

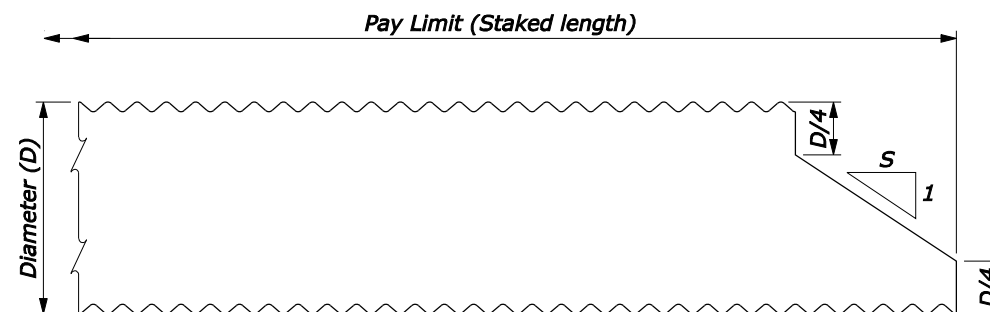
### STRUCTURAL PLATE PIPE CULVERT


#### FILL HEIGHT AND METAL THICKNESS TABLE

STEEL											ALUMINUM								
PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	6" x 2" CORRUGATIONS									PIPE SIZE DIAMETER INCHES	MINIMUM COVER INCHES	9" x 2½" CORRUGATIONS						
		METAL THICKNESS (INCH/GAGE)/BOLTS PER CORRUGATION											METAL THICKNESS (INCH/GAGE)/BOLTS PER CORRUGATION						
		0.111/12/2	0.140/10/2	0.170/8/2	0.188/7/2	0.218/5/2	0.249/3/2	0.280/1/2	0.280/1/3	0.280/1/4			0.100/12/4	0.125/11/4	0.150/9/4	0.175/7/4	0.200/6/4	0.225/4/4	0.250/2/4
MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)											MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (FEET)								
60	12	46	68	90	100	100	100	100	100	100	60	15	31	45	60	70	81	92	100
66	12	42	62	81	93	100	100	100	100	100	66	15	28	41	54	64	74	84	94
72	12	38	57	75	86	100	100	100	100	100	72	18	25	37	50	58	67	77	86
78	12	35	52	69	79	95	100	100	100	100	78	18	23	35	46	54	62	71	79
84	12	33	49	64	73	88	100	100	100	100	84	18	22	32	42	50	58	66	73
90	12	31	45	60	68	82	97	100	100	100	90	21	20	30	40	47	54	61	68
96	12	29	43	56	64	77	91	100	100	100	96	21	19	28	37	44	50	57	64
102	18	27	40	52	60	73	86	94	100	100	102	24	18	26	35	41	47	54	60
108	18	25	38	50	57	69	81	88	100	100	108	24	17	25	33	39	45	51	57
114	18	24	36	47	54	65	77	84	100	100	114	27	16	23	31	37	42	48	54
120	18	23	34	45	51	62	73	80	100	100	120	27	15	22	30	35	40	46	51
126	18	22	32	42	49	59	69	76	95	100	126	30	14	21	28	33	38	44	49
132	18	21	31	40	46	56	66	72	91	97	132	30	14	20	27	32	37	42	47
138	18	20	29	39	44	54	63	69	87	93	138	33	13	19	26	30	35	40	44
144	18	19	28	37	43	51	61	66	83	89	144	33	12	18	25	29	33	38	43
150	24	18	27	36	41	49	58	64	80	86	150	33	18	24	28	32	36	41	46
156	24	17	26	34	39	47	56	61	76	82	156	33	17	23	27	31	35	39	43
162	24	17	25	33	38	46	54	59	73	79	162	33	22	26	30	34	38	42	46
168	24	16	24	32	36	44	52	57	71	76	168	33	21	25	29	33	36	40	44
174	24	16	23	31	35	42	50	55	68	74	174	33	20	24	28	31	35	39	43
180	24	15	22	30	34	41	48	53	66	71	180	33	23	27	30	34	38	42	46
186	24	15	22	29	33	40	47	51	64	69	186	33	22	26	29	33	36	40	44
192	24	21	28	32	38	45	50	62	67	73	192	36	25	28	32	36	40	44	48
198	30	20	27	31	37	44	48	60	65	71	198	36	24	28	31	35	39	43	47
204	30	20	26	30	36	43	47	58	63	69	204	36	23	27	30	34	38	42	46
210	30	19	25	29	35	41	45	56	61	67	210	36	26	29	33	37	41	45	49
216	30	25	28	34	40	44	54	59	65	71	216	36	25	28	32	36	40	44	48
222	30	24	27	33	39	43	53	58	64	70	222	36	27	30	34	38	42	46	50
228	30	23	27	32	38	42	51	56	62	68	228	36	25	28	32	36	40	44	48
234	30	23	26	31	37	41	50	55	61	67	234	36	24	27	31	35	39	43	47
240	30	25	31	36	40	49	53	59	65	71	240	36	25	28	32	36	40	44	48
246	36	25	30	35	39	48	52	58	64	70	246	36	25	28	32	36	40	44	48
252	36	29	34	38	46	51	57	63	69	75	252	36	29	34	38	42	46	50	54
258	36	28	34	37	45	49	55	61	67	73	258	36	28	34	37	45	49	55	61
264	36	28	33	36	44	48	54	60	66	72	264	36	28	33	36	44	48	54	60
270	36	27	32	35	43	47	53	59	65	71	270	36	27	32	35	43	47	53	59
276	36	31	34	42	46	52	58	64	70	76	276	36	31	34	42	46	52	58	64
282	36	31	34	41	45	51	57	63	69	75	282	36	31	34	41	45	51	57	63
288	42	30	33	40	44	50	56	62	68	74	288	42	30	33	40	44	50	56	62
294	42	32	40	43	49	55	61	67	73	79	294	42	32	40	43	49	55	61	67
300	42	32	39	42	48	54	60	66	72	78	300	42	32	39	42	48	54	60	66
306	42	31	38	41	47	53	59	65	71	77	306	42	31	38	41	47	53	59	65

