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Terra Ridge North  
Transportation Memorandum  
PCD File No.: P-227  
(LSC #S224200)  
June 10, 2022

**Traffic Engineer's Statement**

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



**Developer's Statement**

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

A handwritten signature in blue ink, appearing to read 'Shy [unclear]'.

6/10/22

Date

# Terra Ridge North

## Transportation Memorandum

Prepared for:  
Shay Miles  
15630 Fox Creek Lane  
Colorado Springs, CO 80906-6121

JUNE 10, 2022

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

LSC #S224200  
PCD File No. P-227



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June 10, 2022

Shay Miles  
15630 Fox Creek Lane  
Colorado Springs, CO 80906-6121

RE: Terra Ridge North  
El Paso County, CO  
Transportation Memorandum  
PCD File No.: P-227  
LSC #S224200

Dear Mr. Miles,

LSC Transportation Consultants, Inc. has prepared this Transportation Memorandum for the Terra Ridge North residential development in El Paso County, Colorado. The 39.72-acre site is located generally northeast of Black Forest Road and Terra Ridge Circle. Access would be via an extension of Fox Creek Lane (an existing cul-de-sac) north through the currently vacant property at 15630 Fox Creek Lane. This report has been prepared for submittal to the El Paso County.

## REPORT CONTENTS

The preparation of this report included the following:

- An inventory of existing roadway and traffic conditions on the adjacent and nearby roadway system, including surface conditions, functional classification, widths, pavement markings, traffic-control signs, posted speed limits, intersection and access spacing, roadway and intersection alignments, roadway grades, and auxiliary turn lanes;
- Weekday peak-hour turning-movement traffic counts at the Black Forest Road/Terra Ridge Circle intersection;
- Estimated current average weekday traffic (AWT) volumes on the study-area streets including Black Forest Road, Terra Ridge Circle, and Fox Creek Lane;
- Projections of 20-year background traffic volumes on the study-area streets;
- Estimates of average weekday and weekday peak-hour trip generation for the proposed Terra Ridge North development and the estimated directional distribution of site-generated vehicle trips on the area street and roadway network;
- The proposed site land use;
- Projected site-generated and resulting total peak-hour intersection traffic volumes at the intersection of Black Forest Road/Terra Ridge Circle;



- Projected total daily (AWT) volumes on the study-area streets;
- Intersection level of service analysis at the Black Forest Road/Terra Ridge Circle intersection; and
- Findings and recommendations.

## **OTHER TRAFFIC IMPACT STUDIES USED IN THE PREPARATION OF THIS REPORT**

Flying Horse North is located west of Black Forest Road. LSC previously completed the Preliminary Plan for this development in April 2018. Additionally, LSC completed the *Flying Horse North Filing No. 1* in July 2018. This report is consistent with previous traffic studies completed for properties adjacent to the Terra Ridge North development.

## **CORRIDOR PRESERVATION**

The El Paso County *Major Transportation Corridors Plan* (MTCP) shows Black Forest Road as a four-lane minor arterial adjacent to the site. The Flying Horse North plan shows ROW preservation of 90 feet from the centerline of Black Forest Road for the future 180 feet if needed.

## **LAND USE AND ACCESS**

Figure 1 shows the site location relative to the adjacent and nearby roadways. The Terra Ridge North residential development is proposed to contain eleven single-family detached dwelling units, as shown in Figure 2.

The 39.72-acre site is located generally north of Terra Ridge Circle and east of Black Forest Road. Access would be via a proposed extension of Fox Creek Lane (an existing cul-de-sac). This extension would be north through the currently-vacant 6.19-acre Lot 6 (of Terra Ridge Filing No. 1). It is our understanding that a home will be built on this lot in the future, although the lot will be reduced in size for the extension of Fox Creek Lane.

## **INTERSECTION SIGHT DISTANCE**

Intersection sight distance was measured at the existing Black Forest Road/Terra Ridge Circle intersection. The *Engineering Criteria Manual (ECM)* requires a sight distance of a minimum of 555 feet at an intersection on a 45-mile-per-hour (mph) road. To the north of Terra Ridge Circle, the sight distance exceeds  $\frac{1}{4}$  mile, while the sight distance to the south is approximately 625 feet. The sight distance exceeds 555 feet to the north and south of Terra Ridge Circle.

## **ROAD AND TRAFFIC CONDITIONS**

Figure 1 shows the roadways in the vicinity of the site. Copies of the *2016 El Paso County Major Transportation Corridors Plan (MTCP) 2040 Roadway Plan* and *2016 MTCP 2060 Corridor*

*Preservation Plan*, with the site location identified on them, have been attached to this report. The major roadways are identified below followed by a brief description of each.

**Black Forest Road** is a two-lane, paved rural minor arterial that extends north from Woodmen Road to County Line Road. Black Forest Road is offset about one-quarter mile to the east at Hodgen Road. The posted speed limit is 45 miles per hour adjacent to the site.

**Terra Ridge Circle** is an approximately 1.2-mile-long local road that forms a loop and intersects with Black Forest Road at both ends. The roadway is located east of Black Forest Road and provides access to residential lots. The posted speed limit is 25 mph. Both intersections of Black Forest Road/Terra Ridge Circle are stop controlled.

**Fox Creek Lane** is a local road cul-de-sac off of Terra Ridge Circle that is approximately 0.1 miles in length. The intersection with Terra Ridge Circle is stop controlled.

**Old Stagecoach Road** extends west from the Black Forest Road/Terra Ridge Circle intersection. It is classified as a Rural Local just west of Black Forest Road and then transitions first to a Rural Minor Collector and then to a Rural Major Collector as it approaches State Highway 83.

### **Existing Traffic Volumes**

Figure 3 shows the results of peak-hour traffic volume counts conducted in April 2022 at the intersection of Black Forest Road/Terra Ridge Circle along with existing lane geometries and traffic controls. The traffic count sheets are attached.

## **FUTURE BACKGROUND TRAFFIC**

### **2040 Background Traffic Volumes**

Figure 4 shows the projected long-term background traffic volumes for the year 2040. Estimated 2040 background traffic volumes are based on information contained in nearby, previously-conducted LSC traffic impact studies. Traffic from the proposed eleven additional lots proposed as part of the Terra Ridge North development is **not** included in the 2040 background traffic volumes.

The 2040 background traffic volumes assume the buildout of Flying Horse North located west of Black Forest Road and development of Lot 6 of Terra Ridge Filing No. 1.

### **TRIP GENERATION**

Estimates of the vehicle trips projected to be generated by the seven single-family homes were developed using the nationally published trip-generation rates from *Trip Generation, 11<sup>th</sup> Edition, 20217* by the Institute of Transportation Engineers (ITE). Table 1 below presents a summary of

the estimated site trip generation. A detailed trip-generation estimate for the development, including ITE rates for the proposed land uses, is presented Table 2 (attached).

The proposed Terra Ridge North residential development is projected to generate about 104 vehicle trips on the average weekday during a 24-hour period, with approximately half entering and half exiting the site. During the morning peak hour, approximately 2 entering vehicles and 6 exiting vehicles would be generated. Approximately 7 entering and 4 exiting vehicles would be generated by the site during the evening peak hour.

**Table 1: Estimated Site Vehicle-Trip Generation**

Analysis Period	Weekday		
	In	Out	Total
Morning Peak Hour	2	6	8
Evening Peak Hour	7	4	11
Daily/24-hour	104	52	52

## **TRIP DISTRIBUTION AND ASSIGNMENT**

### **Trip Directional Distribution**

The estimated directional distribution of site-generated vehicle trips to the study-area roads and intersections is a necessary component in determining the site's traffic impacts. Figure 5 shows the percentages of the site-generated vehicle trips projected to be oriented to and from the site's major approaches. Estimates have been based on the following factors: existing traffic counts at the intersection of Black Forest/Terra Ridge/Old Stagecoach, the proposed new land use, the existing area road system serving the site, and the site's geographic location relative to the overall greater Colorado Springs area.

### **Site-Generated Traffic**

Site-generated traffic volumes have been estimated at the intersection of Black Forest Road/Terra Ridge Circle. Figure 5 shows the projected site-generated traffic volumes for the weekday morning and evening peak hours. These volumes have been calculated by applying the directional-distribution percentages (also shown in Figure 5) to the trip-generation estimates (from Table 1). Estimated site-generated average weekday traffic volumes (AWTs) are also shown in the figure. As shown, the development is expected to add approximately 105 vehicles per day (vpd) to Fox Creek Lane and Terra Ridge Circle.

### **Short-Term Total Traffic Volumes**

Figure 6 shows the sum of the existing traffic volumes (from Figure 3) and site-generated peak-hour traffic volumes (shown in Figure 5). These volumes represent the projected short-term

total traffic following site buildout. Laneage and traffic control at the study-area intersections following site buildout are also shown in this figure.

**2040 Total Traffic Volumes**

Figure 7 shows the sum of 2040 background traffic volumes (from Figure 4) plus site-generated traffic volumes (from Figure 5).

**LEVEL OF SERVICE ANALYSIS**

The intersection of Black Forest Road/Old Stagecoach Road/Terra Ridge Circle has been analyzed to determine the projected intersection levels of service for short- and long-term traffic scenarios for the morning and evening peak-hour periods.

Level of service (LOS) is a quantitative measure of the level of congestion or delay at an intersection and is indicated on a scale from “A” to “F.” LOS A is indicative of little congestion or delay. LOS F indicates a high level of congestion or delay. Table 3 shows the level of service delay ranges for signalized and unsignalized intersections.

