Memorandum

Date: November 18, 2015
To: Lisa Bankosh, Midpeninsula Regional Open Space District
From: Gary Black
Subject: Bear Creek Redwoods Traffic Study

Hexagon Transportation Consultants, Inc. has completed a traffic study of the Bear Creek Redwoods Open Space Preserve, which is located along Bear Creek Road in the Santa Cruz Mountains (see Figure1). The study includes an analysis of potential driveway and crosswalk locations. Driveway(s) and a crosswalk are to be installed on Bear Creek Road to serve a potential parking lot and allow public access into the preserve. The Preserve currently does not allow public access, so the addition of parking and access will increase visitation to the Preserve. As Bear Creek Road is hilly and winding with limited sight distance in many locations, potential driveway locations must be carefully studied. Figure 2 shows the existing gates into the Preserve and the two potential driveway locations studied in this memo.

This study also identifies any potential traffic operation impacts related to the addition of parking and access to the Preserve.

The study evaluates the traffic impacts of the project on the operation of two unsignalized intersections and two roadway segments in the vicinity of the project site during the weekday AM and PM peak periods of traffic as well as the Saturday peak hour. Santa Clara County does not have any standards to define impacts or mitigation for unsignalized intersections or roadway segments. Therefore, the operations analysis does not draw any conclusions relative to impacts under the California Environmental Quality Act (CEQA). The study intersections and roadway segments are identified below.

**Study Intersections**

1. SR 17 Southbound Ramps and Bear Creek Road (All-way stop)
2. SR 17 Northbound Ramps and Bear Creek Road (Two-way stop)

**Study Road Segments**

1. Bear Creek Road west of Camel Hill Vineyard Driveway
2. Bear Creek Road west of Alma College Road

Traffic conditions at the study intersections were analyzed for the weekday AM and PM peak hours as well as for the Saturday peak hour. The AM peak hour of adjacent street traffic is generally between 7:00 and 9:00 AM, and the PM peak hour of adjacent street traffic is typically between 4:00 and 6:00 PM. It is during these periods on an average weekday that the most congested traffic conditions occur. The Saturday peak hour was analyzed since it is generally the day that the Preserve would generate the greatest amount of traffic.

Traffic conditions were evaluated for the following scenarios:

**Scenario 1:** *Existing Conditions.* Existing traffic volumes were obtained from 2015 manual turning-movement counts. The new intersection count data and roadway tube counts are included in Appendix A.

**Scenario 2:** *Existing Plus Project Conditions.* Existing plus project peak hour traffic volumes were estimated by adding to existing traffic volumes the additional traffic generated by the project. Existing plus project conditions were evaluated relative to existing conditions in order to determine the effects the project would have on existing traffic conditions.
Figure 2
Potential Driveway Locations (Zoomed)
Scenario 3: *Future Plus Project Conditions.* Future plus project traffic volumes were estimated by applying a general growth factor (for 15 years) to the existing peak-hour volumes and adding the project trips.

Both of the study intersections are unsignalized. Neither Santa Clara County nor Caltrans have standards to evaluate the intersection level of service for unsignalized intersections. Therefore, this analysis includes an operational analysis of vehicle queuing and delay based on principles and methodologies from the 2010 *Highway Capacity Manual.*

**Existing Bear Creek Road Traffic**

Bear Creek Road is a two-lane county road through the Santa Cruz Mountains. It carries a relatively modest amount of commute traffic during the weekdays to and from mountain residences, and it carries recreational traffic on weekends. Bear Creek Road is winding and steep in places. Passing is not allowed in the project vicinity. There were no speed limit signs observed in the project vicinity, so the sight distance analysis is based on observed speeds.

Hexagon conducted traffic and speed counts on Bear Creek Road near the two best locations for potential driveways for 24 hours on February 26, 2015, a typical weekday and on June 20, 2015, a Saturday. The total volume on the weekday was about 3,590 vehicles west of Camel Hill Vineyards driveway (Driveway 1 on Figure 2) and about 3,410 west of Alma College Road (Driveway 2 on Figure 2). The highest volume occurred during the typical AM commute hour (7 AM to 8 AM) when there were 326 vehicles counted in the peak direction (eastbound) west of Camel Hill Vineyards. The PM peak hour at the same location (5 PM to 6PM) saw 240 vehicles in the peak direction (westbound).

