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Sterling Ranch Sketch Plan
2023 Amendment & Rezone
Traffic Technical Memorandum
PCD Filling Nos. SKP235, P239, P2310, and P2311
(LSC #S224441)
December 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.



Developer's Statement

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

Date

Sterling Ranch Sketch Plan

2023 Amendment and Rezone

Traffic Technical Memorandum

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

DECEMBER 15, 2023

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

LSC #S224441





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December 15, 2023

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

RE: Sterling Ranch Sketch Plan
2023 Amendment and Rezone
Traffic Technical Memorandum
El Paso County, Colorado
LSC #S224441

Dear Mr. Moreland:

LSC Transportation Consultants, Inc. has prepared this traffic technical memorandum for the currently proposed amendment to the Sterling Ranch Sketch Plan and proposed rezone of the parcels north of Briargate Parkway and east of Sterling Ranch Road. As shown in Figure 1, Sterling Ranch is located east of Vollmer Road near Lochwinnoch Lane between the future extensions of Marksheffel Road and Stapleton Drive in El Paso County, Colorado. LSC prepared a master traffic impact study (MTIS) for the entire Sterling Ranch development dated June 5, 2008. This master study was updated October 21, 2022, December 22, 2022, February 10, 2023, and March 17, 2023 (approved version) ([SKP-22-004](#)). The purpose of this memorandum is to confirm that the land uses allowed by the currently proposed Sketch Plan amendment conform to the overall land uses assumed in the approved version of the MTIS.

This memo also addresses the potential localized **shift** of up to about 118 dwelling units into the area north of Briargate Parkway including the parcels to be rezoned by providing a "sensitivity analysis." The results of this analysis demonstrate that the prior findings and recommendations contained in the MTIS would remain valid.

STUDY AREA

Sketch Plan

Figure 2 shows the location of the proposed rezone area and the proposed amendment to the Sketch Plan is attached. The 1,444-acre Sterling Ranch Sketch Plan area is partially developed and planned to ultimately include a mix of residential, commercial, and educational land uses. The

number of residential dwelling units for Sterling Ranch is capped at 4,800. No change to the maximum number of residential dwelling units is proposed as part of the 2023 Sketch Plan Amendment. However, the currently proposed plan includes a rezone of the parcels north of Briargate Parkway to allow for higher residential densities.

The 2022 MTIS assumed the Sterling Ranch development would be built with the maximum allowable number of residential units. As many of the residential parcels within Sterling Ranch were either existing, approved, under review, or in the preliminary planning stages, and therefore had a known number of dwelling units, the MTIS assumed that the areas north of Briargate Parkway and east of Sterling Ranch Road where detailed plans had not yet been made would be developed with the number of dwelling units needed to reach the maximum of 4,800 dwelling units for the overall development even though that number was greater than what was allowed by the zoning for those parcels. This area was included in the MTIS as Traffic Analysis Zones (TAZ) 30, 34, 35, 36 (which are located just north of Briargate Parkway), and TAZ 101 (currently proposed to be rezoned). Table 1 shows the number of residential dwelling units assumed in the MTIS for each TAZ in this area and the number of dwelling units that would be allowed based on the currently proposed plan. As shown in Table 1, the MTIS assumed 1,302 single-family residential dwelling units in this area (TAZs 30, 34, 35, 36, and 101). The currently-proposed plan would allow between 894 and 1,438 residential single-family residential dwelling units. As the total number of allowable residential dwelling units in the overall Sterling Ranch development has **not** been increased, the 1,302 dwelling units shown for this area in the MTIS is likely still a reasonable assumption. If up to 1,418 dwelling units are constructed in the area north of Briargate Parkway and east of Sterling Ranch Road, the number of dwelling units in other areas of Sterling Ranch Sketch Plan area that have not yet been developed would need to be reduced by at least 116 dwelling units (so the overall Sterling Ranch dwelling unit cap is not exceeded).

Study-Area Access Plan

No changes to the access plan are proposed as part of this Sketch Plan Amendment.

Sterling Ranch Road is no longer planned to be directly extended to Arroya Lane, which is planned to be upgraded to a Minor Rural Collector as part of the TimberRidge Filing No. 3 ([SF2241](#)). A connection will be provided to Arroya Lane via a circulation Urban Local street network.

Add statement that this connection will be further analyzed with subsequent subdivision submittals.

TRIP GENERATION

Table 2 shows the trip-generation estimate for the areas north of Briargate Parkway and east of Sterling Ranch Road (TAZs 30, 34, 35, 36 and 101) should they be developed with 1,418 residential dwelling units, which is the maximum number of units based on the currently-proposed zoning. The trip generation was estimated using the nationally-published trip-generation rates from *Trip Generation, 11th Edition*, 2021 by the Institute of Transportation Engineers (ITE). Note that the trip generation for the **overall** Sterling Ranch Master Plan is not anticipated to change from what was assumed in the March 2023 MTIS as the maximum number of residential units for the overall

sketch plan area is capped at 4,800 dwelling units. Should 1,418 residential dwelling units be constructed within the area north of Briargate Parkway and east of Sterling Ranch Road currently-proposed amendment area, the number of units in other areas of the Sterling Ranch Sketch Plan not currently developed would need to be reduced by 116 units so that the 4,800 cap is not exceeded.

If the maximum number of residential units is developed within the areas north of Briargate Parkway and east of Sterling Ranch Road, this area is projected to generate about 13,372 new external vehicle trips on the average weekday, with about half entering and half exiting the area during a 24-hour period. This is about 1,094 more daily trips than were estimated for the same area in the March 2023 MTIS.

Figures 3a through 3e show the projected average weekday traffic volume by parcel on the key street segments that will serve the area north of Briargate Parkway and east of Sterling Ranch Road. Figure 3f shows the total projected average weekday traffic volumes due to traffic generated by all of Sterling Ranch assuming the area north of Briargate Parkway and east of Sterling Ranch Road is developed with 1,418 single-family residential units. The volumes shown in Figure 3f are the sum of the volumes from Figure 3a through 3e. Figure 3g shows the projected peak-hour traffic volumes due to traffic generated by all of Sterling Ranch assuming the area north of Briargate Parkway and east of Sterling Ranch Road is developed with 1,418 single-family residential dwelling units. These volumes are based on the trip-generation estimate shown in Table 2 and the directional-distribution estimate from the March 2023 MTIS.

BASELINE TRAFFIC

Baseline traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development's trip generation of Sterling Ranch-generated traffic volumes. Baseline traffic (for a specified horizon year) includes the through traffic and the traffic generated by nearby developments (existing and planned) but assumes zero traffic generated by land uses within Sterling Ranch, including traffic generated by existing developments within Sterling Ranch.

Figure 4a shows the projected 2042 baseline daily traffic volumes on key street segments at the key area intersections and Figure 4b shows the projected 2042 peak-hour baseline traffic volumes at the key area intersections. These volumes assume buildout of the area street network, including the completion of Marksheffel Road between Vollmer Road and Black Forest Road, Briargate Parkway between Meridian Road and Black Forest Road, and Sterling Ranch Road between Marksheffel Road and Briargate Parkway. The 2042 baseline traffic volumes are estimates by LSC, based on the 2042 baseline traffic volumes from the March 2023 MTIS with some updates based on work completed by LSC for other projects in the area, including Retreat at TimberRidge Filing 3 ([SF2241](#)) and Retreat at TimberRidge Filing 4 ([SF1827](#))

SENSITIVITY ANALYSIS

As the currently-proposed sketch-plan amendment does not increase the maximum number of residential dwelling units allowed within the overall Sterling Ranch Sketch Plan above the 4,800 units allowed in the approved plan, the 2042 total traffic volumes and level of service analysis from the March 2023 MTIS are generally still applicable. LSC has prepared this "sensitivity analysis" of the possible scenario in which the maximum allowable number of dwelling units is constructed within the areas north of Briargate Parkway and east of Sterling Ranch Road. This would require the number of units in areas outside of the currently-proposed amendment area to be reduced by 118 units, but to be conservative, this sensitivity analysis assumes no changes (reduction in trip generation) to the land uses outside of this area. The purpose of this sensitivity analysis is to determine if the proposed lane geometry and roadway classifications for the key intersections and street sections serving the amendment area are still appropriate.

Figure 5a shows the projected 2042 total daily traffic volumes on key street segments and Figure 5b shows the projected 2042 total peak-hour traffic volumes at the key study-area intersections, should 1,418 single-family homes be built within the area north of Briargate Parkway and east of Sterling Ranch Road. These volumes are the sum of the 2042 baseline traffic volumes from Figure 3a and 3b and the site-generated traffic volumes from Figures 3e and 3g.

Figure 5c shows the results of the level of service analysis based on the volumes shown in Figure 5b and the lane geometry shown in Figure 5c. As shown in Figure 5c, all of the movements at the stop-sign-controlled intersection of Vollmer/Arroya (Intersection #2) are projected to operate at LOS C or better during the peak hours. All movements at the future signalized intersection of Briargate/Sterling Ranch (Intersection #5) are projected to operate at LOS D or better during the peak hours. All movements at the future signalized intersection of Briargate/Banning Lewis (Intersection #6) for the westbound left-turn and northbound left-turn movement at Banning Lewis/Briargate are projected to operate at LOS E, which is **consistent with the level of service analysis shown in the MTIS at this intersection.**

ROADWAY FUNCTIONAL CLASSIFICATIONS AND LANEAGE

Figure 6 shows the recommended functional classifications and number of through lanes for the streets in the study area. Figure 6 also shows a comparison of the projected average weekday traffic volume (ADT) and the design ADT from the *ECM* for the key street segments in the vicinity of the site. All of the projected weekday traffic volumes are below the design ADT volumes.

CONCLUSIONS AND RECOMMENDATIONS

As residential dwelling unit cap for Sterling Ranch is not proposed to be raised and the number of dwelling units assumed in the MTIS for the parcels north of Briargate Parkway and east of Sterling Ranch Road are within the range allowed by the proposed updated residential densities,

the conclusions and recommendations in the *Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study*, by LSC Transportation Consultants, Inc. dated March 17, 2023, are still valid.

* * * * *

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

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By Jeffrey C. Hodsdon, P.E.
Principal

JCH/KDF:jas

Enclosures: Tables 1-2
Figures 1-6
Level of Service Reports
Sterling Ranch Sketch Plan Amendment 2023

Tables 1-2

Table 1 Sterling Ranch Sketch Plan 2023 Amendment Land Use Comparison											
Traffic Analysis Zone ⁽²⁾	Land Uses Assumed in the <i>Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study, March 17, 2023</i>				Land Uses Allowed by the Currently Proposed Sterling Ranch Sketch Plan 2023 Amendment						
	Name	Land Use	Quantity	Unit	Land Use	(Acres)	Minimum Quantity	Unit	Maximum Quantity	Unit	
101	Future Sterling Ranch East East of TimberRidge	Residential 0.2-5 DU/Ac	431	DU	Residential 2.5 Acre Lots	31	12	DU		12	DU
					Residential 2 DU/Ac	33	66	DU		66	DU
					Residential 3-5 DU/Ac	125	375	DU		625	DU
					TOTAL TAZs 30, 34, 35, 36		431	DU	453	DU	703
30, 34, 35 & 36	Future Sterling Ranch East North of Briargate	Residential 3-5 DU/Ac	871	DU	Residential 3-5 DU/Ac	143	429	DU		715	DU
TOTAL TAZs 30, 34, 35, 36 & 101				1,302	DU	882		DU	1,418		DU
Notes: (1) See Figure 3 from the MTIS for Traffic Analysis Zone Boundaries (2) DU = dwelling unit											
Source: LSC Transportation Consultants, Inc.											
Sep-23											

Table 2
Sterling Ranch Sketch Plan 2023 Amendment
Trip Generation Estimate Comparison for the Amendment Area

