

# TREBLE R FABRICATIONS

UNIT 42 – CROSSGATE ROAD – PARK FARM INDUSTRIAL ESTATE – REDDITCH – WORCS – B987SN

tel 01527 503 303 – fax 01527 503 325 – web [www.treblefabrications.co.uk](http://www.treblefabrications.co.uk)

## RPC PLASTIC WEIRPLATES

Many settlement and distribution tanks require the need to separate the scum from the clear water and most tanks will require a Weirplate and Scumboard located on it perimeter.

Weirplates are also useful in monitoring flow or controlling the rate of flow of water through channels.

Our range of Weirplates & Scumboards are manufactured from a RPC plastic material specifically designed for use with this equipment. This material has advantages over the traditional GRP as follows: -

1. Recycled polycarbonate is environmentally sound
2. RPC is virtually unbreakable
3. RPC will not splinter during drilling
4. No need to seal the edges after trimming
5. Thickness range available 5, 6 and 8
6. Plates supplied with 20 x 6 SA sponge rubber seals
7. RPC offers good weather resistance
8. RPC is light in weight with a specific gravity of 1-2
9. Specified by the major water companies

There are two types of Weirplates. The plain type for use wherever a level Weir Edge is required around a tank periphery and the 90 degree V-Notched type. The notched type is generally preferred in installations where fluctuations in flow rates are to be expected



RPC PLASTIC WEIRPLATES

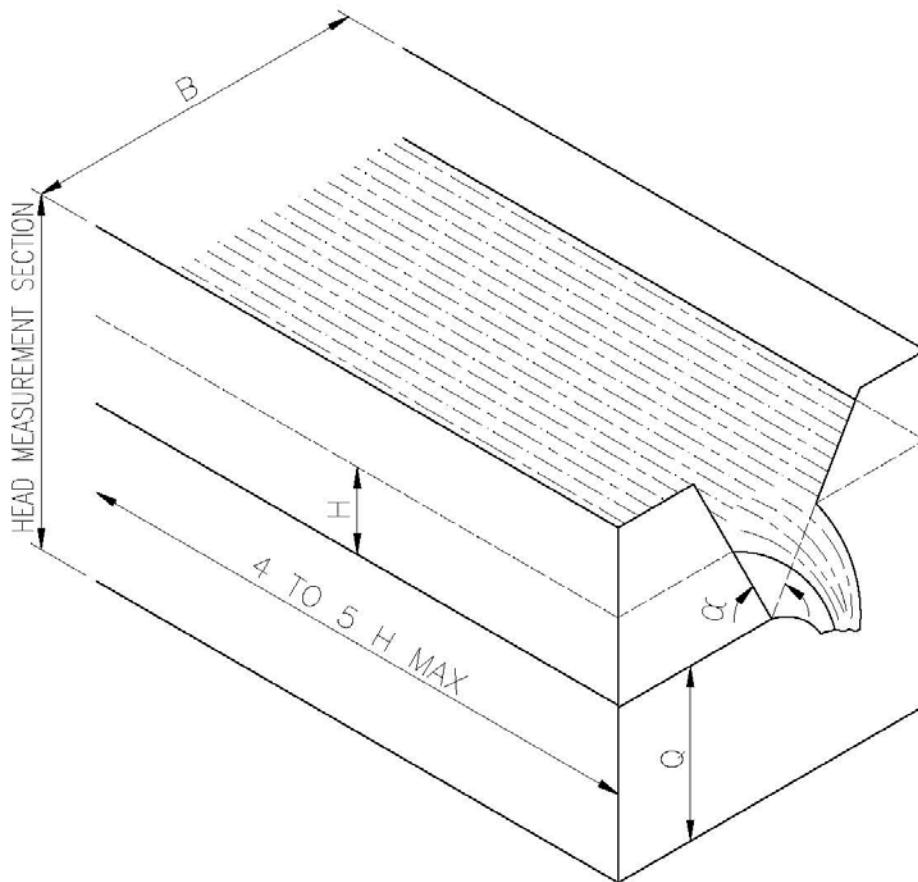
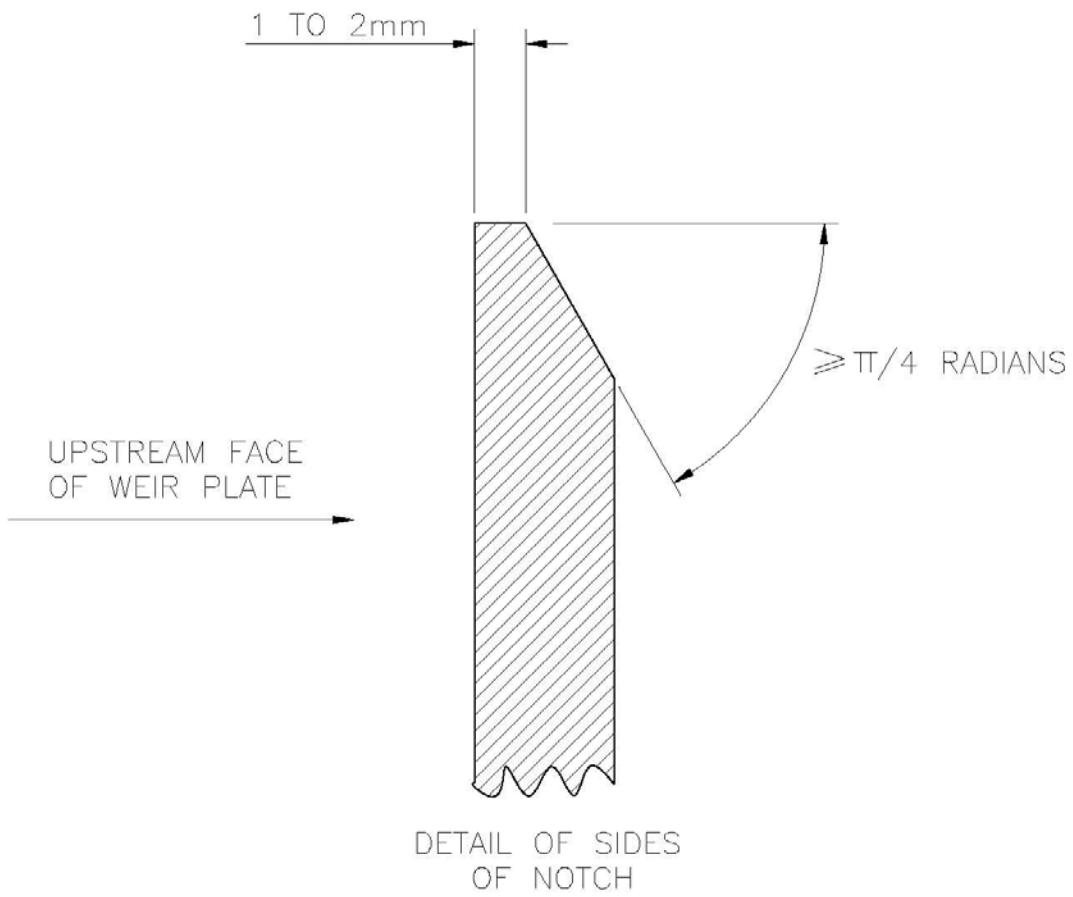
## **TRIANGULAR-NOTCH THIN-PLATE WEIR**