The total volume on June 20, 2015 (Saturday) was about 3,190 vehicles west of Camel Hill Vineyards driveway (Driveway 1 on Figure 2) and about 3,070 west of Alma College Road (Driveway 2 on Figure 2). The total volumes on Saturday are about 10% lower compared to the traffic on a typical weekday. The highest volume on Saturday occurred during the late afternoon between 5:00 PM and 6:00 PM when there were 147 vehicles counted towards the Santa Cruz direction (westbound) west of Camel Hill Vineyards.

According to the 2010 *Highway Capacity Manual* (HCM), the capacity of a two-lane highway is a maximum of 3,200 vehicles per hour. That figure must be adjusted for terrain. The HCM suggests that the capacity should be reduced by one-third in mountainous areas. Thus, the capacity of Bear Creek Rd is about 2,100 vehicles per hour, or 1,050 vehicles per hour per lane. As the existing AM peak hour volume for the peak direction is 326 and the existing Saturday peak hour volume for the peak direction is 147, it can be concluded that Bear Creek Rd is currently operating well below its maximum capacity.

Hexagon also measured speed along with traffic volume. The 85th percentile speeds and suggested design speeds are summarized in the following table. Hexagon has been made aware of comments from people familiar with Bear Creek Road that speeds are higher during commute hours, especially in the morning when people are trying to get to work. The speed data (included in the Appendix) support this observation. Speeds were higher in the morning commute period for traffic going toward Highway 17, which is downhill near Alma College Road (Gate 4). On a 24-hour basis the 85th percentile speed at this location was 36 miles per hour (mph). However, between 6-7 AM the 85th percentile speed was 39 mph, and between 7-8 AM the 85th percentile speed was 38 mph. Nevertheless, for all of these cases the proper design speed is 40 mph based on the standards specified in the Manual on Uniform Traffic Control Devices (MUTCD), which is what was used for the sight distance calculations.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Measured Speeds and Suggested Design Speeds at Potential Driveway Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td><strong>Toward Santa Cruz</strong></td>
</tr>
<tr>
<td></td>
<td>85th percentile speed</td>
</tr>
<tr>
<td>Weekday</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>38 mph</td>
</tr>
<tr>
<td>2</td>
<td>28 mph</td>
</tr>
</tbody>
</table>
Existing Intersection Level of Service

The study also analyzed the traffic impacts of the project on the two unsignalized intersections at the Bear Creek Road/SR 17 interchange during the weekday AM and PM peak periods of traffic and during the Saturday peak hour. Existing weekday AM (7:00-9:00 AM) and PM (4:00-6:00 PM) peak hour traffic volumes and Saturday peak hour traffic volumes (1:00-2:00PM) were obtained from new manual turning-movement counts (see Figure 3).

The results of the intersection level of service analysis show that the intersection of the SR 17 southbound ramps and Bear Creek Road is operating at acceptable levels of service. The intersection of the SR 17 northbound ramps and Bear Creek Road is operating at level of service B during the weekday PM peak hour and the Saturday peak hour. However during the weekday AM peak hour, the calculation shows that traffic is experiencing long delays. Field observations show that the poor level of service is caused by the ramp meter at the SR 17 northbound on-ramp. Traffic backs up from the on-ramp, onto Bear Creek Road, through the adjacent off-ramp intersection, and up the hill. Traffic also backs up on Old Santa Cruz Highway. Although a stop sign does not exist for traffic on Bear Creek Road, drivers are stopping at Old Santa Cruz Highway and letting other vehicles on to the ramp in an alternating fashion, as if a stop sign were present.

Table 2

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Intersection</th>
<th>Peak Hour</th>
<th>Count Date</th>
<th>Avg. Delay (sec.)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SR 17 Southbound Ramps &amp; Bear Creek Road</td>
<td>AM</td>
<td>06/23/15</td>
<td>9.7</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>(All-way Stop)</td>
<td>PM</td>
<td>06/23/15</td>
<td>10.5</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>06/20/15</td>
<td>9.0</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>SR 17 Northbound Ramps &amp; Bear Creek Road</td>
<td>AM</td>
<td>06/23/15</td>
<td><strong>53.3</strong></td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>(Unsignalized)</td>
<td>PM</td>
<td>06/23/15</td>
<td>11.6</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>06/20/15</td>
<td>13.7</td>
<td>B</td>
</tr>
</tbody>
</table>
Figure 3
Existing Traffic Volumes

XX(XX)[XX] = AM[PM][Saturday] Peak-Hour Traffic Volumes
Trip Generation

The method for calculating the amount of trips generated by the proposed project involved using daily visitation counts from similar Preserves: the Fremont Older Preserve, and the Windy Hill Preserve.

