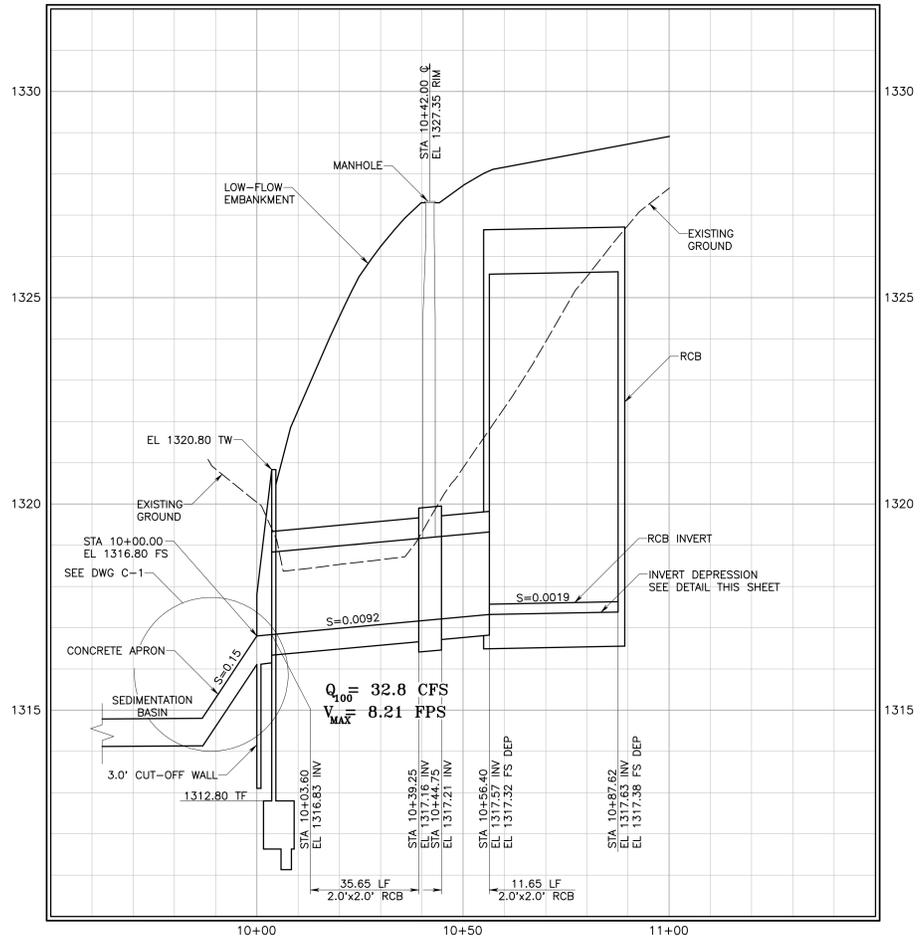
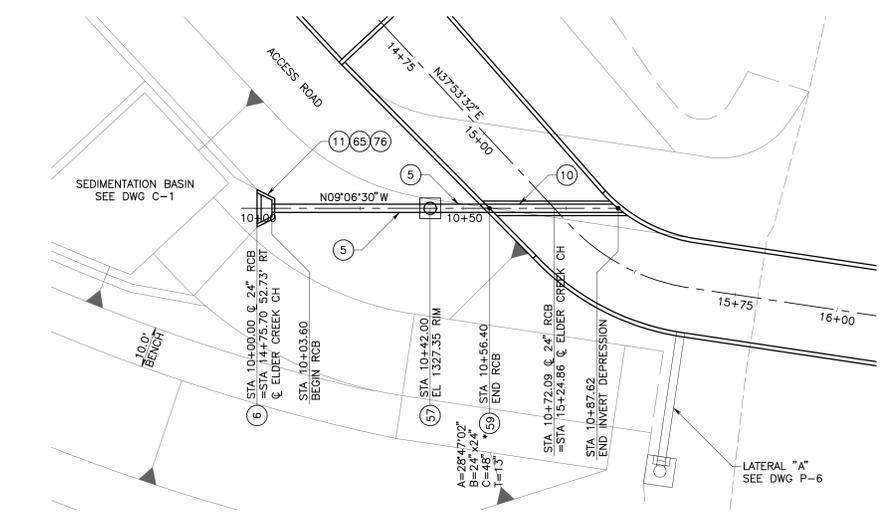


WARNING: ALL INDIVIDUALS INTERESTED IN BIDDING ON THIS PROJECT MUST OBTAIN THE FINAL PLANS AND SPECIFICATIONS FROM THE DEPARTMENT MANAGING THE PROJECT OR AS OTHERWISE STATED IN THE ADVERTISEMENT FOR BIDS FOR THE PROJECT. DO NOT USE THE PLANS AND SPECIFICATIONS POSTED ON THE CLERK OF THE BOARD'S WEBSITE FOR BIDDING ON THIS PROJECT.

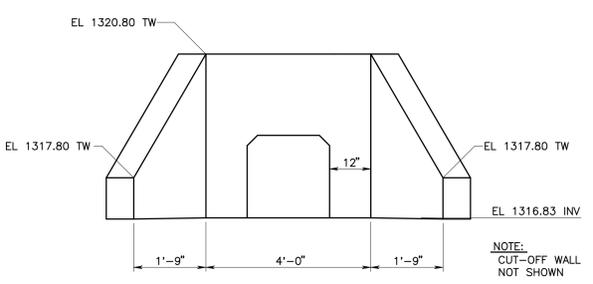
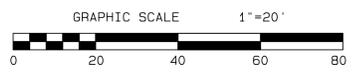
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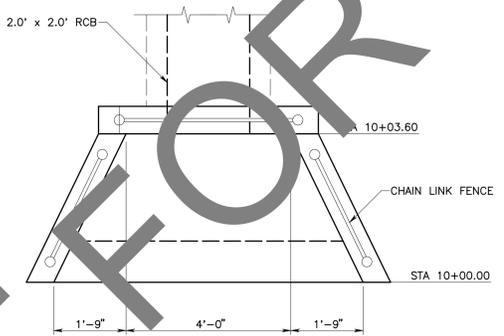
PROFILE VIEW
2.0' x 2.0' REINFORCED CONCRETE BOX
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 2'



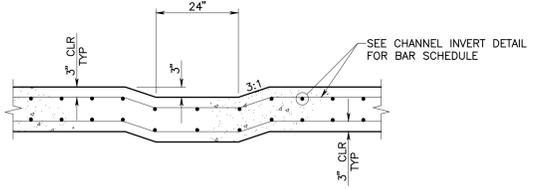
PLAN VIEW
2.0' x 2.0' REINFORCED CONCRETE BOX
HORIZONTAL SCALE 1" = 20'



2.0' x 2.0' RCB
OUTLET STRUCTURE DETAIL
SCALE 1" = 2'



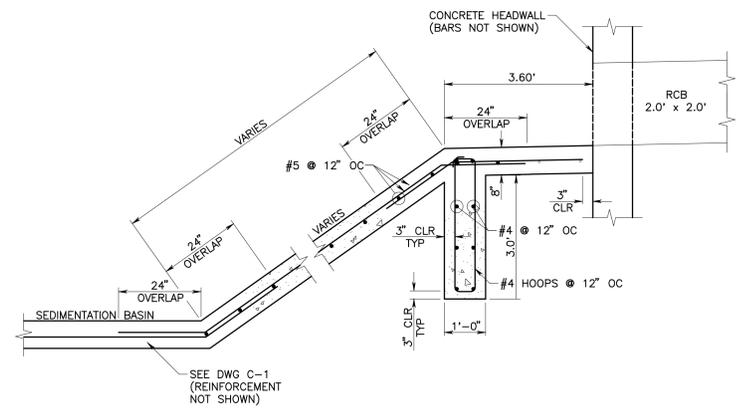
2.0' x 2.0' RCB
OUTLET STRUCTURE DETAIL
SCALE 1" = 2'



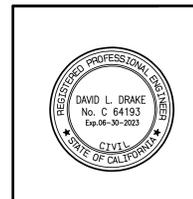
INVERT DEPRESSION
SCALE 1" = 2'

CONSTRUCTION NOTES:

- 1 PROTECT IN PLACE
- 5 CONSTRUCT MODIFIED 2.0' x 2.0' REINFORCED CONCRETE BOX PER 2018 CALTRANS STD. DB0 CAST-IN-PLACE SINGLE BOX CULVERT
- 6 CONSTRUCT REINFORCED CONCRETE CUT-OFF WALL PER DETAILS ON DWG S-6
- 10 CONSTRUCT REINFORCED CONCRETE INVERT DEPRESSION PER DETAIL ON DWG P-8
- 11 INSTALL 6.0' CHAIN LINK CHANNEL FENCE PER SBCFCD SPECIAL DRAWING II ON DWG FCD-2
- 57 CONSTRUCT MODIFIED MANHOLE, MANHOLE SHAFT AND MANHOLE FRAME PER SPPWC STD 323-2, STD 324-2 AND STD 630
- 59 CONSTRUCT RCB (MODIFIED) TO CHANNEL WALL CONNECTION PER SPPWC STD 333-2, PLAN AND PROFILE ON DWG P-8
- 65 CONSTRUCT HEADWALL AND WINGWALL PER CALTRANS STD DB4 TYPE A
- 76 CONSTRUCT CONCRETE APRON AND CUT-OFF WALL PER DETAIL ON DWG P-8



2.0' x 2.0' RCB CONCRETE APRON
AND CUT-OFF WALL DETAIL
SCALE 1" = 2'



REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY:	<i>Eloy Ruvalcaba</i>	3/13/2024	
	ELOY RUVALCABA, P.E.	DATE	
RECOMMENDED BY:	<i>David L. Drake</i>	3/13/24	
	DAVID L. DRAKE, P.E.	DATE	
APPROVED BY:	<i>Mervat Mirzai</i>	3/21/24	
	MERVAT MIRZAI, P.E.	DATE	
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
D.D.	E.R./D.B.	D.D.	D.B.

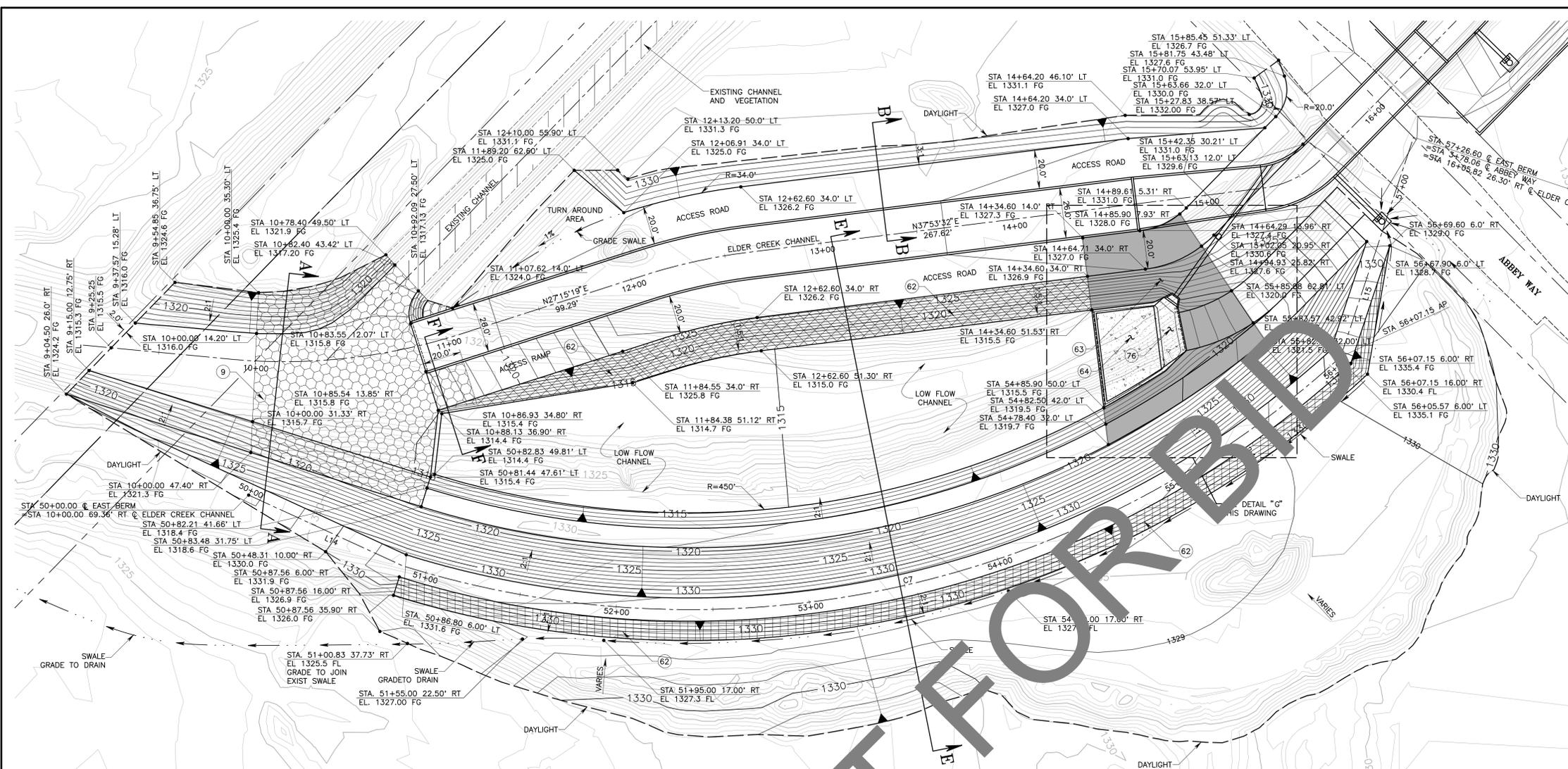
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

