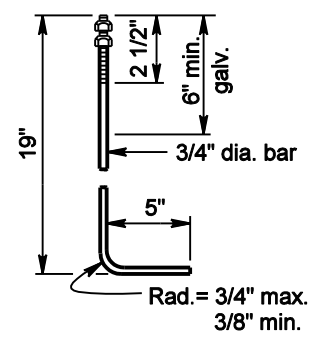
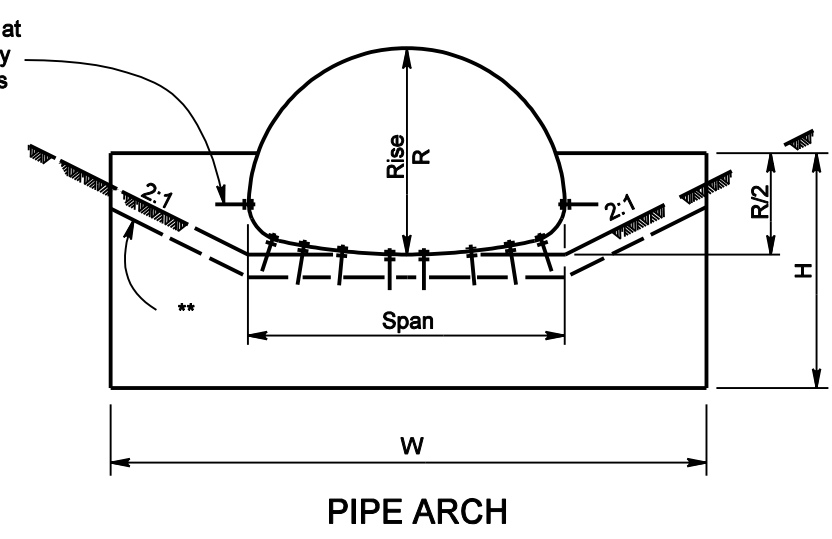
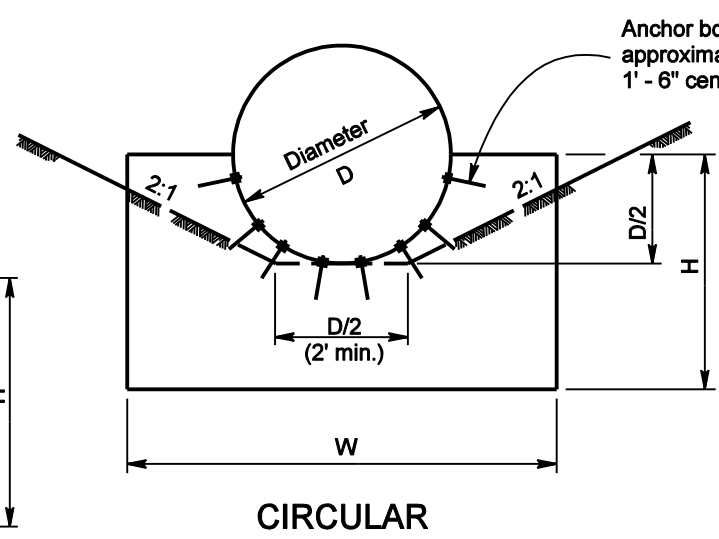
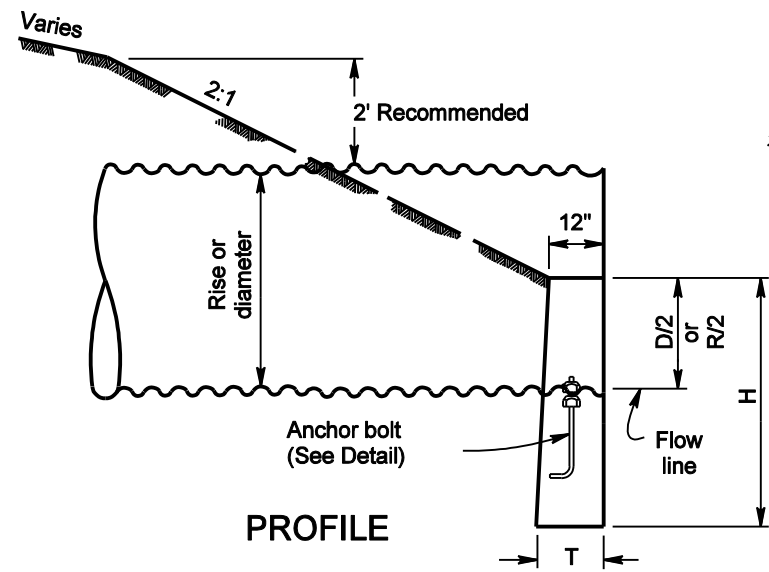
