

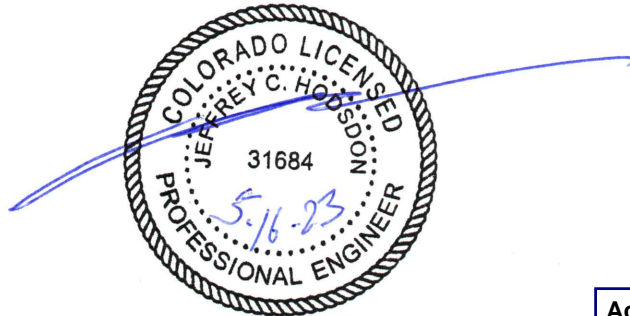


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Sterling Ranch East
Filing Nos. 1 and 2
PCD File Nos. SF-22-035 and SF-22-037
Traffic Technical Memorandum
(LSC #S224570)
May 15, 2023

Traffic Engineer's Statement

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

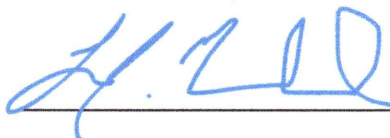


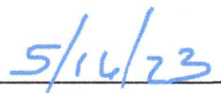
Accepted for File
By: Gilbert LaForce, P.E.
Engineering Manager
Date: 09/23/2024 2:15:51 PM
El Paso County Department of Public Works



Developer's Statement

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





Date

Sterling Ranch East Filing Nos. 1 & 2 Traffic Technical Memorandum

Prepared for:

Loren J. Moreland
Vice President/ Project Manager
Classic SRJ
2138 Flying Horse Club Drive
Colorado Springs, CO 80921

MAY 15, 2023

LSC Transportation Consultants
Prepared by: Kirstin D. Ferrin, P.E.
Reviewed by: Jeffrey C. Hodsdon, P.E.

LSC #S224570
PCD File Nos. SF-22-035 and SF-22-037



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May 15, 2023

Mr. Loren J. Moreland
Vice President/ Project Manager
Classic SRJ
2138 Flying Horse Club Drive
Colorado Springs, CO 80921

RE: Sterling Ranch East Filing
Nos. 1 and 2
El Paso County, CO
Traffic Technical Memorandum
PCD File Nos. SF-22-035 and SF-22-037
LSC #S224570

Dear Mr. Moreland:

LSC Transportation Consultants, Inc. has prepared this traffic technical memorandum for the Sterling Ranch East Filing Nos. 1 and 2 residential development. As shown in Figure 1, the sites for these two subdivision filings are located west of the future extension of Sterling Ranch Road in El Paso County, Colorado. LSC recently prepared a traffic impact study (TIS) for the Sterling Ranch East Rezoning and Preliminary Plan ([SP224](#)) that included trips by the currently-proposed filings. This memorandum is intended as a site-specific, final plat traffic report for Sterling Ranch East Filing No. 1 and Filing No. 2.

REPORT CONTENTS

This report presents:

- A summary of the proposed land use and access plan;
- The projected average weekday and peak-hour vehicle trips to be generated by the currently proposed filings;
- The assignment of the site-generated traffic volumes to the area roadways;
- The recommended street classifications for the internal streets within these two currently-proposed filings;
- Improvements needed with the currently proposed filings; and
- The project's obligation to the County roadway improvement fee program.

RECENT TRAFFIC REPORTS

- LSC completed an updated master traffic study (TIS) for the entire Sterling Ranch development, dated October 21, 2022.
- LSC prepared a TIS for the Sterling Ranch East Rezoning and Preliminary Plan, November 17, 2022. The currently proposed filings were accounted for within that recent report. Appendix A includes a link to the El Paso County Electronic Development Application Review Program (EDARP) page where a copy of the latest version of the Rezoning and Preliminary Plan TIS can be obtained.
- A list of other traffic studies within Sterling Ranch and in the vicinity of area of study completed within the past five years (that LSC is aware of) is attached for reference (Appendix Table 1).
- El Paso County is currently studying the Briargate Stapleton Corridor as part of a Pikes Peak Rural Transportation Authority (PPRTA) study. A draft version of the Briargate-Stapleton Corridor Study by Wilson & Company was published December 9, 2021.

LAND USE AND ACCESS

Sterling Ranch East Filing 2 is planned to include 42 lots for single-family homes located north of the future extension of Briargate Parkway. Sterling Ranch East Filing 1 is planned to include 294 proposed lots for single-family homes located south of Briargate Parkway. Figure 2 shows the proposed site plan.

A future K-8 school site is located southwest of Briargate Parkway/Sterling Ranch Road. There are currently no details such as building layout, circulation, or number of students available. LSC assumed the future K-8 school would serve 1,100 students and that the site would have two access points to Sterling Ranch Road and a three-quarter movement access to Briargate Parkway. An entrance-only access to Sterling Ranch was assumed just south of Briargate Parkway and an exit-only access was assumed to Sterling Ranch Road that would align with the future Oak Park Drive. The three-quarter movement access to Briargate Parkway was assumed to mostly serve teacher parking and/or a bus loop. A separate site-specific traffic impact study will be required prior to school site development.

Figure 3 shows the roadway connections that are planned to be constructed in the short term. As shown in Figure 3, by 2023 Briargate Parkway is planned to be constructed to its final cross section between Vollmer Road and Wheatland Drive, Marksheffel Road is planned to be completed between Vollmer Road and Woodmen Road, and Sterling Ranch Road is planned to be constructed from Marksheffel Road to Dines Boulevard. With Sterling Ranch East Filing No. 1, Briargate Parkway is planned to be constructed to its final cross section between Wheatland Drive and Sterling Ranch Road and Sterling Ranch Road is planned to be constructed from Dines Boulevard to Idaho Falls Drive.

Three full-movement access points (Westmont Drive, Lake Tahoe Drive, and Newport Beach Drive) are proposed to Sterling Ranch Road, a future Non-Residential Collector south of Briargate Parkway, and one full-movement access (Idaho Falls Drive) is proposed to Sterling Ranch Road north of Briargate. The proposed access spacing is shown in Figure 2. As shown in the figure, all of the access points meet the intersection spacing requirements for an Urban Non-Residential Collector and Urban Local roadways.

An additional three-quarter-movement access (Boulder City Place) is proposed to Briargate Parkway about 1,245 feet east of Wheatland Drive and 1,375 feet west of Sterling Ranch Road. As called out in the Sterling Ranch East Rezoning and Preliminary Plan TIS, this access will require a deviation to the criteria contained in the El Paso County *Engineering Criteria Manual (ECM)*. The *Briargate Parkway-Stapleton Road Corridor Study Appendix D: Access Control Plan* shows the access locations and intersection access restrictions along Briargate Parkway between Black Forest Road and Meridian Road. The access control plan shows a right-in/right-out access point north and south of Briargate Parkway between Wheatland Drive and Sterling Ranch Road. The Master TIS and Sterling Ranch East Rezoning and Preliminary Plan TIS showed two offset three-quarter movement (left-in/right-in/right-out only) access points in this general location. A future three-quarter movement access to be located 160 feet east of the currently proposed Boulder City Place would serve the future planned K-8 school parcel located southwest of the intersection of Briargate/Sterling Ranch.

The currently proposed filings were included in the Sterling Ranch Master TIS as Traffic Analysis Zones (TAZ) 18, 22, and 26. The land use and access currently proposed are consistent with what was assumed in the Master TIS and the Sterling Ranch East Rezoning and TIS.

Intersection Sight Distance

Figure 4a shows a sight-distance analysis at the proposed intersections of Westmont/Sterling Ranch, Lake Tahoe/Sterling Ranch, and Newport Beach/Sterling Ranch. Figure 4b shows a sight-distance analysis at the proposed intersection of Idaho Falls/Sterling Ranch. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersections is 445 feet. As shown in Figures 4a and 4b, the proposed intersections to Sterling Ranch Road will meet the criteria.

Figure 4c shows a sight-distance analysis at the proposed three-quarter movement intersection of Boulder City/Briargate. Based on a design speed of 50 miles per hour (mph) and the criteria contained in Table 2-21 of the *Engineering Criteria Manual (ECM)*, the required intersection sight distance at the future intersection is 555 feet. As shown in Figures 4c, the proposed intersection will meet the criteria.

Pedestrian and Bicycle Analysis

Figure 2 also shows the location of all planned trails and sidewalks in the vicinity of the site. Connections are also proposed to the planned future Sand Creek Regional Trail (west of Dines Boulevard), as shown in the attached map.

A detached sidewalk will be provided along the west side of Sterling Ranch Road. The multi-use paved shoulder on Sterling Ranch Road will accommodate bicycles.

There are no existing schools within two miles of the site. However, a K-8 school is planned southwest of the future intersection of Briargate/Sterling Ranch Road and two elementary schools are planned east of Sterling Ranch Road. School crossings will be needed at Briargate/Sterling Ranch and at one or more locations along Sterling Ranch Road between Westmont Drive and Oak Park Drive, depending on the final layout of the school sites.

