Appendix A

100% Design Plan Drawings

NOT FOR CONSTRUCTION

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

Know what's below. Call before you dig.

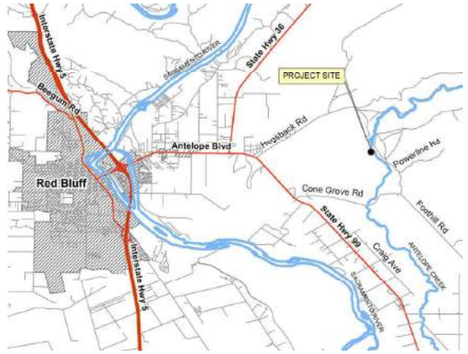
PLANS FOR THE

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

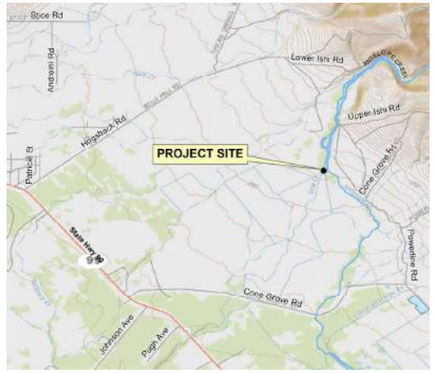
LOCATED NEAR RED BLUFF, CA

100% DESIGN

SITE LOCATION
NOT TO SCALE



AREA MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE

PROJECT CONTACTS

OWNER:

Resource Conservation District of Tehama County
Jon Barrett, Project Director
(530)527-3013
2 Sutter Street, Suite D
Red Bluff CA 96080

OWNERS REPRESENTATIVE:

Davids Engineering, Inc.
Thomas J Ostrowski, PE
530-757-6107 ext. 108

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 5/1/2019
CHECKED ----
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
G1
1 OF ##

Antelope Creek Fish Passage Improvement Project

Title Sheet

DAVIDS ENGINEERING, INC
1772 Picasso Ave, Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED TJO
DRAWN TJO
CHECKED ----

DATE 5/1/2019
FILE G1_AC_Front End

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE NTS

C:\Users\Tommy.DE-WATER\Documents\1159 - RCDTC\1159.01 - Antelope Creek Fish Passage\3.1 - Project Design\Drafting\90_AC_Front End.dwg
May 01, 2019 - 5:02pm

GENERAL NOTES

1. DAVIDS ENGINEERING, CASCADE STREAM SOLUTIONS, AND ONE WATER CONSULTING ARE THE ENGINEERS AND CONSTRUCTION INSPECTORS FOR THIS PROJECT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THEIR ACTIONS AND COOPERATING TO FACILITATE MATERIALS TESTING BY THE CONSTRUCTION INSPECTORS OR THEIR APPOINTED MATERIALS TESTING SERVICE.
3. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS.
4. DO NOT SCALE DRAWINGS. CONTRACT THE ENGINEER FOR ANY DIMENSIONS OR SPECIFIC DETAIL NOT SHOWN.
5. PRODUCTS REFERENCED ON THE DRAWINGS, OR THOSE APPROVED AS EQUAL, SHALL BE CONSTRUCTED, INSTALLED, AND/OR APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATION UNLESS OTHERWISE SHOWN.
6. CONTRACTOR SHALL LIMIT TOTAL WORK AREA TO THE MINIMUM REQUIRED FOR CONSTRUCTION. STAGING AREAS AND OTHER DROP ZONES OR EQUIPMENT STORAGE ZONES BEYOND THE ALIGNMENT OF THE PIPELINE SHALL BE PRE-APPROVED BY THE OWNER.
7. NOTIFY THE OWNER AND/OR ENGINEER WHERE A CONFLICT OR DISCREPANCY OCCURS BETWEEN THESE DRAWINGS AND ANY OTHER PORTION OF THE CONTRACT DOCUMENTS OR EXISTING FIELD CONDITIONS.
8. THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE TO THE OWNER AND ENGINEER FOR APPROVAL PRIOR TO BEGINNING WORK AND IS TO NOTIFY THE OWNER 48 HOURS IN ADVANCE OF EACH CONSTRUCTION PHASE SO AS TO FACILITATE CONSTRUCTION INSPECTION SCHEDULING.
9. THE CONTRACTOR SHALL BE RESPONSIBILITY FOR ACQUIRING, USING AND DISPOSING OF ADDITIONAL WORK AREAS AND FACILITIES TEMPORARILY REQUIRED FOR CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE OWNER HARMLESS FROM ALL CLAIMS FOR DAMAGES OCCASIONED BY SUCH ACTIONS.
10. PRIOR TO THE START OF CONSTRUCTION, LOCATE ALL EXISTING AND UNDERGROUND UTILITIES IN AN AROUND THE AREAS OF NEW CONSTRUCTION. VERIFY THAT THE PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH EXISTING OR PROPOSED UTILITIES OR THAT APPROPRIATE MEANS ARE PROVIDED FOR REROUTING, SUPPORTING, OR PROTECTION, OR OTHERWISE INCORPORATING THE UTILITIES INTO THE CONSTRUCTION.
11. UNLESS NOTED OTHERWISE ON THE PLANS, ALL EXISTING ITEMS CALLED OUT TO BE PROTECTED OR LEFT UNDISTURBED SHALL BE PROTECTED BY THE CONTRACTOR. IF SUCH ITEMS ARE DAMAGED OR MUST BE REMOVED TO FACILITATE CONSTRUCTION, THE CONTRACTOR SHALL REPLACE THE ITEMS AT NO COST TO THE OWNER TO THE SAME OR BETTER CONDITION THAN THEY WERE BEFORE REMOVAL.
12. WHERE FACILITIES ARE CALLED OUT TO REMAIN IN PLACE OR NOT TO BE DISTURBED, THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES TO PROTECT FACILITIES DURING CONSTRUCTION. FACILITIES SHOULD NOT BE DISTURBED UNLESS IT IS SHOWN ON THE DRAWINGS THAT THE CONTRACTOR IS TO MAKE IMPROVEMENTS.
13. VISITS TO THE JOB SITE BY THE ENGINEER OR THE OWNER TO OBSERVE THE CONSTRUCTION DO NOT IN ANY WAY MEAN THAT THEY ARE GUARANTORS OF THE CONTRACTOR'S WORK, NOR RESPONSIBLE FOR COMPREHENSIVE OR SPECIAL INSPECTIONS, COORDINATION, SUPERVISION, NOR SAFETY AT THE JOB SITE.
14. CONTRACTOR TO VERIFY ALL EXISTING INVERT ELEVATIONS SHOWN HEREIN.

DESIGN BASIS:

1. MINIMUM DIVERSION CAPACITY: TOTAL CAPACITY FOR THE PROPOSED COMBINED DIVERSION POINT/STRUCTURE WILL BE AT LEAST 90 CFS
2. MINIMUM WEST DITCH SIPHON CAPACITY: AT A MINIMUM, THE SIPHON IS EXPECTED TO PROVIDE UP TO 25 CFS BY GRAVITY TO THE WEST DITCH. THE GOAL IS TO DESIGN THE SIPHON SUCH THAT IT WILL PROVIDE 35-37 CFS BY GRAVITY.
3. MINIMUM FISH LADDER OPERATIONAL FLOW: THE DESIGN FLOW FOR THE CDFW-DESIGNED FISH LADDER IS 4.86 CFS, OR A FLOW OTHERWISE NEGOTIATED OR IN A SEPARATE AGREEMENT WITH THE DIVERTERS.
4. FISH SCREEN AND BYPASS DESIGN CRITERIA:
   - REFERENCE CRITERIA:
     - CDFW FISH SCREEN DESIGN CRITERIA
     - NMFS ANADROMOUS SALMONID PASSAGE FACILITY DESIGN, NORTHWEST REGION, JULY 2011
     - NMFS FISH SCREENING CRITERIA FOR ANADROMOUS SALMONIDS, SECTION E. CIVIL WORKS AND STRUCTURAL FEATURES, SOUTHWEST REGION, JANUARY 1997
     - CDFW CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL, CHAPTER XII
   - SCREEN DESIGN CRITERIA
     - APPROACH VELOCITY: LESS THAN OR EQUAL TO 0.4 FEET PER SECOND
     - SWEEPING VELOCITY: GREATER THAN APPROACH VELOCITY
     - EXPOSURE TIME: LESS THAN 60 SECONDS
     - PROFILE BAR OPENING WIDTH: 0.0689 INCHES OR NARROWER
     - MINI. SCREEN OPEN AREA: 40 PERCENT
   - BYPASS CRITERIA
     - MINIMUM BYPASS FLOW DEPTH: 0.75 FEET OR GREATER
     - FLOW VELOCITY: 2 FEET PER SECOND OR GREATER
     - RIVER VELOCITIES AT OUTFALL: 4 FEET PER SECOND OR AS CLOSE AS OBTAINABLE
     - IMPACT VELOCITY: 25 FEET PER SECOND
5. ANTELOPE CREEK HISTORICAL FLOWS: DAILY FLOW DATA FROM USGS ANTELOPE CREEK NO. 11379000 (1940 TO 1982) AND STILLWATER SCIENCES UAC GAGE (2012-2017).

   95% EXCEEDANCE NOV-FEB = 962 CFS

   98% EXCEEDANCE NOV-FEB = 1,686 CFS

   99% EXCEEDANCE NOV-FEB = 2,263 CFS
6. SIPHON HYDRAULIC DESIGN FACTORS AND COEFFICIENTS:
7. TARGET DOWNSTREAM WATER SURFACE ELEVATION (WEST DITCH @ SIPHON DISCHARGE) = 309.40
8. GEOTECHNICAL: REFERENCE THE CONTRACT DOCUMENTS FOR SOIL BORINGS MADE TO INFORM THE DESIGN PROCESS. REFERENCE SECTION 01005-1.5 (SPECIFICATIONS) OF THE CONTRACT DOCUMENTS REGARDING USE OF THE BORE LOGS.

SURVEY:

TOPOGRAPHIC DATA USED FOR THIS DESIGN WAS COLLECTED BY VESTRA RESOURCES IN 2009 WITH ADDITIONAL SUPPLEMENTAL DATA COLLECTED BY NORTHSTATE LAND SURVEYING IN 2018. ALL COORDINATES AND ELEVATIONS ARE IN CALIFORNIA COORDINATE SYSTEM, NAD83 ZONE 1 (GRID) HORIZONTAL COORDINATE SYSTEM AND NAVD88 VERTICAL DATUM.

CONSTRUCTION STAKING AND LAYOUT

1. THE ENGINEER SHALL PROVIDE CONSTRUCTION STAKING AND LAYOUT FOR THE PROJECT. THE CONTRACTOR AND THE ENGINEER SHALL COORDINATE AND PREPARE A STAKEOUT SCHEDULE DURING THE PRE-CONSTRUCTION MEETING.
2. REFERENCE SECTION 01019 (LAYOUT OF WORK AND SURVEYS) OF THE GENERAL REQUIREMENTS.

SITE ACCESS AND STAGING

1. REFERENCE SECTION 01018 (CONTRACTOR'S RESPONSIBILITY) AND SECTION 01500 (USE OF SITE) OF THE CONTRACT DOCUMENTS.
2. ACCESS TO THE SITE SHALL BE FROM HOGS BACK ROAD AND PROCEED THROUGH THE ANTELOPE CREEK RANCH. CONSTRUCTION TRAFFIC SHALL OBSERVE A MAXIMUM SPEED OF 10MPH ON ALL DIRT OR GRAVEL ROADS AND SPEED SHALL BE ADJUSTED TO MINIMIZE DUST OR NOISE DISTURBANCE NEAR RESIDENCES. DELIVERY OF EQUIPMENT AND MATERIALS SHALL BE FROM HOGS BACK ROAD. SEE SITE ACCESS SHEET FOR ROUTE DELINEATION.
3. ACCESS ROADS USED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE RETURNED TO PRE-PROJECT CONDITIONS PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. PRE-PROJECT CONDITIONS SHALL BE AS DETERMINED THROUGH SITE INSPECTION AND DOCUMENTATION TO BE COMPLETED BY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR PRIOR TO THE START OF WORK.
4. THE CONTRACTOR WILL BE REQUIRED TO PROVIDE DUST ABATEMENT FOR THE DURATION OF THE PROJECT. REFERENCE SECTION 01500 (USE OF SITE) OF THE CONTRACT DOCUMENTS.
5. ROCK DELIVERY SHALL BE FROM HOGS BACK ROAD. STAGING OR STOCKPILING OF DELIVERED ROCK SHALL BE COORDINATED WITH THE ENGINEER. TRANSPORT OF ROCK FROM THE STAGING AREA TO THE WORK SITE SHALL BE FROM AN EXISTING DIRT ACCESS ROAD NORTH OF THE WEST DITCH AND APPROACHING ANTELOPE CREEK ON RIVER RIGHT. THE ACCESS ROAD IS UNIMPROVED. TRANSPORT OF ROCK TO THE WORK SITE SHALL BE DONE SO IN A MANNER THAT DOES NOT IMPACT VEGETATION, SLOPES, EMBANKMENTS, OR OTHER GROUND FEATURES NOT WITHIN THE CONSTRUCTION ZONE.
6. STAGING AND LAY-DOWN AREAS ARE IDENTIFIED ON THE ACCESS SHEET AND ARE AVAILABLE TO BE USED AT THE CONTRACTOR'S DISCRETION. ALL OTHER SITES OR AREAS DEEMED NECESSARY BY THE CONTRACTOR SHALL BE COORDINATED BY THE CONTRACTOR AND THE LANDOWNER AT NO ADDITIONAL COST TO THE PROJECT.

ENVIRONMENTAL PROTECTION AND EROSION CONTROL :

1. THE CONTRACTOR SHALL SUBMIT A CLEARING AND GRUBBING PLAN PRIOR TO BEGINNING WORK. THE PLAN SHALL CLEARLY SHOW THE EXTENTS OF THE PROPOSED CLEARING, VEGETATION TO BE CLEARED, AND VEGETATION TO BE PROTECTED IN PLACE. THE PLAN AND IT'S CONTENTS ARE SUBJECT TO THE APPROVAL OF THE OWNER AND OWNER'S REPRESENTATIVE.
2. THIS PROJECT IS SUBJECT TO CERTAIN ENVIRONMENTAL PERMITS AND REGULATIONS THAT MUST BE ABIDED BY AT ALL TIMES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL WORK BE COMPLETED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. A COPY OF THE APPLICABLE PERMITS FOR THE PROJECT ARE INCLUDED IN THE SPECIAL PROVISIONS OF THE CONTRACT DOCUMENTS. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW AND BE FAMILIAR WITH ALL REQUIREMENTS.
3. REFERENCE SECTION 01530 (ENVIRONMENTAL QUALITY PROTECTION) OF THE CONTRACT DOCUMENTS FOR EXPLANATION AND DEFINITION OF MEASURES REQUIRED TO MITIGATE OR MINIMIZE ENVIRONMENTAL IMPACTS.

PROTECTION AND SALVAGE OF EXISTING ITEMS:

1. THE CONTRACTOR SHALL COORDINATE WITH THE CDFW FOR REMOVAL AND SALVAGE OF THE EXISTING EAST DITCH FISH SCREEN AND DRIVE COMPONENTS. CDFW SHALL BE RESPONSIBLE FOR HAULING OF SALVAGED MATERIAL OFF-SITE.
2. ALL EXISTING VEGETATION NOT IDENTIFIED FOR REMOVAL, BUT WITHIN THE WORK ZONE, SHALL BE PROTECTED IN PLACE. PROTECTION METHODS SHALL BE REFLECTIVE OF THE RELATIVE RISK OF IMPACT OR DAMAGE FROM THE CONTRACTOR'S OPERATIONS.

SHEET INDEX

SUBSET	SHEET CODE	NAME	SHEET NUMBER
GENERAL	G1	TITLE SHEET	
	G2	GENERAL NOTE	
	G3	ACCESS AND STAGING PLAN	
DEMOLITION	D1	DEMOLITION PLAN	
CIVIL	C1	PLAN SHEET	
	C2	FISH SCREEN PLAN 1	
	C3	FISH SCREEN PLAN 2	
	C4	PROFILE SHEET	
	C5	FENCING DETAIL	
	C5	SIPHON PLAN AND PROFILE	
	C6	FLOW CONTROL HEADINGS	
	C7	SIPHON DISCHARGE STRUCTURE	
	C8	DETAILS	
MECHANICAL	M100	INTAKE PLAN	
	M101	BYPASS CHANNEL SECTIONS	
	M102	INTAKE SECTIONS	
	M1	SCREEN & CLEANER DETAILS	
	M2	BAFFLE DETAILS	
	M3	INTAKE CHANNEL SECTIONS	
	M4	BRUSH CLEANER DRIVE	
	M5	EQUIPMENT DETAILS	
	M6	EQUIPMENT DETAILS	
	M7	BRUSH TROLLEY DETAILS	
STRUCUTRAL	S100	FOUNDATION PLAN	
	S101	CATWALK FRAMING PLAN	
	S200	SECTIONS	
	S201	SECTIONS	
	S202	CONCRETE DETAILS	
	S203	STEEL DETAILS	
ELECTRICAL	E1	LOAD CALCS AND NOTES	
	E2	ELECTRICAL DETAILS & LAYOUT	
	E3	SCREEN CONTROLS	
	E4	ELECTRICAL DETAILS	

ABBREVIATIONS:

(E)	EXISTING	EG	EXISTING GROUND	O.D.	OUTSIDE DIAMETER	W/	WITH
(N)	NEW	EL	ELEVATION	OH	OVERHEAD	WF	WIDE FLANGE
(P)	PROPOSED	ELEC	ELECTRIC	PL	PLATE	WSE	WATER SURFACE ELEVATION
2.5 : 1	HORIZONTAL : VERTICAL SLOPE	ELEV	ELEVATION	PSI	POUNDS PER SQUARE INCH	WSEL	WATER SURFACE ELEVATION
A.B.	ANCHOR BOLT	F&I	FURNISH AND INSTALL	PVC	POLYVINYL CHOLRIDE		
AB	AGGREGATE BASE	FF	FINISH FLOOR	REV	REVISION		
APPROX	APPROXIMATE	FG	FINISHED GRADE	S=	SLOPE =		
B.O.	BOTTOM OF	FL	FLOWLINE	SCH	SCHEDULE		
BM	BENCH MARK	FS	FLAT STOCK	SHT	SHEET		
CFS	CUBIC FEET PER SECOND	FT	FEET	SIM	SIMILAR		
CL	CENTERLINE	GA	GALVANIZED	SS	STAINLESS STEEL		
CONC	CONCRETE	GALV	GALVANIZED	STA	STATION		
CSP	CORRUGATED STEEL PIPE	GS	GALVANIZED STEEL	STL	STEEL		
CTD	CENTERED	HT	HEIGHT	t	THICKNESS		
CTR	CENTER	ID	INSIDE DIAMETER	T.O.	TOP OF		
CY	CUBIC YARD	IE	INVERT ELEVATION	TBR	TO BE REMOVED		
DEG	DEGREE	INV	INVERT	TOB	TOP OF BANK		
DIA	DIAMETER	L=	LENGTH =	TOC	TOP OF CONCRETE STRUCTURE		
DWG	DRAWING	MAX	MAXIMUM	TOW	TOP OF WALL		
E	ELECTRIC LINE	MIN	MINIMUM	TYP	TYPICAL		
E.	EAST (COORDINATE)	MISC	MISCELLANEOUS	UHMW	ULTRA HIGH MOLECULAR WEIGHT		
E.F.	EACH FACE	N.	NORTH (COORDINATE)				
E.W.	EACH WAY	NTBD	NOT TO BE DISTURBED				
EA	EACH						

General Notes

Antelope Creek Fish Passage Improvement Project

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 5/1/2019
CHECKED ----
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

DAVIDS ENGINEERING, INC
1772 Picasso Ave, Suite A
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Phone: (530) 757-6107

Cascade Stream Solutions
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED TJO
DRAWN TJO
CHECKED -----

DATE 5/1/2019
FILE 90_AC_Front End

BAR IS ONE INCH AT FULL SCALE
0 1" IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE NTS

SHEET NUMBER
G2
2 OF ##

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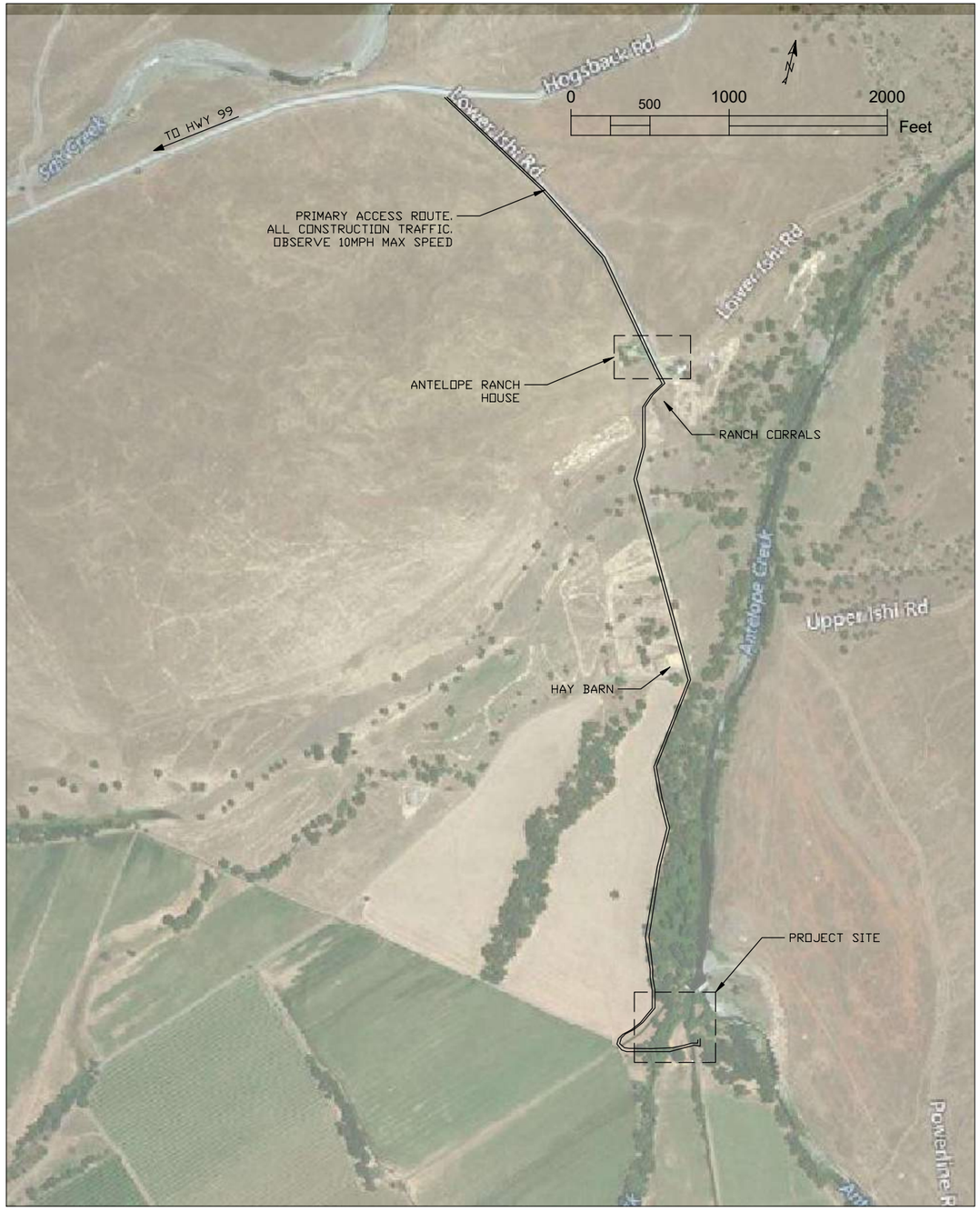
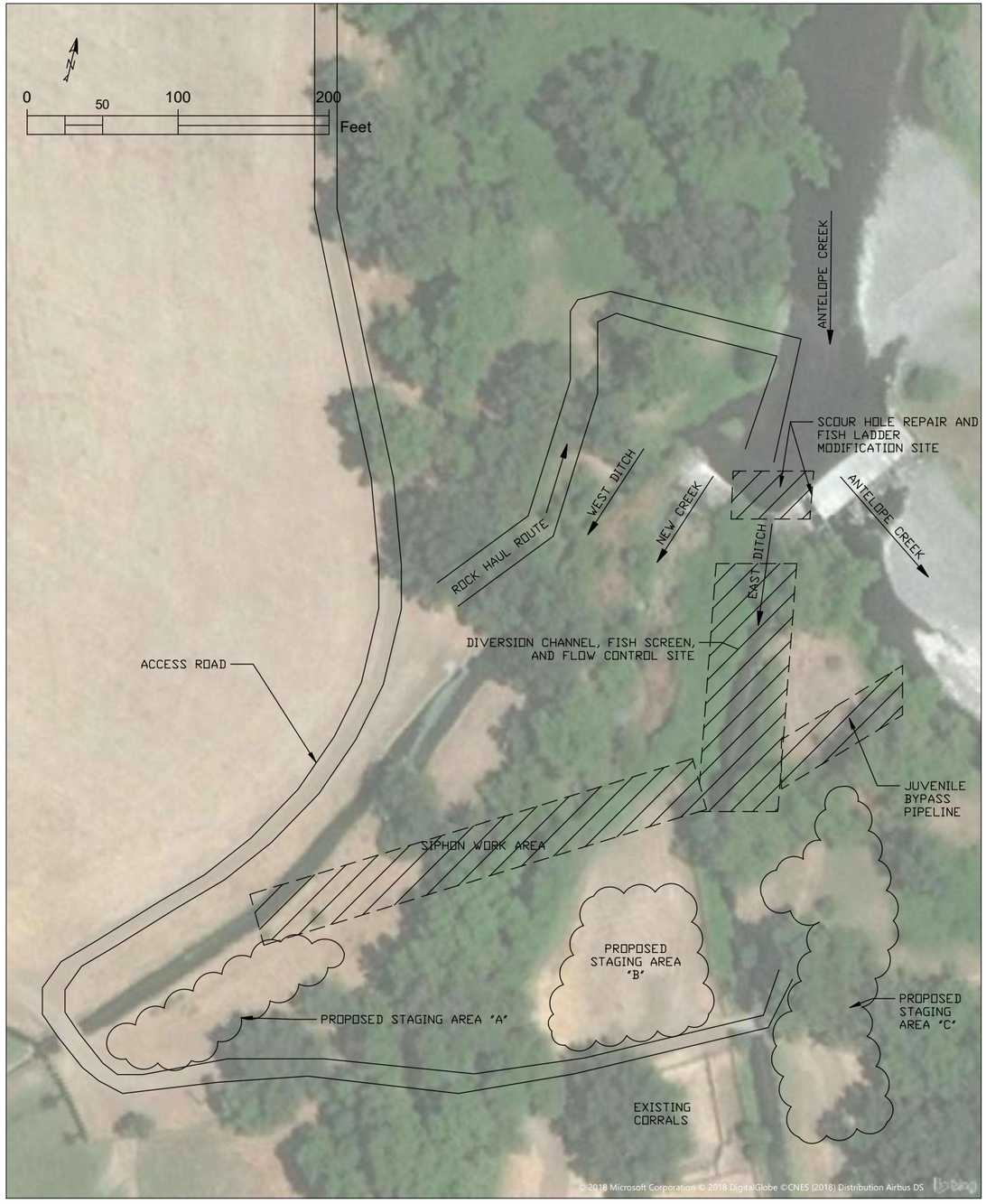
May 01, 2019 - 5:02pm





ACCESS AND STAGING PLAN

Antelope Creek Fish Passage Improvement Project

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
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RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
G3
3 OF ##

DAVIDS ENGINEERING, INC.
1772 Picasso Ave, Suite A
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Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

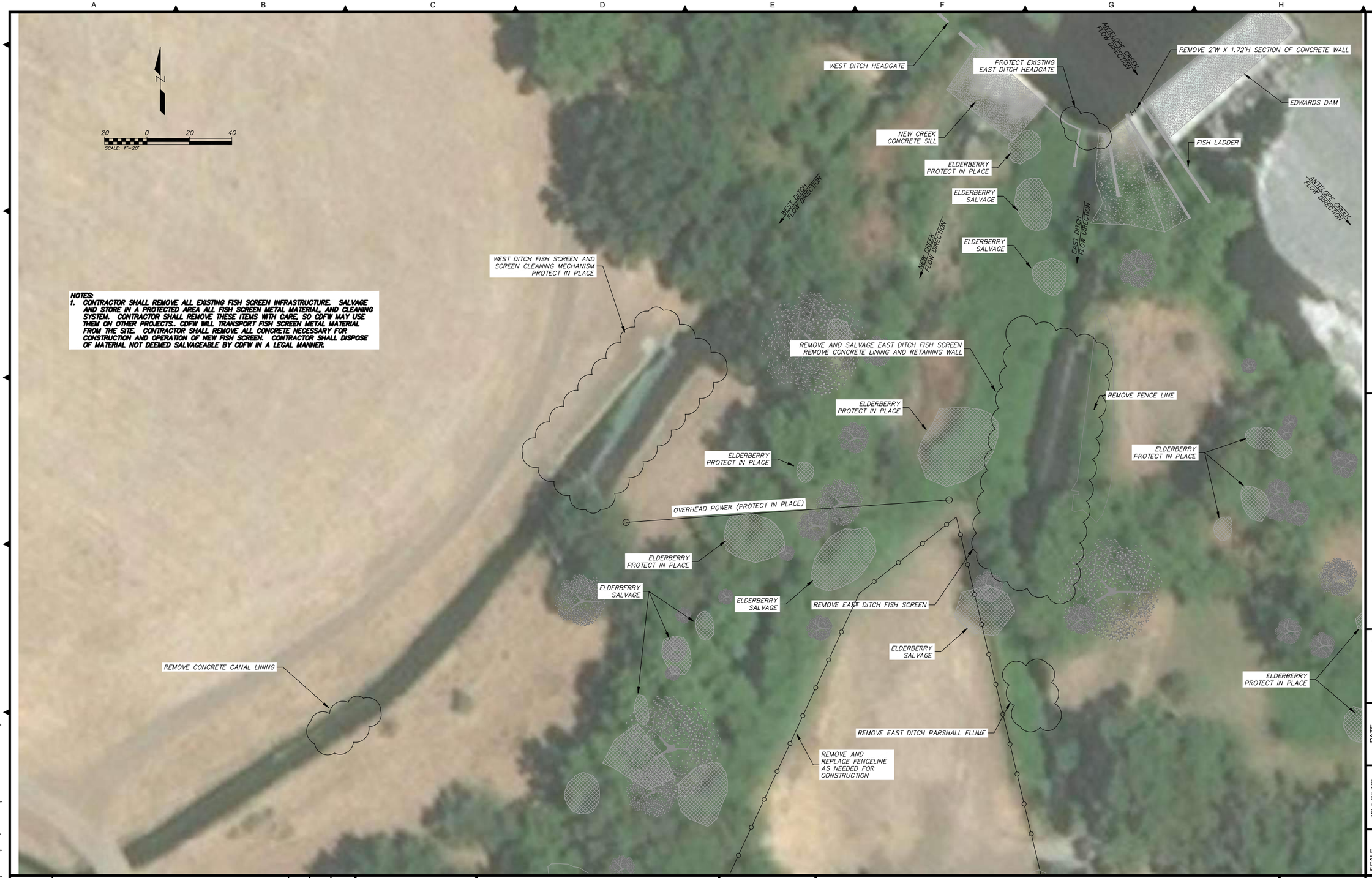
DESIGNED TJO
DRAWN TJO
CHECKED ----

DATE 5/1/2019
FILE BLACK_Front.dwg

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE NTS

C:\Users\Tommy.DE-WATER\Documents\1159 - RCDTC\1159.01 - Antelope Creek Fish Passage\3.1 - Project Design\Drafting\90_AC_Front End.dwg
May 01, 2019 - 5:02pm



Antelope Creek Fish Passage Improvement Project

DEMOLITION SHEET

DAVIS ENGINEERING INC.
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED TD/AW/JH
DRAWN JH
CHECKED ####

DATE 7.31.2018
FILE

BAR IS ONE INCH AT FULL SIZE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE 20'

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TD/AW/JH
DRAWN JH
DATE 731/2018
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
D-1
OF

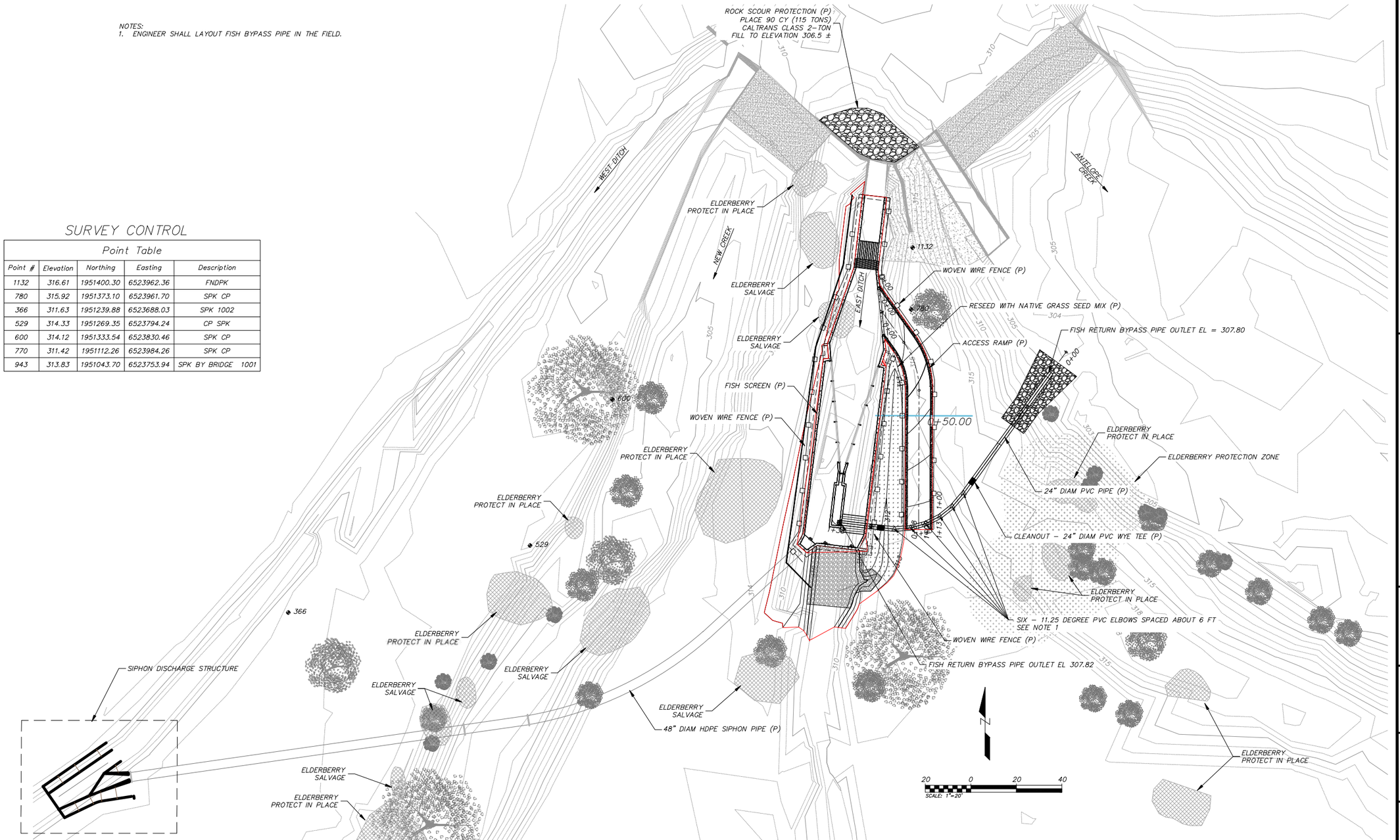
Apr 25, 2019 - 1:47pm

NOTES:
1. ENGINEER SHALL LAYOUT FISH BYPASS PIPE IN THE FIELD.

