INDEX OF SHEETS

PRELIMINARY
NOT FOR CONSTRUCTION

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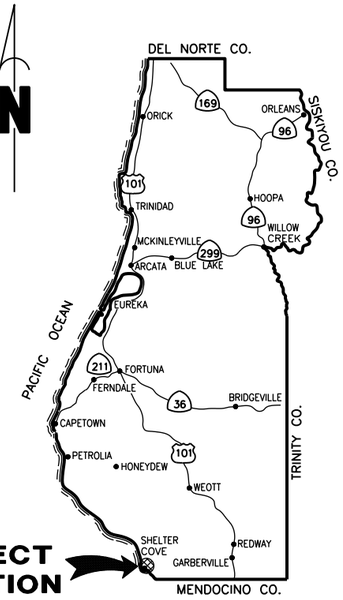
ROAD NAME: VARIOUS		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: VARIOUS	MILE POST: VARIOUS		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: VARIOUS		DRAWN BY: RMD	COVER SHEET, SHEET INDEX AND MAPS
DRAWING FILE NAME: 217XXX CDSN 001		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 1 OF 30

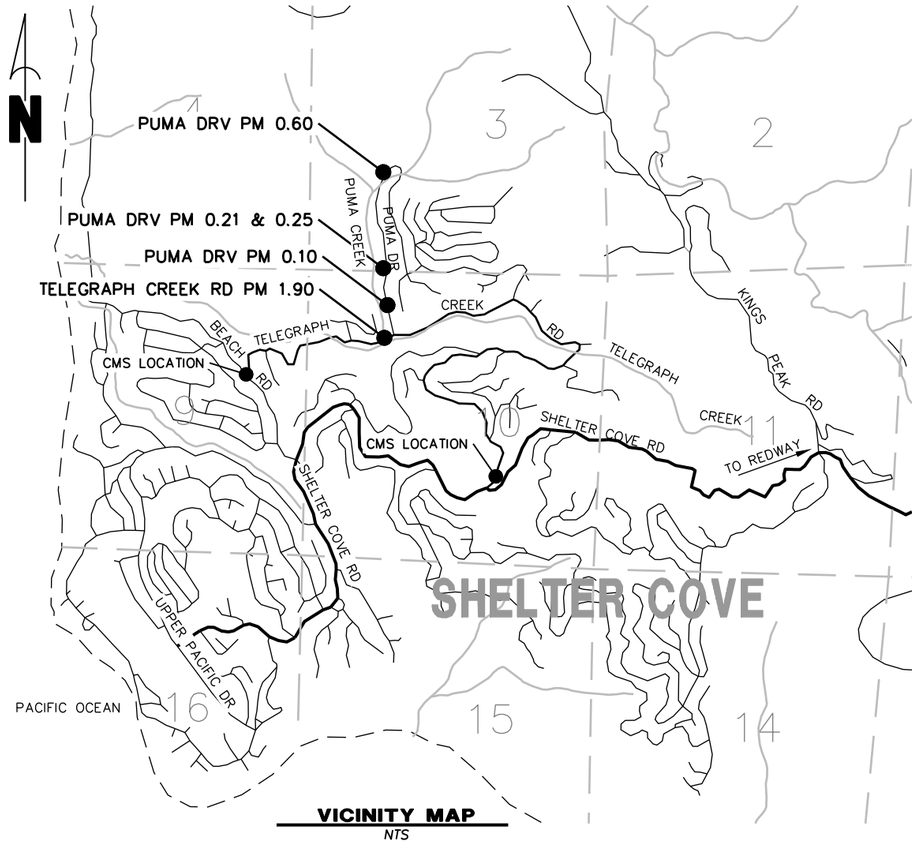
COUNTY OF HUMBOLDT
DEPARTMENT OF PUBLIC WORKS

PROJECT PLANS FOR CONSTRUCTION OF

STORM DAMAGE REPAIR TO
TELEGRAPH CREEK RD. (4A150) PM 1.90
AND PUMA DRIVE (4A125) PM 0.10, 0.21, 0.25, 0.60
PROJECT NO. FEMA-4308-DR-CA PW-1433, PW-1309
AND FEMA-4434-DR-CA PW-212
CONTRACT NO. 217345, 219342, 219343, 217541, 219346



LOCATION MAP
SCALE: 1"=10± MILE



VICINITY MAP
NTS

NOTES

THE CONTRACTOR SHALL HAVE A CLASS "A" LICENSE FOR THIS PROJECT.

REFERENCE TO CALTRANS STANDARD PLANS DATED JULY 2018. (SEE APPLICABLE STAN PLAN LIST IN SPECIAL PROVISIONS)

DESIGN DESIGNATION

ADT (OCTOBER'09)=127

V=35MPH

RECOMMENDED

JEFFREY A. BALL
RCE 70631, EXP. 6/30/2021

DATE

REGISTERED PROFESSIONAL ENGINEER
JEFFREY A. BALL
NO. 70631
CIVIL
STATE OF CALIFORNIA

APPROVED

TONY R. SEGHETTI
RCE 63714, EXP. 9/30/2022

DATE

REGISTERED PROFESSIONAL ENGINEER
TONY R. SEGHETTI
NO. 63714
CIVIL
STATE OF CALIFORNIA

ORIGINAL LOW BID PRICE	CONSTRUCTED BY	RESIDENT ENGINEER
	PROJECT COMPLETED / /	CONSTRUCTION COST $

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ROAD NO: VARIOUS	MILE POST: VARIOUS	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	
CONTRACT NO.: VARIOUS		REVIEWED BY: JAB	PROJECT QUANTITIES BY LOCATION
DRAWING FILE NAME: 217XXX CDSN 002		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 2 OF 30

BID QUANTITIES SEPARATED BY LOCATION

ITEM NO.	ITEM CODE		ITEM DESCRIPTION	UNIT	Telegraph Crk Rd PM 1.90	Puma Drv PM 0.1	Puma Drv PM 0.21	Puma Drv PM 0.25	Puma Drv PM 0.60	Total
1	120090		Construction Area Signs	EA	10	4	1	1	4	20
2	120100		Traffic Control System	LS	0.50	0.20	0.10	0.10	0.10	1
3	128651		Portable Changeable Message Sign	EA	2.00	0.00	0.00	0.00	0.00	2
4	129000		Temporary Railing (Type K)	EA	0.00	2.00	0.00	0.00	0.00	2
5	130100		Job Site Management	LS	0.50	0.20	0.10	0.10	0.10	1
6	130200		Prepare Water Pollution Contol Program	LS	0.50	0.20	0.10	0.10	0.10	1
7	130900		Temporary Concrete Washout	EA	1.00	0.00	0.00	0.00	0.00	1
8	131201		Temporary Creek Diversion System	LS	1.00	0.00	0.00	0.00	0.00	1
9	150200		Remove Temporary Railroad Flatcar Bridge	LS	1.00	0.00	0.00	0.00	0.00	1
10	150808		Remove Culvert	EA	1.00	0.00	0.00	0.00	0.00	1
11	153112		Remove Concrete Headwalls and Concrete at Outlet	LS	1.00	0.00	0.00	0.00	0.00	1
12	170103		Clearing and Grubbing (LS)	LS	0.50	0.20	0.10	0.10	0.10	1
13	190101		Roadway Excavation	CY	0.00	63.00	50.00	42.00	230.00	385
14	192025	F	Structure Excavation (Culvert & Channel)	CY	3,400.00	0.00	0.00	0.00	0.00	3,400
15	192037	F	Structure Excavation (Retaining Wall)	CY	0.00	643.00	0.00	0.00	0.00	643
16	193004	F	Structure Backfill (Culvert)	CY	520.00	0.00	0.00	0.00	0.00	520
17	193013	F	Structure Backfill (WWW Retaining Wall)	CY	0.00	460.00	0.00	0.00	0.00	460
18	198050	F	Embankment	CY	2,060.00	312.00	0.00	0.00	0.00	2,372
19	210212		Dry Seed (SQFT)	SQFT	6,005.00	726.00	0.00	3,380.00	0.00	10,111
20	210280		Rolled Erosion Control Product (Blanket)	SQFT	0.00	517.00	0.00	0.00	0.00	517
21	210350		Fiber Rolls	LF	460.00	0.00	0.00	0.00	0.00	460
22	210420		Straw	SQFT	2,875.00	209.00	0.00	3,380.00	0.00	6,464
23	260203	F	Class 2 Aggregate Base (CY)	CY	130.00	77.00	10.00	9.00	172.00	398
24	390132		Hot Mix Asphalt (Type A)	TON	93.00	46.00	10.00	11.00	109.00	269
25	394073		Hot Mix Asphalt Dike Type A	LF	400.00	0.00	0.00	0.00	0.00	400
26	477020	F	Mechanically Stabilized Embankment (Wire Wall)	SQFT	0.00	944.00	0.00	0.00	0.00	944
27	510094		Minor Concrete, Drainage Inlet (Type GO)	EA	0.00	1.00	0.00	2.00	0.00	3
28	510103A	F	Class A Concrete (Arch Culvert-Footings)	CY	104.00	0.00	0.00	0.00	0.00	104
29	510103B	F	Structure Concrete (Headwall & Wingwalls)	CY	115.00	0.00	0.00	0.00	0.00	115
30	520101	F	Bar Reinforcing Steel	Lbs	7,020.00	0.00	0.00	0.00	0.00	7,020
31	641107		18" Plastic Pipe (Heat-Fused HDPE)	LF	0.00	71.00	0.00	378.00	0.00	449
32	674960	P	22'x8'-11" Structural Steel Plate, Arch Culvert (0.170 in - 8	LF	70.00	0.00	0.00	0.00	0.00	70
33	680902		6" Perforated Plastic Pipe Underdrain	LF	0.00	108.00	0.00	0.00	0.00	108
34	680903		6" Non-Perforated Plastic Pipe Underdrain	LF	0.00	31.00	0.00	0.00	0.00	31
35	681132		Geocomposite Drain	SQFT	0.00	912.00	0.00	0.00	0.00	912
36	681990		Filter Fabric (Class B)	SQYD	0.00	385.00	0.00	0.00	0.00	385
37	682023		Class 1 Permeable Material (Type B)	CY	0.00	95.00	0.00	0.00	0.00	95
38	692381		Concrete Anchor and Cable Assembly	EA	0.00	0.00	0.00	2.00	0.00	2
39	720000	F	Engineered Streambed Material	CY	180.00	0.00	0.00	0.00	0.00	180
40	723017	F	Rock Slope Protection (Class VIII & IX, Method A) (Weirs	CY	150.00	0.00	0.00	0.00	0.00	150
41	723035	F	Rock Slope Protection-Roughened Channel (Class VII &	CY	45.00	0.00	0.00	0.00	0.00	45
42	723050		Rock Slope Protection (1/4 T, Class V, Method B) (CY)	CY	135.00	9.00	0.00	8.00	0.00	152
43	723095		Rock Slope Protection (20 lb, Class I, Method B) (CY)	CY	0.00	1.00	0.00	0.00	0.00	1
44	750500		Miscellaneious Metal (Inlet Grate)	LBS	0.00	239.00	0.00	478.00	0.00	717
45	832006		Midwest Guardrail System (Steel Post)	LF	0.00	75.00	0.00	0.00	0.00	75
46	839581		End Anchor Assembly (Type SFT)	EA	0.00	1.00	0.00	0.00	0.00	1
47	839585		Alternative Flared Terminal System	EA	0.00	1.00	0.00	0.00	0.00	1
48	840501		Thermoplastic Traffic Stripe	LF	200.00	120.00	200.00	30.00	290.00	840
49	999990		Mobilization	LS	0.50	0.20	0.10	0.10	0.10	1

PRELIMINARY
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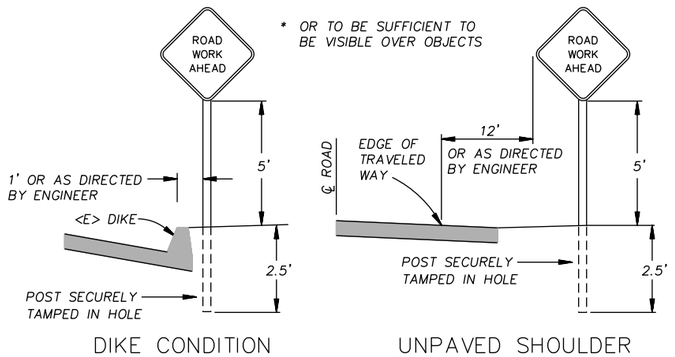
BAR IS ONE INCH ON ORIGINAL DRAWING	ROAD NAME: VARIOUS		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 3 OF 30
	ROAD NO: VARIOUS	MILE POST: VARIOUS			
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV	
	CONTRACT NO.: VARIOUS		DRAWN BY: RMD	CONSTRUCTION AREA SIGNS AND STAGING / STOCKPILE LOCATIONS	
	DRAWING FILE NAME: 217XXX CDSN 002		REVIEWED BY: JAB		
	PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS		



RURAL CONSTRUCTION AREA SIGN

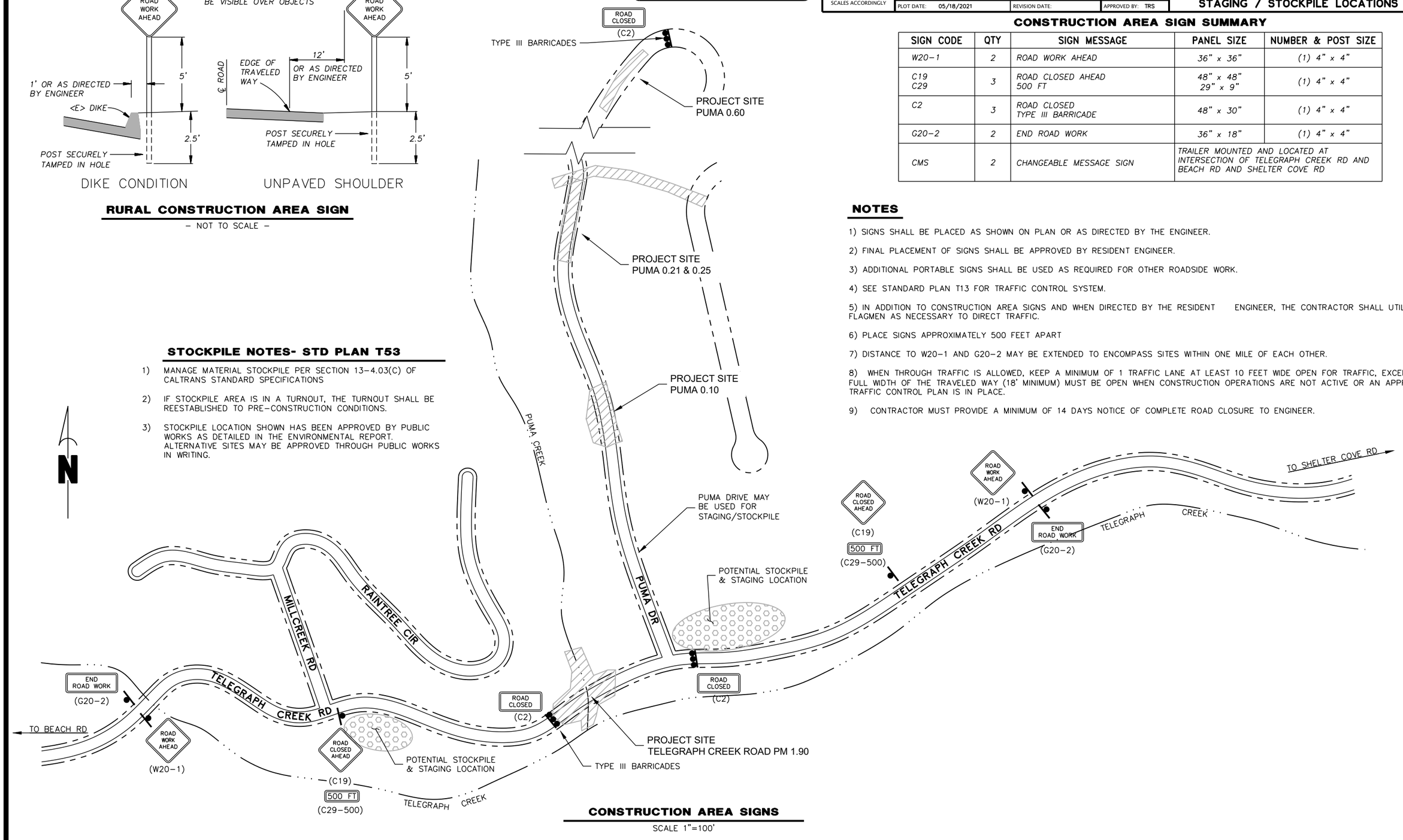
– NOT TO SCALE –

STOCKPILE NOTES- STD PLAN T53

1) MANAGE MATERIAL STOCKPILE PER SECTION 13-4.03(C) OF CALTRANS STANDARD SPECIFICATIONS

2) IF STOCKPILE AREA IS IN A TURNOUT, THE TURNOUT SHALL BE REESTABLISHED TO PRE-CONSTRUCTION CONDITIONS.

3) STOCKPILE LOCATION SHOWN HAS BEEN APPROVED BY PUBLIC WORKS AS DETAILED IN THE ENVIRONMENTAL REPORT. ALTERNATIVE SITES MAY BE APPROVED THROUGH PUBLIC WORKS IN WRITING.



CONSTRUCTION AREA SIGNS

SCALE 1"=100'

CONSTRUCTION AREA SIGN SUMMARY

SIGN CODE	QTY	SIGN MESSAGE	PANEL SIZE	NUMBER & POST SIZE
W20-1	2	ROAD WORK AHEAD	36" x 36"	(1) 4" x 4"
C19 C29	3	ROAD CLOSED AHEAD 500 FT	48" x 48" 29" x 9"	(1) 4" x 4"
C2	3	ROAD CLOSED TYPE III BARRICADE	48" x 30"	(1) 4" x 4"
G20-2	2	END ROAD WORK	36" x 18"	(1) 4" x 4"
CMS	2	CHANGEABLE MESSAGE SIGN	TRAILER MOUNTED AND LOCATED AT INTERSECTION OF TELEGRAPH CREEK RD AND BEACH RD AND SHELTER COVE RD	

NOTES

1) SIGNS SHALL BE PLACED AS SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.

2) FINAL PLACEMENT OF SIGNS SHALL BE APPROVED BY RESIDENT ENGINEER.

3) ADDITIONAL PORTABLE SIGNS SHALL BE USED AS REQUIRED FOR OTHER ROADSIDE WORK.

4) SEE STANDARD PLAN T13 FOR TRAFFIC CONTROL SYSTEM.

5) IN ADDITION TO CONSTRUCTION AREA SIGNS AND WHEN DIRECTED BY THE RESIDENT ENGINEER, THE CONTRACTOR SHALL UTILIZE FLAGMEN AS NECESSARY TO DIRECT TRAFFIC.

6) PLACE SIGNS APPROXIMATELY 500 FEET APART

7) DISTANCE TO W20-1 AND G20-2 MAY BE EXTENDED TO ENCOMPASS SITES WITHIN ONE MILE OF EACH OTHER.

8) WHEN THROUGH TRAFFIC IS ALLOWED, KEEP A MINIMUM OF 1 TRAFFIC LANE AT LEAST 10 FEET WIDE OPEN FOR TRAFFIC, EXCEPT THE FULL WIDTH OF THE TRAVELED WAY (18' MINIMUM) MUST BE OPEN WHEN CONSTRUCTION OPERATIONS ARE NOT ACTIVE OR AN APPROVED TRAFFIC CONTROL PLAN IS IN PLACE.

9) CONTRACTOR MUST PROVIDE A MINIMUM OF 14 DAYS NOTICE OF COMPLETE ROAD CLOSURE TO ENGINEER.

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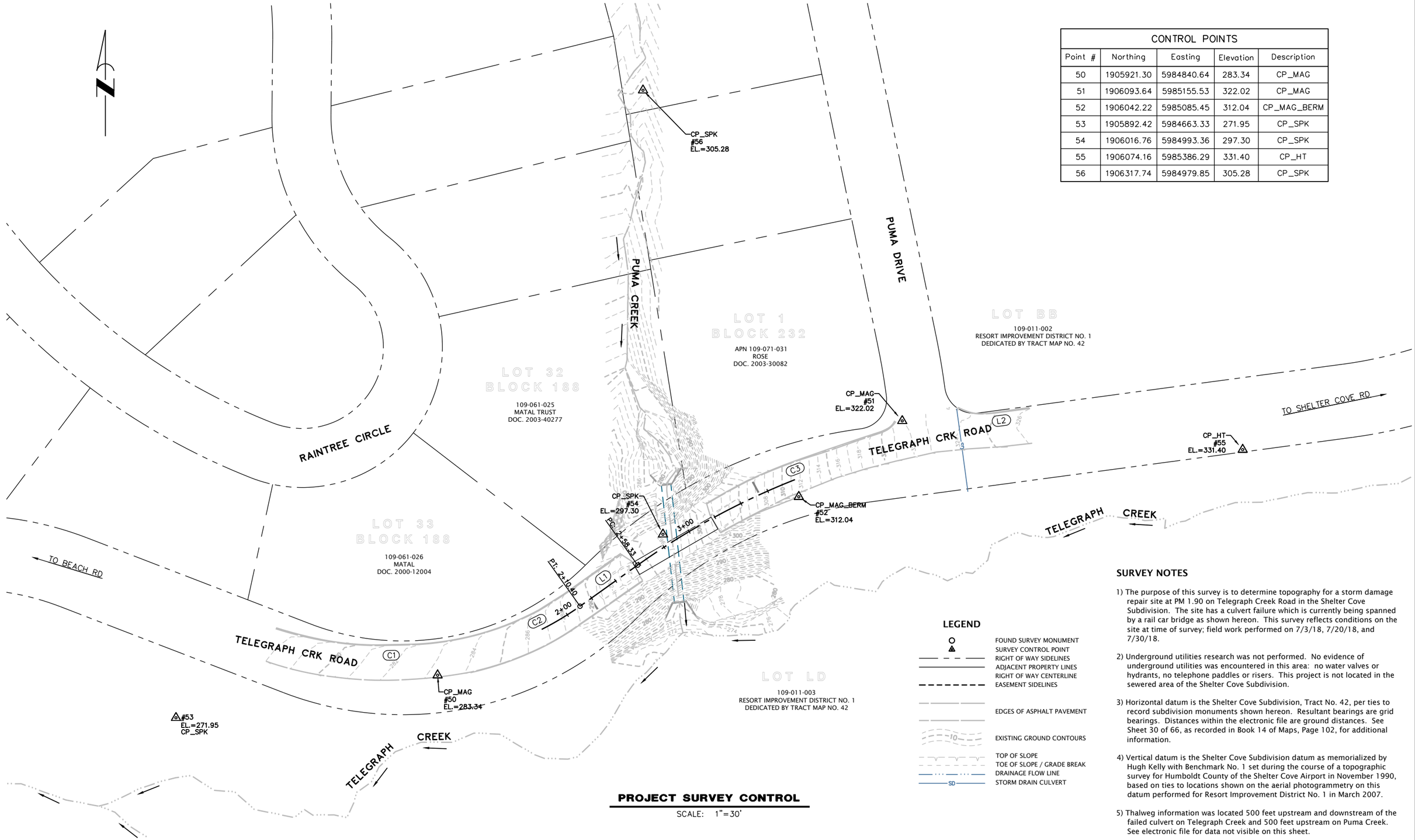
ROAD NAME: TELEGRAPH CREEK ROAD		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A150	MILE POST: 1.90	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 SURVEY CONTROL
CONTRACT NO.: 217345		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 004		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 4 OF 30

CONTROL POINTS				
Point #	Northing	Easting	Elevation	Description
50	1905921.30	5984840.64	283.34	CP_MAG
51	1906093.64	5985155.53	322.02	CP_MAG
52	1906042.22	5985085.45	312.04	CP_MAG_BERM
53	1905892.42	5984663.33	271.95	CP_SPK
54	1906016.76	5984993.36	297.30	CP_SPK
55	1906074.16	5985386.29	331.40	CP_HT
56	1906317.74	5984979.85	305.28	CP_SPK



PROJECT SURVEY CONTROL

SCALE: 1"=30'

LEGEND

- FOUND SURVEY MONUMENT
- SURVEY CONTROL POINT
- RIGHT OF WAY SIDELINES
- ADJACENT PROPERTY LINES
- RIGHT OF WAY CENTERLINE
- EASEMENT SIDELINES
- EDGES OF ASPHALT PAVEMENT
- EXISTING GROUND CONTOURS
- TOP OF SLOPE
- TOE OF SLOPE / GRADE BREAK
- DRAINAGE FLOW LINE
- STORM DRAIN CULVERT (SD)

SURVEY NOTES

1) The purpose of this survey is to determine topography for a storm damage repair site at PM 1.90 on Telegraph Creek Road in the Shelter Cove Subdivision. The site has a culvert failure which is currently being spanned by a rail car bridge as shown hereon. This survey reflects conditions on the site at time of survey; field work performed on 7/3/18, 7/20/18, and 7/30/18.

2) Underground utilities research was not performed. No evidence of underground utilities was encountered in this area: no water valves or hydrants, no telephone paddles or risers. This project is not located in the sewered area of the Shelter Cove Subdivision.

3) Horizontal datum is the Shelter Cove Subdivision, Tract No. 42, per ties to record subdivision monuments shown hereon. Resultant bearings are grid bearings. Distances within the electronic file are ground distances. See Sheet 30 of 66, as recorded in Book 14 of Maps, Page 102, for additional information.

4) Vertical datum is the Shelter Cove Subdivision datum as memorialized by Hugh Kelly with Benchmark No. 1 set during the course of a topographic survey for Humboldt County of the Shelter Cove Airport in November 1990, based on ties to locations shown on the aerial photogrammetry on this datum performed for Resort Improvement District No. 1 in March 2007.

