WILLOW CREEK ROAD 2ND BRIDGE
FISH PASSAGE PROJECT

SPONSORED BY

STATE COASTAL CONSERVANCY

IN PARTNERSHIP WITH

STEWARDS OF THE COAST AND REDWOODS

CALIFORNIA STATE PARKS

SONOMA COUNTY DEPARTMENT OF TRANSPORTATION AND PUBLIC WORKS

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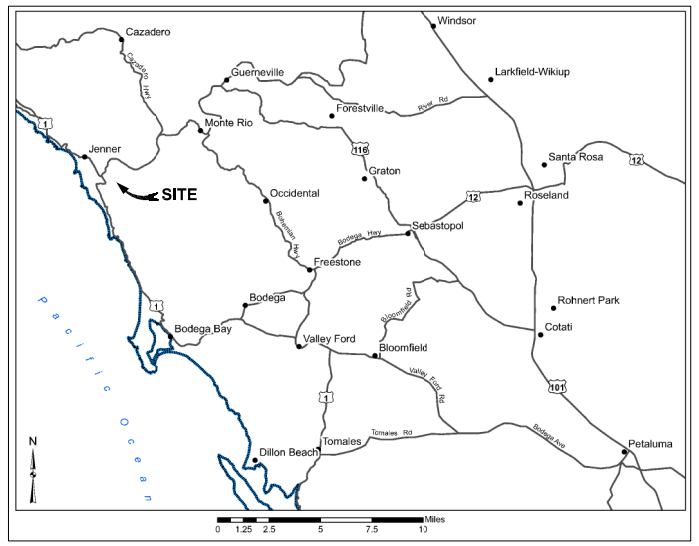
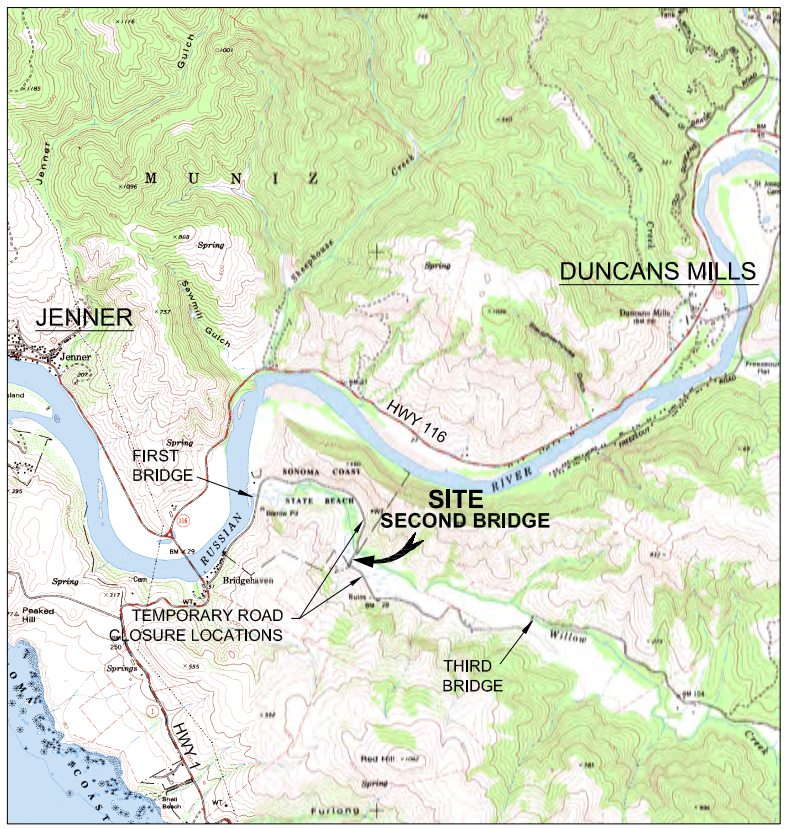


