

San Benito Route 156 Improvement Project

San Benito County, California
District 5–SBt–156–PM 3.0/R8.2

05-344900
05000005050

SCH# 2002091009

Draft Supplemental Environmental Impact Report



IMPROVEMENT PROJECT

Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by the California Department of Transportation under its assumption of responsibility pursuant to 23 U.S. Code 327.

March 2011



What's in this document?

The California Department of Transportation (Caltrans), as California Environmental Quality Act (CEQA) lead agency, as assigned by the Federal Highway Administration, has prepared this Draft Supplemental Environmental Impact Report, which responds to a decision of the Superior Court of California for the County of San Benito, which precluded Caltrans from approving the project or certifying the Environmental Impact Report without first preparing an additional review document following the procedures applicable to those relating to supplemental environmental impact reports, which document must update the 2004 hydrological study; explain the standards used to determine noise impacts and whether those standards are uniform statewide; circulate to the public information regarding the California tiger salamander that was added to the 2008 Final Environmental Impact Report; and provide additional analysis and explanation of feasible mitigation measures for loss of farmland. In all other respects, the 2008 Final Environmental Impact Report was determined adequate and complied with the California Environmental Quality Act and other applicable laws.

What should you do?

- Please read this Draft Supplemental Environmental Impact Report. Additional copies of this document are available for review at:

Caltrans District 5 office, 50 Higuera Street, San Luis Obispo, CA 93401
San Benito County Free Library, 470 5th Street, Hollister, CA 95023, (831) 636-4107
San Juan Bautista Library, 801 2nd Street, San Juan Bautista, CA 95045, (831) 623-4687
- Attend the open forum public hearing at the San Juan Elementary School, San Juan Bautista, on April 6, 2011 between 4:30 and 7:30 pm
- We welcome your comments regarding the contents of the draft Supplemental Environmental Impact Report. If you have any concerns regarding the environmental document, please attend the open forum public hearing or send your written comments to Caltrans by the deadline.
- Submit comments via U.S. mail to Caltrans at the following address:
G. William "Trais" Norris III, Branch Chief
Sierra Pacific Environmental Analysis Branch
California Department of Transportation
2015 East Shields Avenue, Suite 100, Fresno, CA 93726
- Submit comments via email to: trais_norris@dot.ca.gov
- Submit comments by the deadline: **May 5, 2011**

Widen State Route 156 from The Alameda in San Juan Bautista to 0.2 mile
east of Fourth Street (Business Route 156) in San Benito County

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

Submitted Pursuant to: State Division 13, Public Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

3/9/11
Date of Approval


JENNIFER H. TAYLOR
Acting Chief Central Region Environmental
California Department of Transportation

The following person may be contacted for additional information concerning this document:

G. WILLIAM "TRAVIS" NORRIS III, Branch Chief
Sierra Pacific Environmental Analysis Branch
California Department of Transportation
2015 E. Shields Avenue, Suite 100
Fresno, CA 93726

Abstract

The Proposed Project consists of the construction, operation, and maintenance of the widening of State Route 156 from The Alameda in San Juan Bautista to 0.2 mile east of Fourth Street (Business Route 156) in San Benito County. The purpose of the project is to improve route continuity, reduce congestion, and increase safety. This Draft Supplemental Environmental Impact Report responds to a decision of the Superior Court of California for the County of San Benito, which precluded Caltrans from approving the project or certifying the Environmental Impact Report without first preparing an additional review document following the procedures applicable to those relating to supplemental environmental impact reports, which document must update the 2004 hydrological study; explain the standards used to determine noise impacts and whether those standards are uniform statewide; circulate to the public information regarding the California tiger salamander that was added to the 2008 Final Environmental Impact Report; and provide additional analysis and explanation of feasible mitigation measures for loss of farmland. In all other respects, the 2008 Final Environmental Impact Report was determined adequate and complied with the California Environmental Quality Act and other applicable laws.



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List of Abbreviated Terms

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
dBA	decibel
EIR	Environmental Impact Report
PM	post mile

Chapter 1 Introduction

1.1 Type of Environmental Review

The Draft Supplemental Environmental Impact Report to the previously prepared and certified State Route 156 Improvement Project Final Environmental Impact Report (October 2008) (State Clearinghouse Number 2009091009) presents additional analysis or information in regard to hydrology, noise, California tiger salamander, and farmland impacts, as ordered by the San Benito County Superior Court, Case Number CU-08-00176, *Save San Juan Valley v. California Department of Transportation* In the Judgment and Writ of Mandate issued on February 3, 2010. In that decision, from a judgment of the Superior Court of San Benito County, the court held that the California Department of Transportation (Caltrans) failed to comply with the California Environmental Quality Act (CEQA) in certifying the Environmental Impact Report and approving the project in the following particulars:

- a. The Environmental Impact Report's analysis of hydrology and flooding impacts and the cumulative impacts thereof are inadequate insofar as the 2004 hydrologic study must be updated, taking into account the San Benito County Water District comments.
- b. The Environmental Impact Report's analysis of noise impacts is inadequate insofar as the standards used to determine noise impacts need to be specified with more particularity and the standards applied to the project shall be consistent with those applied statewide.
- c. The information regarding the California tiger salamander that was added to the 2008 Final Environmental Impact Report must be circulated to the public as part of the supplemental Environmental Impact Report.
- d. The Environmental Impact Report requires additional analysis and explanation of feasible mitigation measures for loss of farmland.

The judgment further added that:

- e. Any findings, including the Statement of Overriding Considerations, relying on the above-stated deficiencies are inadequate.
- f. As to the remaining issues raised by the petition, the court denies such challenges.

The Writ of Mandate precludes Caltrans from approving the project or certifying the Environmental Impact Report without first preparing an additional environmental review document following the procedures applicable to those relating to supplemental environmental impact reports and for that document to contain “adequate information to address the deficiencies specified in the judgment.”

Accordingly, this Draft Supplemental Environmental Impact Report is prepared in compliance with the applicable requirements of California Environmental Quality Act Guideline 15163, which states the following:

- a. The lead or responsible agency may choose to prepare a supplement to an Environmental Impact Report rather than a subsequent Environmental Impact Report if:
 1. Any of the conditions described in Section 15162 (Subsequent Environmental Impact Reports and Negative Declarations) would require preparation of a subsequent Environmental Impact Report, and
 2. Only minor additions or changes would be necessary to make the previous Environmental Impact Report adequately apply to the project in the changed situation.
- b. The supplement to the Environmental Impact Report need contain only the information necessary to make the previous Environmental Impact Report adequate for the project as revised.
- c. A supplement to an Environmental Impact Report shall be given the same kind of notice and public review as is given to a draft Environmental Impact Report under Section 15087.
- d. A supplement to an Environmental Impact Report may be circulated by itself without re-circulating the previous draft or final Environmental Impact Report.
- e. When the agency decides whether to approve the project, the decision-making body shall consider the previous Environmental Impact Report as revised by the supplemental Environmental Impact Report. A finding under Section 15091 shall be made for each significant effect shown in the previous Environmental Impact Report as revised.

In preparing this Draft Supplemental Environmental Impact Report, Caltrans has referenced the 2008 Final Environmental Impact Report and has made use of that document and its supporting administrative record as necessary and appropriate. Because the court denied all challenges to the 2008 Final Environmental Impact Report other than those set forth in the judgment, this document considers only the areas set aside pursuant to the judgment and the writ. In addition, once it has received and responded to comments on the Draft Supplement Environmental Impact Report, Caltrans may certify the Supplemental Environmental Impact Report if Caltrans determines that substantial evidence supports the required findings for certification.

1.2 Incorporation by Reference

In accordance with California Environmental Quality Act Guideline 15150, this Draft Supplemental Environmental Impact Report incorporates the following by reference: Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact: San Benito 156 Improvement Project, San Benito County, California (October 2008). These documents can be reviewed at:

Caltrans District Office, 50 Higuera Street, San Luis Obispo, CA 93401

San Benito County Free Library, 470 5th Street, Hollister, CA 95023, (831) 636-4107

San Juan Bautista Library, 801 2nd Street, San Juan Bautista, CA 95045, (831) 623-4687

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Trais Norris, 2015 East Shields Avenue, Suite 100, Fresno, CA 93726; phone (559) 243-8178 Voice, or use the California Relay Service TTY number, 1-800-735-2929.

California Environmental Quality Act Guideline 15150(a) states that an Environmental Impact Report “may incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public. Where all or part of another document is incorporated by reference, the incorporated language shall be considered to be set forth in full as part of the text of the Environmental Impact Report.” California Environmental Quality Act goes on to state that incorporated text shall be briefly summarized, and the entire document be made available for public review (California Environmental Quality Act Guidelines 15150(b) and (c). As explained above, the 2008 Environmental Impact Report contains detailed environmental analysis of the

proposed project, in compliance with the requirements of the California Environmental Quality Act, other than as set forth in the judgment.

1.3 Public Review

In compliance with the California Environmental Quality Act and the California Environmental Quality Act Guidelines, this Draft Supplemental Environmental Impact Report is being circulated for 45 days to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on it. Pursuant to California Environmental Quality Act Guideline 15163(b), this Draft Supplemental Environmental Impact Report contains only the information necessary to make the previous Environmental Impact Report adequate. In this instance, that information is precisely defined by the court judgment and the writ. The public can review this information at the address listed in Section 1.2.

Public notice of the publication of this Draft Supplemental Environmental Impact Report marks the beginning of the 45-day public review period. Caltrans will receive written comments during this review period at the following address:

G. William "Trais" Norris, III
2015 E. Shields Avenue, Suite 100
Fresno, CA 93726
Phone: (805) 542-4711 or
E-mail: trais_norris@dot.ca.gov

Caltrans will respond in writing to all comments that are received on the Draft Supplemental Environmental Impact Report during the 45-day public review period. Pursuant to California Environmental Quality Act Guideline 15088, comments received after the close of the 45-day public review period may not receive a response.

Caltrans provides that no person be excluded from participation or otherwise be subjected to discrimination under any program or activity administered by the Department (see Appendix A for the Title VI Policy Statement).

1.4 Supplemental Environmental Impact Report Certification

The Draft Supplemental Environmental Impact Report, together with responses to comments on the Draft Supplemental Environmental Impact Report and any changes or corrections made to the Draft Supplemental Environmental Impact Report in response to comments, will constitute the Final Supplemental Environmental Impact Report. Caltrans will then review the project, the Final Supplemental Environmental Impact Report, the 2008 Final Environmental Impact Report, and any public testimony or comments and,

based on that information and all other substantial record evidence, will decide whether to certify the Final Supplemental Environmental Impact Report and approve the project. As California Environmental Quality Act Guideline 15163(e) requires, Caltrans will make a finding on each potentially significant effect identified in the portions of the 2008 Final Environmental Impact Report not altered by the judgment, as well as the Supplemental Environmental Impact Report.

1.5 Supplemental Environmental Impact Report Organization

The organization of this Draft Supplemental Environmental Impact Report mirrors the organization of the 2008 Final Environmental Impact Report in regard to impact discussion—Regulatory Setting, Affected Environment, Impacts, and Avoidance, Minimization, and/or Mitigation Measures—except the noise and farmland sections. The noise section, as directed by the judgment and writ, provides the information necessary to specify with particularity the standards that were used in the Environmental Impact Report to determine noise impacts for the project. The farmland section, as directed by the judgment and writ, provides additional analysis and explanation of feasible mitigation measures for loss of farmland.

It is anticipated that readers may consider this Supplemental Environmental Impact Report together with the 2008 Final Environmental Impact Report. The chapters in this document are numbered to correspond to the 2008 Final Environmental Impact Report; however, the sequence of the environmental particulars (specifics) discussed follows the court's judgment (hydrology/floodplain, noise, California tiger salamander, and farmland) and are not in the same sequence as the 2008 Final Environmental Impact Report. Only the areas cited in the judgment are discussed because it was not necessary to supplement all portions of the 2008 Final Environmental Impact Report.



Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

The judgment of the Superior Court of San Benito County upheld the 2008 Final Environmental Impact Report in all respects but for the particulars cited in Section 1.1 of this document. Therefore, the Supplemental Environmental Impact Report contains only the information necessary to make the 2008 Final Environmental Impact Report adequate for the project. This chapter will:

- a. Provide an updated analysis of hydrology and flooding impacts, and the cumulative impacts thereof, by updating the 2004 hydrologic study, taking into account the San Benito County Water District's comments.
- b. Provide the information necessary to specify with particularity the standards used to determine noise impacts, and show that the standards used for the project are consistent with those applied statewide.
- c. Circulate to the public the information regarding the California tiger salamander that was added to the 2008 Final Environmental Impact Report, and provide additional information resulting from the March 3, 2010 decision to elevate the species from a California species of special concern to a threatened species.
- d. Provide additional analysis and explanation of feasible mitigation measures for loss of farmland.

The following information is provided in the order listed above. Regulatory Settings are provided at the beginning of each section discussed in this document and were provided in the 2008 Final Environmental Impact Report at the beginning of each section discussed.

2.1 Hydrology and Floodplain

As directed by the court judgment and writ, this section will provide an updated analysis of hydrology and flooding impacts. Caltrans hydrology engineering staff completed a Hydrology and Floodplain Report in August 2010, which is included in this document as Appendix B. Caltrans evaluated several studies done for the San Juan Creek in preparing

the 2010 Hydrology and Floodplain Report. These reports and studies included the following:

- Draft Version of the San Juan Basin Surface Drainage Study by Advanced Hydro Engineering for San Benito County Water District (April 2007) (The version provided to Caltrans for the 2010 study.)
- San Juan Creek Hydrology/Hydraulics Report by the Caltrans Division of Structures (Revised January 2010)
- Flood Insurance Study, San Benito County, California and Incorporated Areas by the Federal Emergency Management Agency (Revised April 2009)
- Caltrans Location Hydraulic Study (February 2004)

The following discussion is a summary of the Caltrans 2010 Hydrology and Floodplain Report.

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. Requirements for compliance are outlined in 23 Code of Federal Regulations Part 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

Affected Environment

In March 2010, Caltrans hydrology and design engineers and environmental division staff conducted a field survey of the project. The purpose of the field survey was to update

information in the project file, clarify conflicting information, and document changes in the existing environment.

Caltrans hydrology engineering staff completed a Hydrology and Floodplain Report in August 2010. This report documented the most current analyses on the floodplain at San Juan Creek in the project area and supersedes the 2004 Location Hydraulic Study. The report takes into consideration:

- Comments received from the San Benito County Water District on the 2007 Draft Environmental Document for the San Benito 156 Improvement Project
- A draft version of the San Juan Basin Surface Drainage Study conducted by Advanced Hydro Engineering for the San Benito County Water District
- The Federal Emergency Management Agency (FEMA) Flood Insurance Study revised April 16, 2009
- The San Juan Creek Hydrology/Hydraulics Report conducted by Caltrans Division of Structures revised January 12, 2010
- Data gathered from the March 2010 field survey

The project sits in the San Juan Valley between the Gabilan and Diablo Ranges of the Santa Cruz Mountains. This area of land, which drains across State Route 156 within the project limits, originates in the foothills and flows through the floor of the San Juan Valley on its way to the San Benito River. The community of San Juan Bautista is to the west and the city of Hollister is to the east of the project area. Land use is primarily agricultural in the low lands; grasslands are in the foothills.

U.S. Geological Survey topographic maps were evaluated to quantify the size and characteristics of the watershed. The maps show that three distinct sub-basins drain San Juan Creek within the project limits: San Juan Canyon, San Andreas Rift Zone, and the flatland north of State Route 156. These sub-basins drain across State Route 156.

San Juan Creek drains the first sub-basin, the San Juan Canyon, which is about 8.6 square miles in area. It originates at Fremont Peak (elevation 3,170 feet) in the Gabilan Mountains and runs northwesterly toward the San Benito River (elevation 160 feet). As the creek approaches State Route 156, it has been channeled, piped, and re-routed through the southern portion of San Juan Bautista. Once north of San Juan Bautista, the creek has been channeled by agriculture, resulting in the area being subject to severe flooding.

A second sub-basin, the San Andreas Rift Zone, is about 11.8 square miles in area. It starts at the 2,500 feet elevation near the Monterey County line and runs northwesterly toward its ultimate destination, the San Benito River. As the sub-basin approaches the valley floor, farming operations have disrupted its tributaries. A row of telephone stumps running southeasterly toward Mission Vineyard Road marks the last remnant of the natural creek. When the natural creek reaches the flatland, it appears that the creek has been channelized between the foothills and State Route 156. In the mid-1950s during the construction of existing State Route 156, Caltrans realigned about 1,500 feet of the creek channel. This sub-basin is the tributary for the east branch of San Juan Creek referred to as “ditch” on the U.S. Geological Survey topographic map.

The third sub-basin, the flatland north of the State Route 156, is about 1.7 square miles in area. In this sub-basin, the natural creek beds have also been altered. According to the U.S. Geological Survey topographic map, the area between Bixby Road and Mitchell Road has a natural slope to the west and south toward State Route 156; however, west of Bixby Road, the natural topography directs flows to the west and north, away from State Route 156 (see Appendix B, Hydrology and Floodplain Report, U.S. Geological Survey Topographic and Watershed Map).

The San Benito 156 Improvement Project includes building a new bridge over San Juan Creek for the eastbound lanes and replacing an existing reinforced concrete box culvert at Mission Vineyard Road with a new bridge. Mission Vineyard Road crosses the east branch of San Juan Creek, a tributary to San Juan Creek. Figure 2-1 shows an illustration of the existing San Juan Creek and its two branches.

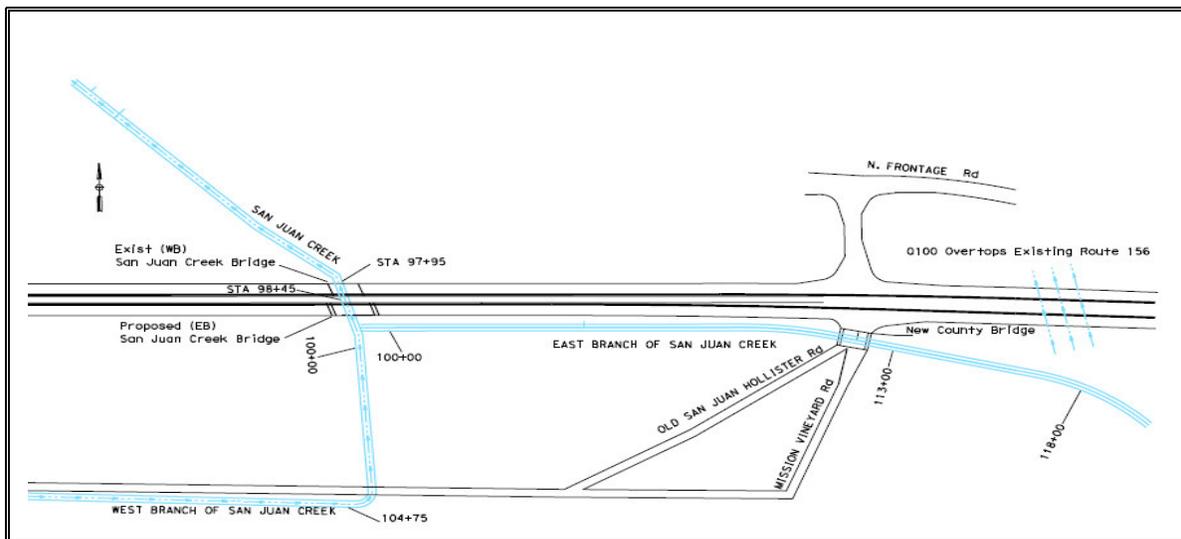


Figure 2-1 San Juan Creek within the Project Limits

Encroachments on floodplains, such as structures and fill, reduce the flood-carrying capacity, increase flood heights and velocities, and increase flood hazards in areas beyond the encroachments themselves. Minimum federal standards limit such increases to 1 foot, provided those minimum standards can be adopted directly or can be used as a basis for additional floodway studies. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is a channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. The floodway fringe is the portion of the 100-year floodplain that is not within the floodway, and in which development and other forms of encroachment may be permitted under certain circumstances.