5) Thalweg information was located 500 feet upstream and downstream of the failed culvert on Telegraph Creek and 500 feet upstream on Puma Creek. See electronic file for data not visible on this sheet.

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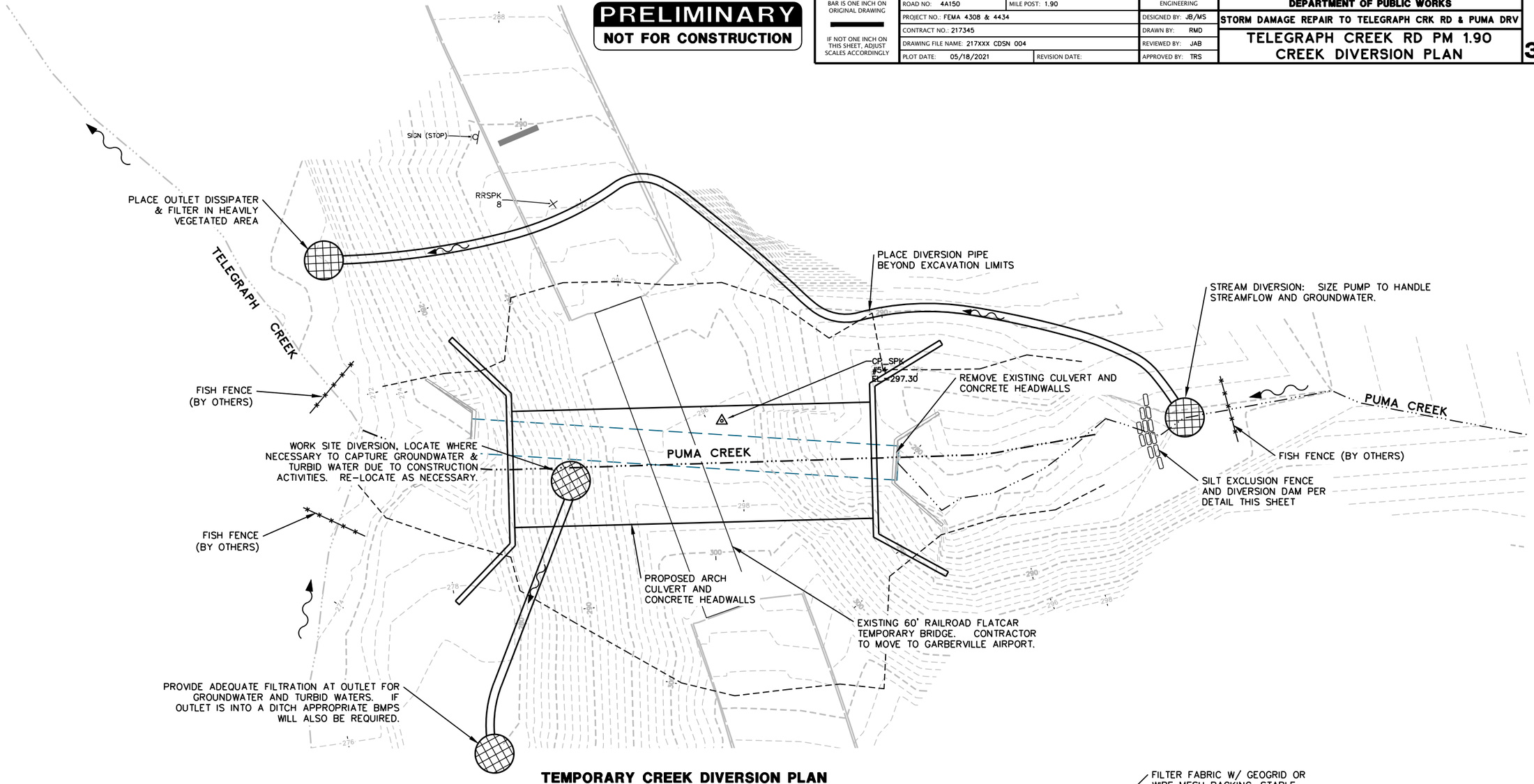
ROAD NAME: TELEGRAPH CREEK ROAD		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A150	MILE POST: 1.90		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217345		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 CREEK DIVERSION PLAN
DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 5 OF 30

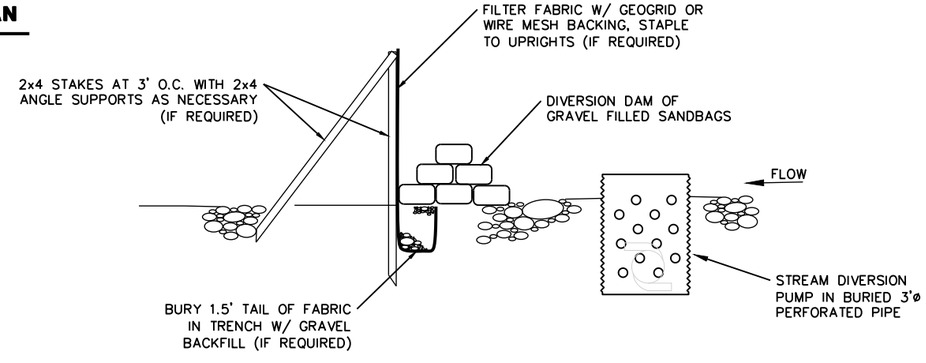


TEMPORARY CREEK DIVERSION PLAN

SCALE: 1"=10'

NOTES

1. THE PUMP WILL RUN 24/7 AS NEEDED TO DIVERT STREAM FLOW THROUGH THE SITE USING A GAS GENERATOR OR SIMILAR DEVICE.
2. PLACE GENERATOR IN A CONTAINMENT STRUCTURE AND HAVE SECONDARY CONTAINMENT STRUCTURE FOR FUELING.
3. PLACE STREAM INLET PUMP IN A 3' DIAMETER PERFORATED PIPE, 40 GALLON BUCKET, OR SIMILAR STRUCTURE WITH HOLES TO CAPTURE STREAM FLOW AND GROUND WATER. THIS WILL DIVERT SURFACE AND SUBSURFACE FLOW. A SAND-BAG COFFER DAM WILL BE BUILT AROUND STREAM INLET PUMP TO INSURE ALL WATER IS ADEQUATELY PUMPED FROM ACTIVE WORK SITE.
4. DISCHARGE THE STREAM DIVERSION OUTLET DOWNSTREAM OF EXCAVATION LIMITS INTO A DISSIPATION/FILTER SYSTEM THAT MINIMIZES EROSION OR SCOUR.
5. THE WORK SITE DIVERSION MUST DISCHARGE ACCUMULATED GROUNDWATER AND WATERS THAT ARE TURBID DUE TO CONSTRUCTION ACTIVITIES IN AN AREA THAT IS EITHER HEAVILY VEGETATED EMBANKMENT OR IN THE ROADSIDE DITCH THAT DRAINS BACK INTO TELEGRAPH CREEK.
6. ADEQUATE FILTRATION MUST BE PROVIDED FOR ALL DIVERSION SYSTEM OUTLETS.
7. ALTERNATE DIVERSIONS SYSTEMS, INCLUDING GRAVITY WILL BE CONSIDERED, BUT MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.



CREEK DIVERSION DETAIL

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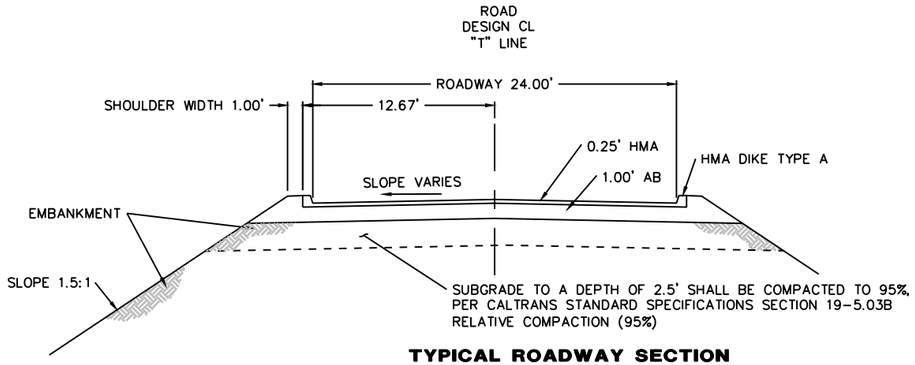
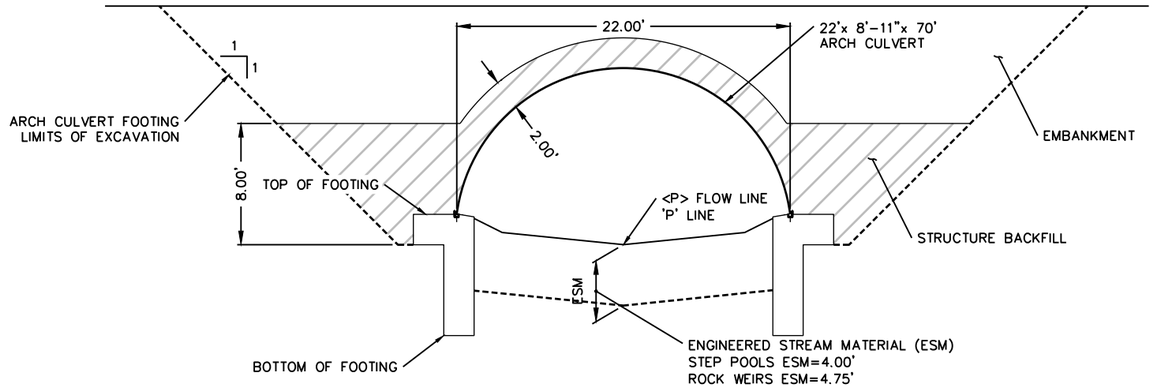
CONTRACT NO.: 217345		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 TYPICAL SECTIONS AND DETAILS
DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 6 OF 30



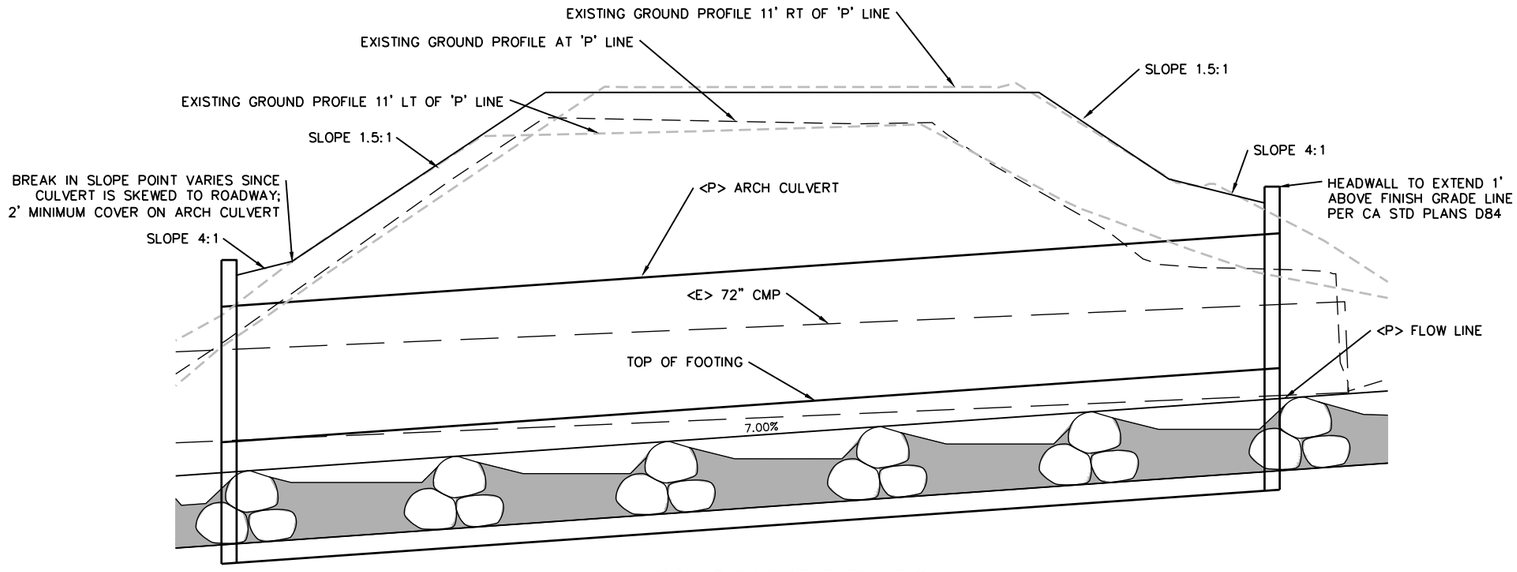
TYPICAL ROADWAY SECTION

SCALE: 1"=5'



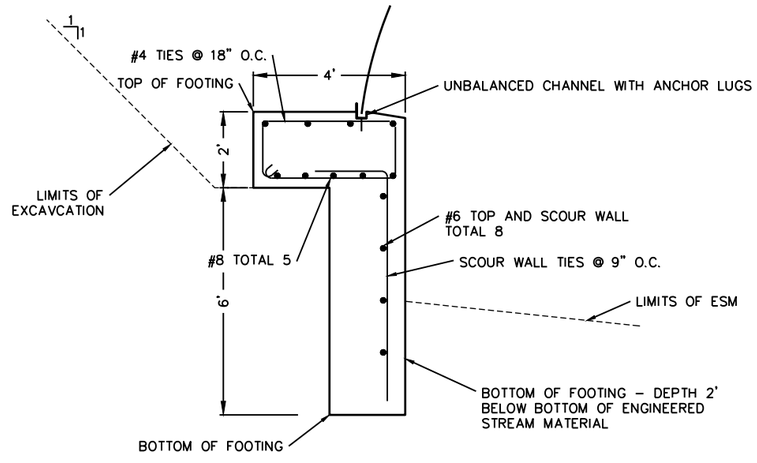
TYPICAL ARCH CULVERT SECTION

SCALE: 1"=5'



ARCH CULVERT ELEVATION

SCALE: 1"=5'



CONCRETE FOOTING DETAIL

SCALE: 1"=2'

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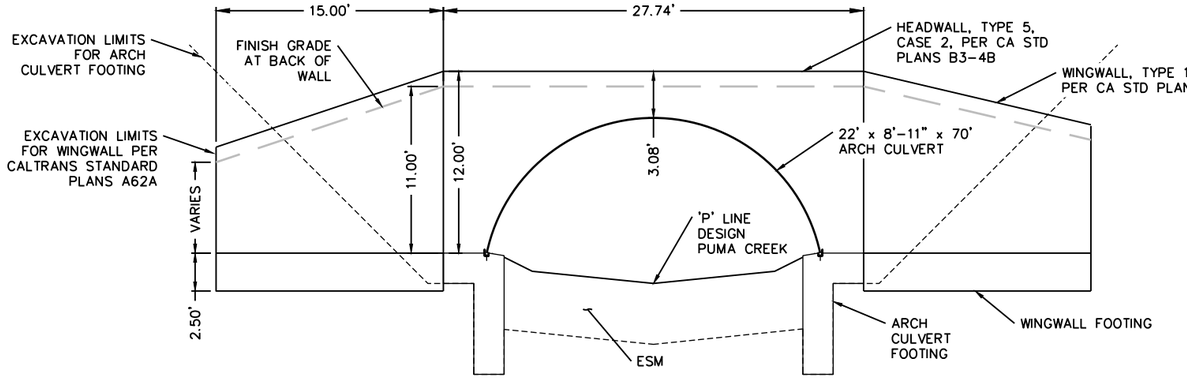
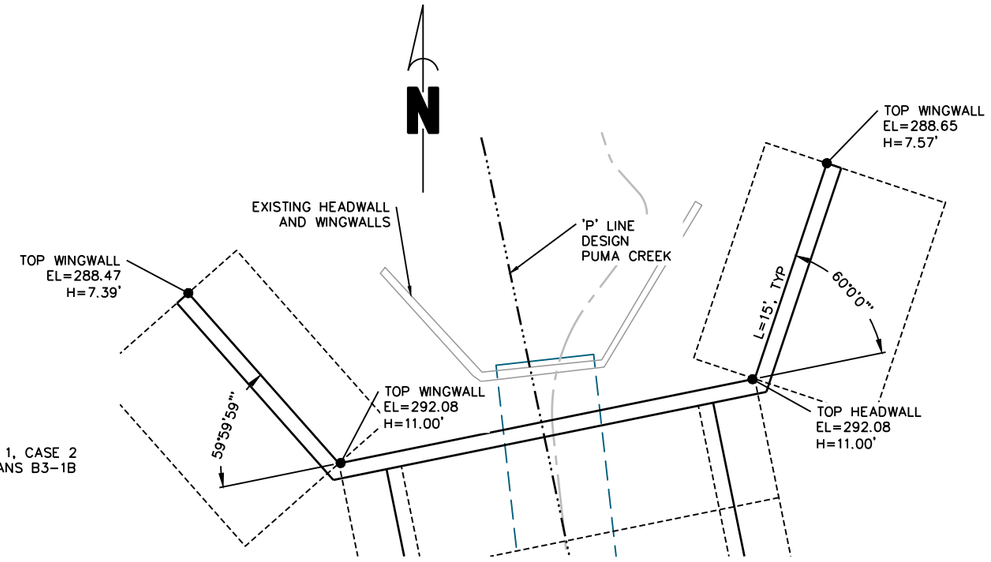
SHEET 7 OF 30



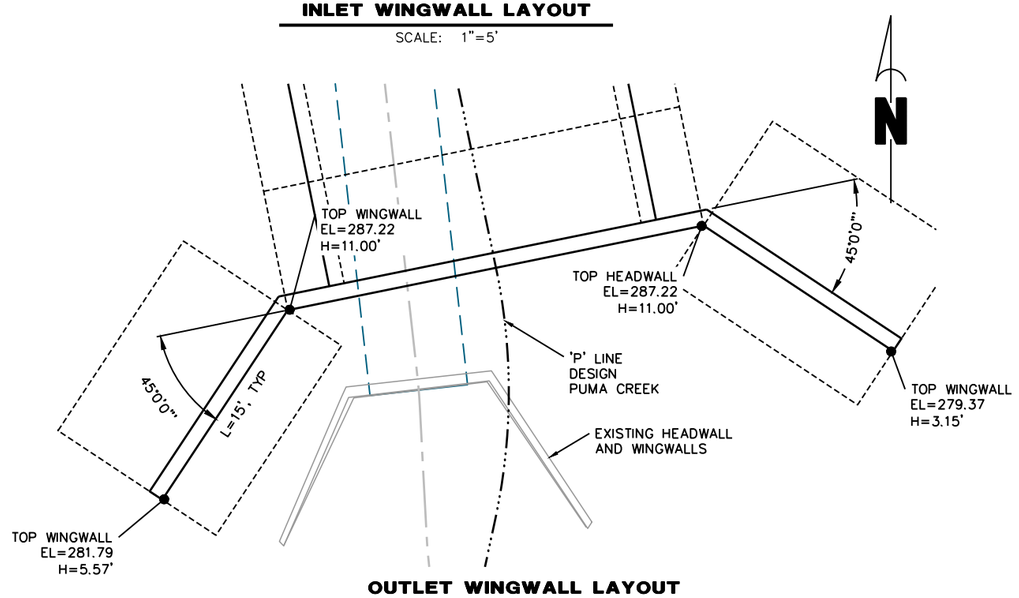
ARCH CULVERT WITH HEADWALL AND WINGWALL

SCALE: 1"=5'



INLET WINGWALL LAYOUT

SCALE: 1"=5'



OUTLET WINGWALL LAYOUT

SCALE: 1"=5'

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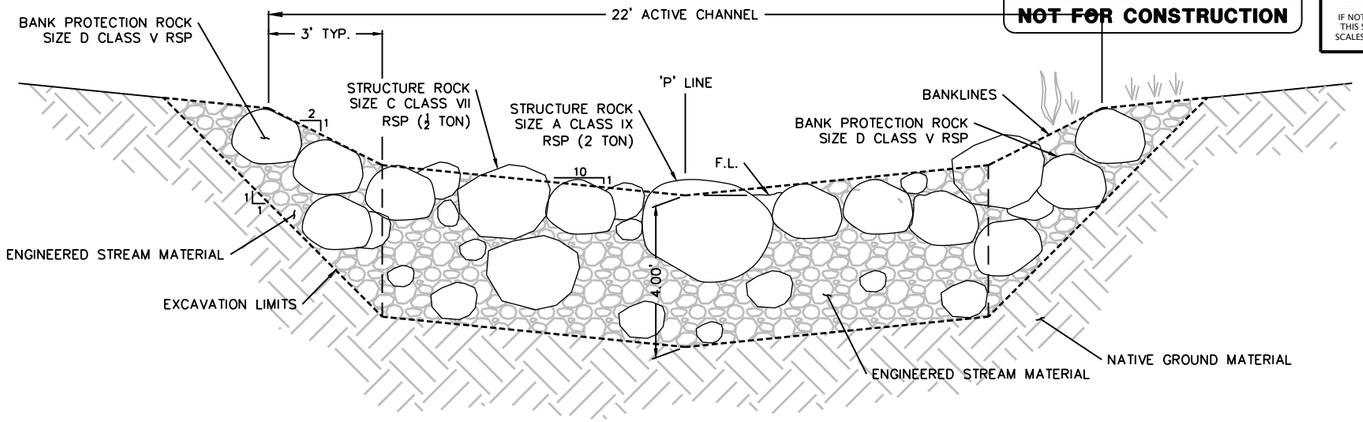
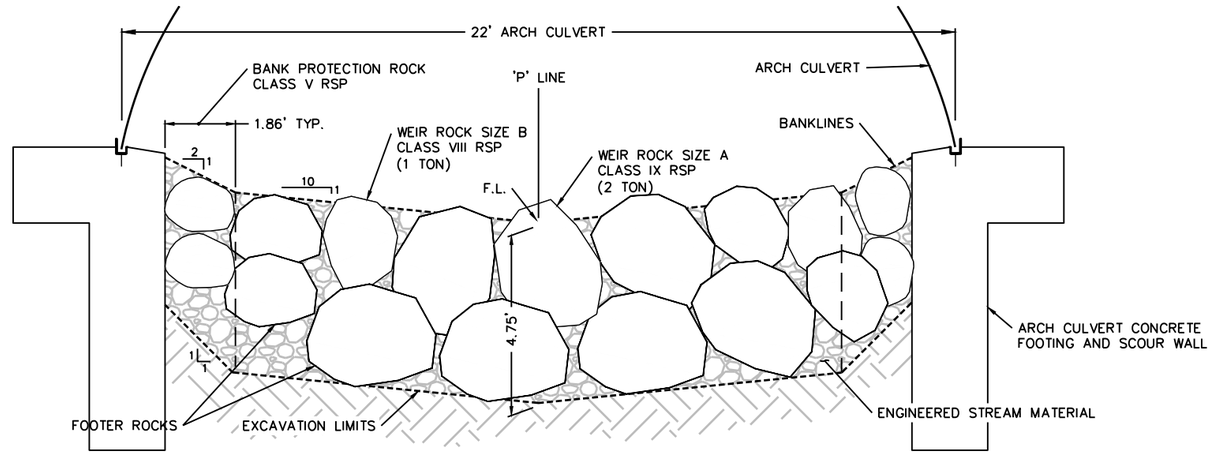
ROAD NAME: TELEGRAPH CREEK ROAD		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A150	MILE POST: 1.90		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217345		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 TYPICAL SECTIONS AND DETAILS
DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 8 OF 30



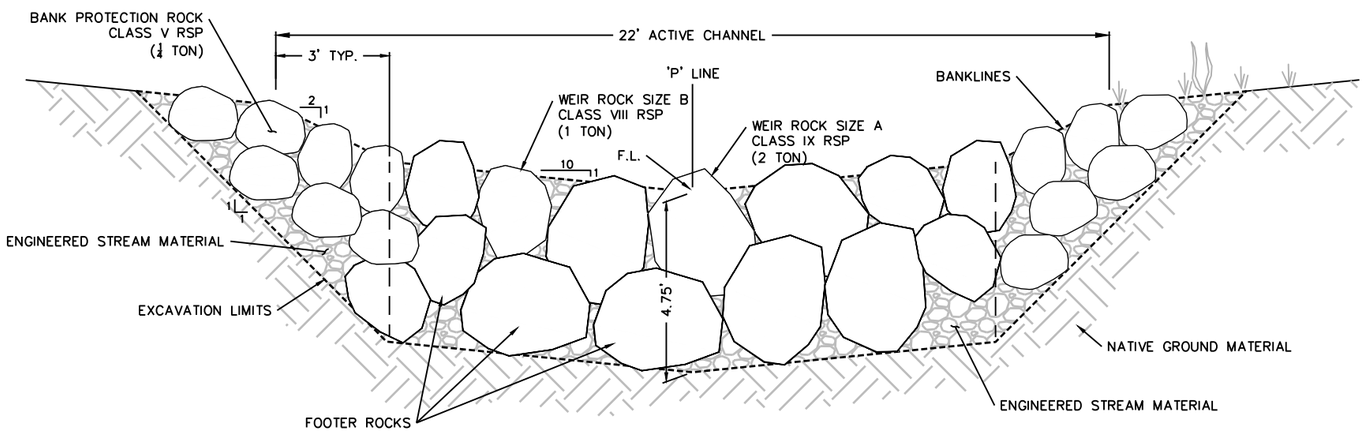
CASCADE ROUGHENED CHANNEL TYPICAL SECTION A-A

SCALE: 1"=2'



