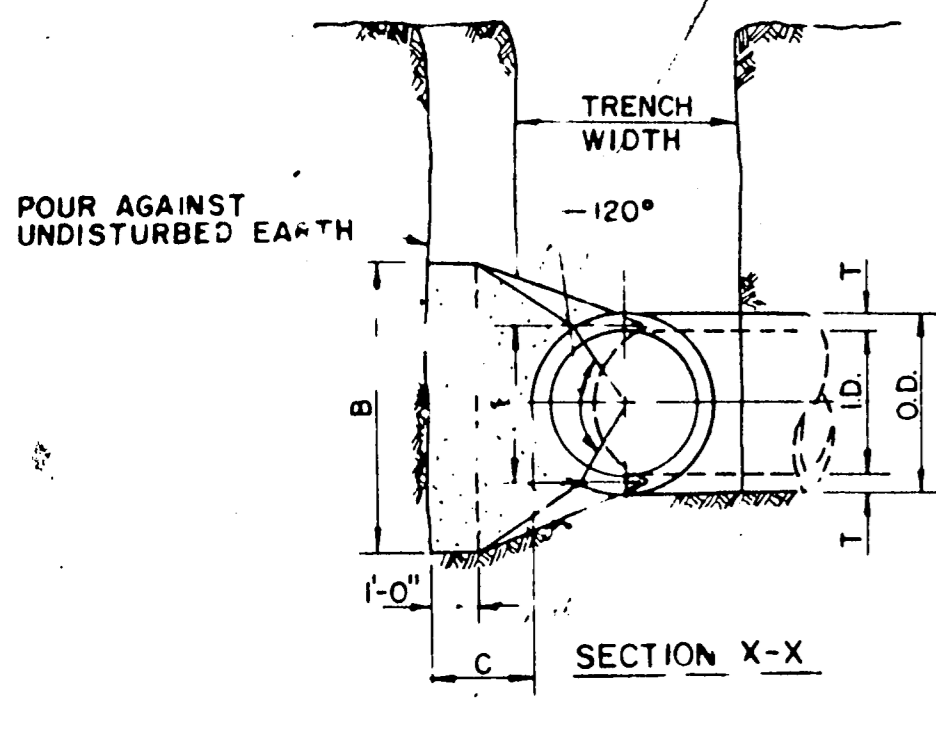
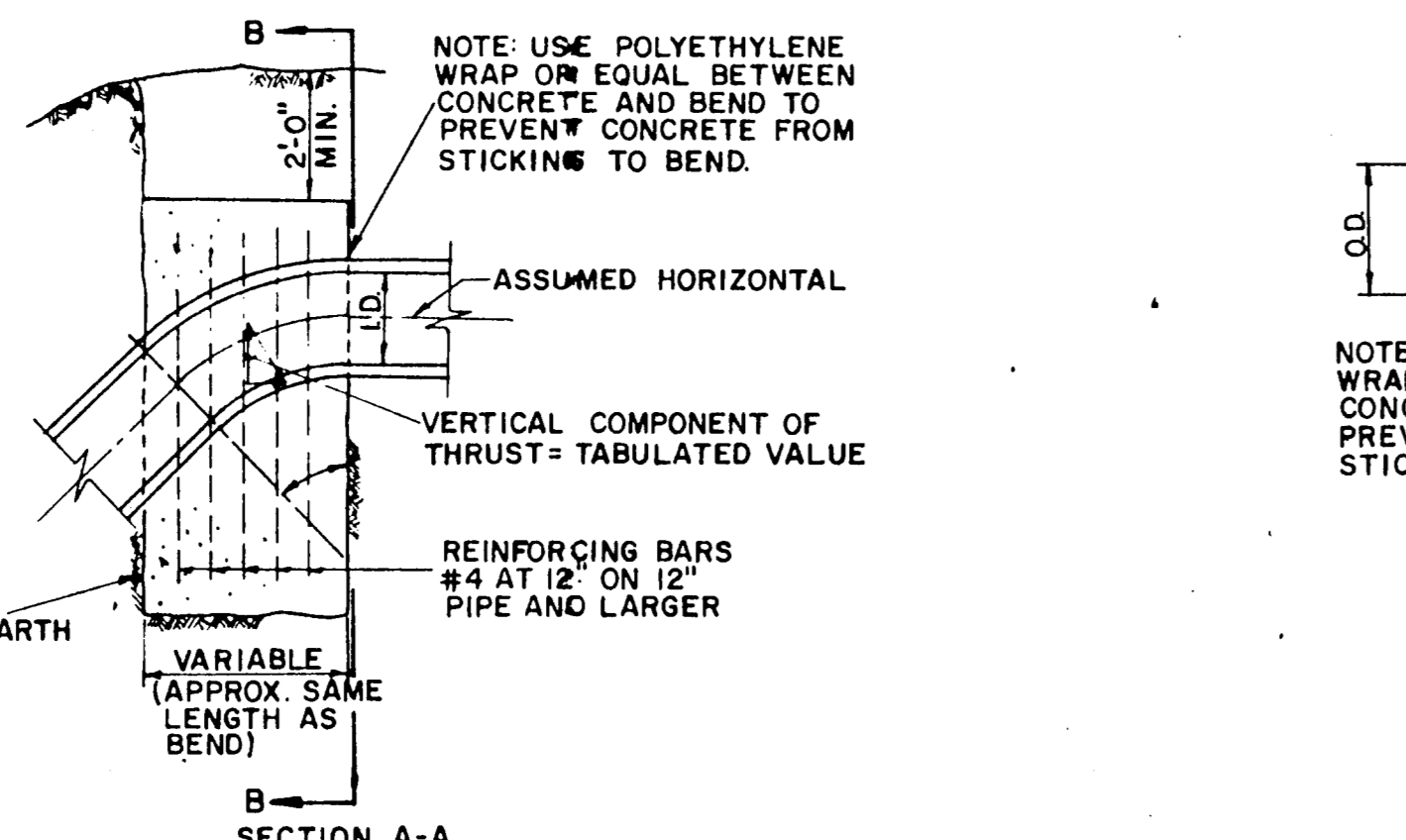
