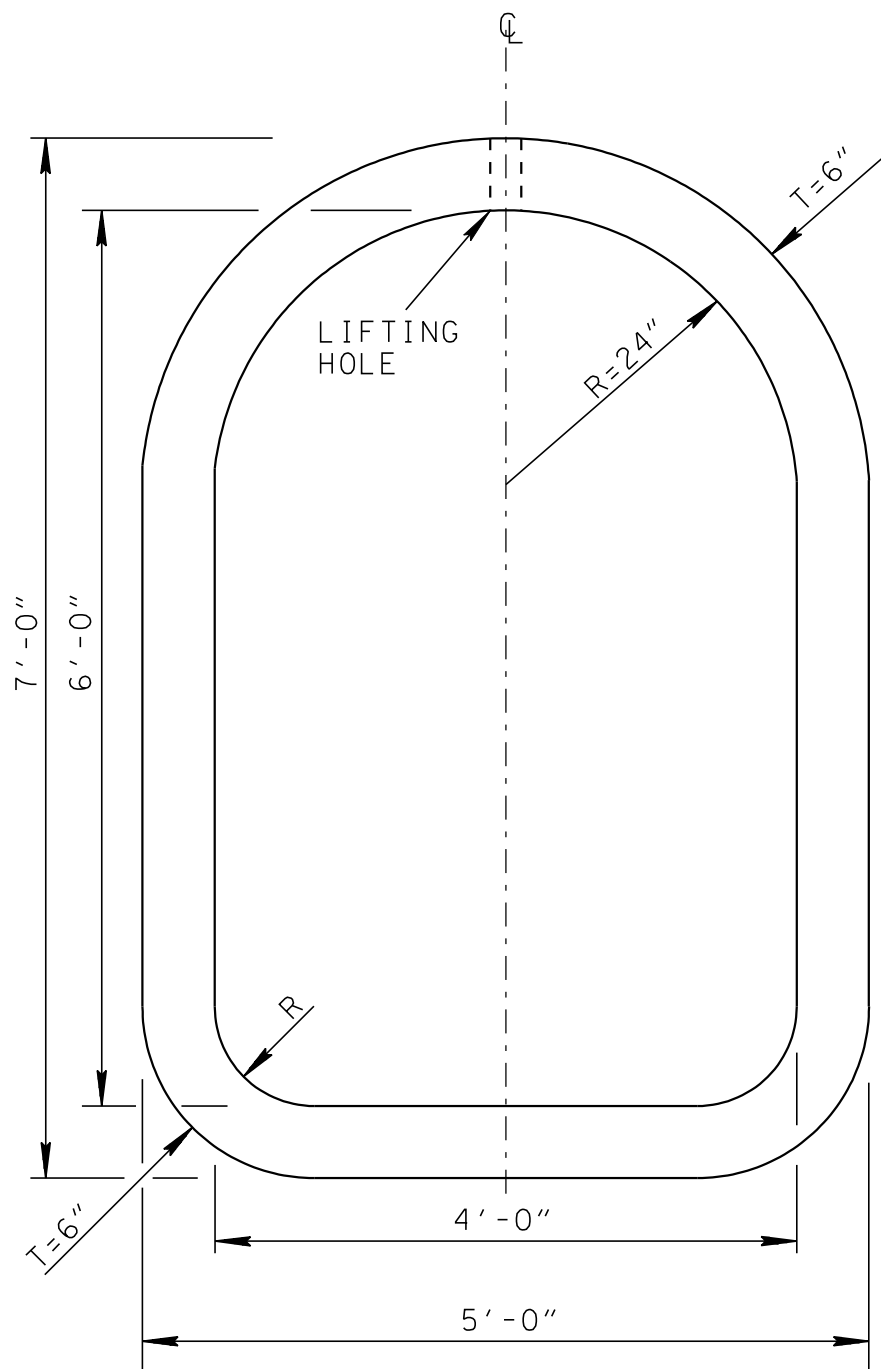
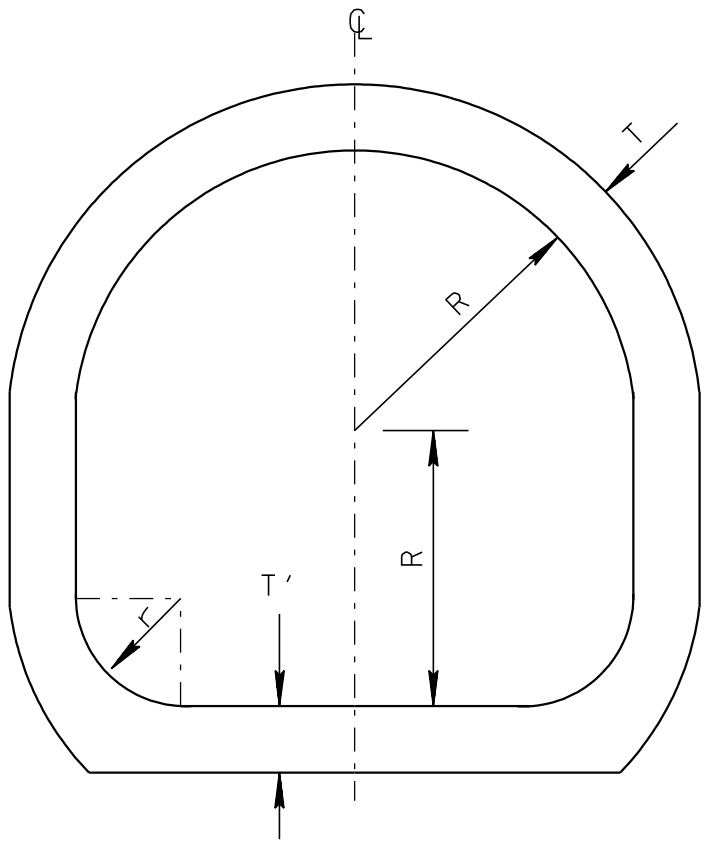
