California Department of Transportation

CALTRANS DISTRICT 5
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December 6, 2022

Mr. Phil Angelo, Associate Planner
Monterey County Housing and Community Development Department (HCD)
1441 Schilling Place, South 2nd Floor
Salinas, CA 93901
Submitted via email to angelop@co.monterey.ca.us

Subject: Response to County Questions Raised in Historic Resources Review Board Staff Report, dated December 1, 2022
Reference: Garrapata Creek Bridge Railing Replacement Project (PLN220090)

Dear Mr. Angelo:

We appreciate County staff's time and effort in reviewing Caltrans' application material for the above referenced project. We understand that there is a large volume of information that Caltrans has prepared for the project in addition to the State law governing the development and programming of the project and Caltrans' authority to repair and maintain the State Highway System to ensure public safety. We would urge County staff, decision-makers and interested members of the public to review all of the submitted information to ensure that evaluation of the project is based upon accurate and complete information.

As stated in our application material, the proposed project is funded through Caltrans' State Highway Operation and Protection Program (SHOPP), not "grant funding." The SHOPP is for the expenditure of transportation funds for major capital improvements that are necessary to preserve and protect the State Highway System. Projects included in the program are for improvements relative to the maintenance, safety, operation, and rehabilitation of state highways and bridges.

Prior to the item being heard by the Historic Resources Review Board (HRRB) on January 5, 2022, we would like to clarify and answer the questions raised in the staff report as well as additional questions raised by members of the HRRB on December 1, 2022, to avoid any confusion during the HRRB's consideration of the project. Below are responses to staff's questions on the project contained in Exhibit A (Discussion) of the HRRB staff report and the main body of the staff report (in bold)(also contained in Enclosure 1) and additional questions raised by the HRRB on December 1, 2022.

Staff Report Main Body Comment 1. Clarification of the historic structure impact assessment.

It is inferred from the EIR and historic reports, but not clearly stated in these documents, that the bridge rails are character defining features and that their replacement is consistent with the Secretary of the Interior Standards for Rehabilitation.

and

Staff Report Exhibit A Comment 1. Big Sur Coast Land Use Plan

CIP section 20.145.110.B. indicates that a historical site survey shall be required for all development on known or suspected historical sites. A survey report was prepared October 2020 by Cal Trans District 5 Principal Architectural Historian, Daniel Leckie. The report is divided into two sections, a "Tier 2" report specific to the Garrapata bridge rail replacement project, and a "Tier 1" historical report discussing the potential replacement of bridge rails on the five other historic open spandrel concrete bridges in Big Sur. Attached to the Tier 1 report is also the Department of Parks and Recreation (DPR) forms which provide a historical evaluation and context for the Carmel-San Simeon Highway Historic District.

While the report does outline several inter-related procedural requirements for federal and state historical review, it does not contain certain details necessary to make a finding of consistency with the development standards in the CIP. Specifically:

- **Significance. The report does not specify what the sites primary (historically defining) features are, pursuant to CIP section 20.145.110.B.4.b. This is important as it will allow us to evaluate whether the proposed rail is keeping with the historically defining features of the existing bridge. Per CIP section 20.145.110.C.1, "Where development is proposed on parcels with an identified historical site, such development shall be compatible with the site through incorporation of appropriate design, structural and architectural features, siting, location, and other techniques as recommended in the historical survey prepared for the project.".**
- **Impact. While the supplemental letter, EIR, and historic assessment indicate that there are impacts to cultural (historical) resources, with Cal Trans certified EIR indicating that those impacts will be mitigated to a less than significant level, the report does not assess what the specific impacts to the historical site will be, as required by CIP section 20.145.110.B.4.c. This is not possible without first establishing the bridges historically defining characteristics, however, this would also be essential to the project analysis. Once the project is complete, would the resulting bridge still be eligible for**

listing on CRHR or NRHR? Would the different historic criteria be affected differently? How would the CSSHD be effected?

- **Recommendations. In accordance with CIP section 20.145.110.B.4.d, the historic assessment should contemplate the relative impact of alternatives (discussed in the CEQA section below) to historical resources, and include recommendations to mitigate any impacts (additional to those included in the MOU with the State Historic Preservation Officer). Consider including recommendations for the concrete texture and color that would minimize impact to the historic bridge.**

Response: The Finding of Adverse Effect (FAE) that was prepared for Section 106 Consultation with the SHPO for the project is incorporated herein by reference as Enclosure 2 and contains the requested information. This FAE as well as the Memorandum of Agreement from the SHPO are contained in appendices to the Final Historic Property Survey Report (HPSR) for the project dated December 2020 and included in the Final Tier 1 and Tier 2 EIR for the project. The December 2020 HPSR was transmitted to the County on our FTP site on December 2, 2022.

Concrete color and texture were discussed during the ADAC meetings held for the project; Caltrans intends to match the existing bridge rail as closely as possible per the ADAC's recommendations.

Staff Report Exhibit A Comment 2. California Environmental Quality Act

Comment on Objectives.

Pg 1 of the supplemental application information packet submitted August 15, 2022 describes the project purpose as "This project proposes to upgrade the existing nonstandard bridge railing to current standards in order to ensure the safety and reliability of Highway 1." This purpose is similar to that detailed in section 1.2.1 of the EIR. Please list the objectives of the project in more detail, per CEQA Guidelines section 15124(b). Defining the sole purpose of the project to be the preferred alternative, replacement of an existing rail with a new compliant rail, forecloses evaluation of a reasonable range of project alternatives as required by CEQA.

Response: The "purpose" in Caltrans' environmental documentation comprises the "project objectives" required in CEQA. The purpose and need in the Tier 1 and Tier 2 EIR for the project (Staff Report Exhibit E) are as follows:

> "*<u>Purpose</u>*
>
> *The purpose of the Tier 1 Big Sur Bridge Rail Replacement Program and Tier 2 Garrapata Creek Bridge Rail Replacement project is to replace the*

existing nonstandard concrete baluster bridge rails and approach rails with rails that meet current state and federal traffic safety standards to ensure the reliability of State Route 1.

Need

The Tier 1 Big Sur Bridge Rail Replacement Program is needed because the existing rails do not meet current traffic safety standards.

The Tier 2 Garrapata Creek Bridge Rail Replacement project is needed because the existing rails do not meet current traffic safety standards, and as stated in the 2015 Bridge Inspection Report, portions of the existing Garrapata Creek Bridge rails have developed severe cracking caused by deterioration of concrete and reinforcing steel.

The upcoming projects are necessary due to various levels of deterioration of the existing railing on all six bridges, and the railing no longer meets current traffic safety standards. Caltrans Structure Maintenance and Investigations crews inspected all six bridges in 2019, and the bridge rails on all six bridges were given a poor rating in the Bridge Inventory Status Report.

The Manual for Assessing Safety Hardware, which was implemented as an agreement between the Federal Highway Administration and the American Association of State Highway Transportation Officials in 2009 (updated in 2016), sets the standards for highway safety equipment. Newly adopted Manual for Assessing Safety Hardware standards have mandated that all new installations of roadside safety devices on high-speed roadways, including bridge railing, must meet a new higher standard for crash testing for all projects advertised as of December 31, 2019, without exception.

Manual for Assessing Safety Hardware standards dictate both the structural performance as well as the height and width dimensions of new railing. The existing railings are insufficient by current Manual for Assessing Safety Hardware standards for the posted speed limits on this stretch of State Route 1, so it is not possible to accomplish the purpose of the project and replace the existing railing in-kind moving forward. Portions of the existing Garrapata Creek Bridge rail are in an accelerated state of deterioration, including the concrete spalling and exposed steel reinforcing bar. This deterioration may pose a hazard to public health and safety moving forward if allowed to continue unaddressed."

As specified in CEQA Guidelines Section 15124(b), the lead agency has the discretion to develop its own project description as well as the project objectives. Aside from the preferred alternative, the environmental document analyzed three additional alternatives. However, they did not meet the purpose and need of the project and therefore were eliminated from consideration.

The Tier 1 and Tier 2 EIR has already been circulated for public comment and has been certified. Public comment was not received from Monterey County HCD. Caltrans is not electing to revise the objectives of the project. Furthermore, the EIR prepared for the project contains an evaluation of a reasonable range of alternatives as discussed under the following question and response.

Comments on Alternatives

Comment on Repair. As assessed by a qualified architectural historian and structural engineer, and notwithstanding compliance with Cal Trans standards, is repair of the existing rails possible? The 2021 Division of Maintenance report attached to the supplemental letter dated August 15, 2022 indicates that conditions had not significantly changed since a previous report in 2015, and indicates that the 2009 work recommendation to rehabilitate the rails is still valid, "Remove any unsound concrete from the delaminated and spalled areas throughout both bridge rails. Clean and paint any exposed steel and patch or recast the resulting spalled areas."

Response: Below is a description provided by Kelly McClain the District Chief of Maintenance and Caltrans' Structures Maintenance & Investigations (SM&I) of how projects are identified and developed from inspection reports:

- With respect to bridge inspection reports, the Area Bridge Maintenance Engineer provides a condition assessment based on field observations only. It is intended to highlight that action is needed. The work recommendation does not speak to the feasibility of any one course of action. Generally, work recommendations remain in the system until addressed.
- The Garrapata Creek Bridge rail is rated as Poor in the Bridge Rail Replacement and Upgrade asset category of the SHOPP. The Good-Fair-Poor assessment is mandated by FHWA as part of Moving Ahead for Progress in the 21st Century Act (MAP-21) legislation. MAP-21 requires States to adopt national asset management performance measures to establish nationwide consistency for pavement and bridge condition reporting (2021 State Highway System Management Plan [SHSMP], page 1-3)
- Poor Bridge Rail is based on rail type and rail deemed to not be crash-worthy **regardless of speed**.

- Once a project is initiated, the design effort begins which includes studies, models and in-depth analysis. This engineering analysis for the Garrapata Creek Bridge railing has led to the development of the Type 86H.
- Because the bridge rail is a safety feature, it must be brought up to current MASH standards. **Therefore, replacement is the only repair strategy.**
- Ongoing deterioration has been documented in the historical bridge inspection reports.

The 2009 Bridge Inspection Report is attached in Enclosure 3. Page 2 of the 2009 Bridge Inspection Report states "However, the railing needs replacement. An e-mail was sent to Roger Hunter 2/24/11 requesting the rail replacement be expedited."

Comment on Replacement with a Non-Standard Alternative. The conclusion of section 4 of the supplemental letter submitted August 15, 2022 indicates that "The Caltrans District 5 Traffic Safety Engineer has made the determination that he will not be recommending an exception to the MASH standard for the new bridge railing for the Garrapata Creek Bridge." (Pg. 7) Other areas of the document indicate that exceptions to MASH are simply not possible, "As of December 31st, 2019, Caltrans requires that bridge rails comply with MASH standards without exception." (Pg. 6) The Cal Trans Highway design manual referenced in the letter appears to contemplate non-standard designs for certain highway elements. Is replacement with a non-standard rail precluded from consideration by a specific statutory requirement? If not precluded by statute, would an exception to the standards require a specific approval within Cal Trans, and the appropriate authority to make that determination in Cal Trans would not be able to support such an exception?

Response: The statement that "The Caltrans District 5 Traffic Safety Engineer has made the determination that he will not be recommending an exception to the MASH standard for the new bridge railing for the Garrapata Creek Bridge." is meant to reiterate that the Caltrans District 5 Traffic Safety Engineer is responsible for ensuring that the bridge rail selection follows the Traffic Safety Systems Guidance (TSSG) and other Caltrans MASH implementation policy. Design exceptions for the non-MASH compliant bridge rail designs are not allowed by Caltrans per the "2019 MASH Implementation Memo" discussed in the supplemental application information submitted on August 15, 2022 (see "4. Applicable Design Standards, starting on page 7 of the pdf file for Exhibit D of the staff report) and re-attached herein as Enclosure 4. The applicable and relevant sections of the memorandum below are underlined.

> *"On December 23, 2016, the California Department of Transportation (Caltrans) established a timeline for implementation of roadside safety*

> *hardware and evaluation of new products under the Manual for Assessing Safety Hardware (MASH). The plan set specific dates when* ***Caltrans will no longer allow the installation of non-MASH compliant safety devices.***
>
> ***If one or more Caltrans approved MASH compliant safety devices are available for a specific need, Caltrans must use the safety device(s)****…*
>
> …
>
> ***These requirements apply to all projects and work done on the State highway system."***

Section 82.1(2) of the Highway Design Manual regarding *Application of Standards* define "absolute requirements" of the design standards as follows: "Design guidance related to requirements of law, policy, or statute that do not allow exception are phrased by the use of 'must,' 'is required,', 'without exception,' 'are to be,' 'is to be,' 'in no event,' or a combination of these terms." (page 87)

Staff Report Main Body Comment No. 2: Project Justification

The County and the public have questions the need for replacement of the bridge rails. Questions have been raised about:

a. **The ability to reduce the speed limit, which affects the replacement rail design requirements. - Staff analysis is that this issue has been addressed by CalTrans and the speed cannot/should not be reduced.**

Response: Lowering the speed limit was evaluated as an alternative in the EIR and was rejected as further discussed in the supplemental application information submitted on August 15, 2022 (on page 10 of the pdf file for Exhibit D of the staff report). Furthermore, Assembly Bill (AB)1938 prohibits reductions of the speed limit by more than 7.4 mph below the 85th percentile speed on the State Highway System. The 85th percentile speed near the Garrapata Creek Bridge was spot surveyed at 58 mph.

b. **Is it possible to apply exceptions to current safety standards for preservation of Historic Resources? - Staffs analysis is that this question has not been adequately addressed and there may still be opportunity to repair the existing rails or to replace the rails in kind.**

Response: The supplemental application information submitted on August 15, 2022 includes a response to this question (under "4. Applicable Design Standards, starting on page 7 of the pdf file for Exhibit D of the staff report). Also,

please see the above response to Staff Report Exhibit A Comment No. 2 on Alternatives. Design exceptions are not allowed for this project.

Staff Report Main Body Comment No. 3: Cumulative Effects

Will the decision on the Garrapata bridge rails have a cumulative effect on all seven historic concrete arch bridges? - Staffs analysis is that this issue is not clearly explained by CalTrans. It is staff's opinion that the decision on the Garrapta bridge rails can and will influence future decisions on bridge rails on the six other historic concrete bridges.

and

Exhibit A Comment on Cumulative Impacts

As this project is a pilot for the replacement of the rails on the other five historic bridges in Big Sur, an analysis of potential cumulative impacts to historical resources. Examples to address include:

- **If these rails are replaced, will it affect the continuity of the Carmel-San Simeon Highway Historic District?**
- **For future projects, would other rails need to be designed to match to maintain historic district integrity?**
- **If each rail goes through a "Tier 2" EIR review and design process, could the resulting bridge rail replacements be incongruous?**
- **Would not being able to consider non-standard alternatives also affect the other engineering features within the CSSHD, such as the retaining or parapet walls?**

Response: Caltrans prepared a Tier 1 Programmatic EIR for the Big Sur Bridge Rail Replacement Program which would upgrade the existing nonstandard bridge railings on the following six historic bridges along the Big Sur Coast to bring facilities up to current MASH standards to ensure the safety and reliability of Highway 1:

- Garrapata Creek Bridge (1931)—post mile 63.0, Bridge Number 44-0018
- Rocky Creek Bridge (1932)—post mile 60.0, Bridge Number 44-0036
- Granite Canyon Bridge (1932)—post mile 64.3, Bridge Number 44-0012
- Bixby Creek Bridge (1932)—post mile 59.4, Bridge Number 44-0019
- Malpaso Creek Bridge (1935)—post mile 67.9, Bridge Number 44-0017
- Big Creek Bridge (1938)—post mile 28.1, Bridge Number 44-0056

Tier 1 of the analysis in the EIR evaluates cumulative impacts associated with implementation of the entire Program. However, the analysis of the Tier 1

program cumulative impacts presents a "snapshot" of information currently available at the corridor level. Because the Tier 1 program improvements would be constructed over a multi-year time frame, potential cumulative impacts, as well as other resource impacts, could change over time. As projects for the other five bridges are programmed as Tier 2 construction-level projects, they will be subject to separate environmental review, including the consideration of cumulative impacts.

In the Tier 2 analysis of the Garrapata Creek Bridge Railing Replacement Project in the EIR, direct and indirect impacts to cultural resources were determined to contribute to cumulative impacts but were determined to be mitigated below the level of significance with implementation of measures required in the Memorandum of Agreement with the State Historic Preservation Officer (SHPO) for the Garrapata Creek Bridge Railing Replacement Project.

Cumulative effects to the Carmel San Simeon Highway Historic District (CSSHHD) are discussed in the Finding of Adverse Effect (FAE) prepared for the Garrapata Creek Bridge Railing Replacement Project as well. The FAE concludes that:

> "Though the project will adversely affect one individually eligible contributing resource, the Garrapata Creek Bridge, the project does not impact the CSSHHD in its entirety in such a way that would impede its ability to convey its significance. Many of the features of this district have been modified over time but remain as contributors to the district, continuing to convey its significant historical themes. Therefore, after the project, the CSSHHD will remain a discontinuous historic district comprising 241 discrete elements (five (5) water fountains, ten (10) retaining walls, 61 parapets, 158 culvert head walls, and seven (7) individually eligible concrete arch bridges). Its ability to convey its significance under Criteria A and C, as a distinctive example of a rural coastal highway built with rustic handcrafted masonry features that harmonize with their dramatic natural environments, will not be diminished by this project. None of the other criteria of adverse effects apply to this project, and the project does not constitute any other examples of adverse potential effects not included in the seven (7) examples found in 36 CFR 800.5.2.
>
> Cumulatively, the rail replacement of the six bridges will not affect the characteristics of the CSSHHD in a manner that would diminish the district's overall integrity of design, materials, workmanship, location, setting, feeling, or association. The bridges will retain their status as individually eligible properties and as contributing resources in the district, and the effect to the historic district as a whole will be minimal and would not hinder the CSSHHD's ability to convey its historical significance.

> Cumulatively, the six bridge rail replacement projects (five of which have not yet been proposed) will not have an adverse effect on the CSSHHD. Potential effects of each project will be assessed individually in separate Findings of Effect for each project as they are proposed in the future." (page 18 of the Finding of Adverse Effect dated December 2020).

HRRB Comment

Would Caltrans consider seeking legislation to allow a design exception from MASH standards to allow for replacement in kind of the railing on the Garrapata Creek Bridge and the other 5 historic bridges under the Big Sur Bridge Rail Replacement Program?

Response: The proposed dimensions of each design feature of the bridge railing for the Garrapata Creek Bridge have a very distinct and important role to ensure the safety of the traveling public and the movement of goods and essential services coupled with the reliability of the highway. Caltrans would not seek legislation to reduce the safety or reliability of the railing.

The proposed dimensions of the bridge railing for the Garrapata Creek Bridge meet the requirements of the MASH Standard while replicating the existing railing design aesthetic to the maximum extent possible allowing for consistency with the existing aesthetics.

The design of the railing for the remaining 5 bridges will be completed individually for each bridge as the work is programmed. Stand-alone environmental analysis and public outreach, including Aesthetics Design Advisory Committee meetings, will be completed for each individual bridge.

HRRB Comment

Are bike rails proposed on top of the bridge railing?

Response: No, bike rails are not proposed at this time. The Structural Details in the Plan Set have been corrected and attached herein in Enclosure 5 to remove the note and detail for the bike rail.

HRRB Comment

Can the speed study be expanded to include other historic bridge locations or be conducted on another day?

Individual speed studies will be performed for each future bridge rail replacement project. The EIR for the project, the supplemental application

information submitted by Caltrans on August 15, 2022 (under "5. Alternatives Analysis, starting on page 9 of the pdf file for Exhibit D of the staff report), and the *Frequently Asked Questions (FAQs) on Setting Speed Limits* in Attachment 9 of the supplemental application information submitted by Caltrans on August 15, 2022, describe the requirements and restrictions for lowering the speed limit.

In order to ensure that complete and accurate information is relayed to the public and to the Historic Resources Review Board in the staff report prior to the meeting, we are also able to meet in person as well, to ensure that our answers are clear and to ensure that there are no further questions or information required from staff prior to the meeting. Please let me or Michelle Wilson know if you have further questions. I can be reached at mitch.dallas@dot.ca.gov or at (805) 748-7004 and Michelle can be reached at michelle.wilson@dot.ca.gov or (805) 305-3635.

Sincerely,

Michelle Wil for

Mitch Dallas
Senior Coastal Resources Specialist

cc: Craig Spencer, Chief of Planning, Monterey County HCD
Erik Lundquist, Director, Monterey County HCD

Enclosures:

1. December 1, 2022 HRRB Staff Report with Exhibit A, Discussion
2. Finding of Adverse Effect for the Garrapata Creek Bridge Railing Replacement Project (submitted with December 2020 Historic Properties Survey Report on FTP site on 12/1/22)
3. 2009 Bridge Inspection Report
4. 2019 MASH Implementation Memo
5. Revised Structural Details with Bike Rail Removed

Introduced: 11/9/2022
Version: 1

Current Status: Agenda Ready
Matter Type: General Agenda Item

PLN220090 - CALIFORNIA DEPARTMENT OF TRANSPORTATION (GARRAPATA CREEK BRIDGE)

Public hearing to consider a recommendation to the Monterey County Planning Commission on a Combined Development Permit to allow replacement of the bridge rails on the Garrapata Creek Bridge.

Project Location: Garrapata Creek Bridge near post mile 63.0 on HWY 1, 35681 HWY 1, Carmel, CA 93923 (Assessor's Parcel Number 000-000-000-000 and 243-301-029-000), Big Sur Coast Land Use Plan.

RECOMMENDATION:

Staff recommends that the Monterey County Historic Resources Review Board (HRRB) continue the hearing on the project to a date certain of January 5, 2023, with direction that the additional information requested in the staff report be provided.

SUMMARY:

The California Department of Transportation (Cal Trans) proposes to replace the bridge rails on the Garrapata Creek Bridge. The bridge is individually eligible for listing on the National Register of Historic Places (NRHP), the California Register of Historic Resources (CRHR), and is a contributing resource to the Carmel San Simeon Historic District (CSSHD). Named after the rural state highway constructed between 1922 and 1938, CSSHD stretches along Highway 1 for approximately 75 miles from the San Carpoforo Creek in San Luis Obispo County to the Carmel River in Monterey County. The district includes 241 contributing elements, primarily engineering features which are a part of or adjacent to the Highway: rubble masonry road side water fountains (5), retaining walls (10), parapet walls (61), culvert headwalls (158), and concrete arch bridges (7).

