

TRAFFIC IMPACT STUDY

For

**High Plains Estates
Weld County, Colorado**

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I. Introduction

Project Overview

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the development entitled High Plains Estates.

This traffic impact study has been revised to address jurisdiction review comments regarding additional description and detail of proposed site access connection to River Rock Drive.

This proposed development consists of a residential subdivision including a mix of single-family and multifamily housing. The development is located on the south side of E County Road 14 and east of High Plains Boulevard in Weld County, Colorado.

Study Area

The study area to be examined in this analysis encompasses High Plains Boulevard between E County Road 14 and State Highway 60, and E County Road 14 from I-25 Frontage Road to High Plains Boulevard, as well as proposed site access drives.

Figure 1 illustrates location of the site and study intersections.

Site Description

Land for the development is currently vacant and surrounded by a mix of residential, agricultural, and open space land uses. The proposed development is understood to entail the new construction of a residential subdivision supporting as many as 226 multifamily dwelling units, and 401 single-family detached dwelling units.

Proposed access to the development is primarily provided at the following locations: one full-movement access onto High Plains Boulevard (referred to as Access A), and one full-movement access onto E County Road 14 (referred to as Access B). Additional access to the development area also includes connection to Onyx Place via extension of River Rock Drive, as well as future connection to the east. However, for analysis purposes said access locations were not directly analyzed given their internal nature to the overall residential development area and the conceptual nature of the site plan. Internal access operations are expected to provide levels of service equal to or better than those of the adjacent major study intersections.

For purposes of this study, it is anticipated that development construction would be completed by end of Year 2024. General site and access locations are shown on Figure 1. A conceptual site plan, as prepared by Henry Design Group, is shown on Figure 2. This plan is provided for illustrative purposes only.





NOTE:
 1. THIS IS AN ILLUSTRATIVE CONCEPTUAL PLAN TO SHOW HOW THE PROPERTY COULD DEVELOP, AS WELL AS INDICATE THE CURRENT OWNERS INTENT. ALL DETAILS SHOWN ARE CONCEPTUAL ONLY AND MORE DETAILED PLANS AND ENGINEERING ARE REQUIRED TO ENSURE COMPLIANCE WITH TOWN CODES, REGULATIONS AND STANDARDS.
 2. DIMENSIONS BETWEEN ACCESS POINTS ARE CONCEPTUAL. EXACT SPACING TO BE DETERMINED AT PLATTING.



Existing and Committed Surface Transportation Network

Within the study area, High Plains Boulevard is the primary roadway that will accommodate traffic to and from the proposed development. The secondary roadways include E County Road 14, State Highway 60, Brunner Boulevard, I-25 Frontage Road, and River Rock Drive.

High Plains Boulevard is a north-south arterial roadway having between two to four through lanes (one to two lanes in each direction) with a combination of shared and exclusive turn lanes at the intersections within the study area. High Plains Boulevard provides a posted speed limit of 35 MPH. High Plains Boulevard currently ends north of Brunner Boulevard and is anticipated to be extended north to intersect E County Road 14 upon continued area development.

E County Road 14 is an east-west arterial roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersections within the study area. E County Road 14 provides a posted speed limit of 55 MPH. E County Road 14 becomes State Highway 60 west of I-25 Frontage Road.

State Highway 60 is an east-west state roadway having two through lanes (one lane in each direction) with exclusive turn lanes at the intersection within the study area. The Colorado Department of Transportation (CDOT) categorizes State Highway 60 as a Non-Rural Principal Highway (NR-A) and provides a posted speed limit of 55 MPH.

Brunner Boulevard is an east-west collector roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. Brunner Boulevard provides a posted speed limit of 25 MPH.

I-25 Frontage Road is a north-south state roadway having two through lanes (one lane in each direction) with shared turn lanes at the intersection within the study area. I-25 Frontage Road provides a posted speed limit of 55 MPH. I-25 Frontage Road is currently closed between E County Road 14 and State Highway 60 pursuant to CDOT's I-25 North Express Lanes Berthoud to Johnstown Project and is not anticipated to reopen in the future.

River Rock Drive is a north-south local roadway having two through lanes (one lane in each direction) with shared turn lanes at intersections within the existing adjacent subdivision. River Rock Drive does not provide a posted speed limit. However, based on the roadway classification, it is assumed to provide a posted speed limit of 25 MPH.

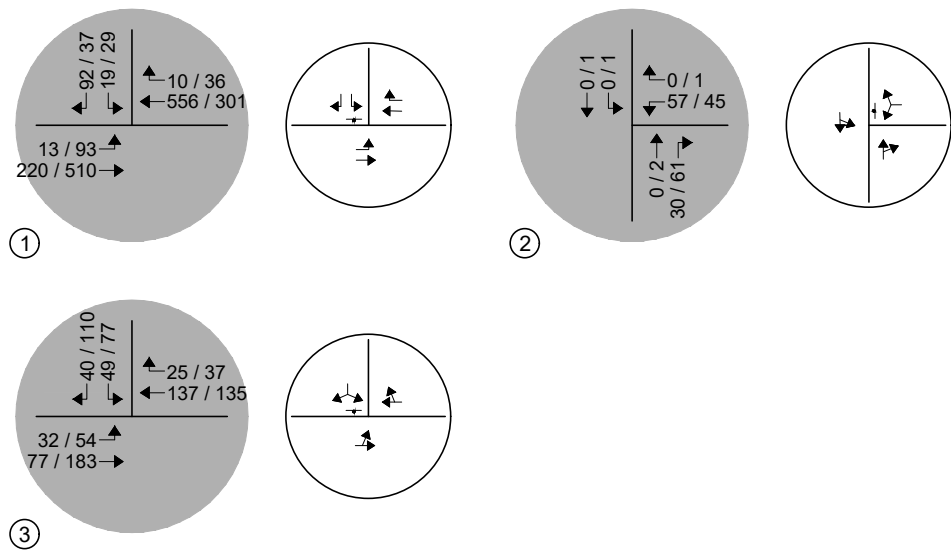
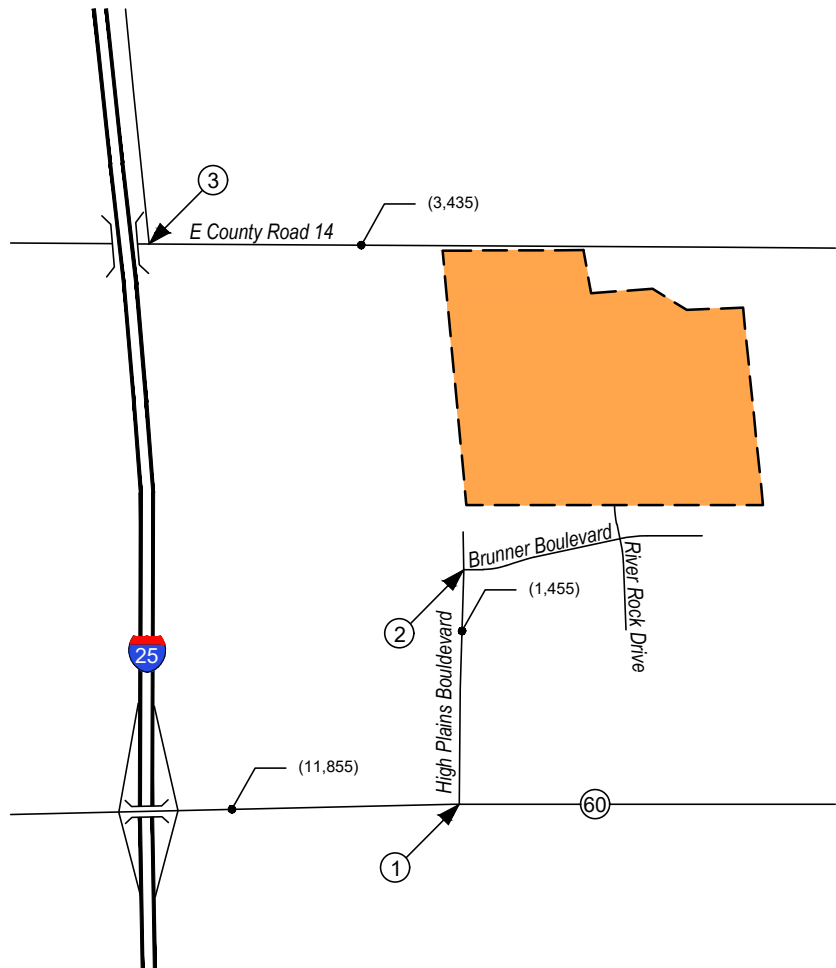
Study intersections operate under a stop-controlled condition. A stop-controlled intersection is defined as a roadway intersection where vehicle rights-of-way are controlled by one or more "STOP" signs.