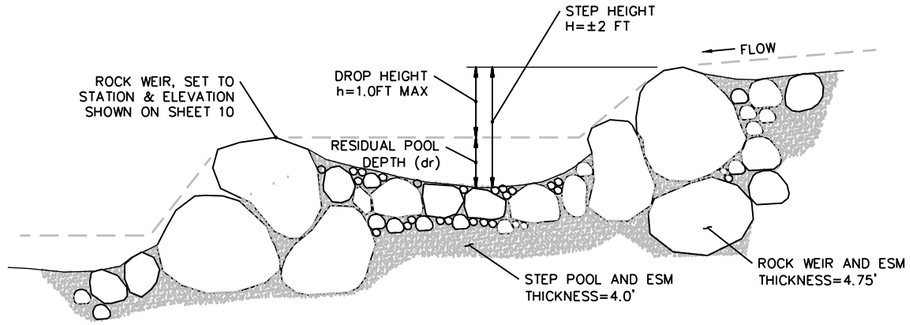
ROCK WEIR TYPICAL SECTION B-B

SCALE: 1"=2'



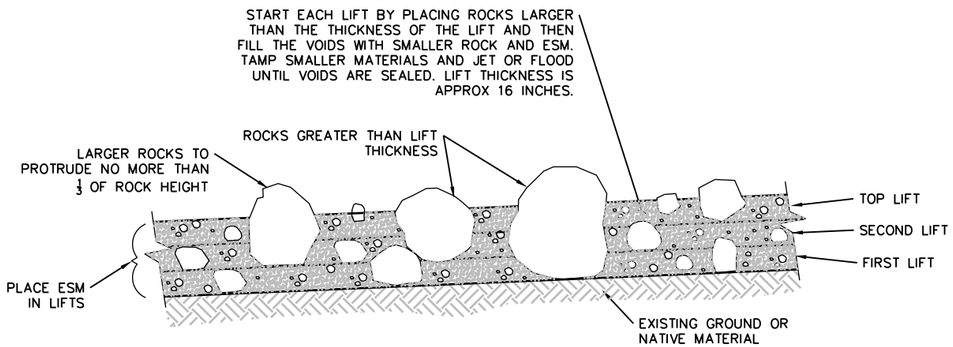
ROCK WEIR TYPICAL SECTION C-C

SCALE: 1"=2'



ROCK WEIR STEP POOL DETAIL

NOT TO SCALE



ENGINEERED STREAM MATERIAL (ESM) DETAIL

NOT TO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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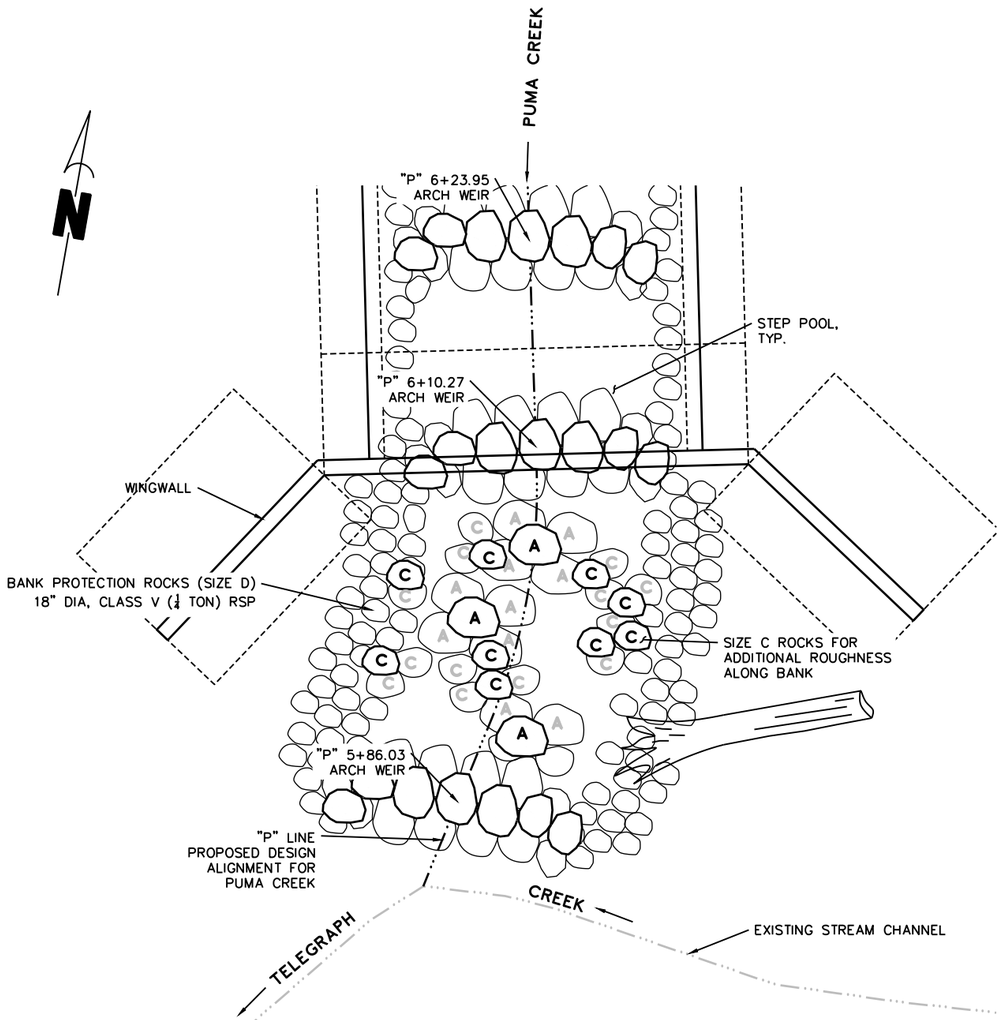
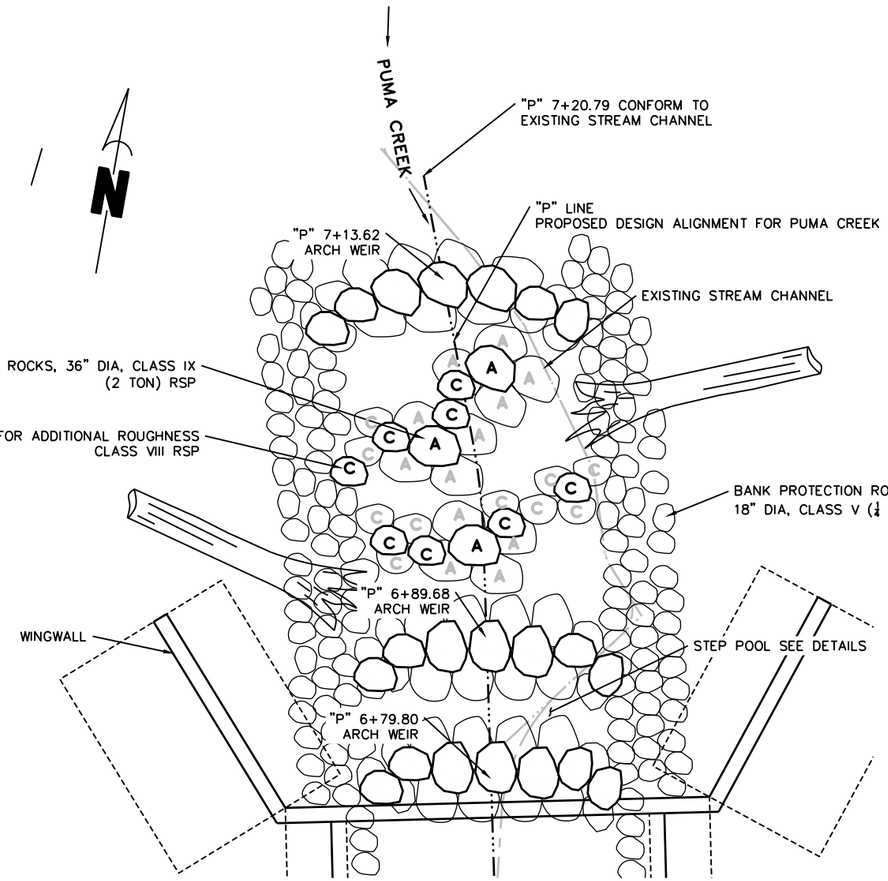
SHEET 9 OF 30



CASCADE ROUGHENED CHANNEL - OUTLET
'P' 5+79.69 TO 'P' 6+10.27
SCALE: 1"=5'



CASCADE ROUGHENED CHANNEL - INLET
'P' 6+89.68 TO 'P' 7+20.79
SCALE: 1"=5'

TABLE OF STRUCTURE ROCKS

	DOWNSTREAM (EACH)	UPSTREAM (EACH)	TOTAL (EACH)	TOTAL (TONS)	TOTAL (CY)**
SIZE A ROCKS, CLASS IX, 2 TON RSP	13	15	28	56	31.3
SIZE C ROCKS, CLASS VII, 1/2 TON RSP	22	18	40	20	11.2

**35% VOIDS, SG=2.87

NOTES

1. SEE CONSTRUCTION NOTES
2. ROOT WAD LOCATIONS ARE APPROXIMATE
3. EXCAVATION DAYLIGHTS NOT SHOWN

PRELIMINARY
NOT FOR CONSTRUCTION

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PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 CHANNEL CONSTRUCTION NOTES
CONTRACT NO.: 217345		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 004		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 10 OF 30

ROCK WEIR NOTES

1. ROCK WEIRS SHALL CONSIST OF FOOTER ROCKS, SELECT WEIR ROCKS AND ESM SET TO THE GRADES SHOWN ON THE PLANS.
2. ALL ROCK SHALL BE PLACED IN ACCORDANCE WITH THE APPROVED ROCK HANDLING PLAN
3. ALL ROCK DIMENSIONS ARE MEASURED ALONG THE INTERMEDIATE AXIS, WHICH IS AN AXIS THAT IS NOT THE MINOR OR MAJOR AXIS. THE MINOR AXIS OF AN INDIVIDUAL ROCK FRAGMENT SHALL NOT BE LESS THAN ONE–THIRD (1/3) THE MAJOR AXIS.
4. ROCK WEIRS SHALL CONFORM TO THE FOLLOWING SIZE:
   - 4.1. SIZE A: CLASS IX ROCK SLOPE PROTECTION (RSP) DESIGNATED FOR ARCH ROCK WEIRS SHALL BE HAND SELECTED AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION (SECTION 72–2) FOR TWO (2) TON ROCK
   - 4.2. SIZE B: CLASS VIII ROCK SLOPE PROTECTION (RSP) DESIGNATED FOR ARCH ROCK WEIRS SHALL BE HAND SELECTED AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION (SECTION 72–2) FOR ONE (1) TON ROCK
   - 4.3. FOOTER ROCK: SAME GENERAL SIZE AS WEIR ROCK
5. CONSTRUCTION OF ROCK WEIRS:
   - 5.1. WEIR ROCKS SHALL BE INDIVIDUALLY SELECTED AND INDIVIDUALLY PLACED.
   - 5.2. FOR EACH WEIR THE FOOTER ROCKS SHALL BE PLACED PRIOR TO PLACEMENT OF WEIR ROCKS.
   - 5.1. FOOTER AND WEIR ROCKS MUST BE SECURELY PLACED. WEIR ROCKS SHALL HAVE A MINIMUM OF SIX POINTS OF CONTACT. SELECTED ROCKS SHALL MINIMIZE VOIDS AND GAPS AND PLACED SO THAT THEY DO NOT ROCK OR ROTATE IN–PLACE OR SHIFT DOWNSTREAM.
   - 5.2. FINISHED GRADE SHALL BE MEASURED AT THE CONTACT POINTS BETWEEN WEIR ROCKS. THE CREST OF WEIR ROCKS SHALL NOT EXTEND MORE THAN 12 INCHES ABOVE FINISHED GRADE.
   - 5.3. THE SIDE SLOPES ON THE STEP POOLS SHALL BE NO GREATER THAN 1.5:1 HORIZONTAL AND VERTICAL.
   - 5.4. STEP–POOLS SHALL HAVE A DROP HEIGHT NO GREATER THAN 1.0'. THE STEP HEIGHT SHOULD BE TWO FEET (2') DEEP AT ITS DEEPEST POINT. SEE DETAIL ON SHEET 6 OF THE PROJECT PLANS.
   - 5.5. ESM SHALL NOT BE PLACED AGAINST FOOTER OR WEIR ROCKS UNTIL THE WEIR IS FULLY BUILT AND APPROVED BY ENGINEER.
   - 5.6. ESM SHALL BE JET OR FLOODED FOLLOWING PLACEMENT UNTIL NO VOIDS ARE VISIBLE AND WATER FLOWS ON SURFACE
6. NATIVE ROCK REMOVED DURING EXCAVATION MAY BE RE–USED FOR ROCK WEIRS AND FOOTER ROCK AS APPROVED BY THE FIELD ENGINEER.
7. GRADE TOLERANCES FOR ROCK WEIRS SHALL BE AS FOLLOWS:
   - 7.1. HORIZONTAL 1.0'
   - 7.2. VERTICAL 0.2'

CASCADE ROUGHENED CHANNEL ROCK NOTES

1. ROUGHENED CHANNEL ROCK CONSISTS OF STRUCTURE ROCKS, ENGINEERED STREAMBED MATERIAL (ESM) AND BANK PROTECTION ROCK.
2. ALL ROCK SHALL BE PLACED IN ACCORDANCE WITH THE APPROVED ROCK HANDLING PLAN.
3. ALL ROCK DIMENSIONS ARE MEASURED ALONG THE INTERMEDIATE AXIS, WHICH IS AN AXIS THAT IS NOT THE MINOR OR MAJOR AXIS. THE MINOR AXIS OF AN INDIVIDUAL ROCK FRAGMENT SHALL NOT BE LESS THAN ON–THIRD THE MAJOR AXIS.
4. STRUCTURE ROCK SHALL CONFORM TO THE FOLLOWING SIZES:
   - 4.1. SIZE A: CLASS IX ROCK SLOPE PROTECTION (RSP) DESIGNATED FOR STRUCTURE ROCKS IN THE CASCADE CHANNEL SHALL BE 36 INCH NOMINAL DIAMETER AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION (SECTION 72–2) FOR TWO (2) TON ROCK.
   - 4.2. SIZE C: CLASS VII ROCK SLOPE PROTECTION (RSP) DESIGNATED FOR STRUCTURE ROCKS IN THE CASCADE CHANNEL SHALL BE 24 INCH NOMINAL DIAMETER AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION (SECTION 72–2) FOR ONE–HALF (1/2) TON ROCK.
5. CONSTRUCTION OF ROUGHENED CHANNEL
   - 5.1. ROCKS GREATER THAN 18" NOMINAL DIAMETER SHALL BE INDIVIDUALLY SELECTED AND PLACED.
   - 5.2. ROCK PLACEMENT SHALL BE AT THE DISCRETION OF THE ENGINEER.
   - 5.3. PLACE ROCK SUCH THAT THE ROCK RESISTS ROLLING DUE TO GRAVITY AND HYDRAULIC FORCES. THE LONGEST AXIS OF A ROCK SHALL NOT BE PLACED VERTICALLY.
   - 5.4. TOP ROCKS SHALL BE CRADLED BY FOOTER ROCKS SUCH THAT IT CANNOT ROLL DOWNSTREAM
   - 5.5. ROCK (EXCEPT FOOTERS) MUST EXTEND ABOVE FINISHED GRADE BETWEEN APPROXIMATELY ONE–THIRD 1/3 OF ITS VERTICAL HEIGHT.
   - 5.6. ROCK SHALL BE PLACED TO BLEND INTO BANK PROTECTION
   - 5.7. THE ENGINEERED STREAMBED MATERIAL (ESM) SHALL BE JET OR FLOODED FOLLOWING PLACEMENT OF STRUCTURE ROCKS UNTIL NO VOIDS ARE VISIBLE AND WATER FLOWS ON SURFACE.
   - 5.8. ONCE PLACED, AVOID DRIVING ON PLACED MATERIALS.
6. NATIVE ROCK REMOVED DURING EXCAVATION MAY BE RE–USED FOR ROUGHENED CHANNEL ROCK AS APPROVED BY FIELD ENGINEER.
7. GRADE TOLERANCES FOR STRUCTURE ROCK SHALL BE AS FOLLOWS:
   - 7.1. HORIZONTAL 1.0'
   - 7.2. VERTICAL 0.2'

BANK PROTECTION ROCK NOTES

1. BANK PROTECTION CONSISTS OF BANK PROTECTION ROCKS AND ENGINEERED STREAMBED MATERIAL (ESM).
2. BANK PROTECTION IS LOCATED ALONG THE EDGES OF THE ACTIVE CHANNEL ON SHOWN IN THE TYPICAL SECTIONS OF SHEET 6 OF THE PROJECT PLANS
3. BANK PROTECTION ROCKS ARE TO BE RIGID AND RESISTANT TO EROSION. FACES SHALL BE UNEVEN, PROTRUDE INTO THE CHANNEL AND BE ROUGH IN APPEARANCE
4. BANK PROTECTION ROCK SHALL CONFORM TO THE FOLLOWING SIZE:
   - 4.1. SIZE D: CLASS V ROCK SLOPE PROTECTION (RSP) DESIGNATED FOR BANK PROTECTION SHALL BE 18 INCH NOMINAL DIAMETER AND SHALL CONFORM TO CALTRANS STANDARD SPECIFICATION (SECTION 72–2) FOR QUARTER (1/4) TON ROCK.
5. CONSTRUCTION OF BANK PROTECTION
   - 5.1. PREPARE SUBGRADE FOR RECEIVING BANK PROTECTION ROCK.
   - 5.2. INSTALL BANK PROTECTION ROCK WHERE SHOWN ON THE PLANS.
   - 5.3. BUILD BANK PROTECTION IN LIFTS.
   - 5.4. PLACE BANK PROTECTION ROCK SUCH THAT THE TOPS OF THE ROCKS SLOPE AWAY FROM THE CHANNEL ALLOWING UPPER ROCKS TO SHINGLE AWAY FROM CHANNEL SO ROCKS CANNOT SLIDE INTO CHANNEL.
   - 5.5. PLACE A SINGLE LAYER BANK PROTECTION ROCK THEN PLACE ESM IN VOIDS. TAMP ESM FOLLOWED BY JETTING OR FLOODING. CONTINUE TAMPING/JETTING/FLOODING UNTIL VOIDS VISUALLY APPEAR TO BE FILLED TO ABOUT HALF THE HEIGHT OF THE PLACED BANK PROTECTION ROCK SUCH THAT LOWER BANK PROTECTION ROCKS PROTRUDE INTO UPPER LIFTS.
   - 5.6. PLACE LARGE STRUCTURE ROCKS RANDOMLY ALONG BANK TO INCREASE ROUGHNESS AND/OR AS DIRECTED BY ENGINEER.
   - 5.7. ON TOP LIFT OF BANK PROTECTION, PLACE/TAMP/JET/FLOOD ESM TO SPECIFIED TOP ELEVATION OF BANK PROTECTION ROCK UNTIL VOIDS APPEAR TO BE VISUALLY FILLED.
   - 5.8. THE ENGINEERED STREAMBED MATERIAL (ESM) SHALL BE JET OR FLOODED BETWEEN BANK PROTECTION ROCKS DURING PLACEMENT AND JET OR FLOOD ED FOLLOWING PLACEMENT UNTIL NO VOIDS ARE VISIBLE AND WATER DOES NOT FLOW INTO BANKS
6. NATIVE ROCK REMOVED DURING EXCAVATION MAY BE RE–USED FOR BANK PROTECTION ROCK AS APPROVED BY FIELD ENGINEER.
7. GRADE TOLERANCES FOR BANK PROTECTION ROCK SHALL BE AS FOLLOWS:
   - 7.1. HORIZONTAL 1.0'
   - 7.2. VERTICAL 0.5

ENGINEERED STREAMBED MATERIAL (ESM) NOTES

1. ENGINEERED STREAMBED MATERIAL CONSISTS OF GRADED ROCK MATERIALS PLACE BETWEEN THE STRUCTURE ROCK OF THE ROUGHENED CHANNEL, BANK PROTECTION, AND ROCK WEIRS.
2. ALL MATERIAL LARGER THAN 8–INCH DIAMETER SHALL BE ANGULAR.
3. ESM SHALL HAVE A MINIMUM THICKNESS AS SPECIFIED IN THE PROJECT PLANS.
4. ENGINEERED STREAMBED MATERIAL SHALL BE A WELL–GRADED MIX OF THE FOLLOWING MATERIALS:

NOMINAL DIAMETER	WEIGHT CLASS	% VOLUME
$D_{100-ESM}$, 4.75 FEET	3 TON, CLASS X	1%
D_{95-ESM}, 3.04 FEET	2 TON CLASS IX	5%
D_{84-ESM}, 1.90 FEET	3/8 TON CLASS VI	11%
D_{50-ESM}, 0.76 FEET	CLASS II (60lb)	34%
D_{30-ESM}, 0.38 FEET	CLASS I (20lb)	20%
D_{16-ESM}, 1.36 INCH	N/A	14%
D_{8-ESM}, 0.16 INCH	N/A	8%
FINES	N/A	7%

5. CONSTRUCTION OF ENGINEERED STREAMBED MATERIAL
   - 5.1. ESM SHALL BE PLACED IN APPROXIMATELY 16" LIFTS. SEE SHEET 7 OF THE PROJECT PLANS.
   - 5.2. ESM SHALL SURROUND AND FILL VOIDS AROUND STRUCTURE ROCKS.
   - 5.3. EACH LIFT SHALL INCLUDE ROCK MATERIAL FROM ALL ROCK GROUPS UNLESS ROCK WILL PROTRUDE MORE THAN ONE–HALF (1/2) OF ITS DIAMETER ABOVE FINISHED GRADE.
   - 5.4. EACH LIFT SHALL BE SEALED SO THAT WATER VISUALLY APPEARS TO REMAIN ON THE SURFACE AND WATER REMAINS FLOWING ON THE TOP WHEN FLOW SOURCE IS RESTORED. THE CONTRACTOR CAN SEAL THE SURFACE IN A METHOD THEY PREFER. IT RECOMMENDED THAT JETTING OR FLOODING AND A MECHANICAL MEANS SUCH AS TAMPING BE USED.
   - 5.5. IF WATER FAILS TO FLOW ON SURFACE, ADD ESM AND CONTINUE TAMPING/FLOODING/JETTING UNTIL BED IS SEALED.
   - 5.6. THE FINAL LIFT SHALL BE ROUGH IN APPEARANCE WITH ROCKS LARGER THAN 10INCH PROTRUDING APPROXIMATELY ONE–THIRD (1/3) OF DIAMETER ABOVE FINISHED GRADE.
   - 5.7. AVOID PLACING HEAVY EQUIPMENT OF PLACED MATERIALS.
   - 5.8. NOT WATER USED DURING THE SEALING PROCESS SHALL BE ALLOWED TO DISCHARGE INTO THE LIVE STREAM CHANNEL, BUT SHALL BE REUSED OR PUMPED TO AN APPROVED DE–WATERING SYSTEM.
6. NATIVE MATERIAL AND ROCK REMOVED DURING EXCAVATION MAY BE RE–USED FOR ESM AS APPROVED BY FIELD ENGINEER. NATIVE MATERIAL SHALL BE FREE OF WOODY DEBRIS AND DELETERIOUS MATERIALS. NO CONCRETE DEBRIS WILL BE ALLOWED
7. GRADE TOLERANCES FOR ESM SHALL BE AS FOLLOWS:
   - 7.1. HORIZONTAL N/A
   - 7.2. VERTICAL 0.2'

PRELIMINARY
NOT FOR CONSTRUCTION

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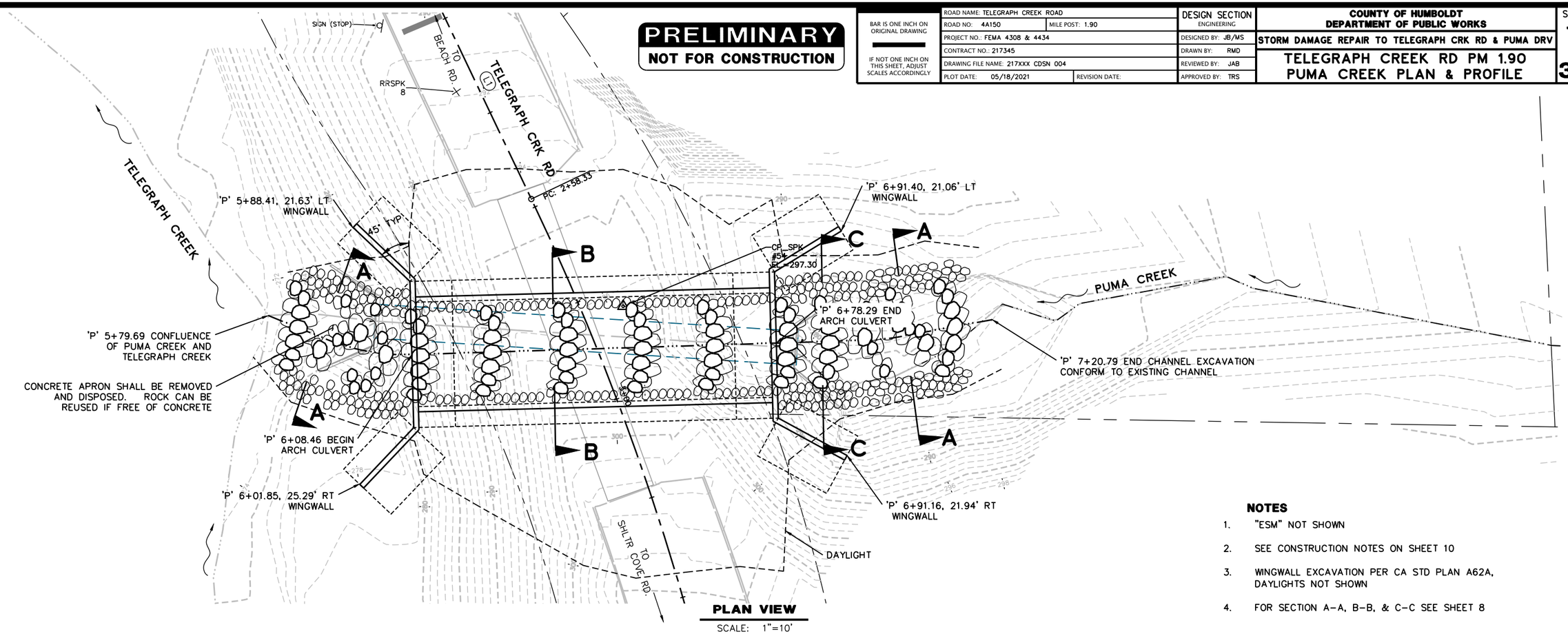
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

