

Note to Designer: The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

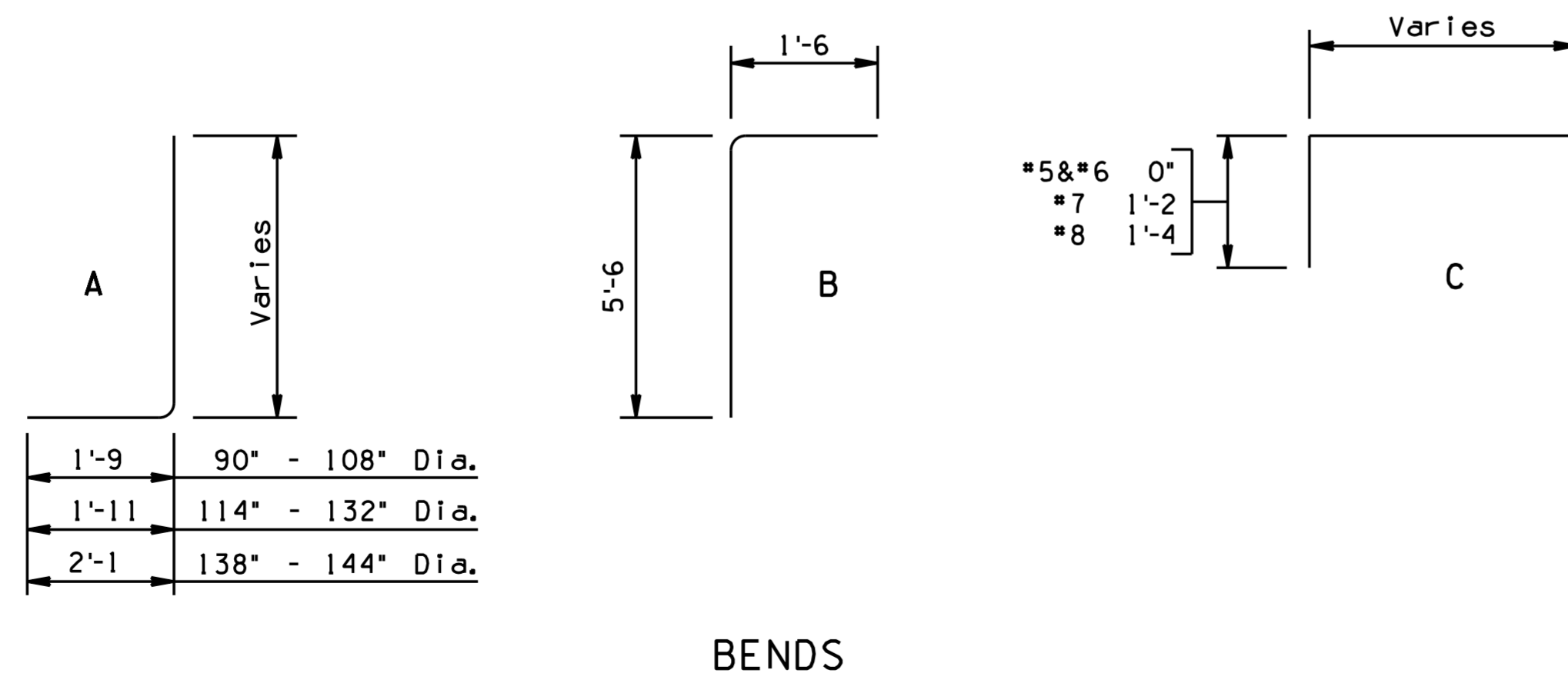
NO.	DESCRIPTION OF REVISIONS	DATE
1	Original Issue	7-12
2		
3		
4		