A conservative trip generation estimate would come from the Fremont Older Preserve. This Preserve, located close to the Town of Cupertino, gets both regular neighbor use as well as weekend/day trip destination use. Fremont Older is open to hiking, biking, and equestrian use throughout the Preserve, as well as dogs. Trail counts were conducted in 2007 and 2010 for two consecutive weeks in Fremont Older Preserve. The counts show an average daily visitation of 522. Since the Bear Creek Redwoods Open Space Preserve will have no dog access and only limited biking, it will likely get less use.

Another less conservative (but maybe more accurate) comparator is the Windy Hill Preserve, which is close to Woodside and Portola valley, has only one through trail open to bikes, and is open to hiking and equestrian use. It is also open to dogs and gets a lot of regular dog walkers. The study shows that Windy Hill has an average of 341 visitors per day.

The Bear Creek Redwoods Open Space Preserve would not permit dogs and would include only one trail open to bicycles. Comparing the size and uses of the Bear Creek Redwoods Preserve with the two Preserves discussed above, a conservative estimate would be an average of 500 daily visitors on weekends. This calculates to 1,000 daily person trips, one trip in and one trip out for each visitor. Trips generated on weekdays were assumed to be 40 percent of the weekend trip generation. This percentage is based on a comparison and average between weekday and weekend trip generation for various park land uses in the Institute of Transportation Engineers (ITE) Trip Generation Manual. The park land use categories include City Park, County Park, Regional Park, Beach Park, and National Monument. After applying a reasonable assumption of 1.5 people per car, the Preserve is expected to generate an average of 267 and 667 daily vehicle trips on weekdays and weekends, respectively. The peak hour trips generally would be 15% of the average daily traffic, which would result in 40 trips during each of the weekday AM and PM peak hours and 100 trips during the Saturday peak hour. It is further assumed that there will be roughly a 60%/40% in/out split in the morning and the reverse in the afternoon on weekdays. On weekends, the in/out split is expected to be nearly equal with 48% in and 52% out.

Special Events

The Preserve is being proposed as a potential special-event venue making use of the existing Alma College buildings. Weddings or other special events would accommodate up to 250 guests. Also, at the Bear Creek Stables site, which is within the Preserve, it is anticipated that there would be one or two large events per year on weekends with up to 250 people. To provide the most conservative analysis, a worst-case scenario was studied with large events hosted (total up to 500 guests) at both sites on the same weekend. It is extremely unlikely that simultaneous events would occur, but the results are presented for informational purposes. It is assumed that the large events would have an average vehicle occupancy of two persons per car. Thus, the large events would generate up to 500 daily trips. Adding in the regular park users brings the total to 1,167 added daily vehicle trips.

It is assumed that the guests for a wedding or other special event hosted at the Alma College site would arrive within one hour. The regular Preserve visitors (hikers) and the Bear Creek Stable users would arrive or leave spread throughout the day with 10% during any particular hour. It is expected that there would be 342 peak hour trips during weekend peak hour with 294 inbound trips and 48 outbound trips (see Table 3).
Table 3
Anticipated Project Trip Generation

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Daily Trips</th>
<th>AM Peak Hour</th>
<th>PM Peak Hour</th>
<th>Saturdays</th>
<th>Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>In (%)</td>
<td>Out (%)</td>
<td>Total (%)</td>
<td>In (%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bear Creek Redwoods Preserve</td>
<td>267</td>
<td>23</td>
<td>17</td>
<td>40</td>
<td>18</td>
</tr>
<tr>
<td>Weekend with Special Events</td>
<td>1,167</td>
<td>294</td>
<td>48</td>
<td>342</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
la/ Rate based on trips generated by three similar Preserves; Rate of one and half persons per vehicle was assumed to convert visitors to vehicle trips. Weekday trips were assumed to be 40% of weekend trips.
lb/ AM and PM peak hour trips were assumed to each to be 15% of the daily volumes.
lc/ Percentage based on ITE Trip Generation Rate for Regional Park (Land Use Type: 417)
ld/ Weekend trips with special events were assumed including average daily regular visitors to the Preserve, trips generated by the special events with 250 guests at the Bear Creek Stables site and wedding events with 250 guests at the Alma College buildings. Rate of two persons per vehicle was assumed for the special events guests.
le/ Weekend peak hour trips were assumed to include 10% of the average daily regular visitors, 10% of the Bear Creek Stable users, and 100% of the wedding guests.
lf/ Percentage based on ITE Trip Generation Rate for Regional Park for Saturday Peak hour were used for regular visitors and Bear Creek Stable users. It is assumed that the 250 guests for wedding will arrive within the peak hour.

