

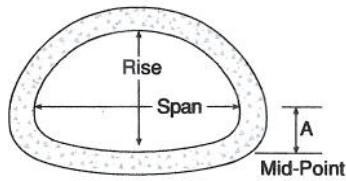
## **Concrete Arch Pipe**

**#41**

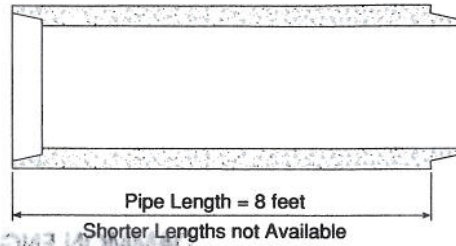
Hanson

- Flared end sections are not permitted.
- Pipe to be reinforced, Class III minimum.
- Portland cement for concrete pipe to conform to ASTM C 150, Type II, with a compressive strength of 4000 psi.
- Bed and backfill pipe in conformance with specifications.
- Provide security barriers in accordance with UFC 3-200-10N.
- Preformed joint sealant to conform to ASTM C 443.

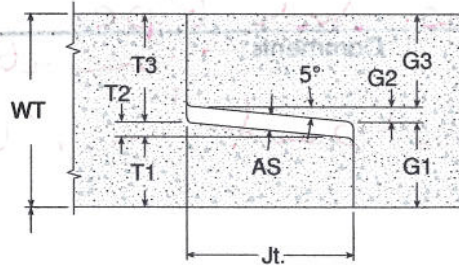
# Reinforced Concrete Pipe



**End View**



Pipe Data							
Span (in.)	Rise (in.)	Rd. Equiv Pipe Size (in.)	Metric Equiv.		Opening Sq. Ft. (in.)	Weight (lb. ft.)	Mid-Point A (in.)
			Rise (mm)	Span (mm)			
18	11	15	460	280	1.1	188	4 11/16
22	13	18	560	345	1.6	233	6
29	18	24	725	460	2.9	325	5 29/32
36	23	30	920	570	4.4	392	7 11/16
44	27	36	1,110	675	6.5	537	8 9/16
51	31	42	1,300	795	8.7	696	10 1/16
58	36	48	1,485	915	11.4	885	11 19/32
65	40	54	1,650	1,015	14.3	1,079	13
73	45	60	1,855	1,145	17.7	1,333	14 11/16
88	54	72	2,235	1,370	25.6	1,856	17



Joint Dimensions									
Size (in.)	Wall (in.)	Jt. (in.)	G1 (in.)	G2 (in.)	G3 (in.)	T1 (in.)	T2 (in.)	T3 (in.)	AS (in.)
18 x 11	3	2 1/4	1.281	0.197	1.522	1.000	0.197	1.803	0.28
22 x 13	3 1/8	2 1/4	1.406	0.197	1.522	1.125	0.197	1.803	0.28
29 x 18	3 1/2	2 3/4	1.516	0.234	1.750	1.250	0.234	2.016	0.27
36 x 23	3 1/2	3	1.594	0.262	1.644	1.313	0.262	1.925	0.28
44 x 27	4	3 1/2	1.719	0.306	1.975	1.438	0.306	2.256	0.28
51 x 31	4 1/2	3 1/2	1.906	0.306	2.288	1.625	0.306	2.569	0.28
58 x 36	5	3 1/2	2.281	0.306	2.413	2.000	0.306	2.694	0.28
65 x 40	5 1/2	5	2.625	0.437	2.438	2.313	0.437	2.750	0.31
73 x 45	6	5	2.938	0.437	2.625	2.375	0.437	3.188	0.56
88 x 54	7	6	3.188	0.525	3.287	2.625	0.525	3.850	0.56



**Note:**

- (a.) Joint Material: Preformed Flexible Mastic (Federal Spec. SS-S-210A)  
Bituminous Plastic Cement. (M.D.O.T. Section 707.04)
- (b.) All Pipe manufactured according to ASTM Spec. C-506 & AASHTO M-206.

