



# DESIGN & INSTALLATION GUIDE



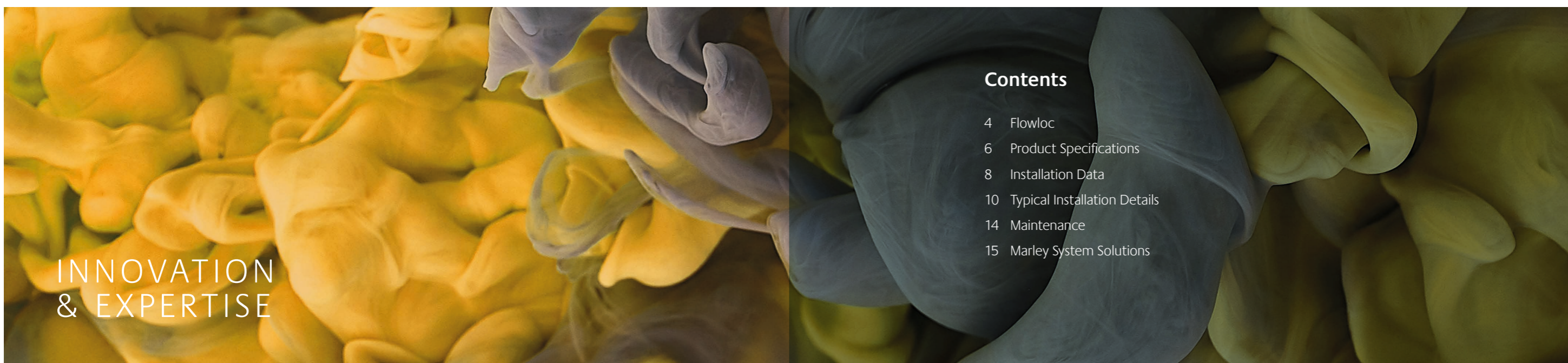


## Flow control and filtration chambers

Flowloc is a Vortex flow control unit, which is used as part of an attenuation scheme. It controls the rate at which water is discharged to a drainage system or watercourse, ensuring compliance set overflow rates. Flowloc is supplied within a chamber base with an integrated filter providing protection against controller blockage.

### Production information

Information on the complete range of Marley Plumbing and Drainage system solutions is available to download from [marleypd.co.uk](http://marleypd.co.uk) or via the literature hotline 01622 852585.



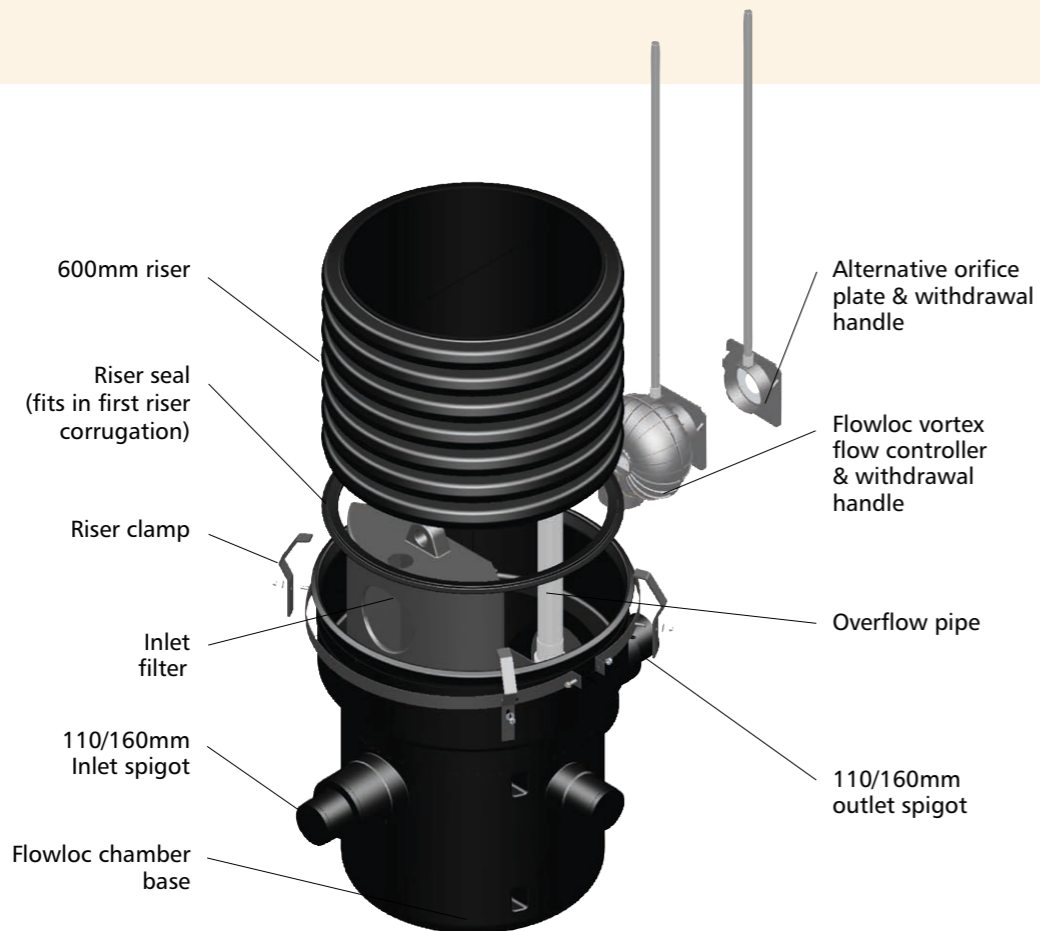
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INNOVATION  
& EXPERTISE

## Flowloc is a Vortex flow control unit, which is used as part of an attenuation scheme.

- Heavy duty aluminium flow controller and coupling system, electro coated for long service life. Available to suit a wide range of flow rates. Refer to performance tables opposite.
- Supplied within a chamber base with an integrated filter providing protection against controller blockage.
- Suitable for use with tank depths up to 4m.
- All components readily removable from surface for ease of maintenance.
- The chamber base is also suitable for installation within a conventional man entry in



Flowloc controls the rate at which water is discharged to a drainage system or watercourse. Local Authorities or Water Companies normally set an outflow rate for new developments.