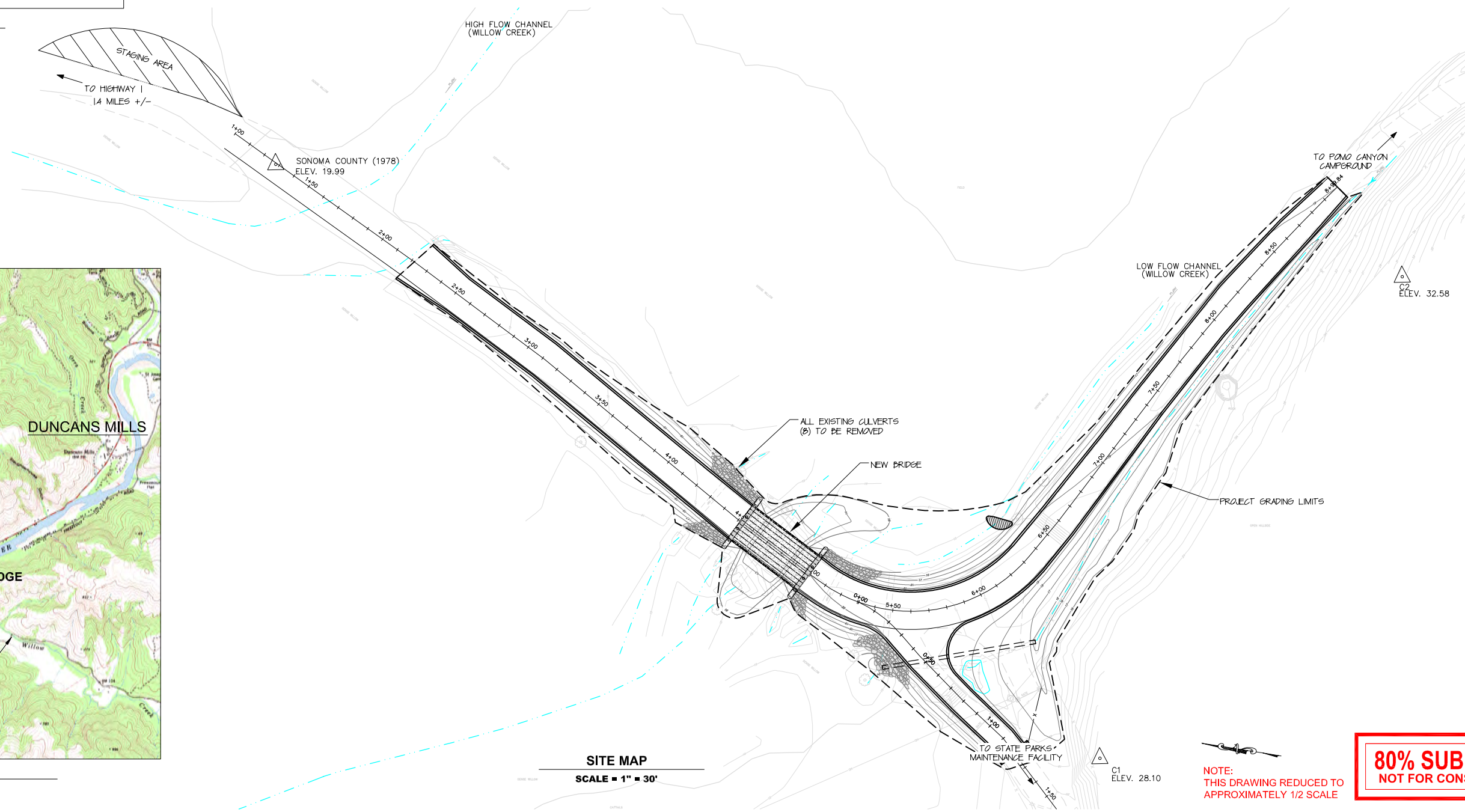
VICINITY MAP

AS SHOWN



LOCATION MAP

USGS QUADRANGLE 7.5 SERIES
DUNCAN'S MILLS, CA
SCALE: 1" = 2500'



SITE MAP

SCALE = 1" = 30'

NOTE:
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80% SUBMITTAL
NOT FOR CONSTRUCTION

PRUNUSKE CHATHAM, INC.
400 MORRIS STREET, SUITE G
SEBASTOPOL, CA 95472
(707) 824-4600

REGISTERED PROFESSIONAL ENGINEER — JONATHON A. MANN — No. C 63782 Exp. 9/30/10 — CIVIL — STATE OF CALIFORNIA

DATE: 01/07/09
SCALE: AS SHOWN
DESIGNED BY: LW, DR
DRAFTED BY: LW, AQ
CHECKED BY: JMANN

REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods & California State Parks
Duncans Mills, CA

Willow Creek Road 2nd Bridge Area Fish Passage Project
Title Sheet

SHEET 1 OF 8

GENERAL CONSTRUCTION NOTES:

A. LEGAL

A1. Construction Contractor shall assume sole and complete responsibility for job site conditions during the course of construction of the project, including safety of all persons and property. This requirement shall be made to apply continuously and not be limited to normal working hours. Construction Contractor shall hold harmless, indemnify and defend the Owner, the Project Designer and their consultants, and each of their officers, employees, and agents.

B. INSPECTION / OVERSIGHT

B1. Project Designer from Prunuske Chatham, Inc., shall inspect construction shown hereon. Contractor to meet with Project Designer and Owner Representative before commencing construction to determine inspection points that require approval before continuing work.

B2. A pre-construction site meeting will be held w/ Contractor, Grading Inspector, Project Designer, Geotechnical Engineer and Owner Representative to discuss construction methods, schedule and inspections.

B3. For site work Project Designer shall inspect and approve: 1. All grade staking prior to construction. 2. After excavation before geotextile fabric placement. 3. After geotextile fabric placement before rock placement. 4. After excavation during compaction of fills and backfills. 5. After rock placement before revegetation/seeding/mulching and erosion blanket. 6. At job completion.

B4. For bridge work Project Designer shall inspect and approve: 1. Foundation Construction. 2. Bridge abutments prior to attachment of bridge deck and backfilling. 3. After placement of bridge deck.

B5. The Project Designer shall approve all rock before placement.

C. GENERAL CONDITIONS

C1. Construction staging areas and temporary access to be coordinated with Owner Representative and Project Designer prior to construction. Staging will occur within project area on north side of creek and as approved by Owner Representative and Project Designer.

C2. Prior to construction, the Contractor is responsible for determining locations of all existing underground utilities through coordination with the property owner, Underground Service Alert, and the various utility companies.

C3. It is expected that the construction area will be dry. In the case that water is present the contractor must provide a water diversion and control plan to be approved by the Project Designer and Owner Representative.

C4. Contractor shall coordinate with the Owner Representative to locate pipes and utilities in field. Locations of pipes encountered during construction shall be documented to the Owner Representative. Cut pipes shall be capped in place and marked in field for recovery and reconditioning by the Owner Representative. Contractor shall coordinate work with recovery of utilities.

C5. All existing vegetation outside of the project limits will be left undisturbed.

C6. Short-term erosion control shall consist of stockpiling soil or other material in areas where it will not be washed into the stream. If rain should occur while the soil is temporarily stockpiled, the stockpiled soil will be covered with plastic. The plastic will be secured in place to insure that soil is protected from rain and wind. Silt fencing or wattles shall be installed on contour around all stockpile locations.

C7. No work shall commence prior to 7am except in an emergency.

D. CONSTRUCTION NOTES

D1. All rock shall be of sound quality, free of cracks, of sufficient durability, and not contain swelling type clay. All rock shall conform to CALTRANS Standard Specifications Section 72-2.02, Materials, for all material qualities, such as but not limited to, durability, absorption, and apparent specific gravity (CALTRANS Standard Specifications, 2006).

D2. Compact fill in 6" lifts with 90% relative compaction, unless otherwise noted.

D3. All rock shall have Mirafi 1100N filter fabric installed between soil and rock. Alternate fabric may be approved by Project Designer in advance of construction.

D4. Begin constructing rock at bottom of slope to insure rock is stable.

D5. All disturbed soil area to be seeded and mulched. (See seed/mulch specification below).

D6. All graded slopes not covered by rock shall be covered with coir erosion control blanket (North American Green C125BN).
Install seed prior to erosion control blanket. Blanket to be pinned w/12" or 18" soil pins 2' on center with triangular spacing.

D7. Contractor shall use temporary dewatering systems to control minor surface flow from ground water seeps through work area. Unless otherwise arranged, Contractor is responsible for the design, operation, and maintenance of any required temporary dewatering system

D8. Contractor to grade stake site.

D9. Contractor shall install straw wattles on graded slopes and disturbed areas where vegetation has been removed or on temporary access roads at the end of the job as needed. Contractor to coordinate with project designer on location of wattles.

D11. Contractor is responsible for identifying and preserving any utilities encountered during construction.

E. ENVIRONMENTALLY SENSITIVE AREAS AND CULTRUAL RESOURCES

This construction site is considered an environmentally sensitive area. The Contractor shall take all precautions and utilize all measures necessary to protect the environmental integrity of the site, including but not limited to the protection of plant, animal, and aquatic life. The following is an integral aspect of this construction project:

E1. All vehicles and equipment on the site must not leak any type of hazardous materials such as oil, hydraulic fluid, or fuel. Vehicles and equipment must be inspected and approved by Owner Representative before use. Fueling shall take place outside of the riparian corridor.

