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Engineering Review

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dsdnjkamp

EPC Planning & Community  
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Paint Brush Hills Filing 14  
Traffic Impact Analysis  
PCD File No SP206 and SF2024  
(LSC #184630)  
January 13, 2021

Traffic Engineer's Statement

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



Developer's Statement

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

A blue ink signature of the developer, consisting of stylized initials.

1-13-21

Date



**LSC TRANSPORTATION CONSULTANTS, INC.**  
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January 13, 2021

Mr. Jeff Mark  
The Landhuis Company  
212 North Wahsatch Avenue, Suite 301  
Colorado Springs, CO 80903

RE: Paint Brush Hills Filing 14  
El Paso County, Colorado  
Updated Traffic Impact Analysis  
LSC #184630

Dear Mr. Mark:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for the proposed Paint Brush Hills Filing 14 residential development in El Paso County, Colorado. As shown in Figure 1, the site is located north-northwest of the Londonderry Drive/Rockingham Drive intersection in unincorporated El Paso County.

## **REPORT CONTENTS**

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

- Existing street conditions;
- Projections of short-term (2023) and long-term (2040) baseline/background traffic volumes;
- The projected average weekday and peak-hour vehicle-trips to be generated by the site;
- The assignment of the site's projected traffic volumes to the key area streets and intersections for the short and long term and the resulting total traffic volumes for the short and long term;
- The resulting traffic impacts including level of service analysis at key intersections and average daily traffic volumes on key street sections in the vicinity of the site;
- Recommended classification for all subdivision streets; and
- Recommended lane configuration for the site access points to Londonderry Drive.

## PREVIOUS TRAFFIC IMPACT STUDIES

LSC has completed the following traffic studies for Paint Brush Hills (previously Falcon Hills):

- **Falcon Hills Traffic Impact Study** - April 8, 2004: This study included analysis of all of the vacant areas west of Meridian Road and north of Stapleton Drive. Since completion of that report, Falcon Middle School has been completed on the parcel shown as “Falcon High School” in the 2004 report. An elementary school will be constructed in this area. However, it will be placed just north of Falcon Middle School rather than northwest of the north Londonderry Drive/Towner intersection. The key tables and figures from that report have been attached for reference.
- **Paint Brush Hills Filing 13A** - May 14, 2014: The 17 single-family homes in Filing 13A located south of Londonderry Drive and east of Towner Avenue have all been constructed since completion of this report.
- **Paint Brush Hills Filing 13B** - March 26, 2014: This report assumed lots for 21 single-family homes to be located north of Londonderry Drive and west of Towner Avenue. This is the same number of units as assumed for this area in the 2004 overall study. Some of the lots in this filing are currently under construction but none are currently occupied.
- **Scenic View at Paint Brush Hills** - April 7, 2014: This report assumed lots for 90 single-family homes northeast of the intersection of Stapleton Drive and Towner Avenue. Since completion of that report, all of the homes have been built in the Scenic View development.
- **Paint Brush Hills Filings 13C-13F** - September 25, 2014: This report was superseded by the Paint Brush Hills Filings 13C and 13 D report described below.
- **Paint Brush Hills Filings 13C and 13D** - January 9, 2017: This report assumed lots for 232 single-family homes west of Towner Avenue between the north and south portions of Londonderry Drive. Some of the lots within these filings are currently under construction but none are currently occupied.
- **D-49 Elementary School** - May 30, 2017: This report analyzed an elementary school to be located southeast of the north intersection of Londonderry Drive and Towner Avenue. At buildout, the school will support up to 900 students.
- **Paint Brush Hills Filing 13E** – October 22, 2018: This report assumed 158 single-family homes east of the currently proposed Paint Brush Hills Filing 14.

Table 1 contains a summary of the land uses assumed for the areas west of Meridian Road and north of Stapleton Drive in the 2004 report and the latest traffic impact study completed by LSC in the area (Paint Brush Hill Filing 13E). Figure 2 shows the site plan and traffic analysis zones (TAZ) assumed in the 2004 study.

## **LAND USE AND ACCESS**

### **Land Use**

Figure 2 shows the currently existing, approved, and currently-proposed developments in the areas west of Meridian Road and north of Stapleton Drive. The currently-proposed Paint Brush Hills Filing 14 is located in the northwest corner of the development. There are also existing single-family homes north and west of the site.

Filing 14 is planned to contain 224 single-family homes. Figure 3 shows the currently-proposed site plan. Access is proposed through Paint Brush Hills Filing 12 to the existing intersection of Keating Drive/Rockingham Drive and through Paint Brush Hills Filing 13 to the existing intersection of Londonderry Drive/Devoncove Drive. All of the internal intersections within Filing 14 are spaced at least 175 feet apart (centerline to centerline) except for the intersection of Country Manor Drive/Keynes Drive which is located about 161 feet east of Keating Drive (centerline to centerline). A request for a deviation to the criteria contained within the El Paso County Engineering Criteria Manual (ECM) will be submitted with this application.

The Paint Brush Hills Filing 14 area was included as part of TAZ 11 in the 2004 overall TIA. As shown in Table 1 the currently proposed plan for this filing includes about 113 more lots in this area than was assumed in the 2004 overall TIA. Including other changes to the residential land uses within Paint Brush Hills made since completion of the 2004 report, the total number of dwelling units within the entire study area represents an increase of 14 dwelling units.

Changes have also been made to the commercial and educational land uses within the Paint Brush Hills development. The 2004 study included 8.8 acres on the north end of Towner Avenue to be zoned "PBC". These parcels were assumed to be developed as a "shopping center" with 85,000 square feet of floor space. A 2.2-acre portion of this area is now included in the Bennett Ranch Elementary School site and it is now thought that the remaining six-acre PBC site will most likely be developed with a lower intensity land use such as a church with a daycare. The 2004 study assumed a high school with about 700 students and an elementary school with 500 students. Since completion of that study, Falcon Middle School has been constructed on the high school site. The middle school current enrollment is about 900 students. Bennet Ranch Elementary School is also planned to serve up to 900 students. Although this represents an increase in the number of students served, a majority of the traffic generated by the schools will likely be internal to the Paint Brush Hills development.

### **Sight Distance**

Figure 4a shows the sight distance analysis for all of the proposed intersections within Paint Brush Hills Filing 14. Based on the design speed of 25 miles per hour, the required intersection sight distance at these intersections is 280 feet. Figures 4b through 4e show the areas between the sight distance lines and the curb line that will need to be kept free of other obstructions (such as rear privacy fencing, landscaping, and backyard/patio amenities) that would restrict the drivers'

line of sight. Landscaping should be low — about 18 inches or lower in height — to the east of the passenger vehicle lines of sight shown. Please refer to ECM Sections 2.3.6.G.1 and 2.

Figure 4f shows the sight distance analysis for the proposed intersection of Country Manor Drive/Keys Drive. This intersection is located about 161 feet west of the of Keating Drive/Keynes Drive and the available stopping sight distance from the start of the pavement on the west leg of Keating/Keynes to the centerline of Country Manor/Keynes is about 149.5'. The required stopping sight distance from Table 2-17 of the ECM is 155 feet, based on a design speed of 25 miles per hour (mph). As Keating/Keynes is a "T" intersection, all westbound traffic on Keynes Drive approaching Country Manor Drive will have either just turned right or left from Country Manor Drive. The turning speed for these movements is likely between 9 and 20 mph. Using the assumptions stated in Table 2-17 (break reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 feet/second) the calculated stopping sight distance based on a turning speed of 20 mph is 112 feet.

### **Pedestrian and Bicycle Route Analysis**

Figure 5 shows a pedestrian and bicycle route analysis to the two area schools. There are existing sidewalks within the Paint Brush Hills Filing 13 subdivision streets and on the north and south sides of Londonderry Drive on the north section between Rockingham Drive and Towner Drive. There is a marked crossing on the south leg of the intersection of Londonderry/Towner (north) but not on the west leg as recommended in traffic impact study for Bennett Ranch Elementary School (PCD File No. PPR-17-019).

There are currently no sidewalks on Rockingham Drive and on the short section of Keating Drive between Rockingham Drive and the south boundary of the currently proposed filing. It is our understanding that these street segments were platted prior to the ECM Local street right-of-way criteria of 50-foot right-of-way widths plus two five-foot public improvement easements. The south section of Londonderry Drive between Rockingham Drive and Towner Drive has sidewalks on the northeast side but no sidewalks on the southwest side. If students choose to use the south route to Falcon Middle School, they would likely cross Londonderry Drive at Rockingham Drive. A marked crosswalk may be needed at this location. It should be noted that overall traffic volumes at this intersection are low and through volumes are very low as most vehicles make either a right or left turn onto Rockingham Drive.

## **ROADWAY AND TRAFFIC CONDITIONS**

### **Area Roadways**

The area roadways in the site's vicinity are shown on Figures 1 and 4 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.

- **Londonderry Drive** is a two-lane Urban Residential Collector that currently extends west from Eastonville Road to Towner Avenue and then loops to the south to intersect Towner Avenue again about one-half mile to the south.
- **Meridian Road** extends north from South Blaney Road to County Line Road. Meridian Road is shown as a four-lane Minor Arterial south of Rex Road and north of Stapleton Drive and a two-lane Minor Arterial north of Rex Road on the *El Paso County Major Transportation Corridors Plan (MTCP)* and *El Paso County Corridor Preservation Plan (CPP)*. Meridian has been upgraded to four lanes between Stapleton and Indian Paint Trail with a PPRTA project.
- **Stapleton Drive** is classified as a four-lane Urban Principal Arterial on the El Paso County MTCP. However, Stapleton Drive in the vicinity of the site is a two-lane roadway. Stapleton Drive extends east from just west of Towner Drive across US Highway 24 to Curtis Road. Longer-term plans show Stapleton extended west to connect with Briargate.
- **Towner Avenue** is a 40-foot-wide Urban Residential Collector street (within Paint Brush Hills) that extends south from Londonderry Drive to just south of Woodmen Hills Drive. The posted speed limit is 35 miles per hour.

### Existing Traffic

Figure 6 shows the existing traffic volumes at the intersections of Londonderry/Rockingham and Londonderry/Devoncove. These traffic volumes are based on traffic counts conducted by LSC in December 2020. Note that many of the lots within Paint Brush Hills Filing 13 located north of the intersection of Londonderry/Devoncove are currently under construction and most of the traffic observed using the north leg of this intersection appeared to be construction related. The traffic count reports are attached.

### Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 2 shows the level of service delay ranges.

**Table 2: 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) <sup>(1)</sup>
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.		

## BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the area streets and roadways without consideration of the proposed development. Figure 7 shows the projected background traffic volumes for the short term (2023). These background traffic volumes were based on the existing traffic counts shown in Figure 6 plus estimates of traffic projected to be generated by the buildout of Paint Brush Hills Filings 13D and 13E. The number of lots within these filings that are currently unoccupied is shown on Table 1. As most of the traffic using the north leg of the intersection of Londonderry/Devoncove was observed to be construction related, the traffic volumes for this leg were instead taken from the *Paint Brush Hills Filing 13E Traffic Impact Analysis* by LSC, dated October 22, 2018. The short-term scenario assumes Stapleton Drive not yet extended west from its current terminus.

Figure 8 shows the projected 2040 background traffic volumes. These volumes assume buildout of the Paint Brush Hills development including the parcel southwest of the intersection of Londonderry/Towner (north) across from Bennet Ranch Elementary School. The 2040 background traffic volumes also assume Stapleton Drive has been extended west.

## 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 3 shows the trip-generation estimates for the site.

Filing 14 is expected to generate about 2,115 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 41 vehicles would enter and 124 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 140 vehicles would enter and 82 vehicles would exit the site.

## **DIRECTIONAL DISTRIBUTION**

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 9 shows the short-term and long-term external directional distribution estimates for the site-generated traffic volumes. The estimates have been based on the following factors: the site's location with respect to the nearby employment, commercial, schools, and activity centers and the balance of the Falcon and Colorado Springs metropolitan area; 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. The long-term distribution takes into account the extension of Stapleton west to Briargate Parkway.

## **SITE-GENERATED TRAFFIC**

Figures 10 and 11 show the projected short-term and long-term site-generated traffic volumes, respectively. The site-generated traffic volumes were calculated by applying the directional distribution percentages (from Figure 8) to the trip-generation estimates from Table 3.

## **TOTAL TRAFFIC**

Figure 12 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 7) plus the short-term site-generated traffic volumes from Figure 10.

Figure 13 shows the projected 2040 total traffic volumes. The 2040 total traffic volumes are the sum of the 2040 background traffic volumes (from Figure 8) plus the long-term site-generated traffic volumes from Figure 11.

## **PROJECTED LEVELS OF SERVICE**

The intersections of Rockingham Drive/Londonderry Drive and Devoncove Drive/Londonderry Drive were analyzed to determine the projected levels of service for the background and total traffic volumes, based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6<sup>th</sup> Edition* by the Transportation Research Board. Figures 7, 8, 12, and 13 show the level of service analysis results. The level of service reports are attached.

The intersections of Rockingham Drive/Londonderry Drive and Devoncove Drive/Londonderry Drive are projected to operate at LOS B or better for all movements, based on the projected short-term and 2040 total traffic volumes as two-way stop-sign-controlled intersections.

## **STREET CLASSIFICATIONS**

Figure 14 shows the recommended internal street classifications, based on the projected buildout traffic volumes for Filing 14.



## CONCLUSIONS AND RECOMMENDATIONS

### Trip Generation

- Filing 14 is expected to generate about 2,115 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 41 vehicles would enter and 124 vehicles would exit the site. During the afternoon peak hour, about 140 vehicles would enter and 82 vehicles would exit the site.

### Level of Service

- The intersections of Rockingham Drive/Londonderry Drive and Devoncove Drive/Londonderry Drive are projected to operate at LOS B or better for all movements, based on the projected short-term and 2040 total traffic volumes as two-way stop-sign-controlled intersections.

### Intersection Lane Configurations

- Based on the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* and the projected short-term total traffic volumes, a northbound left-turn lane would be required on Londonderry Drive approaching Rockingham Drive. Londonderry Drive is currently 40 feet wide in the vicinity of this intersection and could be restriped to provide a northbound left-turn lane. Based on the criteria contained in the ECM, this lane would need to be 255 feet long (155 deceleration length and 100 feet of storage) plus a 160-foot taper. The existing intersection spacing would allow for Londonderry Drive to be restriped with a turn lane that would meet this criterion. Although the ECM does not have a provision for waiving the need for a left-turn lane when the through traffic is below a certain level, the State of Colorado Highway Access code provides a waiver to left-turn lane requirements when the 20th year predicted volume in the opposing lane is below 100 vehicles per hour. As the southbound traffic volume is projected to be only 87 vehicles per hour, LSC recommends that the requirement for a left-turn lane be waived.
- Based on the criteria contained in the ECM and the projected short-term total traffic volumes, a southbound right-turn deceleration lane would be required on Londonderry Drive approaching Rockingham Drive, based on the projected right-turn volume. However, at this particular location, the westbound through volume is low and is projected to remain low at buildout. Although the ECM does not have a provision for waiving the need for a right-turn deceleration lane when the through traffic is below a certain level, the State of Colorado Highway Access code provides a waiver to right-turn lane requirements when the 20<sup>th</sup> year predicted volume in the travel lane is below 150 vehicles per hour. As the southbound traffic volume is projected to be only 87 vehicles per hour, LSC recommends that the requirement for a right-turn deceleration lane be waived. A deviation to the ECM was approved for Paintbrush Hills Fil 13E for this same intersection. An updated deviation request will be submitted as part of this filing. If

required, this lane would need to be 155 feet long plus a 160-foot taper. The existing intersection spacing would allow for a turn lane that would meet this criterion.

- Based on the criteria contained in the ECM, auxiliary turn lanes would be required on the west leg of the intersection of Rockingham/Londonderry. However, this section of Rockingham has already been constructed and there are existing homes adjacent to it. As this leg is stop-sign-controlled, auxiliary turn lanes will not be needed for “speed change” or speed differential purposes. A single eastbound approach lane at this intersection is projected to operate at LOS B or better during the peak hours. The projected 95<sup>th</sup> percentile queue with a single approach lane is 0.5 vehicles during the morning peak hour and 0.4 vehicles during the afternoon peak hour. This queue can be accommodated by the available 200 feet of stacking distance between Londonderry Drive and Keating Drive. Also, the projected volumes on this leg are below the minimum volume thresholds set by State of Colorado Highway Access code where left and right-turn lane requirements may be waived.
- Based on the criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* and the projected 2040 total traffic volumes, left-turn lane and right-turn lanes would **not** be required on Londonderry Drive approaching Devoncove Drive.

#### **Proposed Subdivision Street Classifications**

- As shown in Figure 14 all proposed subdivision streets will be classified as Urban Local Low Volume or Urban Local streets.

#### **County Road Impact Fee**

- The applicant will be required to participate in the County Road Impact Fee Program. Assuming this development joins the ten-mil PID, the building permit fee portion is \$1,221 per single-family dwelling unit. The net fee for the proposed 224 lots in Filing 14 would be \$273,504. Note: This is based on the current rate, which is subject to change. El Paso County updates this rate periodically.