Installation can be in conjunction with an attenuation tank or detention basin (swale or pond). The design of Flowloc is based on the proven vortex principle, and enables a near constant discharge rate to be achieved, independent of the head of water in the tank.

Available to accommodate flow rates ranging from 2 l/s to 15 l/s, Flowloc is installed in a chamber base with a withdrawal handle to allow easy access from the surface for maintenance.

In the unlikely event of blockage, an overflow pipe allows water to bypass the controller to the outlet.

An extensive range of orifice plate flow control units are also available for applications where very low flow rates are required or for higher flows. These flow rates are head dependant.

## Flow control

The benefit of using the Marley Flowloc vortex flow control unit is that the discharge rate varies less with changes in the head of water in the tank. Orifice plates operate by reducing the flow area to a much smaller proportion of its original size, thereby constricting the flow rate.



## Flowloc vortex flow control unit Performance data (l/s)

Product Code						Water head (m)
USW40	USW50	USW60	USW70	USW80	USW90	
flow rate (l/s)						
2.50	3.00	3.60	4.30	5.20	7.00	0.5
2.59	3.10	3.75	4.45	5.25	7.05	0.55
3.00	3.45	4.20	5.25	6.35	8.25	0.81
3.20	3.70	4.80	5.80	7.00	9.00	1.0
3.25	3.80	4.95	6.00	7.20	9.30	1.07
3.39	4.20	5.45	6.60	7.98	10.30	1.33
3.40	4.40	5.60	7.00	8.40	10.90	1.5
3.42	4.50	5.75	7.20	8.65	11.20	1.59
3.75	4.85	6.05	7.80	9.60	12.05	1.85
3.80	5.00	6.20	8.10	9.80	12.50	2.0
3.85	5.10	6.35	8.30	10.06	12.85	2.11
3.95	5.30	6.65	8.80	10.58	13.65	2.37
4.00	5.40	6.80	9.00	10.80	14.00	2.5
4.20	5.50	6.90	9.20	11.05	14.40	2.63
4.30	5.65	7.15	9.40	11.45	15.10	2.89
4.40	5.70	7.20	9.50	11.60	15.40	3.0
4.45	5.75	7.25	9.60	11.78	15.75	3.15
4.59	5.79	7.35	9.65	11.85	16.45	3.41
4.60	5.80	7.40	9.70	12.00	16.50	3.5
4.61	5.80	7.41	9.80	12.10	17.81	3.67

## Orifice plate flow control unit Performance data (l/s)

Product code	USW415	USW420	USW425	USW430	USW435	USW440	USW445	USW450	USW455	USW460	USW465	USW470	USW475	USW480	USW485	Water head (m)
Orifice dia mm	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	
flow rate (l/s)																
0.34	0.61	0.95	1.37	1.87	2.44	3.09	3.81	4.61	5.49	6.44	7.47	8.58	9.76	11.02	0.5	
0.36	0.64	1.00	1.44	1.96	2.56	3.24	4.00	4.84	5.76	6.76	7.84	9.00	10.24	11.56	0.55	
0.44	0.78	1.21	1.75	2.38	3.11	3.93	4.85	5.87	6.99	8.20	9.51	10.92	12.42	14.03	0.81	
0.49	0.86	1.35	1.94	2.64	3.45	4.37	5.39	6.52	7.76	9.11	10.57	12.13	13.80	15.58	1.0	
0.50	0.89	1.39	2.01	2.73	3.57	4.52	5.58	6.75	8.03	9.43	10.93	12.55	14.28	16.12	1.07	
0.56	0.99	1.55	2.24	3.05	3.98	5.04	6.22	7.52	8.95	10.51	12.19	13.99	15.92	17.97	1.33	
0.59	1.06	1.65	2.38	3.24	4.23	5.35	6.60	7.99	9.51	11.16	12.94	14.86	16.91	19.09	1.5	
0.61	1.09	1.70	2.45	3.33	4.35	5.51	6.80	8.23	9.79	11.49	13.33	15.30	17.41	19.65	1.59	
0.66	1.17	1.83	2.64	3.59	4.69	5.94	7.33	8.87	10.56	12.39	14.38	16.50	18.78	21.20	1.85	
0.69	1.22	1.91	2.75	3.74	4.88	6.18	7.63	9.23	10.98	12.89	14.95	17.16	19.52	22.04	2.0	
0.70	1.25	1.96	2.82	3.84	5.01	6.34	7.83	9.48	11.28	13.24	15.35	17.62	20.05	22.64	2.11	
0.75	1.33	2.08	2.99	4.07	5.31	6.72	8.30	10.04	11.95	14.03	16.27	18.68	21.25	23.99	2.37	
0.77	1.36	2.13	3.07	4.18	5.46	6.91	8.53	10.32	12.28	14.41	16.71	19.18	21.83	24.64	2.5	
0.79	1.40	2.19	3.15	4.28	5.60	7.08	8.74	10.58	12.59	14.78	17.14	19.68	22.39	25.27	2.63	
0.83	1.47	2.29	3.30	4.49	5.87	7.43	9.17	11.09	13.20	15.49	17.97	20.63	23.47	26.49	2.89	
0.84	1.49	2.33	3.36	4.58	5.98	7.57	9.34	11.30	13.45	15.78	18.31	21.01	23.91	26.99	3.0	
0.86	1.53	2.39	3.45	4.69	6.12	7.75	9.57	11.58	13.78	16.17	18.76	21.53	24.50	27.66	3.15	
0.90	1.59	2.49	3.58	4.88	6.37	8.07	9.96	12.05	14.34	16.83	19.52	22.40	25.49	28.78	3.41	
0.91	1.61	2.52	3.63	4.94	6.46	8.17	10.09	12.21	14.53	17.05	19.77	22.70	25.83	29.15	3.5	
0.93	1.65	2.58	3.72	5.06	6.61	8.37	10.33	12.50	14.88	17.46	20.25	23.24	26.45	29.85	3.67	

## FLOWLOC



Size mm	Code	Colour	Qty
40	<a href="#">USW40</a>	Black	1
50	<a href="#">USW50</a>	Black	1
60	<a href="#">USW60</a>	Black	1
70	<a href="#">USW70</a>	Black	1
80	<a href="#">USW80</a>	Black	1
90	<a href="#">USW90</a>	Black	1

Includes vortex flow control unit, chamber base fitted with controller housing, inlet filter with chain and overflow pipe.