Roadway Traffic Analysis

The peak hour for the Preserve trip generation would be in the early afternoon. At the hour of 1-2 PM the weekday volume on Bear Creek Road is 91 vehicles westbound and 76 vehicles eastbound. Based on the above trip generation estimates, the Preserve is expected to add 18 westbound vehicles and 22 eastbound vehicles during the early afternoon time period. Considering that the total capacity of a lane is 1,050 as described previously, Bear Creek Road would still be operating well below its capacity after the completion of the project.

The weekend peak hour for the Preserve would be in the late afternoon. At the hour of 5:00 - 6:00 PM the volume on Bear Creek Road is 114 vehicles eastbound and 147 vehicles westbound. Under the worst-case scenario with two special events at the same time, the traffic generated by the Preserve would add 294 westbound vehicles and 48 eastbound vehicles during the peak hour. The total traffic on Bear Creek Road could reach 162 vehicles eastbound and 441 vehicles westbound. The peak direction volume would be less than 50% of the total capacity of the road. Therefore, Bear Creek Road would still be operating well below its capacity even under the worst-case scenario with the project.

Existing Plus Project Intersection Level of Service Analysis

The trip distribution pattern for the project was developed based on existing travel patterns on the surrounding roadway system and the locations of complementary land uses. The peak hour vehicle trips generated by the
project were assigned to the roadway network in accordance with the trip distribution pattern. Figure 4 shows the project trip assignment at the study intersections. The project trips were added to existing traffic volumes to obtain existing plus project traffic volumes (see Figure 5).

The results of the intersection level of service analysis under existing plus project conditions show that the intersection of the SR 17 southbound ramps and Bear Creek Road would operate at an acceptable level of service during the weekday AM and PM peak hours and the Saturday peak hour (see Table 4).

During the weekday PM peak hour and Saturday peak hour, the intersection of the SR 17 northbound ramps/Bear Creek Road would operate at level of service B under existing plus project conditions. During the weekday AM peak hour the intersection operates at LOS F. The project could increase the delay for traffic at the on ramp. The delay increase would be minor and probably not noticeable to motorists. Since the delay is caused by the ramp meter at the northbound SR17 on-ramp, there are no feasible improvements that could be done. The meter already allows two vehicles per green. Any increase in metering rate would flood SR17 with vehicles, which would defeat the purpose of the ramp meter. There is ample queuing space on Old Santa Cruz Highway and Bear Creek Road for vehicles waiting to get on the freeway so the queuing does not disrupt intersection operations or create unsafe conditions.

Table 4
Existing Plus Project Intersection Level of Service

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Intersection</th>
<th>Peak Hour</th>
<th>Existing Avg. Delay (sec.)</th>
<th>LOS</th>
<th>Existing + Project Avg. Delay (sec.)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SR 17 Southbound Ramps &amp; Bear Creek Road (All-way Stop)</td>
<td>AM</td>
<td>9.7</td>
<td>A</td>
<td>10.0</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM</td>
<td>10.5</td>
<td>B</td>
<td>11.0</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>9.0</td>
<td>A</td>
<td>14.5</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>SR 17 Northbound Ramps &amp; Bear Creek Road (Unsignalized)</td>
<td>AM</td>
<td>53.3</td>
<td>F</td>
<td>61.8</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PM</td>
<td>11.6</td>
<td>B</td>
<td>11.8</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>13.7</td>
<td>B</td>
<td>14.9</td>
<td>B</td>
</tr>
</tbody>
</table>
Figure 4
Project Trip Assignment

LEGEND

= Project Study Roadway
= Potential Study Driveway
= Potential Study Gate
= Study Intersection

