

July 8, 2025
Crawford File No. 25-1596.1

To: Arthur Moretti
Subject: Supplemental Recommendations – Retaining Wall
Jenner Inn, Jenner, CA

Crawford & Associates, Inc (Crawford) prepared this geotechnical memo for the proposed the retaining wall replacement at the Jenner Inn at 10625 Hwy 1. The wall is proposed to be adjacent the Hwy 1 shoulder parking area, a soldier beam and lagging wall, and could be up to 6 feet high. LACO Associates (geosciences group acquired by Crawford in 2023) prepared a geotechnical memorandum for the former improvements at the site, dated October 27, 2022. This memo supplements the LACO report and contains recommendations for the proposed retaining wall.

RECOMMENDATIONS

LATERAL EARTH PRESSURES

The equivalent fluid pressures (EFPs) provided in Table 1 are recommended for design of the retaining wall. The parameters provided assume native materials or imported fill (per LACO report) will be used as backfill.

Table 1: Recommended EFPs

Condition	Static	Incremental Seismic
Active	42 pcf	46 pcf

The EFP values shown above assume:

- Angle of internal friction (ϕ) = 30°
- Unit weight (γ) = 125 pcf
- $PGA_M = 1.03g$ (from Table 2)

SEISMIC LATERAL EARTH PRESSURE

For seismic design, the incremental ΔEFP_{EQ} should be added to the total static earth pressures plus hydrostatic pressures. The incremental ΔEFP_{EQ} values provided were determined based on equations/guidance from Agusti and Sitar¹ and the site's PGA_M . A triangular pressure distribution should be used for the incremental seismic pressure, and the magnitude of the resultant force should be applied at 40% of the wall height above the base.

¹ Agusti, G.C. and Sitar, N. (2013), Seismic Earth Pressures on Retaining Structures in Cohesive Soils, Caltrans Technical Report No. CA13-2170



SURCHARGE LOADS

For surcharge loads, an additional uniform lateral load should be applied that is equal to a minimum surcharge pressure of 100 psf (or a higher design pressure, if appropriate) multiplied by the K value of 0.33.

WALL DRAINAGE

Drainage should include a vertical column of ½- to ¾-inch crushed, uniformly graded gravel be entirely wrapped in filter fabric such as Mirafi 140N or equal (an overlap of at least 12 inches should be provided at all non-woven fabric joints). The gravel and fabric should be at least 8 inches wide in section and extend from the bottom of lagging to within 18 inches of the finished grade at the top. Caltrans Class 2 permeable material may be used in lieu of the gravel and filter fabric. As an alternative to a gravel subdrain, continuous drainage panels (such as Mirafi G100W or equal) may be used. Although it may be used, a perforated drainage pipe is not necessary since groundwater captured in the drain rock should weep through the lagging.

FOUNDATIONS

DRILLED SHAFT CAPACITY

The vertical capacity for drilled shafts should be designed considering an allowable skin friction of 170 psf for dead plus live loads; this value may be increased by 1/3 for all loads including seismic. An allowable skin friction of 95 psf should be used for uplift loads, if applicable. The shafts should have a minimum diameter of 18 inches and minimum depth of 8 feet. The upper foot of shaft should be neglected in determining vertical capacity. To avoid a reduction in capacity, the shafts should be spaced no closer than three shaft diameters center-to-center (CTC). Settlement is expected to be less than ½ inch.

Passive resistance may be used to resist lateral loading on the proposed drilled shafts for soldier piles. A maximum passive EFP resistance value of 600 pcf (which includes arching effects) may be used for design; however, the upper 2 feet of the drilled shaft should be neglected from the passive resistance due to the descending slope below. The passive pressure should be limited to a maximum value of 6,000 psf.

SEISMIC DESIGN PARAMETERS

Seismic design parameters were developed in accordance with the 2022 CBC Section 1613 and ASCE 7-16. The values were based on site coordinates (latitude 38.4501°, longitude -123.1181°) and mapped Risk Targeted Maximum Considered Earthquake (MCE) ground motions parameters obtained through the Structural Engineers Association of California and Office of Statewide Health Planning and Development (SEAOC and OSHPD) Seismic Design website². A Risk Category II was assumed.

For Site Class D with S_1 greater than or equal to 0.2, we assume the exception in ASCE 7-16 Chapter 11, Section 4.8, Supplement 3, will be used and a ground motion hazard analysis is not required where the value of S_{M1} is increased by 50% for all applications of S_{M1} . The structural engineer should review and follow the exception in Supplement 3. If it is determined the exception does not apply and a site-specific analysis is needed, then the values provided below will need to

² <https://www.seismicmaps.org/>

be updated. Table 2 summarizes the seismic design parameters for the project, which includes the 50% increase to S_{M1} .

Table 2: Seismic Design Parameters (Exception)

Site Class	D
Risk Category	II
S_s – Acceleration Parameter	2.175g
S_1 – Acceleration Parameter	0.905g
F_a – Site Coefficient	1.00
F_v – Site Coefficient	1.70
S_{MS} – Adjusted MCE Spectral Response Acceleration Parameter	2.175g
S_{M1} – Adjusted MCE Spectral Response Acceleration Parameter ¹	2.308g
S_{DS} – Design Spectral Acceleration Parameter	1.45g
S_{D1} – Design Spectral Acceleration Parameter	1.539g
T_L – Long-Period Transition Period	12 seconds
PGA_M – Site Modified Peak Ground Acceleration	1.025g

¹ S_{M1} increased by 50%.

CONSTRUCTION OBSERVATIONS AND TESTING

Crawford should be involved during remaining construction to observe the final excavations of the drilled shafts to verify that soils conditions are as expected based on the LACO geotechnical investigation report.

CLOSING

Crawford performed services in accordance with generally accepted geotechnical engineering principles and practices. Do not use this report for different locations and/or projects without the written consent of Crawford. We do not warranty our services.

Crawford based this report on the site conditions encountered by LACO. We assumed the soil and groundwater conditions are representative of the subsurface conditions at the wall. Actual conditions will vary along the wall alignment. The transition between soil types may be abrupt or gradual. Our recommendations are based on the LACO logs, which represent their interpretation of the field logs and general knowledge of the site and geological conditions.

Please contact us if you have any questions or require further services.

Sincerely,
Crawford & Associates, Inc.,



Chris Trumbull, PE, GE, D.GE
Senior Project Manager