#### NOTE:

1. Fabricate the bottom plates one (1) thickness heavier than the side plates but not heavier than 0.380 inch for steel or 0.250 inch for aluminum.
2. Fasten plates with galvanized steel ¾" bolts and nuts conforming to AASHTO M167.
3. 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.
4. 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 pavement.




 $S = 1.5$  for 1V:1.5H fill slopes  
 $S = 2$  for 1V:2H or flatter slopes

#### END TREATMENT DIAGRAM

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
<b>STRUCTURAL PLATE PIPE CULVERT</b>	
STANDARD APPROVED FOR USE 12/1993 REVISED: 4/1994 6/2005	STANDARD 603-1

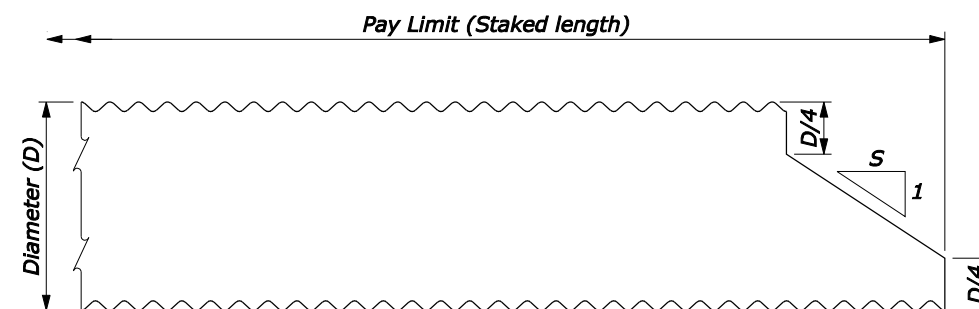
## STRUCTURAL PLATE PIPE CULVERT

### FILL HEIGHT AND METAL THICKNESS TABLE

STEEL											ALUMINUM										
PIPE SIZE DIAMETER	MINIMUM COVER	152 x 51 CORRUGATIONS									PIPE SIZE DIAMETER	MINIMUM COVER	230 x 64 CORRUGATIONS								
		METAL THICKNESS/BOLTS PER CORRUGATION											METAL THICKNESS/BOLTS PER CORRUGATION								
		2.82/2	3.56/2	4.32/2	4.79/2	5.54/2	6.32/2	7.11/2	7.87/3	9.65/4			2.54/4	3.18/4	3.81/4	4.44/4	5.08/4	5.72/4	6.35/4		
MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (METERS)											MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (METERS)										
1500	300	14.0	20.7	27.4	30.0	30.0	30.0	30.0	30.0	30.0	1500	375	9.5	13.7	18.3	21.3	24.7	28.0	30.0		
1655	300	12.8	18.9	24.7	28.4	30.0	30.0	30.0	30.0	30.0	1655	375	8.5	12.5	16.5	19.5	22.6	25.6	28.7		
1810	300	11.6	17.4	22.9	26.2	30.0	30.0	30.0	30.0	30.0	1810	450	7.6	11.3	15.2	17.7	20.4	23.5	26.2		
1965	300	10.7	15.9	21.0	24.1	29.0	30.0	30.0	30.0	30.0	1965	450	7.0	10.7	14.0	16.5	18.9	21.6	24.1		
2120	300	10.1	14.9	19.5	22.3	28.8	30.0	30.0	30.0	30.0	2120	450	6.7	9.8	12.8	15.2	17.7	20.1	22.3		
2275	300	9.6	13.7	18.3	25.0	28.6	30.0	30.0	30.0	30.0	2275	525	6.1	9.1	12.2	14.3	16.5	18.6	20.7		
2430	300	8.8	13.1	17.1	19.6	23.5	27.7	30.0	30.0	30.0	2430	525	5.8	8.5	11.3	13.4	15.2	17.4	19.5		
2585	450	8.2	12.2	15.9	18.3	22.3	26.2	28.7	30.0	30.0	2585	600	5.5	7.9	10.7	12.5	14.3	16.5	18.3		
2740	450	7.6	11.6	15.2	17.4	21.0	24.7	26.8	30.0	30.0	2740	600	5.2	7.6	10.1	11.9	13.7	15.5	17.4		
2895	450	7.3	11.0	14.3	16.5	19.8	23.5	25.6	30.0	30.0	2895	675	4.9	7.0	9.5	11.3	12.8	14.6	16.5		