According to Caltrans Standard Environmental Reference Guidelines, a significant encroachment is defined as a highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction or flood-related impacts: (1) a significant potential for interruption or termination of a transportation facility, which is needed for emergency vehicles or provides for a community's only evacuation route, (2) a significant risk, or (3) a significant adverse impact on natural and beneficial floodplain values.

For the 2010 Hydrology and Floodplain Report, Caltrans evaluated the Flood Insurance Rate Maps and the Federal Emergency Management Agency Flood Insurance Study (FIS) for San Benito County and Incorporated Areas. The evaluation was done to determine if any portion of the proposed project is in an area that could be subject to the floodplain criteria described above.

The proposed project extends over two Flood Insurance Rate Maps (Numbers 06069C0159D and 06069C0158D, both revised on April 16, 2009), and sits within different zones designated by the Federal Emergency Management Agency. Table 2.1 provides the definitions for the Area of Special Flood Hazard zones within the project limits. All of the Areas of Special Flood Hazard zones can be viewed on page 5 of Hydrology and Floodplain Report in Appendix B.

Table 2.1 Flood Zones within Project Limits

Areas of Special Flood Hazard	Definition
Zone A	No Base Flood Elevations determined.
Zone AE	Base Flood Elevations determined.
Zone AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
Zone AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
Zone X	Areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood.

Based on the Federal Emergency Management Agency’s Flood Insurance Rate Maps, Caltrans determined the west end of the project encroaches into a flood area of the San Juan Creek and the San Juan Creek tributary. The San Juan Creek tributary overtops State Route 156 just east of The Alameda in San Juan Bautista. The area east of The Alameda and south of State Route 156 is defined as Zone AH; the north side of State Route 156 is defined as Zone AE; and a segment of State Route 156, about 600 feet long, where the San Juan Creek tributary overtops State Route 156, is defined as Zone AE.

As water flows down the west branch of San Juan Creek, it creates a floodplain, which progressively widens as it reaches the flatlands. On the west branch of the San Juan Creek, the flood zone changes from Zone AO (upstream of San Juan Hollister Road) to Zone AE (south of State Route 156). In the east branch of San Juan Creek, parallel to State Route 156, the zone is A. The Federal Emergency Management Agency’s Flood Insurance Rate Map Number 06069C0159D indicates that both sides of the highway are on the floodplain, but the highway is not. The Federal Emergency Management Agency’s Flood Insurance Rate Map also indicates that the 100-year flow crosses State Route 156 under San Juan Creek Bridge without overtopping San Juan Creek Bridge or State Route 156.

The Caltrans 2010 Hydrology and Floodplain Report, as well as the other studies evaluated, indicates that the 100-year flood overtops the existing State Route 156 at the lower roadway elevations east of Mission Vineyard Road. The segment of State Route 156 just west of Mission Vineyard Road is already elevated, and all the studies conclude that this elevated segment and the San Juan Creek Bridge are not overtopped.

Caltrans hydrology engineers determined that none of the previous studies evaluated both branches (east and west) of San Juan Creek upstream of the San Juan Creek Bridge in

detail. In addition, the information in some of the reports/studies was inconsistent with each other. For example, the west branch of San Juan Creek is referenced as San Juan Creek in both the Federal Emergency Management Agency Flood Insurance Study and the Advanced Hydro Engineering Study. The 2010 Caltrans Division of Structures Study references the east branch of San Juan Creek as San Juan Creek, and the Advanced Hydro Engineering Study references it as South San Juan Channel.

Also, the Federal Emergency Management Agency Flood Insurance Study modeled in detail the west branch of San Juan Creek with Hydrologic Engineering Center (HEC-2) software, but used only approximation methods to estimate the 100-year flood elevations at the east branch of the creek. The Advanced Hydro Engineering study took the Federal Emergency Management Agency Hydrologic Engineering Center (HEC-2) model and converted it to a Hydrologic Engineering Center - River Analysis System (HEC-RAS) model and used Caltrans' current topography. The Advanced Hydro Engineering study slightly improved the Federal Emergency Management Agency Flood Insurance Study model, but it did not model the east branch of San Juan Creek.

The 2010 Caltrans Division of Structures Study did not model the west branch of San Juan Creek and concentrated on only the east branch of San Juan Creek, the main branch affected by the project. Although this study is sufficient to analyze the existing San Juan Bridge and design the two new bridges proposed in this project, the 2010 study is not sufficient to analyze the impact on the floodplain because it does not take into consideration the encroachment of the new eastbound lanes, and it did not model the proposed culverts across State Route 156. The culverts are needed to bypass the flow rate that currently overtops State Route 156 to avoid increasing the flood depths after the profile of State Route 156 is raised east of Mission Vineyard Road.

The 2010 Caltrans Hydrology and Floodplain Report, a more comprehensive Hydrologic Engineering Center-River Analysis System (HEC-RAS) model, not only analyzed the existing conditions of both branches of San Juan Creek, but also addressed the impact of the two new lanes proposed at State Route 156. This study used the Federal Emergency Management Agency Hydrologic Engineering Center (HEC-2) model and the bridge openings designed by Caltrans Division of Structures, and it analyzed the channel improvements proposed at the east branch of the San Juan Creek.

All of the studies evaluated used similar flow rates, but apparently no gage (gauge) station records exist for the San Juan Creek. Gaging (gauging) station data, one of the most common types of stream flow data, is generally based on recording gage (gauge)

station observations with detailed information about the stream channel cross section. The Federal Emergency Management Agency Flood Insurance Study's 100-year year flow rates (Q100's) at San Juan Creek (upstream of State Route 156) are 2,600 cubic feet per second (cfs) with a watershed area of 19.1 square miles. Upstream of Mission Vineyard Road, the 100-year year flow rate (Q100's) is 800 cubic feet per second (cfs) with a watershed area of 8.12 square miles. Advanced Hydro Engineering also used the Flood Insurance Study's flow rates, while the Caltrans Division of Structures estimated flow rates similar to those in the Federal Emergency Management Agency Flood Insurance Study.

The flow rates used in the 2010 Caltrans Hydrology and Floodplain Report are similar to the ones used in the other studies. Caltrans hydrology engineers estimated the watershed upstream of San Juan Creek to have an area of 20.4 square miles, 7 percent more than the estimated area determined by the Federal Emergency Management Agency Flood Insurance Study. For the west branch of San Juan Creek, Caltrans hydrology engineers used the flow rate of the Federal Emergency Management Agency Flood Insurance Study. For the east branch of San Juan Creek, Caltrans used the flow rate estimated by the Caltrans Division of Structures. A summary of flow rates is provided on page 9 of Hydrology and Floodplain Report in Appendix B.

For the 2010 Caltrans Hydrology and Floodplain Report, the San Juan Creek was modeled using three scenarios. The first scenario was the existing conditions. The second scenario widened about 1,500 feet of the east branch of San Juan Creek an additional 10 feet. The third scenario added a retaining wall and a swale parallel to the main channel of the west branch of San Juan Creek between San Juan Creek Bridge and the proposed bridge at Mission Vineyard Road.

For the existing conditions (first scenario), Caltrans hydrology engineers used the same Federal Emergency Management Agency Flood Insurance Study Hydrologic Engineering Center (HEC-2) data for the west branch of the San Juan Creek; for the east branch of the creek, channel cross sections and structure dimensions based on survey information and as-built plans were used. Caltrans used the Manning formula, an empirical formula for open-channel flow, or free-surface flow, driven by gravity.

For the two other scenarios, data from the Federal Emergency Management Agency Flood Insurance Study Hydrologic Engineering Center (HEC-2) was used for the west branch of the creek. The east branch of the creek was modeled using the existing (first scenario) and the two proposed new bridges. The second scenario assumed widening

about 1,500 feet of the east branch of San Juan Creek an additional 10 feet. The third scenario assumed adding a retaining wall and a swale parallel to the main channel of the west branch of San Juan Creek between San Juan Creek Bridge and the proposed bridge at Mission Vineyard Road.

The third scenario is shown in the cross section in Figure 2-2, based on the current Caltrans right-of-way survey information and preliminary design plans for the new eastbound lanes proposed in the State Route 156 Improvement Project.

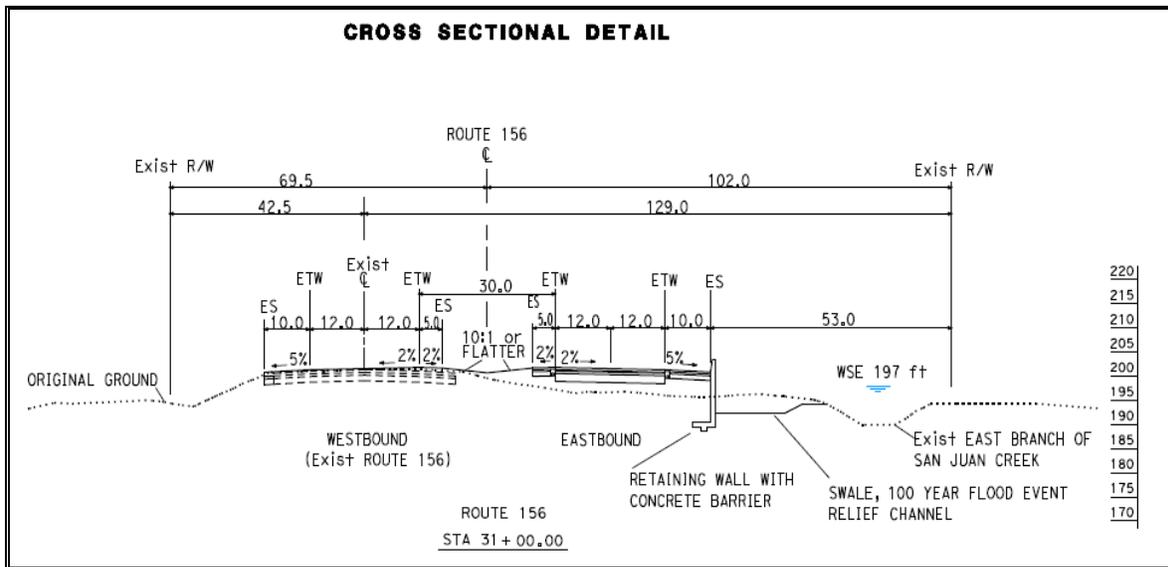


Figure 2-2 Retaining Wall Cross Section

Under the first scenario, the existing conditions scenario, the water surface elevations were very similar to those of the Federal Emergency Management Agency Flood Insurance Study Hydrologic Engineering Center (HEC-2) model for the west branch of San Juan Creek. The elevation at the upper limits of the model, where the 100-year flow overtops State Route 156, was 197.38 feet. Under existing conditions, about 150 cubic feet per second (cfs) overtops State Route 156 east of the Mission Vineyard Road.

Under the second scenario, the channel-widening scenario, the water surface elevations were also very similar to those of the Federal Emergency Management Agency Flood Insurance Study Hydrologic Engineering Center (HEC-2) model for the west branch of San Juan Creek. The elevation at the upper limits of the model, where the 100-year flow currently overtops State Route 156, was 197.31.

Under the third scenario, the swale and retaining wall scenario, the water surface elevations were similar to those of the Federal Emergency Management Agency Flood

Insurance Study Hydrologic Engineering Center (HEC-2) model for the west branch of San Juan Creek. The elevation at the upper limits of the model, where the 100-year flow currently overtops State Route 156, was 197.32. A summary of water surface elevations is provided on page 11 of Hydrology and Floodplain Report in Appendix B.

Impacts

The existing State Route 156 is elevated above the 100-year flow elevation from approximately 600 feet east of The Alameda to the San Juan Creek. At this location, Caltrans does not propose raising the roadway profile any higher, which would result in the 100-year flow of the San Juan Creek tributary to continue overtopping State Route 156. A soundwall, approximately 870-feet-long, is proposed west of San Juan Creek but would not affect the floodplain due to the raised elevation of the existing highway.

The new roadway drainage would consist of drainage inlets and pipes draining the highway water into side ditches. Caltrans considered using two ditches to separate the onsite (highway) runoff from offsite (agricultural) runoff, but the current plans for the proposed project include a single ditch, which would convey both onsite and offsite runoff. Caltrans would treat onsite runoff with biofiltration strips, also known as vegetated buffer strips, which are vegetated sections of land over which storm water flows as overland sheet flow. The single ditch would combine the treated onsite runoff with offsite runoff. The ditch would be shallow (3 feet), and it would have berms (mounds) to slow down the flow rate and maximize infiltration.

The single ditch is not designed to solve the regional floodplain issues but would have the capacity to convey low flows, such as a 10-year storm, which would benefit properties next to State Route 156. Although there is no current plan to combine this project with a major flood management project, the proposed ditch could be enlarged and redesigned to accommodate a joint flood management project in the future. The drainage plans are included as an attachment to the 2010 Caltrans Hydrology and Floodplain Report in Appendix B.

The 2010 Caltrans Hydrology and Floodplain Report concluded that the San Benito 156 Improvement Project could affect the size of the floodplain if nothing were done. In order to avoid significant impacts, it was recommended to improve the approximately 1,500-foot segment of the east branch of San Juan Creek, construct a longer bridge over San Juan Creek, and remove the Mission Vineyard Bridge and replace it with a larger bridge. With the adoption of the avoidance measures recommended, the project would not constitute a significant floodplain encroachment as defined in 23 Code of Federal

Regulations, Section 650.105(q), and it would not increase the base flood backwater elevations, and it would not have a negative impact.

Avoidance, Minimization, and/or Mitigation Measures

Eastern Segment of San Juan Creek - Caltrans hydrology engineers recommended two alternatives to minimize any potential encroachment on the floodplain, which would augment or enhance the 1,500-foot segment of the east branch of the San Juan Creek. Because this segment of State Route 156 is already elevated above the 100-year flow elevation, either recommendation would minimize an encroachment on the floodplain.

The first alternative was to widen the channel an additional 10 feet. Widening the channel would be covered under a Section 404 Permit for dredging or filling waters of the United States and a Section 1602 Streambed Alteration Agreement, both anticipated for the project after the final distribution of the environmental document.

The second alternative was to construct a swale parallel to the channel with a retaining wall, which was shown in the 2008 Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact as Figure 2-4, for the soundwall cross section. The proposed soundwall would be placed on top of the retaining wall.

East of Mission Vineyard Road - Since Caltrans proposes to raise the roadway profile above the floodwater level on the east side of Mission Vineyard Road, three culverts (3 feet in diameter) will be used to mimic current flooding patterns and maintain the existing water elevations.

North of State Route 156 - To minimize the flooding due to flow concentration on the north side of State Route 156, Caltrans will build a lined concrete ditch or install a reinforced concrete pipe (5 feet in diameter) parallel to State Route 156 between Mission Vineyard and the San Juan Creek. The ditch or pipe would discharge into San Juan Creek downstream of San Juan Creek Bridge (north of State Route 156).

San Juan Creek Bridge – Caltrans will construct a new bridge for the eastbound lanes south of the existing bridge over San Juan Creek, and the existing bridge will be used for the westbound lanes. The new bridge will be longer than the existing bridge because the length of the existing bridge currently restricts the flow of the water. By building the new bridge longer, the water flow elevation would be expected to remain very similar to the existing conditions.

Mission Vineyard Road - Caltrans will remove and replace the existing county box culvert on Mission Vineyard Road on the east branch of the San Juan Creek with a bridge. The replacement of the existing box culvert was included in the 2008 Final Environmental Impact Report/Environmental Assessment with Finding of No Significant Impact as a design feature of all the build alternatives.

2.2 Noise

As directed by the court's judgment and writ, this section provides the information necessary to specify with particularity the standards that were used in the Environmental Impact Report to determine noise impacts for the project under the California Environmental Quality Act, and further demonstrates and confirms that the standards used for the project are consistent with those applied statewide.

The 2008 Final Environmental Impact Report concluded that the project will not result in any significant noise impacts under the California Environmental Quality Act. Caltrans noise policy is set forth in Caltrans' August 2006 Traffic Noise Analysis Protocol, which has been approved as California's official noise policy by the Federal Highway Administration. Caltrans applied the standard methodology from the Noise Analysis Protocol that is uniformly practiced by Caltrans statewide in screening and evaluating the noise impacts of the project.

In addition, when determining whether a noise impact is significant under the California Environmental Quality Act, a comparison is made between the no-build noise level and the build noise level. The California Environmental Quality Act noise analysis is completely independent of the National Environmental Policy Act-23 Code of Federal Regulations 772 analysis, which is centered on noise abatement criteria. Under the California Environmental Quality Act, the assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected, and the absolute noise level.

Caltrans identified 27 noise receptors, which represented homes and businesses in the project area. Tables 2.14 through 2.16 in Chapter 2 of the 2008 Final Environmental Impact Report showed how the existing and predicted noise levels at these receptors with and without the project. The analysis was based on 2005 traffic information supplied by Caltrans District 5 Transportation Planning in July 2006. All of the build alternatives would have similar effects on the receptors. At no location on the project do project-

related noise levels increase by more than 5 decibels over existing noise levels. Many of the project's sensitive receptors are north of the existing highway. At most of these receptors, the 2030 build noise levels would be lower than 2030 no-build noise levels because the realigned highway lanes would move traffic farther away from them. The existing highway would become a frontage road carrying minimal traffic.

Caltrans noise policy is contained in Caltrans' August 2006 Traffic Noise Analysis Protocol ("the protocol"), which was approved as California's official noise policy by the Federal Highway Administration on August 16, 2006. The protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or federal-aid highway projects. The Noise Abatement Criteria specified in the protocol are the same as those specified in 23 Code of Federal Regulations 772. The protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 decibels or when a future sound level is predicted to approach a Noise Abatement Criteria level within 1 decibel of the Noise Abatement Criteria identified in 23 Code of Federal Regulations 772 (for example, 66 decibels is considered to approach the Noise Abatement Criteria of 67 decibels, but 65 decibels is not).

The Caltrans' Technical Noise Supplement (TeNS) to the protocol provides detailed technical guidance for the evaluation of highway traffic noise. This includes field measurement methods, noise modeling methods, and report preparation guidance.

It is widely accepted that the average healthy ear can barely perceive noise level changes of 3 decibels in an outdoor setting, and for most people, the threshold of hearing is closer to 10 decibels. According to Section N-2211 of the protocol, doubling sound energy results in a 3-decibel increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured. Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-decibel changes in sound levels, when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000 Hertz–8,000 Hertz) range. In typical noisy environments, changes in noise of 1 to 2 decibels are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 decibels in typical noisy environments. Further, a 5-decibel increase is generally perceived as a distinctly noticeable increase, and a 10-decibel increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (for example, doubling the volume of

traffic on a highway) that would result in a 3-decibel increase in sound would generally be perceived as barely detectable.

Caltrans has determined there are no significant impacts under the California Environmental Quality Act because the project would not cause an increase of more than 5 decibels at any of the receptors, which would be noticeable by the human ear but less than significant.

The Noise Analysis Protocol analyzes the potential for noise abatement in already-noisy areas according to standard criteria that are explained in the Regulatory Setting, which is included in the Final Environmental Impact Report. In other words, the Noise Analysis Protocol requires consideration for noise abatement in some cases even if there is no increase in noise above the baseline conditions. For example, noise abatement was considered in several project locations where the project would actually reduce noise levels over the baseline. The California Environmental Quality Act, though, does not require mitigation in instances where there is already a beneficial impact from the project itself. However, because the Final Environmental Impact Report is a blended National Environmental Policy Act/California Environmental Quality Act (NEPA/CEQA) document, the federal rule of considering noise abatement for preexisting conditions was also applied in the National Environmental Policy Act context.

As explained in the administrative record for the lawsuit challenging the Final Environmental Impact Report for the project, during the course of conducting its environmental noise analysis for the project, Caltrans had two traffic noise analysis protocols: the October 1998 protocol and the August 2006 protocol. The updated Noise Technical Report (May 2007) used the October 1998 protocol, which was referenced in the 2007 Draft Final Environmental Impact Report. However, Caltrans used the August 2006 protocol for the noise analysis contained in the October 2008 Final Environmental Impact Report and to prepare the responses to comments contained in the Final Environmental Impact Report. In any case, both protocols define “substantial increase” as an increase of 12 decibels over existing noise levels or when the future noise level with the project approaches or exceeds the noise abatement criteria, in this case 67 decibels. As a result, the California Environmental Quality Act noise analysis contained in Chapter 3 of the Draft Environmental Impact Report and the Final Environmental Impact Report, including the responses to comments, is accurate.

