

Project name	Islington Wharf Phase 4		
Design note title	Discharge of Planning Condition 10		
Document reference	IW4-HYD-XX-XX-RP-D-0001		
Author	Chloe Fell		
Revision	P3		
Date	7 June 2023	Approved	☐

1.1 Scope

This document addresses Planning Condition 10 of application number 126669/FO/2020, location: Land Bound By Old Mill Street & Great Ancoats Street, Manchester, M4 6EE.

1.2 Condition Overview

Prior to the first occupation of the development, details of the implementation, maintenance and management of the sustainable drainage scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include:

- 1. Verification reporting providing photographic evidence of construction*
- 2. As built construction drawings if different from design construction drawings*
- 3. Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.*
- 4. Timescale for implementation of the scheme. The implementation of the management and maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.*

1.3 Response to discharge condition

1.3.1 'Verification reporting providing photographic evidence of construction'

Verification reporting providing photographic evidence of the construction of the drainage network is included in Appendix A. Photographic evidence of the construction of the attenuation tank that has been installed is included in Appendix B.

A Manhole checklist, including photographic evidence of the construction and installation of the Hydrobrake Manhole is included in Appendix C.

Product details and data sheets of the installed attenuation tank and Hydrobrake manhole are included within Appendix D.

1.3.2 'As built construction drawings if different from design construction drawings'

An as-built construction drawing of the drainage layout is contained within Appendix E.

1.3.3 'Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.'

The Management and Maintenance plan is detailed in the table below. For all external drainage, maintenance will be the responsibility of the building management company.

Item	Maintenance	Frequency per year
Gullies	Removal of silt accumulation from mud bucket Gratings checked for operation/damage – replaced if required.	2
Foul Water Manholes	Manholes covers checked for operation/damage – seating's re-greased or replaced as required. Check for blockages and or damage to invert channel/inlets – jetting pipe runs if blocked, any damage to be repaired. All access ladders & other associated ironworks to be checked for corrosion & fixings to be checked for deterioration. To be repaired or replaced dependent on extent of damage.	1
Surface Water Manholes, Flow Controls	As Above All catch pits/Vortex Separators to have silt/solid accumulation removed & base jetted clean	1
Drainage Channels	All catch/access pits to have silt/solid accumulation removed. Channel run to be jetted through between access points. Any channel grates to be inspected for damage & replaced as necessary.	2
Attenuation Tank	High pressure jetting. All recommendations by specialists to be acted upon. Remove any accumulation of debris. Clearing Inlet/Outlet including jet washing to inlet.	2
Condensate drain	Sainsburys to determine maintenance requirements of all condensate drainage systems. We would recommend that it is inspected and rodded twice annually as a minimum.	2

1.3.4 'Timescale for implementation of the scheme. The implementation of the management and maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.'

Works have been carried out by Morgan Sindall from AUG 2021 and have been completed. The maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.

1.4 United Utilities Comments

Comments were also received from United Utilities in response to the Verification Report.

United Utilities have stated that they cannot recommend the condition be discharged as 'the design does not show a SUDs system as stated in the condition' As such, an amended scheme needs to be submitted or evidence provided to demonstrate that the proposed drainage system is a SUDs system.

1.5 Response to comment

1.1.1 The SuDS philosophy for a development site is the promotion of Pollution Prevention and Site Control Techniques. The following design philosophy was proposed during the initial design and in the Flood Risk Assessment submitted for planning in April 2020 (10042-HYD-XX-XX-RP-FR-0001):

- Surface water treatment using the 'Management Train' approach to remove and isolate contamination at all SuDS facilities prior to conveyance.
- Site Control features (attenuation) to accommodate the additional surface water runoff generated by the development site before discharging into the combined sewer.
- Provision of filter drains to the north of the site to accommodate surface water run-off.
- Surface water runoff from roofs and external areas will be directed to the below ground gravity network, where it will join the wider private drainage network of carrier drains and will be attenuated prior to outfall into the existing UU combined sewer.
- Infiltration was considered but was not considered feasible due to the ground conditions in the area
- Aim to limit, where possible, the impermeable fraction of development.

1.1.2 Given the dense urban environment, ground conditions and foreseeable use by heavy vehicles the use of SuDS has been limited to attenuation, flow control and source catchment.

1.1.3 A review of the possible SuDS solutions that were feasible included:

- Ground storage/attenuation
- Filter Drain
- Vortex Flow Control
- Trapped gullies and surface inlets

These can be found on the drainage layout drawing included in Appendix E.

Appendix A









Appendix B







Appendix C



Man Hole Checklist

CONTRACT: ISLINGTON WHARF 4

Manhole Installation:

LOCATION: As Per Attached Drawing

DRAWING USED:

SK-S-008

We wish to advise that the above element has been inspected, the items checked and results are shown below.

		X ✓	NCR No:	Comments	Chartrange Checked (Ticked)	Client Checked (Ticked)
1.0	Preparation					
1.1	Check setting out	/		Existing manholes	Pm	
1.2	Check drawings	/		Checked	Pm	
1.3	Check position of services	/		N/A	Pm	
1.4	Suitability of machine/lifting gear	/		Checked	Pm	
1.5	Loads on excavation	/		trench box	Pm	
1.6	Adequacy of earthwork support/Batters 1:2 ratio	/		Steel piling	Pm	
1.7	Excavation depth/fill Material as per drawings/specification	/		3.8 M OP	Pm	
1.8	Support to services provided as necessary			N/A	Pm	
1.9	Inlet pipe diameter/make/invert level, as per drawings/specification	/		3000	Pm	
1.10	Outlet pipes diameter/make/invert level, as per drawings/specification	/		3000	Pm	
2.0	Installation					
2.1	Concrete base with inlet and outlet pipes positioned at correct & angles and inverts, as per drawings/specification	/		Breaking into existing MH'S Hydro-Grate installed	Pm	

* No Manholes installed, Broke into existing manholes and installed Hydro-Grate



Man Hole Checklist

2.2	Inlet pipe coupled to MH correctly with rocker pipe, as per drawings/specification	/		Pm	Pm	
2.3	Precast concrete manhole ring, correct diameter/step rings orientated correctly/correct height installed/sealant strip installed.	/		No rings used	Pm	
2.4	Cover/reducer slab (if required), correct diameter/ orientated to step irons correctly/sealant strip installed.	/			Pm	
2.5	Precast concrete manhole ring 900mm diameter, correct diameter/step rings orientated correctly/correct height installed/sealant strip installed.	/		N/A	Pm	
	Reducer slab 900mm diameter, correct diameter/ orientated to step irons correctly/sealant strip installed.	/		N/A	Pm	
2.4	Manhole Concrete surround as per drawings / specification	/			Pm	
2.5	Backfilling & compaction as per drawings /specification	/			Pm	
2.6	brickwork cover & frame installed as per drawings /specification	/			Pm	
2.7	Benching as per drawings / specification	/			Pm	



Man Hole Checklist

CONTRACT:

DRAWING USED:

CHECKING COMMENTS/ACTION:

Approved By;

CR Site Manager/Construction Manager/Project Managers

☐ **Name:** Philip Macey

Position: Site Supervisor/Forman Engineer

Signature: P. Macey

Date: 18-4-2023

Client Site Manager/Construction Manager/Project Managers

☐ **Name:** Karl Ford

Position: Site Manager

Signature: [Signature]

