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April 17, 2020

Mr. Paul Howard &
Mr. Peter Martz
4 Site Investments LLC
1271 Kelly Johnson Boulevard, Suite 100
Colorado Springs, CO 80920

RE: Grandview Reserve
El Paso County, Colorado
Master Traffic Impact Analysis
LSC #184840

Dear Peter:

In response to your request, LSC Transportation Consultants, Inc. has prepared this master traffic impact analysis for the Grandview Reserve Sketch Plan in El Paso County, Colorado. As shown in Figure 1, the 768-acre site is located west of the intersection of US Highway 24 and Elbert Road 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 Grandview Reserve residential development. The report contains the following:

- The traffic count data and street conditions
- Short-term and 2040 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
- 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. This study accounts for the land use, trip generation and the roadway network included in these studies.

LAND USE AND ACCESS

Site Plan

Figure 2 shows the proposed Grandview Reserve sketch plan. The site is planned to be developed with up to 3,261 residential dwelling units, 17 acres of commercial uses, an elementary school, and a church. Two full-movement access points are proposed to Eastonville Road and seven full-movement access points are proposed to an extension of Rex Road through the site. Figure 2 shows the proposed spacing of the access points. The sketch plan also shows a future street connection to planned Phase 3 of the Waterbury development.

The site access points to Rex Road and Eastonville Road will need to meet County standards for intersection and stopping sight distance.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown on 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 with the site location identified on them have been attached to this report.

- **US Highway 24 (US Hwy 24)** is generally a two-lane State Highway extending east/west across Colorado connecting the Buena Vista, Colorado Springs, and Limon areas. US Hwy 24 is planned to be widened to four lanes through the Falcon area. The US Hwy 24 PEL identifies this widening as a high priority with a timeline of less than 10 years. US Hwy 24 in the vicinity is classified as an EX – Expressway/Major Bypass by the Colorado Department of Transportation (CDOT). US Hwy 24 is shown as a four-lane Principal Arterial on the *MTCP* and the *Preserved Corridor Network Plan*. The posted speed limit on US Hwy 24 adjacent to the site is 65 miles per hour (mph).
- **Eastonville Road** extends northeast from Meridian Road to past Hodgen Road. It is shown as a two-lane Minor Arterial on the El Paso County *Major Transportation Corridors Plan* and the *Preserved Corridor Network Plan*. Eastonville Road has a three-lane cross-section (one through lane in each direction plus a center two-way, left-turn lane) from Woodmen Hills Drive to Snaffle Bit Road (approximately midway between Judge Orr Road and Stapleton Road). Eastonville Road is a two-lane roadway north and south of this section. PPRTA-funded improvements are anticipated in the future at the intersection of Eastonville Road and Stapleton Drive that would likely add northbound and southbound left-turn lanes. The posted speed limit north of Stapleton Drive is 35 mph.
- **Rex Road** extends east from Goodson Road to Pyramid Peak Drive within the Meridian Ranch development. Rex Road will be extended east through Meridian Ranch and the currently

proposed Grandview Reserve sketch plan area to US Hwy 24 as discussed in the Rex Road Corridor section below.

- **Stapleton Drive** 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)*. Stapleton Drive extends east from Towner Drive to US Hwy 24. Stapleton continues southeast, then south as Curtis Road. It is planned to be ultimately extended west to connect with the Briargate Parkway extension. Stapleton Drive currently is a half-section of a four-lane Principal Arterial street (one through lane in each direction) between Meridian Road and US Hwy 24. The posted speed limit between Eastonville Road and US Hwy 24 is 45 mph.

Existing Traffic Volumes

Figure 3 shows the existing traffic volumes at key intersections in the vicinity of the site. These volumes are based on manual intersection turning movement counts conducted by LSC in May 2017, November 2018, and December 2018. The count data sheets are attached for reference. Figure 3 also shows the Colorado Department of Transportation Average Annual Daily Traffic volumes (AADT) on US Hwy 24 in the vicinity of the site and an estimate of the average weekday traffic volumes on key street segments, based on the peak-hour counts.

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	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more
(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.		

Figure 3 presents the results of the existing intersection level of service analysis. The intersections of US Hwy 24/Stapleton, Eastonville/Stapleton, and Londonderry/Eastonville were analyzed based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The level of service reports are attached.

The southbound left-turn, northbound left-turn, and through movements at the two-way, stop sign-controlled intersection of Stapleton/US Hwy 24 are currently operating at LOS F during the afternoon peak hour.

The eastbound approach at the two-way stop sign-controlled intersection of Stapleton/Eastonville is currently operating at LOS F during the morning peak hour. All other movements are currently operating at a LOS D or better during the peak hours.

The eastbound left-turn movement at the two-way, stop sign-controlled intersection of Eastonville/Londonderry is currently operating at a LOS D during the morning peak hour.

The El Paso County 2060 *Corridor Preservation Plan* (CPP) shows Rex Road extending east from Eastonville Road along the north boundary of the site and terminating at Elbert Road just north of US Hwy 24. However, the Colorado Department of Transportation US Hwy 24 *Planning and Environmental Linkages Study Final Corridor Conditions Report (PEL)* dated December 2016 labels the future roadway intersecting US Hwy 24 at mile post 324.72 (about one mile southwest of Elbert Road) as “Rex Road.” As shown in Figure 2 Rex Road is planned to be constructed southeast through the currently proposed Grandview Reserve sketch plan area and will intersect US Hwy 24 at approximately the location shown on the PEL.

SHORT-TERM (YEAR 2023) BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development’s trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments, but assumes zero traffic generated by the site. Figure 4 shows the projected background traffic volumes for the short term (2023).

These background traffic volumes have been based on the existing traffic volumes (from Figure 4) plus increases in traffic due to regional growth including buildout of existing and currently proposed subdivisions within the Waterbury development located northeast of the intersection of Eastonville/Stapleton, Meridian Ranch Filings 1-3 and Filings 6-8, Estates Filings 2-3, Meridian Ranch Filing 11, Stonebridge Filings 1, 2, and 3, Meridian Ranch Filing 9, the Vistas at Meridian Ranch Filing 1, WindingWalk at Meridian Ranch Filing 1, The Enclave at Stonebridge at Meridian Ranch, the Estates at Rolling Hills Ranch Filing No. 1, and the Rolling Hills Ranch at Meridian Ranch PUD. The short-term background traffic volumes assume Rex Road has been extended from its existing terminus to the Rolling Hills Ranch at Meridian Ranch PUD access but **not** further east to Eastonville Road. The background traffic scenarios also hypothetically assume Rex Road has been

constructed from Eastonville Road through the site to US Hwy 24, but the background traffic scenarios include only the non-site traffic.

2040 BACKGROUND TRAFFIC

Figure 5 shows the projected 20-year background traffic volumes for the year 2040. The 2040 background/baseline traffic volumes are based on the *Colorado Department of Transportation US Hwy 24 Planning and Environmental Linkages Study Final Corridor Conditions Report* dated December 2016 and on previous work completed by LSC in the area, including work done for the Meridian Ranch and Waterbury developments. The background traffic scenarios hypothetically assume Rex Road through the site, but the background traffic scenarios include only the non-site traffic. The 2040 background traffic volumes do not include traffic from Grandview Reserve.

TRIP GENERATION

The site-generated vehicle-trips were estimated using the nationally published trip generation rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). Table 2 shows the trip generation estimates.

The total number of vehicle-trips generated by the land uses has been reduced to account for the internal vehicle-trips made within the site between land uses, without use of the external streets surrounding the site. Table 2 shows the number of internal trips assumed for each land use. The internal trip reduction for the commercial parcels is an estimate by LSC, based on National Highway Cooperative Highway Research Program (NCHRP) Report 684 Enhancing Internal Trip Capture Estimation for Mixed-Use Developments. The results of the spreadsheet model are attached. An additional 50 percent of the school trips were also assumed to be internal to the site.

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

Phase 1 is planned to include buildout of up to 1,585 residential dwelling units in Parcels I, J K, and L. Following Phase 1, Grandview Reserve is expected to generate about 13,212 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, which generally occurs for one hour between 6:30 and 8:30 a.m., about 283 vehicles would enter and 848 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 908 vehicles would enter and 533 vehicles would exit the site.

At buildout, Grandview Reserve is expected to generate about c 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 797 vehicles would enter and 1,933 vehicles would exit the site. During the afternoon peak hour, about 2,176 vehicles would enter and 1,409 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. Figure 7 shows the directional distribution estimates for the site-generated traffic volumes. The estimates have been based on the following factors: the recent traffic count data; the Pikes Peak Area Council of Governments' 2040 traffic projections, the site's location with respect to the nearby employment, commercial and activity centers, and the balance of the Falcon and Colorado Springs metropolitan areas; the site's proposed land use; the site's proposed access points; and the phasing of the existing and future roadway system serving the site.

When the distribution percentages (from Figure 7) were applied to the trip generation estimates (from Table 2), the site-generated traffic volumes on the area roadways were determined. Figure 7 shows the site-generated traffic volumes following Phase 1. Figure 8 shows the site-generated traffic volumes at buildout of Grandview Reserve.

TOTAL TRAFFIC

Figure 9 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 4) plus the Phase 1 site-generated traffic volumes (from Figure 7).

Figure 10 shows the projected 2040 total traffic volumes. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 5) plus the buildout site-generated traffic volumes (from Figure 8).

PROJECTED LEVELS OF SERVICE

The key area intersections and site access points have been analyzed to determine the projected future levels of service based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board and Synchro signalized intersection procedures. Table 3 shows the level of service analysis results based on the projected short-term traffic volumes and Table 4 shows the level of service analysis results based on the 2040 traffic volumes. The level of service reports are attached.

Rex/Eastonville

In the short-term, it was assumed that a new section of Rex Road would be constructed from Eastonville Road through the Grandview Reserve sketch plan area to US Hwy 24. It was assumed that the section of Rex Road just west of Eastonville Road through the Meridian Ranch development was not yet constructed. The intersection of Rex/Eastonville is projected to operate at LOS B or better for all movements during the peak hours as a stop sign-controlled "T" intersection based on the projected short-term total traffic volumes.

By 2040 it was assumed that Rex Road would be completed between Meridian Road and US Hwy 24. Based on the projected 2040 total traffic volumes the intersection of Rex/Meridian is projected to operate at LOS F for some of the minor approach volumes, if it is stop sign-controlled. If this intersection is constructed as a one-lane modern roundabout or if it is traffic-signal controlled, all movements are projected to operate at LOS D or better during the peak hours.

Rex Road Site Access Points

The site access points to Rex Road were analyzed as two-way, stop-controlled intersections and one-lane modern roundabouts. The intersection of the proposed residential collector and the access point for the commercial parcels were also analyzed as assuming traffic signal control. The first three intersections east of Eastonville Road (intersections 2, 3, and 4) are projected to operate at a satisfactory level of service as two-way, stop sign-controlled intersections. The remaining access points will likely need alternate traffic control to achieve an acceptable level of service.

Rex/US Hwy 24

The intersection of Rex/US Hwy 24 is projected to operate at LOS D as a stop-sign controlled "T" intersection based on the projected short-term total traffic volumes. The analysis assumes left-turn and right-turn deceleration and acceleration lanes on US Hwy 24 at this intersection. By 2040 this intersection was assumed to be traffic signal controlled. All movements are projected to operate at LOS D or better based on the projected 2040 total traffic volumes.

Eastonville Site Access Point

The two site access points to Eastonville Road are planned beyond Phase 1. Based on the projected 2040 total traffic volumes, the westbound approach at the north site access is projected to operate at LOS E during the peak hours. If this access were constructed as a modern one-lane roundabout, all approaches are projected to operate at a satisfactory level of service. The south site access is projected to operate at LOS D or better for all movements during the peak hours as a stop sign-controlled "T" intersection.

Londonderry/Eastonville

The eastbound left-turn movement at the stop sign-controlled intersection of Londonderry/Eastonville is projected to operate at LOS F during the peak hours, based on the projected short-term total traffic volumes. All movements at this intersection are projected to operate at a satisfactory level of service if it is reconstructed as a modern roundabout or traffic-signal controlled. By 2040, it will likely be necessary to provide two northbound and southbound through lanes to achieve an acceptable level of service.

Stapleton/Eastonville

The eastbound approach at the intersection of Stapleton/Eastonville is currently operating at LOS F during the morning peak hour. A PPRTA project is currently planned to improve Eastonville Road in the vicinity of the site, however the timing of this project is unknown. To maintain an acceptable level of service these PPRTA improvements will need to be completed and the intersection will need to be converted to traffic signal control.

By 2040, it was assumed that Stapleton Drive would be constructed to its full cross section. Even with improvements to Stapleton Drive it may not be possible to maintain an acceptable level of service at this intersection without also widening Eastonville Road to provide two northbound and southbound through lanes.

Stapleton/US Hwy 24

The intersection of US Hwy 24/Stapleton is currently stop sign-controlled. The northbound and southbound left-turn movements and the northbound through movements are currently operating at LOS F during the peak hours. This intersection is planned to be signalized in the future. Once signalized, all movements are projected to operate at LOS D or better during the peak hours, based on the projected short-term total traffic volumes. By 2040 some movements at this intersection are projected to operate at LOS E or F during the peak hours. Alternate traffic control options were presented in the US Hwy 24 PEL Study. Alternatives to a "conventional" four-leg signalized intersection may include a jug handle intersection, a continuous flow intersection (or partial/half CFI) or a junior interchange. An alternate intersection design may be needed long-term to maintain an acceptable level of service.

TRAFFIC SIGNAL WARRANT ANALYSIS

The intersections of Stapleton/Eastonville and Stapleton/US Hwy 24 were analyzed to determine when Four-Hour Vehicular Volume Traffic Signal Warrant thresholds would be reached or exceeded, based on the projected peak-hour traffic volumes. This analysis using the peak hours is intended to provide an indication that a warrant may be met or is close to being met. In order for a Four-Hour Traffic Signal Warrant to be satisfied, the volume threshold would need to be met for two additional hours of the day. For example, the four-hour warrant would be satisfied with the volume thresholds met for one hour in the morning, two hours (instead of the one-hour

peak) during the afternoon peak period, and an hour during the mid-afternoon. The satisfaction of warrants does not indicate that a signal must be installed. The decision to require a signal to be installed rests with the County.

Stapleton/Eastonville

Table 5 shows the results of the analysis for the intersection of Stapleton/Eastonville. The minor approach volumes were assumed to include either the eastbound left-turn, through, and right-turn movements or the westbound left-turn and through movements (the right-turn movements were excluded, as there is an exclusive right-turn lane). Even if the threshold is met based on both the eastbound and westbound approaches, it would only be considered to be met once for that hour. As shown in the Table 4, the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant are projected to be exceeded based on the morning peak hour and the afternoon peak hour, based on the projected short-term background and total traffic.

Stapleton/US Hwy 24

Table 6 shows the signal warrant analysis for the intersection of Stapleton/US Hwy 24, based on the existing traffic volumes. This analysis includes data for four hours — 6:30 to 7:30 a.m., 7:30 to 8:30 a.m., 4:00 to 5:00 p.m., and 5:00 to 6:00 p.m. The analysis assumes the minor approach includes the higher of either the southbound (Stapleton Drive) left-turn and through movements or northbound (Curtis Road) left-turn and through movements. This intersection currently meets the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant for three of the four hours. It is very likely that a fourth hour could be found that currently meets the thresholds for a traffic signal warrant. Additional traffic counts would be needed to confirm this.

FUNCTIONAL CLASSIFICATIONS AND LANEAGE

Figure 11 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.

MULTI-MODAL AND PEDESTRIAN/BIKE TRANSPORTATION

- A park n' ride facility is planned for a site near Meridan Road and US Highway 24.
- The Rock Island Regional Trail passes adjacent to the site.
- Many of the area county roads have been or will be upgraded to provide paved shoulders for cyclists. Stapleton and Elbert Road are shown as future "bike routes."
- The *MTCP* shows a future primary regional trail along Eastonville Road. Another future primary regional trail is shown extending west from Eastonville Road though Meridian Ranch.
- The Highway 24 PEL study also includes multi-modal elements.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- At buildout Grandview Reserve is expected to generate about 30,870 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 797 vehicles would enter and 1,933 vehicles would exit the site. During the afternoon peak hour, about 2,176 vehicles would enter and 1,409 vehicles would exit the site.

Required Improvements

Auxiliary Turn Lanes

- Based on the short-term total traffic volumes shown in Figure 9 and the criteria contained in the *State of Colorado Highway Access Code*, an eastbound left-turn lane is projected to be warranted on US Hwy 24 approaching Rex Road. Based on a posted speed limit of 65 miles per hour (mph), the prescribed lane length for the deceleration lane is 1,400 feet long (including 600 feet of stacking distance) plus a 300-foot taper. In the future, it will be necessary to provide dual eastbound left-turn lanes.
- Based on the short-term total traffic volumes shown in Figure 9 and the criteria contained in the *State of Colorado Highway Access Code*, a westbound right-turn acceleration lane is projected to be warranted on US Hwy 24 at Rex Road. Based on a posted speed limit of 65 miles per hour (mph), the prescribed lane length for the acceleration lane is 1,380 feet long plus a 300-foot taper.
- Based on the short-term total traffic volumes shown in Figure 9 and the criteria contained in the *State of Colorado Highway Access Code*, a westbound right-turn deceleration lane is projected to be warranted on US Hwy 24 approaching Rex Road. Based on a posted speed limit of 65 miles per hour (mph), the prescribed lane length for the deceleration lane is 800 feet long plus a 300-foot taper.
- Based on the short-term total traffic volumes and the level of service analysis results, an eastbound left-turn acceleration lane on US Hwy 24 at Rex Road would reduce the delay for the left turn from Rex onto eastbound Highway 24. This lane may be required by CDOT at some point as development progresses. Based on a posted speed limit of 65 miles per hour (mph), the prescribed lane length for the acceleration lane is 1,380 feet long plus a 300-foot taper. A channelized T configuration (with raised center median channelization) may be part of the traffic control phasing over time at this intersection.
- Based on the 2040 total traffic volumes shown in Figure 10 and the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* the new section of Rex Road

between Eastonville and US Hwy 24 should anticipate the need for with right-turn and left-turn deceleration lanes approaching all access points and intersections.

- Based on the 2040 total traffic volumes shown in Figure 10 and the criteria contained in the *El Paso County Engineering Criteria Manual* (ECM) northbound and southbound left-turn lanes will be needed on Eastonville approaching Rex Road and the site access points. These auxiliary lanes would not be needed if these intersections are designed as modern roundabouts.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH:KDF:jas

Enclosures: Tables 2-6
Appendix Table 1
Figures 1-12
MTCP Maps
NCHRP Report 684 Internal Trip Capture Estimation Tool
Traffic Count Reports
Level of Service Reports

Tables

Table 2 Trip Generation Estimate Grandview Reserve																								
Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾				Total Trips Generated					Internal Trips Generated ⁽²⁾					External Trips Generated					Pass-By Trips ⁽³⁾	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	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
Short-Term Trip Generation Estimate																								
210	Single-Family Detached Housing	1,585 DU	8.34	0.18	0.53	0.57	0.34	13,212	283	848	908	533	0	0	0	0	0	13,212	283	848	908	533	0%	13,212
Buildout Trip Generation Estimate																								
520	Elementary School	500 Students	1.89	0.36	0.31	0.08	0.09	945	181	154	41	44	473	91	39	10	22	472	90	115	31	22	0%	472
820	Shopping Center	133 KSF ⁽⁴⁾	54.88	1.02	0.62	2.42	2.62	7,299	135	83	322	349	599	18	12	3	40	6,700	117	71	319	309	34%	4,422
560	Church	49 KSF	6.49	0.21	0.14	0.20	0.25	318	10	7	10	12	0	0	0	0	0	318	10	7	10	12	0%	318
210	Single-Family Detached Housing	3,261 DU ⁽⁵⁾	7.87	0.18	0.53	0.56	0.33	25,658	580	1,740	1,816	1,066	0	0	0	0	0	25,658	580	1,740	1,816	1,066	0%	25,658
			3,261 DU					34,220	906	1,984	2,189	1,471	1,072	109	51	13	62	33,148	797	1,933	2,176	1,409		30,870
Notes:																								
(1) Source: "Trip Generation, 10th Edition, 2017" by the Institute of Transportation Engineers (ITE)																								
(2) Internal trips to and from the commercial parcels were based on the attached NCHRP 684 Internal Trip Capture Estimation Tool. About one half the school trips were assumed to be internal to the site.																								
(3) Source: "Trip Generation Handbook - An ITE Proposed Recommended Practice, Third Edition September 2017" by ITE																								
(4) KSF = one thousand square feet of floor space																								
(5) DU = dwelling unit																								
Source: LSC Transportation Consultants, Inc.																								

<div>Table 3</div> <div>Short-Term Level of Service Analysis</div> <div>Grandview Reserve</div>						
Intersection	Traffic Control	Movement	Short-Term Background Traffic		Short-Term Total Traffic	
			AM	PM	AM	PM
#1 Rex/Eastonville	TWSC	Westbound Left	A	A	B	B
		Westbound Right	A	A	A	A
		Southbound Left	A	A	A	A
#3 Rex/Parcel H	TWSC	Northbound Left	---	---	B	B
		Northbound Right	---	---	A	B
		Westbound Left	---	---	A	A
#4 Rex/Parcel I	TWSC	Northbound Left	---	---	B	B
		Northbound Right	---	---	A	B
		Westbound Left	---	---	A	A
#5 Rex/Parcels I & J	TWSC	Northbound Left	---	---	B	C
		Northbound Right	---	---	A	B
		Westbound Left	---	---	A	A
#6 Rex/Residential Collector	TWSC	Eastbound Left	---	---	A	A
		Southbound Left	---	---	B	B
		Southbound Right	---	---	A	B
#7 Rex/Parcels J & K	TWSC	Northbound Left	---	---	B	F
		Northbound Right	---	---	B	B
		Westbound Left	---	---	A	A
	Roundabout	Eastbound Through/Right	---	---	C	A
		Westbound Left/Through	---	---	A	A
		Northbound Left/Right	---	---	A	A
		Overall	---	---	A	A
#9 Rex/US 24	TWSC	Northbound Left	A	A	A	B
		Eastbound Left (With Acceleration Lane)	B	C	D	B
		Eastbound Right (With Acceleration Lane)	A	A	A	A
#12 Eastonville/Londonderry	TWSC	Northbound Left	A	A	B	A
		Eastbound Left	F	F	F	F
		Eastbound Right	B	A	C	B
	Roundabout	Eastbound	---	---	B	A
		Northbound	---	---	A	B
		Southbound	---	---	B	A
		Overall	---	---	A	B
	Signal	Eastbound Left	---	---	D	D
		Eastbound Right	---	---	B	B
		Northbound Left	---	---	A	A
		Northbound Through	---	---	A	A
		Southbound Through	---	---	A	A
		Southbound Right	---	---	A	A
		Overall	---	---	A	A
#13 Eastonville/Stapleton	TWSC	Northbound Left	A	A	A	A
		Eastbound	F	F	F	F
		Westbound Left/Through	F	F	F	F
		Westbound Right	B	B	B	C
		Southbound Left	A	A	A	A
	Signal	Eastbound Left/Through/Right	---	---	C	D
		Westbound Left/Through	---	---	C	B
		Westbound Right	---	---	A	A
		Northbound Left	---	---	B	C
		Northbound Through/Right	---	---	D	D
		Southbound Left	---	---	C	D
		Southbound Through/Right	---	---	C	C
		Overall	---	---	C	C
#14 US 24/Stapleton	TWSC	Northbound Left	A	B	B	C
		Eastbound Through	F	F	F	F
		Eastbound Right	F	F	F	F
		Eastbound Left	A	A	A	A
		Westbound Through	F	F	F	F
		Westbound Right	F	F	F	F
		Westbound Left	A	A	A	A
		Southbound Left	A	A	A	B
	Signal	Eastbound Left	---	---	D	C
		Eastbound Through	---	---	D	D
		Eastbound Right	---	---	A	A
		Westbound Left	---	---	C	C
		Westbound Through	---	---	C	D
		Westbound Right	---	---	A	A
		Northbound Left	---	---	D	D
		Northbound Through	---	---	B	C
		Northbound Right	---	---	A	A
		Southbound Left	---	---	A	A
		Southbound Through	---	---	D	C
		Southbound Right	---	---	A	A
		Overall	---	---	C	C

Table 4 Page 1 of 3 2040 Level of Service Analysis Grandview Reserve								
Intersection	Traffic Control	Movement	2040 Background Traffic		2040 Total Traffic			
			AM	PM	AM	PM		
#1 Rex/Eastonville	TWSC	Northbound Left	A	A	A	A		
		Eastbound Left	B	C	C	F		
		Eastbound Through	C	C	E	F		
		Eastbound Right	B	A	B	B		
		Westbound Left	D	D	F	F		
		Westbound Through	B	C	C	D		
		Westbound Right	A	A	A	A		
		Southbound Left	A	A	A	A		
		Roundabout	Eastbound Left/Through/Right	---	---	D	B	
	Westbound Left/Through/Right		---	---	C	B		
	Northbound Left/Through		---	---	A	A		
	Northbound Right		---	---	A	B		
	Southbound Left/Through/Right		---	---	B	B		
	Overall		---	---	C	B		
	Signal	Eastbound Left	---	---	A	B		
		Eastbound Through	---	---	B	C		
		Eastbound Right	---	---	A	A		
		Westbound Left	---	---	D	C		
		Westbound Through	---	---	B	B		
		Westbound Right	---	---	A	A		
		Northbound Left	---	---	B	B		
		Northbound Through	---	---	B	B		
		Northbound Right	---	---	A	A		
		Southbound Left	---	---	B	B		
		Southbound Through	---	---	B	B		
		Southbound Right	---	---	A	A		
		Overall	---	---	C	B		
		#2 Rex/Parcels A & B	TWSC	Northbound Left	---	---	C	C
				Northbound Right	---	---	B	C
	Westbound Left			---	---	A	A	
Roundabout	Eastbound Through/Right		---	---	A	B		
	Westbound Left/Through		---	---	A	A		
	Northbound Left/Right		---	---	A	A		
	Overall		---	---	A	A		
#3 Rex/Parcel H	TWSC		Northbound Left	---	---	C	C	
			Northbound Right	---	---	B	C	
		Westbound Left	---	---	A	B		
	Roundabout	Eastbound Through/Right	---	---	A	B		
		Westbound Left/Through	---	---	A	A		
		Northbound Left/Right	---	---	A	A		
		Overall	---	---	A	B		
	#4 Rex/Parcel I	TWSC	Northbound Left	---	---	C	D	
Northbound Right			---	---	B	C		
Westbound Left			---	---	A	B		
Roundabout		Eastbound Through/Right	---	---	A	C		
		Westbound Left/Through	---	---	A	A		
		Northbound Left/Right	---	---	A	A		
		Overall	---	---	A	B		
#5 Rex/Parcels I & J		TWSC	Northbound Left	---	---	D	E	
	Northbound Right		---	---	C	C		
	Westbound Left		---	---	A	B		
	Roundabout	Eastbound Through/Right	---	---	A	C		
		Westbound Left/Through	---	---	A	B		
		Northbound Left/Right	---	---	B	A		
		Overall	---	---	A	B		
	Source: LSC Transportation Consultants, Inc.						Apr-20	

Table 4 Page 2 of 3 2040 Level of Service Analysis Grandview Reserve

Intersection	Traffic Control	Movement	2040 Background Traffic		2040 Total Traffic		
			AM	PM	AM	PM	
#6 Rex/Residential Collector	TWSC	Eastbound Left	---	---	A	B	
		Southbound Left	---	---	F	F	
		Southbound Right	---	---	B	C	
	Roundabout	Eastbound Left/Through	---	---	D	C	
		Westbound Through	---	---	A	A	
		Westbound Right	---	---	A	A	
		Southbound Left/Right	---	---	C	B	
		Overall	---	---	C	B	
		Signal	Eastbound Left	---	---	B	B
	Eastbound Through		---	---	B	A	
	Westbound Through		---	---	D	D	
	Westbound Right		---	---	C	B	
	Southbound Left		---	---	D	D	
	Southbound Right		---	---	A	A	
	Overall		---	---	C	C	
	#7 Rex/Parcels J & K	TWSC	Northbound Left	---	---	E	F
			Northbound Right	---	---	F	C
Westbound Left			---	---	B	B	
Roundabout		Eastbound Through/Right	---	---	C	B	
		Westbound Left/Through	---	---	A	D	
		Northbound Left/Right	---	---	C	A	
		Overall	---	---	C	C	
#8 Rex/Parcels C1 & C2	TWSC	Northbound Left	---	---	F	F	
		Northbound Through/Right	---	---	C	C	
		Eastbound Left	---	---	A	B	
		Westbound Left	---	---	B	B	
		Southbound Left	---	---	F	F	
		Southbound Through/Right	---	---	B	C	
	Roundabout	Eastbound Left/Through	---	---	A	A	
		Eastbound Through/Right	---	---	A	A	
		Westbound Left/Through	---	---	A	A	
		Westbound Through/Right	---	---	A	A	
		Northbound Left/Through/Right	---	---	A	A	
		Southbound Left/Through/Right	---	---	A	B	
		Overall	---	---	A	A	
	Signal	Eastbound Left	---	---	A	B	
		Eastbound Through (2)	---	---	B	B	
		Eastbound Right	---	---	A	A	
		Westbound Left	---	---	D	D	
		Westbound Through (2)	---	---	D	D	
		Westbound Right	---	---	C	B	
		Northbound Left	---	---	C	C	
		Northbound Through/Right	---	---	A	A	
		Southbound Left	---	---	C	C	
		Southbound Through/Right	---	---	A	A	
Overall	---	---	C	C			
#9 Rex/US 24	Signal	Eastbound Left	D	D	D	D	
		Eastbound Right	A	A	A	A	
		Northbound Left (2)	E	E	D	D	
		Northbound Through (2)	A	A	A	A	
		Southbound Through (2)	B	B	C	D	
		Southbound Right	A	A	A	A	
		Overall	A	B	B	C	
#10 Eastonville/Parcel C	TWSC	Westbound	---	---	E	E	
		Southbound Left	---	---	A	B	
	Roundabout	Westbound Left/Right	---	---	A	A	
		Northbound Through/Right	---	---	A	C	
		Southbound Left/Through	---	---	C	A	
		Overall	---	---	C	C	

<div>Table 4</div> <div>Page 3 of 3</div> <div>2040 Level of Service Analysis</div> <div>Grandview Reserve</div>						
Intersection	Traffic Control	Movement	2040 Background Traffic		2040 Total Traffic	
			AM	PM	AM	PM
#11 Eastonville/Parcels E & F	TWSC	Westbound	---	---	D	D
		Southbound Left	---	---	A	B
	Roundabout	Westbound Left/Right	---	---	A	B
		Northbound Through/Right	---	---	A	C
		Southbound Left/Through	---	---	F	A
		Overall	---	---	E	C
#12 Eastonville/Londonderry	TWSC	Northbound Left	A	A	C	B
		Eastbound Left	C	F	F	F
		Eastbound Right	C	B	F	C
	Roundabout	Eastbound Left	---	---	B	A
		Eastbound Right	---	---	C	A
		Northbound Left	---	---	A	A
		Northbound Through	---	---	A	D
		Southbound Through	---	---	A	A
		Southbound Through/Right	---	---	B	A
		Overall	---	---	A	C
	Signal	Eastbound Left	---	---	C	C
		Eastbound Right	---	---	B	A
		Northbound Left	---	---	A	B
		Northbound Through (2)	---	---	A	A
		Southbound Through (2)	---	---	B	B
		Southbound Right	---	---	A	A
		Overall	---	---	B	B
	Signal (One NB/SB TH Lane)	Eastbound Left	D	D	D	F
		Eastbound Through (2)	C	C	D	D
		Eastbound Right	A	A	A	A
		Westbound Left	C	B	D	C
		Westbound Through (2)	C	D	D	F
		Westbound Right	A	A	A	B
		Northbound Left	C	D	D	E
		Northbound Through (1)	C	D	C	F
		Northbound Right	A	A	A	B
		Southbound Left	C	D	D	F
		Southbound Through (1)	D	D	D	D
		Southbound Right	A	A	B	A
		Overall	C	C	D	E
	Signal (Two NB/SB TH Lanes)	Eastbound Left	---	---	D	E
		Eastbound Through (2)	---	---	C	C
		Eastbound Right	---	---	A	A
		Westbound Left	---	---	C	C
		Westbound Through (2)	---	---	C	D
		Westbound Right	---	---	A	A
		Northbound Left	---	---	C	D
		Northbound Through (2)	---	---	C	D
		Northbound Right	---	---	A	A
		Southbound Left	---	---	D	E
		Southbound Through (2)	---	---	D	D
		Southbound Right	---	---	C	B
		Overall	---	---	C	D
#14 US 24/Stapleton	Signal	Eastbound Left (2)	D	D	D	E
		Eastbound Through (2)	D	C	D	C
		Eastbound Right	A	A	A	A
		Westbound Left (2)	D	D	D	D
		Westbound Through (2)	D	D	D	D
		Westbound Right	A	A	A	A
		Northbound Left (2)	D	D	D	E
		Northbound Through (2)	C	C	C	F
		Northbound Right	A	A	A	B
		Southbound Left (2)	D	D	D	E
		Southbound Through (2)	D	D	F	F
		Southbound Right	A	A	A	A
		Overall	C	D	F	F

Table 5
Grandview Reserve
Traffic Signal Warrant Analysis of Eastonville/Stapleton
Peak-Hour Four-Hour Vehicular Volume Evaluation

Year	AM Peak Hour						PM Peak Hour					
	Peak-Hour Traffic Volumes			Volume Evaluation ⁽¹⁾			Peak-Hour Traffic Volumes			Volume Evaluation ⁽¹⁾		
	Major ⁽²⁾	Minor		Minor St Minimum	EB Met?	WB Met?	Major ⁽²⁾	Minor		Minor St Minimum	EB Met?	WB Met?
		EB ⁽³⁾	WB ⁽⁴⁾					EB ⁽³⁾	WB ⁽⁴⁾			
Existing	544	123	48	318	No	No	213	70	123	484	No	No
2023 Background	859	389	194	185	Yes	Yes	679	299	373	258	Yes	Yes
2023 Total	1159	428	194	108	Yes	Yes	984	426	373	154	Yes	Yes

Notes:

(1) Based on 2 lanes on major approach and 1 lane on minor approach.

