



Concrete Pipe

PRODUCT GUIDE & TECHNICAL REFERENCE MANUAL

Providing the right solutions.





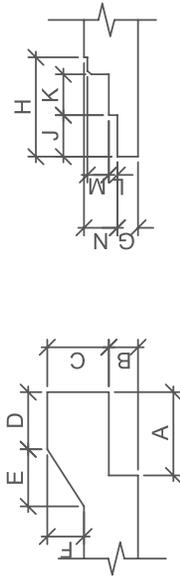
During the last decade, owners and engineers have become very conscious about design flows, infiltration and economy of buried pipeline systems with performance being the main consideration. In this respect one should pay meticulous attention to manufacturers' qualifications since the quality and dimensional accuracy of pipe are entirely dependent upon the manufacturer's equipment and quality control.

SHAW PRECAST SOLUTIONS manufactures pretested sanitary sewer pipe for use with a confined gasket to keep sewage waste inside and ground water outside. Each section of pipe must pass all of our quality control tests before it is certified to leave the plant. Our "TESTED" stamp assures you that section of pipe has qualified and passed our rigorous tests.

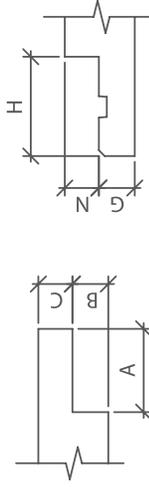
SHAW PRECAST SOLUTIONS manufactures culvert and storm sewer pipe for clear water drainage. Gaskets are commonly used on the joints but this pipe has not undergone the rigorous hydrostatic testing performed on the pretested sanitary pipe.

TYPICAL PIPE JOINT DIMENSIONS

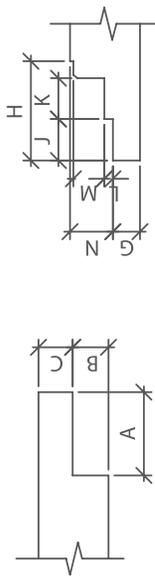
300MM - 750MM DIAMETER PIPE



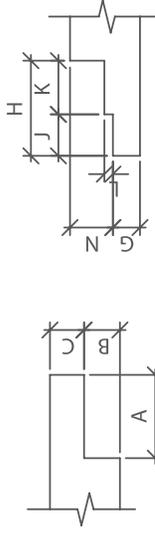
1350MM, 1500MM (C-WALL)
2400MM DIAMETER PIPE



900MM - 1500MM (B-WALL) DIAMETER PIPE



3000MM, 3600MM DIAMETER PIPE



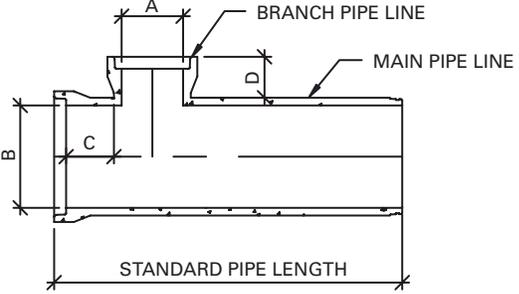
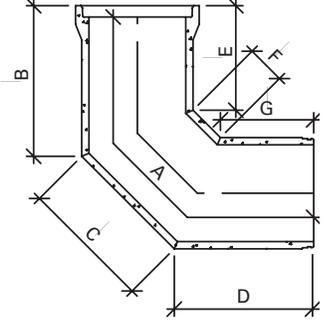
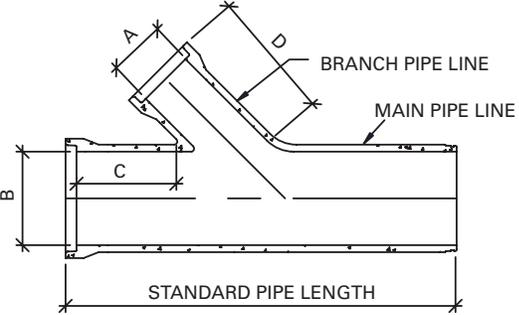
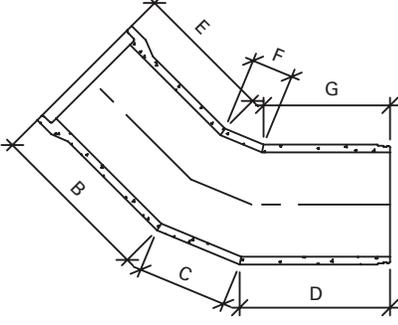
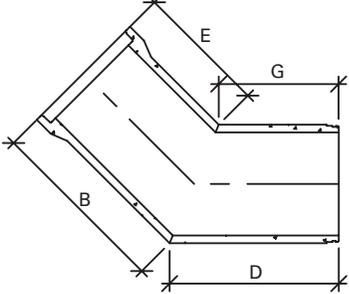
NOTE:

Properly specified and inspected pipe, correct laying and jointing procedures, careful bedding, backfilling, and compaction all contribute to a satisfactorily installed, testable sanitary pipeline.