3050	450	7.0	10.4	13.7	15.5	18.9	22.3	24.4	30.0	30.0	3050	675	4.6	6.7	9.1	10.7	12.2	14.0	15.5		
3205	450	6.7	9.8	12.8	14.9	18.0	21.0	23.2	29.0	30.0	3205	750	4.3	6.4	8.5	10.1	11.6	13.4	14.9		
3360	450	6.4	9.5	12.2	14.0	17.1	20.1	22.0	27.7	29.6	3360	750	4.3	6.1	8.2	9.8	11.3	12.8	14.3		
3515	450	6.1	8.8	11.9	13.4	16.5	19.2	21.0	26.5	28.4	3515	825	4.0	5.8	7.9	9.1	10.7	12.2	13.4		
3670	450	5.8	8.5	11.3	13.1	15.5	18.6	20.1	25.3	27.1	3670	825	3.7	5.5	7.6	8.8	10.1	11.6	13.1		
3825	600	5.5	8.2	11.0	12.5	14.9	17.7	19.5	24.4	26.2	3825	825		5.5	7.3	8.5	9.8	11.0	12.5		
3980	600	5.2	7.9	10.4	11.9	14.3	17.1	18.6	23.2	25.0	3980	825		5.2	7.0	8.2	9.5	10.7	11.9		
4135	600	5.2	7.6	10.1	11.6	14.0	16.6	18.0	22.3	24.1	4135	825			6.7	7.9	9.1	10.4	11.6		
4290	600	4.9	7.3	9.8	11.0	13.4	15.9	17.4	21.6	23.2	4290	825			6.4	7.6	8.8	10.1	11.0		
4445	600	4.9	7.0	9.5	10.7	12.8	15.2	16.8	20.7	22.6	4445	825			6.1	7.3	8.5	9.5	10.7		
4600	600	4.6	6.7	9.1	10.4	12.5	14.6	16.2	20.1	21.6	4600	825				7.0	8.2	9.1	10.4		
4755	600	4.6	6.7	8.8	10.1	12.2	14.3	15.5	19.5	21.0	4755	825				6.7	7.9	8.8	10.1		
4910	600		6.4	8.5	9.8	11.6	13.7	15.2	18.9	20.4	4910	900					7.6	8.5	9.8		
5065	750		6.1	8.2	9.5	11.3	13.4	14.6	18.3	19.8	5030	900					7.3	8.5	9.5		
5220	750		6.1	7.9	9.1	11.0	13.1	14.3	17.7	19.2	5220	900					7.0	8.2	9.1		
5375	750		5.8	7.5	8.8	10.7	12.5	13.7	17.1	18.6	5385	900						7.9	8.8		
5530	750			7.5	8.5	10.4	12.2	13.4	16.5	18.0	5530	900						7.6	8.5		
5685	750			7.3	8.2	10.0	11.9	13.1	16.2	17.7	5685	900							8.2		
5840	750			7.0	7.9	9.8	11.6	12.8	15.5	17.1	5840	900							8.2		
5995	750			7.0	7.6	9.5	11.3	12.5	15.2	16.8											
6150	750				7.6	9.5	11.0	12.2	14.9	16.2											
6305	900					9.1	10.7	11.9	14.6	15.9											
6460	900					8.8	10.4	11.6	14.0	15.5											
6615	900					8.5	10.4	11.3	13.7	14.9											
6770	900					8.5	10.1	11.0	13.4	11.6											
6925	900					8.2	9.8	10.7	13.1	14.3											
7080	900						9.5	13.4	12.8	14.0											
7235	900						9.5	13.4	12.5	13.7											
7390	1050						9.1	10.1	12.2	13.4											
7545	1050							9.8	12.2	13.1											
7700	1050							9.8	11.9	12.8											
7855	1050							9.5	11.6	12.5											