(2) The major street volumes include all (left/through/right) movements on Eastonville Road.

(3) The EB minor street volumes include all easbound movements (left, through, and right) on Stapleton Drive.

(4) The WB minor street volumes include only the left and through westbound movements on Stapleton Dr. The right-turn movements have been excluded because there is an existing exclusive right-turn lane on this approach.

Source: LSC Transportation Consultants, Inc.

Table 6
Grandview Reserve
Traffic Signal Warrant Analysis of Stapleton/US 24
Peak-Hour Four-Hour Vehicular Volume Evaluation

Time	Traffic Volumes			Volume Evaluation ⁽¹⁾		
	Major ⁽²⁾	Minor		Minor St Minimum	EB Met?	WB Met?
		SEB ⁽³⁾	NWB ⁽⁴⁾			
6:30 AM - 7:30 AM	838	166	75	96	Yes	No
7:30 AM - 8:30 AM	691	77	63	143	No	No
4:00 PM - 5:00 PM	882	109	43	85	Yes	No
5:00 PM - 6:00 PM	932	87	57	80	Yes	No

Notes:

(1) Based on 2 or more lanes on the major approach and 2 or more lanes on the minor approach (70% Factor).

(2) The major street volumes include all (left/through/right) movements on US 24

(3) The SEB minor street volumes include only the easbound left-turn and through movements on Stapleton Dr. The right-turn movements have been excluded

(4) The NWB minor street volumes include only the left and through westbound movements on Curtis Rd. The right-turn movements have been excluded

Source: LSC Transportation Consultants, Inc.

Appendix Table 1

Appendix Table 1
Area Traffic Impact Studies by LSC
Rolling Hills Ranch Filing Nos. 1-3

Study	Date
Meridian Ranch	
Meridian Ranch Sketch Plan TIA	April 11, 2011
Meridian Ranch Filing 11 Updated TIA	November 26, 2013
Stonebridge at Meridian Ranch Filing No. 1 Updated TIA	April 23, 2014
Stonebridge at Meridian Ranch Transportation Memorandum	July 28, 2015
Meridian Ranch Filing 8 Updated TIA	December 23, 2014
Meridian Ranch Filing 9 Updated TIA	May 21, 2015
Meridian Ranch Sketch Plan 2015 Amendment TIA	July 30, 2015
The Vistas at Meridian Ranch TIA	March 24, 2016
Meridian Ranch Estates Filing No. 2 Transportation Memorandum	August 27, 2015
The Vistas at Meridian Ranch Updated Transportation Memorandum	June 20, 2017
Londonderry Drive Pedestrian Operations and Safety Study	February 8, 2017
Stonebridge Filing 3 at Meridian Ranch Updated TIA	March 20, 2017
Meridian Ranch Sketch Plan 2017 Amendment TIA	October 3, 2017
WindingWalk at Meridian Ranch and The Enclave at Stonebridge at Meridian Ranch Updated Traffic Impact Analysis	May 10, 2018
Rolling Hills Ranch at Meridian Ranch PUDSP Traffic Impact Analysis	March 9, 2020
The Estates at Rolling Hills Ranch Filing No. 1 Traffic Impact Analysis	March 13, 2020
Waterbury/4-Way Ranch	
Waterbury PUD Development Plan Updated TIA	January 10, 2013
Waterbury Preliminary Plan No. 1 Updated TIA	June 5, 2013
Waterbury Phase 2 Preliminary Plan	August 3, 2017
Waterbury Phase 1 Filing Nos. 2 and 3	October 16, 2017
<i>Source: LSC Transportation Consultants, Inc.</i>	

Figures



Approximate Scale
Scale: 1" = 4,000'

Figure 1
**Vicinity
Map**

Grandview Reserve (LSC #184840)

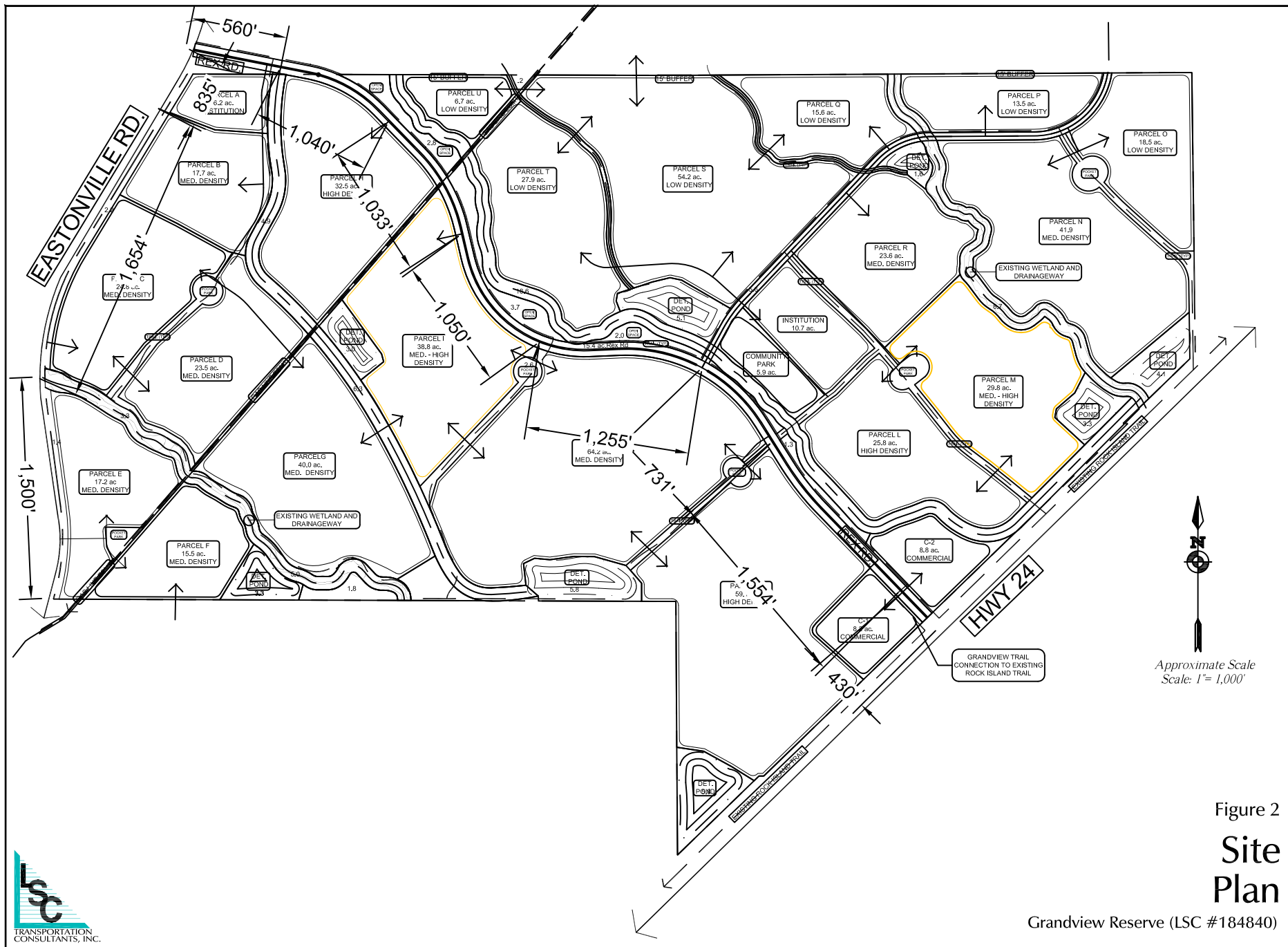
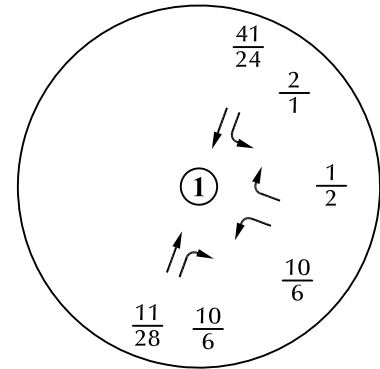


Figure 2

Site Plan

Grandview Reserve (LSC #184840)



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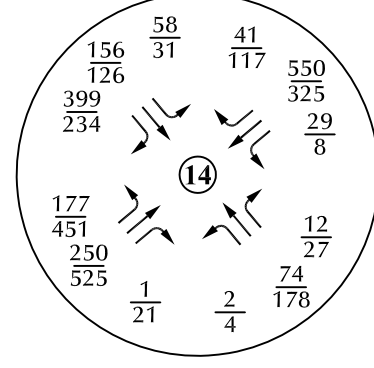
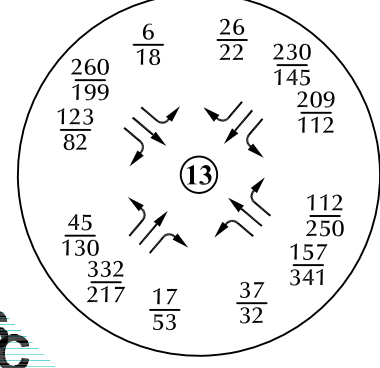
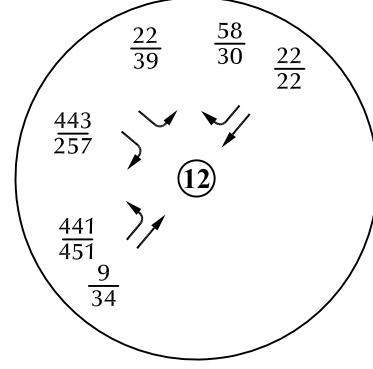
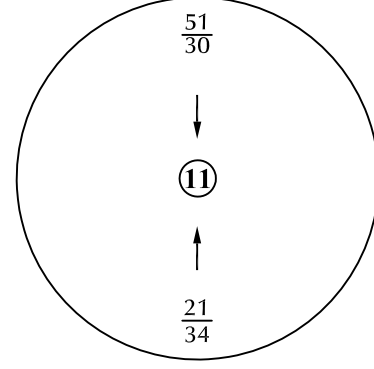
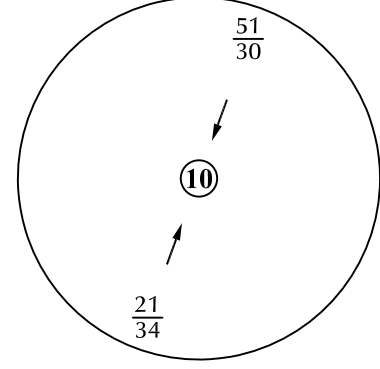
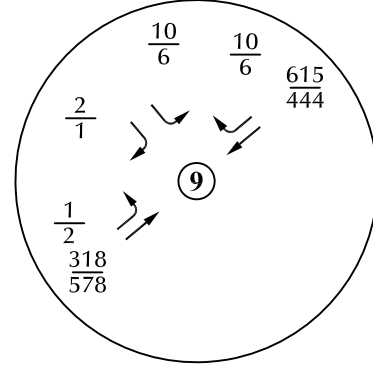
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LEGEND:

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

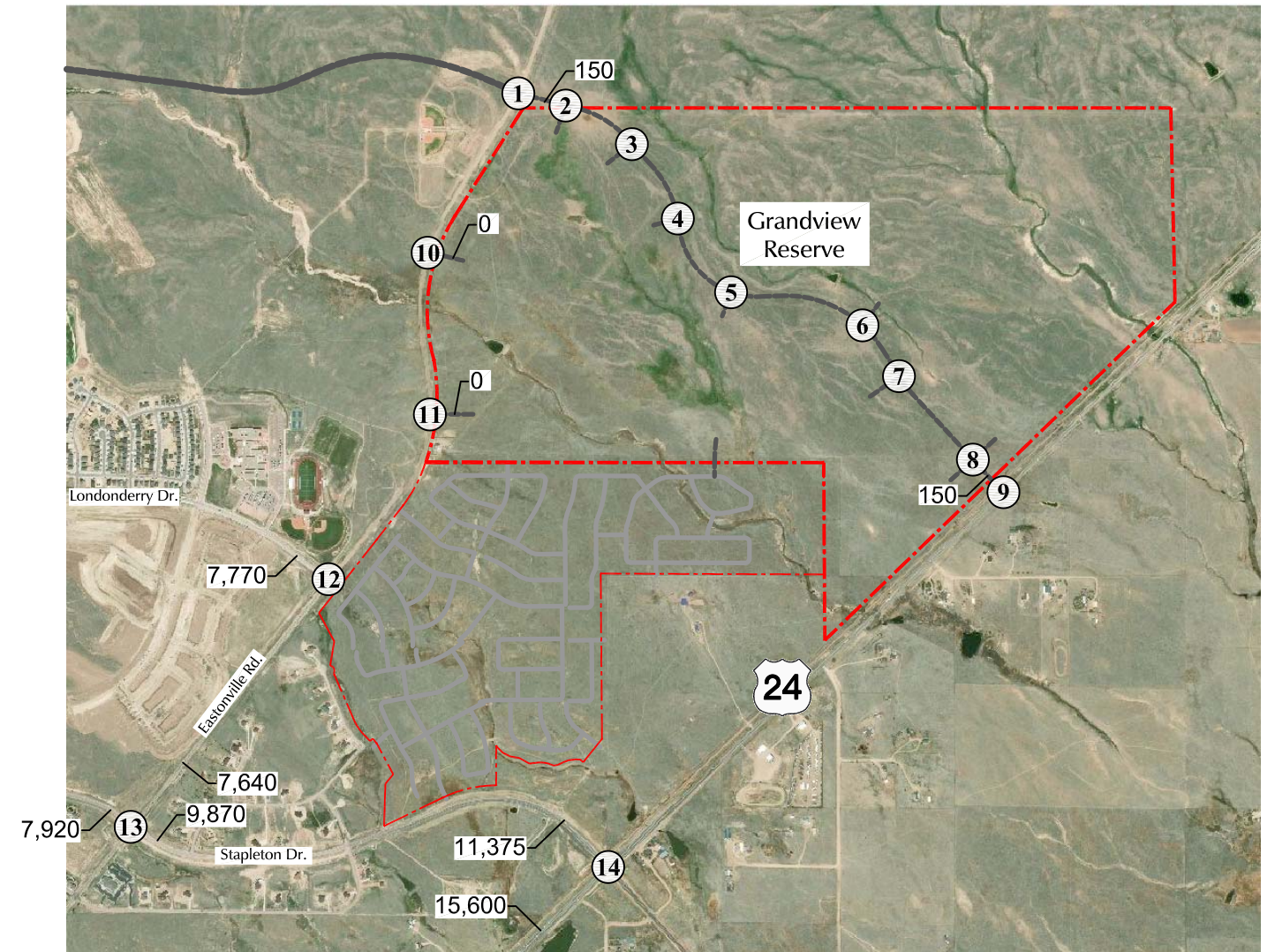
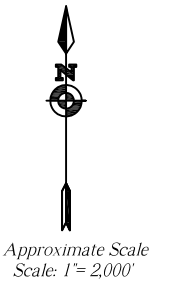
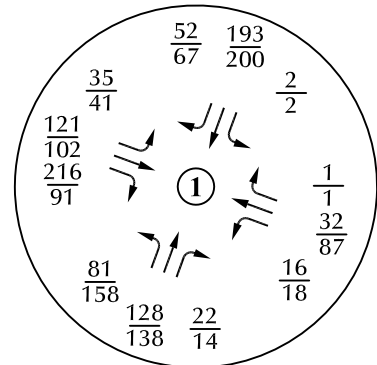


Figure 4

Short-Term
Background Traffic
Grandview Reserve (LSC #184840)



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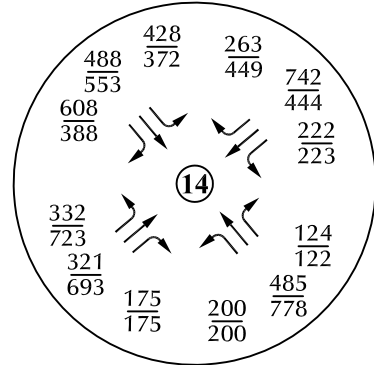
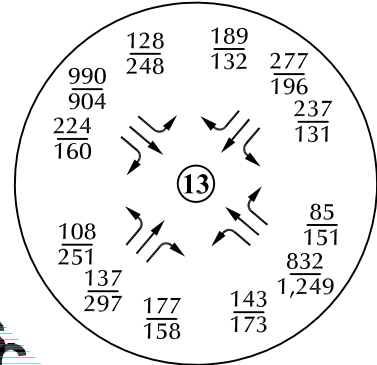
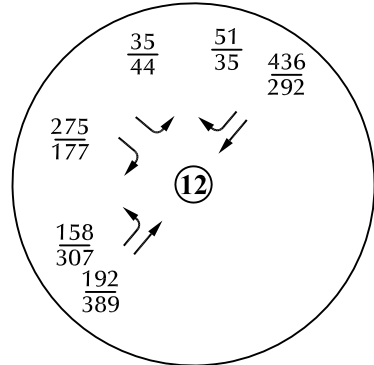
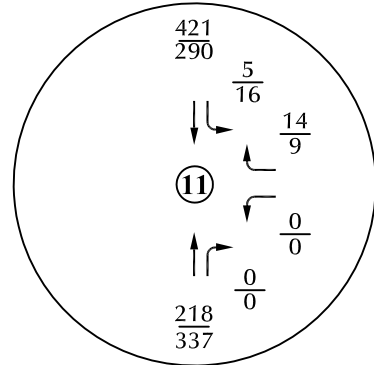
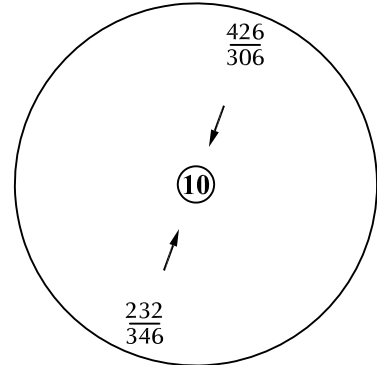
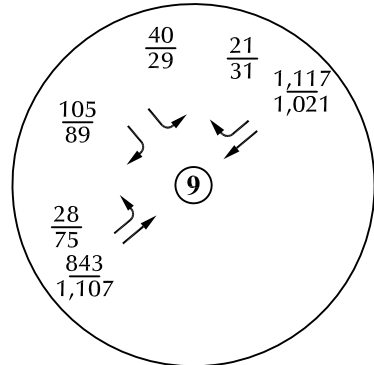
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LEGEND:

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

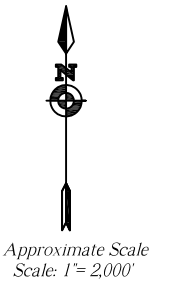


Figure 5

Year 2040
Background Traffic
Grandview Reserve (LSC #184840)



Approximate Scale
Scale: 1" = 4,000'

Figure 6

Directional Distribution of Site-Generated Traffic

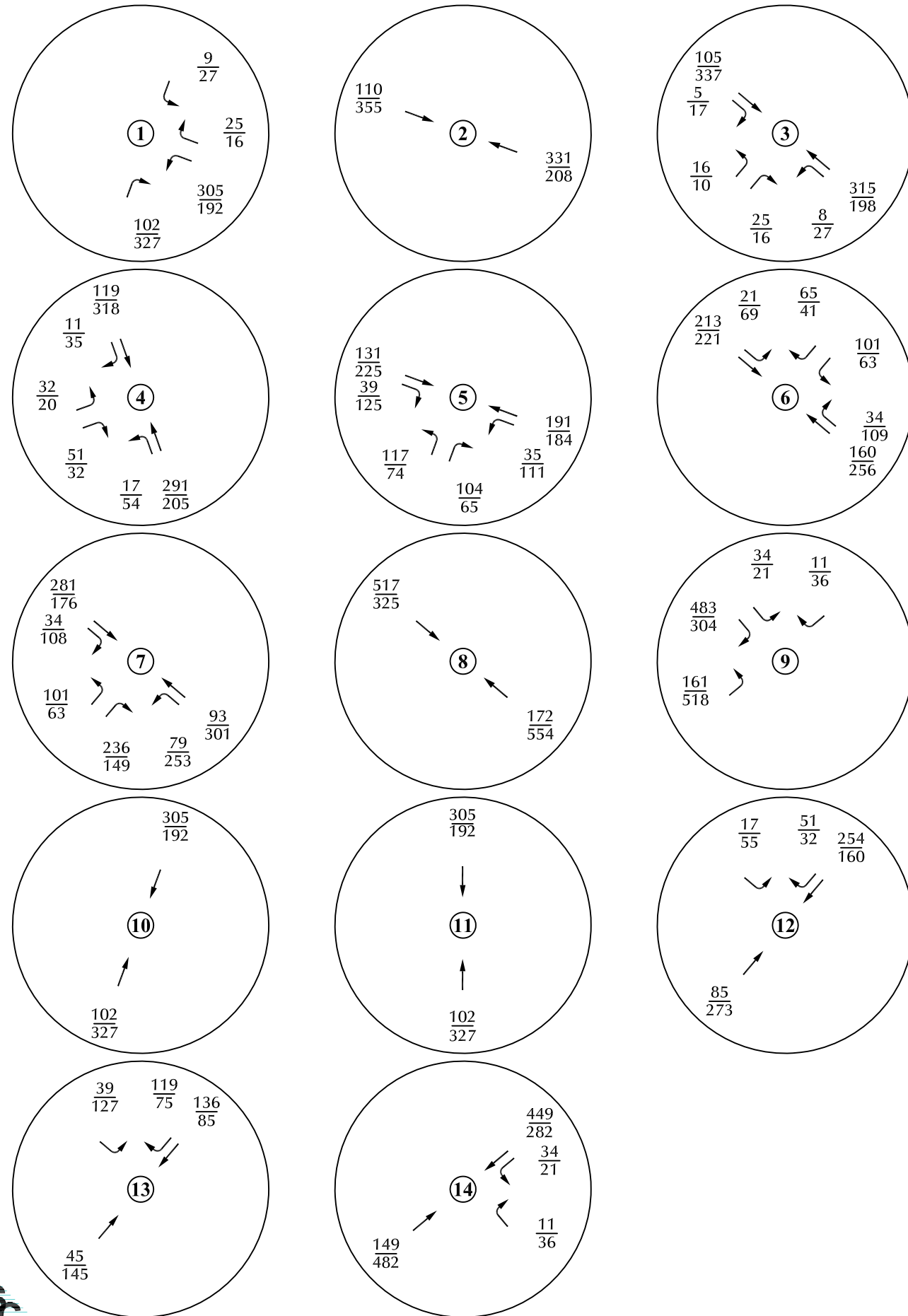
Grandview Reserve (LSC #184840)



LEGEND:

$\frac{XX\%}{XX\%}$

= $\frac{\text{Residential Percent Directional Distribution}}{\text{Non-Residential Percent Directional Distribution}}$



LEGEND:

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

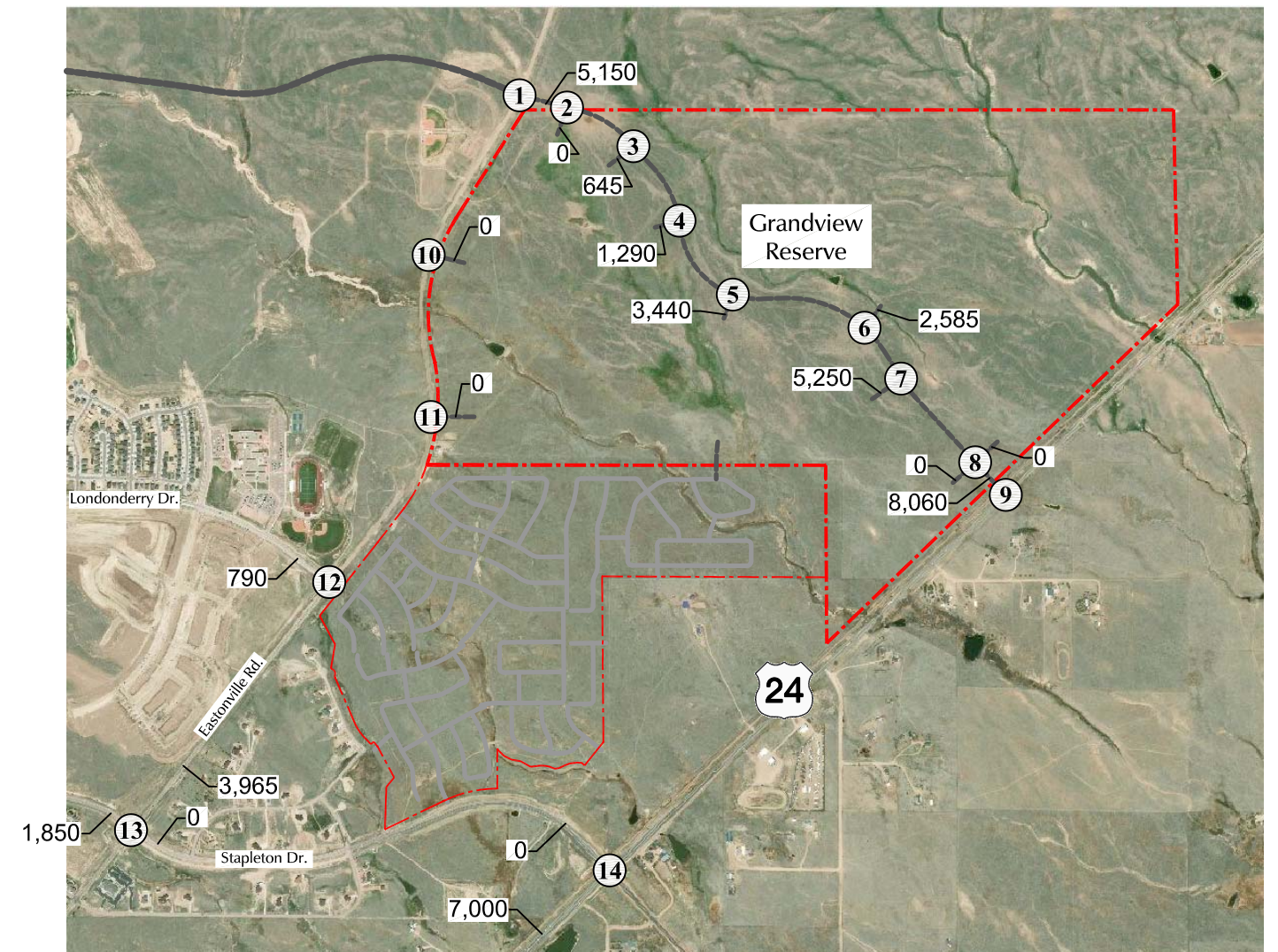
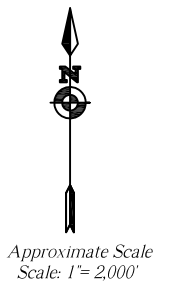
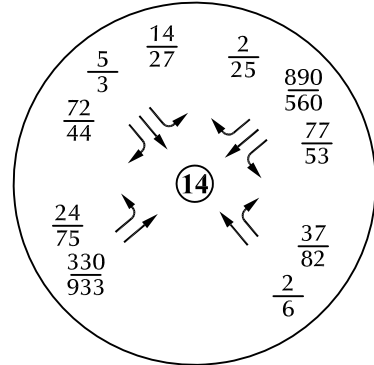
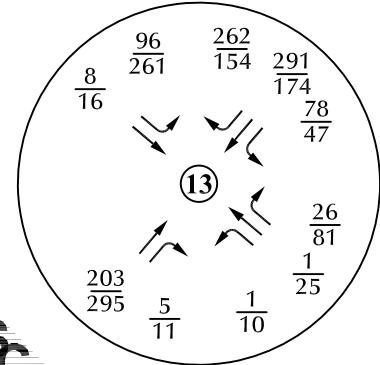
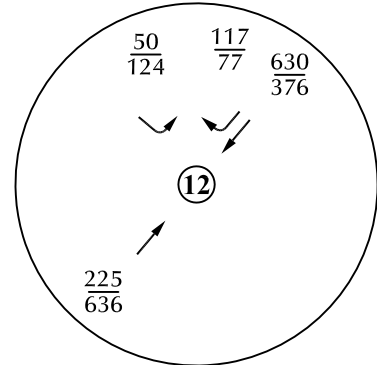
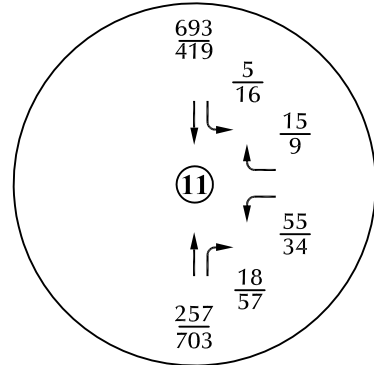
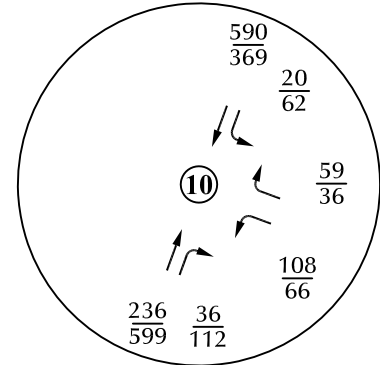
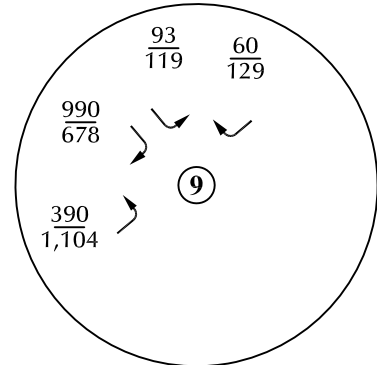
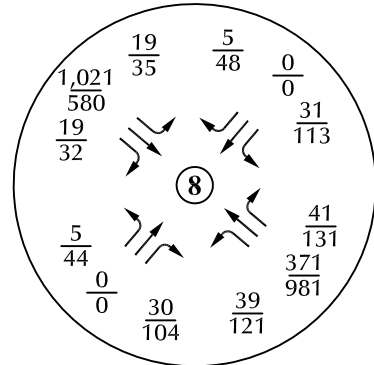
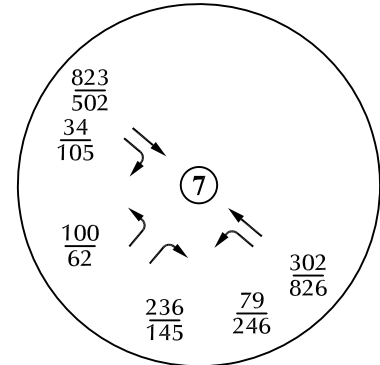
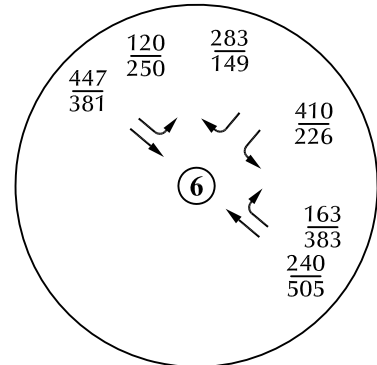
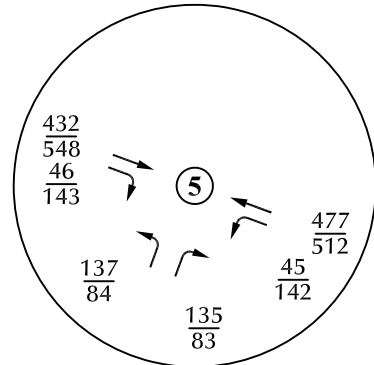
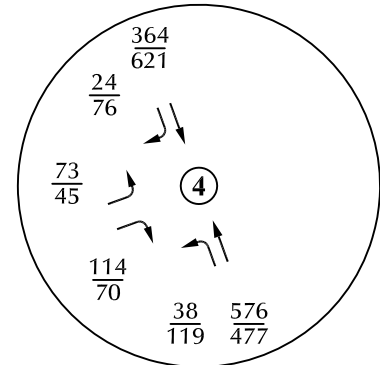
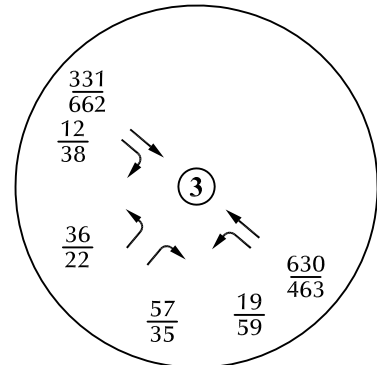
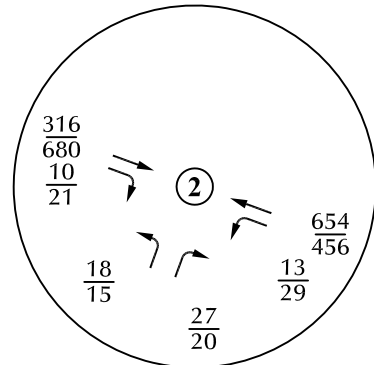
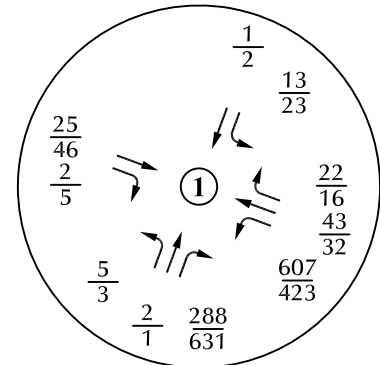


Figure 7

Assignment of Phase 1 Site-Generated Traffic

Grandview Reserve (LSC #184840)