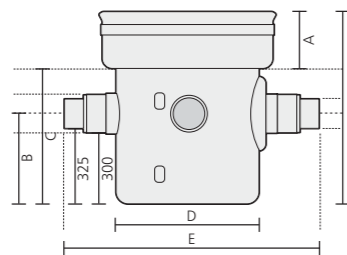
## ORIFICE PLATE



Size mm	Code	Colour	Qty
15	<a href="#">USW415</a>	Black	1
20	<a href="#">USW420</a>	Black	1
25	<a href="#">USW425</a>	Black	1
30	<a href="#">USW430</a>	Black	1
35	<a href="#">USW435</a>	Black	1
40	<a href="#">USW440</a>	Black	1
45	<a href="#">USW445</a>	Black	1
50	<a href="#">USW450</a>	Black	1
55	<a href="#">USW455</a>	Black	1
60	<a href="#">USW460</a>	Black	1
65	<a href="#">USW465</a>	Black	1
70	<a href="#">USW470</a>	Black	1
75	<a href="#">USW475</a>	Black	1
80	<a href="#">USW480</a>	Black	1
85	<a href="#">USW485</a>	Black	1

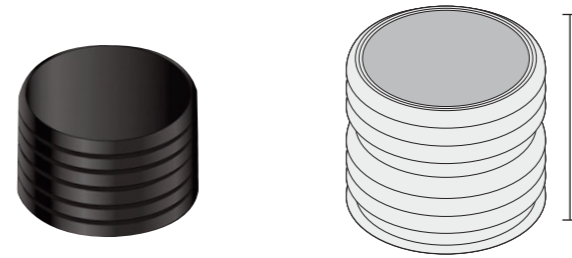
Includes orifice plate flow control unit, chamber base fitted with controller housing, inlet filter with chain and overflow pipe.

## SILT TRAP



Size mm	Code	A	B	C	D	E	F	Colour	Qty
600 Ø	<a href="#">USW30</a>	240	380	575	612	1085	815	Black	1

## RISER KIT



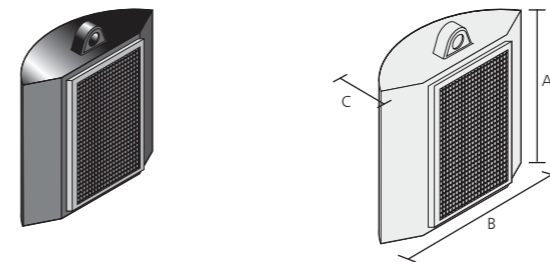
Size mm	Code	A	Colour	Qty
600	<a href="#">USW301</a>	1000	Black	1

Size mm	Code	A	Colour	Qty
600	<a href="#">USW32</a>	2000	Black	1

Size mm	Code	A	Colour	Qty
600	<a href="#">USW33</a>	3000	Black	1

Supplied with clamp and seal set

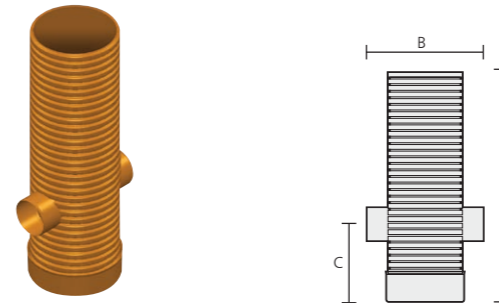
## INLET FILTER



Code	A	B	C	Colour	Qty
<a href="#">USW29</a>	500	500	230	Black/stainless	1

With lifting chain  
For use with USW30 silt trap

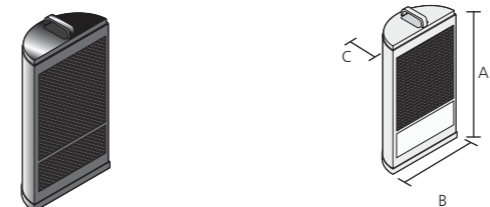
## SILT TRAP



Size mm	Code	A	B	C	Colour	Qty
250 Ø	<a href="#">UG60</a>	780	350	270	Orange	1

Supplied with a leaf guard fitted to the outlet

## INLET FILTER



Angle	Code	A	B	C	Colour	Qty
90°	<a href="#">UG61</a>	380	190	132	Black/stainless	1

For use with UG60 silt trap

## ANTI-FLOOD VALVE



Size mm	Code	A	B	C	Colour	Qty
110	<a href="#">USW130</a>	175	52	69	B	1
160	<a href="#">USW140</a>	225	100	92	B	1

Double flap  
Required when connecting to a combined drainage system

## Silt Traps

It is recommended that all stormwater drainage systems that discharge into infiltration or attenuation tanks have upstream filtration to minimise the build-up of silt and protection of the storage facility and flow control components from the ingress of debris and silts.

Marley silt traps are available in 250mm and 600mm, with or without additional filters.

