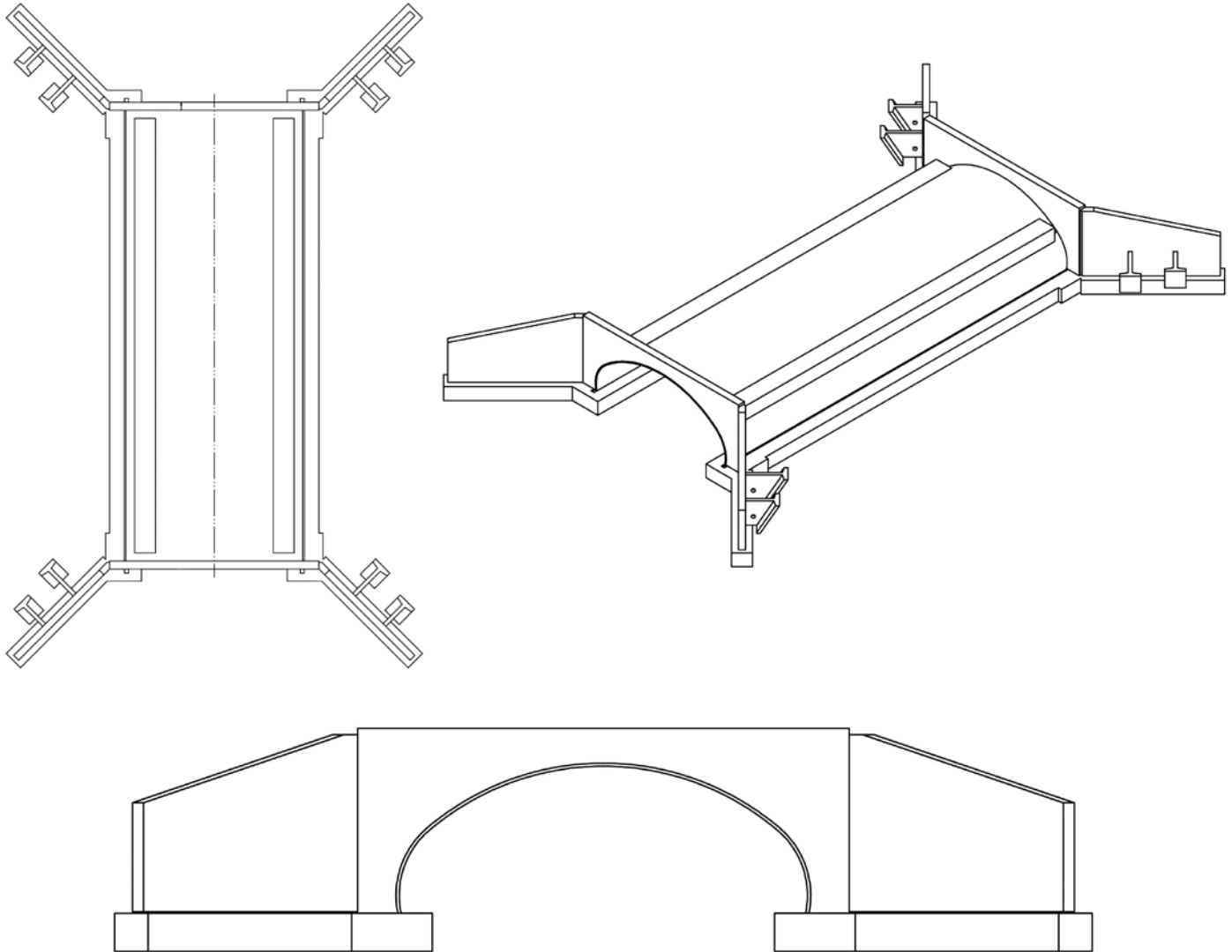


Structural Plate Details



REFERENCE SPECIFICATIONS

AASHTO:

Standard Specifications for Highway Bridges 17th Edition - Section 12
LRFD Bridge Design Specifications - Section 12




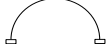




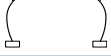




ASTM:

MULTI-PLATE[®] - A-796, 6" x 2" and BridgeCor[®] 15" x 5 1/2" corrugation
Aluminum Structural Plate - B-790, 9" x 2 1/2" corrugation

AREMA Manual For Railway Engineering, 2012 - Section 4.10

NCSPA Corrugated Steel Pipe Design Manual - Chapter 7

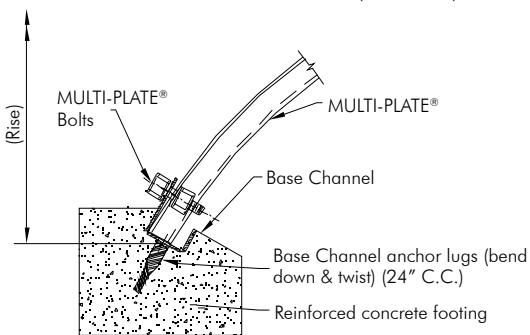
Structure Size Ranges - Inside Span x Rise

SHAPES		Structure Size Ranges - Inside Span x Rise			
			MULTI-PLATE®	BridgeCor®	ALSP
			6x2 Steel	15x5.5 Steel	9x2.5 Aluminum
Round		min.	5'-0"	19'-11"	6'-0"
		max.	26'-0"	50'-6"	21'-0"
Vertical Ellipse		min.	4'-8" x 5'-2"		4'-8" x 5'-2"
		max.	25'-0" x 27'-8"		20'-1" x 22'-3"
Underpass		min.	12'-2" x 11'-0"		12'-1" x 11'-0"
		max.	20'-4" x 17'-9"		20'-5" x 17'-9"
Single Radius Arch		min.	6'-0" x 1'-10"	19'-7" x 9'-9"	5'-0" x 1'-9"
		max.	26'0" x 13'1"	54'-4" x 27'-2"	23'-0" x 11'-11"
Two Radius Arch		min.		18'-5" x 8'-4"	
		max.		50'-7" x 19'-11"	
Horizontal Ellipse		min.	7'-4" x 5'-6"		9'-2" x 6'-8"
		max.	14'-11" x 11'-2"		14'-11" x 11'-2"
Pipe Arch		min.	6'-1" x 4'-7"		6'-7" x 5'-8"
		max.	20'-7" x 13'-2"		21'-11" x 14'-11"
Low-Profile Arch SUPER-SPAN™ / SUPER-PLATE®		min.	19'-5" x 6'-9"		19'-5" x 6'-9"
		max.	45'-0" x 18'-8"		38'-8" x 15'-9"
High Profile Arch SUPER-SPAN™ / SUPER-PLATE®		min.	20'-1" x 9'-1"		20'-1" x 9'-1"
		max.	35'-4" x 20'-0"		35'-5" x 20'-0"
Horizontal Ellipse SUPER-SPAN™ / SUPER-PLATE®		min.	19'-4" x 12'-9"		19'-4" x 12'-9"
		max.	37'-2" x 22'-2"		37'-3" x 22'-2"
Pear-Arch SUPER-SPAN™		min.	23'-11" x 23'-4"		
		max.	30'4" x 25'10"		
Pear SUPER-SPAN™		min.	23'-8" x 25'-5"		
		max.	29'-11" x 31'-3"		
Box Culvert		min.		17'-6" x 6'-10"	8'-9" x 2'-6"
		max.		35'-4" x 13'-11"	35'-3" x 13'-7"

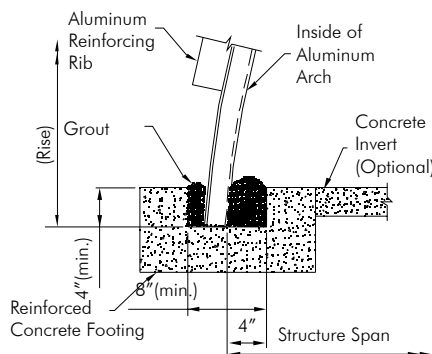
Custom sizes and shapes may be an option.