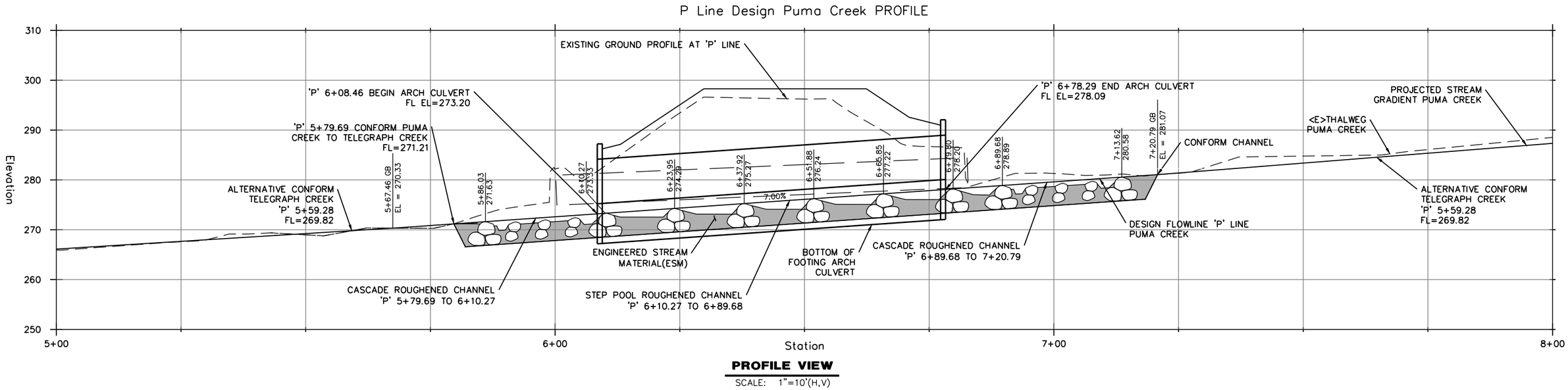
SHEET 11 OF 30



PLAN VIEW
SCALE: 1"=10'

NOTES

1. "ESM" NOT SHOWN
2. SEE CONSTRUCTION NOTES ON SHEET 10
3. WINGWALL EXCAVATION PER CA STD PLAN A62A, DAYLIGHTS NOT SHOWN
4. FOR SECTION A–A, B–B, & C–C SEE SHEET 8



PROFILE VIEW
SCALE: 1"=10'(H,V)

PRELIMINARY
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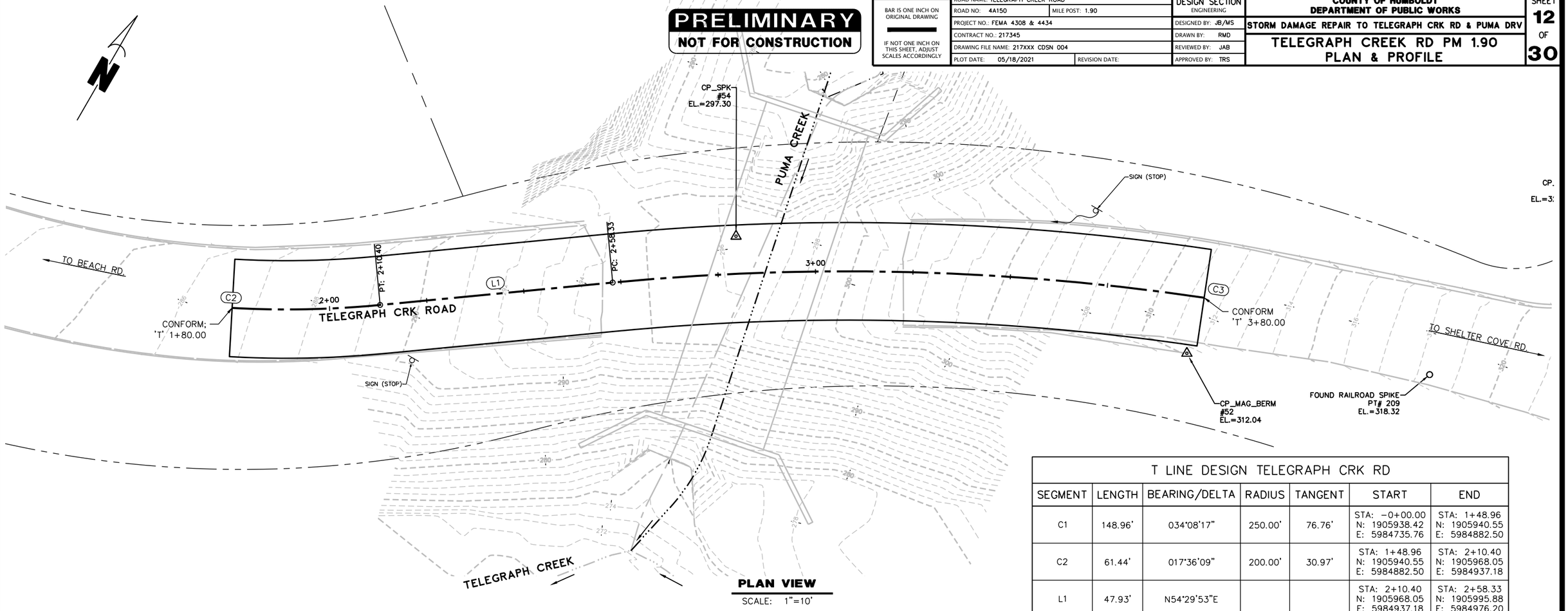
SHEET 12 OF 30

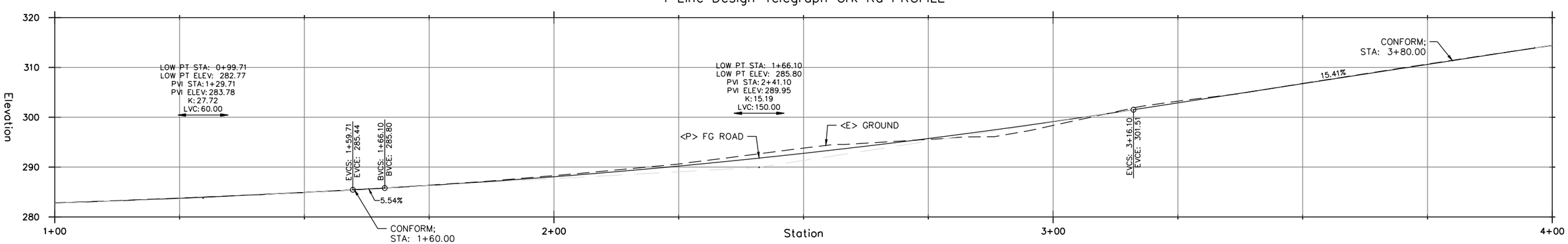


PLAN VIEW
SCALE: 1"=10'

T LINE DESIGN TELEGRAPH CRK RD

SEGMENT	LENGTH	BEARING/DELTA	RADIUS	TANGENT	START	END
C1	148.96'	034°08'17"	250.00'	76.76'	STA: -0+00.00 N: 1905938.42 E: 5984735.76	STA: 1+48.96 N: 1905940.55 E: 5984882.50
C2	61.44'	017°36'09"	200.00'	30.97'	STA: 1+48.96 N: 1905940.55 E: 5984882.50	STA: 2+10.40 N: 1905968.05 E: 5984937.18
L1	47.93'	N54°29'53"E			STA: 2+10.40 N: 1905968.05 E: 5984937.18	STA: 2+58.33 N: 1905995.88 E: 5984976.20
C3	248.65'	028°29'37"	500.00'	126.95'	STA: 2+58.33 N: 1905995.88 E: 5984976.20	STA: 5+06.98 N: 1906085.10 E: 5985205.56
L2	36.32'	N82°59'30"E			STA: 5+06.98 N: 1906085.10 E: 5985205.56	STA: 5+43.31 N: 1906089.53 E: 5985241.61

T Line Design Telegraph Crk Rd PROFILE



PROFILE VIEW
SCALE: 1"=10'(H,V)

PRELIMINARY
NOT FOR CONSTRUCTION

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	DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	
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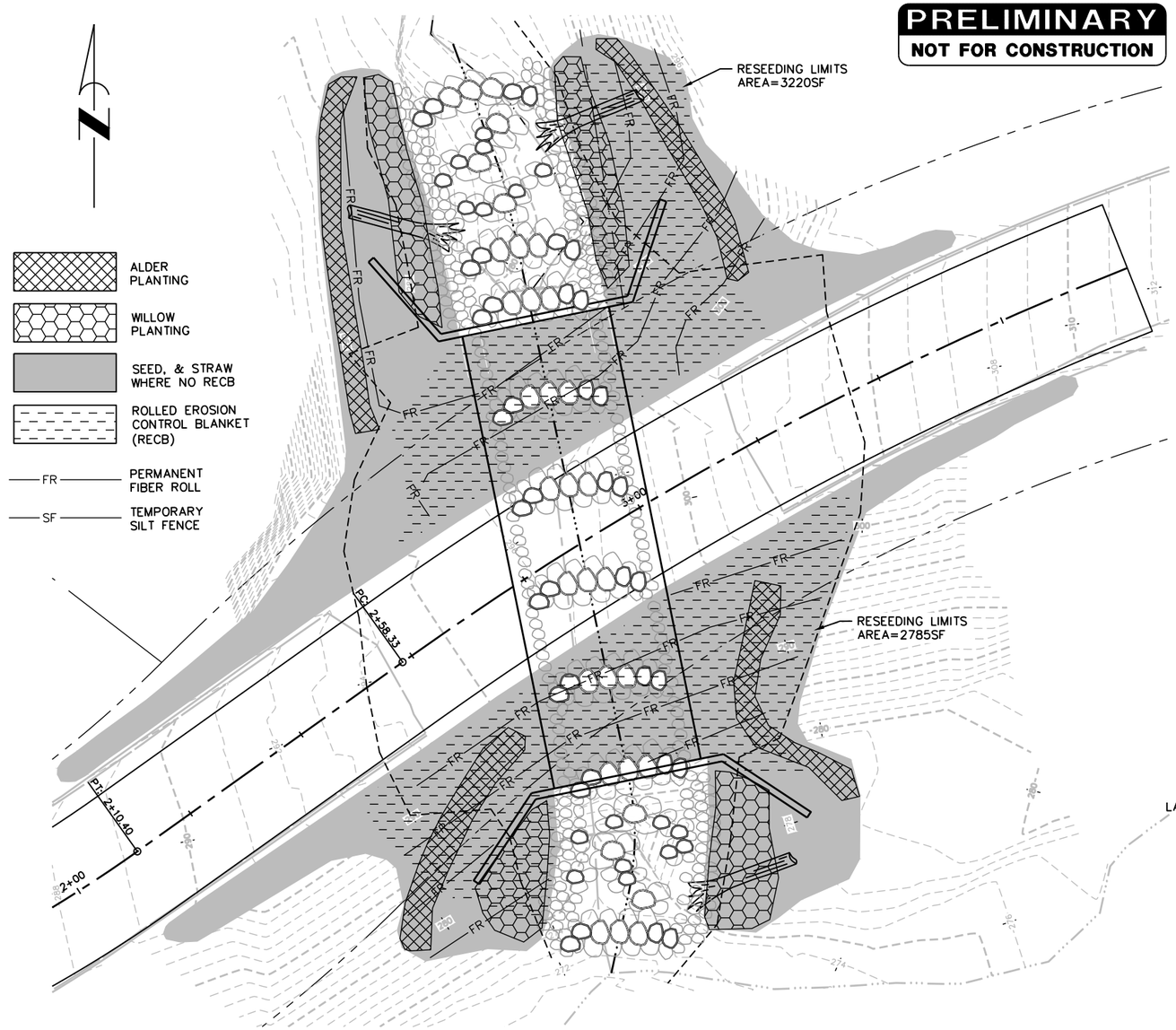
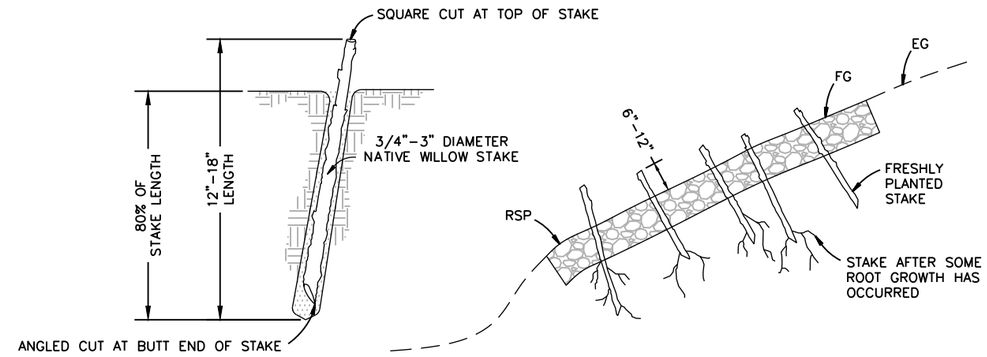
SHEET 13 OF 30



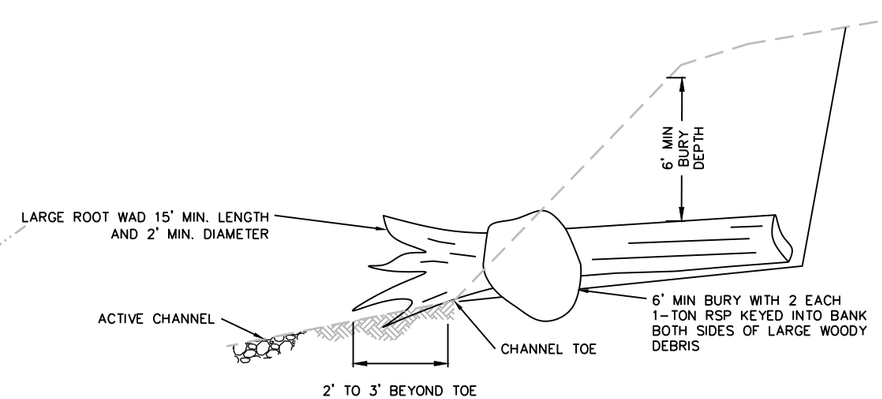
RE-VEGETATION PLAN VIEW

SCALE: 1"=10'



WILLOW STAKING

– NOT TO SCALE –



FISH HABITAT STRUCTURE DETAIL
ROOT WAD

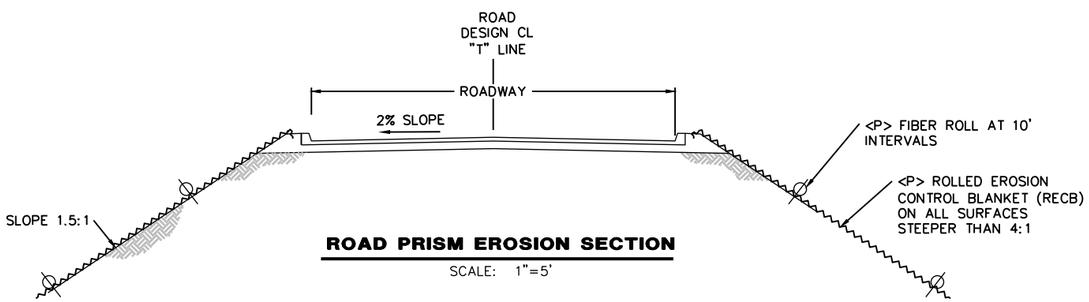
– NOT TO SCALE –

REVEGETATION NOTES

1. HARVEST PLANTING STAKES FROM ON-SITE OR NEARBY SOURCES.
2. SOAK STAKES FOR 5-7 DAYS PRIOR TO INSTALLATION.
3. PRE-DRIVE HOLES FOR STAKES USING AUGER OR EXCAVATOR MOUNTED STINGER. HOLE MUST EXTEND AT LEAST 6" BELOW TOP OF WATER TABLE.
4. PLACE STAKE IN PREPARED HOLE WITH 2-5 BRANCH/BUD SCARS ABOVE THE GROUND.
5. WATER PLANTING AREA THOROUGHLY AFTER INSTALLING STAKES AND ENSURE THERE ARE NO AIR POCKETS IN HOLE AROUND WILLOW STAKES.
6. PLACE 200 WILLOW STAKES 6 FT ON CENTER MAXIMUM. STAGGER WILL STAKE ROWS BY 5FT PARALLEL TO THE ROAD.
7. REPLACE RED ALDER TREES AT 6 FT ON CENTER. THREES SHALL HAVE A MINIMUM HEIGHT OF 4 FT.

REVEGETATION PLAN

PLANT TYPE	QTY	LOCATION	NOTES
ALDER	*24 (EA)*	*EACH BANK AS SHOWN ON PLAN VIEW*	*4'-6' MIN HT, SPACED 6FT APART*
WILLOW	*200 (EA)*	*EACH BANK AS SHOWN ON PLAN VIEW*	*12"-18" MIN HT*
SEED	*6005 (SF)*	*ALL EXPOSED SOIL*	
STRAW	*1875 (SF)*	*SLOPES < 4:1*	
RECB	*348 (SY)*	*SLOPES > 4:1*	
FIBER ROLLS	*460 (LF)*	*ALL SLOPES*	*10' INTERVALS (1.5:1)*



ROAD PRISM EROSION SECTION

SCALE: 1"=5'

PRELIMINARY
NOT FOR CONSTRUCTION

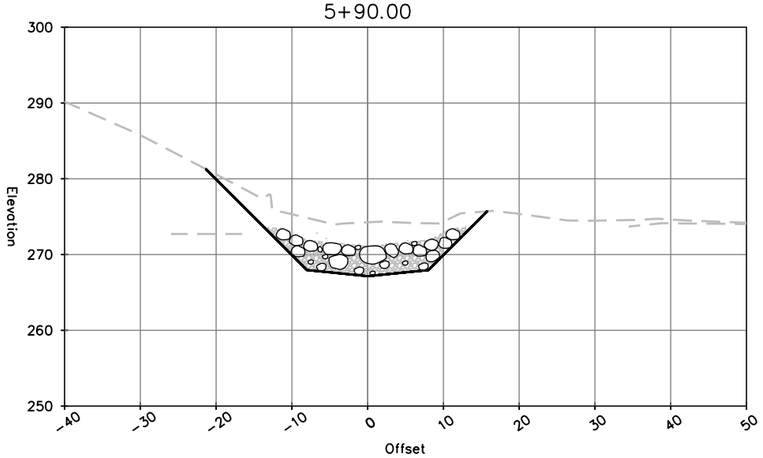
BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME: TELEGRAPH CREEK ROAD		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A150	MILE POST: 1.90		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217345		DRAWN BY: RMD	
DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	TELEGRAPH CREEK RD PM 1.90 PUMA CREEK CROSS SECTIONS
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 14 OF 30

5+90.00



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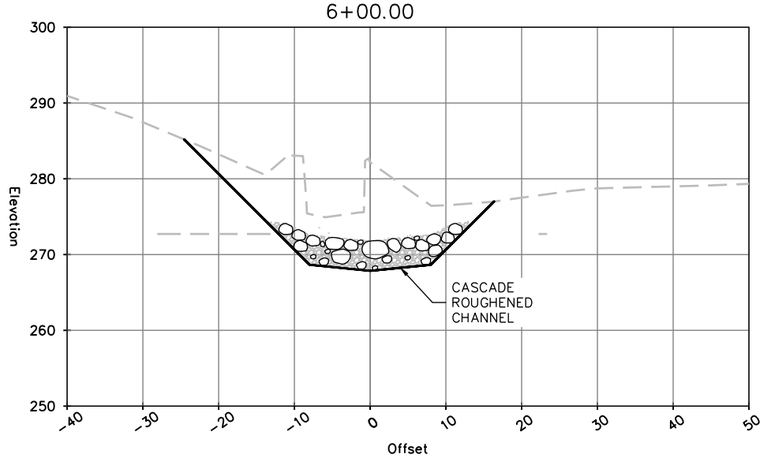

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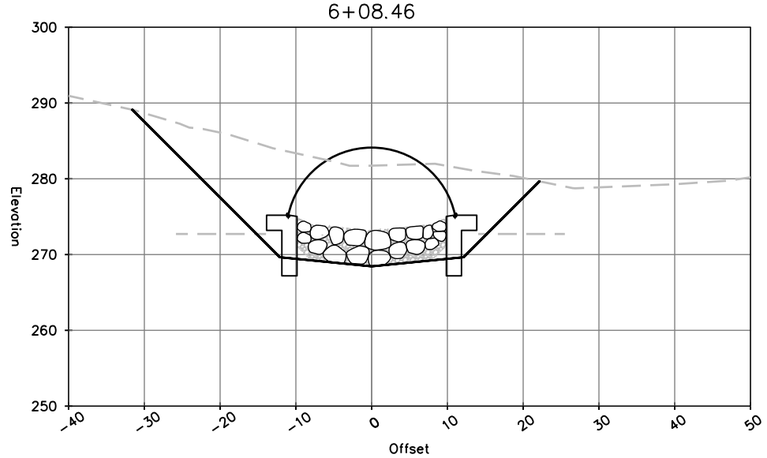

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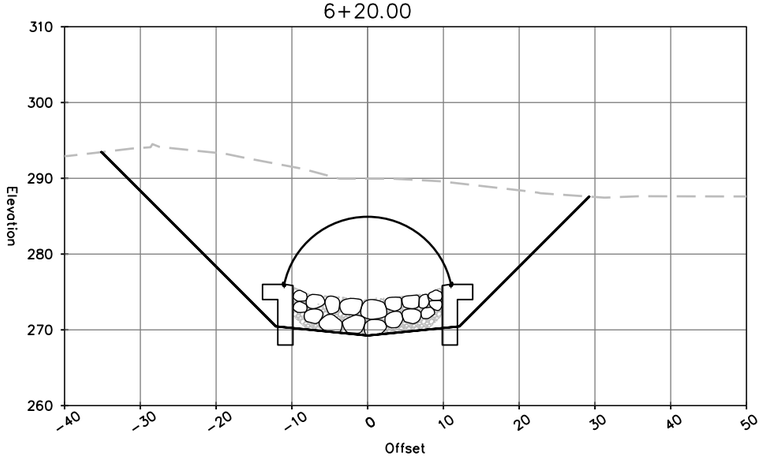

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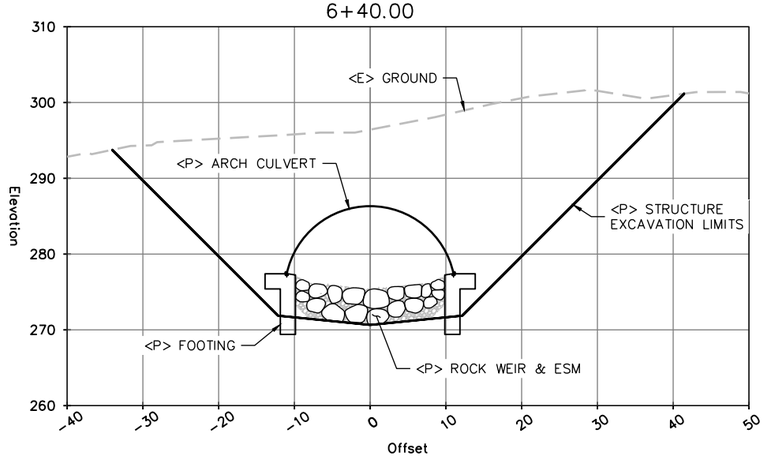

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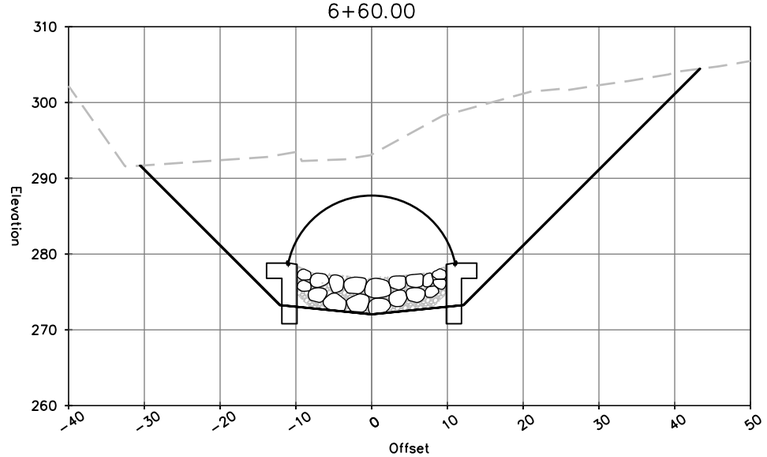