\* \* \* \* \*

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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 1 and 3  
Figures 1-14  
Traffic Counts  
Level of Service Reports  
MTCP Maps  
Key tables and figures from *Falcon Hills Traffic Impact Study* dated April 8, 2004

# Tables

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Table 1 Paintbrush Hills Land Use Comparison																
Falcon Hills Traffic Impact Analysis April 8, 2004 Scenario 2				Paint Brush Hills Filing 13E Traffic Impact Analysis October 22, 2018				Existing, Approved, Currently Proposed or Future					Change			
													From 2004		From 2018	
Traffic Analysis Zone	Land Use	Quantity	Unit	Filing Name	Land Use	Quantity	Unit	Filing Name	Status	Land Use	Quantity	Unit	Quantity	Unit	Quantity	Unit
1	Single-Family Detached Housing	194	DU <sup>(1)</sup>	Paintbrush Hills Fil 4	Single-Family Detached Housing	164	DU	Paintbrush Hills Fil 4	Built Out	Single-Family Detached Housing	164	DU	1	DU	0	DU
				Paintbrush Hills Fil 5	Single-Family Detached Housing	31	DU	Paintbrush Hills Fil 5	Built Out	Single-Family Detached Housing	31	DU		DU	0	DU
2	Single-Family Detached Housing	303	DU	Paintbrush Hills Fil 6	Single-Family Detached Housing	48	DU	Paintbrush Hills Fil 6	Built Out	Single-Family Detached Housing	48	DU	-2	DU	0	DU
	Single-Family Detached Housing		DU	Paintbrush Hills Fil 7	Single-Family Detached Housing	57	DU	Paintbrush Hills Fil 7	Built Out	Single-Family Detached Housing	57	DU		DU	0	DU
	Single-Family Detached Housing		DU	Paintbrush Hills Fil 8	Single-Family Detached Housing	108	DU	Paintbrush Hills Fil 8	Built Out	Single-Family Detached Housing	108	DU		DU	0	DU
	Single-Family Detached Housing		DU	Paintbrush Hills Fil 9	Single-Family Detached Housing	88	DU	Paintbrush Hills Fil 9	Built Out	Single-Family Detached Housing	88	DU		DU	0	DU
3	High School	706	Students	Falcon Middle School	Middle School	900	Students	Falcon Middle School	Built Out	Middle School	900	Students	---		---	
4	Single-Family Detached Housing	41	DU	Paintbrush Hills Fil 10 (East)	Single-Family Detached Housing	41	DU	Paintbrush Hills Fil 10 (East)	Built Out	Single-Family Detached Housing	41	DU	0	DU	0	DU
5	Single-Family Detached Housing	181	DU	Paintbrush Hills Fil 10 (West)	Single-Family Detached Housing	49	DU	Paintbrush Hills Fil 10 (West)	Built Out	Single-Family Detached Housing	49	DU	-5	DU	0	DU
			DU	Paintbrush Hills Fil 11	Single-Family Detached Housing	81	DU	Paintbrush Hills Fil 11	Built Out	Single-Family Detached Housing	81	DU		DU	0	DU
			DU	Paintbrush Hills Fil 12	Single-Family Detached Housing	46	DU	Paintbrush Hills Fil 12	Built Out	Single-Family Detached Housing	46	DU		DU	0	DU
6	Apartments	180	DU	Scenic View at Paintbrush Hills	Single-Family Detached Housing	89	DU	Scenic View at Paintbrush Hills	Built Out	Single-Family Detached Housing	89	DU	-91	DU	0	DU
7	Single-Family Detached Housing	13	DU	---	---	---		---	---	---	---		-13	DU		DU
8	Shopping Center (8.2 acres)	82	KSF <sup>(2)</sup>	D-49 Elementary School	Elementary School	900	Students	D-49 Elementary School	Built Out	Elementary School	900	Students	---		---	
				Future	Church with Day Care	6	Acres	Future	Future	Church with Day Care	6	Acres	---		---	
	Single-Family Detached Housing	33	DU	Paintbrush Hills Fil 13A	Single-Family Detached Housing	17	DU	Paintbrush Hills Fil 13A	Built Out	Single-Family Detached Housing	17	DU	-16	DU	0	DU
9	Single-Family Detached Housing	133	DU	Paintbrush Hills Fil 13B	Single-Family Detached Housing	21	DU	Paintbrush Hills Fil 13B	Built Out	Single-Family Detached Housing	21	DU	23	DU	0	DU
			DU	Paintbrush Hills Fil 13C	Single-Family Detached Housing	135	DU	Paintbrush Hills Fil 13C	Built Out	Single-Family Detached Housing	135	DU		DU	0	DU
10	Single-Family Detached Housing	102	DU	Paintbrush Hills Fil 13D	Single-Family Detached Housing	97	DU	Paintbrush Hills Fil 13D	Under Construction <sup>(3)</sup>	Single-Family Detached Housing	97	DU	-5	DU	0	DU
11	Single-Family Detached Housing	167	DU	Paintbrush Hills Fil 14	Single-Family Detached Housing	224	DU	Paintbrush Hills Fil 14	Proposed	Single-Family Detached Housing	224	DU	113	DU	0	DU
			DU	Paintbrush Hills Fil 13E (west)	Single-Family Detached Housing	56	DU	Paintbrush Hills Fil 13E (west)	Under Construction <sup>(4)</sup>	Single-Family Detached Housing	56	DU		DU	0	DU
12	Single-Family Detached Housing	93	DU	Paintbrush Hills Fil 13E (east)	Single-Family Detached Housing	102	DU	Paintbrush Hills Fil 13E (east)	Under Construction <sup>(5)</sup>	Single-Family Detached Housing	102	DU	9	DU	0	DU
	Elementary School	500	Students										---		---	
<b>Total</b>																
	Single-Family Detached Housing	1,260	DU		Single-Family Detached Housing	1,454	DU			Single-Family Detached Housing	1,454	DU	194	DU	0	DU
	Apartments	180	DU		Apartments	0	DU			Apartments	0	DU	-180	DU	0	DU
	Total Residential	1,440	DU		Total Residential	1,454	DU			Total Residential Dwelling Units	1,454	DU	14	DU	0	DU
	Shopping Center	82	KSF		Shopping Center	0	KSF			Shopping Center	0	KSF	-47	KSF	0	KSF
	Church With Day Care	0	KSF		Church With Day Care	35	KSF			Church With Day Care	35	KSF				
	School	1,206	Students		School	1,800	Students			School	1,800	Students	594	Students	0	Students
Notes: (1) DU = dwelling unit (2) KSF = thousand square feet of floor area (3) At the time traffic counts were conducted (December 2020) homes had been constructed on 93 of the 97 lots within Painbrush Hills Fil 13D (4) At the time traffic counts were conducted (December 2020) homes had been constructed on 19 of the 56 lots within Painbrush Hills Fil 13E (west) (5) At the time traffic counts were conducted (December 2020) homes had been constructed on 51 of the 102 lots within Painbrush Hills Fil 13E (east)																
Source: LSC Transportation Consultants, Inc.																
Dec-20																

**Table 3**  
**Trip Generation Estimate**  
**Paintbrush Hills Filing 14**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>						Total Trips Generated			
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
210	Single-Family Detached Housing	224 DU <sup>(2)</sup>	9.44	0.19	0.56	0.62	0.37	2,115	41	124	140	82
Notes: (1) Source: " <i>Trip Generation, 10th Edition, 2017</i> " by the Institute of Transportation Engineers (ITE) (2) DU = dwelling unit												
Source: LSC Transportation Consultants, Inc.											Dec-20	

# Figures

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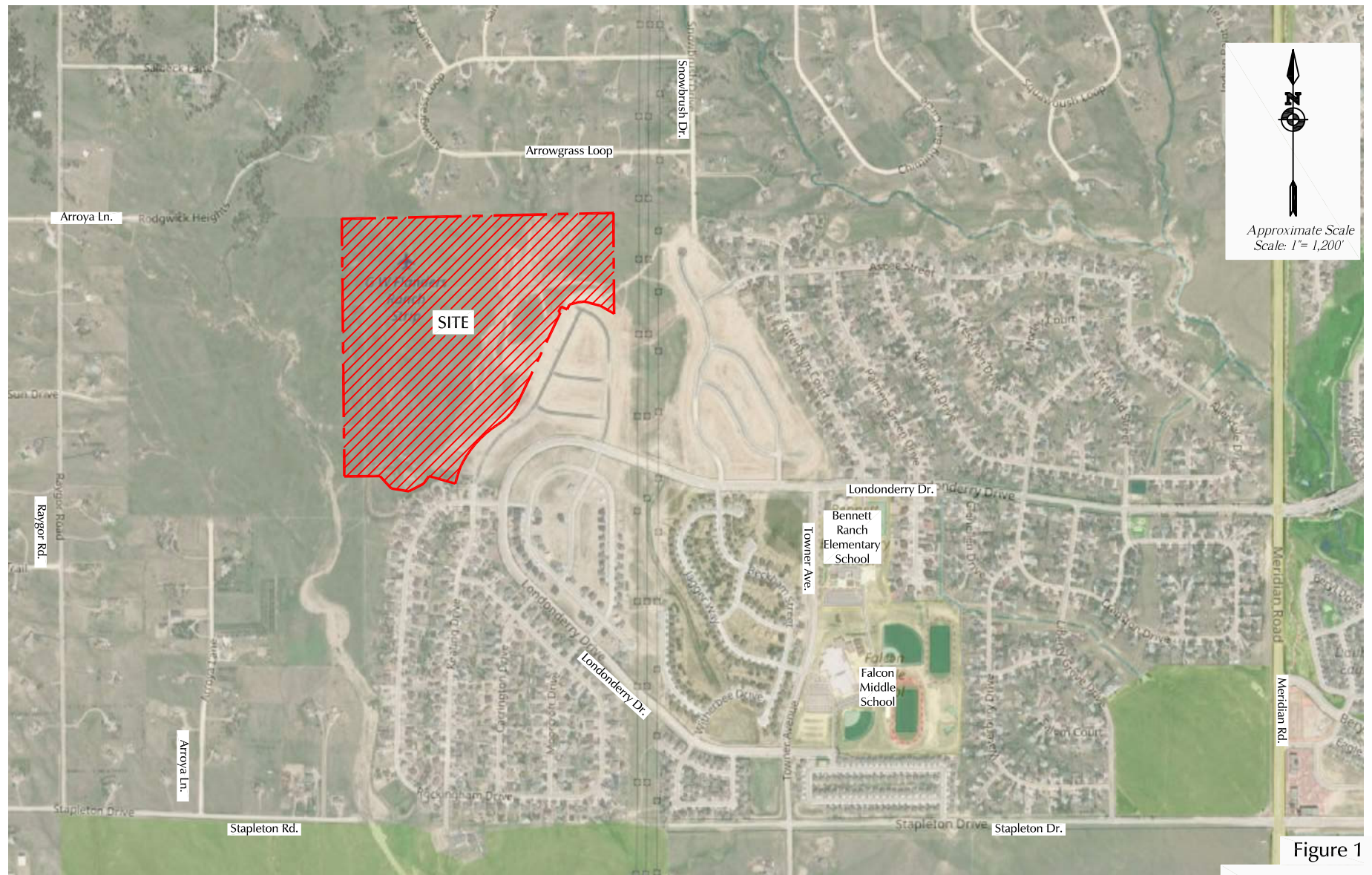
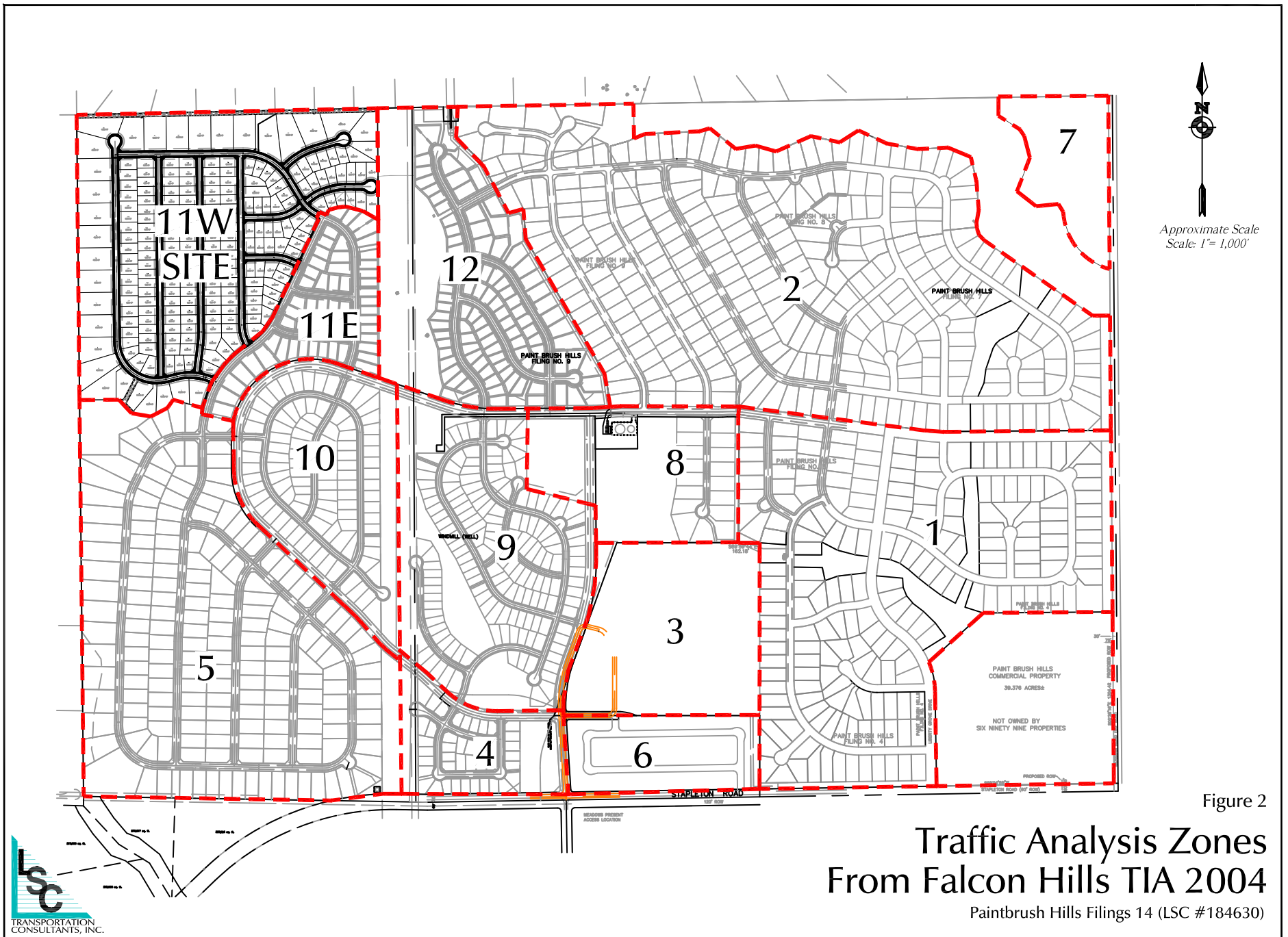


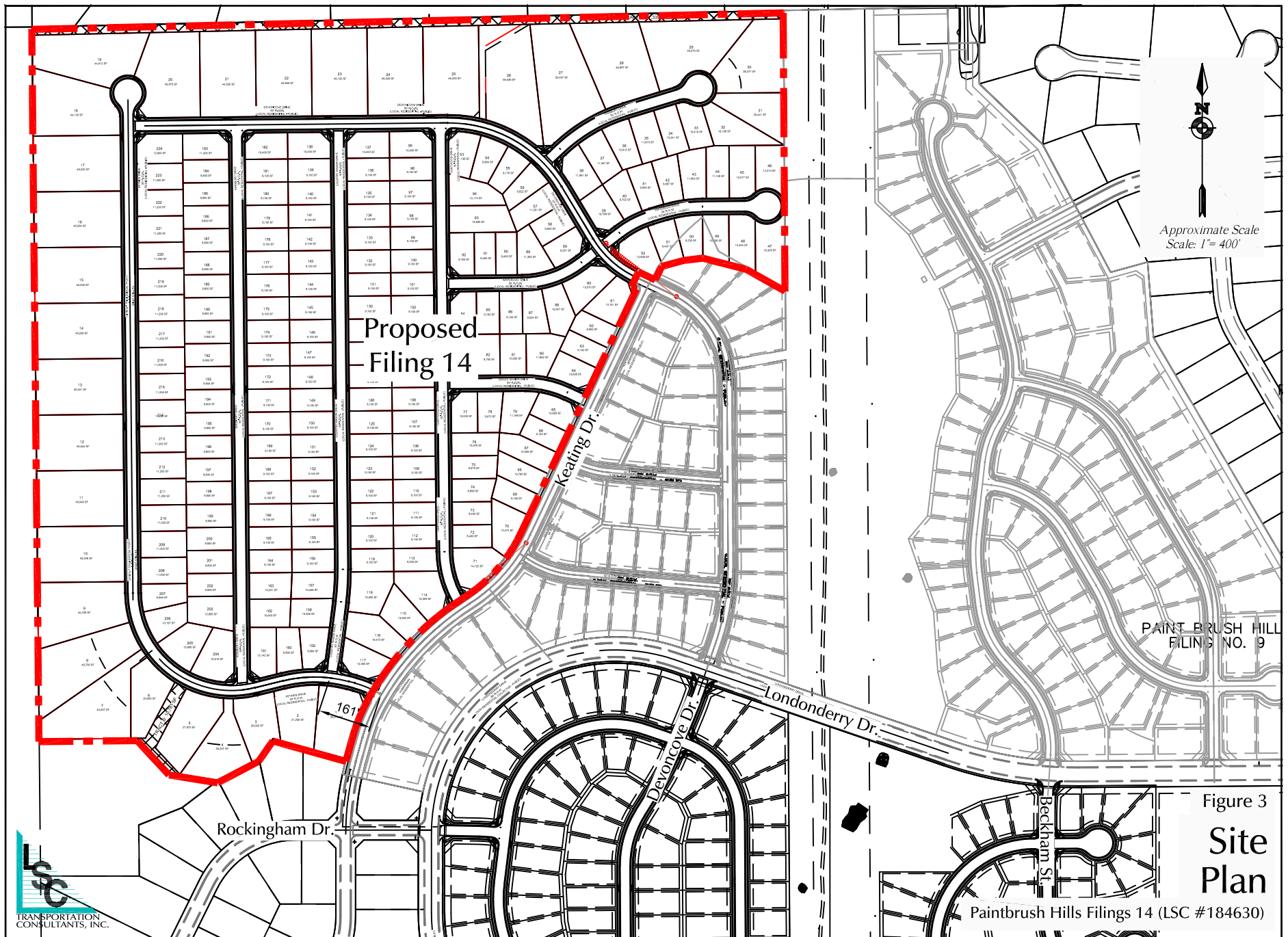
Figure 1

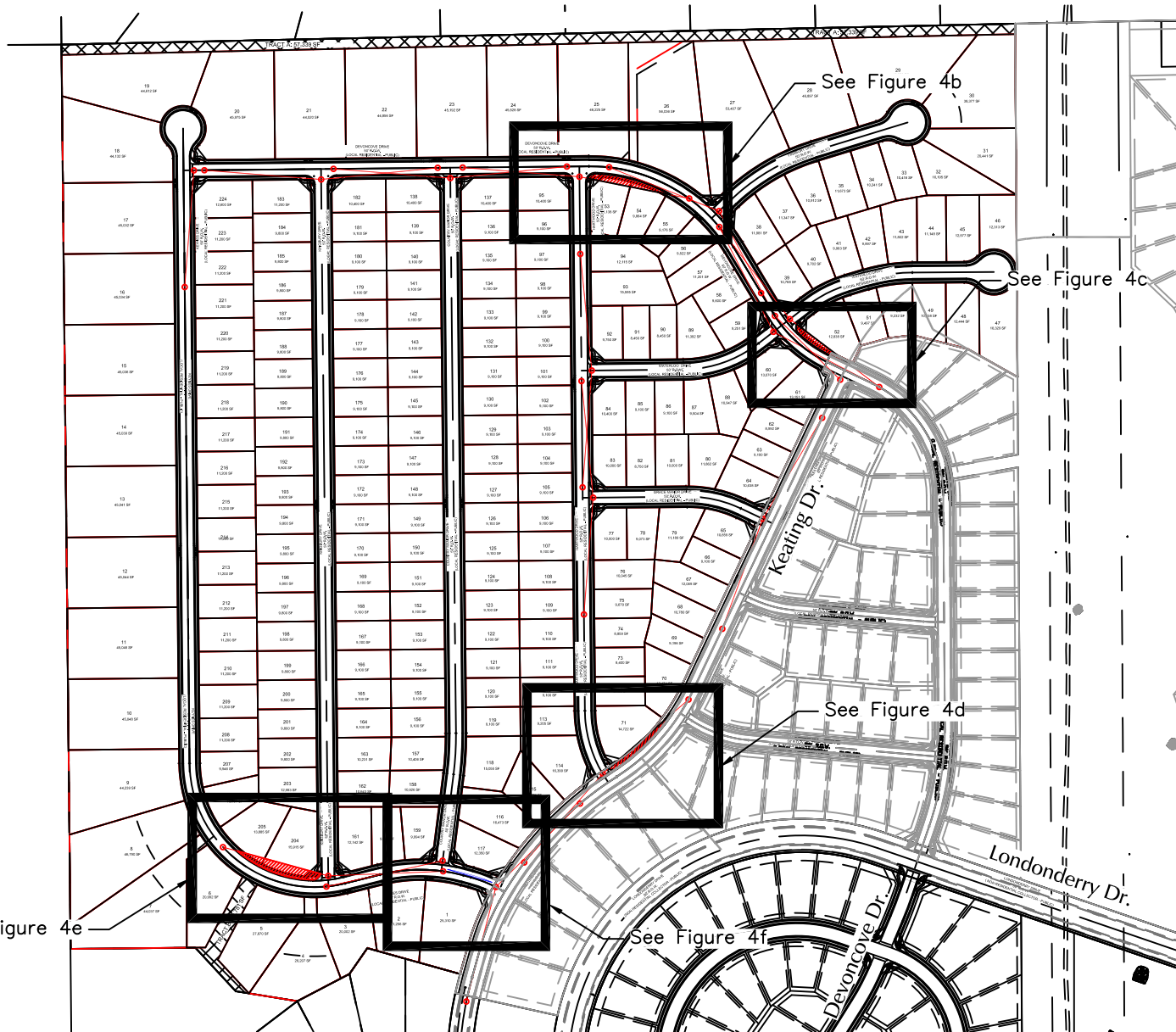
## Vicinity Map

Paintbrush Hills Filings 14 (LSC #184630)