### *Specifications for the standard weir*

The triangular-notch thin-plate weir consists of a V-shaped notch in a vertical, thin plate. See diagrammatic illustration of the triangular-notch weir for dimensional details. The weir plate shall be plane and rigid and perpendicular to the walls and the floor or the channel. The upstream face of the plate shall be smooth (in the vicinity of the notch it shall be equivalent in surface finish to that of rolled sheet-metal).

The bisector of the notch shall be vertical and equidistant from the two walls of the channel. The surfaces of the notch shall be plane surfaces, which shall form sharp edges at their intersection with the upstream face of the weir plate. The width of the notched surfaces, measured perpendicular to the face of the plate, shall be between 1 and 2 mm.

To ensure that the upstream edges of the notch are sharp, they shall be machined or filed, perpendicular to the upstream face of the plate, free of burrs or scratches and untouched by abrasive cloth or paper. The downstream edges of the notch shall be chamfered if the weir plate is thicker than the maximum allowable width of the notch surface. The surface of the chamfer shall make an angle of not less than  $\pi/4$  radians (45 degrees) with the surface of the notch (see Triangular – notch, thin plate weir Drawing). The weir plate in the vicinity of the notch preferably shall be made of corrosion-resistant metal; but if it is not all specified smooth surfaces shall be kept coated with a thin protective film (for example, oil, wax, silicone) applied with a soft cloth.



TRIANGULAR - NOTCH, THIN PLATE WEIR

# GAUGING WEIRS

## (1) FOR 90 PERCENT V NOTCHES

Based on THOMSONS'S FORMULA : -  $Q = 0.305 \frac{H^5}{2}$

Where Q = cubic ft. per minute, and H = head in inches

Depth of Flow in inches	DISCHARGE			Depth of Flow in inches	DISCHARGE		
	Gallons per minute	Gallons per hour	Gallons per 24 hours		Gallons per minute	Gallons per hour	Gallons per 24 hours
1	1.9	114	2,736	9	463.3	27,796	667,100
2	10.8	648	15,552	10	602.9	36,174	868,180
3	29.72	1,783	42,792	11	765.1	45,903	1,101,700
4	61.02	3,661	87,864	12	947.9	56,872	1,364,900
5	106.6	6,394	153,460	13	1,158	69,471	1,667,300
6	168.1	10,086	242,060	14	1,394	83,611	2,006,700
7	247.2	14,829	355,990	15	1,656	99,351	2,384,400
8	345.1	20,706	496,940	16	1,946	116,745	2,801,885

## (2) FOR RECTANGULAR WEIRS

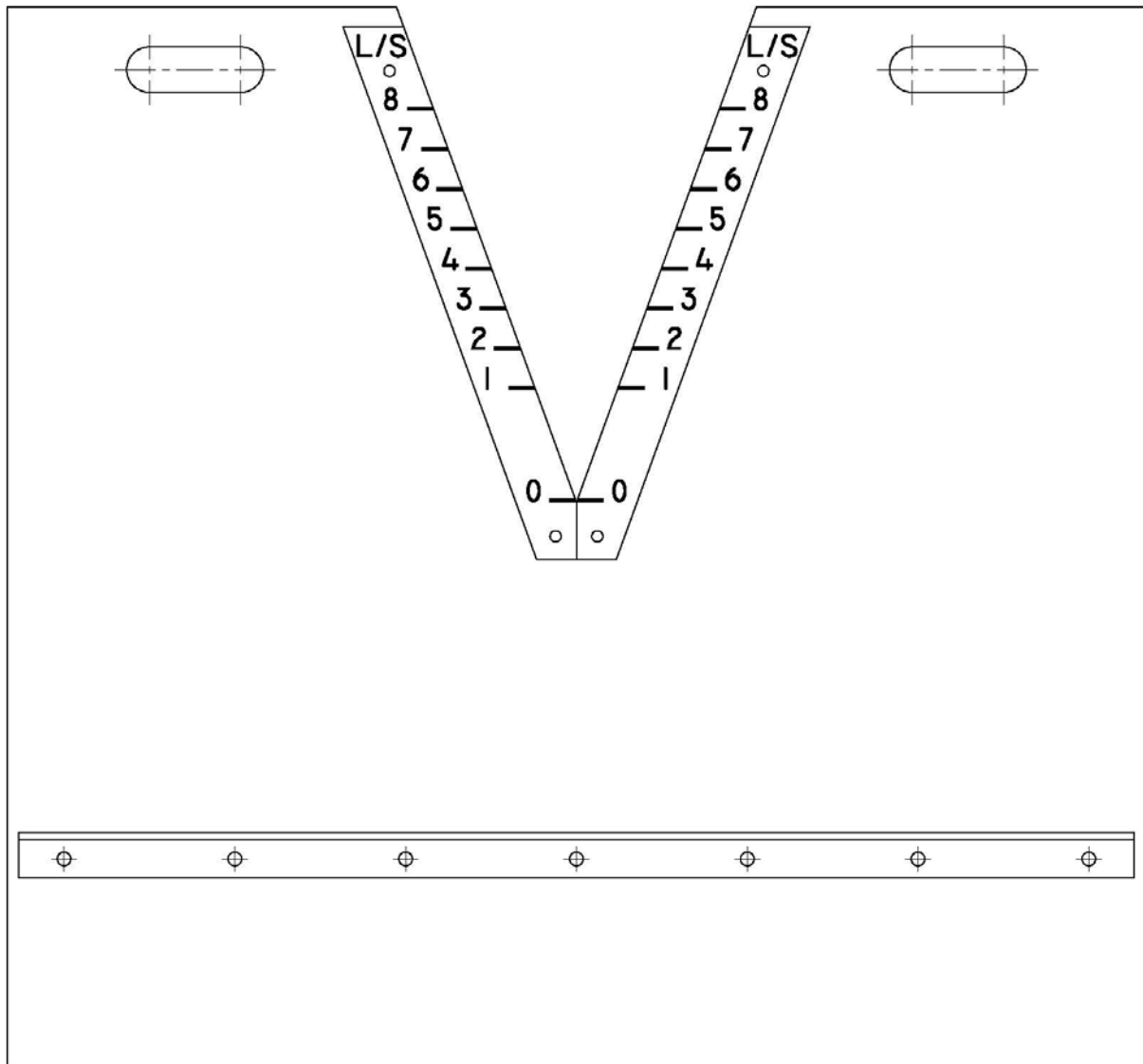
(Without end contractions) per foot width of Weir

Based on FRANCIS' FORMULA : -  $Q = 3.33 \frac{H^3}{2}$

Where Q = cubic ft. per sec., = width of Weir in feet, H = head in ft.