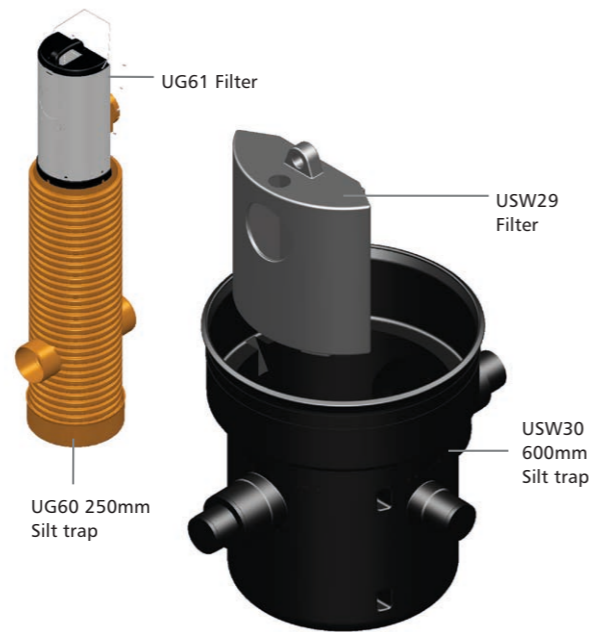


250mm silt trap, UG60      600mm silt trap, USW30 (shown with riser kit)

## Filtration

The UG60, 250mm silt trap is suitable for catchment areas up to 250m<sup>2</sup>. For improved protection, the UG61 filter can be added, which will retain debris as small as 5mm.

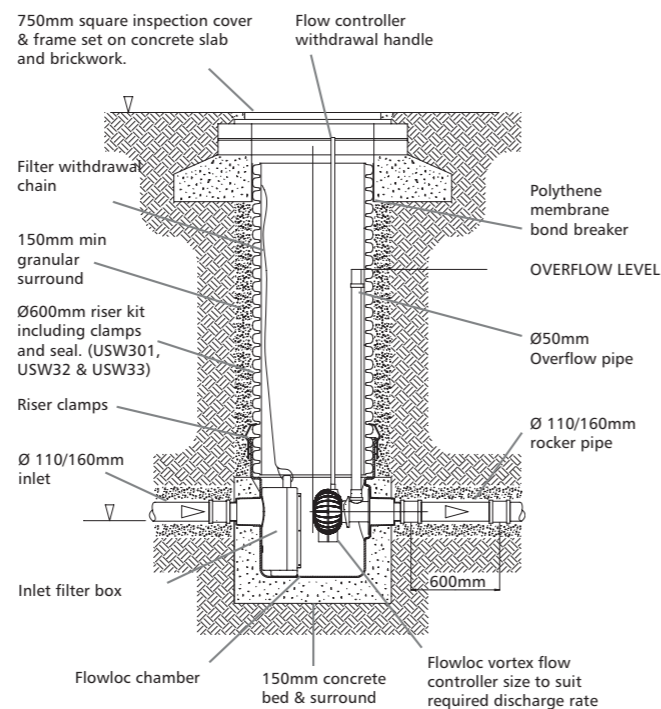
For larger catchment areas, the 600mm silt trap, USW30 should be used. This can be used with or without the USW29 filter which will retain debris particles as small as 10mm.



## 600mm silt trap and Flowloc chamber base

The USW30 can be used as a 600mm silt trap, with or without the USW29 filter. It is also used as the housing for the range of Flowloc control units and orifice plates.

The chamber base can be installed within a precast concrete manhole or with a riser piece (available separately.) Both installation methods require the base to be level and bedded into a 150mm concrete base and surround. The base has spigot connections suitable for either 110mm or 150mm pipe sizes at the inlet and outlet, with additional 110mm side connections for use in 'off-line' installations. All pipe connections should be fitted with 600mm long rocker pipes to allow for ground movement.



## Chamber Riser

To fit the 600mm riser to the chamber base, fit the inlet ring seal into the first corrugation of the riser, lubricate the seal with silicone grease and insert fully into the socket of the base with firm pressure. Fit the clamp ring between the grooves of the base socket and locate the four clamps in the corrugations of the riser before tightening.

Prior to backfilling with granular material, leak test the seal by capping the inlet and outlet connections and filling the riser with water to approximately 0.5m above the seal.

The riser should be cut back to within approximately 200mm of finished ground level before casting a concrete collar with a bond breaker membrane around the riser to prevent load transfer to the shaft. A cast iron inspection cover and frame with a minimum clear opening of 750mm can then be set on engineering brickwork to complete the installation.

## Filter

Attach the end of the filter chain to the inside of the riser with the 'P' clip and screw provided, then lower the filter into the base so that it locates against the inlet.

## Flowloc vortex flow control unit

Using the solvent cement supplied with the kit, bond the 20mm pipe socket to the length of 20mm pipe, then bond the socket to the handle attachment on the Flowloc device. Allow the solvent to set before lowering the controller into the base and engaging the square flange into the coupling slot. The handle can be cut to length.

To set the overflow level, fit the 50mm pipe into the socket in the chamber base aluminium coupling and mark the pipe at a point coinciding with the top, or just below the top of the storage tank. Cut the pipe at this point and bond into the socket with solvent cement, then secure the open end to the inside of the riser wall with the pipe clip and screws provided.

### Anti-flood valve

T110mm or 160mm anti-flood valve (USW130 or USW140) is required when connecting to a foul sewer system. Can also be used for connection to a watercourse.

