TRAFFIC IMPACT STUDY

ELK VIEW ESTATES

El Paso County, CO

PREPARED FOR:
Elk Ridge Developments, LLC

PREPARED BY:
Brian Horan, PE, PTOE
Daniela Gonzalez

Galloway & Company, LLC
5500 Greenwood Plaza Blvd, Suite 200
Greenwood Village, CO 80111

COLORADO LICENSED
BRIAN J. HORAN
0053042
05/20/2026
PROFESSIONAL ENGINEER

DATE:
May 20, 2026

PCD File no. SF266

TABLE OF CONTENTS

Executive Summary 4
Site Location and Study Area 4
Description of Proposed Development 4
Conclusions and Recommendations 4
Conclusions 4
Recommendations 4
I. Introduction 5
Overview 5
Site Location and Study Area 5
Site Description and Access 6
Figure 1-1 Site Location 7
Figure 1-2 Site Plan 8
Figure 1-3 Existing Zoning 9
II. Background Information 10
Study Area 10
Study Methodology 10
Existing Roadway Network 10
Figure 2-1 Existing Lane Use and Traffic Control 11
III. Analysis of Existing Conditions 12
Traffic Volumes 12
Operational Analysis 12
Existing Intersection Queues 12
Figure 3-1 Existing Volumes 13
Figure 3-2 Existing LOS 14
Table 3-1 Existing LOS 15
Table 3-2 Existing Queues 16
IV. Site Analysis 17
Overview 17
Proposed Site Access 17
Trip Generation 17
Figure 4-1 Future Lane Use and Traffic Control 18
Figure 4-2 Site Trips 19
Table 4-1 Site Trip Generation 20
V. Analysis of Future Conditions with Site Development 21

Short Term (2026) Future Traffic Forecasts 21
Short Term (2026) Future Levels of Service with Proposed Development 21
Short Term (2026) Future Queuing 21
Long Term (2046) Analysis 21
Figure 5-1 Future Forecasts 22
Figure 5-2 Future Levels of Service 23
Table 5-1 Future Levels of Service 24
Table 5-2 Future Queues 25
VI. Conclusions and Recommendations 26
Conclusions 26
Recommendations 26

Appendices:

A. Full Sized Conceptual Site Plan
B. LOS Descriptions
C. Traffic Counts
D. Existing Synchro Outputs
E. Future (with site development) Synchro Outputs

Executive Summary

Site Location and Study Area

The property that comprises the application area for the proposed development is approximately 17.1 acres in size and is identified as El Paso County Parcel Number 6223000044. It is located north of Old Ranch Road and east of Studebaker Street in Colorado Springs, CO. It is currently zoned Residential Rural – 5 acres and vacant. The proposed development seeks to rezone the parcel from Residential Rural – 5 acres (RR-5) to Residential Rural – 2.5 acres (RR-2.5).

Description of Proposed Development

The Applicant, Elk Ridge Developments, LLC, seeks to rezone the property from RR-5 to RR-2.5 and subdivide the property to develop into six (6) residential lots for single family detached housing uses. Site access is proposed via one new full movement access on Old Ranch Road along the eastern boundary of the site.

Conclusions and Recommendations

Conclusions

Based on the results of this traffic impact study, the following may be concluded:

- Under existing traffic conditions, the unsignalized movements for the intersection of Old Ranch Road/Studebaker Street currently operate at levels of service (LOS) “A” in the weekday AM and PM peak hours and no queuing related concerns are currently present in the study area.

- The proposed site development would generate, upon completion and full occupancy, 6 new weekday AM and 6 new weekday PM peak hour vehicle trips as well as 57 new weekday daily trips.

- Under both short and long term total future traffic conditions, with the development of the subject site, the movements for the unsignalized intersections within the study area, including the proposed site access, are forecasted to operate at LOS “B” or better in the weekday AM and PM peak hours and no queueing related concerns were identified.

Recommendations

- It is recommended that the Applicant provide access consistent with the site plan contained herein.

- Turn lanes are not warranted due to the anticipated number of turning movements at the study intersections.

I. Introduction

Overview

This report presents the results of a Traffic Impact Study (TIS) conducted in support of a rezoning / map amendment application to develop residential uses in El Paso County, CO. Currently the site is vacant.

Per the requirements of the El Paso County, a Transportation Impact Study is required to support the proposed rezoning.

Site Location and Study Area

The property that comprises the application area for the proposed development is approximately 17.1 acres in size and is identified as El Paso County Parcel Number 6223000044. It is located north of Old Ranch Road and east of Studebaker Street in Colorado Springs, CO, as shown on Figure 1-1. It is currently zoned RR-5 and vacant. The proposed development seeks to rezone the parcel from RR-5 to RR-2.5. Site access is proposed via one new full movement access on Old Ranch Road along the eastern boundary of the site. Old Ranch Road is owned and maintained by the City.

The Applicant, Elk Ridge Developments, LLC, seeks to rezone and subdivide the property to develop six (6) single family detached housing uses. A reduction of the Applicant's proposed conceptual site plan is provided on Figure 1-2. A full-size copy of the plan is provided in Appendix A.

Tasks undertaken in the course of this study included the following:

1. Reviewed the Applicant's proposed development plans and other background data.

2. Conducted a virtual field reconnaissance of existing roadway and intersection geometries, traffic controls, and speed limits.

3. Collected weekday AM and PM peak hour turning movement counts at the key intersection.

4. Analyzed existing levels of service at each of the key study intersections based on the methodologies set forth in the Highway Capacity Guidelines (HCM) 7th Edition as reported by Synchro version 12.

5. Estimated the number of AM and PM peak hour trips that would be generated by the proposed use based on the Institute of Transportation Engineers (ITE) Trip Generation 11th Edition rates/equations and methodologies.

6. Prepared AM and PM peak hour total future traffic forecasts based on existing volumes plus site traffic assignments for the build-out conditions.

7. Calculated total future levels of service for each of the key study intersections based on projected total future traffic forecasts, total future traffic controls and intersection geometries.

8. Identified roadway improvements required to accommodate future traffic volumes as necessary.

Sources of data for this analysis included the Institute of Transportation Engineers (ITE), Trip Generation, 11th edition, the Highway Capacity Guidelines (HCM) 7th, Synchro 12, Pikes Peak Area Council of Governments (PPACG), Elk Ridge Developments, LLC, El Paso County, Colorado and the files/library of Galloway.

Site Description and Access

Site Conditions
The terrain proximate to and surrounding the site is generally classified as “level”.

Hazardous Conditions
Based on the field reconnaissance in the vicinity of the subject site, no hazardous features or constraints were identified.

Proposed Site Access
Access to the site is proposed via one new full movement access on Old Ranch Road along the eastern boundary of the site.

Existing Zoning
The subject site is currently zoned RR-5 and vacant. The proposed development seeks to rezone the parcel from RR-5 to RR-2.5. Figure 1-3 depicts the existing zoning associated with the subject property, as well as neighboring properties as shown on the El Paso County zoning map.

Nearby Uses
The properties surrounding the subject site are generally developed with residential uses.