**Table 3: Intersection Levels of Service Delay Ranges**

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

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

LOS values have been included in each figure for each turning movement/approach during the weekday morning and evening peak hours for the intersection of Black Forest Road/Old Stagecoach Road/Terra Ridge Circle.

As shown in these figures, all turning movements at the unsignalized intersection of Black Forest Road/Old Stagecoach Road/Terra Ridge Circle are projected to operate at LOS B or better during both peak periods through the 2040 horizon, with or without this proposed development. Detailed Synchro reports are attached.

## **AUXILIARY TURN-LANE ANALYSIS**

### **Short Term**

No modifications are required to existing lane configurations, cross-sections, or traffic control, based on the short-term background and short-term total traffic scenarios.

### **Long Term**

With the buildout of the Flying Horse North development west of Black Forest Road, a northbound left-turn lane at the intersection of Black Forest Road/Old Stagecoach Road/Terra Ridge Circle was identified as a future requirement in the "master TIS" for Flying Horse North. This turn lane was called out as a requirement due to projected northbound left-turning traffic to be generated by the Flying Horse North development. In the *Flying Horse North Preliminary Plan TIS*, dated April 3, 2019, it is projected that this turn lane will be required in Phase 3 of the development.

Southbound left-turning volumes at the intersection of Black Forest Road/Terra Ridge Circle do not exceed and are not projected to exceed the El Paso County *Engineering Criteria Manual (ECM)* minimum-volume threshold triggering the requirement for a left-turn lane. However, because a northbound left-turn lane will be constructed, the north leg of the intersection will have to be widened for the lane redirect. At the design stage of this future left-turn lane, the plans will properly accommodate the turning movements to/from the existing east leg of the intersection.

## **DEVIATION REQUESTS**

The extension of Fox Creek Lane will result in a cul-de-sac length of approximately 2,115 feet. A deviation to the criteria contained in the El Paso County *Engineering Criteria Manual* has been submitted as part of this application.

## **CONCLUSIONS AND RECOMMENDATIONS**

- The site is projected to generate about 104 new driveway vehicle trips on the average weekday.
- During the weekday morning peak hour of adjacent street traffic, 2 vehicles would enter the site while 6 vehicles would exit.
- During the weekday evening peak hour of adjacent street traffic, 7 vehicles would enter the site while 4 vehicles would exit.
- All individual turning movements and approaches at the unsignalized intersection of Black Forest Road/Terra Ridge Circle are projected to operate at LOS B or better during both peak hours through the 2040 horizon year, with or without this development.

- Please refer to the “Auxiliary Turn-Lane Analysis” section for more details. No modifications to the existing laneage at the study-area intersections are likely necessary as a result of this development.
- No pedestrian facilities are required, due to the rural roadway classification for all roadways within the study area. The project is not expected to increase pedestrian or bicycle traffic within the study area.

### **COUNTY ROAD IMPROVEMENT FEE PROGRAM**

Terra Ridge North will be required to participate in the Countywide Road Impact Fee program. The specific PID option (or opt-out option), as well as the specific calculated fee amount, will be provided prior to recording of the plat. The fee per residential dwelling unit will be payable at the time of the building permit.

Black Forest Road is listed as a corridor to be upgraded as part of the rural county road upgrade improvements in the MTCP. The roadway does not currently meet the current design standards for a rural minor arterial.

\* \* \* \* \*

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

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

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

JCH/KDF:jas

Enclosures: Table 2  
Figures 1 - 7  
Traffic Count Reports  
Synchro LOS Reports  
MTCP Map

# Tables

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**Table 2  
Trip Generation Estimate  
Miles Subdivision**

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates <sup>(1)</sup>				Total Trips Generated					
			Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour		Average Weekday Traffic	Morning Peak Hour		Afternoon Peak Hour	
				In	Out	In	Out		In	Out	In	Out
210	Single-Family Detached Housing	11 DU <sup>(2)</sup>	9.43	0.18	0.52	0.59	0.35	104	2	6	7	4

Notes:  
(1) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE)  
(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc. Apr-22



# Figures

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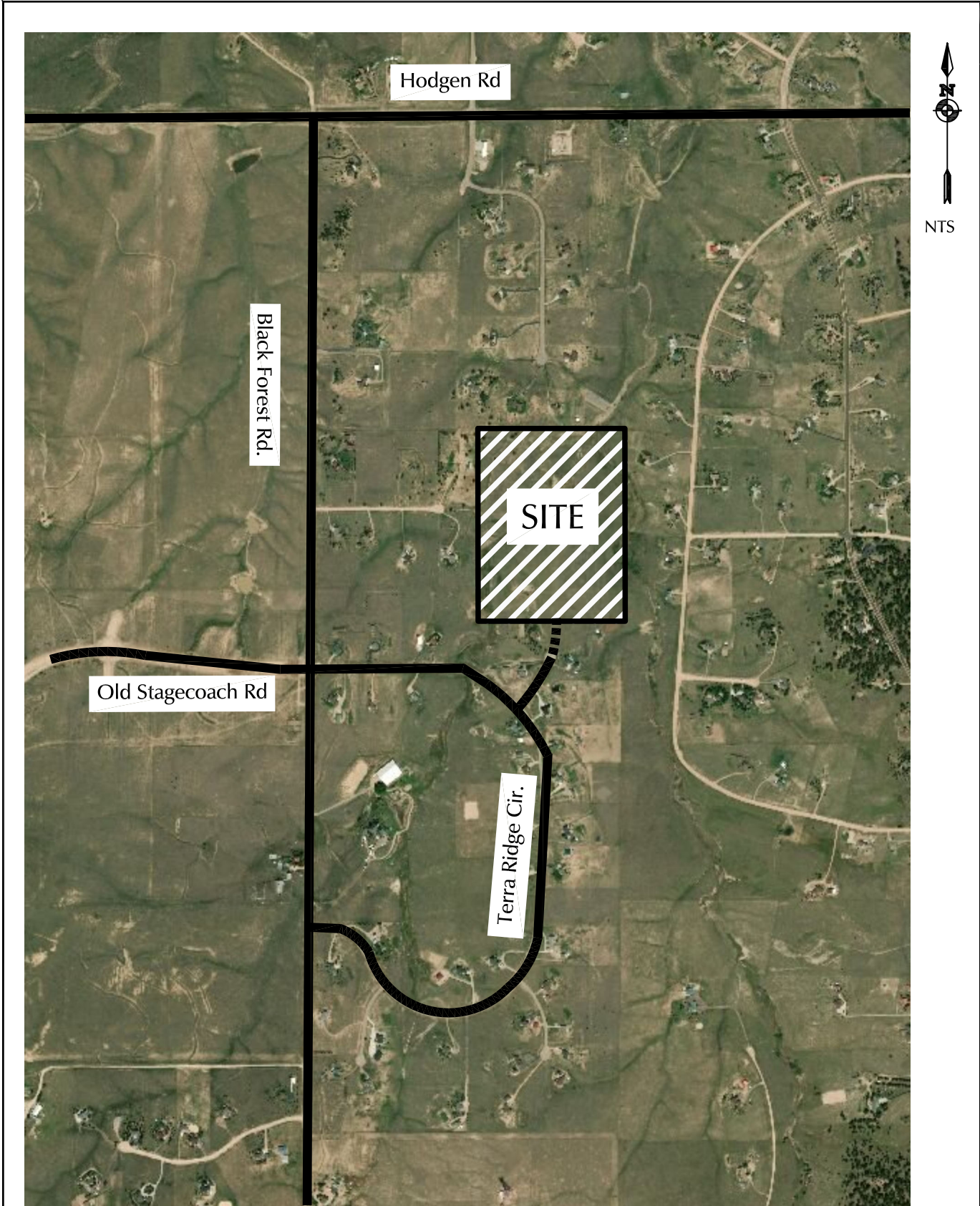


Figure 1

# Vicinity Map

Terra Ridge North (LSC# S224200)





Approximate Scale  
1" = 300'