**-No Scale-**  
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	SECTION/PAGE	DATE
Reinforced Concrete Arch Pipe, 15" - 72"		3.7	5-15-03



Project Name: Stennis Riverine  
Contract: N69450-05-DC094  
Beam Proj.: 3013-70

Submittal: 02300-01  
Reviewed  
Reviewed by: J. Collins  
DATE: 3/25/09

**DAMMON ENGINEERING INC**

Date: 3.31.09 Project: Lewis ROF  
Reviewed: \_\_\_\_\_  
Reviewed as Noted: X  
Revise and Resubmit: \_\_\_\_\_  
Rejected: \_\_\_\_\_  
Other: \_\_\_\_\_

Corrections or comments made on the shop drawings during this review do not relieve the contractor from compliance with requirements of the drawings and specifications. This check is only for review of the general conformance with the design concept of the project and general compliance with the information given in the contract documents. This contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his or her work with that of all other trades and performing all in a safe and satisfactory manner.

Submittal Item: Conc. Arch Pipe  
Comments: See attached  
Robert W. [Signature]

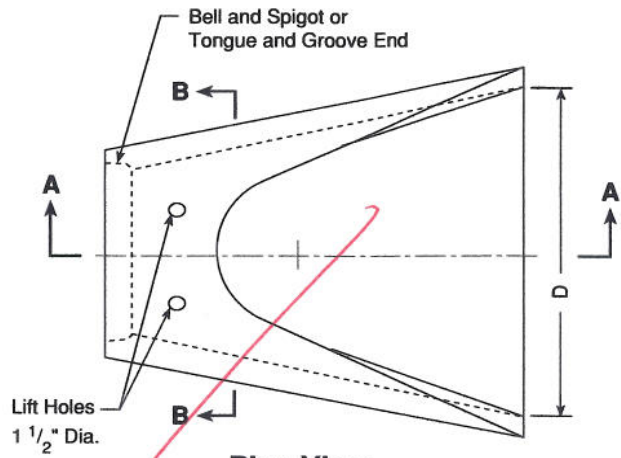
**BROADMOOR, L.L.C.**

I hereby agree that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated with contract number N69450-05-D-0096, is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for Government approval.

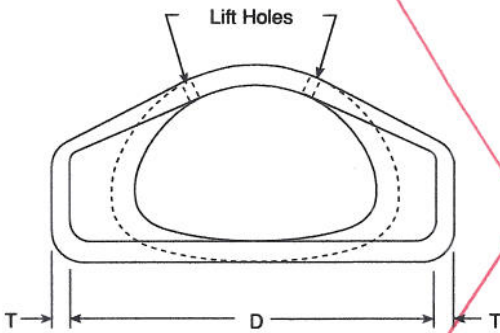
Robert W. [Signature]  
DOC Manager Date 3.31.09

