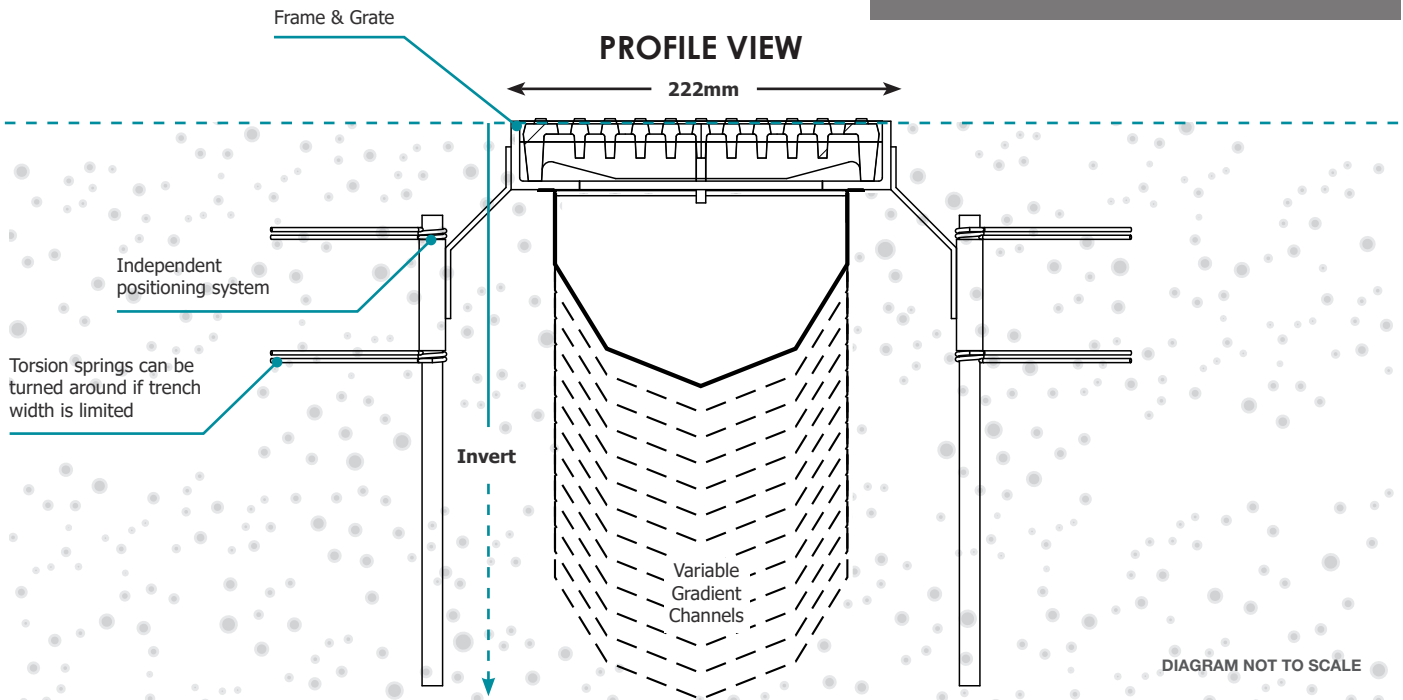


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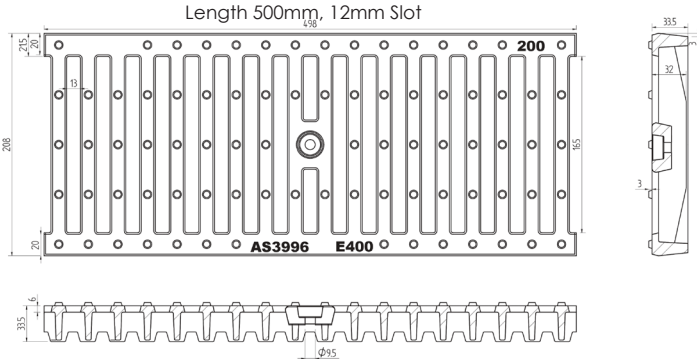


