

ROUND CORRUGATED STEEL STRUCTURAL PLATE PIPE																										
6 IN x 2 IN [152 X 51] CORRUGATIONS																										
PIPE DIAMETER	WATERWAY AREA	MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT	PLATE THICKNESS																							
			ROUND											ELONGATED												
			12 GA [2.77]			10 GA [3.51]			8 GA [4.27]			7 GA [4.78]		5 GA [5.54]		3 GA [6.32]		1 GA [7.11]		1 GA [7.11]						
			4 BOLTS/ft. [13 BOLTS/m]											6 BOLTS/FT [20 BOLTS/m]								8 BOLTS/FT [26 BOLTS/m]				
MAX. FILL HEIGHTS ABOVE TOP OF PIPE																										
IN	mm	FT ²	m ²	IN	mm	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m			
60	1500	20	1.86	21	535	46	14.0	68	20.7	90	27.4	98	29.9	108*	32.9*	118*	36.0*	129*	39.3*	200*	61.0*	192*	58.5*			
66	1655	24	2.23	21	535	42	12.8	62	18.9	79	24.1	84	25.6	91	27.7	99	30.2*	107*	32.6*	181*	55.2*	174*	53.0*			
72	1810	28	2.60	21	535	38	11.6	57	17.4	70	21.3	74	22.6	80	24.4	86	26.2	92	28.0	166*	50.6*	160*	48.8*			
78	1965	33	3.07	21	535	35	10.7	52	15.8	64	19.5	67	20.4	71	21.6	76	23.2	81	24.7	153*	46.6*	147*	44.8*			
84	2120	39	3.62	21	535	33	10.1	49	14.9	59	18.0	61	18.6	65	19.8	69	21.0	73	22.3	142*	43.3*	137*	41.8*			
90	2275	44	4.09	21	535	31	9.4	45	13.7	56	17.1	58	17.7	61	18.6	64	19.5	67	20.4	133*	40.5*	128*	39.0*			
96	2430	50	4.65	21	535	29	8.8	43	13.1	53	16.2	55	16.8	57	17.4	60	18.3	62	18.9	125*	38.1*	120*	36.6*			
102	2585	57	5.30	33	840	27	8.2	40	12.2	51	15.5	52	15.8	54	16.5	56	17.1	58	17.7	117*	35.7*	113*	34.4*			
108	2740	64	5.95	33	840	25	7.6	38	11.6	49	14.9	50	15.2	52	15.8	54	16.5	56	17.1	111*	33.8*	106*	32.3*			
114	2895	71	6.60	33	840	24	7.3	36	11.0	47	14.3	49	14.9	50	15.2	52	15.8	53	16.2	105*	32.0*	101*	30.8*			
120	3050	79	7.34	33	840	23	7.0	34	10.4	45	13.7	48	14.6	49	14.9	50	15.2	52	15.8	100*	30.5*	96	29.3			
126	3205	87	8.08	33	840	22	6.7	32	9.8	42	12.8	47	14.3	48	14.6	49	14.9	50	15.2	95	29.0	91	27.7			
132	3360	95	8.83	33	840	21	6.4	31	9.4	40	12.2	46	14.0	47	14.3	48	14.6	49	14.9	90	27.4	87	26.5			
138	3515	104	9.66	33	840	20	6.1	29	8.8	39	11.9	44	13.4	46	14.0	47	14.3	48	14.6	86	26.2	83	25.3			
144	3670	113	10.50	33	840	19	5.8	28	8.5	37	11.3	43	13.1	45	13.7	46	14.0	47	14.3	83	25.3	80	24.4			
150	3825	123	11.43	33	840	18	5.5	27	8.2	36	11.0	41	12.5	45	13.7	46	14.0	47	14.3	80	24.4	76	23.2			
156	3980	133	12.36	33	840	17	5.2	26	7.9	34	10.4	39	11.9	44	13.4	45	13.7	46	14.0	76	23.2	73	22.3			
162	4135	143	13.29	33	840	17	5.2	25	7.6	33	10.1	38	11.6	44	13.4	44	13.4	45	13.7	74	22.6	71	21.6			
168	4290	154	14.31	33	840	16	4.9	24	7.3	32	9.8	36	11.0	44	13.4	44	13.4	45	13.7	71	21.6	68	20.7			
174	4445	165	15.33	33	840	16	4.9	23	7.0	31	9.4	35	10.7	42	12.8	44	13.4	44	13.4	68	20.7	66	20.1			
180	4600	177	16.44	33	840	15	4.6	22	6.7	30	9.1	34	10.4	41	12.5	43	13.1	44	13.4	66	20.1	64	19.5			

*USE ONLY AFTER A THOROUGH INVESTIGATION OF FOUNDATION FOR UNIFORM SETTLEMENT BETWEEN THE CULVERT AND FILL MATERIAL.