Date: 25/04/23

Nick Campbell

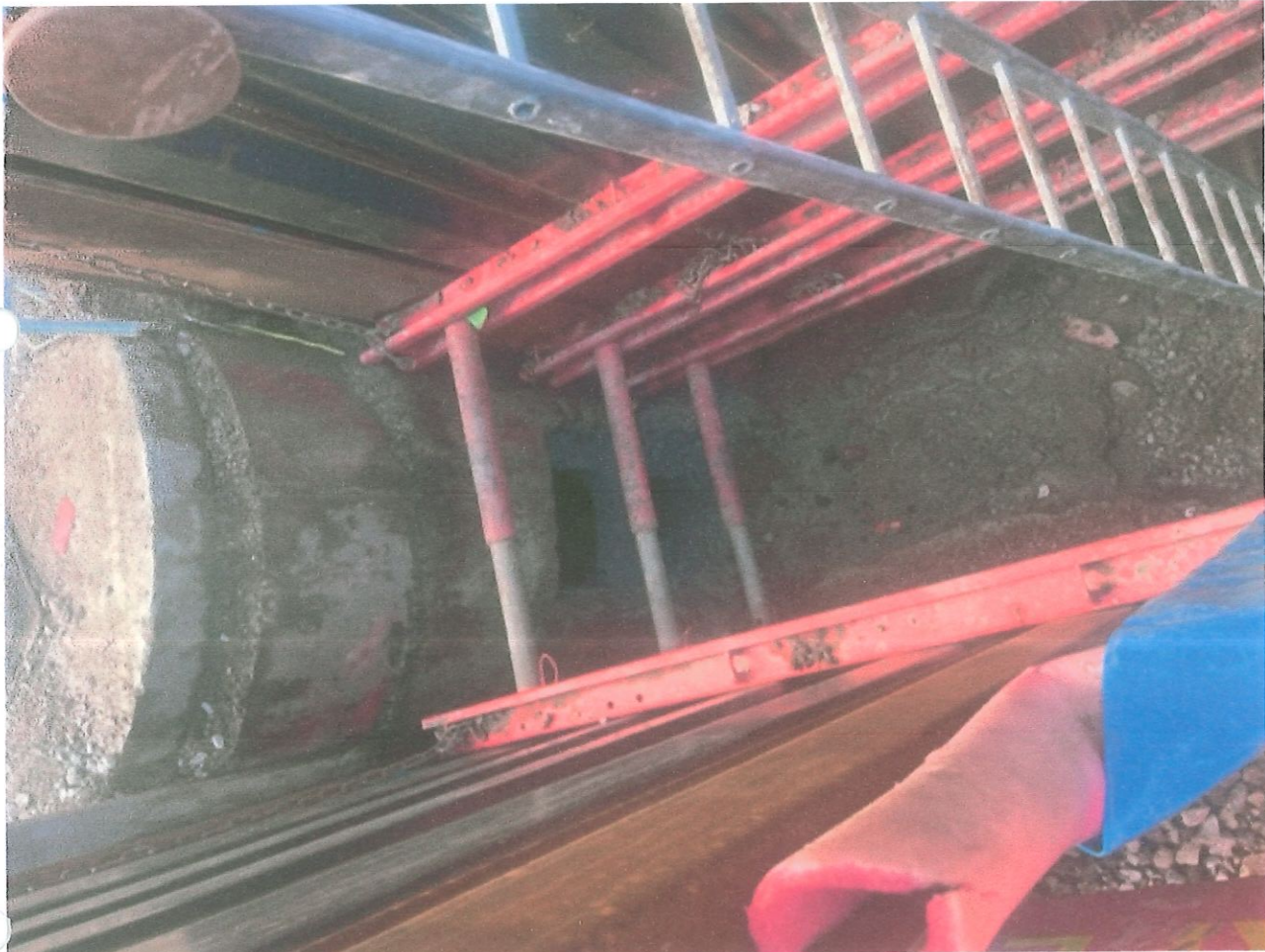
From: philip macey <phil.macey@hotmail.co.uk>
Sent: 05 April 2023 08:25
To: Nick Campbell



Sent from my iPhone

Nick Campbell

From: philip macey <phil.macey@hotmail.co.uk>
Sent: 11 April 2023 11:32
To: Nick Campbell
Subject: Print please



Nick Campbell

From: philip macey <phil.macey@hotmail.co.uk>
Sent: 12 April 2023 12:33
To: Nick Campbell
Subject: 2 copies please



Sent from my iPhone

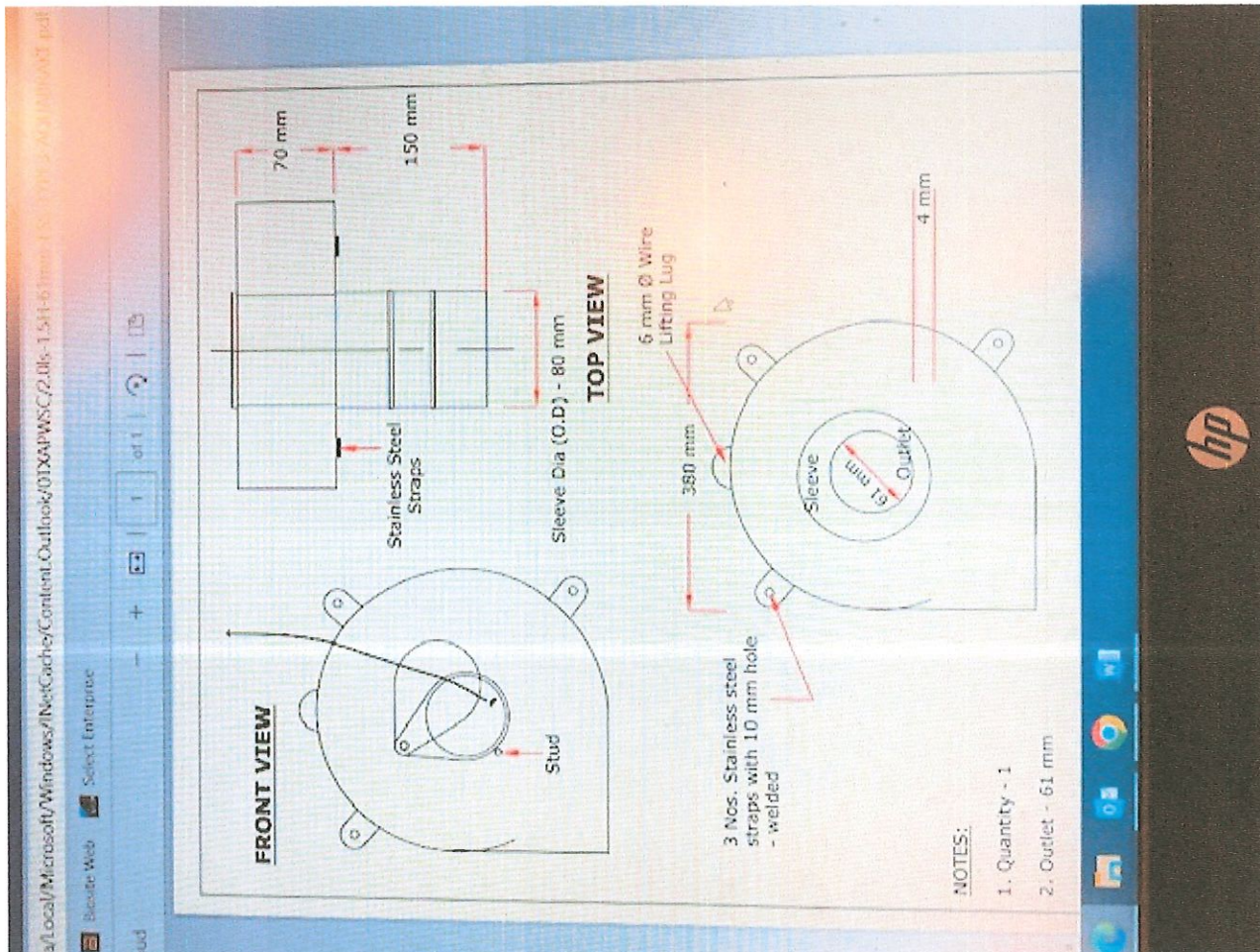


Sent from my iPhone



Nick Campbell

From: nick campbell <nickc2189@googlemail.com>
Sent: 02 June 2023 10:40
To: Nick Campbell
Subject: Hydro Islington



ACCEPTANCE OF WORKING AREA

SQA-01

Contract No: 17120

Client: Heyrod

Project: Islington Wharf, Phase 4, Manchester

Date: 22/11/21

Engineer:

Material: Versavoid & Tufflex

Acceptance of Working Area

I the undersigned, a duly appointed representative of Solutek, have visually observed the sub grade surface in the location of and found it to be an acceptable surface on which to carry out the installation.

Excavation Base.

I the undersigned, a duly appointed representative of the Client hereby handover the above noted area to Solutek. We certify that the area is ready and checked to be at the correct formation level and condition for the installation to proceed.

(This observation is on the surface of the sub grade only, and therefore Solutek can take no responsibility for any subterranean conditions, the sub grade formation, level or its conformance to the projects specifications.)

Excavation

I the undersigned, a duly appointed representative of the Client are fully aware the tank size we are instructed to install is:

This tank will be installed 16.5 length x 4.5 width.

