

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

Funded by a grant from
California State Water Resources Quality Control Board
Nonpoint Source Pollution Control Program Grant Agreement No. D2113514

In partnership with
Butte County Resource Conservation District

REQUEST FOR BIDS

July 15, 2024

Pacific Watershed Associates, Inc.
PO Box 2070
Petaluma, CA 94953



Butte Creek Camp Fire Post-Fire Recovery Project (Centerville Road) Butte County, California

ADVERTISEMENT FOR BIDS

Pacific Watershed Associates (PWA) invites Bid Proposals for the 2024 construction activities of the *Butte Creek Camp Fire Post-Fire Recovery Project*. Proposed treatments are intended to improve road drainage, road drivability, and water quality protection conditions, as well as reduce erosion, sediment delivery, and future maintenance needs for identified sediment source sites and hydrologically connected road reaches along 2.4 miles of Centerville Road, an unpaved Butte County maintained public road within the Camp Fire burn area in the Butte Creek Watershed (Map 1).

A mandatory pre-bid tour of the work site is scheduled for Monday July 22, 2024 at 10:00 A.M. Prospective bidders will meet at the turnout along Centerville Road (across from the intersection with Harris Hills Road; 39.784725, -121.659918), just after the Butte Creek bridge crossing, approximately 11 miles northeast of Chico, California. The work site will be reviewed in personal vehicles for approximately 2.4 miles. The pre-bid tour is expected to take 2-3 hours while on the project road due to the number of sites to visit, so please plan accordingly.

Questions regarding this project should be submitted via email at tylerc@pacificwatershed.com before 3:00 p.m. on Wednesday July 31, 2024. PWA will provide written answers by email to all potential bidders by close of business on August 2, 2024.

Bids should be submitted to tylerc@pacificwatershed.com no later than 3:00 p.m. PDT on Wednesday, August 8, 2024.

Bid Timeline:

Invitation for bid available to prospective bidders: **July 15, 2024** (Monday)

Mandatory Site Tour (10:00 a.m. to 4:00 p.m.): **July 22, 2024** (Monday)

Deadline to submit questions to PWA (by 3:00 p.m.): **July 31, 2024** (Wednesday)

Deadline for PWA to respond to questions: **August 2, 2024** (Friday)

Deadline to submit proposal (by 3:00 p.m.): **August 8, 2024** (Wednesday)

Notice of Intent to Award by Butte County Resource Conservation District: **August 15, 2024** (Thursday)

Target date for Start of Project: **August 26, 2024** (Monday)

Project Design Estimate: \$449,500

Estimated Project Duration: 12-14 weeks

List of Attached Exhibits:

Exhibit A: Construction Plan

Construction Plan Summary Memo

Map 1. Project Location

Map 2. Road Surface Treatments and Sediment Delivery Sites

Appendix A. Road Log of Proposed Treatments

Appendix B. Representative Photos

Appendix C. Typical Construction Drawings

Appendix D. Proposed Revegetation and Effectiveness Monitoring Plan

Appendix E. Project Summary Tables

Appendix F. Grading Plan Drawings

Exhibit B: Bid Proposal Worksheet

Exhibit C: Contractor Qualifications Form

Exhibit D: Best Management Practices for Construction

Exhibit E: Sample Agreement for Subcontractor Services

Exhibit F: Contract Provisions for Non-Federal Entity Contracts Under Federal Awards

Exhibit G: Insurance Requirements

Exhibit H: Traffic Control Plan

Pacific Watershed Associates Inc.

PO Box 2070 • Petaluma, CA 94953 / 707-773-1385 / www.pacificwatershed.com

Geologic and Geomorphic Studies • Watershed Restoration • Civil Engineering • Environmental and Permitting Services

SECTION 1. GENERAL INFORMATION

1.1 PURPOSE AND DESCRIPTION OF SERVICES

This project is being implemented by Pacific Watershed Associates Inc. (PWA) alongside the Butte County Resource Conservation District (BCRCD) with grant funding from the California State Water Resources Quality Control Board (Nonpoint Source Pollution Control Program Grant Agreement No. D2113514).

The project consists of road upgrading and stream crossing culvert replacement as staked in the field and described in the Road Log of Proposed Treatments and Grading Plan (Exhibit A, Appendix A and F; Map 2), or as directed by PWA project manager. Road upgrading treatments include installing or replacing culverts at 19 stream crossings (some may be actively flowing during excavation), installation and replacement of ditch relief culverts, improving inboard ditch capacity and minor road outslowing, applying Rock Slope Protection (RSP) and/or riprap to steep fillslopes and other areas, and applying and compacting road rock to finished road surfaces. Dewatering of one or more live streams may be necessary. All disturbed slopes with potential to deliver soil to a watercourse will be seeded and mulched by the contractor. The bid summary cost worksheet (Exhibit B) includes an estimated number of hours necessary to complete the work detailed in the Construction Plan (Exhibit A). All culverts, rock, erosion control materials will be purchased by PWA/BCRCD.

General conditions shall be pursuant to *Handbook for Forest, Ranch and Rural Roads, a Guide for Planning, Designing, Constructing, Re-constructing, Upgrading, Maintaining, and Closing Wildland Roads*, commissioned by the State Water Resources Control Board, CalFire, and the Mendocino County Resource Conservation District¹ and 2) the California Department of Fish and Wildlife *California Salmonid Stream Habitat Restoration Manual, Chapter 10*².

PWA is facilitating this bid and all bid-related questions should be directed to tylerc@pacificwatershed.com. BCRCD will be the primary contract holder. PWA will be the lead project construction manager and will be providing construction oversight and reporting, with assistance from BCRCD. In order to protect sensitive resources, biological monitors will be present at select sites as necessary during construction.

1.2 PROJECT LOCATION

This project is located along a 2.4-mile-long stretch of Centerville Road, located in steep terrain, and running roughly parallel to Butte Creek approximately 12 miles northeast of Chico, CA and near the City of Paradise, CA (Map 1). Travel time from Chico to the lower end of the project road is approximately 25 minutes.

1 Weaver, W.E., Weppner, E.M. and Hagans, D.K., 2015, Handbook for Forest, Ranch and Rural Roads: A Guide for Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads: Mendocino County Resource Conservation District, Ukiah, CA, 416 p.

2 Weaver, W.E., Hagans, D.K., Weppner, E., 2006, Part X: Upslope erosion inventory and sediment control guidance, in Flosi, G., Downie, S., et al., eds., California salmonid stream habitat restoration manual, 3d. ed.: Sacramento, CA, California Department of Fish and Game, 207 p. Available from: http://www.dfg.ca.gov/fish/documents/Resources/CaSalmonidStreamHabitatManual/manual_partX.pdf

1.3 BIDDING TIMELINE AND SUBMISSION OF BIDS

A mandatory pre-bid tour of the work site is scheduled for Monday July 22, 2024 at 10:00 A.M. Prospective bidders will meet at the turnout³ along Centerville Road (across from the intersection with Harris Hills Road), just after the Butte Creek bridge crossing approximately 11 miles northeast of Chico, California. The work site will be reviewed in personal vehicles for approximately 2.4 miles. The pre-bid tour is expected to take 2-3 hours while on the project road due to the number of sites to visit, so please plan accordingly. Please be certain to write your email address on the sign-in sheet at the pre-bid tour to receive any bid updates or addendums.

Bid Timeline:

Invitation for bid available to prospective bidders:	July 15, 2024
Mandatory Site Tour (10:a.m. to 4:00 p.m.):	July 22, 2024
Deadline to submit questions to PWA (by 3:00 p.m.):	July 31, 2024
Deadline for PWA to respond to questions:	August 2, 2024
Deadline to submit proposal (by 3:00 p.m.):	August 8, 2024
Notice of Intent to Award by Butte County Resource Conservation District:	August 15, 2024
Target date for Start of Project:	August 26, 2024

Questions regarding this project should be submitted via email to tylerc@pacificwatershed.com before 3:00 p.m. on Tuesday July 31, 2024. PWA will provide written answers by email before close of business on August 2, 2024. This email will be shared with all contractors who attended the pre-bid meeting.

Bids should be submitted via email to tylerc@pacificwatershed.com no later than 3:00 p.m. PDT on Thursday August 8, 2024. See Section 2 below for bidding instructions.

Work on the project may commence upon execution of project permits. The timeline may be adjusted at the discretion of PWA/BCRCD due to inclement weather, wet soil conditions, or other unforeseen delays. No work shall begin until authorized by PWA/BCRCD. The deadline for completion of all stream crossing project tasks is October 31, 2024, although this deadline may be extended if the weather allows.

1.4 STANDARD CONDITIONS OF SERVICE

- a. PWA and BCRCD are soliciting bids from Contractors to provide heavy equipment with operators and laborers on a *lump sum* basis to perform wildland and remote forest road upgrading in steep terrain by installing and replacing drainage structures at stream crossings, and hydrologically disconnecting areas of road surface runoff concentration along a 2.4-mile segment of Centerville Road east of Chico, California. The work will require furnishing labor and fully functional heavy equipment with qualified operators at prevailing wage rates. The Contractor will be required to submit certified payroll records (CPRs) to the Labor Commissioner using DIR's Public Works Website Services.
- b. Service shall not commence until the Agreement is fully executed with BCRCD and all permits have been obtained. Should the Contractor fail to commence work within 5 days of the Notice to Proceed, BCRCD reserves the right to terminate the Agreement. In addition, the Contractor shall be liable to BCRCD for the difference between the

³ Approximate coordinates of pre-bid tour meeting location: 34.726826, -119.919684

Contractor's bid price and the actual cost of performing work by the second low bidder or by another Contractor.

- c. All performance under the Agreement shall be completed on or before the termination date of the Agreement unless this Agreement is amended by BCRCDC to extend the term.
- d. No oral understanding or agreement shall be binding on either party.
- e. Pursuant to Section 1733 of the Labor Code, the Director of California Department of Industrial Relations has determined the general prevailing rate of wages. Bidders should contact the Department of Industrial Relations at (415) 703-4774 for General Prevailing Wage Rates on specific job classifications. Future effective wage rates, which have been predetermined, are on file with the California Department of Industrial Relations. Bidders are advised that if they intend to use a craft or classification not on file in the general wage determinations, they may be required to pay the wage rate of that craft or classification most closely related to it as shown in the general determinations.
- f. This Contract is subject to State contract non-discrimination and compliance requirements pursuant to Government Code, Section 12990. BCRCDC hereby notifies all bidders that it will affirmatively insure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award.
- g. This Project is subject to prevailing wage and requires a bid bond and a performance bond for 100% of the contracted bid amount, as described below in Section 2.5 and 2.6.

SECTION 2. INSTRUCTIONS TO BIDDERS

2.1 BID SUBMITTAL

All bids are to be submitted in accordance with the instructions and timeline detailed in Section 1.3 above. Bids received after the due date and time may be deemed non-responsive and rejected. The bidder is solely responsible for the timely delivery of the bid.

All bid proposals shall consist of the ***Contractor Bid Worksheet (Exhibit B, page 6-10)*** and the ***Bidder Qualifications Form (Exhibit C)***. The bidder shall fill out **all** blanks in the proposal worksheets, and the bid shall set forth each item of work in clearly legible figures, with an item price and a total price for the item in the respective spaces provided. The Contractor Bid Worksheet Cover Page shall be signed by an individual who is authorized to bind the bidding firm contractually. The signature must indicate the title or position that the individual holds in the firm. An unsigned bid shall be deemed incomplete and rejected.

Each proposal must include the attached list of subcontractors, if needed, and the non-collusion affidavit. In addition, the bids must include the Bidder Qualifications Form (Exhibit C). Bidders may include additional pages to describe qualifications as necessary. In addition, bidders shall submit with their bids a bidder's bond and performance bond as described below.

Bids not including the above documents *filled out in full* may be deemed non-responsive and rejected. Bids are required for the entirety of the work called for in the contract documents. A bid may be rejected if conditional or incomplete, or if it contains any alterations of form or other irregularities of any kind.

PWA/BCRCD does not accept alternate language from a bidder. A bid with such language will be considered a counter proposal and will be rejected. PWA's General Terms and Conditions are not negotiable.

Bidders are cautioned not to rely on PWA/BCRCD to discover and report to the bidder all defects and errors in the submitted documents during the evaluation. Bidders should carefully proof their documents for errors and adherence to the Invitation for Bid requirements before submitting them.

Where applicable, the bidder should carefully examine the worksite and specifications. Bidder shall investigate conditions, character, quality of surface, subsurface materials, or obstacles to be encountered. No additions to the Agreement amount will be made because of failure to thoroughly examine the worksite and specifications.

A bidder may modify a bid after its submission by withdrawal and resubmission before the bid due date. Modification of a bid offered in any other manner, oral or written, will not be considered.

A bidder may withdraw bid by submitting a written request for its withdrawal to PWA/BCRCD, signed by the bidder or an agent authorized to bind the bidding firm contractually. A bidder may thereafter submit a new bid before the bid submission deadline. Bids may not be withdrawn after the bid due date. Bids received after the due date and time will be rejected as non-responsive.

Total bid cost estimates are made public upon bid opening (but not unit costs).

Costs for developing bids and preparation of award of the Agreement are entirely the responsibility of the bidder and shall not be chargeable to PWA/BCRCD.

2.2 EVALUATION AND SELECTION PROCESS

Equipment operators must be able to interpret written and verbal excavation details and visualize and plan all aspects of work required to ensure proper function of the constructed structures. Excavation shall be guided by PWA staking and flagging in the field, grading plans, typical drawings, road logs and plan maps and this should be seen as a guide to the final excavation. The moisture content and type of material to be excavated can vary significantly from one work site to another. Ground conditions and material to be excavated can vary from dry to saturated. The type of material to be excavated can vary from fine-grained soil material to large concentrations of strong bedrock, boulders, and large woody debris. These variations in excavated material and ground conditions are inherent to the nature of this work. No larger trees shall be removed or damaged outside of designated work areas. All trees, branches, brush and cull logs removed during excavation will be used as mulch and straw bale mulch shall be evenly placed on finished slopes or on stream channel sideslopes as directed by the PWA Project Manager. An excavator and bulldozer tractor will grade all equipment tracks and perform the final grading on all stream crossings, spoil areas and road shaping throughout the project area. Watering of dry fills to achieve appropriate field compaction and roads as well as field compaction of all new fill slopes will be necessary as designated by the Project Manager.

- a. PWA will put each bid through a process of evaluation to determine the responsiveness of qualified bidders to Project's needs. The final award will be made on the basis of the lowest responsive qualified bid meeting the specifications.
- b. The bids will be evaluated based on the bidder's experience and references in working in steep, remote, backcountry wildlands settings, work schedule and price for each item to

be delivered.

- c. Bids that contain false or misleading information or provide references that do not support an attribute or condition claimed by the bidder may be rejected. If, in the opinion of PWA/BCRCD, information was intended to mislead PWA in its evaluation of the bid, the bid may be rejected.
- d. At the time of bid opening, each bid will be checked for the presence or absence of required information in conformance with the submission requirements of this invitation for bid.
- e. The contract will be awarded to the lowest responsible bidder after consideration of the applicable preferences and experience listed above.

2.3 REJECTION OF BID

PWA/BCRCD reserves the right to reject any and all bids. Bids may be rejected if they show any alteration of form, additions not called for, conditional bids, incomplete bids, erasures or irregularities of any kind. Bids not accompanied by a non-collusion affidavit (See Exhibit B) may be rejected. Bids in which the price of any item appears to be abnormally high or low may also be rejected. PWA/BCRCD reserves the right to reject any or all bids or to waive any defect or irregularity in bidding.

2.4 CONTRACT

Bidder to whom award is made will be required to execute a written contract with BCRCD, and to furnish approved performance bonds and insurance certificates as herein provided within seven calendar days after the date of receipt of the notice to such bidder that the contract is awarded. Please see the attached Sample Agreement for Subcontractor Services (Exhibit F).

2.5 BID BOND

Bidders must submit with their Bids either a cashier's check or certified check from a responsible bank in the United States, or a bidder's bond executed by an admitted surety insurer. The amount of the security shall be not less than ten percent (10%) of amount of the total Bid Price indicated on the bid worksheet, payable to "Butte County Resource Conservation District". BCRCD will reject as non-responsive any Bid submitted without the necessary Bid Security.

2.6 PERFORMANCE BOND

In addition to the bid bond, a Performance Bond shall be given to secure faithful performance of the contract in the amount of 100% of the contract price thereof and shall provide, in effect, that "*the principal shall well and truly perform the contract*" rather than "*work contracted to be done*" as is quite common. If the latter is used, the bond will be rejected.

The Performance Bond shall be security for all of the provisions of the contract including, but not limited to, the guaranty provisions.

All bonds shall contain the following language:

All alternations, extensions of time, extra and additional work, and other changes authorized by the specifications or any part of the contract may be made without securing the consent of the surety or sureties on the contract bonds. Surety waives any requirement of notice of any such alterations, extensions of time, extra work and additional work or any other changes.

2.7 INSURANCE

Contractor shall obtain insurance acceptable to PWA and BCRC D from a company or companies acceptable to PWA and BCRC D. The required documentation of such insurance shall be furnished to PWA and BCRC D at the time of submission of the executed contract. Please see the attached Insurance Requirements (Exhibit E).

2.8 EXAMINATION OF JOB SITE AND CONTRACT DOCUMENTS

Bidders shall carefully examine the site of the contemplated work, the plans and specifications, and the proposal and contract documents therefore and are required to personally satisfy themselves of all local conditions affecting the work and delivery of the articles. The accuracy of the interpretation of the facts disclosed by preliminary investigations is not guaranteed by PWA.

2.9 ADDENDUM

If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other proposed contract documents, or finds discrepancies in, or omissions from the plans or specifications, they may submit to the BCRC D Project Manager a written request for an interpretation or correction thereof.

Any interpretation or correction of the proposed contract documents prior to bid opening will be made solely in the form of written addendum to the contract documents and when issued will be on file at the office of BCRC D before bids are opened. Interpretations, corrections, or changes to the proposed contract allegedly made in any other manner shall not be binding for any purpose and bidders shall not rely on such interpretations, corrections or changes. In addition, all addenda will be emailed to each person who attended the pre-bid tour, but it shall be bidder's responsibility to make inquiry as to the addenda issued. All such addenda shall become part of the contract documents and all bidders shall be bound by such addenda, whether or not received by bidder. ***Please note that receipt of any addendum(s) must be acknowledged on the Bid Proposal Worksheet (Exhibit B).***

SECTION 3. SPECIAL PROVISIONS

3.1 WORK COVERED BY CONTRACT DOCUMENTS

PWA/BCRC D is soliciting bids from Contractors to provide heavy equipment with qualified operators and laborers at prevailing wage rates, as described in Exhibit A.

Contractor's Duties

Contractor will provide and pay for equipment with operator and laborers in accordance with the bid schedule (SECTION 5.2).

1. Provide labor in accordance with the State of California Labor Surcharge User's Guide in effect at the date of bid award.
2. Procure and maintain all insurance and bonds required by these Contract Documents.
3. Secure and pay for, as necessary for proper execution and completion of the work, applicable permits not mentioned elsewhere, licenses, and agreements. Conform to the requirements of all such documents needed to complete the Project.
4. Provide PWA Project Manager with daily and weekly work schedules and heavy equipment logs of daily work accomplishments by site numbers, road lengths, rolling dip numbers, engine time

hours worked by each operated equipment type and laborer as required by the contract.

5. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which depend on the performance of the work.
6. Promptly submit written notice to the PWA/BCRCD Project Manager of observed variance of Contract Documents from legal or construction requirements.
7. Enforce strict discipline and good order of the employees.
8. Coordinate work actively with PWA/BCRCD Project Manager.

The proposed work is located along a segment of Centerville Road, located in semi-rural Butte County. The contractor is advised that rain, wet fog, or red flag fire warnings may stop or cause delays in the work schedule as needed, unless the PWA Project Manager determines that work may continue and that productive work can be accomplished.

Cultural Resources: Should any paleontological, archaeological, historical or unique ethnic or sacred resources be encountered during construction or grading operations, all ground-disturbing work shall be temporarily halted on site and Contractor shall notify PWA/BCRCD at 707-773-1385. Work on site shall not be resumed until a qualified archeologist has evaluated the materials and offered recommendations for further action. Prehistoric materials that could be encountered includes: obsidian or chert flakes or tools, locally darkened midden soils, groundstone artifacts, deposits of shell, dietary bone, and human burials. Should human remains be uncovered, State law requires that the County Coroner be contacted immediately. Contractor shall immediately notify PWA/BCRCD Project Manager at 707-773-1385 and the Butte County Coroner at 805-683-2724. Should the Coroner determine that the remains are likely those of a Native American, the California Native Heritage Commission must be contacted. The Heritage Commission consults with the most likely Native American descendants to determine the appropriate treatment of the remains.

Hazardous Materials: If hazardous materials or what appear to be hazardous materials are encountered, stop work in the affected area immediately. Contractor must immediately notify PWA/BCRCD at 707-773-1385, and then contact the appropriate agency for further instruction.

Environmental Compliance and Permits: Contractor is responsible for complying with any and all project permits. The Contractor will be responsible for securing encroachment permits. PWA/BCRCD will be responsible for obtaining and providing copies of all other necessary project permits.

PWA Approval: All improvements shall be accomplished under the approval, inspection and to the satisfaction of PWA. Placed materials not conforming to specifications shall be removed and replaced as directed by PWA at no additional cost to PWA/BCRCD. PWA/BCRCD will be responsible for monitoring the actions of the contractor(s).

Contractor Plan and Site Inspection: The contractor, before submitting a bid for this project, shall attend the mandatory pre-bid field site assessment meeting on July 22, 2024 to thoroughly familiarize themselves with all existing road and landscape site limitations and conditions above and below ground. Before submitting a bid, Bidders shall be satisfied as to the accuracy and completeness of these Specifications and Construction Documents regarding the nature and extent of all work described.

3.2 CONTRACTS

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The WORK will be completed in its entirety under one Not-To-Exceed Contract with BCRC. See Exhibit F - Sample Agreement for Subcontractor Services.

3.3 WORK SEQUENCE

After Award of Contract and receipt of the Notice to Proceed from BCRC, the Contractor and PWA/BCRC Project Manager will meet to schedule the work and equipment. The Contractor can only charge equipment and labor hours for actually used and running while completing the required work. If necessary, the Contractor and Project Manager shall meet daily to update the work schedule. The sequence of work shall be agreed upon by the Contractor and PWA Project Manager in adherence to the work plan and continue until the awarded contract dollar amount is expended.

3.4 CONTRACTOR USE OF PREMISES

The needs of abutting property owners and residents shall be considered, and accommodations made. Driveway access shall be maintained at all times unless other arrangements are made with the owner and residents of the affected property. Heavy equipment, workers private vehicles, materials, and other debris shall be parked and stored out of the roadway when not in use, and shall be positioned in such a manner to keep the roadway clear at all times. At the end of each work day, the Contractor shall be responsible for restoring the road to a satisfactory condition that is safely passable to road users.

3.5 SPECIAL PERMITS AND REQUIREMENTS

The Contractor is cautioned that all work must be performed in compliance with project permits and CEQA exemption. Cost of compliance with permit requirements shall be paid for in accordance with the bid schedule for equipment and labor.



PACIFIC WATERSHED ASSOCIATES INC.

PO Box 2070 • Petaluma, CA 94953-2070
Phone 707-773-1385 • www.pacificwatershed.com

June 7, 2024

Thad Walker
Butte County Resource Conservation District
150 Chuck Yeager Way – Suite A
Oroville, California 95965
(530) 693-3173 / thad@bcrd.org

Re: Final Construction Plan for the *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California* (PWA Report No. 241041103)

Introduction

At the request of Butte County Resource Conservation District (BCRCD), Pacific Watershed Associates, Inc. (PWA) prepared this Final Construction Plan (Plan) for the project entitled *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California* (Project). Proposed treatments are intended to improve stream function, road drainage, and water quality protection conditions, as well as reduce erosion, sediment delivery, and future maintenance needs for identified sediment source sites and hydrologically connected road reaches along approximately 2.4 miles of Centerville Road, an unpaved Butte County maintained road within the Camp Fire burn area in the Butte Creek Watershed, a salmonid bearing system (Map 1).

In 2022, PWA was requested by BCRCD to prepare construction plan details and assist with permitting to employ sediment reduction and stream enhancement recommendations for the 2.4-mile-long stretch of Centerville Road as part of the State Water Board funded project (Agreement No. D2113514). This 2.4-mile-long segment of Centerville Road had previously been inventoried by PWA and BCRCD and had been identified as a high priority road for treatment due to the high rate of sediment production and delivery from hydrologically connected road surfaces and the number of high priority (i.e. high treatment immediacy) identified sediment source sites. The original assessment occurred shortly before the Camp Fire burned over 153,000 acres, including 67,000 acres in the Butte Creek watershed in November 2018.

From 2022 to present, PWA completed the necessary site visits to evaluate current conditions, participated in design review meetings with Butte County Department of Public Works (BCPW), and prepared a construction plan to upgrade 32 high priority stream crossings and ditch relief culverts that are conduits of sediment delivery from Centerville Road along the 2.4-mile-long segment. In addition, all hydrologically connected road reaches that have the potential to funnel surface runoff and fine sediment to the project sediment delivery sites have received proposed recommendations to improve road surface drainage to reduce sediment delivery. Implementing this Project will upgrade 19 undersized, deteriorated, and misaligned stream crossings and will prevent an estimated 4,590 yd³ of sediment from being delivered to Butte Creek from site-specific and chronic road surface sources and will promote natural hydrologic processes. Proposed treatments are intended to improve stream function, road surface drainage, and water quality conditions and decrease failure potential at stream crossings, as well as reduce

erosion, sediment delivery, and future maintenance needs for identified sediment source sites and hydrologically connected road reaches along 2.4 miles of road (Map 1-2).

In February 2024, PWA prepared a Draft Construction Plan (PWA Report No. 241041102) for BCDPW review. The Draft Construction Plan was also submitted with permit applications to the California Department of Fish and Wildlife (CDFW) and Central Valley Water Quality Control Board (CVRWQCB). This Final Construction Plan includes minor changes to add clarification and meet requests or comments from BCDPW, CDFW, and CVRWQCB.

Field assessment protocols and the development of all proposed treatment designs, technical specifications, and typical construction drawings enclosed follow industry BMP standards and guidelines included in 1) the *Handbook for Forest, Ranch and Rural Roads, a Guide for Planning, Designing, Constructing, Re-constructing, Upgrading, Maintaining and Closing Wildland Roads*, commissioned by the State Water Resources Control Board, CalFire, and the Mendocino County Resource Conservation District¹ and 2) the California Department of Fish and Wildlife *California Salmonid Stream Habitat Restoration Manual*².

This Final Construction Plan includes location and treatment site maps and five appendixes (Maps 1-2; Appendix A-E). Map 1 shows the location of the project area and points of access and Map 2 displays locations for all sediment source treatment sites and proposed road surface drainage features. All appendixes may be referenced as supplemental information for regulatory permit applications and bid solicitation and can be supplied to the heavy equipment contractor for implementing the Project's proposed treatments.

Appendix A provides a road log of the proposed treatments including tables that summarize treatment type and quantity and materials (culverts, rock, trash racks, erosion control materials) necessary to implement the proposed treatments. Appendix B includes representative photos of current conditions at each of the proposed treatment locations. Construction typical (schematic) drawings of recommended treatments can be found in Appendix C. Appendix D provides post construction guidance with a proposed *Revegetation and Effectiveness Monitoring Plan*.

Appendix E provides project summary tables. Sediment delivery sites and hydrologically connected road segments recommended for treatment are listed in Table E1. Table E2 displays estimated future sediment delivery for sites and road surfaces recommended for hydrological disconnection treatment. Site descriptions and locations of proposed work and location of areas impacting streams and riparian areas are displayed in Table E3. Table E4 displays culvert sizing information, methodology, and values used in discharge calculations for all stream crossings proposed for treatment. Site-specific stream impact details (permanent and temporary) for streams are detailed in Table E5, and estimated disturbance area (limits of grading) and excavation volumes associated with proposed work in streams are detailed in Table E6.

Appendix F includes grading plan designs for stream crossings proposed for culvert replacement or installation. Each grading plan drawing includes a plan view, profile view, and a cross section of the crossing as well as maximum cut depths, excavation and fill volumes, culvert size, and material quantities.

1 Weaver, W.E., Weppner, E.M. and Hagans, D.K., 2015, *Handbook for Forest, Ranch and Rural Roads: A Guide For Planning, Designing, Constructing, Reconstructing, Upgrading, Maintaining and Closing Wildland Roads*: Mendocino County Resource Conservation District, Ukiah, CA, 416 p.

2 Weaver, W.E., Hagans, D.K., Weppner, E., 2006, Part X: Upslope erosion inventory and sediment control guidance, in Flosi, G., Downie, S., et al., eds., *California salmonid stream habitat restoration manual*, 3d. ed.: Sacramento, CA, California Department of Fish and Game, 207 p. Available from: http://www.dfg.ca.gov/fish/documents/Resources/CaSalmonidStreamHabitatManual/manual_partX.pdf

Project Description

This Project lies entirely within the Butte Creek Watershed on Centerville Road, a Butte County Department of Public Works (BCDPW) maintained public rural road in Butte County (Map 1-2; Appendix A). This road improvement and sediment reduction project proposes 13 different recommended erosion control and erosion prevention treatments (Map 2; Appendix A: Table A1, A2):

- 1) Install 1 culvert at an unculverted stream crossing site.
- 2) Replace 17 undersized, poorly installed, or worn-out stream crossing culverts.
- 3) Improve stream and ditch capacity at 1 diverted stream.
- 4) At 1 site, clean culvert inlet and interior of an existing stream crossing culvert.
- 5) Install 15 critical dips to eliminate diversion potential at stream crossings.
- 6) Use a total of 350 yd³ of rock slope protection (RSP) riprap to buttress road fillslopes within the county right-of-way.
- 7) At 5 locations (2 stream crossings and 3 ditch relief culverts) install RSP riprap energy dissipation structures at culvert outlets.
- 8) Install 20 single-post trash racks above stream crossing culvert inlets to reduce sediment and debris plug potential.
- 9) Replace 13 existing ditch relief culverts to improve road surface drainage.
- 10) Install 23 new ditch relief culverts to improve road surface drainage.
- 11) Clean inlet area of existing ditch relief culvert at 4 locations.
- 12) At 4 locations, outslope the road and keep the inboard ditch for a total of 2,060 linear ft.
- 13) At 11 locations, cut and/or clean inboard ditch to achieve proper capacity for a total of 2,370 linear ft.

We anticipate dewatering will likely be necessary to replace the existing stream crossing culvert at Site 142 and could be necessary at other crossings if surface water is present. See schematic drawing #21 in Appendix C for the dewatering plan. A qualified biologist will evaluate the site well in advance of construction to provide a site-specific plan for aquatic biological protection needs during construction.

Protected plant species have been identified near areas of proposed disturbance³. A qualified biologist will flag species and a buffer area to be avoided. Sites where protected species have been identified are noted on Map 2 and in the road logs (Appendix A: Table A4).

Fill material permanently removed from streams and outboard edges of roads will be utilized at stream crossings where additional fill is required and/or stored locally along the existing road and cutbanks, but away from any streams to eliminate future sediment delivery potential.

Refuse is present and abundant at many of the stream crossing sites and will be removed and properly disposed of when encountered during grading. Miscellaneous refuse observed at stream crossings that will be removed includes but is not limited to the following: tires, old fencing, small household appliances, lumber, plastic sheeting, mattresses, and other miscellaneous household trash. We do not suspect hazardous waste to be encountered at Project sites. In addition to refuse the selected contractor will remove all concrete and old culverts from the Project area.

After construction, any bare disturbed soils with the potential to deliver sediment to nearby streams will be covered with a native seed blend approved by BCRC and BCPW and weed-free rice straw. See the *Proposed Restoration and Effectiveness Monitoring Plan* (Appendix D) for additional details on post

³ Rougle, W., 2022, Botanical Survey Report, Centerville Road (Butte Creek Camp Fire Post-Fire Recovery Project): Butte County Resource Conservation District, Oroville, CA

construction erosion control, revegetation, and invasive species prevention. An estimated 0.69 acres of ground disturbance is associated with new grading activities at stream crossings and the remainder of construction activities lie on existing road surface and are considered road maintenance (Appendix E: Table E6).

Additional information on work to be performed and general construction assumptions and treatment notes are found in Appendix A.

Certification, Limitations, and Conclusions

This Final Construction Plan for the project entitled *Butte Creek Camp Fire Post-Fire Recovery Project* was prepared under the direction of a licensed professional geologist at PWA, and all information herein is based on data and information collected by PWA staff. Sediment-source inventory and analysis for the project, as well as erosion control treatment prescriptions, were similarly conducted by or under the responsible charge of a California licensed professional geologist at PWA.

The interpretations and conclusions presented in this Final Construction Plan are based on a study of inherently limited scope. Observations are qualitative, or semi-quantitative, and confined to surface expressions of limited extent and artificial exposures of subsurface materials. Interpretations of problematic geologic and geomorphic features (such as unstable hillslopes) and erosion processes are based on the information available at the time of the study and on the nature and distribution of existing features. We can make no assurances that the hillslopes will not be subject to natural localized failures or failures resulting from land use operations. Due to the nature of seismic and climactic conditions in northern California and recent fires, it is impossible to determine how hillslopes will respond to natural events or land use in the future.

The recommendations included in this Final Construction Plan are professional opinions derived in accordance with current standards of professional practice and are valid as of the submittal date. No other warranty, expressed or implied, is made. PWA is not responsible for changes in the conditions of the property with the passage of time, whether due to natural processes or to the works of man or changing conditions on adjacent areas. PWA reserves the right to change the recommended treatment prescriptions contained in the construction road logs of proposed treatments at any time for any reason deemed prudent by PWA, including, identification of previously unrecognized factors affecting the suitability of the treatment prescription, and prescription inconsistencies with the long-term road use management plan. Finally, PWA is not responsible for changes in applicable or appropriate standards beyond our control, such as those arising from changes in legislation or broadening of knowledge, which may affect the suitability of any of our treatment prescriptions.

These construction road logs of proposed treatments should be considered in their entirety and their treatment prescriptions should not be applied to sites other than those specified in the construction logs. PWA is not responsible for any claims, damages, or liability associated with any other party's interpretation of the construction logs or use of these prescriptions for other projects. Furthermore, to ensure proper applicability to existing conditions, the information and recommendations contained in this Final Construction Plan will be considered valid for a period of 2 years, and it is the responsibility of the landowner to ensure that no recommendations are inappropriately applied to conditions on the property that have changed since the recommendations were developed.

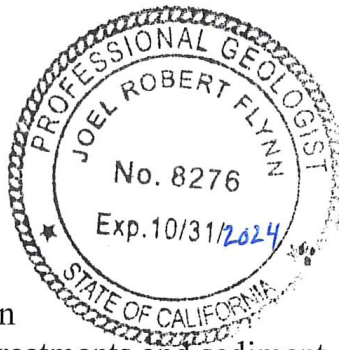
This *Butte Creek Camp Fire Post-Fire Recovery Project* will implement sediment reduction and road drainage treatments along Centerville Road and employ erosion control and erosion prevention treatments to restore the land currently maintained by Butte County Department of Public Works. Treatments include upgrading 32 sediment delivery sites and disconnecting 2.4 miles of hydrologically connected road. Implementing this Project will upgrade 19 undersized, deteriorated, and misaligned stream crossings and will prevent an estimated 4,590 yd³ of sediment from being delivered to Butte Creek from site-specific and road surface chronic sources and will promote natural hydrologic processes. All treatments should abide by recommended treatments in the *Road Log of Proposed Treatments* (Appendix A) following professional standards and industry BMP guidelines.

If you have any additional questions or needs, please feel free to contact Shannon Weese, Project Geologist, at shannonw@pacificwatershed.com or (707) 773-1385 or Joel Flynn, PWA licensed Professional Geologist, at joelf@pacificwatershed.com or (707) 839-5130.

Sincerely,
PACIFIC WATERSHED ASSOCIATES INC.

Certified by:


Joel Flynn, PG #8276

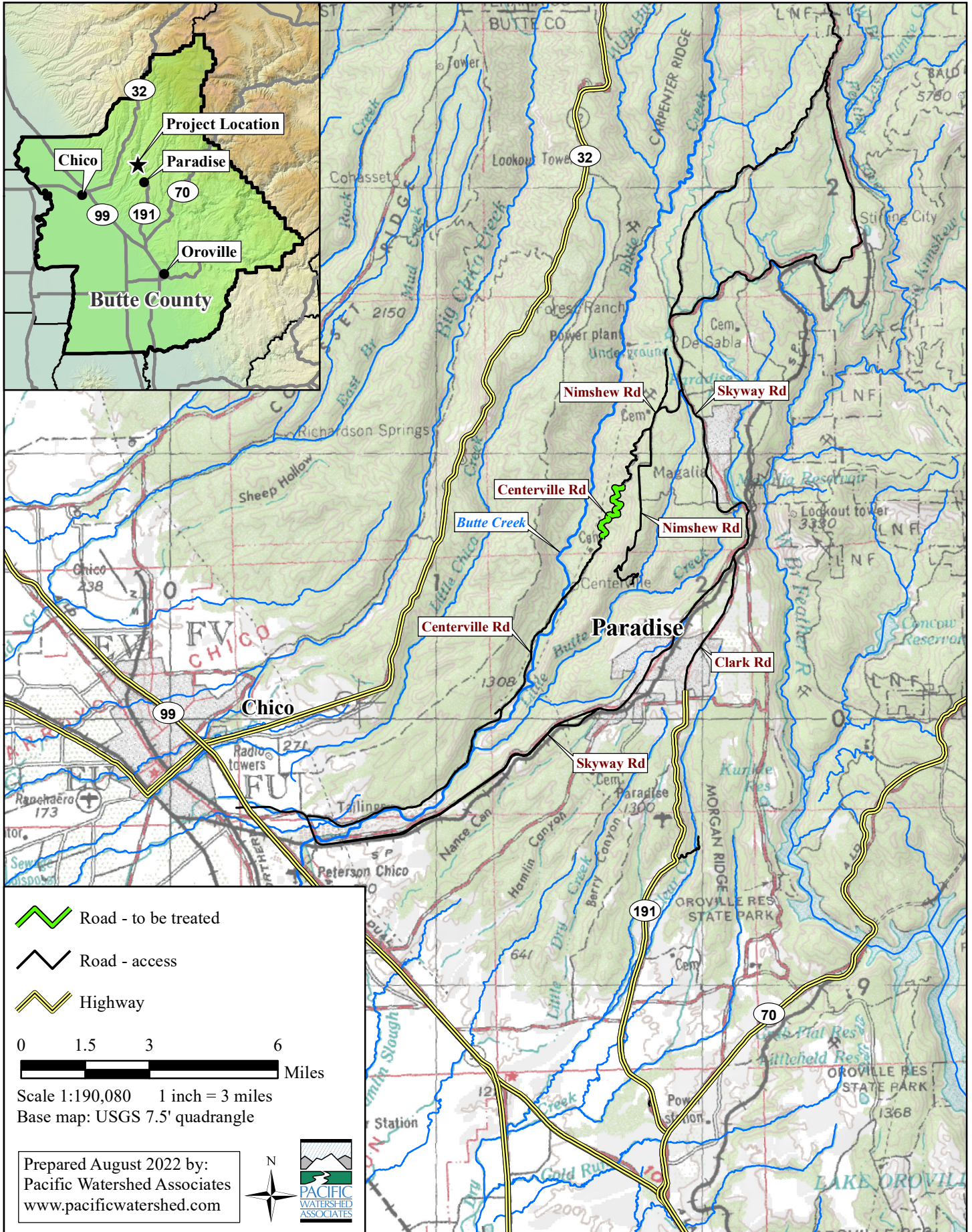


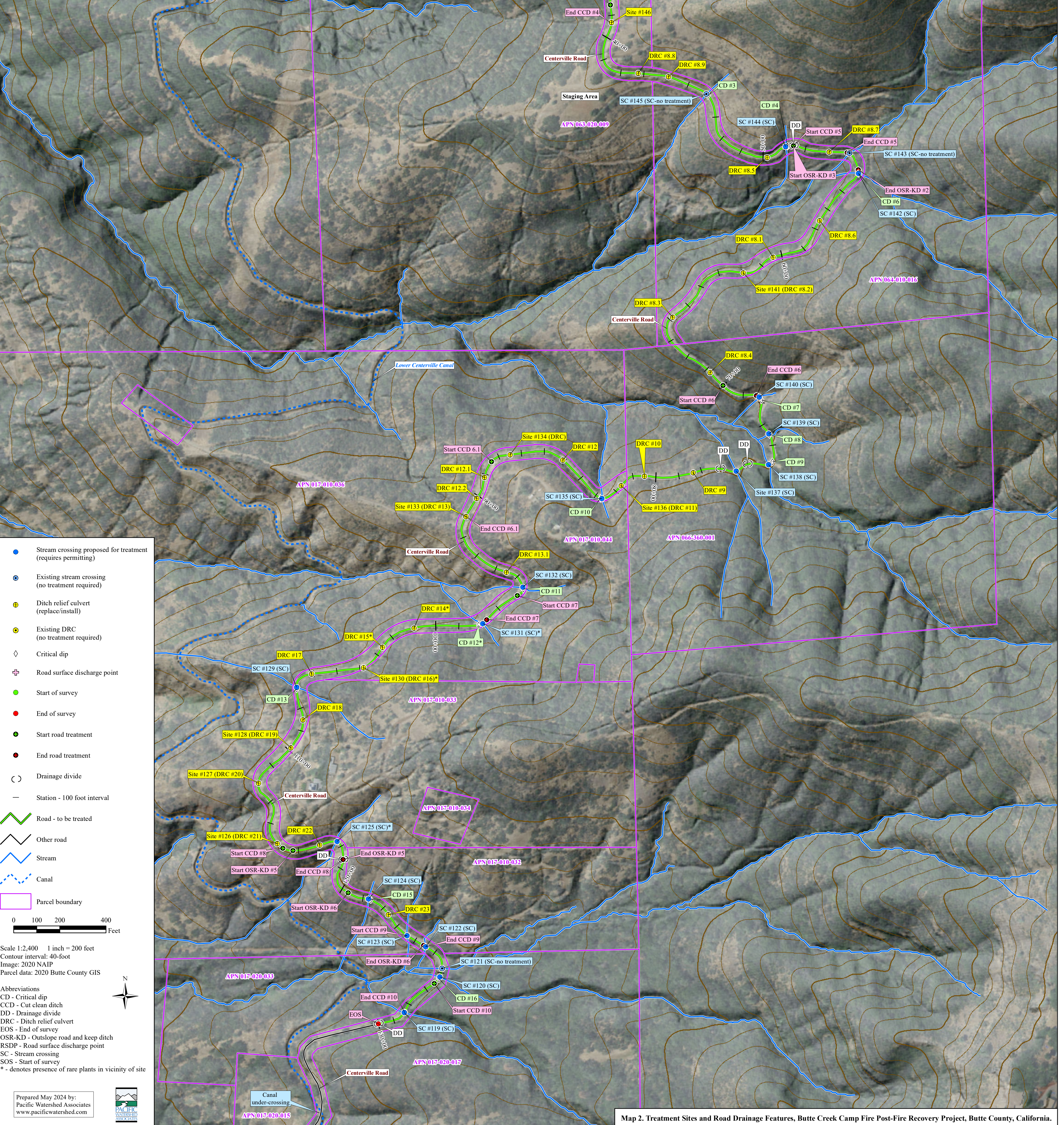
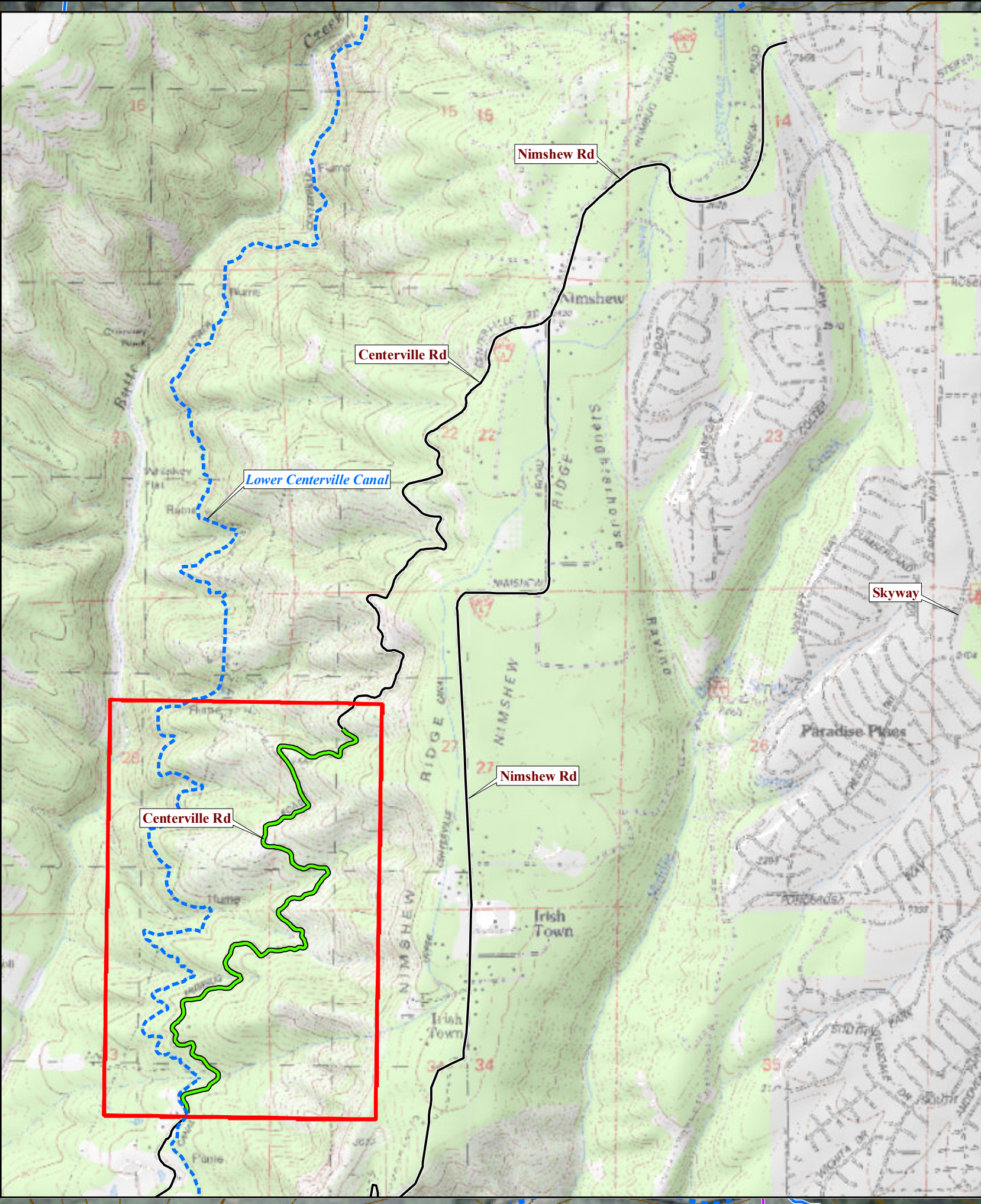
encl:

- Map 1. Project location
- Map 2. Road surface treatments and sediment delivery sites
- Appendix A. Road log of proposed treatments
- Appendix B. Representative photos
- Appendix C. Typical construction drawings
- Appendix D. Proposed revegetation and effectiveness monitoring plan
- Appendix E. Project summary tables
- Appendix F. Grading plan drawings

cc:

Tyler Cole, PWA Staff Geologist (tylerc@pacificwatershed.com)
Danny Hagans, PWA Principal Earth Scientist (dannyh@pacificwatershed.com)





- Stream crossing proposed for treatment (requires permitting)
 - Existing stream crossing (no treatment required)
 - Ditch relief culvert (replace/install)
 - Existing DRC (no treatment required)
 - ◇ Critical dip
 - + Road surface discharge point
 - Start of survey
 - End of survey
 - Start road treatment
 - End road treatment
 - () Drainage divide
 - Station - 100 foot interval
 - Road - to be treated
 - Other road
 - Stream
 - - - Canal
 - Parcel boundary
- 0 100 200 400 Feet
- Scale 1:2,400 1 inch = 200 feet
 Contour interval: 40-foot
 Image: 2020 NAIP
 Parcel data: 2020 Butte County GIS
- Abbreviations
 CD - Critical dip
 CCD - Cut clean ditch
 DD - Drainage divide
 DRC - Ditch relief culvert
 EOS - End of survey
 OSR-KD - Outslope road and keep ditch
 RSDP - Road surface discharge point
 SC - Stream crossing
 SOS - Start of survey
 * - denotes presence of rare plants in vicinity of site

Map 2. Treatment Sites and Road Drainage Features, Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.

Appendix A

Road Log of Proposed Treatments

Butte Creek Camp Fire Post Fire Recovery Project
Butte County, California

Page #	Description
A-1	Cover page.
A-2	Project description, location, directions, contact information, and a list of used acronyms and abbreviations.
A-3	Work to be performed, general construction assumptions, and treatment notes.
A-4	Table A1. Road log of proposed treatments: Centerville Road (upgrade).
A-18	Table A2. Summary of Construction Material Needs and Proposed Treatments.
A-18	Table A3. Summary of Construction Materials and Specifications.

See Map 2 for location of proposed treatments and Appendix C for Typical drawings (schematic diagrams) showing components of erosion control and erosion prevention treatments, and techniques for construction.

Project description:

The goal of the Butte Creek Camp Fire Post-Fire Recovery Project (Project) is to implement prioritized short-term and long-term erosion control and prevention measures to rapidly facilitate post-fire recovery and protect water quality from fire related impacts. This Project will improve 2.45 miles of unpaved road heavily trafficked by evacuees and rescue personnel during the Camp Fire and currently used daily as an access route from Chico to Magalia areas (Map 1). Project treatments include upgrading 19 stream crossings, replacing 15 existing ditch relief culverts, installing 27 new ditch relief culverts and constructing 17 critical dips, as well as other road surface treatments to hydrologically disconnect 2.4 miles of road. All treatments are intended to restore stream function, improve road surface drainage, reduce chronic erosion and sediment delivery, thereby improving riparian habitat and decreasing overall maintenance needs and improve access.

Project location directions:

From Chico, head south on Skyway and CA-99 to Honey Run Road and travel 4.3 miles to Centerville Road. Project activities begin 11.01 miles up the road, at the drainage divide about 630 feet past the canal undercrossing. Alternatively, the project can be accessed from Magalia by traveling northeast on Skyway to Nimshew Road and follow it for 1.5 miles to the intersection of Centerville Road. The start of the project treatment from the north is approximately 2.18 miles south down and on Centerville Road.

Project location: Centerville Road, Chico, CA 95928
Adjacent Assessor’s Parcel Numbers (APNs): 064-010-016, 063-020-009, 066-360-001, 017-010-044, 017-010-036, 017-010-033, 017-010-032, 017-020-033, 017-020-015, and 017-020-017.

Project contact: Butte County Resource Conservation District
 Thad Walker, District Manager/ Conservation Project Coordinator
 thad@bcrd.org / Phone: (530) 693-3173

Consultant contact: Pacific Watershed Associates, Inc (PWA)
 Shannon Weese, Project Geologist
 shannonw@pacificwatershed.com / Phone: (707) 773-1385 ext. 73
 Tyler Cole, Staff Geologist
 tylerc@pacificwatershed.com / Phone: (707) 773-1385 ext. 71

List of used acronyms and abbreviations

SC	Stream crossing	SOS	Start of survey
DRC	Ditch relief culvert	EOS	End of survey
TOP	Upstream extent of excavation	CD	Critical dip
BOT	Downstream extent of excavation	CCD	Cut and clean ditch
EDS	Energy dissipation structure	OSR-KD	Outslope road and keep inboard ditch
IBR	Inboard edge of road	CMP	Corrugated metal pipe (i.e. culvert)
OBR	Outboard edge of road	TR	Trash rack
IBF	Inboard edge of fill	Left/Right	As looking downslope or downstream
OBF	Outboard edge of fill	yd³	Cubic yards
IBD	Inboard ditch		

Work to be performed:

All work must conform to the approved permits, enclosed road designs and specifications and will be supervised by Pacific Watershed Associates (PWA) and Butte County Resource Conservation District (BCRCD) personnel. Prior to implementation, all permit pre-construction conditions to protect species will need to be met. All proposed road work will be completed in accordance with the techniques described in Part X of the California Salmonid Stream Habitat Restoration Manual, 4th edition (CDFW 2010). Culvert replacement work will be consistent with current California Department of Fish and Wildlife (CDFW) and National Marine Fisheries Service (NMFS) guidelines concerning fish passage, including Part X of the Habitat Restoration Manual. Contractors will be expected to complete work according to all permit conditions.

General construction assumptions and treatment notes:

- Centerville Road must remain open and passable outside work hours. Sites shall be left in a condition that will allow the road to remain open during off-hours. If an excavation is too large to be backfilled to a safe passage finish grade in a single workday, steel trench plates shall be used to make sure the crossings are in a safe condition with well-marked traffic directions and barriers for use of the road after hours and to allow safe overnight passage.
- Culvert excavations backfill materials shall be placed in accordance with Caltrans standard specifications for fill placement (Earthwork Chapter 4, Section 19).
- Water will not be available on site. Water source and transporting, loading, and unloading of water will need to be determined by selected contractor. Water source must be approved by PWA or BCRCD prior to construction.
- Grey highlighting designates sites that have proposed work in jurisdictional streams and will require secured regulatory permits prior to implementation.
- Any exposed and disturbed soil area adjacent to watercourses with the potential to deliver sediment will be seeded and straw mulched after construction and before the onset of rain.
- All sites will be accessed via the identified project roads detailed in Maps 1 and 2 and ground will only be disturbed as needed to complete the work along project roads.
- All access roads will be repaired/graded as needed and erosion control materials will be applied after completion of work to return to original or improved condition.
- All work sites will be re-rocked with the estimated material quantity and type in the following road log tables.
- Staging areas will be repaired/graded as needed after completion of work to return to original or improved condition.
- All treatments shall follow PWA construction recommendations detailed in the road logs, typical (schematic) drawings, grading plan drawings, and abide by industry standards as well as secured local, state, and federal permits.
- This project will take place within applicable windows as permitted by regulatory agencies, roughly June 15 to October 15.

