Technical Memorandum

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Jurisdiction: Marin County

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Subject: Traffic Impact Study for Residential Development located at 455 Panoramic Highway, Marin County, California

The purpose of this technical memorandum is to prepare a focused traffic impact analysis for the proposed Residential Development, which is located at 455 Panoramic Highway, in the unincorporated part of Mill Valley, Marin County, California. The proposed project is to comply with the Marin County permit application requirements. The proposed project consists of one existing dwelling unit and two additional units. The total units on the property is three. Access to the project site would be provided via one full-access driveway on Panoramic Highway. The project is located near to the historic Muir Woods, and north of Highway 1. Currently, there is one home on the site. The project site is mostly a vacant lot with one existing residential unit. Figure 1 shows the project site plan.

Existing Conditions

Important roadways adjacent to the project site are discussed below:

State Route 1 (SR-1), also known as the Shoreline Highway is a major north-south state highway that runs along most of the Pacific coastline of California. SR-1, is located south of the project area, and intersects with the southern end of Panoramic Highway. It should be noted that a stretch of Highway 1 between Muir Beach and Stinson Beach closed due to mudslides. Hence, all Highway 1 traffic to Stinson is routed through Panoramic Highway. This route will open in fall 2018.

Panoramic Highway (SR-29) is a north-south, two-lane undivided roadway that connects SR-1 to Stinson Beach. The posted speed limit along Panoramic Highway is 30 miles per hour (mph) within the project vicinity.

Brighton Boulevard is an east-west, two lane undivided roadway that traverses between Panoramic Highway and Fern Lane. The posted speed limit is 25 mph within the project vicinity.
Muir Woods Road is an east-west, two-lane roadway that traverses between Panoramic Highway to State Route 1, where it becomes the Shoreline Highway. This roadway connects to the Muir Woods National Monument and Muir Beach. The speed limit is 25 mph.

**PROJECT DESCRIPTION AND TRIP GENERATION**

The proposed project is located at a predominantly vacant parcel in unincorporated Marin County near the City of Mill Valley. The area is mainly residential developments located east of the project site. The northern driveway access of the project is at 455 Panoramic Highway which currently has one residential unit on the parcel. The proposed project will add two residential units to this parcel, for a total of three units.

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the Institute of Transportation Engineer’s (ITE) publication Trip Generation (9th Edition). TJKM used published trip rates for Single Family Residential (ITE Land use Code 210). Table 1 shows the trip generation for the proposed project, minus the existing trip generated from the one residential unit already on the site.

Using ITE rates, the project is expected to generate approximately 1 p.m. trip (1 outbound) during the p.m. peak hour.

<table>
<thead>
<tr>
<th>Land Use (ITE Code)</th>
<th>Size</th>
<th>Daily Rate</th>
<th>Trips</th>
<th>P.M. Peak Hour Rate</th>
<th>In</th>
<th>Out</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential (210) Existing unit</td>
<td>1</td>
<td>9.52</td>
<td>10</td>
<td>1.00</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Single Family Residential (210)- Proposed</td>
<td>2</td>
<td>3.68</td>
<td>19</td>
<td>1.00</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Trips</strong></td>
<td></td>
<td><strong>9</strong></td>
<td><strong>0</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Source- Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition, 2012. ksf=thousand square feet

Due to the minimal increase in peak hour trips, level of service analysis was not necessary for the nearby intersections.
SITE ACCESS AND ON-SITE CIRCULATION

TJKM reviewed site access and internal circulation for vehicles, pedestrians and bicycles based on the site plan. TJKM reviewed internal and external access for the project site for passenger vehicles, trucks, pedestrians, and bicycles.

TJKM reviewed the proposed project site plan, dated November 03, 2017, to evaluate access to the project. The proposed project has one full access driveway on Panoramic Highway, 280 ft from the Brighton Boulevard towards North which serves for three residential units.