The bridge is one of the seven concrete arch bridges in the CSSHD. Cal Trans intends to replace the bridge rails on six of these bridges. The historical report prepared for the project (LIB220303, Exhibit D) is a “Tier 2” report, focusing on the Garrapta Bridge rail replacement. A “Tier 1” programmatic analysis evaluating the replacement of the rails on all six bridges is included as an attachment to that report, as well as the Department of Parks and Recreation (DPR) 523 forms for the CSSHD. The EIR prepared for the project (Exhibit F) also utilizes this Tier 1 / 2 approach, with the Tier 1 EIR being a programmatic analysis of replacing the bridge rails on all six bridges, and the Tier II analysis being specifically focused on the Garrapata Creek bridge rail replacement. Cal Trans also submitted a supplemental letter addressing frequently asked questions and providing additional analysis of the project, Exhibit E.

The rails are in a state of physical deterioration, with concrete spawling and visible damage, and Cal Trans is proposing to replace them with new rails compliant with current safety standards to address this. Comments on the EIR, the County's previous Section 106 Consolation comments (Exhibit H), and feedback from the LUAC (Exhibit G) focus on the project justification and whether other alternatives to address public safety would be more appropriate given the historic context of the bridge, such as: repair of the existing rails, replacement of the rails with those of the same design, a reduction of the speed limit near the bridge, or a combination of these alternatives.

Cal Trans has addressed these contentions in various forms and in varying levels of detail in the above referenced documents. Staff have reviewed these materials, and don't believe they provide all the necessary detail for staff to draft findings to recommend approval of the project. The main issues that need additional explanation or justification include:

1. Clarification of the historic structure impact assessment.
   It is inferred from the EIR and historic reports, but not clearly stated in these documents, that the bridge rails are character defining features and that their replacement is consistent with the Secretary of the Interior Standards for Rehabilitation.
2. Project Justification.
   The County and the public have questions the need for replacement of the bridge rails. Questions have been raised about:
   a. The ability to reduce the speed limit, which affects the replacement rail design requirements. - Staff analysis is that this issue has been addressed by CalTrans and the speed cannot/should not be reduced.
   b. Is it possible to apply exceptions to current safety standards for preservation of Historic Resources? - Staffs analysis is that this question has not been adequately addressed and there may still be opportunity to repair the existing rails or to replace the rails in kind.
3. Cumulative Effects.
   Will the decision on the Garrapata bridge rails have a cumulative effect on all seven historic concrete arch bridges? - Staffs analysis is that this issue is not clearly explained by CalTrans. It is staff's opinion that the decision on the Garrapta bridge rails can and will influence future decisions on bridge rails on the six other historic concrete bridges.

Therefore, staff are recommending the HRRB continue the project to the next regular meeting with direction to provide the additional requested information. These points are detailed further in the discussion **Exhibit A**.

Prepared by: Phil Angelo, Associate Planner
Reviewed by: Craig Spencer, Chief of Planning

The following attachments are on file with Housing and Community Development:

- Exhibit A - Discussion
- Exhibit B - Project Plans
- Exhibit C - Historic Property Survey Report (LIB220303)
- Exhibit D - Supplemental Letter prepared by Cal Trans
- Exhibit E - Tier I & II EIR

- Exhibit F - Draft Big Sur Land Use Advisory Committee (LUAC) Meeting Minutes
- Exhibit G - Previous HRRB Comments on the Project dated October 29, 2020

cc: Mitch Dallas (Applicant); Michelle Wilson (Applicant); Craig Spencer, HCD Chief of Planning; Project File PLN220090

Exhibit A

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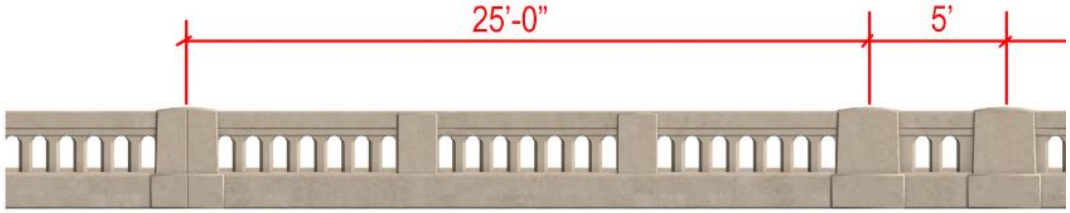
EXHIBIT A
DISCUSSION

INTRODUCTION

The California Department of Transportation (Cal Trans) proposes to remove and replace the bridge rails on the Garrapata Creek bridge. This bridge is one of seven historic bridges in Big Sur, six of which have open spandrel designs. All seven bridges are part of the Carmel San Simeon Historic District (CSSHD), a non-contiguous district named after the rural state highway constructed between 1922 and 1938, which stretches approximately 75 miles from the San Carpoforo Creek in San Luis Obispo County to the Carmel River in Monterey County. The district includes 241 contributing elements, primarily engineering features which are a part of or adjacent to the highway: rubble masonry roadside water fountains (5), retaining walls (10), parapet walls (61), culvert headwalls (158), and concrete arch bridges (7). The Garrapata Creek Bridge is also individually eligible for listing on the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR).



86H WITH TOP BEAM GROOVE LINE BACK ELEVATION

Exhibit 1: Proposed and Existing Rail Looking Toward Bridge

86H WITH TOP BEAM GROOVE LINE FRONT ELEVATION

Exhibit 2: Proposed and Existing Rail Away from Bridge

BIG SUR COAST LAND USE PLAN

The project would need to be found consistent with the Monterey County Local Coastal Program, which includes the Big Sur Coastal Land Use Plan, and implementing regulations in the Monterey County Coastal Implementation Plan (CIP). CIP, Part 3, Regulations for Development in the Big Sur Coast Land Use Plan contains regulations intended for the protection of historical resources within the Big Sur coastal planning area.

CIP section 20.145.110.B. indicates that a historical site survey shall be required for all development on known or suspected historical sites. A survey report was prepared October 2020 by Cal Trans District 5 Principal Architectural Historian, Daniel Leckie. The report is divided into two sections, a "Tier 2" report specific to the Garrapata bridge rail replacement project, and a "Tier 1" historical report discussing the potential replacement of bridge rails on the five other historic open spandrel concrete bridges in Big Sur. Attached to the Tier 1 report is also the Department of Parks and Recreation (DPR) forms which provide a historical evaluation and context for the Carmel-San Simeon Highway Historic District.

While the report does outline several inter-related procedural requirements for federal and state historical review, it does not contain certain details necessary to make a finding of consistency with the development standards in the CIP. Specifically:

- Significance. The report does not specify what the sites primary (historically defining) features are, pursuant to CIP section 20.145.110.B.4.b. This is important as it will allow us to evaluate whether the proposed rail is keeping with the historically defining features of the existing bridge. Per CIP section 20.145.110.C.1, "Where development is proposed on parcels with an identified historical site, such development shall be compatible with the site through incorporation of appropriate design, structural and architectural features, siting, location, and other techniques as recommended in the historical survey prepared for the project."

- Impact. While the supplemental letter, EIR, and historic assessment indicate that there are impacts to cultural (historical) resources, with Cal Trans certified EIR indicating that those impacts will be mitigated to a less than significant level, the report does not assess what the specific impacts to the historical site will be, as required by CIP section 20.145.110.B.4.c. This is not possible without first establishing the bridges historically defining characteristics, however, this would also be essential to the project analysis. Once the project is complete, would the resulting bridge still be eligible for listing on CRHR or NRHR? Would the different historic criteria be affected differently? How would the CSSHD be effected?

- Recommendations. In accordance with CIP section 20.145.110.B.4.d, the historic assessment should contemplate the relative impact of alternatives (discussed in the CEQA section below) to historical resources, and include recommendations to mitigate any impacts (additional to those included in the MOU with the State Historic Preservation Officer). Consider including recommendations for the concrete texture and color that would minimize impact to the historic bridge.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to State CEQA Guidelines section 15051(a), as Cal Trans is carrying out the bridge rail replacement project, they're the lead agency on the project, with the County acting as a "Responsible Agency" under CEQA. Responsible Agencies are those public agencies with discretionary approval power over a project other than the lead agency.

While the Responsible Agencies role in the project is more limited, in accordance with CEQA Guidelines section 15096(f) and (g), as a Responsible Agency the County must consider the EIR prior to acting on the project, and make required findings required by CEQA guidelines sections 15091 and 15093, if applicable. The following clarifying and amplifying information is requested in order to allow County staff to draft appropriate findings for recommending and decision making bodies to consider.

Objectives

Pg 1 of the supplemental application information packet submitted August 15, 2022 describes the project purpose as "*This project proposes to upgrade the existing nonstandard bridge railing to current standards in order to ensure the safety and reliability of Highway 1."* This purpose is similar to that detailed in section 1.2.1 of the EIR. Please list the objectives of the project in more detail, per CEQA Guidelines section 15124(b). Defining the sole purpose of the project to be the preferred alternative, replacement of an existing rail with a new compliant rail, forecloses evaluation of a reasonable range of project alternatives as required by CEQA.

Alternatives

In accordance with CEQA Guidelines section 15126.6, a range of reasonable alternatives to the project should be evaluated which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects relative to the other alternatives. Within the EIR, supplemental package, and supporting documentation: the no project alternative, proposed replacement (86-H), alternative replacement (C412), reducing the speed limit, installation of a façade in front of a compliant rail, repair, widening the bridge two feet, or constructing of a new bridge to re-route traffic are mentioned and discussed in different levels of detail. Staff had the following questions regarding repair of the existing rails or replacement of the rails with a non-standard alternative:

- Repair. As assessed by a qualified architectural historian and structural engineer, and notwithstanding compliance with Cal Trans standards, is repair of the existing rails possible? The 2021 Division of Maintenance report attached to the supplemental letter dated August 15, 2022 indicates that conditions had not significantly changed since a previous report in 2015, and indicates that the 2009 work recommendation to rehabilitate the rails is still valid, "Remove any unsound concrete from the delaminated and spalled areas throughout both bridge rails. Clean and paint any exposed steel and patch or recast the resulting spalled areas."

- Replacement with a Non-standard Alternative. The conclusion of section 4 of the supplemental letter submitted August 15, 2022 indicates that *"The Caltrans District 5 Traffic Safety Engineer has made the determination that he will not be recommending an*

exception to the MASH standard for the new bridge railing for the Garrapata Creek Bridge." (Pg. 7) Other areas of the document indicate that exceptions to MASH are simply not possible, *"As of December 31st, 2019, Caltrans requires that bridge rails comply with MASH standards without exception."* (Pg. 6) The Cal Trans Highway design manual referenced in the letter appears to contemplate non-standard designs for certain highway elements. Is replacement with a non-standard rail precluded from consideration by a specific statutory requirement? If not precluded by statute, would an exception to the standards require a specific approval within Cal Trans, and the appropriate authority to make that determination in Cal Trans would not be able to support such an exception?

Cumulative Impacts

As this project is a pilot for the replacement of the rails on the other five historic bridges in Big Sur, an analysis of potential cumulative impacts to historical resources. Examples to address include:

- If these rails are replaced, will it affect the continuity of the Carmel-San Simeon Highway Historic District?
- For future projects, would other rails need to be designed to match to maintain historic district integrity?
- If each rail goes through a "Tier 2" EIR review and design process, could the resulting bridge rail replacements be incongruous?
- Would not being able to consider non-standard alternatives for also affect the other engineering features within the CSSHD, such as the retaining or parapet walls?

FINDING OF ADVERSE EFFECT

for

The Garrapata Creek Bridge Rail Replacement Project

Monterey County, California

05-MON-1, PM 62.97

EA: 05-1H800, EFIS: 05-1600-0163

Garrapata Creek Bridge, November 1931

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TABLE OF CONTENTS

ATTACHMENTS

1 Introduction

Caltrans District 5 proposes the Garrapata Creek Bridge Rail Replacement Project (05-1H8000) on State Route 1 (SR-1) at Post Mile 62.97 in Monterey County (Figures 1-2 in Attachment 1). The project proposes to replace the railings on the Garrapata Creek Bridge (Bridge No.44 0018), which is individually eligible for listing in the National Register of Historic Places (NRHP) and is also a contributing resource in the Carmel-San Simeon Highway Historic District (CSSHHD). The Garrapata Creek Bridge is an open-spandrel concrete arch bridge that was constructed in 1931 and seismically retrofitted in 1987 and 1998. The California Department of Transportation (Caltrans) proposes to replace the deteriorated nonstandard concrete baluster bridge rail and approach railing on the Garrapata Creek Bridge with a rail that meets the American Association of State Highway and Transportation Officials (AASHTO) safety and crash test requirements, which are found in the Manual for Assessing Safety Hardware (MASH), as well as the Caltrans design specifications. The Garrapata Creek Bridge is located at post mile 62.97 just south of Carmel, in Monterey County along State Route 1 on the Big Sur Coast. The Garrapata Creek Bridge is one (1) of seven (7) historic reinforced concrete arch bridges which are all both individually eligible for the NRHP as well as contributing elements to the CSSHHD. The purpose of this Finding of Adverse Effect (FAE) is to ensure project compliance under Section 106 of the National Historic Preservation Act (NHPA) by applying the Criteria of Adverse Effect to historic properties in the APE, as set forth in Title 36 Code of Federal Regulations (CFR) Part 800.5.

This FAE has been prepared under the January 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act as it Pertains to the Administration of the Federal-Aid Highway Program in California* (Section 106 PA), as well as under Public Resources Code 5024 and pursuant to the January 2015 *Memorandum of Understanding Between the California Department of Transportation and the California State Historic Preservation Office Regarding Compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92*, as addended 2019 (5024 MOU), as applicable.

This FAE concludes that the Garrapata Creek Bridge Rail Replacement Project will have an adverse effect on the Garrapata Creek Bridge and will not adversely affect the CSSHHD. Thus, for the undertaking as a whole, Caltrans, in applying the Criteria of Adverse Effect, proposes that an FAE is appropriate and is seeking SHPO concurrence on the finding, pursuant to 36 CFR 800.5(d)(2) and Section 106 PA Stipulation X.C and 5024 MOA Stipulation X.C.2.b.

2 Description of Undertaking

The Garrapata Creek Bridge (No. 44-0018) is an open-spandrel, concrete-arch bridge that was constructed in 1931 and seismically retrofitted in 1987 and 1998. The bridge is located at post mile 62.97 just south of Carmel, in Monterey County and is one of seven historic arch bridges along State Route 1 on the Big Sur Coast. The bridge is 285 feet long and consists of 12-foot lanes and 0 to 1-foot shoulders.

The proposed project is necessary due to deterioration of the existing railing and because the railing no longer meets current traffic safety standards. The Manual for Assessing Safety Hardware (MASH) is a nationwide standard that was implemented by the Federal Highway Administration (FHWA) and the American Association of State Highway Transportation Officials (AASHTO) in 2009 and updated in 2016. MASH sets the standards for highway safety equipment, including bridge rails, guardrails, and other safety features. Newly adopted MASH standards have mandated that all new installations of roadside safety devices on high-speed roadways, including bridge railing, must meet a new higher standard for crash testing for all projects implemented as of December 31st, 2019, without exception.

Portions of the existing rail are in an accelerated state of deterioration and are experiencing concrete spalling, exposed steel reinforcing bar, and corrosion caused by exposure to salts in the air due to the bridge's location near the ocean. The rail end posts exhibit fine pattern cracking, and the barrier rail posts are severely deteriorated with multiple incipient spalls in addition to previous impact damage. This deterioration may pose a hazard to public health and safety in the future if allowed to continue unaddressed. However, though the project purpose is to replace the existing nonstandard concrete baluster bridge rails and approach rails with new railing that meets current traffic safety standards, Caltrans is committed to choosing a new MASH-compliant railing that is context sensitive and will be compatible with the historic character of the Garrapata Creek Bridge and within the Carmel-San Simeon Highway Historic District. Caltrans structures design engineers are currently developing a new bridge rail that is designed specifically to replicate the design of the historic rails as closely as possible while also meeting the new MASH crashworthiness standards. The new Caltrans rail design (Type 86H) is currently undergoing crash testing. A second new rail design developed by the Texas Department of Transportation to replicate historic bridge rail designs (Type C412) is also under consideration. (See **Appendix D)** for renderings of the new bridge rail designs).

Construction will consist of removing the existing rail along with the existing 1-foot of overhang on each side of the bridge deck and widening the deck three inches on each side to place the new rails. No work will be conducted within Garrapata Creek. Debris from removal of the existing rail and overhang will be prevented from entering Garrapata Creek by either affixing a debris containment system to falsework hung from the top of the bridge or using an excavator with a bucket designed to catch the debris. All work will be conducted within the existing state right-of-way and access below the bridge will be restricted to foot traffic only, therefore, equipment access roads are not necessary. There are no utility conflicts.

3 Public Participation

As part of the Historic Property Survey Report (HPSR) prepared for this project in September 2020, Caltrans sent notification letters to local interested parties asking for comments on the proposed project on August 31st, 2020. Recipients of the letter were the Monterey County Historical Society, Big Sur Historical Society, Carmel Heritage Society, The Historic Bridge Foundation, and the Monterey County Historic Resources Review Board. This notification was sent via Email and US Postal Service mail on August 31st, 2020 and follow-up email reminders were sent to all consulting parties on September 21st, 2020. Caltrans reengaged parties with a stated participatory interest in the project, including the Big Sur Historical Society and The Monterrey County Historic Resources Review Board, on December 10th, 2020 with a notice of the determination of adverse effect and mitigation proposal.

3.1 Monterey County Historic Resources Review Board (MCHRRB)

On September 21st, 2020 Caltrans PQS Architectural Historian Daniel Leckie spoke with Monterey County Planner Craig Spencer on behalf of the Monterey County Historic Resources Review Board (MCHRRB) over the phone and explained the upcoming bridge rail replacement project, as well as additional future bridge rail replacement projects anticipated along SR-1 in Monterey County. The MCHRRB added the Garrapata Creek Bridge Rail Replacement Project to their monthly board meeting agenda on October 1st, 2020. Calrans PQS Architectural Historians Daniel Leckie and Lindsay Kozub attended the meeting and presented the project to the board. A follow-up meeting was held on October 20th, 2020 to finalize board comments, and a formal letter detailing concerns with the project, including project justification, evaluation and documentation, environmental review and the replacement rail design was issued on November 7th, 2020. Representatives from Monterey County and the MCHRRB, including Mr. Spencer, were also present for the December 8th 2020 public meeting which, due to the current COVID-19 pandemic provisions, took place via WebEx video conferencing software. To date, the MCHRRB has brought forth specific concerns as follows:

- **Project justification:** The MCHRRB expressed desire for a greater understanding of the need for the bridge rail replacement. Including:
  - An in-depth review and discussion with FHWA on consideration of historic architecture as a means to compliance with MASH and ASHTO standards;
  - Details on the condition of the existing bridge rails, including photographic evidence;
    - ***Note:*** *Additional Photos have been added to the most recent draft of the environmental document which is publicly available online. The MCHRRB was alerted to the presence and location of the Draft Environmental Impact Report (DEIR) and the additional photos there within during the public meeting held via WebEx on December 8th, 2020.*
  - Review of Highway speeds and potential reduction of speed for each bridge as a means of providing flexibility in design solutions for reinforcement, replacement in kind, or design of the replacement rails (if needed); and
    - ***Note:*** *speed studies for the Garrapata Creek Bridge were performed in December 2019 and are detailed on page 8 of the associated Draft Environmental Impact*

Report (DEIR), which is publicly available and has been forwarded to Monterey County for review and comment. The speed studies are also detailed on page 19 of this Finding of Adverse Effect (FAE) which will be submitted to the county upon finalization concurrently with SHPO submission. Speed studies for the other Tier II bridges will be implemented as those projects are initiated in the future.

- A detailed discussion of why typical historic preservation building standards are not possible in this situation with documentation of efforts on coordination with FHWA and highway speeds.
  - ***Note:*** *detailed analysis and discussion can be found within this Finding of Adverse Effect (FAE) Document which will be provided to the MCHRRB upon finalization concurrent with SHPO submission. Additionally, this level of discussion is found within the Draft Environmental Impact Report (DEIR) which is publicly available and has been forwarded to the county as well.*

- **Evaluation and documentation**: The MCHRRB feels review of the project would benefit from more detailed plans and documentation including but not limited to:
  - Elevations and photographs that show the interior and exterior views of the existing bridge rails including features of the rail that reflect the vertical structural elements of the bridge;
  - Original drawings for the bridge and railing if available;
    - ***Note:*** *original 1931 drawings of both bridge and railing were provided to the MCHRRB as an attachment along with the original letter submission on August 31st , 2020. They are also found on page 9 and in appendix D of this report which will be forwarded to all engaged consulting parties upon finalization, concurrent with SHPO submission.*
  - Detail the full cross section of the rail and bridge deck; and
    - ***Note:*** *Current drawings of the proposed rail designs have been provided to the MCHRRB. As per the Caltrans project development process, detailed plans will be developed later in project development, during the design phase, and will be presented to consulting parties and the public at such time.*
  - Detailed historic analysis and report for each bridge prepared by a qualified historian.
    - ***Note:*** *A copy of this Finding of Adverse Effect (FAE) document, which includes historical analysis and assessment of the project's effects on the bridge, will be provided to the MCHRRB upon finalization. Additional detailed historical documentation has been proposed as part of the mitigation for this project, to be completed before any construction activities will begin.*

- **Environmental Review:** The MCHRRB supports CalTrans decision to prepare an Environmental Impact Report. The MCHRRB feels the EIR should consider at a minimum:
  - Cumulative considerations of rail replacement for ***all six*** historic bridges;
  - Alternatives analysis including a no project alternative;
  - Highway speed reductions given circumstances occurring at each bridge; Historic Preservation design and engineering standard exceptions; and options to repair and reinforce the existing rails or replace in kind; and
  - Effects on historic resources (defining features of the bridges); effects on the critical viewshed in Big Sur; and compatibility with the Coastal Act, Big Sur Land Use Plan and Coast Highway Management Plan.
    - ***Note:*** *All of the above concerns, listed under "Environmental Review" specific to the Garrapata Creek Bridge have either been addressed in the current draft of the*

Environmental Impact Report (DEIR), or will be addressed before that document is finalized in the Spring of 2021. Many of these items are also discussed in this Finding of Adverse Effect which will be provided to all concerned parties concurrent with the SHPO submission. Elements specific to projects impacting the other structures will be address in subsequent Tier II environmental documents as those individual projects are proposed in the future.

