

REINFORCED CONCRETE ROUND PIPE													
PIPE DIAMETER (INCHES)	IN CUT SECTIONS												
	REQUIRED PIPE CLASS												
	● MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE ( FEET )												
	1 TO 2	2 THRU 10	12	14	16	18	20	25	30	35	40	45	50
12	IV	II	II	II	II	II	III	III	III	III	III	III	III
15	III	II	II	II	II	II	II	III	III	III	III	III	III
18	III	II	II	II	II	II	II	III	III	III	III	III	III
21	III	II	II	II	II	II	II	III	III	III	III	III	III
24	III	II	II	III	III	III	III	IV	IV	IV	IV	IV	IV
27	II	II	II	III	III	III	III	IV	IV	IV	IV	IV	IV
30	II	II	II	III	III	III	III	IV	IV	IV	IV	IV	IV
36	II	II	III	III	IV	IV	IV	IV	IV/V	IV/V	IV/V	IV/V	IV/V
42	II	II	III	III	III	IV	IV	IV	IV/V	V	IV/V	IV/V	IV/V
48	II	II	III	III	III	IV	IV	IV	IV/V	V	IV/V	IV/V	IV/V
54	II	II	III	III	III	IV	IV	IV	IV/V	V	IV/V	IV/V	IV/V
60	II	II	III	III	IV	IV	IV	IV	IV/V	V	V	V	V
66	II	II	III	III	IV	IV	IV	IV	IV/V	IV/V	V	V	V
72	II	II	III	III	IV	IV	IV	IV	IV/V	IV/V	V	V	V
78	II	II	III	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
84	II	II	III	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
90	II	II	II	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
96	II	II	II	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
102	II	II	II	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
108	II	II	II	III	III	IV	IV	IV	IV/V	IV/V	V	V	V
PIPE DIAMETER (INCHES)	IN FILL SECTIONS												
	REQUIRED PIPE CLASS												
	● MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE ( FEET )												
	1 TO 2	2 THRU 10	12	14	16	18	20	25	30	35	40	45	50
12	IV	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
15	III	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
18	III	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
21	III	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
24	III	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
27	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
30	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
36	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
42	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
48	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
54	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
60	II	II	III	III	IV	IV	IV	IV/V	V	*	*	*	*
66	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
72	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
78	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
84	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
90	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
96	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
102	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*
108	II	II	II	III	III	IV	IV	IV/V	V	V	*	*	*

\*SPECIAL DESIGN PIPE. DESIGN METHOD TO CONFORM TO CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.  
 ● FILL HEIGHT MEASURED FROM TOP OF PIPE TO TOP OF SUBGRADE.

REINFORCED CONCRETE ARCH/ELLIPTICAL PIPE					
APPROXIMATE EQUIVALENT ROUND PIPE (INCHES)	▲ CLASS A - III ARCH CLASS HE - III HORIZONTAL ELLIPTICAL CLASS VE - IV VERTICAL ELLIPTICAL				
	ARCH SIZE SPAN x RISE (INCHES)	HORIZONTAL ELLIPTICAL SIZE RISE x SPAN (INCHES)	VERTICAL ELLIPTICAL SIZE RISE x SPAN (INCHES)	MINIMUM COVER (INCHES)	MAXIMUM COVER ( FEET )
	15	18 x 11			12
18	22 x 13-1/2	14 x 23	23 x 14	12	10
21	26 x 15-1/2			12	10
24	28-1/2 x 18	19 x 30	30 x 19	12	10
30	36-1/4 x 22-1/2	24 x 38	38 x 24	12	10
36	43-3/4 x 26-5/8	29 x 45	45 x 29	12	10
42	51-1/8 x 31-5/16	34 x 53	53 x 34	12	10
48	58-1/2 x 36	38 x 60	60 x 38	12	10
54	65 x 40	43 x 68	68 x 43	12	10
60	73 x 45	48 x 76	76 x 48	12	10
66		53 x 83	83 x 53	12	10
72	88 x 54	58 x 91	91 x 58	12	10
78		63 x 98	98 x 63	12	10
84	102 x 62	68 x 106	106 x 68	12	10
90	115 x 72	72 x 113	113 x 72	12	10
96	122 x 77-1/4	77 x 121	121 x 77	12	10
102		82 x 128	128 x 82	12	10
108	138 x 87-1/8	87 x 136	136 x 87	12	10
114		92 x 143	143 x 92	12	10
120		97 x 151	151 x 97	12	10

▲ DIMENSIONS LISTED FOR ARCH PIPE IN PAY ITEMS SHOW TRUNCATED INCHES.

GENERAL NOTES

- FILL HEIGHT DESIGNS ARE BASED ON A CLASS B BEDDING, NEGATIVE PROJECTION, HS-20 LIVE LOADING, AND 120 LBS/C.F. SOIL WEIGHT.
- MINIMUM HEIGHT OF COVER FROM TOP OF PIPE TO TOP OF SUBGRADE FOR REINFORCED CONCRETE PIPE SHALL BE 12 INCHES.
- IN THE EVENT LOADS IN EXCESS OF HS-20 ARE TO BE OPERATED OVER OR ADJACENT TO THE PIPE INSTALLATION DURING THE CONSTRUCTION PHASE, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A MINIMUM OF FOUR FEET OF COVER OVER THE PIPE AT WHEEL OR TRACK PATHS.
- PROPER INSTALLATION PRACTICES MUST BE ADHERED TO AS SHOWN ON THE 1999 ENGLISH ROADWAY STANDARD SPI-3.
- ANY PIPE CRACKED PRIOR TO FINAL ACCEPTANCE SHALL BE REPLACED BY THE CONTRACTOR AT HIS EXPENSE. SURFACE DISTRESS MUST BE REPAIRED TO THE SATISFACTION OF THE ENGINEER, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- PIPE DIMENSIONS LISTED IN TABLES CONFORM TO 1998 AASHTO DESIGNATIONS.
- CLASS IV/V REINFORCED CONCRETE PIPE SHALL MEET STRENGTH TEST REQUIREMENTS OF A MAXIMUM 2000 POUNDS FOR CLASS IV AND 3000 POUNDS FOR CLASS V PIPE - FORCE PER LINEAR FOOT PER FOOT OF DIAMETER TO PRODUCE A 0.01 INCH CRACK, CONFORMING TO TEST PROCEDURE AASHTO M170.

APPROVED BY ROADWAY ENGINEER *C.M. Senkowski* DATE *9/1/99*

OKLAHOMA DEPT. OF TRANSPORTATION  
 ROADWAY STANDARD ( ENGLISH )  
 FILL HEIGHT TABLES  
 CONCRETE PIPE CULVERTS

1999 SPECIFICATIONS

FHTCP-2 OOE  
 R-110AE