In a response to a comment that was included in the Final Environmental Impact Report, Caltrans explained, “It is true that other jurisdictions use a lower increase for their

significance criteria.” This statement may have resulted in some confusion about whether Caltrans applies a uniform standard statewide. Caltrans only uses the Noise Analysis Protocol statewide and uses no other methodology to conduct noise impact analysis. The reference to “other jurisdictions” was to agencies other than Caltrans, which have the discretion to establish their own analysis protocols. Caltrans applies the process of standards of the Noise Analysis Protocol in a uniform manner statewide.

2.3 Threatened and Endangered Species: California Tiger Salamander

As directed by the court judgment and writ, this section provides the information added to the discussion of the California tiger salamander in the 2008 Final Environmental Impact Report. This section also provides additional information resulting from the March 3, 2010 decision by the California Fish and Game Commission to elevate the species from a California species of special concern to a threatened species.

Regulatory Setting

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 United States Code, Section 1531, et seq. See also 50 Code of Federal Regulations Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend.

Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration Fisheries Service to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species.

The outcome of consultation under Section 7 is a Biological Opinion or an incidental take statement. Section 3 of the Federal Endangered Species Act defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or any attempt at such conduct.”

California has enacted a similar law at the state level, the California Endangered Species Act, California Fish and Game Code, Section 2050, et seq. The California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered,

and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats.

The California Department of Fish and Game is the agency responsible for implementing the California Endangered Species Act. Section 2081 of the Fish and Game Code prohibits “take” of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California Endangered Species Act allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by the California Department of Fish and Game.

For projects requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, the California Department of Fish and Game may also authorize impacts to the California Endangered Species Act species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

Caltrans biologists prepared a Natural Environment Study for the project in March 2007. The study provides information needed to comply with a variety of state and federal laws, regulations, and executive orders relating to the natural environment. Potential effects on natural resources, including federal and state special-status species and their habitats, were analyzed.

Caltrans biologists searched the California Natural Diversity Database Rarefind (San Juan Bautista, Hollister, Watsonville East, Prunedale, Salinas, Natividad, Mr. Harlan, Paicines, Tres Pinos, Three Sisters, San Felipe, and Chittenden U.S. Geological Survey Quadrangles), examined topographical maps, and did field surveys to determine the potential impacts of this project on the biological resources of the area. Caltrans biologists identified habitat for the California tiger salamander within the project area. The Biological Study Area for the project and the location area for this species were shown in the 2008 Final Environmental Impact Report as Figures 2-5 and 2-7. In this document, the maps are shown at the end of this section as Figures 2-3 and 2-4. The Biological Study Area at Union Road, in Figure 2-4, has been changed to reflect the modification of San Juan Road and a frontage road.

California Tiger Salamander

On August 5, 2004, the U.S. Fish and Wildlife Service listed the California tiger salamander (*Ambystoma californiense*) as threatened throughout its range. On March 3,

2010, the California Fish and Game Commission voted to elevate the state status of the California tiger salamander from a California species of special concern to a threatened species.

Caltrans biologists surveyed around the ponds nearest the project area for California tiger salamanders on December 11, 2003, and no salamanders were seen. Surveys done at known California tiger salamander ponds the same night also produced negative results. This was a dry winter. A survey was attempted in January 2007, but ponds near the non-native grassland did not hold water long enough to support California tiger salamander breeding.

The California tiger salamander is an amphibian. It is large or stocky with a broad, rounded snout. Adult males are about 8 inches long; females grow slightly less than 7 inches long. They have white or pale yellow spots or bars on a black background on their back and sides. Their bellies vary from an almost uniform white or pale yellow to a variegated pattern of white or pale yellow and black. They have small eyes with black irises. The eyes protrude from their heads.

The species is restricted to grasslands and low (under 1,500 feet) foothill regions where lowland aquatic sites are available for breeding. They prefer natural seasonal pools or ponds that mimic such pools (stock ponds that are allowed to go dry).

California tiger salamanders are known to occur in several ponds on the San Juan Oaks Golf Course property, west of Union Road and about 900 feet south of State Route 156. No California tiger salamander aquatic habitat occurred within the project footprint.

No continuous grassland habitat connects the project footprint to the nearest California tiger salamander breeding ponds. The California tiger salamander spends about 95 percent of its lifecycle (its non-breeding period) in burrows. A small area of non-native grassland sits at the east end of the project at the southeast corner of the State Route 156 and Union Road intersection (see Figure 2-4). A low density of pocket gopher and California ground squirrel burrows, which may be used by California tiger salamanders, is found in the area of this non-native grassland. This area is periodically mowed next to Union Road and is surrounded by agricultural fields on the west and north sides of the project footprint.

Impacts

A Biological Assessment was prepared, and Section 7 consultation with the U.S. Fish and Wildlife Service was initiated through Caltrans, as assigned by the Federal Highway

Administration, after the preferred alternative was selected. Initially, Caltrans biologists determined that there would be no temporary or permanent impacts to upland habitat occupied by the California tiger salamander. During formal consultation with the U.S. Fish and Wildlife Service, however, habitat was identified closer to the project area. Based on the late discovery of habitat, Caltrans biologists have changed the determination to “may affect, likely to adversely affect” the California tiger salamander. The U.S. Fish and Wildlife Service issued a Biological Opinion on September 19, 2008 concurring with that determination.

Caltrans will need to acquire a 2081(b) Incidental Take Permit from the California Department of Fish and Game before construction. An Incidental Take Permit will be submitted to the California Department of Fish and Game after completion of the final environmental document.

The initial determination was based on the conclusion that the nearest breeding ponds for California tiger salamanders were over 2 miles away from the project area. In addition, because of the low density of rodent burrows and the lack of continuous grassland habitat connecting the project footprint (the area that is affected) to the breeding ponds, there was a low likelihood of this non-native grassland being used as California tiger salamander upland habitat. However, as stated previously, during formal consultation with the U.S. Fish and Wildlife Service, habitat was identified about 0.75 mile away. Therefore, there is a potential for impacts to adult salamanders within upland habitat during construction because the project footprint is within the 1.24-mile dispersal distance from known California tiger salamander breeding ponds.

Avoidance, Minimization, and/or Mitigation Measures

Potential impacts to the California tiger salamander that could occur in the uplands habitat adjacent to the project area at State Route 156 and Union Road would be avoided or minimized by incorporating the following avoidance and minimization measures:

- To the maximum extent practicable, project activities within potential California tiger salamander upland and dispersal habitat will be implemented between May 15 and October 15, which is timed to occur between the breeding season and the fall dispersal period for the California tiger salamander.
- Exclusionary fencing will be installed to avoid impacts to adjacent non-native grasslands that potentially serve as California tiger salamander upland habitat (see Figure 2-4).

- During vegetation removal and grading activities a qualified biologist will survey for and relocate any California tiger salamanders identified within potential California tiger salamander habitat.
- A limited number of small mammal burrows within potential California tiger salamander habitat will be hand excavated prior to construction activities. Approximately 50 of the 300 rodent burrows identified in the eastern portion of the project area that are deemed most likely to contain California tiger salamanders will be hand excavated by a U.S. Fish and Wildlife Service-approved biologist to determine if California tiger salamanders are present. If a California tiger salamander is located during hand excavation activities, then all rodent burrows within potential California tiger salamander upland habitat will be excavated. If no California tiger salamanders are located during excavation of the 50 burrows most likely to contain the species, then hand excavation activities will be suspended, and construction activities may proceed. Any California tiger salamanders found during hand excavation activities will be relocated the shortest distance possible by a U.S. Fish and Wildlife Service-approved biologist to a location that has suitable habitat and will not be affected by project activities. A rodent burrow hand excavation plan with protocol for hand excavation, potential relocation sites, protocol for determination of rodent burrows with highest likelihood of containing California tiger salamanders, and names of qualified personnel must be submitted to the U.S Fish and Wildlife Service at least 30 days before hand excavation activities are to begin.

Cumulative Impacts

There will be no permanent impacts to the California tiger salamander breeding or upland habitat; therefore, because the project will not add any incremental effect, it would not contribute to any cumulative impacts.

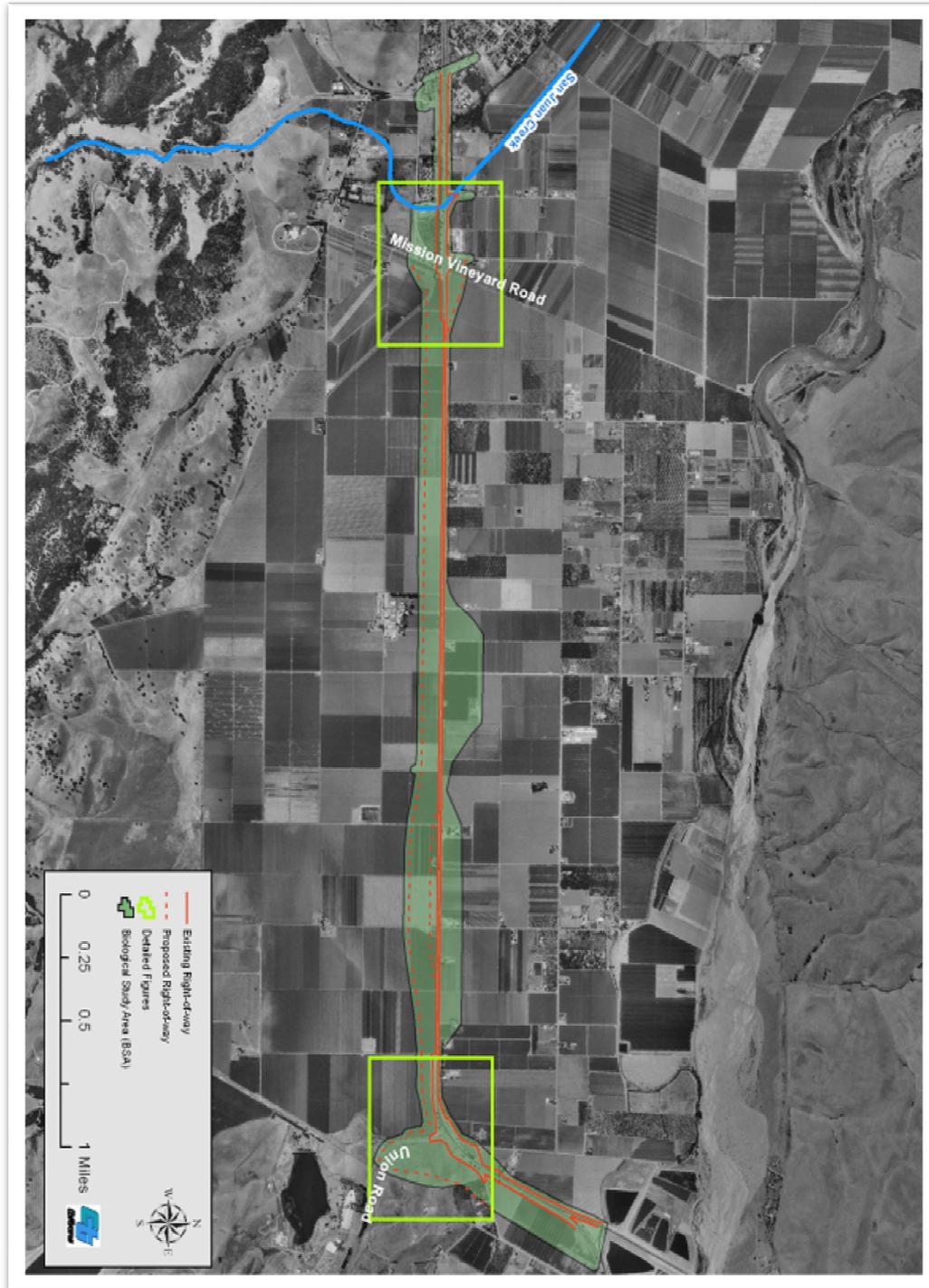


Figure 2-3 Biological Study Area for the Project

This map shows the biological study area for the project. The rectangular box near Union Road, indicates the area where the California tiger salamander was identified, and the rectangular box near Mission Vineyard Road indicates the area where the California red-legged frog was identified.

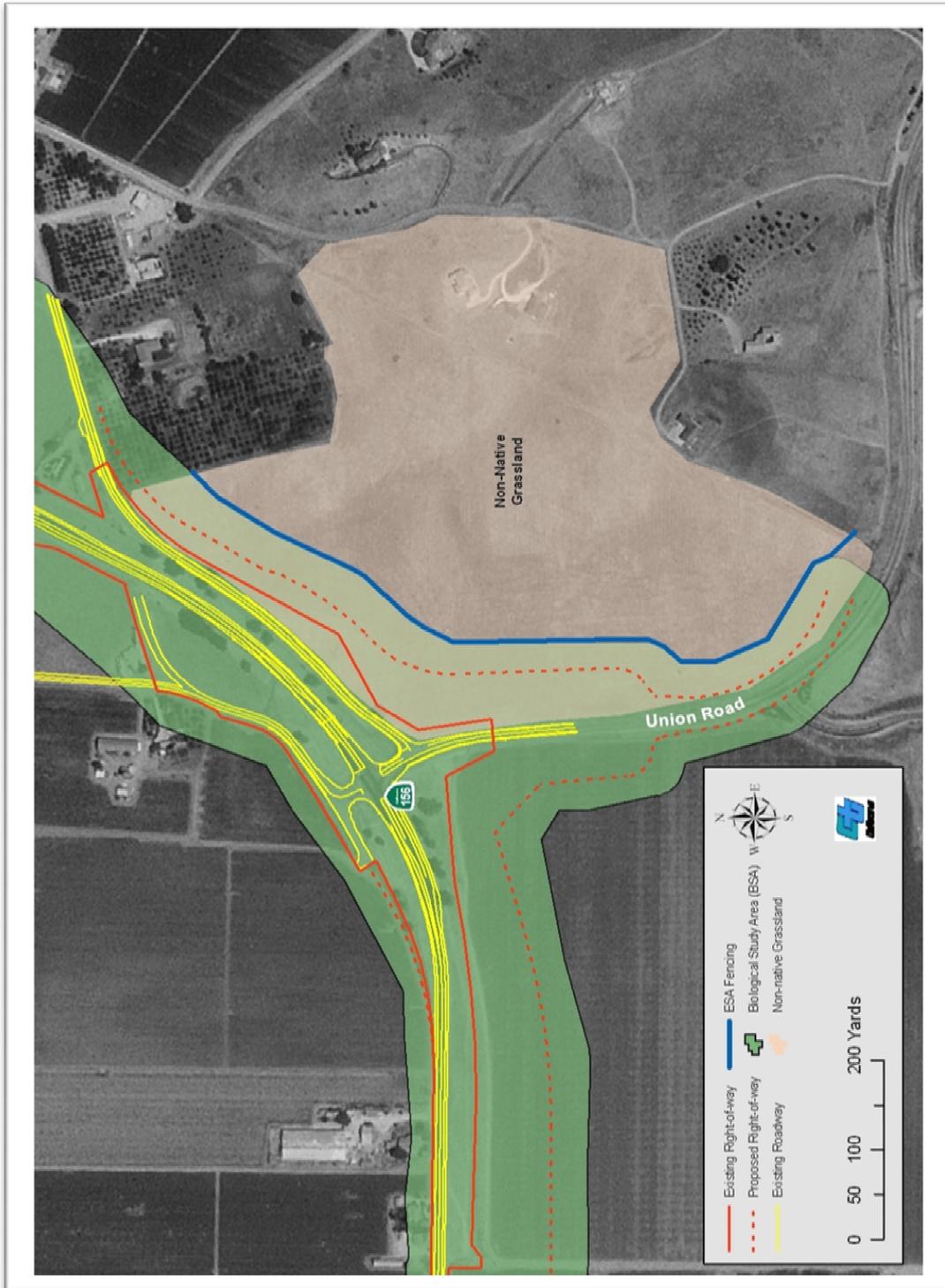


Figure 2-4 Biological Study Area (Union Road)

This map is a closer view of the area where the California tiger salamander was identified. The blue line indicates the placement of the Environmentally Sensitive Area (ESA) fencing.

2.4 Farmlands

As directed by the court's judgment and writ, this section provides additional analysis and explanation of feasible mitigation measures for loss of farmland. Caltrans will acquire conservation easements to reduce the farmland impacts resulting from this project. However, farmland impacts cannot be avoided and even with the adoption of the following mitigation measures it is too uncertain as to whether the impacts will be mitigated to less than significant.

According to Section 15370 of the California Environmental Quality Act, "mitigation" includes:

- (a) Avoiding the impact altogether by not taking a certain action or part of an action
- (b) Minimizing impacts by limiting the degree or magnitude of the action and implementation
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- (e) Compensating for the impact by replacing or providing substitute resources

Avoiding the Impact

The entire project is surrounded by farmland except for 1 mile at the beginning of the project, which is within San Juan Bautista's city limits, between The Alameda and Mission Vineyard Road. All of the farmland surrounding the remainder of project is considered Prime Farmland or Farmland of Statewide Importance (California Department of Conservation, Office of Land Conservation's Farmland Mapping and Monitoring Program).

Caltrans' policy is to avoid or minimize farmland impact to the maximum extent possible. However, this segment of State Route 156 is surrounded by farmland, which makes the avoidance of farmland impacts impossible. Only the No-Build Alternative would completely avoid converting farmland, but it would not meet the purpose and need of the project.

Minimizing the Impact

Alternative 6, the Preferred Alternative, is a four-lane controlled-access expressway. This alternative avoids all right-of-way acquisition (including farmland) and

relocations (residences) north of the existing State Route 156. The existing State Route 156 would be used as a frontage road, which eliminates the need for more right-of-way (including farmland). An intersection without signals is proposed at Bixby Road and requires additional right-of-way south of the existing State Route 156 to provide adequate distance between the frontage road intersection at Bixby Road (existing State Route 156) and the intersection of the newly aligned State Route 156/Bixby Road.

Caltrans has incorporated measures to minimize farmland impacts by reducing the median and modifying the preliminary design of the project resulting in the conversion of fewer acres of farmland. Based on the Caltrans Right of Way Appraisal maps, the farmland acreage to be converted has been reduced from a preliminary estimate of 145 acres to 124 acres.

As part of the right-of-way process for purchasing land, Caltrans would negotiate parcel exchanges with neighboring farmers to reconfigure split farmland parcels for resale so that the parcels would continue to be farmed and not contribute further to the segmentation and conversion of farmland. Generally, when Caltrans resells or reconfigures land in an area zoned for agriculture as buffers or conservation easements, deed restrictions limiting future use to agriculture would be included to keep land in agricultural use in perpetuity. Remnant parcels of farmland are avoided as much as possible by acquiring right-of-way in “slivers” or linear strips of property adjacent to the existing parcels. When possible, Caltrans will allow farmland to be kept in production (after purchase) until it is needed for construction.

Rectifying/Repairing/Rehabilitating/Restoring

Caltrans would provide relocation advisory assistance to any person, business, farm, or non-profit organization that would be displaced, or that has onsite investments, such as wells and irrigation systems, displaced as a result of acquisition of real property for public use. Relocation resources would be available to all displaced individuals, free of discrimination. In addition, any right-of-way acquisition would be purchased at fair market value.

Currently, some farmers affected by the project have irrigation water piped under the existing State Route 156 because their source of water is located on the north side of the highway and their crops are on the south side. These farmers must cross the highway to regulate the irrigation water. During construction, when these irrigation pipes are replaced, release valves can be placed on the south side of the new

expressway, which would make crossing the highway to regulate the irrigation water unnecessary, thereby providing a safer condition.

If an excess parcel of farmland results from construction, adequate access to water for the irrigation of crops would be established and a permanent easement would be attached to ensure agricultural land use of the parcel in perpetuity.

