

Attachment A

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Attachment A – Discussion

ADDITIONAL MATERIALS

This report builds upon the information contained in the staff report prepared for the December 6, 2023 Board of Supervisors hearing on this project, and primarily contains discussion new information submitted by Caltrans staff since that hearing. Previous staff reports containing detailed discussion of the project and additional background information from the prior hearings can be found at:

<https://www.co.monterey.ca.us/government/departments-a-h/housing-community-development/planning-services/library-current-major-projects/california-department-of-transportation-caltrans-garrapata-creek-bridge-rail-replacement-pln220090>

Caltrans also has a website which includes information on the project, drive through photo-simulations, and the 10 design variations with 10-inch openings developed after the Planning Commission’s denial of the project:

<https://dot.ca.gov/caltrans-near-me/district-5/district-5-current-projects/05-1h800>

CALTRAN’S SUPPLEMENTAL PACKAGE

On February 23, 2024, Caltrans submitted a supplemental package of materials including a letter from District 5’s deputy director of environmental analysis dated February 23, 2024; a letter from the new State Bridge Engineer dated February 13, 2024; the previous State Bridge Engineer’s letter dated March 21, 2023; letters of support for the project from the California Highway Patrol and California State Parks’ Monterey District; a user guide to bridge standard details; and a comparison diagram of the progression in safety standards requiring additional supporting steel, which uses the upgraded Nojoqui Creek Bridge as an example.

On March 8, 2024, Caltrans submitted a revised version of the February 23, 2024 letter dated March 6, 2024 and signed by the District 5 Traffic Division Chief. In summary the difference between the two versions is that the February 23 letter incorrectly states that there is no exception process for new bridge elements. The March 6 letter states that the State Bridge Engineer may approve exception to the Bridge Design Specifications but would not grant such an exception. These most current version of this supplemental packet with the March 6, 2024 letter is included as **Attachment I**.

The content and responses to the letters dated February 13, 2024 and March 6, 2024 are detailed below. Three additional memos referenced in the discussion below: a FHWA memo dated March 17, 2017, clarifying the role of the FHWA in implementing MASH; a Caltrans memo dated November 12, 2019, outlining the MASH compliance Plan and Policy; and a Caltrans memo dated August 19, 2021, outlining the adoption of the AASHTO LRFD BDS-8. These are included in the staff report as **Attachment J**.

March 6, 2024 Letter from Deputy Director of Environmental Analysis

Design Exception Process – Not Applicable to Bridge Rail Replacement:

“The County had asked Caltrans to summarize the design exception process. It should be noted, for bridge rail replacement types, a design exception could be granted by the State Bridge Engineer, but both the current and former State Bridge Engineer stated that they would not grant an exception to bridge design specifications for rail opening size or barrier shape that could provide snag points.”

The Department processes design exceptions (or “Design Standard Decision Document” [DSDD]) only for non-standard features such as lane width, shoulder width, side slopes, sight distances, etc. When applicable, design exceptions are at the discretion of the Project Engineer based on project circumstances or needs. However, bridge rail type is not part of the DSDD process.

What the Department is proposing is a bridge railing that was custom designed for this location and was approved based on standardized crash tests and studies that meet State and Federal safety standards and specifications, including MASH compliance. The Manual for Assessing Safety Hardware (MASH) presents uniform guidelines for crash testing permanent and temporary highway safety features and recommends evaluation criteria to assess test results. Again, both the current and former State Bridge Engineers stated that the design exception would not be granted for this bridge rail replacement.”

The first paragraph is consistent with information reviewed by County staff that indicates that unique circumstances may exist and provides an avenue for State Department of Transportation to address these circumstances. For example, the Caltrans memo dated November 12, 2019, states: “If a situation arises where a MASH compliant safety device is not available to address a specific need, Caltrans must use a National Cooperative Highway Research Program (NCHRP) Report 350 approved safety device. If a NCHRP Report 350 device is not available, Caltrans must use engineering judgement to address the specific need. For cases when either a NHRP Report 350 device or engineering judgement is used for traffic safety devices, the engineer must consult with the District Traffic Safety Coordinator. The engineer must then document the decision in the project history file. These requirements apply to all projects and work done on the State Highway System.” The information in the attached letter from the current State Bridge Engineer dated February 13, 2024 contradicts the first paragraph above. It has no reference to snag points, states that “There is no design exception process to grant a waiver for a bridge rail to not comply with MASH criteria,” and that the “AASHTO LRDFE-BDS provide minimum standards for bridge design according to the Code of Federal Regulations.”