No regional or specific improvements for the above-described roadways beyond that already discussed are known to be planned or committed at this time. It is anticipated that as area development continues to occur roadway and intersection improvements will be necessary dependent on specific capacity thresholds associated with each development area. For purposes of this analysis, the study area roadways are considered to be built to their ultimate cross-sections excluding future improvements associated with the proposed development and to accommodate regional transportation demands.

II. Existing Traffic Conditions

Morning (AM) and afternoon (PM) peak hour traffic counts were collected at the intersections of High Plains Boulevard with State Highway 60 and Brunner Boulevard, as well as E County Road 14 with I-25 Frontage Road. Average daily traffic (ADT) volumes were collected over a 24-hour period on High Plains Boulevard, State Highway 60, and E County Road 14. Counts were collected on June 1, 2022, with AM peak hour counts being collected during the period of 7:00 a.m. to 9:00 a.m. and PM peak hour counts being collected during the period of 4:00 p.m. to 6:00 p.m.

Existing volumes and intersection geometry are shown on Figure 3. Traffic count data is included for reference in Appendix A.



LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

Figure 3
EXISTING TRAFFIC
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Existing Traffic

The Signalized and Unsignalized Intersection Analysis techniques, as published in the Highway Capacity Manual (HCM), 6th Edition, by the Transportation Research Board and as incorporated into the SYNCHRO computer program, were used to analyze the study intersections for existing and future traffic conditions. These nationally accepted techniques allow for the determination of intersection level of service (LOS) based on the congestion and delay of each traffic movement.

Level of service is a method of measurement used by transportation professionals to quantify a driver’s perception of travel conditions that include travel time, number of stops, and total amount of stopped delay experienced on a roadway network. The HCM categorizes level of service into a range from “A” which indicates little, if any, vehicle delay, to “F” which indicates a level of operation considered unacceptable to most drivers. These levels of service grades with brief descriptions of the operating condition, for unsignalized and signalized intersections, are included for reference in Appendix B and have been used throughout this study.

The level of service analyses results for existing conditions are summarized in Table 1.

Intersection capacity worksheets developed for this study are provided in Appendix C.

Table 1 – Intersection Capacity Analysis Summary – Existing Traffic

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
SH 60 / High Plains Boulevard (Stop-Controlled) Eastbound Left Southbound Left Southbound Right	A C B	A C B
High Plains Boulevard / Brunner Boulevard (Stop-Controlled) Westbound Left and Right Southbound Left and Through	A A	A A
E County Road 14 / I-25 Frontage Road (Stop-Controlled) Eastbound Left and Through Southbound Left and Right	A B	A B

Key: Stop-Controlled Intersection: Level of Service

Existing Traffic Analysis Results

Under existing conditions, operational analysis shows that the unsignalized intersection of State Highway 60 with High Plains Boulevard has turning movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

The unsignalized intersection of High Plains Boulevard with Brunner Boulevard has turning movement operations at LOS A during both the morning and afternoon peak traffic hours.

The unsignalized intersection of E County Road 14 with I-25 Frontage Road has turning movement operations at LOS B or better during both the morning and afternoon peak traffic hours.

III. Future Traffic Conditions Without Proposed Development

Background traffic is the traffic projected to be on area roadways without consideration of the proposed development. Background traffic includes traffic generated by development of vacant parcels in the area.

To account for projected increases in background traffic for Years 2024 and 2042, a compounded annual growth rate was determined using historical traffic data provided by CDOT's Online Transportation Information System (OTIS) along the adjacent segment of State Highway 60, which anticipates a 20-year growth rate of approximately two percent. Therefore, a growth rate of two percent was applied to existing traffic volumes. This annual growth rate provides for a conservative analysis and is assumed to account for regional growth projections and the level of in-fill development expected within the area.

To account for projected traffic from adjacent developments not yet built, trip generations from the Revere at Johnstown, Filing No. 1 traffic study¹ were added to background traffic volumes. It is noted that additional development to the west and north of the proposed development site is anticipated pursuant to conceptual land use plans referred to as Great Plains Village. However, given the conceptual nature of this area, no specific traffic analyses are currently available. Therefore, future traffic volumes associated with this additional development is assumed to be accounted for within the applied two percent annual growth rate.

Pursuant to the area roadway improvements discussed in Section I, Year 2024 background traffic conditions assume the extension of High Plains Boulevard north to E County Road 14 as part of the adjacent Revere development including site access along this extension located opposite proposed site Access A (referred to as Access Drive). Year 2042 assumes no additional roadway improvements to accommodate regional transportation demands. This assumption provides for a conservative analysis.