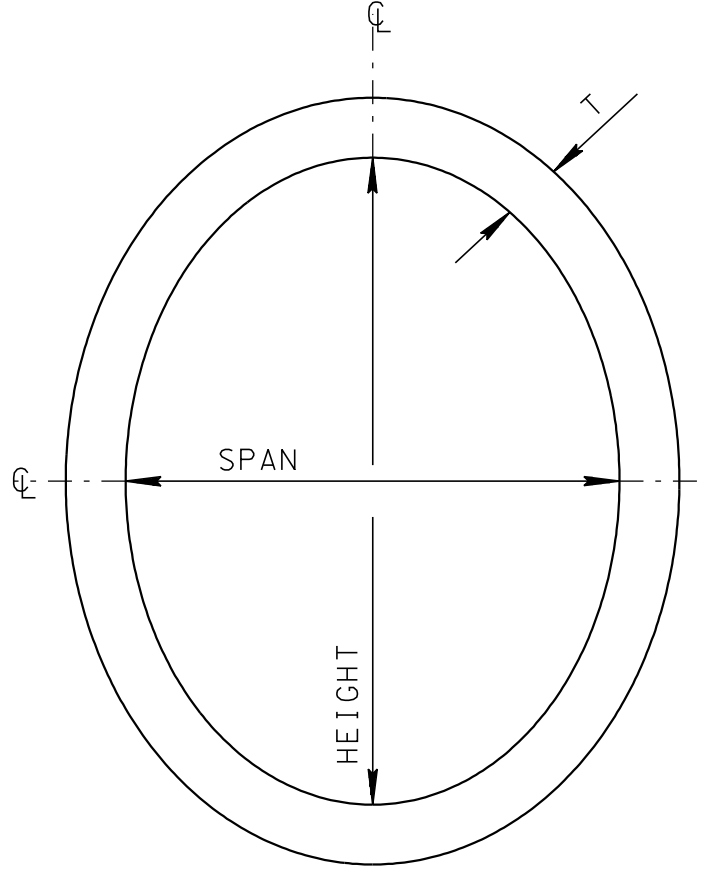




