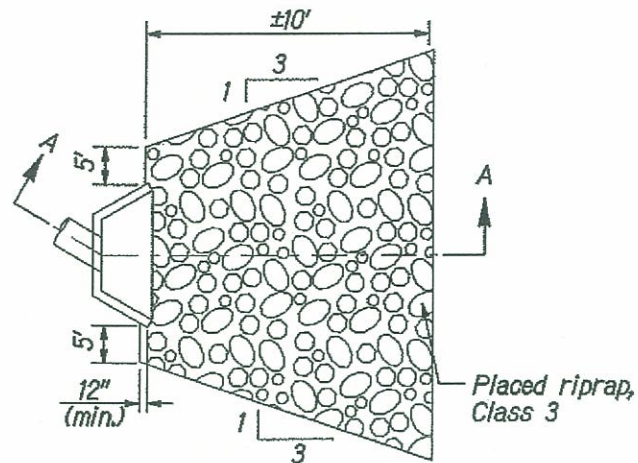


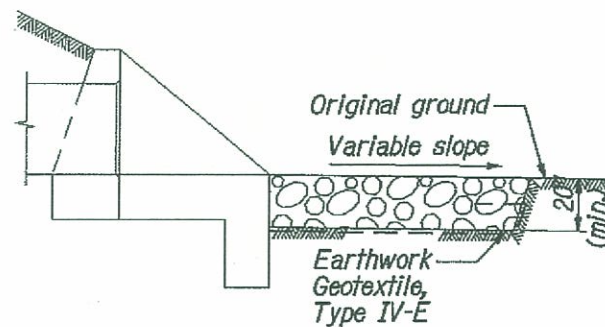
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP & TI 200(2)	L8	L15

NOTE:

1. Dimensions not labeled are in inches.
2. Excavation for placement of riprap will not be measured for payment.
3. Furnish geotextile materials conforming to subsection 714.01 (Earthwork Geotextile, Type IV-E).

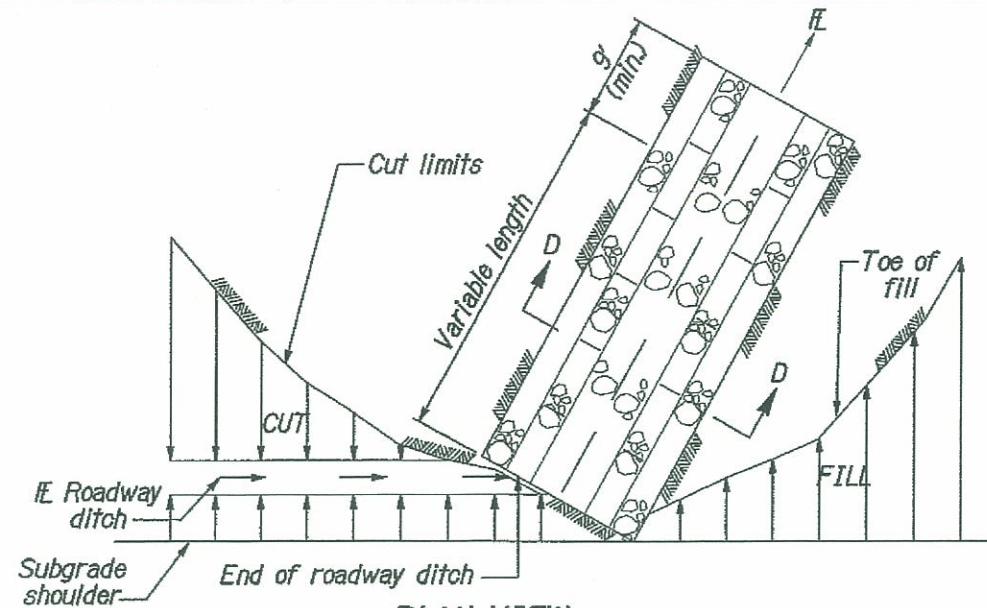


PLAN VIEW

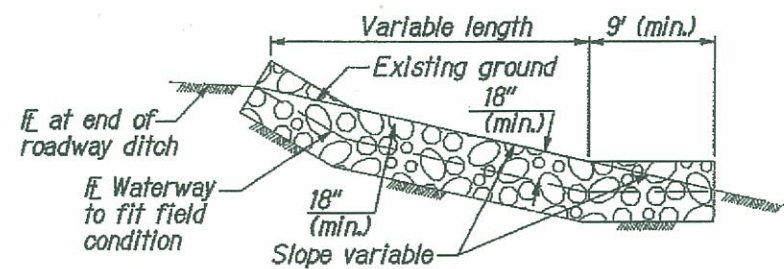


SECTION A-A
PROTECTIVE APRON

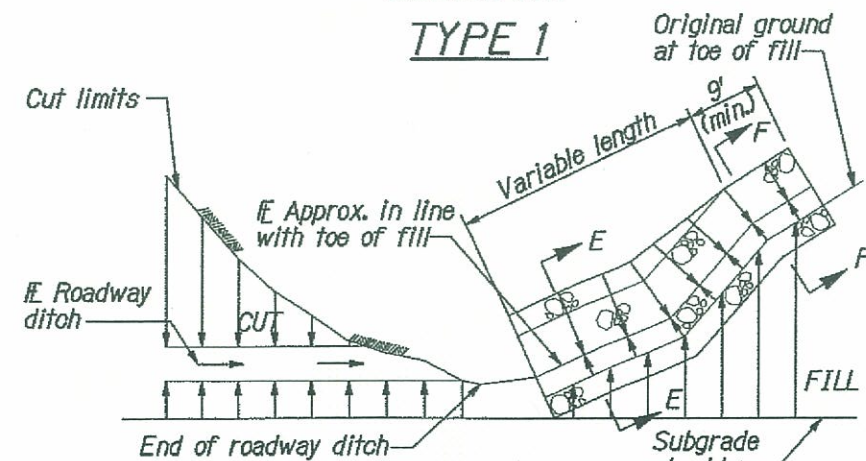
Placed Riprap at
Circular Culvert with
Stone Masonry Structure