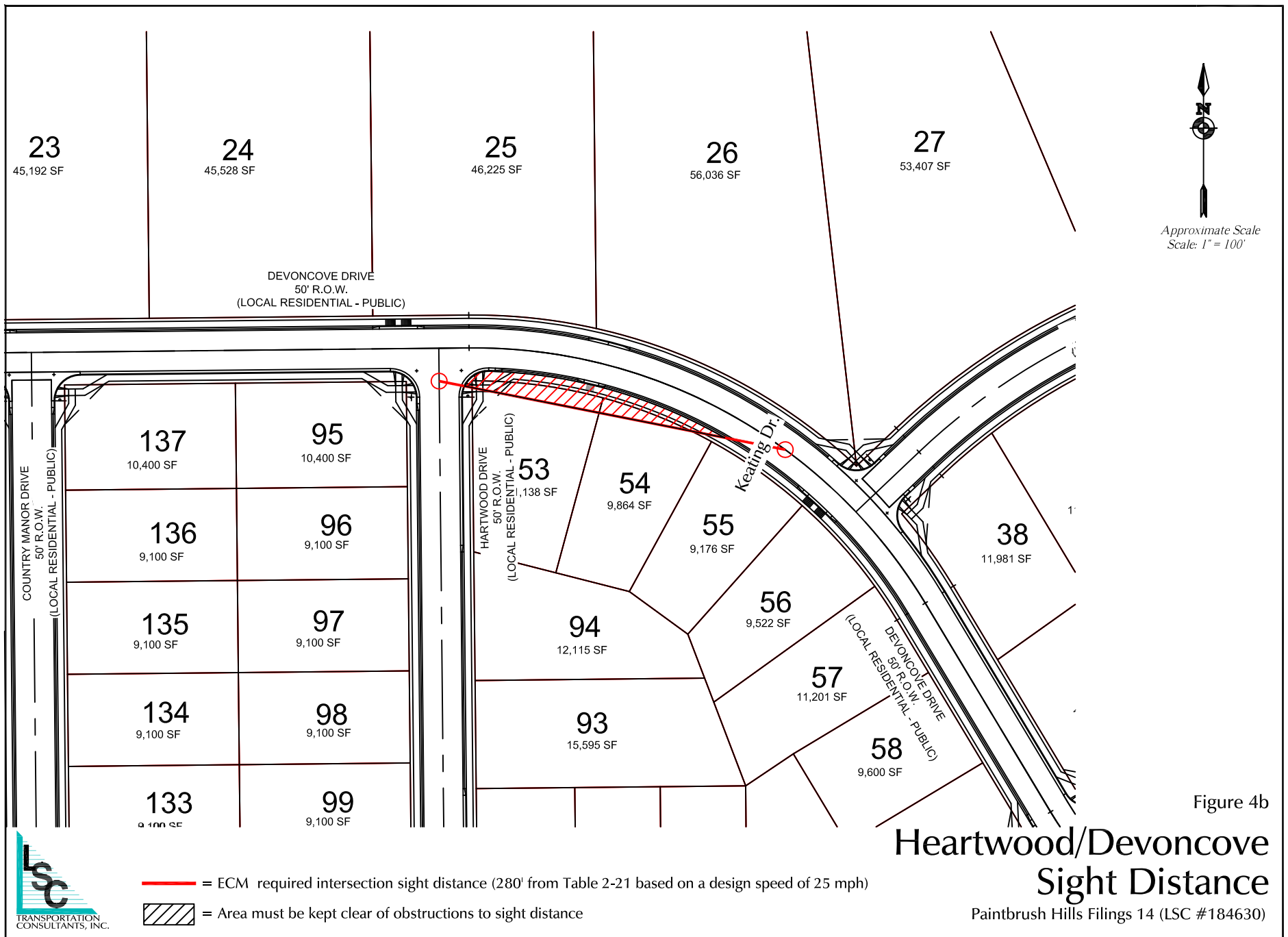


Approximate Scale  
Scale: NTS

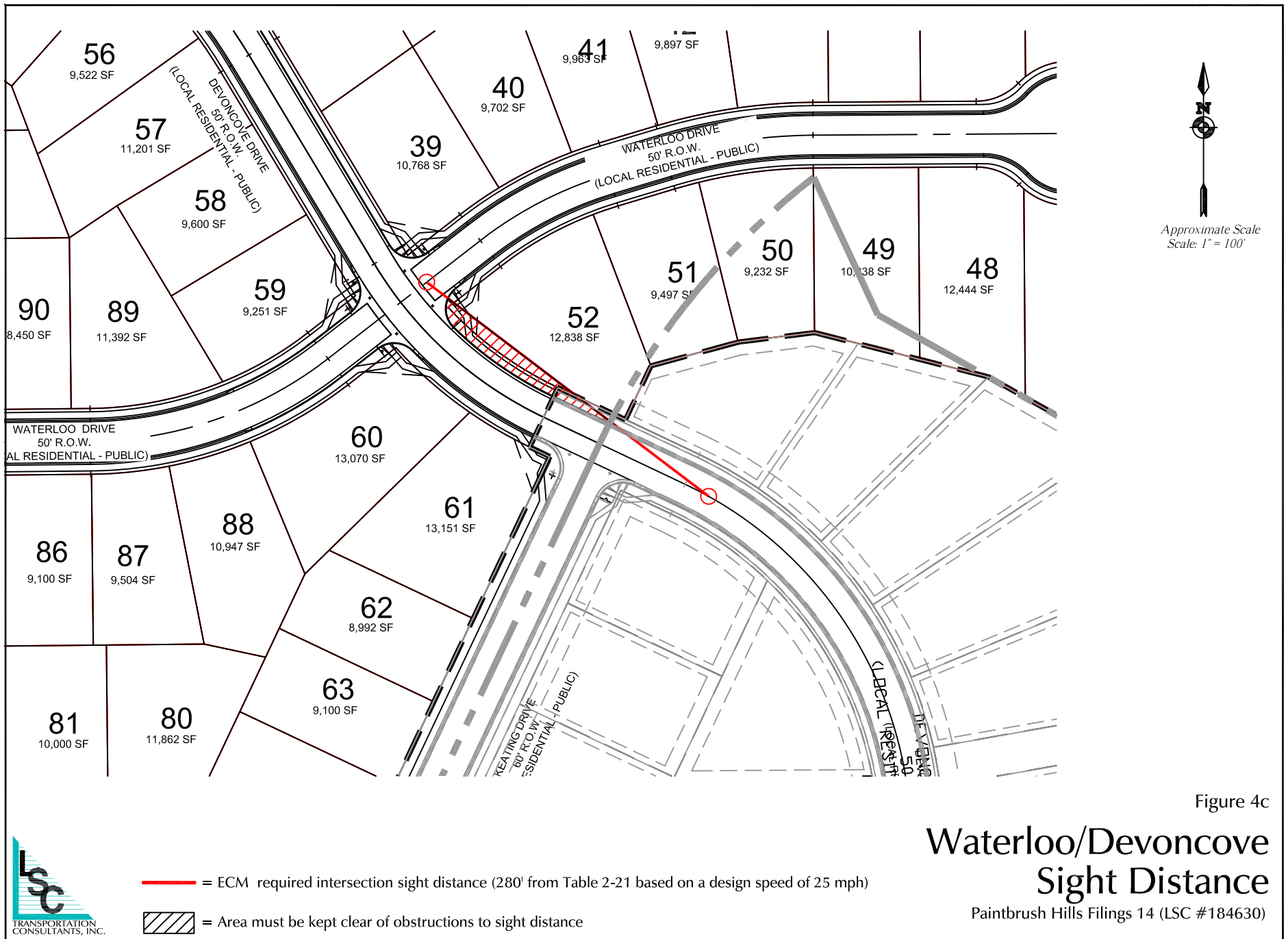
Figure 4a  
**Intersection  
Sight Distance**

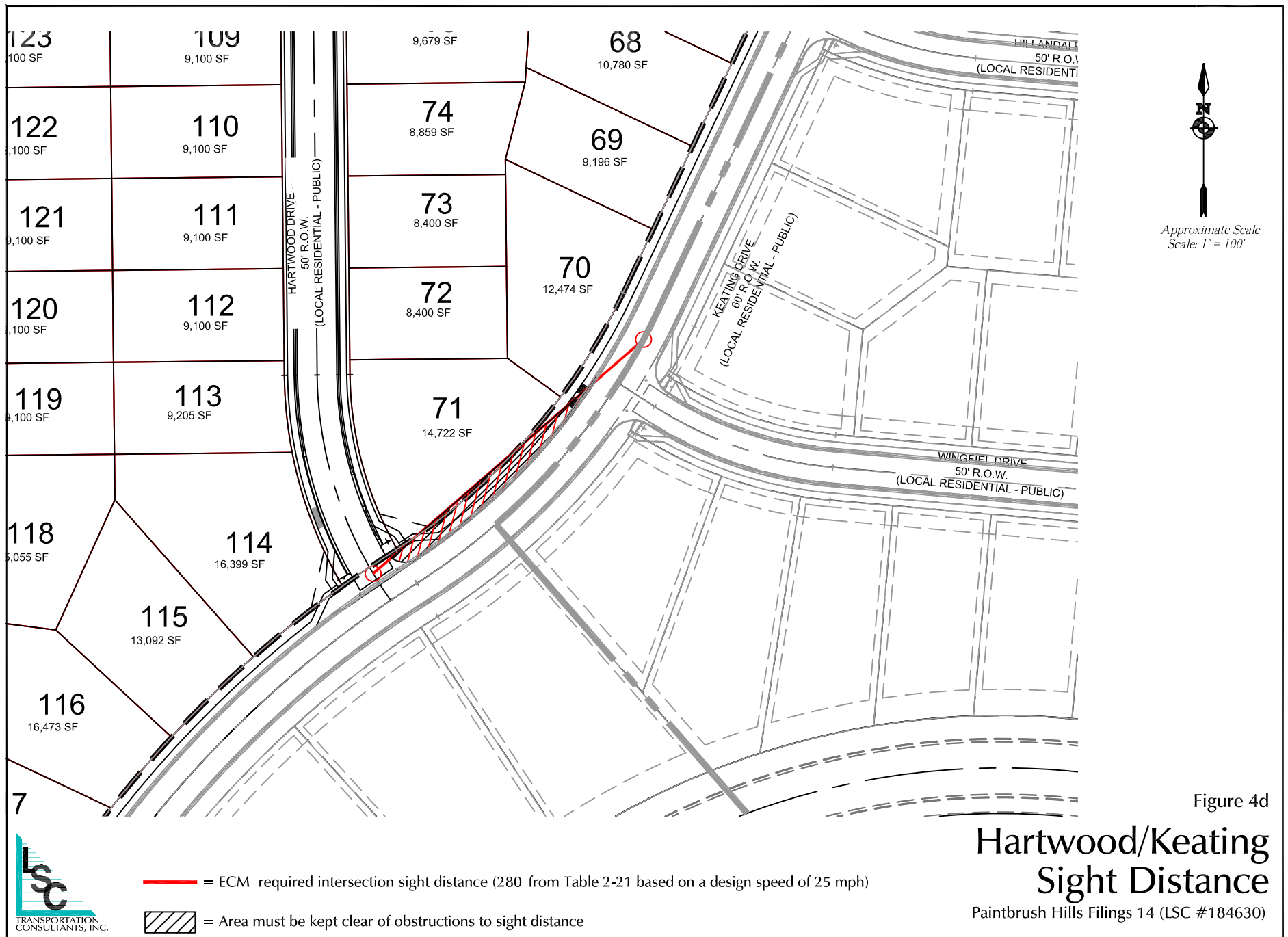
Paintbrush Hills Filings 14 (LSC #184630)

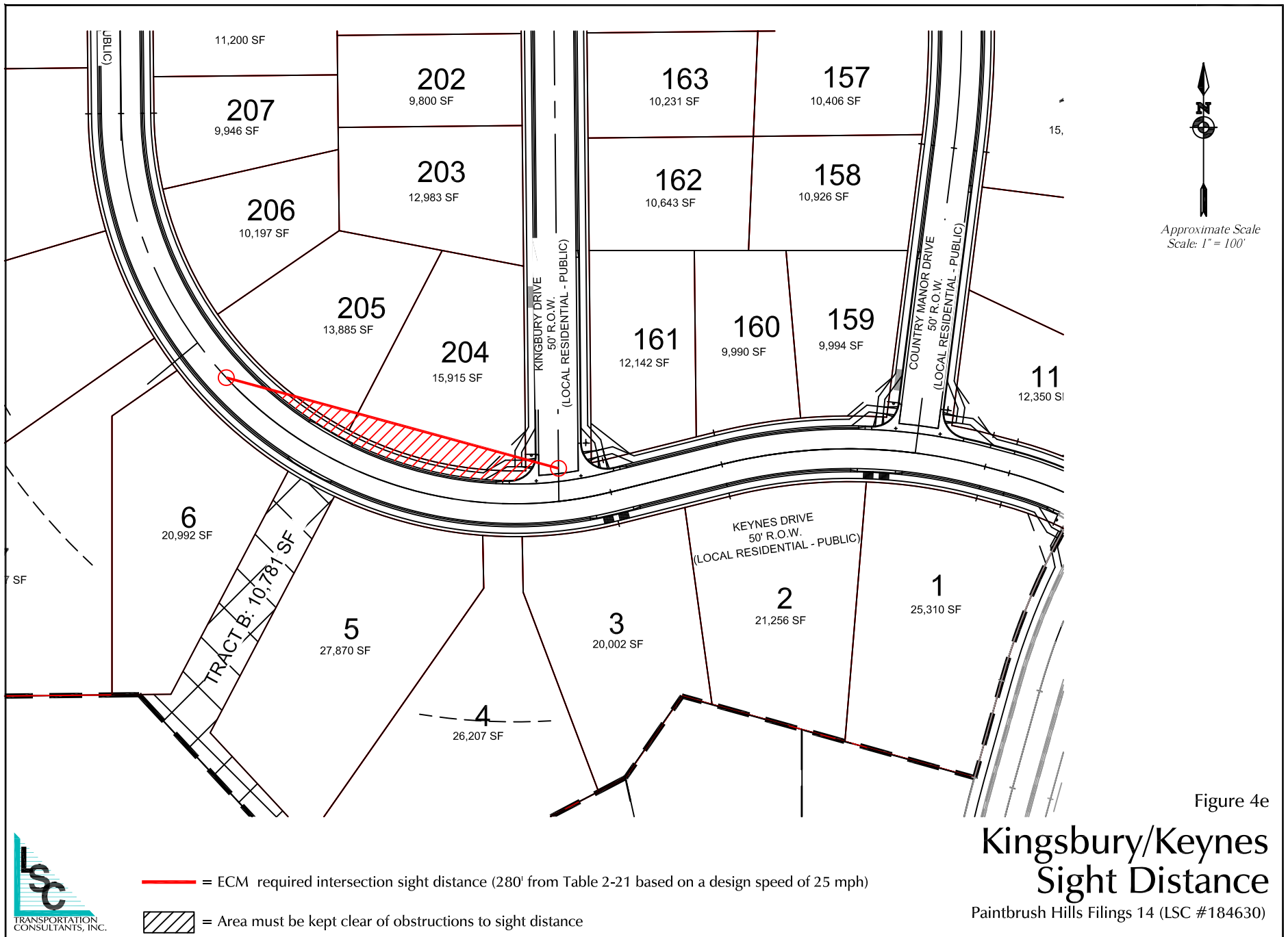
- = ECM required intersection sight distance (280' from Table 2-21 based on a design speed of 25 mph)
- = Available stopping sight distance
- = Area must be kept clear of obstructions to sight distance