- **Replacement Rail Design**: If replacement of the bridge rails is determined to be necessary, the MCHRRB reserves the ability to review and comment upon each bridge's rail designs, prior to selection of a final design. These are the MCHRRB's *preliminary* comments on potential new bridge rail designs:
  - The MCHRRB suggests CalTrans work with the local community as well as Monterey County to design bridge rails to fit the character of the structures and the surroundings. The county suggests the community members should include Big Sur Coast Multi-Agency Committee (BSMAC), and the local Big Sur Land Use Advisory Committee (LUAC). Monterey County is willing to set these discussions on those agencies' agendas.
  - The MCHRRB prefers the "C411" rail design for replacement. Although the C411 design is engineered for speeds of up to 45 miles per hour, the MCHRRB believes some bridges warrant reduced speeds where there are curves or heavily used turnouts which slow traffic near the bridges.
  - The MCHRRB believes travelers along the Highway would rather slow down to enjoy the beautiful views rather than seeing the visual shock of foreign elements which impact bridges' character;
  - The MCHRRB asks that CalTrans coordinate with the county on the final bridge rail design.
  - The MCHRRB requests final design options be presented to Monterey County with sufficient flexibility to amend the design before a final designed is selected;

As stated above, Caltrans sent a subsequent letter to the MCHRRB on December 10th, 2020 notifying them of the determination of adverse effect for this project as well as the current proposed section 106 mitigation measures. Any suggestions or concerns of the board will be considered in the final Memorandum of Agreement (MOA). All correspondence including the formal comments can be found in **Appendix B**. Caltrans has responded to the MCHRRB's concerns and provided all requested information that is currently available. Caltrans will continue to consult with all interested parties throughout the project process and provide additional information, including mitigation documents and updated plans as they come available.

3.2 Big Sur Historical Society

On September 28th, 2020 Caltrans received a response from Mary Trotter of the Big Sur Historical Society expressing concern with the project including compatibility of the new railing design with the historic bridges, concrete coloring, and impacts to the historic structure overall. Caltrans responded clarifying some aspects of the overall process and reasoning for the project as well as an explanation of the efforts made to develop a compatible bridge railing. Ms. Trotter also attended the December 8th, 2020 public meeting. The Big Sur Historical Society has raised the following concerns, which have been summarized by Caltrans staff, about the upcoming project:

- The Big Sur Historical Society acknowledges that the rails have begun to deteriorate but is unhappy with the repairs made to date including poor color matching making repairs stand out from the original railing.
  - Incompatible design for the new rails to the original structure:
  - The Big Sur Historical Society Feels that the new designs appear like "Romanesque elements on a Gothic cathedral".
  - The archways are heavy, bulky and overwhelmingly solid
  - Archways in some of the renderings appear as rectangular spaces.
  - Archways emphasize the structure rather than the openings between.
    - ***Note:*** *the design details in the initial renderings have been updated since the initial letter was sent to consulting parties, demonstrating additional options for arched openings. The final design details of the final railing will not be determined until Caltrans is farther along in the design process.*
- Questions on what safety hazard the original railings pose to the traveling public.
  - Unaware of the accident history along this stretch
- Given Caltrans history of community involvement in the decision-making process, the Big Sur Historical Society feels it should be possible for state and federal to reach a compromise about changes to historic structures.
- Expressing hope that the railings could be replaced with the exact same design, perhaps beefed up on the interior with more or larger diameter rebar.
- Taking issue with the color match, which is said to have originally come from use of local sand in the concrete mixture, which was incompatible in the initial renderings.
  - ***Note:*** *the color in the initial renderings has been updated since the initial letter was sent to consulting parties, demonstrating a more appropriate color match. The original renderings appeared with a darker gray concrete coloring, but they now appear more in keeping with the original sandy beige bridge color. The final coloring, along with other design details of the final railing will not be determined until Caltrans is farther along in the design process. Caltrans is committed to designing the new railing with as close of a color match as possible in the final design for the replacement railings.*
- Concern that the NRHP/CRHR eligibility designation should have more "meaning and strength" to oppose these changes.

As stated above, Caltrans has reengaged this group with a notice of determination of adverse effect for this project as well as the current proposed section 106 mitigation measures, and any suggestions will be considered in the final Memorandum of Agreement (MOA). All correspondence including the formal comments can be found in **Appendix B**.

3.3 All Other Consulting Parties

On September 21st, 2020 Caltrans PQS Architectural Historian Daniel Leckie spoke with Kitty Henderson, the Executive Director of the Historic Bridge Foundation over the phone and provided more information on the project. However, on October 9th, Ms. Henderson declined to formally respond to the project for personal family reasons. On September 22nd, 2020 Caltrans received a response from James Perry, Executive Director of the Monterey County Historical Society expressing no concerns with the project. The Carmel Heritage Society has not replied to the initial

letter or reminder email to date. All correspondence including the formal comments can be found in **Appendix B**.

4 Description of Historic Properties

The project area is located on SR 1 along the Big Sur coast of Central California, an area characterized by the rugged terrain of the Santa Lucia Mountains, which descend steeply down on the west to the Pacific Ocean. The western slope is cut by numerous rivers, creeks, and canyons of varying widths and depths, such as Garrapata Creek. The shoreline is generally rocky with a few sandy beaches; coastal terraces are few. The Big Sur region does not have any census designated places, but at a few locations, such as Big Sur Village, Gorda, and Lucia, are small settlements that usually include tourist service businesses such as restaurants, gas stations, and lodging. There are two historic properties located within the APE for the Garrapata Creek Bridge Rail Replacement Project: the Garrapata Creek Bridge (Bridge No. 44-0018), which was determined eligible for the NRHP in 1986, and the CSSHHD, which was determined eligible for the NRHP in 1996 with SHPO concurrence in 2003 and updates in 2006. The Garrapata Creek Bridge is also a contributing resource in the CSSHHD.

4.1 The Garrapata Creek Bridge (Bridge No. 44-0018)

The Garrapata Creek Bridge (#44 0018), located at post mile 62.97 on Highway 1 in Monterey County, is a reinforced concrete, open spandrel, fixed parabolic arch bridge with a single arch span comprised of parallel concrete arch ribs measuring 150 feet long. It was determined eligible for listing NRHP and in the CRHR in 1986 under Criterion A/1 (in the area of transportation) for its association with the Highway Beautification Movement and construction of the Carmel-San Simeon Highway as well as Criterion C/3 as an example of reinforced concrete bridge design and engineering from the 1920s-30s. The bridge's character-defining features include its use of reinforced concrete materials; its open spandrel, fixed parabolic arch; its six concrete T-beam approach spans; its decorative cantilevered walkway; and the decorative reinforced concrete railings with arched window design and smooth textured finish. The historic resource boundary for the bridge is the structure itself.

Garrapata Creek Bridge, February 1932

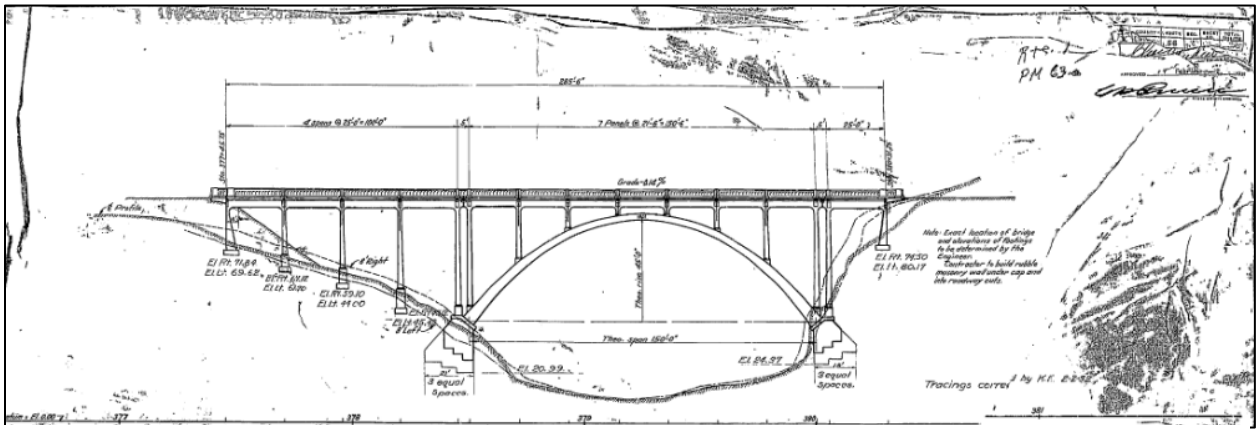
The total bridge length is 285 feet and includes seven approach spans (five 25-foot spans and two 5-foot spans) in addition to the 150-foot arch span. The height of the bridge is approximately 85 feet above the creek bed. The reinforced concrete arch ribs measure five feet in thickness at the springing line, narrowing to three feet in thickness at the crown. The bridge deck is 28 feet wide, including a 24-foot, two-lane roadway with curbs. The bridge railings are smooth reinforced concrete in an arched window design. The bridge was seismically retrofitted in 1987 and 1998.

Garrapata Creek Bridge Rails, 2018

The Garrapata Creek Bridge was constructed in 1931 by the Hanrahan Construction Company of San Francisco for the California Division of Highways Bridge Department under the leadership of Charles Andrew. The resident engineer was O.R. Bosso. The Garrapata Creek Bridge was the first concrete arch bridge constructed on the scenic Carmel-San Simeon Highway, which was constructed between 1922 and 1938 along one of the most rugged and previously inaccessible areas of the California coastline. A November 1931 article in California Highways and Public Works announced the opening of the Garrapata Creek Bridge, and also noted that the Granite Creek Bridge was under construction, and plans for the Bixby Creek Bridge were underway:

> Beautiful bridges, an imposing series of them, will mark the new State highway now in course of construction along the rugged coast between Carmel and San Simeon. One of the most scenic portions of the Pacific shoreline, this section is indented by arms of the sea and furrowed by deep gorges through which mountain streams reach the ocean making bridges necessary for a direct highway route... This new concrete bridge [Garrapata] replaces an old narrow steel bridge which had become so badly rusted, due to its proximity to the ocean, that it was no longer safe for use and during the past year traffic has been detoured over a small temporary timber bridge at the head of the gorge. [1]

The Garrapata Creek Bridge is one of seven iconic concrete arch bridges known as the "Big Sur Arches" located on Highway 1 along the coast of the Pacific Ocean in Monterey County. The other six bridges include the Bixby Creek, Rocky Creek, Big Creek, Granite Canyon, Malpaso Creek, and Wildcat Creek Bridges. All seven concrete arch bridges were determined individually eligible for listing in the NRHP and in the CRHR in 1986 by Caltrans historian Stephen Mikesell. In addition, the bridges are included as contributing resources in the Carmel-San Simeon Highway Historic District, which was determined eligible for listing in the NRHP and the CRHR in 1996 Caltrans architectural historian Robert Pavlik and updated by JRP Historical Consultants in 2006.



Garrapata Creek Bridge Original Plan Drawing, 1931

[1] Gallagher, James, "Longest Concrete Arch in State Among Carmel Coast Link Bridges", *California Highways and Public Works* (November 1931): 34.

4.2 Carmel – San Simeon Highway Historic District

The Carmel-San Simeon Highway Historic District, as documented in the 2006 updated Historical Resources Evaluation Report (HRER) by JRP Historical Consulting and Paula Juelke Carr, is comprised of 241 contributing resources. These include 234 Rustic-style rubble masonry features (158 culvert headwalls, 61 parapet walls, 10 retaining walls, and 5 fountains), as well as the seven concrete arch bridges that are also individually eligible for listing in the NRHP and the CRHR.

Arcade-style masonry parapet

Contributing L-Shaped Masonry Culvert Headwall

The historic district is located entirely within the Caltrans right-of-way along Highway 1, extending approximately 75 miles between post mile 71.34 in San Luis Obispo County (San Carpoforo Creek) at the southern end, to post mile 72.28 in Monterey County (Carmel River) at the northern end. The district is a noncontiguous district that consists only of these masonry and concrete structures associated with the construction of the highway from 1922-1938; the highway itself is not a contributing resource due to alterations that occurred after the period of significance. The Carmel-

San Simeon Highway Historic District was determined to be eligible under Criterion A for its association with the Highway Beautification Movement, and under Criterion C as an example of Rustic-style handcrafted rubble masonry and concrete bridge design from the 1920s-30s. The period of significance for the Carmel-San Simeon Highway Historic District is 1922-1938, spanning from the date that highway construction began near San Simeon in 1922 until the highway was completed with the construction of the concrete arch bridge over Big Creek in 1938. The historic district, as originally defined by Pavlik in 1996, contained 96 contributing resources including the seven iconic concrete arch bridges. In 2006, the determination of eligibility for the Carmel-San Simeon Highway Historic District was updated by Paula Juelke Carr and JRP Historical Consulting Services to include 145 additional resources in addition to the 96 resources originally surveyed by Pavlik, increasing the total number of contributing resources to 241.[2] Although subsequent studies addressed potential effects to individual contributing resources and to the historic district as projects occurred, the district has not been comprehensively re-surveyed since 2006. Plans are currently underway to begin a comprehensive survey update for the entire historic district in 2021-2022.

Constructed over a sixteen-year period between 1922 and 1938, the Carmel-San Simeon Highway was a feat of engineering that traversed the edge of the steep and rugged coastline between the Santa Lucia Mountains and the Pacific Ocean. Although smaller, primitive dirt roads and horse trails had been constructed along some stretches of the coast and through the mountains to access local homesteads in the late 1800s, the area from San Simeon north along the Big Sur Coast was still largely inaccessible in the early twentieth century due to the mountainous terrain. In 1915, Dr. John L.D. Roberts of Monterey joined with Senator Elmer S. Rigdon of Cambria to address the state legislature to request that the state construct a highway along the Central Coast. Delayed by World War I, the bond finally passed in 1919, partly due to advocates asserting that the road would be useful for military defense purposes. The road was built in eight different sections (Sections A through H), with the first phase of construction occurring from 1922-24 and the second phase of construction from 1928-38 (a four-year delay from 1924-28 was due to the underestimation of amount of funds necessary to build the road). The highway was constructed by the Division of Highways, who utilized private contractors, convict laborers, and work relief program laborers to construct the road and associated engineering structures.[3]

Concrete Arch Bridges in the CSSHHD

The most iconic and visually prominent historic engineering features located within the CSSHHD are the seven concrete arch bridges located hundreds of feet above the Big Sur coastline. The Big Sur Arches were constructed between 1931 and 1938, concurrent with the original highway construction, and were a product of the tradition of concrete arch bridge construction in California

[2] Wee and Larson, 2006; Carr, Paula Juelke, Christopher Ryan, and Kelda Wilson, *Historic Property Survey Report: Pfeiffer-Big Sur Left Turn Channelization Project and Updated Description of the Carmel-San Simeon Highway Historic District (P-27-002775)*, San Luis Obispo: Caltrans, 2006.
[3] Wee and Larson, p. 12-19.

in the early twentieth century, the durability and availability of concrete in the state, and the unique problem of the steep, mountainous terrain of the Big Sur Coast, which necessitated massive spans of both distance and height.

Table 1: Concrete Arch Bridges of the Carmel-San Simeon Highway Historic District

Bridge Name	Bridge #	District Identifier	Post Mile	Year Built
Big Creek Bridge	44 0056	DM-322	28.09	1938
Bixby Creek Bridge	44 0019	DM-032	59.37	1932
Rocky Creek Bridge	44 0036	DM-030	60.05	1932
Garrapata Creek Bridge	44 0018	DM-028	62.97	1931
Granite Canyon Bridge	44 0012	DM-027	64.33	1932
Malpaso Creek Bridge	44 0017	DM-025	67.85	1935
Wildcat Creek Bridge	44 0016	DM-022	69.02	1933

Of 31 bridges originally constructed within the length of the Carmel-San Simeon Highway, 21 were of timber construction, six were steel, and the remaining seven were the concrete arches. All of the original timber bridges have been replaced (between 1940–1985), and nearly all of the steel bridges have also been replaced; however, all seven of the original concrete arch bridges are still in place.[4] Most of the concrete arch bridges span several hundred feet, including the Bixby Creek Bridge, which contains the largest single concrete arch span in the state (360 feet), with a complete bridge span of 714 feet.[5] Six of the seven bridges are located within a 10-mile span between post miles 59 to 69; the Big Creek Bridge is located more than 30 miles south of the others at post mile 28.09.

The construction of these distinctive arch bridges along with handcrafted stone masonry features along the highway corresponded with the "Highway Beautification" movement, which began in the 1910s and gained momentum in California in the 1920s. Part of the emphasis of this movement was to provide infrastructure that would integrate and harmonize with the surrounding natural environment, particularly in rural and scenic areas.[6]

5 Application of the Criteria of Adverse Effect

The following section considers potential effects the Garrapata Creek Bridge Rail Replacement Project may have on the two historic properties in the APE, the Garrapata Creek Bridge and the CSSHHD. The NHPA Section 106 regulations state that if there are historic properties in the APE

[4] Pavlik, Robert C., *Historical Resource Evaluation Report: The Rock Retaining Walls, Parapets, Culvert Headwalls, and Drinking Fountains Along the Carmel to San Simeon Highway*, San Luis Obispo: Caltrans, 1996, p. 3.
[5] McMorris, Christopher, *Caltrans Historic Bridge Inventory Update: Concrete Arch Bridges*, JRP Consulting for Caltrans, 2004, p. 20-21.
[6] Mikesell, Stephen D., *Historic Resource Evaluation Report, The Carmel-San Simeon Highway*, Caltrans 1986; Pavlik, 1996; [6] Wee, Stephen, and Bryan Larson, *Historical Resources Evaluation Report: Pfeiffer-Big Sur Left Turn Channelization Project and Updated Description of the Carmel-San Simeon Highway Historic District*, San Luis Obispo: JRP Historical Consulting/Caltrans, 2006, p. 20-28.

which may be affected by a federal undertaking, the agency official shall assess adverse effects, if any, in accordance with the Criteria of Adverse Effect defined in 36 CFR 800.5.

The following are examples of adverse effects as per 36 CFR 800.5(a)(2):

i. Physical destruction of or damage to all or part of the property;
ii. Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines;
iii. Removal of the property from its historic location;
iv. Change of the character of the property's use or of physical features within the property's setting that contributes to its historic significance;
v. Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
vi. Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
vii. Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

- ***Note:*** *though these are the most common examples of adverse effects which are found explicitly in 36 CFR part 800.5.2, adverse effects are not limited to the above seven (7) examples. Caltrans has considered all potential adverse effects resulting from the Garrapata Creek Replacement Project and determined that no others apply to the Undertaking as proposed.*

5.1 The Garrapata Creek Bridge (Bridge No. 44 0018)

In order to meet the crash-testing requirements of the MASH safety standards, the new replacement rails on the Garrapata Creek Bridge are required to have a greater thickness and slightly modified arch window shape; therefore the original rails cannot be replaced in kind to meet the Secretary of the Interior's Standards for the Treatment of Historic Properties. Because the Garrapata Creek Bridge (Bridge No. 44 0018) is a National Register-eligible property, and the project proposes to remove and replace the original railing of the bridge with a railing that is not an in-kind replacement, the project will have an adverse effect on the Garrapata Creek bridge. This adverse effect corresponds to 36 CFR 800.5.2(i) "Physical destruction of or damage to all or part of the property"; and 36 CFR 800.5.2(ii): "Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR part 68) and applicable guidelines." None of the other criteria of adverse effects apply to this project, and the project does not constitute any other examples of potential adverse effects not included in the seven (7) examples found in 36 CRF 800.5.2.

Table 2: Comparison of Bridge Rail Dimensions

	Original Rails	Type 86H	Type C412
Rail height	42”	42”	42”
Arch window height	19”	14”	13”
Arch window width	10”	6”	5.75”
Baluster width	6”	8”	7.25”
Baluster thickness (depth)	5”	7”	10”
Base height	9”	18”	18”
Base thickness (depth)	10” (base of balusters); 27” (including inside curb)	24”	19”
Height at base of arch windows	12”	18”	20”
Top rail height	9”	10”	6”
Top rail thickness (depth)	12”	15”	17.5”

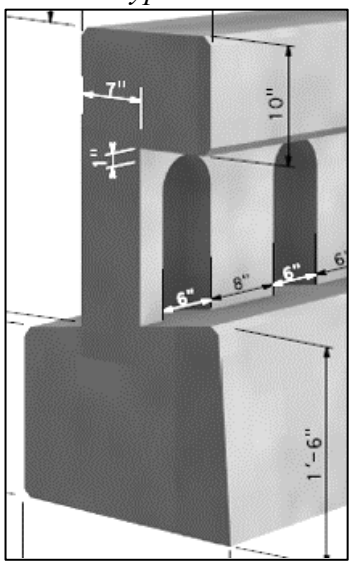
The new proposed rail designs that meet current MASH crashworthiness standards have several similarities with the original bridge rails: the overall height of the rails is 42 inches, the rails contain arched window openings, and the rails are composed of reinforced concrete. The differences in the rail design are in the dimensions of the balusters, window openings, base, and top rail. Since the open windows in baluster-style rails can be “catch points,” where vehicles’ bumpers can potentially catch on the rails, which could cause or worsen accidents, current safety standards require a higher base height, thickness, and top rail thickness to accommodate modern vehicle designs and speeds. The increased height of the base of the rails and at the base of the window openings provides the rail with the ability to withstand and deflect vehicle impacts. While the lines and shapes are similar in the proposed new rails, the arched window openings are shorter in height and narrower in width, while the balusters are wider and have greater thickness (depth).

