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Rhetoric Subdivision
Traffic Impact Analysis
PCD File No.: PPR2341 & SF2325
(LSC #S224330)
March 20, 2024

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.

MARCH 20, 2024
Date

Rhetoric Subdivision

Traffic Impact Analysis

Prepared for:
Colorado Concrete Crushing, LLC
20 Boulder Crescent, Suite 100
Colorado Springs, CO 80903

Contact: Mr. Eric S. Howard, Manager

MARCH 20, 2024

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

PCD FILE NO.: PPR2341 & SF2325
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CONTENTS

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March 20, 2024

Mr. Eric S. Howard, Manager
Colorado Concrete Crushing, LLC
20 Boulder Crescent, Suite 100
Colorado Springs, CO 80903

RE: Rhetoric Subdivision
Traffic Impact Analysis
El Paso County, Colorado
PCD FILE NO.: PPR2341 & SF23252241
LSC #S224330

Dear Mr. Howard:

LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the proposed Rhetoric Subdivision located east of Vollmer Road and south of Marksheffel Road in El Paso County, Colorado. The site location is shown in Figure 1.

REPORT CONTENTS

The preparation of this report included the following:

- A summary of the existing and proposed land uses and access;
- The existing roadway and traffic conditions in the site's vicinity, including the roadway widths, surface conditions, lane geometries, traffic controls, and posted speed limits; and in-progress changes to the existing conditions, based on the design plans and construction of Vollmer Road improvements, Marksheffel Road and Sterling Ranch Road, as shown on the construction plans by Sterling Ranch;
- Estimates of projected short-term background traffic volumes;
- The projected average weekday and peak-hour vehicle trips to be generated by the concrete recycling operation during the design hour; projections of potential future development trip generation on Lot No. 1 and the remaining portion of Lot No. 2.
- The assignment of the estimated design-hour site-generated traffic volumes at the intersection of Marksheffel Road/Sterling Ranch Road;
- The projected short-term total design-hour traffic volumes;

- The projected levels of service at the intersection of Marksheffel Road/Sterling Ranch Road intersection; a preliminary traffic signal warrant analysis;
- Recommendations for auxiliary turn lanes at the intersection of Marksheffel Road/Sterling Ranch Road;
- Other recommendations; and
- County Road Improvement Fee Program information and an estimate of the fee amount.

RECENT TRAFFIC REPORTS

Appendix Table 1, which includes 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.

LAND USE AND ACCESS

Land Use

The 32.4263-acre parcel (EPC Parcel No. 5300000743) is located south of the Sterling Ranch master planned community and north of the Pioneer Landscape Centers. The site is currently zoned for industrial uses. It is planned to be subdivided into two lots and for right-of-way (ROW) dedication for an extension of Sterling Ranch Road, as shown in Figure 2.

An asphalt and concrete recycling facility is currently operating on the south 7.7 acres of Lot 2. There are currently no plans for the remaining 16.36 acres. However, based on the current zoning, this area could potentially be developed for industrial uses in the future.

The 4.74-acre Lot 1 is intended for mini-warehouse uses **in the future** and will be developed under a separate site development plan application.

Access

Access for the Rhetoric Subdivision is planned via an extension of Sterling Ranch Road southwest of Marksheffel Road. The extension of Sterling Ranch Road into the site is proposed to be a public street and would be classified as a Non-Residential Collector with 80feet of right-of-way. The recycling operation currently shares the existing Pioneer access to Vollmer Road, located about 905 feet southwest of the future Marksheffel alignment in the jurisdiction of the City of Colorado Springs. As part of this development, the recycling operation would no longer utilize the existing access but would instead have a full-movement access to the new section of Sterling Ranch Road about 585 feet southwest of Marksheffel Road.

Existing Asphalt and Concrete Recycling Operations

The operating hours for the existing asphalt and concrete recycling facility are Monday through Friday from 7:00 a.m. to 5:30 p.m. and one Saturday per month from 7:00 a.m. to noon. The operation currently has four employees but that may increase to up to six in the future.

Tandem trucks and semi-trucks that are owned by third parties transport materials on and off the site throughout the operating hours. No trucks are stored on-site overnight, so each truck load results in one entering truck trip and one exiting truck trip.

LSC was provided with information on the truck operations at the current facility from March 1, 2022, to December 31, 2022. The number of truck loads per day varies throughout the year based on construction activity in the Colorado Springs metropolitan area with the heaviest activity occurring from June to September. The applicant has noted a recent slowdown in demand for recycled materials product due to rising interest rates and reduced housing starts. The applicant anticipates that the summer 2022 traffic likely represents peak demand and resulting production with low probability/potential for future increases in production and associated truck traffic in the foreseeable future.

The maximum number of truck loads on a single day during that time period was 135 (127 tandem trucks and seven semi-trucks). The 85th-percentile weekday (Monday through Friday) number of truck loads was 61 loads per day (47 tandem trucks and 15 semi-trucks).

EXISTING ROAD AND TRAFFIC CONDITIONS

The adjacent streets are shown in Figure 1 and are described below. Copies of the *2016 El Paso County Major Transportation Corridors Plan (MTCP), 2040 Roadway Plan, and 2016 MTCP 2060 Corridor Preservation Plan* with the site location identified on them have been attached to this report.

Marksheffel Road is a Principal Arterial extending north from the City of Fountain to about three quarters of a mile north of Woodmen Road. Marksheffel Road is planned ultimately to be widened to six lanes and extended north and west from Woodmen Road to connect to Research Parkway at Black Forest Road. Marksheffel Road is shown as a four-lane Principal Arterial adjacent to the site on the El Paso County *MTCP*. The City of Colorado Springs intends to take ownership and maintenance of Marksheffel Road when it is constructed from Vollmer to the east and south to where it will connect to the segment constructed north of Woodmen Road in the City.

The section of Marksheffel Road adjacent to Sterling Ranch (and this site) is planned to be constructed on 107 feet of right-of-way to the City's required cross section(s) and criteria. The section of Marksheffel Road between Sterling Ranch Road and Vollmer Road was recently

finished and the section of Marksheffel Road southeast of Sterling Ranch Road (to connect to the segment recently constructed) will be completed in 2024 and will open the connection to Woodmen Road. Marksheffel will be constructed as a four-lane roadway to the previously-agreed-upon cross section.

Vollmer Road is currently a five-lane urban street within the City of Colorado Springs limits between Black Forest Road and Cowpoke Road; and a two-lane, rural, paved roadway north of Cowpoke Road extending to north of Hodgen Road. In the southbound direction, Vollmer Road has a posted speed limit of 45 mph. South of the existing site access, Vollmer Road is within the City limits and has a 40-mph posted speed limit. The *2040 El Paso County Major Transportation Corridors Plan* (*MTCP*) and the Sterling Ranch master traffic study show Vollmer Road as a four-lane Urban Minor Arterial just north of the existing site access. South of the existing site access, Vollmer is classified as a Minor Arterial (including four through lanes, a center turn lane, bicycle lanes in each direction, and a detached sidewalk). The Sterling Ranch development is currently working on improvements to Vollmer Road north of the existing site access. The section south of the existing site access to Dry Needle Place is a three-lane cross section (two southbound travel lanes and one northbound travel lane) with a striped bicycle lane in the southbound direction. South of Dry Needle Place, the cross section has been completed to the full City cross section.

Sterling Ranch Road is a planned Urban Non-Residential Collector shown extending through the Sterling Ranch development between Marksheffel Road and the north end of the Sketch Plan area (near Arroya Road). Sterling Ranch Road has been constructed between Marksheffel Road and Dines Boulevard and will be constructed north to Briargate Parkway in the short term with the Sterling Ranch East Phase 1 Preliminary Plan. A short segment of Sterling Ranch Road is planned to be constructed **south** of Marksheffel Road as part of the currently-proposed development.

TRIP GENERATION

Initial Phase and Operations

Initially, no new development is proposed for the site, other than the changes to the access for the existing asphalt and concrete recycling operation (operating on the southern eight-acres of Lot 2) as proposed. LSC conducted the traffic counts at the existing access to Vollmer Road that Colorado Concrete Crushing shares with Pioneer Sand on May 25, 2022. As the count data did not identify the portion related to the site operations, LSC has estimated the number of trips based on the number of employees and operation data provided by Colorado Concrete Crushing. Table 1 shows the trip-generation estimates. The estimated trips on May 24, 2022 due to the employees was based on the number of existing employees and the nationally published trip-generation rates for ITE Land Use 110 – Light Industrial from *Trip Generation, 11th Edition*, 2021 by the Institute of Transportation Engineers (ITE). The number of truck trips

during the peak hours was estimated by LSC by assuming that trucks arrive and depart from the site evenly throughout the operating hours.

As shown in Appendix Table 2, the truck activity on the site varies throughout the year with peak activity occurring from July to September. As traffic counts were conducted in May, LSC has selected a "design" day to use for this analysis. The "design" day selected was the 85th percentile from the weekday truck-load data for 2022 provided by Colorado Concrete Crushing. The "design" day also assumes two additional employees in the future. Based on the existing economic conditions, no increases in truck traffic from what was recorded in 2022 are anticipated in the short-term/intermediate-term future. Table 1 shows the projected short-term "design day" traffic volumes and the difference between the May 24, 2022 traffic volumes and the "design day" volumes.

Future Trip Generation Estimate

Table 2 shows the potential future trip-generation estimate for the entire Rhetoric Subdivision. Vehicle trips due to development of Lot 1 have been estimated using the nationally published trip-generation rates for Land Use 151: Mini-Warehouse from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE). Vehicle trips due to potential future development of the remaining portion of Lot 2 have been estimated using the nationally published trip-generation rates for Land Use 130: Industrial Park.

At buildout, the Rhetoric Subdivision could potentially be expected to generate 954 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 72 vehicles would enter and 24 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 28 vehicles would enter and 71 vehicles would exit the site.

TRIP DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the street and roadway system serving the site is one of the most important factors in determining the site's traffic impacts. Figure 3 shows the estimated directional distribution of the traffic related to the existing asphalt and concrete operation and for the potential future land uses.

When the distribution percentages from Figure 3 are applied to the new, external trip-generation estimates (from Table 2), the resulting site-generated traffic volumes can be determined. Figure 4 shows the "design day" site-generated traffic volumes due to the existing asphalt and concrete recycling facility following the change to the access from Vollmer Road to a new extension of Sterling Ranch Road. Figure 5 shows the potential future additional site-generated traffic volumes, should Lot 1 be developed for mini warehouse uses as intended

and the remaining portion of Lot 2 is developed for industrial uses consistent with the existing zoning.

BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development's trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments but assumes zero traffic generated by the site.

Figures 6 and 7 show the projected short-term and 2044 background traffic volumes. The background traffic volumes are estimates by LSC, based on work completed by LSC in the area including Sterling Ranch East Filings 1 and 2, FourSquare at Sterling Ranch, Sterling Ranch Filing 5, and Sterling Ranch East Filing 5. The short-term background traffic volumes assume the section of Marksheffel Road between Sterling Ranch Road and the existing terminus north of Woodmen Road has been constructed.

TOTAL TRAFFIC

Figure 8 shows the sum of the short-term background traffic volumes from Figure 6 plus the "design day" asphalt and concrete facility-generated traffic volumes from Figure 4. These volumes represent the projected short-term total traffic assuming only the existing asphalt and concrete recycling on the south portion of Lot 2. This scenario assumes no development on Lot 1 or the remaining portion of Lot 2 in the short-term.

Figure 9 shows the 2044 total traffic volumes. These volumes are the sum of the 2044 background traffic volumes from Figure 7 plus the "design day" asphalt and concrete facility-generated traffic volumes from Figure 4 plus the potential future additional site-generated traffic volumes from Figure 5. This scenario assumes Lot 1 has been developed for mini warehouse uses as intended and the remaining portion of Lot 2 is developed for industrial uses consistent with the existing zoning.

LEVEL OF SERVICE ANALYSIS

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 intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections. Table 3 shows the level of service delay ranges.

Table 3: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections Average Control Delay (seconds per vehicle)	Unsignalized Intersections Average Control Delay (seconds per vehicle)(1)
A	10.0 sec or less	10.0 sec or less
B	10.1-20.0 sec	10.1-15.0 sec
C	20.1-35.0 sec	15.1-25.0 sec
D	35.1-55.0 sec	25.1-35.0 sec
E	55.1-80.0 sec	35.1-50.0 sec
F	80.1 sec or more	50.1 sec or more

(1) For unsignalized intersections, if V/C ratio is greater than 1.0 the level of service is LOS F, regardless of the projected average control delay per vehicle.

The intersection of Marksheffel/Sterling Ranch Road has been analyzed to determine the projected short-term and 2044 total intersection levels of service based on the unsignalized intersection analysis procedures from the *Highway Capacity Manual 6th Edition*. The intersection was also analyzed assuming signal control using Synchro. Figures 8 and 9 show the level of service analysis results. The level of service reports are attached.

The southbound left-turn movement at this intersection is projected to operate at LOS F during the afternoon peak hour, based on projected short-term **background** traffic volumes. This intersection is planned as a future signalized intersection. However, traffic-signal warrant(s) may not be met in the short-term. It is not uncommon for the minor street approach/movements at a stop-sign-controlled intersection to operate at LOS E or F as the traffic volumes approach the levels needed to meet vehicular-volume traffic-signal warrants. The addition of the site-generated traffic is projected to increase the delay for the southbound left-turn movement from 62.3 seconds per vehicle to 89.3 seconds per vehicle. If this intersection is converted to traffic-signal control all movements are projected to operate at LOS D or better, based on both the short-term and 2044 total traffic volumes.

SIGNAL WARRANT THRESHOLD ANALYSIS – AM AND PM PEAK HOURS

The intersection of Marksheffel/Sterling Ranch was 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 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.

Table 4 shows the results of the analysis for the intersection of Marksheffel/Sterling Ranch. As shown in Table 4, in the short-term, only five of the hours analyzed are projected to meet the thresholds for an Eight-Hour Vehicular-Volume Traffic-Signal and only three 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/Sterling Ranch in the short-term. The minor-approach volume threshold for an Eight-Hour Vehicular-Volume Warrant is 75 vehicles per hour and the minor-approach volume threshold for a Four-Hour Vehicular-Volume Warrant is 80 vehicles per hour. As the projected northbound left-turn volume from the south leg is less than these thresholds, it is likely that a traffic signal will only be warranted at this intersection with future development within the Sterling Ranch Sketch Plan area north of Marksheffel Road.

DEVIATION REQUESTS

No requests for deviations to the criteria contained in the El Paso County *Engineering Criteria Manual* are planned to be submitted as part of this development.

MARKSHEFFEL/STERLING RANCH ROAD INTERSECTION RECOMMENDATIONS

- A northwest-bound left-turn lane on Marksheffel Road approaching Sterling Ranch Road should be included with the design plans for Marksheffel Road currently under review by the City of Colorado Springs. This lane should be 200 feet long plus a 180-foot taper.
- A southeast-bound right-turn lane should be constructed on Marksheffel Road approaching Sterling Ranch Road. This lane should be 200 feet long plus a 180-foot taper.
- The City of Colorado Springs will require the developer to remit $150,000 for the future anticipated traffic signal at the intersection of Marksheffel/Sterling Ranch.

EL PASO COUNTY ROADWAY IMPROVEMENT FEE PROGRAM

This development is required to participate in the El Paso County Roadway Improvement Fee Program. The Road Impact Fee Schedule does not include a fee for the existing asphalt and concrete crushing use. Therefore, the County will require that the fee be calculated based on *ITE Trip Generation* rates. Since the land use is not directly in the ITE manual the County will require the fee be calculated based on ITE Land Use 140: Manufacturing — the units of measure being per acre.

The calculation is based on 3.6 acres as the predictor variable. The 3.6 acres represent the approximate “active work area” within the 7.7-acre portion of Lot 2 - the asphalt and concrete recycling facility.

3.6 acres x 39.53 trips/acre/day = 142 trips per day

The cost per trip is $398.55, therefore the total fee obligation would be $56,594

The PID option for any future development on Lots 1 or 2 will be identified with a future Preliminary Plan/Plat submittal. Note: only the 5 mil PID option is available for a mini-warehouse land use.

FINDINGS & RECOMMENDATIONS

- Please refer to the trip generation section of this report for details regarding the estimated trip-generation estimate for the asphalt and concrete recycling facility used in the access design volumes. The trip-generation estimate has been based on actual daily load data for the concrete recycling operation.
- Colorado Concrete Crushing is currently operating on the site (and currently using the Vollmer access). Truck activity on the site varies based on daily demand and overall construction activity in the Colorado Springs metropolitan area. Based on current economic conditions it is not anticipated that activity will increase significantly from the activity levels in 2022 in the foreseeable future.
- If in the future Lot 1 is developed for mini warehouse uses and the remaining portion of Lot 2 is developed with industrial uses consistent with the existing zoning, the Rhetoric Subdivision could potentially be expected to generate 954 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 72 vehicles would enter and 24 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 28 vehicles would enter and 71 vehicles would exit the site.
- The southbound left-turn movement at this intersection is projected to operate at LOS F during the afternoon peak hour, based on projected short-term **background** traffic volumes. This intersection is planned as a future signalized intersection. However, traffic-signal warrant(s) may not be met in the short term. It is not uncommon for the minor-street approach/movements at a stop-sign-controlled intersection to operate at LOS E or F as the traffic volumes approach the levels needed to meet vehicular-volume traffic-signal warrants. The addition of the site-generated traffic is projected to increase the delay for the southbound left-turn movement from 62.3 seconds per vehicle to 89.3 seconds per vehicle. If this intersection is converted to traffic-signal control, all movements are projected to operate at LOS D or better, based on both the short-term and 2044 total traffic volumes.
- The classification of the proposed extension of Sterling Ranch Road into the site as a public street and would Non-Residential Collector with 80feet of right-of-way.
- A northwest-bound left-turn lane on Marksheffel Road approaching Sterling Ranch Road should be included with the design plans for Marksheffel Road currently under review by the City of Colorado Springs. This lane should be 200 feet long plus a 180-foot taper.
- A southeast-bound right-turn lane should be constructed on Marksheffel Road approaching Sterling Ranch Road. This lane should be 200 feet long plus a 180-foot taper.
- The City of Colorado Springs will require the developer to remit $150,000 for the future anticipated traffic signal at the intersection of Marksheffel/Sterling Ranch.

- The applicant will be required to participate in the El Paso County Road Improvement Fee Program. The Road Impact Fee Schedule does not include land use category and associated fee rate for the existing asphalt and concrete crushing use (given the unique nature of the land use). As discussed above, the "full fee" for this use would be $56,594. The PID option for any future development on Lots 1 or 2 will be identified with a future Preliminary Plan/Plat submittal.

* * * * *

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, 2, and 4
Figures 1-9
Traffic Count Reports
MTCP Maps
Level of Service Reports
Appendix Tables 1-2
Vollmer Road Approved CD

Tables 1, 2, and 4

TRANSPORTATION
CONSULTANTS, INC.

Table 1
Initial Phase Trip Generation Estimate
Rhetoric Subdivision

Vehicle Type	Number of Employees or Truck Loads	Trip Generation Rates[1]							Total Trips Generated						
		Average Weekday Traffic			Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic			Morning Peak Hour		Afternoon Peak Hour	
		In	Out	Total	In	Out	In	Out	In	Out	Total	In	Out	In	Out
Estimated site-generated trips on the day traffic counts were conducted at the existing site access (May 24, 2022)															
Passenger Car (employee)	4	1.55	1.55	3.10	0.44	0.09	0.11	0.38	6	6	12	2	0	0	2
Tandem Truck	18	1	1	2	0.10	0.10	0.10	0.10	18	18	36	2	2	2	2
Semi-Truck	6	1	1	2	0.10	0.10	0.10	0.10	6	6	12	1	1	1	1
								Total	**30**	**30**	**60**	**5**	**3**	**3**	**5**
Estimated site-generated trips on the "design" day (Weekday 85th Percentile)															
Passenger Car (employee)	6	1.55	1.55	3.10	0.44	0.09	0.11	0.38	9	9	18	3	1	1	2
Tandem Truck	47	1	1	2	0.10	0.10	0.10	0.10	47	47	94	5	5	5	5
Semi-Truck	15	1	1	2	0.10	0.10	0.10	0.10	15	15	30	2	2	2	2
								Total	**71**	**71**	**142**	**10**	**8**	**8**	**9**
				Difference between the "counted" day and the "design" day					**41**	**41**	**82**	**5**	**5**	**5**	**4**

Notes:
(1) Employee trip generation rates were based on the rates for ITE Land Use 110 - General Light Industrial from "*Trip Generation, 11th Edition, 2021*" by the Institute of Transportation Engineers (ITE)
Truck trip generation rates assume the trucks arrive and exit evenly throughout the operating hours (7:00 am to 5:30 pm)

Source: LSC Transportation Consultants, Inc.