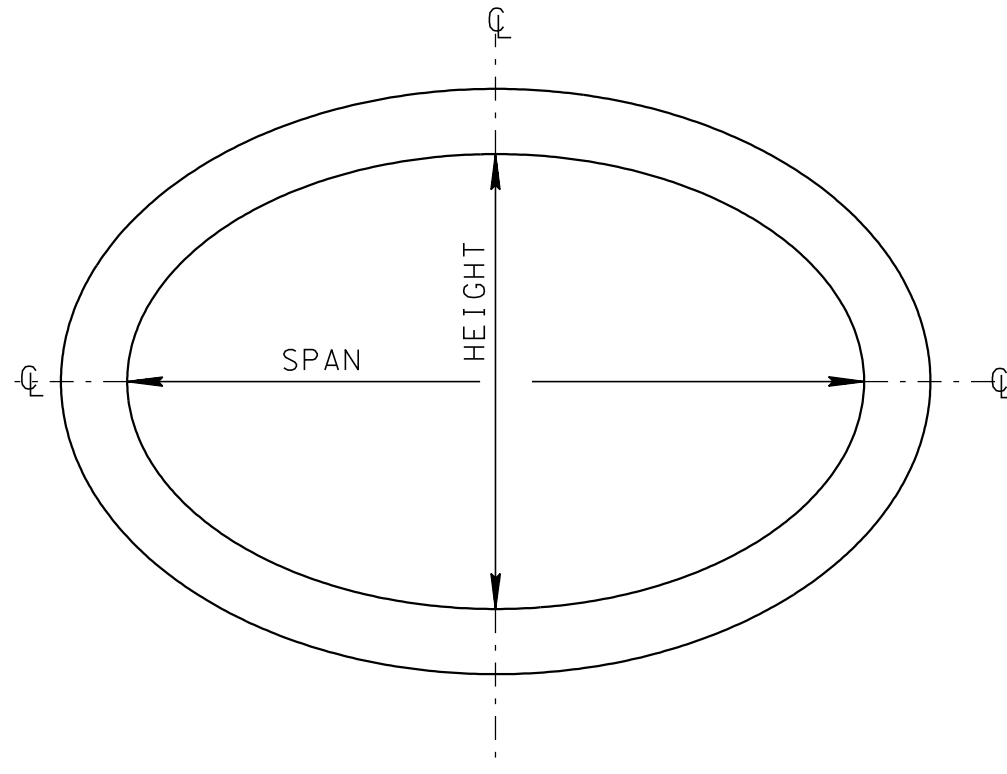
CATTLE PASS CONC. PIPE



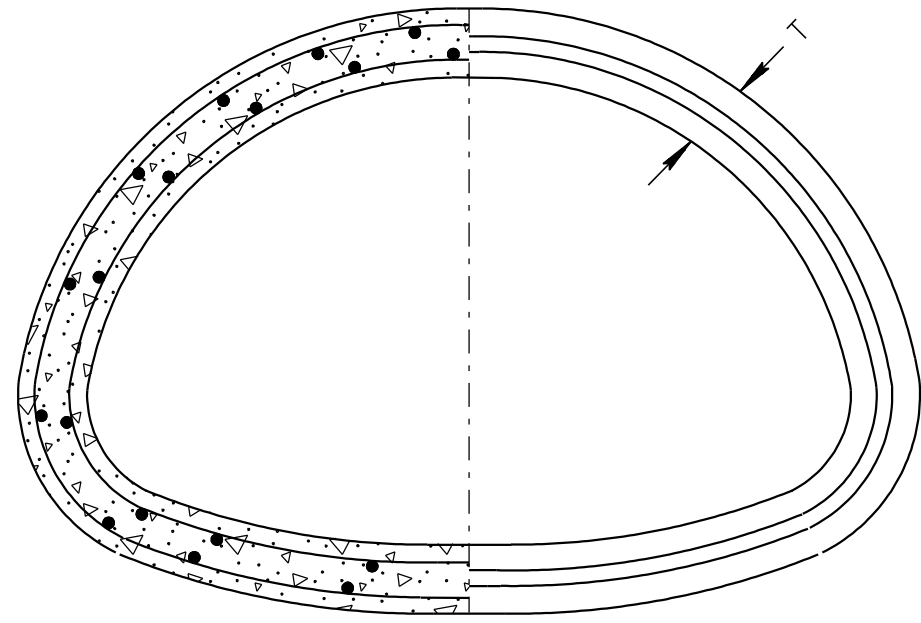
FLAT BASE CONC. PIPE



VERTICAL OVAL PIPE



HORIZONTAL OVAL PIPE



REINFORCED
CONC. ARCH PIPE

REV. 6-21-71: DETAILS OF REINFORCED CONCRETE ARCH PIPE ADDED.

REV. 7-1-72: CHANGED DEPARTMENT NAME. CHANGED STANDARD REFERENCE DWG. NOS. IN NOTES.

REV. 1-1-76: CHANGED DWG. NO. FROM CO-1-1 TO D-PO-1.