XX(XX)XX = AM(PM)(Saturday) Peak-Hour Trips
Figure 5
Existing Plus Project Traffic Volumes

LEGEND

= Project Study Roadway
= Potential Study Driveway
= Potential Study Gate
= Study Intersection
XX(XX)[XX] = AM[PM] Saturday Peak-Hour Traffic Volumes
Future Plus Project Intersection Level of Service Analysis

It is expected that buildout of the project will take 15 years. Future plus project traffic volumes were estimated by applying a general growth factor of 1% per year for 15 years to the existing peak-hour volumes and adding the project trips (see Figure 6). The results show that both study intersections would operate at acceptable levels of service during the weekday PM peak hour and the weekend peak hour. During weekday PM peak hour and Saturday peak hour, the intersection of the SR 17 northbound ramps/Bear Creek Road would operate at level of service B under future plus project conditions. During the weekday AM peak hour, the intersection already operates at LOS F, and queues would increase with the assumed future growth, without the project. The project could increase the delay for the on-ramp. The delay increase due to the project would be minor and probably not noticeable to motorists.

Since the delay is caused by the ramp meter at the northbound SR17 on-ramp, there are no feasible improvements that could be done. The meter already allows two vehicles per green. Any increase in metering rate would flood SR17 with vehicles, which would defeat the purpose of the ramp meter. There is ample queuing space on Old Santa Cruz Highway and Bear Creek Road for vehicles waiting to get on the freeway so the queuing does not disrupt intersection operations or create unsafe conditions.

Table 4
Future Plus Project Intersection Level of Service

<table>
<thead>
<tr>
<th>Study Number</th>
<th>Intersection</th>
<th>Peak Hour</th>
<th>Avg. Delay (sec.)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SR 17 Southbound Ramps &amp; Bear Creek Road</td>
<td>AM</td>
<td>10.8</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>(All-way Stop)</td>
<td>PM</td>
<td>12.4</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>16.2</td>
<td>B</td>
</tr>
<tr>
<td>2</td>
<td>SR 17 Northbound Ramps &amp; Bear Creek Road</td>
<td>AM</td>
<td>166.6</td>
<td>F</td>
</tr>
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<td></td>
<td>(Unsignalized)</td>
<td>PM</td>
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<tr>
<td></td>
<td></td>
<td>Saturday</td>
<td>16.7</td>
<td>C</td>
</tr>
</tbody>
</table>
Figure 6
Future Plus Project Traffic Volumes

XX(XX)[XX] = AM/PM/[Saturday] Peak-Hour Traffic Volumes
Driveway Sight Distance Analysis

The most important factor in adequate and safe driveway operations is the sight distance. In California, the Caltrans Highway Design Manual is the primary reference used to determine sight distance requirements. Since Bear Creek Road has many grades and curves, sight distance is limited in several locations.

Two potential driveway locations were identified that would provide adequate sight distance for a new driveway. The first is located in between gates BC01 and BC02 just west of the Camel Hill Vineyard entrance. The second location, about 800 feet west of gate BC04, was also considered for a driveway and crosswalk because the Open Space District owns land on both sides of the road.

At the first driveway location near Camel Hill Vineyard, sight distance could be over 450 feet for all potential turning movements (e.g. left turn in, left turn out, right turn out) if existing vegetation were removed. The tree located by the first utility pole west of the Camel Hill Vineyard entrance would need to be removed. The next tree to the west might also require removal depending on the view after other vegetation is removed (See Figures 7 and 8).

At the existing gate BC04, sight distance to the west is inadequate, so a new driveway location is necessary. A potential driveway location was found west of Alma College Rd that could achieve sight distance of about 400 feet to the east (or north) and a sight distance of more than 400 feet to the west (or south) with the removal of trees and vegetation (See Figures 9 and 10).

The actual and required stopping sight distances for the potential driveways are shown in Table 5. The required sight distances are based on the Caltrans Highway Design Manual, table 201.1. Section 201.3 specifies a 20% increase in stopping sight distance on a sustained downgrade of over 3%. According to this table, driveways at the potential locations would provide adequate sight distance.

The Open Space District owns land on both sides of the road near gate BC04 but only owns land on one side of the road near Camel Hill Vineyard. Therefore, a crosswalk would only be appropriate at the potential driveway location studied near gate BC04. At this location, sight distance is adequate with the trees removed as specified above, and there are flat landing areas on both sides of the road that could be used for the crossing.