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 = Annual Average Daily Traffic (vehicles per day)

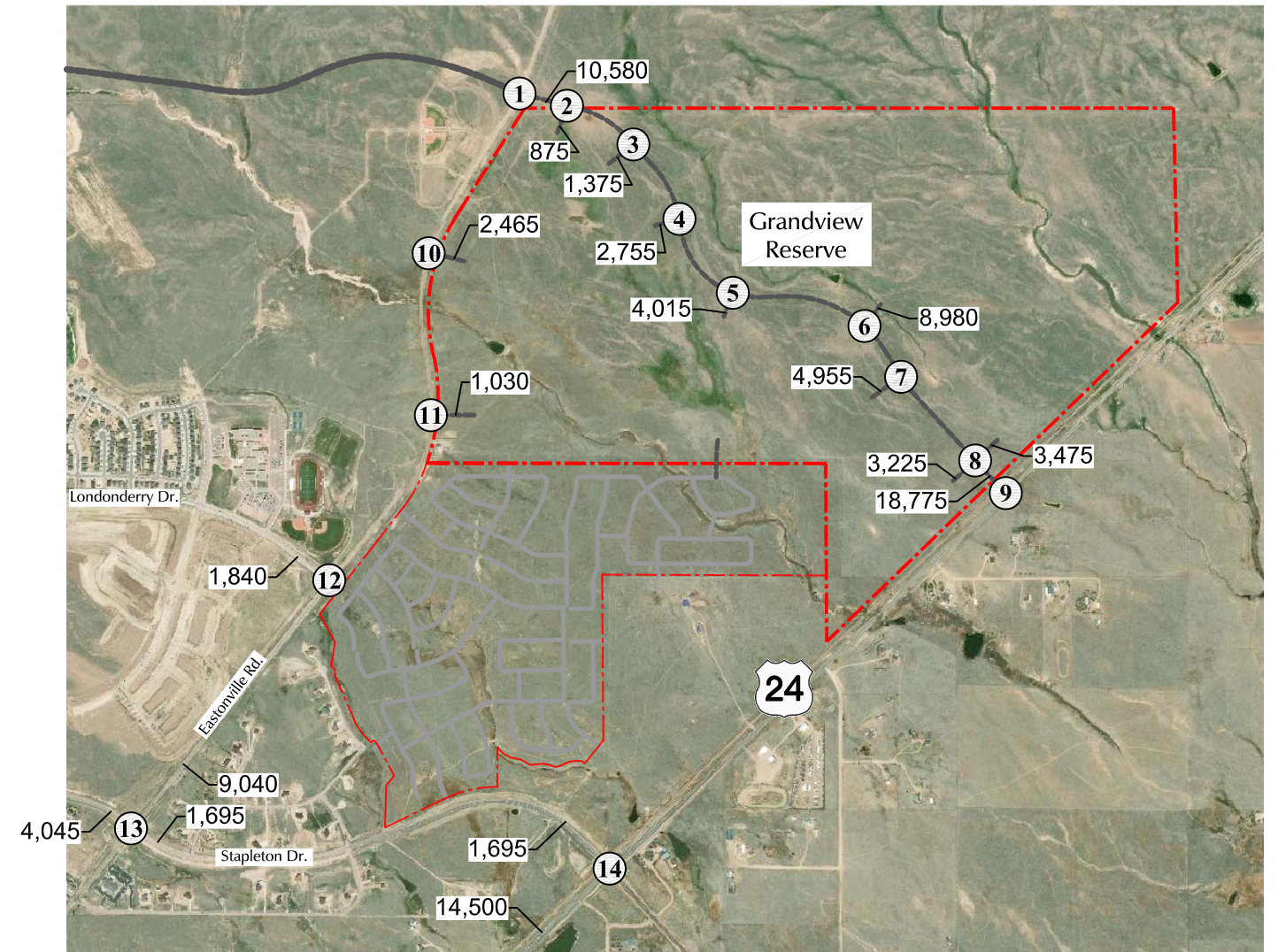
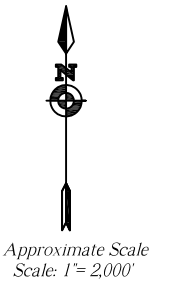
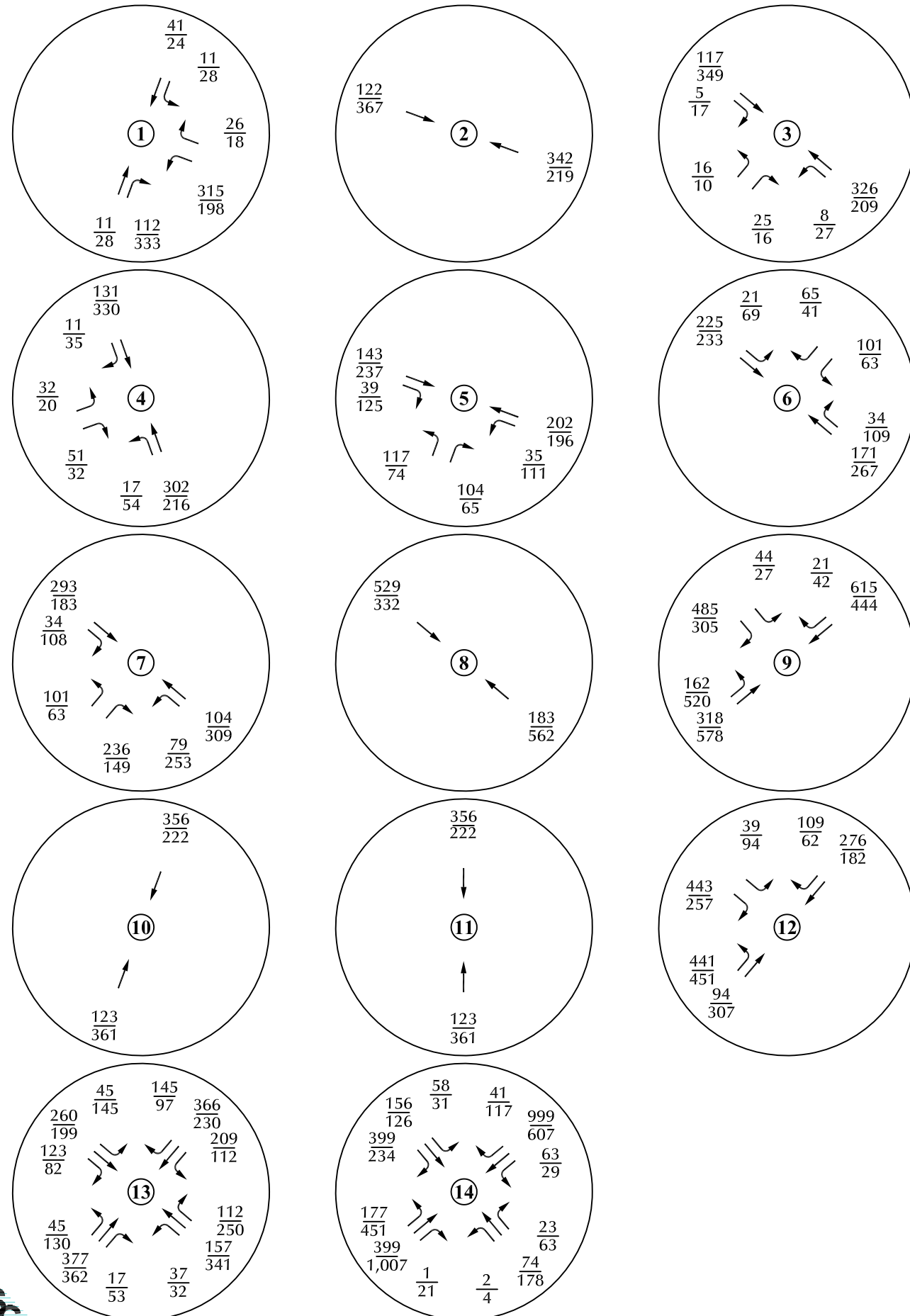


Figure 8

Assignment of Buildout Site-Generated Traffic

Grandview Reserve (LSC #184840)



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 = Annual Average Daily Traffic (vehicles per day)

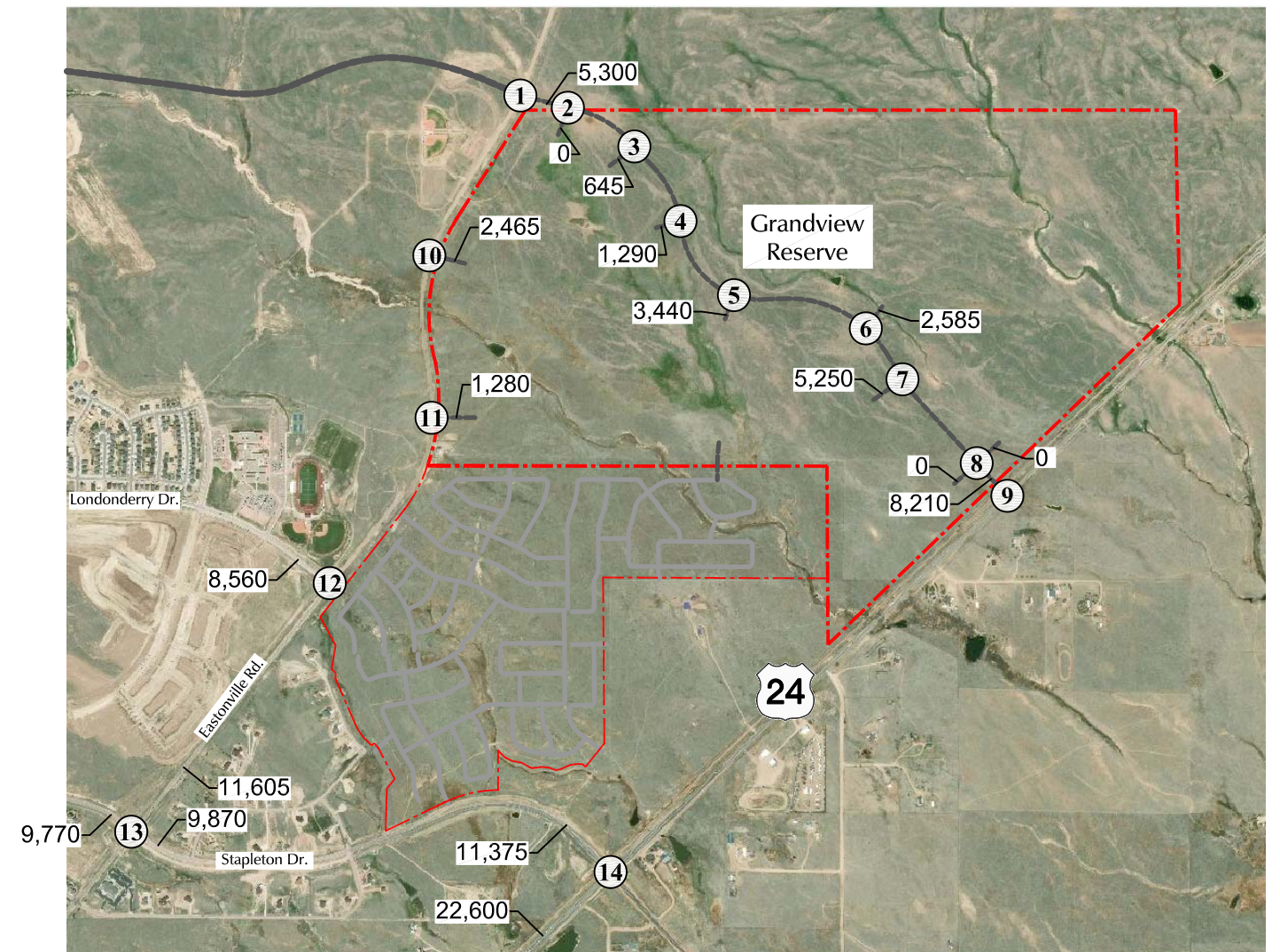
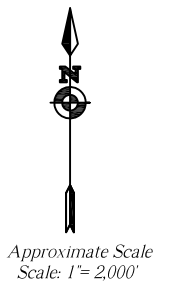
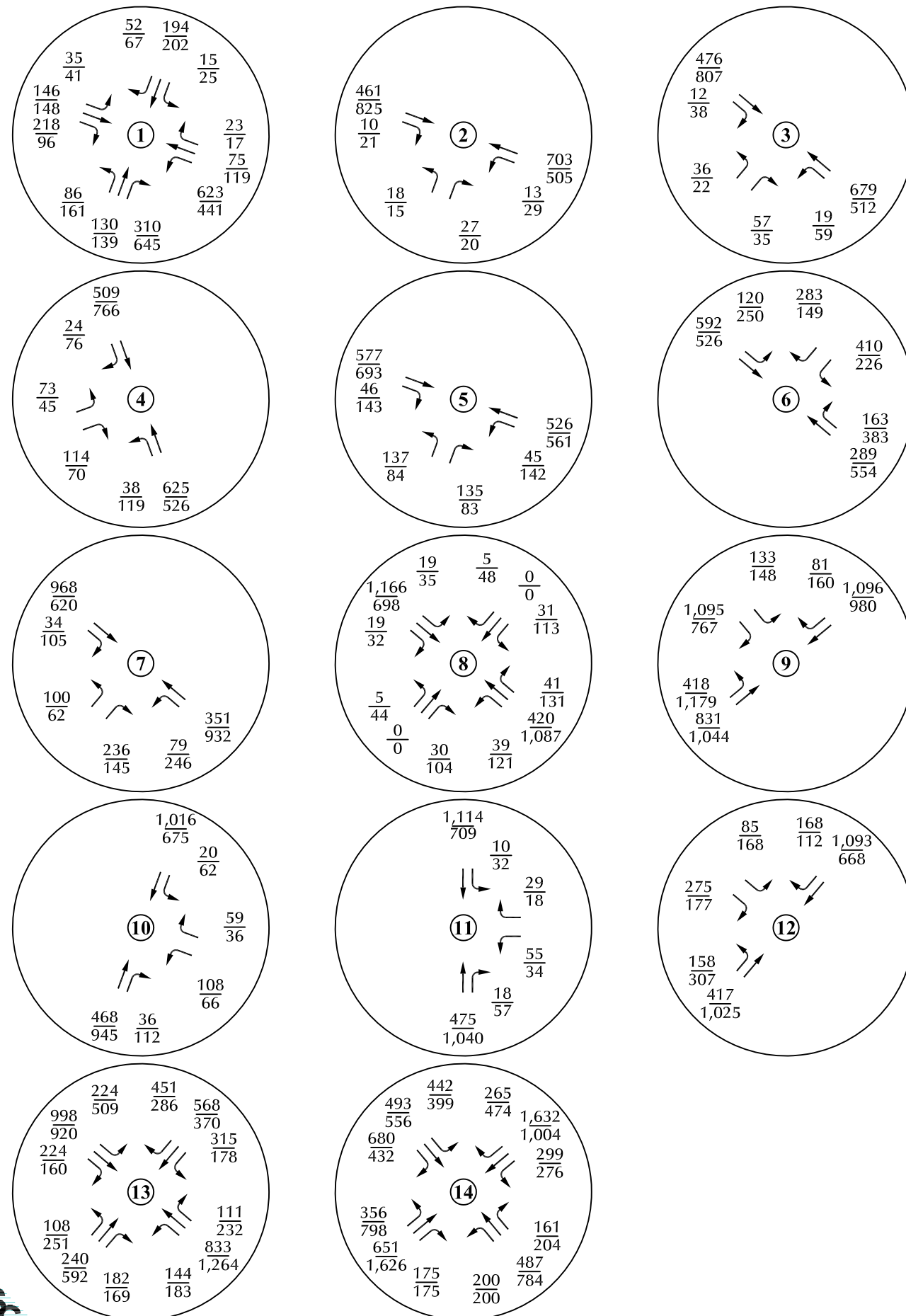


Figure 9

Short-Term Total Traffic

Grandview Reserve (LSC #184840)



LEGEND:

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

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

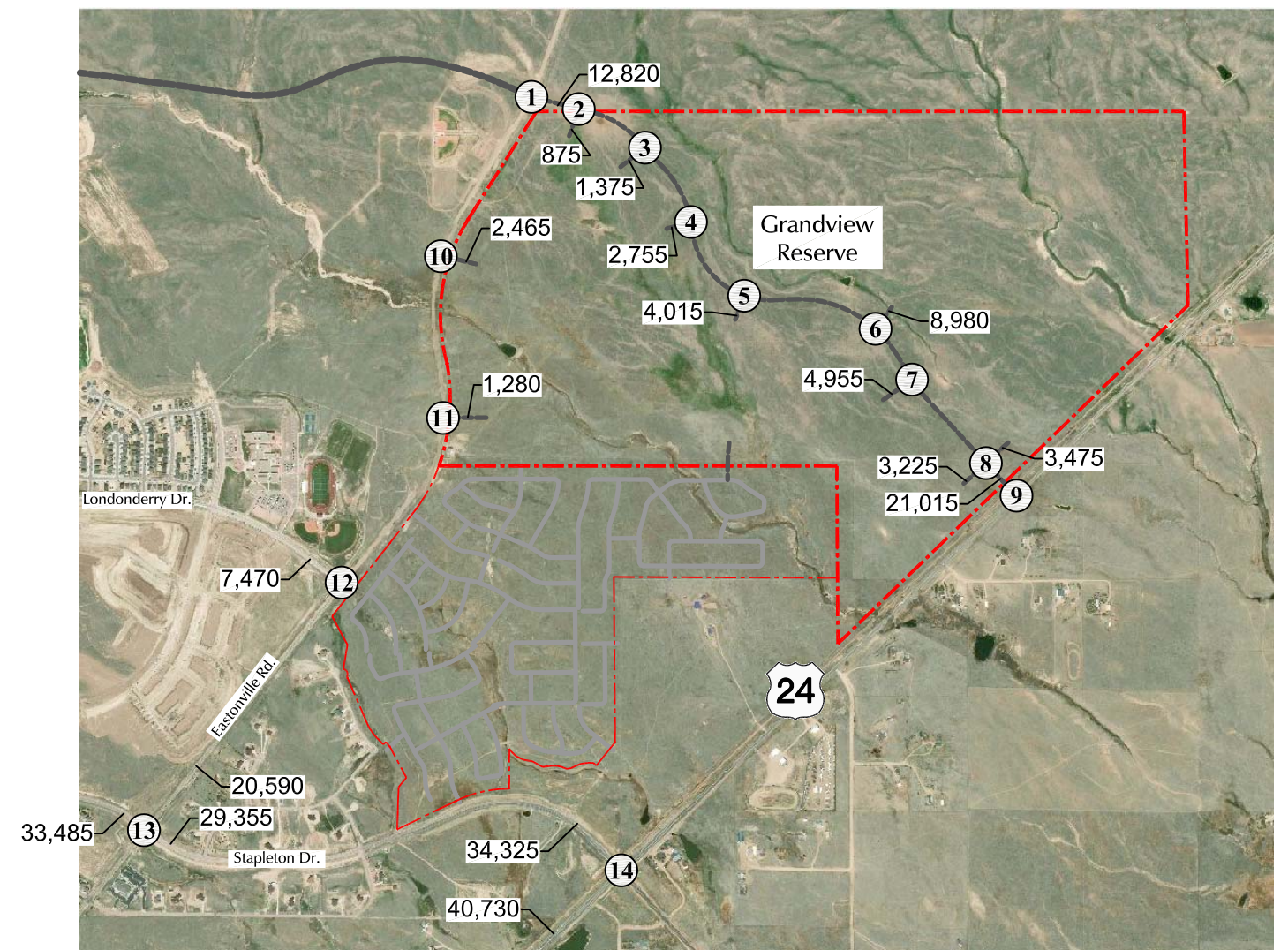
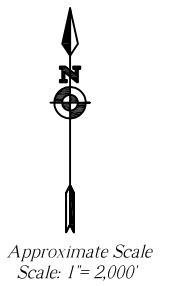
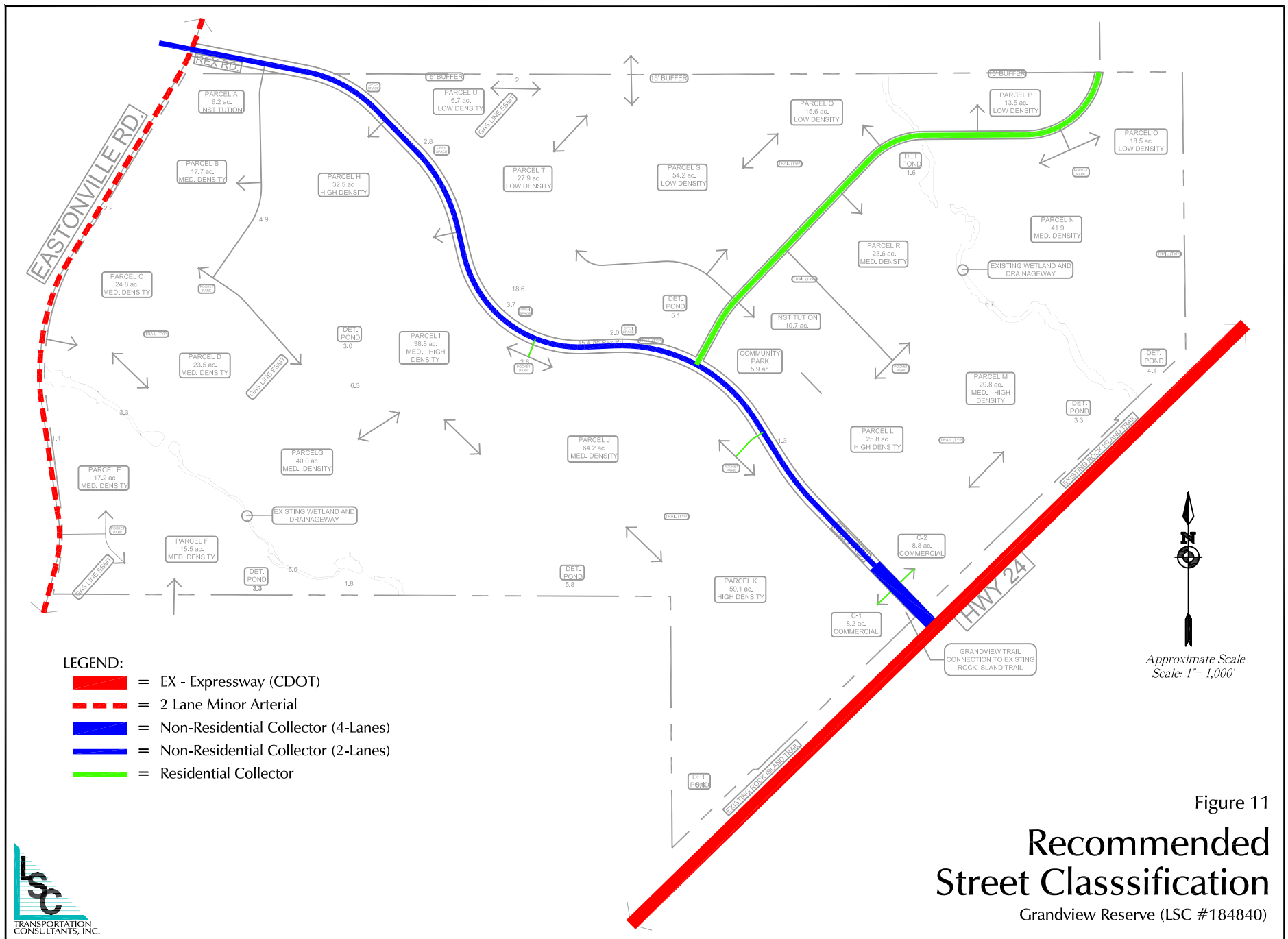


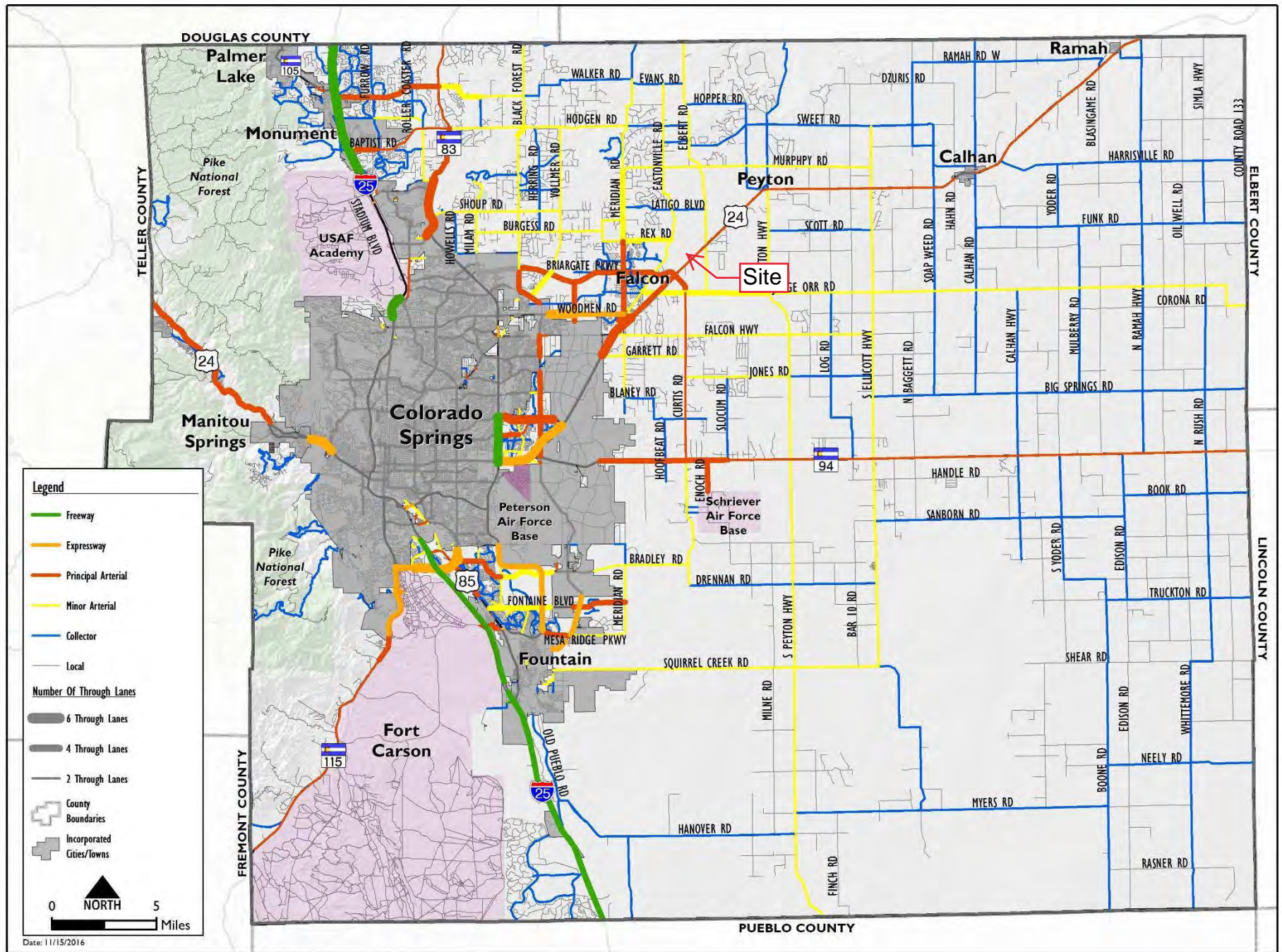
Figure 10

Year 2040
Total Traffic

Grandview Reserve (LSC #184840)

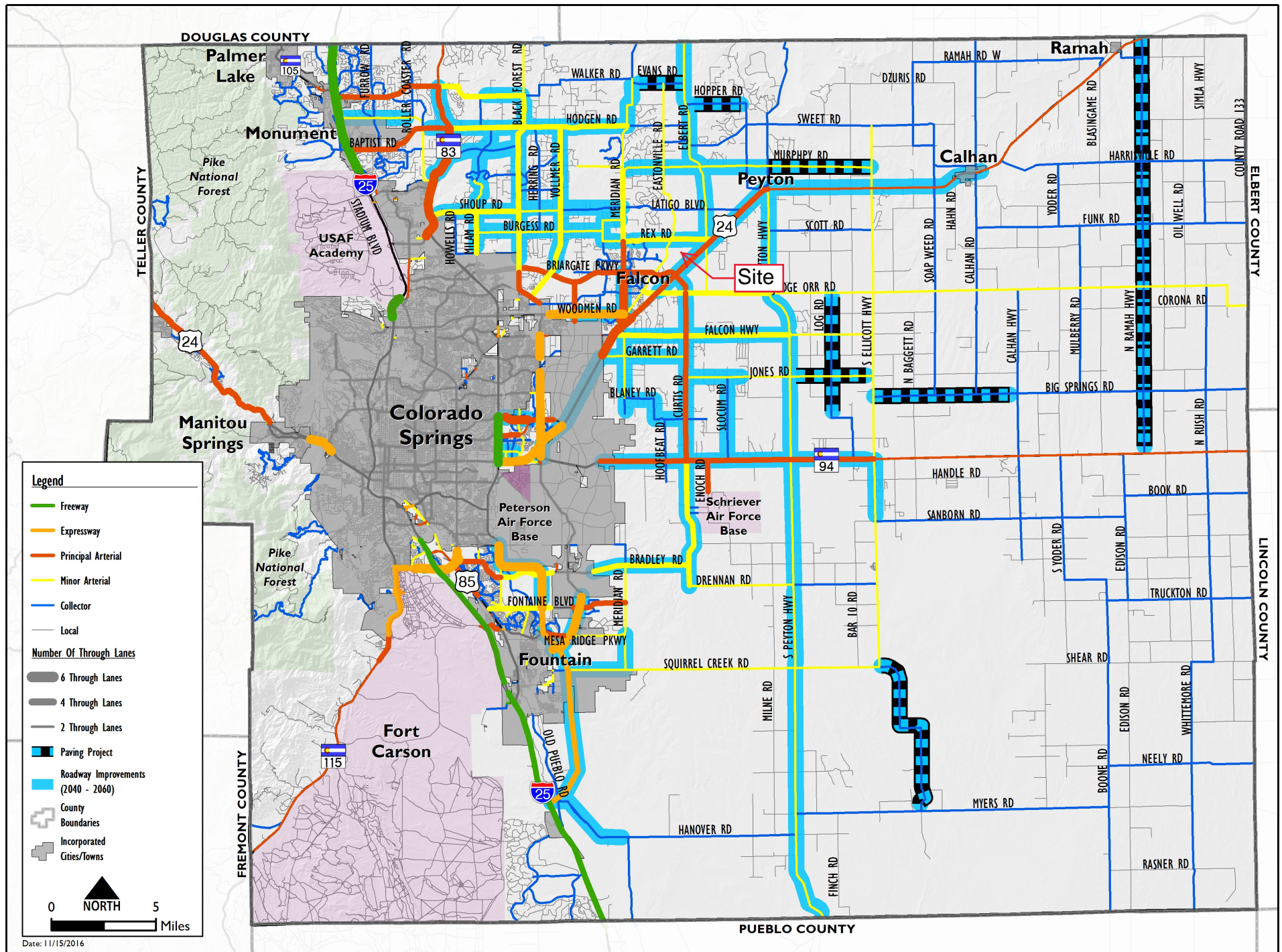


MTCP Maps



Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



NCHRP Report 684 Internal Trip Capture Estimation Tool



NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Grandview Reserve	Organization:	LSC Transportation Consultants, Inc.		
Project Location:	Rex/US 24	Performed By:	KDF		
Scenario Description:	Buildout	Date:	3/9/2020		
Analysis Year:	2040	Checked By:			
Analysis Period:	AM Street Peak Hour	Date:			

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				218	135	83
Restaurant				0		
Cinema/Entertainment				0		
Residential				2,320	580	1,740
Hotel				0		
All Other Land Uses ²				352	191	161
				2,890	906	1,984

Table 2-A: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	12	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	17	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	2,890	906	1,984
Internal Capture Percentage	2%	3%	1%
External Vehicle-Trips ⁵	2,832	877	1,955
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-A: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	13%	14%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	1%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-A vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be made to Tables 5-A, 9-A (O and D). Enter transit, non-motorized percentages that will result with proposed mixed-use project complete.
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Grandview Reserve
Analysis Period:	AM Street Peak Hour

Table 7-A: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-A (D): Entering Trips			Table 7-A (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	135	135	1.00	83	83
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	580	580	1.00	1740	1740
Hotel	1.00	0	0	1.00	0	0

Table 8-A (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	24		11	0	12	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	35	17	348	0		0
Hotel	0	0	0	0	0	

Table 8-A (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		43	0	0	0	0
Retail	0		0	0	12	0
Restaurant	0	11		0	29	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	23	0	0		0
Hotel	0	5	0	0	0	

Table 9-A (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	17	118	135	118	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	12	568	580	568	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	191	191	191	0	0

Table 9-A (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	12	71	83	71	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	17	1723	1740	1723	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	161	161	161	0	0

¹ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A
² Person-Trips
³ Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator
*Indicates computation that has been rounded to the nearest whole number.