GENERAL NOTES

DESIGN CRITERIA

Bed in accordance with the Standard Plan for Pipe Fill Height Chart and Installation Details.

Specifications: A.A.S.H.T.O. 1983 Standard Specifications for Highway Bridges

Assemble structural plate pipe and arch pipe with 3/4 in [19] Ø galvanized high strength steel bolts.

Dead Load: 120 p.s.f. per ft [18.85 kPa per meter] of height of cover

Coat aluminum structural plate pipes that are invert paved with an asphalt mastic coating in accordance with the Standard Specifications.

Live Load: HS 20-44 [MS 18]

Measure fill heights from top of pipe to top of surfacing.

Safety Factors: 3.0 for longitudinal seam strength
 2.0 for pipe wall buckling
 See specifications for flexibility factors
 Maximum deflection = 5% of diameter

** Use 3 tons per ft²[300 kPa] fill height table values only when the contract specifically states that allowable bearing pressure has been confirmed by the geology program and is approved for the given pipe installation.

Backfill: Material compaction to 95% proctor density
 K = 0.22 soil stiffness coefficient
 E' = 1400 psi [9653 kPa] (Modulus of Passive Soil Resistance)

Allowable Soil
 Bearing Pressure: 2.0 tons per ft² [200 kPa] for corner plates unless otherwise specified. (See General Notes)

CORRUGATED STEEL STRUCTURAL PLATE STOCK PASS									
6 IN x 2 IN [152 x 51] CORRUGATIONS*									
PIPE DIMENSIONS SPAN x RISE		MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT		CORNER RADIUS		CORNER PRESSURE 2 TONS/ft ² [200 kPa]			
IN x IN	mm x mm	IN	mm	IN	mm	GA	mm	FT	m
68 x 78	1730 x 1980	24	610	18	460	12	2.77	15	4.6
70 x 92	1780 x 2340	24	610	18	460	12	2.77	15	4.6

* BOLT PATTERN - 4 BOLTS PER FOOT [13 BOLTS PER meter].

Designed by: BOS
 Drawn by: GLD
 Checked by: RRC
 Previous Dep. No. 622-01A

GENERAL REQUIREMENTS AND STEEL PIPE FILL HEIGHTS

Note: Units shown in brackets [] are metric and are in millimeters (mm) unless other units are shown.