SURVEY CONTROL

Point Table

Point #	Elevation	Northing	Easting	Description
1132	316.61	1951400.30	6523962.36	FNDPK
780	315.92	1951373.10	6523961.70	SPK CP
366	311.63	1951239.88	6523688.03	SPK 1002
529	314.33	1951269.35	6523794.24	CP SPK
600	314.12	1951333.54	6523830.46	SPK CP
770	311.42	1951112.26	6523984.26	SPK CP
943	313.83	1951043.70	6523753.94	SPK BY BRIDGE 1001



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2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
C-1
####OF ####

Antelope Creek Fish Passage Improvement Project

PLAN SHEET

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
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ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED TD/MW/JH
DRAWN JH
CHECKED ####

DATE 7.31.2018
FILE

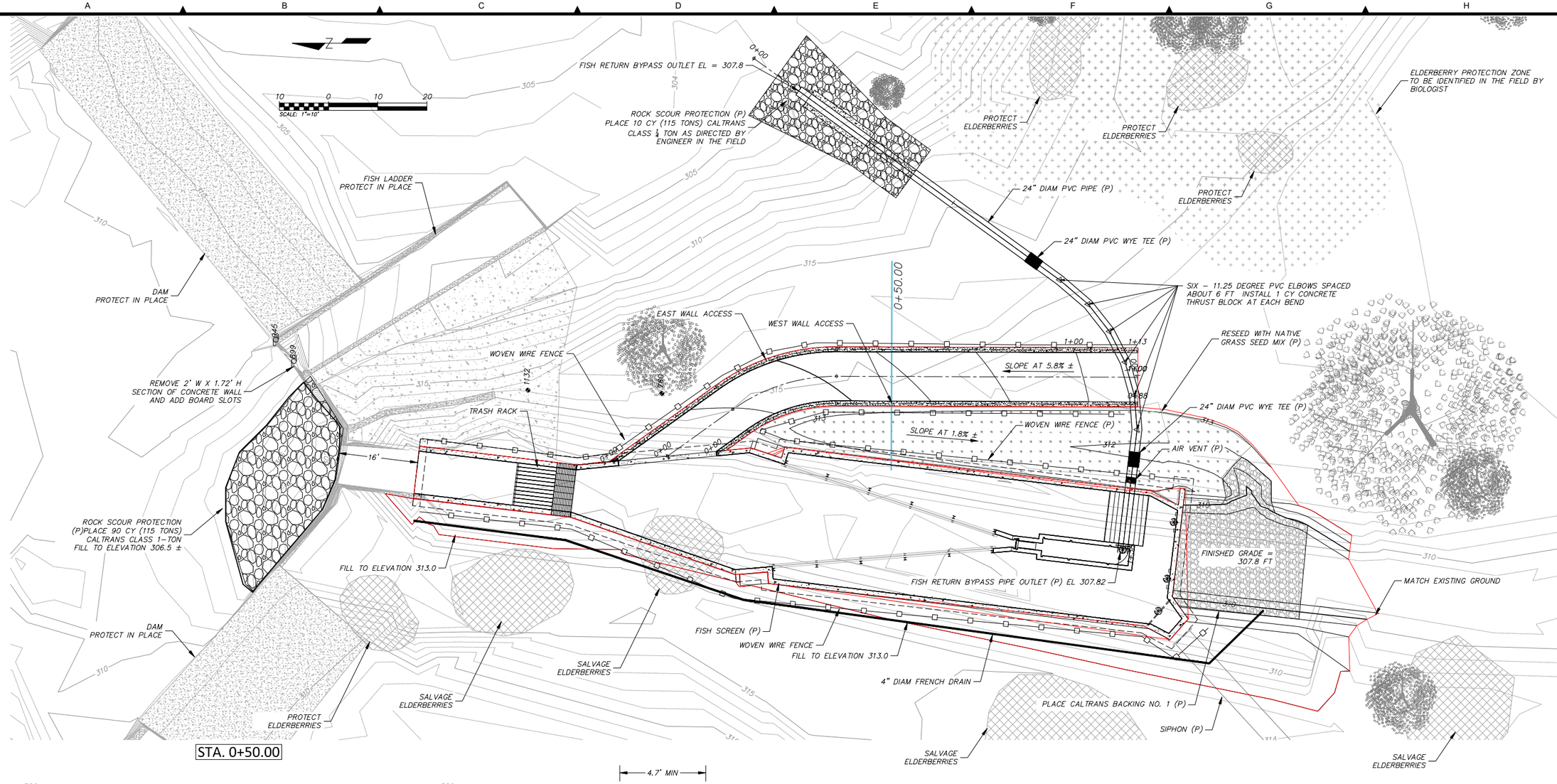
BAR IS ONE INCH AT FULL SIZE
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY
0 1"

SCALE 20'

Apr 25, 2019 - 1:48pm

FISH SCREEN PLAN

Antelope Creek Fish Passage Improvement Project



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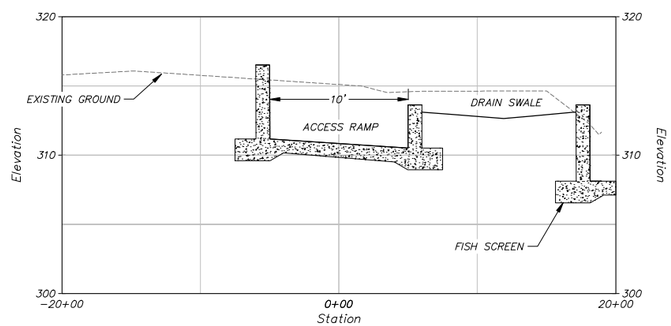
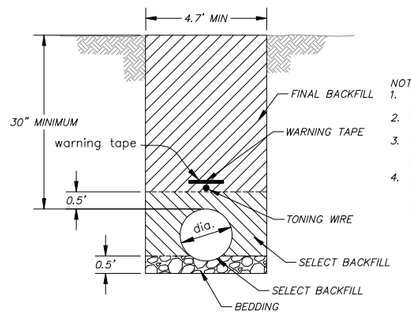
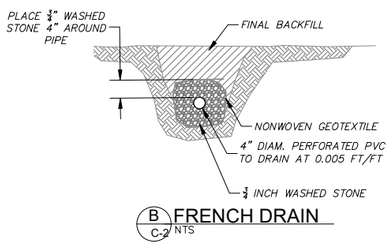


A TRENCH DETAIL
C-2 NTS



NOTES:
1. PLACE FILL OVER PIPE AS SHOWN TO PROVIDE MINIMUM COVER IN PLACES WHERE NATURAL GROUND IS LOW.
2. FINAL BACKFILL SHALL BE FREE FROM MATERIAL LARGER THAN 3 INCHES
3. SELECT BACKFILL SHALL CONSIST OF SOIL OR GRANULAR MATERIAL THAT IS FREE FROM ROCKS GREATER THAN ½ INCH IN DIAMETER
4. BEDDING SHALL BE USED ON FOUNDATIONS CONTAINING MATERIAL LARGER THAN ½ INCH. BEDING MAY BE EITHER GRANULAR MATERIAL CONFORMING TO ASTM C–33 GRADATION 7 OR 8, OR SELECT BACKFILL MATERIAL.



B FRENCH DRAIN
C-2 NTS

REVISION	DESCRIPTION	BY	APP	DATE

Apr 25, 2019 – 1:40pm

WORK ORDER NO. 1159.01
DESIGNED TO/MW/JH
DRAWN JH
DATE 7.31.2018
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

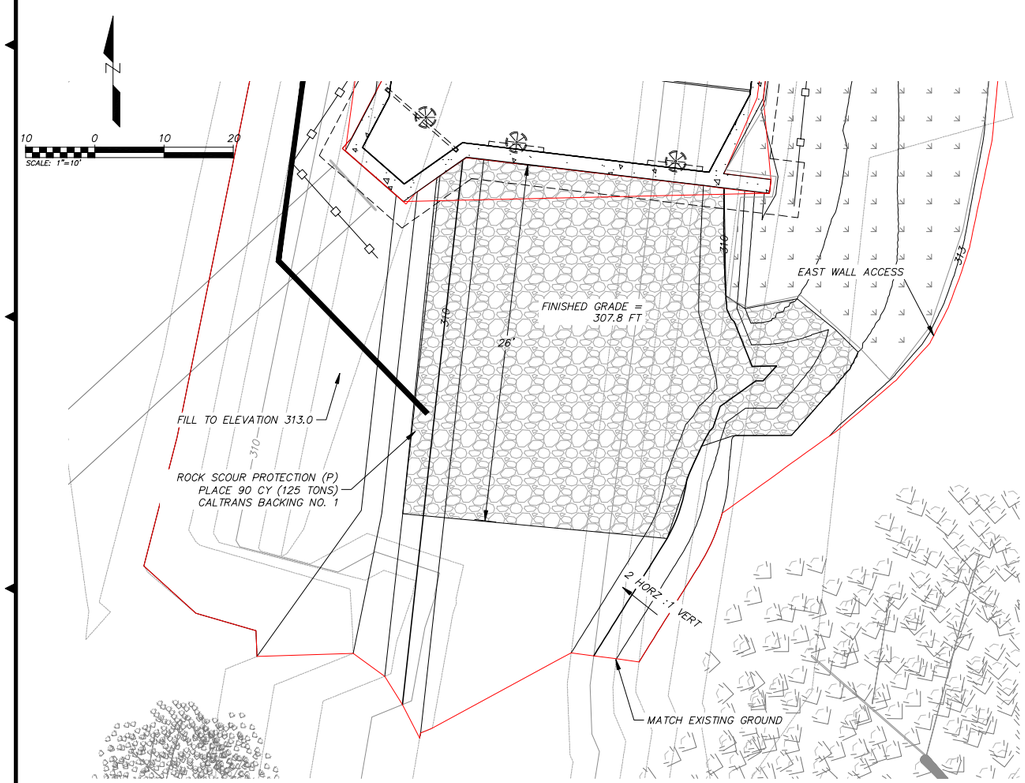
SHEET NUMBER
C-2
####OF ####

DESIGNED TO/MW/JH
DRAWN JH
CHECKED ####
DATE 7.31.2018
FILE
BAR IS ONE INCH AT FULL SIZE
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY
SCALE 20'

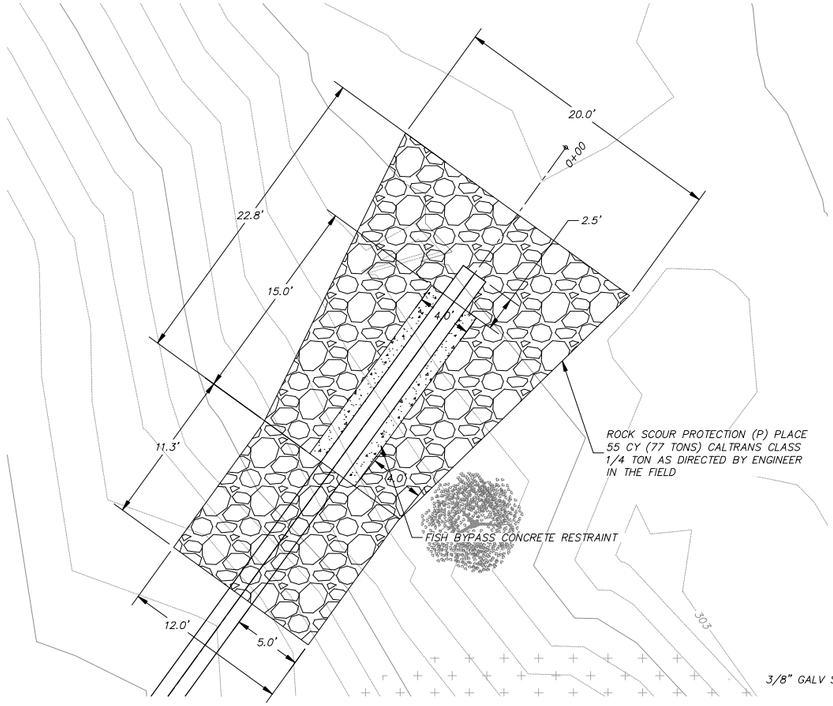
DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

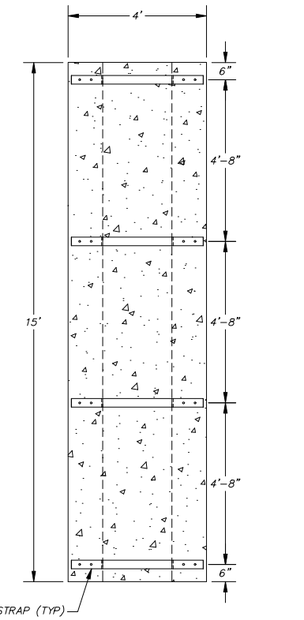
ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331



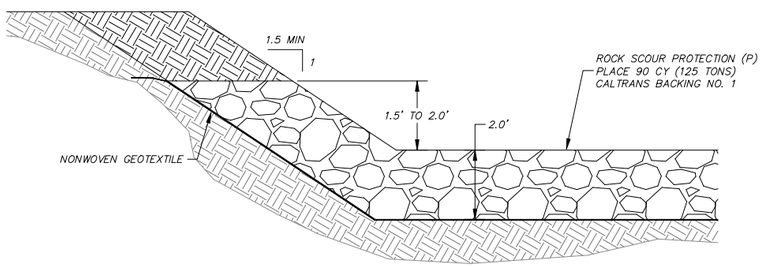
A C-3 DITCH SCOUR PROTECTION PLAN
H: 1"=10' V: 1"=10'



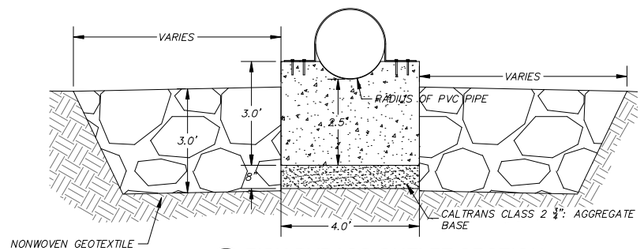
C C-3 FISH BYPASS APRON PLAN
H: 1"=5' V: 1"=5'



D C-3 FISH BYPASS APRON PLAN
H: 1"=2' V: 1"=2'

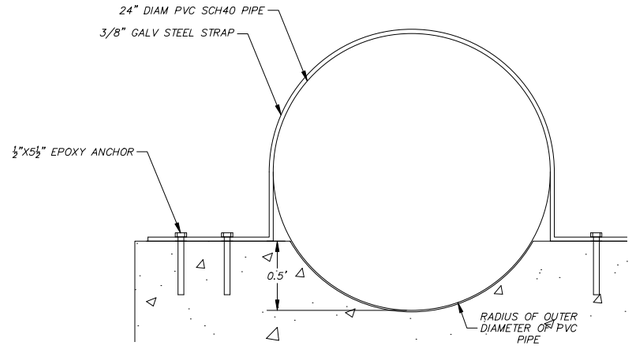


B C-3 DITCH SCOUR PROTECTION DETAIL
H: 1"=2' V: 1"=2'

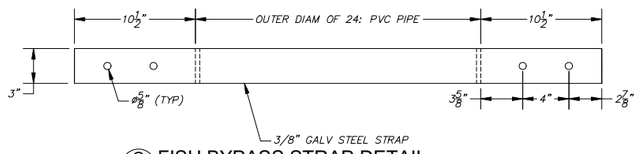


E C-3 FISH BYPASS OUTLET SECTION
H: 1"=2' V: 1"=2'

NOTES:
1. SEE SHEET S201 FOR STEEL DETAILS



F C-3 FISH BYPASS RESTRAINT
H: 1"=6" V: 1"=6"



G C-3 FISH BYPASS STRAP DETAIL
H: 1"=6" V: 1"=6"

BYPASS AND DITCH DETAILS

Antelope Creek Fish Passage Improvement Project

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TD/MW/JH
DRAWN JH
DATE 7/31/2018
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
C-3
####OF####

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Aquatic
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED TD/MW/JH
DRAWN JH
CHECKED ####

DATE 7.31.2018
FILE

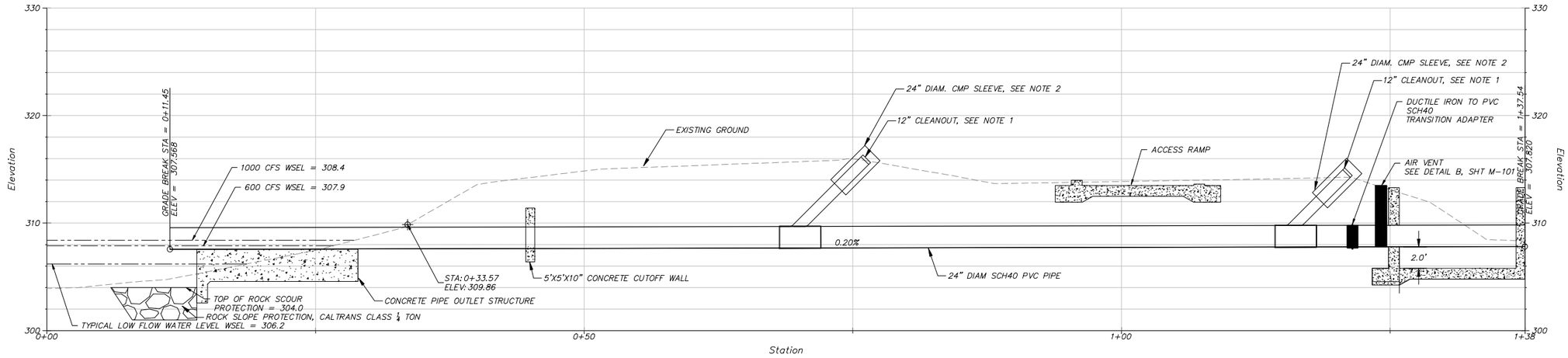
BAR IS ONE INCH AT FULL SCALE
0 1" IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE 20'

Apr 26, 2019 - 1:40pm

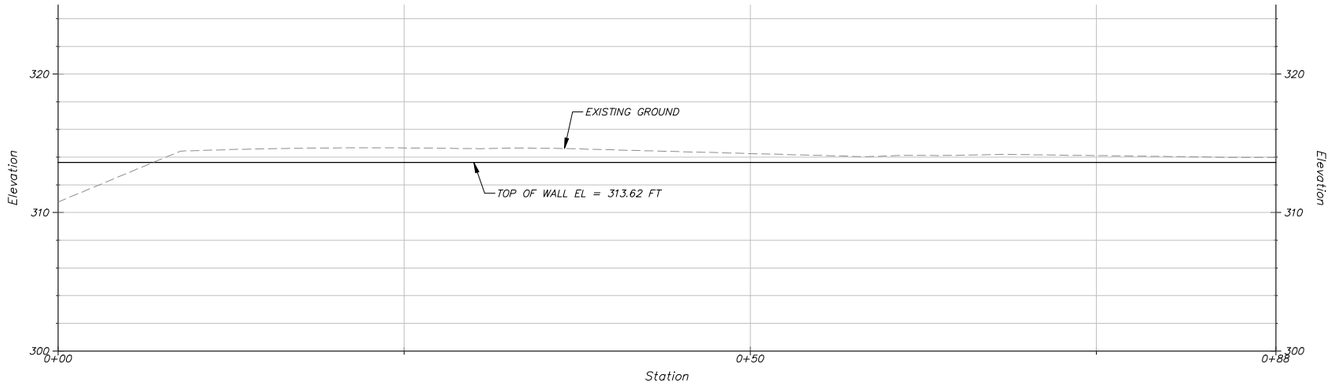
5 4 3 2 1

Fish_Return PROFILE

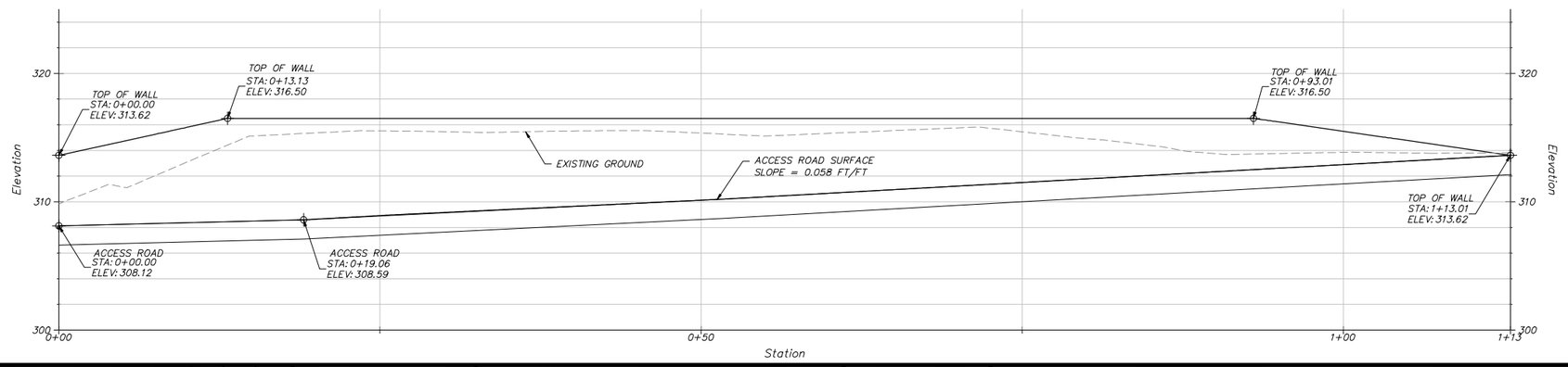


NOTE:
1. CLEANOUT CONSISTS OF 24"X24"X12" WYE TEE TO A 12 INCH PVC PIPE RISER AND REMOVABLE CAP
2. INSTALL 24" DIAMETER X 4.5' CMP TO FORM A PROTECTIVE SLEEVE AROUND CLEANOUT.

WEST WALL ACCESS PROFILE



EAST WALL ACCESS WALL PROFILE



Antelope Creek Fish Passage Improvement Project

PROFILE SHEET

DAVIS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

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14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-8331

DESIGNED TO/MW/JH
DRAWN JH
CHECKED ####

DATE 7.31.2018
FILE

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE 20'

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TO/MW/JH
DRAWN JH
DATE 731/2018
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

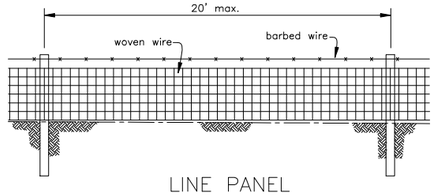
RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

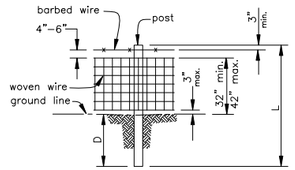
Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
C-4
OF

Apr 29, 2019 - 1:51pm



LINE PANEL



WOVEN WIRE W/ONE BARB DETAIL

WOVEN WIRE

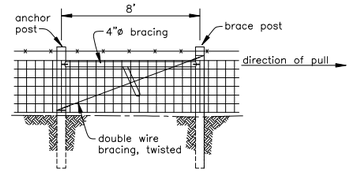
Top and bottom wires shall be 10 gauge or heavier and line and stay wires shall be 12 1/2 gauge or heavier.

There will be a minimum of 6 horizontal wires with a max. of 12 inch spacing between stay wires.

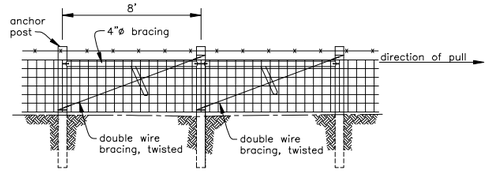
The label shall indicate the wire meets ASTM A–116 or ASTM A–584 standards.

LINE	Wood:	L = 7 ft. min. D = 2.5 ft. min. Dia. = 3 in. min.	Steel:	L = 6 ft. min. D = 22 in. min. Standard "T" or "U"; ≥ 1.25 lbs/ft of length
CORNER OR GATE	Wood:	L = 7 ft. min. D = 3 ft. min. Dia. = 6 in. min.	Steel:	L = 7 ft. min. D = 3 ft. min. (set in conc.) Dia. = Round 2–3/8 in. O.D. or Angle iron 2–1/2 x2–1/2 x1/4 (in.)
STAYS	Wood: 1–1/2 in. dia. min. Fiberglass: Any manufactured for this purpose Wire: 9 1/2 gauge, zinc coated			

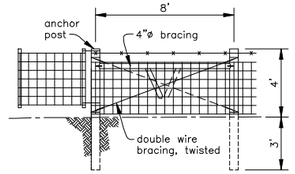
NOTES:
1. WOOD POSTS SHALL BE PRESSURE TREATED.



1–SPAN END



2–SPAN END



GATE BRACE

1. Double wrap all bracing.
2. All brace posts to be 7' long, 3' embedment.
3. Dap braces into posts.
4. Spike braces to posts.

This drawing requires supporting technical documentation prior to use and must be adapted to the specific site.

Drawing not to scale.

Antelope Creek Fish Passage Improvement Project

DETAIL SHEET

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Aquatic Group
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-8331

DESIGNED TO/MW/MW
DRAWN JH
CHECKED ####

DATE 7.31.2018
FILE

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE Varies

REVISION	DESCRIPTION	BY	APP	DATE

Apr 29, 2019 - 1:51pm

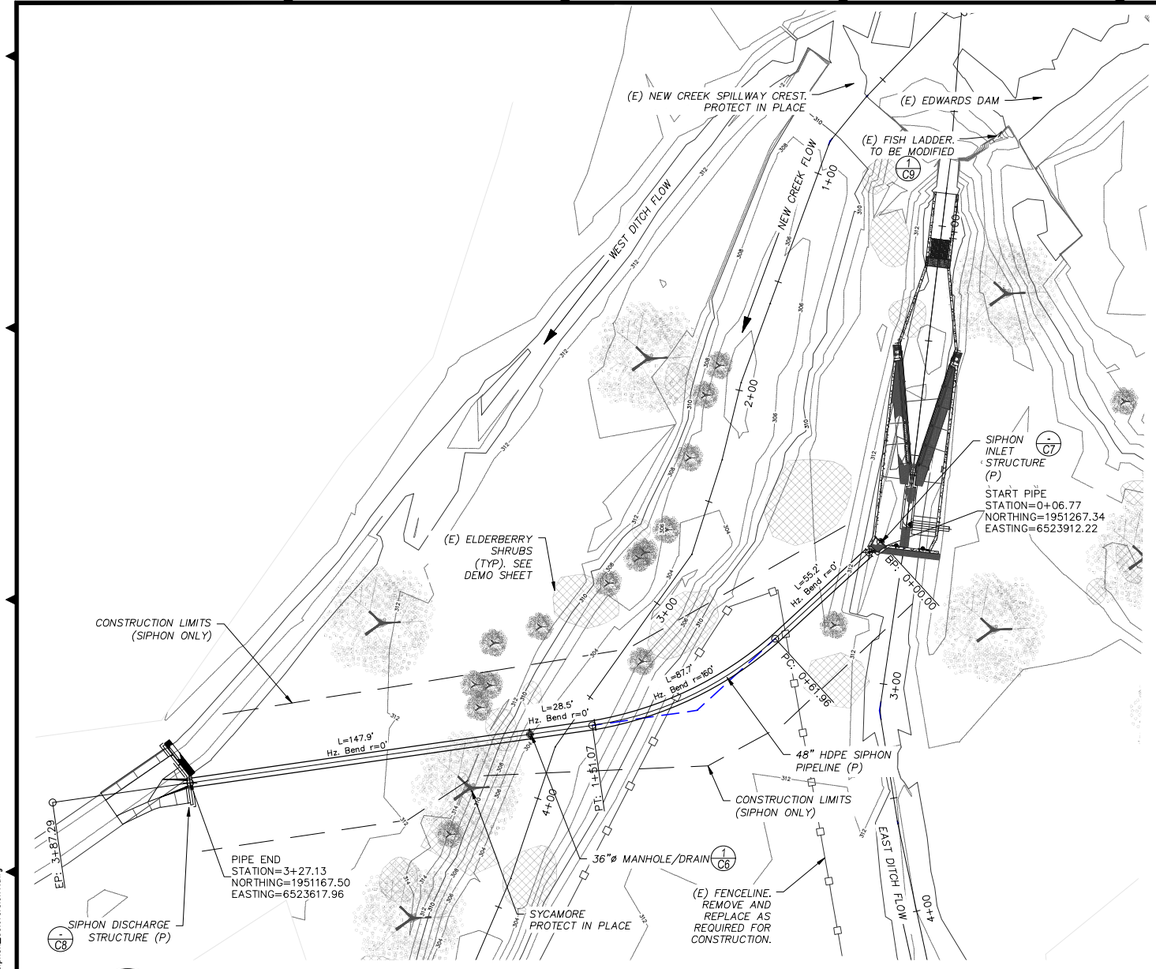
WORK ORDER NO. 1159.01
DESIGNED TO/MW/JH
DRAWN JH
DATE 731/2018
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

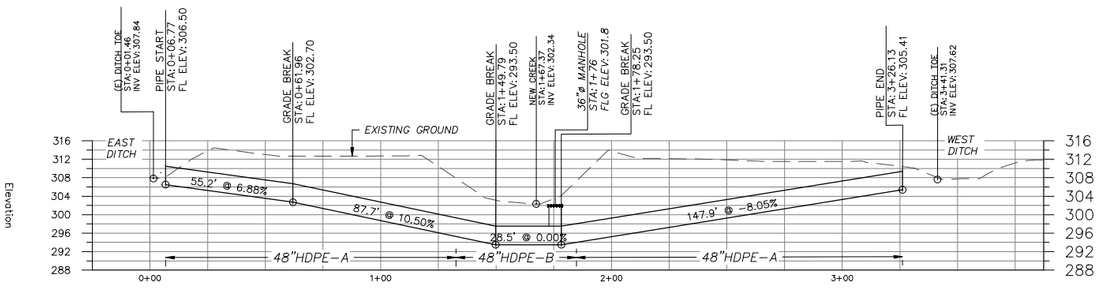
NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

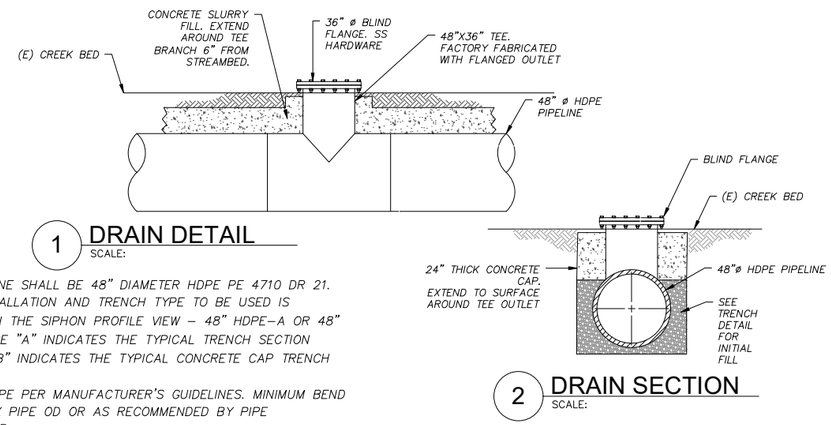
SHEET NUMBER
C-5
OF



SIPHON ALIGNMENT
SCALE: 1" = 30'



SIPHON PROFILE
SCALE: H = V=

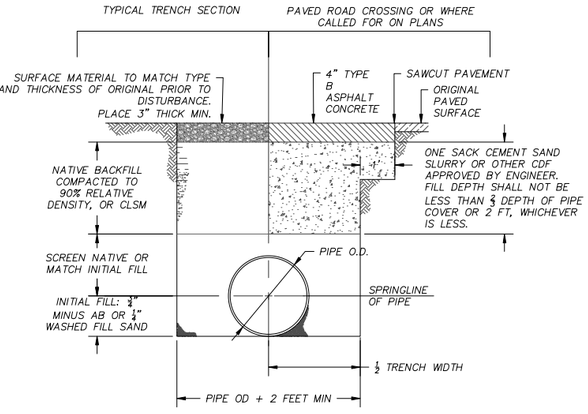


1 DRAIN DETAIL
SCALE:

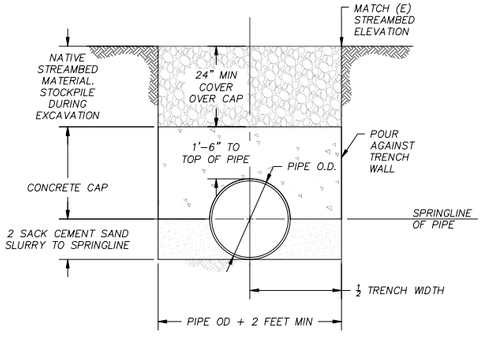
2 DRAIN SECTION
SCALE:

NOTE:

1. SIPHON PIPELINE SHALL BE 48" DIAMETER HDPE PE 4710 DR 21.
2. THE PIPE INSTALLATION AND TRENCH TYPE TO BE USED IS DESIGNATED IN THE SIPHON PROFILE VIEW – 48" HDPE–A OR 48" HDPE–B WHERE "A" INDICATES THE TYPICAL TRENCH SECTION DETAIL AND "B" INDICATES THE TYPICAL CONCRETE CAP TRENCH DETAIL
3. COLD BEND PIPE PER MANUFACTURER'S GUIDELINES. MINIMUM BEND RADIUS =27 X PIPE OD OR AS RECOMMENDED BY PIPE MANUFACTURER.