Restoring 18 inches of topsoil to temporarily disturbed farmland would mitigate temporary impacts. At the direction of Caltrans, the construction contractor would stockpile the top 18 inches of topsoil for eventual replacement on parcels that have been disturbed.

During construction, provisions for adequate access (temporary driveways/easements) would ensure that agricultural operations are not impaired along the project limits.

Reducing or Eliminating the Impact over Time by Preservation and Maintenance Operations During the Life of the Action

During the circulation of the Draft Environmental Impact Report/Environmental Assessment in October 2007, a letter from the California Department of Conservation was submitted to Caltrans with suggestions and recommendations for farmland impact mitigation. The California Department of Conservation recommended several measures to mitigate farmland including conservation easements, Farmland Security Zone contracts, Williamson Act contracts, and mitigation banks, and made available to Caltrans approximately 30 “conservation tools,” which are methods used to conserve or mitigate project impacts on agricultural land. Caltrans reviewed the conservation methods and determined that all the methods are outside the jurisdiction of Caltrans and would require some form of legislation, regulation, statute, or ordinance by the State, City or County except three: Williamson Act contracts, endowments, and conservation easements.

For the Williamson Act contracts, the California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to non-agricultural use. The proposed project, a four-lane expressway, would affect 17 property parcels and convert 124 acres of prime farmland. Most of the right-of-way needed for construction of the project, about 110 acres, would come from five parcels. All of these property parcels are under Williamson Act contracts and total about 1,132 acres. None of the Williamson Act contracts would be cancelled due to the project’s right-of-way needs.

For endowments, Caltrans currently is allowed to transfer only title (ownership), but cannot transfer endowment or the donation of mitigation fees to a local, regional, or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The transfer of direct endowment is considered a gift of public funds (actual dollars) and is prohibited by Article 16, Section 6 of the California Constitution. In other words, Caltrans cannot donate fees; therefore, this recommendation is not legally feasible.

Compensating for the Impact by Replacing or Providing Substitute Resources

For the outright purchase of easements, the California Department of Conservation recommends the use of conservation easements of land of at least equal quality and size as partial compensation for the direct loss of agricultural land. This agency states that this form of mitigation will protect a portion of those remaining land resources and lessen project impacts in accordance with California Environmental Quality Act Guideline 15370.

According to the California Department of Conservation website, an agricultural conservation easement is a voluntary legally recorded deed restriction that is placed on a specific property used for agricultural production. The goal of an agricultural conservation easement is to maintain agricultural land in active production by removing the development pressures from the land. Such an easement prohibits practices that would damage or interfere with the agricultural use of the land. Because the easement is a restriction on the deed of the property, the easement remains in effect even when the land changes ownership. Agricultural conservation easements are held by the property owner, land trusts or local governments, which are responsible for ensuring that the terms of the easement is upheld.

Caltrans has determined that a conservation easement or deed restriction is a feasible form of mitigation for the farmland impacts resulting from the project. Deed restrictions would limit future use of the land to agriculture in perpetuity and the property owner is responsible for ensuring that the terms of the easement are upheld because the property owner retains ownership.

In addition to the mitigation discussed and already adopted for this project, Caltrans will preserve farmland of roughly equal quality by purchasing a conservation easement(s) to partially compensate for the acreage of farmland converted by the project. When Caltrans programmed this project for right-of-way capital costs, the highest cost estimate was used for Alternative 2, a four-lane divided expressway with

two-lane frontage roads north and south of the expressway. When Alternative 6 was modified and chosen as the preferred alternative, less right-of-way was needed and the right-of-way capital costs were less than earlier estimated. Therefore, the savings of approximately \$500,000 can be used toward farmland mitigation. Additional funds for farmland mitigation are currently unavailable. If there are any additional savings from other mitigation costs programmed for the project, the savings may be used toward farmland mitigation.

A conservation easement(s) would be established before construction of the project begins in the year 2014. Caltrans Right of Way agents are currently corresponding with property owners within the San Juan Valley with the intention of establishing a conservation easement near the project. However, if conservation easements cannot be established near the project, Caltrans will pursue a conservation easement elsewhere.

The conservation easement will limit future use of the land to agriculture in perpetuity, and the property owner retains ownership but will be responsible for ensuring that the terms of the conservation easement are upheld. The parcel(s) proposed for conservation will continue to be used for, and is large enough to sustain, commercial agricultural production. The land will also be in an area that possesses the necessary market, infrastructure, and agricultural support services, and the surrounding parcel sizes and land uses will support long-term commercial agricultural production.

However, before purchasing the conservation easement, the Final Supplemental Environmental Impact Report must be approved, and Caltrans is required to conduct environmental studies and an appraisal on the parcel(s) proposed for the easement. Once compensation has been accepted, the terms of the agricultural conservation easement would be a deed restriction on the land being acquired.

Caltrans intends to establish a conservation easement near the project but if negotiations are not successful locally, Caltrans will establish a conservation easement elsewhere in California. Caltrans made inquiries to several farmland trusts, non-profit 501(c)(3) organizations with the mission of conserving farmland in California. The farmland trusts were in Northern, Central, and Coastal California. Several of these organizations stated they were willing to work with Caltrans in acquiring conservation easements of farmland subject to development pressure. These trusts stated that, depending on the location, similar properties available for sale range

between \$3,000 and \$25,000 per acre. At a 1-acre to 1-acre ratio, the \$500,000 reserved for farmland mitigation should be adequate to acquire properties of similar quality for a conservation easement based on the low sale range provided by the farmland trusts contacted.

The loss of farmland resulting from the project represents an unavoidable permanent reduction in California's agricultural land resources. However, the use of a conservation easement, along with the mitigation measures already built into the project design, would partially compensate the direct loss of agricultural land and will protect a portion of California's remaining land resources in accordance with California Environmental Quality Act Guideline 15370.



Chapter 3 Chapters Intentionally Omitted

Chapters 3 through Chapter 6 were intentionally omitted because it was not necessary to supplement Chapters 3 through Chapter 6 of the 2008 Environmental Impact Report.





Appendix B Caltrans Hydrology and Floodplain Report

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

*Flex your power!
Be energy efficient!*

To: KAL DAHIR
Senior Design Engineer
Project Development, Design II

Date: August 9, 2010

File: 05-SBt 156
PM 3.0/R 8.2
EA: 05-344900

From: TOM FISHER 
Senior Hydraulics Engineer
Central Region Hydraulics

Subject: **Hydrology and Floodplain Report**

I. INTRODUCTION

The San Benito 156 Improvement Project proposes improvements to State Route 156 between the cities of San Juan Bautista and Hollister in San Benito County. The 5.2 mile project begins within the eastern city limits of San Juan Bautista at the Alameda Avenue and ends west of Hollister, approximately 0.2 miles east of Fourth St (Business Route 156) in San Benito County. The California Department of Transportation (Caltrans) proposes to widen State Route 156 in San Benito County from two lanes to four lanes. The project proposes to construct a new bridge over San Juan Creek for the eastbound lanes and remove an existing reinforced concrete box culvert and replace it with a bridge at Mission Vineyard Road, which currently crosses the east branch of San Juan Creek, a tributary to San Juan Creek.

This Report supersedes the Location Hydraulic Study dated February 25, 2004 and documents the most current analyses on the floodplain at San Juan Creek in the project area. This report also takes into consideration the comments received from the San Benito Water District, a draft version of the San Juan Basin Surface Drainage Study by Advanced Hydro Engineering for the San Benito County Water District; the FEMA Flood Insurance Study revised April 16, 2009 and the San Juan Creek Hydrology/Hydraulics Report by Caltrans, Division of Structures.

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II. SITE CHARACTERISTICS

II A. Climate

The climate of northern San Benito County is characterized by warm summers and cool, moist winters. The normal temperature for summer and winter is 73°F and 46°F, respectively. However, it is not unusual for temperatures to rise above 100°F a few days every summer or to fall below 40°F occasionally in the winter. The average yearly rainfall is 13 inches for Hollister and 17 inches for San Juan Bautista. Most of this precipitation occurs in the period from October to May.

II B. Topography and Hydrology Characteristics

The area of land, which drains across this stretch of Highway 156, originates in the foothills and flows through the floor of the San Juan Valley while on its way to the San Benito River. The community of San Juan Bautista is to the west, and the city of Hollister is to the east of the area of interest. Land use is primarily agricultural in the low lands, and grasslands in the foothills.

The USGS topographic maps were evaluated to quantify the size and characteristics of the watershed. The maps indicate that three distinct sub-basins drain across this stretch of highway into San Juan Creek. San Juan Creek drains the San Juan Canyon sub-basin, and is 8.6 square miles. It originates at about Fremont Peak (elevation 3,170') in the Gabilan Mountains, and runs in a northwesterly direction towards the San Benito River (elevation 160'). As it approaches the state highway and the city of San Juan Bautista as well, the creek has been channeled, piped, and re-routed through the town area. Once north of San Juan Bautista, the creek has again been channeled by agriculture. This area has been subject to severe flooding.

A second sub-basin is the San Andreas Rift Zone, which is about 11.8 square miles in area. It starts at the 2,500' elevation near the Monterey County line and also runs in a northwesterly direction towards its ultimate destination, the San Benito River. As it approaches the valley floor, farming operations has obliterated its tributaries. A row of telephone

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stumps running in a southeasterly direction towards Mission Vineyard Road marks the last remnant of the natural creek. When the natural creek reached the flatland, farmers channelized the creek between the foothills and Route 156. Also in the mid-1950's, during the construction of existing Route 156, Caltrans realigned approximately 1500 feet of the Creek Channel. This sub-basin is the tributary for the east branch of San Juan Creek referred as ditch in the USGS topographic map.

A third sub-basin of concern is the flatland north of the highway and is about 1.7 square miles. Here again, farming operations has altered the natural creek beds. According to the USGS topographic map, the area between Bixby Rd and Mitchell Rd has a natural slope to the west and south toward the highway, but west of Bixby Rd, the natural topography directs flows to the to the west and north, away from the highway. Please see the attached Topographic and Watershed Map.

III. FLOODPLAINS

III A. General

Title 23 of the Code of Federal Regulations, Part 650, Subpart A prescribes policies and procedures for the location and Hydraulic design of Highway encroachments on floodplains. Such polices comply with the National Flood Insurance Program (NFIP) of the Federal Emergency Management Agency (FEMA). FEMA has adapted the 100-year flood as the base flood for floodplain management purposes. The 100-year flood or **base flood** is defined as the "flood or tide having a one percent chance of being exceeded in any given year" (Q100).

Similarly, the **base floodplain** is defined as "the area subject to flooding by the base flood". An **encroachment** is defined as "an action within the limits of the base floodplain". Encroachment on flood plains, such as structures and fill, reduces the flood carrying capacity, increases flood heights, and velocities, and increases flood hazards in areas beyond the encroachment itself. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is a channel of a stream, plus any adjacent flood plain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal

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standards limits such increases to 1.0 foot provided those minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

A **significant encroachment** is defined as a highway encroachment and any direct support of likely base floodplain development that would involve one or more of the following construction or flood-related impacts. (1) A significant potential for interruption or termination of a transportation facility, which is needed for emergency vehicles or provides for a community's only evacuation route. (2) A significant risk or (3) a significant adverse impact on natural and beneficial floodplain values.

III B. Floodplain Encroachment

III B1. FEMA Flood Insurance Rate Maps

The FEMA Flood Insurance Rate Maps (FIRM) as well as the FEMA Flood Insurance Study (FIS) for San Benito County and Incorporated Areas were evaluated to determine if any portion of the proposed project is in an area that could be subject to the above described flood plain criteria. The west end of the project encroaches into a flood area of the San Juan Creek and the San Juan Creek Tributary. Please see the attached Flood Insurance Rate Maps (FIRM).

The FIS and FIRM maps were prepared and revised by FEMA on April 16, 2009. The Hydraulics HEC-2 model in which the FIRM maps are base were prepared by SCHAAF & Wheeler Consulting Civil Engineers for San Benito County Flood Insurance Study on January 1989. The proposed project is located on the following FIRM Maps.

San Benito County, California and Incorporated Areas

Map Number	Revised Date
06069C0159D	April 16, 2009
06069C0158D	April 16, 2009

The proposed project is within different zones designated as Zone A, AO, AE, AH and X. The zones are defined below.

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SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.



FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



OTHER FLOOD AREAS

- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



OTHER AREAS

- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

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III B2. Vertical Datum

All elevations are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. The elevations shown in this FEMA FIS report and the FIRM maps are referenced to the North American Vertical Datum of 1988 (NAVD88). All other elevations, including this analysis, shown on the report are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).

Ground, structure, and flood elevations may be compared and/or referenced to NAVD88 by applying a standard conversion factor. The conversion from NGVD29 to NAVD88 ranged between 2.74 and 2.87 for this county. The conversion factor for this San Juan Creek is 2.82.

The Base Flood Elevations shown on the FIRM represent whole-foot rounded values. For example, a Base Flood Elevation of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this report to NAVD88 should apply the stated conversion factor to elevations shown on the flood profiles and supporting data tables in the FIS. For example a 196.63 ft NGVD29 elevation is equal to 199.45 ft in the NAVD88 vertical datum.

III B3. San Juan Creek Tributary

The San Juan Creek Tributary overtops Route 156 just east of Alameda Street. According to FEMA FIRM Map 06069C0158D the area east of Alameda Street and south of Route 156 is defined as Zone AH and the north side of Route 156 is defined as Zone AE. Approximately 600 ft segment of Route 156, where the San Juan Creek tributary overtops Route 156, is defined as Zone AE.

III B4. San Juan Creek

As water flows down the west branch of San Juan Creek, it creates a floodplain, which progressively widens as it reaches the flatlands. On the west branch of the San Juan Creek, the flood zone changes from Zone AO upstream of San Juan Hollister Road to Zone AE just south of Route 156. In the east branch of San Juan Creek, parallel to Route 156, the Zone is A. The FEMA

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FIRM map 06069C0159D, suggests that both sides of the highway are on the floodplain, but the highway itself is not in it. The FEMA FIRM map suggests that the 100-year flow crosses Route 156 under San Juan Creek Bridge without overtopping San Juan Creek Bridge or Route 156.

However, our Central Region Study as well as other studies such as San Juan Basin Surface Drainage Study by Advanced Hydro Engineering for San Benito County Water District and the San Juan Creek Hydrology/Hydraulics Report by Caltrans Division of Structures revised January 12, 2010 indicates that the 100-year food overtops the existing Route 156 at the lower roadway elevations located east of Mission Vineyard Road.

All studies conclude that the San Juan Creek Bridge as well as the segment of Route 156 just west of Mission Vineyard Road is not overtopped. The segment of Route 156 just west of Mission Vineyard Road is already elevated.

IV. SAN JUAN CREEK HYDROLOGY AND HYDRAULICS

IV A. Background

Several other studies have been done for the San Juan Creek. However, none of them addresses both branches of San Juan Creek in detail. San Juan Creek has two main branches (east and west) downstream of San Juan Creek Bridge at Route 156. The west branch of San Juan Creek is referenced as San Juan Creek in both the FEMA FIS and the Advanced Hydro Engineering Study. The Caltrans Division of Structures Study references the east branch of San Juan Creek as **San Juan Creek**, and the Advanced Hydro Engineering Study references it as **South San Juan Channel**.

The FEMA FIS study modeled in detail the west branch of San Juan Creek with HEC-2 software, but only used approximation methods to estimate the 100-year flood elevations at the east branch of the Creek.

The Advanced Hydro Engineering study took the FEMA HEC-2 model converted it to a HEC-RAS model and used Caltrans current topography. This study slightly improved the FEMA FIS model, but it didn't model the east branch of San Juan Creek.

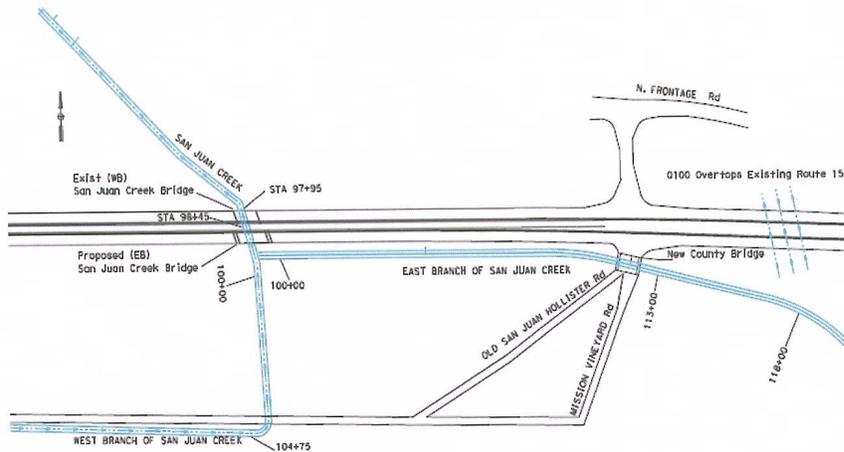
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The Caltrans Division of Structures Study didn't model the west branch of San Juan Creek; instead it only concentrated in the east branch of San Juan Creek, the main branch affected by the project. Although this study is sufficient to analyze the existing San Juan Bridge and design the two new bridges proposed in this project, the study is not sufficient to analyze the impact on the flood plain. The study doesn't take into consideration the encroachment of the new eastbound lanes. Neither, it models the proposed culverts across Route 156. The culverts are needed to bypass the flow rate that currently overtops Route 156 to avoid increasing the flood depths after the Route 156 profile is raised east of Mission Vineyard Road.

Our Central Region Hydraulics Study is a more comprehensive HEC-RAS model that not only analyzes the existing conditions of both branches of San Juan Creek, but also addresses the impact of the two new lanes proposed at Route 156. This study uses the FEMA HEC-2 model and the bridge openings designed by Caltrans Division of Structures and, it analyzes the channel improvements proposed at the east branch of San Juan Creek.

A sketch of the San Juan Creek showing the two branches of the creek is show for additional clarification.



IV B. Flow Rates

All Studies reviewed used similar flow rates, and apparently there are no gage station records for the San Juan Creek. The

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FEMA FIS one-hundred year flow rates (Q100's) are 2600 cfs and 800 cfs at San Juan Creek upstream of Route 156 and at upstream of Mission Vineyard Road respectively and the watersheds are 19.1 and 8.12 square miles respectively. In their study, Advanced Hydro Engineering also used the FIS flow rates. The Caltrans Division of Structures also estimated flow rates similar to the FEMA FIS.

The flow rates used in our Central Region Hydraulics Study are similar to the ones used in the other studies. At the watershed upstream of San Juan Creek, we estimated 20.4 square miles, a small percent difference than the 19.1 square miles estimated by the FEMA FIS. So, the differences in the flow rates are expected to be very similar too. For the west branch of San Juan Creek, we used the FEMA FIS flow rate, and for the east branch of San Juan Creek, we used the Division of Structures estimate. The estimated flow rates used in our study are tabulated below.

FLOW RATES

Station	Description	Exist Q100 (cfs)	Proposed Q100 (cfs)
East Branch of San Juan Creek 118+00	Upper Limit of Detail Study upstream of New County Bridge	1800	1800
East Branch of San Juan Creek 113+00 to STA 118+00	Overtops or Bypasses Route 156	150	192
East Branch of San Juan Creek 113+00	Upstream of New County Bridge	1650	1608
West Branch of San Juan Creek 104+71	Upstream of Mission-Vineyard Road	800	800
San Juan Creek 98+45	Upstream of Exist San Juan Creek Bridge	2450	2408
San Juan Creek 97+95	Downstream of San Juan Creek Bridge	2600	2600

Notes:

1. Under existing conditions, it is assumed that the flow that overtops Route 156 returns to the Creek downstream of San Juan Creek Bridge.
2. Under proposed conditions, up to 192 cfs would be bypassed to the other side of Route 156 with 3 pipe culverts.

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IV C. San Juan Creek Data

The creek was modeled using three scenarios. For the existing conditions, we used the same FEMA FIS HEC-2 data for the West Branch of the Creek and for the East Branch of the creek we used channel cross-sections and structure dimensions based on survey information and as-built plans.