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
0+00		SOS	Project road starts at ditch relief culvert (Site 150) approximately 2.18 miles south of intersection with Nimsheew Road.		
	150 (DRC)	DRC 1.2	<p>Site 150: Existing DRC.</p> <ol style="list-style-type: none"> 1. Replace existing DRC with 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
2+20		DRC 1.1	<p>Existing DRC with crushed and plugged inlet.</p> <ol style="list-style-type: none"> 1. Replace with 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. Position outlet on Site 149 OBF riprap. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
2+90	149 (SC)	CD 1.1	<p>Site 149: Stream crossing with existing 15" x 30' long concrete culvert. The inlet is crushed, and the culvert was installed high in the fill.</p> <ol style="list-style-type: none"> 1. Excavate the crossing from TOP to BOT for 80' and install a 54" x 80' long CMP at base of fill and along natural channel alignment. 2. Define a 3' wide x 50' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. 3. Rebuild IBF at 2:1 slope. 4. Rebuild OBF at 34 degrees and armor the lower 1/4 with 20 yd³ of 1'-2' riprap. 5. Construct a critical dip on the left hingeline to eliminate diversion potential. 6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 7. Maintain/rebuild single car turnout left of inlet area. 8. Re-rock disturbed road surface with 30 yd³ of road rock. 	54" x 80' 3 couplers 3" x 8' tall galv. post	12 yd ³ 1'-2' riprap 30 yd ³ road rock
4+50		DRC 1	<ol style="list-style-type: none"> 1. Install an 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
6+20		Start CCD 1	<ol style="list-style-type: none"> 1. Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 120' and drain to new inlet of Site 148. 		
6+80		DRC 2	<ol style="list-style-type: none"> 1. Install an 18" x 50' long DRC set perpendicular to the roadbed and 10% grade; Plug inboard ditch downslope of new DRC inlet. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
7+40	148 (SC)	CD 1 End CCD 1	<p>Site 148: Stream crossing with existing 18" x 30' long steel culvert.</p> <ol style="list-style-type: none"> 1. Remove 20" maple cluster below current outlet area. 2. Trim trunks of 6" maple near inlet as necessary for access. 3. Excavate the crossing from TOP to BOT for 70' and install a 48" x 80' long CMP at base of fill and along natural channel alignment. 4. Define a 6' wide x 30' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. 5. Rebuild IBF at 34 degrees and armor the lower 1/4 with 2 yd³ of 1'-2' riprap. 6. Rebuild OBF at 32 degrees and armor the lower 1/4 with 10 yd³ of 1'-2' riprap. 7. Construct a critical dip on the left hingeline to eliminate diversion potential. 8. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 9. Maintain/rebuild single car turnout left of inlet area. 10. End cut and/or clean ditch (CCD 1) and connect to new inlet. 11. Re-rock disturbed road surface with 30 yd³ of road rock. 	48" x 80' 3 couplers 3" x 8' tall galv. post	12 yd ³ 1'-2' riprap 30 yd ³ road rock
9+50		DRC	<p>Existing 24" DRC with drop inlet and riprap. No treatment.</p>		
13+00		DRC	<p>Existing 24" DRC with drop inlet and riprap on OBF. No treatment.</p>		
15+00		DRC 2.1	<ol style="list-style-type: none"> 1. Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade; Plug inboard ditch downslope of new DRC inlet. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
17+40		DRC 3	<p>Existing 12" DRC.</p> <ol style="list-style-type: none"> 1. Replace with an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
19+10		Start CCD 2	<ol style="list-style-type: none"> 1. Cut and/or clean existing inboard ditch 2' wide x 1' deep for 170' long to DRC 4. 		
19+60		DRC 3.1 Start OSR-KD 1	<p>Existing 18" steel DRC.</p> <ol style="list-style-type: none"> 1. Clean DRC inlet area and interior to regain function. 2. Start outslope road and keep ditch for 990' to Site 147. 3. Re-rock road with 200 yd³ of road rock (18' x 0.3' x 990'). 		200 yd ³ road rock

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
20+80		DRC 4 End CCD 2	Existing 12" concrete DRC near intersection on right. 1. Replace with 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. 2. End cut and clean ditch at DRC 4.	18" x 50' 2 couplers	
23+00		DRC 4.1	1. Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade; Plug inboard ditch downslope of new DRC inlet.	18" x 50' 2 couplers	
26+60		DRC	Existing newer 18" DRC. No treatment.		
28+50		DRC 5 Start CCD 3	1. Install an 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. 2. Cut and/or clean existing inboard ditch 2' wide x 1' deep for 530' from DRC 5 to DRC 6.	18" x 50' 2 couplers	
29+50	147 (SC)	CD 2 End OSR-KD 1	Site 147: Stream crossing with existing 24" x 50' long plastic culvert. 1. Excavate the crossing from TOP to BOT for 105' and install a 36" x 80' long CMP at the base of fill. 2. Define a 4' wide x 30' long channel with 2:1 sideslopes from TOP to new inlet to remove aggraded sediment and restore natural channel grade and alignment. 3. Rebuild IBF at 45 degrees and armor the full slope with 5 yd ³ of 1'-2' riprap. 4. Rebuild OBF at 35 degrees and armor the lower 3/4 with 70 yd ³ of 1'-3' riprap. 5. Construct a critical dip on the left hingeline to eliminate diversion potential. 6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 7. Rebuild/maintain turnout along IBR left of inlet. 8. End outslope road and keep ditch (OSR-KD 1) at Site 147.	36" x 80' 3 couplers 3" x 6' tall galv. post	5 yd ³ 1'-2' riprap 70 yd ³ 1'-3' riprap
31+30		DRC 6.1	1. Install an 18" x 40' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd ³ of road rock.	18" x 40' 1 coupler	5 yd ³ road rock
33+80		DRC 6 End CCD 3	1. Install an 18" x 40' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd ³ of road rock. 3. End cut and clean ditch (CCD 3) at DRC 6.	18" x 40' 1 coupler	5 yd ³ road rock
35+40		DRC 7	1. Install an 18" x 40' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd ³ of road rock.	18" x 40' 1 coupler	5 yd ³ road rock

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
37+40		DRC 8	<p>Existing 12" concrete ditch relief culvert.</p> <ol style="list-style-type: none"> 1. Install an 18" x 40' long CMP with inlet positioned at low point of ditch (about 30' up road of existing 12" concrete DRC). Position the pipe perpendicular to the road alignment to drain both left and right ditches. 2. Abandon in place existing 12" concrete DRC. 3. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 40' 1 coupler	5 yd ³ road rock
38+50		Start CCD 4	<ol style="list-style-type: none"> 1. Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 80' long after bend in the road and connect to Site 146. 		
39+30	146 (DRC)	EDS 1 End CCD 4	<p>Site 146: Existing 12" steel DRC with outlet gully.</p> <ol style="list-style-type: none"> 1. Construct energy dissipation structure at outlet of existing DRC using 1 yd³ of 0.5'-2' riprap (4' wide x 2' deep avg. x 5' long). 2. End cut/clean ditch (CCD 4) at Site 146 and connect to inlet. 		1 yd ³ 0.5'-2' riprap
41+50			<p>Gated Staging Area.</p> <p>Gated private property to be used for staging equipment, debris, and materials pending owner's approval. Minimize disturbance to staging area and repair any damage to private property. Erosion control seed and straw should be applied to disturbed areas upon completion of the project.</p>		
42+80		DRC 8.8	<ol style="list-style-type: none"> 1. Install an 18" x 40' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 40' 1 coupler	5 yd ³ road rock
44+00		DRC 8.9	<ol style="list-style-type: none"> 1. Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 1 coupler	5 yd ³ road rock
46+00	145 (SC)	CD 3	<p>Site 145: Existing newer 24" x 20' long steel stream crossing culvert installed high in the fill.</p> <ol style="list-style-type: none"> 1. Construct a critical dip on the left hingeline to eliminate diversion potential. 2. Install a T-post trash rack above the new inlet and centered to reduce plug potential. 	T-post	30 yd ³ road rock
50+10		DRC 8.5	<p>Existing new 24" steel DRC.</p> <ol style="list-style-type: none"> 1. Clean inlet. 		

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
51+00	144 (SC)	CD 4	<p>Site 144: Diverted stream with no crossing structure. Stream currently diverts 100' down IBD to DRC 8.5.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 50' and install a 24" x 40' long CMP at the base of fill. Define a 4' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 45 degrees and armor the full slope with existing riprap. Rebuild OBF at 34 degrees and armor the lower 1/4 with 3 yd³ of 1'-2' riprap. Plug ditch on right to eliminate diversion potential. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a T-post trash rack above the new inlet and centered to reduce plug potential. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>24" x 40' 1 coupler</p> <p>T-post</p>	<p>3 yd³ 1'-2' riprap</p> <p>30 yd³ road rock</p>
51+40		<p>DD</p> <p>Start OSR-KD 2</p> <p>Start CCD 5</p>	<p>At road surface drainage divide:</p> <ol style="list-style-type: none"> Start outslope road and keep ditch with a 4-5% grade for 360'. Re-rock the road using 70 yd³ of road rock (18' x 0.3' x 360'). Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 240' long. 		75 yd ³ road rock
53+00		DRC 8.7	<ol style="list-style-type: none"> Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade. 	18" x 50' 2 couplers	
53+90	143 (SC)	End CCD 5	<p>Site 143: Existing 36" x 40' long undersized newer metal stream crossing culvert. (Class II stream)</p> <ol style="list-style-type: none"> End cut and clean ditch (CCD 5) and connect to Site 143 inlet. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 	3" x 6' tall galv. post	

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
<p>Notes: Descriptions in bold give abbreviated summary of existing site or road treatment feature. Cells shaded in grey require secured permits before work can begin. An asterisk (*) notes locations where sensitive plant species have been identified. See Appendix C, construction typical (schematic) drawings, and Appendix F, stream crossing grading plan drawings, for design details, and Page A-2 above for abbreviations.</p>					
55+00	142 (SC)	CD 6 End OSR-KD 2	<p>Site 142: Stream crossing with existing 18" x 30' long culvert with a concrete inlet and steel outlet. (Class II stream).</p> <ol style="list-style-type: none"> If water is present in work area, the Qualified Biologist shall be notified and the approved dewatering procedure must be followed. Excavate the crossing from TOP to BOT for 70' and install a 60" x 60' long CMP at the base of fill. Define a 5' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Raise road as necessary (about 3 feet) to provide adequate coverage of new 60" CMP. Import fill material (~21 yd³) from other treatment sites where there is excess. Rebuild IBF at 2:1 slope. Rebuild OBF at 30 degrees and armor the lower 1/4 with existing riprap. Construct/enhance the critical dip on the left hingeline to eliminate diversion potential. Remove steel pipe under decommissioned road on right and maintain ditch to Site 143 new inlet. Maintain road outslope and remove any existing berm between Site 142 and 143. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. End OSR-KD 2 at Site 142. 	60" x 60' 2 couplers 3" x 8' tall galv. Post	
57+70		DRC 8.6	<ol style="list-style-type: none"> Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
60+40		DRC 8.1	<p>Existing plugged 12" concrete and steel DRC.</p> <ol style="list-style-type: none"> Replace with 18" x 50' long CMP in the existing alignment and with the outlet deeper and at the base of fill. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
62+00	141 (DRC)	DRC 8.2 EDS 2	<p>Existing DRC with outlet gully.</p> <ol style="list-style-type: none"> Construct energy dissipation structure at outlet of existing DRC using 1 yd³ of 0.5'-2' riprap (4' wide x 2' deep avg. x 5' long). 		1 yd ³ 0.5'-2' riprap
65+90		DRC 8.3	<p>Existing 18" steel DRC.</p> <ol style="list-style-type: none"> Clean inlet area and interior. 		
69+10		DRC 8.4	<p>Existing plugged 12" steel DRC.</p> <ol style="list-style-type: none"> Replace with 18" x 50' long DRC set at minimum 30 degrees from the roadbed and 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Distance on road (feet)	PWA site # / site type	Road treatment	Site / treatment description	Culvert/ Trash Rack	Rock/ fill
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70+00		Start CCD 6	1. Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 170' to Site 140.		
72+00	140 (SC)	CD 7 End CCD 6	<p>Site 140: Stream crossing with an existing 18" x 30' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 100' and install a 30" x 60' long CMP at the base of fill. Define a 4' wide x 40' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 2:1 slope. Rebuild OBF at 30 degrees and armor the lower 1/4 with 10 yd³ of 1'-3' riprap. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. End cut/clean ditch (CCD 6) and connect to new inlet. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>30" x 60' 2 couplers</p> <p>3" x 6' tall galv. post</p>	<p>10 yd³ 1'-3' riprap</p> <p>30 yd³ road rock</p>
73+80	139 (SC)	CD 8	<p>Site 139: Stream crossing with an existing 12" x 25' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 75' and install a 30" x 50' long CMP at the base of fill. Define a 4' wide x 15' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 45 degrees and armor the full slope with 4 yd³ of 1'-2' riprap. Rebuild OBF at 45 degrees and armor the full slope with 30 yd³ of 1'-2' riprap. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>30" x 50' 2 couplers</p> <p>3" x 6' tall galv. post</p>	<p>34 yd³ 1'-2' riprap</p> <p>30 yd³ road rock</p>

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

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75+00	138 (SC)	CD 9	<p>Site 138: Stream crossing with an existing 30" x 30' long steel culvert and steel plate on road surface.</p> <ol style="list-style-type: none"> 1. Remove 8" maple tree near inlet. 2. Excavate the crossing from TOP to BOT for 110' and install a 72" x 70' long CMP at the base of fill. 3. Define an 8' wide x 40' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. 4. Rebuild IBF at 2:1 slope. 5. Rebuild OBF at 36 degrees and armor the lower 1/2 with 8 yd³ of 1'-2' riprap. Import fill material as needed (~36 yd³) from other treatment sites to rebuild OBF. 6. Construct a critical dip on the right hingeline to eliminate diversion potential. 7. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 8. Maintain/rebuild access road and single car turnout left of inlet. 9. Re-rock disturbed road surface with 30 yd³ of road rock. 	72" x 70' 3 couplers 3" x 10' tall galv. post	8 yd ³ 1'-2' riprap 30 yd ³ road rock
75+80		DD	Drainage divide		
76+50	137 (SC)		<p>Site 137: Stream crossing with an existing 12" x 25' long metal culvert.</p> <ol style="list-style-type: none"> 1. Excavate the crossing from TOP to BOT for 50' and install a 30" x 50' long CMP at the base of fill. 2. Rebuild IBF at 2:1 slope. 3. Rebuild OBF at 33 degrees and armor the lower 1/4 with 5 yd³ of 1'-2' riprap. Lower the road 1.5' upon rebuild. Offhaul excess material as necessary. 4. Install a T-post trash rack above the new inlet and centered to reduce plug potential. 5. Re-rock disturbed road surface with 30 yd³ of road rock. 	30" x 50' 2 couplers T-post	5 yd ³ 1'-2' riprap 30 yd ³ road rock
77+00		DD	Drainage divide		
78+30		DRC 9	<ol style="list-style-type: none"> 1. Install an 18" x 50' long DRC set at minimum 30 degrees from the roadbed and minimum 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
80+50		DRC 10	<ol style="list-style-type: none"> 1. Install an 18" x 50' long CMP before bend in the road. Set at 30 degrees from the roadbed and at a 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock
81+70	136 (DRC)	DRC 11	<p>Site 136: Existing plugged 12" steel DRC</p> <ol style="list-style-type: none"> 1. Replace with 18" x 50' long CMP with inlet 5 feet up the road and outlet at the base of fill. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 	18" x 50' 2 couplers	5 yd ³ road rock

Table A1. Centerville Road (upgrade): Road log of proposed treatments. *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

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82+70	135 (SC)	CD 10	<p>Site 135: Existing 18" x 40' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 60' and install a 24" x 50' long CMP at the base of fill. Rebuild IBF at 2:1 slope. Rebuild OBF at 36 degrees and armor the lower 1/2 with 4 yd³ of 1'-2' riprap. Connect existing right ditch to new inlet. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a T-post trash rack above the new inlet and centered to reduce plug potential. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>24" x 50' 2 couplers</p> <p>T-post</p>	<p>4 yd³ 1'-2' riprap</p> <p>30 yd³ road rock</p>
85+00		DRC 12	<ol style="list-style-type: none"> Install an 18" x 50' long CMP before bend in the road. Set at 30 degrees from the roadbed and at a minimum 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>
87+50	134 (DRC)	DRC	<p>Site 134: Existing 18" steel DRC.</p> <p>No treatments at this site. Road treatments up the road will reduce road surface runoff and sediment delivery.</p>		
88+40		Start CCD 6.1	<ol style="list-style-type: none"> Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 260' to Site 133. 		
89+10		DRC 12.1	<p>Existing 18" steel DRC.</p> <ol style="list-style-type: none"> Clean inlet area and interior to restore function. 		
90+10		DRC 12.2	<ol style="list-style-type: none"> Install an 18" x 50' long CMP with inlet above private driveway with green gate. Set at 30 degrees from the roadbed and at a minimum 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>
91+00	133 (DRC)	DRC 13 End CCD 6.1	<p>Site 133: Existing 12" steel DRC with outlet gully.</p> <ol style="list-style-type: none"> Replace with 18" x 50' long CMP in the existing alignment and with the outlet at a minimum 10% grade or base of fill. End cut/clean ditch (CCD 6.1) at DRC 13. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>
94+50		DRC 13.1	<ol style="list-style-type: none"> Install an 18" x 50' long DRC set at 30 degrees from the roadbed and at a minimum 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>

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95+60	132 (SC)	CD 11	<p>Site 132: Stream crossing with existing 18" x 45' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 65' and install a 30" x 50' long CMP at the base of fill. Retain oak trees on left and right hillslopes near new outlet. Define a 4' wide x 13' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 38 degrees and armor the lower 3/4 with 3 yd³ of 1'-2' riprap. Rebuild OBF at 38 degrees and armor the lower 3/4 with 8 yd³ of 1'-2' riprap. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>30" x 50' 2 couplers</p> <p>3" x 6' tall galv. post</p>	<p>11 yd³ 1'-2' riprap</p> <p>30 yd³ road rock</p>
96+00		Start CCD 7	<ol style="list-style-type: none"> Cut and/or clean existing inboard ditch minimum 2' wide x 1' deep for 170'. 		
97+70		End CCD 7	<ol style="list-style-type: none"> End cut and clean ditch (CCD 7). 		
98+00	*131* (SC)	CD 12	<p>Site 131: Existing 12" x 30' long concrete culvert.</p> <p><i>*Rare plant in vicinity, proceed with RCD biologist approval*</i></p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 55' and install a 30" x 50' long CMP at the base of fill. Rebuild IBF at 38 degrees and armor the lower 3/4 with 2 yd³ of 1'-2' riprap. Rebuild OBF at 38 degrees and armor the lower 3/4 with 8 yd³ of 1'-2' riprap. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a T-post trash rack above the new inlet and centered to reduce plug potential. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>30" x 50' 2 couplers</p> <p>T-post</p>	<p>10 yd³ of 1'-2' riprap</p> <p>30 yd³ road rock</p>
101+00		*DRC 14*	<p><i>*Rare plant in vicinity, proceed with RCD biologist approval*</i></p> <ol style="list-style-type: none"> Install an 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>
102+70		*DRC 15*	<p><i>*Rare plant in vicinity, proceed with RCD biologist approval*</i></p> <ol style="list-style-type: none"> Install an 18" x 50' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. Re-rock disturbed road surface with 5 yd³ of road rock. 	<p>18" x 50' 2 couplers</p>	<p>5 yd³ road rock</p>

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103+90	130 (DRC)	*DRC 16*	<p>Site 130: Existing 18" DRC with outlet gully <i>*Rare plant in vicinity, proceed with RCD biologist approval*.</i> 1. Replace with 18" x 50' long CMP in the existing alignment and with the outlet at the base of fill. 2. Re-rock disturbed road surface with 5 yd³ of road rock.</p>	18" x 50' 2 couplers	5 yd ³ road rock
105+90		*DRC 17*	<p><i>*Rare plant in vicinity, proceed with RCD biologist approval*.</i> 1. Install an 18" x 50' long CMP above turn. Set at 30 degrees from the roadbed and at a minimum 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock.</p>	18" x 50' 2 couplers	5 yd ³ road rock
107+00	129 (SC)	CD 13	<p>Site 129: Existing 12" x 25' long concrete culvert. 1. Excavate the crossing from TOP to BOT for 45' and install a 24" x 50' long CMP at the base of fill. Align new outlet with the gully channel below. 2. Raise IBR as necessary (about 3 feet) to provide adequate coverage of new 24" CMP. Import fill material (~3 yd³) from Site 122 or another site with excess spoils. 3. Rebuild IBF at 45 degrees and armor the lower 3/4 with 1 yd³ of 1'-2' riprap. 4. Rebuild OBF at 40 degrees and armor the lower 3/4 with 18 yd³ of 1'-2' riprap. 5. Construct a critical dip on the left hingeline to eliminate diversion potential. 6. Install a T-post trash rack above the new inlet and centered to reduce plug potential. 7. Re-rock disturbed road surface with 30 yd³ of road rock.</p>	24" x 50' 2 couplers T-post	19 yd ³ 1'-2' riprap 30 yd ³ road rock
108+50		DRC 18	<p>1. Install an 18" x 40' long CMP perpendicular to the roadbed and at a minimum 10% grade. 2. Re-rock disturbed road surface with 5 yd³ of road rock.</p>	18" x 40' 1 coupler	5 yd ³ road rock
109+90	128 (DRC)	DRC 19	<p>Site 128: Existing 12" concrete DRC. 1. Replace with 18" x 40' long CMP in the existing alignment and with the outlet at the base of fill. 2. Re-rock disturbed road surface with 5 yd³ of road rock.</p>	18" x 40' 1 coupler	5 yd ³ road rock
112+00	127 (DRC)	DRC 20 EDS 4	<p>Site 127: Existing 12" concrete DRC with outlet gully. 1. Replace with 18" x 60' long CMP in the existing alignment and with the outlet at the bottom of the gully. 2. Re-rock disturbed road surface with 5 yd³ of road rock. 3. Construct energy dissipation structure at new outlet using onsite riprap.</p>	18" x 60' 2 couplers	5 yd ³ road rock
115+00	126 (DRC)	DRC 21	<p>Site 126: Existing 12" concrete DRC with outlet gully. 1. Replace with 24" x 50' long CMP in the existing alignment and with the outlet set at the base of existing gully. 2. Re-rock disturbed road surface with 5 yd³ of road rock.</p>	24" x 50' 2 couplers	5 yd ³ road rock

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115+30		Start CCD 8	1. Cut and clean existing inboard ditch 2' wide x 1' deep for 330'.		
115+80		Start OSR-KD 5	1. Start outslope road and keep ditch with a 4-5% grade for 280' after bend in road. 2. Re-rock the road using 60 yd ³ of road rock (18' wide x 0.3' x 280' long).		60 yd ³ road rock
117+00		DRC 22	1. Install an 18" x 60' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. Position the outlet near trees and shrubs on hillslope below.	18" x 60' 2 couplers	
117+70	*125* (SC)	--	<p>Site 125: Stream crossing with existing 12" x 25' long steel culvert. <i>*Rare plant in vicinity, proceed with RCD biologist approval.</i></p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 130' and install a 30" x 70' long CMP at the base of fill. Move the new inlet 13' to the left to improve alignment with the natural stream channel. Define a 3' wide x 60' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 2:1 slope. Rebuild OBF and adjacent fillslope at 38 degrees and armor the lower 3/4 (55' wide at bottom, tapering up to 33' wide at top) x 2' deep with 95 yd³ of 1'-3' riprap. Connect left and right ditch to new inlet. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. 	30" x 70' 3 couplers 3" x 6' tall galv. post	95 yd ³ 1'-3' riprap
118+60		DD End CCD 8 End OSR-KD 5	At road surface drainage divide: 1. End cut and clean ditch. 2. End OSR-KD 5.		
120+20		Start OSR-KD 6	1. Start outslope road and keep ditch with a 4-5% grade for 430'. 2. Re-rock the road using 90 yd ³ of road rock. (18' x 0.3' x 430')		90 yd ³ road rock

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121+20	124 (SC)	CD 15	<p>Site 124: Stream crossing with existing 12" x 30' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 45' and install a 24" x 40' long CMP at the base of fill. Rebuild IBF at 2:1 slope. Rebuild OBF at 36 degrees and armor the lower 3/4 with 2 yd³ of 1'-2' riprap. Construct a critical dip on the left hingeline to eliminate diversion potential. Install a T-post trash rack above the new inlet and centered to reduce plug potential. 	<p>24" x 40' 1 coupler T-post</p>	<p>2 yd³ 1'-2' riprap</p>
122+40		DRC 23	<p>Existing plugged 12" steel DRC with outlet gully.</p> <ol style="list-style-type: none"> Replace with 24" x 60' long CMP set at 30 degrees from the roadbed and at a minimum 10% grade. Align the outlet with the existing gully. 	<p>24" x 60' 2 couplers</p>	
123+40	123 (SC)	Start CCD 9	<p>Site 123: Stream crossing with existing diverted stream crossing. Stream diverts down IBD for 100' and enters stream channel at Site 122 inlet.</p> <ol style="list-style-type: none"> Cut and clean existing inboard ditch 3' wide x 1' deep for 100'. Maintain current diversion path and connect flow to new Site 122 inlet. 		
124+20	122 (SC)	<p>End OSR-KD 6 End CCD 9</p>	<p>Site 122: Stream crossing with existing crushed, plugged, non-functioning 18" x 40' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 95' and install a 24" x 60' long CMP in the existing alignment with the outlet positioned at the base of fill. Install a flared 24" inlet to the CMP inlet. Rebuild IBF at 2:1 slope. Rebuild OBF at 38 degrees and armor the lower 3/4 with 2 yd³ of 1'-2' riprap. Install a T-post trash rack above the new inlet and centered to reduce plug potential. End OSR-KD 6 at Site at 122. End cut and clean ditch (CCD 9) and drain to new inlet. Re-rock disturbed road surface with 30 yd³ of road rock. 	<p>24" x 60' 2 couplers 24" flared inlet T-post</p>	<p>30 yd³ road rock 2 yd³ 1'-2' riprap</p>
125+60			Intersection with private driveway upslope.		
125+70	121 (SC)		<p>Site 121: Stream crossing with existing 4' x 10' concrete box culvert stream crossing on large stream.</p> <ol style="list-style-type: none"> Use hand labor to remove vegetation from inlet and outlet area and remove sediment from culvert interior. 		

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126+10	120 (SC)	CD 16 EDS 5	<p>Site 120: Stream crossing with existing 18" x 30' long steel culvert.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 70' and install a 48" x 50' long CMP at the base of fill. Move the new inlet 12' to the left to improve alignment with the natural stream channel. Define a 5' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 2:1 slope. Rebuild OBF at 38 degrees and armor the lower 3/4 with 11 yd³ of 1'-2' riprap. Construct energy dissipation structure at outlet using onsite riprap (7' wide x 2' deep avg. x 5' long). Construct a critical dip on the left hingeline to eliminate diversion potential. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. Maintain/establish single car turnout left of inlet area. Re-rock disturbed road surface with 30 yd³ of road rock. 	48" x 50' 2 couplers 3" x 8' tall galv. post	11 yd ³ 1'-2' riprap 30 yd ³ road rock
126+50		Start CCD 10	<ol style="list-style-type: none"> Cut and clean existing inboard ditch 2' wide x 1' deep for 200'. 		
128+50	119 (SC)	EDS 6 End CCD 10	<p>Site 119: Stream crossing with existing pair of 30" x 40' long steel culverts.</p> <ol style="list-style-type: none"> Excavate the crossing from TOP to BOT for 190' and install a 60" x 70' long CMP at the base of fill. Define a 5' wide x 120' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment. Rebuild IBF at 2:1 slope. Rebuild OBF at 30 degrees and armor the lower 1/4 with 8 yd³ of 1'-3' riprap. Construct an energy dissipation structure at outlet using 1 yd³ of 0.5'-2' riprap (4' wide x 2' deep avg. x 5' long). Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential. End cut and clean ditch and connect to new inlet. Re-rock disturbed road surface with 30 yd³ of road rock. 	60" x 70' 3 couplers 3" x 10' tall galv. post	1 yd ³ 0.5'-2' riprap 8 yd ³ 1'-3' riprap 30 yd ³ road rock
129+60		DD	Road surface drainage divide.		
		EOS	End of survey at drainage divide near oak on OBR.		

Table A2. Summary of Construction Material Needs and Proposed Treatments, *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Proposed treatment summary	Culvert, couplers, trash racks	Rock and fill needs (yd ³) ^a	Erosion Control Materials
Install stream crossing culvert (#): 1 Replace stream crossing culvert (#): 17 Improve channel at diverted stream (#): 1 Clean stream crossing culvert interior (#): 1 Construct energy dissipation structure (#): 5 Install ditch relief culvert (#): 23 Replace ditch relief culvert (#): 13 Clean inlet at ditch relief culvert (#): 4 Critical dip (#): 15 Trash rack (#): 20 Cut and clean existing ditch (ft): 2,370 Outslope road and keep ditch (ft): 2,060	18" x 1,650'; 61 couplers 24" x 350'; 10 couplers 30" x 330'; 13 couplers 36" x 80'; 3 couplers 48" x 130'; 5 couplers 54" x 80'; 3 couplers 60" x 130'; 5 couplers 72" x 70'; 3 couplers 24" flared inlet (1) 8 T-post TR 12 Galvanized post TR	Road rock: 1,000 yd ³ 0.5'-2' riprap: 5 yd ³ 1' - 2' riprap: 140 yd ³ 1' - 3' riprap: 185 yd ³	41 bales of weed-free rice straw 60.0 lbs. of native seed

^a Total road rock and riprap volume is rounded up to the nearest 5 yd³

Table A3. Summary of Construction Material Specifications, *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Item	Material Specification
Culvert	Corrugated metal pipes: galvanized steel 14ga 18", 14ga 24", 12ga 30", 12ga 36", 12ga 48", 12ga 60", 12ga 72"
Trash rack	Heavy duty steel T-post: 1.5" x 6' tall Galvanized post minimum: 3" diameter minimum and various lengths.
Rock ^a	Riprap: Purchased riprap from local quarry must be angular, not rounded. Road rock: Road surface areas disturbed by construction shall be re-rocked minimum 0.3 ft thickness. Proposed road rock shall meet Caltrans standard 26-1.02B Class 2 Aggregate Base.
Straw	Certified weed-free, seed-free rice straw
Seed	Butte County RCD approved native seed mix

All materials must be approved by PWA or BCRCD prior to use.

Appendix B

Representative Photos

Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California

Photo #	Site #	Site Type
1	119	Stream crossing
2	119	Stream crossing
3	120	Stream crossing
4	120	Stream crossing
5	122	Stream crossing
6	122	Stream crossing
7	124	Stream crossing
8	124	Stream crossing
9	125	Stream crossing
10	125	Stream crossing
11	126	Ditch relief culvert
12	127	Ditch relief culvert
13	128	Ditch relief culvert
14	128	Ditch relief culvert
15	129	Stream crossing
16	129	Stream crossing
17	130	Ditch relief culvert
18	130	Ditch relief culvert
19	131	Stream crossing
20	131	Stream crossing
21	132	Stream crossing
22	132	Stream crossing

Photo #	Site #	Site Type
23	134	Ditch relief culvert
24	134	Ditch relief culvert
25	135	Stream crossing
26	135	Stream crossing
27	136	Ditch relief culvert
28	136	Ditch relief culvert
29	138	Stream crossing
30	138	Stream crossing
31	139	Stream crossing
32	139	Stream crossing
33	140	Stream crossing
34	140	Stream crossing
35	142	Stream crossing
36	142	Stream crossing
37	144	Stream crossing
38	144	Stream crossing
39	147	Stream crossing
40	147	Stream crossing
41	148	Stream crossing
42	148	Stream crossing
43	149	Stream crossing
44	149	Stream crossing



Photo 1. Site 119: View from the left streambank looking towards existing CMP outlet and outboard fillslope. A new 60-inch CMP will replace the double CMPs and will be set at the base of fill.



Photo 2. Site 119: View looking downstream towards existing CMP inlets. Both CMPs were recently installed in-kind with the previous undersized CMP. Both CMPs are shallow in the fill and will continue to erode the outboard fill.



Photo 3. Site 120: View looking upstream towards existing CMP outlet and outboard fillslope. A new 48-inch CMP will be installed at the base of fill and will be aligned with the stream channel.



Photo 4. Site 120: View looking downstream towards existing stream crossing CMP alignment. The CMP is undersized and not aligned with the stream channel and is short and high in the fill.



Photo 5. Site 122: View looking upstream at the current CMP outlet and outboard fillslope for Site #'s 123 and 122. A new 24-inch CMP will be placed at the base of fill and will be adequately sized to transmit flow from both streams.



Photo 6. Site 122: View looking downstream towards existing CMP inlet. Streamflow from Site #123 comes in from the right ditch and uses this CMP. The existing CMP is undersized to convey the streamflow from both streams.



Photo 7. Site 124: View looking upstream at the current CMP outlet and outboard fillslope. A new 24-inch CMP will be placed at the base of the fill.



Photo 8. Site 124: View looking downstream at the current CMP inlet and stream crossing surface. The undersized CMP is short and high in the fill and has caused erosion of the outboard fillslope.



Photo 9. Site 125: View looking upstream at the current CMP outlet and rocked outboard fillslope. A new 30-inch CMP will be placed in line with the channel and set at the base of fill.



Photo 10. Site 125: View looking downstream. The undersized CMP is not in line with the channel and is set high in the fill. A stone crib wall buttresses the fillslope but is slowly being filled in with sediment from overtopping at the inlet.



Photo 11. Site 126: View of inlet area of existing DRC#21. Standing in inboard ditch 15 feet uproad from inlet.



Photo 12. Site 127: View of inlet area of existing DRC#20. Standing in inboard ditch 12 feet uproad of inlet.



Photo 13. Site 128: View of inlet area of existing DRC#19. Standing in inboard ditch 20 feet uproad of inlet.



Photo 14. Site 128: View of outlet area of existing DRC#19 from 30 feet below outboard edge of road.



Photo 15. Site 129: View looking upstream at the current CMP outlet and outboard fillslope. A new 24-inch CMP will be placed at the base of fill reducing the amount of future outboard fill erosion.



Photo 16. Site 129: View of the current CMP inlet and stream crossing surface. Long ditch and stream flow is conveyed through this undersized CMP causing erosion of the outboard fillslope at the outlet.



Photo 17. Site 130: View of inlet of existing DRC#16. The opening of the existing CMP has been crushed.



Photo 18. Site 130: View of OBR berm area and outlet of existing DRC#16 from OBR.



Photo 19. Site 131: View looking upstream at the current CMP outlet and outboard fillslope. A new 30-inch CMP will be placed at the base of fill.



Photo 20. Site 131: View looking downstream at the plugged CMP inlet. The current CMP is undersized and is short in the fill causing erosion of the outboard fillslope.



Photo 21. Site 132: View looking upstream towards the outboard fillslope. A new 30-inch CMP will be placed at the base of fill and the long ditch flow will be truncated with the installation of a DRC to the right ditch.



Photo 22. Site 132: View looking downstream at the current CMP inlet and stream crossing surface. The CMP is undersized and delivers long ditch flow from the right.



Photo 23. Site 134: View looking uproad from OBR. RD#19.



Photo 24. Site 134: View looking uproad from OBR to DRC#12



Photo 25. Site 135: View looking upstream at the current CMP outlet and outboard fillslope. A new 24-inch CMP will be placed at the base of fill.



Photo 26. Site 135: View of the current CMP inlet and stream crossing surface from the right streambank. The CMP is partially crushed reducing its carrying capacity and is high in the fillslope on the outlet side.



Photo 27. Site 136: View from IBR 15 feet uproad at the current DRC#11 inlet area.



Photo 28. Site 136: View from OBR at DRC#11 outlet area



Photo 29. Site 138: View looking upstream at the current channel outlet and armored outboard fill slope. A new 72-inch CMP will be placed at stream grade and aligned with the stream channel.



Photo 30. Site 138: View looking downstream at the current CMP inlet and channel alignment. The CMP is not in alignment with the stream channel and is also placed shallow in the fill exposing it on the outboard edge of the road.



Photo 31. Site 139: View looking upstream at the current CMP outlet and outboard fillslope. A new 30-inch CMP will be placed at the base of fill eliminating the erosion of the outboard fillslope.



Photo 32. Site 139: View of current channel alignment and stream crossing surface. The CMP inlet is in front and to the left of the placed tape measure. The CMP is undersized and placed shallow in the roadbed causing infilling at the inlet and erosion at outlet.



Photo 33. Site 140: View looking upstream at the CMP outlet area. A new 30-inch CMP will be installed at the base of fill and at channel grade, as well as the long ditch length will be reduced by maintaining two DRCs that would otherwise drain the ditch.



Photo 34. Site 140: View downstream of the current CMP inlet. This CMP transmits long ditch flow and is undersized for this stream.



Photo 35. Site 142: View of the current CMP outlet and outboard fillslope. A new 60-inch CMP will be installed at the base of fill and at stream grade to allow for passage of sediments.



Photo 36. Site 142: View looking downstream at the current CMP inlet. The CMP is placed shallow in the fill and is relatively flat, increasing its potential to fill with sediment and plug.



Photo 37. Site 144: View upstream of the outboard fillslope and current shotgun CMP outlet. A new 24-inch CMP will be placed at the base of fill.



Photo 38. Site 144: View looking downstream towards existing CMP alignment. The CMP is set shallow in the fill and gets filled with sediment reducing its capacity.



Photo 39. Site 147: View of the stream crossing from the left cutbank. The current CMP is near flat and long lengths of ditch flow utilize this crossing. The new CMP will be 36 inches in diameter and will be set at the natural stream grade.



Photo 40. Site 147: View uproad from site 148 showing area of planned RD#9 and DRC#5.



Photo 41. Site 148: View looking upstream towards the outboard fill slope and current CMP alignment. Stream upgrades include installing a new 48-inch CMP and aligning it with the natural channel at grade.



Photo 42. Site 148: View looking downstream towards the stream crossing. The current CMP is undersized and periodically plugs with sediment.



Photo 43. Site 149: View of outboard fill slope and current culvert outlet area. Stream upgrades include installing a new 54-inch CMP at the natural channel grade.



Photo 44. Site 149: View looking downstream towards the stream crossing culvert inlet area.

Appendix C

Typical drawings (schematic diagrams) showing components of erosion control and erosion prevention treatments, and techniques for construction.

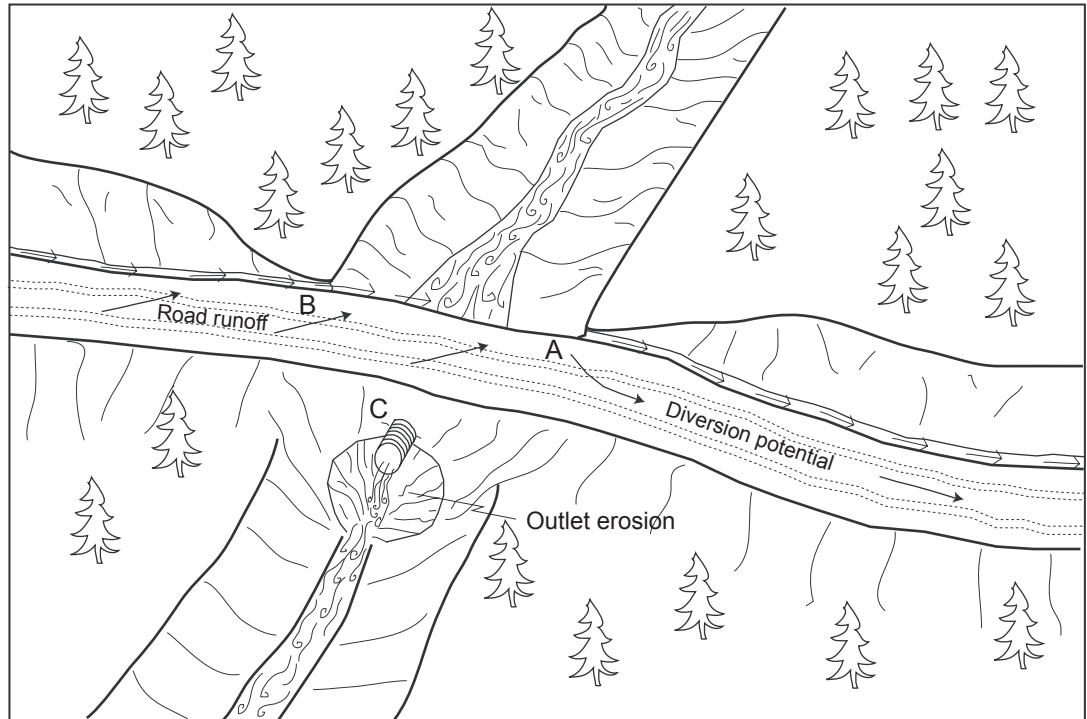
Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California

No.	Drawing Title
1a	Typical problems and applied treatments for a non-fish bearing upgraded stream crossing
1b	Armoring fill faces to upgrade stream crossings
2	Typical design of a non-fish bearing culverted stream crossing
3	Typical design of a single-post culvert inlet trash rack
4	Typical design for armoring fillslopes
8	Typical ditch relief culvert installation
9	Typical designs for using road shape to control road runoff (using insloping, outsloping, and crowning)
11	Typical road surface drainage by rolling dips
12	Typical sidecast or excavation methods for removing outboard berms on a maintained road
13	Typical excavation of unstable fillslope on an upgraded road
18	Typical rock grade control structure installation
19a	Standard (Type 1) rolling dip construction
19b	Type 2 rolling dip construction for through-cut or thick berm road reaches
19c	Type 3 rolling dip construction for steep slope road reaches
21	Typical design for de-watering streams

Typical Problems and Applied Treatments for a Non-fish Bearing Upgraded Stream Crossing

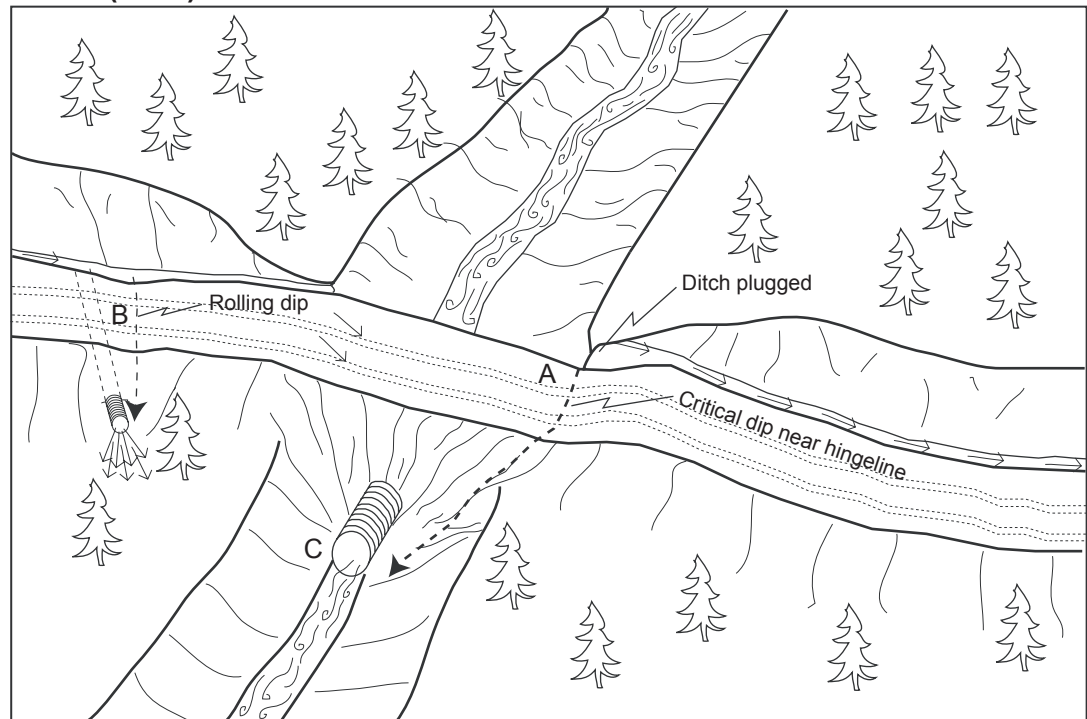
Problem condition (before)

- A - Diversion potential
- B - Road surface and ditch drain to stream
- C - Undersized culvert high in fill with outlet erosion



Treatment standards (after)

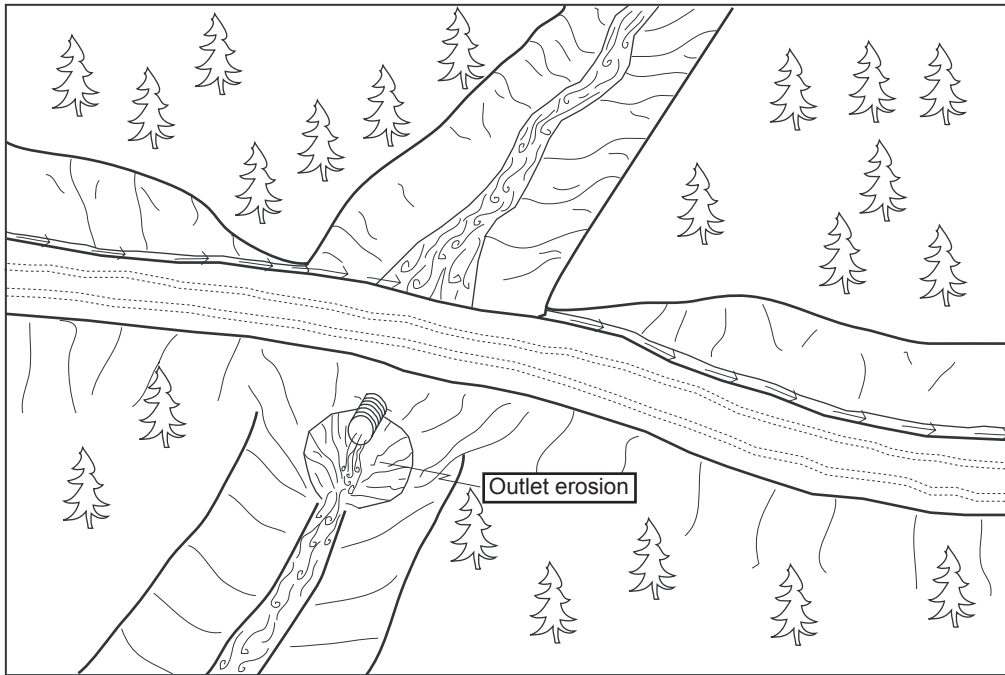
- A - No diversion potential with critical dip installed near hingeline
- B - Road surface and ditch disconnected from stream by rolling dip and ditch relief culvert
- C - 100-year culvert set at base of fill



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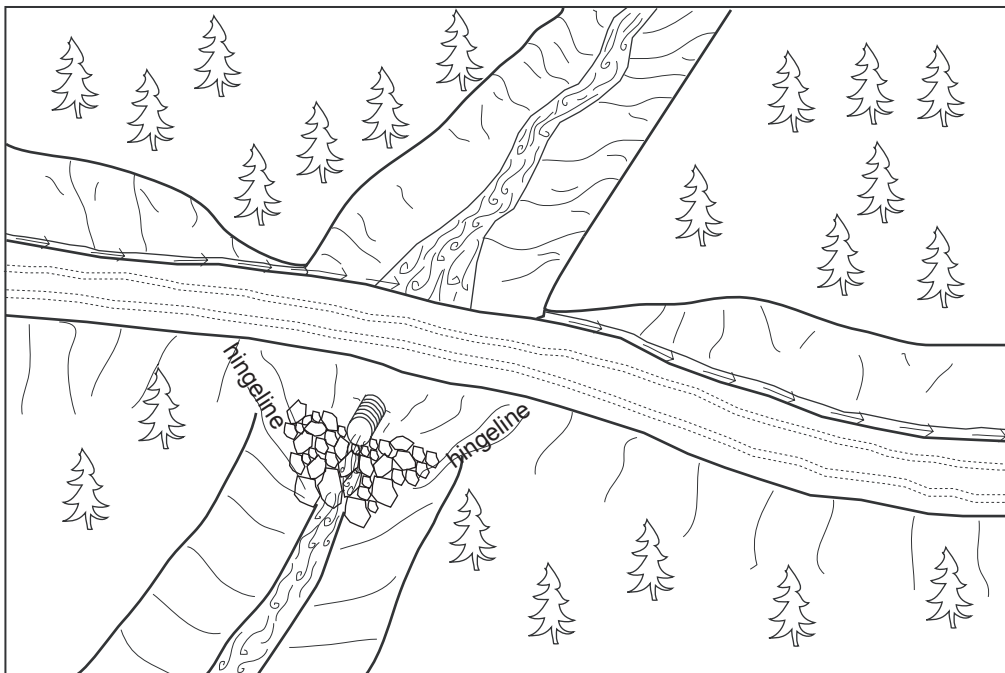
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Armoring Fill Faces to Upgrade Stream Crossings



Problem: Culvert set high in outboard fill has resulted in scour of the outboard fill face and natural channel.

Conditions: The existing stream crossing has a culvert sufficient in diameter to manage design stream flows and has a functional life.



Action: The area of scour is backfilled with rip-rap to provide protection in the form of energy dissipation for the remaining fill face and channel.

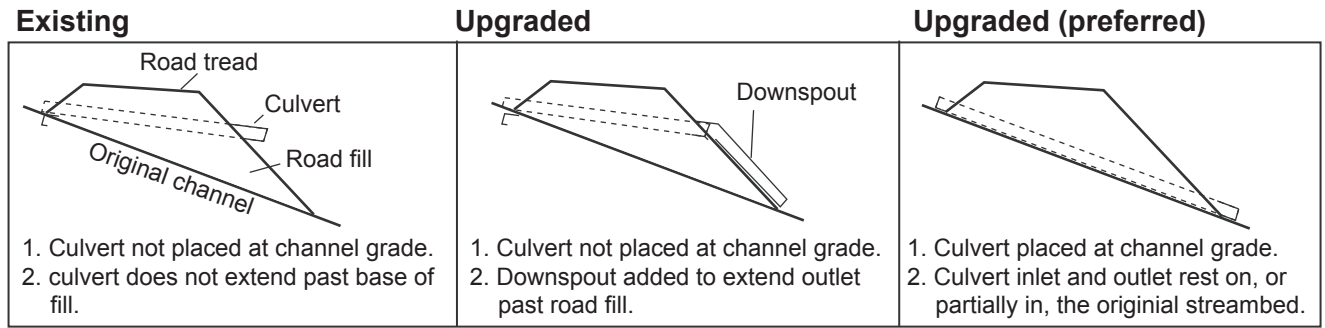
Treatment Specifications:

- 1) Placement of rip-rap should be between the left and right hingelines and extend from a keyway excavated below the existing channel base level at the base of the fill slope up and under the existing culvert.
- 2) Rock size and volume is determined on a site by site basis based on estimated discharge and existing stream bed particle size range (See accompanying road log).

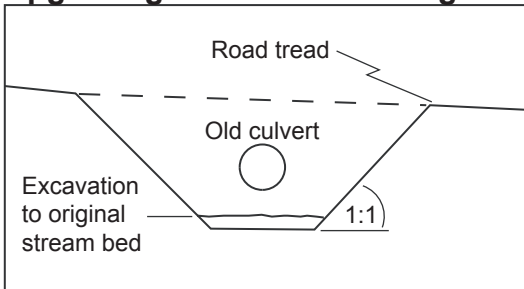
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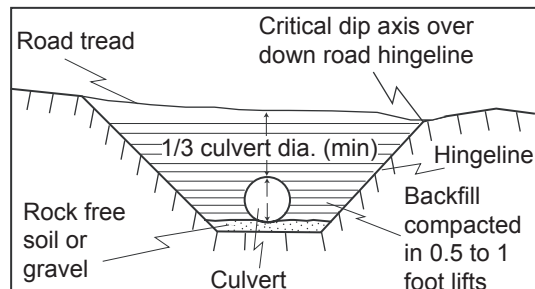
Typical Design of a Non-fish Bearing Culverted Stream Crossing



Excavation in preparation for upgrading culverted crossing



Upgraded stream crossing culvert installation



Note:

Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calculations using a procedure such as the Rational Formula.

Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed, or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 inches per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end then the other end of the culvert shall be covered and secured. The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
 - Base and side wall material will be compacted before the pipe is placed in its bed.
 - Backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

Erosion control measures for culvert replacement

Both mechanical and vegetative measures will be employed to minimize accelerated erosion from stream crossing and ditch relief culvert upgrading. Erosion control measures implemented will be evaluated on a site by site basis. Erosion control measures include but are not limited to:

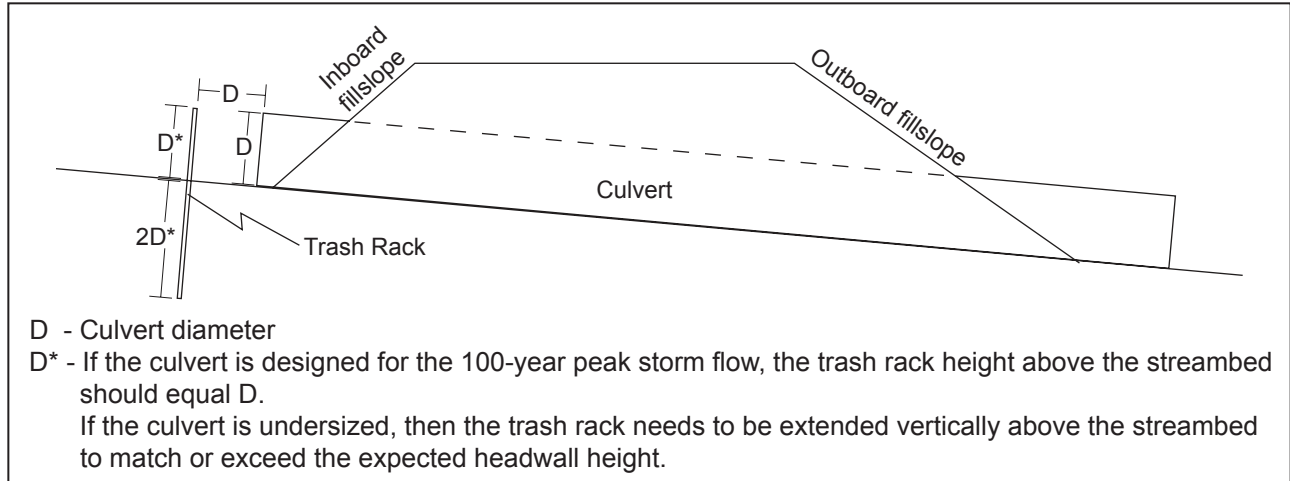
1. Minimizing soil exposure by limiting excavation areas and heavy equipment disturbance.
2. Installing filter windrows of slash at the base of the road fill to minimize the movement of eroded soil to downslope areas and stream channels.
3. Retaining rooted trees and shrubs at the base of the fill as "anchor" for the fill and filter windrows.
4. Bare slopes created by construction operations will be protected until vegetation can stabilize the surface. Surface erosion on exposed cuts and fills will be minimized by mulching, seeding, planting, compacting, armoring, and/or benching prior to the first rains.
5. Excess or unusable soil will be stored in long term spoil disposal locations that are not limited by factors such as excessive moisture, steep slopes greater than 10%, archeology potential, or proximity to a watercourse.
6. On running streams, water will be pumped or diverted past the crossing and into the downstream channel during the construction process.
7. Straw bales and/or silt fencing will be employed where necessary to control runoff within the construction zone.