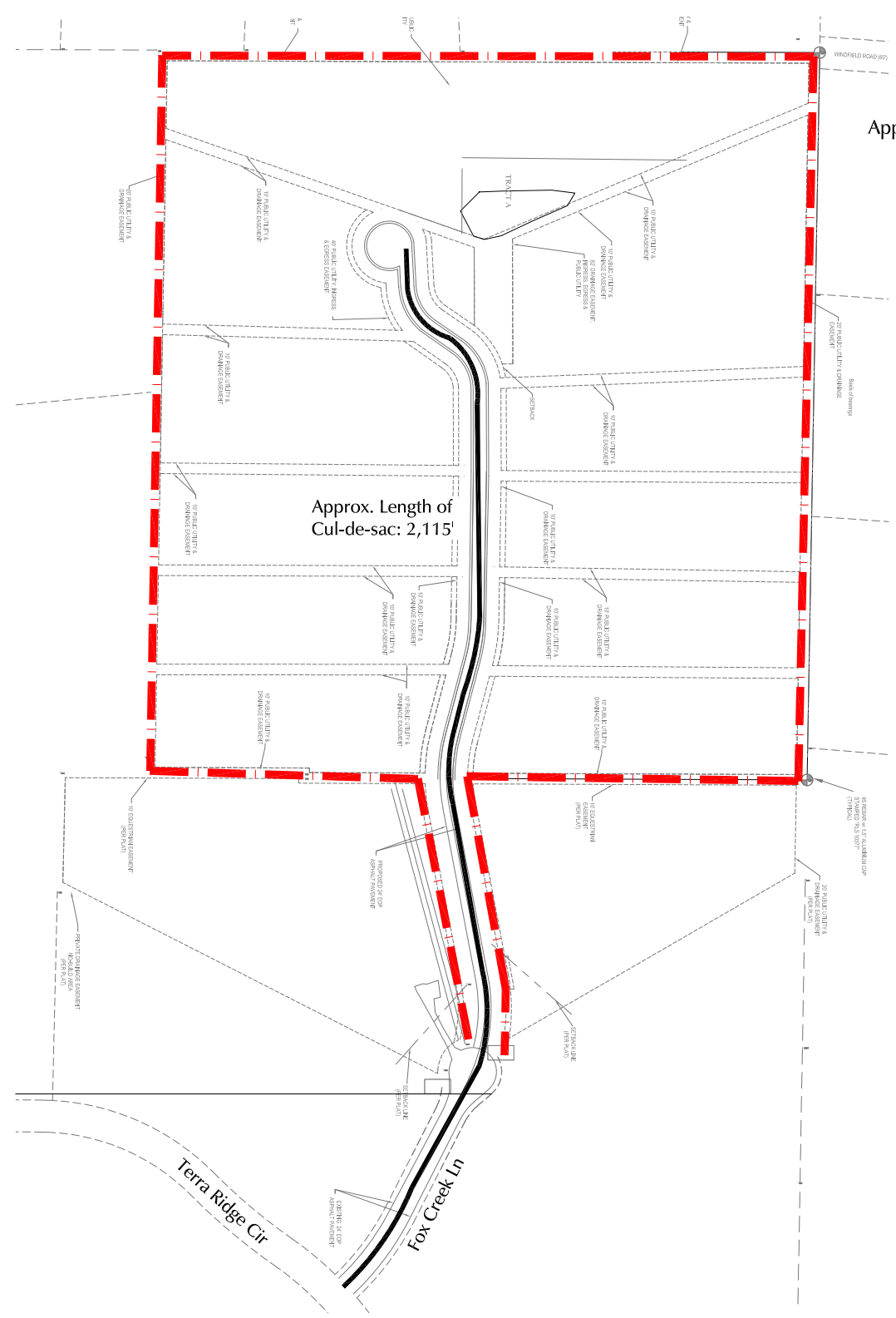
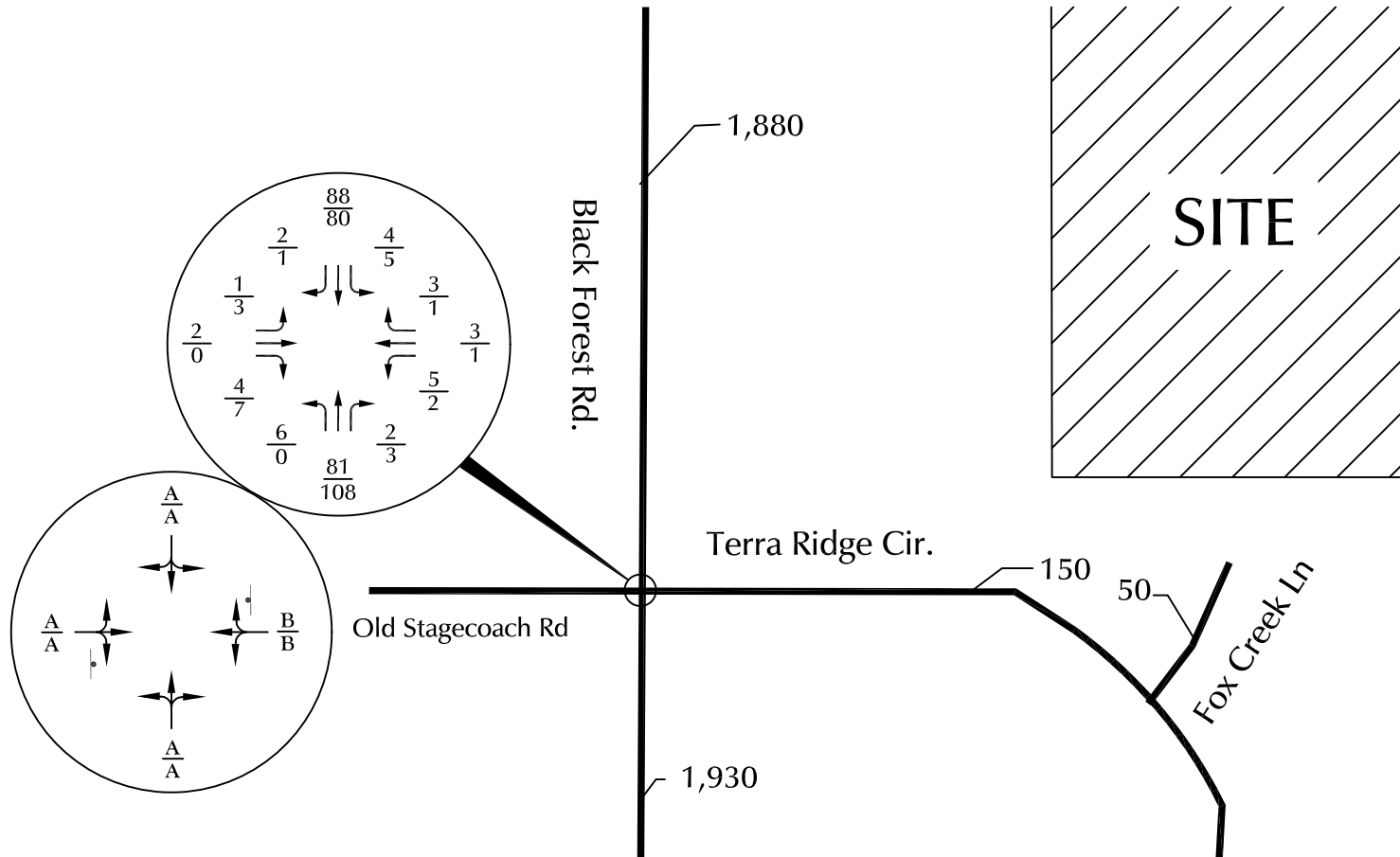


Figure 2  
**Site Plan**

Terra Ridge North (LSC# S224200)



LEGEND:  $\frac{XX}{XX} = \frac{\text{AM Peak-Hour Traffic (veh/hr)}}{\text{PM Peak-Hour Traffic (veh/hr)}}$  (Counts by LSC 4/2022)

XXX = Average Daily Traffic (vehicles per day) (Estimated by LSC)

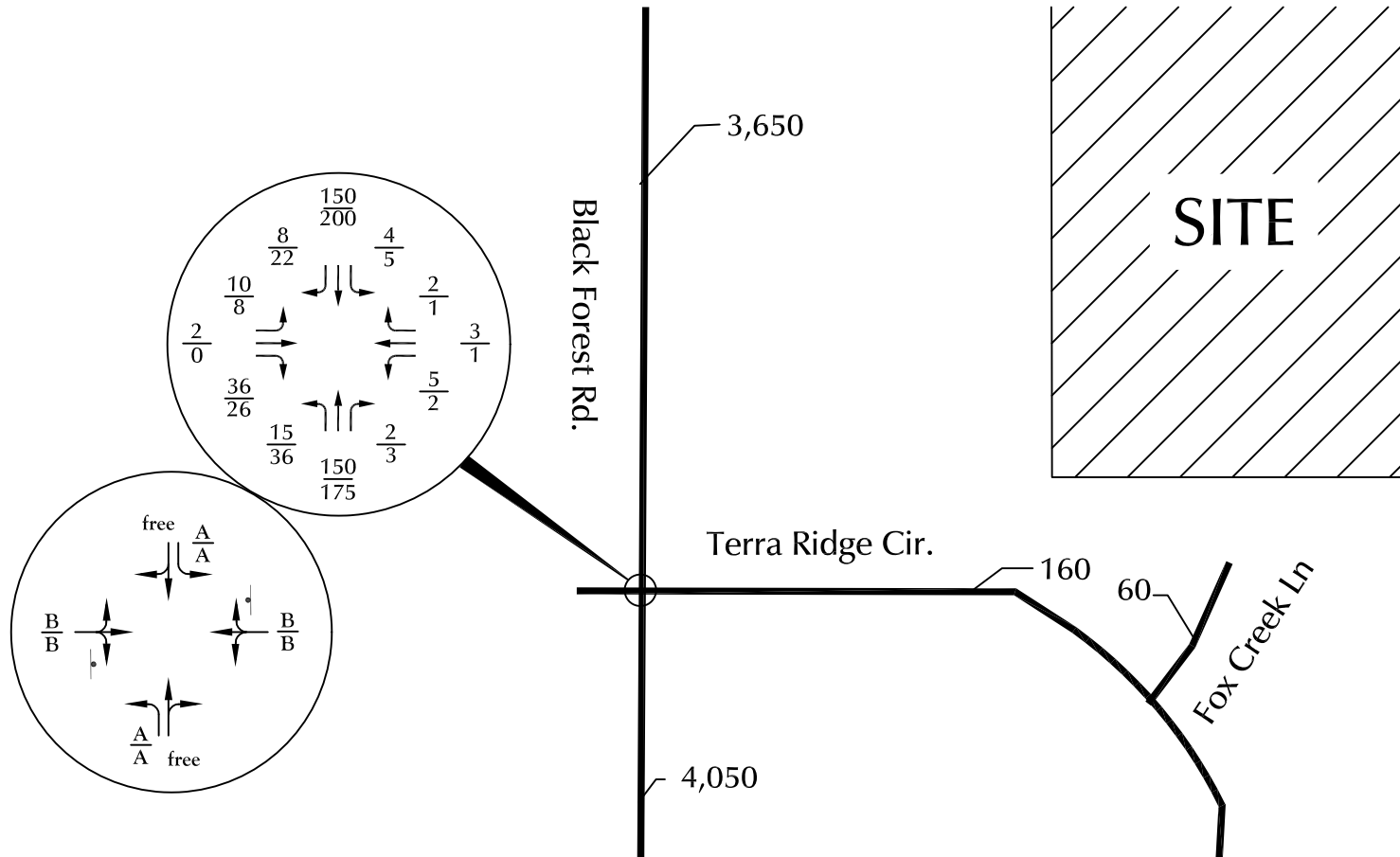
$\frac{A}{B} = \frac{\text{AM Individual Movement Peak-Hour Level of Service}}{\text{PM Individual Movement Peak-Hour Level of Service}}$

