Span, S			12′												14′												16′											
Wall Height, H			6′		8′		10′		12′		14′		15′		6′		8′		10′		12′		14′		15′		6′		8′		10′		12′		14′		15′	
Max Earth Cover			10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Concrete	Roof T1		11"	1′-1"	11"	1′-1"	11"	1′-1"	11"	1′-1"	1′-0½"	1′-1"	1′-0½"	1′-2"	11"	1′-2"	11"	1′-2"	11"	1′-2"	11"	1′-2"	1′-0"	1′-2"	1′-0"	1′-2"	1′-2"	1′-4"	1′-2"	1′-4"	1′-2"	1′-4"	1′-2"	1′-4"	1′-2"	1′-4"	1′-2"	1′-4"
Concrete	Walls T2		11"	1′-1"	11"	1′-1"	11"	1′-3"	1′-0"	1′-6"	1′-2½"	1′-8"	1′-4"	1′-9½"	11"	1′-0"	11"	1′-2"	11"	1′-4"	1′-0"	1′-6"	1′- 2½"	1′-8½"	1′-4"	1′-9"	11"	1′-2"	11"	1′-2"	1′-0"	1′-4½"	1′-0½"	1′-6½"	1′-2"	1′-8"	1′-3"	1′-9"
Reinforcement	Spacing		12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
Reinforcement	"a"	Bar size	#7	#7	#7	#7	#7	#7	#7	#7	#7	#8	#7	#8	#7	#8	#7	#8	#7	#8	#7	#8	#7	#8	#7	#8	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9
Reinforcement	"b"	Bar size	#6	#6	#6	#6	#6	#7	#6	#7	#6	#8	#7	#8	#6	#7	#6	#7	#6	#7	#6	#7	#6	#7	#7	#7	#6	#8	#6	#8	#6	#8	#7	#8	#7	#8	#7	#8
Reinforcement	"b"	*"Bw" - Cut-off Length	4′-4"	5′-0"	4′-4"	5′-3"	4′-4"	5′-3"	4′-4"	5′-3"	4′-4"	5′-3"	4′-4"	5′-3"	5′-0′	5′-6"	5′-6"	6′-0"	5′-6"	6′-0"	5′-6"	6′-0"	5′-6"	6′-0"	5′-6"	6′-0"	5′-6"	6′-0"	5′-9"	6′-6"	5′-9"	7′-0"	5′-9"	7′-0"	5′-9"	7′-0"	5′-9"	7′-0"
Reinforcement	"c"	Bar size	#6	#6	#6	#6	#6	#7	#6	#7	#6	#8	#6	#8	#6	#7	#6	#7	#6	#7	#6	#7	#6	#7	#7	#7	#6	#8	#6	#8	#6	#8	#7	#8	#7	#8	#7	#8
Reinforcement	"c"	"C" - Cut-off Length	2′-0"	2′-0"	2′-0"	2′-3"	2′-0"	2′-6"	2′-0"	2′-8"	2′-6"	3′-0"	2′-6"	3′-3"	2′-0"	2′-6"	2′-0"	2′-6"	2′-0"	3′-0"	2′-6"	3′-3"	2′-9"	3′-6"	3′-0"	3′-6"	2′-0"	2′-9"	2′-0"	3′-0"	2′-3"	3′-3"	2′-6"	3′-6"	2′-9"	3′-9"	3′-0"	4′-0"
Reinforcement	"d"	Bar size	#6	#6	#6	#6	#7	#7	#8	#8	#9	#9	#9	#9	#6	#6	#6	#6	#6	#6	#8	#8	#9	#9	#9	#9	#6	#6	#6	#6	#6	#6	#7	#7	#9	#9	#9	#9
Reinforcement	"e"	Bar size	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
Reinforcement	Ties @ Walls		Not Req	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	Not Req	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	Not Req	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
Quantities	Concrete CF/LF		24.7	29.3	28.3	33.7	32.0	41.7	37.8	53.3	49.9	54.3	56.3	72.9	26.5	34.1	30.2	38.7	33.8	47.1	39.7	56.8	51.3	69.2	57.7	73.9	32.8	39.4	36.5	44.1	42.0	53.5	47.1	63.4	55.1	73.4	60.1	79.5
Quantities	Reinforcement lb/LF		197	212	232	240	282	321	345	390	431	532	466	561	213	276	249	307	276	340	364	433	448	519	506	543	230	356	268	392	296	432	385	496	520	638	546	666

* ⌈ shape bars vertical legs may be spliced per Standard Specifications.