For the two other scenarios the FEMA-HEC2 data was also used for the west branch of the Creek, but the east branch of the Creek was modeled using the existing and the two proposed new bridges. The cross sections were based in the current survey information and plans that include the new eastbound lanes proposed in Route 156. One of the scenarios modeled assumes widening approximately 1500 ft the east branch of San Juan Creek and the other assumes a retaining wall and a swale parallel to the main channel of the west branch of San Juan Creek between San Juan Creek Bridge and the proposed County Bridge. The Manning's roughness coefficient for the main channel is assumed to be 0.025 and 0.04 for the over banks.

IV D. San Juan Creek Water Surface Elevations

Under the existing conditions scenario, the water surface elevations match very closely the FEMA FIS HEC-2 model for the west branch of San Juan Creek, and the elevation at the upper limits of the model where the 100 year flow overtops Route 156 is 197.38 ft. Under existing conditions approximately 150 cfs overtops Route 156 East of the Mission Vineyard Road.

Under the proposed condition scenarios, the water surface elevations also matches very closely the FEMA HEC-2 model for the west branch of San Juan Creek, and the elevation at the upper limits of the model where the 100 year flow currently overtops Route 156 are slightly decreased to 197.31 ft for the channel widening alternative and 197.32 ft for the swale and retaining wall alternative. The summary of flows is tabulated below.

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Water Surface Elevation
 (NGVD 29 Vertical Datum)

Station	Description	Q100 (cfs)	Existing Conditions	Proposed Alternative	
				Channel Widening	Swale and Ret. Wall
East Branch of San Juan Creek STA 118+00	Upstream of New County Bridge (upper limit of detail study)	1800	197.38	197.31	197.32
East Branch of San Juan Creek STA 113+00	Upstream of New County Bridge	1608	197.34	197.25	197.25
West Branch of San Juan Creek STA 104+71	Upstream of Mission-Vineyard Road	800	199.61	199.6	199.6
West Branch of San Juan Creek STA 101+26	Upstream of Junction	800	196.42	196.16	196.16
San Juan Creek STA 99+00	Upstream of New E/B San Juan Creek Bridge	2408		196.63	196.63
San Juan Creek STA 98+45	Upstream of Exist San Juan Creek Bridge	2408	196.34	195.95	195.95
San Juan Creek STA 97+95 (97+77 Proposed Alternatives)	Downstream of Exist San Juan Creek Bridge	2600	194.59	194.08	194.08

Notes:

1. Under existing conditions, it is assumed that the flow that overtops Route 156 returns to the Creek downstream of San Juan Creek Bridge
2. Under proposed conditions, up to 192 cfs would be bypassed to the other side of Route 156 with 3 pipe culverts.

V. CONCLUSION AND RECOMMENDATIONS

According to the Hydraulics HEC-RAS modeling of the San Juan Creek, this project would affect the size of the floodplain if nothing were done to the approximately 1500 ft of existing east branch of San Juan Creek adjacent to Route 156 between the existing San Juan Creek bridge and the proposed county bridge.

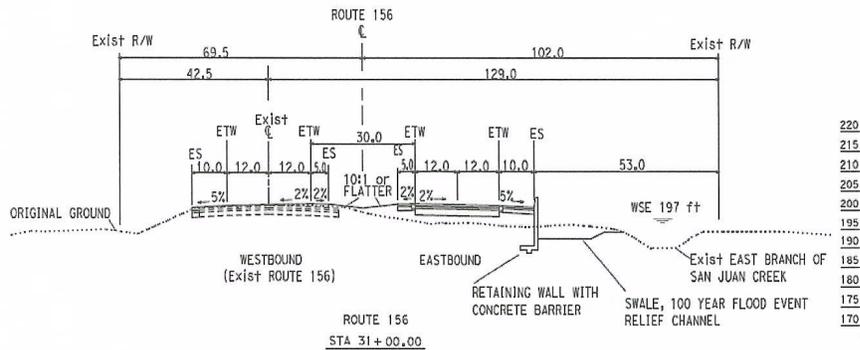
Therefore, Central Region Hydraulics recommends improving approximately 1500 ft of the east branch of San Juan Creek channel adjacent to the highway just east of San Juan Creek Bridge. There are two alternatives to improve the channel of the east branch of San Juan Creek. One of the alternatives consists in widening the channel 10 additional feet. The other alternative consists in constructing a swale parallel to the channel and constructing a retaining wall to minimize the

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encroachment on the floodplain. In this location Route 156 is already elevated above the floodplain water elevation. Please see the cross sectional detail.

CROSS SECTIONAL DETAIL



Since Caltrans proposes to raise the roadway profile above the floodwater level on the east side of Mission Vineyard Road, three 3-ft diameter culverts are recommended to mimic current flooding patterns and to safely pass all water with the potential to back up against the proposed new alignment.

To mitigate the flooding due to flow concentration on the north side of Route 156, it is proposed to construct either a lined concrete ditch or install a 5 ft diameter reinforced concrete pipe parallel to Route 156 between Mission Vineyard and San Juan Creek. This ditch or pipe would discharge into San Juan Creek downstream of San Juan Creek Bridge.

Furthermore, Central Region Hydraulics concurs with the Caltrans Structures Division to design a larger bridge for the proposed new eastbound lanes at San Juan Creek. Similarly, Central Region Hydraulics concurs with Caltrans Division of Structures to remove the existing County box culvert located on the Mission Vineyard Road on the east branch of the creek and replace it with a bridge.

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Caltrans doesn't propose raising the roadway profile between Alameda Road and San Juan Creek, so the 100 year flow of the San Juan Creek Tributary will continue overtopping Route 156 east of Alameda Avenue. In this location sound walls and concrete barriers should not be constructed. An approximately 870 ft long sound wall is proposed west of San Juan Creek, but this wall should not affect the floodplain because at this location Route 156 is already elevated above the floodplain elevation.

The roadway drainage will consist in drainage inlets and pipes draining the highway water into side ditches. Caltrans considered using two ditches to separate the onsite (highway) runoff from offsite (agricultural) runoff, but the current plans for the proposed project includes a single ditch, which will convey both onsite and offsite runoff. Caltrans will treat onsite runoff with biofiltration strips. Biofiltration strips, also know as vegetated buffer strips, are vegetated sections of land over which storm water flows as overland sheet flow. The single ditch will combine the treated onsite runoff with offsite runoff. The ditch will be shallow (3 feet) and will have berms (mounds) to slowdown the flow rate and maximize infiltration.

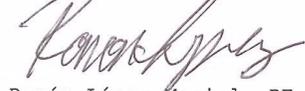
The ditch will not have the capacity to convey the 100-year flow rate, but State Route 156 will be elevated above the 100-year flow elevation, and the ditch will have the capacity to convey low flows, such as the 10-year storm, which would benefit properties adjacent to State Route 156. Although, there is no current plan to combine this project with a major flood management project, the proposed ditch could be enlarged and redesigned to accommodate a joint flood management project in the future. Please see the attached preliminary drainage plans.

Considering the proposed channel improvements and the replacement of the culvert with a bridge and the construction of the longer bridge in the eastbound lane, the project would not increase the base flood backwater elevations. The project doesn't constitute a significant floodplain encroachment as defined in 23 Code of Federal Regulations, Section 650.1059q0.

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Study Prepared by:



Ramón López Maciel, PE
Central Region Hydraulics Branch B
District 6, Fresno, CA.

VI Attachments

1. Project Location Map
2. Topographic and Watershed Map
3. Flood Insurance Rate Maps
4. Technical Information for Location Hydraulic Study and Floodplain Evaluation Report Summary
5. Preliminary Drainage Plans

VII REFERENCES

1. Federal Emergency Management Agency, Flood Insurance Study, San Benito County, California and Incorporated Areas, Revised April 16, 2009.
2. Federal Management Emergency Agency, Flood Insurance Rate Maps 06069C0159D and 06069C0158D , San Benito County, California and Incorporated Areas, Revised April 16, 2009
3. California Department of Transportation, Location Hydraulic Study, February 25, 2004
4. California Department of Transportation, Division of Structures San Juan Creek Hydrology /Hydraulics Report, Revised January 12, 2010
5. California Department of Transportation, Highway Design Manual, Sixth Edition, September 1, 2006
6. Advanced Hydro Engineering for the San Benito County Water District, Draft version of the San Juan Basin Surface Drainage, April 27, 2007
7. United States Geological Survey, Topographic Maps, Hollister, and San Juan Bautista Quadrangles

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**Technical information for Location Hydraulic Study
(Location 2 of 2)**

Dist. 05 Co. San Benito Route: 156 PM 3.0/R8.2

EA 05-344901 Bridge: Mission Vineyard Road No. 43C0068

FLOOD PLAIN DESCRIPTION:

In the east branch of San Juan Creek, parallel to Route 156, the Zone is A. The 100-year food overtops both the existing culvert and the existing Route 156 at the lower roadway elevations located east of Mission Vineyard Road.

1. Description of Proposal (including any physical barriers i.e. concrete barriers, soundwalls, etc. And design elements to minimize floodplain impacts): An existing reinforced concrete box culvert will be replaced with a bridge at Mission Vineyard Road, which currently crosses the east branch of San Juan Creek. Although the bridge will have more capacity than the existing culvert, the bridge and Mission Vineyard Road will continue to be overtopped by the 100-year flood.

2. ADT: 450 Current 450 Projected (2034) 650

3. Hydraulic Data: (NGVD 29 Vertical Datum)
 Base flood $Q_{100} =$ 1608 cfs WSE₁₀₀ = 197.25 ft
 The flood of record if greater than Q_{100} $Q =$ _____ cfs WSE = _____
 Overtopping flood $Q =$ _____ cfs WSE = _____
 Are NFIP maps studies available? Yes x No _____

4. Is the highway location alternative within regulatory floodway?
 Yes _____ No x

5. Attach map with flood limits outlined showing all building or other improvements within the base floodplain.
 Potential Q_{100} backwater damages: Additional damages are not expected.
 E. Residencies? _____ x
 F. Other Bldgs? _____ x
 G. Crops? _____ x
 H. Natural and Beneficial floodplain values? _____ x

6. Type of Traffic:
 E. Emergency supply or evacuation route? x _____
 F. Emergency vehicle access? x _____
 G. Practicable detour available? x _____
 H. School bus or mail route? x _____

7. Estimated duration of traffic interruption for 100-year event 12 hours

8. Estimated value of Q_{100} flood damage (if any) –moderate risk level.
 C. Roadway \$ _____
 D. Property \$ _____
 Total \$ _____

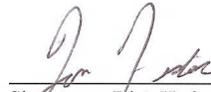
Attachment to the Hydrology and Floodplain Report

9. Assessment of Level of Risk

Low Moderate High

For High Risk projects, during design phase, additional Design Study Risk Analysis may be necessary to determine design alternative.

PREPARED BY:


Signature – Dist. Hydraulic Engineer
(Items numbers 3,4,5,7,9)

9/11/10
Date

Is there any longitudinal encroachment, significant encroachment, or any support of incomparable Floodplain development? No Yes

If yes, provide evaluation and discussion of practicability of alternative in accordance with 23 CFR 650.113

According to the HEC-RAS model, the project would affect the size of the floodplain if nothing were done to the approximately 1500 ft of existing east branch of San Juan Creek adjacent to Route 156 between the existing San Juan Creek bridge and the proposed county bridge.

Therefore, in addition to constructing a larger bridge for the Eastbound lanes of Route 156 and replacing the existing box culvert at mission Vineyard Road with a bridge, approximately 1500 ft of the east branch of San Juan Creek channel adjacent to the highway just north of San Juan Creek Bridge will be improved. There are two alternatives to improve the channel. One of the alternatives consists in widening the channel 10 additional feet. The other alternative consists in constructing a swale parallel to the channel and constructing a retaining wall to minimize the encroachment on the floodplain.

Since a longer bridge will be constructed for the eastbound lanes, a culvert will be replaced with a bridge and the channel will be improved, it is expected that the longitudinal encroachment will be insignificant.

Information developed to comply with Federal requirement for the Location Hydraulic Study shall be retained in the project files.


Signature – Dist. Project Engineer
(Item numbers 1,2, 6, 8)

08/11/10
Date

Attachment to the Hydrology and Floodplain Report

FLOOD PLAIN EVALUATIONS REPORT SUMMARY

Dist. 05 Co. San Benito Route: 156 PM 3.0/R8.2

EA 05-344900

Limits:

The project proposes improvements to State Route 156 between the cities of San Juan Bautista and Hollister in San Benito County. The 5.2 miles project begins within the eastern city limits of San Juan Bautista at the Alameda Avenue and ends west of Hollister, approximately 0.2 miles east of Fourth St (Business Route 156) in San Benito County

FLOOD PLAIN DESCRIPTION:

Location 1: As water flows down the West Branch of San Juan Creek it creates a flood plain, which progressively widens as it reaches the flatlands. On the west branch of the San Juan Creek, the flood zone changes from Zone AO upstream of San Juan Hollister Road to Zone AE just south of Route 156. In the east branch of San Juan Creek, parallel to Route 156, the Zone is A. The 100-year flow crosses Route 156 under San Juan Creek Bridge without overtopping San Juan Creek Bridge. However, the 100-year food overtops the existing Route 156 at the lower roadway elevations located east of Mission Vineyard Road.

Location 2: In the east branch of San Juan Creek, parallel to Route 156, the Zone is A. The 100-year food overtops both the Existing culvert and the existing Route 156 at the lower roadway elevations located east of Mission Vineyard Road.

- | | YES | NO |
|--|----------|----------|
| 1. Is the proposed action a longitudinal encroachment of a floodplain?
<u>However, a longer bridge will be constructed for the eastbound lanes, a culvert will be replaced with a bridge and the channel will be improved. It is expected that the longitudinal enchantment will insignificant.</u> | <u>X</u> | ___ |
| 2. Are the risks associated with the implementation of the proposed action significant? | ___ | <u>X</u> |
| 3. Will the proposed action support probable incompatible floodplain development? | ___ | <u>X</u> |
| 4. Are there any significant impacts on the natural and beneficial floodplain values? | ___ | <u>X</u> |
| 5. Routine construction procedures are required to minimize impacts on the floodplain. Are there any special mitigation measures necessary to minimize impacts or restore and preserve natural and beneficial floodplain value? If yes, explain. | ___ | <u>X</u> |
| 6. Does the proposed action constitute a significant floodplain encroachment as defined in 23 CFR, Section 650.105 (q)? | ___ | <u>X</u> |
| 7. Are Location Hydraulic Studies that document the above answers on file? If not explain. | <u>X</u> | ___ |

PREPARED BY:

[Signature]
Signature – Dist. Hydraulic Engineer

8/11/10
Date

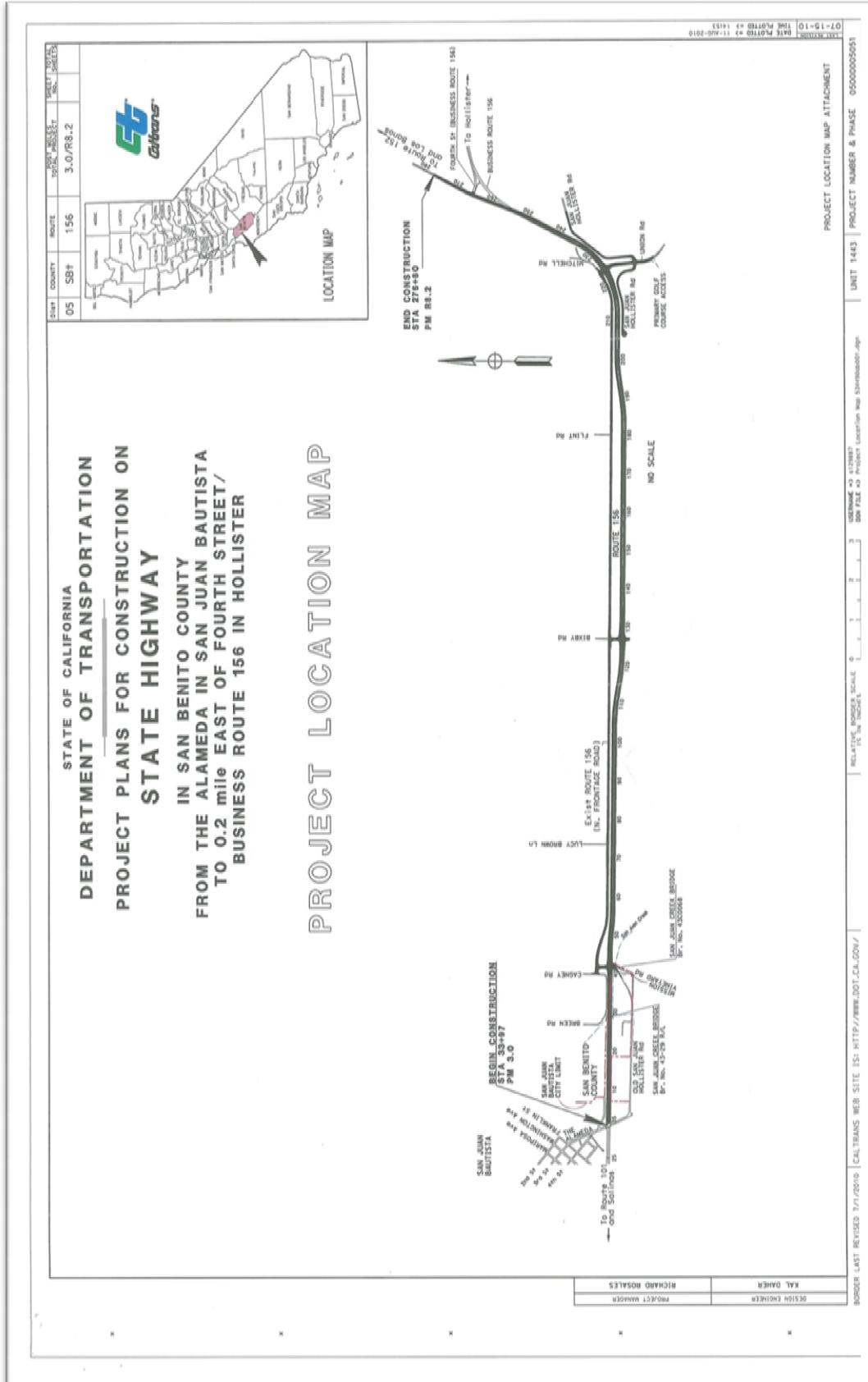
[Signature]
Signature – Dist. Environmental Branch Chief

