ROUND CORRUGATED STEEL PIPE
2 2/3" X 1/2" CORRUGATIONS
RIVETED, SPOT WELDED OR HELICAL LOCK SEAM FABRICATION

DIAMETER OR SPAN IN	MIN. COVER IN	MAXIMUM FILL HEIGHT (FT.) THICKNESS 0.064	0.079	0.109	0.138	0.168
12	12	84	91			
15	12	67	72			
18	12	55	60			
21	12	47	52	66		
24	12	41	45	58		
30	18	33	36	46		
36	18	27	30	39	40	
42	18	30	42	46	48	49
48	18	26	37	44	45	46
54	18		33	43	44	45
60	18			42	43	44
66	18			42	42	43
72	18				40	42
78	18					39
84	18					39

FOR 15"-36" DIAMETER & SPAN 18"-43" USE 4 1/2 RIVETS/FOOT.
FOR 42"-84" DIAMETER & SPAN 50"-85" USE 9 RIVETS/FOOT.

CORRUGATED STEEL PIPE ARCHES
2 2/3" X 1/2" CORRUGATIONS
RIVETED, WELDED OR HELICAL FABRICATION

PIPE DIM. SPAN-RISE INCHES	CORNER RADIUS INCHES	MIN. COVER INCHES	MIN. THICKNESS INCHES	MAX. FILL HEIGHT FEET
17 X 13	3	18	0.064	16
21 X 15	3	18	0.064	15
24 X 18	3	18	0.064	13
28 X 20	3	18	0.060	12
35 X 24	3	18	0.064	12
42 X 29	3 1/2	18	0.064	10
49 X 33	4	18	0.079	10
57 X 38	5	18	0.109	10
64 X 43	6	18	0.109	10
71 X 47	7	18	0.138	10
77 X 52	8	18	0.168	10
83 X 57	9	18	0.168	10

FOR 0.064 THICKNESS & 0.079 USE 5/16" DIAMETER RIVETS.
FOR 0.109, 0.138 & 0.168 THICKNESS USE 3/8" DIA. RIVETS.

FOR 12" THRU 36" DIA. & SPAN 18"- 43" USE 4 1/2 RIVETS / FT.

FOR 42" THRU 72" DIA. & SPAN 50"- 72" USE 9 RIVETS / FT.

FOR 0.060 & 0.075 THICKNESS USE 5/16" DIA. RIVETS.

FOR 0.105, 0.135 & 0.164 USE 3/8" DIA. RIVETS.

THE ABOVE SPECIFICATIONS ARE FOR "ROUND CORRUGATED ALUMINUM PIPE" AND "CORRUGATED ALUMINUM PIPE ARCHES."

ROUND CORRUGATED ALUMINUM STRUCTURAL PL. PIPE
9" X 2 1/2" CORRUGATIONS
BOLTED FABRICATION

PIPE DIAMETER INCHES	MIN. COVER INCHES	MAXIMUM FILL HEIGHT (FT.) THICKNESS 5 1/3"- 3/4" Ø ALUM. BOLTS / FT. 0.100	0.125	0.152	5 1/3" 3/4" Ø STEEL BLTS./FT. 0.175	0.200	0.225	0.250
60	18	26	34	44	48	52	56	60
66	18	23	31	38	42	44	47	50
72	18	20	27	34	41	46	51	56
84	18	19	25	32	38	43	47	51
96	18	17	22	28	33	38	41	45
108	24	15	19	25	29	33	37	40
120	24	13	17	22	26	30	33	36
132	24	12	16	20	24	27	30	33
144	24		14	18	22	25	28	30
156	24		13	17	20	23	25	28
168	24			16	19	21	24	26
180	24				18	20	22	24

ALUMINUM STRUCTURAL PLATE PIPE NOT ACCEPTABLE IF PAVED INVERT REQUIRED.

ROUND CORRUGATED STEEL PIPE
5"x 1" & 3"x 1" CORRUGATIONS
RIVETED, SPOT WELDED OR HELICAL LOCK SEAM FABRICATION

DIAMETER OR SPAN INCHES	MIN. COVER INCHES	MAXIMUM FILL HEIGHT (FT.) THICKNESS 0.064	0.079	0.109	0.138	0.168
36	18	48	60	79	91	103
42	18	41	51	65	72	80
48	18	36	45	57	62	67
54	18	32	40	52	56	59
60	18	29	36	49	52	54
66	18	26	32	47	49	51
72	18	24	30	44	47	49
78	18	22	28	41	46	47
84	18	21	26	38	45	46
90	18	19	25	35	42	45
96	18	18	22	33	40	44
102	24	17	21	31	37	42
108	24		20	29	35	39
114	24		19	28	33	37
120	24			26	32	35

USE 8 RIVETS/FOOT FOR ALL DIAMETERS.
FOR 0.064 & 0.079 THICKNESS USE 3/8" DIAMETER RIVETS.
FOR 0.109, 0.138 & 0.168 THICKNESS USE 7/16" DIAMETER RIVETS.