Photos/Renderings of Bridge Rail Designs

(See Appendix D for Complete Drawings and additional Photos)

Original Rails

Type 86H



Type C412

Minimization of Adverse Effect

Although the proposed rail replacement project constitutes an adverse effect because the original rails cannot be replaced in kind, Caltrans has made extensive efforts to minimize the adverse effect to the greatest extent feasible. Caltrans structures design engineers designed a new rail type (Type 86H) specifically to replicate the design of the historic concrete bridge rails as closely as possible while still meeting MASH standards (See Attachment D). In addition, Caltrans also considered concrete rail designs from other states, including the Type C412 rail design from the Texas Department of Transportation, which was also designed to replace historic baluster rails. Although the concrete railings, an original character-defining feature of the bridge, will be replaced, the overall adverse effect on the bridge will be minimal, and the bridge will retain its eligibility for NRHP and CRHR listing. The project will diminish some aspects of the bridge's integrity including its design, workmanship, and feeling; however, the structure's integrity of location, setting, materials, and association will not be diminished. The following discussion addresses each of the seven aspects of integrity individually:

- **In terms of design**, integrity will be diminished as the original dimensions of the bridge railing will be altered by the project. As a result of developing a railing that is compliant with the current MASH standards as defined by AASHTO, the replacement railings will have smaller openings and a larger base and baluster. This change in the physical dimensions of the railing will diminish integrity of design. However, the overall design of the bridge's massive substructure, including the 150-foot arches and 285-foot span over the canyon, will not be affected.
- **In terms of workmanship**, integrity will be diminished as the original concrete rails and end treatments to be removed by the project will be replaced with modern precast elements.
- **In terms of feeling**, integrity will be somewhat diminished as the original more minimal concrete railing evokes a sense of time for drivers, pedestrians, or bicyclists who experience the bridge. The appearance of these original railings is in keeping with other concrete arch bridges constructed in the 1920s and 30s; therefore, the bridge's integrity of feeling will diminish as the rails are replaced with modern ones.
- **In terms of location**, the bridge will retain its integrity as it will remain in its original location;
- **In terms of materials,** the bridge will retain integrity as the replacement concrete rails will employ compatible concrete materials to the original bridge;
- **In terms of setting,** the bridge will retain integrity as the project does not propose to alter the iconic coastal setting, and this project will only result in the direct impact of replacing the original bridge railing;
- **In terms of association**, the bridge will retain integrity as it will continue to function as a highway bridge in this location on Highway 1 along the Big Sur Coast. Additionally, the bridge will retain its historical association with the construction of the highway and will remain a contributing element to the CSSHHD.

Although the railings will be altered, the Garrapata Creek Bridge will remain both individually eligible for the NRHP and a contributing feature of the CSSHHD after completion of the project.

In addition, replacing the original rails with ones that meet current safety standards ensures that the bridge itself remains in use in its original function as a bridge along Highway 1 on the Big Sur Coast. Ensuring that the bridge remains functional for its original historical purpose helps to ensure continuing preservation of the structure and longevity of its use in the future.

5.2 Carmel – San Simeon Highway Historic District

The CSSHHD is a noncontiguous historic district comprised of 241 individual, discrete contributing resources. Because the Garrapata Creek Bridge is both individually eligible for listing in the NRHP and CRHR and is also a contributor to the CSSHHD, the Garrapata Creek Bridge Rail Replacement Project similarly has potential to adversely affect the CSSHHD because it directly alters a contributing element of the historic district. However, as the proposed project will leave the bridge largely as is, and it will still remain both an individually eligible resource and a contributing element of the CSSHHD after the project is completed, Caltrans has determined the overall effect to the CSSHHD is No Adverse Effect. This determination of effect considers that the replacement bridge rail alternatives provide a similar visual appearance to the existing rails, with a comparable shape albeit slightly different dimensions, and also considers that the Garrapata Creek Bridge is one seven (7) concrete arch bridges, which are the most substantial of 241 contributing elements of the 75-mile long CSSHHD. Therefore, the Garrapata Creek Bridge Rail Replacement project will not affect the characteristics of the CSSHHD in a way that would diminish the district's integrity of design, materials, workmanship, location, setting, feeling, or association.

- **In terms of location**, the CSSHHD will retain its integrity as all features will remain in their original location(s);
- **In terms of design**, the CSSHHD will retain its integrity as the design change of the bridge rails for the Garrapata Creek Bridge will have a minimal impact on the significant design features of the 75-mile historic district overall. Namely, it will remain a discontinuous historic district comprised of 234 original handcrafted rubble stone masonry highway features and seven (7) concrete arch bridges which harmonize with their dramatic coastal environment. The significant design features of those elements will not change in a way that would diminish the district's ability to convey the history of the significant engineering and design achievements relating to the highway beautification programs of the 1920s and 30s;
- **In terms of setting,** the CSSHHD will retain integrity as the project does not propose to alter the iconic coastal setting, and this project will only result in the direct impact of replacing the original bridge railing for one (1) of seven (7) bridges and 241 total features;

- **In terms of materials,** the CSSHHD will retain integrity as the replacement concrete rails will employ compatible concrete materials to the original bridge. Additionally, this project will have no material impact on the other 240 features of the CSSHHD;
- **In terms of workmanship**, the CSSHHD will retain its integrity of workmanship as the new work will only impact one (1) feature, the Garrapata Creek Bridge. This new work will have a minimal impact on the ability of the public to understand the 75-mile historic district. The district will remain comprised of 234 original rubble stone features and seven (7) concrete arch bridges, which will overwhelmingly still convey the demonstratable qualities of the original stone masonry craftsmanship and significant early reinforced concrete work of the 1920s & 1930s despite this alteration to one (1) contributing resource;
- **In terms of feeling**, the CSSHHD will retain integrity of feeling as a 75-mile-long rural highway historic district comprised of rustic rubble masonry features and seven (7) iconic concrete arch bridges. As this project impacts only one (1) of seven (7) contributing bridges and 241 total features, it will not impact the ability of the district to convey the feeling of that significant period over its 75-mile stretch. Though the feeling of the individual bridge will be moderately diminished by this project, the replacement railing will be compatible in terms of materials, composition, colors, etc. and therefore will not detract from the historic feeling of the CSSHHD overall.
- **In terms of association**, the CSSHHD will retain integrity as it will retain its historical association with the construction of the original highway and as an example of the Highway Beautification Movement. The Garrapata Creek Bridge will remain a contributing element to the CSSHHD, and both the bridge and the historic district will remain eligible for the NRHP and CRHR after implementation of the project.

Though the project will adversely affect one individually eligible contributing resource, the Garrapata Creek Bridge, the project does not impact the CSSHHD in its entirety in such a way that would impede its ability to convey its significance. Many of the features of this district have been modified over time but remain as contributors to the district, continuing to convey its significant historical themes. Therefore, after the project, the CSSHHD will remain a discontinuous historic district comprising 241 discrete elements (five (5) water fountains, ten (10) retaining walls, 61 parapets, 158 culvert head walls, and seven (7) individually eligible concrete arch bridges). Its ability to convey its significance under Criteria A and C, as a distinctive example of a rural coastal highway built with rustic handcrafted masonry features that harmonize with their dramatic natural environments, will not be diminished by this project. None of the other criteria of adverse effects apply to this project, and the project does not constitute any other examples of adverse potential effects not included in the seven (7) examples found in 36 CRF 800.5.2.

While this FAE addresses potential effects resulting from the Garrapata Creek Bridge Rail Replacement Project, Caltrans is also considering potential cumulative effects that may result from the upcoming rail replacement projects for six of the seven historic concrete arch bridges in the historic district. Previously, on September 1st 2020, Caltrans contacted the SHPO with a Tier I

analysis and notification of upcoming Section 106 documentation and consultation regarding these anticipated projects. Cumulatively, the rail replacement of the six bridges will not affect the characteristics of the CSSHHD in a manner that would diminish the district's overall integrity of design, materials, workmanship, location, setting, feeling, or association. The bridges will retain their status as individually eligible properties and as contributing resources in the district, and the effect to the historic district as a whole will be minimal and would not hinder the CSSHHD's ability to convey its historical significance. Cumulatively, the six bridge rail replacement projects (five of which have not yet been proposed) will not have an adverse effect on the CSSHHD. Potential effects of each project will be assessed individually in separate Findings of Effect for each project as they are proposed in the future.

6 Alternatives Considered But Rejected

Caltrans considered multiple alternatives in an effort to seek out all potential options to avoid or minimize adverse effects to the bridge. To be considered viable, project alternatives must address the project purpose and need: The purpose of the project is to replace the existing concrete baluster bridge rail and approach rail with a rail that meets current traffic safety standards. The bridge is historic as well as visually significant to the traveling public, so project design must address context-sensitive solutions. The following alternatives were considered but rejected because they either could not meet the purpose and need of the project or were determined not to be feasible:

6.1 No Build Alternative

The no build alternative was considered but rejected because it does not meet the purpose and need of the project to replace the existing nonstandard concrete baluster bridge rail and approach rail with a rail that meets current MASH crashworthiness safety standards. The existing rails do not meet MASH standards, and portions of the rails are currently deteriorated and in need of replacement. The rails are experiencing concrete spalling, exposed steel reinforcing bar, and corrosion caused by exposure to salts in the air due to the bridge's location near the ocean. This deterioration may pose a hazard to public health and safety in the future if allowed to continue unaddressed. Therefore, replacement of the existing rails is necessary for safety purposes as well as to preserve the continued function of the Garrapata Creek Bridge, extending its service life.

6.2 Replacement of Rails In Kind Alternative

Caltrans investigated all possible alternatives that would avoid adversely affecting the bridge, including replacing the rails in kind in a manner that would meet the Secretary of the Interior's Standards for the Treatment of Historic Properties. However, the replacement of the rails in kind was rejected because it does not meet the purpose and need of the project to replace the existing bridge rail and approach rail with a rail that meets current traffic safety standards. The dimensions of the existing railings do not meet MASH crashworthiness standards; therefore, replacing them with new rails of the same dimensions would not meet MASH standards.

6.3 Replacement of Rails with Type C411 / Reduction of Speed Limit to 45 mph

Caltrans also considered the possibility of lowering the speed limit in order to replace the rails with the Type C411, a design that is more aesthetically similar to the bridge's original rail design. The Type C411 rail is rated only for speeds up to 45 mph (TL-2 rating). The replacement of the rails with the Type C411 railing was considered but rejected after a speed survey on the Garrapata Creek Bridge was completed and determined that a reduction of the speed limit was not a feasible option. The results from a vehicle speed survey completed in December 2019 demonstrated that the speeds were higher than anticipated; at the 85th percentile speeds were 58 mph. This data informs the Caltrans project development team that the replacement railing must be designed for crashworthiness at the TL-4 rating, which is designed for vehicles travelling greater than 45 mph. As the Type C411 railing would not meet that standard, it does not meet the purpose and need of the project.

6.4 Widening

Additional widening of the bridge, two feet on either side to add additional shoulder width for alternative transportation uses such as biking, was also discussed but after consideration was dismissed as not feasible as part of the scope of this project.

7 Conclusions

This FAE assesses the effect the Garrapata Creek Bridge Rail Replacement Project will have on the two historic properties in the APE: The Garrapata Creek Bridge and the Carmel–San Simeon Highway Historic District (CSSHHD). The Garrapata Creek Bridge Rail Replacement Project proposes to replace the bridge railing and approach railing with new rails that meet current MASH safety standards. After analysis of the potential effects of this undertaking on the Garrapata Creek Bridge and the CSSHHD, Caltrans finds that the project causes an adverse effect on the Garrapata Creek Bridge and does not adversely affect the CSSHHD.

The following summary table presents the conclusions of this FAE:

Historic Property	Effect Finding	Avoidance / Minimize Impact
Garrapata Creek Bridge	**Adverse –** direct effect; the project will alter the original railings of the bridge and introduce new visual elements that will diminish some aspects of the historic integrity of the property.	Develop / adopt a railing type that is as visually compatible with the original bridge railing as possible.
Carmel – San Simeon Highway Historic District	**Not Adverse –** the effect of changing the railing on one of the seven bridges, one of 241 contributing elements to the historic district, is a minimal effect on the district. This project will not diminish the integrity of its overall character as a 75-mile long discontinuous district with hundreds of discrete elements, and does	N/A

	not impede the CSSHHD's ability to convey its historic significance.	

8. Mitigation Measures

In order to take into account the effects of this undertaking on historic properties, the adverse effect to the Garrapata Creek Bridge will be resolved through implementation of mitigation measures, which are outlined in a Memorandum of Agreement (MOA) which Caltrans is submitting concurrently with this Finding of Effect document. Caltrans has engaged with interested parties on appropriate mitigation measures for this project, sending notification letters on the adverse effect determination and proposed mitigation to the Big Sur Historical Society and Monterey County Historic Resources Review Board on December 10th, 2020. Caltrans has considered all consulting party comments in developing the MOA, and proposes the following mitigation measures for the Garrapata Creek Bridge Rail Replacement Project:

- Recordation of the bridge's current condition via the Historic American Engineering Record (HAER) to include written historical and professional photographic documentation;
- Detailed historical analysis documented in individual DPR 523 forms for all seven (7) concrete arch bridges within the Carmel-San Simeon Highway Historic District (CSSHHD) including:
    - Big Creek Bridge (1938) - PM 28.1, Bridge Number 44-0056
    - Bixby Creek Bridge (1932) - PM 59.4, Bridge Number 44-0019
    - Rocky Creek Bridge (1932) - PM 60.0, Bridge Number 44-0036
    - Garrapata Creek Bridge (1931) - PM 63.0, Bridge Number 44-0018
    - Granite Canyon Bridge (1932) - PM 64.3, Bridge Number 44-0012
    - Malpaso Creek Bridge (1935) - PM 67.9, Bridge Number 44-0017
    - Wildcat Creek Bridge (1933) – PM 69.0, Bridge Number 44-0016
- The production of an interpretive website to highlight the history of the seven Big Sur Arches. The website will include historic and modern photographs, historic contexts developed in the individual historic analysis reports, and additional information on the engineering and transportation history of the bridges.
    - The website will be updated along with all other mitigations as future bridge rail replacement projects are proposed for the Big Sur Arches in the future.
    - Additionally, the website will also contain outreach information in the form of lesson plans for elementary school aged students that focuses on historic and/or other Scientific, Technological, Engineering, or Mathematical (STEM) activities based on the Big Sur arch bridges within a historic context.

The MOA is prepared in consultation with the SHPO and interested parties. Mitigation will commence after the MOA is executed and prior to the start of any work on the project.

DEPARTMENT OF TRANSPORTATION
Structure Maintenance & Investigations

Bridge Number : 44 0018
Facility Carried: STATE ROUTE 1
Location : 05-MON-001-62.97
City :
Inspection Date : 09/25/2009

Bridge Inspection Report

Inspection Type

Routine	FC	Underwater	Special	Other
X				

STRUCTURE NAME: GARRAPATA CREEK

CONSTRUCTION INFORMATION

Year Built : 1931
Year Widened: N/A
Length (m) : 87
Skew (degrees): 0
No. of Joints : 0
No. of Hinges : 0

Structure Description: RC open-spandrel arch and RC girder (2) approach spans on RC column (2) bents all founded on spread footings.

Span Configuration : 4 @ 25', 1 @ 5', 1 @ 150', 1 @ 5', 1 @ 25' (N).

LOAD CAPACITY AND RATINGS

Design Live Load: MS-13.5 OR HS-15
Inventory Rating: 36 metric tonnes Calculation Method: LOAD FACTOR
Operating Rating: 59.6 metric tonnes Calculation Method: LOAD FACTOR
Permit Rating : PPPPP
Posting Load : Type 3: Legal Type 3S2: Legal Type 3-3: Legal

DESCRIPTION ON STRUCTURE

Deck X-Section: 1' br, 0.7' cu, 24', 0.7' cu, 1' br.
Total Width: 8.3 m Net Width: 7.3 m No. of Lanes: 2
Rail Description: Concrete baluster. Rail Code : 0111
Min. Vertical Clearance: Unimpaired

DESCRIPTION UNDER STRUCTURE

Channel Description: Coastal mountain bedrock channel with steep gradient. Sand, gravel, and bedrock in the channel. Narrow section in active channel. Heavy vegetation on high flow sides of channel.

CONDITION TEXT

REVISIONS

The full quantity of Element 331 was down graded to condition state 4 due to the advanced deterioration of the railing.

CONDITION OF STRUCTURE

Access

Due to the height of the bridge, the approaches, railing, deck, joints, and abutments were inspected visually at close range. The soffit and the substructure were inspected with binoculars. The last close up access to the soffit appears to have been during the seismic retrofit in 1998. A UBIT assisted inspection will be scheduled when the 2012 UBIT schedule is released.

Deck & Rail

The rail end posts are covered with fine pattern cracking. See the attached photo. The barrier rail posts are highly deteriorated, with dozens of incipient spalls and five fully spalled posts. No work was recommended since there was an existing STRAIN

CONDITION TEXT

recommendation for a rail upgrade (Fiscal Year 2001). However, the railing needs replacement. An e-mail was sent to Roger Hunter 2/24/11 requesting the rail replacement be expedited.

The deck has a full width transverse crack between 1/64" and 1/16" on the main arch span, between sets of spandrel columns. See the attached photos. Minor deck cracking is common and does not reduce the ultimate capacity of the superstructure.

Superstructure

Efflorescence can be seen in the soffit at the joints. The joints were filled with mortar when the structure was made continuous during the retrofit.

Substructure

Arch:

There is an incipient spall at the top of the west rib at the bottom of SC-6 approximately 2' x 0.7'.

Columns:

The south face of the right column at Bent 3, has a vertical spall approximately 6" x 2" with exposed corroded reinforcing steel. Two smaller spalls are just below the upper spall. See the attached photos. This kind of spalling is common and is due to a combination of inadequate cover over the reinforcing steel and the high chloride content of the marine air. Many spalls were documented through the years and were patched.

Left and right spandrel columns 1 were patched. However, pattern cracking was noted in the patches; indicating the patches will eventually fail. See the attached photo. This was noted with the aid of binoculars.

It was noted through binoculars that in the main span, on the right right side, the first spandrel column appears to have map cracking in most of the column.

There is an incipient spall approximately 3" wide x 2' long at Bent 3, left column, mid height, SW corner. There is also map cracking less than 1/64" wide on the patches on both columns.

There is an incipient spall approximately 6" wide x 2.5' long at Bent 4, left column, base of NW corner.

Transverse Strut:

There is a crack in the SW face of the bottom strut near SC-4. The crack averages 1/8" wide x 1.5' long.

Spalling on the bridge railing and spandrel columns has been documented since the 1956 inspection report. Apparently, the condition will be ongoing unless new material for patching and sealing the concrete can be found.

SAFE LOAD CAPACITY

The spandrel spans and approach spans were rated in 1975 and the arches rated in 1978, the lower and more conservative ratings were for the spandrel spans are used. Rating factors were calculated with the Load Factor method using 0" AC. Based on an operating rating of 2.16, this bridge should sustain the State legal and permit loads.

CONDITION TEXT

HS20-44 design truck: Inventory Rating = 36 metric tons Rating Factor: 1.11
HS20-44 design truck: Operating Rating = 60 metric tons Rating Factor: 1.84

Permit: rating factor = 1.47 PPPPP

MISCELLANEOUS

A request was sent to Mike Lee of Maintenance Design on 2/24/2011 to produce a set of plan and elevation drawings that can be used as a template for noting element deficiencies.

This bridge is NBI labeled "Functionally Obsolete" due to the high ADT / bridge deck width ratio.

ELEMENT INSPECTION RATINGS

Elem No.	Element Description	Env	Total Qty	Units	Qty in each Condition State St. 1	St. 2	St. 3	St. 4	St. 5
12	Concrete Deck - Bare	3	730	sq.m.	730	0	0	0	0
44	Concrete Slab - Protected w/ Thin Overlay	2	750	sq.m.	750	0	0	0	0
110	Reinforced Conc Open Girder/Beam	3	174	m.	90	84	0	0	0
144	Reinforced Conc Arch	3	75	m.	74	1	0	0	
155	Reinforced Conc Floor Beam	2	55	m.	55	0	0	0	0
205	Reinforced Conc Column or Pile Extension	3	26	ea.	22	4	0	0	
215	Reinforced Conc Abutment	2	16	m.	16	0	0	0	0
320	P/S Concrete Approach Slab w/ or w-o/AC Ovly	2	4	ea.	4	0	0	0	0
331	Reinforced Conc Bridge Railing	3	186	m.	12	0	0	174	
358	Deck Cracking	2	1	ea.	0	1	0	0	

WORK RECOMMENDATIONS

RecDate: 09/25/2009
Action : Railing-Rehab
Work By: MAINT. CONTRACT
Status : PROPOSED
EstCost: $2,000
StrTarget: 2 YEARS
DistTarget:
EA:
Remove all unsound concrete and loose rust, then recast the affected areas.