Not available.

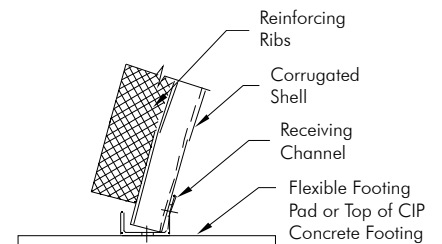
FOOTING DETAILS (not to scale)



Steel Base Channel Example

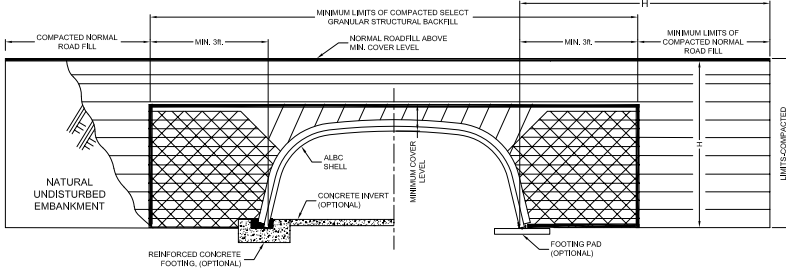


Slotted Concrete Footing Example

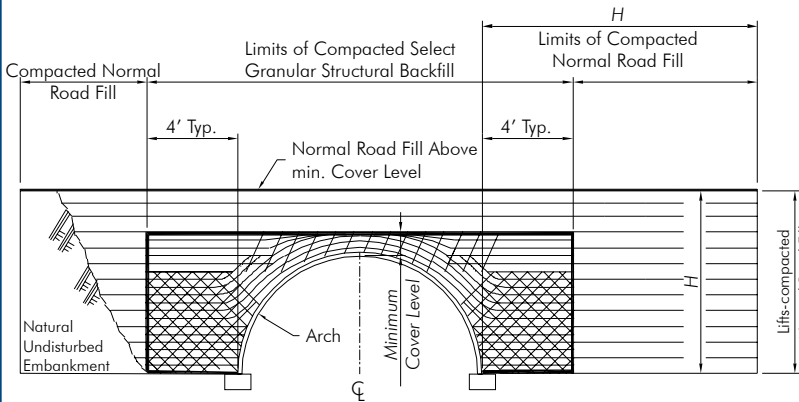


Aluminum Receiving Channel Example

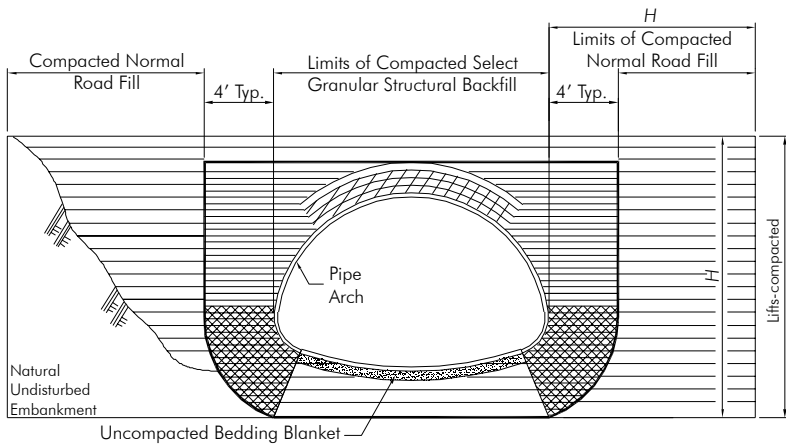
BACKFILL DETAILS (not to scale)