Excavation/Tank size additional information:

Solutek Representative

Name (Signature)

[Signature]

Name (Print)

Alfonso Sutek

Date

22/11/21

Clients Representative

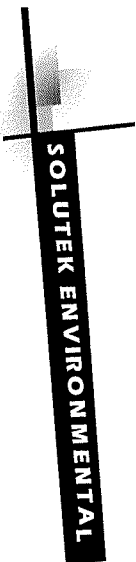
Name (Signature)

Name (Print)

Date

22/11/21

Form No	Date Iss.	Issue No.
SFR - 043	Jun-19	2



LOCATION INSPECTION REPORT/ HANDBACK AREA TO CLIENT

SQA-04

Contract No:	17120	Client:	Heyrod	Project:	Islington Wharf, Phase 4, Manchester
Date:	22/11/21	Engineer:		Material:	Versavoid & Tuflex

Location: EXCAVATION

1. Visual inspection of geomembrane	☒
2. Visual inspection of geomembrane joints	☒
3. Visual inspection of geotextile	☒
4. Completion of non-destructive testing	☐
5. Number of small patch repairs	☐
6. Number of tank connections	☐

Quantity	
Quantity	
	N/A
	N/A
	2

Clients representatives initials

11. Details of any other items / works i.e. sealing to manholes, lift pits, etc
no Vers Connection

*Delete above items where appropriate

Handback of Area to Client

SQA-05

I the duly appointed representative of the Client hereby take receipt of the completed installed area from Solutek, having inspected the works and confirmed it as being free from faults and installed as per the project requirements

Clients Representative

Name (Signature)		Name (Print)		Date	22/11/21
------------------	--	--------------	--	------	----------

Form No	Date Iss.	Issue No.
SFR - 044	Nov-11	1



Appendix D

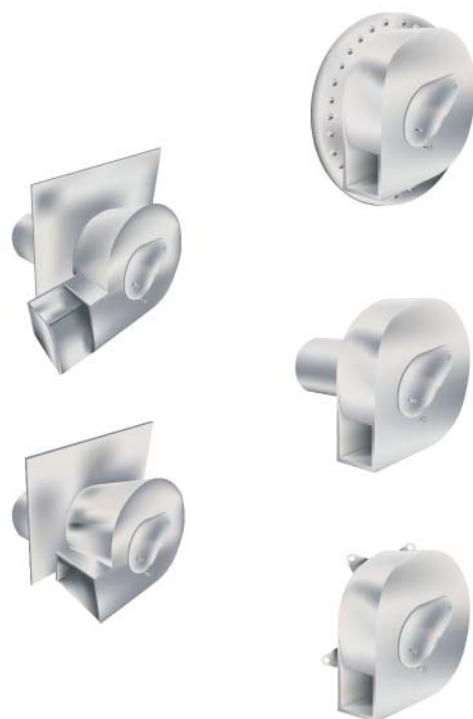
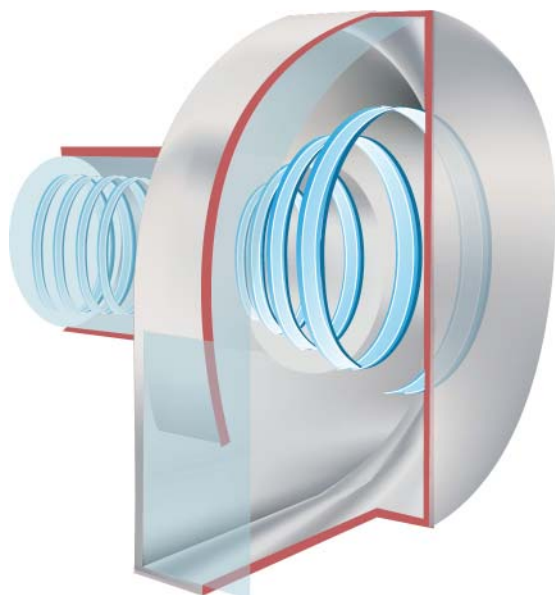
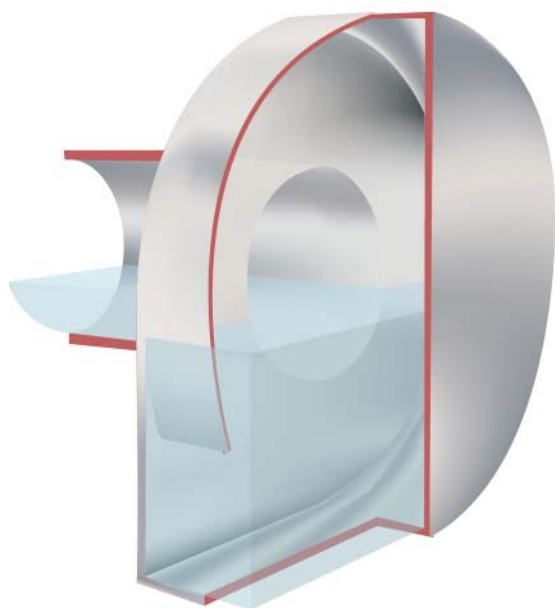


Modular Geo-Void Systems

Total Water Management

AquaBrakes

Vortex Flow Control Solutions



- Easy to install
- Multiple design options
- Controls and minimises peak stormwater flows
- Reduces storage requirements
- Vortex flow removes risk of clogging

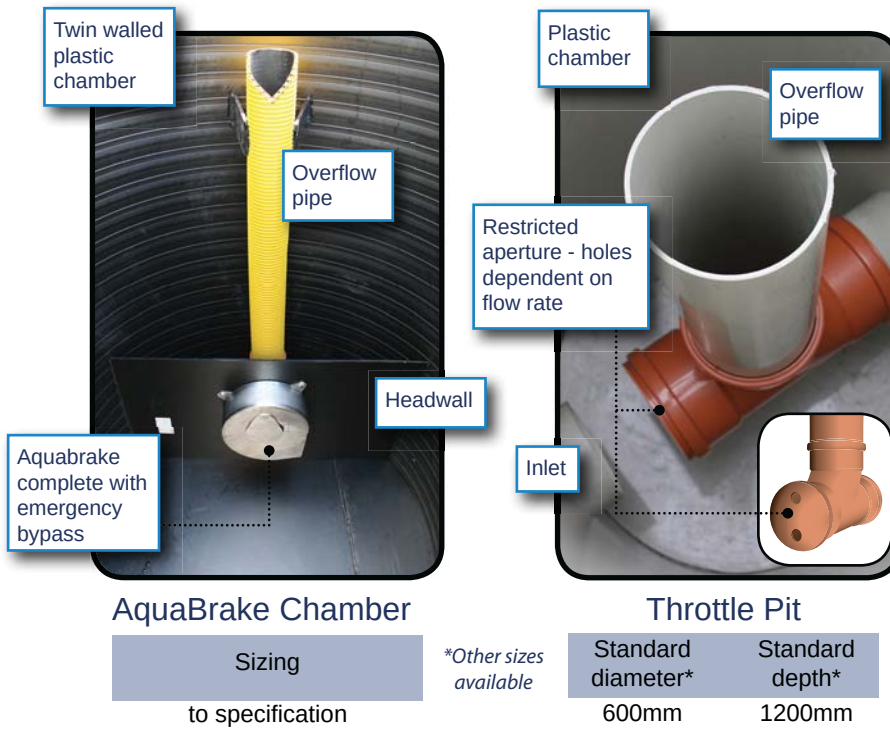


Flow Control

AquaBrake Chambers and Throttle Pits

AquaBrake Flow Control

AquaBrakes are an efficient and convenient tool for regulating flow rates through storm, sewer or combined systems. As vortex flow controls, they are powered by the water flow alone and are activated simply by the flow of water. With no moving parts and no requirements for external energy sources, their clever design minimises maintenance and prevents clogging. AquaBrakes can be supplied alone or pre-fitted within chambers designed to site requirements.

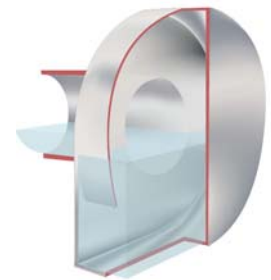


Traditional Flow Control

The ESS Throttle Pit is an alternative to the AquaBrake. It regulates flow in a more traditional manner by restricting an aperture to allow only a certain flow to pass through. Like AquaBrakes they are all designed with overflow channels which run vertically to the top of the pit ensuring continuous water discharge in the event of a blockage.

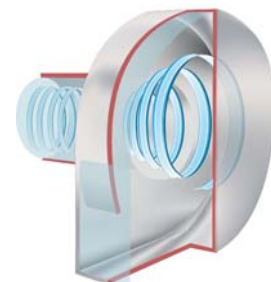


Vortex Flow Control: How does it work?



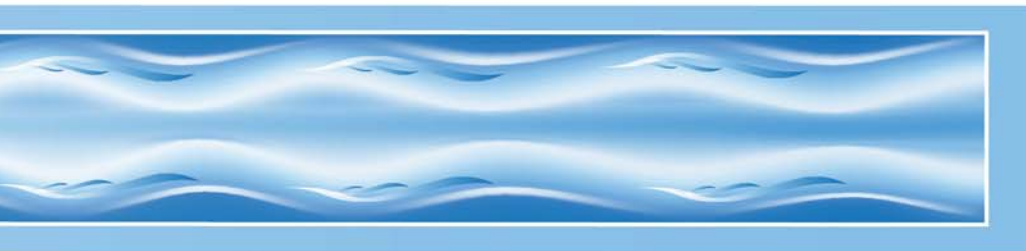
Low flow Conditions

During low flows, the AquaBrake behaves like a traditional opening and water passes through at a normal rate.