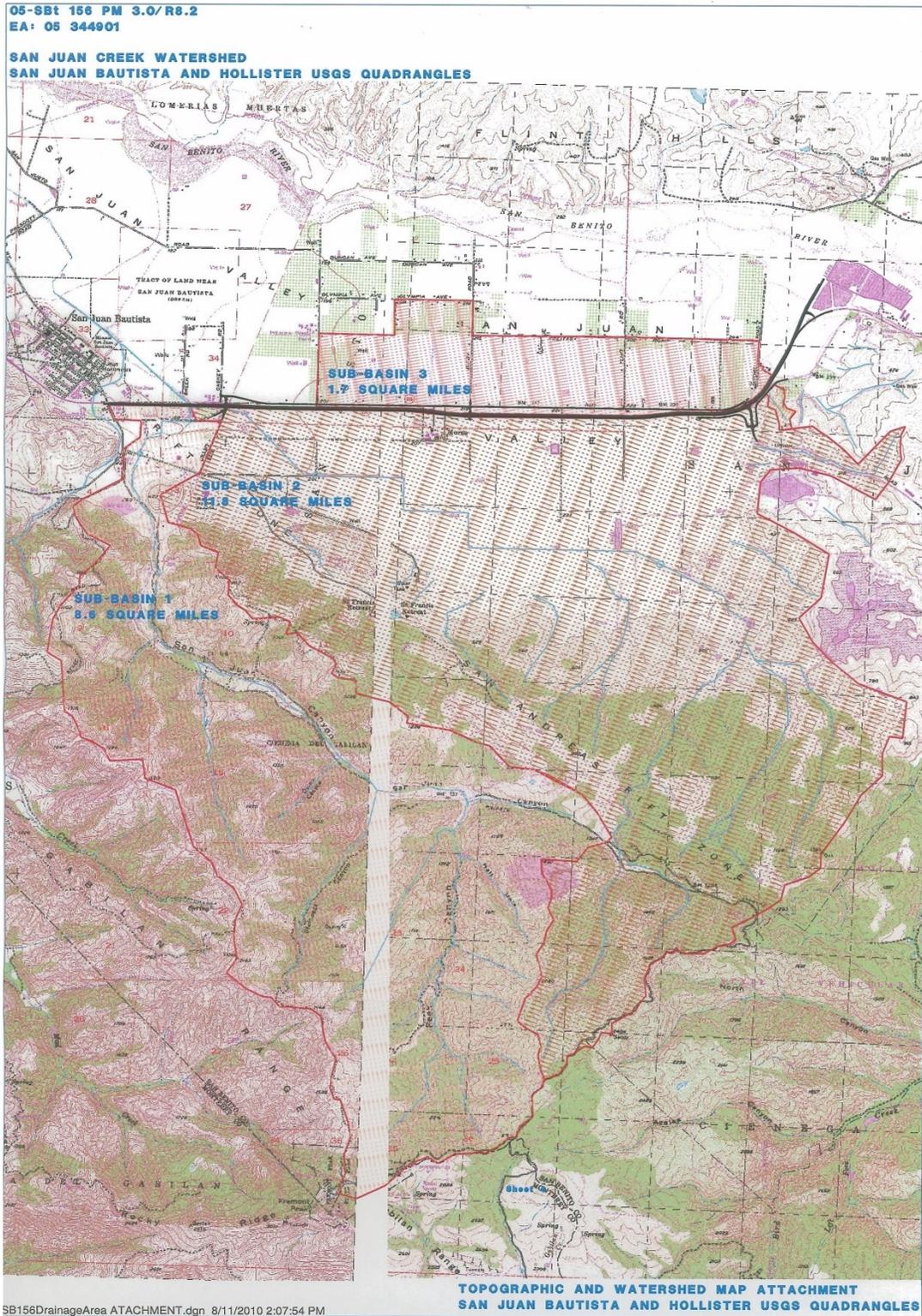
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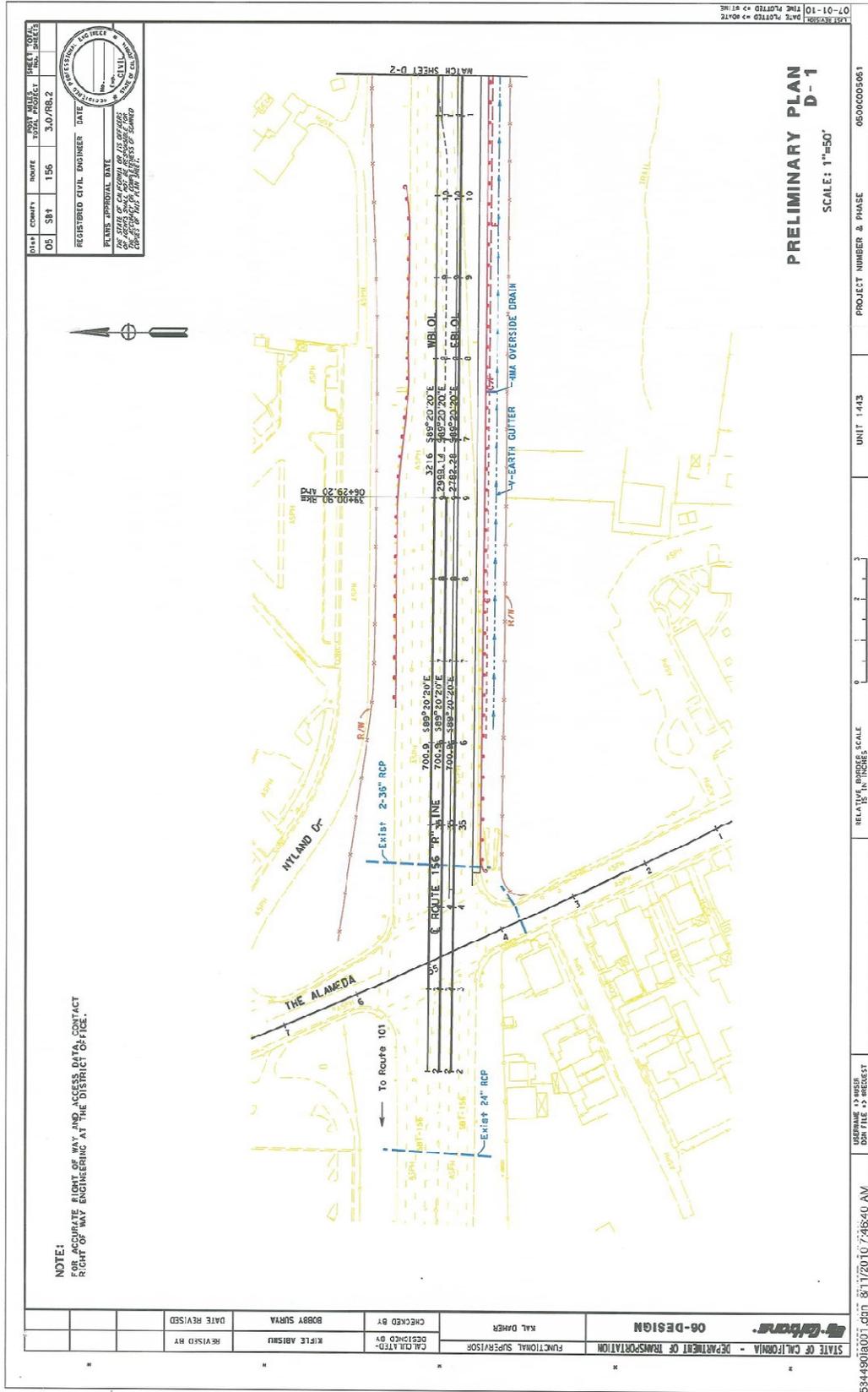
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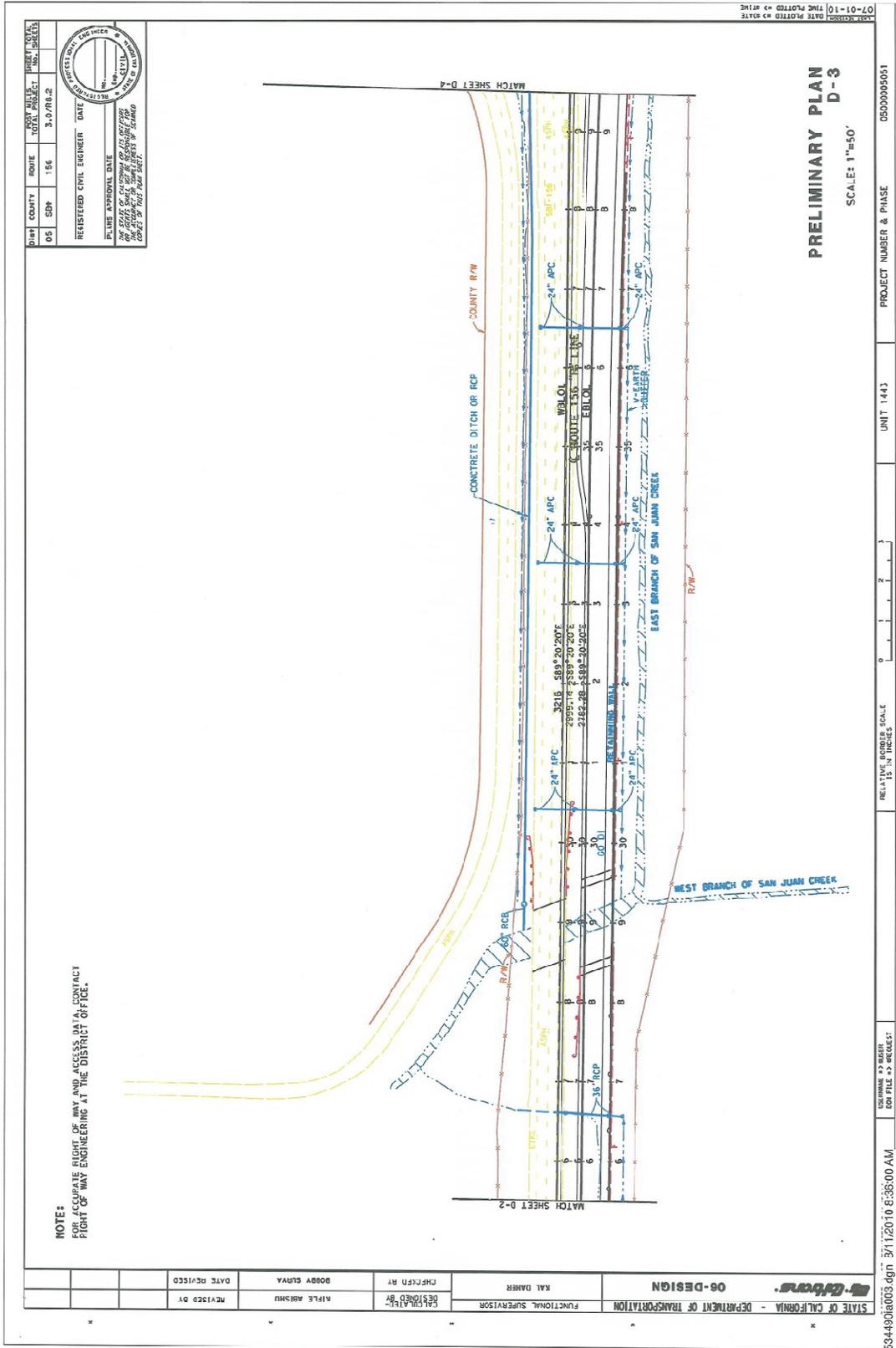
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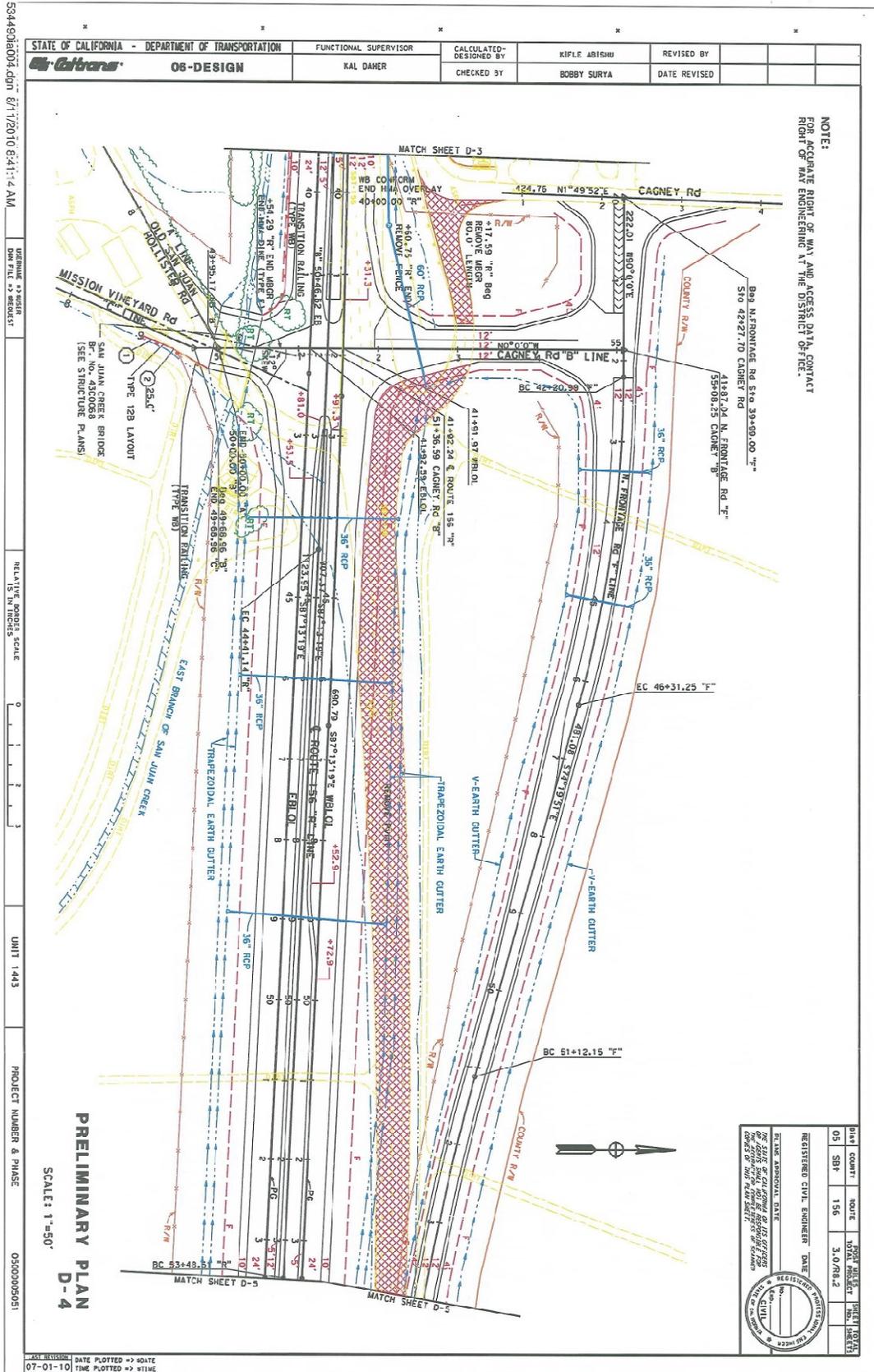
Attachment to the Hydrology and Floodplain Report

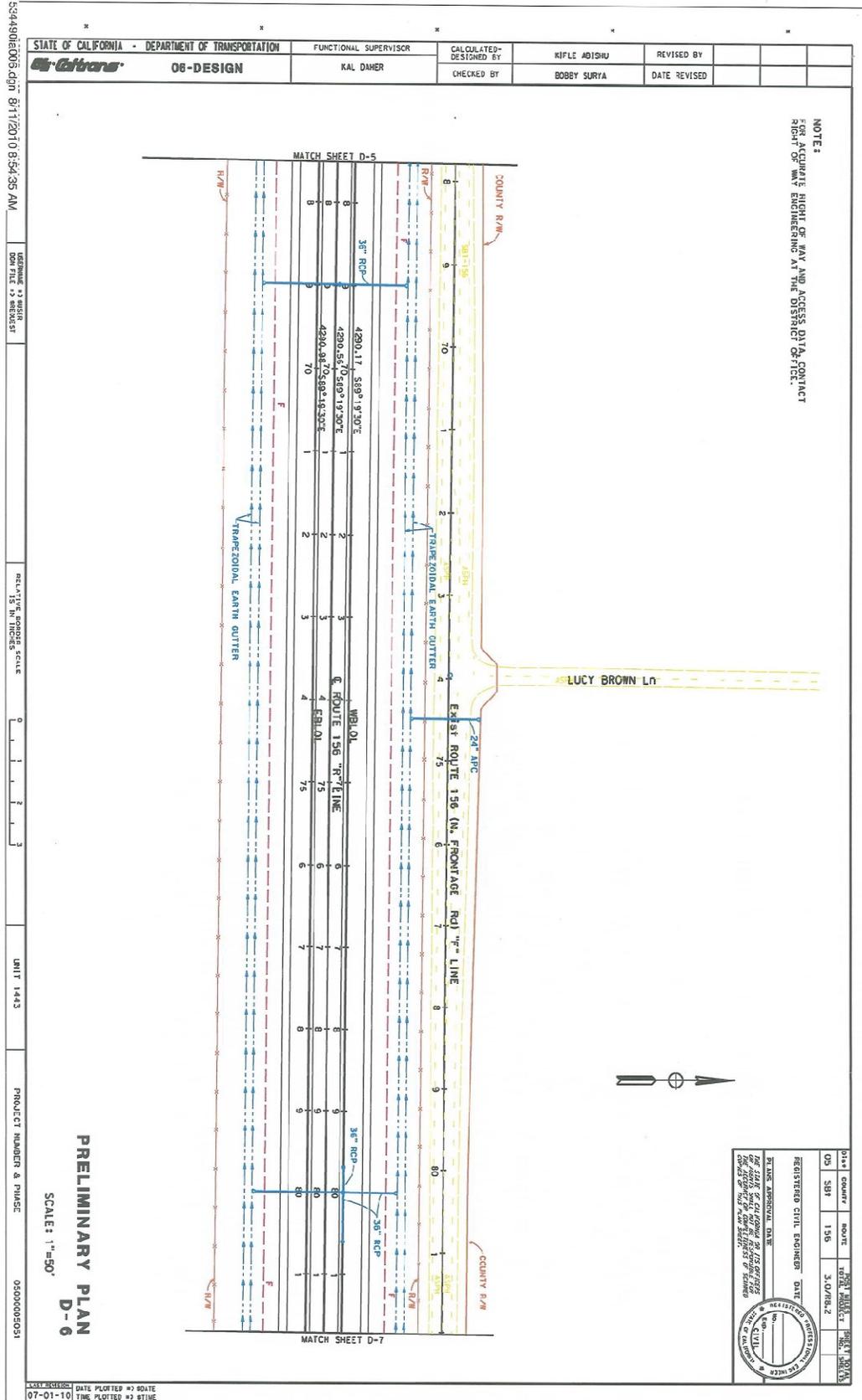












NOTES:
FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DATE	COUNTY	ROUTE	SECTION	SHEET NO.	TOTAL SHEETS
07-01-10	SBF	156	3A/7MB.2	1	2

REGISTERED CIVIL ENGINEER DATE
 DATE OF EXPIRATION OF LICENSE
 THE STATE OF CALIFORNIA REGISTERED PROFESSIONAL CIVIL ENGINEER
 (Seal of the State of California Professional Civil Engineer)

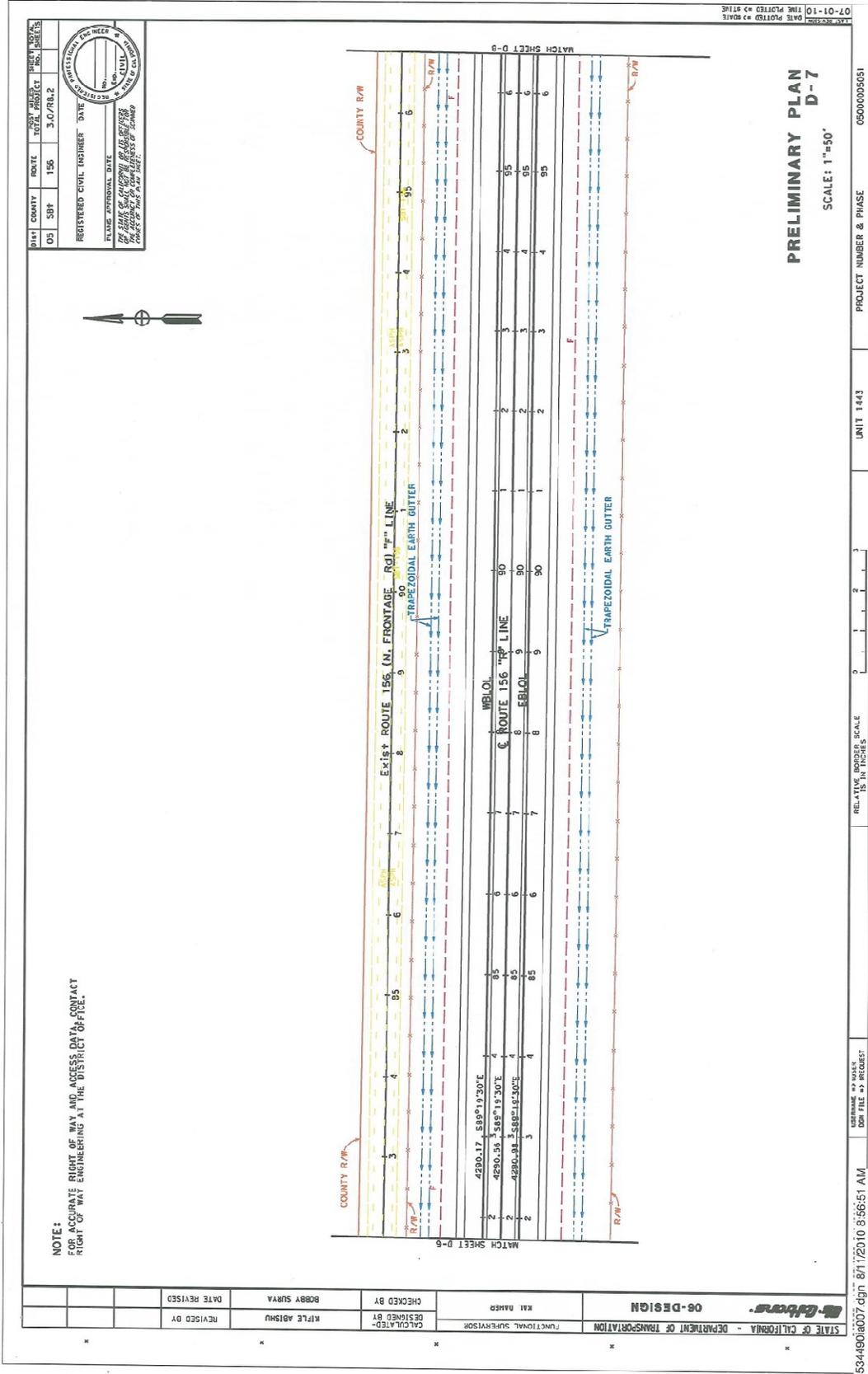
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	KIFLE ADISHU	REVISED BY	
Caltrans 06-DESIGN	KAL DAHER	CHECKED BY	BOBBY SURYA	DATE REVISED	