CROSS SECTIONS

SCALE: 1"=10' H,V

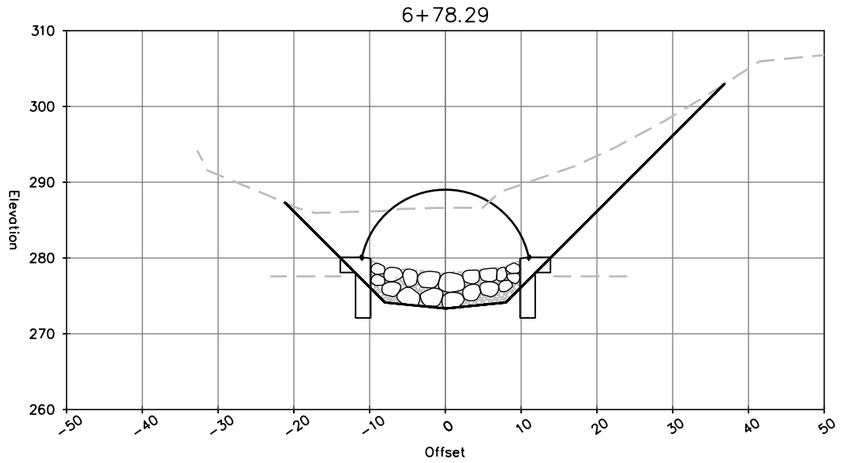
PRELIMINARY
NOT FOR CONSTRUCTION

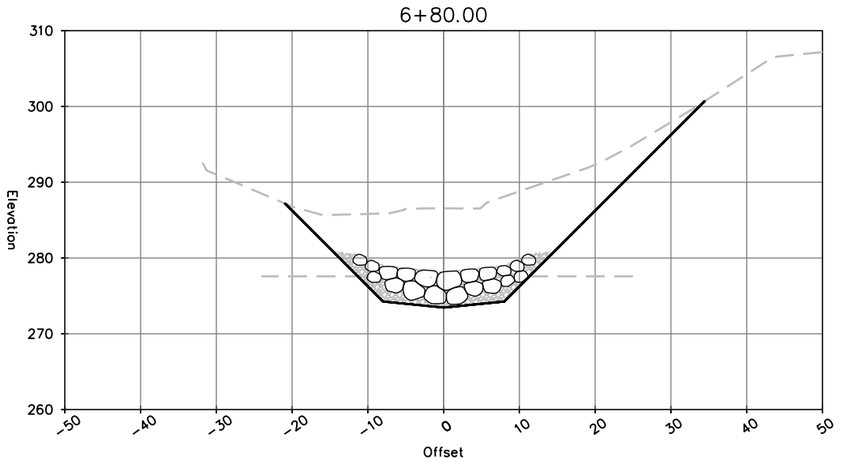
BAR IS ONE INCH ON ORIGINAL DRAWING

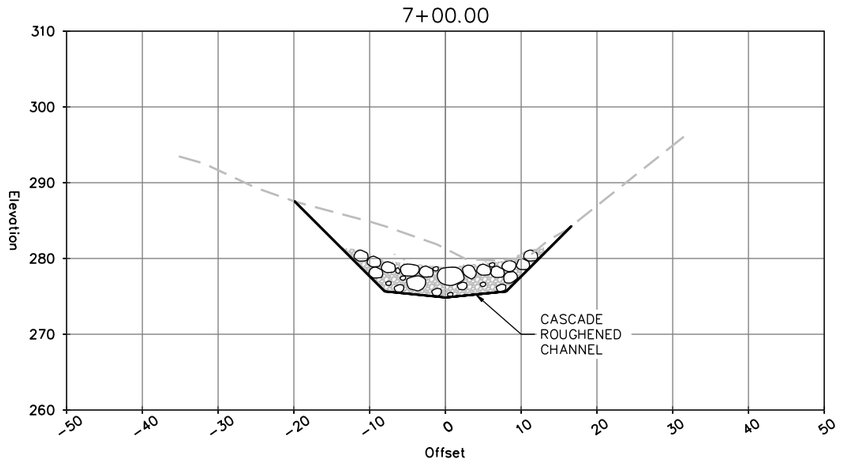
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

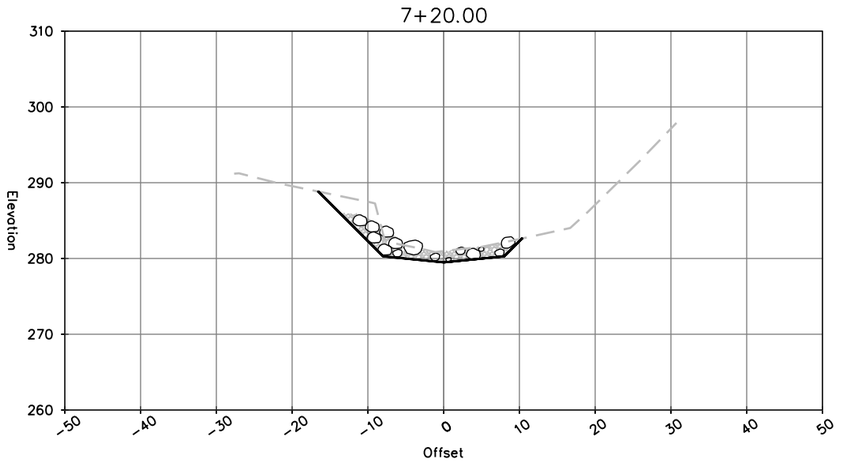
ROAD NAME: TELEGRAPH CREEK ROAD		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A150	MILE POST: 1.90	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 PUMA CREEK CROSS SECTIONS
CONTRACT NO.: 217345		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 004		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 15 OF 30









CROSS SECTIONS

SCALE: 1"=10' H,V

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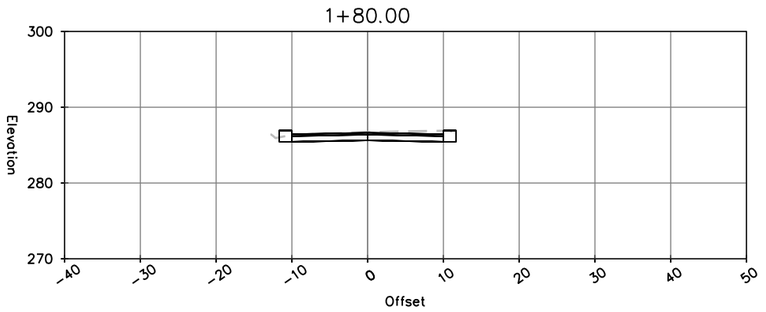
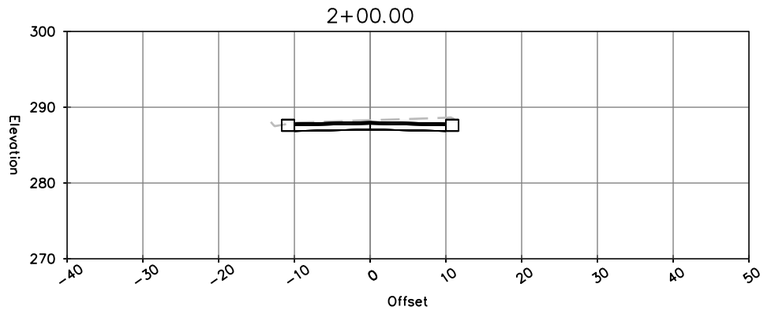
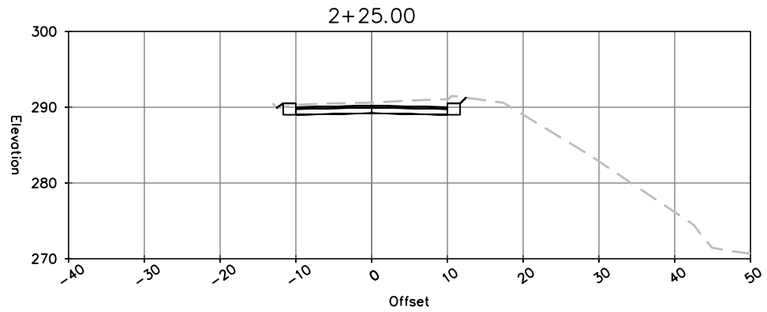
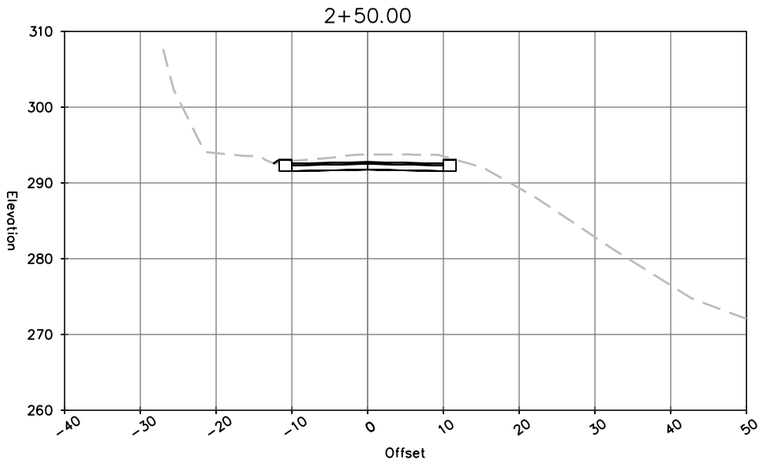
ROAD NO: 4A150	MILE POST: 1.90		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217345		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 CROSS SECTIONS
DRAWING FILE NAME: 217XXX CDSN 004		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

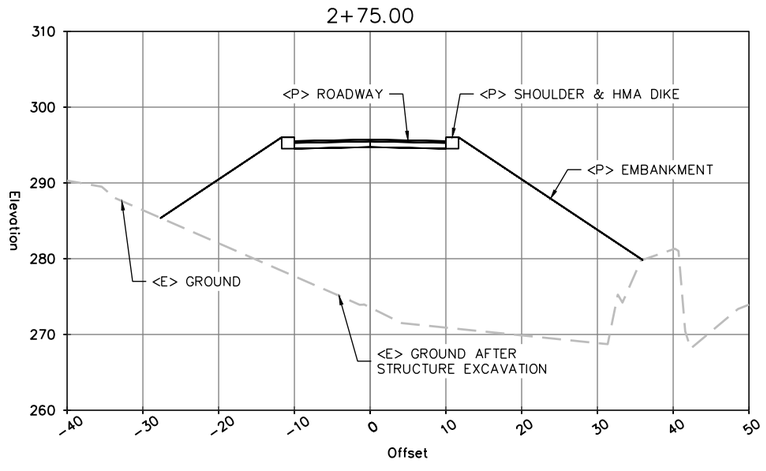
SHEET 16 OF 30

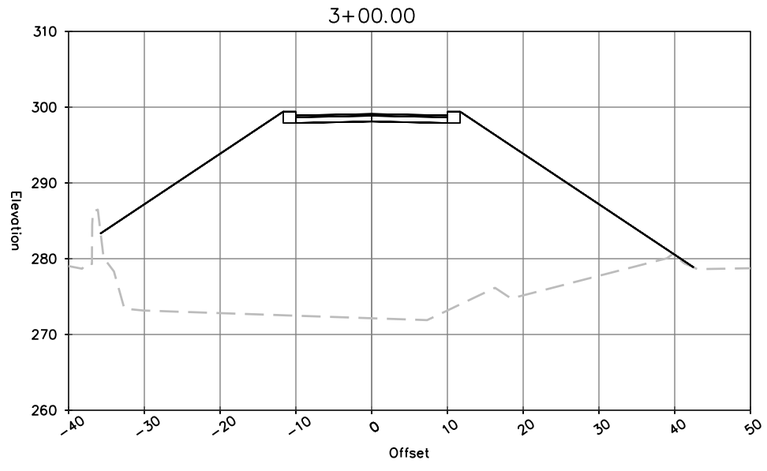












CROSS SECTIONS

SCALE: 1"=10' H,V

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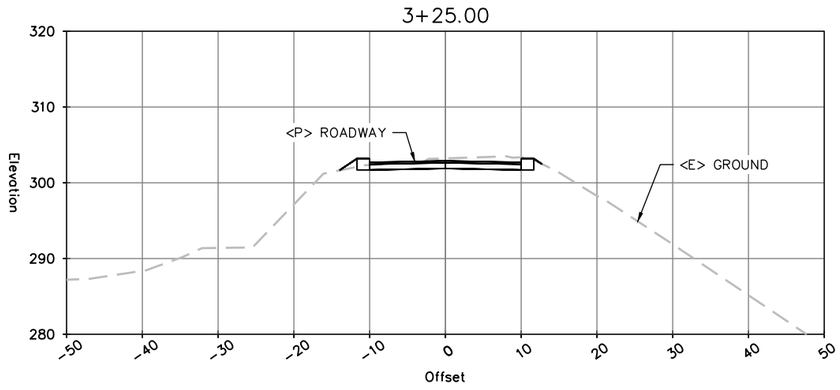
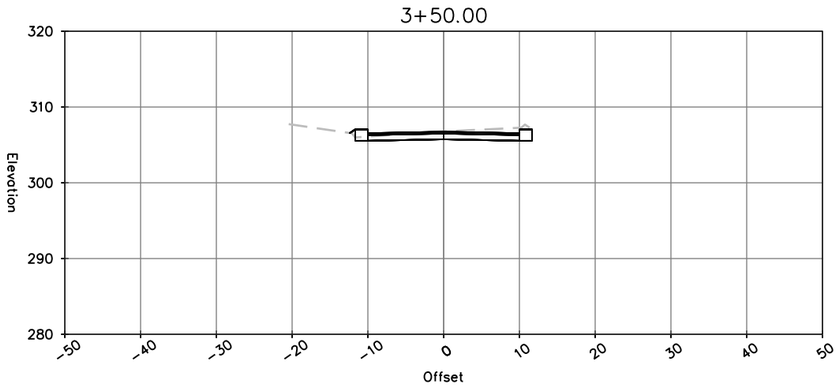
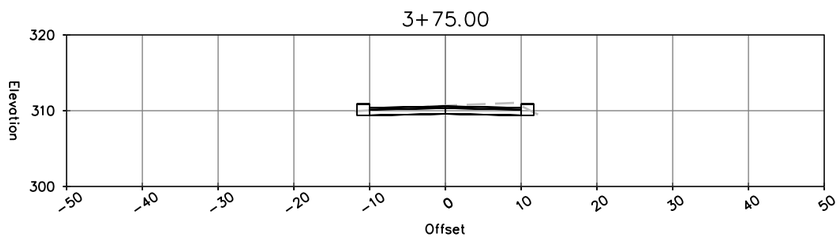
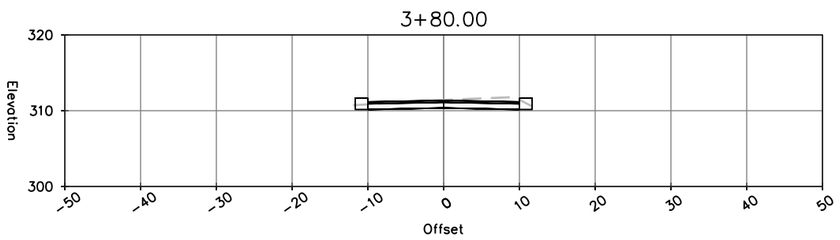
ROAD NO: 4A150	MILE POST: 1.90	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	TELEGRAPH CREEK RD PM 1.90 CROSS SECTIONS
CONTRACT NO.: 217345		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 004		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 17 OF 30









CROSS SECTIONS

SCALE: 1"=10' H,V

PRELIMINARY
NOT FOR CONSTRUCTION

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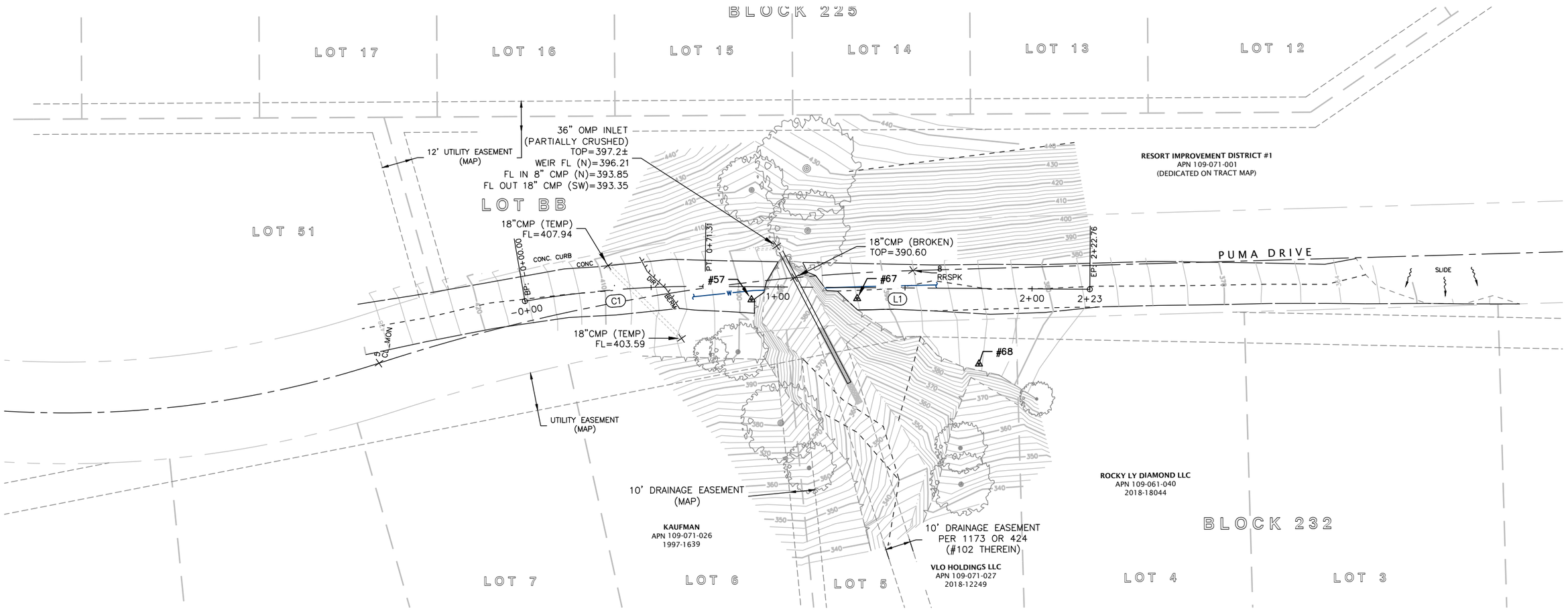
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	PUMA DRIVE PM 0.10 SURVEY CONTROL
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 18 OF 30



SURVEY NOTES:

1) The purpose of this survey is to determine topography for a storm damage repair site at PM 0.10 on Puma Road in the Shelter Cove Subdivision. The roadway slipout was caused by a metal culvert failure. A temporary culvert has been installed upstream of the failure as shown hereon. This survey reflects conditions on the site at the time of survey; field work was performed on 8/10/2020. The survey of the roadway was extended southerly to show the location of another slide which has covered the roadway with debris.

2) Underground utility research was not performed at the RID#1 offices. This area generally has underground water lines and overhead power and communication lines. This project is not located in the sewered area of the Shelter Cove Subdivision. The utility appurtenances found in the project area are the storm drainage features and the broken waterline shown hereon.

3) Horizontal datum is the Shelter Cove Subdivision, Tract No. 42, per ties to record subdivision monuments. Resultant bearings are grid bearings. Distances within the electronic file are ground distances. See Sheets 30 & 31 of 66, as recorded in Book 14 of Maps, Pages 102-103, for additional information. This survey holds a centerline railroad spike on Puma Drive (#107) and the centerline monument at the intersection of Puma Drive and Marten Way (#128) at the record calculated bearing. All property lines in the area shown were scaled to the tie between these 2 monuments, resulting in a scale factor of 0.99974 applied to the original distances.

4) Vertical datum is the Shelter Cove Subdivision datum as memorialized by Hugh Kelly with Benchmark No. 1 set during the course of a topographic survey for Humboldt County of the Shelter Cove Airport in November 1990, based on ties to locations shown on the aerial photogrammetry on this datum performed for Resort Improvement District No. 1 in March 2007.

5) Drainage easements over Lot 5 are taken from various sources as noted hereon. The drainage easement along the common property line between Lots 5 & 6 is shown on the original Tract Map. The public utility easement along the frontage of Lot 5 is shown on the original Tract Map with no dimensions allowing its exact location to be determined. The drainage easement through Lot 5 was conveyed to the County of Humboldt per 1173 OR 424.

6) The underground waterline running through the site is an 8" asbestos-concrete pipeline that was broken by the road failure within the project limits as shown hereon and is not active. No bypass exists for the waterline to the knowledge of the surveyor.

7) The origin of the 8" CMP entering the OMP inlet from the north was not located by this survey. This pipe is possibly an underdrain or french drain under the concrete curb strip shown hereon.

PRELIMINARY
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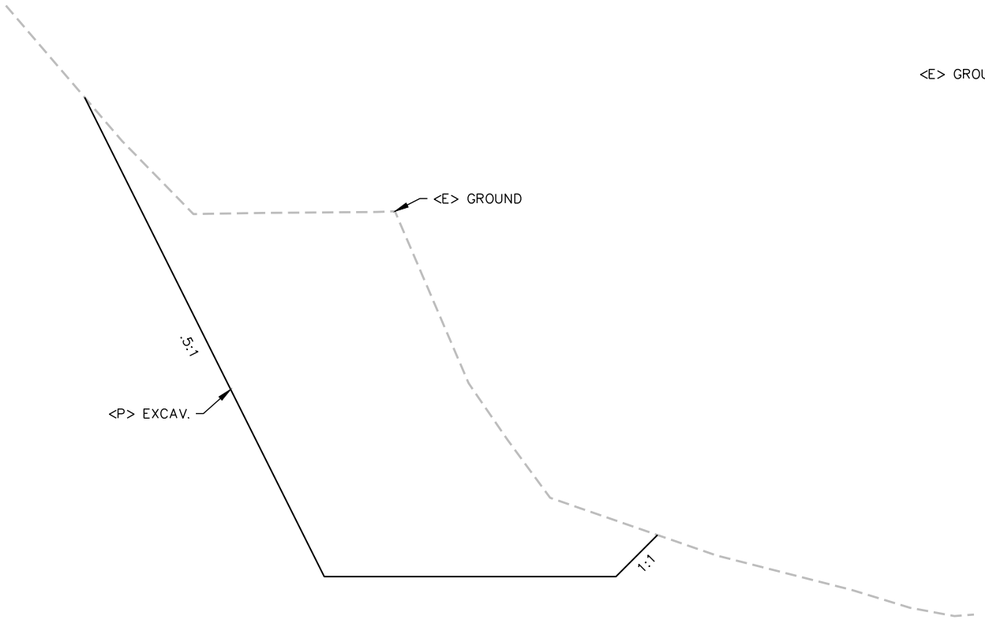
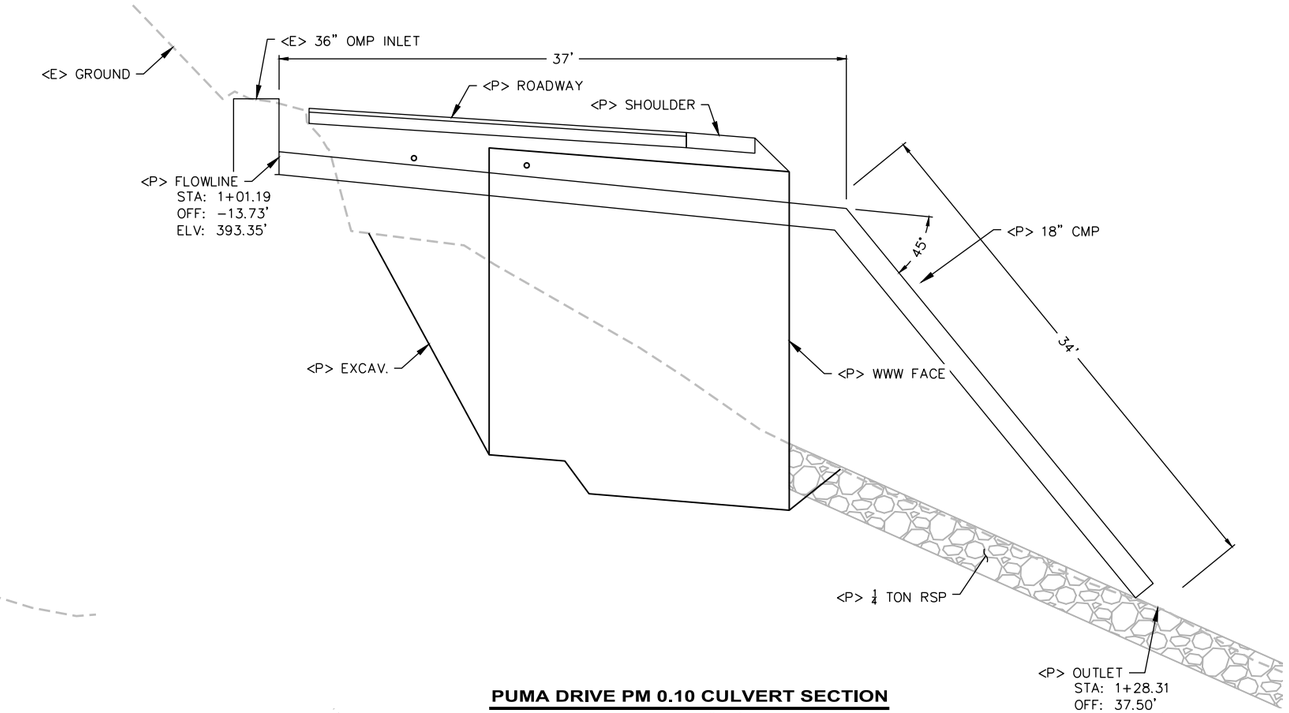
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	PUMA DRIVE PM 0.10 TYPICAL SECTIONS
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