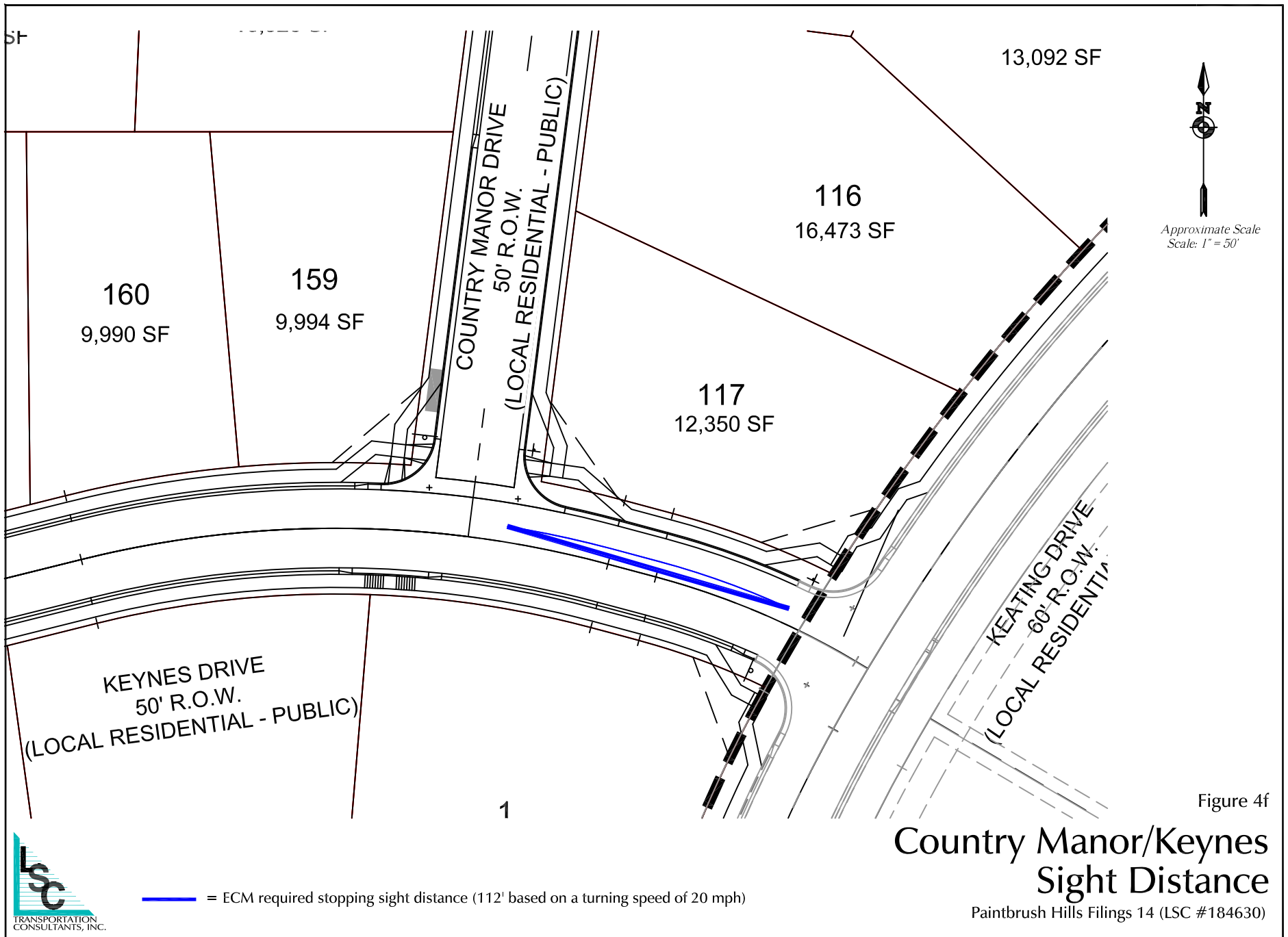




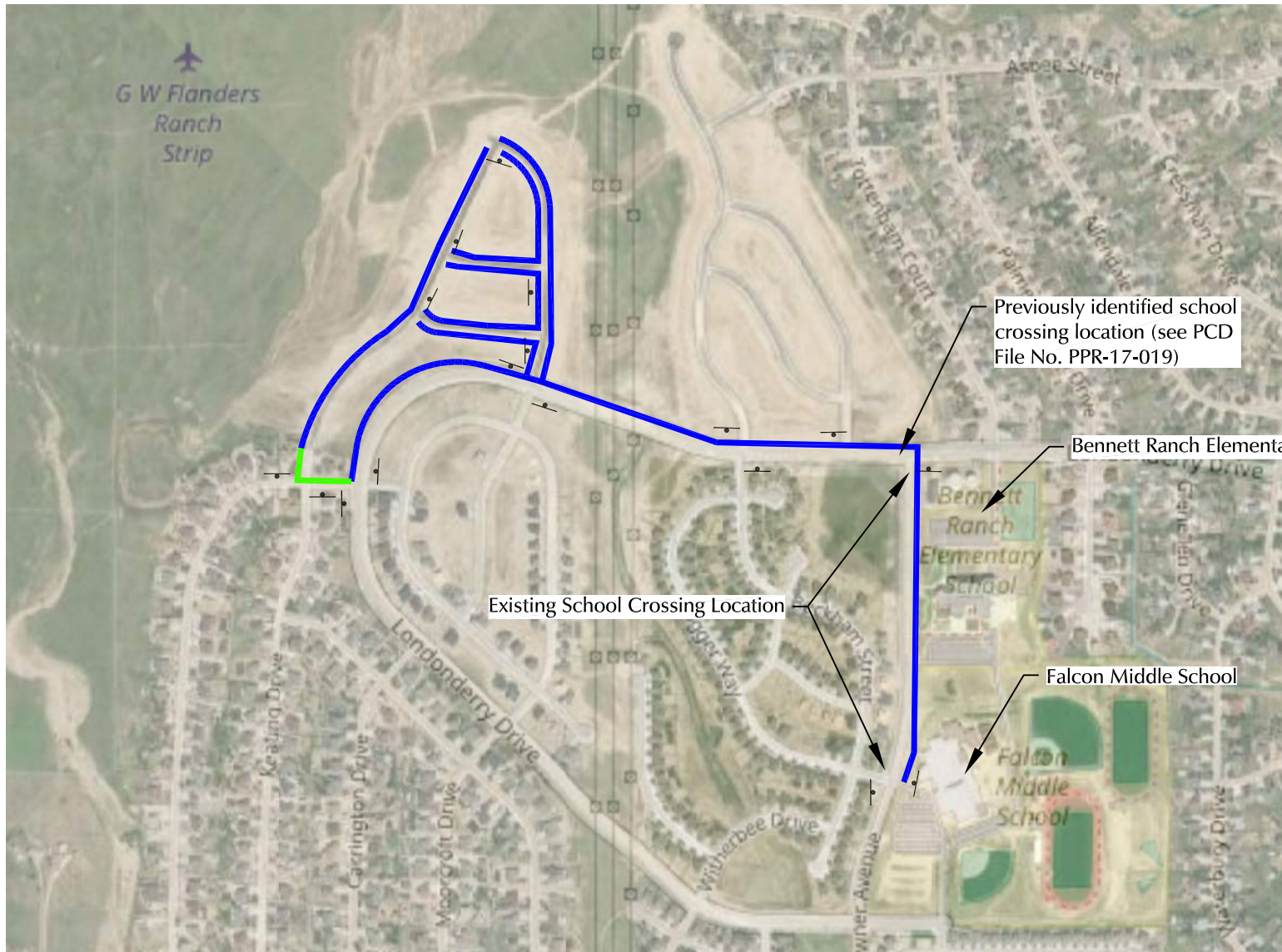












Approximate Scale  
Scale: NTS

Figure 5

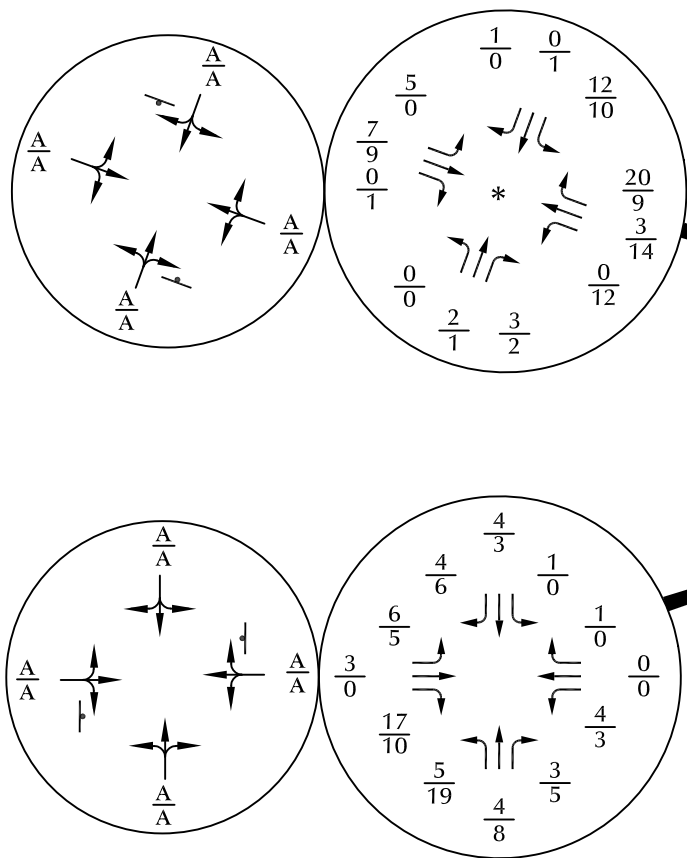
# School Pedestrian Routing Plan

Paintbrush Hills Filing 14 (LSC #184630)

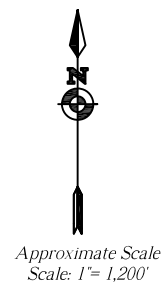
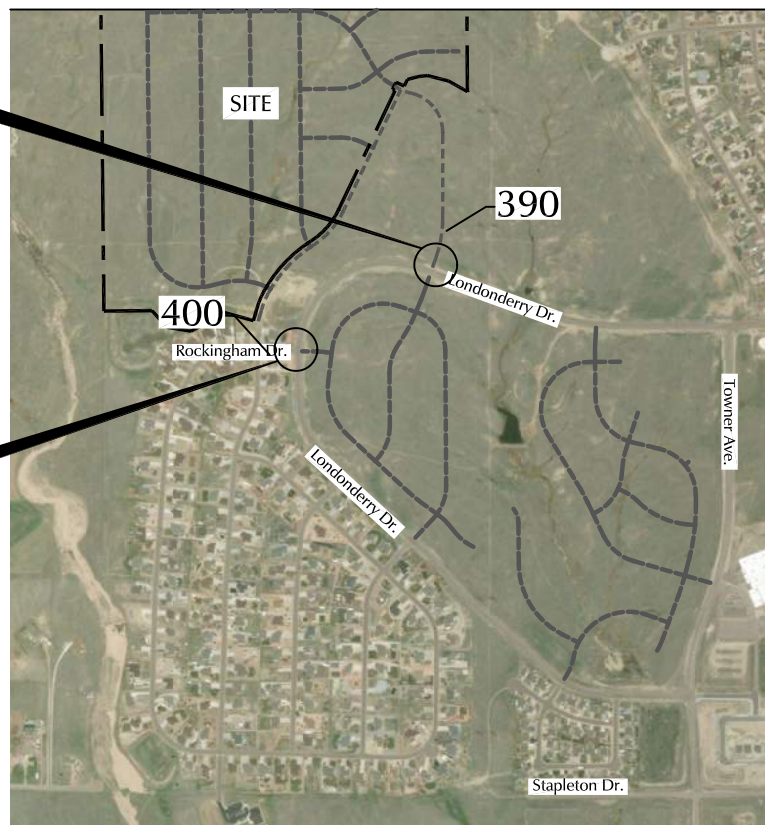


## LEGEND:

- = School pedestrian route
- = School pedestrian route - no existing sidewalks
- | = Stop Sign



\*The majority of the vehicles using the north leg appeared to be construction related.



LEGEND:

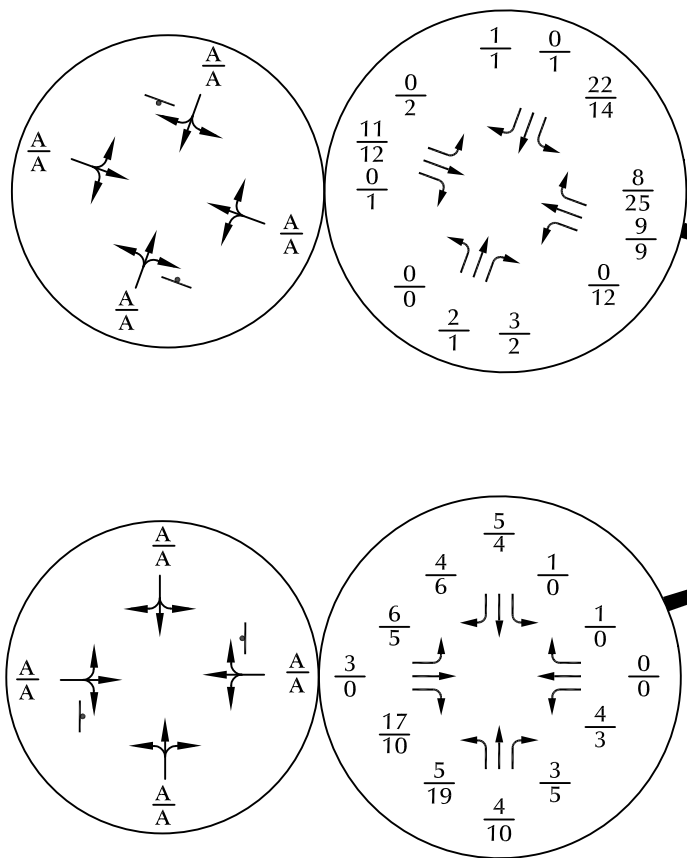
- = Stop Sign
- $\frac{XX}{XX}$  =  $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$  Based on counts by LSC December 2020
- $\frac{A}{B}$  =  $\frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$
- X,XXX= Average Daily Traffic (vehicles per day) (Estimated by LSC based on peak-hour traffic volumes)



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

Paintbrush Hills Filing 14 (LSC #184630)

Figure 6



LEGEND:

= Stop Sign

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

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

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

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

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

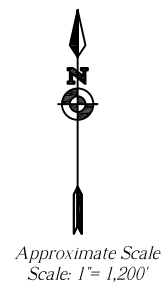
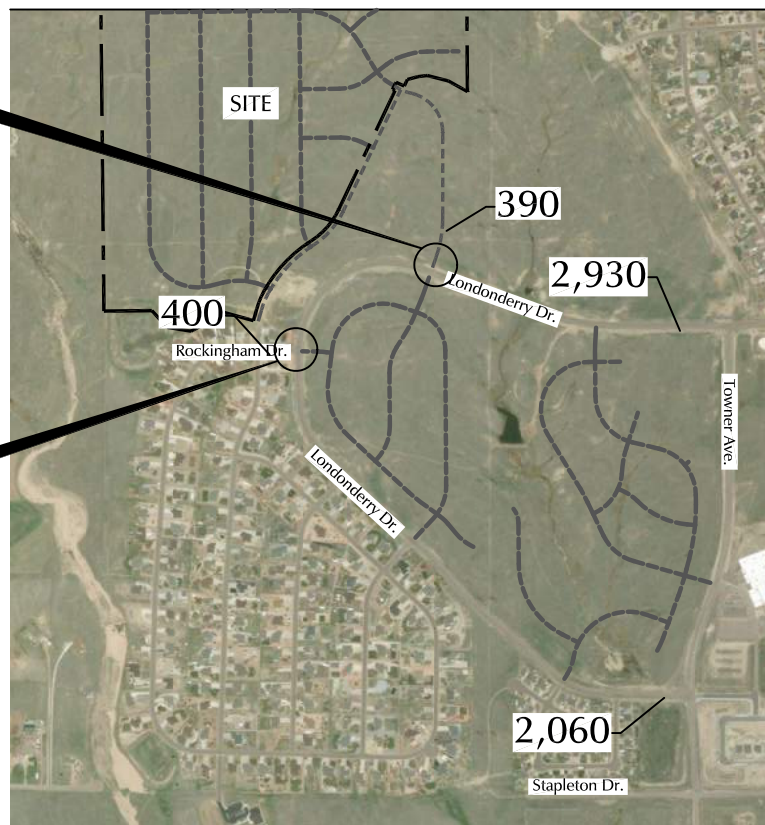
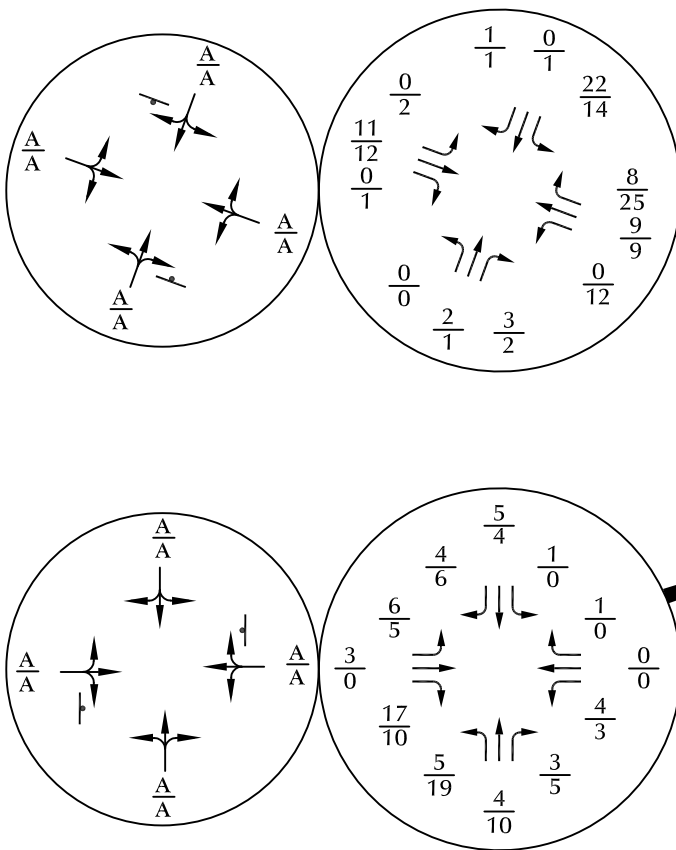


Figure 7

# Short-Term Background Traffic, Lane Geometry, Traffic Control and Level of Service

Paintbrush Hills Filing 14 (LSC #184630)





LEGEND:

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

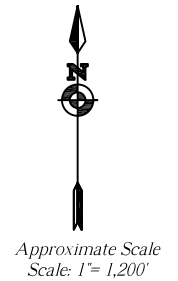
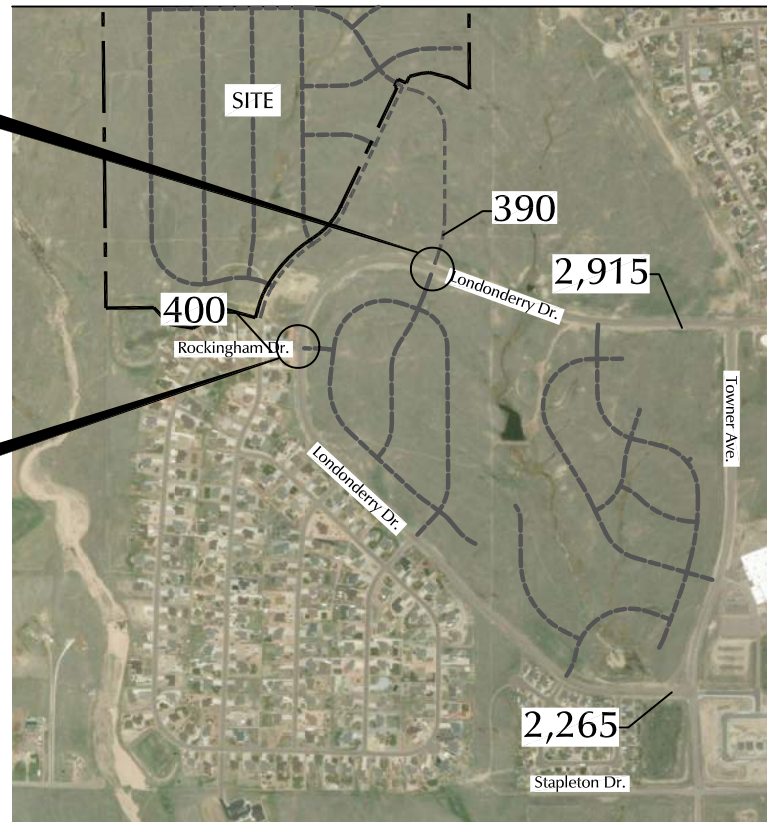
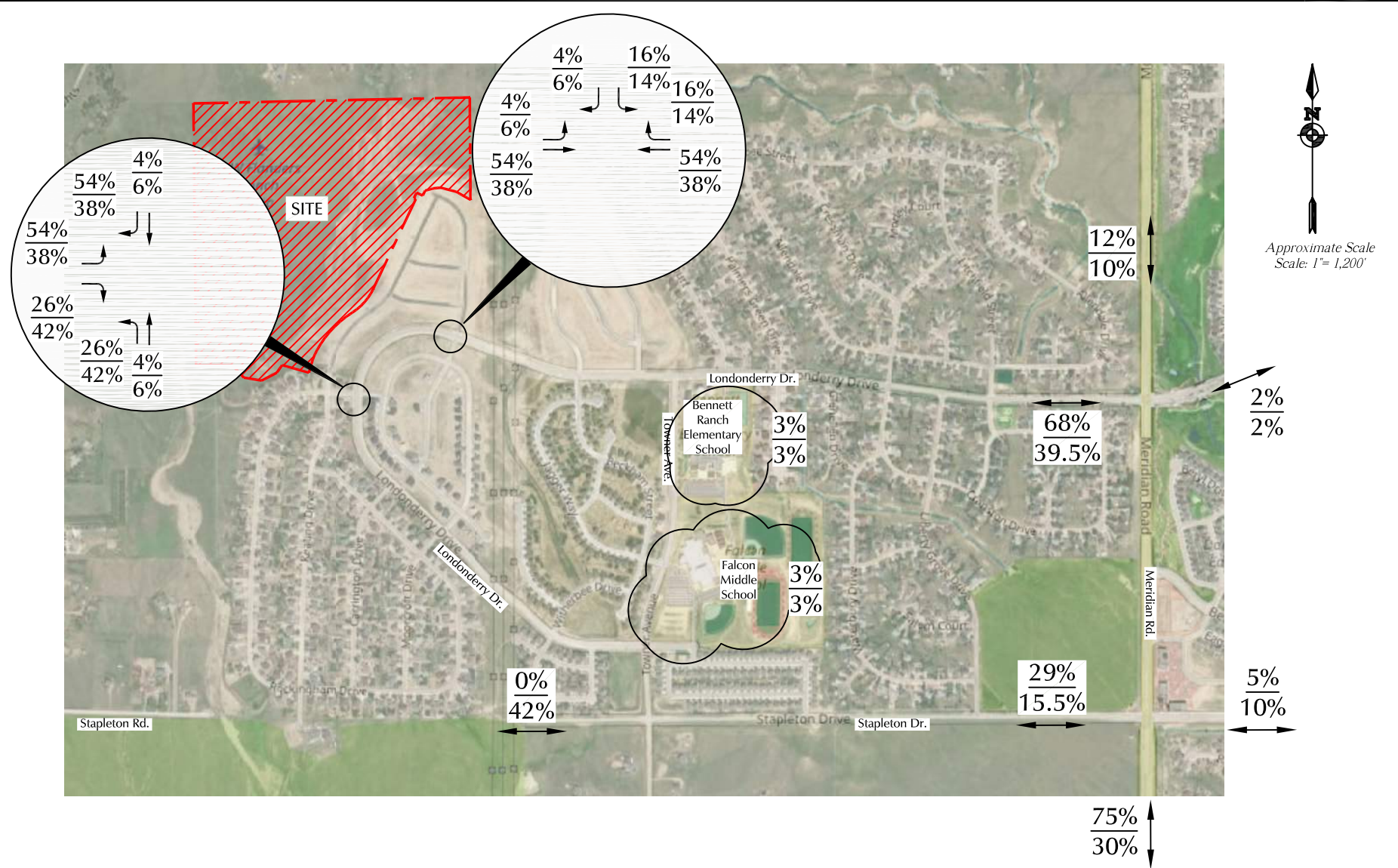


Figure 8

# Year 2040 Background Traffic, Lane Geometry, Traffic Control and Level of Service

Paintbrush Hills Filing 14 (LSC #184630)