NCHRP 684 Internal Trip Capture Estimation Tool					
Project Name:	Grandview Reserve	Organization:	LSC Transportation Consultants, Inc.		
Project Location:	Rex/US 24	Performed By:	KDF		
Scenario Description:	Buildout	Date:	3/9/2020		
Analysis Year:	2040	Checked By:			
Analysis Period:	PM Street Peak Hour	Date:			

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)						
Land Use	Development Data (For Information Only)			Estimated Vehicle-Trips ³		
	ITE LUCs ¹	Quantity	Units	Total	Entering	Exiting
Office				0		
Retail				671	322	349
Restaurant				0		
Cinema/Entertainment				0		
Residential				2,882	1,816	1,066
Hotel				0		
All Other Land Uses ²				107	51	56
				3,660	2,189	1,471

Table 2-P: Mode Split and Vehicle Occupancy Estimates						
Land Use	Entering Trips			Exiting Trips		
	Veh. Occ. ⁴	% Transit	% Non-Motorized	Veh. Occ. ⁴	% Transit	% Non-Motorized
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						
All Other Land Uses ²						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail					2640	
Restaurant						
Cinema/Entertainment						
Residential		2640				
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	0		0	0	40	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	0	3	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary			
	Total	Entering	Exiting
All Person-Trips	3,660	2,189	1,471
Internal Capture Percentage	2%	2%	3%
External Vehicle-Trips ⁵	3,574	2,146	1,428
External Transit-Trips ⁶	0	0	0
External Non-Motorized Trips ⁶	0	0	0

Table 6-P: Internal Trip Capture Percentages by Land Use		
Land Use	Entering Trips	Exiting Trips
Office	N/A	N/A
Retail	1%	11%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	2%	0%
Hotel	N/A	N/A

¹ Land Use Codes (LUCs) from <i>Trip Generation Manual</i> , published by the Institute of Transportation Engineers.
² Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator.
³ Enter trips assuming no transit or non-motorized trips (as assumed in ITE <i>Trip Generation Manual</i>).
⁴ Enter vehicle occupancy assumed in Table 1-P vehicle trips. If vehicle occupancy changes for proposed mixed-use project, manual adjustments must be
⁵ Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P.
⁶ Person-Trips
*Indicates computation that has been rounded to the nearest whole number.
Estimation Tool Developed by the Texas A&M Transportation Institute - Version 2013.1

Project Name:	Grandview Reserve
Analysis Period:	PM Street Peak Hour

Table 7-P: Conversion of Vehicle-Trip Ends to Person-Trip Ends						
Land Use	Table 7-P (D): Entering Trips			Table 7-P (O): Exiting Trips		
	Veh. Occ.	Vehicle-Trips	Person-Trips*	Veh. Occ.	Vehicle-Trips	Person-Trips*
Office	1.00	0	0	1.00	0	0
Retail	1.00	322	322	1.00	349	349
Restaurant	1.00	0	0	1.00	0	0
Cinema/Entertainment	1.00	0	0	1.00	0	0
Residential	1.00	1816	1816	1.00	1066	1066
Hotel	1.00	0	0	1.00	0	0

Table 8-P (O): Internal Person-Trip Origin-Destination Matrix (Computed at Origin)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail	7		101	14	40	17
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	43	45	224	0		32
Hotel	0	0	0	0	0	

Table 8-P (D): Internal Person-Trip Origin-Destination Matrix (Computed at Destination)						
Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		26	0	0	73	0
Retail	0		0	0	835	0
Restaurant	0	161		0	291	0
Cinema/Entertainment	0	13	0		73	0
Residential	0	3	0	0		0
Hotel	0	6	0	0	0	

Table 9-P (D): Internal and External Trips Summary (Entering Trips)						
Destination Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	3	319	322	319	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	40	1776	1816	1776	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	51	51	51	0	0

Table 9-P (O): Internal and External Trips Summary (Exiting Trips)						
Origin Land Use	Person-Trip Estimates			External Trips by Mode*		
	Internal	External	Total	Vehicles ¹	Transit ²	Non-Motorized ²
Office	0	0	0	0	0	0
Retail	40	309	349	309	0	0
Restaurant	0	0	0	0	0	0
Cinema/Entertainment	0	0	0	0	0	0
Residential	3	1063	1066	1063	0	0
Hotel	0	0	0	0	0	0
All Other Land Uses ³	0	56	56	56	0	0

¹Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

²Person-Trips

³Total estimate for all other land uses at mixed-use development site is not subject to internal trip capture computations in this estimator

*Indicates computation that has been rounded to the nearest whole number.

Traffic Counts

LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210

Colorado Springs, CO 80905

719-633-2868

File Name : Eastonville Rd - Londonderry Dr AM 12-18

Site Code : 184750

Start Date : 12/11/2018

Page No : 1

Groups Printed- Unshifted

	Eastonville Rd Southbound				Westbound				Eastonville Rd Northbound				Londonderry Dr Eastbound				Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
06:30	0	3	1	0	0	0	0	0	19	2	0	0	1	0	39	0	65
06:45	0	0	5	0	0	0	0	0	55	0	0	0	0	0	67	0	127
Total	0	3	6	0	0	0	0	0	74	2	0	0	1	0	106	0	192
07:00	0	5	7	0	0	0	0	0	142	3	0	0	1	0	72	0	230
07:15	0	4	8	0	0	0	0	0	132	1	0	0	3	0	85	0	233
07:30	0	2	1	0	0	0	0	0	29	1	0	0	2	0	31	0	66
07:45	0	4	1	0	0	0	0	0	26	0	0	0	0	0	26	0	57
Total	0	15	17	0	0	0	0	0	329	5	0	0	6	0	214	0	586
08:00	0	2	3	0	0	0	0	0	19	2	0	0	2	0	36	0	64
08:15	0	2	2	0	0	0	0	0	17	1	0	0	1	0	22	0	45
Grand Total	0	22	28	0	0	0	0	0	439	10	0	0	10	0	378	0	887
Apprch %	0	44	56	0	0	0	0	0	97.8	2.2	0	0	2.6	0	97.4	0	
Total %	0	2.5	3.2	0	0	0	0	0	49.5	1.1	0	0	1.1	0	42.6	0	

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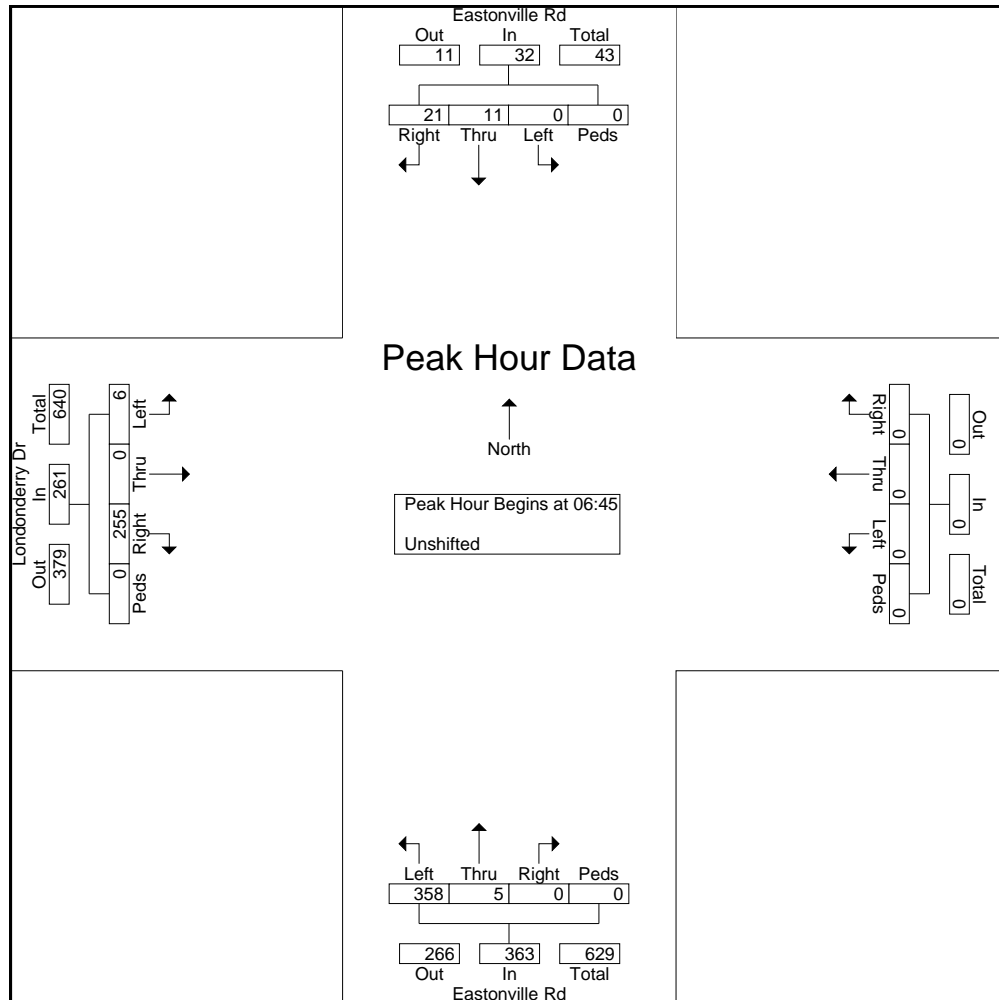
File Name : Eastonville Rd - Londonderry Dr AM 12-18

Site Code : 184750

Start Date : 12/11/2018

Page No : 2

	Eastonville Rd Southbound					Westbound					Eastonville Rd Northbound					Londonderry Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:45																					
06:45	0	0	5	0	5	0	0	0	0	0	55	0	0	0	55	0	0	67	0	67	127
07:00	0	5	7	0	12	0	0	0	0	0	142	3	0	0	145	1	0	72	0	73	230
07:15	0	4	8	0	12	0	0	0	0	0	132	1	0	0	133	3	0	85	0	88	233
07:30	0	2	1	0	3	0	0	0	0	0	29	1	0	0	30	2	0	31	0	33	66
Total Volume	0	11	21	0	32	0	0	0	0	0	358	5	0	0	363	6	0	255	0	261	656
% App. Total	0	34.4	65.6	0		0	0	0	0		98.6	1.4	0	0		2.3	0	97.7	0		
PHF	.000	.550	.656	.000	.667	.000	.000	.000	.000	.000	.630	.417	.000	.000	.626	.500	.000	.750	.000	.741	.704



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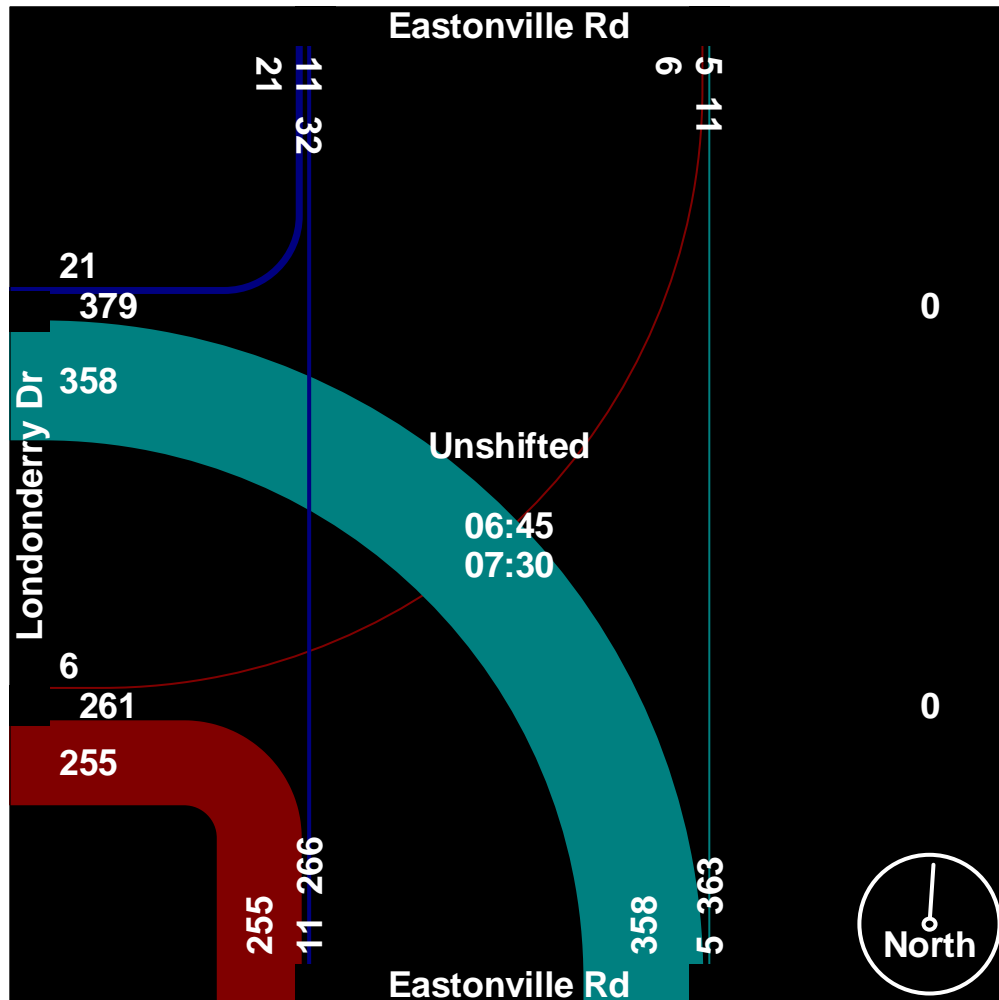
719-633-2868

File Name : Eastonville Rd - Londonderry Dr AM 12-18

Site Code : 184750

Start Date : 12/11/2018

Page No : 3



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File Name : Eastonville Rd - Londonderry Dr PM 12-18

Site Code : 184750

Start Date : 12/11/2018

Page No : 1

Groups Printed- Unshifted

Start Time	Eastonville Rd Southbound				Westbound				Eastonville Rd Northbound				Londonderry Dr Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
16:00	0	4	1	0	0	0	0	0	52	6	0	0	0	0	53	0	116
16:15	0	3	1	0	0	0	0	0	52	7	0	0	0	0	17	0	80
16:30	0	5	0	0	0	0	0	0	49	8	0	0	1	0	29	0	92
16:45	0	3	0	0	0	0	0	0	44	1	0	0	2	0	29	0	79
Total	0	15	2	0	0	0	0	0	197	22	0	0	3	0	128	0	367
17:00	0	1	1	0	0	0	0	0	37	7	0	0	0	0	21	0	67
17:15	0	1	1	0	0	0	0	0	68	5	0	0	0	0	23	0	98
17:30	0	7	1	0	0	0	0	0	53	2	0	0	1	0	11	0	75
17:45	0	3	1	0	0	0	0	0	46	2	0	0	1	0	13	0	66
Total	0	12	4	0	0	0	0	0	204	16	0	0	2	0	68	0	306
Grand Total	0	27	6	0	0	0	0	0	401	38	0	0	5	0	196	0	673
Apprch %	0	81.8	18.2	0	0	0	0	0	91.3	8.7	0	0	2.5	0	97.5	0	
Total %	0	4	0.9	0	0	0	0	0	59.6	5.6	0	0	0.7	0	29.1	0	

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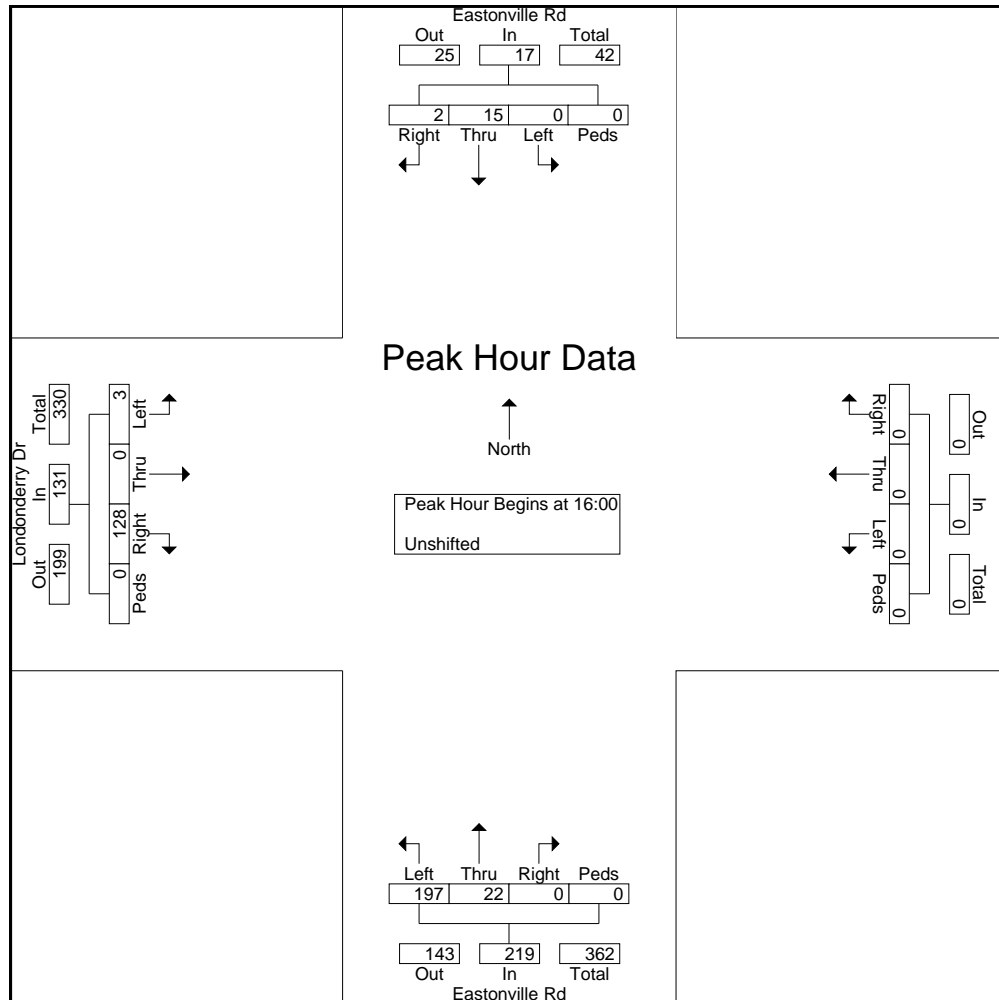
File Name : Eastonville Rd - Londonderry Dr PM 12-18

Site Code : 184750

Start Date : 12/11/2018

Page No : 2

	Eastonville Rd Southbound					Westbound					Eastonville Rd Northbound					Londonderry Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:00																					
16:00	0	4	1	0	5	0	0	0	0	0	52	6	0	0	58	0	0	53	0	53	116
16:15	0	3	1	0	4	0	0	0	0	0	52	7	0	0	59	0	0	17	0	17	80
16:30	0	5	0	0	5	0	0	0	0	0	49	8	0	0	57	1	0	29	0	30	92
16:45	0	3	0	0	3	0	0	0	0	0	44	1	0	0	45	2	0	29	0	31	79
Total Volume	0	15	2	0	17	0	0	0	0	0	197	22	0	0	219	3	0	128	0	131	367
% App. Total	0	88.2	11.8	0		0	0	0	0		90	10	0	0		2.3	0	97.7	0		
PHF	.000	.750	.500	.000	.850	.000	.000	.000	.000	.000	.947	.688	.000	.000	.928	.375	.000	.604	.000	.618	.791



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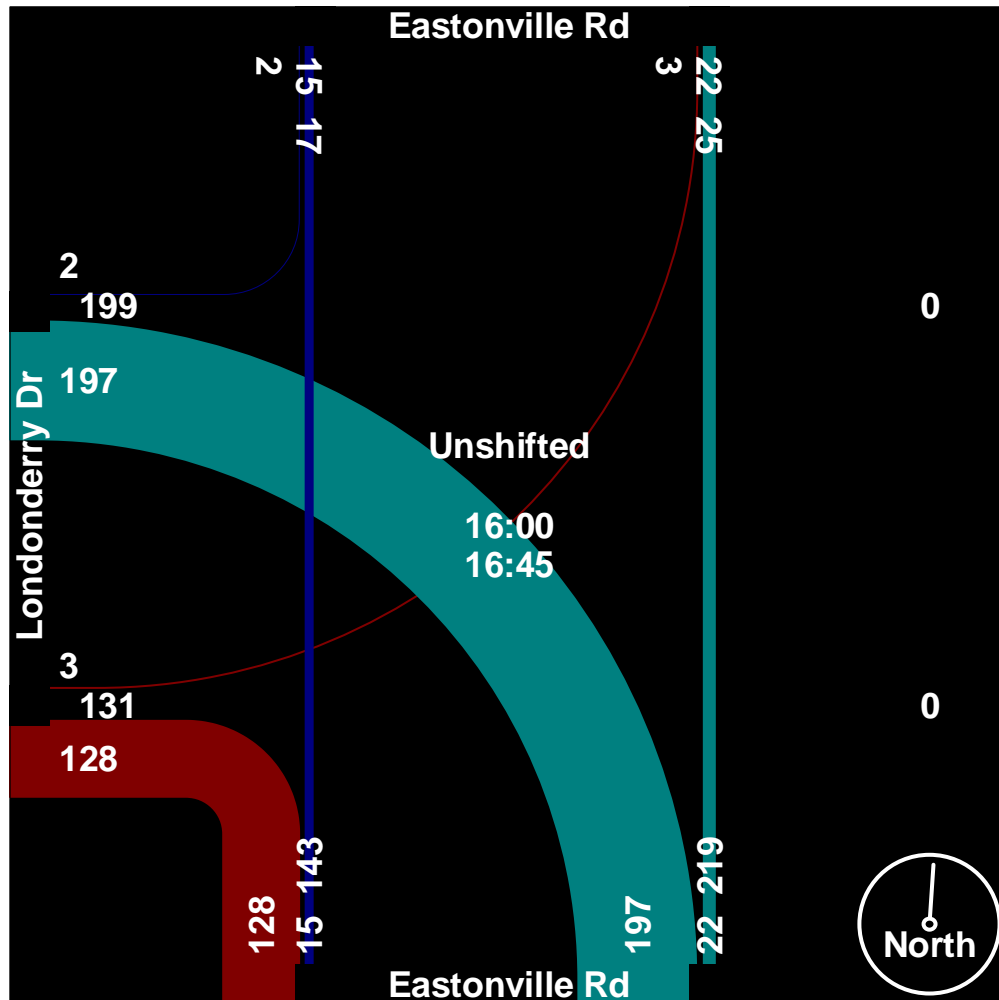
719-633-2868

File Name : Eastonville Rd - Londonderry Dr PM 12-18

Site Code : 184750

Start Date : 12/11/2018

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Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Eastonville Rd - Stapleton Dr 5-23-17 AM

Site Code : 00174350

Start Date : 05/23/2017

Page No : 1

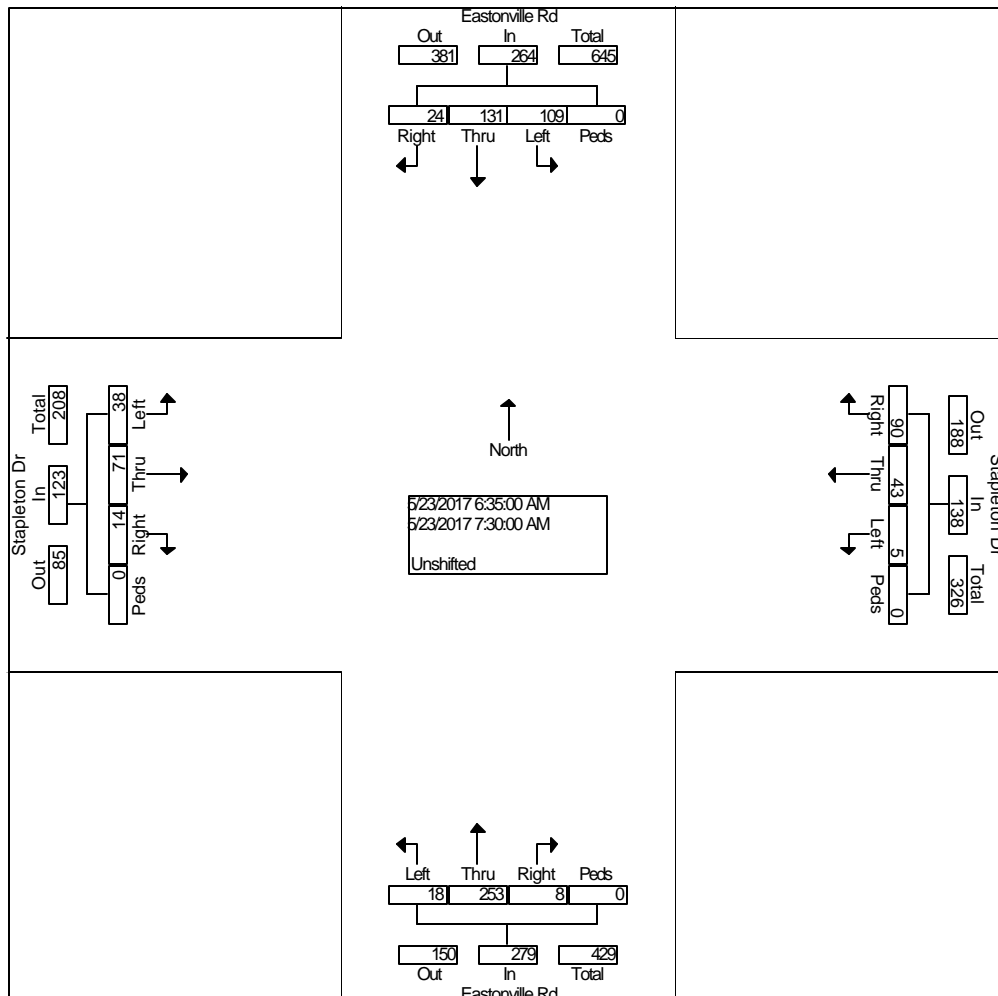
Groups Printed- Unshifted

	Eastonville Rd From North				Stapleton Dr From East				Eastonville Rd From South				Stapleton Dr From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
06:30 AM	1	11	18	0	9	1	0	0	0	30	1	0	1	12	5	0	89
06:45 AM	2	16	25	0	19	5	2	0	0	42	3	0	4	17	8	0	143
07:00 AM	10	46	24	0	35	9	1	0	0	111	6	0	6	19	18	0	285
07:15 AM	10	54	37	0	25	20	1	0	7	75	7	0	2	16	6	0	260
07:30 AM	2	14	19	0	7	25	2	0	2	3	3	0	2	21	5	0	105
07:45 AM	4	7	11	0	11	15	2	0	0	8	2	0	4	29	2	0	95
08:00 AM	0	11	11	0	14	11	1	0	0	9	0	1	0	25	2	0	85
08:15 AM	3	11	22	0	7	10	1	0	1	10	2	0	0	11	2	0	80
Grand Total	32	170	167	0	127	96	10	0	10	288	24	1	19	150	48	0	1142
Apprch %	8.7	46.1	45.3	0.0	54.5	41.2	4.3	0.0	3.1	89.2	7.4	0.3	8.8	69.1	22.1	0.0	
Total %	2.8	14.9	14.6	0.0	11.1	8.4	0.9	0.0	0.9	25.2	2.1	0.1	1.7	13.1	4.2	0.0	

Counts by LSC

File Name : Eastonville Rd - Stapleton Dr 5-23-17 AM
 Site Code : 00174350
 Start Date : 05/23/2017
 Page No : 2

	Eastonville Rd From North					Stapleton Dr From East					Eastonville Rd From South					Stapleton Dr From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 06:30 AM to 08:25 AM - Peak 1 of 1																					
Intersection	06:35 AM																				
Volume	24	13	10	0	264	90	43	5	0	138	8	25	18	0	279	14	71	38	0	123	804
Percent	9.1	49.	41.	0.0		65.	31.	3.6	0.0		2.9	90.	6.5	0.0		11.	57.	30.	0.0		
		6	3			2	2					7				4	7	9			
07:10																					
Volume	3	18	8	0	29	15	4	0	0	19	0	38	1	0	39	2	6	7	0	15	102
Peak																					
Factor																					0.657
High Int.	07:25 AM					07:10 AM					07:05 AM					07:05 AM					
Volume	2	23	14	0	39	15	4	0	0	19	0	39	3	0	42	3	7	5	0	15	
Peak																					
Factor					0.56					0.60					0.55					0.68	
					4					5					4					3	



Counts by LSC

LSC Transportation Consultants, Inc.

File Name : Eastonville Rd - Stapleton Dr PM

Site Code : 00174350

Start Date : 05/11/2017

Page No : 1

Groups Printed- Unshifted

	Eastonville Rd From North				Stapleton Dr From East				Eastonville Rd From South				Stapleton Dr From West				Int. Total
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	2	19	12	0	16	19	1	0	1	23	1	0	1	13	2	0	110
04:15 PM	0	12	5	0	24	25	3	0	1	19	4	0	1	5	6	0	105
04:30 PM	3	16	12	0	16	35	5	0	2	19	3	0	2	9	9	0	131
04:45 PM	4	9	7	0	23	29	2	0	4	34	1	0	1	9	8	0	131
Total	9	56	36	0	79	108	11	0	8	95	9	0	5	36	25	0	477
05:00 PM	2	18	11	0	28	27	2	0	1	20	3	0	0	9	2	0	123
05:15 PM	1	13	8	0	25	23	0	0	1	21	0	0	0	19	2	0	113
05:30 PM	1	19	1	0	12	14	2	0	3	37	3	0	1	13	1	0	107
05:45 PM	1	16	1	0	11	13	1	0	2	31	1	0	1	9	1	0	88
Total	5	66	21	0	76	77	5	0	7	109	7	0	2	50	6	0	431
Grand Total	14	122	57	0	155	185	16	0	15	204	16	0	7	86	31	0	908
Apprch %	7.3	63.2	29.5	0.0	43.5	52.0	4.5	0.0	6.4	86.8	6.8	0.0	5.6	69.4	25.0	0.0	
Total %	1.5	13.4	6.3	0.0	17.1	20.4	1.8	0.0	1.7	22.5	1.8	0.0	0.8	9.5	3.4	0.0	

Counts by LSC

File Name : Eastonville Rd - Stapleton Dr PM
 Site Code : 00174350
 Start Date : 05/11/2017
 Page No : 2

	Eastonville Rd From North					Stapleton Dr From East					Eastonville Rd From South					Stapleton Dr From West					
Start Time	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Rig ht	Thr u	Lef t	Pe ds	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Intersection	04:30 PM																				
Volume	10	56	38	0	104	92	114	9	0	215	8	94	7	0	109	3	46	21	0	70	498
Percent	9.6	53.8	36.5	0.0		42.8	53.0	4.2	0.0		7.3	86.2	6.4	0.0		4.3	65.7	30.0	0.0		
04:45																					
Volume	4	9	7	0	20	23	29	2	0	54	4	34	1	0	39	1	9	8	0	18	131
Peak Factor																					0.950
High Int.	04:30 PM					05:00 PM					04:45 PM					05:15 PM					
Volume	3	16	12	0	31	28	27	2	0	57	4	34	1	0	39	0	19	2	0	21	
Peak Factor																					

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File Name : Hwy 24 - Stapleton Rd AM 11-18

Site Code : 184750

Start Date : 11/15/2018

Page No : 1

Groups Printed- Unshifted

	Hwy 24 Southbound				Stapleton Dr Westbound				Hwy 24 Northbound				Stapleton Dr Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
06:30	4	120	3	0	0	11	3	0	5	39	0	0	2	30	26	0	243
06:45	7	123	7	0	0	12	4	0	13	55	0	0	11	25	33	0	290
Total	11	243	10	0	0	23	7	0	18	94	0	0	13	55	59	0	533
07:00	9	125	8	0	1	22	4	0	24	70	0	0	12	37	33	0	345
07:15	7	139	11	0	0	29	4	0	18	51	0	0	10	39	27	0	335
07:30	6	115	10	0	1	24	0	0	15	48	1	0	3	28	28	0	279
07:45	6	106	9	0	0	11	4	0	6	43	1	0	5	19	19	0	229
Total	28	485	38	0	2	86	12	0	63	212	2	0	30	123	107	0	1188
08:00	2	74	6	0	4	11	2	0	13	66	0	0	1	10	17	0	206
08:15	3	86	5	0	3	9	0	0	8	60	2	0	2	9	13	0	200
Grand Total	44	888	59	0	9	129	21	0	102	432	4	0	46	197	196	0	2127
Apprch %	4.4	89.6	6	0	5.7	81.1	13.2	0	19	80.3	0.7	0	10.5	44.9	44.6	0	
Total %	2.1	41.7	2.8	0	0.4	6.1	1	0	4.8	20.3	0.2	0	2.2	9.3	9.2	0	

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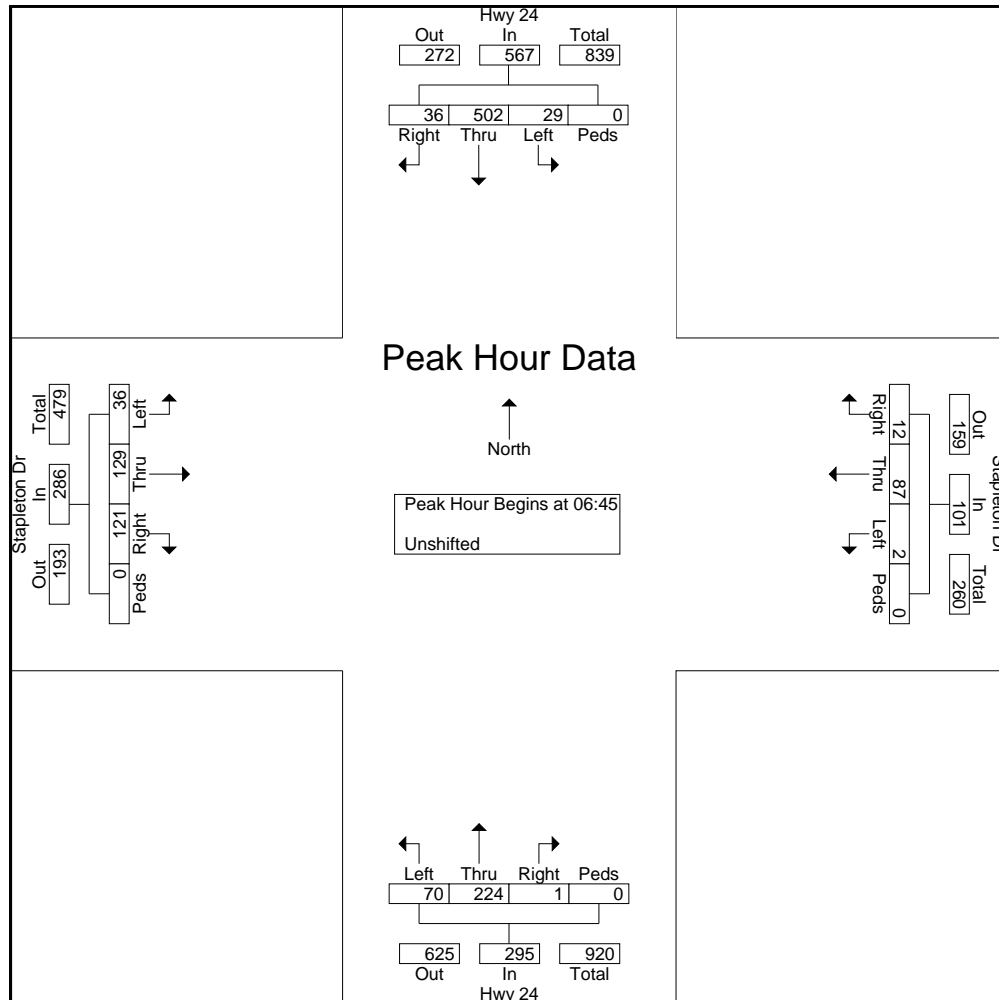
File Name : Hwy 24 - Stapleton Rd AM 11-18