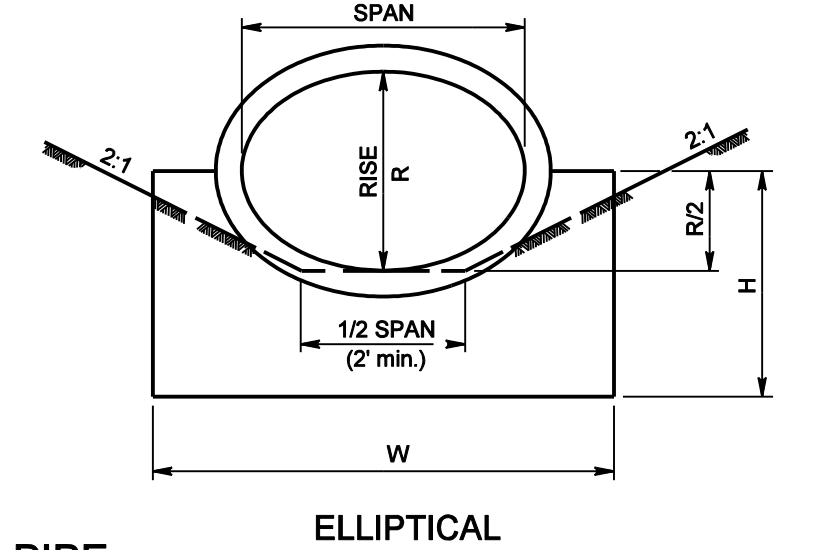
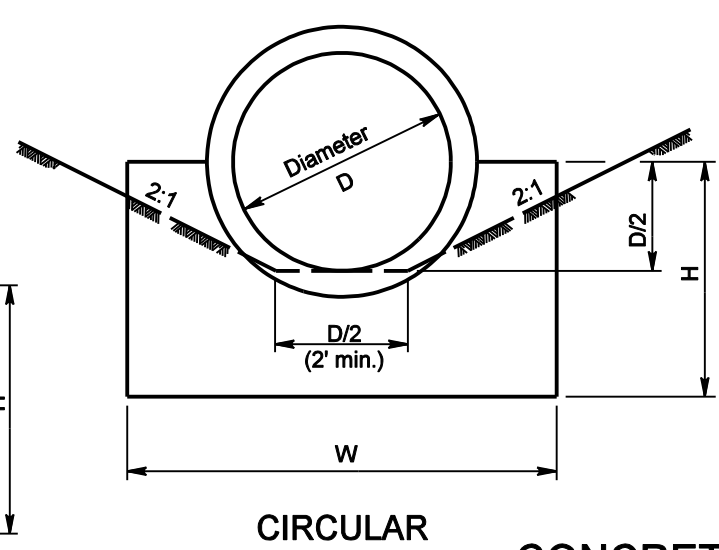
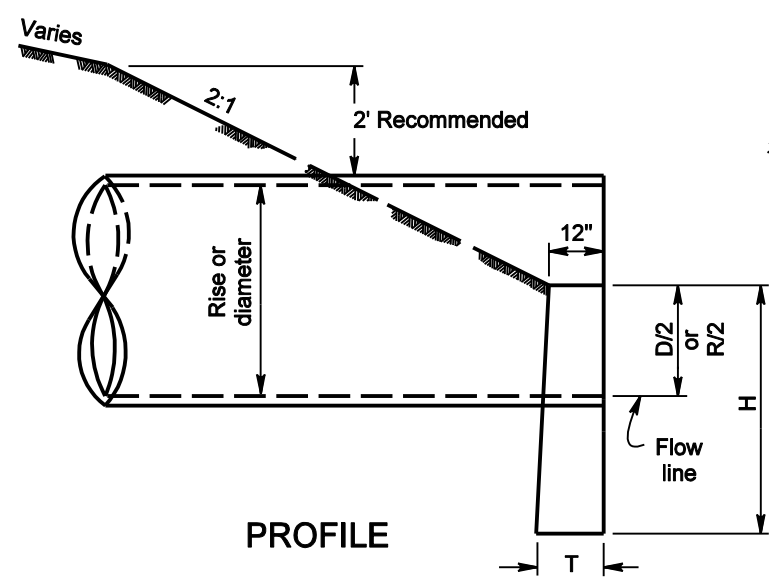