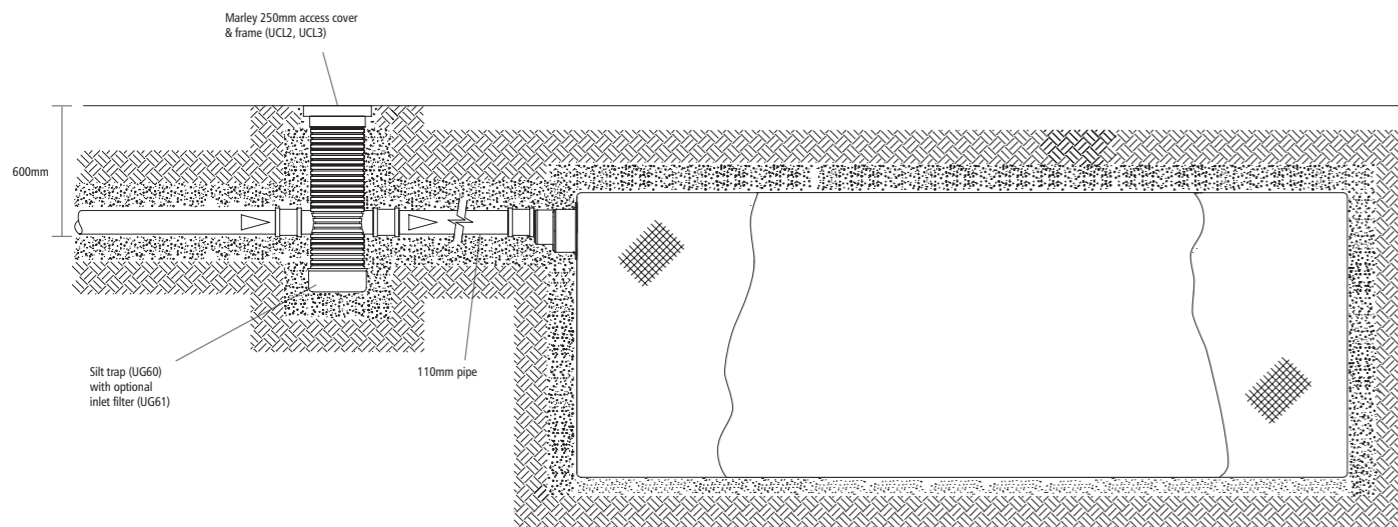
## 250mm silt trap, UG60

The 250mm silt trap, UG60 can be used with or without a filter, UG61. The 250mm silt trap must be installed with the flow indication arrow in the base of the unit in line with the direction of flow. This will ensure that the filter is always correctly located against the inlet connection, and that the UG60 leaf guard is fitted to the outlet.

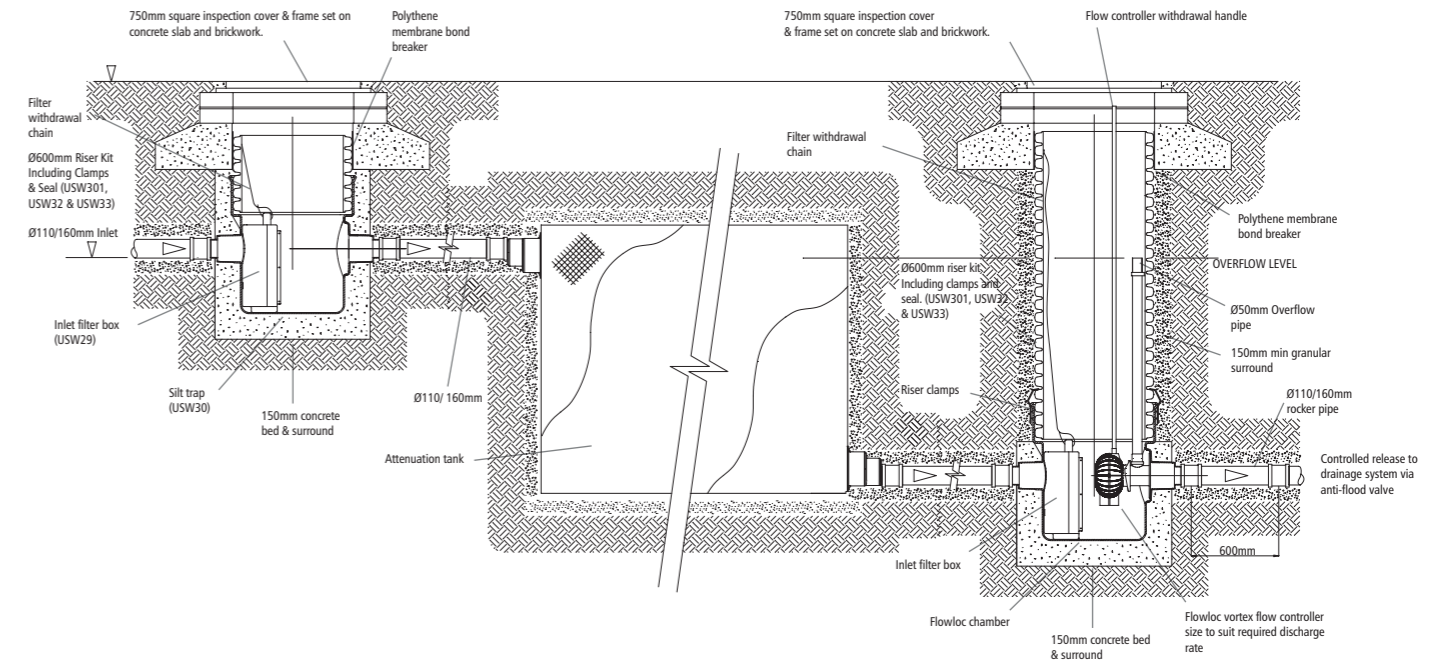
The silt trap should be installed with a pea shingle bed and surround at the appropriate depth. The riser is then trimmed back to suit the ground level, before the UCL2/3 cover and frame is bonded in place with solvent cement. When inserting the filter into the UG60, make sure that the base is positioned against the location ramps and that the wire retainer is lowered to lock it into position.