Depth of flow in inches	DISCHARGE per ft. of width				Depth of flow in inches	DISCHARGE per ft. of width			
	Cubit ft. per sec. = Q	Cubic ft. per hour	Gallons per hour	Gallons per 24 hours		Cubic ft. per sec. = Q	Cubic ft. per hour	Gallons per hour	Gallons per 24 hours
1	.080	288	1,795	43,080	10	2.533	9,118.8	56,800	1,363,200
2	.227	817.2	5,091	122,000	11	2.922	10,519	65,540	1,573,000
3	.416	1,497.6	9,333	224,000	12	3.33	11,988	74,680	1,792,300
4	.641	2,307.6	14,370	344,880	14	4.196	15,106	94,200	22,60,800
5	.896	3,225.6	20,080	481,920	16	5.126	18,454	115,000	2,760,000
6	1.117	4,237.2	26,400	633,600	18	6.118	22,025	137,000	3,288,000
7	1.484	5,342.4	33,280	798,720	20	7.163	25,787	160,300	3,847,200
8	1.812	6,523.2	40,640	975,360	24	9.419	33,908	211,300	5,070,000
9	2.163	7,786.8	48,500	1,164,000	30	13.163	47,387	295,200	7,085,000

BRONZE SCALES IN  
LITRES / SECOND  
(BS3680 : PT 4 : TABLE 3)



TYPICAL DRAWING SHOWING  
"V" NOTCHED WEIR PLATE

Theoretical flow data for 90 degree V-notch based on Thomson's Formula

Head mm	Flow litres per min	Flow litres per hour	Flow litres per day
5	0.148	8.88	213
10	0.843	51	1214
25	8.6	519	12449
50	49.1	2948	70761
75	135.2	8113	194725

Theoretical flow per metre of notched Weir for rectangular tanks based on 75mm 90 degree V-notches at 150mm centres

Head mm	Flow litres per min	Flow litres per hour	Flow litres per day
5	0.9347	56	1346
10	5.32	319	7667
25	54.3	3259	78214
50	310	18606	446545
75	854	51233	1229591

Theoretical flows for circular tanks based on 5mm HEAD flow through 75mm 90 degree V-notches at 150mm centres

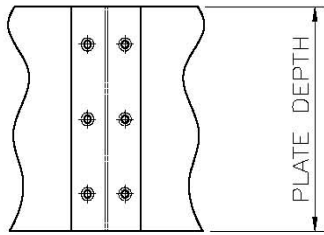
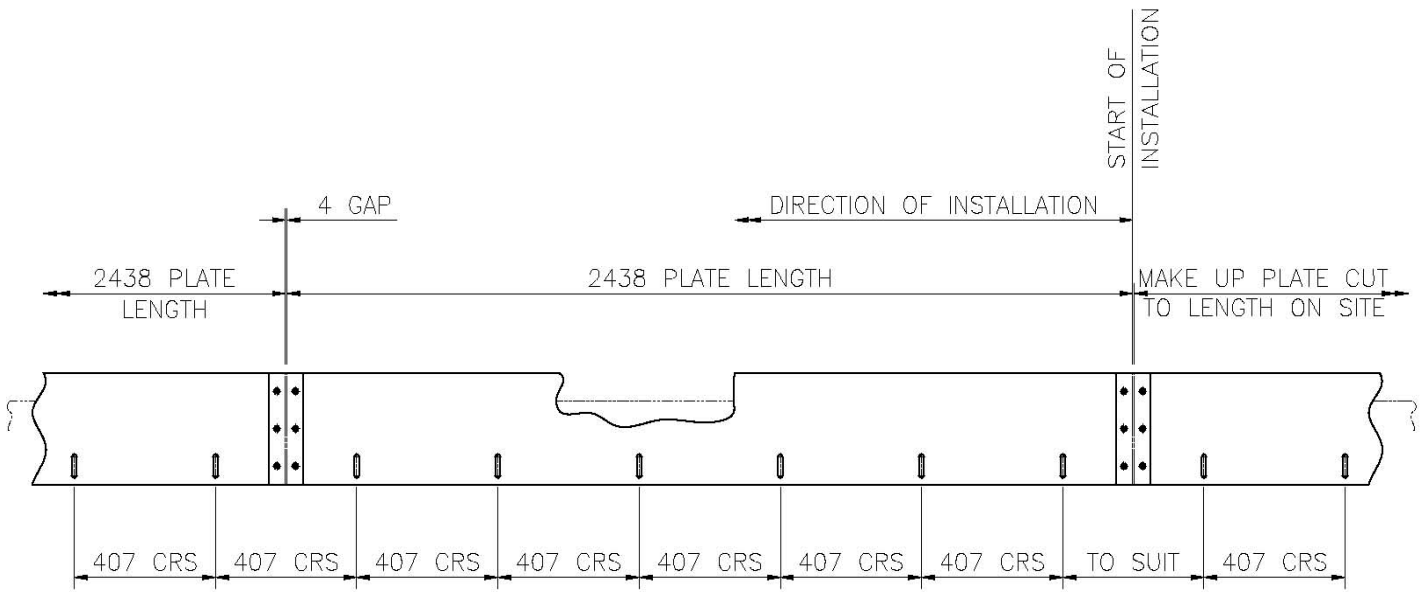
Tank Dia metres	Flow over single weirs			Flow over double weirs		
	m3/m	m3/h	m3/d	m3/m	m3/h	m3/d
5	0.015	0.88	21.1	0.27	1.60	38.5
6	0.018	1.06	25.4	0.033	1.98	47.5
7	0.021	1.23	29.6	0.039	2.34	56.2
8	0.023	1.41	33.8	0.044	2.64	63.4
9	0.026	1.59	38.1	0.049	2.94	70.6
10	0.029	1.76	42.3	0.055	3.30	79.2
11	0.032	1.94	46.5	0.061	3.66	87.8
12	0.035	2.11	50.7	0.067	4.02	96.5
13	0.038	2.29	55.0	0.073	4.38	105.5
14	0.041	2.47	59.2	0.079	4.74	114.5
15	0.044	2.64	63.4	0.085	5.10	122.5
16	0.047	2.82	67.6	0.091	5.46	131.5
17	0.050	2.99	71.9	0.097	5.82	140.5
18	0.053	3.17	76.1	0.103	6.18	148.5
19	0.056	3.35	80.3	0.109	6.54	157.5
20	0.059	3.52	84.6	0.115	6.90	166.5
21	0.062	3.70	88.8	0.121	7.26	174.5
22	0.065	3.88	93.0	0.127	7.62	183.5
23	0.068	4.05	97.2	0.133	7.98	192.5
24	0.070	4.23	101	0.138	8.28	199.5
25	0.073	4.40	106	0.143	8.58	206.5
26	0.076	4.58	110	0.149	8.94	215.5
27	0.079	4.76	114	0.155	9.30	223.5
28	0.082	4.93	118	0.161	9.66	232.5
29	0.085	5.11	123	0.167	10.0	240.5
30	0.088	5.28	127	0.173	10.4	249.5
40	0.117	7.05	169	0.232	13.9	333.5
50	0.147	8.81	211	0.291	17.5	419.5
60	0.176	10.6	254	0.349	21.0	503.5
70	0.206	12.3	296	0.409	24.5	588.5
80	0.235	14.1	338	0.467	28.0	672.5
90	0.264	15.9	381	0.525	31.5	756.5
100	0.294	17.6	423	0.585	35.1	842.5

