I.D. (IN.)	Δ = 11.25º								I.D. (IN.)	Δ = 22.50º								I.D. (IN.)
			EARTH			ROCK						EARTH			ROCK			
	G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.		G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.	
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1	4,6,8
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1	10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.1	10,12
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16,18	1.6	9.9	2.0	3.5	0.6	2.0	2.5	0.3	16,18
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.6	3.5	3.5	0.7	2.0	3.5	0.4	20
24	1.1	8.9	3.0	3.0	0.5	1.5	3.0	0.3	24	2.2	17.7	4.0	4.5	1.0	3.0	3.0	0.5	24
30	1.4	10.4	3.0	4.5	0.6	2.0	3.5	0.4	30	2.7	20.7	5.0	4.5	1.5	3.0	4.0	0.8	30
36	1.7	15.0	3.5	5.0	0.9	2.0	4.0	0.5	36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3	36
42	1.9	20.4	4.5	6.0	1.5	2.5	5.0	0.8	42	3.8	40.5	7.0	6.0	3.9	4.5	5.0	2.1	42
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1	48	4.4	52.9	8.0	7.0	5.7	4.5	6.0	2.8	48
54	2.5	33.7	6.0	7.0	3.0	3.0	6.0	1.4	54	4.9	67.0	9.0	8.0	8.0	6.0	6.0	4.1	54
60	2.7	41.6	6.0	8.0	3.8	3.0	7.0	1.8	60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3	60
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7	66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2	66
72	3.3	59.9	7.5	9.0	6.3	4.0	8.0	3.3	72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1	72
78	3.6	40.2	8.0	10.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7	78
84	3.9	81.5	8.5	10.0	10.3	4.5	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8	84
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7	90
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4	96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8	96

I.D. (IN.)	Δ = 30º								I.D. (IN.)	Δ = 45º								I.D. (IN.)
			EARTH			ROCK						EARTH			ROCK			
	G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.		G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.	
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1	4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	4,6,8
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2	10,12	2.2	8.7	3.5	2.5	0.5	2.0	2.5	0.3	10,12
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.4	16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6	16,18
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5	20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7	20
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7	24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1	24
30	3.6	27.5	5.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6	30
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6	36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6	36
42	51.0	53.8	8.0	7.0	5.1	5.5	5.0	2.5	42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2	42
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7	48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3	48
54	6.5	89.0	10.0	9.0	10.3	7.0	6.5	5.3	54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9	54
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0	60
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6	66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2	66
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3	72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7	72
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6	78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9	78
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5	84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.6	84
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9	90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6	90
96	11.6	281.2	18.0	16.0	55.0	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5	96

I.D. (IN.)	Δ = 67.5º								I.D. (IN.)	Δ = 90º								I.D. (IN.)
			EARTH			ROCK						EARTH			ROCK			
	G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.		G FT.	THRUST TONS	A FT.	B FT.	VOLUME C.Y.	A FT.	B FT.	VOLUME C.Y.	
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2	4,6,8	2.7	7.1	5.0	1.5	0.4	2.0	2.0	0.2	4,6,8
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4	10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5	10,12
16,18	4.7	28.3	7.5	4.0	1.9	5.0	3.0	0.9	16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0	16,18
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2	20	6.6	44.4	10.0	4.5	3.1	6.0	4.0	1.5	20
24	6.2	50.3	11.5	4.5	3.2	6.5	4.0	1.6	24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1	24
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2	30	9.9	75.0	15.0	5.0	6.7	10.0	4.0	3.3	30
36	9.4	84.9	14.5	6.0	5.2	9.5	4.5	3.8	36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3	36
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3	42	13.9	147.0	21.0	7.0	17.8	17.0	5.5	8.7	42
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2	48	15.9	192.0	24.0	8.0	23.2	16.0	6.0	12.4	48
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9	54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1	54
60	15.6	235.8	24.0	10.0	35.6	16.0	7.5	17.6	60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	21.0	60
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0	66	21.8	362.8	33.0	11.0	66.2	22.0	8.5	32.5	66
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4	72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0	72
78	20.2	398.5	31.0	13.0	75.7	21.0	9.5	37.4	78	25.7	506.7	39.0	13.0	128.2	26.0	10.0	53.2	78
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5	84	28.8	587.7	42.0	14.0	134.4	28.0	10.5	64.8	84
90	23.3	530.5	35.5	15.0	114.4	24.5	11.0	58.2	90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2	90
96	24.9	603.5	38.0	16.0	138.9	25.5	12.0	71.0	96	31.6	707.5	48.0	16.0	199.0	32.0	12.0	95.1	96

TYPICAL HORIZONTAL THRUST BLOCK

SEE W-3A FOR GENERAL NOTES

(NO SCALE)

SEE W-3B FOR ADDITIONAL DETAILS

CITY OF WACO

ENGINEERING DIVISION

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REVISIONS

NO.	COMMENTS	BY	DATE
##	DESCRIPTION	FL	MM/DD/YYYY

DATE 01/01/2024

W-3C