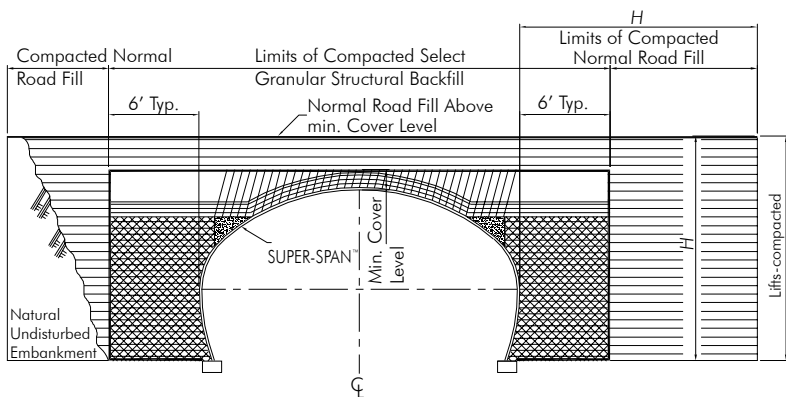
Typical Backfill Section - ALBC



Typical Backfill Section - Single Radius Arch

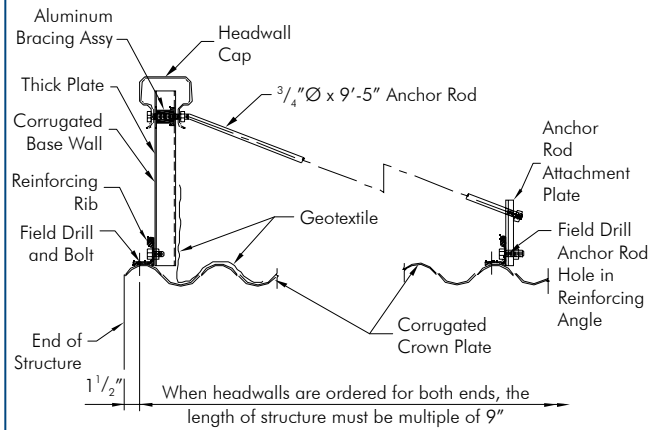


Typical Backfill Section - Pipe Arch

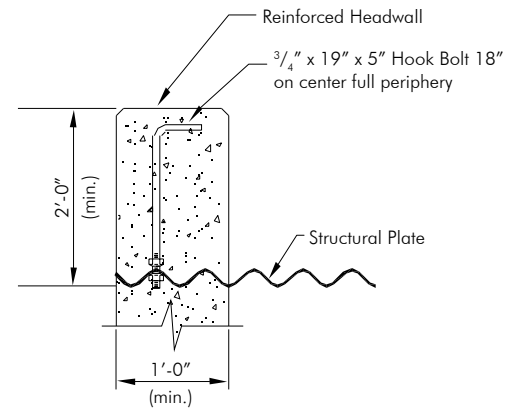


Typical Backfill Section - SUPER-SPAN™

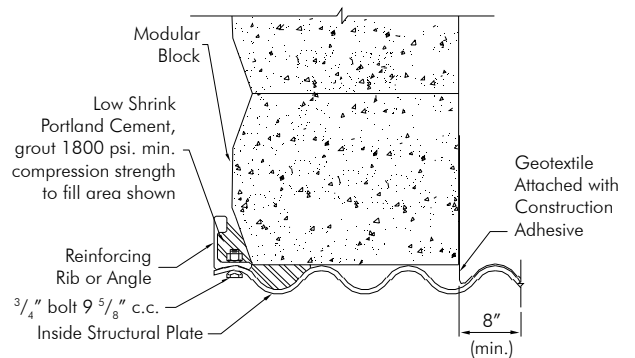
HEADWALL DETAILS (not to scale)