**Theoretical flows for circular tanks based on FULL HEAD flow through 75mm 90 degree V-notches at 150mm centres**

Tank Dia metres	Flow over single weirs			Flow over double weirs		
	m3/m	m3/h	m3/d	m3/m	m3/h	m3/d
5	13.4	8.05	19319	24.2	1449	34780
6	16.1	966	23183	29.5	1770	42480
7	18.8	1127	27050	34.9	2094	50256
8	21.5	1288	30911	40.3	2418	58032
9	24.1	1449	34775	45.6	2736	65664
10	26.8	1610	38638	50.9	3054	73296
11	29.5	1771	42502	56.3	3378	81072
12	32.2	1932	46366	61.7	3702	88848
13	34.9	2093	50230	67.1	4026	96624
14	37.6	2254	54094	72.5	4350	104400
15	40.2	2415	57958	77.8	4668	112032
16	42.9	2576	61822	83.1	4986	119664
17	45.6	2737	65685	88.5	5310	127440
18	48.3	2898	69549	93.9	5634	135216
19	51.0	3059	73413	99.3	5958	142992
20	53.7	3220	77277	104.7	6282	150768
21	56.3	3381	81141	110.0	6600	158400
22	59.0	3542	85005	115.3	6918	166032
23	61.7	3703	88868	120.7	7242	173808
24	64.4	3864	92732	126.1	7566	181584
25	67.1	4025	96596	131.5	7890	189360
26	69.8	4186	100460	136.9	8214	197136
27	72.4	4347	104324	142.2	8532	204768
28	75.1	4508	108188	147.5	8850	212400
29	77.8	4669	112051	152.9	9174	220176
30	80.5	4830	115915	158.3	9498	227952
40	107.3	6440	154554	211.9	12717	305202
50	134.2	8050	193192	265.7	15941	382576
60	161.0	9660	231831	319.3	19159	459807
70	187.8	11270	270469	372.9	22377	537037
80	214.7	12879	309108	426.7	25600	614412
90	241.5	14489	347746	480.3	28818	691642
100	268.3	16099	386384	533.9	32036	768873

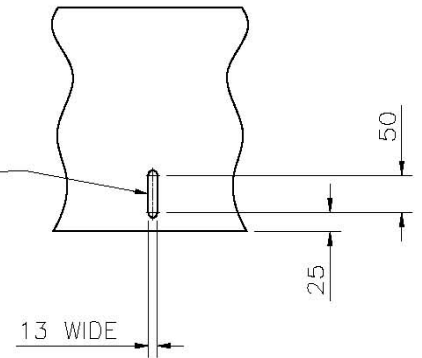


# WEIRPLATE TYPE 4 TO SUIT CIRCULAR TANKS

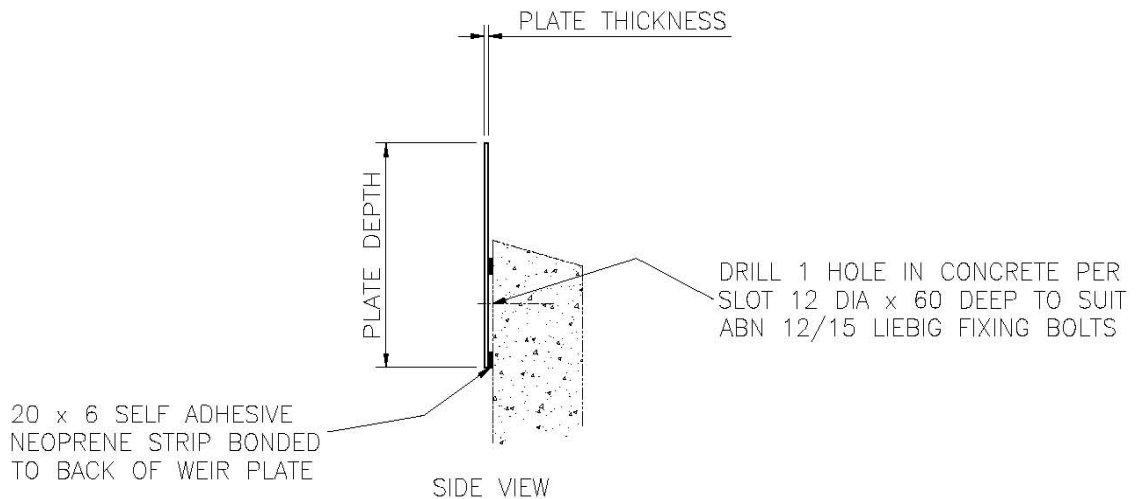


JOINING PLATE  
DETAILS

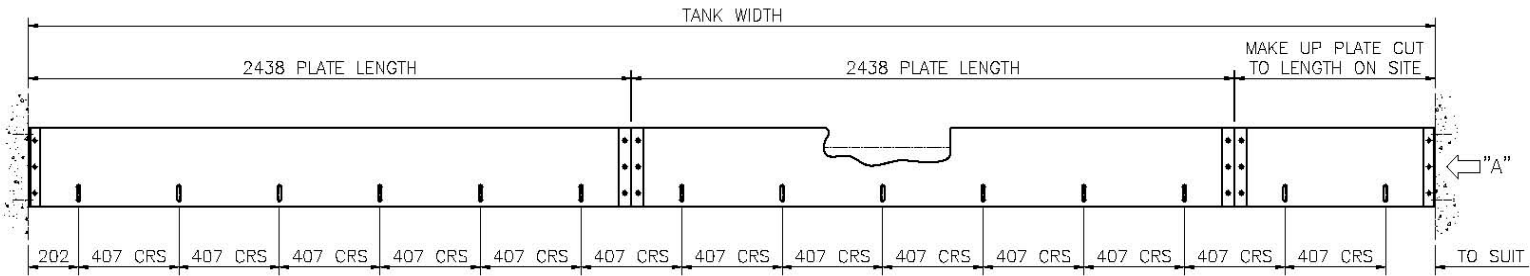
SLOTS IN WEIR PLATES  
ALLOW FOR  $\pm 25\text{mm}$   
ADJUSTMENT