HEAVY DUTY 200 SERIES									
SECTION ID	SECTION MEASUREMENT				SECTION POSITION		SECTION HYDRAULICS <sup>3</sup>		
<b>River (R) - Variable Built-in-Fall</b>									
Sections	Weight Excl. Grate (Kg's)	Length (Metres) <sup>5</sup>	Start Invert (mm)	End Invert (mm)	Previous Upstream Section	Next Downstream Section	Built-in-Fall (%)	Max Design Velocity (M/s)	Max Design Flow Rate (L/s) <sup>1</sup>
HD200 R1-0.5	4.0	0.5 <sup>4</sup>	163	172	-	R2 or T2 <sup>4</sup>	1.50%	-	-
HD200 R1-1.0	9.0	1.0 <sup>4</sup>	155	172	-	R2 or T2 <sup>4</sup>	1.50%	-	-
HD200 R1-1.5	12.5	1.5 <sup>4</sup>	148	172	-	R2 or T2 <sup>4</sup>	1.50%	-	-
HD200 R1-2.0	17.0	2.0 <sup>4</sup>	140	172	-	R2 or T2 <sup>4</sup>	1.50%	-	-
HD200 R1-2.5	22.0	2.5 <sup>4</sup>	133	172	-	R2 or T2 <sup>4</sup>	1.50%	-	-
HD200 R1-3.0	26.0	3.0 <sup>4</sup>	125	172	-	R2 or T2 <sup>4</sup>	1.50%	1.4	26
HD200 R2-3.0	26.5	3.0	172	204	R1	R3	1.00%	1.3	29
HD200 R3-3.0	27.0	3.0	204	229	R2	R4	0.75%	1.1	31
HD200 R4-3.0	27.5	3.0	229	249	R3	R5 or T5 <sup>8</sup>	0.63%	1.1	33
<b>(Z5) Zero Fall Section Length Extender can be inserted here<sup>2</sup></b>									
HD200 R5-3.0	28.0	3.0	249	269	R4 or T2 <sup>4</sup>	R6	0.60%	1.1	36
HD200 R6-3.0	32.0	3.0	269	289	R5	R7	0.58%	1.0	40
HD200 R7-3.0	33.0	3.0	289	307	R6	R8	0.56%	1.0	43
HD200 R8-3.0	33.5	3.0	307	326	R7	R9 or T9 <sup>13</sup>	0.55%	1.1	47
HD200 R9-3.0	34.0	3.0	326	344	R8 or T5 <sup>8</sup>	R10	0.54%	1.1	50
HD200 R10-3.0	34.5	3.0	344	362	R9	R11	0.53%	1.1	54
HD200 R11-3.0	35.0	3.0	362	380	R10	R12	0.52%	1.1	57
HD200 R12-3.0	35.5	3.0	380	397	R11	R13	0.51%	1.1	60
HD200 R13-3.0	36.0	3.0	397	414	R12	R14	0.50%	1.1	65
HD200 R14-3.0	39.0	3.0	414	431	R13 or T9 <sup>13</sup>	R15	0.50%	1.1	68
HD200 R15-3.0	40.0	3.0	431	448	R14	R16	0.50%	1.1	73
HD200 R16-3.0	41.0	3.0	448	465	R15	-	0.50%	1.1	78
<b>Torrent (T) Self Cleansing - Super Steep Built-in-Fall</b>									
Sections	Weight Excl. Grate (Kg's)	Length (Metres)	Start Invert (mm)	End Invert (mm)	Previous Upstream Section	Next Downstream Section	Built-in-Fall (%)	Max Design Velocity (M/s)	Max Design Flow Rate (L/s) <sup>1</sup>
HD200 T2 <sup>4</sup> -3.0	27.5	3.0	172	249	R1	T5 <sup>8</sup> or R5	2.51%	2.0	45
HD200 T5 <sup>8</sup> -3.0	30.0	3.0	249	326	T2 <sup>4</sup> or R <sup>4</sup>	T9 <sup>13</sup> or R9	2.49%	2.1	70
HD200 T9 <sup>13</sup> -3.0	35.0	3.0	326	414	T5 <sup>8</sup> or R8	R14	2.87%	2.4	115
<b>Zero Fall Shallow (Z1) - 125mm Invert</b>									
Sections	Weight Excl. Grate (Kg's)	Length (Metres)	Start Invert (mm)	End Invert (mm)	Previous Upstream Section	Next Downstream Section	Built-in-Fall (%)	Max Design Velocity (M/s)	Max Design Flow Rate (L/s) <sup>1</sup>
HD200 Z1-3.0	20.0	3.0	125	125	-	R1	0.00%	-	-
<b>Zero Fall (Z5) - 249mm Invert<sup>2</sup></b>									
Sections	Weight Excl. Grate (Kg's)	Length (Metres) <sup>5</sup>	Start Invert (mm)	End Invert (mm)	Previous Upstream Section	Next Downstream Section	Built-in-Fall (%)	Max Design Velocity (M/s)	Max Design Flow Rate (L/s) <sup>1</sup>
HD200 Z5-0.5	4.5	0.5 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-
HD200 Z5-1.0	9.0	1.0 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-
HD200 Z5-1.5	13.5	1.5 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-
HD200 Z5-2.0	18.0	2.0 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-
HD200 Z5-2.5	22.5	2.5 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-
HD200 Z5-3.0	27.5	3.0 <sup>4</sup>	249	249	T2 <sup>4</sup> or R4	T5 <sup>8</sup> or R5	0.00%	-	-