RecDate: 02/10/1984
Action : Railing-Upgrade
Work By: STRAIN
Status : PROPOSED
EstCost: $324,720
StrTarget: 2 YEARS
DistTarget:
EA:
F1-03 / F2-0 / F3-0 / Rail Type-C.WIN

Inspected By : R. Fuentes / Y.Huang

Ricardo Fuentes

Ricardo L. Fuentes (Registered Civil Engineer)

STRUCTURE INVENTORY AND APPRAISAL REPORT

********** IDENTIFICATION **********

(1) STATE NAME- CALIFORNIA 069
(8) STRUCTURE NUMBER **44 0018**
(5) INVENTORY ROUTE(ON/UNDER)- ON 131000010
(2) HIGHWAY AGENCY DISTRICT 05
(3) COUNTY CODE 053 (4) PLACE CODE 00000
(6) FEATURE INTERSECTED- GARRAPATA CREEK
(7) FACILITY CARRIED- STATE ROUTE 1
(9) LOCATION- 05-MON-001-62.97
(11) MILEPOINT/KILOMETERPOINT 62.97
(12) BASE HIGHWAY NETWORK- PART OF NET 1
(13) LRS INVENTORY ROUTE & SUBROUTE 000000000101
(16) LATITUDE 36 DEG 25 MIN 06 SEC
(17) LONGITUDE 121 DEG 54 MIN 42 SEC
(98) BORDER BRIDGE STATE CODE % SHARE %
(99) BORDER BRIDGE STRUCTURE NUMBER

******** STRUCTURE TYPE AND MATERIAL *********

(43) STRUCTURE TYPE MAIN:MATERIAL- CONCRETE
TYPE- ARCH - DECK CODE 111
(44) STRUCTURE TYPE APPR:MATERIAL- CONCRETE CONT
TYPE- TEE BEAM CODE 204
(45) NUMBER OF SPANS IN MAIN UNIT 1
(46) NUMBER OF APPROACH SPANS 7
(107) DECK STRUCTURE TYPE- CIP CONCRETE CODE 1
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE- NONE CODE 0
B) TYPE OF MEMBRANE- NONE CODE 0
C) TYPE OF DECK PROTECTION- NONE CODE 0

********** AGE AND SERVICE **********

(27) YEAR BUILT 1931
(106) YEAR RECONSTRUCTED 0000
(42) TYPE OF SERVICE: ON- HIGHWAY 1
UNDER- WATERWAY 5
(28) LANES:ON STRUCTURE 02 UNDER STRUCTURE 00
(29) AVERAGE DAILY TRAFFIC 4500
(30) YEAR OF ADT 2000 (109) TRUCK ADT 3 %
(19) BYPASS, DETOUR LENGTH 199 KM

********** GEOMETRIC DATA **********

(48) LENGTH OF MAXIMUM SPAN 45.7 M
(49) STRUCTURE LENGTH 87.0 M
(50) CURB OR SIDEWALK: LEFT 0.2 M RIGHT 0.2 M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB 7.3 M
(52) DECK WIDTH OUT TO OUT 8.3 M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) 7.3 M
(33) BRIDGE MEDIAN- NO MEDIAN 0
(34) SKEW 0 DEG (35) STRUCTURE FLARED NO
(10) INVENTORY ROUTE MIN VERT CLEAR 99.99 M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR 7.3 M
(53) MIN VERT CLEAR OVER BRIDGE RDWY 99.99 M
(54) MIN VERT UNDERCLEAR REF- NOT H/RR 0.00 M
(55) MIN LAT UNDERCLEAR RT REF- NOT H/RR 0.0 M
(56) MIN LAT UNDERCLEAR LT 0.0 M

********** NAVIGATION DATA **********

(38) NAVIGATION CONTROL- NO CONTROL CODE 0
(111) PIER PROTECTION- CODE
(39) NAVIGATION VERTICAL CLEARANCE 0.0 M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR M
(40) NAVIGATION HORIZONTAL CLEARANCE 0.0 M

****
SUFFICIENCY RATING = 61.0
STATUS FUNCTIONALLY OBSOLETE
HEALTH INDEX 93.0
PAINT CONDITION INDEX = N/A

********** CLASSIFICATION ********** CODE

(112) NBIS BRIDGE LENGTH- YES Y
(104) HIGHWAY SYSTEM- NOT ON NHS 0
(26) FUNCTIONAL CLASS- MINOR ARTERIAL RURAL 06
(100) DEFENSE HIGHWAY- NOT STRAHNET 0
(101) PARALLEL STRUCTURE- NONE EXISTS N
(102) DIRECTION OF TRAFFIC- 2 WAY 2
(103) TEMPORARY STRUCTURE-
(105) FED.LANDS HWY- NOT APPLICABLE 0
(110) DESIGNATED NATIONAL NETWORK - NOT ON NET 0
(20) TOLL- ON FREE ROAD 3
(21) MAINTAIN- STATE HIGHWAY AGENCY 01
(22) OWNER- STATE HIGHWAY AGENCY 01
(37) HISTORICAL SIGNIFICANCE- ELIGIBLE 2

********** CONDITION ********** CODE

(58) DECK 6
(59) SUPERSTRUCTURE 6
(60) SUBSTRUCTURE 6
(61) CHANNEL & CHANNEL PROTECTION 6
(62) CULVERTS N

********* LOAD RATING AND POSTING ********* CODE

(31) DESIGN LOAD- MS-13.5 OR HS-15 3
(63) OPERATING RATING METHOD- LOAD FACTOR 1
(64) OPERATING RATING- 59.6
(65) INVENTORY RATING METHOD- LOAD FACTOR 1
(66) INVENTORY RATING- 36
(70) BRIDGE POSTING- EQUAL TO OR ABOVE LEGAL LOADS 5
(41) STRUCTURE OPEN, POSTED OR CLOSED- A
DESCRIPTION- OPEN, NO RESTRICTION

********** APPRAISAL ********** CODE

(67) STRUCTURAL EVALUATION 6
(68) DECK GEOMETRY 2
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL N
(71) WATER ADEQUACY 9
(72) APPROACH ROADWAY ALIGNMENT 8
(36) TRAFFIC SAFETY FEATURES 0111
(113) SCOUR CRITICAL BRIDGES 9

********** PROPOSED IMPROVEMENTS **********

(75) TYPE OF WORK- MISC STRUCTURAL WORK CODE 38
(76) LENGTH OF STRUCTURE IMPROVEMENT 87 M
(94) BRIDGE IMPROVEMENT COST $720,000
(95) ROADWAY IMPROVEMENT COST $144,000
(96) TOTAL PROJECT COST $1,209,600
(97) YEAR OF IMPROVEMENT COST ESTIMATE 2010
(114) FUTURE ADT 7334
(115) YEAR OF FUTURE ADT 2029

********** INSPECTIONS **********

(90) INSPECTION DATE 09/09 (91) FREQUENCY 24 MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL- NO MO A)
B) UNDERWATER INSP- NO MO B)
C) OTHER SPECIAL INSP- NO 96 MO C)

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

102 - Deck-Damage/Deterioration

Photo #2

Typical deck crack size.

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

119 - Rail-Damage/Deterioration

Photo #3

Pattern cracking on bridge rail end posts.

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

119 - Rail-Damage/Deterioration

Photo #4

Gross deterioration of bridge railing.

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

119 - Rail-Damage/Deterioration

Photo #5

Gross deterioration of bridge railing.

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

119 - Rail-Damage/Deterioration

Photo #6

Gross deterioration of bridge railing.

44 0018 GARRAPATA CREEK 05-MON-001-62.97

Sep 25, 2009 [AAAF]

119 - Rail-Damage/Deterioration

Photo #7

Gross deterioration of bridge railing.

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Making Conservation a California Way of Life

To: DISTRICT DIRECTORS

Date: November 12, 2019

From: STEVE TAKIGAWA
Deputy Director
Maintenance and Operations

CORY BINNS
Acting Deputy Director
Project Delivery

Subject: **MASH COMPLIANCE PLAN AND POLICY**

On December 23, 2016, the California Department of Transportation (Caltrans) established a timeline for implementation of roadside safety hardware and evaluation of new products under the Manual for Assessing Safety Hardware (MASH). The plan set specific dates when Caltrans will no longer allow the installation of non-MASH compliant safety devices.

If one or more Caltrans approved MASH compliant safety devices are available for a specific need, Caltrans must use the safety device(s) even if it may require a sole source contract. 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 NCHRP Report 350 device or engineering judgement is used for traffic safety devices, the engineer must consult with the District Traffic Safety Devices 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 MASH compliant safety hardware approved by Caltrans can be found at: <https://dot.ca.gov/programs/traffic-operations/mash>

For further questions regarding this process for traffic safety devices, please contact Duper Tong, Chief, Office of Traffic Engineering at (916) 654-5176 or by e-mail at <Duper.Tong@dot.ca.gov>. For bridge rails, transitions, sign supports and other breakaway hardware, contact Joel Magana, Chief, Office of Design and Technical Services at (916) 227-8018 or by e-mail at <Joel.Magana@dot.ca.gov>.

c: Jasvinderjit S. Bhullar, Chief, Division of Traffic Operations
Dennis T. Agar, Chief, Division of Maintenance
Rachel Falsetti, Chief, Division of Construction
Janice Benton, Chief, Division of Design
Thomas A. Ostrom, Chief, Division of Engineering Services
Dara Wheeler, Chief, Division of Research, Innovation and System Information
Duper Tong, Chief, Office of Traffic Engineering
Joel Magana, Chief, Office of Design and Technical Services

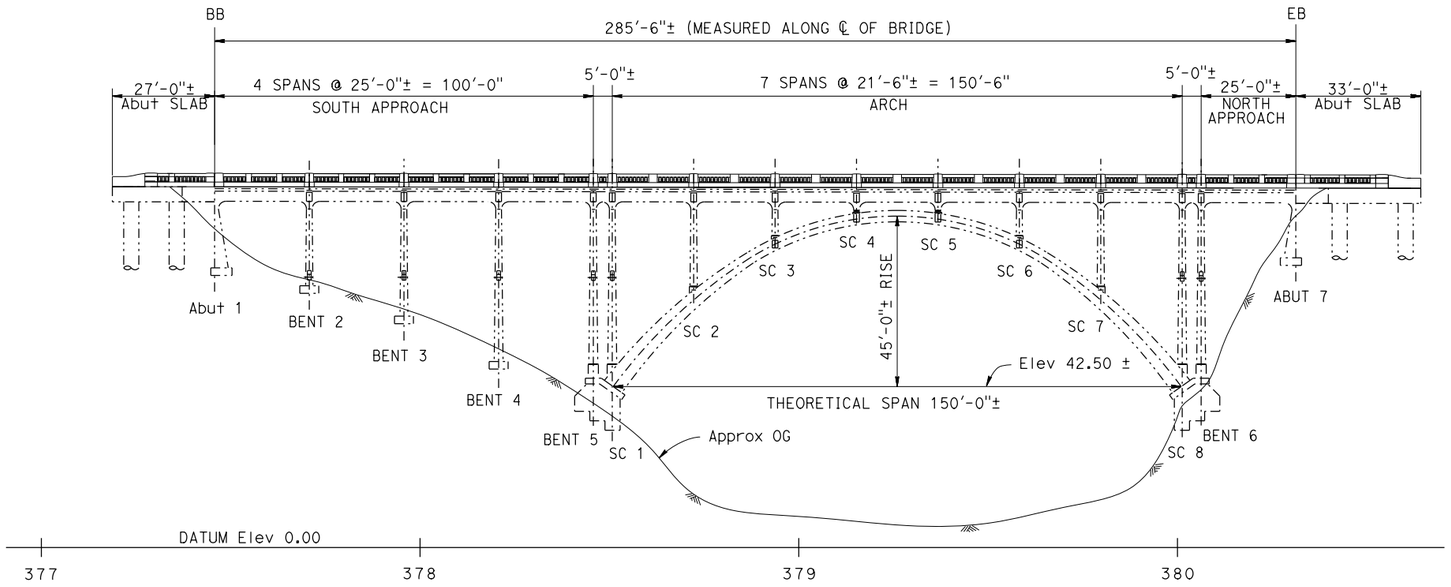
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

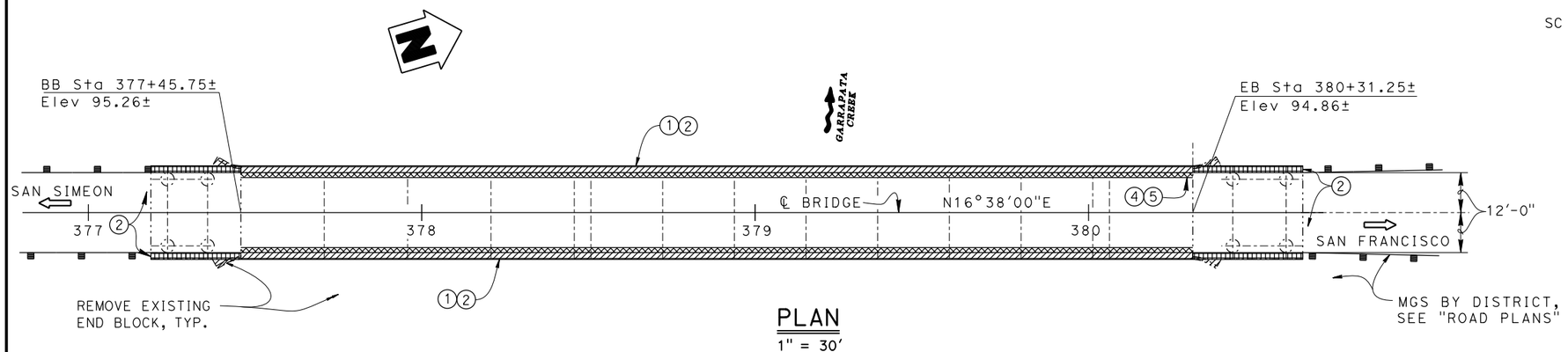
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



ELEVATION
1" = 30'



PLAN
1" = 30'

NOTES:

1. Remove existing Overhang, Curb and Barrier, replace with new Overhang and Barrier Type 86H(Mod) extended to end of Abutment slab. Existing bridge rail not shown in "ELEVATION VIEW" for clarity.
2. Barrier Type 86H(Mod) shown.
3. Stage construction with one-way traffic control will be necessary.
4. Paint: "GARRAPATA CREEK BRIDGE 1931"
5. Paint: "Br. No. 44-0018"

LEGEND:

——— INDICATES NEW CONSTRUCTION

·-·-·-·- INDICATES EXISTING STRUCTURE

INDICATES REMOVAL OF EXISTING CONCRETE BARRIER, END BLOCKS, CURB, 1" POLYESTER OVERLAY AND OVERHANG

PREPARE CONCRETE DECK, FINISH AND PLACE 1" POLYESTER CONCRETE OVERLAY. MATCH EXISTING GRADE

INDICATES REMOVAL OF EXISTING POLYESTER CONCRETE OVERLAY AT LOCATIONS OF NEW CONCRETE BARRIER TYPE 86H(MOD)

SC SPANDREL COLUMN

NOTE:
THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

Matt Schott
BRANCH CHIEF

DESIGN	BY Rene Coria	CHECKED Jim Gutierrez	SEISMIC ANALYSIS	BY X	CHECKED X
DETAILS	BY Mohammad Sharif	CHECKED Rene Coria	LAYOUT	BY Rene Coria	CHECKED Mohammad Sharif
QUANTITIES	BY Rene Coria	CHECKED Mohammad Sharif	SPECIFICATIONS	BY X	PLANS AND SPECS COMPARED X

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
BRIDGE DESIGN
BRANCH 18

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE
GENERAL PLAN

STRUCTURES DESIGN GENERAL PLAN SHEET (ENGLISH) (REVISION 2/8/2022)

DATE PLOTTED => 15-NOV-2022 TIME PLOTTED => 14:08
FILE => 44-0018-a-gp01.dgn USERNAME => s110279
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3603
PROJECT NUMBER & PHASE: 0516000163
COUNTY/ROUTE: Mon/001
CONTRACT No.: 05-1H800

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
~~9/22/22~~		10/13/22	~~10/06/22~~	1	15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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STANDARD PLANS DATED 2022

DETAIL	DESCRIPTION
A3A	ABBREVIATIONS (SHEET 1 OF 3)
A3B	ABBREVIATIONS (SHEET 2 OF 3)
A3C	ABBREVIATIONS (SHEET 3 OF 3)
A10A	LEGEND LINES AND SYMBOLS (SHEET 1 OF 5)
A10B	LEGEND LINES AND SYMBOLS (SHEET 2 OF 5)
A10C	LEGEND LINES AND SYMBOLS (SHEET 3 OF 5)
A10D	LEGEND LINES AND SYMBOLS (SHEET 4 OF 5)
A10E	LEGEND LINES AND SYMBOLS (SHEET 5 OF 5)
B7-8	DECK DRAINAGE DETAIL

GENERAL NOTES:

DESIGN: AASHTO LRFD Bridge Design Specifications, 8th Edition with California Amendments

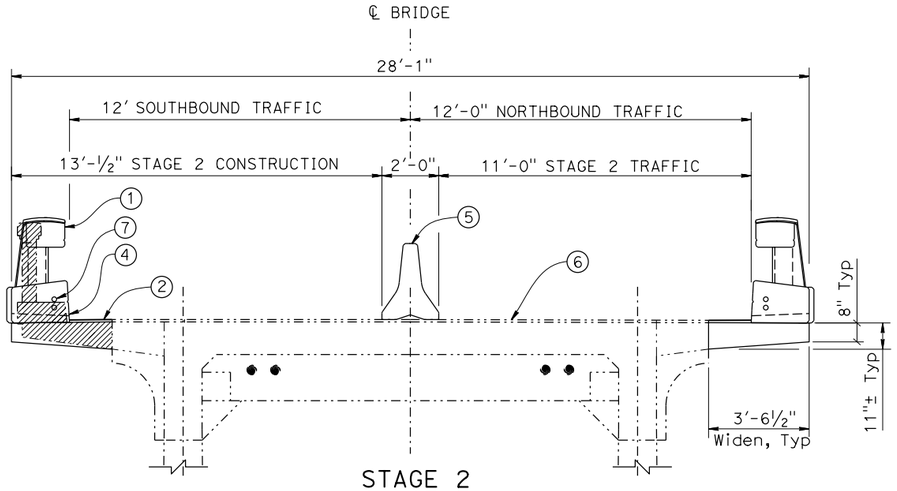
BARRIER LOADING: Test Level 4

DEAD LOAD: Includes 35 psf for future wearing surface

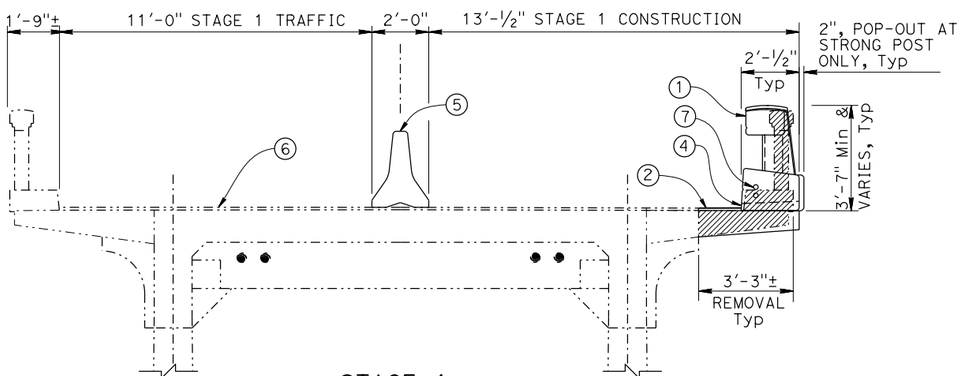
REINFORCED CONCRETE:

Structural Concrete (Polymer Fiber):
fy = 80 ksi
fy = 33 ksi (Existing Reinf)
f'c = 4.0 ksi, Polymer Fiber
n = 8

Concrete Barrier, Type 86(MOD):
fy = 60 ksi, Epoxy Coated
f'c = 3.6 ksi
n = 8



STAGE 2



STAGE 1

TYPICAL SECTION

⅜" = 1'-0"

INDEX TO PLANS

NOTES:

1. Remove existing Overhang, Curb and Barrier, replace with new Overhang and Barrier Type 86H(Mod) extended to end of Abutment slab. Barrier to have integral color to match existing deck color.
2. New 1" polyester overlay to match existing slope and grade.
3. Stage construction with one-way traffic control will be necessary.
4. Scupper or drop-thru Deck Drains to be installed in or near new Barriers. See STANDARD PLANS B7-8 "SCUPPER DETAIL"
5. Temporary K-Rail, see "ROADWAY PLANS".
6. Existing 1" polyester overlay to remain.
7. 2 ea 1-1½ ø Conduit at each Barrier for future utilities.