A TYPICAL TRENCH SECTION AND ROAD CROSSING DETAIL
SCALE: 1" = 2'



B TYPICAL CONCRETE CAP TRENCH DETAIL
SCALE: 1" = 2'

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 5/1/2019
CHECKED AAA
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

60% Design Phase

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
C6
6 OF ##

Antelope Creek Fish Passage Improvement Project

Siphon Plan & Profile

DESIGNED TJO
DRAWN TJO
CHECKED AAA
DATE 5/1/2019
FILE AC_Siphon_Alignment

BAR IS ONE INCH AT FULL SCALE
IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY
0 1"
SCALE NTS

DAVIS ENGINEERING, INC
1772 Picasso Ave, Suite A
Davis, CA 95618
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Cascade
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ONE WATER CONSULTING
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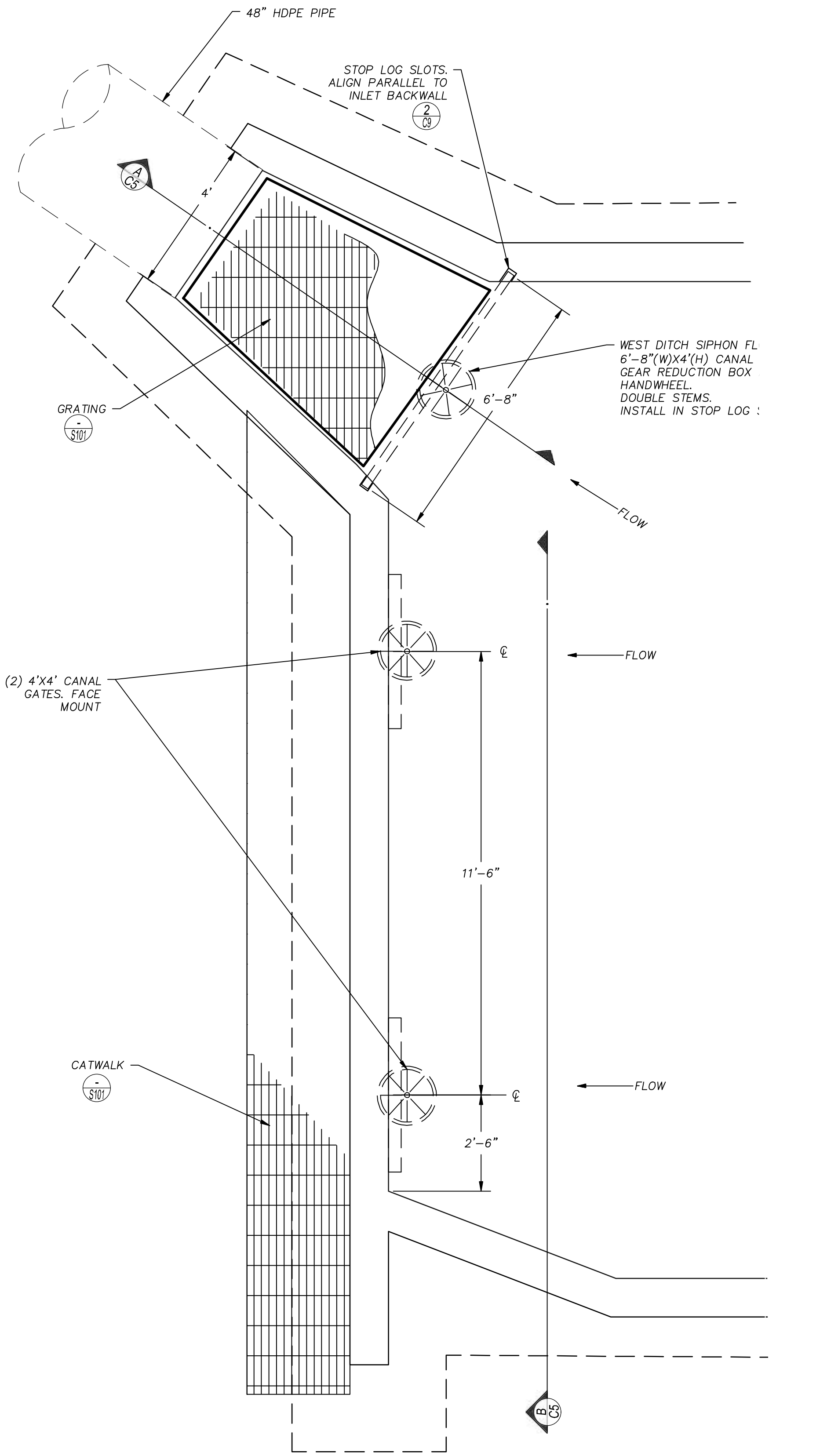
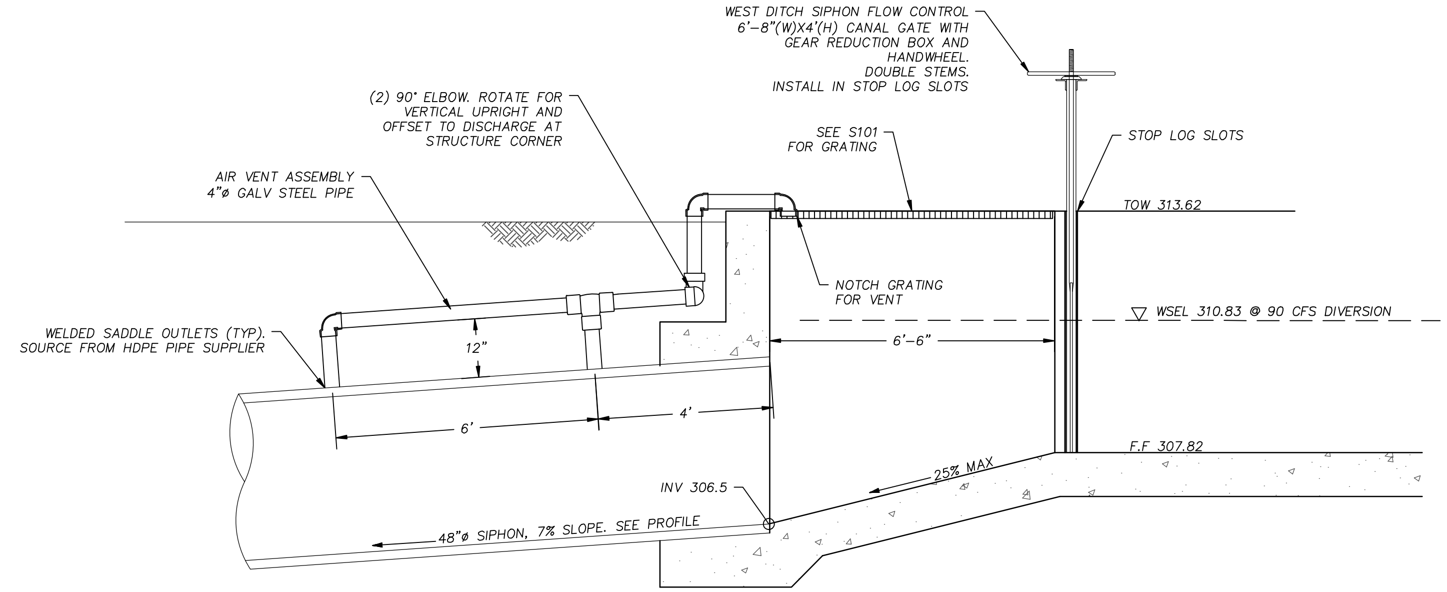
Reno, Nevada 89511
Phone: (775) 287-9331

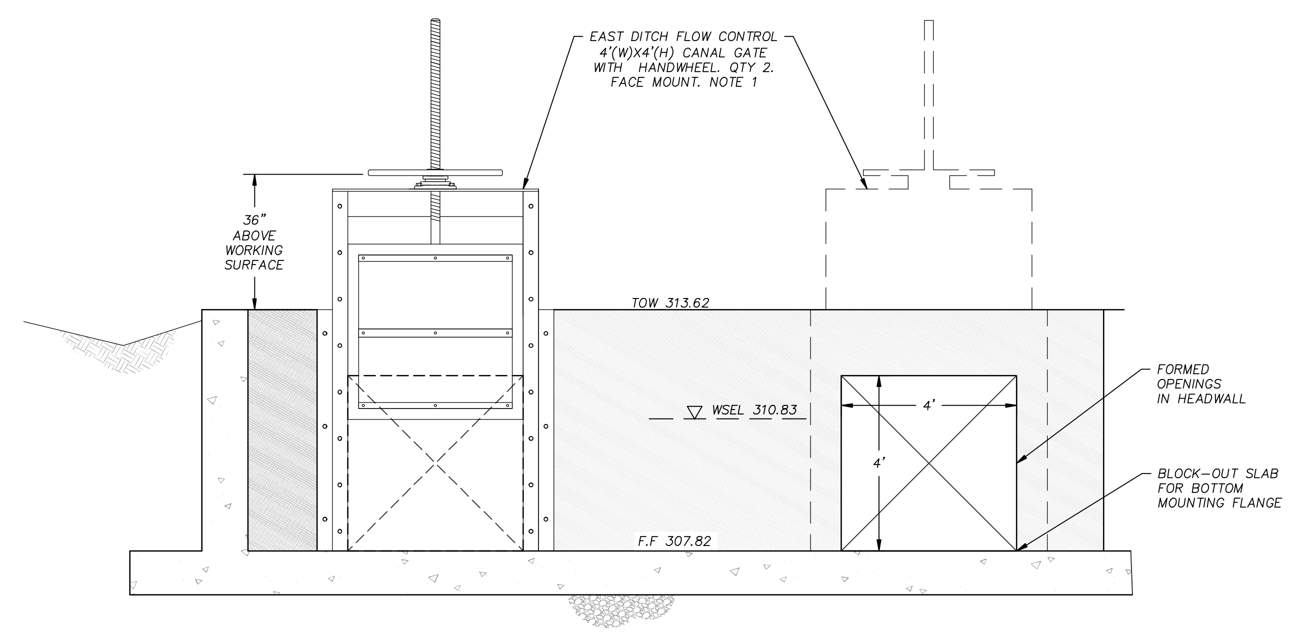
C:\Users\Tommy.DE-WATER\Documents\1159 - RCDTC\1159.01 - Antelope Creek Fish Passage\3.1 - Project Design\Drafting\AC_Siphon_60%version1.dwg
May 01, 2019 - 5:15pm



SIPHON INLET AND FLOW CONTROL STRUCTURE
SCALE: 1" = 4'



A SECTION A
SCALE: 1" = 2'



B SECTION B
SCALE: 1" = 2'

NOTES:
1. Gates shall be Fresno Casting and Valves (559)834-2511) Series 8200 Fabricated Slide Gate, or preapproved equal.

FLOW CONTROL HEADINGS

Antelope Creek Fish Passage Improvement Project

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
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Cascade
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ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED ####
DRAWN TJO
CHECKED AAA

DATE 5/1/2019
FILE

BAR IS ONE INCH AT FULL SCALE. IF NOT ONE INCH ON THIS SHEET, SCALE ACCORDINGLY

SCALE NTS

REVISION	DESCRIPTION	BY	APP	DATE

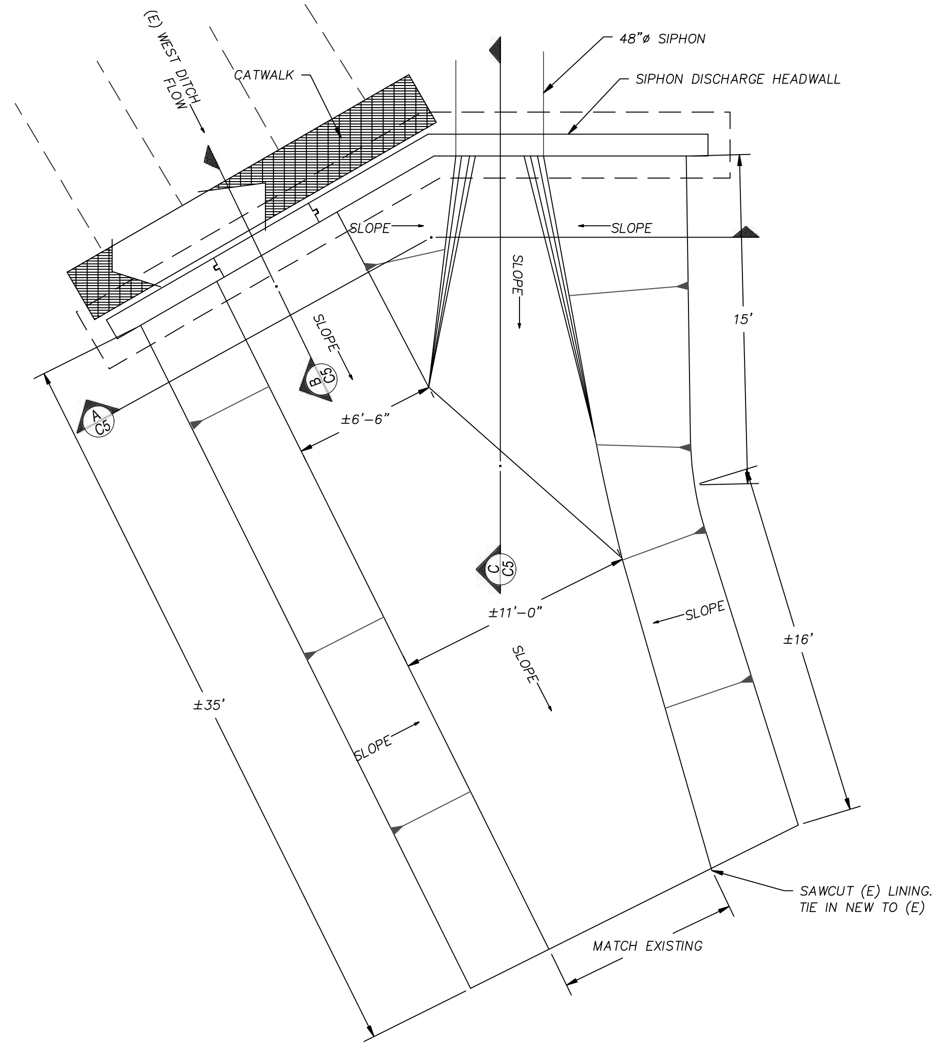
WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 5/1/2019
CHECKED AAA
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

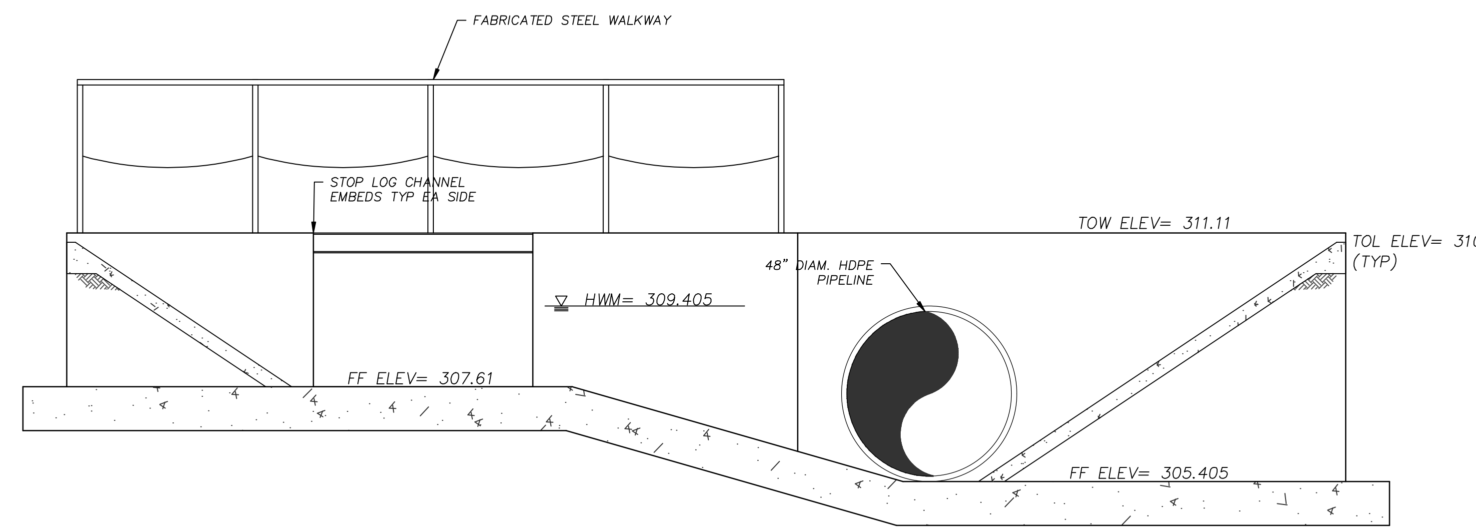
NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

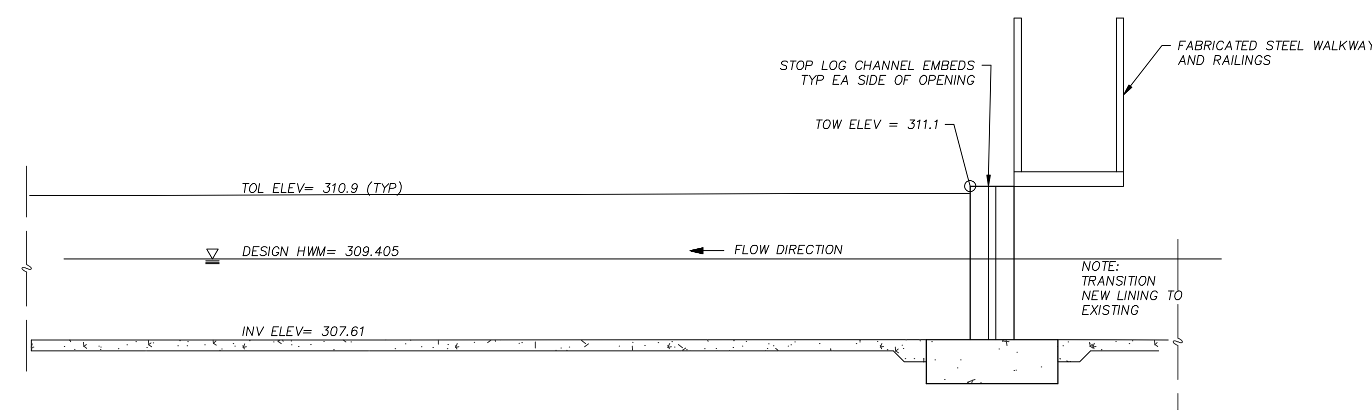
SHEET NUMBER
C7
7 OF ##



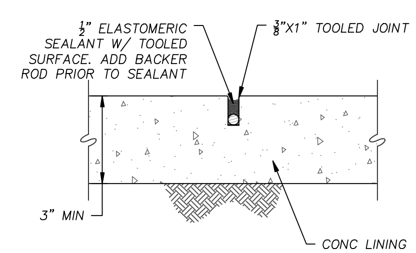
- SIPHON DISCHARGE STRUCTURE
SCALE: 1" = 4'



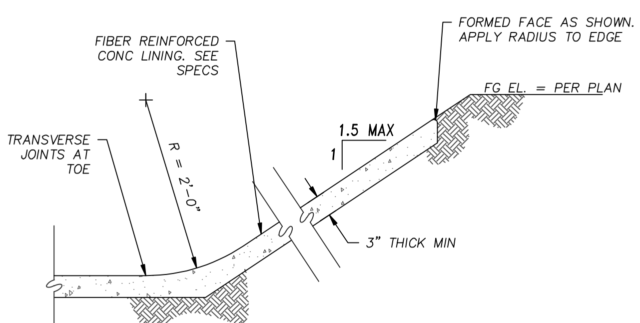
A SECTION A
SCALE: 1" = 2'



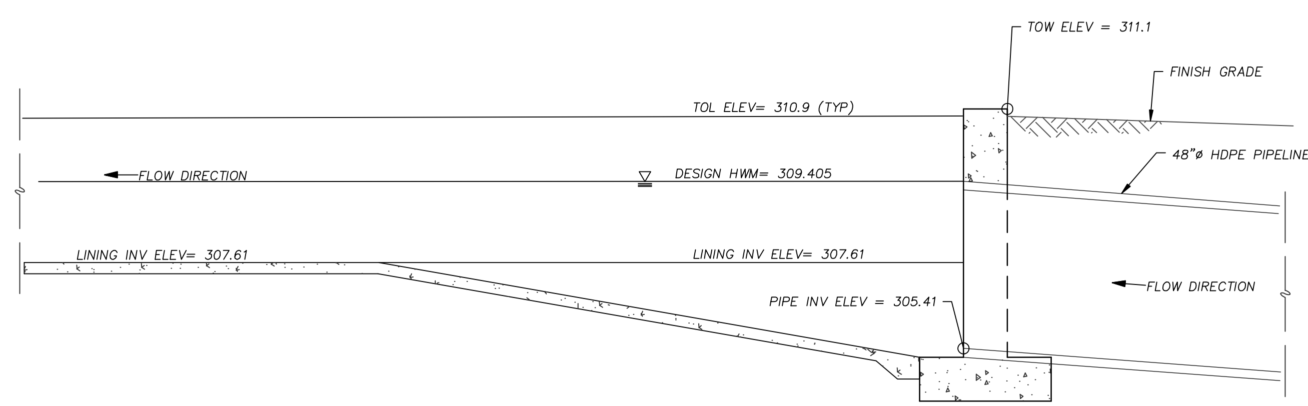
B SECTION B
SCALE: 1" = 2'

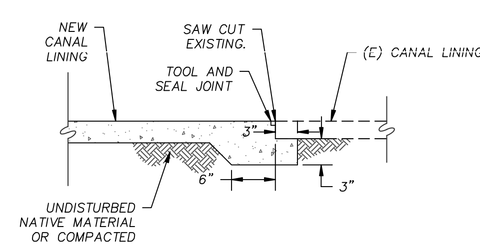


2 JOINT
SCALE: 1" = 1'



1 TYPICAL LINING SECTION
SCALE: 1" = 1'





NOTES:
1. Transverse joints span entire canal cross-section perpendicular to canal centerline
2. Install joints at 12'-0" max spacing on all new lining

3 LINING CONNECTION
SCALE: 1" = 1'

C SECTION C
SCALE: 1" = 2'

SIPHON DISCHARGE STRUCTURE

Antelope Creek Fish Passage Improvement Project

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ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED ####
DRAWN TJO
CHECKED ----
DATE 5/1/2019
FILE C_60_SIPHON_DISCHARGE_v1

BAR IS ONE INCH AT FULL SCALE. IF NOT ONE INCH ON THIS SHEET, SCALE ACCORDINGLY
0 1"

SCALE NTS

REVISION	DESCRIPTION	BY	APP	DATE

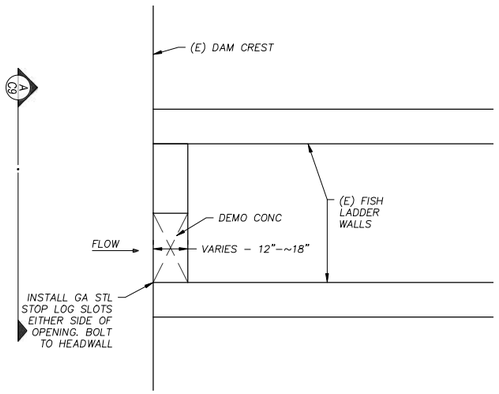
WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 5/1/2019
CHECKED ----
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

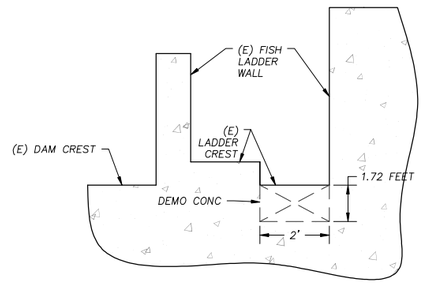
NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

SHEET NUMBER
C8
8 OF ##

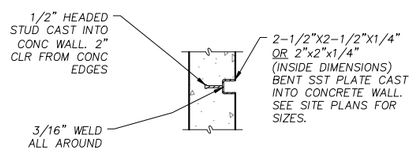


PLAN
SCALE: 1" = 2'

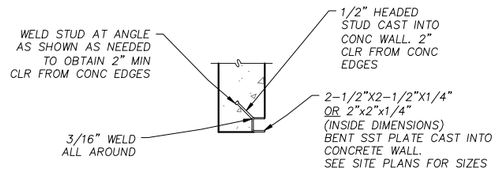


A-A SECTION A
SCALE: 1" = 2'

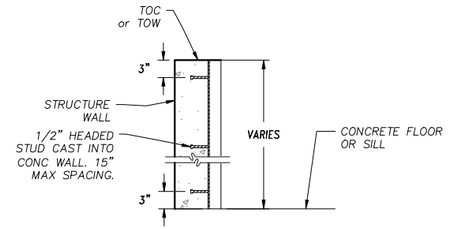
1 FISH LADDER MODIFICATION
SCALE: 1" = 2'



PLAN - TYPE A



PLAN - TYPE B



PROFILE

NOTES:
1. Board guides to be aligned properly to accept straight boards.
2. Board guides to extend 5 1/2" above weir wall for LCWs. Install flush with top of concrete structure for all other structures. Board guides to extend to structure floor.

2 FABRICATED STOP LOG GUIDE DETAIL
SCALE: 1" = 1'

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. 1159.01
DESIGNED TJO
DRAWN TJO
DATE 4/30/2019
CHECKED ----
SUBMITTED
RECOMMENDED
APPROVED ----

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

Antelope Creek Fish Passage Improvement Project

DETAILS

DESIGNED TJO
DRAWN TJO
CHECKED ----
DATE 4/30/2019
FILE C_60_SIPHON_DISCHARGE_v1
SCALE NTS

WAS BL ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

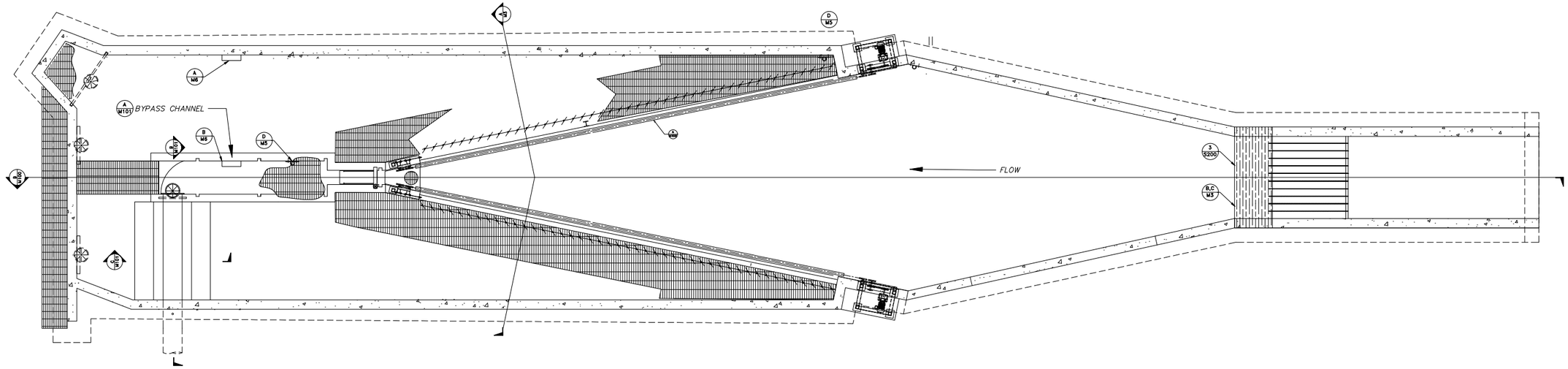
DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

SHEET NUMBER
C9
9 OF ##

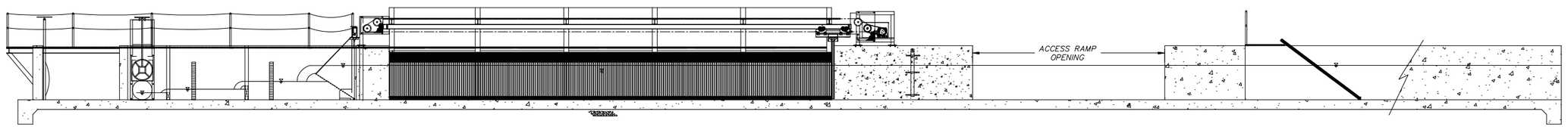
C:\Users\Tommy.DE-WATER\Documents\1159 - RCDTC\1159.01 - Antelope Creek Fish Passage\3.1 - Project Design\Drafting\60percent\C_60_SIPHON_DISCHARGE_v1.dwg
May 01, 2019 - 5:14pm



INTAKE PLAN

SCALE: 3/16" = 1'– 0"

A M100



INTAKE PROFILE

SCALE: 3/16" = 1'– 0"

B M100

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED X

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

INTAKE PLAN

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1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY
0 1"

SCALE NTS

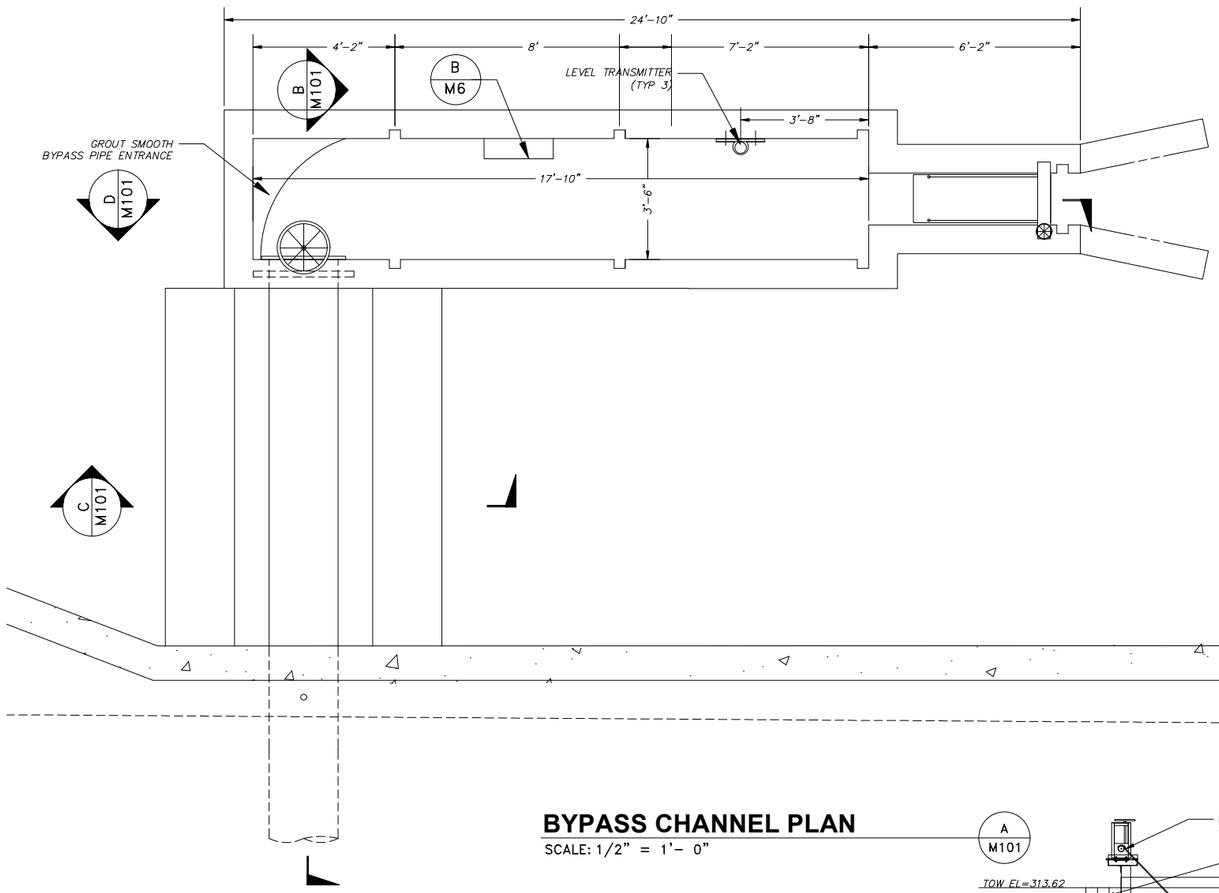
ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

SHEET NUMBER

M100

####OF ####

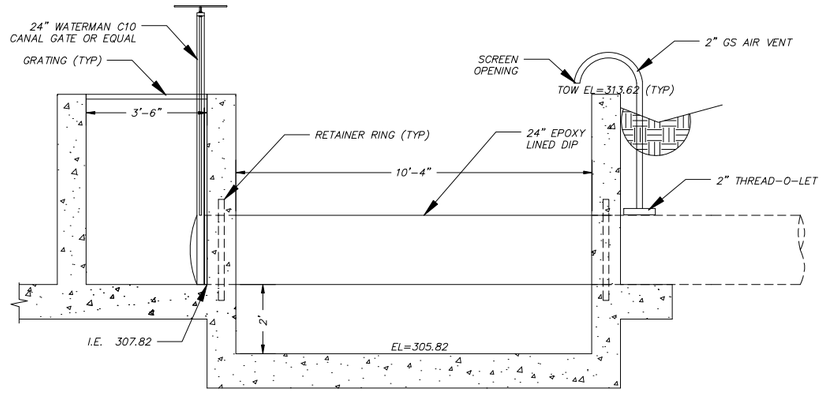
C:\Users\Administrator\Documents\2017\Active\17006 Antelope CA\Design\dwgs\60 PERCENT\100_PERCENT M SHEETS.dwg
Apr 30, 2019 - 5:14pm



BYPASS CHANNEL PLAN

SCALE: 1/2" = 1'- 0"

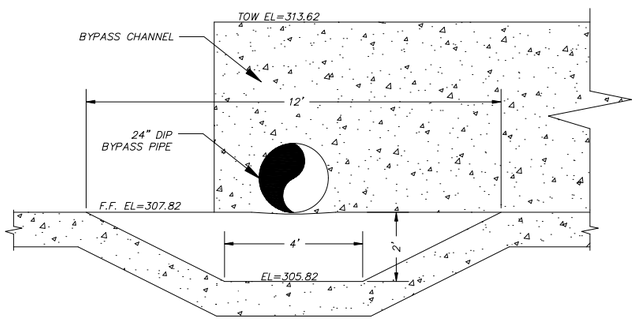
A M101



BYPASS PIPE SECTION

SCALE: 1/2" = 1'- 0"

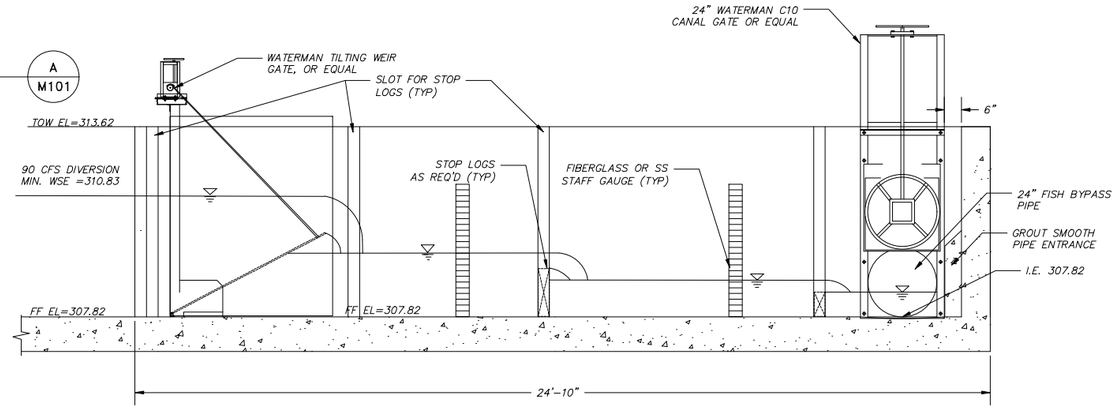
B M101



BYPASS PIPE SECTION

SCALE: 1/2" = 1'- 0"

C M101



BYPASS CHANNEL PROFILE

SCALE: 1/2" = 1'- 0"

D M101

BYPASS CHANNEL SECTIONS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M101
####OF ####

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/1019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY
0 1"

SCALE NTS

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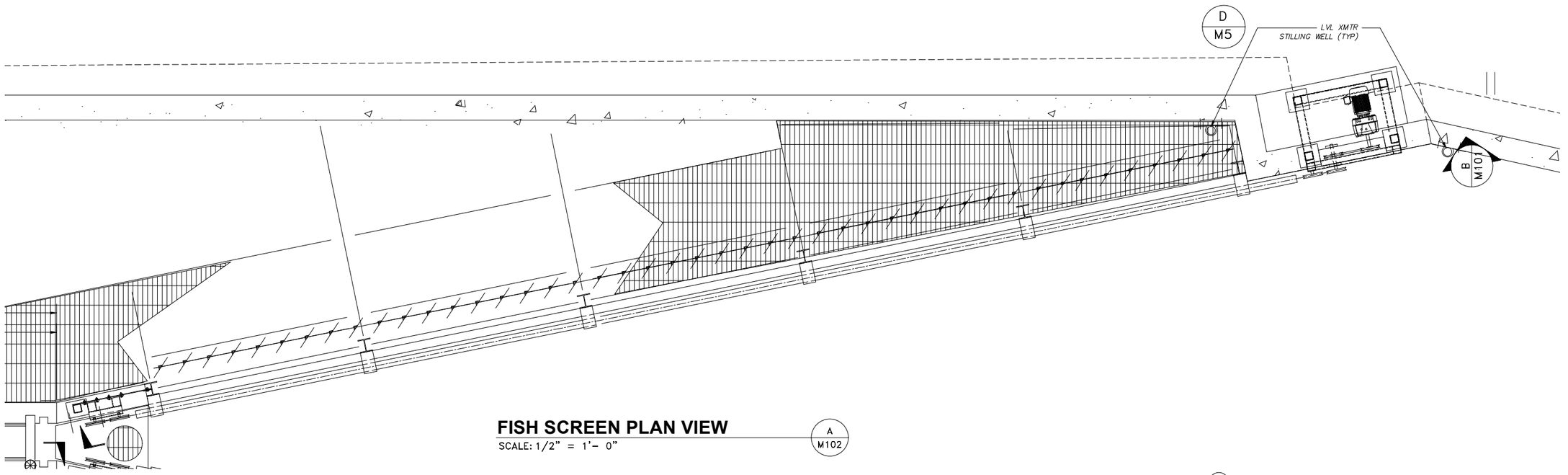
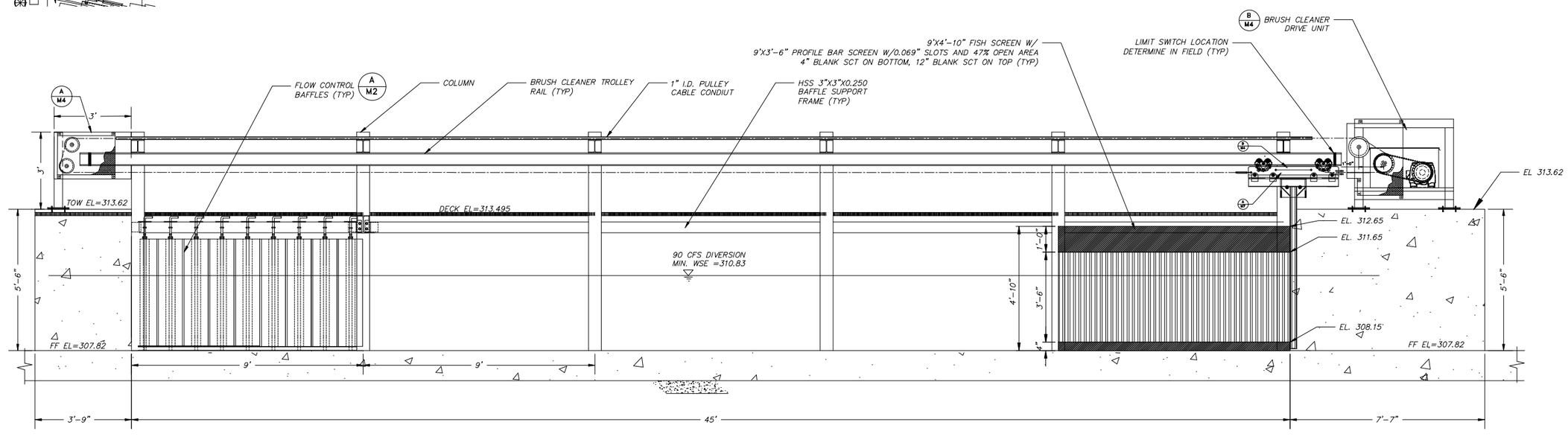
Apr 30, 2019 - 5:15pm