Shaw Precast Solutions recommends that for sanitary pipe installations, good practice dictates that the first 100 meters of pipe installed by each crew should be immediately tested and not more than 300 meters of pipeline per crew should be untested at any time.

PIPE SIZE	mm	in	production	Wall Type	ID	OD	WT	A	B	C	D	E	F	G	H	J	K	L	M	N	GASKET	WEIGHT
	300	12	P3	B	304.80	406.40	50.80	88.90	41.38	55.46	165.10	126.49	46.04	34.65	114.30	44.45	44.45	5.08	6.31	16.15	TSS	385
	375	15	P3	B	361.00	495.30	57.15	88.90	47.10	56.08	165.10	143.93	52.39	40.37	114.30	44.45	44.45	5.08	6.93	16.78	TSS	502
	450	18	P3	B	457.20	584.20	63.50	88.90	47.10	62.43	165.10	125.11	45.54	40.37	114.30	44.45	44.45	5.08	13.28	23.13	TSS	700
	525	21	P3	B	533.40	673.10	69.85	88.90	47.10	62.43	177.80	109.04	39.69	40.37	114.30	44.45	44.45	5.08	19.63	29.48	TSS	837
	600	24	P3	B	609.60	762.00	76.20	88.90	47.10	62.43	177.80	91.59	33.34	40.37	114.30	44.45	44.45	5.08	25.98	35.83	TSS	1042
	750	30	P3	B	762.00	939.80	88.90	88.90	50.80	69.85	177.80	87.23	31.75	44.07	114.30	44.45	44.45	5.08	34.99	44.83	TSS	1815
	900	36	P3	C	914.40	1155.70	120.65	88.90	50.80	69.85	N/A	N/A	N/A	N/A	114.30	44.45	44.45	5.08	66.74	76.53	TSS	2370
A	1050	42	P3	B	1066.80	1295.40	114.30	107.95	52.54	61.76	N/A	N/A	N/A	N/A	133.35	63.50	63.50	7.62	58.48	70.87	TSS	2632
E	1200	48	P3	B	1219.20	1473.20	127.00	107.95	62.06	64.94	N/A	N/A	N/A	N/A	133.35	63.50	63.50	7.62	61.66	74.04	TSS	3260
	1350	54	VUP	B	1371.60	1651.00	139.70	108.00	58.40	81.30	N/A	N/A	N/A	N/A	105.70	N/A	N/A	N/A	N/A	N/A	ORING	4140
	1500	60	P3	B	1524.00	1828.80	152.40	120.65	64.72	87.68	N/A	N/A	N/A	N/A	146.05	63.50	63.50	7.62	84.40	96.79	TSS	4742
K	1500	60	WC	C	1524.00	1866.80	171.40	120.70	64.70	106.70	N/A	N/A	N/A	N/A	118.40	N/A	N/A	N/A	N/A	109.00	TSS	4818
	1500	60	VUP	C	1524.00	1866.80	171.40	120.70	64.70	106.70	N/A	N/A	N/A	N/A	118.40	NA	NA	NA	NA	102.70	ORING	4818
L	1800	72	VUP	C	1828.80	2222.60	196.90	133.40	92.10	104.80	N/A	N/A	N/A	N/A	89.70	N/A	N/A	N/A	N/A	107.20	ORING	7725
R	2100	84	VUP	C	2133.60	2578.20	222.30	127.00	87.30	135.00	N/A	N/A	N/A	N/A	84.10	N/A	N/A	N/A	N/A	138.20	ORING	9962
	2400	96	VUP	B	2438.40	2895.60	228.60	127.00	101.20	127.40	N/A	N/A	N/A	N/A	98.80	N/A	N/A	N/A	N/A	129.80	ORING	10385
Q	2400	96	WC	C	2438.40	2933.70	247.60	127.00	101.20	127.40	N/A	N/A	N/A	N/A	98.80	N/A	N/A	N/A	N/A	129.80	TSS	11587
T	3000	120	WC	C	3048.00	3657.60	304.80	152.40	110.76	194.04	N/A	N/A	N/A	N/A	100.50	N/A	N/A	8.99	N/A	204.30	TSS	20757
W	3600	144	WC	SP	3658.00	4470.00	406.00	152.00	207.34	194.97	N/A	N/A	N/A	N/A	193.83	N/A	N/A	8.90	N/A	211.97	TSS	31967