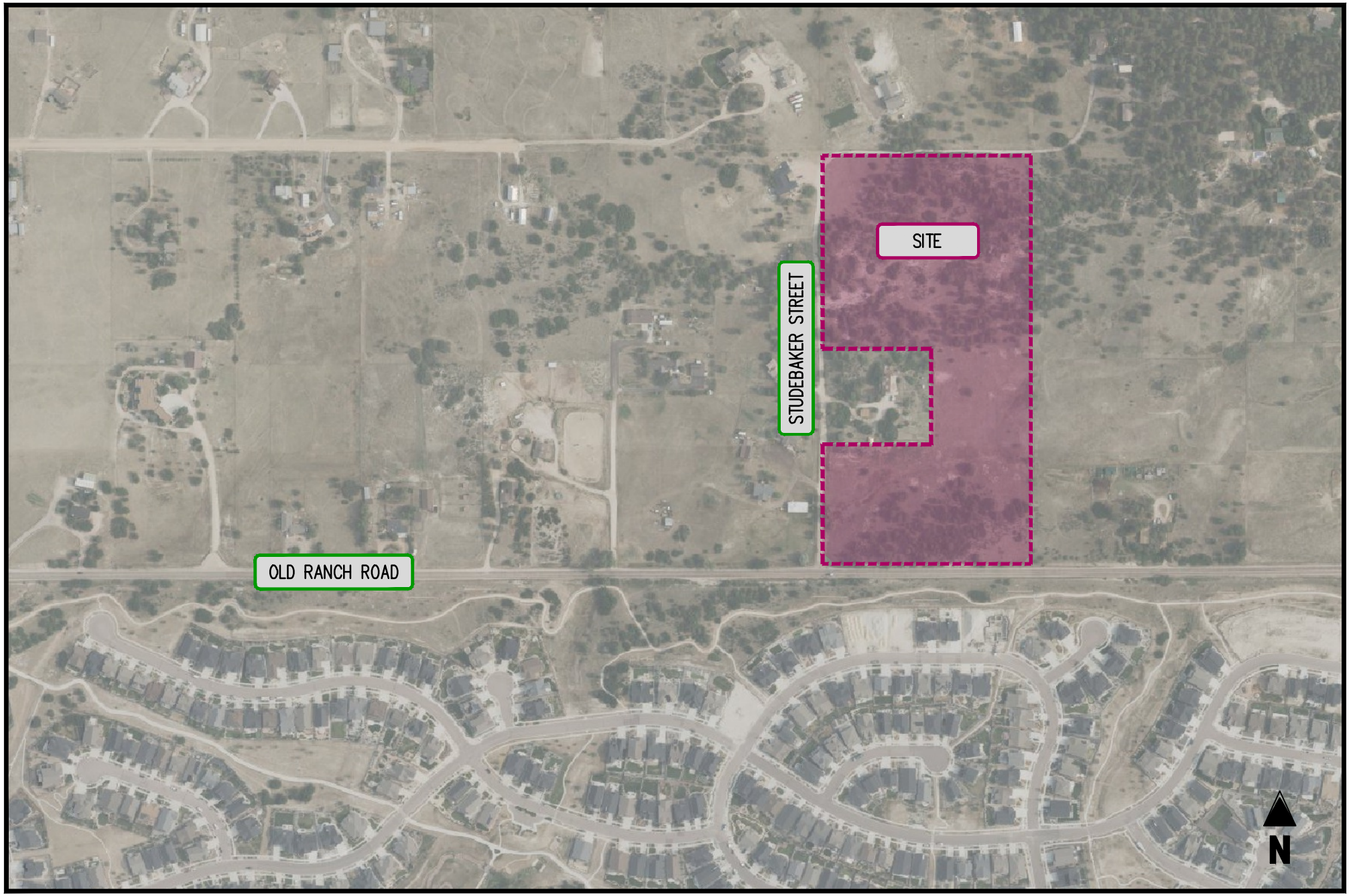


FIGURE 1-1
SITE LOCATION

ELK VIEW ESTATES
EL PASO COUNTY, CO

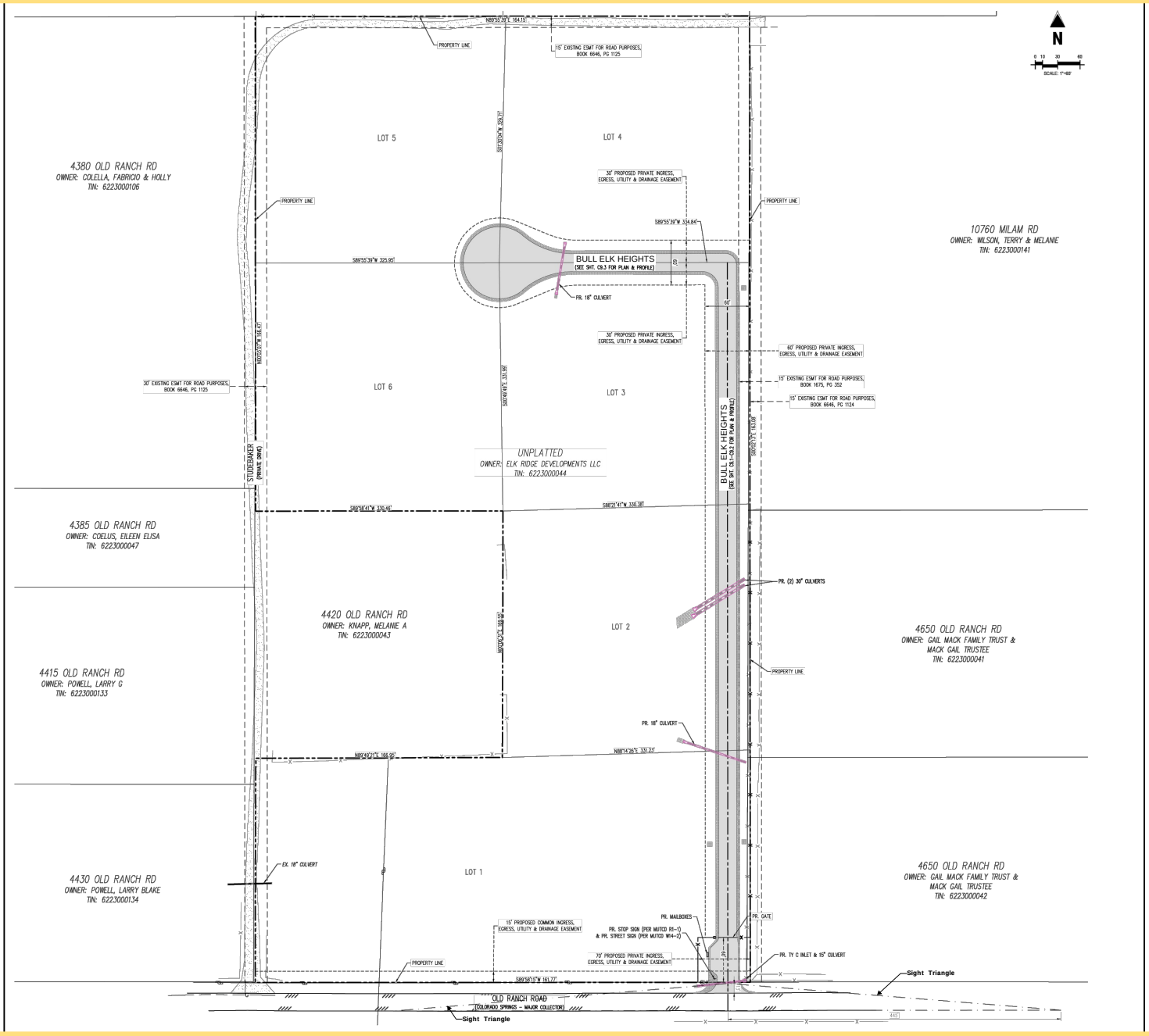


FIGURE 1-2
SITE PLAN

ELK VIEW ESTATES
EL PASO COUNTY, CO

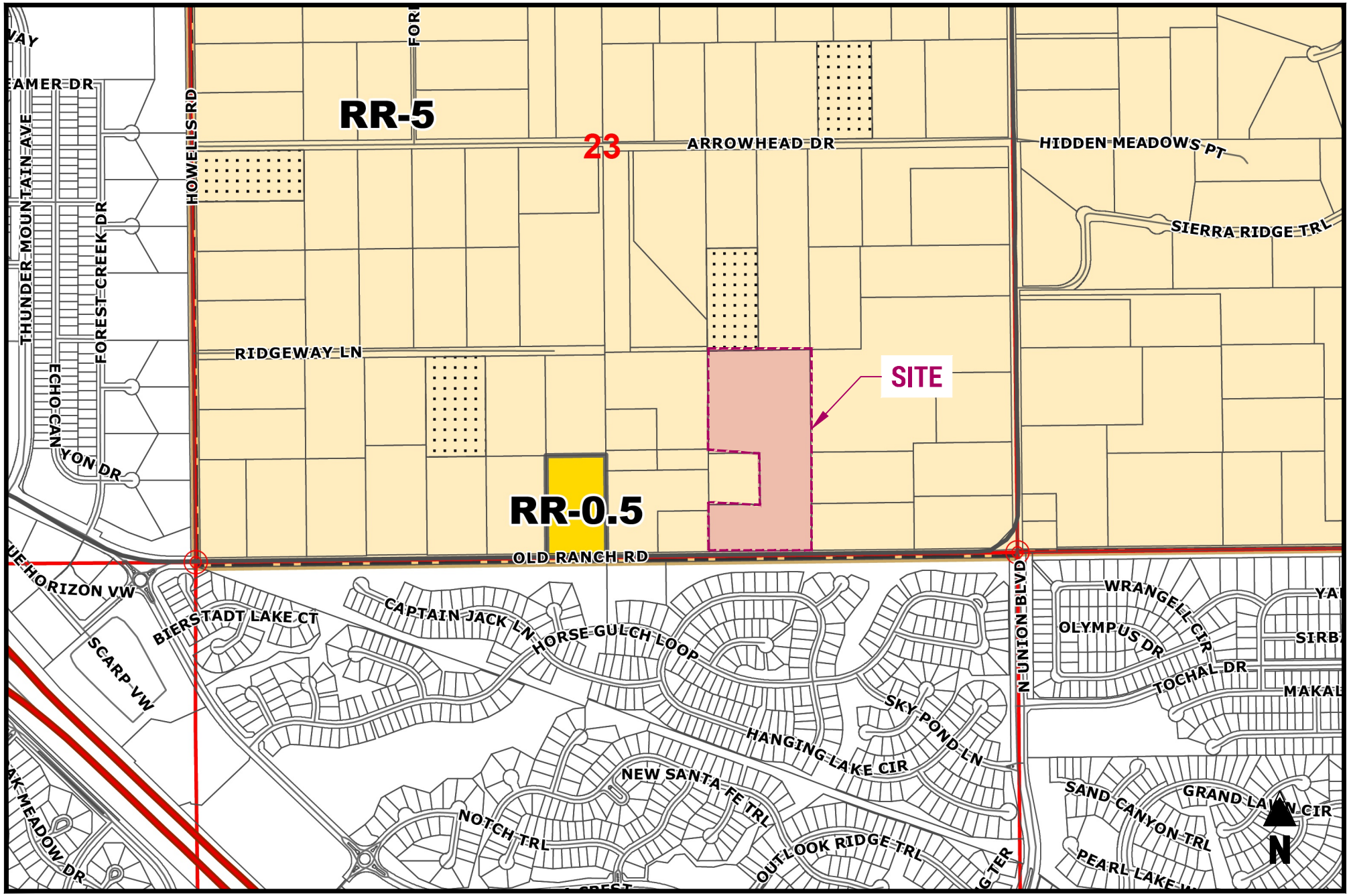


FIGURE 1-3
EXISTING ZONING

ELK VIEW ESTATES
EL PASO COUNTY, CO

II. Background Information

Study Area

The study area was determined by a review of intersections that would experience a significant portion of turning movement volumes generated by the site. As such, the traffic study focuses primarily on the following intersections:

Study Intersections

- Proposed Site Access
- Old Ranch Road/Studebaker Street

Study Methodology

Synchro software version 12 was used to evaluate levels of service at each of the study intersections during the weekday AM and PM peak hours. Synchro is a macroscopic model used for optimizing traffic signal timing and performing capacity analyses. The software can model existing traffic signal timings or optimize splits, offsets, and cycle lengths for individual intersections, an arterial, or a complete network. Synchro allows the user to evaluate the effects of changing intersection geometrics, traffic demands, traffic control, and/or traffic signal settings as well as optimize traffic signal timings.

The levels of service reported for the signalized and unsignalized intersections analyzed were taken from the Highway Capacity Manual (HCM) 7th reports as generated by Synchro. Level of service descriptions are included in Appendix B. A default percent heavy vehicle (%HV) factor of 2% was used for all movements in the study area.

Existing Roadway Network

Access to the subject site is provided by Old Ranch Road. Figure 2-1 depicts existing lane use and traffic controls in the vicinity of the subject site. The following provides a description of each of the roadways within the study network.

Old Ranch Road

Old Ranch Road is constructed as an east/west undivided two-lane section with a posted speed limit of 45 mph in the vicinity of the subject site. The City classifies the roadway as Industrial/Major Collector.

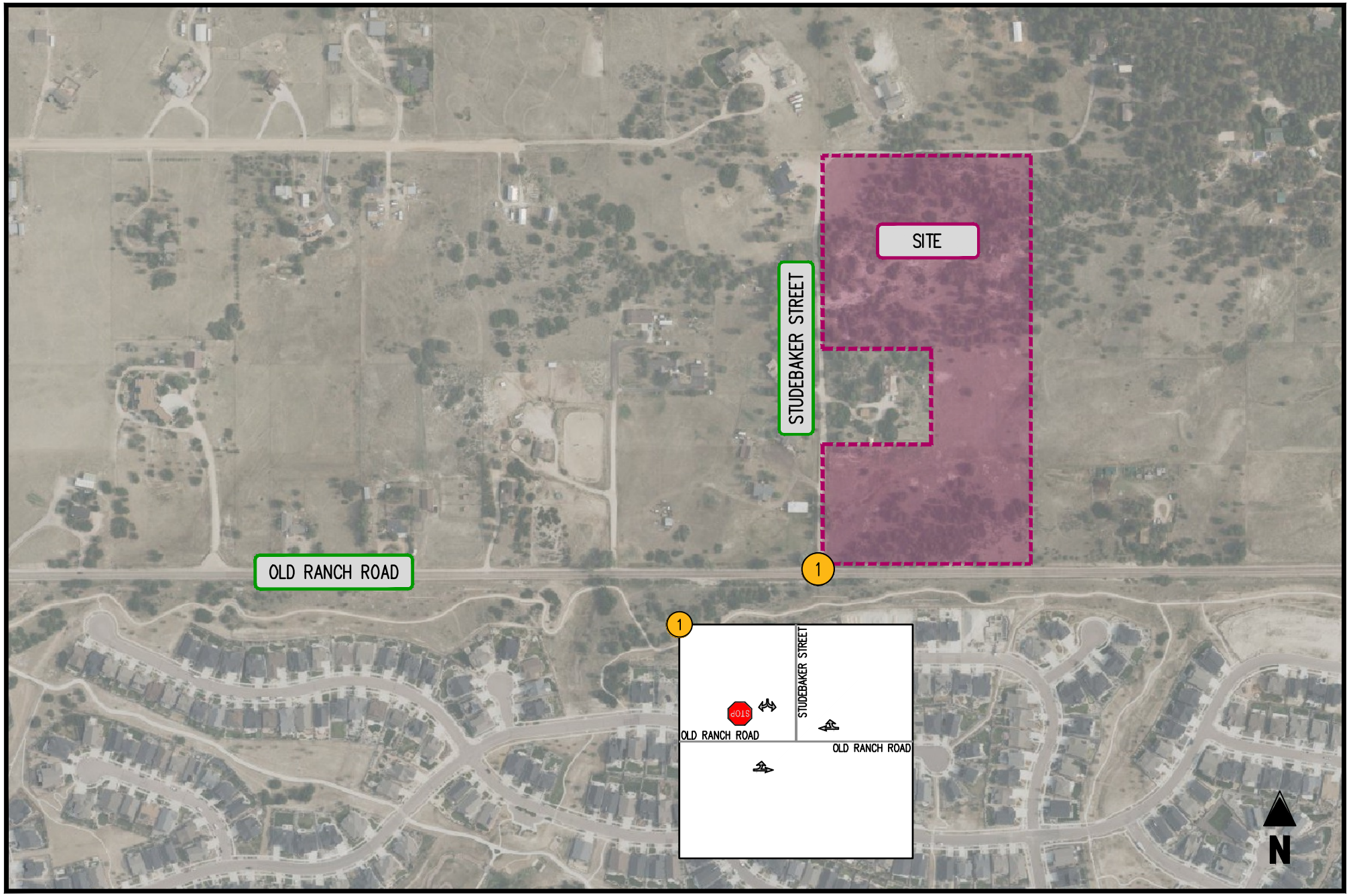


FIGURE 2-1
EXISTING LANE USE & TRAFFIC CONTROL

ELK VIEW ESTATES
EL PASO COUNTY, CO

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

III. Analysis of Existing Conditions

Traffic Volumes

Weekday AM and PM peak hour traffic volumes counts were conducted on Wednesday April 16, 2025 from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM at the study intersections by IDAX Data Solutions.

The existing volumes are summarized on Figure 3-1. Copies of traffic counts are included in Appendix C. Existing peak hour factors (PHF) were also computed by approach from the traffic counts and applied to the analysis with a minimum of 0.85 and a maximum of 0.92.

Operational Analysis

Capacity/level of service (LOS) analyses were conducted at the study intersections based on the existing lane use and traffic controls shown on Figure 2-1 and existing baseline vehicular traffic volumes shown on Figure 3-1. The capacity analysis results are presented in Appendix D and summarized in Table 3-1 and on Figure 3-2.

As shown in Table 3-1, the unsignalized movements for the intersection of Old Ranch Road/Studebaker Street currently operate at overall level of service (LOS) “A” during the weekday AM and PM peak hours.

Existing Intersection Queues

An analysis of intersection 95th-percentile queues was performed at key locations. The results of the queuing analysis, as reported by Synchro, are summarized in Table 3-2. As shown in the table, no queuing related concerns are currently present in the study area.