**NOTE:**

1. Fabricate the bottom plates one (1) thickness heavier than the side plates but not heavier than 9.65 mm for steel or 6.35 mm for aluminum.
2. Fasten plates with galvanized steel M20 bolts and nuts conforming to AASHTO M167M.
3. 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.
4. 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 pavement.
5. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
6. Dimensions without units are millimeters.



$\frac{S}{1}$   $S = 1.5$  for 1V:1.5H fill slopes  
 $S = 2$  for 1V:2H or flatter slopes

**END TREATMENT DIAGRAM**

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
<h2 style="margin: 0;">STRUCTURAL PLATE PIPE CULVERT</h2>	
STANDARD APPROVED FOR USE 3/1996 REVISED: 6/2005	STANDARD <b>M603-1</b>

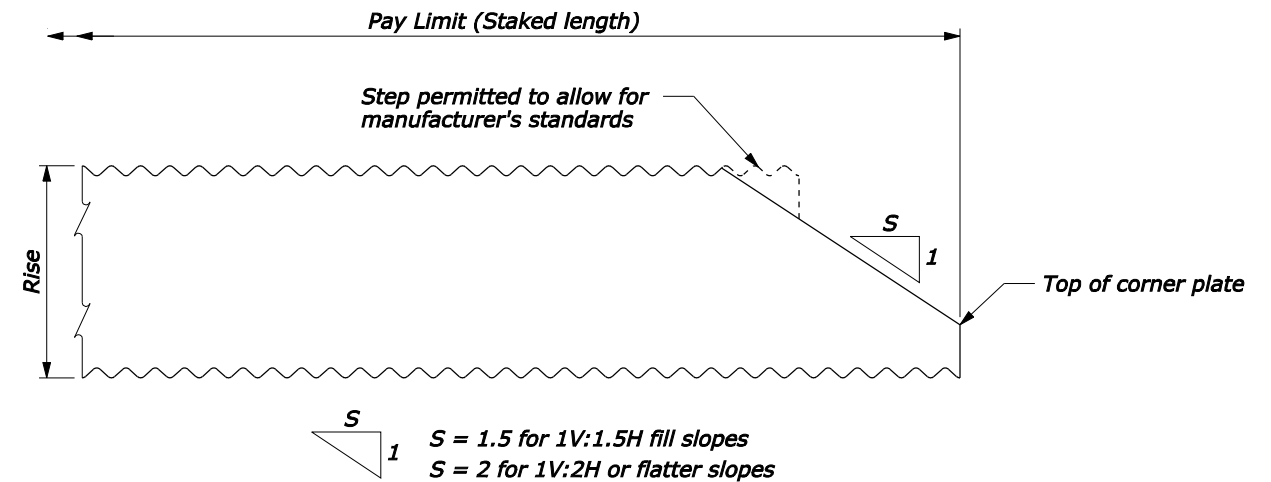
## STRUCTURAL PLATE PIPE ARCH CULVERT

### FILL HEIGHT AND METAL THICKNESS TABLE

STEEL						ALUMINUM					
6" x 2" CORRUGATIONS						9" x 2½" CORRUGATIONS					
2 BOLTS PER CORRUGATION						4 BOLTS PER CORRUGATION					
PIPE ARCH SIZE	CORNER RADIUS	MIN. COVER	METAL THICKNESS		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE FEET	PIPE ARCH SIZE	CORNER RADIUS	MIN. COVER	METAL THICKNESS		MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE FEET
SPAN X RISE	INCH	INCH	INCH	GAGE		SPAN X RISE	INCH	INCH	INCH	GAGE	
6' - 1" x 4' - 7"	18	12	0.111	12	16	6' - 7" x 5' - 8"	32	18	0.100	12	23
6' - 4" x 4' - 9"	18	12	0.111	12	15	6' - 11" x 5' - 9"	32	18	0.100	12	22
6' - 9" x 4' - 11"	18	12	0.111	12	14	7' - 3" x 5' - 11"	32	18	0.100	12	21
7' - 0" x 5' - 1"	18	12	0.111	12	14	7' - 9" x 6' - 0"	32	18	0.100	12	20
7' - 3" x 5' - 3"	18	12	0.111	12	13	8' - 1" x 6' - 1"	32	21	0.100	12	19
7' - 8" x 5' - 5"	18	12	0.111	12	13	8' - 5" x 6' - 3"	32	21	0.100	12	18