REV. 3-15-76: DELETED REFERENCE TO OLD DWG. NO., SUBSTITUTED NEW DWG. NO.

REV. 7-17-81: CHANGED ITEM NO. TO AGREE WITH NEW SPECIFICATION BOOK.

REV. 5-27-01: MODIFIED GENERAL NOTES ③ AND ④. ADDED NOTE ⑤.

OVAL CONCRETE CULVERT PIPES									
ROUND PIPE EQUIVALENT	NOMINAL END AREA SQ. FT.	HORIZ. OVAL PIPE		VERT. OVAL PIPE		WALL THICKNESS "T" INCHES	LAYING LENGTH FEET	NOMINAL WEIGHT PER FT. LB.	MAXIMUM FILL HEIGHT FOR CLASS III PIPE HORIZ. OVAL VERT. OVAL
		SPAN	HEIGHT	SPAN	HEIGHT				
18"	1.8	23"	14"			2¾	8	195	10
24"	3.3	30"	19"			¾	8	300	10
27"	4.1	34"	22"			½	8	365	10
30"	5.1	38"	24"			¾	8	430	10
33"	6.3	42"	27"			¾	8	475	10
36"	7.4	45"	29"	29"	45"	½	8	625	10 13
39"	8.8	49"	32"	32"	49"	¾	8	720	10 20
42"	10.2	53"	34"	34"	53"	5	8	815	10 20
48"	12.9	60"	38"	38"	60"	½	8	1000	10 20
54"	16.6	68"	43"	43"	68"	6	8	1235	10 20
60"	20.5	76"	48"	48"	76"	½	8	1475	10 21
66"	24.8	83"	53"	53"	83"	7	8	1745	10 22
72"	29.5	91"	58"	58"	91"	½	8	2040	10 22
78"	34.6	98"	63"	63"	98"	8	8	2350	10 24
84"	40.1	106"	68"	68"	106"	½	8	2680	10 24
90"	46.1	113"	72"	72"	113"	9	8	3050	10 24
96"	52.4	121"	77"	77"	121"	½	8	3420	10 24
102"	59.2	128"	82"	82"	128"	¾	8	3725	10 -
108"	66.4	136"	87"	87"	136"	10	8	4050	10 -
114"	74.0	143"	92"	92"	143"	½	8	4470	10 -
120"	82.0	151"	97"	97"	151"	11	8	4930	10 -
132"	99.2	166"	106"	106"	166"	12	8	5900	10 -
144"	118.6	180"	116"	116"	180"	13	8	7000	10 -

② MAXIMUM FILL HEIGHT BASED ON BEDDING STANDARD, DWG. D-PB-1. GREATER FILL HEIGHTS PERMISSABLE WITH HIGHER TYPES OF BEDDING.

BEDDING MAT'L. (CL. B) FOR OVAL CONC. PIPE			
HORIZONTAL SPAN x HEIGHT	CU. YD. PER FT.	VERTICAL SPAN x HEIGHT	CU. YD. PER FT.
23"x14"	0.217		
30"x19"	0.256		
38"x24"	0.311		
45"x29"	0.371	29"x45"	0.421
53"x34"	0.433	34"x53"	0.491
60"x38"	0.488	38"x60"	0.556
68"x43"	0.555	43"x68"	0.632
76"x48"	0.625	48"x76"	0.711
83"x53"	0.694	53"x83"	0.787
91"x58"	0.770	58"x91"	0.873
98"x63"	0.846	63"x98"	0.954
106"x68"	0.927	68"x106"	1.045
113"x72"	1.000	72"x113"	1.126
121"x77"	1.087	77"x121"	1.223
128"x82"	1.166	82"x128"	1.308
136"x87"	1.252	87"x136"	1.404
143"x92"	1.343	92"x143"	1.500
151"x97"	1.441	97"x151"	1.608
166"x106"	1.523	106"x166"	1.817
180"x116"	1.838	116"x180"	2.036

① REINFORCED CONCRETE ARCH PIPE				
SPAN x HEIGHT	ROUND PIPE EQUIVALENT	WALL THICKNESS "T"	LAYING LENGTH FT.	NOMINAL WEIGHT PER FT. LBS.
22"x13"	18"	2½"	8	175
29"x18"	24"	3"	8	275
36"x23"	30"	3½"	8	385
44"x27"	36"	4"	8	595
51"x31"	42"	4½"	8	685
58"x36"	48"	5"	8	880
65"x40"	54"	5½"	8	1090
73"x45"	60"	6"	8	1320

① WHERE HORIZONTAL OVAL PIPE IS SPECIFIED, REINFORCED CONCRETE ARCH PIPE MAY BE SUBSTITUTED.