FISH SCREEN PLAN VIEW

SCALE: 1/2" = 1'- 0"

A M102



FISH SCREEN PROFILE

SCALE: 1/2" = 1'- 0"

B M102

INTAKE SECTIONS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

DAVIDS ENGINEERING, INC
1772 Picasso Ave, Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2018
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE NTS

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED X

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M102
####OF ####

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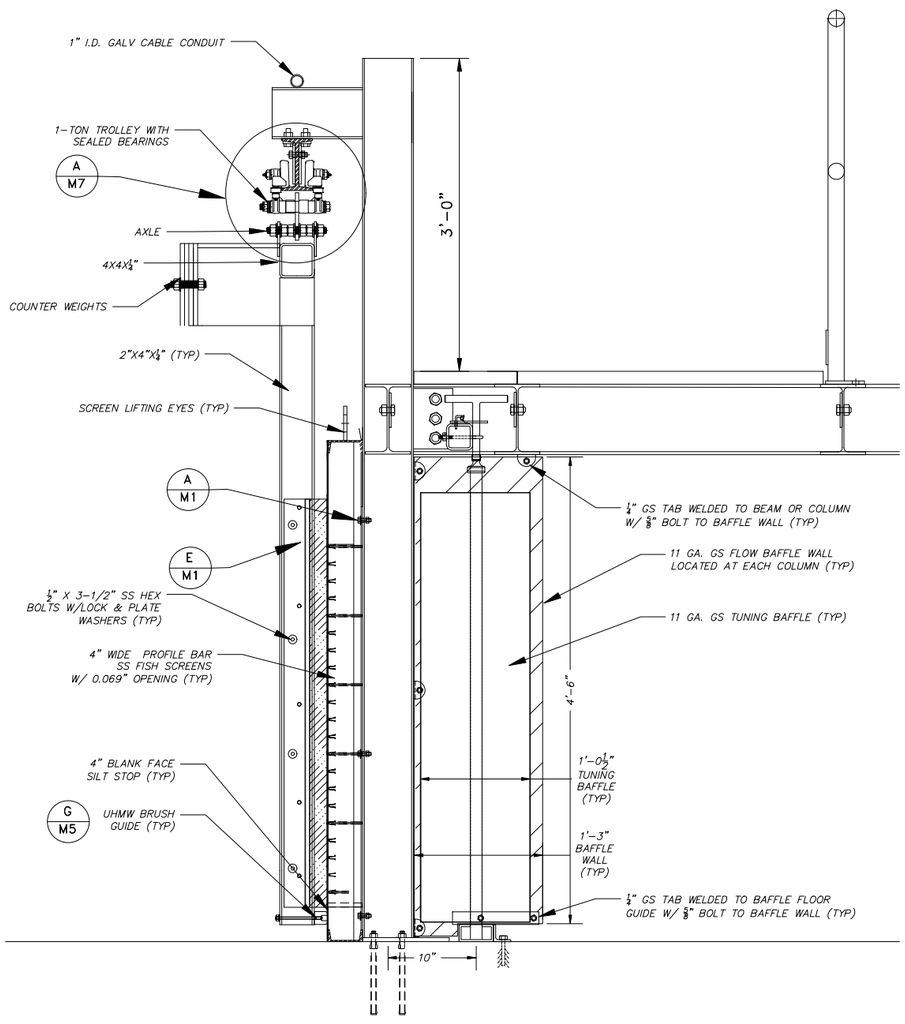
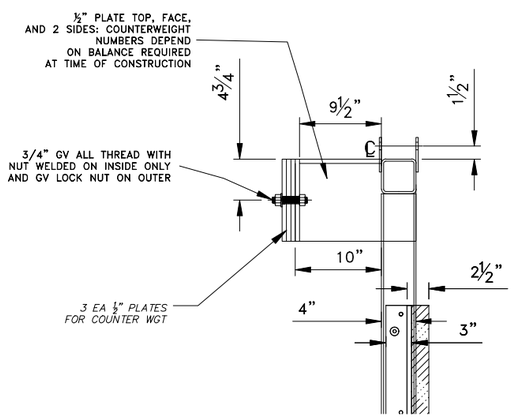
Apr 30, 2019 - 5:10pm



BRUSH DETAILS

SCALE: 1-1/2"=1'

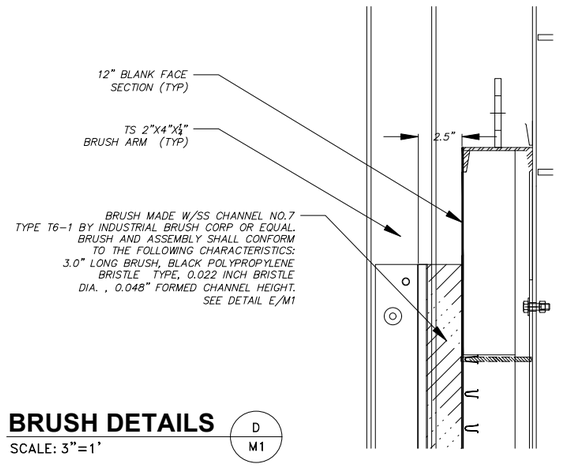
C M1



COUNTER WEIGHT ASSEMBLY

SCALE: 1-1/2"=1'

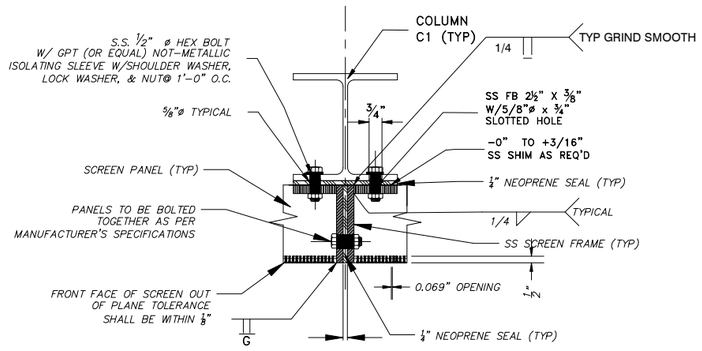
F M1



BRUSH DETAILS

SCALE: 3"=1'

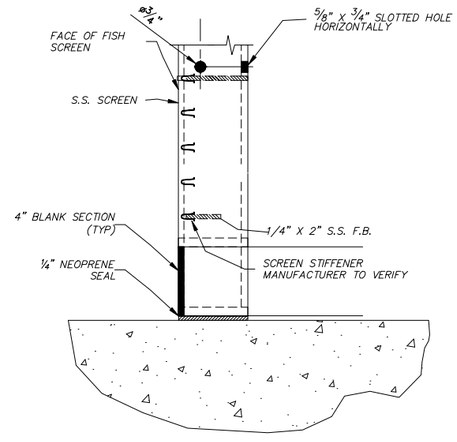
D M1



SCREEN CONNECTION DETAILS

SCALE: 3"=1'

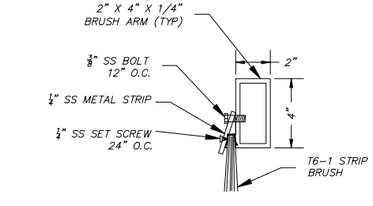
A M1



VIEW

SCALE: 3"=1'

B M1



BRUSH DETAIL

SCALE: NTS

E M1

C:\Users\Administrator\Documents\2017\Active\17006 Antelope Cr\Design\dwgs\60 PERCENT\100_PERCENT M SHEETS.dwg
Apr 30, 2019 - 4:32pm

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED ####

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SCREEN & CLEANER DETAILS

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

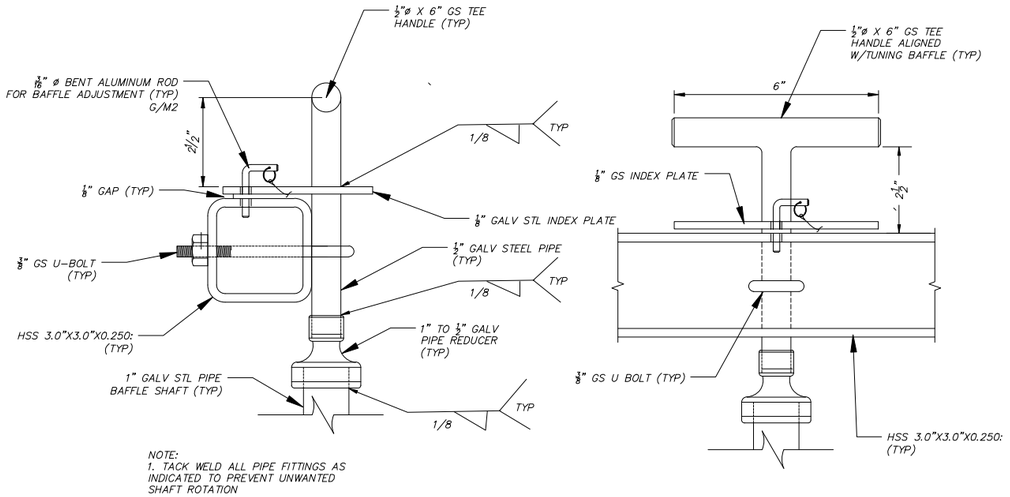
BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY

SCALE NTS

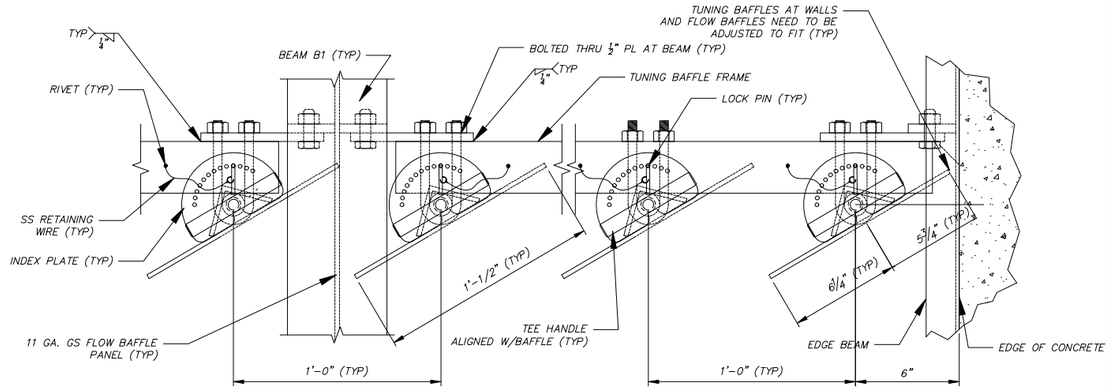
SHEET NUMBER

M1

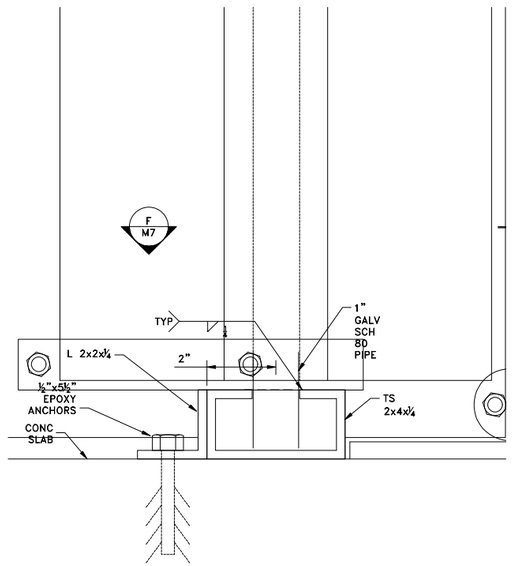
####OF####



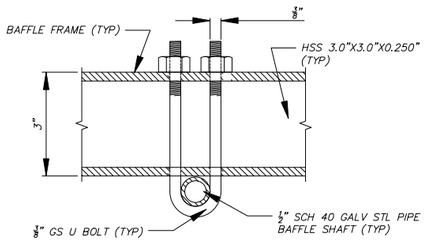
BAFFLE DETAILS (A / M2)
SCALE: 1"=2"



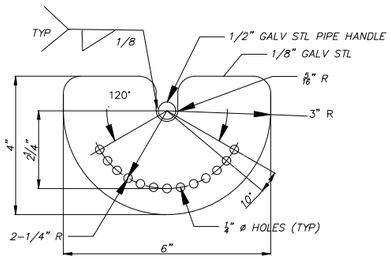
BAFFLE DETAILS (B / M2)
SCALE: 3" = 1'



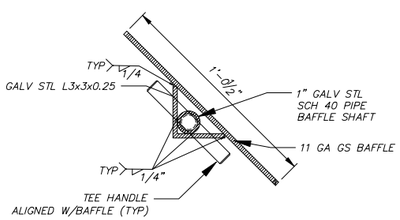
BAFFLE MOUNTING DETAILS (C / M2)
SCALE: 1"=2"



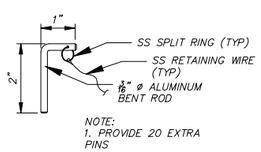
BAFFLE DETAILS (D / M2)
SCALE: NTS



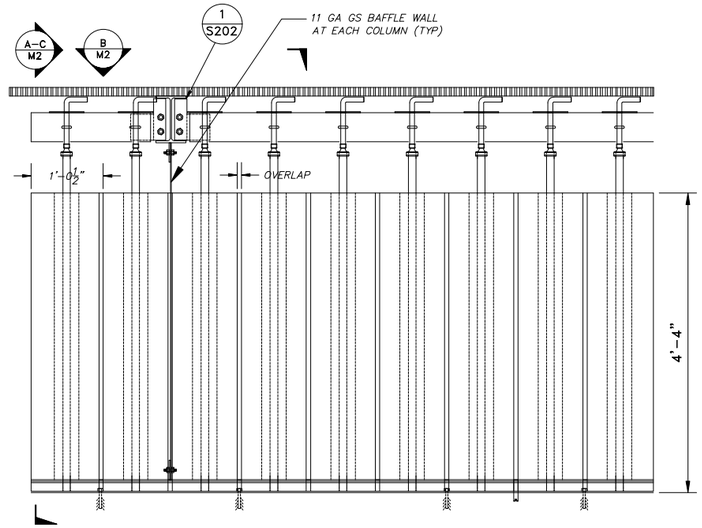
INDEX PLATE DETAILS (E / M2)
SCALE: NTS



BAFFLE DETAILS (F / M2)
SCALE: 1"=4"



LOCK PIN DETAILS (G / M2)
SCALE: NTS



BAFFLE STRUCTURE SECTION (H / M2)
SCALE: 1" = 1'

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

BAFFLE DETAILS

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M2
####OF####

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ###
DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg
BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY
SCALE NTS

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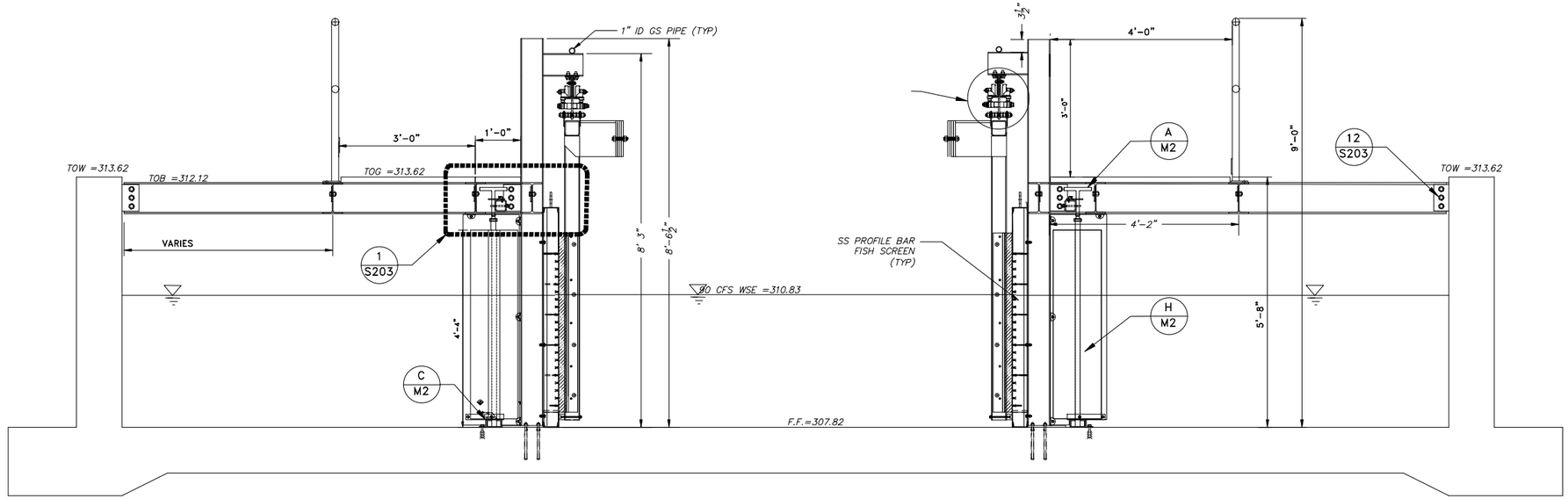
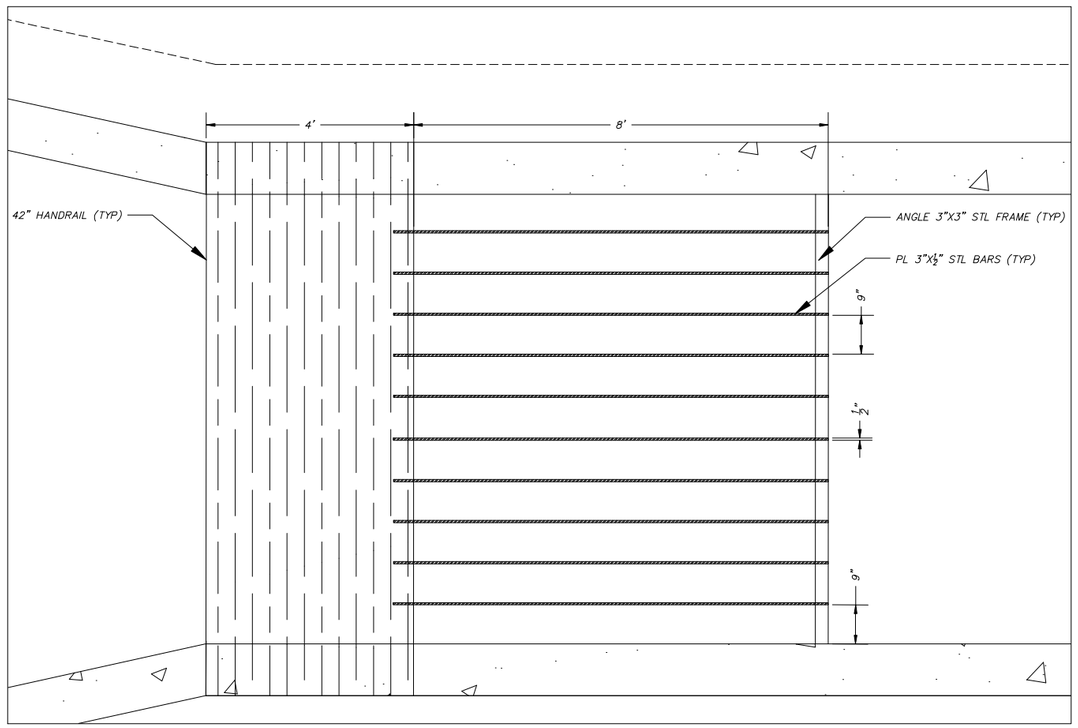
Apr 30, 2019 - 4:36pm



INTAKE STRUCTURE SECTION

SCALE: 3/4" = 1'- 0"

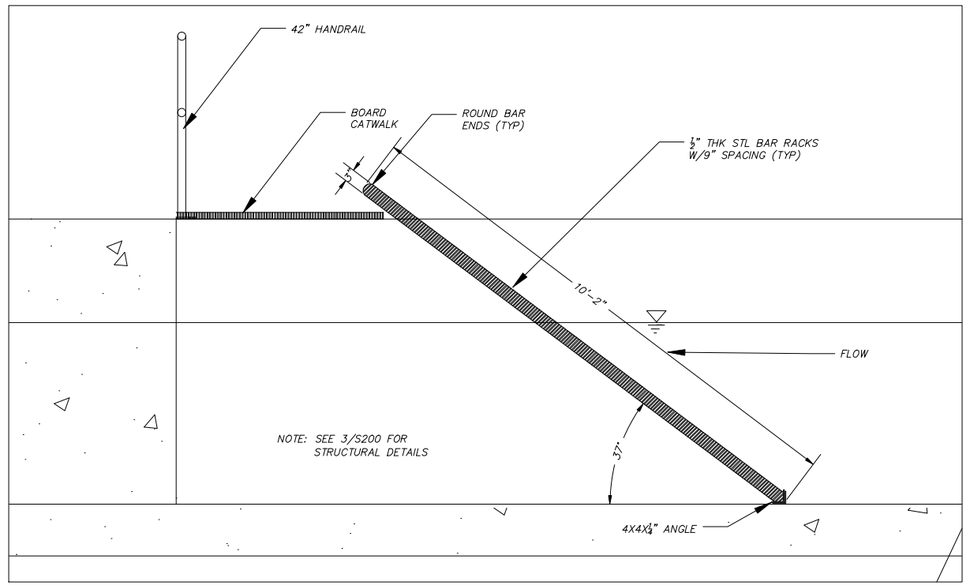
A M3



TRASH RACK PLAN

SCALE: 3/4" = 1'- 0"

B M3



TRASH RACK SECTION

SCALE: 3/4" = 1'- 0"

C M3

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
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RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
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NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M3
####OF ####

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

INTAKE CHANNEL SECTIONS

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Watershed Solutions
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
0 IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY
1"

SCALE NTS

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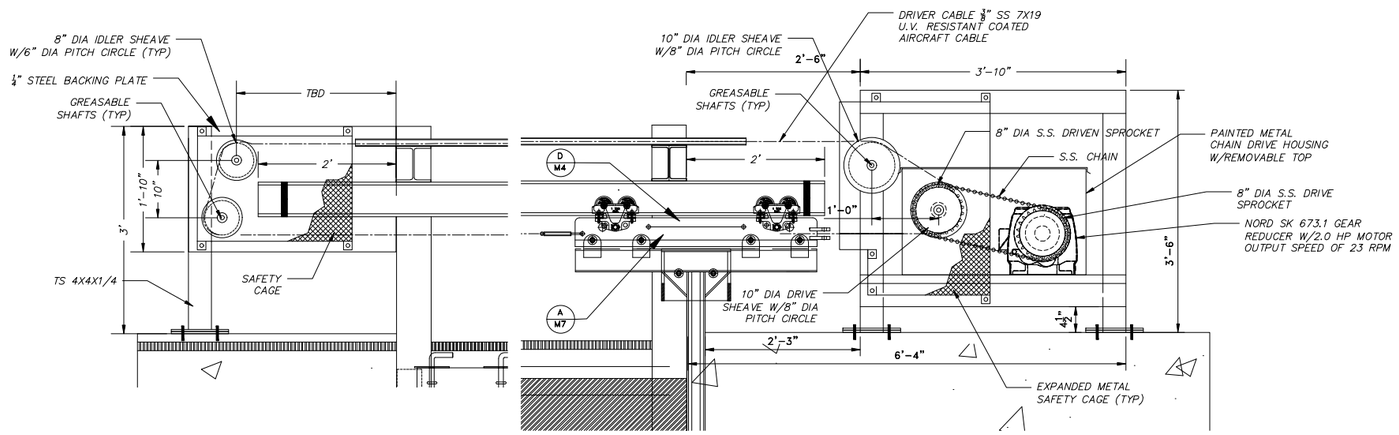
Apr 30, 2019 - 4:37pm



BRUSH CLEANER IDLER UNIT

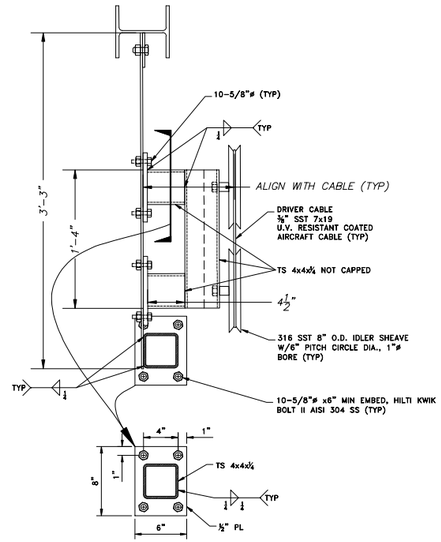
SCALE: 1" = 1'- 0"

A M4

BRUSH CLEANER DRIVE UNIT

SCALE: 1" = 1'- 0"

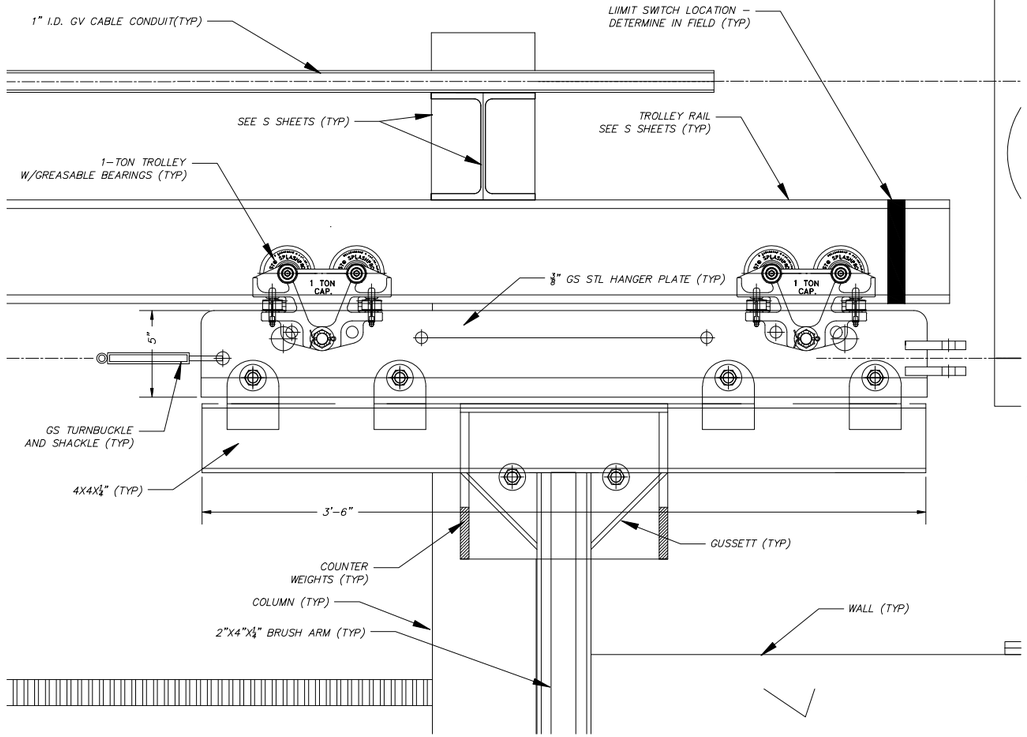
B M4



IDLER UNIT SUPPORT DETAILS

SCALE: 1-1/2" = 1'- 0"

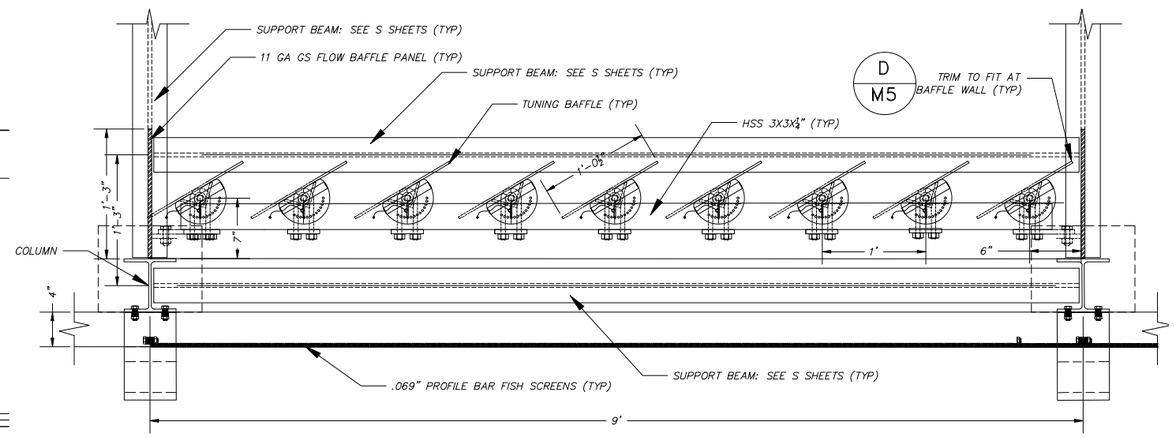
C M4



TROLLEY & BRUSH ARM GUIDE

SCALE: 3" = 1'- 0"

D M4



BAFFLE SECTION PLAN VIEW

SCALE: 1-1/2" = 1'

E M4

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M4
####OF ####

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

BRUSH CLEANER DRIVE

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
IF NOT ONE INCH ON THIS SHEET SCALE ACCORDINGLY
0 1"

SCALE NTS

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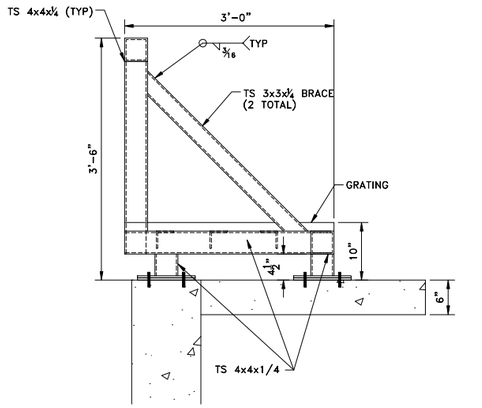
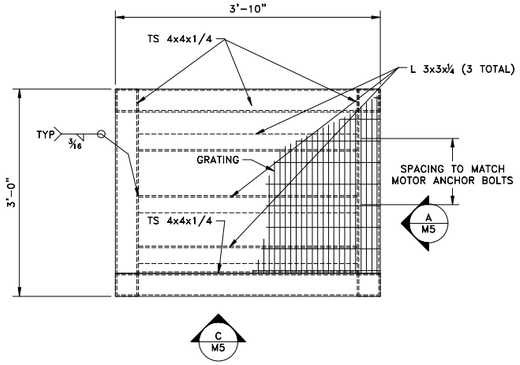
Apr 30, 2019 - 4:37pm



EQUIPMENT STAND SECTION

SCALE: 1" = 1'- 0"

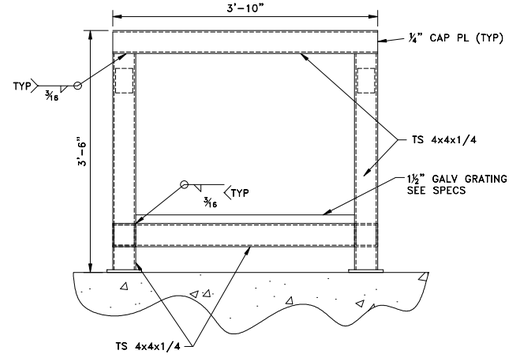
A M5



EQUIPMENT STAND PLATFORM

SCALE: 1" = 1'- 0"

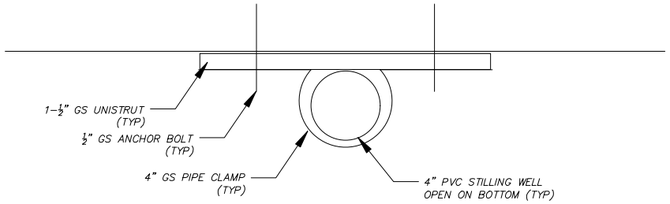
B M5



EQUIPMENT STAND PROFILE

SCALE: 1"= 1'- 0"

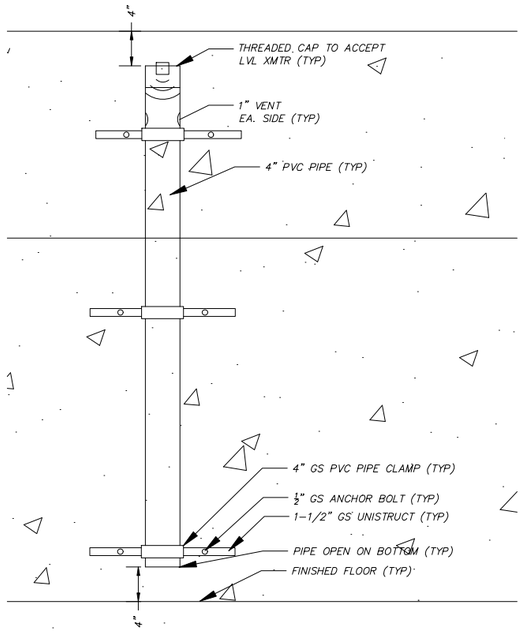
C M5



LVL XMTR STILLING WELL

SCALE: 3" = 1'- 0"

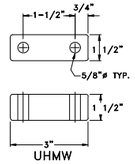
D M5



LVL XMTR STILLING WELL

SCALE: 1-1/2" = 1'- 0"

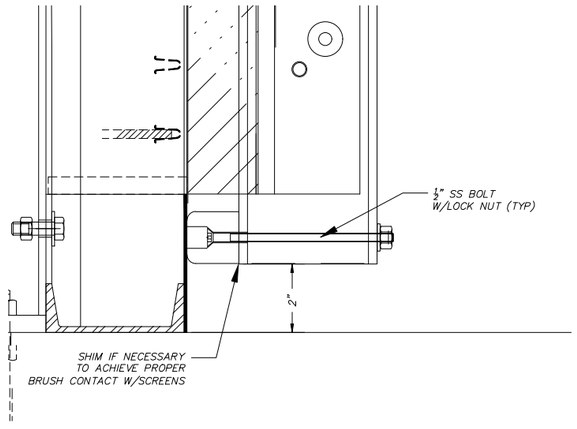
E M5



BRUSH GUIDE RUB

SCALE: 3" = 1'- 0"

