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.

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	No	Size	Lgth	No	Size	Lgth
a1	A	8	#5	8'-0	8	#5	8'-3	10	#5	8'-6	10	#5	8'-9	10	#5	9'-3	10	#5	9'-6	12	#5	9'-9	12	#5	10'-0	12	#5	10'-6	12	#5	10'-9
a2	A	8	#5	8'-9	8	#5	9'-0	10	#5	9'-3	10	#5	9'-6	10	#5	10'-0	10	#5	10'-3	10	#5	10'-6	12	#5	11'-0	12	#5	11'-3	12	#5	11'-6
a3	A	8	#5	9'-6	8	#5	9'-9	8	#5	10'-0	10	#5	10'-3	10	#5	10'-9	10	#6	11'-0	10	#6	11'-6	10	#6	12'-0	12	#6	12'-3	12	#6	12'-6
a4	A	8	#5	10'-0	8	#5	10'-3	8	#5	10'-9	8	#6	11'-3	10	#6	11'-6	10	#6	12'-0	10	#6	12'-3	10	#6	12'-9	12	#6	13'-0	12	#7	13'-6
a5	A	8	#5	10'-9	8	#5	11'-0	8	#6	11'-6	8	#6	12'-0	10	#6	12'-6	10	#7	12'-9	10	#6	13'-0	10	#6	13'-9	10	#6	14'-0	12	#6	14'-6
a6	A	8	#5	11'-6	8	#6	11'-9	8	#6	12'-3	8	#7	12'-9	8	#7	13'-3	10	#7	13'-6	10	#7	14'-0	10	#7	14'-6	10	#7	15'-0	10	#7	15'-6
a7	A	6	#6	12'-3	8	#6	12'-6	8	#7	13'-0	8	#7	13'-6	8	#7	14'-0	8	#7	14'-6	10	#7	14'-9	10	#7	15'-6	10	#7	16'-0	10	#7	16'-6
b1	str	4	#4	26'-3	4	#4	27'-9	4	#4	29'-3	4	#4	30'-9	4	#4	32'-3	4	#4	34'-0	4	#4	35'-6	4	#4	37'-0	4	#4	38'-6	4	#4	40'-0
b2	str	12	#4	26'-0	12	#4	27'-6	16	#4	29'-0	16	#4	30'-6	16	#4	32'-0	16	#4	33'-6	16	#4	35'-0	16	#4	36'-6	20	#4	38'-0	20	#4	39'-6
b3	str	4	#4	24'-0	4	#4	27'-0	4	#4	21'-0	4	#4	24'-0	4	#4	26'-0	4	#4	30'-0	4	#4	33'-0	4	#4	36'-0	4	#4	29'-6	4	#4	33'-0
b4	str	4	#4	14'-6	4	#4	17'-9	4	#4	12'-0	4	#4	14'-9	4	#4	16'-6	4	#4	20'-9	4	#4	23'-3	4	#4	26'-6	4	#4	20'-9	4	#4	23'-6
b5	str	4	#4	5'-0	4	#4	8'-6	4	#4	3'-0	4	#4	5'-6	4	#4	6'-9	4	#4	11'-6	4	#4	13'-6	4	#4	17'-3	4	#4	12'-3	4	#4	14'-3
b6	str																4	#4	2'-6	4	#4	4'-0	4	#4	8'-0	4	#4	3'-6	4	#4	5'-0
b7	str																														
b8	str																														
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	#7	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	10	#5	3'-3	10	#5	3'-3	10	#5	3'-6	10	#5	3'-6	12	#5	3'-9	12	#5	3'-9	12	#5	4'-0	12	#5	4'-3	14	#5	4'-3	14	#5	4'-6
e2	C	10	#5	3'-6	10	#5	3'-9	10	#5	4'-0	10	#5	4'-0	12	#5	4'-3	12	#5	4'-3	12	#5	4'-6	12	#5	4'-9	14	#5	5'-0	14	#6	5'-3