PLUNGE CREEK SYSTEM

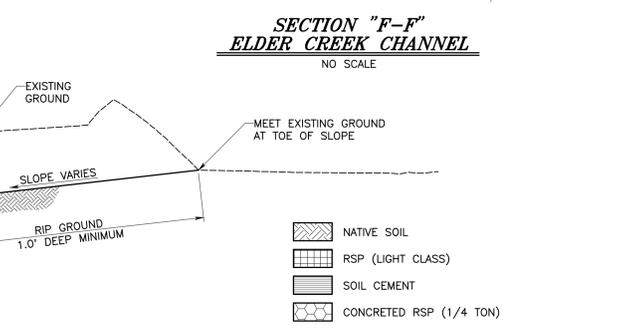
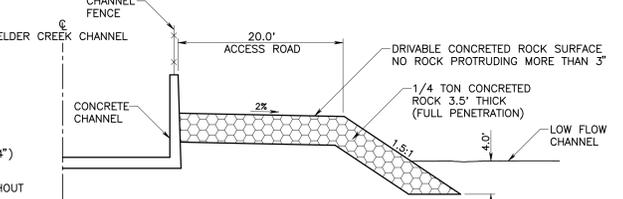
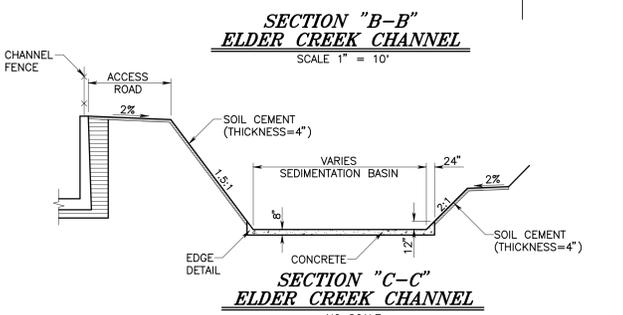
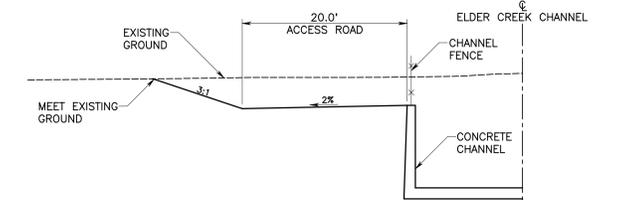
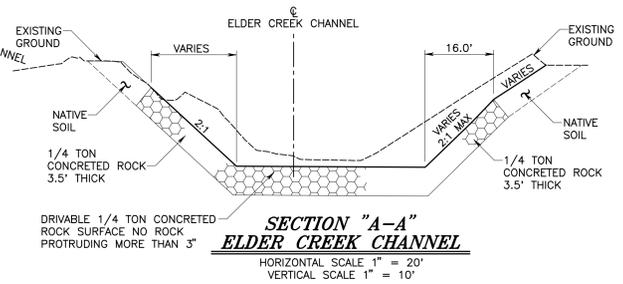
ELDER CREEK CHANNEL

2.0' x 2.0' RCB PLAN, PROFILE, AND DEPRESSION DETAIL

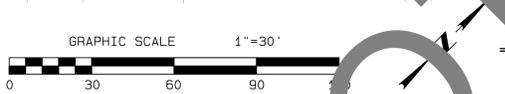
DATE	MAR 2024
SCALE	AS SHOWN
FILE NO.	3-205-1C
DRAWING NO.	P-8
SHEET NO.	11 OF 29



- CONSTRUCTION NOTES:**
- 9 CONSTRUCT CONCRETED ROCK SLOPE PROTECTION (1/4 TON, METHOD A) PER PLAN AND PROFILE ON DWG P-1 AND PER DETAIL ON THIS DRAWING
 - 62 CONSTRUCT ROCK SLOPE PROTECTION (LIGHT, METHOD B) PER DETAIL ON THIS DRAWING
 - 63 CONSTRUCT SOIL CEMENT PER LIMITS SHOWN AND SPECIAL PROVISIONS
 - 64 CONSTRUCT CONCRETE SEDIMENTATION BASIN PER DETAIL ON THIS DRAWING
 - 76 CONSTRUCT CONCRETE APRON PER DETAIL ON DWG P-8

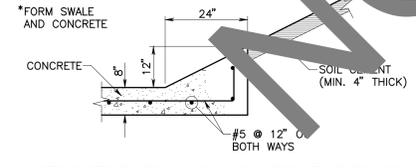


- NATIVE SOIL
- RSP (LIGHT CLASS)
- SOIL CEMENT
- CONCRETED RSP (1/4 TON)

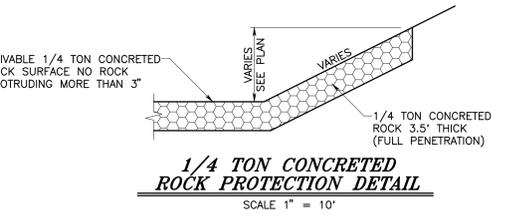


GRADING PLAN ELDER CREEK CHANNEL
HORIZONTAL SCALE 1" = 30'

SEDIMENTATION BASIN CUT-OFF WALL
SCALE 1" = 2'

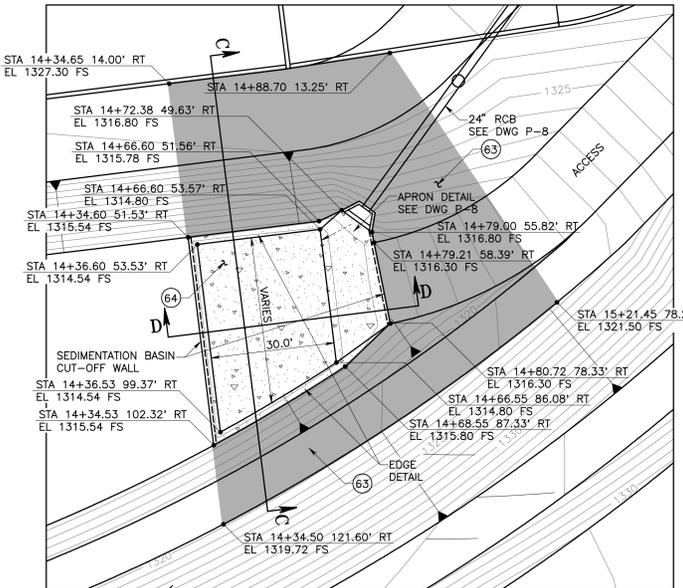


SEDIMENTATION BASIN EDGE DETAIL
SCALE 1" = 2'

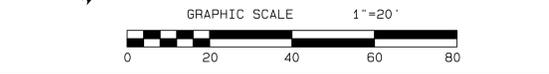


1/4 TON CONCRETED ROCK PROTECTION DETAIL
SCALE 1" = 10'

EAST BERM LINE/CURVE DATA				
LINE	DELTA	RADIUS	TANGENT	BEARING
L14				87.56'
C7	59°46'43"	498.00'	286.24'	519.58'
L15				119.45'



SEDIMENTATION BASIN DETAIL "G"
SCALE 1" = 20'



REVISIONS		
MARK	DATE	DESCRIPTION

SUBMITTED BY:	<i>Eloy Ruvalcaba</i>	3/13/2024
	ELOY RUVALCABA, P.E.	DATE
RECOMMENDED BY:	<i>David L. Drake</i>	3/13/24
	DAVID L. DRAKE, P.E.	DATE
APPROVED BY:	<i>Mehmet Mirzali</i>	3/21/24
	MEHMET MIRZALI, P.E. DEPUTY DIRECTOR	DATE
PROJ. ENGR.	D.D.	
DESIGNED BY	E.R./D.B.	
REV'D BY	D.D.	
DRAWN BY	D.B.	

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

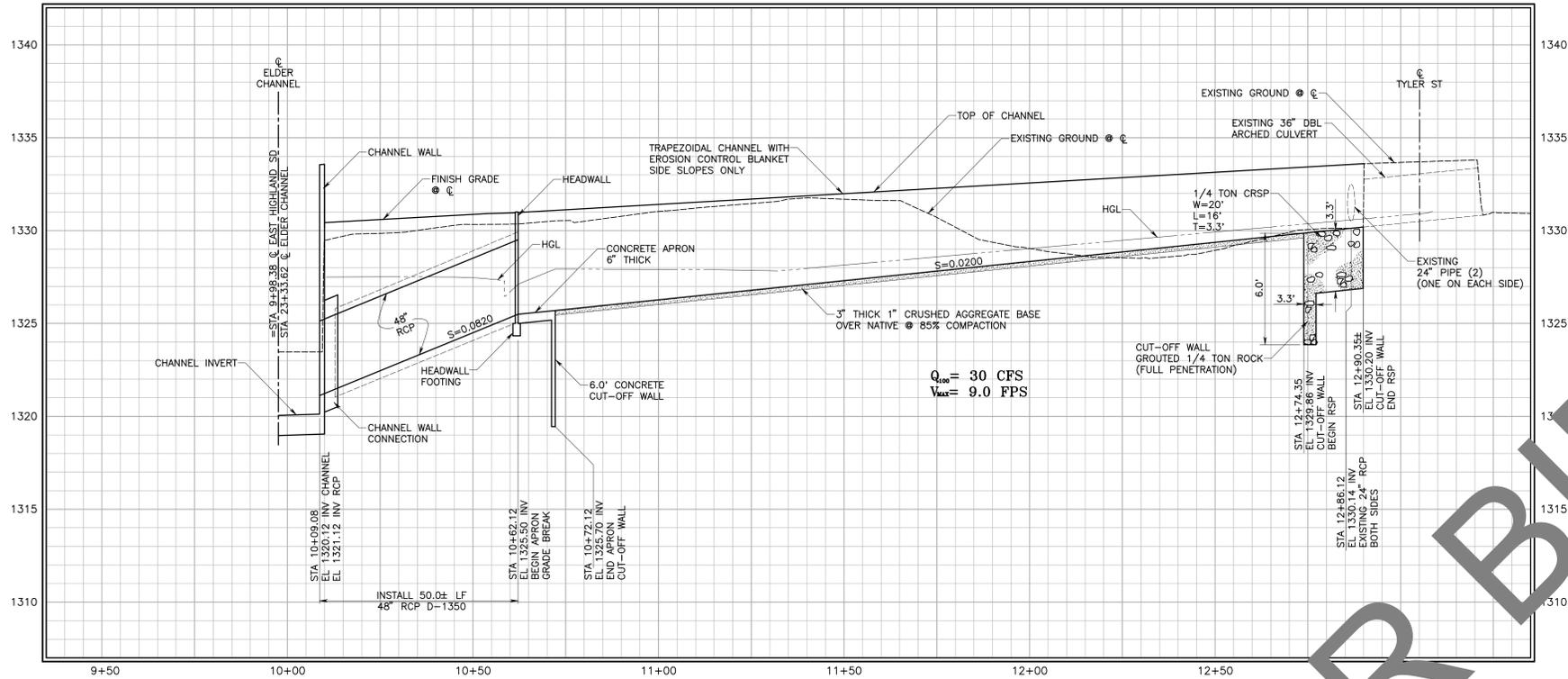
PLUNGE CREEK SYSTEM

ELDER CREEK CHANNEL

GRADING PLAN SOUTH OF ABBEY WAY

DETAILS AND SECTIONS

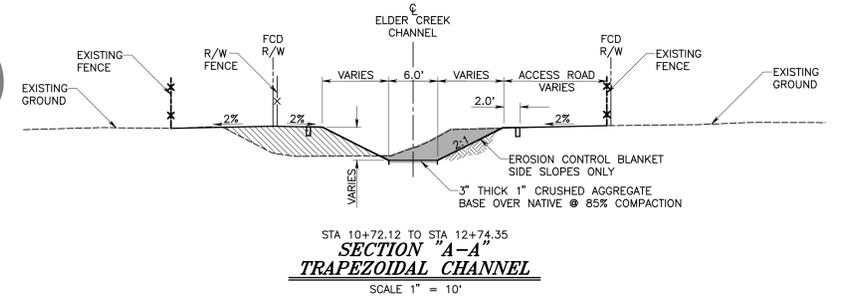
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SCALE	1" = 30'
FILE NO.	3-205-1C
DRAWING NO.	C-1
SHEET NO.	12 OF 29