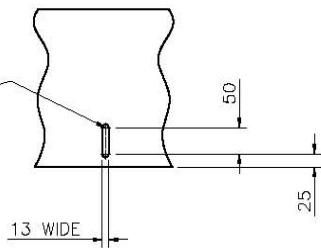
WEIR PLATE  
SLOT DETAILS



# WEIRPLATE TYPE 5 TO SUIT TANK ENDS

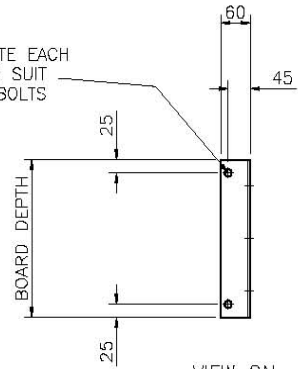


SLOTS IN WEIR PLATES  
ALLOW FOR ±25mm  
ADJUSTMENT



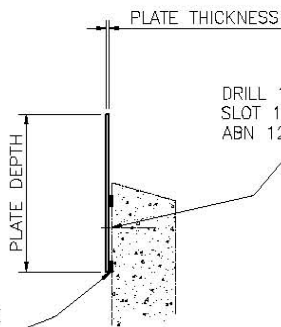
WEIR PLATE  
SLOT DETAILS

DRILL 2 HOLES IN CONCRETE EACH  
END 12 DIA x 60 DEEP TO SUIT  
ABN 12/15 LIEBIG FIXING BOLTS



VIEW ON  
ARROW "A"

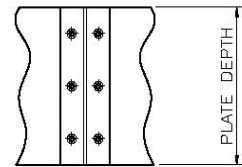
20 x 6 SELF ADHESIVE  
NEOPRENE STRIP BONDED  
TO BACK OF WEIR PLATE



SIDE VIEW

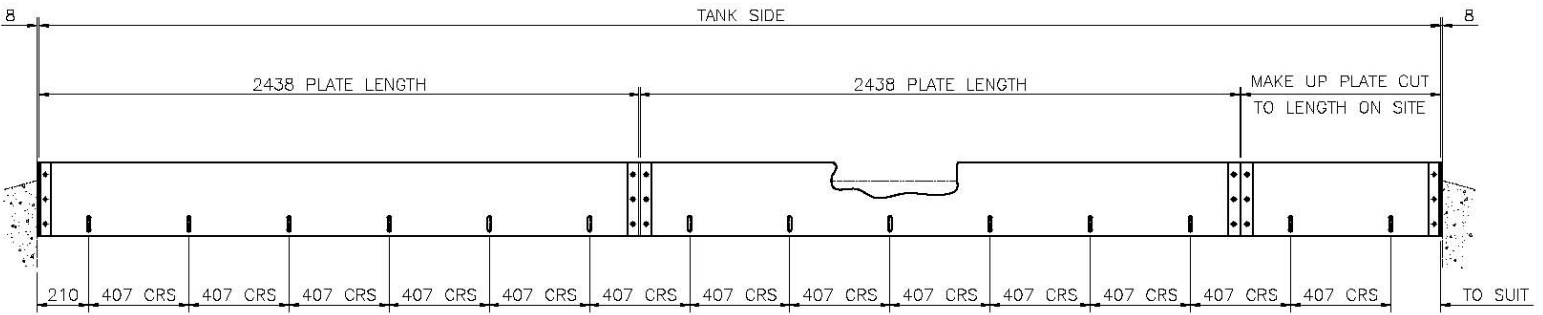
DRILL 1 HOLE IN CONCRETE PER  
SLOT 12 DIA x 60 DEEP TO SUIT  
ABN 12/15 LIEBIG FIXING BOLTS

STAINLESS STEEL  
C'SNK SCREWS

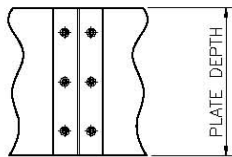


JOINING PLATE  
DETAILS

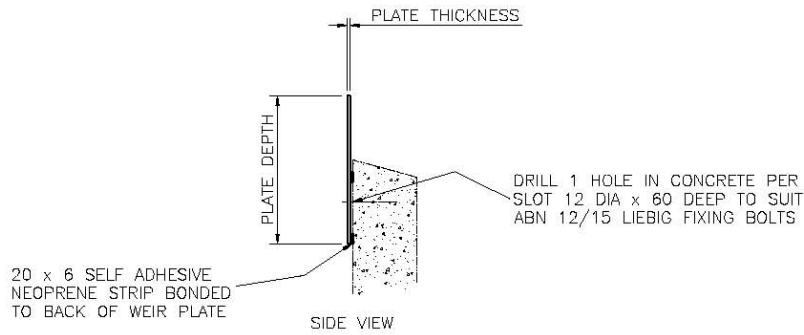
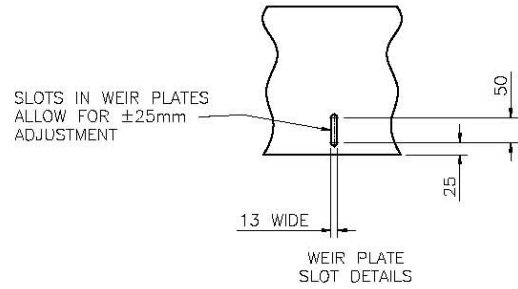
# WEIRPLATE TYPE 6 TO SUIT RECTANGULAR TANKS