Mar-24

Table 2
Potential Future Trip Generation Estimate
Rhetoric Subdivision

Lot	ITE Code	ITE Land Use	Area (Acres)	Floor Area Ratio	Trip Generation Unit		Trip Generation Rates[1]					Total Trip Generated				
								AM Peak Hour		PM Peak Hour			AM Peak Hour		PM Peak Hour	
					Quantity	Unit	Daily	In	Out	In	Out	Daily	In	Out	In	Out
Initial Trip Generation Estimate [2]																
2	- - -	Asphalt and Concrete Recycling	7.70	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	142	10	8	8	9
Additional Trip Generation Estimate Based on Potential Future Land Uses																
1	151	Mini-Warehouse	4.74	0.3	60	KSF[3]	1.45	0.05	0.04	0.07	0.08	87	3	2	4	5
2	130	Industrial Park	16.36	0.3	215	KSF	3.37	0.28	0.06	0.07	0.27	725	59	14	16	57
												812	**62**	**16**	**20**	**62**
											Total	**954**	**72**	**24**	**28**	**71**

Notes:
(1) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE)
(2) See Table 1
(3) KSF = thousand square feet of floor area

Source: LSC Transportation Consultants, Inc. *Mar-24*

Table 4
Traffic Signal Warrant Analysis
Marksheffel Road/Sterling Ranch Road

Hour	Traffic Volumes[2] Major Marksheffel[3]	Minor SB Sterling Ranch[4]	Minor SB Sterling Ranch[4]	Warrant Analysis[1] Warrant 1: Eight Hour Vehicular Volume Evaluation Warrant Thresholds Condition A Major	Condition A Minor	Condition B Major	Condition B Minor	Warrant Threshold Met? SB Approach Condition A	SB Approach Condition B	NB Approach Condition A	NB Approach Condition B	Warrant 2: Four Hour Vehicular Volume Evaluation Short-Term Background Warrant Threshold Minor Minimum	Warrant Threshold Met? SB	Warrant Threshold Met? NB
Short-Term Background Traffic														
12-1 AM	35	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
1-2 AM	16	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
2-3 AM	13	0	0	600	150	900	75	No	No	No	No	Low Volume	No	No
3-4 AM	16	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
4-5 AM	24	34	0	600	150	900	75	No	No	No	No	Low Volume	No	No
5-6 AM	57	83	0	600	150	900	75	No	No	No	No	Low Volume	No	No
6-7 AM	175	247	0	600	150	900	75	No	No	No	No	Low Volume	No	No
7-8 AM	393	427	0	600	150	900	75	No	No	No	No	Low Volume	No	No
8-9 AM	443	360	0	600	150	900	75	No	No	No	No	369	No	No
9-10 AM	384	226	0	600	150	900	75	No	No	No	No	Low Volume	No	No
10-11 AM	463	226	0	600	150	900	75	No	No	No	No	359	No	No
11-12 PM	548	214	0	600	150	900	75	No	No	No	No	316	No	No
12-1 PM	567	212	0	600	150	900	75	No	No	No	No	307	No	No
1-2 PM	589	224	0	600	150	900	75	No	No	No	No	296	No	No
2-3 PM	683	235	0	600	150	900	75	Yes	No	No	No	257	No	No
3-4 PM	781	227	0	600	150	900	75	Yes	No	No	No	210	Yes	No
4-5 PM	897	284	0	600	150	900	75	Yes	No	No	No	176	Yes	No
5-6 PM	827	280	0	600	150	900	75	Yes	No	No	No	193	Yes	No
6-7 PM	644	224	0	600	150	900	75	Yes	No	No	No	272	No	No
7-8 PM	446	163	0	600	150	900	75	No	No	No	No	367	No	No
8-9 PM	427	117	0	600	150	900	75	No	No	No	No	377	No	No
9-10 PM	298	91	0	600	150	900	75	No	No	No	No	Low Volume	No	No
10-11 PM	149	41	0	600	150	900	75	No	No	No	No	Low Volume	No	No
11-12 AM	86	27	0	600	150	900	75	No	No	No	No	Low Volume	No	No
				Numbers of Hours the Warrant Thresholds Are Met				5	0	0	0		3	0
								Warrant Met?	No				No	
Short-Term Total Traffic														
12-1 AM	35	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
1-2 AM	16	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
2-3 AM	13	0	0	600	150	900	75	No	No	No	No	Low Volume	No	No
3-4 AM	16	8	0	600	150	900	75	No	No	No	No	Low Volume	No	No
4-5 AM	25	34	0	600	150	900	75	No	No	No	No	Low Volume	No	No
5-6 AM	59	83	0	600	150	900	75	No	No	No	No	Low Volume	No	No
6-7 AM	180	247	0	600	150	900	75	No	No	No	No	Low Volume	No	No
7-8 AM	403	427	2	600	150	900	75	No	No	No	No	Low Volume	No	No
8-9 AM	450	360	1	600	150	900	75	No	No	No	No	365	No	No
9-10 AM	391	226	1	600	150	900	75	No	No	No	No	Low Volume	No	No
10-11 AM	470	226	1	600	150	900	75	No	No	No	No	355	No	No
11-12 PM	555	214	1	600	150	900	75	No	No	No	No	313	No	No
12-1 PM	574	212	1	600	150	900	75	No	No	No	No	303	No	No
1-2 PM	596	224	1	600	150	900	75	No	No	No	No	292	No	No
2-3 PM	690	235	1	600	150	900	75	Yes	No	No	No	254	No	No
3-4 PM	788	227	1	600	150	900	75	Yes	No	No	No	206	Yes	No
4-5 PM	904	284	1	600	150	900	75	Yes	Yes	No	No	174	Yes	No
5-6 PM	835	280	2	600	150	900	75	Yes	No	No	No	191	Yes	No
6-7 PM	649	224	0	600	150	900	75	Yes	No	No	No	270	No	No
7-8 PM	449	163	0	600	150	900	75	No	No	No	No	366	No	No
8-9 PM	429	117	0	600	150	900	75	No	No	No	No	376	No	No
9-10 PM	300	91	0	600	150	900	75	No	No	No	No	Low Volume	No	No
10-11 PM	150	41	0	600	150	900	75	No	No	No	No	Low Volume	No	No
11-12 AM	87	27	0	600	150	900	75	No	No	No	No	Low Volume	No	No
				Numbers of Hours the Warrant Thresholds Are Met				5	1	0	0		3	0
								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 southbound left turn only for the minor street)

(2) 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 published by the Institute of Transportation Engineers

(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

Source: LSC Transportation Consultants, Inc.

Figures 1-9

TRANSPORTATION
CONSULTANTS, INC.

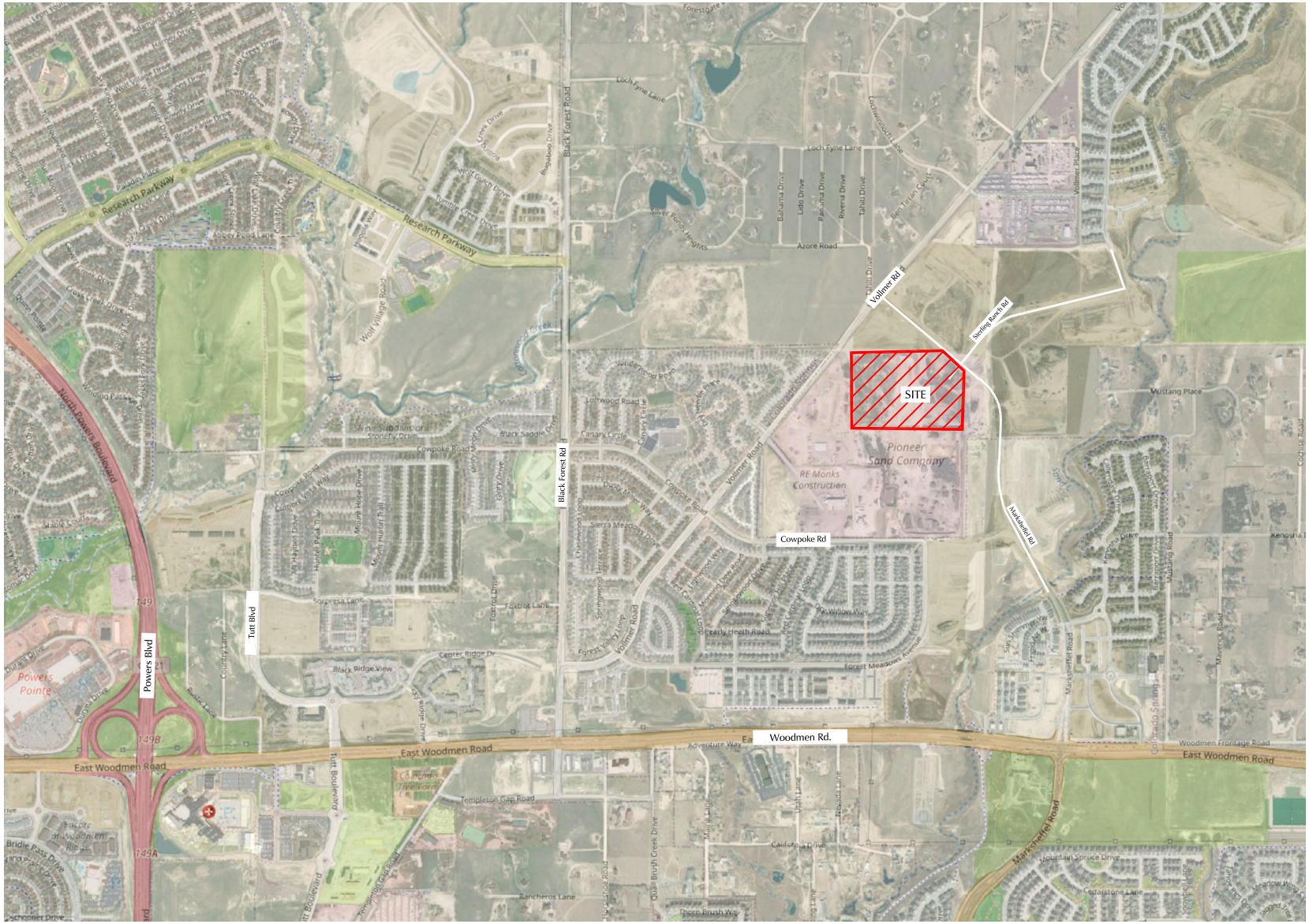


Figure 1

Vicinity Map

Rhetoric Subdivision (LSC# S224330)

TRANSPORTATION CONSULTANTS, INC.

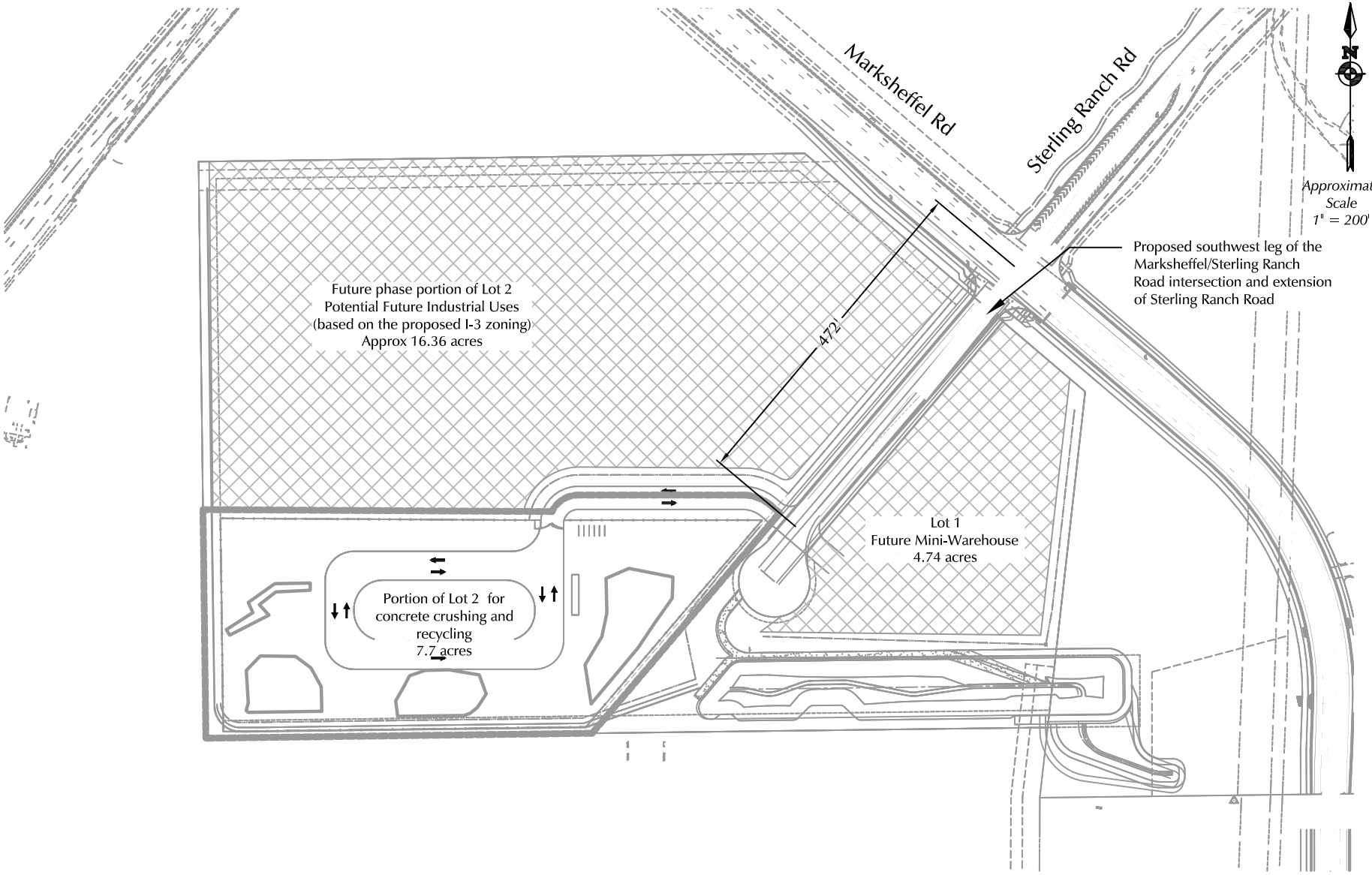
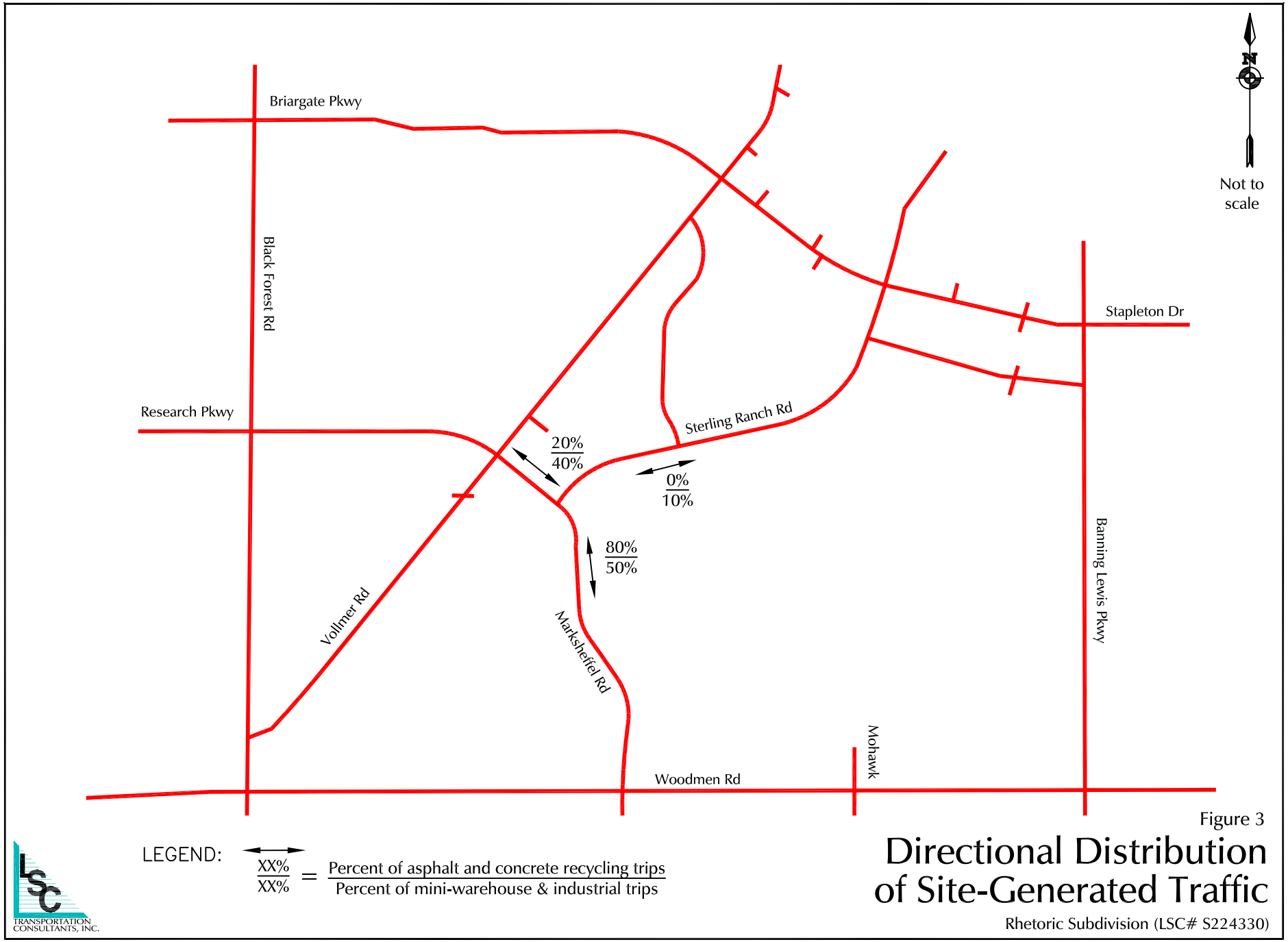


Figure 2

Site Plan

Rhetoric Subdivision (LSC# S224330)

LSC TRANSPORTATION CONSULTANTS, INC.

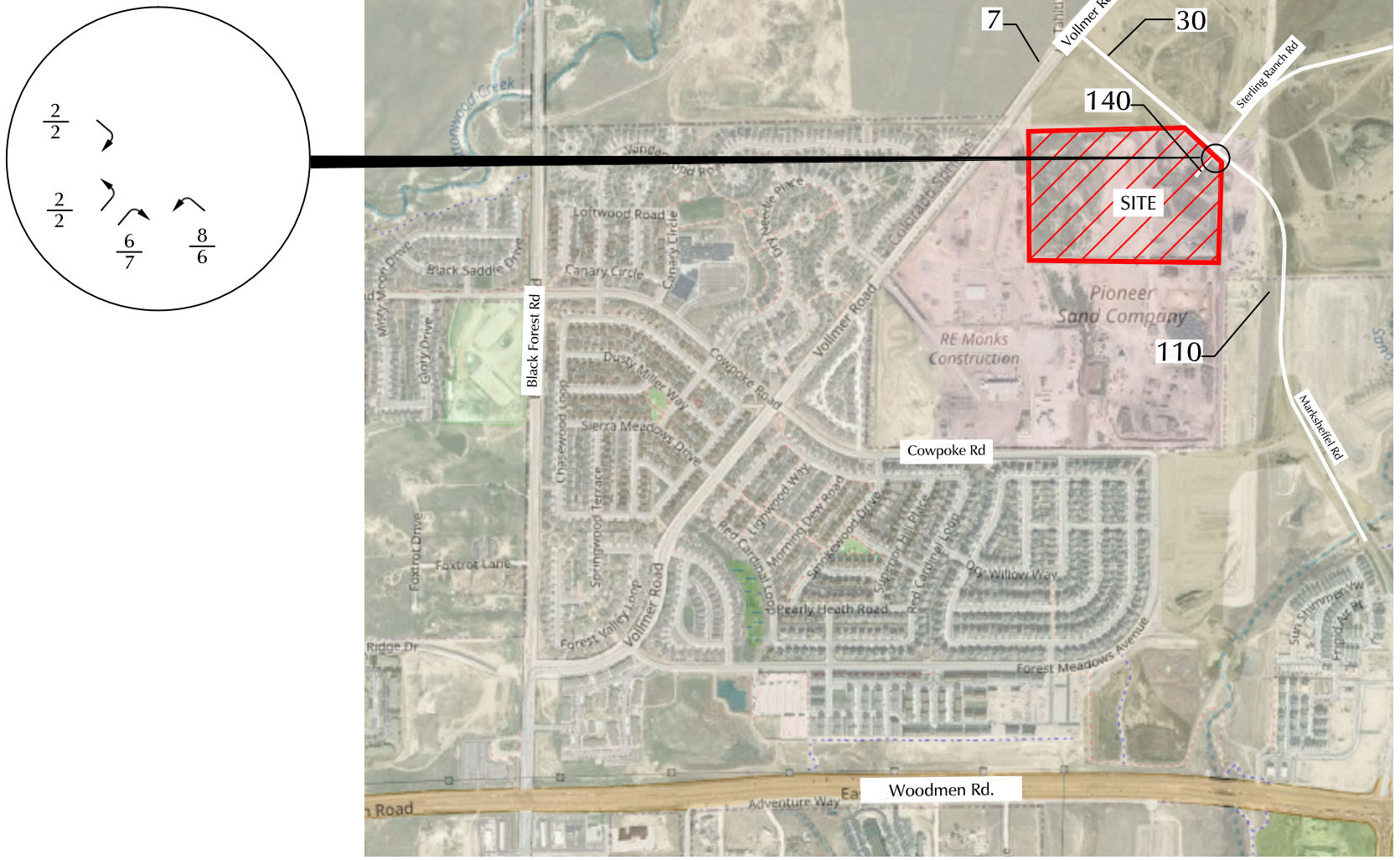


TRANSPORTATION CONSULTANTS, INC.

Figure 3

Directional Distribution of Site-Generated Traffic

Rhetoric Subdivision (LSC# S224330)



LEGEND:

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

XXX = Average Weekday Traffic (vehicles per day)

TRANSPORTATION CONSULTANTS, INC.