e3	C	8	#5	4'-0	10	#5	4'-3	10	#5	4'-6	10	#5	4'-6	10	#5	4'-9	12	#5	5'-0	12	#5	5'-3	12	#6	5'-6	12	#6	5'-6	14	#6	5'-9
e4	C	8	#5	4'-6	8	#5	4'-9	10	#5	5'-0	10	#5	5'-0	10	#5	5'-3	10	#6	5'-6	12	#6	5'-9	12	#6	6'-0	12	#6	6'-3	12	#7	7'-9
e5	C	8	#5	5'-0	8	#5	5'-3	10	#5	5'-6	10	#5	5'-9	10	#6	6'-0	10	#6	6'-3	12	#6	6'-6	12	#7	7'-9	12	#7	8'-0	12	#7	8'-6
e6	C	8	#5	5'-6	8	#5	5'-9	8	#6	6'-0	10	#6	6'-3	10	#6	6'-6	10	#7	8'-0	10	#7	8'-3	12	#7	8'-6	12	#7	8'-9	12	#8	9'-3
e7	C	6	#5	5'-6	6	#5	5'-9	6	#6	6'-0	6	#6	6'-3	6	#6	6'-6	6	#7	8'-0	8	#7	8'-3	8	#7	8'-6	8	#7	8'-9	8	#8	9'-3
e8	C	9	#5	5'-6	9	#5	5'-9	10	#6	6'-0	10	#6	6'-3	11	#6	6'-6	11	#7	8'-0	12	#7	8'-3	12	#7	8'-6	13	#7	8'-9	13	#8	9'-3
f1	str	8	#4	6'-3	8	#4	6'-6	8	#4	6'-9	10	#4	7'-0	10	#4	7'-3	10	#4	7'-6	10	#4	7'-9	10	#4	8'-0	12	#4	8'-3	12	#4	8'-6
f2	str	8	#4	7'-3	8	#4	7'-6	8	#4	7'-9	8	#4	8'-0	10	#4	8'-3	10	#4	8'-9	10	#4	9'-0	10	#4	9'-3	10	#4	9'-6	12	#4	9'-9
f3	str	8	#4	8'-0	8	#4	8'-6	8	#4	8'-9	8	#4	9'-0	8	#4	9'-6	10	#4	9'-9	10	#4	10'-3	10	#4	10'-6	10	#4	10'-9	10	#4	11'-3
f4	str	6	#4	9'-0	8	#4	9'-6	8	#4	9'-9	8	#4	10'-3	8	#4	10'-6	8	#4	11'-0	10	#4	11'-6	10	#4	11'-9	10	#4	12'-3	10	#4	12'-6
f5	str	6	#4	10'-0	6	#4	10'-6	8	#4	10'-9	8	#4	11'-3	8	#4	11'-9	8	#4	12'-3	8	#4	12'-9	10	#4	13'-0	10	#4	13'-6	10	#4	14'-0
g	str	12	#4	26'-3	12	#4	27'-9	12	#4	29'-3	12	#4	30'-9	12	#4	32'-3	12	#4	33'-9	12	#4	35'-3	12	#4	36'-9	12	#4	38'-3	12	#4	39'-9
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	30'-0	8	#4	31'-9	8	#4	33'-3	8	#4	35'-0	10	#4	36'-6	10	#4	38'-3	10	#4	40'-0	10	#4	41'-9	12	#4	43'-3	12	#4	45'-0
m2	str	2	#4	30'-0	2	#4	31'-9	2	#4	33'-3	2	#4	35'-0	2	#4	36'-6	2	#4	38'-3	2	#4	40'-0	2	#4	41'-9	2	#4	43'-3	2	#4	45'-0
n1	str	4	#4	16'-6	4	#4	17'-3	4	#4	18'-3	4	#4	19'-0	5	#4	19'-9	5	#4	20'-6	5	#4	21'-6	5	#4	22'-6	6	#4	23'-3	6	#4	24'-0
n2	str	1	#4	16'-6	1	#4	17'-3	1	#4	18'-3	1	#4	19'-0	1	#4	19'-9	1	#4	20'-6	1	#4	21'-6	1	#4	22'-6	1	#4	23'-3	1	#4	24'-0
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	82	#4	7'-0	88	#4	7'-0	94	#4	7'-0	98	#4	7'-0	102	#4	7'-0	108	#4	7'-0	112	#4	7'-0	116	#4	7'-0	122	#4	7'-0	126	#4	7'-0