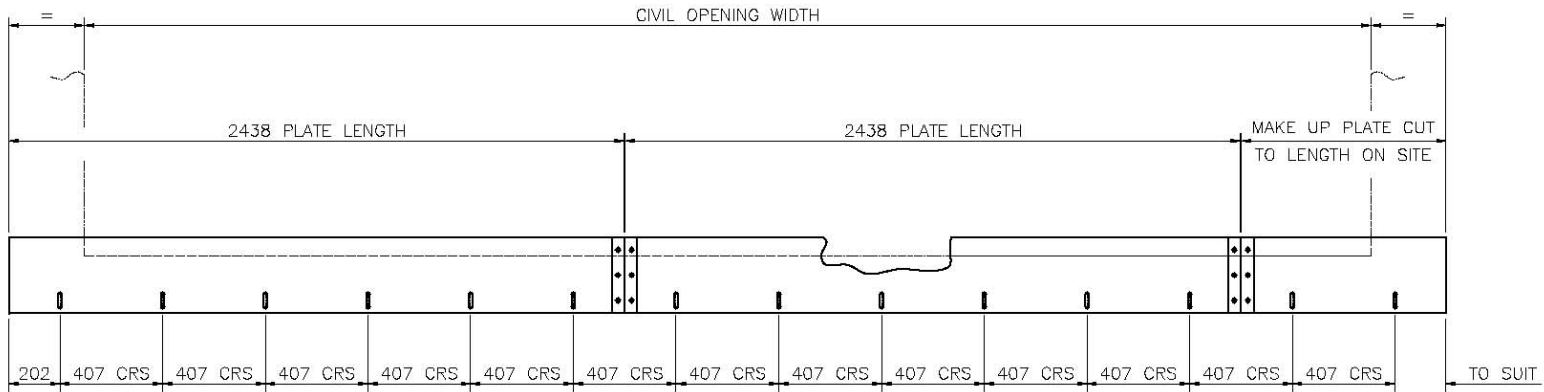
VIEW OF PLATES FROM INSIDE TANK  
(ONE SIDE SHOWN ONLY)



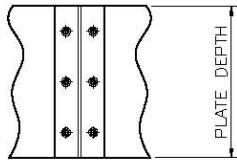
JOINING PLATE  
DETAILS



# WEIRPLATE TYPE 7 TO SUIT RECTANGULAR OPENING IN WALL

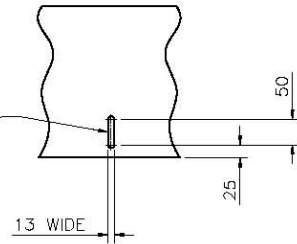


STAINLESS STEEL C'SNK SCREWS

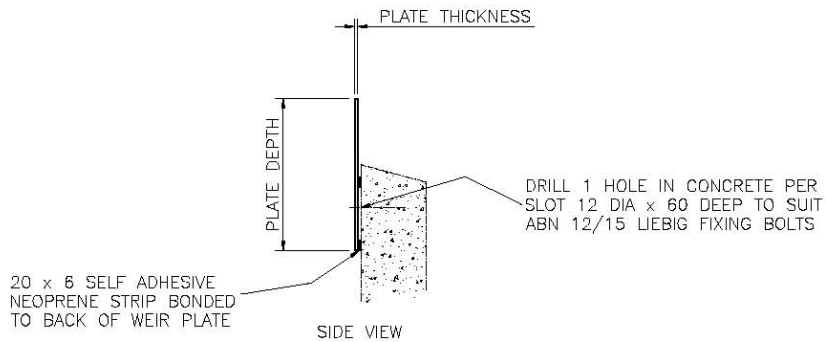


JOINING PLATE DETAILS

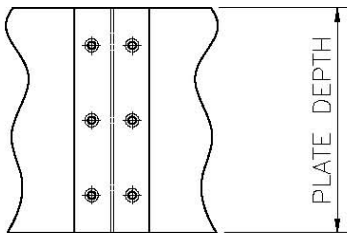
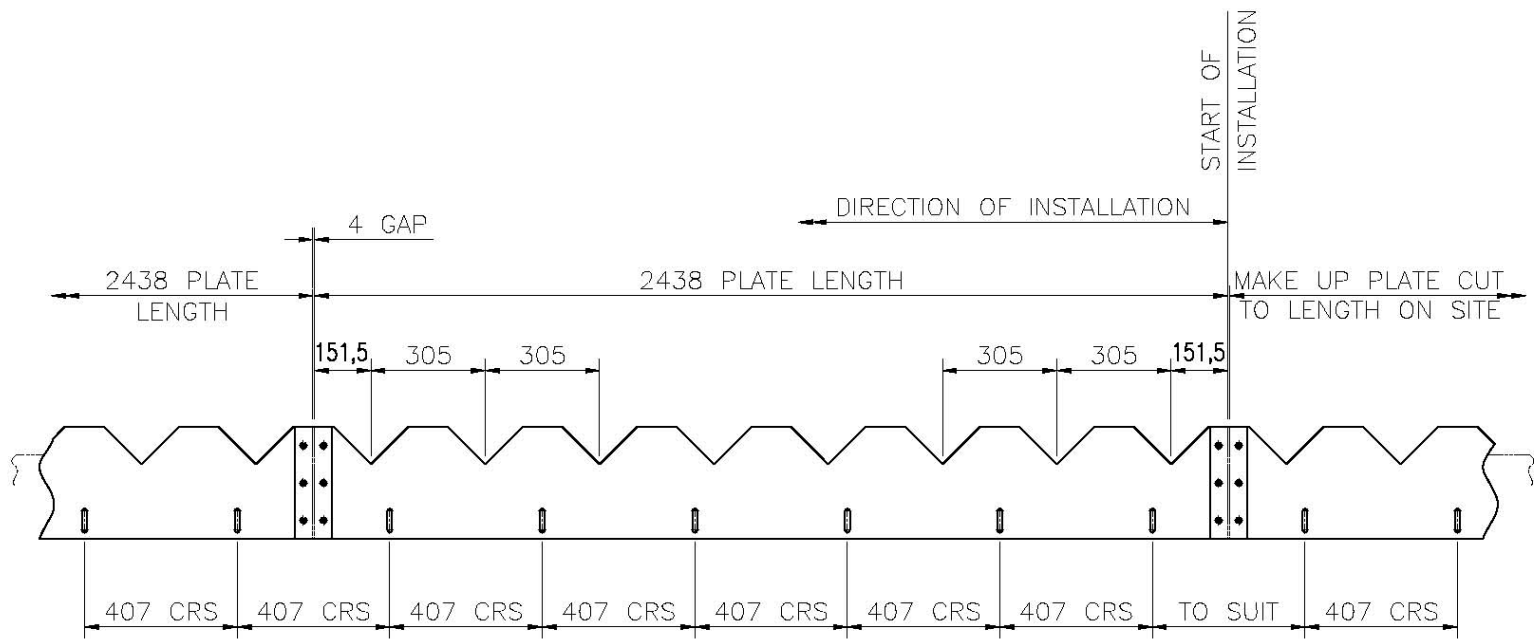
SLOTS IN WEIR PLATES ALLOW FOR  $\pm 25\text{mm}$  ADJUSTMENT



