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**Black Forest Meadows  
Trip Generation & Driveway Permit  
Technical Memorandum**

PCD File No. VA-21-001  
(LSC #204630)  
April 12, 2021

**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.

Deborah L. Ritchey

04-13-2021

# **Black Forest Meadows**

## **Trip Generation & Driveway Permit Memo**

Prepared for:  
Black Forest Meadows  
17104 Goshawk Road E  
Colorado Springs, CO 80908

Contact: Ms. Deborah Ritchey

**APRIL 12, 2020**

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LSC Transportation Consultants  
Prepared by: Jack Bauer, EI  
and Jeffrey C. Hodsdon, P.E.

LSC #204630  
PCD File No. VA-21-001



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April 12, 2021

Deborah Ritchey  
Black Forest Meadows  
17104 Goshawk Road E  
Colorado Springs, CO 80908

RE: Black Forest Meadows  
El Paso County, CO  
Trip Generation & Driveway  
Permit Technical Memo  
LSC #204630  
PCD File No. VA-21-001

Dear Ms. Ritchey,

LSC Transportation Consultants, Inc. has prepared this "trip generation and driveway permit" technical memorandum for the proposed Black Forest Meadows wedding venue in El Paso County, Colorado. The 20-acre site (El Paso County parcel ID 5123000017) is located at 17104 East Goshawk Road, approximately 0.5 miles north of the Hodgen Road/East Goshawk Road intersection. There is currently a single-family home on the property (which will remain) and existing residential access on Goshawk Road East would also serve as the access for the proposed wedding venue.

This report presents information regarding the proposed Black Forest Meadows wedding venue use on the property, the estimated vehicle-trip generation, and an evaluation of the site driveway relative to County access criteria for purposes of obtaining a driveway permit. The memo is called a "driveway permit memo" as the criteria under *Engineering Criteria Manual (ECM)* section B.1.2.D "No TIS Required" is met.

## PROPOSED LAND USE

The 20-acre property (zoned RR-5) is located at 17104 Goshawk Road East in El Paso County, Colorado. One single-family residence exists on the property and this would remain. The land use application is for the addition of an **outdoor** facility/venue for hosting weddings for up to a maximum of 75 guests. The venue would operate seasonally from June through September. Relatively small wedding events would be hosted at the proposed wedding venue during the summer months (June through September).

In order to minimize vehicular traffic impacts on Goshawk Road (and on-site parking demand) the operations plan is to require most guests to travel to/from the site by passenger shuttle transportation rather than private passenger vehicles. Shuttle service would be pre-arranged to provide pick up and drop off at an off-site parking location.

Exceptions will be allowed for the wedding party and immediate family members. Wedding guests, including the wedding party and parents, would arrive on-site via their personal vehicles. Remaining guests would primarily be shuttled in from an off-site parking location.

The applicant has indicated that a few off-site employees would travel to the site to assist with wedding activities. Vendors and wedding service providers would arrive at the venue using their company or business-use personal vehicles in support of the wedding events. These vendors include event coordinators, caterers, florists, photographers, videographers, bands, DJs, etc.

Note: This land use does not match a typical ITE Land Use category (ITE – Institute of Transportation Engineers - for use in estimating trip generation).

#### **SITE ACCESS**

The site access is located on Goshawk Road East, approximately 2,400 feet north of Hodgen Road (centerline distance). The existing residential driveway on Goshawk Road East would also serve as the access for the proposed wedding venue. A copy of the site plan is attached for reference.

**Goshawk Road** forms a rectangular loop on the north side of Hodgen Road. The site is on “Goshawk Road E”- the east side of this loop which extends approximately 0.8 miles north from Hodgen Road. Goshawk Road is identified in the *El Paso County Road System – 2016* report as a “graded and drained” (not paved), local, “Open Public Road Not Maintained by County - not eligible for HUTF.”. The posted speed limit along this gravel road is 25 mph.