Approximate Scale  
Scale: 1" = 1,200'



LEGEND:

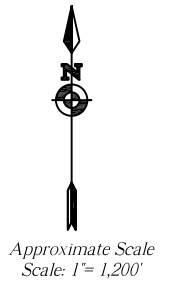
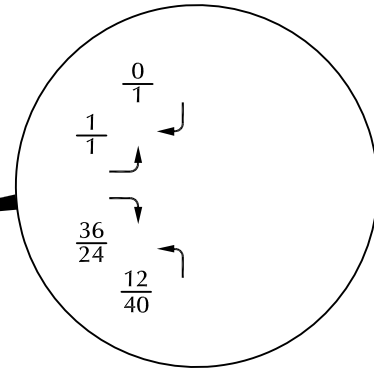
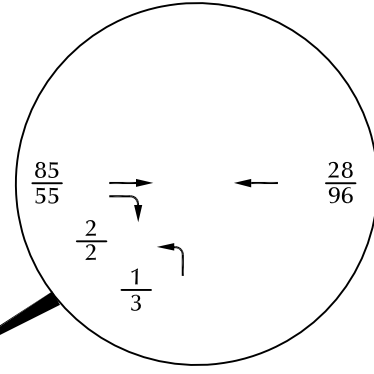
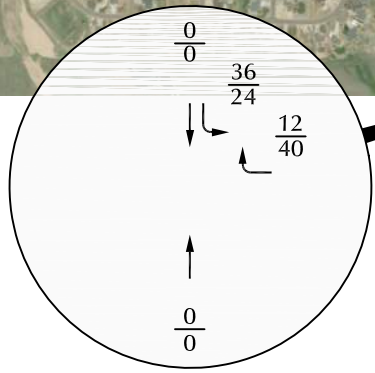
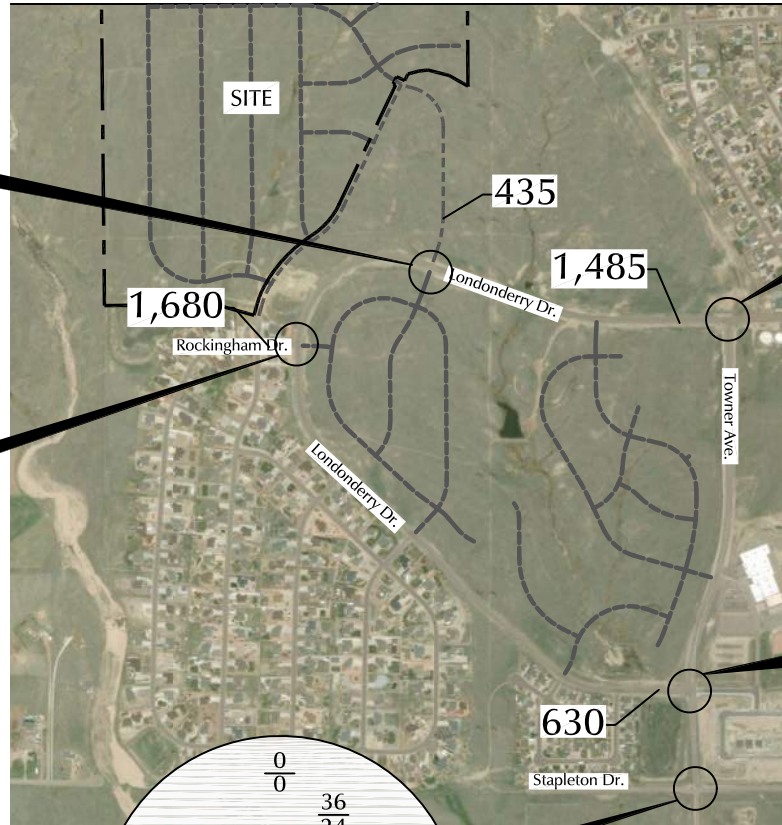
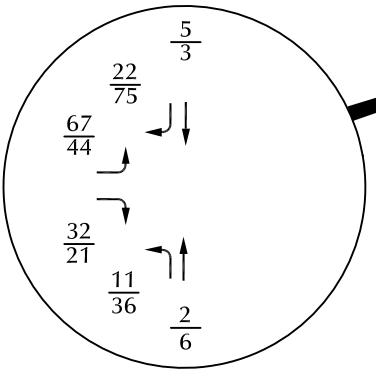
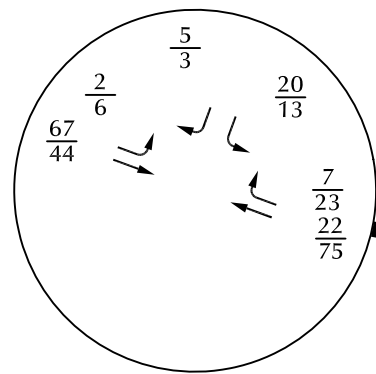
XX%  
XX%

= Short-Term Percent Directional Distribution  
Long-Term Percent Directional Distribution

## Directional Distribution of Site-Generated Traffic

Paintbrush Hills Filings 14 and 15 (LSC #184630)

Figure 9



LEGEND:

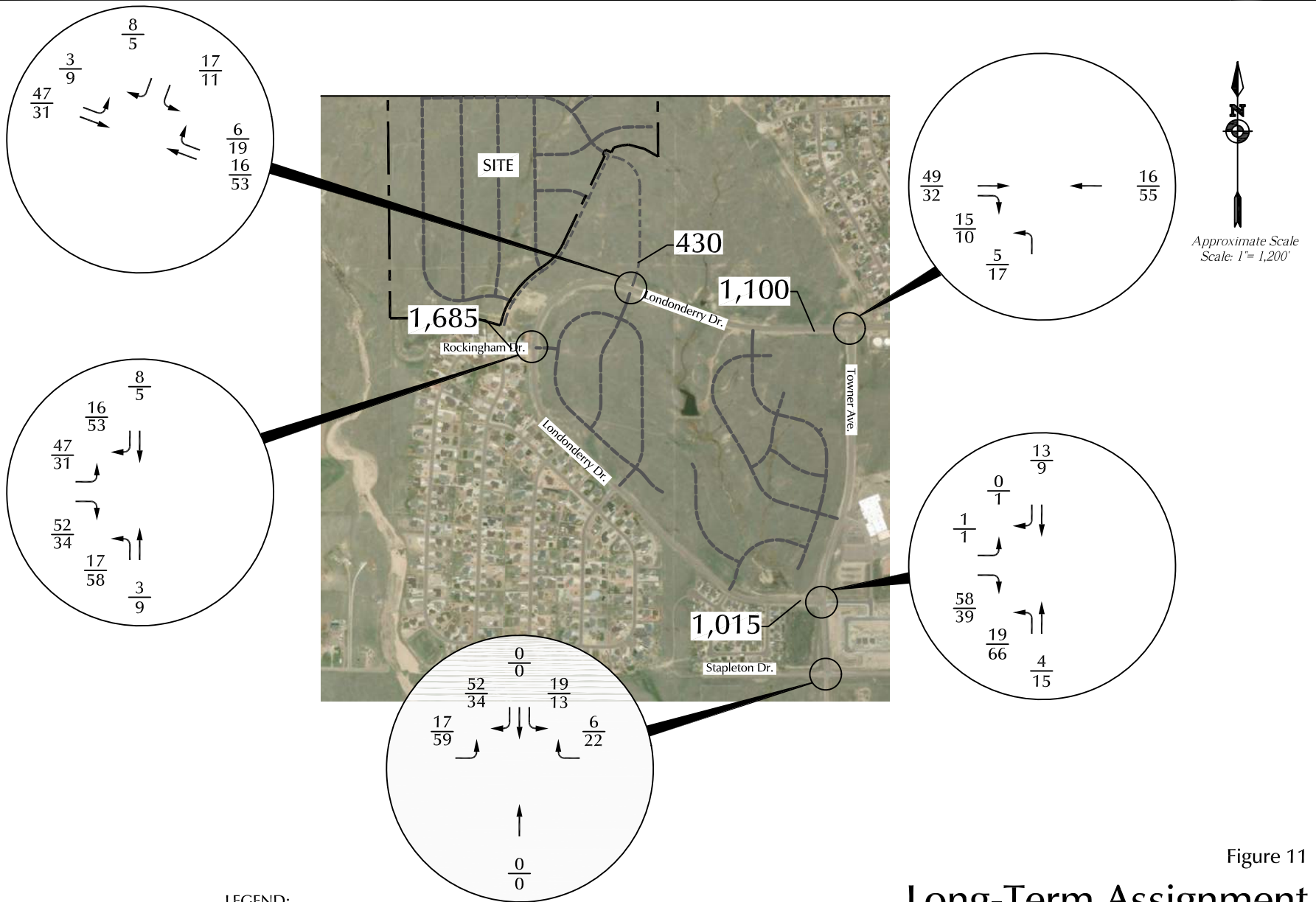
$\frac{XX}{XX}$  = AM Weekday Peak-Hour Traffic (vehicles per hour)  
 $\frac{XX}{XX}$  = PM Weekday Peak-Hour Traffic (vehicles per hour)  
 X,XXX = Annual Average Daily Traffic (vehicles per day)

# Short-Term Assignment of Site-Generated Traffic

Paintbrush Hills Filing 14 (LSC #184630)

Figure 10



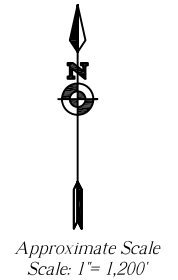
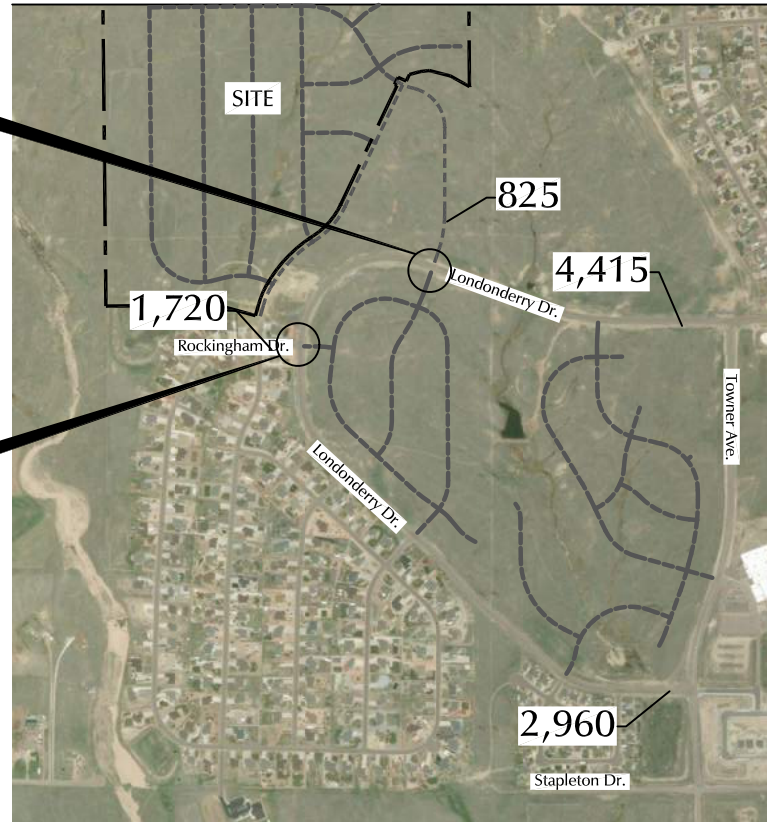
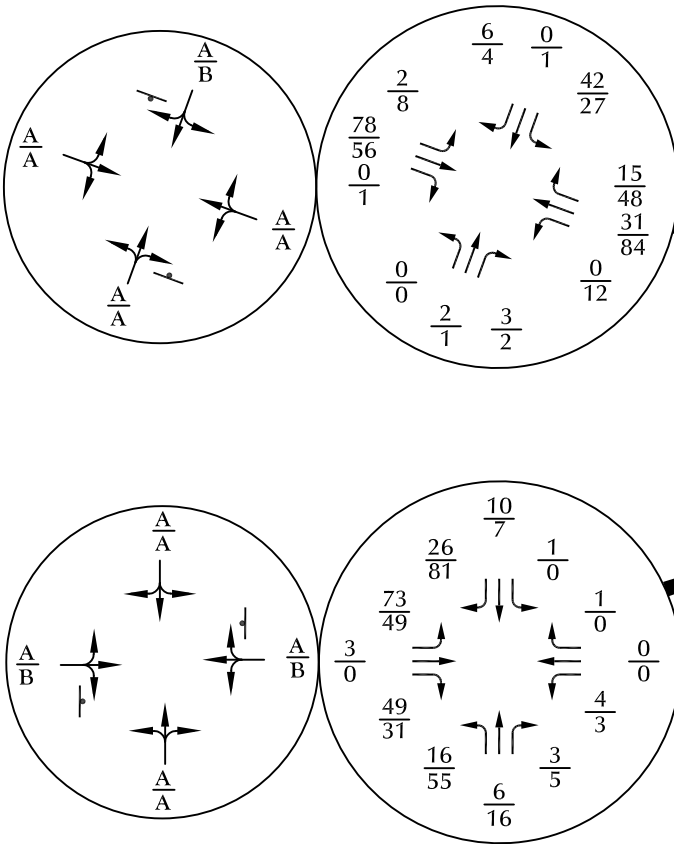


LEGEND:

$\frac{XX}{XX}$  = 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)

## Long-Term Assignment of Site-Generated Traffic

Paintbrush Hills Filing 14 (LSC #184630)



LEGEND:

⊥ = Stop Sign

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

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

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

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

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

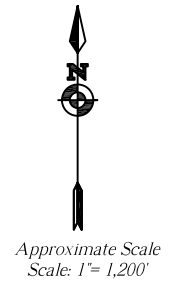
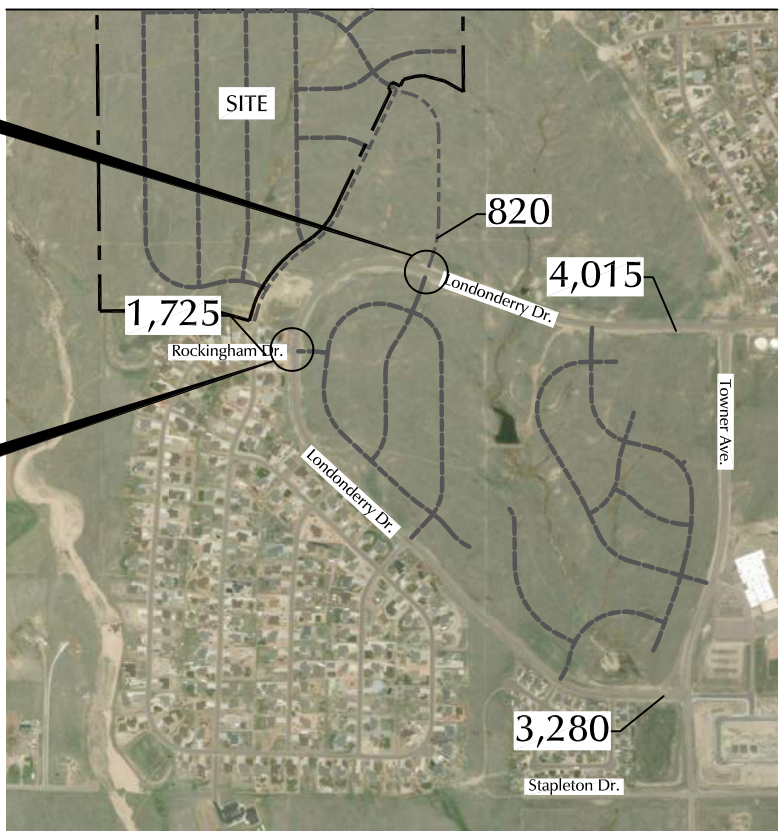
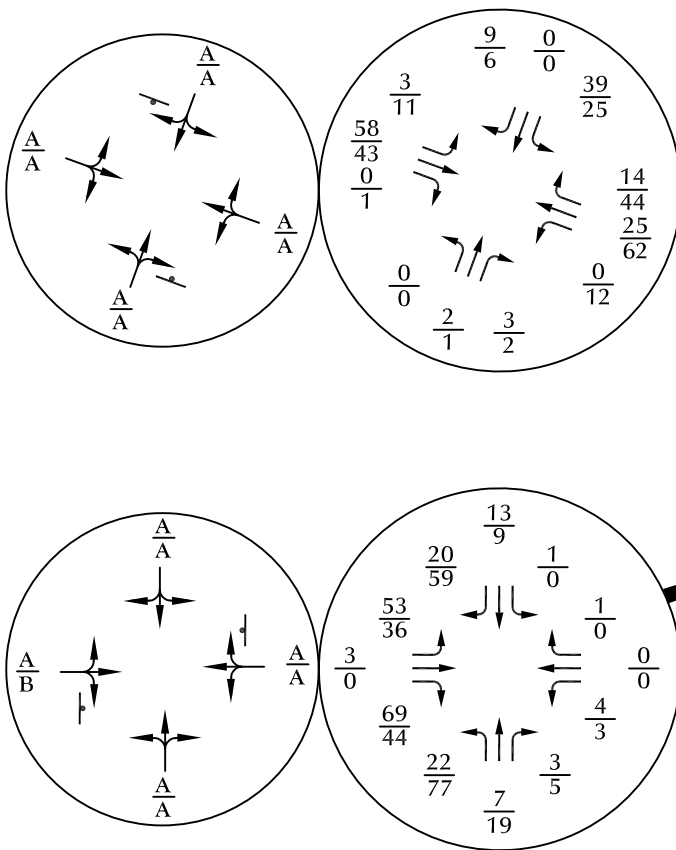


## Short-Term Total Traffic, Lane Geometry, Traffic Control and Level of Service


Figure 12

Paintbrush Hills Filing 14 (LSC #184630)





LEGEND:

 = Stop Sign

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

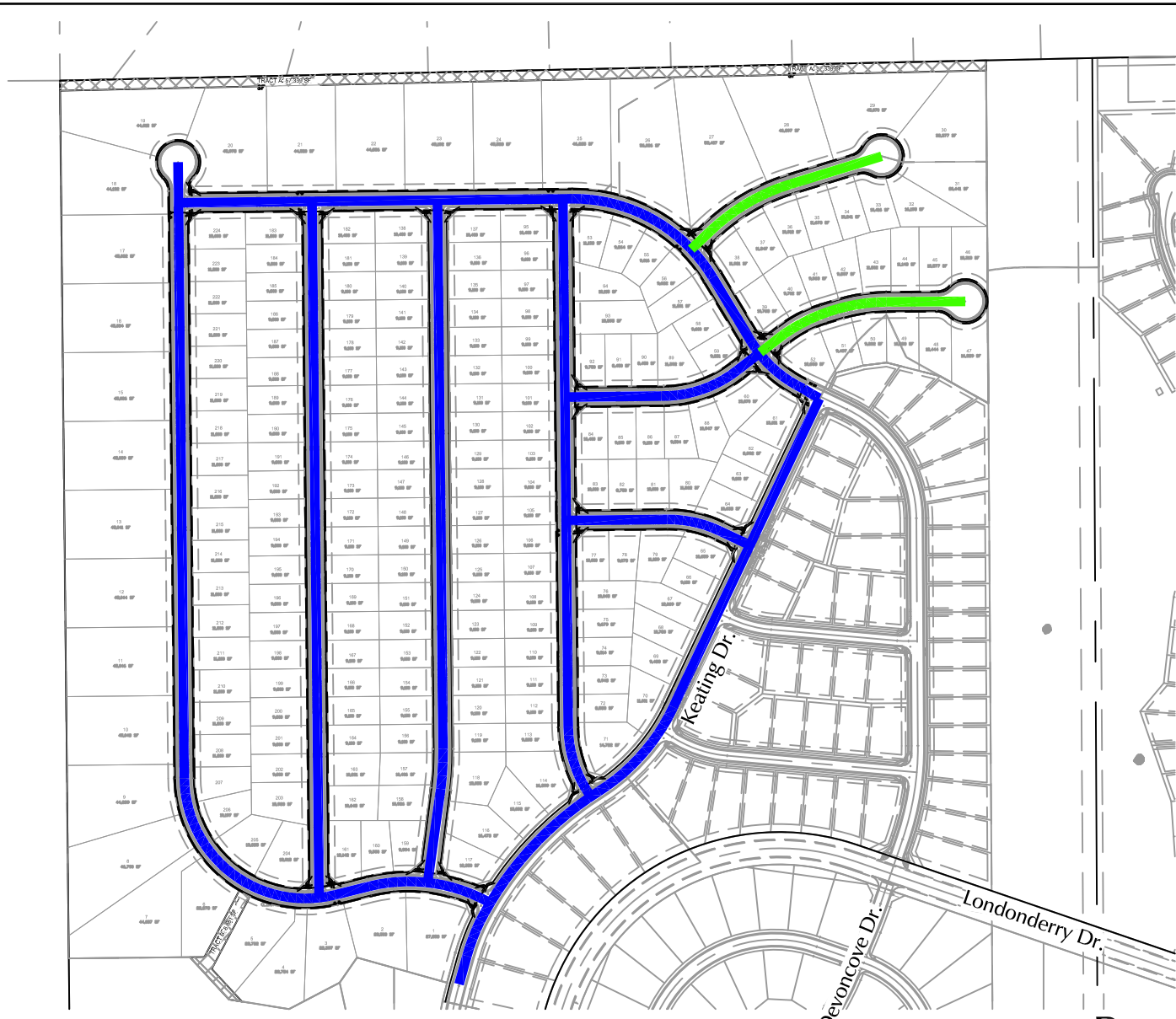
$\frac{A}{B}$  =  $\frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