The second paragraph states which elements of a project design are at the discretion of the project engineer.

Simply stating that the engineer will not approve an exception without any supporting analysis is inadequate to eliminate a project alternative from consideration, and what has been provided is internally contradictory.

Other examples:

“There have been comments regarding potential design exceptions in other states regarding bridge rail replacements. As noted, there are design exceptions for some non-standard features. The Department is not aware of any state that has replaced a MASH standard bridge rail on a state highway with a design that includes clear openings larger than 6 inches that does not include a bar through it (i.e. in the state of Oregon a bridge rail exists with two horizontal bar through the middle of window opening).”

The 6 inch opening width is just an example of a potential exception to consider. In 2020 AASHTO released a the “Historic Bridge Preservation Guide, 1st Edition,” which includes specific discussion of design exceptions for bridge rails on historic bridges. Section 1.1 of this guide states “This Guide

is intended to be used in conjunction with the AASHTO LRFD Bridge Design Specifications (AASHTO LRFD), and may be used with the AASTHO Standards Specifications for Highway Bridges when consistent with state requirements.” Section C13.4 regarding crash testing states “A design exception may be required for bridge rails that do not fully comply with applicable crash test requirements.” Section C13.5 states “A design exception may be required for in-kind repair of existing rail as existing historic rails typically are not crash tested. The design exception is typically justified by some combination of lower speed, high curb, lack of significant horizontal curvature, and benign accident history.”

Crash Information:

“Between 2013 and 2023 a total of eight crashes have been reported on and adjacent to the bridge. During this period, five crashes involved injury. In the same 10-year time period, 921 lane departure crashes occurred on Highway 1 (SLO County Line to Point Lobos) resulting in 407 fatal+injury crashes. A total of 24 people died and 532 people were injured for lane departure crashes. Lane departure crashes can be left or right of the traveled lane. Modern bridge rail design aims to redirect lane departures to keep vehicles on the highway as opposed to the road, creek, or canyon they are crossing over. Please see attached letters of support from CHP and State Parks.”

Additional information and letters of support received. Caltrans’ accident analysis between 1/1/2012 to 12/31/2021 states “A review of the Traffic Collision Reports (TCRs) show two collisions occurring on Garrapata Creek Bridge. One collision involved an unforeseeable mechanical failure of vehicle. The other collision involved person 1 allowing vehicle 1 to collide with the concrete barrier railing due to their level of intoxication resulting in a minor injury.”

Bridge Rail Window Dimension Requirements:

“Bridges in California and in all of the United States are currently designed per AASHTO (American Association of State Highway and Transportation Officials) LRFD-BDS (Load and Resistance Factor Design - Bridge Design Specifications). Section 13 of the AASHTO LRFD-BDS, Article 13.8.1 Pedestrian Railing “Geometry” and Article 13.9.2 Bicycle Railing “Geometry” states that clear openings cannot allow a 6-inch sphere to pass in the lower 27-inch of bridge rail height, and above 27-inch height clear openings must not allow an 8-inch sphere to pass.

This clear opening requirement must be adhered to within a bridge rail, bicycle railing, or pedestrian railing wherever bicycle traffic and/or pedestrian traffic is present.

No exception process exists for these requirements.”

Staff disagrees with Caltrans on the statement that “no exception process exists...” Exception processes do exist, and this appears to be acknowledged in their March 6, 2024 letter. Exceptions require analysis of unique conditions applicable to the project. In this case, there is no shoulder between the vehicle lanes and the Bridge rail (See figure below) and Caltrans has indicated that the average speed, upon which the required bridge rail engineering is based, is over 55 mph. This situation creates unique problems for pedestrians and bicyclists on the bridge. Staff has been requesting more specific reasoning on what exceptions have been considered given the unique setting and why they are not applicable. This reasoning has yet to be provided.