┆ = Stop Sign

Figure 3  
Existing Traffic Conditions

Terra Ridge North (LSC# S224200)





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

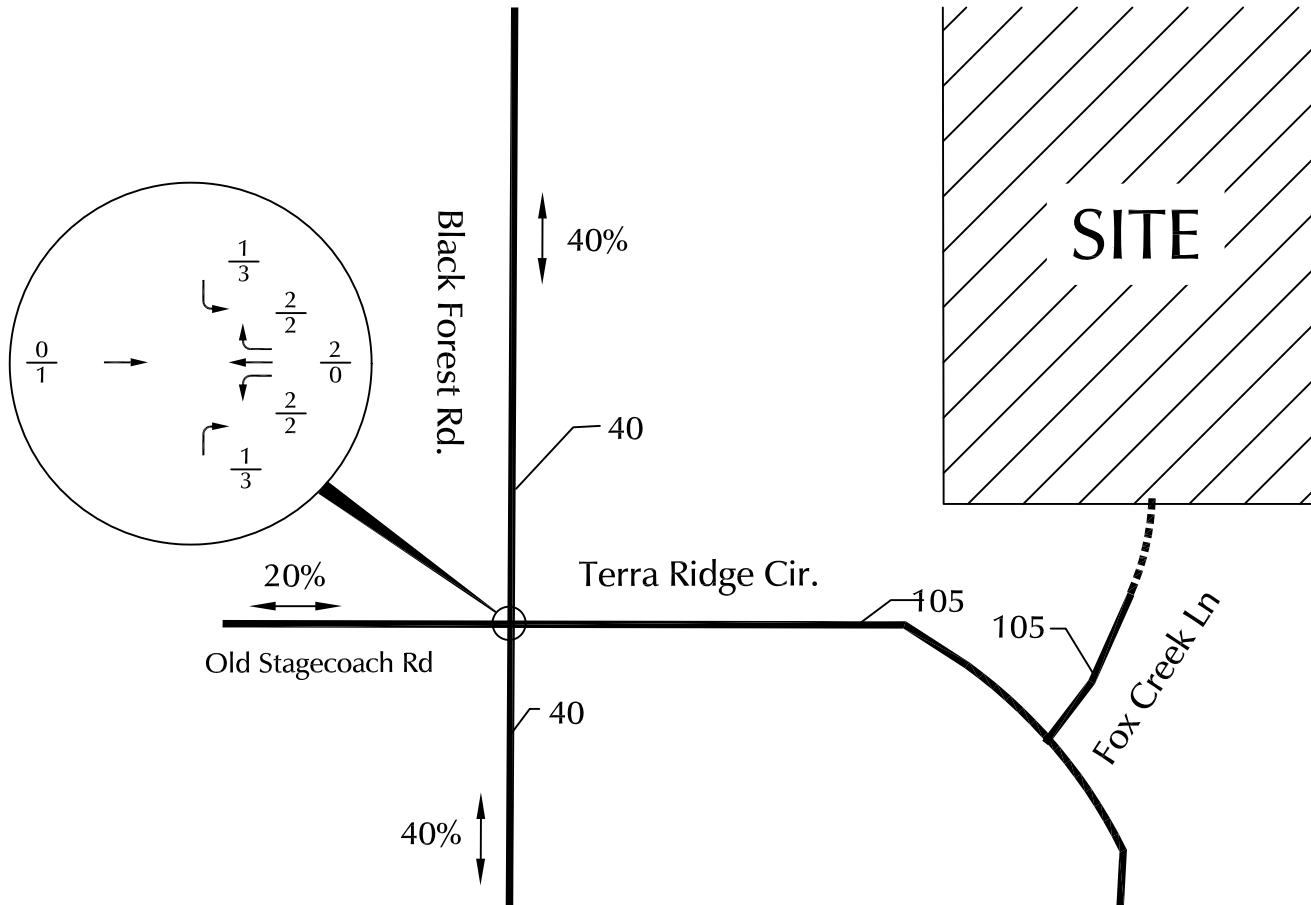
XXX = Average Daily Traffic (vehicles per day)

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

┆ = Stop Sign

Figure 4  
**2040 Projected  
 Background Traffic Conditions**

Terra Ridge North (LSC# S224200)



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

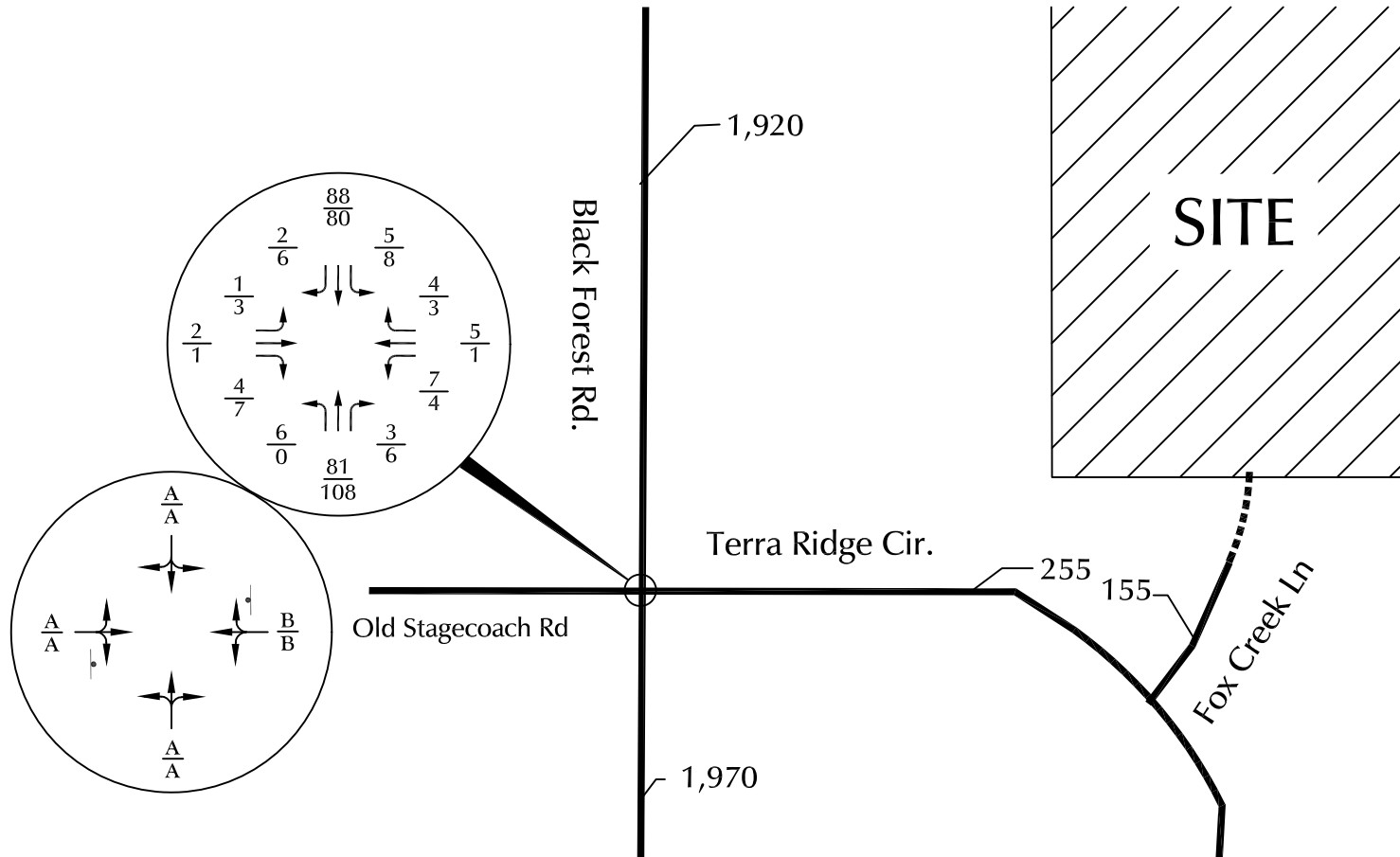
XXX = Average Daily Traffic (vehicles per day)

$\longleftrightarrow$  35% = Estimated Percent Directional Distribution

Figure 5

## Directional Distribution and Site-Generated Traffic

Terra Ridge North (LSC# S224200)