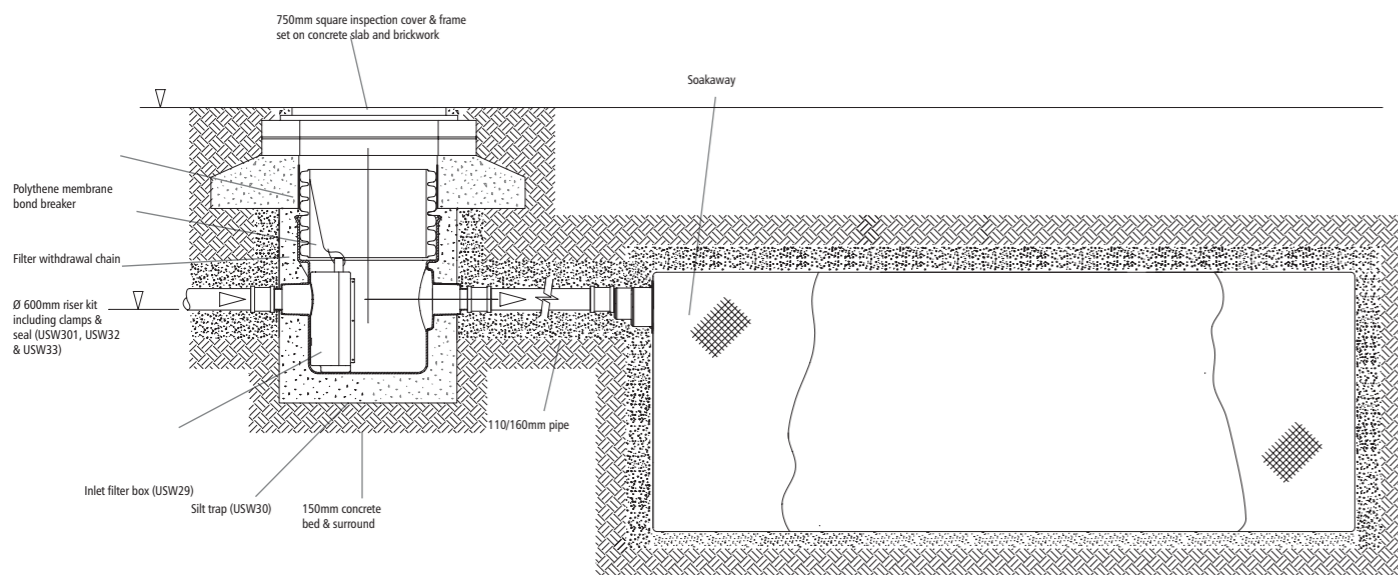
## Soakaway with 250mm silt trap and filter



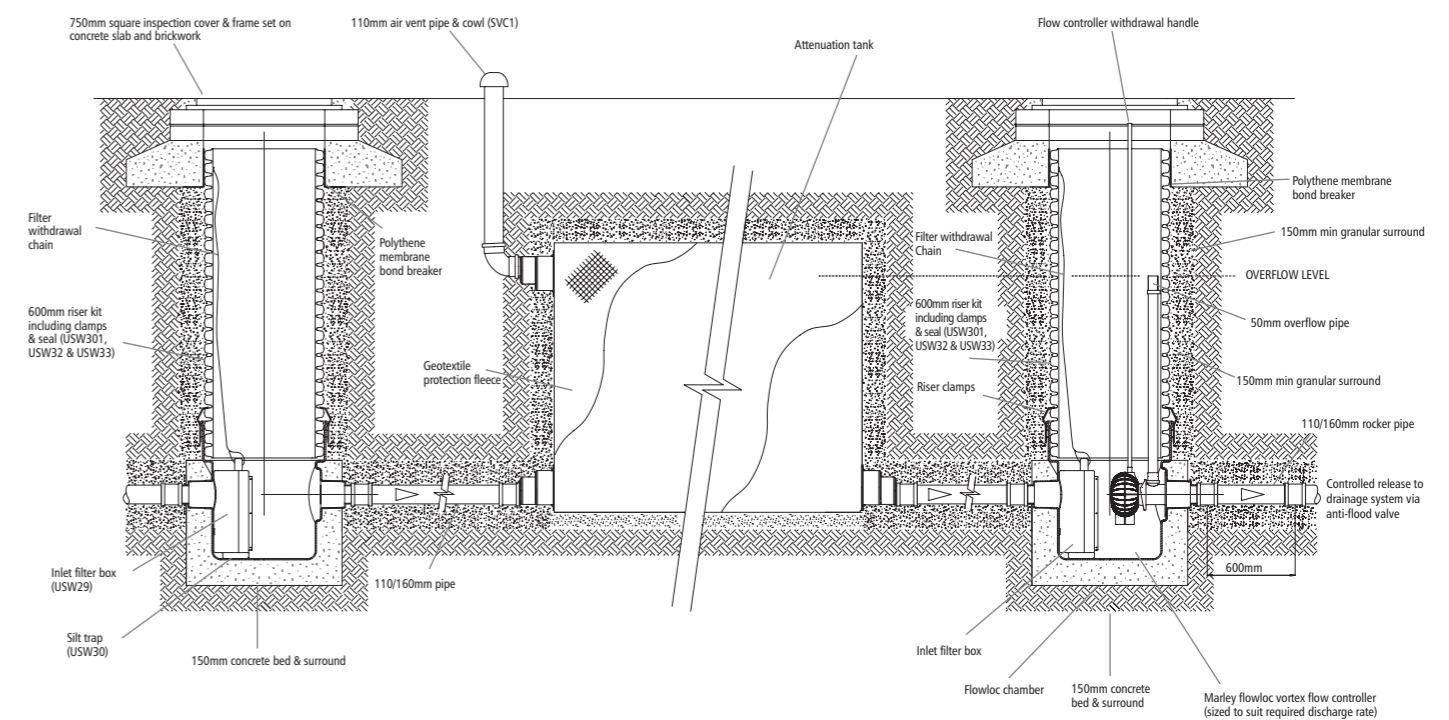
## Attenuation tank with inlet filter and Flowloc vortex flow control unit