7' - 11" x 5' - 7"	18	12	0.111	12	12	8' - 10" x 6' - 4"	32	21	0.100	12	17
8' - 2" x 5' - 9"	18	18	0.111	12	12	9' - 3" x 6' - 5"	32	24	0.100	12	16
8' - 7" x 5' - 11"	18	18	0.111	12	11	9' - 7" x 6' - 6"	32	24	0.100	12	16
8' - 10" x 6' - 1"	18	18	0.111	12	11	9' - 11" x 6' - 8"	32	27	0.100	12	15
9' - 4" x 6' - 3"	18	18	0.111	12	10	10' - 3" x 6' - 9"	32	27	0.100	12	15
9' - 6" x 6' - 5"	18	18	0.111	12	10	10' - 9" x 6' - 10"	32	27	0.100	12	14
9' - 9" x 6' - 7"	18	18	0.111	12	10	11' - 1" x 7' - 0"	32	30	0.100	12	14
10' - 3" x 6' - 9"	18	18	0.111	12	9	11' - 5" x 7' - 1"	32	30	0.100	12	13
10' - 8" x 6' - 11"	18	18	0.111	12	9	11' - 9" x 7' - 2"	32	30	0.100	12	13
10' - 11" x 7' - 1"	18	18	0.111	12	9	12' - 3" x 7' - 3"	32	33	0.100	12	12
11' - 5" x 7' - 3"	18	18	0.111	12	8	12' - 7" x 7' - 5"	32	33	0.100	12	12
11' - 7" x 7' - 5"	18	18	0.111	12	8	12' - 11" x 7' - 6"	32	36	0.100	12	12
11' - 10" x 7' - 7"	18	18	0.111	12	8	13' - 1" x 8' - 2"	32	36	0.100	12	11
12' - 4" x 7' - 9"	18	24	0.111	12	7	13' - 1" x 8' - 4"	32	36	0.100	12	11
12' - 6" x 7' - 11"	18	24	0.111	12	7	13' - 11" x 8' - 5"	32	36	0.100	12	11
12' - 8" x 8' - 1"	18	24	0.111	12	7	13' - 11" x 9' - 5"	32	36	0.100	12	11
12' - 10" x 8' - 4"	18	24	0.111	12	6	14' - 0" x 8' - 7"	32	36	0.100	12	11
13' - 5" x 8' - 5"	18	24	0.111	12	6	14' - 3" x 9' - 7"	32	36	0.100	12	10
13' - 11" x 8' - 7"	18	24	0.111	12	6	14' - 8" x 9' - 8"	32	36	0.125	11	12
14' - 1" x 8' - 9"	18	24	0.111	12	5	14' - 11" x 9' - 10"	32	36	0.125	11	11
14' - 3" x 8' - 11"	18	24	0.111	12	5	15' - 4" x 10' - 0"	32	36	0.125	11	11
13' - 3" x 9' - 4"	31	30	0.111	12	12	15' - 7" x 10' - 2"	32	36	0.125	11	11
13' - 6" x 9' - 6"	31	30	0.111	12	12	16' - 1" x 10' - 4"	32	36	0.125	11	10