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

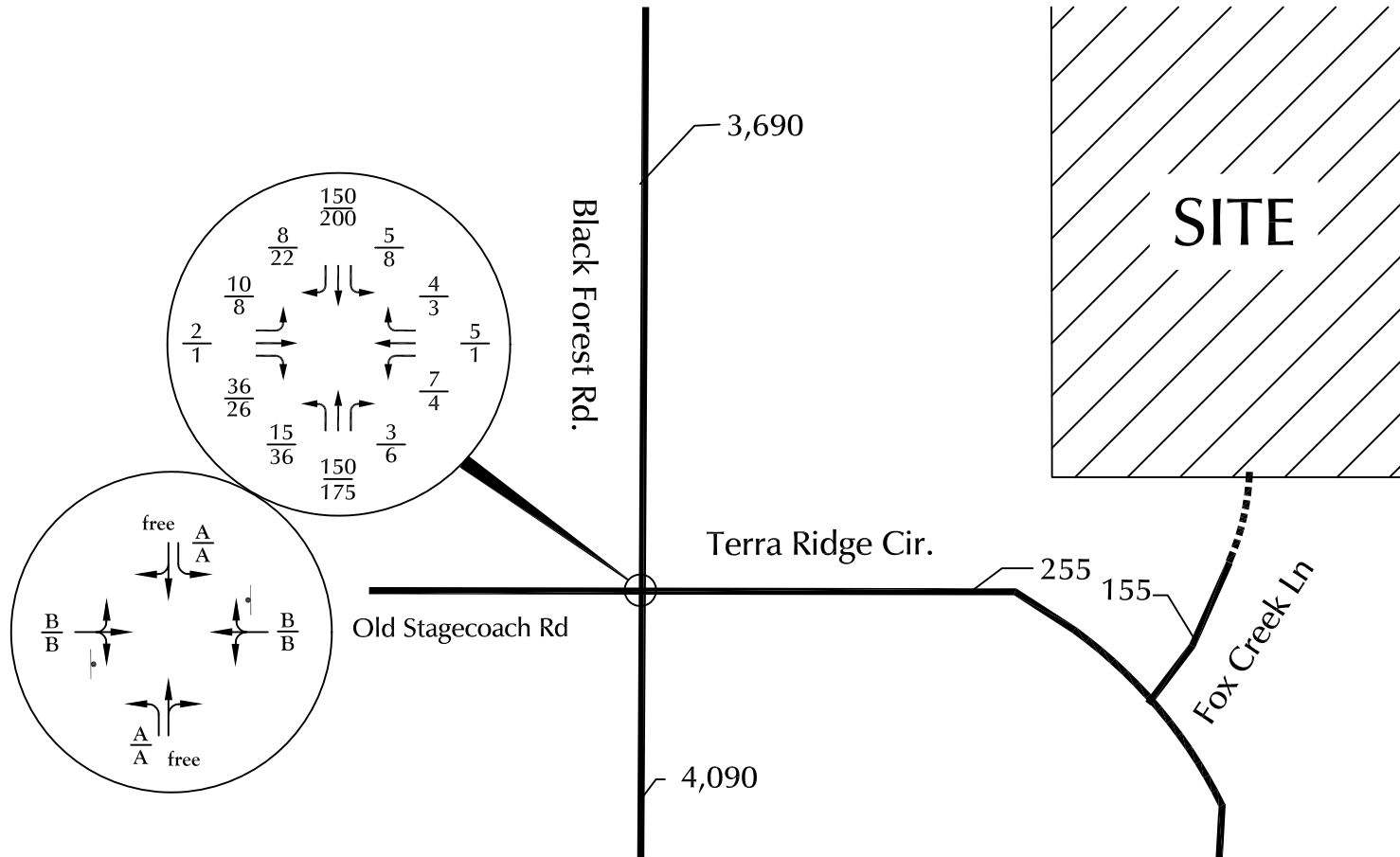
XXX = Average Daily Traffic (vehicles per day)

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

┆ = Stop Sign

Figure 6  
Existing plus  
Site-Generated Traffic Conditions

Terra Ridge North (LSC# S224200)



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

XXX = Average Daily Traffic (vehicles per day)

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

┆ = Stop Sign

# 2040 Total Traffic Conditions

Figure 7

Terra Ridge North (LSC# S224200)





# Traffic Counts

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# LSC Transportation Consultants, Inc.

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

File Name : Black Forest Rd - Old Stagecoach Rd AM Constuction

Site Code : S224200

Start Date : 4/12/2022

Page No : 1

### Groups Printed- Unshifted

Start Time	Black Forest Rd Southbound					Terra Ridge Cir Westbound					Black Forest Rd Northbound					Old Stagecoach Rd Eastbound					Int. Total	
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total		
06:30 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	1	0	0	0	0	1	10
06:35 AM	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	9
06:40 AM	1	5	0	0	6	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	10
06:45 AM	0	7	0	0	7	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	13
06:50 AM	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4
06:55 AM	1	5	0	0	6	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	11
<b>Total</b>	<b>3</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>1</b>	<b>0</b>	<b>27</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>57</b>
07:00 AM	1	8	0	0	9	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	15
07:05 AM	1	6	0	0	7	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	10
07:10 AM	1	4	0	0	5	1	0	0	0	1	0	9	1	0	10	0	0	0	0	0	0	16
07:15 AM	0	10	0	0	10	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	0	17
07:20 AM	0	8	0	0	8	0	0	1	0	1	1	7	3	0	11	0	0	0	0	0	0	20
07:25 AM	0	10	0	0	10	0	2	0	0	2	0	5	0	0	5	0	0	0	0	0	0	17
07:30 AM	0	6	0	0	6	1	1	0	0	2	0	9	1	0	10	0	1	0	0	0	1	19
07:35 AM	0	4	0	0	4	1	1	0	0	2	0	11	1	0	12	0	0	0	0	0	0	18
07:40 AM	0	7	0	0	7	0	0	0	0	0	0	5	0	0	5	1	0	0	0	0	1	13
07:45 AM	0	7	0	0	7	0	0	0	0	0	0	4	0	0	4	1	0	0	0	0	1	12
07:50 AM	0	9	1	0	10	0	0	0	0	0	1	4	0	0	5	0	1	0	0	0	1	16
07:55 AM	1	10	0	0	11	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	19
<b>Total</b>	<b>4</b>	<b>89</b>	<b>1</b>	<b>0</b>	<b>94</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>76</b>	<b>7</b>	<b>0</b>	<b>85</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>192</b>
08:00 AM	1	3	1	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	8
08:05 AM	0	4	0	0	4	0	0	0	0	0	0	3	2	0	5	0	0	0	0	0	0	9
08:10 AM	0	9	1	0	10	0	1	2	0	3	0	10	1	0	11	0	0	0	0	0	0	24
08:15 AM	0	9	1	0	10	0	0	0	0	0	0	6	0	0	6	2	0	0	0	0	2	18
08:20 AM	0	5	0	0	5	0	0	0	0	0	0	7	0	0	7	0	0	1	0	0	1	13
08:25 AM	0	15	0	0	15	0	0	3	0	3	1	11	1	0	13	0	0	0	0	0	0	31
Grand Total	8	160	4	0	172	3	5	7	0	15	3	142	12	0	157	5	2	1	0	0	8	352
Apprch %	4.7	93	2.3	0		20	33.3	46.7	0		1.9	90.4	7.6	0		62.5	25	12.5	0			
Total %	2.3	45.5	1.1	0	48.9	0.9	1.4	2	0	4.3	0.9	40.3	3.4	0	44.6	1.4	0.6	0.3	0	2.3		

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2504 E. Pikes Peak Ave, Suite 304  
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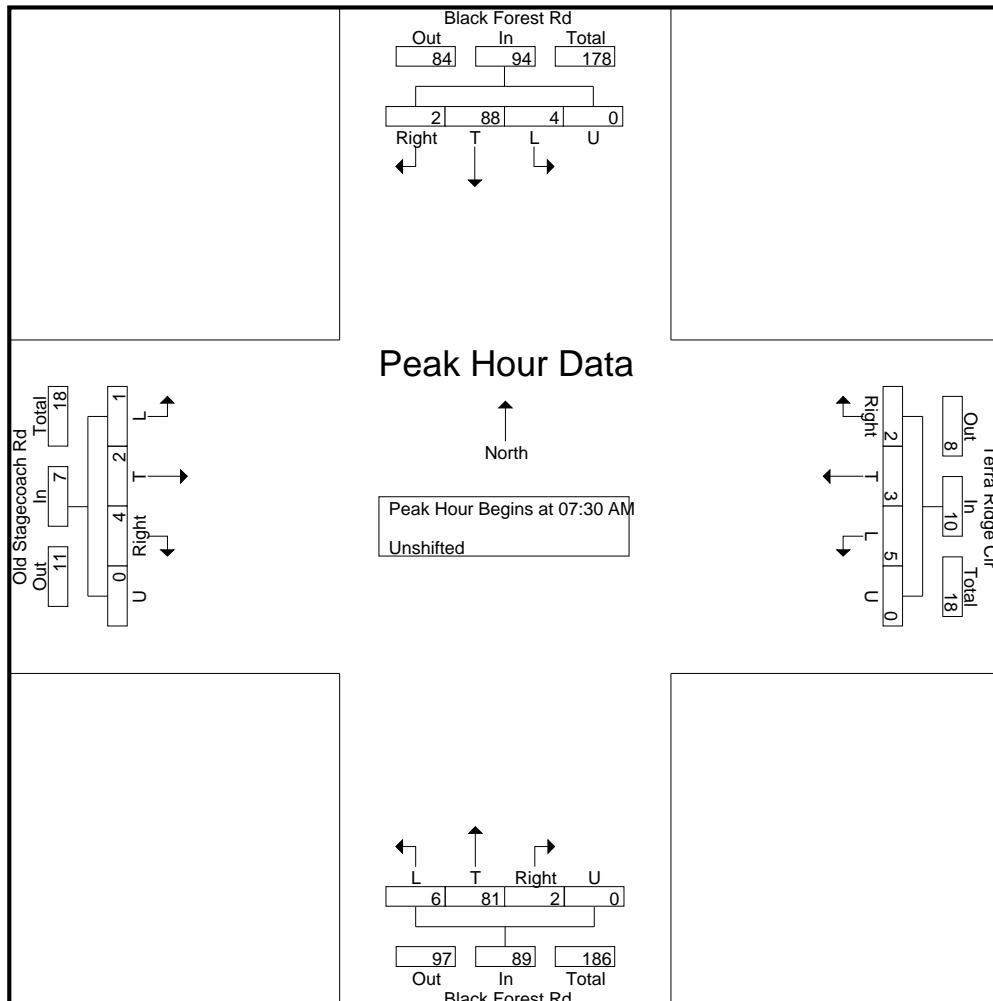
File Name : Black Forest Rd - Old Stagecoach Rd AM Constuction