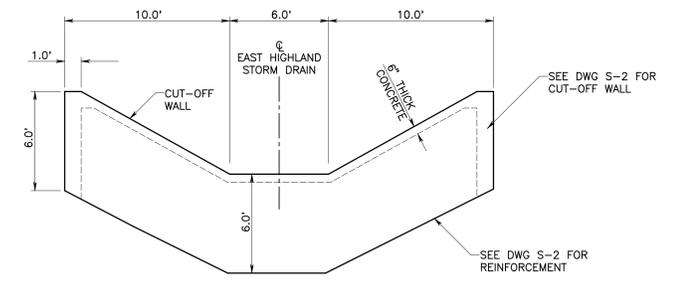
**GRADING PROFILE
EAST HIGHLAND STORM DRAIN**
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 4'

CONSTRUCTION NOTES:

- 1 PROTECT IN PLACE
- 4 CONSTRUCT 48" RCP TO CHANNEL WALL CONNECTION PER SPPWC STD 333-2
- 8 CONSTRUCT EARTHEN TRAPEZOIDAL CHANNEL PER DETAILS ON THIS DRAWING
- 14 3" THICK 1" CRUSHED AGGREGATE BASE OVER NATIVE @ 85% COMPACTION
- 17 INSTALL EROSION CONTROL BLANKET PER CALTRANS STD PLAN H52
- 36 INSTALL 48" RCP D-1350 METHOD III PLACEMENT
- 37 CONSTRUCT HEADWALL PER CALTRANS STD D89 (MODIFIED) SEE DETAILS ON THIS DRAWING AND DWG S-1
- 38 CONSTRUCT 6" THICK CONCRETE APRON PER PLAN ON THIS DRAWING AND DWG S-1
- 39 CONSTRUCT 6.0' REINFORCED CONCRETE CUT-OFF WALL PER DETAILS ON DWG C-2 AND DWG S-1
- 61 CONSTRUCT 1/4 TON CONCRETED ROCK SLOPE PROTECTION (FULL PENETRATION) PER PLAN AND PROFILE ON THIS DRAWING

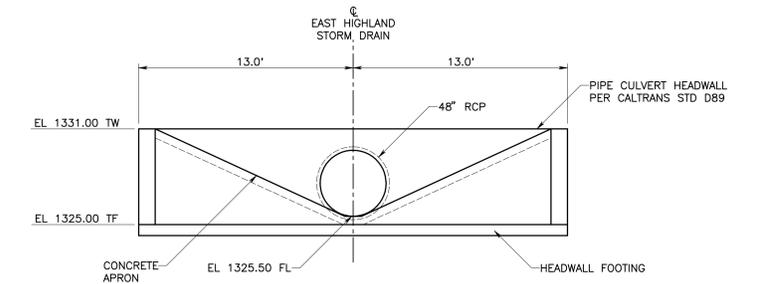


**SECTION "A-A"
TRAPEZOIDAL CHANNEL**
SCALE 1" = 10'



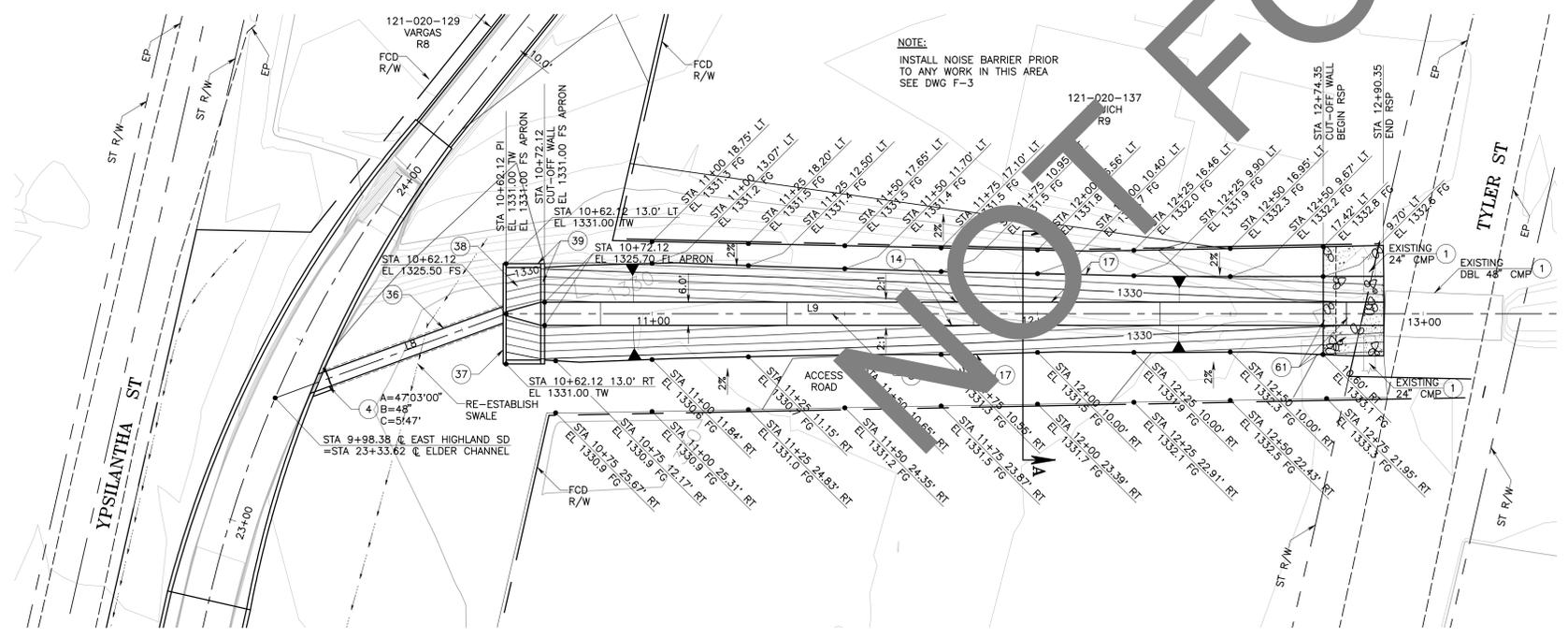
**TRAPEZOIDAL CHANNEL
CUT-OFF WALL DETAIL**
SCALE 1" = 5'

JUNCTION STRUCTURE STATION 23+34.63	
A	45'
B	48'
C	7.7'



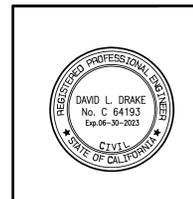
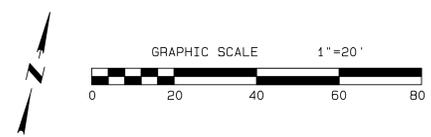
**TRAPEZOIDAL CHANNEL
HEADWALL DETAIL**
SCALE 1" = 5'

- NATIVE SOIL
- COMPACTED BACKFILL
- EXCAVATION



**GRADING PLAN
EAST HIGHLAND STORM DRAIN**
SCALE 1" = 20'

EAST HIGHLAND STORM DRAIN LINE/CURVE DATA				
LINE	DELTA	RADIUS	TANGENT	BEARING
L8			64.25'	N56°33'44"E
L9			228.23'	N76°33'44"E

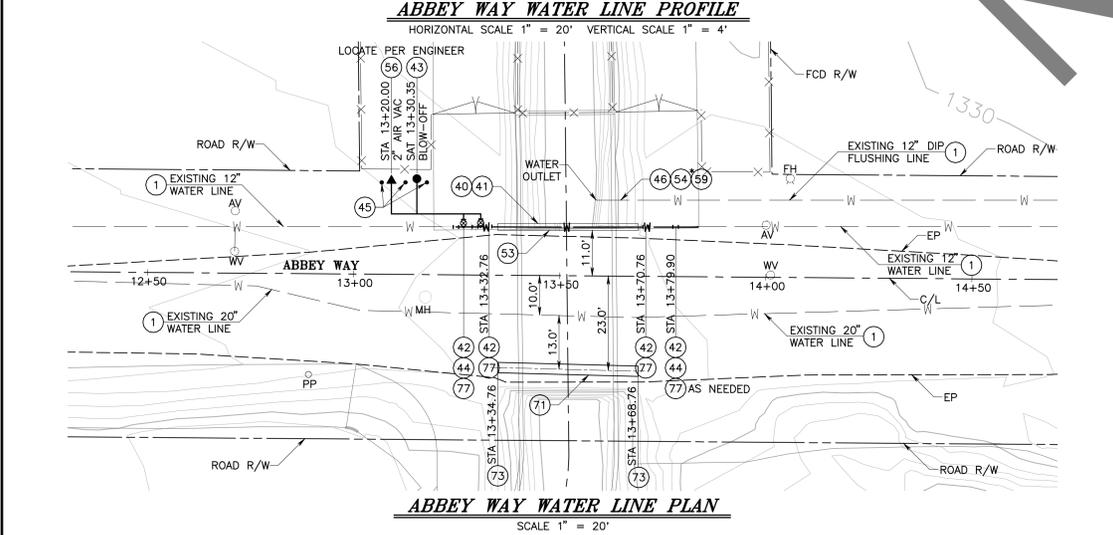
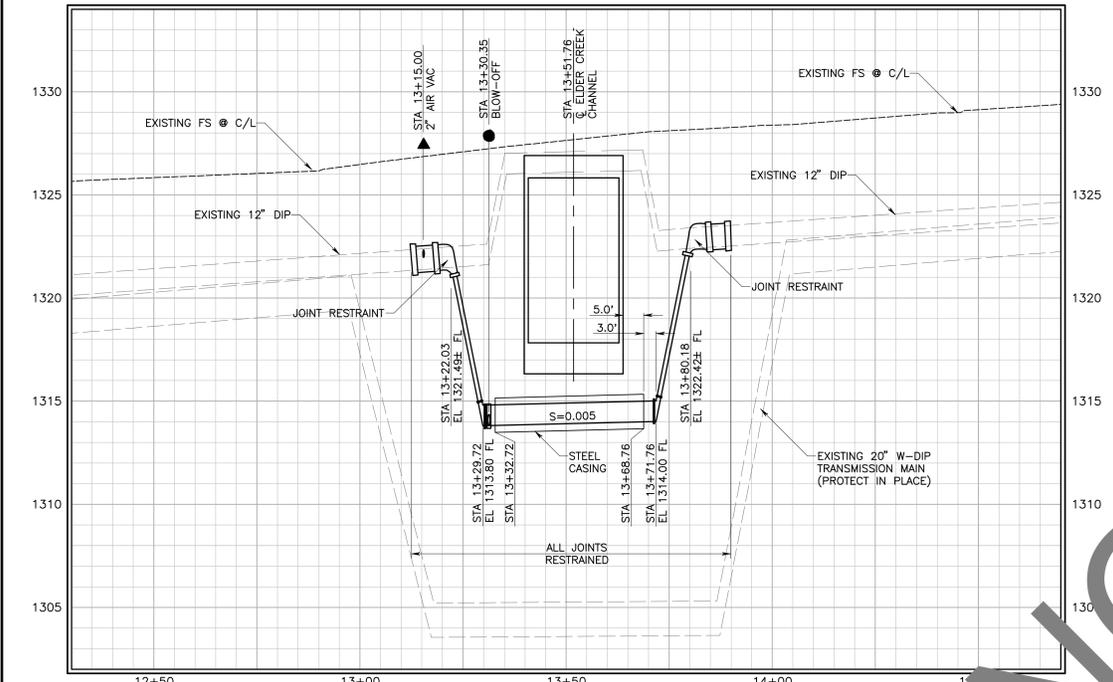
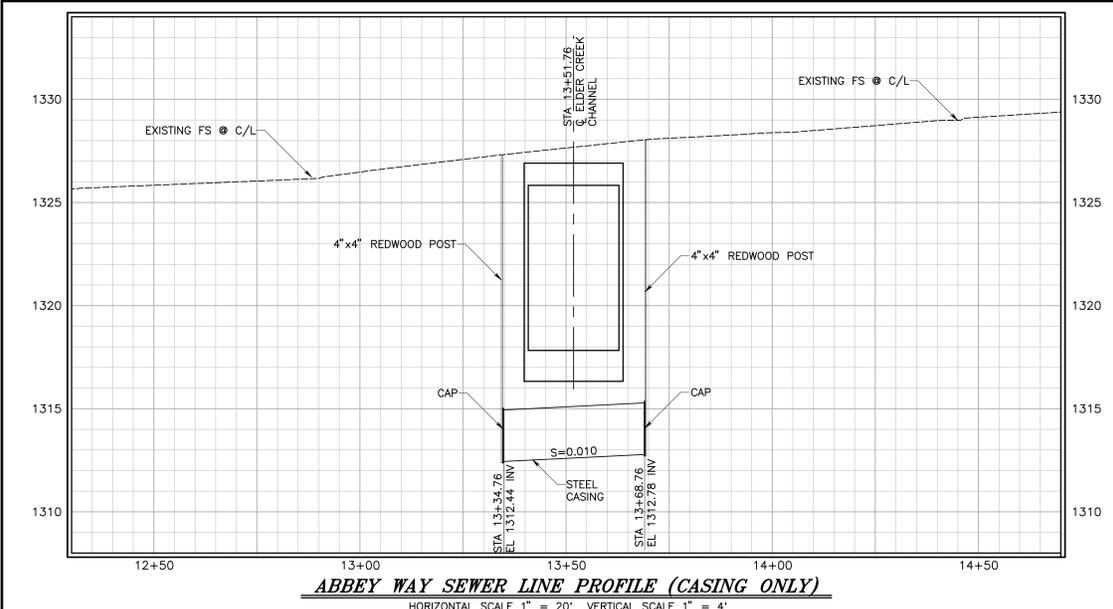


