

# SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT

## 100% DESIGN



2169-G East Francisco Blvd.  
San Rafael, CA 94901  
(415) 454-8868 Phone  
www.wra-ca.com



### ST HELENA, CALIFORNIA

#### STATEMENT OF PURPOSE

THE PROJECT WILL RESTORE STEELHEAD INGRESS AND EGRESS TO THE UPPER PORTION OF SULPHUR CREEK BY REPLACING THE EXISTING PRIVATE BRIDGE AND REMOVING THE EXISTING, NONFUNCTIONING FISH LADDER THAT IS LOCATED WITHIN THE CHANNEL OF THE CREEK. THE PROJECT WILL ENHANCE STREAM FUNCTION, AND IMPROVE BED AND BANK STABILIZATION.

#### REGULATORY CONTEXT

PROJECT GOALS AND SUBSEQUENT DESIGN HAVE BEEN DEVELOPED UNDER THE GUIDANCE OF NAPA COUNTY RESOURCE CONSERVATION DISTRICT.

THE PROJECT IS SUBJECT TO APPROVAL AND RESTRICTIONS FROM THE FOLLOWING AGENCIES:

- US ARMY CORPS OF ENGINEERS
- US FISH AND WILDLIFE SERVICE
- CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
- CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
- NOAA NATIONAL MARINE FISHERIES SERVICE
- NAPA COUNTY

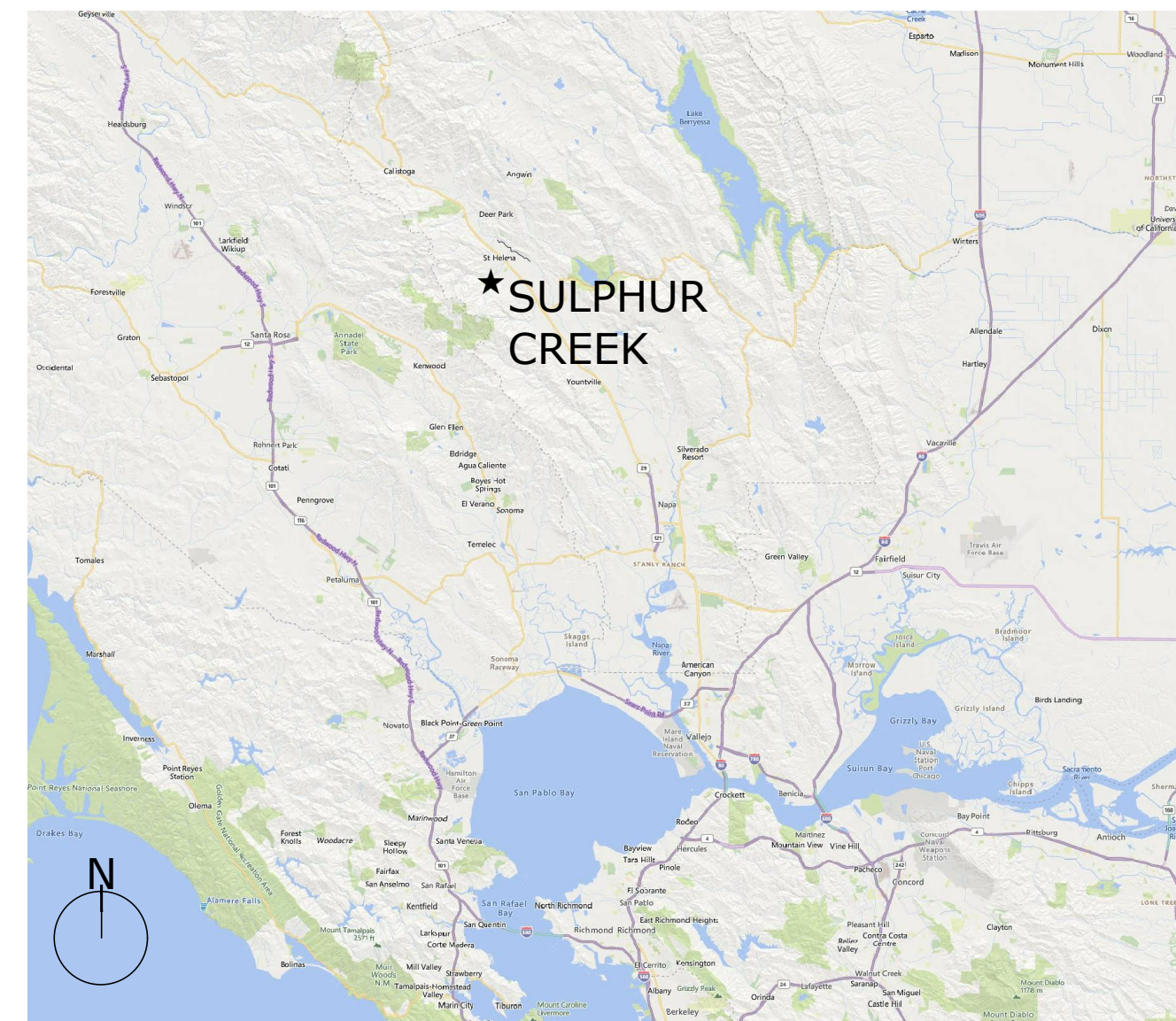
THE PROJECT IS LOCATED IN FEMA FIRM PANEL 06055C0376 BEYOND THE STUDIED FLOOD AREA, NAPA COUNTY ZONING AW, ENCOMPASSES ADDRESSES 2959, 2929, 2955 WHITE SULPHUR SPRING ROAD AND 2995 SPRING STREET, ST. HELENA, CA 94574, AND ENCOMPASSES APN 027-020-051, 027-020-032, 009-391-020, AND 009-392-041.

#### PROJECT SCHEDULE

THIS PROJECT IS INTENDED TO BE CONSTRUCTED DURING ONE SUMMER CONSTRUCTION SEASON (MAY 1 THROUGH OCTOBER 15TH).

#### SURVEY CONTROL

HORIZONTAL DATUM: NAD83 2011, CALIFORNIA STATE PLANE ZONE II, U.S. SURVEY FEET  
VERTICAL DATUM: NAVD88, U.S. SURVEY FEET



**1 VICINITY MAP**  
NOT TO SCALE



**2 LOCATION PLAN**  
NOT TO SCALE



**3 PLAN VIEW**

#### DESIGNED FOR

NAPA COUNTY RESOURCE CONSERVATION DISTRICT  
1303 JEFFERSON ST., STE. 500B  
NAPA, CALIFORNIA 94559  
CONTACT: FRANCES KNAPCZYK  
(707)287-6955  
FRANCES@NAPARCD.ORG

#### ENGINEER CONSULTANT

WRA, INC.  
2169-G E. FRANCISCO BLVD.  
SAN RAFAEL, CA 94901  
CONTACT: ANDREW SMITH, PE  
(408) 499-9479  
SMITH@WRA-CA.COM

#### BRIDGE SUBCONSULTANT

MARK THOMAS  
701 UNIVERSITY AVENUE, SUITE 200  
SACRAMENTO, CA 95825  
CONTACT: DAN BLOMQUIST, PE  
(916) 215-6981  
DBLOMQUIST@MARKTHOMAS.COM

#### SHEET INDEX

G-1.0	COVER
G-1.1	NOTES AND ABBREVIATIONS
V-1.0	EXISTING CONDITIONS PLAN
D-1.0	DEMOLITION PLAN
D-1.1	TREE REMOVAL PLAN
D-1.2	TREE TABLE AND NOTES
C-1.0	SITE PREPARATION PLAN
C-1.1	EXAMPLE CREEK BYPASS AND DEWATERING PLAN
C-2.0	SITE PLAN
C-3.0	GRADING PLAN
C-3.1	GRADING PLAN
C-4.0	PROFILE
C-5.0	SECTIONS
C-5.1	SECTIONS
C-5.2	SECTIONS
C-6.0	CHANNEL DETAILS
PP-1	ROADWAY AND BRIDGE LAYOUT AND PROFILE
CD-1	CONSTRUCTION DETAILS
TH-1	TRAFFIC HANDLING
B-1.0	GENERAL PLAN
B-1.1	INDEX TO PLANS
B-1.2	FOUNDATION PLAN
B-1.3	ABUTMENT LAYOUT
B-1.4	ABUTMENT DETAILS
B-1.5	ABUTMENT DRAINAGE DETAILS
B-1.6	TEST BORING LAYOUT
B-1.7	LOG OF TEST BORINGS
L-2.0	REVEGETATION NOTES AND DETAILS
L-2.1	REVEGETATION PLAN
L-2.2	REVEGETATION PLAN
L-2.3	REVEGETATION PLAN
L-2.4	REVEGETATION PLAN
L-3.0	EROSION CONTROL PLAN
L-3.1	EROSION CONTROL DETAILS
L-3.2	EROSION CONTROL DETAILS

## SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT

ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, JM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

### COVER

SHEET

# G-1.0

Review Test



**PROJECT NOTES**

1. **PROPERTIES**  
ALL WORK TO BE PERFORMED IS ON PARCELS #027-020-051, #009-392-041, #027-020-032 AND #027-020-034.

2. **TOPOGRAPHY**  
BASE TOPOGRAPHY SHOWN HEREIN TAKEN FROM SURVEY ORIGINALLY CONDUCTED BY ALBION SURVEYS, DECEMBER 2017 AND VERIFIED BY MARK THOMAS, 2020. ADDITIONAL TOPOGRAPHY SURVEY OF CHANNEL FEATURES WAS CONDUCTED BY WRA, INC. UNDER SUPERVISION OF ANDREW SMITH, CALIFORNIA PROFESSIONAL ENGINEER #82643

3. **REGULATORY PERMIT REQUIREMENTS**  
ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL REGULATORY PERMITS AND AUTHORIZATIONS ISSUED FOR THE PROJECT, INCLUDING BUT NOT LIMITED TO THOSE ISSUED BY THE FOLLOWING AGENCIES:  
a. U.S. ARMY CORPS OF ENGINEERS  
b. NOAA NATIONAL MARINE FISHERIES SERVICE  
c. U.S. FISH AND WILDLIFE SERVICE  
d. CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE  
e. REGIONAL WATER QUALITY CONTROL BOARD  
f. NAPA COUNTY  
g. BAAQMD  
h. CITY OF ST. HELENA  
THE CONTRACTOR SHALL MAINTAIN A BINDER WITH ALL ENVIRONMENTAL PERMITS ON SITE AT ALL TIMES.

4. **GENERAL**  
THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND CONTROLLING FIELD DIMENSIONS AND RESOLVE ALL FIELD CONFLICTS BEFORE SUBMITTING WORKING DRAWINGS AND ORDERING ANY MATERIAL. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER FOR REVIEW AND APPROVAL OF ALL LAYOUTS AND WORK PLANS PRIOR TO INSTALLATION OR CONSTRUCTION

CONTRACTOR IS RESPONSIBLE FOR COMPLETING THE PROJECT IN ACCORDANCE WITH THE PLANS CONTAINED HEREIN AND THE SPECIFICATIONS PROVIDED. CONTRACTOR SHALL CONSULT WITH THE RESIDENT ENGINEER IF ANY QUESTIONS ARISE RELATED TO THE MATERIAL DEPICTED IN THE PLANS BEFORE PROCEEDING.

CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A COPY OF ALL THE APPROVED GRADING AND EROSION CONTROL PLANS AND ALL APPLICABLE REGULATORY PERMITS ON SITE AT ALL TIMES.

5. **ENVIRONMENTAL AWARENESS TRAINING**  
ALL PEOPLE ENTERING THE SITE DURING CONSTRUCTION SHALL RECEIVE FULL ENVIRONMENTAL AND CULTURAL RESOURCE AWARENESS SENSITIVITY TRAINING PER THE REQUIREMENTS OF ALL ISSUED REGULATORY PERMITS AND SPECIFICATIONS.

6. **LIMITATIONS**  
THESE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH CURRENT ENGINEERING, GEOMORPHIC AND RESTORATION STANDARDS. THE DESIGN, NOTES, DETAILS AND SPECIFICATIONS LOCATED HEREIN AND IN ACCOMPANYING DOCUMENTS WERE CREATED CONTINGENT UPON WRA AND MARK THOMAS BEING CONSULTED IF ANY QUESTIONS ARISE WITH REGARD TO ANY INFORMATION CONTAINED HEREIN.

7. **STAGING/STOCKPILE LOCATIONS**  
CONTRACTOR SHALL USE TEMPORARY STAGING AND STOCKPILE LOCATIONS AS SHOWN HEREIN.

8. **ENVIRONMENTAL NOTES**  
ALL EQUIPMENT STAGING AND DISPENSING OF FUEL, OIL, COOLANT, OR OTHER SUCH ACTIVITIES SHALL OCCUR WITHIN THE LIMIT OF DISTURBANCE AND OUTSIDE OF ANY EXISTING SENSITIVE BIOLOGICAL RESOURCE AREAS, AS SHOWN ON THE PLANS. CONTRACTOR EQUIPMENT SHALL BE CHECKED FOR LEAKS PRIOR TO OPERATION AND REPAIRED AS NECESSARY. ALL CONSTRUCTION EQUIPMENT SHALL BE STORED OVERNIGHT WITHIN THE LIMIT OF DISTURBANCE AND OUTSIDE OF ANY EXISTING SENSITIVE BIOLOGICAL RESOURCE AREAS. IF EQUIPMENT IS ON-SITE BETWEEN OCTOBER 15 AND APRIL 31, EQUIPMENT SHALL BE STORED OVERNIGHT IN THE STAGING AREAS AS SHOWN ON THE PLANS.

ANY PROJECT-RELATED SPILLS OF HAZARDOUS MATERIALS SHALL BE IMMEDIATELY REPORTED TO THE RESIDENT ENGINEER AND TO THE APPROPRIATE ENTITIES AND SHALL BE CLEANED UP IMMEDIATELY AND CONTAMINATED SOILS SHALL BE REMOVED AND PROPERLY DISPOSED OF OFF-SITE.

IF ANY ARCHAEOLOGICAL ARTIFACTS, EXOTIC ROCK (NON-NATIVE), OR UNUSUAL AMOUNTS OF SHELL OR BONE ARE UNCOVERED DURING ANY ON-SITE CONSTRUCTION ACTIVITIES, ALL WORK MUST STOP IMMEDIATELY IN THE AREA AND AN ARCHAEOLOGIST RETAINED TO EVALUATE THE DEPOSIT. WORK WITHIN THE AREA MAY ONLY PROCEED AFTER THE RESIDENT ENGINEER AUTHORIZES RESUMPTION OF WORK.

9. **SITE ACCESS**  
ALL SITE ACCESS SHALL BE FROM WHITE SULPHUR SPRINGS ROAD VIA ACCESS POINTS SHOWN HEREIN. NO ACCESS IS PERMITTED FROM ADJOINING PROPERTIES. CONTRACTOR IS RESPONSIBLE FOR RESTORING ALL PUBLIC ROADWAYS, DRAINAGE FEATURES, FENCES, MAILBOXES, LANDSCAPING AND GUARD RAILS TO THEIR ORIGINAL CONDITION OR DESIGNATED NEW LOCATION UPON COMPLETION OF WORK TO THE SATISFACTION OF THE LANDOWNERS AND NAPA COUNTY PUBLIC WORKS DEPARTMENT.

10. **SITE PREPARATION**  
THE CONTRACTOR SHALL STAKE OUT CONSTRUCTION ENTRANCE/EXIT, HAUL ROUTES, AND STAGING AREA BASED UPON THE DRAWINGS. RESIDENT ENGINEER TO APPROVE PRIOR TO COMMENCING WORK.

FOUR FOOT HIGH ORANGE CONSTRUCTION FENCING OR ORANGE FLAGGED STAKES SHALL BE

**SITE PREPARATION CONTINUED**  
PLACED ALONG THE LIMIT OF DISTURBANCE. THE RESIDENT ENGINEER SHALL APPROVE THE LOCATION OF THE FENCING PRIOR TO MOBILIZING HEAVY EQUIPMENT TO THE WORK AREA. THE CONTRACTOR SHALL MAINTAIN THE FENCING THROUGHOUT THE CONSTRUCTION WORK AND NOT WORK BEYOND THIS LINE WITHOUT PRIOR APPROVAL.

11. **CLEARING AND GRUBBING**  
CONTRACTOR SHALL CLEAR ALL INVASIVE SPECIES INCLUDING HIMALAYAN BLACKBERRY (*RUBUS ARMENIACUS*), TREE-OF-HEAVEN (*AILANTHUS ALTISSIMA*) BLACK LOCUST (ROBINIA PSEUDOACACIA) AND ENGLISH IVY (*HEDERA HELIX*, *HEDERA* SPP.) FROM THE SITE AND REMOVE TO A LANDFILL AUTHORIZED TO RECEIVE THE MATERIAL. ALL NATIVE TREES AND SHRUBS CLEARED ON THE SITE SHALL BE RETAINED FOR USE IN CONSTRUCTING STRUCTURES PER THE SPECIFICATIONS.

12. **TREE REMOVALS**  
ALL TREE REMOVALS SHALL BE COMPLETED PER THE PLANS AND SPECIFICATIONS AND ENVIRONMENTAL PERMIT CONDITIONS.

13. **SUBMITTALS**  
SUBMITTALS ARE REQUIRED FOR ALL MATERIALS IMPORTED ONTO THE SITE BY THE CONTRACTOR PER THE SPECIFICATIONS.

14. **PHYTOPHTHORA TREATMENT**  
ALL LOGS, PLANT MATERIALS OR OTHER ORGANIC MATERIALS IMPORTED ONTO THE SITE SHALL BE TREATED OR GROWN ACCORDING TO CURRENT INDUSTRY BEST MANAGEMENT PRACTICES TO PREVENT THE SPREAD OF *PHYTOPHTHORA RAMORUM* AND OTHER PLANT PATHOGENS.

15. **CONSTRUCTION OVERSIGHT**  
ALL WORK IS TO BE COMPLETED UNDER THE SUPERVISION OF THE RESIDENT ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALERTING THE RESIDENT ENGINEER OF SCHEDULE ON A REGULAR BASIS PER THE SPECIFICATIONS.

16. **TRAFFIC CONTROL**  
CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL FOR WHITE SULPHUR SPRINGS ROAD PER THE SPECIFICATIONS AND THE NAPA COUNTY ENCROACHMENT PERMIT OBTAINED BY THE NAPA COUNTY RCD.

17. **UTILITIES**  
THE CONTRACTOR WILL BE RESPONSIBLE FOR CONTACTING 811 TO HAVE ALL UTILITIES MARKED AT LEAST TWO DAYS PRIOR TO EXCAVATION.

18. **HEALTH AND SAFETY PLAN**  
THE CONTRACTOR SHALL PREPARE A HEALTH AND SAFETY PLAN FOR ALL WORK ON THE SITE PER THE SPECIFICATIONS.

19. **FIRE SAFETY**  
ALL GASOLINE AND DIESEL POWERED EQUIPMENT USED ON THE SITE SHALL HAVE SPARK ARRESTORS, OR OTHER MECHANISMS TO PREVENT EXHAUST AND ENGINE PARTS FROM IGNITING FIRES. ALL EQUIPMENT, INCLUDING VEHICLES, ENTERING THE SITE SHALL BE EQUIPPED WITH FUNCTIONING FIRE EXTINGUISHERS.

18. **DEBRIS REMOVAL**  
ALL DEBRIS, INCLUDING CONCRETE, STEEL AND OTHER MAN-MADE MATERIALS TO BE REMOVED SHALL BE PERMANENTLY DISPOSED OF AT AN APPROVED FACILITY.

20. **SITE GRADING**  
SMOOTH, PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE.

21. **DEMobilIZATION**  
CONTRACTOR SHALL REMOVE THE TEMPORARY CONSTRUCTION ACCESS AND RESTORE THE STAGING AREA AND HAUL ROADS TO EXISTING CONDITIONS BY PERFORMING THE FOLLOWING MINIMUM ACTIONS:  
A. RECONSOLIDATE THE STAGING AREA BY DISCING OR RIPPING TO A MINIMUM DEPTH OF 8"  
B. RESEED WITH THE APPROPRIATE SEED MIX AT THE SEEDING RATES THAT ARE INDICATED IN THE SEEDING PLAN

DAMAGE TO WHITE SULPHUR SPRINGS ROAD OR THE PRIVATE ROAD DURING CONSTRUCTION SHALL BE REPAIRED AND AT A MINIMUM, RETURNED TO ORIGINAL CONDITIONS AFTER GRADING AND SPOILS RELOCATION ACTIVITIES HAVE BEEN COMPLETED.

**ABBREVIATIONS**

AB	AGGREGATE BASE
ABUT	ABUTMENT
AC	ACRES
AP	ANGEL POINT
ARS	ACCELERATION RESPONSE SPECTRUM
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BB	BEGIN BRIDGE
BC	BEGIN CURVE
BEG	BEGIN
BRG	BEARING
BVC	BEGIN VERTICAL CURVE
BW	BARBED WIRE
CDFW	CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
CIDH	CAST-IN-DRILLED- HOLE
CITY	CITY OF ST. HELENA
CI	CLASS
CL	CENTERLINE
CP	CATCH POINT COPPER PIPE
CMP	CORRUGATED METAL PIPE
CY	CUBIC YARDS
DBH	DIAMETER AT BREST HEIGHT
DIA	DIAMETER
(E)	EXISTING
E:	EASTING
EB	END BRIDGE
EC	END CURVE
EG	EXISTING GRADE
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ESM	ENGINEERED STREAMBED MATERIAL
EVC	END VERTICAL CURVE
EXIST	EXISTING
(F)	FINISHED
FG	FINISHED GRADE
FT	FEET
GP	GRADING PLAM
HMA	HOT MIX ASPHALT
HORIZ	HORIZONTAL
HP	HINGE POINT
ID	INSIDE DIAMETER
L	LENGTH
LOD	LIMIT OF DISTURBANCE
LOG	LIMIT OF GRADING
LT	LEFT
MAX	MAXIMUM
MIN	MINIMUM
(A)	NEW
N:	NORTHING
NAD 83	NORTH AMERICAN DATUM OF 1983
NAVD 88	NORTH AMERICAN VERTICAL DATUM OF 1988
NOA	NATURALLY OCCURRING ASBESTOS
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NMFS	NATIONAL MARINE FISHERIES SERVICE
O/C	ON CENTER
OG	ORIGINAL GROUND
OH	OVERHEAD
OHW	ORDINARY HIGH WATER
(P)	PROPOSED
PCMS	PORTABLE CHANGEABLE MESSAGE SIGN
PG	PROFILE GRADE
PRC	POINT OF REVERSE CURVE
PVC	POLYVINYL CHLORIDE
R	RADIUS
REM	REMOVE
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RW	ROOTWAD
RWQCB	REGIONAL WATER QUALITY CONTROL BOARD
SAW	SAWCUT
SHLD	SHOULDER
STBB	SINGLE THRIE BEAM BARRIER
SWPPP	STORM WATER POLLUTION PREVENTION PLAN
T	TANGENT
TOT	TOTAL
TPB	TREATED PERMEABLE BASE
TYP	TYPICAL
USACE	U.S. ARMY CORPS OF ENGINEERS
USFWS	U.S. FISH AND WILDLIFE SERVICE
VAR	VARIES
VC	VERTICAL CURVE
VERT	VERTICAL
WRA	WRA, INC.
WWL	WINGWALL LAYOUT LINE



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ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

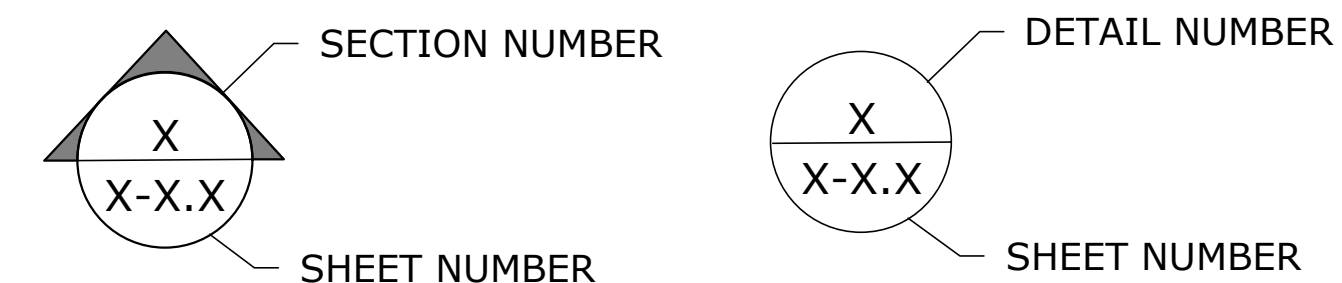
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	
DATE	ISSUES AND REVISIONS	NO.

PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

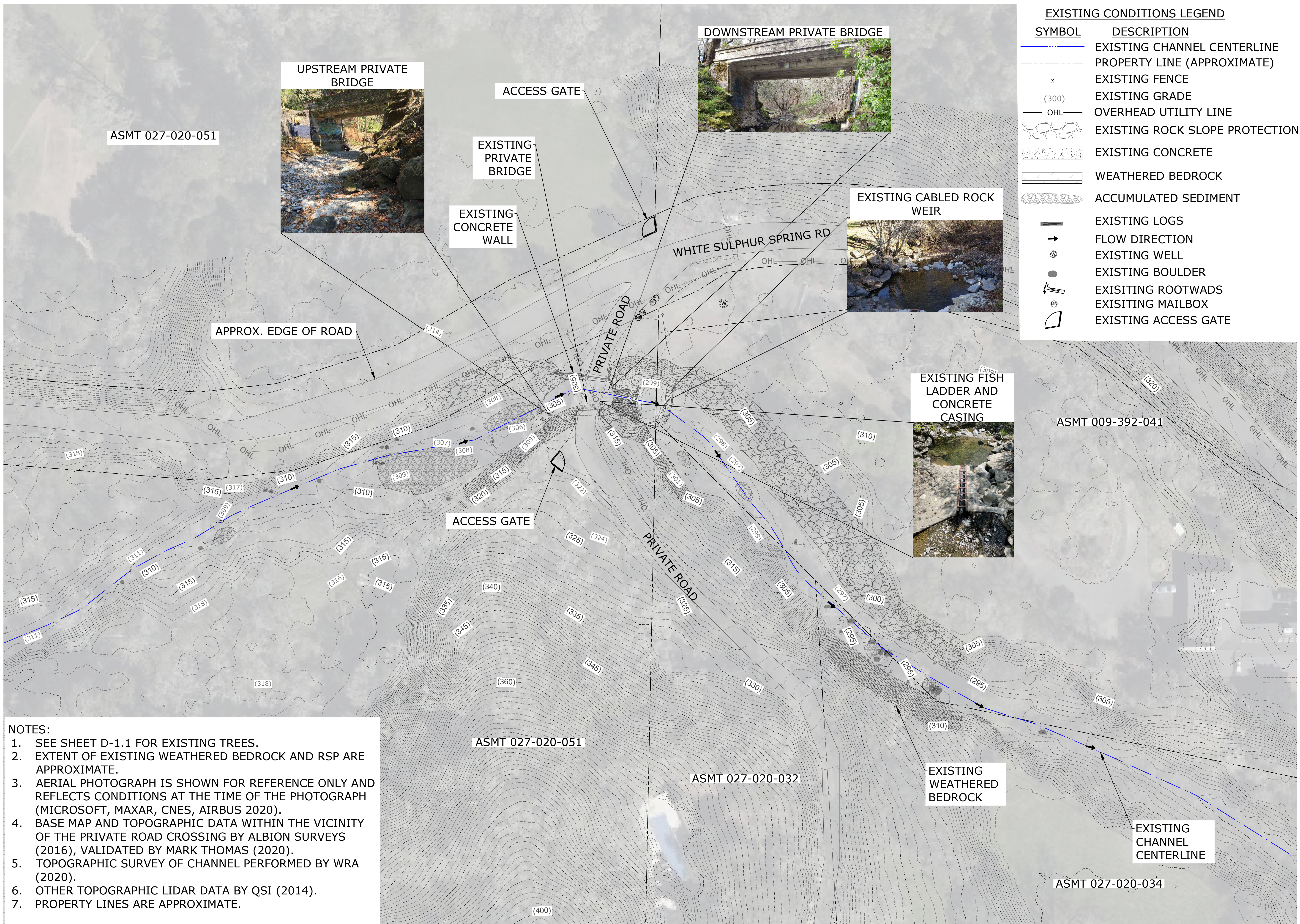
## NOTES AND ABBREVIATIONS

SHEET

# G-1.1







**EXISTING CONDITIONS LEGEND**

SYMBOL	DESCRIPTION
	EXISTING CHANNEL CENTERLINE
	PROPERTY LINE (APPROXIMATE)
	EXISTING FENCE
	EXISTING GRADE
	OVERHEAD UTILITY LINE
	EXISTING ROCK SLOPE PROTECTION
	EXISTING CONCRETE
	WEATHERED BEDROCK
	ACCUMULATED SEDIMENT
	EXISTING LOGS
	FLOW DIRECTION
	EXISTING WELL
	EXISTING BOULDER
	EXISTING ROOTWADS
	EXISTING MAILBOX
	EXISTING ACCESS GATE

**wra**  
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**MARK  
THOMAS**

**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:

**NAPA  
RCD**

**CALIFORNIA TROUT**  
FISH · WATER · PEOPLE

**CALIFORNIA**  
DEPARTMENT OF  
FISH &  
WILDLIFE

LICENSED PROFESSIONAL ENGINEER  
ANDREW C. SMITH  
C-82643  
SIGNATURE  
SEPT. 30, 2024  
EXP. DATE  
JUL. 31, 2024  
DATE  
STATE OF CALIFORNIA

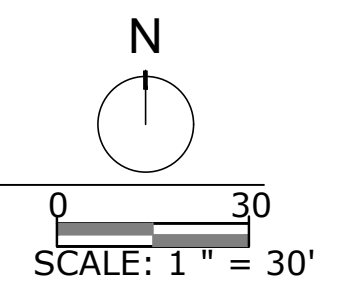
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- NOTES:**
- SEE SHEET D-1.1 FOR EXISTING TREES.
  - EXTENT OF EXISTING WEATHERED BEDROCK AND RSP ARE APPROXIMATE.
  - AERIAL PHOTOGRAPH IS SHOWN FOR REFERENCE ONLY AND REFLECTS CONDITIONS AT THE TIME OF THE PHOTOGRAPH (MICROSOFT, MAXAR, CNES, AIRBUS 2020).
  - BASE MAP AND TOPOGRAPHIC DATA WITHIN THE VICINITY OF THE PRIVATE ROAD CROSSING BY ALBION SURVEYS (2016), VALIDATED BY MARK THOMAS (2020).
  - TOPOGRAPHIC SURVEY OF CHANNEL PERFORMED BY WRA (2020).
  - OTHER TOPOGRAPHIC LIDAR DATA BY QSI (2014).
  - PROPERTY LINES ARE APPROXIMATE.

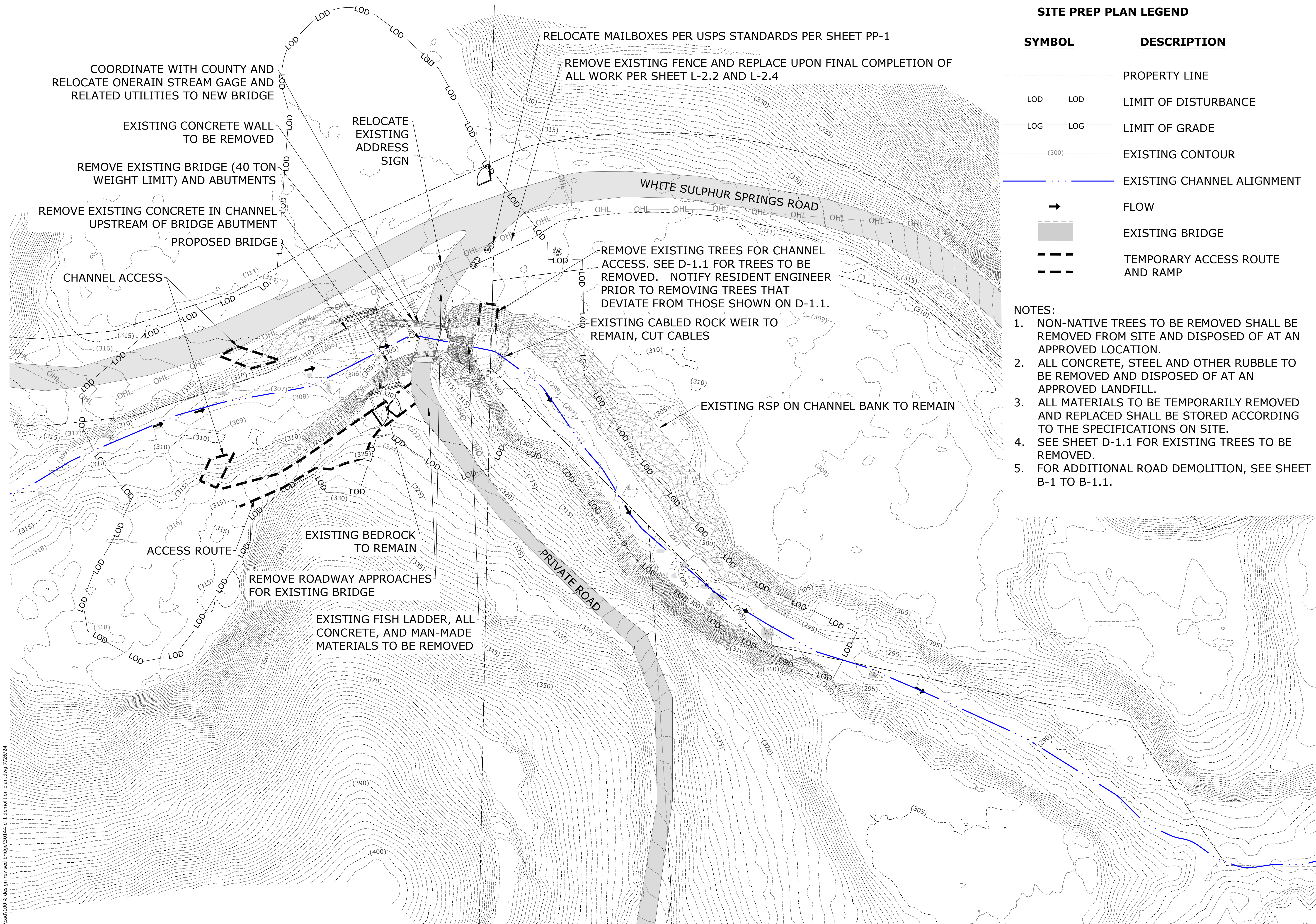
**1 PLAN VIEW**



**V-1.0**

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**SITE PREP PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
— LOD — LOD —	LIMIT OF DISTURBANCE
— LOG — LOG —	LIMIT OF GRADE
(300)	EXISTING CONTOUR
— · · · —	EXISTING CHANNEL ALIGNMENT
→	FLOW
█	EXISTING BRIDGE
- - -	TEMPORARY ACCESS ROUTE AND RAMP

**NOTES:**

1. NON-NATIVE TREES TO BE REMOVED SHALL BE REMOVED FROM SITE AND DISPOSED OF AT AN APPROVED LOCATION.
2. ALL CONCRETE, STEEL AND OTHER RUBBLE TO BE REMOVED AND DISPOSED OF AT AN APPROVED LANDFILL.
3. ALL MATERIALS TO BE TEMPORARILY REMOVED AND REPLACED SHALL BE STORED ACCORDING TO THE SPECIFICATIONS ON SITE.
4. SEE SHEET D-1.1 FOR EXISTING TREES TO BE REMOVED.
5. FOR ADDITIONAL ROAD DEMOLITION, SEE SHEET B-1 TO B-1.1.