Table 5
Sight Distance Analysis

<table>
<thead>
<tr>
<th>Location</th>
<th>WB design speed</th>
<th>WB road grade</th>
<th>WB required sight distance</th>
<th>WB actual sight distance</th>
<th>EB Design speed</th>
<th>EB road grade</th>
<th>EB required sight distance</th>
<th>EB actual sight distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>west of Camel Hill Vineyard</td>
<td>40 mph</td>
<td>insignificant</td>
<td>300 ft</td>
<td>&gt;450 ft</td>
<td>30 mph</td>
<td>insignificant</td>
<td>200 ft</td>
<td>&gt;450 ft</td>
</tr>
<tr>
<td>west of Alma College Rd</td>
<td>30 mph</td>
<td>insignificant</td>
<td>200 ft</td>
<td>400 ft</td>
<td>40 mph</td>
<td>4%</td>
<td>360 ft</td>
<td>&gt;400 ft</td>
</tr>
</tbody>
</table>

Because some people coming to the site would be unfamiliar with its location, adequate signage should be provided in advance of the driveway. Signage should be based on the 2014 California Manual of Uniform Traffic Control Devices (CAMUTCD). Though no signage is specifically required by the CAMUTCD at this location, Hexagon recommends a G72 (CA) style sign at least 200 feet from the driveway in each direction, with “Bear Creek Redwoods Open Space Preserve” or similar text. The sign placements must not obscure sight lines from the driveway.

The Open Space District should consider additional signage to improve the visibility of any crosswalk installed on Bear Creek Road. The signage could include “crosswalk ahead” signs and could also include pedestrian activated rectangular rapid flashing beacons (RRFB). Beacons would probably need to be hard-wired to a power source because solar power could be limited by the tree cover.
Other Existing Gates

Some other gates were observed on Bear Creek Road. Gates BC07 and BC08 next to the Presentation Center do not provide adequate sight distance for a driveway. Gate BC17 at the intersection of Bear Creek Road and Summit Road provides adequate sight distance and could be used as-is (see Figure 11).

The Open Space District plans to develop a multi-use trail on the west side of Bear Creek Road with a trail head at the intersection with Summit Road. Parking for the trail head would be on the east side of Bear Creek Road so there would need to be a way for trail users to cross the road. Hexagon considered the possibility of a pedestrian crosswalk across Bear Creek Road at the intersection with Summit Road. However, this location has poor sight distance so a crosswalk would be problematic. In order to create a safe crossing, it would be necessary to add stop signs on Bear Creek Road. The addition of stop signs would take some engineering design because of the poor sight distance. It would also take Caltrans approval because the intersection is under Caltrans jurisdiction (State Highway 35).

Conclusions

The proposed Bear Creek Redwoods Open Space Preserve will not create traffic impacts to Bear Creek Road. Bear Creek Road is operating well below its capacity and would continue to do so with the modest project traffic added during regular weekday/weekends as well as under the worst-case scenario. The two proposed driveway locations can provide adequate sight distance as long as the proposed tree and vegetation removals are carried out. A crosswalk would be feasible near gate BC04 adjacent to the potential driveway location.

The intersection of the SR17 southbound ramps and Bear Creek road will operate well during weekdays with the modest project traffic added and during weekends with the heaviest traffic if there were to be two large events at the Preserve on the same day. The intersection level of service calculation shows that northbound traffic at the intersection of the SR17 Northbound ramps and Bear Creek Road faces long delays due to the ramp meter at the freeway on-ramp. The project would add some traffic to the on-ramp, but probably wouldn’t result in a noticeable change in delay. There are no feasible improvements to reduce the delay and queuing. There is ample room for the queuing, and it doesn’t cause other operational problems or safety issues.
Figure 7
Driveway 1 Sight Distance

LEGEND

= Approximate Line of Sight
= Potential Study Driveway
= Potential Study Gate

Remove Tree if it blocks the sight line from the final driveway location
Figure 8
Views from Driveway 1 Location (approximate)
Bear Creek Redwoods Traffic Study

Figure 9
Driveway 2 Sight Distance

LEGEND

= Approximate Line of Sight
= Potential Study Driveway
= Potential Study Gate

Remove 2 Trees
Figure 10
Views from Driveway 2 Location (approximate)
Figure 11
Sight Distance for BC17 and BC08