WEIR PLATE SLOT DETAILS

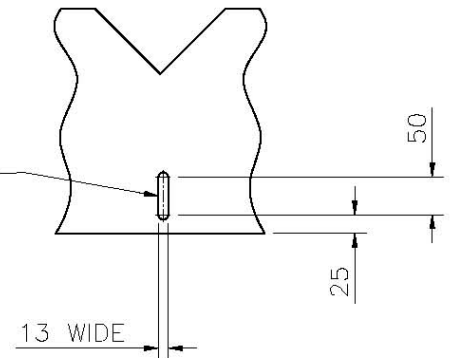


# “V” NOTCHED WEIRPLATE TYPE 4V TO SUIT CIRCULAR TANKS

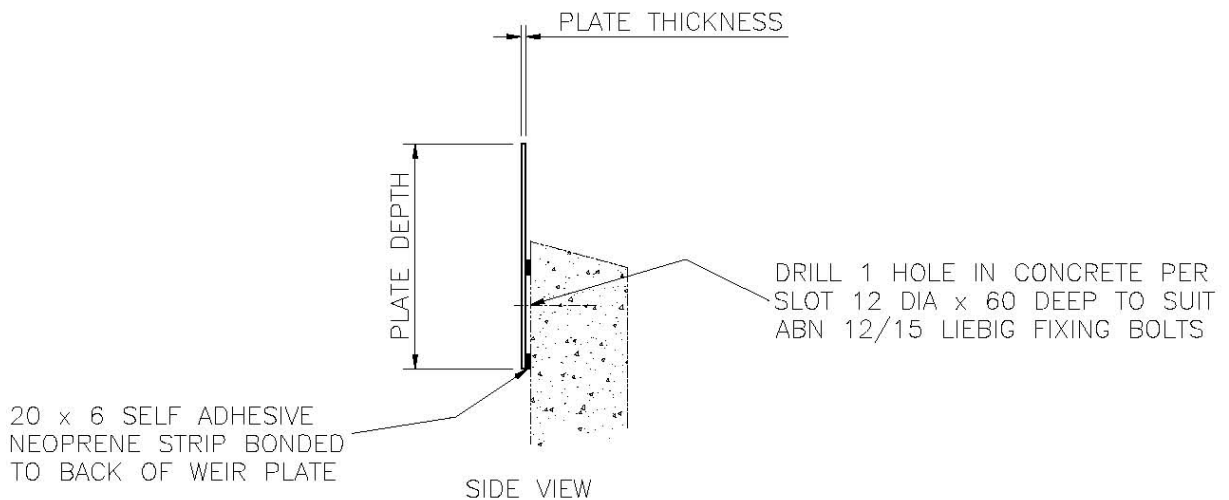


JOINING PLATE DETAILS

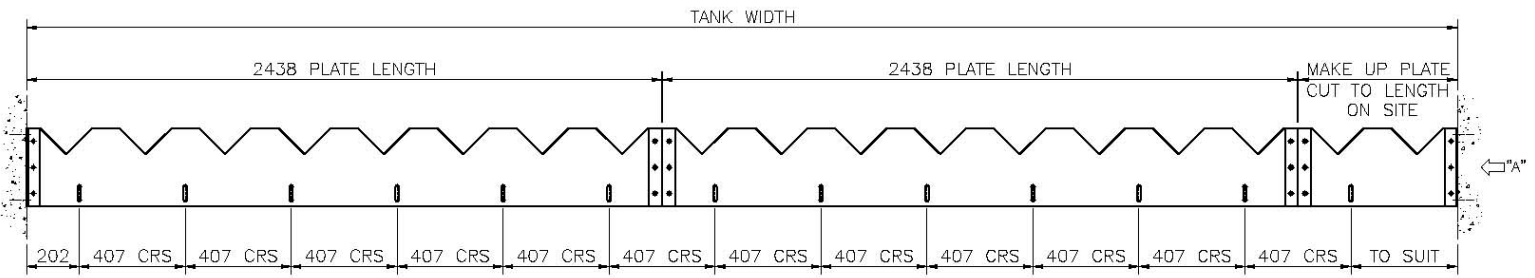
SLOTS IN WEIR PLATES ALLOW FOR  $\pm 25\text{mm}$  ADJUSTMENT



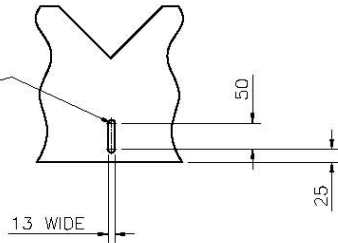
WEIR PLATE SLOT DETAILS



# “V” NOTCHED WEIRPLATE TYPE 5V TO SUIT TANK ENDS

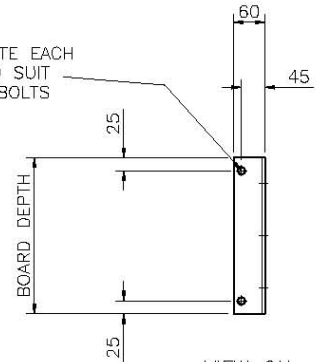


SLOTS IN WEIR PLATES  
ALLOW FOR ±25mm  
ADJUSTMENT



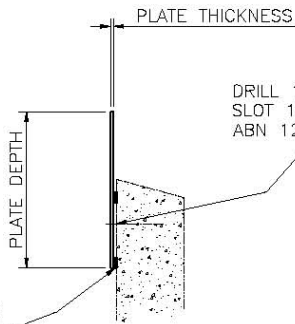
WEIR PLATE  
SLOT DETAILS

DRILL 2 HOLES IN CONCRETE EACH  
END 12 DIA x 60 DEEP TO SUIT  
ABN 12/15 LIEBIG FIXING BOLTS



VIEW ON  
ARROW "A"