Figure 4

"Design Day" Asphalt and Concrete Recycling-Generated Traffic

Rhetoric Subdivision (LSC# S224330)

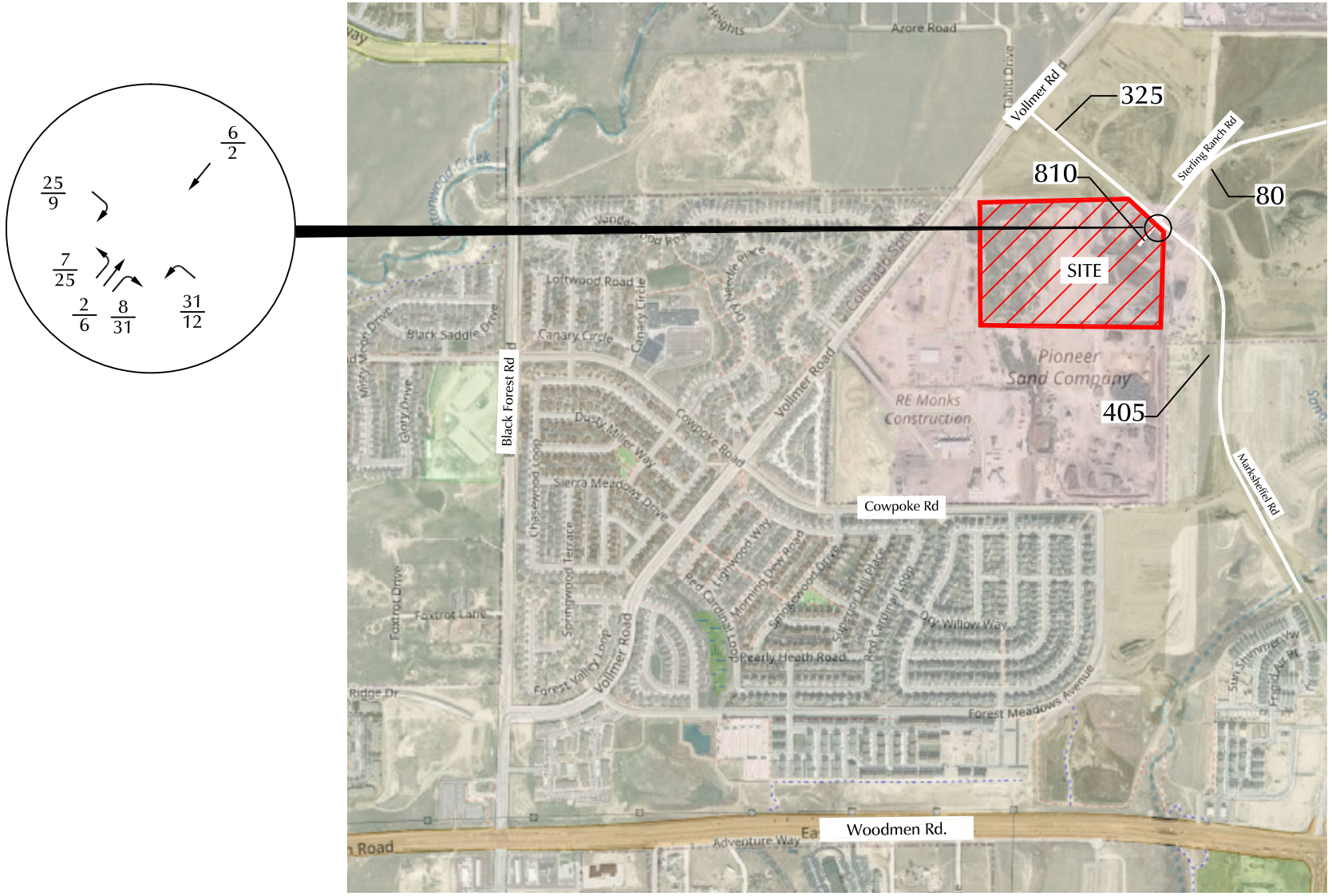


Figure 5

Potential Additional Future Site-Generated Traffic

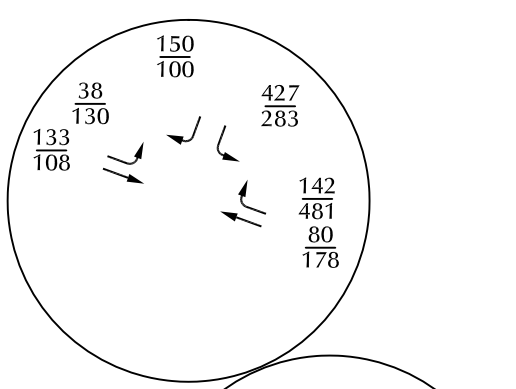
Rhetoric Subdivision (LSC# S224330)

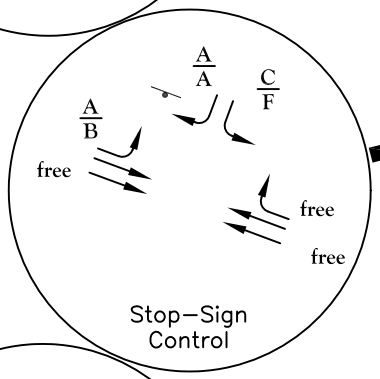
LEGEND:

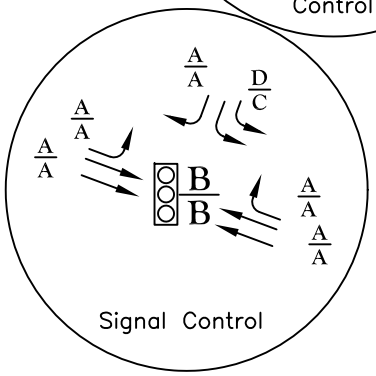
$\frac{XX}{XX}$ = $\frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$

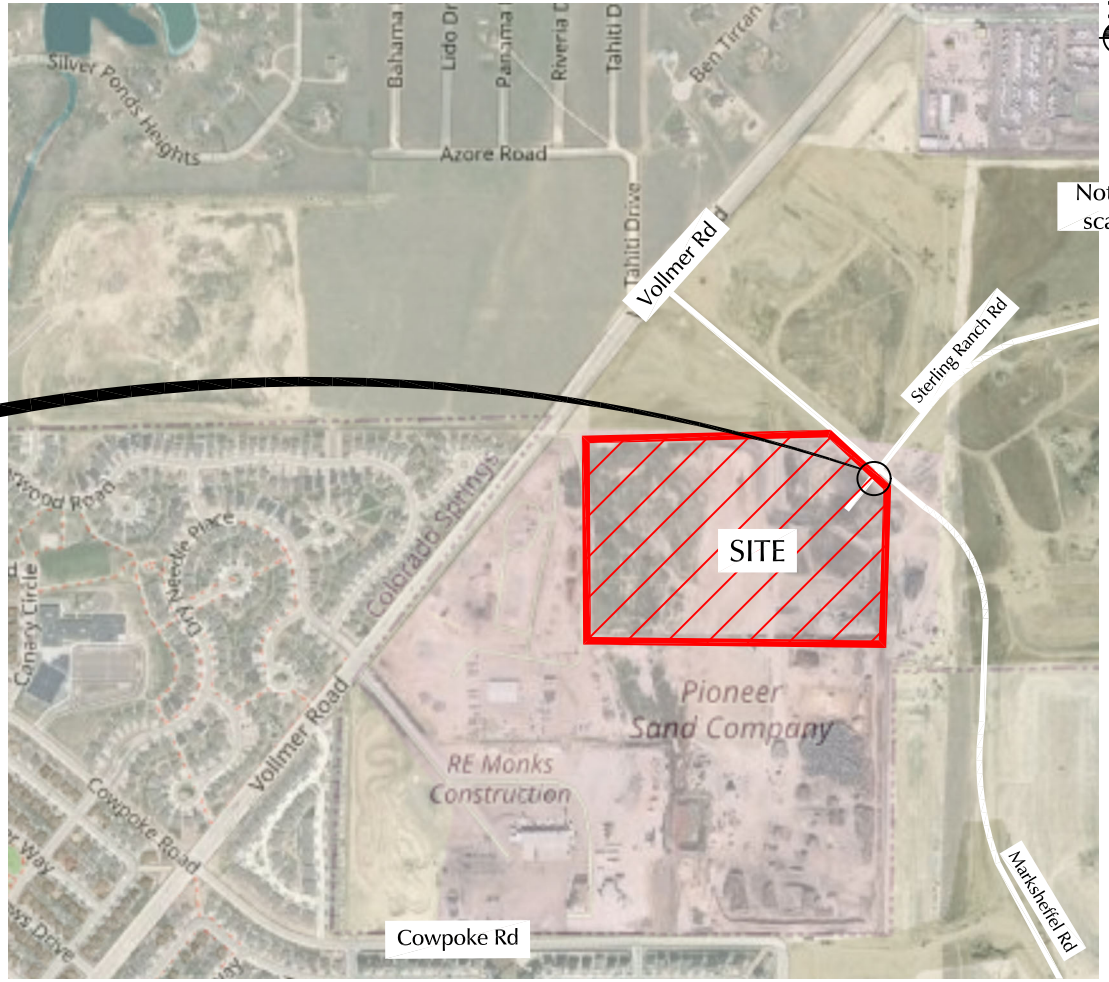
XXX = Average Weekday Traffic (vehicles per day)

LSC TRANSPORTATION CONSULTANTS, INC.









LEGEND:

$\frac{XX}{XX}$ = $\frac{\text{AM Peak–Hour Traffic (veh/hr)}}{\text{PM Peak–Hour Traffic (veh/hr)}}$ $\frac{C}{D}$ = $\frac{\text{AM Entire Intersection Peak–Hour Level of Service}}{\text{PM Entire Intersection Peak–Hour Level of Service}}$

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

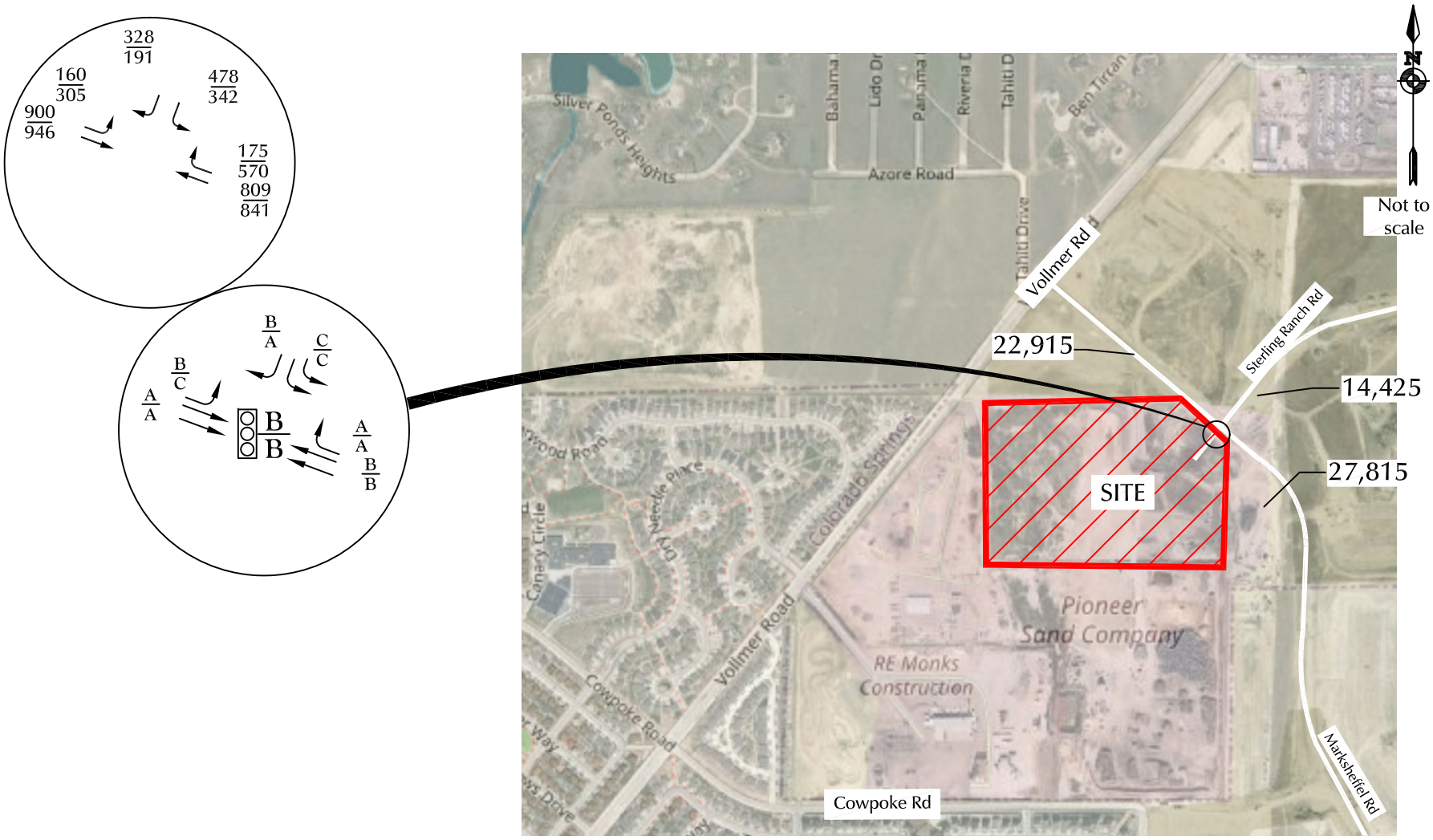
= Stop Sign = Traffic Signal

TRANSPORTATION CONSULTANTS, INC.

Figure 6

Short-Term Background Traffic

Rhetoric Subdivision (LSC# S224330)



LEGEND:

$\frac{XX}{XX}$ = $\frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$ $\frac{C}{D}$ = $\frac{\text{AM Entire Intersection Peak-Hour Level of Service}}{\text{PM Entire Intersection Peak-Hour Level of Service}}$

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

XXX = Average Weekday Traffic (vehicles per day)

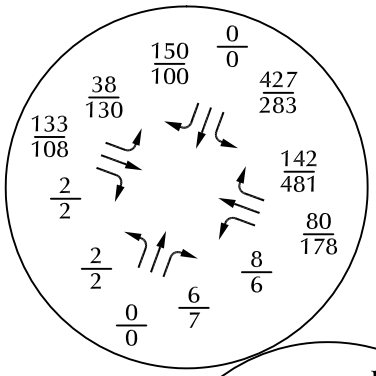
= Traffic Signal

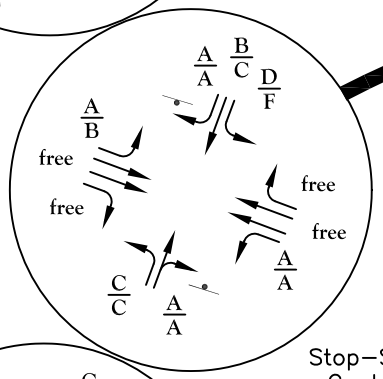
TRANSPORTATION CONSULTANTS, INC.

Figure 7

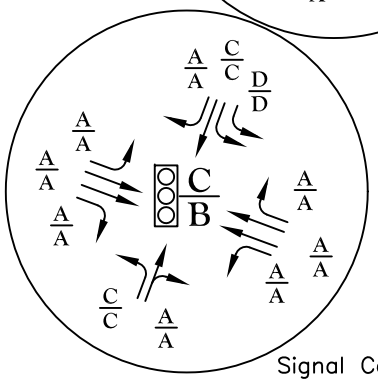
2043 Background Traffic

Rhetoric Subdivision (LSC# S224330)





Stop–Sign Control



Signal Control

Not to scale

LEGEND:

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

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

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

= Stop Sign

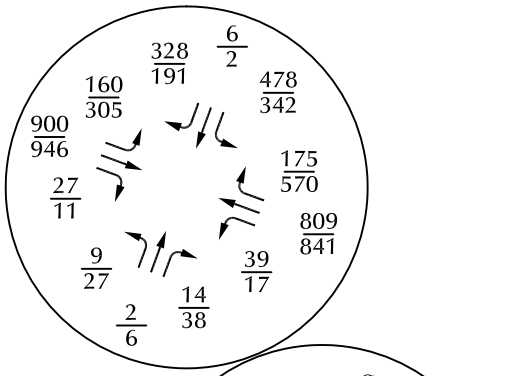
= Traffic Signal

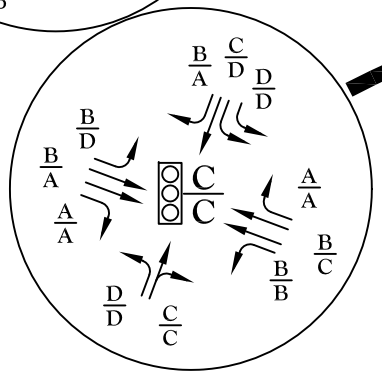
TRANSPORTATION CONSULTANTS, INC.

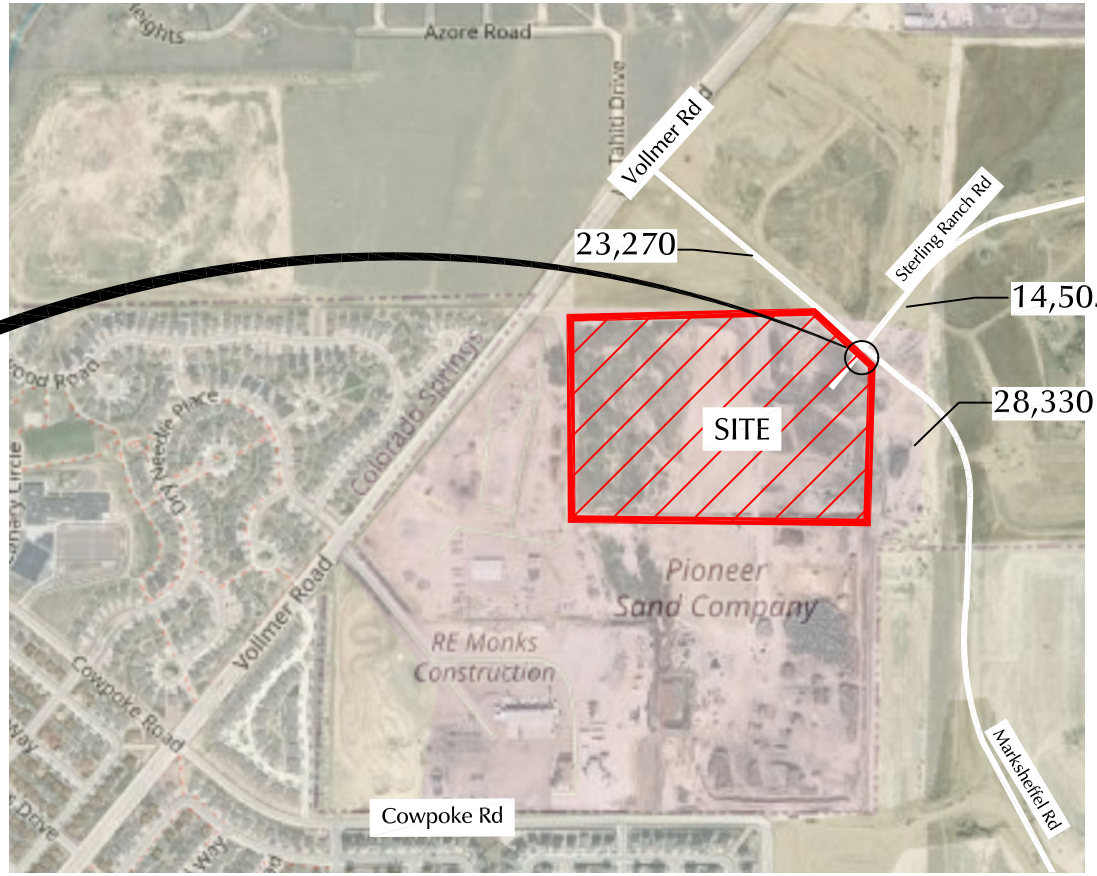
Figure 8

Short-Term Total Traffic

Rhetoric Subdivision (LSC# S224330)







Not to scale

LEGEND:

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

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

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

XXX = Average Weekday Traffic (vehicles per day)

= Traffic Signal

TRANSPORTATION CONSULTANTS, INC.

Figure 9

2043 Total Traffic

Rhetoric Subdivision (LSC# S224330)

Traffic Counts

TRANSPORTATION
CONSULTANTS, INC.

LSC Transportation Consultants, Inc.

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

File Name : Vollmer Rd - Pioneer Sand Trucks AM
Site Code : S22433
Start Date : 5/25/2022

Passenger Cars/ Pickup-Trucks

Groups Printed- Unshifted

	Vollmer Rd Southbound					Pioneer Sand Acces Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30	0	49	0	0	49	3	0	2	0	5	13	15	0	0	28	0	0	0	0	0	82
06:45	0	49	3	0	52	1	0	0	0	1	14	26	0	0	40	0	0	0	0	0	93
Total	0	98	3	0	101	4	0	2	0	6	27	41	0	0	68	0	0	0	0	0	175
07:00	0	63	1	0	64	2	0	6	0	8	5	38	0	0	43	0	0	0	0	0	115
07:15	0	68	1	0	69	8	0	8	0	16	7	44	0	0	51	0	0	0	0	0	136
07:30	0	82	2	0	84	3	0	8	0	11	9	57	0	0	66	0	0	0	0	0	161
07:45	0	79	1	0	80	2	0	2	0	4	5	68	0	0	73	0	0	0	0	0	157
Total	0	292	5	0	297	15	0	24	0	39	26	207	0	0	233	0	0	0	0	0	569
08:00	0	58	4	0	62	1	0	8	0	9	7	64	0	0	71	0	0	0	0	0	142
08:15	0	57	1	1	59	1	0	7	0	8	3	52	0	0	55	0	0	0	0	0	122
Grand Total	0	505	13	1	519	21	0	41	0	62	63	364	0	0	427	0	0	0	0	0	1008
Apprch %	0	97.3	2.5	0.2		33.9	0	66.1	0		14.8	85.2	0	0		0	0	0	0		
Total %	0	50.1	1.3	0.1	51.5	2.1	0	4.1	0	6.2	6.2	36.1	0	0	42.4	0	0	0	0	0	

LSC Transportation Consultants, Inc.

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

Passenger Cars/ Pickup-Trucks

File Name : Vollmer Rd - Pioneer Sand Trucks AM
Site Code : S224330
Start Date : 5/25/2022

	Vollmer Rd Southbound					Pioneer Sand Acces Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 6:30:00 AM to 8:15:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 7:15:00 AM																					
7:15:00 AM	0	68	1	0	69	**8**	0	**8**	0	**16**	7	44	0	0	51	0	0	0	0	0	136
7:30:00 AM	0	**82**	2	0	**84**	3	0	8	0	11	**9**	57	0	0	66	0	0	0	0	0	**161**
7:45:00 AM	0	79	1	0	80	2	0	2	0	4	5	**68**	0	0	**73**	0	0	0	0	0	157
8:00:00 AM	0	58	**4**	0	62	1	0	8	0	9	7	64	0	0	71	0	0	0	0	0	142
Total Volume	0	287	8	0	295	14	0	26	0	40	28	233	0	0	261	0	0	0	0	0	596
% App. Total	0	97.3	2.7	0		35	0	65	0		10.7	89.3	0	0		0	0	0	0		
PHF	.000	.875	.500	.000	.878	.438	.000	.813	.000	.625	.778	.857	.000	.000	.894	.000	.000	.000	.000	.000	.925

LSC Transportation Consultants, Inc.