Safety Analysis

Most of the roadways in the vicinity of the site have not yet been constructed. The Colorado State Patrol (CSP) provided LSC with crash history data for Vollmer Road between Tahiti Drive and Burgess Road from September 2019 through September 2022. During the reported time period, there were twelve reported crashes. Of the twelve reports, ten were single-vehicle non-intersection-related crashes on Vollmer Road. One crash involved a southbound vehicle that turned right onto Poco Road and crashed into several cars parked on Poco Road partially in the lane. The only intersection related crash occurred in June 2022. A vehicle heading northbound on Vollmer Road was slowing to turn left at Lochwinnoch Road and the vehicle behind them attempted to pass on the left side. The crash history data has been attached.

TRIP GENERATION

Sterling Ranch East Filing 2 and Sterling Ranch Filing 1 site-generated vehicle trips have been estimated using the nationally-published trip-generation rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE). Table 1 shows the trip-generation estimate. The trip-generation estimate is consistent with the estimate assumed in the Sterling Ranch Master TIS and the Sterling Ranch East Rezoning and Preliminary Plan TIS for the same parcels.

Sterling Ranch East Filing 2 is expected to generate 396 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 8 vehicles would enter and 22 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 25 vehicles would enter and 15 vehicles would exit the site.

Sterling Ranch East Filing 1 is expected to generate 2,772 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 54 vehicles would enter and 152 vehicles would exit the site. During the afternoon peak hour, about 174 vehicles would enter and 102 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

When the distribution percentages from Figure 8 of the Sterling Ranch East Rezoning and Preliminary Plan TIA are applied to the new, external trip-generation estimates (from Table 1), the resulting site-generated traffic volumes can be determined. Figures 5a and 5b show the short-term residential site-generated traffic volumes. These volumes assume only the street network shown in Figure 3.

TOTAL TRAFFIC VOLUMES AND LEVELS OF SERVICE

Please refer to the short-term and 2042 peak-hour traffic-volume projections and level of service analysis shown in Figures 14c and 15c of the *Sterling Ranch East Rezoning & Preliminary Plan TIS*. The proposed land use and access is in compliance with the Sterling Ranch Master TIS and Sterling Ranch East Rezoning and Preliminary Plan TIS. As such, there are no changes to these projected volumes or level of service results.

SIGNAL WARRANT THRESHOLD ANALYSIS – AM AND PM PEAK HOURS

The intersections of Marksheffel/Vollmer and Marksheffel/Sterling Ranch were analyzed to determine if the thresholds for Four-Hour and/or Eight-Hour Vehicular-Volume Traffic-Signal Warrant thresholds would be reached or exceeded, based on the projected short-term traffic volumes.

The volumes shown are based on the short-term background traffic volumes taken from Figure 6b of the Sterling Ranch East Rezoning and Preliminary Plan TIS and the Sterling Ranch East Filing 1 site-generated traffic volumes shown in Figure 5b of this memorandum. The off-peak-hour volumes are estimates by LSC based on the peak-hour traffic volumes, 72-hour machine counts conducted by LSC on Vollmer Road in November 2020, and vehicle time-of-day distribution data for single-family homes published by the Institute of Transportation Engineers.

Marksheffel/Vollmer

Table 2 shows the results of the analysis for the intersection of Marksheffel/Vollmer. As shown in Table 2, in the short-term only five of the hours analyzed are projected to meet the thresholds for an Eight-Hour Vehicular-Volume Traffic-Signal Warrant and none of the hours analyzed are projected to meet the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant. This analysis indicates that traffic-signal warrant(s) will likely **not** be met at the intersection of Marksheffel/Vollmer with buildout of Sterling Ranch East Filing 1.

Marksheffel/Sterling Ranch

Table 3 shows the results of the analysis for the intersection of Marksheffel/Sterling Ranch. As shown in Table 3, in the short-term only six of the hours analyzed are projected to meet the thresholds for an Eight-Hour Vehicular-Volume Traffic-Signal Warrant. In order for this warrant to be met, eight hours need to meet the thresholds. Seven of the hours analyzed are projected to meet the thresholds for a Four-Hour Vehicular Volume Traffic Signal Warrant. This analysis indicates that a Four-Hour Vehicular Volume traffic-signal warrant(s) may be met at the intersection of Marksheffel/Sterling Ranch with buildout of Sterling Ranch East Filing 1. LSC recommends at least eight hours of traffic count volume data be collected at the intersection of Marksheffel/Sterling Ranch following completion of Marksheffel Road between Vollmer Road and Woodmen Road, which is planned to be done in 2023. Once the traffic data is completed traffic-signal warrant analysis can be reanalyzed based on the existing conditions at that time. The decision to require a signal to be installed rests with the County.

SUBDIVISION STREET CLASSIFICATIONS

All of the internal streets within Sterling Ranch East Filing No. 1 and Filing No. 2 should be classified as Urban Local. Figure 6 shows the recommended street classifications for the streets in the vicinity of the site.

DEVIATION REQUESTS

No deviations are requested as part of this submittal. The Boulder City Place connection to Briargate Parkway, along with the Briargate Parkway extension to Sterling Ranch Road, are part of a separate Preliminary Plan and Final Plat and a deviation request will be requested as part of that submission.

ROADWAY IMPROVEMENTS

Tables 5 and 6 from the *Sterling Ranch East Rezoning and Preliminary Plan TIS* contained a summary of needed improvements and recommendations for auxiliary turn-lane lengths. Copies of these tables have been attached with the improvements needed either prior to or with the Sterling Ranch East Filing No. 1/2 highlighted.

The following improvements will be needed with Filing No. 1:

- Convert the intersection of Marksheffel/Vollmer to traffic signal control, once traffic signal warrants are met.
- Construct a 205' northeast-bound left-turn lane plus 160' taper on Sterling Ranch Road approaching Westmont Drive.
- Construct a 225' northeast-bound left-turn lane plus 160' taper on Sterling Ranch Road approaching Lake Tahoe Drive.
- Construct a 205' northeast-bound left-turn lane plus 160' taper on Sterling Ranch Road approaching Newport Beach Drive.

The following improvement will be needed with Filing Nos. 1 and 2:

- Construct a 285' eastbound left-turn lane plus a 200' taper on Briargate Parkway approaching Boulder City Drive.
- Construct a 435' eastbound left-turn lane plus 200' taper on Briargate Parkway approaching Sterling Ranch Road.
- Construct a 240' northeast-bound left-turn lane plus 160' taper on Sterling Ranch Road approaching Idaho Falls Drive.

ROADWAY IMPROVEMENT FEE PROGRAM

This project will be required to participate in the El Paso County Road Improvement Fee Program. Sterling Ranch East Filing No. 2 and Sterling Ranch Filing 1 will join the five-mil PID. The 2019 five-mil PID building permit fee portion associated with this option is \$2,527 per single-family dwelling unit. Based on 42 lots, the total building permit fee for Sterling Ranch East Filing 2 would be \$106,134. Based on 294 lots, the total building permit fee for Sterling Ranch East Filing 1 would be \$742,938. Note: program fees are subject to change.

* * * * *

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH/KDF:jas

Enclosures: Tables 1-3
Figures 1-9
Appendix Table 1
Appendix A
Tables 5 and 6 from *Sterling Ranch East Rezoning and Preliminary Plan TIS* with notes by LSC

Tables



**Table 1
Trip Generation Estimate
Sterling Ranch East Filing Nos.1 and 2**

Sketch Plan TAZ	Filing No.	Location	ITE Code	ITE Land Use	Quantity	Unit	Trip Generation Rates ⁽¹⁾					Total Trip Generated					
							Daily	AM Peak Hour		PM Peak Hour		Daily	AM Peak Hour		PM Peak Hour		
								In	Out	In	Out		In	Out	In	Out	
22 & 26	1	South of Briargate Parkway	210	Single-Family Detached Housing	294	DU	9.43	0.18	0.52	0.59	0.35	2,772	54	152	174	102	
18	2	North of Briargate Parkway	210	Single-Family Detached Housing	42	DU ⁽²⁾	9.43	0.18	0.52	0.59	0.35	396	8	22	25	15	
336							DU						3168	61	174	199	117

Notes:
 (1) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE)
 (2) DU = Dwelling Unit
 Source: LSC Transportation Consultants, Inc. May-23