Henry M. Calk  
QC OFFICER Date 3/31/09

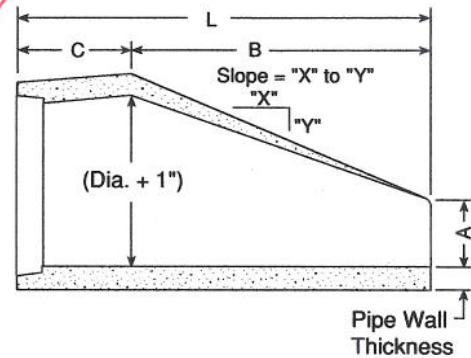
# Precast Drainage Structures



**Plan View**



**Section B-B**



**Section A-A**

## Standard Dimensions

Equiv. Size (In.)	Span-Rise (Nominal) (In.)	Metric Equiv. (mm)	Wall Thick. (In.)	Weight Lbs. per Section	Slope	A (In.)	B (In.)	C (In.)	D (In.)	L (In.)
18	22 x 13	560 x 345	2 1/2	1,050	3:1	7	27	45	36	72
24	29 x 18	725 x 460	3	1,580	3:1	8	39	33	48	72
30	36 x 23	920 x 570	3 1/2	2,250	3:1	10	48	24	60	72
36	44 x 27	1110 x 675	4	3,900	3:1	10	60	36	72	96
42	51 x 31	1300 x 795	4 1/2	5,420	3:1	15	60	36	78	96
48	58 x 36	1485 x 915	5	6,540	3:1	21	60	36	84	96
54	65 x 40	1650 x 1015	5 1/2	7,640	3:1	25	60	36	90	96
60	73 x 45	1855 x 1145	6	9,510	3:1	26	75	21	96	96
72	88 x 54	2235 x 1370	7	14,840	3:1	35	78	22	120	100

**Note:**

(a.) Joint Material: Preformed Flexible Mastic (Federal Spec. SS-S-210A), Bituminous Plastic Cement.

**-No Scale-**  
All dimensions subject to allowable specification tolerances.

TITLE	PLANT	SECTION.PAGE	DATE
<b>Flared End Section For Concrete Arch Pipe</b>		8.37	5-15-03





# TECHNICAL DATA BULLETIN

## BUTYL-NEK

*Preformed Plastic Joint Sealant for  
Pipe, Box, Vaults, Manholes*

	TEST	REQUIRED	RAM-NEK	BUTYL-NEK	RUB'R-NEK	BRAND X
<b>Chemical Composition</b>						
Hydrocarbon, % by weight	METHOD ASTM D 4-80	50-70	68.29	64.86	55.0	51
Inert Mineral Filler, % by weight	AASHTO T111	30-50	30.02	33.45	45.0	35
Volatile Matter, % by weight	ASTM D 6-80	2.0 Max.	1.69	1.69	0.0	1.2
<b>Physical Properties*</b>						
Specific gravity, @ 77F.	ASTM D 71-84	1.2-1.35	1.3343	1.3319	1.29	1.25
Ductility at 77F, cm	ASTM D 113-85	5.0 min.	6.0	6.0	5.0	10
Softening Point, Ring & Ball, @ 77F	ASTM D 36-86	320 min.	325	325	----	----
Penetration, Cone, @ 77 F, 150 g, 5 sec., in 0.1 mm	ASTM D 217-82	50-120	86	75	70	55-60
Flash Point, Cleveland Open Cup, F	ASTM D 92-85	600 min.	615°	620°	600°	450°
Fire Point, Cleveland Open Cup, F	ASTM D 92-85	625 min.	635°	635°	625°	475°
Compression Test @77° F lbf/in <sup>3</sup>	ASTM C 972	100 max.	N/A	100	----	----
Compression Test @ 32° F lbf/in <sup>3</sup>	ASTM D 972	200 max.	N/A	198	----	----
<b>Sag or Flow Resistance</b>						
Sag or flow resistance, in vertical position for 5 days @ 135 F	FS SS-S-210A sect. 4.5.3/ASTM C 990	No sagging	No visible changes	No visible changes	—	—
<b>Chemical Resistance</b>						
30 days immersion @ room temperature in each of the following:	FS SS-S-2120A sect. 3.6/ASTM C 990					
5% Solution of Caustic Potash		No visible Deterioration	Complies	Complies	Complies	Complies
5% Solution of Hydrochloric Acid		No visible Deterioration	Complies	Complies	Complies	Complies
5% Solution of Sulfuric Acid		No visible Deterioration	Complies	Complies	Complies	Complies
Saturated Hydrogen Sulfide Solution		No visible Deterioration	Complies	Complies	Complies	Complies



BUTYL-NEK meets or exceeds the requirements of of Federal Specification SS-S-210(210A), AASHTO M-198B, and ASTM C-990-91.



*For additional information, literature or to place an order please call (800)231-4549*