Sketch Plan TAZ ⁽¹⁾	ITE Code	ITE Land Use	Quantity	Unit	Daily	Trip Generation Rates ⁽²⁾				Total Trip Generated				
						AM Peak Hour		PM Peak Hour		Daily	AM Peak Hour		PM Peak Hour	
						In	Out	In	Out		In	Out	In	Out
Maximum Trip Generation Estimate for the 2023 Amendment Area Based on the Currently Proposed Sterling Ranch Sketch Plan 2023 Amendment ⁽³⁾														
101	210	Single-Family Detached Housing	703	DU ⁽³⁾	9.43	0.18	0.52	0.59	0.35	6,629	128	364	416	245
30, 34, 35 & 36	210	Single-Family Detached Housing	715	DU	9.43	0.18	0.52	0.59	0.35	6,742	130	370	423	249
Total			1,418	DU						13,372	258	735	840	493
Trip Generation Estimate for the 2023 Amendment Area From the <i>Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study</i> , March 17, 2023														
101	210	Single-Family Detached Housing	431	DU	9.43	0.18	0.52	0.59	0.35	4,064	78	223	255	150
30, 34, 35 & 36	210	Single-Family Detached Housing	871	DU	9.43	0.18	0.52	0.59	0.35	8,214	159	451	516	303
Total			1,302	DU						12,278	237	674	771	453
Change From The Approved MTIS ⁽⁴⁾			116	DU						1,094	21	60	69	40

Notes:

(1) See Figure 2 for Traffic Analysis Zone boundaries

(2) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE)

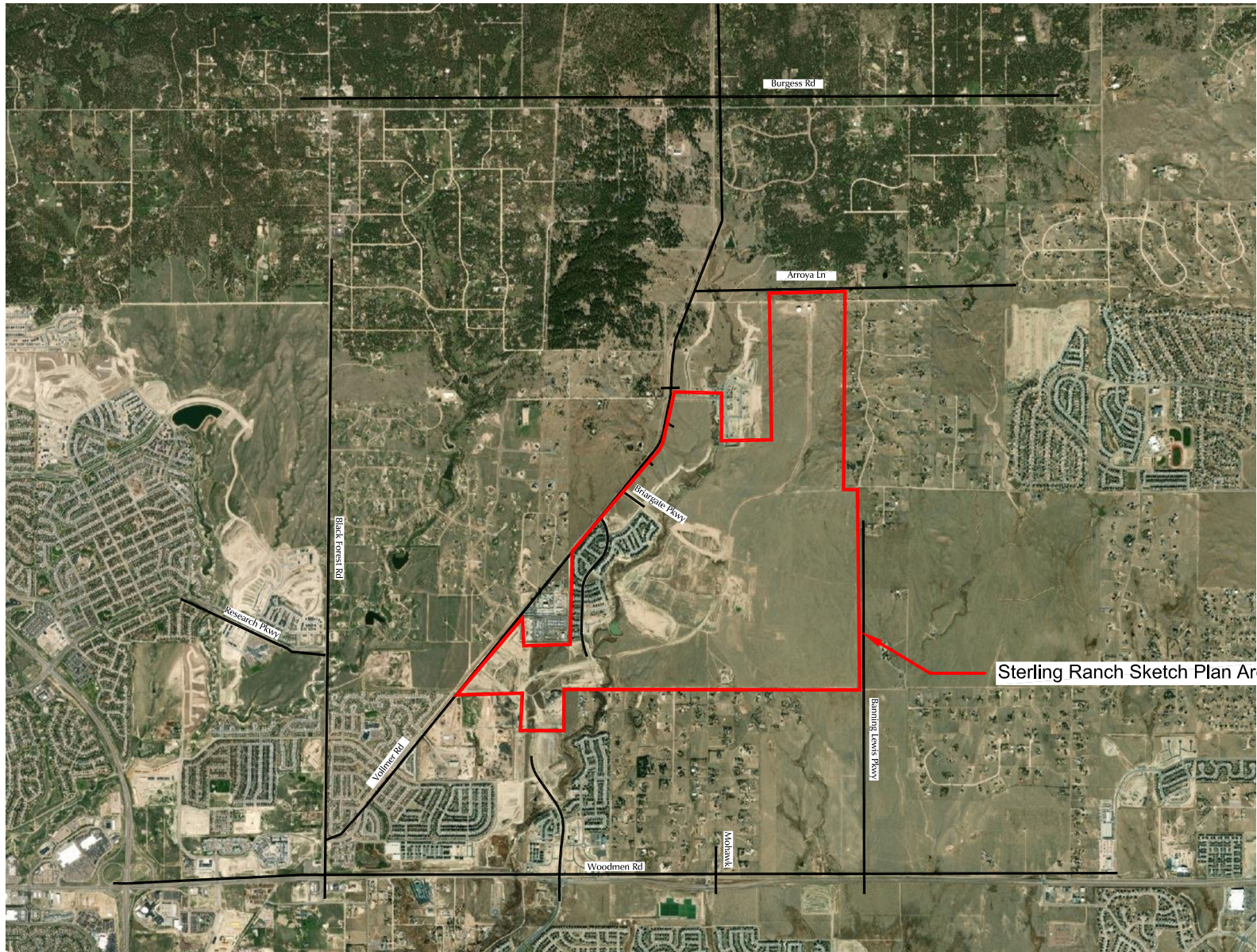
(3) DU = Dwelling Unit

(4) If up to 1,418 dwelling units are constructed in the currently proposed amendment area, the number of dwelling units in other areas of Sterling Ranch Sketch Plan area that have not yet been developed would need to be reduced by at least 116 dwelling units (so the overall Sterling Ranch dwelling unit cap is not exceeded).

Source: LSC Transportation Consultants, Inc.

Dec-23

Figures 1-6

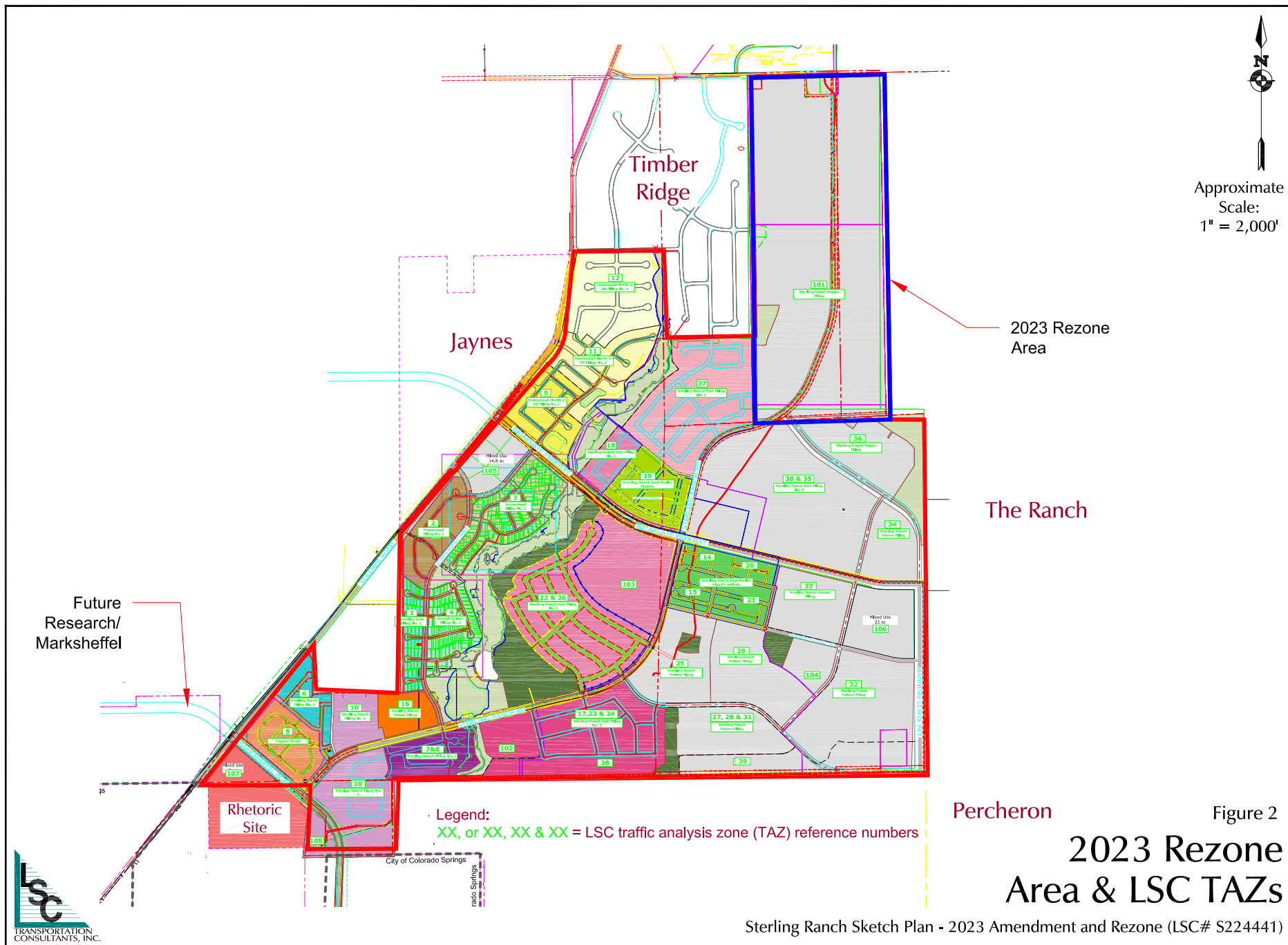


Sterling Ranch Sketch Plan Area

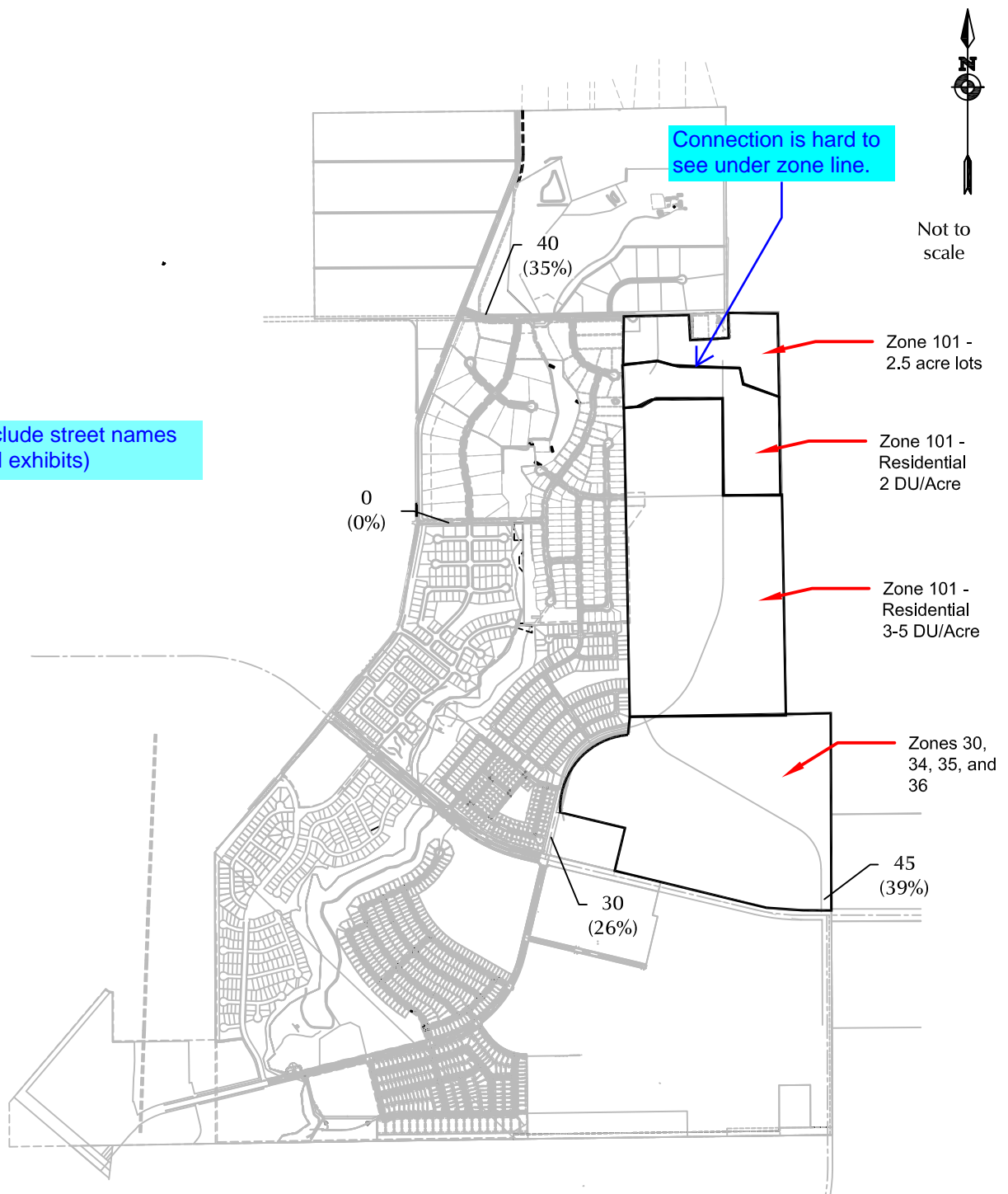
Figure 1

Vicinity

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



Include street names
(all exhibits)