1. Maximum design flow rate is calculated using the Mannings n = 0.012 with 30mm freeboard below grating  
 2. Zero Fall Sections are used where there is surface slope or to extend overall length of "River" sections  
 3. Channel sections can be custom designed (% fall, length) to suit site specific conditions  
 4. R1 Sections (0.5L/m multiples) are used to vary overall length  
 5. Overall drain length can be cut to size to less than 0.5m multiples if required, extra charges will apply.

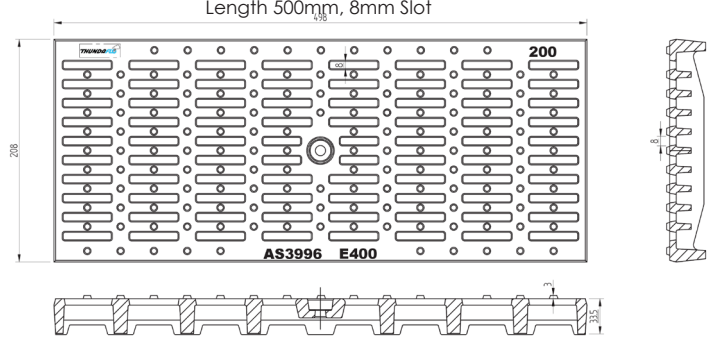
**POWERED COATED DUTILE IRON GRATING**

**Cross Flo Grating – Medium Flow Rate (200 CFG)**



<b>LOAD RATED E400 (AS3996) – TESTED BY OPUS LABORATORIES N.Z.</b>	
<b>MAX FLOW RATE</b>	One side 9.4 L/s/m
	Two sides 16.2 L/s/m

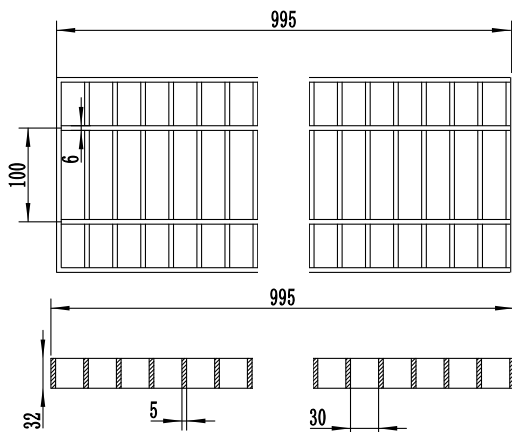
**Shoe-guard Grating – Heel Guard Compliant (200 SGG)**



