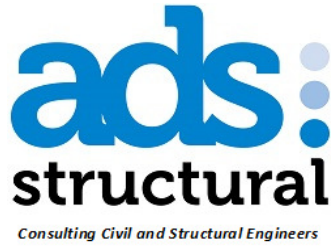


MasterDrain
SW



25 Peel House Lane Widnes, WA8 6TN info@adsstructural.co.uk Tel:0151 541 4000		Job No. 18-2968		
		Sheet no. 1		
		Date 20/03/18		
Project	Morson International	By DCS	Check	Approv
Title	Surcharge calcs (Sized at 30 yrs storm) for MORSON INT 1.SW CCF = 30%			

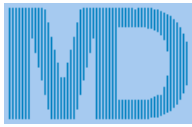
Using in-line restrictors
 Return period = 100 yrs
 Climate change factor = 30

PEAK hydrograph values printed
 Storm duration = 15 mins

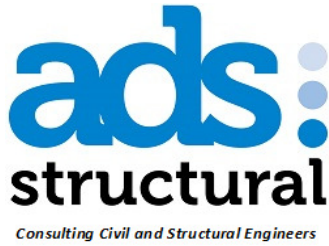
Mean rain intens. 141.00 mm/hr
 Storm profile = winter

Peak rain intens. 352.50 mm/hr
 Sample period = 7.5 secs.

Entry No.	SECT. No.	MANHOLE REF	PIPE CAPACITY l/s	RATE FLOW l/s	PIPE SIZE mm	CHAMBER DIAM/LxW mm	INVERT LEVEL m	WATER LEVEL m	GRND LEVEL m	SURCHARGE		EXCESS FLOW l/s	FLOODED VOL m³	UPSTRM VOL m³	STATUS	
										fract.	Depth					
1	I	1.01	SWMH1	80.0	38.3	300	1200	21.35	21.50	22.85	0.48	0.146	0.00	0.00	2.03	OK
2	I	1.02	SWMH2	171.2	62.2	375	1200	21.20	21.35	23.25	0.36	0.149	0.00	0.00	7.82	OK
3	B	2.01	RWP1	46.6	21.2	225	1200	21.60	21.70	22.80	0.45	0.105	0.00	0.00	1.24	OK
4	B	2.02	SWMH3	113.3	44.7	300	1200	21.35	21.48	22.85	0.39	0.125	0.00	0.00	4.50	OK
5	I	1.03	SWMH4	223.3	152.2	450	1200	20.95	21.24	23.50	0.68	0.291	0.00	0.00	24.80	OK
6	B	3.01	RWP2	43.3	18.3	225	1200	21.00	21.10	22.20	0.42	0.099	0.00	0.00	0.57	OK
7	B	3.02	IC1	48.6	18.3	225	1200	20.90	20.99	22.00	0.38	0.091	0.00	0.00	2.27	OK
8	I	1.04	SWMH5	261.6	213.0	450	1200	20.65	20.99	23.70	0.81	0.343	0.00	0.00	36.61	OK
9	B	4.01	SWMH7	174.4	19.2	225	1200	22.70	22.74	24.20	0.11	0.038	0.00	0.00	0.83	OK
10	I	1.05	SWMH6	Cell.	238.5	6.0x1.2m	1200	20.45	20.55	23.70	0.00	0.100	0.00	0.00	241.07	OK
11	I	1.06	SWMH8†	51.9	45.0	225	1200	19.00	19.18	20.00	0.87	0.183	0.00	0.00	235.83	OK



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SW



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Title	Surcharge calcs (Sized at 30 yrs storm) for MORSON INT 1.SW CCF = 30%			