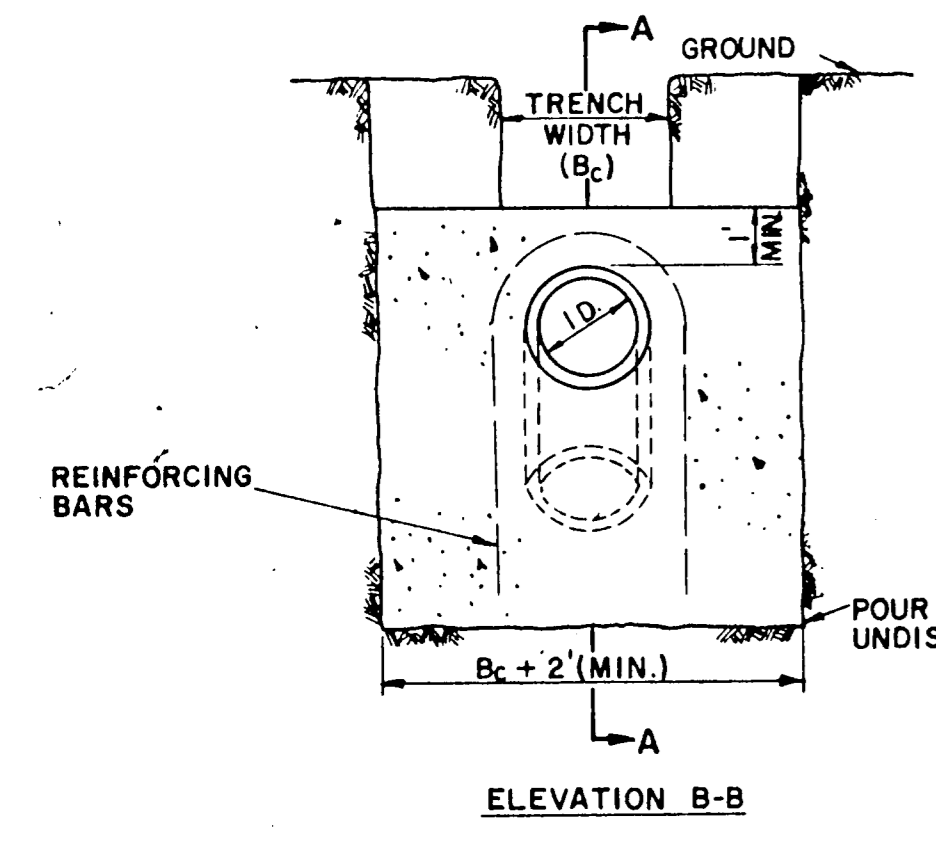