Aluminum Headwall Section Example

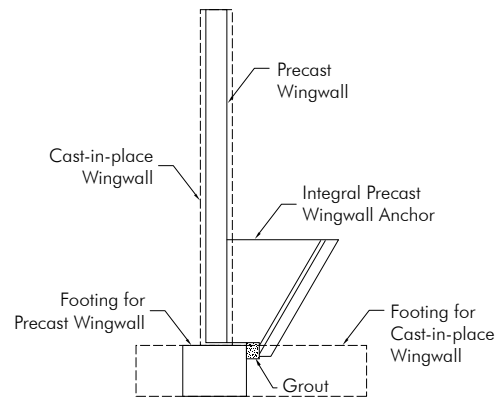


Concrete Headwall Section Example



Keystone Headwall Section Example

WINGWALL DETAILS (not to scale)



Precast Wingwall Section Example

SINGLE RADIUS ARCH		
Span Feet	Rise Ft.-In.	Area Ft. ²
6.0	1'-10"	7.9
	2'-4"	10.0
	3'-2"	15.0
7.0	2'-5"	12.1
	2'-10"	15.0
	3'-8"	20.4
8.0	2'-11"	17.0
	3'-4"	20.3
	4'-2"	26.6
9.0	2'-11"	19.2
	3'-11"	26.5
	4'-8"	33.6
10.0	3'-6"	25.4
	4'-5"	33.5
	5'-3"	41.4
11.0	3'-6"	27.8
	4'-6"	37.0
	5'-9"	50.0
12.0	4'-1"	35.3
	5'-0"	45.2
	6'-3"	59.4
13.0	4'-1"	38.1
	5'-1"	48.9
	6'-9"	69.7
14.0	4'-8"	47.0
	5'-7"	58.5
	7'-3"	80.7
15.0	4'-8"	48.9
	5'-8"	62.8
	7'-9"	92.6
16.0	5'-3"	60.1
	7'-1"	86.2
	8'-4"	105.3
17.0	5'-3"	63.4
	7'-2"	92.0
	8'-10"	118.8
18.0	5'-9"	74.8
	7'-8"	104.6
	8'-11"	126.0
19.0	6'-4"	87.1
	8'-3"	118.1
	9'-5"	140.7
20.0	6'-4"	91.0
	8'-3"	124.4
	10'-0"	156.3
21.0	6'-11"	104.6
	8'-10"	139.2
	10'-6"	172.6
22.0	6'-11"	109.3
	8'-11"	146.0
	11'-0"	189.5
23.0	8'-0"	133.6
	9'-10"	171.1
	11'-6"	207.8
24.0	8'-6"	149.4
	10'-4"	188.3
	12'-0"	226.6
25.0	8'-7"	155.6
	10'-10"	206.3
	12'-6"	246.2
26.0	8'-7"	161.4
	11'-0"	214.9
	13'-1"	266.7

STEEL PIPE ARCH		
Span Ft.-In.	Rise Ft.-In.	Area Ft. ²
6'-1"	4'-7"	22
6'-4"	4'-9"	24
6'-9"	4'-11"	26
7'-0"	5'-1"	29
7'-3"	5'-3"	31
7'-8"	5'-5"	33
7'-11"	5'-7"	36
8'-2"	5'-9"	38
8'-7"	5'-11"	41
8'-10"	6'-1"	43
9'-4"	6'-3"	46
9'-6"	6'-5"	49
9'-9"	6'-7"	52
10'-3"	6'-9"	55
10'-8"	6'-11"	58
10'-11"	7'-1"	61
11'-5"	7'-3"	64
11'-7"	7'-5"	68
11'-10"	7'-7"	71
12'-4"	7'-9"	74
12'-6"	7'-11"	78
12'-8"	8'-1"	82
12'-10"	8'-4"	85
13'-3"	9'-4"	98
13'-6"	9'-6"	102
14'-0"	9'-8"	106
14'-2"	9'-10"	111
14'-5"	10'-0"	115
14'-11"	10'-2"	120
15'-4"	10'-4"	124
15'-7"	10'-6"	129
15'-10"	10'-8"	134
16'-3"	10'-10"	138
16'-6"	11'-0"	143
17'-0"	11'-2"	148
17'-2"	11'-4"	153
17'-5"	11'-6"	158
17'-11"	11'-8"	163
18'-1"	11'-10"	168
18'-7"	12'-0"	174
18'-9"	12'-2"	179
19'-3"	12'-4"	185
19'-6"	12'-6"	191
19'-8"	12'-8"	196
19'-11"	12'-10"	202
20'-5"	13'-0"	208
20'-7"	13'-2"	214