Notes

Printout headings

- | | | |
|---|---|--|
| 1) Entry no - position in file | 2) Section no - pipe identifier | 3) Manhole ref - Manhole identifier |
| 4) Pipe cap - full bore capacity of that pipe | 5) Rate of flow - calculated flow rate (l/s) ‡ = flow restrictor. | 6) Pipe diam - outlet pipe diameter (mm) |
| 7) Chamber diam - chamber diam. at base of MH | 8) Invert level - invert level of manhole | 9) Water level - calculated peak water level. |
| 10) Grnd level - ground / cover level | 11) Surch. fract - calc.flow/pipe capacity | 12) Surch. depth - surcharge level above soffit |
| 13) Overflow - surcharged flow rate (l/s) | 14) Flooded vol - volume of water above cover | 15) Upstrm Vol - upstream pipe vol to previous manhole(s) |
| 16) Status - OK - outlet not surcharged | 17) Status - Surcharged - outlet surcharged | 18) Status - Warning - water level within 300mm of cover level |
| 19) Status - Flooded - cover over-topped | | |

Title box

Hydrograph data

- | | | |
|---|--------------------------------------|--|
| 1) Ret. period - that used to calculate profile | 2) Duration - length of storm (mins) | 3) Profile - either Winter (75%) or Summer (50%) |
|---|--------------------------------------|--|

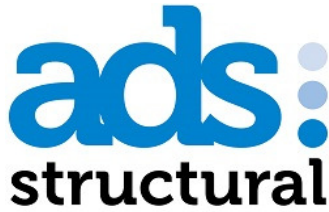
Flow restrictors

Manhole reference - SWMH8

Restrictor flowrate - 45 l/s



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SW



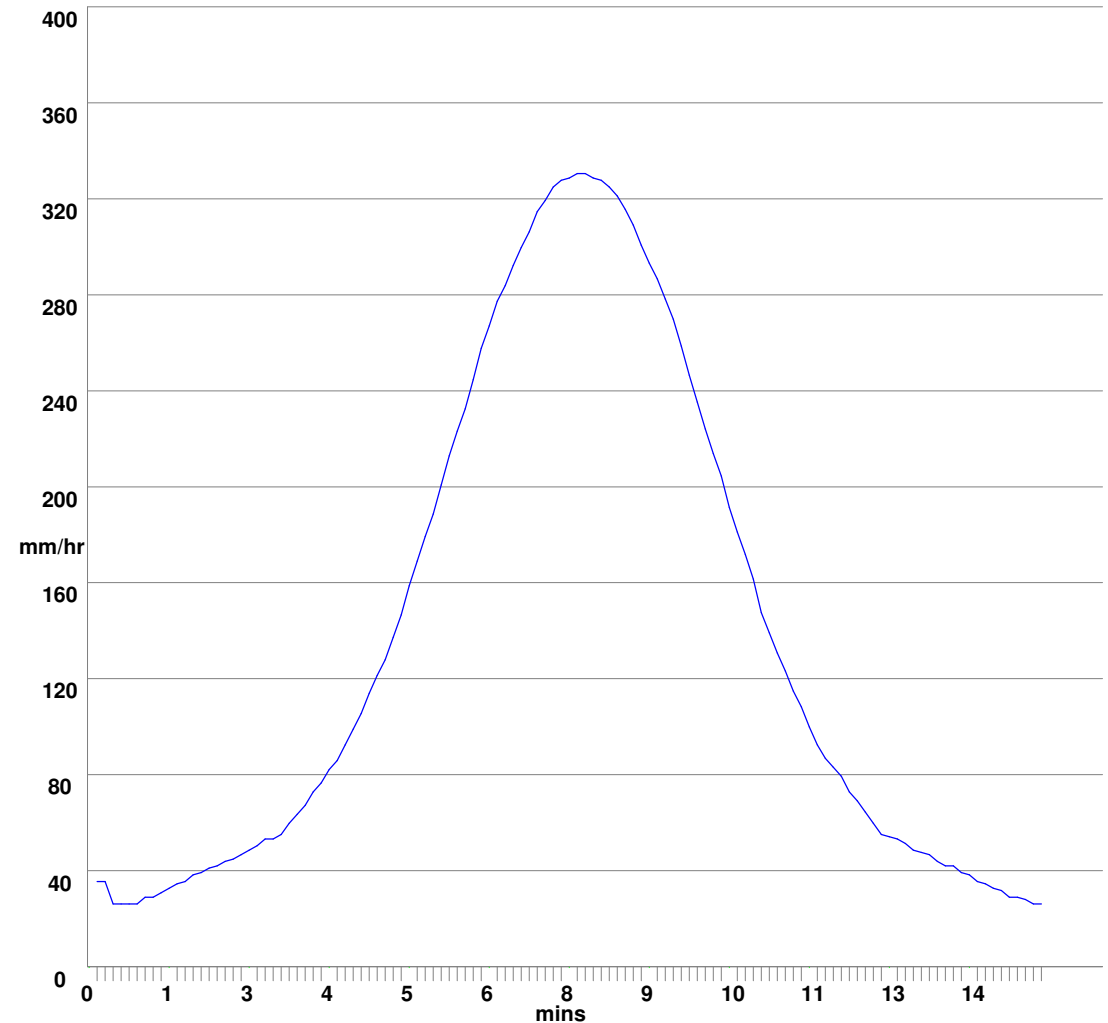
Consulting Civil and Structural Engineers