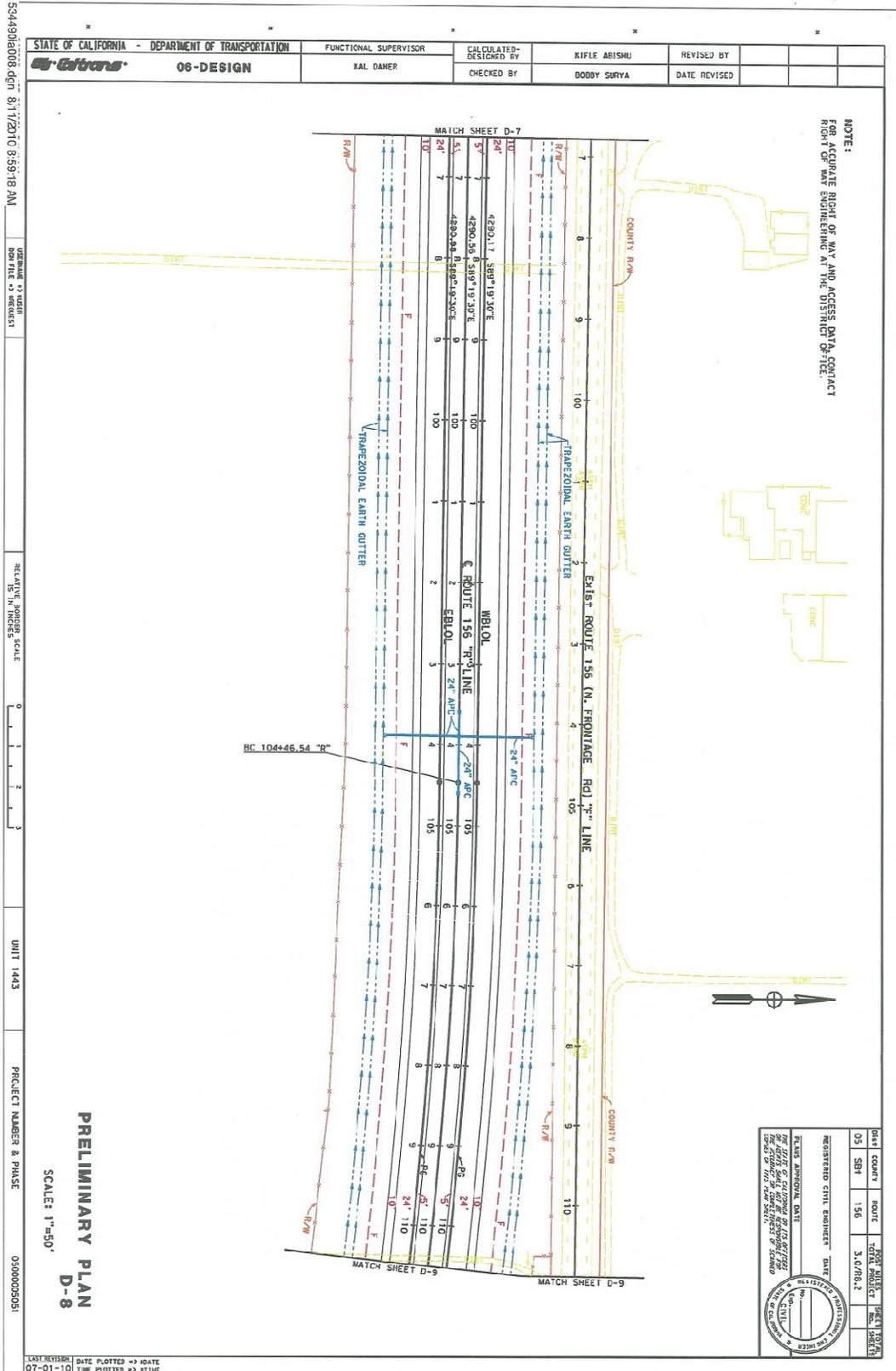
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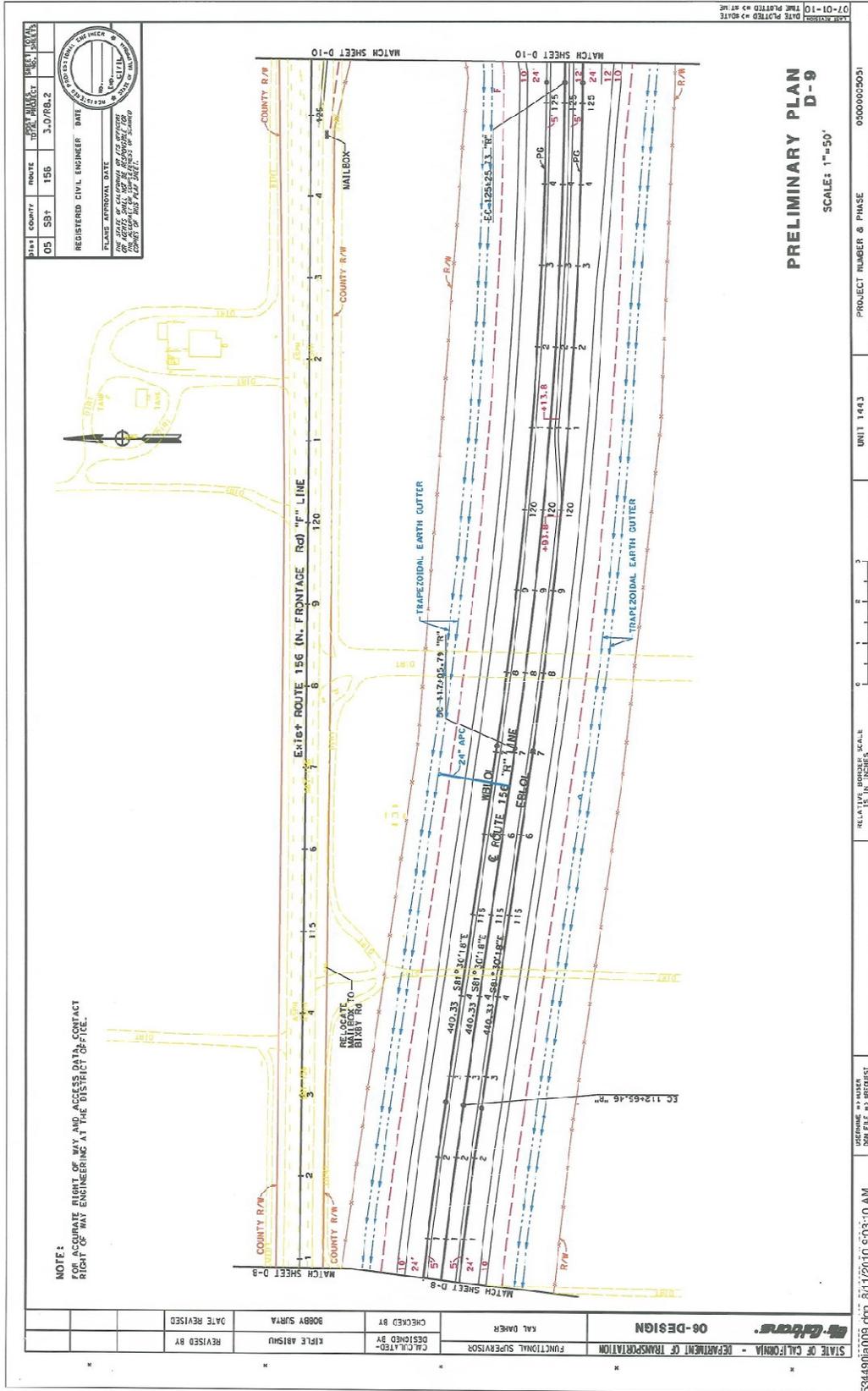
DESIGNED BY: KISHU
 DRAWN BY: KISHU
 RELATIVE HORIZONTAL SCALE: 15 IN INCHES
 UNIT: 1443
 PROJECT NUMBER & PHASE: 05000005051

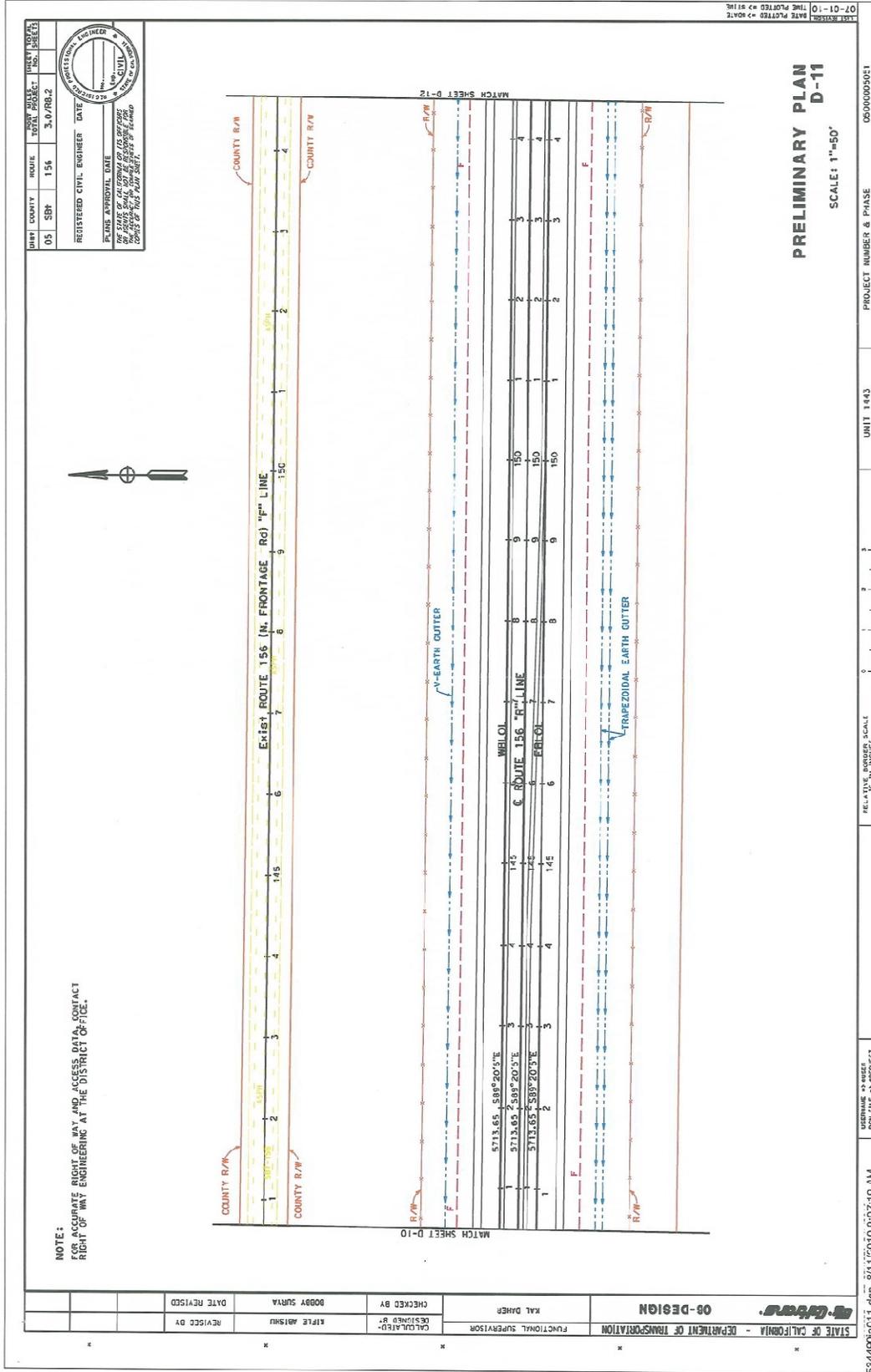
PRELIMINARY PLAN
D-6
 SCALE: 1"=50'

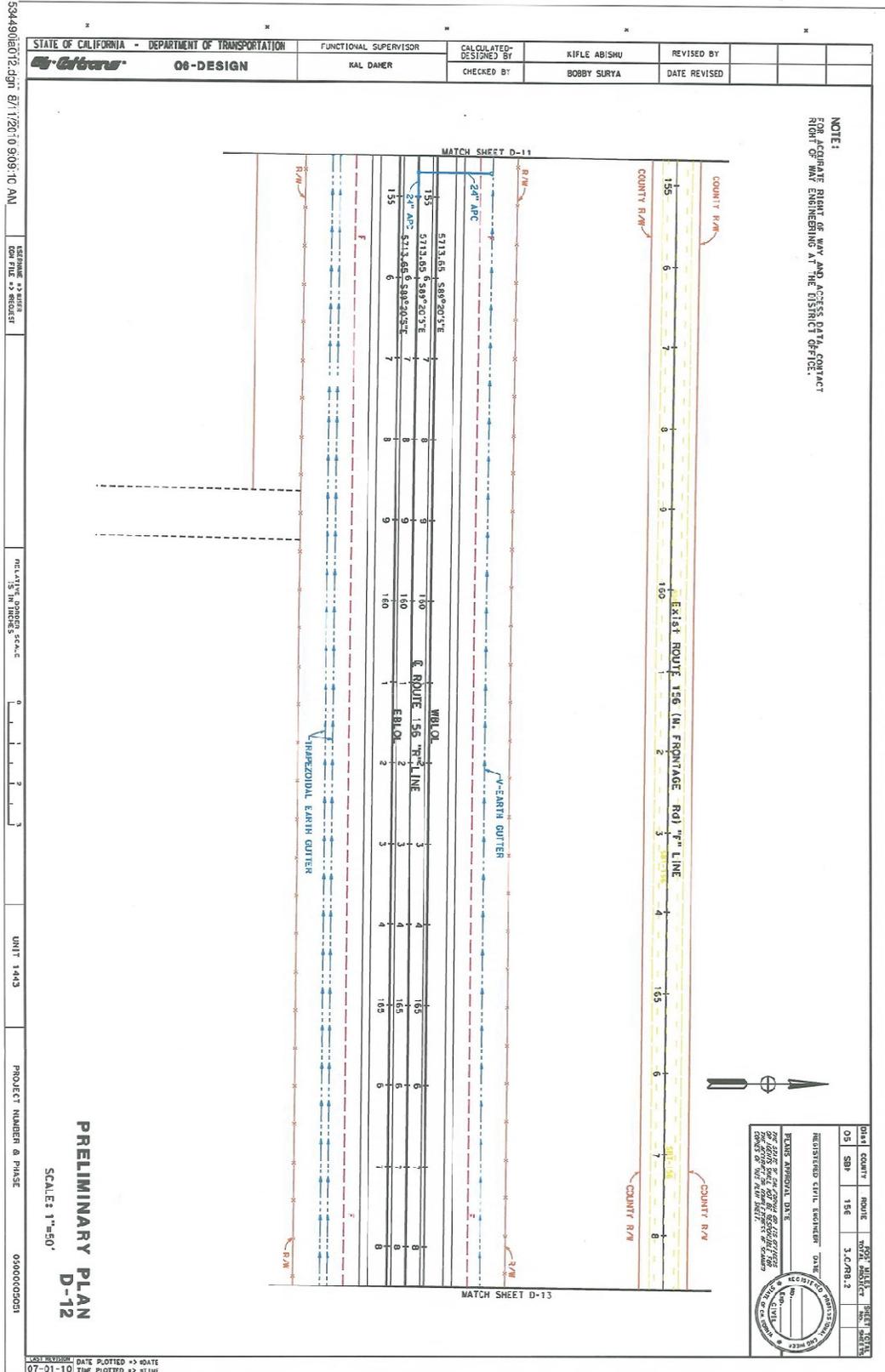
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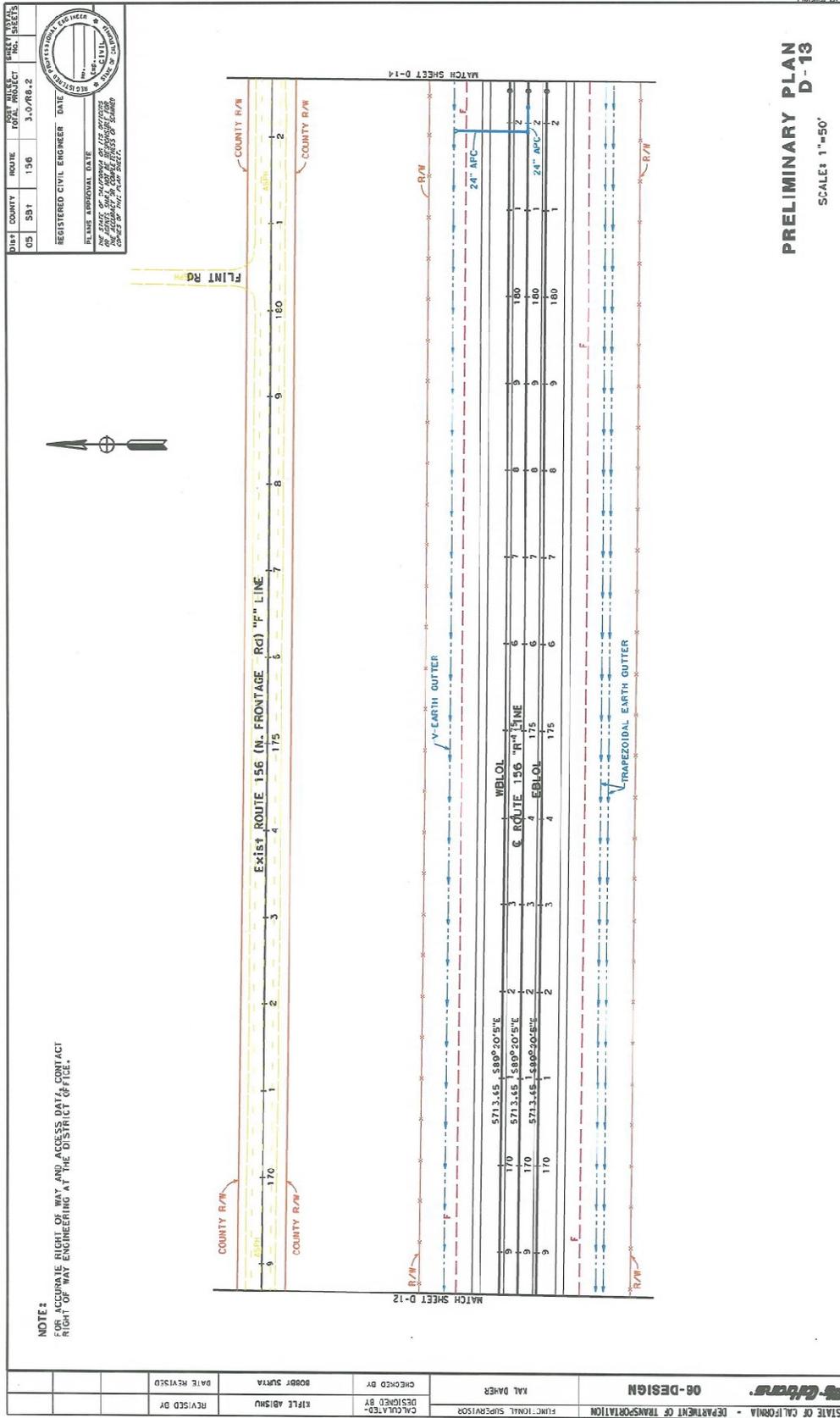