REVISIONS		
MARK	DATE	DESCRIPTION

SUBMITTED BY:	<i>Eloy Ruvalcaba</i>	3/13/2024
	ELOY RUVALCABA, P.E.	DATE
RECOMMENDED BY:	<i>David L. Drake</i>	3/13/24
	DAVID L. DRAKE, P.E.	DATE
APPROVED BY:	<i>Mervat Mughal</i>	3/21/24
	MERVAT MUGHAL, P.E. DEPUTY DIRECTOR	DATE
PROJ. ENGR.	D.D.	
DESIGNED BY:	E.R./D.B.	
REV'D BY:	D.D.	
DRAWN BY:	D.B.	

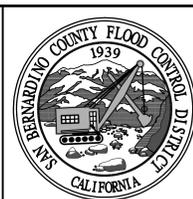
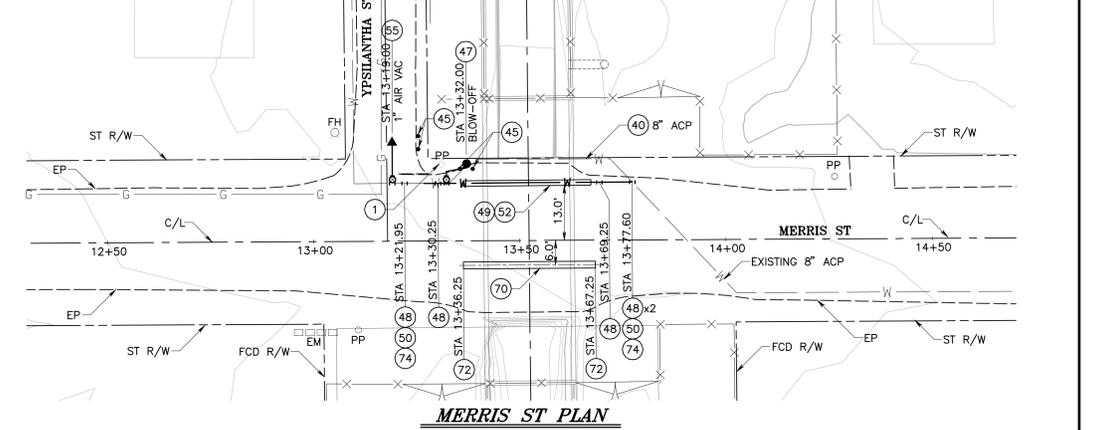
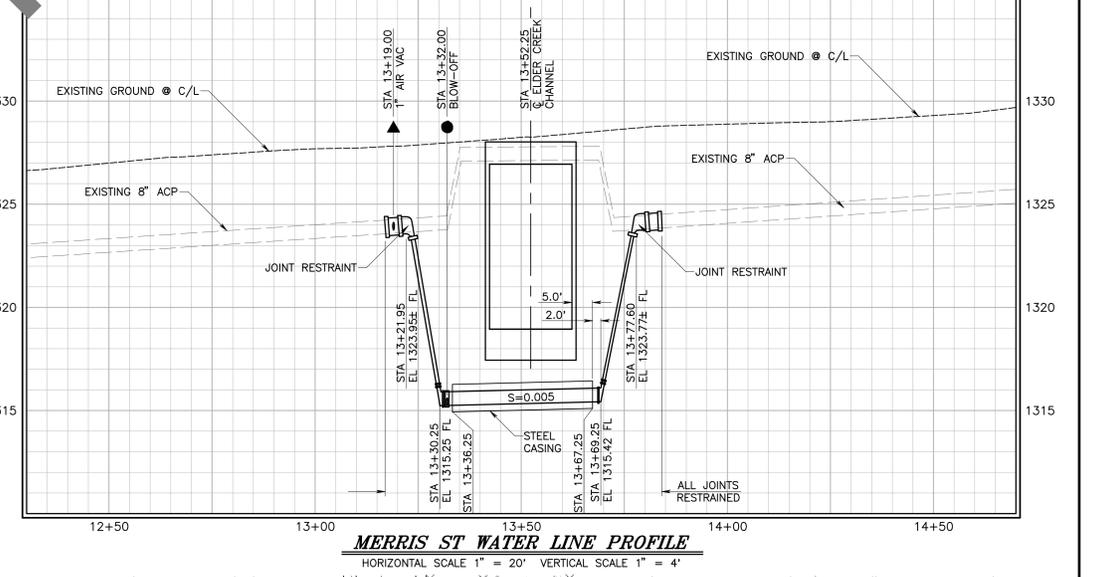
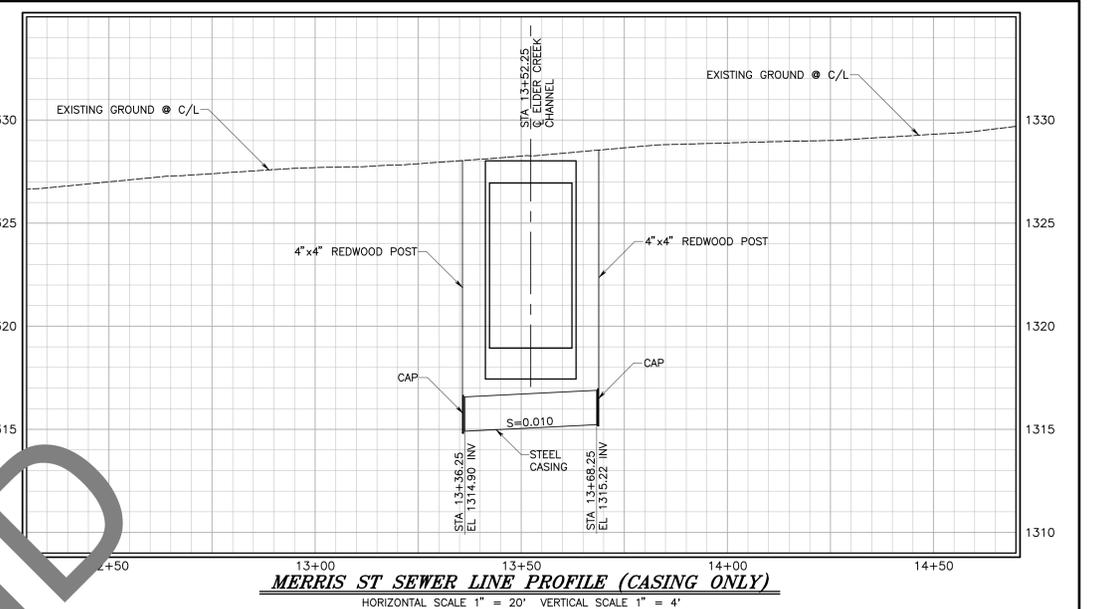
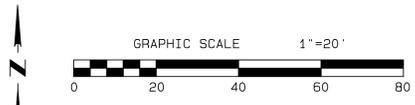
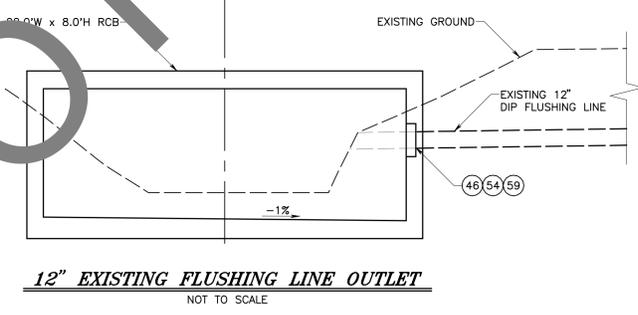
SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT		DATE MAR 2024
PLUNGE CREEK SYSTEM ELDER CREEK CHANNEL		SCALE 1" = 20'
EAST HIGHLAND STORM DRAIN PLAN, PROFILE AND DETAILS		FILE NO. 3-205-1C
		DRAWING NO. C-2
		SHEET NO. 13 OF 29

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CONSTRUCTION NOTES:

- 1 PROTECT IN PLACE
- 40 CUT, REMOVE AND DISPOSE EXISTING PIPE
- 41 INSTALL 12" DIP
- 42 INSTALL 12" DIP 45° BEND MJ
- 43 INSTALL 6" BLOW-OFF PER EWTD STD DWG W-103B
- 44 INSTALL 12" FLEX COUPLING
- 45 INSTALL GUARD POSTS PER EWTD STD DWG W-111
- 46 CUT APPROXIMATELY 6' OF EXISTING 12" DIP FLUSHING LINE FLUSH WITH RCB WALL
- 47 INSTALL 4" BLOW-OFF PER EWTD STD DWG W-103A
- 48 INSTALL 8" DIP 45° BEND MJ
- 49 INSTALL 8" DIP
- 50 INSTALL 8" LONG BARREL COUPLING
- 52 INSTALL 16" STEEL CASING PER EWTD STD DWG W-120
- 53 INSTALL 20" STEEL CASING PER EWTD STD DWG W-120
- 54 INSTALL 12" FLAP GATE
- 55 INSTALL 1" AIRVAC PER EWTD STD DWG W-105A
- 56 INSTALL 2" AIRVAC PER EWTD STD DWG W-105B
- 59 CONSTRUCT 12" DIP TO RCB WALL CONNECTION PER SPPWC STD 333-2, PLAN AND PROFILE ON THIS DRAWING
- 70 INSTALL 20" STEEL CASING PER EWTD STD DWG S-1
- 71 INSTALL 30" STEEL CASING PER EWTD STD DWG S-1
- 72 INSTALL 20" CAP
- 73 INSTALL 30" CAP
- 74 INSTALL 8" MEGALUG RESTRAINT AS NEEDED
- 77 INSTALL 12" MEGALUG RESTRAINT JOINT AS NEEDED



REVISIONS		
MARK	DATE	DESCRIPTION

SUBMITTED BY:		<i>Eloy Ruvalcaba</i>	3/13/2024
ELOY RUVALCABA, P.E.		DATE	
RECOMMENDED BY:		<i>David L. Drake</i>	3/13/24
DAVID L. DRAKE, P.E.		DATE	
APPROVED BY:		<i>Mervyn Michael</i>	3/21/24
MERVYN MICHAEL, P.E. DEPUTY DIRECTOR		DATE	
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
D.D.	E.R./D.B.	D.D.	D.B.