FITTINGS - TEES / WYES AND PIPE BENDS

FITTINGS - TEES (90) AND WYES (45) 300 Ø to 3000 Ø*	STANDARD ANGLED PIPE BENDS 300 Ø to 3000 Ø*
 <p style="text-align: center;">TEE (90)</p>	 <p style="text-align: center;">90° BEND THREE PIECE ONLY</p>
 <p style="text-align: center;">WYE (45)</p>	 <p style="text-align: center;">THREE PIECE BEND (45° to 90°)</p>
	 <p style="text-align: center;">TWO PIECE BEND (5° to 45°)</p>

*PIPE DIAMETERS & ANGLES AS SPECIFIED BY CONSULTANT.

Curved Pipe Alignment

Changes in direction or grade of sewer lines or culverts can be accomplished by laying pipe on a curved alignment. Curved alignments can be accommodated in two ways, by deflecting straight pipe sections at each joint, or using specially manufactured radius pipe.

DEFLECTED STRAIGHT PIPE

In a straight pipeline alignment, the distance between adjacent sections of pipe is essentially uniform around the circumference of the joint. Gradual curved alignment can be accommodated by opening up the joint on one side by a specified amount to achieve the required radius of curvature. To maintain a watertight joint using a rubber gasket joint, ASTM C-443 recommends that the maximum opening (or pull) be 13mm. In installations where watertight integrity is not a concern, the maximum pull is limited by the joint dimensions of the pipe.

The following chart provides the minimum radius possible which can be achieved using Shaw Precast Solutions standard pipe, and using a maximum pull of 13mm at each joint.

CURVED PIPE SIZES		
Nominal Pipe	Radius of Curvature	
Size (mm)	(m)	(ft)
300 mm	80 m	262.4 ft
375 mm	97.5 m	319.9 ft
450 mm	115 m	377.3 ft
525 mm	132.5 m	434.7 ft
600 mm	150 m	492.1 ft
750 mm	185 m	607.0 ft
900 mm	227.5 m	746.4 ft
1050 mm	255.0 m	836.6 ft
1200 mm	290.0 m	951.5 ft
1350 mm	325.0 m	1066.3 ft
1500 mm	360.0 m	1181.2 ft
1800 mm	437.5 m	1435.4 ft
2100 mm	507.5 m	1665.1 ft
2400 mm	570.0 m	1870.2 ft
3000 mm	702.3 m	2304.0 ft
3600 mm	861.6 m	2826.8 ft



Radius Pipe

Radius pipe, also referred to as beveled or mitered pipe, is used to construct pipelines which require a short radius of curvature. The pipe is manufactured by dropping the spigot ring on one side, resulting in one side of the pipe being longer than the other. The deflection angle is accommodated at the joint. The maximum angular deflection obtainable is governed by the joint configuration and the method of manufacture. Shaw Precast Solutions manufactures radius pipe for nominal pipe sizes from 1350ømm to 2400ømm.

The following table provides the minimum radius obtainable for all pipe sizes, using a maximum drop of 150mm. Where the maximum drop will vary for each size of pipe manufactured, we recommend that designers consult with our staff to determine the suitability of radius pipe for the required curvature. Where a shorter radius of curvature is required, bends with a minimum 10 degree angle should be substituted.

RADIUS PIPE SIZES		
Nominal Pipe	Radius of Curvature	
Size (mm)	(m)	(ft)
1350 mm	26.3 m	86.2 ft
1500 mm	29.1 m	95.4 ft
1800 mm	35.3 m	116.0 ft
2100 mm	41.0 m	134.5 ft
2400 mm	46.1 m	151.1 ft
3000 mm	56.7 m	186.0 ft
3600 mm	71.6 m	234.9 ft

CONCRETE PIPE FOR JACKING

The jacking method of installing concrete pipe is now well established. It has obvious advantages in areas where it is impossible or undesirable to disturb the overlying surface. Design information and case histories of this method are readily available.