<b>RATED E400 (AS3996) – TESTED BY OPUS LABORATORIES N.Z.</b>	
<b>MAX FLOW RATE</b>	One side 7.4 L/s/m
	Two sides 13.2 L/s/m

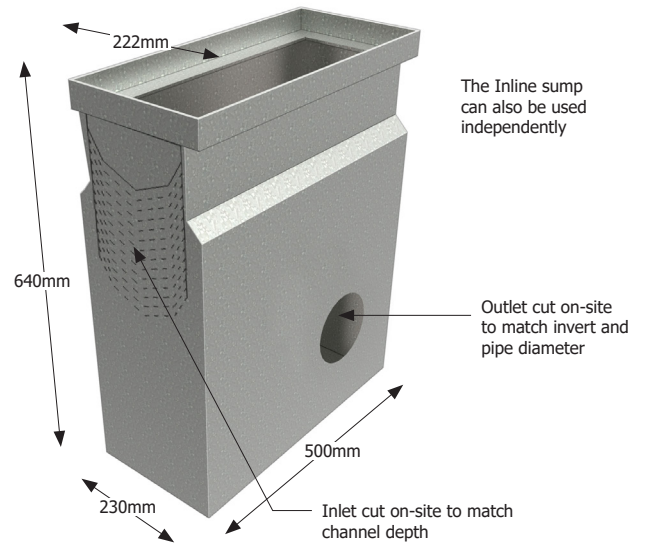
**GALVANISED MESH GRATING (200 GMG)**

**Hi-Flo Grating – High Flow Rate**



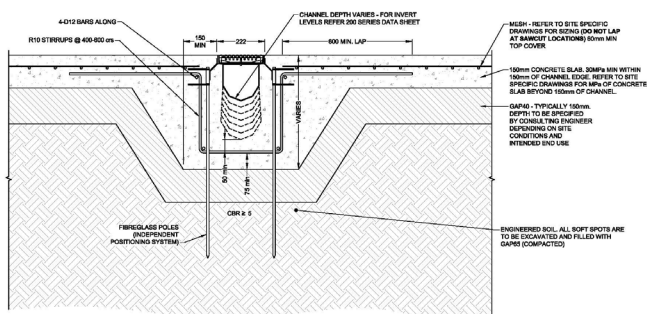
<b>RATED D210 (AS3996) – TESTED BY OPUS LABORATORIES</b>	
<b>MAX FLOW RATE</b>	One side 12.5 L/s/m
	Two sides 18.0 L/s/m

**INLINE SUMP (200 ILS)**

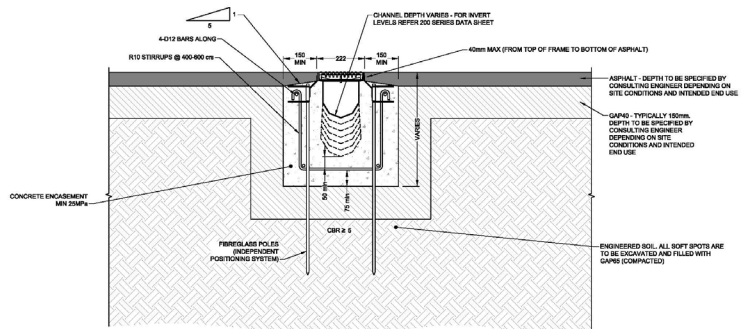


**INSTALLATION GUIDES**

**CONCRETE BOTH SIDES**



**ASPHALT BOTH SIDES**



The Installation Guides can be downloaded from website - [www.thundaflo.com/downloads](http://www.thundaflo.com/downloads)