Table 2
Traffic Signal Warrant Analysis
Marksheffel Road/Vollmer Road

Hour	Short-Term Total Traffic ⁽⁵⁾											Warrant Analysis ⁽³⁾									
	Short-Term Background Traffic ⁽²⁾		SRE Filing 1 Generated Traffic		Villages at SRE Generated Traffic		4-Square at SRE Generated Traffic		Short-Term Total Traffic		Warrant 1: Eight Hour Vehicular Volume Evaluation				Warrant 2: Four Hour Vehicular Volume Evaluation						
	Major ⁽⁴⁾	Minor ⁽⁴⁾	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Warrant Thresholds		Warrant Threshold Met?		Short-Term Background	Short-Term Total	Warrant Threshold Minor	Warrant Threshold Met? WB	Warrant Threshold Minor	Warrant Threshold Met? WB	
	Vollmer	Marksheffel	Vollmer	Marksheffel	Vollmer	Marksheffel	Vollmer	Marksheffel	Vollmer	Marksheffel	Condition A		Condition B		Condition A	Condition B	Minimum	WB	Minimum	WB	
											Major	Minor	Major	Minor	Condition A	Condition B					
12-1 AM	53	3	0	0	0	0	0	53	3	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
1-2 AM	26	3	0	0	0	0	0	26	3	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
2-3 AM	19	0	0	0	0	0	0	19	0	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
3-4 AM	28	3	0	0	0	0	0	28	3	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
4-5 AM	43	14	0	1	0	0	0	43	15	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
5-6 AM	117	34	0	2	0	1	0	117	37	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
6-7 AM	347	101	2	5	1	2	0	350	108	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
7-8 AM	833	174	3	8	1	3	0	837	185	600	150	900	75	Yes	No	Yes	No	192	No	191	No
8-9 AM	931	147	3	7	1	3	0	935	157	600	150	900	75	No	Yes	Yes	Yes	167	No	166	No
9-10 AM	805	92	3	4	1	2	0	809	98	600	150	900	75	No	No	No	No	199	No	198	No
10-11 AM	935	92	4	4	1	2	0	940	98	600	150	900	75	No	Yes	No	Yes	166	No	165	No
11-12 PM	1055	87	5	4	2	2	0	1062	93	600	150	900	75	No	Yes	No	Yes	134	No	131	No
12-1 PM	999	51	0	0	5	1	0	1004	52	600	150	900	75	No	No	No	No	150	No	149	No
1-2 PM	758	73	15	3	2	2	0	775	78	600	150	900	75	No	No	No	No	221	No	213	No
2-3 PM	871	77	5	4	2	2	0	878	83	600	150	900	75	No	No	No	No	182	No	181	No
3-4 PM	927	74	6	4	2	2	0	935	80	600	150	900	75	No	No	No	Yes	168	No	166	No
4-5 PM	962	93	7	4	3	2	0	972	99	600	150	900	75	No	Yes	No	Yes	160	No	157	No
5-6 PM	807	92	9	5	3	2	0	819	99	600	150	900	75	No	No	No	No	198	No	195	No
6-7 PM	553	73	9	5	2	2	0	564	80	600	150	900	75	No	No	No	No	314	No	308	No
7-8 PM	348	53	7	4	2	1	0	357	58	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
8-9 PM	282	38	5	3	2	1	0	289	42	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
9-10 PM	180	30	5	2	1	1	0	186	33	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
10-11 PM	101	14	4	2	1	0	0	106	16	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
11-12 AM	55	9	2	1	0	0	0	57	10	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No
Numbers of Hours the Warrant Thresholds Are Met														1	4	2	5				
Warrant Met?														No		No					

Notes:
 (1) Thresholds are based on 2 or more lanes on the major approach and 1 lane on the minor approach (Warrant evaluation assuming the westbound left turn only for the minor street)
 (2) Source: Sterling Ranch East Phase 1 Rezoning and Preliminary Plan Traffic Impact Study, November 14, 2022
 (3) The major street traffic includes all movements (left, through, and right)
 (4) The minor street traffic includes only the left turns from the minor street
 (5) Off peak hour traffic volumes are based on the projected peak hour traffic volumes, 72-hour machine counts conducted on Vollmer Road in November 2020 and vehicle time-of-day distribution data for single-family residential published by the Institute of Transportation Engineers
 Source: LSC Transportation Consultants, Inc.

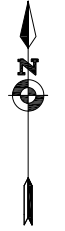
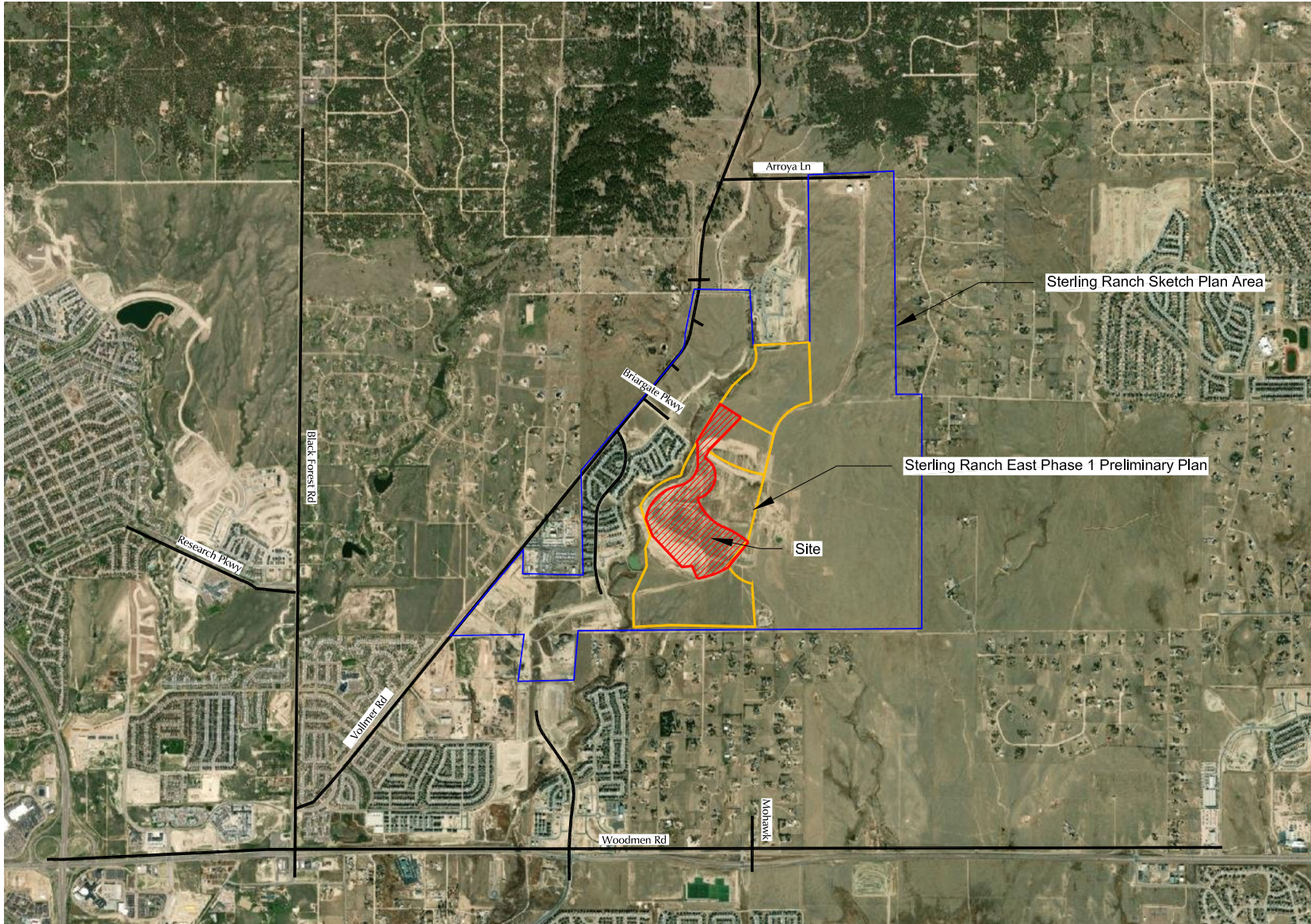
Table 3
Traffic Signal Warrant Analysis
Marksheffel Road/Sterling Ranch Road