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FISH · WATER · PEOPLE

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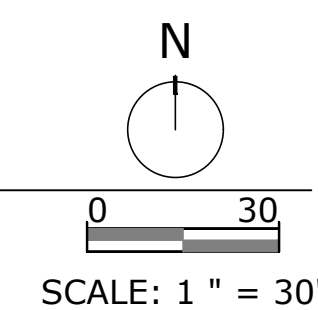
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**DEMOLITION PLAN**  
SHEET

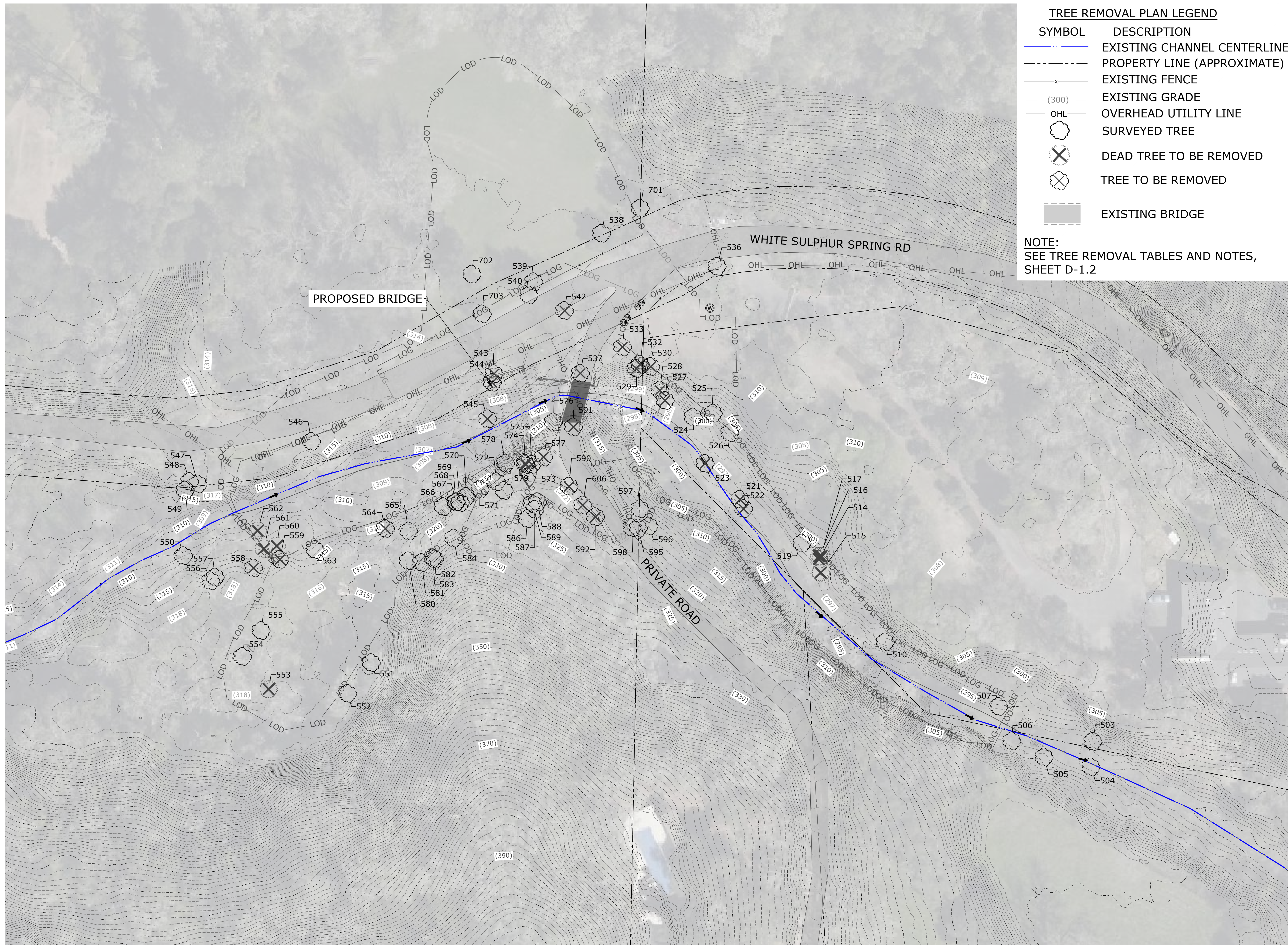
**D-1.0**

**1 DEMOLITION PLAN VIEW**



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**TREE REMOVAL PLAN LEGEND**

SYMBOL	DESCRIPTION
— (Blue dashed line)	EXISTING CHANNEL CENTERLINE
- - - - -	PROPERTY LINE (APPROXIMATE)
- x -	EXISTING FENCE
- (300) -	EXISTING GRADE
- OHL -	OVERHEAD UTILITY LINE
⊗	SURVEYED TREE
⊗ (with X)	DEAD TREE TO BE REMOVED
⊗ (with circle)	TREE TO BE REMOVED
▭ (Grey)	EXISTING BRIDGE

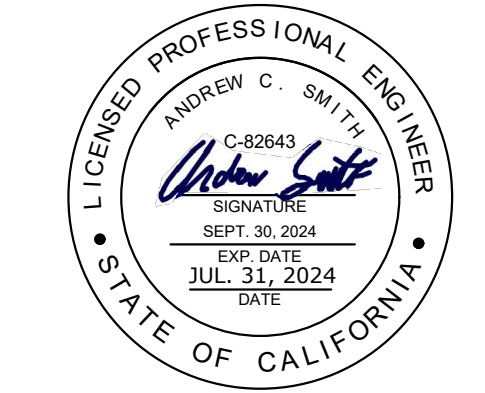
NOTE:  
SEE TREE REMOVAL TABLES AND NOTES,  
SHEET D-1.2

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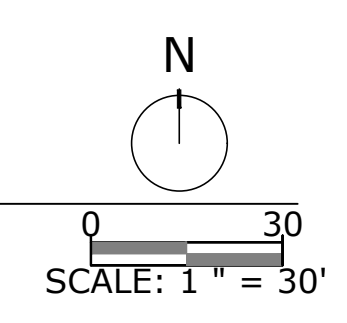
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**TREE REMOVAL  
PLAN**

SHEET

**D-1.1**

**1 PLAN VIEW**



I:\head\2000 files\30000\30144\cad\100% design revised bridge\30144 d-1.1 tree removal plan.dwg 7/30/24



TREE TABLE

Tag #	Common Name	Species	DBH 1	DBH 2	DBH 3	DBH 4	DBH 5	Total DBH	Within LOG	Within LOD	To be Removed
503	Arroyo willow	Salix lasiolepis	5.1	0.0	0.0	0.0	0.0	5.1	No	No	No
504	Arroyo willow	Salix lasiolepis	6.3	0.0	0.0	0.0	0.0	6.3	No	No	No
505	Arroyo willow	Salix lasiolepis	8.5	0.0	0.0	0.0	0.0	8.5	No	No	No
506	Arroyo willow	Salix lasiolepis	4.9	0.0	0.0	0.0	0.0	4.9	Yes	Yes	No
507	Arroyo willow	Salix lasiolepis	8.3	0.0	0.0	0.0	0.0	8.3	Yes	Yes	No
510	white alder	Alnus rhombifolia	12.2	0.0	0.0	0.0	0.0	12.2	Yes	Yes	No
514	white alder	Alnus rhombifolia	7.8	0.0	0.0	0.0	0.0	7.8	Yes	Yes	Yes
515	white alder	Alnus rhombifolia	8.6	0.0	0.0	0.0	0.0	8.6	Yes	Yes	Yes
516	white alder	Alnus rhombifolia	7.3	0.0	0.0	0.0	0.0	7.3	Yes	Yes	Yes
517	white alder	Alnus rhombifolia	10.1	0.0	0.0	0.0	0.0	10.1	Yes	Yes	Yes
519	Arroyo willow	Salix lasiolepis	11.1	0.0	0.0	0.0	0.0	11.1	Yes	Yes	No
521	Red willow	Salix laevigata	8.3	0.0	0.0	0.0	0.0	8.3	Yes	Yes	Yes
522	white alder	Alnus rhombifolia	8.7	0.0	0.0	0.0	0.0	8.7	Yes	Yes	Yes
523	Arroyo willow	Salix lasiolepis	5.1	4.5	4.2	0.0	0.0	13.8	Yes	Yes	Yes
524	Arroyo willow	Salix lasiolepis	9.1	8.2	0.0	0.0	0.0	17.3	Yes	Yes	No
525	Arroyo willow	Salix lasiolepis	7.1	6.2	4.6	0.0	0.0	17.9	Yes	Yes	No
526	Arroyo willow	Salix lasiolepis	10.1	9.1	0.0	0.0	0.0	19.2	Yes	Yes	No
527	Black locust	Robinia pseudoacacia	8.7	8.6	0.0	0.0	0.0	17.3	Yes	Yes	No
528	Black locust	Robinia pseudoacacia	18.4	7.7	7.6	6.3	5.4	45.4	Yes	Yes	No
529	Black locust	Robinia pseudoacacia	9.4	5.8	5.4	0.0	0.0	20.6	Yes	Yes	Yes
530	Black locust	Robinia pseudoacacia	9.1	0.0	0.0	0.0	0.0	9.1	Yes	Yes	No
531	Black locust	Robinia pseudoacacia	9.5	6.8	5.6	0.0	0.0	21.9	Yes	Yes	Yes
532	Black locust	Robinia pseudoacacia	6.9	0.0	0.0	0.0	0.0	6.9	Yes	Yes	Yes
533	Black locust	Robinia pseudoacacia	6.9	0.0	0.0	0.0	0.0	6.9	Yes	Yes	Yes
536	California buckeye	Aesculus californica	6.7	5.3	4.5	4.5	0.0	21.0	No	No	No
537	Black locust	Robinia pseudoacacia	9.3	9.3	9.2	0.0	0.0	27.8	Yes	Yes	Yes
538	Olive	Olea europaea	8.4	5.8	0.0	0.0	0.0	14.2	No	Yes	No
539	Olive	Olea europaea	8.0	7.2	5.2	0.0	0.0	20.4	No	Yes	No
540	Coast live oak	Quercus agrifolia	10.7	0.0	0.0	0.0	0.0	10.7	No	Yes	No
542	Black locust	Robinia pseudoacacia	12.6	0.0	0.0	0.0	0.0	12.6	Yes	Yes	Yes
543	Black locust	Robinia pseudoacacia	15.6	11.2	0.0	0.0	0.0	26.8	Yes	Yes	Yes
544	Black locust	Robinia pseudoacacia	7.5	0.0	0.0	0.0	0.0	7.5	Yes	Yes	Yes
545	Arroyo willow	Salix laevigata	9.6	8.8	8.2	8.1	8.1	42.8	Yes	Yes	Yes
546	Valley oak	Quercus lobata	30.8	0.0	0.0	0.0	0.0	30.8	Yes	Yes	No
547	Coast live oak	Quercus agrifolia	20.2	0.0	0.0	0.0	0.0	20.2	No	No	No
548	Coast live oak x California black oak	Quercus agrifolia x kelloggii	6.6	0.0	0.0	0.0	0.0	6.6	No	No	No
549	Arroyo willow	Salix lasiolepis	4.9	0.0	0.0	0.0	0.0	4.9	No	No	No
550	white alder	Alnus rhombifolia	12.0	11.9	9.9	0.0	0.0	33.8	No	No	No
551	California buckeye	Aesculus californica	7.6	0.0	0.0	0.0	0.0	7.6	No	No	No
552	California buckeye	Aesculus californica	8.0	5.9	0.0	0.0	0.0	13.9	No	No	No
553	Valley oak	Quercus lobata	17.5	0.0	0.0	0.0	0.0	17.5	No	Yes	Yes
554	Valley oak	Quercus lobata	22.7	0.0	0.0	0.0	0.0	22.7	No	Yes	No
555	Valley oak	Quercus lobata	18.1	0.0	0.0	0.0	0.0	18.1	No	Yes	No
556	Valley oak	Quercus lobata	40.0	0.0	0.0	0.0	0.0	40.0	No	No	No
557	California bay	Umbellularia californica	9.1	8.3	4.9	11.9	0.0	34.2	No	No	No
558	Black locust	Robinia pseudoacacia	8.2	0.0	0.0	0.0	0.0	8.2	No	No	No
559	Black locust	Robinia pseudoacacia	9.1	0.0	0.0	0.0	0.0	9.1	No	Yes	No
560	white alder	Alnus rhombifolia	10.4	0.0	0.0	0.0	0.0	10.4	No	Yes	Yes
561	white alder	Alnus rhombifolia	4.5	0.0	0.0	0.0	0.0	4.5	No	Yes	Yes
562	white alder	Alnus rhombifolia	6.4	0.0	0.0	0.0	0.0	6.4	No	Yes	Yes
563	Valley oak	Quercus lobata	22.0	0.0	0.0	0.0	0.0	22.0	No	Yes	No
564	Black locust	Robinia pseudoacacia	7.4	0.0	0.0	0.0	0.0	7.4	No	Yes	No
565	Valley oak	Quercus lobata	23.2	0.0	0.0	0.0	0.0	23.2	No	Yes	No
566	Valley oak	Quercus lobata	10.0	0.0	0.0	0.0	0.0	10.0	No	Yes	No
567	Valley oak	Quercus lobata	8.3	0.0	0.0	0.0	0.0	8.3	No	Yes	No
568	Valley oak	Quercus lobata	9.1	0.0	0.0	0.0	0.0	9.1	No	Yes	No
569	Valley oak	Quercus lobata	12.2	0.0	0.0	0.0	0.0	12.2	No	Yes	No
570	Valley oak	Quercus lobata	9.1	0.0	0.0	0.0	0.0	9.1	No	Yes	No
571	California bay	Umbellularia californica	5.3	4.8	0.0	0.0	0.0	10.1	Yes	Yes	No
572	Valley oak	Quercus lobata	8.6	0.0	0.0	0.0	0.0	8.6	Yes	Yes	No
573	Valley oak	Quercus lobata	14.6	0.0	0.0	0.0	0.0	14.6	Yes	Yes	Yes
574	Interior live oak	Quercus wislizeni	4.5	0.0	0.0	0.0	0.0	4.5	Yes	Yes	Yes
575	California black oak	Quercus kelloggii	14.0	0.0	0.0	0.0	0.0	14.0	Yes	Yes	Yes
576	California black oak	Quercus kelloggii	10.2	0.0	0.0	0.0	0.0	10.2	Yes	Yes	No
577	Valley oak	Quercus lobata	9.7	0.0	0.0	0.0	0.0	9.7	Yes	Yes	Yes
578	Valley oak	Quercus lobata	11.8	0.0	0.0	0.0	0.0	11.8	Yes	Yes	No
579	Valley oak	Quercus lobata	18.3	0.0	0.0	0.0	0.0	18.3	Yes	Yes	No
580	Valley oak	Quercus lobata	16.0	7.3	6.5	0.0	0.0	29.8	Yes	Yes	No
581	Valley oak	Quercus lobata	8.7	0.0	0.0	0.0	0.0	8.7	No	No	No
582	Valley oak	Quercus lobata	15.1	10.7	0.0	0.0	0.0	25.8	No	No	No
583	Valley oak	Quercus lobata	12.5	0.0	0.0	0.0	0.0	12.5	No	No	No
584	Valley oak	Quercus lobata	4.8	0.0	0.0	0.0	0.0	4.8	No	No	No
586	Valley oak	Quercus lobata	14.2	0.0	0.0	0.0	0.0	14.2	No	No	No
587	Valley oak	Quercus lobata	8.2	0.0	0.0	0.0	0.0	8.2	No	No	No
588	Valley oak	Quercus lobata	12.3	0.0	0.0	0.0	0.0	12.3	No	No	No
589	Valley oak	Quercus lobata	15.2	0.0	0.0	0.0	0.0	15.2	No	No	No
590	Valley oak	Quercus lobata	16.2	0.0	0.0	0.0	0.0	16.2	Yes	Yes	Yes
591	Valley oak	Quercus lobata	19.3	0.0	0.0	0.0	0.0	19.3	Yes	Yes	Yes
592	Valley oak	Quercus lobata	22.4	0.0	0.0	0.0	0.0	22.4	Yes	Yes	Yes
595	Coast live oak	Quercus agrifolia	6.5	0.0	0.0	0.0	0.0	6.5	No	Yes	No
596	California bay	Umbellularia californica	5.3	0.0	0.0	0.0	0.0	5.3	No	Yes	No
597	Valley oak	Quercus lobata	9.7	0.0	0.0	0.0	0.0	9.7	No	Yes	No
598	Coast live oak	Quercus agrifolia	10.0	0.0	0.0	0.0	0.0	10.0	No	Yes	No
606	Coast live oak	Quercus agrifolia	10.7	0.0	0.0	0.0	0.0	10.7	Yes	Yes	Yes
701	Coast live oak	Quercus agrifolia	18.5	0.0	0.0	0.0	0.0	18.5	No	No	No
702	Coast live oak	Quercus agrifolia	69.0	0.0	0.0	0.0	0.0	69.0	No	Yes	No
703	California black walnut	Juglans hindsii	36.0	0.0	0.0	0.0	0.0	36.0	No	Yes	No
704	California black walnut	Juglans hindsii	41.5	0.0	0.0	0.0	0.0	41.5	No	Yes	No

NOTES:

- ALL DIAMETER AT BREAST HEIGHT (DBH) MEASUREMENTS ARE IN INCHES.
- TREE REMOVAL SHALL NOT BE STARTED UNTIL:
  - DELINEATION OF LIMITS OF DISTURBANCE HAVE BEEN MARKED WITH FLAGGING OR EXCLUSION FENCE AND APPROVED BY THE RESIDENT ENGINEER
  - TREES TO BE REMOVED AND USED FOR ON-SITE LOG STRUCTURES HAVE BEEN IDENTIFIED AND FLAGGED.
- ALL TREES GREATER THAN 4" DBH ARE MARKED WITH NUMBERED ALUMINUM TREE TAGS CORRESPONDING TO THE NUMBERS SHOWN HEREIN.
- SELECTION OF TREES TO BE USED FOR LOG STRUCTURES AND REMOVAL OF ROOTWADS SHALL BE COMPLETED UNDER SUPERVISION OF THE RESIDENT ENGINEER.
- TREES TO BE PROTECTED IN PLACE WITHIN THE LIMITS OF DISTURBANCE SHALL BE INSPECTED BY A LICENSED ARBORIST PRIOR TO DISTURBANCE. FENCING OR OTHER PROTECTIVE MEASURES SHALL BE INSTALLED BY THE CONTRACTOR PER DIRECTION OF ARBORIST PRIOR TO GROUND DISTURBANCE IN THE AREA OF THOSE TREES.
- ALL COAST LIVE OAK TREES (QUERCUS AGRIFOLIA) GREATER THAN 12 INCH DIAMETER SHALL BE REMOVED WITH ROOTS INTACT FOR USE IN CONSTRUCTING THE BANK STABILIZATION AREA.

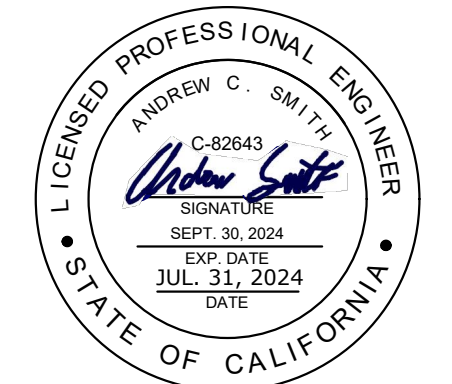


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**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

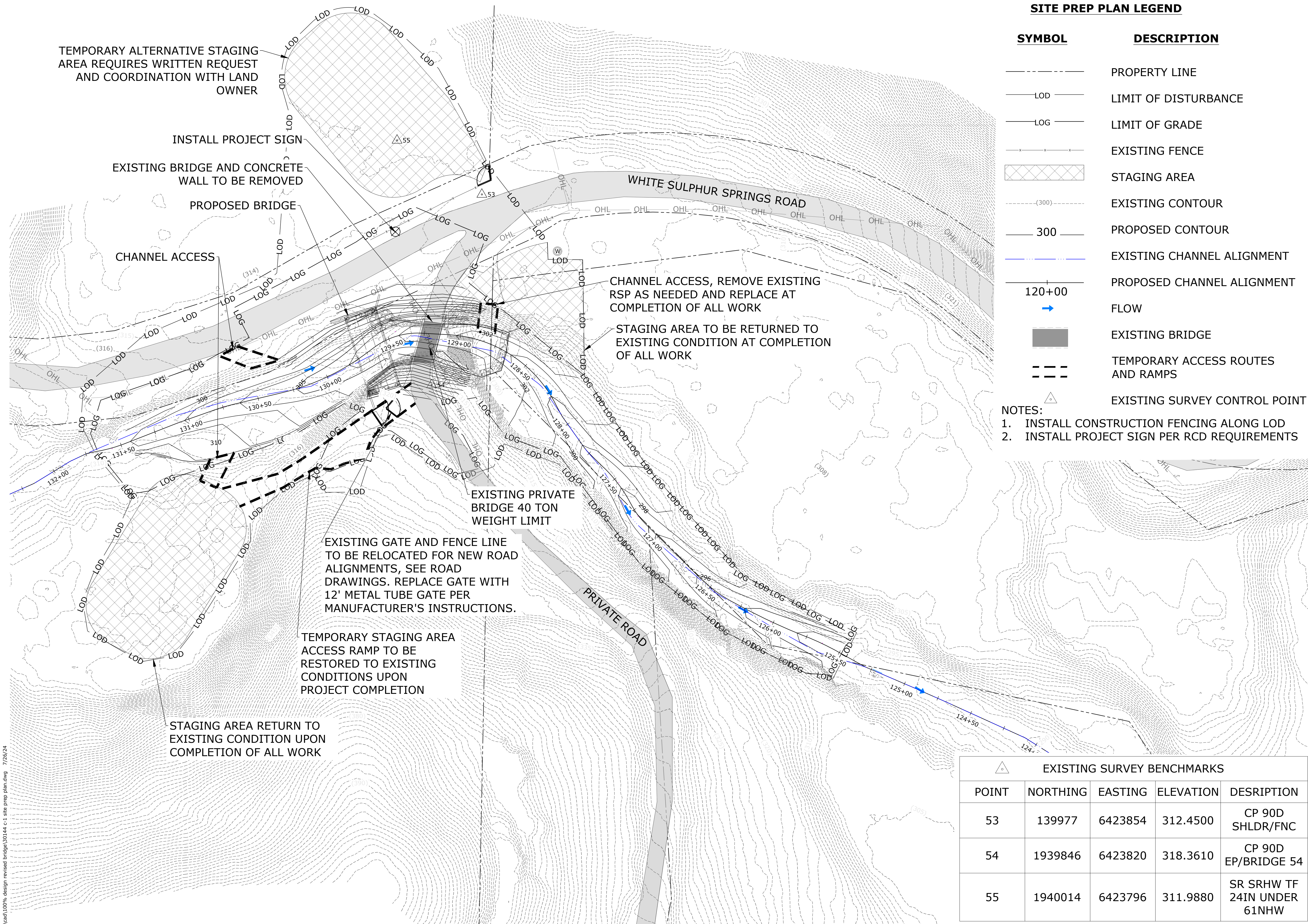
PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

TREE TABLE AND NOTES

SHEET

D-1.2





**SITE PREP PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
— LOD —	LIMIT OF DISTURBANCE
— LOG —	LIMIT OF GRADE
---	EXISTING FENCE
▨	STAGING AREA
---	EXISTING CONTOUR
300	PROPOSED CONTOUR
---	EXISTING CHANNEL ALIGNMENT
---	PROPOSED CHANNEL ALIGNMENT
120+00	FLOW
→	FLOW
▬	EXISTING BRIDGE
---	TEMPORARY ACCESS ROUTES AND RAMPS
△	EXISTING SURVEY CONTROL POINT

- NOTES:  
 1. INSTALL CONSTRUCTION FENCING ALONG LOD  
 2. INSTALL PROJECT SIGN PER RCD REQUIREMENTS

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**MARK THOMAS**

**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

ST HELENA, CALIFORNIA  
 DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
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7/31/24	100% DESIGN PLANS	

PROJECT #30144  
 DRAWN BY: ACS, DG, BMM, CCF  
 CHECKED BY: ACS, VM, IM, AJS  
 ORIGINAL DRAWING SIZE: 24 X 36

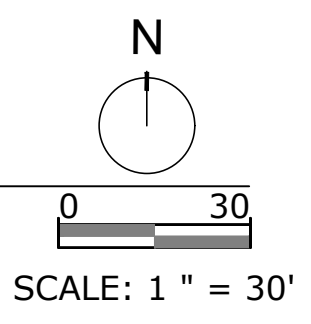
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
53	139977	6423854	312.4500	CP 90D SHLDR/FNC
54	1939846	6423820	318.3610	CP 90D EP/BRIDGE 54
55	1940014	6423796	311.9880	SR SRHW TF 24IN UNDER 61NHW

**SITE PREPARATION PLAN**

SHEET

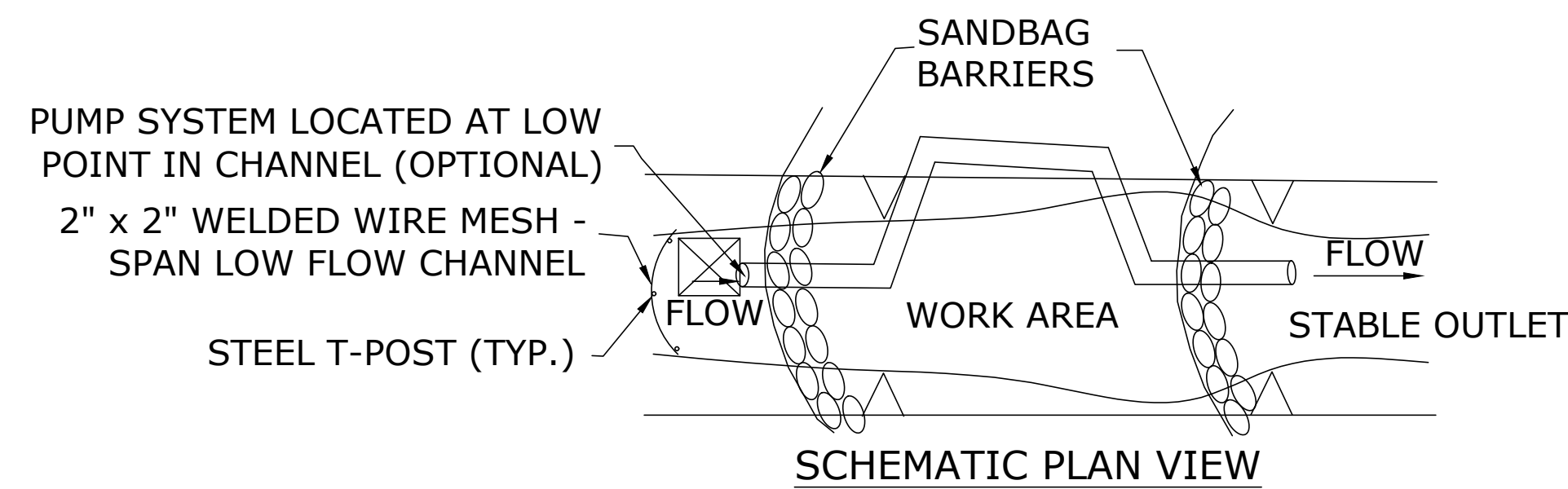
**C-1.0**

**1 SITE PLAN VIEW**



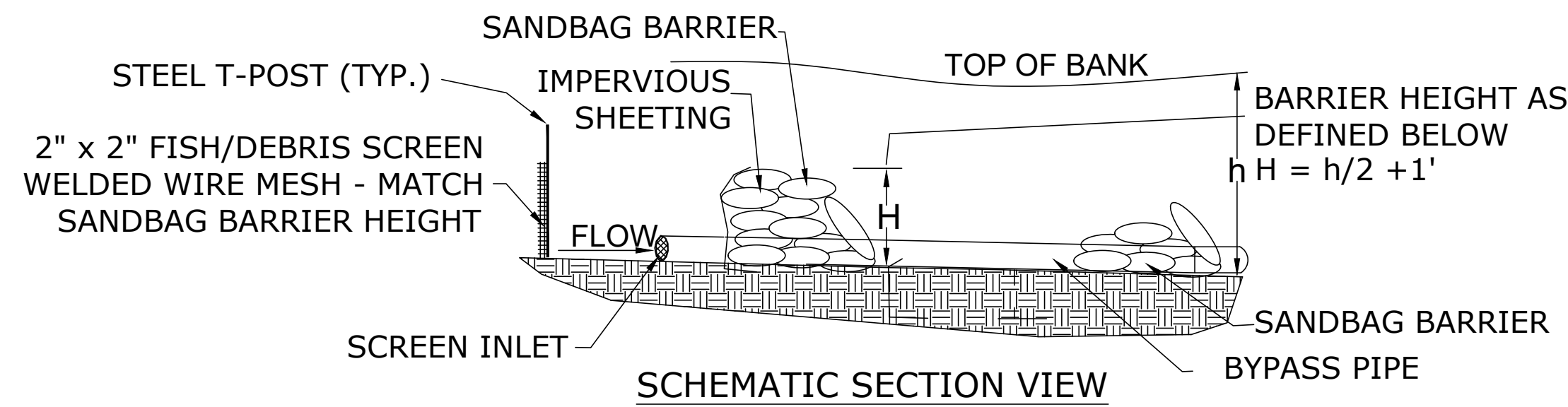
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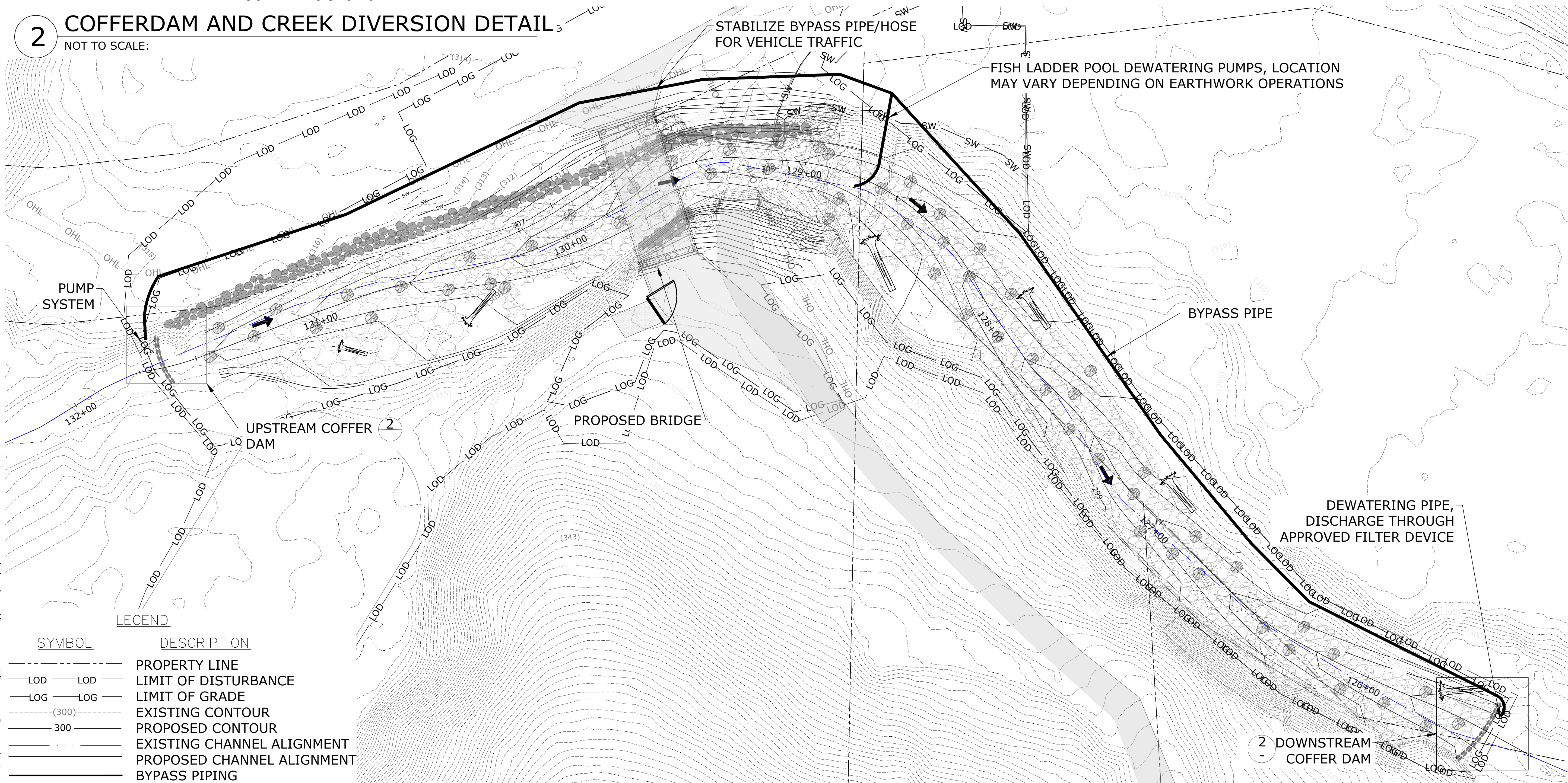
**BYPASS AND DEWATERING PLAN NOTES**

1. THE CONTRACTOR SHALL SUBMIT A FINAL CREEK DEWATERING PLAN 15 DAYS PRIOR TO CONSTRUCTION START. SEE CONTRACT SPECIFICATIONS.
2. THE CONTRACTOR SHALL INSTALL AND DEMONSTRATE PROPER FUNCTION OF THE CREEK BYPASS PRIOR TO STARTING ANY WORK.
3. COFFER DAM AND BYPASS PIPE LOCATIONS SHALL BE STAKED IN THE FIELD AND APPROVED BY CONSTRUCTION MANAGER PRIOR TO INSTALLATION.
4. SANDBAG BARRIERS SHALL BE SIZED AND INSTALLED AS SHOWN IN DETAIL AND AS ADEQUATE TO CAPTURE FLOW.
5. DEWATERING OF SEDIMENT LADEN WATER FROM THE CONSTRUCTION AREA SHALL BE PUMPED FROM A SUMP PIT TO A FILTERING DEVICE WITH A STABLE OUTLET BELOW THE DOWNSTREAM COFFERDAM TO PREVENT TURBID WATER FROM RE-ENTERING THE CREEK CHANNEL PER SPECIFICATIONS.
6. FLEXIBLE TUBING IS PREFERRED. ALL CONNECTIONS SHALL BE RESTRAINED AND WATERTIGHT.
7. THE DIVERSION PIPE SHALL BE SECURELY ANCHORED. CONTRACTOR MAY SELECT LAYOUT AND SHALL DESIGN ANY NECESSARY ANCHORS. THE SOIL AROUND OR UNDER THE PIPE SHALL BE HAND TAMPED IN 4" LIFTS.
8. THE DIVERSION PIPE SHALL DISCHARGE ONTO A STABILIZED AREA OF THE STREAM. 4" - 7" NATIVE STONE UNDERLAIN WITH GEOTEXTILE CLASS C SHALL BE EMPLOYED AS NECESSARY. THE GEOTEXTILE SHALL BE REMOVED AT PROJECT COMPLETION.
9. INSPECTION AND ANY REQUIRED MAINTENANCE SHALL BE PERFORMED PERIODICALLY AND AFTER EACH RAIN EVENT.
10. INSTALL WIRE MESH WITH 2MM OPENINGS UPSTREAM OF INTAKE PIPE AND INSPECT TWICE DAILY, 7 DAYS PER WEEK THROUGHOUT CONSTRUCTION PERIOD. FISH SCREENING SHALL COMPLY WITH NOAA FISH SCREEN CRITERIA.
11. ALL DEWATERING EQUIPMENT SHALL BE REMOVED AT PROJECT COMPLETION AND AREA SHALL BE RESTORED TO ORIGINAL CONDITION.
12. SEE SWPPP FOR MODIFICATIONS TO CREEK BYPASS IN CASE OF PREDICTED RAIN.



**2 COFFERDAM AND CREEK DIVERSION DETAIL**

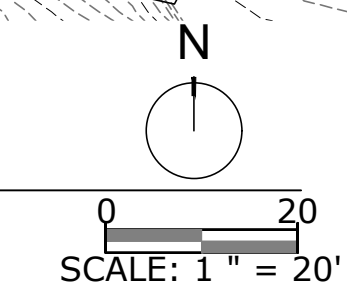
NOT TO SCALE:



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SYMBOL	DESCRIPTION
---	PROPERTY LINE
--- LOD ---	LIMIT OF DISTURBANCE
--- LOG ---	LIMIT OF GRADE
(300)	EXISTING CONTOUR
300	PROPOSED CONTOUR
---	EXISTING CHANNEL ALIGNMENT
---	PROPOSED CHANNEL ALIGNMENT
---	BYPASS PIPING

**1 CREEK BYPASS AND DEWATERING PLAN VIEW**



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
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7/31/24	100% DESIGN PLANS	

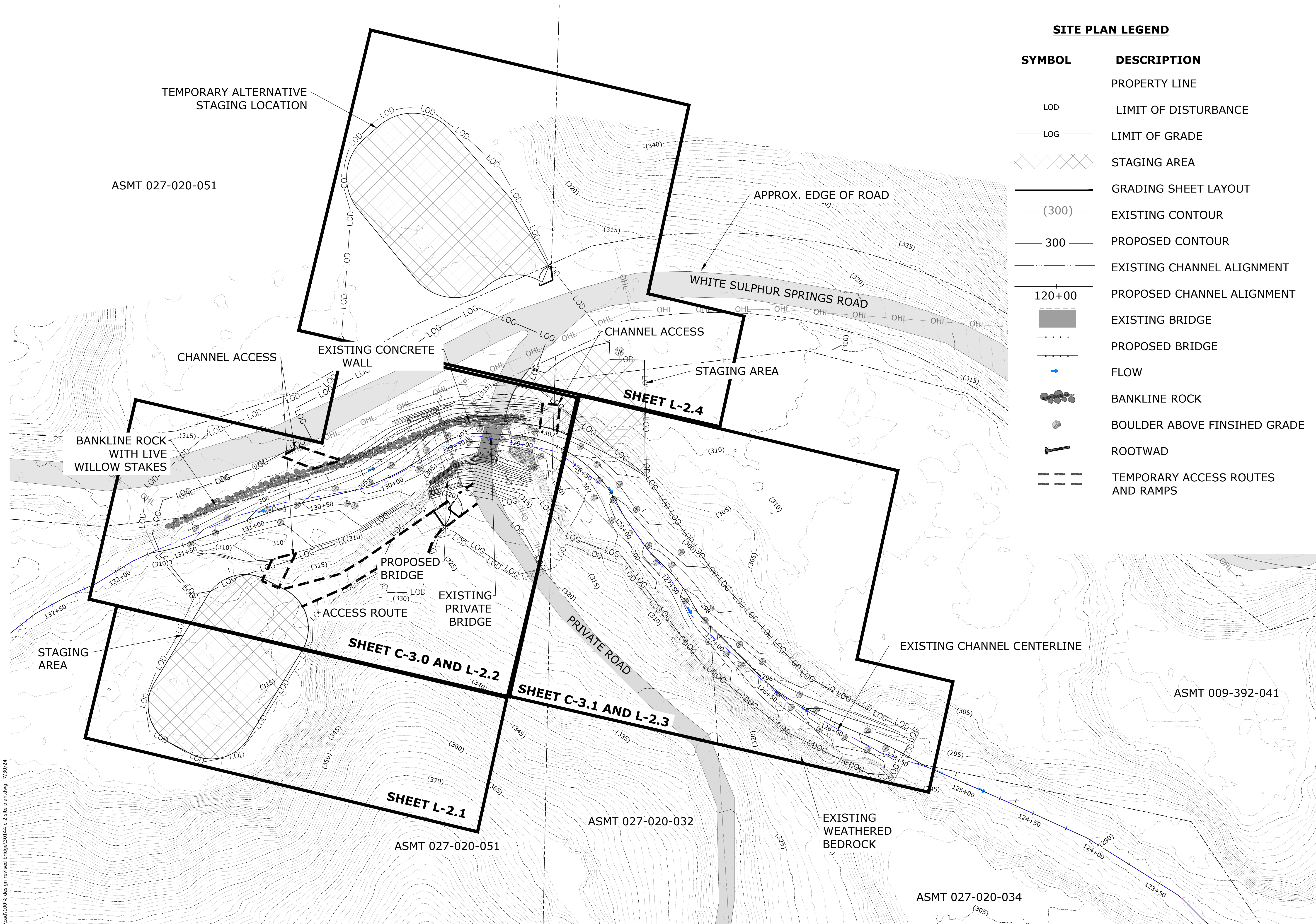
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CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**EXAMPLE CREEK  
BYPASS AND  
DEWATERING PLAN**

SHEET

**C-1.1**





**SITE PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
— LOD —	LIMIT OF DISTURBANCE
— LOG —	LIMIT OF GRADE
▨	STAGING AREA
—	GRADING SHEET LAYOUT
(300)	EXISTING CONTOUR
300	PROPOSED CONTOUR
—	EXISTING CHANNEL ALIGNMENT
—	PROPOSED CHANNEL ALIGNMENT
120+00	PROPOSED CHANNEL ALIGNMENT
▬	EXISTING BRIDGE
▬	PROPOSED BRIDGE
→	FLOW
●	BANKLINE ROCK
●	BOULDER ABOVE FINISHED GRADE
⚓	ROOTWAD
---	TEMPORARY ACCESS ROUTES AND RAMPS

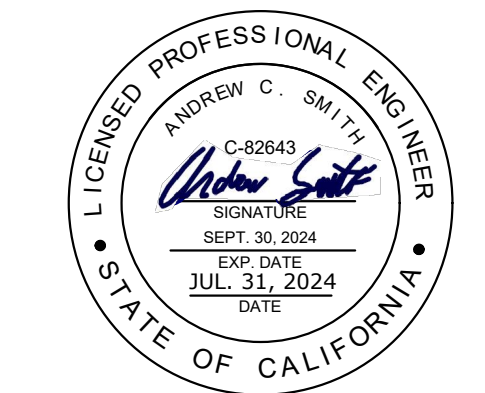
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**MARK  
THOMAS**

**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:

**NAPA  
RCD**

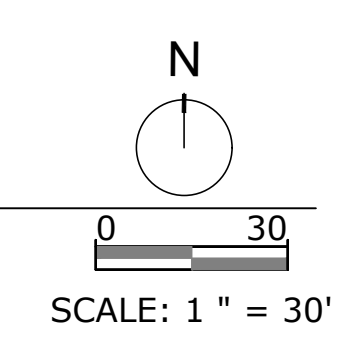


PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

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PROJECT #30144  
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CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**1 SITE PLAN VIEW**



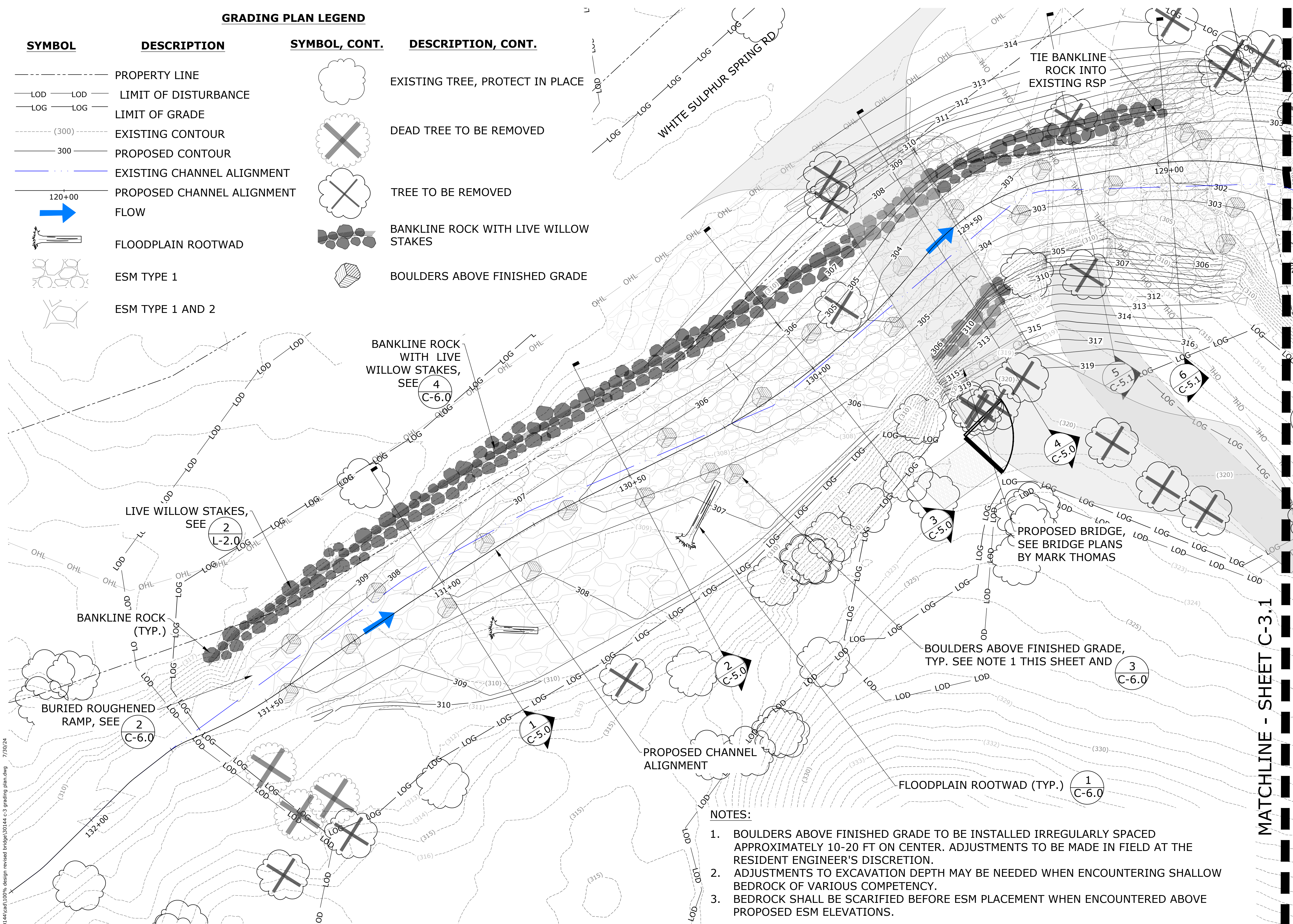
**SITE PLAN  
SHEET  
C-2.0**

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**GRADING PLAN LEGEND**

SYMBOL	DESCRIPTION	SYMBOL, CONT.	DESCRIPTION, CONT.
---	PROPERTY LINE		EXISTING TREE, PROTECT IN PLACE
LOD	LIMIT OF DISTURBANCE		DEAD TREE TO BE REMOVED
LOG	LIMIT OF GRADE		TREE TO BE REMOVED
(300)	EXISTING CONTOUR		BANKLINE ROCK WITH LIVE WILLOW STAKES
300	PROPOSED CONTOUR		BOULDERS ABOVE FINISHED GRADE
---	EXISTING CHANNEL ALIGNMENT		
---	PROPOSED CHANNEL ALIGNMENT		
120+00	FLOW		
	FLOODPLAIN ROOTWAD		
	ESM TYPE 1		
	ESM TYPE 1 AND 2		



- NOTES:**
- BOULDERS ABOVE FINISHED GRADE TO BE INSTALLED IRREGULARLY SPACED APPROXIMATELY 10-20 FT ON CENTER. ADJUSTMENTS TO BE MADE IN FIELD AT THE RESIDENT ENGINEER'S DISCRETION.
  - ADJUSTMENTS TO EXCAVATION DEPTH MAY BE NEEDED WHEN ENCOUNTERING SHALLOW BEDROCK OF VARIOUS COMPETENCY.
  - BEDROCK SHALL BE SCARIFIED BEFORE ESM PLACEMENT WHEN ENCOUNTERED ABOVE PROPOSED ESM ELEVATIONS.