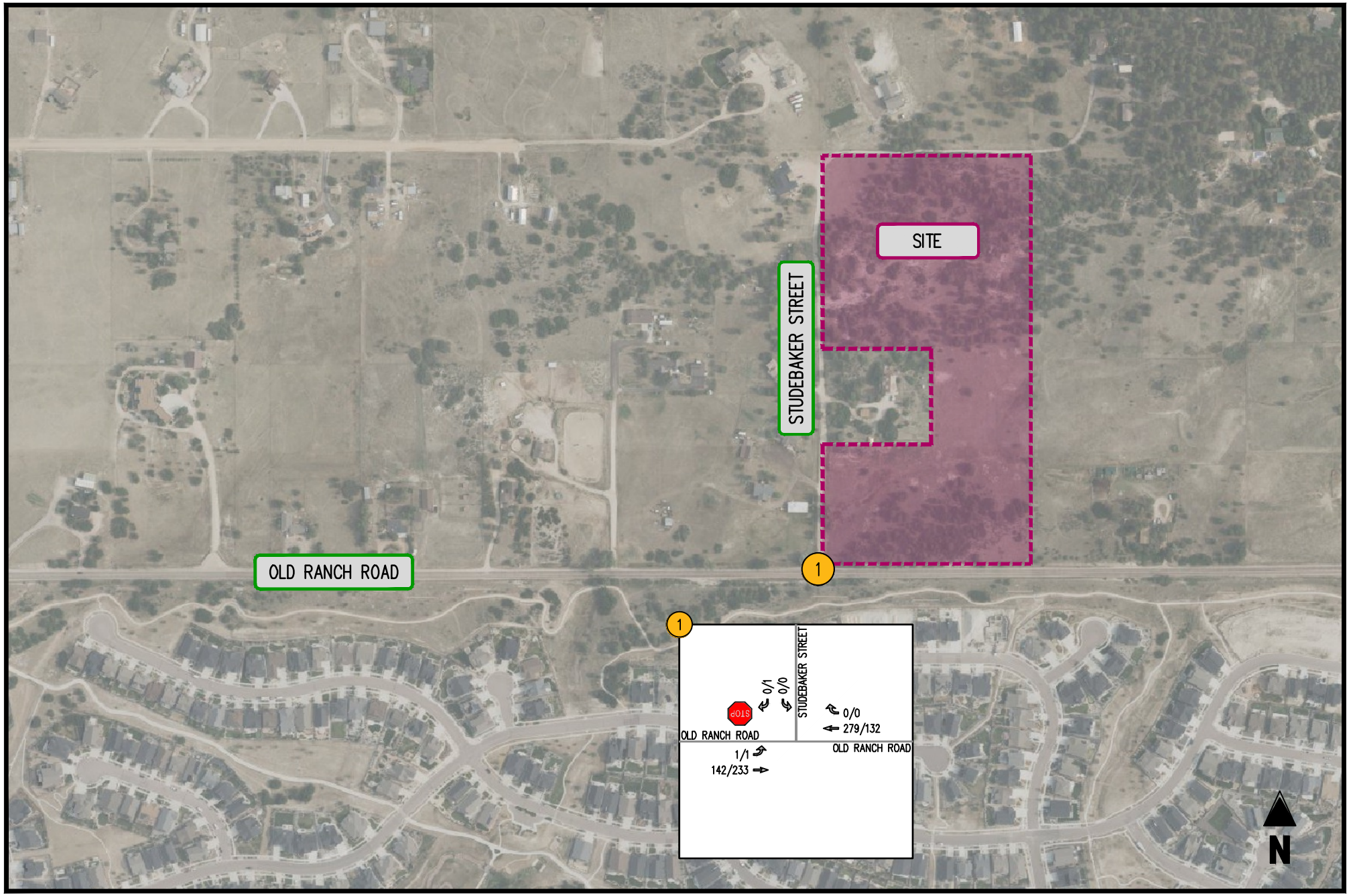


FIGURE 3-1
EXISTING VOLUMES

ELK VIEW ESTATES
EL PASO COUNTY, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

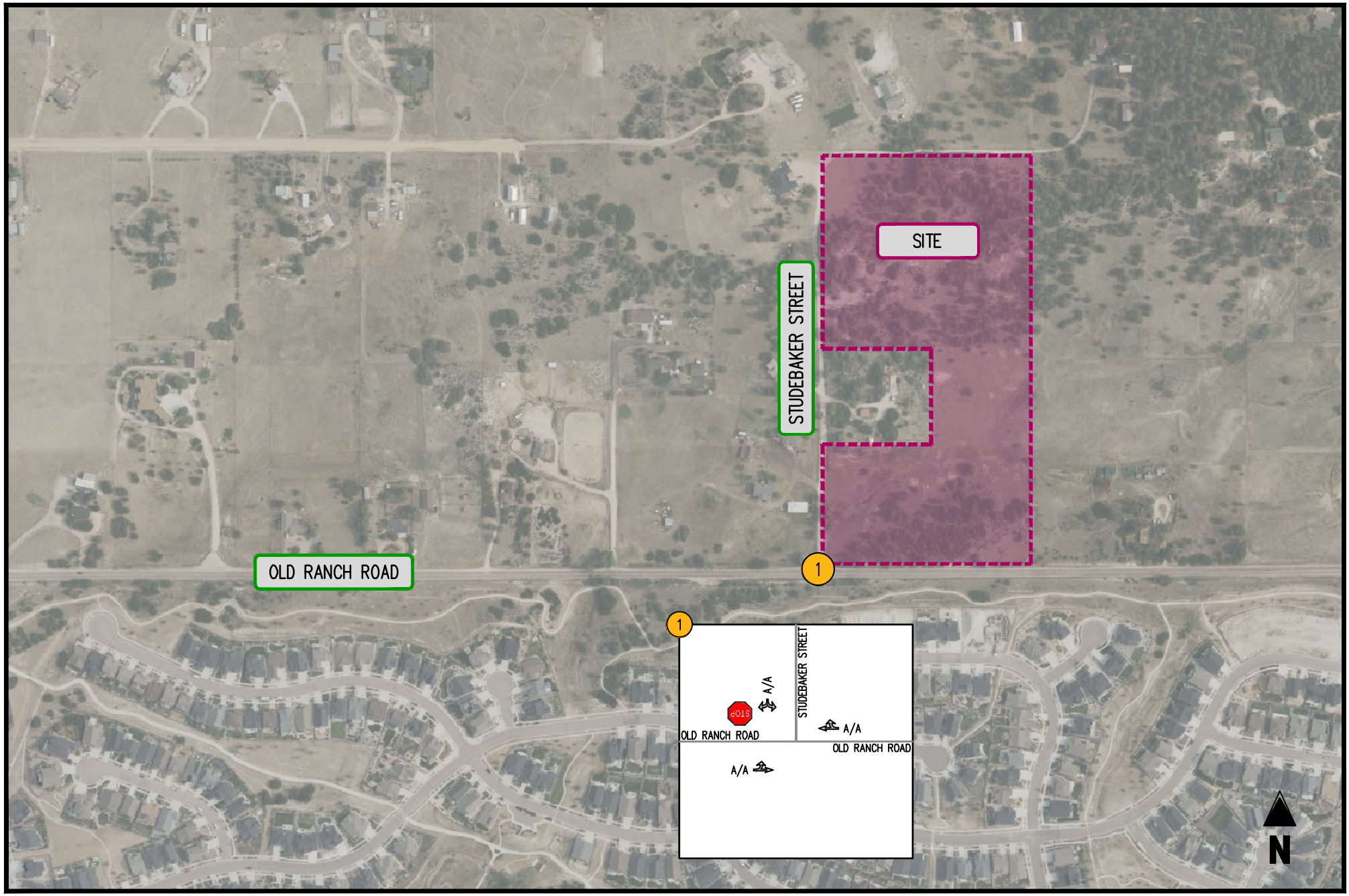


FIGURE 3-2
EXISTING LEVELS OF SERVICE

ELK VIEW ESTATES
EL PASO COUNTY, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

Table 3-1
Elk View Estates - El Paso County, CO
Existing Intersection Level of Service Summary (1)

Intersection	Operating Condition	Street Name	Approach/ Movement	Existing AM Peak Hour	Existing PM Peak Hour
1 Old Ranch Road/Studebaker Street	STOP	Old Ranch Road	EBLT	A [7.9]	A [7.5]
		Old Ranch Road	WBTR	A [0.0]	A [0.0]
		Studebaker Street	SBLR	A [0.0]	A [9.0]

Notes (1) Numbers in brackets [] represent delay at unsignalized intersections in seconds per vehicle.

Table 3-2
Elk View Estates - El Paso County, CO
Existing Intersection Queueing Summary (1)

Intersection	Operating Condition	Street Name	Approach/ Movement	Available Storage	Existing AM Peak Hour	Existing PM Peak Hour
1 Old Ranch Road/Studebaker Street	STOP	Old Ranch Road	EBLT	-	0	0
		Old Ranch Road	WBTR	-	0	0
		Studebaker Street	SBLR	-	0	0

Notes : (1) Queue length, in feet, is based on the 95th percentile queue as reported by Synchro, Version 12.

IV. Site Analysis

Overview

The Applicant is proposing develop the approximately 17.1 acre site with residential uses. The following use and development program was analyzed:

6	DU	Single Family Detached Housing

Proposed Site Access

As shown on the Applicant's conceptual plan (Figure 1-2), access to the development is being proposed via one new full movement access on Old Ranch Road along the eastern boundary of the site. Proposed future lane use and traffic control is shown on Figure 4-1. Section 2.3.G, Table 2-21 of the El Paso County Engineering Criteria Manual was referenced to determine site distance triangles for the new proposed access location and further detailed in an exhibit provided in Appendix A.

Trip Generation

Overview

Trip generation estimates for the weekday AM and PM peak hours, as well as the weekday average daily traffic (ADT), were derived from the standard Institute of Transportation Engineers (ITE) Trip Generation Manual rates/equations, as published in the 11th edition. The trip generation analysis is presented in Table 4-1.

Site Trips

The vehicle trips that would be generated by the proposed development plan are summarized in Table 5-1. As shown in Table 4-1, the site would generate upon completion and full occupancy 6 new weekday AM and 6 new weekday PM peak hour vehicle trips, as well as 57 new weekday daily trips.

Site Trip Distributions

The distribution of the anticipated trips generated by the completion of the proposed development was based on an examination of existing traffic counts and local knowledge. Existing travel patterns indicate the following distribution is appropriate in the forecasting of future site traffic:

- To/from the west on Old Ranch Road: 50%
- To/from the east on Old Ranch Road: 50%

The assignment of the new vehicle trips generated upon the future build-out of the development project was based on the above distribution, which are shown on Figure 4-2.

The proposed access location meets spacing criteria as provided in ECM 2.4.1.B. ADT projections require Rural Gravel Local Road for the design of future internal roadways, however future internal roadways are proposed to be paved and therefore designed as the Rural Local Road standard and will operate acceptably.