Hour	Short-Term Total Traffic ⁽⁵⁾										Warrant Analysis ⁽¹⁾													
	Short-Term Background Traffic ⁽²⁾		SRE Filing 1 Generated Traffic		Villages at SRE Generated Traffic		4-Square at SRE Generated Traffic		Short-Term Total Traffic		Warrant 1: Eight Hour Vehicular Volume Evaluation				Warrant 2: Four Hour Vehicular Volume Evaluation									
	Major ⁽³⁾	Minor ⁽⁴⁾	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Warrant Threshold Met?				Short-Term Background		Short-Term Total							
	Marksheffel	Sterling Ranch	Marksheffel	Sterling Ranch	Marksheffel	Sterling Ranch	Marksheffel	Sterling Ranch	Marksheffel	Sterling Ranch	Warrant Thresholds		Short-Term Background		Short-Term Total		Warrant Threshold Minimum	Warrant Threshold Met? WB	Warrant Threshold Minimum	Warrant Threshold Met? WB				
	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Major	Minor	Condition A	Condition B	Condition A	Condition B	Condition A	Condition B	Minimum	Met?	Minimum	Met?				
12-1 AM	47	7	1	22	1	11	1	4	50	44	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
1-2 AM	20	7	1	9	1	5	1	2	23	23	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
2-3 AM	19	0	0	9	0	5	0	2	19	16	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
3-4 AM	21	7	1	9	1	5	1	2	24	23	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
4-5 AM	31	26	4	13	2	7	3	2	40	48	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
5-6 AM	64	65	10	22	6	11	8	4	88	102	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
6-7 AM	193	192	28	69	17	36	24	12	262	309	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
7-8 AM	414	332	49	138	29	72	41	24	533	566	600	150	900	75	No	No	No	No	383	No	324	Yes		
8-9 AM	469	280	41	160	24	83	35	28	569	551	600	150	900	75	No	No	No	No	356	No	306	Yes		
9-10 AM	406	176	26	138	15	72	22	24	469	410	600	150	900	75	No	No	No	No	387	No	356	Yes		
10-11 AM	503	176	26	181	15	95	22	32	566	484	600	150	900	75	No	No	No	No	339	No	307	Yes		
11-12 PM	616	166	25	233	15	122	21	41	677	562	600	150	900	75	Yes	No	Yes	No	284	No	259	Yes		
12-1 PM	928	114	87	158	42	88	42	88	1099	448	600	150	900	75	No	Yes	Yes	Yes	168	No	120	Yes		
1-2 PM	415	164	124	53	60	29	60	29	659	275	600	150	900	75	No	No	Yes	No	383	No	266	Yes		
2-3 PM	483	172	131	61	63	34	63	34	740	301	600	150	900	75	No	No	Yes	No	349	No	230	Yes		
3-4 PM	552	166	126	74	61	41	61	41	800	322	600	150	900	75	No	No	Yes	No	314	No	200	Yes		
4-5 PM	636	208	158	92	76	51	76	51	946	402	600	150	900	75	Yes	No	Yes	Yes	276	No	164	Yes		
5-6 PM	589	205	156	90	75	50	75	50	895	395	600	150	900	75	No	No	Yes	No	296	No	176	Yes		
6-7 PM	460	164	124	75	60	42	60	42	704	323	600	150	900	75	No	No	Yes	No	360	No	248	Yes		
7-8 PM	318	119	91	54	44	30	44	30	497	233	600	150	900	75	No	No	No	No	Low Volume	No	342	No		
8-9 PM	307	86	65	55	31	31	31	31	434	203	600	150	900	75	No	No	No	No	Low Volume	No	373	No		
9-10 PM	214	67	51	39	24	22	24	22	313	150	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
10-11 PM	107	31	23	19	11	11	11	11	152	72	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
11-12 AM	63	19	15	11	7	6	7	6	92	42	600	150	900	75	No	No	No	No	Low Volume	No	Low Volume	No		
											Numbers of Hours the Warrant Thresholds Are Met				2	1	8	2						
											Warrant Met?				No		Yes							

Notes:
 (1) Thresholds are based on 2 or more lanes on the major approach and 1 lane on the minor approach (Warrant evaluation assuming the southbound left turn only for the minor street)
 (2) Source: *Sterling Ranch East Phase 1 Rezoning and Preliminary Plan Traffic Impact Study*, November 14, 2022
 (3) The major street traffic includes all movements (left, through, and right)
 (4) The minor street traffic includes only the left turns from the minor street
 (5) Off peak hour traffic volumes are based on the projected peak hour traffic volumes, 72-hour machine counts conducted on Vollmer Road in November 2020 and vehicle time-of-day distribution data for single-family residential published by the Institute of Transportation Engineers
 Source: LSC Transportation Consultants, Inc. 11/30/22 7:50

Figures





Not to scale

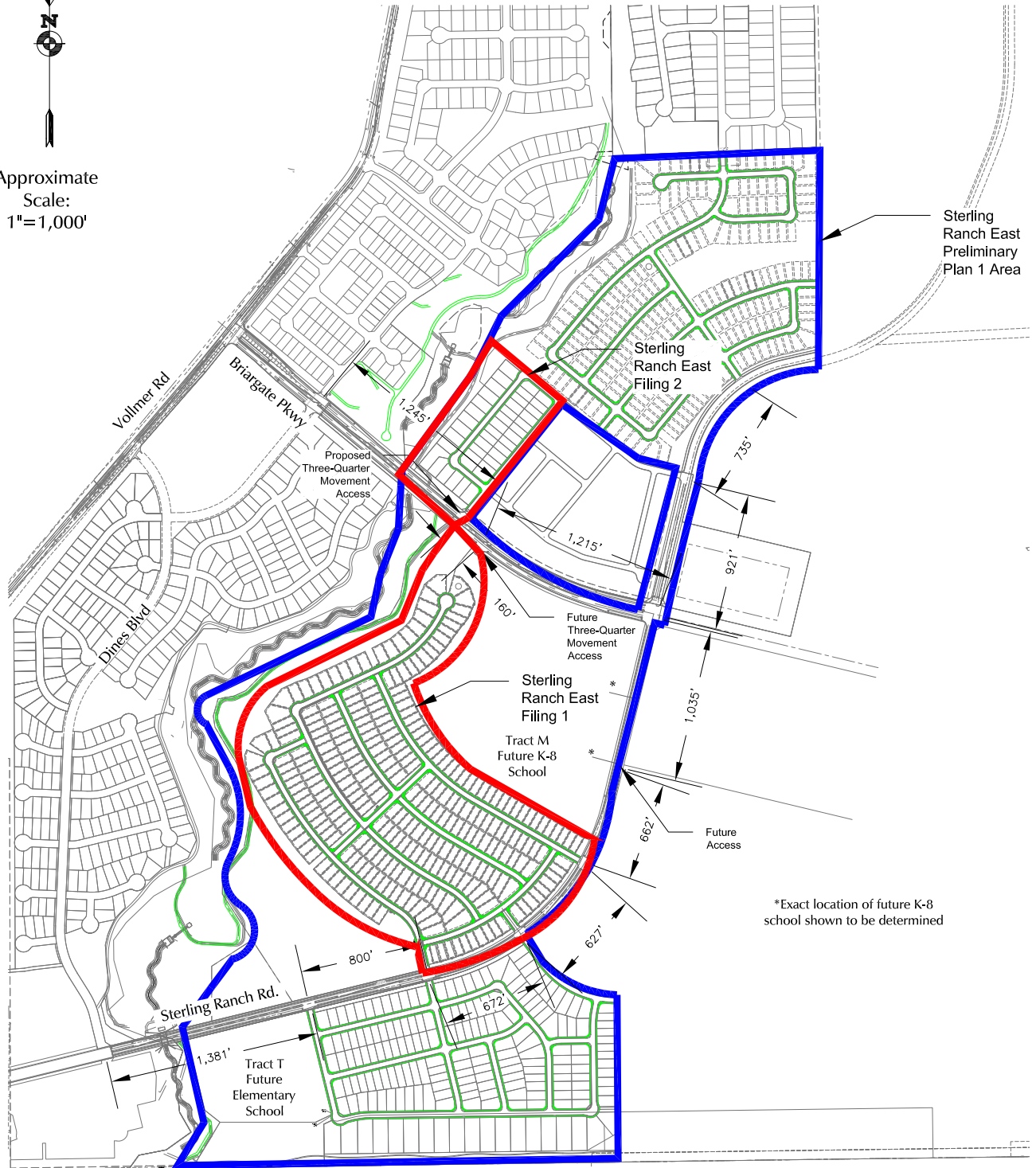
Figure 1

Vicinity Map

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)



Approximate
Scale:
1"=1,000'