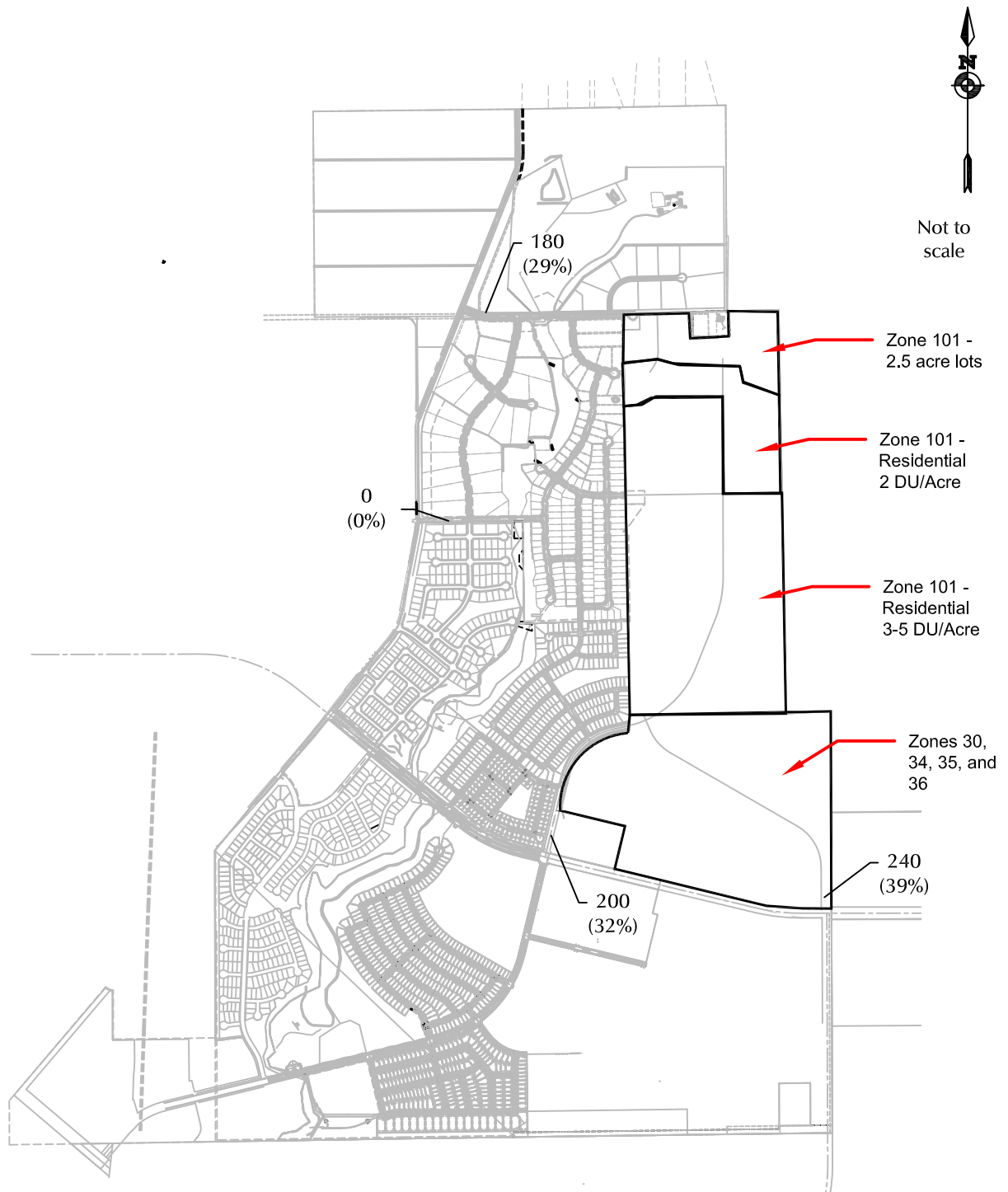
LEGEND:

XXX = Average Weekday Traffic (AWT)(vehicles per day)
(XX%) = Percent of Average Weekday Traffic (AWT)

Figure 3a

Zone 101 (2.5 Acre Lots) Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



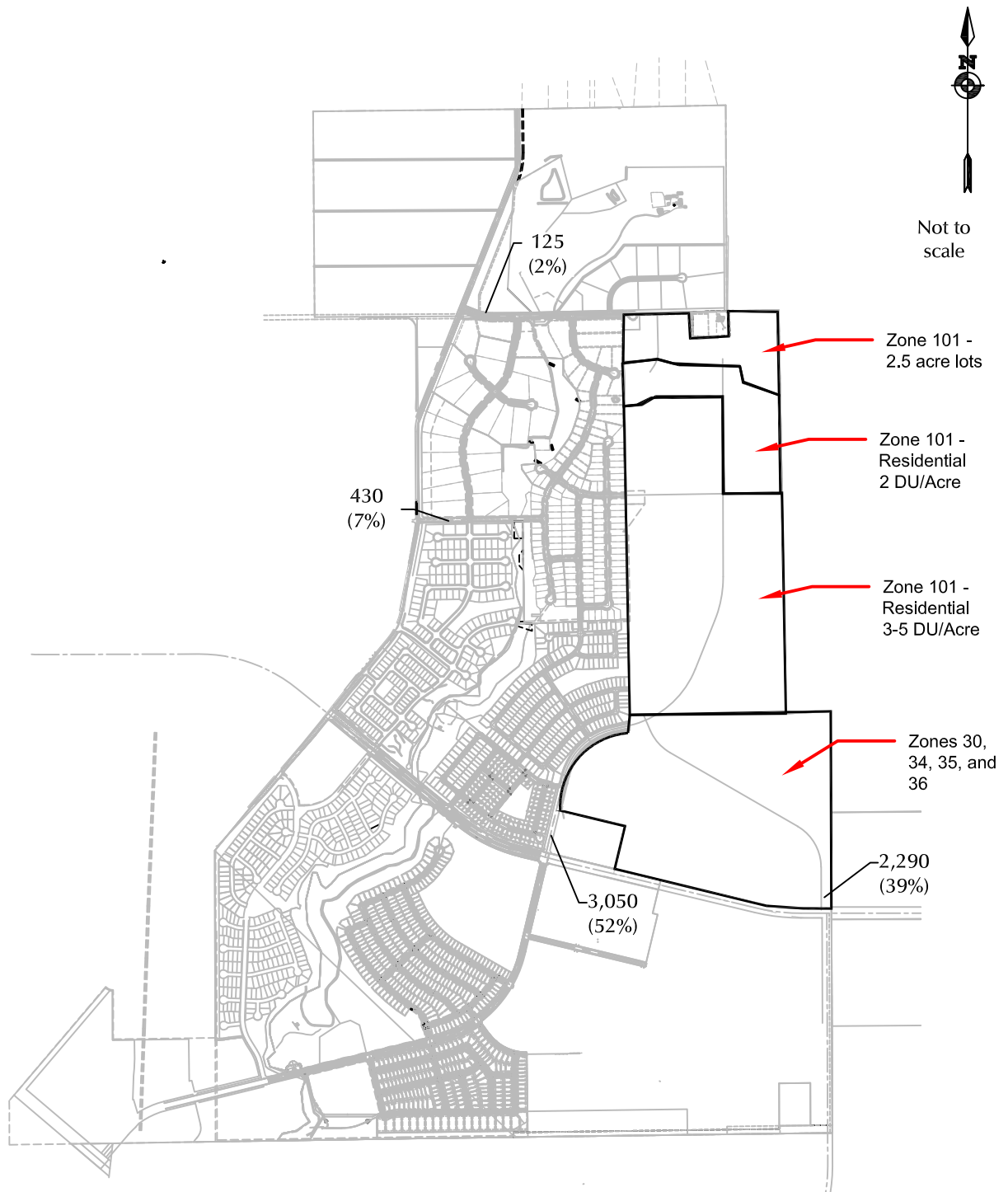
LEGEND:

XXX = Average Weekday Traffic (AWT)(vehicles per day)
 (XX%) = Percent of Average Weekday Traffic (AWT)

Figure 3b

Zone 101 (2 DU/Acre) Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



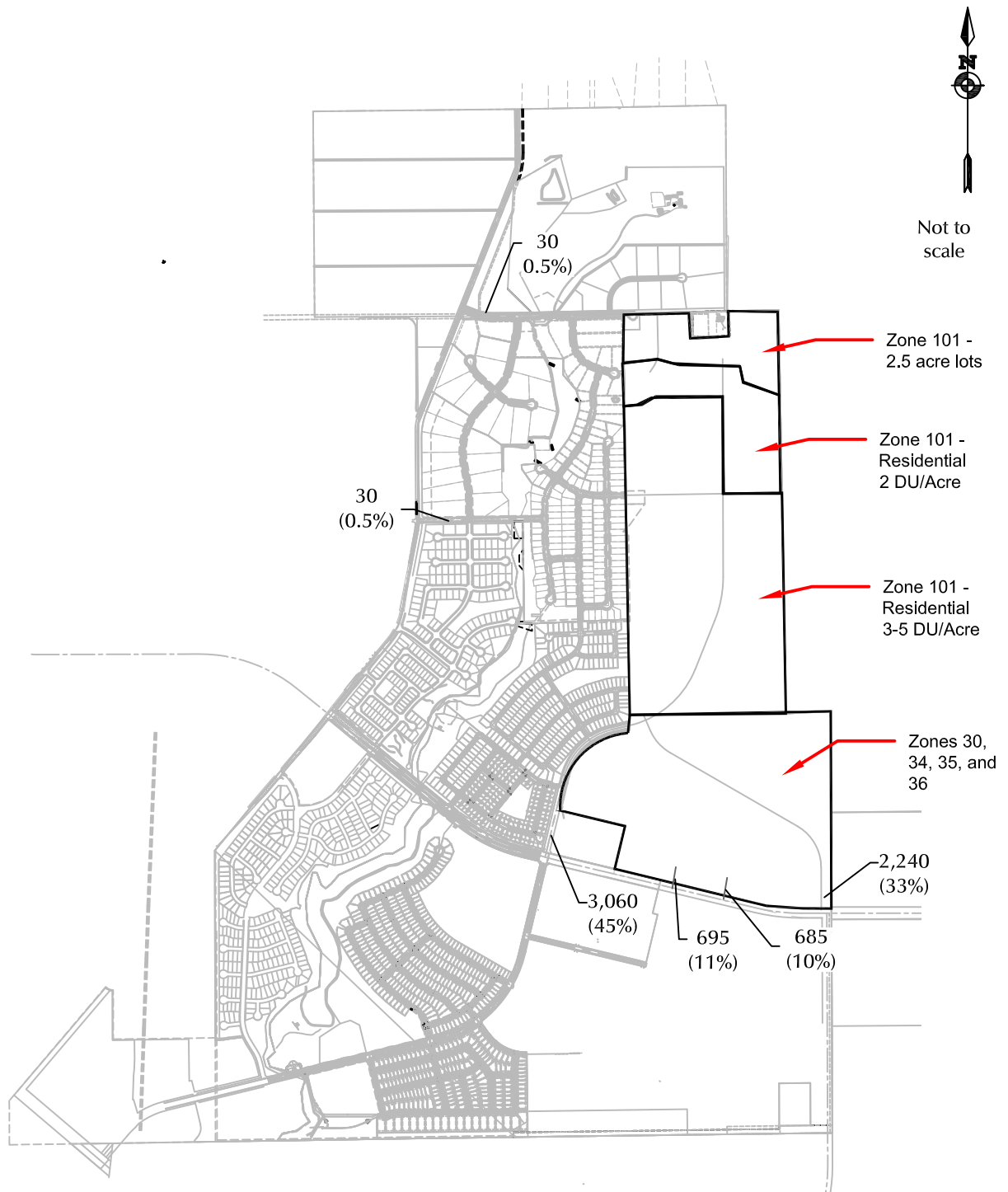
LEGEND:

XXX = Average Weekday Traffic (AWT)(vehicles per day)
 (XX%) = Percent of Average Weekday Traffic (AWT)

Figure 3c

Zone 101 (3-5 DU/Acre) Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



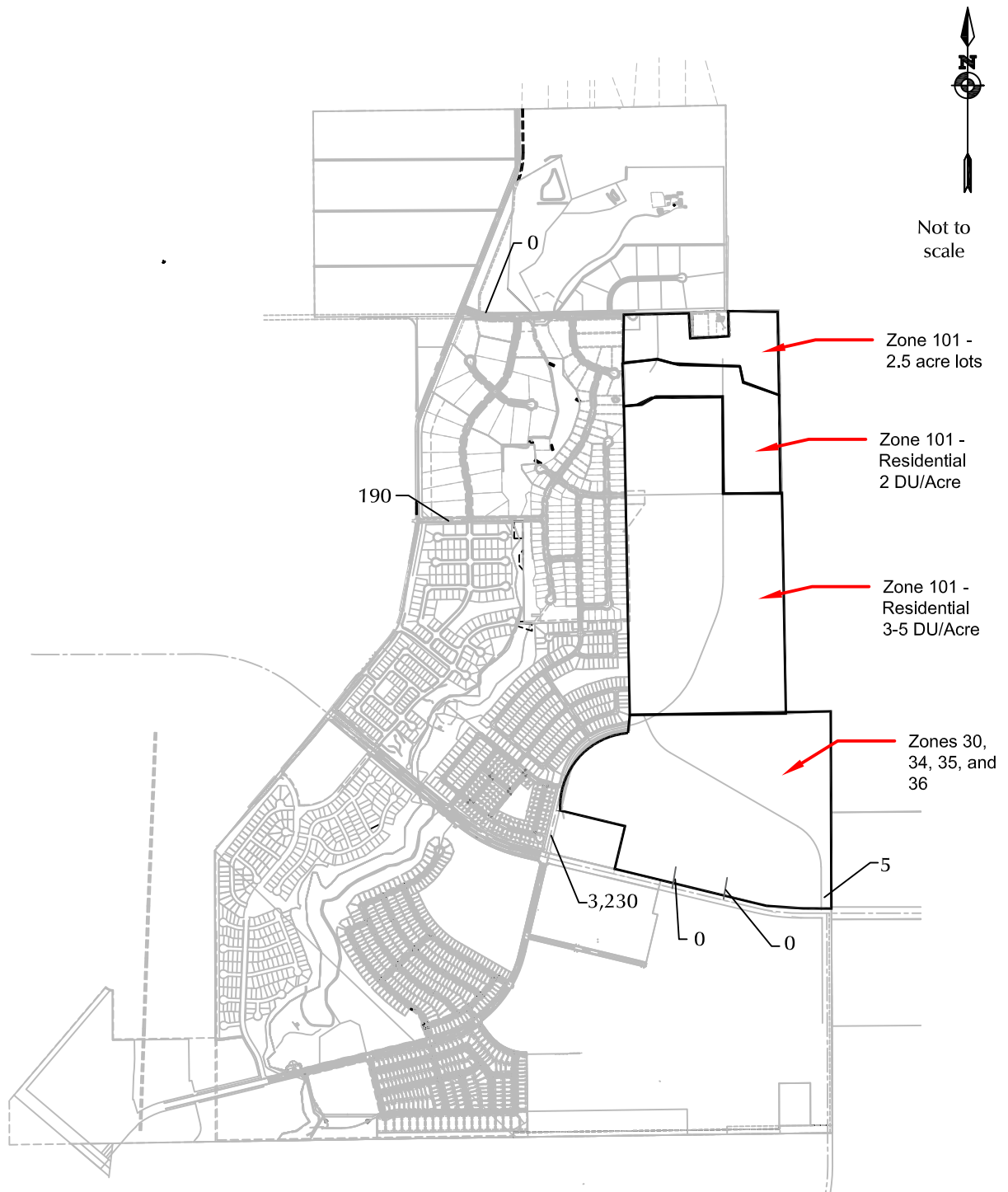
LEGEND:

XXX = Average Weekday Traffic (AWT)(vehicles per day)
 (XX%) = Percent of Average Weekday Traffic (AWT)

Figure 3d

Zones 30, 34, 35, and 36 Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



LEGEND:

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

Figure 3e

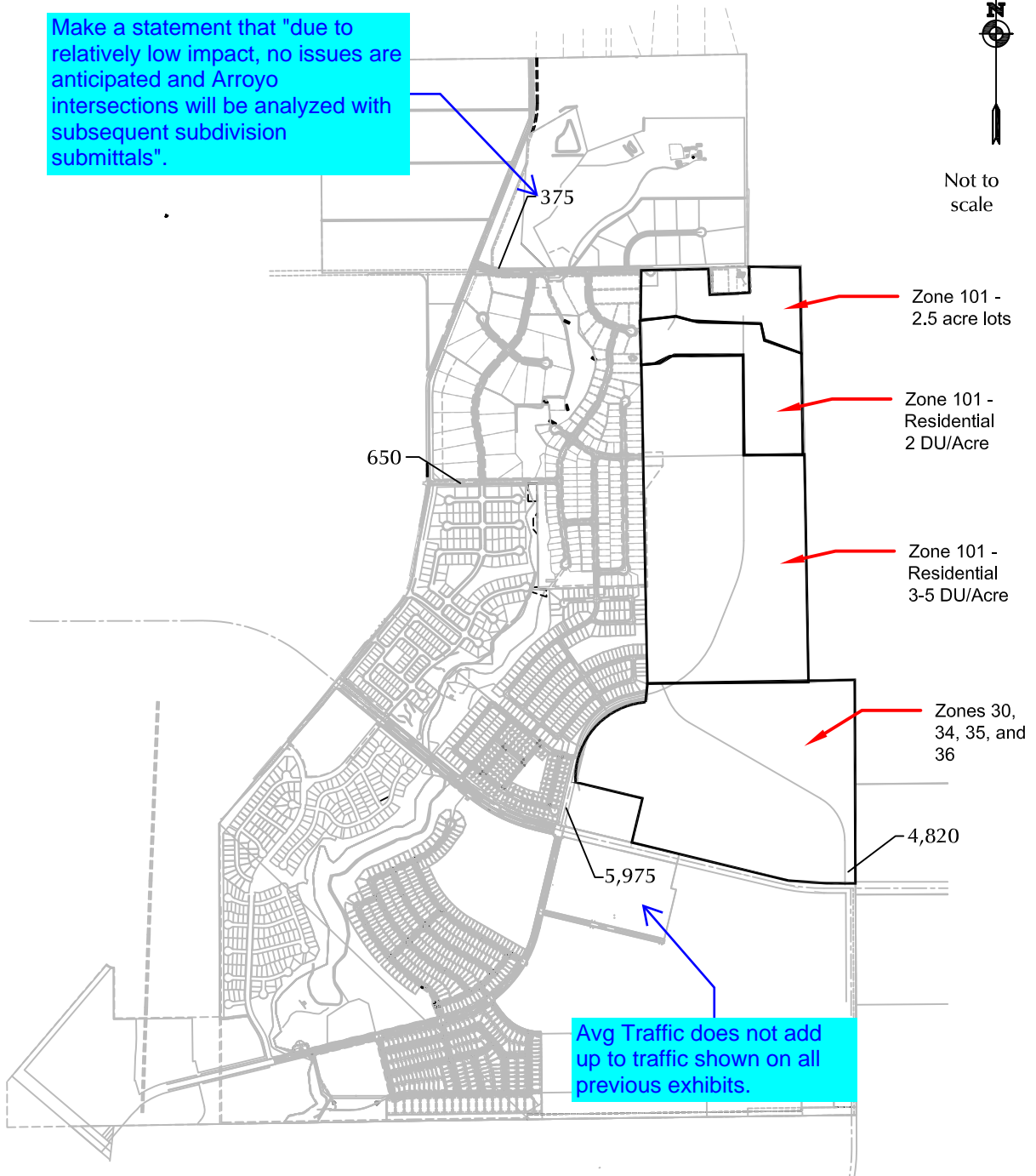
Other Sterling Ranch Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)

Make a statement that "due to relatively low impact, no issues are anticipated and Arroyo intersections will be analyzed with subsequent subdivision submittals".