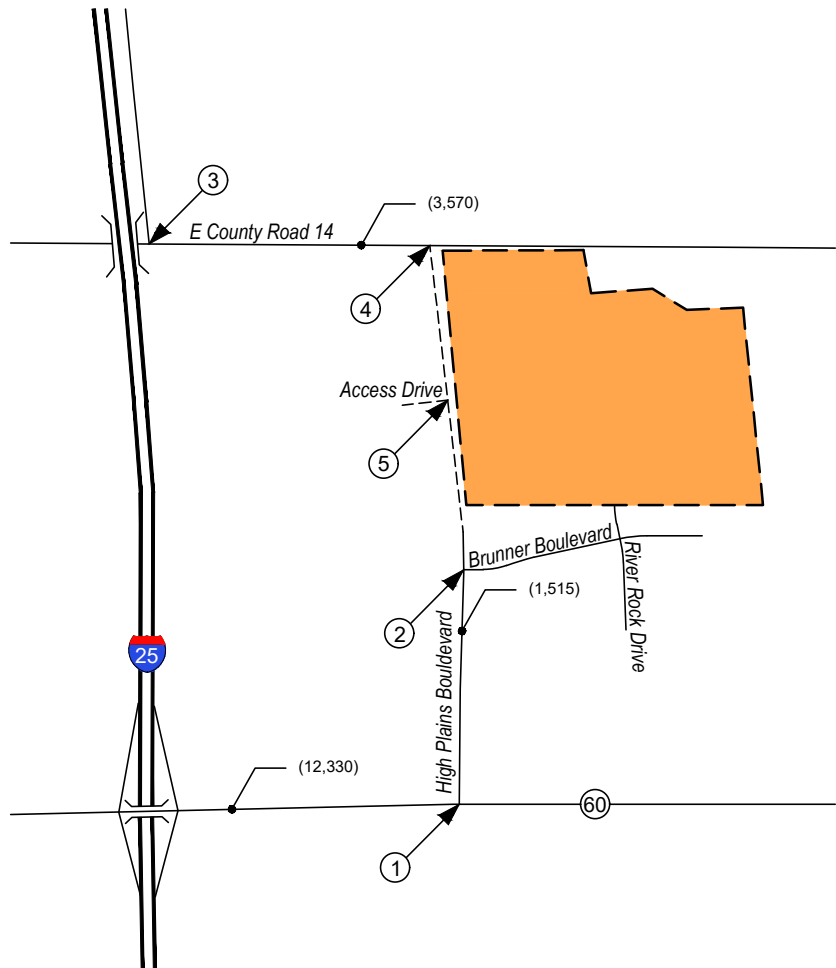
Background Traffic Signal Warrant

A signal warrant analysis, using Year 2024 and 2042 background traffic volumes, was conducted for the State Highway 60 intersection with High Plains Boulevard in order to review potential for traffic signal control. Year 2024 Analysis results conclude that the study intersection was found to be above the minimum vehicle volumes required to meet Warrant 3 – Peak Hour, from the Manual on Uniform Traffic Control Devices (MUTCD), for the installation of a traffic signal. It is noted however that warrants performed in the previous traffic study for adjacent development did not anticipate signalization by Year 2024. As such, the State Highway 60 and High Plains Boulevard intersection analysis remained a stop-controlled condition for Year 2024 but is assumed to be signalized by Year 2042. Warrant study worksheets are provided for reference in Appendix D.

¹ Revere at Johnstown, Filing No. 1 Transportation Impact Study, Delich Associates, September 2020.

Warrant 3 is intended for use at locations where traffic conditions are such that for a minimum of one hour on an average day, the minor-street (High Plains Boulevard) traffic suffers undue delay when entering or crossing the major street (State Highway 60). This assumption provides for a conservative analysis. Said study intersection should be monitored further by CDOT and County Staff as area development occurs to determine when signalization installation is appropriate.

Projected background traffic volumes and intersection geometry for Years 2024 and 2042 are shown on Figure 4 and Figure 5, respectively.



LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

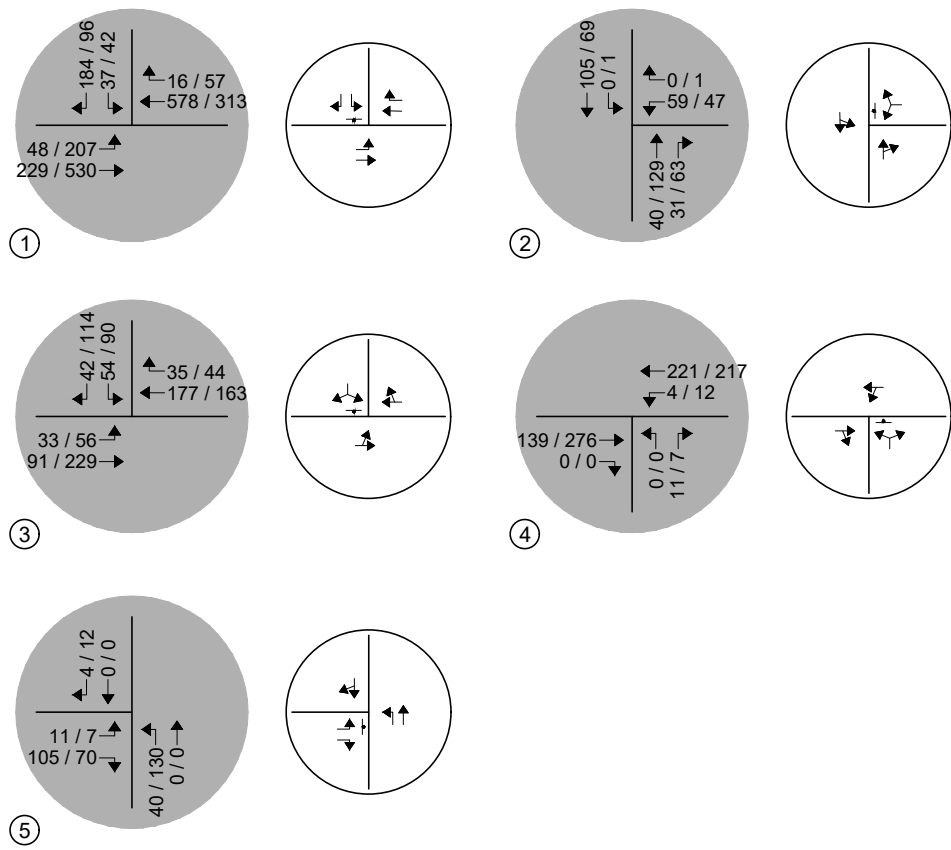
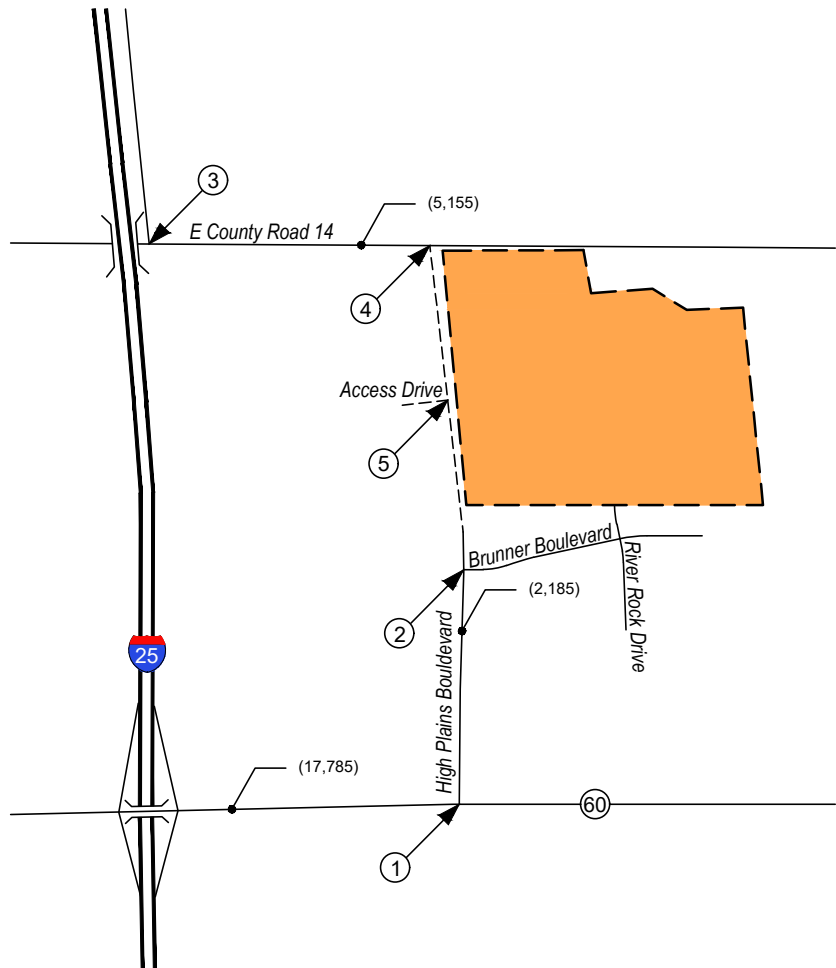