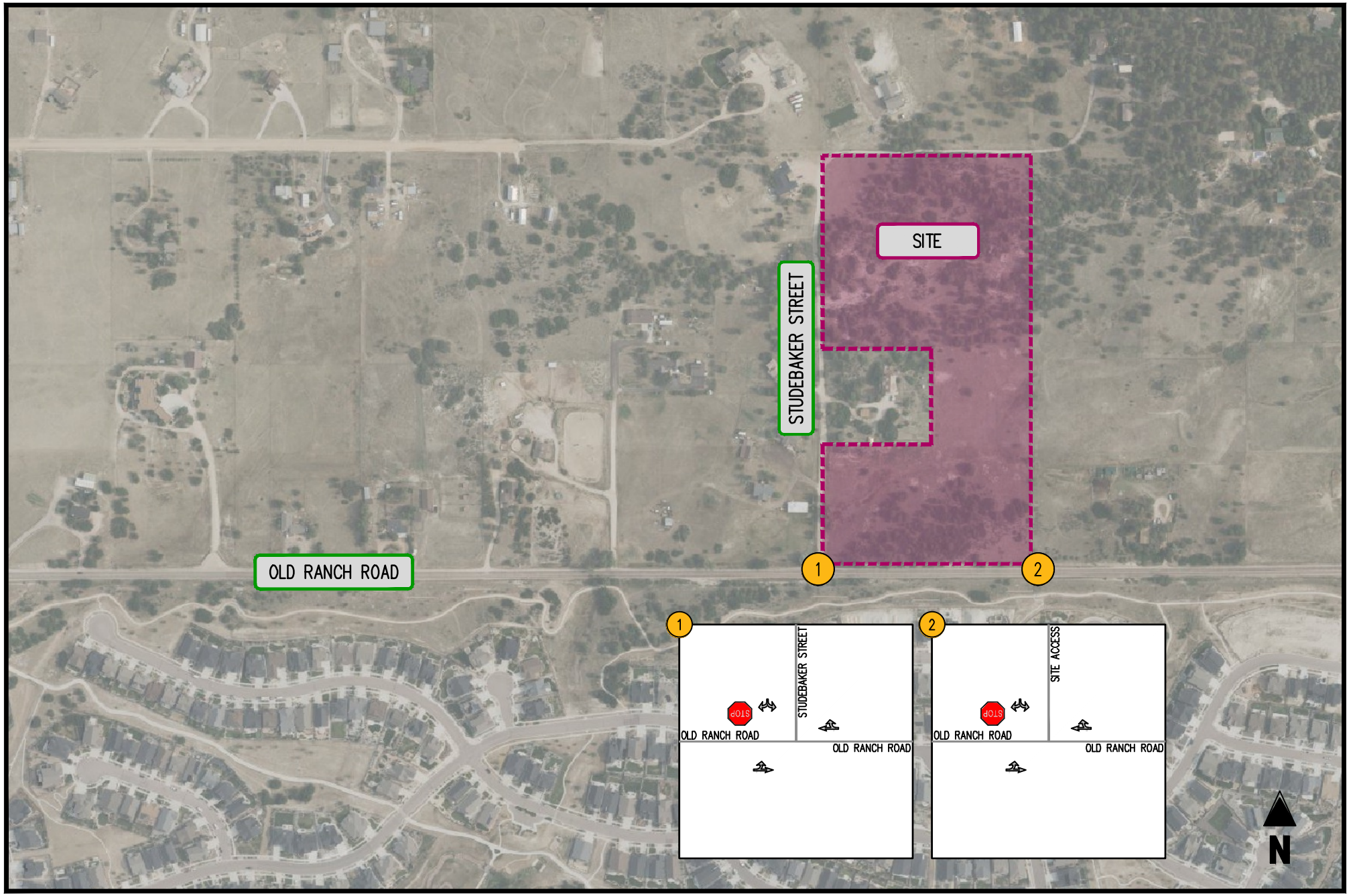


FIGURE 4-1
FUTURE LANE USE & TRAFFIC CONTROL

ELK VIEW ESTATES
EL PASO COUNTY, CO

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

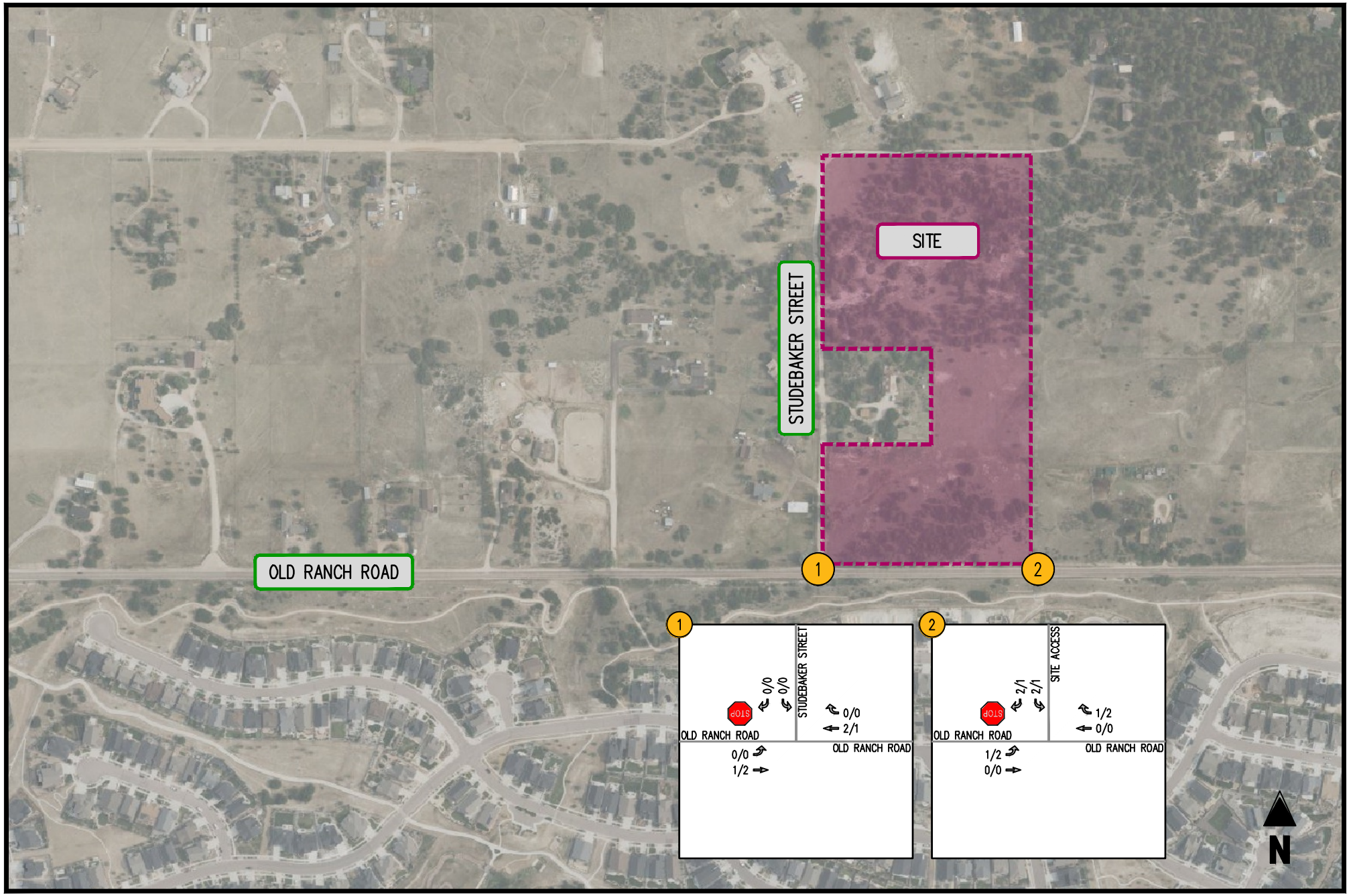


FIGURE 4-2
SITE TRIPS

ELK VIEW ESTATES
EL PASO COUNTY, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

Table 4-1

Elk View Estates

Site Trip Generation

Land Use	Land Use Code	Amount	Units	AM Peak Hour			PM Peak Hour			Average Daily Trips
				In	Out	Total	In	Out	Total	
Proposed [1]										
Single-Family Detached Housing	210	6	DU	2	4	6	4	2	6	57

Note(s):

(1) Trip generation based on the Institute of Transportation Engineers' Trip Generation Manual, 11th Edition

V. Analysis of Future Conditions with Site Development

Short Term (2026) Future Traffic Forecasts

The future traffic forecasts associated with the proposed development were developed by combining the existing volumes shown on Figure 3-1 and the site trips shown on Figure 4-2. The resulting future traffic forecasts are provided on Figure 5-1.

Short Term (2026) Future Levels of Service with Proposed Development

Future levels of service with the proposed development plan were estimated at study intersections based on the future traffic volumes shown on Figures 5-1, the total future lane use on Figure 4-1, and the HCM 7th methodologies for unsignalized intersections. The results of these analyses are provided in Appendix E and presented in Table 5-1. The future levels of service are also presented graphically on Figure 5-2.

As shown in Table 5-1, under future traffic conditions, with the development of the subject site, the movements for the unsignalized intersections within the study area, including the proposed site access, are forecasted to operate at LOS “B” or better in the weekday AM and PM peak hours.

Short Term (2026) Future Queuing

Total future queues were forecasted using Synchro software. The results of the queuing analysis are summarized in Table 5-2. As shown in Table 5-2, no queueing related concerns in the study area were identified.

Long Term (2046) Analysis

No adjacent developments were identified in the vicinity of the subject site. The traffic data provided via the Pikes Peak Area Council of Governments (PPACG), suggest a decrease in growth along Old Ranch Road in the vicinity of the subject site. Considering these factors, along with the proposed trip generation for the site, no significant change is expected between short term and long term analysis.

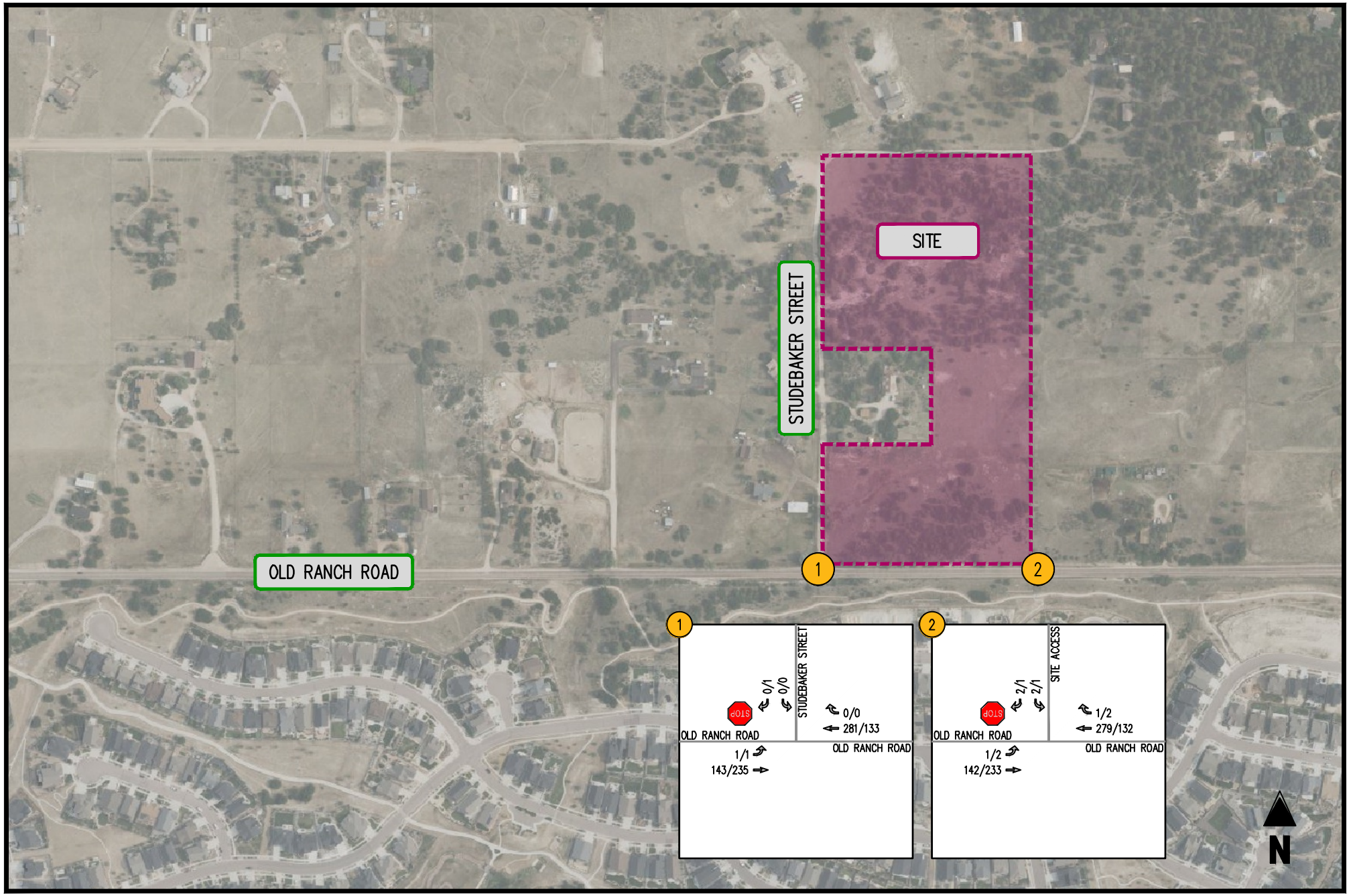


FIGURE 5-1
FUTURE FORECASTS

ELK VIEW ESTATES
EL PASO COUNTY, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