E2. Contractor shall have emergency spill clean up gear (spill containment and absorption materials) and fire equipment available on site at all times. These items are to be reviewed by Owner Representatation before construction begins.

E3. Access to the site must be reviewed with the Owner Representative Project Designer. Exact location of access way, number of trips planned, and type of vehicles used shall be submitted prior to construction start up & approved by Owner Representative and Project Designer. Contractor shall be responsible for repairing, at his own cost above and beyond the scope of work, any damage to property caused by access not approved by the Owner Representative and Project Designer.

E4. Trash, litter, construction debris, cigarette butts, etc., must be stored in designated area approved by the Owner Representative or removed from the site at the end of each working day. Upon completion of work, Contractor is responsible for removing all debris to the satisfaction of the Owner Representative.

E5. Construction personnel shall be briefed about the potential to uncover prehistoric resources, including chert or obsidian flakes, projectile points, mortars and pestles, dark friable soil containing shell and bone dietary, heat-affected rock, or human burials, as well as historic resources such as stone or adobe foundations or walls, structures and remains with square nails, and refuse deposits or bottle dumps. Construction personnel shall be instructed to avoid areas containing potential cultural resources and that collection of cultural resources is forbidden.

E6. Should potential cultural resources be discovered, work will be discontinued until the area can be evaluated by a qualified archaeologist. If human remains are encountered, all work must stop in the immediate vicinity of the discovered remains, and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated.

PERMITTING QUANTITIES:

Total project area = 0.85 acres
Total disturbed area = 0.85 acres (100% total area)
Percent impervious before / after construction = 40% / 40.2%

CONSTRUCTION QUANTITIES:

Total Cut = 2100 c.y.
Total Fill (select fill) = 2500 c.y.
Existing AC to Remove = 120 c.y.
Aggregate Road Base = 400 c.y.
Asphalt = 140 c.y
Rock Fill (1/4 ton) = 25 tons
Rock Fill (No. 1 Backing) = 140 tons
Class 2 Perm Fill = 8 tons
Chinking Rock Fill = 3 tons

SPOIL SPECIFICATIONS:

1. Soil not used for engineered (select) fills will be considered spoils.

2. Spoils to be hauled offsite to facility or location approved by Project Designer.

3. Approximate Spoils = 200 c.y.
(assuming 10% of cut value)

4. Excavated asphalt to be hauled to approved recycling plant.

5. Removed culverts to be hauled to Owner Representative approved location.

NOTE:

Construction quantities shown are approximate.
It is the Contractor's responsibility to determine proper earthwork and rock quantities.

F. SEED, MULCH AND HYDRO MULCH SPECIFICATIONS

TO BE DETERMINED

G. GRADING NOTES

G1. All grading shall be in conformance with the geotechnical report by RGH Consultants, Inc. dated May 9, 2008.

G2. Areas to be graded should be stripped of the upper few inches of soil containing organic matter. Actual stripping depth should be determined by a representative of the geotechnical engineer in the field at the time of stripping. The stripping should be removed from the site, or if suitable, stockpiled for re-use as topsoil in landscaping.

G3. In fill areas, the weak surface soils should be excavated to a depth of approximately two feet below the existing ground surface and should extend at least three feet beyond the edge of pavements. The excavated materials should be removed from the site, or if suitable, stockpiled for re-use as compacted fill.

G4. In general, imported fill should be select. Select fill should be free of organic matter, have a low expansion potential and conform to the following requirements:

		PERCENT PASSING
Liquid Limit - 40% Maximum	SIEVE SIZE	(by dry weight)
Plasticity Index - 15% Maximum	6 in	100
R-value - 20 Minimum	4 in	90-100
	No. 200	10-60

G5. Contractor is responsible for submitting, at least 72 hours (3 days) in advance of its intended use, samples of the proposed import materials for laboratory testing and approval by the geotechnical engineer.

G6. The surface exposed by stripping and removal of weak surface soils should be scarified to a depth of at least 6 inches, uniformly moisture-conditioned to near optimum and properly compacted to at least 90 percent of the maximum dry density of the materials as determined by ASTM Test Method D-1557. Approved fill materials should then be spread in thin lifts, moisture conditioned and compacted to at least 90 percent relative compaction unless otherwise specified.

G7. In general and where not specified on the plans, fill slopes should be constructed at slope gradients of 2:1 (horizontal to vertical) or flatter.

G8. Graded areas with slopes 3:1 or steeper shall have North American Green C125 BN erosion control blanket installed.

G9. Unless approved by the Owner Representative, significant trees (diameter greater than 6") shall be protected in place. Any grading or fill shall be placed around the base of a significant tree.

H. ROADWAY SPECIFICATION

H1. All road material and material placement shall conform to Caltrans standard specifications.

H2. All pavement shall have a minimum select fill thickness of 1 foot, a class 2 aggregate base of 0.75 feet, and an asphalt thickness of 0.25 feet.

H3. Prior to placement of aggregate base, the upper 6 inches of the pavement subgrade soils should be scarified, uniformly moisture-conditioned to near optimum, and compacted to a least 95 percent relative compaction to form a firm, non-yielding surface.

H4. Aggregate used for the base course shall comply with the minimum requirements specified in Caltrans Standard Specifications, Section 26 for Class 2 Aggregate Base.

H5. The suitability of on-site soils for use as select fill should be verified during grading and approved by the Geotechnical Engineer prior to use (See G4).

I. BRIDGE SPECIFICATION

I1. A prefabricated concrete bridge with prefabricated abutments shall be designed by others and delivered to site. Bridge detail drawings are in a separate drawing set. Bridge design geometry shall be assumed current. Bridge detail drawings by others shall supersede in the case of a conflict.

I2. Contractor shall install prefabricated concrete bridge and prefabricated abutments according to bridge detail drawings.

I3. Contractor shall coordinate with bridge manufacturer and property owners to unload and stage bridge materials.

I4. A representative of the bridge manufacturer shall be on site during installation. Representative of bridge manufacturer and Project Designer shall approve bridge installation (see note B4, this sheet).

J. TRAFFIC CONTROL

J1. CA State Parks to close road for construction and secure alternative access. Closure is after Labor Day for duration of project.

K. HORIZONTAL AND VERTICAL CONTROL

K1. Topography based on ground survey by PCI in March 2008.+

K2. Vertical datum is NGVD 1929. Based on PCI survey on Sonoma County benchmark located on existing bridge.

K3. Horizontal datum is approximately California State Plane, Zone 2, NAD 83, Feet. Alignment based on correlation of total station survey to data from GPS.