Site Code : 184750

Start Date : 11/15/2018

Page No : 2

	Hwy 24 Southbound					Stapleton Dr Westbound					Hwy 24 Northbound					Stapleton Dr Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 06:30 to 08:15 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:45																					
06:45	7	123	7	0	137	0	12	4	0	16	13	55	0	0	68	11	25	33	0	69	290
07:00	9	125	8	0	142	1	22	4	0	27	24	70	0	0	94	12	37	33	0	82	345
07:15	7	139	11	0	157	0	29	4	0	33	18	51	0	0	69	10	39	27	0	76	335
07:30	6	115	10	0	131	1	24	0	0	25	15	48	1	0	64	3	28	28	0	59	279
Total Volume	29	502	36	0	567	2	87	12	0	101	70	224	1	0	295	36	129	121	0	286	1249
% App. Total	5.1	88.5	6.3	0		2	86.1	11.9	0		23.7	75.9	0.3	0		12.6	45.1	42.3	0		
PHF	.806	.903	.818	.000	.903	.500	.750	.750	.000	.765	.729	.800	.250	.000	.785	.750	.827	.917	.000	.872	.905



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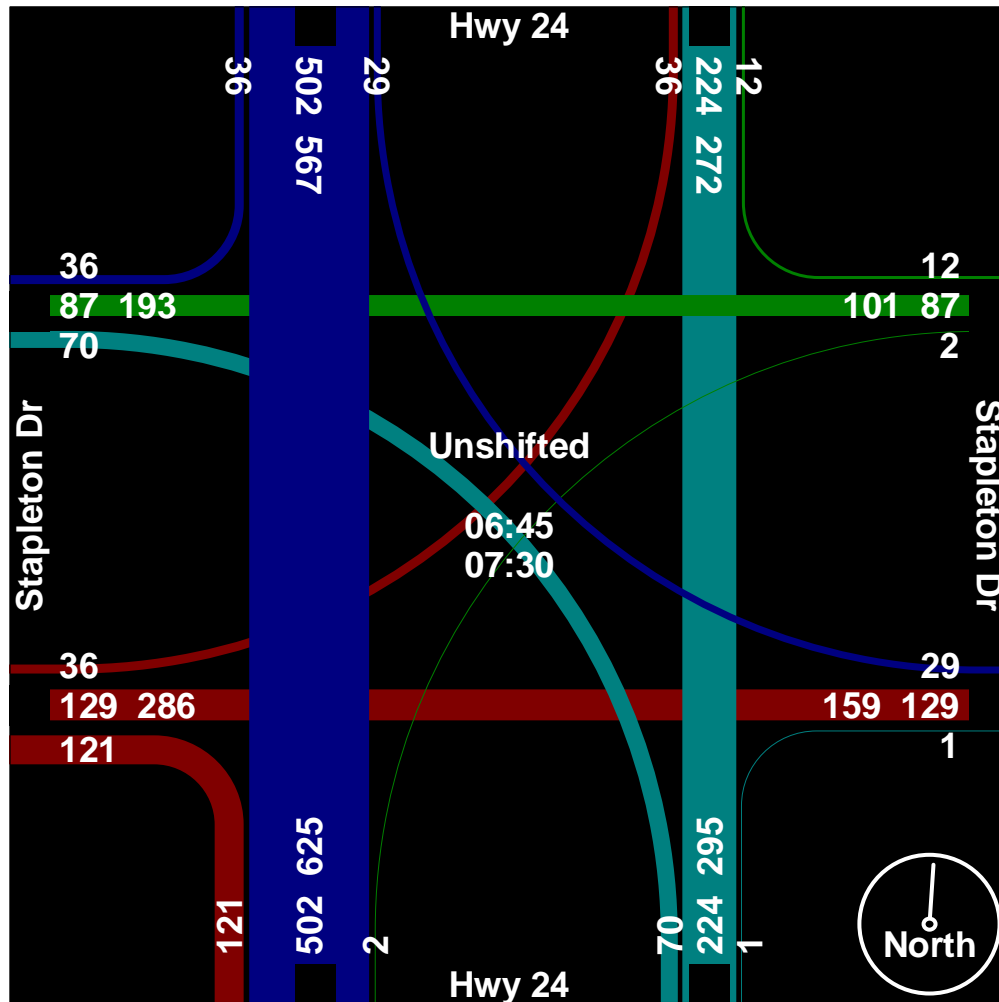
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File Name : Hwy 24 - Stapleton Rd AM 11-18

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File Name : Hwy 24 - Stapleton Rd PM 11-18

Site Code : 00184750

Start Date : 11/28/2018

Page No : 1

Groups Printed- Unshifted

	Hwy 24 Southbound				Stapleton Rd Westbound				Hwy 24 Northbound				Stapleton Rd Eastbound				
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Int. Total
16:00	4	73	11	0	1	20	6	0	20	127	5	0	5	6	11	0	289
16:15	1	73	9	0	3	31	5	0	13	100	5	1	7	5	9	0	262
16:30	3	85	3	0	1	23	7	0	28	96	4	0	2	6	13	0	271
16:45	4	73	9	0	1	29	7	0	32	98	6	0	5	7	14	0	285
Total	12	304	32	0	6	103	25	0	93	421	20	1	19	24	47	0	1107
17:00	2	94	2	0	0	22	5	0	18	138	4	0	0	10	16	0	311
17:15	1	74	7	0	2	23	9	0	29	109	7	0	7	15	13	0	296
17:30	1	63	4	0	1	23	6	0	20	133	4	0	5	8	7	0	275
17:45	4	55	4	0	1	15	6	0	18	136	5	0	4	8	6	0	262
Total	8	286	17	0	4	83	26	0	85	516	20	0	16	41	42	0	1144
Grand Total	20	590	49	0	10	186	51	0	178	937	40	1	35	65	89	0	2251
Apprch %	3	89.5	7.4	0	4	75.3	20.6	0	15.4	81.1	3.5	0.1	18.5	34.4	47.1	0	
Total %	0.9	26.2	2.2	0	0.4	8.3	2.3	0	7.9	41.6	1.8	0	1.6	2.9	4	0	

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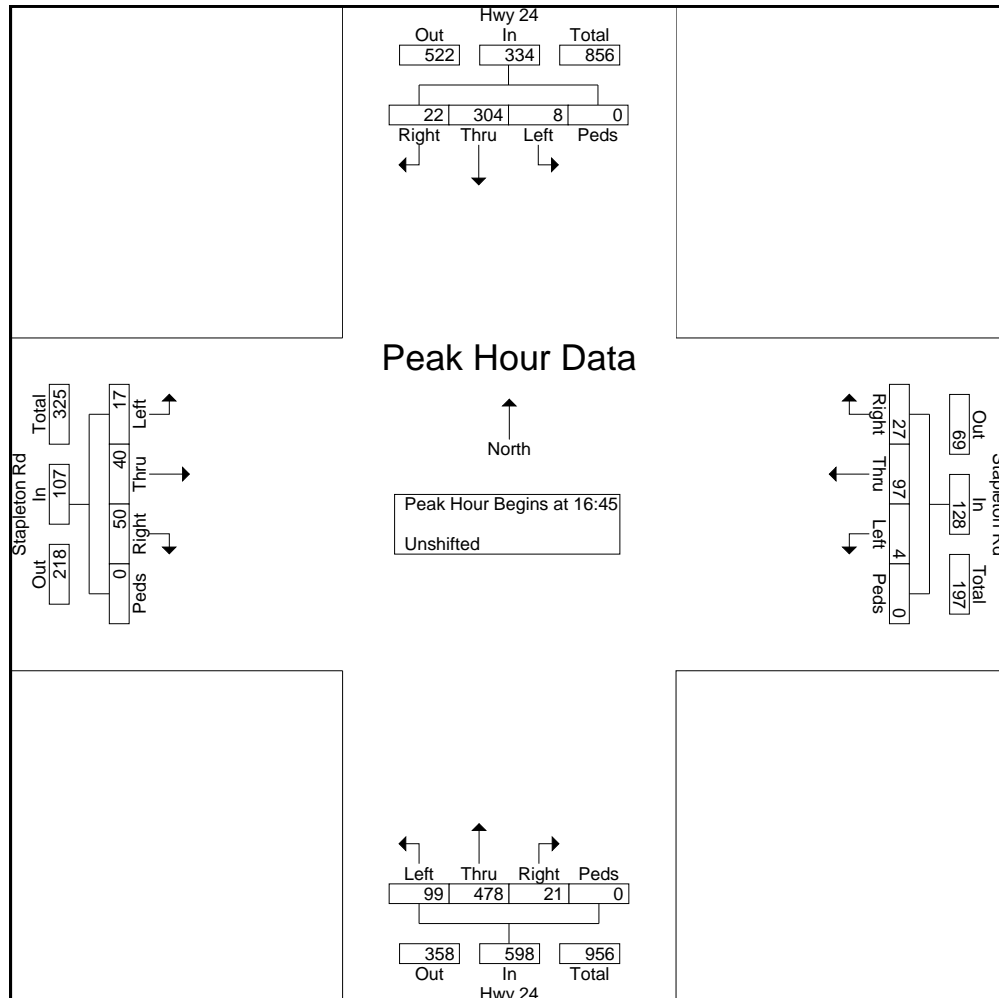
File Name : Hwy 24 - Stapleton Rd PM 11-18

Site Code : 00184750

Start Date : 11/28/2018

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	Hwy 24 Southbound					Stapleton Rd Westbound					Hwy 24 Northbound					Stapleton Rd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:45																					
16:45	4	73	9	0	86	1	29	7	0	37	32	98	6	0	136	5	7	14	0	26	285
17:00	2	94	2	0	98	0	22	5	0	27	18	138	4	0	160	0	10	16	0	26	311
17:15	1	74	7	0	82	2	23	9	0	34	29	109	7	0	145	7	15	13	0	35	296
17:30	1	63	4	0	68	1	23	6	0	30	20	133	4	0	157	5	8	7	0	20	275
Total Volume	8	304	22	0	334	4	97	27	0	128	99	478	21	0	598	17	40	50	0	107	1167
% App. Total	2.4	91	6.6	0		3.1	75.8	21.1	0		16.6	79.9	3.5	0		15.9	37.4	46.7	0		
PHF	.500	.809	.611	.000	.852	.500	.836	.750	.000	.865	.773	.866	.750	.000	.934	.607	.667	.781	.000	.764	.938



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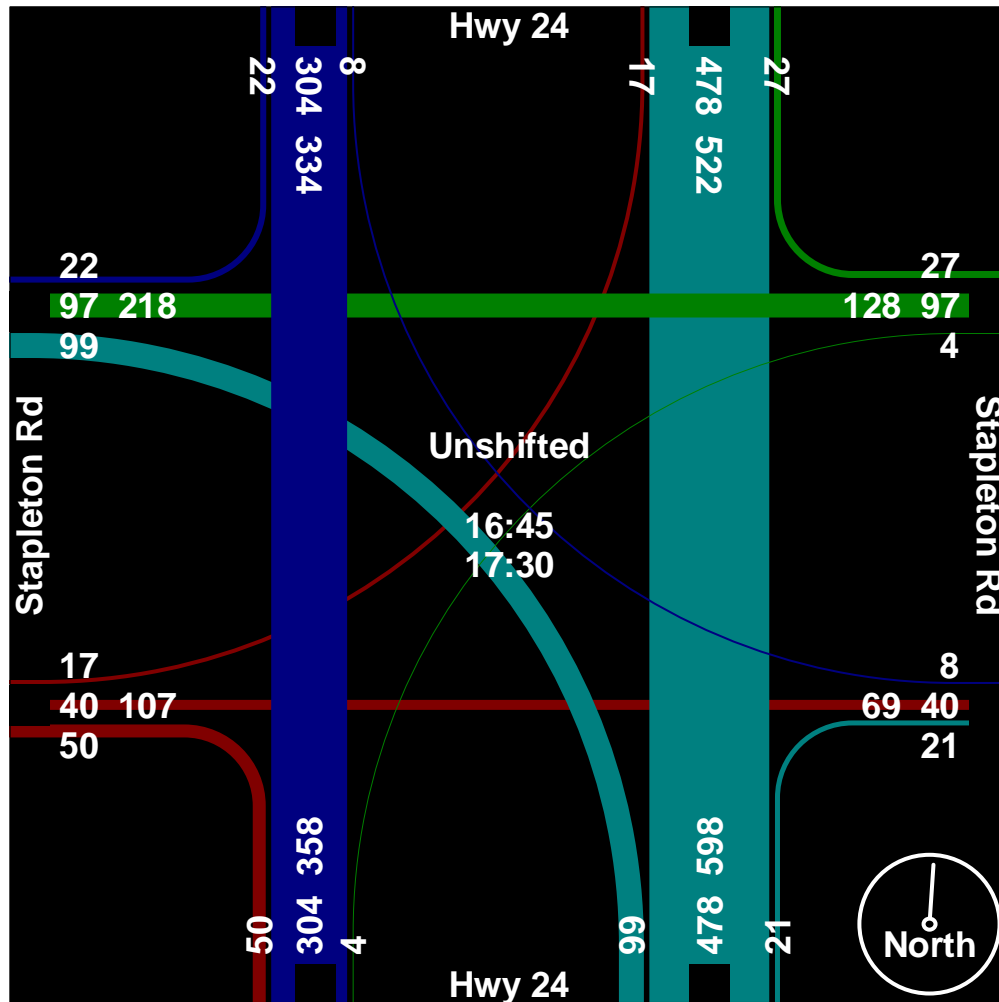
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File Name : Hwy 24 - Stapleton Rd PM 11-18

Site Code : 00184750

Start Date : 11/28/2018

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Levels of Service

HCM 6th TWSC
1: Eastonville Rd & Stapleton Dr

Existing Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	24.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	38	71	14	5	43	90	18	253	8	110	131	24
Future Vol, veh/h	38	71	14	5	43	90	18	253	8	110	131	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	71	71	71	60	60	60	79	79	79
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	108	21	7	61	127	30	422	13	139	166	30





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1042	954	181	1013	963	429	196	0	0	435	0	0
Stage 1	459	459	-	489	489	-	-	-	-	-	-	-
Stage 2	583	495	-	524	474	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	208	259	862	217	256	626	1377	-	-	1125	-	-
Stage 1	582	566	-	561	549	-	-	-	-	-	-	-
Stage 2	498	546	-	537	558	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	114	217	862	114	214	626	1377	-	-	1125	-	-
Mov Cap-2 Maneuver	114	217	-	114	214	-	-	-	-	-	-	-
Stage 1	565	487	-	545	533	-	-	-	-	-	-	-
Stage 2	342	530	-	351	480	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	125.8		19.3		0.5		3.6	
HCM LOS	F		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1377	-	-	182 196 626	1125	-	-
HCM Lane V/C Ratio	0.022	-	-	1.024 0.345 0.202	0.124	-	-
HCM Control Delay (s)	7.7	0	-	125.8 32.7 12.2	8.7	0	-
HCM Lane LOS	A	A	-	F D B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	8.6 1.4 0.8	0.4	-	-













HCM 6th TWSC
2: Eastonville Rd & Londonderry Dr

Existing Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	8.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	255	358	5	11	21
Future Vol, veh/h	6	255	358	5	11	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	68	92	92	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	345	526	5	12	31
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1085	28	43	0	-	0
Stage 1	28	-	-	-	-	-
Stage 2	1057	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	240	1047	1566	-	-	-
Stage 1	995	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	1047	1566	-	-	-
Mov Cap-2 Maneuver	159	-	-	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	334	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	8.4		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1566	-	159	1047	-	-
HCM Lane V/C Ratio	0.336	-	0.051	0.329	-	-
HCM Control Delay (s)	8.5	0	28.9	10.1	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	1.5	-	0.2	1.4	-	-

HCM 6th TWSC
6: US 24 & Stapleton Dr

Existing Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	12.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	129	121	2	87	12	70	224	1	29	502	36
Future Vol, veh/h	36	129	121	2	87	12	70	224	1	29	502	36
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	94	94	94	78	78	78	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	41	148	139	2	93	13	90	287	1	29	502	36

Major/Minor	Minor2		Minor1		Major1		Major2	
Conflicting Flow All	1081	1028	502	1189	1063	287	538	0
Stage 1	560	560	-	467	467	-	-	-
Stage 2	521	468	-	722	596	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-
Pot Cap-1 Maneuver	195	234	569	165	223	752	1030	-
Stage 1	513	511	-	576	562	-	-	-
Stage 2	539	561	-	418	492	-	-	-
Platoon blocked, %								-
Mov Cap-1 Maneuver	113	209	569	49	199	752	1030	-
Mov Cap-2 Maneuver	113	209	-	49	199	-	-	-
Stage 1	468	499	-	526	513	-	-	-
Stage 2	396	512	-	217	481	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	37.6	35.4	2.1	0.4
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1030	-	-	113	209	569	49	199	752	1274	-	-
HCM Lane V/C Ratio	0.087	-	-	0.366	0.709	0.244	0.043	0.465	0.017	0.023	-	-
HCM Control Delay (s)	8.8	-	-	54.2	55.7	13.4	81.8	37.9	9.9	7.9	-	-
HCM Lane LOS	A	-	-	F	F	B	F	E	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.5	4.6	1	0.1	2.2	0.1	0.1	-	-

HCM 6th TWSC
1: Eastonville Rd & Stapleton Dr

Existing Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕			↕	
Traffic Vol, veh/h	21	46	3	9	114	92	7	94	8	38	56	10
Future Vol, veh/h	21	46	3	9	114	92	7	94	8	38	56	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	97	97	97	100	100	100	68	68	68	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	47	3	9	114	92	10	138	12	38	56	10





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	404	307	61	326	306	144	66	0	0	150	0	0
Stage 1	137	137	-	164	164	-	-	-	-	-	-	-
Stage 2	267	170	-	162	142	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	557	607	1004	627	608	903	1536	-	-	1431	-	-
Stage 1	866	783	-	838	762	-	-	-	-	-	-	-
Stage 2	738	758	-	840	779	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	414	586	1004	571	587	903	1536	-	-	1431	-	-
Mov Cap-2 Maneuver	414	586	-	571	587	-	-	-	-	-	-	-
Stage 1	860	761	-	832	757	-	-	-	-	-	-	-
Stage 2	559	753	-	763	757	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	12.9		11.3		0.5		2.8	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1536	-	-	529 586 903	1431	-	-
HCM Lane V/C Ratio	0.007	-	-	0.136 0.21 0.102	0.027	-	-
HCM Control Delay (s)	7.4	0	-	12.9 12.8 9.4	7.6	0	-
HCM Lane LOS	A	A	-	B B A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5 0.8 0.3	0.1	-	-













HCM 6th TWSC
2: Eastonville Rd & Londonderry Dr

Existing Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	7.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	128	197	22	15	2
Future Vol, veh/h	3	128	197	22	15	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	94	94	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	206	210	23	18	2
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	462	19	20	0	-	0
Stage 1	19	-	-	-	-	-
Stage 2	443	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	558	1059	1596	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	484	1059	1596	-	-	-
Mov Cap-2 Maneuver	484	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.3	6.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1596	-	484	1059	-	-
HCM Lane V/C Ratio	0.131	-	0.01	0.195	-	-
HCM Control Delay (s)	7.6	0	12.5	9.2	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.5	-	0	0.7	-	-

HCM 6th TWSC
6: US 24 & Stapleton Dr







Existing Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	6.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	40	50	4	97	27	99	478	23	8	304	22
Future Vol, veh/h	17	40	50	4	97	27	99	478	23	8	304	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	93	93	93	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	40	50	4	97	27	106	514	25	9	358	26

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1177	1127	358	1160	1128	514	384	0	0	539	0	0
Stage 1	376	376	-	726	726	-	-	-	-	-	-	-
Stage 2	801	751	-	434	402	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	168	205	686	172	204	560	1174	-	-	1029	-	-
Stage 1	645	616	-	416	430	-	-	-	-	-	-	-
Stage 2	378	418	-	600	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	87	185	686	123	184	560	1174	-	-	1029	-	-
Mov Cap-2 Maneuver	87	185	-	123	184	-	-	-	-	-	-	-
Stage 1	587	610	-	379	391	-	-	-	-	-	-	-
Stage 2	246	380	-	515	595	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25	37.3	1.4	0.2
HCM LOS	D	E		







Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1174	-	-	87	185	686	123	184	560	1029	-	-
HCM Lane V/C Ratio	0.091	-	-	0.195	0.216	0.073	0.033	0.527	0.048	0.009	-	-
HCM Control Delay (s)	8.4	-	-	56.2	29.7	10.7	35.3	44.5	11.8	8.5	-	-
HCM Lane LOS	A	-	-	F	D	B	E	E	B	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7	0.8	0.2	0.1	2.7	0.2	0	-	-

Intersection						
Int Delay, s/veh	1.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	1	11	10	2	41
Future Vol, veh/h	10	1	11	10	2	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	1	13	12	2	48

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	65	13	0	0	25	0
Stage 1	13	-	-	-	-	-
Stage 2	52	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	941	1067	-	-	1589	-
Stage 1	1010	-	-	-	-	-
Stage 2	970	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	940	1067	-	-	1589	-
Mov Cap-2 Maneuver	940	-	-	-	-	-
Stage 1	1009	-	-	-	-	-
Stage 2	970	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.9	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 940 1067 1589	-	-
HCM Lane V/C Ratio	-	- 0.013 0.001 0.001	-	-
HCM Control Delay (s)	-	- 8.9 8.4 7.3	-	-
HCM Lane LOS	-	- A A A	-	-
HCM 95th %tile Q(veh)	-	- 0 0 0	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	2	1	318	615	10
Future Vol, veh/h	10	2	1	318	615	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	2	1	346	668	11







Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1016	-	679
Stage 1	668	-	-
Stage 2	348	-	-
Critical Hdwy	6.42	-	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	-	2.218
Pot Cap-1 Maneuver	264	0	913
Stage 1	510	0	-
Stage 2	715	0	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	264	-	913
Mov Cap-2 Maneuver	386	-	-
Stage 1	509	-	-
Stage 2	715	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	913	-	386	-	-	-
HCM Lane V/C Ratio	0.001	-	0.028	-	-	-
HCM Control Delay (s)	8.9	-	14.6	0	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-	-

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

Short-Term Background Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	9.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	443	441	9	22	58
Future Vol, veh/h	22	443	441	9	22	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	521	519	11	26	68
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1075	26	94	0	-	0
Stage 1	26	-	-	-	-	-
Stage 2	1049	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	243	1050	1500	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	159	1050	1500	-	-	-
Mov Cap-2 Maneuver ~	864	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	337	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.3	8.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1500	-	+	1050	-	-
HCM Lane V/C Ratio	0.346	-	-	0.496	-	-
HCM Control Delay (s)	8.7	-	1	11.8	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	1.6	-	-	2.8	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 6th TWSC
13: Eastonville Rd & Stapleton Dr

Short-Term Background Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	6	260	123	37	157	112	45	332	17	209	230	26
Future Vol, veh/h	6	260	123	37	157	112	45	332	17	209	230	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	299	141	43	180	129	52	382	20	227	250	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1369	1224	264	1434	1228	392	278	0	0	402	0	0
Stage 1	718	718	-	496	496	-	-	-	-	-	-	-
Stage 2	651	506	-	938	732	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	124	~ 179	775	112	~ 178	657	1285	-	-	1157	-	-
Stage 1	420	433	-	556	545	-	-	-	-	-	-	-
Stage 2	457	540	-	317	427	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 138	775	-	~ 137	657	1285	-	-	1157	-	-
Mov Cap-2 Maneuver	-	~ 138	-	-	~ 137	-	-	-	-	-	-	-
Stage 1	403	348	-	534	523	-	-	-	-	-	-	-
Stage 2	231	518	-	~ 29	343	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.9	4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1285	-	-	-	657	1157	-
HCM Lane V/C Ratio	0.04	-	-	-	0.196	0.196	-
HCM Control Delay (s)	7.9	-	-	-	11.8	8.9	-
HCM Lane LOS	A	-	-	-	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7	0.7	-

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







Intersection												
Int Delay, s/veh	54.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	58	156	399	2	74	12	177	250	1	29	550	41
Future Vol, veh/h	58	156	399	2	74	12	177	250	1	29	550	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	170	434	2	89	14	192	272	1	31	591	44

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1354	1310	-	1416	1353	-	635	0	0	273	0	0
Stage 1	653	653	-	656	656	-	-	-	-	-	-	-
Stage 2	701	657	-	760	697	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	127	~ 159	0	115	150	0	948	-	-	1290	-	-
Stage 1	456	464	0	454	462	0	-	-	-	-	-	-
Stage 2	429	462	0	398	443	0	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 41	~ 124	-	-	117	-	948	-	-	1290	-	-
Mov Cap-2 Maneuver	~ 41	~ 124	-	-	117	-	-	-	-	-	-	-
Stage 1	363	453	-	362	368	-	-	-	-	-	-	-
Stage 2	259	368	-	243	432	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	\$ 332		4	0.4
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	948	-	-	41	124	-	-	117	-	1290	-	-
HCM Lane V/C Ratio	0.203	-	-	1.538	1.367	-	-	0.762	-	0.024	-	-
HCM Control Delay (s)	9.8	-	-	\$ 488.3	273.9	0	-	98.1	0	7.9	-	-
HCM Lane LOS	A	-	-	F	F	A	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	6.4	11.3	-	-	4.3	-	0.1	-	-







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

Intersection						
Int Delay, s/veh	1.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	6	2	28	6	1	24
Future Vol, veh/h	6	2	28	6	1	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	2	33	7	1	28

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	63	33	0
Stage 1	33	-	-
Stage 2	30	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	943	1041	-
Stage 1	989	-	-
Stage 2	993	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	942	1041	-
Mov Cap-2 Maneuver	942	-	-
Stage 1	988	-	-
Stage 2	993	-	-







Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT
Capacity (veh/h)	-	- 942 1041 1570	-	-
HCM Lane V/C Ratio	-	- 0.007 0.002 0.001	-	-
HCM Control Delay (s)	-	- 8.9 8.5 7.3	-	-
HCM Lane LOS	-	- A A A	-	-
HCM 95th %tile Q(veh)	-	- 0 0 0	-	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	1	2	578	444	6
Future Vol, veh/h	6	1	2	578	444	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	1	2	628	483	7
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1115	-	490	0	-	0
Stage 1	483	-	-	-	-	-
Stage 2	632	-	-	-	-	-
Critical Hdwy	6.42	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	2.218	-	-	-
Pot Cap-1 Maneuver	230	0	1073	-	-	-
Stage 1	620	0	-	-	-	-
Stage 2	530	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	230	-	1073	-	-	-
Mov Cap-2 Maneuver	364	-	-	-	-	-
Stage 1	619	-	-	-	-	-
Stage 2	530	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	15.1	0	0			
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1073	-	364	-	-	-
HCM Lane V/C Ratio	0.002	-	0.018	-	-	-
HCM Control Delay (s)	8.4	-	15.1	0	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-	-

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

Short-Term Background Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	7.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	257	451	34	22	30
Future Vol, veh/h	39	257	451	34	22	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	302	531	40	26	35
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1128	26	61	0	-	0
Stage 1	26	-	-	-	-	-
Stage 2	1102	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	226	1050	1542	-	-	-
Stage 1	997	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	148	1050	1542	-	-	-
Mov Cap-2 Maneuver	-1014	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.7	8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1542	-	+	1050	-	-
HCM Lane V/C Ratio	0.344	-	-	0.288	-	-
HCM Control Delay (s)	8.6	-	1.6	9.8	-	-
HCM Lane LOS	A	-	A	A	-	-
HCM 95th %tile Q(veh)	1.6	-	-	1.2	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 6th TWSC
13: Eastonville Rd & Stapleton Dr

Short-Term Background Traffic
PM Peak Hour













Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	18	199	82	32	341	250	130	217	53	112	145	22
Future Vol, veh/h	18	199	82	32	341	250	130	217	53	112	145	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	21	229	94	37	392	287	149	249	61	122	158	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1331	1022	170	1154	1004	280	182	0	0	310	0	0
Stage 1	414	414	-	578	578	-	-	-	-	-	-	-
Stage 2	917	608	-	576	426	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	132	236	874	174	~ 242	759	1393	-	-	1250	-	-
Stage 1	616	593	-	501	501	-	-	-	-	-	-	-
Stage 2	326	486	-	503	586	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	- ~ 190	874	-	~ 195	759	1393	-	-	-	1250	-	-
Mov Cap-2 Maneuver	- ~ 190	-	-	~ 195	-	-	-	-	-	-	-	-
Stage 1	550	535	-	447	447	-	-	-	-	-	-	-
Stage 2	22	434	-	232	529	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2.6	3.3
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1393	-	-	-	759	1250	-
HCM Lane V/C Ratio	0.107	-	-	-	0.379	0.097	-
HCM Control Delay (s)	7.9	-	-	-	12.6	8.2	-
HCM Lane LOS	A	-	-	-	B	A	-
HCM 95th %tile Q(veh)	0.4	-	-	-	1.8	0.3	-

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

Intersection												
Int Delay, s/veh	2.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	126	234	4	178	27	451	525	21	8	325	117
Future Vol, veh/h	31	126	234	4	178	27	451	525	21	8	325	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	137	254	5	214	33	490	571	23	9	349	126

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2037	1941	-	2050	2044	-	475	0	0	594	0	0
Stage 1	367	367	-	1551	1551	-	-	-	-	-	-	-
Stage 2	1670	1574	-	499	493	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	42	~ 65	0	41	~ 56	0	1087	-	-	982	-	-
Stage 1	653	622	0	142	~ 175	0	-	-	-	-	-	-
Stage 2	121	170	0	554	547	0	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	-	~ 35	-	-	~ 30	-	1087	-	-	982	-	-
Mov Cap-2 Maneuver	-	~ 35	-	-	~ 30	-	-	-	-	-	-	-
Stage 1	358	616	-	78	~ 96	-	-	-	-	-	-	-
Stage 2	-	~ 93	-	427	542	-	-	-	-	-	-	-







Approach	EB	WB	NB	SB
HCM Control Delay, s			5	0.2
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1087	-	-	-	35	-	-	30	-	982	-	-
HCM Lane V/C Ratio	0.451	-	-	-	3.913	-	-	7.149	-	0.009	-	-
HCM Control Delay (s)	11	-	-	\$ 1544.8	0	-\$ 3025	0	8.7	-	-	-	-
HCM Lane LOS	B	-	-	F	A	-	F	A	A	-	-	-
HCM 95th %tile Q(veh)	2.4	-	-	-	16	-	-	26.1	-	0	-	-

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

HCM 6th TWSC
1: Eastonville Rd & Rex Rd

Short-Term Total Traffic
AM Peak Hour






Intersection						
Int Delay, s/veh	7.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	315	26	11	112	11	41
Future Vol, veh/h	315	26	11	112	11	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	371	31	13	132	13	48
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	87	13	0	0	145	0
Stage 1	13	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	914	1067	-	-	1437	-
Stage 1	1010	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	906	1067	-	-	1437	-
Mov Cap-2 Maneuver	906	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.5	0	1.6			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 906 1067 1437	-	-		
HCM Lane V/C Ratio	-	- 0.409 0.029 0.009	-	-		
HCM Control Delay (s)	-	- 11.7 8.5 7.5	-	-		
HCM Lane LOS	-	- B A A	-	-		
HCM 95th %tile Q(veh)	-	- 2 0.1 0	-	-		

HCM 6th TWSC
3: Parcel H & Rex Rd

Short-Term Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	117	5	8	326	16	25
Future Vol, veh/h	117	5	8	326	16	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	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	6	9	384	19	29

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	144
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1438
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1438
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	562	907	-	-	1438	-
HCM Lane V/C Ratio	0.033	0.032	-	-	0.007	-
HCM Control Delay (s)	11.6	9.1	-	-	7.5	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-

Intersection

Int Delay, s/veh 1.8







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	131	11	17	302	32	51
Future Vol, veh/h	131	11	17	302	32	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	154	13	20	355	38	60

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

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	554	892	-	-	1411	-
HCM Lane V/C Ratio	0.068	0.067	-	-	0.014	-
HCM Control Delay (s)	12	9.3	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	4.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	143	39	35	202	117	104
Future Vol, veh/h	143	39	35	202	117	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	46	41	238	138	122
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	488	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	320	-
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	-	-	1356	-	539	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	523	876
Mov Cap-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	736	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		1.1		11.5	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	579	876	-	-	1356	-
HCM Lane V/C Ratio	0.238	0.14	-	-	0.03	-
HCM Control Delay (s)	13.1	9.8	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.1	-







Intersection						
Int Delay, s/veh	3.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	225	171	34	101	65
Future Vol, veh/h	21	225	171	34	101	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	265	201	40	119	76
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	241	0	-	0	516	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	315	-
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	1326	-	-	-	519	840
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1326	-	-	-	509	840
Mov Cap-2 Maneuver	-	-	-	-	577	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	740	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.7	0		11.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1326	-	-	-	577	840
HCM Lane V/C Ratio	0.019	-	-	-	0.206	0.091
HCM Control Delay (s)	7.8	-	-	-	12.9	9.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.3