Figure 4
BACKGROUND TRAFFIC - YEAR 2024
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

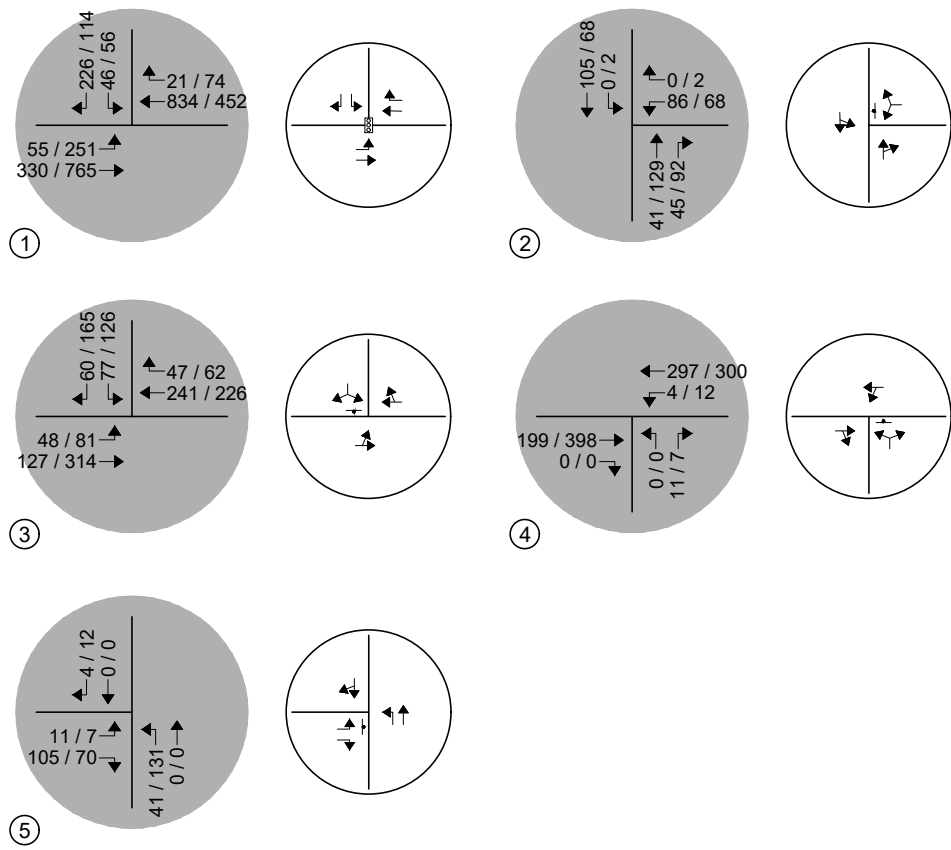


Figure 5
BACKGROUND TRAFFIC - YEAR 2042
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

Peak Hour Intersection Levels of Service – Background Traffic

As with existing traffic conditions, the operations of study intersections were analyzed under background conditions, without the proposed development, using the SYNCHRO computer program.

Background traffic level of service analysis results for Year 2024 are listed in Table 2. Year 2024 operational results are summarized in Table 3.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 2 – Intersection Capacity Analysis Summary – Background Traffic – Year 2024

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
SH 60 / High Plains Boulevard (Stop-Controlled) Eastbound Left Southbound Left Southbound Right	A C C	A E B
High Plains Boulevard / Brunner Boulevard (Stop-Controlled) Westbound Left and Right Southbound Left and Through	A A	B A
E County Road 14 / I-25 Frontage Road (Stop-Controlled) Eastbound Left and Through Southbound Left and Right	A B	A B
E County Road 14 / High Plains Boulevard (Stop-Controlled) Westbound Left and Through Northbound Left and Right	A A	A A
High Plains Boulevard / Access Drive (Stop-Controlled) Eastbound Left Eastbound Right Northbound Left	A A A	B A A

Key: Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2024

Year 2024 background traffic analysis indicates that the unsignalized intersection of State Highway 60 with High Plains Boulevard has turning movement operations at or better than LOS C during the AM peak traffic hour and LOS B or better during the PM peak traffic hour. Exceptions would include the southbound left turning movement which operates at LOS E during the PM peak traffic hour. The LOS E operation is attributed to the high through traffic volumes along State Highway 60 and the stop-controlled nature of the intersection.

The unsignalized intersection of High Plains Boulevard with Brunner Boulevard has turning movement operations at LOS A during the AM peak traffic hour and LOS B or better during the PM peak traffic hour.

The unsignalized intersection of E County Road 14 with I-25 Frontage Road has turning movement operations at or better than LOS B during both the AM and PM peak traffic hours.

The unsignalized intersection of E County Road 14 with High Plains Boulevard has turning movement operations at LOS A during both the AM and PM peak traffic hours.

The unsignalized intersection of High Plains Boulevard with Access Drive has turning movement operations at LOS A during the AM peak traffic hour and LOS B or better during the PM peak traffic hour.

Table 3 – Intersection Capacity Analysis Summary – Background Traffic – Year 2042

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
SH 60 / High Plains Boulevard (Signalized)	B (13.1)	A (8.1)
High Plains Boulevard / Brunner Boulevard (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	A	A
E County Road 14 / I-25 Frontage Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	B	D
E County Road 14 / High Plains Boulevard (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	A	B
High Plains Boulevard / Access Drive (Stop-Controlled)		
Eastbound Left	A	B
Eastbound Right	A	A
Northbound Left	A	A

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service

Background Traffic Analysis Results – Year 2042

By Year 2042 and without the proposed development, the study intersection of State Highway 60 with High Plains Boulevard experiences LOS B operations during the AM peak traffic hour and LOS A operations during the PM peak traffic hour.