BEDDING MAT'L (CL. B) FOR FLAT BASE PIPE	
SPAN x HEIGHT	CU. YD. PER FT.
48"x72"	0.312
46"x46"	0.267
57"x57"	0.358
68"x68"	0.442
80"x80"	0.519
91"x91"	0.560
97"x97"	0.587

③ CATTLE PASS CULVERT PIPE

BEDDING MATERIAL (CL. B) FOR REINF. CONC. ARCH PIPE	
SPAN x HEIGHT	CU. YD. PER FT.
22"x13"	.181
29"x18"	.206
36"x23"	.247
44"x27"	.283
51"x31"	.323
58"x36"	.359
65"x40"	.410
73"x45"	.450

GENERAL NOTES

- ④ SPECIFICATIONS FOR FLAT BASE CONCRETE CULVERT PIPE AND CATTLE PASS CONCRETE CULVERT PIPE SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION.
- ⑤ OVAL PIPE DESIGNED FOR HORIZONTAL PLACEMENT MAY BE SUBSTITUTED FOR VERTICAL OVAL PIPE BUT UNDER NO CIRCUMSTANCES MAY OVAL PIPE DESIGNED FOR VERTICAL PLACEMENT BE SUBSTITUTED FOR HORIZONTAL OVAL PIPE.
- ⑥ FOR DETAILS OF WINGWALLS, SEE STANDARD DRAWING NO. D-PE-5 FOR HORIZONTAL OVAL CONCRETE PIPES; STANDARD DRAWING NOS. D-PE-6 AND D-PE-6A FOR VERTICAL OVAL CONCRETE PIPES; AND STANDARD DRAWING NOS. D-PE-7 AND D-PE-7A FOR FLAT BASE AND CATTLE PASS CONCRETE PIPES.
- ⑦ SPECIFICATIONS FOR REINFORCED CONCRETE ARCH PIPE SHALL CONFORM TO AASHTO M206 FOR THE SPECIFIED DIAMETERS AND STRENGTH CLASSES.
- ⑧ SPECIFICATIONS FOR REINFORCED CONCRETE OVAL PIPE SHALL CONFORM TO AASHTO M207 FOR THE SPECIFIED DIAMETERS AND STRENGTH CLASSES.

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

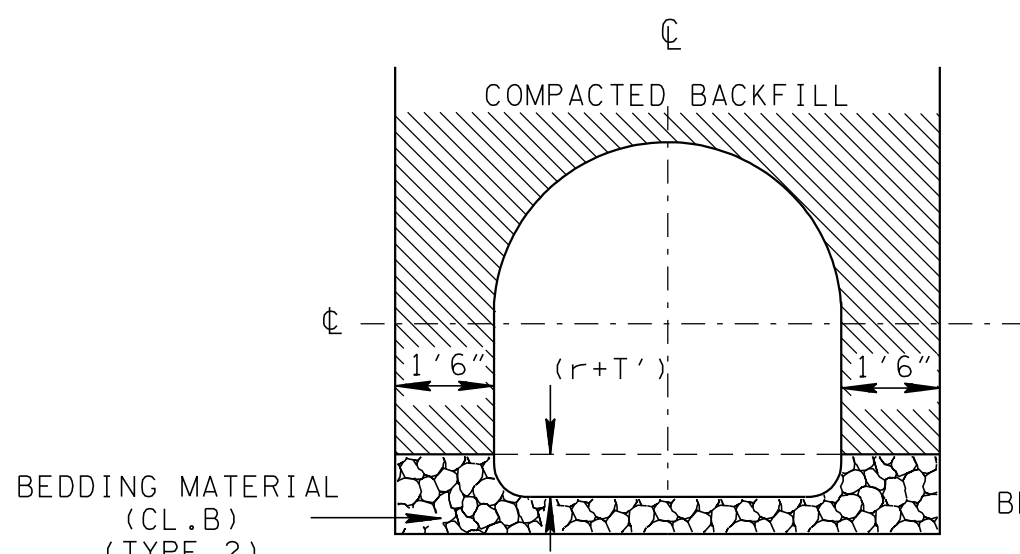
STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