Site Code : S224200

Start Date : 4/12/2022

Page No : 2

Start Time	Black Forest Rd Southbound					Terra Ridge Cir Westbound					Black Forest Rd Northbound					Old Stagecoach Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 06:30 AM to 08:25 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	6	0	0	6	1	1	0	0	2	0	9	1	0	10	0	1	0	0	1	19
07:35 AM	0	4	0	0	4	1	1	0	0	2	0	11	1	0	12	0	0	0	0	0	18
07:40 AM	0	7	0	0	7	0	0	0	0	0	0	5	0	0	5	1	0	0	0	1	13
07:45 AM	0	7	0	0	7	0	0	0	0	0	0	4	0	0	4	1	0	0	0	1	12
07:50 AM	0	9	1	0	10	0	0	0	0	0	1	4	0	0	5	0	1	0	0	1	16
07:55 AM	1	10	0	0	11	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	19
08:00 AM	1	3	1	0	5	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	8
08:05 AM	0	4	0	0	4	0	0	0	0	0	0	3	2	0	5	0	0	0	0	0	9
08:10 AM	0	9	1	0	10	0	1	2	0	3	0	10	1	0	11	0	0	0	0	0	24
08:15 AM	0	9	1	0	10	0	0	0	0	0	0	6	0	0	6	2	0	0	0	2	18
08:20 AM	0	5	0	0	5	0	0	0	0	0	0	7	0	0	7	0	0	1	0	1	13
08:25 AM	0	15	0	0	15	0	0	3	0	3	1	11	1	0	13	0	0	0	0	0	31
Total Volume	2	88	4	0	94	2	3	5	0	10	2	81	6	0	89	4	2	1	0	7	200
% App. Total	2.1	93.6	4.3	0		20	30	50	0		2.2	91	6.7	0		57.1	28.6	14.3	0		
PHF	.167	.489	.333	.000	.522	.167	.250	.139	.000	.278	.167	.614	.250	.000	.571	.167	.167	.083	.000	.292	.538



# LSC Transportation Consultants, Inc.

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

File Name : Black Forest Rd - Old Stagecoach Rd PM Constuction

Site Code : S224200

Start Date : 4/12/2022

Page No : 1

### Groups Printed- Unshifted

Start Time	Black Forest Rd Southbound					Terra Ridge Cir Westbound					Black Forest Rd Northbound					Old Stagecoach Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
04:00 PM	0	8	0	0	8	0	0	1	0	1	0	6	0	0	6	0	0	1	0	1	16
04:05 PM	0	6	0	0	6	1	0	0	0	1	0	7	0	0	7	1	0	0	0	1	15
04:10 PM	0	7	0	0	7	0	1	1	0	2	0	5	0	0	5	0	0	1	0	1	15
04:15 PM	0	8	0	0	8	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	14
04:20 PM	0	11	0	0	11	0	2	0	0	2	0	7	0	0	7	0	0	0	0	0	20
04:25 PM	1	7	0	0	8	1	0	0	0	1	1	1	0	0	2	1	0	0	0	1	12
04:30 PM	0	7	0	0	7	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	14
04:35 PM	1	5	0	0	6	1	0	0	0	1	0	9	0	0	9	0	0	0	0	0	16
04:40 PM	0	6	0	0	6	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	20
04:45 PM	1	11	0	0	12	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	15
04:50 PM	0	7	0	0	7	0	0	0	0	0	1	14	0	0	15	1	0	0	0	1	23
04:55 PM	0	4	0	0	4	1	0	0	0	1	0	13	0	0	13	2	0	0	0	2	20
<b>Total</b>	<b>3</b>	<b>87</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>89</b>	<b>0</b>	<b>0</b>	<b>91</b>	<b>6</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>10</b>	<b>200</b>
05:00 PM	0	3	0	0	3	0	0	1	0	1	0	6	0	0	6	1	0	2	0	3	13
05:05 PM	0	7	0	0	7	0	0	0	0	0	0	10	0	0	10	1	0	0	0	1	18
05:10 PM	0	5	0	0	5	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	14
05:15 PM	0	10	1	0	11	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	18
05:20 PM	0	5	1	0	6	0	1	0	0	1	0	6	0	0	6	0	0	0	0	0	13
05:25 PM	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	21
05:30 PM	0	7	0	0	7	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	16
05:35 PM	1	6	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	16
05:40 PM	0	6	2	0	8	0	0	0	0	0	0	6	0	0	6	2	0	1	0	3	17
05:45 PM	0	11	1	0	12	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	22
05:50 PM	0	8	2	0	10	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	15
05:55 PM	0	6	0	0	6	0	0	1	0	1	0	7	0	0	7	0	0	0	0	0	14
<b>Total</b>	<b>1</b>	<b>83</b>	<b>7</b>	<b>0</b>	<b>91</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>93</b>	<b>0</b>	<b>0</b>	<b>95</b>	<b>4</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>7</b>	<b>197</b>
Grand Total	4	170	7	0	181	4	4	5	0	13	4	182	0	0	186	10	0	7	0	17	397
Apprch %	2.2	93.9	3.9	0		30.8	30.8	38.5	0		2.2	97.8	0	0		58.8	0	41.2	0		
Total %	1	42.8	1.8	0	45.6	1	1	1.3	0	3.3	1	45.8	0	0	46.9	2.5	0	1.8	0	4.3	

# LSC Transportation Consultants, Inc.

2504 E. Pikes Peak Ave, Suite 304  
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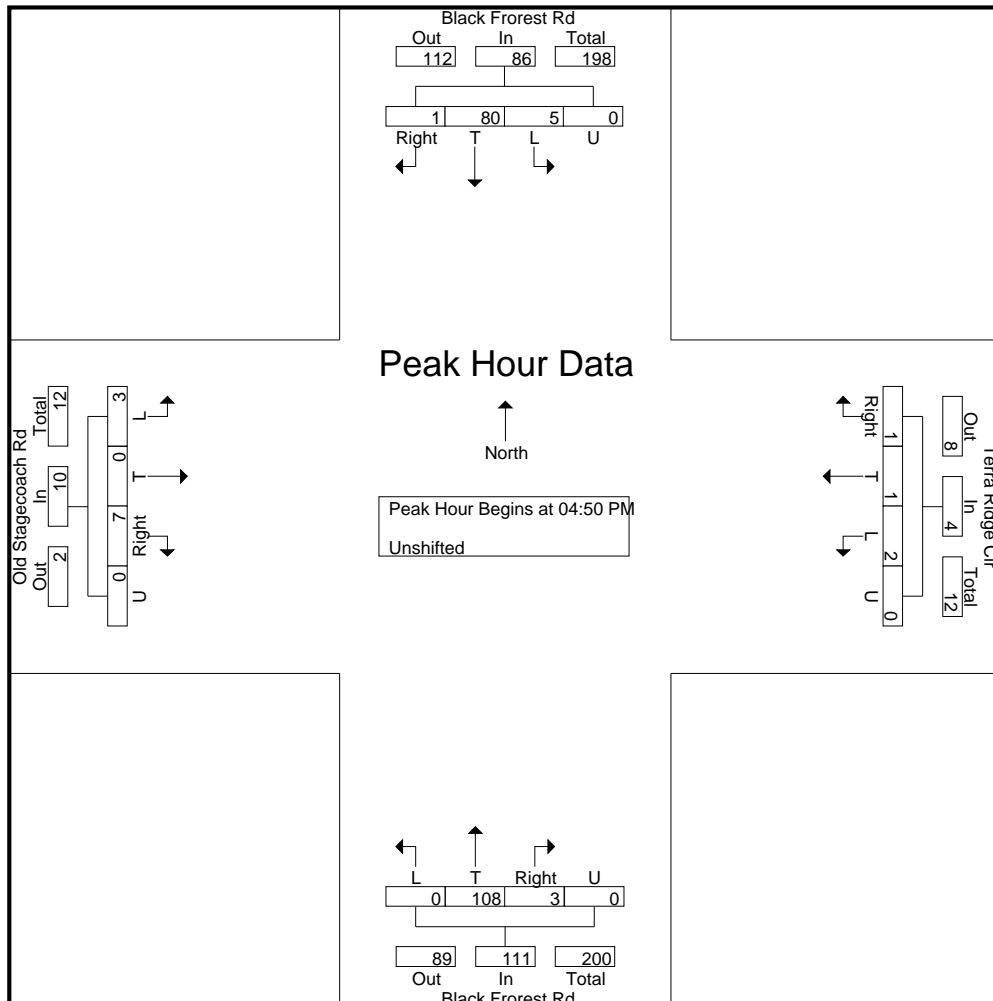
File Name : Black Forest Rd - Old Stagecoach Rd PM Constuction