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

Trucks

File Name : Vollmer Rd - Pioneer Sand Trucks AM
Site Code : S224330
Start Date : 5/25/2022
Page No : 1

Groups Printed- Bank 1

	Vollmer Rd Southbound					Pioneer Sand Acces Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
06:30	0	0	0	0	0	3	0	2	0	5	0	0	0	0	0	0	0	0	0	0	5
06:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	1	0	1	3	0	2	0	5	0	0	0	0	0	0	0	0	0	0	6
07:00	0	0	0	0	0	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	6
07:15	0	0	0	0	0	6	0	7	0	13	1	0	0	0	1	0	0	0	0	0	14
07:30	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	2
Total	0	0	0	0	0	9	0	12	0	21	3	0	0	0	3	0	0	0	0	0	24
08:00	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	3
08:15	0	0	1	0	1	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	3
Grand Total	0	0	3	0	3	12	0	16	0	28	5	0	0	0	5	0	0	0	0	0	36
Apprch %	0	0	100	0		42.9	0	57.1	0		100	0	0	0		0	0	0	0		
Total %	0	0	8.3	0	8.3	33.3	0	44.4	0	77.8	13.9	0	0	0	13.9	0	0	0	0	0	

LSC Transportation Consultants, Inc.

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

Passenger Cars/ Pickup-Trucks

File Name : Vollmer Rd - Pioneer Sand Trucks PM
Site Code : S224330
Start Date : 5/24/2022
Page No : 1

Groups Printed- Unshifted

	Vollmer Rd Southbound					Pioneer Sand Accees Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	0	72	1	0	73	2	0	8	0	10	6	69	0	0	75	0	0	0	0	0	158
16:15	0	61	2	0	63	1	0	7	0	8	11	69	0	0	80	0	0	0	0	0	151
16:30	0	64	1	0	65	2	0	8	0	10	6	75	0	0	81	0	0	0	0	0	156
16:45	0	54	2	0	56	6	0	8	0	14	2	72	0	0	74	0	0	0	0	0	144
Total	0	251	6	0	257	11	0	31	0	42	25	285	0	0	310	0	0	0	0	0	609
17:00	0	60	1	0	61	1	0	9	0	10	3	58	0	0	61	0	0	0	0	0	132
17:15	0	65	2	0	67	0	0	5	0	5	1	58	0	0	59	0	0	0	0	0	131
17:30	0	50	0	0	50	2	0	21	0	23	2	68	0	0	70	0	0	0	0	0	143
17:45	0	48	1	0	49	0	0	2	0	2	0	77	0	0	77	0	0	0	0	0	128
Total	0	223	4	0	227	3	0	37	0	40	6	261	0	0	267	0	0	0	0	0	534
Grand Total	0	474	10	0	484	14	0	68	0	82	31	546	0	0	577	0	0	0	0	0	1143
Apprch %	0	97.9	2.1	0		17.1	0	82.9	0		5.4	94.6	0	0		0	0	0	0		
Total %	0	41.5	0.9	0	42.3	1.2	0	5.9	0	7.2	2.7	47.8	0	0	50.5	0	0	0	0	0	

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

Passenger Cars/ Pickup-Trucks

File Name : Vollmer Rd - Pioneer Sand Trucks PM
Site Code : S224330
Start Date : 5/24/2022

	Vollmer Rd Southbound					Pioneer Sand Accees Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:00:00 PM																					
4:00:00 PM	0	**72**	1	0	**73**	2	0	**8**	0	10	6	69	0	0	75	0	0	0	0	0	**158**
4:15:00 PM	0	61	**2**	0	63	1	0	7	0	8	**11**	69	0	0	80	0	0	0	0	0	151
4:30:00 PM	0	64	1	0	65	2	0	8	0	10	6	**75**	0	0	**81**	0	0	0	0	0	156
4:45:00 PM	0	54	2	0	56	**6**	0	8	0	**14**	2	72	0	0	74	0	0	0	0	0	144
Total Volume	0	251	6	0	257	11	0	31	0	42	25	285	0	0	310	0	0	0	0	0	609
% App. Total	0	97.7	2.3	0		26.2	0	73.8	0		8.1	91.9	0	0		0	0	0	0		
PHF	.000	.872	.750	.000	.880	.458	.000	.969	.000	.750	.568	.950	.000	.000	.957	.000	.000	.000	.000	.000	.964

LSC Transportation Consultants, Inc.

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

Trucks

File Name : Vollmer Rd - Pioneer Sand Trucks PM
Site Code : S224330
Start Date : 5/24/2022
Page No : 1

Groups Printed- Bank 1

	Vollmer Rd Southbound					Pioneer Sand Accees Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
16:00	0	0	1	0	1	1	0	2	0	3	3	0	0	0	3	0	0	0	0	0	7
16:15	0	0	1	0	1	0	0	2	0	2	5	0	0	0	5	0	0	0	0	0	8
16:30	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	4
16:45	0	0	2	0	2	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
Total	0	0	4	0	4	1	0	4	0	5	13	0	0	0	13	0	0	0	0	0	22
17:00	0	0	1	0	1	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	3
17:15	0	0	2	0	2	0	0	2	0	2	1	0	0	0	1	0	0	0	0	0	5
17:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
17:45	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	4	0	4	0	0	3	0	3	4	0	0	0	4	0	0	0	0	0	11
Grand Total	0	0	8	0	8	1	0	7	0	8	17	0	0	0	17	0	0	0	0	0	33
Apprch %	0	0	100	0		12.5	0	87.5	0		100	0	0	0		0	0	0	0		
Total %	0	0	24.2	0	24.2	3	0	21.2	0	24.2	51.5	0	0	0	51.5	0	0	0	0	0	

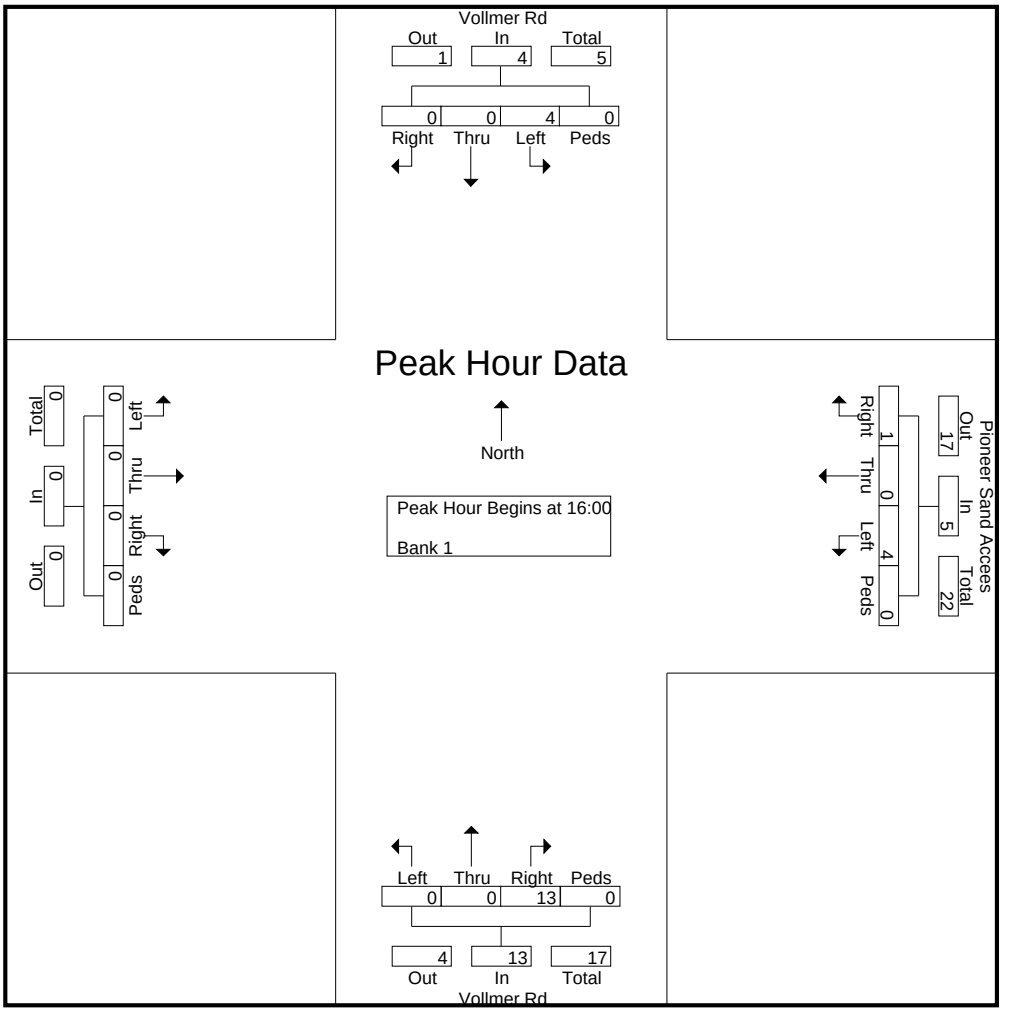
LSC Transportation Consultants, Inc.

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

Trucks

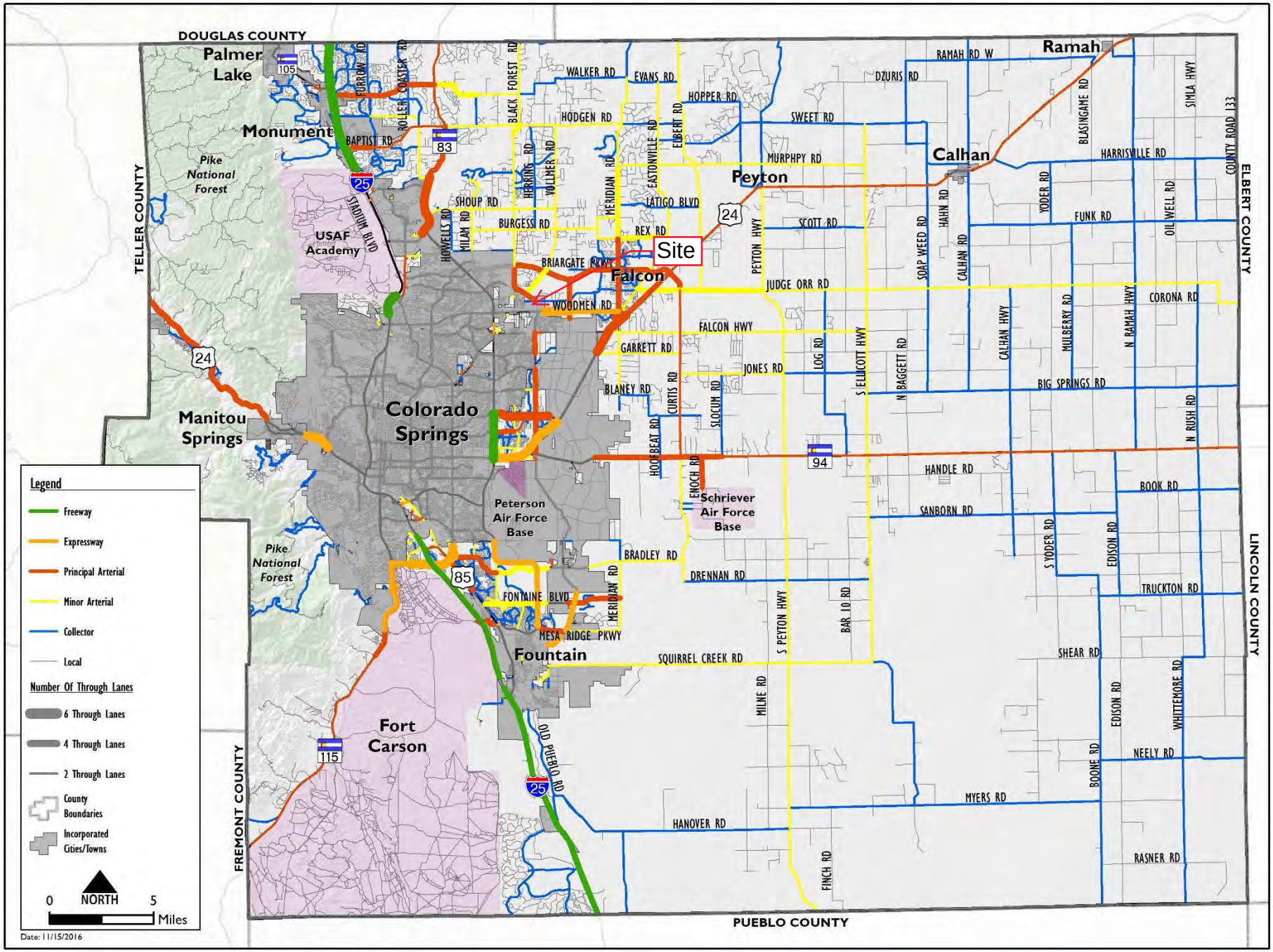
File Name : Vollmer Rd - Pioneer Sand Trucks PM
Site Code : S224330
Start Date : 5/24/2022
Page No : 2

	Vollmer Rd Southbound					Pioneer Sand Accees Westbound					Vollmer Rd Northbound					Eastbound					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 4:00:00 PM to 5:45:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 4:00:00 PM																					
4:00:00 PM	0	0	1	0	1	**1**	0	**2**	0	**3**	3	0	0	0	3	0	0	0	0	0	7
4:15:00 PM	0	0	1	0	1	0	0	2	0	2	**5**	0	0	0	**5**	0	0	0	0	0	**8**
4:30:00 PM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	0	0	0	4
4:45:00 PM	0	0	**2**	0	**2**	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
Total Volume	0	0	4	0	4	1	0	4	0	5	13	0	0	0	13	0	0	0	0	0	22
% App. Total	0	0	100	0		20	0	80	0		100	0	0	0		0	0	0	0		
PHF	.000	.000	.500	.000	.500	.250	.000	.500	.000	.417	.650	.000	.000	.000	.650	.000	.000	.000	.000	.000	.688



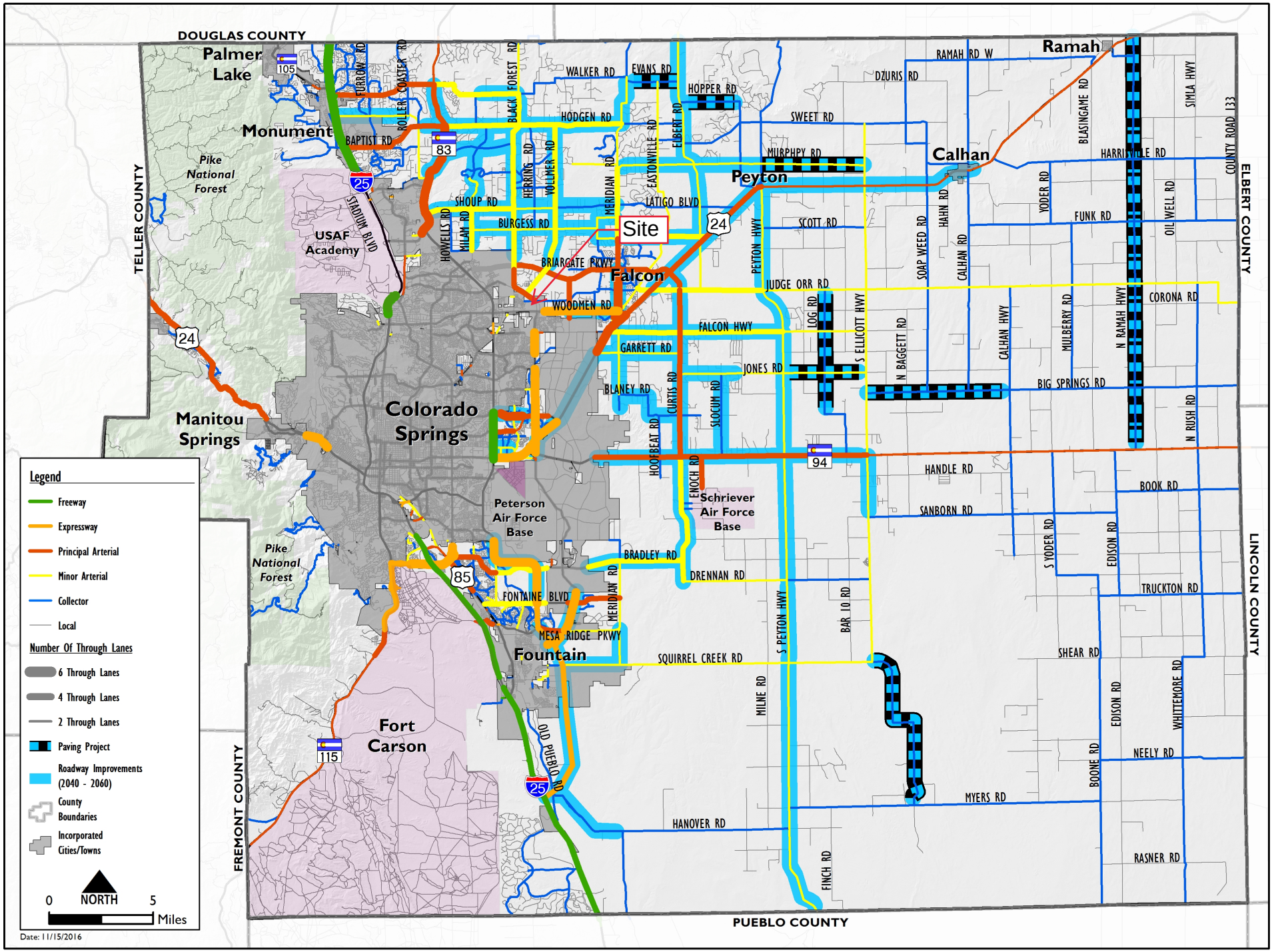
MTCP Maps

TRANSPORTATION
CONSULTANTS, INC.



Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



Level of Service Reports

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	38	133	80	142	427	150
Future Vol, veh/h	38	133	80	142	427	150
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	205	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	156	94	167	502	176

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	261	0	-	0	262	47
Stage 1	-	-	-	-	94	-
Stage 2	-	-	-	-	168	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	1300	-	-	-	705	1012
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	844	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1300	-	-	-	680	1012
Mov Cap-2 Maneuver	-	-	-	-	680	-
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	844	-

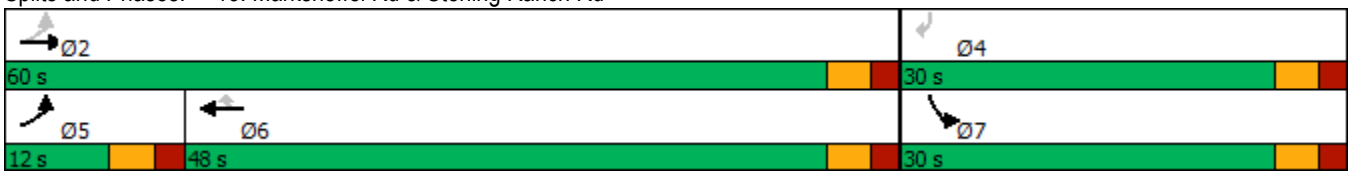
Approach	EB	WB	SB
HCM Control Delay, s	1.7	0	20
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1300	-	-	-	680	1012
HCM Lane V/C Ratio	0.034	-	-	-	0.739	0.174
HCM Control Delay (s)	7.9	-	-	-	23.7	9.3
HCM Lane LOS	A	-	-	-	C	A
HCM 95th %tile Q(veh)	0.1	-	-	-	6.6	0.6

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	38	133	80	142	427	150
Future Volume (vph)	38	133	80	142	427	150
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	7	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	10.0	23.0
Total Split (s)	12.0	60.0	48.0	48.0	30.0	30.0
Total Split (%)	13.3%	66.7%	53.3%	53.3%	33.3%	33.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	55.1	55.1	48.3	48.3	17.1	17.1
Actuated g/C Ratio	0.67	0.67	0.59	0.59	0.21	0.21
v/c Ratio	0.05	0.07	0.05	0.17	0.71	0.38
Control Delay	5.6	5.3	9.7	2.5	35.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	5.3	9.7	2.5	35.9	7.0
LOS	A	A	A	A	D	A
Approach Delay		5.4	5.1		28.4	
Approach LOS		A	A		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82.2	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 29.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Marksheffel Rd & Sterling Ranch Rd



Intersection	
Int Delay, s/veh	15.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	130	108	178	481	283	100
Future Vol, veh/h	130	108	178	481	283	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	205	155	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	153	127	209	566	333	118

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	775	0	-	0	579	105
Stage 1	-	-	-	-	209	-
Stage 2	-	-	-	-	370	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	837	-	-	-	446	929
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	837	-	-	-	364	929
Mov Cap-2 Maneuver	-	-	-	-	364	-
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	669	-

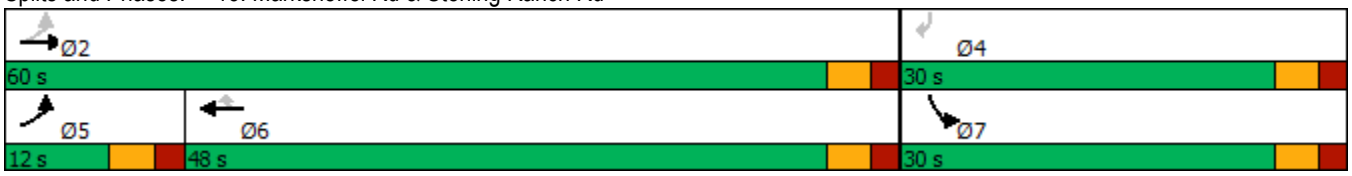
Approach	EB	WB	SB
HCM Control Delay, s	5.6	0	48.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	837	-	-	-	364	929
HCM Lane V/C Ratio	0.183	-	-	-	0.915	0.127
HCM Control Delay (s)	10.3	-	-	-	62.3	9.4
HCM Lane LOS	B	-	-	-	F	A
HCM 95th %tile Q(veh)	0.7	-	-	-	9.4	0.4