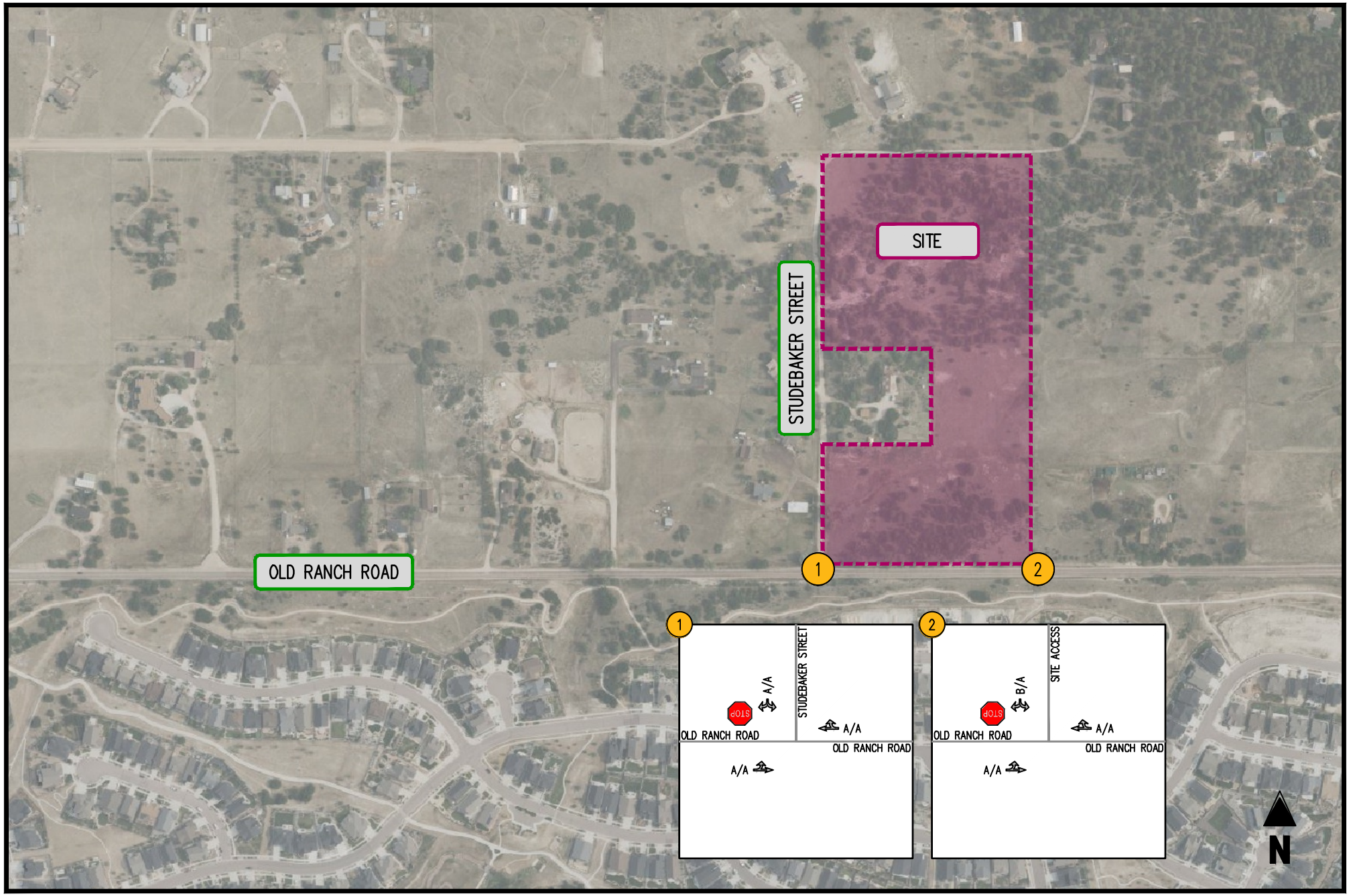


FIGURE 5-2
FUTURE LEVELS OF SERVICE

ELK VIEW ESTATES
EL PASO COUNTY, CO

0000/0000 (AM PEAK HOUR/PM PEAK HOUR)

MOVEMENT
SIGNALIZED INTERSECTION
STOP SIGN
YIELD SIGN

Table 5-1
Elk View Estates - El Paso County, CO
Future Intersection Level of Service Summary (1)

Intersection	Operating Condition	Street Name	Approach/ Movement	Existing AM Peak Hour	Existing PM Peak Hour	Future AM Peak Hour	Future PM Peak Hour
1 Old Ranch Road/Studebaker Street	STOP	Old Ranch Road	EBLT	A [7.9]	A [7.5]	A [7.9]	A [7.5]
		Old Ranch Road	WBTR	A [0.0]	A [0.0]	A [0.0]	A [0.0]
		Studebaker Street	SBLR	A [0.0]	A [9.0]	A [0.0]	A [9.0]
2 Old Ranch Road/Site Access	STOP	Old Ranch Road	EBLT	N/A	N/A	A [7.9]	A [7.5]
		Old Ranch Road	WBTR	N/A	N/A	A [0.0]	A [0.0]
		Site Access	SBLR	N/A	N/A	B [10.7]	A [10.0]

Notes (1) Numbers in brackets [] represent delay at unsignalized intersections in seconds per vehicle.

Table 5-2
Elk View Estates - El Paso County, CO
Future Intersection Queueing Summary (1)

Intersection	Operating Condition	Street Name	Approach/ Movement	Available Storage	Existing AM Peak Hour	Existing PM Peak Hour	Future AM Peak Hour	Future PM Peak Hour
1 Old Ranch Road/Studebaker Street	STOP	Old Ranch Road	EBLT	-	0	0	0	0
		Old Ranch Road	WBTR	-	0	0	0	0
		Studebaker Street	SBLR	-	0	0	0	0
2 Old Ranch Road/Site Access	STOP	Old Ranch Road	EBLT	-	N/A	N/A	0	0
		Old Ranch Road	WBTR	-	N/A	N/A	0	0
		Site Access	SBLR	-	N/A	N/A	0	0

Notes : (1) Queue length, in feet, is based on the 95th percentile queue as reported by Synchro, Version 12.

VI. Conclusions and Recommendations

Conclusions

Based on the results of this traffic impact study, the following may be concluded:

- Under existing traffic conditions, the unsignalized movements for the intersection of Old Ranch Road/Studebaker Street currently operate at levels of service (LOS) “A” in the weekday AM and PM peak hours and no queuing related concerns are currently present in the study area.

- The proposed site development would generate, upon completion and full occupancy, 6 new weekday AM and 6 new weekday PM peak hour vehicle trips as well as 57 new weekday daily trips.

- Under both short and long term total future traffic conditions, with the development of the subject site, the movements for the unsignalized intersections within the study area, including the proposed site access, are forecasted to operate at LOS “B” or better in the weekday AM and PM peak hours and no queueing related concerns were identified.

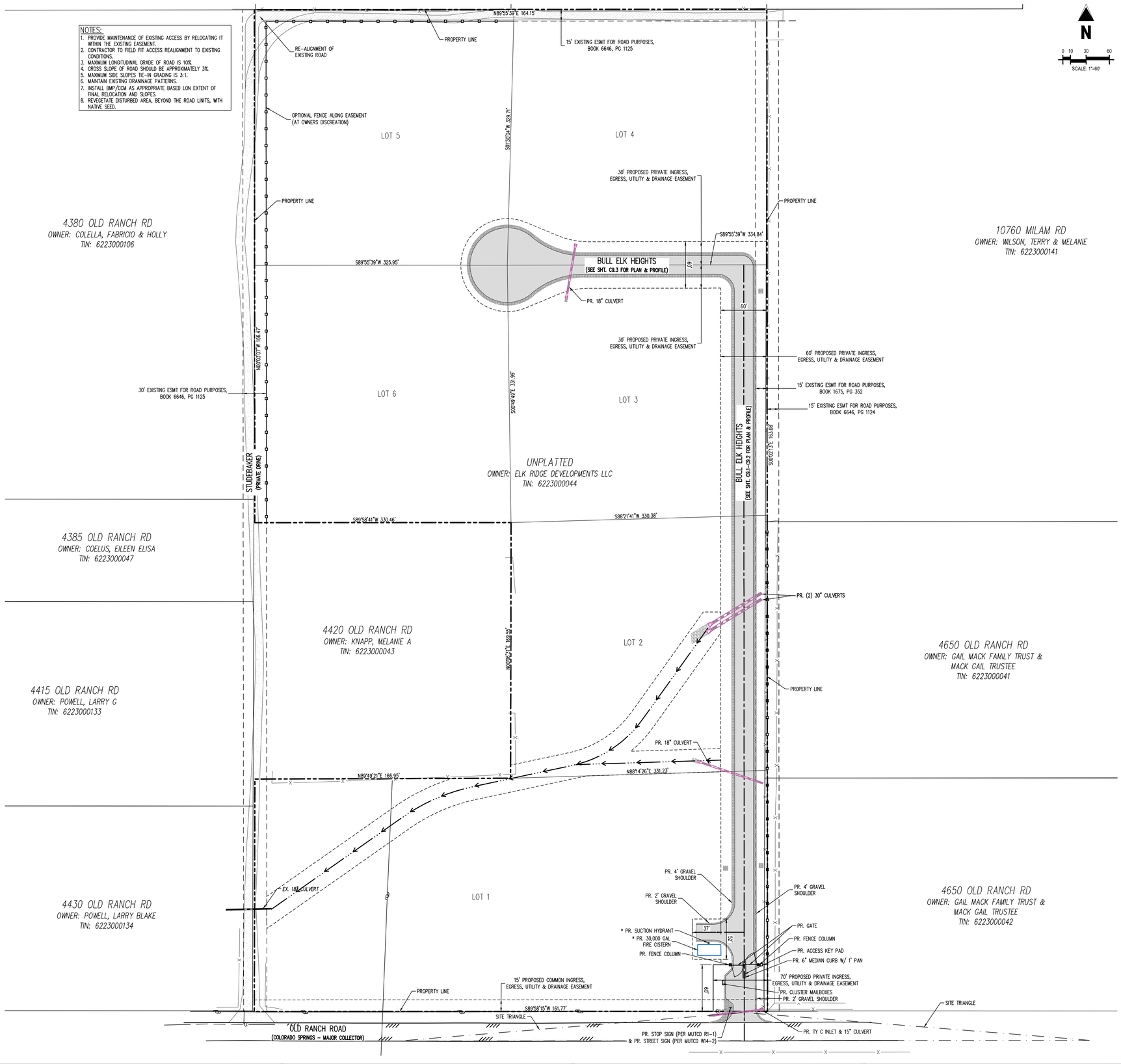
Recommendations

- It is recommended that the Applicant provide access consistent with the site plan contained herein.

- Turn lanes are not warranted due to the anticipated number of turning movements at the study intersections.

APPENDIX A – Full Sized Conceptual Plan

NOTES:
1. PROVIDE MAINTENANCE OF EXISTING ACCESS BY RELOCATING IT WITHIN THE EXISTING EASEMENT.
2. CONTRACTOR TO FIELD FIT ACCESS REALIGNMENT TO EXISTING CONDITIONS.
3. MAXIMUM LONGITUDINAL GRADE OF ROAD IS 10%.
4. CROSS SLOPE OF ROAD SHOULD BE APPROXIMATELY 3%.
5. MAXIMUM SIDE SLOPES TIE-IN GRADING IS 3:1.
6. MAINTAIN EXISTING DRAINNAGE PATTERNS.
7. INSTALL BMP/CCM AS APPROPRIATE BASED LON EXTENT OF FINAL RELOCATION AND SLOPES.
8. REVEGETATE DISTURBED AREA, BEYOND THE ROAD LINITS, WITH NATIVE SEED.



N

0 10 30 60
SCALE: 1"=60'

SITE LEGEND

- PROJECT BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- EXISTING ADJACENT LOT LINE
- PROPOSED LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- PROPOSED ROAD CENTERLINE
- EXISTING ROAD CENTERLINE
- PROPOSED RIDGE LINE
- PROPOSED SWALE LINE
- EXISTING SWALE LINE
- EXISTING FENCE
- PROPOSED FENCE
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF ASPHALT
- PROPOSED GRAVEL SHOULDER PER ECM TABLE D-7
- EXISTING SIGN
- PROPOSED SIGN

PAVING LEGEND

- PROPOSED CONCRETE
- EXISTING CONCRETE/ASPHALT PAVING
- PROPOSED ASPHALT PAVING

UTILITY LEGEND

- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINE
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING STORM SEWER MANHOLE
- PROPOSED STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE

NOTE: CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.

SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.

NOTE: SEE GEC PLANS FOR GRADING.

* NOTE: INSTALL PER BLACK FOREST FIRE RESCUE DEPARTMENT CRITERIA.

BASIS OF BEARING

ALL BEARINGS USED ON THIS PLAT ARE BASED ON AN ASSUMED BEARING BETWEEN A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER AND A NO. 4 REBAR WITH CAP STAMPED "RMLS NO. 19625" AT THE SOUTHWEST CORNER. THE ASSUMED BEARING BETWEEN THESE MONUMENTS IS 'S 89° 58' 15"W.

BENCHMARK

A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER. THE INTERPOLATED ELEVATION USED THERON IS 7128.06'.

CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIESTO THE ENGINEER PRIOR TO CONSTRUCTION.

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

2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

Galloway
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
GallowayUS.com

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

ELK VIEW ESTATES CONSTRUCTION DRAWINGS

OLD RANCH ROAD
EL PASO COUNTY, CO

#	Date	Issue / Description	Init.
1	11/26/2025	1ST COUNTY SUBMITTAL	ELB
2	06/02/2026	2ND COUNTY SUBMITTAL	ELB
3	08/25/2026	3RD COUNTY SUBMITTAL	JAO
4	09/2026	4TH COUNTY SUBMITTAL	JAO

Project No:	ERD01
Drawn By:	ELB
Checked By:	JAO
Date:	9/18/2026

SITE PLAN

C1.1

Sheet 4 of 11

SITE LEGEND

- PROJECT BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- EXISTING ADJACENT LOT LINE
- PROPOSED LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- PROPOSED ROAD CENTERLINE
- EXISTING ROAD CENTERLINE
- PROPOSED RIDGE LINE
- PROPOSED SWALE LINE
- EXISTING SWALE LINE
- EXISTING FENCE
- PROPOSED FENCE
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF ASPHALT
- PROPOSED GRAVEL SHOULDER PER ECM TABLE D-7
- EXISTING SIGN
- PROPOSED SIGN

UTILITY LEGEND

- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINE
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING STORM SEWER MANHOLE
- PROPOSED STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE

PAVING LEGEND

- PROPOSED CONCRETE
- EXISTING CONCRETE/ASPHALT PAVING
- PROPOSED ASPHALT PAVING

NOTE: CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.