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

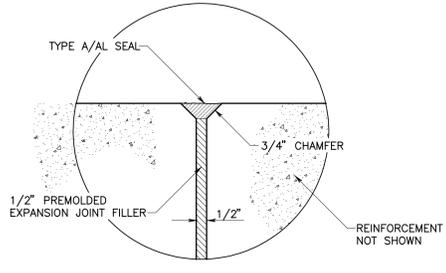
PLUNGE CREEK SYSTEM

ELDER CREEK CHANNEL

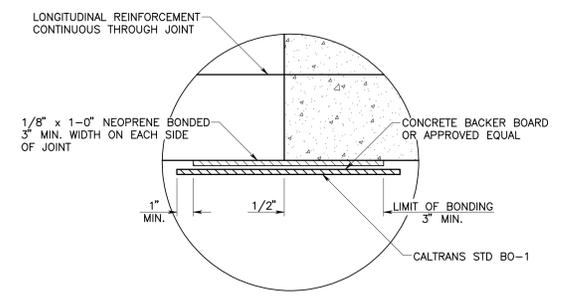
WATER RELOCATION

ABBEY WAY AND MERRIS ST

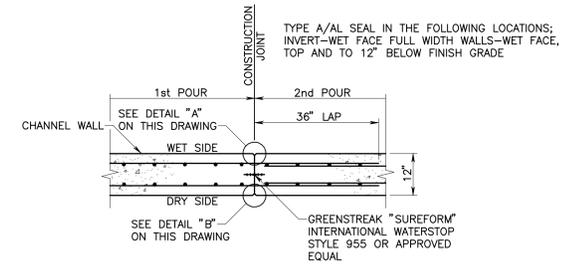
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DRAWING NO.: W-1
SHEET NO.: 14 OF 29



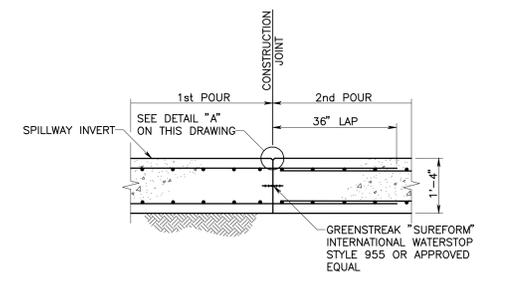
DETAIL "A"
INVERT/WALL EXPANSION JOINT SEAL
NOT TO SCALE



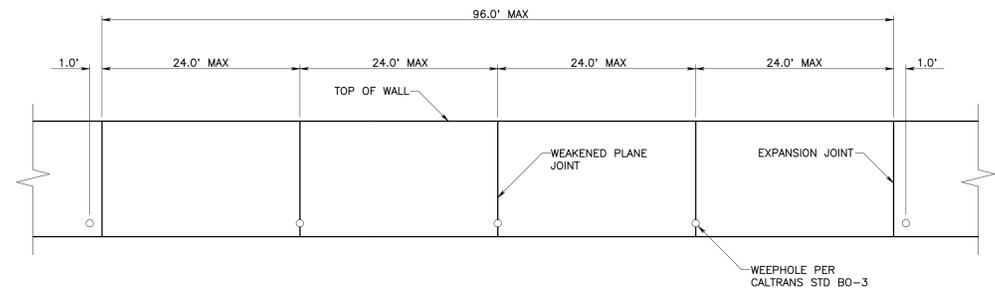
DETAIL "B"
TRANSVERSE WALL EXTERIOR JOINT
NOT TO SCALE



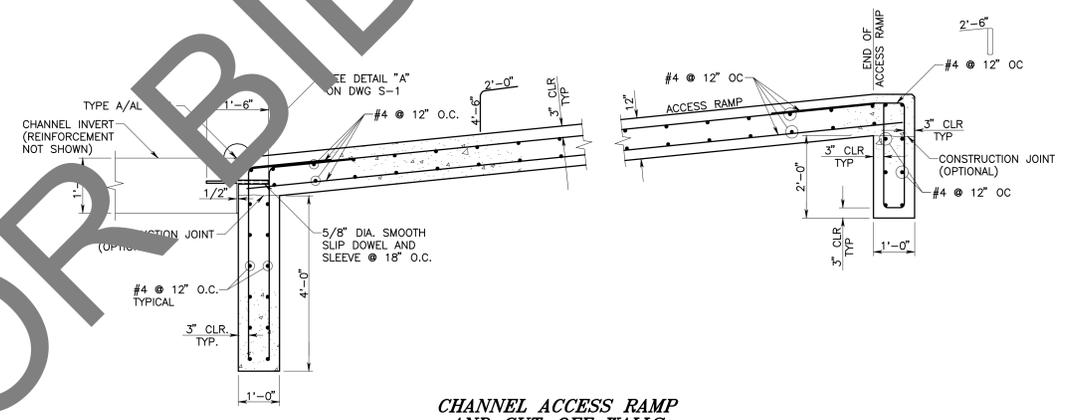
CHANNEL WALL CONSTRUCTION JOINT
SCALE 1" = 2"



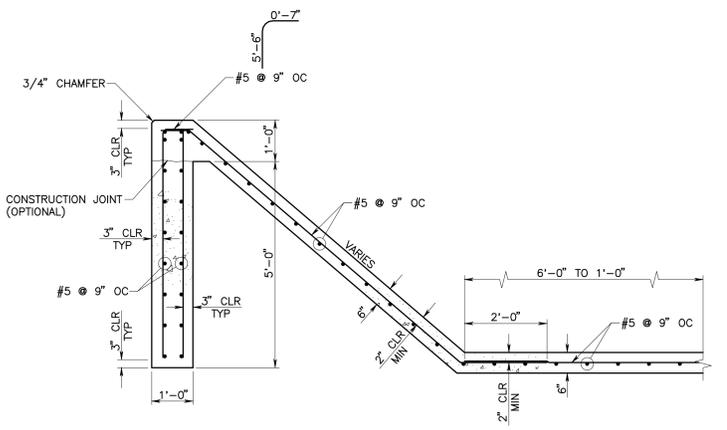
CHANNEL INVERT CONSTRUCTION JOINT
SCALE 1" = 2"



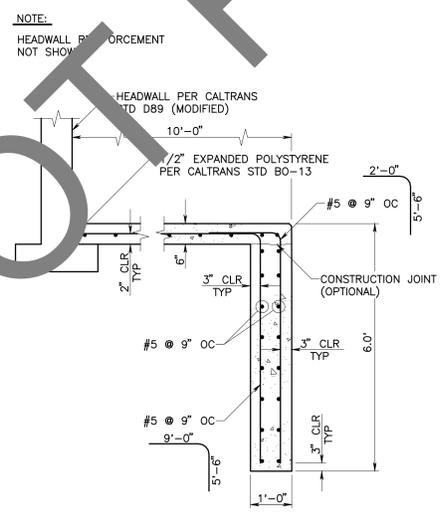
WALL EXPANSION JOINTS AND WEAKENED PLANES
SCALE 1" = 10'



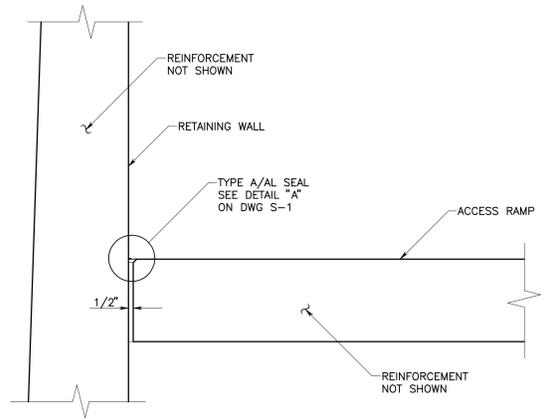
CHANNEL ACCESS RAMP AND CUT-OFF WALLS
SCALE 1" = 2"



STA 10+62.12 TO STA 10+72.12
EAST HIGHLAND SD
APRON CUT-OFF WALL
SCALE 1" = 2'

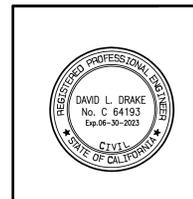


STA 10+72.12
EAST HIGHLAND SD
APRON CUT-OFF WALL
SCALE 1" = 2'



ACCESS RAMP CHANNEL WALL
SCALE 1" = 1'

NOT FOR BID

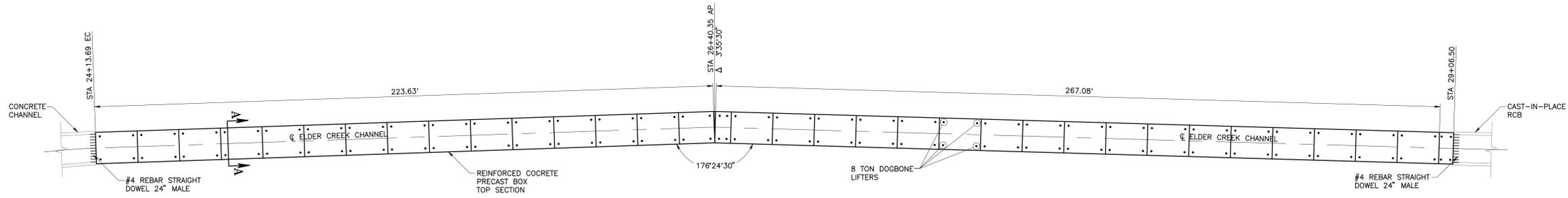


REVISIONS			
MARK	DATE	DESCRIPTION	BY:

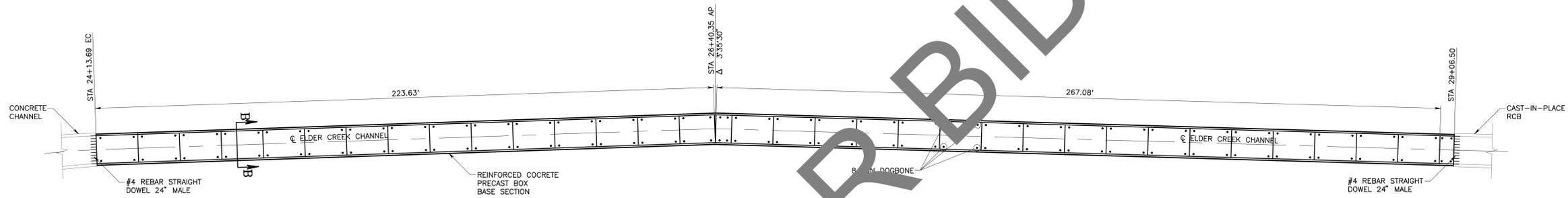
SUBMITTED BY:	<i>Eloy Ruvalcaba</i>	3/13/2024	
	ELOY RUVALCABA, P.E.	DATE	
RECOMMENDED BY:	<i>David L. Drake</i>	3/13/24	
	DAVID L. DRAKE, P.E.	DATE	
APPROVED BY:	<i>Mervat Muehail</i>	3/21/24	
	MERVAT MUEHAIL, P.E.	DATE	
PROJ. ENGR.	DESIGNED BY:	REV'D BY:	DRAWN BY:
D.D.	E.R./D.B.	D.D.	D.B.