#### **ESTIMATED GOSHAWK ROAD BACKGROUND TRAFFIC VOLUMES**

LSC has estimated current and potential future traffic volumes on Goshawk Road based on the current and potential future land uses/residential lots. Based on the lot and roadway layout of the neighborhood, residents from 15 single-family houses (including potential future homes on currently-undeveloped lots) in the vicinity would primarily use Goshawk Road East, while the remainder would instead use Goshawk Road West. According to ITE trip-generation rates, the average single-family house generates 9.44 trips per day, but LSC has rounded up this rate to 10 trips per day to be conservative. Therefore, LSC estimates a background/baseline average daily traffic volume of approximately 125 to 150 vehicles per day on Goshawk Road just north of Hodgen Road.

#### **SITE TRIP GENERATION ESTIMATE**

Typically, estimates of vehicle trips projected to be generated by a site are made using the nationally published average trip generation rates for land use codes in *Trip Generation*, 10<sup>th</sup>

*Edition, 2017* by the Institute of Transportation Engineers (ITE). However, due to the unique land use of the proposed wedding venue, LSC has estimated trip generation based on information provided by the applicant presented in the “Proposed Land Use” section above.

Table 1 presents the trip-generation estimate. This table presents estimated averages as the number of wedding attendees/guests will vary by event. Also, the shuttle trips will likely vary depending on the size of the bus or van, the number of vehicles used in support of an event, and the number of round trips between the site and the off-site pick-up/drop-off location(s). The number trips by vendors and private guest vehicles for the wedding party/immediate family will likely vary as well.

**Table 1: Estimated Event Day and Average Daily Vehicle Trip Generation**

Guest Description	Average Event Day Trip Estimate					
	Persons	Person Trips		Vehicles Used	Vehicle-Trips	
		IN	OUT		IN	OUT
<b>Owners/Managers/Residents</b>	2	3	3	1	2	2
<b>Guests</b>						
Wedding Party Guests (Personal Vehicles)	8	8	8	4	4	4
Wedding Guests (Shuttle Vehicle)	75	75	75	1 or 2	7	7
				<b>Sub-Total (Guests)</b>	<b>11</b>	<b>11</b>
<b>Vendors</b>						
Caterer	4	4	4	2	2	2
Florist	2	2	2	1	1	1
Photographer	1	1	1	1	1	1
Videographer	1	1	1	1	1	1
Officiant	1	1	1	1	1	1
Rentals	2	2	2	1	1	1
Reception MC (if separate from Musicians)	1	1	1	1	1	1
Musician(s)	4	4	4	2	2	2
	16			<b>Sub-Total (Vendors)</b>	<b>10</b>	<b>10</b>
<b>AVERAGE DAILY TRIPS (ON EVENT DAYS)</b>						
				<b>Total Event Day Vehicle-Trips (Sum of IN &amp; OUT)</b>		<b>46</b>
<b>CALCULATION OF AVERAGE DAILY TRIPS (EVENT AND NON EVENT DAYS):</b>						
				<b>Event Days (Annually)</b>		<b>20</b>
				<b>Event Days (Summer Season: Mid May - September)</b>		<b>18</b>
				<b>Non-Event Day Owner Trips</b>		<b>9.54</b>
				<b>Annual Average Owner Daily Trips</b>		<b>9.25</b>
				<b>Seasonal Average Owner Daily Trip</b>		<b>9.28</b>
				<b>Overall Annual Average* Daily Trips</b>		<b>12</b>
				<b>Overall Seasonal Average* Daily Trips</b>		<b>15</b>
* Average of event and non event days for the period						12/13/2020

Based on the projections in Table 1, the propose wedding venue would generate about 46 vehicle trips on the average event day, with half entering and half exiting the site.

The table also presents annual average daily trips and summer season average daily trips. These averages include both event days and non-event days. These have been provided because there will be significantly more non-event days than event days.

### **Total Projected Traffic Volumes/Link LOS for Goshawk Road**

Goshawk Road is a local service, rural, unpaved roadway. The *ECM* design ADT for a “Rural Gravel” roadway is 200 ADT. LSC has estimated background/baseline and total ADT volumes on Goshawk Road just north of Hodgen Road. With the addition of projected “event day” or “seasonal average” site-generated traffic to the roadway, average daily traffic volumes on Goshawk Road are likely to remain under the 200 ADT threshold. Vehicle trips to be generated by the wedding venue are “by design,” meaning the applicant shuttle programming is a core part of the operations plan with the intent to limit the vehicle trips on Goshawk Road to:

- Minimize traffic impacts to the area residents
- Keep the total volume on Goshawk Road below 200 ADT.