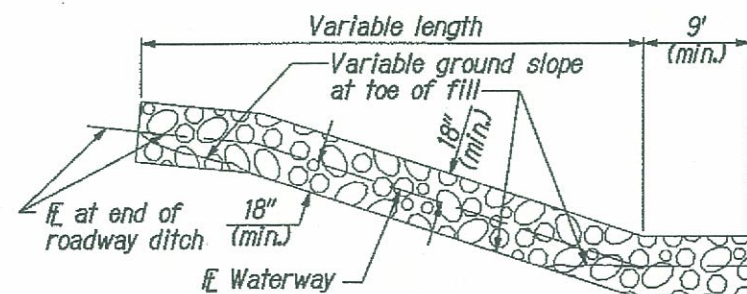
PLAN VIEW



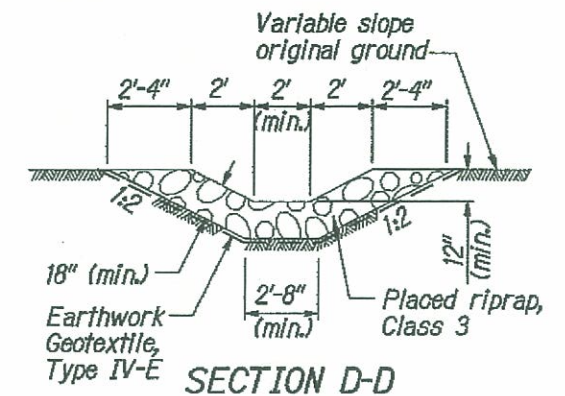
ELEVATION
TYPE 1



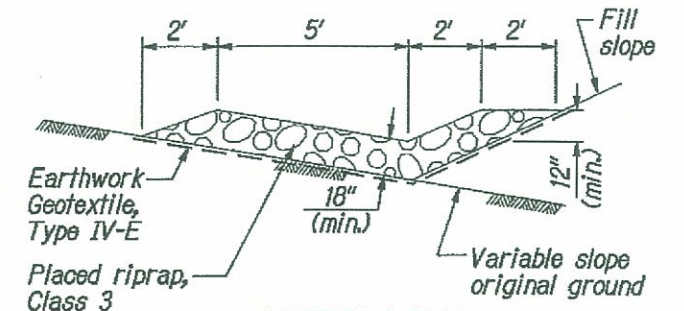
PLAN VIEW



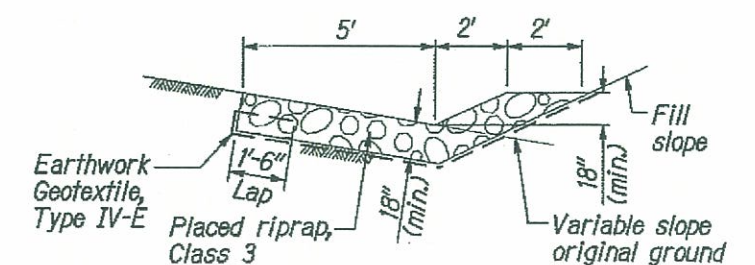
ELEVATION
TYPE 2



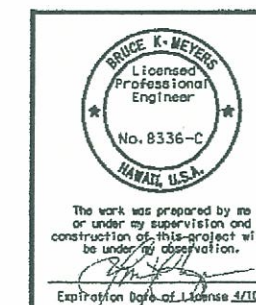
SECTION D-D



SECTION E-E



SECTION F-F



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL DETAIL C251-50

PLACED RIPRAP

Scale: N.T.S.

Date: June 5, 2009

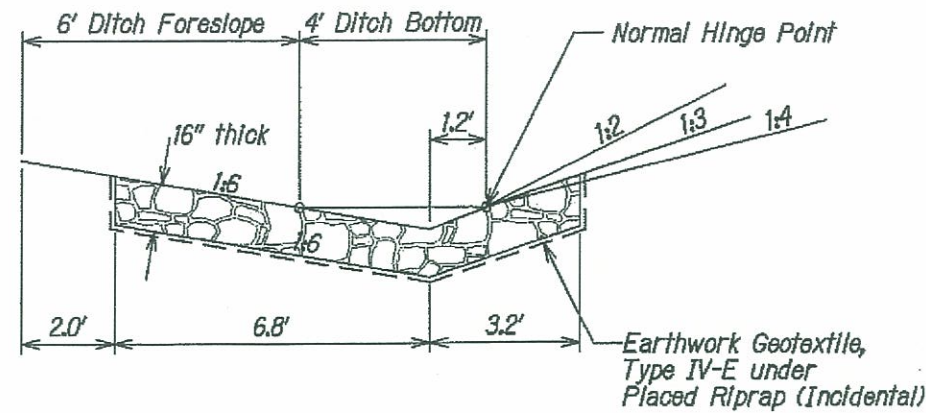
SHEET No. 1 OF 1

Locations of Riprap Ditch Lining

Station Range	Side of Road	Length
1168+00 to 1170+20	R	220
1186+25 to 1192+00	L	575
1191+00 to 1192+50	R	150
1202+72 to 1207+45	R	473
1208+00 to 1223+00	L	1500
1253+00 to 1258+60	R	560
1302+00 to 1303+58	R	158
1304+00 to 1309+55	R	555
1309+97 to 1319+00	R	903
1338+00 to 1347+36	L	936
1338+00 to 1365+00	R	2700
1367+00 to 1371+50	R	450
1370+00 to 1378+19	L	819
1386+00 to 1392+41	R	641
1422+00 to 1434+10	L	1210
1428+00 to 1434+30	R	630
1445+00 to 1449+25	R	425
1463+50 to 1468+50	R	500
1463+00 to 1469+05	L	605
1486+50 to 1490+50	L	400
1508+50 to 1522+64	R	1414
1511+25 to 1520+55	L	930

REVISED 07/14/09
AMENDMENT A002

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP & TI 200(2)	L9	L15

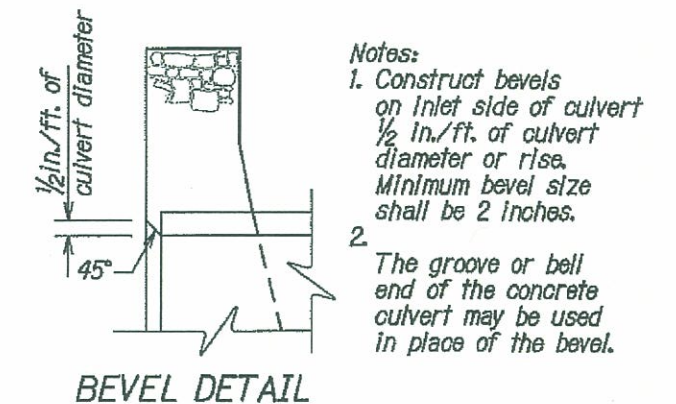
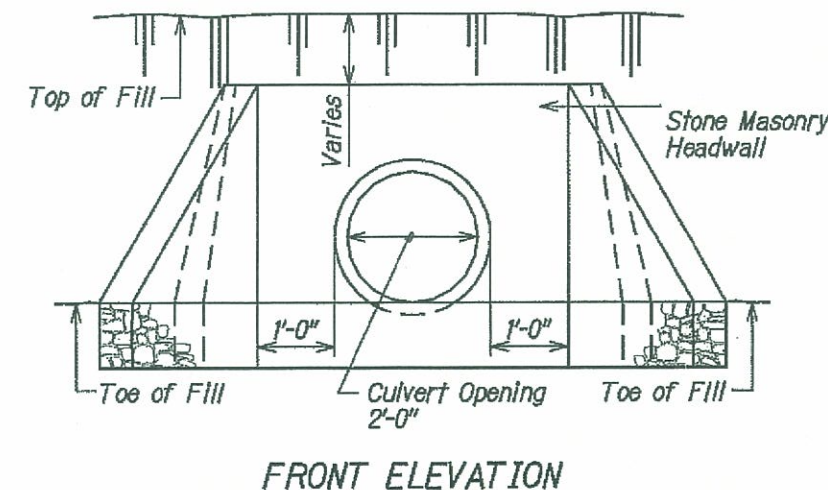
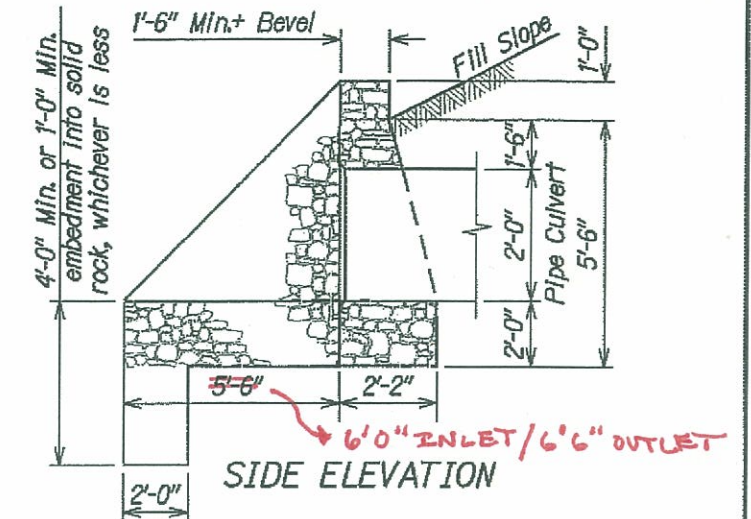
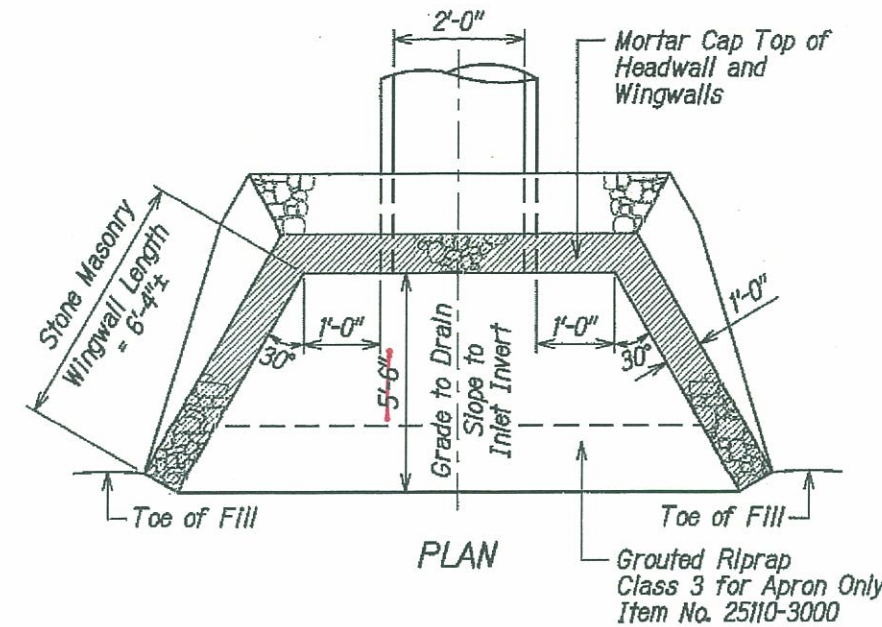