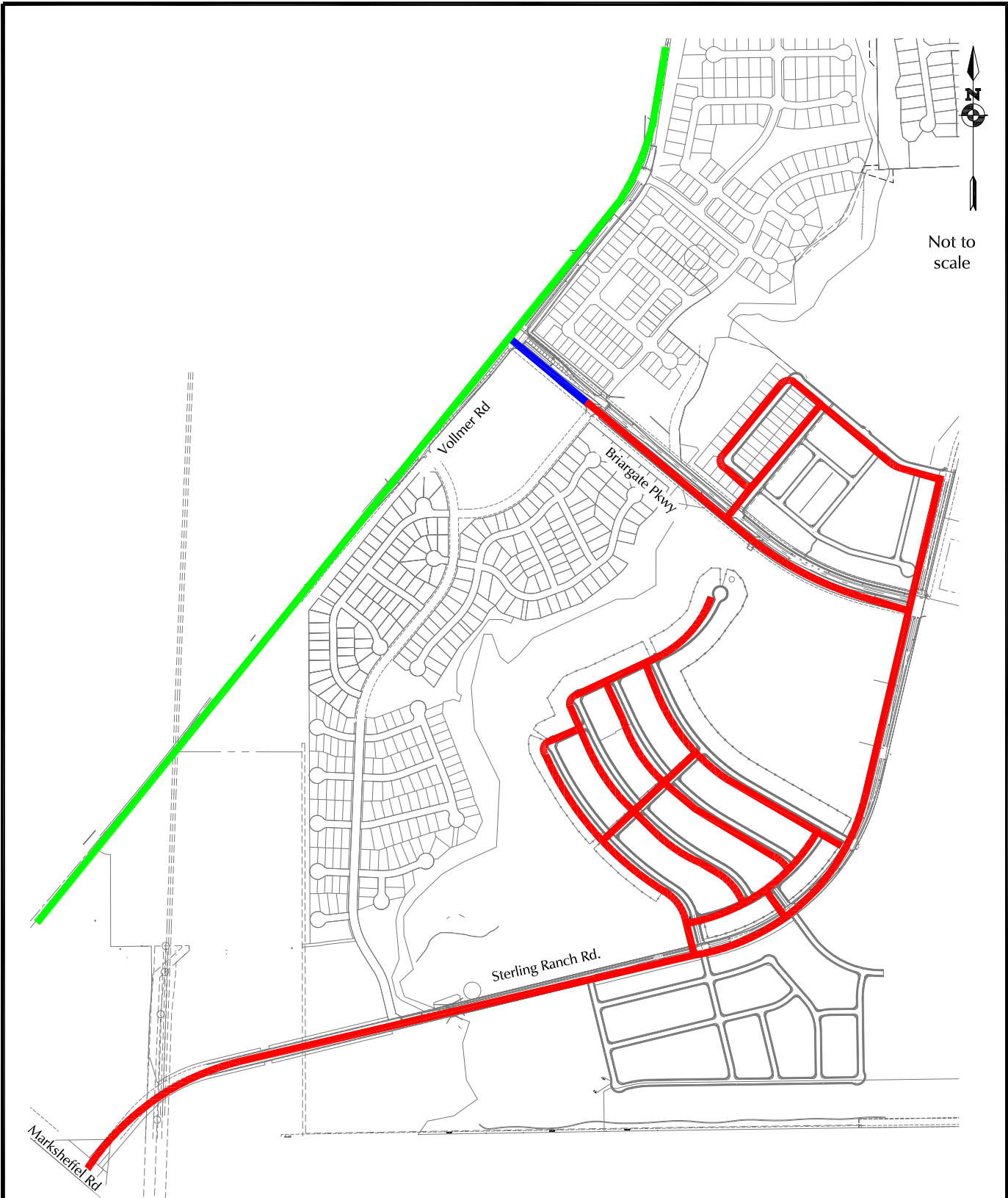
*Exact location of future K-8 school shown to be determined

— Trail & Sidewalks



Figure 2
Site Plan

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)



LEGEND:

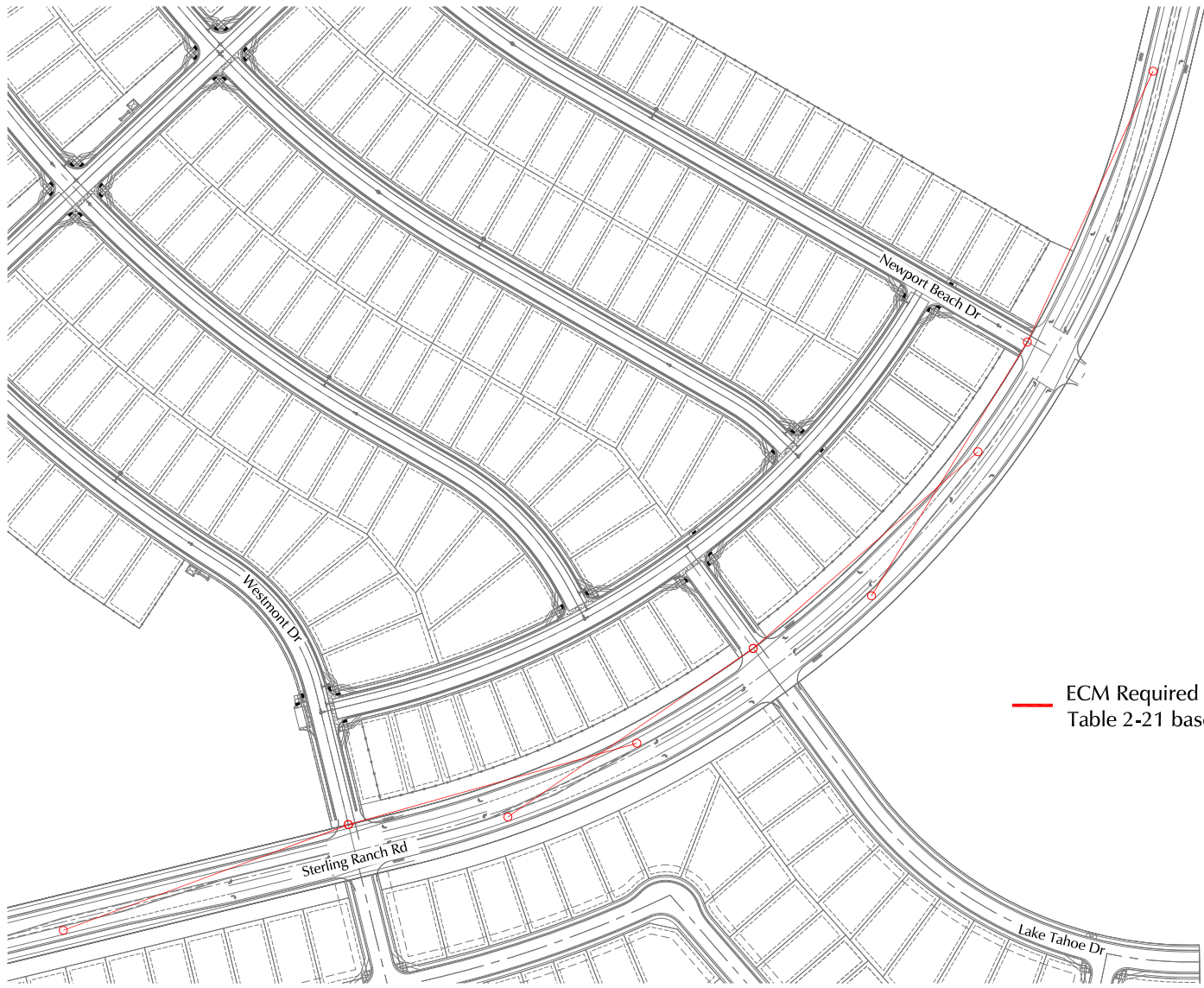
- Roadway Connection Planned with Sterling Ranch East Filings 1 and/or 2
- Existing Roadway
- Roadway Planned to be Completed by 2023

Figure 3

Short-Term Roadway Connections

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)





Not to scale

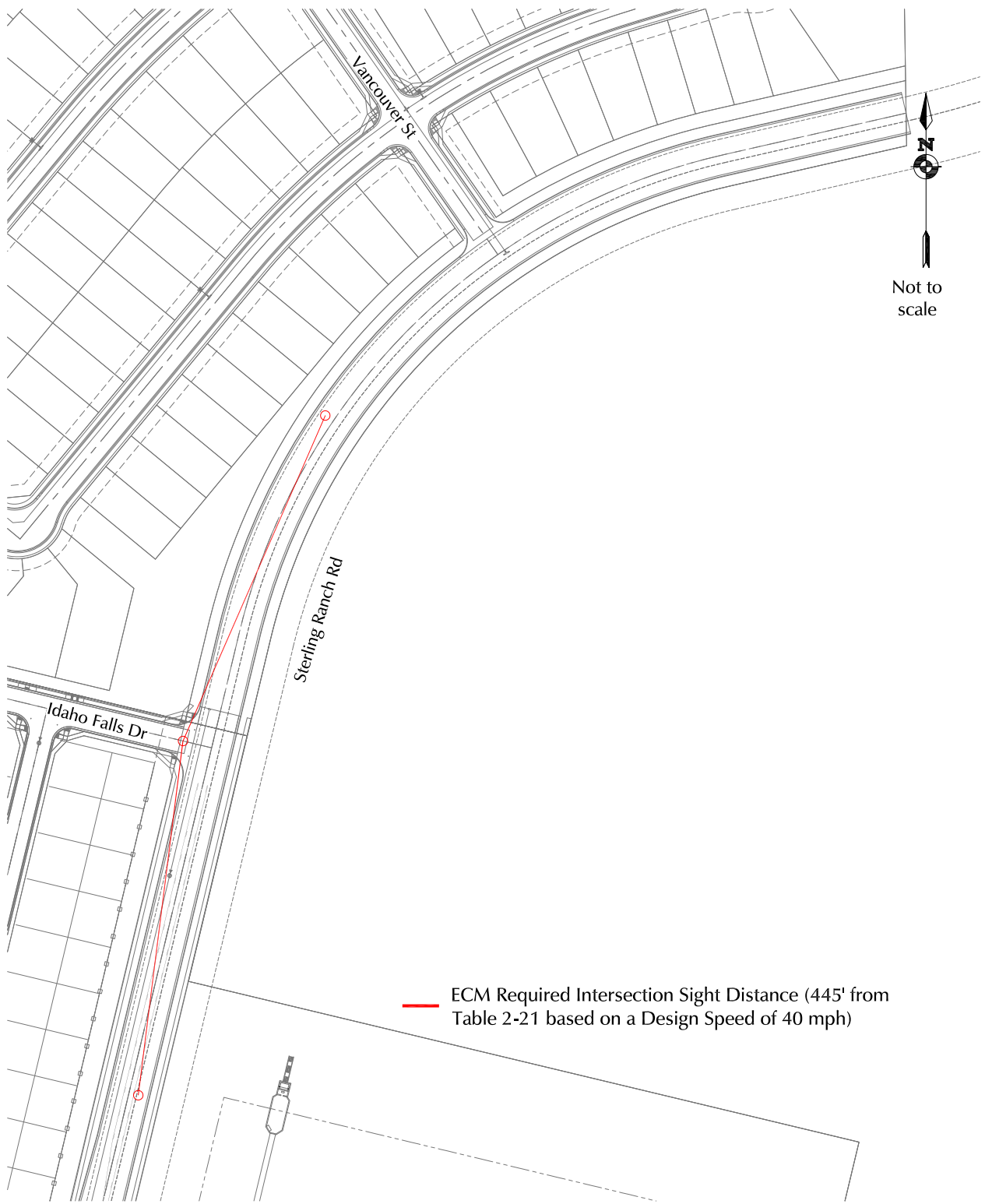
— ECM Required Intersection Sight Distance (445' from Table 2-21 based on a Design Speed of 40 mph)