		STEEL LIST																																
Mark	Bend	90° Dia.		96° Dia.		102° Dia.		108° Dia.		114° Dia.		120° Dia.		126° Dia.		132° Dia.		138° Dia.		144° Dia.														
		No	Size	Lgth	No	Size	Lgth	No	Size	Lgth	No	Size	Lgth	No	Size	Lgth	No	Size	Lgth	No	Size	Lgth	No	Size	Lgth									
a1	A	6	*5	5'-9	4	*5	6'-0	6	*5	6'-0	6	*5	6'-0	6	*5	6'-3	6	*5	6'-6	6	*5	6'-6	6	*5	6'-6	6	*5	6'-9	8	*5	7'-0			
a2	A	4	*5	7'-0	4	*5	7'-3	4	*5	7'-3	6	*5	7'-3	6	*5	7'-6	6	*5	7'-9	6	*5	8'-0	6	*5	8'-0	6	*5	8'-3	6	*5	8'-9			
a3	A	4	*5	8'-3	4	*5	8'-3	4	*5	8'-3	4	*5	9'-0	6	*5	9'-3	6	*5	9'-3	6	*5	9'-6	6	*5	9'-6	6	*5	9'-9	6	*5	10'-6			
a4	A	4	*5	9'-6	4	*5	9'-3	4	*5	9'-6	4	*5	10'-0	4	*5	10'-3	6	*6	10'-6	6	*5	10'-9	6	*5	11'-0	6	*5	11'-3	6	*6	11'-9			
a5	A	4	*5	10'-9	4	*5	10'-6	4	*5	10'-6	4	*5	10'-6	4	*6	11'-0	4	*6	11'-9	4	*7	12'-0	6	*6	12'-3	6	*6	12'-6	6	*6	13'-0	6	*7	13'-6
a6	A	4	*6	12'-0	4	*6	11'-6	4	*6	11'-9	4	*6	12'-3	4	*7	13'-0	4	*7	13'-6	4	*7	13'-9	6	*7	14'-0	6	*7	14'-6	6	*7	15'-0			
a7	A				4	*6	12'-9	4	*6	13'-0	4	*7	13'-6	4	*7	14'-3	4	*7	14'-9	4	*7	15'-3	4	*7	15'-6	6	*8	16'-0	6	*8	16'-6			
b1	str	4	*4	13'-6	4	*4	14'-6	4	*4	15'-9	4	*4	16'-9	4	*4	17'-9	4	*4	19'-0	4	*4	20'-0	4	*4	21'-0	4	*4	22'-3	4	*4	23'-3			
b2	str	8	*4	12'-0	8	*4	13'-0	8	*4	14'-0	8	*4	15'-0	8	*4	16'-0	8	*4	17'-0	8	*4	18'-0	8	*4	19'-0	8	*4	20'-0	12	*4	21'-0			
b3	str	4	*4	10'-3	4	*4	11'-0	4	*4	12'-3	4	*4	13'-6	4	*4	15'-0	4	*4	16'-0	4	*4	17'-0	4	*4	18'-0	4	*4	19'-6	4	*4	21'-3			
b4	str	4	*4	7'-6	4	*4	8'-3	4	*4	9'-6	4	*4	10'-6	4	*4	12'-0	4	*4	13'-0	4	*4	14'-0	4	*4	15'-0	4	*4	16'-3	4	*4	17'-3			
b5	str	4	*4	4'-6	4	*4	5'-9	4	*4	6'-9	4	*4	7'-9	4	*4	8'-9	4	*4	9'-9	4	*4	11'-0	4	*4	12'-0	4	*4	13'-3	4	*4	14'-3			
b6	str	4	*4	1'-9	4	*4	3'-0	4	*4	4'-0	4	*4	4'-9	4	*4	5'-9	4	*4	6'-9	4	*4	7'-9	4	*4	8'-9	4	*4	10'-0	4	*4	11'-0			
b7	str							4	*4	1'-3	4	*4	2'-0	4	*4	2'-9	4	*4	3'-9	4	*4	4'-9	4	*4	5'-9	4	*4	7'-0	4	*4	8'-0			
b8	str																		4	*4	1'-9	4	*4	2'-9	4	*4	3'-9	4	*4	4'-9	4	*4	5'-9	
c	str	4	*4	10'-6	4	*4	11'-0	4	*4	11'-6	4	*4	12'-0	4	*4	12'-6	4	*4	13'-0	4	*4	13'-6	4	*4	14'-0	4	*4	14'-6	4	*4	15'-0			
d	A	6	*6	12'-3	6	*6	12'-9	6	*6	13'-3	6	*7	13'-9	6	*7	14'-6	6	*7	15'-0	6	*7	15'-6	6	*7	16'-0	6	*8	16'-6	6	*8	17'-0			
e1	C	4	*5	2'-9	6	*5	2'-9	6	*5	2'-9	6	*5	2'-9	6	*5	2'-9	6	*5	2'-9	6	*5	2'-9	8	*5	2'-9	8	*5	2'-9	8	*5	2'-9			