CORRUGATED STEEL PIPE ARCHES
5"x 1" & 3"x 1" CORRUGATIONS
RIVETED, WELDED OR HELICAL FABRICATION

PIPE DIM. SPAN-RISE INCHES	CORNER RADIUS INCHES	MIN. COVER INCHES	MIN. THICKNESS INCHES	MAX. FILL HEIGHT FEET
43 X 27	5	18	0.064	12
50 X 31	6	18	0.064	12
58 X 36	7	18	0.064	12
65 X 40	8	18	0.064	12
72 X 44	9	18	0.064	12
73 X 55	12	18	0.064	16
81 X 59	14	18	0.079	15
87 X 63	14	18	0.079	14
95 X 67	16	18	0.109	13
103 X 71	16	24	0.109	12
112 X 75	18	24	0.109	11
117 X 79	18	24	0.109	10
128 X 83	18	24	0.138	9

ROUND CORRUGATED STEEL STRUCTURAL PLATE PIPE
6" X 2" CORRUGATIONS
BOLTED FABRICATION 4-3/4" Ø BOLTS / FOOT

PIPE DIAMETER INCHES	MIN COVER INCHES	MAXIMUM FILL HEIGHT (FT) THICKNESS 0.109	0.138	0.168	0.188	0.218	0.249	0.280
60	18	42	62	81	93	108*	119	129
66	18	38	56	73	84	191	99	107
72	18	35	51	67	74	80	86	92
78	18	32	47	62	67	71	76	81
84	18	30	44	57	61	65	69	73
90	18	28	41	54	58	61	64	67
96	18	26	38	50	55	57	60	62
102	30	24	36	47	52	54	56	59
108	30	23	34	45	50	52	54	56
114	30	22	32	42	48	50	52	53
120	30	21	31	40	46	49	50	52
126	30	20	29	38	44	48	49	50
132	30	19	28	36	42	47	48	49
144	30	17	25	33	38	45	46	47
156	30	16	23	31	35	43	45	46
168	30	15	22	28	33	40	44	45
180	30	14	20	27	31	37	43	44
192	30		19	25	29	35	41	43
204	36		18	23	27	32	38	42
216	36		17	22	25	31	36	40
228	36			21	24	29	34	37
240	36			20	23	28	33	36
252	36				22	26	31	34

* FILL HEIGHTS OVER 100' USED ONLY AFTER THOROUGH INVESTIGATION OF FOUNDATION MATERIAL.

ROUND CORRUGATED ALUMINUM PIPE
2 2/3" X 1/2" CORRUGATIONS
RIVETED, WELDED OR HELICAL FABRICATION

PIPE	MIN.	MAXIMUM FILL HEIGHT (FT) THICKNESS 0.060	0.075	0.105	0.135	0.164
12	12	45	45	73		
15	12	30	36	60		
18	12	25	30	43		
21	12	21	25	35	30	
24	12	18	22	30	33	
30	18	15	18	25	27	28
36	18	12	15	23	24	25
42	18		21	22	22	23
48	18				22	22
54	18				21	21
60	18				17	21
66	18				12	16
72	18					12

CORRUGATED ALUMINUM PIPE ARCHES
2 2/3" X 1/2" CORRUGATIONS
RIVETED, WELDED OR HELICAL FABRICATION

PIPE DIM. SPAN-RISE INCHES	CORNER RADIUS INCHES	MIN. COVER INCHES	MIN. THICKNESS INCHES	MAX FILL HEIGHT FEET
18 X 11	3 1/2	18	0.060	15
22 X 13	4 3/4	18	0.060	14
25 X 16	4 1/2	18	0.060	12
29 X 18	4 1/2	18	0.060	10
36 X 22	5	18	0.060	9
43 X 27	5 1/2	18	0.075	9
50 X 31	6	18	0.105	8
58 X 36	7	18	0.135	8
65 X 40	8	18	0.135	8
72 X 44	9	18	0.164	8

CORRUGATED ALUMINUM PIPE ARCHES
9" X 2 1/2" CORRUGATIONS
BOLTED FABRICATION *

PIPE DIMENSION SPAN-RISE FEET	CORNER RADIUS INCHES	MIN COVER INCHES	MIN. THICKNESS INCHES	MAX. FILL HEIGHT FEET
5-11 X 5-4	28.8	18	0.100	16
6-8 X 5-7	28.8	18	0.100	16
7-4 X 5-11	28.8	18	0.100	15
8-0 X 6-2	28.8	18	0.100	14
8-7 X 6-6	28.8	24	0.100	13
9-0 X 6-8	28.8	24	0.100	12
9-4 X 6-10	28.8	24	0.100	13
10-10 X 7-1	28.8	24	0.100	13
10-5 X 7-3	28.8	24	0.100	12
11-2 X 7-6	28.8	24	0.125	15
11-8 X 7-10	28.8	24	0.125	14
12-2 X 8-0	28.8	24	0.125	13
12-10 X 8-3	28.8	24	0.125	13
13-7 X 8-7	28.8	24	0.150	12
14-3 X 8-10	28.8	24	0.150	11
14-9 X 9-2	28.2	24	0.175	10
15-3 X 9-4	28.8	24	0.175	10
16-0 X 9-7	28.8	36	0.200	10
16-8 X 9-11	28.8	36	0.225	10
16-11 X 10-1	28.8	36	0.250	9