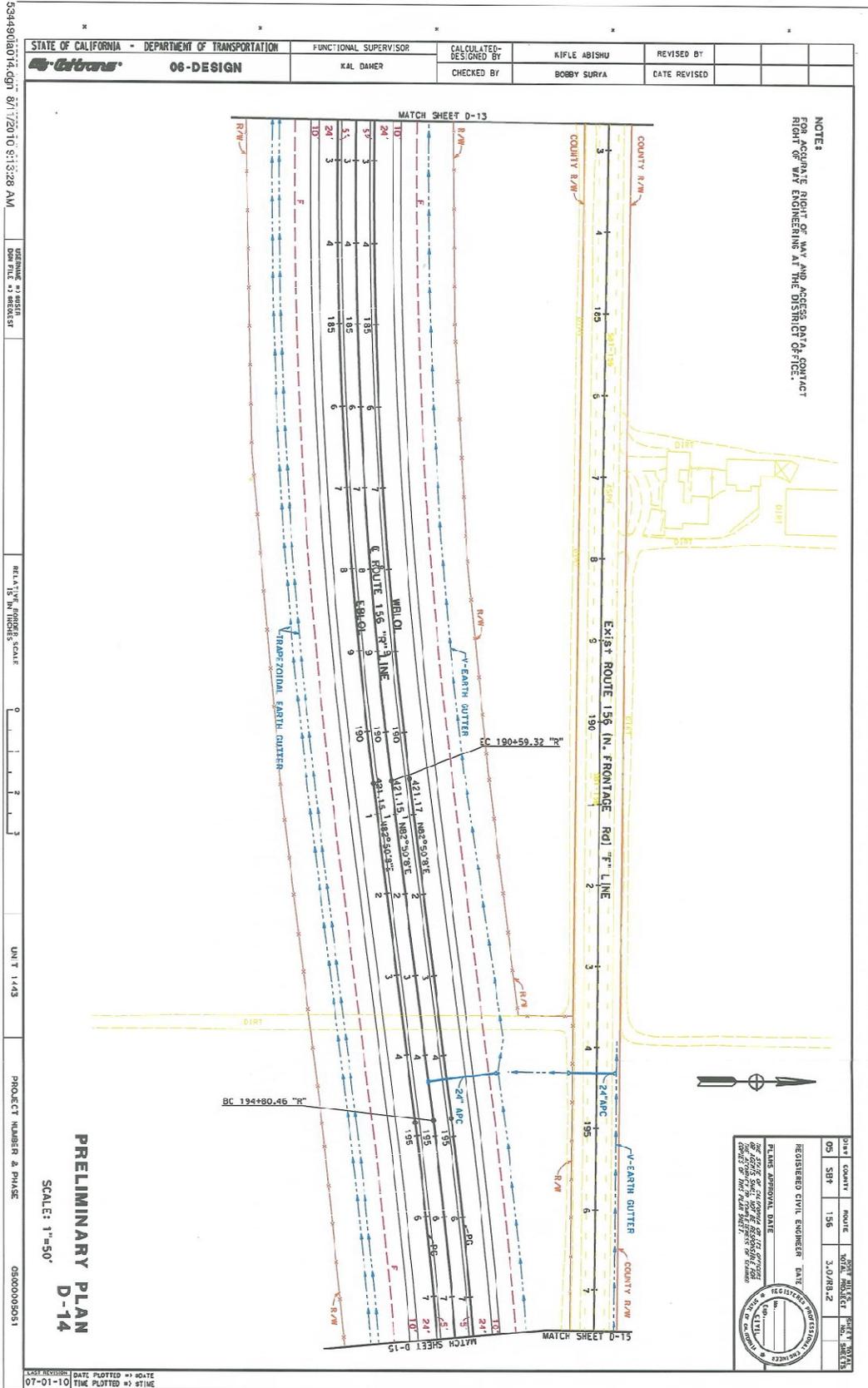


NOTE:
FOR ACCURATE RIGHT OF WAY AND ACCESS DATA CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

DISTRICT COUNTY ROUTE DISTRICT PROJECT SHEET TOTAL SHEETS
 05 591 156 3-D/AR-2
 REGISTERED CIVIL ENGINEER DATE
 STATE APPROVAL DATE
 THE STATE OF CALIFORNIA OFFICE SERVICES
 THE COUNTY OF SAN BENITO COUNTY ENGINEER
 COUNTY OF SAN BENITO

PRELIMINARY PLAN D-13
SCALE: 1"=50'

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	08-DESIGN	KAL BAKER	CHECKED BY	BOBBI SURTA	DATE REVISID
FUNCTIONAL SUPERVISOR	DESIGNED BY	KAL BAKER	CALCULATED-	KIFLE ABISHU	REVISID BY



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	KIFLE ABISHU	REVISED BY	
Caltrans 06-DESIGN	KAL DAMER	CHECKED BY	BOBBY SURYA	DATE REVISED	

NOTE:
FOR ACCURATE ENGINEERING AND PROGRESS ON CONTRACT
FROM ANY ENGINEERING AND THE DESIGN OF THE

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USING: 11/10/01
DGN FILE: 11/10/01

RELATIVE PRINT SCALE
IS IN INCHES

UNIT: 1/43

PROJECT NUMBER & PHASE

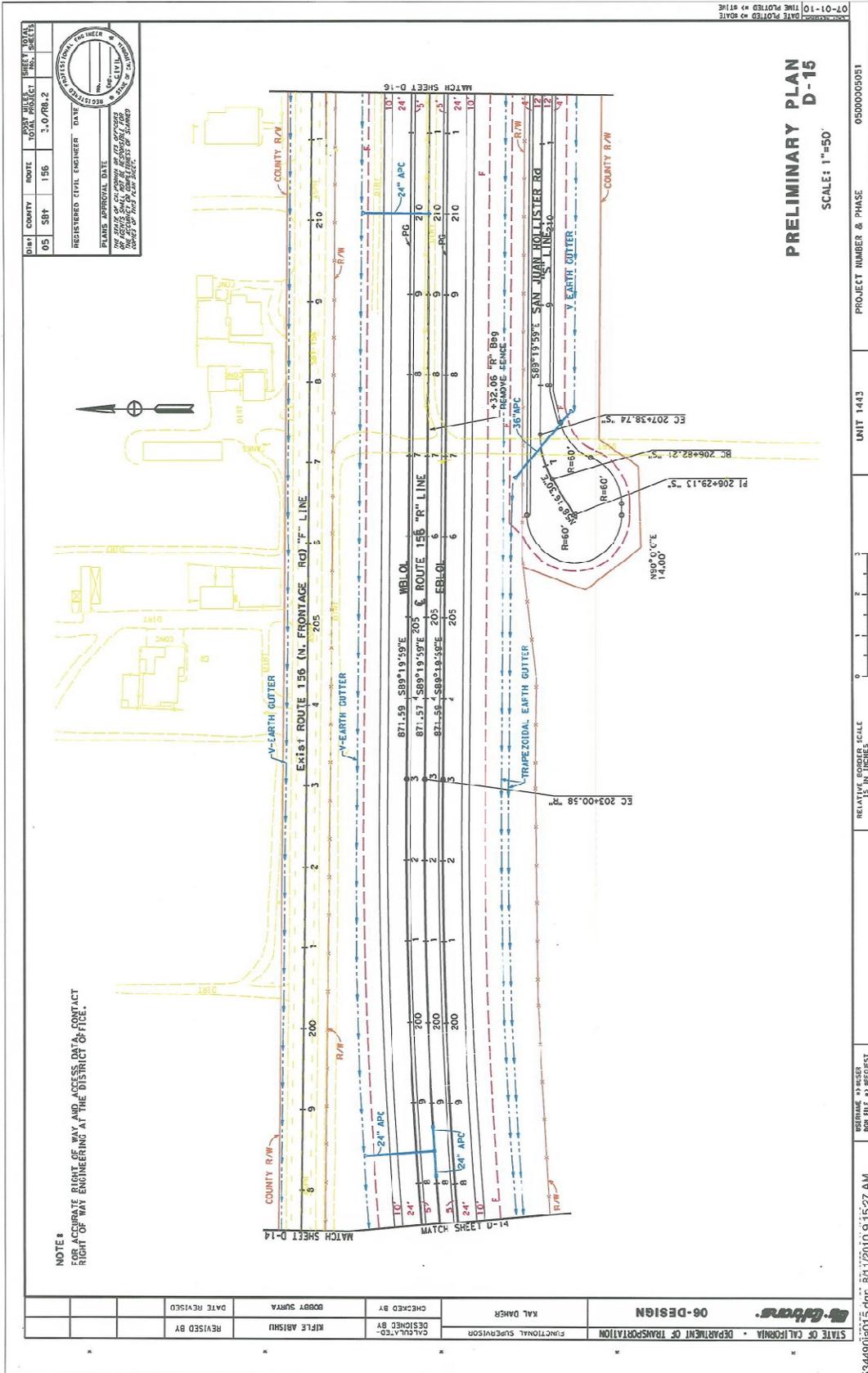
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PRELIMINARY PLAN D-14
SCALE: 1"=50'

051	051	156	3.0/0.0/0.2	051
ROUTE	COUNTY	ROUTE	TOTAL MILES	ROUTE NO.
REGISTERED CIVIL ENGINEER	DATE	REGISTERED CIVIL ENGINEER	DATE	REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE: 07/17/2010
 REGISTERED CIVIL ENGINEER: BOBBY SURYA
 LICENSE NO.: 11111
 EXPIRES: 07/17/2011

LAST REVISION: 07-01-10
 DATE PLOTTED: 07-01-10
 TIME PLOTTED: 08:13:28 AM



DIST	COUNTY	ROUTE	POST MILE	SHEET NO.	TOTAL SHEETS
05	SBT	156	3.0/PB.2		

REGISTERED CIVIL ENGINEER	DATE
STATE	EXPIRES

NOTE: FOR ACCURATE RIGHT OF WAY AND ACCESS DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

07-01-10 DATE PLOTTED & STN
 095000050501 PROJECT NUMBER & PHASE
 UNIT 1443
 RELATIVE BORDER SCALE
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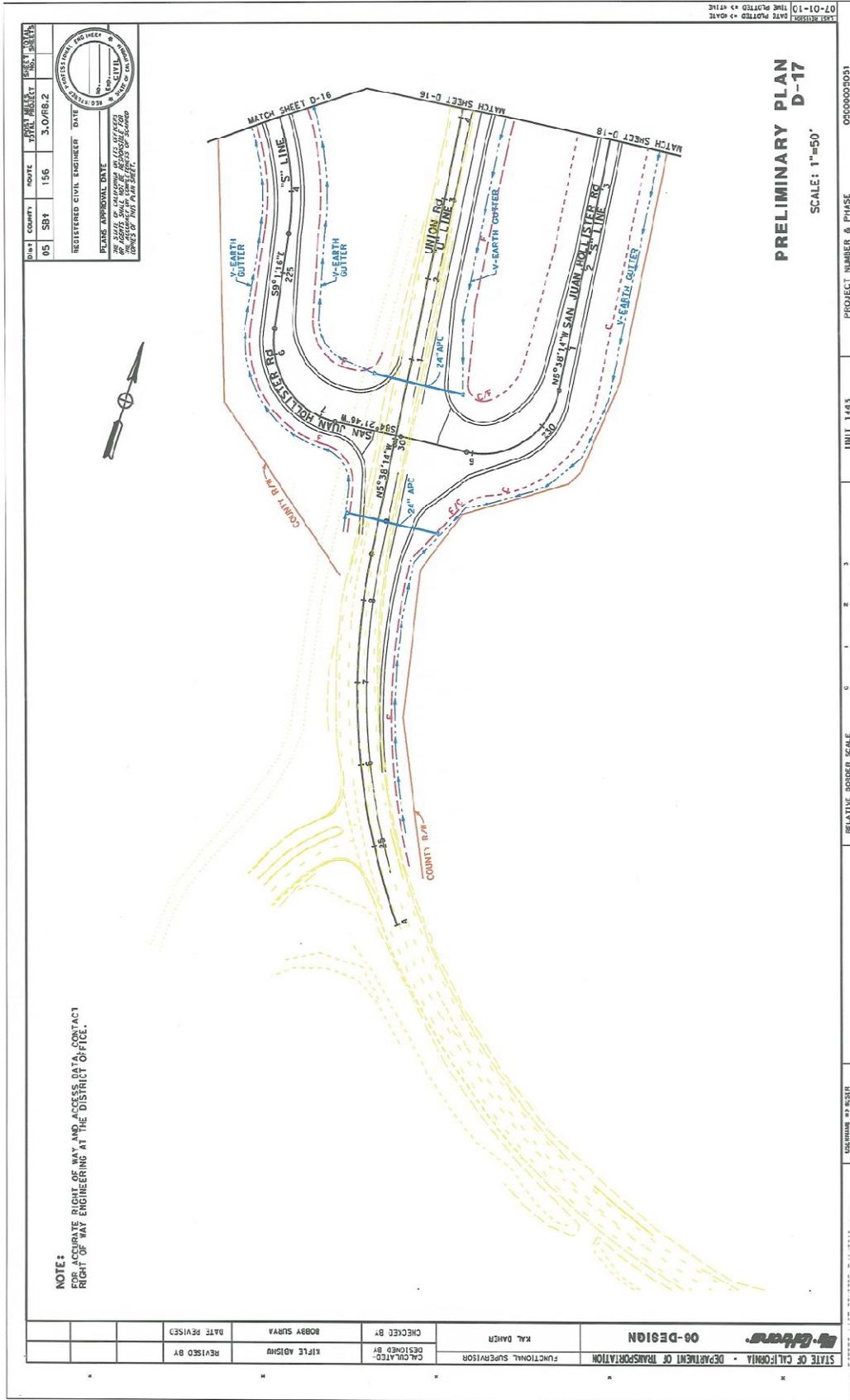
PRELIMINARY PLAN
 D-15
 SCALE: 1"=50'

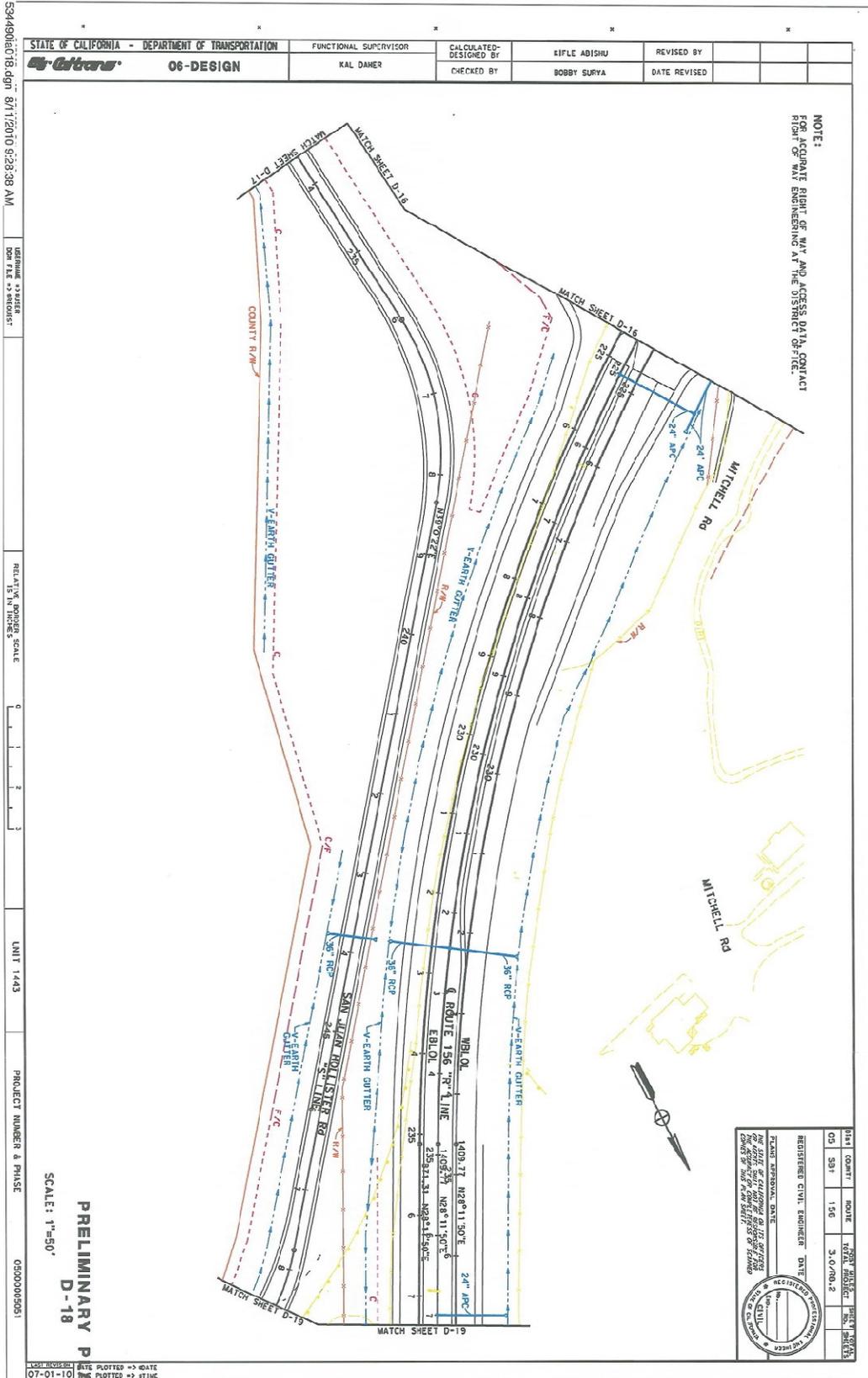
STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION
 06-DESIGN
 FUNCTIONAL SUPERVISOR
 RAL DAHER
 CHECKED BY
 BOBBY SURYA
 DATE REVISED
 DESIGNED BY
 KIFLE ABISHU

REVISOR
 DATE REVISED
 REVISIONS

CALIFORNIA
 DECISION BY
 KIFLE ABISHU

06-DESIGN
 FUNCTIONAL SUPERVISOR
 RAL DAHER





NOTE:
FOR ACCURATE RIGHT OF WAY AND ACCESS DATA CONTACT
RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	KIFLE ABISHU	REVISED BY	
06-DESIGN	KAL DANER	CHECKED BY	BOBBY SURYA	DATE REVISED	

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 BEGINNING TO SHEET 500' 1/2" TO SHEETS
 RELATIVE CROSS SCALE 10' IN HORIZ.
 UNIT 1:43
 PROJECT NUMBER & PHASE 05000005051
 PRELIMINARY P
 D-18
 SCALE: 1"=50'
 DATE PLOTTED -> DATE 07-01-10
 DATE PLOTTED -> TIME

DATE	COMPT	NOVE	TOTAL PROJECT	NOV 11 2010
05	391	156	3,070,2	NOV 11 2010
REGISTERED CIVIL ENGINEER DATE				
STATE PERSONAL DATE				
THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION				
DIVISION OF HIGHWAYS				
PROJECT NO. 05000005051				
DRAWN BY: BOBBY SURYA				