Intersection						
Int Delay, s/veh	6.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	293	34	79	104	101	236
Future Vol, veh/h	293	34	79	104	101	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	345	40	93	122	119	278
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	385	0	653	345
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	308	-
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	-	-	1173	-	432	698
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1173	-	398	698
Mov Cap-2 Maneuver	-	-	-	-	481	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	745	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		3.6		13.9	
HCM LOS					B	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	481	698	-	-	1173	-
HCM Lane V/C Ratio	0.247	0.398	-	-	0.079	-
HCM Control Delay (s)	14.9	13.5	-	-	8.3	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	1	1.9	-	-	0.3	-

Intersection			
Intersection Delay, s/veh	6.7		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	385	215	397
Demand Flow Rate, veh/h	393	219	405
Vehicles Circulating, veh/h	95	121	352
Vehicles Exiting, veh/h	245	636	136
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.8	4.6	8.6
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	393	219	405
Cap Entry Lane, veh/h	1252	1220	964
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	385	215	397
Cap Entry, veh/h	1227	1195	945
V/C Ratio	0.314	0.180	0.420
Control Delay, s/veh	5.8	4.6	8.6
LOS	A	A	A
95th %tile Queue, veh	1	1	2

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	485	162	318	615	21
Future Vol, veh/h	44	485	162	318	615	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	527	176	346	668	23







Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1366	- 691	0 - 0
Stage 1	668	- -	- - -
Stage 2	698	- -	- - -
Critical Hdwy	6.42	- 4.12	- - -
Critical Hdwy Stg 1	5.42	- -	- - -
Critical Hdwy Stg 2	5.42	- -	- - -
Follow-up Hdwy	3.518	- 2.218	- - -
Pot Cap-1 Maneuver	162	0 904	- - -
Stage 1	510	0 -	- - -
Stage 2	494	0 -	- - -
Platoon blocked, %			- - -
Mov Cap-1 Maneuver	130	- 904	- - -
Mov Cap-2 Maneuver	222	- -	- - -
Stage 1	411	- -	- - -
Stage 2	494	- -	- - -

Approach	EB	NB	SB
HCM Control Delay, s	25.6	3.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	904	- 222	-	-	-	-
HCM Lane V/C Ratio	0.195	- 0.215	-	-	-	-
HCM Control Delay (s)	9.9	- 25.6	0	-	-	-
HCM Lane LOS	A	- D	A	-	-	-
HCM 95th %tile Q(veh)	0.7	- 0.8	-	-	-	-

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	10.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	443	441	94	276	109
Future Vol, veh/h	39	443	441	94	276	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	521	519	111	325	128
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1474	325	453	0	-	0
Stage 1	325	-	-	-	-	-
Stage 2	1149	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	139	716	1108	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	74	716	1108	-	-	-
Mov Cap-2 Maneuver	-3438	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	20.8	9.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1108	-	+	716	-	-
HCM Lane V/C Ratio	0.468	-	-	0.728	-	-
HCM Control Delay (s)	11.1	-	4	22.3	-	-
HCM Lane LOS	B	-	A	C	-	-
HCM 95th %tile Q(veh)	2.6	-	-	6.4	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						













HCM 6th Roundabout
12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
AM Peak Hour

Intersection			
Intersection Delay, s/veh	9.2		
Intersection LOS	A		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	567	630	453
Demand Flow Rate, veh/h	578	642	463
Vehicles Circulating, veh/h	331	47	529
Vehicles Exiting, veh/h	660	862	160
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	7.4	10.8
Approach LOS	B	A	B
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	578	642	463
Cap Entry Lane, veh/h	1072	1364	906
Entry HV Adj Factor	0.981	0.981	0.979
Flow Entry, veh/h	567	630	453
Cap Entry, veh/h	1051	1339	887
V/C Ratio	0.539	0.471	0.511
Control Delay, s/veh	10.1	7.4	10.8
LOS	B	A	B
95th %tile Queue, veh	3	3	3

Timings
12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	443	441	94	276	109
Future Volume (vph)	39	443	441	94	276	109
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	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	20.0
Total Split (s)	20.0	20.0	70.0	70.0	70.0	70.0
Total Split (%)	22.2%	22.2%	77.8%	77.8%	77.8%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effect Green (s)	9.1	9.1	65.1	65.1	65.1	65.1
Actuated g/C Ratio	0.11	0.11	0.77	0.77	0.77	0.77
v/c Ratio	0.24	0.82	0.64	0.08	0.23	0.10
Control Delay	36.8	15.1	9.6	3.0	3.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	15.1	9.6	3.0	3.5	0.9
LOS	D	B	A	A	A	A
Approach Delay	16.9			8.5	2.7	
Approach LOS	B			A	A	

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 84.2
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 9.8
 Intersection Capacity Utilization 55.6%
 Analysis Period (min) 15








Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 12: Eastonville Rd & Londonderry Dr



















HCM 6th TWSC
13: Eastonville Rd & Stapleton Dr

Short-Term Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	260	123	37	157	112	45	377	17	209	366	145
Future Vol, veh/h	45	260	123	37	157	112	45	377	17	209	366	145
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	299	141	43	180	129	52	433	20	227	398	158
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1633	1488	477	1698	1557	443	556	0	0	453	0	0
Stage 1	931	931	-	547	547	-	-	-	-	-	-	-
Stage 2	702	557	-	1151	1010	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	81 ~ 124	588	73 ~ 113	615	1015	-	-	1108	-	-	-	-
Stage 1	320	346	-	521	517	-	-	-	-	-	-	-
Stage 2	429	512	-	241	317	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	- ~ 93	588	- ~ 85	615	1015	-	-	1108	-	-	-	-
Mov Cap-2 Maneuver	- ~ 93	-	- ~ 85	-	-	-	-	-	-	-	-	-
Stage 1	304 ~ 275	-	494	491	-	-	-	-	-	-	-	-
Stage 2	204	486	-	-	252	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s					0.9		2.6					
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1015	-	-	-	615	1108	-	-				
HCM Lane V/C Ratio	0.051	-	-	-	0.209	0.205	-	-				
HCM Control Delay (s)	8.7	-	-	-	12.4	9.1	-	-				
HCM Lane LOS	A	-	-	-	B	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8	0.8	-	-				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings 13: Eastonville Rd & Stapleton Dr

Short-Term Total Traffic
AM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	45	260	37	157	112	45	377	209	366
Future Volume (vph)	45	260	37	157	112	45	377	209	366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	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	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	10.0	31.0	14.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	11.1%	34.4%	15.6%	38.9%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		25.8		25.8	25.8	27.4	22.2	36.1	31.3
Actuated g/C Ratio		0.35		0.35	0.35	0.38	0.31	0.50	0.43
v/c Ratio		0.80		0.41	0.20	0.17	0.80	0.61	0.71
Control Delay		30.5		20.2	4.0	13.6	36.8	21.3	26.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.5		20.2	4.0	13.6	36.8	21.3	26.8
LOS		C		C	A	B	D	C	C
Approach Delay		30.5		14.3			34.4		25.2
Approach LOS		C		B			C		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 72.7

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.8

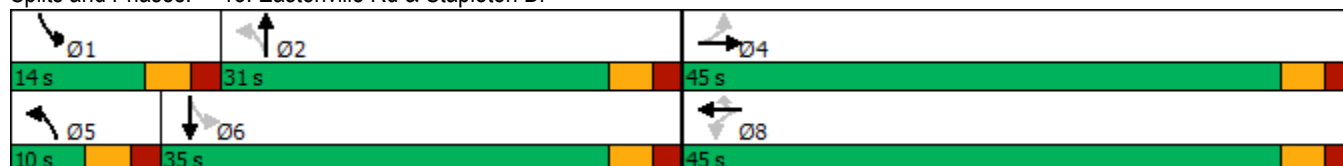
Intersection LOS: C

Intersection Capacity Utilization 83.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	58	156	399	2	74	23	177	399	1	63	999	41
Future Vol, veh/h	58	156	399	2	74	23	177	399	1	63	999	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	170	434	2	89	28	192	434	1	68	1074	44

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2073	2029	-	2135	2072	-	1118	0	0	435	0	0
Stage 1	1210	1210	-	818	818	-	-	-	-	-	-	-
Stage 2	863	819	-	1317	1254	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 40	~ 57	0	36	~ 54	0	625	-	-	1125	-	-
Stage 1	223	255	0	370	390	0	-	-	-	-	-	-
Stage 2	349	389	0	194	243	0	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 37	-	-	~ 35	-	625	-	-	1125	-	-
Mov Cap-2 Maneuver	-	~ 37	-	-	~ 35	-	-	-	-	-	-	-
Stage 1	155	240	-	256	270	-	-	-	-	-	-	-
Stage 2	162	270	-	53	228	-	-	-	-	-	-	-

























Approach	EB	WB	NB	SB
HCM Control Delay, s	-	-	4.1	0.5
HCM LOS	-	-	-	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	625	-	-	-	37	-	-	35	-	1125	-	-
HCM Lane V/C Ratio	0.308	-	-	-	4.583	-	-	2.547	-	0.06	-	-
HCM Control Delay (s)	13.3	-	-	\$ 1830.7	0	-	\$ 945	0	8.4	-	-	-
HCM Lane LOS	B	-	-	F	A	-	F	A	A	-	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-	19.8	-	-	10.1	-	0.2	-	-

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

Timings
14: US 24 & Stapleton Dr

Short-Term Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	156	399	2	74	23	177	399	1	63	999	41
Future Volume (vph)	58	156	399	2	74	23	177	399	1	63	999	41
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	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	5.0
Minimum Split (s)	20.0	20.0		20.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	25.0	25.0		25.0	25.0	25.0	12.0	55.0	55.0	10.0	53.0	53.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	13.3%	61.1%	61.1%	11.1%	58.9%	58.9%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	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	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	12.8	12.8	82.9	12.8	12.8	12.8	57.7	51.2	51.2	53.1	47.1	47.1
Actuated g/C Ratio	0.15	0.15	1.00	0.15	0.15	0.15	0.70	0.62	0.62	0.64	0.57	0.57
v/c Ratio	0.32	0.59	0.27	0.01	0.31	0.09	0.81	0.38	0.00	0.11	1.02	0.05
Control Delay	35.1	41.3	0.4	29.0	33.6	0.5	43.4	10.4	0.0	4.7	52.3	0.6
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	35.1	41.3	0.4	29.0	33.6	0.5	43.4	10.4	0.0	4.7	52.3	0.6
LOS	D	D	A	C	C	A	D	B	A	A	D	A
Approach Delay		14.1			25.8			20.5			47.6	
Approach LOS		B			C			C			D	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 82.9

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 85.6%

ICU Level of Service E







Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr



HCM 6th TWSC
1: Eastonville Rd & Rex Rd

Short-Term Total Traffic
PM Peak Hour






Intersection						
Int Delay, s/veh	4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	198	18	28	333	28	24
Future Vol, veh/h	198	18	28	333	28	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	233	21	33	392	33	28
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	127	33	0	0	425	0
Stage 1	33	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	868	1041	-	-	1134	-
Stage 1	989	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	843	1041	-	-	1134	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	10.7	0	4.5			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 843 1041 1134	-	-		
HCM Lane V/C Ratio	-	- 0.276 0.02 0.029	-	-		
HCM Control Delay (s)	-	- 10.9 8.5 8.3	-	-		
HCM Lane LOS	-	- B A A	-	-		
HCM 95th %tile Q(veh)	-	- 1.1 0.1 0.1	-	-		

HCM 6th TWSC
3: Parcel H & Rex Rd

Short-Term Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	349	17	27	209	10	16
Future Vol, veh/h	349	17	27	209	10	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	411	20	32	246	12	19

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	431
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1129
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1129
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	632	-	-	1129	-
HCM Lane V/C Ratio	0.025	0.03	-	-	0.028	-
HCM Control Delay (s)	12.7	10.9	-	-	8.3	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection

Int Delay, s/veh 1.6







Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	330	35	54	216	20	32
Future Vol, veh/h	330	35	54	216	20	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	388	41	64	254	24	38

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	429
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1130
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1130
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.7	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	449	660	-	-	1130	-
HCM Lane V/C Ratio	0.052	0.057	-	-	0.056	-
HCM Control Delay (s)	13.5	10.8	-	-	8.4	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.2	-

Intersection								
Int Delay, s/veh	3.5							
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑	↗	↘	↑	↘	↗		
Traffic Vol, veh/h	237	125	111	196	74	65		
Future Vol, veh/h	237	125	111	196	74	65		
Conflicting Peds, #/hr	0	0	0	0	0	0		
Sign Control	Free	Free	Free	Free	Stop	Stop		
RT Channelized	-	None	-	None	-	None		
Storage Length	-	155	305	-	0	0		
Veh in Median Storage, #	0	-	-	0	0	-		
Grade, %	0	-	-	0	0	-		
Peak Hour Factor	85	85	85	85	85	85		
Heavy Vehicles, %	2	2	2	2	2	2		
Mvmt Flow	279	147	131	231	87	76		
Major/Minor	Major1		Major2		Minor1			
Conflicting Flow All	0	0	426	0	772	279		
Stage 1	-	-	-	-	279	-		
Stage 2	-	-	-	-	493	-		
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	-	-	1133	-	368	760		
Stage 1	-	-	-	-	768	-		
Stage 2	-	-	-	-	614	-		
Platoon blocked, %	-	-		-				
Mov Cap-1 Maneuver	-	-	1133	-	325	760		
Mov Cap-2 Maneuver	-	-	-	-	396	-		
Stage 1	-	-	-	-	679	-		
Stage 2	-	-	-	-	614	-		
Approach	EB		WB		NB			
HCM Control Delay, s	0		3.1		13.7			
HCM LOS					B			
Minor Lane/Major Mvmt	NBLn1		NBLn2		EBT	EBR	WBL	WBT
Capacity (veh/h)	396		760		-	-	1133	-
HCM Lane V/C Ratio	0.22		0.101		-	-	0.115	-
HCM Control Delay (s)	16.6		10.3		-	-	8.6	-
HCM Lane LOS	C		B		-	-	A	-
HCM 95th %tile Q(veh)	0.8		0.3		-	-	0.4	-

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	233	267	109	63	41
Future Vol, veh/h	69	233	267	109	63	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	274	314	128	74	48
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	442	0	-	0	750	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	436	-
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	1118	-	-	-	379	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	652	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	352	726
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	652	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.9	0		13		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1118	-	-	-	442	726
HCM Lane V/C Ratio	0.073	-	-	-	0.168	0.066
HCM Control Delay (s)	8.5	-	-	-	14.8	10.3
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.2

Intersection

Int Delay, s/veh 29

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	183	108	253	309	63	149
Future Vol, veh/h	183	108	253	309	63	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	127	298	364	74	175

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	342
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1217
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1217
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	135.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	50	825	-	-	1217	-
HCM Lane V/C Ratio	1.482	0.212	-	-	0.245	-
HCM Control Delay (s)	\$ 430.1	10.5	-	-	8.9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	7	0.8	-	-	1	-







Notes

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

HCM 6th Roundabout
7: J & K & Rex Rd







Short-Term Total Traffic
PM Peak Hour

Intersection			
Intersection Delay, s/veh	7.6		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	342	662	249
Demand Flow Rate, veh/h	349	675	253
Vehicles Circulating, veh/h	304	75	219
Vehicles Exiting, veh/h	446	397	434
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.3	8.7	5.4
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	349	675	253
Cap Entry Lane, veh/h	1012	1278	1104
Entry HV Adj Factor	0.979	0.980	0.984
Flow Entry, veh/h	342	662	249
Cap Entry, veh/h	991	1253	1086
V/C Ratio	0.345	0.528	0.229
Control Delay, s/veh	7.3	8.7	5.4
LOS	A	A	A
95th %tile Queue, veh	2	3	1

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	305	520	578	444	42
Future Vol, veh/h	27	305	520	578	444	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	332	565	628	483	46
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2241	-	529	0	-	0
Stage 1	483	-	-	-	-	-
Stage 2	1758	-	-	-	-	-
Critical Hdwy	6.42	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	2.218	-	-	-
Pot Cap-1 Maneuver	46	0	1038	-	-	-
Stage 1	620	0	-	-	-	-
Stage 2	152	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	-	1038	-	-	-
Mov Cap-2 Maneuver	624	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	152	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.1	5.9		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1038	-	624	-	-	-
HCM Lane V/C Ratio	0.545	-	0.047	-	-	-
HCM Control Delay (s)	12.5	-	11.1	0	-	-
HCM Lane LOS	B	-	B	A	-	-
HCM 95th %tile Q(veh)	3.4	-	0.1	-	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	257	451	307	182	62
Future Vol, veh/h	94	257	451	307	182	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	302	531	361	214	73
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1637	214	287	0	-	0
Stage 1	214	-	-	-	-	-
Stage 2	1423	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	111	826	1275	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 65	826	1275	-	-	-
Mov Cap-2 Maneuver	~3386	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	5.8		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1275	-	+	826	-	-
HCM Lane V/C Ratio	0.416	-	-	0.366	-	-
HCM Control Delay (s)	9.8	-	4	11.9	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	2.1	-	-	1.7	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						













HCM 6th Roundabout
12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
PM Peak Hour

Intersection			
Intersection Delay, s/veh	10.3		
Intersection LOS	B		
Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	413	892	287
Demand Flow Rate, veh/h	421	910	292
Vehicles Circulating, veh/h	218	113	542
Vehicles Exiting, veh/h	616	526	481
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.6	12.9	7.7
Approach LOS	A	B	A
Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	421	910	292
Cap Entry Lane, veh/h	1180	1290	896
Entry HV Adj Factor	0.981	0.980	0.982
Flow Entry, veh/h	413	892	287
Cap Entry, veh/h	1157	1264	880
V/C Ratio	0.357	0.705	0.326
Control Delay, s/veh	6.6	12.9	7.7
LOS	A	B	A
95th %tile Queue, veh	2	6	1

Timings 12: Eastonville Rd & Londonderry Dr

Short-Term Total Traffic
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	257	451	307	182	62
Future Volume (vph)	94	257	451	307	182	62
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	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	20.0
Total Split (s)	20.0	20.0	70.0	70.0	70.0	70.0
Total Split (%)	22.2%	22.2%	77.8%	77.8%	77.8%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effect Green (s)	10.6	10.6	65.1	65.1	65.1	65.1
Actuated g/C Ratio	0.12	0.12	0.76	0.76	0.76	0.76
v/c Ratio	0.51	0.66	0.60	0.26	0.15	0.06
Control Delay	43.2	11.8	8.7	3.9	3.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	11.8	8.7	3.9	3.4	1.0
LOS	D	B	A	A	A	A
Approach Delay	20.2			6.8	2.8	
Approach LOS	C			A	A	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.7

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 9.5

Intersection LOS: A

Intersection Capacity Utilization 52.3%

ICU Level of Service A








Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr



















HCM 6th TWSC
13: Eastonville Rd & Stapleton Dr

Short-Term Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	199	82	32	341	250	130	362	53	112	230	97
Future Vol, veh/h	145	199	82	32	341	250	130	362	53	112	230	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	167	229	94	37	392	287	149	416	61	122	250	105
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1631	1322	303	1453	1344	447	355	0	0	477	0	0
Stage 1	547	547	-	745	745	-	-	-	-	-	-	-
Stage 2	1084	775	-	708	599	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 81	~ 156	737	108	~ 152	612	1204	-	-	1085	-	-
Stage 1	521	517	-	406	421	-	-	-	-	-	-	-
Stage 2	263	408	-	426	490	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	- ~ 121	737	- ~ 118	612	1204	-	-	-	-	1085	-	-
Mov Cap-2 Maneuver	- ~ 121	-	- ~ 118	-	-	-	-	-	-	-	-	-
Stage 1	456	459	-	356	~ 369	-	-	-	-	-	-	-
Stage 2	-	357	-	165	435	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s							2		2.2			
HCM LOS	-		-									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR					
Capacity (veh/h)	1204	-	-	-	-	612	1085	-	-			
HCM Lane V/C Ratio	0.124	-	-	-	-	0.47	0.112	-	-			
HCM Control Delay (s)	8.4	-	-	-	-	16	8.7	-	-			
HCM Lane LOS	A	-	-	-	-	C	A	-	-			
HCM 95th %tile Q(veh)	0.4	-	-	-	-	2.5	0.4	-	-			
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined				*: All major volume in platoon				

Timings 13: Eastonville Rd & Stapleton Dr

Short-Term Total Traffic
PM Peak Hour

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	199	32	341	250	130	362	112	230
Future Volume (vph)	145	199	32	341	250	130	362	112	230
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	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	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	48.0	48.0	48.0	48.0	48.0	10.0	32.0	10.0	32.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	53.3%	11.1%	35.6%	11.1%	35.6%
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
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effect Green (s)		42.9		42.9	42.9	30.2	25.2	30.2	25.2
Actuated g/C Ratio		0.49		0.49	0.49	0.34	0.29	0.34	0.29
v/c Ratio		0.95		0.51	0.31	0.55	0.90	0.66	0.67
Control Delay		53.0		18.5	2.7	27.0	52.3	37.3	33.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		53.0		18.5	2.7	27.0	52.3	37.3	33.0
LOS		D		B	A	C	D	D	C
Approach Delay		53.0		12.2			46.3		34.1
Approach LOS		D		B			D		C

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 88.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.6







Intersection LOS: C

Intersection Capacity Utilization 88.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr

		
10 s	32 s	48 s
		
10 s	32 s	48 s

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	31	126	234	4	178	63	451	1007	21	29	607	117
Future Vol, veh/h	31	126	234	4	178	63	451	1007	21	29	607	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	137	254	5	214	76	490	1095	23	31	653	126

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2909	2813	-	2922	2916	-	779	0	0	1118	0	0
Stage 1	715	715	-	2075	2075	-	-	-	-	-	-	-
Stage 2	2194	2098	-	847	841	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 10	~ 18	0	10	~ 15	0	838	-	-	625	-	-
Stage 1	422	434	0	70	~ 96	0	-	-	-	-	-	-
Stage 2	60	~ 93	0	357	380	0	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	~ 7	-	-	~ 6	-	838	-	-	625	-	-
Mov Cap-2 Maneuver	-	~ 7	-	-	~ 6	-	-	-	-	-	-	-
Stage 1	175	412	-	29	~ 40	-	-	-	-	-	-	-
Stage 2	-	~ 39	-	227	361	-	-	-	-	-	-	-

























Approach	EB	WB	NB	SB
HCM Control Delay, s			4.6	0.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	838	-	-	-	7	-	-	6	-	625	-	-
HCM Lane V/C Ratio	0.585	-	-	-	19.565	-	-	35.743	-	0.05	-	-
HCM Control Delay (s)	15.2	-	-	-	\$ 9384.4	0	-	\$ 16834	0	11.1	-	-
HCM Lane LOS	C	-	-	-	F	A	-	F	A	B	-	-
HCM 95th %tile Q(veh)	3.9	-	-	-	19	-	-	28.8	-	0.2	-	-

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

Timings
14: US 24 & Stapleton Dr

Short-Term Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	126	234	4	178	63	451	1007	21	29	607	117
Future Volume (vph)	31	126	234	4	178	63	451	1007	21	29	607	117
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	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	5.0
Minimum Split (s)	20.0	20.0		20.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	25.0	25.0		25.0	25.0	25.0	18.0	55.0	55.0	10.0	47.0	47.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	20.0%	61.1%	61.1%	11.1%	52.2%	52.2%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	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	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	14.7	14.7	84.8	14.7	14.7	14.7	60.1	55.3	55.3	47.1	41.1	41.1
Actuated g/C Ratio	0.17	0.17	1.00	0.17	0.17	0.17	0.71	0.65	0.65	0.56	0.48	0.48
v/c Ratio	0.25	0.43	0.16	0.03	0.66	0.19	0.99	0.90	0.02	0.17	0.72	0.15
Control Delay	34.7	35.2	0.2	28.2	43.1	1.0	54.3	27.9	0.0	7.9	24.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	35.2	0.2	28.2	43.1	1.0	54.3	27.9	0.0	7.9	24.0	2.4
LOS	C	D	A	C	D	A	D	C	A	A	C	A
Approach Delay		14.3			32.0			35.5			20.0	
Approach LOS		B			C			D			C	

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.8

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 28.3

Intersection LOS: C

Intersection Capacity Utilization 88.2%

ICU Level of Service E













Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr



HCM 6th TWSC
1: Eastonville Rd & Rex Rd

2040 Background Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	7.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	121	216	16	32	1	81	128	22	2	193	52
Future Vol, veh/h	35	121	216	16	32	1	81	128	22	2	193	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	127	227	17	34	1	85	135	23	2	203	55













Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	541	535	203	717	567	135	258	0	0	158	0	0
Stage 1	207	207	-	305	305	-	-	-	-	-	-	-
Stage 2	334	328	-	412	262	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	452	452	838	345	433	914	1307	-	-	1422	-	-
Stage 1	795	731	-	705	662	-	-	-	-	-	-	-
Stage 2	680	647	-	617	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	401	422	838	184	404	914	1307	-	-	1422	-	-
Mov Cap-2 Maneuver	401	422	-	184	404	-	-	-	-	-	-	-
Stage 1	743	730	-	659	619	-	-	-	-	-	-	-
Stage 2	600	605	-	371	690	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.3		18.4		2.8		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	401	422	838	184	404	914	1422	-	-
HCM Lane V/C Ratio	0.065	-	-	0.092	0.302	0.271	0.092	0.083	0.001	0.001	-	-
HCM Control Delay (s)	7.9	-	-	14.9	17.2	10.9	26.5	14.7	8.9	7.5	-	-
HCM Lane LOS	A	-	-	B	C	B	D	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	1.3	1.1	0.3	0.3	0	0	-	-

Timings
9: US 24 & Rex Rd

2040 Background Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	105	28	843	1117	21
Future Volume (vph)	40	105	28	843	1117	21
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		48.0	95.0	47.0	47.0
Total Split (%)	20.8%		40.0%	79.2%	39.2%	39.2%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	6.5	90.0	82.8	82.8
Actuated g/C Ratio	0.17	1.00	0.05	0.75	0.69	0.69
v/c Ratio	0.14	0.07	0.16	0.32	0.48	0.02
Control Delay	44.2	0.1	55.6	5.3	10.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.1	55.6	5.3	10.2	3.7
LOS	D	A	E	A	B	A
Approach Delay	12.2			7.0	10.0	
Approach LOS	B			A	B	

Intersection Summary







Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 9.0
 Intersection Capacity Utilization 43.4%
 Analysis Period (min) 15

Intersection LOS: A

ICU Level of Service A

























Splits and Phases: 9: US 24 & Rex Rd



Intersection						
Int Delay, s/veh	5.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	275	158	192	463	51
Future Vol, veh/h	35	275	158	192	463	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
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	37	289	166	202	487	54
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1021	487	541	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	262	581	1028	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	220	581	1028	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.3	4.1		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1028	-	311	581	-	-
HCM Lane V/C Ratio	0.162	-	0.118	0.498	-	-
HCM Control Delay (s)	9.2	-	18.1	17.2	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.4	2.8	-	-

Timings
13: Eastonville Rd & Stapleton Dr

2040 Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	990	224	143	832	85	108	137	177	237	277	189
Future Volume (vph)	128	990	224	143	832	85	108	137	177	237	277	189
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	47.0	47.0	12.0	39.0	39.0	10.0	51.0	51.0	10.0	51.0	51.0
Total Split (%)	16.7%	39.2%	39.2%	10.0%	32.5%	32.5%	8.3%	42.5%	42.5%	8.3%	42.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	9.0	33.2	33.2	41.6	32.4	32.4	27.2	20.0	20.0	27.2	20.0	20.0
Actuated g/C Ratio	0.10	0.39	0.39	0.48	0.38	0.38	0.32	0.23	0.23	0.32	0.23	0.23
v/c Ratio	0.38	0.76	0.32	0.58	0.66	0.13	0.39	0.33	0.36	0.59	0.67	0.38
Control Delay	41.8	27.5	5.7	22.8	25.7	2.0	24.5	30.6	6.7	29.7	39.2	6.6
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	41.8	27.5	5.7	22.8	25.7	2.0	24.5	30.6	6.7	29.7	39.2	6.6
LOS	D	C	A	C	C	A	C	C	A	C	D	A
Approach Delay		25.2			23.4			19.0			27.2	
Approach LOS		C			C			B			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 86

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 24.3

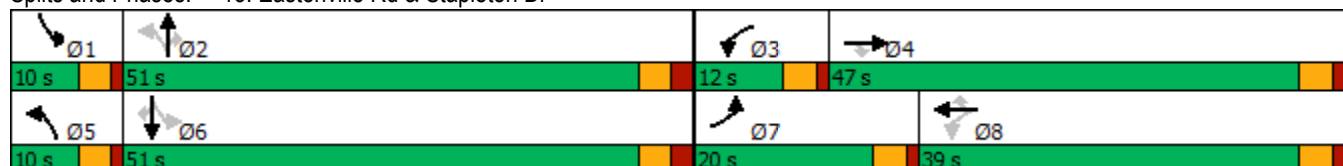
Intersection LOS: C

Intersection Capacity Utilization 70.9%

ICU Level of Service C

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings
14: US 24 & Stapleton Dr

2040 Background Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	488	608	200	485	124	332	321	175	222	742	263
Future Volume (vph)	428	488	608	200	485	124	332	321	175	222	742	263
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Detector Phase	7	4		3	8	8	5	2	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	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	11.0
Total Split (s)	25.0	31.0		19.0	25.0	25.0	22.0	38.0	38.0	22.0	38.0	38.0
Total Split (%)	22.7%	28.2%		17.3%	22.7%	22.7%	20.0%	34.5%	34.5%	20.0%	34.5%	34.5%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	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	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	17.8	24.9	104.7	11.5	18.7	18.7	15.0	34.7	34.7	12.5	32.2	32.2
Actuated g/C Ratio	0.17	0.24	1.00	0.11	0.18	0.18	0.14	0.33	0.33	0.12	0.31	0.31
v/c Ratio	0.77	0.61	0.40	0.56	0.81	0.31	0.71	0.29	0.28	0.57	0.70	0.41
Control Delay	51.8	39.5	0.8	50.9	53.0	3.9	51.9	27.9	5.5	50.0	37.0	5.6
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	51.8	39.5	0.8	50.9	53.0	3.9	51.9	27.9	5.5	50.0	37.0	5.6
LOS	D	D	A	D	D	A	D	C	A	D	D	A
Approach Delay		27.5			44.9			32.8			32.5	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 104.7

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 33.1









Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D













Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr

			
Ø1	Ø2	Ø3	Ø4
22 s	38 s	19 s	31 s
			
Ø5	Ø6	Ø7	Ø8
22 s	38 s	25 s	25 s

HCM 6th TWSC
1: Eastonville Rd & Rex Rd

2040 Background Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	102	91	18	87	1	158	138	14	2	200	67
Future Vol, veh/h	41	102	91	18	87	1	158	138	14	2	200	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	107	96	19	92	1	166	145	15	2	211	71













Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	746	707	211	829	763	145	282	0	0	160	0	0
Stage 1	215	215	-	477	477	-	-	-	-	-	-	-
Stage 2	531	492	-	352	286	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	330	360	829	290	334	902	1280	-	-	1419	-	-
Stage 1	787	725	-	569	556	-	-	-	-	-	-	-
Stage 2	532	548	-	665	675	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	225	313	829	171	290	902	1280	-	-	1419	-	-
Mov Cap-2 Maneuver	225	313	-	171	290	-	-	-	-	-	-	-
Stage 1	685	724	-	495	484	-	-	-	-	-	-	-
Stage 2	375	477	-	500	674	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18	23.8	4.2	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	225	313	829	171	290	902	1419	-	-
HCM Lane V/C Ratio	0.13	-	-	0.192	0.343	0.116	0.111	0.316	0.001	0.001	-	-
HCM Control Delay (s)	8.2	-	-	24.8	22.4	9.9	28.7	23	9	7.5	-	-
HCM Lane LOS	A	-	-	C	C	A	D	C	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.7	1.5	0.4	0.4	1.3	0	0	-	-

Timings
9: US 24 & Rex Rd

2040 Background Traffic
PM Peak Hour







						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	89	75	1107	1021	31
Future Volume (vph)	29	89	75	1107	1021	31
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		15.0	95.0	80.0	80.0
Total Split (%)	20.8%		12.5%	79.2%	66.7%	66.7%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	8.1	90.0	79.1	79.1
Actuated g/C Ratio	0.17	1.00	0.07	0.75	0.66	0.66
v/c Ratio	0.11	0.06	0.34	0.43	0.46	0.03
Control Delay	43.6	0.1	57.1	6.1	11.4	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	0.1	57.1	6.1	11.4	2.9
LOS	D	A	E	A	B	A
Approach Delay	10.9			9.4	11.1	
Approach LOS	B			A	B	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 10.3
 Intersection Capacity Utilization 44.6%
 Analysis Period (min) 15

























Splits and Phases: 9: US 24 & Rex Rd



Intersection						
Int Delay, s/veh	2.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	177	307	389	292	35
Future Vol, veh/h	44	177	307	389	292	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	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	46	186	323	409	307	37
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1381	326	344	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	1055	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	159	715	1215	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	117	715	1215	-	-	-
Mov Cap-2 Maneuver	~ -21	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s		4		0		
HCM LOS	-					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1215	-	+	715	-	-
HCM Lane V/C Ratio	0.266	-	-	0.261	-	-
HCM Control Delay (s)	9	-	-	11.8	-	-
HCM Lane LOS	A	-	-	B	-	-
HCM 95th %tile Q(veh)	1.1	-	-	1	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						