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Typical Design of a Single-post Culvert Inlet Trash Rack

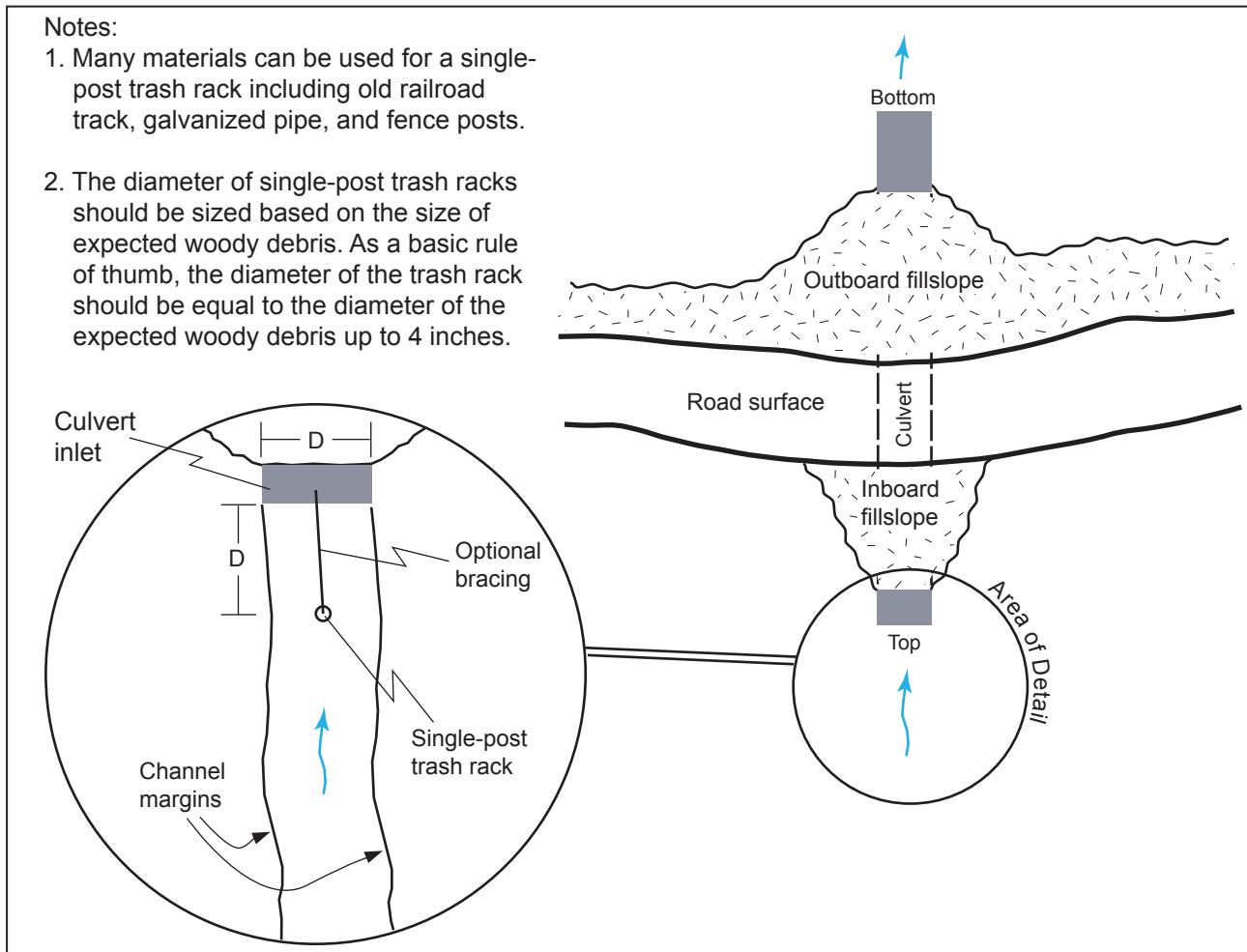
Cross section view



Plan view

Notes:

1. Many materials can be used for a single-post trash rack including old railroad track, galvanized pipe, and fence posts.
2. The diameter of single-post trash racks should be sized based on the size of expected woody debris. As a basic rule of thumb, the diameter of the trash rack should be equal to the diameter of the expected woody debris up to 4 inches.

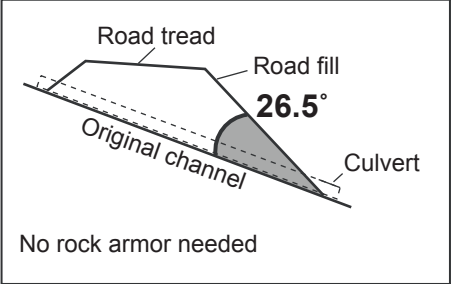


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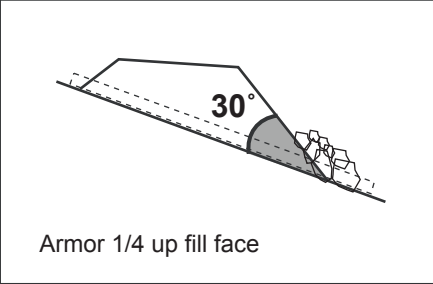
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Typical Design of Stream Crossing Fill Armor

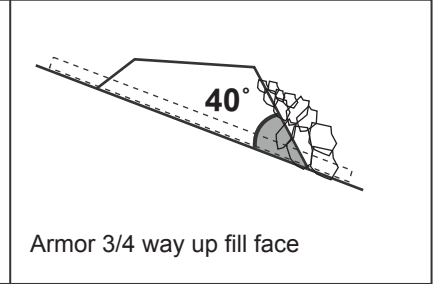
Fill angles $\leq 26.5^\circ$ (2:1)



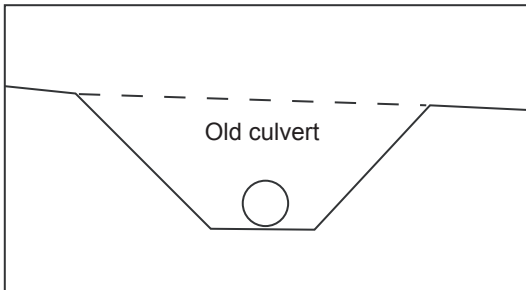
Fill angles $26.5^\circ - 35^\circ$ (1.5:1)



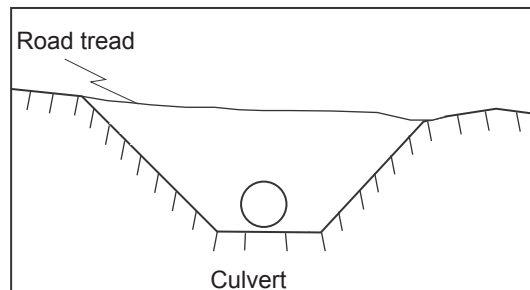
Fill angles $35^\circ - 45^\circ$ (1:1)



Fill angles $26.5^\circ - 35^\circ$ (1.5:1)



Fill angles $35^\circ - 45^\circ$ (1:1)



Note:

Road upgrading tasks typically include upgrading stream crossings by installing larger culverts and inlet protection (trash barriers) to prevent plugging. Culvert sizing for the 100-year peak storm flow should be determined by both field observation and calculations using a procedure such as the Rational Formula.

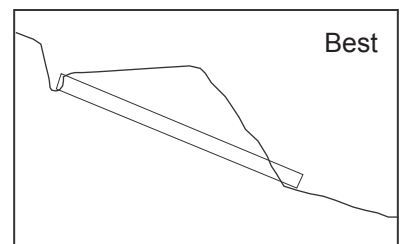
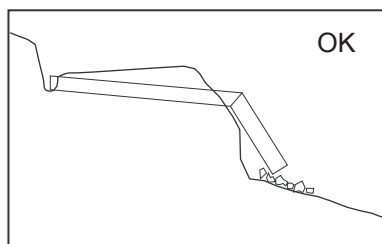
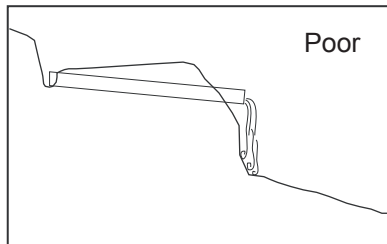
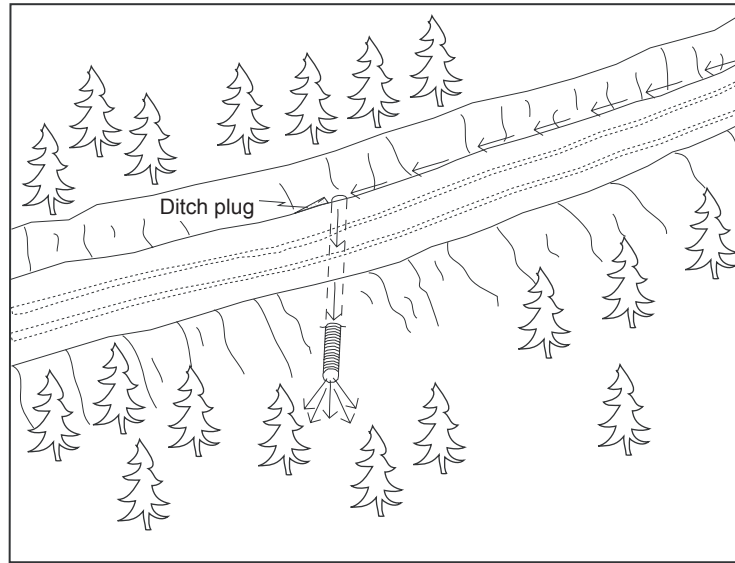
Stream crossing culvert Installation

1. Culverts shall be aligned with natural stream channels to ensure proper function, and prevent bank erosion and plugging by debris.
2. Culverts shall be placed at the base of the fill and the grade of the original streambed or downspouted past the base of the fill.
3. Culverts shall be set slightly below the original stream grade so that the water drops several inches as it enters the pipe.
5. To allow for sagging after burial, a camber shall be between 1.5 to 3 inches per 10 feet culvert pipe length.
6. Backfill material shall be free of rocks, limbs or other debris that could dent or puncture the pipe or allow water to seep around pipe.
7. First one end and then the other end of the culvert shall be covered and secured. The center is covered last.
8. Backfill material shall be tamped and compacted throughout the entire process:
 - Base and side wall material will be compacted before the pipe is placed in its bed.
 - Backfill compacting will be done in 0.5 - 1 foot lifts until 1/3 of the diameter of the culvert has been covered. A gas powered tamper can be used for this work.
9. Inlets and outlets shall be armored with rock or mulched and seeded with grass as needed.
10. Trash protectors shall be installed just upstream from the culvert where there is a hazard of floating debris plugging the culvert.
11. Layers of fill will be pushed over the crossing until the final designed road grade is achieved, at a minimum of 1/3 to 1/2 the culvert diameter.

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Typical Ditch Relief Culvert Installation



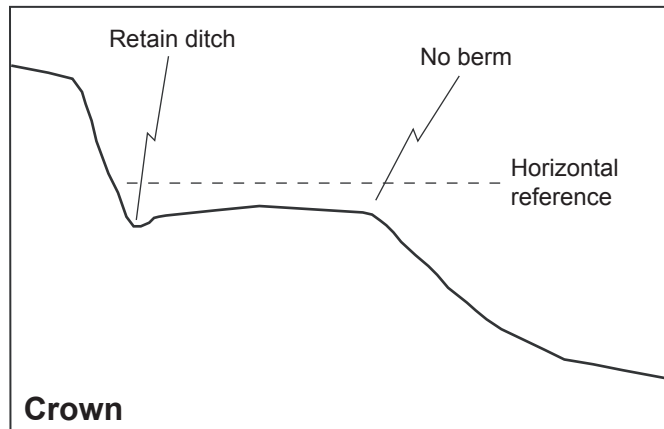
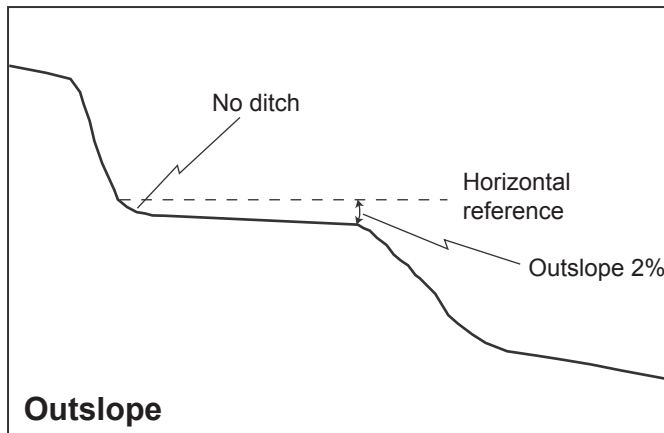
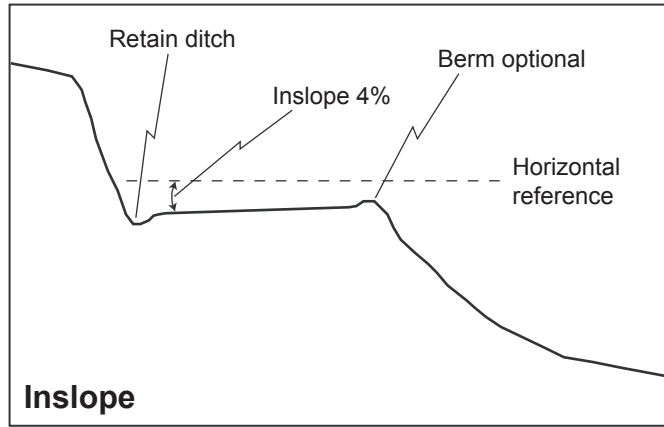
Ditch relief culvert installation

- 1) The same basic steps followed for stream crossing installation shall be employed.
- 2) Culverts shall be installed at a 30 degree angle to the ditch to lessen the chance of inlet erosion and plugging.
- 3) Culverts shall be seated on the natural slope or at a minimum depth of 5 feet at the outside edge of the road, whichever is less.
- 4) At a minimum, culverts shall be installed at a slope of 2 to 4 percent steeper than the approaching ditch grade, or at least 5 inches every 10 feet.
- 5) Backfill shall be compacted from the bed to a depth of 1 foot or 1/3 of the culvert diameter, which ever is greater, over the top of the culvert.
- 6) Culvert outlets shall extend beyond the base of the road fill (or a flume downspout will be used).
Culverts will be seated on the natural slope or at a depth of 5 feet at the outside edge of the road, whichever is less.

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Typical Designs for Using Road Shape to Control Road Runoff

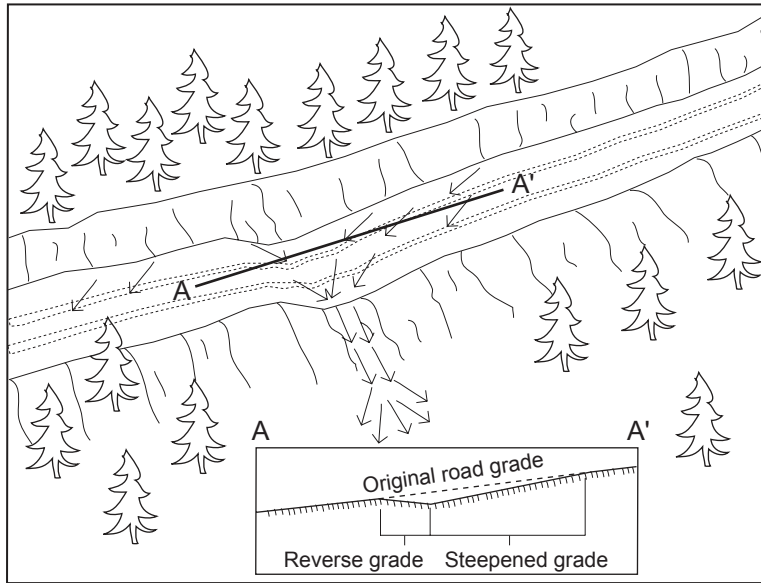


Outsloping Pitch for Roads Up to 8% Grade		
Road grade	Unsurfaced roads	Surfaced roads
4% or less	3/8" per foot	1/2" per foot
5%	1/2" per foot	5/8" per foot
6%	5/8" per foot	3/4" per foot
7%	3/4" per foot	7/8" per foot
8% or more	1" per foot	1 1/4" per foot

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Typical Road Surface Drainage by Rolling Dips



Rolling dip installation:

1. Rolling dips will be installed in the roadbed as needed to drain the road surface.
2. Rolling dips will be sloped either into the ditch or to the outside of the road edge as required to properly drain the road.
3. Rolling dips are usually built at 30 to 45 degree angles to the road alignment with cross road grade of at least 1% greater than the grade of the road.
4. Excavation for the dips will be done with a medium-size bulldozer or similar equipment.
5. Excavation of the dips will begin 50 to 100 feet up road from where the axis of the dip is planned as per guidelines established in the rolling dip dimensions table.
6. Material will be progressively excavated from the roadbed, steepening the grade until the axis is reached.
7. The depth of the dip will be determined by the grade of the road (see table below).
8. On the down road side of the rolling dip axis, a grade change will be installed to prevent the runoff from continuing down the road (see figure above).
9. The rise in the reverse grade will be carried for about 10 to 20 feet and then return to the original slope.
10. The transition from axis to bottom, through rising grade to falling grade, will be in a road distance of at least 15 to 30 feet.

Table of rolling dip dimensions by road grade

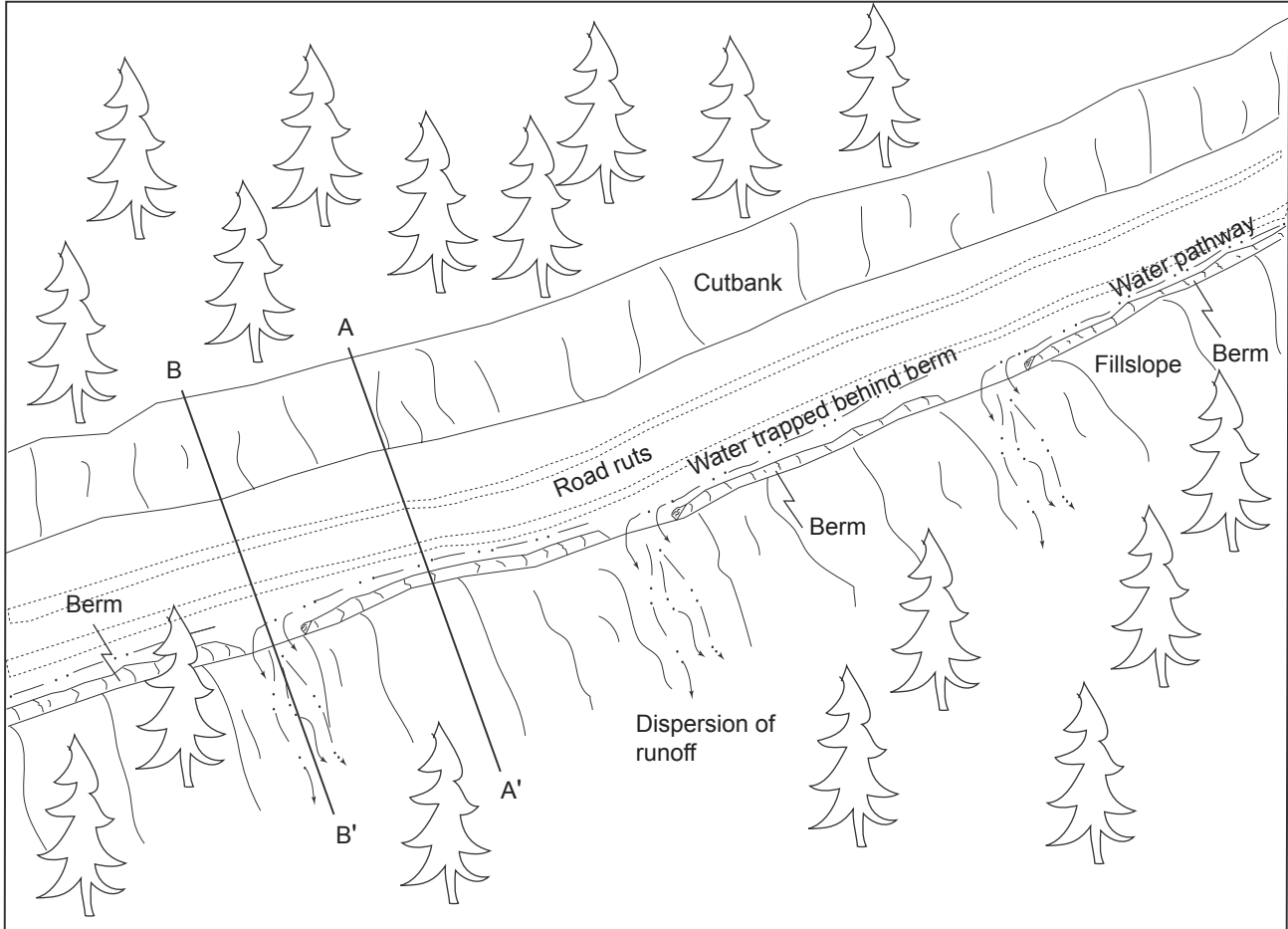
Road grade %	Upslope approach distance (from up road start to trough) ft	Reverse grade distance (from trough to crest) ft	Depth at trough outlet (below average road grade) ft	Depth at trough inlet (below average road grade) ft
<6	55	15 - 20	0.9	0.3
8	65	15 - 20	1.0	0.2
10	75	15 - 20	1.1	0.01
12	85	20 - 25	1.2	0.01
>12	100	20 - 25	1.3	0.01

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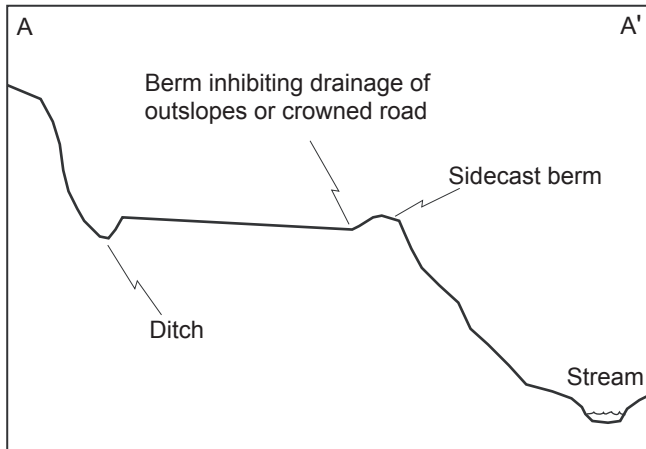
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Typical Sidecast or Excavation Methods for Removing Outboard Berms on a Maintained Road

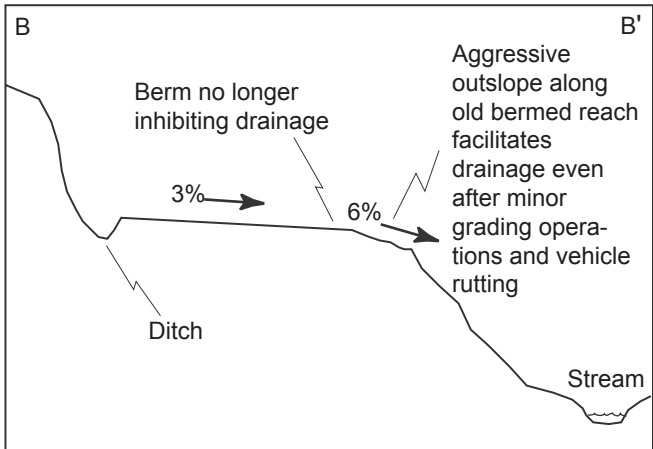
1. On gentle road segments berms can be removed continuously (see B-B').
2. On steep road segments, where safety is a concern, the berm can be frequently breached (see A-A' & B-B').
 Berm breaches should be spaced every 30 to 100 feet to provide adequate drainage of the road system while maintaining a semi-continuous berm for vehicle safety.



Road cross section between berm breaches



Road cross section at berm breaches

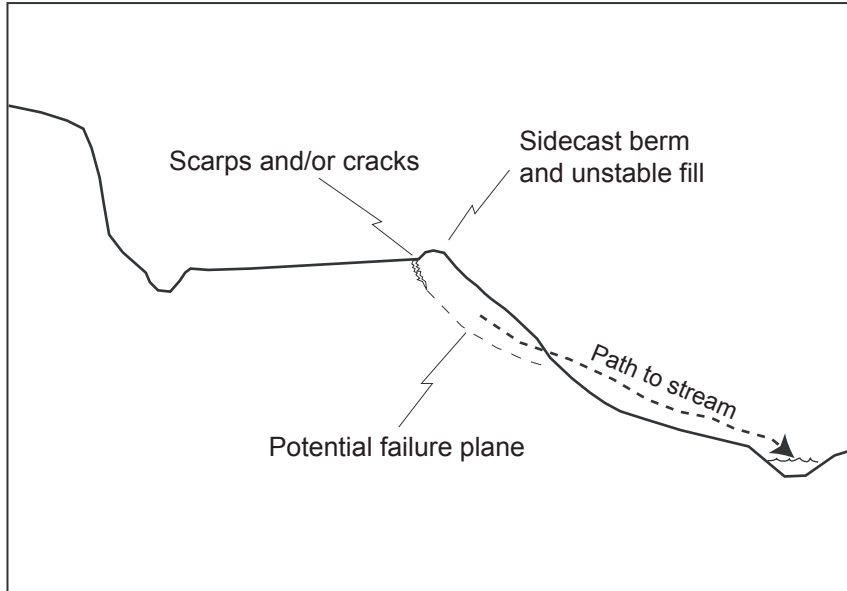


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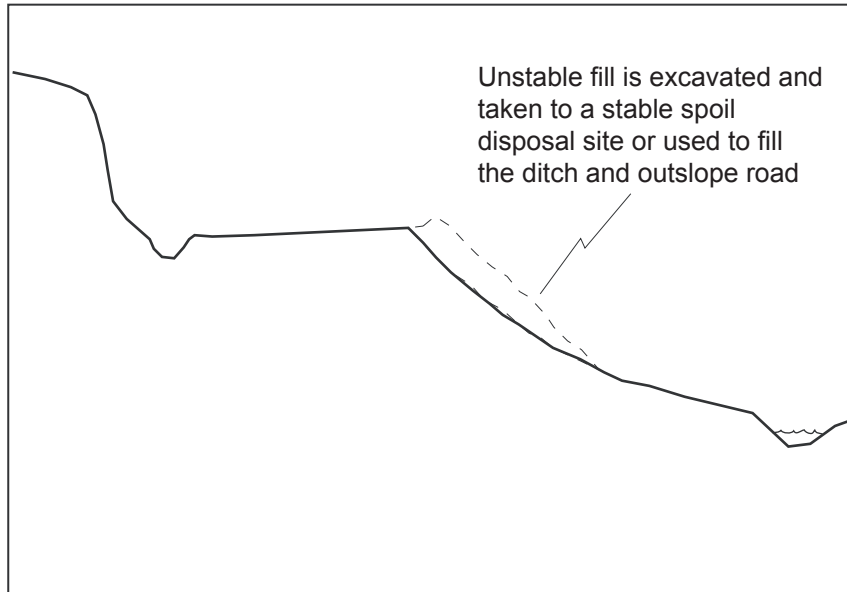
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Typical Excavation of Unstable Fillslope on an Upgraded Road

Before



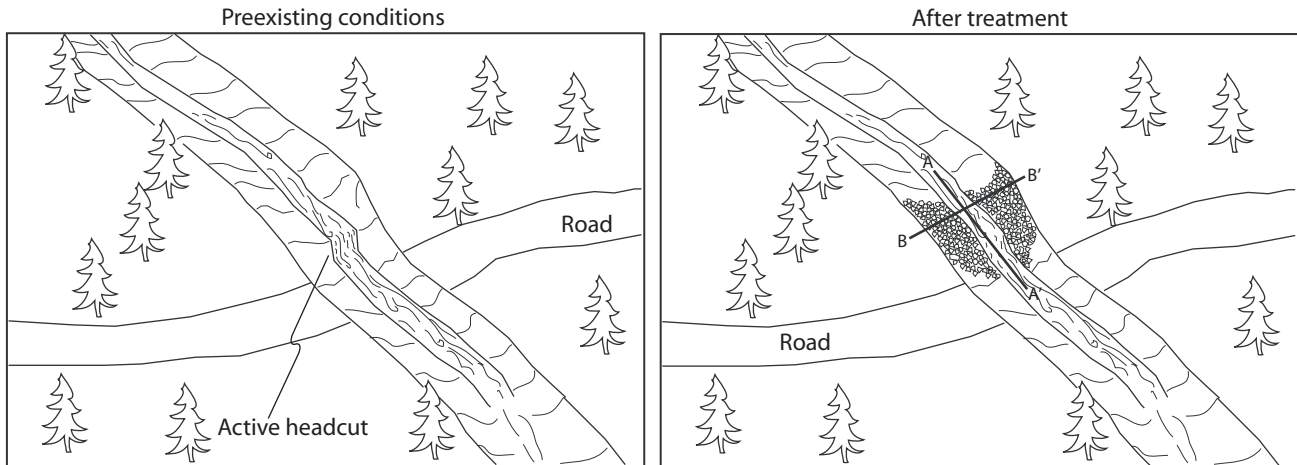
After



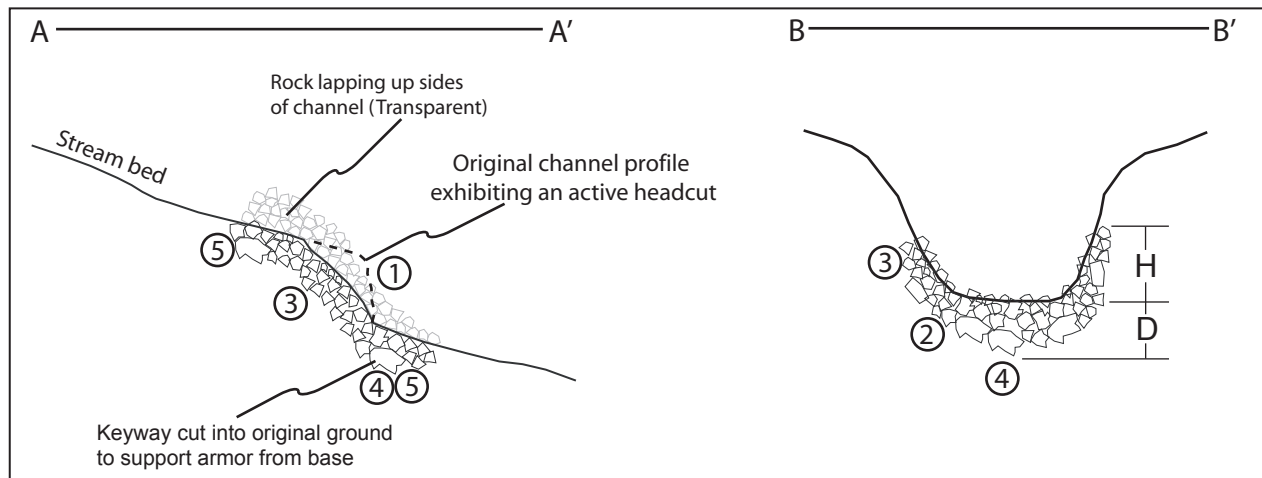
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Typical Rock Grade Control Structure Installation at man-made headcuts/knickpoints in a non-fish bearing stream channel



Cross section parallel and perpendicular to watercourse



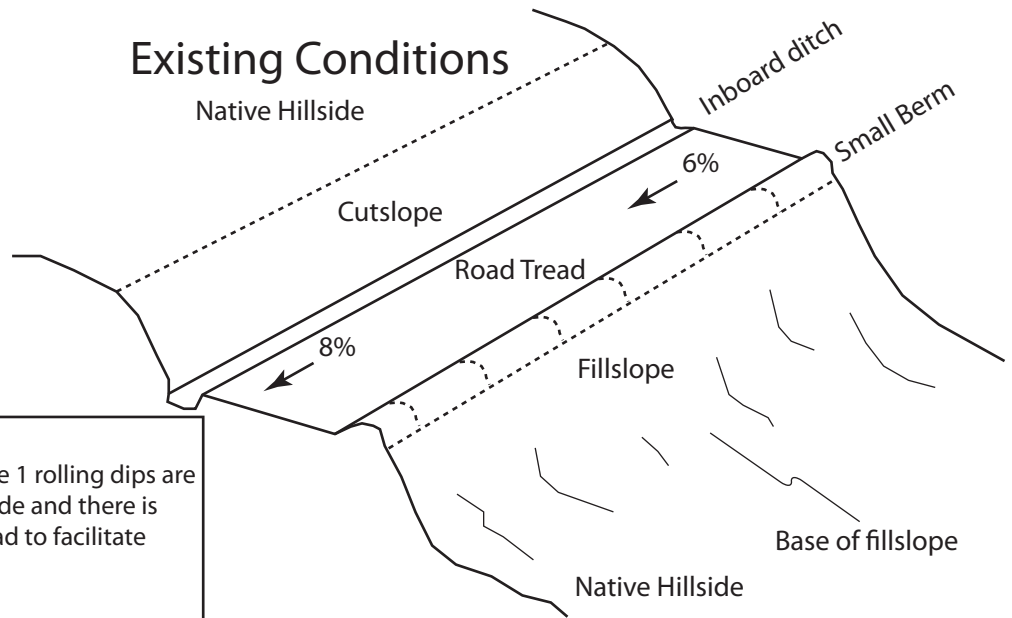
Notes

- The main objective is to create a structure that will not be flanked, undercut, or eroded by the stream.
- The critical elements of a successful grade control structure are:
- 1) Excavating the headcut to a gentler channel gradient over a distance of stream
(See road log for details)
 - 2) rock selection- rock should be selected that is resistant to transport during design flows, and has a bell shaped distribution of sizes with the median diameter equivalent to the D50 particle size of the stream at the site of installation (See road log for range of rock diameters).
 - 3) The rock must be placed in a "U" shape that will contain the 100 yr. return interval stream flow, won't constrict the channel cross sectional area, and be flush with the streambed and not deflect flow.
 - 4) The rock must be imbedded into the channel at least two rock diameters in thickness.
 - 5) The largest rock should be used at the base and top of the grade control structure to buttress the other rock

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Standard (Type 1) Rolling Dip Construction

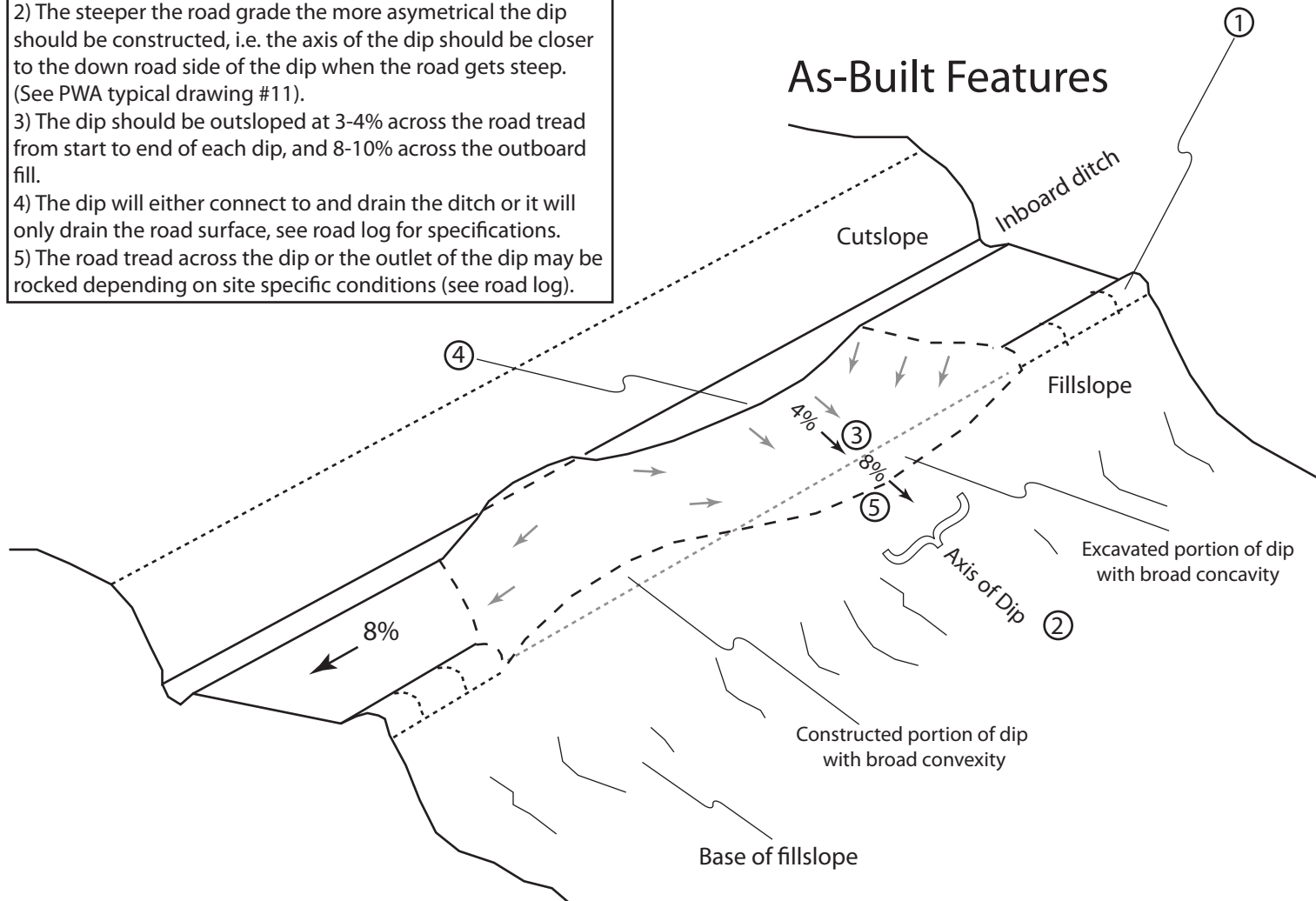


Notes

Rolling dip type 1 existing conditions: Type 1 rolling dips are utilized when roads are less than 12-14% grade and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

Design Notes:

- 1) The berm should be removed for the entire length of the dip.
- 2) The steeper the road grade the more asymmetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep. (See PWA typical drawing #11).
- 3) The dip should be outsloped at 3-4% across the road tread from start to end of each dip, and 8-10% across the outboard fill.
- 4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.
- 5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

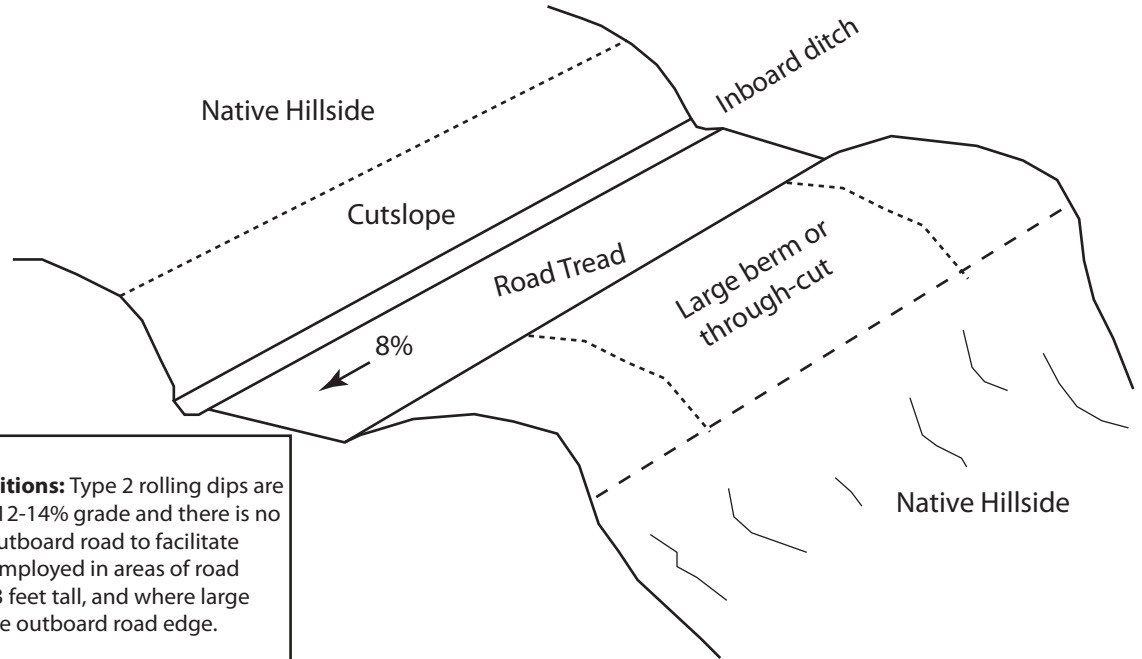


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Type 2 Rolling Dip Construction

(Through-cut or thick berm road reaches)



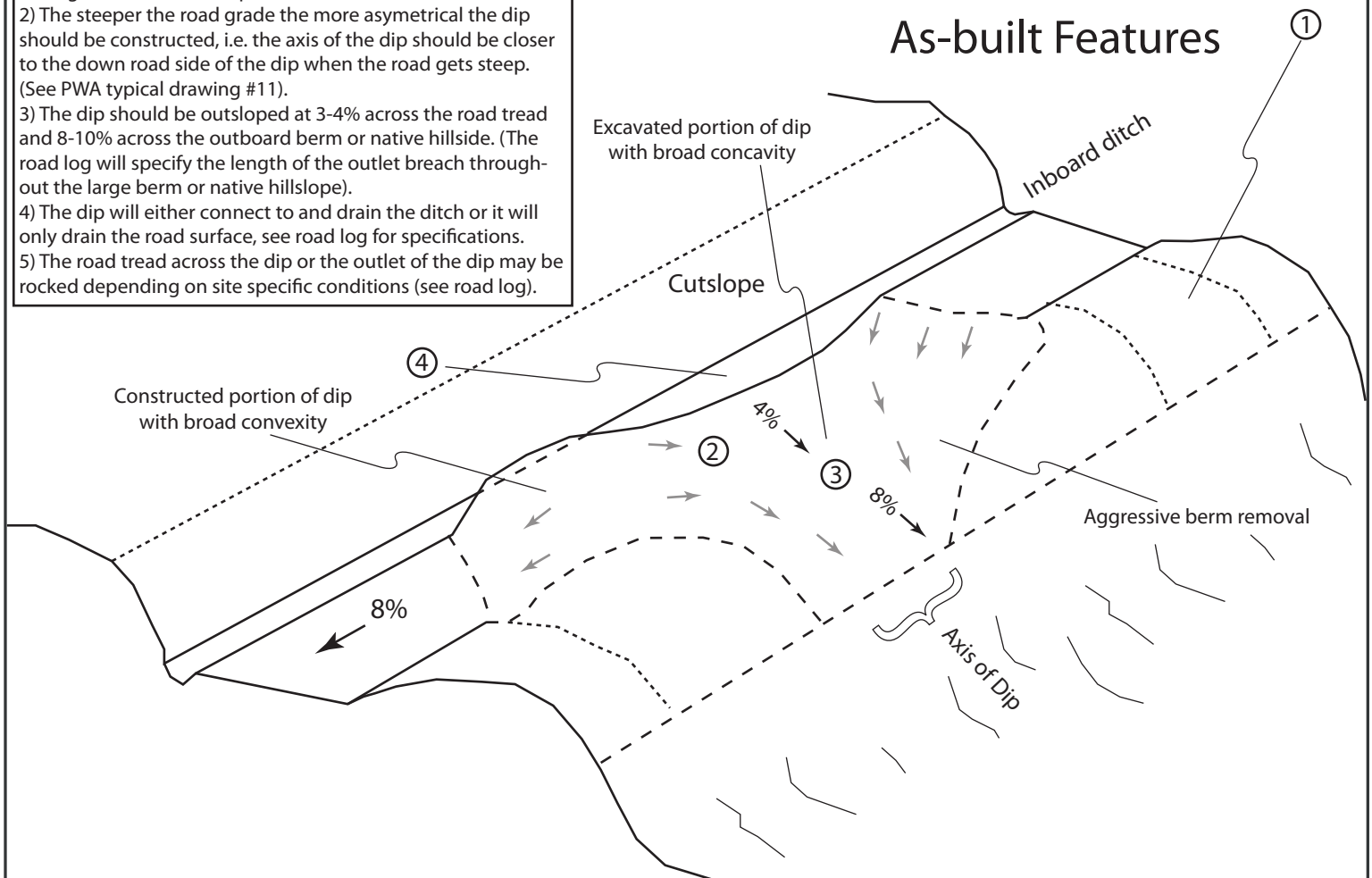
Notes

Rolling dip type 2 existing conditions: Type 2 rolling dips are utilized when roads are less than 12-14% grade and there is no proximal outfall adjacent to the outboard road to facilitate road drainage. These should be employed in areas of road through-cuts generally less than 3 feet tall, and where large wide and/or tall berms exist on the outboard road edge.

Design Notes:

- 1) The berm or native hillside should be removed for the entire length of the excavated portion of the dip, or, at a minimum through the axis of the dip.
- 2) The steeper the road grade the more asymmetrical the dip should be constructed, i.e. the axis of the dip should be closer to the down road side of the dip when the road gets steep.
- 3) The dip should be outsloped at 3-4% across the road tread and 8-10% across the outboard berm or native hillside. (The road log will specify the length of the outlet breach throughout the large berm or native hillside).
- 4) The dip will either connect to and drain the ditch or it will only drain the road surface, see road log for specifications.
- 5) The road tread across the dip or the outlet of the dip may be rocked depending on site specific conditions (see road log).

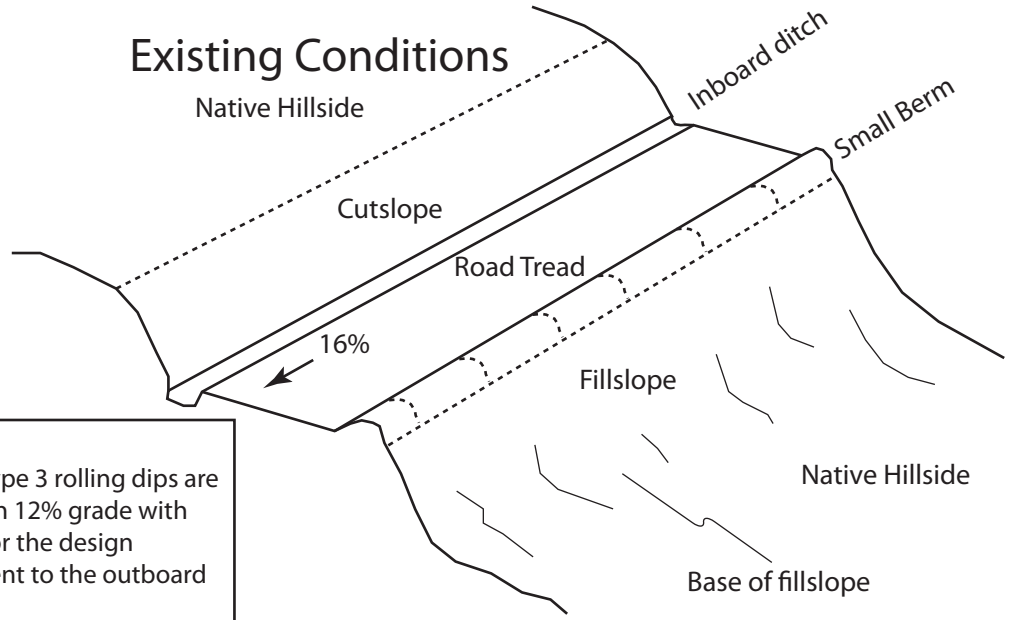
As-built Features



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Type 3 Rolling Dip Construction (steep slope outslope)

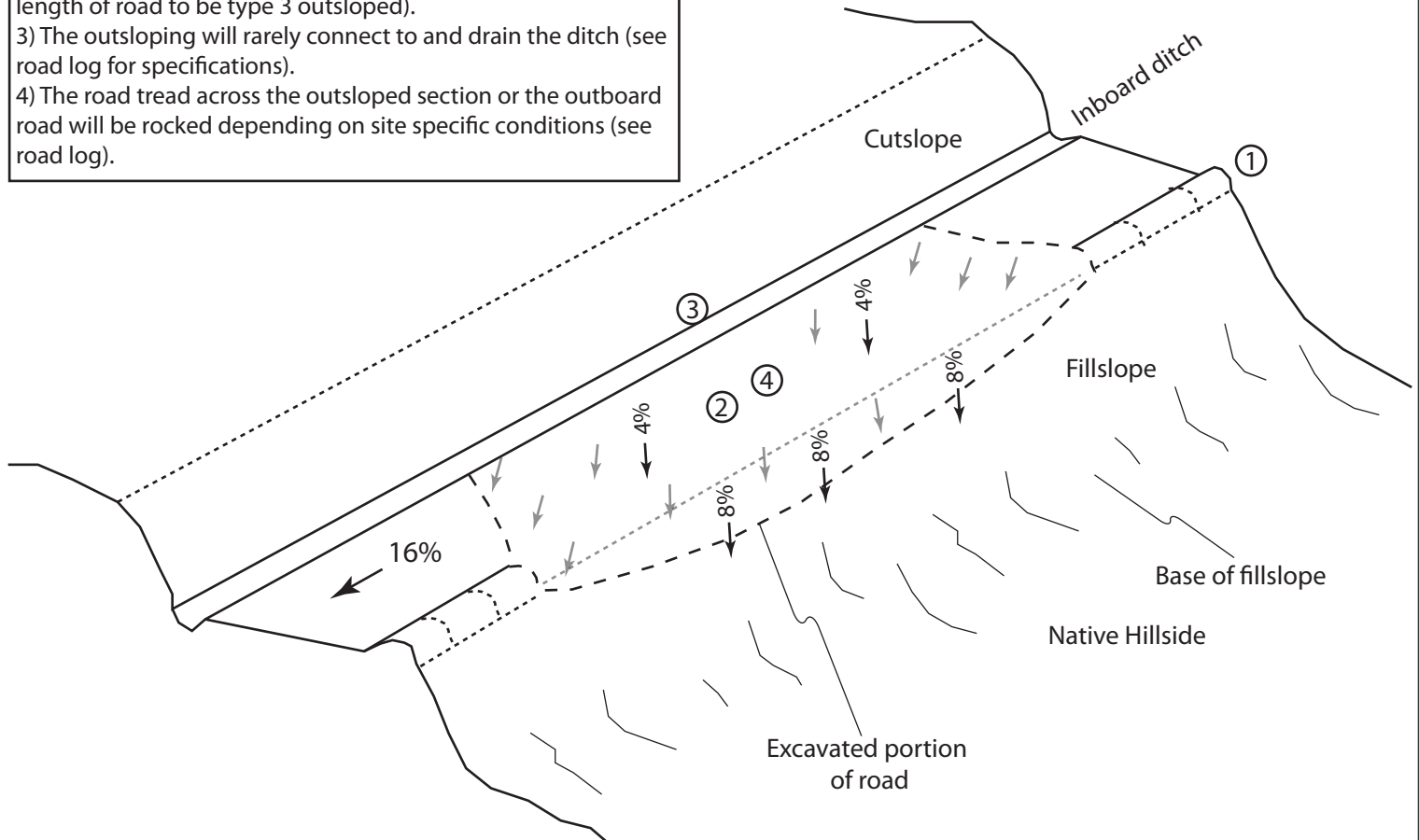


Notes

Rolling dip type 3 existing conditions: Type 3 rolling dips are utilized when roads grades are steeper than 12% grade with little opportunity to create reverse grade for the design vehicle, and there is proximal outfall adjacent to the outboard road to facilitate road drainage.

Design Notes:

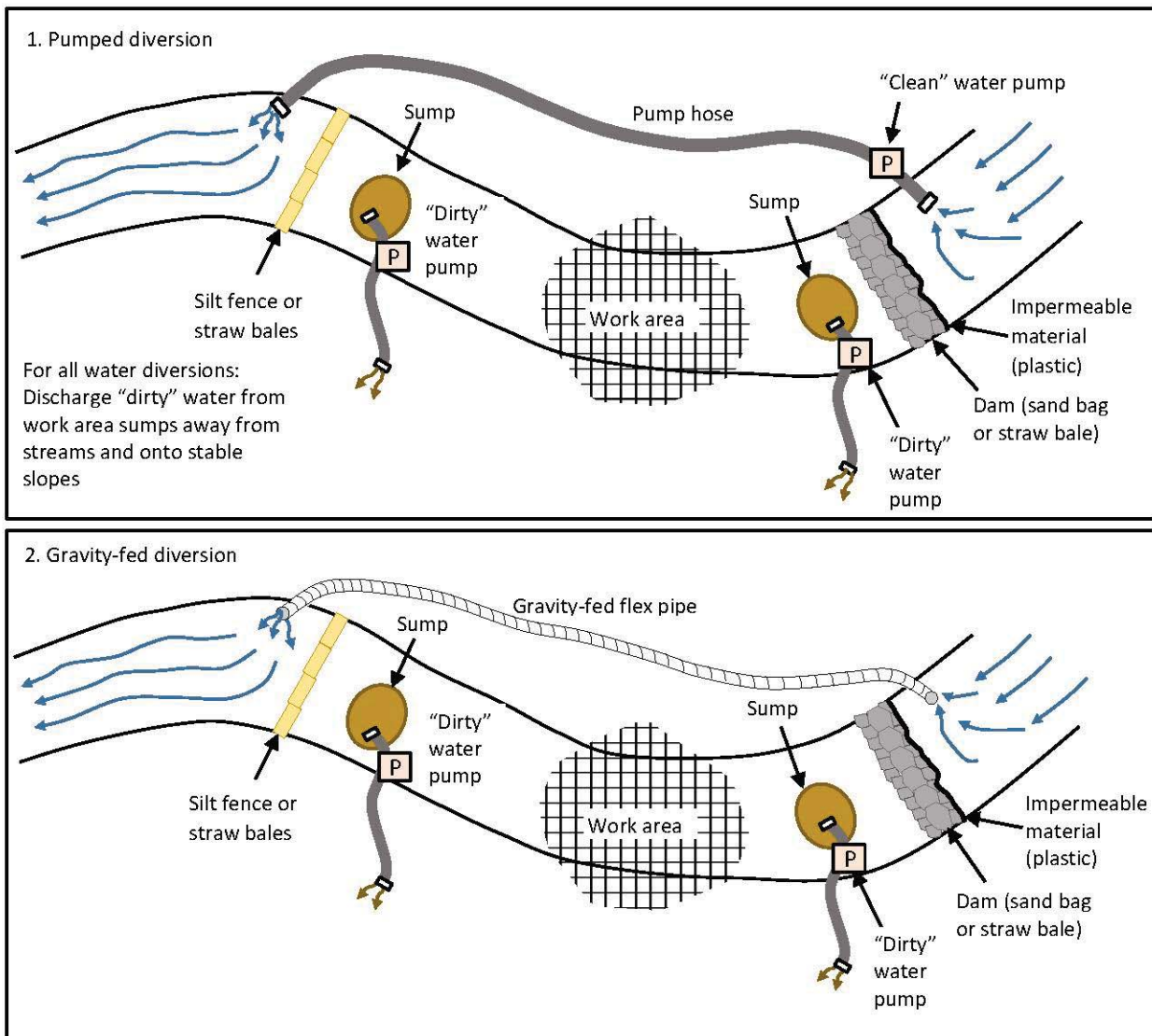
- 1) The berm should be removed for the entire length of the outsloped section.
- 2) The dip should be outsloped at 2-4% across the road tread and 4-8% across the outboard fill. (The road log will specify the length of road to be type 3 outsloped).
- 3) The outsloping will rarely connect to and drain the ditch (see road log for specifications).
- 4) The road tread across the outsloped section or the outboard road will be rocked depending on site specific conditions (see road log).



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Typical Design for De-watering Streams



Stream crossing de-watering

Prior to working in and around the active stream channel, proper stream dewatering and avoidance of increasing downstream turbidity should be employed. Stream flows will be isolated upstream of the work area using cofferdams and transported downstream / around the work site through either a pumped diversion (Type 1) or by gravity diversion (Type 2) to keep the stream "live" (flowing) below the work area. An additional dam will be installed downstream of the work areas to capture any subsurface flow that might travel through the construction area. Any "dirty" water will be collected at this location and pumped away from the site where it can infiltrate into the ground without the potential to delivery to the stream and/or be used to wet fill being deposited in the spoil disposal areas.