STRUCTURAL PLATE PIPE FILL HEIGHT CHART

STANDARD PLAN

CORRUGATED STEEL STRUCTURAL PLATE PIPE-ARCH															
6 IN x 2 IN [152 x 51] CORRUGATIONS*															
PIPE DIMENSIONS SPAN x RISE		WATERWAY AREA		MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT		CORNER PRESSURE									
						2 TONS/FT ² [200 kPa]		** 3 TONS/FT ² [300 kPa]							
IN x IN		mm x mm		FT ²		m ²		MINIMUM THICKNESS		MAXIMUM FILL HEIGHT		MINIMUM THICKNESS		MAXIMUM FILL HEIGHT	
GA	mm	FT	m	GA	mm	FT	m	GA	mm	FT	m	GA	mm	FT	m
73 x 55	1850 x 1400	22	2.04	27	685	12	2.77	16	4.9	12	2.77	24	7.3		
76 x 57	1930 x 1450	24	2.23	27	685	12	2.77	15	4.6	12	2.77	23	7.0		
81 x 59	2060 x 1500	26	2.42	27	685	12	2.77	14	4.3	12	2.77	21	6.4		
84 x 61	2130 x 1550	28	2.60	27	685	12	2.77	14	4.3	12	2.77	21	6.4		
87 x 63	2210 x 1600	31	2.88	27	685	12	2.77	13	4.0	12	2.77	20	6.1		
92 x 65	2340 x 1650	33	3.07	27	685	12	2.77	12	3.7	12	2.77	19	5.8		
95 x 67	2410 x 1700	35	3.25	27	685	12	2.77	12	3.7	12	2.77	18	5.5		
98 x 69	2490 x 1750	38	3.53	27	685	12	2.77	12	3.7	12	2.77	18	5.5		
103 x 71	2620 x 1800	40	3.72	33	840	12	2.77	11	3.4	12	2.77	17	5.2		
106 x 73	2690 x 1850	43	3.99	33	840	12	2.77	11	3.4	12	2.77	16	4.9		
112 x 75	2840 x 1910	46	4.27	33	840	12	2.77	10	3.0	12	2.77	16	4.9		
114 x 77	2900 x 1960	49	4.55	33	840	12	2.77	10	3.0	12	2.77	15	4.6		
117 x 79	2970 x 2010	52	4.83	33	840	12	2.77	10	3.0	12	2.77	15	4.6		
123 x 81	3120 x 2060	55	5.11	33	840	12	2.77	9	2.7	12	2.77	14	4.3		
128 x 83	3250 x 2110	58	5.39	33	840	12	2.77	9	2.7	12	2.77	13	4.0		
131 x 85	3330 x 2160	61	5.67	33	840	12	2.77	9	2.7	12	2.77	13	4.0		
137 x 87	3480 x 2210	64	5.95	33	840	12	2.77	8	2.4	12	2.77	12	3.7		
139 x 89	3530 x 2260	67	6.22	33	840	12	2.77	8	2.4	12	2.77	12	3.7		
142 x 91	3610 x 2310	71	6.60	33	840	12	2.77	8	2.4	12	2.77	12	3.7		
148 x 93	3760 x 2360	74	6.87	33	840	12	2.77	7	2.1	12	2.77	12	3.7		
150 x 95	3810 x 2410	78	7.25	33	840	12	2.77	7	2.1	12	2.77	11	3.4		
152 x 97	3860 x 2460	81	7.53	39	990	12	2.77	7	2.1	12	2.77	11	3.4		
154 x 100	3910 x 2540	85	7.90	39	990	12	2.77	7	2.1	12	2.77	11	3.4		
159 x 112	4040 x 2840	98	9.10	39	990	12	2.77	12	3.7	12	2.77	17	5.2		
162 x 114	4110 x 2900	102	9.48	39	990	12	2.77	12	3.7	12	2.77	17	5.2		
168 x 116	4270 x 2950	105	9.75	39	990	12	2.77	12	3.7	12	2.77	16	4.9		
170 x 118	4320 x 3000	109	10.13	39	990	12	2.77	11	3.4	12	2.77	16	4.9		
173 x 120	4390 x 3050	114	10.59	39	990	12	2.77	11	3.4	12	2.77	16	4.9		
179 x 122	4550 x 3100	118	10.96	39	990	12	2.77	11	3.4	12	2.77	15	4.6		
184 x 124	4670 x 3150	123	11.43	45	1145	12	2.77	10	3.0	12	2.77	15	4.6		
187 x 126	4750 x 3200	127	11.80	45	1145	10	3.51	10	3.0	10	3.51	14	4.3		
190 x 128	4830 x 3250	132	12.26	45	1145	10	3.51	10	3.0	10	3.51	14	4.3		
195 x 130	4950 x 3300	137	12.73	45	1145	10	3.51	10	3.0	10	3.51	14	4.3		
198 x 132	5030 x 3350	142	13.19	45	1145	10	3.51	10	3.0	10	3.51	14	4.3		
204 x 134	5180 x 3400	146	13.56	45	1145	10	3.51	9	2.7	10	3.51	14	4.3		
206 x 136	5230 x 3450	151	14.03	45	1145	10	3.51	9	2.7	10	3.51	14	4.3		
209 x 138	5310 x 3510	157	14.59	45	1145	10	3.51	9	2.7	10	3.51	14	4.3		
215 x 140	5460 x 3560	161	14.96	45	1145	8	4.27	9	2.7	8	4.27	14	4.3		
217 x 142	5510 x 3610	167	15.51	45	1145	8	4.27	9	2.7	8	4.27	14	4.3		
223 x 144	5660 x 3660	172	15.98	45	1145	8	4.27	9	2.7	8	4.27	13	4.0		
225 x 146	5720 x 3710	177	16.44	45	1145	8	4.27	9	2.7	8	4.27	13	4.0		
231 x 148	5870 x 3760	182	16.91	45	1145	8	4.27	8	2.4	8	4.27	13	4.0		
234 x 150	5940 x 3810	188	17.47	45	1145	8	4.27	8	2.4	8	4.27	13	4.0		
236 x															