Timings
13: Eastonville Rd & Stapleton Dr

2040 Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	904	160	173	1249	151	251	297	158	131	196	132
Future Volume (vph)	248	904	160	173	1249	151	251	297	158	131	196	132
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	21.0	47.0	47.0	19.0	45.0	45.0	16.0	44.0	44.0	10.0	38.0	38.0
Total Split (%)	17.5%	39.2%	39.2%	15.8%	37.5%	37.5%	13.3%	36.7%	36.7%	8.3%	31.7%	31.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	12.8	42.6	42.6	51.8	40.3	40.3	34.3	23.2	23.2	24.3	17.3	17.3
Actuated g/C Ratio	0.13	0.42	0.42	0.52	0.40	0.40	0.34	0.23	0.23	0.24	0.17	0.17
v/c Ratio	0.60	0.62	0.22	0.54	0.90	0.22	0.75	0.73	0.34	0.57	0.64	0.36
Control Delay	48.2	26.2	4.9	17.5	39.4	7.5	41.0	46.3	6.8	36.1	48.5	8.8
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	48.2	26.2	4.9	17.5	39.4	7.5	41.0	46.3	6.8	36.1	48.5	8.8
LOS	D	C	A	B	D	A	D	D	A	D	D	A
Approach Delay		27.8			33.8			35.6			33.5	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 100.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 32.1

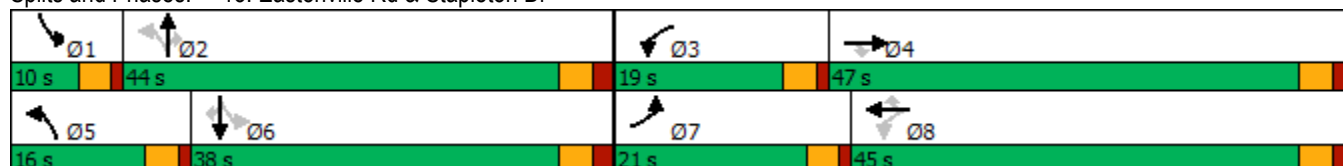
Intersection LOS: C

Intersection Capacity Utilization 80.8%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings
14: US 24 & Stapleton Dr

2040 Background Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	553	388	200	778	122	723	693	175	223	444	449
Future Volume (vph)	372	553	388	200	778	122	723	693	175	223	444	449
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			Free
Detector Phase	7	4		3	8	8	5	2	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	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	
Total Split (s)	20.0	34.0		16.0	30.0	30.0	29.0	34.0	34.0	16.0	21.0	
Total Split (%)	20.0%	34.0%		16.0%	30.0%	30.0%	29.0%	34.0%	34.0%	16.0%	21.0%	
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	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Act Effect Green (s)	14.4	28.8	98.6	10.2	24.7	24.7	23.3	29.1	29.1	10.4	16.2	98.6
Actuated g/C Ratio	0.15	0.29	1.00	0.10	0.25	0.25	0.24	0.30	0.30	0.11	0.16	1.00
v/c Ratio	0.78	0.56	0.26	0.59	0.93	0.24	0.91	0.68	0.31	0.65	0.78	0.30
Control Delay	52.9	32.3	0.4	49.8	53.9	2.4	53.4	34.8	5.7	51.4	50.4	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	52.9	32.3	0.4	49.8	53.9	2.4	53.4	34.8	5.7	51.4	50.4	0.5
LOS	D	C	A	D	D	A	D	C	A	D	D	A
Approach Delay		28.7			47.4			40.0			30.3	
Approach LOS		C			D			D			C	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 98.6

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 36.6

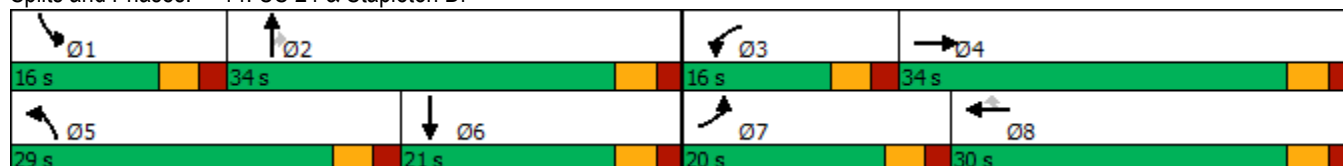
Intersection LOS: D

Intersection Capacity Utilization 81.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr



HCM 6th TWSC
1: Eastonville Rd & Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection												
Int Delay, s/veh	721											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	35	146	218	623	75	23	86	130	310	15	194	52
Future Vol, veh/h	35	146	218	623	75	23	86	130	310	15	194	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	154	229	656	79	24	91	137	326	16	204	55

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	770	881	204	774	610	137	259	0	0	463	0	0
Stage 1	236	236	-	319	319	-	-	-	-	-	-	-
Stage 2	534	645	-	455	291	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	318	285	837	~ 316	409	911	1306	-	-	1098	-	-
Stage 1	767	710	-	693	653	-	-	-	-	-	-	-
Stage 2	530	467	-	~ 585	672	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	244	261	837	~ 115	375	911	1306	-	-	1098	-	-
Mov Cap-2 Maneuver	244	261	-	~ 115	375	-	-	-	-	-	-	-
Stage 1	713	699	-	~ 644	607	-	-	-	-	-	-	-
Stage 2	418	434	-	~ 326	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.4	\$ 1894.1	1.3	0.5
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1306	-	-	244	261	837	115	375	911	1098	-	-
HCM Lane V/C Ratio	0.069	-	-	0.151	0.589	0.274	5.703	0.211	0.027	0.014	-	-
HCM Control Delay (s)	8	-	-	22.4	36.8	10.9	2189.7	17.1	9.1	8.3	-	-
HCM Lane LOS	A	-	-	C	E	B	F	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	3.4	1.1	71.1	0.8	0.1	0	-	-

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

HCM 6th Roundabout
1: Eastonville Rd & Rex Rd

2040 Total Traffic
AM Peak Hour

























Intersection					
Intersection Delay, s/veh	15.8				
Intersection LOS	C				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	2	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	420	759	554	275	
Demand Flow Rate, veh/h	429	774	566	280	
Vehicles Circulating, veh/h	893	271	211	843	
Vehicles Exiting, veh/h	230	506	1111	202	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	29.5	16.4	5.4	14.3	
Approach LOS	D	C	A	B	
Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	LT	R	LTR
Assumed Moves	LTR	LTR	LT	R	LTR
RT Channelized					
Lane Util	1.000	1.000	0.412	0.588	1.000
Follow-Up Headway, s	2.609	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.976	4.544	4.544	4.976
Entry Flow, veh/h	429	774	233	333	280
Cap Entry Lane, veh/h	555	1047	1172	1172	584
Entry HV Adj Factor	0.979	0.981	0.980	0.979	0.982
Flow Entry, veh/h	420	759	228	326	275
Cap Entry, veh/h	543	1027	1148	1147	573
V/C Ratio	0.773	0.740	0.199	0.284	0.479
Control Delay, s/veh	29.5	16.4	4.9	5.8	14.3
LOS	D	C	A	A	B
95th %tile Queue, veh	7	7	1	1	3

Timings

1: Eastonville Rd & Rex Rd

2040 Total Traffic

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	146	218	623	75	23	86	130	310	15	194	52
Future Volume (vph)	35	146	218	623	75	23	86	130	310	15	194	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	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	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	30.0	30.0	15.0	30.0	30.0	75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	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	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	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	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	15.4	9.2	9.2	23.8	20.2	20.2	10.8	10.8	10.8	10.8	10.8	10.8
Actuated g/C Ratio	0.34	0.20	0.20	0.53	0.45	0.45	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.07	0.41	0.45	1.00	0.10	0.03	0.33	0.31	0.52	0.05	0.46	0.13
Control Delay	6.7	19.8	6.3	49.6	11.4	1.2	18.1	16.5	5.7	14.1	18.8	5.1
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	6.7	19.8	6.3	49.6	11.4	1.2	18.1	16.5	5.7	14.1	18.8	5.1
LOS	A	B	A	D	B	A	B	B	A	B	B	A
Approach Delay		11.3			44.1			10.4			15.8	
Approach LOS		B			D			B			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 45.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 24.1



Intersection LOS: C

Intersection Capacity Utilization 73.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: Eastonville Rd & Rex Rd






 Ø2	 Ø3	 Ø4
75 s	15 s	30 s
 Ø6	 Ø7	 Ø8
75 s	15 s	30 s

HCM 6th TWSC
2: Parcel A & B & Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	461	10	13	703	18	27
Future Vol, veh/h	461	10	13	703	18	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	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	485	11	14	740	19	28

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	496
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1068
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1068
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	316	578	-	-	1068	-
HCM Lane V/C Ratio	0.06	0.049	-	-	0.013	-
HCM Control Delay (s)	17.1	11.6	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-






HCM 6th Roundabout
2: Parcels A & B & Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection			
Intersection Delay, s/veh	7.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	496	754	47
Demand Flow Rate, veh/h	506	769	48
Vehicles Circulating, veh/h	14	19	495
Vehicles Exiting, veh/h	774	524	25
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	9.1	5.0
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	506	769	48
Cap Entry Lane, veh/h	1360	1353	833
Entry HV Adj Factor	0.981	0.981	0.979
Flow Entry, veh/h	496	754	47
Cap Entry, veh/h	1334	1327	816
V/C Ratio	0.372	0.568	0.058
Control Delay, s/veh	6.1	9.1	5.0
LOS	A	A	A
95th %tile Queue, veh	2	4	0

Intersection

Int Delay, s/veh 1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	476	12	19	679	36	57
Future Vol, veh/h	476	12	19	679	36	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	517	13	21	738	39	62

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	530
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	1037
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1037
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	553	-	-	1037	-
HCM Lane V/C Ratio	0.13	0.112	-	-	0.02	-
HCM Control Delay (s)	18.7	12.3	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.4	-	-	0.1	-

HCM 6th Roundabout
3: Parcel H & Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection			
Intersection Delay, s/veh	8.1		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	530	759	101
Demand Flow Rate, veh/h	540	774	103
Vehicles Circulating, veh/h	21	40	527
Vehicles Exiting, veh/h	793	590	34
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.5	9.5	5.9
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	540	774	103
Cap Entry Lane, veh/h	1351	1325	806
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	530	759	101
Cap Entry, veh/h	1325	1299	790
V/C Ratio	0.400	0.584	0.128
Control Delay, s/veh	6.5	9.5	5.9
LOS	A	A	A
95th %tile Queue, veh	2	4	0

Intersection						
Int Delay, s/veh	2.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	509	24	38	625	73	114
Future Vol, veh/h	509	24	38	625	73	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	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	536	25	40	658	77	120
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	561	0	1274	536
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	738	-
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	-	-	1010	-	184	545
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1010	-	177	545
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	473	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.5		16.4	
HCM LOS	C					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	545	-	-	1010	-
HCM Lane V/C Ratio	0.254	0.22	-	-	0.04	-
HCM Control Delay (s)	20.9	13.5	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.8	-	-	0.1	-

HCM 6th Roundabout
4: Parcel I & Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection			
Intersection Delay, s/veh	8.2		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	561	698	197
Demand Flow Rate, veh/h	573	712	201
Vehicles Circulating, veh/h	41	79	547
Vehicles Exiting, veh/h	750	669	66
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.0	9.3	7.5
Approach LOS	A	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	573	712	201
Cap Entry Lane, veh/h	1323	1273	790
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	561	698	197
Cap Entry, veh/h	1296	1248	774
V/C Ratio	0.433	0.559	0.254
Control Delay, s/veh	7.0	9.3	7.5
LOS	A	A	A
95th %tile Queue, veh	2	4	1

Intersection

Int Delay, s/veh 4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	577	46	45	526	137	135
Future Vol, veh/h	577	46	45	526	137	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	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	607	48	47	554	144	142

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	655
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	932
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	932
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-







Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	308	496	-	-	932	-
HCM Lane V/C Ratio	0.468	0.287	-	-	0.051	-
HCM Control Delay (s)	26.6	15.1	-	-	9.1	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	2.4	1.2	-	-	0.2	-

Intersection			
Intersection Delay, s/veh	8.9		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	655	601	286
Demand Flow Rate, veh/h	668	613	292
Vehicles Circulating, veh/h	48	147	619
Vehicles Exiting, veh/h	712	764	97
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.2	8.9	10.3
Approach LOS	A	A	B
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	668	613	292
Cap Entry Lane, veh/h	1314	1188	734
Entry HV Adj Factor	0.980	0.980	0.979
Flow Entry, veh/h	655	601	286
Cap Entry, veh/h	1288	1164	719
V/C Ratio	0.508	0.516	0.398
Control Delay, s/veh	8.2	8.9	10.3
LOS	A	A	B
95th %tile Queue, veh	3	3	2

HCM 6th TWSC
6: Rex Rd & Residential Collector

2040 Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	91					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	120	592	289	163	410	283
Future Vol, veh/h	120	592	289	163	410	283
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	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	126	623	304	172	432	298
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	476	0	-	0	1179	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	875	-
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	1086	-	-	-	~ 211	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	~ 408	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1086	-	-	-	~ 187	736
Mov Cap-2 Maneuver	-	-	-	-	~ 243	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	~ 408	-
Approach	EB	WB		SB		
HCM Control Delay, s	1.5	0		242.2		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1086	-	-	-	243	736
HCM Lane V/C Ratio	0.116	-	-	-	1.776	0.405
HCM Control Delay (s)	8.8	-	-	-	\$ 400.2	13.2
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.4	-	-	-	29.1	2
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon













HCM 6th Roundabout
6: Rex Rd & Residential Collector

2040 Total Traffic
AM Peak Hour

Intersection				
Intersection Delay, s/veh	18.6			
Intersection LOS	C			
Approach	EB	WB	SB	
Entry Lanes	1	2	1	
Conflicting Circle Lanes	1	1	1	
Adj Approach Flow, veh/h	749	476	730	
Demand Flow Rate, veh/h	764	485	745	
Vehicles Circulating, veh/h	441	129	310	
Vehicles Exiting, veh/h	614	1076	304	
Ped Vol Crossing Leg, #/h	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	
Approach Delay, s/veh	29.0	4.7	17.0	
Approach LOS	D	A	C	
Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.639	0.361	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.544	4.544	4.976
Entry Flow, veh/h	764	310	175	745
Cap Entry Lane, veh/h	880	1263	1263	1006
Entry HV Adj Factor	0.980	0.980	0.983	0.980
Flow Entry, veh/h	749	304	172	730
Cap Entry, veh/h	862	1238	1241	986
V/C Ratio	0.868	0.245	0.139	0.741
Control Delay, s/veh	29.0	5.1	4.1	17.0
LOS	D	A	A	C
95th %tile Queue, veh	11	1	0	7

Timings
6: Rex Rd & Residential Collector

2040 Total Traffic
AM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	120	592	289	163	410	283
Future Volume (vph)	120	592	289	163	410	283
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	78.0	63.0	63.0	42.0	42.0
Total Split (%)	12.5%	65.0%	52.5%	52.5%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	None	None	Max	Max
Act Effect Green (s)	73.0	73.0	59.2	59.2	37.0	37.0
Actuated g/C Ratio	0.61	0.61	0.49	0.49	0.31	0.31
v/c Ratio	0.21	0.55	0.33	0.20	0.79	0.43
Control Delay	10.9	16.1	47.7	26.7	50.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	16.1	47.7	26.7	50.1	5.5
LOS	B	B	D	C	D	A
Approach Delay		15.3	40.1		31.9	
Approach LOS		B	D		C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 27.5
 Intersection Capacity Utilization 62.2%
 Analysis Period (min) 15













Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 6: Rex Rd & Residential Collector



Intersection						
Int Delay, s/veh	10.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↘	↑	↘	↗
Traffic Vol, veh/h	968	34	79	351	100	236
Future Vol, veh/h	968	34	79	351	100	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	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	1019	36	83	369	105	248
Major/Minor	Major1	Major2		Minor1		
Conflicting Flow All	0	0	1055	0	1554	1019
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	535	-
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	-	-	660	-	125	288
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	660	-	109	288
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	587	-
Approach	EB	WB		NB		
HCM Control Delay, s	0	2.1		54.8		
HCM LOS	F					
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	288	-	-	660	-
HCM Lane V/C Ratio	0.481	0.863	-	-	0.126	-
HCM Control Delay (s)	35.8	62.8	-	-	11.2	-
HCM Lane LOS	E	F	-	-	B	-
HCM 95th %tile Q(veh)	2.4	7.5	-	-	0.4	-

Intersection			
Intersection Delay, s/veh	15.1		
Intersection LOS	C		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1055	452	353
Demand Flow Rate, veh/h	1076	461	360
Vehicles Circulating, veh/h	85	107	1039
Vehicles Exiting, veh/h	483	1292	122
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.7	6.2	18.7
Approach LOS	C	A	C
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	1076	461	360
Cap Entry Lane, veh/h	1321	1297	587
Entry HV Adj Factor	0.980	0.980	0.981
Flow Entry, veh/h	1055	452	353
Cap Entry, veh/h	1295	1270	576
V/C Ratio	0.814	0.356	0.613
Control Delay, s/veh	17.7	6.2	18.7
LOS	C	A	C
95th %tile Queue, veh	10	2	4

Intersection												
Int Delay, s/veh	4.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1166	19	39	420	41	5	0	30	31	0	5
Future Vol, veh/h	19	1166	19	39	420	41	5	0	30	31	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	200	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1227	20	41	442	43	5	0	32	33	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	485	0	0	1247	0	0	1815	1834	1227	1817	1811	442
Stage 1	-	-	-	-	-	-	1267	1267	-	524	524	-
Stage 2	-	-	-	-	-	-	548	567	-	1293	1287	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1078	-	-	558	-	-	60	76	217	60	79	615
Stage 1	-	-	-	-	-	-	207	240	-	537	530	-
Stage 2	-	-	-	-	-	-	521	507	-	200	235	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1078	-	-	558	-	-	55	69	217	48	72	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	69	-	48	72	-
Stage 1	-	-	-	-	-	-	203	235	-	527	491	-
Stage 2	-	-	-	-	-	-	479	470	-	168	231	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.9			32			152.8		
HCM LOS							D			F		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	55	217	1078	-	-	558	-	-	48	615
HCM Lane V/C Ratio	0.096	0.146	0.019	-	-	0.074	-	-	0.68	0.009
HCM Control Delay (s)	77.3	24.4	8.4	-	-	12	-	-	175.7	10.9
HCM Lane LOS	F	C	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.3	0.5	0.1	-	-	0.2	-	-	2.7	0





















HCM 6th Roundabout
8: Rex Rd

2040 Total Traffic
AM Peak Hour

Intersection						
Intersection Delay, s/veh	7.2					
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	1309		545		38	39
Demand Flow Rate, veh/h	1334		556		39	40
Vehicles Circulating, veh/h	78		26		1348	514
Vehicles Exiting, veh/h	476		1361		64	68
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	8.4		4.4		9.4	4.4
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	0.470	0.530	0.469	0.531	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	627	707	261	295	39	40
Cap Entry Lane, veh/h	1256	1329	1318	1389	451	917
Entry HV Adj Factor	0.981	0.981	0.981	0.979	0.974	0.975
Flow Entry, veh/h	615	694	256	289	38	39
Cap Entry, veh/h	1232	1304	1293	1360	440	894
V/C Ratio	0.499	0.532	0.198	0.212	0.086	0.044
Control Delay, s/veh	8.3	8.5	4.5	4.4	9.4	4.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	3	3	1	1	0	0

Timings
8: C-1/C-2 & Rex Rd

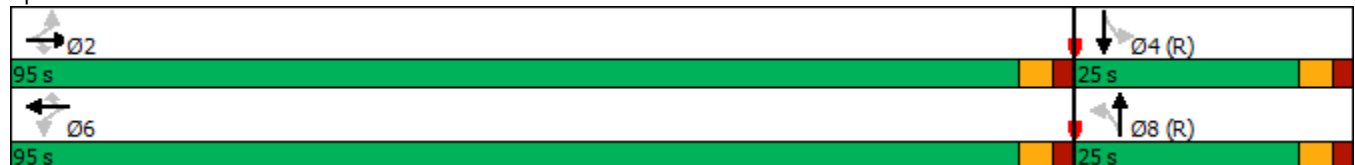
2040 Total Traffic
AM Peak Hour

										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	19	1166	19	39	420	41	5	0	31	0
Future Volume (vph)	19	1166	19	39	420	41	5	0	31	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	95.0	95.0	95.0	95.0	95.0	95.0	25.0	25.0	25.0	25.0
Total Split (%)	79.2%	79.2%	79.2%	79.2%	79.2%	79.2%	20.8%	20.8%	20.8%	20.8%
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 Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	61.5	61.5	61.5	61.5	61.5	61.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.40	0.40	0.40	0.40
v/c Ratio	0.04	0.68	0.02	0.34	0.24	0.05	0.01	0.04	0.06	0.01
Control Delay	8.2	17.5	1.6	53.6	40.2	25.3	27.8	0.1	27.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	17.5	1.6	53.6	40.2	25.3	27.8	0.1	27.2	0.0
LOS	A	B	A	D	D	C	C	A	C	A
Approach Delay		17.1			40.0			3.9		23.6
Approach LOS		B			D			A		C

Intersection Summary








Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 23.4
Intersection Capacity Utilization 49.1%
Analysis Period (min) 15
Intersection LOS: C
ICU Level of Service A

Splits and Phases: 8: C-1/C-2 & Rex Rd



Timings
9: US 24 & Rex Rd

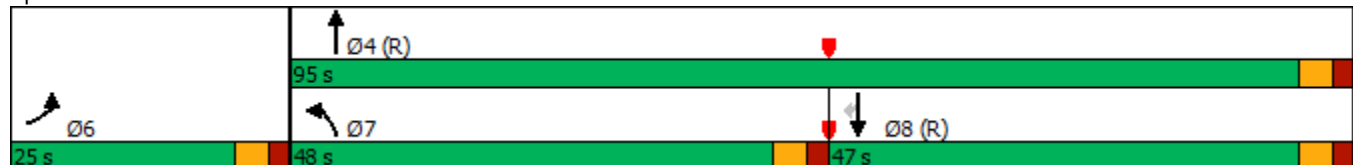
2040 Total Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	1095	418	833	1096	81
Future Volume (vph)	133	1095	418	833	1096	81
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		48.0	95.0	47.0	47.0
Total Split (%)	20.8%		40.0%	79.2%	39.2%	39.2%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effect Green (s)	20.0	120.0	20.9	90.0	64.1	64.1
Actuated g/C Ratio	0.17	1.00	0.17	0.75	0.53	0.53
v/c Ratio	0.47	0.73	0.74	0.32	0.61	0.10
Control Delay	51.3	3.0	54.3	5.3	21.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	3.0	54.3	5.3	21.7	5.1
LOS	D	A	D	A	C	A
Approach Delay	8.2			22.0	20.6	
Approach LOS	A			C	C	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 16.9
 Intersection Capacity Utilization 62.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 9: US 24 & Rex Rd








HCM 6th TWSC
10: Eastonville Rd & Parcels C

2040 Total Traffic
AM Peak Hour

Intersection

Int Delay, s/veh 3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	108	59	468	36	20	1016
Future Vol, veh/h	108	59	468	36	20	1016
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
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	114	62	493	38	21	1069

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1604	493	0
Stage 1	493	-	-
Stage 2	1111	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	116	576	-
Stage 1	614	-	-
Stage 2	315	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	114	576	-
Mov Cap-2 Maneuver	224	-	-
Stage 1	602	-	-
Stage 2	315	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.8	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	1036
HCM Lane V/C Ratio	-	-	0.615	0.02
HCM Control Delay (s)	-	-	35.8	8.5
HCM Lane LOS	-	-	E	A
HCM 95th %tile Q(veh)	-	-	3.8	0.1

Intersection			
Intersection Delay, s/veh	15.6		
Intersection LOS	C		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	176	531	1090
Demand Flow Rate, veh/h	179	542	1111
Vehicles Circulating, veh/h	503	21	116
Vehicles Exiting, veh/h	60	1206	566
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.9	6.2	21.7
Approach LOS	A	A	C
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	179	542	1111
Cap Entry Lane, veh/h	926	1395	1287
Entry HV Adj Factor	0.983	0.980	0.981
Flow Entry, veh/h	176	531	1090
Cap Entry, veh/h	910	1367	1262
V/C Ratio	0.193	0.389	0.863
Control Delay, s/veh	5.9	6.2	21.7
LOS	A	A	C
95th %tile Queue, veh	1	2	12

HCM 6th TWSC
11: Eastonville Rd & Parcels E & F







2040 Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↑	↑	Y	↑
Traffic Vol, veh/h	55	29	475	18	10	1114
Future Vol, veh/h	55	29	475	18	10	1114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	34	559	21	12	1311
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1894	559	0	0	580	0
Stage 1	559	-	-	-	-	-
Stage 2	1335	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	77	529	-	-	994	-
Stage 1	572	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	76	529	-	-	994	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	31.8	0	0.1			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	231	994	-	
HCM Lane V/C Ratio	-	-	0.428	0.012	-	
HCM Control Delay (s)	-	-	31.8	8.7	-	
HCM Lane LOS	-	-	D	A	-	
HCM 95th %tile Q(veh)	-	-	2	0	-	

Intersection			
Intersection Delay, s/veh	39.4		
Intersection LOS	E		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	99	580	1323
Demand Flow Rate, veh/h	101	591	1349
Vehicles Circulating, veh/h	570	12	66
Vehicles Exiting, veh/h	33	1403	605
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	6.9	56.1
Approach LOS	A	A	F
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	101	591	1349
Cap Entry Lane, veh/h	772	1363	1290
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	99	580	1323
Cap Entry, veh/h	756	1337	1265
V/C Ratio	0.131	0.434	1.046
Control Delay, s/veh	6.1	6.9	56.1
LOS	A	A	F
95th %tile Queue, veh	0	2	26

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

2040 Total Traffic
AM Peak Hour

Intersection						
Int Delay, s/veh	24.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	275	158	417	1093	168
Future Vol, veh/h	85	275	158	417	1093	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
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	89	289	166	439	1151	177

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1922	1151	1328	0	-	0
Stage 1	1151	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 74	~ 241	520	-	-	-
Stage 1	301	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 50	~ 241	520	-	-	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	205	-	-	-	-	-
Stage 2	456	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	144.7	4.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	520	-	132	241	-	-
HCM Lane V/C Ratio	0.32	-	0.678	1.201	-	-
HCM Control Delay (s)	15.1	-	76.3	165.8	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	1.4	-	3.7	13.9	-	-

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













HCM 6th Roundabout
12: Eastonville Rd & Londonderry Dr

2040 Total Traffic
AM Peak Hour

Intersection						
Intersection Delay, s/veh	9.8					
Intersection LOS	A					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	378		605		1328	
Demand Flow Rate, veh/h	386		617		1355	
Vehicles Circulating, veh/h	1174		91		169	
Vehicles Exiting, veh/h	350		1469		539	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	16.7		5.4		9.9	
Approach LOS	C		A		A	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.236	0.764	0.274	0.726	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	91	295	169	448	637	718
Cap Entry Lane, veh/h	458	523	1241	1314	1155	1230
Entry HV Adj Factor	0.978	0.980	0.982	0.980	0.980	0.980
Flow Entry, veh/h	89	289	166	439	624	704
Cap Entry, veh/h	448	513	1219	1289	1132	1206
V/C Ratio	0.199	0.564	0.136	0.341	0.551	0.584
Control Delay, s/veh	11.0	18.5	4.1	5.9	9.8	10.0
LOS	B	C	A	A	A	B
95th %tile Queue, veh	1	3	0	2	3	4

Timings
12: Eastonville Rd & Londonderry Dr

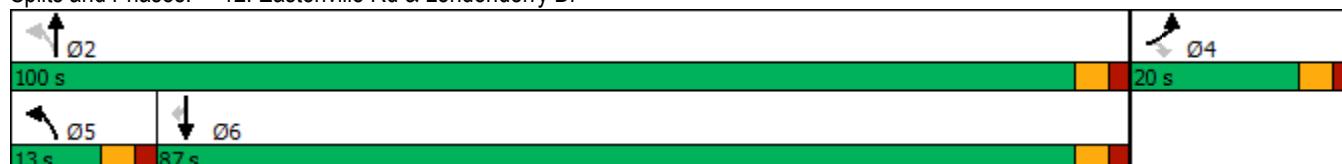
2040 Total Traffic
AM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	275	158	417	1093	168
Future Volume (vph)	85	275	158	417	1093	168
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	13.0	100.0	87.0	87.0
Total Split (%)	16.7%	16.7%	10.8%	83.3%	72.5%	72.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effect Green (s)	10.0	10.0	43.3	43.3	30.0	30.0
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.47	0.47
v/c Ratio	0.32	0.69	0.46	0.18	0.69	0.21
Control Delay	29.3	18.7	9.7	4.1	15.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	18.7	9.7	4.1	15.6	2.4
LOS	C	B	A	A	B	A
Approach Delay	21.2			5.6	13.8	
Approach LOS	C			A	B	

Intersection Summary

























Cycle Length: 120
 Actuated Cycle Length: 63.7
 Natural Cycle: 60
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.69
 Intersection Signal Delay: 12.9
 Intersection LOS: B
 Intersection Capacity Utilization 56.2%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr



Timings
13: Eastonville Rd & Stapleton Dr

2040 Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Future Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	47.0	47.0	12.0	39.0	39.0	10.0	51.0	51.0	10.0	51.0	51.0
Total Split (%)	16.7%	39.2%	39.2%	10.0%	32.5%	32.5%	8.3%	42.5%	42.5%	8.3%	42.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	12.9	38.4	38.4	42.8	33.6	33.6	48.2	41.1	41.1	48.2	41.1	41.1
Actuated g/C Ratio	0.12	0.34	0.34	0.38	0.30	0.30	0.43	0.37	0.37	0.43	0.37	0.37
v/c Ratio	0.60	0.87	0.35	0.78	0.82	0.21	0.64	0.37	0.27	0.74	0.88	0.62
Control Delay	54.9	43.5	7.8	50.1	45.1	5.7	36.2	28.0	4.5	35.4	48.5	14.6
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	54.9	43.5	7.8	50.1	45.1	5.7	36.2	28.0	4.5	35.4	48.5	14.6
LOS	D	D	A	D	D	A	D	C	A	D	D	B
Approach Delay		39.7			41.7			21.6			34.0	
Approach LOS		D			D			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 111.9

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 36.3

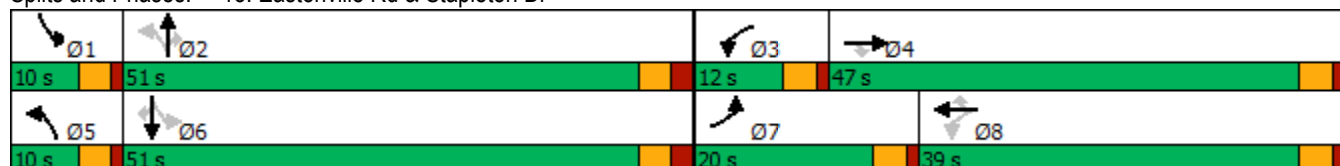
Intersection LOS: D

Intersection Capacity Utilization 86.4%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings 13: Eastonville Rd & Stapleton Dr

2040 Total Traffic
AM Peak Hour 2 NB/SB TH

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Future Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	24.0	62.0	62.0	12.0	50.0	50.0	18.0	32.0	32.0	14.0	28.0	28.0
Total Split (%)	20.0%	51.7%	51.7%	10.0%	41.7%	41.7%	15.0%	26.7%	26.7%	11.7%	23.3%	23.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	12.1	37.4	37.4	42.1	33.2	33.2	33.4	22.1	22.1	33.2	22.0	22.0
Actuated g/C Ratio	0.13	0.39	0.39	0.44	0.35	0.35	0.35	0.23	0.23	0.35	0.23	0.23
v/c Ratio	0.55	0.76	0.31	0.65	0.72	0.19	0.40	0.31	0.38	0.75	0.74	0.76
Control Delay	46.1	29.5	3.6	29.3	31.6	4.4	25.5	33.0	8.4	38.7	42.4	20.2
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	46.1	29.5	3.6	29.3	31.6	4.4	25.5	33.0	8.4	38.7	42.4	20.2
LOS	D	C	A	C	C	A	C	C	A	D	D	C
Approach Delay		28.1			28.5			23.0			34.0	
Approach LOS		C			C			C			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 96

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 29.4

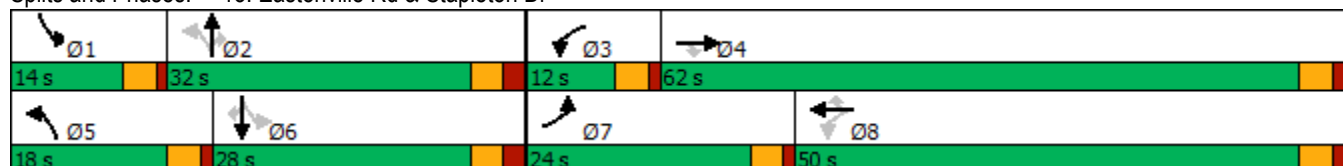
Intersection LOS: C

Intersection Capacity Utilization 74.7%

ICU Level of Service D

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings
14: US 24 & Stapleton Dr

2040 Total Traffic
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	493	680	200	487	161	356	651	175	299	1632	265
Future Volume (vph)	442	493	680	200	487	161	356	651	175	299	1632	265
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Detector Phase	7	4		3	8	8	5	2	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	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	11.0
Total Split (s)	25.0	31.0		19.0	25.0	25.0	22.0	38.0	38.0	22.0	38.0	38.0
Total Split (%)	22.7%	28.2%		17.3%	22.7%	22.7%	20.0%	34.5%	34.5%	20.0%	34.5%	34.5%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	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	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effect Green (s)	18.1	25.3	105.6	11.6	18.8	18.8	15.5	33.1	33.1	14.5	32.1	32.1
Actuated g/C Ratio	0.17	0.24	1.00	0.11	0.18	0.18	0.15	0.31	0.31	0.14	0.30	0.30
v/c Ratio	0.79	0.61	0.45	0.56	0.82	0.39	0.75	0.62	0.30	0.67	1.55	0.41
Control Delay	52.9	39.7	0.9	51.3	53.7	8.0	53.6	34.8	5.7	51.2	279.4	5.6
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	52.9	39.7	0.9	51.3	53.7	8.0	53.6	34.8	5.7	51.2	279.4	5.6
LOS	D	D	A	D	D	A	D	C	A	D	F	A
Approach Delay		27.0			44.5			36.2			213.8	
Approach LOS		C			D			D			F	