I.D. (IN.)	T (IN.)	C 11.25°		C 22.50°		E FT.
		A FT.	B FT.	A FT.	B FT.	
4.68	0.4	1.5	1.5	1.5	1.5	0.9
10.12	0.5	1.5	1.5	1.5	1.5	1.2
16.18	0.6	1.5	1.5	1.5	1.5	1.6
20	0.7	1.5	1.5	1.5	1.5	1.8
24	0.9	1.5	1.5	1.5	1.5	2.1
30	2.9	1.5	1.9	1.9	1.9	2.6
36	4.5	1.5	2.3	3.3	3.3	3.3
42	5.0	1.8	2.6	3.8	3.8	3.8
48	5.5	2.0	3.0	4.3	4.3	4.3
54	6.0	2.3	3.4	4.8	4.8	4.8
60	6.5	2.5	3.8	5.3	5.3	5.3
66	6.8	2.8	4.1	5.7	5.7	5.7
72	7.5	3.0	4.5	6.3	6.3	6.3
78	7.5	3.3	4.9	6.7	6.7	6.7
84	8.0	3.5	5.3	7.2	7.2	7.2
90	8.5	3.8	5.6	7.7	7.7	7.7
96	9.0	4.0	6.0	8.2	8.2	8.2



I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK		I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK		I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK	
			A FT.	B FT.	A FT.	B FT.				A FT.	B FT.	A FT.	B FT.				A FT.	B FT.	A FT.	B FT.
4.68	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1	4.68	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1	1.0	1.0	0.1
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	1.0	1.0	0.1
16.18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2	16.18	1.6	9.9	3.0	3.5	0.6	2.0	2.5	0.3	1.5	1.5	0.1
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3	20	1.8	12.3	3.5	3.5	0.7	2.0	3.5	0.4	1.5	1.5	0.1
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	1.5	1.5	0.1
30	1.4	10.4	3.0	3.5	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	1.8	1.8	0.1
36	1.7	15.0	3.5	4.5	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	2.0	2.0	0.1
42	1.9	20.4	4.5	5.0	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	2.5	2.5	0.1
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	4.8	6.0	2.8	3.0	3.0	0.1
54	2.5	33.7	6.0	6.0	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	4.0	4.0	0.1
60	2.7	41.6	6.0	7.0	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	5.0	5.0	0.1
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	7.0	7.0	0.1
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.7	72	6.6	119.1	11.0	11.0	17.6	7.5	9.0	9.1	8.0	8.0	0.1
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9	78	7.1	139.8	12.0	12.0	22.5	8.0	10	11.7	10.0	10.0	0.1
84	3.8	81.5	8.5	10.0	10.3	4.3	10.0	5.3	84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8	10.0	10.0	0.1
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.2	90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7	10.0	10.0	0.1
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	10.0	10.0	0.1