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RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



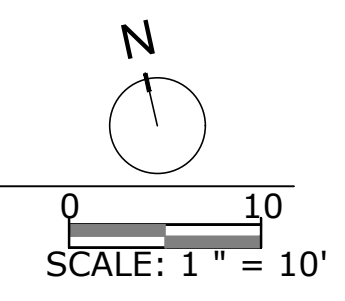
PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

MATCHLINE - SHEET C-3.1

**1 GRADING PLAN VIEW**

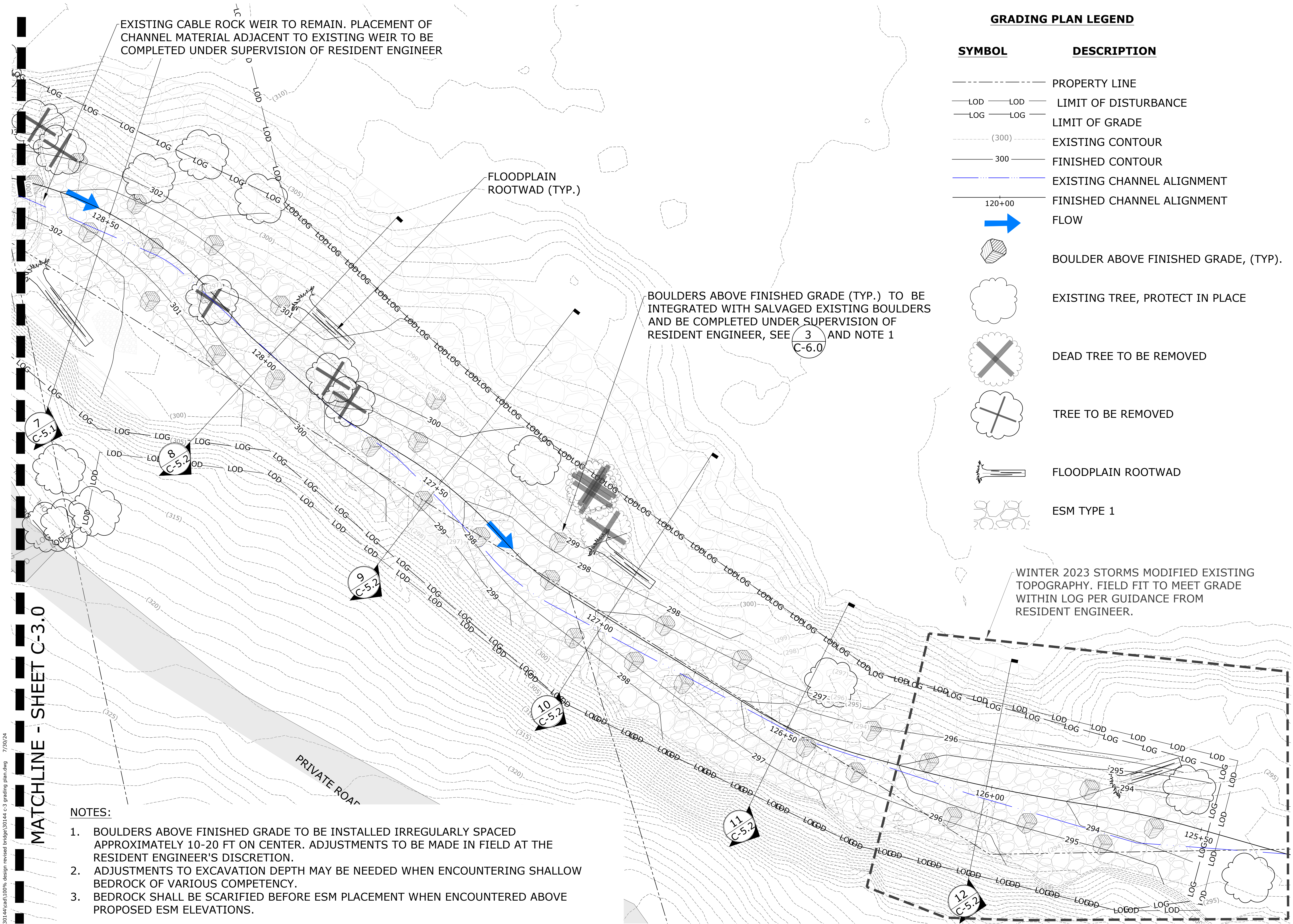


**GRADING PLAN  
SHEET**

**C-3.0**

I:\road 2000 files\30100\30144\cad\100% design revised bridge\30144 c-3 grading plan.dwg 7/30/24





**GRADING PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
— LOD — LOD —	LIMIT OF DISTURBANCE
— LOG — LOG —	LIMIT OF GRADE
(300)	EXISTING CONTOUR
300	FINISHED CONTOUR
---	EXISTING CHANNEL ALIGNMENT
---	FINISHED CHANNEL ALIGNMENT
→	FLOW
⬢	BOULDER ABOVE FINISHED GRADE, (TYP.)
☁	EXISTING TREE, PROTECT IN PLACE
☁ X	DEAD TREE TO BE REMOVED
☁ /	TREE TO BE REMOVED
⌋	FLOODPLAIN ROOTWAD
⬢	ESM TYPE 1

- NOTES:**
- BOULDERS ABOVE FINISHED GRADE TO BE INSTALLED IRREGULARLY SPACED APPROXIMATELY 10-20 FT ON CENTER. ADJUSTMENTS TO BE MADE IN FIELD AT THE RESIDENT ENGINEER'S DISCRETION.
  - ADJUSTMENTS TO EXCAVATION DEPTH MAY BE NEEDED WHEN ENCOUNTERING SHALLOW BEDROCK OF VARIOUS COMPETENCY.
  - BEDROCK SHALL BE SCARIFIED BEFORE ESM PLACEMENT WHEN ENCOUNTERED ABOVE PROPOSED ESM ELEVATIONS.

**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

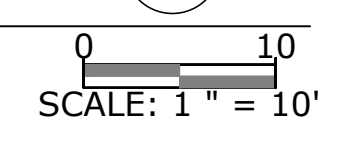
PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**GRADING PLAN**

SHEET

**C-3.1**

**2 GRADING PLAN VIEW**

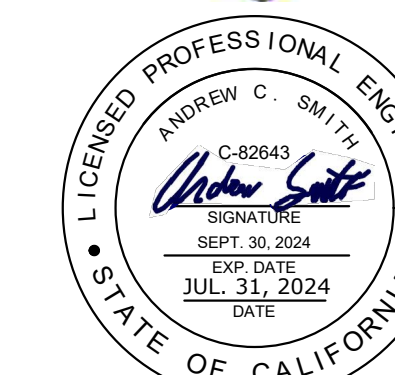


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# SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT

ST HELENA, CALIFORNIA  
DESIGNED FOR:



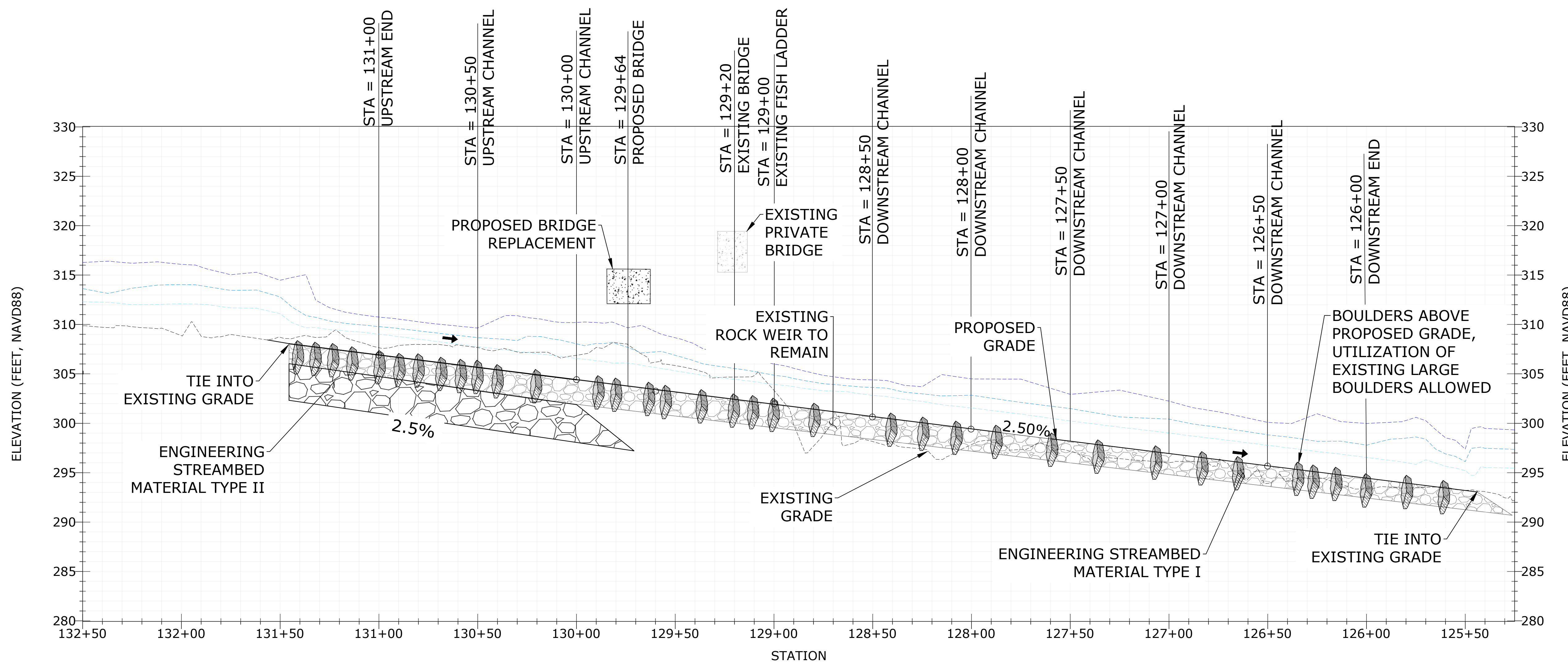
PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	
DATE	ISSUES AND REVISIONS	NO.

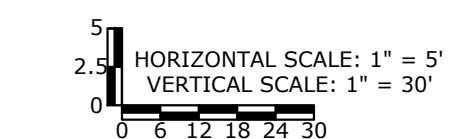
PROJECT # 30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**PROFILE**  
SHEET

# C-4.0



**1** PROPOSED CHANNEL CENTERLINE PROFILE VIEW



**PROFILE LEGEND**

SYMBOL	DESCRIPTION
-----	EXISTING GRADE
—————	PROPOSED GRADE
-----	Q2 (299 CFS) WATER SURFACE ELEVATION
-----	Q10 (757 CFS) WATER SURFACE ELEVATION
-----	Q100 (1480 CFS) WATER SURFACE ELEVATION
	BOULDERS ABOVE PROPOSED GRADE
	ENGINEERING STREAMBED MATERIAL TYPE I
	ENGINEERING STREAMBED MATERIAL TYPE II

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# SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT

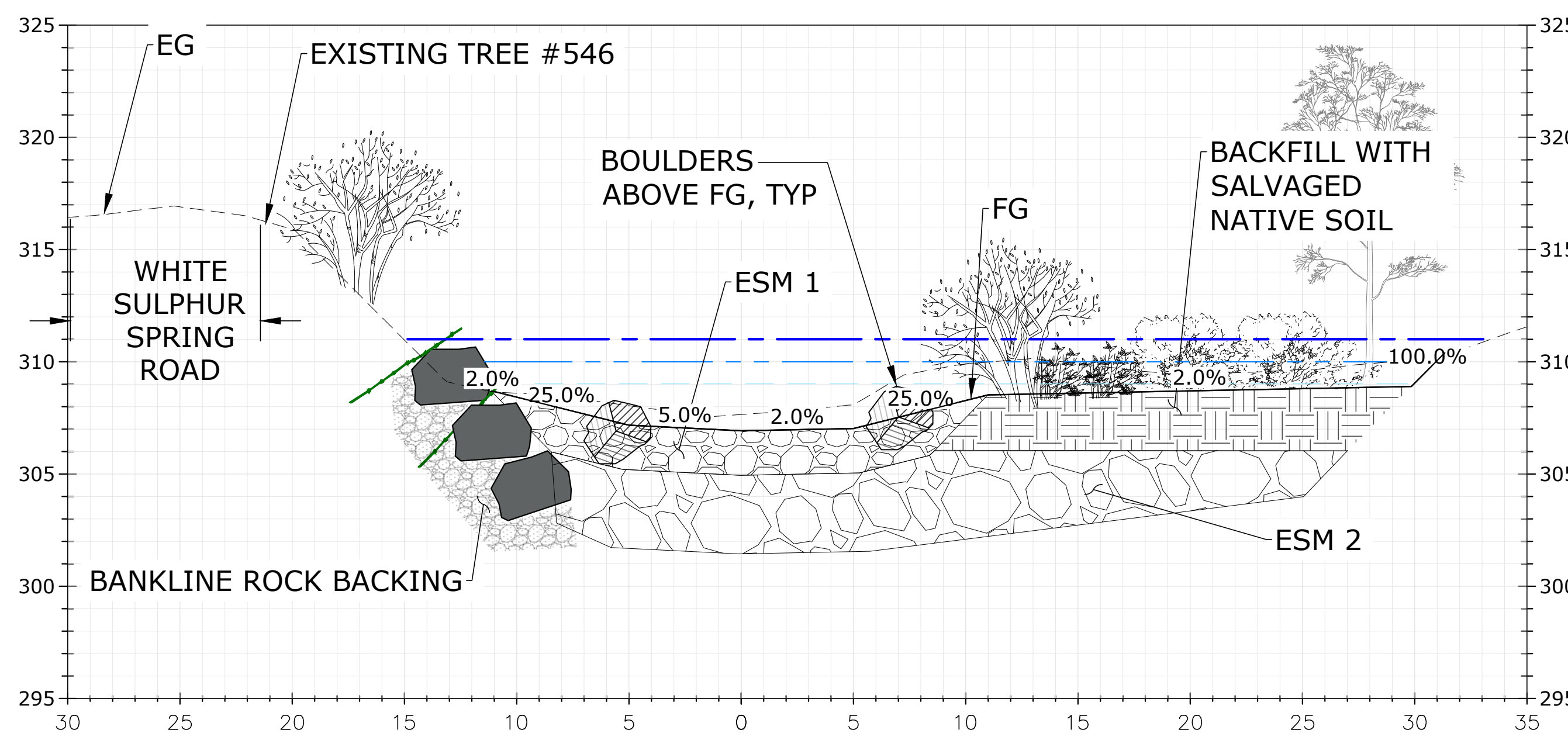
ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

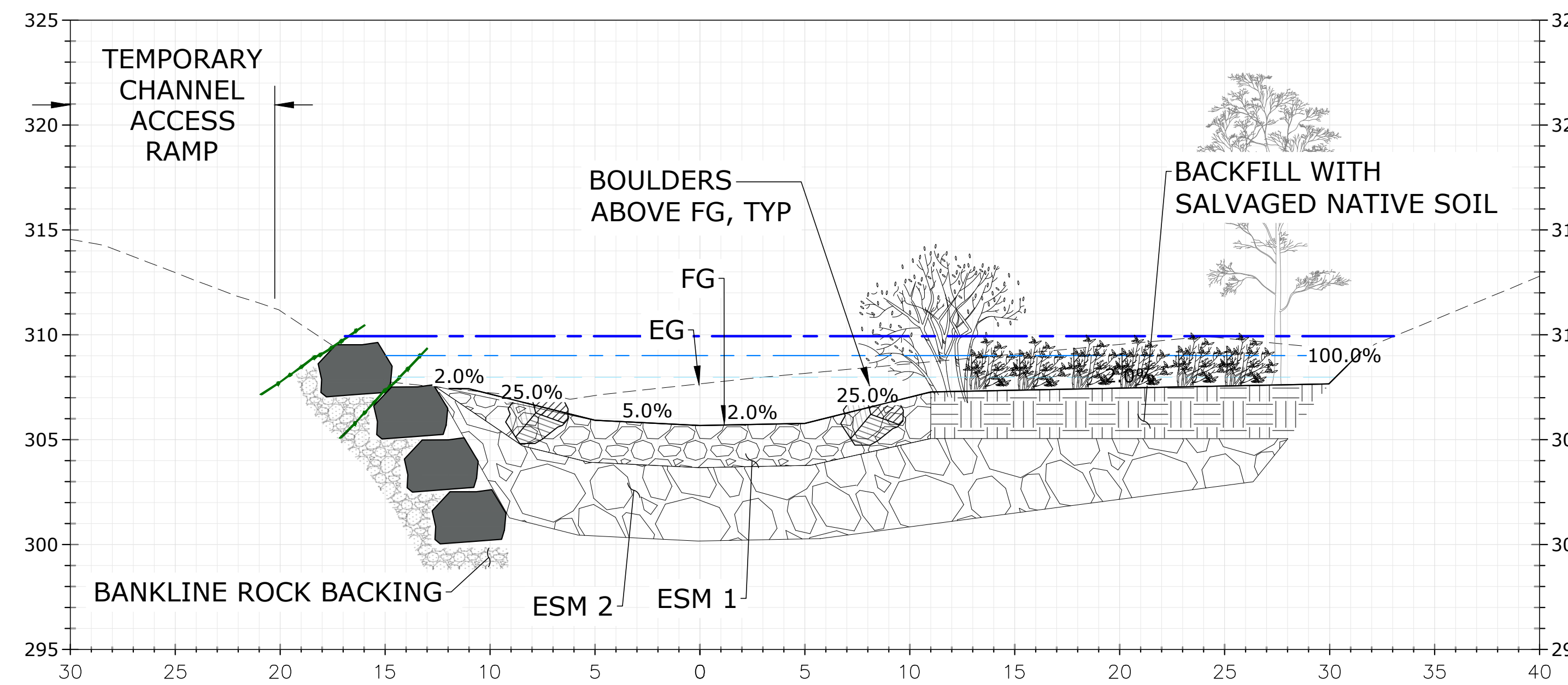
DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36



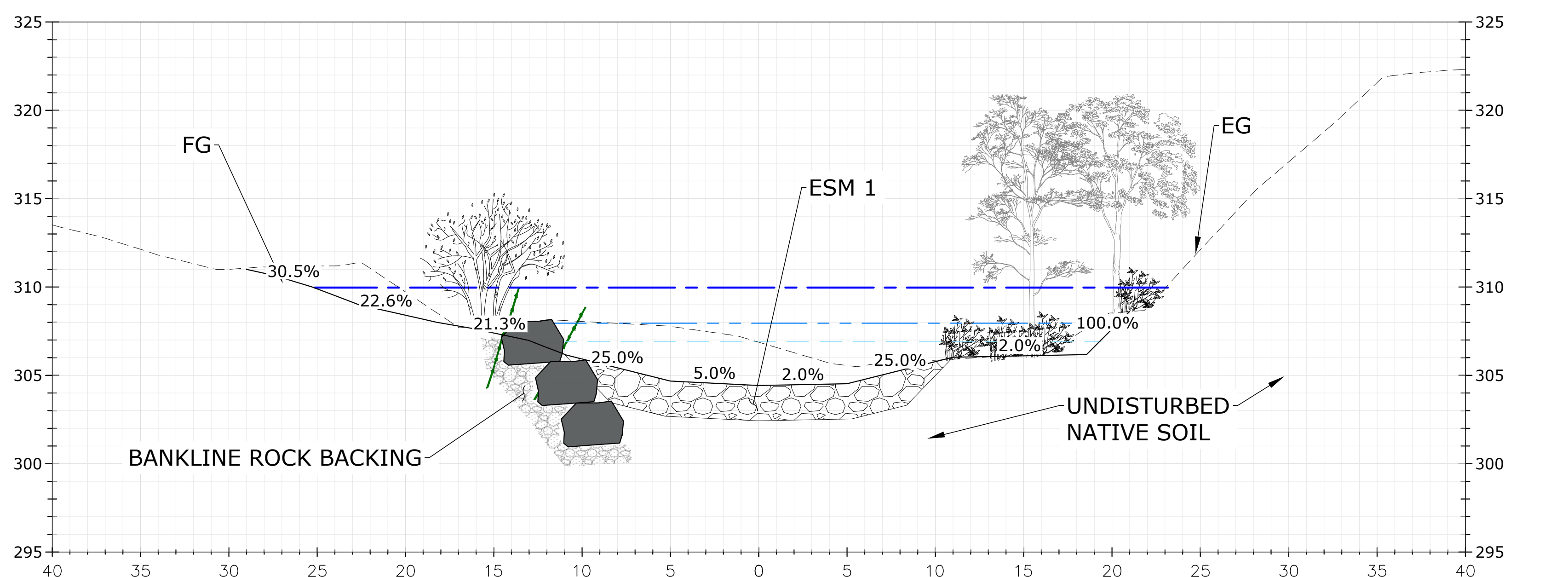
**1** UPSTREAM ROCK RAMP AT 131+00  
C-3.0 DOWNSTREAM VIEW

SCALE: 1" = 5'



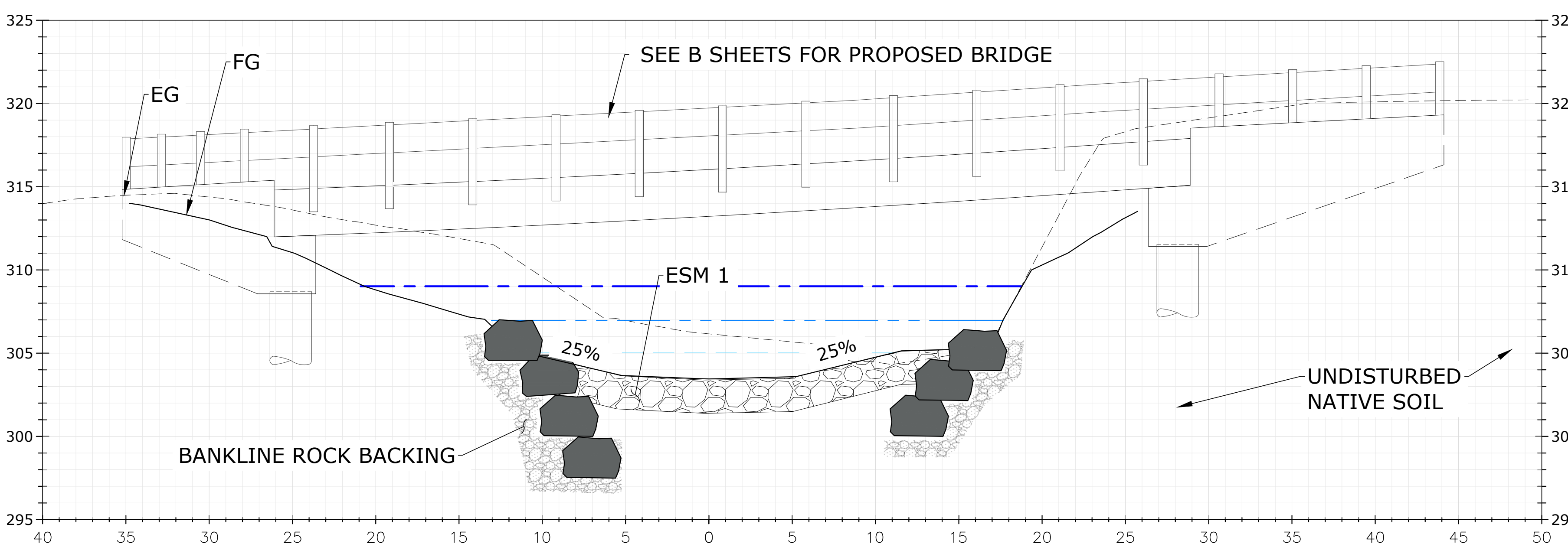
**2** UPSTREAM CHANNEL AT 130+50  
C-3.0 DOWNSTREAM VIEW

SCALE: 1" = 5'



**3** UPSTREAM CHANNEL AT 130+00  
C-3.0 DOWNSTREAM VIEW

SCALE: 1" = 5'



**4** PROPOSED BRIDGE AT 129+60  
C-3.0 DOWNSTREAM VIEW

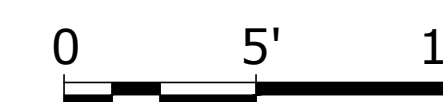
SCALE: 1" = 5'

### SECTION LEGEND

SYMBOL	DESCRIPTION
	EXISTING GRADE
	FINISHED GRADE
	Q2 (299 CFS) WATER SURFACE ELEVATION
	Q10 (757 CFS) WATER SURFACE ELEVATION
	Q100 (1480 CFS) WATER SURFACE ELEVATION
	BOULDER ABOVE FINISHED GRADE
	WILLOW LIVE STAKE PLANTING
	ENGINEERED STREAMBED MATERIAL 1
	ENGINEERED STREAMBED MATERIAL 2
	EXISTING RSP
	BANKLINE ROCK BACKING MATERIAL
	SALVAGED NATIVE SOIL
	BANKLINE ROCK

### NOTES:

1. INDIVIDUAL PLANT SIZE AND SPACING NOT TO HORIZONTAL SCALE.
2. SEE SHEET C-6.0 FOR CHANNEL FEATURE INSTALLATION DETAILS.
3. SEE SHEET L-2.0 FOR PLANT INSTALLATION DETAILS.



SECTIONS  
SHEET

# C-5.0



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

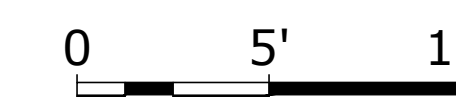
ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION  
OF ANDREW SMITH, PE #C-82643

04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	
DATE	ISSUES AND REVISIONS	NO.

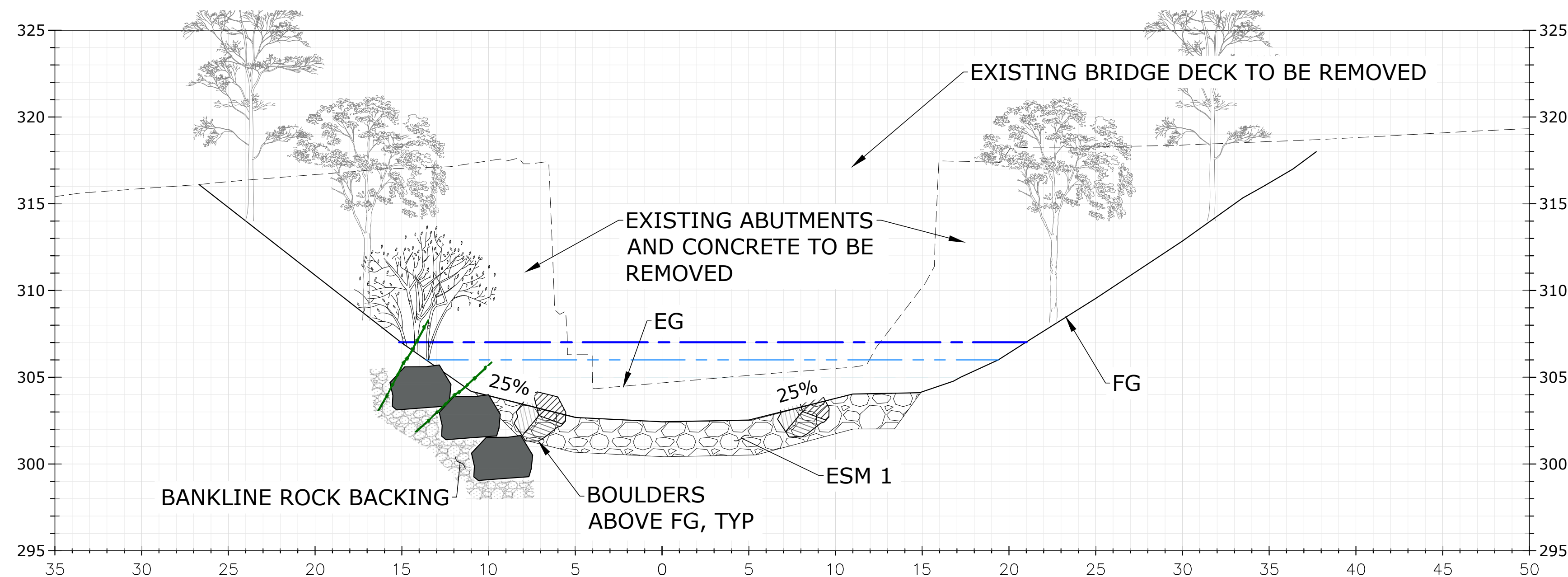
PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36



**SECTIONS**

SHEET

**C-5.1**



**5** EXISTING BRIDGE AT 129+20  
C-3.0 DOWNSTREAM VIEW

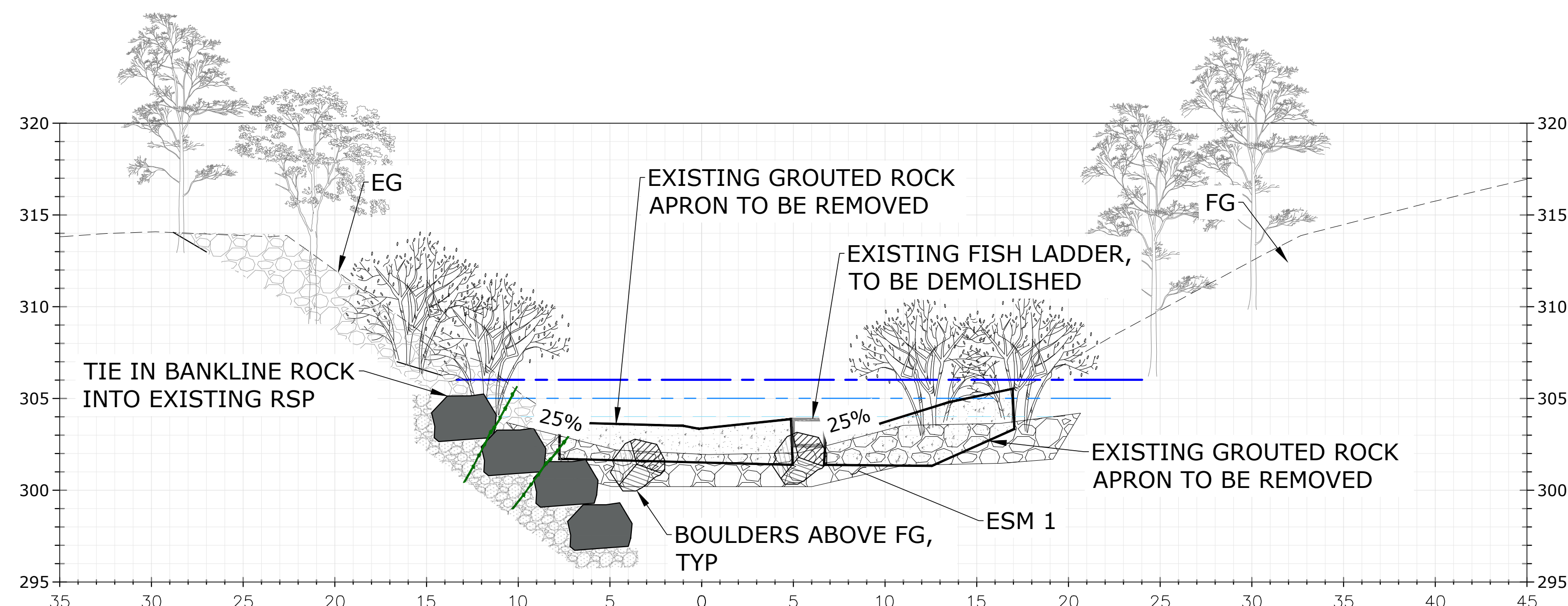
SCALE: 1" = 5'

**SECTION LEGEND**

SYMBOL	DESCRIPTION
- - - - -	EXISTING GRADE
—————	FINISHED GRADE
— · — · —	Q2 (299 CFS) WATER SURFACE ELEVATION
— · — · —	Q10 (757 CFS) WATER SURFACE ELEVATION
— · — · —	Q100 (1480 CFS) WATER SURFACE ELEVATION
	BOULDER ABOVE FINISHED GRADE
	WILLOW LIVE STAKE PLANTING
	ENGINEERED STREAMBED MATERIAL 1
	ENGINEERED STREAMBED MATERIAL 2
	EXISTING RSP
	BANKLINE ROCK BACKING MATERIAL
	SALVAGED NATIVE SOIL
	BANKLINE ROCK

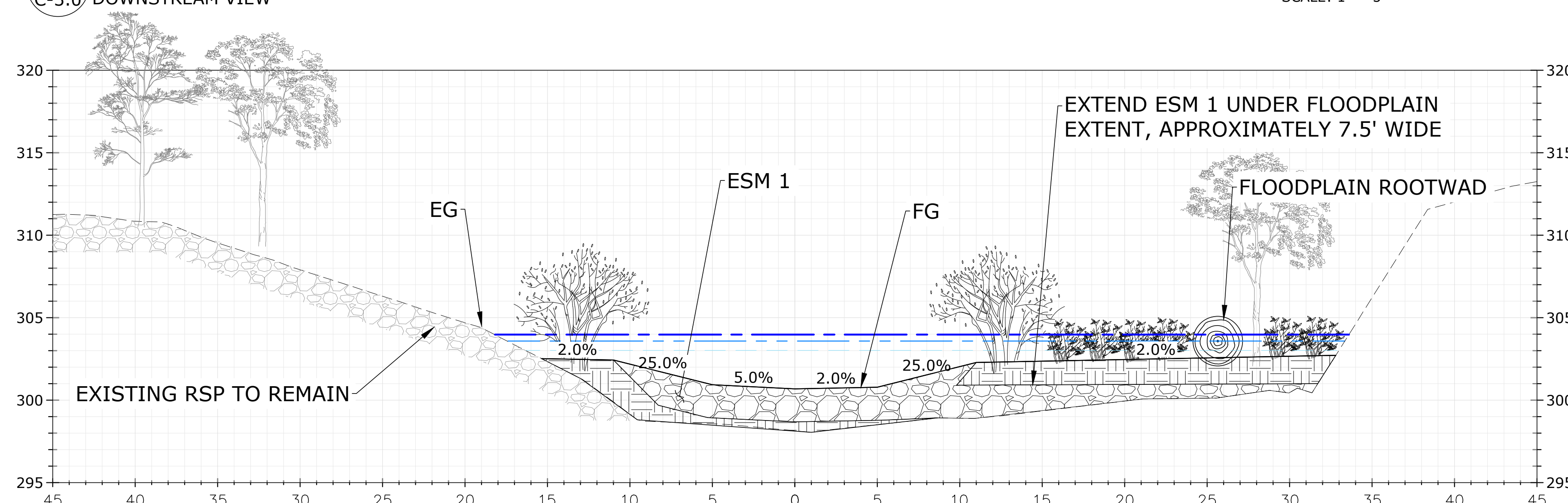
**NOTES:**

- INDIVIDUAL PLANT SIZE AND SPACING NOT TO HORIZONTAL SCALE.
- SEE SHEET C-6.0 FOR CHANNEL FEATURE INSTALLATION DETAILS.
- SEE SHEET L-2.0 FOR PLANT INSTALLATION DETAILS.



