

TYP. BARS FOR 4:1 CONCRETE PIPE ROUND INLET OR SIDE TAPERED INLET																														TYP. BARS FOR 4:1 CONCRETE PIPE ROUND INLET ONLY										TYP.BARS FOR 4:1 CONCRETE PIPE SIDE TAPERED INLET ONLY																							
PIPE	SKEW	BARS F		BARS FB		BARS FC		BARS WXL		BARS WXS		SERIES BARS WYL (2 REQ'D)				SERIES BARS WYS (2 REQ'D)				2 BARS WZL	2 BARS WZS	SERIES BARS WL (1 REQ'D)				SERIES BARS WS (1 REQ'D)				SERIES BARS WLA (1 REQ'D)				SERIES BARS WSA (1 REQ'D)				SERIES BARS FA (1 REQ'D)				BARS FD		4 BARS W	2 BARS T	SERIES BARS FA (1 REQ'D)				BARS FD		4 BARS W	2 BARS TA										
		T.L.	N.R.	T.L.	N.R.	T.L.	N.R.	T.L.	N.R.	T.L.	N.R.	A	B	C	X	T.L.	A	B	C	X	T.L.	A	B	C	X	T.L.	A	B	C	X	T.L.	A	B	C	X	T.L.	T.L.	N.R.	T.L.	N.R.	A	B	C	X	T.L.	T.L.	N.R.	A	B	C	X	T.L.											
15"	45°	6'5"	4	3'3"	4	2'5"	11	6'6"	4	3'4"	4	3'2"	3'2"	0"	1	3'2"	1'9"	1'9"	0"	1	1'9"	8'2"	5'0"	2'4"	1'7"	1½"	7	18'5"	2'4"	1'7"	3"	4	10'6"	2'4"	1'7"	1½"	7	13'9"	2'4"	1'7"	3"	4	7'10"	6'9"	4'3"	10"	4	22'0"	3'9"	4	5'9"	8'1"	7'5"	4'11"	10"	4	24'8"	3'9"	5	6'6"	2'4½"	1'9"	8'1"
		60°	4'8"	4	3'3"	4	2'5"	9	4'9"	4	3'3"	4	2'4"	2'4"	0"	1	2'4"	1'9"	1'9"	0"	1	1'9"	6'5"	5'0"	2'4"	1'7"	2¼"	5	13'2"	2'4"	1'7"	3"	4	10'6"	2'4"	1'7"	2¼"	5	9'10"	2'4"	1'7"	3"	4	7'10"	6'8"	4'2"	10"	4	21'8"	3'9"	4	5'9"	8'1"	7'4"	4'10"	10"	4	24'4"	3'9"	5	6'6"	2'4½"	1'9"
	75°	4'6"	4	3'5"	4	2'5"	9	4'7"	4	3'6"	4	2'4"	2'4"	0"	1	2'4"	2'0"	2'0"	0"	1	2'0"	6'3"	5'3"	2'4"	1'7"	2¼"	5	13'2"	2'4"	1'7"	3"	4	10'6"	2'4"	1'7"	2¼"	5	9'10"	2'4"	1'7"	3"	4	7'10"	6'7"	4'1"	10"	4	21'9"	3'9"	4	5'9"	8'1"	7'3"	4'9"	10"	4	24'0"	3'9"	5	6'6"	2'4½"	1'9"	8'1"
		90°	4'0"	4	4'0"	4	2'5"	10	4'0"	4	4'0"	4	2'0"	2'0"	0"	1	2'0"	2'0"	2'0"	0"	1	2'0"	5'8"	5'8"	2'4"	1'7"	2¼"	5	13'2"	2'4"	1'7"	2¼"	5	13'2"	2'4"	1'7"	2¼"	5	9'10"	2'4"	1'7"	2¼"	5	9'10"	6'6"	4'0"	10"	4	21'0"	3'9"	4	5'9"	8'1"	7'2"	4'8"	10"	4	23'8"	3'9"	5	6'6"	2'4½"	1'9"