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	130	108	178	481	283	100
Future Volume (vph)	130	108	178	481	283	100
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	7	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	10.0	23.0
Total Split (s)	12.0	60.0	48.0	48.0	30.0	30.0
Total Split (%)	13.3%	66.7%	53.3%	53.3%	33.3%	33.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	55.1	55.1	43.3	43.3	12.7	12.7
Actuated g/C Ratio	0.71	0.71	0.56	0.56	0.16	0.16
v/c Ratio	0.19	0.05	0.11	0.50	0.59	0.33
Control Delay	4.6	3.9	8.8	2.7	34.7	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.6	3.9	8.8	2.7	34.7	8.7
LOS	A	A	A	A	C	A
Approach Delay		4.3	4.3		27.9	
Approach LOS		A	A		C	

Intersection Summary		
Cycle Length: 90		
Actuated Cycle Length: 77.8		
Natural Cycle: 60		
Control Type: Semi Act-Uncoord		
Maximum v/c Ratio: 0.59		
Intersection Signal Delay: 11.4	Intersection LOS: B	
Intersection Capacity Utilization 45.3%	ICU Level of Service A	
Analysis Period (min) 15		

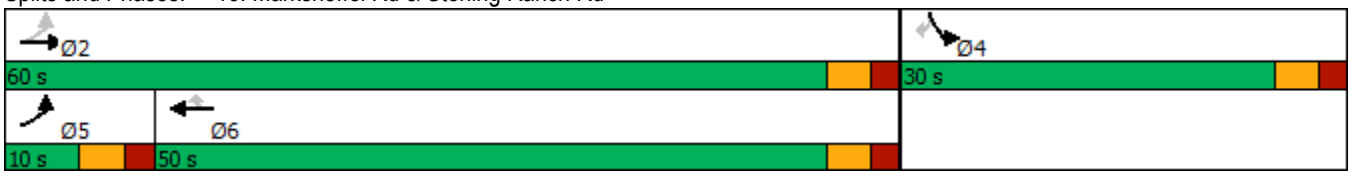
Splits and Phases: 13: Marksheffel Rd & Sterling Ranch Rd



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	160	900	809	175	478	328
Future Volume (vph)	160	900	809	175	478	328
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	10.0	10.0
Total Split (s)	10.0	60.0	50.0	50.0	30.0	30.0
Total Split (%)	11.1%	66.7%	55.6%	55.6%	33.3%	33.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	55.1	55.1	45.1	45.1	18.1	18.1
Actuated g/C Ratio	0.66	0.66	0.54	0.54	0.22	0.22
v/c Ratio	0.45	0.41	0.45	0.20	0.68	0.69
Control Delay	10.0	7.7	13.1	2.4	34.8	19.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	7.7	13.1	2.4	34.8	19.2
LOS	B	A	B	A	C	B
Approach Delay		8.0	11.2		28.5	
Approach LOS		A	B		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 83.2	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 14.9	Intersection LOS: B
Intersection Capacity Utilization 57.4%	ICU Level of Service B
Analysis Period (min) 15	

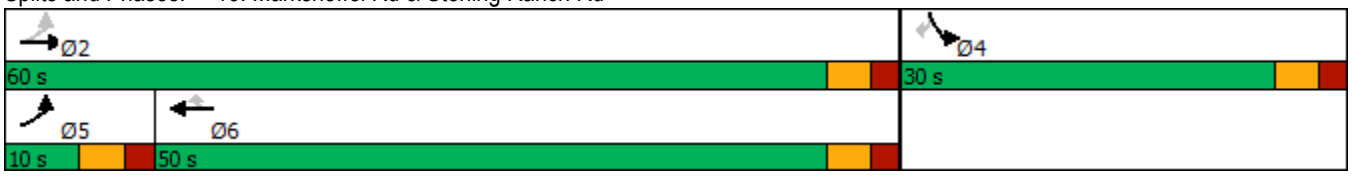
Splits and Phases: 13: Marksheffel Rd & Sterling Ranch Rd



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	305	946	841	570	342	191
Future Volume (vph)	305	946	841	570	342	191
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	23.0	10.0	10.0
Total Split (s)	10.0	60.0	50.0	50.0	30.0	30.0
Total Split (%)	11.1%	66.7%	55.6%	55.6%	33.3%	33.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	Max	Max	Max	None	None
Act Effct Green (s)	55.0	55.0	45.0	45.0	13.6	13.6
Actuated g/C Ratio	0.70	0.70	0.57	0.57	0.17	0.17
v/c Ratio	0.81	0.41	0.44	0.52	0.61	0.46
Control Delay	25.6	5.9	10.9	2.7	34.7	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.6	5.9	10.9	2.7	34.7	8.3
LOS	C	A	B	A	C	A
Approach Delay		10.7	7.6		25.2	
Approach LOS		B	A		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 78.7	
Natural Cycle: 50	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 11.7	Intersection LOS: B
Intersection Capacity Utilization 62.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 13: Marksheffel Rd & Sterling Ranch Rd



Intersection	
Int Delay, s/veh	15

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	133	2	8	80	142	2	0	6	427	1	150
Future Vol, veh/h	38	133	2	8	80	142	2	0	6	427	1	150
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	300	-	200	250	-	205	0	-	-	155	-	0
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	70	70	2	2	88	2	88	2	2	2
Mvmt Flow	45	156	2	9	94	167	2	0	7	502	1	176

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	261	0	0	158	0	0	312	525	78	280	360	47
Stage 1	-	-	-	-	-	-	246	246	-	112	112	-
Stage 2	-	-	-	-	-	-	66	279	-	168	248	-
Critical Hdwy	4.14	-	-	5.5	-	-	9.26	6.54	8.66	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	8.26	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.26	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.9	-	-	4.38	4.02	4.18	3.52	4.02	3.32
Pot Cap-1 Maneuver	1300	-	-	1039	-	-	443	456	747	650	565	1012
Stage 1	-	-	-	-	-	-	541	701	-	881	802	-
Stage 2	-	-	-	-	-	-	735	678	-	817	700	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1300	-	-	1039	-	-	353	436	747	623	540	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	436	-	623	540	-
Stage 1	-	-	-	-	-	-	522	676	-	850	795	-
Stage 2	-	-	-	-	-	-	601	672	-	781	676	-

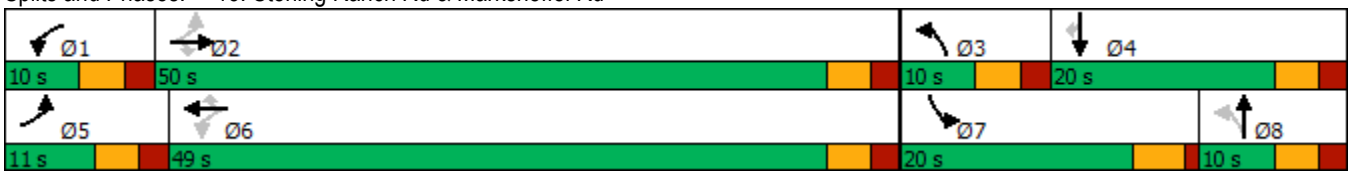
Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.3	11.3	24.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	353	747	1300	-	-	1039	-	-	623	540	1012
HCM Lane V/C Ratio	0.007	0.009	0.034	-	-	0.009	-	-	0.806	0.002	0.174
HCM Control Delay (s)	15.3	9.9	7.9	-	-	8.5	-	-	30.4	11.7	9.3
HCM Lane LOS	C	A	A	-	-	A	-	-	D	B	A
HCM 95th %tile Q(veh)	0	0	0.1	-	-	0	-	-	8.1	0	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	38	133	2	8	80	142	2	0	427	1	150
Future Volume (vph)	38	133	2	8	80	142	2	0	427	1	150
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6	8				4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	10.0	9.5	10.0	10.0
Total Split (s)	11.0	50.0	50.0	10.0	49.0	49.0	10.0	10.0	20.0	20.0	20.0
Total Split (%)	12.2%	55.6%	55.6%	11.1%	54.4%	54.4%	11.1%	11.1%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	50.4	49.4	49.4	47.8	45.0	45.0	5.9	5.1	14.6	14.1	14.1
Actuated g/C Ratio	0.65	0.64	0.64	0.62	0.58	0.58	0.08	0.07	0.19	0.18	0.18
v/c Ratio	0.05	0.07	0.00	0.02	0.05	0.17	0.03	0.01	0.77	0.00	0.41
Control Delay	5.6	6.9	0.0	5.9	9.3	1.6	30.0	0.0	40.2	29.0	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	6.9	0.0	5.9	9.3	1.6	30.0	0.0	40.2	29.0	8.6
LOS	A	A	A	A	A	A	C	A	D	C	A
Approach Delay		6.5			4.4			6.7		32.0	
Approach LOS		A			A			A		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 77.1	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 36.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



Intersection	
Int Delay, s/veh	21.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	108	2	6	178	481	2	0	7	283	1	100
Future Vol, veh/h	130	108	2	6	178	481	2	0	7	283	1	100
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	300	-	200	250	-	205	0	-	-	155	-	0
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	88	88	2	2	78	2	78	2	2	2
Mvmt Flow	153	127	2	7	209	566	2	0	8	333	1	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	775	0	0	129	0	0	552	1222	64	593	658	105
Stage 1	-	-	-	-	-	-	433	433	-	223	223	-
Stage 2	-	-	-	-	-	-	119	789	-	370	435	-
Critical Hdwy	4.14	-	-	5.86	-	-	9.06	6.54	8.46	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	8.06	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	8.06	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	3.08	-	-	4.28	4.02	4.08	3.52	4.02	3.32
Pot Cap-1 Maneuver	837	-	-	1001	-	-	286	178	787	389	383	929
Stage 1	-	-	-	-	-	-	408	580	-	759	718	-
Stage 2	-	-	-	-	-	-	691	400	-	622	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	837	-	-	1001	-	-	213	144	787	~ 329	311	929
Mov Cap-2 Maneuver	-	-	-	-	-	-	213	144	-	~ 329	311	-
Stage 1	-	-	-	-	-	-	333	474	-	620	713	-
Stage 2	-	-	-	-	-	-	598	397	-	503	473	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.6	0.1	12.4	68.3
HCM LOS			B	F

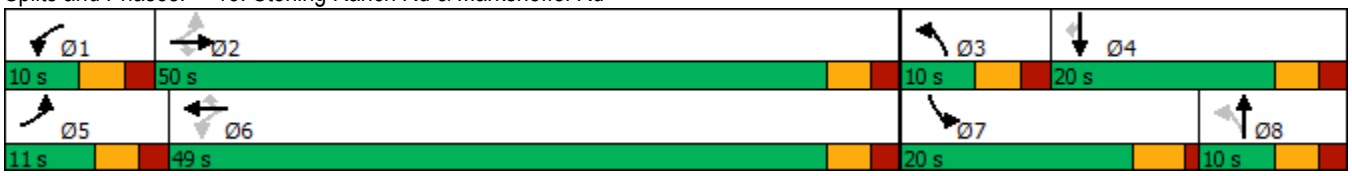
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2	SBLn3
Capacity (veh/h)	213	787	837	-	-	1001	-	-	329	311	929
HCM Lane V/C Ratio	0.011	0.01	0.183	-	-	0.007	-	-	1.012	0.004	0.127
HCM Control Delay (s)	22.1	9.6	10.3	-	-	8.6	-	-	89.3	16.6	9.4
HCM Lane LOS	C	A	B	-	-	A	-	-	F	C	A
HCM 95th %tile Q(veh)	0	0	0.7	-	-	0	-	-	11.4	0	0.4

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	130	108	2	6	178	481	2	0	283	1	100
Future Volume (vph)	130	108	2	6	178	481	2	0	283	1	100
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6	8				4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	23.0	23.0	10.0	23.0	23.0	10.0	10.0	9.5	10.0	10.0
Total Split (s)	11.0	50.0	50.0	10.0	49.0	49.0	10.0	10.0	20.0	20.0	20.0
Total Split (%)	12.2%	55.6%	55.6%	11.1%	54.4%	54.4%	11.1%	11.1%	22.2%	22.2%	22.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.5	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	Max	None	None	None	None	None
Act Effct Green (s)	54.5	53.5	53.5	49.2	44.2	44.2	5.9	5.0	12.5	11.3	11.3
Actuated g/C Ratio	0.69	0.68	0.68	0.62	0.56	0.56	0.07	0.06	0.16	0.14	0.14
v/c Ratio	0.20	0.05	0.00	0.02	0.11	0.50	0.03	0.01	0.62	0.00	0.34
Control Delay	5.6	6.4	0.0	5.7	9.3	2.8	29.5	0.0	36.7	30.0	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.6	6.4	0.0	5.7	9.3	2.8	29.5	0.0	36.7	30.0	6.6
LOS	A	A	A	A	A	A	C	A	D	C	A
Approach Delay		5.9			4.6			5.9		28.9	
Approach LOS		A			A			A		C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 79	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay: 12.0	Intersection LOS: B
Intersection Capacity Utilization 53.7%	ICU Level of Service A
Analysis Period (min) 15	

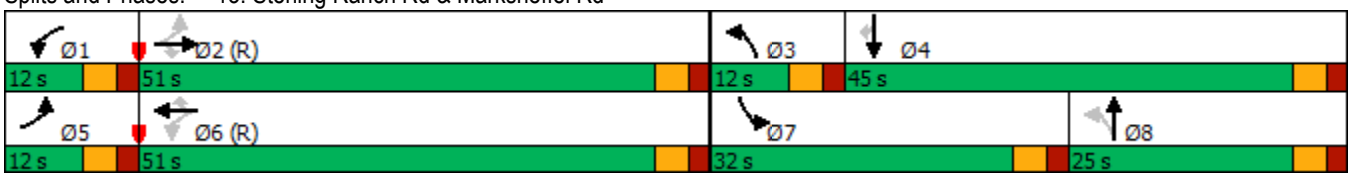
Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	160	900	27	39	809	175	9	2	478	6	328
Future Volume (vph)	160	900	27	39	809	175	9	2	478	6	328
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6	8				4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	10.0	20.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	15.0	25.0	20.0	20.0
Total Split (s)	12.0	51.0	51.0	12.0	51.0	51.0	12.0	25.0	32.0	45.0	45.0
Total Split (%)	10.0%	42.5%	42.5%	10.0%	42.5%	42.5%	10.0%	20.8%	26.7%	37.5%	37.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	None
Act Effct Green (s)	79.8	70.8	70.8	72.5	65.4	65.4	10.2	10.0	23.1	26.7	26.7
Actuated g/C Ratio	0.66	0.59	0.59	0.60	0.54	0.54	0.08	0.08	0.19	0.22	0.22
v/c Ratio	0.42	0.46	0.04	0.17	0.45	0.20	0.10	0.16	0.77	0.02	0.61
Control Delay	17.7	13.4	0.1	11.5	19.7	3.8	35.7	28.2	54.1	32.8	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.7	13.4	0.1	11.5	19.7	3.8	35.7	28.2	54.1	32.8	12.6
LOS	B	B	A	B	B	A	D	C	D	C	B
Approach Delay		13.7			16.7			31.0		37.2	
Approach LOS		B			B			C		D	

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: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 64.0%	ICU Level of Service C
Analysis Period (min) 15	

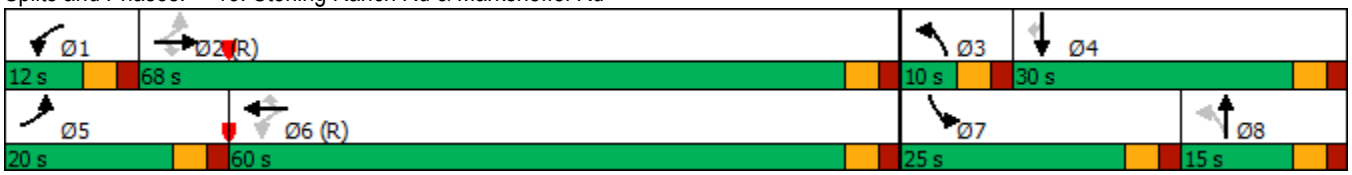
Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	305	946	11	17	841	570	27	6	342	2	191
Future Volume (vph)	305	946	11	17	841	570	27	6	342	2	191
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8	7	4	
Permitted Phases	2		2	6		6	8				4
Detector Phase	5	2	2	1	6	6	3	8	7	4	4
Switch Phase											
Minimum Initial (s)	5.0	15.0	15.0	5.0	15.0	15.0	5.0	10.0	20.0	10.0	10.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	15.0	25.0	20.0	20.0
Total Split (s)	20.0	68.0	68.0	12.0	60.0	60.0	10.0	15.0	25.0	30.0	30.0
Total Split (%)	16.7%	56.7%	56.7%	10.0%	50.0%	50.0%	8.3%	12.5%	20.8%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	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	None
Act Effct Green (s)	78.0	73.3	73.3	65.2	59.1	59.1	13.0	10.0	20.0	26.0	26.0
Actuated g/C Ratio	0.65	0.61	0.61	0.54	0.49	0.49	0.11	0.08	0.17	0.22	0.22
v/c Ratio	0.79	0.47	0.02	0.08	0.51	0.56	0.25	0.36	0.64	0.01	0.40
Control Delay	45.3	9.5	0.0	10.2	23.1	3.7	38.4	27.1	52.3	38.0	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.3	9.5	0.0	10.2	23.1	3.7	38.4	27.1	52.3	38.0	8.0
LOS	D	A	A	B	C	A	D	C	D	D	A
Approach Delay		18.1			15.2			31.5		36.4	
Approach LOS		B			B			C		D	

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: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 20.1	Intersection LOS: C
Intersection Capacity Utilization 73.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 13: Sterling Ranch Rd & Marksheffel Rd



Appendix Tables 1-2

TRANSPORTATION
CONSULTANTS, INC.

Appendix Table 1
Area Traffic Impact Studies
Rhetoric Subdivision

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 Memorandum	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
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
The Villages at Sterling Ranch East Preliminary Plan/Traffic Generation Analysis	PUDSP226	SM Rocha, LLC	July 1, 2022
Sterling Ranch Sketch Plan Amendment Master Traffic Impact Study	SKP224	LSC Transportation Consultants, Inc	March 17, 2023
Sterling Ranch East - Rezoning & Preliminary Plan Traffic Impact Study	SP-22-004, P-22-012, P-22-013	LSC Transportation Consultants, Inc	March 17, 2023[(2)]
Sterling Ranch East Filing Nos 1 & 2 Traffic Technical Memorandum	SF2235 SF2237	LSC Transportation Consultants, Inc	February 10, 2023
Sterling Ranch Filing No. 4 Transportation Memorandum	SF2230	LSC Transportation Consultants, Inc	February 21, 2023
Foursquare at Sterling Ranch East Transportation Memorandum	SF2236	LSC Transportation Consultants, Inc	April 20, 2023
Copper Chase at Sterling Ranch Traffic Impact Study	PUDSP222	LSC Transportation Consultants, Inc	April 28, 2023
Sterling Ranch East Filing 5 Rezone and Prelminary Plan Traffic Impact Study	SP235	LSC Transportation Consultants, Inc	January 15, 2024
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	SF2241	LSC Transportation Consultants, Inc	July 1, 2022
The Retreat at TimberRidge Filing No. 4 Traffic Technical Memorandum	SF1827	LSC Transportation Consultants, Inc	February 21, 2024
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	May, 2022
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.
(2) With minor revision 4/3/2023

Source: LSC Transportation Consultants, Inc. *Mar-24*

Appendix Table 2
Existing Truck Operations
Rhetoric Subdivision

DATE	Day of the Week	Tandem	Semi	TOTAL LOADS	DATE	Day of the Week	Tandem	Semi	TOTAL LOADS
3/6/2022	Sunday	0	0	0	5/23/2022	Monday	19	4	23
3/13/2022	Sunday	0	0	0	10/17/2022	Monday	19	4	23
3/20/2022	Sunday	0	0	0	11/3/2022	Thursday	17	6	23
3/27/2022	Sunday	0	0	0	9/30/2022	Friday	17	6	23
4/3/2022	Sunday	0	0	0	5/24/2022	Tuesday	18	6	24
4/10/2022	Sunday	0	0	0	10/13/2022	Thursday	20	4	24
4/17/2022	Sunday	0	0	0	10/21/2022	Friday	18	6	24
4/24/2022	Sunday	0	0	0	9/17/2022	Saturday	23	1	24
5/1/2022	Sunday	0	0	0	5/2/2022	Monday	25	0	25
5/8/2022	Sunday	0	0	0	11/21/2022	Monday	17	8	25
5/15/2022	Sunday	0	0	0	12/6/2022	Tuesday	23	2	25
6/12/2022	Sunday	0	0	0	10/6/2022	Thursday	12	13	25
6/19/2022	Sunday	0	0	0	10/27/2022	Thursday	21	4	25
6/26/2022	Sunday	0	0	0	12/29/2022	Thursday	25	0	25
7/3/2022	Sunday	0	0	0	5/27/2022	Friday	17	8	25
7/10/2022	Sunday	0	0	0	12/2/2022	Friday	20	5	25
7/17/2022	Sunday	0	0	0	10/31/2022	Monday	18	8	26
7/24/2022	Sunday	0	0	0	8/16/2022	Tuesday	26	0	26
7/31/2022	Sunday	0	0	0	10/12/2022	Wednesday	20	6	26
8/7/2022	Sunday	0	0	0	3/3/2022	Thursday	21	5	26
8/14/2022	Sunday	0	0	0	6/30/2022	Thursday	17	9	26
8/21/2022	Sunday	0	0	0	9/1/2022	Thursday	18	8	26
9/4/2022	Sunday	0	0	0	10/18/2022	Tuesday	21	6	27
9/11/2022	Sunday	0	0	0	10/19/2022	Wednesday	21	6	27
9/18/2022	Sunday	0	0	0	6/16/2022	Thursday	26	1	27
9/25/2022	Sunday	0	0	0	11/9/2022	Wednesday	20	8	28
10/2/2022	Sunday	0	0	0	12/28/2022	Wednesday	24	4	28
10/9/2022	Sunday	0	0	0	11/17/2022	Thursday	13	15	28
10/16/2022	Sunday	0	0	0	12/1/2022	Thursday	18	11	29
10/23/2022	Sunday	0	0	0	6/3/2022	Friday	25	4	29
10/30/2022	Sunday	0	0	0	4/12/2022	Tuesday	15	15	30
11/6/2022	Sunday	0	0	0	5/31/2022	Tuesday	23	7	30
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12/4/2022	Sunday	0	0	0	12/20/2022	Tuesday	28	3	31
12/11/2022	Sunday	0	0	0	5/6/2022	Friday	31	0	31
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8/31/2022	Wednesday	0	0	0	5/18/2022	Wednesday	26	8	34
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4/21/2022	Thursday	0	0	0	8/26/2022	Friday	18	16	34
12/22/2022	Thursday	0	0	0	5/16/2022	Monday	35	0	35
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12/21/2022	Wednesday	12	4	16	7/29/2022	Friday	43	27	70
4/15/2022	Friday	16	0	16	11/4/2022	Friday	44	27	71
12/16/2022	Friday	16	0	16	9/26/2022	Monday	67	6	73
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11/15/2022	Tuesday	11	6	17	3/28/2022	Monday	13	62	75
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10/7/2022	Friday	18	4	22	7/8/2022	Friday	128	7	135
						Maximum	**128**	**68**	**135**
						85th Percentile (Sun-Sat)	**43**	**13**	**55**
						85th Percentile (Mon-Fri)	**47**	**15**	**61**

Source: LSC Transportation Consultants, Inc.