Site Code : S224200

Start Date : 4/12/2022

Page No : 2

Start Time	Black Forest Rd Southbound					Terra Ridge Cir Westbound					Black Forest Rd Northbound					Old Stagecoach Rd Eastbound					Int. Total
	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	Right	T	L	U	App. Total	
Peak Hour Analysis From 04:00 PM to 05:55 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:50 PM																					
04:50 PM	0	7	0	0	7	0	0	0	0	0	1	14	0	0	15	1	0	0	0	1	23
04:55 PM	0	4	0	0	4	1	0	0	0	1	0	13	0	0	13	2	0	0	0	2	20
05:00 PM	0	3	0	0	3	0	0	1	0	1	0	6	0	0	6	1	0	2	0	3	13
05:05 PM	0	7	0	0	7	0	0	0	0	0	0	10	0	0	10	1	0	0	0	1	18
05:10 PM	0	5	0	0	5	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	14
05:15 PM	0	10	1	0	11	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	18
05:20 PM	0	5	1	0	6	0	1	0	0	1	0	6	0	0	6	0	0	0	0	0	13
05:25 PM	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	0	0	0	0	0	21
05:30 PM	0	7	0	0	7	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	16
05:35 PM	1	6	0	0	7	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	16
05:40 PM	0	6	2	0	8	0	0	0	0	0	0	6	0	0	6	2	0	1	0	3	17
05:45 PM	0	11	1	0	12	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	22
Total Volume	1	80	5	0	86	1	1	2	0	4	3	108	0	0	111	7	0	3	0	10	211
% App. Total	1.2	93	5.8	0		25	25	50	0		2.7	97.3	0	0		70	0	30	0		
PHF	.083	.606	.208	.000	.597	.083	.083	.167	.000	.333	.250	.643	.000	.000	.617	.292	.000	.125	.000	.278	.764



# Levels of Service

---



HCM 6th TWSC  
3: Black Forest Rd & Terra Ridge Cir

Existing Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	4	5	3	2	6	81	2	4	88	2
Future Vol, veh/h	1	2	4	5	3	2	6	81	2	4	88	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	7	6	4	3	8	104	3	5	113	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	250	248	115	252	248	106	116	0	0	107	0	0
Stage 1	125	125	-	122	122	-	-	-	-	-	-	-
Stage 2	125	123	-	130	126	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	703	655	937	701	655	948	1473	-	-	1484	-	-
Stage 1	879	792	-	882	795	-	-	-	-	-	-	-
Stage 2	879	794	-	874	792	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	692	648	937	688	648	948	1473	-	-	1484	-	-
Mov Cap-2 Maneuver	692	648	-	688	648	-	-	-	-	-	-	-
Stage 1	874	789	-	877	790	-	-	-	-	-	-	-
Stage 2	867	789	-	860	789	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10.1	0.5	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	795	714	1484	-	-
HCM Lane V/C Ratio	0.005	-	-	0.015	0.018	0.003	-	-
HCM Control Delay (s)	7.5	0	-	9.6	10.1	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

HCM 6th TWSC  
3: Black Forest Rd & Terra Ridge Cir

Existing Traffic  
PM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	0	7	2	1	1	0	108	3	5	80	1
Future Vol, veh/h	3	0	7	2	1	1	0	108	3	5	80	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	42	42	50	50	50	82	82	82	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	17	4	2	2	0	132	4	6	103	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	252	252	104	258	250	134	104	0	0	136	0	0
Stage 1	116	116	-	134	134	-	-	-	-	-	-	-
Stage 2	136	136	-	124	116	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	701	651	951	695	653	915	1488	-	-	1448	-	-
Stage 1	889	800	-	869	785	-	-	-	-	-	-	-
Stage 2	867	784	-	880	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	695	648	951	680	650	915	1488	-	-	1448	-	-
Mov Cap-2 Maneuver	695	648	-	680	650	-	-	-	-	-	-	-
Stage 1	889	797	-	869	785	-	-	-	-	-	-	-
Stage 2	863	784	-	861	797	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	10.1	0	0.4
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	856	718	1448	-	-
HCM Lane V/C Ratio	-	-	-	0.028	0.011	0.004	-	-
HCM Control Delay (s)	0	-	-	9.3	10.1	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-



HCM 6th TWSC  
3: Black Forest Rd & Terra Ridge Cir

Existing + Site Generated Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	2	4	7	5	4	6	81	3	5	88	2
Future Vol, veh/h	1	2	4	7	5	4	6	81	3	5	88	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	3	7	9	6	5	8	104	4	6	113	3

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	255	251	115	254	250	106	116	0	0	108	0	0
Stage 1	127	127	-	122	122	-	-	-	-	-	-	-
Stage 2	128	124	-	132	128	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	698	652	937	699	653	948	1473	-	-	1483	-	-
Stage 1	877	791	-	882	795	-	-	-	-	-	-	-
Stage 2	876	793	-	871	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	684	645	937	686	646	948	1473	-	-	1483	-	-
Mov Cap-2 Maneuver	684	645	-	686	646	-	-	-	-	-	-	-
Stage 1	872	788	-	877	790	-	-	-	-	-	-	-
Stage 2	859	788	-	857	787	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	9.6		10.1		0.5		0.4	
HCM LOS	A		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	793	722	1483	-	-
HCM Lane V/C Ratio	0.005	-	-	0.015	0.028	0.004	-	-
HCM Control Delay (s)	7.5	0	-	9.6	10.1	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-

HCM 6th TWSC  
 3: Black Forest Rd & Terra Ridge Cir

Existing + Site Generated Traffic  
 PM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	1	7	4	1	3	0	108	6	8	80	1
Future Vol, veh/h	3	1	7	4	1	3	0	108	6	8	80	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	42	42	50	50	50	82	82	82	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	2	17	8	2	6	0	132	7	10	103	1

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	264	263	104	269	260	136	104	0	0	139	0	0
Stage 1	124	124	-	136	136	-	-	-	-	-	-	-
Stage 2	140	139	-	133	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	689	642	951	684	645	913	1488	-	-	1445	-	-
Stage 1	880	793	-	867	784	-	-	-	-	-	-	-
Stage 2	863	782	-	870	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	679	638	951	666	640	913	1488	-	-	1445	-	-
Mov Cap-2 Maneuver	679	638	-	666	640	-	-	-	-	-	-	-
Stage 1	880	787	-	867	784	-	-	-	-	-	-	-
Stage 2	855	782	-	846	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	10	0	0.7
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1488	-	-	824	737	1445	-	-
HCM Lane V/C Ratio	-	-	-	0.032	0.022	0.007	-	-
HCM Control Delay (s)	0	-	-	9.5	10	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	36	5	3	2	15	150	2	4	150	8
Future Vol, veh/h	10	2	36	5	3	2	15	150	2	4	150	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	3	62	6	4	3	19	192	3	5	192	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	442	440	197	472	444	194	202	0	0	195	0	0
Stage 1	207	207	-	232	232	-	-	-	-	-	-	-
Stage 2	235	233	-	240	212	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	526	511	844	502	508	847	1370	-	-	1378	-	-
Stage 1	795	731	-	771	713	-	-	-	-	-	-	-
Stage 2	768	712	-	763	727	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	513	501	844	456	498	847	1370	-	-	1378	-	-
Mov Cap-2 Maneuver	513	501	-	456	498	-	-	-	-	-	-	-
Stage 1	782	728	-	759	702	-	-	-	-	-	-	-
Stage 2	749	701	-	701	724	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	12.1	0.7	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	726	517	1378	-	-
HCM Lane V/C Ratio	0.014	-	-	0.114	0.025	0.004	-	-
HCM Control Delay (s)	7.7	0	-	10.6	12.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

Intersection												
Int Delay, s/veh	2.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	0	26	2	1	1	36	175	3	5	200	22
Future Vol, veh/h	8	0	26	2	1	1	36	175	3	5	200	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	42	42	50	50	50	82	82	82	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	0	62	4	2	2	44	213	4	6	256	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	587	587	270	616	599	215	284	0	0	217	0	0
Stage 1	282	282	-	303	303	-	-	-	-	-	-	-
Stage 2	305	305	-	313	296	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	421	422	769	403	415	825	1278	-	-	1353	-	-
Stage 1	725	678	-	706	664	-	-	-	-	-	-	-
Stage 2	705	662	-	698	668	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	405	403	769	358	397	825	1278	-	-	1353	-	-
Mov Cap-2 Maneuver	405	403	-	358	397	-	-	-	-	-	-	-
Stage 1	697	675	-	678	638	-	-	-	-	-	-	-
Stage 2	674	636	-	639	665	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	13.6	1.3	0.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	635	429	1353	-	-
HCM Lane V/C Ratio	0.034	-	-	0.127	0.019	0.005	-	-
HCM Control Delay (s)	7.9	0	-	11.5	13.6	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.4	0.1	0	-	-

HCM 6th TWSC  
3: Black Forest Rd & Terra Ridge Cir

2040 Total Traffic  
AM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	2	36	7	5	4	15	150	3	5	150	8
Future Vol, veh/h	10	2	36	7	5	4	15	150	3	5	150	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	58	58	58	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	3	62	9	6	5	19	192	4	6	192	10

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	447	443	197	474	446	194	202	0	0	196	0	0
Stage 1	209	209	-	232	232	-	-	-	-	-	-	-
Stage 2	238	234	-	242	214	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	522	509	844	501	507	847	1370	-	-	1377	-	-
Stage 1	793	729	-	771	713	-	-	-	-	-	-	-
Stage 2	765	711	-	762	725	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	505	498	844	454	496	847	1370	-	-	1377	-	-
Mov Cap-2 Maneuver	505	498	-	454	496	-	-	-	-	-	-	-
Stage 1	780	725	-	759	702	-	-	-	-	-	-	-
Stage 2	741	700	-	699	721	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.6		12.1		0.7		0.2	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	722	529	1377	-	-
HCM Lane V/C Ratio	0.014	-	-	0.115	0.039	0.005	-	-
HCM Control Delay (s)	7.7	0	-	10.6	12.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