**6** EXISTING FISH LADDER AT 129+00  
C-3.0 DOWNSTREAM VIEW

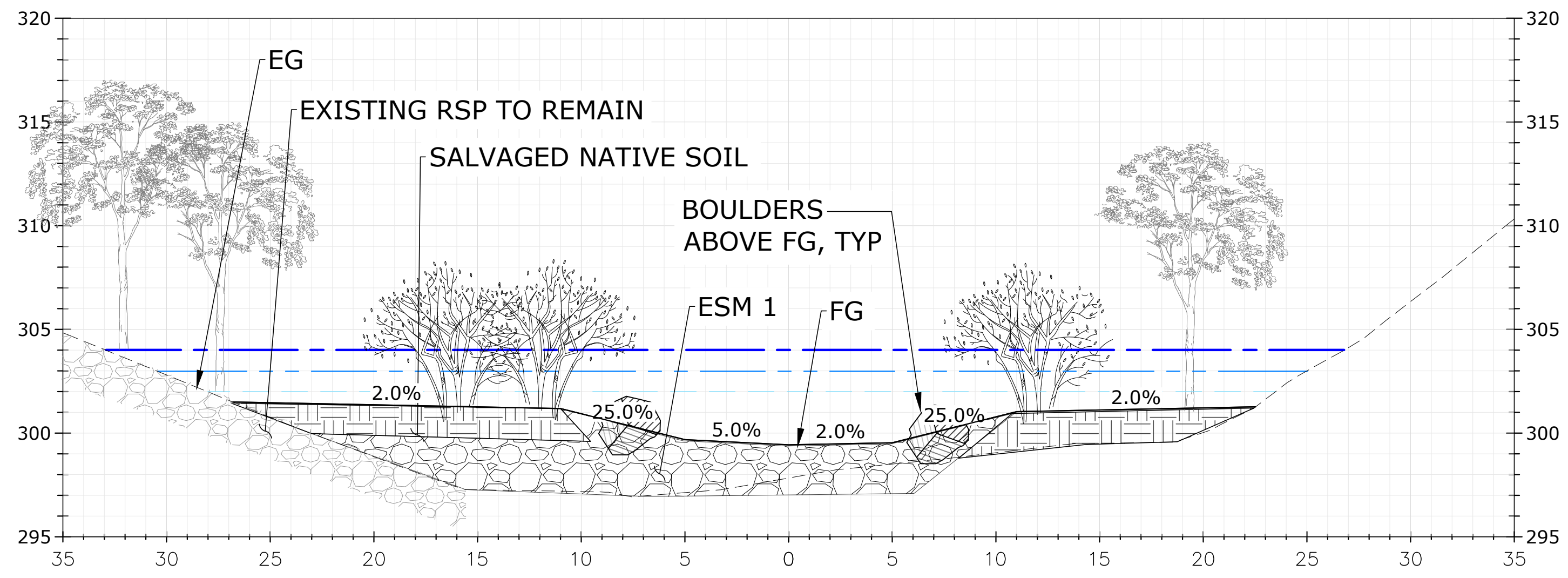
SCALE: 1" = 5'



**7** DOWNSTREAM CHANNEL AT 128+50  
C-3.1 DOWNSTREAM VIEW

SCALE: 1" = 5'





8 DOWNSTREAM CHANNEL AT 128+00  
C-3.1 DOWNSTREAM VIEW SCALE: 1" = 5'

**SECTION LEGEND**

SYMBOL	DESCRIPTION
--- (dashed line)	EXISTING GRADE
— (solid line)	FINISHED GRADE
--- (dotted line)	Q2 (299 CFS) WATER SURFACE ELEVATION
--- (dash-dot line)	Q10 (757 CFS) WATER SURFACE ELEVATION
--- (long-dash line)	Q100 (1480 CFS) WATER SURFACE ELEVATION
⬢ (hatched triangle)	BOULDER ABOVE FINISHED GRADE
— (green line)	WILLOW LIVE STAKE PLANTING
▨ (stippled pattern)	ENGINEERED STREAMBED MATERIAL 1
▨ (cross-hatched pattern)	ENGINEERED STREAMBED MATERIAL 2
▨ (dotted pattern)	EXISTING RSP
▨ (brick pattern)	BANKLINE ROCK BACKING MATERIAL
▨ (horizontal line pattern)	SALVAGED NATIVE SOIL
⬢ (solid black)	BANKLINE ROCK

- NOTES:**
- INDIVIDUAL PLANT SIZE AND SPACING DO NOT TO HORIZONTAL SCALE.
  - SEE SHEET C-6.0 FOR CHANNEL FEATURE INSTALLATION DETAILS
  - SEE SHEET L-2.0 FOR PLANT INSTALLATION DETAILS

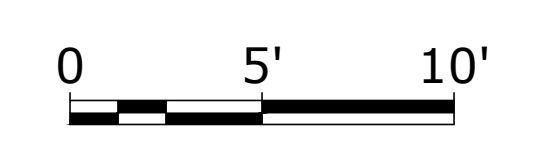
**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**  
ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

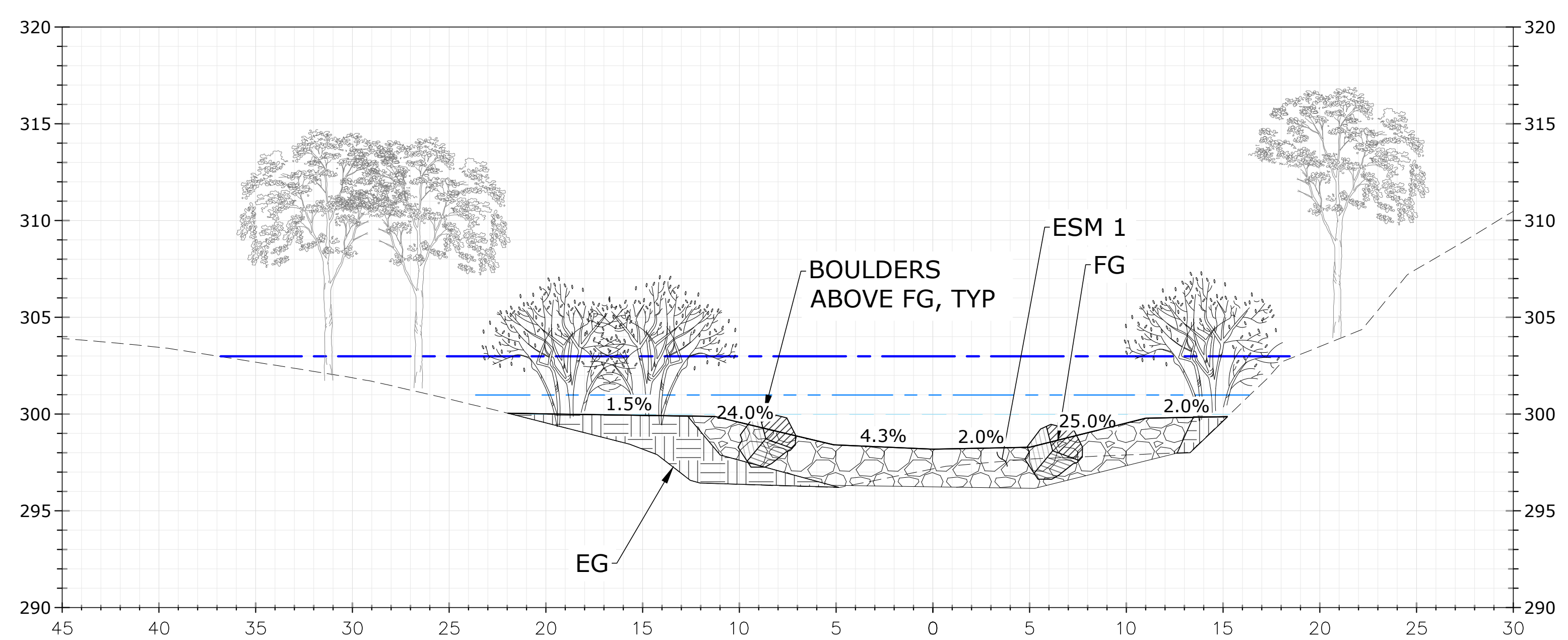
PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36



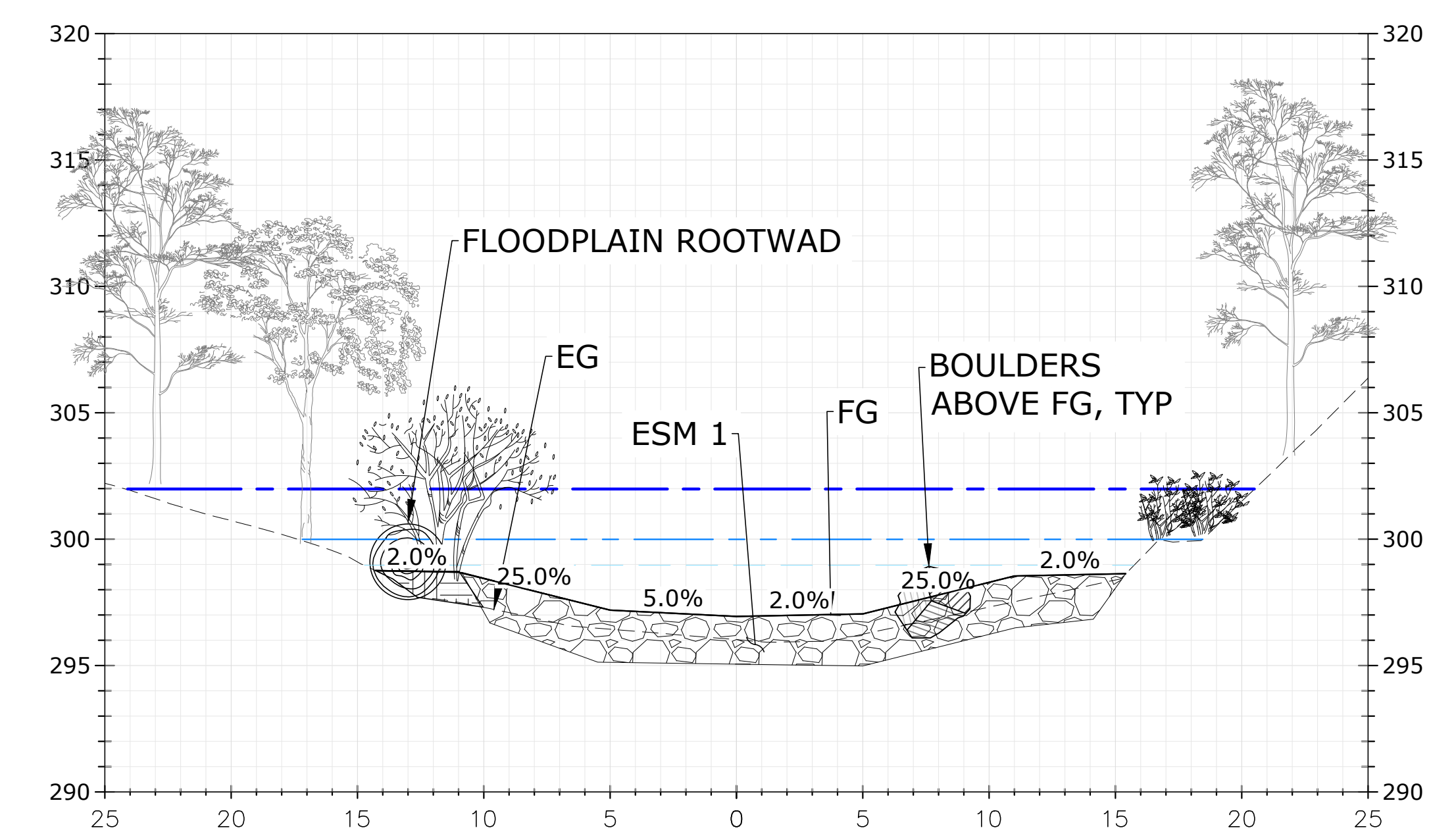
**SECTIONS**

SHEET

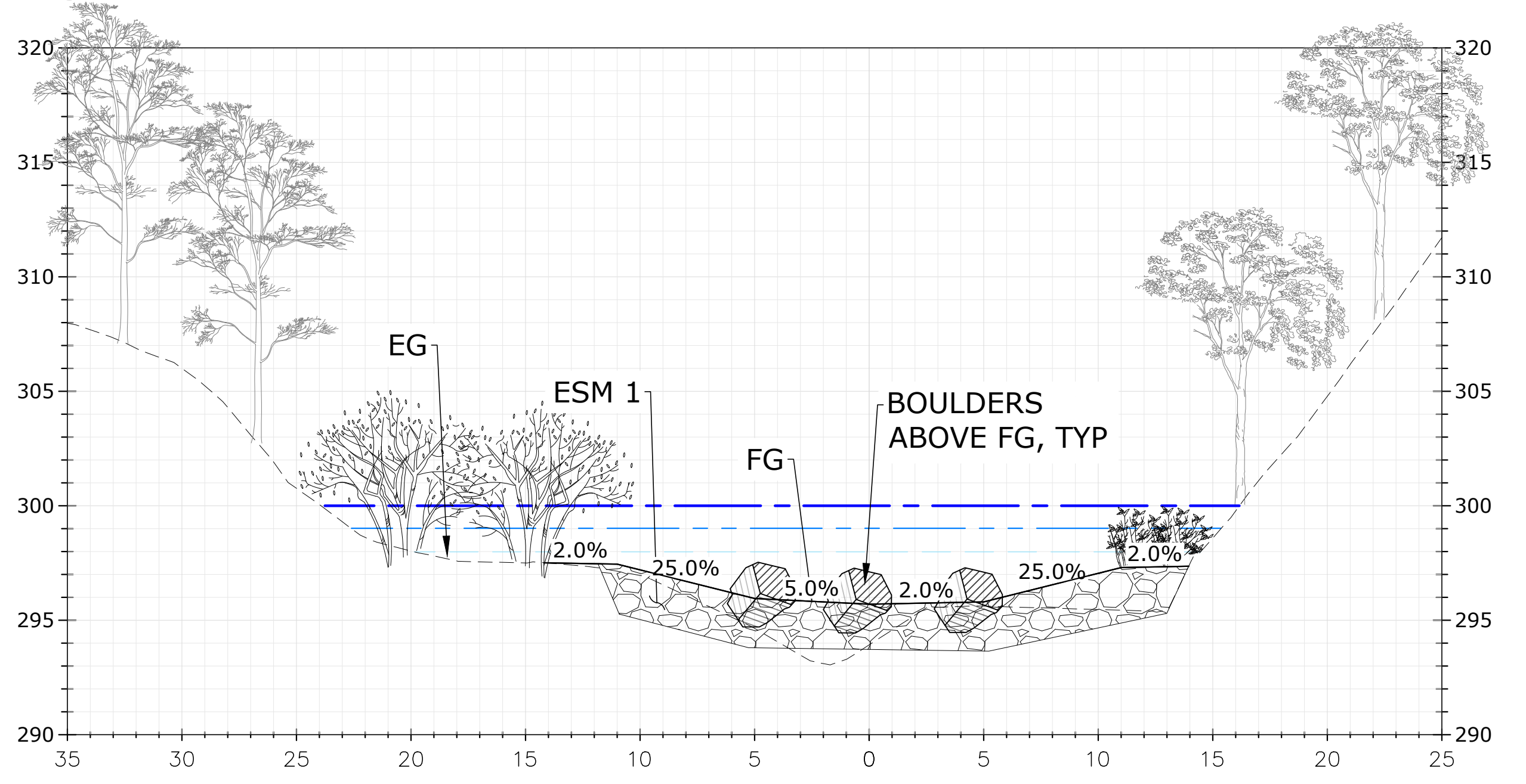
**C-5.2**



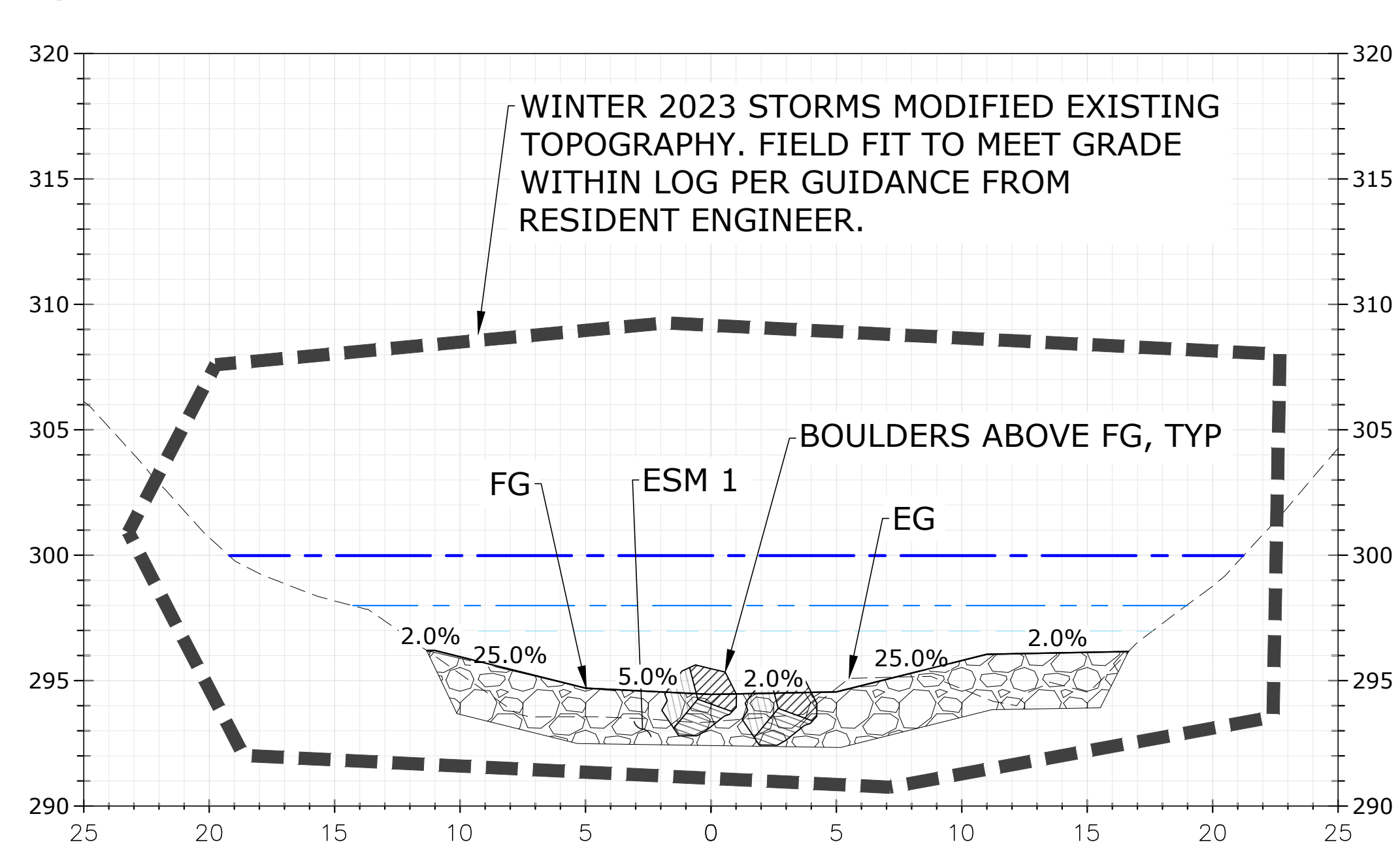
9 DOWNSTREAM CHANNEL AT 127+50  
C-3.1 DOWNSTREAM VIEW SCALE: 1" = 5'



10 DOWNSTREAM CHANNEL AT 127+00  
C-3.1 DOWNSTREAM VIEW SCALE: 1" = 5'



11 DOWNSTREAM CHANNEL AT 126+50  
C-3.1 DOWNSTREAM VIEW SCALE: 1" = 5'



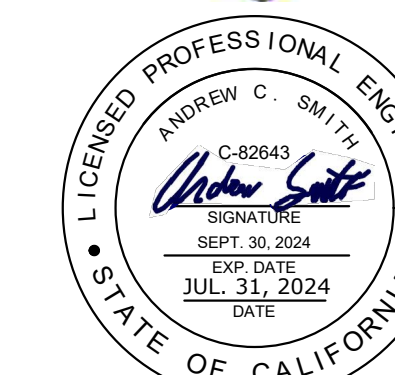
12 DOWNSTREAM END AT 126+00  
C-3.1 DOWNSTREAM VIEW SCALE: 1" = 5'

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**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



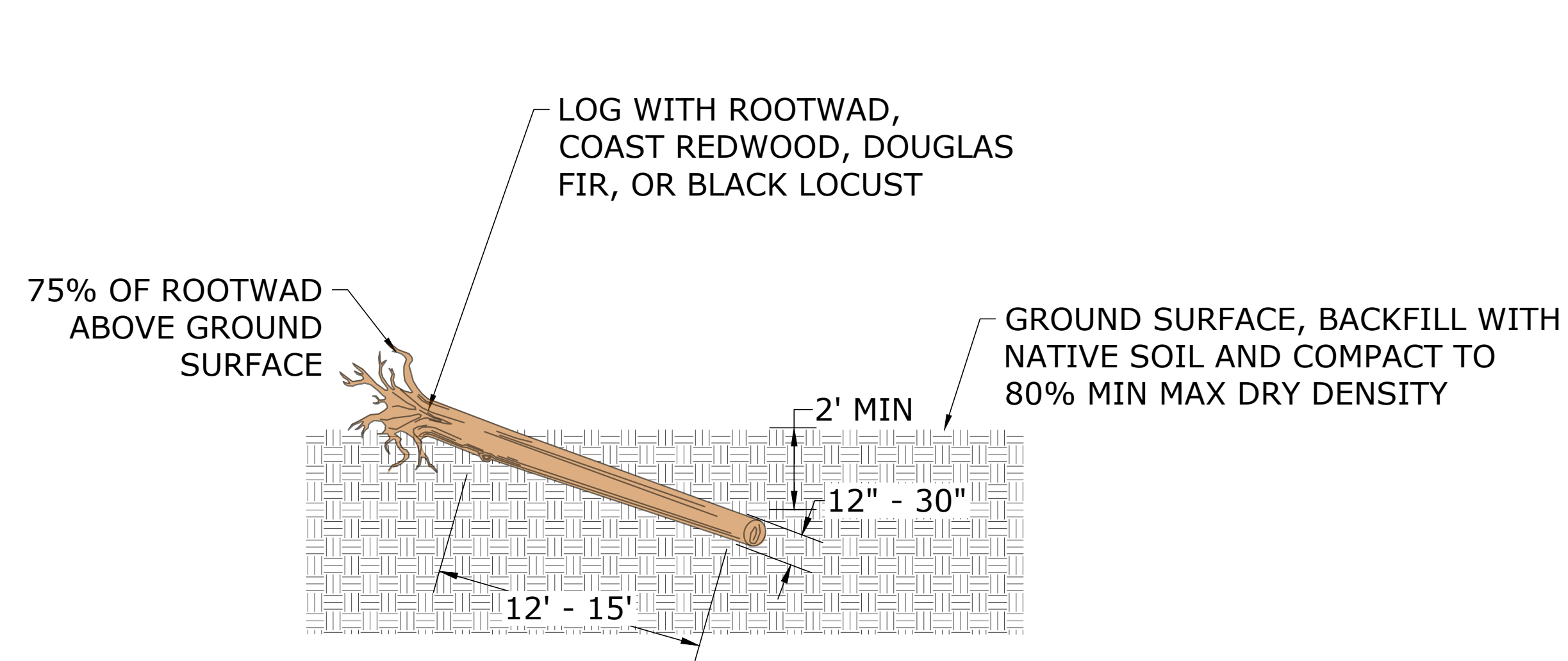
PLANS PREPARED UNDER SUPERVISION  
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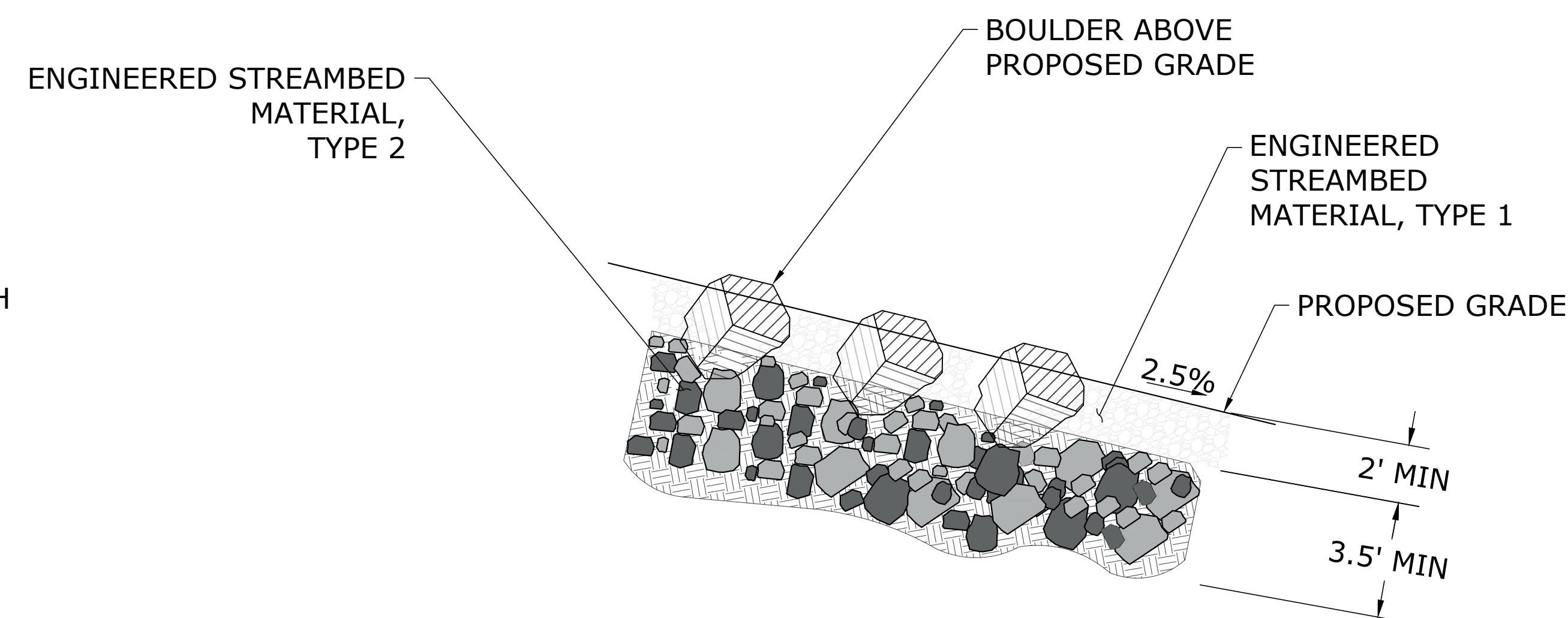
PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**CHANNEL DETAILS**  
SHEET

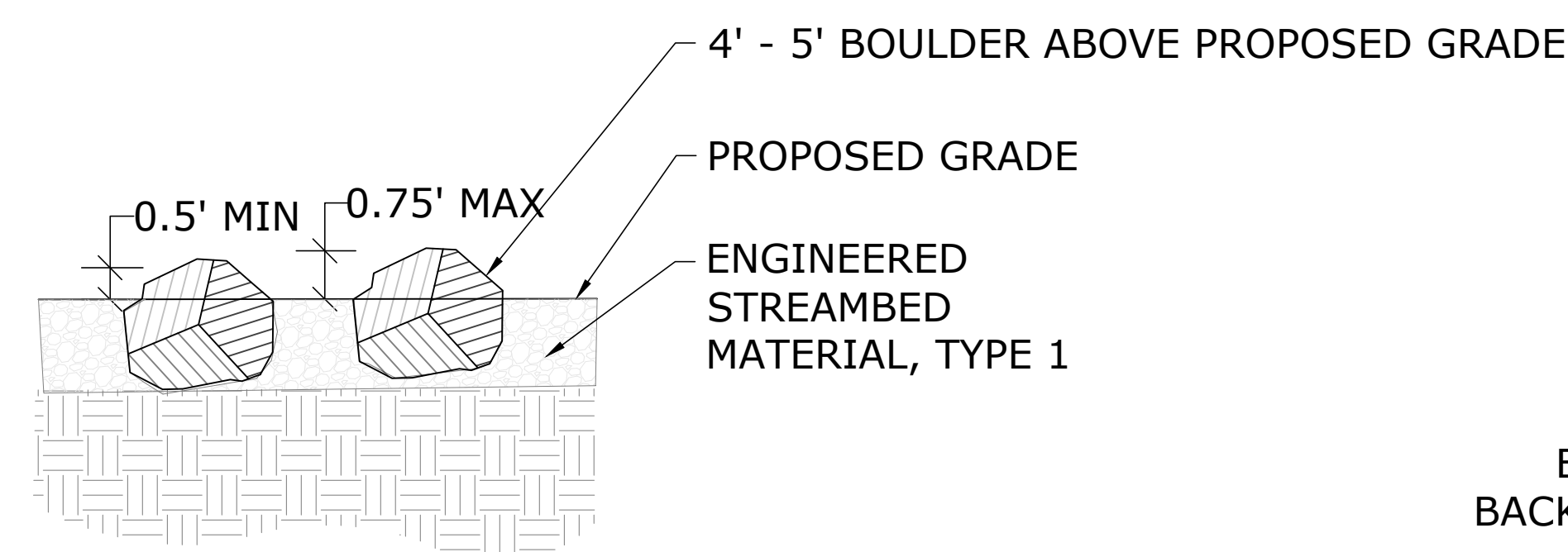
**C-6.0**



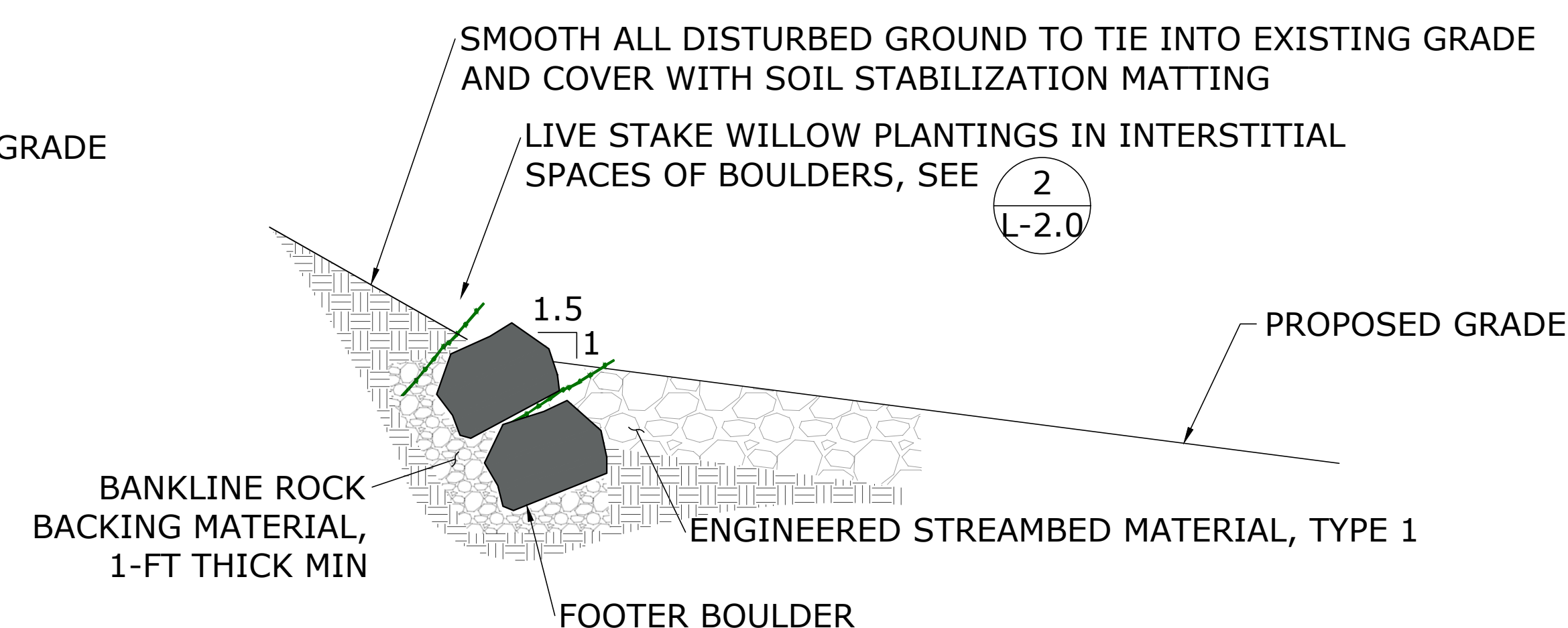
**1** FLOODPLAIN ROOTWAD DETAIL  
C-3.1 NOT TO SCALE



**2** BURIED ROUGHENED RAMP DETAIL  
C-3.0 NOT TO SCALE



**3** BOULDER ABOVE PROPOSED GRADE DETAILS  
C-3.1 NOT TO SCALE



**4** BANKLINE ROCK WITH LIVE STAKE PLANTING  
C-3.0 NOT TO SCALE



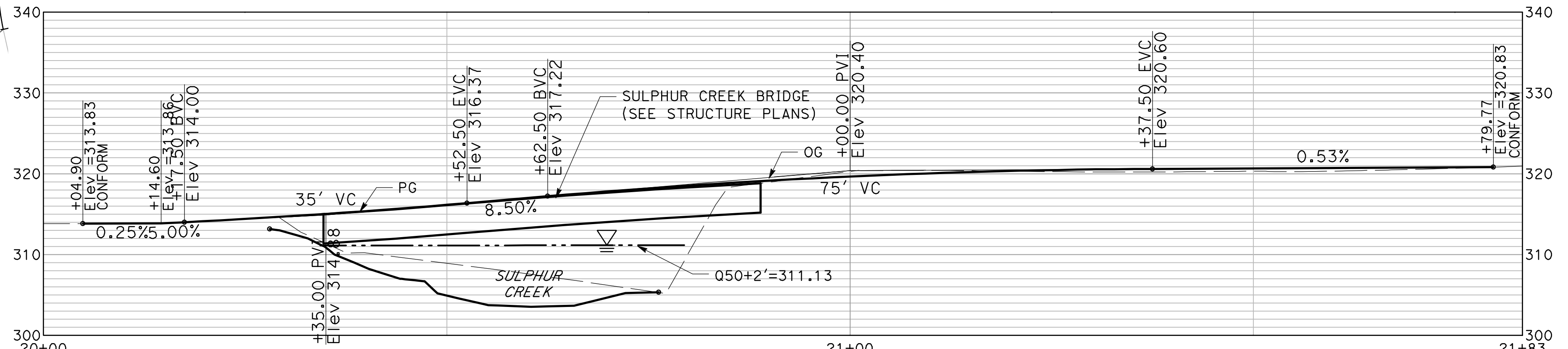
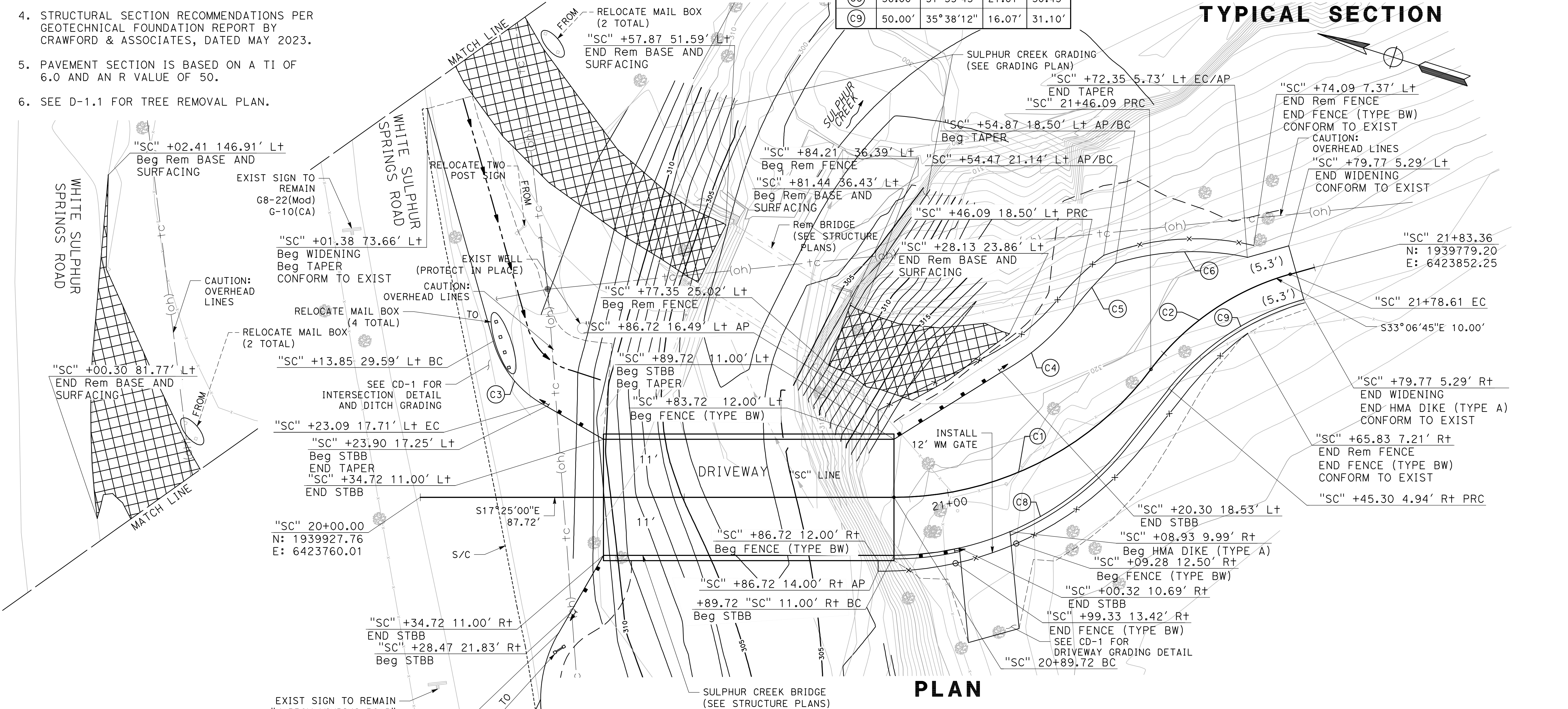
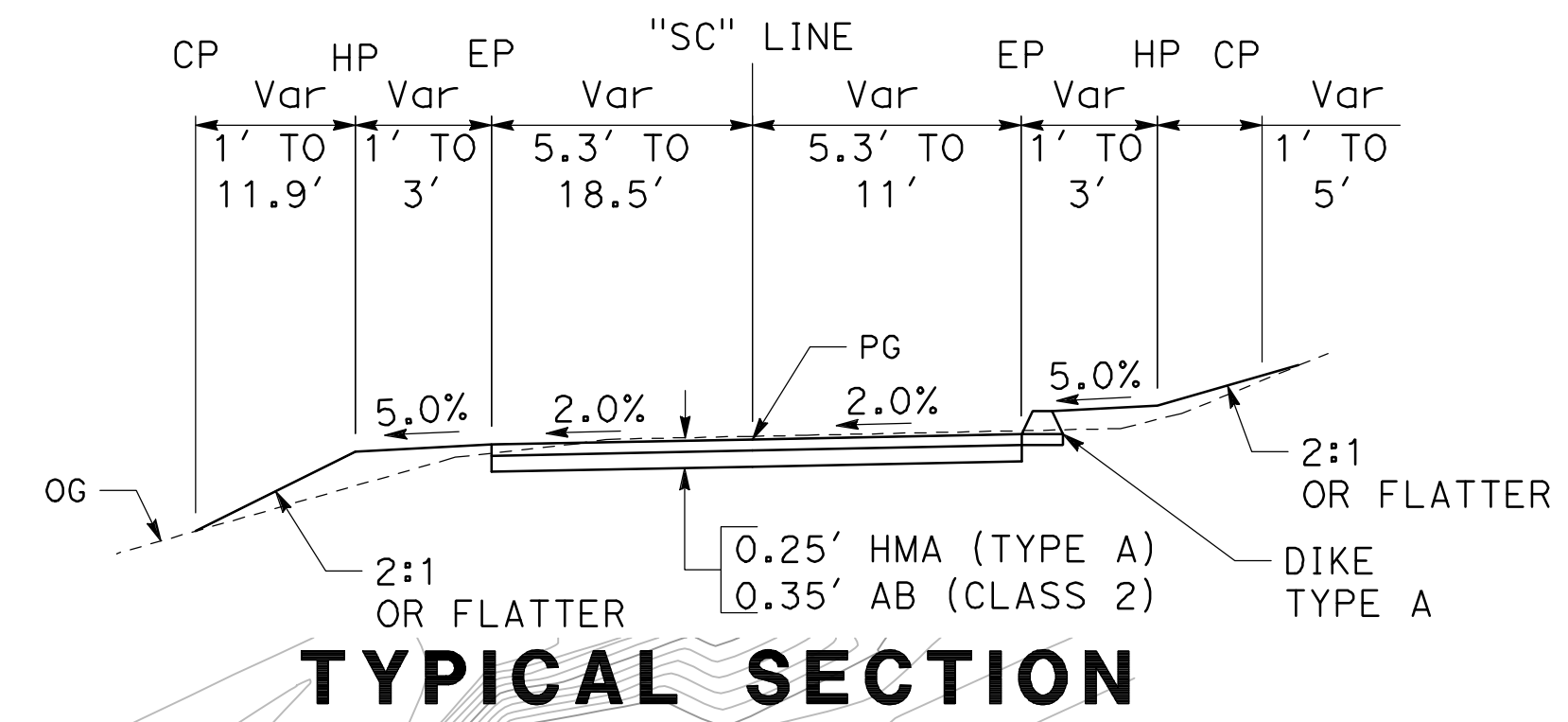
**NOTE:**

- FOR ALL UNREFERENCED DETAILS, SEE CALTRANS STANDARD PLANS UNLESS OTHERWISE NOTED.
- SEE CONSTRUCTION DETAILS FOR DRIVEWAY AND WHITE SULPHUR SPRINGS ROAD INTERSECTION GRADING SULPHUR CREEK ROAD GRADING.
- DIMENSIONS OF THE PAVEMENT STRUCTURES (STRUCTURAL SECTIONS) ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.
- STRUCTURAL SECTION RECOMMENDATIONS PER GEOTECHNICAL FOUNDATION REPORT BY CRAWFORD & ASSOCIATES, DATED MAY 2023.
- PAVEMENT SECTION IS BASED ON A T1 OF 6.0 AND AN R VALUE OF 50.
- SEE D-1.1 FOR TREE REMOVAL PLAN.

**LEGEND:**

- F --- F --- LIMIT OF FILL
- C --- C --- LIMIT OF CUT
- +c --- (oh) --- EXIST OH TELECOM (AT&T)
- [Cross-hatched] --- Rem BASE AND SURFACING
- ↑ --- TYPE P MARKER
- [Tree symbol] --- EXIST TREE

CURVE TABLE				
No. X	R	Δ	T	L
(C1)	61.00'	52°57'03"	30.38'	56.37'
(C2)	50.00'	37°15'19"	16.85'	32.51'
(C3)	20.00'	44°12'23"	8.12'	15.43'
(C4)	42.50'	24°13'49"	9.12'	17.97'
(C5)	68.50'	10°03'35"	6.03'	12.03'
(C6)	50.00'	28°57'18"	12.91'	25.27'
(C7)	25.00'	42°27'38"	9.71'	18.53'
(C8)	56.00'	51°35'43"	27.07'	50.43'
(C9)	50.00'	35°38'12"	16.07'	31.10'



**DRIVEWAY PROFILE**  
 "SC" LINE  
 SCALE: HORIZ 1"=10'  
 VERT 1"=10'

**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

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07/31/24	100% DESIGN PLANS	

PROJECT #30144  
 DRAWN BY: ZB  
 CHECKED BY: JW  
 ORIGINAL DRAWING SIZE: 24 X 36

**ROADWAY AND BRIDGE LAYOUT AND PROFILE**

SHEET

**PP-1**

SCALE: 1"=10'



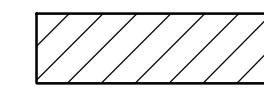
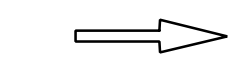




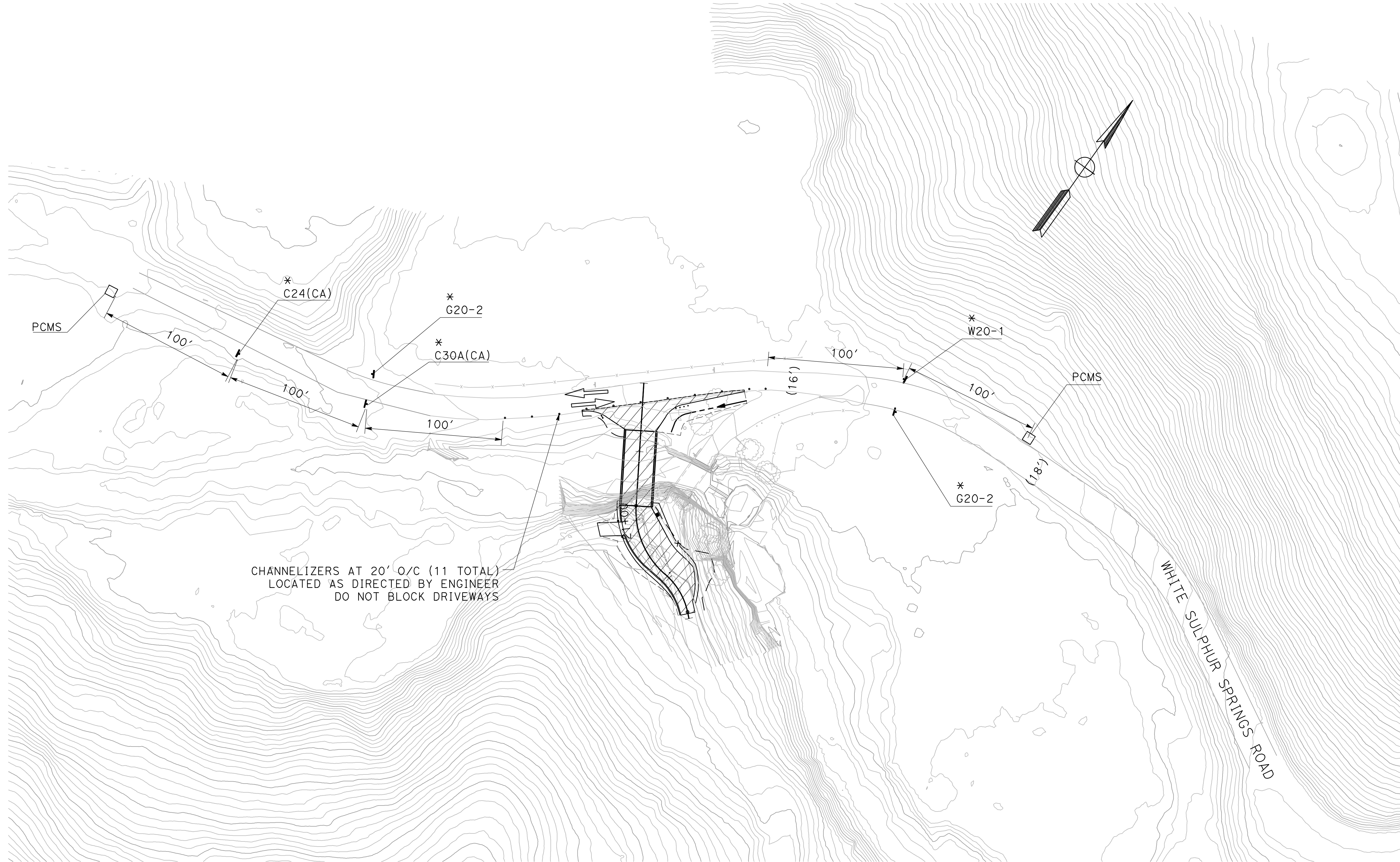


**NOTE:**

1. DURING WORK WITHIN THE TRAVELED WAY, PROVIDE AT LEAST ONE 12-FOOT WIDE TRAFFIC LANE AT ALL TIMES UNLESS SPECIFICALLY AUTHORIZED. MAINTAIN ACCESS TO EXISTING DRIVEWAYS AND FIRE HYDRANTS AT ALL TIMES.
2. COVER ALL EXISTING CONFLICTING SIGNS.