LEGEND:

——— INDICATES NEW CONSTRUCTION

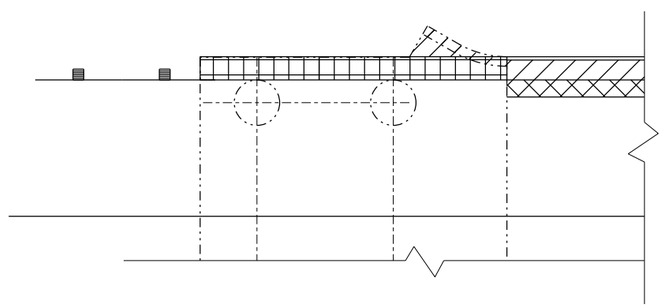
·—·—·— INDICATES EXISTING STRUCTURE

INDICATES REMOVAL OF EXISTING CONCRETE BARRIER, END BLOCKS, CURB, 1" POLYESTER OVERLAY AND OVERHANG

PREPARE CONCRETE DECK, FINISH AND PLACE 1" POLYESTER CONCRETE OVERLAY. MATCH EXISTING GRADE

INDICATES REMOVAL OF EXISTING POLYESTER CONCRETE OVERLAY AT LOCATIONS OF NEW CONCRETE BARRIER TYPE 86H(MOD)

SC SPANDREL COLUMN



DESIGN	BY Rene Coria	CHECKED X	
DETAILS	BY Mohammad Sharif	CHECKED X	
QUANTITIES	BY X	CHECKED X	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
BRIDGE DESIGN
BRANCH 18

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE
INDEX TO PLAN

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 29-NOV-2022 TIME PLOTTED => 15:42
FILE => 44-0018-a-itp.dgn USERNAME => s110279
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3603
PROJECT NUMBER & PHASE: 0516000163
COUNTY/ROUTE: Mon/001
CONTRACT No.: 05-1H800

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9/22/22		11/29/22	11/18/22	2	15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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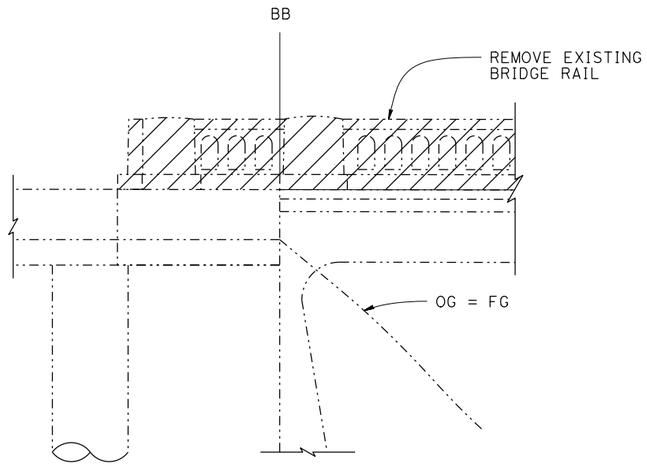
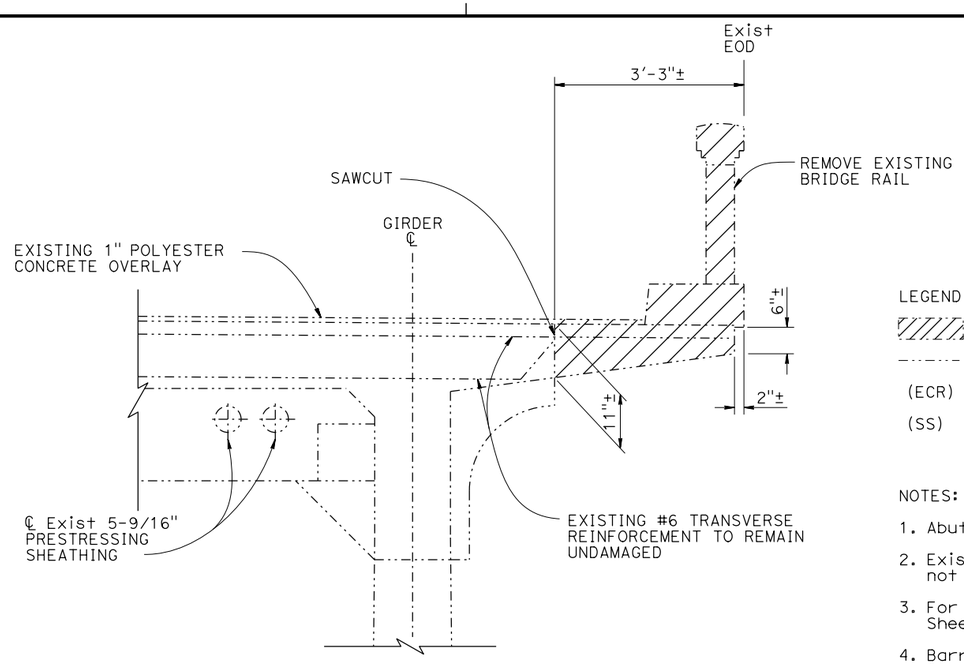


ABUTMENT ELEVATION
1/4" = 1'-0"



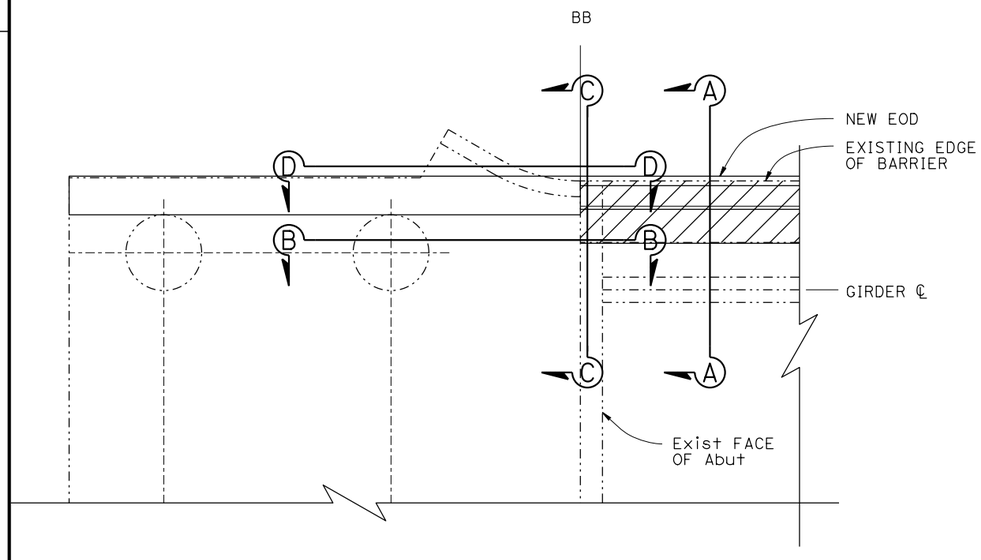
REMOVAL SECTION A-A
3/4" = 1'-0"

LEGEND:

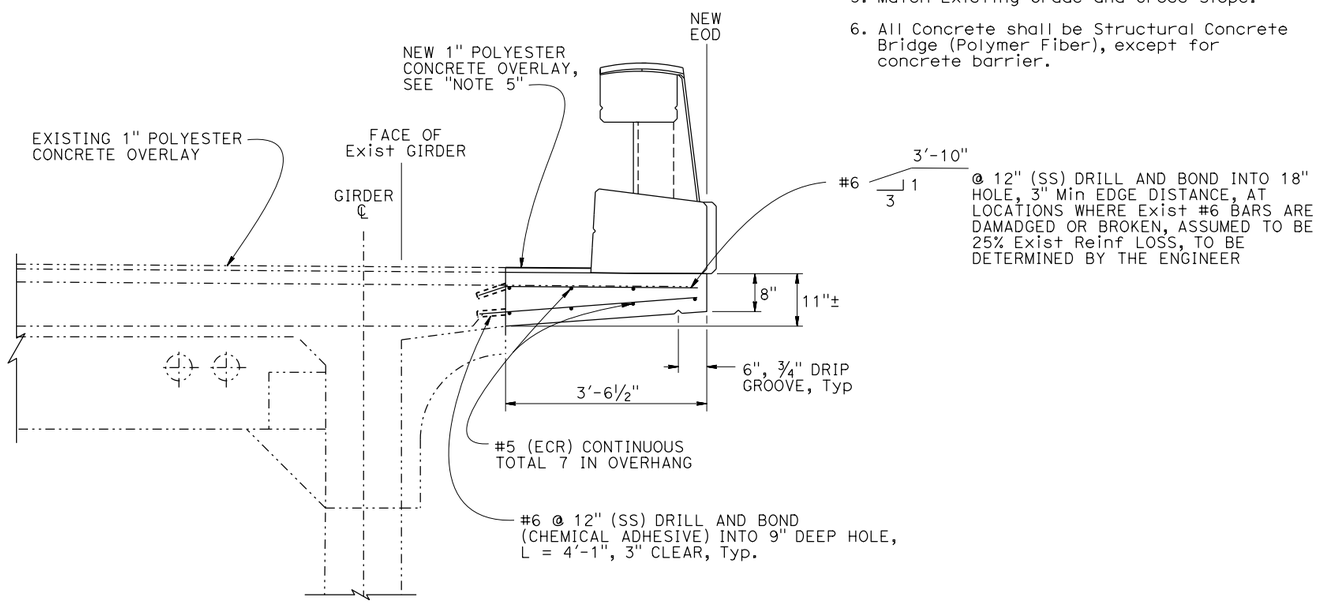
- Bridge Removal (Portion)
- Existing Structure
- (ECR) Epoxy coated reinforcement bar
- (SS) Stainless steel reinforcement bar

NOTES:

1. Abutment 1 shown, Abutment 7 similar.
2. Exist Concrete Barrier Rail not shown in Plan View for Clarity.
3. For Section B-B, C-C and D-D, see Sheet "OVERHANG DETAILS NO. 2".
4. Barrier Reinforcement not shown for Clarity, see "CONCRETE BARRIER TYPE 86H(MOD) DETAILS No. 7, 8, 9, AND 10" sheets for details.
5. Match Existing Grade and Cross Slope.
6. All Concrete shall be Structural Concrete Bridge (Polymer Fiber), except for concrete barrier.



ABUTMENT PART PLAN
1/4" = 1'-0"



RECONSTRUCTION SECTION A-A
3/4" = 1'-0"

DESIGN	BY Rene Coria	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES BRIDGE DESIGN BRANCH 18	BRIDGE No. 44-0018
DETAILS	BY Mohammad Sharif	CHECKED X			POST MILE 63.0
QUANTITIES	BY X	CHECKED X			

GARRAPATA CREEK BRIDGE
OVERHANG DETAILS NO. 1

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 15-NOV-2022 TIME PLOTTED => 14:09
FILE => 44-0018-t-brdt01.dgn USERNAME => s110279

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3603
PROJECT NUMBER & PHASE: 0516000163

COUNTY/ROUTE: Mon/001
CONTRACT No.: 05-1H800

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9/12/22	9/20/22	10/05/22		3	15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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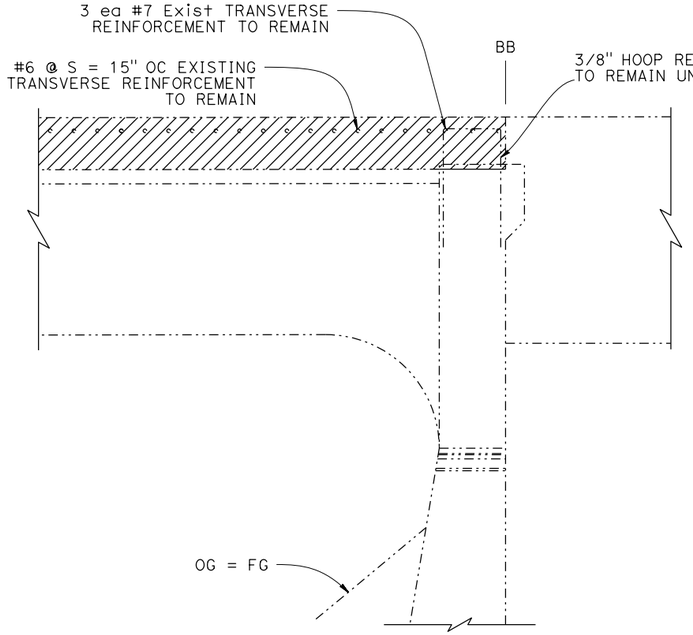
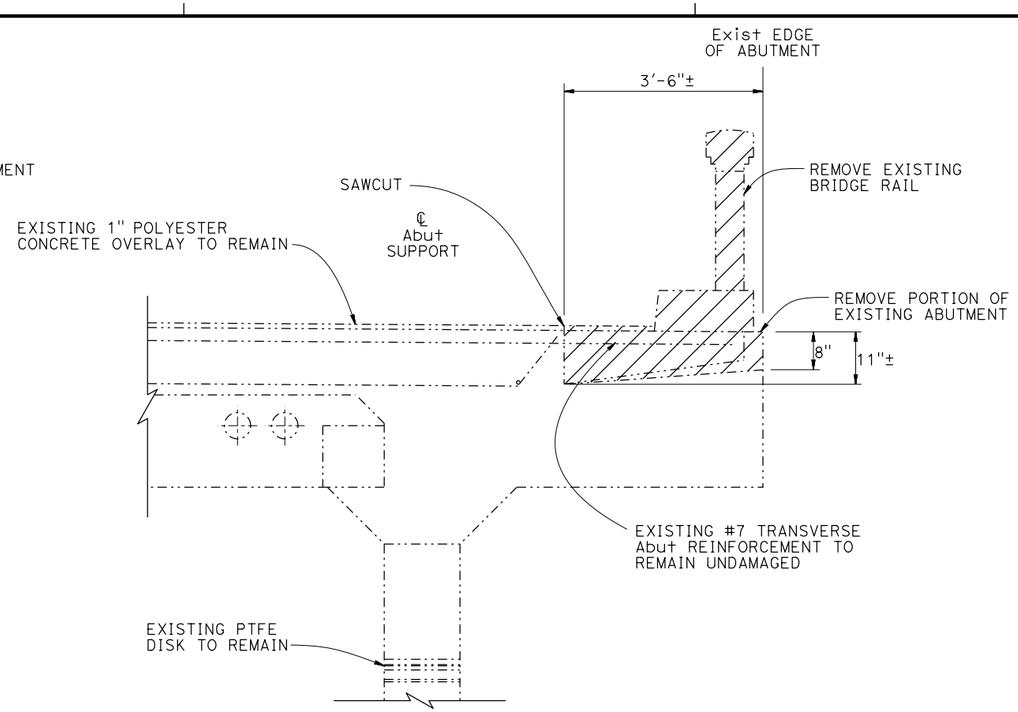


REMOVAL SECTION B-B
3/4" = 1'-0"



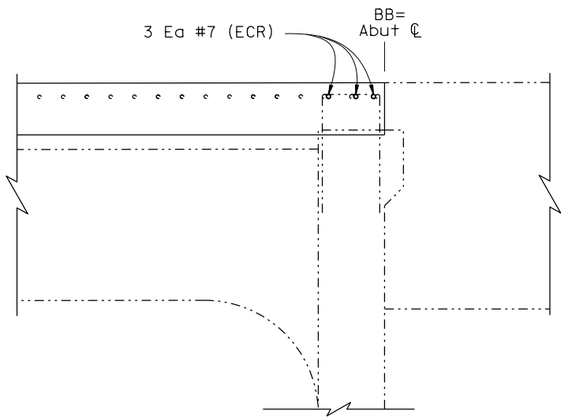
REMOVAL SECTION C-C
3/4" = 1'-0"

NOTES:

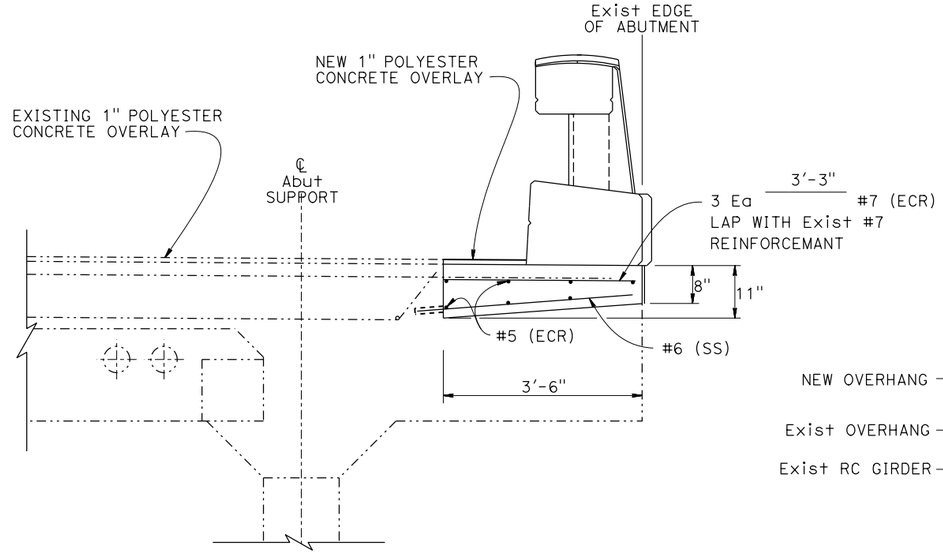
1. For Location of Section B-B and C-C, see Sheet "OVERHANG DETAILS NO. 1".
2. Abut 1 shown, Abut 7 similar.
3. Barrier Reinforcement not shown for Clarity, see "CONCRETE BARRIER TYPE 86H(MOD) DETAILS No. 7, 8, 9, AND 10" sheets for details.
4. Match Existing Grade and Cross Slope.
5. New Deck Reinforcement, see "OVERHANG DETAILS NO. 1" and "BARRIER TYPE 86H(Mod)" Sheets.
6. Overhang Concrete shall be Structural Concrete, Bridge (Polymer Fiber).

LEGEND:

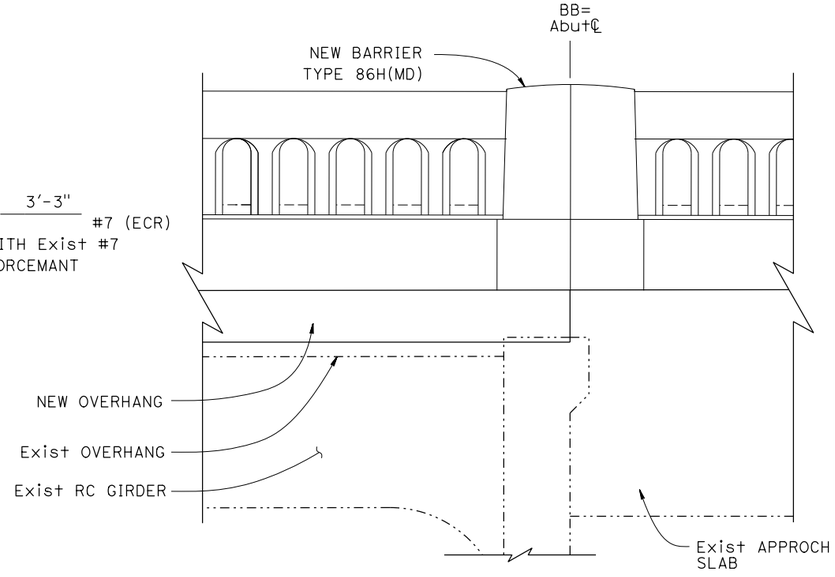
- Bridge Removal (Portion)
- Existing Structure
- (ECR) Epoxy coated reinforcement bar
- (SS) Stainless steel reinforcement bar



RECONSTRUCTION SECTION B-B
3/4" = 1'-0"



RECONSTRUCTION SECTION C-C
3/4" = 1'-0"



SECTION D-D
3/4" = 1'-0"

DESIGN	BY Rene Coria	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES BRIDGE DESIGN BRANCH 18	BRIDGE No. 44-0018	GARRAPATA CREEK BRIDGE
DETAILS	BY Mohammad Sharif	CHECKED X			POST MILE 63.0	OVERHANG DETAILS NO. 2
QUANTITIES	BY X	CHECKED X				

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 15-NOV-2022 TIME PLOTTED => 14:09 ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3
FILE => 44-0018-t-brdt02.dgn USERNAME => s110279

UNIT: 3603 PROJECT NUMBER & PHASE: 0516000163 COUNTY/ROUTE: Mon/001 CONTRACT No.: 05-1H880

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9/12/22	9/20/22	10/05/22		4	15

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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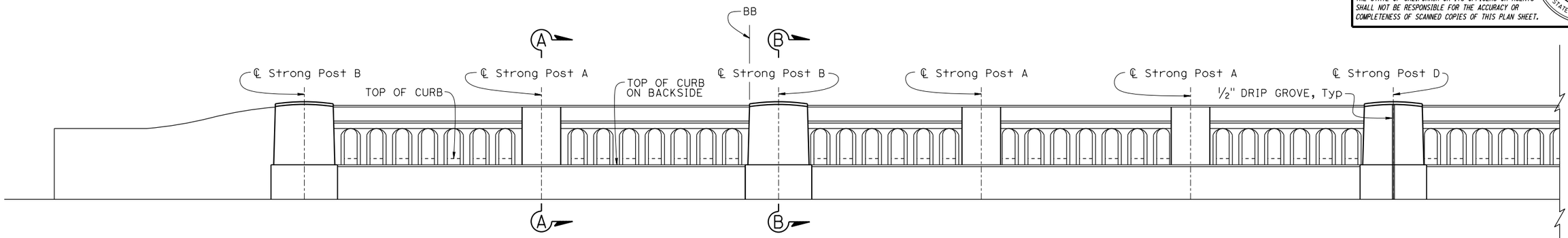
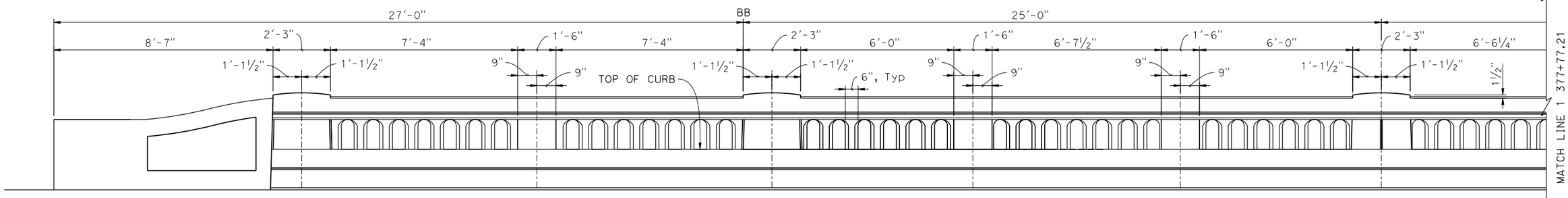


BACKSIDE ELEVATION

½" = 1'-0"

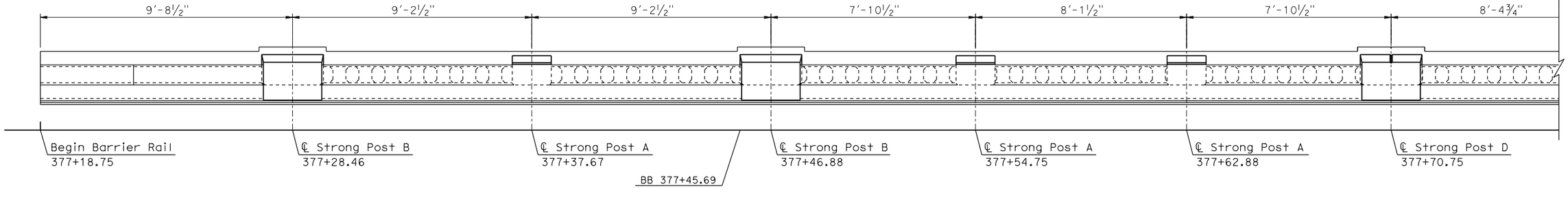
NOTE: Backside View (from ocean side) 6" Balusters



TRAFFIC SIDE ELEVATION

½" = 1'-0"

NOTE: Front View (from traffic side) 6" Balusters



PLAN

½" = 1'-0"

DESIGN	BY Kimberly Mori	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF DESIGN AND TECHNICAL SERVICES SPECIAL DESIGN BRANCH B	BRIDGE No. 44-0018
DETAILS	BY David Elliott	CHECKED X			POST MILE 63.0
QUANTITIES	BY X	CHECKED X			