NOTE:
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Exp. 9/30/10
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DATE: 01/07/09
SCALE: NONE
DESIGNED BY: LW, DR
DRAFTED BY: LW
CHECKED BY: J MANN

REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods & California State Parks
Duncans Mills, CA

Willow Creek Road 2nd Bridge Fish Passage Project Construction Notes

SHEET 2 OF 8

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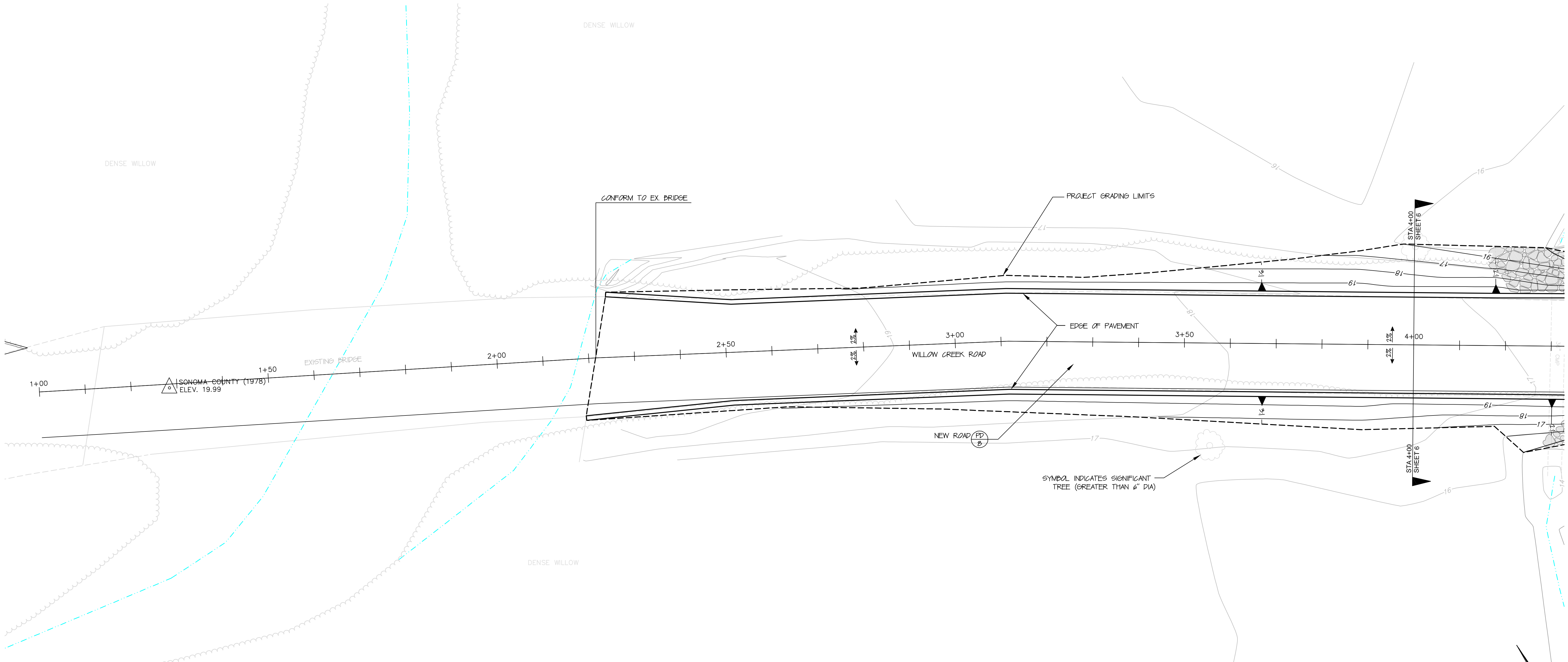

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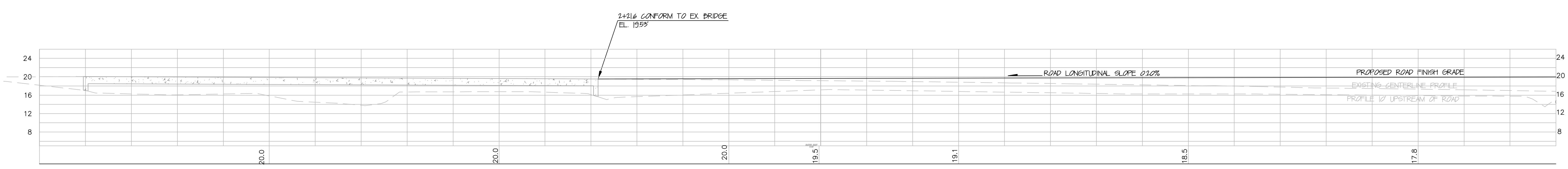

PROFILE

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CHECKED BY: JMANN

REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods
& California State Parks
Duncans Mills, CA

Willow Creek Road 2nd Bridge Area Fish Passage Project
Station 1+00 - 4+00 Plan & Profiile