**LEGEND:**

-  CONSTRUCTION
-  DIRECTION OF TRAVEL
-  CHANNELIZER (SURFACE MOUNTED)
-  CONSTRUCTION SIGNS TO BE INSTALLED



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
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DATE	ISSUES AND REVISIONS	NO.

PROJECT #30144  
DRAWN BY: ZB  
CHECKED BY: JW  
ORIGINAL DRAWING SIZE: 24 X 36

**TRAFFIC HANDLING**

SHEET

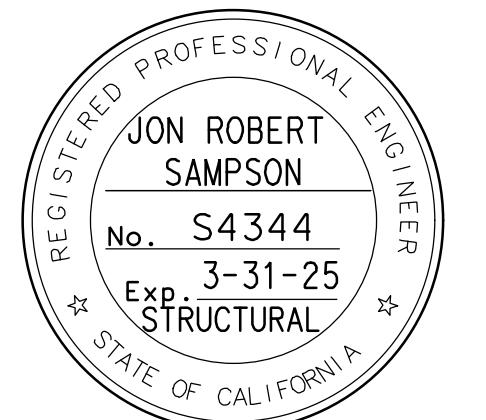
**TH-1**

SCALE: 1"=40'



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

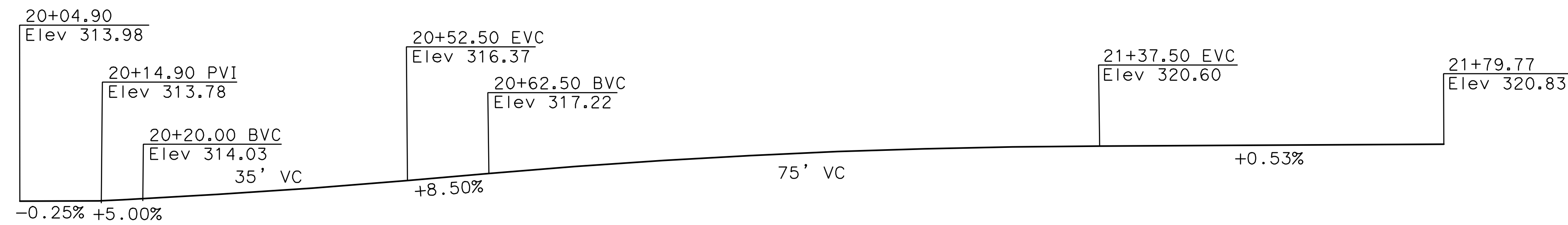
ST HELENA, CALIFORNIA  
DESIGNED FOR:



04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

DATE ISSUES AND REVISIONS NO.

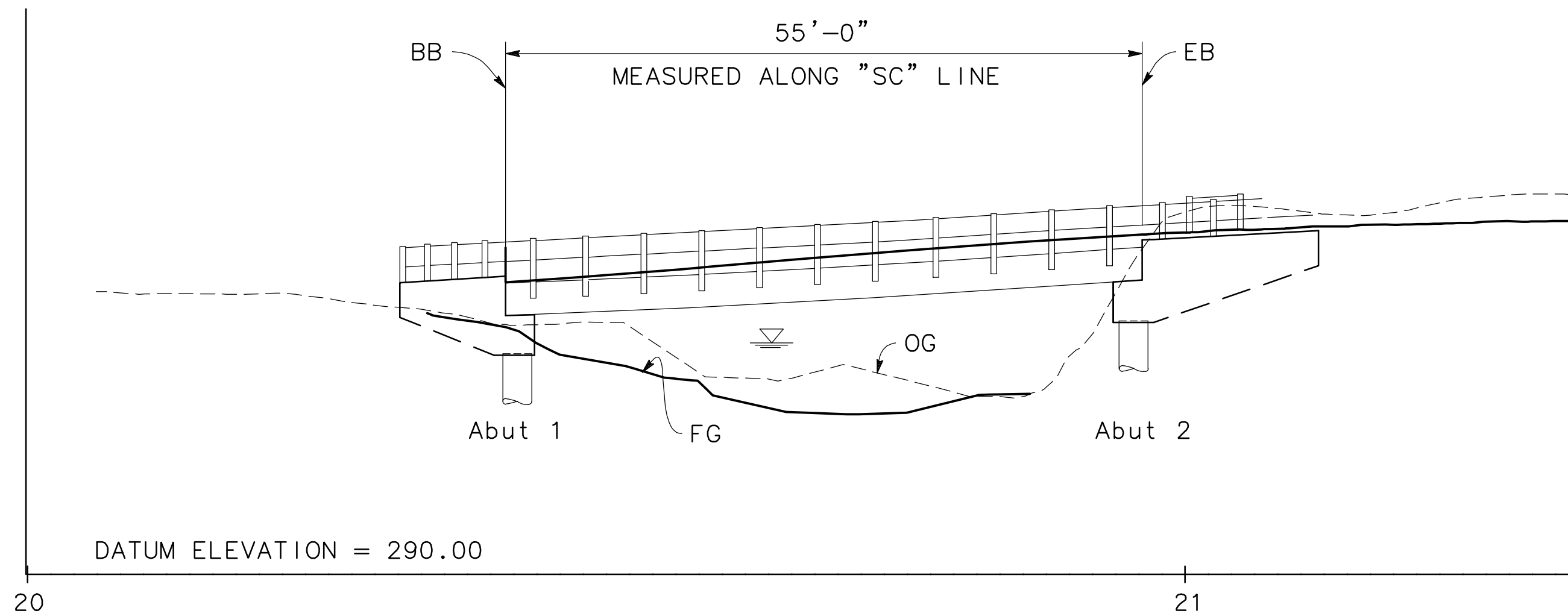
PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36



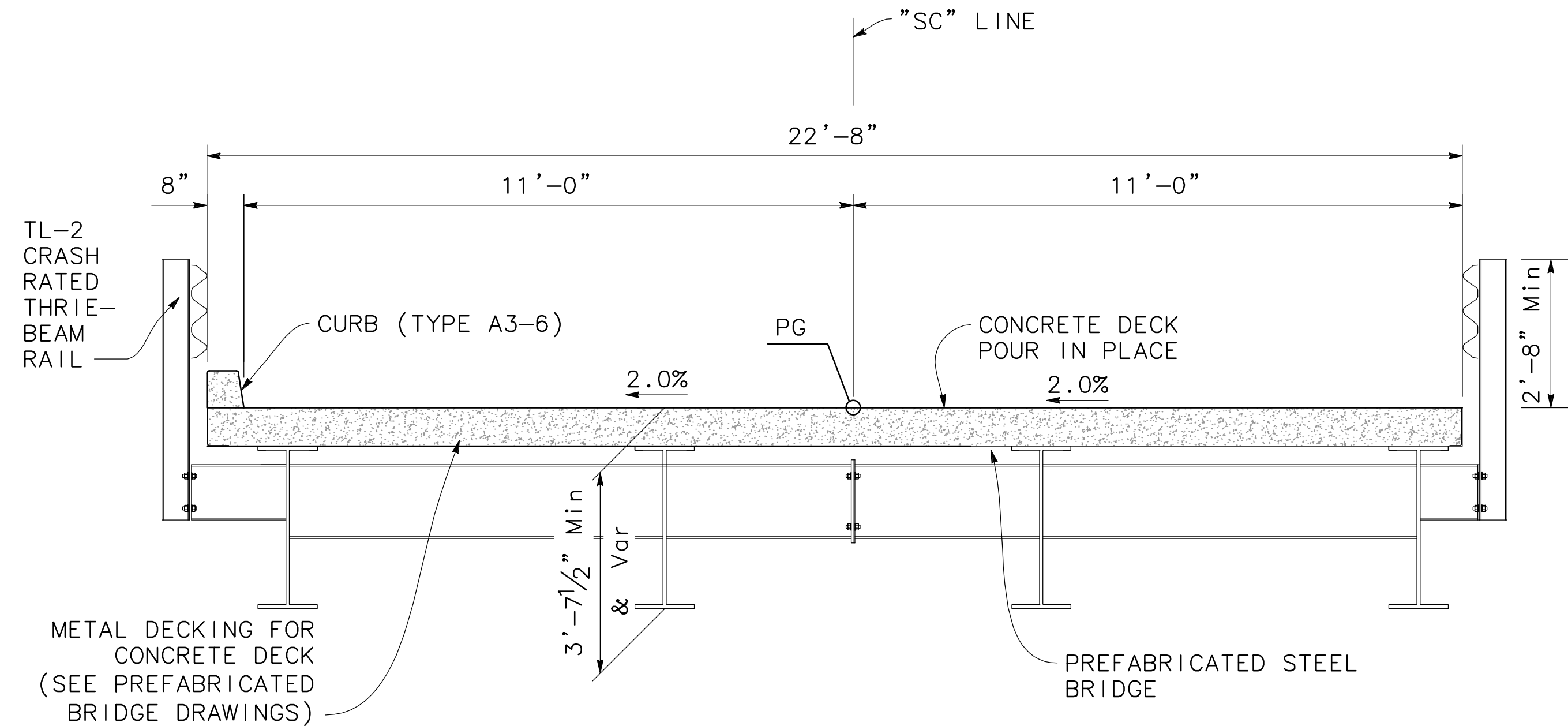
**PROFILE GRADE**  
NO SCALE

**QUANTITIES**

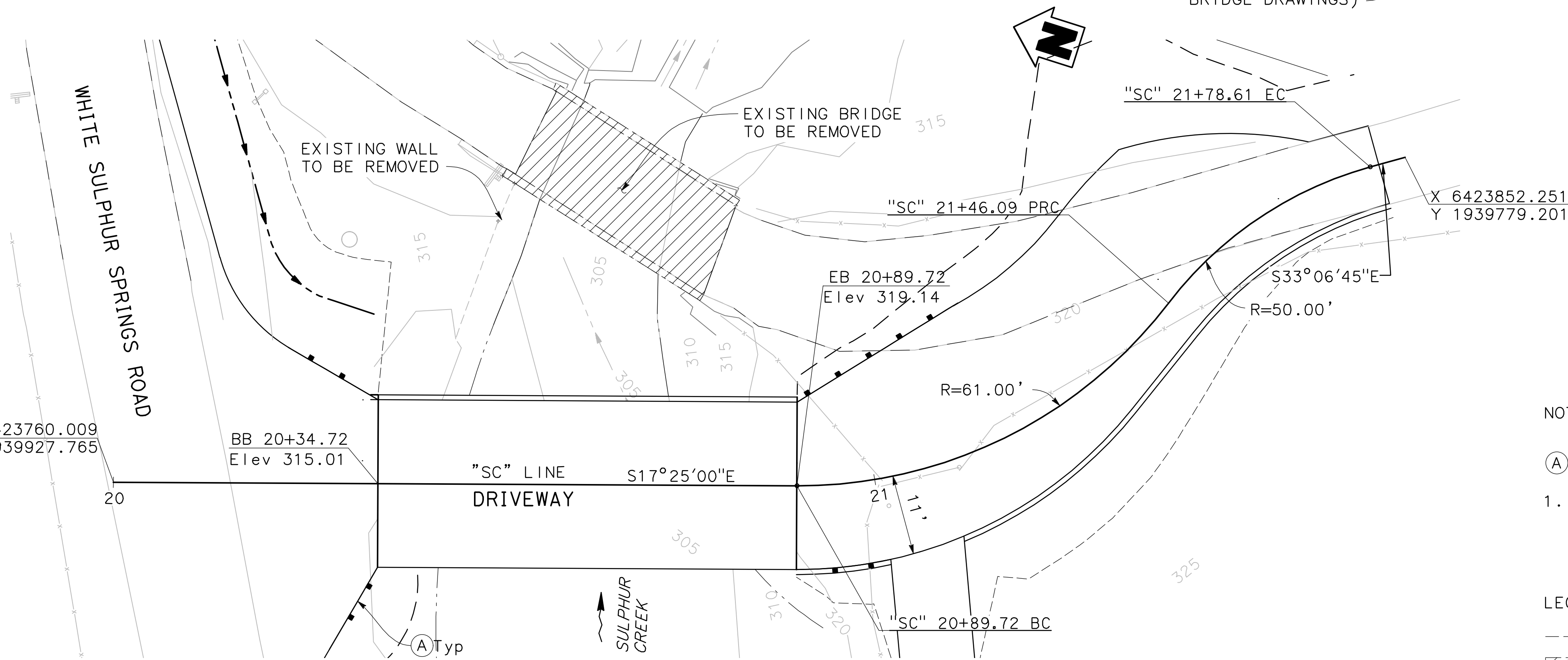
STRUCTURE EXCAVATION (BRIDGE)	74 CY
STRUCTURE BACKFILL (BRIDGE)	42 CY
30" CAST-IN-DRILLED-HOPE CONCRETE PILING	222 LF
STRUCTURAL CONCRETE, BRIDGE	39 CY
FURNISH STRUCTURAL STEEL (BRIDGE)	1 LS
ERECT STRUCTURAL STEEL (BRIDGE)	1 LS
BAR REINFORCING STEEL (BRIDGE)	12,236 LB
BRIDGE REMOVAL	1 LS
MINOR CONCRETE (CURB)	1 CY



**ELEVATION**  
1" = 10'



**TYPICAL SECTION**  
1/2" = 1'-0"



**PLAN**  
1" = 10'

**CURVE DATA**

R=62.00'	R=50.00'
Δ=52°57'03"	Δ=33°06'45"
T=30.38'	T=16.85'
L=56.37'	L=32.51'

**INDEX TO PLANS**

- B-1 GENERAL PLAN
- B-2 INDEX TO PLANS
- B-3 FOUNDATION PLAN
- B-4 ABUTMENT LAYOUT
- B-5 ABUTMENT DETAILS
- B-6 ABUTMENT DRAINAGE DETAILS
- B-7 TEST BORING LAYOUT
- B-8 LOG OF TEST BORINGS

**NOTES:**

- (A) THRIE BEAM BARRIER, see "ROADWAY PLANS"
- 1. For final grade in channel see "STREAM RESTORATION PLANS"

**LEGEND:**

- Indicates Existing Bridge
- ▨ Indicates Bridge Removal
- ▽ Indicates Q50 + 2' Freeboard Water Surface Elevation

**GENERAL PLAN**

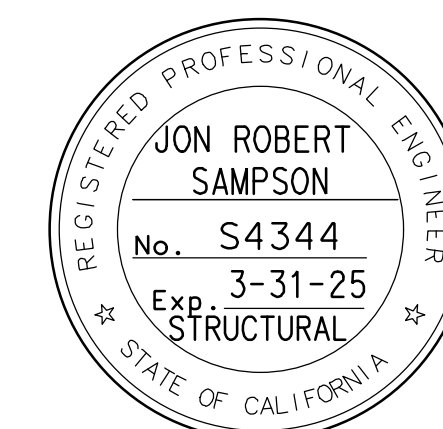
SHEET

**B-1**



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



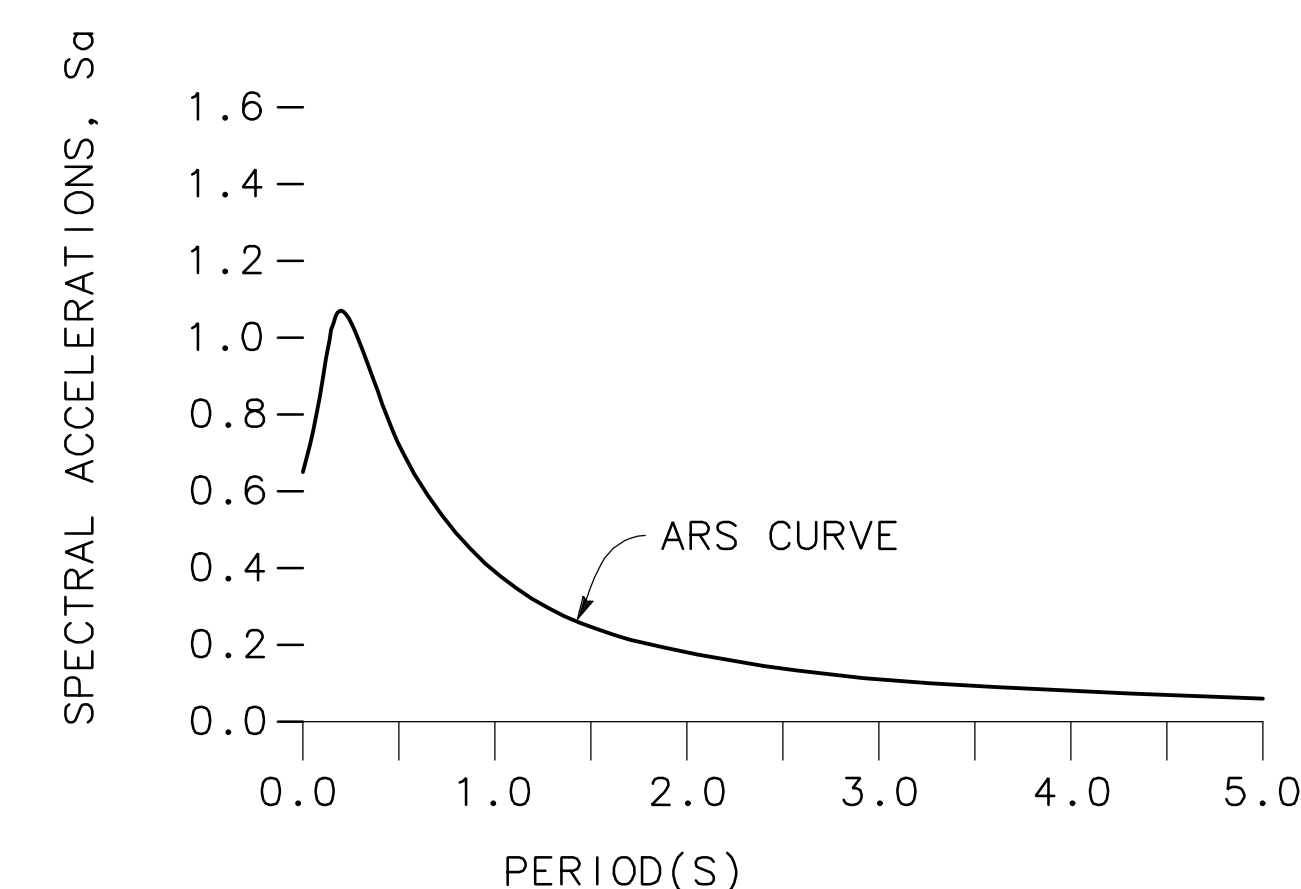
04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

DATE ISSUES AND REVISIONS NO.

PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36

GENERAL NOTES

- Contractor shall verify all controlling field dimensions before ordering or fabricating any material. Dimensions marked (\*) shall be subject to adjustment depending upon approved prefab bridge plans. Contractor shall coordinate and reflect them in respective shop drawing prior to construction.
- Anchor bolts to be 1" diameter x 24" F1558 Grade 55 with 1/4"x3"x3" plate washers. Anchor bolts, nuts, and plate washers to be galvanized.
- Spiral reinforcement must be lapped with two full turns at beginning and end of each bar. A 135 degree 6" long hook around a longitudinal bar shall be used to terminate the ends of the spiral reinforcement at spiral lapped splices and at the top and bottom of the piles.



**ARS CURVE**  
5% DAMPING

**GENERAL NOTES**  
**LOAD AND RESISTANCE FACTOR DESIGN**

**DESIGN:**  
AASHTO LRFD Bridge Design Specifications, 8th edition and the California Amendments, preface dated April 2019.

**SEISMIC DESIGN:**  
Caltrans Seismic Design Criteria (SDC), Version 2.0 dated April 2019.

**LIVE LOADING:**  
HL93

**SEISMIC LOADING:**  
Soil Profile: Vs30 = 486 m/s (1593 ft/s)  
Moment Magnitude: 6.72  
Peak Ground Acceleration 0.65g  
See ARS Curve on Foundation Plan

**CONCRETE:**  
fy = 60 ksi  
f'c = 3.6 ksi unless otherwise noted  
n = 8

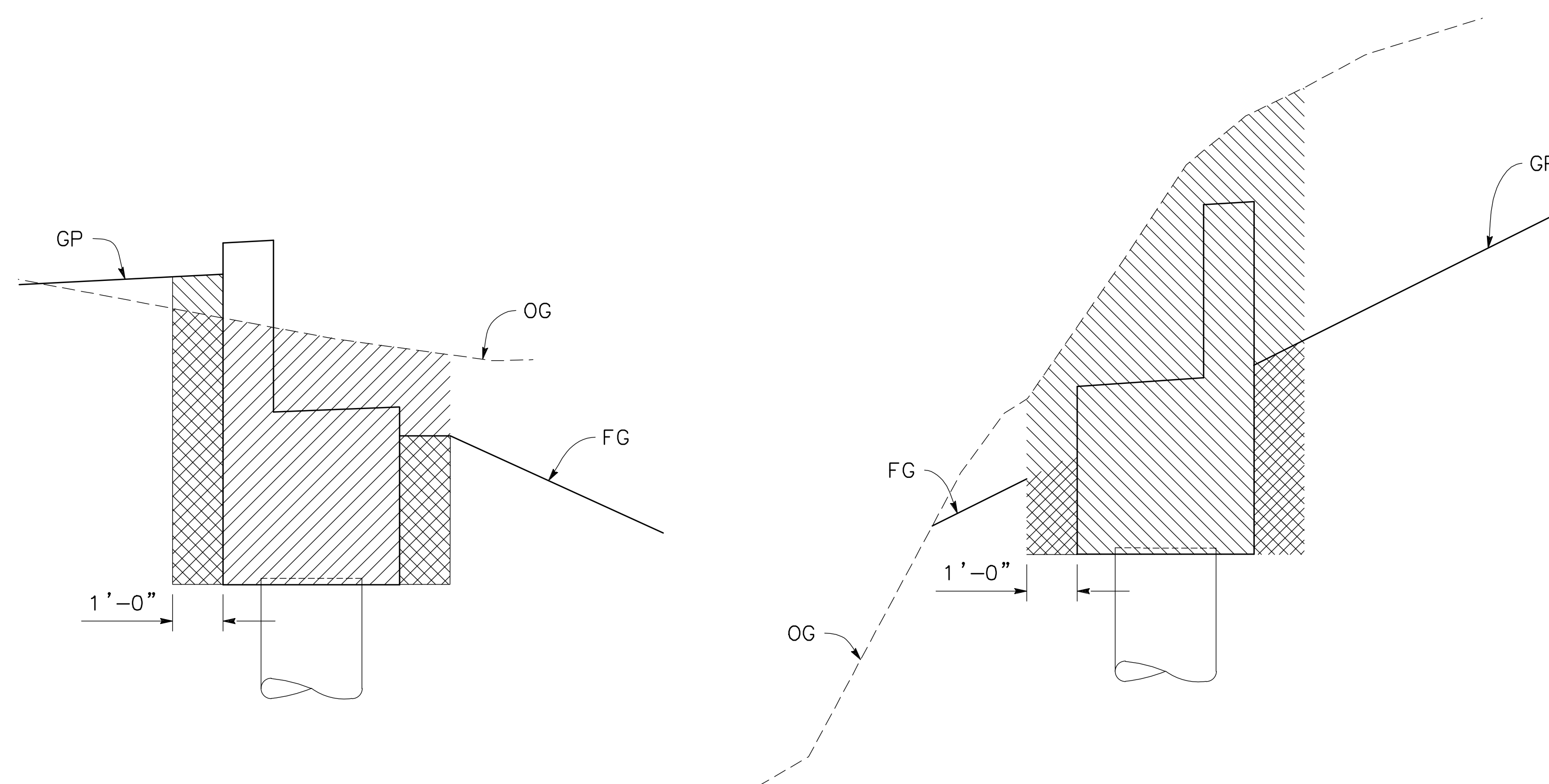
**PILES:**  
See PILE DATA TABLE on "FOUNDATION PLAN" sheet.

**STRUCTURAL STEEL:**  
PREFABRICATED STEEL BRIDGE to be constructed of ASTM A588 weathering steel.

**STANDARD PLANS DATED 20223**

A3A - A3C  
A10A - A10E  
A10F & A10G  
A10H  
B0-1  
B6-21

ABBREVIATIONS  
LEGEND - LINE AND SYMBOLS  
LEGEND - SOIL  
LEGEND - ROCKS  
BRIDGE DETAILS  
JOINT SEALS (MAXIMUM MOVEMENT RATING = 2")



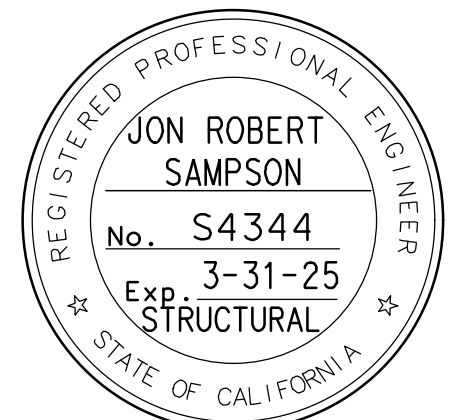
**LIMITS OF PAYMENT FOR EXCAVATION AND BACKFILL**  
NO SCALE

Structure Excavation  
 Structure Backfill



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

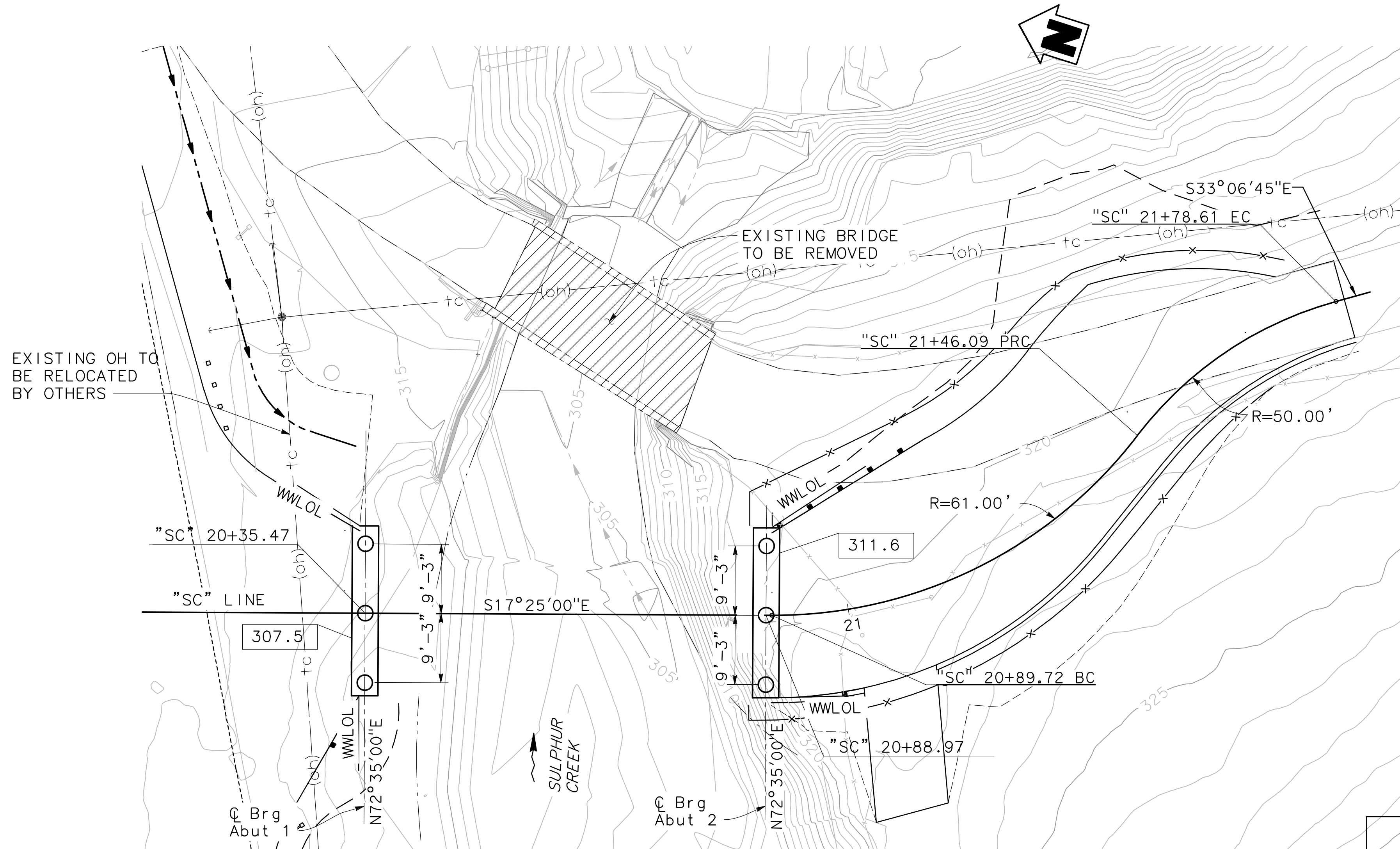
DATE ISSUES AND REVISIONS NO.

PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36

**FOUNDATION PLAN**

SHEET

**B-3**



**PLAN**  
1" = 10'

**CURVE DATA**

R=61.00'      R=50.00'  
Δ=52°57'03"      Δ=37°15'19"  
T=30.38'      T=16.85'  
L=56.37'      L=32.51'

**LEGEND:**

- Indicates Existing Bridge
- ▨ Indicates Bridge Removal
- Indicates Bottom of Footing Elevation (feet)
- Indicates 30" CIDH Pile

**SCOUR DATA TABLE**

Location	Long Term (Degradation and Contraction) Scour Elevation (ft)	Short Term (Local) Scour Depth (ft)
Abut 1	302.4	N/A
Abut 2	302.4	N/A

Hydrologic summary for  
Sulphur Creek Bridge

Frequency	Design Flood	Base Flood	Flood of Record
	50-year	100-year	N/A
Discharge	1260 cfs	1480 cfs	N/A
Water Surface Elevation at Bridge	309.2 ft	309.9 ft	N/A

NOTE: HYDRAULIC INFORMATION PROVIDED FROM HYDRAULIC MEMO.

**PILE DATA TABLE**

Location	Pile Type	Nominal Resistance (kips)		Design Tip Elevations (ft)	Specified Tip Elevations (ft)
		Compression	Tension		
Abut 1	30" CIDH	230	N/A	270 (a-l) 282 (b)	270
Abut 2	30" CIDH	230	N/A	276 (a-l) 286 (b)	276

**NOTES:**

- Design tip elevations are controlled by: (a-l) Compression and (Strength Limit) and (b) Lateral Load, respectively.
- The Specified Tip Elevation shall not be raised above design tip elevation.

**BENCHMARK**

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
53	1939977	6423854	312.45	CP 90D SHLDR/FNC
54	1939846	6423820	318.361	CP 90D EP/BRIDGE 54
55	1940014	6423796	311.988	SR SRHW TF 24IN UNDER 61NHW
1000	1939897	6423814	316.616	SVCP 60D
1001	1939904	6423859	313.642	SVCP 60D

VERTICAL DATUM BASED ON NAVD '88

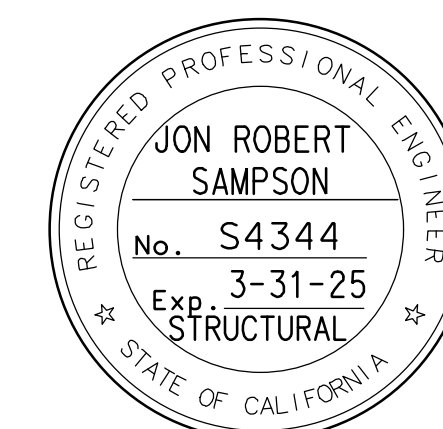
HORIZONTAL DATUM BASED ON NAD '83

PER TRIMBLE GPS OBSERVATIONS USING OPUS SOLUTION



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



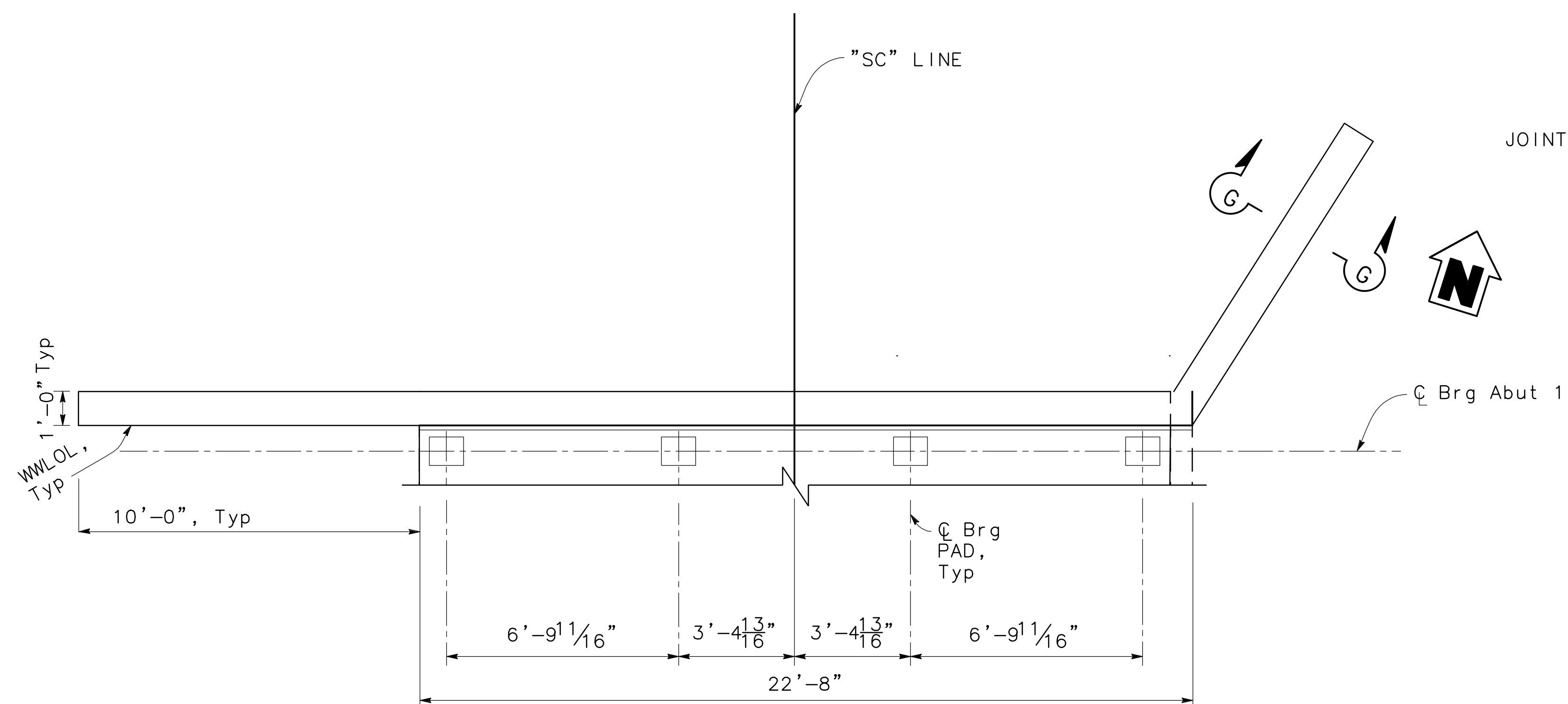
04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

DATE ISSUES AND REVISIONS NO.