* THICKNESS TO 0.175 USE 5 1/3 - 3/4 Ø ALUM. BOLTS/FOOT.
THICKNESS TO 0.200 & OVER USE 5 1/3 - 3/4 Ø STEEL BOLTS/FOOT.

CORRUGATED STEEL PIPE ARCHES
6" X 2" CORRUGATIONS
BOLTED FABRICATION 4-3/4" Ø BOLTS/FOOT *

PIPE DIMENSION SPAN RISE FEET	CORNER RADIUS INCHES	MIN COVER INCHES	MIN. THICKNESS INCHES	MAX. FILL HEIGHT FEET
6-1 X 4-7	18	18	0.109	15
7-10 X 5-1	18	18	0.109	15
7-11 X 5-7	18	18	0.109	12
8-10 X 6-1	18	24	0.109	11
9-9 X 6-7	18	24	0.109	10
10-11 X 7-1	18	24	0.109	9
11-10 X 7-7	18	24	0.109	8
12-10 X 8-4	18	24	0.109	8
14-1 X 8-9	18	24	0.109	7
15-4 X 9-3	18	24	0.138	7
15-10 X 9-10	18	24	0.138	7
16-7 X 10-1	18	36	0.138	7
13-3 X 9-4	31	24	0.109	13
14-2 X 9-10	31	24	0.109	12
15-4 X 10-4	31	24	0.138	11
16-3 X 10-10	31	36	0.138	11
17-2 X 11-4	31	36	0.138	10
18-1 X 11-10	31	36	0.168	9
19-3 X 12-4	31	36	0.168	9
19-11 X 12-10	31	36	0.168	8
20-7 X 13-2	31	36	0.188	8

REGISTERED PROFESSIONAL ENGINEER
J. BLAKE WEBSTER
No. 7728
STATE OF UTAH

I CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF UTAH AND DO ALSO CERTIFY THAT THIS DRAWING/PLAN IS ACCURATE AS DEPICTED AND STRUCTURES ASSOCIATED WITH THIS PLAN ARE DESIGNED ACCORDING TO PRUDENT ENGINEERING PRACTICES TO THE BEST OF MY KNOWLEDGE AND BELIEF.

J. Blake Webster 11/15/91
J. BLAKE WEBSTER NO. 7728 DATE

As Constructed
Creamer & Noble
CONSULTING ENGINEERS

1. FILL HEIGHTS SHOWN ARE MAXIMUM FROM TOP OF PIPE TO TOP OF SUBGRADE FOR THICKNESS SHOWN FOR PIPE INSTALLED WITH ADEQUATE BEDDING AND BACKFILL IN ACCORDANCE WITH STATE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

2. EXCEPT FOR STRUCTURAL PLATE PIPE, ONE THICKNESS SHALL BE USED FOR THE FULL LENGTH OF PIPE WHICH SHALL BE THE THICKNESS REQUIRED BY THE MAXIMUM HEIGHT OF FILL OVER THE PIPE.

3. THE NUMBER OF SPOT WELDS PER FOOT FOR SPOT WELDED PIPE SHALL BE AT LEAST EQUAL TO THE NUMBER OF RIVETS REQUIRED.

4. THE DEFLECTION OF THE PIPE SHALL NOT EXCEED 5% DURING CONSTRUCTION. IF IT EXCEEDS 5% IT SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.

5. FOR BEDDING DETAILS SEE STD. DWG. 605-20

6 GAGES SHOWN ARE ADEQUATE ONLY FOR FINISHED CONSTRUCTION. DURING CONSTRUCTION MINIMUM COVER SHALL BE PROVIDED TO PROTECT STRUCTURE FROM DAMAGE.

2-5-80 INC. 5x1 CORR.
5-7-74 INCLUDED 12" PIPE - CHANGED CHARTS
3 27 73 CHANGED CHARTS.

5-1

SUPERSEDES

REVISIONS

Date	Appr.
3 27 73	
5-7-74	
2.5.80	

FILL HEIGHTS FOR PIPE CULVERTS

RECOMMENDED FOR APPROVAL:
CHAIRMAN STANDARDS COMMITTEE — NOV 12 1964
APPROVED:
STATE HIGHWAY ENGINEER — NOV 12 1964

STD. DWG. NO. 605-1

UTAH POWER & LIGHT COMPANY
DEPARTMENT OF MINING & EXPLORATION
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