Adherence to Industry Standards:

“In addition to the proposed Type 86H rail (and the 10 design variation options based on Type 86H) meeting AASHTO LRFD-BDS standards and specifications, such as concrete cover spacing from steel reinforcement, spacing and placement of steel reinforcement elements from each other, the Type 86H rail was designed per AASHTO-CA BDS-8 including Finite Element Analysis, then crash tested per MASH 2016 Test Level 4 (TL-4). Reference: User Guide to Bridge Standard Detail Sheets, Section 16 – Barriers and Railings Concrete Barrier Type 86H: <<https://dot.ca.gov/-/media/dot-media/programs/engineering/documents/bridgestandarddetails/chap-16/202401-xs-16-127-ug-allly.pdf>>. No exception process exists for these requirements.”

It is recognized that Caltrans has made changes to the design of a crash tested bridge rail (Type 86-H) that did not modify the structural integrity of the standard bridge rail type. Through the review process, many have questioned why the design must start and end with the standard bridge rail. Many unique considerations have been offered as a potential basis for a nonstandard solutions. Caltrans has not responded directly to the unique consideration comments and it remains unclear if these circumstances were considered by Caltrans. As the February 23, 2024 letter submitted by Caltrans states exceptions are not possible, the March 6, 2024 letter states that they may but the State Bridge Engineer would not approve one, and the attached letters from the State Bridge Engineer directly contradict this, it appears that it was not. If the statute or regulation permits exceptions to these design standards, and Caltrans has no internal process for the consideration of exceptions, it may be prudent to create one, as the environmental and coastal development permit review both require this kind of alternatives analysis.

Character Defining Features:

“The character-defining features of the historic Big Sur Arch Bridges that were identified in the determinations of eligibility for the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) are the following:

- *Open spandrel arch rib design*
- *Use of reinforced concrete*
- *Concrete T-beam approach spans*
- *Bridge deck and cantilevered walkways*
- *Bents*

- *Abutments*
- *Concrete railings with arched window design*

The proposed bridge rail was designed to meet safety standards but also maintain the character defining concrete railings with arched windows. With input from the ADAC, the PDT further refined the Type 86H rail to incorporate chamfered edges as requested by the ADAC after Division of Engineering Services (DES) Architecture presented artist renderings of different edge options.

The view in the current rail configuration is currently blocked by the existence of the temporary guardrail section attached to the bridge rail. The bridge rail view will not be restored until the bridge rail is replaced thus allowing for the removal of the attached guardrail section.”

Caltrans Finding of Adverse Effect dated December 2020 concludes that the bridge rail replacement will adversely impact the design, workmanship, and feeling of the bridge. There are often many solutions to rehabilitating historic structures., and removing and replacing a character defining feature does not preserve it.

February 13, 2024 Letter from State Bridge Engineer

“This memorandum reiterates the response by Thomas A. Ostrom in the memorandum titled "Garrapata Creek Bridge Rail Replacement Project" dated March 21, 2023, regarding the question as to whether a design exception would be granted to allow for a larger clear opening in the bridge railings on Garrapata Creek Bridge. As set forth below and as previously stated, the Department of Transportation cannot construct bridge components that violate minimum safety standards set forth in federal and state law and policy, and as such, neither wider openings nor narrower railings than those proposed by the Department may be used in the Garrapata Creek Bridge Rail Replacement Project.

Bridges in the United States are designed in accordance with specifications published by the American Association of State Highway and Transportation Officials (AASHTO). These specifications include the AASHTO LRFD Bridge Design Specifications (AASHTO LRFD-BDS), which provide the minimum standards for highway bridge design according to the Code of Federal Regulations. Bridge rail designs must meet the requirements of AASHTO LRFD-BDS, Section 13, which specifies in part that the clear opening between elements shall be such that a 6-inch-diameter sphere shall not pass through the opening. Since this is a safety requirement, a design exception cannot be granted to increase the clear openings in the bridge railing: such exception would violate state and Federal standards and jeopardize public safety.”