ROUND CORRUGATED ALUMINUM STRUCTURAL PLATE PIPE

9 IN x 2 1/2 IN [230 x 64] CORRUGATIONS*

PIPE DIAMETER	WATERWAY AREA		MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT	PLATE THICKNESS															
				0.10" [2.54]		0.125" [3.18]		0.15" [3.81]		0.175" [4.45]		0.20" [5.08]		0.225" [5.72]		0.25" [6.35]			
				MAXIMUM FILL HEIGHTS ABOVE TOP OF PIPE															
IN	mm	ft²	m²	IN	mm	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m	FT	m
78	1965	33	3.07	27	685	24	7.3	35	10.7	46	14.0	54	16.5	59	18.0	62	18.9	64	19.5
84	2120	39	3.62	27	685	22	6.7	32	9.8	42	12.8	50	15.2	56	17.1	58	17.7	59	18.0
90	2275	44	4.09	27	685	20	6.1	30	9.1	40	12.2	47	14.3	53	16.2	54	16.5	56	17.1
96	2430	50	4.65	27	685	19	5.8	28	8.5	37	11.3	44	13.4	51	15.5	52	15.8	53	16.2
102	2585	57	5.30	36	915	18	5.5	26	7.9	35	10.7	41	12.5	47	14.3	50	15.2	51	15.5
108	2740	64	5.95	36	915	17	5.2	25	7.6	33	10.1	39	11.9	45	13.7	49	14.9	49	14.9
114	2895	71	6.60	36	915	16	4.9	23	7.0	31	9.4	37	11.3	42	12.8	47	14.3	48	14.6
120	3050	79	7.34	36	915	15	4.6	22	6.7	30	9.1	35	10.7	40	12.2	46	14.0	47	14.3
126	3205	87	8.08	36	915	14	4.3	21	6.4	28	8.5	33	10.1	38	11.6	44	13.4	46	14.0
132	3360	95	8.83	36	915	14	4.3	20	6.1	27	8.2	32	9.8	37	11.3	42	12.8	45	13.7
138	3515	104	9.66	36	915	13	4.0	19	5.8	26	7.9	30	9.1	35	10.7	40	12.2	44	13.4
144	3670	113	10.50	36	915	13	4.0	18	5.5	25	7.6	29	8.8	33	10.1	38	11.6	43	13.1
156	3980	133	12.36	36	915	12	3.7	17	5.2	23	7.0	27	8.2	31	9.4	35	10.7	39	11.9
168	4290	154	14.31	36	915	11	3.4	16	4.9	21	6.4	25	7.6	29	8.8	33	10.1	36	11.0
180	4600	177	16.44	36	915	10	3.0	15	4.6	20	6.1	23	7.0	27	8.2	30	9.1	34	10.4

*BOLT PATTERN - 5 1/3 BOLTS PER FT [17.5 BOLTS PER meter].

CORRUGATED ALUMINUM STRUCTURAL PLATE STOCK PASS

9 IN x 2 1/2 IN [230 x 64] CORRUGATIONS*

PIPE DIMENSIONS SPAN x RISE		MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT		CORNER PRESSURE 2 TONS/ft.² [200 kPa]			
				MINIMUM THICKNESS		MAXIMUM FILL HEIGHT	
IN x IN	mm x mm	IN	mm	IN	mm	FT	m
74 x 84	1880 x 2130	24	610	0.100	2.54	8	2.44
73 x 94	1850 x 2390	24	610	0.100	2.54	8	2.44

*CORNER RADIUS 31.8 IN [808].

BOLT PATTERN - 5 1/3 BOLTS PER FT [17.5 BOLTS PER meter].

EQUIVALENT SIZES OF STRUCTURAL PLATE STOCK PASS

STEEL		ALUMINUM	
PIPE DIMENSIONS SPAN x RISE		PIPE DIMENSIONS SPAN x RISE	
IN x IN	mm x mm	IN x IN	mm x mm
68 x 78	1730 x 1980	74 x 84	1880 x 2130
70 x 92	1780 x 2340	73 x 94	1850 x 2390