Practical working space limitations require the use of at least 900mm diameter pipe. It is preferable to use pipe with no increase in outside diameter at the bell, in order to reduce problems with grade alignment.

The cross sectional area of all "B-wall" pipe is more than adequate to resist axial loading due to normal jacking pressures. For unusually high jacking pressures or excessive unit frictional forces, higher concrete compressive strengths can be specified, typically up to 41 MPa (6000 psi). Designers should consult with our engineering staff if higher compressive strengths are required.

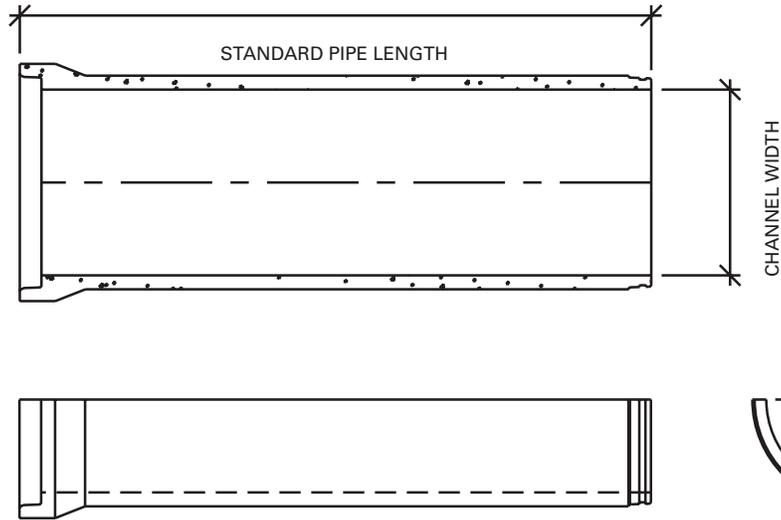
It is extremely important to prevent localized stress concentrations by maintaining uniform distribution of the axial load around the circumference of the pipe wall and ensuring the ends of the pipe are aligned with the tunnel axis. It is also important that the pipe being used meets the dimensional tolerances of the specified standards, to ensure that the ends of the pipe are square to the tunnel axis. A cushioning material should be used at the pipe joints to properly distribute the jacking force through the jacking frame to the pipe.

Further information on concrete pipe for jacking is available from our design staff.