High flow Conditions

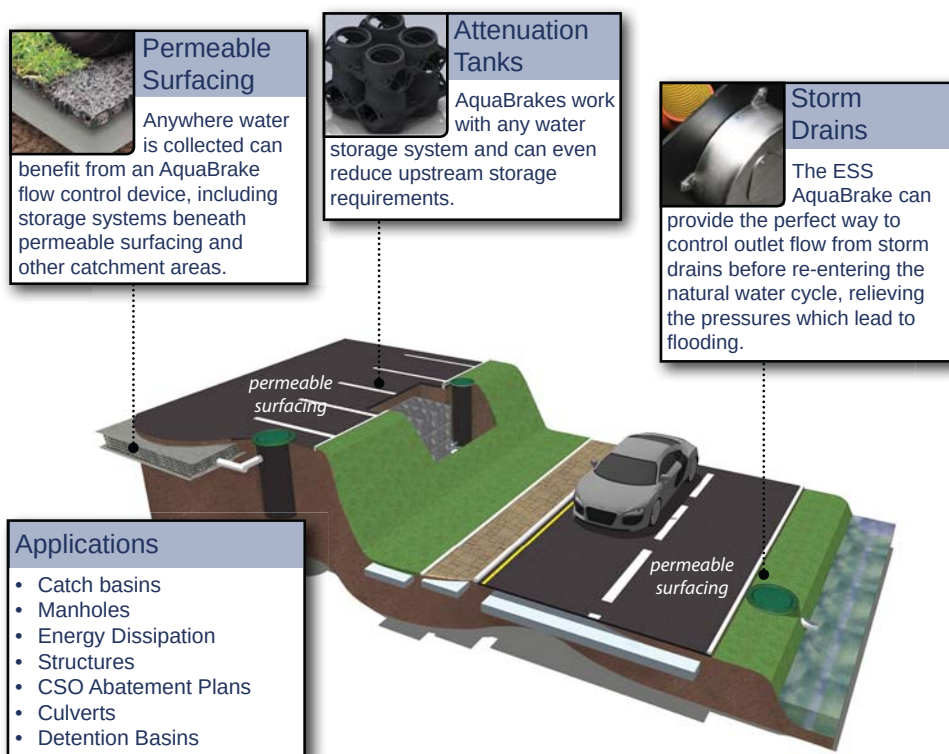
As the surrounding chamber fills, the AquaBrake becomes submerged beneath the water level causing a rotational velocity to be established. The rotational velocities in the inlet section of the device cause an air-cored vortex to form in the outlet section. The air core occupies the centre of the outlet and creates a significant opposition to flow through the device.



Applications

The ESS AquaBrake can be used for a variety of flow control purposes, including drainage systems for permeable surfacing, roadside runoff, attenuation systems and any general storm drains.

With a self activating, clog resistant operating mode, the ESS AquaBrake is the option of choice for any flow control application.



ESS and Total Stormwater Management

AquaBrakes form only a small part of our water management range. As part of the Alderburgh Group, ESS has the benefit of over twenty years of experience and is able to provide the solution to almost any stormwater problem.



Porous Surfacing and Sub-Strata, Combined Surface and Sub-Surface Swale Systems, Geocellular Ground Stabilisation, Infiltration and Water Storage Systems, Roadside Drainage.



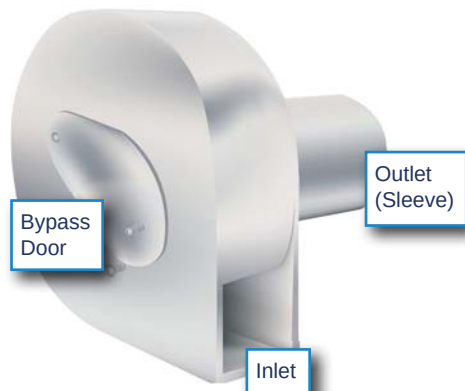
Benefits

-  **Cost Savings**
 - a simple solution to flow control.
 - can reduce upstream storage requirements by up to 30%.
-  **Durability**
 - corrosion resistant stainless steel.
 - tried and tested by independent sources - test data available on request.
-  **No energy requirements**
 - self-activating solution with no moving parts.
 - powered by the energy of the water flow alone.
-  **Clog Resistant**
 - AquaBrake design prevents blockages likely to occur in traditional orifices.
 - built in overflows and bypasses mean that if a blockage does occur it is easily sorted.
-  **Flexible Design**
 - several options for attachment available.
 - specification of type, size, orientation and attachment gives total control.

Fluid Amp AquaBrake

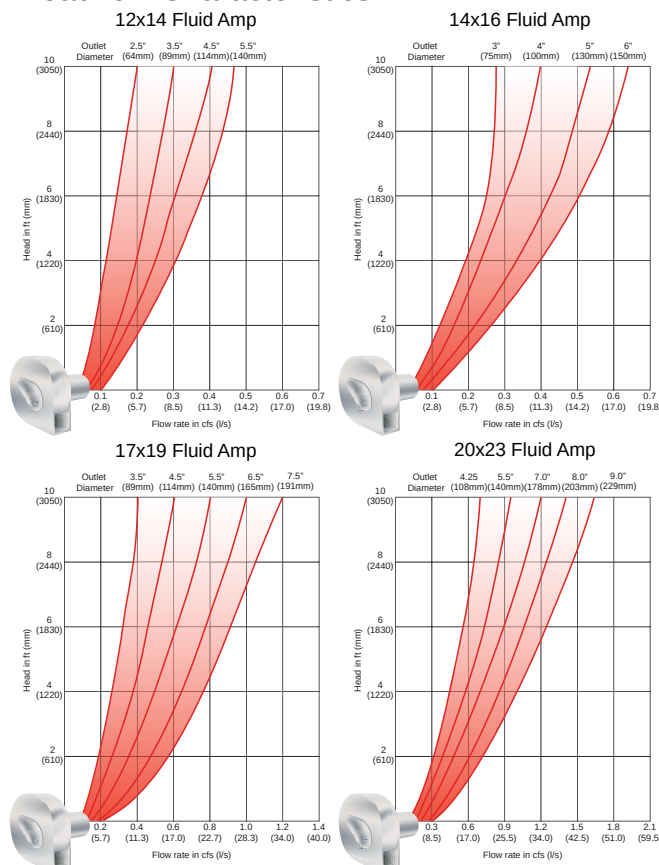
Fluid Amp

The Fluid Amp AquaBrake derives its name from the amplifier discussed in most fluid mechanics texts. They are most commonly installed in a catch basin outlet.



The Fluid Amp can be designed completely to specification and comes with a manual bypass as standard. If required, the Fluid Amp can be supplied pre-installed within a chamber, complete with a vertical overflow pipe to allow the entire chamber to be drained down in the unlikely event of a blockage. Separate fittings and attachments can be specified.

Headflow Characteristics



Size to specification

Attachments Various

Overflow Yes*

Manual Bypass Yes

*When supplied within a chamber

Fluid Amp Variations



Lug and Sleeve combination fitting



Flange



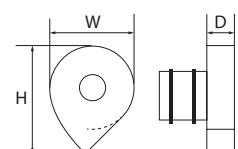
Lugs

Standard specification

Specialist Specification

Standard Fluid Amp Sizes

Model	Width		Height		Depth	
	in	mm	in	mm	in	mm
12x14	12	305	13.8	351	4	102
14x16	14.5	368	16.75	425	4.5	114
17x19	16.75	425	19.5	495	5.5	140
20x23	20.25	514	23.5	597	6.5	165

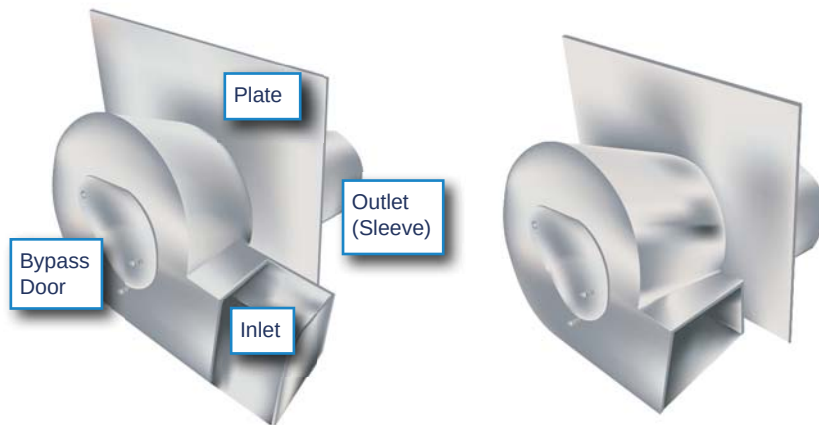


The information provided on these pages is for your information only. For further design information, technical sizing and specific configurations please contact ESS technical department.