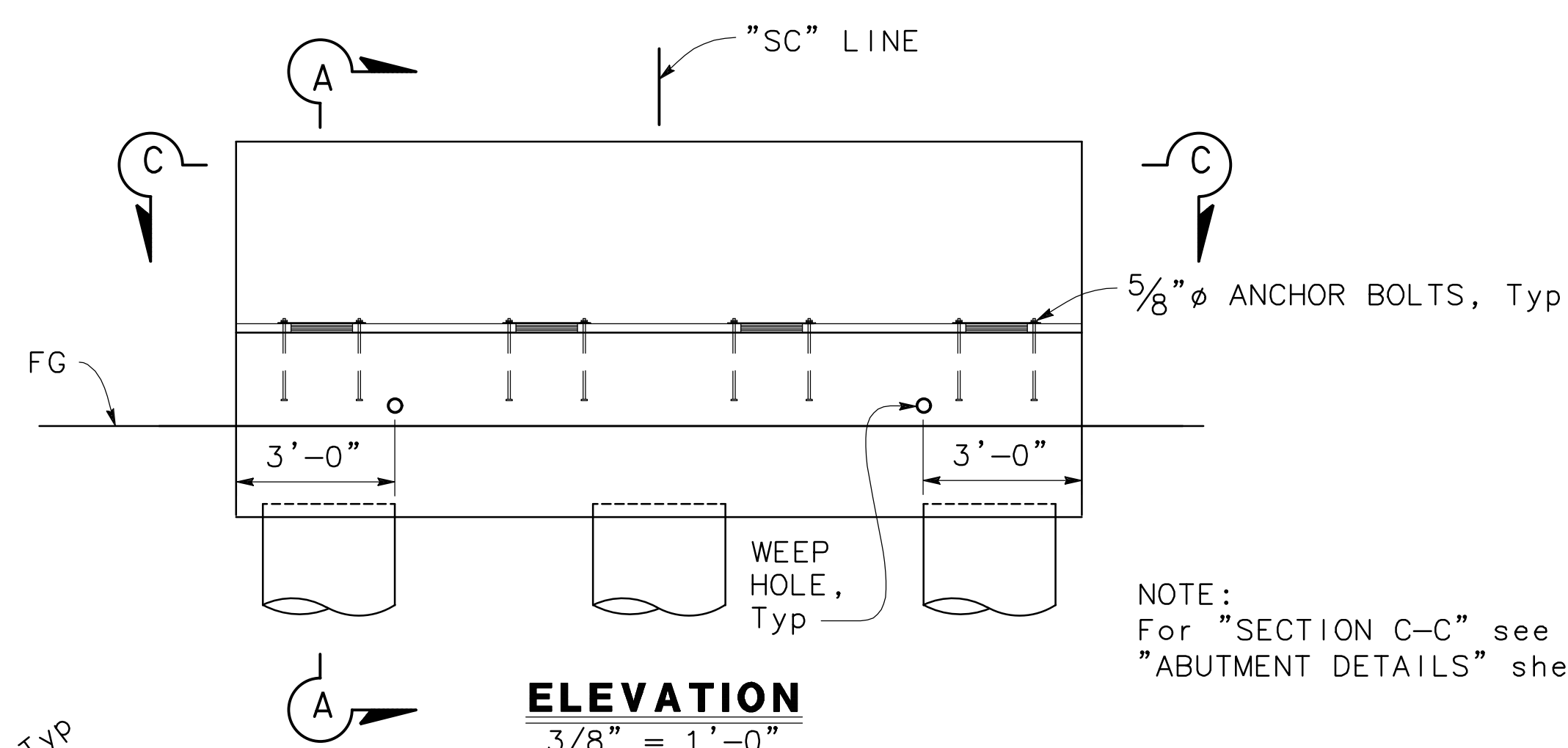
PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36

ABUTMENT LAYOUT  
SHEET

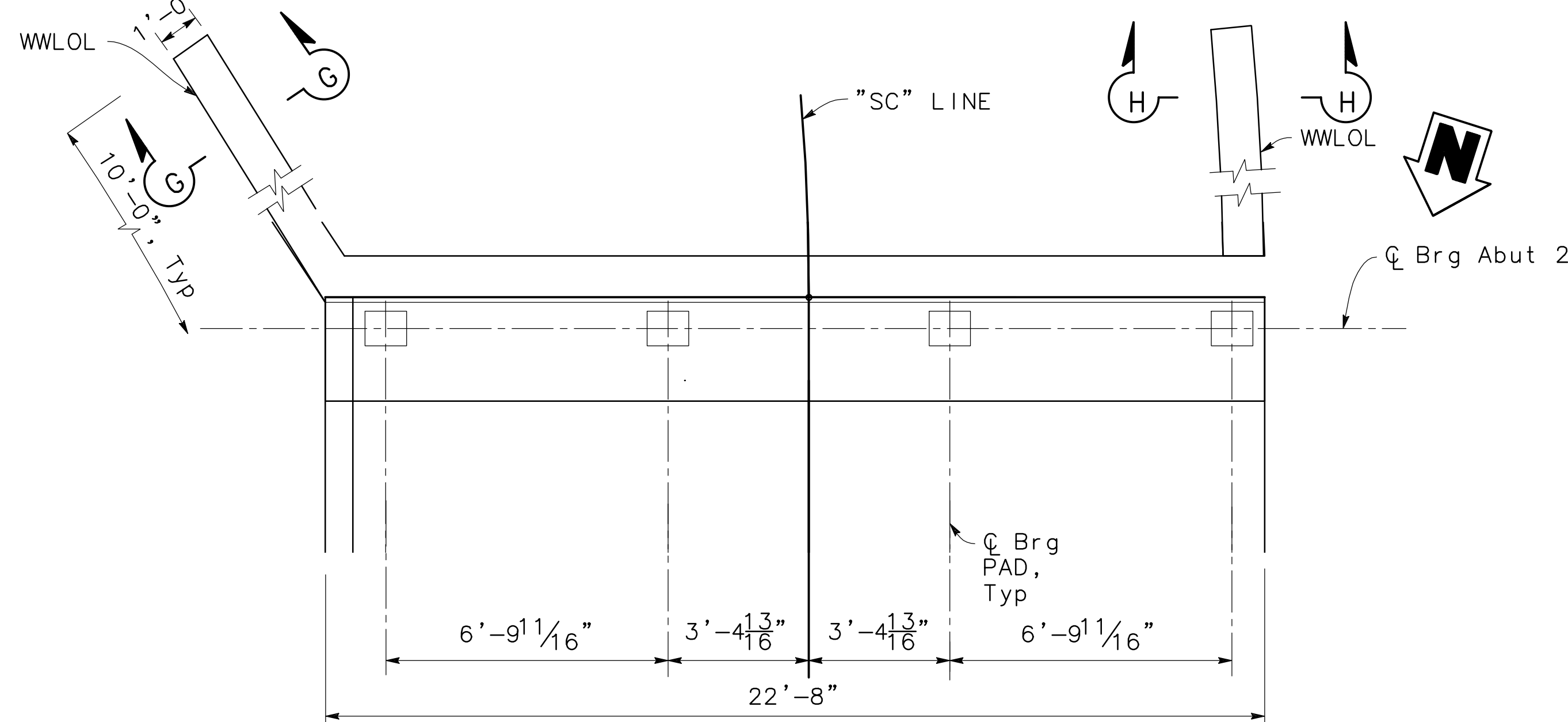
**B-4**



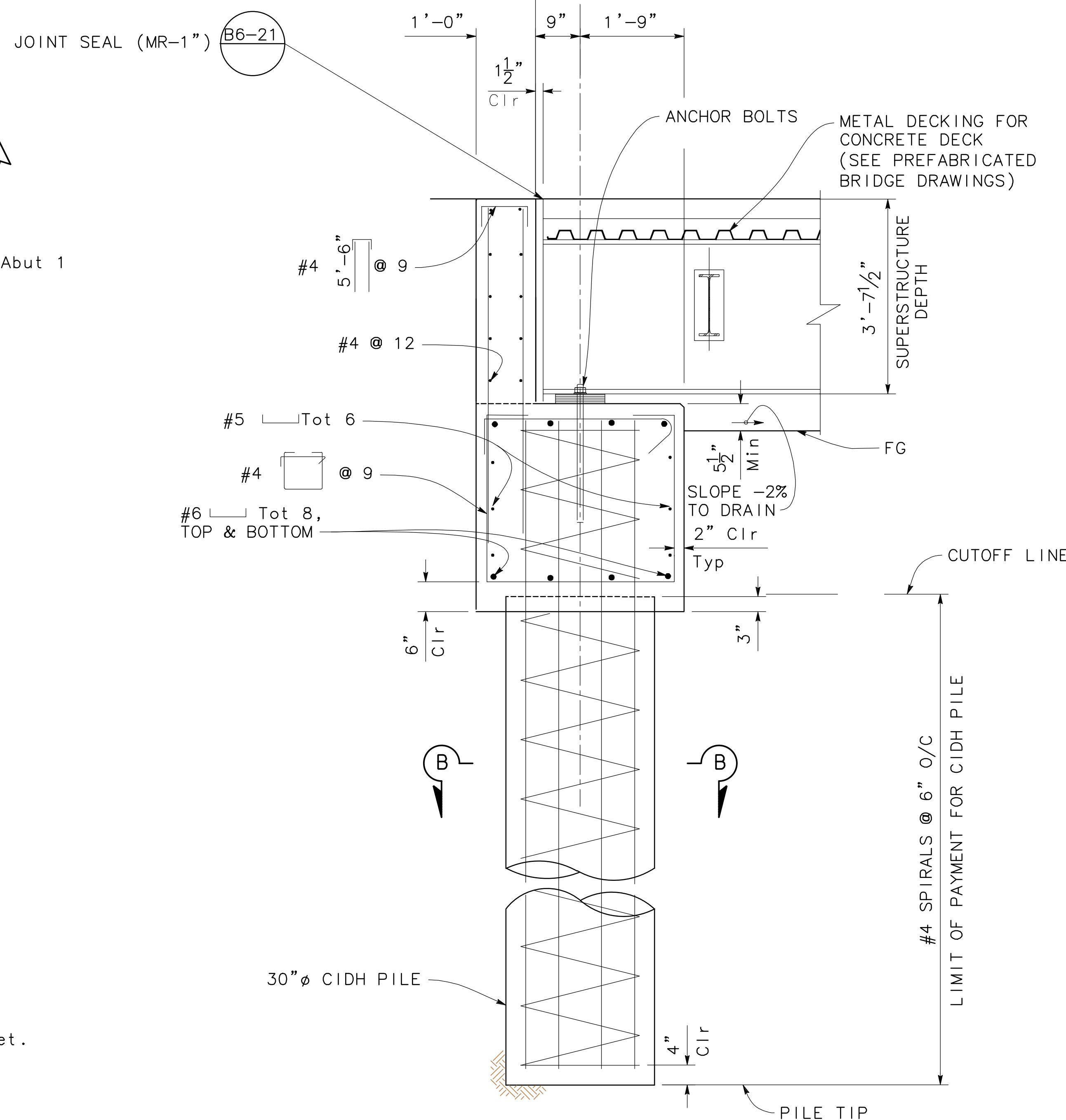
**ABUTMENT 1 PLAN**  
3/8" = 1'-0"



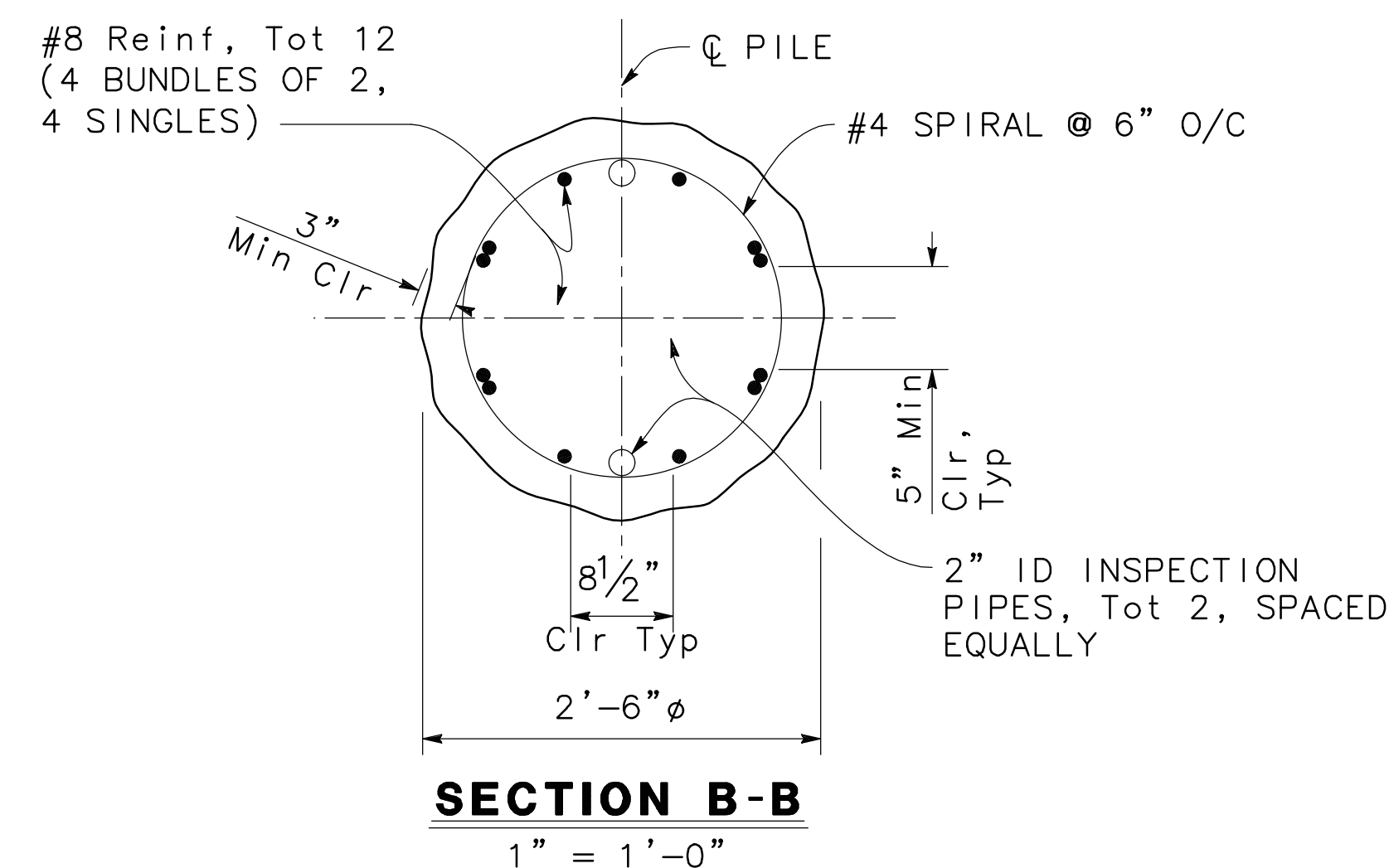
**ELEVATION**  
3/8" = 1'-0"



**ABUTMENT 2 PLAN**  
3/8" = 1'-0"

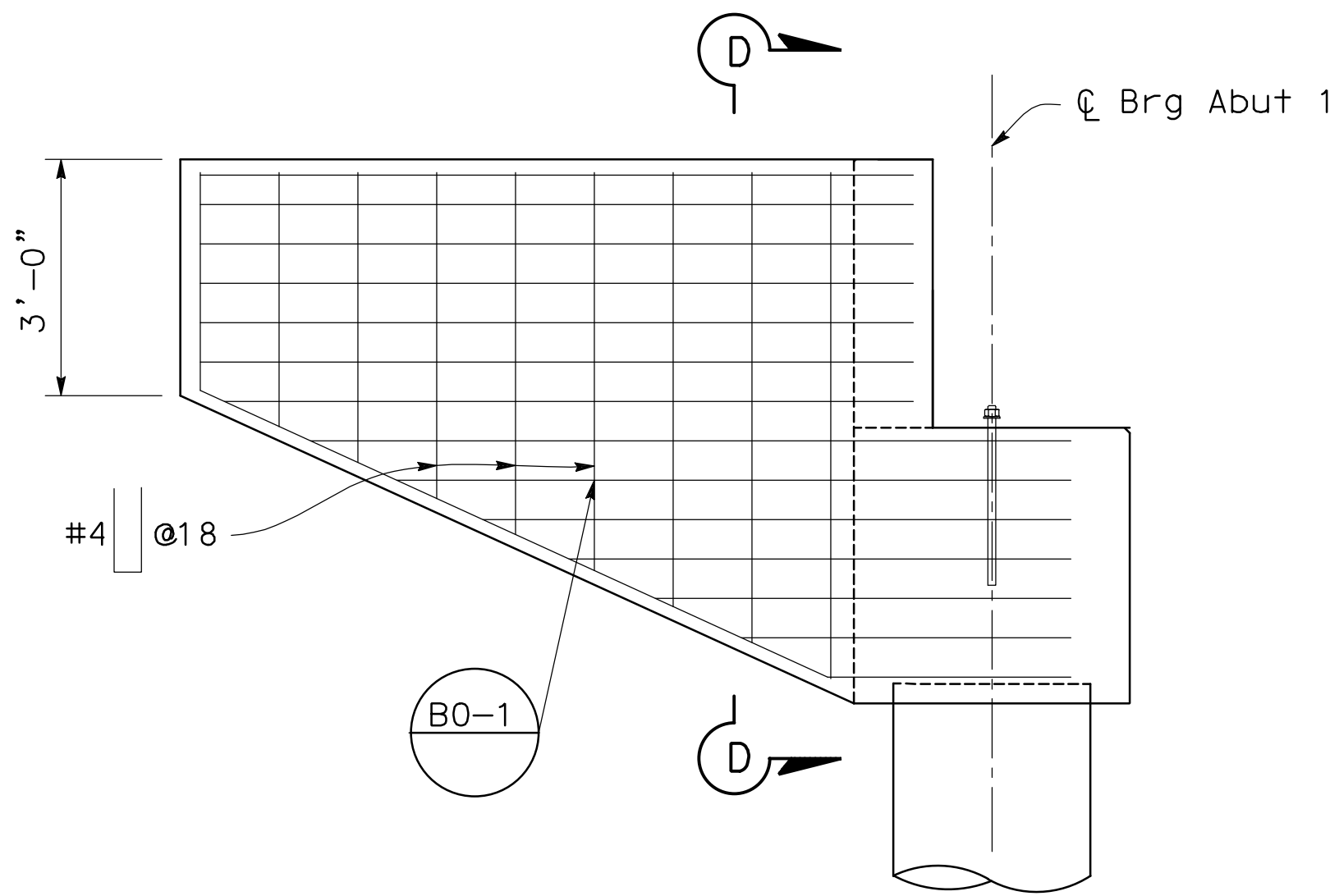


**SECTION A-A**  
3/4" = 1'-0"



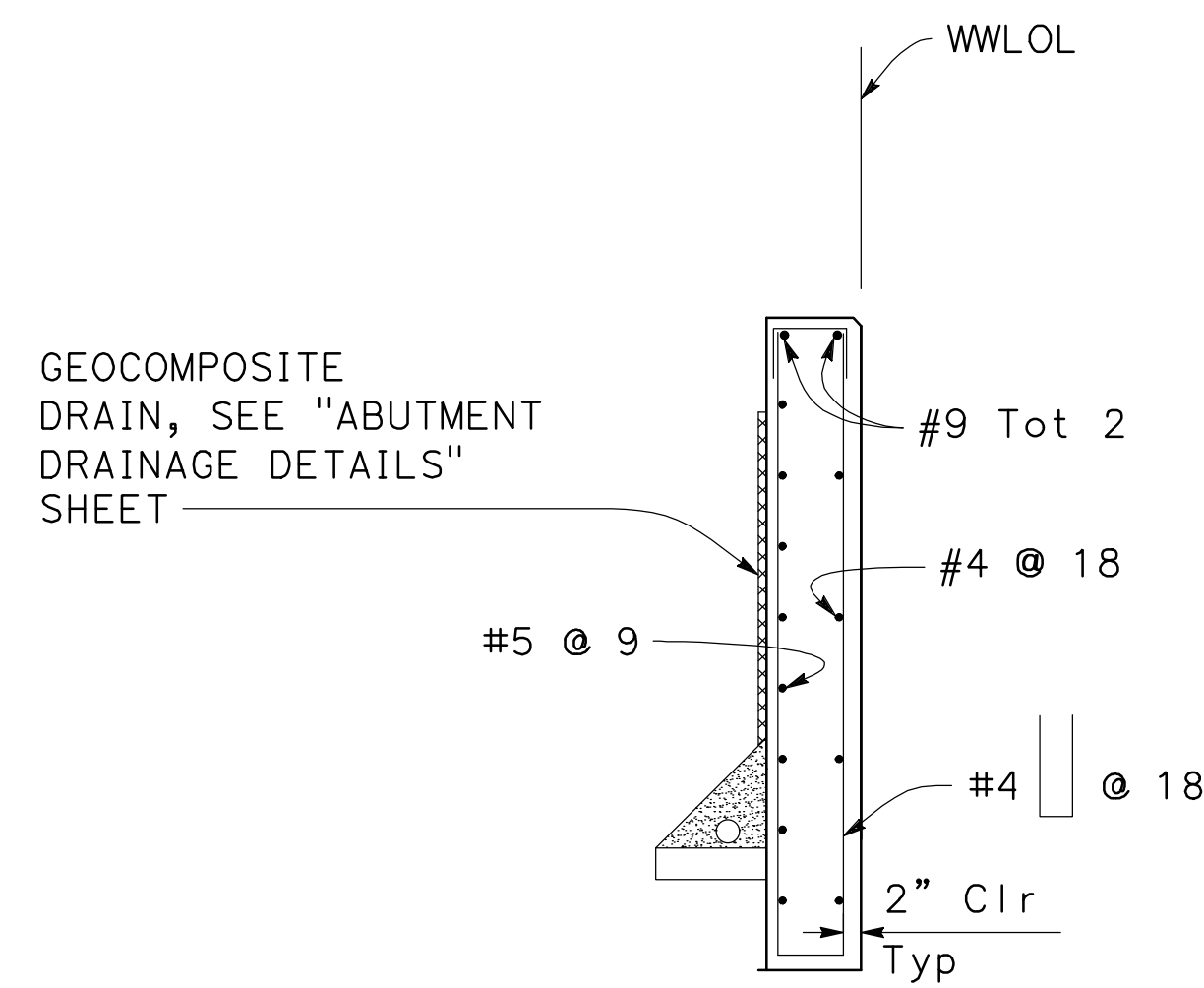
**SECTION B-B**  
1" = 1'-0"





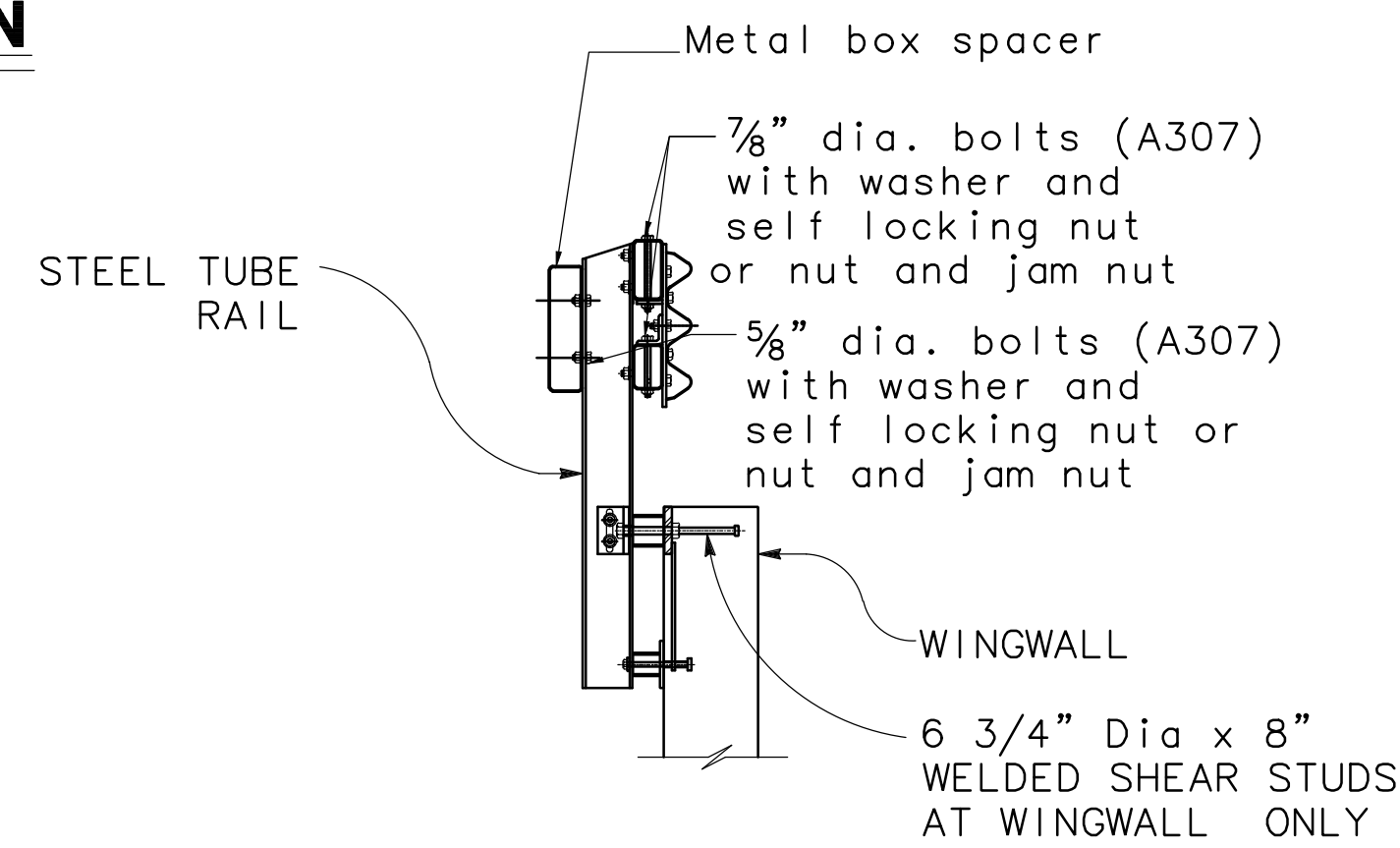
**ABUTMENT WINGWALL  
ELEVATION**

1/2" = 1'-0"



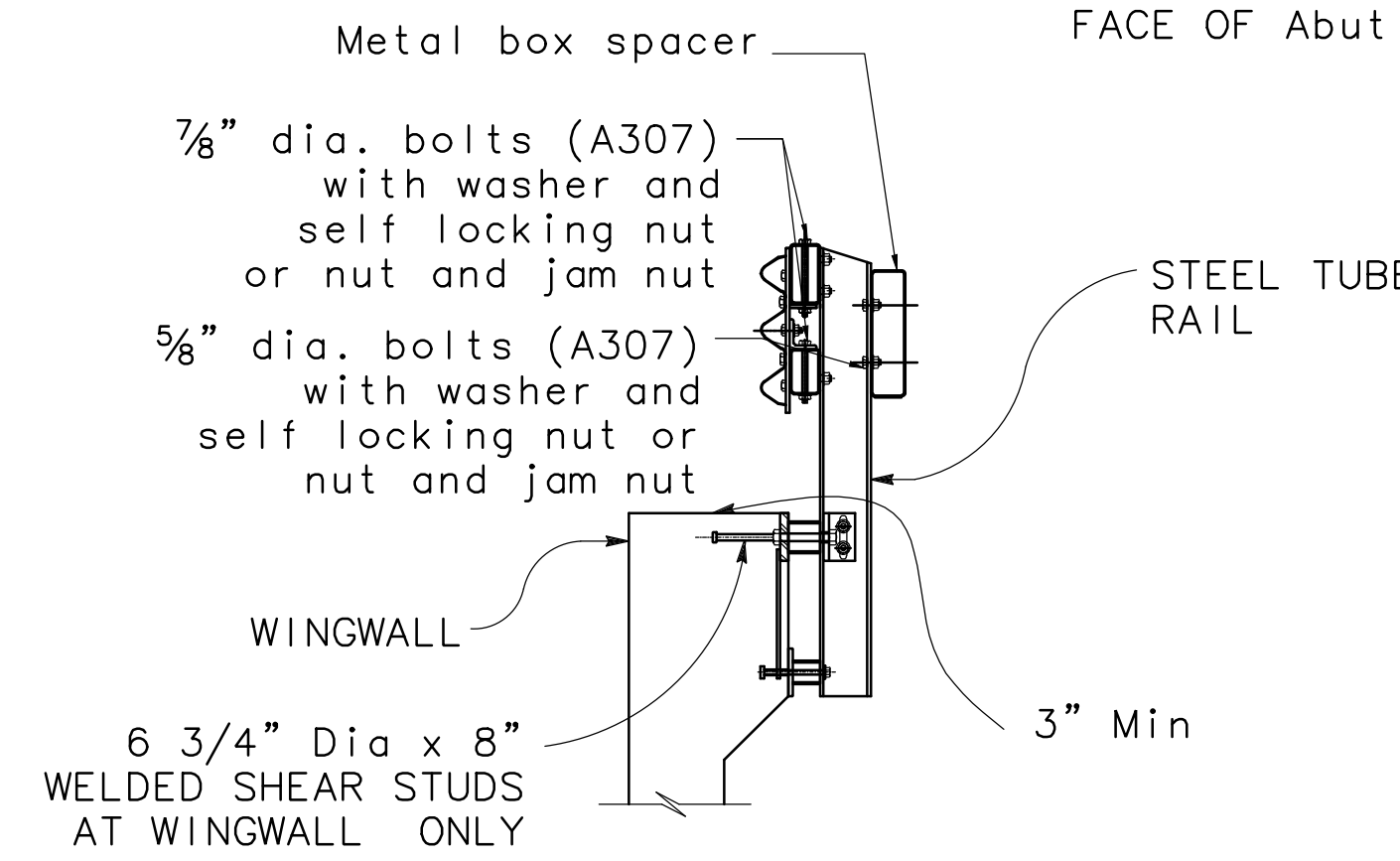
**SECTION D-D**

1/2" = 1'-0"



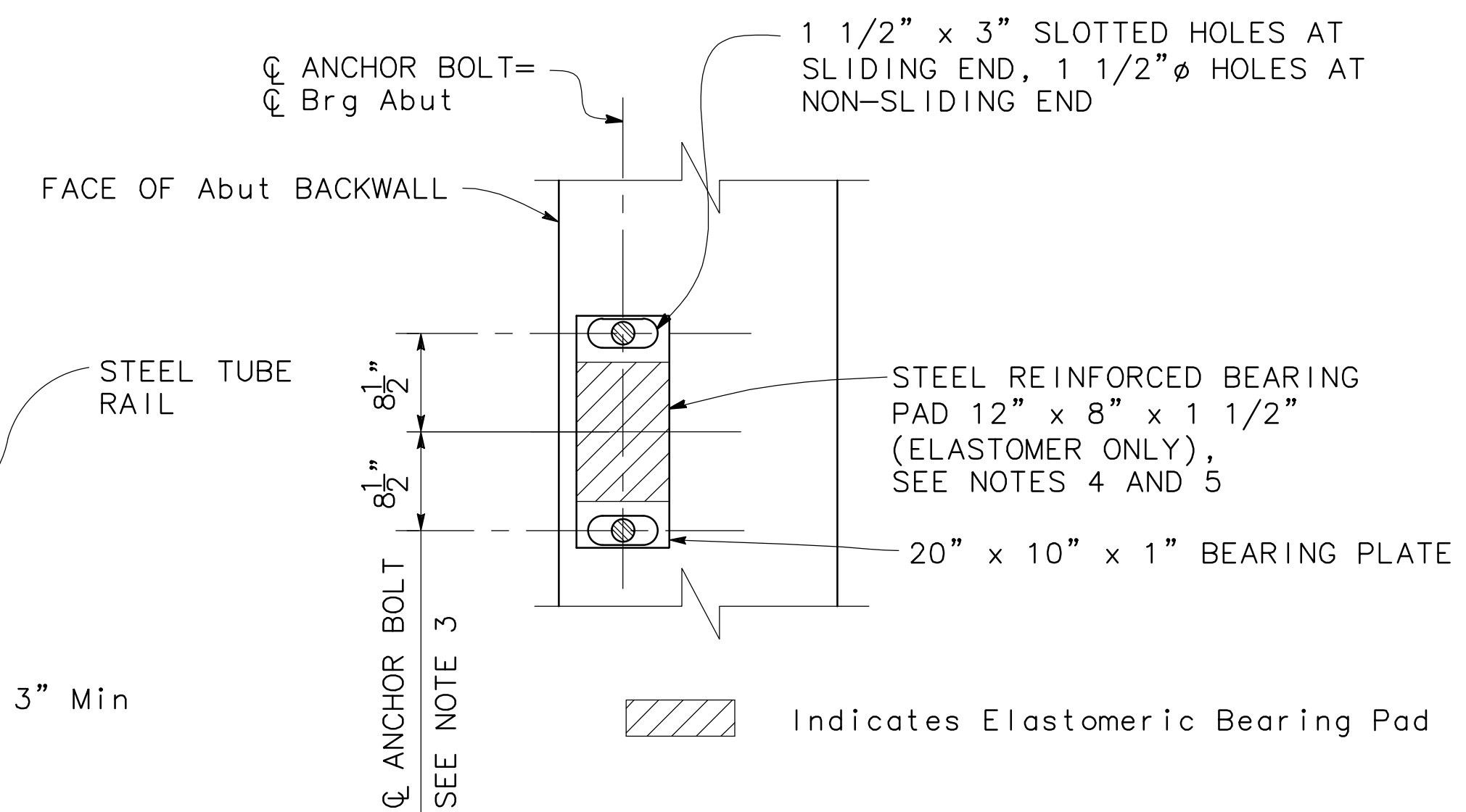
**SECTION G-G**

1/2" = 1'-0"



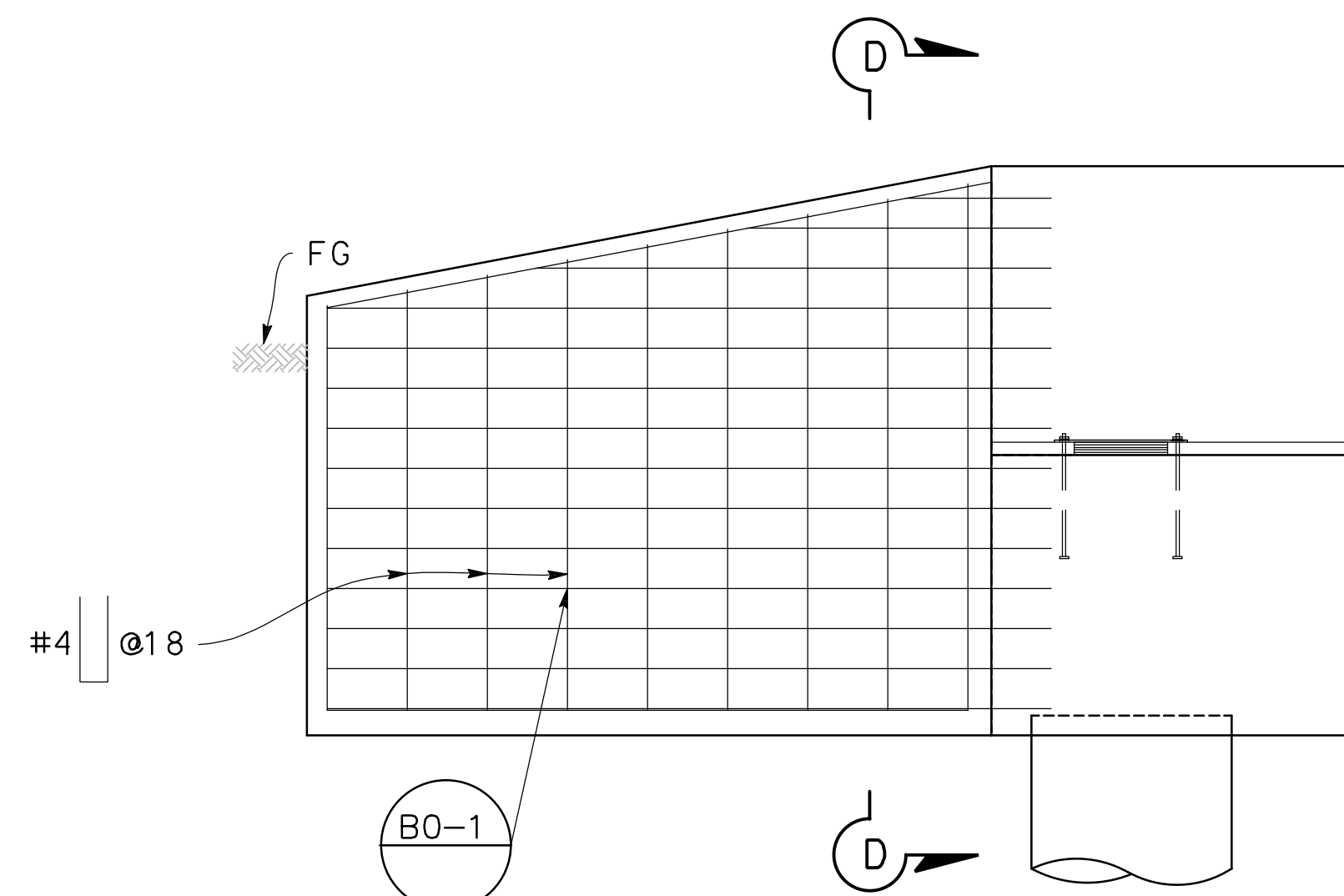
**SECTION H-H**

1/2" = 1'-0"



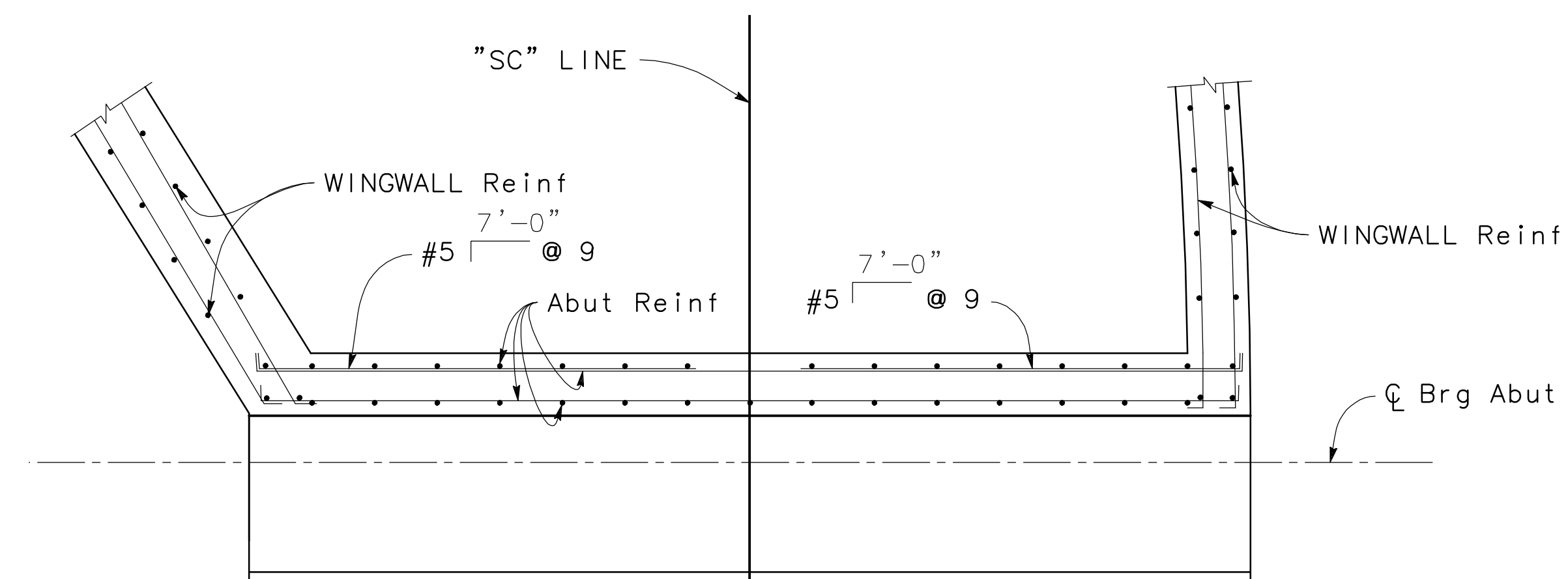
**BEARING PLATE DETAIL**

NO SCALE



**ABUTMENT 1 WEST WINGWALL  
ELEVATION**

1/2" = 1'-0"



**SECTION C-C**

1/2" = 1'-0"

(Abutment 2 shown, Abutment 1 similar)

**GENERAL NOTES:**

1. Contractor must verify all controlling field dimensions before ordering or fabricating any material.
2. For prefabricated steel truss bridge details, see truss manufacturer's approved drawings. Contractor must coordinate, supply and install anchor bolts per truss manufacturer's plans.
3. Slots and holes in bearing plates are shown for 1 1/4" diameter anchor bolts for uniform bids. The actual anchor bolts, holes and slot sizes must be per bridge manufacturer's design.
4. Bearing plates, bearing pads, anchor bolt sizes, etc. must be determined by the prefabricated bridge manufacturer's design. Approximate details shown are for uniform bids.
5. Epoxy bond bearing pad and joint filler to the seat. Apply light coat of commercial quality grease to top of bearing pad at the sliding end only.

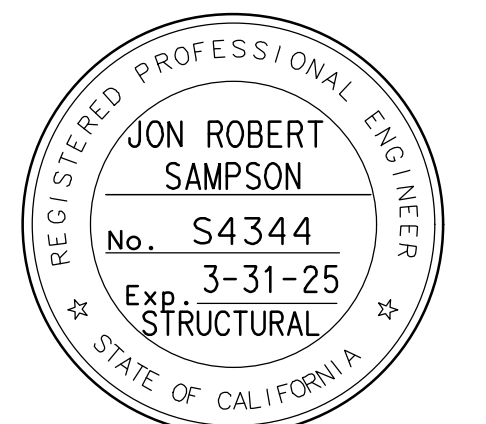


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San Rafael, CA 94901  
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info@wra-ca.com



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

DATE	ISSUES AND REVISIONS	NO.

PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36

**ABUTMENT DETAILS**

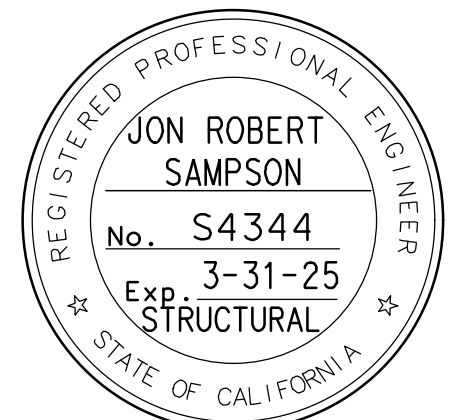
SHEET

**B-5**



**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

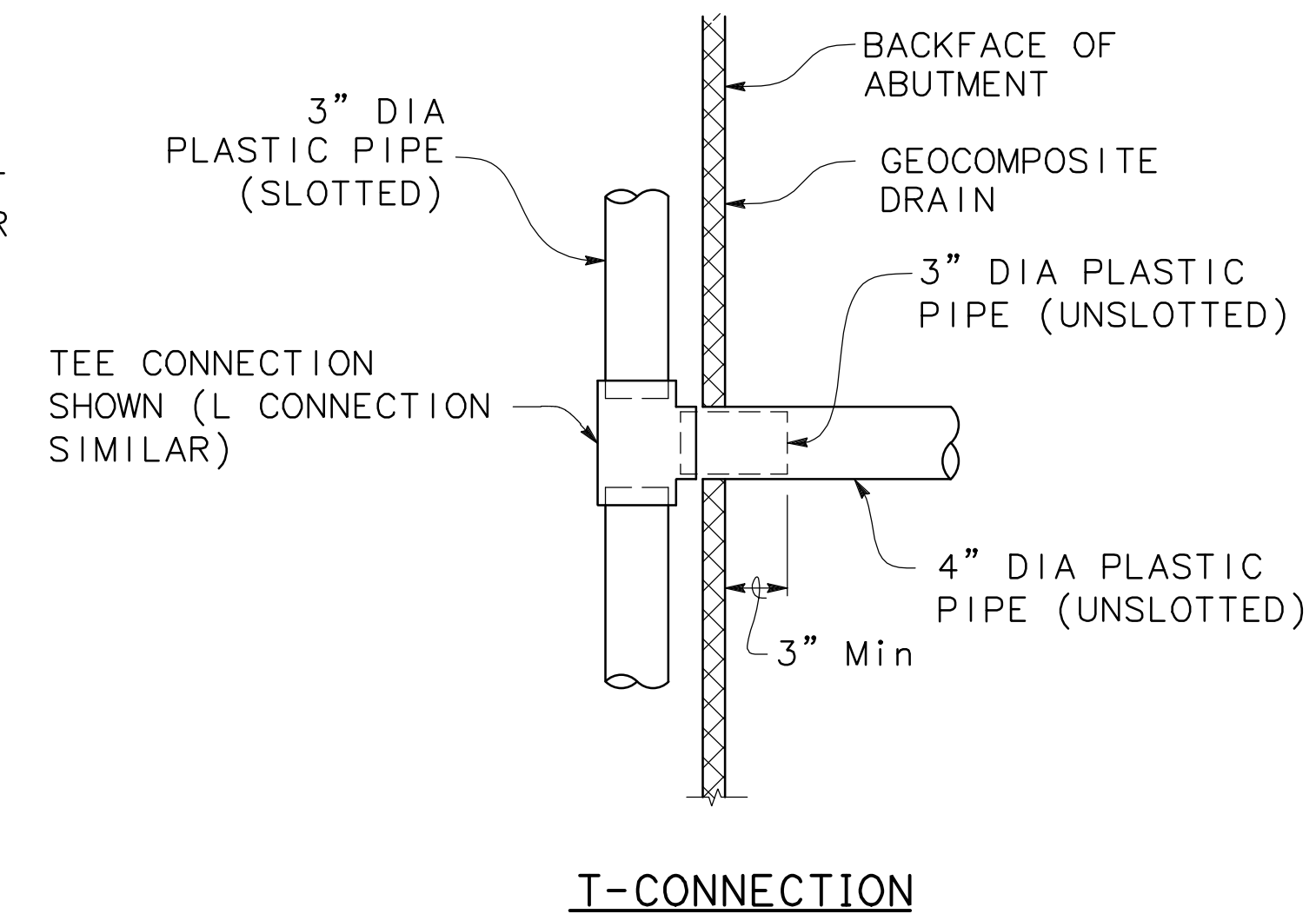
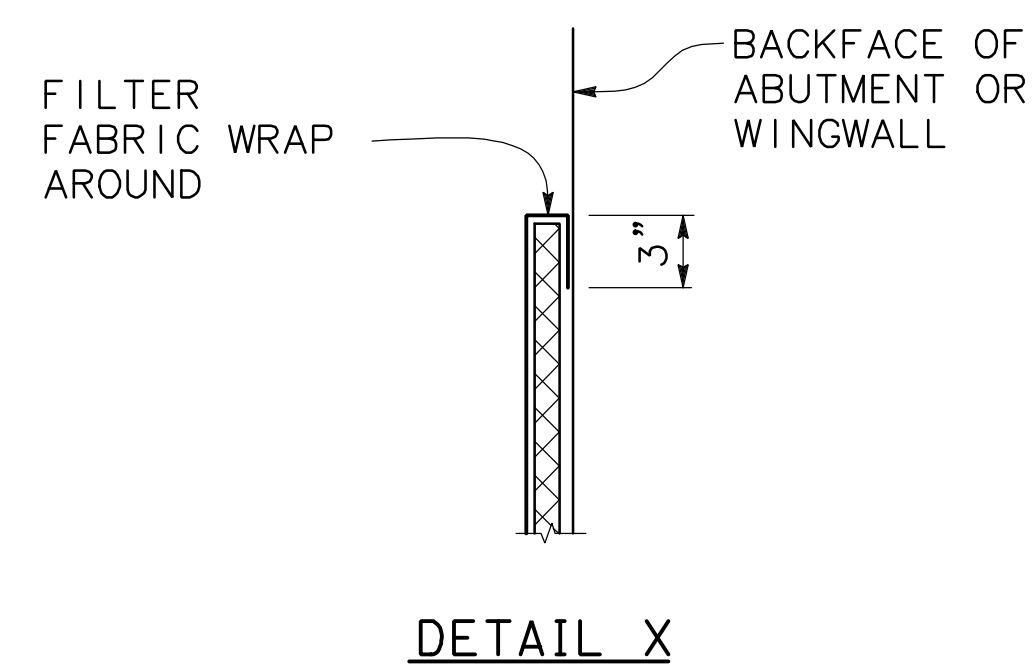
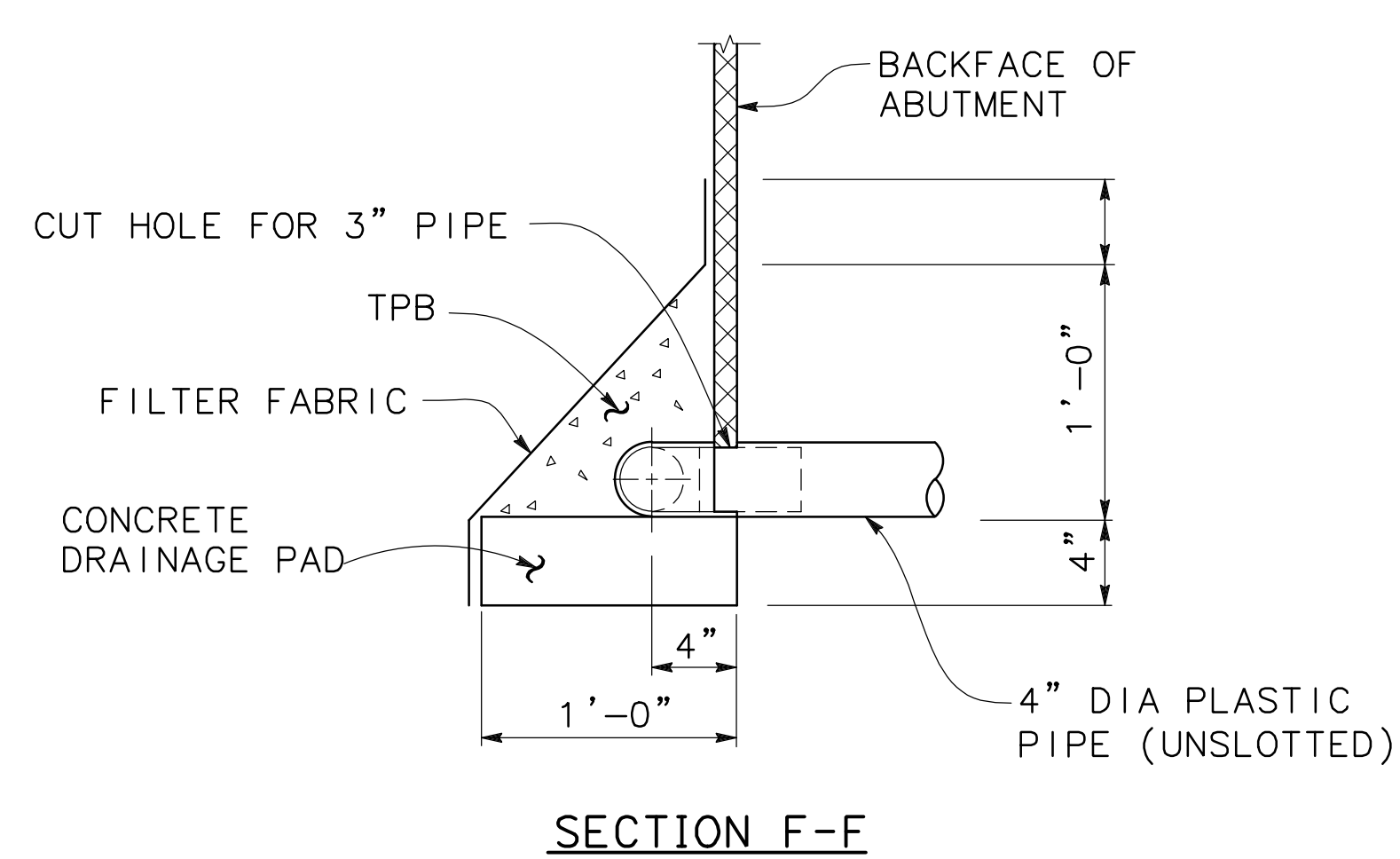
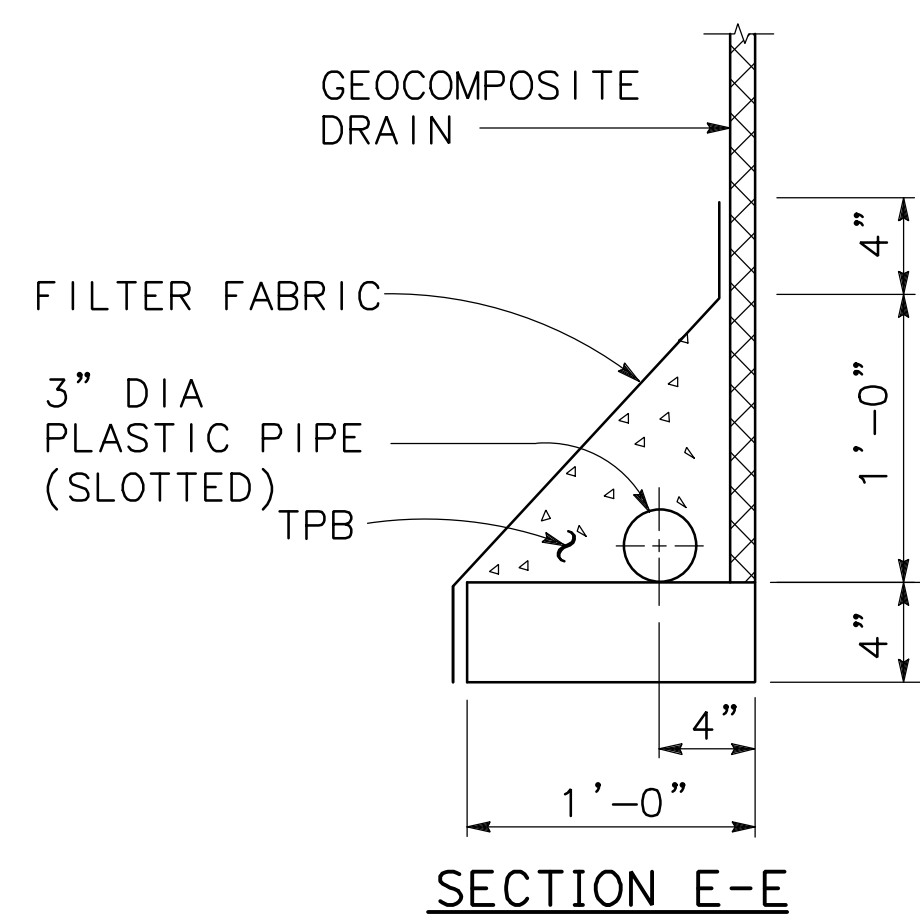
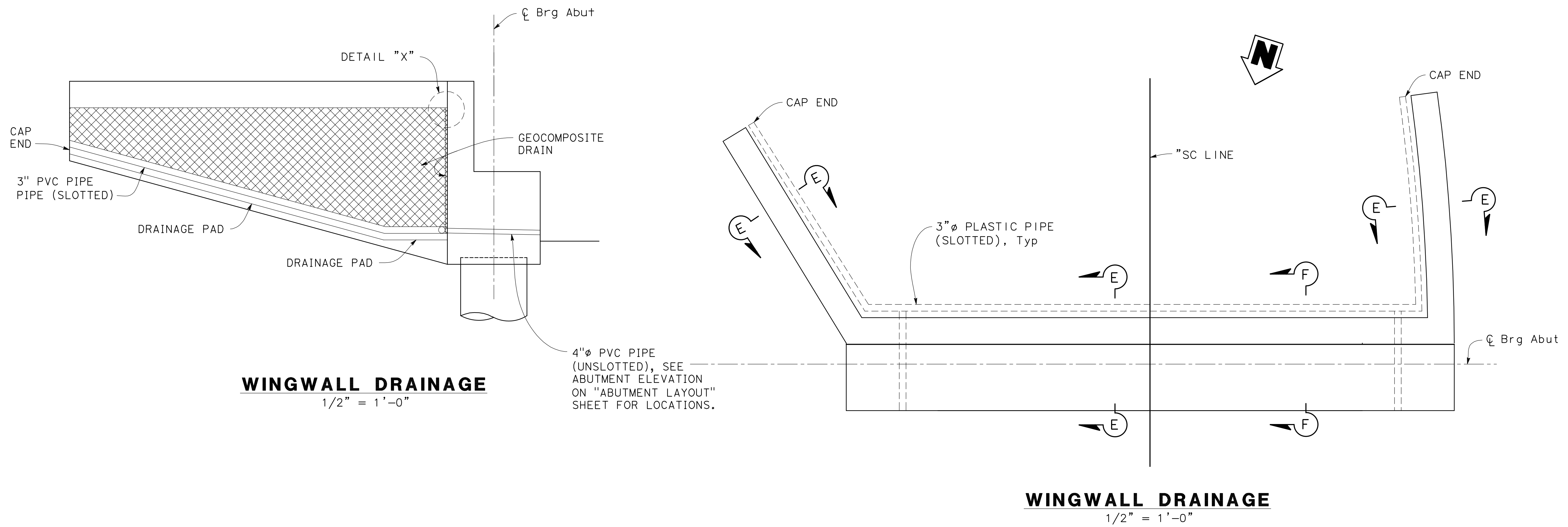
ST HELENA, CALIFORNIA  
DESIGNED FOR:



04/07/2023 65% DESIGN  
10/13/2023 90% DESIGN  
07/31/2024 100% DESIGN

DATE ISSUES AND REVISIONS NO.

PROJECT #30144  
DRAWN BY: JD  
CHECKED BY: JS  
ORIGINAL DRAWING SIZE: 24 X 36



**DRAINAGE DETAILS**  
1 1/2" = 1'-0"

**ABUTMENT  
DRAINAGE DETAILS**

SHEET

**B-6**



BENCH MARK

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
53	1939977	6423854	312.45	CP 90D SHLDR/FNC
54	1939846	6423820	318.361	CP 90D EP/BRIDGE 54
55	1940014	6423796	311.988	SR SRHW TF 24IN UNDER 61NHW
1000	1939897	6423814	316.616	SVCP 60D
1001	1939904	6423859	313.642	SVCP 60D

VERTICAL DATUM BASED ON NAVD '88  
 HORIZONTAL DATUM BASED ON NAD '83  
 PER TRIMBLE GPS OBSERVATIONS USING OPUS SOLUTION

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

See 2022 Standard Plans A10F and A10G for Soil Legend, and A10H for Rock Legend.



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**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

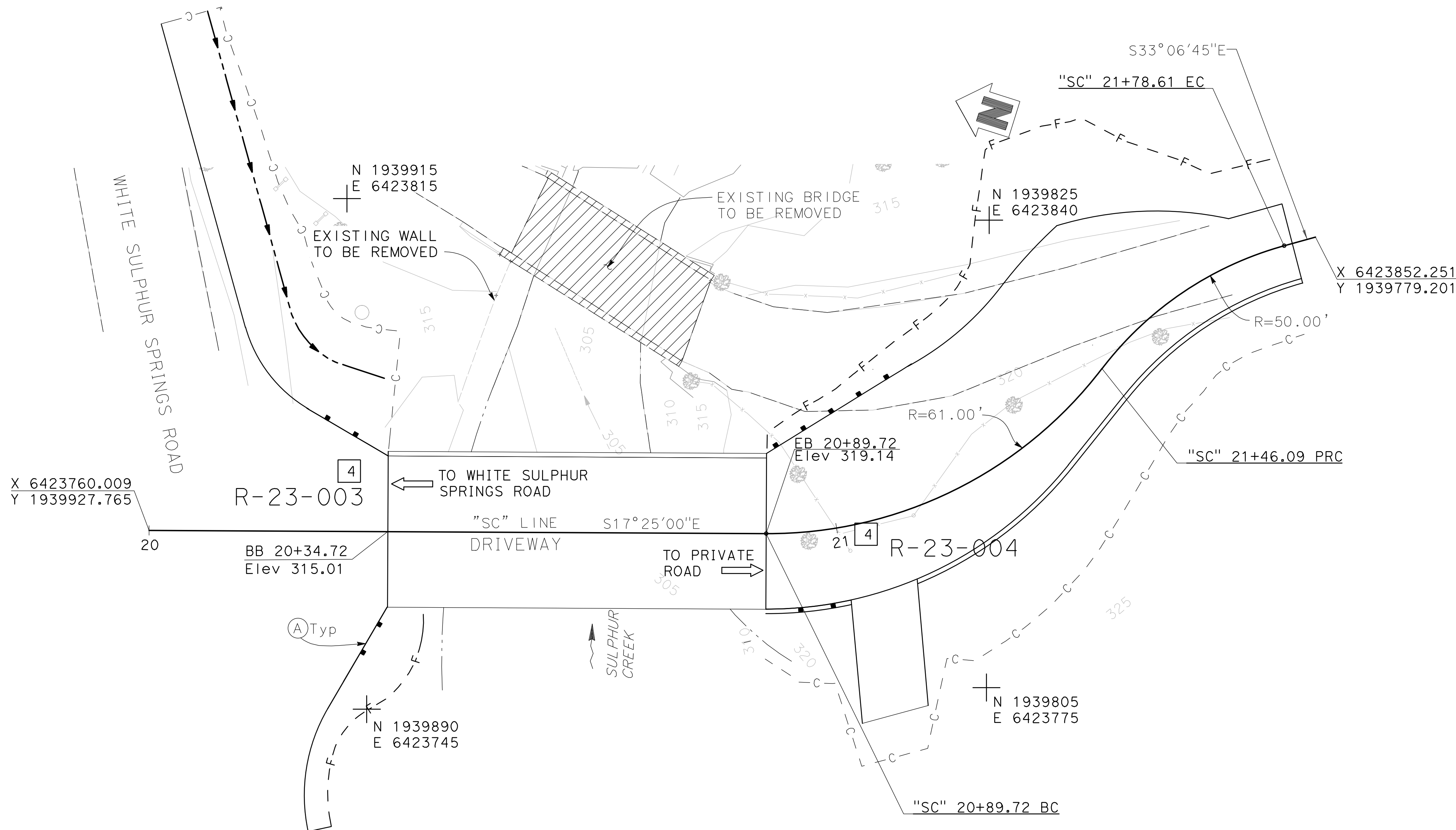
ST HELENA, CALIFORNIA  
 DESIGNED FOR:



02/10/2023 65% DESIGN  
 07/31/2024 100% DESIGN

DATE	ISSUES AND REVISIONS	NO.

PROJECT #30144  
 DRAWN BY: EK  
 CHECKED BY: JW  
 ORIGINAL DRAWING SIZE: 24 X 36



**PLAN**  
 1" = 10'

HOLE ID	NORTHING	EASTING	ALIGNMENT NAME	STATION AND OFFSET
R-23-003	1939904.3	6423772.1	"SC" LINE	20+29.06 8.77' L+
R-23-004	1939834.3	6423785.4	"SC" LINE	21+03.98 1.73' R+

TEST BORING LAYOUT

SHEET

**B1.6**



FOR PLAN VIEW AND ADDITIONAL NOTES, SEE  
"TEST BORING LAYOUT" SHEET

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

See 2022 Standard Plans A10F and A10G for Soil Legend, and A10H for Rock Legend.

NOTES:

1. Whole number blow counts ("N") represent the "standard penetration resistance" interval in accordance with this Manual. Where less than 0.5 feet of penetration is achieved, the blow count shown is for that fraction of the "standard penetration resistance" interval actually penetrated.
2. Blow counts shown as "REF" where less than 0.5 feet of penetration were achieved in the first seating interval.
3. Density of soils shown in ( ) where estimated.
4. "2.4 inch sampler": ID = 2.4", OD = 3 inch. Driven in same manner as SPT ("1.4 inch") sampler.
5. If laboratory tests are not shown as being performed, the soil descriptions presented are based solely on the visual practices described in the Caltrans Manual.
6. Groundwater elevations are subject to seasonal fluctuations and may occur at higher or lower elevations depending on the conditions at any particular time.
7. Groundwater elevation was not established in boring R-23-004 due to drilling method.
8. \* Indicates that rock did not meet soundness requirement.



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**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



02/10/2023 65% DESIGN  
07/31/2024 100% DESIGN

DATE ISSUES AND REVISIONS NO.

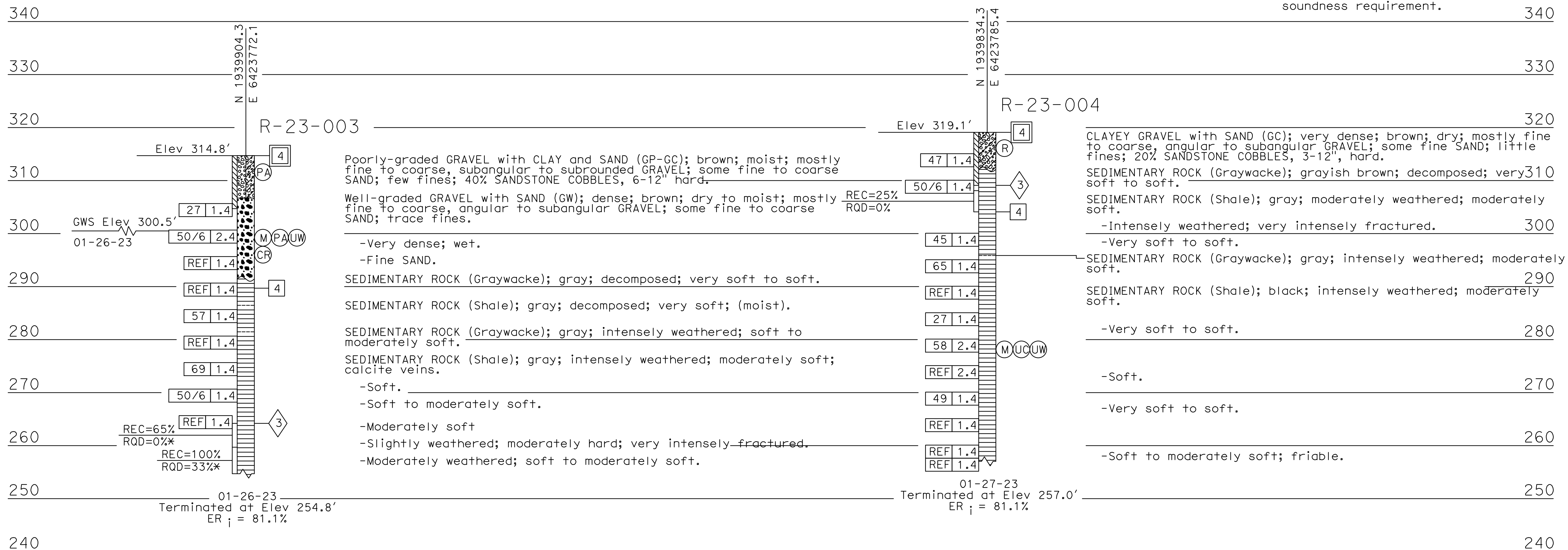
PROJECT #30144  
DRAWN BY: EK  
CHECKED BY: JW  
ORIGINAL DRAWING SIZE: 24 X 36

LOG OF  
TEST BORINGS

SHEET

**B1.7**

PROFILE  
Vert: 1"=10'

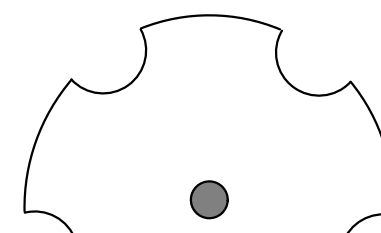
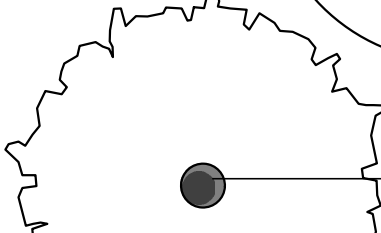
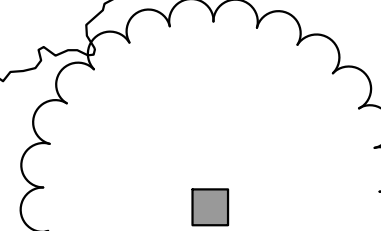
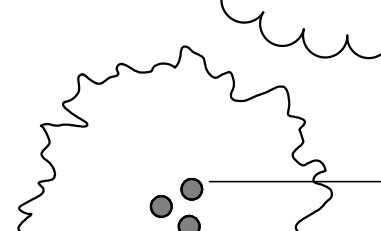




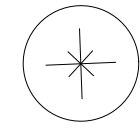
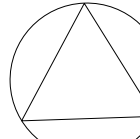
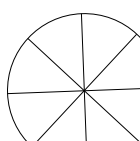
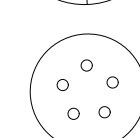
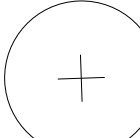
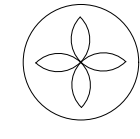
**REVEGETATION NOTES:**

- LOCATIONS OF PLANTINGS AND EXTENT OF THE SEEDING AREAS ARE TO BE MARKED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE RESIDENT ENGINEER PRIOR TO PLANTING.
- ALL SEEDING AREAS ARE TO BE HYDROSEEDDED OR BROADCAST SEEDDED WITH MIX SPECIFIED ON THIS SHEET IMMEDIATELY UPON COMPLETION OF GRADING PER SPECIFICATIONS.
- AREAS THAT ARE BROADCAST SEEDDED AND NOT COVERED WITH EROSION CONTROL MATTING (AS SHOWN ON SHEET L-3.0) SHALL BE STABILIZED WITH WEED-FREE STRAW MULCH.
- ALL SEED SHALL BE CERTIFIED MINIMUM 95 PERCENT WEED FREE, WITH 0 PERCENT CALIFORNIA INVASIVE PLANT COUNCIL (CAL-IPC) "HIGH" RANKED SEED.
- REVEGETATION EFFORTS ARE TO COMMENCE AFTER ALL GRADING HAS BEEN COMPLETED.
- WILLOW (SALIX SPP.) LIVE STAKES ARE TO BE HARVESTED ON SITE.
- CONTAINER PLANTS ARE TO BE SOURCED FROM A NURSERY SPECIALIZING IN NATIVE PLANT RESTORATION, AND SHALL BE TREATED OR GROWN ACCORDING TO CURRENT INDUSTRY BEST MANAGEMENT PRACTICES TO PREVENT THE SPREAD OF *PHYTOPHTHORA RAMORUM* AND OTHER PLANT PATHOGENS.
- CONTAINER PLANTS INSTALLED ON THE SITE SHALL BE WATERED WEEKLY FOR ONE YEAR FROM MAY THROUGH NOVEMBER.
- REVEGETATION AREAS ARE TO BE MAINTAINED THROUGHOUT THE ONE-YEAR MONITORING PERIOD TO REDUCE IMPACTS OF NON-NATIVE INVASIVE SPECIES.
- NON-NATIVE INVASIVE SPECIES (EXCLUSIVE OF ANNUAL GRASSES) ARE TO BE TREATED AND REMOVED FROM THE SITE THROUGHOUT THE MONITORING PERIOD USING MECHANICAL METHODS TO THE EXTENT FEASIBLE.
- HERBICIDE APPLICATION NEAR OR OVER WATERS OF THE U.S. THAT RESULTS IN DISCHARGES OF POLLUTANTS WILL REQUIRE COVERAGE UNDER A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR RESIDUAL AQUATIC PESTICIDE DISCHARGES TO WATERS OF THE UNITED STATES FROM ALGAE AND AQUATIC WEED CONTROL APPLICATIONS (WATER QUALITY ORDER 2013-0002-DWQ).
- ONLY THOSE HERBICIDES REGISTERED IN CALIFORNIA FOR USE IN OR ADJACENT TO AQUATIC SITES MAY BE USED ON THE PROJECT SITE.
- SPECIES LISTED AS FOLLOWS ARE CONSIDERED INVASIVE SPECIES FOR REMOVAL:
  - RANKED "HIGH" BY CAL-IPC
  - CLASSIFIED AS "RED ALERT" BY CAL-IPC
  - RATED "HIGH PRIORITY" BY THE BAY AREA EARLY DETECTION NETWORK.

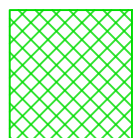
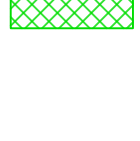
**PLANT LEGEND**

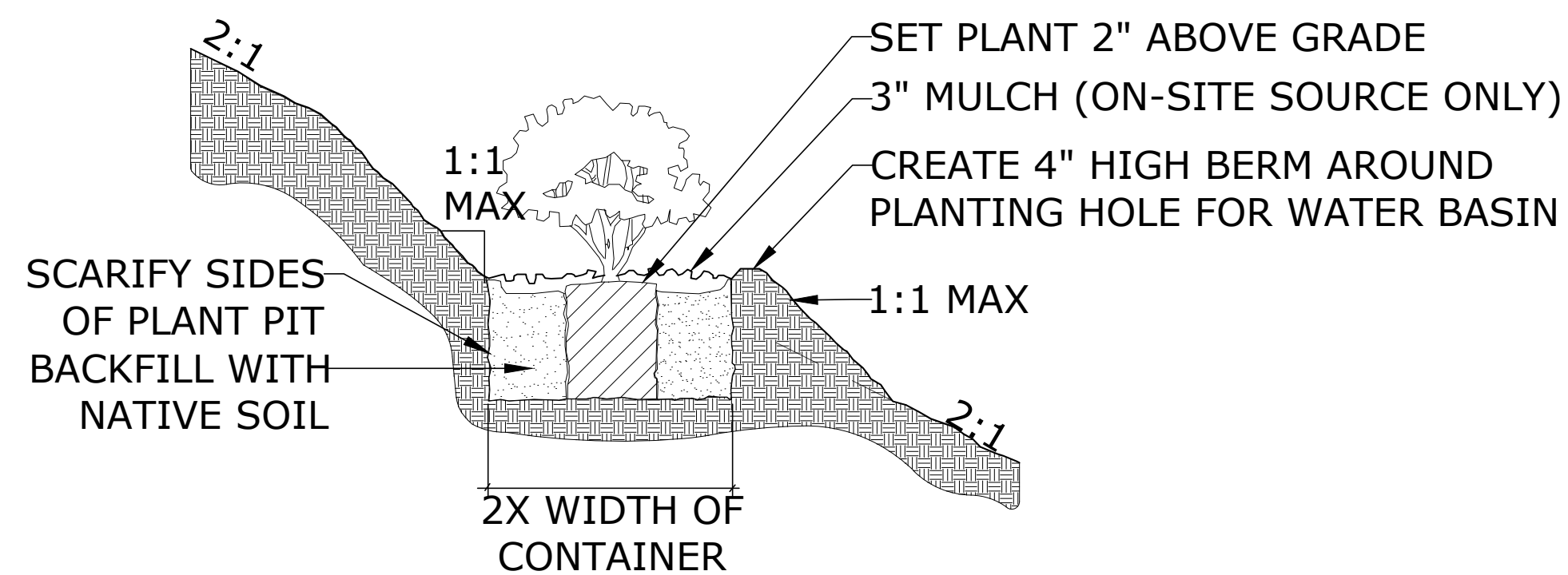
TREES	BOTANICAL NAME	COMMON NAME	ON CENTER SPACING (FT)	CONTAINER SIZE	QUANTITY	NOTES
	<i>ALNUS RHOMBIFOLIA</i>	WHITE ALDER	20	5 GAL	7	FOLIAGE PROTECTION CAGE
	<i>QUERCUS LOBATA</i>	VALLEY OAK	20	5 GAL	15	FOLIAGE PROTECTION CAGE
	<i>QUERCUS AGRIFOLIA</i>	COAST LIVE OAK	20	5 GAL	15	FOLIAGE PROTECTION CAGE
	<i>SALIX LASIOLEPIS</i>	ARROYO WILLOW	15	5 GAL	17	

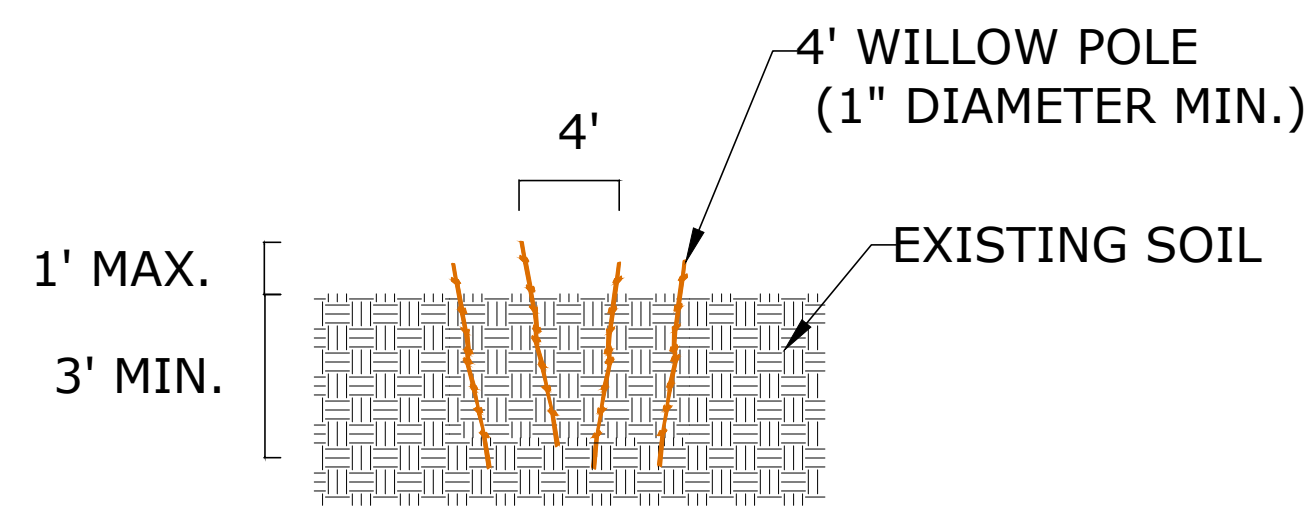
UNDERSTORY	BOTANICAL NAME	COMMON NAME	ON CENTER SPACING (FT)	CONTAINER SIZE	QUANTITY	NOTES
	<i>CEANOTHUS THYRSIFLORUS VAR. GRISEUS</i>	CARMEL CEANOTHUS	6	1 GAL	26	
	<i>FREMONTODENDRON CALIFORNICUM</i>	FLANNEL BUSH	8	1 GAL	9	
	<i>LONICERA HISPIDULA</i>	PINK HONEYSUCKLE	8	1 GAL	11	FOLIAGE PROTECTION CAGE
	<i>RUBUS URSINUS</i>	PACIFIC BLACKBERRY	6	1 GAL	23	FOLIAGE PROTECTION CAGE
	<i>SAMBUCUS MEXICANA</i>	BLUE ELDERBERRY	8	1 GAL	12	
	<i>SYMPHORICARPOS ALBUS</i>	SNOWBERRY	6	1 GAL	10	FOLIAGE PROTECTION CAGE

SYMBOL	BOTANICAL NAME	COMMON NAME	ON CENTER SPACING (FT)	CONTAINER SIZE	QUANTITY	NOTES
	<i>SALIX LAEVIGATA</i>	RED WILLOW	4	LIVE STAKE	84	
	<i>SALIX LASOLEPSIS</i>	ARROYO WILLOW	4	LIVE STAKE	84	



**1 TREE & SHRUB PLANTING ON SLOPE DETAIL**  
NOT TO SCALE



**2 WILLOW POLE PLANTING DETAIL**  
NOT TO SCALE

**REVEGETATION SEEDING SCHEDULE**

Scientific Name	Common Name	Form	Seeding Rate (lbs. / acre)	Pure Live Seed (Total Pounds)
<b>Native riparian seed mix</b>				
<i>Carex barbarae</i>	Santa Barbara sedge	perennial graminoid	0.5	0.03
<i>Carex densa</i>	dense sedge	perennial graminoid	0.5	0.03
<i>Juncus patens</i>	common rush	perennial graminoid	0.5	0.03
<i>Scrophularia californica</i>	bee plant	perennial forb	1.5	0.08
<i>Elymus x triticum</i>	Regreen sterile wheatgrass	herbaceous	50	2.56
<i>Bromus carinatus</i>	California brome	herbaceous	8	0.41
<i>Elymus glaucus</i>	blue wildrye	herbaceous	6	0.31
<i>Festuca microstachys</i>	small fescue	herbaceous	6	0.31
<b>Native upland seed mix</b>				
<i>Achillea millefolium</i>	common yarrow	perennial forb	0.5	0.27
<i>Aristolochia californica</i>	Dutchman's pipe	perennial forb	1.5	0.82
<i>Eschscholzia californica</i>	California poppy	perennial forb	2.5	1.36
<i>Marah fabacea</i>	California manroot	perennial forb	0.25	0.14
<i>Scrophularia californica</i>	bee plant	perennial forb	1	0.54
<i>Elymus x triticum</i>	Regreen sterile wheatgrass	herbaceous	50	27.18
<i>Elymus glaucus</i>	blue wildrye	herbaceous	6	3.26
<i>Festuca microstachys</i>	small fescue	herbaceous	6	3.26

**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

ST HELENA, CALIFORNIA  
DESIGNED FOR:



PLANS PREPARED UNDER SUPERVISION OF ANDREW SMITH, PE #C-82643

DATE	ISSUES AND REVISIONS	NO.
04/07/23	65% DESIGN PLANS	
10/18/23	90% DESIGN PLANS	
7/31/24	100% DESIGN PLANS	

PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**REVEGETATION NOTES AND DETAILS**

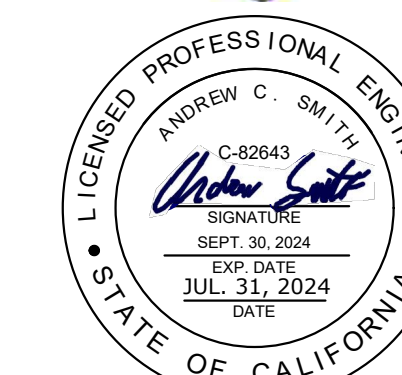
SHEET

**L-2.0**



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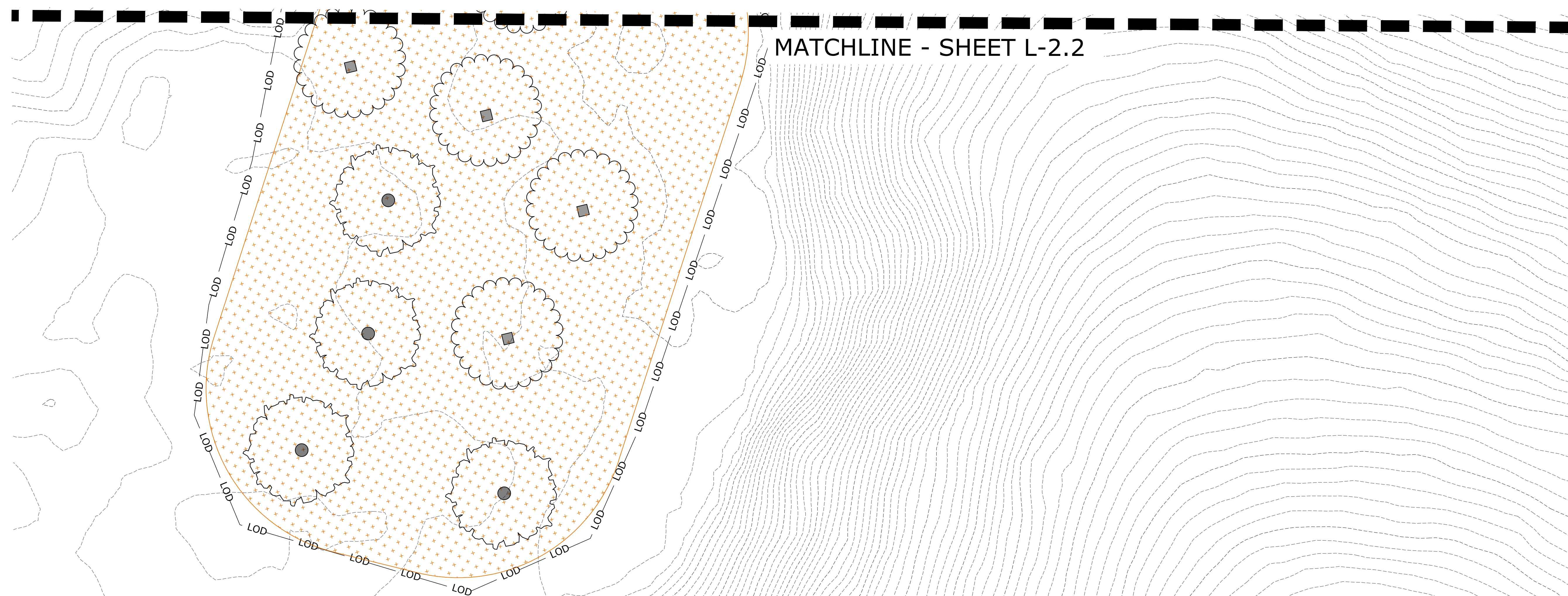
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ORIGINAL DRAWING SIZE: 24 X 36

## REVEGETATION PLAN LEGEND

SYMBOL	DESCRIPTION
---	PROPERTY LINE
--- LOD --- LOD ---	LIMIT OF DISTURBANCE
--- LOG --- LOG ---	LIMIT OF GRADE
--- (300) ---	EXISTING CONTOUR
--- 300 ---	PROPOSED CONTOUR
---	PROPOSED CHANNEL ALIGNMENT
□ 120+00	FENCE
→	FLOW
●	PROPOSED BOULDER
■	WILLOW LIVE STAKE PLANTING
■	NATIVE RIPARIAN SEEDING
■	NATIVE UPLAND SEED MIX

NOTE: NO PLANTING TO OCCUR IN  
FUELS MANAGEMENT ZONE AS DEFINED BY  
THE PROPERTY OWNER.