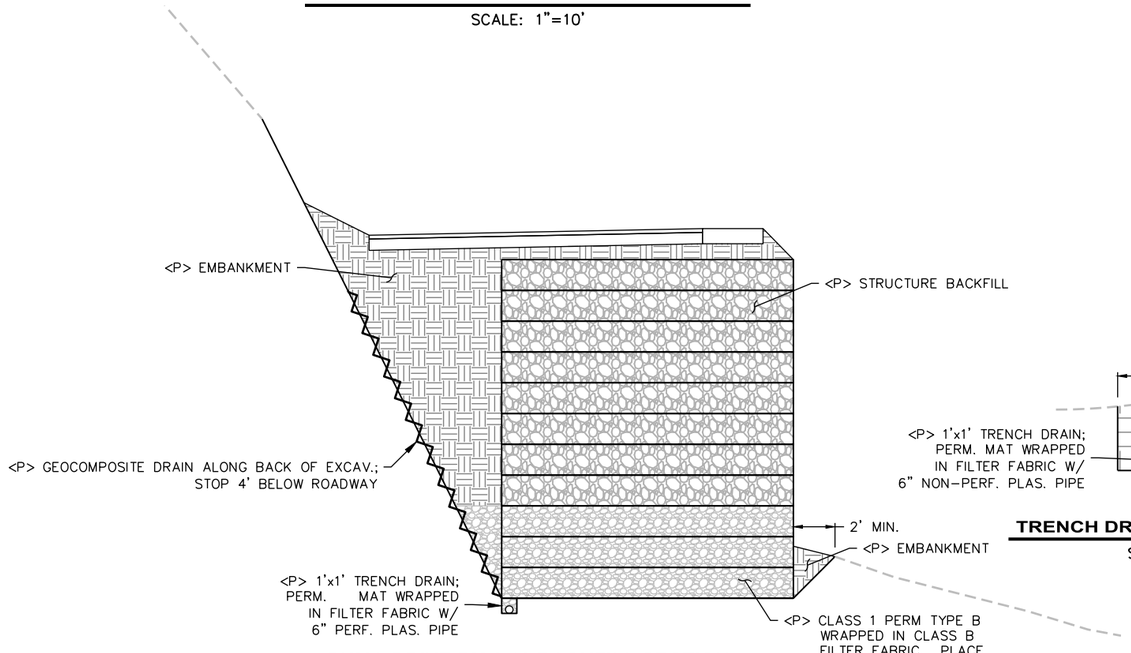
SHEET 19 OF 30



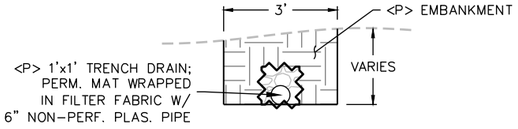
PUMA DRIVE PM 0.10 EXCAVATION SECTION
SCALE: 1"=10'



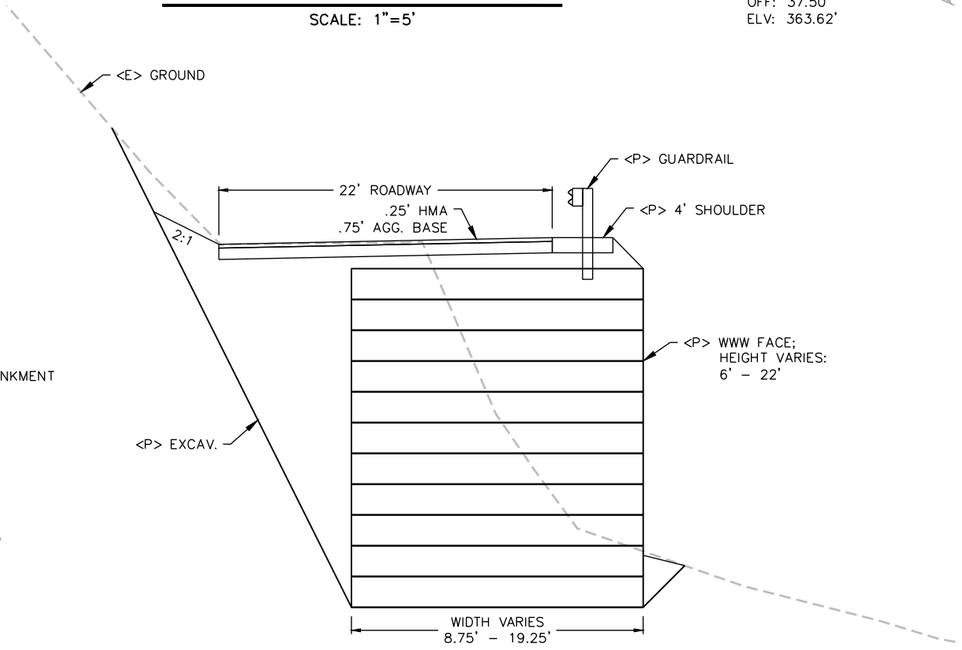
PUMA DRIVE PM 0.10 CULVERT SECTION
SCALE: 1"=5'



PUMA DRIVE PM 0.10 BACKFILL SECTION
SCALE: 1"=5'



TRENCH DRAIN OUTLET SECTION
SCALE: 1"=2'



PUMA DRIVE PM 0.10 TYPICAL SECTION
SCALE: 1"=5'

CL ALIGNMENT PUMA PM 0.10						
SEGMENT	LENGTH	BEARING/DELTA	RADIUS	TANGENT	START	END
C1	71.31'	010°12'54"	400.00'	35.75'	STA: −0+00.00 N: 1906706.08 E: 5985035.70	STA: 0+71.31 N: 1906637.19 E: 5985053.74
L1	151.44'	S09°34'05"E			STA: 0+71.31 N: 1906637.19 E: 5985053.74	STA: 2+22.76 N: 1906487.85 E: 5985078.92

CONTROL POINTS				
Point #	Northing	Easting	Elevation	Description
50	1905921.30	5984840.64	283.34	CP_MAG
51	1906093.64	5985155.53	322.02	CP_MAG
52	1906042.22	5985085.45	312.04	CP_MAG_BERM
53	1905892.42	5984663.33	271.95	CP_SPK
54	1906016.76	5984993.36	297.30	CP_SPK
55	1906074.16	5985386.29	331.40	CP_HT
56	1906317.74	5984979.85	305.28	CP_SPK
57	1906618.33	5985051.74	399.06	CP_MAG
58	1906945.07	5984962.06	463.83	CP_MAG
59	1907167.99	5985007.21	489.84	CP_MAG
60	1907222.73	5985005.97	495.44	CP_MAG
61	1907157.67	5985206.40	620.59	CP_HT
62	1907092.31	5985294.33	639.63	CP_SPK
63	1907197.27	5985204.13	614.85	CP_SPK
65	1907155.80	5984995.22	489.23	CP_SPK
66	1907041.20	5984980.24	476.24	CP_MAG
67	1906577.42	5985059.43	391.86	CP_MAG
68	1906525.73	5985042.40	384.55	CP_SPK

NOTES:
1. GUARDRAIL
 1.1. MIDWEST GUARD RAIL SYSTEM WITH:
  1.1.1. 37.5' SRT 350 FLARED TERMINAL SYSTEM
  1.1.2. 75' MIDWEST GUARD RAIL
  1.1.3. 6.25' END ANCHOR ASSEMBLY
  1.1.4. 118.75' TOTAL

PRELIMINARY
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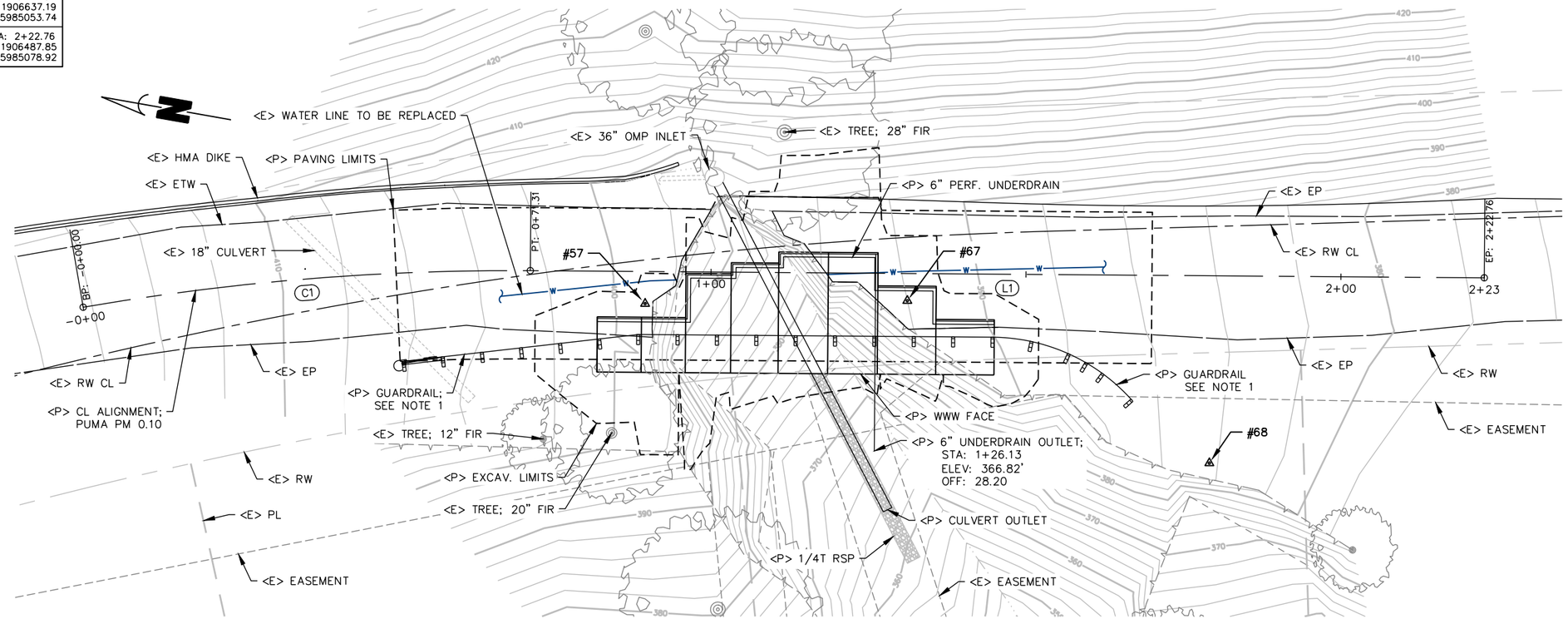
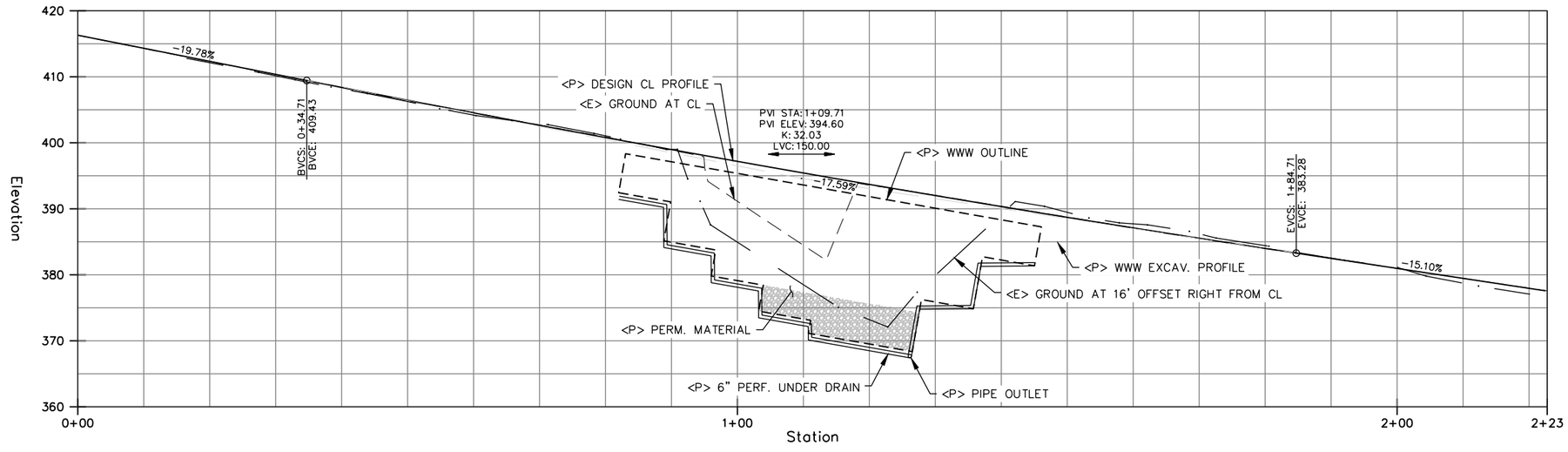
ROAD NO: 4A125	MILE POST: 0.10	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	PUMA DRIVE PM 0.10 PLAN AND PROFILE VIEWS
CONTRACT NO.: 219342		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 018		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 20 OF 30



PUMA DRIVE PM 0.10 PLAN VIEW
SCALE: 1"=10'



PUMA DRIVE PM 0.10 PROFILE VIEW
SCALE: 1"=10'

PRELIMINARY
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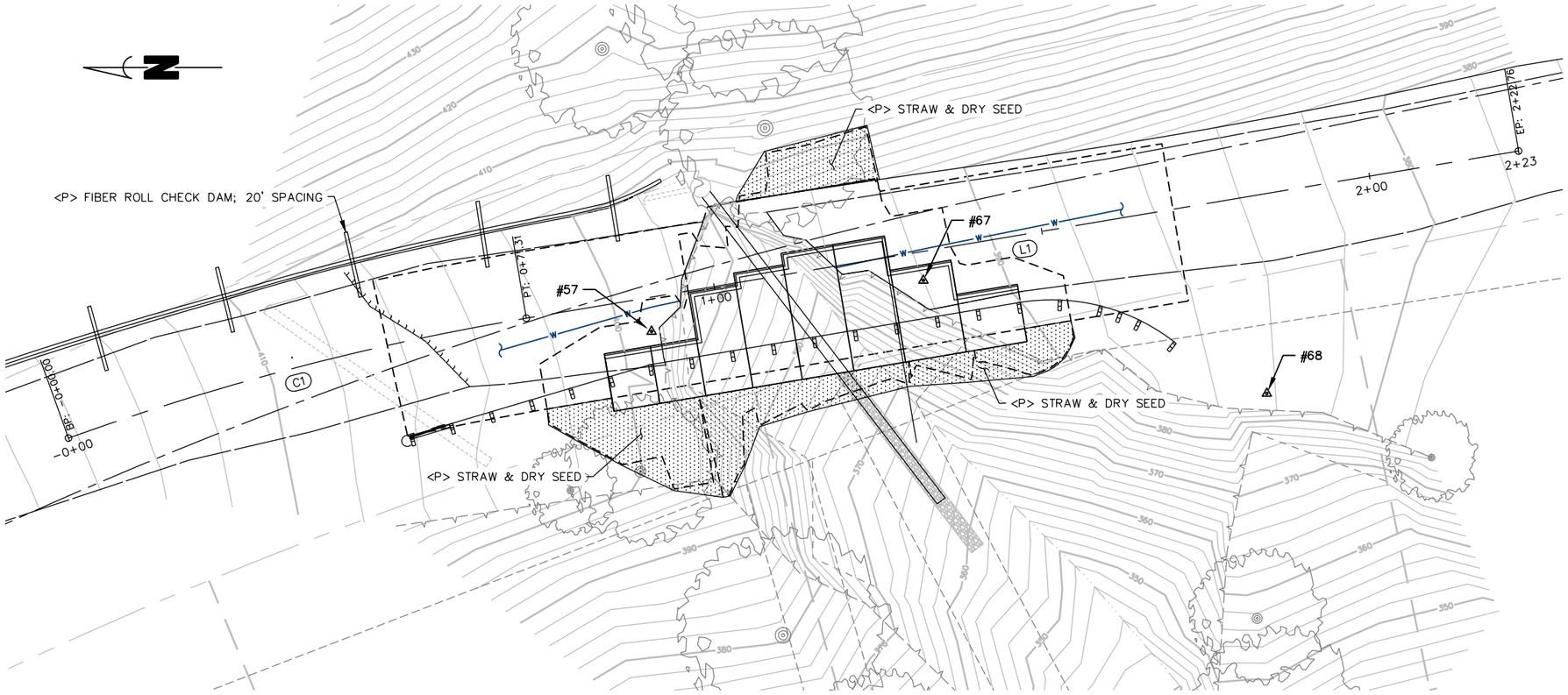
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	PUMA DRIVE PM 0.10 EROSION CONTROL PLAN
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 21 OF 30



PUMA DRIVE PM 0.10 EROSION CONTROL PLAN

SCALE: 1"=10'

PRELIMINARY
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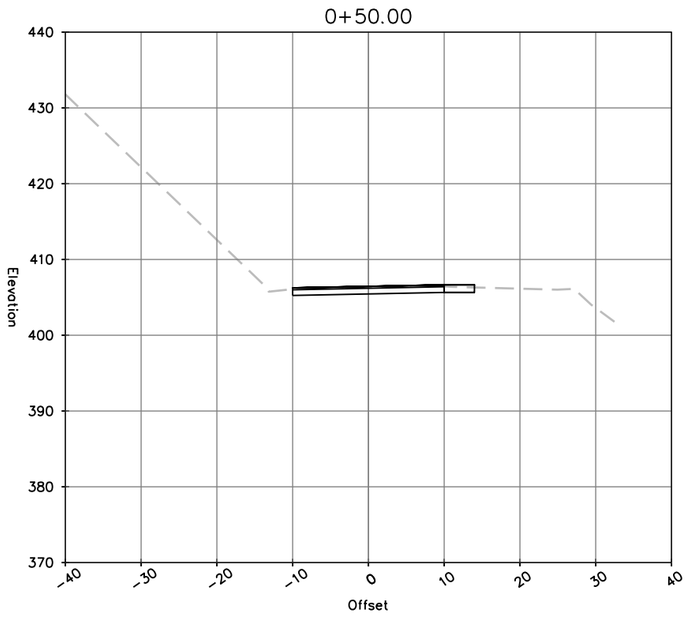
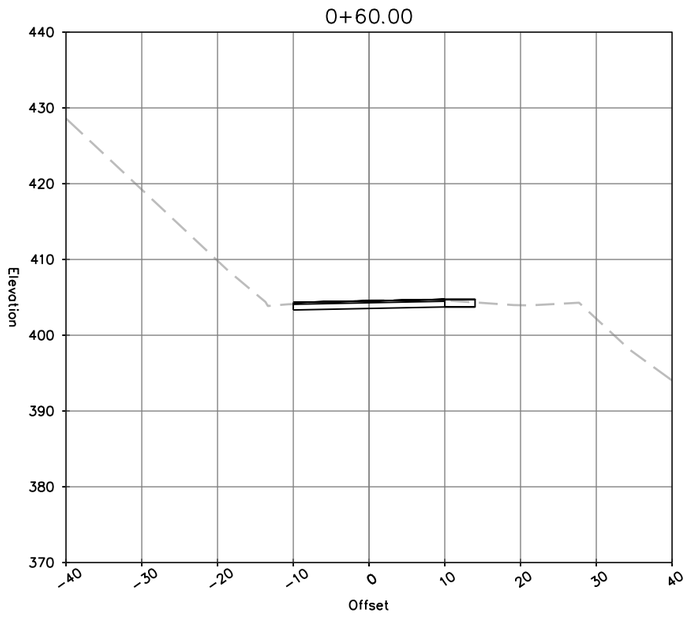
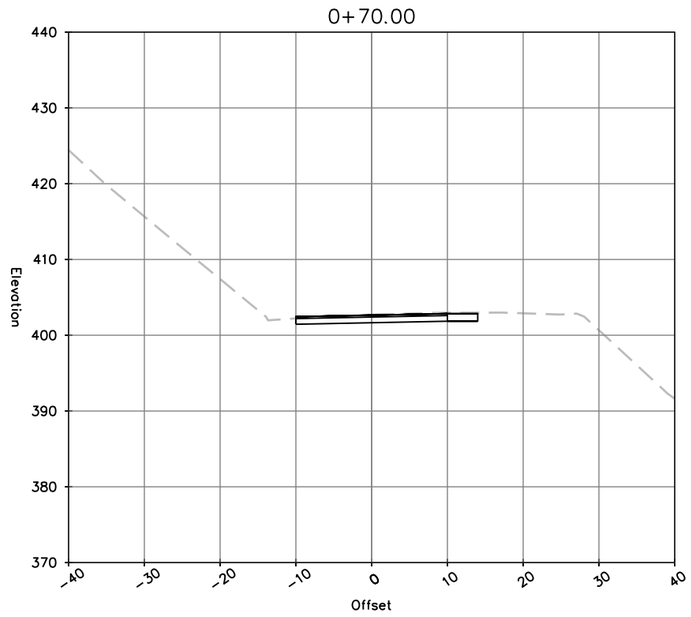
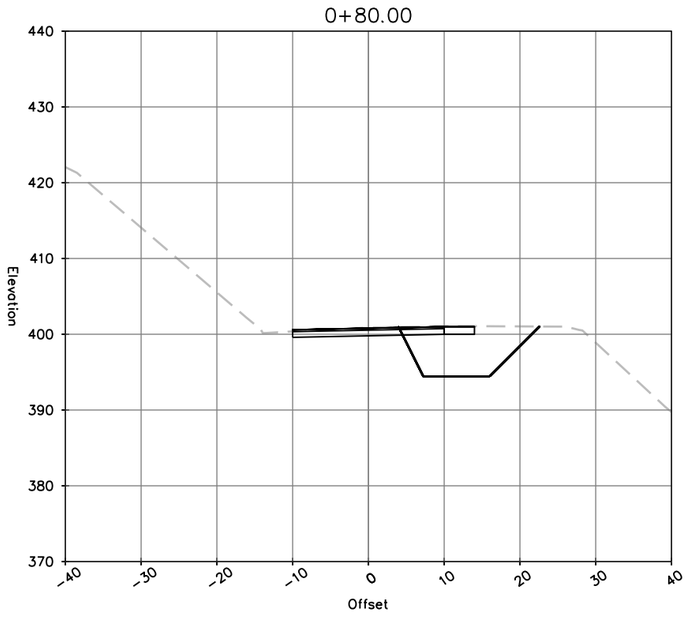
ROAD NO: 4A125	MILE POST: 0.10	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	PUMA DRIVE PM 0.10 SECTION VIEWS
CONTRACT NO.: 219342		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 018		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

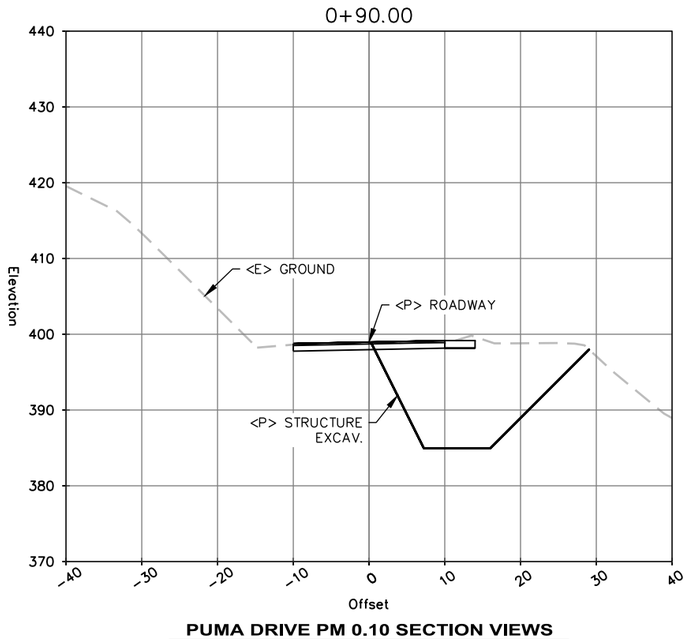
SHEET 22 OF 30

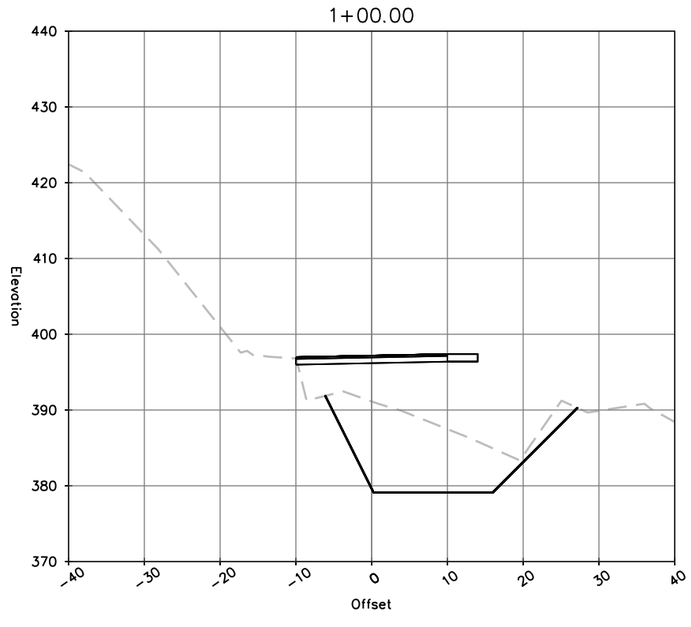












PUMA DRIVE PM 0.10 SECTION VIEWS

Scale: 1"=10'