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Appendix E

Project Summary Tables

Butte Creek Camp Fire Post Fire Recovery Project,
Butte County, California

Page #	Description
E-1	Cover Page
E-2	Table E1. Sediment delivery sites and hydrologically connected road segments
E-2	Table E2. Estimated future sediment delivery for sites and road surfaces recommended for treatment
E-3	Table E3. Site description, proposed work and location of areas impacting waters of the U.S. and/or the State
E-4	Table E4. Culvert sizing information and values used in discharge calculations for all stream crossings
E-5	Table E5. Site specific stream channel impacts
E-6	Table E6. Estimated limits of grading and excavation volumes associated with of areas impacting stream and riparian zones

Table E1. Sediment delivery sites and hydrologically connected road segments, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Sources of sediment delivery	Sediment delivery sites ^a		Hydrologically connected roads adjacent to sites	Total length of roads to be treated for project (mi) ^b
	Proposed for treatment (#)	Requires permitting (#)	Proposed for treatment (mi)	
Stream crossings	22	19	1.54	-
Ditch relief culverts	10	0	0.86	-
Total	32	19	2.40	2.40

^a Descriptions of sediment delivery sources are provided in road logs (Appendix A) and Table E2 below. Sites recommended for treatment that require secured permits include 19 stream crossings.

^b Total road length to be treated was generated from GIS data.

Table E2. Estimated future sediment delivery for sites and road surfaces recommended for treatment, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Sources of sediment delivery	Estimated future sediment delivery (yd ³) ^a	Percent of total
1. Episodic sediment delivery from road related erosion sites (indeterminate time period)		
Stream crossings	2,725	99%
Ditch relief culverts	25	1%
Total episodic sediment delivery	2,750	100%
2. Chronic sediment delivery from road surface erosion (estimated for a 10yr period) ^b		
Total chronic sediment delivery	1,840	-

^a Estimated future sediment delivery volumes from episodic storm generated erosion (site specific locations) based on an indeterminate interval/number of years with no rounding of numbers.

^b Chronic sediment delivery volumes from ongoing surface, rill and gully erosional processes calculated for a 10 yr period based on PWA field analysis of measured road, ditch, and cutbank contributing areas and road surface lowering and cutbank retreat rates based on field analyses by PWA staff: (1) 0.05 ft/10 yr (low rating); (2) 0.1 ft/10 yr (moderate-low rating); (3) 0.2 ft/10 yr (moderate rating); (4) 0.3 ft/10yr (high-moderate rating); and (5) 0.4 ft/10yr (high rating) for rockered roads with no rounding.

Table E3. Site description, proposed work and location of areas impacting waters of the U.S. and/or the State, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Site #	Description of existing conditions and summary of proposed improvements (abbreviated) ^a	Coordinates ^b	
		Latitude	Longitude
119	Existing pair of 30" x 40' long metal culverts to be replaced with a 60" x 70' long CMP with a rock energy dissipation structure at the outlet.	39.805706°	-121.641717°
120	Existing 18" x 30' long metal culvert to be replaced with a 48" x 50' long CMP with a rock energy dissipation structure at the outlet.	39.806125°	-121.641158°
122	Existing 18" x 40' long metal culvert to be replaced with a 24" x 60' long CMP.	39.806487°	-121.641367°
123	Existing diverted stream crossing to be maintained in existing alignment with increased channel width and depth to improve capacity.	39.806617°	-121.641642°
124	Existing 12" x 30' long metal culvert to be replaced with a 24" x 40' long CMP.	39.807064°	-121.642242°
125	Existing 12" x 25' long metal culvert to be replaced with a 30" x 70' long CMP.	39.807753°	-121.642711°
129	Existing 12" x 25' long concrete culvert to be replaced with a 24" x 50' long CMP.	39.809594°	-121.643297°
131	Existing 12" x 30' long concrete culvert to be replaced with a 30" x 50' long CMP.	39.810322°	-121.640414°
132	Existing 18" x 45' long metal culvert to be replaced with a 30" x 50' long CMP.	39.810747°	-121.639783°
135	Existing 18" x 40' long metal culvert to be replaced with a 24" x 50' long CMP with a rock energy dissipation structure at the outlet.	39.811786°	-121.638547°
137	Existing 12" x 25' long metal culvert to be replaced with a 30" x 50' long CMP.	39.812079°	-121.636455°
138	Existing 30" x 30' long metal culvert to be replaced with a 72" x 70' long CMP.	39.812161°	-121.635969°
139	Existing 12" x 25' long metal culvert to be replaced with a 30" x 50' long CMP.	39.812528°	-121.635956°
140	Existing 18" x 30" long metal culvert to be replaced with a 30" x 60' long CMP.	39.812967°	-121.636094°
142	Existing 18" x 30' long concrete culvert to be replaced with a 60" x 60' long CMP.	39.815608°	-121.634511°
144	24" x 40' long CMP to be installed at diverted stream with no crossing structure.	39.815939°	-121.635633°
147	Existing 24" x 50" long plastic culvert to be replaced with a 36" x 80' long CMP.	39.818747°	-121.635683°
148	Existing 18" x 30" long metal culvert to be replaced with a 48" x 80' long CMP.	39.821031°	-121.633831°
149	Existing 15" x 30" long concrete culvert to be replaced with a 54" x 80' long CMP.	39.821762°	-121.632832°
Total:	19 proposed stream crossing sites impacting waters of the U.S. and/or the State.		

^a Refer to Road log of proposed treatments (Appendix A) and project map for additional proposed treatment details.

^b Latitude and longitude data was gathered from Google Earth and are represented in decimal degrees.

Table E4. Culvert sizing information and values used in discharge calculations for all stream crossings, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Stream crossing #	Watershed area (acres) ^a	Q100 – discharge estimate for 100-yr storm ^{a, b} (cfs)	Existing culvert		Proposed culvert	
			Diameter (in)	Length (linear ft) ^c	Diameter (in) ^d	Length (linear ft)
119	44	102	30	80	60	70
120	25	58	18	30	48	50
122	-	-	18	40	24	60
124	-	-	12	30	24	40
125	3	7	12	25	30	70
129	-	-	12	25	24	50
131	6	14	12	30	30	50
132	7	16	18	45	30	50
135	-	-	18	45	24	50
137	-	-	12	25	30	50
138	59	137	30	20	72	70
139	-	-	12	25	30	50
140	-	-	18	30	30	60
142	41	95	18	30	60	60
144	-	-	N/A	N/A	24	40
147	10	23	24	50	36	80
148	21	63	18	30	48	80
149	28	65	15	30	54	80

^a All sites have drainage areas < 80 acres therefore selected discharge method is identified and based on Rational method with the exception of select sites when PWA professional field evaluation (Field Call) was applied at crossings where stream bankfull dimensions are ≤ 3' wide x 1' long (field call evaluation indicated above with dashes).

^b Assumes mean annual precipitation of 59 inches and 0.45 runoff coefficient (C).

^c Existing culvert length estimated by PWA field staff.

^d The 100-year Return-Period precipitation data was sourced from: https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ca. A headwater depth ratio (HW/D) of 0.67 or 1.0 was used to determine culvert sizing based on field observations of the stream channel, current and proposed crossing design and sediment and woody debris in transport. Stream crossings using the Field Call method minimum 24" diameter culvert is recommended.

Table E5. Site specific stream channel impacts, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Site #	Site type ^a	Bank -full width (ft)	Stream channel impacts ^b								
			Existing			Proposed temporary ^c			Proposed permanent ^d		
			Linear feet	Square feet	Acres	Linear feet	Square feet ^d	Acres	Linear feet	Square feet	Acres
119	SC	4	195	780	0.02	120	480	0.01	75	300	0.01
120	SC	3	70	210	0.00	15	45	0.00	55	165	< 0.01
122	SC	2	95	190	0.00	35	70	0.00	60	120	< 0.01
123	SC	2	100	200	0.00	100	200	0.00	0	0	< 0.01
124	SC	2	45	90	0.00	5	10	0.00	40	80	< 0.01
125	SC	3	130	390	0.01	60	180	0.00	70	210	< 0.01
129	SC	2	50	100	0.00	0	0	0.00	50	100	< 0.01
131	SC	3	55	165	0.00	5	15	0.00	50	150	< 0.01
132	SC	3	65	195	0.00	15	45	0.00	50	150	< 0.01
135	SC	2	60	120	0.00	5	10	0.00	55	110	< 0.01
137	SC	2	50	100	0.00	0	0	0.00	50	100	< 0.01
138	SC	8	110	880	0.02	40	320	0.01	70	560	0.01
139	SC	1.5	65	97.5	0.00	15	22.5	0.00	50	75	< 0.01
140	SC	2	100	200	0.00	40	80	0.00	60	120	< 0.01
142	SC	5	80	400	0.01	20	100	0.00	60	300	0.01
144	SC	1	60	60	0.00	20	20	0.00	40	40	< 0.01
147	SC	3	105	315	0.01	25	75	0.00	80	240	0.01
148	SC	5	130	650	0.01	50	250	0.01	80	400	0.01
149	SC	3	90	270	0.01	10	30	0.00	80	240	0.01
Total: 19 SC			1,655	5,413	0.12	580	1,953	0.04	1,075	3,460	0.08

^a Site type abbreviation: SC = Stream crossing.

^b Bankfull values are determined in the field and is the sum of the individual channel widths along the cross section at top of bank.

^c Impacts calculated using bankfull width and linear feet of existing material in stream or excavation length for stream channel restoration efforts or material to be permanently placed in stream channel (values are rounded).

^d Proposed temporary impacts are locations where a stream channel and streambanks will be excavated to restore natural channel characteristics (alignment, stored sediment, gradient, etc.).

^e Proposed permanent impacts include culverts and riprap to be installed.

Table E6. Estimated limits of grading and excavation volumes associated with of areas impacting stream and riparian zones, *Butte Creek Camp Fire Post Fire Recovery Project, Butte County, California.*

Site #	Volume excavated ^c (yd ³)	Estimated proposed disturbance ^a			Erosion and sediment control measures ^b	
		Length (linear ft)	Area		Seed ^d (lb.)	Straw ^f (bale)
			Square feet	Acres		
119	950	195	4,680	0.11	9.4	6
120	60	70	840	0.02	1.7	1.5
122	210	95	1,425	0.03	2.9	2
123	0	100	300	0.01	0.6	0.5
124	35	45	495	0.01	1.0	1
125	265	130	2,340	0.05	4.7	3
129	100	50	800	0.02	1.6	1
131	100	55	715	0.02	1.4	1
132	135	65	975	0.02	2.0	1.5
135	110	60	780	0.02	1.6	1
137	140	50	1,000	0.02	2.0	1.5
138	380	110	2,750	0.06	5.5	3.5
139	250	65	1,170	0.03	2.3	1.5
140	225	100	1,600	0.04	3.2	2
142	55	80	1,760	0.04	3.5	2.5
144	50	60	660	0.02	1.3	1
147	515	105	2,310	0.05	4.6	3
148	580	130	2,730	0.06	5.5	3.5
149	525	90	2,700	0.06	5.4	3.5
Totals	4,685	1,655	30,030	0.69	60.1	41

^a Estimated disturbance includes proposed limits of grading along stream length in linear feet and area given in square feet and acres based on an average of maximum and minimum estimated excavation widths.

^b Estimated seed and straw recommended for initial sediment and erosion control post construction at site specific disturbance areas to prevent sediment delivery and minimize invasive species. See Appendix D for additional details on revegetation and erosion control for whole project.

^c Includes estimated volume of material to be excavated and either removed permanently and used on the road for road shaping or utilized for backfill from each site.

^d Seed totals based on an application rate of 2lb of native seed per 1,000 ft².

^e Straw totals based on an application rate of 1 bale of rice straw per 800 ft² and rounded to the nearest half bale.

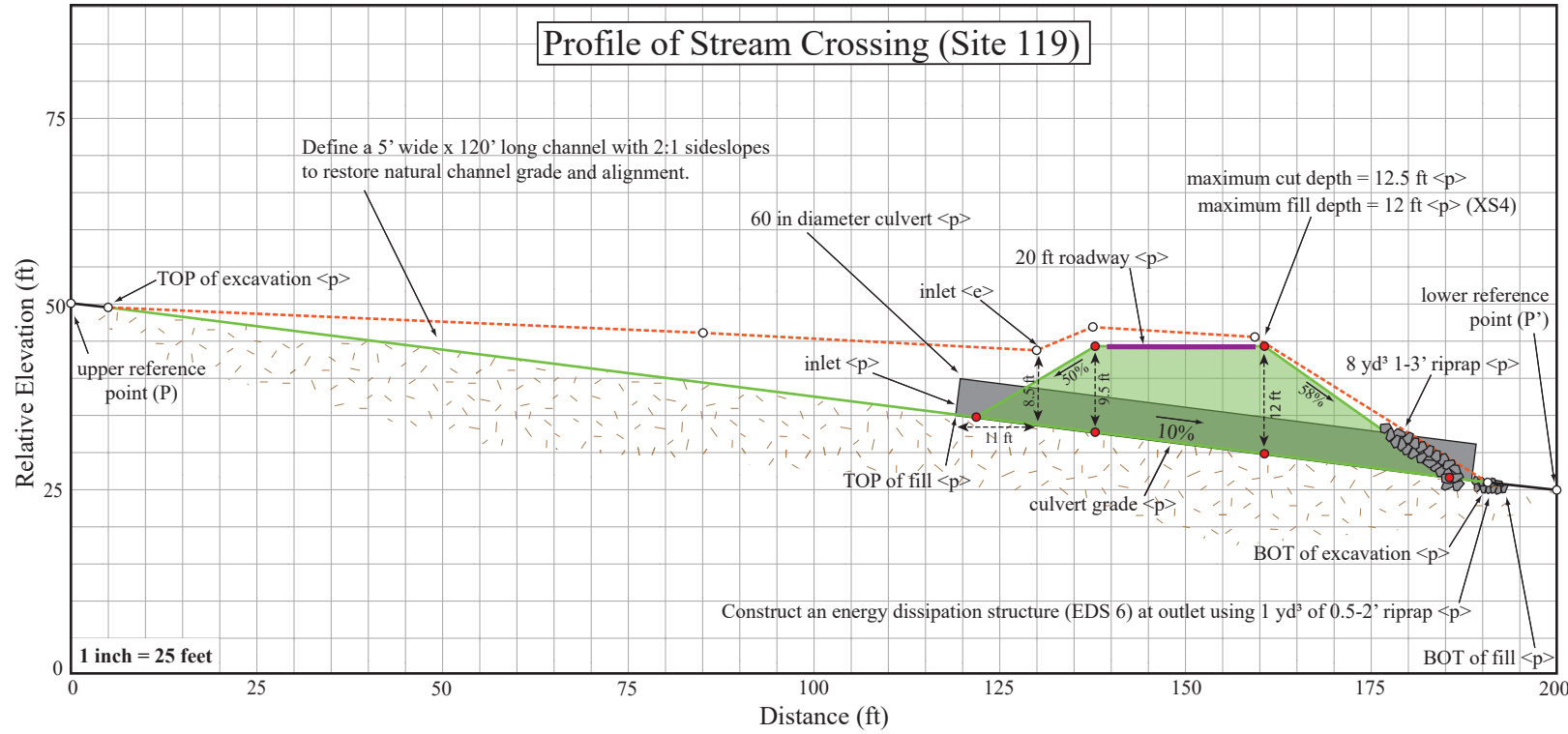
Appendix F

Grading Plan Drawings

Butte Creek Camp Fire Post Fire Recovery Project Butte County, California

Page #	Site #	Assessor's Parcel Number in Vicinity
F-2	119	017-020-017 (above); 017-020-033 (below)
F-3	120	
F-4	122	017-010-032 (above); 017-020-033 (below); 017-010-033 (below)
F-5	124	017-010-032 (above); 017-010-036 (below)
F-6	125	017-010-033 (above); 017-010-036 (below)
F-7	129	
F-8	131	017-010-044 (above); 017-010-036 (below)
F-9	132	
F-10	135	
F-11	137	066-360-001
F-12	138	
F-13	139	
F-14	140	
F-15	142	064-010-016
F-16	144	
F-17	147	
F-18	148	
F-19	149	

Site 119 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



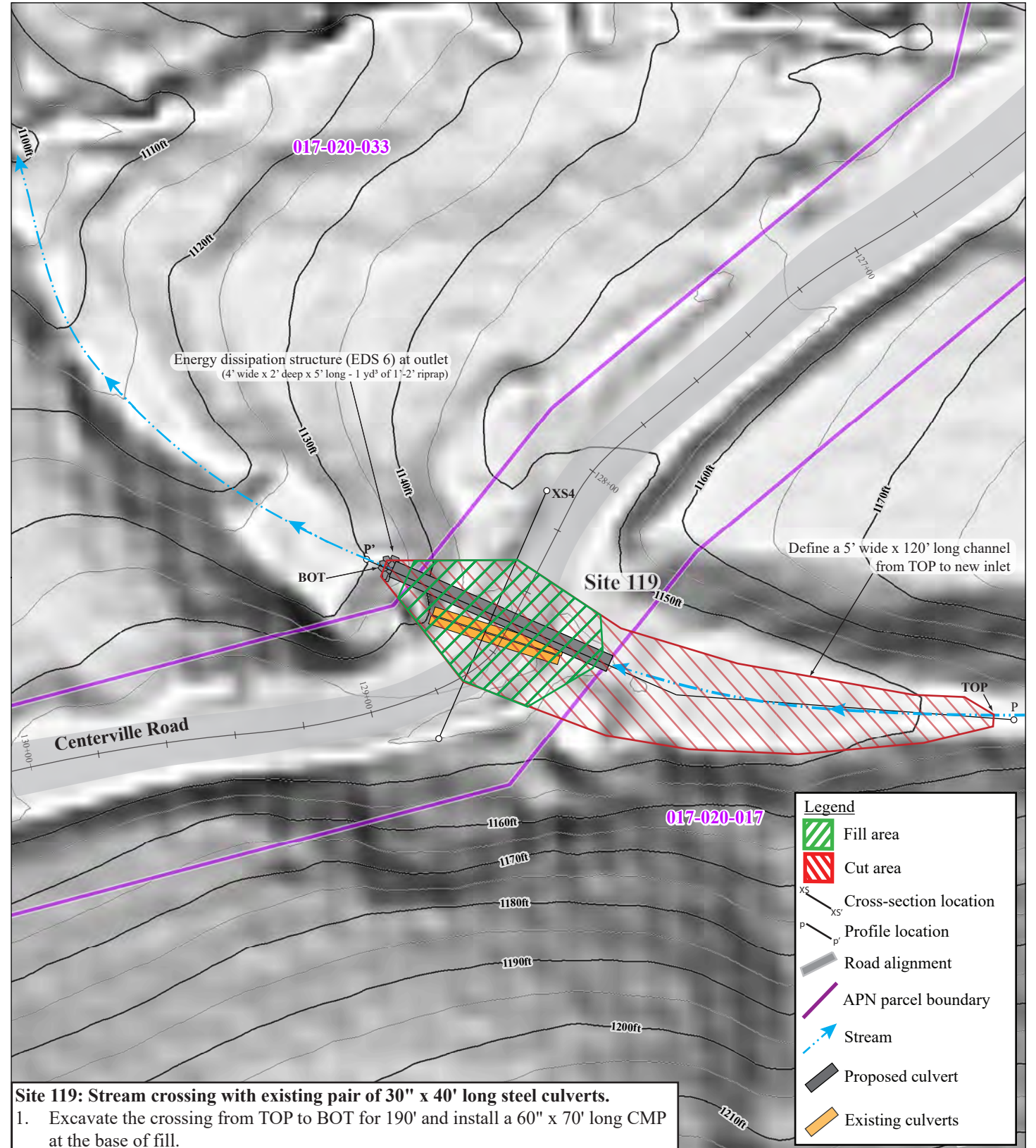
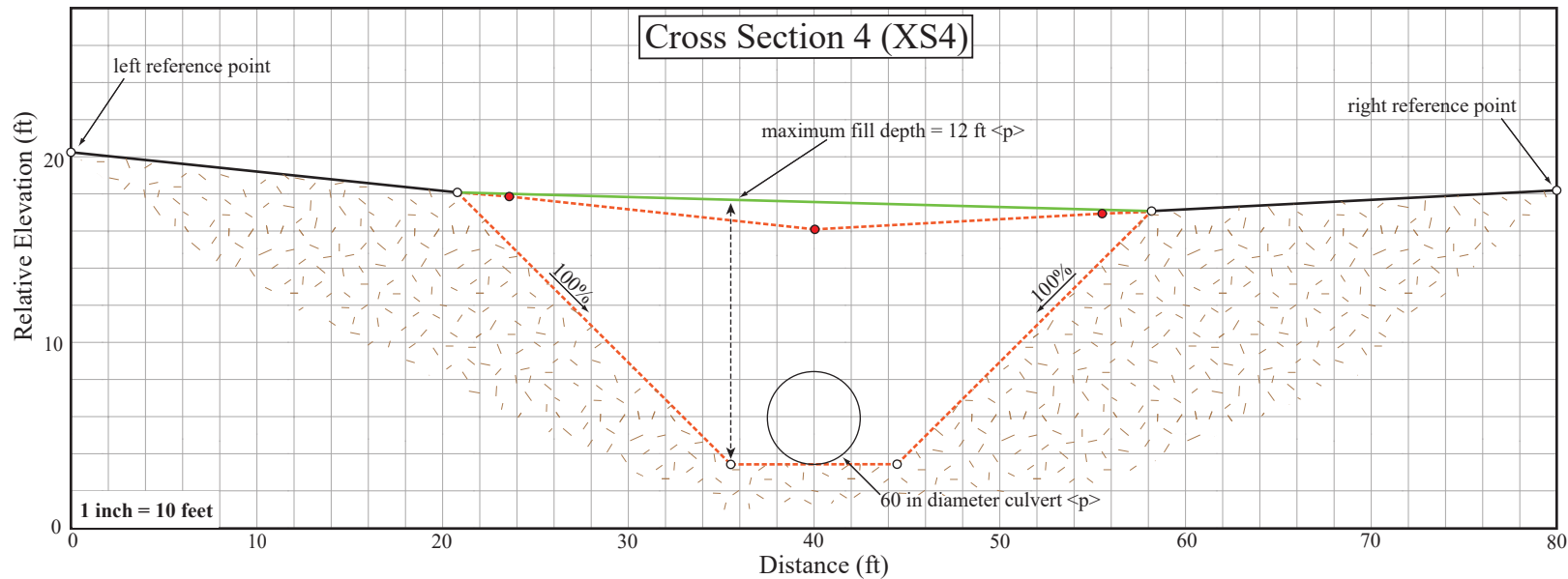
Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:

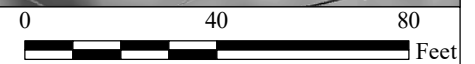
- TOP = top of excavation/fill; BOT = bottom of excavation/fill;
- IBF = inboard fillslope; OBF = outboard fillslope;
- CMP = corrugated metal pipe; EDS = energy dissipation structure
- <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

- Excavation disturbance area = 4,600 sq ft
- Excavation/cut volume = 845 cu yd
- Proposed backfill volume = 365 cu yd
- Proposed re-build TOP to BOT length = 195 ft
- Proposed culvert size = 60 in x 70 ft
- Proposed culvert grade = 10%



Site 119: Stream crossing with existing pair of 30" x 40' long steel culverts.

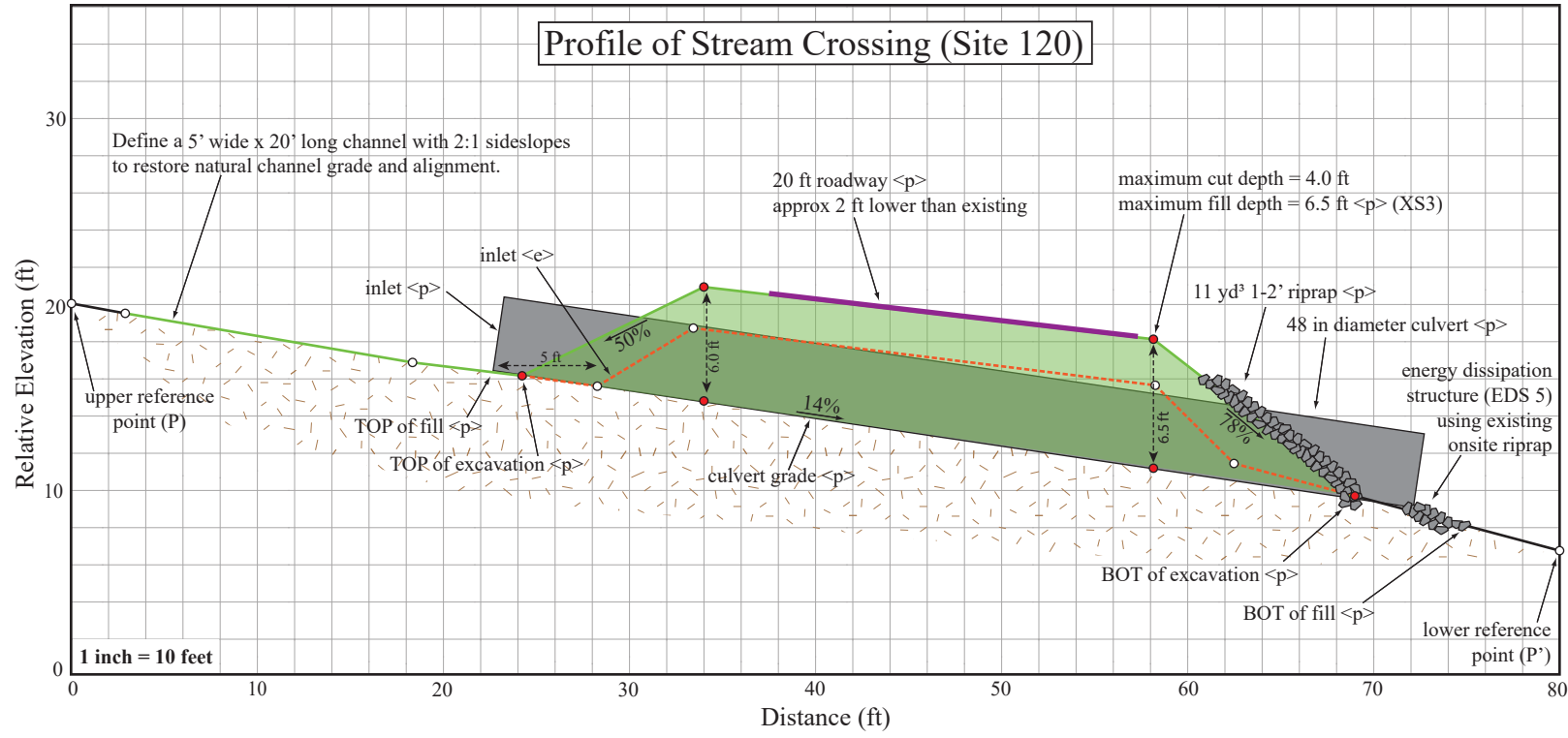
1. Excavate the crossing from TOP to BOT for 190' and install a 60" x 70' long CMP at the base of fill.
2. Define a 5' wide x 120' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
3. Rebuild IBF at 2:1 slope.
4. Rebuild OBF at 30 degrees and armor the lower 1/4 with 8 yd³ of 1'-3' riprap.
5. Construct an energy dissipation structure at outlet using 1 yd³ of 0.5'-2' riprap (4' wide x 2' deep avg. x 5' long).
6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
7. End cut and clean ditch and connect to new inlet.



Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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 Pacific Watershed Associates
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Site 120 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California

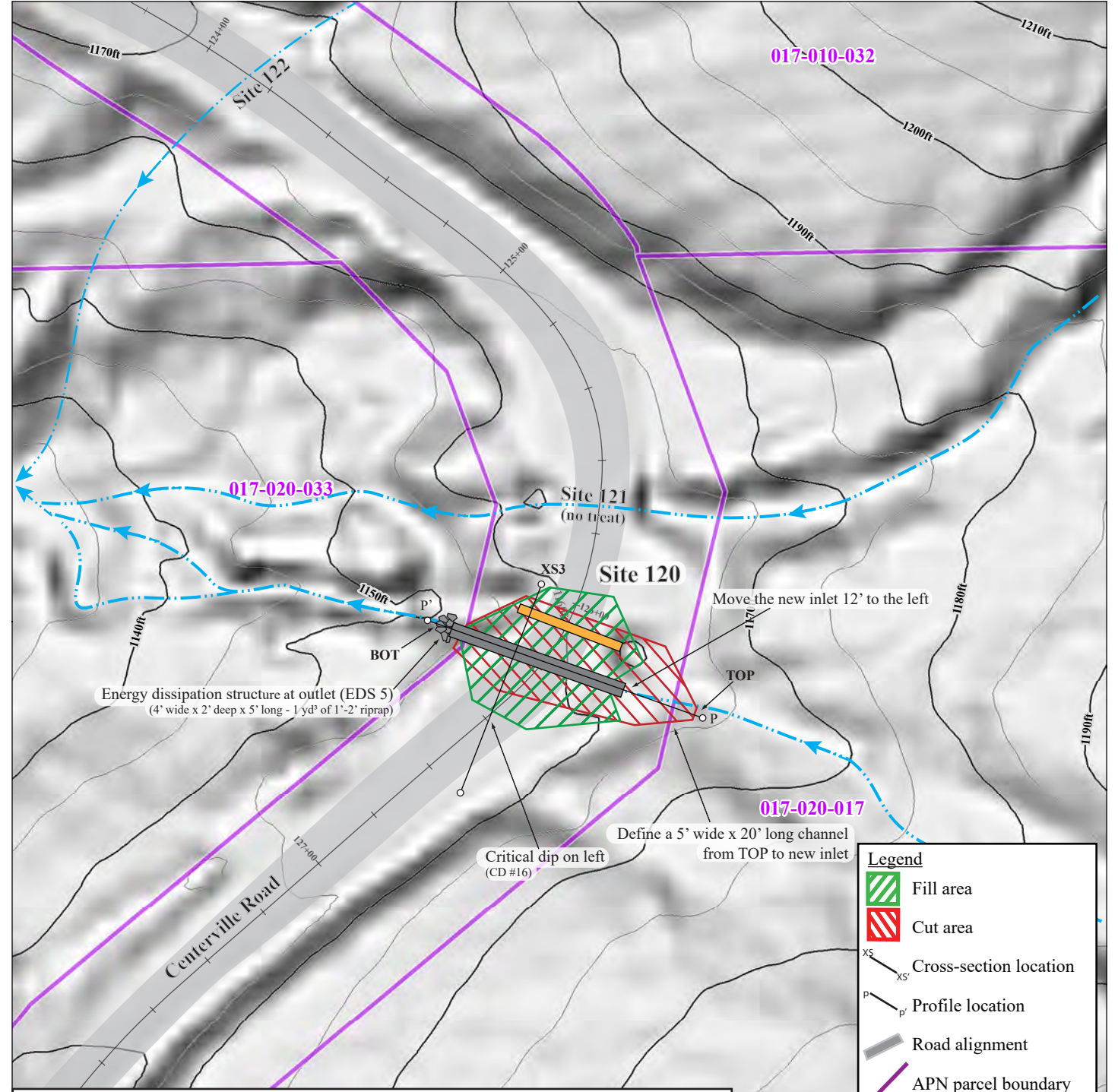
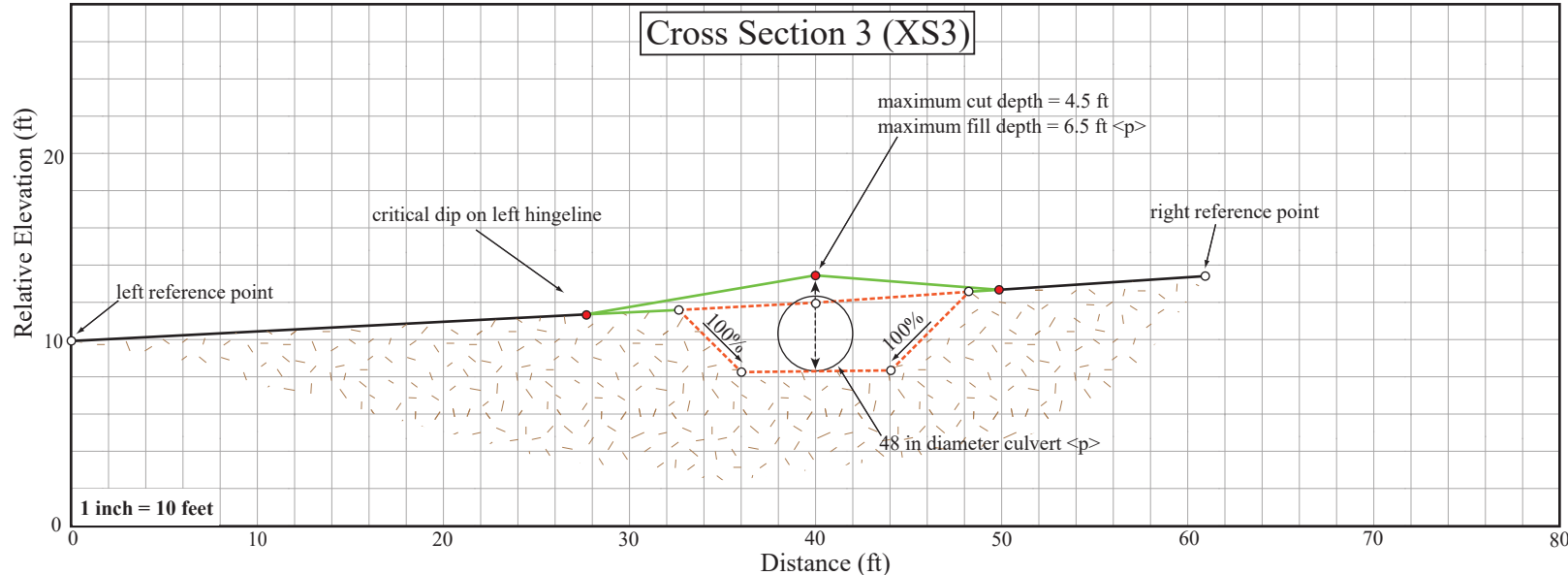


Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope
 CMP = corrugated metal pipe; CD = critical dip; EDS = energy dissipation structure
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 840 sq ft
 Excavation/cut volume = 50 cu yd
 Proposed backfill volume = 80 cu yd
 Proposed re-build TOP to BOT length = 70 ft
 Proposed culvert size = 48 in x 50 ft
 Proposed culvert grade = 14%



- Site 120: Stream crossing with existing 18" x 30' long steel culvert.**
- Excavate the crossing from TOP to BOT for 70' and install a 48" x 50' long CMP at the base of fill.
 - Move the new inlet 12' to the left to improve alignment with the natural stream channel.
 - Define a 5' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 - Rebuild IBF at 2:1 slope.
 - Rebuild OBF at 38 degrees and armor the lower 3/4 with 11 yd³ of 1'-2' riprap.
 - Construct energy dissipation structure at outlet using onsite riprap (7' wide x 2' deep avg. x 5' long).
 - Construct a critical dip on the left hingeline to eliminate diversion potential.
 - Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
 - Maintain/establish single car turnout left of inlet area.

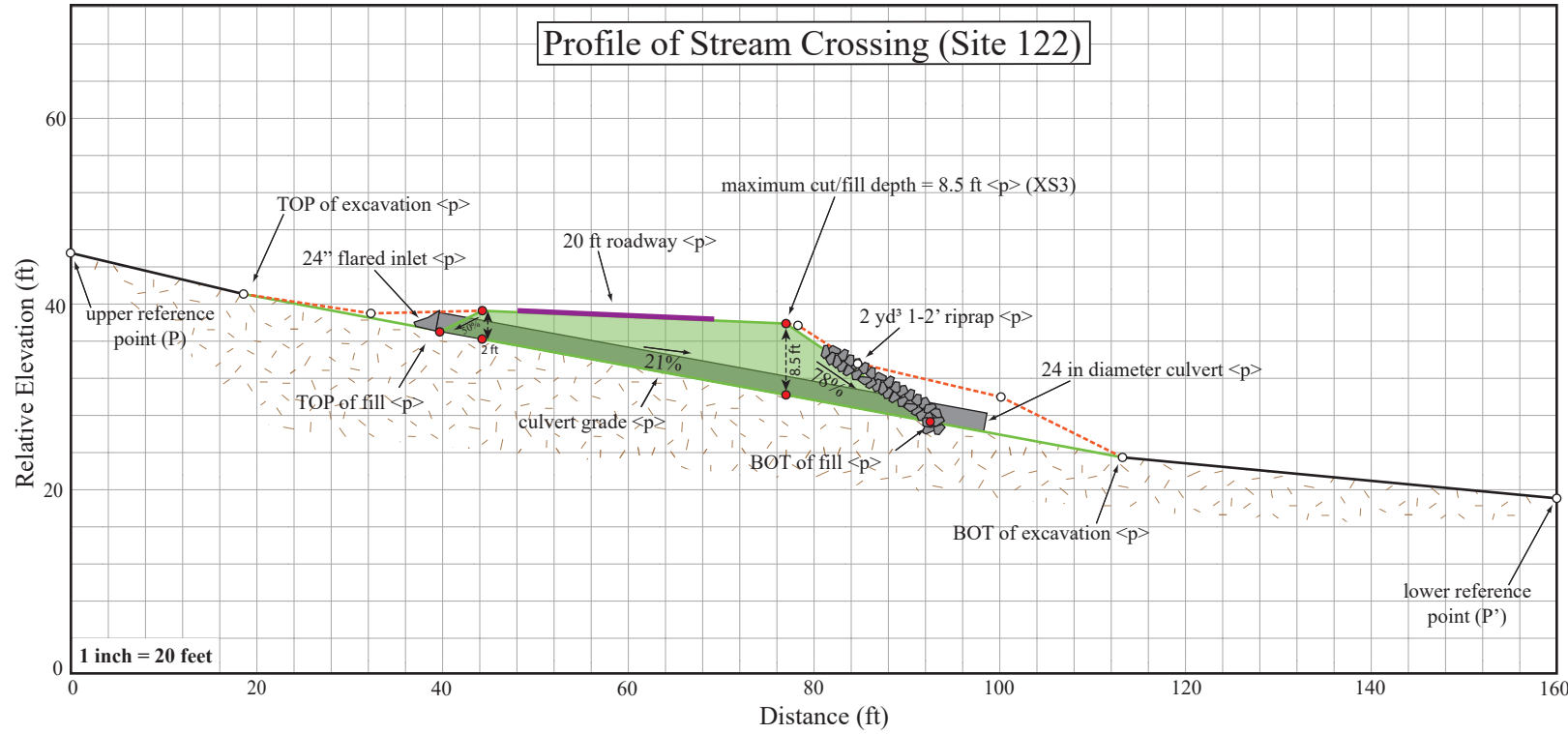
Legend

- Fill area
- Cut area
- Cross-section location
- Profile location
- Road alignment
- APN parcel boundary
- Stream
- Proposed culvert
- Existing culvert

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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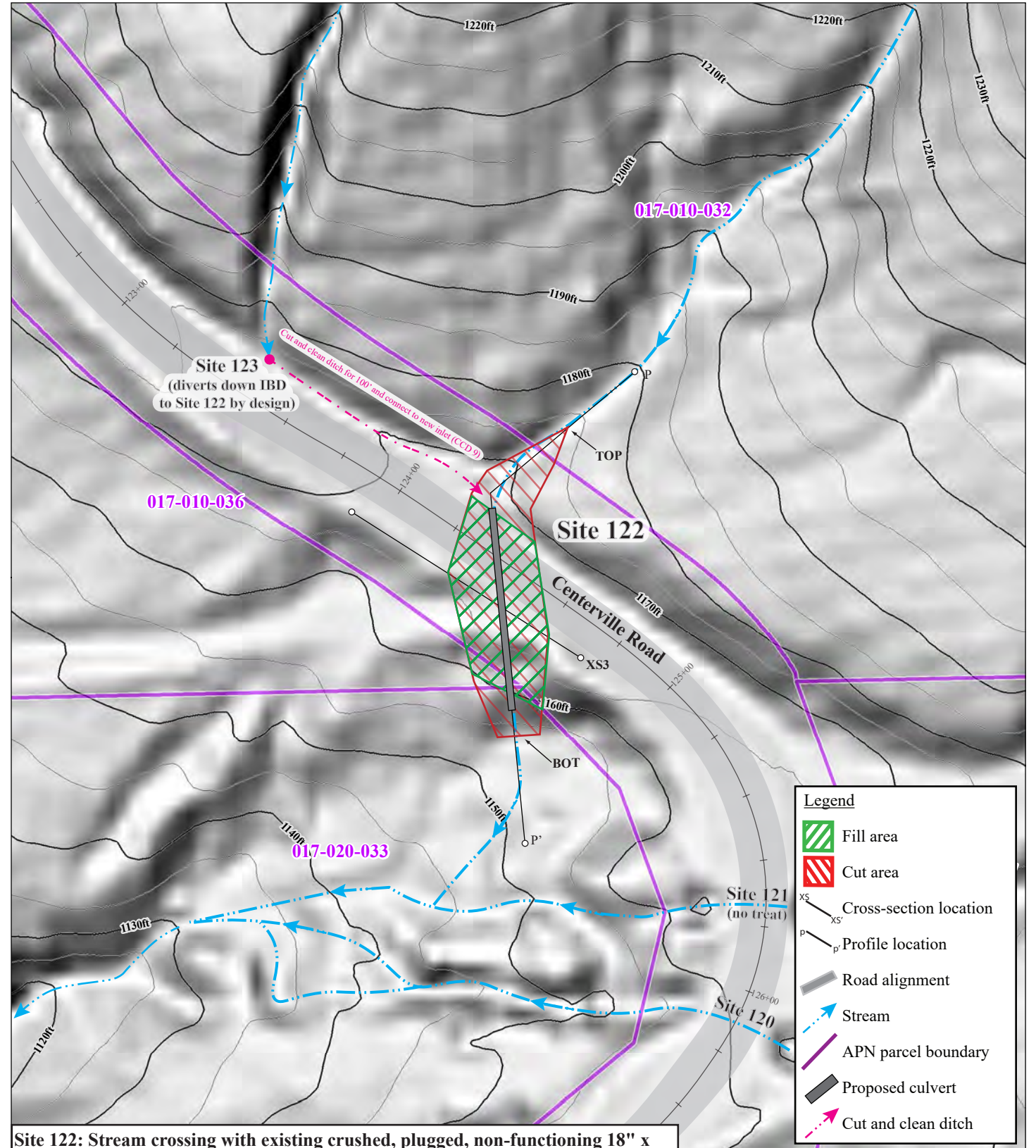
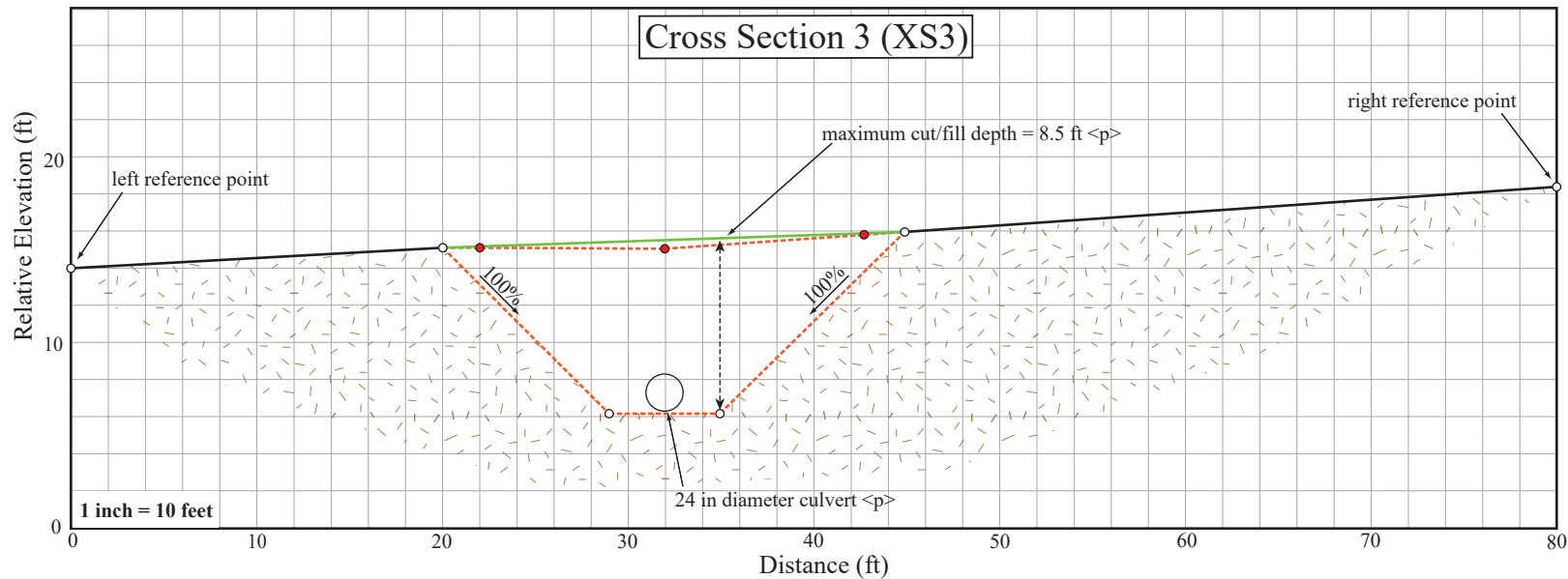
Site 122 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CCD = cut and clean ditch;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 1,380 sq ft
 Excavation/cut volume = 170 cu yd
 Proposed backfill volume = 100 cu yd
 Proposed re-build TOP to BOT length = 95 ft
 Proposed culvert size = 24 in x 60 ft
 Proposed culvert grade = 21%



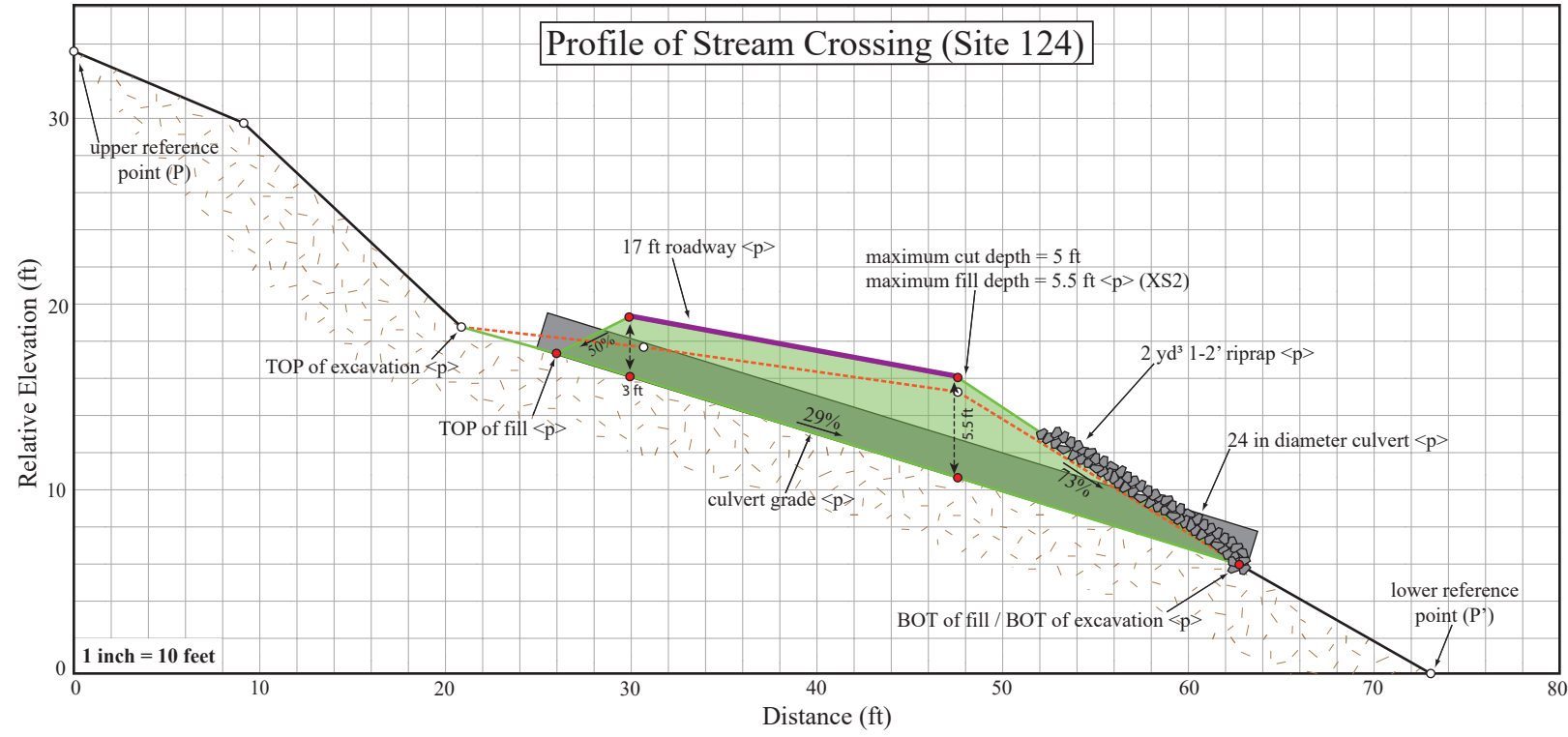
- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P-P' Profile location
 - Road alignment
 - Stream
 - APN parcel boundary
 - Proposed culvert
 - Cut and clean ditch

- Site 122: Stream crossing with existing crushed, plugged, non-functioning 18" x 40' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 95' and install a 24" x 60' long CMP in the existing alignment with the outlet positioned at the base of fill.
 2. Install a flared 24" inlet to the CMP inlet.
 3. Rebuild IBF at 2:1 slope.
 4. Rebuild OBF at 38 degrees and armor the lower 3/4 with 2 yd³ of 1'-2' riprap.
 5. Install a T-post trash rack above the new inlet and centered to reduce plug potential.
 6. End OSR-KD 6 at Site at 122.
 7. End cut and clean ditch (CCD 9) and drain to new inlet.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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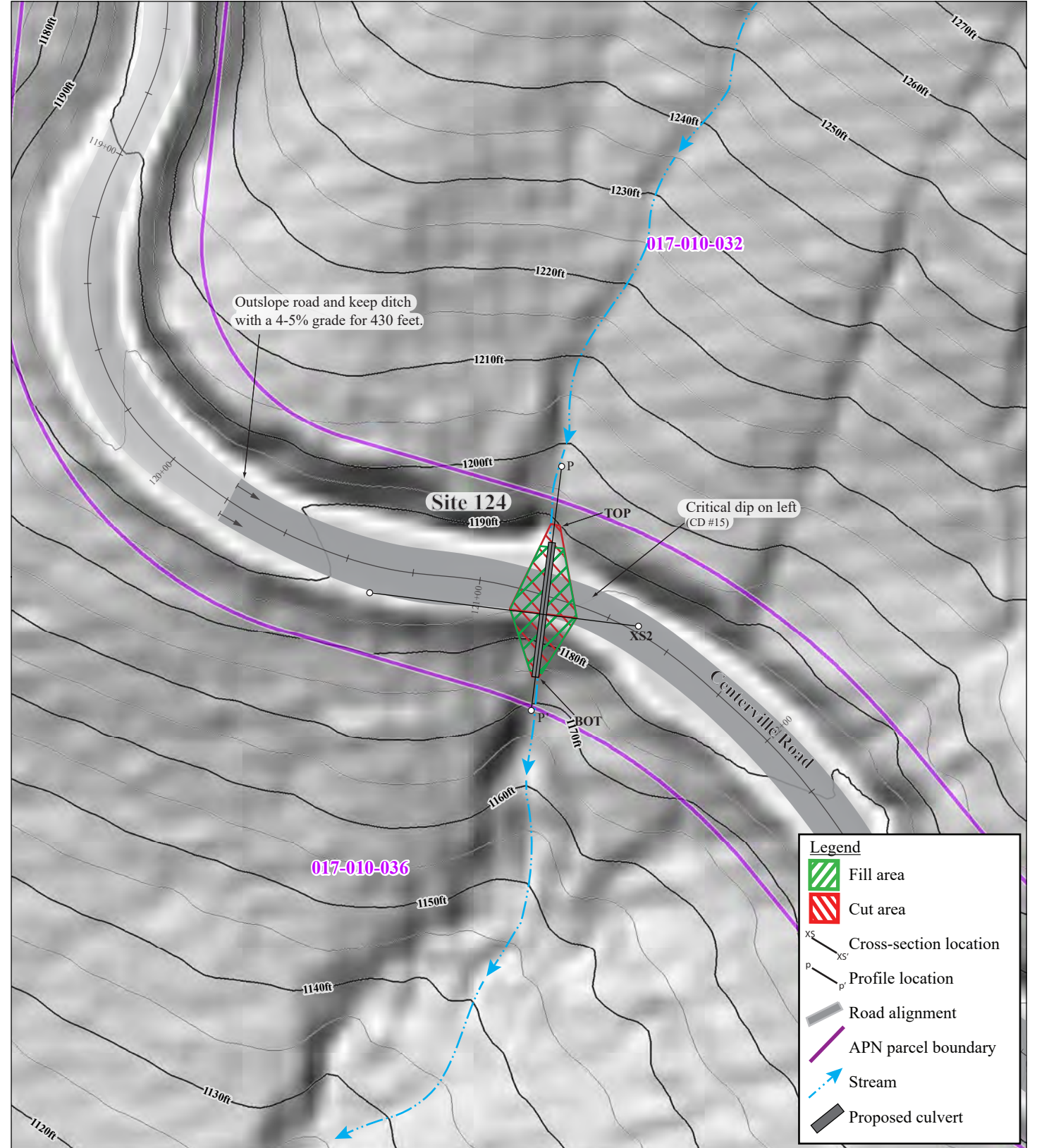
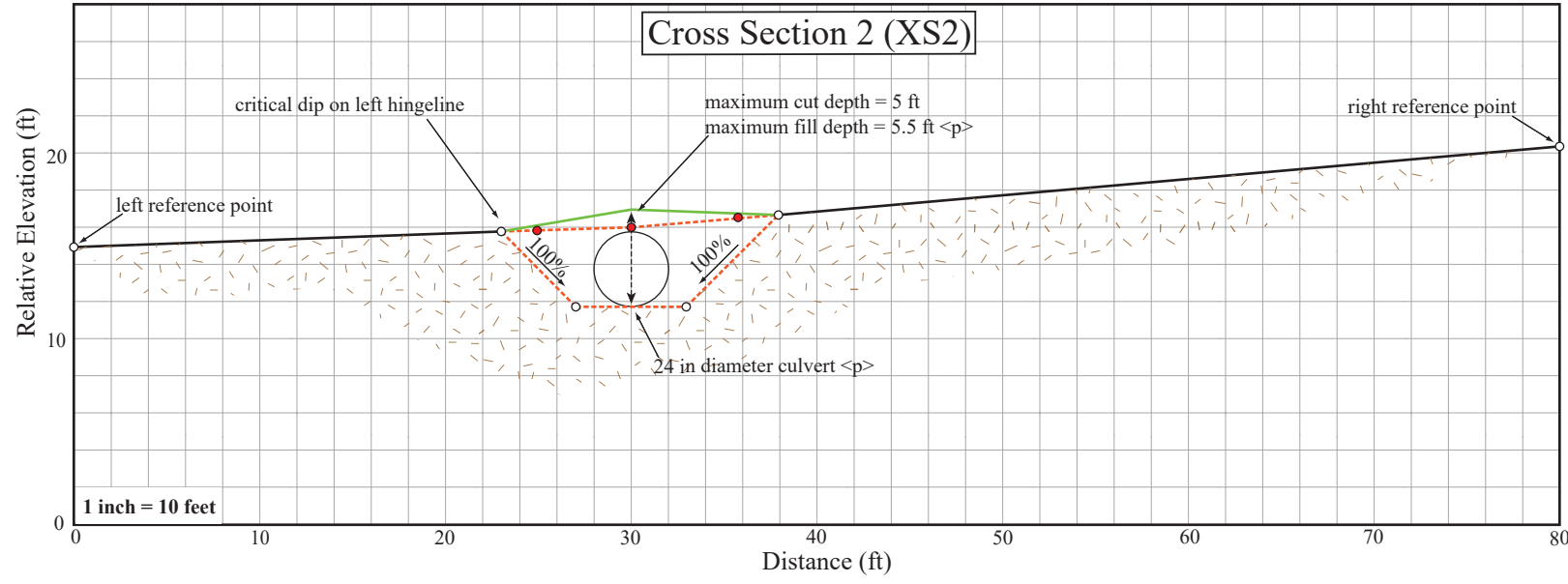
Site 124 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation; BOT = bottom of excavation;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 475 sq ft
 Excavation/cut volume = 30 cu yd
 Proposed backfill volume = 35 cu yd
 Proposed re-build TOP to BOT length = 45 ft
 Proposed culvert size = 24 in x 40 ft
 Proposed culvert grade = 29%