The study intersection of High Plains Boulevard with Brunner Boulevard experiences LOS B or better operations during both the AM and PM peak traffic hours.

The study intersection of E County Road 14 with I-25 Frontage Road experiences LOS B or better operations during the AM peak traffic hour and LOS D or better operations during the PM peak traffic hour.

The study intersection of E County Road 14 with High Plains Boulevard experiences LOS A operations during the AM peak traffic hour and LOS B or better operations during the PM peak traffic hour.

The study intersection of High Plains Boulevard with Access Drive experiences LOS A operations during the AM peak traffic hour and LOS B or better operations during the PM peak traffic hour.

IV. Proposed Project Traffic

Trip Generation

Standard traffic generation characteristics compiled by the Institute of Transportation Engineers (ITE) in their report entitled Trip Generation Manual, 11th Edition, were applied to the proposed land use in order to estimate average daily traffic (ADT), AM Peak Hour, and PM Peak Hour vehicle trips. A vehicle trip is defined as a one-way vehicle movement from a point of origin to a point of destination.

The ITE land use codes 210 (Single-Family Detached Housing) and 220 (Multifamily Housing (Low-Rise)) were used for estimating trip generation because of their best fit to the proposed land use descriptions.

Trip generation rates used in this study are presented in Table 4.

Table 4 – Trip Generation Rates

ITE CODE	LAND USE	UNIT	TRIP GENERATION RATES						
			24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
				ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	DU	9.43	0.18	0.52	0.70	0.59	0.35	0.94
220	Multifamily Housing (Low-Rise)	DU	6.74	0.10	0.30	0.40	0.32	0.19	0.51

Key: DU = Dwelling Units.

Table 5 illustrates projected ADT, AM Peak Hour, and PM Peak Hour traffic volumes likely generated by the proposed development upon build-out.

Table 5 – Trip Generation Summary

ITE CODE	LAND USE	SIZE	DU	TOTAL TRIPS GENERATED						
				24 HOUR	AM PEAK HOUR			PM PEAK HOUR		
					ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
210	Single-Family Detached Housing	401	DU	3,781	73	208	281	237	139	377
220	Multifamily Housing (Low-Rise)	226	DU	1,523	22	69	90	73	43	115
<i>Total:</i>				5,305	95	276	371	310	182	492

Key: DU = Dwelling Units.

Note: All data and calculations above are subject to being rounded to nearest value.

Upon build-out, Table 5 illustrates that the proposed development has the potential to generate approximately 5,305 daily vehicle trips with 371 of those occurring during the morning peak hour and 492 during the afternoon peak hour.

Adjustments to Trip Generation Rates

A development of this type is not likely to attract trips from within area land uses nor pass-by or diverted link trips from the adjacent roadway system, therefore no trip reduction was taken in this analysis.

Trip Distribution

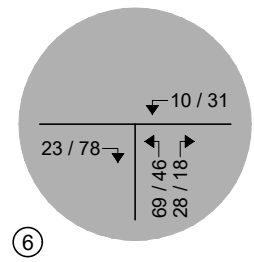
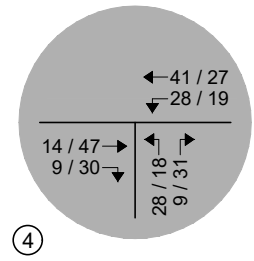
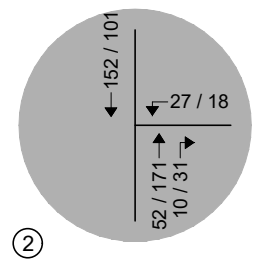
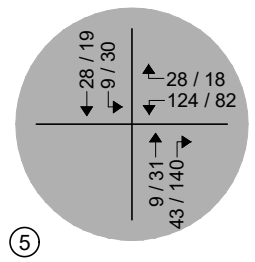
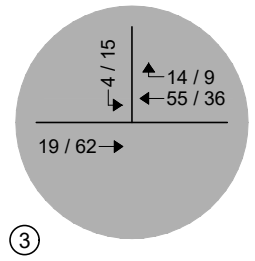
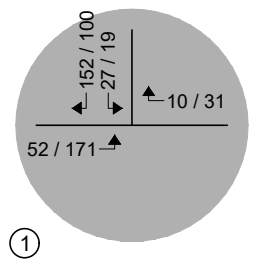
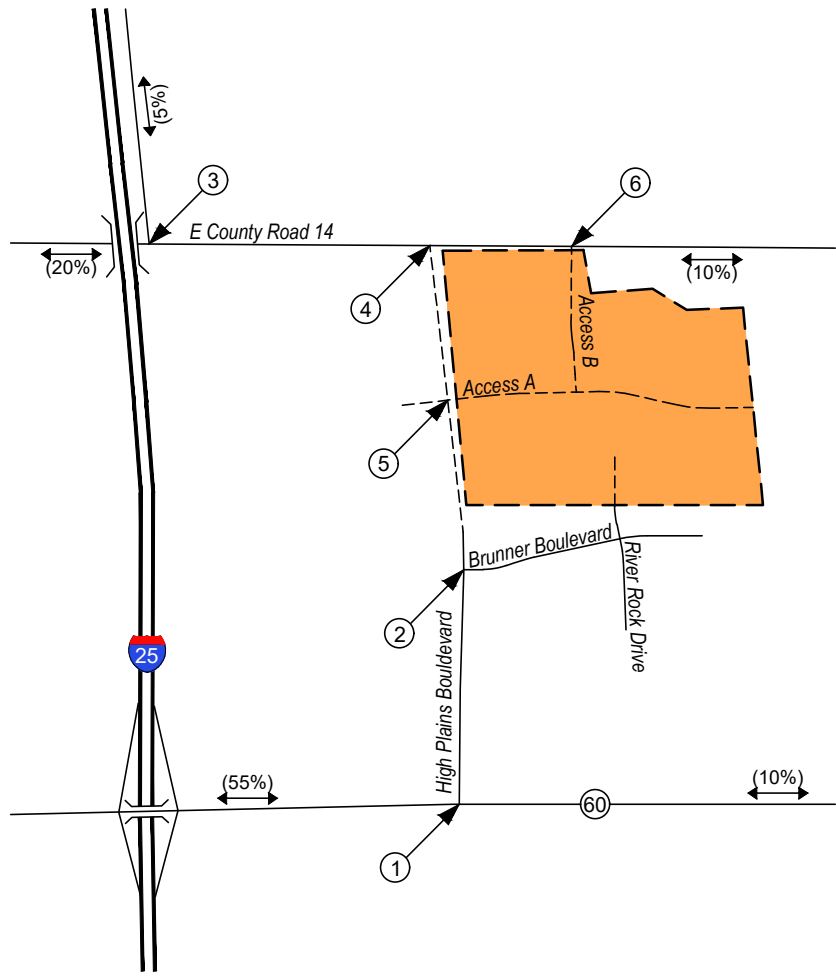
The overall directional distribution of site-generated traffic was determined based on the location of development site within the County, proposed and existing area land uses, allowed turning movements, available roadway network, and in reference to distribution patterns assumed in the previously prepared traffic study for the adjacent development.