Figure 4a

Sight Distance Analysis - Sterling Ranch Road South of Briargate Parkway

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)







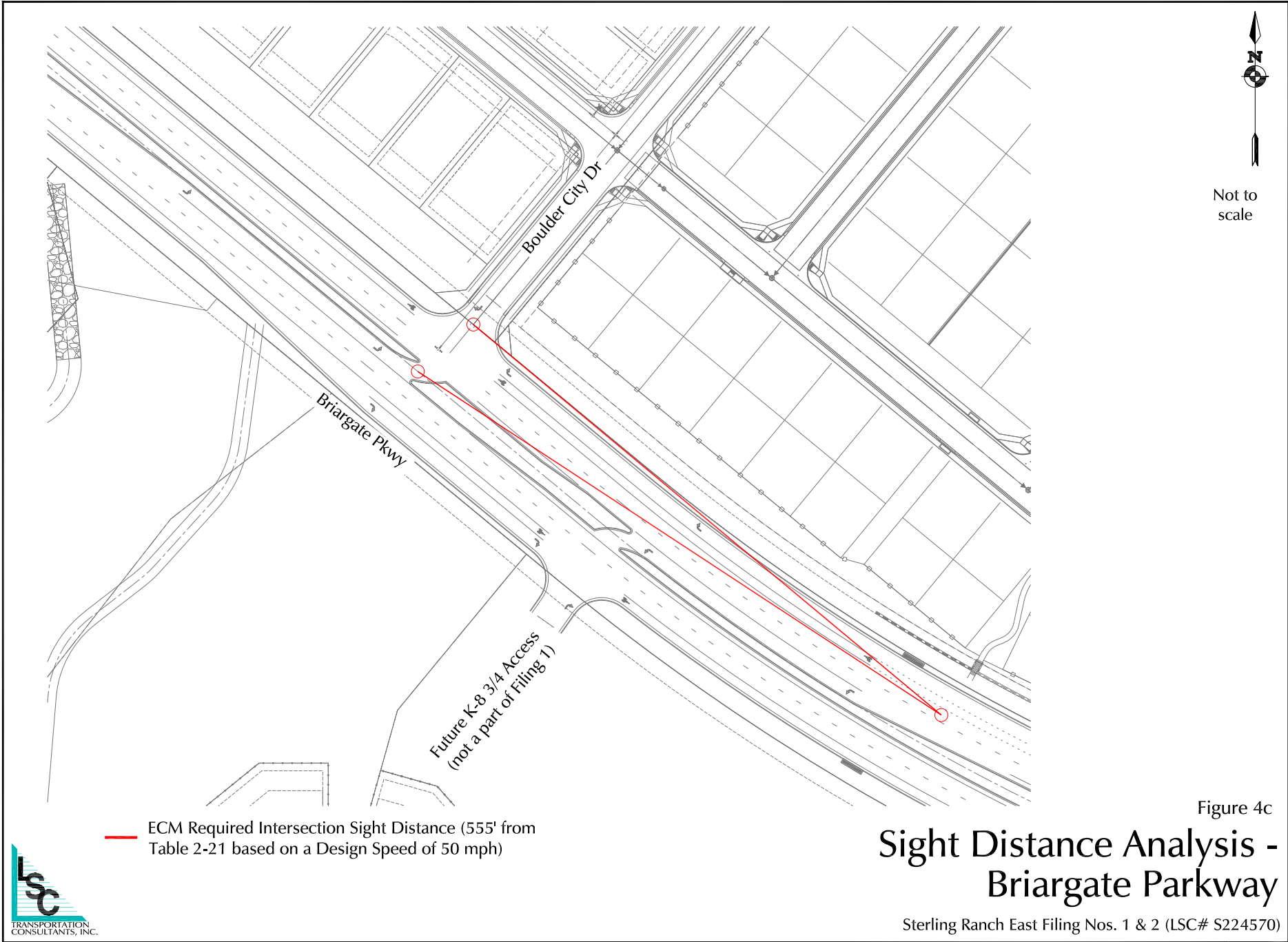
 Not to scale

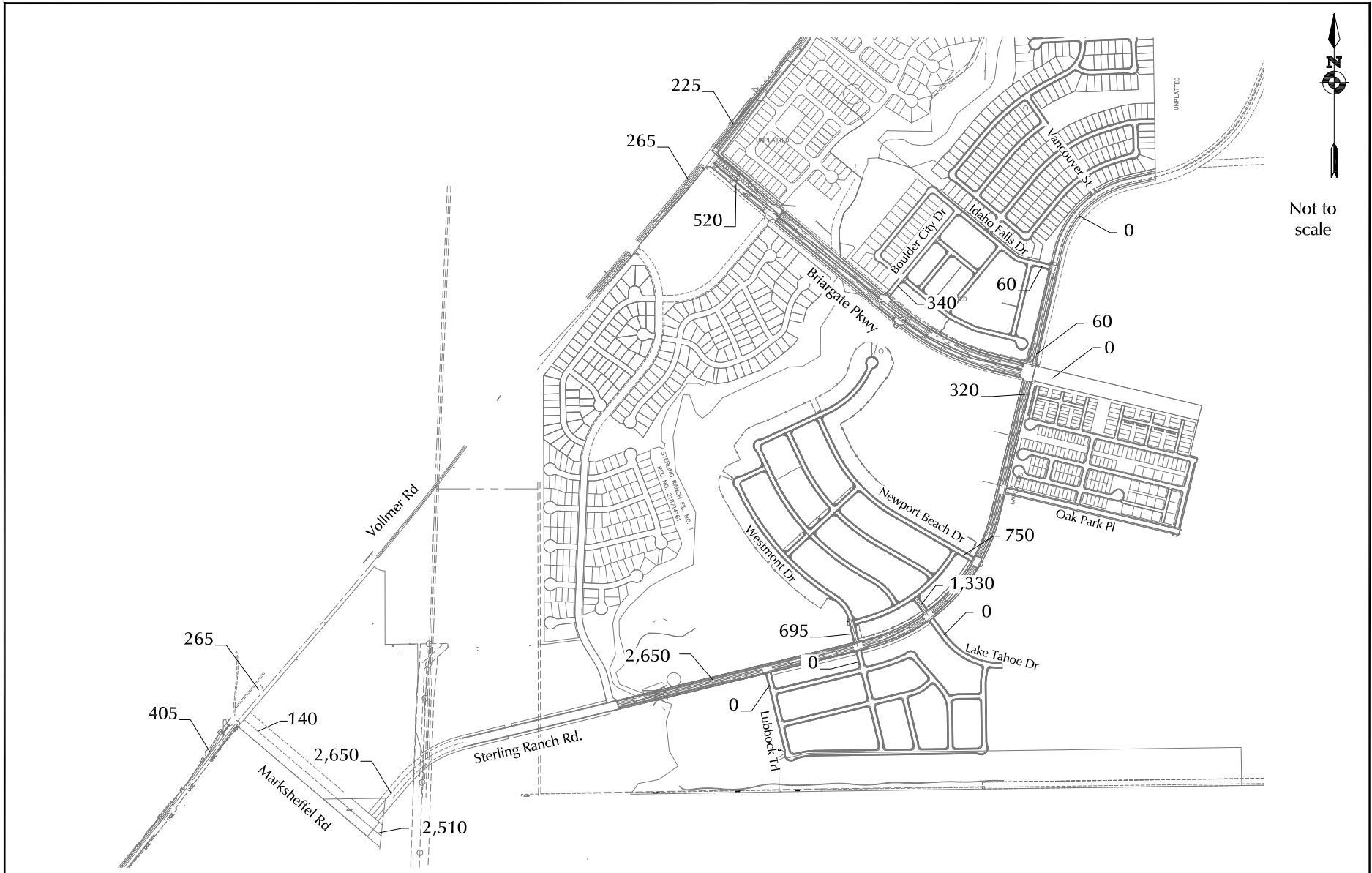
Figure 4b

Sight Distance Analysis - Sterling Ranch Road North of Briargate Parkway

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)