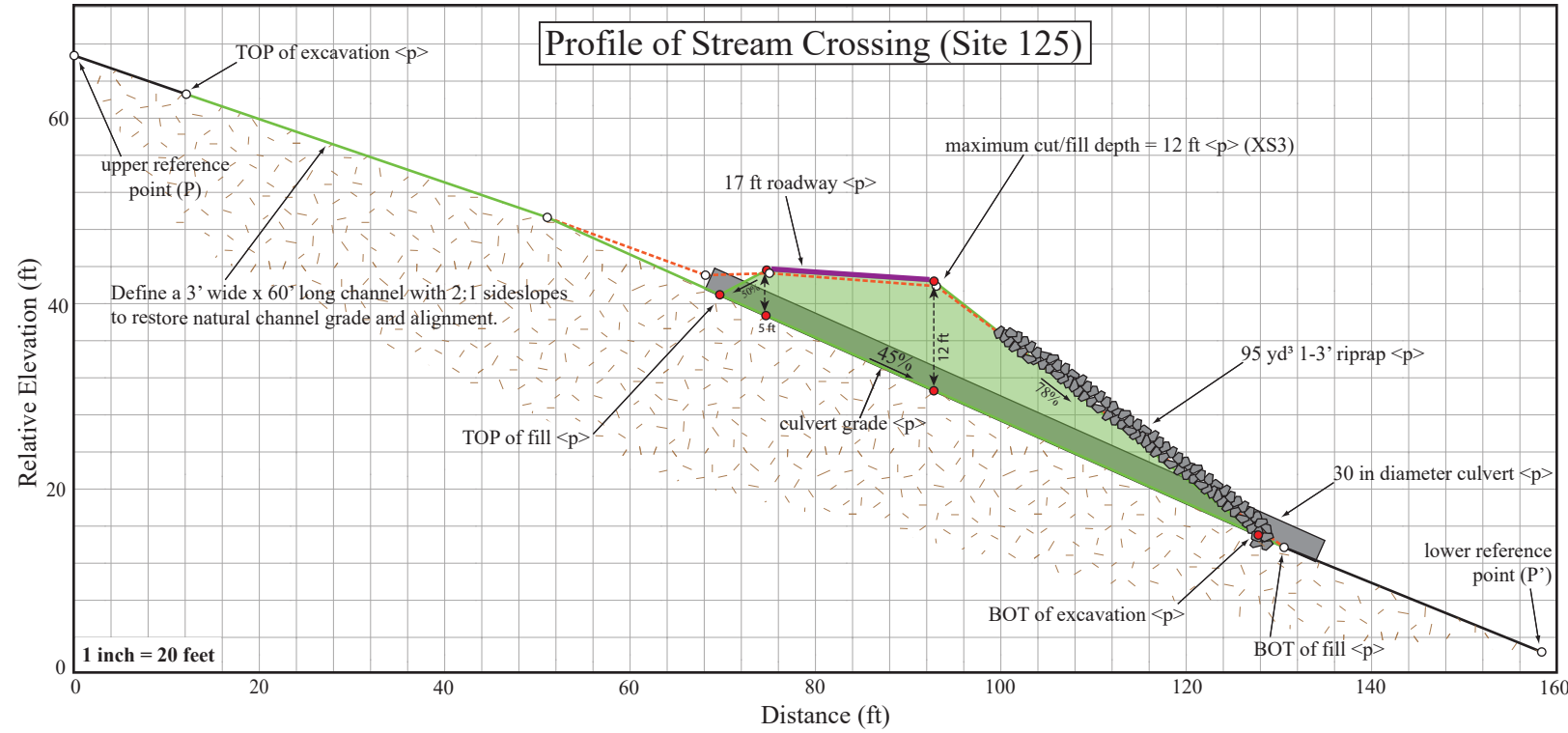
- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert

- Site 124: Stream crossing with existing 12" x 30' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 45' and install a 24" x 40' long CMP at the base of fill.
 2. Rebuild IBF at 2:1 slope.
 3. Rebuild OBF at 36 degrees and armor the lower 3/4 with 2 yd³ of 1-2' riprap.
 4. Construct a critical dip on the left hingeline to eliminate diversion potential.
 5. Install a T-post trash rack above the new inlet and centered to reduce plug potential.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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Site 125 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



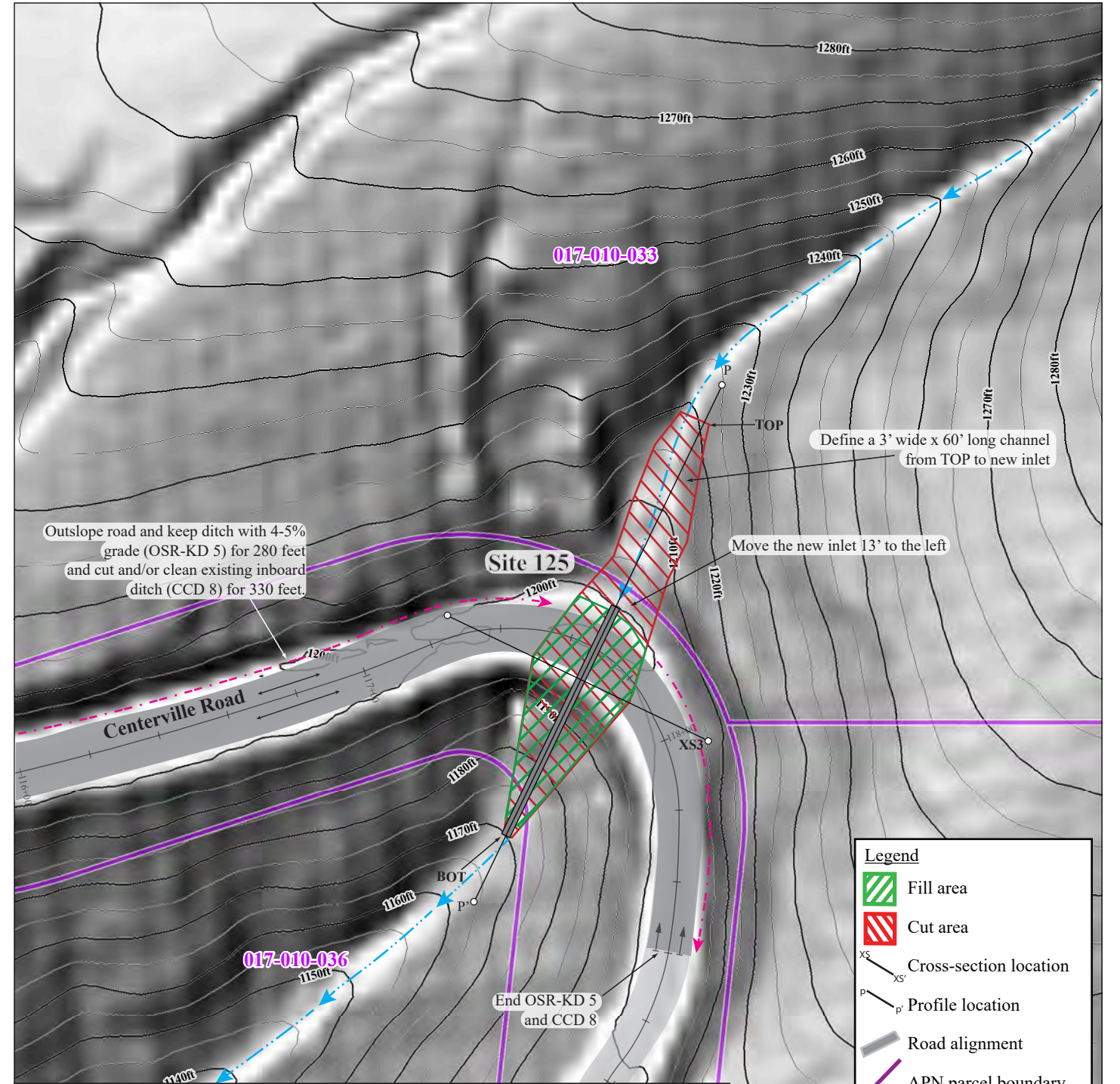
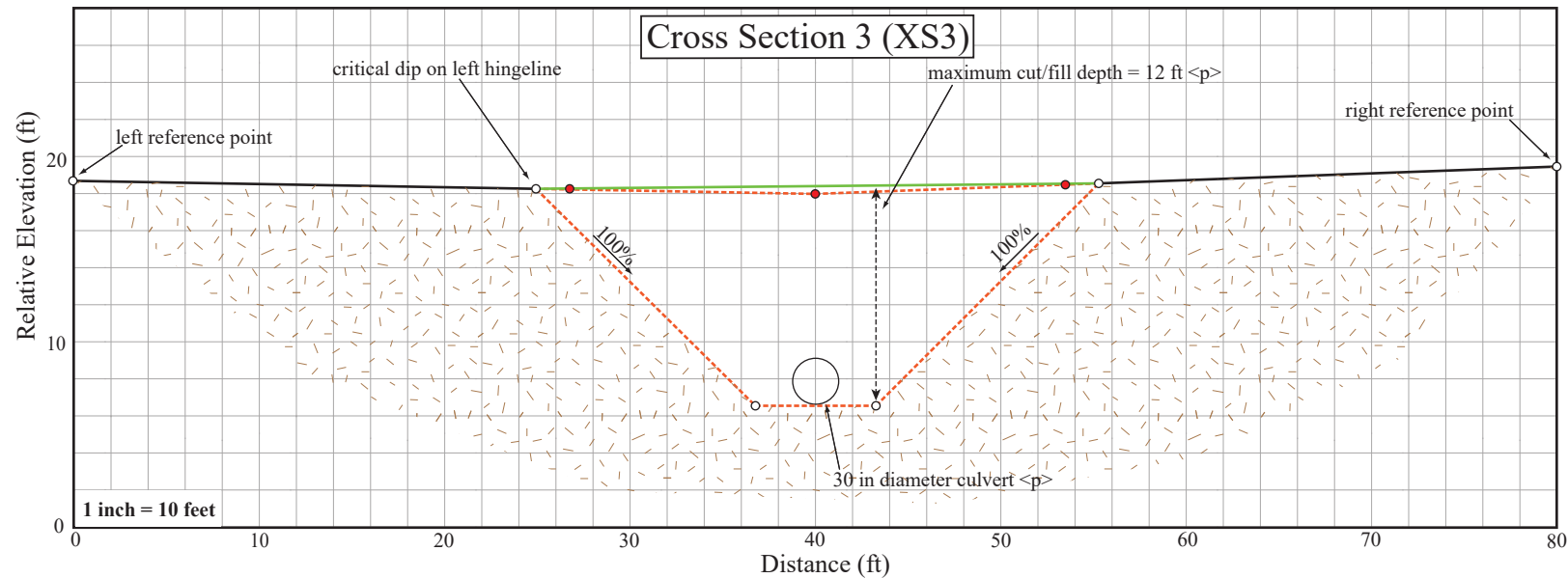
Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:

- TOP = top of excavation/fill; BOT = bottom of excavation/fill;
- IBF = inboard fillslope; OBF = outboard fillslope;
- CMP = corrugated metal pipe; CD = critical dip;
- <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

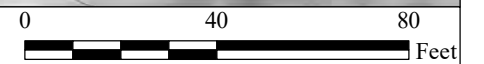
- Excavation disturbance area = 2,375 sq ft
- Excavation/cut volume = 230 cu yd
- Proposed backfill volume = 220 cu yd
- Proposed re-build TOP to BOT length = 130 ft
- Proposed culvert size = 30 in x 70 ft
- Proposed culvert grade = 45%



Legend

- Fill area
- Cut area
- Cross-section location
- Profile location
- Road alignment
- APN parcel boundary
- Stream
- Proposed culvert
- Cut and clean ditch

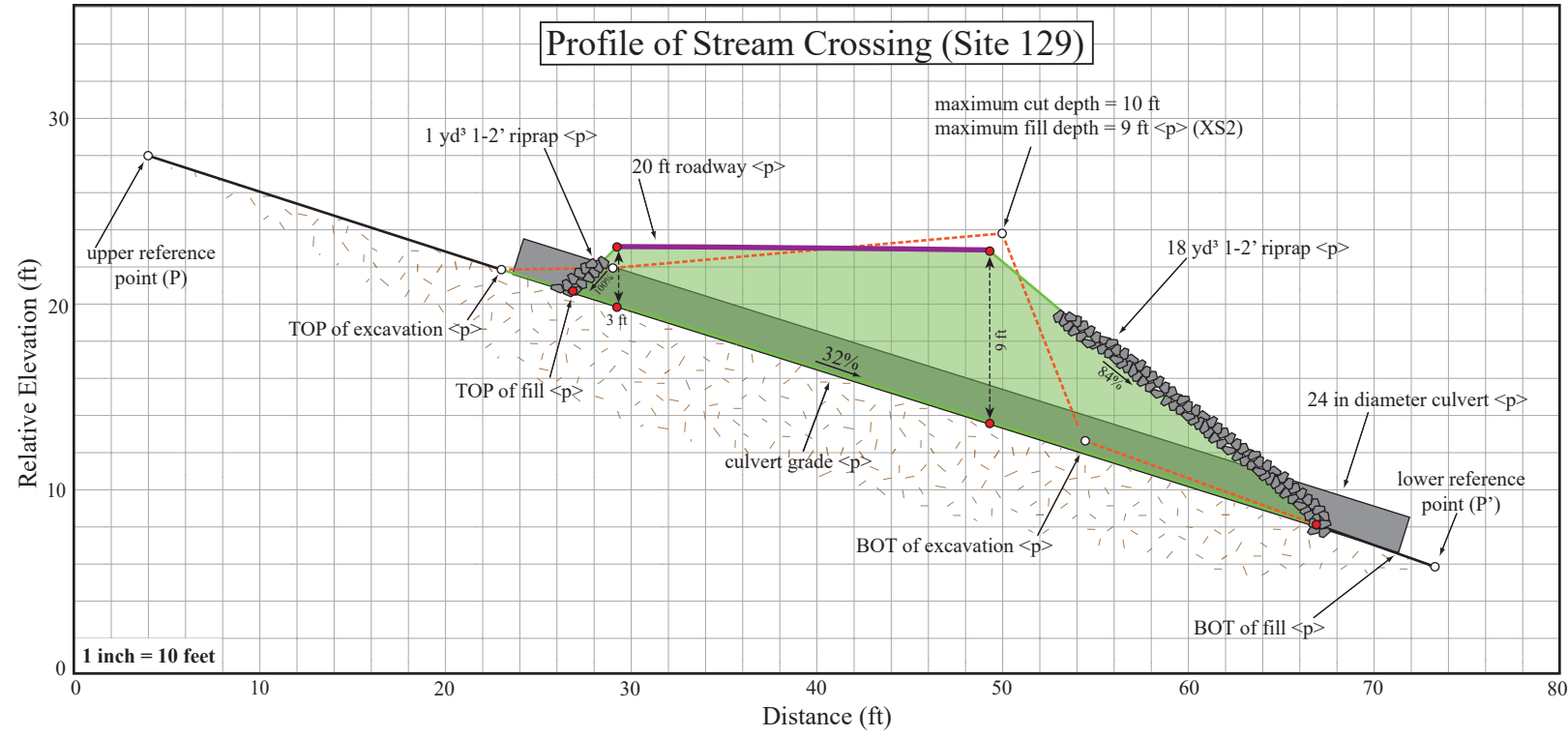
- *Rare plant in vicinity, proceed with RCD biologist approval.**
- Site 125: Stream crossing with existing 12" x 25' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 130' and install a 30" x 70' long CMP at the base of fill.
 2. Move the new inlet 13' to the left to improve alignment with the natural stream channel.
 3. Define a 3' wide x 60' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 4. Rebuild IBF at 2:1 slope.
 5. Rebuild OBF and adjacent fillslope at 38 degrees and armor the lower 3/4 (55' wide at bottom, tapering up to 33' wide at top) x 2' deep with 95 yd³ of 1'-3' riprap.
 6. Connect left and right ditch to new inlet.
 7. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.



Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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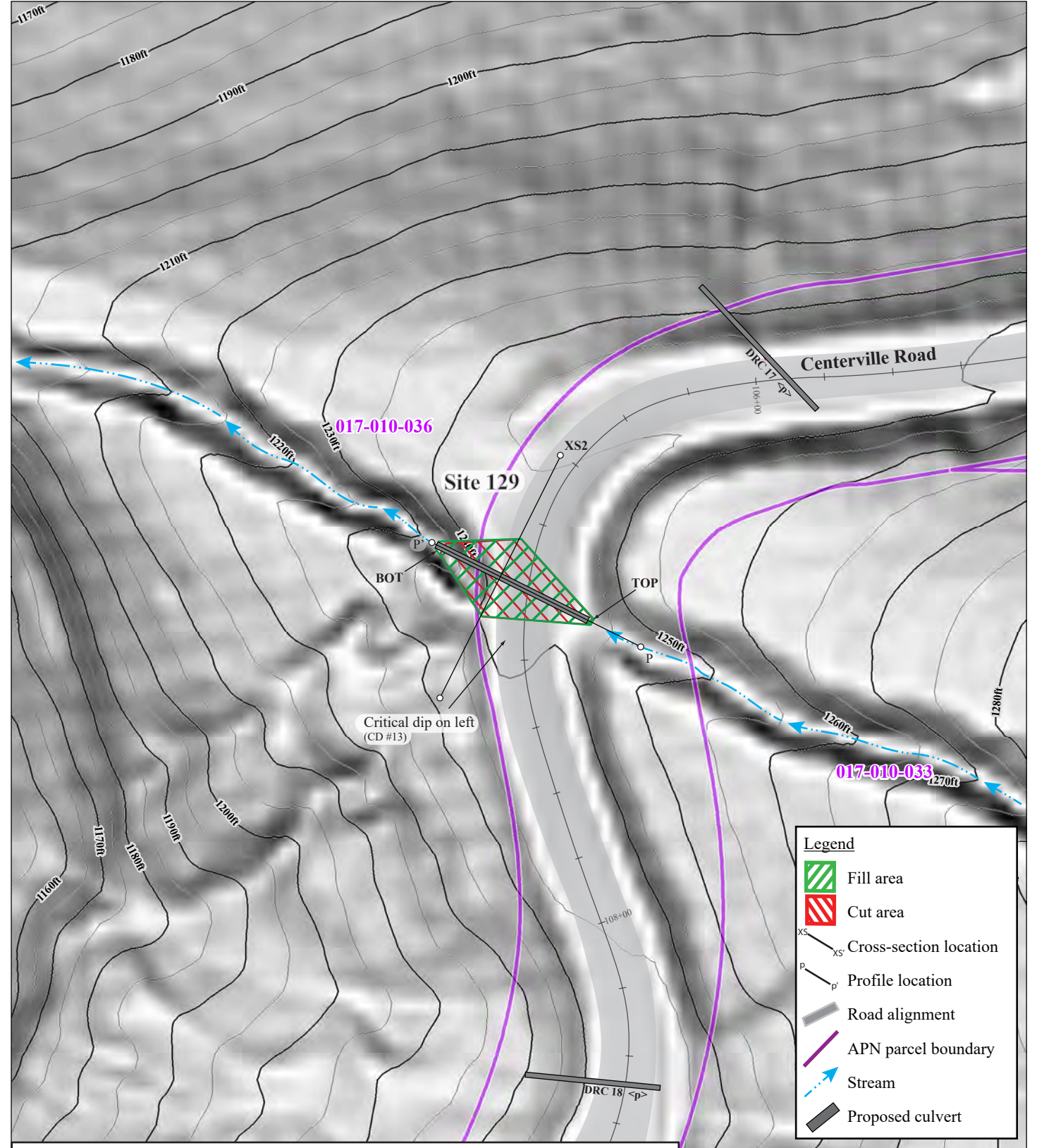
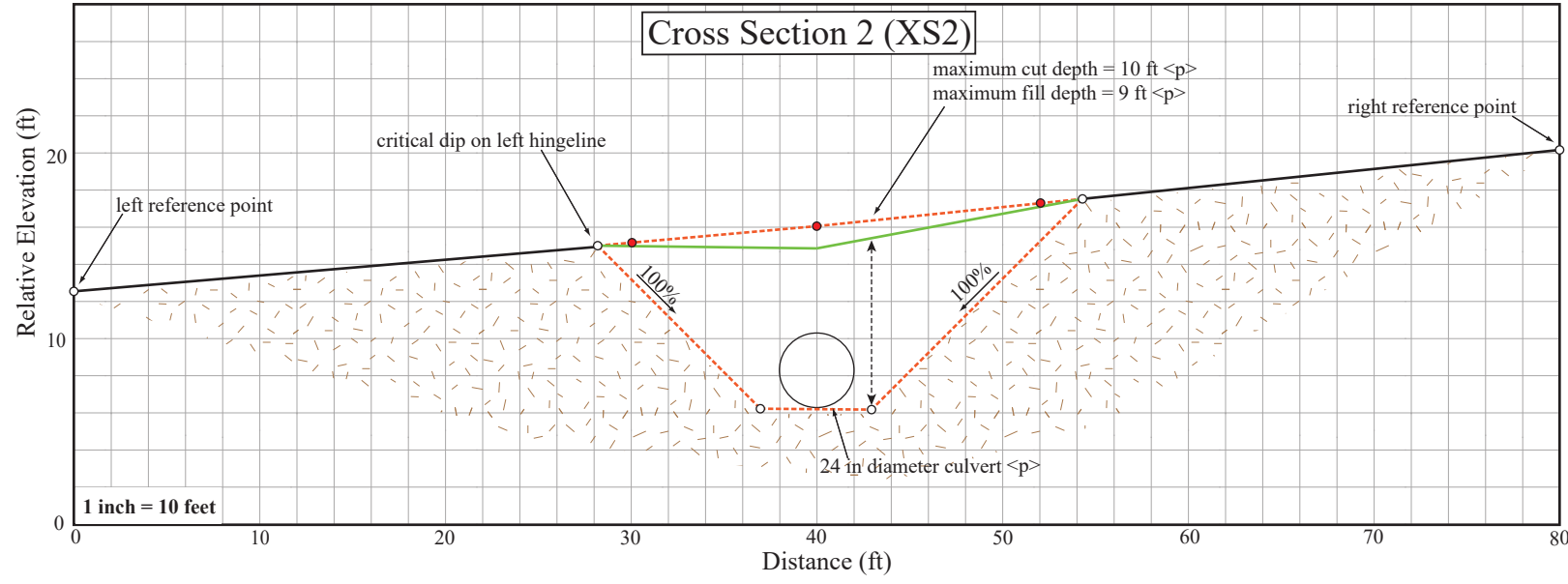
Site 129 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 800 sq ft
 Excavation/cut volume = 80 cu yd
 Proposed backfill volume = 100 cu yd
 Proposed re-build TOP to BOT length = 50 ft
 Proposed culvert size = 24 in x 50 ft
 Proposed culvert grade = 32%



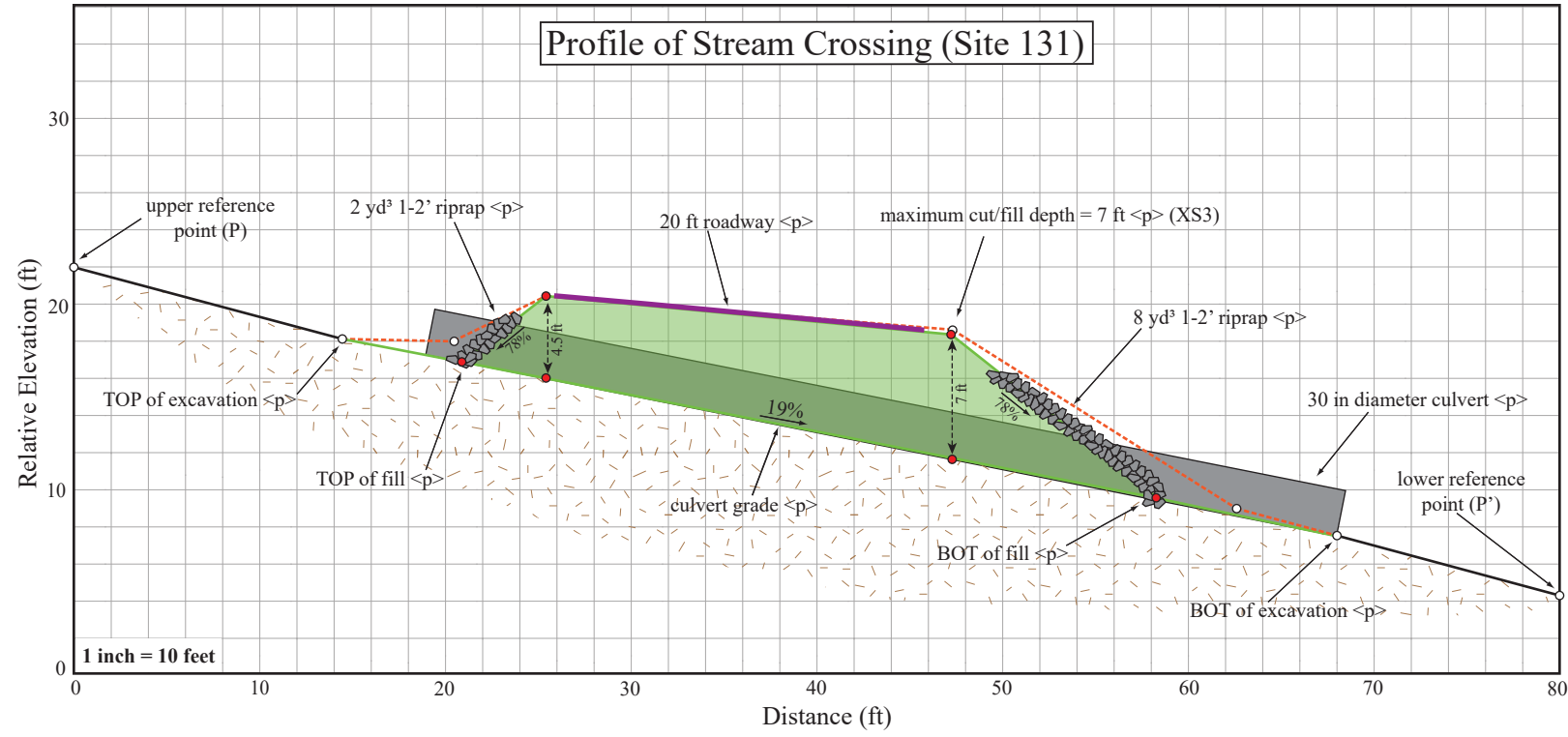
- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert

- Site 129: Existing 12" x 25' long concrete culvert.**
1. Excavate the crossing from TOP to BOT for 45' and install a 24" x 50' long CMP at the base of fill. Align new outlet with the gully channel below.
 2. Raise IBR as necessary (about 3 feet) to provide adequate coverage of new 24" CMP. Import fill material (~3 yd³) from Site 122 or another site with excess spoils.
 3. Rebuild IBF at 45 degrees and armor the lower 3/4 with 1 yd³ of 1'-2' riprap.
 4. Rebuild OBF at 40 degrees and armor the lower 3/4 with 18 yd³ of 1'-2' riprap.
 5. Construct a critical dip on the left hingeline to eliminate diversion potential.
 6. Install a T-post trash rack above the new inlet and centered to reduce plug potential.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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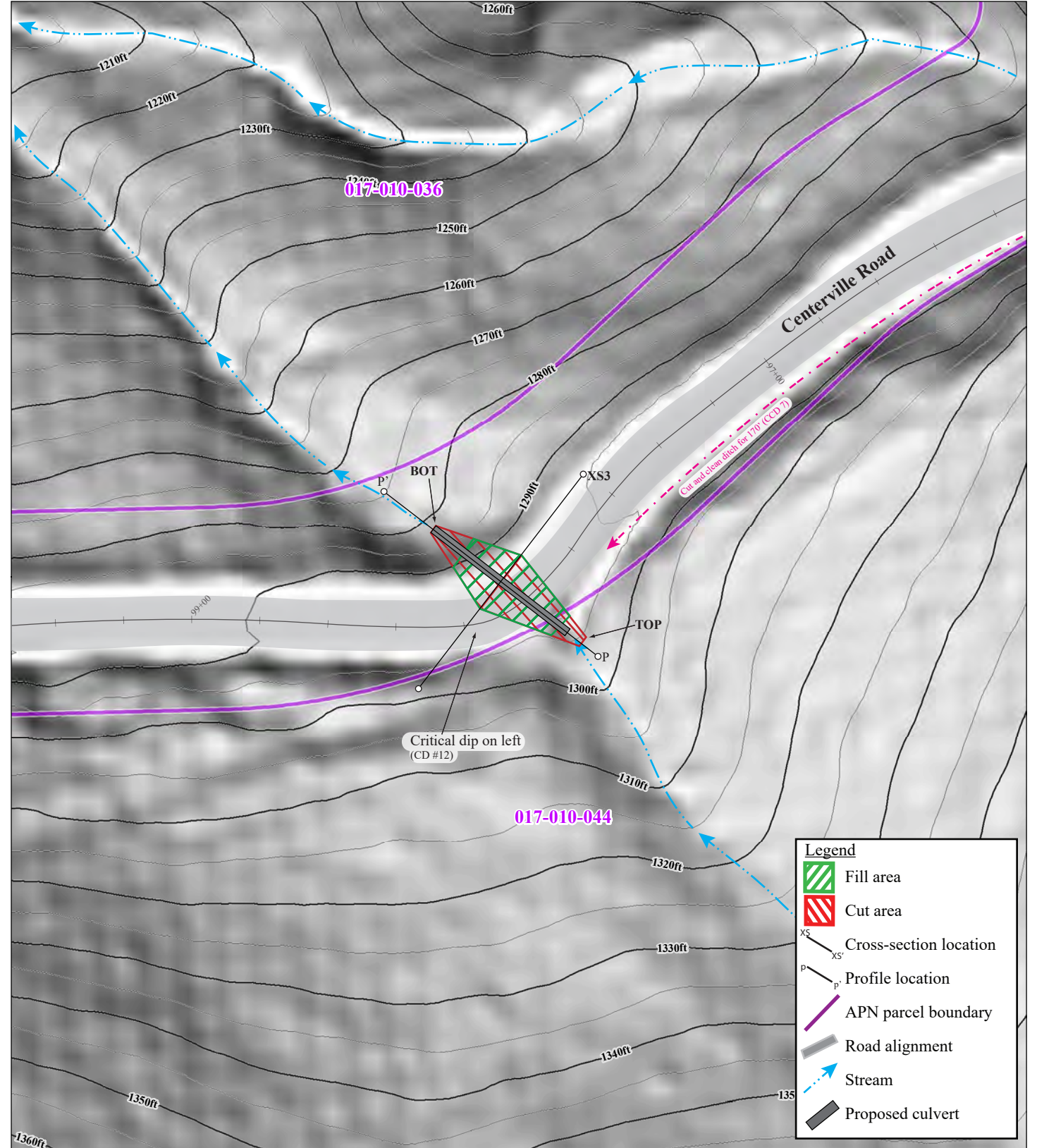
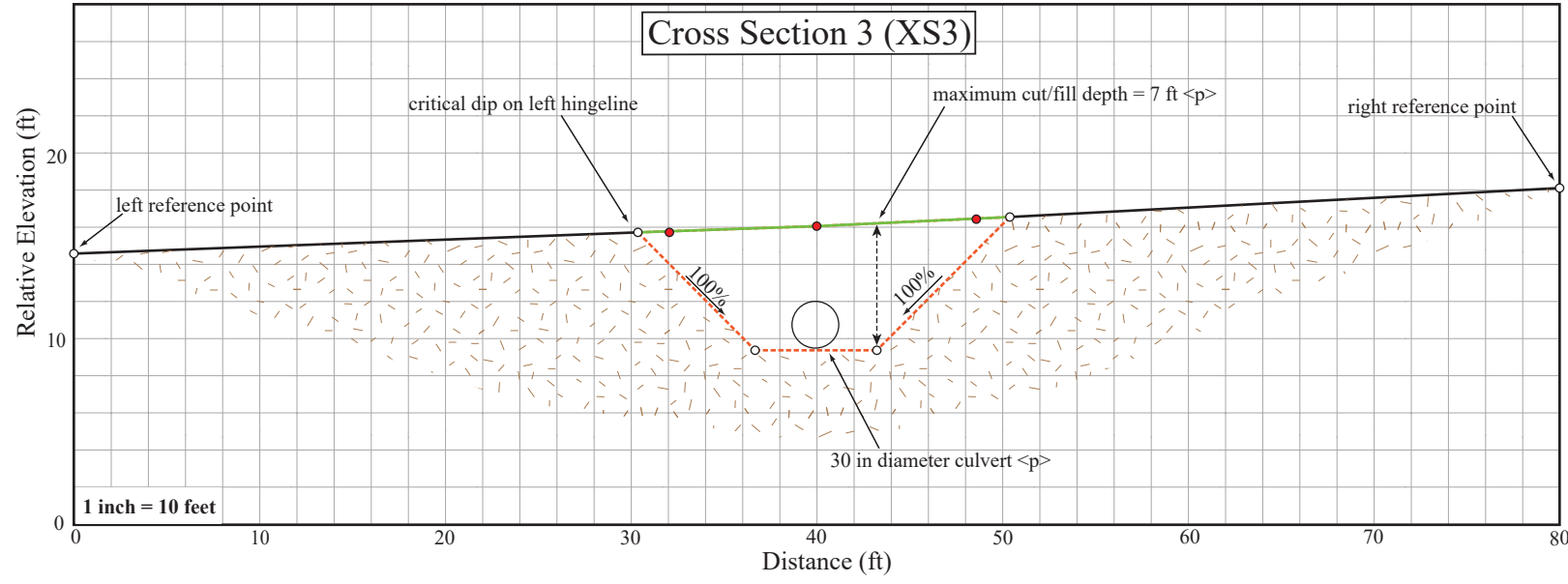
Site 131 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- - - Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 730 sq ft
 Excavation/cut volume = 80 cu yd
 Proposed backfill volume = 75 cu yd
 Proposed re-build TOP to BOT length = 55 ft
 Proposed culvert size = 30 in x 50 ft
 Proposed culvert grade = 19%



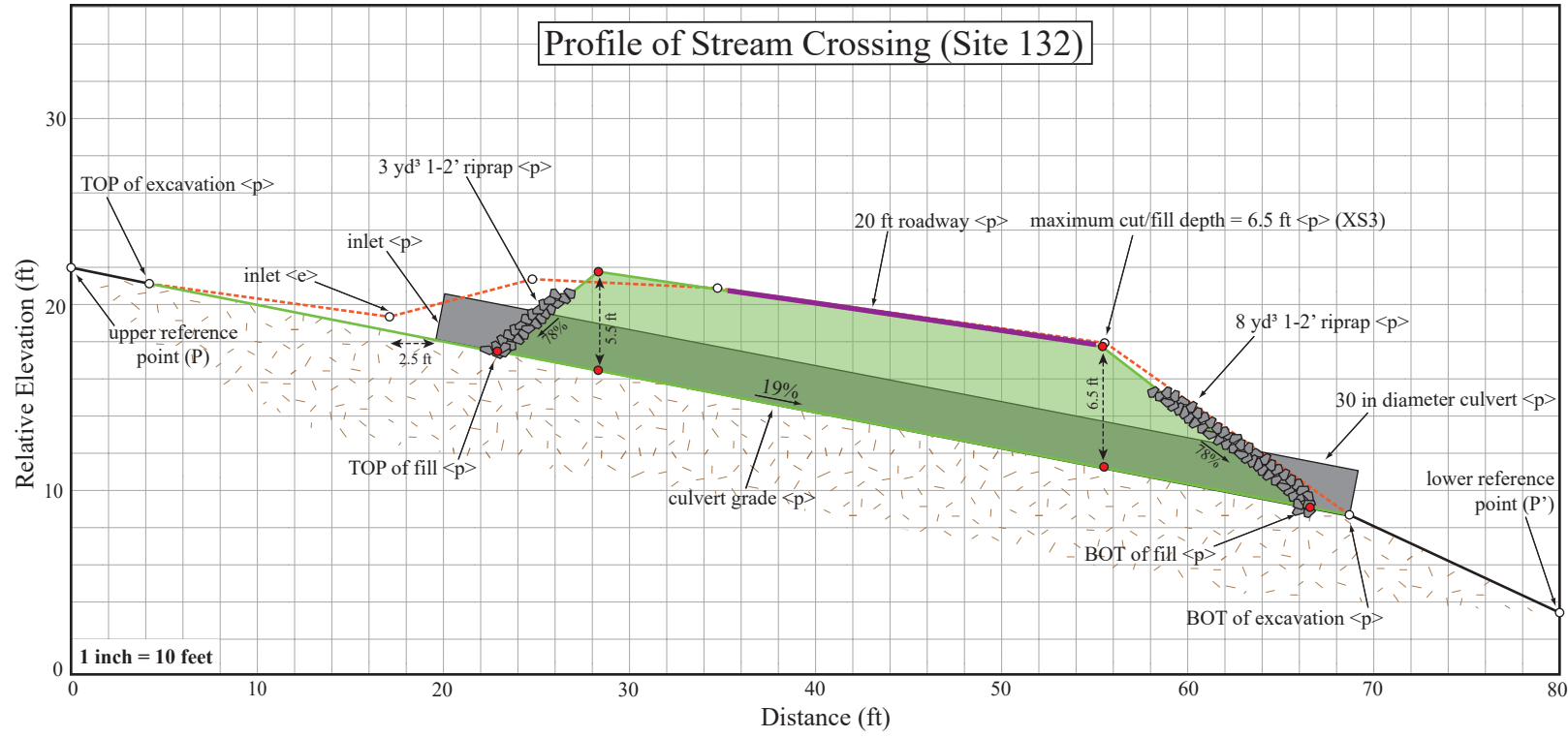
- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - APN parcel boundary
 - Road alignment
 - - - Stream
 - Proposed culvert

- *Rare plant in vicinity, proceed with RCD biologist approval.**
- Site 131: Existing 12" x 30' long concrete culvert.**
1. Excavate the crossing from TOP to BOT for 55' and install a 30" x 50' long CMP at the base of fill.
 2. Rebuild IBF at 38 degrees and armor the lower 3/4 with 2 yd³ of 1'-2' riprap.
 3. Rebuild OBF at 38 degrees and armor the lower 3/4 with 8 yd³ of 1'-2' riprap.
 4. Construct a critical dip on the left hingeline to eliminate diversion potential.
 5. Install a T-post trash rack above the new inlet and centered to reduce plug potential.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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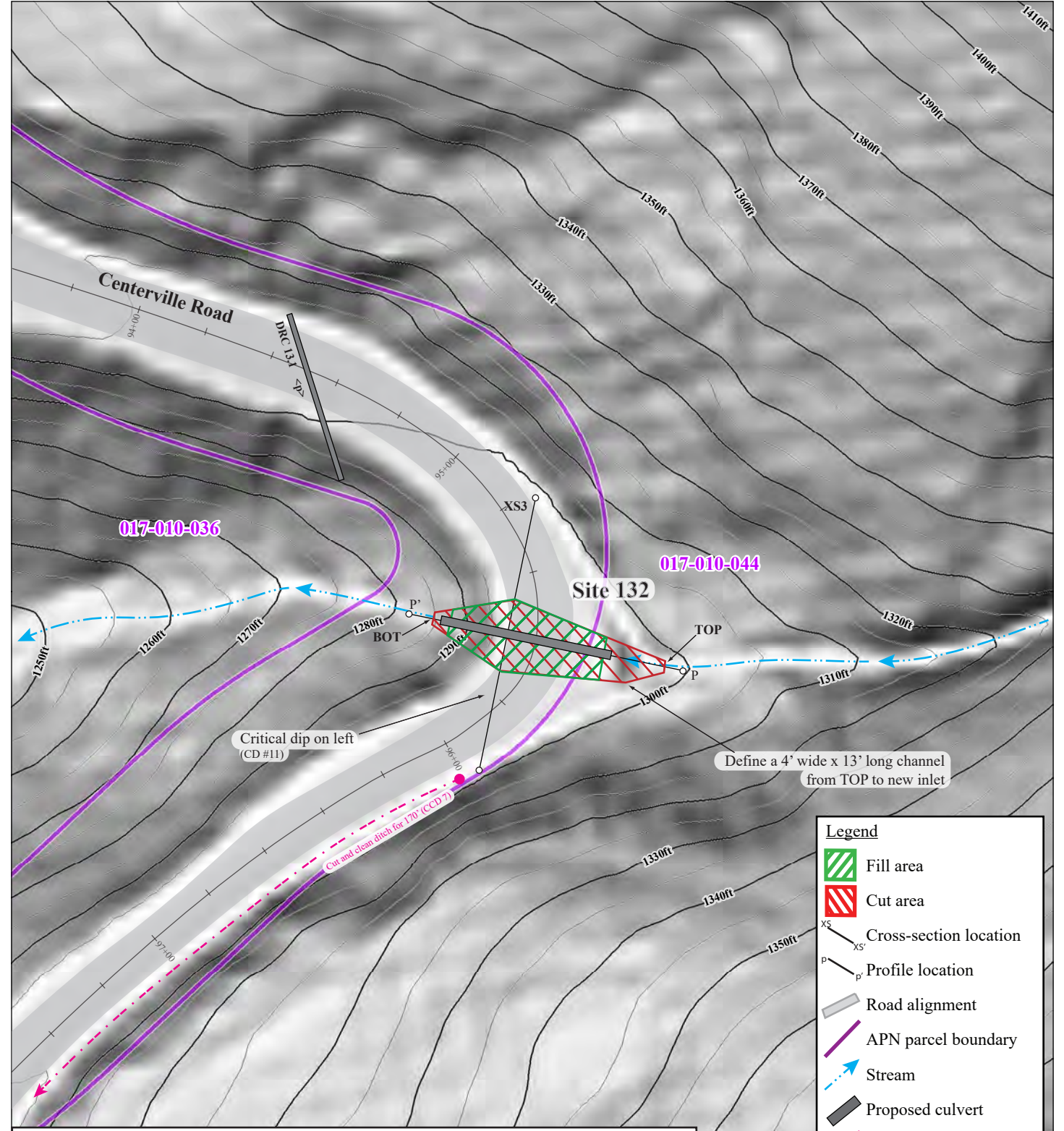
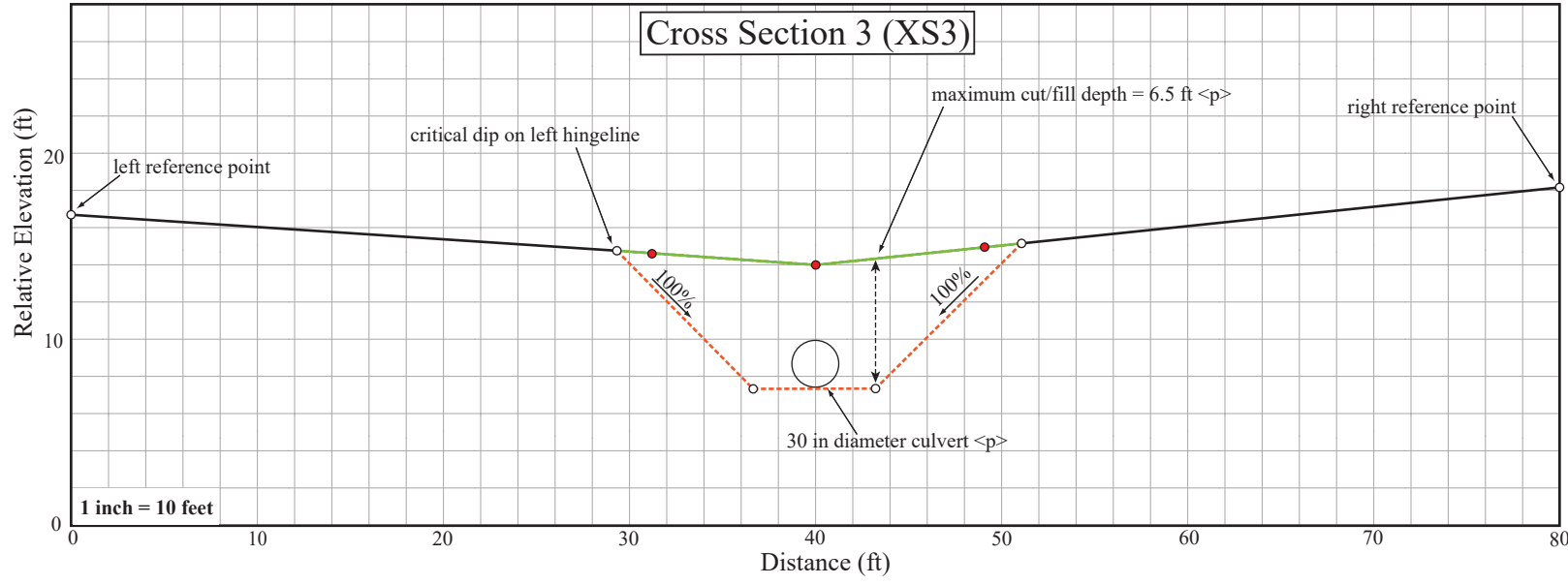
Site 132 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- - - Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 1,000 sq ft
 Excavation/cut volume = 110 cu yd
 Proposed backfill volume = 100 cu yd
 Proposed re-build TOP to BOT length = 65 ft
 Proposed culvert size = 30 in x 50 ft
 Proposed culvert grade = 6%



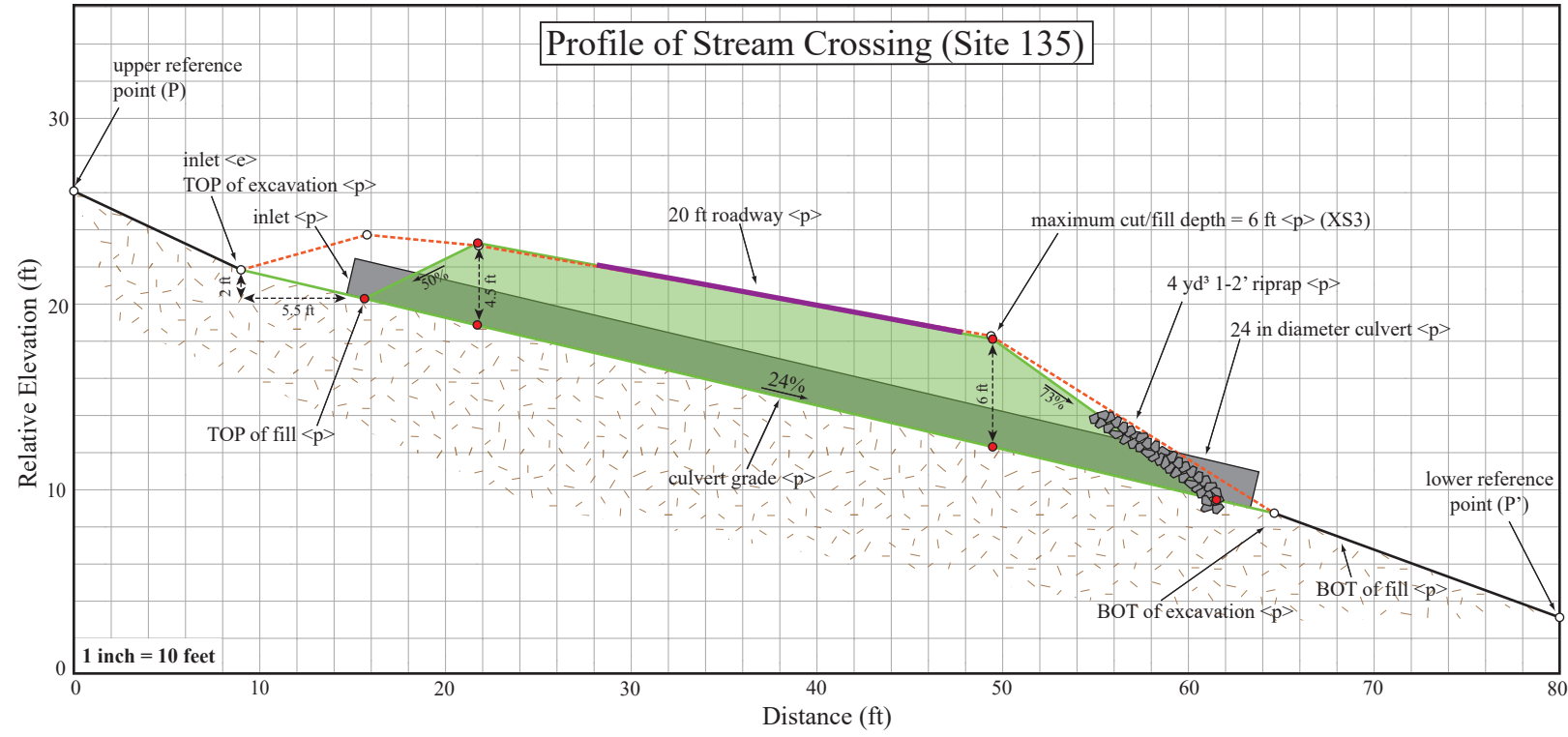
- Site 132: Stream crossing with existing 18" x 45' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 65' and install a 30" x 50' long CMP at the base of fill.
 2. Retain oak trees on left and right hillslopes near new outlet.
 3. Define a 4' wide x 13' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 4. Rebuild IBF at 38 degrees and armor the lower 3/4 with 3 yd³ of 1'-2' riprap.
 5. Rebuild OBF at 38 degrees and armor the lower 3/4 with 8 yd³ of 1'-2' riprap.
 6. Construct a critical dip on the left hingeline to eliminate diversion potential.
 7. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.