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

Figure 13

## 2040 Total Traffic, Lane Geometry, Traffic Control and Level of Service

Paintbrush Hills Filing 14 (LSC #184630)



Approximate Scale  
Scale: 1" = 400'

LEGEND:

- = Urban Local
- = Urban Local (Low Volume)

Figure 14  
**Recommended  
Street Classifications**  
Paintbrush Hills Filings 14 (LSC #184630)



# Traffic Counts

---

# LSC Transportation Consultants, Inc.

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

File Name : Londonderry Dr - Rockingham Dr AM  
Site Code : 00184630  
Start Date : 12/17/2020  
Page No : 1

## Groups Printed- Unshifted

	Londonderry Dr Southbound					Rockingham Dr Westbound					Londonderry Dr Northbound					Rockingham Dr Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	5	0	6	9
07:15 AM	1	0	2	0	3	0	0	1	0	1	2	0	0	0	2	2	0	5	0	7	13
07:30 AM	0	0	1	0	1	1	0	0	0	1	1	2	0	0	3	1	2	2	0	5	10
07:45 AM	0	3	1	0	4	1	0	0	0	1	2	2	3	0	7	2	1	5	0	8	20
Total	1	4	4	0	9	4	0	1	0	5	5	4	3	0	12	6	3	17	0	26	52
08:00 AM	0	0	0	0	0	1	0	1	0	2	1	0	0	0	1	0	0	1	0	1	4
08:15 AM	0	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	0	2	0	2	4
08:30 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	0	0	4	0	4	7
08:45 AM	0	0	0	0	0	1	0	0	0	1	1	3	0	0	4	0	0	2	0	2	7
Total	0	1	0	0	1	3	0	1	0	4	3	5	0	0	8	0	0	9	0	9	22
Grand Total	1	5	4	0	10	7	0	2	0	9	8	9	3	0	20	6	3	26	0	35	74
Apprch %	10	50	40	0		77.8	0	22.2	0		40	45	15	0		17.1	8.6	74.3	0		
Total %	1.4	6.8	5.4	0	13.5	9.5	0	2.7	0	12.2	10.8	12.2	4.1	0	27	8.1	4.1	35.1	0	47.3	

# LSC Transportation Consultants, Inc.

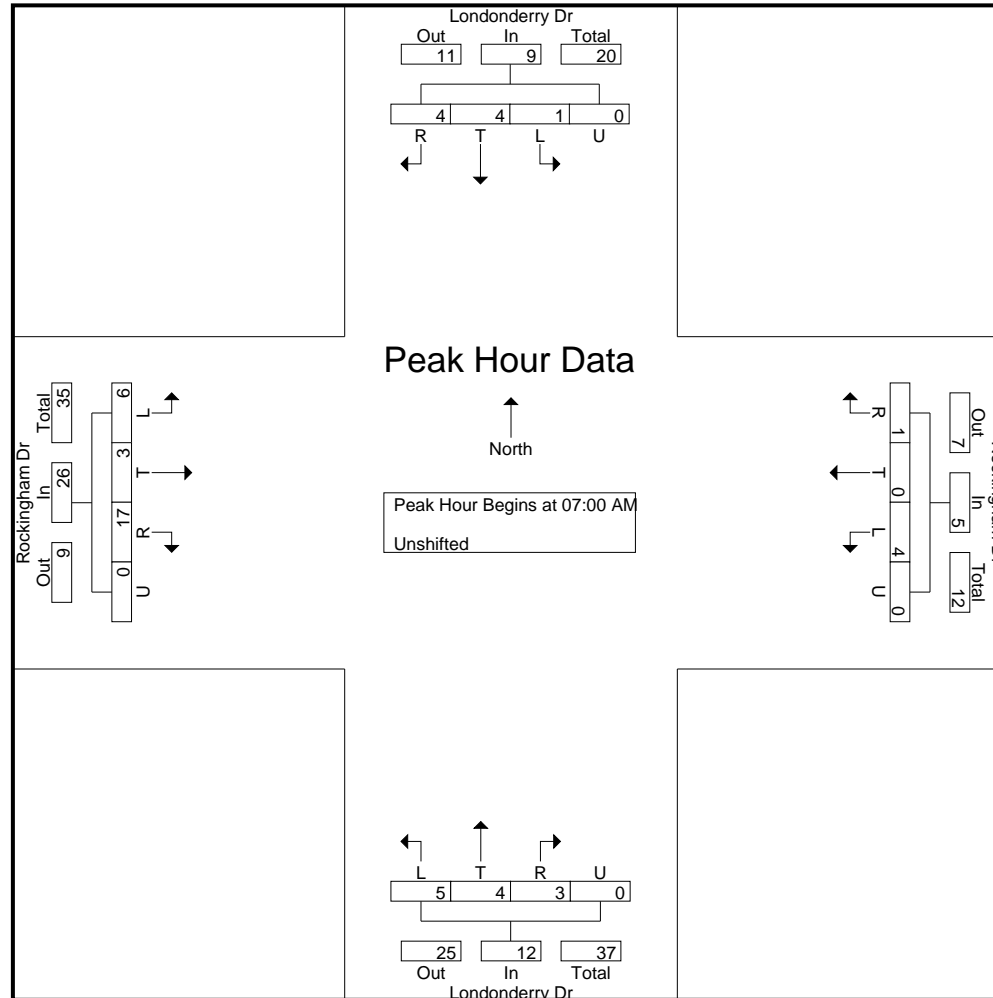
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Londonderry Dr - Rockingham Dr AM

Site Code : 00184630

Start Date : 12/17/2020

Page No : 3



# LSC Transportation Consultants, Inc.

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

File Name : Londonderry Dr - Rockingham Dr PM

Site Code : 00184630

Start Date : 12/15/2020

Page No : 1

## Groups Printed- Unshifted

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Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	0	0	1	0	1	0	0	0	0	0	4	2	0	0	6	0	0	2	0	2	9
04:15 PM	0	2	1	0	3	0	0	0	0	0	6	2	0	0	8	1	0	2	0	3	14
04:30 PM	0	1	2	0	3	1	0	0	0	1	6	0	1	0	7	0	0	5	0	5	16
04:45 PM	0	0	1	0	1	2	0	0	0	2	1	1	3	0	5	1	0	1	2	4	12
Total	0	3	5	0	8	3	0	0	0	3	17	5	4	0	26	2	0	10	2	14	51
05:00 PM	0	0	2	0	2	0	0	0	0	0	6	5	1	0	12	3	0	2	0	5	19
05:15 PM	0	1	1	0	2	1	0	0	0	1	4	1	1	0	6	0	0	2	0	2	11
05:30 PM	0	1	0	0	1	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	4
05:45 PM	0	5	0	0	5	0	0	0	0	0	5	0	0	0	5	0	0	1	0	1	11
Total	0	7	3	0	10	1	0	0	0	1	17	7	2	0	26	3	0	5	0	8	45
Grand Total	0	10	8	0	18	4	0	0	0	4	34	12	6	0	52	5	0	15	2	22	96
Apprch %	0	55.6	44.4	0		100	0	0	0		65.4	23.1	11.5	0		22.7	0	68.2	9.1		
Total %	0	10.4	8.3	0	18.8	4.2	0	0	0	4.2	35.4	12.5	6.2	0	54.2	5.2	0	15.6	2.1	22.9	

# LSC Transportation Consultants, Inc.

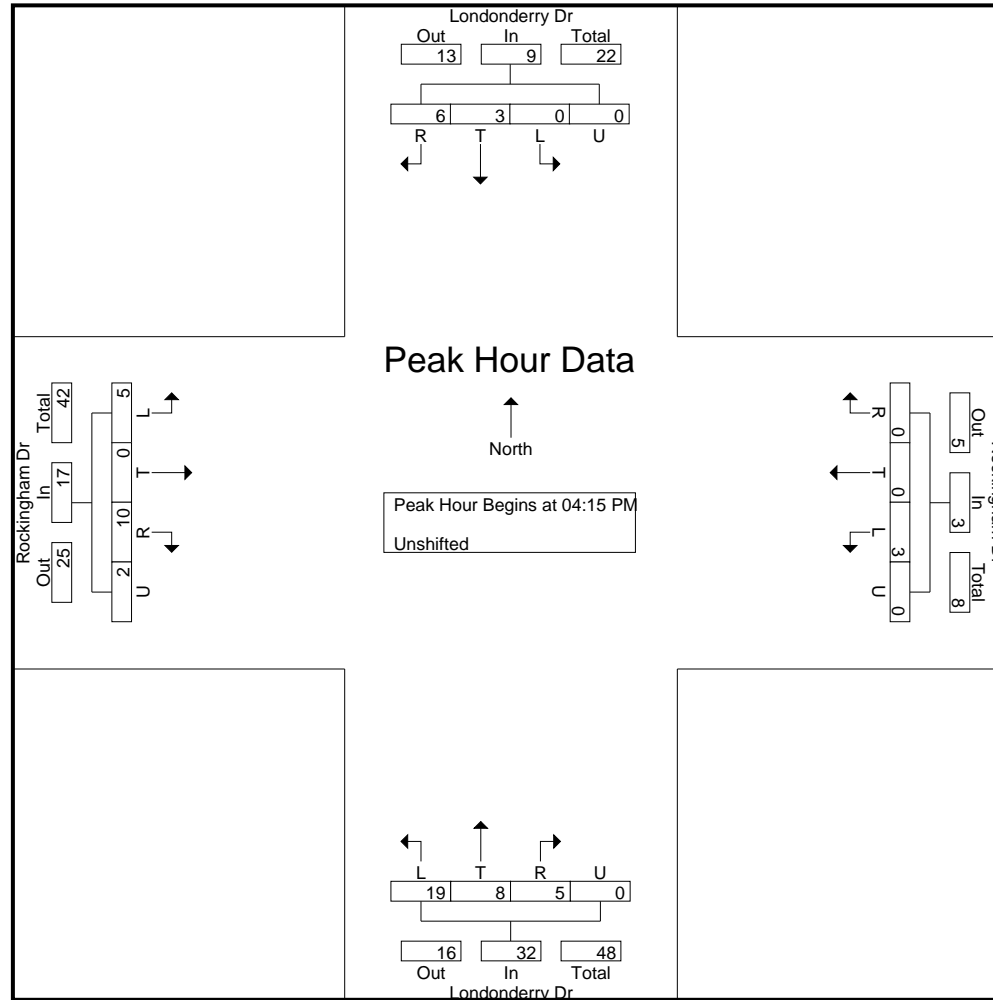
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Londonderry Dr - Rockingham Dr PM

Site Code : 00184630

Start Date : 12/15/2020

Page No : 3



# LSC Transportation Consultants, Inc.

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

File Name : Devoncove Dr - Londonderry Dr AM  
Site Code : 00184630  
Start Date : 12/22/2020  
Page No : 1

## Groups Printed- Unshifted

	Devoncove Dr Southbound					Londonderry Dr Westbound					Devoncove Dr Northbound					Londonderry Dr Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
07:00 AM	1	0	0	0	1	2	1	4	0	7	0	1	0	0	1	0	2	0	0	2	11
07:15 AM	3	0	0	0	3	3	0	3	0	6	0	1	0	0	1	0	3	1	0	4	14
07:30 AM	1	0	0	0	1	0	0	5	0	5	0	1	1	0	2	0	1	0	0	1	9
07:45 AM	6	0	0	0	6	0	0	5	0	5	0	1	0	0	1	2	3	0	0	5	17
Total	11	0	0	0	11	5	1	17	0	23	0	4	1	0	5	2	9	1	0	12	51
08:00 AM	0	0	0	0	0	0	2	7	0	9	0	0	1	0	1	1	2	0	0	3	13
08:15 AM	3	0	1	0	4	0	0	6	1	7	0	0	1	0	1	2	0	0	0	2	14
08:30 AM	3	0	0	0	3	0	1	2	0	3	0	1	1	0	2	0	2	0	0	2	10
08:45 AM	3	0	1	0	4	2	2	6	0	10	0	0	0	0	0	0	0	0	0	0	14
Total	9	0	2	0	11	2	5	21	1	29	0	1	3	0	4	3	4	0	0	7	51
Grand Total	20	0	2	0	22	7	6	38	1	52	0	5	4	0	9	5	13	1	0	19	102
Apprch %	90.9	0	9.1	0		13.5	11.5	73.1	1.9		0	55.6	44.4	0		26.3	68.4	5.3	0		
Total %	19.6	0	2	0	21.6	6.9	5.9	37.3	1	51	0	4.9	3.9	0	8.8	4.9	12.7	1	0	18.6	



# LSC Transportation Consultants, Inc.

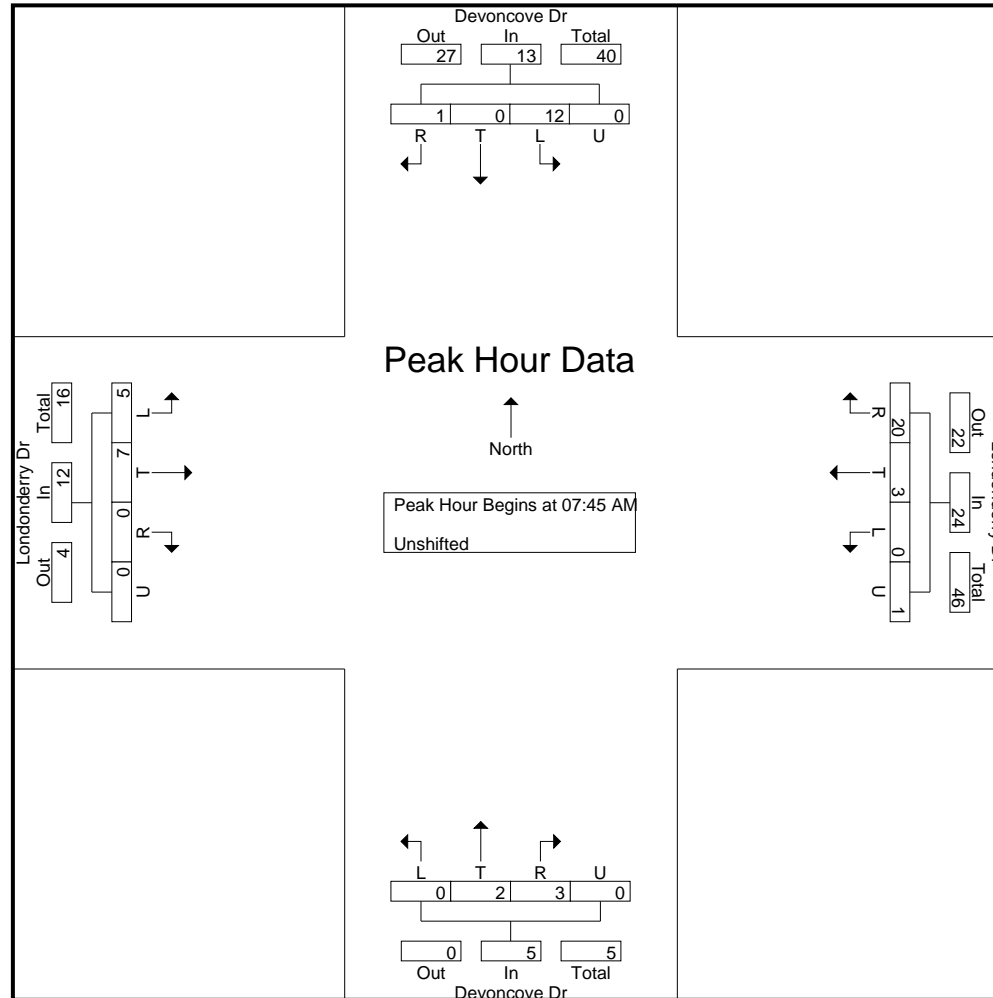
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Devoncove Dr - Londonderry Dr AM

Site Code : 00184630

Start Date : 12/22/2020

Page No : 3



# LSC Transportation Consultants, Inc.

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

File Name : Devoncove Dr - Londonderry Dr PM  
Site Code : 00184630  
Start Date : 12/17/2020  
Page No : 1

## Groups Printed- Unshifted

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Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	2	0	0	0	2	1	6	1	0	8	0	0	0	0	0	1	3	0	0	4	14
04:15 PM	4	0	0	0	4	1	1	1	0	3	0	0	1	0	1	1	3	1	0	5	13
04:30 PM	5	1	0	0	6	0	3	2	0	5	0	0	2	0	2	0	1	0	0	1	14
04:45 PM	2	0	0	0	2	1	4	2	0	7	1	0	0	0	1	0	1	0	0	1	11
Total	13	1	0	0	14	3	14	6	0	23	1	0	3	0	4	2	8	1	0	11	52
05:00 PM	2	0	0	0	2	4	3	1	0	8	0	1	1	0	2	0	1	0	0	1	13
05:15 PM	4	1	0	1	6	2	5	2	0	9	0	0	1	0	1	0	3	1	0	4	20
05:30 PM	3	0	0	0	3	3	3	3	0	9	0	0	0	0	0	0	2	0	0	2	14
05:45 PM	1	0	0	0	1	3	3	3	0	9	0	0	0	0	0	0	3	0	0	3	13
Total	10	1	0	1	12	12	14	9	0	35	0	1	2	0	3	0	9	1	0	10	60
Grand Total	23	2	0	1	26	15	28	15	0	58	1	1	5	0	7	2	17	2	0	21	112
Apprch %	88.5	7.7	0	3.8		25.9	48.3	25.9	0		14.3	14.3	71.4	0		9.5	81	9.5	0		
Total %	20.5	1.8	0	0.9	23.2	13.4	25	13.4	0	51.8	0.9	0.9	4.5	0	6.2	1.8	15.2	1.8	0	18.8	