Fluid Cone AquaBrake

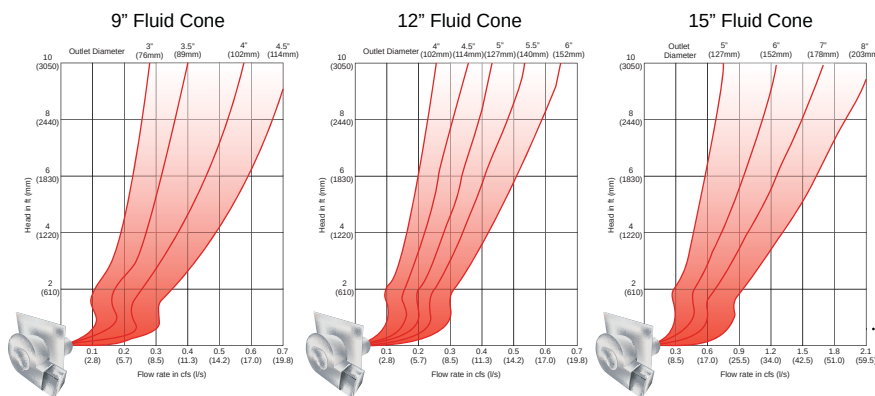
Fluid Cone

The Fluid Cone AquaBrake is named for its conical shape and is installed in structures with no sumps. Typically fitted to outlets from manholes in storm drains or sanitary sewers, they can also be fitted to culverts and detention basin outlets.

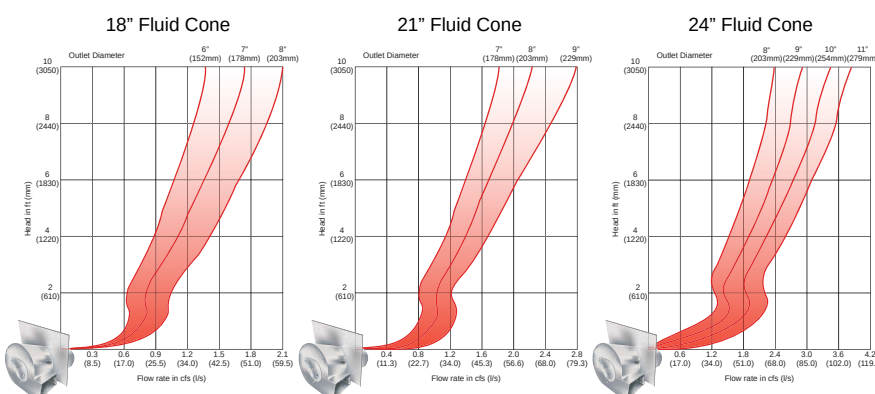


The Fluid Cone can be designed completely to specification and comes with a manual bypass as standard. If required, the Fluid Amp can be supplied pre-installed within a chamber, complete with a vertical overflow pipe to allow the entire chamber to be drained down in the unlikely event of a blockage. Separate fittings and attachments can be specified.

Headflow Characteristics Boxed Inlet



Slotted Inlet



Size	to specification
Attachments	Various
Overflow	Yes*
Manual Bypass	Yes

*When supplied within a chamber

Fluid Cone Variations

When specifying Fluid Cones, you will require either a boxed or slotted inlet. The boxed inlet is used with smaller AquaBrakes and the slotted inlet with larger AquaBrake sizes to keep the overall dimensions small enough to permit the AquaBrake to fit in most manhole or catch basin castings.



S

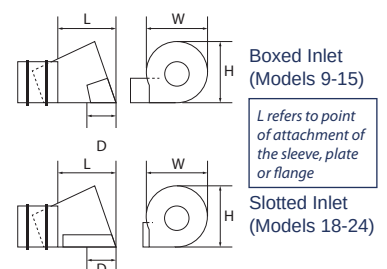
Boxed Inlet
with plate and sleeve
combination fitting



S

Slotted Inlet
with plate and sleeve
combination fitting

Model	Width in mm	Height in mm	Depth in mm	Length in mm
9	9	229	3-5	76-127
12	12	305	11.75	298
15	15	381	14.75	375
18	18	457	17.75	451
21	21	533	20.5	521
24	24	610	23.5	597



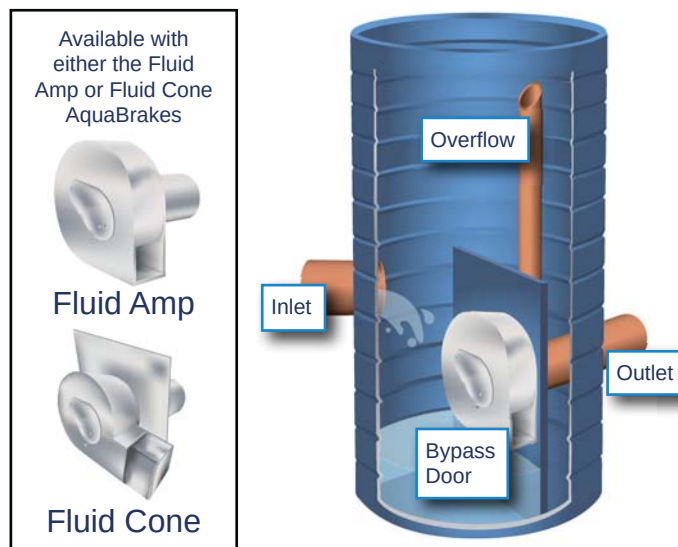
NOTE: Boxed inlets involve some individual custom sizing. The overall box dimensions are always slightly smaller than the outlet diameter specified.

AquaBrake Chambers

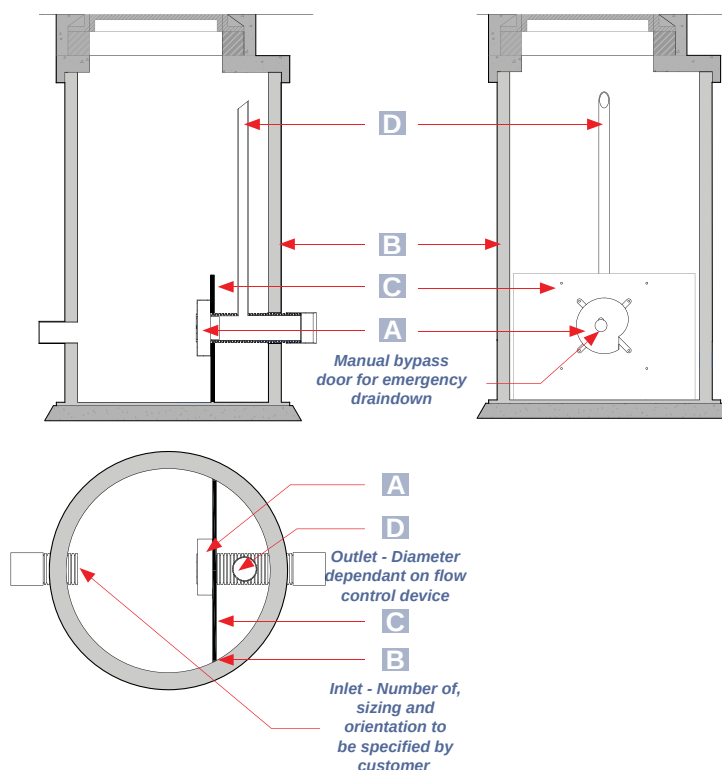
AquaBrake Chamber

The AquaBrake Chamber is available completely to specification, with chamber depth, chamber diameter and the AquaBrake all dependant on design specification.

Standard chamber depth is 1200mm and standard diameters are 900mm and 1200mm.



Technical Information



Size	to specification
Material	polypropylene
AquaBrake	cone/amp
Overflow	yes, fitted
Manual Bypass	yes, fitted

Key Design Information

Design Head

The depth between the invert level of the outlet pipe to the top of the upstream water level.

Design Flow/Peak Discharge

The required discharge from the AquaBrake. This is the desired output that can affect the amount of storage requirements needed for tanks.

Application

Surface water, foul water or combined system.

Further Details

Details of system proposals, manhole details, or any other relevant information.

Components

AquaBrake A

Specification dependant on design flow and design head.

Chamber B

Twin wall plastic chamber.

Headwall C

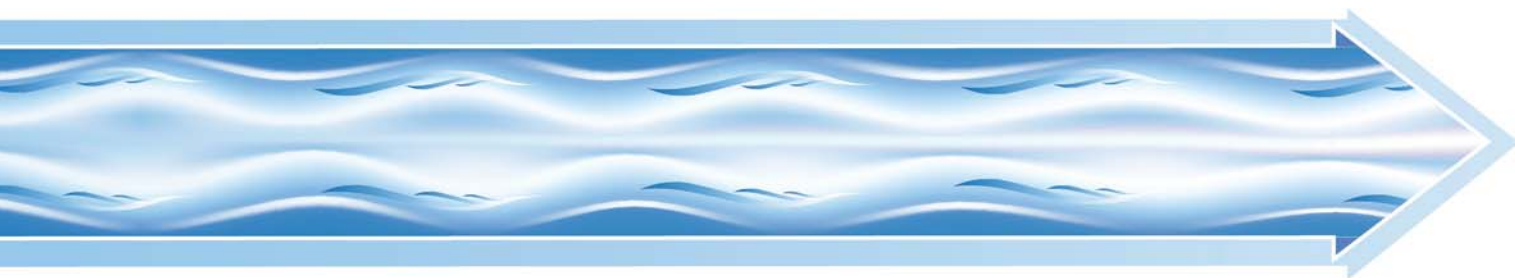
Height dependant on flow control device.