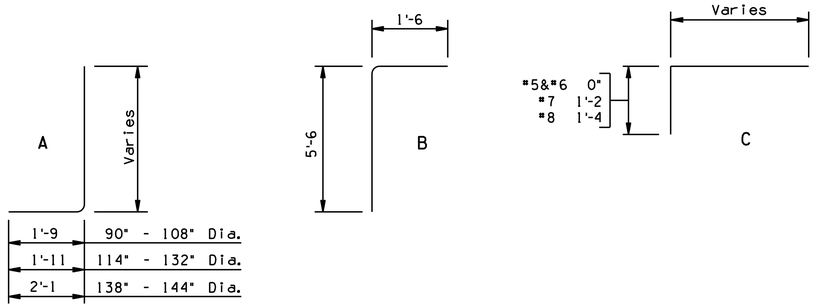
PIPE DIAMETER

	90"	96"	102"	108"	114"	120"	126"	132"	138"	144"
A	0'- 3	0'- 6	0'- 3	0'- 6	0'- 3	0'- 6	0'- 3	0'- 6	0'- 3	0'- 6
B	2'- 2	2'- 2	2'- 3	2'- 3	2'- 4	2'- 4	2'- 5	2'- 5	2'- 6	2'- 6
C	1'- 4	1'- 6	1'- 6	1'- 7	1'- 8	1'-10	1'-11	2'- 1	2'- 2	2'- 3
D	2'- 6	2'- 7	2'- 9	2'-11	3'- 0	3'- 1	3'- 2	3'- 3	3'- 4	3'- 6
E	6'- 0	6'- 3	6'- 6	6'- 9	7'- 0	7'- 3	7'- 6	7'- 9	8'- 0	8'- 3
F	26'- 0	27'- 6	29'- 0	30'- 6	32'- 0	33'- 6	35'- 0	36'- 6	38'- 0	39'- 6
G	4'-11	5'- 2	5'- 5	5'- 8	5'-11	6'- 2	6'- 5	6'- 8	6'-11	7'- 2
H	9'- 6	10'- 0	10'- 6	11'- 0	11'- 6	12'- 0	12'- 6	13'- 0	13'- 6	14'- 0
J	5'- 3	5'- 6	5'- 9	6'- 0	6'- 3	6'- 6	6'- 9	7'- 0	7'- 3	7'- 6
K	30'- 4 5/8	32'- 0 3/4	33'- 8 1/8	35'- 4 1/4	36'-11 5/8	38'- 7 3/4	40'- 4 1/2	42'- 0 5/8	43'- 8	45'- 4 1/8
L	8'- 3 5/8	8'- 8 3/4	9'- 1 1/8	9'- 6 1/4	9'-10 5/8	10'- 3 3/4	10'- 9 1/2	11'- 2 5/8	11'- 7	12'- 0 1/8
M	4'- 1 1/4	4'- 4 1/4	4'- 6 1/2	4'- 9 1/2	4'-11 3/4	5'- 2 3/4	5'- 6 1/2	5'- 9 1/2	5'-11 3/4	6'- 2 3/4
N	5'- 6 5/8	5'- 9 5/8	6'- 0 5/8	6'- 3 5/8	6'- 6 5/8	6'- 9 5/8	7'- 2 3/4	7'- 5 3/4	7'- 8 3/4	7'-11 3/4

QUANTITIES

PIPE Dia.	REINF Lbs.	CONCRETE C.Y.
90"	2605	46.7
96"	2850	50.9
102"	3300	55.0
108"	3600	59.5
114"	3965	64.2
120"	4550	69.2
126"	4850	78.8
132"	5245	84.5
138"	5720	90.2
144"	6420	96.1

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).

NO	DESCRIPTION OF REVISIONS	MADE BY	DATE
1	Original Issue	S.M.H.	7-12
2			
3			
4			

DESIGN APPROVED: Shafi U. Hasan

APPROVED FOR DISTRIBUTION: Jean A. Nehme

ARIZONA DEPARTMENT OF TRANSPORTATION
INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION
BRIDGE GROUP STRUCTURE DETAIL

PIPE CULVERT HEADWALLS
RIGHT ANGLE OUTLET
6 : 1 SLOPE

ROUTE	PROJECT NO.	FA NO.	DRAWING NO.
			SD 6.31 (8 of 8)
LOCATION			SHEET NO. OF