Vollmer Road Approved CD

TRANSPORTATION
CONSULTANTS, INC.

STERLING RANCH - VOLLMER ROAD FILING 2

COUNTY OF EL PASO, STATE OF COLORADO

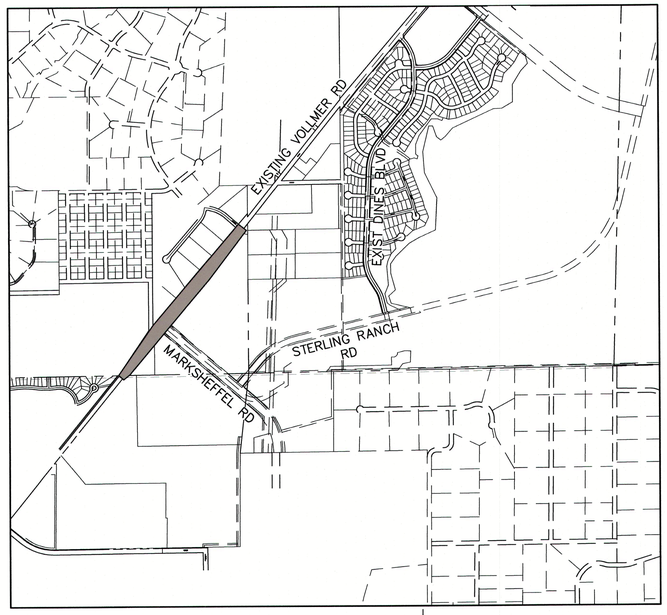
STREET IMPROVEMENT PLAN

MARCH 2022

CDR 20-005

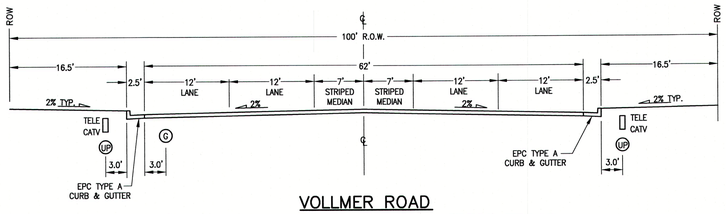
AGENCIES

OWNER/DEVELOPER:	SR LAND, LLC 20 BOULDER CRESCENT, SUITE 201 COLORADO SPRINGS, CO 80903 JAMES F. MORLEY (719) 471-1742
CIVIL ENGINEER:	JR ENGINEERING, LLC 5475 TECH CENTER DRIVE COLORADO SPRINGS, CO 80919 MIKE BRAMLETT P.E. (303) 267-6240
COUNTY ENGINEERING:	EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, CO 80910 JEFF RICE, P.E. (719) 520-6300
TRAFFIC ENGINEERING:	EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 JENNIFER IRVINE, P.E. (719) 520-6460
WATER RESOURCES:	STERLING RANCH METRO DISTRICT ENGINEERS JDS-HYDRO CONSULTANTS 545 E. PIKES PEAK AVE., SUITE 300 COLORADO SPRINGS, CO 80903 JOHN MCGINN (719) 668-8769
FIRE DISTRICT:	BLACK FOREST FIRE PROTECTION DISTRICT 11445 TEACHOUT ROAD COLORADO SPRINGS, CO 80908 CHIEF BRYAN JACK (719) 495-4300
GAS DEPARTMENT:	COLORADO SPRINGS UTILITIES 7710 DURANT DR. COLORADO SPRINGS, CO 80947 TIM WENDT (719) 668-3556
ELECTRIC DEPARTMENT:	MOUNTAIN VIEW ELECTRIC 11140 E. WOODMEN ROAD FALCON, CO 80831 (719) 495-2283
COMMUNICATIONS:	QWEST COMMUNICATIONS (U.N.C.C. LOCATORS) (800) 922-1987 AT&T (LOCATORS) (719) 635-3674
CITY STORMWATER:	STORMWATER ENTERPRISE 30 S. NEVADA AVENUE, SUITE 401 COLORADO SPRINGS, CO 80903 (719)-385-5918



VICINITY MAP
SCALE : 1"=1,000'

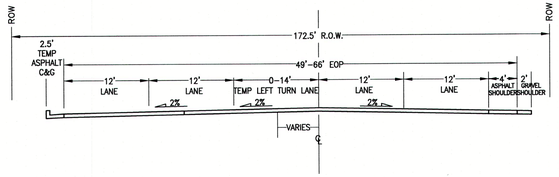
SHEET INDEX



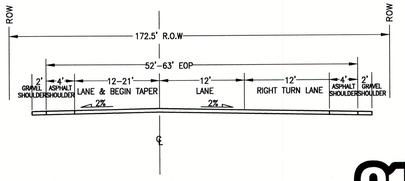
VOLLMER ROAD
(MODIFIED) URBAN MINOR ARTERIAL CROSS SECTION
SCALE: NTS
ULTIMATE STA: 14+00.00 – 34+00.00

BENCHMARKS

1. THE TOP OF AN ALUMINUM SURVEYORS CAP, STAMPED "9853", AT THE SOUTHEAST BOUNDARY CORNER OF BARBARICK SUBDIVISION
   NORTHING = 411416.273
   EASTING = 235167.071
   ELEVATION = 7023.42
2. THE TOP OF A RED PLASTIC SURVEYORS CAP, ILLEGIBLE, AT THE NORTHWEST BOUNDARY CORNER OF PAWNEE RANCHEROS SUBDIVISION
   NORTHING = 410095.404
   EASTING = 235052.131
   ELEVATION = 7000.40
3. THE TOP OF A RED PLASTIC SURVEYORS CAP, STAMPED "38141", AT THE SOUTHWEST BOUNDARY CORNER OF BARBARICK SUBDISION
   NORTHING = 411399.962
   EASTING = 233849.817
   ELEVATION = 7030.82



VOLLMER ROAD
INTERIM CROSS SECTION
SCALE: NTS
INTERIM STA: 29+76.26 – 34+00.93



VOLLMER ROAD
INTERIM CROSS SECTION
SCALE: NTS
INTERIM STA: 34+00.93 – 35+76.70

811 Know what's below. Call before you dig.

OWNER/DEVELOPER STATEMENT

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH ALL OF THE REQUIREMENTS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

JAMES F. MORLEY — DATE 3/3/22

SR LAND, LLC
20 BOULDER CRESCENT, SUITE 201
COLORADO SPRINGS, CO 80903

EL PASO COUNTY STATEMENT

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS DISCRETION.

APPROVED
Engineering Department
04/05/2022 7:16:30 PM
dsdnijkamp
EPC Planning & Community Development Department

JENNIFER IRVINE, P.E.
COUNTY ENGINEER/ECM ADMINISTRATOR

ENGINEER'S STATEMENT

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLAN AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

COLORADO REGISTERED PROFESSIONAL ENGINEER — MIKE A. BRAMLETT — MB — 32314 — 3/2/22

MIKE A. BRAMLETT, P.E. — DATE 3/2/22
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

DISTRICT APPROVALS

THESE DOCUMENTS HAVE BEEN REVIEWED AND APPROVED FOR STORM DRAIN AND ASSOCIATED UTILITY SERVICE CONSTRUCTION.

FOR AND ON BEHALF OF THE STERLING RANCH METRO DISTRICT — DATE 3/3/22

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

PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
SUITE 201
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 471-1742

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	N/A
V-SCALE	N/A
DATE	1/26/22
DESIGNED BY	RAB
DRAWN BY	RAB
CHECKED BY	

STERLING RANCH – VOLLMER ROAD FILING 2
COVER SHEET

SHEET 1 OF 11
JOB NO. 25188.01

GENERAL CONSTRUCTION NOTES:

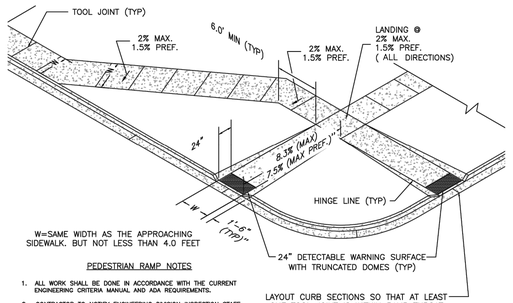
1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
2. THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
3. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
4. ALL BACKFILL, SUB-BASE, AND/OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED PER THE SOILS ENGINEER'S RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY PCD.
5. ALL STATIONING IS CENTERLINE OF IMPROVEMENTS UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE INDICATED AS TOP BACK OF CURB (TBC), ASPHALT (ASP), OR TOP OF INLET OR BOX (TOB).
6. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO EPC ECM APPENDIX K – 1.2C.
7. ALL INTERSECTION ACCESSES TO BE CONSTRUCTED WITH A 25 FOOT SIGHT VISIBILITY TRIANGLES EXCEPT [VOLLMER ROAD, MARKSHEFFEL ROAD, BRAIRGATE PARKWAY] WHICH IS AN ARTERIAL AND A 50 FOOT SIGHT VISIBILITY TRIANGLE IS REQUIRED AND THERE SHALL BE NO OBSTRUCTIONS GREATER THAN 18" IN THIS AREA.
8. ALL CULVERTS AND STORM DRAIN PIPES SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE (HDPE), REINFORCED CONCRETE PIPE (RCP). ALL CULVERTS SHALL BE PLACED COMPLETE WITH FLARED END SECTIONS. ADEQUACY OF MATERIAL THICKNESS FOR ANY CSP INSTALLED SHALL BE VERIFIED BY OWNER'S GEOTECHNICAL ENGINEER TO SUPPORT MINIMUM 50 YEAR DESIGN LIFE. CULVERTS MUST CONFORM TO EPC ECM SECTION 3.32 – CULVERTS.
9. ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNER'S GEOTECHNICAL ENGINEER. OWNER'S GEOTECHNICAL ENGINEER TO BE ON SITE AT THE TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT ENGINEERING DIVISION PRIOR TO CONSTRUCTION.

SIGNING AND STRIPING NOTES:

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PCD.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS"
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES,/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 12" WIDE AND 8' LONG PER CDOT S-627-1.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY PCD PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS:

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   a. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   b. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
   c. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
   d. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PCD INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY PCD AND MUTCD CRITERIA. [IF APPLICABLE, ADDITIONAL SIGNING AND STRIPING NOTES WILL BE PROVIDED.]
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY PCD, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.



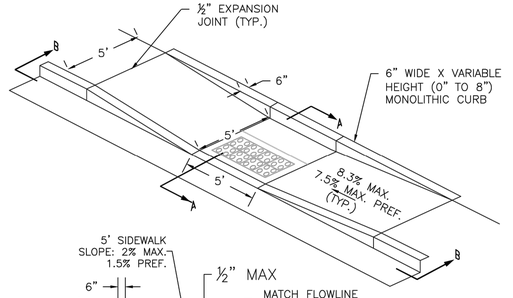
PEDESTRIAN RAMP NOTES

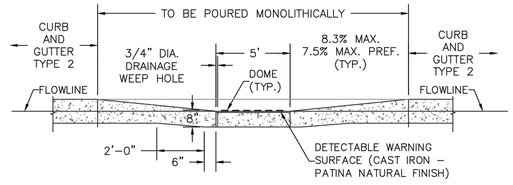
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT ENGINEERING CRITERIA MANUAL AND ADA REQUIREMENTS.
2. CONTRACTOR TO NOTIFY ENGINEERING DIVISION INSPECTION STAFF 48 HOURS PRIOR TO CONCRETE PLACEMENT.
3. PEDESTRIAN CURB RAMP CONSTRUCTION SHALL BE A MINIMUM 4,500 PSI CONCRETE, MINIMUM 4" THICK, NON-COLORED, NON-SCORED, COARSE BROOM FINISH.
4. PEDESTRIAN CURB RAMP LOCATION AND LENGTH MAY REQUIRE MODIFICATION TO MAINTAIN THE 8.3% MAXIMUM RUNNING RAMP SLOPE DUE TO STREET INTERSECTION GRADES AND/OR ALIGNMENTS. SEE ECM SECTION 6.3.6 FOR PEDESTRIAN PUSHBUTTON LOCATION REQUIREMENTS.
5. DETECTABLE WARNING SURFACE SHALL START A MINIMUM OF 6" BUT NOT MORE THAN 8" FROM THE FLOWLINE OF THE CURB AT ANY POINT.
6. DETECTABLE WARNING SURFACE SHALL BE PREFABRICATED, CAST IRON (PATINA NATURAL FINISH) AND IN ACCORDANCE WITH ECM CHAPTER 6 AND SD_2-42. THERMOPLASTIC TRUNCATED DOMES AND PAVERS WILL NOT BE ACCEPTED.
7. THE DETECTABLE WARNING SURFACE SHALL BE 24" IN LENGTH AND THE FULL WIDTH OF THE RAMP.
8. PEDESTRIAN CURB RAMP WIDTH REQUIRED IS SAME AS APPROACHING SIDEWALK; 4' MINIMUM.
9. ALL PEDESTRIAN CURB RAMPS WILL BE PERPENDICULAR TO TRAFFIC WITH THE EXCEPTION OF MID-BLOCK OR TERMINAL RAMPS WHICH MAY BE PARALLEL SUBJECT TO APPROVAL.
10. DRAINAGE STRUCTURES, TRAFFIC SIGNAL/SIGNAGE, UTILITIES/JUNCTION BOXES, OR OTHER OBSTRUCTIONS WITHIN PROPOSED PEDESTRIAN CURB RAMP AREAS AND LANDINGS ARE PROHIBITED.
11. THE COUNTER SLOPE OF THE GUTTER OR ROAD AT THE FOOT OF A RAMP SHALL NOT EXCEED 5%.

GENERAL NOTES

1. WHERE THE 1'-6" FLARED SIDE(S) OF A PERPENDICULAR CURB RAMP IS (ARE) CONTIGUOUS WITH A PEDESTRIAN OR HARD SURFACE AREA (PEDESTRIAN CIRCULATION PATH), THE MAXIMUM FLARE SLOPE SHALL NOT EXCEED 10:1.
2. PEDESTRIAN WALKWAY (PEDESTRIAN ACCESS ROUTE) AND/OR LOCATION OF EXISTING OR FUTURE PEDESTRIAN RAMPS ON OPPOSITE CORNERS SHALL BE REVIEWED BEFORE CONSTRUCTING NEW RAMPS.
3. AT MARKED PEDESTRIAN CROSSINGS, THE BOTTOM OF THE RAMPS, EXCLUSIVE OF THE FLARE SIDES, SHALL BE TOTALLY CONTAINED WITHIN THE MARKINGS.

PEDESTRIAN INTERSECTION RAMP (SD 2-41)
SCALE: NTS



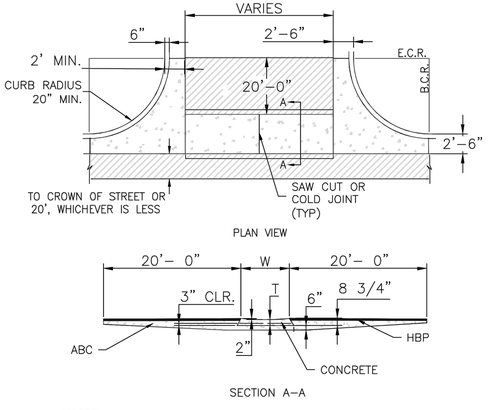


SECTION B-B

SCALE: NOT TO SCALE

PARALLEL PEDESTRIAN RAMP DETAIL (SD 2-50)
SCALE: NTS

EPC 4/5/2022

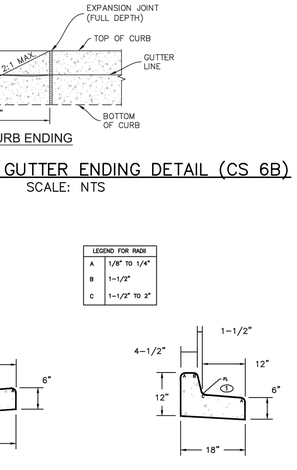


SECTION A-A

NOTES

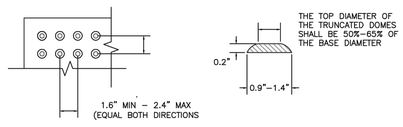
1. W – WIDTH SHALL BE 6' FOR LOCAL, 8' FOR COLLECTORS, AND 10' FOR ARTERIAL ROADS.
2. T – SQUARED-OFF RETURN TO BE POURED MONOLITHICALLY, 8" PCC FOR LOCAL ROADS, 9" FOR COLLECTORS WITH 6x6 – 4.4 W.W.F. OR #4 REINFORCING BAR @ 18" EACH WAY.
3. ▨ = 3" MINIMUM ASPHALT DEPTH (2 LIFTS).
4. DESIGN TO SPECIFY ELEVATIONS AT PI AND PCR.

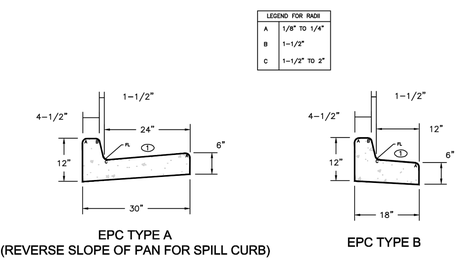
TYPICAL CROSS PAN LAYOUT DETAIL (SD 2-26)
SCALE: NTS



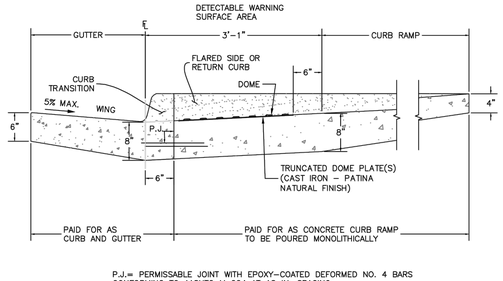
TYPICAL CURB & GUTTER ENDING DETAIL (CS 6B)
SCALE: NTS

TRUNCATED DOME DETAILS





TYPICAL CURB & GUTTER DETAILS DETAIL (SD 2-20)
SCALE: NTS



P.J.= PERMISSABLE JOINT WITH EPOXY-COATED DEFORMED NO. 4 BARS CONFORMING TO AASHTO M 284 AT 18 IN. SPACING

DETECTABLE WARNING SURFACE DETAILS (SD 2-42)
SCALE: NTS

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BY	DATE	No.	REVISION

H-SCALE	AS NOTED
V-SCALE	N/A
DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

STERLING RANCH – VOLLMER ROAD FILING 2
NOTES AND DETAILS

ENGINEER'S STATEMENT

STANDARD DETAILS SHOWN WERE REVIEWED ONLY AS TO THEIR APPLICATION ON THIS PROJECT.

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

32314 — 3/7/22
DATE

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

SHEET 2 OF 11

JOB NO. 25188.01

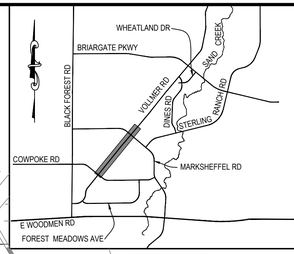
Vollmer South CL										
Point	Design Pt	Station	Distance	Bearing	Northing	Easting	Radius	Delta	Length	Tangent
C1	PC PI PT	10+00.00 11+22.75 12+45.48			410021.2566 410116.7139 410210.2482	232043.6991 232120.8669 232200.3545	10000	1°24'23"	245.48	122.75
L1	Begin Line End Line	12+45.48 25+49.93	1304.444	N40° 21' 27.79"E	410210.2482 411204.2559	232200.3545 233045.0573				

— ASPHALT TO BE REMOVED

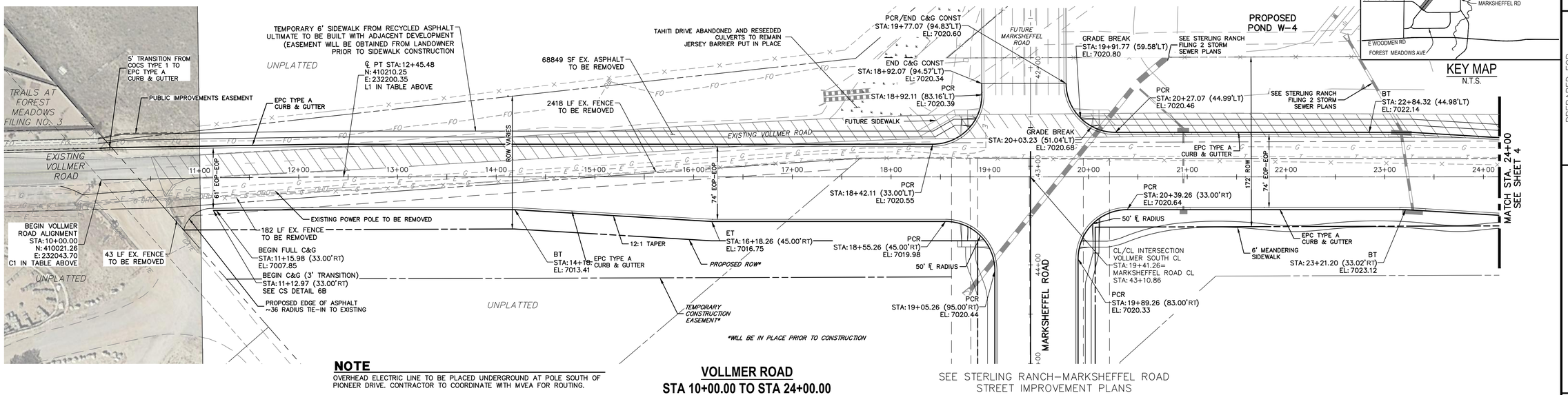
50 25 0 50 100

HORIZONTAL
ORIGINAL SCALE: 1" = 50'
VERTICAL
ORIGINAL SCALE: 1" = 5'

811 Know what's below. Call before you dig.



KEY MAP
N.T.S.