e2	C	4	*5	3'-3	4	*5	3'-3	6	*5	3'-6	6	*5	3'-6	6	*5	3'-6	6	*5	3'-9	6	*5	3'-9	8	*5	3'-9	8	*5	3'-9	8	*5	4'-0			
e3	C	4	*5	4'-0	4	*5	4'-0	4	*5	4'-3	6	*5	4'-3	6	*5	4'-6	6	*5	4'-6	6	*5	4'-9	6	*5	5'-0	6	*5	5'-0	8	*6	5'-3			
e4	C	4	*5	4'-6	4	*5	4'-9	4	*5	4'-9	4	*5	5'-3	6	*6	5'-3	6	*6	5'-6	6	*6	5'-9	6	*6	6'-0	6	*6	6'-3	6	*7	7'-6			
e5	C	4	*5	5'-0	4	*5	5'-3	4	*5	5'-6	4	*6	6'-0	4	*6	6'-3	6	*7	7'-6	6	*7	8'-0	6	*7	8'-3	6	*7	8'-6	6	*7	8'-6			
e6	C	4	*5	5'-9	4	*6	6'-0	4	*6	6'-3	4	*7	8'-0	4	*7	8'-3	4	*7	8'-6	6	*7	9'-0	6	*8	9'-6	6	*8	9'-9	6	*8	10'-0			
e7	C	6	*6	6'-0	6	*6	6'-3	6	*6	6'-6	6	*7	8'-3	6	*7	8'-6	6	*7	8'-9	8	*7	9'-3	8	*8	9'-9	8	*8	10'-0	8	*8	10'-3			
e8	C	9	*6	6'-0	9	*6	6'-3	10	*6	6'-6	10	*7	8'-3	11	*7	8'-6	11	*7	8'-9	12	*7	9'-3	12	*8	9'-9	13	*8	10'-0	13	*8	10'-3			
f1	str	4	*4	4'-6	6	*4	4'-6	4	*4	4'-6	4	*4	4'-9	6	*4	4'-9	6	*4	4'-9	6	*4	5'-0	6	*4	5'-0	6	*4	5'-0	6	*4	5'-3			
f2	str	4	*4	6'-3	4	*4	6'-6	4	*4	6'-0	4	*4	6'-3	4	*4	6'-6	6	*4	6'-9	6	*4	7'-0	6	*4	7'-0	6	*4	7'-3	6	*4	7'-6			
f3	str	4	*4	7'-9	4	*4	8'-3	4	*4	7'-6	4	*4	8'-0	4	*4	8'-3	4	*4	8'-9	4	*4	9'-0	6	*4	9'-0	6	*4	9'-3	6	*4	9'-6			
f4	str	4	*4	9'-6	4	*4	10'-3	4	*4	9'-3	4	*4	9'-6	4	*4	10'-0	4	*4	10'-6	4	*4	10'-9	4	*4	11'-3	6	*4	11'-6	6	*4	11'-9			
f5	str							4	*4	10'-9	4	*4	11'-3	4	*4	11'-9	4	*4	12'-3	4	*4	12'-6	4	*4	13'-3	4	*4	13'-9	4	*4	14'-0			
g	str	12	*4	12'-3	12	*4	13'-3	12	*4	14'-3	12	*4	15'-3	12	*4	16'-3	12	*4	17'-3	12	*4	18'-3	12	*4	19'-3	12	*4	20'-3	12	*4	21'-3			
j	str	6	*4	8'-3	6	*4	8'-9	6	*4	9'-3	6	*4	9'-6	6	*4	10'-0	6	*4	10'-6	6	*4	11'-0	6	*4	11'-6	6	*4	12'-0	6	*4	12'-6			
m1	str	8	*4	16'-3	8	*4	17'-6	8	*4	18'-9	10	*4	20'-0	10	*4	21'-3	10	*4	22'-6	10	*4	23'-6	12	*4	24'-9	12	*4	26'-0	12	*4	27'-3			
m2	str	2	*4	16'-3	2	*4	17'-6	2	*4	18'-9	2	*4	20'-0	2	*4	21'-3	2	*4	22'-6	2	*4	23'-6	2	*4	24'-9	2	*4	26'-0	2	*4	27'-3			
n1	str	4	*4	17'-0	4	*4	18'-0	4	*4	19'-0	5	*4	20'-0	5	*4	20'-9	5	*4	21'-9	5	*4	22'-9	6	*4	23'-9	6	*4	24'-6	6	*4	25'-6			
n2	str	1	*4	17'-0	1	*4	18'-0	1	*4	19'-0	1	*4	20'-0	1	*4	20'-9	1	*4	21'-9	1	*4	22'-9	1	*4	23'-9	1	*4	24'-6	1	*4	25'-6			
p	str	4	*5	10'-9	4	*5	11'-3	4	*5	11'-9	4	*5	12'-3	4	*5	12'-9	4	*5	13'-3	4	*5	14'-3	4	*5	14'-9	4	*5	15'-3	4	*5	15'-9			
q	str	2	*6	12'-9	2	*6	13'-3	2	*6	13'-9	2	*6	14'-3	2	*6	14'-9	2	*6	15'-3	2	*6	16'-3	2	*6	16'-9	2	*6	17'-3	2	*6	17'-9			
u	B	46	*4	7'-0	50	*4	7'-0	52	*4	7'-0	56	*4	7'-0	58	*4	7'-0	62	*4	7'-0	64	*4	7'-0	68	*4	7'-0	70	*4	7'-0	74	*4	7'-0			