SHEET
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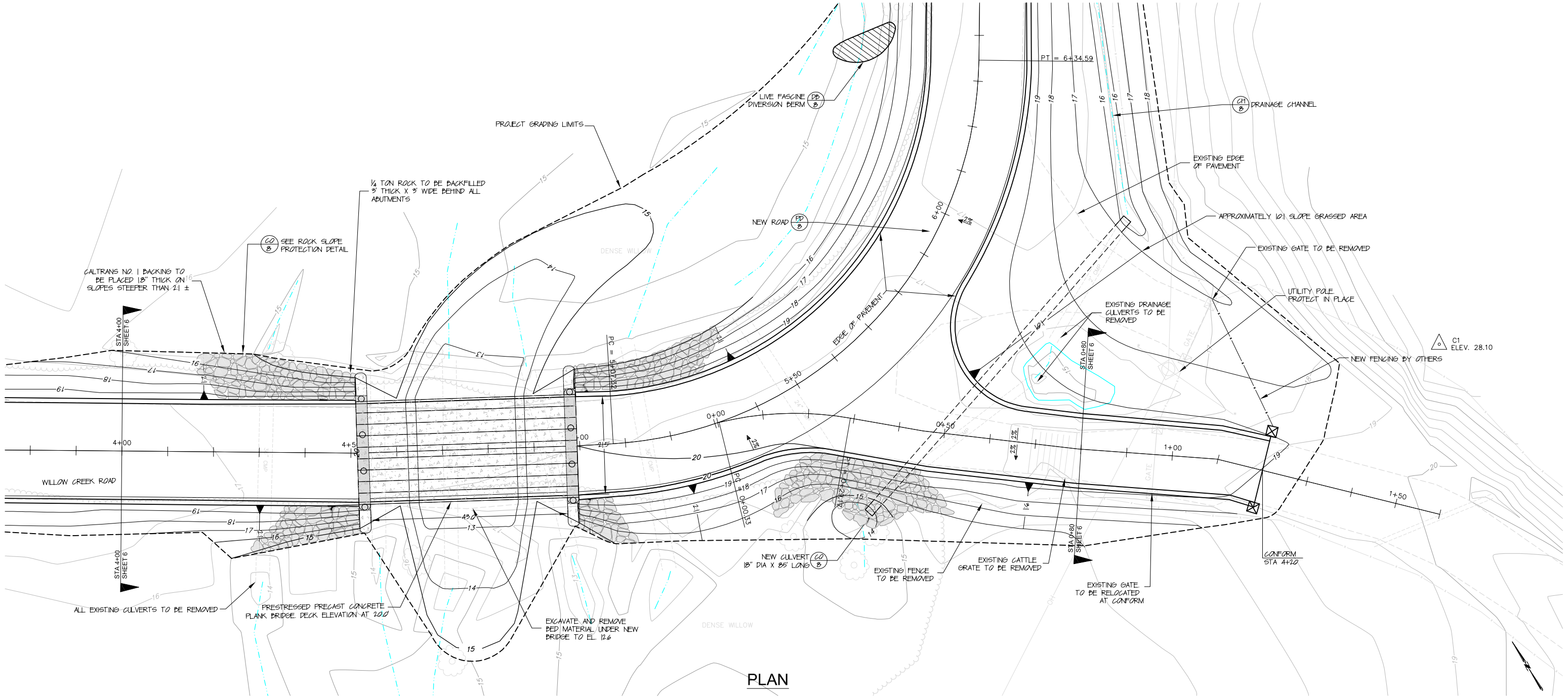
OF 8



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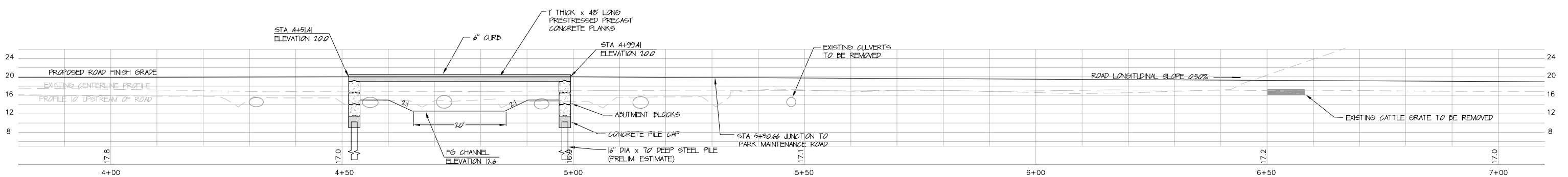

PROFILE

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Willow Creek Road 2nd Bridge Area Fish Passage Project
Station 4+00 - 6+00 Plan & Profiile

SHEET
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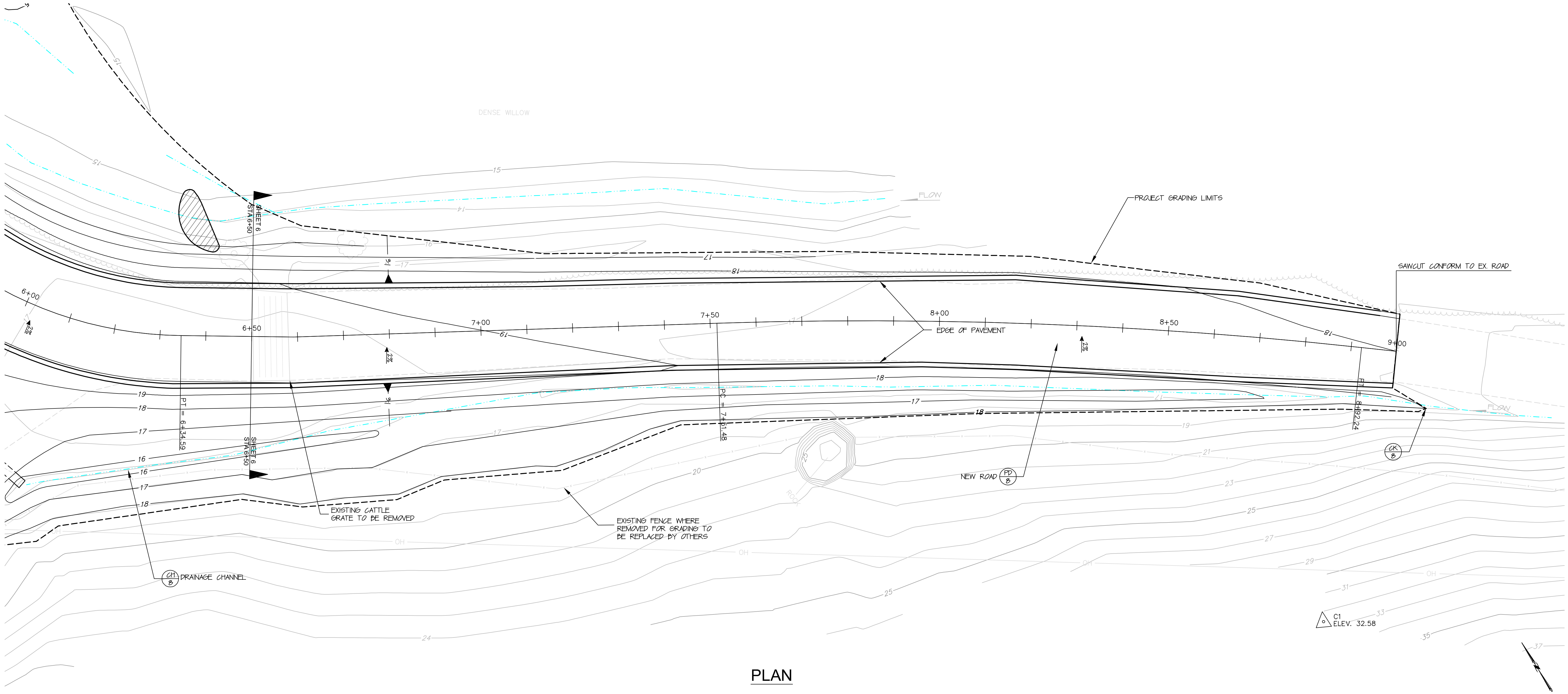
OF 8