# LSC Transportation Consultants, Inc.

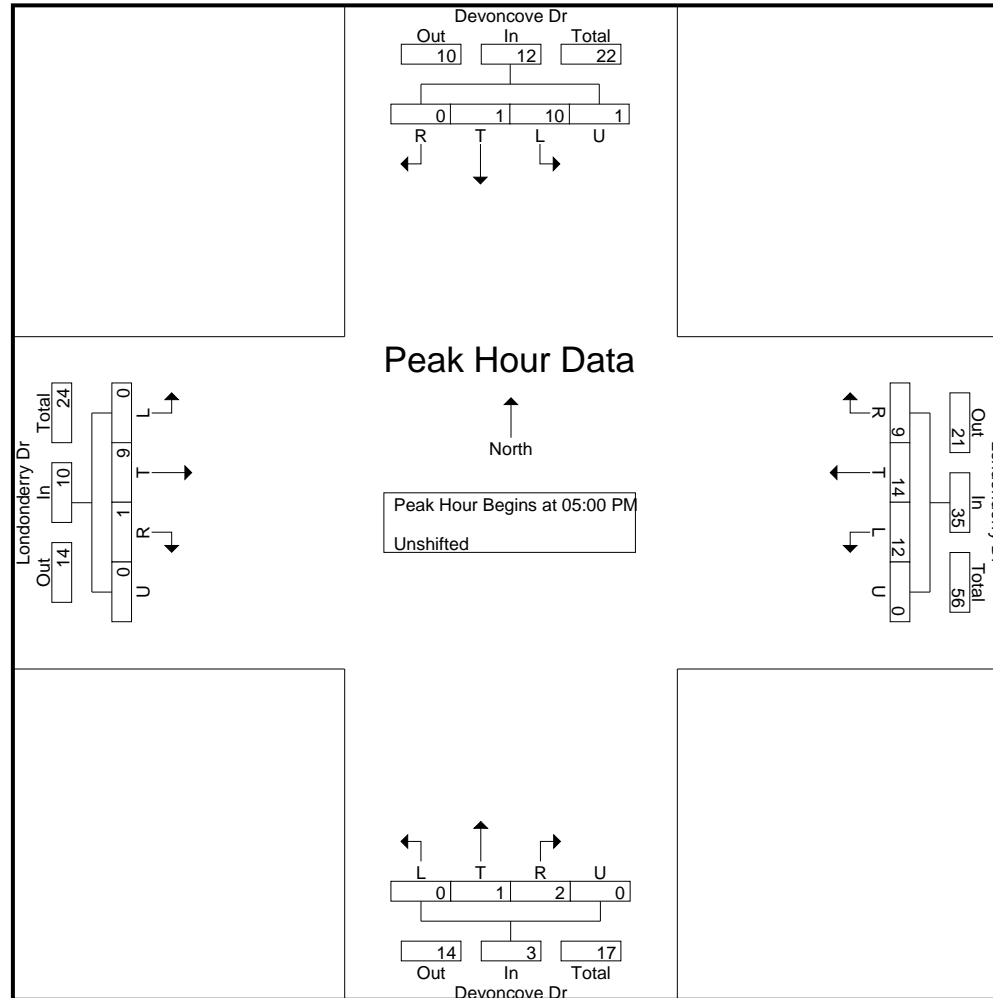
545 E Pikes Peak Ave, Suite 210  
Colorado Springs, CO 80905  
719-633-2868

File Name : Devoncove Dr - Londonderry Dr PM

Site Code : 00184630

Start Date : 12/17/2020

Page No : 3







# Levels of Service

---

HCM 6th TWSC  
12: Devoncove Dr & Londonderry Dr

Existing Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	7	0	0	3	20	0	2	3	12	0	1
Future Vol, veh/h	5	7	0	0	3	20	0	2	3	12	0	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	78	78	78	43	43	43	56	56	56
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	9	0	0	4	26	0	5	7	21	0	2
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	30	0	0	9	0	0	39	51	9	44	38	17
Stage 1	-	-	-	-	-	-	21	21	-	17	17	-
Stage 2	-	-	-	-	-	-	18	30	-	27	21	-
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	1583	-	-	1611	-	-	966	840	1073	958	854	1062
Stage 1	-	-	-	-	-	-	998	878	-	1002	881	-
Stage 2	-	-	-	-	-	-	1001	870	-	990	878	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1611	-	-	961	837	1073	945	851	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	961	837	-	945	851	-
Stage 1	-	-	-	-	-	-	994	874	-	998	881	-
Stage 2	-	-	-	-	-	-	999	870	-	974	874	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	3			0			8.8			8.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	964	1583	-	-	1611	-	-	953				
HCM Lane V/C Ratio	0.012	0.004	-	-	-	-	-	0.024				
HCM Control Delay (s)	8.8	7.3	0	-	0	-	-	8.9				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr

Existing Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	3	17	4	0	1	5	4	3	1	4	4
Future Vol, veh/h	6	3	17	4	0	1	5	4	3	1	4	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	60	60	60	78	78	78	78	78	78	54	54	54
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	5	28	5	0	1	6	5	4	2	7	7





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	35	36	11	50	37	7	14	0	0	9	0	0
Stage 1	15	15	-	19	19	-	-	-	-	-	-	-
Stage 2	20	21	-	31	18	-	-	-	-	-	-	-
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	971	856	1070	950	855	1075	1604	-	-	1611	-	-
Stage 1	1005	883	-	1000	880	-	-	-	-	-	-	-
Stage 2	999	878	-	986	880	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	966	852	1070	917	851	1075	1604	-	-	1611	-	-
Mov Cap-2 Maneuver	966	852	-	917	851	-	-	-	-	-	-	-
Stage 1	1001	882	-	996	876	-	-	-	-	-	-	-
Stage 2	994	874	-	953	879	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	8.8	3	0.8
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1604	-	-	1015 945	1611	-	-
HCM Lane V/C Ratio	0.004	-	-	0.043 0.007	0.001	-	-
HCM Control Delay (s)	7.3	0	-	8.7 8.8	7.2	0	-
HCM Lane LOS	A	A	-	A A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0	0	-	-

HCM 6th TWSC  
12: Devoncove Dr & Londonderry Dr

Existing Traffic  
PM Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	9	1	12	14	9	0	1	2	10	1	0
Future Vol, veh/h	0	9	1	12	14	9	0	1	2	10	1	0
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	78	78	78	67	67	67	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	12	1	15	18	12	0	1	3	13	1	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	30	0	0	13	0	0	68	73	13	69	67	24
Stage 1	-	-	-	-	-	-	13	13	-	54	54	-
Stage 2	-	-	-	-	-	-	55	60	-	15	13	-
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	1583	-	-	1606	-	-	925	817	1067	923	824	1052
Stage 1	-	-	-	-	-	-	1007	885	-	958	850	-
Stage 2	-	-	-	-	-	-	957	845	-	1005	885	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1583	-	-	1606	-	-	917	809	1067	912	816	1052
Mov Cap-2 Maneuver	-	-	-	-	-	-	917	809	-	912	816	-
Stage 1	-	-	-	-	-	-	1007	885	-	958	842	-
Stage 2	-	-	-	-	-	-	946	837	-	1000	885	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.5			8.8			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	964	1583	-	-	1606	-	-	902				
HCM Lane V/C Ratio	0.005	-	-	-	0.01	-	-	0.016				
HCM Control Delay (s)	8.8	0	-	-	7.3	0	-	9.1				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0				

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr

Existing Traffic  
PM Peak Hour





Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	10	3	0	0	19	8	5	0	3	6
Future Vol, veh/h	5	0	10	3	0	0	19	8	5	0	3	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	97	97	97	78	78	78	55	55	55
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	0	16	3	0	0	24	10	6	0	5	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	72	75	11	80	77	13	16	0	0	16	0	0
Stage 1	11	11	-	61	61	-	-	-	-	-	-	-
Stage 2	61	64	-	19	16	-	-	-	-	-	-	-
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	919	815	1070	908	813	1067	1602	-	-	1602	-	-
Stage 1	1010	886	-	950	844	-	-	-	-	-	-	-
Stage 2	950	842	-	1000	882	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	909	803	1070	884	801	1067	1602	-	-	1602	-	-
Mov Cap-2 Maneuver	909	803	-	884	801	-	-	-	-	-	-	-
Stage 1	995	886	-	936	831	-	-	-	-	-	-	-
Stage 2	936	829	-	985	882	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	9.1	4.3	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1602	-	-	1010 884	1602	-	-
HCM Lane V/C Ratio	0.015	-	-	0.024 0.003	-	-	-
HCM Control Delay (s)	7.3	0	-	8.7 9.1	0	-	-
HCM Lane LOS	A	A	-	A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0	0	-	-







Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	11	0	0	9	8	0	2	3	22	0	1
Future Vol, veh/h	0	11	0	0	9	8	0	2	3	22	0	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	0	0	11	9	0	2	4	26	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	20	0	0	13	0	0	29	33	13	32	29	16
Stage 1	-	-	-	-	-	-	13	13	-	16	16	-
Stage 2	-	-	-	-	-	-	16	20	-	16	13	-
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	1596	-	-	1606	-	-	980	860	1067	976	864	1063
Stage 1	-	-	-	-	-	-	1007	885	-	1004	882	-
Stage 2	-	-	-	-	-	-	1004	879	-	1004	885	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1596	-	-	1606	-	-	979	860	1067	971	864	1063
Mov Cap-2 Maneuver	-	-	-	-	-	-	979	860	-	971	864	-
Stage 1	-	-	-	-	-	-	1007	885	-	1004	882	-
Stage 2	-	-	-	-	-	-	1003	879	-	998	885	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			8.7			8.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	973	1596	-	-	1606	-	-	975				
HCM Lane V/C Ratio	0.006	-	-	-	-	-	-	0.028				
HCM Control Delay (s)	8.7	0	-	-	0	-	-	8.8				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr

Short-Term Background Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	3	17	4	0	1	5	4	3	1	5	4
Future Vol, veh/h	6	3	17	4	0	1	5	4	3	1	5	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	4	20	5	0	1	6	5	4	1	6	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	31	32	9	42	32	7	11	0	0	9	0	0
Stage 1	11	11	-	19	19	-	-	-	-	-	-	-
Stage 2	20	21	-	23	13	-	-	-	-	-	-	-
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	977	861	1073	961	861	1075	1608	-	-	1611	-	-
Stage 1	1010	886	-	1000	880	-	-	-	-	-	-	-
Stage 2	999	878	-	995	885	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	972	857	1073	937	857	1075	1608	-	-	1611	-	-
Mov Cap-2 Maneuver	972	857	-	937	857	-	-	-	-	-	-	-
Stage 1	1006	885	-	996	876	-	-	-	-	-	-	-
Stage 2	994	874	-	972	884	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.6		8.8		3		0.7					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1608	-	-	1019	962	1611	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.03	0.006	0.001	-	-				
HCM Control Delay (s)	7.2	0	-	8.6	8.8	7.2	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	12	1	12	9	25	0	1	2	14	1	1
Future Vol, veh/h	2	12	1	12	9	25	0	1	2	14	1	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	14	1	14	11	29	0	1	2	16	1	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	40	0	0	15	0	0	74	87	15	74	73	26
Stage 1	-	-	-	-	-	-	19	19	-	54	54	-
Stage 2	-	-	-	-	-	-	55	68	-	20	19	-
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	1570	-	-	1603	-	-	916	803	1065	916	817	1050
Stage 1	-	-	-	-	-	-	1000	880	-	958	850	-
Stage 2	-	-	-	-	-	-	957	838	-	999	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1570	-	-	1603	-	-	907	795	1065	906	809	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	907	795	-	906	809	-
Stage 1	-	-	-	-	-	-	999	879	-	957	842	-
Stage 2	-	-	-	-	-	-	946	830	-	994	879	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			1.9			8.8			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	957	1570	-	-	1603	-	-	907				
HCM Lane V/C Ratio	0.004	0.001	-	-	0.009	-	-	0.021				
HCM Control Delay (s)	8.8	7.3	0	-	7.3	0	-	9.1				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	10	3	0	0	19	10	5	0	4	6
Future Vol, veh/h	5	0	10	3	0	0	19	10	5	0	4	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	12	4	0	0	22	12	6	0	5	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	68	71	9	74	71	15	12	0	0	18	0	0
Stage 1	9	9	-	59	59	-	-	-	-	-	-	-
Stage 2	59	62	-	15	12	-	-	-	-	-	-	-
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	925	819	1073	916	819	1065	1607	-	-	1599	-	-
Stage 1	1012	888	-	953	846	-	-	-	-	-	-	-
Stage 2	953	843	-	1005	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	915	808	1073	896	808	1065	1607	-	-	1599	-	-
Mov Cap-2 Maneuver	915	808	-	896	808	-	-	-	-	-	-	-
Stage 1	998	888	-	940	834	-	-	-	-	-	-	-
Stage 2	940	831	-	994	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9	4.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1607	-	-	1015 896	1599	-	-
HCM Lane V/C Ratio	0.014	-	-	0.017 0.004	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6 9	0	-	-
HCM Lane LOS	A	A	-	A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0	0	-	-

HCM 6th TWSC  
12: Devoncove Dr & Londonderry Dr

Short-Term Total Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	2.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	78	0	0	31	15	0	2	3	42	0	6
Future Vol, veh/h	2	78	0	0	31	15	0	2	3	42	0	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	92	0	0	36	18	0	2	4	49	0	7





Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	54	0	0	92	0	0	145	150	92	144	141	45
Stage 1	-	-	-	-	-	-	96	96	-	45	45	-
Stage 2	-	-	-	-	-	-	49	54	-	99	96	-
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	1551	-	-	1503	-	-	824	742	965	825	750	1025
Stage 1	-	-	-	-	-	-	911	815	-	969	857	-
Stage 2	-	-	-	-	-	-	964	850	-	907	815	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1551	-	-	1503	-	-	817	741	965	819	749	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	817	741	-	819	749	-
Stage 1	-	-	-	-	-	-	910	814	-	968	857	-
Stage 2	-	-	-	-	-	-	957	850	-	900	814	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0	9.2	9.6
HCM LOS			A	A





Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	861	1551	-	-	1503	-	-	840
HCM Lane V/C Ratio	0.007	0.002	-	-	-	-	-	0.067
HCM Control Delay (s)	9.2	7.3	0	-	0	-	-	9.6
HCM Lane LOS	A	A	A	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr

Short-Term Total Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	3	49	4	0	1	16	6	3	1	10	26
Future Vol, veh/h	73	3	49	4	0	1	16	6	3	1	10	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	4	58	5	0	1	19	7	4	1	12	31
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	78	79	28	108	92	9	43	0	0	11	0	0
Stage 1	30	30	-	47	47	-	-	-	-	-	-	-
Stage 2	48	49	-	61	45	-	-	-	-	-	-	-
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	911	811	1047	871	798	1073	1566	-	-	1608	-	-
Stage 1	987	870	-	967	856	-	-	-	-	-	-	-
Stage 2	965	854	-	950	857	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	901	800	1047	812	788	1073	1566	-	-	1608	-	-
Mov Cap-2 Maneuver	901	800	-	812	788	-	-	-	-	-	-	-
Stage 1	975	869	-	955	846	-	-	-	-	-	-	-
Stage 2	952	844	-	893	856	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.5		9.2		4.7		0.2					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1566	-	-	950	854	1608	-	-				
HCM Lane V/C Ratio	0.012	-	-	0.155	0.007	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9.5	9.2	7.2	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0	0	-	-				



Intersection												
Int Delay, s/veh	2.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	56	1	12	84	48	0	1	2	27	1	4
Future Vol, veh/h	8	56	1	12	84	48	0	1	2	27	1	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	66	1	14	99	56	0	1	2	32	1	5
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	155	0	0	67	0	0	243	268	67	241	240	127
Stage 1	-	-	-	-	-	-	85	85	-	155	155	-
Stage 2	-	-	-	-	-	-	158	183	-	86	85	-
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	1425	-	-	1535	-	-	711	638	997	713	661	923
Stage 1	-	-	-	-	-	-	923	824	-	847	769	-
Stage 2	-	-	-	-	-	-	844	748	-	922	824	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1425	-	-	1535	-	-	697	627	997	701	650	923
Mov Cap-2 Maneuver	-	-	-	-	-	-	697	627	-	701	650	-
Stage 1	-	-	-	-	-	-	917	818	-	841	761	-
Stage 2	-	-	-	-	-	-	830	741	-	912	818	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.6			9.3			10.3		
HCM LOS							A			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	833	1425	-	-	1535	-	-	721				
HCM Lane V/C Ratio	0.004	0.007	-	-	0.009	-	-	0.052				
HCM Control Delay (s)	9.3	7.5	0	-	7.4	0	-	10.3				
HCM Lane LOS	A	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr





Short-Term Total Traffic  
PM Peak Hour

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	49	0	31	3	0	0	55	16	5	0	7	81
Future Vol, veh/h	49	0	31	3	0	0	55	16	5	0	7	81
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	0	36	4	0	0	65	19	6	0	8	95





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	208	211	56	226	255	22	103	0	0	25	0	0
Stage 1	56	56	-	152	152	-	-	-	-	-	-	-
Stage 2	152	155	-	74	103	-	-	-	-	-	-	-
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	749	686	1011	729	649	1055	1489	-	-	1589	-	-
Stage 1	956	848	-	850	772	-	-	-	-	-	-	-
Stage 2	850	769	-	935	810	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	724	656	1011	679	620	1055	1489	-	-	1589	-	-
Mov Cap-2 Maneuver	724	656	-	679	620	-	-	-	-	-	-	-
Stage 1	914	848	-	813	738	-	-	-	-	-	-	-
Stage 2	813	735	-	901	810	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.3	5.4	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1489	-	-	813 679	1589	-	-
HCM Lane V/C Ratio	0.043	-	-	0.116 0.005	-	-	-
HCM Control Delay (s)	7.5	0	-	10 10.3	0	-	-
HCM Lane LOS	A	A	-	B B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4 0	0	-	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	11	0	0	9	8	0	2	3	22	0	1
Future Vol, veh/h	0	11	0	0	9	8	0	2	3	22	0	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	0	0	11	9	0	2	4	26	0	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	20	0	0	13	0	0	29	33	13	32	29	16
Stage 1	-	-	-	-	-	-	13	13	-	16	16	-
Stage 2	-	-	-	-	-	-	16	20	-	16	13	-
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	1596	-	-	1606	-	-	980	860	1067	976	864	1063
Stage 1	-	-	-	-	-	-	1007	885	-	1004	882	-
Stage 2	-	-	-	-	-	-	1004	879	-	1004	885	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1596	-	-	1606	-	-	979	860	1067	971	864	1063
Mov Cap-2 Maneuver	-	-	-	-	-	-	979	860	-	971	864	-
Stage 1	-	-	-	-	-	-	1007	885	-	1004	882	-
Stage 2	-	-	-	-	-	-	1003	879	-	998	885	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			8.7			8.8		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	973	1596	-	-	1606	-	-	975				
HCM Lane V/C Ratio	0.006	-	-	-	-	-	-	0.028				
HCM Control Delay (s)	8.7	0	-	-	0	-	-	8.8				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	5.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	3	17	4	0	1	5	4	3	1	5	4
Future Vol, veh/h	6	3	17	4	0	1	5	4	3	1	5	4
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	4	20	5	0	1	6	5	4	1	6	5
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	31	32	9	42	32	7	11	0	0	9	0	0
Stage 1	11	11	-	19	19	-	-	-	-	-	-	-
Stage 2	20	21	-	23	13	-	-	-	-	-	-	-
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	977	861	1073	961	861	1075	1608	-	-	1611	-	-
Stage 1	1010	886	-	1000	880	-	-	-	-	-	-	-
Stage 2	999	878	-	995	885	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	972	857	1073	937	857	1075	1608	-	-	1611	-	-
Mov Cap-2 Maneuver	972	857	-	937	857	-	-	-	-	-	-	-
Stage 1	1006	885	-	996	876	-	-	-	-	-	-	-
Stage 2	994	874	-	972	884	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.6		8.8		3		0.7					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1608	-	-	1019	962	1611	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.03	0.006	0.001	-	-				
HCM Control Delay (s)	7.2	0	-	8.6	8.8	7.2	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-				