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 1

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:31
FILE => 44-0018-c-sp01.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-1-22	9-1-22			X	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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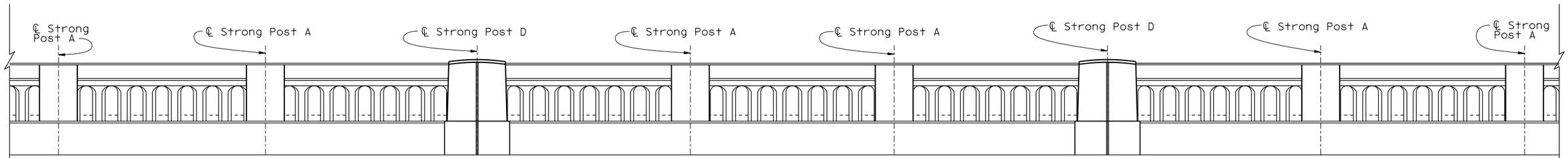
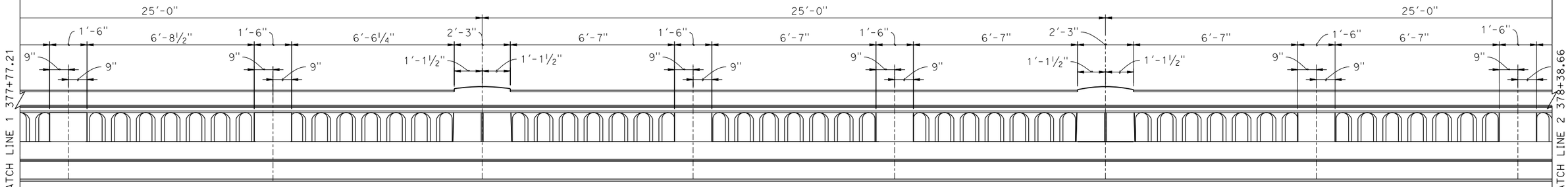
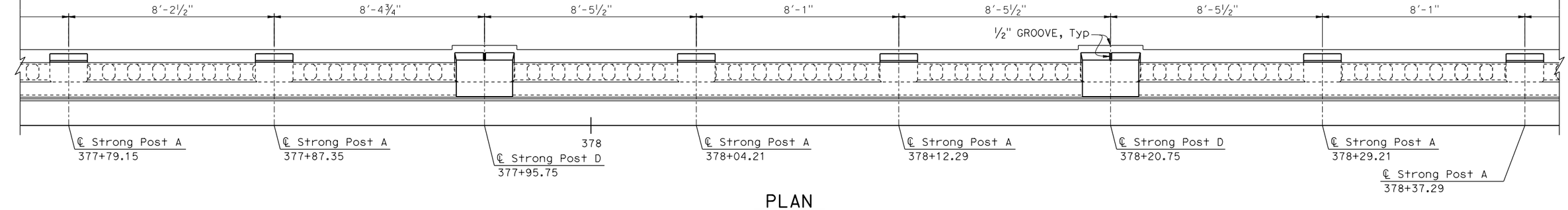


BACKSIDE ELEVATION
½" = 1'-0"



TRAFFIC SIDE ELEVATION
½" = 1'-0"



PLAN
½" = 1'-0"

	BY	CHECKED
DESIGN	Kimberly Mori	X
DETAILS	David Elliott	X
QUANTITIES	X	X

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH **B**

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 2

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:31
FILE => 44-0018-c-sp02.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-1-22	9-1-22			X	X

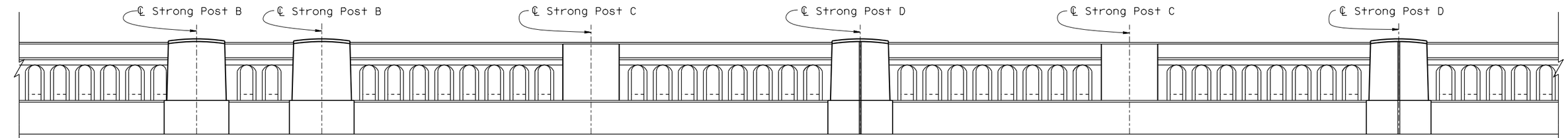
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER _____ DATE X

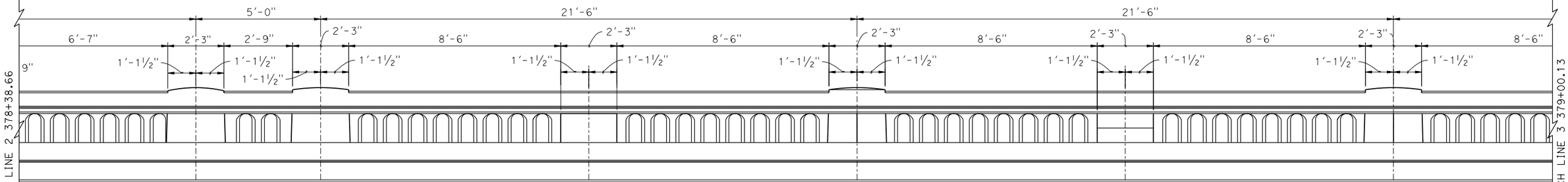
PLANS APPROVAL DATE _____

REGISTERED PROFESSIONAL ENGINEER
X
No. X
Exp. X
CIVIL
STATE OF CALIFORNIA

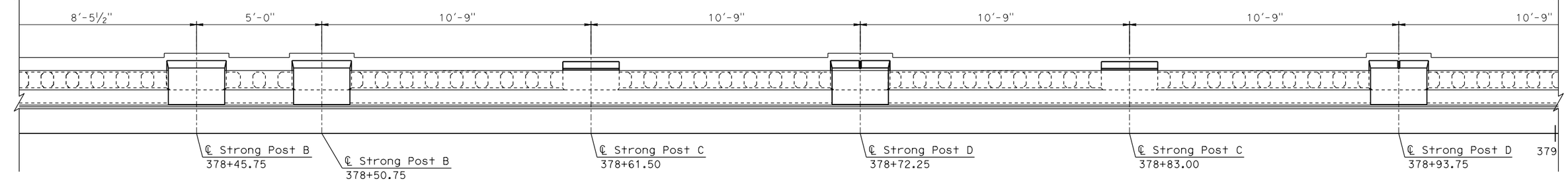
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



BACKSIDE ELEVATION
½" = 1'-0"



TRAFFIC SIDE ELEVATION
½" = 1'-0"



PLAN
½" = 1'-0"

DESIGN	BY X	CHECKED X	
DETAILS	BY X	CHECKED X	
QUANTITIES	BY X	CHECKED X	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH **B**

BRIDGE No.	
44-0018	
POST MILE	
63.0	

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 3

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:31
FILE => 44-0018-c-sp03.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-5-22	9-1-22			X	X

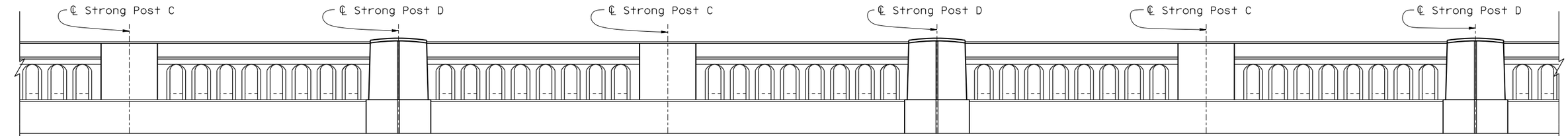
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER _____ DATE X

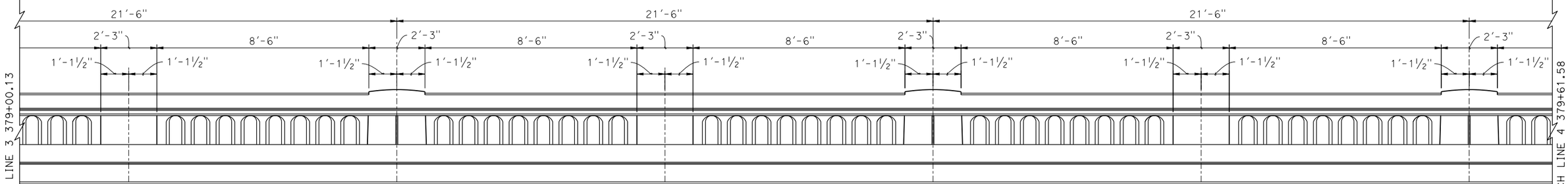
PLANS APPROVAL DATE _____

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

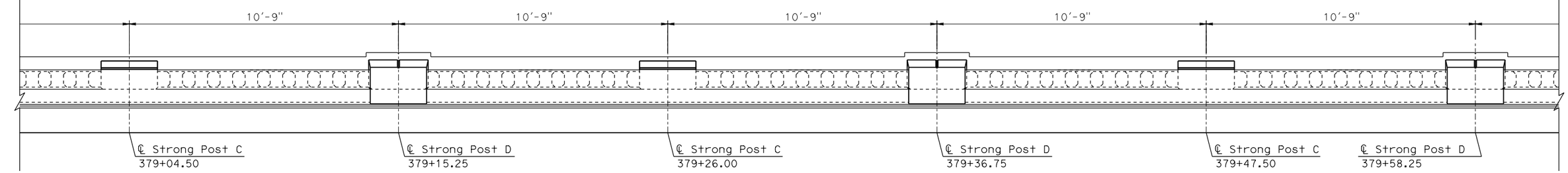
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



BACKSIDE ELEVATION
½" = 1'-0"



TRAFFIC SIDE ELEVATION
½" = 1'-0"



PLAN
½" = 1'-0"

DESIGN	BY Kimberly Mori	CHECKED X	
DETAILS	BY David Elliott	CHECKED X	
QUANTITIES	BY X	CHECKED X	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH B

BRIDGE No.	44-0018
POST MILE	63.0

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 4

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:31
FILE => 44-0018-c-sp04.dgn USERNAME => s123982
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-5-22	9-1-22			X	X

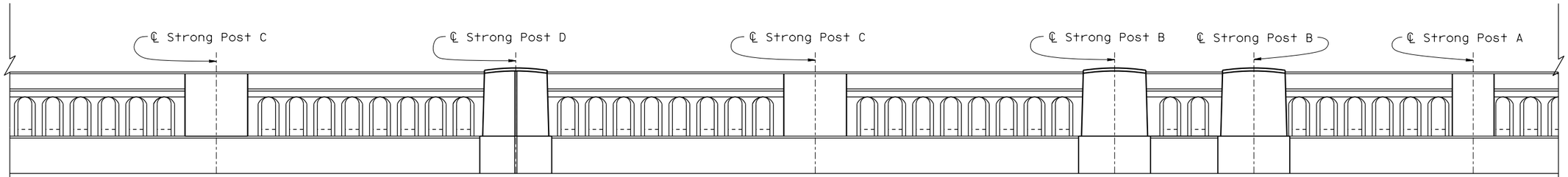
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER _____ X DATE

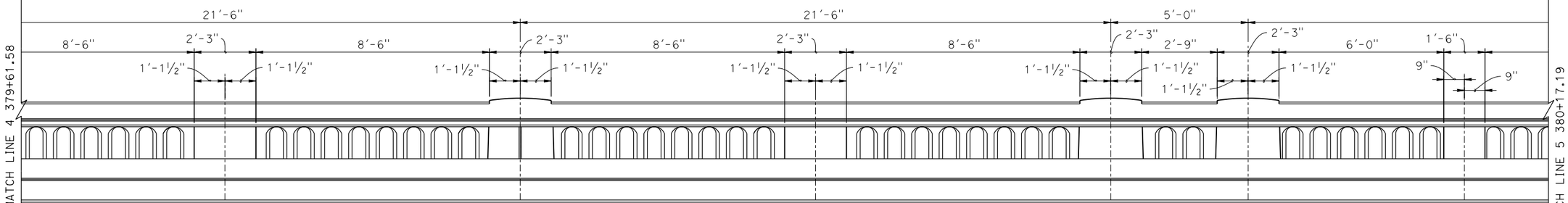
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

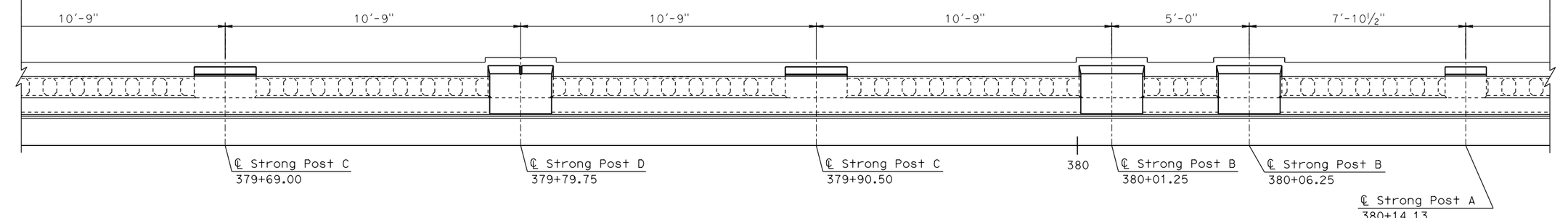
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



BACKSIDE ELEVATION
½" = 1'-0"



TRAFFIC SIDE ELEVATION
½" = 1'-0"



PLAN
½" = 1'-0"

	BY	CHECKED
DESIGN	Kimberly Mori	X
DETAILS	David Elliott	X
QUANTITIES	X	X

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH B

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE
CONCRETE BARRIER TYPE 86H DETAILS No. 5

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:31
FILE => 44-0018-c-sp05.dgn USERNAME => s123982
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
~~8-5-22~~	9-1-22			X	X

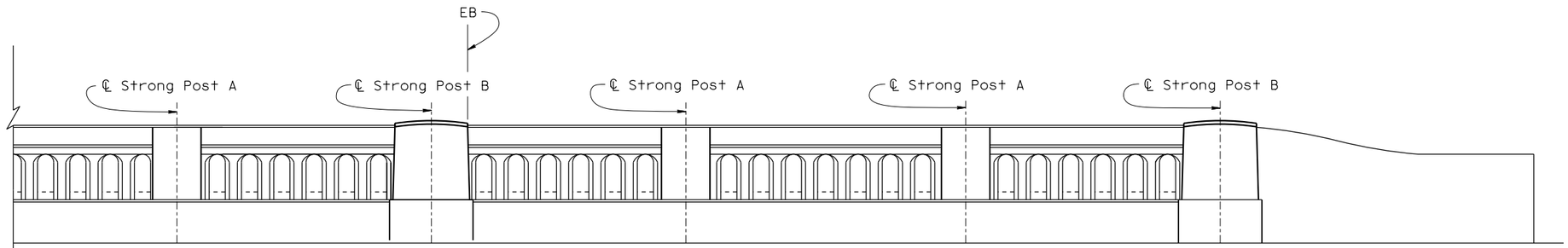
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

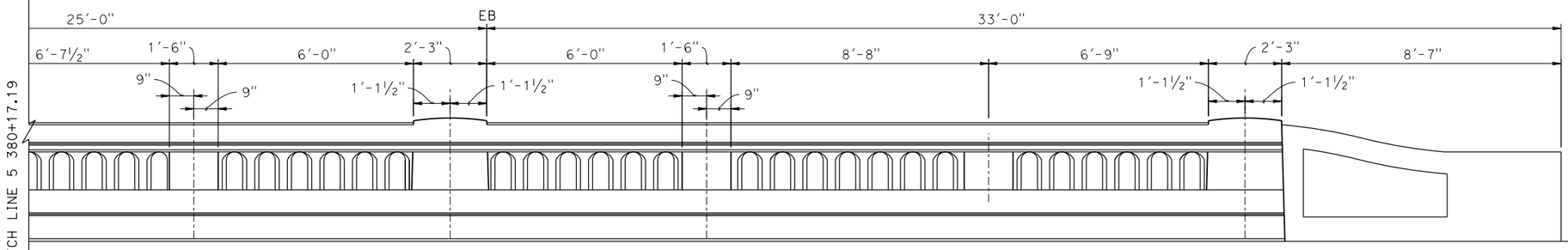
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

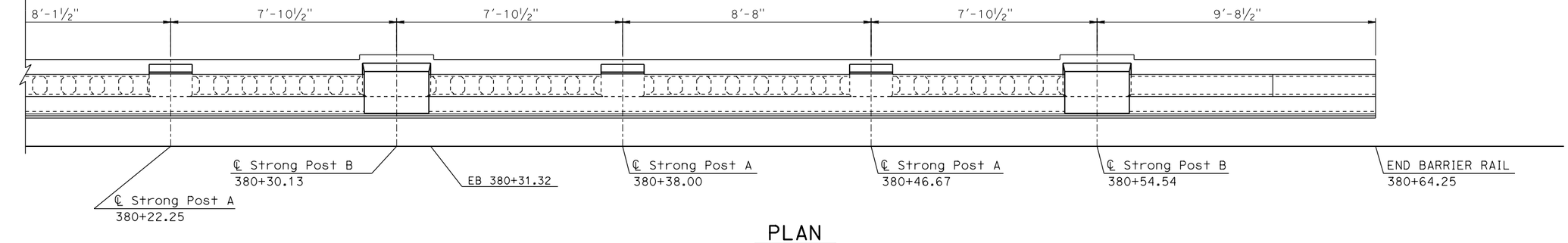
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



BACKSIDE ELEVATION
½" = 1'-0"



TRAFFIC SIDE ELEVATION
½" = 1'-0"



PLAN
½" = 1'-0"

DESIGN	BY Kimberly Mori	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
DETAILS	BY David Elliott	CHECKED X	DIVISION OF ENGINEERING SERVICES OFFICE OF DESIGN AND TECHNICAL SERVICES SPECIAL DESIGN BRANCH B
QUANTITIES	BY X	CHECKED X	BRIDGE No. 44-0018 POST MILE 63.0

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 6

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp06.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-5-22	9-1-22			X	X

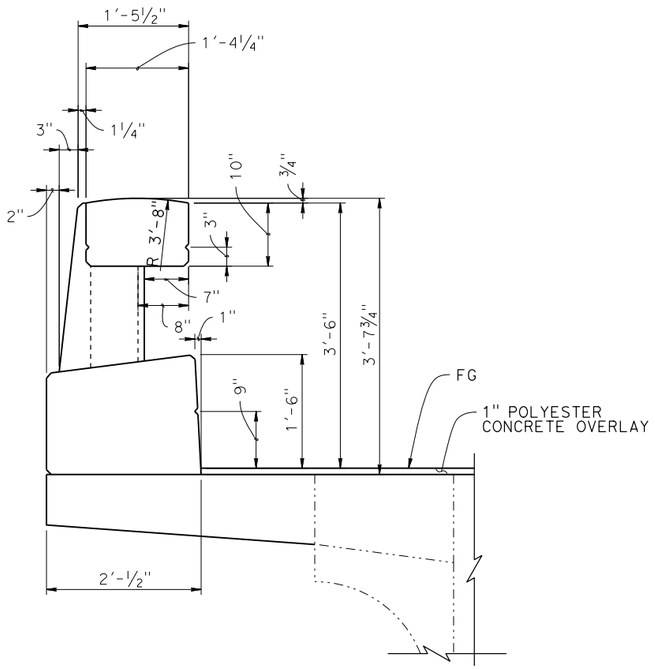
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER _____ DATE X

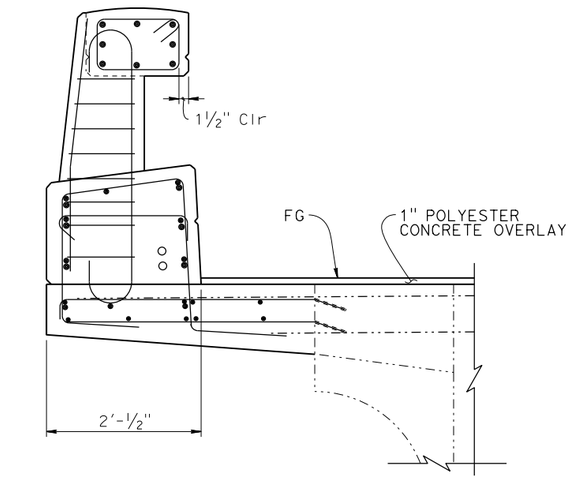
PLANS APPROVAL DATE _____

REGISTERED PROFESSIONAL ENGINEER
X
No. X
Exp. X
CIVIL
STATE OF CALIFORNIA

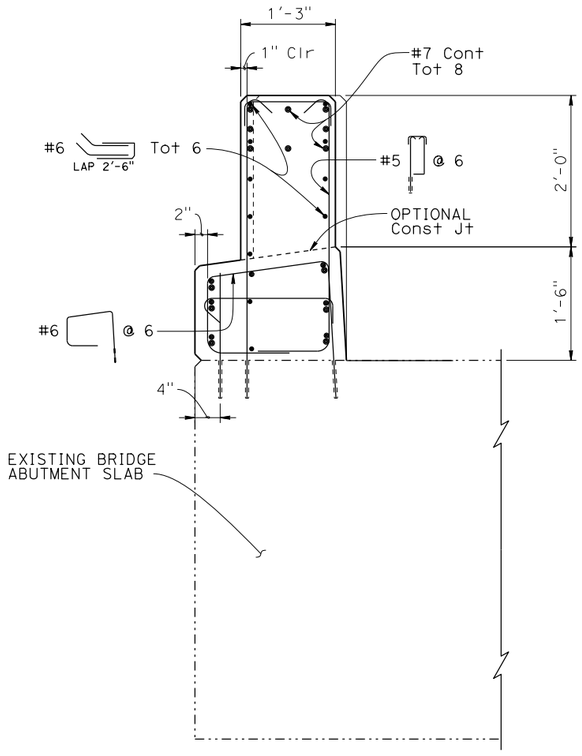
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



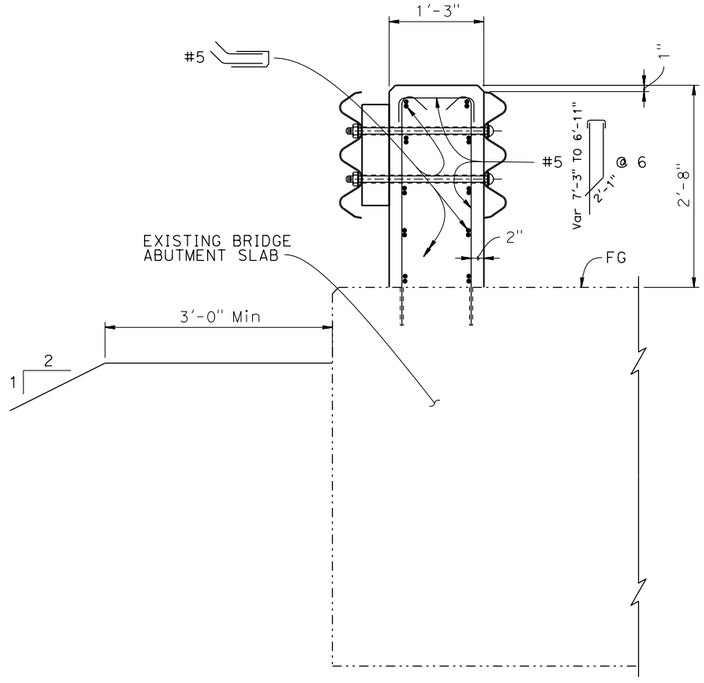
TYPICAL SECTION
1" = 1'-0"



TYPICAL SECTION - TYPE 86H
1" = 1'-0"



SECTION D-D
1" = 1'-0"



SECTION E-E
1" = 1'-0"

DESIGN	BY Kimberly Mori	CHECKED X	
DETAILS	BY David Elliott	CHECKED X	
QUANTITIES	BY X	CHECKED X	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH B

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE
CONCRETE BARRIER TYPE 86H DETAILS No. 7

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp07.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-1-22	8-9-22	9-2-22		X	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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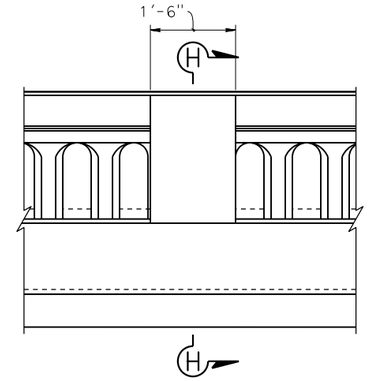
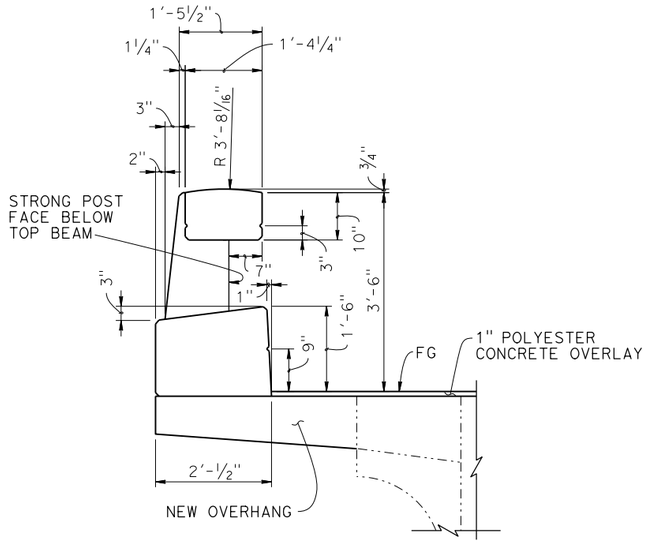


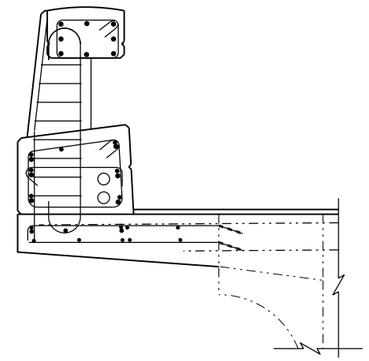
STRONG POST A TYPICAL

3/4" = 1'-0"



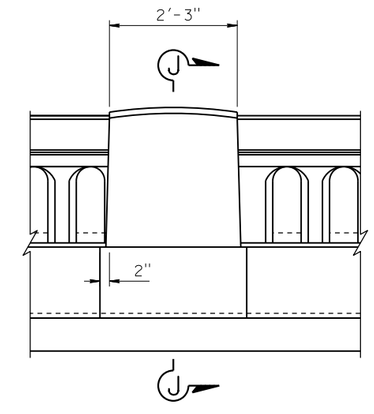
SECTION H-H

NOTE: Strong Post A cross section dimensions shown, Strong Post C similar.