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT		DATE
		JAN 2024
PLUNGE CREEK SYSTEM ELDER CREEK CHANNEL		SCALE
		AS SHOWN
STRUCTURAL DETAILS		FILE NO.
		3-205-1C
STRUCTURAL DETAILS		DRAWING NO.
		S-1
STRUCTURAL DETAILS		SHEET NO.
		15 OF 29

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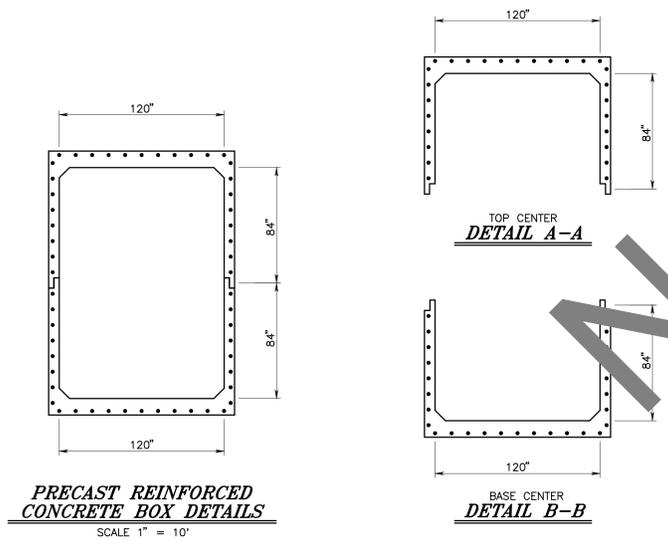


TOP CENTER PLAN VIEW



BASE CENTER PLAN VIEW

10.0'W x 14.0'H PRECAST REINFORCED CONCRETE BOX DETAILS



CONSTRUCTION NOTES:

- 69 INSTALL JENSEN'S PRECAST REINFORCED CONCRETE BOX 10' SPAN x 14' HEIGHT PER LATEST EDITION OF AASHTO LRFD BRIDGE DESIGN OR APPROVED EQUAL FOR HIGHWAY LOADING USING H20 PER ASHTO

DESIGN NOTES:

- DESIGNED IN ACCORDANCE WITH LRFD HL-93 LOADING USING 6,000 PSI COMPRESSIVE STRENGTH CONCRETE AND 60,000 PSI YIELD STRENGTH ASTM A-706 STEEL REINFORCEMENT PER CALCS. #2412-TYPE 2 SECTION.
- ALL PARTS TO BE STENCILED:MFG DATE/JOB NUMBER/PRODUCT ID/WEIGHT.

LIFTING NOTES:

- DEMOLDING: THIS CONCRETE PRODUCT IS DESIGNED TO BE LIFTED AT 2,500 PSI WITH 4 LIFT CONNECTIONS EQUALLY LOADED TO 4 LIFTING POINTS AT A MINIMUM 90° SLING ANGLE, MEASURED FROM HORIZONTAL.
- INSTALLATION: THIS CONCRETE PRODUCT IS DESIGNED TO BE LIFTED AT 5,500 PSI WITH 4 LIFT CONNECTIONS EQUALLY LOADED TO 4 LIFTING POINTS AT A MINIMUM 60° SLING ANGLE, MEASURED FROM HORIZONTAL.

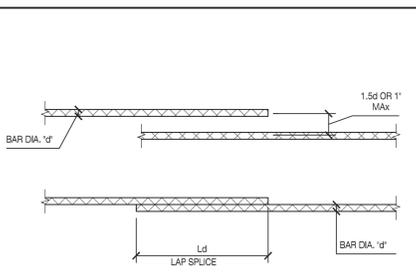
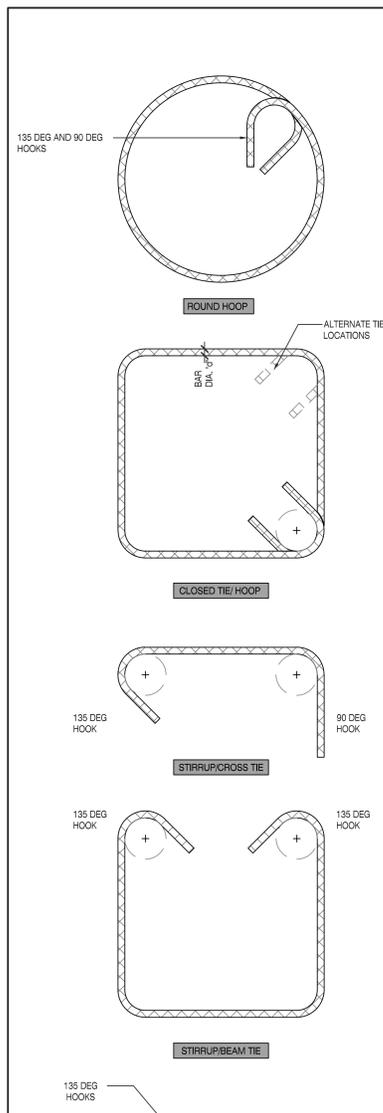


REVISIONS		
MARK	DATE	DESCRIPTION

SUBMITTED BY:		<i>Eloy Ruvalcaba</i>	3/13/2024
RECOMMENDED BY:		<i>David L. Drake</i>	3/13/24
APPROVED BY:		<i>Mervat Mikheil</i>	3/21/24
PROJ. ENGR.	DESIGNED BY	REV'D BY	DRAWN BY
D.D.	E.R./D.B.	D.D.	D.B.

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT		DATE
PLUNGE CREEK SYSTEM		JAN 2024
ELDER CREEK CHANNEL		SCALE
10.0'W x 14.0'H PRECAST RCB DETAILS		AS SHOWN
		FILE NO.
		3-205-1C
		DRAWING NO.
		S-2
		SHEET NO.
		16 OF 29

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fc = 2,500 PSI TENSION DEVELOPMENT (ks) AND LAP SPLICE (l) LENGTH FOR BARS IN WALLS, SLABS, AND FOOTINGS

BAR SIZE	LAP CLASS	COVER = 0.75"		COVER = 1.5"		COVER = 2"		COVER = 3"	
		UNCOATED		UNCOATED		UNCOATED		UNCOATED	
		TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER
#3	A	15"	12"	15"	15"	15"	15"	15"	15"
	B	19"	15"	19"	19"	19"	19"	19"	19"
#4	A	24"	18"	19"	19"	19"	19"	19"	19"
	B	31"	24"	25"	25"	25"	25"	25"	25"
#5	A	35"	27"	24"	24"	24"	24"	24"	24"
	B	45"	35"	31"	31"	31"	31"	31"	31"
#6	A	47"	36"	29"	29"	29"	29"	29"	29"
	B	61"	47"	37"	37"	37"	37"	37"	37"
#7	A	76"	59"	47"	36"	41"	32"	41"	32"
	B	99"	76"	61"	47"	54"	41"	54"	41"
#8	A	94"	72"	59"	45"	47"	36"	47"	36"
	B	122"	94"	77"	59"	48"	47"	61"	47"
#9	A	113"	87"	72"	56"	58"	45"	53"	41"
	B	147"	113"	94"	72"	76"	58"	69"	53"

fc = 3,000 PSI TENSION DEVELOPMENT (ks) AND LAP SPLICE (l) LENGTH FOR BARS IN WALLS, SLABS, AND FOOTINGS

BAR SIZE	LAP CLASS	COVER = 0.75"		COVER = 1.5"		COVER = 2"		COVER = 3"	
		UNCOATED		UNCOATED		UNCOATED		UNCOATED	
		TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER
#3	A	13"	12"	13"	12"	12"	12"	12"	12"
	B	17"	13"	17"	13"	17"	13"	17"	13"
#4	A	22"	17"	18"	14"	18"	14"	18"	14"
	B	28"	22"	23"	18"	23"	18"	23"	18"
#5	A	32"	25"	22"	17"	22"	17"	22"	17"
	B	41"	32"	28"	22"	28"	22"	28"	22"
#6	A	43"	33"	28"	22"	28"	22"	28"	22"
	B	56"	43"	34"	26"	34"	26"	34"	26"
#7	A	69"	53"	43"	33"	38"	29"	38"	29"
	B	90"	69"	55"	43"	49"	38"	49"	38"
#8	A	86"	66"	54"	42"	43"	33"	43"	33"
	B	112"	86"	70"	54"	56"	43"	56"	43"
#9	A	103"	80"	68"	51"	53"	41"	49"	37"
	B	134"	103"	86"	66"	66"	69"	63"	49"

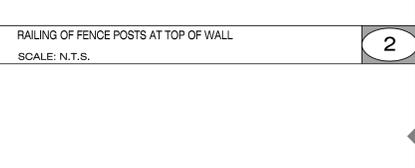
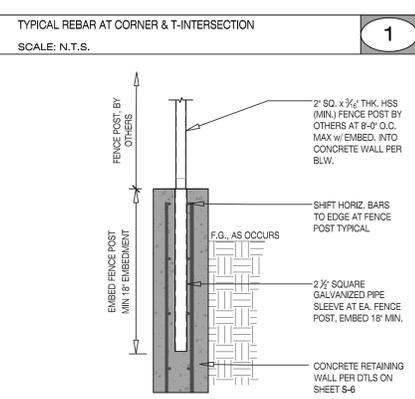
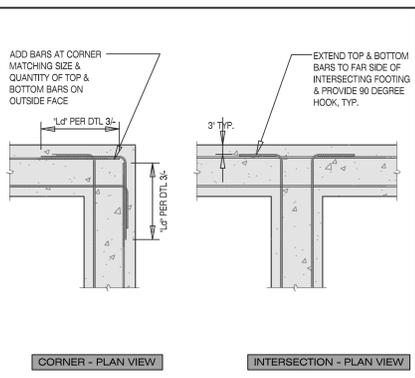
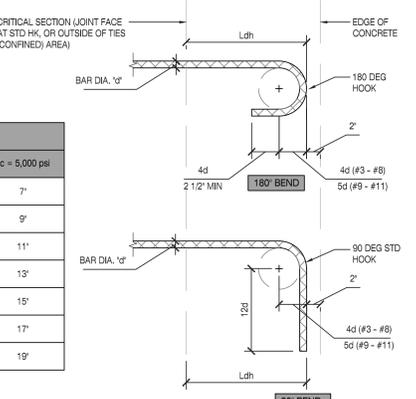
fc = 4,000 PSI TENSION DEVELOPMENT (ks) AND LAP SPLICE (l) LENGTH FOR BARS IN WALLS, SLABS, AND FOOTINGS

BAR SIZE	LAP CLASS	COVER = 0.75"		COVER = 1.5"		COVER = 2"		COVER = 3"	
		UNCOATED		UNCOATED		UNCOATED		UNCOATED	
		TOP	OTHER	TOP	OTHER	TOP	OTHER	TOP	OTHER
#3	A	12"	12"	12"	12"	12"	12"	12"	12"
	B	15"	12"	15"	12"	15"	12"	15"	12"
#4	A	19"	15"	15"	12"	15"	12"	15"	12"
	B	25"	19"	20"	15"	20"	15"	20"	15"
#5	A	28"	21"	19"	15"	19"	15"	19"	15"
	B	36"	28"	25"	19"	25"	19"	25"	19"
#6	A	37"	29"	23"	18"	23"	18"	23"	18"
	B	49"	37"	29"	23"	29"	23"	29"	23"
#7	A	60"	46"	37"	29"	33"	25"	33"	25"
	B	78"	60"	48"	37"	43"	33"	43"	33"
#8	A	74"	57"	47"	35"	37"	29"	37"	29"
	B	97"	74"	61"	47"	49"	37"	49"	37"
#9	A	90"	69"	57"	44"	46"	36"	42"	32"
	B	116"	90"	74"	57"	60"	46"	55"	42"

- NOTES:**
- TABULATED VALUES ARE BASED ON A MINIMUM YIELD STRENGTH OF 60,000 PSI FOR ALL REINFORCING AND NORMAL WEIGHT CONCRETE.
 - SPACING OF REINFORCING BEING SPLICED SHALL BE GREATER THAN ONE BAR DIAMETER PLUS TWICE THE CONCRETE COVER.
 - 'TOP' INDICATES A TOP BAR WHICH ARE DEFINED AS HORIZONTAL REINFORCING WITH MORE THAN 12" OF CONCRETE CAST BELOW THE BAR.
 - LENGTHS ARE FOR UNCOATED BARS ONLY.
 - FOR LIGHTWEIGHT CONCRETE, DIVIDE THE CORRESPONDING TABULATED VALUE BY 0.75.
 - EXCEPT AS SPECIFIED, LAP SPLICES SHALL BE CLASS B SPLICES

STANDARD HOOK DEVELOPMENT LENGTH (Ldh)

BAR SIZE	fc = 2,500 psi	fc = 3,000 psi	fc = 4,000 psi	fc = 4,500 psi	fc = 5,000 psi
#3	9"	9"	7"	7"	7"
#4	12"	11"	9"	9"	9"
#5	15"	14"	12"	11"	11"
#6	18"	16"	14"	13"	13"
#7	21"	19"	17"	16"	15"
#8	24"	22"	19"	18"	17"
#9	27"	25"	21"	20"	19"



CONCRETE

- CONCRETE COMPRESSIVE STRENGTH: ALL CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH AS SHOWN IN THE TABLE BELOW AT 28 DAYS, U.N.C. ON PLANS. SEE ALSO SULFATE CONTENT NOTES.
- AGGREGATES IN CONCRETE: SHALL BE NATURAL SAND AND ROCK (150 LB/CU FT) CONFORMING TO ASTM C33. AGGREGATE SHALL HAVE PROVEN SHRINKAGE CHARACTERISTICS OF LESS THAN 0.04% PER ASTM C-157. DO NOT CHANGE SOURCE OF AGGREGATE DURING COURSE OF WORK WITHOUT WRITTEN CONSENT OF ENGINEER.
- CEMENT: SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150. CEMENT SHALL BE TYPE V OR AS REQUIRED TO SATISFY SITE SOIL CONDITIONS. REFER TO TABLE BELOW FOR CONCRETE STRENGTH & MAXIMUM WATER TO CEMENT RATIO REQUIREMENTS.