Overall trip distribution patterns for the development are shown on Figure 6.

Trip Assignment

Trip assignment is how generated and distributed vehicle trips are expected to be loaded onto the available roadway network.

Applying trip distribution patterns to site-generated traffic provides the overall site-generated trip assignments shown on Figure 6.



LEGEND

- Study Intersection Volumes
- Development Site

Figure 6
SITE DEVELOPMENT DISTRIBUTION
(%) : Overall
SITE-GENERATED
AM / PM Peak Hour

V. Future Traffic Conditions With Proposed Developments

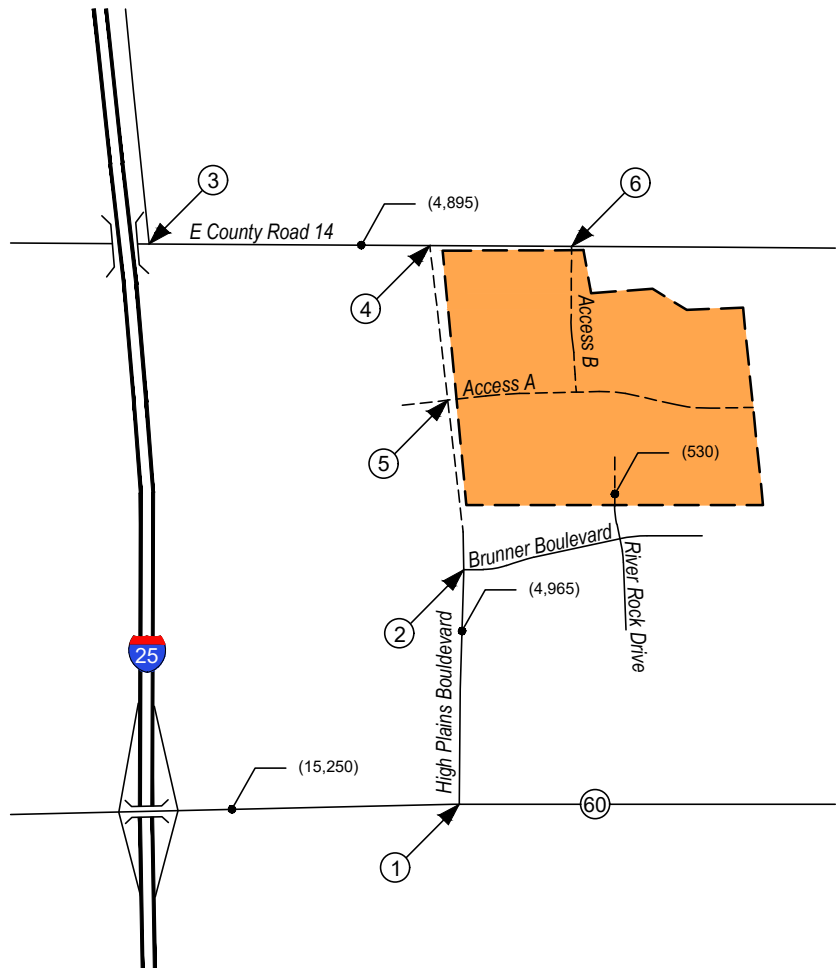
Total traffic is the traffic projected to be on area roadways with consideration of the proposed development. Total traffic includes background traffic projections for Years 2024 and 2042 with consideration of site-generated traffic. For analysis purposes, it was assumed that development construction would be completed by end of Year 2024.

Pursuant to area roadway improvement discussions provided in Section III, Year 2024 and Year 2042 total traffic conditions assume no additional roadway improvements to accommodate regional transportation demands. Roadway improvements associated with site development are expected to be limited to site access and frontage as required by the governing agency.

As previously discussed in Section III, Year 2024 and Year 2042 background traffic conditions indicate that the State Highway 60 and High Plains Boulevard intersection was found to be above the minimum vehicle volumes required to meet Warrant 3 – Peak Hour, from the MUTCD, for the installation of a traffic signal. To be consistent with background traffic assumptions, it is expected that signalization will have occurred after Year 2024. As such, the intersection was analyzed under a stop-controlled condition for Year 2024 and with traffic signal control by Year 2042.

Projected Year 2024 total traffic volumes and intersection geometry are shown in Figure 7.

Figure 8 shows projected total traffic volumes and intersection geometry for Year 2042.



LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

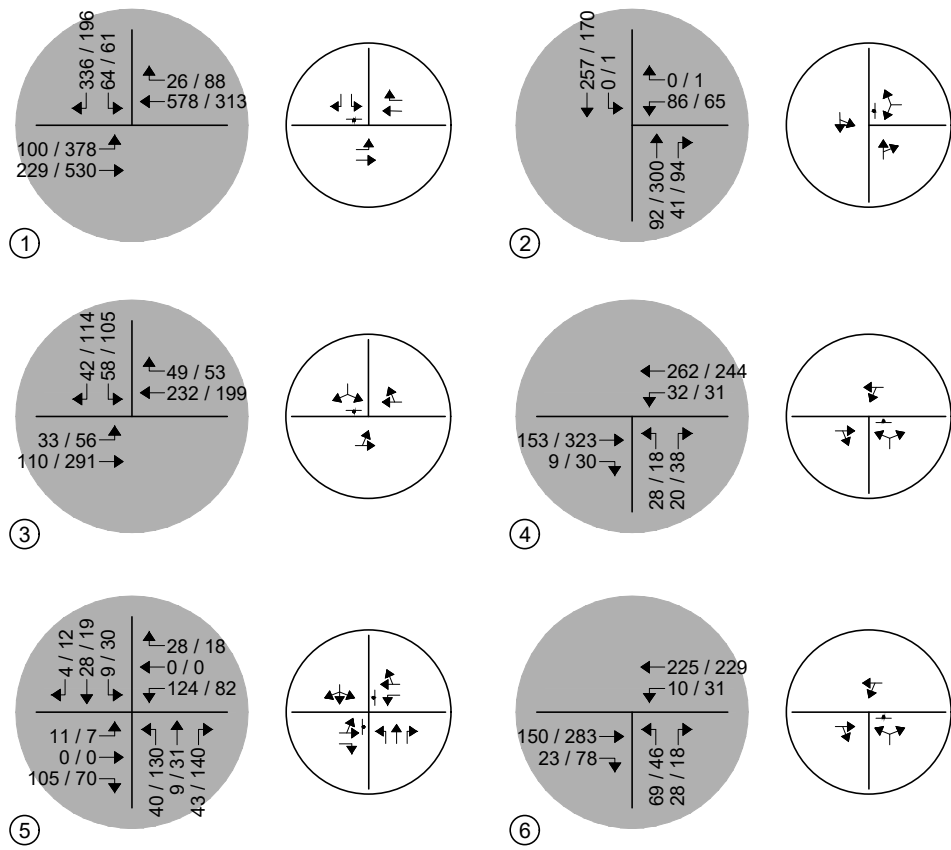
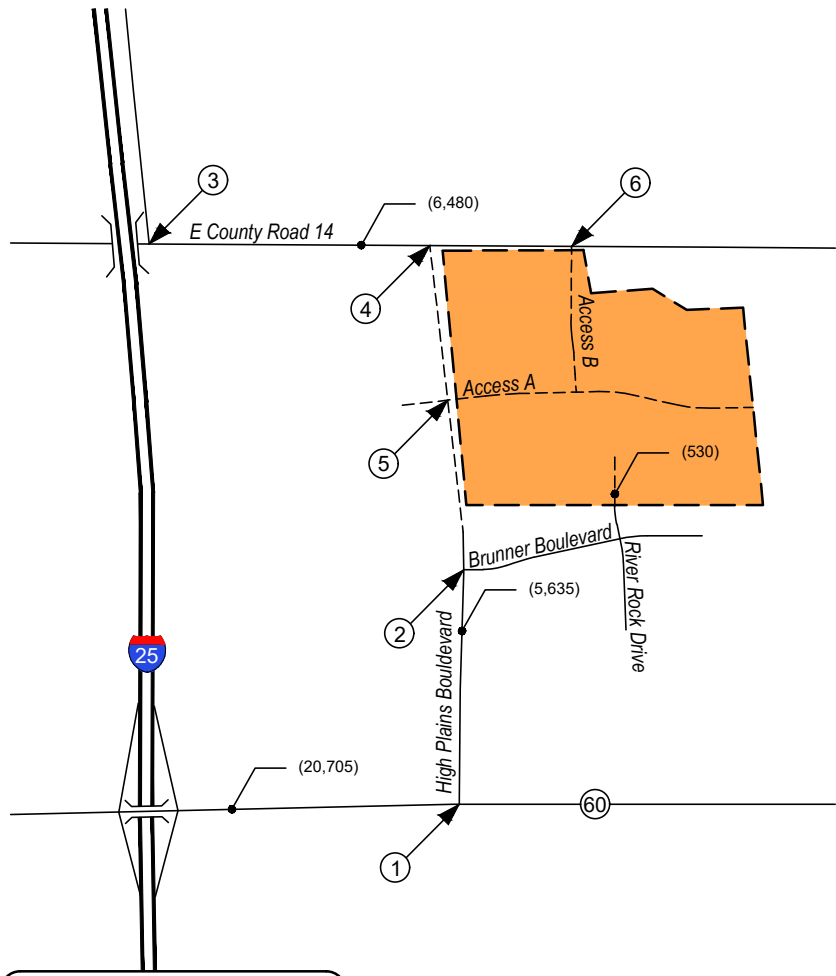


Figure 7
TOTAL TRAFFIC - YEAR 2024
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic



LEGEND

- Study Intersection Volumes
- Study Intersection Lane Geometry
- Development Site

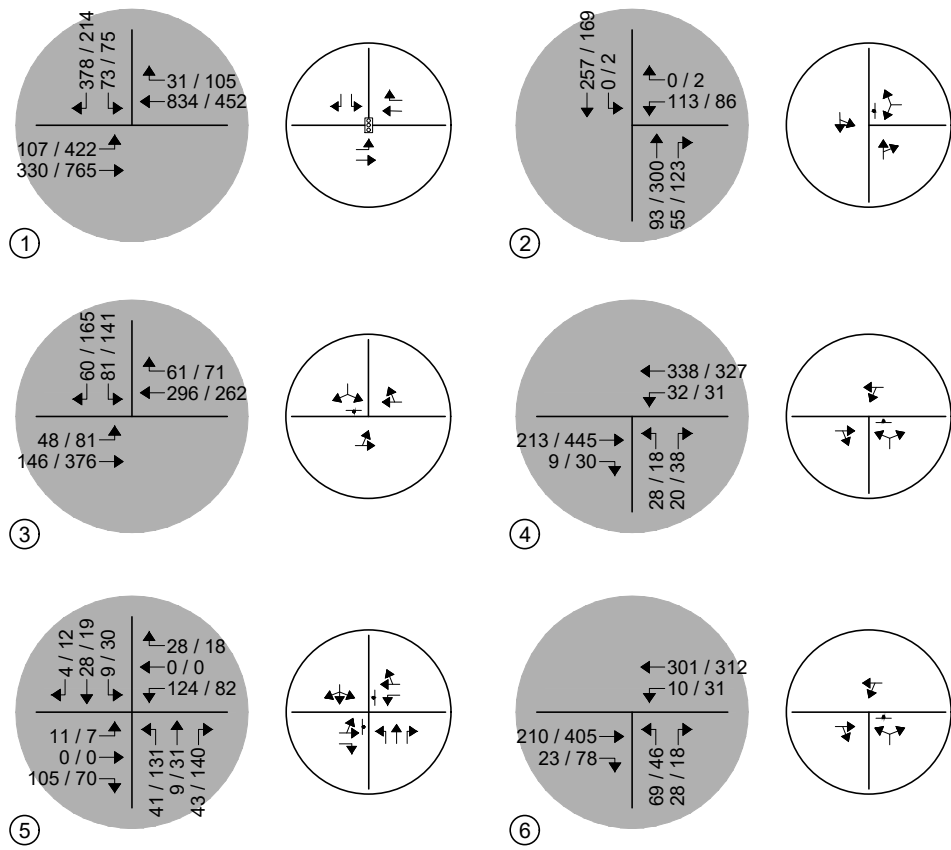


Figure 8
TOTAL TRAFFIC - YEAR 2042
 Volumes & Intersection Geometry
 AM / PM Peak Hour
 (ADT) : Average Daily Traffic

VI. Project Impacts

The analyses and procedures described in this study were performed in accordance with the latest HCM and are based upon the worst-case conditions that occur during a typical weekday upon build-out of site development and analyzed land uses. Therefore, study intersections are likely to operate with traffic conditions better than those described within this study, which represent the peak hours of weekday operations only.

Peak Hour Intersection Levels of Service – Total Traffic

As with background traffic, the operations of the study intersections were analyzed under projected total traffic conditions using the SYNCHRO computer program. Total traffic level of service analysis results for Years 2024 and 2042 are summarized in Table 6 and Table 7, respectively.

Definitions of levels of service are given in Appendix B. Intersection capacity worksheets are provided in Appendix C.