NOTE: CONTRACTOR MUST COORDINATE WORK WITH UTILITY COMPANY AND CITY PRIOR TO BEGINNING WORK AND IS RESPONSIBLE FOR ALL MATERIALS, LABOR, REPAIRS, ETC. TO COMPLETE WORK AND RESTORE AREA TO SAME STATE PRIOR TO STARTING WORK.

CONTRACTOR RESPONSIBLE FOR AS-BUILT DRAWINGS, TESTS, REPORTS AND/OR ANY OTHER CERTIFICATES OR INFORMATION AS REQUIRED FOR ACCEPTANCE OF WORK FROM CITY, UTILITY DISTRICTS OR ANY OTHER GOVERNING AGENCY.

SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.

BASIS OF BEARING

ALL BEARINGS USED ON THIS PLAT ARE BASED ON AN ASSUMED BEARING BETWEEN A REBAR WITH 'YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER AND A NO. 4 REBAR WITH CAP STAMPED "RMLS NO. 19625" AT THE SOUTHWEST CORNER. THE ASSUMED BEARING BETWEEN THESE MONUMENTS IS S 89° 58' 15" W.

BENCHMARK

A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER. THE INTERPOLATED ELEVATION USED THEREON IS 7128.06'.

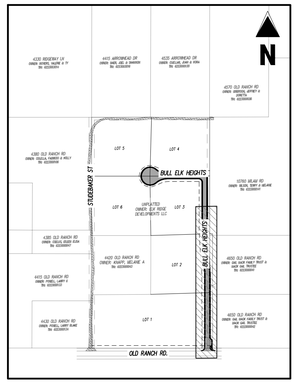
CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIESTO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

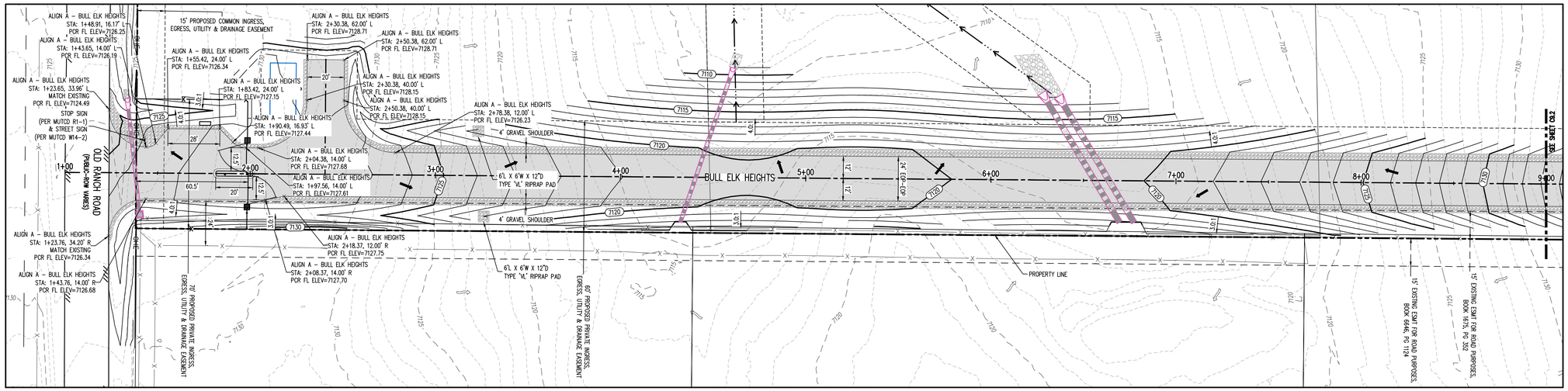
811 Know what's below. Call before you dig.

N

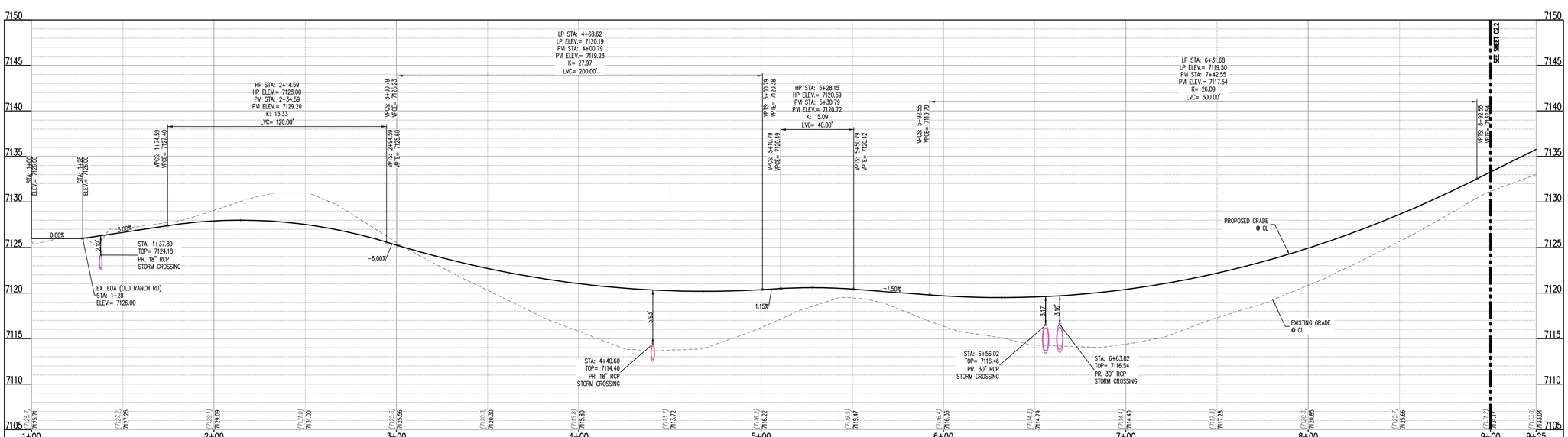
SCALE: 1"=30'



KEY MAP
SCALE: 1"=400'



BULL ELK HEIGHTS – EASEMENT VARIES
25 MPH DESIGN SPEED (RURAL-LOCAL)
SCALE: 1"=30'



ALIGN A – BULL ELK HEIGHTS (STA: 1+00 TO 9+25) – SCALE: H: 1"=30' V: 1"=6'

Galloway
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
GallowayUS.com

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

ELK VIEW ESTATES
CONSTRUCTION DRAWINGS

OLD RANCH ROAD
EL PASO COUNTY, CO

#	Date	Issue / Description	Init.
1	11/26/2025	1ST COUNTY SUBMITTAL	ELB
2	06/02/2026	2ND COUNTY SUBMITTAL	ELB
3	08/25/2026	3RD COUNTY SUBMITTAL	JAO
4	09/2026	4TH COUNTY SUBMITTAL	JAO

Project No:	ERD01
Drawn By:	ELB
Checked By:	JAO
Date:	9/18/2026

BULL ELK HEIGHTS
PLAN & PROFILES

C9.1

Sheet 9 of 11

SITE LEGEND

- PROJECT BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- EXISTING ADJACENT LOT LINE
- PROPOSED LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- PROPOSED ROAD CENTERLINE
- EXISTING ROAD CENTERLINE
- PROPOSED RIDGE LINE
- PROPOSED SWALE LINE
- EXISTING SWALE LINE
- EXISTING FENCE
- PROPOSED FENCE
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF ASPHALT
- PROPOSED GRAVEL SHOULDER PER ECM TABLE D-7
- EXISTING SIGN
- PROPOSED SIGN

UTILITY LEGEND

- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINE
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING STORM SEWER MANHOLE
- PROPOSED STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE

PAVING LEGEND

- PROPOSED CONCRETE
- EXISTING CONCRETE/ASPHALT PAVING
- PROPOSED ASPHALT PAVING

NOTE: CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.

NOTE: CONTRACTOR MUST COORDINATE WORK WITH UTILITY COMPANY AND CITY PRIOR TO BEGINNING WORK AND IS RESPONSIBLE FOR ALL MATERIALS, LABOR, REPAIRS, ETC. TO COMPLETE WORK AND RESTORE AREA TO SAME STATE PRIOR TO STARTING WORK.

CONTRACTOR RESPONSIBLE FOR AS-BUILT DRAWINGS, TESTS, REPORTS AND/OR ANY OTHER CERTIFICATES OR INFORMATION AS REQUIRED FOR ACCEPTANCE OF WORK FROM CITY, UTILITY DISTRICTS OR ANY OTHER GOVERNING AGENCY.

SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.

BASIS OF BEARING

ALL BEARINGS USED ON THIS PLAT ARE BASED ON AN ASSUMED BEARING BETWEEN A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER AND A NO. 4 REBAR WITH CAP STAMPED "RMLS NO. 19625" AT THE SOUTHWEST CORNER. THE ASSUMED BEARING BETWEEN THESE MONUMENTS IS S 89° 58'15"W.

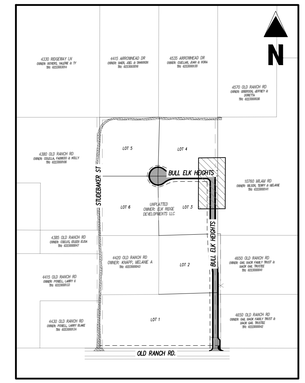
BENCHMARK

A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER. THE INTERPOLATED ELEVATION USED THEREON IS 7128.06'.

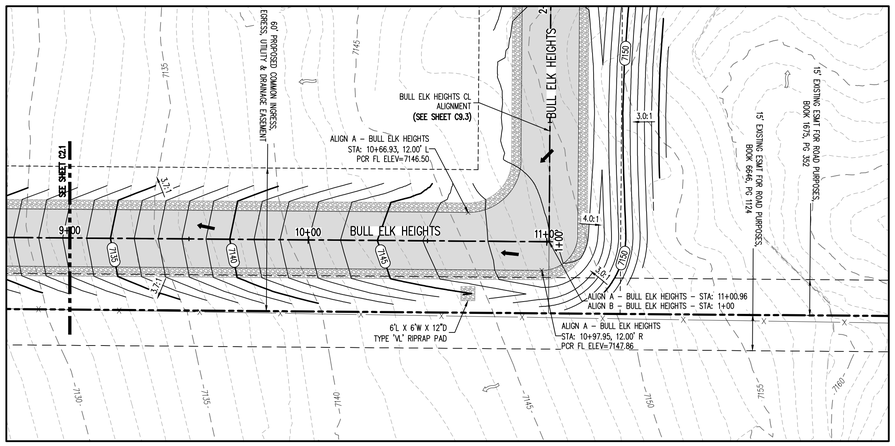
CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIESTO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

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

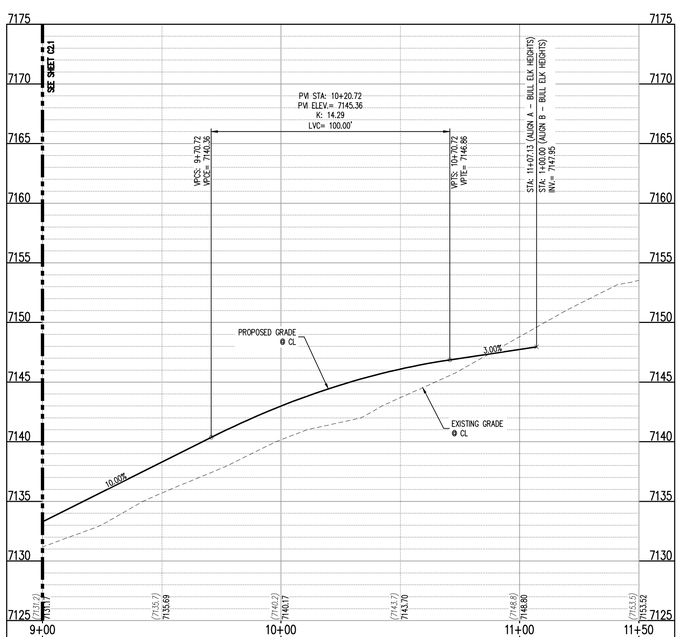


KEY MAP
SCALE: 1"=400'



N
0 15 30
SCALE: 1"=30'

BULL ELK HEIGHTS – 60' EASEMENT
25 MPH DESIGN SPEED (RURAL–LOCAL)
SCALE: 1"=30'



ALIGN A – BULL ELK HEIGHTS (STA: 9+00 TO 11+50) – SCALE: H: 1"=30' V: 1"=6'

Galloway
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
GallowayUS.com

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

ELK VIEW ESTATES
CONSTRUCTION DRAWINGS

OLD RANCH ROAD
EL PASO COUNTY, CO

#	Date	Issue / Description	Init.
1	11/26/2025	1ST COUNTY SUBMITTAL	ELB
2	06/02/2026	2ND COUNTY SUBMITTAL	ELB
3	08/25/2026	3RD COUNTY SUBMITTAL	JAO
4	09/2026	4TH COUNTY SUBMITTAL	JAO

Project No:	ERD01
Drawn By:	ELB
Checked By:	JAO
Date:	9/18/2026

BULL ELK HEIGHTS
PLAN & PROFILES

C9.2

SITE LEGEND

- PROJECT BOUNDARY LINE
- ADJACENT PROPERTY BOUNDARY LINE
- RIGHT OF WAY LINE
- EXISTING ADJACENT LOT LINE
- PROPOSED LOT LINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- PROPOSED ROAD CENTERLINE
- EXISTING ROAD CENTERLINE
- PROPOSED RIDGE LINE
- PROPOSED SWALE LINE
- EXISTING SWALE LINE
- EXISTING FENCE
- PROPOSED FENCE
- PROPOSED CURB AND GUTTER
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF ASPHALT
- PROPOSED GRAVEL SHOULDER PER ECM TABLE D-7
- EXISTING SIGN
- PROPOSED SIGN

UTILITY LEGEND

- EXISTING OVERHEAD ELECTRIC
- EXISTING GAS LINE
- EXISTING WATER LINE
- PROPOSED WATER LINE
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING WATER VALVE
- PROPOSED WATER VALVE
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING STORM SEWER MANHOLE
- PROPOSED STORM SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE

PAVING LEGEND

- PROPOSED CONCRETE
- EXISTING CONCRETE/ASPHALT PAVING
- PROPOSED ASPHALT PAVING

NOTE: CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.