CONCRETE STRENGTH

CONDITION	STRENGTH, FC	WATER / CEMENT RATIO	MAX. SLUMP	MAX. AGGREGATE
CHANNEL BOTTOM, ALL FOOTING	5,000 PSI	0.45	6"	1 1/2"
CHANNEL WALL	5,000 PSI	0.45	6"	1"

- REBAR CLEAR COVER IN CONCRETE: THE FOLLOWING MINIMUM CLEAR DISTANCES BETWEEN REINFORCING STEEL AND FACE OF CONCRETE SHALL BE MAINTAINED UNLESS NOTED OTHERWISE:

CONDITION	COVER
SLAB ON GRADE	CENTER OF SLAB OR 3" MIN
CONCRETE CAST AGAINST & PERMANENTLY EXPOSED TO GROUND	3"
CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND	3"
#5 BARS & SMALLER	3"
#6 BARS & LARGER	3"

- REBAR CLEAR COVER FOR CAST-IN-PLACE CONCRETE PER ACI 318-14 TABLE 20.6.1.3.1
- VIBRATION: VIBRATION OF CONCRETE SHALL BE IN ACCORDANCE WITH GENERAL PROVISIONS OUTLINED IN ACI 309R.
- CURING: CONCRETE SHALL BE MAINTAINED AT IN A MOIST CONDITION FOR A MINIMUM OF 24 HOURS AFTER ITS PLACEMENT. FOR CONCRETE OTHER THAN SLAB ON GRADE, APPROVED CURING COMPOUNDS MAY BE USED IN LIEU OF WATER. ONLY IF APPROVED BY THE ENGINEER.
- INSPECTIONS, TESTING & QUALITY ASSURANCE: AS REQUIRED BY THE JURISDICTION.
- ANCHOR BOLTS, DOWELS, INSERTS: SHALL BE TIED IN PRIOR TO POURING CONCRETE.
- CONSTRUCTION AND POUR JOINTS: LOCATIONS SHALL BE APPROVED BY ENGINEER PRIOR TO POURING CONCRETE.
- FLY ASH: CONCRETE MIX DESIGN MAY CONTAIN FLY ASH PER ACI 308.4.1.1
- FORMWORK: FORMWORK TOLERANCE SHALL BE IN ACCORDANCE WITH THE C.B.C. AND A.C.T. STANDARDS.
- HOT AND COLD WEATHER CONCRETING:
 - HOT WEATHER CONCRETING: WHEN TEMPERATURES EXCEED 80°F AND HUMIDITY FALLS BELOW 25%, CONTRACTOR SHALL FOLLOW HOT WEATHER CONCRETING IN ACCORDANCE WITH ACI 309R. CONTRACTOR SHALL BE PREPARED TO USE FOG SPRAY OR OTHER PRECAUTIONS ACCEPTABLE TO ENGINEER WHEN RATE OF EVAPORATION EXCEEDS 0.2 POUNDS PER SQUARE FOOT PER HOUR.
 - COLD WEATHER CONCRETING: ADEQUATE EQUIPMENT SHALL BE PROVIDED FOR HEATING CONCRETE MATERIALS AND PROTECTING CONCRETE DURING FREEZING OR IF THERE IS A POTENTIAL FOR FREEZING WEATHER. ALL CONCRETE MATERIALS AND ALL FORMWORK, FORMWORKERS AND GROUND WITH WHICH THE CONCRETE IS IN CONTACT SHALL BE FREE FROM FROST. FROZEN MATERIAL OR MATERIALS CONTAINING ICE SHALL NOT BE USED. COLD WEATHER CONCRETING SHALL BE DONE IN ACCORDANCE WITH ACI 306R. (LATEST EDITION)
- PIPES IN CONCRETE: PIPES SHALL PASS THROUGH STRUCTURAL CONCRETE IN SLEEVES, BUT SHALL NOT BE EMBEDDED THEREIN. PIPES OR DUCTS EXCEEDING ONE-THIRD THE SLAB OR WALL THICKNESS SHALL NOT BE PLACED IN THE STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED.

REINFORCING STEEL

- REINFORCING STEEL:
 - ALL BARS, UNLESS OTHERWISE NOTED, SHALL BE ASTM A615, GRADE 60
 - BARS TO BE WELDED: ASTM A706, GRADE 60
- SHOP DRAWINGS: ACI 315, PART B, SHOW REINFORCING STEEL PLACEMENT INCLUDING SIZES, QUANTITIES, SPACING, CLEARANCES, SPLICE LOCATIONS, LAP LENGTHS, AND CONCRETE COVERAGES AND SUBMIT TO STRUCTURAL ENGINEER. PROMPTLY NOTIFY STRUCTURAL ENGINEER PRIOR TO DEVELOPING SHOP DRAWINGS IF INSUFFICIENT CLEAR DISTANCES BETWEEN REINFORCING STEEL AND OTHER CONSTRUCTION IS ENCOUNTERED. NOTIFY SPECIAL INSPECTOR OF ADJUSTMENTS MADE FROM APPROVED CONTRACT DOCUMENTS WHICH ARE INDICATED ON ACCEPTED SHOP DRAWINGS THAT FACILITATE FIELD PLACEMENT OF REINFORCING STEEL AND CONCRETE.
- MINIMUM CLEARANCES BETWEEN PARALLEL REINFORCING STEEL INCLUDING DISTANCE BETWEEN SETS OF SPLICED BARS: 1" OR 1 db, WHICHEVER IS GREATER, 1 1/2" OR 1 1/2 db WHICHEVER IS GREATER, AT COLUMNS, PIERS, AND PILASTERS ONLY. FOR BUNDLED BARS: MINIMUM CLEAR DISTANCES BETWEEN UNITS OF BUNDLED BARS SHALL BE SAME AS SINGLE BARS EXCEPT BAR DIAMETER IS DERIVED FROM EQUIVALENT TOTAL AREA OF BUNDLE.
- DOWELS AT CONSTRUCTION JOINTS: PROVIDE DOWELS MATCHING SIZE AND QUANTITY OF REINFORCING STEEL INTERRUPTED AT CONSTRUCTION JOINTS, UNLESS DETAILED OTHERWISE.
- BARS TERMINATING AT WALLS, COLUMNS, BEAMS, AND FOUNDATIONS: EXTEND BARS TO WITHIN 2' 3" AT CONCRETE POURED AGAINST EARTH OF FAR FACE OF WALL, COLUMN, BEAM OR FOUNDATION AND PROVIDE STANDARD ACI 90-DEGREE HOOK UNLESS DETAILED OTHERWISE.
- BARS INTERRUPTED BY STRUCTURAL STEEL: EXTEND BARS TO WITHIN 2' OF STEEL FACE AND PROVIDE STANDARD ACI 90-DEGREE HOOK UNLESS DETAILED OTHERWISE.
- BENDING: BEND COLD, ONE TIME ONLY, UNLESS OTHERWISE ACCEPTED BY STRUCTURAL ENGINEER. DO NOT FIELD-BEND REINFORCING STEEL BARS EMBEDDED IN CONCRETE UNLESS SHOWN ON THE DRAWINGS OR OTHERWISE ACCEPTED IN WRITING BY STRUCTURAL ENGINEER.
- SPLICES: PROVIDE CLASS B SPLICES PER DETAIL 3/SN1 LAP SPLICE SCHEDULE.
- "PRE-ARMED" TIE SYSTEMS COMPLYING WITH CRSI REPORT #53 ARE ACCEPTABLE.
- STEEL SOIL INSPECTION & TESTING NOT REQUIRED IF COILS ARE ACCOMPANIED BY MILL CERTS.

EARTHWORK & FOUNDATIONS

- ALLOWABLE FOUNDATION DESIGN VALUES PER GEOTECHNICAL REPORT:
 - BEARING CAPACITY: SEE SHEET SCS
 - PASSIVE LATERAL BEARING PRESSURE: SEE SHEET SCS
 - COEFFICIENT OF FRICTION: SEE SHEET SCS
- PREPARATION OF SOIL: SEE GEOTECHNICAL REPORT FOR OVER-EXCAVATION OF EXISTING SOIL AND INSTALLATION OF PROPERLY COMPACTED BACKFILL.
- FOUNDATION EXCAVATIONS: FOUNDATIONS ARE TO BEAR ON FIRM EXISTING SOIL OR APPROVED COMPACTED FILL AS INDICATED IN GEOTECHNICAL REPORT. EXCAVATIONS ARE TO BE INSPECTED BY GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF REINFORCING STEEL AND FORMWORK. ENSURE EXCAVATIONS ARE CLEAN, DRY AND FREE OF DEBRIS OR LOOSE SOIL. SLOPE SIDES OF EXCAVATION NOT LESS THAN MINIMUM SLOPE INDICATED IN GEOTECHNICAL REPORT. CAST CONCRETE DIRECTLY AGAINST EXCAVATED SURFACES.