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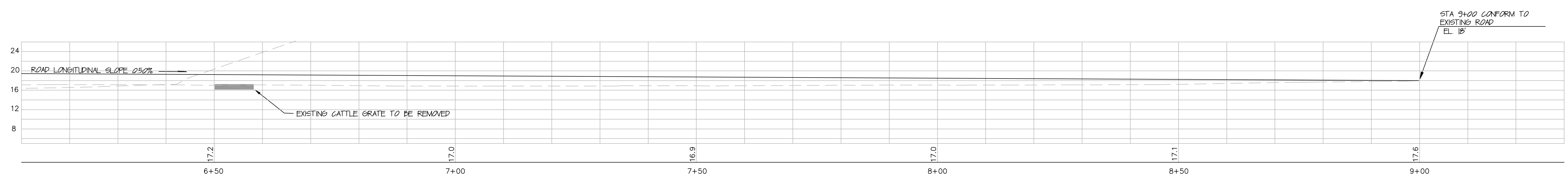

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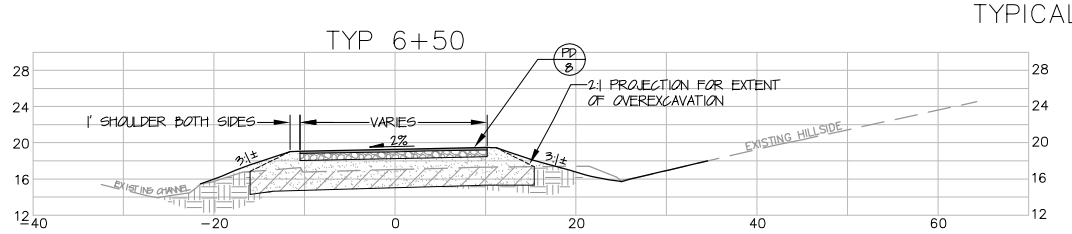
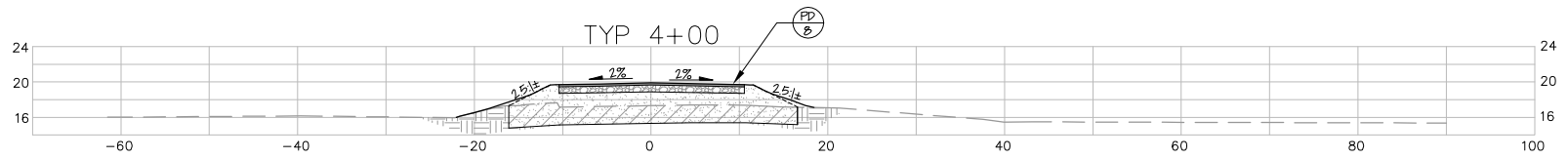
Duncans Mills, CA

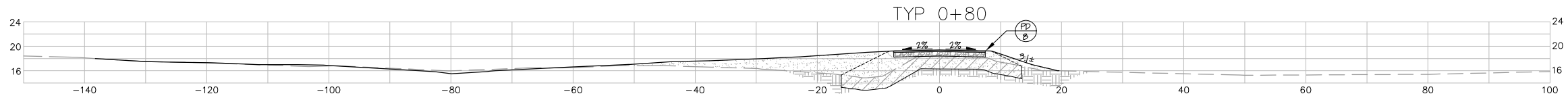
Willow Creek Road 2nd Bridge Area Fish Passage Project
Station 6+00 - 9+00 Plan & Profiile

SHEET 5 OF 8

TYPICAL SECTIONS







ASPHALT – THICKNESS 0.25'

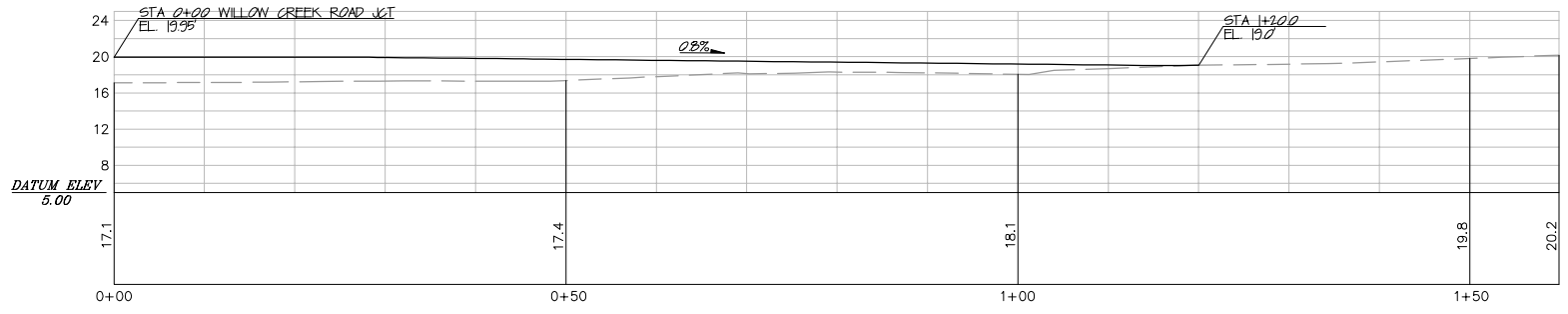
CLASS 2 AGGREGATE – THICKNESS 0.75'

SELECT FILL – MINIMUM THICKNESS 1.0'