HORIZONTAL BEND THRUST BLOCK



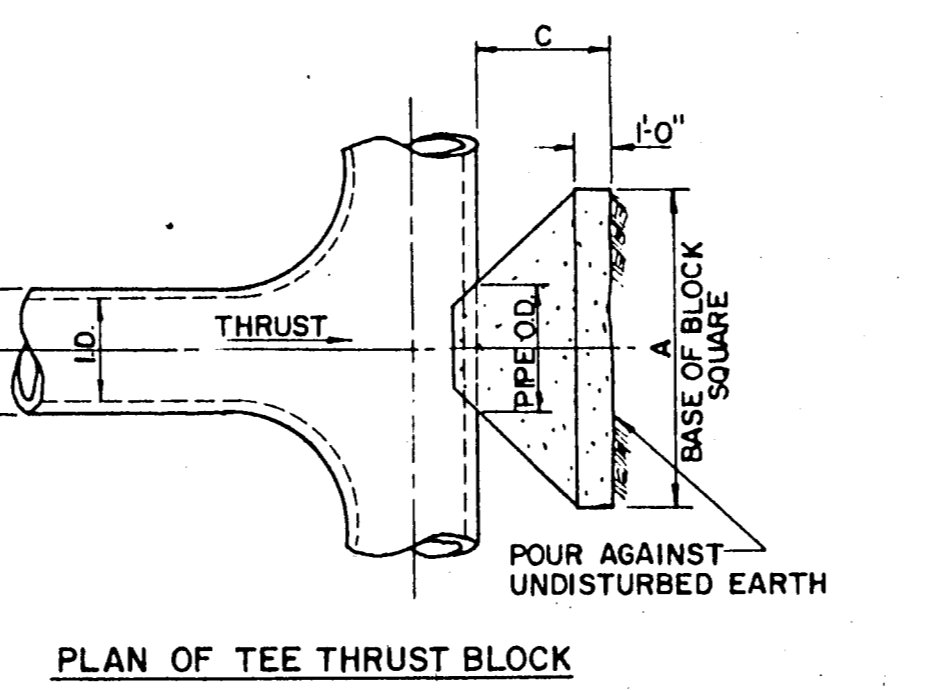
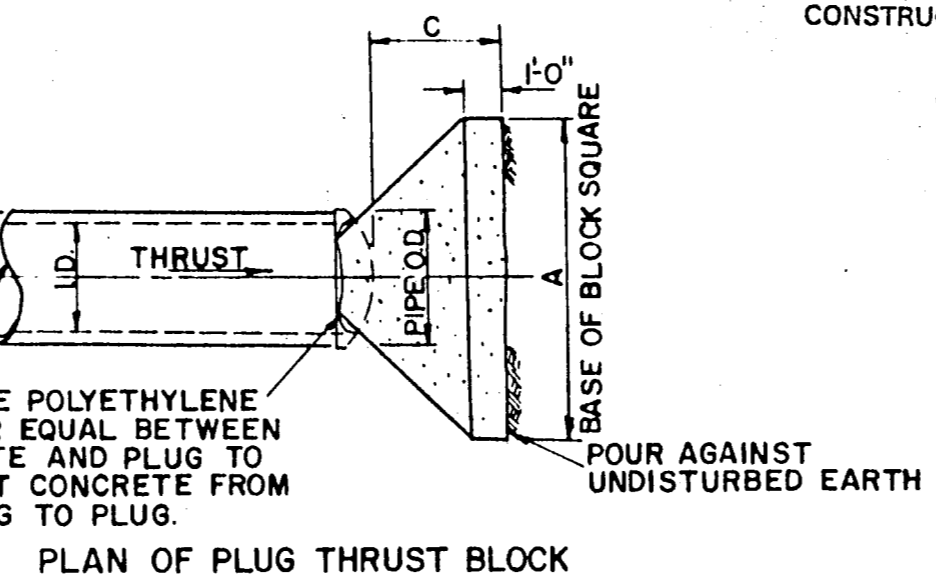
Δ	11.25°		22.50°		30°		45°		67.50°		90°		I.D. (IN.)
	THRUST TONS	VOL. CY.	THRUST TONS	VOL. CY.	THRUST TONS	VOL. CY.	THRUST TONS	VOL. CY.	THRUST TONS	VOL. CY.	THRUST TONS	VOL. CY.	
4.68	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	6.0	2.5	4.68
10.12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10.12
16.18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16.18
20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
24	8.2	4.4	17.3	8.7	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
30	10.5	5.2	20.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	94.0	48.0	104.0	52.0	42
48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	106.0	60
66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
84	81.1	40.5	159.0	79.5	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	444.0	221.0	477.0	239.0	90
96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

