

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

REQUIRED PIPE CLASS FOR REINFORCED CONCRETE ROUND PIPE IN FILL SECTIONS													
PIPE DIAMETER	● MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE												
	1' TO 2'	2' THRU 10'	12'	14'	16'	18'	20'	25'	30'	35'	40'	45'	50'
12" 15" 18"	IV III III	II II	III III	III III	IV IV	IV IV	IV IV	IV/V IV/V	V IV/V	* * *	* * *	* * *	* * *
24" 27" 30" 36"	III II II II	II II II	III III III	III III III	IV IV IV	IV IV IV	IV IV IV	IV/V IV/V IV/V	V IV/V V	* * *	* * *	* * *	* * *
42" 48" 54" 60"	II II II II	II II II	III III II	III III III	IV IV III	IV IV IV	IV IV IV	IV/V IV/V IV/V	V IV/V V	* * *	* * *	* * *	* * *
66" 72" 78" 84"	II II II II	II II II	II II II	III III III	III III III	IV IV IV	IV IV IV	IV/V IV/V IV/V	V IV/V V	V V V	* * *	* * *	* * *
90" 96" 102" 108"	II II II II	II II II	II II II	III III III	III III III	IV IV IV	IV IV IV	IV/V IV/V IV/V	V IV/V V	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					
▲ CLASS A - III ARCH CLASS HE - III HORIZONTAL ELLIPTICAL CLASS VE - IV VERTICAL ELLIPTICAL					
APPROXIMATE EQUIVALENT ROUND PIPE	ARCH SIZE SPAN x RISE	HORIZONTAL ELLIPTICAL SIZE RISE x SPAN	VERTICAL ELLIPTICAL SIZE RISE x SPAN	MINIMUM COVER	MAXIMUM COVER
15"	18" x 11"			12"	10'
18"	22" x 13"	14" x 23"	23" x 14"	12"	10'
24"	28" x 18"	19" x 30"	30" x 19"	12"	10'
30"	36" x 22"	24" x 38"	38" x 24"	12"	10'
36"	43" x 26"	29" x 45"	45" x 29"	12"	10'
42"	51" x 31"	34" x 53"	53" x 34"	12"	10'
48"	58" 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"	77" x 121"	121" x 77"	12"	10'
102"		82" x 128"	128" x 82"	12"	10'
108"	138" x 87"	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 ROADWAY STANDARDS SPI-4, FPI-3 AND SPB-1.
- 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 2005 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 REFERENCES IN AASHTO M 170.