Riprap Ditch Detail - Class 3

Approximate Locations of Riprap Ditch Lining

*All locations to be verified with the CO.

Station Range	Side of Road	Length
1169+00 to 1171+50	R	250'
1186+25 to 1192+00	L	575'
1191+00 to 1192+50	R	150'
1202+75 to 1206+50	R	375'
1206+25 to 1221+50	L	1525'
1253+00 to 1256+50	L	350'
1283+00 to 1284+00	L	100'
1303+50 to 1309+50	L	600'
1306+00 to 1309+50	R	350'
1313+00 to 1315+25	L	225'
1313+50 to 1319+25	R	575'
1337+00 to 1344+50	L	750'
1337+50 to 1356+00	R	1850'
1364+50 to 1365+00	R	50'
1373+00 to 1377+25	L	425'
1388+75 to 1391+25	R	250'
1399+25 to 1399+50	R	25'
1401+75 to 1402+50	L	75'
1402+00 to 1403+00	R	100'
1422+75 to 1433+50	L	1075'
1429+25 to 1430+50	R	125'
1463+50 to 1468+75	L	525'
1464+50 to 1468+00	R	350'
1486+50 to 1491+00	L	450'
1508+50 to 1521+50	R	1300'
1511+25 to 1520+00	L	875'



STONE MASONRY CULVERT END TREATMENT

BRUCE K. MEYERS Licensed Professional Engineer No. 8336-C HAWAII, U.S.A. The work was prepared by me or under my supervision and construction of this project will be under my observation. Expiration Date of License 4/10	U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION STONE MASONRY STRUCTURE & PLACED RIPRAP Scale: N.T.S. Date: June 5, 2009 SHEET No. 1 OF 1
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METAL ROUND PIPE CULVERT																
FILL HEIGHT AND METAL THICKNESS TABLE																
HELICAL LOCKSEAM AND WELDED SEAM PIPE CULVERT																
PIPE SIZE	MINIMUM COVER	STEEL														
		2"x 1/2" CORRUGATIONS					3"x 1" CORRUGATIONS					5"x 1" CORRUGATIONS				
		METAL THICKNESS IN INCH/GAGE														
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN FEET														
DIAMETER INCHES	INCHES	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.064/16	0.079/14	0.109/12	0.138/10	0.168/8
12	12	100	100													
15	12	100	100													
18	12	100	100	100												
24	12	100	100	100												
30	12	85	100	100												
36	12	71	88	100	100		81	100	100							
42	12	60	76	100	100	100	69	87	100							
48	12	53	66	93	100	100	61	76	100			54	68	95		
54	18		59	82	100	100	54	67	95	100	100	48	60	84	100	100
60	18			74	95	100	48	61	85	100	100	43	54	76	98	100
66	18				87	100	44	55	78	100	100	39	49	69	89	100
72	18				79	97	40	50	71	92	100	36	45	63	81	100
78	18					86	37	47	66	85	100	33	41	58	75	92
84	18					75	34	43	61	78	96	31	38	54	70	85
90	18						32	40	57	73	90	29	36	50	65	80
96	18							38	53	69	84		34	47	61	75
102	18							35	50	65	79		32	44	57	70
108	18								47	61	75			42	54	66
114	18								45	58	71			40	51	63
120	18								42	55	67			38	49	60
126	18									52	64				46	57
132	18									50	61				44	50
138	18									48	58				42	50
144	18										56					50

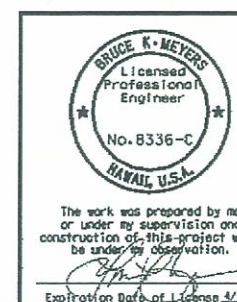
MINIMUM COVER	ALUMINUM											
	2 2/3"x 1/2" CORRUGATIONS						3"x 1" CORRUGATIONS					
	METAL THICKNESS IN INCH/GAGE											
	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN FEET											
INCHES	0.060/16	0.075/14	0.105/12	0.135/10	0.060/16	0.075/14	0.105/12	0.135/10	0.060/16	0.075/14	0.105/12	0.135/10
12	100	100										
12	100	100										
12	100	100										
24	77	96	79	99								
24		77	63	82	71	89	100					
24		64	53	68	59	74	100	100				
24			45	58	50	62	89	100				
24			39	51	44	55	34	52				
24			54	41	39	49	31	46				
24				33		44	27	41				
24						40	25	37				
24						37	23	34				
24						34	21	32				
24							20	29				
24							18	27				
24								26				
24								24				
24								23				

METAL PIPE ARCH CULVERT																												
FILL HEIGHT AND METAL THICKNESS TABLE																												
HELICAL LOCKSEAM AND WELDED SEAM PIPE ARCH CULVERT																												
PIPE ARCH SIZE SPAN X RISE INCHES	CORNER RADIUS INCHES	MINIMUM COVER INCHES	STEEL														MINIMUM COVER INCHES	ALUMINUM										
			2"x 1/2" CORRUGATIONS				3"x 1" CORRUGATIONS				5"x 1" CORRUGATIONS							2 2/3"x 1/2" CORRUGATIONS				3"x 1" CORRUGATIONS						
			METAL THICKNESS IN INCH/GAGE															METAL THICKNESS IN INCH/GAGE										
			0.064/16	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.079/14	0.109/12	0.138/10	0.168/8	0.060/16		0.075/14	0.105/12	0.135/10								
MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN FEET																												
17 x 13	3 1/2	12	13															24	13									
21 x 15	4 1/8	12	12															24	12									
24 x 18	4 1/8	12	13															24	13									
28 x 20	5 1/2	12	13															24										
35 x 24	6 3/8	12	12															24										
42 x 29	8 1/4	12	12															24										
49 x 33	9 5/8	12		12														24										
57 x 38	11	12			12													24										
64 x 43	12 3/8	12				12												24										
71 x 47	13 3/4	12					12											24										
77 x 52	15 1/8	12						12										24										
83 x 57	16 1/2	12							12									24										
—	—	—																—										
60 x 46	18 3/4	12																24										
66 x 51	20 3/4	12																24										
73 x 55	22 1/8	12																24										
81 x 59	20 1/8	12								17	—							24										
87 x 63	22 3/8	12								17	—							24										
95 x 67	24 3/8	12								17	—							24										
103 x 71	26 1/8	18									17							24										
112 x 75	27 3/4	18									16							24										
117 x 79	29 1/2	18									16							24										
128 x 83	31 1/4	24										16						24										
137 x 87	33	24										16						24										
142 x 91	34 3/4	24											16					24										

NOTES:

- When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
- Fill heights exceeding 100 feet require special analysis by the Government.
- The fill heights in the table are for helical lockseam and welded seam pipe only. Fill heights for culvert pipe with annular corrugations are more restrictive than those of helical lockseam and welded seam pipe. Obtain approval before furnishing annular corrugated pipe.
- Measure minimum cover from the top of the pipe culvert to the top of pavement or top of future finished grade. Measure maximum fill height from the top of the pipe to the top of pavement or top of future finished grade. Minimum cover is 24 inches.
- Culvert types/sizes shown on sheets are acceptable for use.
- Steel pipe will not be allowed for this project.
- The pH of the soil, backfill and effluent shall be within range of 5.5 and 9.0 inclusive, and resistivity shall be not less than 500 ohm-centimeters.