CORRUGATED ALUMINUM STRUCTURAL PLATE PIPE-ARCH

9 IN x 2 1/2 IN [230 x 64] CORRUGATIONS*

PIPE DIMENSIONS SPAN x RISE		WATERWAY AREA		MIN. COVER, TOP OF PIPE TO TOP OF PAVEMENT	CORNER PRESSURE								
					2 TONS/FT² [200 kPa]				**3 TONS/FT² [300 kPa]				
					MINIMUM THICKNESS		MAXIMUM FILL HEIGHT		MINIMUM THICKNESS		MAXIMUM FILL HEIGHT		
IN x IN	mm x mm	FT²	m²	IN	mm	IN	mm	FT	m	IN	mm	FT	m
79 x 68	2010 x 1730	30	2.79	30	760	0.100	2.54	22	6.7	0.125	3.18	32	9.8
83 x 69	2110 x 1750	32	2.97	30	760	0.100	2.54	22	6.7	0.125	3.18	32	9.8
87 x 71	2210 x 1800	34	3.16	30	760	0.100	2.54	20	6.1	0.125	3.18	30	9.1
93 x 72	2360 x 1830	37	3.44	30	760	0.100	2.54	19	5.8	0.125	3.18	30	9.1
97 x 73	2460 x 1850	39	3.62	30	760	0.100	2.54	18	5.5	0.125	3.18	26	7.9
101 x 75	2570 x 1910	42	3.90	36	915	0.100	2.54	18	5.5	0.125	3.18	26	7.9
106 x 76	2690 x 1930	45	4.18	36	915	0.100	2.54	17	5.2	0.125	3.18	25	7.6
111 x 77	2820 x 1960	47	4.37	36	915	0.100	2.54	17	5.2	0.125	3.18	23	7.0
115 x 78	2920 x 1980	50	4.65	36	915	0.100	2.54	16	4.9	0.125	3.18	22	6.7
119 x 80	3020 x 2030	53	4.92	36	915	0.100	2.54	15	4.6	0.125	3.18	22	6.7
123 x 81	3120 x 2060	56	5.20	36	915	0.100	2.54	14	4.3	0.125	3.18	21	6.4
129 x 82	3280 x 2080	58	5.39	36	915	0.100	2.54	14	4.3	0.125	3.18	20	6.1
133 x 84	3380 x 2130	61	5.67	36	915	0.100	2.54	13	4.0	0.125	3.18	19	5.8
137 x 85	3480 x 2160	64	5.95	36	915	0.100	2.54	13	4.0	0.125	3.18	19	5.8
141 x 86	3580 x 2180	68	6.32	36	915	0.100	2.54	12	3.7	0.125	3.18	18	5.5
147 x 87	3730 x 2210	71	6.60	36	915	0.100	2.54	12	3.7	0.125	3.18	18	5.5
151 x 89	3840 x 2260	74	6.87	36	915	0.100	2.54	11	3.4	0.125	3.18	17	5.2
155 x 90	3940 x 2290	77	7.15	36	915	0.100	2.54	11	3.4	0.125	3.18	17	5.2
157 x 98	3990 x 2490	83	7.71	36	915	0.100	2.54	11	3.4	0.125	3.18	16	4.9
157 x 100	3990 x 2540	87	8.08	36	915	0.100	2.54	11	3.4	0.125	3.18	16	4.9
167 x 101	4240 x 2570	90	8.36	36	915	0.125	3.18	12	3.7	0.125	3.18	16	4.9
168 x 103	4270 x 2620	94	8.73	36	915	0.125	3.18	11	3.4	0.125	3.18	16	4.9
167 x 113	4240 x 2870	102	9.48	36	915	0.125	3.18	12	3.7	0.125	3.18	16	4.9
171 x 115	4340 x 2920	106	9.85	36	915	0.125	3.18	12	3.7	0.150	3.81	18	5.5
176 x 116	4470 x 2950	110	10.22	36	915	0.125	3.18	11	3.4	0.150	3.81	17	5.2
179 x 118	4540 x 3000	114	10.59	36	915	0.125	3.18	11	3.4	0.150	3.81	17	5.2
184 x 120	4670 x 3050	119	11.06	48	1220	0.125	3.18	10	3.0	0.150	3.81	16	4.9
187 x 122	4750 x 3100	123	11.43	48	1220	0.150	3.81	10	3.0	0.150	3.81	16	4.9
193 x 124	4900 x 3150	128	11.89	48	1220	0.150	3.81	10	3.0	0.150	3.81	15	4.6
196 x 126	4980 x 3200	132	12.26	48	1220	0.150	3.81	10	3.0	0.150	3.81	15	4.6
201 x 128	5110 x 3250	137	12.73	48	1220	0.150	3.81	9	2.7	0.150	3.81	15	4.6
204 x 130	5180 x 3300	142	13.19	48	1220	0.150	3.81	9	2.7	0.150	3.81	15	4.6
207 x 132	5260 x 3350	147	13.66	48	1220	0.150	3.81	9	2.7	0.150	3.81	14	4.3
213 x 134	5410 x 3400	152	14.12	48	1220	0.175	4.45	9	2.7	0.150	3.81	14	4.3
216 x 136	5490 x 3450	157	14.59	48	1220	0.175	4.45	9	2.7	0.150	3.81	14	4.3
221 x 138	5610 x 3510	162	15.05	54	1370	0.175	4.45	9	2.7	0.150	3.81	13	4.0
224 x 140	5690 x 3560	167	15.51	54	1370	0.175	4.45	9	2.7	0.150	3.81	13	4.0
230 x 141	5840 x 3580	172	15.98	54	1370	0.175	4.45	8	2.4	0.150	3.81	13	4.0
233 x 143	5920 x 3630	178	16.54	54	1370	0.175	4.45	8	2.4	0.150	3.81	13	4.0
238 x 145	6050 x 3680	183	17.00	54	1370	0.200	5.08	8	2.4	0.150	3.81	12	3.7
241 x 147	6120 x 3730	189	17.56	54	1370	0.200	5.08	8	2.4	0.150	3.81	12	3.7
241 x 150	6120 x 3810	194	18.02	54	1370	0.200	5.08	8	2.4	0.150	3.81	12	3.7