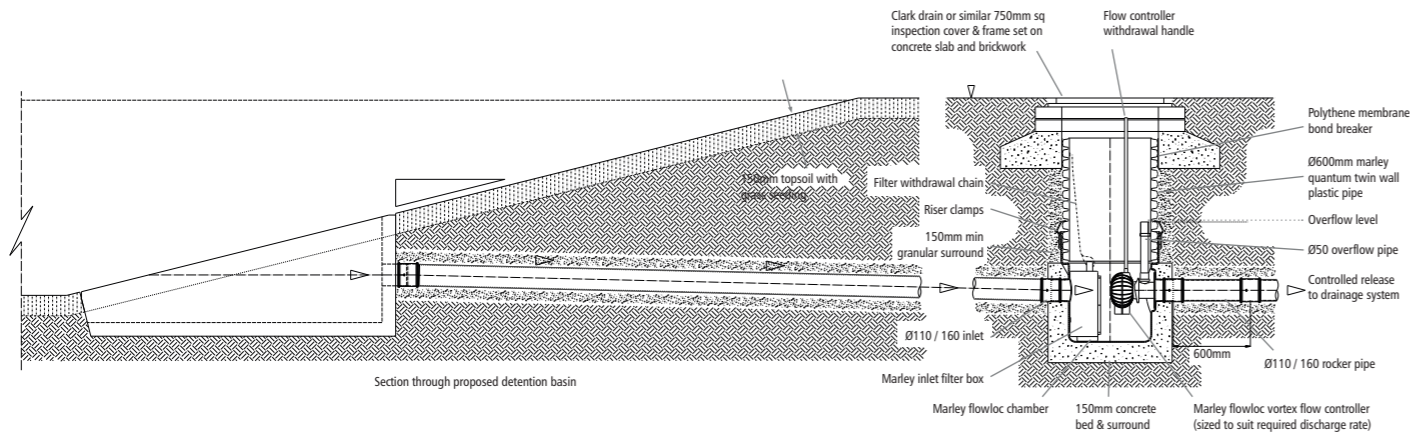
## Soakaway with 600mm silt trap and inlet filter



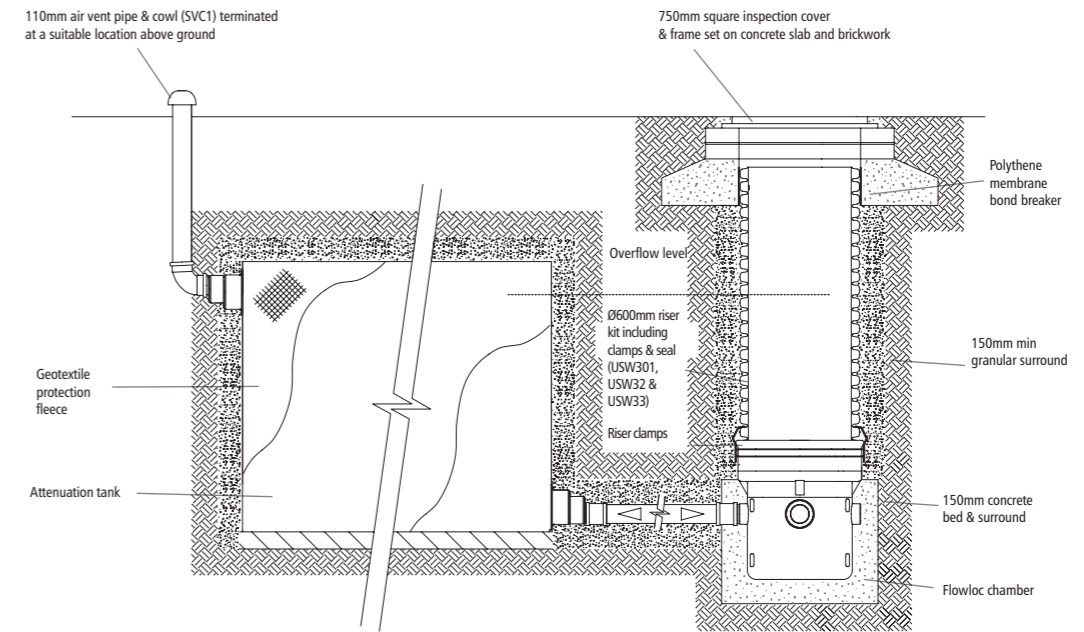
## Level invert attenuation tank with air vent, inlet filter and Flowloc vortex flow control unit