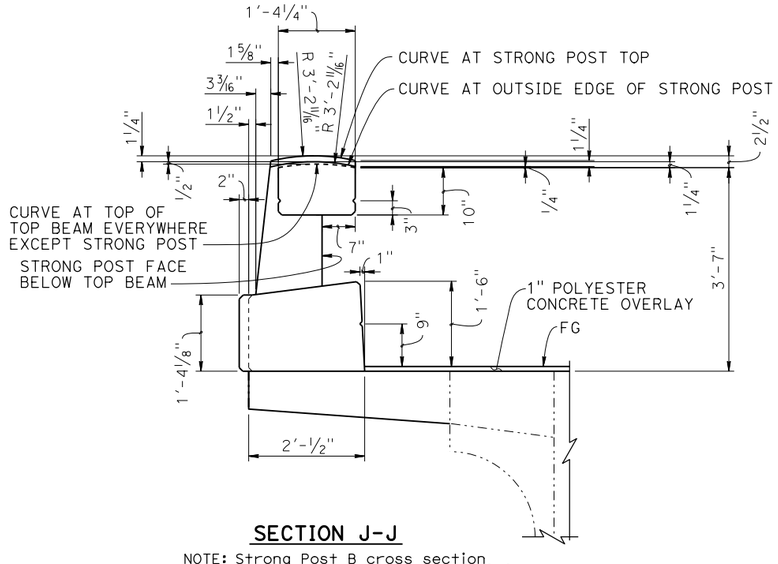
SECTION H-H

NOTE: Strong Post A rebar shown, Strong Post C similar.



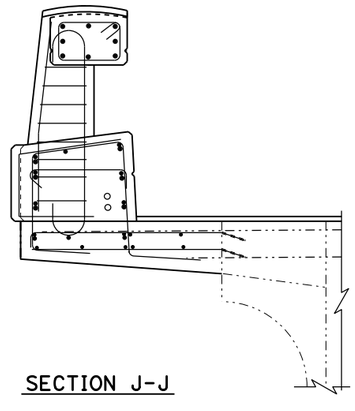
STRONG POST B TYPICAL

3/4" = 1'-0"



SECTION J-J

NOTE: Strong Post B cross section dimensions shown, Strong Post D similar.



SECTION J-J

NOTE: Strong Post B rebar shown, Strong Post D similar.

DESIGN	BY Kimberly Mori	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF DESIGN AND TECHNICAL SERVICES SPECIAL DESIGN BRANCH B	BRIDGE No. 44-0018	GARRAPATA CREEK BRIDGE
DETAILS	BY David Elliott	CHECKED X			POST MILE 63.0	CONCRETE BARRIER TYPE 86H DETAILS No. 8
QUANTITIES	BY X	CHECKED X				

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp08.dgn USERNAME => s123982
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-1-22	8-8-22	9-2-22		X	X

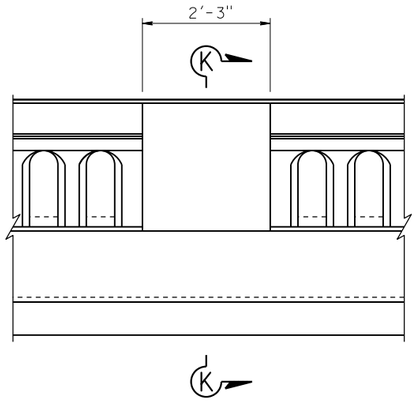
Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER _____ DATE X

PLANS APPROVAL DATE _____

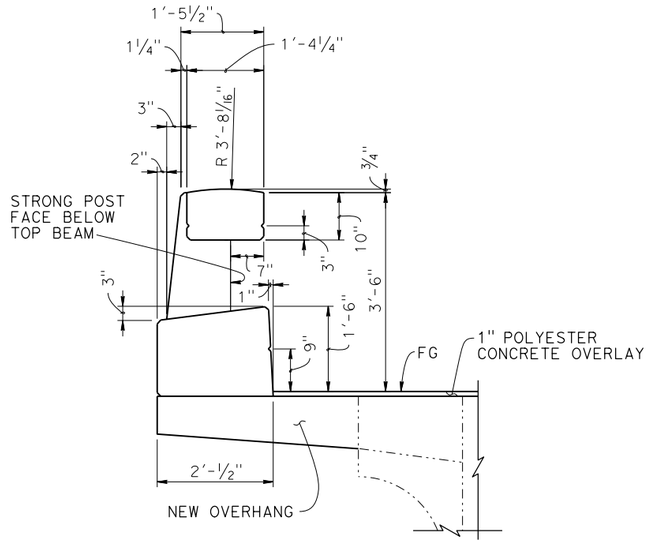
REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



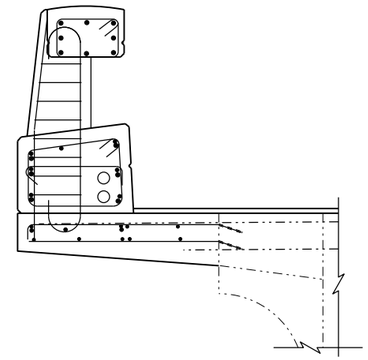
STRONG POST C TYPICAL

3/4" = 1'-0"



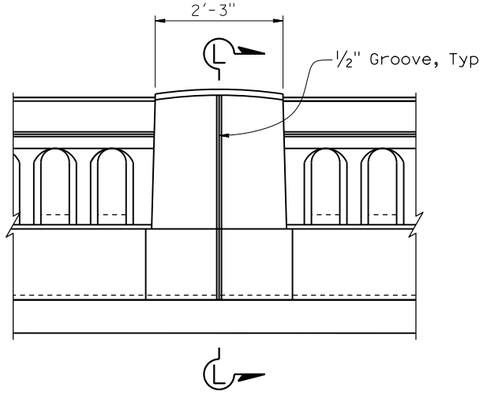
SECTION K-K

NOTE: Strong Post C cross section dimensions shown, Strong Post A similar.



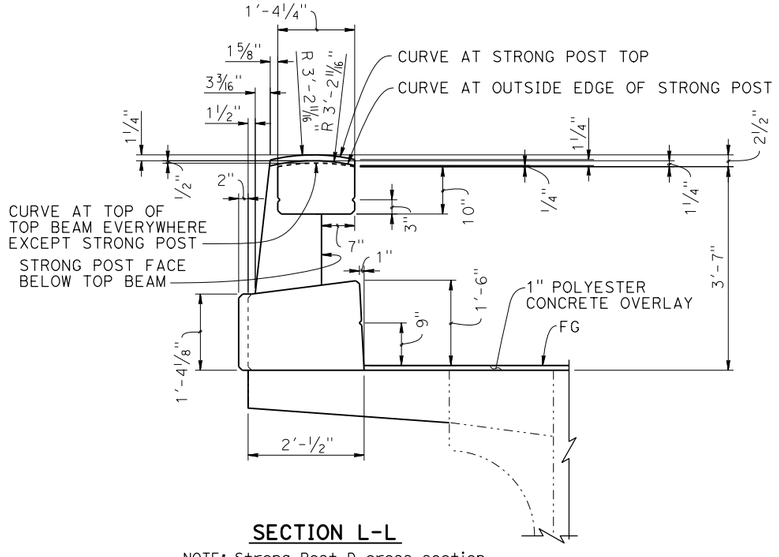
SECTION K-K

NOTE: Strong Post C rebar shown, Strong Post A similar.



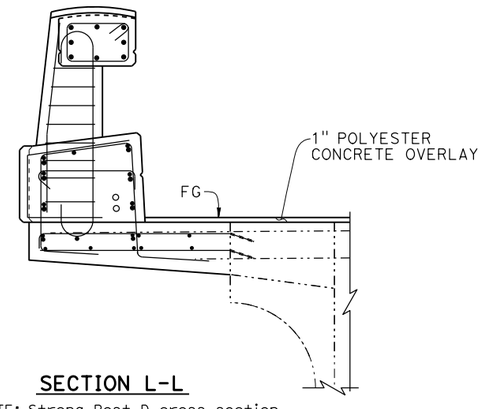
STRONG POST D TYPICAL

3/4" = 1'-0"



SECTION L-L

NOTE: Strong Post D cross section dimensions shown, Strong Post B similar.



SECTION L-L

NOTE: Strong Post D cross section reinforcement shown, Strong Post B similar.

DESIGN	BY Kimberly Mori	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF DESIGN AND TECHNICAL SERVICES SPECIAL DESIGN BRANCH B	BRIDGE No. 44-0018
DETAILS	BY David Elliott	CHECKED X			POST MILE 63.0
QUANTITIES	BY X	CHECKED X			

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 9

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp09.dgn USERNAME => s123982

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
9-7-22	----	----		X	X

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

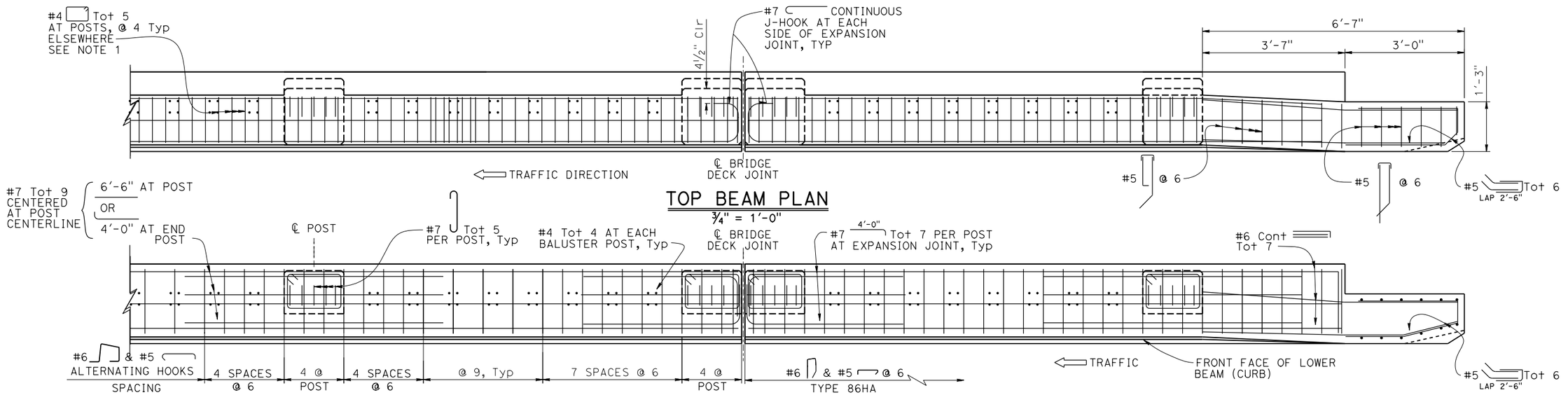
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:

1. Adjust spacing of #4 hoops at post location as necessary to avoid locations of the drill and bond threaded rods attaching the tubular bicycle railing to the top of the top concrete beam. See the "TUBULAR BICYCLE RAILING DETAIL" on the "CONCRETE BARRIER TYPE 86H DETAILS No. 5" sheet.

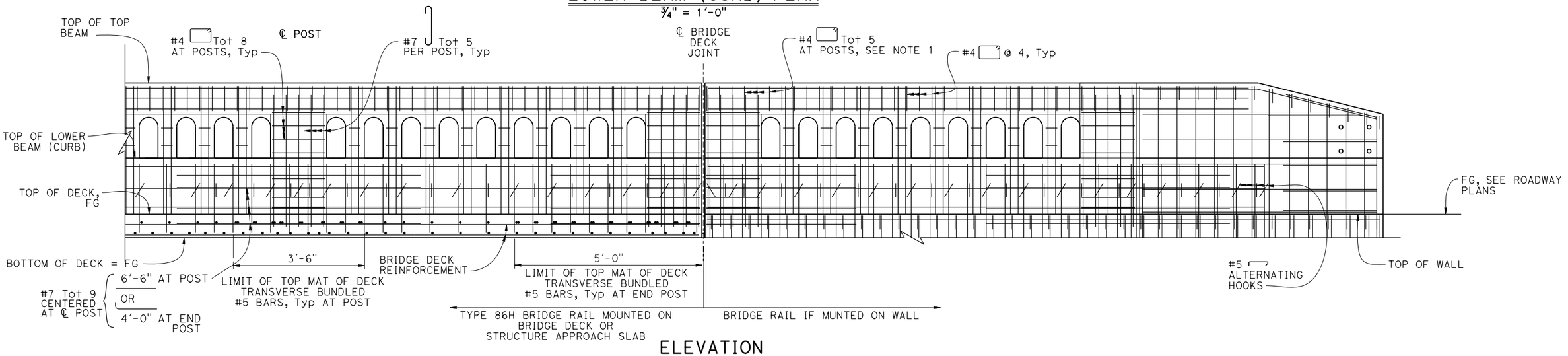


TOP BEAM PLAN

¾" = 1'-0"

LOWER BEAM (CURB) PLAN

¾" = 1'-0"



ELEVATION

¾" = 1'-0"

	BY	CHECKED
DESIGN	Kimberly Mori	X
DETAILS	David Elliott	X
QUANTITIES	X	X

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES
OFFICE OF DESIGN AND TECHNICAL SERVICES
SPECIAL DESIGN BRANCH B

BRIDGE No. 44-0018
POST MILE 63.0

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 10

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

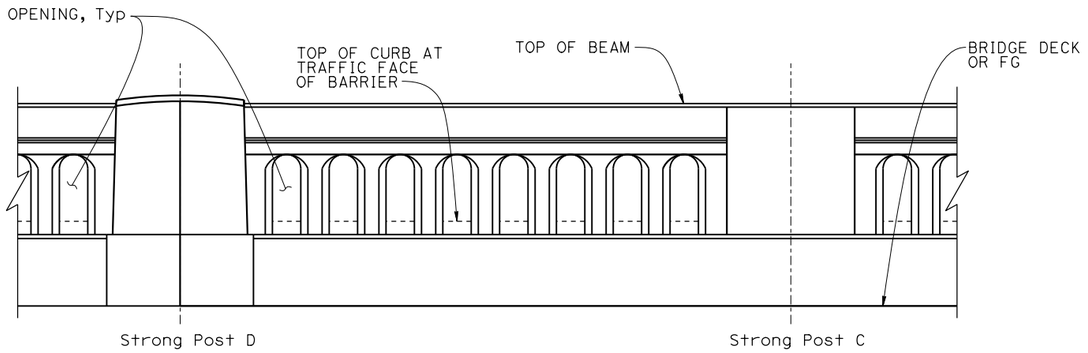
DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp10.dgn USERNAME => s123982
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631

COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES					SHEET	OF
8-5-22					X	X



ELEVATION WITH CHAMFERED BALUSTERS

CLEAR OPENINGS & BALUSTERS

3/4"= 1'-0"

NOTES:

1. For "SECTION A-A" and " SECTION B-B" location see "CONCRETE BARRIER TYPE 86H No. 1" sheet.
2. For details not shown, see other sheets.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — X — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

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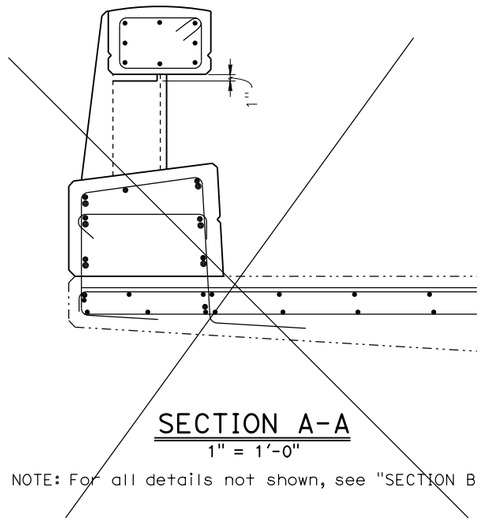
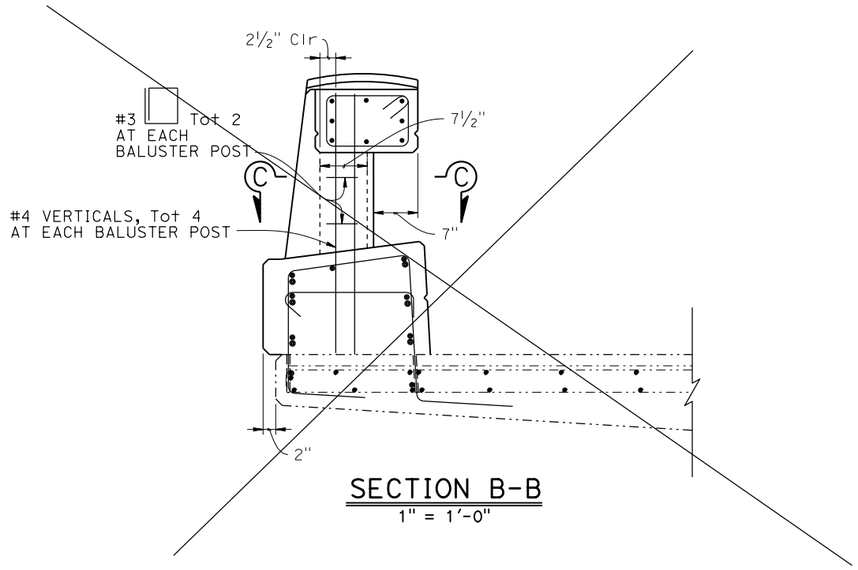


SECTION A-A

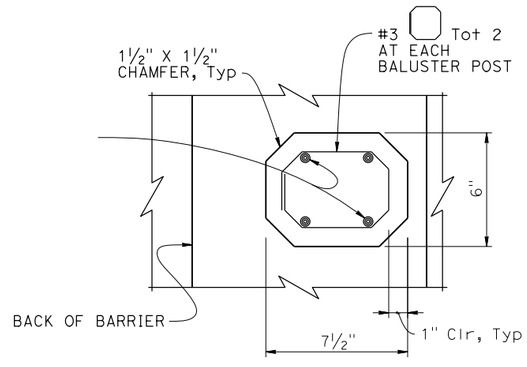
1" = 1'-0"

NOTE: For all details not shown, see "SECTION B



SECTION B-B

1" = 1'-0"



SECTION C-C

3" = 1'-0"

DESIGN	BY Kimberly Mori	CHECKED X	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES OFFICE OF DESIGN AND TECHNICAL SERVICES SPECIAL DESIGN BRANCH B	BRIDGE No. 44-0018
DETAILS	BY David Elliott	CHECKED X			POST MILE 63.0
QUANTITIES	BY X	CHECKED X			

GARRAPATA CREEK BRIDGE

CONCRETE BARRIER TYPE 86H DETAILS No. 11

STRUCTURES DESIGN DETAIL SHEET (ENGLISH) (REVISION 3/10/2021)

DATE PLOTTED => 7-SEP-2022 TIME PLOTTED => 08:32
FILE => 44-0018-c-sp11.dgn USERNAME => s123982
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3619
PROJECT NUMBER & PHASE: 05160001631
COUNTY/ROUTE: Mon/1
CONTRACT No.: 05-1H8004

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
8-1-22	8-8-22			X	X