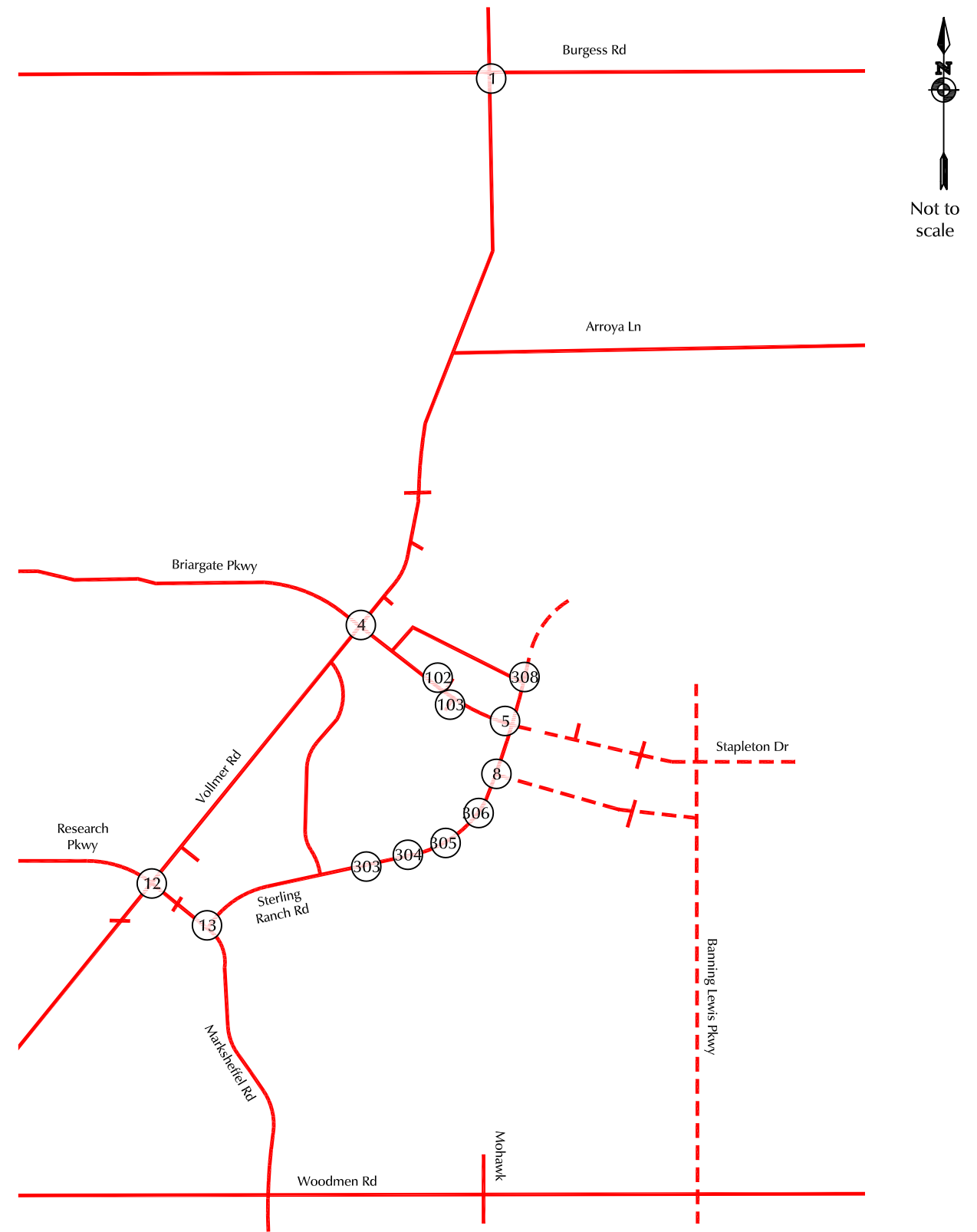
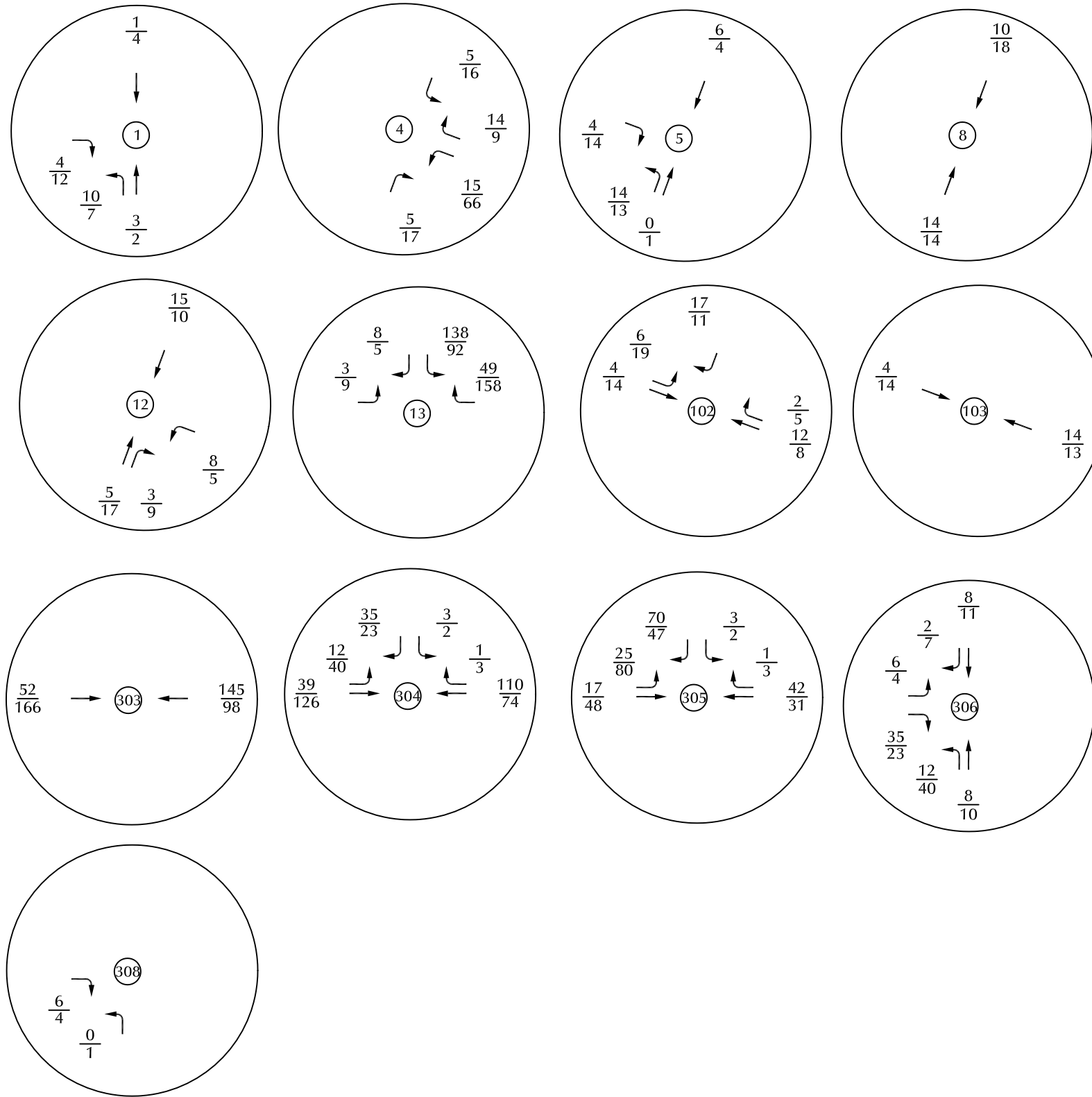
LEGEND: XXX = Average Weekday Traffic (vehicles per day)(AWT)

Figure 5a

Short-Term Site Generated Average Weekday Traffic

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)