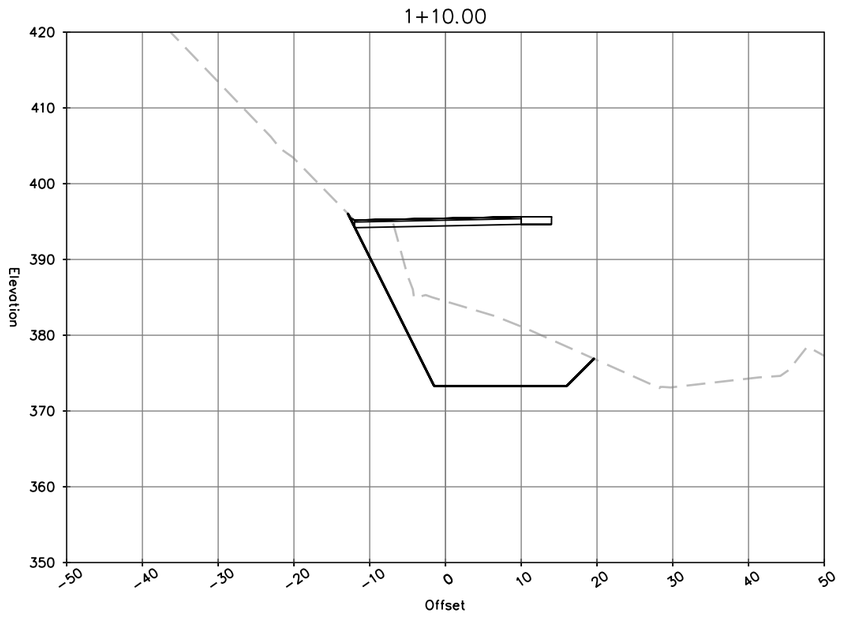
PRELIMINARY
NOT FOR CONSTRUCTION

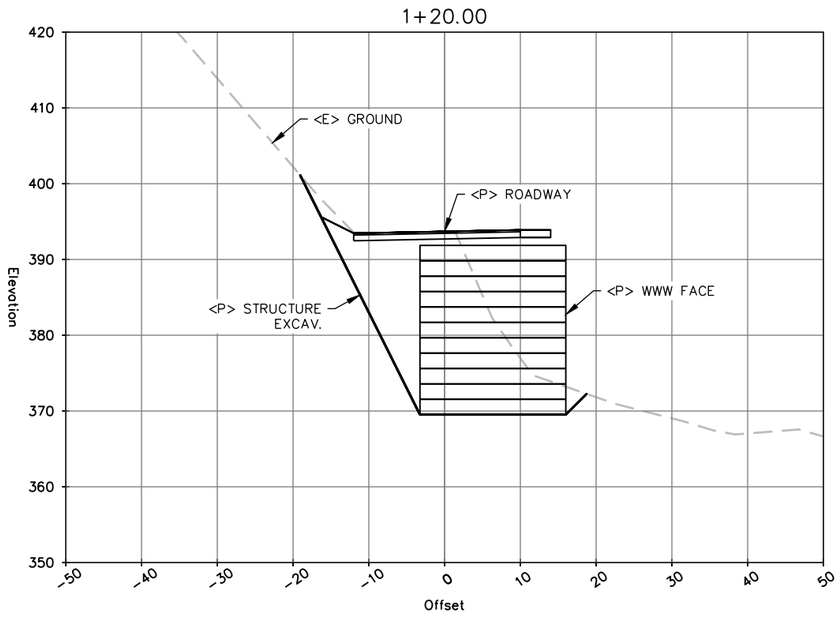
BAR IS ONE INCH ON ORIGINAL DRAWING

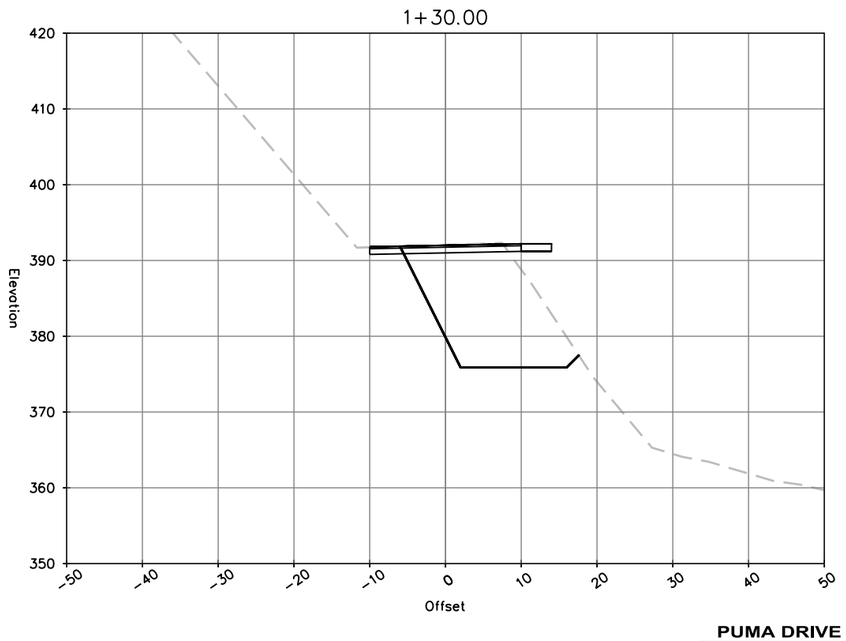
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

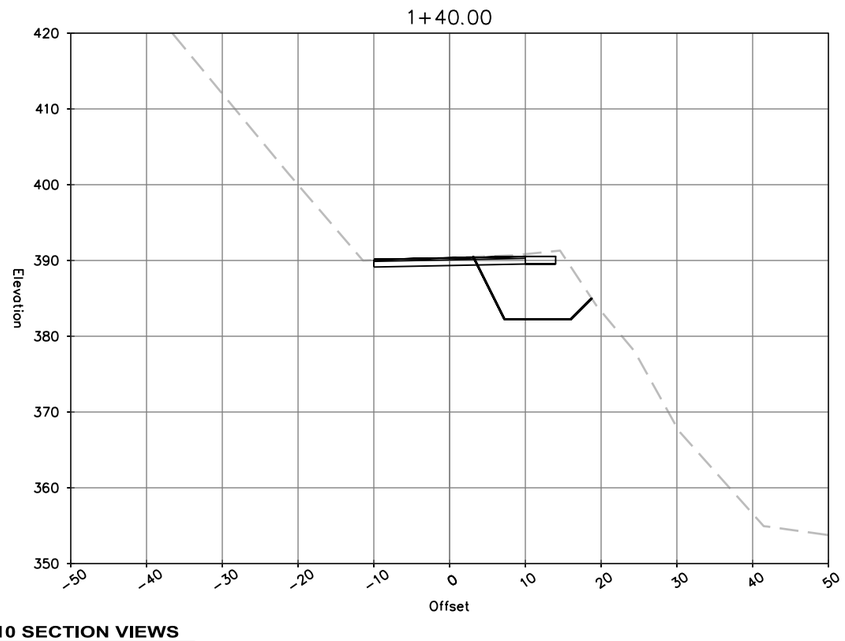
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	PUMA DRIVE PM 0.10 SECTION VIEWS
CONTRACT NO.: 219342		REVIEWED BY: JAB	
DRAWING FILE NAME: 217XXX CDSN 018		APPROVED BY: TRS	
PLOT DATE: 05/18/2021	REVISION DATE:		

SHEET 23 OF 30









PUMA DRIVE PM 0.10 SECTION VIEWS

Scale: 1"=10'

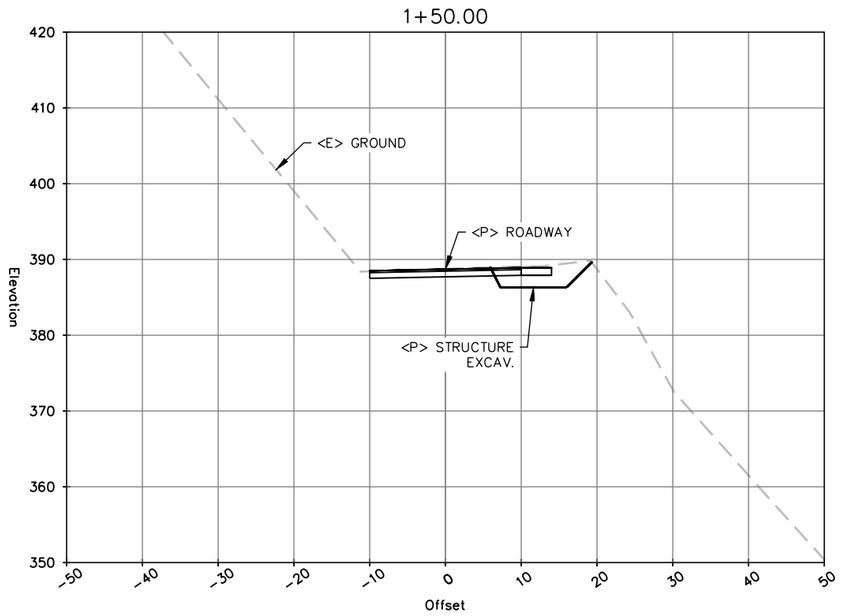
PRELIMINARY
NOT FOR CONSTRUCTION

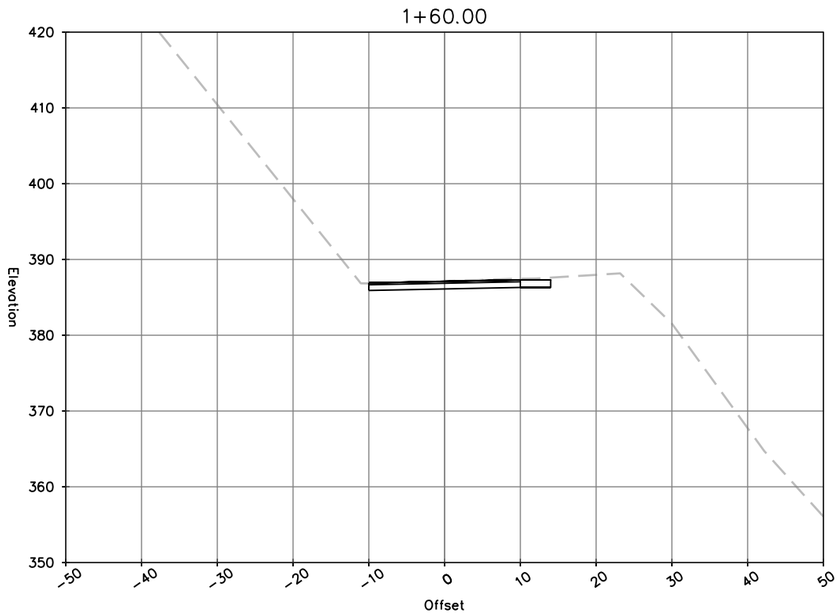
BAR IS ONE INCH ON ORIGINAL DRAWING

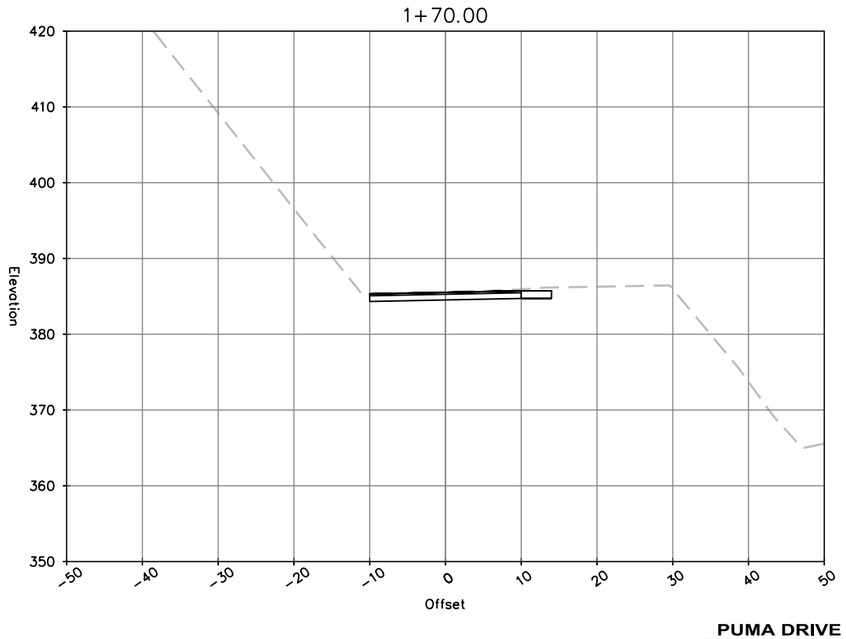
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	PUMA DRIVE PM 0.10 SECTION VIEWS
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 24 OF 30







PUMA DRIVE PM 0.10 SECTION VIEWS
Scale: 1"=10'

PRELIMINARY
NOT FOR CONSTRUCTION

BAR IS ONE INCH ON ORIGINAL DRAWING

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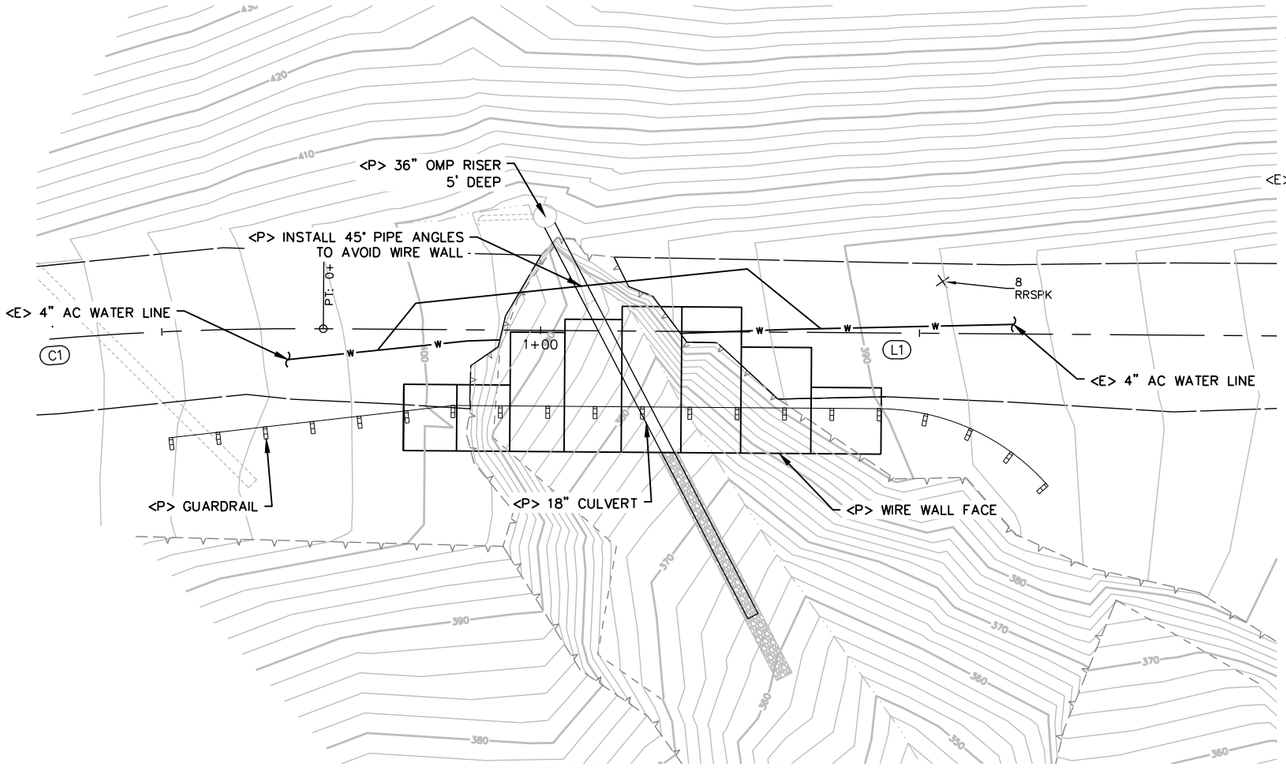
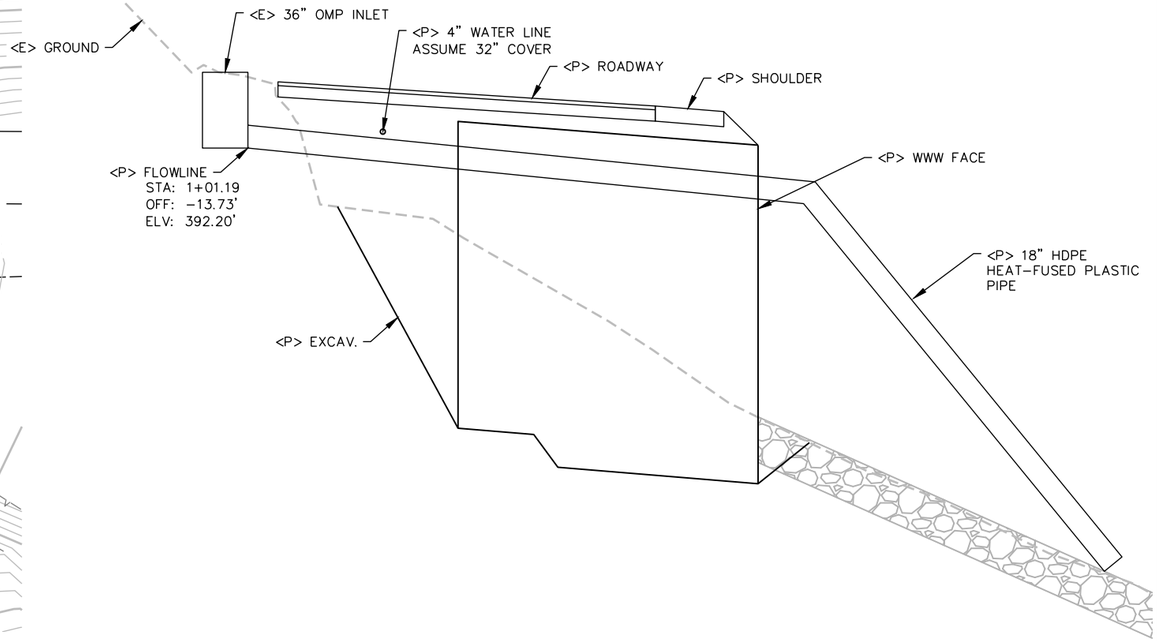
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	PUMA DRIVE PM 0.10 UTILITY PLAN
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

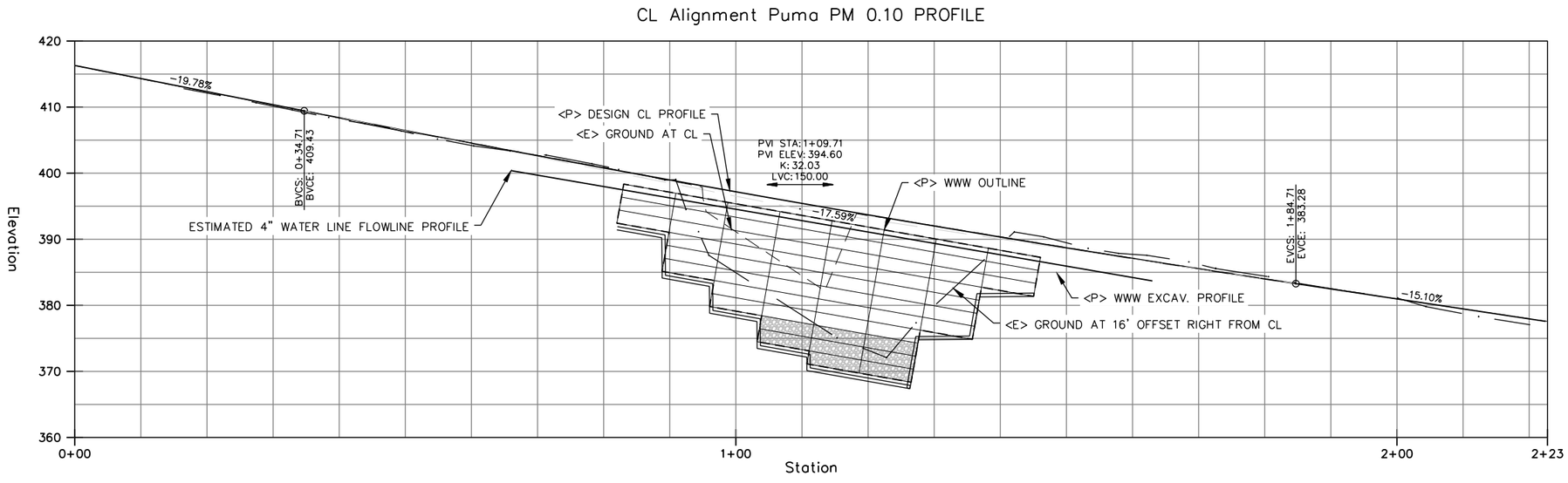
SHEET 25 OF 30



PUMA DRIVE PM 0.10 OPTION "A"
SCALE: 1"=10'



PUMA DRIVE PM 0.10 CULVERT SECTION OPTION "A"
SCALE: 1"=5'



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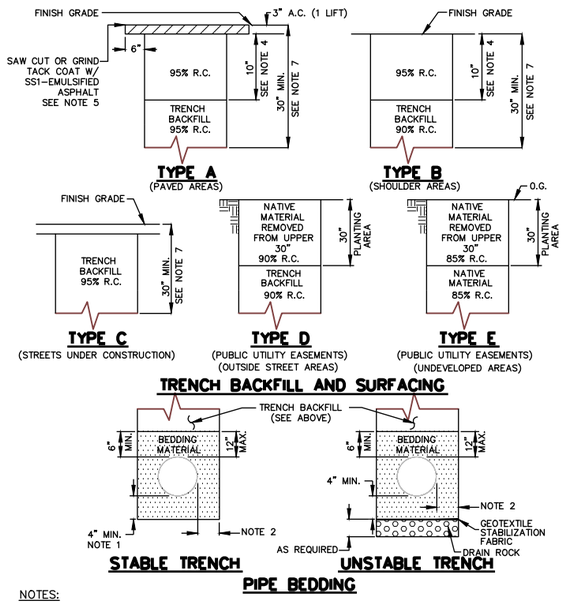
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.10		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219342		DRAWN BY: RMD	PUMA DRIVE PM 0.10 WATER MAIN TRENCH DETAILS
DRAWING FILE NAME: 217XXX CDSN 018		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 26 OF 30



TRENCH BACKFILL AND SURFACING

PIPE BEDDING

NOTES:

1. 1/4 PIPE O.D. OR 4" MIN. WHEN EXCAVATION IS IN ROCKY GROUND.
2. PIPE DIAMETER 18" OR LESS: 6" MIN., 9" MAX/PIPE DIA. GREATER THAN 18": 9" MIN., 12" MAX.
3. RELATIVE COMPACTION DESIGNATED R.C.
4. THE MINIMUM STREET STRUCTURAL SECTION SHALL BE 3" A.C. ON 10" A.B. OR MATCH EXISTING PAVEMENT, WHICHEVER IS THICKER, SPECIFIED ON PLANS, OR REQUIRED BY ENCROACHMENT PERMIT.
5. SAW CUT OR GRIND PAVEMENT SIX INCHES FROM EDGE OF TRENCH AFTER TRENCH IS BACKFILLED.
6. MINIMUM PIPE COVER SHALL BE 36" WATER, 42" SEWER FROM TOP OF PIPE.
7. NEW STREETS AND SHOULDER AREAS UNDER CONSTRUCTION SHALL BE COMPACTED TO 95% RELATIVE COMPACTION FOR A MINIMUM DEPTH OF 30" PER CALTRANS SECTION 19-5.03.
8. INSTALL #12 COPPER COATED TRACER WIRE ON/OVER ALL NON-METALLIC MAINS.

WATER AND SEWER
STANDARD TRENCH DETAILS

MATERIAL SPECIFICATIONS:

1. BEDDING MATERIAL:
   - A.) PEA GRAVEL– CONFORMING TO CALTRANS SECTION 68-1.025, PERMEABLE MATERIAL, CLASS 1, TYPE B.
   - B.) CL 2 AB. – CONFORMING TO CALTRANS SECTION 26-1.02A, CLASS 2 AGGREGATE BASE, 3/4" MAXIMUM.
   - C.) PERMEABLE – CONFORMING TO CALTRANS SECTION 68-1.025 CLASS 2 PERMEABLE MATERIAL.
2. AGGREGATE BASE:
   - A.) CL 2 AB. – CONFORMING TO CALTRANS SECTION 26-1.02A, CLASS 2 AGGRIGATE BASE, 3/4" MAXIMUM.
3. DRAIN ROCK:
   - A.) NO. 3 ROCK– SHALL BE A WASHED ROCK OF THE NOMINAL SIZE DESIGNATED AS 1" TO 2".
4. GABION ROCK:
   - A.) GABION ROCK– SHALL BE A WASHED OR NON-WASHED ROCK OF THE NOMINAL SIZE DESIGNATED AS 4" TO 12".
5. NATIVE MATERIAL:
   - A.) NATIVE MATERIAL– NATIVE MATERIAL USED AS BACKFILL SHALL BE FREE OF ORGANIC MATTER, REFUSE OR OTHER UNSATISFACTORY MATERIALS, STONES, OR LUMPS GREATER THAN OR EXCEEDING 3" IN GREATEST DIMENSION.
6. SHALE MATERIAL:
   - A.) SHALE MATERIAL– SHALE MATERIAL SHALL MEET THE QUALITY REQUIREMENTS FOR CL 2 AB AND CONTAIN ENOUGH FINE MATERIALS TO BE ABLE TO BE COMPACTED TO 95% RC IN A TIGHT SUSTAINABLE MATRIX.