ANCHOR BOLT

NOTE: ANCHOR BOLTS FOR ANCHORING UPSTREAM END OF METAL PIPES SHALL MEET ASTM A307. THE TOP 6" MIN. OF BOLT SHALL BE GALVANIZED ACCORDING TO ASTM A153. NUTS SHALL MEET ASTM A325 AND A153. UNLESS OTHERWISE SPECIFIED, ANCHOR BOLTS SHALL BE USED ONLY ON PIPES WITH SPAN OR RISE GREATER THAN 24 INCHES.

ALL CONCRETE SHALL BE CLASS "A".



HEADWALL FOR CORRUGATED METAL PIPE										
CIRCULAR					PIPE ARCH					
D	W	H	T	CONC. (yds) ³	SPAN	RISE	W	H	T	CONC. (yds) ³
12"	2' - 0"	3' - 0"	12"	.21						
15"	2' - 6"	3' - 2"	12"	.27	18"	11"	3' - 0"	3' - 0"	12"	.31
18"	3' - 0"	3' - 3"	12"	.33	22"	13"	3' - 6"	3' - 0"	12"	.37
21"	3' - 6"	3' - 4"	12"	.39	25"	16"	4' - 0"	3' - 2"	12"	.43
24"	4' - 0"	3' - 6"	12"	.46	29"	18"	4' - 6"	3' - 3"	12"	.48
27"	4' - 6"	3' - 8"	12"	.53						
30"	5' - 0"	3' - 9"	12"	.60	36"	22"	5' - 6"	3' - 5"	12"	.61
33"	5' - 6"	3' - 10"	12"	.68						
36"	6' - 0"	4' - 0"	12"	.76	43"	27"	6' - 6"	3' - 7"	12"	.74
39"	6' - 6"	4' - 2"	12"	.84						
42"	7' - 0"	4' - 3"	12"	.92	50"	31"	7' - 8"	3' - 9"	12"	.90
48"	8' - 0"	4' - 6"	12"	1.10	58"	36"	9' - 0"	4' - 0"	12"	1.09
54"	9' - 3"	4' - 9"	12"	1.33	65"	40"	10' - 0"	4' - 2"	12"	1.25
60"	10' - 6"	5' - 6"	12"	1.78	72"	44"	11' - 0"	4' - 4"	12"	1.43
66"	11' - 9"	5' - 9"	12"	2.06	73"	55"	13' - 0"	4' - 9"	12"	1.84
72"	13' - 0"	6' - 0"	12"	2.37	87"	63"	15' - 6"	5' - 2"	14"	2.56
78"	14' - 3"	6' - 3"	14"	2.94	103"	71"	18' - 6"	5' - 6"	16"	3.50
84"	15' - 6"	6' - 6"	14"	3.30	114"	77"	20' - 0"	5' - 9"	18"	4.18

HEADWALL FOR CONCRETE PIPE										
CIRCULAR					ELLIPTICAL					
D	W	H	T	CONC. (yds) ³	SPAN	RISE	W	H	T	CONC. (yds) ³
12"	2' - 0"	3' - 0"	12"	.20						
15"	2' - 6"	3' - 2"	12"	.25						
18"	3' - 0"	3' - 3"	12"	.31	23"	14"	3' - 5"	3' - 2"	12"	.33
21"	3' - 6"	3' - 4"	12"	.37						
24"	4' - 0"	3' - 6"	12"	.43	30"	19"	4' - 2"	3' - 4"	12"	.42
27"	4' - 6"	3' - 8"	12"	.49	34"	22"	4' - 7"	3' - 5"	12"	.46
30"	5' - 0"	3' - 9"	12"	.56	38"	24"	5' - 0"	3' - 6"	12"	.50
33"	5' - 6"	3' - 10"	12"	.62	42"	27"	5' - 5"	3' - 7"	12"	.55
36"	6' - 0"	4' - 0"	12"	.69	45"	29"	5' - 10"	3' - 8"	12"	.59
39"	6' - 6"	4' - 2"	12"	.77	49"	32"	6' - 6"	3' - 10"	12"	.67
42"	7' - 0"	4' - 3"	12"	.84	53"	34"	7' - 2"	4' - 0"	14"	.82
48"	8' - 0"	4' - 6"	14"	1.09	60"	38"	8' - 5"	4' - 2"	14"	1.01
54"	9' - 3"	4' - 9"	14"	1.32	68"	43"	9' - 8"	4' - 4"	16"	1.32
60"	10' - 6"	5' - 6"	16"	1.93	76"	48"	11' - 0"	5' - 0"	16"	1.79
66"	11' - 9"	5' - 9"	18"	2.42	83"	53"	12' - 4"	5' - 2"	18"	2.23
72"	13' - 0"	6' - 0"	18"	2.77	91"	58"	13' - 7"	5' - 5"	18"	2.53
78"	14' - 3"	6' - 3"	20"	3.37	98"	63"	14' - 10"	5' - 7"	20"	3.07
84"	15' - 6"	6' - 6"	22"	4.05	106"	68"	16' - 2"	5' - 10"	20"	3.42