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

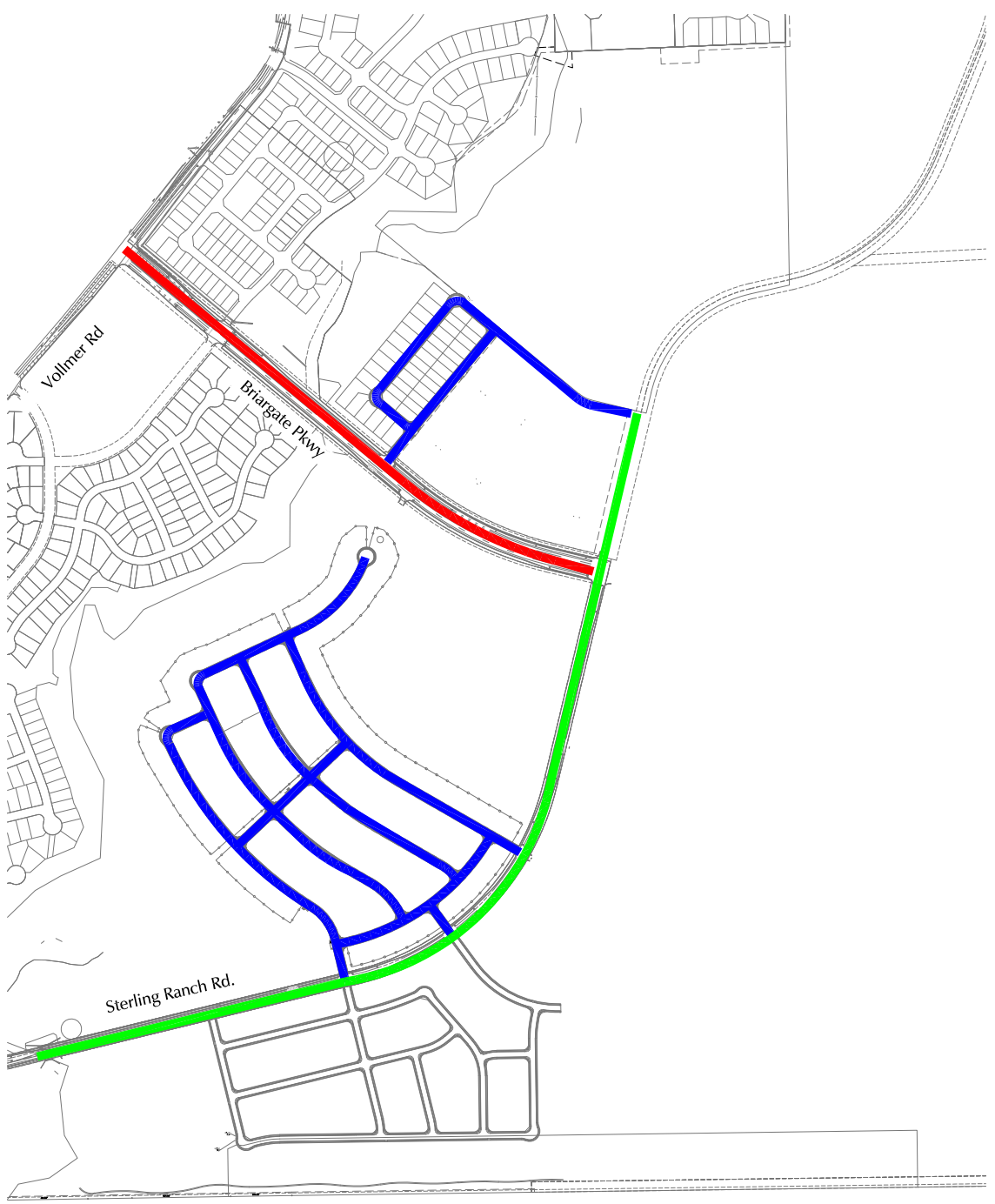


*Please refer to Figure 2 for intersection details

Figure 5b
Short-Term Site-Generated Traffic*
 Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)



Not to scale



LEGEND:

- 4-Lane Urban Principal Arterial
- Urban Local

- Urban Non-Residential Collector

Figure 6

Roadway Classifications

Sterling Ranch East Filing Nos. 1 & 2 (LSC# S224570)



Appendix Table 1



**Appendix Table 1
Area Traffic Impact Studies
Sterling Ranch East Filing Nos. 1 & 2**

Study	PCD File No⁽¹⁾	Consultant	Date
Sterling Ranch Reports			
Sterling Ranch Updated Traffic Impact Analysis	SKP07007	LSC Transportation Consultants, Inc	June 5, 2008
Sterling Ranch Phase 1 Traffic Impact Study	P151	LSC Transportation Consultants, Inc	March 16, 2015
Sterling Ranch Phases 1-3 Transportation Memorandum	SP1415	LSC Transportation Consultants, Inc	October 2, 2017
Branding Iron at Sterling Ranch Filing No. 1 and Homestead at Sterling Ranch Filing No. 1 Transportation	SF1724 SF1725	LSC Transportation Consultants, Inc	December 19, 2017
Sterling Ranch Filing No. 2 Transportation Memorandum	SF1820	LSC Transportation Consultants, Inc	April 3, 2018
Sterling Ranch Phase 2 Preliminary Plan Traffic Impact Study	SP203	LSC Transportation Consultants, Inc	December 20, 2018
Homestead at Sterling Ranch Filing No. 2 Transportation Memorandum	SF194	LSC Transportation Consultants, Inc	March 3, 2020
Branding Iron at Sterling Ranch Filing No. 2 Transportation Memorandum	SF1918	LSC Transportation Consultants, Inc	May 6, 2020
Sterling Ranch Filing No. 2 and Phase 2 Traffic Impact Study	SF2015 SP191	LSC Transportation Consultants, Inc	June 23, 2021
Sterling Ranch Filing No. 3 Transportation Memorandum	SF2132	LSC Transportation Consultants, Inc	April 19, 2022
Copper Chase at Sterling Ranch Transportation Memorandum	PUDSP222	LSC Transportation Consultants, Inc	December 14, 2021
Homestead North Phase 1 Updated Transportation Memorandum	SP208	LSC Transportation Consultants, Inc	January 11, 2022
Homestead North Filing No. 1 Traffic Technical Memorandum	SF2213	LSC Transportation Consultants, Inc	February 2, 2022
Homestead North Filing No. 2 Traffic Technical Memorandum	SF2218	LSC Transportation Consultants, Inc	April 15, 2022
Homestead North Filing 3 Traffic Impact Study	SF2229	LSC Transportation Consultants, Inc	June 17, 2022
Foursquare at Sterling Ranch East Preliminary Plan/Traffic Generation Analysis	PUDSP227	LSC Transportation Consultants, Inc	November 22, 2022
The Villages at Sterling Ranch East Preliminary Plan/Traffic Generation Analysis	PUDSP226	LSC Transportation Consultants, Inc	December 9, 2022
Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study	SKP224	LSC Transportation Consultants, Inc	February 10, 2023
Sterling Ranch East - Phase 1 Rezoning & Preliminary Plan Traffic Impact Study	SP-22-004, P-22-012, P-22-013	LSC Transportation Consultants, Inc	February 10, 2023
Retreat at TimberRidge Reports			
The Retreat at TimberRidge Traffic Impact Analysis	PUD173	LSC Transportation Consultants, Inc	January 25, 2018
The Retreat at TimberRidge Preliminary Plan Traffic Technical Memorandum	SP182	LSC Transportation Consultants, Inc	June 29, 2018
The Retreat at TimberRidge Filing No. 1 Traffic Technical Memorandum	SF199	LSC Transportation Consultants, Inc	April 3, 2020
The Retreat at TimberRidge Filing No. 2 Updated Traffic Technical Memorandum	SF2121	LSC Transportation Consultants, Inc	October 4, 2021
The Retreat at TimberRidge Filing No. 3 Traffic Technical Memorandum		LSC Transportation Consultants, Inc	July 1, 2022
Other Area Reports			
Wolf Ranch School Site Traffic Impact Study	OAR1720	Matrix Design Group, Inc.	5-May-17
The Ranch Sketch Plan Traffic Impact Analysis	SKP186	LSC Transportation Consultants, Inc	July 9, 2019
Lodge III Traffic Impact Study	OAR	LSC Transportation Consultants, Inc	December 13, 2019
Continental 613 Traffic Impact Study	OAR2177	LSC Transportation Consultants, Inc	July 16, 2021
Solace at Black Forest Traffic Impact and Access Analysis	OAR2134	LSC Transportation Consultants, Inc	August 13, 2021
Traffic Impact Study Addendum for Percheron	OAR2173	SM Rocha, LLC	October, 2021
Woodmen East Commercial Center Traffic Impact Analysis	OAR2191	LSC Transportation Consultants, Inc	December 8, 2021
Traffic Impact Study for Jaynes Property	SKP225	SM Rocha, LLC	January, 2023
Traffic Impact Study for Rhetoric Site	P2216	SM Rocha, LLC	June, 2022
Briargate-Stapleton Corridor Study (DRAFT)	briargate-stapleton.com	Wilson & Company	December 9, 2021
Notes:			
(1) Follow the links listed below to obtain the most recent version of each listed study. To obtain a copy of the version of each study used in preparing this report please contact LSC Transportation Consultants, Inc.			
Source: LSC Transportation Consultants, Inc.			

Appendix A



This memorandum was based on the *Sterling Ranch East Rezoning and Preliminary Plan TIS* dated February 10, 2023. The latest version of this report can be found at <https://epcdevplanreview.com/Public/ProjectDetails/184081>. If you need a copy of the February 10, 2023 version of the report, please contact LSC Transportation Consultants, Inc.

Additional Attachments

Tables 5 and 6 from *Sterling Ranch East Rezoning and Preliminary Plan TIS* with notes by LSC