GENERAL NOTES

- FIELD VERIFICATION: FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. PROMPTLY NOTIFY ENGINEER OF RECORD (STRUCTURAL ENGINEER) IN CASE OF DISCREPANCIES.
- DESIGN INTENT: CONTRACT DOCUMENTS INDICATE DESIGN INTENT FOR STRUCTURE IN ITS COMPLETED STATE. THEY DO NOT INDICATE METHOD OF CONSTRUCTION. PROMPTLY NOTIFY ENGINEER OF RECORD (STRUCTURAL ENGINEER), PRIOR TO PROCEEDING WITH WORK, IF DESIGN INTENT REQUIRES FURTHER CLARIFICATION.
- DEVIATIONS, MODIFICATIONS AND SUBSTITUTIONS TO APPROVED STRUCTURAL DRAWINGS: MUST BE ACCEPTED IN WRITING BY ENGINEER OF RECORD (STRUCTURAL ENGINEER) AND APPROVED BY GOVERNING CODE AUTHORITY. NO DEVIATION, MODIFICATION OR SUBSTITUTION WILL BE ACCEPTED VIA SHOP DRAWING REVIEW.
- PROCEDURES OF CONSTRUCTION: CONTRACTOR IS RESPONSIBLE FOR PROCEDURES OF CONSTRUCTION COMPLYING WITH NATIONAL, STATE AND LOCAL SAFETY ORDINANCES. SITE VISITS (INCLUDING STRUCTURAL OBSERVATION) BY ENGINEER OF RECORD (STRUCTURAL ENGINEER) DO NOT CONSTITUTE SUPERVISIONS OF METHODS OF CONSTRUCTION.
 - PROTECTION OF UTILITIES: LOCATE EXISTING UTILITIES, INCLUDING THOSE NOT SHOWN ON CONTRACT DOCUMENTS, AND PROTECT THEM FROM DAMAGE. CONTRACTOR BEARS EXPENSE OF REPAIR OR REPLACEMENT OF UTILITIES IN CONJUNCTION WITH EXECUTION OF WORK.
 - EXCAVATIONS: PROTECT STRUCTURE, ADJACENT STRUCTURES, ADJACENT PROPERTIES, STREETS, AND UTILITIES DURING EXCAVATION UTILIZING LAGGING, SHORING, UNDERPINNING AT SIDES AND RELATED PROCEDURES AS MAY BE REQUIRED. PROVIDE NECESSARY SUPPORTS FOR SOIL EXCAVATIONS. CONTRACTOR AND AFFECTED TRADES SHALL REFER TO GEOTECHNICAL REPORT FOR MORE INFORMATION.
 - PROTECTION OF STRUCTURE: PROVIDE NECESSARY MEASURES TO PROTECT STRUCTURE DURING EXECUTION OF WORK.
 - TEMPORARY LOADING: ENSURE CONSTRUCTION LOADS DO NOT EXCEED INDICATED DESIGN LIVE LOAD VALUES. NOTIFY AFFECTED SUB-CONTRACTOR TRADES OF THESE DESIGN LOAD LIMITS.
 - COORDINATION RESPONSIBILITY: CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK INCLUDING THAT OF SUB-CONTRACTOR TRADES.
 - REQUEST FOR INFORMATION (RFI) SUBMITTALS: ACCOMPANY RFI'S WITH PARTIAL STRUCTURAL FOUNDATION OR FRAMING PLANS SHOWING LOCATION IN QUESTION AND AFFECTED STRUCTURAL MEMBERS. COPY PARTIAL PLAN FROM STRUCTURAL DRAWINGS AND INDICATE GRID LINE LOCATIONS AND FLOOR LEVEL.
 - CONTRACT DOCUMENTS USE: REVIEW CONTRACT DOCUMENTS IN THEIR ENTIRETY BEFORE PERFORMING STRUCTURAL RELATED WORK AND BEFORE DEVELOPING SHOP DRAWINGS. BRING DISCREPANCIES TO THE IMMEDIATE ATTENTION OF ENGINEER OF RECORD (STRUCTURAL ENGINEER) BEFORE STARTING WORK.
 - SCALING OF DRAWINGS: NOT PERMITTED.
 - NON-STRUCTURAL ITEMS REQUIRING SPECIAL PROVISIONS: SEE 'CIVIL' OR 'SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT' MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR NON-STRUCTURAL ITEMS REQUIRING SPECIAL PROVISIONS DURING CONSTRUCTION. THEY INCLUDE, BUT ARE NOT LIMITED TO: NON-STRUCTURAL WALLS; SIZE AND LOCATIONS OF OPENINGS AND SLEEVES PENETRATING STRUCTURE; SIZE AND LOCATION OF CONCRETE CURBS AND PADS; AND SIZE AND LOCATION OF PIPING, DUCTWORK, AND EQUIPMENT ANCHORAGES MOUNTED OR SUSPENDED FROM STRUCTURE. VERIFY EXACT SIZE AND LOCATION OF EQUIPMENT WITH EQUIPMENT MANUFACTURER.
 - MATERIALS: FURNISH AND INSTALL IN COMPLIANCE WITH LEGALLY CONSTITUTED PUBLIC AUTHORITIES HAVING JURISDICTION INCLUDING COUNTY AND LOCAL ORDINANCES AND SAFETY ORDERS OF STATE INDUSTRIAL ACCIDENT COMMISSION, OSHA.
 - PENETRATIONS, EMBEDMENTS, AND OPENINGS IN STRUCTURAL MEMBERS: NO PENETRATION, EMBEDMENT, OPENING, SLEEVE, PIPE, OR CONDUIT SHALL OCCUR IN STRUCTURAL MEMBERS INCLUDING FOOTINGS, SLABS, WALLS, COLUMNS, AND BEAMS UNLESS SPECIFICALLY SHOWN OR INDICATED ON STRUCTURAL DRAWINGS.
 - TYPICAL DETAILS: DETAILS ON SO SERIES SHEETS ARE APPLICABLE THROUGHOUT PROJECT WHEREVER THE DESCRIBED CONDITION OCCURS AND MAY OR MAY NOT BE SPECIFICALLY REFERENCED ON STRUCTURAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THESE DETAILS AND UNDERSTANDING EXTENT OF THEIR APPLICATION PRIOR TO PERFORMING WORK.

SUBMITTED BY: *Sandy Fong* 2024.02.29
SANDY FONG, P.E. DATE

REVIEWED BY: *Shawn Lothrop* 2024.02.29
SHAWN LOTHROP, S.E. DATE

INNOVATIVE STRUCTURAL ENGINEERING, INC
 27369 VIA INDUSTRIA TEMECULA CA 92590
 TELE: 951.600.0032

DESIGNED BY: S.F. REVD BY: S.L. DRAWN BY: S.F.

REGISTERED PROFESSIONAL ENGINEER
SANDY FONG
 C83965
 CIVIL
 STATE OF CALIFORNIA

REVISIONS

MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: *Eloy Ruvalcaba* 3/13/2024
ELOY RUVALCABA, P.E. DATE

RECOMMENDED BY: *David L. Drake*
DAVID L. DRAKE, P.E. 3/13/24 DATE

APPROVED BY: *Mervat Mikhail* 3/21/24
MERVAT MIKHAIL, P.E. DATE
 DEPUTY DIRECTOR

PROJ. ENGR. E.R. DESIGNED BY: --/-- REVD BY: D.D. DRAWN BY: --/--

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

PLUNGE CREEK SYSTEM

ELDER CREEK

STRUCTURAL PLANS AND DETAILS

DATE: **DEC 2023**

SCALE: **S-3**

FILE NO.: **3-205-1C**

DRAWING NO.: **S-3**

SHEET NO.: **17 of 29**

LEGEND

DETAIL NUMBER
 STRUCTURAL SHEET NUMBER

REINFORCED CONCRETE BOX



THIS PLAN ACCURATE FOR STRUCTURAL DETAILS AND SHEET REFERENCE ONLY

SUBMITTED BY:
Sandy Fong
SANDY FONG, P.E. 2024.02.29
 DATE

REVIEWED BY:
Shawn Lothrop
SHAWN LOTHROP, S.E. 2024.02.29
 DATE

INNOVATIVE STRUCTURAL ENGINEERING, INC
 27369 VIA INDUSTRIA TEMECULA CA 92590
 TELE: 951.600.0032

DESIGNED BY: S.F. REVD BY: S.L. DRAWN BY: S.F.



REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY: *Eloy Ruvalcaba* 3/13/2024
ELOY RUVALCABA, P.E. DATE

RECOMMENDED BY: *David L. Drake* 3/13/24
DAVID L. DRAKE, P.E. DATE

APPROVED BY: *Mervat Merhail* 3/21/24
MERVAT MERHAIL, P.E. DATE
 DEPUTY DIRECTOR

PROJ. ENGR. E.R. DESIGNED BY: --/-- REVD BY: D.D. DRAWN BY: --

SAN BERNARDINO COUNTY
 FLOOD CONTROL DISTRICT

PLUNGE CREEK SYSTEM

ELDER CREEK

STRUCTURAL
 PLANS AND DETAILS

DATE
 DEC 2023

SCALE

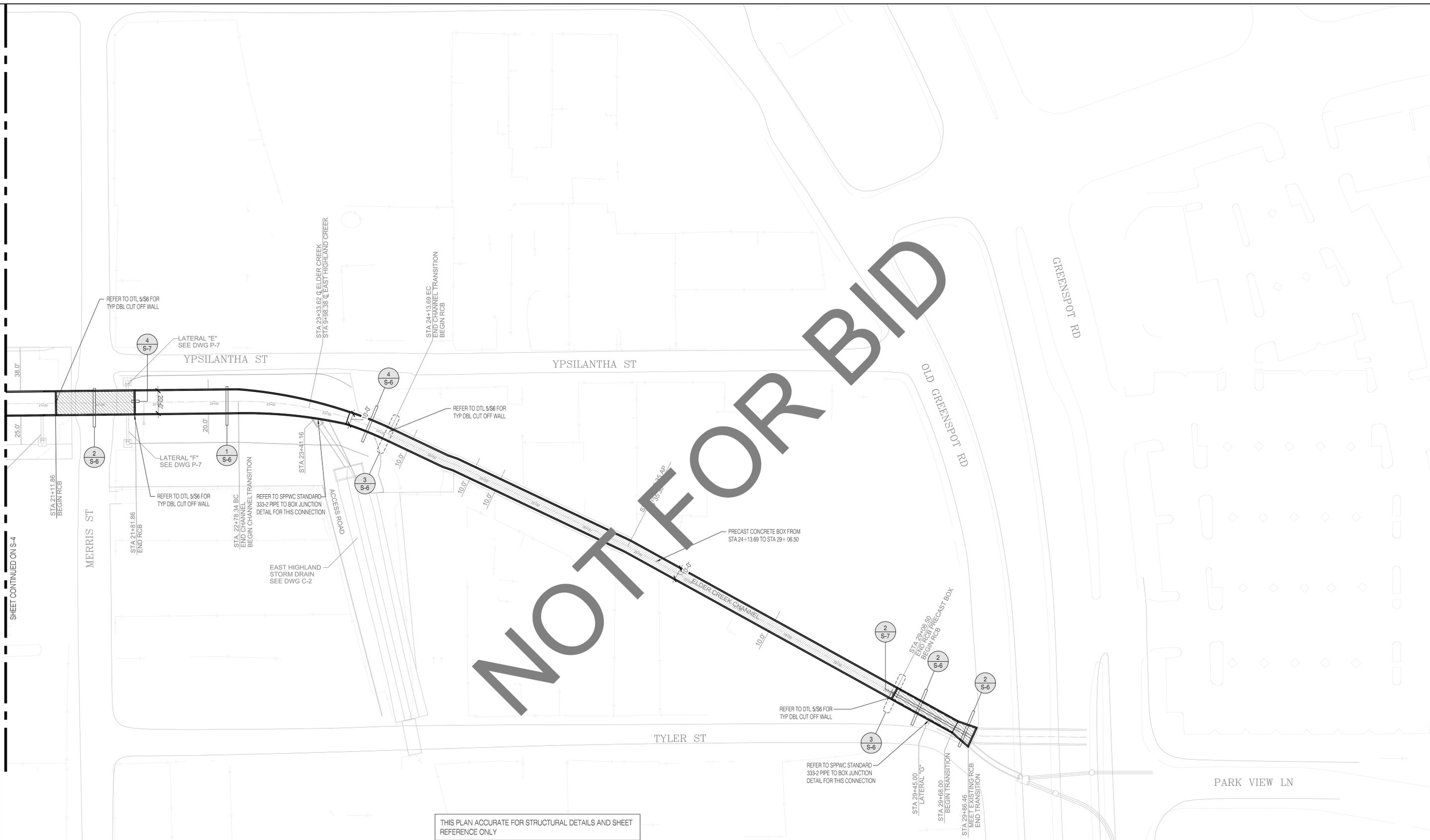
FILE NO.
 3-205-1C

DRAWING NO.
 S-4

SHEET NO.
 18 of 29

SHEET CONTINUED ON S-5

NOT FOR BID



THIS PLAN ACCURATE FOR STRUCTURAL DETAILS AND SHEET REFERENCE ONLY

SUBMITTED BY:

SANDY FONG, P.E. 2024.02.29
 DATE

REVIEWED BY:

SHAWN LOTHROP, S.E. 2024.02.29
 DATE

INNOVATIVE STRUCTURAL ENGINEERING, INC
 27369 VIA INDUSTRIA TEMECULA CA 92590
 TELE: 951.600.0032

DESIGNED BY: S.F. REVD BY: S.L. DRAWN BY: S.F.



REVISIONS			
MARK	DATE	DESCRIPTION	BY:

SUBMITTED BY:
ELOY RUVALCABA, P.E. 3/13/2024
 DATE

RECOMMENDED BY:
DAVID L. DRAKE, P.E. 3/13/24
 DATE

APPROVED BY:
MERVAT MERALI, P.E. 3/21/24
 DEPUTY DIRECTOR DATE

PROJ. ENGR. E.R. DESIGNED BY: --/-- REVD BY: D.D. DRAWN BY: --

SAN BERNARDINO COUNTY
 FLOOD CONTROL DISTRICT

PLUNGE CREEK SYSTEM

ELDER CREEK

STRUCTURAL
 PLANS AND DETAILS

DATE
 DEC 2023

SCALE

FILE NO.
 3-205-1C

DRAWING NO.
 S-5

SHEET NO.
 19 of 29