18"	45°	8'5"	4	4'3"	4	2'5"	14	8'6"	4	4'4"	4	4'3"	4'3"	0"	1	4'3"	2'2"	2'2"	0"	1	2'2"	10'2"	6'0"	2'7"	1'7"	1½"	9	24'9"	2'7"	1'7"	3"	5	13'9"	2'7"	1'7"	1½"	9	18'9"	2'7"	1'7"	3"	5	10'5"	7'0"	4'6"	10"	4	23'0"	3'9"	4	4'6"	8'11"	7'9"	5'3"	10"	4	26'0"	3'9"	5	6'9"	2'9"	2'0"	9'1"
		60°	6'1"	4	4'3"	4	2'5"	12	6'2"	4	4'4"	4	3'1"	3'1"	0"	1	3'1"	2'2"	2'2"	0"	1	2'2"	7'10"	6'0"	2'7"	1'7"	2"	7	19'3"	2'7"	1'7"	3"	5	13'9"	2'7"	1'7"	2"	7	14'7"	2'7"	1'7"	3"	5	10'5"	6'11"	4'5"	10"	4	22'8"	3'9"	4	4'6"	8'11"	7'8"	5'2"	10"	4	25'8"	3'9"	5	6'9"	2'9"	1'9"
	75°	5'11"	4	4'6"	4	2'5"	12	6'0"	4	4'7"	4	3'0"	3'0"	0"	1	3'0"	2'3"	2'3"	0"	1	2'3"	7'8"	6'3"	2'7"	1'7"	2"	7	19'3"	2'7"	1'7"	3"	5	13'9"	2'7"	1'7"	2"	7	14'7"	2'7"	1'7"	3"	5	10'5"	6'10"	4'4"	10"	4	22'4"	3'9"	4	4'6"	8'11"	7'7"	5'1"	10"	4	25'4"	3'9"	4	6'9"	2'9"	2'0"	9'1"
		90°	5'3"	4	5'3"	4	2'5"	12	5'3"	4	5'3"	4	2'8"	2'8"	0"	1	2'8"	2'8"	2'8"	0"	1	2'8"	4'6"	8'11"	2'7"	1'7"	2½"	6	16'6"	2'7"	1'7"	2½"	6	12'6"	2'7"	1'7"	2½"	6	12'6"	2'7"	1'7"	2½"	6	12'6"	6'9"	4'3"	10"	4	22'0"	3'9"	4	4'6"	8'11"	7'6"	5'0"	10"	4	25'0"	3'9"	4	6'9"	2'9"	1'9"
24"	45°	13'2"	4	6'9"	4	2'5"	22	12'5"	6	6'3"	6	9'0"	9'0"	0"	1	9'0"	5'0"	5'0"	0"	1	5'0"	13'10"	7'8"	2'5"	3'11"	1½"	13	49'10"	2'5"	3'11"	3"	7	26'10"	2'5"	3'11"	1½"	13	41'2"	2'5"	3'11"	3"	7	22'2"	7'10"	5'4"	10"	4	26'4"	3'9"	6	7'0"	10'5"	9'1"	6'7"	10"	4	31'4"	3'9"	6	8'3"	4'3"	3'0"	13'1"
		60°	9'8"	4	6'9"	4	2'5"	18	9'0"	6	6'3"	6	6'9"	6'9"	0"	1	6'9"	5'0"	5'0"	0"	1	5'0"	10'0"	7'5"	2'5"	3'11"	2¼"	9	34'6"	2'5"	3'11"	3"	7	26'10"	2'5"	3'11"	2¼"	9	28'6"	2'5"	3'11"	3"	7	22'2"	7'11"	5'5"	10"	4	26'8"	3'9"	6	7'0"	10'5"	9'2"	6'8"	10"	4	31'8"	3'9"	6	8'3"	4'3"	3'0"