Not to scale



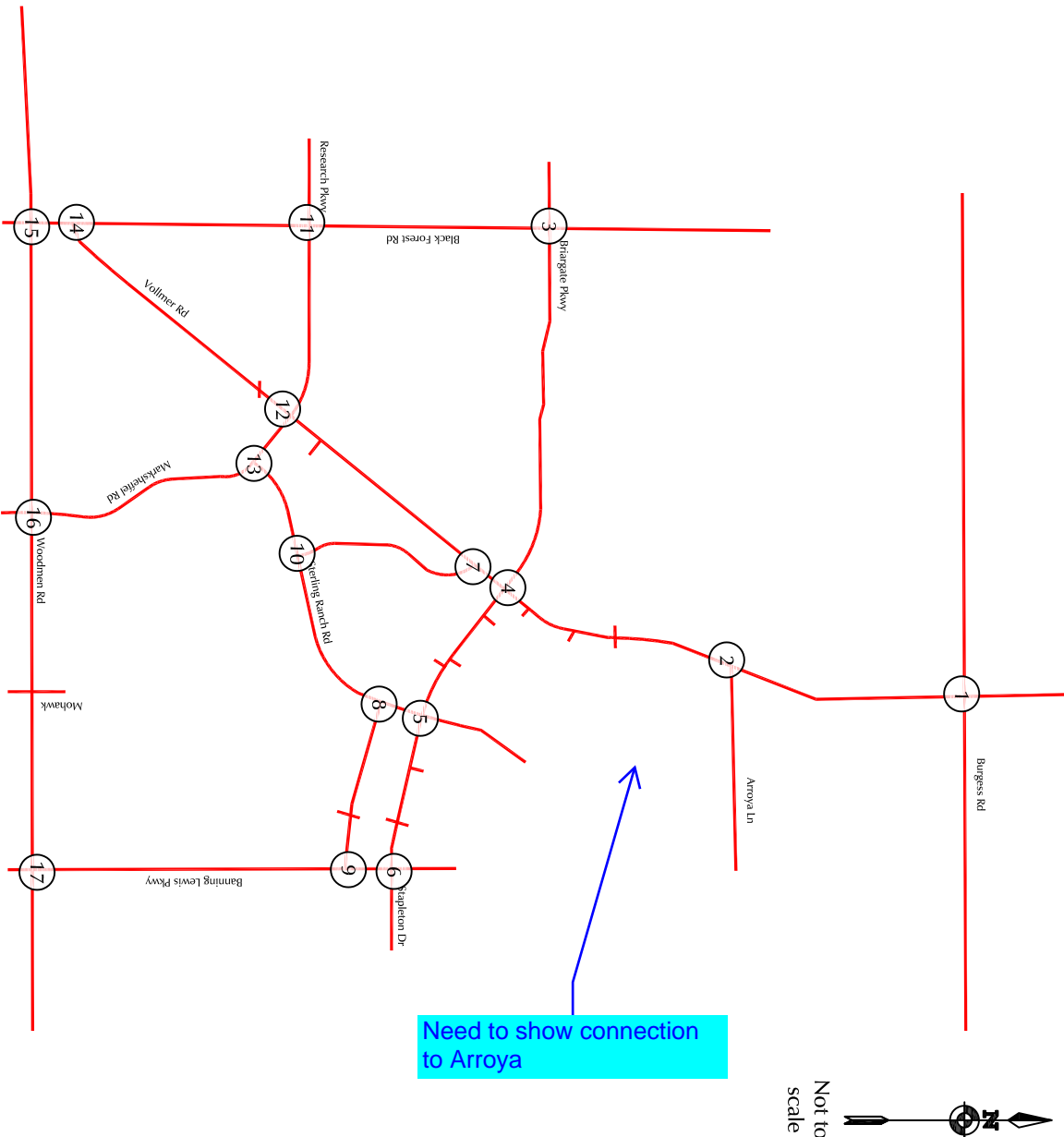
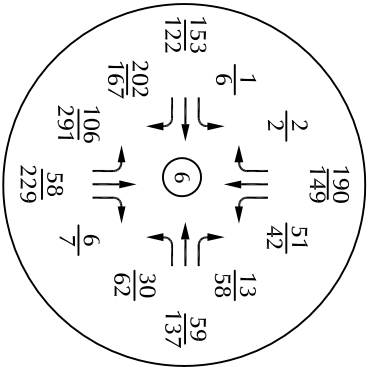
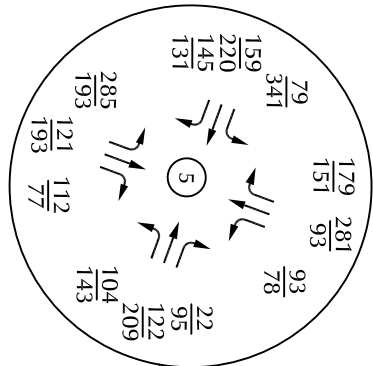
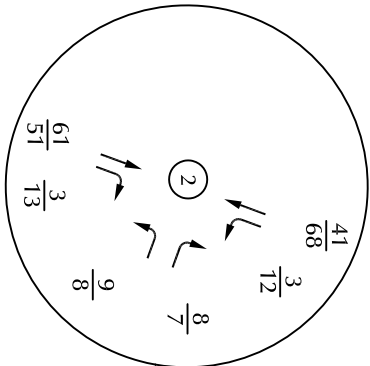
LEGEND:

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

Figure 3f

Total Sterling Ranch Generated Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



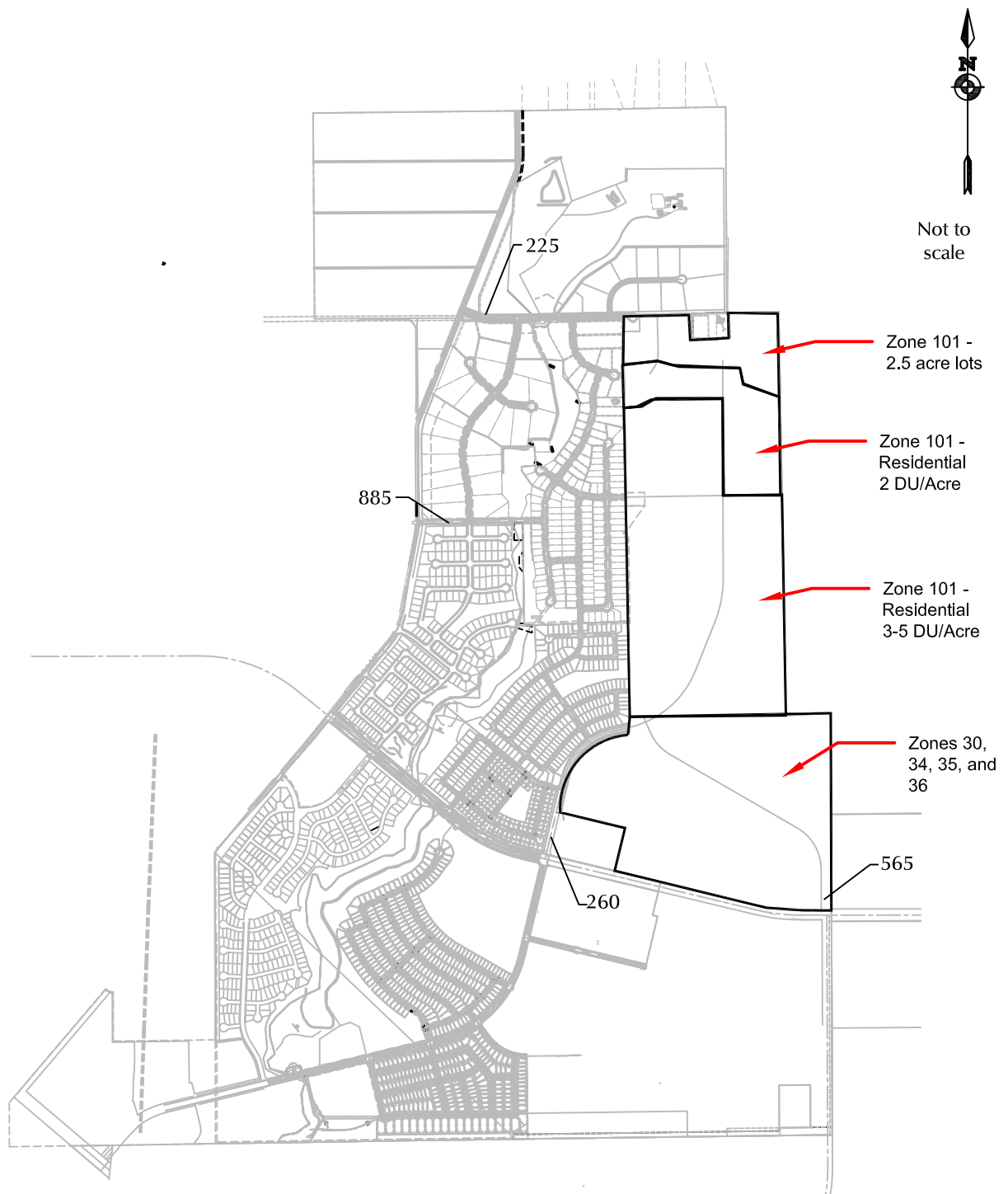
*Note: This sensitivity analysis assumes 1,418 single family homes within the area north of Briargate Parkway and east of Sterling Ranch Road which is the maximum number of dwelling units allowed by the proposed 2023 amendment, but no changes to the number of dwelling units in other areas of the Sterling Ranch Sketch Plan. The total number of residential dwelling units within Sterling Ranch assumed in this analysis would exceed cap of 4,800 units. In order to achieve the maximum density in the 2023 amendment area the number of residential dwelling units in other areas of Sterling Ranch would need to be reduced so that the total number of units does not exceed 4,800.

LEGEND:

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



Figure 3g
Sterling Ranch Sketch Plan-Generated Peak-Hour Traffic
Assuming Maximum Density in the 2023 Amendment Area*
Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)



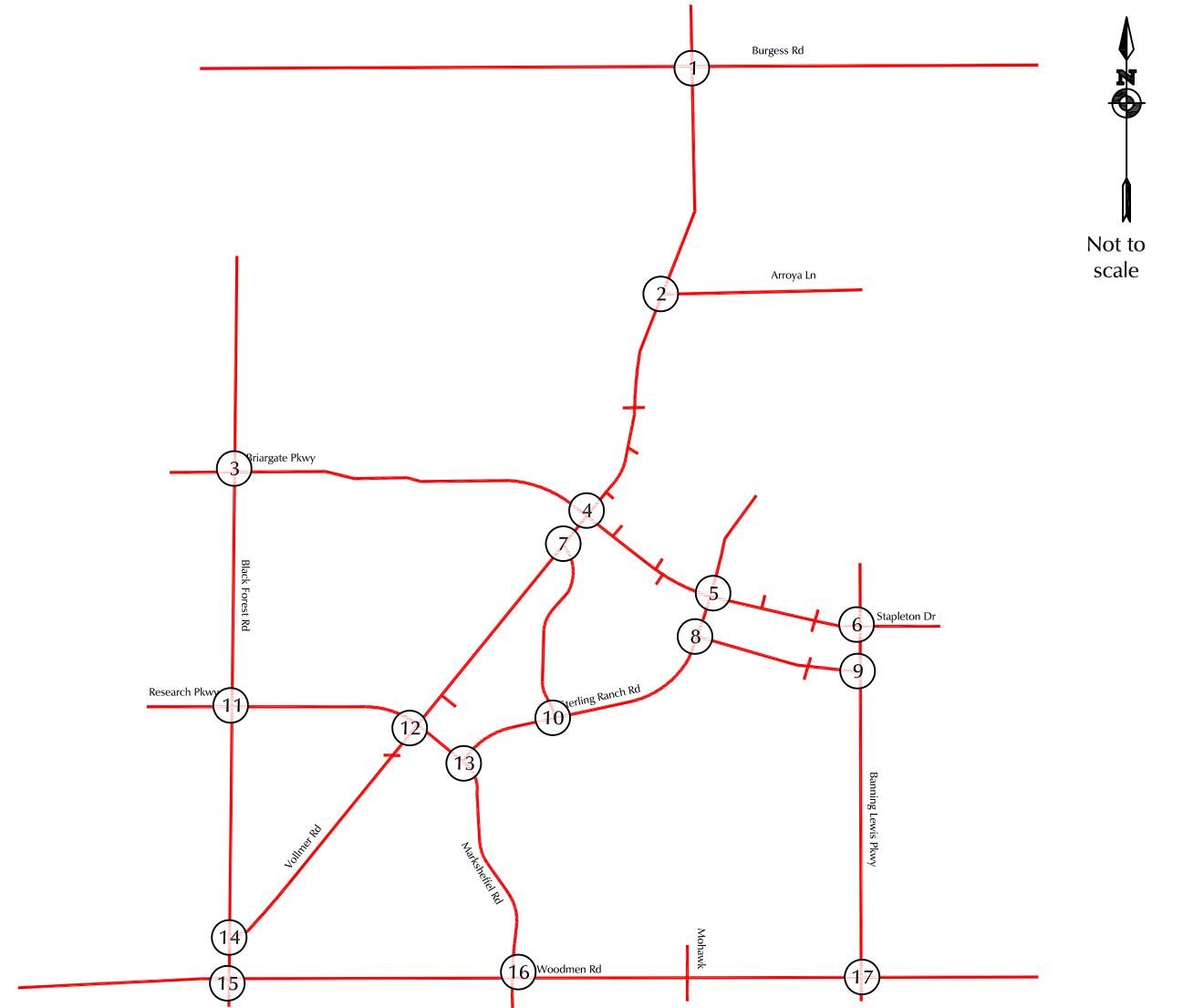
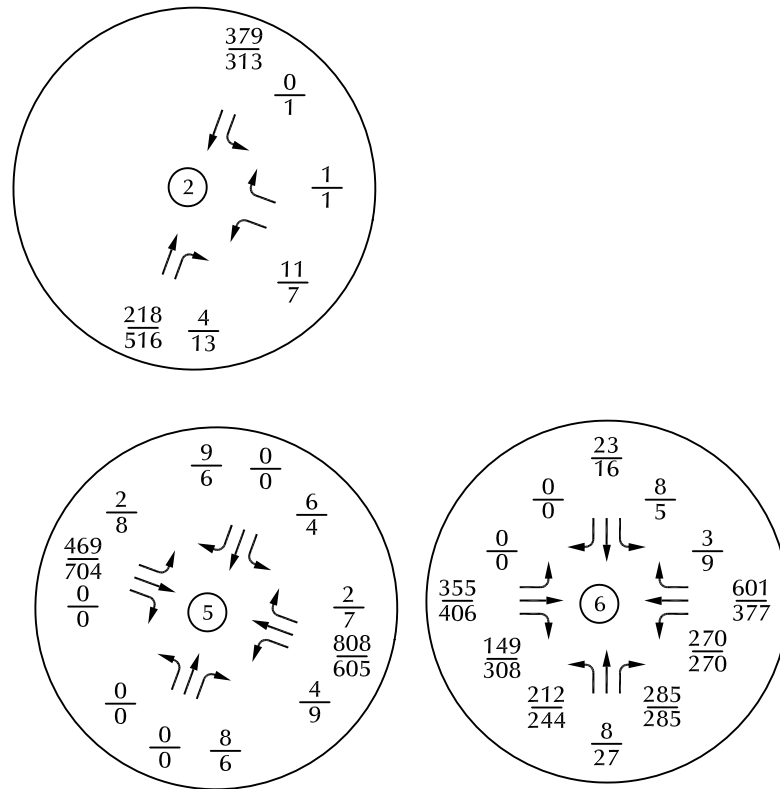
LEGEND:

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

Figure 4a

2042 Baseline Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)

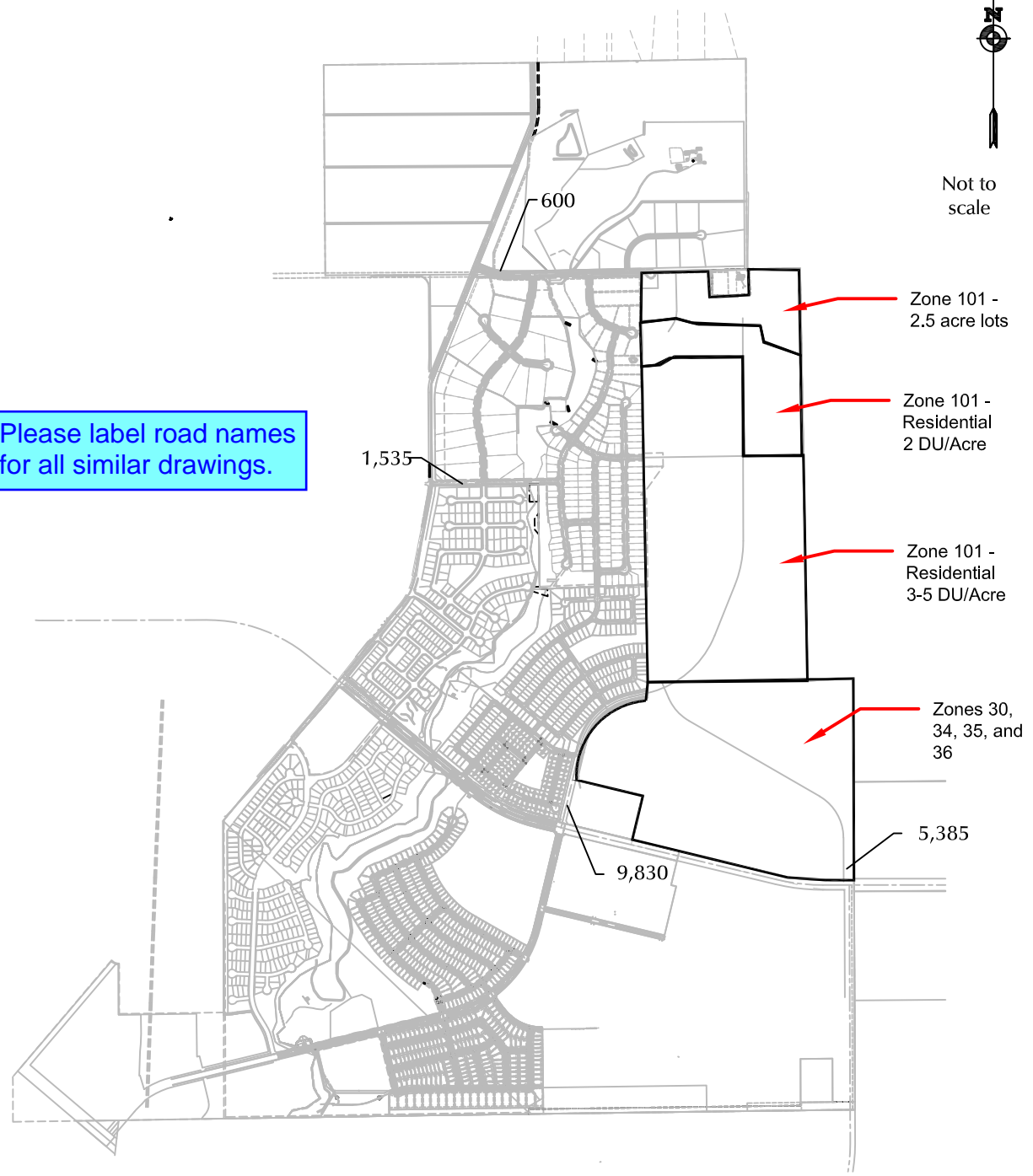


LEGEND: $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$



Not to scale

Please label road names for all similar drawings.



LEGEND:

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

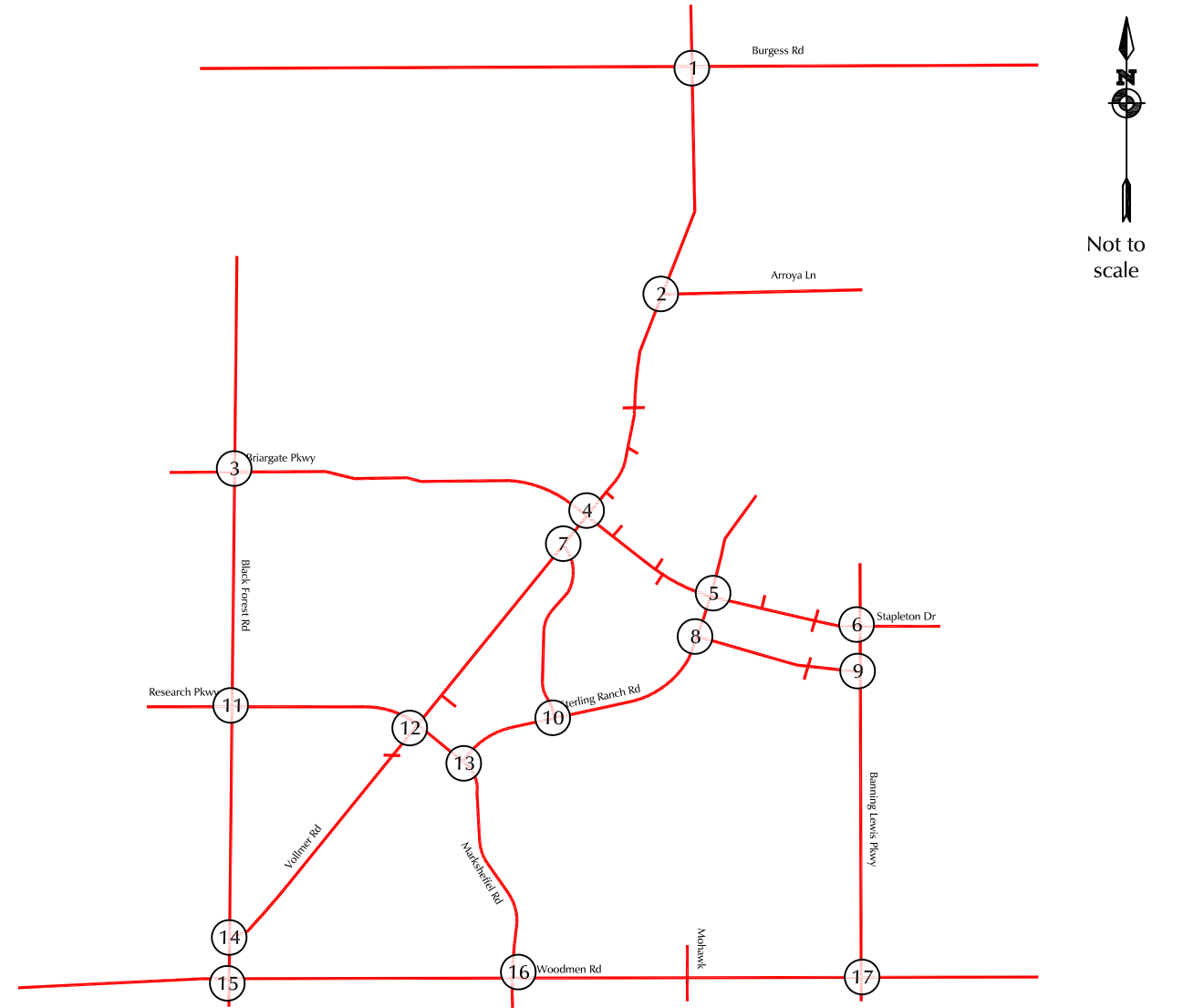
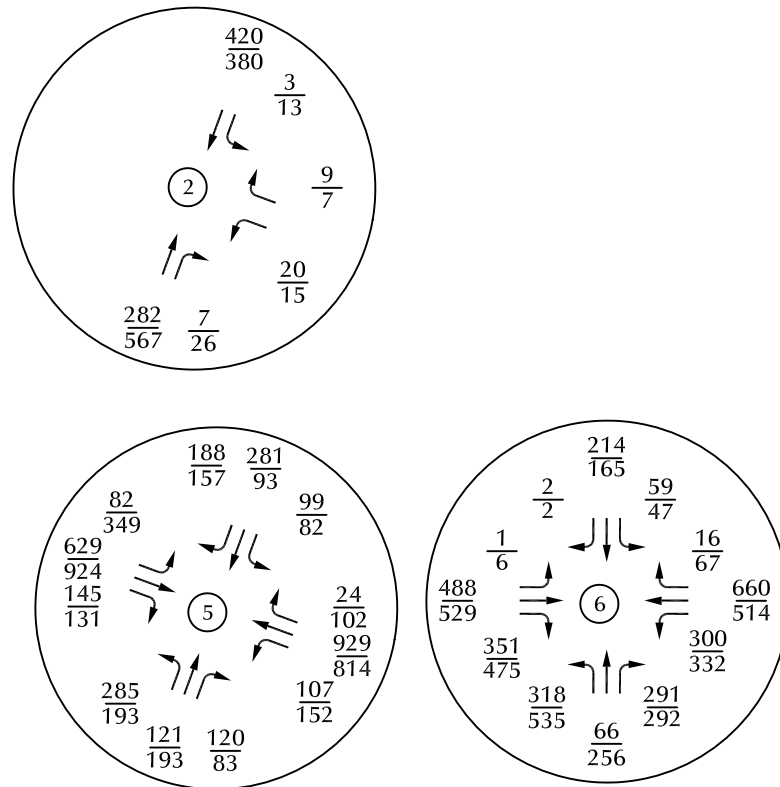
Figure 5a

Rezone Area Sensitivity Analysis* Average Weekday Traffic

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)