NOTE: STEEL PIPE REFERENCES DELETED



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL C602-1
METAL PIPE CULVERT

Scale: N.T.S.

Date: June 5, 2009

SHEET No. 1 OF 1

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP & TI 200X2)	L11	L15

COUPLING BANDS FOR METAL PIPE CULVERT ^{1/}					
CORRUGATION SIZE ^{2/}	PIPE DIAMETER	PIPE-ARCH SPAN X RISE	MINIMUM BAND WIDTH		
			ANNULAR ^{3/} CORRUGATED BANDS	HELICALLY ^{4/} CORRUGATED BANDS	SEMI- ^{5/} CORRUGATED BANDS
INCHES	INCHES	INCHES	INCHES	INCHES	INCHES
1 1/2 by 1/4 2 2/3 by 1/2	underdrain ^{6/}	-	7	7	10 1/2
	12 to 36	17x13 to 42x29	7	12	10 1/2
	42 to 72	49x33 to 83x57	10 1/2	12	10 1/2
3 by 1	78 to 84	-	10 1/2	12	10 1/2
	36 to 72	42x29 to 81x59	12	14	10 1/2
5 by 1	78 to 144	87x63 to 142x91	12	14	10 1/2
	48 to 72	57x38 to 81x59	20	22	10 1/2
	78 to 144	87x63 to 142x91	20	22	10 1/2

^{1/} Fabricate annular, helical and semi-corrugated type coupling bands from the same metal as the connecting pipe. Provide coupling bands not more than 3 nominal sheet thicknesses thinner than the thickness of the pipe to be connected, and no thinner than 0.052 inch (18 gage) for steel or 0.048 inch (18 gage) for aluminum. Fasten coupling bands with the following sizes of bolt:

- 3/8" diameter - 18" (21"x15" pipe arch) or less
- 1/2" diameter - 21" (24"x18" pipe arch) or more

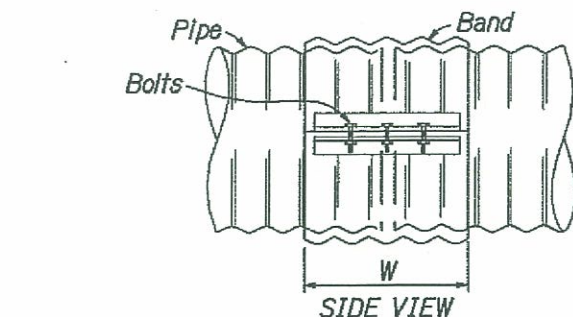
^{2/} For helically corrugated pipe with rerolled ends, the nominal corrugation size refers to the dimension of the end corrugation in the pipe.

^{3/} Use annular corrugated bands with pipes having annular corrugations or with helical pipe having rerolled ends to form annular corrugations. A 10 1/2 inch band is acceptable on pipe ends rerolled with 2 2/3 by 1/2 inch corrugations. A 12 inch band is acceptable on pipe ends rerolled with 3 by 1 inch pipe corrugations.

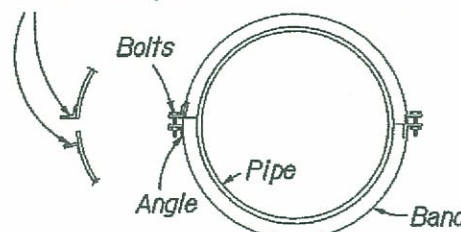
^{4/} Use helical corrugated bands with pipes having helically corrugated ends.

^{5/} The minimum band widths shown for 3 by 1 and 5 by 1 inch corrugated sizes apply to 2 2/3 by 1/2 corrugations on rerolled pipe ends.

^{6/} Smooth sleeve-type couplers and flat bands may be used for pipe diameters of 12 inches or less. Use a matching metal having a nominal thickness of not less than 0.040 inch (20 gage) for steel, or 0.036 inch (20 gage) for aluminum, or a plastic with an equivalent strength to metal.



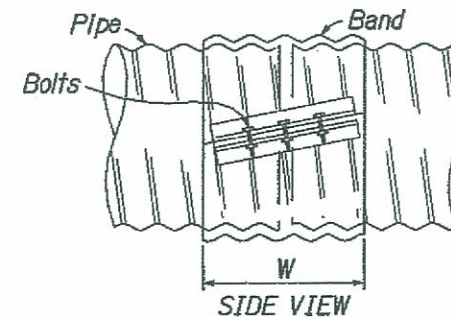
Rivet, Spotweld, or Fillet weld at crest of corrugation at heel and toe of angle.



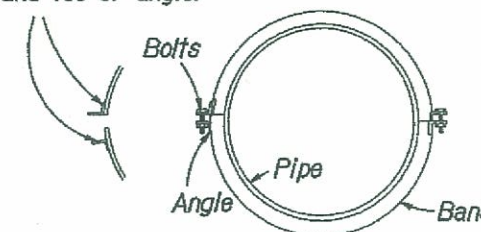
END VIEW

Note:
Second angle connection optional to 42" diameter, required above 42" diameter.

ANNULAR BAND



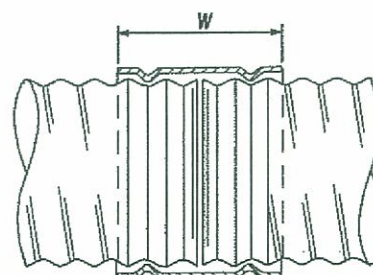
Rivet, Spotweld, or Fillet weld at crest of corrugation at heel and toe of angle.



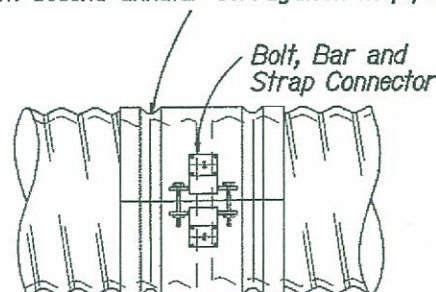
END VIEW

Note:
Second angle connection optional to 42" diameter, required above 42" diameter.

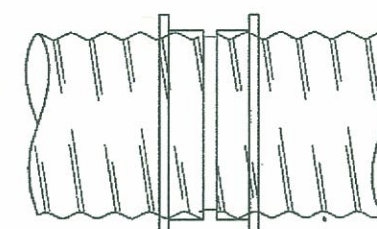
HELICAL BAND



Continuous corrugation around band meshes with second annular corrugation in pipe end.

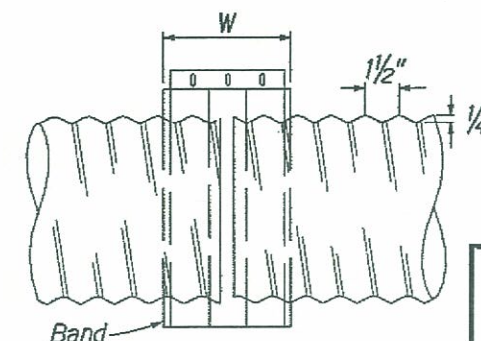


SEMI-CORRUGATED BAND



Smoother sleeve with center stop.
Stub type joint.