- Legend**
- Fill area
 - Cut area
 - Cross-section location
 - Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert
 - Cut and clean ditch

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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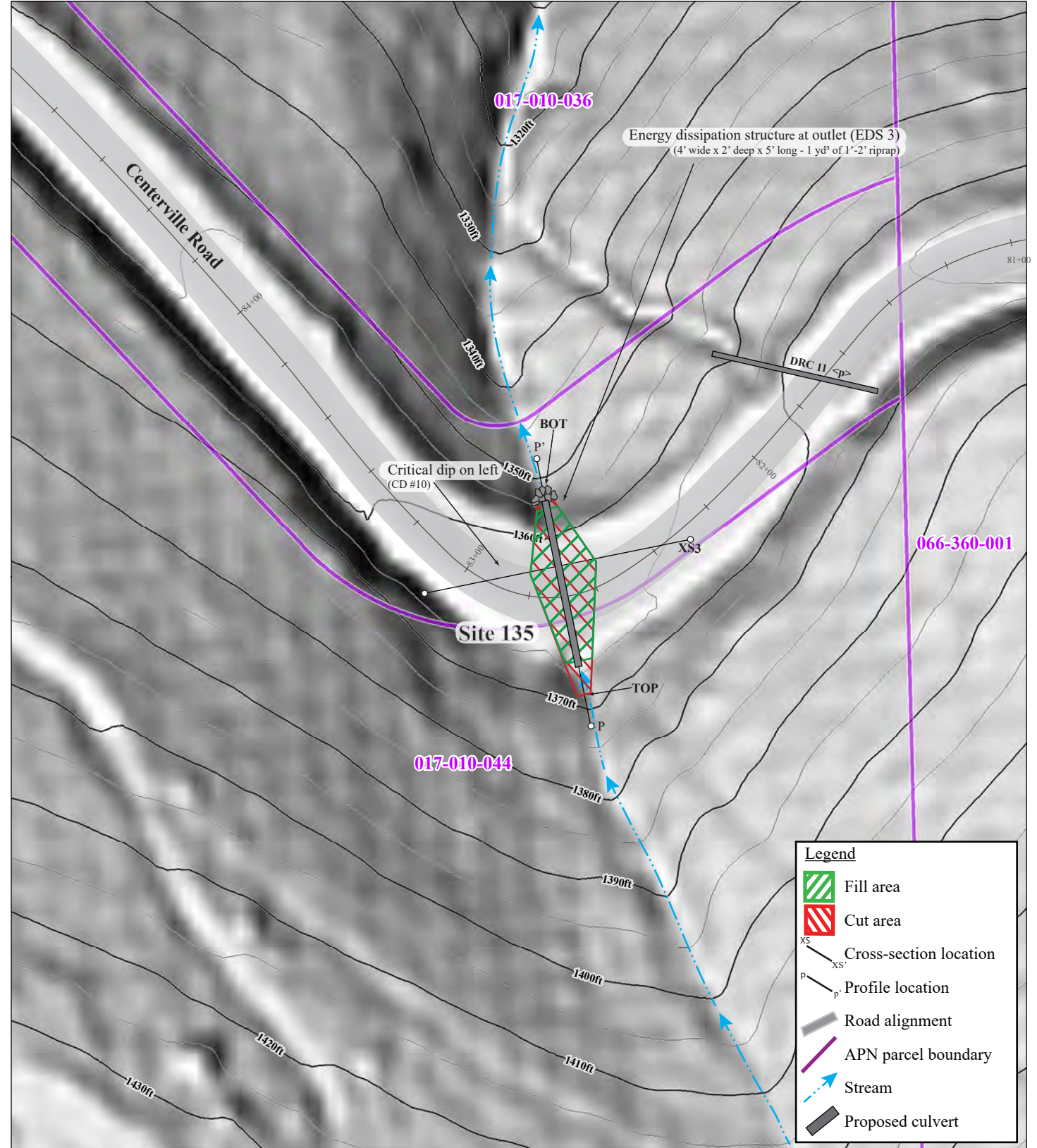
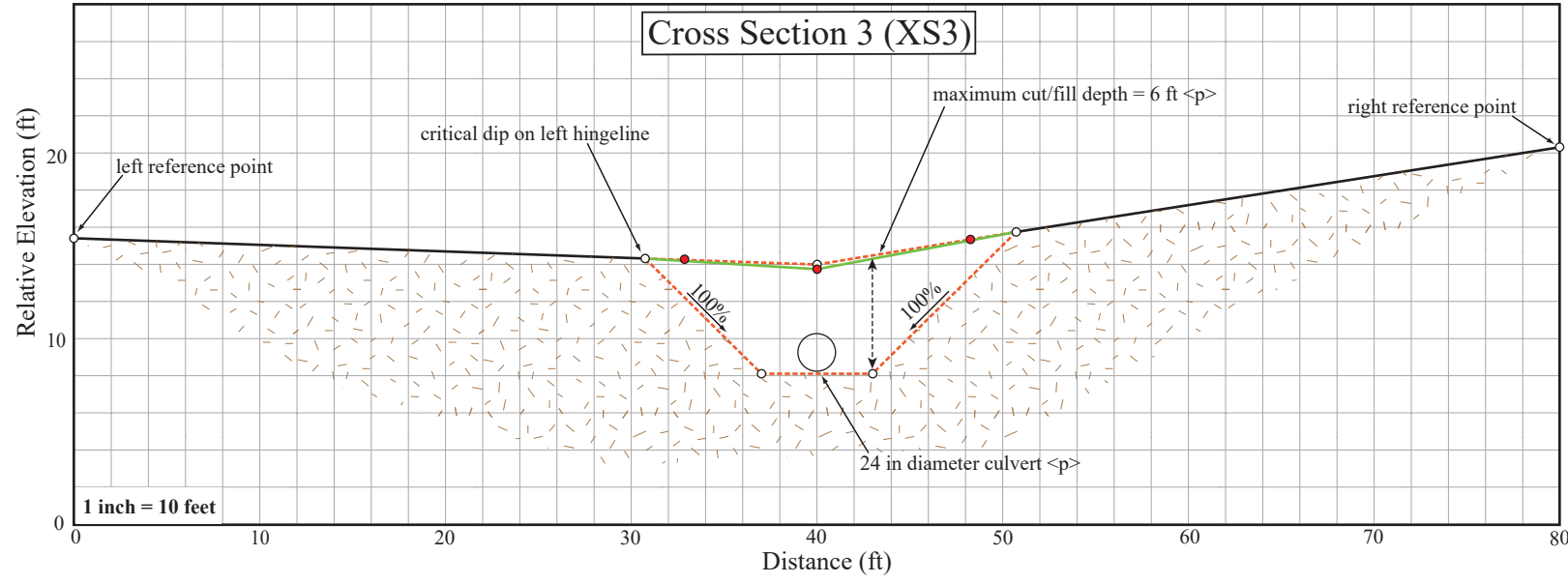
Site 135 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- - - Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip; EDS = energy dissipation structure;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 780 sq ft
 Excavation/cut volume = 90 cu yd
 Proposed backfill volume = 80 cu yd
 Proposed re-build TOP to BOT length = 60 ft
 Proposed culvert size = 24 in x 50 ft
 Proposed culvert grade = 24%



- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert

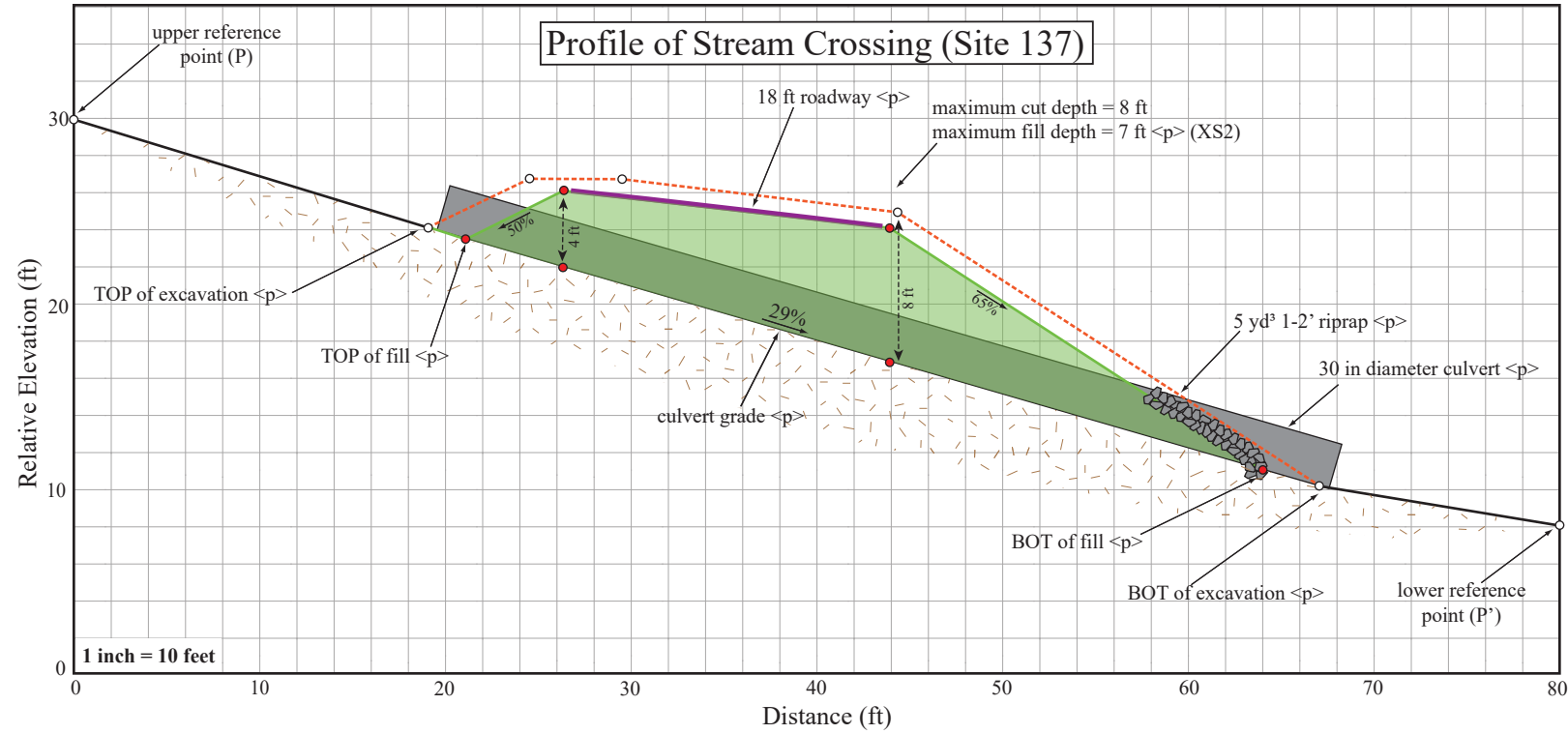
- Site 135: Existing 18" x 40' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 60' and install a 24" x 50' long CMP at the base of fill.
 2. Rebuild IBF at 2:1 slope.
 3. Rebuild OBF at 36 degrees and armor the lower 1/2 with 4 yd³ of 1'-2' riprap.
 4. Connect existing right ditch to new inlet.
 5. Construct a critical dip on the left hingeline to eliminate diversion potential.
 6. Install a T-post trash rack above the new inlet and centered to reduce plug potential.

0 40 80 Feet

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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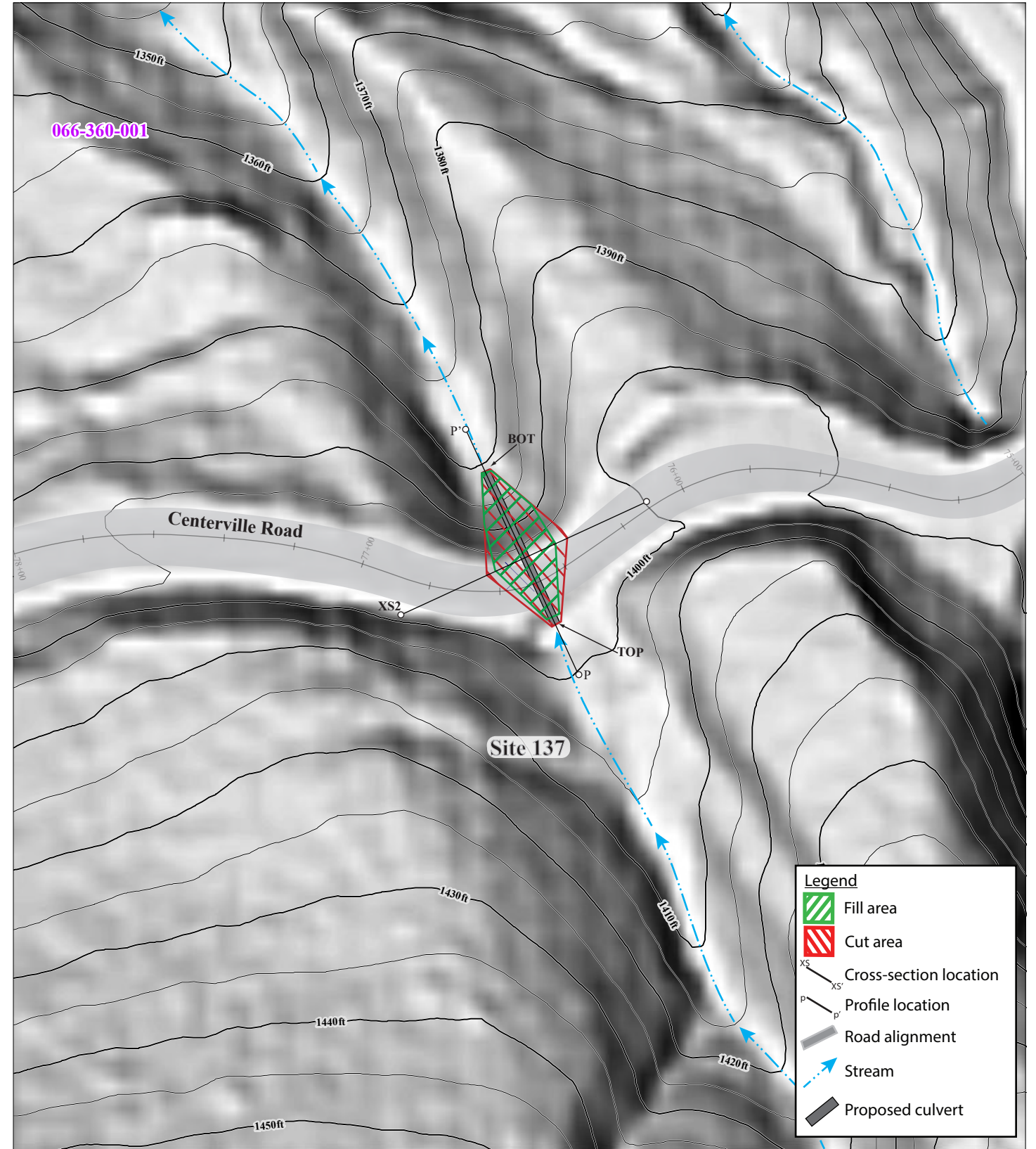
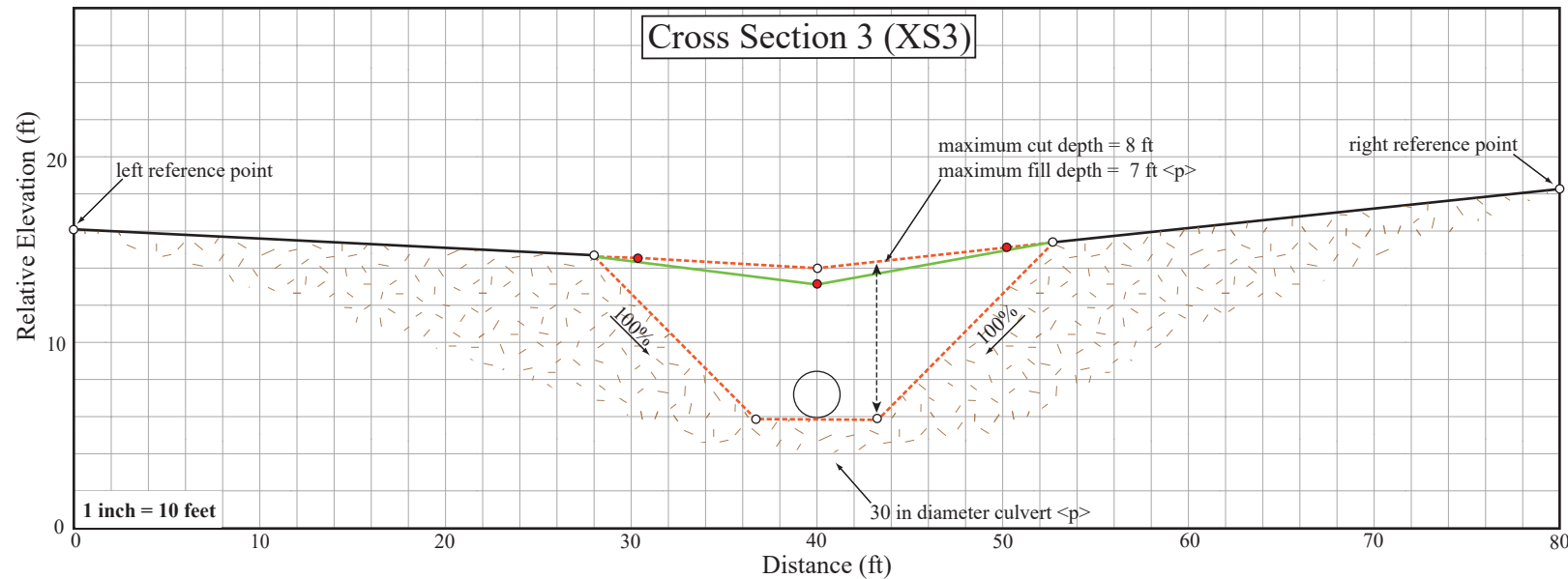
Site 137 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- - - Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

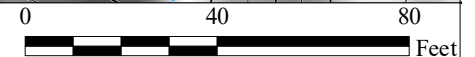
Excavation disturbance area = 1,000 sq ft
 Excavation/cut volume = 140 cu yd
 Proposed backfill volume = 100 cu yd
 Proposed re-build TOP to BOT length = 50ft
 Proposed culvert size = 30 in x 50 ft
 Proposed culvert grade = 29%



- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - Stream
 - Proposed culvert

Site 137: Stream crossing with an existing 12" x 25' long metal culvert.

1. Excavate the crossing from TOP to BOT for 50' and install a 30" x 50' long CMP at the base of fill.
2. Rebuild IBF at 2:1 slope.
3. Rebuild OBF at 33 degrees and armor the lower 1/4 with 5 yd³ of 1'-2' riprap. Lower the road 1.5' upon rebuild. Offhaul excess material as necessary.
4. Install a T-post trash rack above the new inlet and centered to reduce plug potential.



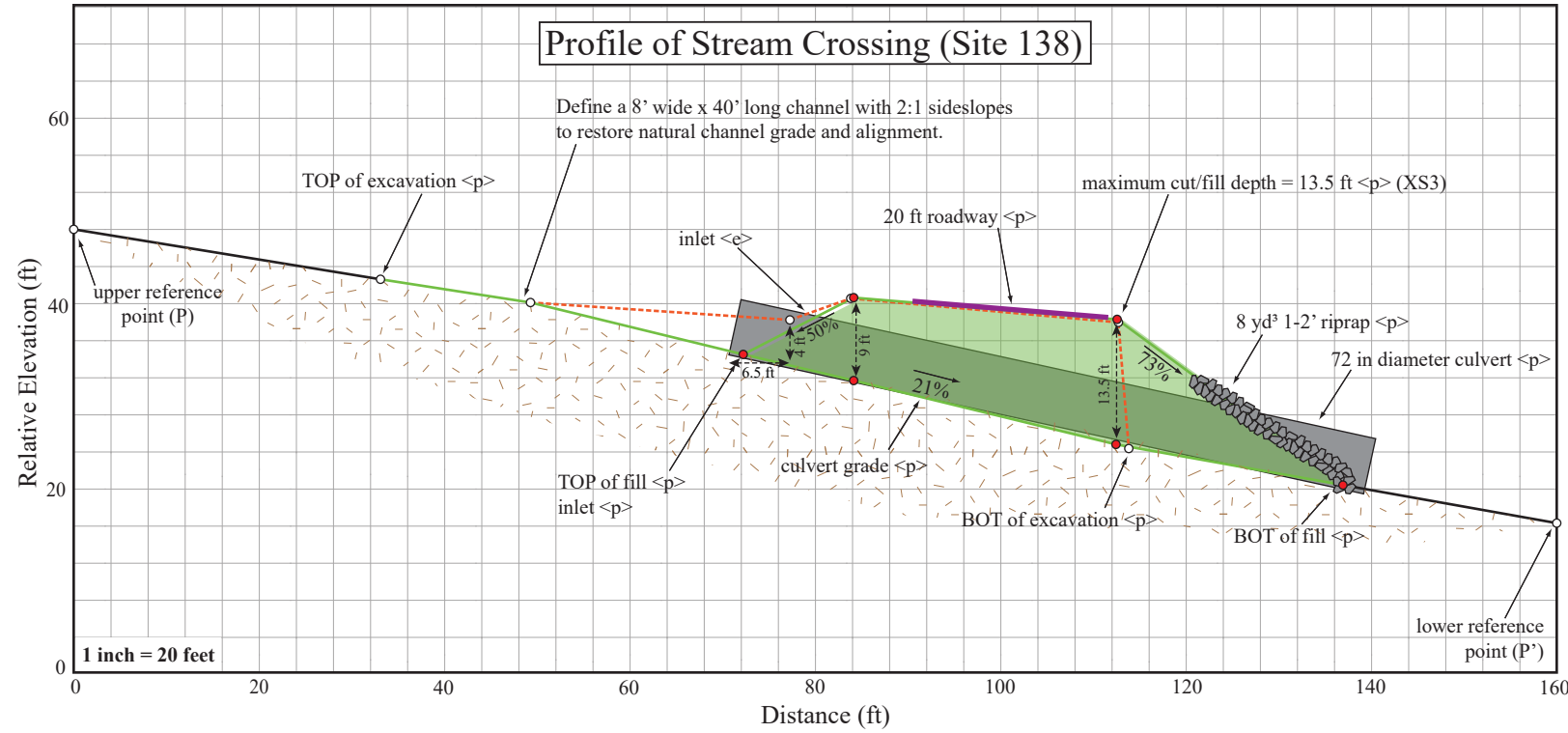
Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval

Imagery: Hillshade derived from
 USGS 1-m DEM

Prepared June 2024 by:
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Site 138 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



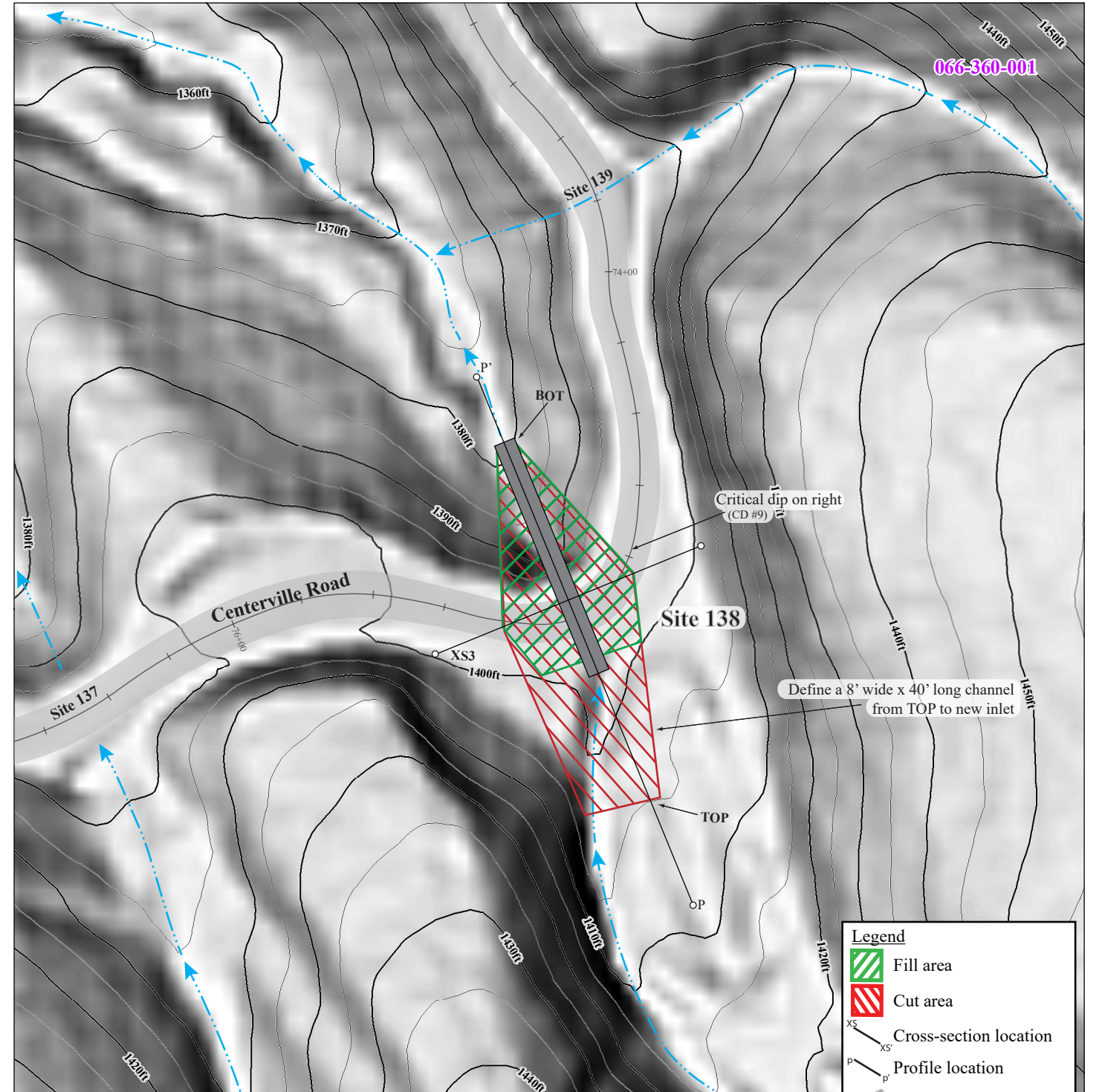
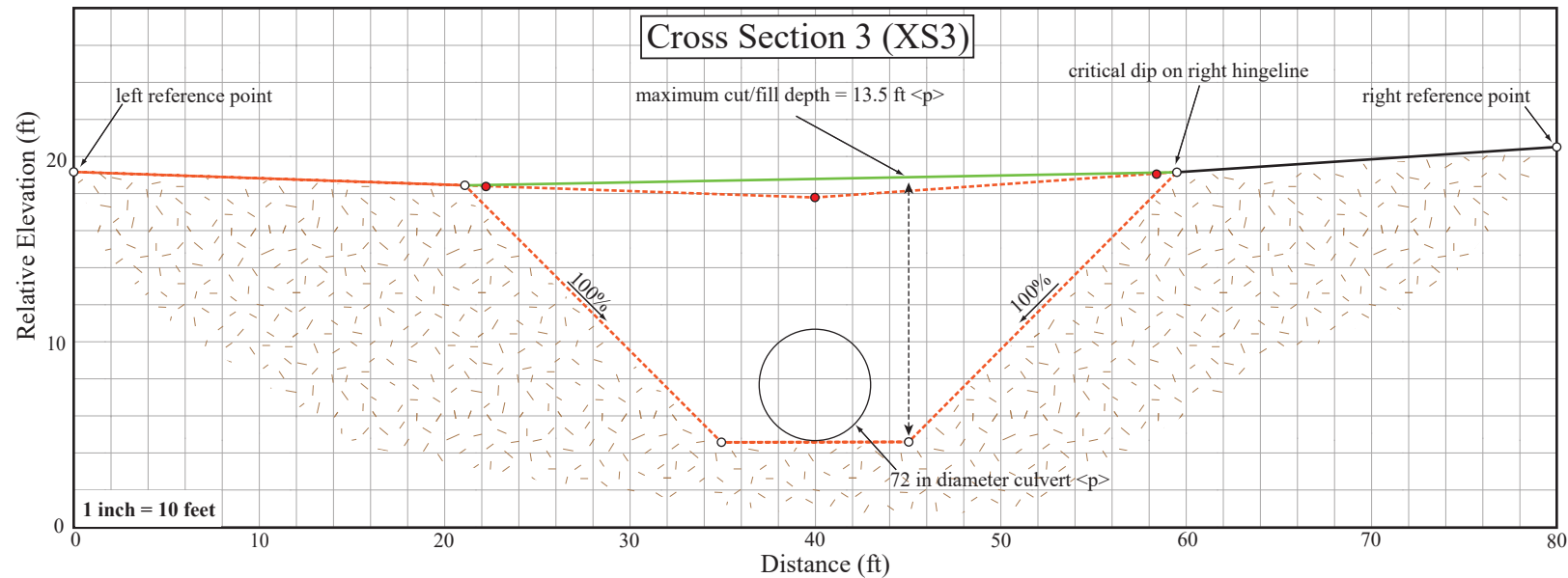
Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:

- TOP = top of excavation/fill; BOT = bottom of excavation/fill;
- IBF = inboard fillslope; OBF = outboard fillslope;
- CMP = corrugated metal pipe; CD = critical dip;
- <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

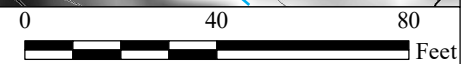
- Excavation disturbance area = 2,450 sq ft
- Excavation/cut volume = 314 cu yd
- Proposed backfill volume = 413 cu yd
- Proposed re-build TOP to BOT length = 110 ft
- Proposed culvert size = 72 in x 70 ft
- Proposed culvert grade = 21%



- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - Stream
 - Proposed culvert

Site 138: Stream crossing with an existing 30" x 30' long steel culvert and steel plate on road surface.

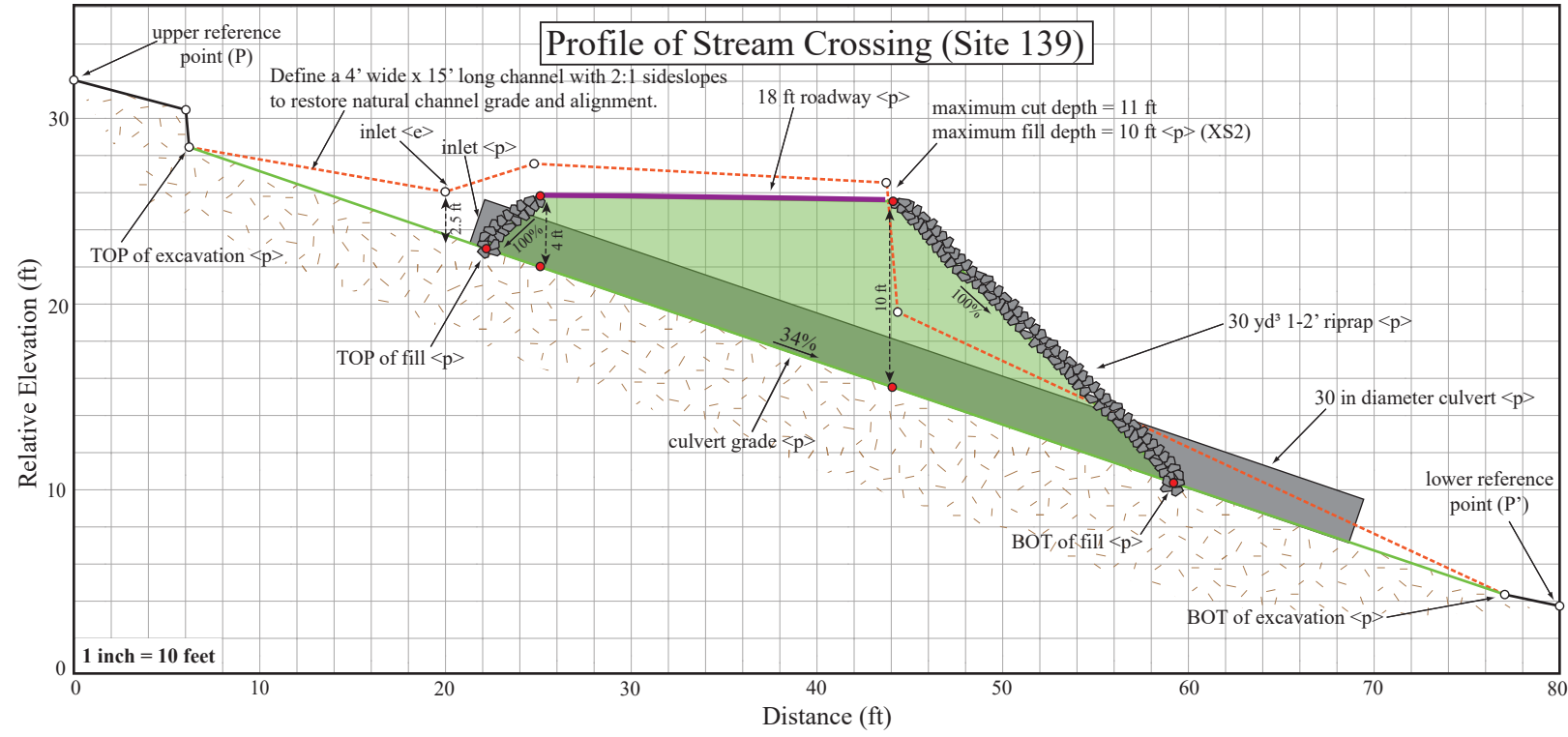
1. Remove 8" maple tree near inlet.
2. Excavate the crossing from TOP to BOT for 110' and install a 72" x 70' long CMP at the base of fill.
3. Define an 8' wide x 40' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
4. Rebuild IBF at 2:1 slope.
5. Rebuild OBF at 36 degrees and armor the lower 1/2 with 8 yd³ of 1'-2' riprap. Import fill material as needed (~36 yd³) from other treatment sites to rebuild OBF.
6. Construct a critical dip on the right hingeline to eliminate diversion potential.
7. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
8. Maintain/rebuild access road and single car turnout left of inlet.



Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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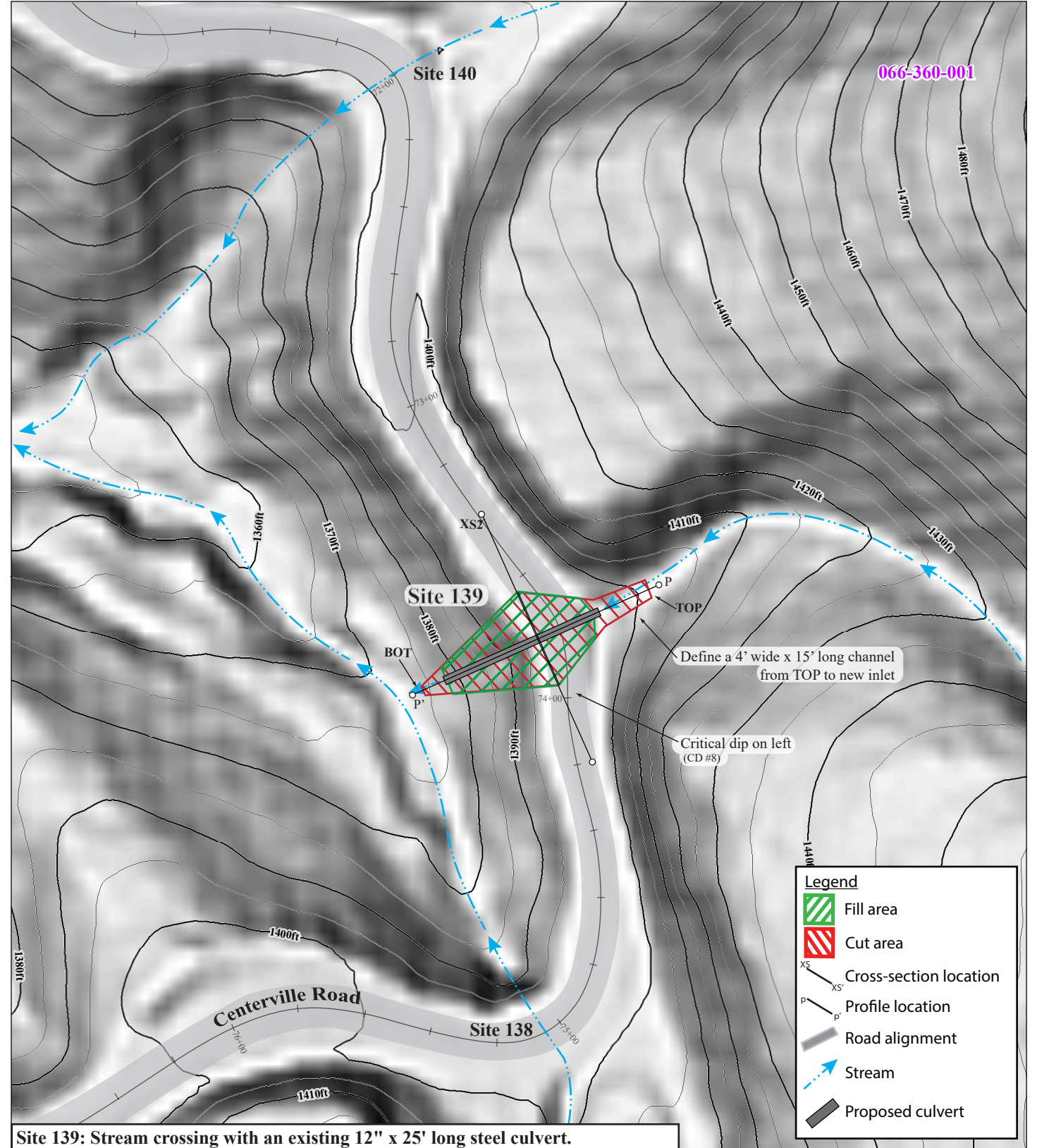
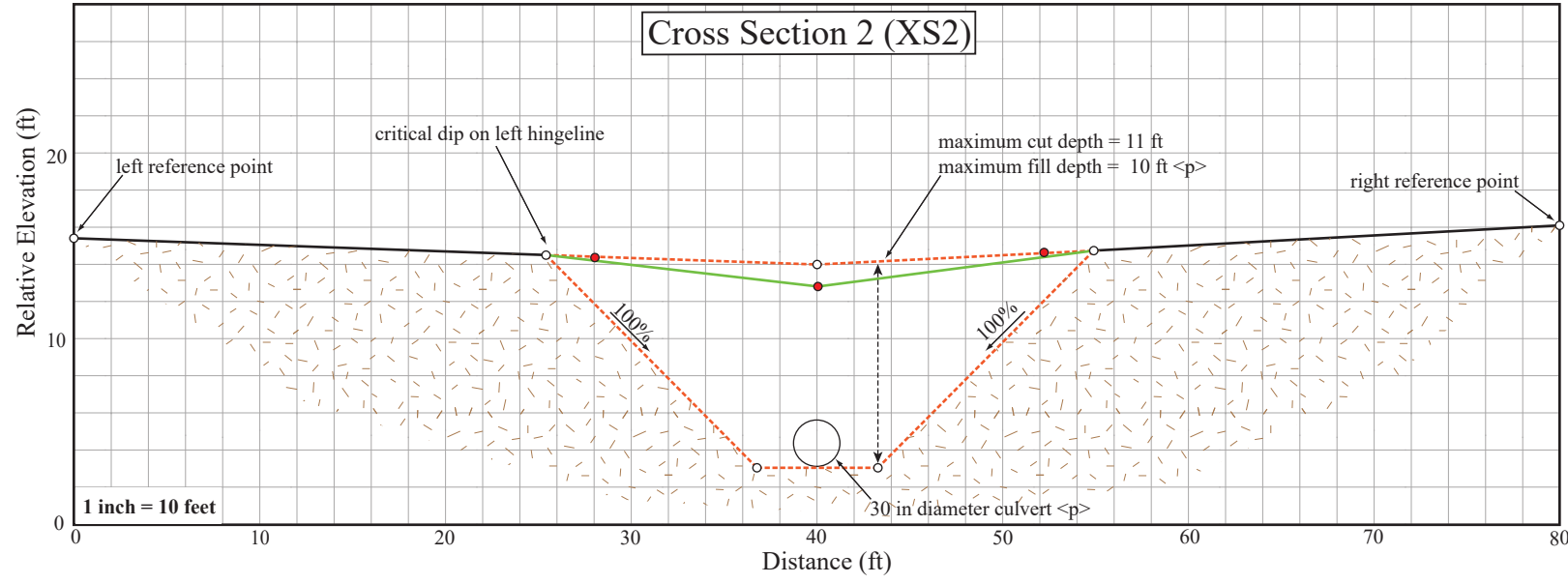
Site 139 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 1,190 sq ft
 Excavation/cut volume = 200 cu yd
 Proposed backfill volume = 130 cu yd
 Proposed re-build TOP to BOT length = 65 ft
 Proposed culvert size = 30 in x 50 ft
 Proposed culvert grade = 34%

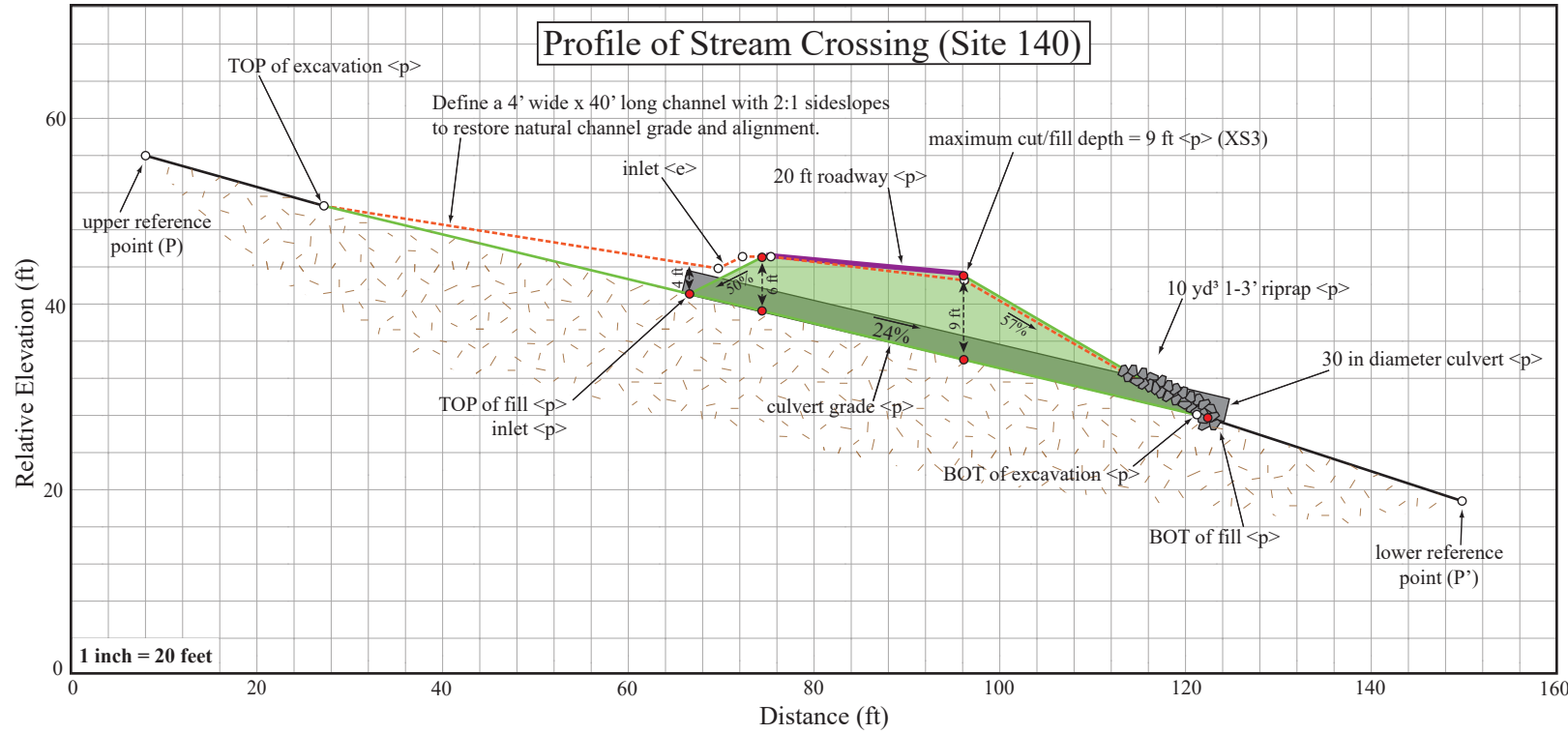


- Site 139: Stream crossing with an existing 12" x 25' long steel culvert.**
1. Excavate the crossing from TOP to BOT for 75' and install a 30" x 50' long CMP at the base of fill.
 2. Define a 4' wide x 15' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 3. Rebuild IBF at 45 degrees and armor the full slope with 4 yd³ of 1'-2' riprap.
 4. Rebuild OBF at 45 degrees and armor the full slope with 30 yd³ of 1'-2' riprap.
 5. Construct a critical dip on the left hingeline to eliminate diversion potential.
 6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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Site 140 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



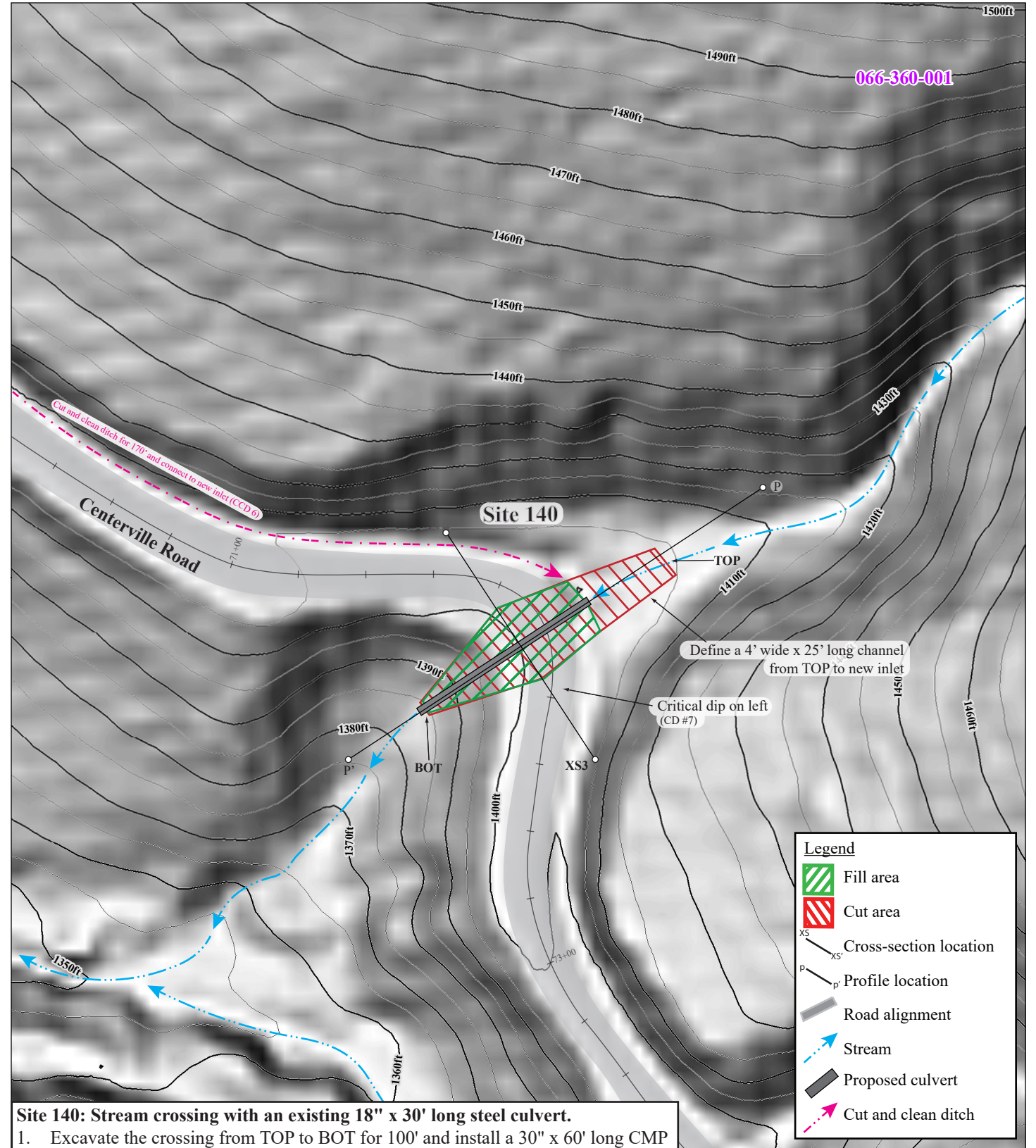
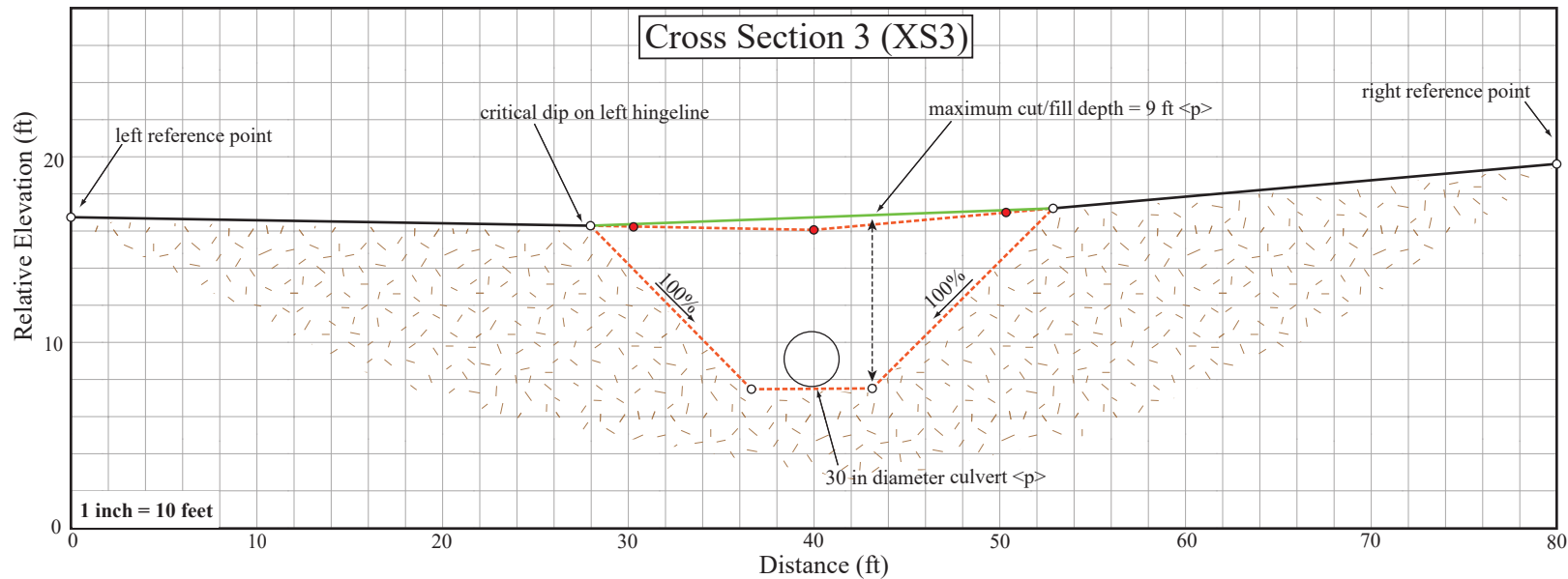
Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:

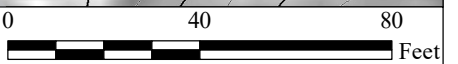
- TOP = top of excavation/fill; BOT = bottom of excavation/fill;
- IBF = inboard fillslope; OBF = outboard fillslope;
- CMP = corrugated metal pipe; CD = critical dip; CCD = cut and clean ditch;
- <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

- Excavation disturbance area = 1,575 sq ft
- Excavation/cut volume = 185 cu yd
- Proposed backfill volume = 150 cu yd
- Proposed re-build TOP to BOT length = 100 ft
- Proposed culvert size = 30 in x 60 ft
- Proposed culvert grade = 24%



Site 140: Stream crossing with an existing 18" x 30' long steel culvert.

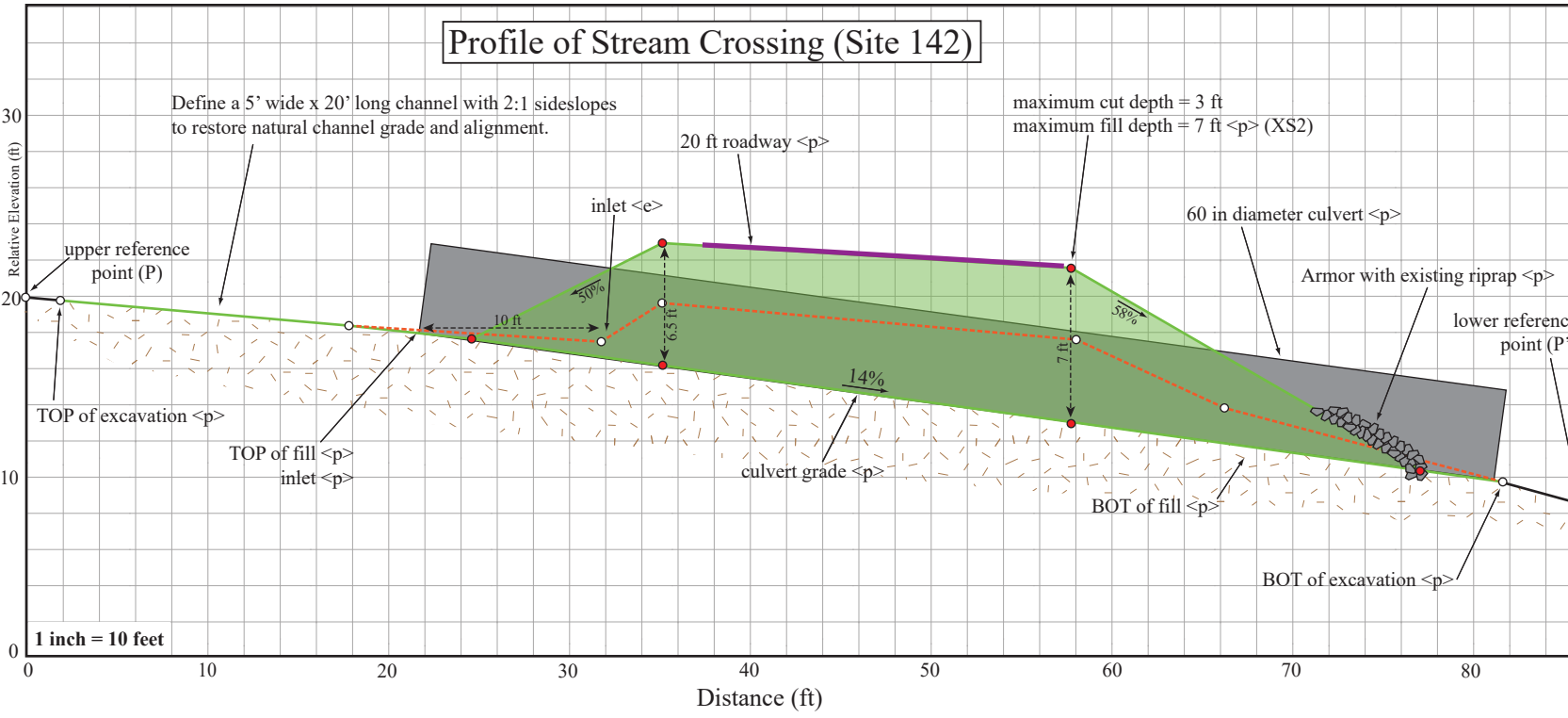
1. Excavate the crossing from TOP to BOT for 100' and install a 30" x 60' long CMP at the base of fill.
2. Define a 4' wide x 40' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
3. Rebuild IBF at 2:1 slope.
4. Rebuild OBF at 30 degrees and armor the lower 1/4 with 10 yd³ of 1'-3' riprap.
5. Construct a critical dip on the left hingeline to eliminate diversion potential.
6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
7. End cut/clean ditch (CCD 6) and connect to new inlet.



Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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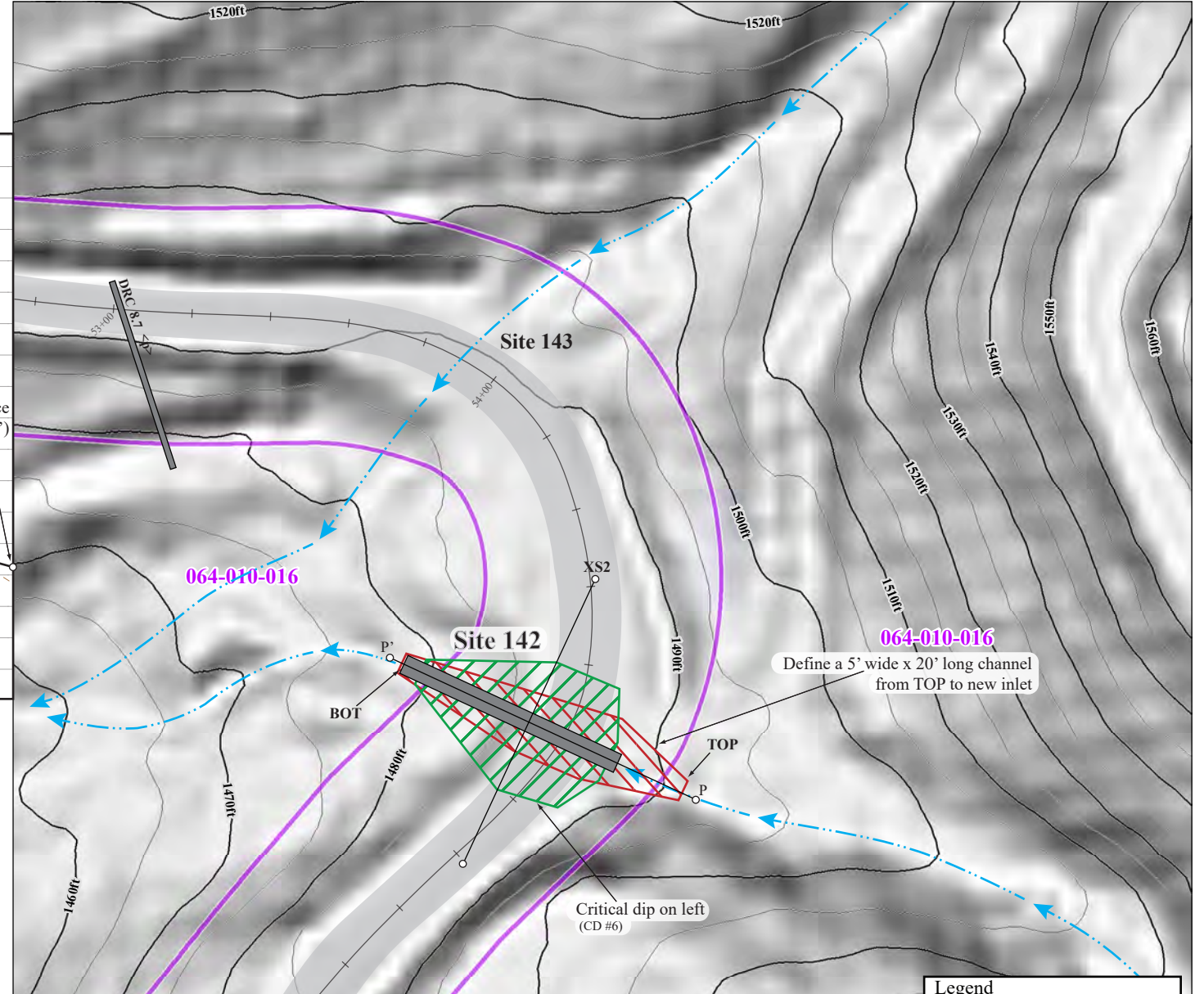
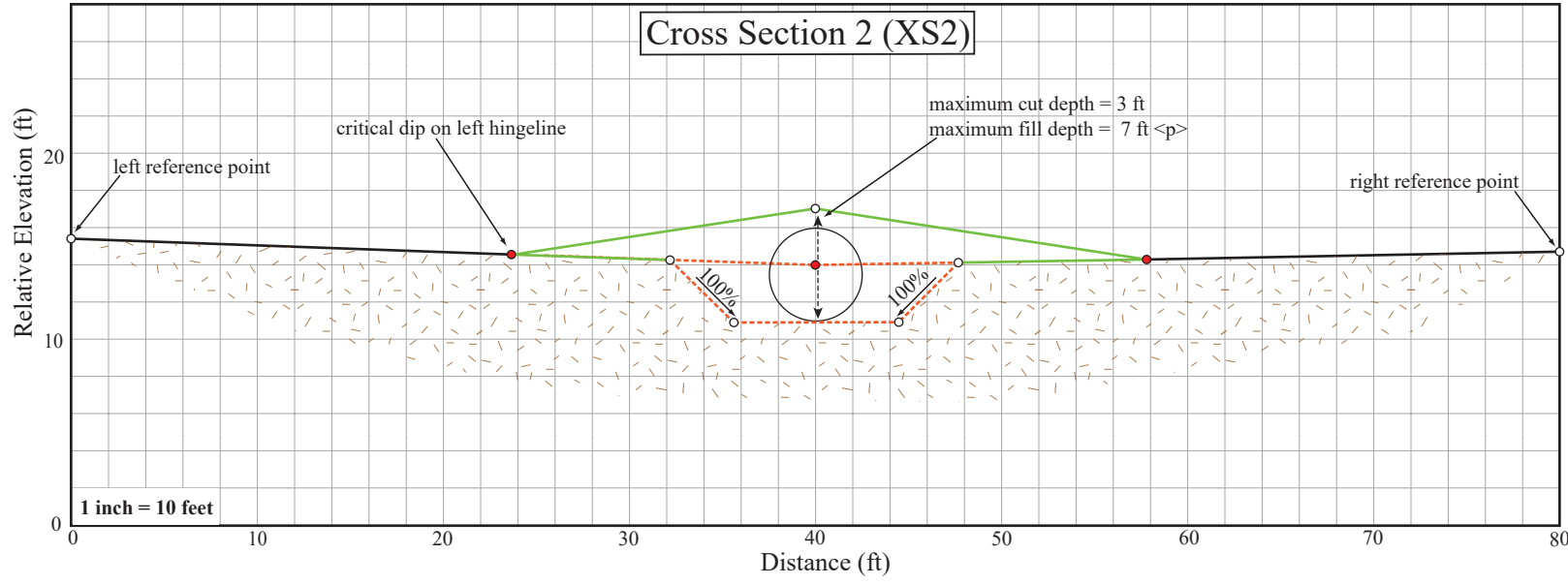
Site 142 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 1,720 sq ft
 Excavation/cut volume = 45 cu yd
 Proposed backfill volume = 75 cu yd
 Proposed re-build TOP to BOT length = 80 ft
 Proposed culvert size = 60 in x 60 ft
 Proposed culvert grade = 14%



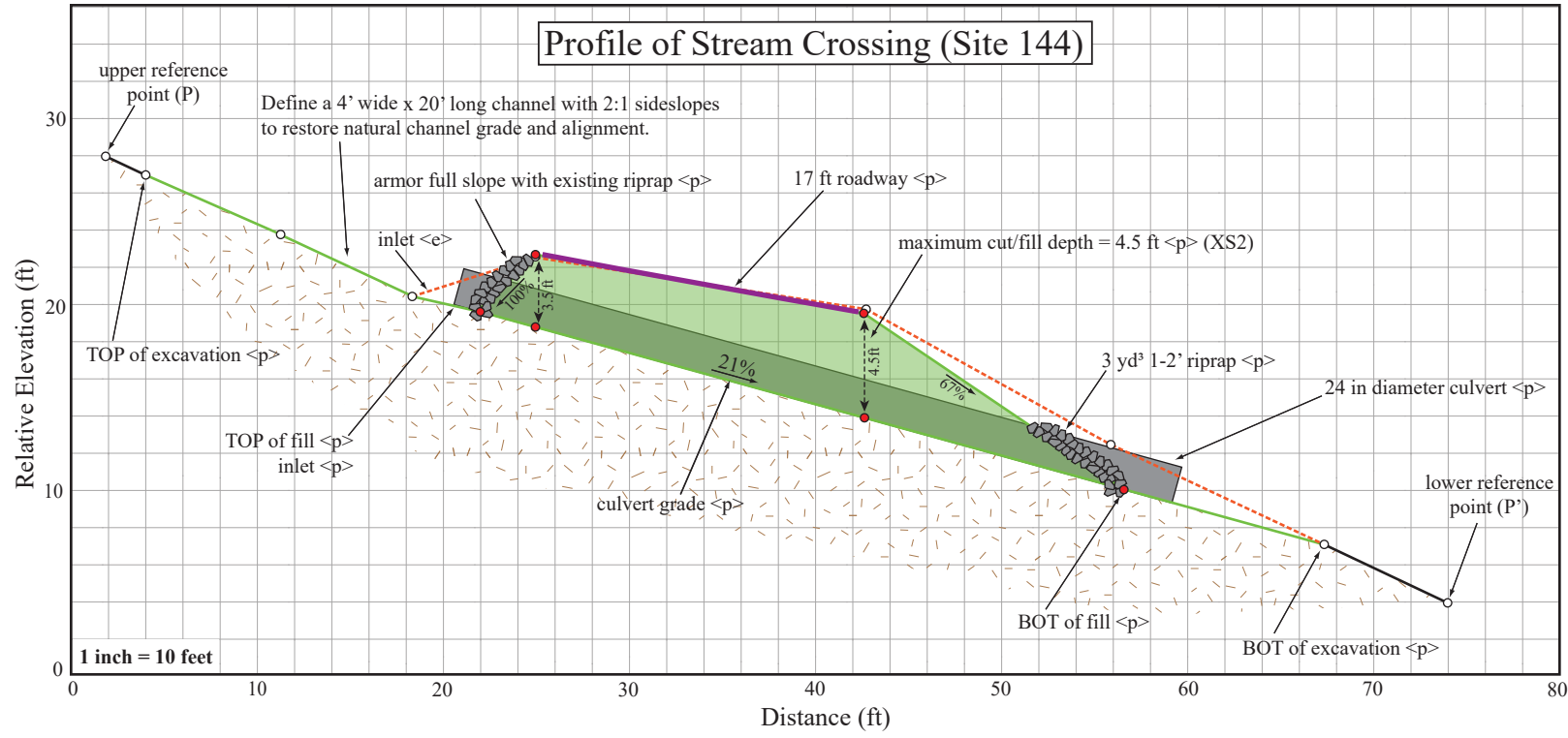
- *Dewatering procedure may be required if stream is live***
- Site 142: Stream crossing with existing 18" x 30' long culvert with a concrete inlet and steel outlet. (Class II stream).**
1. If water is present in work area, the Qualified Biologist shall be notified and the approved dewatering procedure must be followed.
 2. Excavate the crossing from TOP to BOT for 70' and install a 60" x 60' long CMP at the base of fill.
 3. Define a 5' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 4. Raise road as necessary (about 3 feet) to provide adequate coverage of new 60" CMP. Import fill material (~21 yd³) from other treatment sites where there is excess.
 5. Rebuild IBF at 2:1 slope.
 6. Rebuild OBF at 30 degrees and armor the lower 1/4 with existing riprap.
 7. Construct/enhance the critical dip on the left hingeline to eliminate diversion potential.
 8. Remove steel pipe under decommissioned road on right and maintain ditch to Site 143 new inlet. Maintain road outslope and remove any existing berm between Site 142 and 143.
 9. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
 10. End OSR-KD 2 at Site 142.

- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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Site 144 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California

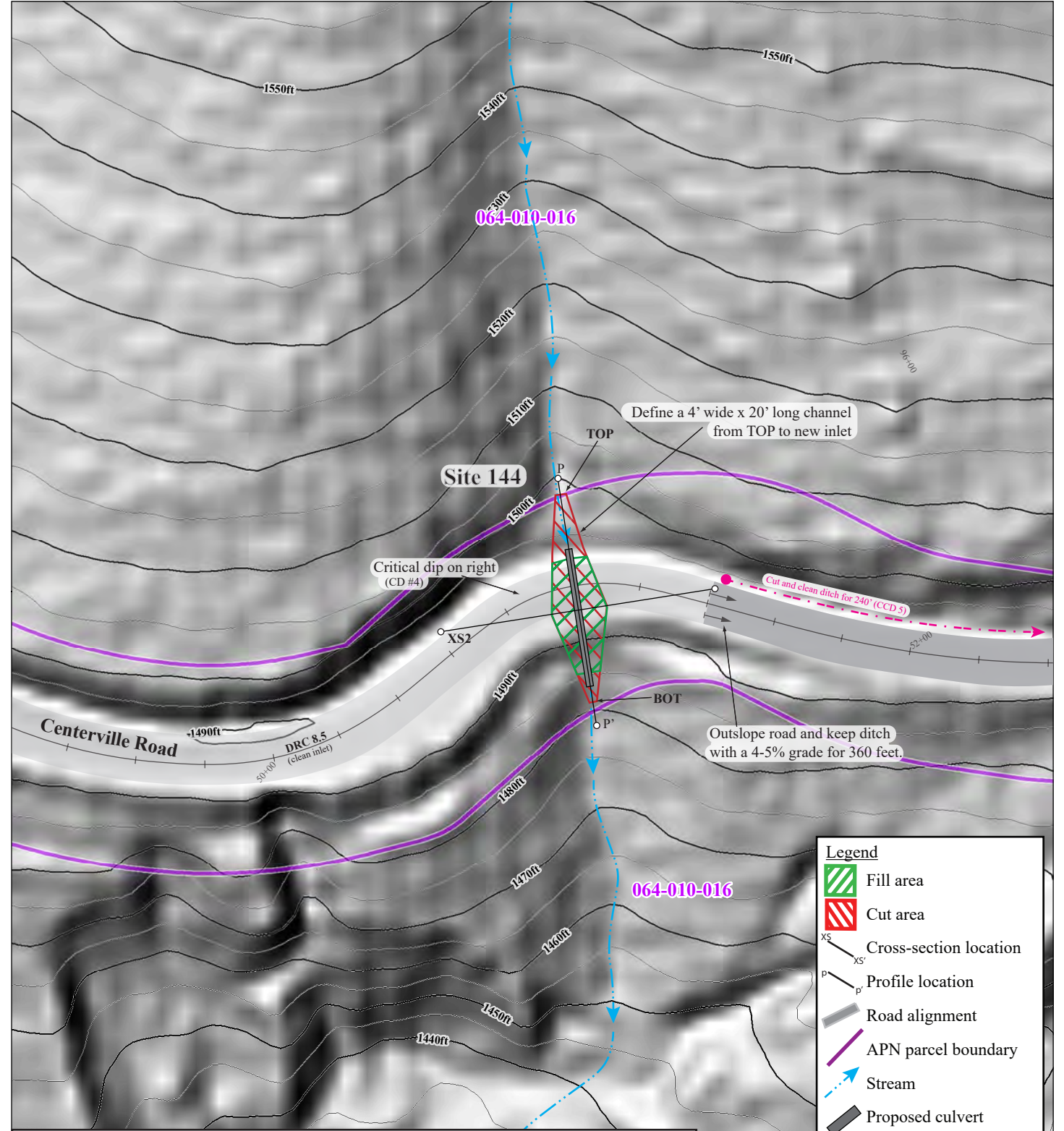
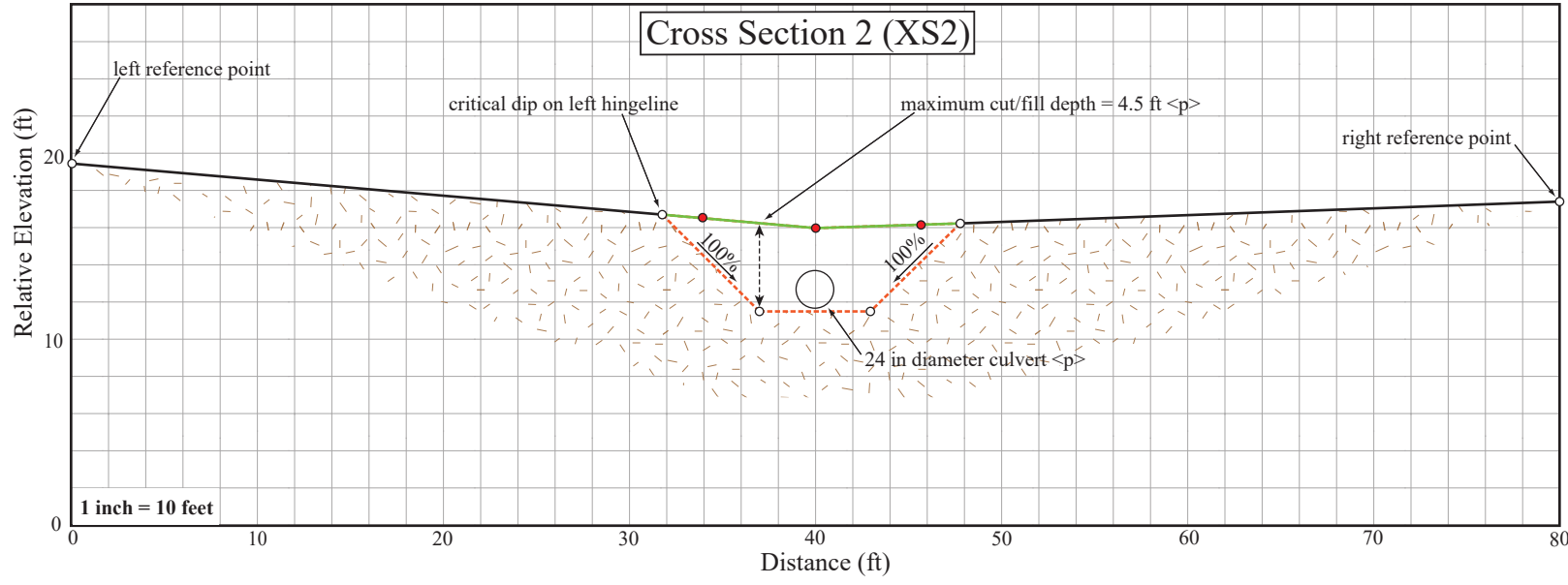


Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 660 sq ft
 Excavation/cut volume = 40 cu yd
 Proposed backfill volume = 40 cu yd
 Proposed re-build TOP to BOT length = 60 ft
 Proposed culvert size = 24 in x 50 ft
 Proposed culvert grade = 21%



- Site 144: Diverted stream with no crossing structure. Stream currently diverts 100 feet down IBD to DRC 8.5.**
- Excavate the crossing from TOP to BOT for 50' and install a 24" x 40' long CMP at the base of fill.
 - Define a 4' wide x 20' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 - Rebuild IBF at 45 degrees and armor the full slope with existing riprap.
 - Rebuild OBF at 34 degrees and armor the lower 1/4 with 3 yd³ of 1'-2' riprap.
 - Plug ditch on right to eliminate diversion potential.
 - Construct a critical dip on the left hingeline to eliminate diversion potential.
 - Install a T-post trash rack above the new inlet and centered to reduce plug potential.

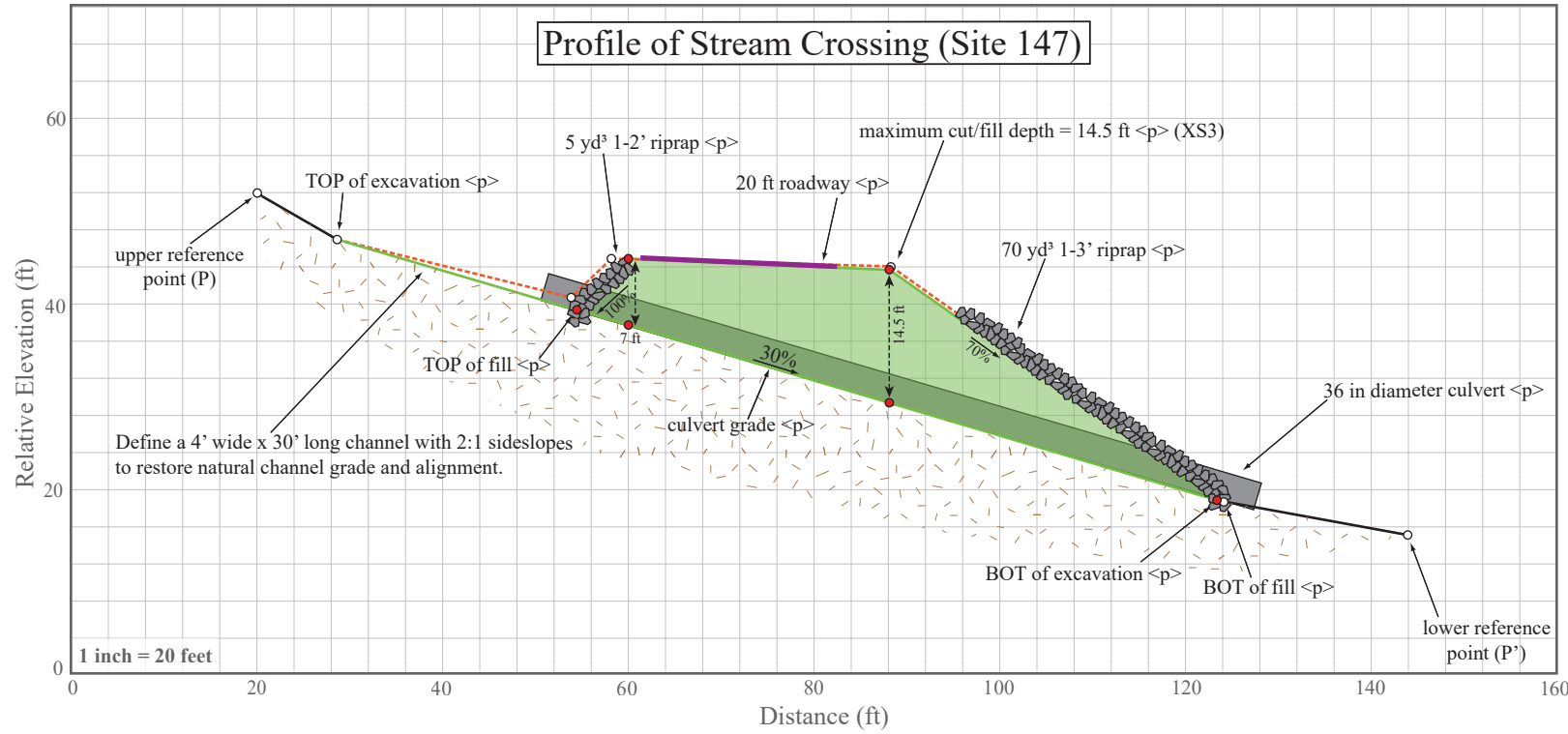
Legend

- Fill area
- Cut area
- Cross-section location
- Profile location
- Road alignment
- APN parcel boundary
- Stream
- Proposed culvert
- Cut and clean ditch

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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Site 147 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



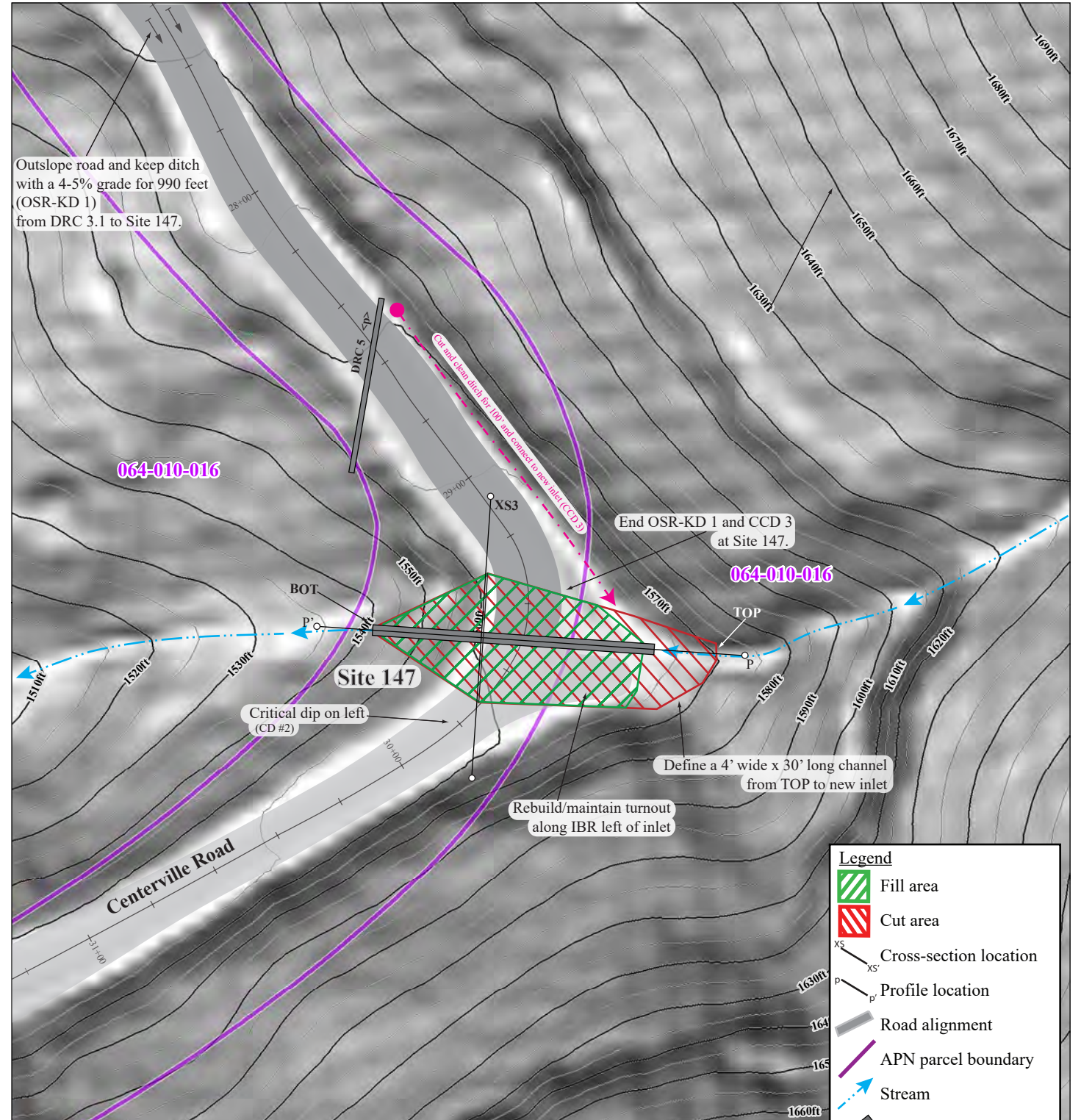
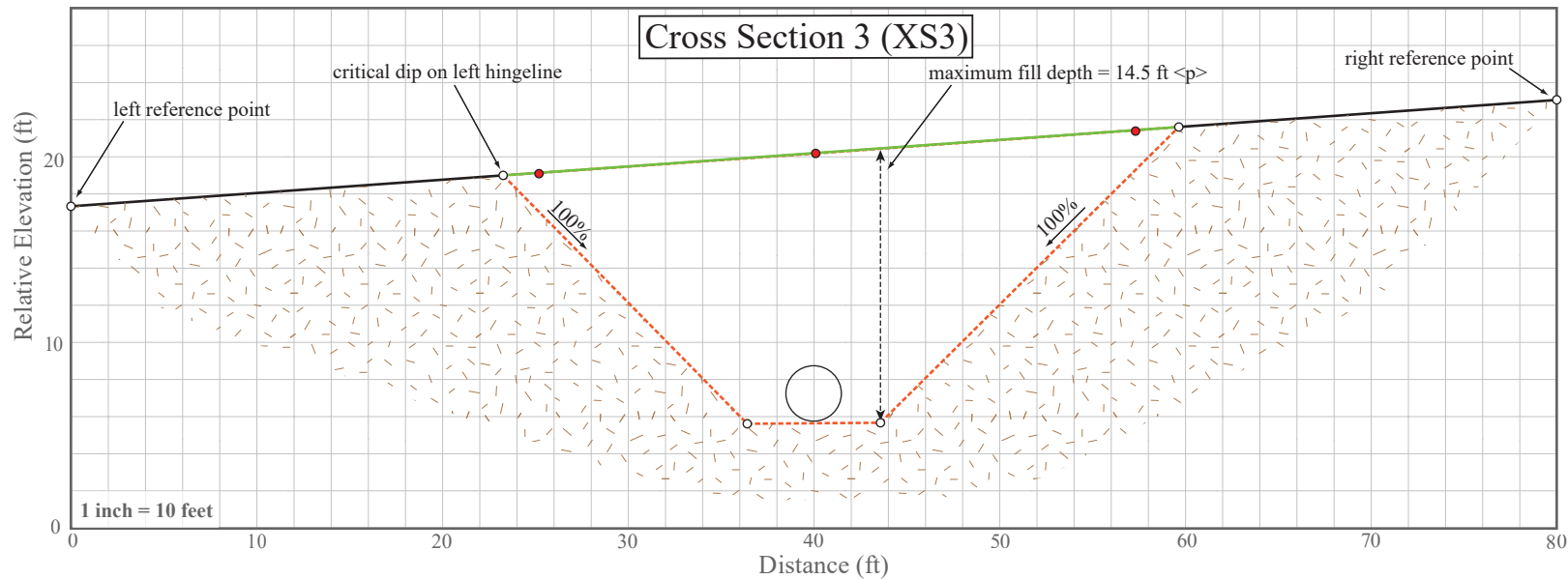
Legend

- Existing ground surface to be graded
- Existing ground surface
- Proposed ground surface
- Proposed roadway
- Proposed rock armor
- Proposed culvert
- Native ground

Abbreviations:

- TOP = top of excavation/fill; BOT = bottom of excavation/fill;
- IBF = inboard fillslope; OBF = outboard fillslope; IBR = inboard edge of road;
- CMP = corrugated metal pipe; CD = critical dip; CCD = cut and clean ditch;
- <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

- Excavation disturbance area = 2,260 sq ft
- Excavation/cut volume = 430 cu yd
- Proposed backfill volume = 390 cu yd
- Proposed re-build TOP to BOT length = 105 ft
- Proposed culvert size = 36 in x 80 ft
- Proposed culvert grade = 30%



- Site 147: Stream crossing with existing 24" x 50' long plastic culvert.**
1. Excavate the crossing from TOP to BOT for 105' and install a 36" x 80' long CMP at the base of fill.
 2. Define a 4' wide x 30' long channel with 2:1 sideslopes from TOP to new inlet to remove aggraded sediment and restore natural channel grade and alignment.
 3. Rebuild IBF at 45 degrees and armor the full slope with 5 yd³ of 1'-2' riprap.
 4. Rebuild OBF at 35 degrees and armor the lower 3/4 with 70 yd³ of 1'-3' riprap.
 5. Construct a critical dip on the left hingeline to eliminate diversion potential.
 6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
 7. Rebuild/maintain turnout along IBR left of inlet.
 8. End outslope road and keep ditch (OSR-KD 1) at Site 147.

Legend

- Fill area
- Cut area
- Cross-section location
- Profile location
- Road alignment
- APN parcel boundary
- Stream
- Proposed culvert
- Cut and clean ditch

0 40 80 Feet

Scale 1:480 1 in = 40 ft

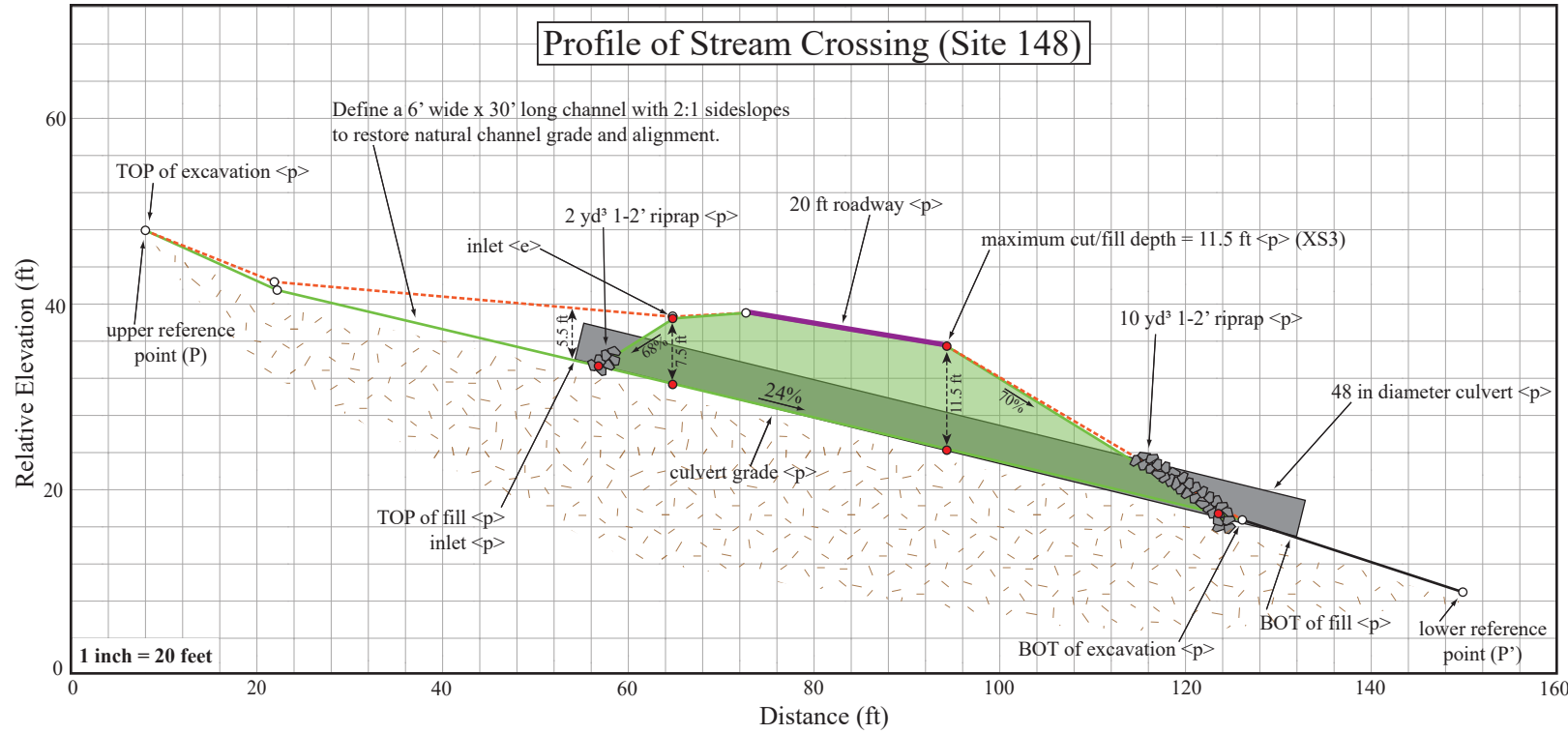
APN: Butte County GIS 2022

Contour: 5 ft interval

Imagery: Hillshade derived from USGS 1-m DEM

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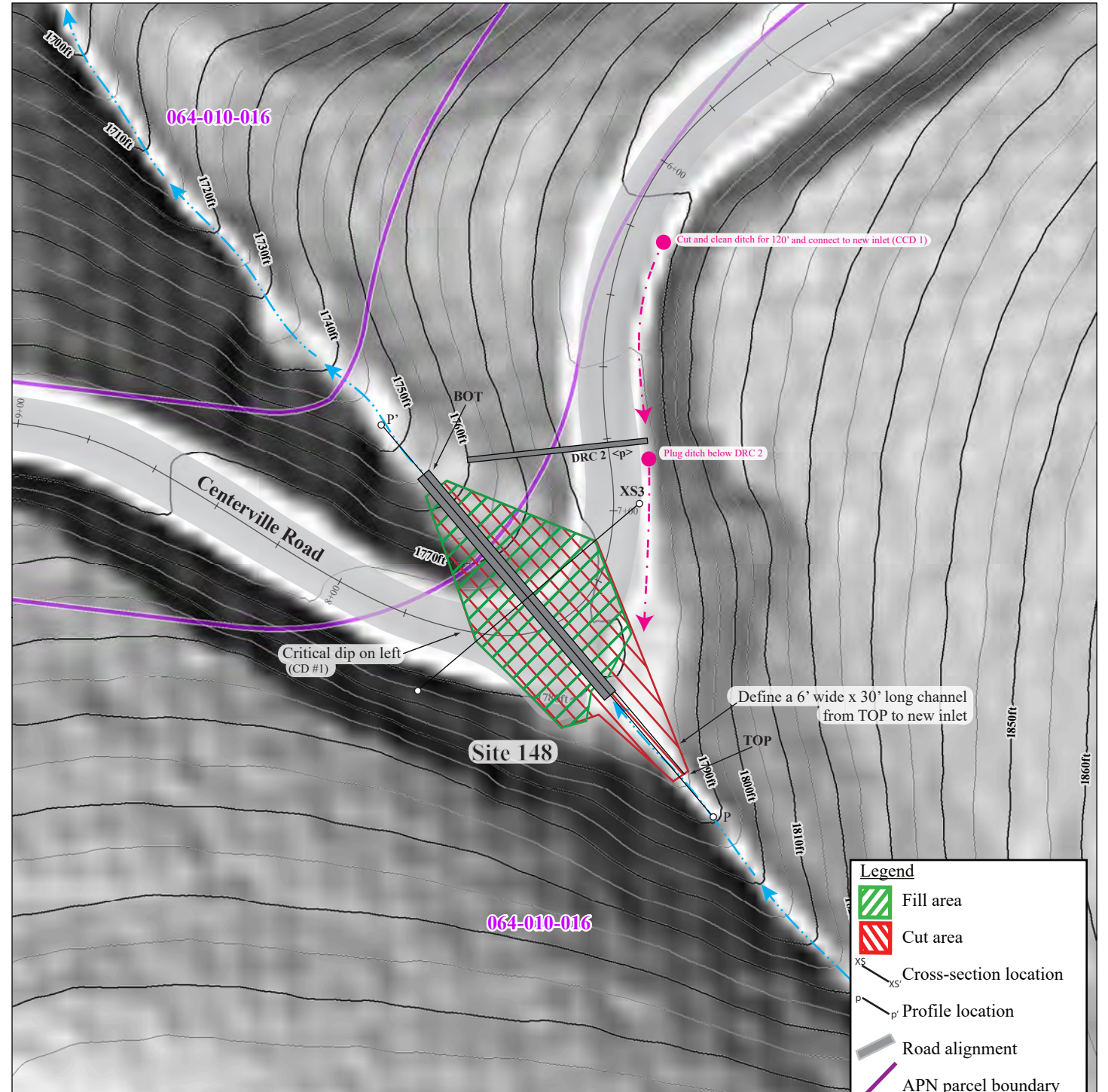
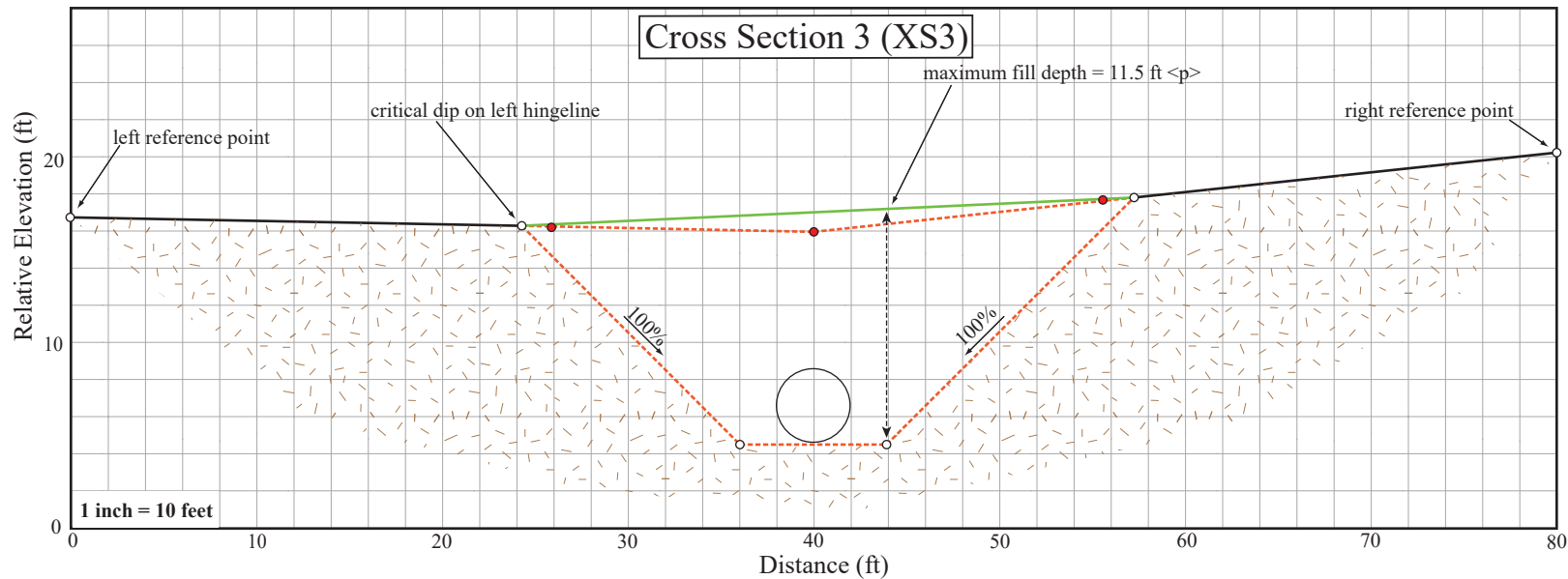
Site 148 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip; CCD = cut and clean ditch;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 2,730 sq ft
 Excavation/cut volume = 500 cu yd
 Proposed backfill volume = 360 cu yd
 Proposed re-build TOP to BOT length = 130 ft
 Proposed culvert size = 48 in x 80 ft
 Proposed culvert grade = 24%



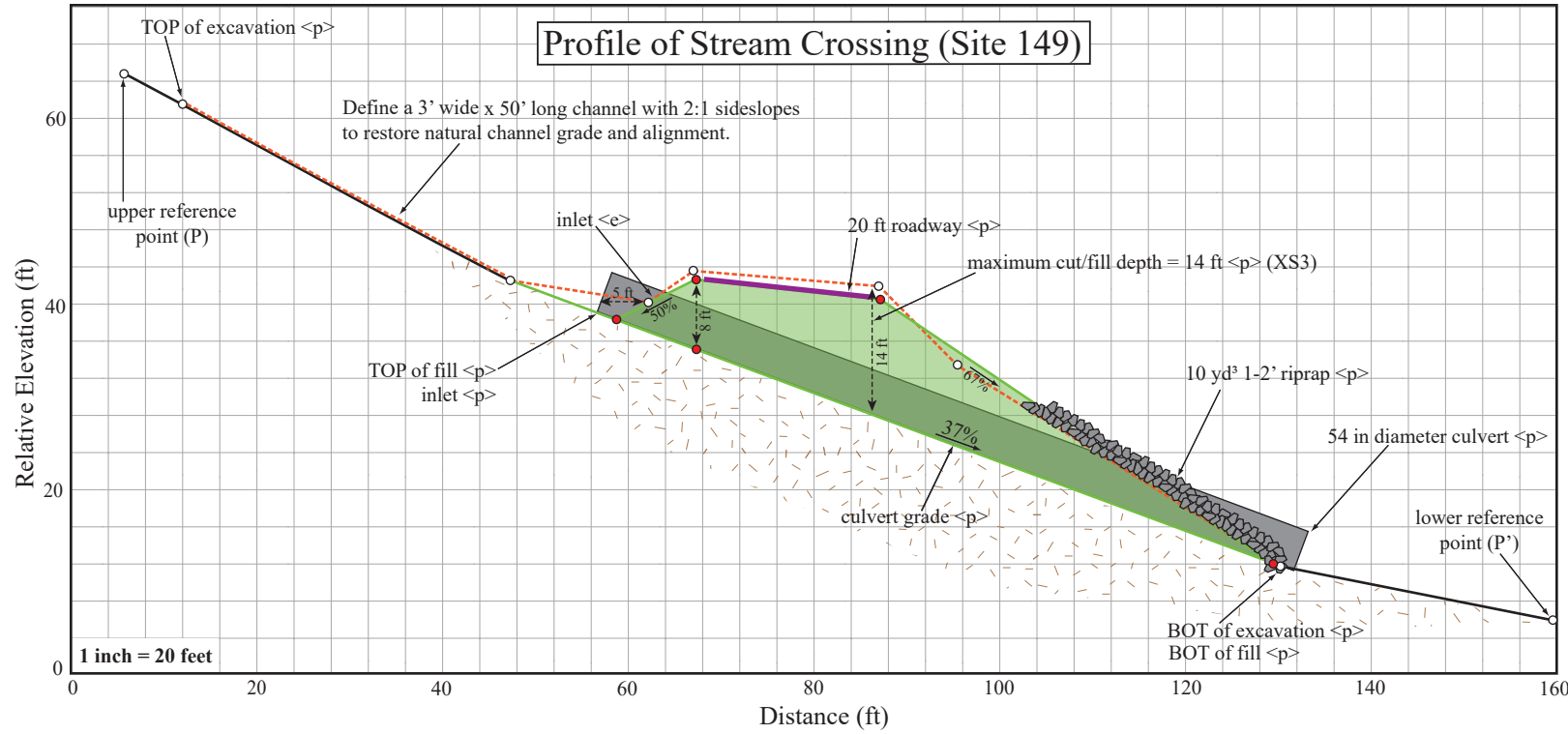
- Legend**
- Fill area
 - Cut area
 - XS Cross-section location
 - P-P' Profile location
 - Road alignment
 - APN parcel boundary
 - Stream
 - Proposed culvert
 - Cut and clean ditch

- Site 148: Stream crossing with existing 18" x 30' long steel culvert.**
1. Remove 20" maple cluster below current outlet area.
 2. Trim trunks of 6" maple near inlet as necessary for access.
 3. Excavate the crossing from TOP to BOT for 70' and install a 48" x 80' long CMP at base of fill and along natural channel alignment.
 4. Define a 6' wide x 30' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 5. Rebuild IBF at 34 degrees and armor the lower 1/4 with 2 yd³ of 1'-2' riprap.
 6. Rebuild OBF at 32 degrees and armor the lower 1/4 with 10 yd³ of 1'-2' riprap.
 7. Construct a critical dip on the left hingeline to eliminate diversion potential.
 8. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
 9. Maintain/rebuild single car turnout left of inlet area.
 10. End cut and/or clean ditch (CCD 1) and connect to new inlet.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

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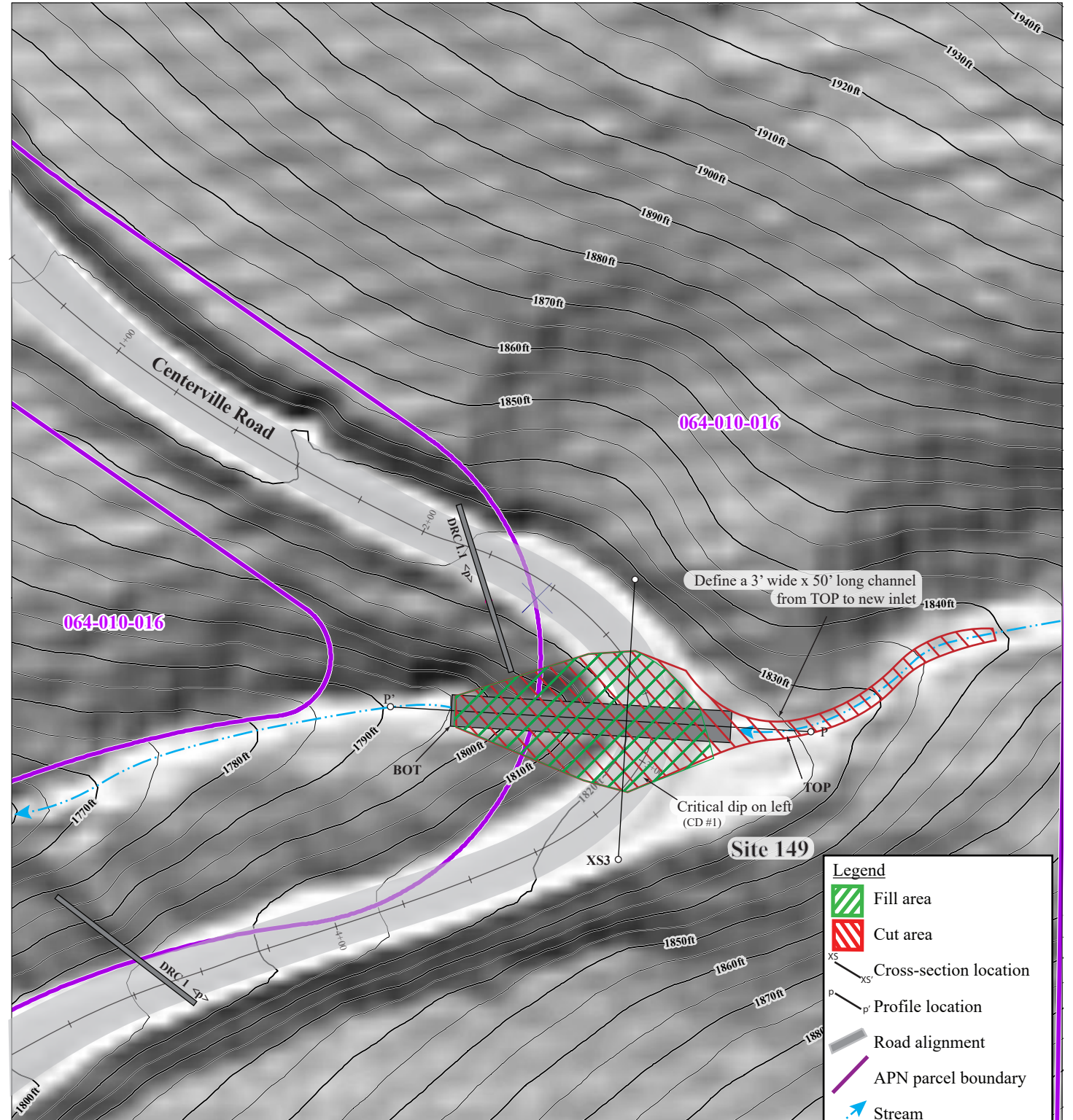
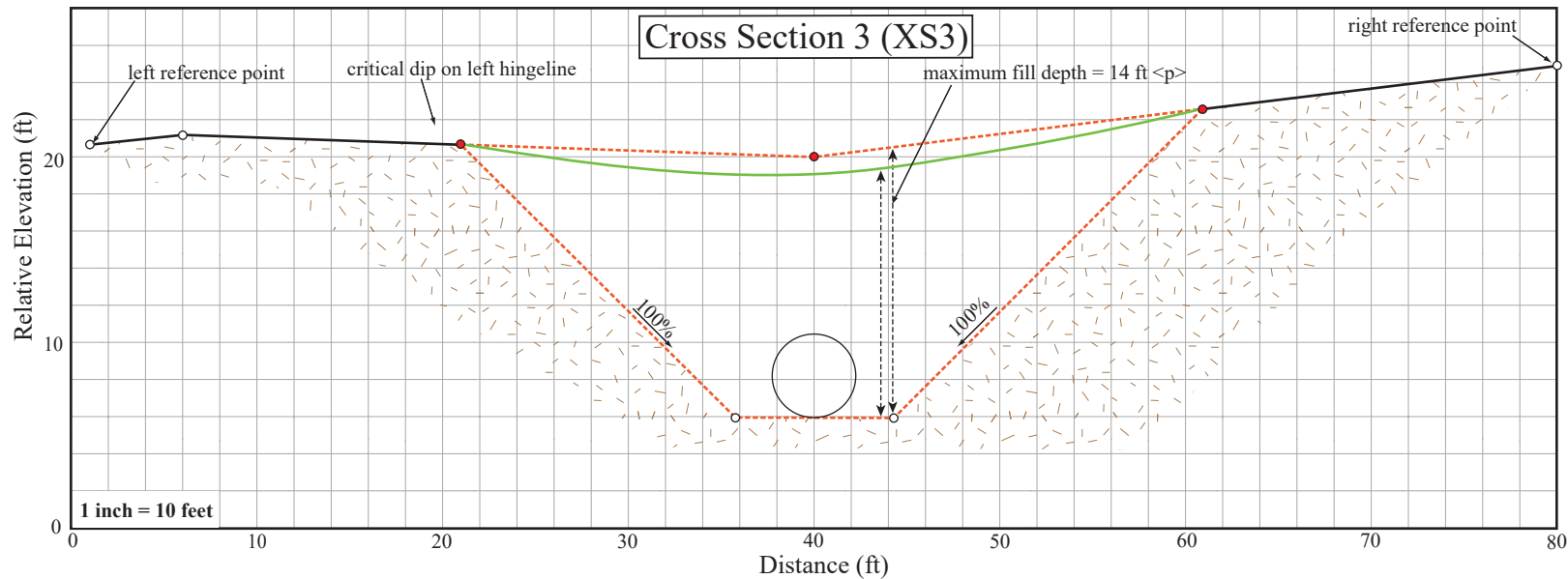
Site 149 (Proposed Culvert Replacement) Butte Creek Camp Fire Post Fire Recovery Project Centerville Road, Butte County, California



- Legend**
- Existing ground surface to be graded
 - Existing ground surface
 - Proposed ground surface
 - Proposed roadway
 - Proposed rock armor
 - Proposed culvert
 - Native ground

Abbreviations:
 TOP = top of excavation/fill; BOT = bottom of excavation/fill;
 IBF = inboard fillslope; OBF = outboard fillslope;
 CMP = corrugated metal pipe; CD = critical dip; DRC = ditch relief culvert;
 <e> = existing; <p> = proposed; P-P' = profile; XS = cross-section

Excavation disturbance area = 2,400 sq ft
 Excavation/cut volume = 540 cu yd
 Proposed backfill volume = 410 cu yd
 Proposed re-build TOP to BOT length = 90 ft
 Proposed culvert size = 54 in x 80 ft
 Proposed culvert grade = 37%



- Site 149: Stream crossing with existing 15" x 30' long concrete culvert. The inlet is crushed and the culvert was installed high in the fill.**
1. Excavate the crossing from TOP to BOT for 80' and install a 54" x 80' long CMP at base of fill and along natural channel alignment.
 2. Define a 3' wide x 50' long channel with 2:1 sideslopes from TOP to new inlet to restore natural channel grade and alignment.
 3. Rebuild IBF at 2:1 slope.
 4. Rebuild OBF at 34 degrees and armor the lower 1/4 with 20 yd³ of 1'-2' riprap.
 5. Construct a critical dip on the left hingeline to eliminate diversion potential.
 6. Install a single-post galvanized trash rack above the new inlet and centered to reduce plug potential.
 7. Maintain/rebuild single car turnout left of inlet area.

Scale 1:480 1 in = 40 ft
 APN: Butte County GIS 2022
 Contour: 5 ft interval
 Imagery: Hillshade derived from USGS 1-m DEM

Prepared June 2024 by:
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EXHIBIT B:
BID PROPOSAL WORKSHEET

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

Item	Page #
General Bid Details	2
Description of Bid Items	3-5
Contractor Bid Worksheet	6
List of Proposed Subcontractors	9
Non-Collusion Affidavit	10

GENERAL BID DETAILS

The general bid details and miscellaneous assumptions are listed herein below:

- This is a LUMP SUM contract for work satisfactorily completed in accordance with Contract Documents. The contract sum shall be deemed to include all costs necessary to complete the work and shall include any costs which may arise from any reasonable unforeseen difficulties or delays encountered during the project.
- Vegetation/brush removed during site grubbing will be moved to a preferred location within in the property as determined by PWA/BCRCD.
- Spoils generated from construction will be reused along existing road surface(s) to improve/achieve effective outsloped road drainage.
- All construction-related debris and refuse encountered within culvert replacement sites (old culverts, concrete, fencing, abandoned tires, etc.) will be hauled away and properly disposed of by the selected heavy equipment contractor.
- If gates or fences need to be removed, it will be first approved by the adjacent landowner and cost of labor/material will be approved by BCRCD.
- The successful contractor will work under the direct supervision of PWA with assistance from BCRCD, and all tasks listed in the Road Log (Exhibit A; Appendix A) must be completed to our satisfaction. See Table A3 in the Road Log for a summary of project-specific treatments, materials, and specifications.
- The selected contractor must abide by all permit requirements as directed by BCRCD and PWA, and/or regulatory staff to ensure the project remains in environmental compliance.
- This project will take place within applicable windows (August to October) as determined by regulatory agencies. Installation of ditch relief culverts and road surface drainage improvements may be performed outside the regulatory window.
- Total estimated construction duration is 12-14 weeks.
- Materials:
See Table A2 in the Road Logs (Exhibit A; Appendix A) for a summary of materials and specifications.
Culverts: All culvert materials will be purchased by PWA and delivered to a location to be determined by PWA and the selected contractor. Selected contractor will be responsible for delivering the materials to the project site as needed.
Rock: All rock materials (riprap/RSP and road rock) will be purchased by PWA and delivered to the project site by quarry-provided trucking.
Erosion Control: All erosion control materials (seed and straw) will be purchased by PWA and delivered to a staging area in the project vicinity.

DESCRIPTION OF BID ITEMS

Base Bid – This is a LUMP SUM contract for work satisfactorily completed in accordance with Contract Documents. **Item 2** will consist of a lump sum cost to perform the stream crossing improvement summarized in Table 2. **Item 3** will consist of an estimated sum of unit price bid items (Item 301-307) listed below. The successful contractor will work under the direct supervision of PWA with assistance from BCRCD, and all tasks listed in the road logs and grading plan (Exhibit A; Appendix A and F) must be completed to our satisfaction. Bids shall be deemed to include full compensation for all labor, equipment, tools, and incidentals necessary to complete the work and shall include any costs which may arise from any reasonable unforeseen difficulties or delays encountered during the project. The lump sum bid items are listed below.

Item 1: MOBILIZATION OF HEAVY EQUIPMENT – The Contractor shall be paid a lump-sum rate to mobilize heavy equipment to and from the project site.