- GENERAL NOTES-FOR ALL THRUST BLOCKS
- All Calculations Are Based On Internal Pressure Of 200 P.S.I. For 24" I.D. Pipe And Smaller And 150 P.S.I. On 30" I.D. And Larger.
 - Volumes Of Vertical Bend Thrust Blocks Are Net Volumes Of Concrete To Be Furnished. The Corresponding Weight Of The Concrete (Class F) Is Equal To Or Greater Than The Vertical Component Of Thrust On The Vertical Bend.
 - Wall Thickness (T) Assumed Here For Estimating Purposes Only.
 - Concrete For Blocking Shall Be Class B Concrete.
 - Dimensions May Be Varied As Required By Field Conditions Where And As Directed By The Engineer. The Volume Of Concrete Blocking Shall Not Be Less Than Shown Here.

VERTICAL BEND THRUST BLOCK

I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK		I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK		I.D. (IN.)	G FT.	THRUST TONS	EARTH		ROCK	
			A FT.	B FT.	A FT.	B FT.				A FT.	B FT.	A FT.	B FT.				A FT.	B FT.		
4.68	1.0	2.6	2.0	1.5	0.2	1.0	1.0	0.1	4.68	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1	1.0	1.0	0.1
10.12	1.3	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	2.0	2.5	0.3
16.18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.8	16.18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.6	2.0	3.0	0.6
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	2.0	3.0	0.7
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	4.3	4.0	1.1	2.0	3.0	1.1
30	3.6	27.5	5.5	5.0	1.9	3.5	4.0	0.9	30	5.4	40.8	8.5	5.0	3.2	5.5	4.0	1.6	2.0	3.0	1.6
36	4.4	38.5	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	2.0	3.0	2.6
42	5.1	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	2.0	3.0	4.2
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	2.0	3.0	6.3
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	2.0	3.0	8.9
60	7.3	110.0	11.0	10.0	13.9	7.5	7.3	6.0	60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0	2.0	3.0	12.0
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	2.0	3.0	16.2
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	9.5	20.7	2.0	3.0	20.7
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.8	78	13.9	274.3	21.5	13.0	49.8	14.5	9.5	25.9	2.0	3.0	25.9
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	32.8	2.0	3.0	32.8
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	74.3	16.5	10.5	39.6	2.0	3.0	39.6
96	11.6	281.2	17.0	16.0	55.5	12.5	11.5	28.9	96	17.1	415.6	26.0	16.0	89.3	17.5	11.5	48.3	2.0	3.0	48.3

PLUG & TEE THRUST BLOCK



I.D. (IN.)	THRUST TONS	C FT.	EARTH		ROCK	
			A FT.	B FT.	A FT.	B FT.
4.68	1.1	1.5	2.5	0.3	2.0	0.2
10.12	1.3	1.5	3.5	0.6	2.5	0.3
16.18	2.5	2.0	5.5	1.6	4.0	0.9
20	3.1	2.0	6.0	1.9	4.0	0.9
24	4.5	2.5	7.0	3.1	5.0	1.7
30	5.3	3.0	7.5	4.1	5.5	2.4
36	7.3	4.0	9.0	7.5	6.5	4.2
42	10.4	4.5	10.5	11.0	7.5	6.2
48	13.6	5.0	12.0	15.6	8.5	8.7
54	17.2	5.5	13.5	21.4	9.5	11.9
60	21.2	6.0	15.0	28.4	10.5	15.7
66	25.7	6				