SMOOTH SLEEVE BAND

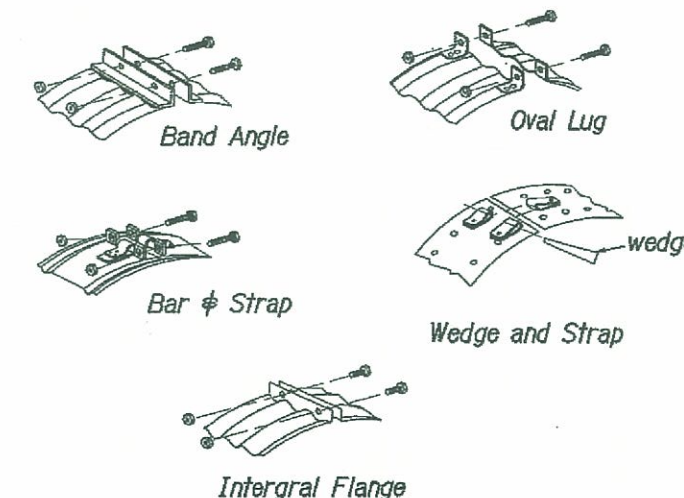


CROSS SECTION THRU PIPE JOINTS

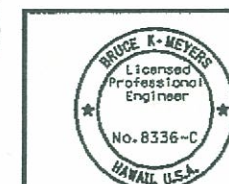
FLAT BAND

NOTE:

- Watertight pipe joints are not required unless specified in the Special Contract Requirements.
- Other types of coupling bands or fastening devices that comply with the joint performance criteria of AASHTO Standard specifications for Highway Bridges, Division II Section 26 may be used.



STANDARD BAND CONNECTIONS



The work was prepared by me or under my supervision and construction of this project will be under my observation.
Expiration Date of License 4/10

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

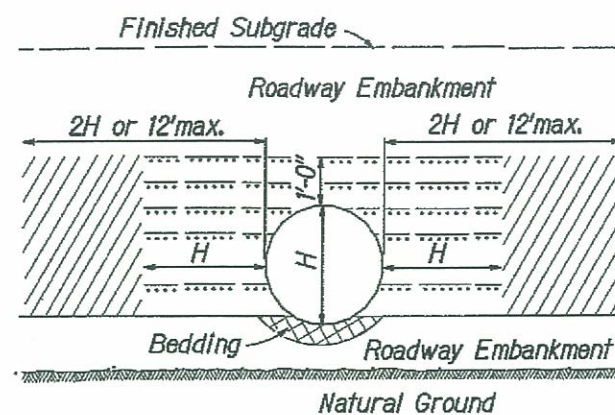
SPECIAL C602-2 METAL PIPE CULVERT COUPLING BAND

Scale: N.T.S.

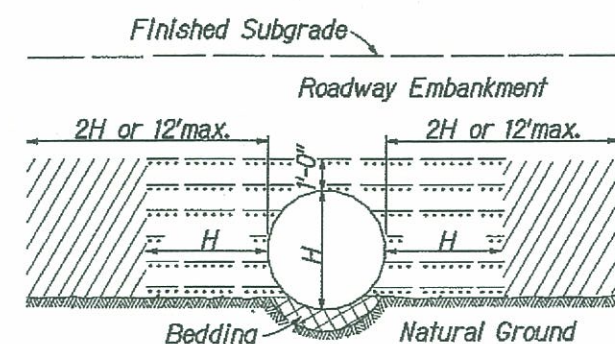
Date: June 5, 2009

SHEET No. 1 OF 1

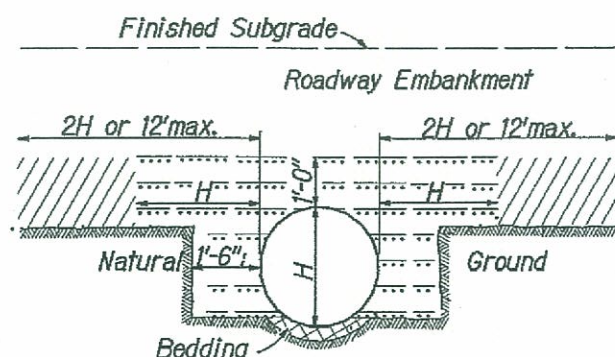
STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP & TI 200(2)	LJ2	L15



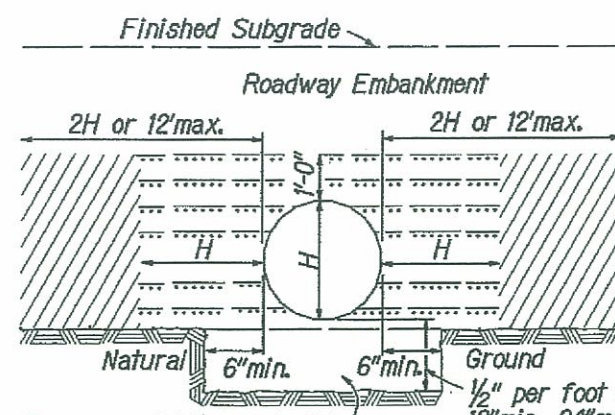
ABOVE NATURAL GROUND



ON NATURAL GROUND

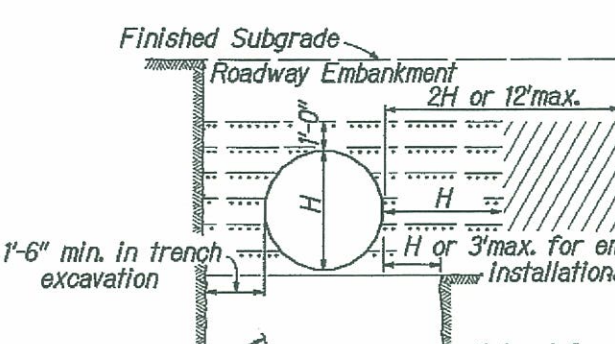


ABOVE AND BELOW NATURAL GROUND



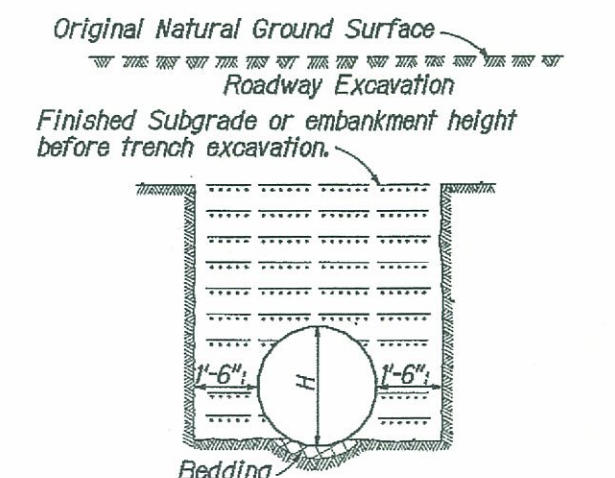
Remove unyielding material and replace with selected fine compressible material. Lightly compact in layers not over 6 inches in uncompacted depth.

ON UNYIELDING MATERIAL

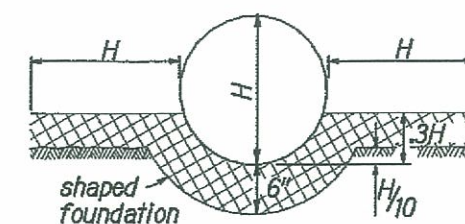


Remove unstable material to firm bearing soil and replace with approved granular foundation fill material properly compacted.