*BOLT PATTERN - 5 1/3 BOLTS PER FT [17.5 BOLTS PER meter].

CORNER RADIUS - 31.8 IN [810].

* * USE 3 TONS PER FT² [300 kPa] FILL HEIGHT TABLE VALUES ONLY WHEN THE CONTRACT SPECIFICALLY STATES THAT ALLOWABLE BEARING PRESSURE HAS BEEN CONFIRMED BY THE GEOLOGY PROGRAM AND IS APPROVED FOR THE GIVEN PIPE INSTALLATION.

EQUIVALENT SIZES OF STRUCTURAL PLATE PIPE-ARCH

STEEL ALUMINUM

PIPE DIMENSIONS SPAN x RISE		WATERWAY AREA		WATERWAY AREA		PIPE DIMENSIONS SPAN x RISE	
				FT²	m²		
IN x IN	mm x mm	FT²	m²	FT²	m²	IN x IN	mm x mm
73 x 55	1850 x 1400	22	2.04	—	—	—	—
76 x 57	1930 x 1450	24	2.23	—	—	—	—
81 x 59	2060 x 1500	26	2.42	—	—	—	—
84 x 61	2130 x 1550	28	2.60	30	2.79	79 x 68	2010 x 1730
87 x 63	2210 x 1600	31	2.88	32	2.97	83 x 69	2110 x 1750
92 x 65	2340 x 1650	33	3.07	34	3.16	87 x 71	2210 x 1800
95 x 67	2410 x 1700	35	3.25	37	3.44	93 x 72	2360 x 1850
98 x 69	2490 x 1750	38	3.53	39	3.62	97 x 73	2460 x 1850
103 x 71	2620 x 1800	40	3.72	42	3.90	101 x 75	2570 x 1910
106 x 73	2690 x 1850	43	3.99	45	4.18	106 x 76	2690 x 1930
112 x 75	2840 x 1910	46	4.27	47	4.37	111 x 77	2820 x 1960
114 x 77	2900 x 1960	49	4.55	50	4.65	115 x 78	2920 x 1980
117 x 79	2970 x 2010	52	4.83	53	4.92	119 x 80	3020 x 2030
123 x 81	3120 x 2060	55	5.11	56	5.20	123 x 81	3120 x 2060
128 x 83	3250 x 2110	58	5.39	58	5.39	129 x 82	3280 x 2080
131 x 85	3330 x 2160	61	5.67	61	5.67	133 x 84	3380 x 2130
137 x 87	3480 x 2210	64	5.95	64	5.95	137 x 85	3480 x 2160
139 x 89	3530 x 2260	67	6.22	68	6.32	141 x 86	3580 x 2180
142 x 91	3610 x 2310	71	6.60	71	6.60	147 x 87	3730 x 2210
148 x 93	3760 x 2360	74	6.87	74	6.87	151 x 89	3840 x 2260
150 x 95	3810 x 2410	78	7.25				