OVEREXCAVATION – MINIMUM DEPTH 2.0' FROM EXISTING GROUND SURFACE

EXISTING GROUND

STATE PARK MAINTENANCE ROAD PROFILE



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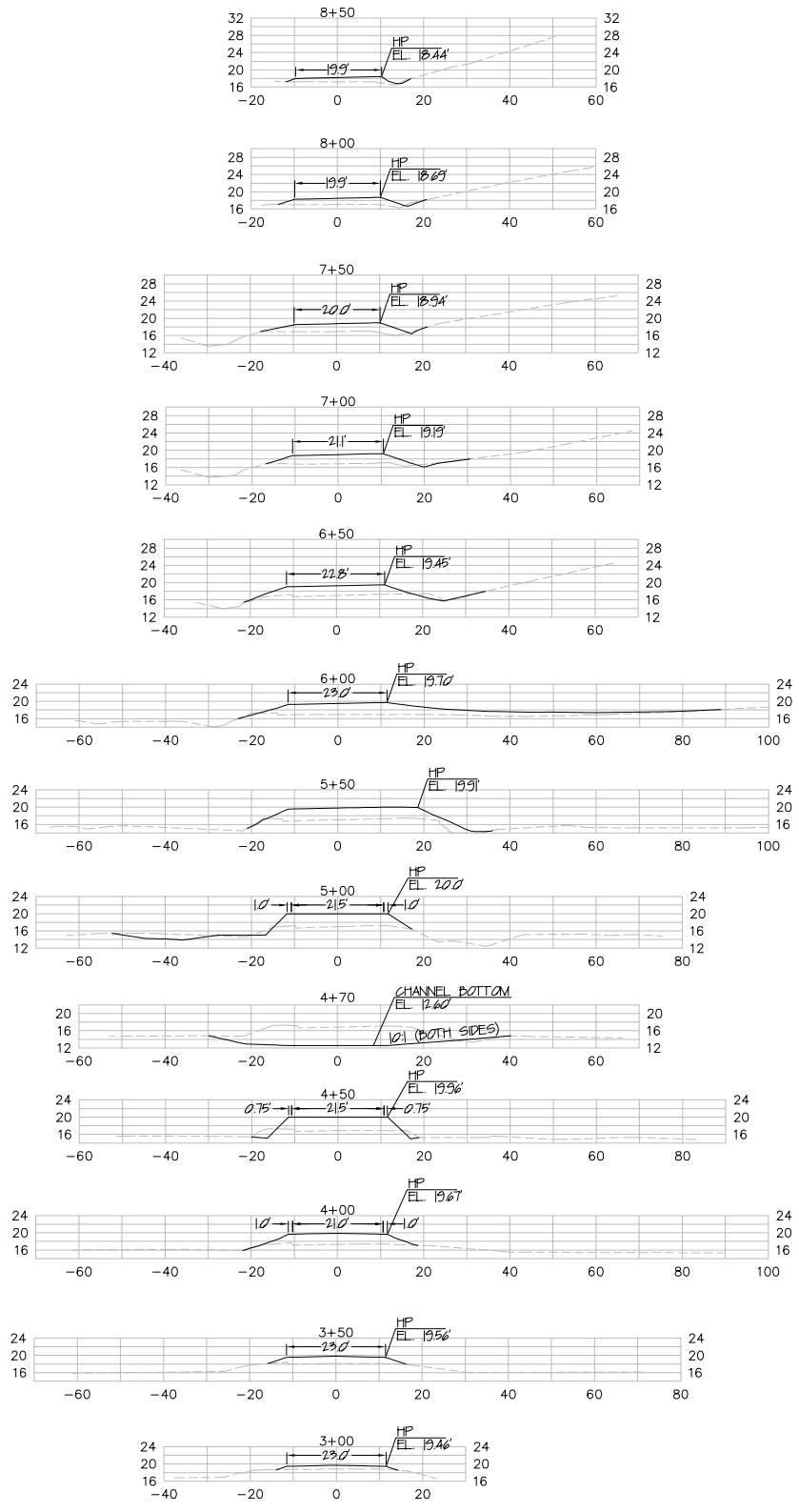
REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods & California State Parks
Duncans Mills, CA

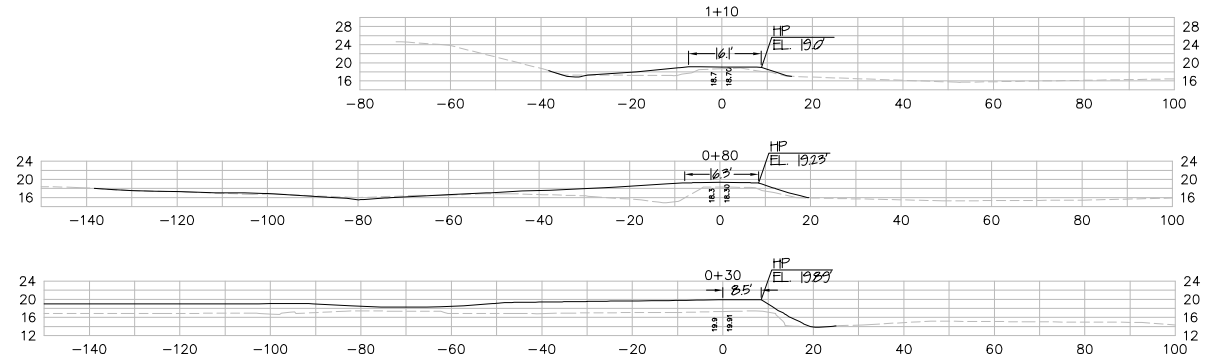
Willow Creek Road 2nd Bridge Fish Passage Project
Typical Sections & Maintenance Road Profile

SHEET 6 OF 8

WILLOW CREEK ROAD ALIGNMENT



WILLOW CREEK SHOP ROAD ALIGNMENT



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SCALE: 1" = 20'
DESIGNED BY: LW, DR
DRAFTED BY: LW
CHECKED BY: JMANN

REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods & California State Parks
Duncans Mills, CA

Willow Creek Road 2nd Bridge Fish Passage Project
Cross Sections

SHEET 7 OF 8

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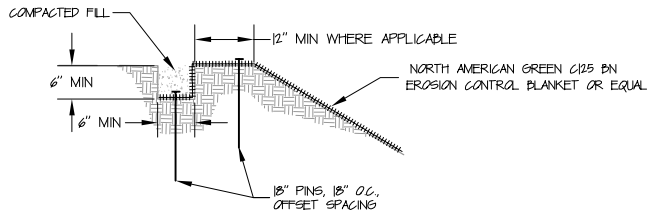

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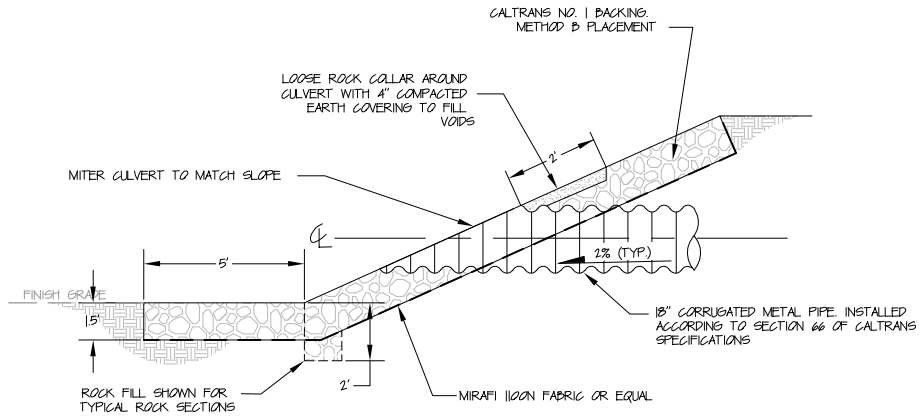
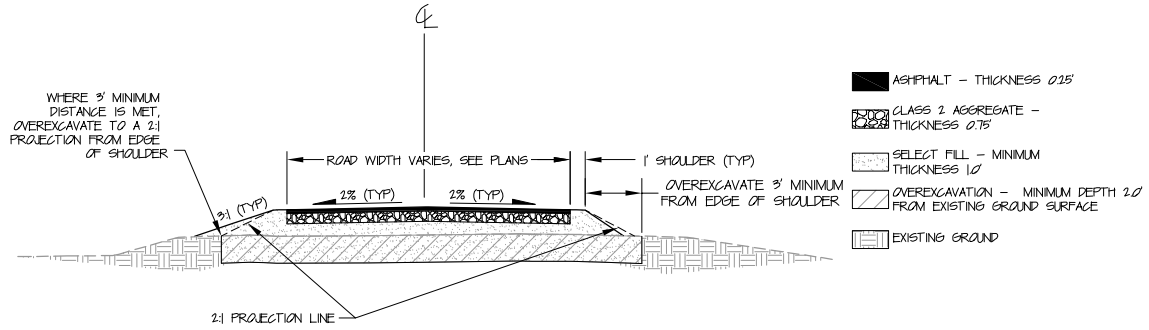