STANDARD
OVAL & FLAT
BASE CONCRETE
CULVERT PIPE

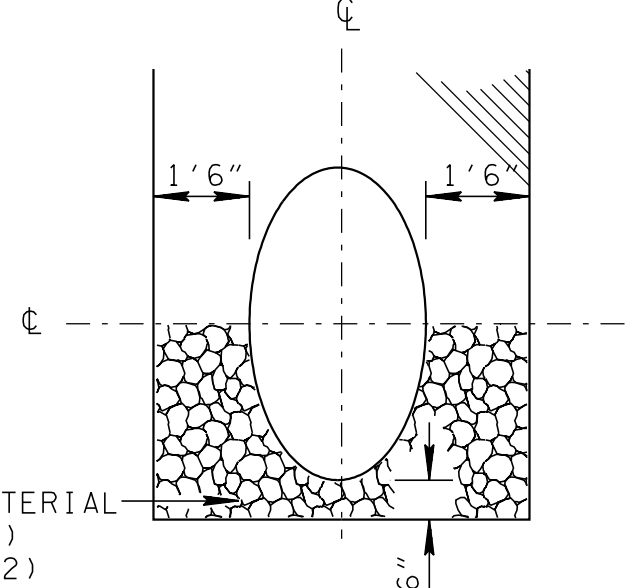
D-PO-1

FLAT BASE CONCRETE CULVERT PIPES											
ROUND PIPE EQUIVALENT	NOMINAL END AREA SQ. FT.	NOMINAL SIZE	T	T'	R	r	WEIGHT PER FT. LB.	LAYING LENGTH FEET	MAXIMUM FILL IN FEET		
									CL. III		
60"	22.10	48"x72"	6"	-	24"	9"	1450	4 & 6	10		
48"	12.87	46"x46"	5"	5½"	23"	9"	988	4 & 8	10		
60"	19.81	57"x57"	6"	7"	28½"	10½"	1537	4 & 8	12		
72"	28.0	68"x68"	8"	10"	34"	12"	2420	4 & 8	10		
84"	38.9	80"x80"	8"	10"	40"	16"	2930	4 & 6	13		
96"	50.4	91"x91"	8½"	10"	45½"	17½"	3300	4 & 6	14		
102"	57.3	97"x97"	9"	10"	48½"	18½"	3900	4 & 6	15		

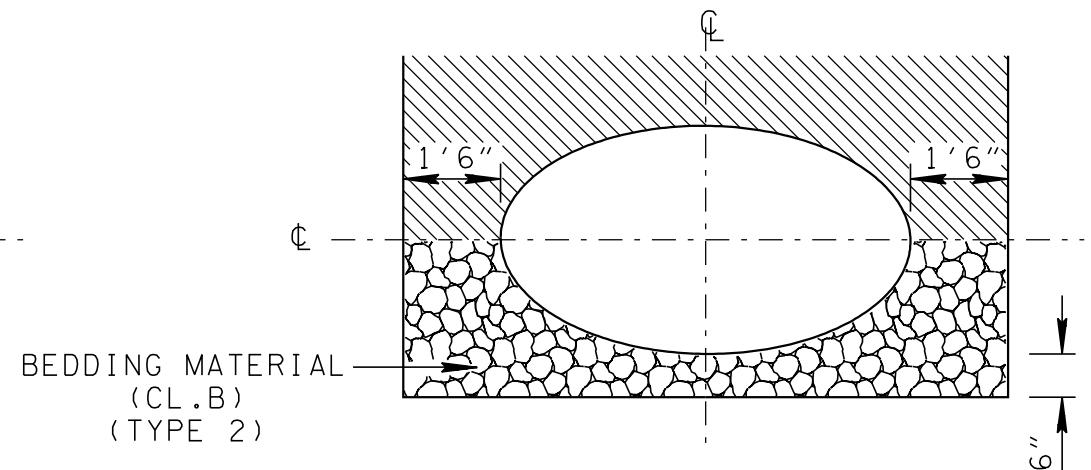
③ CATTLE PASS CULVERT PIPE



FLAT BASE PIPE



VERTICAL OVAL PIPE



HORIZONTAL OVAL PIPE

SKETCHES SHOWING PLACING OF BEDDING MATERIAL (CL. B) FOR OVAL AND FLAT BASE PIPE CULVERT. FOR OTHER BEDDING DETAILS, SEE STANDARD DRAWING D-PB-1.