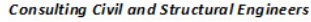
25 Peel House Lane Widnes, WA8 6TN info@adsstructural.co.uk Tel:0151 541 4000		Job No. 18-2968		
		Sheet no. 5		
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Project	Morson International		By DCS	Check
Title	Surcharge calcs (Sized at 30 yrs storm) for MORSON INT 1.SW CCF = 30%		Approv	

Time mins	Rain mm/hr	Time mins	Rain mm/hr	Time mins	Rain mm/hr
0:08	38.19	5:08	181.04	10:08	193.77
0:15	38.19	5:15	192.35	10:15	183.87
0:22	28.29	5:22	202.25	10:22	172.55
0:30	28.29	5:30	214.98	10:30	158.41
0:38	28.29	5:38	227.71	10:38	148.51
0:45	28.29	5:45	239.03	10:45	140.02
0:52	31.12	5:52	248.93	10:52	131.54
1:00	31.12	6:00	261.66	11:00	123.05
1:08	32.53	6:08	275.80	11:08	115.98
1:15	35.36	6:15	285.70	11:15	107.49
1:22	36.77	6:22	297.02	11:22	99.01
1:30	38.19	6:30	304.09	11:30	93.35
1:38	41.02	6:38	312.57	11:38	89.11
1:45	42.43	6:45	321.06	11:45	84.86
1:52	43.85	6:52	328.13	11:52	77.79
2:00	45.26	7:00	336.62	12:00	73.55
2:08	46.67	7:08	342.28	12:08	69.30
2:15	48.09	7:15	347.93	12:15	63.65
2:22	49.50	7:22	350.76	12:22	59.40
2:30	52.33	7:30	352.18	12:30	57.99
2:38	53.75	7:38	353.59	12:38	56.57
2:45	56.57	7:45	353.59	12:45	55.16
2:52	56.57	7:52	352.18	12:52	52.33
3:00	59.40	8:00	350.76	13:00	50.92
3:08	63.65	8:08	347.93	13:08	49.50
3:15	67.89	8:15	343.69	13:15	46.67
3:22	72.13	8:22	338.03	13:22	45.26
3:30	77.79	8:30	330.96	13:30	45.26
3:38	82.03	8:38	322.48	13:38	42.43
3:45	87.69	8:45	313.99	13:45	41.02
3:52	91.93	8:52	306.92	13:52	38.19
4:00	99.01	9:00	298.43	14:00	36.77
4:08	106.08	9:08	288.53	14:08	35.36
4:15	113.15	9:15	277.22	14:15	33.94
4:22	121.64	9:22	264.49	14:22	31.12
4:30	130.12	9:30	251.76	14:30	31.12
4:38	137.19	9:38	240.44	14:38	29.70
4:45	147.09	9:45	229.13	14:45	28.29
4:52	156.99	9:52	219.23	14:52	28.29
5:00	169.72	10:00	205.08	15:00	28.29