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 105.6

Natural Cycle: 130

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.55

Intersection Signal Delay: 100.6

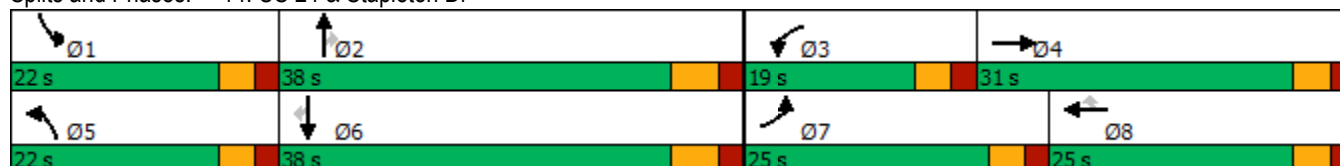
Intersection LOS: F

Intersection Capacity Utilization 98.8%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr



HCM 6th TWSC
1: Eastonville Rd & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection												
Int Delay, s/veh	22.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	41	148	96	441	119	17	161	139	645	25	202	67
Future Vol, veh/h	41	148	96	441	119	17	161	139	645	25	202	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	156	101	464	125	18	169	146	679	26	213	71

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1160	1428	213	913	820	146	284	0	0	825	0	0
Stage 1	265	265	-	484	484	-	-	-	-	-	-	-
Stage 2	895	1163	-	429	336	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	172	~ 135	827	~ 254	310	901	1278	-	-	805	-	-
Stage 1	740	689	-	564	552	-	-	-	-	-	-	-
Stage 2	335	269	-	604	642	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	93	~ 113	827	-	260	901	1278	-	-	805	-	-
Mov Cap-2 Maneuver	93	~ 113	-	-	260	-	-	-	-	-	-	-
Stage 1	642	667	-	490	479	-	-	-	-	-	-	-
Stage 2	210	233	-	~ 393	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	162.7		1.4	0.8
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	93	113	827	-	260	901	805	-	-
HCM Lane V/C Ratio	0.133	-	-	0.464	1.379	0.122	-	0.482	0.02	0.033	-	-
HCM Control Delay (s)	8.2	-	-	73.5	286.4	10	-	31.1	9.1	9.6	-	-
HCM Lane LOS	A	-	-	F	F	B	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	2	10.8	0.4	-	2.4	0.1	0.1	-	-

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

HCM 6th Roundabout
1: Eastonville Rd & Rex Rd

2040 Total Traffic
PM Peak Hour

























Intersection					
Intersection Delay, s/veh	11.7				
Intersection LOS	B				
Approach	EB	WB	NB	SB	
Entry Lanes	1	1	2	1	
Conflicting Circle Lanes	1	1	1	1	
Adj Approach Flow, veh/h	300	607	994	310	
Demand Flow Rate, veh/h	306	619	1014	316	
Vehicles Circulating, veh/h	717	365	230	772	
Vehicles Exiting, veh/h	371	879	793	211	
Ped Vol Crossing Leg, #/h	0	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	1.000	
Approach Delay, s/veh	12.5	14.0	9.3	14.1	
Approach LOS	B	B	A	B	
Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	LT	R	LTR
Assumed Moves	LTR	LTR	LT	R	LTR
RT Channelized					
Lane Util	1.000	1.000	0.317	0.683	1.000
Follow-Up Headway, s	2.609	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.976	4.544	4.544	4.976
Entry Flow, veh/h	306	619	321	693	316
Cap Entry Lane, veh/h	664	951	1152	1152	628
Entry HV Adj Factor	0.980	0.981	0.982	0.980	0.980
Flow Entry, veh/h	300	607	315	679	310
Cap Entry, veh/h	651	933	1131	1129	615
V/C Ratio	0.461	0.651	0.279	0.602	0.503
Control Delay, s/veh	12.5	14.0	5.8	10.9	14.1
LOS	B	B	A	B	B
95th %tile Queue, veh	2	5	1	4	3

Timings

1: Eastonville Rd & Rex Rd

2040 Total Traffic

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	148	96	441	119	17	161	139	645	25	202	67
Future Volume (vph)	41	148	96	441	119	17	161	139	645	25	202	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	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	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	30.0	30.0	15.0	30.0	30.0	75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	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	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	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	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	16.4	9.9	9.9	24.6	21.2	21.2	16.8	16.8	16.8	16.8	16.8	16.8
Actuated g/C Ratio	0.31	0.19	0.19	0.47	0.40	0.40	0.32	0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.09	0.44	0.27	0.79	0.17	0.03	0.46	0.24	0.74	0.07	0.36	0.13
Control Delay	10.5	25.1	7.6	25.8	16.3	0.1	18.4	13.9	7.9	12.3	15.2	4.2
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	10.5	25.1	7.6	25.8	16.3	0.1	18.4	13.9	7.9	12.3	15.2	4.2
LOS	B	C	A	C	B	A	B	B	A	B	B	A
Approach Delay		17.1			23.1			10.6			12.4	
Approach LOS		B			C			B			B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 52.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 15.2

Intersection LOS: B

Intersection Capacity Utilization 68.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Eastonville Rd & Rex Rd








HCM 6th TWSC
2: Parcel A & B & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	825	21	29	505	15	20
Future Vol, veh/h	825	21	29	505	15	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	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	868	22	31	532	16	21

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	890
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	761
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	761
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	263	347	-	-	761	-
HCM Lane V/C Ratio	0.06	0.061	-	-	0.04	-
HCM Control Delay (s)	19.6	16	-	-	9.9	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.1	-

HCM 6th Roundabout
2: Parcels A & B & Rex Rd

2040 Total Traffic
PM Peak Hour






Intersection			
Intersection Delay, s/veh	9.8		
Intersection LOS	A		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	890	563	37
Demand Flow Rate, veh/h	907	575	37
Vehicles Circulating, veh/h	32	16	885
Vehicles Exiting, veh/h	559	906	54
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.7	6.8	7.2
Approach LOS	B	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	907	575	37
Cap Entry Lane, veh/h	1336	1358	560
Entry HV Adj Factor	0.981	0.980	1.000
Flow Entry, veh/h	890	563	37
Cap Entry, veh/h	1310	1330	560
V/C Ratio	0.679	0.424	0.066
Control Delay, s/veh	11.7	6.8	7.2
LOS	B	A	A
95th %tile Queue, veh	6	2	0

HCM 6th TWSC
3: Parcel H & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	807	38	59	512	22	35
Future Vol, veh/h	807	38	59	512	22	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	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	849	40	62	539	23	37

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	889
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	762
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	762
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	351	-	-	762	-
HCM Lane V/C Ratio	0.096	0.105	-	-	0.082	-
HCM Control Delay (s)	21.5	16.5	-	-	10.1	-
HCM Lane LOS	C	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.3	-

HCM 6th Roundabout
3: Parcel H & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection			
Intersection Delay, s/veh	10.4		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	889	601	60
Demand Flow Rate, veh/h	907	613	61
Vehicles Circulating, veh/h	63	23	866
Vehicles Exiting, veh/h	573	904	104
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.7	7.2	7.7
Approach LOS	B	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	907	613	61
Cap Entry Lane, veh/h	1294	1348	571
Entry HV Adj Factor	0.980	0.981	0.984
Flow Entry, veh/h	889	601	60
Cap Entry, veh/h	1268	1322	561
V/C Ratio	0.701	0.455	0.107
Control Delay, s/veh	12.7	7.2	7.7
LOS	B	A	A
95th %tile Queue, veh	6	2	0

HCM 6th TWSC
4: Parcel I & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	766	76	119	526	45	70
Future Vol, veh/h	766	76	119	526	45	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	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	806	80	125	554	47	74

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	886
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	764
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	764
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	198	382	-	-	764	-
HCM Lane V/C Ratio	0.239	0.193	-	-	0.164	-
HCM Control Delay (s)	28.8	16.7	-	-	10.6	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	0.7	-	-	0.6	-

HCM 6th Roundabout
4: Parcel I & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection			
Intersection Delay, s/veh	12.0		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	886	679	121
Demand Flow Rate, veh/h	904	693	123
Vehicles Circulating, veh/h	127	48	822
Vehicles Exiting, veh/h	613	897	209
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.0	8.5	8.7
Approach LOS	C	A	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	904	693	123
Cap Entry Lane, veh/h	1212	1314	597
Entry HV Adj Factor	0.980	0.980	0.984
Flow Entry, veh/h	886	679	121
Cap Entry, veh/h	1188	1287	587
V/C Ratio	0.746	0.527	0.206
Control Delay, s/veh	15.0	8.5	8.7
LOS	C	A	A
95th %tile Queue, veh	7	3	1

Intersection						
Int Delay, s/veh	3.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↗	↖	↑	↖	↗
Traffic Vol, veh/h	693	143	142	561	84	83
Future Vol, veh/h	693	143	142	561	84	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	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	729	151	149	591	88	87
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	880	0	1618	729
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	889	-
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	-	-	768	-	114	423
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	768	-	92	423
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	402	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		2.2		29.6	
HCM LOS					D	
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	423	-	-	768	-
HCM Lane V/C Ratio	0.494	0.207	-	-	0.195	-
HCM Control Delay (s)	43.3	15.7	-	-	10.8	-
HCM Lane LOS	E	C	-	-	B	-
HCM 95th %tile Q(veh)	2.4	0.8	-	-	0.7	-







HCM 6th Roundabout
5: I & J & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection			
Intersection Delay, s/veh	12.9		
Intersection LOS	B		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	880	740	175
Demand Flow Rate, veh/h	898	755	179
Vehicles Circulating, veh/h	152	90	744
Vehicles Exiting, veh/h	693	833	306
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.0	10.2	9.3
Approach LOS	C	B	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	898	755	179
Cap Entry Lane, veh/h	1182	1259	646
Entry HV Adj Factor	0.980	0.980	0.978
Flow Entry, veh/h	880	740	175
Cap Entry, veh/h	1159	1234	632
V/C Ratio	0.760	0.600	0.277
Control Delay, s/veh	16.0	10.2	9.3
LOS	C	B	A
95th %tile Queue, veh	8	4	1

HCM 6th TWSC
6: Rex Rd & Residential Collector

2040 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	173.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	250	526	554	383	226	149
Future Vol, veh/h	250	526	554	383	226	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	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	263	554	583	403	238	157
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	986	0	-	0	1663	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	1080	-
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	701	-	-	-	~ 107	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	326	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	701	-	-	-	~ 67	512
Mov Cap-2 Maneuver	-	-	-	-	~ 57	-
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	326	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.2	0		\$ 955.2		
HCM LOS	F					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	701	-	-	-	57	512
HCM Lane V/C Ratio	0.375	-	-	-	4.174	0.306
HCM Control Delay (s)	13.2	-	-	-	\$ 1575	15.1
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	1.7	-	-	-	26	1.3
Notes						
~: Volume exceeds capacity		\$: Delay exceeds 300s		+: Computation Not Defined		*: All major volume in platoon













HCM 6th Roundabout
6: Rex Rd & Residential Collector

2040 Total Traffic
PM Peak Hour

Intersection				
Intersection Delay, s/veh	12.8			
Intersection LOS	B			
Approach	EB	WB	SB	
Entry Lanes	1	2	1	
Conflicting Circle Lanes	1	1	1	
Adj Approach Flow, veh/h	817	986	395	
Demand Flow Rate, veh/h	833	1006	403	
Vehicles Circulating, veh/h	243	268	595	
Vehicles Exiting, veh/h	755	808	679	
Ped Vol Crossing Leg, #/h	0	0	0	
Ped Cap Adj	1.000	1.000	1.000	
Approach Delay, s/veh	17.8	8.6	13.1	
Approach LOS	C	A	B	
Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.591	0.409	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.544	4.544	4.976
Entry Flow, veh/h	833	595	411	403
Cap Entry Lane, veh/h	1077	1113	1113	752
Entry HV Adj Factor	0.981	0.980	0.981	0.980
Flow Entry, veh/h	817	583	403	395
Cap Entry, veh/h	1056	1091	1091	737
V/C Ratio	0.773	0.535	0.369	0.536
Control Delay, s/veh	17.8	9.7	7.1	13.1
LOS	C	A	A	B
95th %tile Queue, veh	8	3	2	3

Timings
6: Rex Rd & Residential Collector

2040 Total Traffic
PM Peak Hour

						
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	250	526	554	383	226	149
Future Volume (vph)	250	526	554	383	226	149
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	90.0	75.0	75.0	30.0	30.0
Total Split (%)	12.5%	75.0%	62.5%	62.5%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	None	None	Max	Max
Act Effect Green (s)	85.0	85.0	70.3	70.3	25.0	25.0
Actuated g/C Ratio	0.71	0.71	0.59	0.59	0.21	0.21
v/c Ratio	0.53	0.42	0.53	0.37	0.65	0.35
Control Delay	10.1	8.4	37.7	18.9	52.7	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	8.4	37.7	18.9	52.7	8.3
LOS	B	A	D	B	D	A
Approach Delay		9.0	30.0		35.1	
Approach LOS		A	C		D	

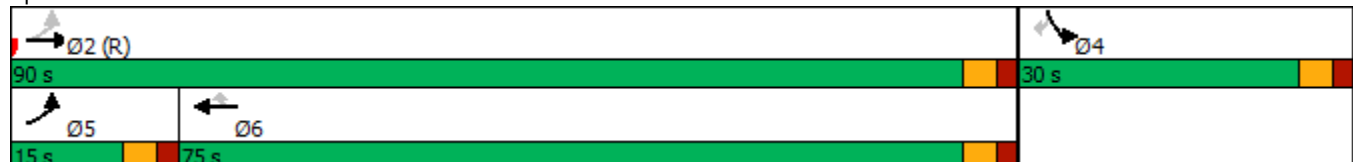
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.65
 Intersection Signal Delay: 23.1
 Intersection Capacity Utilization 68.0%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 6: Rex Rd & Residential Collector



Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑	↑	↑	↑	↑
Traffic Vol, veh/h	620	105	246	932	62	145
Future Vol, veh/h	620	105	246	932	62	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	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	653	111	259	981	65	153











Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	764	0	2152	653
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	1499	-
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	-	-	849	-	~ 53	467
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	204	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	849	-	~ 37	467
Mov Cap-2 Maneuver	-	-	-	-	~ -84	-
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	204	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	+	467	-	-	849	-
HCM Lane V/C Ratio	-	0.327	-	-	0.305	-
HCM Control Delay (s)	-	16.4	-	-	11.1	-
HCM Lane LOS	-	C	-	-	B	-
HCM 95th %tile Q(veh)	-	1.4	-	-	1.3	-

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

Intersection			
Intersection Delay, s/veh	22.6		
Intersection LOS	C		
Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	764	1240	218
Demand Flow Rate, veh/h	779	1265	222
Vehicles Circulating, veh/h	264	66	666
Vehicles Exiting, veh/h	1067	822	377
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	13.4	30.9	7.6
Approach LOS	B	D	A
Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	779	1265	222
Cap Entry Lane, veh/h	1135	1343	806
Entry HV Adj Factor	0.981	0.981	0.982
Flow Entry, veh/h	764	1240	218
Cap Entry, veh/h	1113	1316	792
V/C Ratio	0.687	0.942	0.275
Control Delay, s/veh	13.4	30.9	7.6
LOS	B	D	A
95th %tile Queue, veh	6	17	1

Intersection												
Int Delay, s/veh	170.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	698	32	121	1087	131	44	0	104	113	0	48
Future Vol, veh/h	35	698	32	121	1087	131	44	0	104	113	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	200	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	735	34	127	1144	138	46	0	109	119	0	51
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1282	0	0	769	0	0	2302	2345	735	2279	2241	1144
Stage 1	-	-	-	-	-	-	809	809	-	1398	1398	-
Stage 2	-	-	-	-	-	-	1493	1536	-	881	843	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	541	-	-	845	-	-	~ 27	36	420	~ 28	42	243
Stage 1	-	-	-	-	-	-	374	394	-	174	207	-
Stage 2	-	-	-	-	-	-	154	178	-	341	380	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	541	-	-	845	-	-	~ 18	29	420	~ 17	33	243
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 18	29	-	~ 17	33	-
Stage 1	-	-	-	-	-	-	349	367	-	162	176	-
Stage 2	-	-	-	-	-	-	104	151	-	235	354	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.6			0.9			\$ 355.4			\$ 2213.2		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	18	420	541	-	-	845	-	-	17	243		
HCM Lane V/C Ratio	2.573	0.261	0.068	-	-	0.151	-	-	6.997	0.208		
HCM Control Delay (s)	\$ 1156.3	16.6	12.1	-	-	10	-	-	\$ 3143.2	23.7		
HCM Lane LOS	F	C	B	-	-	B	-	-	F	C		
HCM 95th %tile Q(veh)	6.3	1	0.2	-	-	0.5	-	-	15.6	0.8		
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			





















HCM 6th Roundabout
8: C-1/C-2 & Rex Rd

2040 Total Traffic
PM Peak Hour

Intersection						
Intersection Delay, s/veh	8.9					
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	806		1409		155	170
Demand Flow Rate, veh/h	823		1438		158	173
Vehicles Circulating, veh/h	251		85		909	1344
Vehicles Exiting, veh/h	1266		982		165	179
Ped Vol Crossing Leg, #/h	0		0		0	0
Ped Cap Adj	1.000		1.000		1.000	1.000
Approach Delay, s/veh	7.1		9.2		8.6	14.9
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	387	436	676	762	158	173
Cap Entry Lane, veh/h	1072	1147	1248	1321	656	453
Entry HV Adj Factor	0.979	0.980	0.980	0.980	0.981	0.983
Flow Entry, veh/h	379	427	662	747	155	170
Cap Entry, veh/h	1049	1124	1223	1295	643	445
V/C Ratio	0.361	0.380	0.542	0.577	0.241	0.382
Control Delay, s/veh	7.2	7.1	9.1	9.4	8.6	14.9
LOS	A	A	A	A	A	B
95th %tile Queue, veh	2	2	3	4	1	2

Timings
8: C-1/C-2 & Rex Rd

2040 Total Traffic
PM Peak Hour

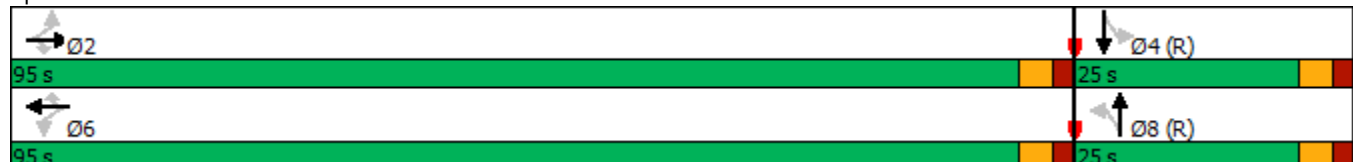
										
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	35	698	32	121	1087	131	44	0	113	0
Future Volume (vph)	35	698	32	121	1087	131	44	0	113	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	95.0	95.0	95.0	95.0	95.0	95.0	25.0	25.0	25.0	25.0
Total Split (%)	79.2%	79.2%	79.2%	79.2%	79.2%	79.2%	20.8%	20.8%	20.8%	20.8%
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 Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effect Green (s)	58.4	58.4	58.4	58.4	58.4	58.4	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.49	0.49	0.49	0.49	0.49	0.49	0.43	0.43	0.43	0.43
v/c Ratio	0.30	0.43	0.04	0.47	0.66	0.16	0.08	0.13	0.22	0.07
Control Delay	17.4	15.2	1.6	42.0	44.3	17.3	25.4	0.3	26.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	15.2	1.6	42.0	44.6	17.3	25.4	0.3	26.3	0.2
LOS	B	B	A	D	D	B	C	A	C	A
Approach Delay		14.7			41.7			7.8		18.5
Approach LOS		B			D			A		B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.66
 Intersection Signal Delay: 29.5
 Intersection Capacity Utilization 59.6%
 Analysis Period (min) 15













Intersection LOS: C
 ICU Level of Service B

Splits and Phases: 8: C-1/C-2 & Rex Rd



Timings
9: US 24 & Rex Rd

2040 Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR						
Lane Configurations												
Traffic Volume (vph)	148	767	1179	1044	980	160						
Future Volume (vph)	148	767	1179	1044	980	160						
Turn Type	Prot	Free	Prot	NA	NA	Perm						
Protected Phases	6		7	4	8							
Permitted Phases		Free				8						
Detector Phase	6		7	4	8	8						
Switch Phase												
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0						
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0						
Total Split (s)	25.0		54.0	95.0	41.0	41.0						
Total Split (%)	20.8%		45.0%	79.2%	34.2%	34.2%						
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0						
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0						
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0						
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0						
Lead/Lag			Lead		Lag	Lag						
Lead-Lag Optimize?			Yes		Yes	Yes						
Recall Mode	Max		None	C-Max	C-Max	C-Max						
Act Effect Green (s)	20.0	120.0	47.3	90.0	37.7	37.7						
Actuated g/C Ratio	0.17	1.00	0.39	0.75	0.31	0.31						
v/c Ratio	0.53	0.51	0.92	0.40	0.93	0.28						
Control Delay	53.0	1.2	46.1	5.9	55.0	8.4						
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0						
Total Delay	53.0	1.2	46.1	5.9	55.0	8.4						
LOS	D	A	D	A	D	A						
Approach Delay	9.6			27.5	48.4							
Approach LOS	A			C	D							

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 29.3
 Intersection Capacity Utilization 81.4%
 Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service D

Splits and Phases: 9: US 24 & Rex Rd








HCM 6th TWSC
10: Eastonville Rd & Parcels C

2040 Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	36	945	112	62	675
Future Vol, veh/h	66	36	945	112	62	675
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
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	69	38	995	118	65	711

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1836	995	0
Stage 1	995	-	-
Stage 2	841	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	83	297	-
Stage 1	358	-	-
Stage 2	423	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	74	297	-
Mov Cap-2 Maneuver	188	-	-
Stage 1	321	-	-
Stage 2	423	-	-






Approach	WB	NB	SB
HCM Control Delay, s	37.1	0	1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	627
HCM Lane V/C Ratio	-	-	0.497	0.104
HCM Control Delay (s)	-	-	37.1	11.4
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	2.5	0.3

Intersection			
Intersection Delay, s/veh	15.1		
Intersection LOS	C		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	107	1113	776
Demand Flow Rate, veh/h	109	1135	791
Vehicles Circulating, veh/h	1015	66	70
Vehicles Exiting, veh/h	186	795	1054
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.4	19.6	9.6
Approach LOS	A	C	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	109	1135	791
Cap Entry Lane, veh/h	599	1343	1338
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	107	1113	776
Cap Entry, veh/h	588	1317	1312
V/C Ratio	0.182	0.845	0.591
Control Delay, s/veh	8.4	19.6	9.6
LOS	A	C	A
95th %tile Queue, veh	1	11	4

HCM 6th TWSC
11: Eastonville Rd & Parcels E & F







2040 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	18	1040	57	32	709
Future Vol, veh/h	34	18	1040	57	32	709
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
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	36	19	1095	60	34	746
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1909	1095	0	0	1155	0
Stage 1	1095	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	75	260	-	-	605	-
Stage 1	321	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	71	260	-	-	605	-
Mov Cap-2 Maneuver	189	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	28.2	0	0.5			
HCM LOS	D					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	209	605	-	
HCM Lane V/C Ratio	-	-	0.262	0.056	-	
HCM Control Delay (s)	-	-	28.2	11.3	-	
HCM Lane LOS	-	-	D	B	-	
HCM 95th %tile Q(veh)	-	-	1	0.2	-	

Intersection			
Intersection Delay, s/veh	17.7		
Intersection LOS	C		
Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	55	1155	780
Demand Flow Rate, veh/h	56	1178	796
Vehicles Circulating, veh/h	1117	35	37
Vehicles Exiting, veh/h	96	798	1136
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	23.3	9.8
Approach LOS	B	C	A
Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	56	1178	796
Cap Entry Lane, veh/h	442	1331	1329
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	55	1155	780
Cap Entry, veh/h	434	1306	1302
V/C Ratio	0.127	0.885	0.599
Control Delay, s/veh	10.1	23.3	9.8
LOS	B	C	A
95th %tile Queue, veh	0	13	4

HCM 6th TWSC
12: Eastonville Rd & Londonderry Dr

2040 Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	168	177	307	1025	668	112
Future Vol, veh/h	168	177	307	1025	668	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
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	177	186	323	1079	703	118
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2428	703	821	0	-	0
Stage 1	703	-	-	-	-	-
Stage 2	1725	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 35	438	808	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	~ 158	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	438	808	-	-	-
Mov Cap-2 Maneuver	~ 510	-	-	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	~ 158	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s		2.9		0		
HCM LOS	-					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	808	-	+	438	-	-
HCM Lane V/C Ratio	0.4	-	-	0.425	-	-
HCM Control Delay (s)	12.4	-	-	19.2	-	-
HCM Lane LOS	B	-	-	C	-	-
HCM 95th %tile Q(veh)	1.9	-	-	2.1	-	-
Notes						
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon						













HCM 6th Roundabout
12: Eastonville Rd & Londonderry Dr

2040 Total Traffic
PM Peak Hour

Intersection						
Intersection Delay, s/veh	15.7					
Intersection LOS	C					
Approach	EB		NB		SB	
Entry Lanes	2		2		2	
Conflicting Circle Lanes	2		2		2	
Adj Approach Flow, veh/h	363		1402		821	
Demand Flow Rate, veh/h	371		1430		837	
Vehicles Circulating, veh/h	717		181		329	
Vehicles Exiting, veh/h	449		907		1282	
Ped Vol Crossing Leg, #/h	0		0		0	
Ped Cap Adj	1.000		1.000		1.000	
Approach Delay, s/veh	8.0		22.2		7.9	
Approach LOS	A		C		A	
Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.488	0.512	0.230	0.770	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	181	190	329	1101	393	444
Cap Entry Lane, veh/h	698	772	1143	1218	997	1074
Entry HV Adj Factor	0.978	0.979	0.982	0.980	0.982	0.980
Flow Entry, veh/h	177	186	323	1079	386	435
Cap Entry, veh/h	683	756	1122	1194	979	1052
V/C Ratio	0.259	0.246	0.288	0.904	0.394	0.414
Control Delay, s/veh	8.4	7.5	5.9	27.1	8.0	7.9
LOS	A	A	A	D	A	A
95th %tile Queue, veh	1	1	1	14	2	2

Timings 12: Eastonville Rd & Londonderry Dr

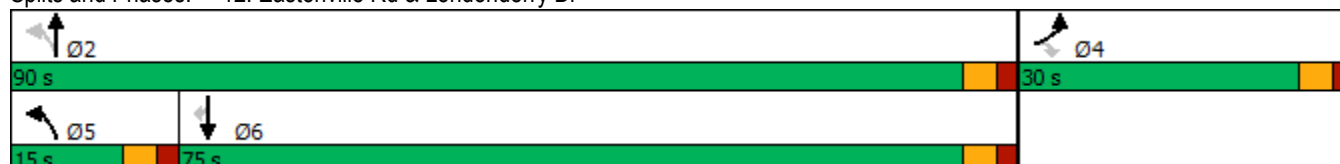
2040 Total Traffic
PM Peak Hour

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	168	177	307	1025	668	112
Future Volume (vph)	168	177	307	1025	668	112
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (s)	30.0	30.0	15.0	90.0	75.0	75.0
Total Split (%)	25.0%	25.0%	12.5%	75.0%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effect Green (s)	11.0	11.0	33.9	33.9	18.6	18.6
Actuated g/C Ratio	0.20	0.20	0.62	0.62	0.34	0.34
v/c Ratio	0.50	0.40	0.63	0.50	0.59	0.19
Control Delay	26.1	6.9	12.5	7.0	17.3	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	6.9	12.5	7.0	17.3	4.0
LOS	C	A	B	A	B	A
Approach Delay	16.2			8.3	15.4	
Approach LOS	B			A	B	

Intersection Summary





























Cycle Length: 120
Actuated Cycle Length: 55
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 11.6
Intersection LOS: B
Intersection Capacity Utilization 57.3%
ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr



Timings
13: Eastonville Rd & Stapleton Dr

2040 Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 						 	
Traffic Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Future Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	21.0	47.0	47.0	19.0	45.0	45.0	16.0	44.0	44.0	10.0	38.0	38.0
Total Split (%)	17.5%	39.2%	39.2%	15.8%	37.5%	37.5%	13.3%	36.7%	36.7%	8.3%	31.7%	31.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	17.0	44.6	44.6	53.4	40.0	40.0	50.0	39.0	39.0	40.0	33.0	33.0
Actuated g/C Ratio	0.14	0.37	0.37	0.44	0.33	0.33	0.42	0.32	0.32	0.33	0.28	0.28
v/c Ratio	1.10	0.71	0.24	0.68	1.09	0.38	0.89	1.03	0.30	1.23	0.76	0.47
Control Delay	119.3	36.4	6.0	30.3	94.0	12.4	58.5	84.6	11.1	175.5	50.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.3	36.4	6.0	30.3	94.0	12.4	58.5	84.6	11.1	175.5	50.8	7.9
LOS	F	D	A	C	F	B	E	F	B	F	D	A
Approach Delay		60.4			75.4			65.9			62.6	
Approach LOS		E			E			E			E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 66.7

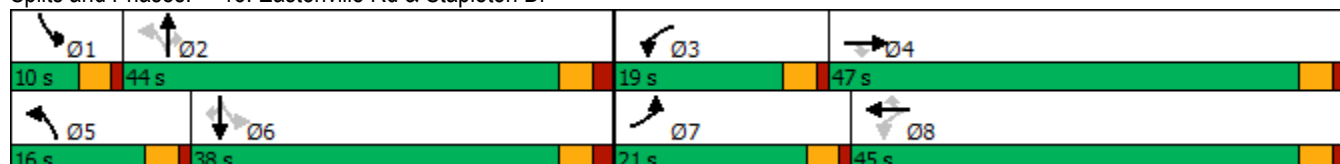
Intersection LOS: E

Intersection Capacity Utilization 105.5%

ICU Level of Service G

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings 13: Eastonville Rd & Stapleton Dr

2040 Total Traffic
PM Peak Hour 2 NB/SB TH

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Future Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	24.0	62.0	62.0	12.0	50.0	50.0	18.0	32.0	32.0	14.0	28.0	28.0
Total Split (%)	20.0%	51.7%	51.7%	10.0%	41.7%	41.7%	15.0%	26.7%	26.7%	11.7%	23.3%	23.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	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	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effect Green (s)	19.9	56.9	56.9	53.9	45.0	45.0	40.1	25.2	25.2	32.4	21.3	21.3
Actuated g/C Ratio	0.17	0.48	0.48	0.46	0.38	0.38	0.34	0.21	0.21	0.27	0.18	0.18
v/c Ratio	0.93	0.55	0.20	0.62	0.96	0.34	0.81	0.82	0.37	0.87	0.61	0.59
Control Delay	72.1	23.4	3.2	23.8	52.6	9.8	50.9	54.5	7.9	67.0	49.0	12.0
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	72.1	23.4	3.2	23.8	52.6	9.8	50.9	54.5	7.9	67.0	49.0	12.0
LOS	E	C	A	C	D	A	D	D	A	E	D	B
Approach Delay		37.2			43.3			45.8			40.1	
Approach LOS		D			D			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 118.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 41.4

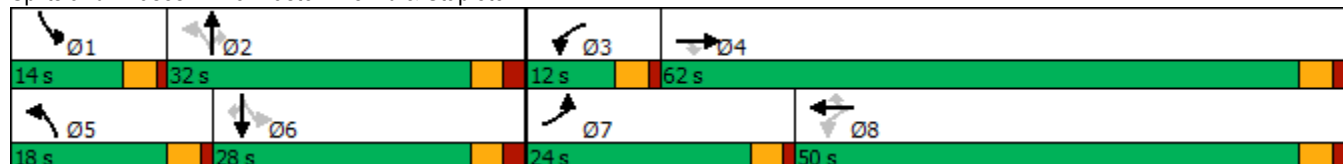
Intersection LOS: D

Intersection Capacity Utilization 90.7%

ICU Level of Service E

























Analysis Period (min) 15

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Timings
14: US 24 & Stapleton Dr

2040 Total Traffic
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	399	556	432	200	784	204	798	1626	175	276	1004	474
Future Volume (vph)	399	556	432	200	784	204	798	1626	175	276	1004	474
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			Free
Detector Phase	7	4		3	8	8	5	2	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	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	
Total Split (s)	20.0	34.0		16.0	30.0	30.0	29.0	34.0	34.0	16.0	21.0	
Total Split (%)	20.0%	34.0%		16.0%	30.0%	30.0%	29.0%	34.0%	34.0%	16.0%	21.0%	
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	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Act Effect Green (s)	14.6	29.4	99.6	10.2	25.0	25.0	24.0	29.2	29.2	10.8	16.0	99.6
Actuated g/C Ratio	0.15	0.30	1.00	0.10	0.25	0.25	0.24	0.29	0.29	0.11	0.16	1.00
v/c Ratio	0.83	0.56	0.29	0.60	0.93	0.39	0.99	1.60	0.33	0.78	1.80	0.32
Control Delay	56.9	32.3	0.5	50.2	54.7	6.5	66.6	303.4	11.0	58.9	395.9	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	56.9	32.3	0.5	50.2	54.7	6.5	66.6	303.4	11.0	58.9	395.9	0.5
LOS	E	C	A	D	D	A	E	F	B	E	F	A
Approach Delay		29.5			45.6			210.6			233.1	
Approach LOS		C			D			F			F	

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 99.6

Natural Cycle: 140

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.80

Intersection Signal Delay: 150.7

Intersection LOS: F

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr