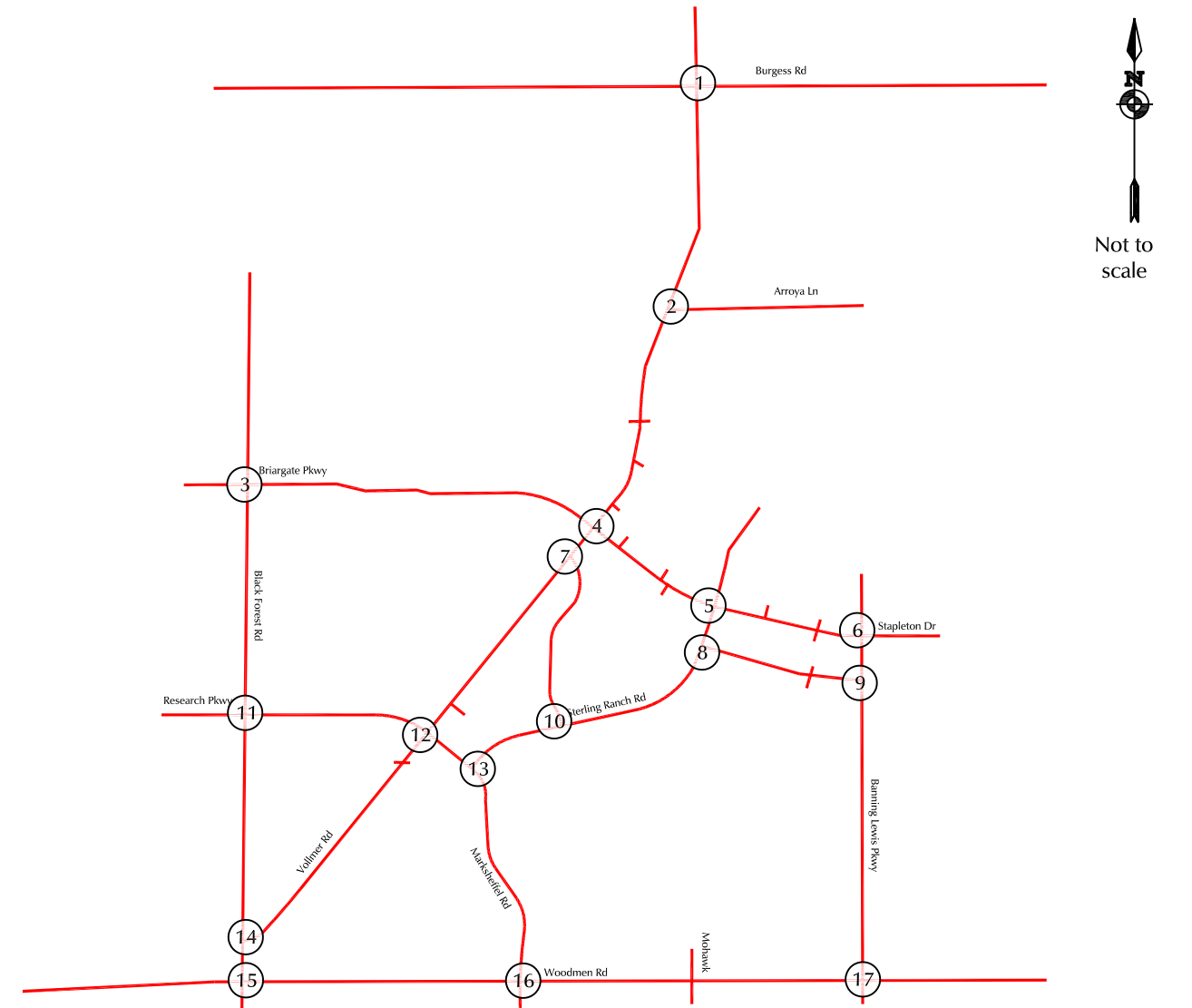
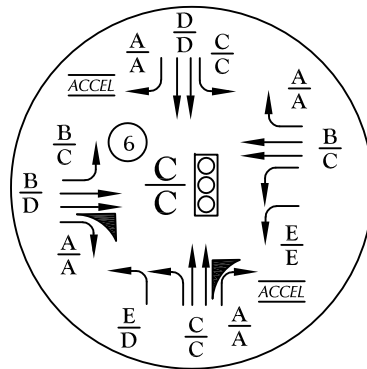
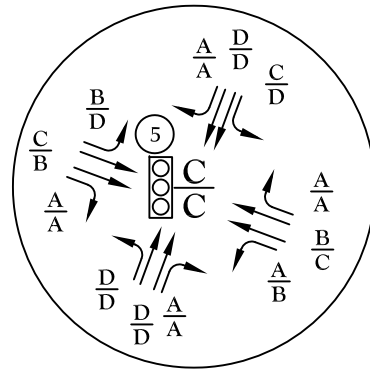
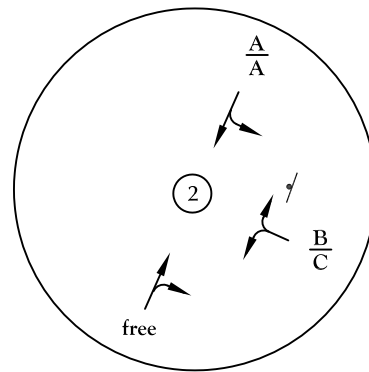


*Note: These volumes are the sum of the Sterling Ranch Sketch Plan generated traffic volumes assuming maximum density in the area north of Briargate Parkway and east of Sterling Ranch Road (from Figure 3a) plus the 2042 baseline traffic volumes taken from Figure 6a of the Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study (MTIS), by LSC Transportation Consultants, March 2023. These volumes should be compared to the corresponding impacted street segment volumes shown on Figure 10a of the March 2023 MTIS.



*Note: These volumes are the sum of the Sterling Ranch Sketch Plan generated traffic volumes assuming maximum density in the area north of Briargate Parkway and east of Sterling Ranch Road (from Figure 3b) plus the 2042 baseline traffic volumes taken from Figure 6b of the *Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study (MTIS)*, by LSC Transportation Consultants, March 2023. These volumes should be compared to the corresponding impacted intersection volumes shown on Figure 10b of the March 2023 MTIS.

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




*Note: The Level of Service Analysis results at these intersections should be compared to the corresponding Level of Service results at the impacted intersections shown on Figure 10c in the Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study (MTIS), by LSC Transportation Consultants, March 2023.

LEGEND:

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

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

 = Stop Sign


 = Traffic Signal



Figure 5c

Rezone Area Sensitivity Analysis* Lane Geometry, Traffic Control, and Level of Service

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)

LEGEND:

$$\frac{XX,XXX}{XX,XXX} = \frac{\text{Projected Average Daily Traffic}^*}{\text{Design Average Daily Traffic}}$$

*Assuming 1,400 single family homes in the 2023 amendment area

- 4-Lane Urban Principal Arterial
- 4-Lane Urban Minor Arterial (El Paso County MTCP)
- - - 2-Lane Rural Minor Arterial
- Urban Non-residential Collector
- - - Urban Residential Collector
- Rural Minor Collector
- Urban Local



Not to scale

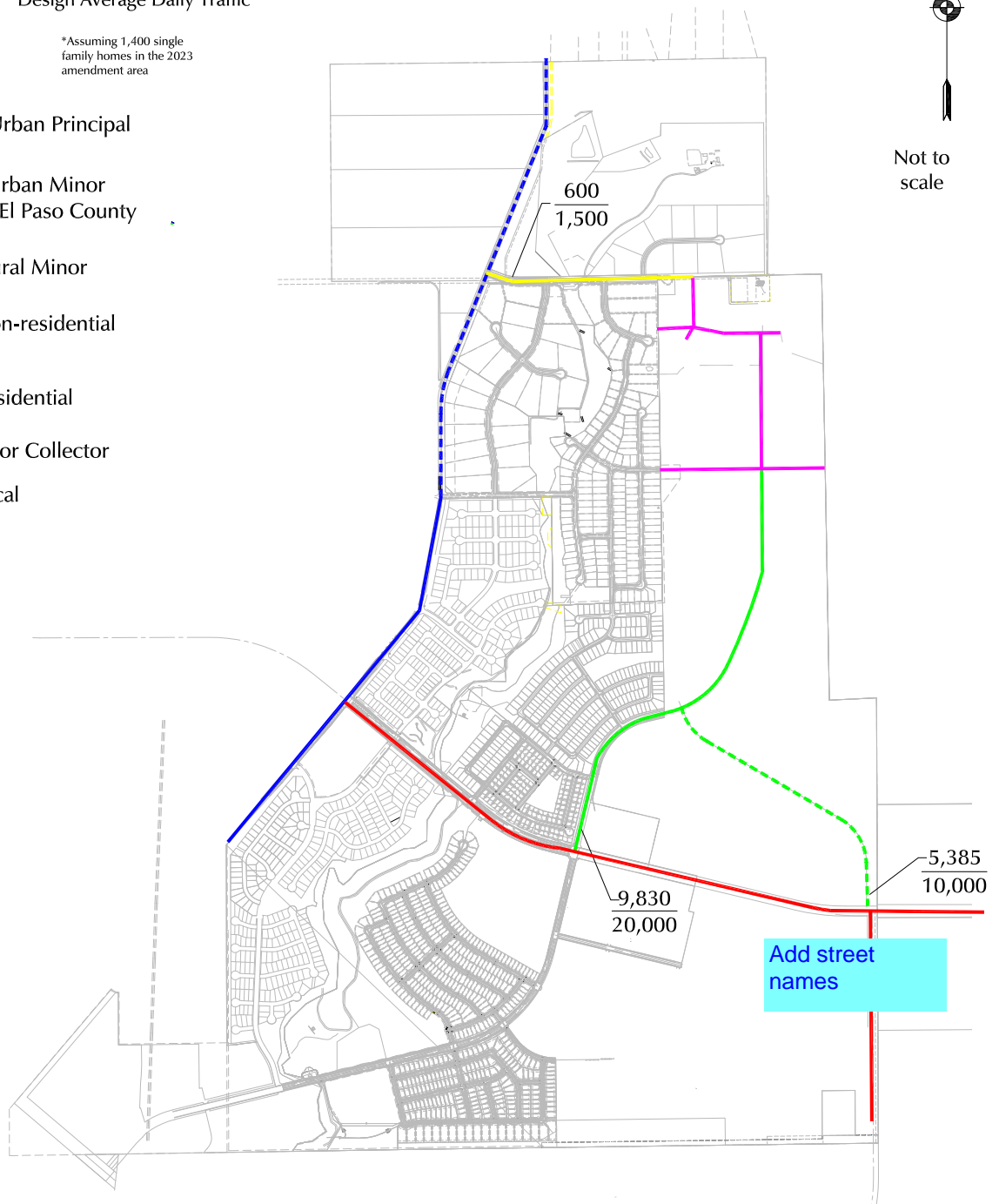





Figure 6

Proposed Functional Classification

Sterling Ranch Sketch Plan - 2023 Amendment and Rezone (LSC# S224441)

Level of Service Reports



























Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	20	9	282	7	3	420
Future Vol, veh/h	20	9	282	7	3	420
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	9	297	7	3	442
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	749	301	0	0	304	0
Stage 1	301	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	379	739	-	-	1257	-
Stage 1	751	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	378	739	-	-	1257	-
Mov Cap-2 Maneuver	378	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.7	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	446	1257	-	
HCM Lane V/C Ratio	-	-	0.068	0.003	-	
HCM Control Delay (s)	-	-	13.7	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Timings

2042 Total Traffic With Max DU 2023 Amendment Area

5: Sterling Ranch Rd & Briargate Pkwy

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	629	145	107	929	24	285	121	120	99	281	188
Future Volume (vph)	82	629	145	107	929	24	285	121	120	99	281	188
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		Free	4		Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0		5.0	20.0	
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	25.0		10.0	25.0	
Total Split (s)	12.0	55.0	55.0	12.0	55.0	55.0	21.0	32.0		21.0	32.0	
Total Split (%)	10.0%	45.8%	45.8%	10.0%	45.8%	45.8%	17.5%	26.7%		17.5%	26.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max		None	Max	
Act Effect Green (s)	56.9	50.1	50.1	58.0	52.4	52.4	47.5	33.0	120.0	37.2	27.2	120.0
Actuated g/C Ratio	0.47	0.42	0.42	0.48	0.44	0.44	0.40	0.28	1.00	0.31	0.23	1.00
v/c Ratio	0.37	0.45	0.20	0.33	0.63	0.03	0.85	0.25	0.08	0.24	0.70	0.13
Control Delay	19.6	26.3	4.1	9.7	18.7	0.8	49.2	36.3	0.1	25.0	52.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	26.3	4.1	9.7	18.7	0.8	49.2	36.3	0.1	25.0	52.8	0.2
LOS	B	C	A	A	B	A	D	D	A	C	D	A
Approach Delay		21.9			17.4			35.0			30.5	
Approach LOS		C			B			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 63 (53%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 24.2