**Driveway Width:** As per the Caltrans Manual (Section 205.3), the width of a double residential driveway such as used for multiple dwellings should be 20 feet minimum and 30 feet maximum. As per the Marin County Uniform Construction Standards, approach width should be 24 feet minimum for High volume driveway. However, the proposed driveway is 28 feet wide, and meets the Caltrans & County standards for minor residential roadways. The minimum driveway centerline radius of 40 feet is provided. All the details are shown in **Figure 2.**

**Turning Design:** As per the Marin County Standards, radius of 30 feet to 40 feet was provided, which will be sufficient for turning all types of vehicles including trucks at the proposed driveway. All the details are shown in **Figure 3.**

**Access Openings:** As per the Caltrans Manual (Section 205.1), Recessed access openings are desirable at all points where private access is permitted and should be provided. The opening should be located a minimum distance of 75 feet from the nearest edge of the traveled way. However, access opening, radius and taper at the proposed driveway is provided as per the standards. All the details are shown in **Figure 4.**

**Driveway Turnouts:** As per the Marin County Fire Department Land Development Standards, Turnouts are provided on the proposed driveway, with a paved traveled way of 20 feet wide, cross slope of 8% in order to serve Parcel 2 and 3. All the details are shown in **Figure 4.**

**Access Control:** Stop Control Sign is proposed at unsignalized intersection driveway with Panoramic Highway, with appropriate pavement delineation and signing to enhance traffic safety and operations on the roadways.

SIGHT DISTANCE ANALYSIS

Given the low volume of potentially conflicting traffic movements, the proposed site access configuration is not anticipated to result in a significant volume of conflicting movements and the proposed site access configuration is adequate to safely accommodate the anticipated volume of trips to and from the Project site.

A sight distance analysis was performed to review any anticipated impacts from Panoramic Highway near the proposed project driveway. Panoramic Highway has hills and curves present in the project area.
From the proposed project entrance, there is visibility up to 205 feet looking northbound and 205 feet looking southbound. Per the American Association of State Highway and Transportation Officials (AASHTO) Geometric Design of Highways and Streets, 2004, the recommended "stopping sight distance" is 200 feet with a roadway at 30 mph. Therefore, the findings indicate the visibility is adequate. In addition, there are no sidewalks and limited opportunities for on-street parking on Panoramic Highway on the west side of the road, so parked vehicles would not impede the line of sight.

**Conclusions**

The development of the residential project, as proposed, would not result in a significant traffic impacts under Marin County, Caltrans, Marin County Fire Department Standards guidelines.
Intersection Turning Radius Templates

1. **Intersection with AC Centerline Radius**
2. **Northbound - Entering with Truck Turning Template**
3. **Southbound - Entering with Truck Turning Template**
4. **Northbound - Exiting with Truck Turning Template**
5. **Southbound - Exiting with Truck Turning Template**

**General Notes - Intersection**

1. DRAW LINE 1 SPACED OUT FOR THE INTERSECTION OF THE EXISTING CDIGGED 60' WIDE.
2. DETAIL TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
3. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
4. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
5. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
6. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
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8. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
9. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.
10. PROVIDE TRAFFIC SHARING ON 60' WIDE CDIGGED 15' OFF THE RIGHTSIDE.

Source: Ziegler Civil Engineering

Figure 3
Design Standards

Marin County Fire Department
Geometrics Design Criteria

Driveway - Intersection Turning Template Design Basis

Note:
1. The basis of this turn template is as follows: the angle of the driveway to the residential street is the same as the angle of the driveway to the road.
2. The turning radius of the driveway to the residential street is determined by the angle of the driveway to the road.
3. The turning radius of the driveway to the road is determined by the angle of the driveway to the road.
4. The turning radius of the driveway to the road is determined by the angle of the driveway to the road.

Figure 205.1
Access Openings on Expressways

Caltrans Standard Plan A7A - Chirps and Driveways

Notes:
1. These driveways are designed to accommodate the turning radius of the driveway to the road.
2. These driveways are designed to accommodate the turning radius of the driveway to the road.
3. These driveways are designed to accommodate the turning radius of the driveway to the road.

Table 201.1
Sight Distance Standards for 50 MPH Roadways AS NEEDED

Source: Ziegler Civil Engineering

Figure 4