NOTE: CONTRACTOR MUST COORDINATE WORK WITH UTILITY COMPANY AND CITY PRIOR TO BEGINNING WORK AND IS RESPONSIBLE FOR ALL MATERIALS, LABOR, REPAIRS, ETC. TO COMPLETE WORK AND RESTORE AREA TO SAME STATE PRIOR TO STARTING WORK.

CONTRACTOR RESPONSIBLE FOR AS-BUILT DRAWINGS, TESTS, REPORTS AND/OR ANY OTHER CERTIFICATES OR INFORMATION AS REQUIRED FOR ACCEPTANCE OF WORK FROM CITY, UTILITY DISTRICTS OR ANY OTHER GOVERNING AGENCY.

SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.

BASIS OF BEARING

ALL BEARINGS USED ON THIS PLAT ARE BASED ON AN ASSUMED BEARING BETWEEN A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER AND A NO. 4 REBAR WITH CAP STAMPED "RMLS NO. 19625" AT THE SOUTHWEST CORNER. THE ASSUMED BEARING BETWEEN THESE MONUMENTS IS S 89° 58' 15" W.

BENCHMARK

A REBAR WITH YELLOW CAP STAMPED "BOSTROM PLS NO. 9477" AT THE SOUTHEAST CORNER. THE INTERPOLATED ELEVATION USED THERON IS 7128.06'.

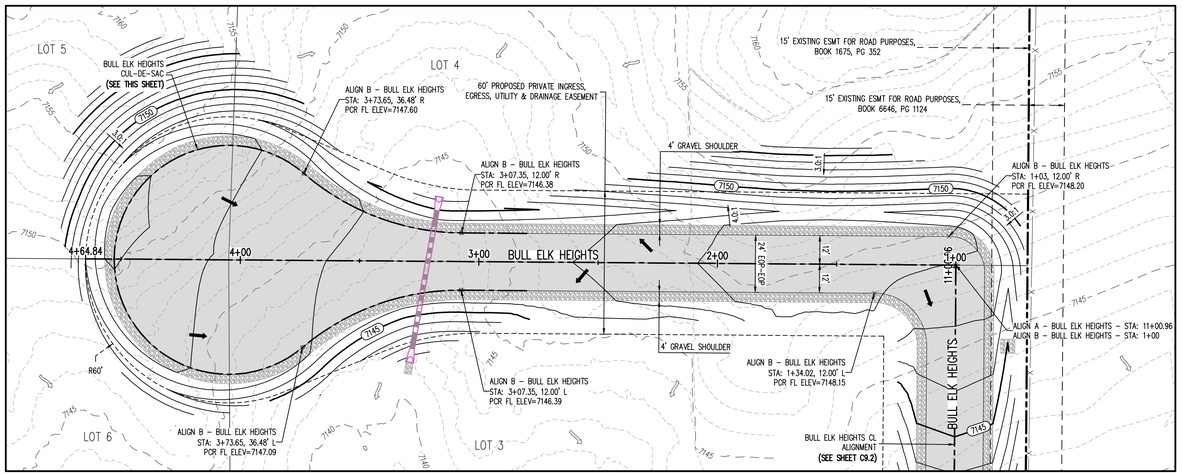
CAUTION – NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIESTO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

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

N

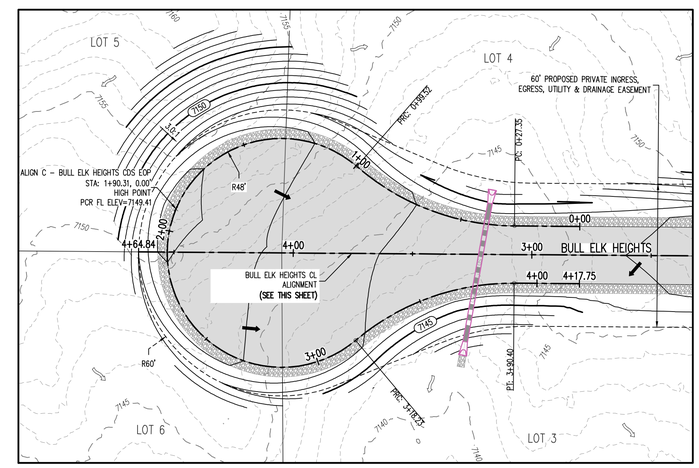
0 15 30
SCALE: 1"=30'



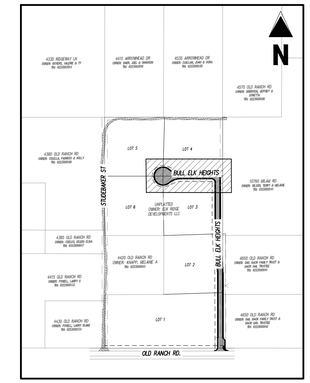
BULL ELK HEIGHTS – 60' EASEMENT
25 MPH DESIGN SPEED (RURAL-LOCAL)
SCALE: 1"=30'

N

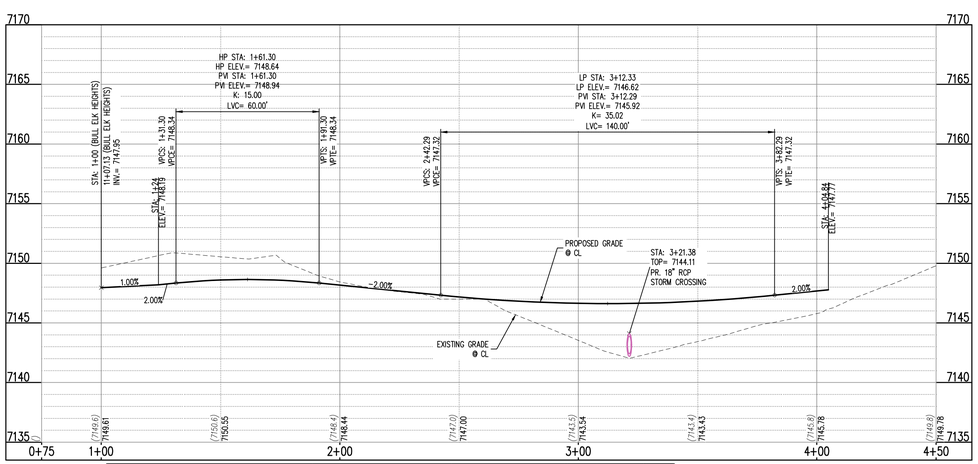
0 15 30
SCALE: 1"=30'



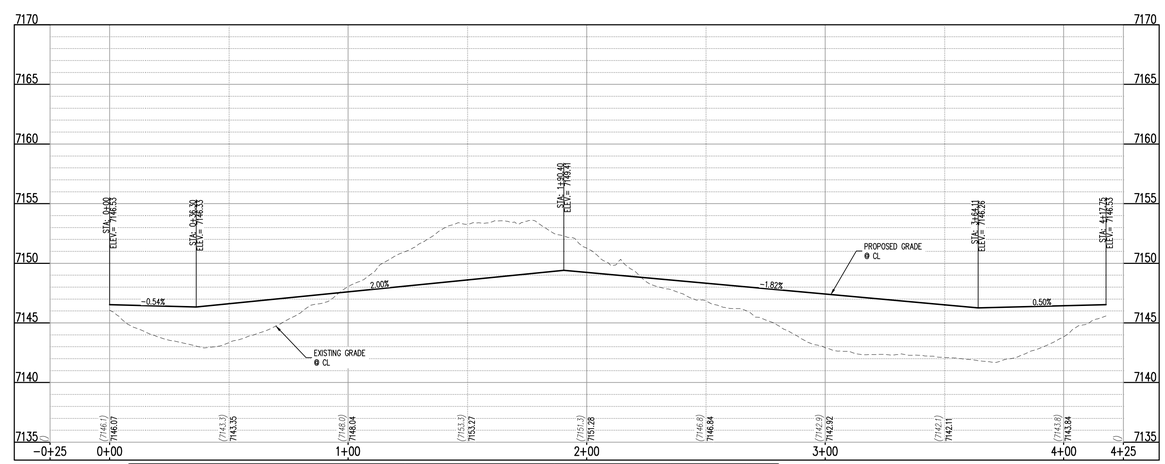
BULL ELK HEIGHTS – 60' EASEMENT
25 MPH DESIGN SPEED (RURAL-LOCAL)
SCALE: 1"=30'



KEY MAP
SCALE: 1"=400'



ALIGN B –BULL ELK HEIGHTS (STA: 0+75 TO 4+50) – SCALE: H: 1"=30' V: 1"=6'



ALIGN C – BULL ELK HEIGHTS CDS EOP (STA: -0+25 TO 4+25) – SCALE: H: 1"=30' V: 1"=6'

Galloway
1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
GallowayUS.com

COPYRIGHT
THESE PLANS ARE AN INSTRUMENT OF SERVICE AND ARE THE PROPERTY OF GALLOWAY, AND MAY NOT BE DUPLICATED, DISCLOSED, OR REPRODUCED WITHOUT THE WRITTEN CONSENT OF GALLOWAY. COPYRIGHTS AND INFRINGEMENTS WILL BE ENFORCED AND PROSECUTED.

ELK VIEW ESTATES
CONSTRUCTION DRAWINGS

OLD RANCH ROAD
EL PASO COUNTY, CO

#	Date	Issue / Description	Init.
1	11/26/2025	1ST COUNTY SUBMITTAL	ELB
2	06/02/2026	2ND COUNTY SUBMITTAL	ELB
3	08/25/2026	3RD COUNTY SUBMITTAL	JAO
4	09/2026	4TH COUNTY SUBMITTAL	JAO

Project No:	ERD01
Drawn By:	ELB
Checked By:	JAO
Date:	9/18/2026

BULL ELK HEIGHTS
PLAN & PROFILES

C9.3
Sheet 11 of 11

APPENDIX B – LOS Descriptions

Level of Service for Signalized Intersections

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle for a 15-min analysis period. The criteria are given in Exhibit 16-2. Delay may be measured in the field or estimated using procedures presented later in this chapter. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the *v/c* ratio for the lane group in question.

LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.

Exhibit 16-2. Level-of-Service Criteria for Signalized Intersections

LEVEL OF SERVICE	STOPPED DELAY PER VEHICLE (SEC)
A	≤10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	>80.0

LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

Level of Service Criteria for Stop Sign Controlled Intersections

The level of service criteria are given in Table 17-2. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. . . .

Table 17-2. Level of Service Criteria for TWSC Intersections

LEVEL OF SERVICE	AVERAGE CONTROL DELAY (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Average total delay less than 10 sec/veh is defined as Level of Service (LOS) A. Follow-up times of less than 5 sec have been measured when there is no conflicting traffic for a minor street movement, so control delays of less than 10 sec/veh are appropriate for low flow conditions. To remain consistent with the AWSC intersection analysis procedure described later in this chapter, a total delay of 50 sec/veh is assumed as the break point between LOS E and F.

The proposed level of service criteria for TWSC intersections are somewhat different from the criteria used in Chapter 16 for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, several driver behavior considerations combine to make delays at signalized intersections less onerous than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, where drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized than signalized intersections. For these reasons, it is considered that the total delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. . . .

LOS F exists when there are insufficient gaps of suitable size to allow a side street demand to cross safely through a major street traffic stream. This level of service is generally evident from extremely long total delays experienced by side street traffic and by queueing on the minor approaches. The method, however, is based on a constant critical gap size - that is, the critical gap remains constant, no matter how long the side street motorist waits. LOS F may also appear in the form of side street vehicles' selecting smaller-than-usual gaps. In such cases, safety may be a problem and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior. The latter is more difficult to observe on the field than queueing, which is more obvious.