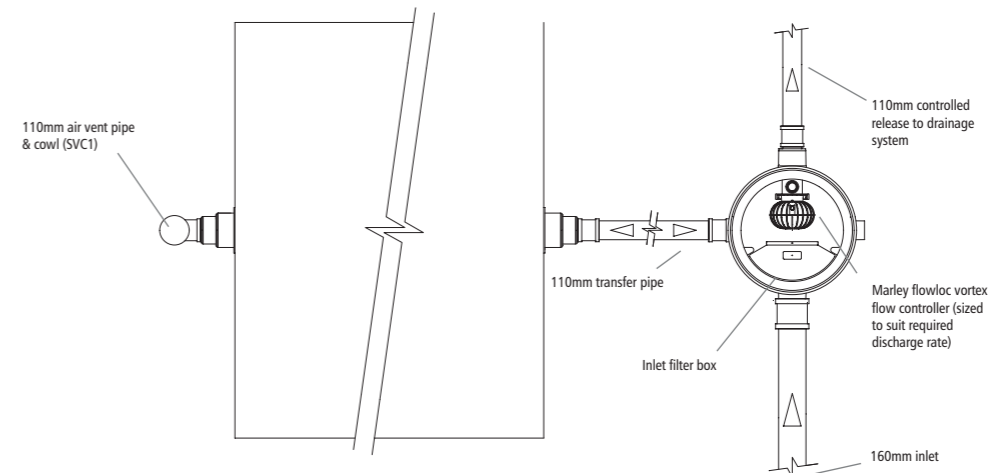
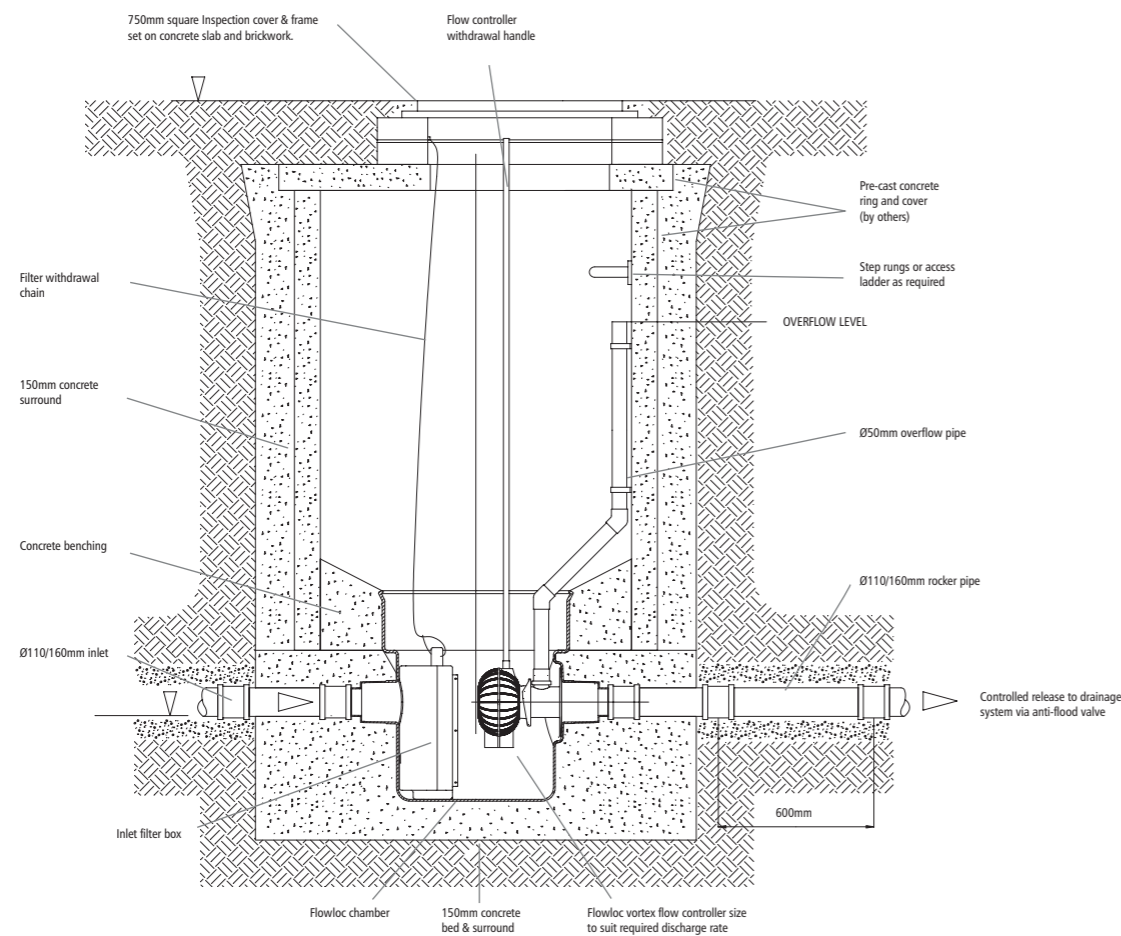
## Detention basin (Swale/Pond), with controlled release via Flowloc vortex flow control unit



## Offline attenuation tank with air vent and Flowloc vortex flow control unit



## Marley Flowloc chamber with concrete riser and Flowloc vortex flow control unit



# Maintenance

## Flowloc vortex flow control unit

Ideally, a maintenance programme should be set up to ensure that the Flowloc control system is regularly checked and cleaned. The filter unit should be periodically raised to ensure that collected debris does not obstruct the inlet to the chamber base. Any debris can be removed via the inlet port at the back of the filter box. Before replacing the filter it is advisable to clean out the base of the chamber with a suction pump to ensure that the filter seats correctly on replacement. The Flowloc controller or orifice plate should be periodically removed for inspection and cleaning, and the base coupling hosed out to ensure correct seating on replacement.

## Silt trap

Silt traps should be regularly maintained by removing the leaf guard from the outlet and discarding any debris from the base of the trap. To clean the filter, raise the wire retainer on the filter, tilt forward and pull out by the handle. Remove the lid by pressing the release catch and thoroughly clean the unit with a hose. Remove any collected silt from the base of the trap, replace the filter and lock into place by lowering the wire retainer.

\*Available to download as CAD files from marleypd.co.uk

# THE TECHNICAL EXPERTS IN PLUMBING & DRAINAGE



Soil & Waste  
PVCu push-fit and solvent weld systems, ideal for domestic and commercial applications. Innovative fittings include the 8-way collar boss with top and side entries which allow for multiple inlet connections.



HDPE Soil  
Certified to BS EN 1519, the Marley HDPE system offers an alternative solution to cast iron. The combination of the excellent material properties of HDPE with homogenous welded joints provide greater installation flexibility with a range of jointing options.



Acoustic Soil  
Used in conjunction with the acoustic pipe brackets, Marley dBlue is designed to reduce noise and acoustic vibrations to a level of 16dB at 4/s, making it perfect for multi-occupancy developments.



Rainwater  
The Marley rainwater range comprises advanced Life4 technology, textured Foundry Finish, and profiles up to heavy industrial to make it the most comprehensive available.



Underground  
Solid wall for round the house drainage with a range of adoptable inspection chambers. Quantum structured wall with smooth bore for good hydraulic performance in sewer and highway drainage applications.



Active Drainage  
Studor P.A.P.A. (Positive Air Pressure Attenuator) and Studor air admittance valves provide a complete active drainage ventilation system solution which is particularly suited to high-rise applications.



Sanitary  
Multikwik sanitary frames and concealed cisterns deliver behind the wall reliability for wall hung toilets and basins. Glass, metal and plastic flush plates offer client choice for modern bathroom designs.



Equator  
Equator is a hot & cold water system manufactured from cross-linked polyethylene (PE-X) and stainless steel. Fittings are tamperproof, but fully demountable and reusable with the use of the demounting tool.



Flowloc  
Flowloc is a Vortex flow control unit, which is used as part of an attenuation scheme. It controls the rate at which water is discharged to a drainage system or watercourse.

Our technical team can help you specify the system you need

Years of experience mean that we can support you throughout your design process and assist with any technical and installation requirements.

- DESIGN SERVICES
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