ROUND		
Span Ft.	Diameter PI	Area Ft. ²
5	60	19.1
8	96	50.0
11	132	95.4
14	168	155.7
17	204	230.8
20	240	321.0
23	276	423.0
26	312	536.0

ALUMINUM BOX CULVERT			
Structure Number	Span Ft.-In.	Rise Ft.-In.	Area Ft. ²
1	8'-9"	2'-6"	18.4
3	9'-7"	4'-1"	32.6
5	10'-6"	5'-7"	48.1
7	11'-4"	7'-2"	65.0
8	10'-2"	2'-8"	23.0
10	10'-11"	4'-3"	39.5
12	11'-8"	5'-9"	57.2
14	12'-5"	7'-4"	76.0
15	11'-7"	2'-10"	28.1
17	12'-3"	4'-5"	46.9
20	13'-3"	6'-9"	76.9
21	13'-0"	3'-0"	33.8
23	13'-7"	4'-7"	54.8
25	14'-1"	6'-2"	76.6
26	14'-5"	3'-3"	40.0
28	14'-10"	4'-10"	63.2
30	15'-4"	6'-5"	87.2
33	15'-10"	3'-6"	46.8
34	16'-0"	4'-3"	59.5
36	16'-4"	5'-11"	85.2
38	16'-8"	7'-6"	111.55
39	16'-10"	8'-3"	124.8
40	17'-9"	3'-10"	54.4
42	18'-7"	5'-4"	82.5
44	19'-5"	6'-11"	111.9
46	20'-3"	8'-5"	142.6
47	19'-1"	4'-2"	63.3
49	19'-9"	5'-8"	93.6
51	20'-6"	7'-3"	125.0
53	21'-2"	8'-10"	157.6
54	20'-4"	4'-6"	73.1
56	20'-11"	6'-1"	105.5
58	21'-6"	7'-8"	139.0
60	22'-1"	9'-3"	173.3
61	21'-7"	4'-11"	83.8
63	22'-1"	6'-6"	118.4
65	22'-6"	8'-1"	153.7
67	23'-0"	9'-8"	189.8
68	22'-9"	5'-4"	95.5
70	23'-2"	6'-11"	132.1
72	23'-6"	8'-6"	169.3
74	23'-10"	10'-1"	207.0
75	24'-0"	5'-9"	108.2
77	24'-3"	7'-4"	146.8
79	24'-5"	8'-11"	185.7
81	24'-8"	10'-6"	225.0
82	25'-2"	6'-2"	122.0
84	25'-3"	7'-9"	162.4
86	25'-4"	9'-5"	202.9
87	25'-5"	10'-2"	223.3
88	26'-7"	5'-5"	111.6
90	27'-5"	7'-0"	153.4
92	28'-3"	8'-7"	196.5
94	29'-1"	10'-1"	241.0
95	27'-10"	5'-10"	125.4
97	28'-7"	7'-5"	169.4
99	29'-4"	9'-0"	214.6
101	30'-1"	10'-7"	260.9
102	29'-1"	6'-4"	140.2
104	29'-8"	7'-11"	186.4
106	30'-4"	9'-5"	233.6
108	31'-0"	11'-0"	281.8
109	30'-3"	6'-9"	156.1
111	30'-10"	8'-4"	204.4
113	31'-4"	9'-11"	253.5
115	31'-11"	11'-6"	303.5
116	31'-5"	7'-3"	173.1
118	31'-10"	8'-10"	223.4
120	32'-4"	10'-4"	274.4
122	32'-9"	12'-0"	326.1
123	32'-7"	7'-9"	191.3
125	32'-11"	9'-4"	243.4
127	33'-3"	10'-11"	296.4
129	33'-8"	12'-6"	349.5
130	33'-8"	8'-3"	210.5
132	33'-11"	9'-10"	264.5
134	34'-2"	11'-5"	319.0
136	34'-5"	13'-1"	373.8
137	34'-9"	8'-9"	230.9
139	34'-11"	10'-4"	286.7
141	35'-2"	12'-0"	342.7
143	35'-3"	13'-7"	399.0