Item 2: STREAM CROSSING IMPROVEMENT WORK – The Contractor shall be paid a lump-sum rate to perform stream crossing improvements in accordance with the project road logs and/or grading plans (Exhibit A, Appendix A and F). A price shall be provided for each stream crossing item in the bid worksheet (Exhibit B; Table 2) and shall include all operations necessary to perform the work as described in the Construction Plan, including the excavation and removal of existing culverts, mobilization and installation of new culverts, and placement of RSP riprap materials. All finished culvert replacement/installation work must comply with the location, diameter, dimensions, metal thickness specifications within the Construction Plan and be in general conformance with the Typical Design Drawings # 1A, 1B, 2, 3, and 4, (Exhibit A, Appendix C), and as acceptable to the Project Manager. Price shall also include placement and proper compaction of all backfill materials, installation of trash racks, as well as construction of critical dip and any grade control structure at each stream crossing site. Backfill materials shall be moisture conditioned and compacted to at least 90% relative compaction, and will be subject to compaction testing to determine compliance with the project plans and Caltrans specifications for culvert backfill and road surface compaction. **Mobilization of rock should not be included in this price.**

Item 3: UNIT PRICE BID ITEMS – The Contractor shall provide an estimated total for unit price bid items listed and described in the following section below (Item 301-307).

Item 4: EXECUTION OF PROJECT ENCROACHMENT PERMITS – The Contractor shall be paid a lump-sum rate to apply for and obtain encroachment permits for the project. Lump-Sum price includes all communications, labor, and permit application fees necessary to execute the permits.

Item 5: CULVERT MATERIALS – The Contractor shall be paid a lump-sum rate to coordinate project culvert materials, which includes all new pipes, couplers and securing bolts. Culvert materials will be purchased by PWA, and delivery will be scheduled to a location to be determined by PWA and the selected contractor. The Contractor will be responsible for accepting delivery of the materials, which includes confirming the quantity and specifications of the materials, as well as unloading and safe storage of the materials. The culvert materials for the project are expected to consist of 2,280 feet of pipe and 103 couplers, and the culvert manufacturer estimates that their shipments will occupy nine semi-trucks. In addition, the Contractor is responsible for mobilization of the project culverts to the project site as needed for

installation. Price includes all labor, equipment, storage, and coordination costs for acceptance of delivery, unloading, storage, and mobilization of culvert materials.

Item 6: COMPLIANCE WITH TRAFFIC CONTROL PLAN (APPENDIX H) – The Contractor shall be paid a lump-sum rate to provide compliance with the Traffic Control Plan (Exhibit H). Price should include all communication, signage, cones, barriers, as well as steel plates and any other equipment necessary to rapidly reopen the road for emergency vehicle access as necessary.

Item 7: MISCELLANEOUS ADDITIONAL EXPENSES – The Contractor shall be paid a lump-sum rate to cover miscellaneous expenses necessary to complete the project as detailed in the road logs (Exhibit A, Appendix A). Miscellaneous items may include, but are not limited to the following: refuse disposal, including dump fees and hauling costs, toilet rental, insurance, bonding. This bid item should also include equipment and labor necessary to restore the project staging area to suitable conditions, similar to or better than pre-project conditions. Only PWA and BCRCDC can approve any additional miscellaneous items for the project that will be payable up to the bid amount.

Unit Price Bid Items – The Contractor shall provide a unit price bid for the items described below. The Unit Prices in Table 3 of Exhibit B shall apply to Work covered by unit prices, regardless of quantity. By submitting a bid, Bidder acknowledges that these unit prices shall remain fixed throughout performance of the Contract, regardless of any incremental cost differentials resulting from variances in any quantity estimates or increased or decreased economies of scale.

Item 301: INSTALLATION OF DITCH RELIEF CULVERT – The Contractor shall be paid a unit cost to install ditch relief culverts along the project road. Ditch relief culverts will range from 18 to 24 inches in diameter, and will range in length from 40 to 60 feet. Price shall include removal of existing culverts where present, and installation of new ditch relief culverts in accordance with the Road Log and PWA Typical Design Drawing #8, (Exhibit A, Appendix A and C).

Item 302: CONSTRUCTION OF ENERGY DISSIPATION STRUCTURE – The Contractor shall be paid a unit cost to construct 1yd³ energy dissipation structures at ditch relief culvert outlets in accordance with the Road Log and PWA Typical Design Drawing #18, (Exhibit A, Appendix A and C). Price shall include all equipment and labor to mobilize RSP from delivery location and construct the structures. Energy dissipation structures at stream crossing culvert should not be included in this item.

Item 303: CUT AND CLEAN DITCH (CCD) – The Contractor shall be paid a unit cost per-100-foot to establish and/or improve the capacity of an inboard roadside ditch where prescribed in the project Road Log (Exhibit A, Appendix A). Ditches shall consist of a 2+-foot wide by 1-foot deep, U-shaped channel along the uphill side of the road, and the unit price shall apply to locations at which a new ditch will be established, as well as locations where an existing ditch will be enhanced.

Item 304: OUTSLOPE ROAD AND KEEP DITCH (OSR-KD) – The Contractor shall be paid a unit cost per-100-foot to perform road surface outsloping on the project road. Road outsloping shall be performed in accordance with the Construction Plan and PWA Typical

Design Drawing #9, (Exhibit A, Appendix C). Resurfacing disturbed areas with compacted road rock should not be included in this item.

Item 305: ROAD ROCKING – The Contractor shall be paid a unit cost per ton to re-rock the road surface in areas disturbed by stream crossing, ditch relief culvert, and road surface outslipping excavations. The price shall include all costs necessary to spread, moisture condition, and compact road rock. Road rock will be subject to compaction testing to determine compliance with Caltrans specifications for road surface compaction. We anticipate the length of road to be resurfaced will be about 3,140 linear feet. Road rock materials and trucking will be coordinated and ordered and purchased by PWA/BCRCD.

Item 306: PURCHASE AND TRANSPORTATION OF CONSTRUCTION WATER – The Contractor shall be paid a per-1000-gallon rate to supply and deliver construction water to the project site for the purpose of soil moisture conditioning, dust control, and fire suppression.

Item 307: CLEARWATER DIVERSION MATERIALS – The Contractor shall be paid a daily rental rate to provide all generators, pumps, screening, plastic sheeting, hoses, flex piping, and any other equipment necessary to conduct proper clearwater diversions as required by the project biologist and the CDFW Streambed Alteration Agreement at locations where work is to be performed in a flowing stream channel. Refer to PWA Typical Design Drawing #21 for clearwater diversion methods (Exhibit A; Appendix C). Only days when clearwater diversion materials are operated as required by the project biologist will be payable.

CONTRACTOR BID WORKSHEET

Contractors bids shall consist of the following pages, including Tables 1, 2, and 3 filled out in entirety, as well as any subcontractor information, as applicable. Submitted bids should also include the Contractor Qualifications Form (Exhibit C).

Table 1. Project Bid Summary Worksheet for the *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Item	Description	Bid Amount
1	Mobilization of Heavy Equipment	
2	Stream Crossing Improvement Work <i>(lump sum total from Table 2 below)</i>	
3	Unit Price Bid Items <i>(total from Table 3 below)</i>	
4	Execution of Project Encroachment Permits	
5	Culvert Materials	
6	Compliance With Traffic Control Plan (Exhibit H)	
7	Miscellaneous Additional Expenses	
Total Project Bid <i>(total of items 1-7 above)</i>		

The undersigned is familiar with all the conditions affecting the cost of WORK at the place where the WORK is to be done and with the PLANS and CONTRACT DOCUMENTS and addenda thereto, hereby proposes and agrees to perform everything required to be performed **on a lump-sum basis** and to provide and furnish all required labor, materials, tools, equipment, supervision, and all utility and transportation services necessary to complete in a workmanlike manner for the **Butte Creek Camp Fire Post-Fire Recovery Project** within the time set forth therein, and at the prices stated below. All bids will use **California prevailing wage** and include all taxes and delivery fees for each category.

Contractor Signature	Company Name	
Name and Title	Tax ID #	
Date	License Type	License Number
Phone	Address	
Email	City	State Zip

I agree that this Bid shall be irrevocable. I make the above Bid and declare under penalty of perjury that the statements made in this Bid Proposal, including attachments, are true and correct. I acknowledge that I have read, understand, and accept the terms and conditions contained in this bid package in its entirety.

Table 2. Bid Proposal Worksheet for Project Stream Crossing Improvement Work, *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Item	Description	Lump-Sum Bid
119	Stream Crossing Site 119 – Replace existing pair of steel culverts with a 60” x 70’ long CMP, define stream channel for 190 feet, install trash rack, armor the outboard fillslope with RSP, install energy dissipation structure, construct critical dip.	
120	Stream Crossing Site 120 – Replace existing steel culvert with a 48” x 50’ long CMP, define stream channel for 20 feet, install trash rack, armor the outboard fillslope with RSP, install energy dissipation structure, construct critical dip.	
121	Stream Crossing Site 121 – Use hand labor to remove vegetation from inlet area and remove sediment and cobbles from interior of existing 4’ x 10’ concrete box culvert.	
122	Stream Crossing Site 122 – Replace existing steel culvert with a 24” x 60’ long CMP with flared inlet, install trash rack, armor the outboard fillslope with RSP.	
123	Stream Crossing Site 123 (CCD 9) – Cut and clean inboard ditch 3’ wide x 1’ deep for 100 feet to maintain existing stream diversion flow path to Site 122 inlet.	
124	Stream Crossing Site 124 – Replace existing steel culvert with a 24” x 40’ long CMP, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
125	Stream Crossing Site 125 – Replace existing steel culvert with a 30” x 70’ long CMP, define stream channel for 60 feet, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
129	Stream Crossing Site 129 – Replace existing steel culvert with a 24” x 50’ long CMP, raise road elevation approximately 3 feet at crossing, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
131	Stream Crossing Site 131 – Replace existing steel culvert with a 30” x 50’ long CMP, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
132	Stream Crossing Site 132 – Replace existing steel culvert with a 30” x 50’ long CMP, define stream channel for 13 feet, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
135	Stream Crossing Site 135 – Replace existing steel culvert with a 24” x 50’ long CMP, install trash rack, armor the outboard fillslope with RSP, install energy dissipation structure, construct critical dip.	
137	Stream Crossing Site 137 – Replace existing steel culvert with a 30” x 50’ long CMP, lower the road by approximately 1.5 feet, install trash rack, armor the outboard fillslope with RSP.	
138	Stream Crossing Site 138 – Remove maple tree at site, replace existing steel culvert with a 72” x 70’ long CMP, define stream channel for 40 feet, maintain single-car turnout, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
139	Stream Crossing Site 139 – Replace existing steel culvert with a 30” x 50’ long CMP, define stream channel for 15 feet, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
140	Stream Crossing Site 140 – Replace existing steel culvert with a 30” x 60’ long CMP, define stream channel for 40 feet, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
142	Stream Crossing Site 142 – Replace the existing concrete culvert with a 60” x 60’ long CMP, define stream channel for 20 feet, install trash rack, armor the outboard fillslope with RSP, construct critical dip, remove steel pipe under decommissioned road on right and re-establish ditch. Stream dewatering should NOT be included in this price.	
143	Stream Crossing Site 143 – Install trash rack and construct critical dip.	
144	Stream Crossing Site 144 – Replace existing steel culvert with a 24” x 40’ long CMP, define stream channel for 20 feet, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
145	Stream Crossing Site 145 – Install trash rack and construct critical dip.	

Table 2. Bid Proposal Worksheet for Project Stream Crossing Improvement Work, *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Item	Description	Lump-Sum Bid
147	Stream Crossing Site 147 – Replace existing plastic culvert with a 36” x 80’ long CMP, define stream channel for 30 feet, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
148	Stream Crossing Site 148 – Remove trees at outlet as necessary to replace existing steel culvert with a 48” x 80’ long CMP, define stream channel for 30 feet, maintain existing turnout on left, install trash rack, armor the inboard and outboard fillslopes with RSP, construct critical dip.	
149	Stream Crossing Site 149 – Replace existing concrete culvert with a 54” x 80’ long CMP, define stream channel for 50 feet, install trash rack, armor the outboard fillslope with RSP, construct critical dip.	
Item 2: Stream Crossing Improvements Lump Sum Bid Total <i>(insert total in Table 1 above)</i>		

The prices listed above should include: stream crossing excavation and installation of new culvert, stream dewatering, placement of all RSP/riprap and erosion control materials at stream crossing locations.

The prices listed above should not include: purchase, acceptance and storage of new culverts, transportation of rock materials, placement of road rock, hauling and disposal fees of debris generated by excavation.

Table 3. Bid Proposal Worksheet for Road Surface Drainage Improvement Treatments and Other Unit Bid Items, *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

Item	Description	Estimated Quantity	Unit of Measure	Unit Cost	Total Bid
301	Installation of Ditch Relief Culvert	42	/ unit		
302	Construction of Grade Control Structure	3 ^a	/ unit		
303	CCD: Cut and Clean Ditch	23.7	/ 100 feet		
304	OSR-KD: Outslope Road and Keep Ditch	20.6	/ 100 feet		
305	Road Rocking	2,000	/ ton		
306	Purchase and Transportation of Construction Water	150	/ 1,000 gallons		
307	Clearwater Diversion Materials	1	/ day		
Item 3: Unit Price Bid Item Total <i>(insert total in Table 1 above)</i>					

^a Quantity includes grade control structures to be constructed at ditch relief culvert locations. Costs for installation of grade control structures at stream crossing culverts should be included in stream crossing improvements (Table 2).

LIST OF PROPOSED SUBCONTRACTORS

Use the space below to set forth the name, address, phone number, type and cost of work, and license for each subcontractor who will perform work on or render services in any amount exceeding one-half of one percent (1/2%) of the total bid according to provisions of the California Public Contract Code §4100 through §4113.

1. Company Name: _____
Contact: _____
Address: _____
Phone Number: _____
Type of Work: _____
Cost of Work: _____
Required License: _____

2. Company Name: _____
Contact: _____
Address: _____
Phone Number: _____
Type of Work: _____
Cost of Work: _____
Required License: _____

3. Company Name: _____
Contact: _____
Address: _____
Phone Number: _____
Type of Work: _____
Cost of Work: _____
Required License: _____

NON-COLLUSION AFFIDAVIT

(Name of party bidding) _____, under penalty of perjury, deposes and says that he or she is the party making the foregoing bid and that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against Pacific Watershed Associates or the Butte County Resource Conservation District of anyone interested in the proposed contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive sham or bid.

Signature

Date

EXHIBIT C: **CONTRACTOR QUALIFICATIONS FORM**

Butte Creek Camp Fire Post-Fire Recovery Project (Centerville Road) Butte County, California

Due to the unique restoration nature of the project, Contractor must provide detailed project information demonstrating qualifications and experience performing at least three projects of similar nature and complexity within the last ten years. In addition to bid price, PWA will consider the bidder's qualifications and similar experience implementing similar rural road improvements and road decommissioning in wildland settings, as well as working in environmentally sensitive and wetland environments. Road construction experience must demonstrate:

1. Work performed in/near waterways, wetlands, and riparian areas.
2. Installation of diversion dam on natural stream channels to dewater project stream reach working in compliance with regulatory permits.
3. Erosion control silt fence, fiber mat and wattles; proper application of temporary erosion control seed and straw.
4. Compliance with the State Water Board Storm Water Pollution Prevention Plan.
5. Work with biological and/or cultural monitoring professionals for sensitive resources.
6. Working in Waters of the State and Waters of the United States and in compliance with regulatory permits.
7. Rolling dip construction on a variety of backcountry road surface grades, soils, and terrain.
8. Critical dip construction at stream crossings to prevent stream diversion.
9. Road surface shaping such as improving or converting to outsloped, insloped, or crowned road shapes.
10. Road surface drainage treatments including ditch relief culverts, rolling dips, cutting ditches, and cross road drains.
11. Other miscellaneous road improvement treatments such as rock slope protection, unstable road or landing fill excavations, and sediment basins.
12. Installation and removal of stream crossings, including culverts.
13. Application of other stream crossing improvements such as critical dips, trash racks, applying riprap to fillslopes, and instream grade control and energy dissipations structures.
14. Importing materials (such as rock, corrugated metal pipes up to 20 linear feet, dewatering supplies, erosion control materials, etc.) to areas with narrow turns, rough driving surface, and steep grades with minimal impacts.

Example projects should each have a contract dollar amount of at least \$150,000, and at least one with a contract dollar amount of at least \$250,000. Please use the following **Contractor Qualifications Form** to submit example projects, or attach the information presented in a similar format. Provide additional project examples, as necessary, to demonstrate the different skills. All example projects should be similar in nature of the wildland setting to this Project.

EXHIBIT D:
BEST MANAGEMENT PRACTICES FOR CONSTRUCTION

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

GENERAL PROJECT BMPs

1. **Housekeeping:** Contractor shall maintain a clean and orderly work site. Because the work is occurring within areas that are openly visible to the public, specific attention will be paid on a daily basis by the Contractor to ensure that no litter will be left on the work site. Waste items including cigarette butts, food wrappers, food, construction debris etc. shall be disposed of in suitable receptacles provided by the Contractor.
2. **Cultural Resources:** Should any paleontological, archaeological, historical or unique ethnic or sacred resources be encountered during construction or grading operations, all ground-disturbing work shall be temporarily halted on site and Contractor shall notify PWA immediately. Work on site shall not be resumed until a qualified archeologist has evaluated the materials and offered recommendations for further action. Prehistoric materials that could be encountered include: obsidian or chert flakes or tools, locally darkened midden soils, groundstone artifacts, deposits of shell, dietary bone, and human burials. Should human remains be uncovered, State law requires that the County Coroner be contacted immediately. Contractor shall notify PWA Project Manager at 707-773-1385 and the Butte County Coroner at 530-538-7404. Should the Coroner determine that the remains are likely those of a Native American, the California Native Heritage Commission must be contacted. The Heritage Commission consults with the most likely Native American descendants to determine the appropriate treatment of the remains.
3. **Sediment control:**
 - a. Silt fencing, straw bales, straw wattles, seeding as deemed necessary and specified by the PWA Project Manager.
 - b. Contractor must have erosion control materials on site for installation on any exposed mineral soil that could be washed into drainages, remnant channels or any watercourse in case of rain. Contractor must install erosion control measures if significant rainfall is predicted within 24 hours to ensure that the project will not violate water quality standards or waste discharge requirements.
4. **Vegetation Management:**
 - a. No trees over 4" dbh will be removed for this project without prior approval of PWA.
5. **Dewatering:**
 - a. All work shall be conducted when the stream is dry, to the extent feasible. The project areas will be dewatered, if necessary, before project construction begins.
 - b. Within 5 days prior to operations, the Designated Biologist shall survey the portion of the stream proposed for dewatering. If fish or amphibians are observed during the surveys, Permittee shall not commence operations, and shall immediately notify and consult with the PWA Project Manager and CDFW to incorporate avoidance or disturbance minimization measures.

- c. Cofferdams shall be installed to divert streamflow, isolate, and dewater the work site, catch sediment-laden water, and minimize sediment transport downstream. Cofferdams shall be constructed of non-polluting materials including weed-free straw bales, sandbags, rock, and/or plastic tarps. Mineral soil shall not be used in the construction of cofferdams.
 - d. Flowing water shall be cleanly bypassed and/or prevented from entering the work area through pumping or gravity flow, and cleanly returned to the stream below the work area. Flow diversions shall be done in a manner that prevents pollution and/or siltation and provide flows to downstream reaches.
 - e. All pump intakes must be screened, per the CDFW Streambed Alteration Agreement. (SAA)
 - f. Pumped turbid water that collects in the excavation areas will be pumped to a flat, vegetated area at least 20 feet from the top of the streambank, and will not be allowed to discharge back into the stream, but will infiltrate into the ground.
 - g. Periodically check for erosion at the discharge of the diversion, and repair or move the outfall as necessary.
 - h. Provide adequate fuel supply and backup pumps in the event of a mechanical failure.
 - i. Permittee shall restore normal flows to the affected stream immediately upon completion of work.
6. Staging area:
- a. All staging activities, including, but not limited to, vehicle parking, equipment and material storage, spoils and materials stockpiles, vehicle fueling and maintenance, sanitation facilities, and solid waste receptacles shall be designated staging areas approved by PWA, a minimum of 100 feet from the top of bank of any waterbody.
 - b. Any material excavated from crossings or the roadway will be temporarily stored in designated areas, in a manner to prevent sediment delivery to any waterbody.
 - c. Silt fencing will be placed between spoils/materials piles and any waterbody, if necessary and as determined by the Project Manager.
 - d. Excess spoils shall be end-hauled to the approved off-site disposal area and treated according to the Plans and Specifications and Special Provisions at the end of the project.
 - e. Equipment will be fueled more than 100 feet from any waterbody or its adjacent riparian vegetation.
7. Spill prevention and containment:
- a. An oil-trapping absorbent floating boom system will be placed immediately downstream of the project area at the start of construction, if necessary.
 - b. Containment supplies will be kept on site, sufficient to contain a spill of up to 50 gallons.

CONSTRUCTION AND EXCAVATION STANDARDS

WATERCOURSE CROSSING UPGRADES: Any culvert that is to be removed or installed in a flowing stream shall be de-watered per the CDFW Streambed Alteration Agreement (SAA). Contractor shall be responsible for all de-watering of active streams. PWA will assist Contractor in order to comply with water quality requirements.

Installing or replacing culverts. Only culverts capable of withstanding the 100-year storm flow, including expected sediment and debris in transit, will be installed or replaced at stream crossings.

Culvert selection and size determination will be conducted by PWA. Culverts on non- fish-bearing streams are placed at the base of fill, in line and on grade with the natural stream channel upstream and downstream of the crossing site. Indicators of nearing the original (natural) stream channel will include hardness, organic soils, woody debris, stream channel rock, in-place cut stumps and bedrock outcrops. Culvert beds should be compacted prior to installation of the pipe and composed of rock-free soil or gravel, evenly distributed under the length of the pipe. Backfill material, free of woody debris, is compacted in 0.5-1.0 ft thick loose lifts. Water should be used as necessary to condition backfill materials for compaction. At sites where fillslopes are steeper than 2:1, or where eddying currents might erode fill on either side of the inlet, rock armor will be applied as needed. Culvert installation and replacement should be as per the typical design specifications (Exhibit A; Appendix C) and more detailed construction standards stated in the road logs (Exhibit A; Appendix B).

Trash Racks. Trash racks will be single post, installed vertically in the stream bed, centered directly upstream from the culvert inlet, located one culvert diameter distance upstream from the inlet. The trash rack will be installed deeply enough into the channel bed and of sufficient gauge to not be bent or pushed out of position by transported woody debris during high stream discharges. Trash racks should be installed as per the typical design specifications (Exhibit A: Appendix C) and more detailed construction standards stated in the road logs (Exhibit A: Appendix B).

ROAD DRAINAGE TREATMENTS: Road Shaping

Outsloping. Road outsloping is generally accomplished by excavation of earthen material from the shoulder and outboard portion of the roadway and emplacement of excavated materials on the inboard portion of road, primarily using a bulldozer or motor grader with or without support from a hydraulic excavator at the Contractor's preference. The road surface and shoulder prescribed for outsloping in the Road Log must be sloped away from the cutbank at a minimum slope based on the local road grade as shown in Table 1 below. The shoulder of road segments prescribed for outsloping must be more steeply outsloped than the road surface to ensure runoff and sediment shall leave the roadbed, and *no material shall be sidecast onto the fillslope below*. Outsloped roads will have outboard berms removed and drain their surface runoff to the outside edge of the roadbed and onto the fillslope. The degree of outslope will be at least 2% for low gradient roads (<4%) and increase as road grade increases (up to 10%), with consideration for driver safety. Outsloping should be conducted as per the typical design specifications (Appendix C) and more detailed construction standards stated in the road logs (Exhibit A: Appendix B).

FIRE PLAN

The provisions set forth below outline the responsibility for fire prevention and suppression activities and establish a suppression plan for fires within the contract area. The contract area is delineated by map in the contract. The provisions set forth below also specify conditions under which contract activities will be curtailed or shut down.

Responsibilities

- a. Contractor shall abide by the requirements of this Fire Plan.
- b. Contractor shall take all steps necessary to prevent employees, subcontractors and their employees from setting fires not necessary for completion of the contract, shall be responsible for preventing the escape of fires set directly or indirectly as a result of contract operations, and shall extinguish all such fires which may escape.
- c. Contractor shall permit and assist in periodic testing and inspection of required fire equipment. Contractor shall certify compliance with specific fire precautionary measures in the fire plan, before beginning operations during Fire Precautionary Period and shall update such certification when operations change.
- d. Contractor shall designate in the Fire Plan and furnish on Contract Area, during operating hours, a qualified fire supervisor authorized to act on behalf of Contractor in fire prevention and suppression matters.

Tools and Equipment

A. Fire Tools and Equipment: Contractor shall meet minimum requirements of Section 4428 of the California Public Resources Code (C.P.R.C.). Fire tools kept at each operating landing shall be sufficient to equip all employees in the felling, yarding, loading, chipping, and material processing operations associated with each landing. Fire equipment shall include two tractor headlights for each tractor dozer used in Contractor's Operations. Tractor headlights shall be attachable to each tractor and served by an adequate power source. All required fire tools shall be maintained in suitable and serviceable condition for fire fighting purposes.

Trucks, tractors, skidders, pickups and other similar mobile equipment shall be equipped with and carry at all times a size 0 or larger shovel with an overall length of not less than 46 inches and a 2-1/2 pound axe or larger with an overall length of not less than 28 inches.

Where cable yarding is used, Contractor shall provide a size 0 or larger shovel with an overall length of not less than 46 inches and a filled backpack can (4 or 5 gallon) with hand pump within 25 feet of each tail and corner block.

B. Fire Extinguishers: Contractor shall equip each internal combustion yarder, fuel truck, and loader with a fire extinguisher for oil and grease fires (4-A:60-B:C).

All tractors and heavy equipment shall be equipped with a minimum 5-BC fire extinguisher.

All Fire Extinguishers shall be mounted, readily accessible, properly maintained and fully charged.

Contractor shall equip each mechanized harvesting machine with hydraulic systems, powered by an internal combustion engine (chipper, feller/buncher, harvester, forwarder, hot saws, stroke delimeter, etc), except tractors and skidders, with at least two 4-A:60-B:C fire extinguishers or equivalent.

C. Spark Arresters and Mufflers: Contractor shall equip each operating tractor and any other internal combustion engine with a spark arrester, except for motor vehicles equipped with a maintained muffler as defined in C.P.R.C. Section 4442 or tractors with exhaust-operated turbochargers. Spark Arresters shall be a model tested and approved under Forest Service Standard 5100-1a as shown in the National Wildlife Coordinating Group Spark Arrester Guide, Volumes 1 and 2, and shall be maintained in good operating

condition. Every motor vehicle subject to registration shall at all times be equipped with an adequate exhaust system meeting the requirements of the California Vehicle Code

General Fire Plan Best Management Practices

The Contractor shall cooperate with local fire prevention authorities in eliminating hazardous fire conditions and shall implement the following fire plan under the direction of the Project Manager:

- A. **State Law:** In addition to the requirements in this Fire Plan, the Contractor shall comply with all applicable laws of the State of California. In particular, see California Public Resource Codes.
- B. **Permits Required:** The Contractor must secure a special written permit from the District Ranger or designated representative before burning, welding or cutting metal or starting any warming fires.
- C. **Smoking:** Smoking shall not be permitted during fire season, except in a barren area or in an area cleared to mineral soil at least three feet in diameter. In areas closed to smoking, the Project Manager may approve special areas to be used for smoking. The Contractor shall sign designated smoking areas. Contractor shall post signs regarding smoking and fire rules in conspicuous places for all employees to see. Contractor's supervisory personnel shall require compliance with these rules. Under no circumstances shall smoking be permitted during fire season while employees are operating light or heavy equipment, or walking or working in grass and woodlands.
- D. **Storage and Parking Areas.** Equipment service areas, parking areas, and gas & oil storage areas shall be cleared of all flammable material for a radius of at least 10 feet unless otherwise specified by local administrative unit. Small mobile or stationary internal combustion engine sites shall be cleared of flammable material for a slope distance of at least 10 feet from such engine. The COR shall approve such sites in writing.
- E. **Reporting Fires:** As soon as feasible but no later than 15 minutes after initial discovery, Contractor shall notify local fire authorities of any fires in the project vicinity or along roads used by Contractor as soon as possible.

When reporting a fire, provide the following information:

- Your Name
- Call back telephone number
- Project Name
- Location: Legal description (Township, Range, Section); and Descriptive location (Reference point).
- Fire Information: Including Acres, Rate of Spread and Wind Conditions.

The Contractor shall be responsible for:

- a. Immediately reporting to the nearest fire suppression agency fires occurring within the limits of the project,
- b. Preventing project personnel from setting open fires not part of the work,
- c. Preventing the escape of fires caused directly or indirectly as a result of project operations and extinguishing these fires,
- d. Maintaining traffic control to allow for passage of residents and fire suppression vehicles/equipment at all times.

EXHIBIT E:
SAMPLE AGREEMENT FOR SUBCONTRACTOR SERVICES

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

THIS AGREEMENT, entered into as of, ___(Date)___ is between the Butte County Resource Conservation District, a public entity, organized and existing pursuant to the laws of the State of California (hereinafter called the "BCRCD") and ___(Contractor)___ (hereinafter called the "Contractor"), WHEREAS, the Contractor has been awarded the contract for the work hereafter mentioned:

"Butte Creek Camp Fire Post-Fire Recovery Project"

WITNESSETH: That the parties hereto mutually agree to the terms and conditions hereinafter set forth.

I. CONTRACT DOCUMENTS

The Items hereinafter enumerated as the Contract Documents shall form a part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. Work called for in any one Contract Document and not mentioned in another is to be performed and executed the same as if mentioned in all Contract Documents, the table of contents, titles, and headings contained herein and in said documents are solely to facilitate reference to various provisions of the Contract Documents and in no way affect or limit the interpretations of the provisions to which they refer.

The "Contract Documents", sometimes also referred to as the Contract, consist of the completed Form of Bid Proposal submitted by the Contractor to whom the Contract is awarded, the Scope of Work insofar as they relate to events which will occur or actions to be taken after the submission of the Proposal.

II. DEFINITIONS

Unless otherwise specifically provided herein, all words and phrases defined in the Request for Bids shall have the same meaning and intent in this Agreement.

III. SCOPE OF THE CONTRACT The Contractor shall perform, within the time stipulated, the Contract as herein defined, and shall furnish all labor, tools, equipment, apparatus, facilities, labor and material and transportation necessary to perform and complete in a good workmanlike manner to the satisfaction of the BCRCD, all the work called for, and in the manner designated in, and in strict conformity with, the Contract Documents entitled: "Butte Creek Camp Fire Post-Fire Recovery Project"

IV. CONTRACT PRICE

The BCRCD agrees to pay and the Contractor agrees to accept, in full payment for the work included in the Bid the total sum of: \$ ___(Amount in words)___.

V. CONTRACT TIME, COMPLETION, AND CHANGES

A. Notice to Proceed

Within ten (10) days of the opening of bids the successful bidder will be authorized by written notice to proceed with the work. The bidder shall have no claim against the BCRCD, or its officers, employees, agents, consultants, project manager or engineer because of failure to issue the Notice to Proceed.

B. Commencement and Prosecution of Work

The Contractor shall commence the work on or before ten (10) days from and after the date specified in the written "Notice to Proceed," and will diligently prosecute the work to final completion. Said Notice to Proceed shall be issued following execution of the Agreement, the filing by the Contractor of the required bonds and proof of insurance. The continuous prosecution of work by the Contractor shall be subject only to delays as defined in this section of this Agreement.

C. Time of Completion

After given Notice to Proceed the entire work shall be brought to substantial completion in the manner provided for in the Contract Documents. Project work is to be performed during the working days and completed by ___(Date)__. The working days from and through the date of, shall be hereinafter called the "Estimated Completion Date" unless extensions of time are granted in accordance with the Contract Documents. Time is and shall be of the essence of each and every obligation in these Contract Documents. The entire project must be completed by ___(Date)__.

D. Changes in the Work

Changes in the work made and extensions of time of completion made necessary by reason thereof shall not in any way release any guarantee given by the Contractor, or the contract let hereunder, nor shall such changes in the work relieve or release the Sureties on bonds executed pursuant to the said provisions. The Sureties, in executing such bonds, shall be deemed to have expressly agreed to any such change in the work and to any extension of time made by reason thereof. The BCRCD agrees that no changes in the work shall be ordered which will necessitate an extension of the substantial completion time beyond the fixed completion date.

E. Extensions of Time

In the event it is deemed necessary by the BCRCD to extend the time of substantial completion of the work to be done under this contract beyond any required dates of completion herein specified, such extensions shall in no way release any guarantee given by the Contractor pursuant to the provisions of the Contract Documents, or the contract let hereunder, nor shall such extension of time relieve or release the sureties on the bonds executed pursuant to said provisions. The sureties in executing such bonds shall be deemed to have expressly agreed to any such extension of time. The amount of time allowed in any Extension of Time shall be limited to the period of the delay-giving rise to the same as determined by the BCRCD.

VI NOTICE OF DELAY

The Contractor shall promptly notify the BCRCB in writing of any anticipated delay in the prosecution of the work, and, in any event, promptly upon the occurrence of a delay. Said notice shall constitute an application for an extension of contract time only if it is reviewed and approved by the BCRCB Board of Directors. Failure by the Contractor to make a timely request will result in a waiver of the right to such extension. The BCRCB may take steps to prevent the occurrence of continuance of the delay and/or may determine to what extent the completion of the work is delayed thereby.

VII NO WAIVER OF RIGHTS

Neither the inspection by the BCRCB or its agents, nor any order or certificate for the payment of money, nor any payment for, nor acceptance of the whole or any part of the work by the BCRCB, nor any extensions of time, nor any position taken by the BCRCB or its agents shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the BCRCB or any right to damage herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach. All remedies provided in this Contract shall be taken and construed as cumulative, that is in addition to each and every other remedy herein provided; and the BCRCB shall have any and all equitable and legal remedies which it would in any case have.

VIII PAYMENT REQUESTS

Payment of any invoice will be made only after receipt of a complete, adequately supported, properly documented and accurately addressed invoice. Failure to use the address exactly as provided above may result in return of the invoice or payment request to the Contractor. All invoices must be approved by the RCD Project Manager. Payment shall be deemed complete upon deposit of the payment.

- Invoices must be submitted by the tenth (10th) of the month following performance of work. Invoices received after the tenth will be paid the following month.
- Payments shall be made by RCD to CONTRACTOR within fifteen (30) calendar days after BRCD's receipt of payment from funding agency. Funds appropriated for this agreement are unavailable until RCD has submitted CONTRACTOR's invoice to funding agency and has received payment.

XIV AGREEMENT CONTROLS

In the event of a conflict between the Contract Documents, the conflict shall be resolved by giving precedence in the following order: (1) This Agreement Form; (2) the Notice to Contractors; (3) the Instructions to Bidders; (4) the Project Construction Plan (PWA Report No. 241041103)

CONTRACT AGREEMENT CERTIFICATION

BCRCD:

Signature: _____ Dated: _____

Printed Name: David Lee

Title: Butte County RCD Chairman

Contractor:

Signature: _____ Dated: _____

Printed Name: _____

Title: _____

Company: _____

END OF SECTION

EXHIBIT F:
CONTRACT PROVISIONS FOR NON-FEDERAL ENTITY
CONTRACTS UNDER FEDERAL AWARDS

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

The contract for services shall be in accordance with the Code of Federal Regulations Appendix II to Part 200 — Contract Provisions for Non-Federal Entity Contracts Under Federal Awards¹, detailed below.

In addition to other provisions required by the Federal agency or non-Federal entity, all contracts made by the non-Federal entity under the Federal award must contain provisions covering the following, as applicable.

- (A) Contracts for more than the simplified acquisition threshold, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.
- (B) All contracts in excess of \$10,000 must address termination for cause and for convenience by the non-Federal entity including the manner by which it will be effected and the basis for settlement.
- (C) **Equal Employment Opportunity.** Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of “federally assisted construction contract” in 41 CFR Part 60–1.3 must include the equal opportunity clause provided under 41 CFR 60–1.4(b), in accordance with Executive Order 11246, “Equal Employment Opportunity” (30 FR 12319, 12935, 3 CFR Part, 1964–1965 Comp., p. 339), as amended by Executive Order 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and implementing regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”
- (D) **Davis-Bacon Act, as amended (40 U.S.C. 3141–3148).** When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141–3144, and 3146–3148) as supplemented by Department of Labor regulations (29 CFR Part 5, “Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction”). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland “Anti-Kickback” Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
- (E) **Contract Work Hours and Safety Standards Act (40 U.S.C. 3701–3708).** Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the

¹ Appendix II to Part 200—Contract Provisions for Non-Federal Entity Contracts Under Federal Awards
<https://www.ecfr.gov/current/title-2/subtitle-A/chapter-II/part-200/appendix-Appendix%20II%20to%20Part%20200>

standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of [40 U.S.C. 3704](#) are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

- (F) **Rights to Inventions Made Under a Contract or Agreement.** If the Federal award meets the definition of “funding agreement” under [37 CFR § 401.2 \(a\)](#) and the recipient or subrecipient wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the recipient or subrecipient must comply with the requirements of [37 CFR Part 401](#), “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” and any implementing regulations issued by the awarding agency.
- (G) **Clean Air Act** ([42 U.S.C. 7401–7671q.](#)) and the Federal Water Pollution Control Act ([33 U.S.C. 1251–1387](#)), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act ([42 U.S.C. 7401–7671q](#)) and the Federal Water Pollution Control Act as amended ([33 U.S.C. 1251–1387](#)). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).
- (H) **Debarment and Suspension** (Executive Orders 12549 and 12689)—A contract award (see [2 CFR 180.220](#)) must not be made to parties listed on the governmentwide exclusions in the System for Award Management (SAM), in accordance with the OMB guidelines at [2 CFR 180](#) that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than [Executive Order 12549](#).
- (I) **Byrd Anti-Lobbying Amendment** ([31 U.S.C. 1352](#))—Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by [31 U.S.C. 1352](#). Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.
- (J) **Procurement of Recovered Materials.** A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at [40 CFR part 247](#) that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.
- (K) **Prohibition on certain telecommunications and video surveillance services or equipment.**
- (a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
- (1) Procure or obtain;
 - (2) Extend or renew a contract to procure or obtain; or
 - (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in [Public Law 115–232](#), section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
 - (i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera

-
- Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- (ii) Telecommunications or video surveillance services provided by such entities or using such equipment.
 - (iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
- (b) In implementing the prohibition under [Public Law 115–232](#), section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.
 - (c) [Public Law 115–232](#), section 889 Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment
 - (d) Telecommunications Costs and Video Surveillance Costs
 - (1) Costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, cloud servers are allowable except for the following circumstances:
 - (2) Obligating or expending covered telecommunications and video surveillance services or equipment or services as described in [§ 200.216](#) to:
 - (i) Procure or obtain, extend or renew a contract to procure or obtain;
 - (ii) Enter into a contract (or extend or renew a contract) to procure; or
 - (iii) Obtain the equipment, services, or systems.
- (L) Domestic preferences for procurements.**
- (a) As appropriate and to the extent consistent with law, the non-Federal entity should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
 - (b) For purposes of this section:
 - (1) “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 - (2) “Manufactured products” means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.
 - (c) Federal agencies providing Federal financial assistance for infrastructure projects must implement the Buy America preferences set forth in [2 CFR part 184](#).

EXHIBIT G:
INSURANCE REQUIREMENTS

Butte Creek Camp Fire Post-Fire Recovery Project
(Centerville Road) Butte County, California

The Contractor shall obtain insurance acceptable to Pacific Watershed Associates, inc. (PWA) and the Butte County Resource Conservation District (BCRCD) from a company or companies acceptable to PWA. The required documentation of such insurance shall be furnished to PWA at the time he returns the executed Contract. The proper insurance shall be provided within five working days, after Bidder has received the notice that the Contract has been awarded and prior to PWA executing the Contract and issuing a Notice To Proceed. Contractor shall not commence Work, nor shall he allow his employees or subcontractors or anyone to commence Work until all insurance required hereunder has been submitted and approved and a Notice To Proceed has been issued.

With respect to performance of Work under this Contract, Contractor shall maintain and shall require all its subcontractors to maintain insurance as described below:

- A. Workers' compensation insurance with statutory limits as required by the Labor Code of the State of California. Said policy shall be endorsed with the following specific language:

"This policy shall not be cancelled or materially changed without first giving 30 days prior written notice by certified mail return receipt requested to the Project Manager."

Commercial General Liability Insurance covering bodily injury and property damage utilizing an occurrence policy form, in an amount no less than \$1,000,000 combined single limit for each occurrence (\$1,000,000 Aggregate). Said commercial general liability insurance policy shall either be endorsed with the following specific language or contain equivalent language in the policy:

- 1) PWA, BCRCD, and BCPW: their officers, officials, employees, and volunteers
 - 2) The inclusion of more than one insured shall not operate to impair the rights of one insured against another insured, and the coverage afforded shall apply as though separate policies had been issued to each insured, but the inclusion of more than one insurance shall not operate to increase the limits of the company's liability.
 - 3) The insurance provided herein is primary coverage to PWA, BCRCD, and BCPW with respect to any insurance or self-insurance programs maintained by PWA, BCRCD, and BCPW.
 - 4) This policy shall not be cancelled or materially changed without first giving 30 days prior written notice by certified mail return receipt requested has been given to the PWA Project Manager, PO Box 2070, Petaluma, California, 94953.
 - 5) The insurance shall be primary as respects the insured shown in the scheduled above, or if excess, shall stand in an unbroken chain of coverage excess of the Named Insured's scheduled underlying primary coverage. In either event, any other insurance maintained by the Insured scheduled above shall be in excess of this insurance and shall not be called upon to contribute with it.
- B. Automobile liability insurance covering bodily injury and property damage in an amount no less than \$1,000,000 combined single limit for each occurrence. Said insurance shall include coverage for owned, hired, and non-owned vehicles. Said policy shall be endorsed with the following language:
- 1) This policy shall not be cancelled or materially changed without first giving 30 day prior written notice by certified mail return receipt requested to the PWA Project Manager.

-
- 2) PWA, BCRCDD, and BCPW: their officers, officials, employees, and volunteers are included as insured regarding damages and defense of claims arising from: the ownership, operation, maintenance, use, loading or unloading any auto owned, leased, hired or borrowed by the Named insured, or for which the named insured is responsible.
- C. The following documentation shall be submitted to PWA and BCRCDD:
- 1) Properly executed Certificates of Insurance clearly evidencing all coverages, limits, and endorsements required above. Said certificates shall be submitted prior to the execution of this contract.
 - 2) Signed copies of the specified endorsements for each policy shall be submitted within 10 days of execution of contract.
 - 3) Upon BCRCDD's written request, certified copies of insurance policies shall be submitted within 30 days of BCRCDD's request.
- D. Contractor's indemnity and other obligations shall not be limited by the foregoing insurance requirements.
- E. If Contractor, for any reason, fails to maintain insurance coverage that is required pursuant to this Contract, the same shall be deemed a material breach of Contract. PWA, at its sole option, may terminate this Contract and obtain damages from Contractor resulting from said breach. Alternatively, PWA may purchase such required insurance coverage, and without further notice to Contractor, PWA may deduct from sums due to Contractor any premium costs advanced by PWA for such insurance. These remedies shall be in addition to any other remedies available to PWA.

Draft - Pending Approval
from BCPW

EXHIBIT H: **TRAFFIC CONTROL PLAN**

Butte Creek Camp Fire Post Fire Recovery Project,
(Centerville Road) Butte County, California

1. GENERAL INFORMATION

The Traffic Control Plans depicted in this Appendix are intended to supplement Part 6 "Temporary Traffic Control" of the 2023 Manual on Uniform Traffic Control Devices (MUTCD) 11th Edition and 2023 MUTCD California Supplement in providing guidance and information on preparing traffic control plans. Other references may also provide useful information on traffic control procedures. It should be understood that implementation of traffic control plans must conform with the latest revisions of Part 6 of the 2023 MUTCD and 2014 MUTCD California Supplement.

Part 6 of the MUTCD Manual "Temporary Traffic Control" are published by the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans). These manuals in combination are issued to provide the basic standards for uniform types of warning signs, lights, and other devices to be placed upon any public roadway or street by a person engaged in performing work which interferes with or endangers the safe movement of traffic flow upon such highway or street, in accordance with sections 21367 and 21400 of the California Vehicle Code.

It is the responsibility of the Contractor or Organization performing work on, or adjacent to, a roadway to install and maintain such devices which are necessary to provide safe passage for the traveling public through the work area and for the safety of the workers. Before work begins, traffic control plans for handling traffic through a construction or maintenance project shall be approved by the engineer of the public agency or authority having jurisdiction over the roadway.

Special attention is also needed on the traffic control plans when the work areas affect bike lanes, sidewalks, pedestrian access, and curved or narrow roadways. Notification of the approving agency is desirable prior to the preparation of the plan when bicycles and pedestrian routes are affected by the work.

Nothing contained in this Appendix shall prevent local jurisdictions from modifying, changing, or adopting new specifications deemed necessary. The text and typical drawings in this Appendix are not a legal standard. Criteria for position, location, and use of traffic control devices is furnished solely for the purpose of guidance and information to assist in the preparation of traffic control plans.

2. PROJECT OVERVIEW

Centerville Road is a rural, unpaved, county-maintained road located in the Butte Creek Basin between Nimshew Ridge and Doe Mill Ridge approximately 10 miles northeast of Chico in Butte County, California. The road begins at its intersection with Honey Run Road to the south and travels northward, running roughly parallel to Butte Creek for approximately 11.3 miles to its intersection with Nimshew Road to the north. Centerville Road provides access to several rural-residential properties, and receives moderate traffic serving as an alternate route between Chico and Magalia.

The *Butte Creek Camp Fire Post-Fire Recovery Project* is planned to occur during the summer months of 2024 and/or 2025 and proposes erosion control and erosion prevention treatments along a 2.4-mile segment of Centerville Road. The road improvement and sediment-reduction project begins approximately 6.7 miles

north of Honey Run Road, and includes excavations to install stream crossing and ditch relief culverts at 56 locations, as summarized in Table 1 below.

Table 1. Summary of Culvert Excavations along Centerville Road for the *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*

	Ditch Relief Culvert	Stream Crossing Culvert
Replace Existing Culvert	16	17
Install New Culvert	22	1
Total	38	18
	= 56 Total	

3. SUMMARY OF TRAFFIC CONTROL NEEDS

The following procedures will be in place to ensure the safety of the road users.

General Traffic Control Assumptions

1. Heavy equipment, workers private vehicles, materials, and other debris shall be parked and stored out of the roadway when not in use, and shall be positioned in such a manner to keep the roadway clear at all times.
2. Work that will affect traffic shall be limited to weekdays between the hours of 8:00 A.M. to 4:00 P.M.
3. At the end of each work day, the contractor shall be responsible for restoring the road to a satisfactory condition that is safely passable to public vehicle traffic. Travel lanes will be a minimum of 12 feet wide.
4. Trenches or excavations shall be backfilled or steel-plated during non-work hours. Steel plates shall have a rock or soil ramp on all edges, and shall be securely supported so they won't be dislodged by vehicle traffic. A sign shall be posted near the plates identifying the contractor's name and 24-hour emergency telephone number.
5. The needs of abutting property owners and residents shall be considered, and accommodations made. Driveway access shall be maintained at all times unless other arrangements are made with the owner and residents of the affected property.

Culvert Excavations

Replacement and installation of new culverts generally take several hours to complete and will result in intermittent temporary road closures to allow the excavation and installation of new culverts. The road will be closed while the crew excavates the existing culvert, where present, and prepares the excavation for placement and installation of the new culvert materials. When the new culvert is in place, the excavation will be backfilled to allow the safe passage of traffic. Emergency procedures will be in place to accommodate emergency responders in the case of wildfire or medical emergencies and are described in Section 9 below.

Ditch Relief Culverts - Ditch relief culvert excavations are positioned across the road and are typically about 3 feet wide and can range in depth up to 6 feet. We anticipate road closure for approximately 2 to 3 hours will be necessary for each ditch relief culvert installation.

Stream Crossing Culverts – Stream crossing culvert excavations across the road at stream crossing locations. We anticipate the stream crossing excavations for this project will range up to 40 feet in width and up to 14½ feet in depth. Trench plates shall be stored nearby to cover the excavation and allow traffic to pass periodically during the excavation when necessary.

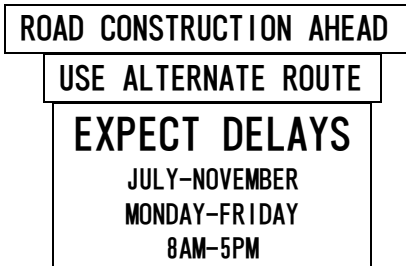
We anticipate most of the stream crossing excavations can be completed in a single work day, and shall be scheduled to begin at the beginning of the work day to allow adequate time to complete the culvert installation and safely reopen the road by the end of the day. In the case that an excavation will take longer than one work day, the excavation may begin on the previous day to remove any existing culvert and lower the road surface. This will reduce the depth of excavation and road closure time that will be necessary the following day, and will allow for the road to safely remain open overnight.

The following crossings have been identified by PWA as deeper excavations that will likely need to begin preliminary excavation the day before: Site 119, 125, 138, 139, 140, 147, 148, and 149. Sites 120, 129, 131, 132, 135, and 137 may also need to be begun the day before, to be determined on a case-by-case basis by PWA and the selected contractor.

4. PUBLIC OUTREACH AND SIGNAGE

Local residents and commuters will be notified in advance of intermittent road closures by local media, signage, and online platforms. Announcements will include an estimated start date and duration, and will encourage road users to use alternative routes to reduce traffic along Centerville Road. Construction signage will be displayed in the project vicinity will be visible to drivers approaching the project area as described below.

The following signs will be posted to provide advance warning of changed conditions several weeks before construction activities are scheduled to begin, at the north and south ends of Centerville Road, as well as at the upper and lower ends of the project area.



6 MILES AHEAD will be displayed at Centerville Road’s intersection with Honey Run Road, and **2 MILES AHEAD** will be similarly specified at the intersection with Nimshew Road to the north. During this time, local road users can use the roadway to the point of closure.

When culvert excavations are expected to block traffic passage along Centerville Road, the following sign will be mounted on folding barricades and displayed at either end of the work area.



5. EMERGENCY PROCEDURES

In the event of wildfire or other public safety emergency that demands the immediate passage of emergency vehicles or evacuation traffic along Centerville Road, the contractor shall make every effort to prioritize the safe and timely passage of emergency traffic through the work zone. Trench plates and soil materials shall be kept in the vicinity of any excavation that obstructs the roadway to assist the contractor with rapid and safe temporary re-opening of the road, as described below.

In the event of emergency:

- a. Any excavation that blocks the road shall be quickly backfilled or covered using soil and/or trench plates to allow safe passage of vehicles.
- b. Any equipment, vehicles, or materials obstructing the roadway shall be moved out of the roadway to ensure a clear path for emergency vehicles.
- c. Contractor and all onsite personnel shall provide assistance and guidance to emergency vehicles as needed to safely navigate through the work area.
- d. All work activities shall cease until emergency activities in the vicinity have concluded.

6. INSPECTION AND REVIEW

This traffic control plan is subject to approval by the appropriate authorities and may be revised and adapted as necessary to ensure the safety and efficiency of the work area.

Signage Location 1. Centerville Road at intersection with Honey Run Road:

ROAD CONSTRUCTION AHEAD

USE ALTERNATE ROUTE

EXPECT DELAYS

JULY-NOVEMBER
MONDAY-FRIDAY
8AM-5PM

6 MILES AHEAD

Signage Location 2. Centerville Road at intersection with Nimshew Road:

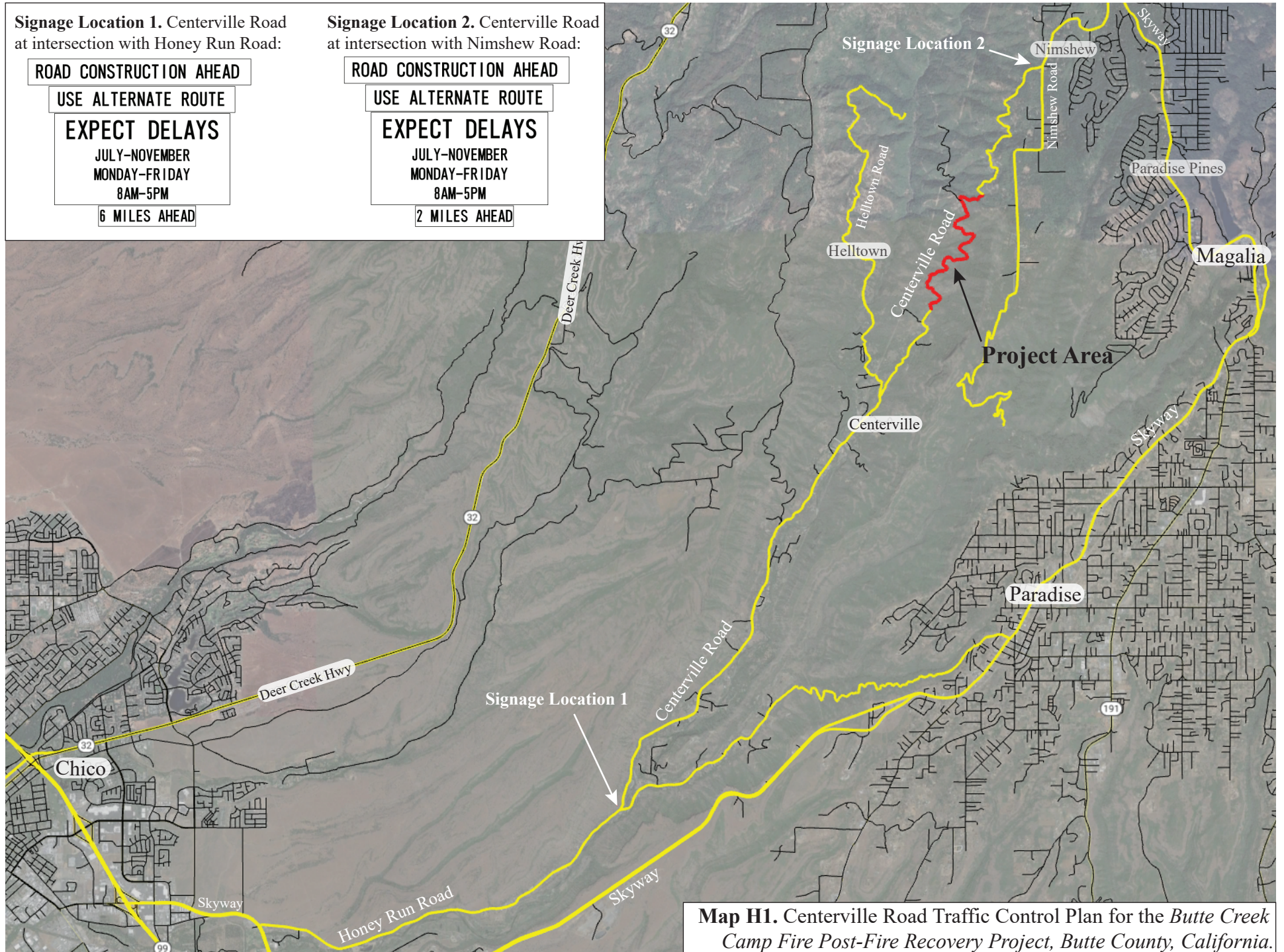
ROAD CONSTRUCTION AHEAD

USE ALTERNATE ROUTE

EXPECT DELAYS

JULY-NOVEMBER
MONDAY-FRIDAY
8AM-5PM

2 MILES AHEAD



Map H1. Centerville Road Traffic Control Plan for the *Butte Creek Camp Fire Post-Fire Recovery Project, Butte County, California.*