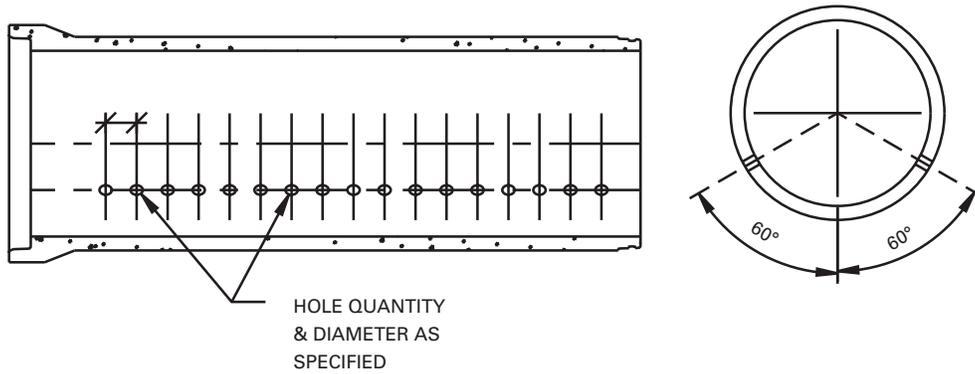


CIRCULAR HALF PIPE AND PERFORATED PIPE

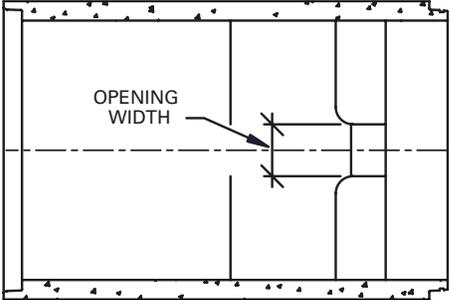
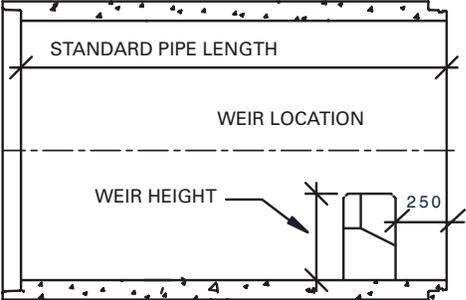
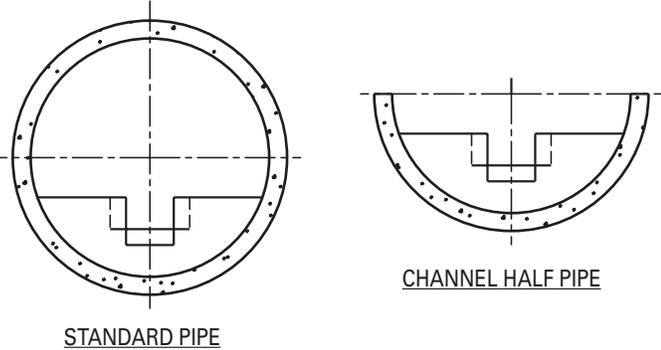
CIRCULAR HALF PIPE



PERFORATED PIPE (Available in all pipe sizes)

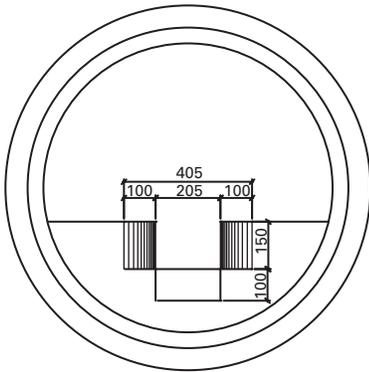


FISH & FLOW DISSIPATION WEIRS INSTALLED IN CIRCULAR PIPE SECTIONS

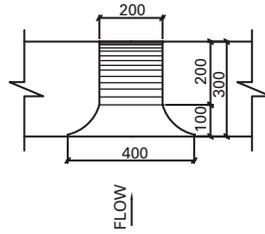
PLAN VIEW AT CENTRE LINE OF PIPE	
<p>Weir dimensions to suit project specifications.</p>	
LONGITUDINAL SECTION AT CENTRE LINE OF PIPE	
<p>Fish weirs can be installed in circular pipe sections from 900mm to 3600mm dia.</p>	
TRANSVERSE SECTIONS	
<p>Fish weirs can also be installed in channel half pipe sections, box culvert, and flat bottom pipe sections.</p>	 <p style="text-align: center;">STANDARD PIPE CHANNEL HALF PIPE</p>