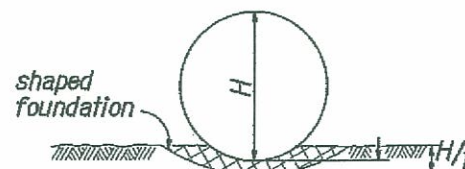
ON UNSTABLE MATERIAL



BELOW NATURAL GROUND OR TRENCH EXCAVATION IN EMBANKMENT



CLASS B BEDDING

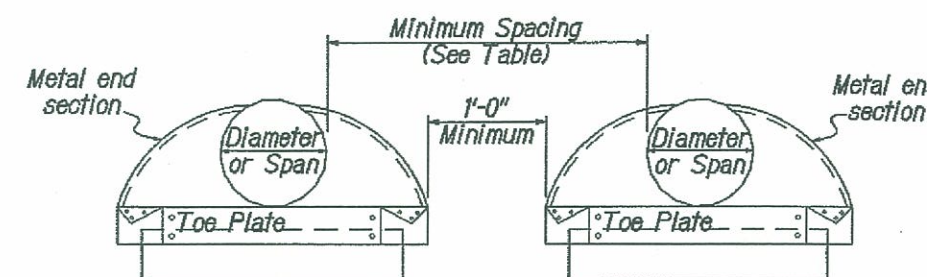


1" for 1/2" corrugations
2" for 1" corrugations

CLASS C BEDDING

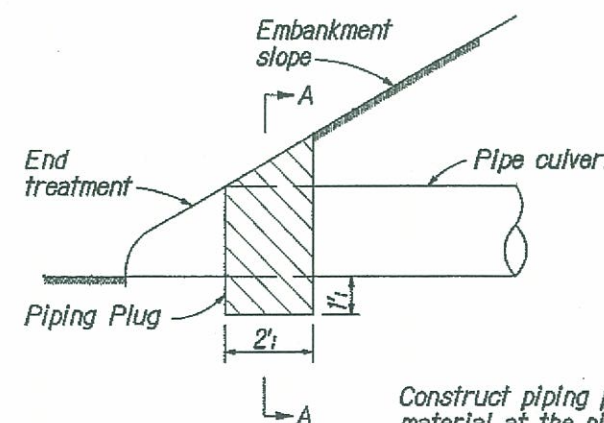
NOTES:

- When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
- H equals the diameter of all round pipe culverts or the rise dimension of all pipe arch culverts.
- Bed pipe culverts 48 inches and larger in diameter and pipe arch culverts 38 inches and greater in rise in Class B Bedding. Bed smaller pipe culverts in Class B or C Bedding.



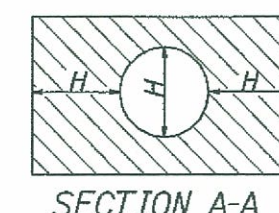
MINIMUM SPACING	
DIAMETER or SPAN INCHES	SPACING INCHES
UP to 48	24
48 and UP	1/2 Diameter or Span or 36 whichever is less

MULTIPLE PIPE INSTALLATION



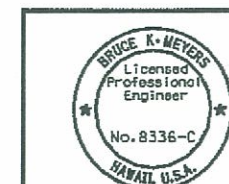
Construct piping plug of impermeable backfill material at the pipe culvert inlet where granular material is used for backfill.

PIPING PLUG



SECTION A-A

- Bedding Material
- Embankment material placed in layers not exceeding 6" compacted depth.
- Approved granular material or fine compactable soil placed in layers not exceeding 6" compacted depth.



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Expiration Date of License 4/18

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CENTRAL FEDERAL LANDS HIGHWAY DIVISION

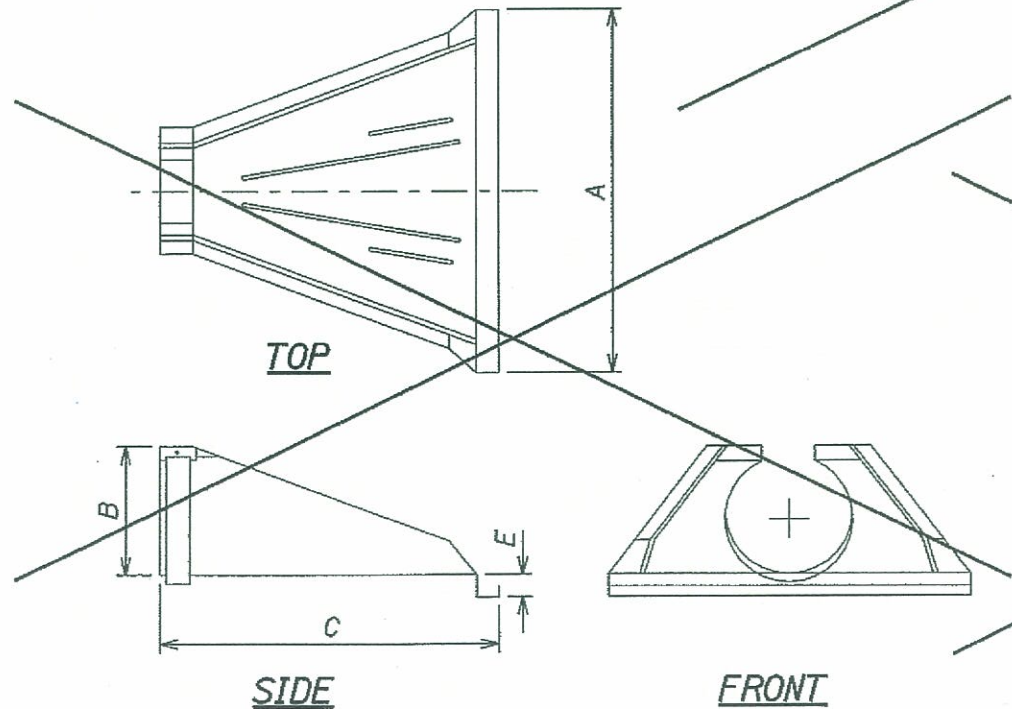
**DETAIL C602-3
METAL AND PLASTIC
PIPE CULVERT BEDDING**

Scale: N.T.S. Date: June 5, 2009

SHEET No. 1 OF 1

POLYETHYLENE (PE) PLASTIC ROUND PIPE CULVERT															
FILL HEIGHT TABLE AND MINIMUM CELL CLASSIFICATION NUMBER PER ASTM D 3350															
SMOOTH WALL, CORRUGATED AND RIBBED PIPE CULVERT															
PIPE SIZE	MINIMUM COVER	SMOOTH WALL (SOLID WALL)						CORRUGATED				RIBBED			
		CELL CLASSIFICATION NUMBER 335434C						PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 315412C MAX. FILL HEIGHT IN FT.	CELL CLASS. NO. 324420C MAX. FILL HEIGHT IN FT.	PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	CELL CLASS. NO. 334433C MAX. FILL HEIGHT IN FEET	CELL CLASS. NO. 335434C MAX. FILL HEIGHT IN FEET
		MINIMUM WALL THICKNESS IN INCHES													
		0.607	0.657	0.923	1.154	1.385	1.292								
MAXIMUM FILL HEIGHT IN FEET															
12	12	57						12	12	11	10	18	12	18	24
18	12		52					15	12	11	10	24	12	22	28
24	12			38				18	12	12	10	30	12	22	28
30	12				38			24	12	12	10	36	12	25	31
36	12					38		30	12	12	10	42	12	21	27
42	12						27	36	12	11	10	48	12	21	26
48	12						27								

POLYVINYL CHLORIDE (PVC) PLASTIC ROUND PIPE CULVERT											
FILL HEIGHT TABLE AND MINIMUM CELL CLASSIFICATION NUMBER PER ASTM D 1784											
SMOOTH WALL AND RIBBED PIPE CULVERT											
SMOOTH WALL (SOLID WALL)						RIBBED					
PIPE SIZE	MINIMUM COVER	CELL CLASS. NO. 12454C		CELL CLASS. NO. 12364C		PIPE SIZE	MINIMUM COVER	CELL CLASS. NO. 12454C		CELL CLASS. NO. 12364C	
		MIN. WALL THICKNESS IN INCHES						MAX. FILL HEIGHT IN FEET			
		0.358	0.498	0.358	0.498						
DIAMETER INCHES	INCHES					DIAMETER INCHES	INCHES			MAX. FILL HEIGHT IN FEET	
12	12	65		69		12	12	37		26	
15	12		62		66	15	12	32		22	
						18	12	33		23	
						24	12	29		21	
						30	12	28		20	
						36	12	27		19	
						42	12	26		18	
						48	12	24		17	



PLASTIC PIPE END SECTION				
PIPE SIZE	DIMENSIONS			
	A	B	C	E
12	42	15	33	6
15	46	25	45	6
18	54	29	55	6
24	64	37	65	6
30	88	36	64	6
36	88	43	67	6

NOTES:

1. When directed, camber pipe culverts upward from a chord through the inlet and outlet Inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the Inlet Invert, reduce the amount of camber or increase the pipe culvert gradient.
2. Measure minimum cover from the top of the pipe culvert to the top of pavement or future finished grade. Measure maximum fill height from the top of the pipe to the top of pavement or future finished grade. Minimum cover is 24 inches.
3. Minimum HDPE pipe culvert size is 18 inches and the maximum is 48 inches.