HCM 6th TWSC  
 3: Black Forest Rd & Terra Ridge Cir

2040 Total Traffic  
 PM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	1	26	4	1	3	36	175	6	8	200	22
Future Vol, veh/h	8	1	26	4	1	3	36	175	6	8	200	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	42	42	42	50	50	50	82	82	82	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	2	62	8	2	6	44	213	7	10	256	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	599	598	270	627	609	217	284	0	0	220	0	0
Stage 1	290	290	-	305	305	-	-	-	-	-	-	-
Stage 2	309	308	-	322	304	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	413	416	769	396	410	823	1278	-	-	1349	-	-
Stage 1	718	672	-	705	662	-	-	-	-	-	-	-
Stage 2	701	660	-	690	663	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	394	396	769	349	390	823	1278	-	-	1349	-	-
Mov Cap-2 Maneuver	394	396	-	349	390	-	-	-	-	-	-	-
Stage 1	690	666	-	678	636	-	-	-	-	-	-	-
Stage 2	667	634	-	626	657	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	11.7		13.2		1.3		0.3	
HCM LOS	B		B					

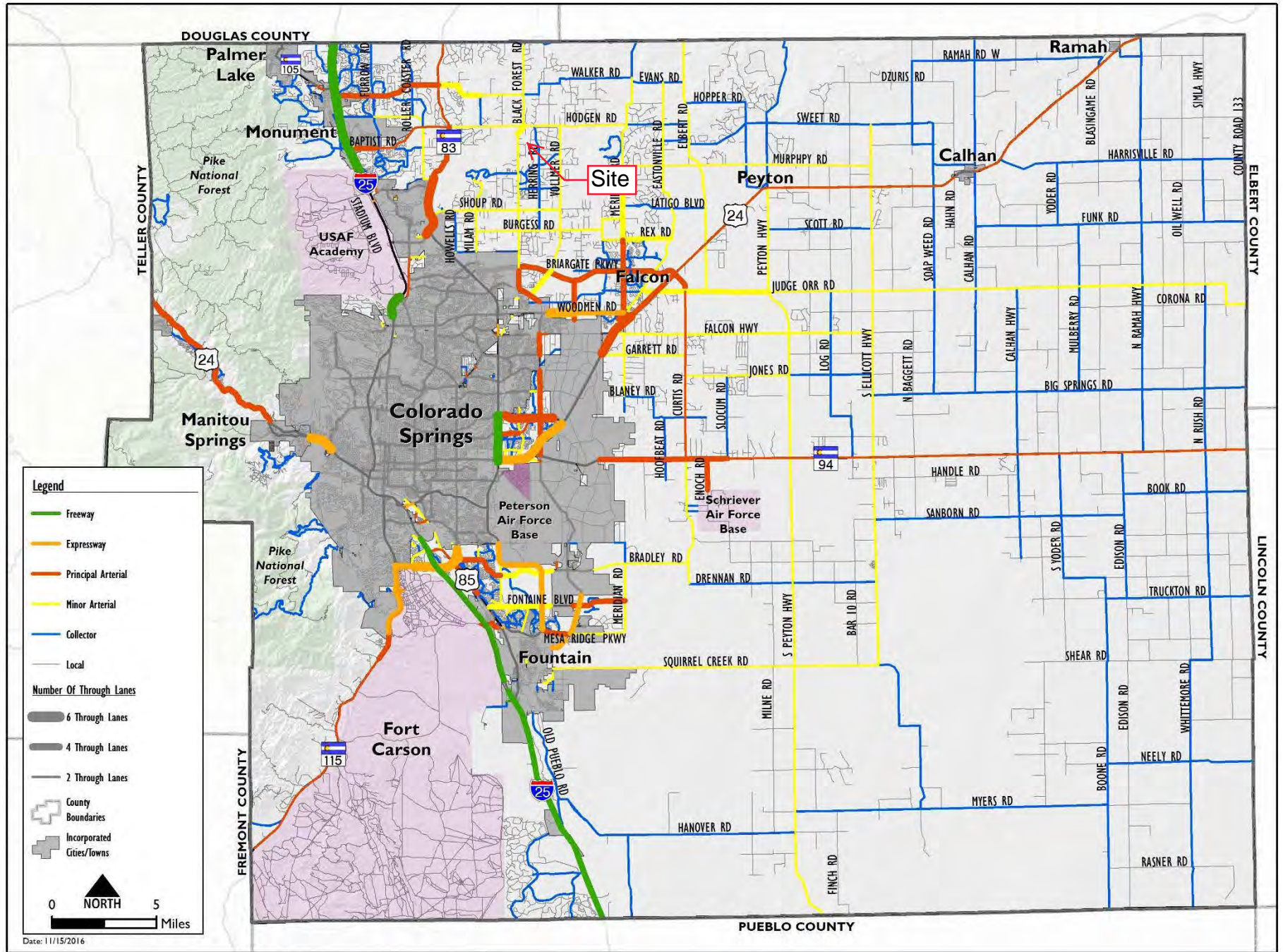
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	618	453	1349	-	-
HCM Lane V/C Ratio	0.034	-	-	0.135	0.035	0.008	-	-
HCM Control Delay (s)	7.9	0	-	11.7	13.2	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.1	0	-	-

# MTCP Maps

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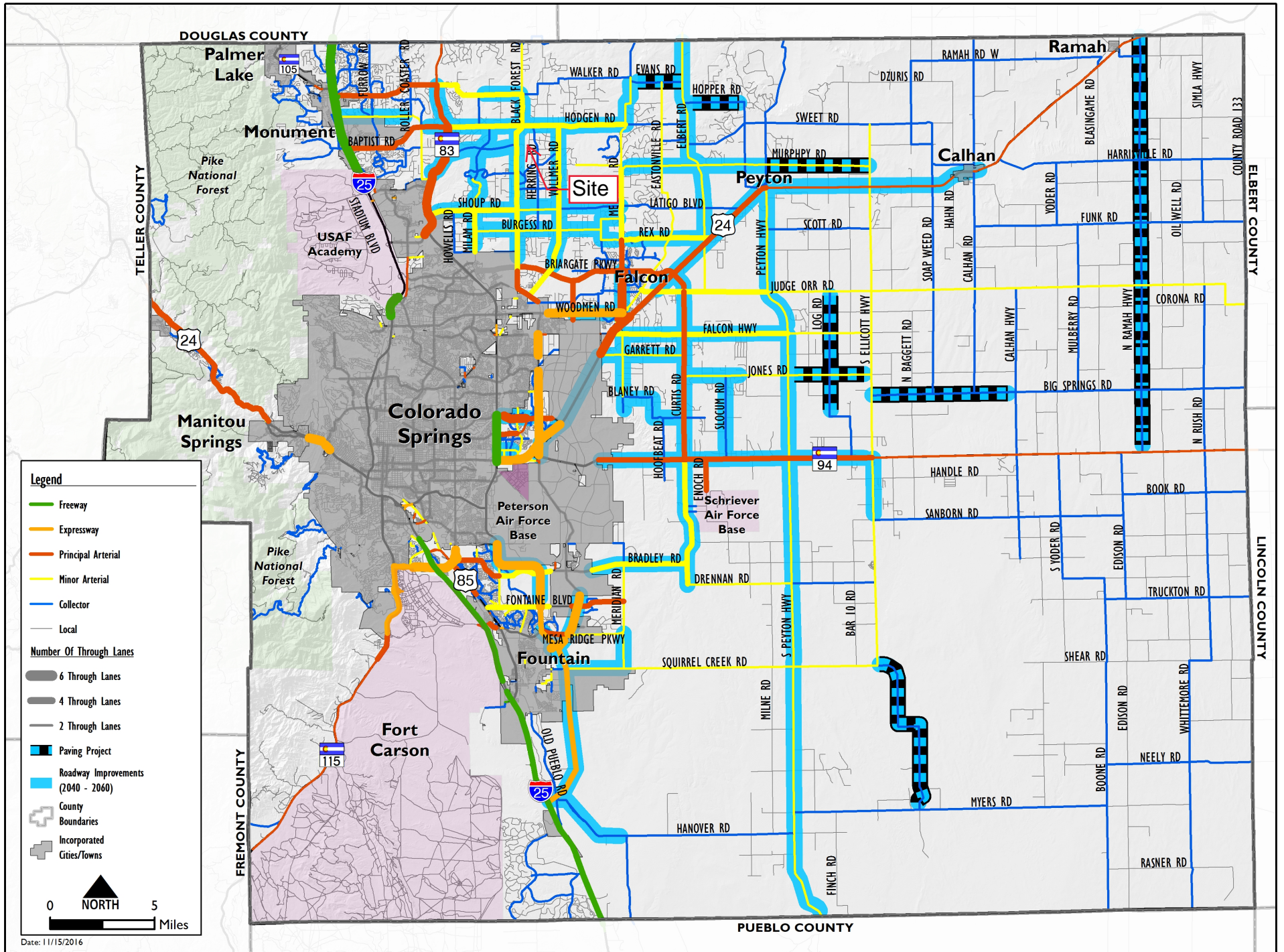




Map 14: 2040 Roadway Plan (Classification and Lanes)



# Map 17: 2060 Corridor Preservation



**Legend**

- Freeway
- Expressway
- Principal Arterial
- Minor Arterial
- Collector
- Local

**Number Of Through Lanes**

- 6 Through Lanes
- 4 Through Lanes
- 2 Through Lanes

- Paving Project
- Roadway Improvements (2040 - 2060)
- County Boundaries
- Incorporated Cities/Towns

0 **NORTH** 5  
Miles

Date: 11/15/2016