FISH & FLOW DISSIPATION WEIRS TYPICAL DIMENSIONS

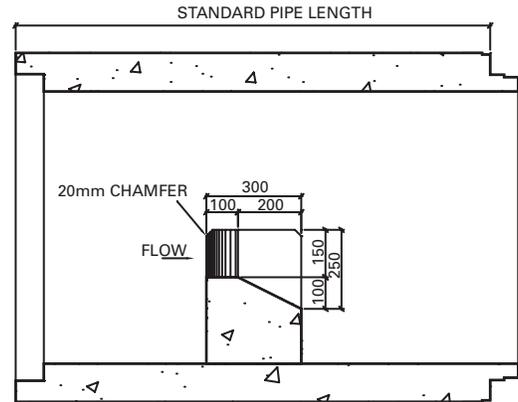
STANDARD WEIR A



TRANSVERSE ELEVATION

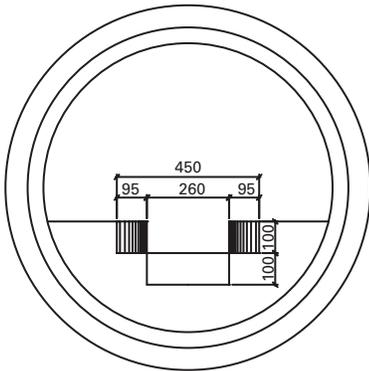


PLAN VIEW - WEIR

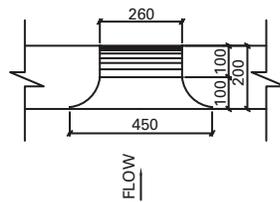


SECTION AT \bar{C} OF WEIR

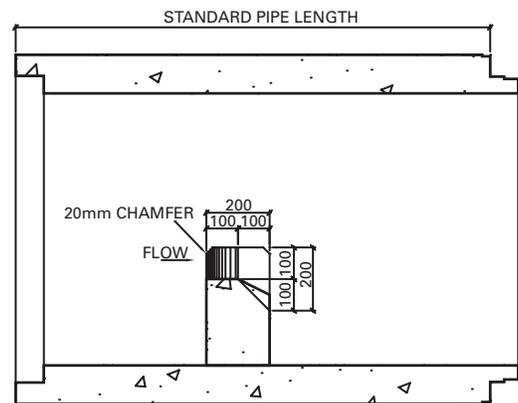
STANDARD WEIR B



TRANSVERSE ELEVATION



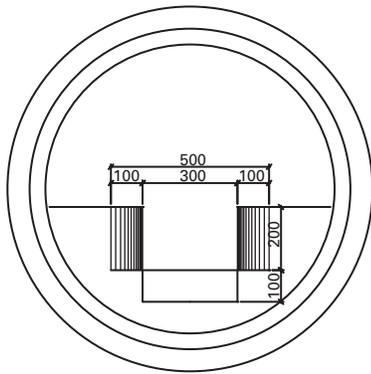
PLAN VIEW - WEIR



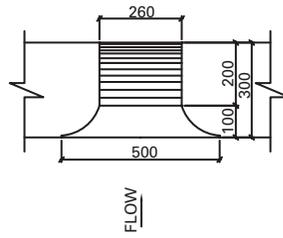
SECTION AT \bar{C} OF WEIR

FISH & FLOW DISSIPATION WEIRS TYPICAL DIMENSIONS

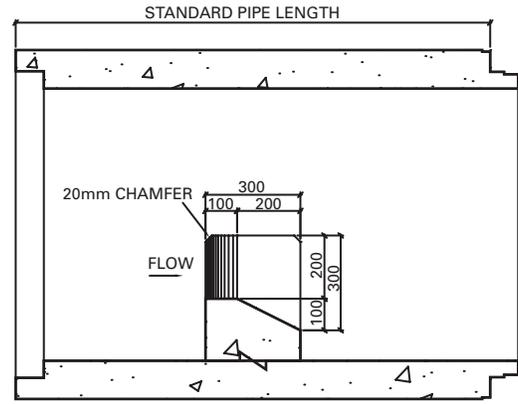
STANDARD WEIR C



TRANSVERSE ELEVATION

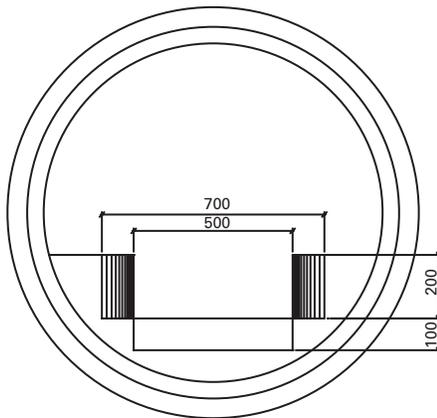


PLAN VIEW - WEIR

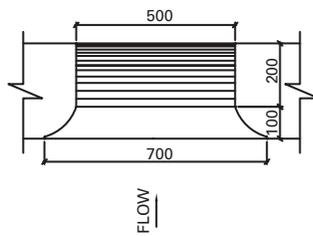


SECTION AT Q-Q OF WEIR

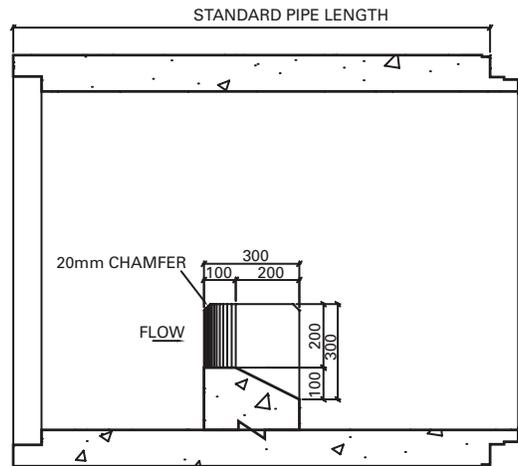
STANDARD WEIR D



TRANSVERSE ELEVATION



PLAN VIEW - WEIR



SECTION AT Q-Q OF WEIR

FISH & FLOW DISSIPATION WEIRS TYPICAL DIMENSIONS