F M5



BRUSH GUIDE RUB

SCALE: 6" = 1'- 0"

G M5

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER

M5

####OF####

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

EQUIPMENT DETAILS

DAVIDS ENGINEERING, INC
1772 Picasso Ave, Suite A
Davis, CA 95618
Phone: (530) 757-6107

2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

Cascade

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ON THIS SHEET, SCALE ACCORDINGLY

SCALE NTS

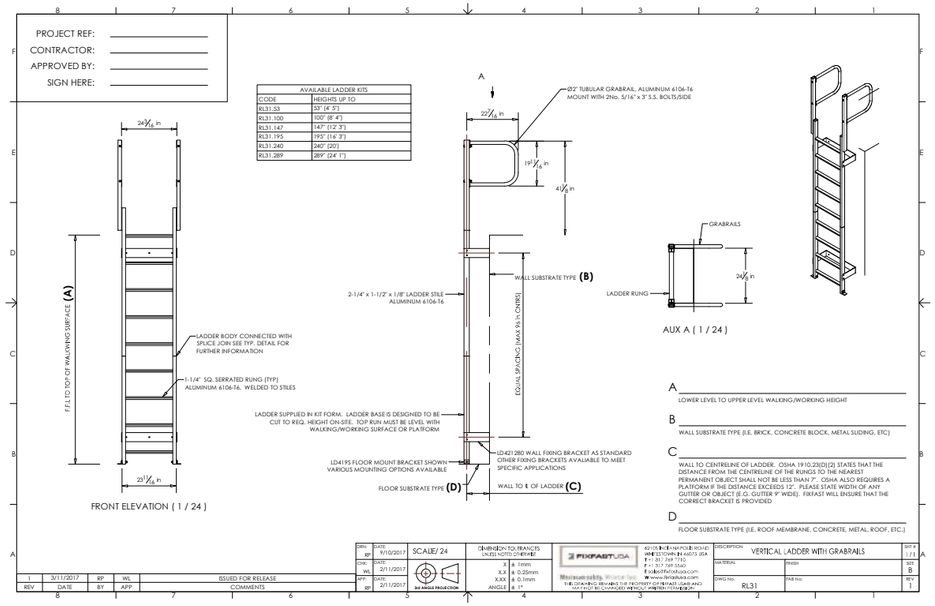
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

ONE WATER CONSULTING

C:\Users\Administrator\Documents\2017\Active\17006 Antelope Cr\Design\dwgs\60 PERCENT\100_PERCENT M SHEETS.dwg
Apr 30, 2019 - 4:38pm

PROJECT REF: _____
CONTRACTOR: _____
APPROVED BY: _____
SIGN HERE: _____

AVAILABLE LADDER KITS	
CODE	HEIGHTS UP TO
RL31.53	53" (4' 5")
RL31.100	100" (8' 4")
RL31.147	147" (12' 3")
RL31.195	195" (16' 3")
RL31.240	240" (20')
RL31.289	289" (24' 1")



1	3/11/2017	RP	WL	ISSUED FOR RELEASE
REV	DATE	BY	APP	COMMENTS

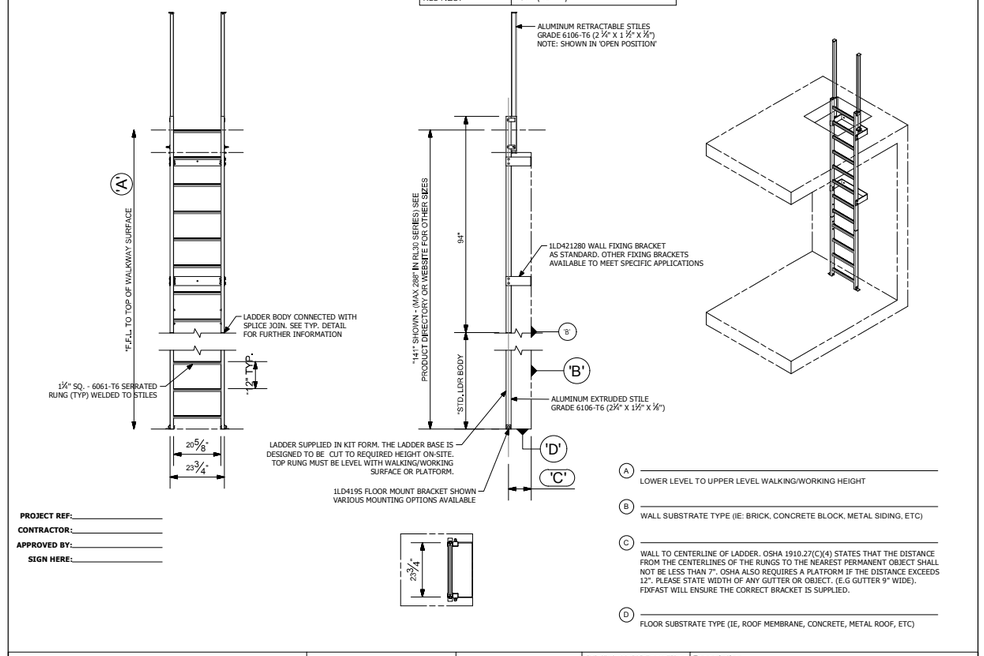
NOTE:
1. FIXFAST ACCESS LADDER OR EQUAL
2. MUST MEET CURRENT CAL-OSHA REQUIREMENTS

INTAKE CHANNEL ACCESS LADDER

SCALE: NTS

A / M6

AVAILABLE LADDER KITS	
CODE	HEIGHTS UP TO
RL31.53	53" (4' 5")
RL31.100	100" (8' 4")
RL31.147	147" (12' 3")
RL31.195	195" (16' 3")
RL31.240	240" (20')
RL31.289	289" (24' 1")



FIXFAST USA
6210S Indianapolis Road
Whitestown IN 46075 USA
Tel:- +1 317 769 7710
Fax:- +1 317 769 5560
Email:- technical@fixfastusa.com
Web:- www.fixfastusa.com

FIXFAST USA CONFIDENTIAL MATERIAL
THIS DRAWING IS THE PROPERTY OF FIXFAST USA' AND SHALL NOT BE COPIED OR DISCLOSED TO A THIRD PARTY IN WHOLE OR PART WITHOUT THE CONSENT IN WRITING OF 'FIXFAST USA'

Description: Standard Access Ladder With Lead On Handrails
Material:
Product Code: RL34 SERIES | FAB No. | Drawing No.: 7236 | Rev

1	3/11/2017	RP	WL	ISSUED FOR RELEASE
REV	DATE	BY	APP	COMMENTS

Maximum safety. Minimum fuss.

NOTE:
1. FIXFAST ACCESS LADDER OR EQUAL
2. MUST MEET CURRENT CAL-OSHA REQUIREMENTS

BYPASS CHANNEL ACCESS LADDER

SCALE: NTS

B / M6

C:\Users\Administrator\Documents\2017\Active\17006 Antelope Cr\Design\dwgs\60 PERCENT\100_PERCENT M SHEETS.dwg
Apr 30, 2019 - 4:38pm

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
M6
####OF ####

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

EQUIPMENT DETAILS

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

Cascade Earth Sciences

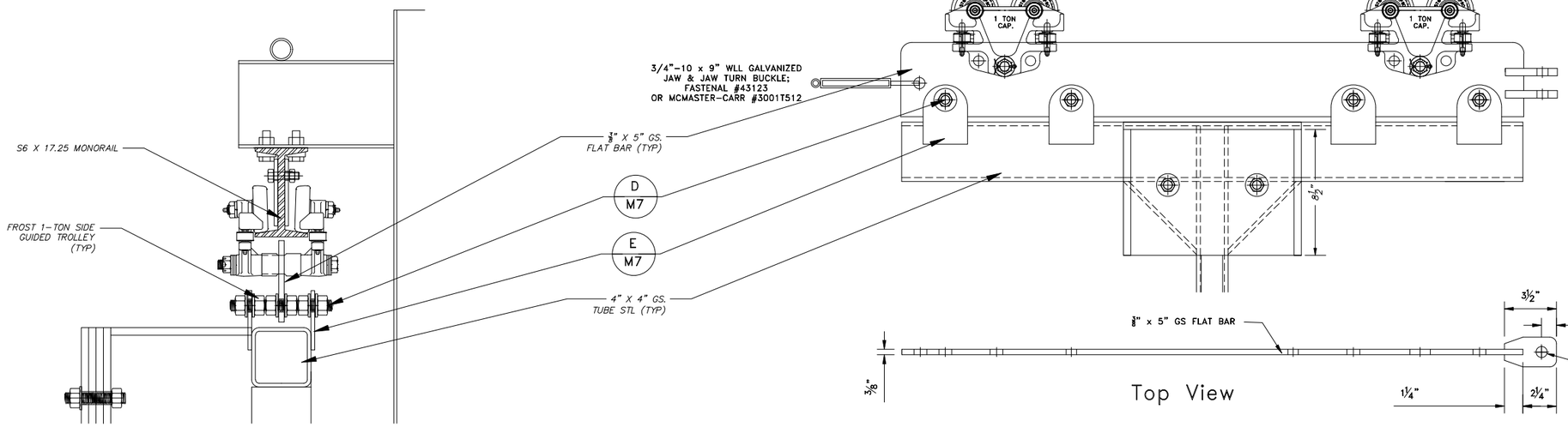
DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

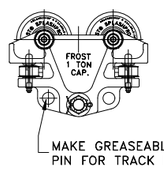
BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ON THIS SHEET ADJUST SCALE ACCORDINGLY

SCALE NTS

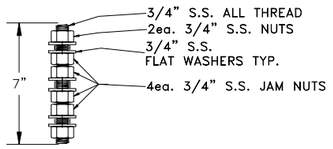
ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331



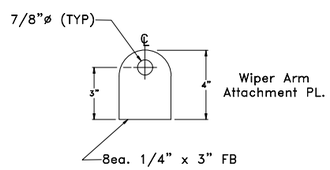
TROLLEY DETAIL
SCALE: 3"=1' — A M7



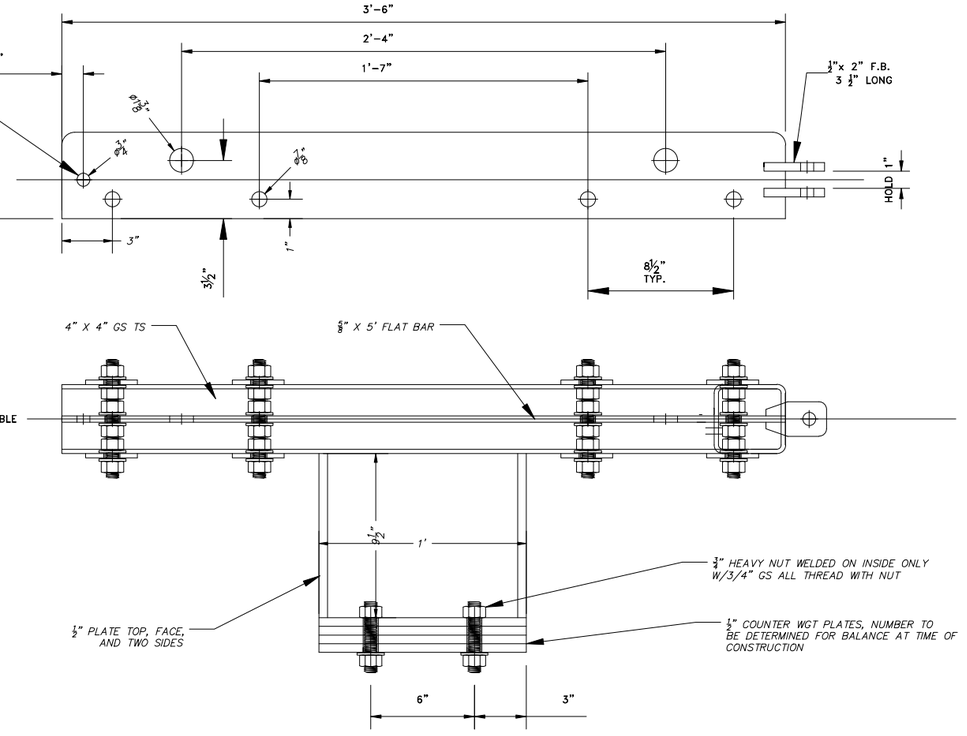
TROLLEY DETAIL
SCALE: 3"=1' — C M7



DETAIL
SCALE: 3"=1' — D M7



DETAIL
SCALE: 3"=1' — E M7



TROLLEY SYSTEM
SCALE: 3"=1' — B M7

BRUSH TROLLEY DETAILS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ####
DESIGNED MSW
DRAWN MSW
DATE 04/25/2019
CHECKED ####
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RECOMMENDED
APPROVED

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Red Bluff, CA 96080
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NOT FOR CONSTRUCTION

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER **M7**
####OF####

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1772 Picasso Ave. Suite A
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Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED MSW
DRAWN MSW
CHECKED ####

DATE 04/25/2019
FILE 100_PERCENT M SHEETS.dwg

BAR IS ONE INCH AT FULL SCALE
0 1"
IF NOT ONE INCH ADJUST SCALE ACCORDINGLY

SCALE NTS

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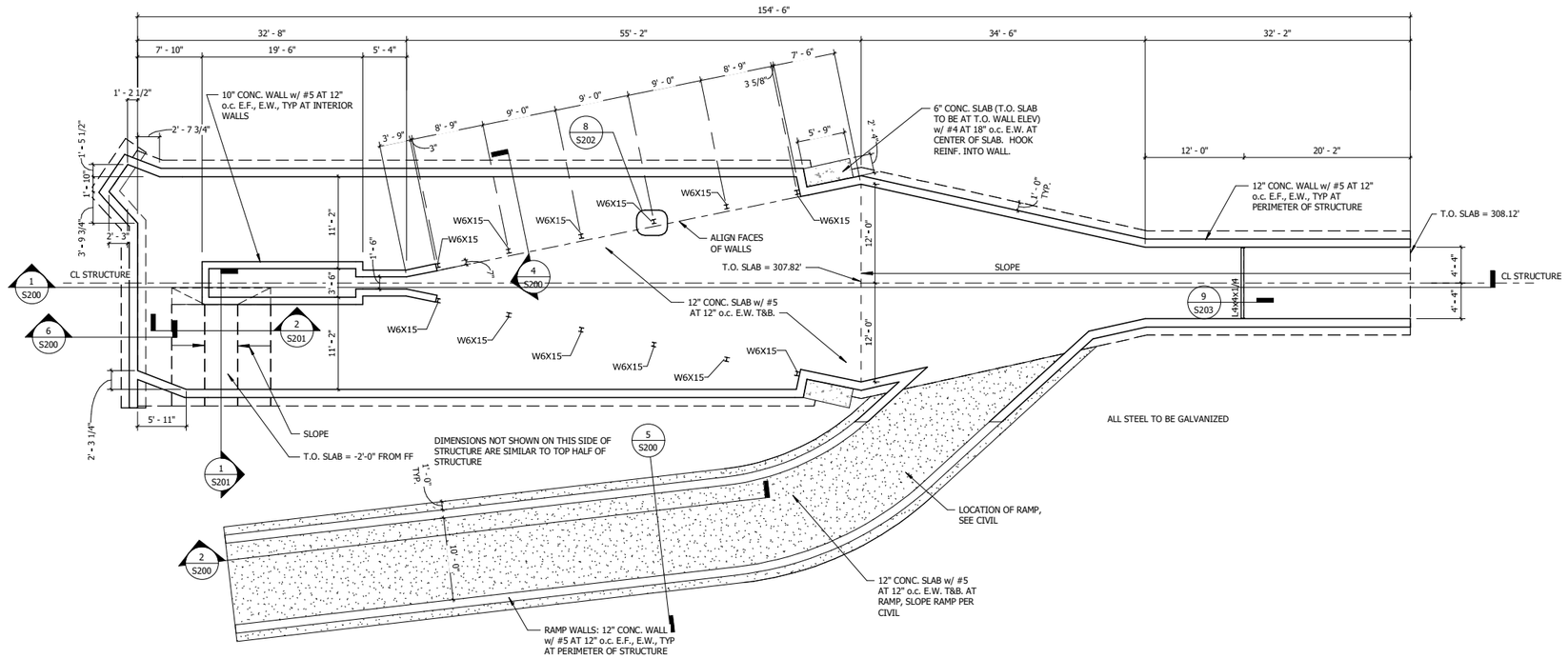
Apr 30, 2019 - 5:04pm



FOUNDATION PLAN
SCALE: 1/8" = 1'-0"

1

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

FOUNDATION PLAN

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Earth Sciences
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

BJG ARCHITECTURE & ENGINEERING

DESIGNED KV
DRAWN KV
CHECKED

DATE 04/29/2019
FILE

SCALE 1/8"

NUMBER	DESCRIPTION	BY	APP	DATE

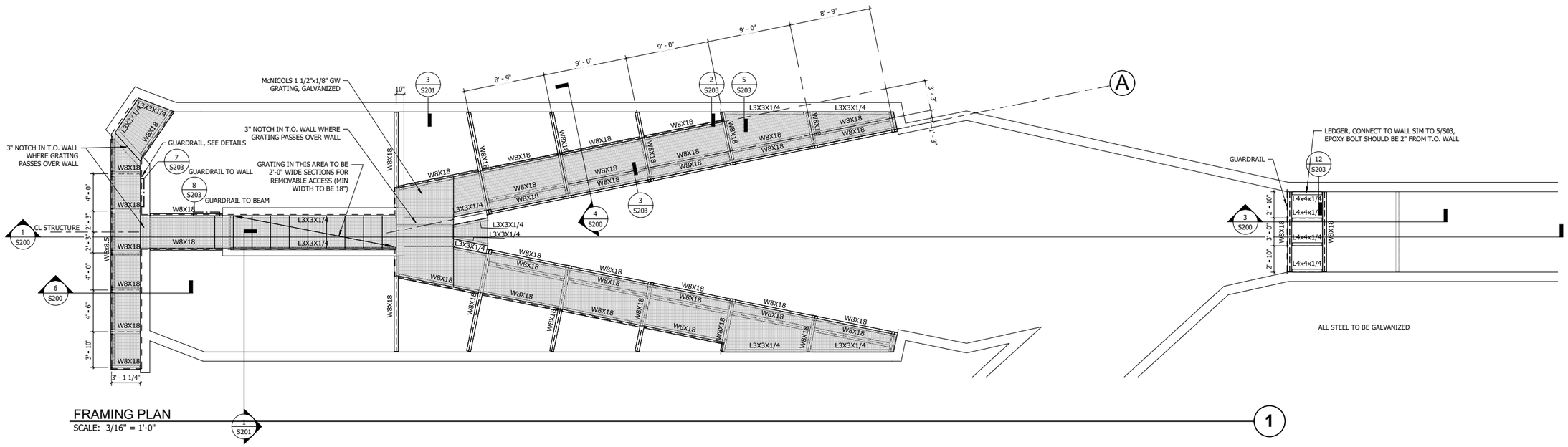
WORK ORDER NO.
DESIGNED KV
DRAWN KV
DATE 04/29/2019
CHECKED
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

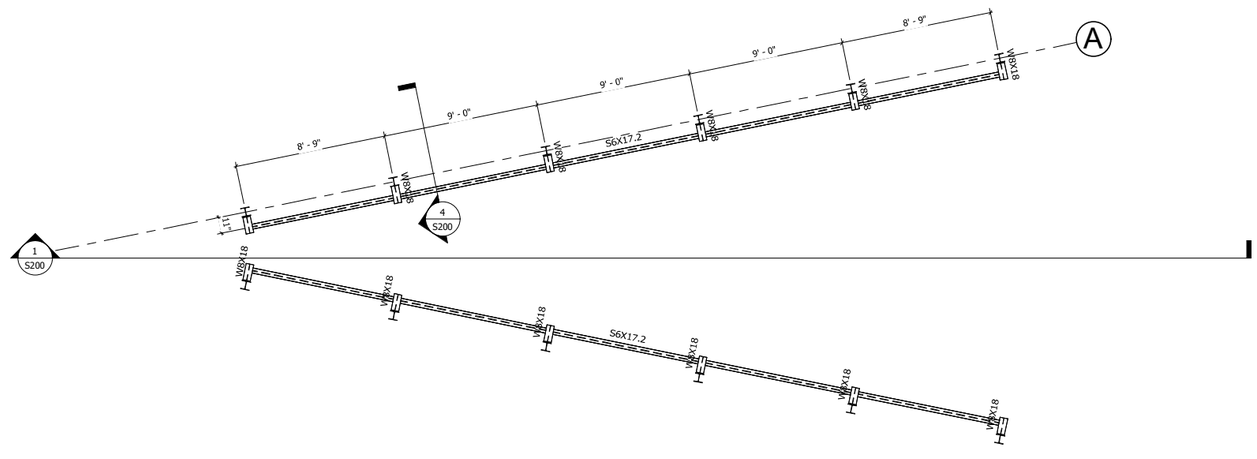
100% DESIGN DRAWINGS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
S100
SHEET OF



FRAMING PLAN
SCALE: 3/16" = 1'-0"



FRAMING PLAN - CRANE LEVEL
SCALE: 1/4" = 1'-0"

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

CATWALK FRAMING PLAN

NUMBER	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ---
DESIGNED Designer
DRAWN Author
DATE 04/29/2019
CHECKED Checker
SUBMITTED ---
RECOMMENDED ---
APPROVED ---

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

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DESIGNED Designer
DRAWN Author
CHECKED Checker
DATE 04/29/2019
FILE
SCALE AS NOTED

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

Cascade Stream Solutions
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

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14430 Spezia Rd.
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Phone: (775) 287-9331

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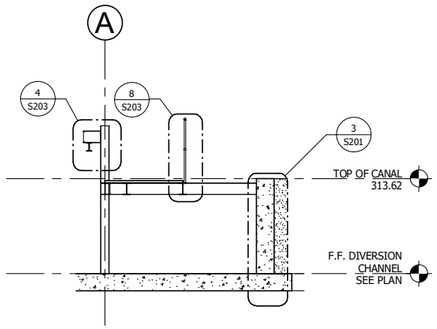
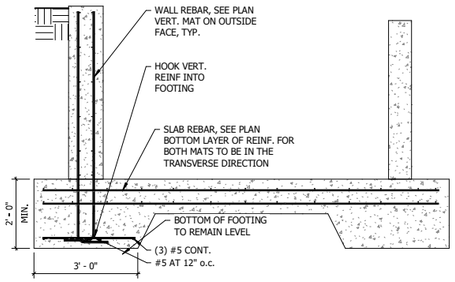
SHEET NUMBER
S101
OF 99



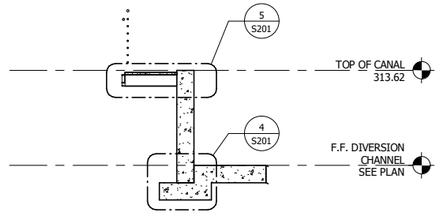
CROSS SECTION
SCALE: 1/4" = 1'-0"

4



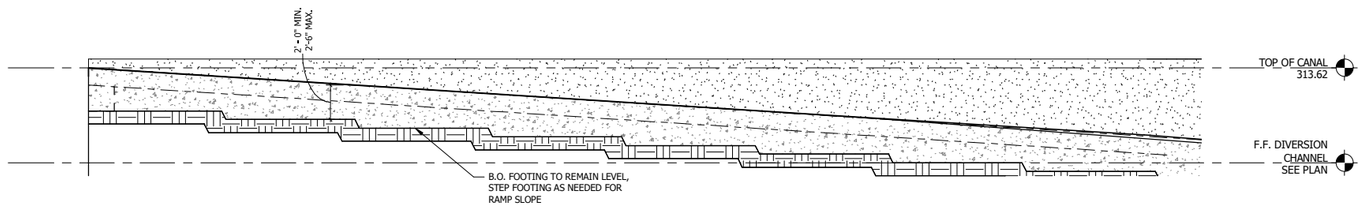
RAMP SECTION DETAIL
SCALE: 1/2" = 1'-0"

5



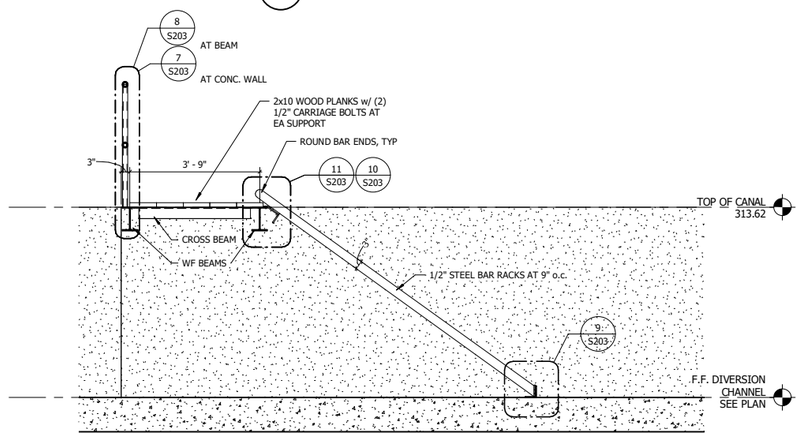
END WALL SECTION
SCALE: 1/4" = 1'-0"

6



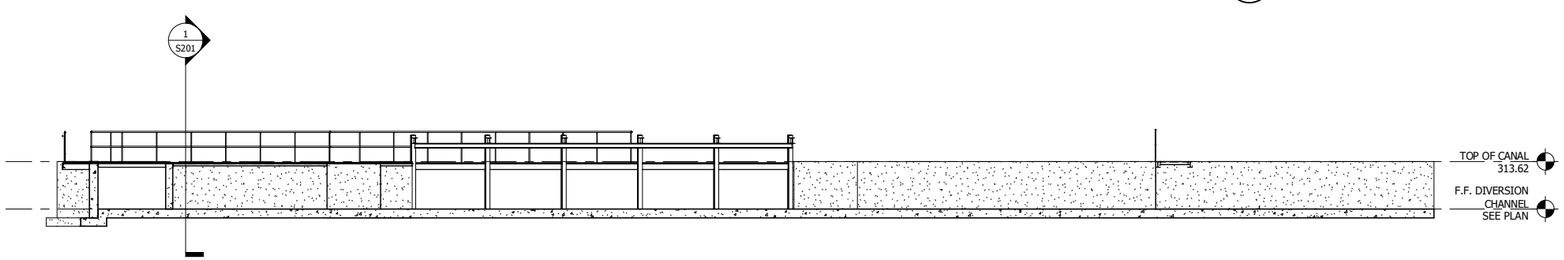
RAMP ELEVATION
SCALE: 1/4" = 1'-0"

2



TRASH RACK SECTION
SCALE: 1/2" = 1'-0"

3



SECTION VIEW
SCALE: 1/8" = 1'-0"

1

BJG
ARCHITECTURE & ENGINEERING

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SECTIONS

1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

DAVIDS ENGINEERING, INC

2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

Cascade

14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

ONE WATER CONSULTING

DESIGNED KV
DRAWN KV
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DATE 04/29/2019
FILE

SCALE NTS

NUMBER	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. [illegible]
DESIGNED KV
DRAWN KV
DATE 04/29/2019
CHECKED [illegible]
SUBMITTED
RECOMMENDED
APPROVED

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

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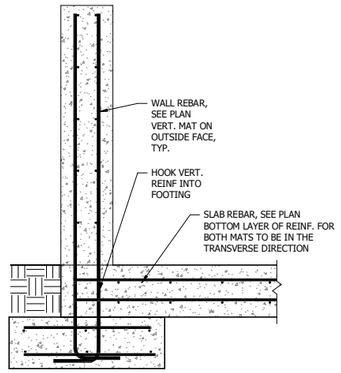
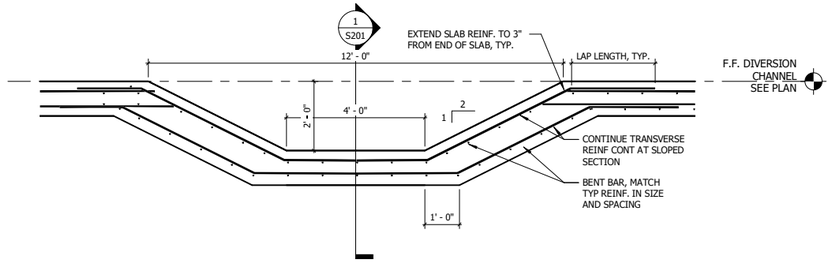
ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
S200
[illegible] OF [illegible]



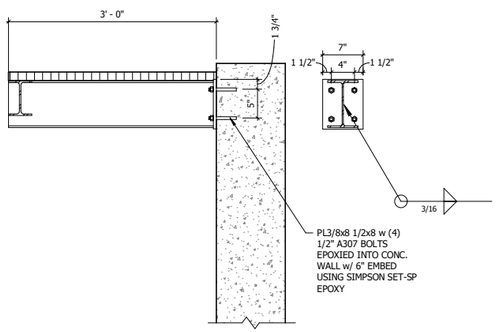
FOOTING SECTION
SCALE: 3/4" = 1'-0"

4



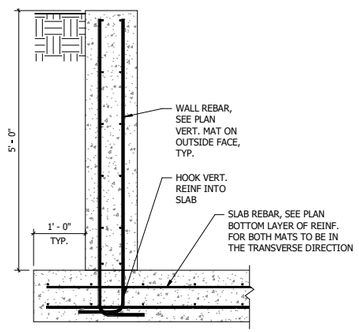
DEPRESSED SLAB SECTION
SCALE: 1/2" = 1'-0"

2



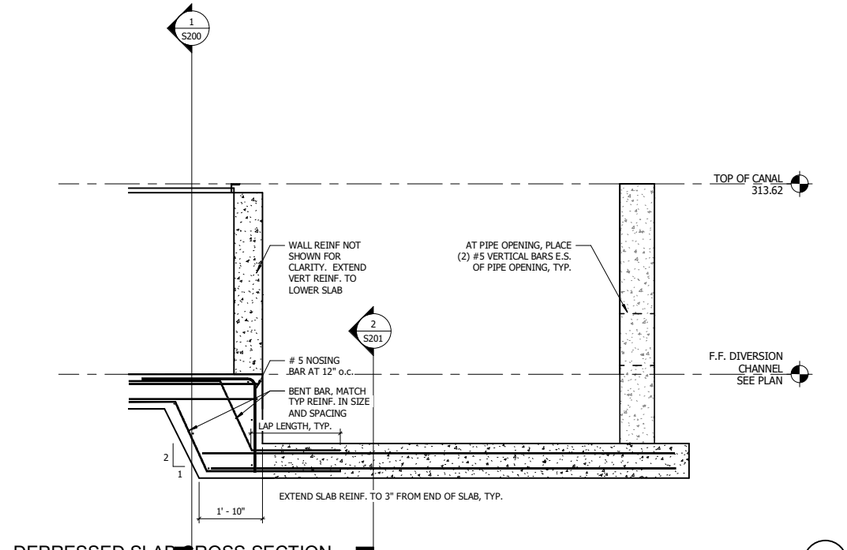
CANTILEVERED CATWALK SUPPORT
SCALE: 1" = 1'-0"

5



SIDE WALL SECTION
SCALE: 3/4" = 1'-0"

3



DEPRESSED SLAB CROSS SECTION
SCALE: 1/2" = 1'-0"

1

BJG
ARCHITECTURE & ENGINEERING

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SECTIONS

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
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Phone: (530) 757-6107

Cascade
2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED
DRAWN
CHECKED

DATE 04/29/2019
FILE

SCALE

REVISION	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ---
DESIGNED Designer
DRAWN Author
DATE 04/29/2019
CHECKED Checker
SUBMITTED ---
RECOMMENDED ---
APPROVED ---

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

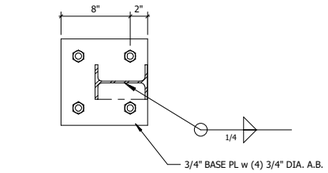
2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

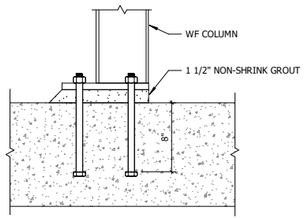
100% DESIGN DRAWINGS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
S201

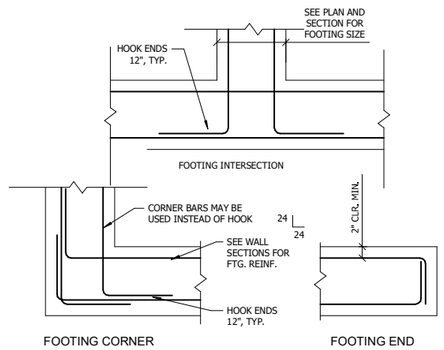
SHEET OF ---





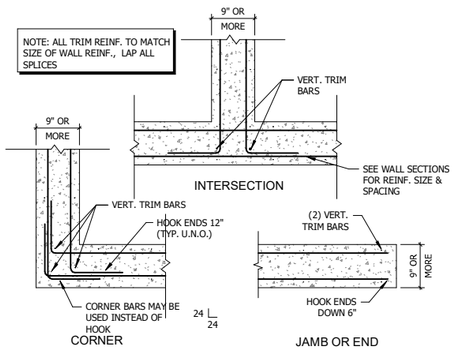
BASE PLATE DETAIL

SCALE: 1 1/2" = 1'-0" — 8



TYP. REINF LAP IN FOOTING

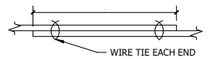
SCALE: 1" = 1'-0" — 7



CAST IN PLACE CONC. WALL REINF.

SCALE: 3/4" = 1'-0" — 6

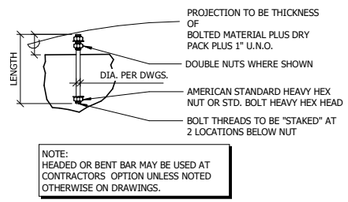
LAP SPLICE (IN.)									
f'c	BAR SIZE								
	#3	#4	#5	#6	#7	#8	#9	#10	#11
2,500	24	32	39	47	69	78	88	100	110
3,000	22	29	36	43	63	72	81	91	101
3,500	20	27	33	40	58	66	75	84	93
4,000	19	25	31	37	54	62	70	79	87
5,000	17	23	28	34	49	56	63	71	78
MASONRY	27	36	45	74	101	152	192	-	-



1. SPLICE LENGTHS GIVEN ARE CLASS B FOR CONCRETE.
2. BARS LARGER THAN #11 SHALL NOT BE LAP SPLICED. PROVIDE APPROVED MECH'L COUPLERS OR CP BUTT WELDS AT SPLICES OF BARS GREATER THAN #11.
3. LAP LENGTHS GIVEN SHALL BE INCREASED 20% FOR BUNDLED BARS.
4. LAP LENGTHS CAN BE DECREASED BY 23% IF LESS THAN 50% OF THE BARS ARE SPLICED IN THE LAP AREA.
5. DO NOT USE THESE LENGTHS FOR EPOXY-COATED BARS.
6. INCREASE LAP LENGTHS AN ADDITIONAL 30% IF MORE THAN 12" OF CONCRETE IS POURED BELOW THE LAP AT ONE TIME.
7. MASONRY LAP SPLICES ARE FOR f'_m = 1500 PSI

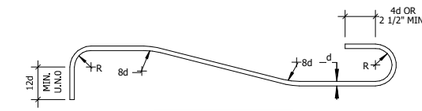
TYP. LAP SPLICE LENGTHS

SCALE: 1" = 1'-0" — 5



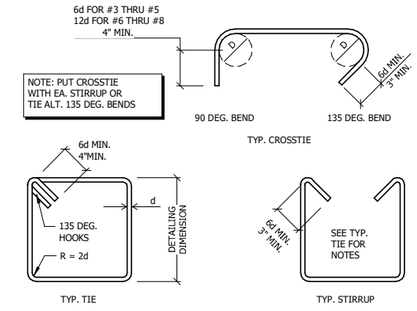
TYP. ANCHOR BOLT IN CONC.