Hydrograph profile derived from data in the Flood Studies Report

Return period= 100 yrs Duration= 15 mins Profile - winter



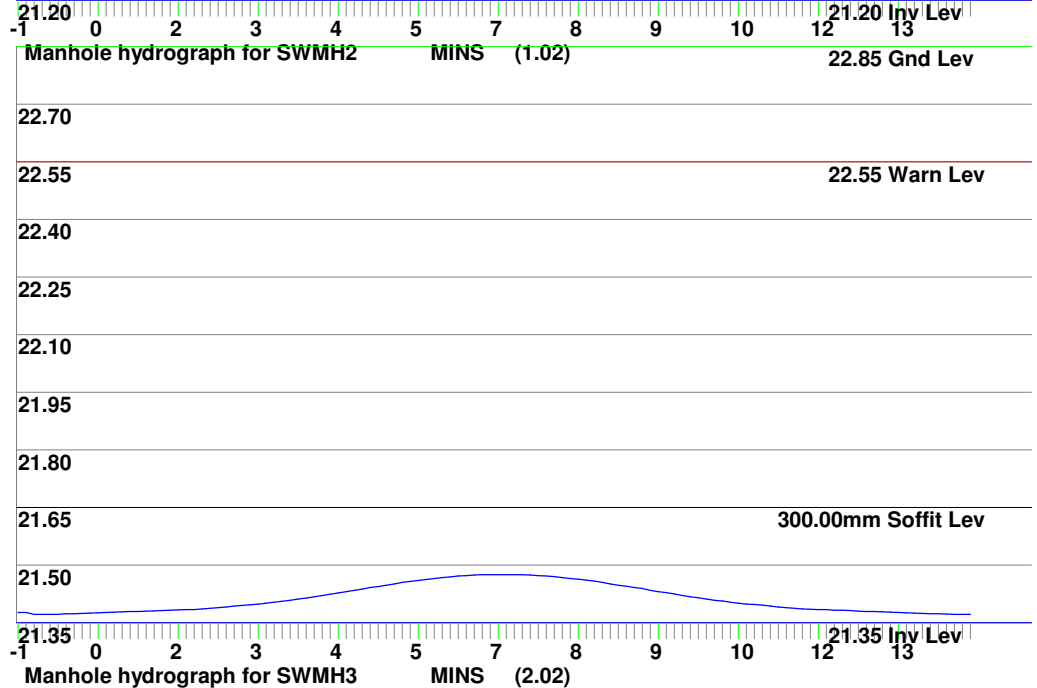
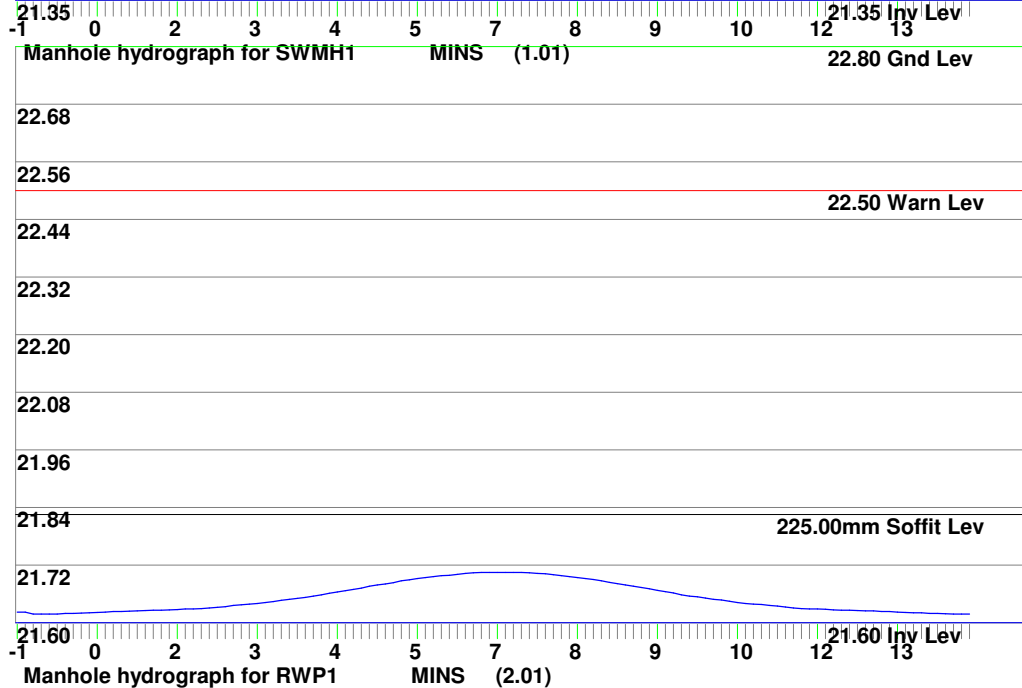