Caltrans letter stating that adherence to these standards is required by federal law and policy contradicts the FHWA memo that states it is the State’s responsibility to pick a particular hardware device in a particular location, as well as the March 6, 2024 letter that states that the State Bridge Engineer may approve exceptions but would not do so. The letter provides reference to the standards, but no detailed analysis is provided with the State Bridge Engineer’s letter on why an exception would not be feasible. It is contradictory to state that the State Bridge Engineer may approve an exception to standards, but doing so is not an option.

“Additionally, all new permanent and replacement bridge railing on the State Highway System must comply with the Manual for Assessing Safety Hardware (MASH). There is no design exception process to grant a waiver for a bridge rail to not comply with MASH criteria. Attached is the MASH implementation memorandum that requires all bridge rails to be MASH compliant.”

See attached Caltrans memo dated November 12, 2019 discussed above that outlines options for when a MASH compliant device is not available to address a specific need, and the March 6, 2024 letter from Caltrans stating that the State Bridge Engineer could potentially grant an exception but would not do so.

Additional Materials

Discussion of the additional materials submitted by Caltrans with their February 23, 2024 packet are below.

Letters of Support

The letters from the California Highway Patrol and Department of Parks and Recreation Monterey District both expressed their support for the project and the importance of ensuring the safety of travelers along Highway 1.

Nojoqui Creek Bridge Rail Replacement Diagram

The diagram of the progression in safety standards shows section cuts of older bridge rails, newer ones that adhere to safety standards rails, including supporting steel. An explanation is not provided with this diagram but the standards have apparently gradually increased in structural requirements over time. The Nojoqui Creek Bridge rail replacement is included as an example. This creek is along Highway 101 south of Buellton and north of Gaviota State Park. The creek crisscrosses under the highway at multiple points. The older rails were constructed in the 1950's and underwent a replacement 2012. Images of existing rails at other areas of this corridor (construction date unknown) and the replacement rails are shown below. (These do not include the aesthetic treatments proposed at the Garrapata Creek Bridge.)



Figure 9: Bridge Rails along Nojoqui Creek Corridor (Google Maps Imagery, May 2023)



Figure 10: Type 80 Bridge Rails along Nojoqui Creek Corridor (Google Maps Imagery, May 2023)

Guide for Standard Bridge Rail Selection

The guide for standard bridge rail selection states that the 86-H (H being historic) was developed to comply with the National Historic Preservation Act (NHPA) and for use on projects that may require consultation with the State Historic Preservation Officer (SHPO). The guide has details on the use of the rail and unique considerations for specific circumstances, such as incorporation into existing bridge decks and the use of bicycle rail. It also states that the balusters can be multiple shapes (such as rounded, chamfered, square), and states that the clear openings must comply with the AASHTO-CA BDS-8 Section 13.9 Bicycle Railings and Section 13.8 Pedestrian Railing.

Conclusion

In summary the information does not address previous comments or concerns raised at the Planning Commission or Board of Supervisors hearings. The letters have contradictory information regarding design exceptions for bridge rails. The original cover letter of the package dated February 23 states there is no design exception process for bridge rails. The March 8 cover letter stating that an exception could be considered by the State Bridge Engineer but they would not grant an exception to rail opening size or barrier shape that could provide snag points. The letters from the current and former State Bridge Engineer have no reference to snag points and state that any exception would violate federal and state law and policy without any specific citations. Neither contain detailed analysis of what exceptions were considered in this case or why they would be inappropriate given the specific conditions at the Garrapata Creek Bridge. The letters of support from the California Highway Patrol and Department of Parks and Recreation Monterey District are received but don't address previous comments or concerns. The progression of Caltrans Bridge Safety Standards provides examples of why the new standards would change the design, and the User Guide to Bridge Standard Detail Sheets provides information on the selection of standards rails, but neither address inconsistencies with the Local Coastal Program or inadequate alternatives analysis.

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