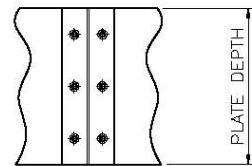
20 x 6 SELF ADHESIVE  
NEOPRENE STRIP BONDED  
TO BACK OF WEIR PLATE



DRILL 1 HOLE IN CONCRETE PER  
SLOT 12 DIA x 60 DEEP TO SUIT  
ABN 12/15 LIEBIG FIXING BOLTS

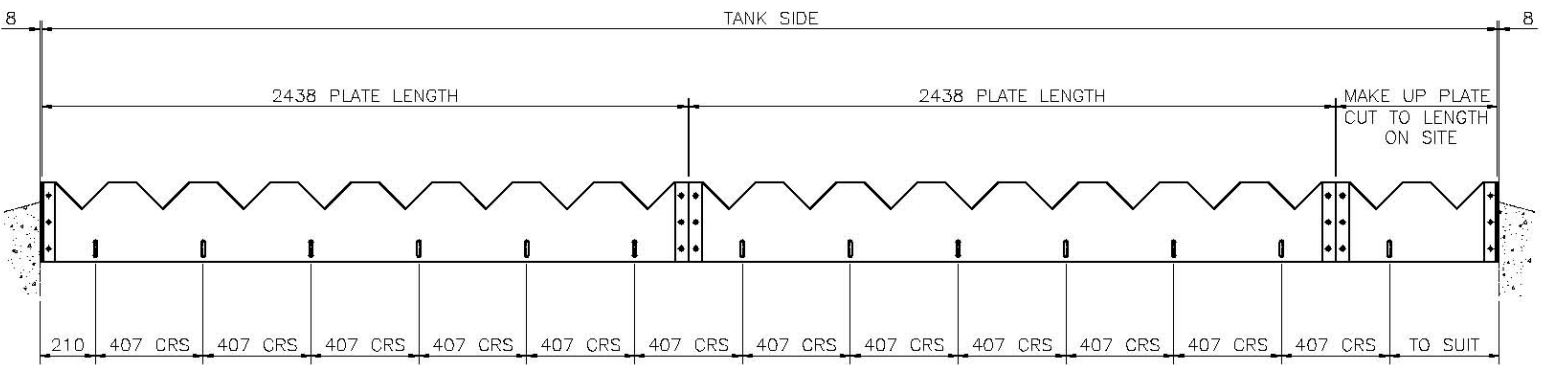
SIDE VIEW

STAINLESS STEEL  
C'SNK SCREWS

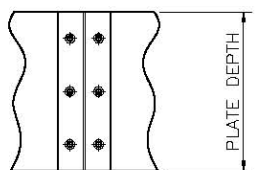


JOINING PLATE  
DETAILS

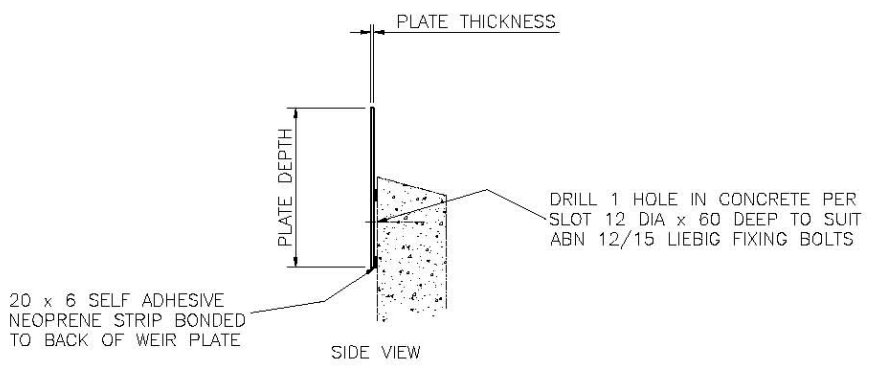
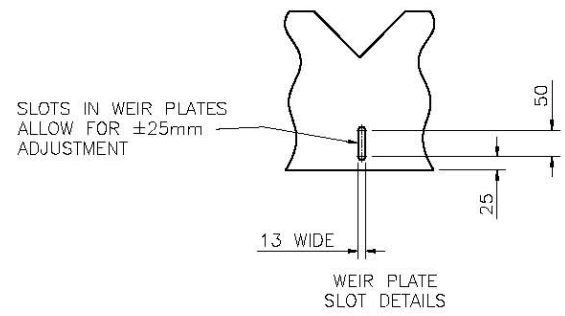
# “V” NOTCHED WEIRPLATE TYPE 6V TO SUIT RECTANGULAR TANKS



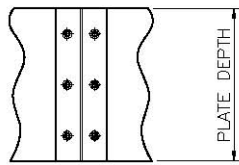
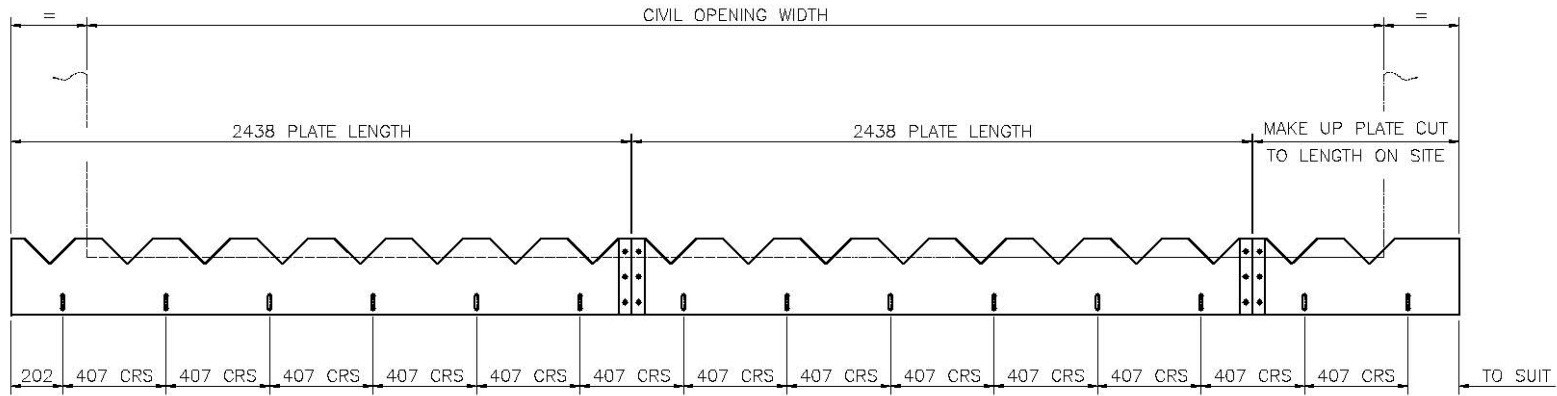
VIEW OF PLATES FROM INSIDE TANK  
(ONE SIDE SHOWN ONLY)



JOINING PLATE  
DETAILS

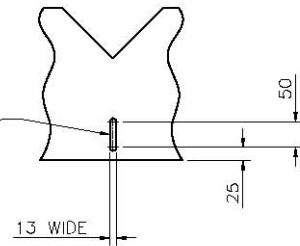


# “V” NOTCHED WEIRPLATE TYPE 7V TO SUIT RECTANGULAR OPENING IN WALL



JOINING PLATE DETAILS

SLOTS IN WEIR PLATES ALLOW FOR  $\pm 25\text{mm}$  ADJUSTMENT



WEIR PLATE SLOT DETAILS