CO - **CULVERT OUTFALL DETAIL - ROCK SLOPE PROTECTION**
NTS



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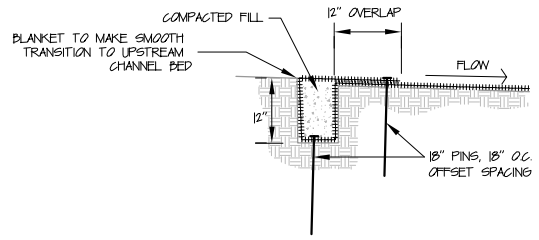

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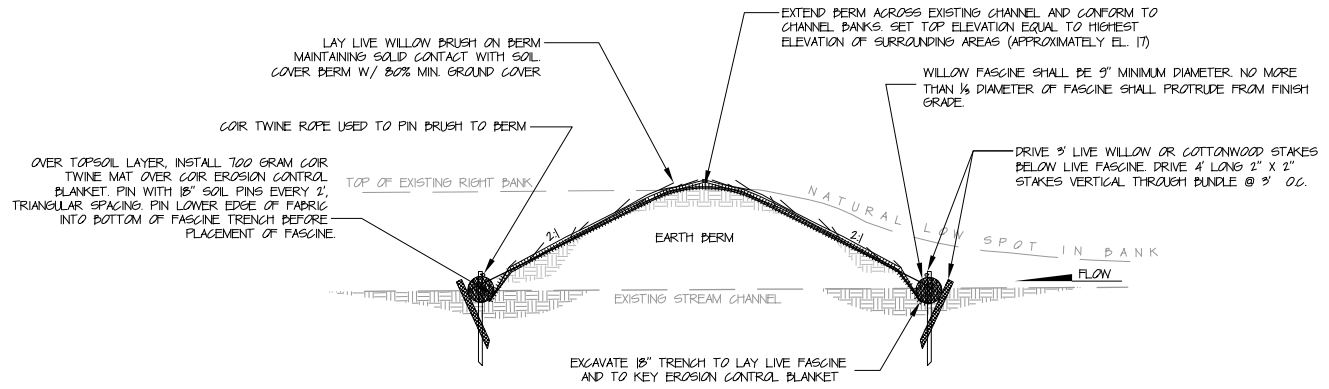
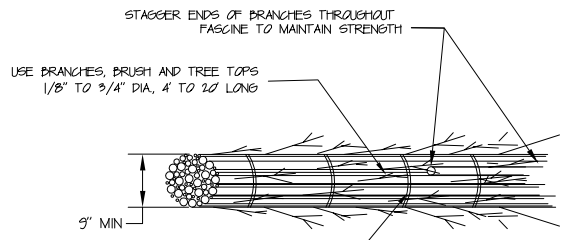


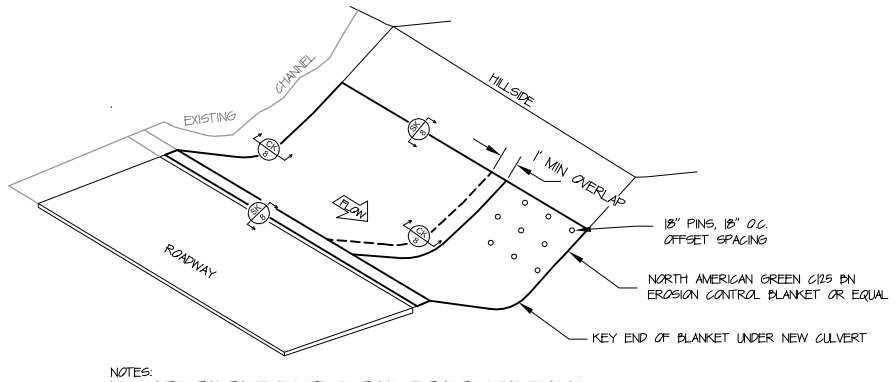
SECTION

DB - **DIVERSION BERM DETAIL**
NTS



NOTES:
1. OVERLAP FASCINE BY 12" AT ALL JOINTS BETWEEN INDIVIDUAL BUNDLES.
2. OPTIONAL: INSTALL BRANCHES WITH NODES IN THE SAME DIRECTION FOR EASIER BUNDLE CONSTRUCTION.
3. BERM TO BE LEFT IN PLACE AT COMPLETION OF PROJECT.

LIVE FASCINE



NOTES:
1. CONTRACTOR TO REVIEW SPECIFICATIONS SECTION 72-4 FOR EROSION CONTROL BLANKET INSTALLATION, CONSTRUCTION SEQUENCING AND MATERIALS.
2. PREPARE SOIL BEFORE BLANKET INSTALLATION INCLUDING COMPACTION, SCARIFICATION, AND SEED APPLICATION.

CH - **DRAINAGE CHANNEL DETAIL**
NTS

NOTE:
THIS DRAWING REDUCED TO APPROXIMATELY 1/2 SCALE

80% SUBMITTAL
NOT FOR CONSTRUCTION

PRUNUSKE CHATHAM, INC.
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REGISTERED PROFESSIONAL ENGINEER
JONATHAN A. MANN
No. C 63782
Exp. 9/30/10
CIVIL
STATE OF CALIFORNIA

DATE: 01/07/09
SCALE: AS SHOWN
DESIGNED BY: LW, DR
DRAFTED BY: LW
CHECKED BY: JMANN

REVISIONS	DATE	BY

PREPARED FOR:
Stewards of the Coast and Redwoods
Duncans Mills, Ca

Willow Creek Road 2nd Bridge
Fish Passage Project
Detail Sheet

SHEET
8
OF 8