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	12	1	12	9	25	0	1	2	14	1	1
Future Vol, veh/h	2	12	1	12	9	25	0	1	2	14	1	1
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	14	1	14	11	29	0	1	2	16	1	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	40	0	0	15	0	0	74	87	15	74	73	26
Stage 1	-	-	-	-	-	-	19	19	-	54	54	-
Stage 2	-	-	-	-	-	-	55	68	-	20	19	-
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	1570	-	-	1603	-	-	916	803	1065	916	817	1050
Stage 1	-	-	-	-	-	-	1000	880	-	958	850	-
Stage 2	-	-	-	-	-	-	957	838	-	999	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1570	-	-	1603	-	-	907	795	1065	906	809	1050
Mov Cap-2 Maneuver	-	-	-	-	-	-	907	795	-	906	809	-
Stage 1	-	-	-	-	-	-	999	879	-	957	842	-
Stage 2	-	-	-	-	-	-	946	830	-	994	879	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			1.9			8.8			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	957	1570	-	-	1603	-	-	907				
HCM Lane V/C Ratio	0.004	0.001	-	-	0.009	-	-	0.021				
HCM Control Delay (s)	8.8	7.3	0	-	7.3	0	-	9.1				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	0	10	3	0	0	19	10	5	0	4	6
Future Vol, veh/h	5	0	10	3	0	0	19	10	5	0	4	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	12	4	0	0	22	12	6	0	5	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	68	71	9	74	71	15	12	0	0	18	0	0
Stage 1	9	9	-	59	59	-	-	-	-	-	-	-
Stage 2	59	62	-	15	12	-	-	-	-	-	-	-
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	925	819	1073	916	819	1065	1607	-	-	1599	-	-
Stage 1	1012	888	-	953	846	-	-	-	-	-	-	-
Stage 2	953	843	-	1005	886	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	915	808	1073	896	808	1065	1607	-	-	1599	-	-
Mov Cap-2 Maneuver	915	808	-	896	808	-	-	-	-	-	-	-
Stage 1	998	888	-	940	834	-	-	-	-	-	-	-
Stage 2	940	831	-	994	886	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9	4.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1607	-	-	1015 896	1599	-	-
HCM Lane V/C Ratio	0.014	-	-	0.017 0.004	-	-	-
HCM Control Delay (s)	7.3	0	-	8.6 9	0	-	-
HCM Lane LOS	A	A	-	A A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0	0	-	-



Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	58	0	0	25	14	0	2	3	39	0	9
Future Vol, veh/h	3	58	0	0	25	14	0	2	3	39	0	9
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	68	0	0	29	16	0	2	4	46	0	11
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	45	0	0	68	0	0	119	121	68	116	113	37
Stage 1	-	-	-	-	-	-	76	76	-	37	37	-
Stage 2	-	-	-	-	-	-	43	45	-	79	76	-
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	1563	-	-	1533	-	-	857	769	995	861	777	1035
Stage 1	-	-	-	-	-	-	933	832	-	978	864	-
Stage 2	-	-	-	-	-	-	971	857	-	930	832	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1563	-	-	1533	-	-	847	767	995	854	775	1035
Mov Cap-2 Maneuver	-	-	-	-	-	-	847	767	-	854	775	-
Stage 1	-	-	-	-	-	-	930	830	-	975	864	-
Stage 2	-	-	-	-	-	-	961	857	-	921	830	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			9.1			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	889	1563	-	-	1533	-	-	883				
HCM Lane V/C Ratio	0.007	0.002	-	-	-	-	-	0.064				
HCM Control Delay (s)	9.1	7.3	0	-	0	-	-	9.4				
HCM Lane LOS	A	A	A	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

HCM 6th TWSC  
23: Londonderry Dr & Rockingham Dr

2040 Total Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	7.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	53	3	69	4	0	1	22	7	3	1	13	20
Future Vol, veh/h	53	3	69	4	0	1	22	7	3	1	13	20
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	62	4	81	5	0	1	26	8	4	1	15	24
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	92	93	27	134	103	10	39	0	0	12	0	0
Stage 1	29	29	-	62	62	-	-	-	-	-	-	-
Stage 2	63	64	-	72	41	-	-	-	-	-	-	-
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	892	797	1048	838	787	1071	1571	-	-	1607	-	-
Stage 1	988	871	-	949	843	-	-	-	-	-	-	-
Stage 2	948	842	-	938	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	879	783	1048	760	773	1071	1571	-	-	1607	-	-
Mov Cap-2 Maneuver	879	783	-	760	773	-	-	-	-	-	-	-
Stage 1	971	870	-	933	829	-	-	-	-	-	-	-
Stage 2	931	828	-	861	860	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.4		9.5			5			0.2			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1571	-	-	962	807	1607	-	-				
HCM Lane V/C Ratio	0.016	-	-	0.153	0.007	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9.4	9.5	7.2	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0	0	-	-				

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	11	43	1	12	62	44	0	1	2	25	1	6
Future Vol, veh/h	11	43	1	12	62	44	0	1	2	25	1	6
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	51	1	14	73	52	0	1	2	29	1	7
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	125	0	0	52	0	0	209	231	52	206	205	99
Stage 1	-	-	-	-	-	-	78	78	-	127	127	-
Stage 2	-	-	-	-	-	-	131	153	-	79	78	-
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	1462	-	-	1554	-	-	748	669	1016	752	691	957
Stage 1	-	-	-	-	-	-	931	830	-	877	791	-
Stage 2	-	-	-	-	-	-	873	771	-	930	830	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1462	-	-	1554	-	-	731	656	1016	738	678	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	731	656	-	738	678	-
Stage 1	-	-	-	-	-	-	923	823	-	869	783	-
Stage 2	-	-	-	-	-	-	857	763	-	918	823	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.5			0.7			9.2			9.9		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	859	1462	-	-	1554	-	-	769				
HCM Lane V/C Ratio	0.004	0.009	-	-	0.009	-	-	0.049				
HCM Control Delay (s)	9.2	7.5	0	-	7.3	0	-	9.9				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.2				

Intersection												
Int Delay, s/veh	5.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	0	44	3	0	0	77	19	5	0	9	59
Future Vol, veh/h	36	0	44	3	0	0	77	19	5	0	9	59
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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	0	52	4	0	0	91	22	6	0	11	69

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	253	256	46	279	287	25	80	0	0	28	0	0
Stage 1	46	46	-	207	207	-	-	-	-	-	-	-
Stage 2	207	210	-	72	80	-	-	-	-	-	-	-
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	700	648	1023	673	623	1051	1518	-	-	1585	-	-
Stage 1	968	857	-	795	731	-	-	-	-	-	-	-
Stage 2	795	728	-	938	828	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	667	608	1023	609	585	1051	1518	-	-	1585	-	-
Mov Cap-2 Maneuver	667	608	-	609	585	-	-	-	-	-	-	-
Stage 1	909	857	-	747	686	-	-	-	-	-	-	-
Stage 2	747	684	-	891	828	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10.9	5.7	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	825 609	1585	-	-
HCM Lane V/C Ratio	0.06	-	-	0.114 0.006	-	-	-
HCM Control Delay (s)	7.5	0	-	9.9 10.9	0	-	-
HCM Lane LOS	A	A	-	A B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4 0	0	-	-

# MTCP Maps

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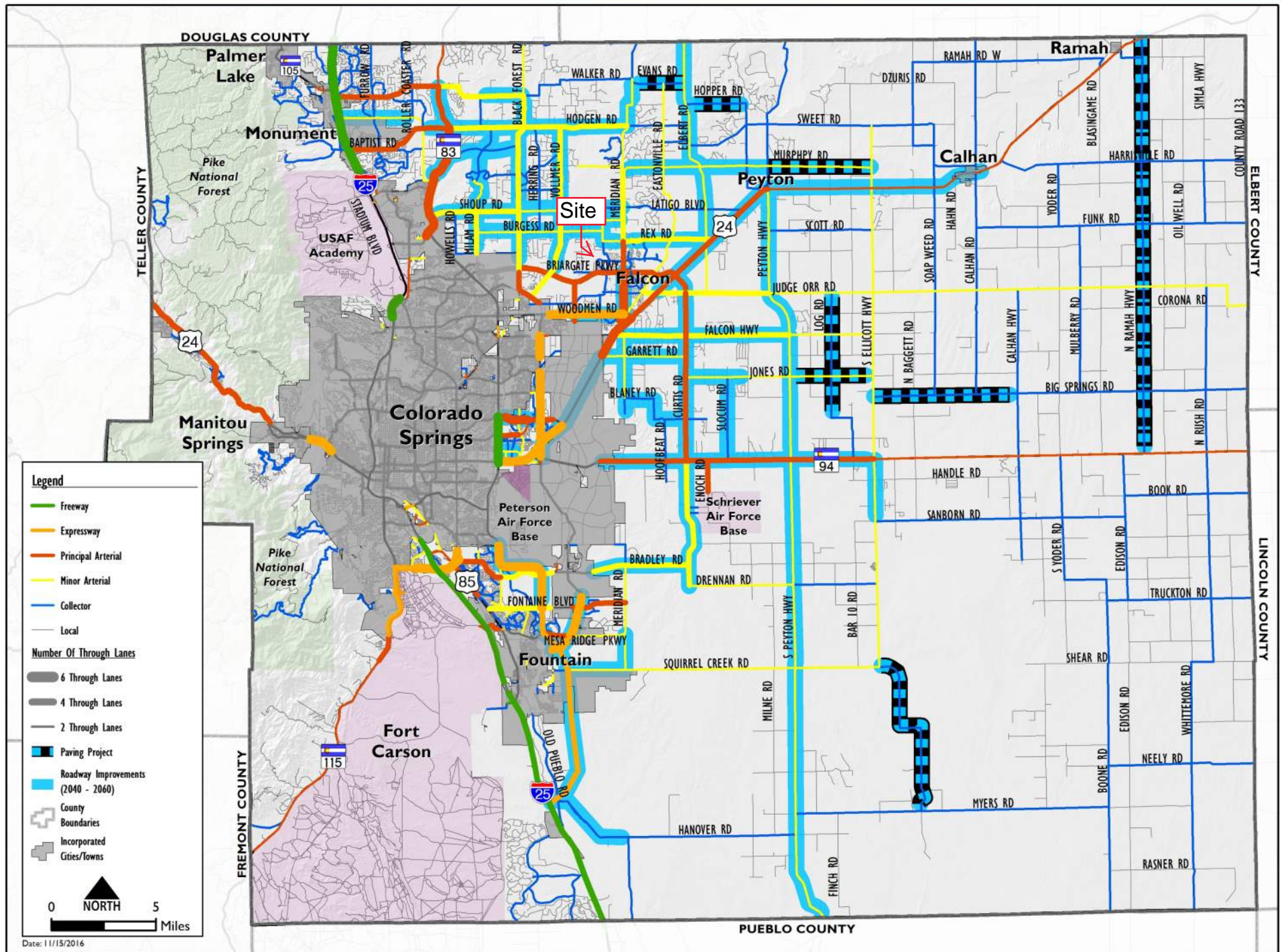








# Map 17: 2060 Corridor Preservation



## Additional Attachments

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Key tables and figures from *Falcon Hills Traffic Impact Study* dated April 8, 2004:

- Page 1
- Table 1
- Figures 2 and 3







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April 8, 2004

Mr. Harold Fong  
Manager, Falcon Hills  
Six Ninety Nine LA, LLC  
545 East Pikes Peak, Suite 207  
Colorado Springs, CO 80903

RE: Falcon Hills  
Updated March 2004  
LSC #036080

Dear Mr. Fong:

In response to your request, we have prepared this updated traffic impact analysis report for Falcon Hills. A previous traffic study was prepared for Falcon Hills entitled *Traffic Impact Report For Falcon Hills* dated May 3, 2000 by URS Corporation. Falcon Hills is located west of Meridian Road and north of Stapleton Road in El Paso County, Colorado. The site location and vicinity are shown in Figure 1. The purpose of this report is to present an updated study based on the current land use plan, including the specific separate traffic impacts for each of the various landowners within Falcon Hills as well as for the area as a whole, and to identify the short- and long-term transportation system improvements adjacent to Falcon Hills.

This report contains an analysis of the traffic estimated to be generated by each of the existing and future proposed development parcels within Falcon Hills, estimates of the projected site-generated traffic volumes on the existing and future adjacent roadway system, and the impacts of additional traffic on the area roadways and intersections by ownership land use type. The report also identifies recommendations for auxiliary turn lanes, traffic signals, and other roadway system improvements for the short and long term.

#### LAND USE PLAN AND OWNERSHIP

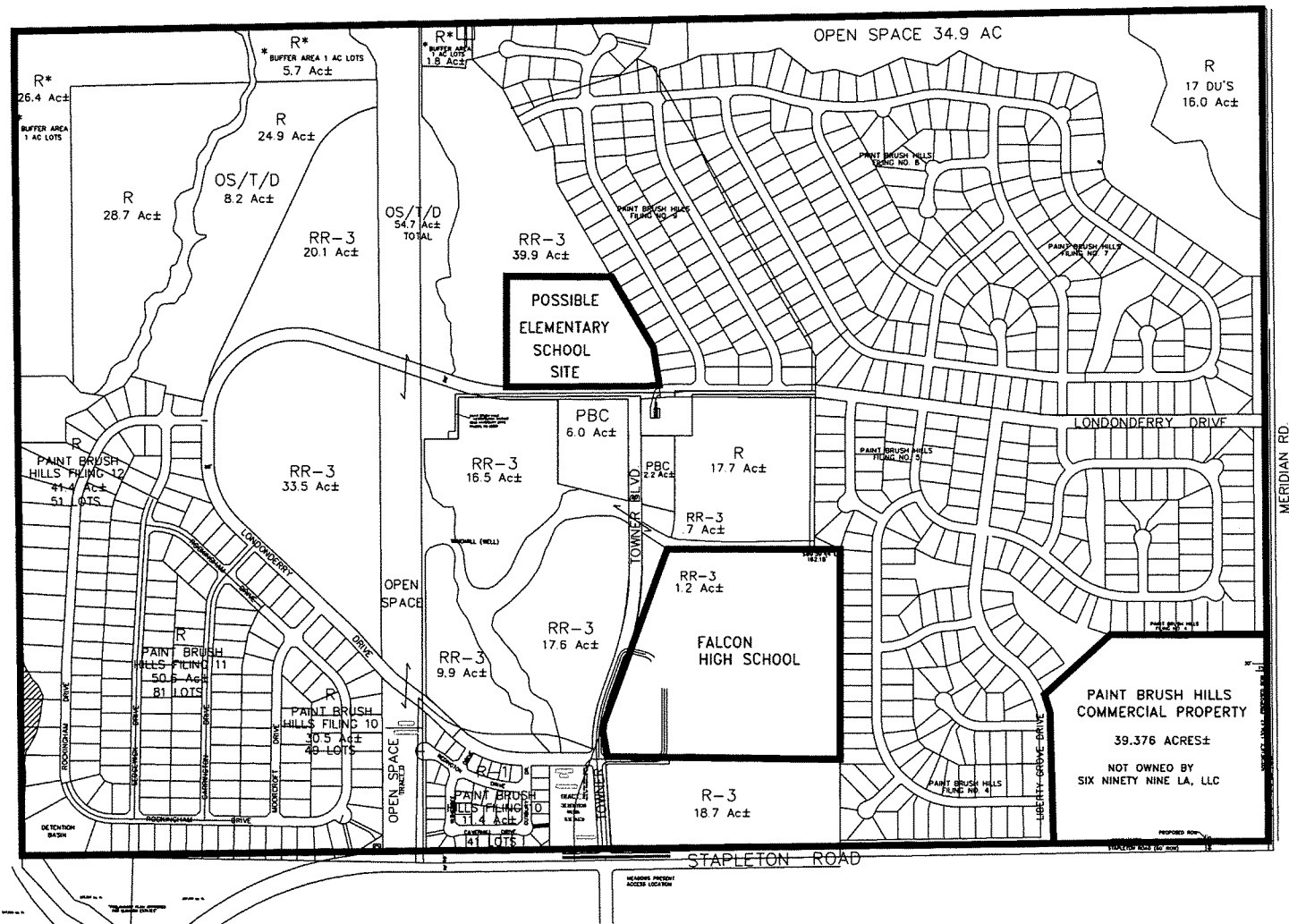
Falcon Hills is located west of Meridian Road and north of Stapleton Road. Aside from existing developed individual lots, of which there were about 497 in August 2003, there are three major owners of developing and undeveloped land within Falcon Hills. These owners are **Six Ninety Nine LA, LLC; School District 49; and Roger Barrack/Scott Smith**. These three owners will each contribute to a portion of the total traffic impacts of future development within Falcon Hills. Thus, the idea is that each would contribute to an equitable portion of the total cost of street improvements necessitated by the traffic generated.

**Table 1**  
**Trip Generation Estimate**  
Falcon Hills Update

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>				Total Trips Generated				Percent Internal Trips	Total External Trips Generated				New Trips Generated				
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour			Afternoon Peak Hour		Percent Pass-by Trips <sup>(2)</sup>	Average New Weekday Traffic					
				In	Out	In	Out		In	Out	In	Out			In	Out	In	Out		
SCENARIO 1																				
Six Ninety Nine LA, LLC Land Uses																				
Residential Uses																				
210	Single-Family Detached Housing	1290 DU <sup>(3)</sup>	9.57	0.19	0.56	0.65	0.36	12,345	242	726	834	469	10%	11,111	218	653	750	422	0%	11,111
220	Apartment	180 DU	6.74	0.08	0.43	0.43	0.21	1,213	15	78	78	38	10%	1,092	13	70	70	34	0%	1,092
Total Six Ninety Nine Residential								13,558	257	803	912	507		12,203	231	723	820	457		12,203
Neighborhood Commercial Uses																				
820	Shopping Center	82 KSF <sup>(4)</sup>	73.17	1.06	0.68	3.22	3.49	6,000	87	55	264	286	6%	5,640	81	52	249	269	34%	3,722
Total Six Ninety Nine Properties								19,558	343	859	1,176	794		17,843	312	775	1,069	726		15,925
School District 49 Land Uses																				
530	High School	706 Students	1.79	0.32	0.14	0.06	0.09	1,264	227	97	42	64	25%	948	170	73	32	48	0%	948
Southeast Corner Land Uses (Not Owned By Six Ninety Nine LA, LLC)																				
820	Shopping Center	360 KSF	43.15	0.58	0.37	1.95	2.11	15,534	209	134	702	760	6%	14,602	197	126	660	715	34%	9,637
TOTAL SCENARIO 1								36,356	780	1,090	1,920	1,618		33,392	679	974	1,761	1,488		26,510
SCENARIO 2																				
Six Ninety Nine LA, LLC																				
Residential Uses																				
210	Single-Family Detached Housing	1260 DU	9.57	0.19	0.56	0.65	0.36	12,058	236	709	814	458	13%	10,491	206	617	709	399	0%	10,491
220	Apartment	180 DU	6.74	0.08	0.43	0.43	0.21	1,213	15	78	78	38	13%	1,055	13	68	68	33	0%	1,055
Total Six Ninety Nine Residential								13,271	251	787	892	496		11,546	218	684	776	432		11,546
Neighborhood Commercial Uses																				
820	Shopping Center	82 KSF	73.17	1.06	0.68	3.22	3.49	6,000	87	55	264	286	6%	5,640	81	52	249	269	34%	3,722
Total Six Ninety Nine Properties								19,271	338	842	1,157	783		17,186	300	736	1,025	701		15,268
School District 49 Land Uses																				
530	High School	706 Students	1.79	0.32	0.14	0.06	0.09	1,264	227	97	42	64	25%	948	170	73	32	48	0%	948
520	Elementary School	500 Students	1.02	0.17	0.12	0.00	0.01	510	86	59	1	5	67%	168	28	20	0	2	0%	168
Total School District 49								1774	313	157	43	69		1116	199	93	32	49		1116
Southeast Corner Land Uses (Not Owned By Six Ninety Nine LA, LLC)																				
820	Shopping Center	360 KSF	43.15	0.58	0.37	1.95	2.11	15,534	209	134	702	760	6%	14,602	197	126	660	715	34%	9,637
TOTAL SCENARIO 2								36,579	860	1,133	1,901	1,612		32,904	695	955	1,717	1,465		26,022

Notes:  
(1) Source: "Trip Generation," Institute of Transportation Engineers, 6<sup>th</sup> ed., 1997.  
(2) Source: "Trip Generation Handbook An ITE Recommended Practice" Institute of Transportation Engineers, October 1998.  
(3) DU = dwelling unit  
(4) KSF = thousand square feet of floor area





Site Plan - Scenario Two  
With Elementary School Site  
Falcon Hills Update



Figure 3  
LSC # 036080