Overflow Pipe D

110mm diameter.

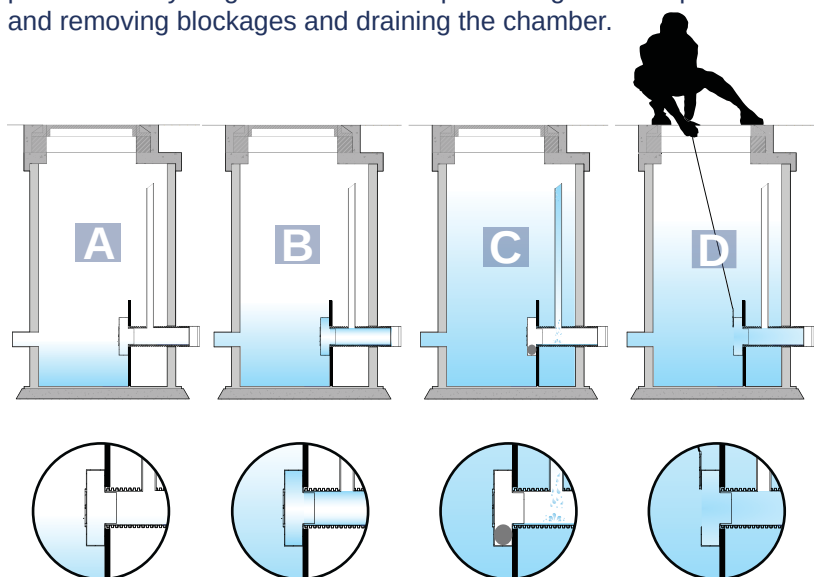
Cover Details by others

Reinforced concrete cover slab with mortar, complete with engineering or special purpose concrete brickwork. Manhole cover and frame bedded and hunched in 1:3 cement mortar. Concrete base and encasement also by others.



Key System Responses

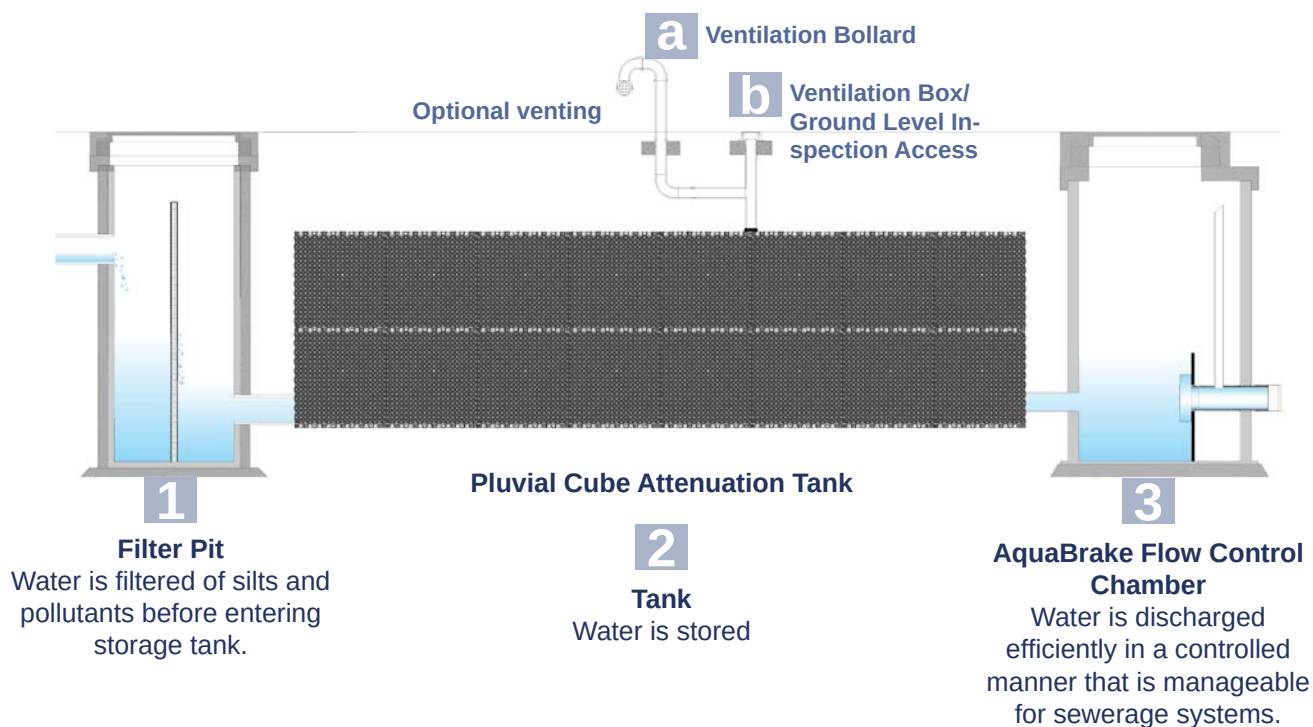
The AquaBrake Chamber is optimally designed to respond not only to high volumes of stormwater discharge, but also to the potential risk of blockage. Even though this risk is minimal, the chamber provides everything needed for both preventing overflow problems and removing blockages and draining the chamber.



- A Low Flow**
During low flows, water passes through the AquaBrake in a traditional manner.
- B High Flow**
During high flows, the AquaBrake becomes submerged beneath the water level causing a rotational velocity. An air-cored vortex is formed.
- C Blockage**
The integral vertical overflow pipe prevents flooding and water bypasses the AquaBrake.
- D Drain-Down**
The chamber can be completely drained down via the manual bypass door and fitted pull wire.

Typical Application

ESS Stormwater Attenuation Tank - Pluvial Cube System complete with filter pit and AquaBrake Flow Control



AquaBrakes

Vortex Flow Control Solutions

All products are manufactured to the highest quality, being subject to rigid quality control. However, the company cannot control conditions of application and use of its products, thus any warranty, written or implied, is given in good faith for materials only. ESS Ltd will not accept any responsibility for damage or injury arising from storage, handling, misapplication or misuse of its products. All transactions are subject to our standard condition of sale, copies of which are available on request.

To find out more about these systems and products please contact us



ENVIRONMENTAL SUSTAINABLE SOLUTIONS LTD

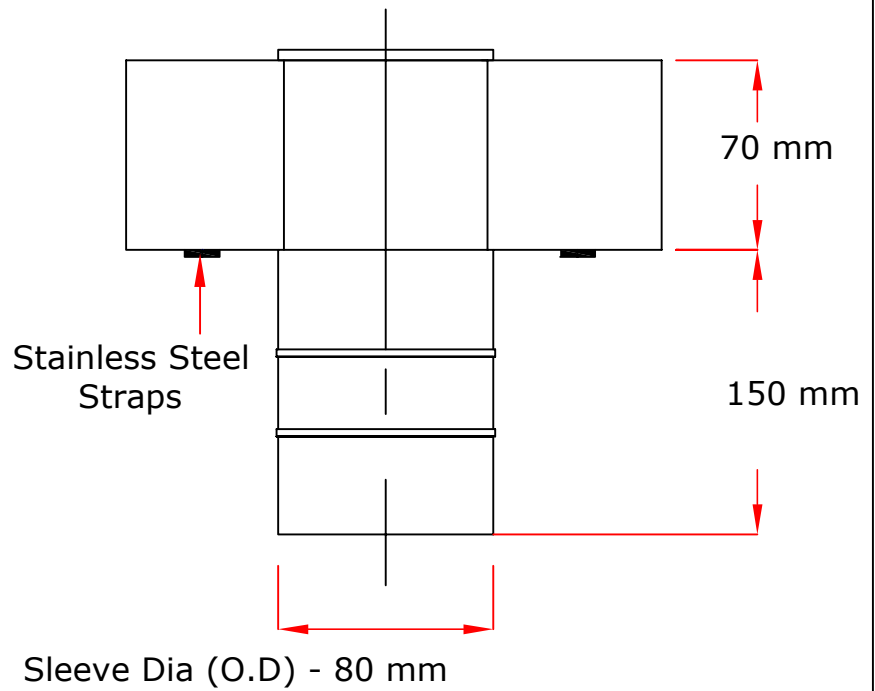
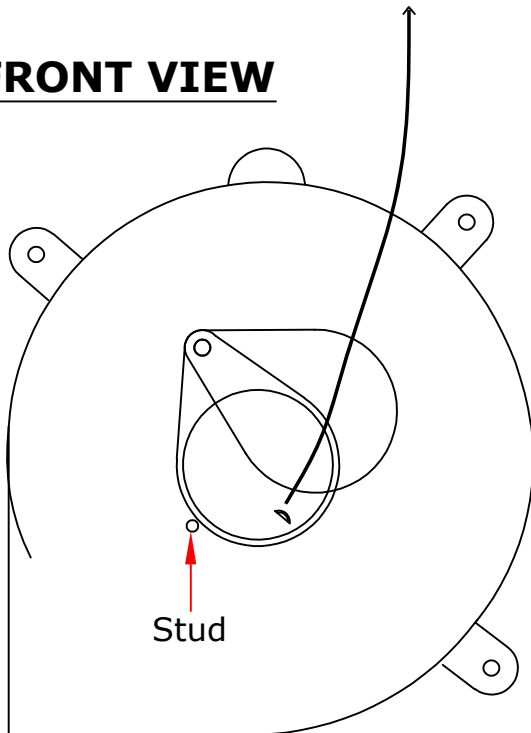
Environmental Sustainable Solutions Ltd

Sladen Mill, Halifax Road, Littleborough,
Lancashire. OL15 0LB.