### **ACCESS SIGHT DISTANCE ANALYSIS**

#### **Sight Distance Field Measurements**

Sight distance field measurements utilized a driver’s eye height of 3.5 feet and a height of 3.5 feet for a vehicle traveling along Goshawk Road East. The following analysis corresponds to field-measured sight distances for the proposed site-access intersection with Goshawk Road East. Field-measured sight distances for passenger vehicles are as follows:

- To the north: 295 feet
- To the south: 526 feet

Please refer to Figure 2 and 2 for detailed sight distance analysis diagrams.

#### **Entering Sight Distance**

With a 25-mph posted speed limit on Goshawk Road, the field-measured sight distances for the proposed site-access intersection with Goshawk Road would exceed the required 250-foot requirement for entering sight distance for passenger vehicles, as shown in *ECM* Table 2-35.

The requirement of 325 feet for single-unit trucks (or larger shuttle vehicles/buses) would be met as well for the infrequent single-unit truck, as the driver’s eye height would be higher than 3.5 feet above the access drive surface. Therefore, access entering sight distance **would** be acceptable at the proposed site-access location shown on the site plan. If landscaping, signage, etc. is proposed for the wedding venue, the lines of sight to the north and south from the access point need to be kept clear of any sight distance obstructions.

## **Stopping Sight Distance**

### ECM Sight Distance Requirements

The site access point/driveway on Goshawk Road must meet *ECM* standards for “sight distance along the roadway” contained in Section 2.4.1.D.1 of the *ECM* (Table 2-33 “Minimum Sight Distance Along Roadway (Horizontal and Vertical)”). Grade adjustment factors for values in 2-33 (when applicable) are contained in *ECM* Table 2-34 (“Sight distance Adjustment Factors for Roadway Grade”).

#### *Northbound Approach to the Driveway*

Based on the 25-mph posted speed limit and spot-grades along Goshawk Road south of the access (upgrades varying from 3.7 to 5.2 percent on the northbound approach), the prescribed “sight distance along the roadway” (Goshawk Road) approaching the access in the northbound direction from the north is 135 feet (based on calculations using *ECM* Tables 2-33 and 2-34).

#### *Southbound Approach to the Driveway*

For the southbound approach to the driveway, *ECM* Table 2-18 “Stopping Sight Distance at Grade” has been used in lieu of *ECM* Tables 2-33 and 2-34. The reason is Table 2-34 does not provide an adjustment factor for grades over 7.5 percent. Based on an assumed 30 mph **design** speed, and spot-grades along Goshawk Road (downgrade of approximately 9 percent in the southbound direction), the prescribed “sight distance along the roadway” (Goshawk Road) approaching the access in the southbound direction from the north is 227 feet (from *ECM* Table 2-18).

Based on the field spot-grade measurements and the field-measured available sight distances referenced above, the “sight distance along the roadway” for the proposed (existing) site-access driveway would exceed the required 227 feet approaching the access from the north along Goshawk Road and 120 feet approaching the access from the south.

## **DRIVEWAY ACCESS EVALUATION**

### **ECM Criteria for Access Design**

One site access point/driveway is proposed (at the existing driveway location). The following summarizes *Engineering Criteria Manual* Section 2.4.1 access criteria, which states the following five access design guidelines:

- Adequate spacing
- Proper alignments
- Clear sight distances
- Coordinated widths with its intended use
- Clearances from intersections



The following sections address each of these criteria for site driveway.

### **Adequate Spacing**

Goshawk Road is a local service roadway and individual lot access is permitted by the *ECM*. The existing driveway to the property will be used.

### **Access Alignment**

#### Horizontal Alignment

Per *ECM* criteria, “All proposed site access points should be aligned at 90 degrees to the adjacent roadway centerline.” The current driveway is aligned slightly greater than 90 degrees. However, given the site-specific conditions, this will not be problematic.