SEE STERLING RANCH–MARKSHEFFEL ROAD STREET IMPROVEMENT PLANS

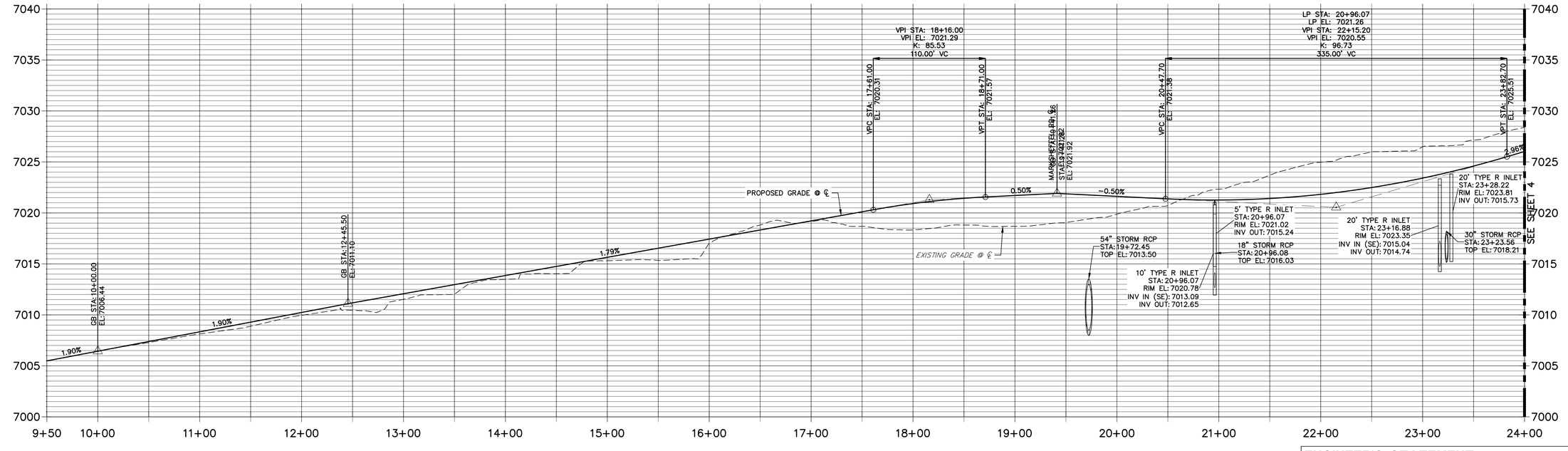
NOTE

OVERHEAD ELECTRIC LINE TO BE PLACED UNDERGROUND AT POLE SOUTH OF PIONEER DRIVE. CONTRACTOR TO COORDINATE WITH MVEA FOR ROUTING.

CONTRACTOR TO COORDINATE WITH BLACK HILLS AND OTHER EXISTING UTILITIES WITHIN PROJECT LIMITS TO COORDINATE RELOCATION IF NECESSARY

VOLLMER ROAD
STA 10+00.00 TO STA 24+00.00

VOLLMER SOUTH CL PROFILE
STA 9+50.00 TO 24+00.00



VOLLMER ROAD
STA 10+00.00 TO STA 23+50.00

EPC 4/5/2022

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

32314 — 3/7/22

COLORADO REGISTERED MIKE A. BRAMLETT PROFESSIONAL ENGINEER

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

PREPARED FOR
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Fort Collins 970-491-9888 • www.jrengineering.com

No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	1"=5'
DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

STERLING RANCH – VOLLMER ROAD FILING 2
PLAN & PROFILE

SHEET 3 OF 11

JOB NO. 25188.01

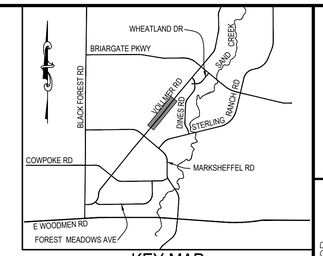
Vollmer South CL										
Point	Design Pt	Station	Distance	Bearing	Northing	Easting	Radius	Delta	Length	Tangent
L2	Begin Line End Line	25+49.93 35+75.83	1025.900	N37° 33' 44.75"E	411204.2559 412017.4765	233045.0573 233670.4724				
L3	Begin Line End Line	35+75.83 37+99.22	223.394	N39° 52' 40.53"E	412017.4765 412188.9114	233670.4724 233813.7020				

— ASPHALT TO BE REMOVED

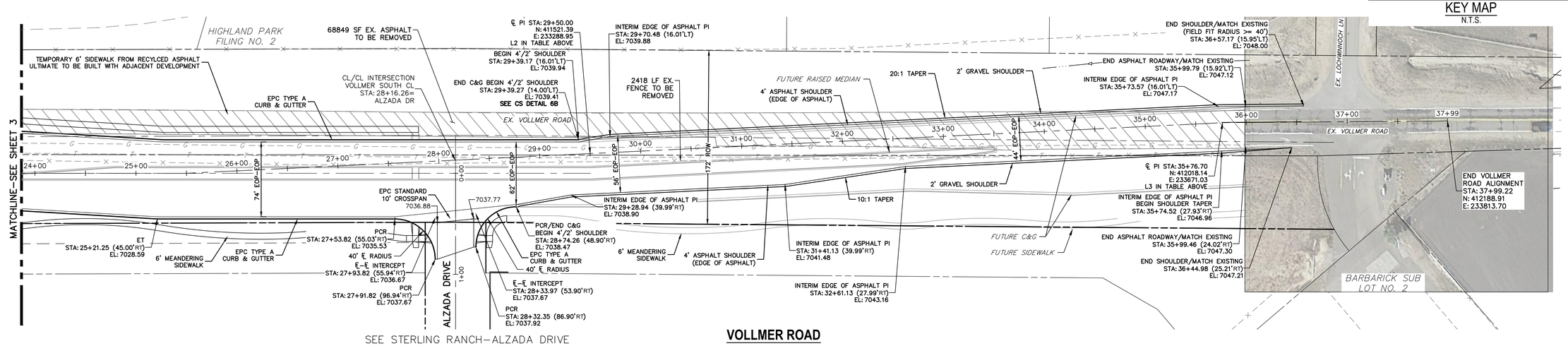
50 25 0 50 100

HORIZONTAL
ORIGINAL SCALE: 1" = 50'
VERTICAL
ORIGINAL SCALE: 1" = 5'

811 Know what's below. Call before you dig.



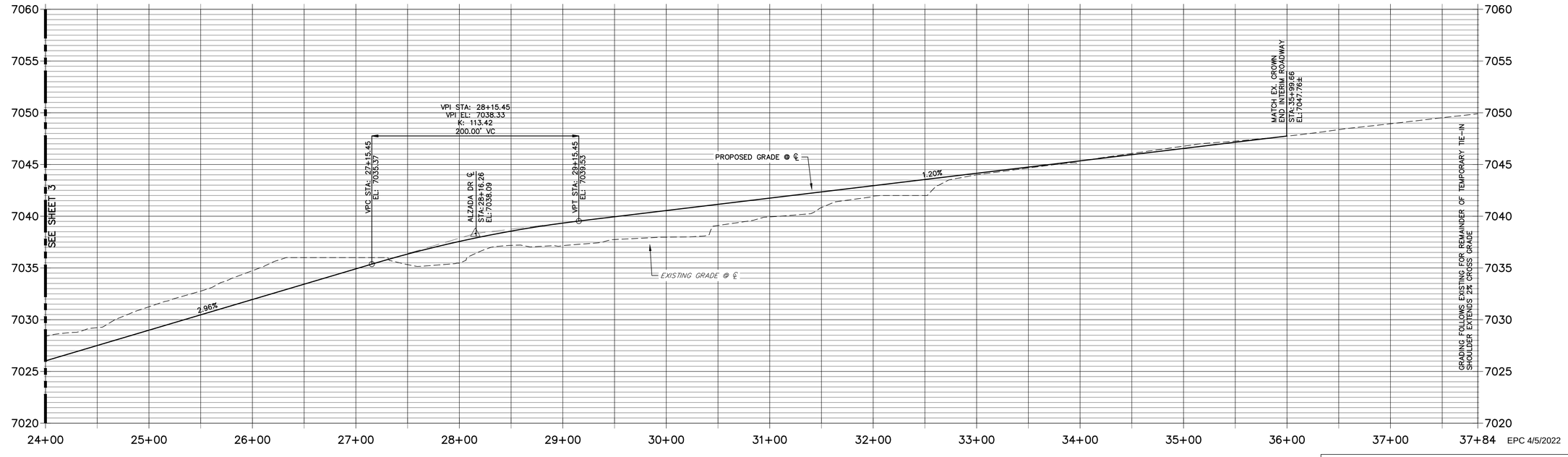
KEY MAP
N.T.S.



SEE STERLING RANCH–ALZADA DRIVE STREET IMPROVEMENT PLANS

VOLLMER ROAD
STA 24+00.00 TO STA 38+00.00

VOLLMER SOUTH CL PROFILE
STA 24+00.00 TO 37+84.39



ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

3/7/22
DATE

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

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No.	REVISION	BY	DATE

H-SCALE	1"=50'	DESIGNED BY	RAB
V-SCALE	1"=5'	DRAWN BY	KRW
DATE	3/7/22	CHECKED BY	

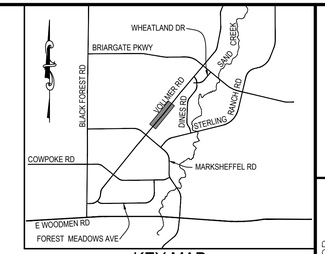
STERLING RANCH – VOLLMER ROAD FILING 2
PLAN & PROFILE

SHEET 4 OF 11

JOB NO. 25188.01

20 10 0 20 40
ORIGINAL SCALE: 1" = 20'

Know what's below.
Call before you dig.



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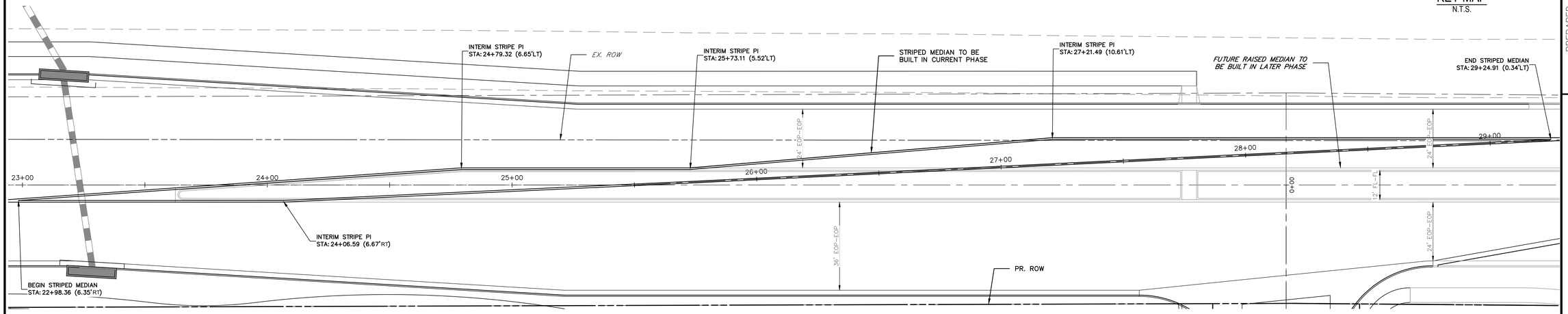

VOLLMER ROAD INTERIM STRIPED MEDIAN (AND FUTURE RAISED MEDIAN) STA 22+98.00 TO STA 29+25.00

EPC 4/5/2022

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

Mike A. Bramlett 32314 3/7/22

MIKE A. BRAMLETT, P.E. DATE
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

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

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DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

STERLING RANCH – VOLLMER ROAD FILING 2

MEDIAN DETAILS

SHEET 5 OF 11

JOB NO. 25188.01

STRIPING LEGEND		
STRIPE	PAVEMENT MARKINGS	MARKING DESCRIPTION
②	DOUBLE CENTERLINE LANE MARKINGS (EPOXY)	PARALLEL SOLID YELLOW, 4" WIDE, 12" APART
③	LANE LANES (EPOXY)	BROKEN WHITE, 4" WIDE, 10' SEGMENTS WITH 30" GAPS
④	BROKEN EDGE/BIKE LANE LINES (EPOXY)	BROKEN WHITE, 4" WIDE, 5' SEGMENTS WITH 15" GAPS
⑤	EDGE/BIKE LANE LINES (EPOXY)	SOLID WHITE, 4" WIDE
⑥	CHANNELIZING LINES (EPOXY)	SOLID WHITE, 8" WIDE
⑦	STOP LINES (THERMO PLASTIC)	SOLID WHITE, 24" WIDE

NOTE: ALL STRIPING INSTALLATION SHALL BE PER COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) "M&S STANDARDS" STANDARD PLAN NO. S-627-1.

NOTE TO CONTRACTOR:

1. ALL 4" AND 8" SOLID OR SKIP PAVEMENT MARKINGS ARE TO BE EPOXY.
2. SIGNS AND POLES SHALL BE PER CDOT STANDARDS S-614-8, S-1614-2, AND S-614-3, LATEST REVISION.
3. ALL SIGNAGE INSTALLATION IS TO BE IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

50 25 0 50 100
ORIGINAL SCALE: 1" = 50'

Know what's below. Call before you dig.

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PREPARED FOR
SR LAND, LLC
20 BOULDER CRESCENT
SUITE 201
COLORADO SPRINGS, CO 80903
JAMES F. MORLEY
(719) 471-1742

J·R ENGINEERING
A Westrian Company
Centennial 303-740-9393 • Colorado Springs 719-593-2593
Fort Collins 970-491-9888 • www.jrengineering.com

UNPLATTED
EXISTING TAHITI DRIVE
TAHITI DRIVE ABANDONED AND RESEEDED
CULVERTS TO REMAIN
JERSEY BARRIER PUT IN PLACE
FUTURE MARKSHEFFEL ROAD
JERSEY BARRIERS
EXISTING HIGHLAND PARK FILING NO. 2
EXISTING TRAILS AT FOREST MEADOWS FILING NO. 3
EXISTING VOLLMER ROAD
25:1 REDIRECT
445.00'
BARRICADES TO BLOCK ACCESS TO MARKSHEFFEL ROAD UNTIL CONSTRUCTED
RIGHT TURN LANE TO BE HATCHED OFF UNTIL FUTURE MARKSHEFFEL ROAD (WEST LEG) IS CONSTRUCTED
12:1 TAPER
245.00'
EXISTING SIGN MAY BE RE-USED WITH COUNTY TRAFFIC ENGINEERING APPROVAL
SPEED LIMIT 35
R2-1 (36"x48")
RIGHT LANE MUST TURN RIGHT
R3-7R (36"x36")
VOLLMER ROAD
MARKSHEFFEL ROAD
D-3 (6" FONT)
MARKSHEFFEL ROAD
STOP
R1-1 (36"x36")
BARRICADES TO BLOCK ACCESS TO MARKSHEFFEL ROAD UNTIL CITY AND COUNTY APPROVE
SEE STERLING RANCH-MARKSHEFFEL ROAD PLANS
FUTURE STERLING RANCH SUBDIVISION FILING NO. 2
MATCHLINE - CONTINUED BELOW LEFT

VOLLMER ROAD INTERIM CONDITION

MATCHLINE - CONTINUED ABOVE RIGHT
TEMPORARY STRIPED MEDIAN (TO PROVIDE RIRO MOVEMENT) UNTIL ULTIMATE RAISED MEDIAN IS BUILT IN FUTURE PHASE
EXISTING HIGHLAND PARK FILING NO. 2
R3-2L (30"x30")
20:1 REDIRECT
VOLLMER ROAD
LOCHWINNOCH LANE
D-3 (6" FONT)
EXISTING LOCHWINNOCH LANE
SPEED LIMIT 35
R2-1 (36"x48")
10:1 MERGE TAPER
270.00'
120.00'
RIGHT LANE MUST TURN RIGHT
R3-7R (36"x36")
ALZADA DRIVE
ROAD CLOSED
TYPE 3 M-C BARRICADE W/ R11-2 ROAD CLOSED SIGN
STERLING RANCH SUBDIVISION FILING NO. 2

EPC 4/5/2022

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

32314 — 3/7/22 DATE

No.	REVISION	BY	DATE

H-SCALE	1"=50'
V-SCALE	N/A
DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

STERLING RANCH – VOLLMER ROAD FILING 2
SIGNAGE & STRIPING

SHEET 6 OF 11
JOB NO. 25188.01

STRIPING LEGEND		
STRIPE	PAVEMENT MARKINGS	MARKING DESCRIPTION
②	DOUBLE CENTERLINE LANE MARKINGS (EPOXY)	PARALLEL SOLID YELLOW, 4" WIDE, 12" APART
③	LANE LANES (EPOXY)	BROKEN WHITE, 4" WIDE, 10' SEGMENTS WITH 30" GAPS
④	BROKEN EDGE/BIKE LANE LINES (EPOXY)	BROKEN WHITE, 4" WIDE, 5' SEGMENTS WITH 15" GAPS
⑤	EDGE/BIKE LANE LINES (EPOXY)	SOLID WHITE, 4" WIDE
⑥	CHANNELIZING LINES (EPOXY)	SOLID WHITE, 8" WIDE
⑦	STOP LINES (THERMO PLASTIC)	SOLID WHITE, 24" WIDE

NOTE: ALL STRIPING INSTALLATION SHALL BE PER COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) "M&S STANDARDS" STANDARD PLAN NO. S-627-1.

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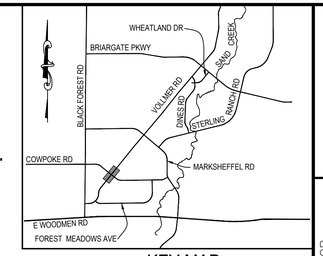
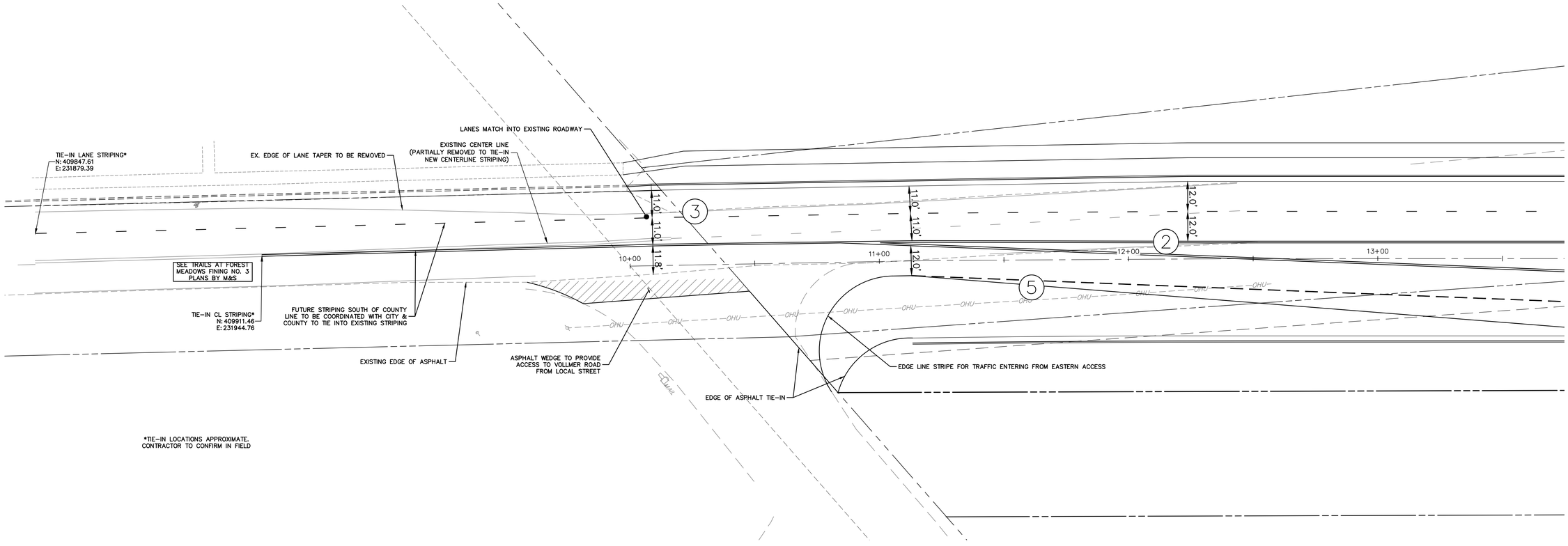
20 10 0 20 40
ORIGINAL SCALE: 1" = 20'

811 Know what's below. Call before you dig.



KEY MAP
N.T.S.