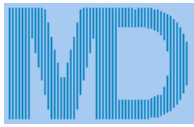
info@adsstructural.co.uk

Tel:0151 541 4000

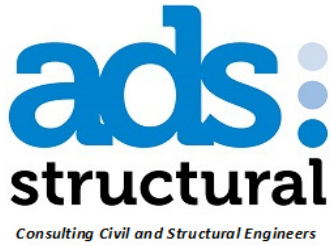
By	Check	Approv
DCS		

Title	Surcharge calcs (Sized at 30 yrs storm) for MORSON INT 1.SW CCF = 30%
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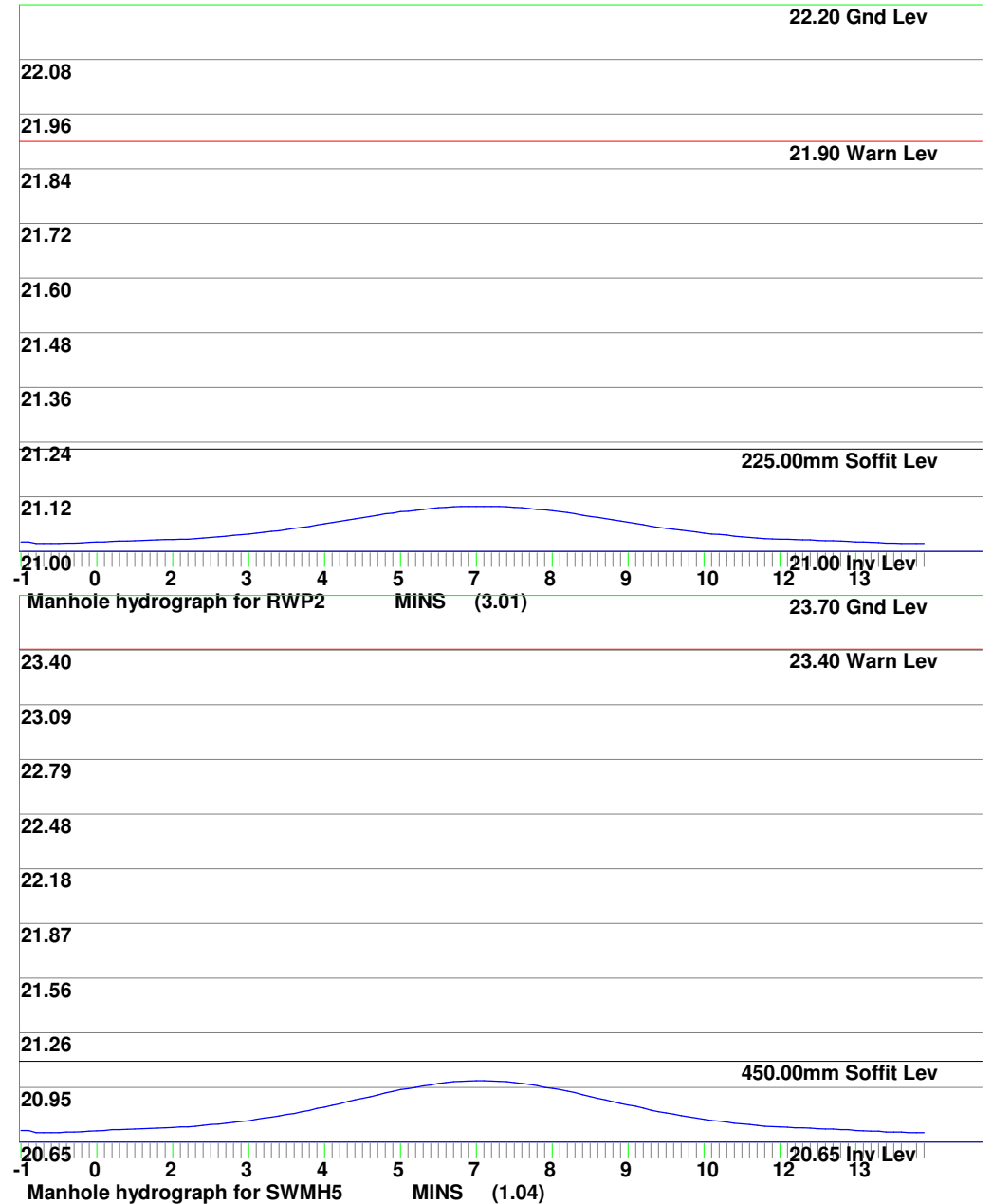
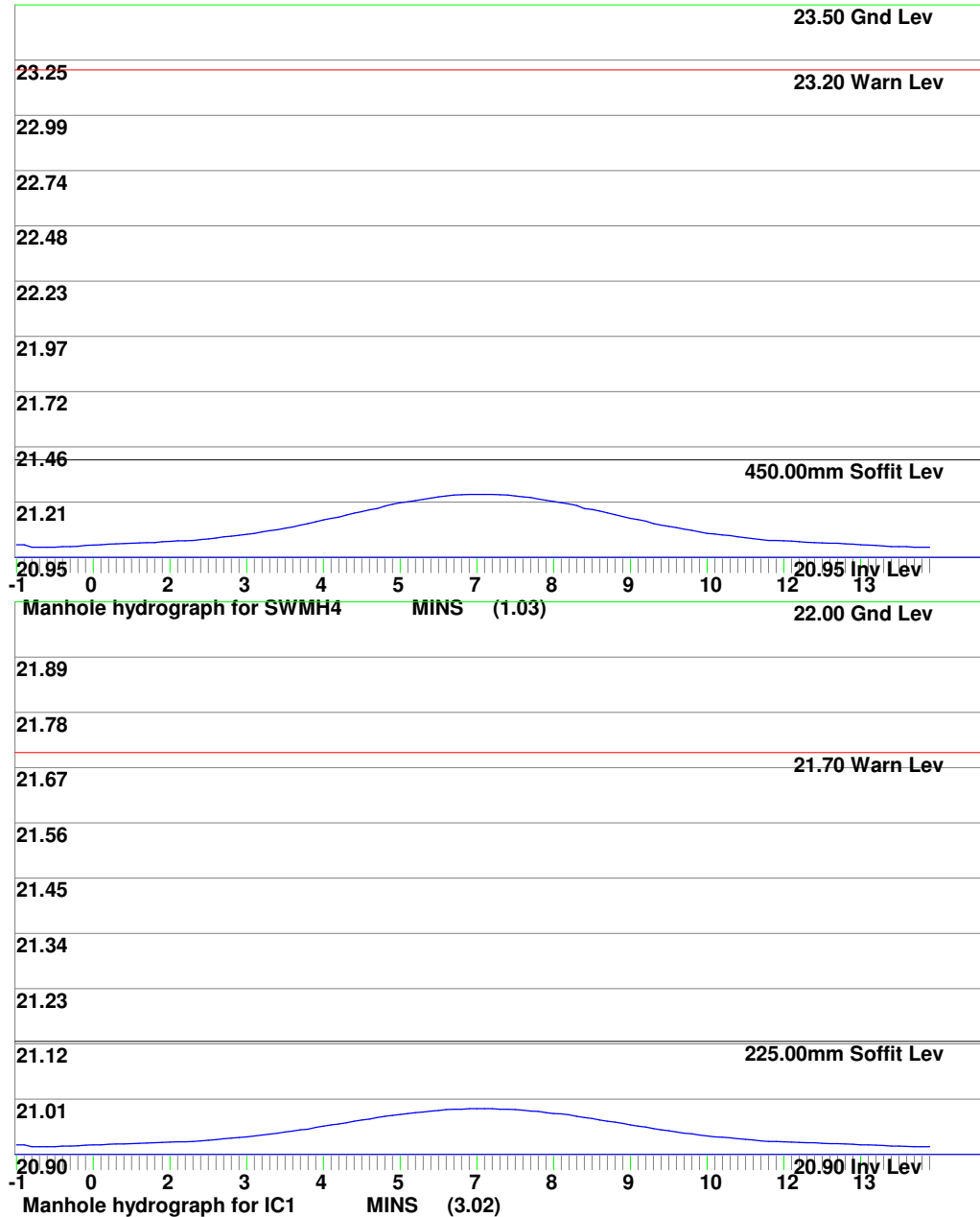