#### Vertical Alignment

Per *ECM* Section 2.4.1.C.2, “maximum access grades are 4% for commercial and industrial properties with a required 30-foot landing length and a 4% for rural residential properties with a required 15-foot landing length.” This vertical alignment criteria for commercial properties shall be met for the driveway.

### **Access Sight Distances**

The access sight distance criteria in section 2.4.1.D would apply:

*“Any potentially obstructing objects, such as but not limited to advertising signs, structures, trees, and bushes, shall be designed, placed, and maintained at a height not to interfere with the sight distance needed by any vehicle using the access.”*

Please refer to the “Sight Distance Analysis” section above for a detailed discussion about sight distance at the site access. All *ECM*-required sight distances would be met at the site access point. Improvements, such as signs, on-street parking, and landscaping, should not impede the required sight-distance lines of sight.

### **Access Width**

Per *ECM* Section 2.4.1.E.1, “two-way residential access points shall have a 10-foot minimum and a 24-foot maximum width.” The access drive (12-13 feet wide) would meet this *ECM* criteria. Although commercial access point criteria require a minimum 25-foot and maximum 40-foot access width, the nature of this proposed business with most attendees arriving and departing by shuttle, the full commercial access width would not likely be necessary. However, the access radii will need to accommodate the design vehicle associated with the wedding venue – single unit trucks, busses, RVs, vehicles towing trailers and potentially fire equipment. It would be

reasonable to assume use of the entire width of the access and the adjacent Goshawk Road for turning in and out.

#### **Clearances from Intersections**

The site driveway is not near an intersection.

#### **EVALUATION AGAINST ECM APPENDIX B**

The criteria under *Engineering Criteria Manual* Section B.1.2.D “No TIS Required” is met. Please refer to the attached worksheet.

#### **EL PASO COUNTY ROAD IMPACT FEE**

Per staff comments, the “Road impact fee might apply.” As of the date of this report, a determination has not yet been relayed to LSC. The comments indicate that staff will notify LSC and/or the applicant of the *ECM* Administrator’s determination.

\* \* \* \* \*

Please contact me if you have any questions.

Respectfully Submitted,

LSC TRANSPORTATION CONSULTANTS, INC.

By:

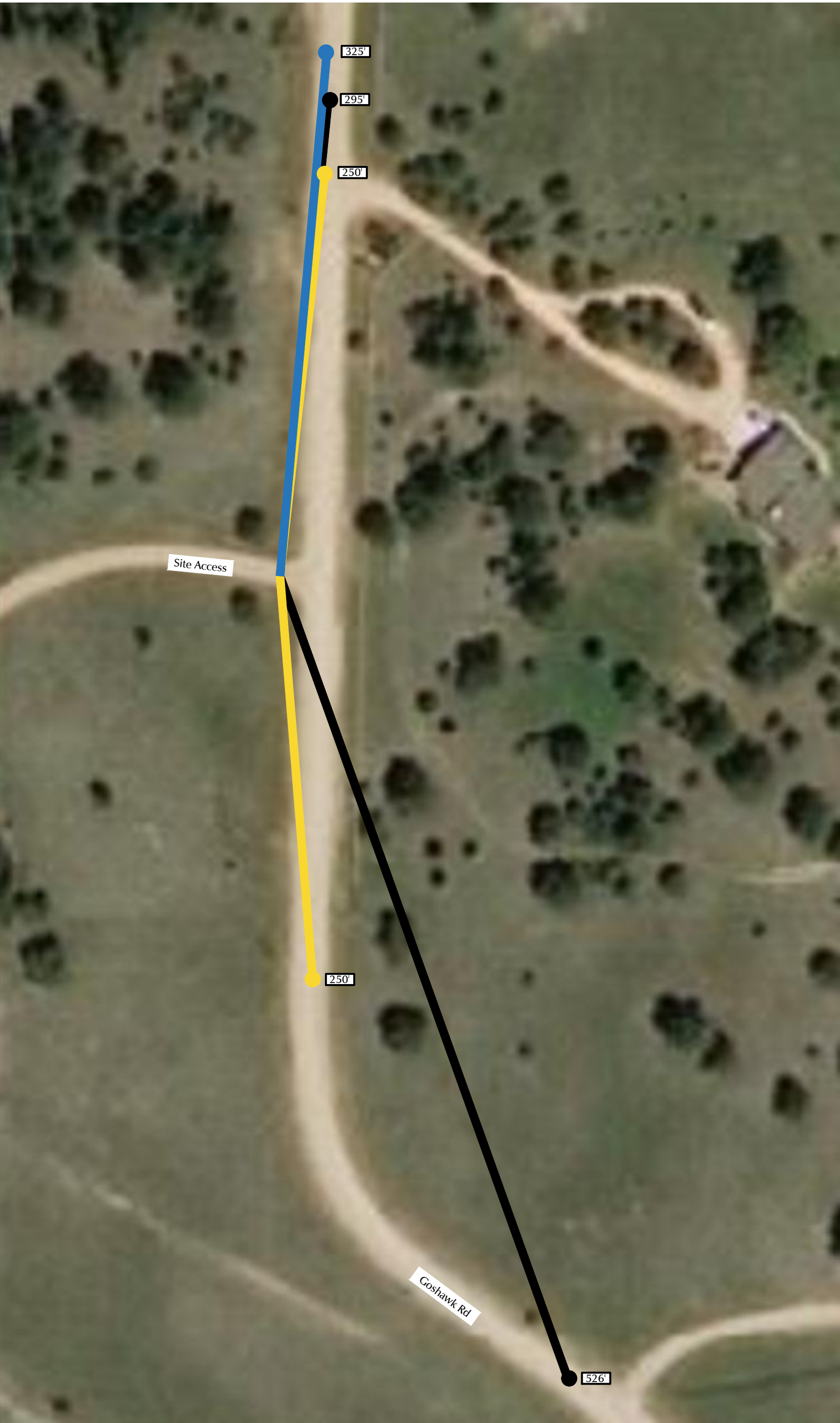
Jeffrey C. Hodsdon, P.E.  
Principal

JCH:JAB:jas

Enclosures:    Figures 1 & 2  
                     ECM Appendix B – “No TIS Required” Worksheet

# Figures

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1" = 60'  
scale



- XXX Sight distance length
- Length of field-measured sight distance from the access point (from passenger car driver's eye)
- Required intersection sight distance for passenger vehicles (from passenger car driver's eye)
- Intersection sight distance for single-unit trucks (from single-unit truck driver's eye)

Figure 1  
**Intersection  
Sight Distance**  
Black Forest Meadows (LSC #204630)



1" = 60'  
scale



- [XXX'] Sight distance length
- Length of field-measured sight distance line of sight from approaching motorists traveling along Goshawk Rd
- County-required stopping sight distance (adjusted for grade)
- Approaching vehicle

Figure 2  
**Stopping Sight Distance**  
Black Forest Meadows (LSC #204630)

## ECM Appendix B – “No TIS Required” Worksheet

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## ECM Appendix B – “No TIS Required” Worksheet

### ECM Section B.1.2.D. No TIS Required

No TIS is required if all of the criteria below are satisfied:

☐ Vehicular Traffic:

- ☐ (1) Daily vehicle trip-end generation is less than 100 or the peak hour trip generation is less than 10;
- ☐ (2) There are no additional proposed minor or major roadway intersections on major collectors, arterials, or State Highways;
- ☐ (3) the increase in the number of vehicular trips does not exceed the existing trip generation by more than 10 peak hour trips or 100 daily trip ends;
- ☐ (4) The change in the type of traffic to be generated (i.e., the addition of truck traffic) does not adversely affect the traffic currently planned for and accommodated within, and adjacent to, the property;
- ☐ (5) acceptable LOS on the adjacent public roadways, accesses, and intersections will be maintained;
- ☐ (6) no roadway or intersection in the immediate vicinity has a history of safety or accident problems; and
- ☐ (7) there is no change of land use with access to a State Highway.

☐ Pedestrian Traffic: Paved pedestrian facilities exist or will be constructed on, or adjacent to, the site; or, the proposed use will not generate any new pedestrian traffic.

☐ Bicycle Traffic: Paved bicycle lanes or paths exist or will be constructed on, or adjacent to, the site; or, the proposed use will not generate any new bicycle traffic.