Table 6 – Intersection Capacity Analysis Summary – Total Traffic – Year 2024

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
SH 60 / High Plains Boulevard (Stop-Controlled) Eastbound Left Southbound Left Southbound Right	A D D	B F B
High Plains Boulevard / Brunner Boulevard (Stop-Controlled) Westbound Left and Right Southbound Left and Through	B A	B A
E County Road 14 / I-25 Frontage Road (Stop-Controlled) Eastbound Left and Through Southbound Left and Right	A B	A C
E County Road 14 / High Plains Boulevard (Stop-Controlled) Westbound Left and Through Northbound Left and Right	A B	A B
High Plains Boulevard / Access A (Stop-Controlled) Eastbound Left and Through Eastbound Right Westbound Left and Through Westbound Right Northbound Left Southbound Left, Through and Right	B A B A A A	B A C A A A
E County Road 14 / Access B (Stop-Controlled) Westbound Left and Through Northbound Left and Right	A B	A B

Key: Stop-Controlled Intersection: Level of Service

Table 7 – Intersection Capacity Analysis Summary – Total Traffic – Year 2042

INTERSECTION LANE GROUPS	LEVEL OF SERVICE	
	AM PEAK HOUR	PM PEAK HOUR
SH 60 / High Plains Boulevard (Signalized)	C (23.3)	B (10.1)
High Plains Boulevard / Brunner Boulevard (Stop-Controlled)		
Westbound Left and Right	B	B
Southbound Left and Through	A	A
E County Road 14 / I-25 Frontage Road (Stop-Controlled)		
Eastbound Left and Through	A	A
Southbound Left and Right	C	E
E County Road 14 / High Plains Boulevard (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	B	B
High Plains Boulevard / Access A (Stop-Controlled)		
Eastbound Left and Through	B	B
Eastbound Right	A	A
Westbound Left and Through	B	C
Westbound Right	A	A
Northbound Left	A	A
Southbound Left, Through and Right	A	A
E County Road 14 / Access B (Stop-Controlled)		
Westbound Left and Through	A	A
Northbound Left and Right	B	C

Key: Signalized Intersection: Level of Service (Control Delay in sec/veh)
 Stop-Controlled Intersection: Level of Service

Total Traffic Analysis Results Upon Development Build-Out

Table 7 illustrates how, by Year 2042 and upon development build-out, the signalized intersection of State Highway 60 with High Plains Boulevard shows an overall LOS C operation during the morning peak traffic hour and LOS B operation during the afternoon peak traffic hour. Compared to the background traffic analysis, the traffic generated by the proposed development is not expected to significantly change the operations of the study intersection.

The stop-controlled intersection of High Plains Boulevard with Brunner Boulevard is projected to have turning movement operations at LOS B or better for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of E County Road 14 with I-25 Frontage Road is projected to have turning movement operations at LOS C or better for the morning peak traffic hour and LOS A for the afternoon peak traffic hour. Exceptions would include the southbound turning movements and which operate at LOS E during the PM peak traffic hour. The LOS E operations are attributed to the high through traffic volumes along E County Road 14 and the stop-controlled nature of the intersection.

It is to be noted that it is not uncommon for unsignalized movements to or from an arterial roadway, in urban areas, to operate with noticeable delays during peak traffic hours. It is recommended that CDOT and County Staff continue to monitor the E County Road 14 and I-25 Frontage Road intersection as area development occurs to determine when mitigation measures may be most appropriate.

The stop-controlled intersection of E County Road 14 with High Plains Boulevard is projected to have turning movement operations at LOS B or better for both the morning and afternoon peak traffic hours.

The stop-controlled intersection of High Plains Boulevard with Access A is projected to have turning movement operations at LOS B or better for the morning peak traffic hour and LOS C or better for the afternoon peak traffic hour.

The stop-controlled intersection of E County Road 14 with Access B is projected to have turning movement operations at LOS B or better for the morning peak traffic hour and LOS C or better for the afternoon peak traffic hour.

These intersection operations are similar to background conditions.

As discussed in Section I, it is noted that proposed internal site access to the existing adjacent subdivision via River Rock Drive is anticipated to provide operations comparable to or better than the adjacent study intersections. Due to the acceptable operations shown at the intersection of High Plains Boulevard with Brunner Boulevard, no significant impacts to intersections along Brunner Boulevard or River Rock Drive are anticipated. Furthermore, projected average daily traffic volumes at the River Rock Drive access, as shown on Figures 7 and 8, are estimated to be approximately ten percent of total daily traffic volumes generated by the development and are considered to be minor.

Auxiliary Lane Analysis

Auxiliary lanes for site development accesses are to be based on County's Engineering and Construction Criteria (Criteria)², and CDOT's State Highway Access Code (SHAC)³.

Considering development build-out, an evaluation of auxiliary lane requirements, pursuant to Section 8.7, Table 8-4 of the County's Criteria, as well as section 3.10 of the CDOT SHAC, reveals that left turn and right-turn deceleration lanes at Access A along High Plains Boulevard and Access B along E County Road 14 are required since the development's projected peak hour left turn and right turn ingress volumes exceed the County's thresholds of 10 and 25 vehicles per hour, respectively.

² Weld County Engineering and Construction Criteria, Atkins, January 2021.

³ State Highway Access Code, State of Colorado, March 2002.

VII. Conclusion

This traffic impact study is provided as a planning document and addresses the capacity, geometric, and control requirements associated with the development entitled High Plains Estates. This proposed development consists of a residential subdivision including a mix of single-family and multifamily housing. The development is located on the south side of E County Road 14 and west of High Plains Boulevard in Weld County, Colorado.

The study area examined in this analysis encompassed High Plains Boulevard between E County Road 14 and State Highway 60, and proposed site access drives.

Analysis was conducted for critical AM Peak Hour and PM Peak Hour traffic operations for existing traffic conditions, Year 2024 and Year 2042 background traffic conditions, and Year 2024 and Year 2042 total traffic conditions.

Under existing conditions, operational analysis shows that the unsignalized study intersections generally experience turning movement operations at or better than LOS C during both the morning and afternoon peak traffic hours.

Year 2024 background traffic analysis indicates that the unsignalized intersection of State Highway 60 with High Plains Boulevard has turning movement operations at or better than LOS C during the AM peak traffic hour and LOS B or better during the PM peak traffic hour. Exceptions would include the southbound left turning movement which operates at LOS E during the PM peak traffic hour. The LOS E operation is attributed to the high through traffic volumes along State Highway 60 and the stop-controlled nature of the intersection. The remaining unsignalized intersections have turning movement operations at or better than LOS B during either peak traffic hour.

By Year 2042 and without the proposed development, the signalized intersection of State Highway 60 with High Plains Boulevard experiences LOS B operations during the AM peak traffic hour and LOS A operations during the PM peak traffic hour. Stop-controlled study intersections experience LOS B or better operations during the AM peak traffic hour and LOS D or better during the PM peak traffic hour.

Analysis of future traffic conditions indicates that the addition of site-generated traffic is expected to create no negative impact to traffic operations for the existing and surrounding roadway system upon consideration of the various roadway and intersection control improvements assumed within this analysis. With all conservative assumptions defined in this analysis, the study intersections are projected to operate at future levels of service comparable to Year 2042 background traffic conditions. Proposed site accesses have long-term operations at LOS C or better during peak traffic periods and upon build-out.