COMPACTION REQUIREMENTS:

1. BEDDING MATERIAL:
   - A.) PEA GRAVEL SHALL EITHER BE HAND TAMPED UNDER AND AT THE SIDES OF THE PIPES IN LIFTS NOT GREATER THAN 6" OR SHAPED AND COMPACTED PRIOR TO PIPE INSTALLATION.
   - B.) CL 2 AB SHALL MEET THE ABOVE REQUIREMENTS AND SHALL ADDITIONALLY BE COMPACTED UNDER THE PIPE TO 90% RC AND UP TO THE SPRING LINE OF THE PIPE TO 90% RC IN TWO SEPERATE LIFTS RESULTING IN A FIRM UNYIELDING BEDDED TRENCH. JETTING SHALL NOT BE ALLOWED.
2. AGGREGATE BASE:
   - A.) AGGREGATE BASE SHALL BE COMPACTED WITH MECHANICAL HAND OPERATED, OR EQUIPMENT MOUNTED OR TOWED METHODS TO ACHIEVE THE REQUIRED COMPACTION. IN ANY EVENT, COMPACTION METHODS SHALL NOT DAMAGE THE PIPE, EXCEED THE LOADING CAPACITY OF THE PIPE, OR RESULT IN A CHANGE TO THE DESIGN PIPE SLOPE REQUIRED OR DEFLECTION UNITS. JETTING SHALL NOT BE ALLOWED.
3. DRAIN ROCK:
   - A.) DRAIN ROCK SHALL BE CONSOLIDATED WITH A SURFACE VIBRATOR.
4. SHALE MATERIAL:
   - A.) SHALE SHALL MEET THE COMPACTION REQUIREMENTS FOR CL 2 AB.
5. NATIVE MATERIAL:
   - A.) NATIVE MATERIAL COMPACTED TO 90% RC SHALL MEET THE COMPACTION REQUIREMENTS OF CL 2 AB. NATIVE MATERIAL COMPACTED TO LESS THAN 90% RC MAY BE COMPACTED BY WHEEL ROLLING.

PUMA DRIVE PM 0.10 WATER MAIN TRENCH DETAIL

NOT-TO-SCALE

PRELIMINARY
NOT FOR CONSTRUCTION

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ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.21 – 0.25		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217541, 219343		DRAWN BY: RMD	PUMA DRIVE PM 0.21 – 0.25 SURVEY CONTROL
DRAWING FILE NAME: 217XXX CDSN 027		REVIEWED BY: JAB	
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 27 OF 30

SURVEY NOTES:

1) The purpose of this survey is to determine topography for a storm damage site at PM 0.21 on Puma Road in the Shelter Cove Subdivision. This site is adjacent to and continuous with the Puma PM 0.25 site and was caused by the same metal culvert failure. This survey reflects conditions on the site at the time of survey; field work for the Puma PM 0.25 site was performed on 1/9/19, 3/4/19, 3/14/19, and 4/23/19; additional survey for the Puma PM 0.21 site was performed 7/20/2020.

2) Underground utility research was performed at the RID#1 offices. This area has underground water lines and overhead power and communication lines. This project is not located in the sewered area of the Shelter Cove Subdivision. Portions of an underground water line were exposed by the scour from the water coming off the slide as shown hereon.

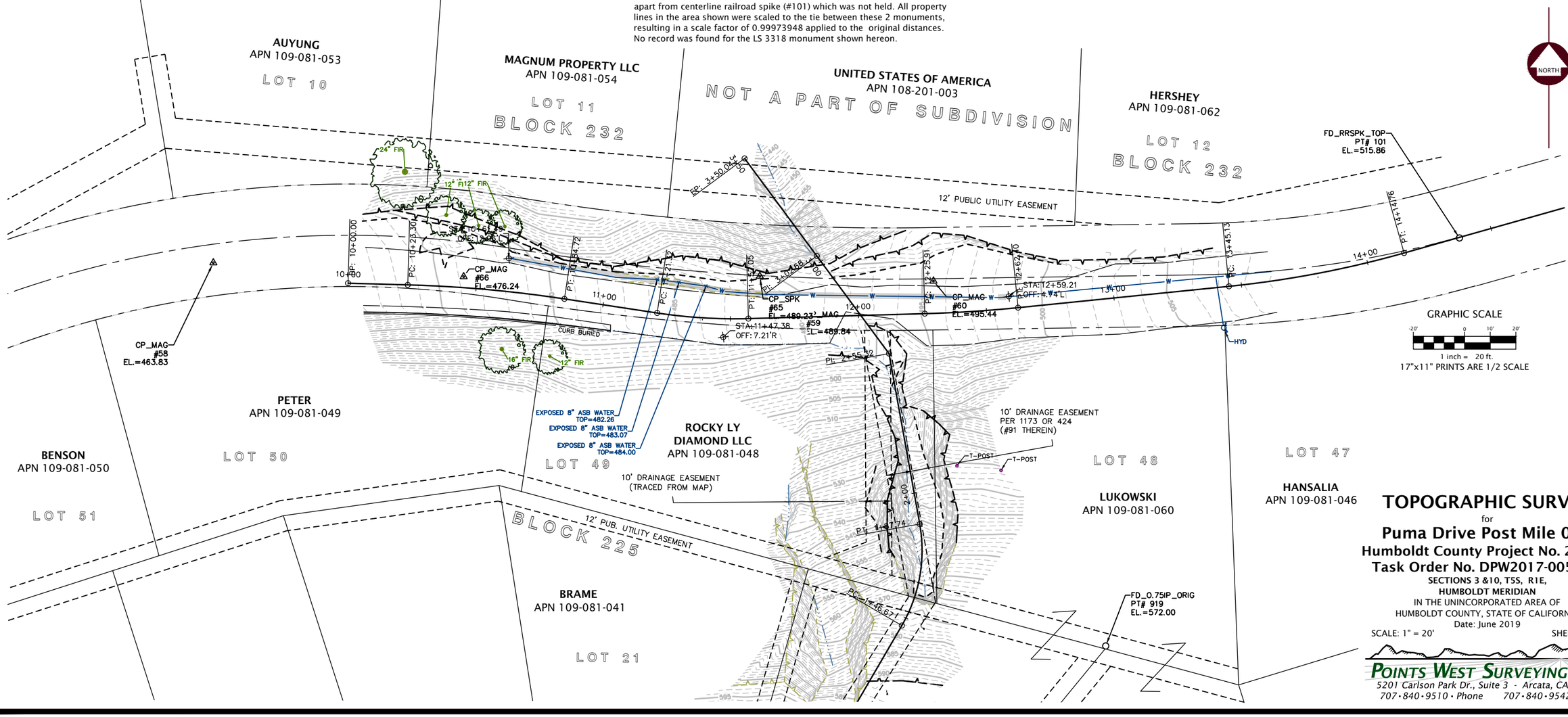
3) Horizontal datum is the Shelter Cove Subdivision, Tract No. 42, per ties to record subdivision monuments shown hereon. Resultant bearings are grid bearings. Distances within the electronic file are ground distances. See Sheets 31 & 32 of 66, as recorded in Book 14 of Maps, Pages 103-104, for additional information. This survey holds a centerline railroad spike on Telegraph Creek Road (#107) and the centerline monument at the intersection of Puma Drive and Marten Way (#128) at the record calculated bearing. Centerline control on Puma Drive appears to have been destroyed apart from centerline railroad spike (#101) which was not held. All property lines in the area shown were scaled to the tie between these 2 monuments, resulting in a scale factor of 0.99973948 applied to the original distances. No record was found for the LS 3318 monument shown hereon.

4) Vertical datum is the Shelter Cove Subdivision datum as memorialized by Hugh Kelly with Benchmark No. 1 set during the course of a topographic survey for Humboldt County of the Shelter Cove Airport in November 1990, based on ties to locations shown on the aerial photogrammetry on this datum performed for Resort Improvement District No. 1 in March 2007.

5) Drainage easements over Lots 21, 22, & 49 are taken from various sources as noted hereon. The drainage easement along the common property line between Lots 21 & 22 is shown on the original Tract Map. The drainage easement paralleling the north line of Lot 49 is shown on the original Tract Map with no dimensions allowing its exact location to be determined and was traced from said map. The drainage easement through Lot 22 and along the northerly portion of Lot 49 was conveyed via separate documents by lots owners to the Bank of California then conveyed to the County of Humboldt per 1173 OR 424. As shown hereon, portions of the existing drainage installation fall outside of all drainage easements. No drainage easement was found for the outfall on APN 108-201-003.

LEGEND

- FOUND SURVEY MONUMENT
- SURVEY CONTROL POINT
- RIGHT OF WAY SIDELINES
- ADJACENT PROPERTY LINES
- FORMER PROPERTY LINES (MERGED)
- RIGHT OF WAY CENTERLINE
- EASEMENT SIDELINES
- EDGES OF ASPHALT PAVEMENT
- EXISTING GROUND CONTOURS
- TOP OF SLOPE
- TOE OF SLOPE / GRADE BREAK
- DRAINAGE FLOW LINE
- STORM DRAIN CULVERT
- WATER LINE



TOPOGRAPHIC SURVEY

for

Puma Drive Post Mile 0.21

Humboldt County Project No. 217541

Task Order No. DPW2017-005-T14

SECTIONS 3 &10, T5S, R1E,
HUMBOLDT MERIDIAN
IN THE UNINCORPORATED AREA OF
HUMBOLDT COUNTY, STATE OF CALIFORNIA
Date: June 2019

SCALE: 1" = 20' SHEET 1 OF 1

POINTS WEST SURVEYING CO.
5201 Carlson Park Dr., Suite 3 - Arcata, CA 95521
707•840•9510 • Phone 707•840•9542 • Fax

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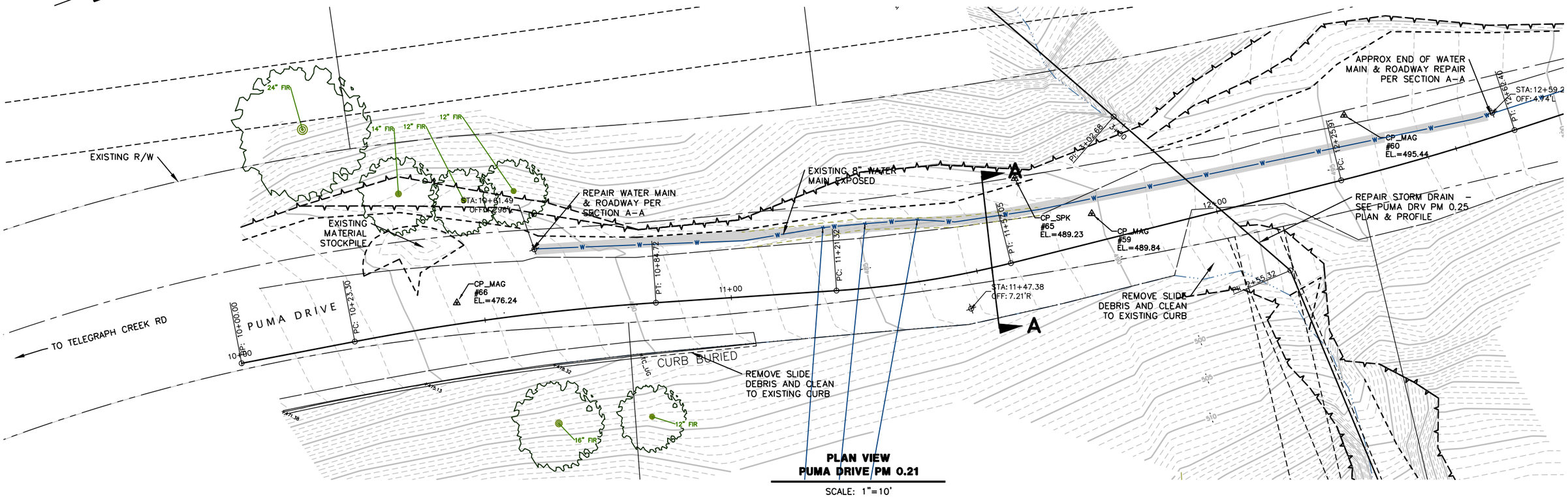
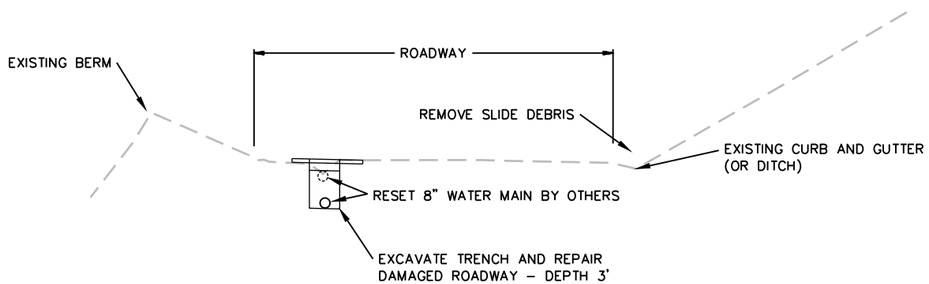
ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS
ROAD NO: 4A125	MILE POST: 0.21		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 219343		DRAWN BY: RMD	
DRAWING FILE NAME: 217XXX CDSN 027		REVIEWED BY: JAB	PUMA DRIVE PM 0.21 PLAN AND REPAIR SECTION
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

SHEET 28 OF 30



PLAN VIEW
PUMA DRIVE PM 0.21
SCALE: 1"=10'



REPAIR ROADWAY SECTION B-B
SCALE: 1"=5'

PRELIMINARY
NOT FOR CONSTRUCTION

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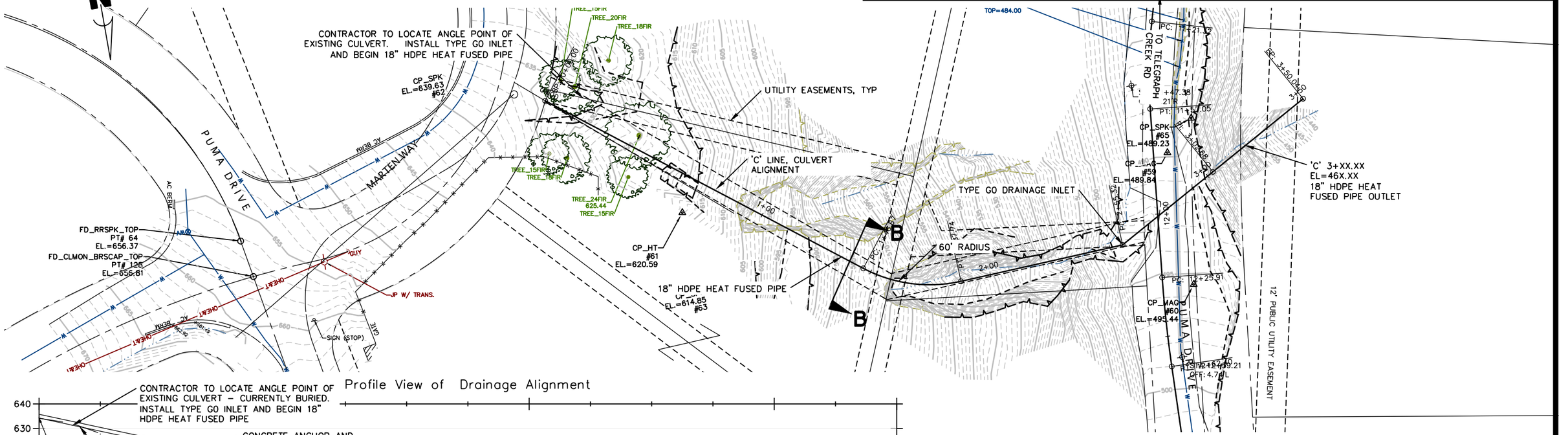
ROAD NO: 4A125	MILE POST: 0.21, 0.25		
PROJECT NO.: FEMA 4308 & 4434		DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV
CONTRACT NO.: 217541, 219343		DRAWN BY: RMD	
DRAWING FILE NAME: 217XXX CDSN 027		REVIEWED BY: JAB	PUMA DRIVE PM 0.21 & 0.25 DRAINAGE PLAN AND PROFILE
PLOT DATE: 05/18/2021	REVISION DATE:	APPROVED BY: TRS	

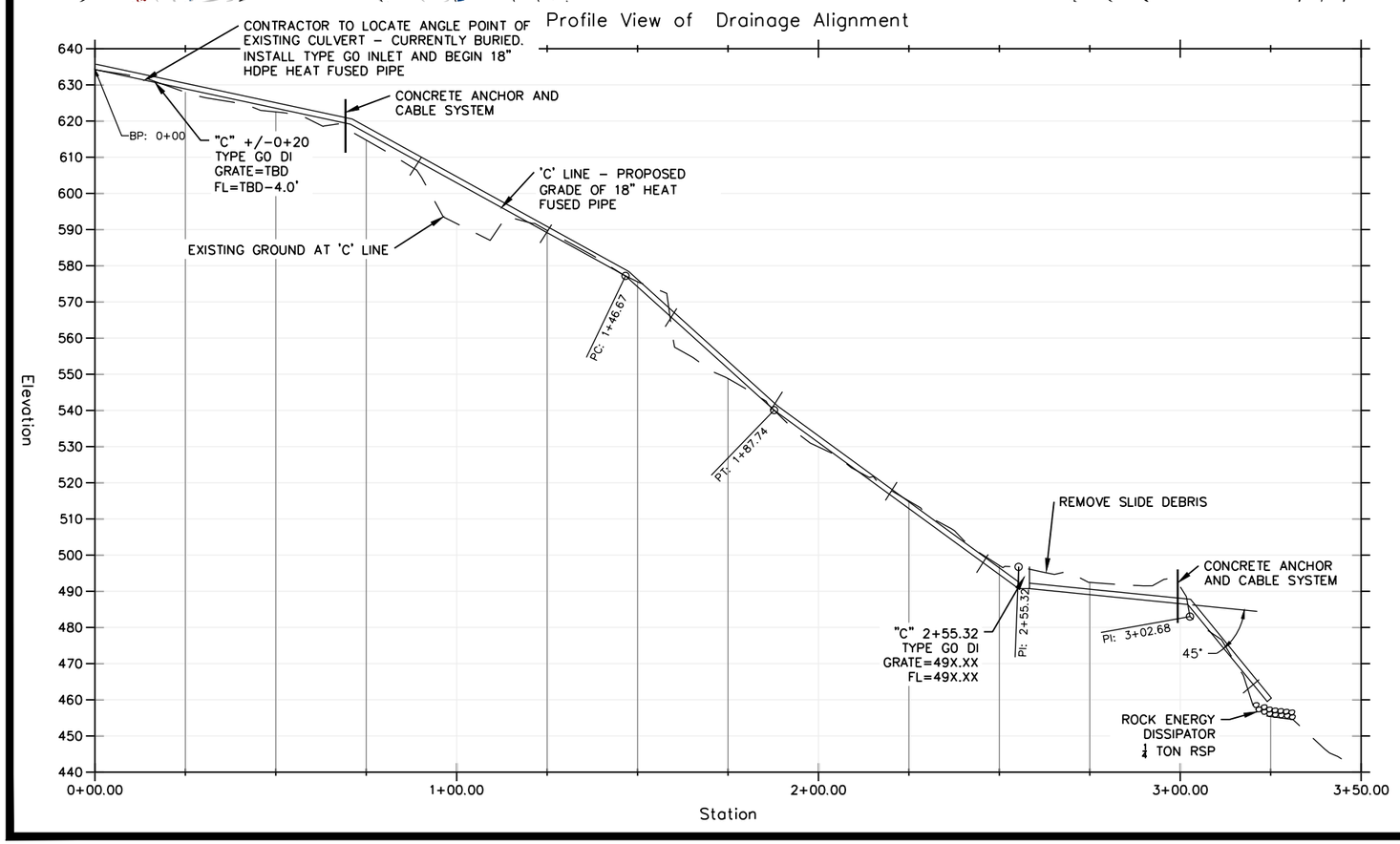
SHEET 29 OF 30



PLAN VIEW
PUMA DRIVE PM 0.25

SCALE: 1"=20'

Profile View of Drainage Alignment

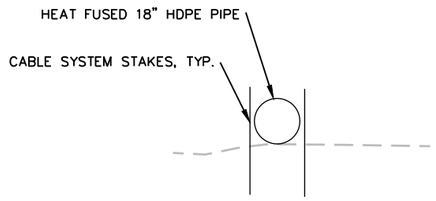


PROFILE VIEW
PUMA DRIVE PM 0.25

HORIZ: 1"=20'
VERT: 1"=20'

NOTES

- 18" SDR 17 HEAT FUSED HDPE PIPE. 39' MINIMUM RADIUS
- TIGHT BENDS IN POLYETHYLENE SHOULD BE BURIED OR CONSTRAINED.
- EXPECT DEFLECTION OF ¼" WHEN SPANNED ~10'
- PIPE EXPANSION OF 7" PER 100' WHEN TEMPERATURE CHANGES FROM 60° TO 120°
- CABLE SYSTEM SHALL HAVE STAKES PLACE EVERY 40FT OR AS DIRECTED BY ENGINEER

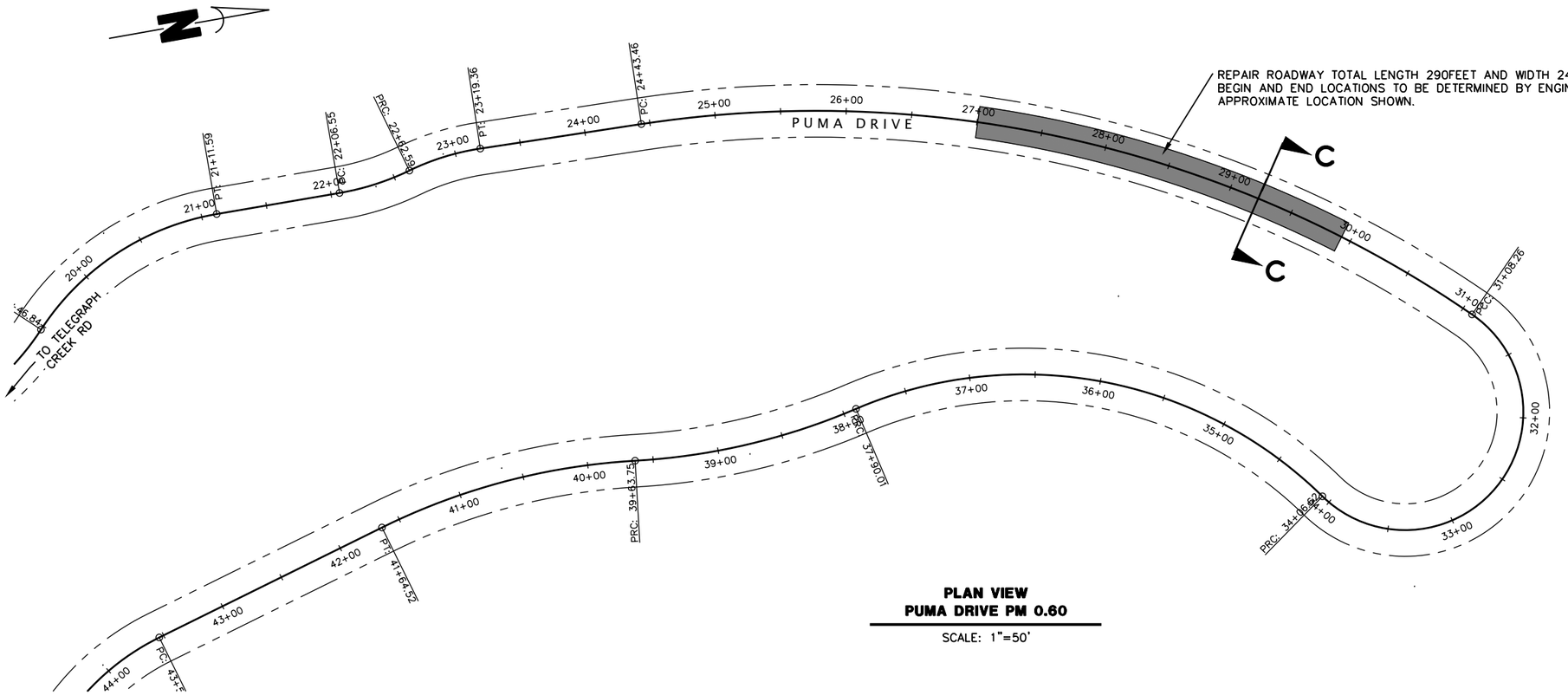


18" PIPE SECTION B-B

SCALE: 1"=5'

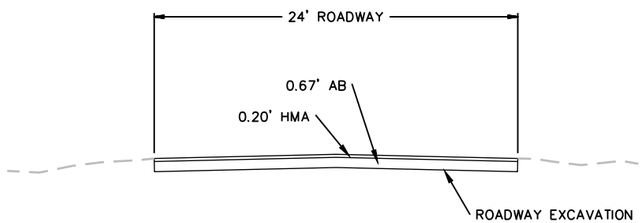
PRELIMINARY
NOT FOR CONSTRUCTION

BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	ROAD NAME: PUMA DRIVE		DESIGN SECTION ENGINEERING	COUNTY OF HUMBOLDT DEPARTMENT OF PUBLIC WORKS	SHEET 30 OF 30
	ROAD NO: 4A125	MILE POST: 0.60	DESIGNED BY: JB/MS	STORM DAMAGE REPAIR TO TELEGRAPH CRK RD & PUMA DRV	
	PROJECT NO.: FEMA 4308 & 4434		DRAWN BY: RMD	PUMA DRIVE PM 0.60 PLAN AND REPAIR SECTION	
	CONTRACT NO.: 219346		REVIEWED BY: JAB		
	DRAWING FILE NAME: 217XXX CDSN 027		APPROVED BY: TRS		
	PLOT DATE: 05/18/2021	REVISION DATE:			



PLAN VIEW
PUMA DRIVE PM 0.60

SCALE: 1"=50'



REPAIR ROADWAY SECTION C-C

SCALE: 1"=5'