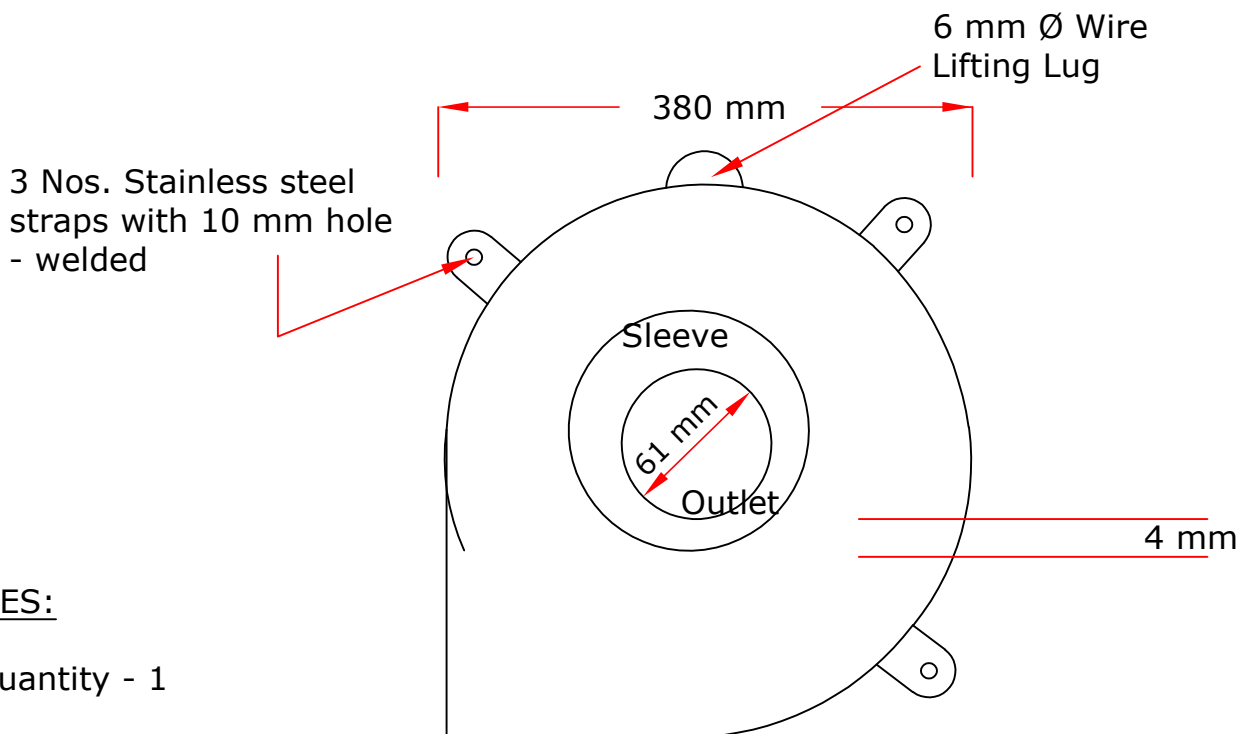
tel: +44 (0)1706 374416
fax: +44 (0)1706 376785
email: technical@y-ess.com
http: www.y-ess.com

E&OE. Without Guarantee.

FRONT VIEW



TOP VIEW



SECTION VIEW

NOTES:

1. Quantity - 1
2. Outlet - 61 mm
3. All welds continuous, unless otherwise noted



FLUIDIC-AMP AQUABRAKE STAINLESS STEEL STRAP ATTACHMENT FABRICATION DRAWING

HEAD	1.5	m
DISCHARGE	2.0	lts/sec (ESS-TYPE3)

SOLUTIONS HOUSE
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785

DATE
12/02/2021

DRAWN
MI

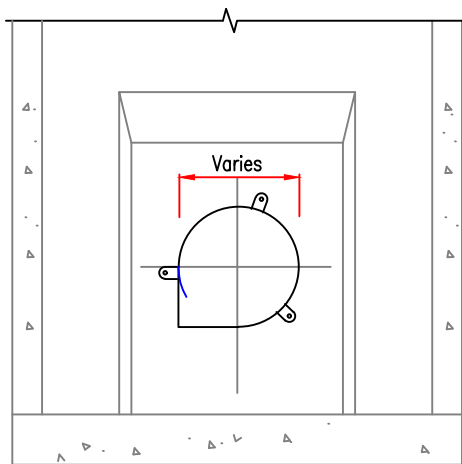
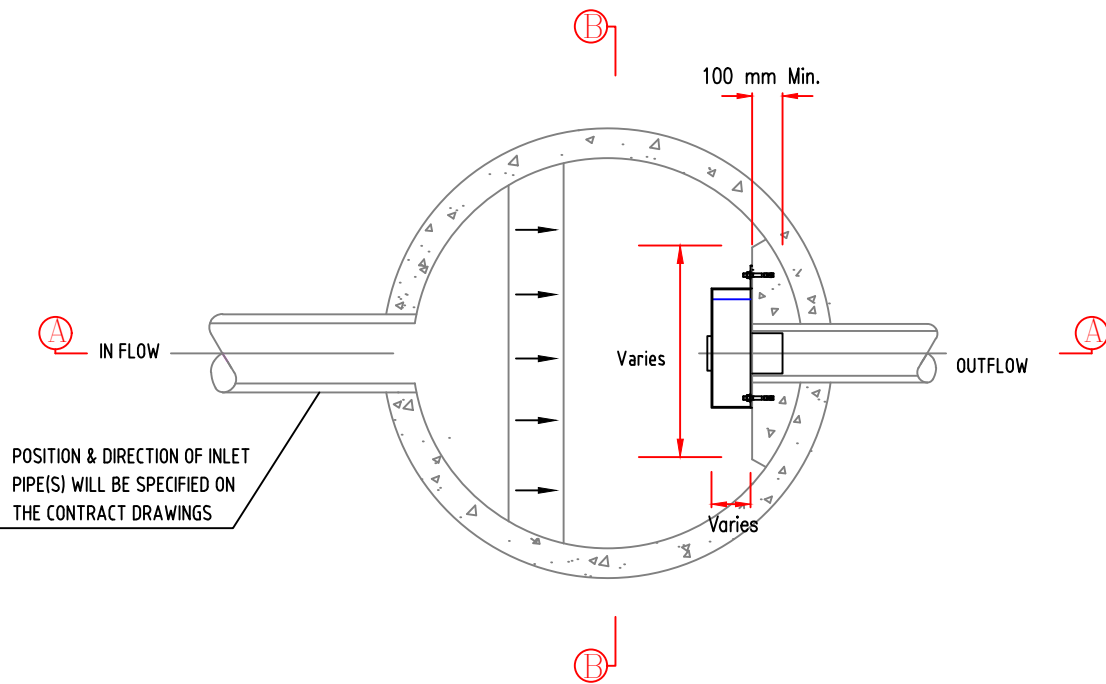
NAME:

SCALE
N.T.S.