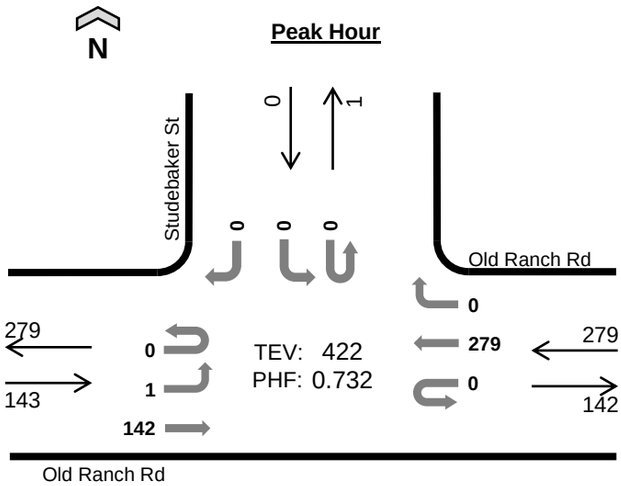
Source: Highway Capacity Manual, 2000. Transportation Research Board, National Research Council

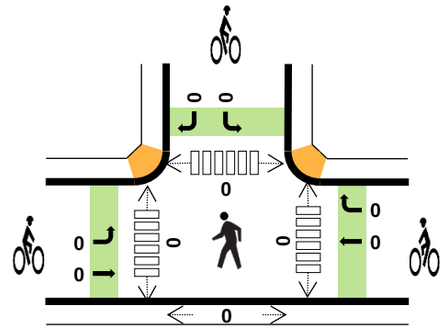
APPENDIX C – Traffic Counts

Studebaker St
Old Ranch Rd

Date: 4/16/2025
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:45 AM to 8:45 AM

Peak Hour





	HV%	PHF
EB	2%	0.64
WB	1%	0.79
NB	--	--
SB	--	--
TOTAL	2%	0.73

Peak Hour Count Summaries

Peak Hour Interval Start		Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:45 AM		0	0	30	0	0	0	65	0	0	0	0	0	0	0	0	0	95	0
8:00 AM		0	0	22	0	0	0	70	0	0	0	0	0	0	0	0	0	92	0
8:15 AM		0	0	56	0	0	0	88	0	0	0	0	0	0	0	0	0	144	0
8:30 AM		0	1	34	0	0	0	56	0	0	0	0	0	0	0	0	0	91	422
Pk Hr	All	0	1	142	0	0	0	279	0	0	0	0	0	0	0	0	0	422	
	HV	0	0	3	0	0	0	4	0	0	0	0	0	0	0	0	0	7	
	HV%	-	0%	2%	-	-	-	1%	-	-	-	-	-	-	-	-	-	2%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
7:45 AM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
8:00 AM	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*
8:15 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
8:30 AM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	3	4	0	0	*7*	0	0	0	0	*0*	0	0	0	0	*0*

TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

Count Summaries - All Vehicles

Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	8	0	0	0	70	0	0	0	0	0	0	0	0	0	78	0
7:15 AM	0	0	26	0	0	0	89	0	0	0	0	0	0	0	0	1	116	0
7:30 AM	0	0	23	0	0	0	54	0	0	0	0	0	0	1	0	0	78	0
7:45 AM	**0**	**0**	**30**	**0**	**0**	**0**	**65**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**95**	**367**
8:00 AM	**0**	**0**	**22**	**0**	**0**	**0**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**92**	**381**
8:15 AM	**0**	**0**	**56**	**0**	**0**	**0**	**88**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**144**	**409**
8:30 AM	**0**	**1**	**34**	**0**	**0**	**0**	**56**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**91**	**422**
8:45 AM	0	0	25	0	0	0	37	0	0	0	0	0	0	0	0	0	62	389
Count Total	0	1	224	0	0	0	529	0	0	0	0	0	0	1	0	1	756	
Pk Hr All	**0**	**1**	**142**	**0**	**0**	**0**	**279**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**422**	
Pk Hr HV	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	
Pk Hr HV%	**-**	**0%**	**2%**	**-**	**-**	**-**	**1%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	**Total**	EB	WB	NB	SB	**Total**	E	W	N	S	**Total**
7:00 AM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
7:15 AM	0	4	0	0	*4*	0	0	0	0	*0*	0	0	0	0	*0*
7:30 AM	2	0	0	0	*2*	0	0	0	0	*0*	0	0	0	0	*0*
7:45 AM	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**1**	**2**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	6	8	0	0	*14*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**3**	**4**	**0**	**0**	***7***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

Count Summaries - Heavy Vehicles

Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4	0
7:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7:45 AM	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**8**
8:00 AM	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**11**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**8**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**7**
8:45 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6
Count Total	0	0	6	0	0	0	8	0	0	0	0	0	0	0	0	0	14	
Pk Hr Heavy	**0**	**0**	**3**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	

Count Summaries - Bikes

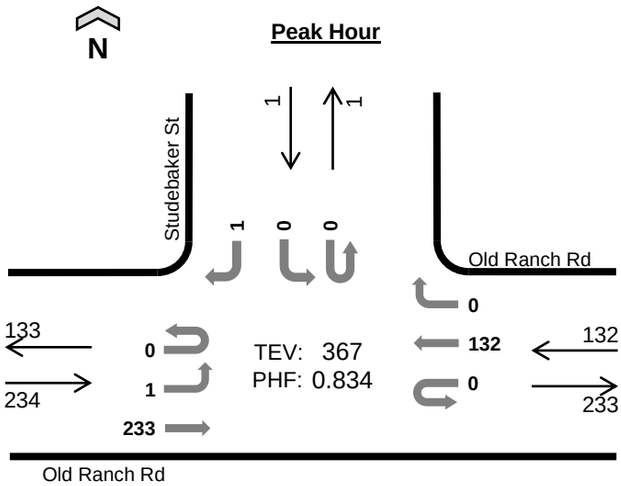
Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:00 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:15 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:30 AM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

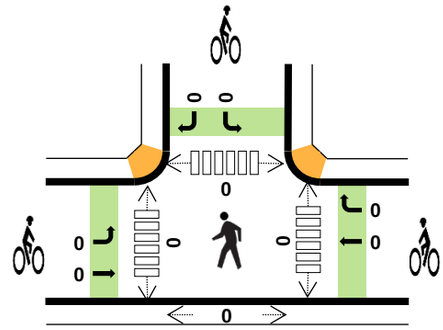
TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

Studebaker St
Old Ranch Rd

Date: 4/16/2025
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM

Peak Hour





	HV%	PHF
EB	0%	0.80
WB	2%	0.83
NB	--	--
SB	0%	0.25
TOTAL	1%	0.83

Peak Hour Count Summaries

Peak Hour Interval Start		Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM		0	1	59	0	0	0	40	0	0	0	0	0	0	0	0	0	100	0
4:15 PM		0	0	52	0	0	0	33	0	0	0	0	0	0	0	0	1	86	0
4:30 PM		0	0	73	0	0	0	37	0	0	0	0	0	0	0	0	0	110	0
4:45 PM		0	0	49	0	0	0	22	0	0	0	0	0	0	0	0	0	71	367
Pk Hr	All	0	1	233	0	0	0	132	0	0	0	0	0	0	0	0	1	367	
	HV	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3	
	HV%	-	0%	0%	-	-	-	2%	-	-	-	-	-	-	-	-	0%	1%	

Note: For complete count summary (all intervals), see following pages.
*** Heavy Vehicle Classifications include FHWA Classes 4-13.*
*** Count Summaries include heavy vehicles, but exclude bicycles in overall count.*

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	E	W	N	S	Total
4:00 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:15 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:30 PM	0	1	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
4:45 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	1	2	0	0	*3*	0	0	0	0	*0*	0	0	0	0	*0*

TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

Count Summaries - All Vehicles

Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**1**	**59**	**0**	**0**	**0**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	0
4:15 PM	**0**	**0**	**52**	**0**	**0**	**0**	**33**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**86**	**0**
4:30 PM	**0**	**0**	**73**	**0**	**0**	**0**	**37**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**110**	**0**
4:45 PM	**0**	**0**	**49**	**0**	**0**	**0**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**71**	**367**
5:00 PM	0	2	47	0	0	0	37	0	0	0	0	0	0	0	0	0	86	353
5:15 PM	0	0	58	0	0	0	34	1	0	0	0	0	0	0	0	0	93	360
5:30 PM	0	0	61	0	0	0	31	0	0	0	0	0	0	0	0	0	92	342
5:45 PM	0	0	49	0	0	0	34	0	0	0	0	0	0	0	0	0	83	354
Count Total	0	3	448	0	0	0	268	1	0	0	0	0	0	0	0	1	721	
Pk Hr All	**0**	**1**	**233**	**0**	**0**	**0**	**132**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**367**	
Pk Hr HV	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	
Pk Hr HV%	**-**	**0%**	**0%**	**-**	**-**	**-**	**2%**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0%**	**1%**	

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	**Total**	EB	WB	NB	SB	**Total**	E	W	N	S	**Total**
4:00 PM	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:15 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	*0*	0	0	0	0	*0*	0	0	0	0	*0*
5:15 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:30 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
5:45 PM	1	0	0	0	*1*	0	0	0	0	*0*	0	0	0	0	*0*
Count Total	4	2	0	0	*6*	0	0	0	0	*0*	0	0	0	0	*0*
Peak Hour	**1**	**2**	**0**	**0**	***3***	**0**	**0**	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**

TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

Count Summaries - Heavy Vehicles

Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
5:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Count Total	0	0	4	0	0	0	2	0	0	0	0	0	0	0	0	0	6	
Pk Hr Heavy	**0**	**0**	**1**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	

Count Summaries - Bikes

Interval Start	Old Ranch Rd				Old Ranch Rd				n/a				Studebaker St				15-min Total	Rolling Hour Total
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
4:15 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:30 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
4:45 PM	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pk Hr Bike	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	

TJ Wethington
(720) 646-1008
tj.wethington@idaxdata.com

APPENDIX D – Existing Synchro Outputs

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	142	279	0	0	0
Future Vol, veh/h	1	142	279	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	154	303	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	303	0	-	0	460	303
Stage 1	-	-	-	-	303	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1258	-	-	-	560	736
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	872	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1258	-	-	-	559	736
Mov Cap-2 Maneuver	-	-	-	-	559	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.06	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	13	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s/veh)	7.9	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	233	132	0	0	1
Future Vol, veh/h	1	233	132	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	253	143	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	143	0	-	0	399	143
Stage 1	-	-	-	-	143	-
Stage 2	-	-	-	-	255	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1439	-	-	-	607	904
Stage 1	-	-	-	-	884	-
Stage 2	-	-	-	-	787	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1439	-	-	-	606	904
Mov Cap-2 Maneuver	-	-	-	-	606	-
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	787	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.03	0	8.99
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	8	-	-	-	904
HCM Lane V/C Ratio	0.001	-	-	-	0.001
HCM Control Delay (s/veh)	7.5	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

APPENDIX E – Future (with site development) Synchro Outputs

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	143	281	0	0	0
Future Vol, veh/h	1	143	281	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	155	305	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	305	0	-	0	463	305
Stage 1	-	-	-	-	305	-
Stage 2	-	-	-	-	158	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1255	-	-	-	557	734
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	871	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1255	-	-	-	557	734
Mov Cap-2 Maneuver	-	-	-	-	557	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	871	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.05	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	12	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s/veh)	7.9	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	142	279	1	2	2
Future Vol, veh/h	1	142	279	1	2	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	154	303	1	2	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	460	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1256	-	-	-	559	736
Stage 1	-	-	-	-	749	-
Stage 2	-	-	-	-	872	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1256	-	-	-	559	736
Mov Cap-2 Maneuver	-	-	-	-	559	-
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.06	0	10.71
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	13	-	-	-	635
HCM Lane V/C Ratio	0.001	-	-	-	0.007
HCM Control Delay (s/veh)	7.9	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	235	133	0	0	1
Future Vol, veh/h	1	235	133	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	255	145	0	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	145	0	-	0	402	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1438	-	-	-	604	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1438	-	-	-	604	903
Mov Cap-2 Maneuver	-	-	-	-	604	-
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.03	0	8.99
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	8	-	-	-	903
HCM Lane V/C Ratio	0.001	-	-	-	0.001
HCM Control Delay (s/veh)	7.5	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	233	132	2	1	1
Future Vol, veh/h	2	233	132	2	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	253	143	2	1	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	146	0	-	0	402	145
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1436	-	-	-	604	903
Stage 1	-	-	-	-	883	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1436	-	-	-	603	903
Mov Cap-2 Maneuver	-	-	-	-	603	-
Stage 1	-	-	-	-	881	-
Stage 2	-	-	-	-	785	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.06	0	9.99
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	15	-	-	-	723
HCM Lane V/C Ratio	0.002	-	-	-	0.003
HCM Control Delay (s/veh)	7.5	0	-	-	10
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0