		PIPE DIAMETER									
		90°	96°	102°	108°	114°	120°	126°	132°	138°	144°
A	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3	0'-3
B	2'-2	2'-2	2'-3	2'-3	2'-4	2'-4	2'-5	2'-5	2'-6	2'-6	2'-6
C	0'-10	0'-10	0'-9	0'-9	0'-8	0'-8	0'-7	0'-7	0'-6	0'-6	0'-6
D	3'-4	3'-8	4'-0	4'-4	4'-8	5'-0	5'-4	5'-8	6'-0	6'-4	6'-4
E	6'-4	6'-8	7'-0	7'-4	7'-8	8'-0	8'-4	8'-8	9'-0	9'-4	9'-4
F	12'-0	13'-0	14'-0	15'-0	16'-0	17'-0	18'-0	19'-0	20'-0	21'-0	21'-0
G	4'-11	5'-2	5'-5	5'-8	5'-11	6'-2	6'-5	6'-8	6'-11	7'-2	7'-2
H	9'-6	10'-0	10'-6	11'-0	11'-6	12'-0	12'-6	13'-0	13'-6	14'-0	14'-0
J	3'-0	3'-1	3'-2	3'-3	3'-4	3'-5	3'-6	3'-7	3'-8	3'-9	3'-9
K	16'-7 <sup>3</sup> / <sub>8</sub>	17'-10 <sup>1</sup> / <sub>4</sub>	19'-0	20'-3 <sup>1</sup> / <sub>8</sub>	21'-5 <sup>1</sup> / <sub>4</sub>	23'-2	23'-11 <sup>1</sup> / <sub>2</sub>	25'-2 <sup>3</sup> / <sub>8</sub>	26'-4 <sup>3</sup> / <sub>8</sub>	27'-7 <sup>1</sup> / <sub>4</sub>	27'-7 <sup>1</sup> / <sub>4</sub>
L	8'-6 <sup>3</sup> / <sub>8</sub>	9'-0	9'-5 <sup>3</sup> / <sub>8</sub>	9'-11 <sup>1</sup> / <sub>8</sub>	10'-4 <sup>1</sup> / <sub>4</sub>	10'-10	11'-4 <sup>1</sup> / <sub>2</sub>	11'-10 <sup>3</sup> / <sub>8</sub>	12'-3 <sup>3</sup> / <sub>8</sub>	12'-9 <sup>1</sup> / <sub>4</sub>	12'-9 <sup>1</sup> / <sub>4</sub>
M	4'-1 <sup>1</sup> / <sub>4</sub>	4'-4 <sup>1</sup> / <sub>4</sub>	4'-6 <sup>1</sup> / <sub>2</sub>	4'-9 <sup>1</sup> / <sub>2</sub>	4'-11 <sup>3</sup> / <sub>4</sub>	5'-2 <sup>3</sup> / <sub>4</sub>	5'-6 <sup>1</sup> / <sub>2</sub>	5'-9 <sup>1</sup> / <sub>2</sub>	5'-11 <sup>3</sup> / <sub>4</sub>	6'-2 <sup>3</sup> / <sub>4</sub>	6'-2 <sup>3</sup> / <sub>4</sub>
N	5'-6 <sup>5</sup> / <sub>8</sub>	5'-9 <sup>5</sup> / <sub>8</sub>	6'-0 <sup>5</sup> / <sub>8</sub>	6'-3 <sup>5</sup> / <sub>8</sub>	6'-6 <sup>5</sup> / <sub>8</sub>	6'-9 <sup>5</sup> / <sub>8</sub>	7'-2 <sup>3</sup> / <sub>4</sub>	7'-5 <sup>3</sup> / <sub>4</sub>	7'-8 <sup>3</sup> / <sub>4</sub>	7'-11 <sup>3</sup> / <sub>4</sub>	7'-11 <sup>3</sup> / <sub>4</sub>

QUANTITIES		
PIPE Dia.	RE INF Lbs.	CONCRETE C. Y.
90°	1460	26.4
96°	1635	29.2
102°	1760	32.1
108°	2120	35.1
114°	2365	38.1
120°	2615	41.8
126°	2870	46.8
132°	3215	50.5
138°	3575	54.2
144°	3880	58.1

NOTE:  
Quantities and steel list shown are for one headwall.



BENDS

NOTE:  
For General Notes and additional Details, see SD 6.30 (1 of 5) and SD 6.31 (5 of 8).

DESIGN APPROVED <i>Shafiq U. Hasan</i>		ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL	
APPROVED FOR DISTRIBUTION <i>Jason A. Nehme</i>		PIPE CULVERT HEADWALLS RIGHT ANGLE OUTLET 2 : 1 SLOPE	
ROUTE	PROJECT NO.	FA NO.	DRAWING NO. SD 6.31 (6 of 8)
LOCATION	</		