14' - 0" x 9' - 8"	31	30	0.111	12	12	16' - 4" x 10' - 6"	32	36	0.150	9	10
14' - 2" x 9' - 10"	31	30	0.111	12	12	16' - 9" x 10' - 8"	32	36	0.150	9	10
14' - 5" x 10' - 0"	31	30	0.111	12	11	17' - 0" x 10' - 10"	32	36	0.150	9	10
14' - 11" x 10' - 2"	31	30	0.111	12	11	17' - 3" x 11' - 0"	32	36	0.150	9	10
15' - 4" x 10' - 4"	31	30	0.111	12	11	17' - 9" x 11' - 2"	32	36	0.175	7	9
15' - 7" x 10' - 6"	31	30	0.111	12	11	18' - 0" x 11' - 4"	32	36	0.175	7	9
15' - 10" x 10' - 8"	31	30	0.111	12	10	18' - 5" x 11' - 6"	32	36	0.175	7	9
16' - 3" x 10' - 10"	31	30	0.111	12	10	18' - 8" x 11' - 8"	32	36	0.200	6	9
16' - 6" x 11' - 0"	31	30	0.111	12	10	19' - 2" x 11' - 9"	32	36	0.200	6	9
17' - 0" x 11' - 2"	31	30	0.111	12	10	19' - 5" x 11' - 11"	32	36	0.200	6	9
17' - 2" x 11' - 4"	31	30	0.111	12	10	19' - 10" x 12' - 1"	32	36	0.200	6	8
17' - 5" x 11' - 6"	31	30	0.111	12	9	20' - 1" x 12' - 3"	32	36	0.200	6	8
17' - 11" x 11' - 8"	31	30	0.111	12	9	20' - 1" x 12' - 6"	32	36	0.200	6	8
18' - 1" x 11' - 10"	31	30	0.111	12	9	20' - 10" x 12' - 7"	32	36	0.225	4	7
18' - 7" x 12' - 0"	31	30	0.111	12	9	21' - 1" x 12' - 9"	32	36	0.225	4	7
18' - 9" x 12' - 2"	31	30	0.111	12	9	21' - 6" x 12' - 11"	32	36	0.225	4	7
19' - 3" x 12' - 4"	31	30	0.140	10	8						
19' - 6" x 12' - 6"	31	30	0.140	10	8						
19' - 8" x 12' - 8"	31	30	0.140	10	8						
19' - 11" x 12' - 10"	31	30	0.140	10	8						
20' - 5" x 13' - 0"	31	30	0.140	10	7						
20' - 7" x 13' - 2"	31	30	0.140	10	7						

### NOTE:

- Fabricate the bottom plates one (1) thickness heavier than the side plates but not heavier than 0.170 inch for steel or 0.175 inch for aluminum.
- Fasten plates with galvanized steel ¾" bolts and nuts conforming to AASHTO M167.
- 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 pavement.