Span, S			18′												20′											
Wall Height, H			6′		8′		10′		12′		14′		15′		6′		8′		10′		12′		14′		15′	
Max Earth Cover			10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′	10′	20′
Concrete	Roof T1		1′-4"	1′-6"	1′-4"	1′-6"	1′-4"	1′-6"	1′-4"	1′-6"	1′-4"	1′-6"	1′-4"	1′-6"	1′-6"	1′-8"	1′-6"	1′-8"	1′-6"	1′-8"	1′-6"	1′-8"	1′-6"	1′-8"	1′-6"	1′-9"
Concrete	Walls T2		11"	1′-2"	1′-0"	1′-3"	1′-1"	1′-4"	1′-2"	1′-6"	1′-3"	1′-8"	1′-4"	1′-9"	11"	1′-4"	1′-0"	1′-6"	1′-0"	1′-7"	1′-0"	1′-8"	1′-2"	1′-8"	1′-2"	1′-9"
Reinforcement	Spacing		12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"	12"
Reinforcement	"a"	Bar size	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9	#8	#9
Reinforcement	"b"	Bar size	#7	#8	#7	#8	#7	#8	#7	#8	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9	#8	#9	#8	#9
Reinforcement	"b"	*"Bw" - Cut-off Length	6′-0"	6′-6"	6′-6"	7′-3"	6′-9"	7′-9"	6′-9"	8′-0"	6′-9"	8′-0"	6′-9"	8′-0"	6′-0"	7′-0"	6′-0"	7′-6"	6′-0"	7′-9"	6′-0"	7′-9"	6′-0"	7′-9"	6′-0"	7′-9"
Reinforcement	"c"	Bar size	#7	#8	#7	#8	#7	#8	#7	#8	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9	#7	#9	#8	#9	#8	#9
Reinforcement	"c"	"C" - Cut-off Length	2′-0"	3′-0"	2′-0"	3′-3"	2′-0"	3′-6"	2′-6"	3′-9"	3′-0"	4′-3"	3′-3"	4′-3"	2′-0"	3′-6"	2′-0"	3′-9"	2′-0"	4′-0"	2′-6"	4′-3"	3′-0"	4′-6"	3′-3"	4′-6"
Reinforcement	"d"	Bar size	#6	#6	#6	#6	#6	#6	#7	#8	#8	#8	#9	#9	#6	#6	#6	#6	#6	#6	#7	#7	#8	#8	#9	#9
Reinforcement	"e"	Bar size	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4	#4
Reinforcement	Ties @ Walls		#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#4 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12	#5 @ 12
Quantities	Concrete CF/LF		38.4	45.5	43.7	51.8	49.6	58.7	56.1	68.5	63.3	79.7	68.6	82.3	44.8	54.8	50.0	63.3	54.0	71.3	58.0	79.9	67.2	86.6	69.5	94.6
Quantities	Reinforcement lb/LF		310	385	342	424	374	476	451	579	529	685	599	759	330	460	360	504	390	544	468	631	592	714	663	791

* ⌈ shape bars vertical legs may be spliced per Standard Specifications.

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS

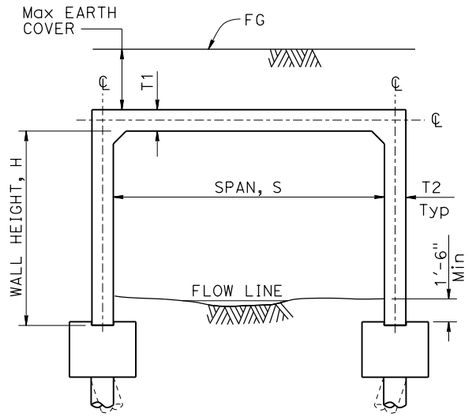
REGISTERED CIVIL ENGINEER — DATE X

PLANS APPROVAL DATE

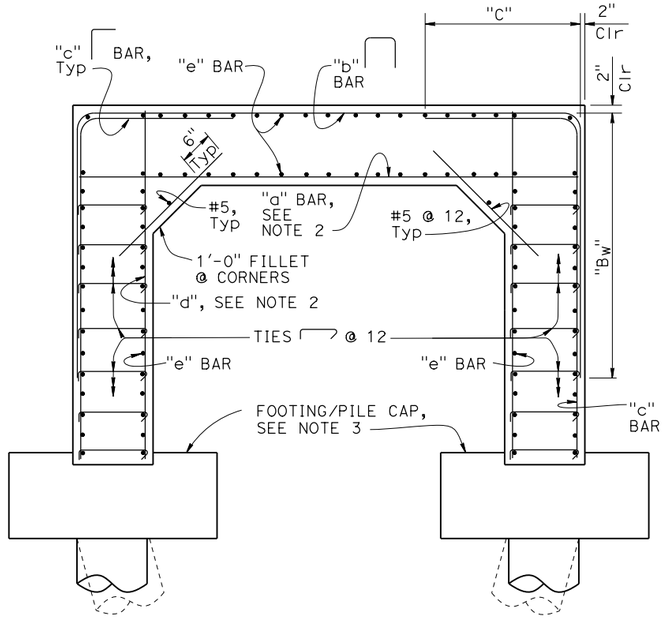
REGISTERED PROFESSIONAL ENGINEER — No. X — Exp. X — CIVIL — STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

THE REGISTERED CIVIL ENGINEER FOR THE PROJECT IS RESPONSIBLE FOR THE SELECTION AND PROPER APPLICATION OF THE COMPONENT DESIGN AND ANY MODIFICATIONS SHOWN.



BOTTOMLESS CULVERT



NOTES:

1. For height less than that shown in table, use next greater table height slab, wall dimensions, and reinforcing steel. Make necessary changes in bar lengths, number of spacers and quantities.
2. The "a" and "d" bars are at half spacings.
3. For footing details not shown, see "CIP BOTTOMLESS CULVERT FOUNDATION DETAILS" sheet.
4. Quantities are approximate and for design purpose only.

TYPICAL REINFORCEMENT

NO SCALE

BRIDGE STANDARD DETAILS

xs17-051	September 2023	The components of the Bridge Standard Details have been prepared under the responsible charge of the Technical Owner, a registered civil engineer in the State of California
FILE NO.	APPROVAL DATE	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

BRIDGE NO. XX-XXXX
POST MILE X.X

CIP BOTTOMLESS CULVERT PILE FOUNDATION/FOOTINGS ON ROCK

Refer to: http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/bridge-standard-detail-sheets/index.html

DATE PLOTTED => 1-SEP-2023 TIME PLOTTED => 15:32
FILE => 201605-xs17-051.dgn USERNAME => s136481
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: XXXX COUNTY/ROUTE/ZONE: XXX/XXX/X
PROJECT NUMBER & PHASE: XXXXXXXXXX1 CONTRACT No.: XX-XXXX4

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES				SHEET	OF
				X	X