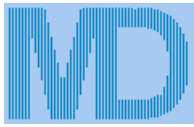


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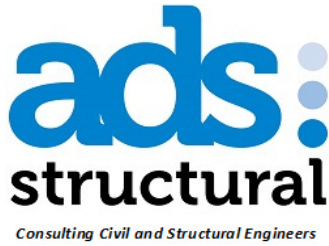


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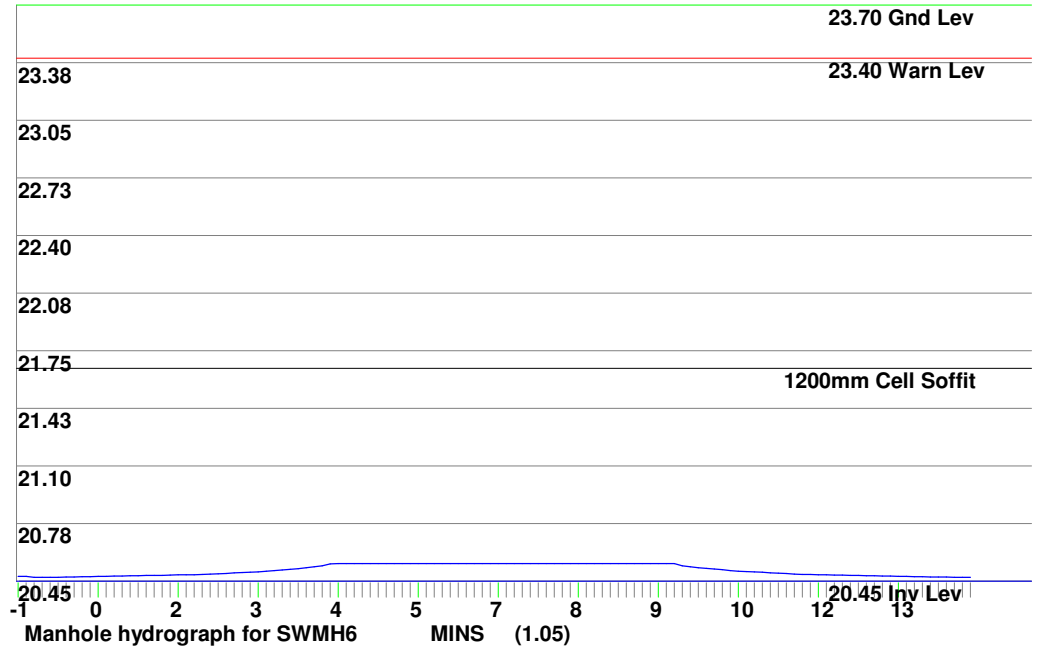


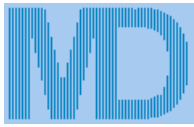


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SW

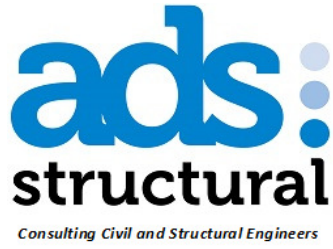


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