MATCHLINE - SHEET L-2.2

1 REVEGETATION PLAN VIEW

SCALE: 1" = 10'



## REVEGETATION PLAN SHEET

# L-2.1

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**REVEGETATION PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
LOD	LIMIT OF DISTURBANCE
LOG	LIMIT OF GRADE
(300)	EXISTING CONTOUR
300	PROPOSED CONTOUR
---	PROPOSED CHANNEL ALIGNMENT
120+00	FENCE
→	FLOW
○	PROPOSED BOULDER
▨	WILLOW LIVE STAKE PLANTING
+	NATIVE RIPARIAN SEEDING
•	NATIVE UPLAND SEED MIX

MATCHLINE - SHEET L-2.4

WHITE SULPHUR SPRING RD

NATIVE RIPARIAN SEED MIX, TYP

NATIVE UPLAND SEED MIX, TYP

FENCE, TYP

WILLOW LIVE STAKES, TYP

ROOTWAD LOG STRUCTURE, TYP

NATIVE UPLAND SEED MIX IF USED AS A STAGING AREA

MATCHLINE - SHEET L-2.1

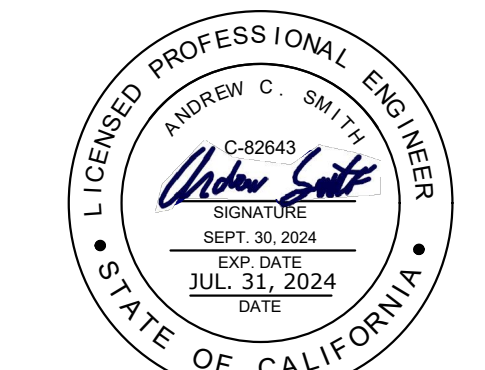
MATCHLINE - SHEET L-2.3

**wra**  
Environmental Consultants  
2169-G East Francisco Blvd.  
San Rafael, CA 94901  
(415) 454-8868 Phone  
www.wra-ca.com

**MARK THOMAS**

**SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT**

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PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

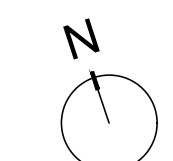
**REVEGETATION PLAN**

SHEET

**L-2.2**

**1 REVEGETATION PLAN VIEW**

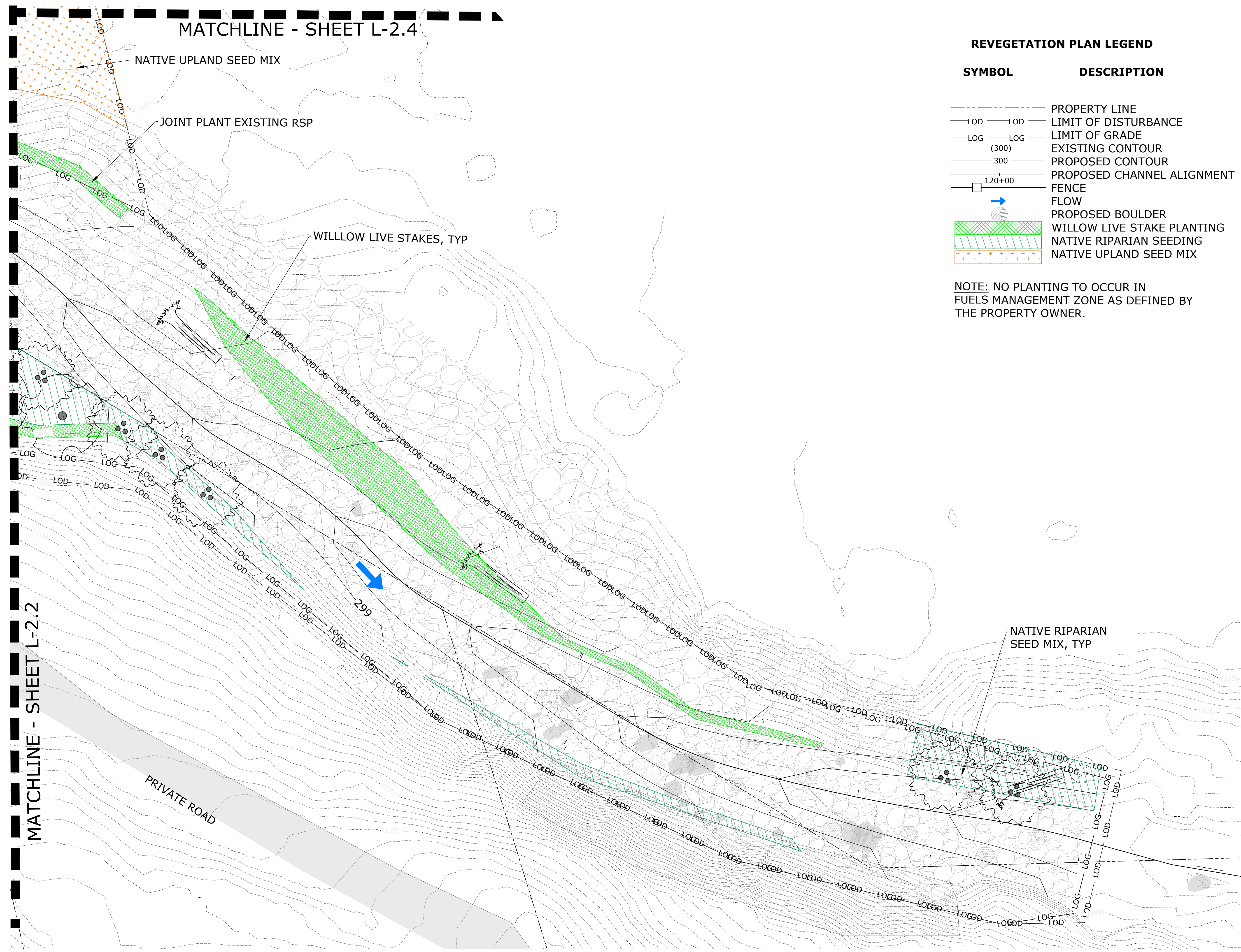
SCALE: 1" = 10'



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MATCHLINE - SHEET L-2.4



**REVEGETATION PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
LOD	LIMIT OF DISTURBANCE
LOG	LIMIT OF GRADE
(300)	EXISTING CONTOUR
300	PROPOSED CONTOUR
120+00	PROPOSED CHANNEL ALIGNMENT
□	FENCE
→	FLOW
●	PROPOSED BOULDER
[Green Grid]	WILLOW LIVE STAKE PLANTING
[Green Hatched]	NATIVE RIPARIAN SEEDING
[Orange Dotted]	NATIVE UPLAND SEED MIX

NOTE: NO PLANTING TO OCCUR IN FUELS MANAGEMENT ZONE AS DEFINED BY THE PROPERTY OWNER.

MATCHLINE - SHEET L-2.2

PRIVATE ROAD

NATIVE RIPARIAN SEED MIX, TYP

299

2 REVEGETATION PLAN VIEW

SCALE: 1" = 10'



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PROJECT #30144  
DRAWN BY: ACS, DG, BMM, CCF  
CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**REVEGETATION PLAN**

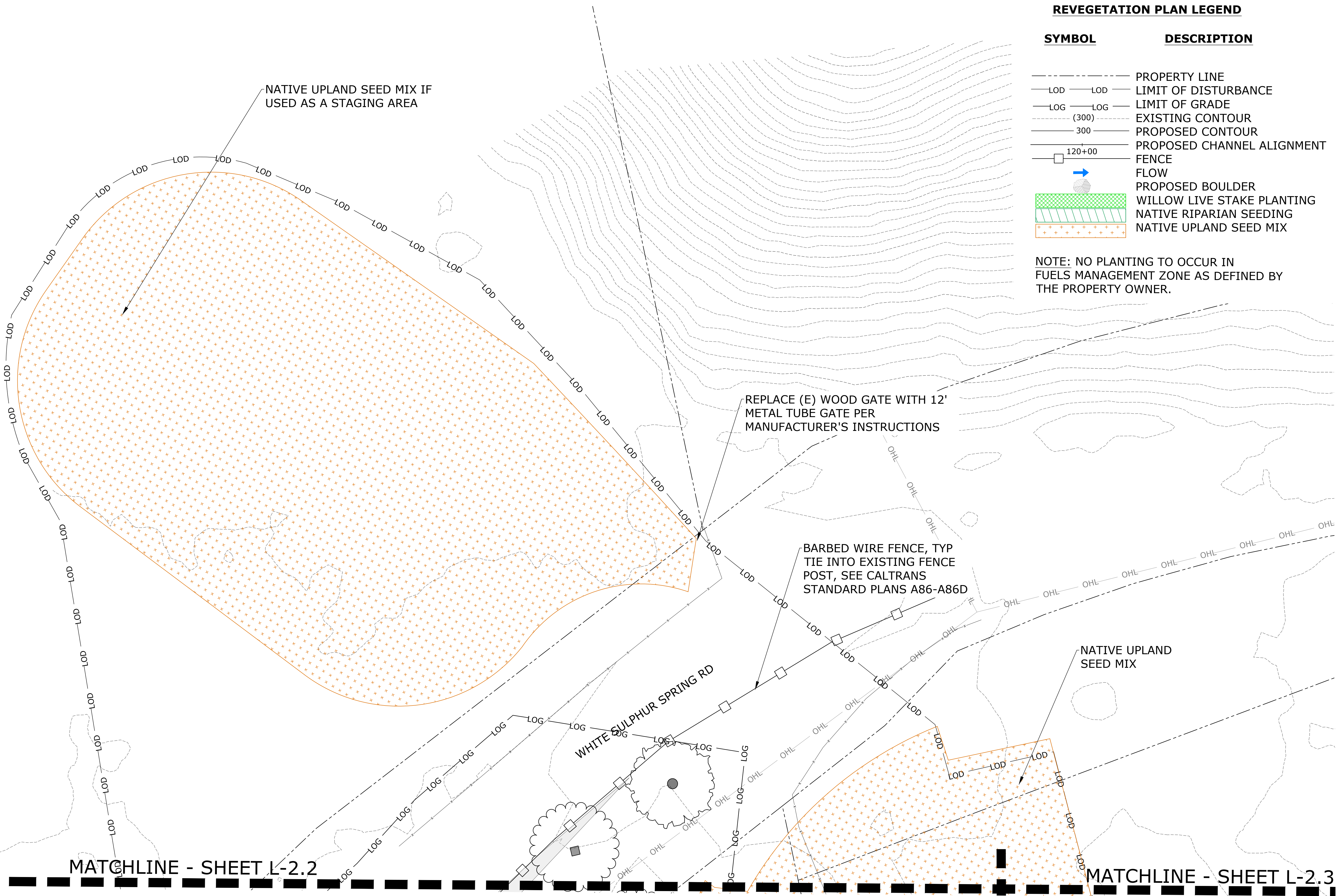
SHEET

**L-2.3**

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**REVEGETATION PLAN LEGEND**

SYMBOL	DESCRIPTION
---	PROPERTY LINE
LOD LOD	LIMIT OF DISTURBANCE
LOG LOG	LIMIT OF GRADE
(300) ---	EXISTING CONTOUR
300 ---	PROPOSED CONTOUR
120+00	PROPOSED CHANNEL ALIGNMENT
□	FENCE
→	FLOW
○	PROPOSED BOULDER
▨	WILLOW LIVE STAKE PLANTING
▧	NATIVE RIPARIAN SEEDING
+	NATIVE UPLAND SEED MIX

NOTE: NO PLANTING TO OCCUR IN FUELS MANAGEMENT ZONE AS DEFINED BY THE PROPERTY OWNER.



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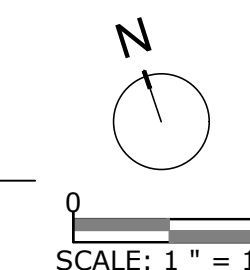
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CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

**REVEGETATION PLAN**

SHEET

**L-2.4**

**3 REVEGETATION PLAN VIEW**

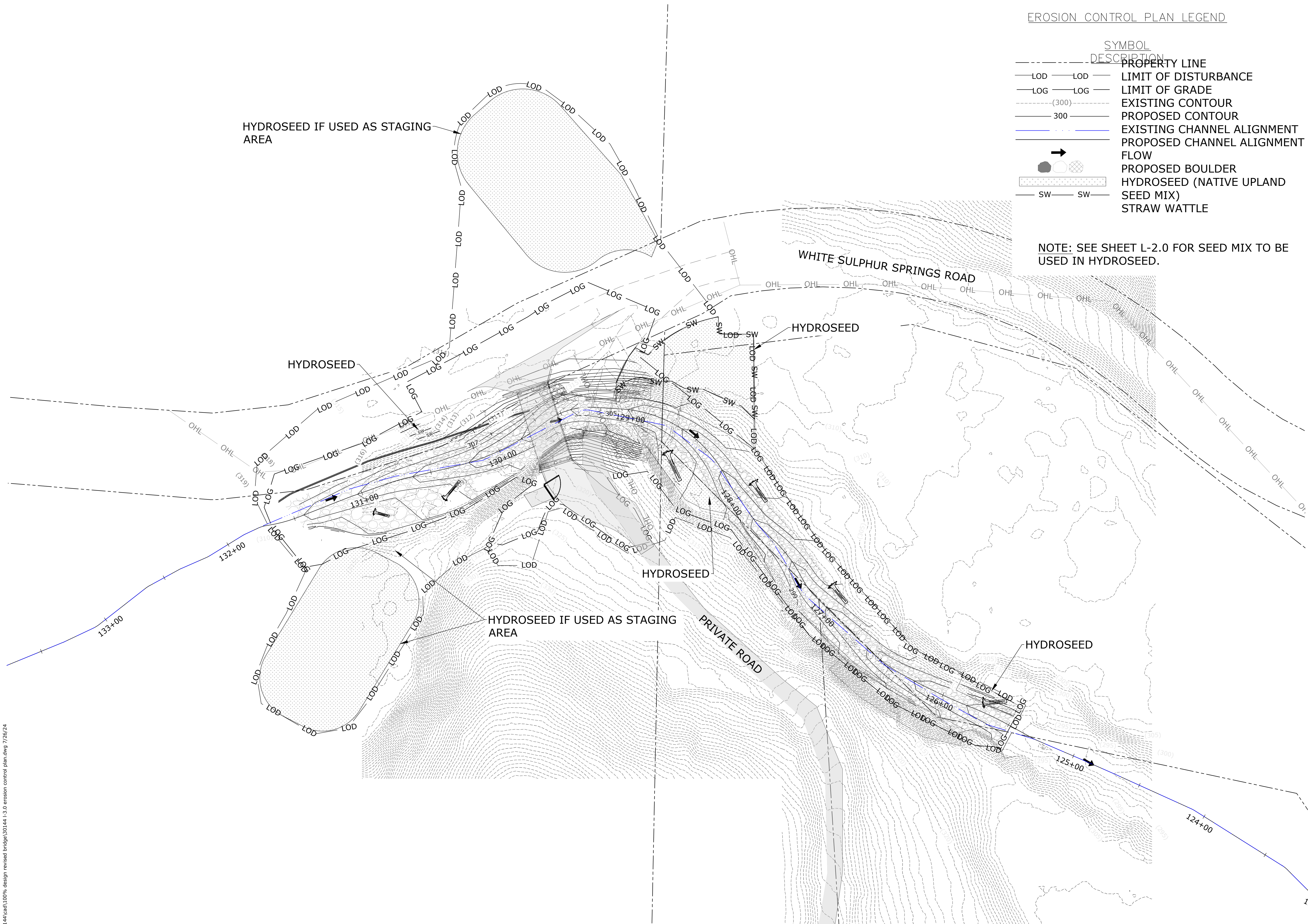




EROSION CONTROL PLAN LEGEND

SYMBOL	DESCRIPTION
---	PROPERTY LINE
--- LOD ---	LIMIT OF DISTURBANCE
--- LOG ---	LIMIT OF GRADE
--- (300) ---	EXISTING CONTOUR
--- 300 ---	PROPOSED CONTOUR
---	EXISTING CHANNEL ALIGNMENT
---	PROPOSED CHANNEL ALIGNMENT
→	FLOW
●	PROPOSED BOULDER
▨	HYDROSEED (NATIVE UPLAND SEED MIX)
SW	STRAW WATTLE

NOTE: SEE SHEET L-2.0 FOR SEED MIX TO BE USED IN HYDROSEED.



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# SULPHUR CREEK FISH PASSAGE RESTORATION PROJECT

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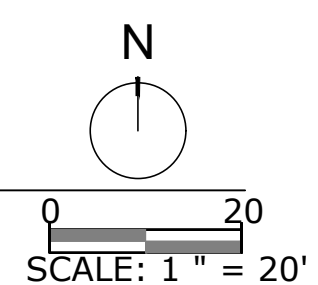
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CHECKED BY: ACS, VM, IM, AJS  
ORIGINAL DRAWING SIZE: 24 X 36

## EROSION CONTROL PLAN

SHEET

# L-3.0

### 1 EROSION CONTROL PLAN VIEW



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**SULPHUR  
CREEK FISH  
PASSAGE  
RESTORATION  
PROJECT**

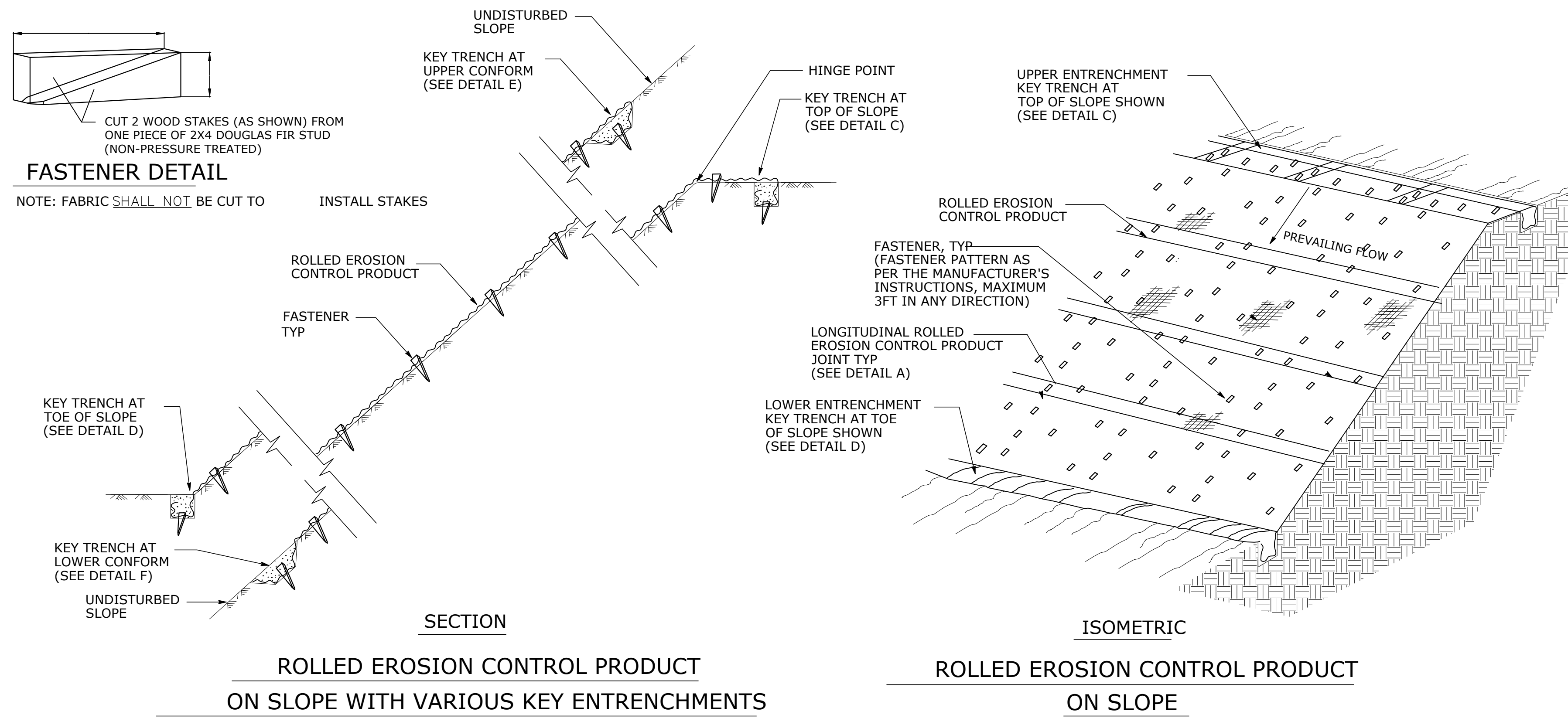
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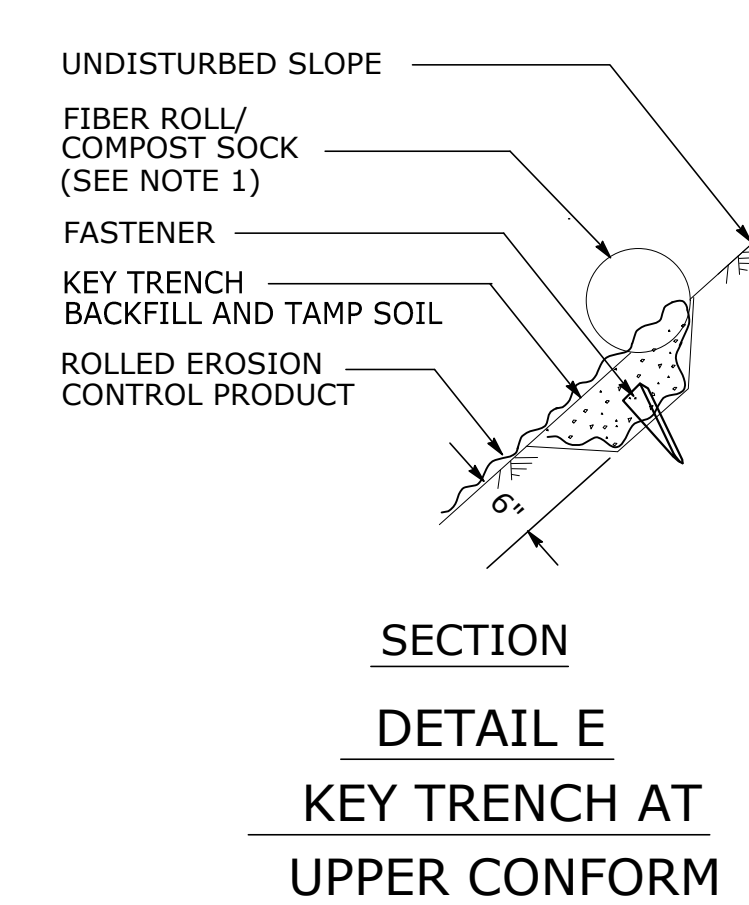
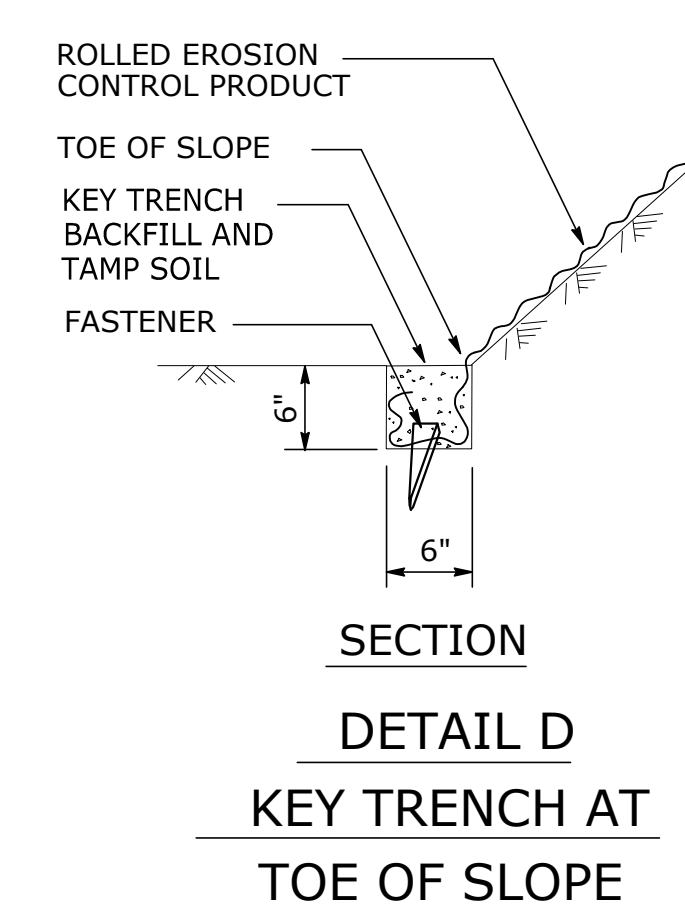
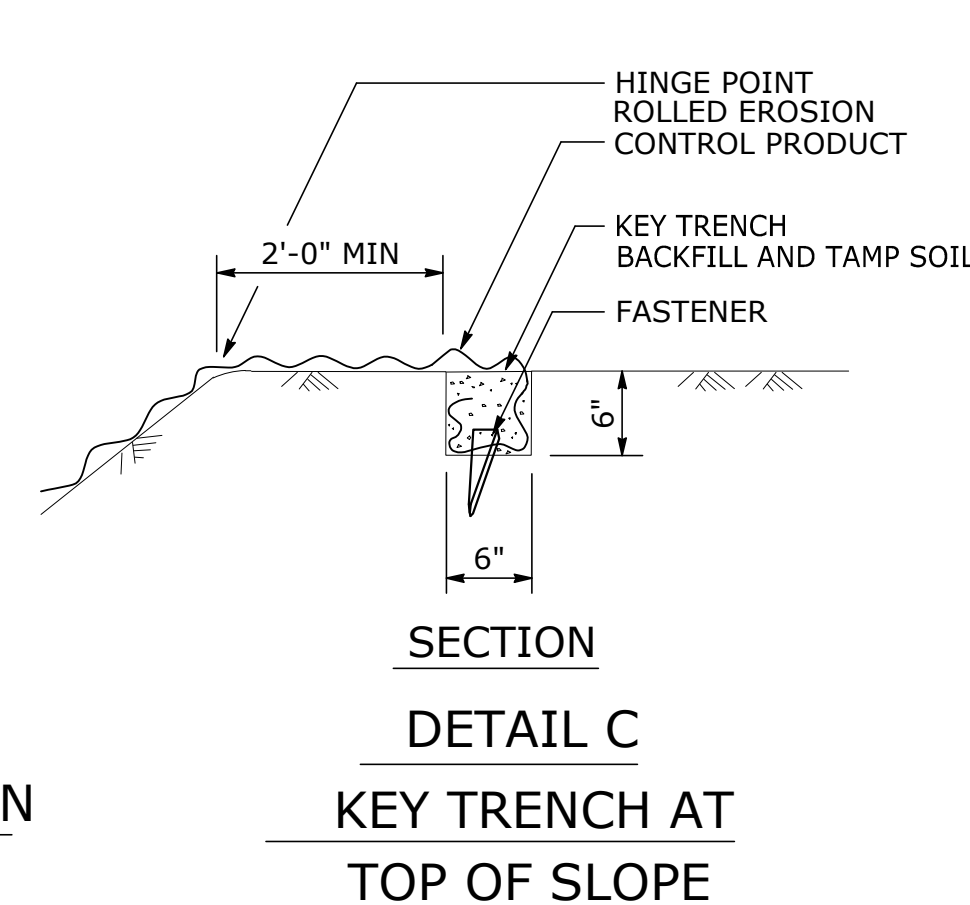
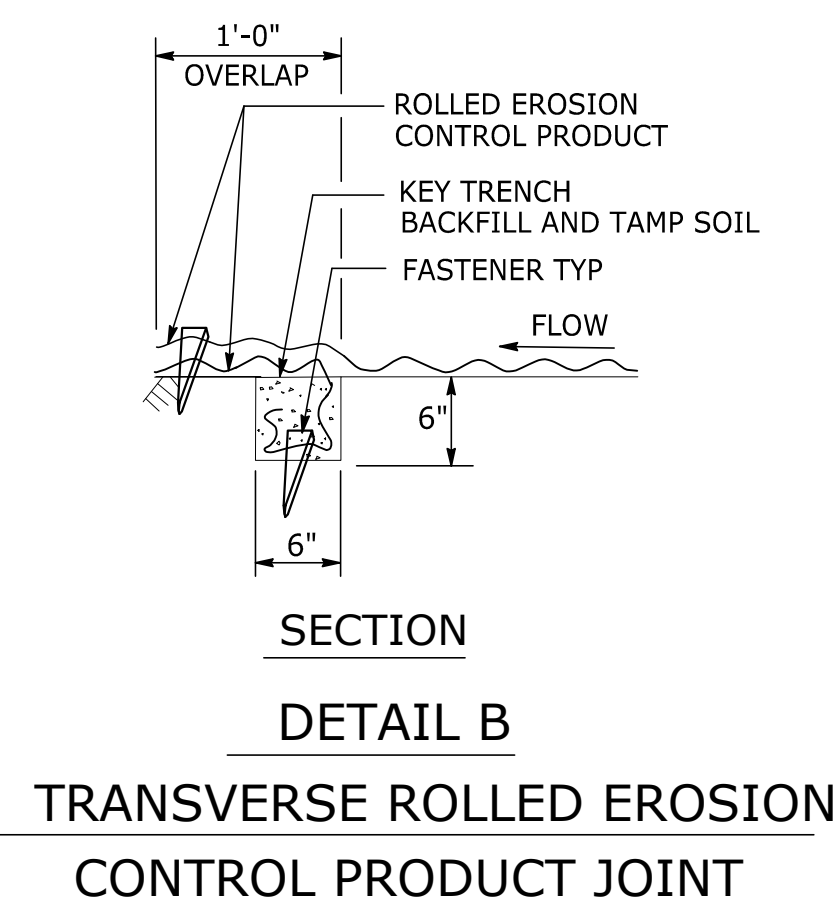
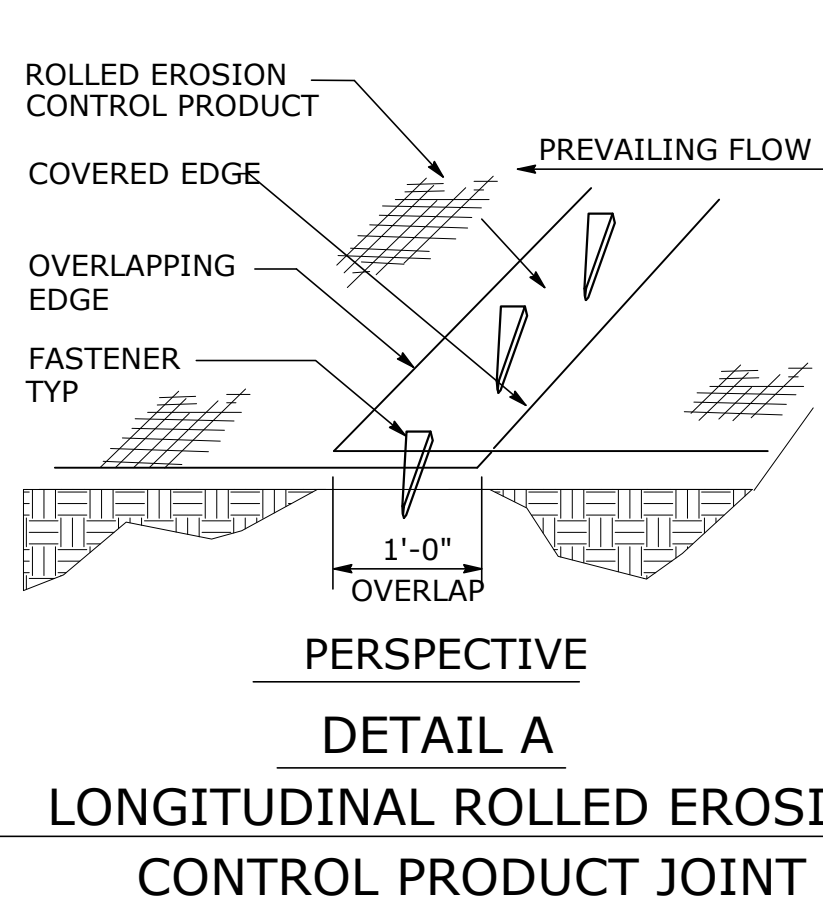
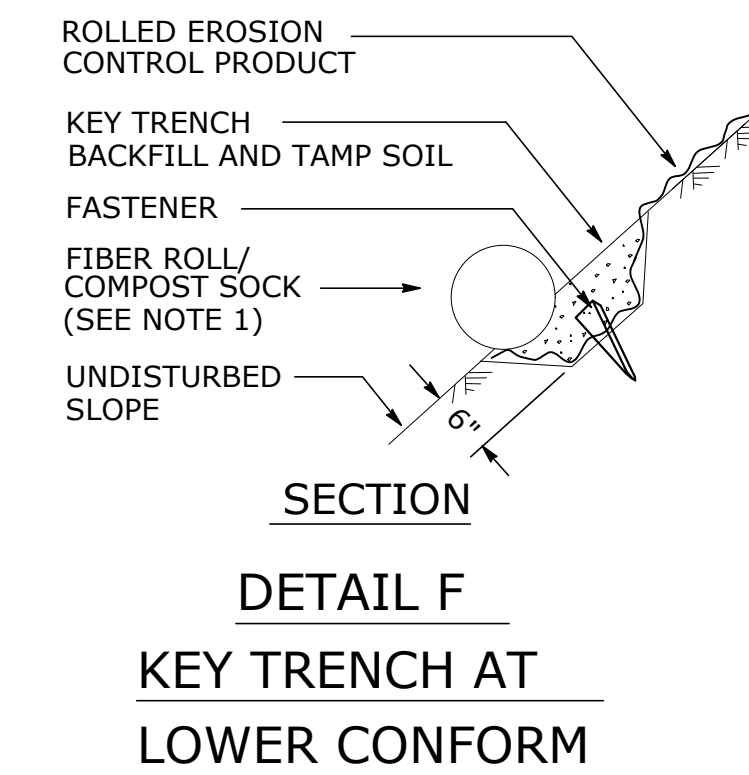
PLANS PREPARED UNDER SUPERVISION  
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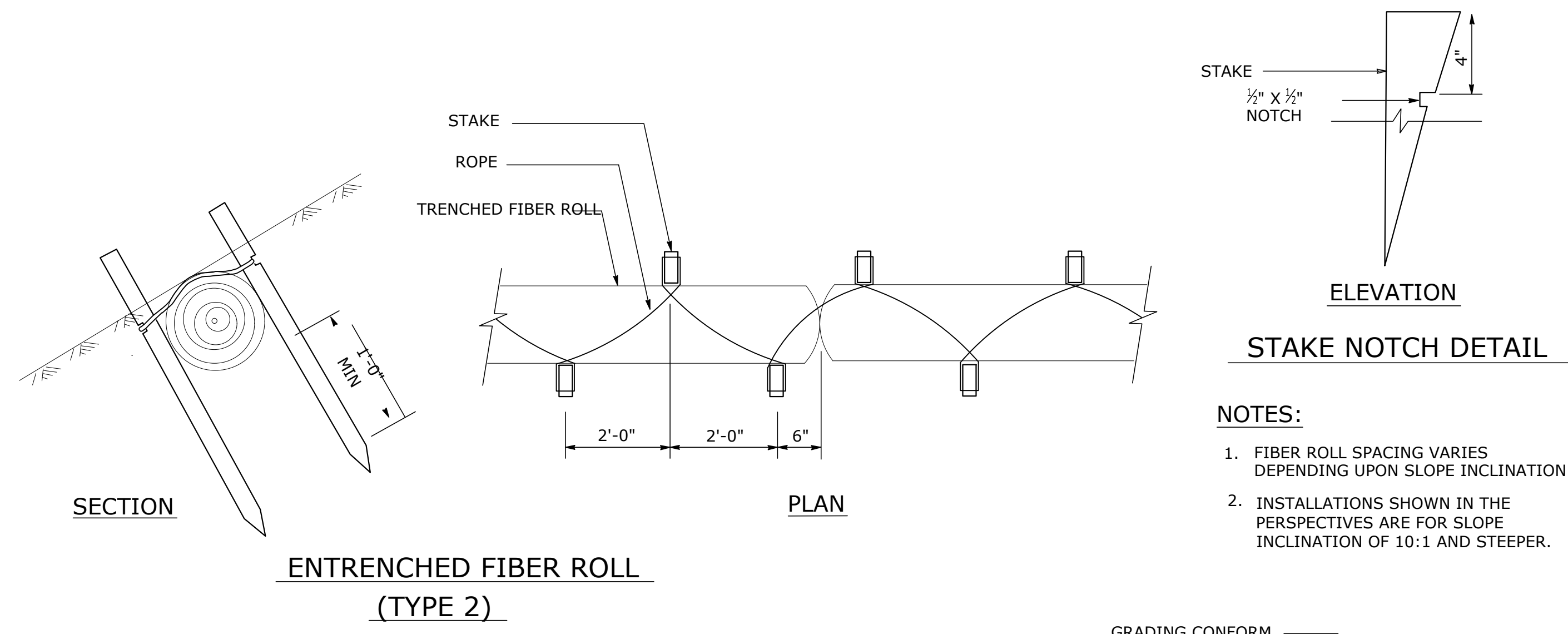


- NOTE:
1. TRENCHED FIBER ROLL/COMPOST SOCK SHOWN FOR REFERENCE PURPOSES ONLY.
  2. IF TRANSVERSE ROLLED EROSION CONTROL PRODUCT JOINTS ARE REQUIRED ON SLOPES, SEE DETAIL B.

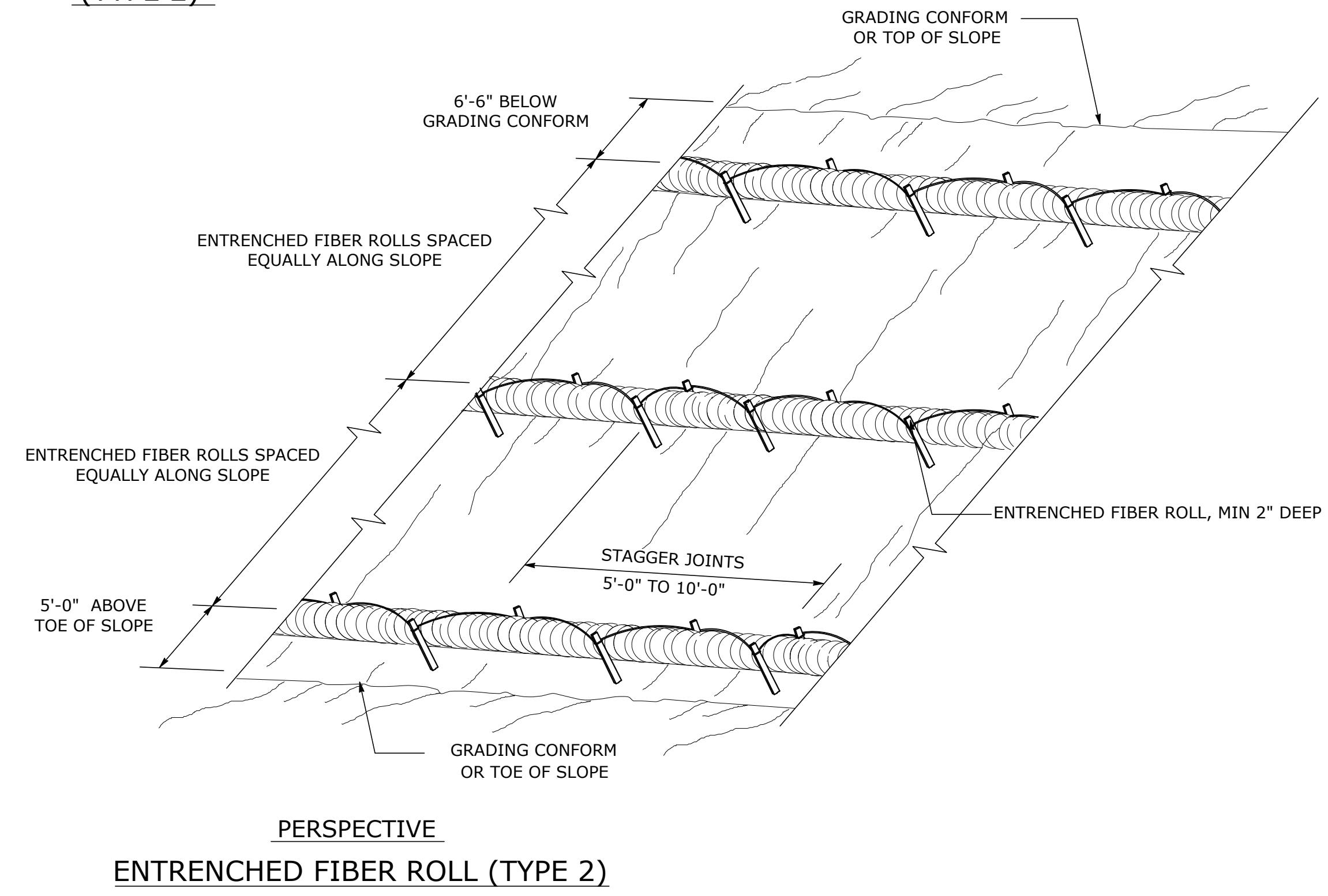




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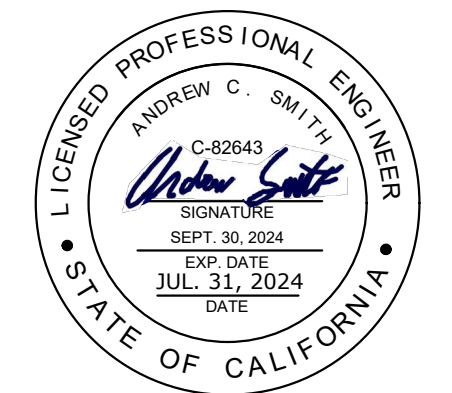


- NOTES:**
1. FIBER ROLL SPACING VARIES DEPENDING UPON SLOPE INCLINATION.
  2. INSTALLATIONS SHOWN IN THE PERSPECTIVES ARE FOR SLOPE INCLINATION OF 10:1 AND STEEPER.



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**EROSION CONTROL DETAILS**

SHEET

**L-3.2**