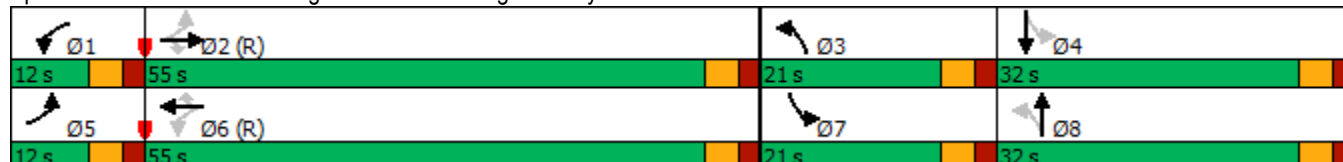
Intersection LOS: C

Intersection Capacity Utilization 79.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 5: Sterling Ranch Rd & Briargate Pkwy



























Timings

2042 Total Traffic With Max DU 2023 Amendment Area

6: Banning Lewis Pkwy & Briargate Pkwy

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	488	351	300	660	16	318	66	291	59	214	2
Future Volume (vph)	1	488	351	300	660	16	318	66	291	59	214	2
Turn Type	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free			6			Free	4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0	15.0	8.0	10.0		8.0	10.0	10.0
Minimum Split (s)	13.0	20.0		20.0	20.0	20.0	13.0	15.0		13.0	15.0	15.0
Total Split (s)	13.0	42.0		28.0	57.0	57.0	29.0	35.0		15.0	21.0	21.0
Total Split (%)	10.8%	35.0%		23.3%	47.5%	47.5%	24.2%	29.2%		12.5%	17.5%	17.5%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Act Effect Green (s)	51.7	43.7	120.0	16.3	62.4	62.4	16.9	33.9	120.0	31.7	23.1	23.1
Actuated g/C Ratio	0.43	0.36	1.00	0.14	0.52	0.52	0.14	0.28	1.00	0.26	0.19	0.19
v/c Ratio	0.00	0.40	0.23	0.68	0.38	0.02	0.69	0.07	0.19	0.16	0.33	0.00
Control Delay	11.0	17.3	0.3	56.8	18.7	0.1	55.5	34.0	0.3	26.5	44.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	17.3	0.3	56.8	18.7	0.1	55.5	34.0	0.3	26.5	44.3	0.0
LOS	B	B	A	E	B	A	E	C	A	C	D	A
Approach Delay		10.2			30.1			29.6			40.2	
Approach LOS		B			C			C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 24.9

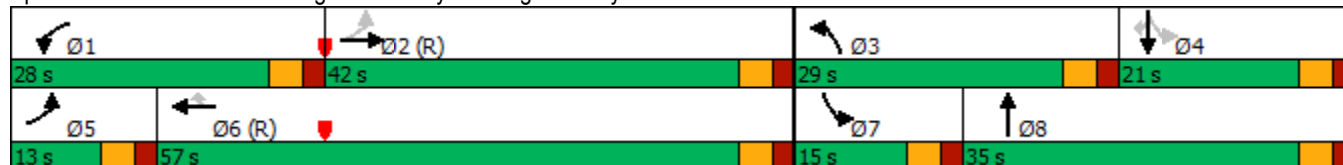
Intersection LOS: C




Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 6: Banning Lewis Pkwy & Briargate Pkwy



























Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	7	568	26	12	381
Future Vol, veh/h	15	7	568	26	12	381
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	16	7	598	27	13	401
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1039	612	0	0	625	0
Stage 1	612	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	255	493	-	-	956	-
Stage 1	541	-	-	-	-	-
Stage 2	658	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	251	493	-	-	956	-
Mov Cap-2 Maneuver	251	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	647	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	18.1	0		0.3		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	297	956	-	
HCM Lane V/C Ratio	-	-	0.078	0.013	-	
HCM Control Delay (s)	-	-	18.1	8.8	0	
HCM Lane LOS	-	-	C	A	A	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

Timings

2042 Total Traffic With Max DU 2023 Amendment Area

5: Sterling Ranch Rd & Briargate Pkwy

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	349	924	131	152	814	102	193	193	83	82	93	157
Future Volume (vph)	349	924	131	152	814	102	193	193	83	82	93	157
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Free	pm+pt	NA	Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		Free	4		Free
Detector Phase	5	2	2	1	6	6	3	8		7	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	20.0		5.0	20.0	
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	25.0		10.0	25.0	
Total Split (s)	22.0	68.0	68.0	12.0	58.0	58.0	15.0	30.0		10.0	25.0	
Total Split (%)	18.3%	56.7%	56.7%	10.0%	48.3%	48.3%	12.5%	25.0%		8.3%	20.8%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Act Effect Green (s)	75.0	63.0	63.0	60.7	53.7	53.7	35.0	27.0	120.0	25.0	20.0	120.0
Actuated g/C Ratio	0.62	0.52	0.52	0.51	0.45	0.45	0.29	0.22	1.00	0.21	0.17	1.00
v/c Ratio	0.87	0.52	0.15	0.52	0.54	0.13	0.57	0.48	0.05	0.33	0.32	0.10
Control Delay	35.8	20.0	2.8	18.8	26.0	5.3	41.5	46.0	0.1	37.3	47.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.8	20.0	2.8	18.8	26.0	5.3	41.5	46.0	0.1	37.3	47.2	0.1
LOS	D	B	A	B	C	A	D	D	A	D	D	A
Approach Delay		22.3			23.0			36.0			22.5	
Approach LOS		C			C			D			C	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 24.5

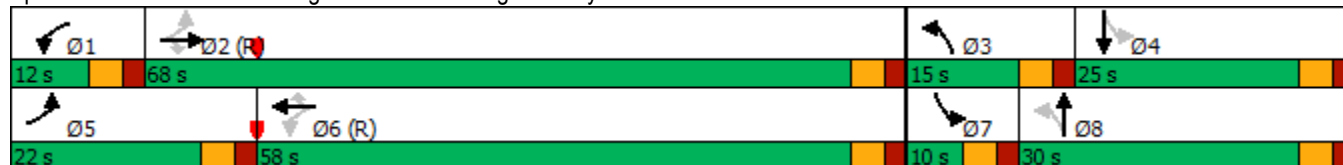
Intersection LOS: C

Intersection Capacity Utilization 85.9%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 5: Sterling Ranch Rd & Briargate Pkwy



























Timings

2042 Total Traffic With Max DU 2023 Amendment Area

6: Banning Lewis Pkwy & Briargate Pkwy

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	529	475	332	514	67	535	256	292	47	165	2
Future Volume (vph)	6	529	475	332	514	67	535	256	292	47	165	2
Turn Type	pm+pt	NA	Free	Prot	NA	Perm	Prot	NA	Free	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		Free			6			Free	4		4
Detector Phase	5	2		1	6	6	3	8		7	4	4
Switch Phase												
Minimum Initial (s)	8.0	15.0		8.0	15.0	15.0	8.0	10.0		8.0	10.0	10.0
Minimum Split (s)	15.0	20.0		20.0	20.0	20.0	13.0	15.0		13.0	15.0	15.0
Total Split (s)	15.0	38.0		25.0	48.0	48.0	32.0	43.0		14.0	25.0	25.0
Total Split (%)	12.5%	31.7%		20.8%	40.0%	40.0%	26.7%	35.8%		11.7%	20.8%	20.8%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Act Effect Green (s)	44.0	36.0	120.0	17.0	55.4	55.4	24.1	41.4	120.0	31.2	22.9	22.9
Actuated g/C Ratio	0.37	0.30	1.00	0.14	0.46	0.46	0.20	0.34	1.00	0.26	0.19	0.19
v/c Ratio	0.02	0.52	0.32	0.72	0.33	0.09	0.82	0.22	0.19	0.15	0.26	0.00
Control Delay	25.8	54.2	0.6	57.8	22.0	0.2	54.1	33.1	0.3	23.3	43.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.8	54.2	0.6	57.8	22.0	0.2	54.1	33.1	0.3	23.3	43.4	0.0
LOS	C	D	A	E	C	A	D	C	A	C	D	A
Approach Delay		28.8			33.4			34.6			38.7	
Approach LOS		C			C			C			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 32.7

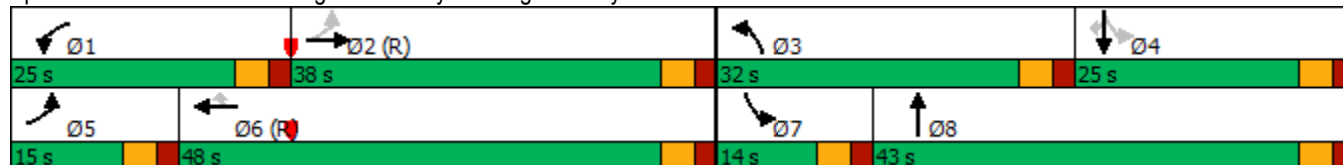
Intersection LOS: C

Intersection Capacity Utilization 64.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Banning Lewis Pkwy & Briargate Pkwy

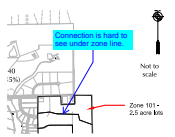


Sterling Ranch Sketch Plan Amendment



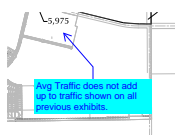
V2_TIS.pdf Markup Summary

Callout (4)



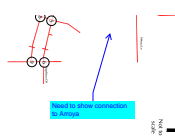
Subject: Callout
Page Label: 14
Author: CDurham
Date: 1/10/2024 8:11:56 AM
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Color:
Layer:
Space:

Connection is hard to see under zone line.



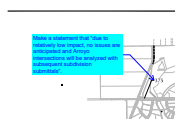
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Author: CDurham
Date: 1/10/2024 11:01:47 AM
Status:
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Avg Traffic does not add up to traffic shown on all previous exhibits.



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Page Label: 20
Author: CDurham
Date: 1/10/2024 11:02:41 AM
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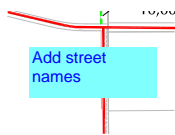
Need to show connection to Arroya



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Author: CDurham
Date: 1/10/2024 12:03:34 PM
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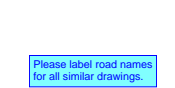
Make a statement that "due to relatively low impact, no issues are anticipated and Arroyo intersections will be analyzed with subsequent subdivision submittals".

Text Box (4)



Subject: Text Box
Page Label: 26
Author: CDurham
Date: 1/4/2024 2:03:48 PM
Status:
Color:
Layer:
Space:


Add street names



Subject: Text Box
Page Label: 23
Author: Carlos
Date: 1/4/2024 5:35:59 PM
Status:
Color:
Layer:
Space:


Please label road names for all similar drawings.

Include street names
(all exhibits)

Subject: Text Box
Page Label: 14
Author: CDurham
Date: 1/10/2024 8:12:59 AM
Status:
Color: 
Layer:
Space:

Include street names (all exhibits)

this Sketch Plan Amendment.
intended to Arroyo Lane, which is planned
the TimberRidge Filing No. 3 (S2243). A
ation Urban Local street network.
Add statement that this connection will
be further analyzed with subsequent
subdivision submittals.
as north of Brigrade Parkway and east of
d they be developed with 1,418 residential
based on the currently-proposed zoning.
published trip-generation rates from Trip

Subject: Text Box
Page Label: 4
Author: CDurham
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Add statement that this connection will be further
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