*TIE-IN LOCATIONS APPROXIMATE. CONTRACTOR TO CONFIRM IN FIELD

VOLLMER ROAD SOUTHERN TIE-IN TO EXISTING

EPC 4/5/2022

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

3/7/22
DATE

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No.	REVISION	BY	DATE

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STERLING RANCH – VOLLMER ROAD FILING 2

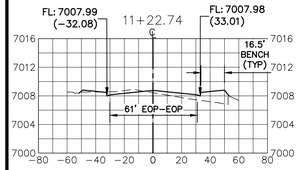
SIGNAGE & STRIPING

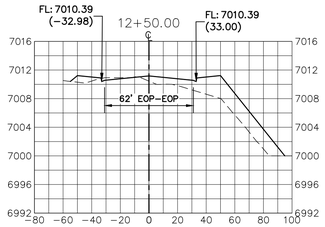
SHEET 7 OF 11

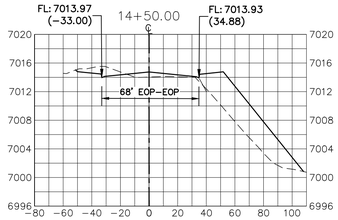
JOB NO. 25188.01

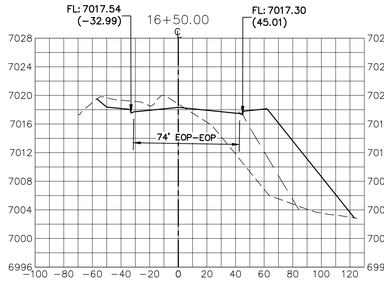
LEGEND

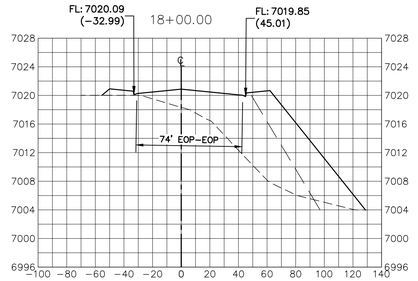
PROPOSED SURFACE
EXISTING SURFACE
FILING NO. 2 SURFACE

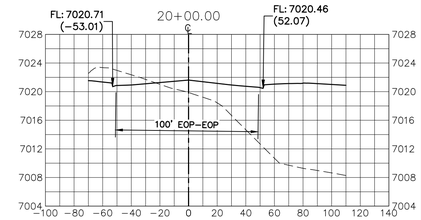


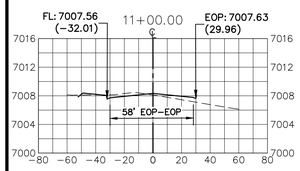


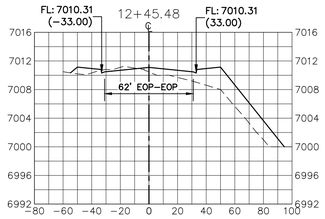


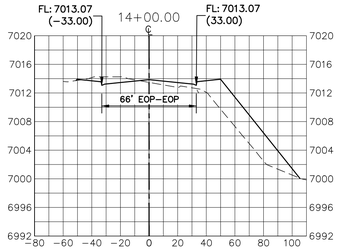


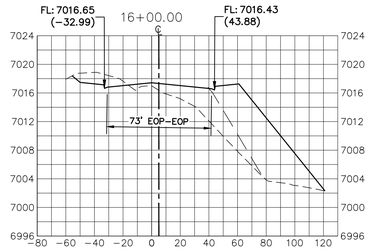


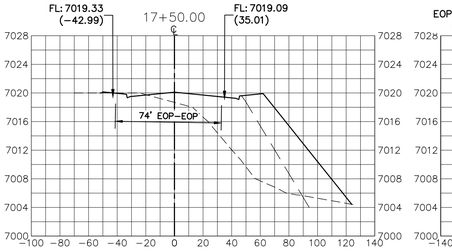


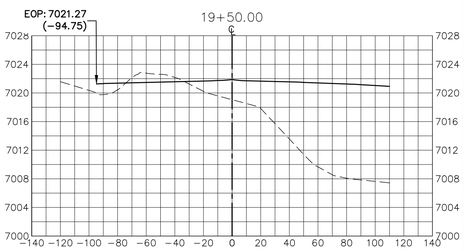


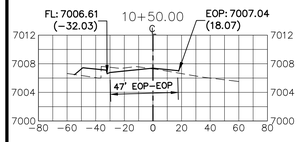


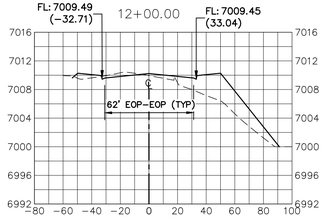


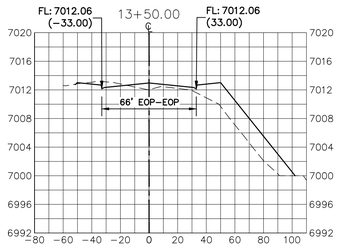


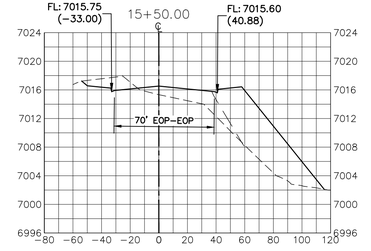


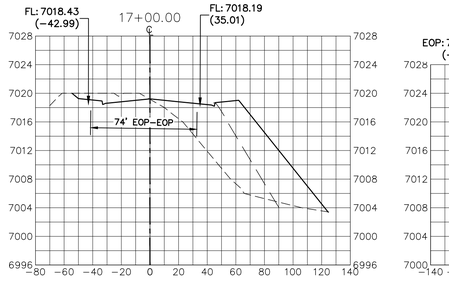


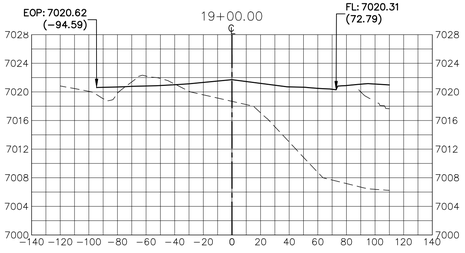


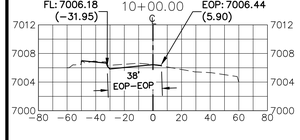


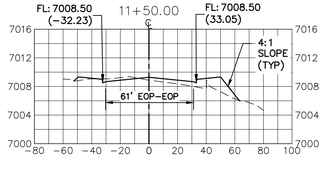


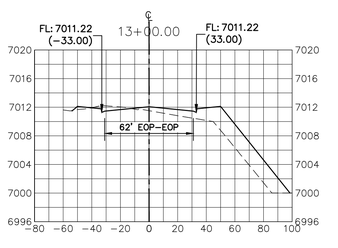


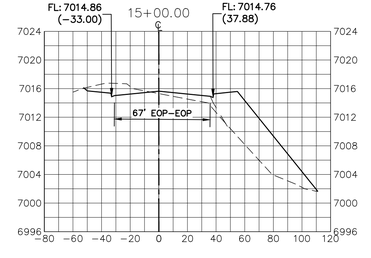


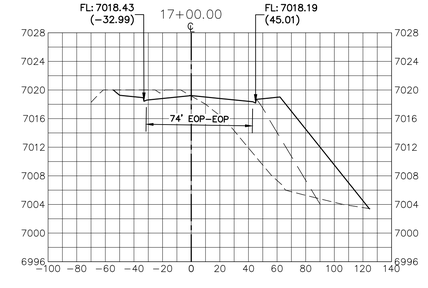


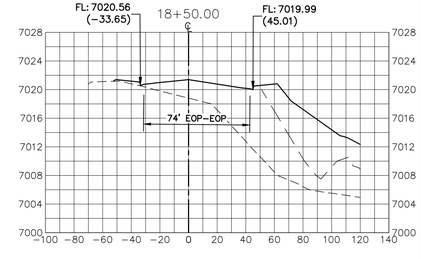












EPC 4/5/2022

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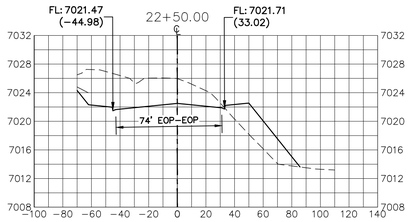
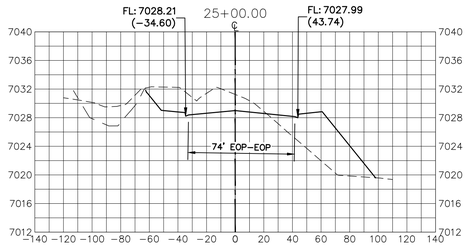
No.	REVISION	BY	DATE

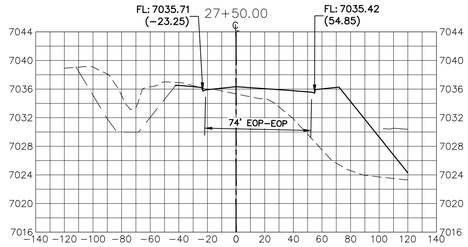
H-SCALE	1"=50'
V-SCALE	1"=10'
DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

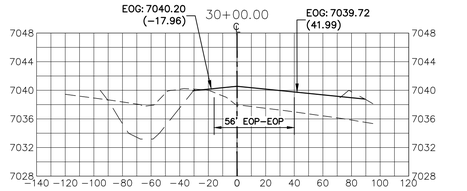
STERLING RANCH – VOLLMER ROAD FILING 2
CROSS SECTIONS

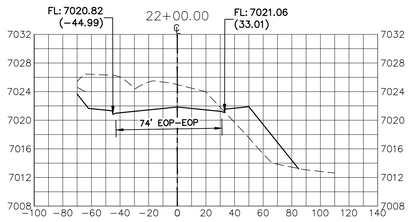
SHEET 8 OF 11
JOB NO. 25188.01

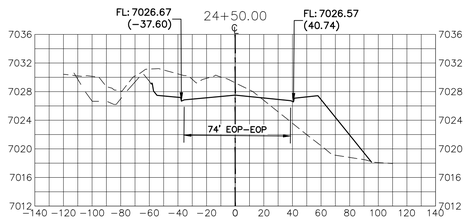


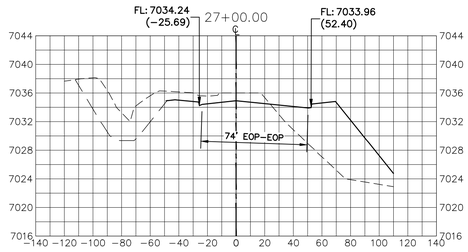


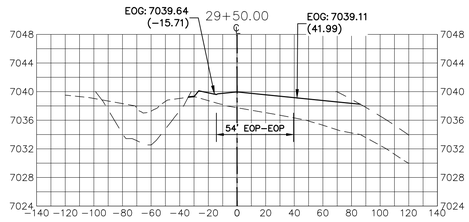


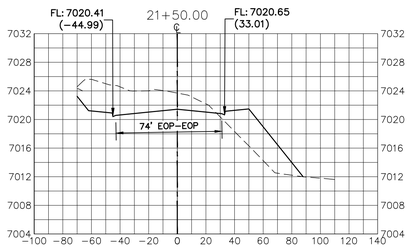


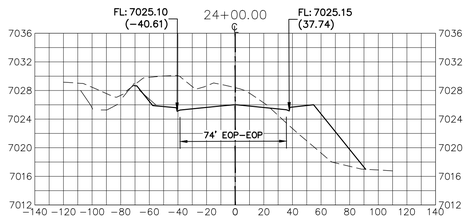


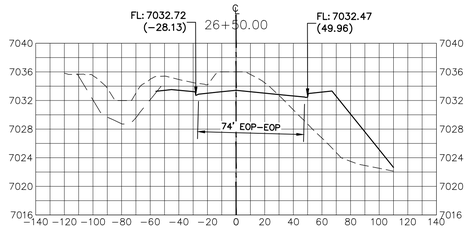


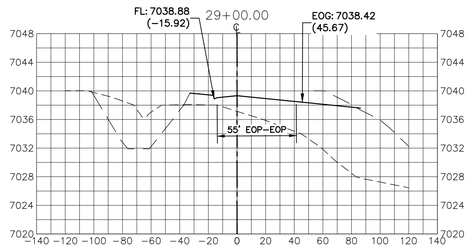


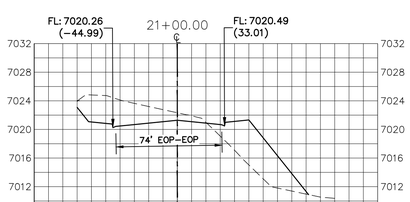


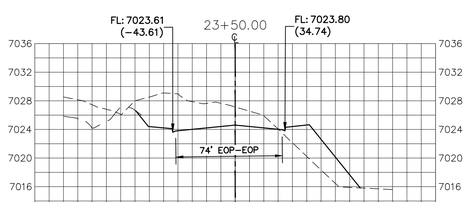


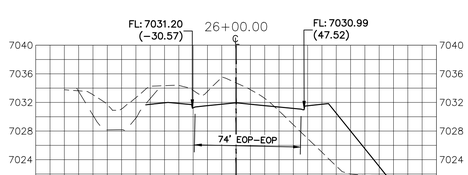


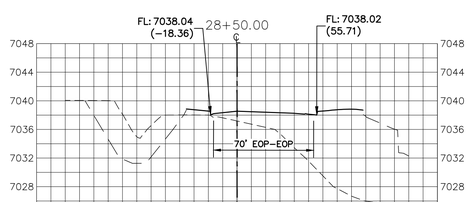


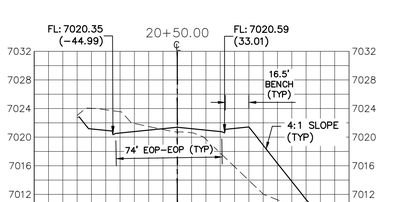


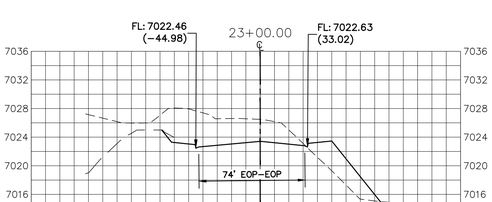


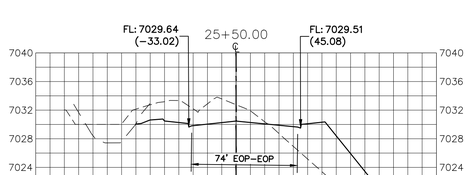


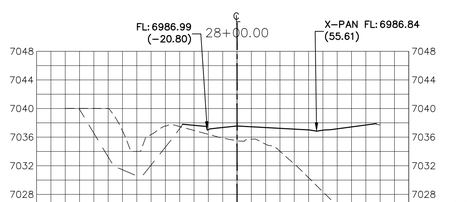












EPC 4/5/2022

LEGEND

- PROPOSED SURFACE
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JAMES F. MORLEY
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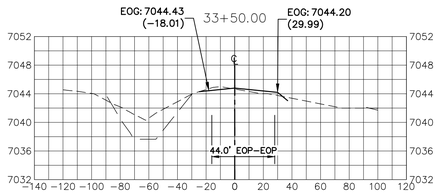
Fort Collins 970–491–9888 • www.jrengineering.com

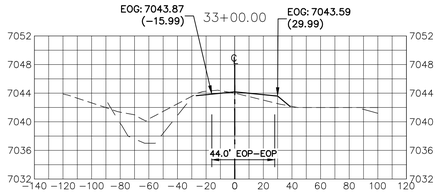
No.	REVISION	BY	DATE

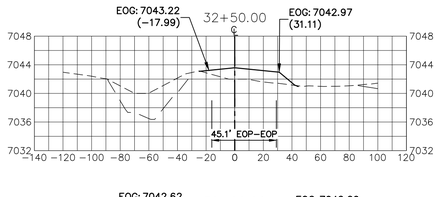
H–SCALE	1"=50'
V–SCALE	1"=10'
DATE	3/7/22
DESIGNED BY	RAB
DRAWN BY	KRW
CHECKED BY	

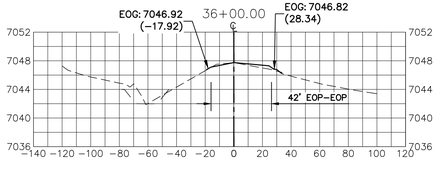
STERLING RANCH – VOLLMER ROAD FILING 2
CROSS SECTIONS

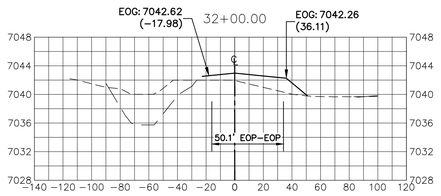
SHEET 9 OF 11
JOB NO. 25188.01

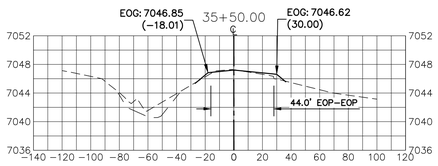


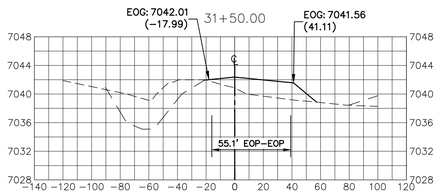


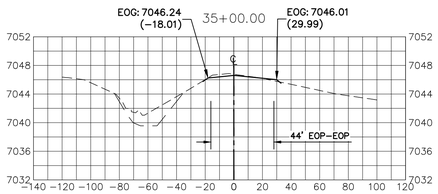


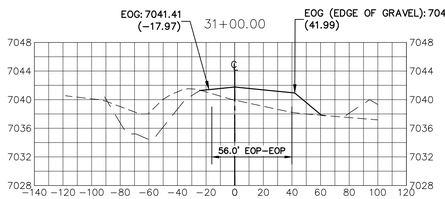


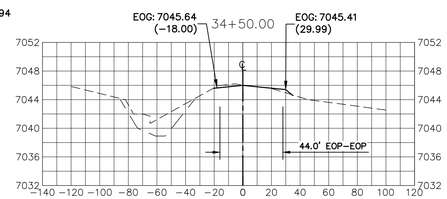


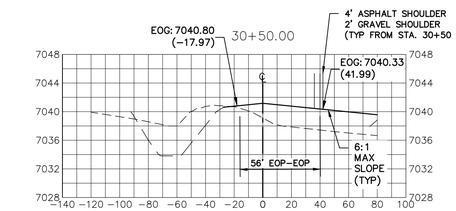


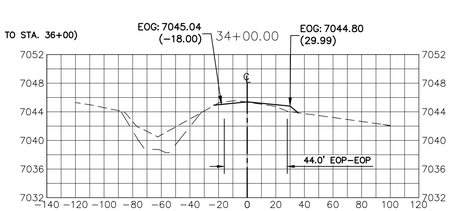












EPC 4/5/2022

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STERLING RANCH – VOLLMER ROAD FILING 2

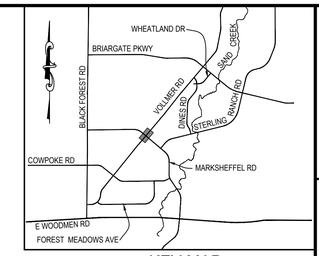
CROSS SECTIONS

SHEET 10 OF 11

JOB NO. 25188.01

20 10 0 20 40
ORIGINAL SCALE: 1" = 20'

811 Know what's below. Call before you dig.



KEY MAP
N.T.S.

PCR/END C&G CONST
STA: 19+77.07 (94.83'LT)
EL: 7020.60

SPOT EL (25' SPACING TYP.)
STA: 19+17.11 (85.99'LT)
N: 410777.72
E: 232569.74
EL: 7021.00

END C&G CONST
STA: 18+92.07 (94.57'LT)
EL: 7020.34

PCR
STA: 18+92.11 (83.16'LT)
EL: 7020.39

GRADE BREAK
STA: 19+91.77 (59.58'LT)
EL: 7020.80

PCR
STA: 20+27.07 (44.99'LT)
EL: 7020.46

SPOT EL (25' SPACING TYP.)
STA: 20+42.11 (35.99'LT)
N: 410840.60
E: 232688.79
EL: 7020.69

GRADE BREAK
STA: 20+03.23 (51.04'LT)
EL: 7020.68

PCR
STA: 18+42.11 (33.00'LT)
EL: 7020.55

SPOT EL (25' SPACING TYP.)
STA: 18+42.11 (39.01'RT)
N: 410639.63
E: 232616.43
EL: 7020.23

PCR
STA: 18+55.26 (45.00'RT)
EL: 7019.98

PCR
STA: 19+05.26 (95.00'RT)
EL: 7020.44

SPOT EL (25' SPACING TYP.)
STA: 19+67.11 (89.01'RT)
N: 410702.50
E: 232735.47
EL: 7020.82

PCR
STA: 20+39.26 (33.00'RT)
EL: 7020.64

CL/CL INTERSECTION
VOLLMER SOUTH CL
STA: 19+41.26=
MARKSHEFFEL ROAD CL
STA: 43+10.86

PCR
STA: 19+89.26 (83.00'RT)
EL: 7020.33

EPC 4/5/2022

VOLLMER ROAD
INTERSECTION AT MARKSHEFFEL ROAD DETAIL

ENGINEER'S STATEMENT

PREPARED UNDER MY DIRECT SUPERVISION AND ON BEHALF OF JR ENGINEERING

Mike A. Bramlett 3/7/22

MIKE A. BRAMLETT, P.E.
COLORADO P.E. 32314
FOR AND ON BEHALF OF JR ENGINEERING, LLC

COLORADO REGISTERED MIKE A. BRAMLETT 32314 PROFESSIONAL ENGINEER

DATE

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INTERSECTION DETAIL

SHEET 11 OF 11

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