### END TREATMENT DIAGRAM

NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
U.S. CUSTOMARY STANDARD	
<b>STRUCTURAL PLATE PIPE ARCH CULVERT</b>	
STANDARD APPROVED FOR USE 12/1993 REVISED: 4/1994 6/2005	STANDARD 603-2

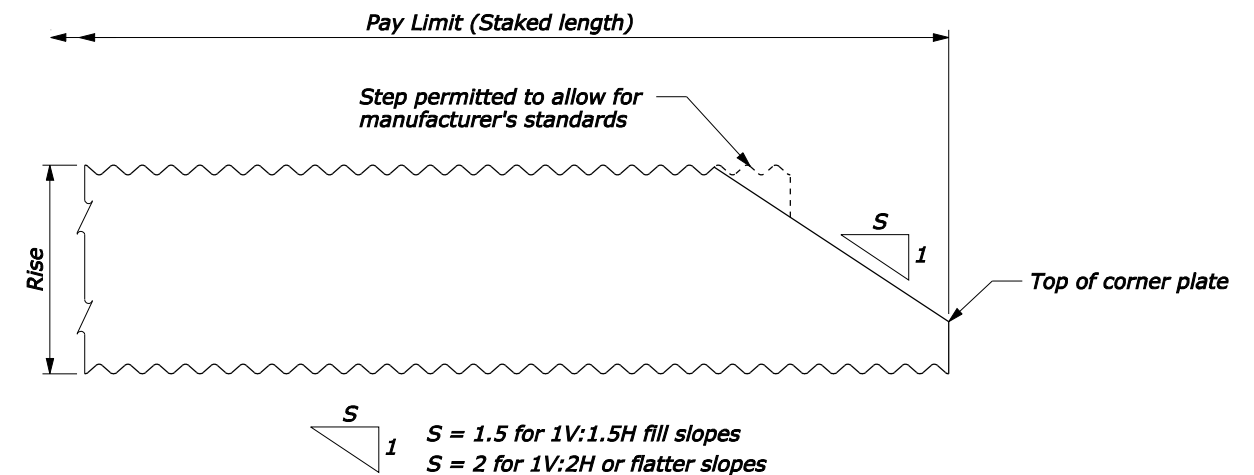
## STRUCTURAL PLATE PIPE ARCH CULVERT

### FILL HEIGHT AND METAL THICKNESS TABLE

STEEL					ALUMINUM				
152 x 51 CORRUGATIONS					230 x 64 CORRUGATIONS				
2 BOLTS PER CORRUGATION					4 BOLTS PER CORRUGATION				
PIPE ARCH SIZE	CORNER RADIUS	MIN. COVER	METAL THICKNESS	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE METERS	PIPE ARCH SIZE	CORNER RADIUS	MIN. COVER	METAL THICKNESS	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE METERS
SPAN X RISE					SPAN X RISE				
1850 x 1400	460	300	2.82	4.9	2010 x 1730	805	450	2.54	7.0
1930 x 1450	460	300	2.82	4.6	2110 x 1750	805	450	2.54	6.7
2060 x 1500	460	300	2.82	4.3	2210 x 1800	805	450	2.54	6.4
2130 x 1550	460	300	2.82	4.3	2360 x 1830	805	450	2.54	6.1
2210 x 1600	460	300	2.82	4.0	2460 x 1850	805	525	2.54	5.8
2340 x 1650	460	300	2.82	4.0	2570 x 1910	805	525	2.54	5.5
2410 x 1700	460	300	2.82	3.7	2690 x 1930	805	525	2.54	5.2
2490 x 1750	460	450	2.82	3.7	2820 x 1960	805	600	2.54	4.9
2620 x 1800	460	450	2.82	3.4	2920 x 1980	805	600	2.54	4.9
2690 x 1850	460	450	2.82	3.4	3020 x 2030	805	675	2.54	4.6
2840 x 1910	460	450	2.82	3.0	3120 x 2060	805	675	2.54	4.6
2900 x 1960	460	450	2.82	3.0	3280 x 2080	805	675	2.54	4.3
2970 x 2010	460	450	2.82	3.0	3380 x 2130	805	750	2.54	4.3
3120 x 2060	460	450	2.82	2.7	3480 x 2160	805	750	2.54	4.0
3250 x 2110	460	450	2.82	2.7	3580 x 2180	805	750	2.54	4.0
3330 x 2160	460	450	2.82	2.7	3730 x 2210	805	825	2.54	3.7
3480 x 2210	460	450	2.82	2.4	3840 x 2260	805	825	2.54	3.7
3530 x 2260	460	450	2.82	2.4	3940 x 2290	805	900	2.54	3.7
3610 x 2310	460	450	2.82	2.4	3990 x 2490	805	900	2.54	3.4
3760 x 2360	460	600	2.82	2.1	3990 x 2540	805	900	2.54	3.4
3810 x 2410	460	600	2.82	2.1	4240 x 2570	805	900	2.54	3.4
3860 x 2460	460	600	2.82	2.1	4240 x 2870	805	900	2.54	3.4
3910 x 2540	460	600	2.82	1.8	4240 x 2620	805	900	2.54	3.4
4090 x 2570	460	600	2.82	1.8	4340 x 2920	805	900	2.54	3.0