	75°	9'4"	4	7'2"	4	2'5"	18	8'9"	6	6'9"	6	6'9"	6'9"	0"	1	6'9"	5'2"	5'2"	0"	1	5'2"	9'10"	7'5"	2'5"	3'11"	2¼"	9	34'6"	2'5"	3'11"	3"	7	26'10"	2'5"	3'11"	2¼"	9	28'6"	2'5"	3'11"	3"	7	22'2"	7'6"	5'2"	10"	4	25'4"	3'9"	6	6'10"	10'5"	8'9"	6'5"	10"	4	30'4"	3'9"	6	8'3"	4'3"	3'0"	13'1"
		90°	8'2"	4	8'2"	4	2'5"	18	7'9"	6	7'9"	6	6'0"	6'0"	0"	1	6'0"	6'0"	6'0"	0"	1	6'0"	8'9"	8'9"	2'5"	3'11"	2½"	8	30'8"	2'5"	3'11"	2½"	8	25'4"	2'5"	3'11"	2½"	8	25'4"	7'7"	5'1"	10"	4	25'4"	3'9"	6	6'10"	10'5"	8'10"	6'4"	10"	4	30'4"	3'9"	6	8'3"	4'3"	3'0"	13'1"				
30"	45°	13'2"	4	6'9"	4	2'5"	21	12'5"	6	6'3"	6	9'0"	9'0"	0"	1	9'0"	5'0"	5'0"	0"	1	5'0"	13'10"	7'8"	2'11"	4'5"	1½"	13	56'4"	2'11"	4'5"	3"	7	30'4"	2'11"	4'5"	1½"	13	47'8"	2'11"	4'5"	3"	7	25'8"	8'4"	5'10"	10"	4	28'4"	3'9"	6	7'6"	12'0"	9'10"	7'4"	10"	4	34'4"	3'9"	7	9'0"	5'0"	3'6"	15'1"
		60°	9'8"	4	6'9"	4	2'5"	18	8'11"	6	6'3"	6	7'3"	7'3"	0"	1	7'3"	5'0"	5'0"	0"	1	5'0"	10'2"	7'8"	2'11"	4'5"	2¼"	9	39'0"	2'11"	4'5"	3"	7	30'4"	2'11"	4'5"	2¼"	9	33'0"	2'11"	4'5"	3"	7	25'8"	8'5"	5'11"	10"	4	28'8"	3'9"	6	7'6"	12'0"	9'11"	7'5"	10"	4	34'8"	3'9"	7	9'0"	5'0"	3'6"
	75°	9'4"	4	7'2"	4	2'5"	18	8'9"	6	6'8"	6	7'6"	7'6"	0"	1	7'6"	5'5"	5'5"	0"	1	5'5"	10'3"	8'1"	2'11"	4'5"	2¼"	9	39'0"	2'11"	4'5"	3"	7	30'4"	2'11"	4'5"	2¼"	9	33'0"	2'11"	4'5"	3"	7	25'8"	8'2"	5'8"	10"	4	27'8"	3'9"	6	7'4"	12'0"	9'8"	7'2"	10"	4	33'8"	3'9"	7	9'0"	5'0"	3'6"	15'1"
		90°	8'2"	4	8'2"	4	2'5"	18	7'9"	6	7'9"	6	6'9"	6'9"	0"	1	6'9"	6'9"	6'9"	0"	1	6'9"	12'11"	12'11"	2'11"	4'5"	2½"	8	34'8"	2'11"	4'5"	2½"	8	29'4"	2'11"	4'5"	2½"	8	29'4"	8'1"	5'7"	10"	4	27'4"	3'9"	6	7'4"	12'0"	9'7"	7'1"	10"	4	33'4"	3'9"	7	9'0"	5'0"	3'6"	15'1"				
36"	45°	17'2"	4	8'9"	4	2'5"	28	16'5"	6	8'3"	6	13'0"	13'0"	0"	1	13'0"	7'0"	7'0"	0"	1	7'0"	18'0"	10'0"	2'11"	4'11"	1½"	17	77'11"	2'11"	4'11"	3"	9	41'3"	2'11"</																													