SCALE: 1" = 1'-0" — 4



TYP. HOOKS AND BENDS

SCALE: 1 1/2" = 1'-0" — 3



HOOKS & BENDS FOR TIES

SCALE: 1" = 1'-0" — 2

CLASS	28 - DAY COMPRESSIVE STRENGTH, PSI	SIZE AND TYPE AGGREGATE	MAX SHRINK	ENTRAINED AIR-PERCENT	MAX. SLUMP INCHES	MAX W/C RATIO
A	4500	3/4" CONC.	0.065%	6±1	3"	0.45

NOTES:
1. SLUMP INDICATED IS WITH WATER ONLY. ADDITIONAL SLUMP IS ACCEPTABLE IF ADDED BY MEANS OF ADDITIVES THAT DO NOT PROMOTE SHRINKAGE OF CONCRETE OR DEGRADE THE CONCRETE.
2. USE TYPE II CEMENT.
3. USE CLASS A

CONCRETE MIX DESIGNS

SCALE: 1" = 1'-0" — 1

BJG ARCHITECTURE & ENGINEERING

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

CONCRETE DETAILS

DAVIDS ENGINEERING, INC
1772 Picasso Ave. Suite A
Davis, CA 95618
Phone: (530) 757-6107

2704 Clay Creek Way
Ashland, OR 97520
Phone: (541) 864-0492

Cascade

14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331
ONE WATER CONSULTING

DESIGNED KV
DRAWN KV
CHECKED PROOF

DATE 04/29/2019
FILE

SCALE NTS

NUMBER	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. [illegible]
DESIGNED KV
DRAWN KV
DATE 04/29/2019
CHECKED Proofer
SUBMITTED
RECOMMENDED
APPROVED

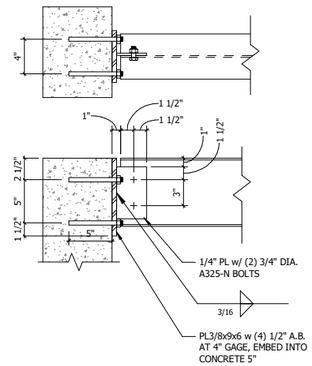
RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

100% DESIGN DRAWINGS

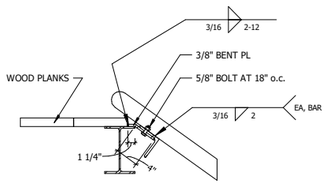
ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

SHEET NUMBER
S202
OF



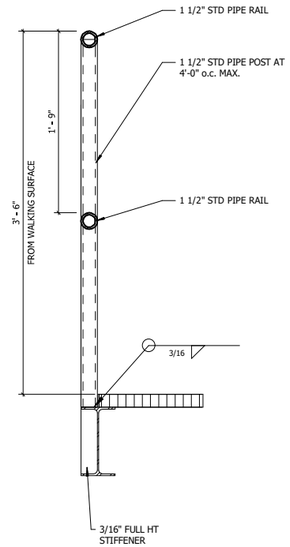
BEAM TO WALL CONNECTION — 12

SCALE: 1 1/2" = 1'-0"



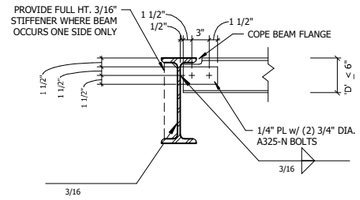
TRASH RACK CONN TO BEAM — 11

SCALE: 1" = 1'-0"



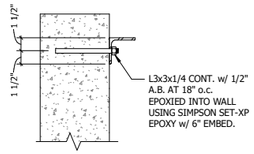
GUARDRAIL TO STEEL BEAM — 8

SCALE: 1 1/2" = 1'-0"



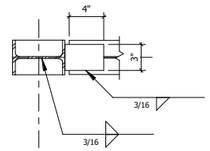
TYP. 6" BEAM SINGLE PLATE CONN. — 6

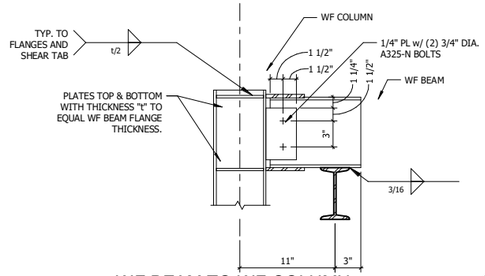
SCALE: 1" = 1'-0"



LEDGER TO WALL CONNECTION — 5

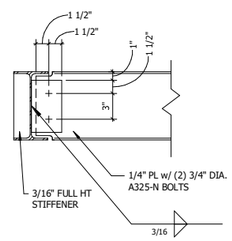
SCALE: 1 1/2" = 1'-0"





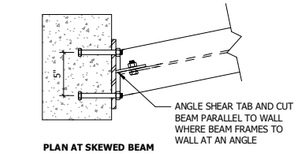
WF BEAM TO WF COLUMN — 4

SCALE: 1 1/2" = 1'-0"

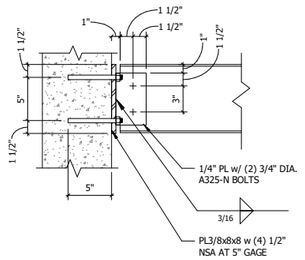


BEAM TO BEAM CONNECTION — 3

SCALE: 1 1/2" = 1'-0"

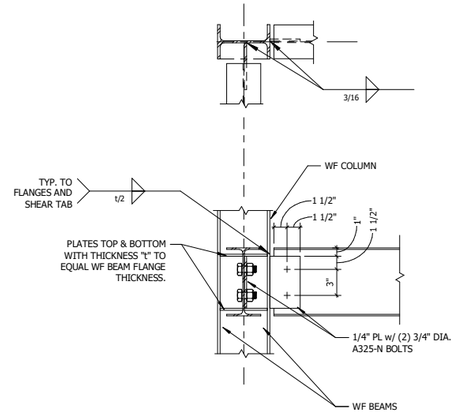


PLAN AT SKEWED BEAM



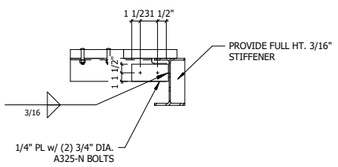
BEAM TO WALL CONNECTION — 2

SCALE: 1 1/2" = 1'-0"



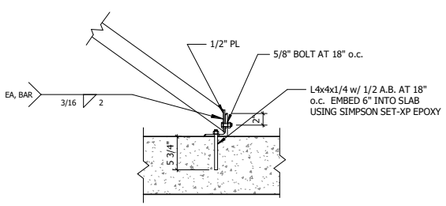
WF BEAM TO WF COLUMN — 1

SCALE: 1 1/2" = 1'-0"



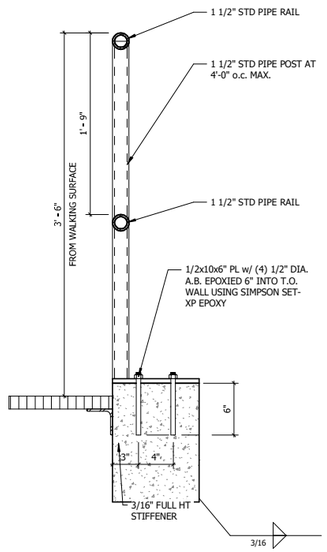
BEAM (ANGLE) TO BEAM CONN — 10

SCALE: 1" = 1'-0"



TRASH RACK CONN TO SLAB — 9

SCALE: 1" = 1'-0"



GUARDRAIL TO CONC. WALL — 7

SCALE: 1 1/2" = 1'-0"

BJG ARCHITECTURE & ENGINEERING

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

STEEL DETAILS

DAVIS ENGINEERING, INC
1772 Picasso Ave. Suite A
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Cascade
2704 Clay Creek Way
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Phone: (541) 864-0492

ONE WATER CONSULTING
14430 Spezia Rd.
Reno, Nevada 89511
Phone: (775) 287-9331

DESIGNED
DRAWN
CHECKED

DATE 04/29/2019

FILE

SCALE NTS

NUMBER	DESCRIPTION	BY	APP	DATE

WORK ORDER NO. ____
DESIGNED Designer
DRAWN Author
DATE 04/29/2019
CHECKED Checker
SUBMITTED ____
RECOMMENDED ____
APPROVED ____

RESOURCE CONSERVATION DISTRICT OF TEHAMA COUNTY

2 Sutter Street, Suite D
Red Bluff, CA 96080
Phone: (530) 527-3013

100% DESIGN DRAWINGS

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

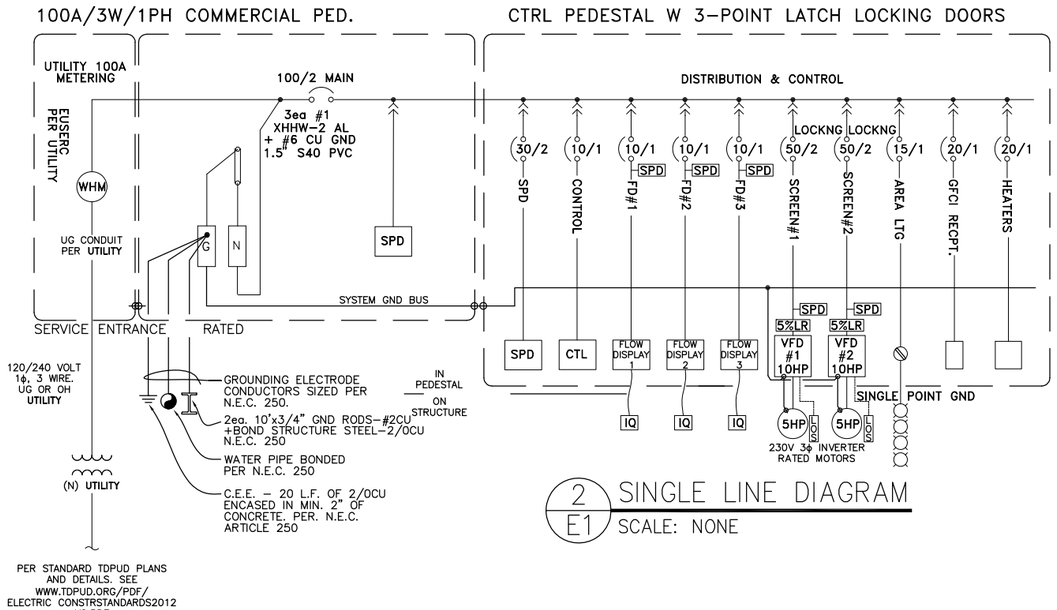
SHEET NUMBER

S203

SHEET OF

Load Calculation for Antelope Creek Fish Passage Improvement Project						
Load	Quan.	HP	Amperes	VA	Demand	125%
Screen 1	1	5	28	6762	8452.5	*
Screen 2	1	5	28	6762	6762	
Controls	1		5	600	750	*
In-stream Flow Monitors	1		2	460	460	
Heaters	2			250	625	
Lighting	4			30	150	*
				Total VA	17,200	
			Amperes @ 240V 3W 1PH		72	

1 / E1 NEC LOAD CALCULATION
SCALE: NONE



2 / E1 SINGLE LINE DIAGRAM
SCALE: NONE

ABBREVIATIONS

AFC - ABOVE FINISHED CEILING
AFF - ABOVE FINISHED FLOOR
AFG - ABOVE FINISHED GRADE
AL - ALUMINUM
BFG - BELOW FINISHED GRADE
CU - COPPER
CKT - CIRCUIT
CT - CURRENT TRANSFORMER
DISC- DISCONNECT (NEMA 3R)
EM - EMERGENCY
(E) - EXISTING
FBO - FURNISHED BY OWNER
F.D. - FIRE DEPARTMENT
GND- GROUND
GFCI- GROUND FAULT CIRCUIT INTERRUPTER RECEPT.
HOA- HAND-OFF-AUTO
LCP - LIGHTING CONTROL PANEL (TITLE 24)
LFMC LIQUID-TIGHT FLEXIBLE METAL CONDUIT
M.I. - MALLEABLE IRON (I.E. F.S. BOXES)
NIC - NOT IN CONTRACT
NET - LOCAL AREA NETWORK OR INTERNET
(N) - NEW
PH - PHASE (1 PHASE, 3 PHASE)
RMC- RIGID METAL CONDUIT
ST - SHUNT TRIP (CB) OR ST STATION PER F.D.
SPD - SURGE PROTECTIVE DEVICE
TELCO - TELEPHONE SYSTEM
UG - UNDERGROUND
VC - VINYL COATED (VCRMC)
WAP- WIRELESS ACCESS POINT (WiFi)
WP - WEATHER PROOF (WP GFCI)
TX - TRANSFORMER
XP - EXPLOSION PROOF
+18"- MOUNTING HEIGHT TO CENTERLINE OF DEVICE AFF OR AFG

SCREEN DRIVE NOTES

1. PROVIDE A U.L. 508 SHOP MANUFACTURED ENCLOSURE WITH 100/2 120/240V MAIN, COMPARTMENT FOR CONTROLLERS FOR TWO PUMPS AND A COMPARTMENT FOR THE CONTROL PLC AND MONITORING INSTRUMENTS IN A DEADFRONT NEMA 4X STAINLESS STEEL ENCLOSURE WITH THREE POINT LATCH, LOCKING, HINGED DOORS, PEDESTAL POWDER COATED IN AGENCY SELECTED COLOR WITH A FULL FEATURE SET INCLUDING:

- NEMA SIZE MOTOR VFD STARTERS FOR PROPOSED 5HP 230V 3PH. MOTORS (10HP ALTITUDE RATED VFD'S) WITH MECHANICAL, THERMOSTATICALLY CONTROLLED VENTILATION OF VFD COMPARTMENT WITH FILTERED AIR.
- FLOW MONITORING FOR THREE IN-STREAM SENSORS
- SCREEN CONTROL VIA PLC PROGRAM W/ H-O-A OVERRIDE. (HAND-OFF-AUTO FOR EACH SCREEN)
- SCREEN RUNNING INDICATOR WITH LED LAMPS
- RUN TIME METER FOR EACH SCREEN
- MANUAL AREA LIGHTING CONTROL SWITCH
- LOCK-OUT-STOP AT EACH DRIVE MOTOR
- Wx HD GFCI RECEPTACLE AT EACH DRIVE MOTOR
- FULL GROUNDING AND BONDING OF ALL STEEL STRUCTURE AND EQUIPMENT
- COMPREHENSIVE SURGE PROTECTIVE DEVICES

PROVIDE ISOLATED DEDICATED CONTACTS FOR:

- SCREEN IN AUTO (2)
- SCREEN IN HAND (2)
- VFD FAULTS (2)
- POWER FAILURE (1)

GENERAL ELECTRICAL NOTES

1. PROVIDE UG CONDUIT AND COMMERCIAL METER/MAIN PEDESTAL PER POWER UTILITY REQUIREMENTS AND INSPECTION.

2. SERVICE ENTRANCE AND METER/MAIN COMPONENT AIC RATING SHALL BE 22kAIC MINIMUM. IT SHALL BE 34kAIC IF UTILITY FAULT CURRENT CAPACITY IS GREATER THAN 22k.

3. PROVIDE TWO GROUNDING ELECTRODES (10x3/4" RODS) AT LEAST 20' APART FOR SERVICE.

4. EXCEPT FOR SERVICE PEDESTAL, ALL ENCLOSURES SHALL BE DEADFRONT WITH NO EXPOSED OPERATORS OR INDICATORS. NEMA 4x - POWDER-COATED STAINLESS STEEL, HINGED COVERS, 3-POINT LATCHES (EXCEPT FOR NEMA 3R SERVICE PEDESTAL) WITH PADLOCKING MECHANISMS. ELEVATE ALL ENCLOSURES 1/4" FROM CONCRETE W/ SS SPACERS.

5. PROVIDE MAIN BREAKER SPD, MAIN CONTROL ENCLOSURE SPD, AN SPD FOR EACH VFD AND FOR EACH FLOW MONITOR POWER FEEDER.

6. PROVIDE A 10HP VFD FOR EACH 5HP INVERTER RATED DRIVE MOTOR TO PRODUCE THREE PHASE POWER FROM SINGLE PHASE UTILITY POWER. DRIVE SHALL BE SIZED AND COOLED TO MAKE THE SINGLE PHASE TO THREE PHASE CONVERSION WITHOUT STRESSING FILTER CAPACITORS DUE TO EXCESS RIPPLE, AND TO NOT DISPLAY FAULT MESSAGES ABOUT MISSING PHASE, ETC. AN SPD AND A 5% LINE REACTOR SHALL BE WIRED IN SERIES WITH INCOMING POWER TO EACH VFD INPUT.

7. ALL RECEPTACLES & SWITCHES SHALL BE SPECIFICATION GRADE.

8. CONTROL ENCLOSURE & PANEL SHALL BE U.L.508 SHOP-BUILT WITH U.L. LISTING AND TAG. MATERIALS SHALL BE USED IN COMPLIANCE WITH THEIR U.L. LISTINGS. ALL ELECTRICAL WORK AND USE OF MATERIALS SHALL MEET OR EXCEED REQUIREMENTS OF 2018 NEC AND NECA STANDARDS OF WORKMANSHIP INCLUDING COMPLETE MOUNTING/ ANCHORING PER SEISMIC REQUIREMENTS FROM MANUFACTURER.

9. ALL ANCHORS SHALL BE STAINLESS THREADED ROD WITH EPOXY ADHESIVE.

10. ALL METALLIC CONDUITS AND PIPE, ENCLOSURES, INSTRUMENTS AND EQUIPMENT SHALL BE BONDED.

11. USE INSULATED THROAT BONDING BUSHINGS FOR ALL METALLIC CONDUIT. INCLUDE A BONDING CONDUCTOR IN ALL PWR CONDUITS.

12. SHOP DRAWINGS SHALL BE SUBMITTED WITH DETAILS FOR ALL CONTRACTOR FABRICATED MATERIALS SUCH AS SUPPORT BRACKETS, ALL CONTROLS AND PANELS, ETC.

13. ALL CONDUITS NOT OTHERWISE CLOSED SHALL BE CLOSED WITH DUX-SEAL AT EVERY AVAILABLE OPENING.

14. NO TOP PENETRATIONS OF OUTSIDE ENCLOSURES IS ALLOWED. USE THREADED, SEALING/GROUNDING MYERS HUBS FOR SIDE PENETRATIONS OF OUTSIDE ENCLOSURES.

15. EXPOSED CONDUITS AND FITTINGS ON THE SCREEN STRUCTURE SHALL BE RMC WITH MALLEABLE IRON BOXES WITH M.I. COVERS AND STAINLESS STEEL FASTENERS, AND SINGLE HOLE SUPPORT STRAPS WITH PLASTIC BACKS. FLEXIBLE (LFMC) SEALTITE SHALL BE METALLIC WITH LISTED FITTINGS. MINIMUM SIGNAL CONDUIT SHALL BE 0.75" MINIMUM BRANCH POWER CONDUIT SHALL BE 0.75". UNDERGROUND OR EMBEDDED RACEWAY SHALL BE SCHEDULE 80 PVC. RMC SHALL BE USED FOR RISERS AND ELBOWS FOR TRANSITION FROM UNDERGROUND OR EMBEDDED TO EXPOSED. ENTRANCE OF SIGNAL CABLES INTO RACEWAY SYSTEMS SHALL BE SEALED WITH NYLON CGB'S. SIGNAL AND CLASS 2 WIRING SHALL BE SEGREGATED FROM POWER WIRING THROUGHOUT WITH BARRIERS, SEPARATE RACEWAYS, SEPARATE WIRING DUCTS, ETC.

16. MINIMUM SIZE CONDUIT BELOW GRADE IS 0.75". UNDERGROUND RACEWAYS SHALL BE AT LEAST 24" BFG.

17. CONDUITS EXPOSED ON STRUCTURES SHALL BE RACKED ON UNISTRUT OR SUPPORTED WITH SINGLE HOLE M.I. STRAPS WITH PLASTIC BACKS. UNISTRUT BASES SUPPORTED ON CAST IN PLACE FLOOR STRUCTURES SHALL BE STAINLESS OR FIBERGLASS. STAINLESS STEEL UNISTRUT MAY BE DIRECTLY EMBEDDED INTO CONCRETE.

18. ALL FANS SHALL BE THERMOSTATICALLY CONTROLLED (T-STATS/FANS FOR VFD COOLING. VENTILATION AIR IN/OUT OF CONTROL ENCLOSURE SHALL BE RATED NEMA 3R OR 4X.

19. VFD'S: MOUNT NEMA 4x OIT KEYPADS ON COMPARTMENT DEADFRONT.

20. FLOW DISPLAYS AND PLC OIT SHALL BE MOUNTED ON DEADFRONT PANEL WITH ALL WIRING CONCEALED BEHIND PANEL. CONNECTIONS SHALL BE GROUPED, SUPPORTED AND STRAIN RELEAVED ACROSS PANEL OR DOOR DOOR HINGES.

21. PROVIDE ROBUST DOOR LATCHES FOR OUTER DOORS TO HOLD THEM OPEN AGAINST WIND AT 90° OR MORE.

22. THE CONTROL DIAGRAM IS SCHEMATIC OF REQUIREMENTS AND SHALL BE REVISED AS REQUIRED TO PROVIDE IDENTIFIED FEATURES WITH ACTUAL EQUIPMENT SUPPLIED.

23. CONTROL EQUIPMENT AND INSTRUMENTS:
THREE SonTek-IQ SHALL BE USED FOR OPEN CHANNEL FLOW MEASUREMENT WITH THREE SonTek FLOW DISPLAYS TO READ EACH FLOW INSTRUMENT WITHOUT CONNECTION TO A PC.

24. SPARES: PROVIDE
20% SPARE TERMINAL POSITIONS
20% EXTRA SPACE FOR DIN RAILS
20% EXTRA SPACE FOR FUTURE CIRCUIT BREAKERS
AT LEAST 3 OF EACH KIND OF FUSE USED.

25. CONCRETE SUPPORT:
PROVIDE STEEL REINFORCED CONCRETE PADS FOR SERVICE ENCLOSURE AND CONTROL PEDESTAL EXTENDING THREE-FIVE INCHES BEYOND THE EQUIPMENT FOOTPRINT. FOR THE CONTROL ENCLOSURE, EXTEND FOUR-SIX INCHES BEYOND THE EQUIPMENT FOOTPRINT.

26. AREA LIGHTING
AREA LIGHTING SHALL BE 3-3.5K LED FIXTURES ~26W ON 10' HIGH x 4"SQ STEEL POLES. ALL FIXTURES SHALL HAVE PEC CONTROL BUILT IN. POWER TO ALL AREA FIXTURES SHALL BE CONTROLLED WITH A SINGLE PANEL OPERATOR ON THE CONTROL PANEL. FIXTURE PATTERN SHALL BE SELECTED TO ILLUMINATE AREA WHERE INSTALLED AND SHALL BE FULL CUTOFF, DARK SKY COMPLIANT.

ALSO SEE THE CIVIL/MECHANICAL PLANS AND ALL WRITTEN SPECIFICATIONS AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.

20 Jan 2019

TCRCD
Tehama County Resource Conservation District
#2 Sutter Street, Suite D, Red Bluff, CA 96080
530.527.3013 www.tehamacountyrcd.org

ENGINEERING
P.O. BOX 2469
Truckee, CA 96160
esandel@ss-eng.com
P-530.587.4725

ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

NEAR RED BLUFF, CA

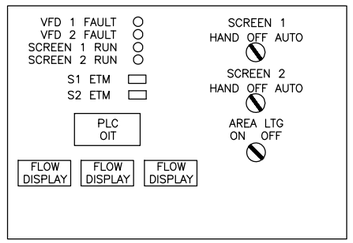
CLIENT NAME:
RESOURCE CONSERVATION DISTRICT
2 SUTTER ST., SUITE D
RED BLUFF, CA 96080
530.527.3013

FILE: One Water Antelope Creek 20Jan'1916.dwg
SCALE: NONE
DATE: 20 JAN 2019
REVISIONS:

DESCRIPTION:
LOAD CALC, ONE-LINE, NOTES

SHEET: E1

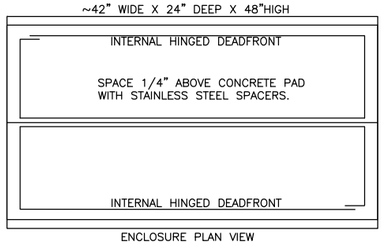
1 OF XX SHEETS



CONTROL PANEL DEADFRONT – SUPPLY AND INSTALL ADDITIONAL INDICATORS AND OPERATORS AS REQUIRED

1 — CTL PANEL LAYOUT

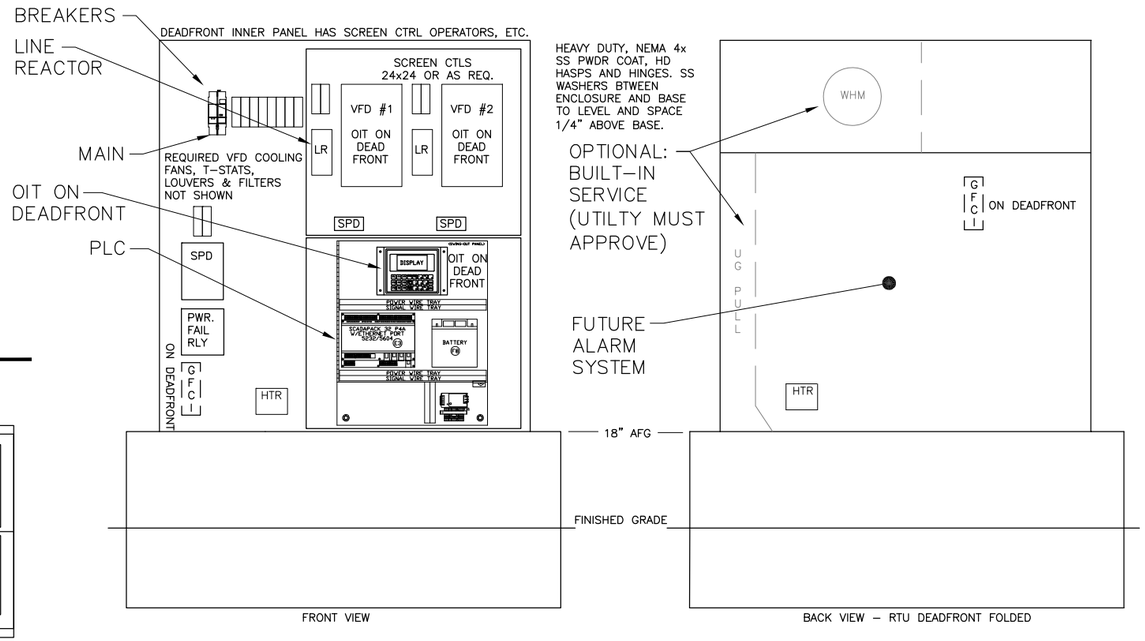
SCALE: NONE



ENCLOSURE PLAN VIEW

2 — PLAN VIEW

SCALE: NONE



FRONT VIEW

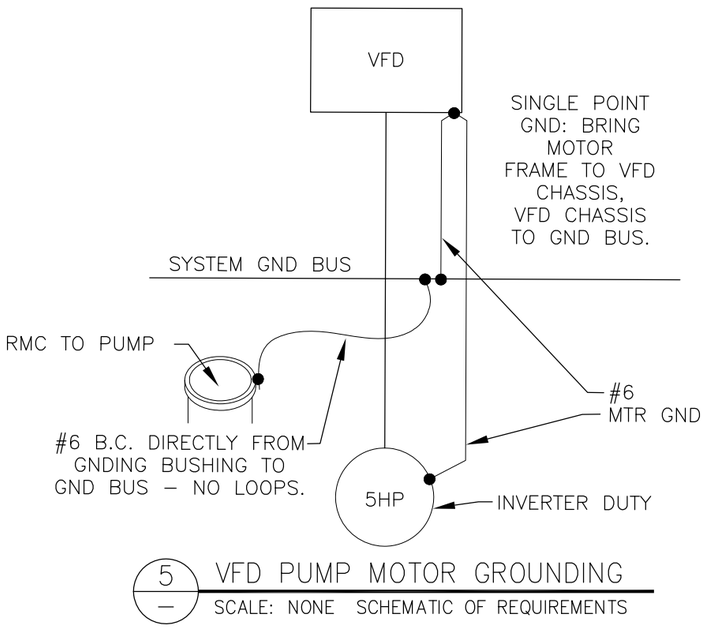
3 — CTRL ELEVATION VIEW

SCALE: NONE

BACK VIEW – RTU DEADFRONT FOLDED

4 — SCADA RTU ELEVATION

SCALE: NONE



5 — VFD PUMP MOTOR GROUNDING

SCALE: NONE SCHEMATIC OF REQUIREMENTS

20 Jan 2019

TCRCD
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#2 Sutter Street, Suite D, Red Bluff, CA 96080
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ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

NEAR RED BLUFF, CA

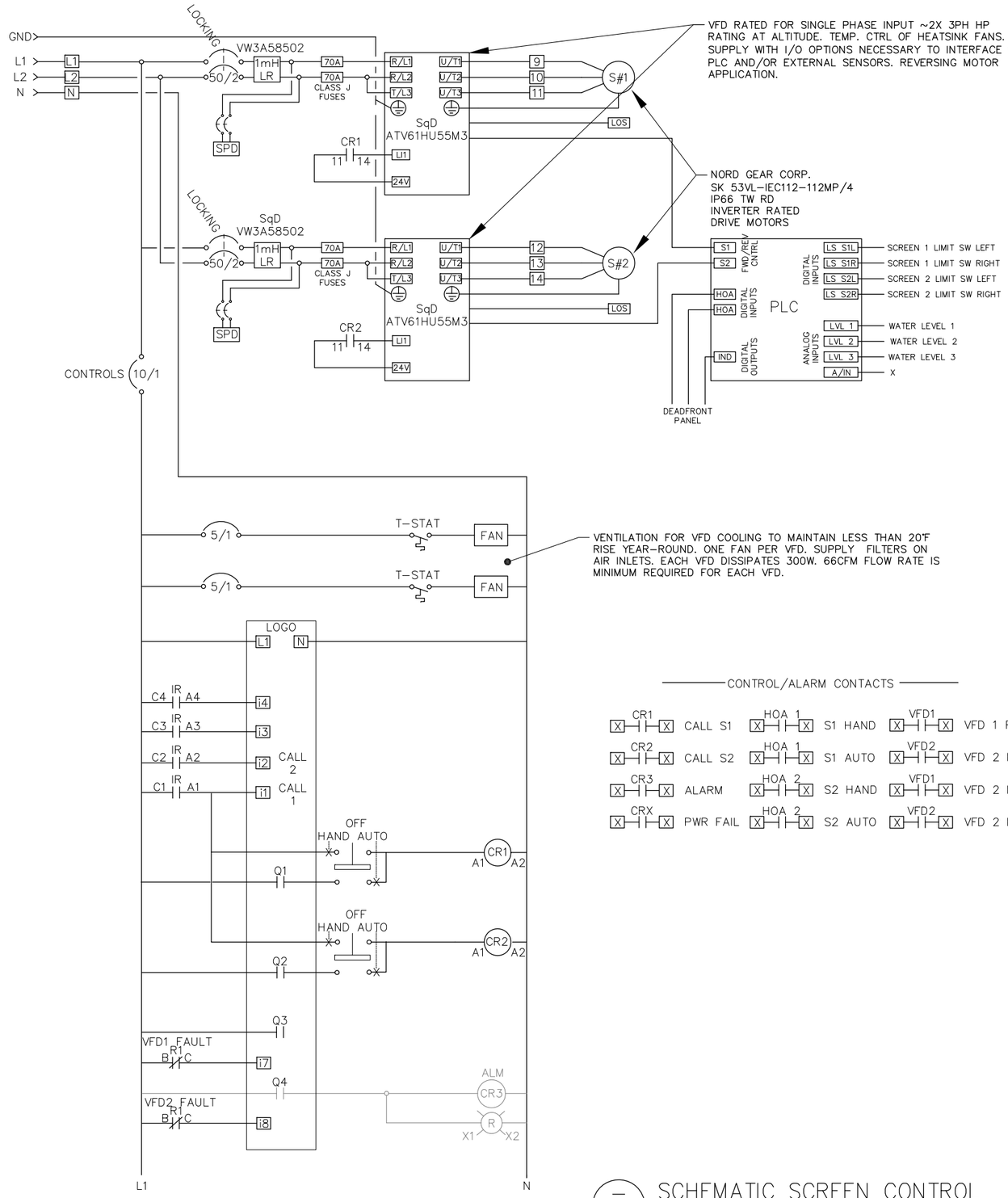
CLIENT NAME:
RESOURCE CONSERVATION DISTRICT
2 SUTTER ST., SUITE D
RED BLUFF, CA 96080
530.527.3013

FILE: One Water Antelope Creek 20Jan'1916.dwg
SCALE: NONE
DATE: 20 JAN 2019
REVISIONS:

DESCRIPTION:
ELECTRICAL DETAILS & LAYOUTS

SHEET: **E2**

2 OF XX SHEETS



CONTROL/ALARM CONTACTS

CR1	CALL S1	HOA 1	S1 HAND	VFD1	VFD 1 RUN
CR2	CALL S2	HOA 1	S1 AUTO	VFD2	VFD 2 RUN
CR3	ALARM	HOA 2	S2 HAND	VFD1	VFD 2 FAULT
CRX	PWR FAIL	HOA 2	S2 AUTO	VFD2	VFD 2 FAULT

E3 SCHEMATIC SCREEN CONTROL

SCALE: NONE SCHEMATIC OF REQUIREMENTS

SCREEN CONTROL NOTES

1. SCREENS SHALL BE CONTROLLED AND WATER FLOWS MONITORED AS REQUIRED IN CIVIL AND MECHANICAL PLANS.

2. VFD SHALL BE SUPPLIED WITH OPTIONS AND/OR OPTION CARDS AS REQUIRED FOR INTERFACING WITH PLC FOR NORMAL OPERATION WHICH REQUIRES FORWARD/REVERSE OPERATION OF THE MOTOR, AND WITH CONTACTS FOR STATUS AND ALARMS FOR FUTURE TELEMETRY OR SCADA SYSTEM.

3. CONTROL DIAGRAM IS SCHEMATIC OF REQUIREMENTS.

4. PROVIDE ISOLATED CONTACTS OR PARALLEL RELAY COILS TO DRIVE LOCAL ALARM/STATUS INDICATORS ON THE SCREEN CONTROL PANEL FROM EITHER A FUTURE SCADA/ALARM RTU OR OEM SCREEN CONTROLS, AS REQUIRED.