MPSS - LOW PROFILE ARCH			
Structure Number	Maximum Span	Rise Ft.-In.	Approx. Area Ft. ²
69A15	19'-5"	6'-9"	105
75A18	21'-6"	7'-9"	133
81A18	23'-0"	8'-1"	147
87A18	24'-6"	8'-3"	161
93A18	25'-11"	8'-7"	176
99A21	28'-1"	9'-6"	212
102A21	28'-10"	9'-8"	220
108A24	30'-11"	10'-0"	261
111A30	32'-4"	12'-3"	319
117A24	33'-2"	11'-1"	289
123A24	34'-7"	11'-4"	308
126A24	35'-4"	11'-5"	318
129A30	37'-10"	12'-11"	383
129A36	39'-4"	14'-4"	441
*138A39	*42'-3"	15'-5"	510
*144A51	*45'-0"	18'-8"	675

* Structures require additional transverse stiffeners

MPSS - HIGH PROFILE ARCH			
Structure Number	Maximum Span	Rise Ft.-In.	Approx. Area Ft. ²
69A15-9	20'-1"	9'-1"	152
75A15-18	21'-6"	11'-8"	215
78A15-18	22'-3"	11'-10"	224
81A15-18	23'-0"	11'-11"	234
81A18-15	23'-8"	11'-10"	238
87A15-24	24'-6"	13'-9"	288
87A21-15	25'-9"	12'-10"	280
90A21-24	26'-6"	15'-3"	347
93A21-15	27'-3"	13'-2"	301
99A21-15	28'-9"	13'-5"	323
99A24-24	29'-5"	16'-5"	412
102A24-30	30'-1"	18'-0"	466
108A24-30	31'-7"	18'-4"	496
111A24-18	32'-4"	15'-5"	420
114A30-18	34'-4"	17'-0"	490
117A30-18	35'-1"	17'-1"	504
123A30-18	36'-7"	17'-4"	533
126A30-18	37'-4"	17'-6"	547

HORIZONTAL ELLIPSE			
Structure Number	Span Ft.-In.	Rise Ft.-In.	Approx. Area Ft. ²
24E15	7'-4"	5'-6"	31.6
30E18	9'-2"	6'-9"	48.2
33E15	9'-7"	6'-4"	46.7
36E18	10'-8"	7'-3"	60.1
36E21	11'-0"	8'-0"	68.2
39E21	11'-8"	8'-3"	75.1
39E24	12'-0"	8'-11"	84.1
42E21	12'-5"	8'-6"	82.2
42E24	12'-9"	9'-2"	91.7
45E21	13'-2"	8'-9"	89.6
45E24	13'-6"	9'-6"	99.6
48E24	14'-3"	9'-9"	107.8
48E27	14'-7"	10'-5"	118.7
48E30	14'-11"	11'-2"	129.9

MPSS = MULTI-PLATE® SUPER-SPAN™

This is a partial list, please see Contech Engineered Solutions Plate Design Guide for complete details, includes BridgeCor.