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CENTRAL FEDERAL LANDS HIGHWAY DIVISION

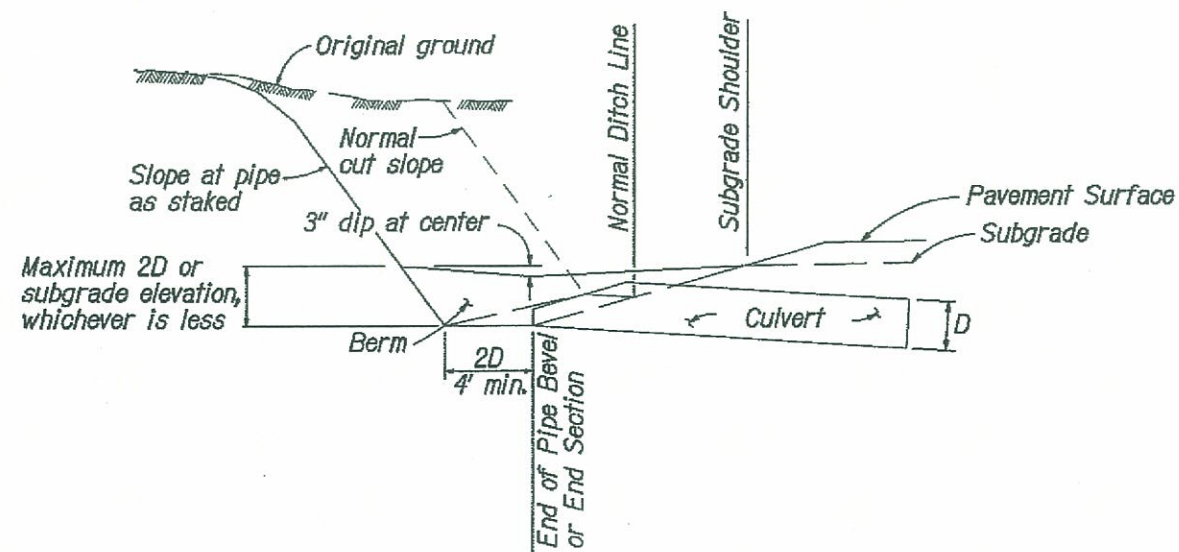
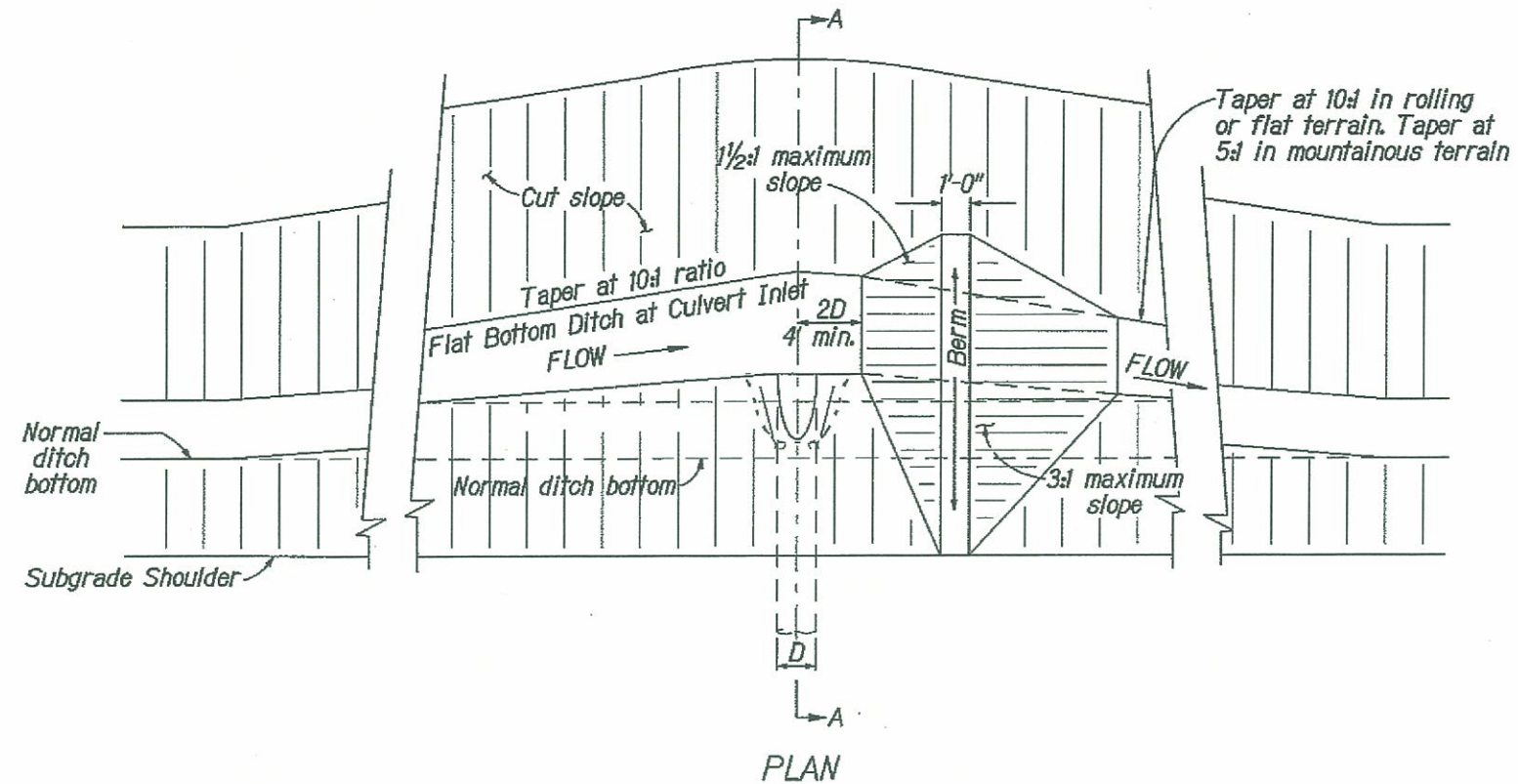
SPECIAL C602-5

PLASTIC PIPE CULVERT

Scale: N.T.S. Date: June 5, 2009

SHEET No. 1 OF 1

STATE	SADDLE ROAD PROJECT	SHEET NO.	TOTAL SHEETS
HI	HI HP & TI 200(2)	L14	L15

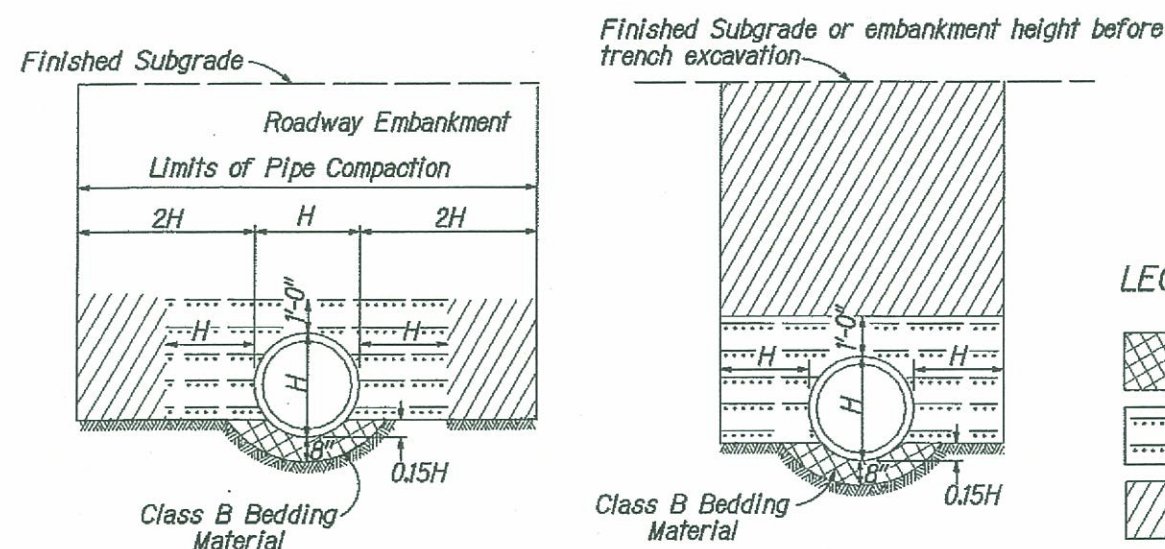


NOTE:

1. D equals the diameter of all round pipe or the rise dimension of all pipe arch culverts.

BRUCE K. MEYERS Licensed Professional Engineer No. 8336-C HAWAII, U.S.A. The work was prepared by me or under my supervision and construction of this project will be under my observation. Expiration Date of License 4/10	U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION CENTRAL FEDERAL LANDS HIGHWAY DIVISION	
	SPECIAL C602-6	
	PIPE CULVERT INLET TREATMENT IN CUT SLOPES	
	Scale: N.T.S.	Date: June 5, 2009
SHEET No. 1 OF 1		

CONCRETE ROUND PIPE CULVERT									
FILL HEIGHT AND PIPE CLASS TABLE									
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	EMBANKMENT				TRENCH			
		CLASS II	CLASS III	CLASS IV	CLASS V	CLASS II	CLASS III	CLASS IV	CLASS V
		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE IN FEET							
12	24	11	11	16	23	18	18	26	37
18	24	10	10	25	39	14	14	31	45
24	24	11	11	15	31	15	15	22	40
30	24	9	13	16	35	13	17	20	46
36	24	9	9	20	41	11	14	26	56
48	24	12	14	26	44	16	17	31	50
60	24	15	17	28	44	18	20	32	50
72	24	13	17	31	41	16	20	35	49
84	24	13	19	31		15	23	37	
96	24	13	20			16	24		
108	24	16	20			19	26		

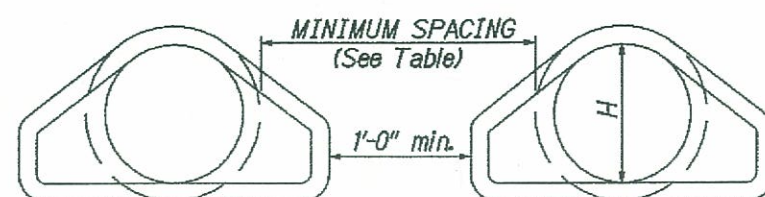


LEGEND:

- Bedding Material
- Approved granular material or fine compactable soil placed in layers not exceeding 6" compacted depth.
- Embankment material placed in layers not exceeding 6" compacted depth.
- Impermeable backfill material

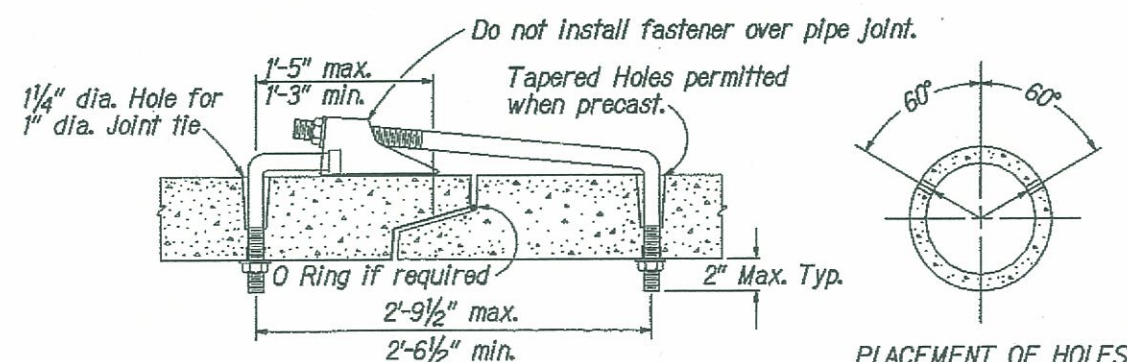
EMBANKMENT INSTALLATION

TRENCH INSTALLATION



MINIMUM SPACING		
DIAMETER INCHES	EMBANKMENT	TRENCH
12-36	15"	2H
36-96	H/2	72"
OVER 96	48"	72"

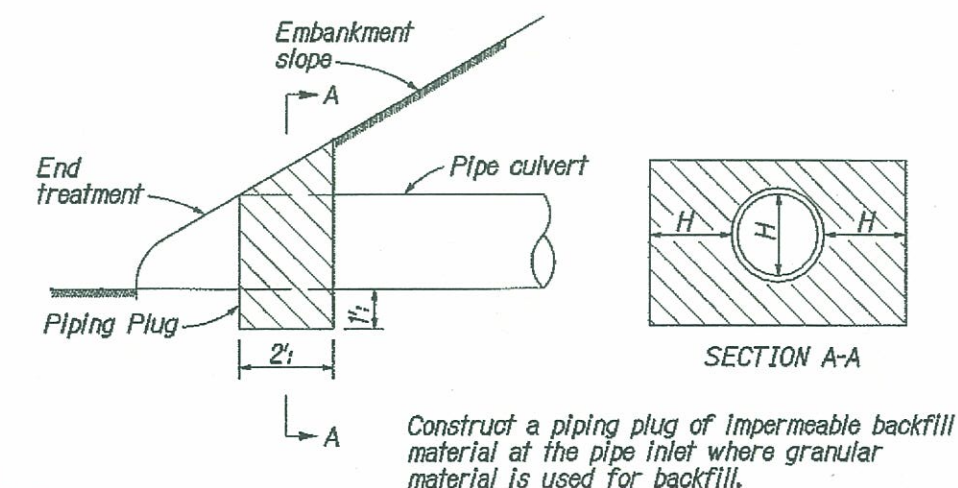
MULTIPLE ROUND PIPE INSTALLATION



SUPPLEMENTAL CONCRETE PIPE TIE

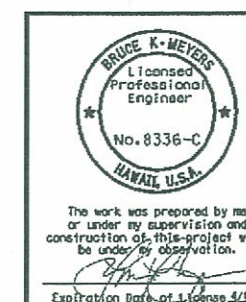
NOTE:

- When directed, camber pipe culverts upward from a chord through the inlet and outlet inverts an ordinate amount equal to 1% of the pipe length. Develop camber on a parabolic curve. If the midpoint elevation on the parabolic curve as designed exceeds the elevation of the inlet invert, reduce the amount of camber or increase the pipe culvert gradient.
- Measure minimum cover from the top of the pipe culvert to the subgrade for flexible pavements, and to the top of the pavement for rigid pavements. Measure maximum fill height from the top of the pipe to the top of the pavement for both flexible and rigid pavements. Minimum cover is 24 inches under the paved sections.
- Pipe compaction limits shown are for pipe installation in an embankment. For pipe installation in a trench, the compaction limits shall be the walls of the trench.
- Where unyielding or unstable material is encountered, install the pipe culvert according to the limits of pipe compaction shown on detail C602-3.
- When grades exceed 10%, install supplemental concrete pipe ties on pipe culvert or install bell and spigot pipe.
- Maximum fill heights for pipe culvert installations may be increased on approval of site-specific structural pipe designs meeting the criteria of AASHTO Standard Specifications for Highway Bridges.



PIPING PLUG

Construct a piping plug of impermeable backfill material at the pipe inlet where granular material is used for backfill.



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

SPECIAL C602-7 CONCRETE PIPE CULVERT INSTALLATION

Scale: N.T.S. Date: June 5, 2009

SHEET No. 1 OF 1