PROFESSIONAL ENGINEER – STATE OF CALIFORNIA
ERIC F. SANDEL
ELECTRICAL
EXP. 12/31/19
No. E16076
20 Jan 2019

TCRCD
Tehama County Resource Conservation District
#2 Sutter Street, Suite D, Red Bluff, CA 96080
530.527.3013 www.tehamacountyrcd.org

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ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

NEAR RED BLUFF, CA

RESOURCE CONSERVATION DISTRICT
2 SUTTER ST., SUITE D
RED BLUFF, CA 96080
530.527.3013

One Water Antelope Creek 20Jan'1916.dwg

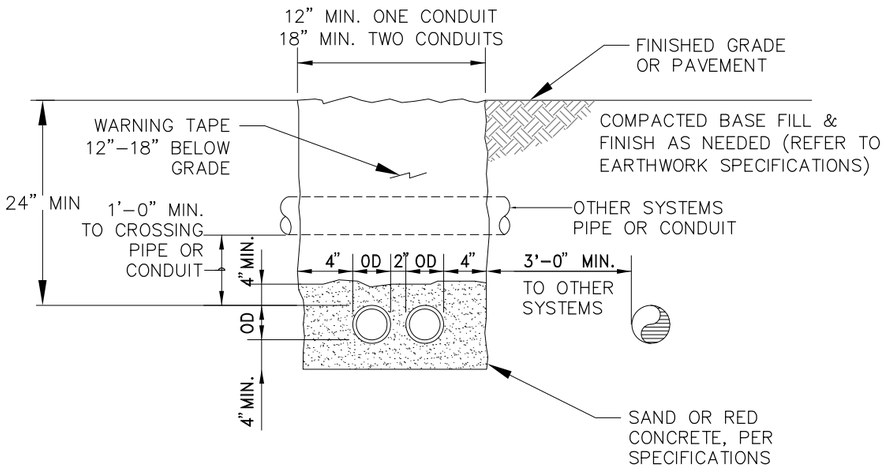
20 JAN 2019

DESCRIPTION:

SCREEN CONTROLS

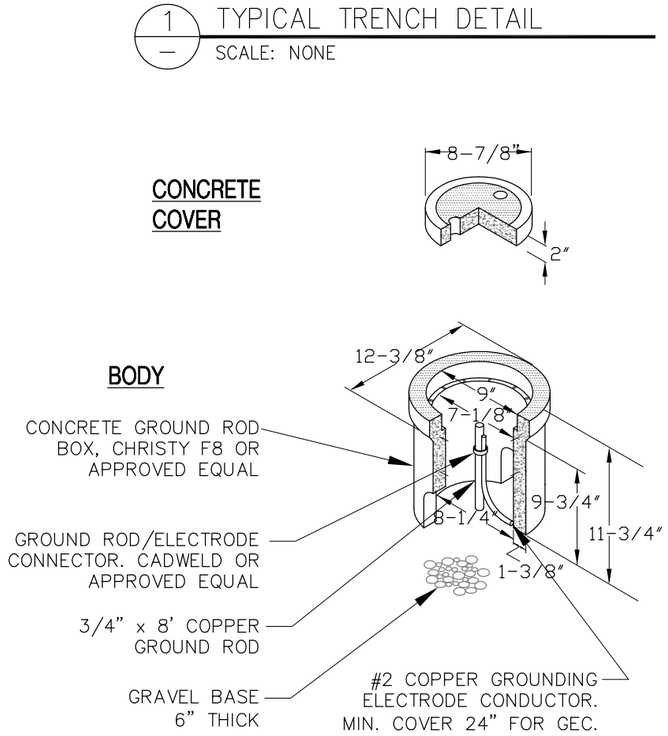
SHEET: E3

3 OF XX SHEETS

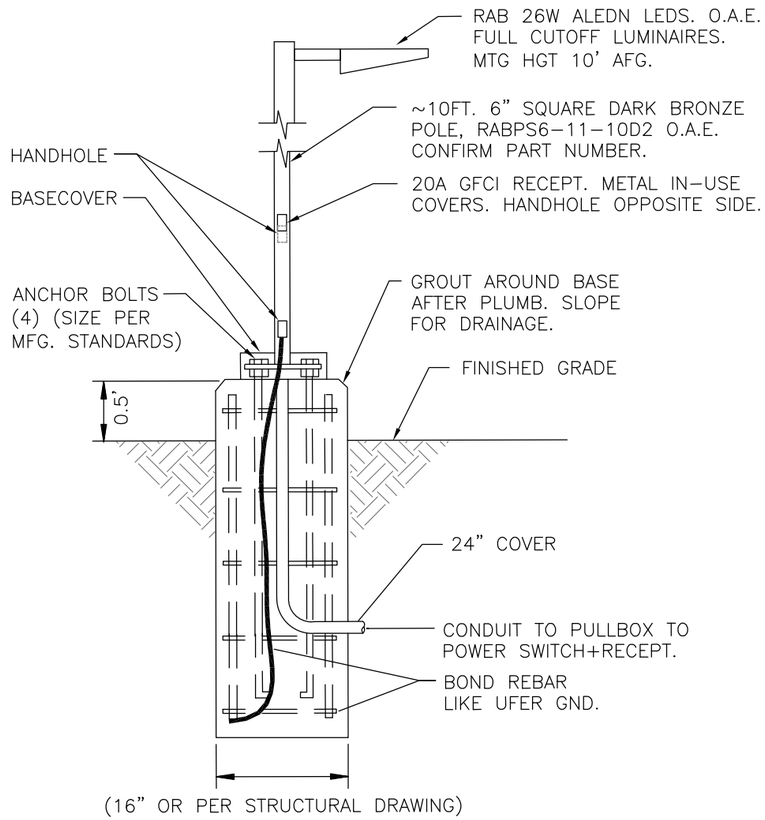


NOTE:
FOR TRENCHING LOCATED IN PAVED AREAS – ALL EARTHWORK AND REPAIR SHALL BE IN ACCORDANCE WITH AGENCY HAVING JURISDICTION.

1/– TYPICAL TRENCH DETAIL
SCALE: NONE



3/– GROUND ROD BOX
SCALE: NONE TYPICAL OF TWO



2/– LED AREA LIGHTING
SCALE: NONE TYPICAL OF FOUR

20 Jan 2019

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ANTELOPE CREEK FISH PASSAGE IMPROVEMENT PROJECT

NEAR RED BLUFF, CA

CLIENT NAME:
RESOURCE CONSERVATION DISTRICT
2 SUTTER ST., SUITE D
RED BLUFF, CA 96080
530.527.3013

One Water Antelope Creek 20Jan'1916.dwg
SCALE: NONE
DATE: 20 JAN 2019
REVISIONS:

DESCRIPTION:
ELECTRICAL DETAILS

SHEET:
E4
4 OF XX SHEETS

Appendix B

Potentially-occurring Special-status Vascular Plant Species

Appendix B: Special-status Plant Species with Potential to Occur at the Antelope Fish Passage Project, Tehama County, California

Scientific Name **Common Name**	**CNPS Rank**	**Geographic Range**	**Elevation (meters)**	**Habitat/Plant Community Associations**	**Flowering Period**
Acmispon rubriflorus **Red-flowered Birds-foot Trefoil**	1B.1	Colusa, Stanislaus, and Tehama counties	200 to 425	Cismontane Woodland and Valley and Foothill Grasslands	April - June
Agrostis hendersonii **Henderson's Bent Grass**	3.2	Butte (?), Calaveras, Merced, Napa, Shasta, Tehama and Tuolumne counties: Oregon	70 - 305	Valley and Foothill Grasslands (mesic), Vernal Pools	April - June
Astragulus pauperculus **Depauperate Milk-vetch**	4.3	California endemic: Butte, Placer, Shasta, Tehama and Yuba counties	60 to 1215	Vernally mesic, volcanic; Chaparral, Cismontane Woodland and Valley and Foothill Grasslands	March - June
California macrophylla **Round-leaved Filaree**	1B.1	California endemic: Alameda, Butte*, Contra Costa, Colusa, Fresno, Glenn, Kern, King, Lake, Lassen, Los Angeles, Merced, Monterey, Napa, Riverside, San Benito, San Diego, San Joaquin, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, San Mateo, Solano, Sonoma, Stanislaus, Tehama, Tulare, Ventura and Yolo counties	15 to 1200	Clay; Cismontane Woodland and Valley and Foothill Grasslands	March - May
Chamaecyce ocellata ssp. *rattanii* **Stony Creek Spurge**	1B.2	California endemic: Glenn and Tehama counties	85 to 800	Chaparral and Valley and Foothill Grasslands (sandy or rocky)	May - October
Clarkia gracilis spp. Albacaulis **White-stemmed Clarkia**	1B.2	California endemic: Butte, Lake and Tehama counties	245-1085 m	Sometimes serpentinite: Chaparral and Cismontane woodland	May - June
Crypthantha crinata **Silky Cryptantha**	1B.2	California endemic: Shasta and Tehama counties	61 to 1215	Gravelly streambeds; Cismontane Woodland, Lower Montane Coniferous Forest, Riparian Forest, Riparian Woodland, and Valley and Foothill Grasslands	April - May
Downingia pusilla **Dwarf downingia**	2B.2	Amador, Fresno, Merced, Napa, Placer, Sacramento, San Joaquin, Solano, Sonoma, Stanislaus, Tehama and Yuba counties; South America	1 to 445	Valley and Foothill Grasslands (mesic) and Vernal Pools	March - May
Fritillaria pluriflora	1B.2	California endemic: Butte, Colusa, Glenn, Lake,	60 to 705	Often adobe; Chaparral,	February - April

Scientific Name **Common Name**	**CNPS Rank**	**Geographic Range**	**Elevation (meters)**	**Habitat/Plant Community Associations**	**Flowering Period**
Adobe Lily		Napa, Solano, Tehama and Yolo counties		Cismontane Woodland and Valley and Foothill Grasslands	
Hesperevax caulescens ***Hogwallow Starfish***	4.2	California endemic: Alameda, Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Kern, Merced, Monterey, Napa*, Sacramento, San Diego*, San Joaquin, San Luis Obispo, Stanislaus, Sutter, Tehama and Yolo counties	0 to 505	Valley and Foothill Grasslands (mesic, clay) and Vernal Pools (shallow)	March - June
Juncus leiospermus var. *ahartii* **Ahart's Dwarf Rush**	1B.2	California endemic: Butte, Calaveras, Placer, Sacramento, Tehama and Yuba counties	30 to 229	Vernally mesic; Chaparral, Cismontane Woodland, Meadows and Seeps, Valley and Foothill Grasslands and Vernal Pools	March - May
Juncus leiospermus var. *leiospermus* **Red Bluff Dwarf Rush**	1B.1	California endemic: Butte, Placer, Shasta and Tehama counties	35 to 1250	Valley and Foothill Grasslands (mesic)	March - June
Limnanthes floccosa ssp. *floccosa* **Wooly Meadowfoam**	4.2	Butte, Lake, Lassen, Napa, Shasta, Siskiyou, Tehama and Trinity counties; Oregon	60 to 1335	Vernally mesic; Chaparral, Cismontane Woodland, Valley and Foothill Grasslands and Vernal Pools	March - June
Mimulus glaucescens **Shield-bracted Monkeyflower**	4.3	California endemic: Butte, Colusa, Lake, Nevada, Shasta and Tehama counties	60 to 1240	Serpentinite seeps, sometimes streambanks; Chaparral, Cismontane Woodland, Lower Montane Coniferous Forest and Valley and Foothill Grasslands	February - September
Navarretia heterandra **Tehama Navarretia**	4.3	Butte, Colusa, Lake, Napa, Shasta, Tehama, Trinity and Yuba counties; Oregon	30 to 1010	Valley and Foothill Grasslands (mesic), Vernal Pools	April - June
Navarretia leucocephala ssp. *bakeri* **Baker's Navarretia**	1B.1	Colusa, Glenn, Lake, Lassen, Mendocino, Mariposa, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties	5 to 1740	Mesic; Cismontane Woodland, Lower Montane Coniferous Forest, Meadows and Seeps, Valley and Foothill Grasslands and Vernal Pools	April - July
Paronychia ahartii	1B.1	California endemic: Butte, Shasta and Tehama	30 to 510	Cismontane Woodland, Valley	February - June

Scientific Name **Common Name**	**CNPS Rank**	**Geographic Range**	**Elevation (meters)**	**Habitat/Plant Community Associations**	**Flowering Period**
Ahart's paronychia		counties		and Foothill Grasslands and Vernal Pools	
Polygonum bidwelliae ***Bidwell's knotweed***	4.3	California endemic: Butte, Shasta and Tehama counties	60 to 1200	Chaparral, Cismontane Woodland and Valley and Foothill Grasslands	April - July
Sagittaria sanfordii **Sanfords Arrowhead**	1B.2	California endemic: Butte, Del Norte, Eldorado, Fresno, Mariposa, Merced, Orange*, Placer, Sacramento, San Bernardino, San Joaquin, Shasta, Solano, Tehama, Ventura* and Yuba counties	0 to 650	Marshes and Swamps (assorted shallow freshwater)	May - November

California Native Plant Society (CNPS) California Rare Plant Ranks (CRPR): CRPR 1B = Plants Rare, Threatened, or Endangered in CA and elsewhere: CRPR 2B = Plants Rare, Threatened or Endangered in CA but more common elsewhere: CRPR 3 = Plants about which more information is needed – a review list: CRPR 4 = Plants of limited distribution in CA

Threat ranks: 0.1 = seriously threatened in CA.; 0.2 = Fairly threatened in CA.; 0.3 = not very threatened in CA. : (*) = May be extirpated from County

Appendix C

Vascular Plant Species Observed Within or Near the Project Site

Appendix C-Table 2. Vascular Plant Species Identified during 2016 Field Surveys; Antelope Creek Fish-Passage Improvement Project; Tehama County, CA

Sambucus	*nigra*	ssp.	*caerulea*	N	Blue Elderberry
ALISMATACEA					**Water-Plantain Family**
Echinodorus	*berteroi*			N	Burhead
AMARANTHACEAE					**Amaranth Family**
Amaranthus	*albus*			I	Tumbleweed
ANACARDIACEAE					**Sumac Family**
Toxicodendron	*diversilobum*			N	Western Poison-oak
APIACEAE					**Carrot Family**
Anthriscus	*caucalis*			I	Bur-cherval
Saniculus	*crassicaulis*			N	Pacific Sanicle
Torilis	*arvensis*			I	Tall Sock-Destroyer
APOCYNACEAE					**Dogbane Family**
Asclepias	*eriocarpa*			N	Indian Milkweed
Aristolochiaceae					**Pipevine Family**
Aristolochia	*californica*			N	California Pipevine
ASTERACEAE					**Sunflower Family**
Artemisia	*douglasiana*			N	Mugwort
Baccharis	*salicifolia*			N	Mule's-fat
Bidens	*frondosa*			N	Sticktight
Centaurea	*solstitialis*			I	Yellow Starthistle
Erigeron	*canadensis*			N	Canadian Horseweed
Erigeron	*sumatrensis*			N	Many-flowered horseweed
Euthamia	*occidentalis*			N	Western Goldenrod
Gnaphalium	*palustre*			N	Western Cudweed
Hypochaeris	*glabra*			I	Smooth Cat's-ear
Lactuca	*serriola*			I	Prickly Lettuce
Leontodon	*saxatillis*			I	Long-beaked Hawkbit
Matricaria	*discoidea*			I	Common Pineapple-weed
Micropus	*californicus*	var.	*californicus*	N	Slender Cottonweed
Pseudognaphalium	*stramineum*			N	Cotton-batting Cudweed
Psilocarphus	*oregonus*			N	Oregon Woolly-marbles
Silybum	*marianum*			I	Milk-thistle
Sonchus	*asper*	ssp.	*asper*	I	Prickly Sow Thistle
Sonchus	*oleraceus*			I	Common Sow Thistle
Taraxacum	*officinale*			I	Common Dandelion
Xanthium	*strumarium*			N	Cocklebur
BETULACEAE					**Birch Family**
Alnus	*rhombifolia*			N	White Alder
BORAGINACEAE					**Popcorn-Flower Family**
Amsinckia	*menziesii*			N	Menzies' Fiddleneck
Heliotropum	*curassavicum*	var.	*oculatum*	N	Wild Heliotrope
Plagiobothrys	*bracteatus*			N	Bracted Popcorn-flower
Plagiobothrys	*canescens*			N	Valley Popcorn-flower
BRASSICACEAE					**Mustard Family**
Arabidopsis	*thaliana*			I	Thalecress
Capsella	*bursa-pastoris*			I	Shepherds's-purse
Cardamine	*oligosperma*			N	Western Bittercress
Hirschfeldia	*incana*			I	Mediterranean Hoary-mustard
Lepidium	*strictum*			I	Upright Pepper-grass
Nasturtium	*officinale*			N	Water-cress
Raphanus	*raphinastrum*			I	Jointed Charlock
Sisymbrium	*officinale*			I	Hedge-mustard
Thysanocarpus	*curvipes*	var.	*elegans*	N	Elegant Fringepod
CALYCANTHACEAE					**Calycanthus Family**
Calycanthus	*occidentalis*			N	Western Spicebush
CAMPANULACEAE					**Bellflower Family**
Triodanis	*biflora*			N	Small Venus' Looking-glass
CARYOPHYLLACEAE					**Carnation Family**
Cerastium	*glomeratum*			I	Sticky Mouse-eared Chickweed
Herniaria	*hirsuta*	ssp.	*hirsuta*	I	Herniaria
Petrorhagia	*dubia*			I	Grass Pink
Spergularia	*rubra*			I	Ruby Sandspurry
Stellaria	*media*			I	Common Chickweed
Stellaria	*pallida*			I	Pale Chickweed
CHENOPODICAEAE					**Goosefoot Family**
Chenopodium	*album*			I	Lamb's Quarters
Dysphania	*ambrosioides*			I	Mexican Tea
CONVOLVULACEAE					**Morning-Glory Family**
Convolvulus	*arvensis*			I	Bindweed

Appendix C-Table 2. Vascular Plant Species Identified during 2016 Field Surveys; Antelope Creek Fish-Passage Improvement Project; Tehama County, CA

CUCURBITACEAE					**Cucumber Family**
Marah	*fabacea*			N	California Manroot
CYPERACEAE					**Sedge Family**
Carex	*nudata*			N	Torrent Sedge
Cyperus	*eragrostis*			N	Tall Cyperus
DIPSICACEAE					**Teasal Family**
Dipsacus	*sp.*			I	Teasal
EQUISETACEAE					**Horsetail Family**
Equisetum	sp.			N	Scouring Rush
Euphorbiaceae					**Spurge Family**
Croton	*setiger*			N	Turkey-mullein
FABACEAE					**Pea Family**
Acmispon	*americanus*	var.	*americanus*	N	Spanish Lotus
Lotus	*corniculatus*			I	Bird's-foot Trefoil
Medicago	*polymorpha*			I	California or Common Bur-clover
Melilotus	*albus*			I	White Sweet-clover
Melilotus	*indicus*			I	Indian Sweet-clover
Trifolium	*dubium*			I	Little Hop Clover
Trifolium	*glomeratum*			I	Sessile-headed Clover
Trifolium	*hirtum*			I	Rose Clover
Trifolium	*microcephalum*			N	Small-headed Clover
Trifolium	*subterraneum*			I	Subterranean Clover
Vicia	*villosa*	ssp.	*varia*	I	Winter Vetch
Vicia	*sativa*			I	Garden Vetch
FAGACEAE					**Oak Family**
Quercus	*lobata*			N	Valley Oak
Zeltnera	venusta			N	Canchalagua
GERANIACEAE					**Geranium Family**
Erodium	*botrys*			I	Long-beaked Stork's-bill
Erodium	*cicutarium*			I	Red-stemmed Filaree
Erodium	*moschatum*			I	White-stemmed Filaree
Geranium	*carolinianum*			I	Carolina Geranium
Geranium	*molle*			I	Dove's-foot Geranium
HYPERICACEAE					**Klammathweed Family**
Hypericum	*anagalloides*			I	Timker's-penny
Hypericum	*perforatum*			I	Klamathweed
JUGLANDACEAE					**Walnut Family**
Juglans	*nigra*			N	Black Walnut
JUNCACEAE					**Rush Family**
Juncus	*bufonius*	var.	*bufonius*	N	Common Toad Rush
Juncus	*effusus*	ssp.	*pacificus*	N	Pacific Rush
LAMIACEAE					**Mint Family**
Lycopus	*americanus*			N	Cut-leaved Bugleweed
Marrubium	*vulgare*			I	Horehound
LYTHRACEAE					**Loosestrife Family**
Lythrum	*hyssopifolium*			I	Hyssop Loosestrife
MOLLUGINACAEE					**Carpet-Weed Family**
Mollugo	*verticillata*			I	Indian Chickweed
MONTIACEAE					**Purselane Family**
Calandrinia	*ciliata*			N	Redmaids
Claytonia	*parviflora*	ssp.	*parviflora*	N	Small-flowered Miner's Lettuce
Claytonia	*perfoliata*			N	Common Miner's Lettuce
MORACEAE					**Fig Family**
Ficus	*carica*			I	Edible Fig
OLEACEAE					**Olive Family**
Fraxinus	*latifolia*			N	Oregon Ash
ONAGRACEAE					**Primrose Family**
Clarkia	*gracilis*	ssp.	*albicaulis*	N	White-stemmed Clarkia
Clarkia	*concinna*	ssp.	*concinna*	N	Redribbons
Clarkia	*purpurea*	ssp.	*quadrivulnera*	N	Purple Clarkia
Epilobium	*ciliatum*			N	Willowherb
Epilobium	*cleistogamum*			N	Cleistogamous Spike-primrose
Epilobium	*brachycarpum*			N	Tall Annual Willowherb
Epilobium	*pallidum/torreyi*			N	Spike-primrose
Ludwegia	*peploides*	ssp.	*peploides*	N	Yellow Waterweed
OROBANCHACEAE					**Broomrape Family**
Castilleja	*attenuata*			N	Valley Tassel
PHRYMACEAE					**Monkey-Flower Family**
Mimulus	*glaucescens*			N	Sheild-bracted Monkey-flower

Appendix C-Table 2. Vascular Plant Species Identified during 2016 Field Surveys; Antelope Creek Fish-Passage Improvement Project; Tehama County, CA

Mimulus	*gutattus*			N	Seep Monkey-flower
PHYTOLACCEAE					**Pokeweed Family**
Phytolacca	*americana*	var.	*americana*	I	America Pokeweed
PLANTAGINACEAE					**Plantain Family**
Plantago	*lanceolata*			I	English Plantain
Veronica	*americana*			N	American Brooklime
Veronica	*peregrina*	ssp.	*xalapensis*	N	Purslane Speedwell
PLATANACEAE					**Sycamore Family**
Platanus	*racemosa*			N	Western Sycamore
POACAE					**Grass Family**
Aira	*caryophyllea*			I	Silver European Hairgrass
Avena	*barbata*			I	Slender Wild Oat
Avena	*fatua*			I	Wild Oat
Briza	*minor*			I	Lesser Quaking-grass
Bromus	*diandrus*			I	Ripgut Brome
Bromus	*hordeaceus*			I	Soft Chess
Bromus	*sterilis*			I	Proverty Brome
Cynodon	*dactylon*			I	Bermuda Grass
Cynosurus	*echinatus*			I	Hedgehog Dogtail
Elymus	*glaucus*	ssp.	*glaucus*	N	Blue Wild-rye
Festuca	*perennis*			I	Annual Ryegrass
Festuca	*myuros*			I	Rattail Sixweeks Grass
Hordeum	*marinum*	ssp.	*gussoneanum*	I	Mediterranean Barley
Hordeum	*murinum*	ssp.	*leporinum*	I	Hare Wall Barley
Leersia	*oryzoides*			N	Rice Cutgrass
Paspalum	*distichum*			N	Knotgrass
Poa	*annua*			I	Annual Bluegrass
Polypogon	*monspeliensis*			I	Annual Beard Grass
Sorghum	*halepense*			I	Johnsongrass
POLEMONIACEAE					**Phlox Family**
Gilia	*capitata*			N	Globe Gilia
POLYGANACEAE					**Bukcwheat Family**
Persicaria	sp.			I	Water Pepperweed
Polygonum	*aviculare*	ssp.	*depressum*	I	Common Knotweed
Rumex	*crispus*			I	Curly Dock
Rumex	*pulcher*			I	Fiddle Dock
POTAMOGETONACEAE					**Pondweed Family**
Potamogeton	*foliosus*	var.	*foliosus*	N	Leafy Pondweed
Potamogeton	*nodosus*			M	Long-leaved Pondweed
RANUNCULACEAE					**Buttercup Family**
Ranunculus	*hebecarpus*			N	Pubescent-fruited buttercup
RHAMNACEAE					**Lilac Family**
Ceanothus	*cuneatus*	var.	*cuneatus*	N	Buckbrush
ROSACEAE					**Rose Family**
Rosa	*californica*			N	California Rose
Rubus	*armeniacus*			I	Himalayan Blackberry
Rubus	*ursinus*			N	California Blackberry
RUBIACEAE					**Madder Family**
Cephalanthus	*occidentalis*			N	California Button Willow
Galium	*aparine*			N	Cleavers
Galium	*parisiense*			I	Wall Bedstraw
Sheradia	*arevensis*			I	Field Madder
SALICACEAE					**Willow Family**
Populus	*fremontii*	ssp.	*fremontii*	N	Fremont's Cottonwood
Salix	*exigua*			N	Sandbar Willow
Salix	*lasiolepis*			N	Arroyo Willow
Salix	*melanopsis*			N	Dusky Willow
SCROPHULARIACEAE					**Figowort**
Verbascum	*blattaria*			I	Moth Mullein
Verbascum	*thapsis*			I	Woolly Mullein
SOLANACEAE					**Nightshade Family**
Datura	*strm*				
Nicotiana	*glauca*			I	Tree tobacco
URTICACEAE					**Nettle Family**
Urtica	*dioica*	ssp.	*holosericea*	N	Hoary Creek Nettle
Urtica	*urens*			I	Burning Nettle
VITACEAE					**Grape Family**
Vitis	*californica*			N	California Wild Grape

Appendix C-Table 2. Vascular Plant Species Identified during 2016 Field Surveys; Antelope Creek Fish-Passage Improvement Project; Tehama County, CA

ZYGOPHYLLACEAE					**Caltrop Family**
Tribulus	*terrestris*			I	Punctureivine

Appendix D

Potentially-occurring Special-status Faunal Species

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
AMPHIBIANS & REPTILES				
Western Pond Turtle *(Emys marmorata)*	---	CSC	In or near aquatic habitats in slow moving water. Often associated with basking substrate (e.g. logs, large rocks, etc.) Use adjacent uplands to nest and overwinter.	Known to occur within the project site. Juveniles observed at the Edwards diversion dam (M. Johnson pers. comm. 2016).
Foothill Yellow-legged Frog *(Rana boylii)*	---	CT / CSC	In or near rocky streams in a variety of habitats. Rarely encountered far from permanent water.	May occur within the project site. Potential breeding habitat present within the project site. Known to occur in Antelope Creek in the Tehama Wildlife Area, approximately 7 miles upstream of the study area (Plemons 2013). Not observed during site surveys.
California Red-legged Frog *(Rana draytonii)*	T	CSC	Slow moving or pooled aquatic habitats with overhanging vegetation.	Not likely to occur within the study area due to the fact that the study area is well outside of the current known range of the species and because this species is believed to have been extirpated from the Sacramento Valley (U.S. Fish and Wildlife Service 2002). Not observed during site surveys; however, protocol-level surveys were not conducted.
Western Spadefoot *(Spea hammondii)*	---	CSC	Grasslands, and occasionally, valley-foothill hardwood woodlands with shallow temporary pools for breeding.	Not likely to breed within the project site due to a lack of preferred breeding habitat. Potential breeding habitat present near the project site. Known to occur approximately 13.5 miles to the northwest near Cottonwood, California (CDFW 2017c). Not observed during site surveys; however, targeted surveys were not conducted.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
BIRDS				
Tricolored Blackbird *(Agelaius tricolor)*	---	CE / CSC	Breeds colonially in tall emergent vegetation or sometimes in tall, upland herbaceous vegetation in areas large enough to support approximately 50 pairs (Zeiner et al. 1990a). Forages in grasslands and agricultural lands.	Not likely to nest within the project site, due to a lack of suitable nesting habitat of sufficient size. May forage within the project site if nesting habitat is present in the general area. Known to occur approximately 6.8 miles southwest of the project site near Interstate 5 (CDFW 2017c) and to the south of the project area within the Dye Creek Preserve. Not observed during site surveys.
Grasshopper Sparrow *(Ammodramus savannarum)*	---	CSC	Uses short- to mid-height moderately open grasslands with scattered shrubs and tall forbs. Ground nesting in depressions near the base of overhanging grass or forb clumps.	Not likely to nest within the project site, due to a lack of suitable nesting habitat. Potential nesting and foraging habitat present adjacent to the initial portion of the access haul route. May forage within the project area if nesting within the general area. Not observed during site surveys. Known to occur south of the project site within the Dye Creek Preserve.
Golden Eagle *(Aquila chrysaetos)*	---	FP	Uses rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, and cliffs and rock outcrops. Generally inhabit more open country.	Not likely to nest within the project site due to a lack of preferred nesting habitat within the project site. Winter foraging habitat is present within the project site. May forage within the project site if nesting habitat is present in the general area or during the winter. Known to nest south of project site within the Dye Creek Preserve. Not observed during site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Short-eared Owl *(Asio flammeus)*	---	CSC	Uses open areas with few trees including grasslands, prairies, dunes, meadows, irrigated areas and emergent wetlands. Nests in open country supporting rodents and herbaceous cover sufficient to conceal ground nests.	Not likely to nest within the project site due to the fact that the project site is well outside of the current known range of nesting for the species. Potential winter foraging and roosting habitat is present within the project site. Not observed during site surveys.
Long-eared Owl *(Asio otus)*	---	CSC	Riparian, live oak or conifer thickets with small, densely canopied trees used for roosting and nesting. Generally forages in open areas.	May occur within the project site. Potential nesting and foraging habitat present within the project site. Not observed during site surveys.
Burrowing Owl *(Athene cunicularia)*	---	CSC	Uses open grasslands, deserts or scrublands. Nest in small mammal burrows, pipes, culverts or nesting boxes. Species is gregarious.	Not likely to nest within the project site due to a lack of nesting habitat however, potential nesting and foraging habitat for this species occurs adjacent to the study area. May forage within the project area if nesting within the general area or during the winter. Known to occur approximately 1.4 miles to the northwest of the project site (CDFW 2017c). Not observed during site surveys. No potential burrows observed during site surveys.
Swainson's Hawk *(Buteo swainsoni)*	---	T	Open desert, grassland or cropland containing scattered large trees, small groves or riparian woodlands. Nests in scattered trees, small groves, sparsely vegetated flatlands or in riparian woodlands.	May occur within the project site. Potential nesting and foraging habitat present within the project site. Known to nest approximately 2.5 miles to the southwest of the project site (CDFW 2017c) and observed within approximately one mile of the project site at Cone Grove Park and south of the project site in the Dye Creek Preserve (J. Souza pers. comm. 2017). No individuals observed during site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Vaux's Swift *(Chaetura vauxi)*	---	CSC	Nests in large hollow trees and snags in redwood, Douglas fir and other conifer habitats. Often nests in large colonies. Forages widely, but prefers rivers and lakes.	Not likely to nest within the project site due to the fact that the study area is well outside of the known breeding range for this species and a lack of nesting habitat within the project site. Potential foraging habitat present within the project site. May forage within the project area if nesting within the general area. Not observed during site surveys.
Northern Harrier *(Circus cyaneus)*	---	CSC	Nests and forages in a variety of open habitats such as grasslands, rangelands, agricultural lands, meadow and emergent wetland that provide adequate vegetative cover, prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. Nests on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas.	May occur within the project site. Potential nesting and foraging habitat present within the project site. Known to occur south of the project site within the Dye Creek Preserve. Not observed during site surveys.
Western Yellow-billed Cuckoo *(Coccyzus americanus occidentalis)*	T	E	Dense deciduous riparian cover, especially willow with low level understory foliage, near slow moving water with high humidity, utilizes riparian forests and adjacent orchards for foraging. Requires large habitat patch sizes, greater than or equal to seven acres in size for nesting.	Not likely to nest within project site, due to lack of minimum nesting habitat acreage requirements. May forage within the project area if nesting within the general area. Known to occur approximately 3.2 miles to the southwest of the project site along the Sacramento River (CDFW 2017c). No individuals observed during site surveys.
Black Swift *(Cypseloides niger)*	---	CSC	Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above surf. Forages widely.	Not likely to nest within project site due to the fact that the study area is well outside of the known breeding range for this species and a lack of nesting habitat within the project site. May forage within the project site during spring and fall migration. Not observed during site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
White-tailed Kite *(Elanus leucurus)*	---	FP	Nests in dense tree stands near open foraging areas. Forages in open grassland and agricultural areas.	May occur within the project site. Potential nesting and foraging habitat present within the project site. Known to occur south of the project site within the Dye Creek Preserve. Not observed during site surveys.
Little Willow Flycatcher *(Empidonax traillii brewsteri)*	---	E	Nests in upper elevation riparian and wet meadow habitats.	Not likely to nest within project site, due to low elevations of the project site. May forage within the project site during spring and fall migration. Not observed during site surveys.
American Peregrine Falcon (*Falco peregrinus anatum*)	D	D / FP	Riparian areas, coastal and inland wetlands are important habitats. Breeds mostly in woodland, forest and coastal habitats on cliff ledges, occasionally in snag cavities and in other used raptor nests.	Not likely to nest within project site, due to lack of nesting habitat within the project site. May forage within the project area if nesting within the general area or during the winter. Known to nest south of the project site within the Dye Creek Preserve. Not observed during site surveys.
American Bald Eagle *(Haliaeetus leucocephalus)*	D	E / FP	Nests in large trees with open branchwork, usually near permanent water including rivers, streams and lakes / reservoirs. Forages over large bodies of water with abundant fish.	Known to occur within the project site. Nesting and foraging habitat present within the project site. Known to occur south of the project site within the Dye Creek Preserve. Observed during site surveys.
Yellow-breasted Chat *(Icteria virens)*	---	CSC	Nests in dense shrubs along streams and rivers. Found in elevations up to approximatly 4,800 feet in valley foothill riparian habitat, and up to approximately 6,500 feet in elevation, east of the Sierra Nevada in desert riparian habitats.	May nest within the riparian areas of the project site. Potential nesting and foraging habitat present. Known to occur approximately 4.3 miles to the south of the project site (CDFW 2017c) and known to nest south of the project site within the Dye Creek Preserve. Observed during site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Loggerhead Shrike *(Lanius ludovicianus)*	---	CSC	Prefers open habitats with scattered trees, shrubs, posts, fences and other perches. Found primarily in valley-foothill and desert habitats.	May occur within the project site. Potential nesting and foraging habitat present within the project site. Known to nest south of the project site within the Dye Creek Preserve. Not observed during site surveys.
American White Pelican *(Pelecanus erythrorhynchos)*		CSC	Rests in day and roosts at night along edge of water, on beaches, sandbars, or old driftwood, but never in trees. Nests at large freshwater and saltwater lakes, usually on small islands or remote dikes.	Not likely to nest within the project site due to a lack of suitable nesting habitat within the project site. May forage within the project site. Observed flying at high elevations over the project site during site surveys.
Bank Swallow *(Riparia riparia)*	---	T	Nests in excavated burrows in fine-textured vertical stream banks.	Not likely to nest within the project site due to a lack of suitable nesting habitat. May forage within the project site if nesting habitat is present in the general area. Known to occur approximately 3.2 miles to the southwest of the project site near the Sacramento River (CDFW 2017c). Not observed during site surveys.
Yellow Warbler *(Setophaga petechia)*	---	CSC	Nests in riparian habitats, montane chaparral and open conifer forests with substantial amounts of brush.	May nest in riparian habitats within the project site. Likely to forage within the project site during spring and fall migration if nesting does not occur locally. Known to occur near the Sacramento River approximately four miles to the south of the project site (CDFW 2017c). Not observed during site surveys.
Least Bell's Vireo *(Vireo bellii pusillus)*	E	E	Lowland riparian areas. Nests in willows, mulefat, wildrose, etc.	Not likely to occur within the study area due to the fact that the study area is well outside the current known range of the species. Not observed during site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
FISH				
Green Sturgeon (Southern DPS) (*Acipenser medirostris*)	T	CSC	Requires cool freshwater for spawning in large cobble. Spawning takes place in deep, fast water.	Not likely to occur due to a lack of preferred habitat. Not observed during site surveys, however intensive fish surveys were not conducted.
Riffle Sculpin *(Cottus gulosus)*	---	CSC	Found exclusively in permanent coldwater streams where riffles and rocky substrates predominate. Prefer shallow fast-flowing waters.	Adults and juveniles are known to occur within the project site (M. Johnson pers. comm. 2016). Not observed during site surveys, however intensive fish surveys were not conducted.
Pacific Lamprey *(Entosphenus tridentatus)*	---	CSC	Occupy habitat downstream of impassable dams in Sacramento River tributaries primarily on the valley floor and foothills. Adults spawn in gravelly riffles in river tributary streams. Ammocoetes (young) use soft stream sediments.	Adults are known to migrate through and spawn near the project site (M. Johnson pers. comm. 2016). Juveniles are known to rear within the project site (M. Johnson pers. comm. 2016). Not observed during site surveys, however intensive fish surveys were not conducted.
River Lamprey (*Lampetra ayresi*)	---	CSC	Adults spawn in gravelly riffles in river tributary streams. Ammocoetes (young) use silty backwaters and eddies.	Not likely to occur. Known to occur in the Sacramento River but is rarely observed in tributaries, and only near the river (R.J. Bottario pers. comm.). Not well studied in Deer Creek. Not observed during site surveys, however intensive fish surveys were not conducted.
Hardhead (*Mylopharodon conocephalus*)	---	CSC	Low to mid-elevation streams up to 4,900 feet in elevation in the Sacramento drainage. Also present in the San Joaquin River and Russian River. Clear, deep pools with sand, gravel, and boulder substrate. Slow water velocity. Not found where exotic centrarchids predominate.	Adults and juveniles are known to occur within the project site (M. Johnson pers. comm. 2016). Not observed during site surveys, however intensive fish surveys were not conducted.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Central Valley Steelhead *(Oncorhynchus mykiss)*	T	---	Spawns in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	Adults are known to migrate through and spawn upstream of the project site and juveniles rear in the project site (M. Johnson pers. comm. 2016). Rainbow trout / steelhead were not observed during site surveys, however intensive fish surveys were not conducted.
Central Valley Fall- / Late Fall-run Chinook Salmon *(Oncorhynchus tshawytscha)*	SC	CSC	Spawn in cool, clear water with clean spawning gravel in the Sacramento River and many tributaries.	May spawn, hold and / or rear within the project site. Adults are known to migrate through and spawn upstream and downstream of the project site (Stillwater Sciences and RCDTC 2015, M. Johnson pers. comm. 2016) and juveniles rear in the project site (M. Johnson pers. comm. 2016). Not observed during site surveys, however intensive fish surveys were not conducted.
Central Valley Spring-run Chinook Salmon *(Oncorhynchus tshawytscha)*	T	T	Spawns in the late summer / early fall in cool, clear water with clean spawning gravel in the Sacramento River and some tributaries.	May spawn, hold and / or rear within the project site. Adults are known to migrate through and spawn upstream of the project site and juveniles rear in the project site (M. Johnson pers. comm. 2016). Not observed during site surveys; however intensive fish surveys were not conducted.
Sacramento River Winter-run Chinook Salmon *(Oncorhynchus tshawytscha)*	E	E	Spawns in the summer in cool, clear water with clean spawning gravel, almost exclusively in the main-stem of the Sacramento River.	Not known to use Antelope Creek for holding or spawning (Bratcher and Olson 2007). Non-natal rearing may occur at the mouth of Antelope Creek and a small distance upstream, if water temperatures permit (Maslin et al. 1999); however, the confluence with Sacramento River is approximately four miles downstream of the study area. Not observed during site surveys; however intensive fish surveys were not conducted.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
INVERTEBRATES				
Conservancy Fairy Shrimp *(Branchinecta conservatio)*	E	---	Vernal pool and vernal pool-like habitats.	Not likely to occur within the project area due to the project site location being outside of the known range for this species. Not observed during site surveys however, surveys were not conducted.
Vernal Pool Fairy Shrimp *(Branchinecta lynchi)*	T	---	Vernal pool and vernal pool-like habitats.	May occur near study area within vernal pool habitat adjacent to the access haul road. Known to occur approximately six miles to the southwest of the project site (CDFW 2017c). Not observed during site surveys; however, surveys were not conducted.
Valley Elderberry Longhorn Beetle *(Desmocerus californicus dimorphus)*	T	---	Elderberry shrubs with stems 1 inch or greater in diameter.	May occur within the project site. Potential habitat present within the project site. Known to occur approximately 1.5 miles to the west of the project site (CDFW 2017c). No exit holes observed during site surveys.
Vernal Pool Tadpole Shrimp *(Lepidurus packardi)*	E	---	Vernal pool and ephemeral wetland habitats.	May occur near study area within vernal pool habitat adjacent to the access haul road. Known to occur approximately 6.8 miles to the north of the project site (CDFW 2017c). Not observed during site surveys; however, surveys were not conducted.
MAMMALS				
Pallid Bat *(Antrozous pallidus)*	---	CSC	Uses a wide variety of habitats including grassland, shrubland, woodland and forest. Roosts in caves, mines, crevices, hollow trees and buildings.	Known to occur within the project site. Roosting and foraging habitat present within the project site. Detected during acoustical surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Ringtail *(Bassariscus astutus)*	---	FP	Riparian habitats and forest and shrub habitats near rocky areas or riparian areas from low to middle elevations.	May occur. Potential denning and foraging habitat present within the project site. Not observed during site surveys.
Gray Wolf (*Canis lupis*)	E	E	Uses a variety of habitats including temperate forests, mountains, tundra, taiga and grasslands.	Not likely to occur within the project area. Potential denning and foraging habitat present within the project site; however, there is an extremely low likelihood of occurrence within the project site due to the very low density of wolves in California and the extremely large territory wolves occupy. A detection of one adult was recorded within one mile of the project site in 2011, 2012 and 2013 while migrating through the area (CDFW 2017b). Not observed during site surveys.
Townsend's Big-eared Bat *(Corynorhinus townsendii)*	---	CSC	Roosts in caves, mines, tunnels, buildings and in large hollow trees. Very sensitive to human disturbance; however, in some instances it can become habituated to reoccurring and predictable human activity.	May roost and forage within the project site. Potential roosting and foraging habitat in the form of hollow trees present within the project site. Not detected during acoustical site surveys, however this species is difficult to detect acoustically.
Spotted Bat *(Euderma maculatum)*	---	CSC	Prefers to roost in rock crevices on cliffs but occasionally roosts in caves and buildings. Forages over water in a variety of habitats.	Not likely to roost within the project site due to a lack of roosting habitat in the form of rock crevices, buildings or caves. May forage in the project site if roosting in the general vicinity. Known to occur approximately 15.9 miles to the northeast of the project site (CDFW 2017c) and known to occur south of the project site within the Dye Creek Preserve. Not detected during acoustical site surveys.