4240 x 2620	460	600	2.82	1.8	4470 x 2950	805	900	3.18	3.7
4290 x 2670	460	600	2.82	1.5	4550 x 3000	805	900	3.18	3.4
4340 x 2720	460	600	2.82	1.5	4670 x 3050	805	900	3.18	3.4
4040 x 2840	790	750	2.82	3.7	4750 x 3100	805	900	3.18	3.4
4110 x 2900	790	750	2.82	3.7	4900 x 3150	805	900	3.18	3.0
4270 x 2950	790	750	2.82	3.7	4980 x 3200	805	900	3.81	3.0
4320 x 3000	790	750	2.82	3.7	5110 x 3250	805	900	3.81	3.0
4390 x 3050	790	750	2.82	3.4	5180 x 3300	805	900	3.81	3.0
4550 x 3100	790	750	2.82	3.4	5260 x 3350	805	900	3.81	3.0
4670 x 3150	790	750	2.82	3.4	5410 x 3400	805	900	4.44	2.7
4750 x 3200	790	750	2.82	3.4	5490 x 3450	805	900	4.44	2.7
4830 x 3250	790	750	2.82	3.0	5610 x 3510	805	900	4.44	2.7
4950 x 3300	790	750	2.82	3.0	5690 x 3560	805	900	5.08	2.7
5030 x 3350	790	750	2.82	3.0	5840 x 3580	805	900	5.08	2.7
5180 x 3400	790	750	2.82	3.0	5920 x 3630	805	900	5.08	2.7
5230 x 3450	790	750	2.82	3.0	6050 x 3680	805	900	5.08	2.4
5310 x 3510	790	750	2.82	2.7	6120 x 3730	805	900	5.08	2.4
5460 x 3560	790	750	2.82	2.7	6120 x 3810	805	900	5.08	2.4
5510 x 3610	790	750	2.82	2.7	6350 x 3840	805	900	5.72	2.1
5660 x 3660	790	750	2.82	2.7	6430 x 3890	805	900	5.72	2.1
5720 x 3710	790	750	2.82	2.7	6550 x 3940	805	750	5.72	2.1
5870 x 3760	790	750	3.56	2.4					
5940 x 3810	790	750	3.56	2.4					
5990 x 3860	790	750	3.56	2.4					
6070 x 3910	790	750	3.56	2.4					
6220 x 3960	790	750	3.56	2.1					
6270 x 4010	790	750	3.56	2.1					

**NOTE:**

1. Fabricate the bottom plates one (1) thickness heavier than the side plates but not heavier than 9.65 mm for steel or 6.35 mm for aluminum.
2. Fasten plates with galvanized steel M20 bolts and nuts conforming to AASHTO M167M.
3. 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.
4. 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 pavement.
5. Furnish hardware in the metric sizes shown. Equivalent US Customary sizes may be used when metric sizes are unavailable.
6. Dimensions without units are millimeters.



NO SCALE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION FEDERAL LANDS HIGHWAY	
METRIC STANDARD	
<b>STRUCTURAL PLATE PIPE ARCH CULVERT</b>	
STANDARD APPROVED FOR USE 3/1996	STANDARD
REVISED: 6/2005	<b>M603-2</b>