APPENDIX D
Potentially-occurring Special-status Species
Antelope Creek Fish Passage Improvement Project

SPECIES	LISTING STATUS		TYPICAL HABITAT	POTENTIAL FOR OCCURRENCE
Common Name (*Scientific Name*)	Federal	State		
Western Mastiff Bat *(Eumops perotis)*	---	CSC	Roosts in crevices in cliff faces, high buildings, trees and tunnels. Occurs in open arid to semi-arid habitats with abundant roost sites.	Not likely to roost within the project site due to a lack of roosting habitat in the form of rock crevices, high buildings or tunnels. May forage in the project site if roosting in the general vicinity. Known to occur approximately 2.5 miles to the southeast of the project site (CDFW 2017c). Not detected during acoustical site surveys.
Western Red Bat (*Lasiurus blossevillii*)	---	CSC	Roosts primarily in trees, less often in shrubs. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Prefers edges or habitat mosaics that have trees for roosting and open areas for foraging.	Known to occur within the project site. Roosting and foraging habitat present within the project site. Detected during acoustical site surveys.

LEGEND:

E = Endangered
T = Threatened
C = Candidate for listing as Endangered or Threatened
P = Proposed for listing as Endangered or Threatened
D = Delisted
PD = Proposed for Delisting
CSC = California Species of Special Concern
FP = California Fully Protected
SC = NMFS Species of Concern

Appendix E

Faunal Species Observed Within or Near the Project Site

APPENDIX E
Faunal Species Observed Within or Near the Project Site
Antelope Creek Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
AMPHIBIANS & REPTILES			
Bullfrog (larvae and adult)*	*Rana catesbeiana*		
Garter Snake	*Thamnophis sp.*		
Gopher Snake	*Pituophis melanoleucus*		
Pacific Chorus Frog	*Pseudacris regilla*		
Western Fence Lizard	*Sceloporus occidentalis*		
Western Rattlesnake	*Crotalus viridis*		
BIRDS			
American Bald Eagle	*Haliaeetus leucocephalus*	D	E/FP
American Kestrel	*Falco sparverius*		
American Robin	*Turdus migratorius*		
American White Pelican	*Pelecanus erythrorhynchos*		CSC
Ash-throated Flycatcher	*Myiarchus cinerascens*		
Belted Kingfisher	*Ceryle alcyon*		
Bewick's Wren	*Thryomanes bewickii*		
Black Phoebe	*Sayornis nigricans*		
Blue Grosbeak	*Passerina caerulea*		
Brewer's Blackbird	*Euphagus cyanocephalus*		
Bullock's Oriole	*Icterus bullockii*		
Bushtit	*Psaltriparus minimus*		
California Horned Lark	*Eremophila alpestris actia*		
California Quail	*Callipepla californica*		
California Towhee	*Pipilo crissalis*		
Common Merganser	*Mergus merganser*		
Common Raven	*Corvus corax*		
Cooper's Hawk	*Accipiter cooperii*		
Downy Woodpecker	*Picoides pubescens*		
Eurasian Collared-Dove*	*Streptopelia decaocto*		
European Starling*	*Sturnus vulgaris*		
Great Blue Heron	*Ardea herodias*		
Great Egret	*Casmerodius albus*		
Great Horned Owl	*Bubo virginianus*		
House Finch	*Carpodacus mexicanus*		
House Wren	*Troglodytes aedon*		
Killdeer	*Charadrius vociferous*		
Lawrence's Goldfinch	*Carduelis lawrencei*		
Lesser Goldfinch	*Spinus psaltria*		
Loggerhead Shrike	*Lanius ludovicianus*		CSC
Mallard	*Anas platyrhynchos*		
Mourning Dove	*Zenaida macroura*		
Northern Flicker	*Calaptes auratus*		
Northern Harrier	*Circus cyaneus*		CSC
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*		
Nuttall's Woodpecker	*Picoides nuttallii*		
Oak Titmouse	*Parus inornatus*		

APPENDIX E
Faunal Species Observed Within or Near the Project Site
Antelope Creek Fish Passage Improvement Project

COMMON NAME	SCIENTIFIC NAME	LISTING STATUS	
		Federal	State
Osprey	*Pandion haliaetus*		
Red-tailed Hawk	*Buteo jamaicensis*		
Red-winged Blackbird	*Agelaius phoeniceus*		
Spotted Towhee	*Pipilo maculatus*		
Tree Swallow	*Tachycineta bicolor*		
Turkey Vulture	*Cathartes aura*		
Western Bluebird	*Sialia mexicana*		
Western Kingbird	*Tyrannus verticalis*		
Western Meadowlark	*Sturnella neglecta*		
Western Scrub-Jay	*Aphelocoma californica*		
Western Wood-Pewee	*Contopus sordidulus*		
White-breasted Nuthatch	*Sitta carolinensis*		
Wild Turkey*	*Meleagris gallopavo*		
Wood Duck	*Aix sponsa*		
Yellow-breasted Chat	*Icteria virens*		CSC
FISH			
Smallmouth Bass*	*Micropterus dolomieu*		
Green Sunfish*	*Lepomis cyanellus*		
Rainbow Trout / Steelhead	*Oncorhynchus mykiss*	T	
Sacramento Sucker	*Catostomus occidentalis*		
Unknown salmonid (juvenile)	*Oncorhynchus spp.*		
MAMMALS			
American Beaver	*Castor canadensis*		
Big Brown Bat	*Eptesicus fuscus*		
Brazilian Free-tailed Bat	*Tadarida brasiliensis*		
California Bat	*Myotis californicus*		
California Ground Squirrel	*Spermophilus beecheyi*		
Canyon Bat	*Parastrellus hesperus*		
Coyote	*Canis latrans*		
Little Brown Bat	*Myotis lucifugus*		
Long-eared Bat	*Myotis evotis*		
Mule Deer (Black-tailed Deer)	*Odocoileus hemionus*		
Pallid Bat	*Antrozous pallidus*		CSC
Western Gray Squirrel	*Sciurus griseus*		
Western Red Bat	*Lasiurus blossevillii*		CSC
Yuma Bat	*Myotis yumanensis*		

LEGEND:

E = Endangered
T = Threatened
C = Candidate for listing as Endangered or Threatened
P = Proposed for listing as Endangered or Threatened
CSC = California Species of Special Concern
FP = California Fully Protected
SC = NMFS Species of Concern
D = Delisted
PD = Proposed for Delisting
***** = Non-native Species

Appendix F

List of Mitigation Measures Table

Appendix F. List of Mitigation Measures	
Significance Criteria	**Mitigation**
3.3 Air Quality	
AIR-1:	**Standard Mitigation Measures for Construction Equipment**
	Maintain all construction equipment in proper tune according to manufacturer's specifications.
	Maximize to the extent feasible, the use of diesel construction equipment meeting current CARB certification standards for off-road heavy-duty diesel engines.
	Registration in the CARB DOORS program (www.arb.ca.gov/msprog/ordiesel/ordiesel.htm) and meeting all applicable standards for replacement and/or retrofit.
	All portable equipment, including generators and air compressors rated over 50 brake horse power, registered in the Portable Equipment Registration Program (www.arb.ca.gov/portable/portable.htm), or permitted through the District as a stationary source.
	Discretionary Mitigation Measures for Construction Equipment
	Electrify equipment where feasible.
	Substitute gasoline-powered for diesel-powered equipment, where feasible.
	Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.
	Use equipment that has Caterpillar pre-chamber diesel engines
AIR-2:	A Fugitive Dust Permit shall be obtained from the Tehama County Air Pollution Control District (TCAPCD), if required.
AIR-3:	*Land Clearing / Earth Moving and Compliant Signage:* Water shall be applied by means of truck(s), hoses and/or sprinklers as needed prior to any land clearing or earth movement to minimize dust emission. Water shall be applied to disturbed areas a minimum of 2 times per day or more as necessary. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours. The telephone number of the District shall also be visible to ensure compliance with District Rule 4:1 & 4:24 (Nuisance and Fugitive Dust Emissions).
	Visibly Dry Disturbed Soil Surface Areas, Unpaved Roads, and Gravel: All visibly dry disturbed soil surface areas of operation shall be treated with a dust palliative agent and/or watered to minimize dust emission. All visibly dry disturbed unpaved roads surface areas of operation shall be watered to minimize dust emission. Unpaved roads may be graveled to reduce dust emissions.
	Paved Road Track-Out and Haul Vehicles: Existing roads and streets adjacent to the project will be cleaned at least once per day unless conditions warrant a greater frequency. Haul vehicles transporting soil into or out of the property shall be covered. Haul roads shall be sprayed down at the end of the work shift to form a thin crust. This application of water shall be in addition to the minimum rate of application.

AIR-3: Cont.	*Vehicles Entering/Exiting Construction Area and Employee Parking:* Vehicles entering or exiting construction area shall travel at a speed which minimizes dust emissions. Construction workers shall park in designated parking areas(s) to help reduce dust emissions. On-site vehicles limited to a speed which minimizes dust emissions on unpaved roads.
	Soil Piles: Soil pile surfaces shall be moistened if dust is being emitted from the pile(s). Adequately secured tarps, plastic or other material may be required to further reduce dust emissions.
3.4 Biological Resources	
VEGETATION-1	Disturbance to existing vegetation will be avoided or minimized to the extent possible.
VEGETATION-2	Disturbance to riparian vegetation will be avoided or minimized to the extent possible.
VEGETATION-3	All heavy equipment shall be thoroughly cleaned prior to mobilization onsite to remove any soil, weed seeds and plant parts to reduce the importation and spread of invasive exotic plant species.
VEGETATION-4	Only certified weed-free straw shall be used for erosion control or other purposes to reduce the importation and spread of invasive exotic plant species.
VEGETATION-5	A revegetation plan will be prepared in coordination with the landowner to replace impacted riparian wetlands and other woody vegetation by a measure of quantity and quality equal to, or exceeding impacts of the project using appropriate native riparian trees and shrubs.
VEGETATION-6	Road improvement and grading activities shall be conducted in such a manner that disturbances are confined to the already disturbed road prism.
VEGETATION-7	No smoking will be allowed on the construction site or within the project area, for fire prevention purposes.
VEGETATION-8	White-stemmed clarkia plants within the project site will be flagged for avoidance. Construction crews will be educated regarding their presence and the appropriate avoidance measures to take for this species.
FISH-1	The National Marine Fisheries Service (NMFS) shall be consulted to 1) develop appropriate avoidance and minimization measures, and 2) determine whether an Endangered Species Act Section 7 take permit will be required for the project. All protective measures imposed by NMFS through the consultation process shall be adhered to.
FISH-2	Instream work can occur between July 1 and September 30. Instream work could start sooner if the California Department of Fish and Wildlife (CDFW) determines that the adult CV spring-run Chinook salmon are no longer present based on environmental conditions and real time passage data. Instream work could be extended to October 14, if environmental conditions which would preclude juvenile steelhead and spring-run Chinook salmon emigration or adult steelhead and late fall-run Chinook salmon immigration are expected to persist. Instream work outside of the July 1 to September 30 work window must be approved by CDFW and NMFS on a case-by-case basis with details on how take will be avoided and / or minimized.
FISH-3	All construction debris (concrete, metal etc.) from the fish passage improvement-related construction activities will be removed from the active stream channel post-construction.

FISH-4	Immediately prior to instream work, a qualified fish biologist, in coordination with CDFW, will conduct surveys above and below the area to be dewatered, to identify presence of salmonids. The Resource Conservation District of Tehama County (RCDTC), in coordination with the contractor, and in consultation with NMFS and CDFW, will ensure that qualified fish biologists are onsite to implement fish rescue operations within the dewatered area through the use of herding, seining and / or electrofishing, if necessary. Best professional determination will be used to decide which method(s) of rescue is to be used and where the relocation of captured fish, either upstream or downstream of the temporary dams is to occur. Biologists will first try to haze and herd fish out of the fish exclusion area. If fish biologists determine that the use of electrofishing is necessary for the efficient and successful removal of fish, NMFS electrofishing guidelines (National Marine Fisheries Service 2000) will be strictly followed. The fish rescue team will be comprised of fishery biologists with professional experience using seines and electrofishing equipment. The same methodologies will be used during dewatering of the diversion ditches.
FISH-5	All water pumps used during construction shall be screened to meet CDFW and NMFS criteria, unless deemed unnecessary by CDFW and NMFS (i.e. if water was being diverted from an off-channel pool). The refueling of pumps will occur away from the wetted area / channel. If pumps are using fuel, they will be outfitted with a spill kit.
FISH-6	All dewatering and rewatering activities will be conducted slowly, in order to minimize disturbance to fish. A qualified fisheries biologist will be onsite during these activities, and CDFW will be notified prior to these activities.
FISH-7	All reasonable measures will be taken to minimize impacts to lamprey, including spending more time at the area as it becomes dewatered (and they are moving out of the mud, chasing the water as it recedes), and possibly electroshocking.
FISH-8	Appropriate measures will be used to avoid the spread of aquatic invasive species such as zebra / quagga mussels, New Zealand mudsnails and chytrid fungus to and from the project area according to the current CDFW Aquatic Invasive Species Disinfection / Decontamination Protocols (Northern Region) and the current U.S. Fish and Wildlife Service (USFWS) Red Bluff Fish and Wildlife Office Anadromous Fish Restoration Program Hazard Analysis Critical Control Point Plan.
WILDLIFE-1	Within seven (7) calendar days prior to the onset of potentially disturbing construction activities, areas that will be disturbed within 100 feet of water bodies shall be surveyed by a qualified biologist to determine if any western pond turtles or turtle nests are present. If any turtles or turtle nests are found, a qualified and permitted biologist shall determine and implement appropriate relocation procedures, in coordination with California Department of Fish and Wildlife (CDFW). The site shall be checked daily by trained construction workers prior to work commencing, including underneath vehicles and equipment that will be used. If turtles are found, they will be moved by a qualified and permitted biologist to an area of safety out of harm's way.
WILDLIFE-2	Within seven (7) calendar days prior to work in aquatic habitats, water bodies shall be surveyed by a qualified biologist to determine if any foothill yellow-legged frogs are present. If any foothill yellow-legged frogs are found, a qualified and permitted biologist shall determine and implement appropriate relocation procedures, in coordination with CDFW. The site shall be checked daily by trained construction workers prior to work commencing, including underneath vehicles and equipment that will be used. If foothill yellow-legged frogs are found, they will be moved by a qualified and permitted biologist to an area of safety out of harm's way.

WILDLIFE-3	Any tree removal, vegetation clearing, or the onset of potentially disturbing construction activities shall occur between September 1 and January 1 (outside of the nesting season for raptors with potential to occur within, or in the vicinity of the project site). Note: Also see measure WILDLIFE-4.
	If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the nesting season, a raptor nesting survey of the construction area and adjacent suitable habitat shall be conducted by a qualified biologist no more than seven (7) calendar days prior to the initiation of the onset of these activities or as appropriate survey protocols require. If active raptor nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities shall be suspended until a qualified biologist, in consultation with CDFW and / or USFWS can establish an appropriate protective buffer area to minimize impacts to the nesting raptors. No construction activities shall commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active.
	Construction activities shall occur continuously (not including weekends) until the end of the nesting season to discourage raptors from initiating nesting. If construction activities cease for more than seven (7) consecutive days (including weekends), all construction activities shall cease until CDFW can be consulted to determine if a subsequent raptor nesting survey must be performed.
	Active or inactive nests are not to be disturbed or removed as a result of construction activities without CDFW consultation per Fish and Game Code Section 3503.5.
WILDLIFE-4	Any tree removal, vegetation clearing, or the onset of potentially disturbing construction activities shall occur between August 1 and March 1 (outside of the nesting season for grasshopper sparrow, yellow-breasted chat, loggerhead shrike, yellow warbler and other nesting migratory birds). Note: Also see measure WILDLIFE-3.
	If tree removal, vegetation clearing, or the onset of potentially disturbing construction activities must occur during the nesting season, a nesting survey of the construction area and adjacent suitable habitat shall be conducted by a qualified biologist no more than seven (7) calendar days prior to the initiation of the onset of these activities. If active bird nests are found to be present, tree removal, vegetation clearing and the onset of potentially disturbing construction activities shall be suspended until a qualified biologist, in consultation with CDFW, can establish an appropriate protective buffer area to minimize impacts to the nesting birds. No construction activities shall commence within the buffer area until the qualified biologist determines that the young birds have fledged or the nest is no longer active.
	Construction activities shall occur continuously (not including weekends) until the end of the nesting season to discourage avian species from initiating nesting. If construction activities cease for more than seven (7) consecutive days (including weekends), all construction activities shall cease until CDFW can be consulted to determine if a subsequent nesting bird survey must be performed.
	Active nests are not to be disturbed or removed as a result of construction activities per Fish and Game Code Section 3503.

WILDLIFE-5	Prior to the onset of potentially disturbing construction activities during the nesting season, a Swainson's hawk nesting survey of the construction area and adjacent suitable habitat shall be conducted by a qualified biologist in accordance with the protocols in Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000). If active Swainson's hawk nests are found to be present, the onset of potentially disturbing construction activities shall be suspended until a qualified biologist, in consultation with CDFW, can establish an appropriate protective buffer area to minimize impacts to the nesting birds. No construction activities shall commence within the buffer area until the qualified biologist determines that the nest is no longer active.
WILDLIFE-6	Prior to any vegetation removal, an attempt will be made by a qualified biologist to determine if pallid bats, Townsend's big-eared bats or western red bats are roosting in the area to be removed / disturbed.
	If pallid bats, Townsend's big-eared bats or western red bats are found to be roosting within the area to be removed / disturbed, these activities shall be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to minimize impacts to these species.
WILDLIFE-7	To the extent possible, all direct disturbance to identified bat roosts shall occur between August 31 and May 1, in order to minimize the likelihood of injuring or killing juvenile bats during the period when they are still unable to fly.
WILDLIFE-8	To the extent possible, the removal of trees or branches with defects (cavities, cracks, exfoliating bark, etc.) that provide potential bat roosting or bird roosting / nesting habitat will be avoided.
WILDLIFE-9	As appropriate, revegetation efforts will incorporate tree and vine species that are known to be used by western red bats for roosting including, but not limited to white alder (Alnus rhombifolia), California sycamore (Platanus racemosa), pipevine (Aristolochia californica) and California grape (Vitis californica).
WILDLIFE-10	Prior to the onset of construction activities, a construction worker education program shall be implemented that includes an explanation of all special-status animal species, identification, avoidance measures, and federal and state laws that protect the species. This shall include, at a minimum, those species described in the environmental documents.
WILDLIFE-11	Prior to the onset of construction activities, a qualified biologist will inspect the project site for signs of denning by ringtails.
	If ringtails are found to be denning, construction activities will be suspended until a qualified biologist, in consultation with CDFW, can establish appropriate measures to protect ringtail.
WILDLIFE-12	The project shall comply with the current Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) (U.S. Fish and Wildlife Service 2017).
WILDLIFE-13	The USFWS shall be consulted to 1) develop appropriate avoidance and minimization measures, and 2) determine whether an Endangered Species Act Section 7 take permit will be required for the project. All protective measures imposed by USFWS through the consultation shall be adhered to.

WILDLIFE-14	Prior to construction, all elderberry shrubs to be avoided within 150 feet of any project activity will be clearly flagged, marked and maintained throughout construction in order to avoid impacts to the valley elderberry longhorn beetle. All elderberry shrubs to be avoided within 100 feet of project activity will be marked with high-visibility orange fencing.
WILDLIFE-15	Signs will be installed every 50 feet, on the fencing of all elderberry shrubs within 100 feet of any project related activities with the following information: "This area is habitat for the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." Signs will be clearly readable from a distance of 20 feet and will be maintained for the duration of construction.
WILDLIFE-16	Prior to construction, elderberry shrubs which cannot be avoided by project related activities with one or more stems measuring 1.0 inch or greater in diameter at ground level shall be transplanted onsite.
	A qualified biologist (monitor) must be onsite for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed and must immediately report any unauthorized take of the beetle or its habitat to the USFWS and to CDFW.
	Elderberry shrubs will be transplanted during dormancy, from November 1 through the first two weeks of February, after the shrubs have lost their leaves, following the specific transplanting guidance provided in the Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus) (U.S. Fish and Wildlife Service 2017).
WILDLIFE-17	A qualified biologist (biological monitor) shall regularly inspect construction-related activities to ensure that no unnecessary disturbance to special-status species and / or their associated habitats occurs. The biological monitor shall have the authority to stop all activities that may result in such disturbance until appropriate corrective measures have been completed. The biologist will also be required to report any unauthorized take to CDFW, USFWS and / or NMFS immediately.
WILDLIFE-18	All food-related trash will be disposed of in closed containers and removed from the project area daily during the construction period. Construction personnel will not feed or otherwise attract wildlife to the project area.
WILDLIFE-19	No pets will be allowed within the project area.
WETLAND-1	Project activities will avoid impacts to wetlands and other aquatic habitats to the extent possible.
WETLAND-2	High-visibility fencing will be installed in areas where equipment will be working near any wetlands and / or riparian habitat that are not to be disturbed.
WETLAND-3	Construction crews will be informed about the importance of avoiding sensitive areas, including wetlands.
WETLAND-4	A Clean Water Act Section 404 Permit will be obtained from the U.S. Army Corps of Engineers and a Clean Water Act Section 401 Certification will be obtained from the Central Valley Regional Water Quality Control Board (RWQCB).

WETLAND-6	A California Fish and Game Code Section 1600 Lake or Streambed Alteration Agreement will be obtained from CDFW.
3.5 Cultural and Tribal Resouces	
CULTURAL-1	Cultural resource site EAD-CR-1 shall be considered environmentally sensitive and no use or modification of the site shall occur. Prior to the onset of construction, the boundary of the site shall be marked with high-visibility fencing and / or flagging and the need to avoid disturbance of the site shall be included in the environmental awareness training for project personnel.
CULTURAL-2	Cultural resource site EAD-CR-2 shall be considered environmentally sensitive and no use or modification of the site shall occur. Use and modification of the existing roadbed adjacent to the site may occur but shall be confined to the existing road footprint not to extend more than 15 feet on either side of the existing road centerline. Prior to the onset of construction, the 15 foot buffer shall be marked with high-visibility fencing and / or flagging and the need to avoid disturbance of the site shall be included in the environmental awareness training for project personnel.
CULTURAL-3	In the event subsurface archaeological resources are encountered during ground-disturbing activities, all work will cease at the general area of discovery and the USFWS regional archaeologist, or other lead agency archaeologist, will be notified immediately. A field exam by a professional archaeologist may be required and further steps for resource protection will be implemented, including mitigation and consultation with the Native American Indian community if human remains are encountered (following Native American Graves Protection and Repatriation Act procedures). Work may proceed on other parts of the project site while mitigation for historical, unique archaeological or tribal resources is being carried out.
3.8 Hazards and Hazardous Wastes	
HAZ-1	A designated concrete washout area will be located at least 100 feet from any high water mark within adjacent waterways, and from any wetlands and will be developed and used following the U.S. Environmental Protection Agency Storm Water BMP for a Concrete Washout.
HAZ-2	BMPs will be developed and implemented to ensure that wet concrete and concrete grindings do not enter Antelope Creek, New Creek, wetlands or other aquatic sites during construction.
HAZ-3	Measures WATER-3 through WATER-5 associated with potential petroleum product spills will be fully implemented.
HAZ-4	Construction equipment and materials shall not be stored or stockpiled in the creek channel, and shall be stored at least 50 feet from the top of the stream bank, any wetlands or other aquatic sites.
3.9 Hydrology and Water Quality	
WATER-1	All instream construction shall be conducted in the summer / early fall during the low flow period (see measure FISH-2). Any work within the channel and banks, outside of this instream work window must be isolated from flowing water and dewatering will be required.
WATER-2	Monitoring of water turbidity and settleable materials shall be conducted in accordance with the Clean Water Act Section 401 Certification through consultation with RWQCB.

WATER-3	All equipment and machinery that contains fuel, oil or other petroleum products used during construction related activities shall be checked for petroleum leaks immediately prior to being mobilized to the project site and again each day prior to use.
WATER-4	All equipment refueling and / or maintenance shall take place within a secondary containment structure and a minimum of 100 feet away from Antelope Creek, New Creek, any wetlands or other aquatic sites.
WATER-5	An emergency spill kit and absorbent oil booms will be onsite during construction activities.
WATER-6	A dewatering permit will be obtained from the RWQCB, if deemed necessary based on the dewatering methods used.
WATER-7	All equipment operations within the channel and banks of Antelope Creek and New Creek will be required to use readily biodegradable hydraulic oil.
3.15 Soils / Geology / Minerals	
SOIL / GEO / MIN-1	After ground-disturbing activities are complete, all disturbed areas (outside of the active stream channels and the ditch bottoms) shall be seeded with native plant species and mulched as approved by the landowner and described in the revegetation plan and the Storm Water Pollutions Prevention Plan (SWPPP), if required.
SOIL / GEO / MIN -2	Construction of all project actions shall comply with the RWQCB Basin Plan Objectives and an erosion control plan. Standard Best Management Practices (BMPs) will be incorporated into the project designs and / or the SWPPP, if required.
SOIL / GEO / MIN -3	If the total disturbance area is greater than one acre, a Notice of Intent will be submitted to the State Water Resources Control Board to obtain coverage under the National Pollution Discharge Elimination System General Permit for Discharges of Storm Water Associated with Construction Activity.
3.18 Wildfires	
WF-1	All designated parking areas shall be kept free of dry vegetation before and during construction. Before construction begins, signage shall be installed at the entrance to the project site that prohibits parking outside of designed parking areas. Where heavy equipment or generators are used, fire extinguishers shall be made available on, or nearby the equipment.

Appendix G

CEQA Environmental Checklist Form

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Less Than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages. Each of the environmental topics listed have been discussed in the joint Environmental Assessment and Initial Study.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☑ Air Quality
☑ Biological Resources	☑ Cultural & Tribal Cultural Resources	☐ Energy
☐ Greenhouse Gas Emissions	☑ Hazards & Hazardous Materials	☑ Hydrology / Water Quality
☐ Land Use / Planning	☐ Noise	☐ Population / Housing
☐ Public Services / Utilities	☐ Recreation	☑ Soils Geology Minerals
☐ Transportation	☑ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Vicky Dawg
Signature

09/11/2019
Date

Environmental Checklist Form

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS. Except as provided in Public Resources Code Section 21099, would the project::				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☑	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑
II. AGRICULTURE AND FORESTRY RESOURCES. In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

Environmental Checklist Form

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☑	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☑
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☑
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☑	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☑	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☑	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☑	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑
V. CULTURAL & TRIBAL CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☐	☐	☑
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☑
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☑
VI. ENERGY. Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☑
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☑
VII. GREENHOUSE GAS EMISSIONS. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑
VIII. HAZARDS AND HAZARDOUS MATERIALS. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☑
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☑	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☑
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.	☐	☐	☐	☑
IX. HYDROLOGY AND WATER QUALITY. Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☑	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☑
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on or off-site;	☐	☑	☐	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☑
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☑
iv) impede or redirect flood flows?	☐	☐	☐	☑
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☑
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☑
X. LAND USE / PLANNING. Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
XI. NOISE. Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
XII. POPULATION / HOUSING. Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
XIII. PUBLIC SERVICES / UTILITIES. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☑
Police protection?	☐	☐	☐	☑
Schools?	☐	☐	☐	☑
Parks?	☐	☐	☐	☑
Other public facilities?	☐	☐	☐	☑
b) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☑
c) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years	☐	☐	☐	☑
d) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
e) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☑
f) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☑
XV. SOILS GEOLOGY MINERALS. Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☑	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☑
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
g) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
h) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☑
XVI. TRANSPORTATION. Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☑
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☐	☑
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
d) Result in inadequate emergency access?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. WILDFIRE. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☑	☐	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☑
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☑
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, threaten to eliminate a plan or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☑
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☑
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

Appendix H

Greenhouse Gas Emissions Inventory

APPPENDIX H
Inventory and Calculation of Greenhouse Gas Emissions
Antelope Creek Fish Passage Improvement Project

Line Emissions from Construction Equipment

Type of Equipment	Maximum Number per Day	Total Operation Days	Total Operation Hours[1]	Fuel Consumption Per Hour[2]	Total Fuel Consumption (gal. diesel)	CO_2e/gal diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
Excavator, MED	1	20	160	7.19	1,151	0.010	12.0
Excavator, SM	1	10	80	3.38	270	0.010	2.8
Front end loader, MED	1	10	80	3.85	308	0.010	3.2
Offroad dump truck	1	3	24	5.71	137	0.010	1.4
Skiploader/backhoe	1	10	80	2.37	190	0.010	2.0
Boom truck	1	3		5.09			
Concrete pump truck	1	10		6.35			
Pump (water)	3	15	360	0.50	180	0.010	1.9
Compactors	3	5	120	0.20	24	0.010	0.3
Skid steer	1	15	120	4.31	517	0.010	5.4
TOTAL							28.9

[1] An 8-hour work day is assumed.

[2] California Air Resource Board Offroad 2007 Emissions Inventory fuel consumption factors

[3] World Resources Institute-Mobile combustion CO_2 emissions tool, June 2003 Version 1.2

Emissions from Transportation of Construction Workforce

Average Number of Workers per Day	Total Number of Workdays	Average Distance Travelled (round trip)	Total Miles Travelled	Average Passenger Vehicle Fuel Efficiency[4]	Total Fuel Consumption (gal. gasoline)	CO_2e/gal Gasoline [3]	Total CO_2 Equivalent Emissions (metric tons)
4.0	40	80	12800	20.8	615.4	0.009	5.5

[4] United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]

Emissions from Transportation of Construction Materials

Trip Type	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Semi-truck Fuel Efficiency	Total Fuel Consumption (gal. diesel)	CO_2e/gal Diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
Delivery	67	40	2680	6.5	412.3	0.010	4.3
Spoils	4	40	160	6.5	24.6	0.010	0.3
TOTAL			2840.0		436.9		4.5

Construction Electricity Emissions

	MWh of electricity	$mtCO2_e$/ MWh[5]	CO_2 e emissions
Electricity Needed	0.7	0.310	0.217

[5] eGRID2010 Version 1.0, February 2011 (Year 2007 data) CAMX-WECC sub-region.

Total Construction Activity Emissions **39.2 (from lines 25, 32, 39, and 43)**
Total Years of Construction
Expected Start Date of Construction
Estimated Project Useful life **1 Years**
Average Annual Total GHG Emissions[7] **39.16 MT CO_2 equivalents**

[7] short-term construction emissions amortized over life of project