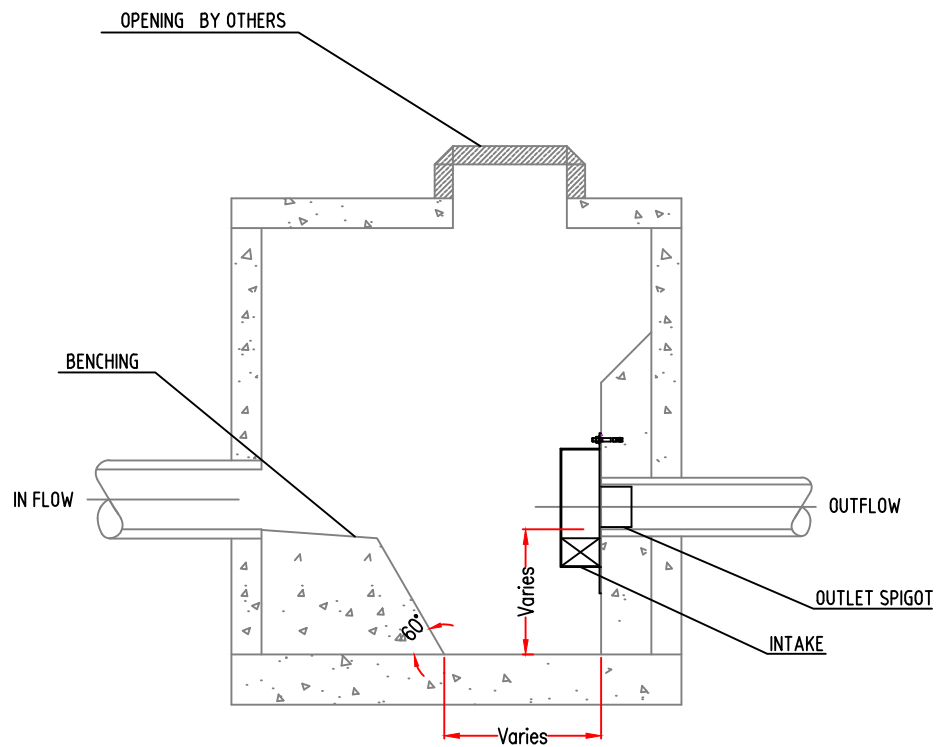
CHECKED
AY

JOB No.

REVISION No.
R0



SECTION B-B



SECTION A-A



SOLUTIONS HOUSE,
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785

TYPICAL DETAILS FOR AQUABRAKE CHAMBER - CONCRETE

HEAD m
DISCHARGE lts/sec

DATE
24/06/2019

DRAWN
VH

PROJECT:

SCALE
N.T.S.

CHECKED
PD

JOB No.

REVISION No.

PLUVIAL CUBE HEAVY DUTY MODULE – DATA SHEET

Pluvial Cube Module Dimensions* (mm)	Module Configuration	Units per m ³	Module Volume (m ³)	Storage Volume (m ³)
500 (L) x 500 (W) x 550 (D)	Single	7.27	0.1375	0.132
500 (L) x 500 (W) x 1075 (D)	Double	3.72	0.2688	0.258
500 (L) x 500 (W) x 1600 (D)	Triple	2.5	0.4	0.384

* Bespoke modules with different configuration available



Single Module



Double Module



Triple Module

Product Data	Heavy Duty Pluvial Cube Module
Application	Stormwater Management
Average Weight (kg) – single module	8
Compressive Strength* (kN/m ²)	400
Lateral Strength* (kN/m ²)	225
Creep Rupture Strength (kN/m ²)	317
Creep Rupture Lateral Strength (kN/m ²)	201
Long Term Creep Testing** (kN/m ²)	200
Void Ratio (%)	96
Surface Void Ratio (%)	Greater than 90
Minimum Backfill Cover Landscaped areas# (mm)	450
Material	Polypropylene
Chemical resistance	Good
Bacterial Resistance	Good
UV Resistance	Good

Note: Other Modules with Compressive Strength more than 1500 kN/m² available

* Modules tested using UKAS calibrated test machine, range 0 – 60 Tons, UDL, loading rate 0.2 kN/m²

** Modules tested for long term creep testing for 90, 180 and 208 days / 5000 hours = 50 years design life.

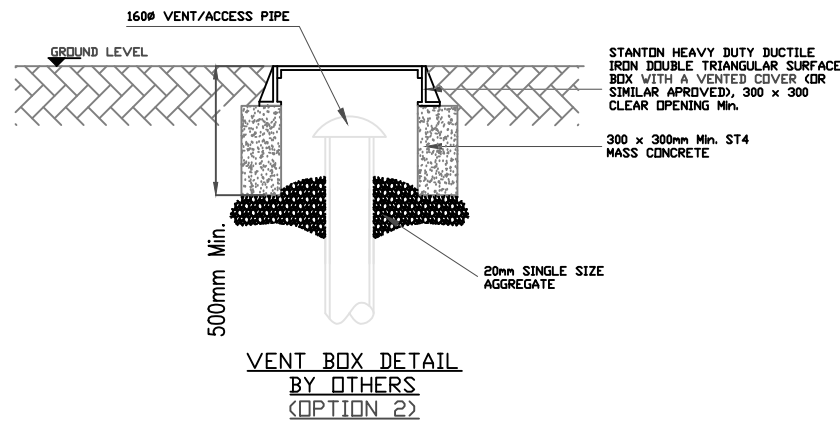
Any cover less than 450 mm and for Min. backfill cover for trafficked areas – contact ESS design department

Maximum depth to invert based on soil type dense sand and gravel for different soil type–contact ESS design department

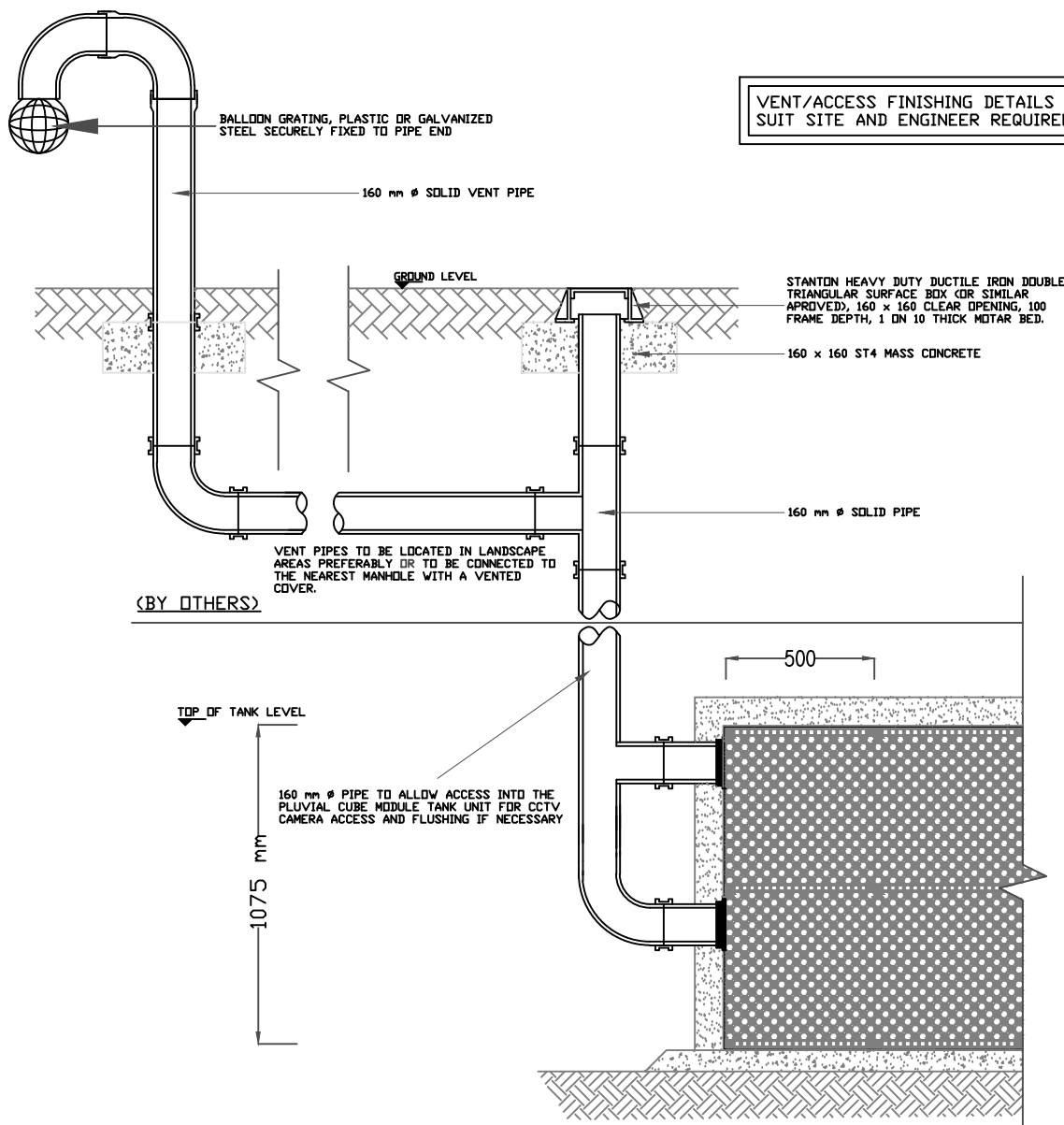
Note: All Alderburgh products are manufactured to the highest quality, being subjected to rigid quality control. However the company cannot control conditions of application and use of its products, thus any warranty, written or implied, is given in good faith for materials only. Alderburgh Ltd will not accept any responsibility for damage or injury arising from storage handling, misapplication or misuse of its products. All transactions are subject to our standard condition of sales, copies of which are available on request. Product design and specification are subject to change without further notice

Solutions House, Dane St.
Rochdale, OL11 4EZ,
Tel: 01706 374416
Fax: 01706 376785
Email: sales@alderburgh.com

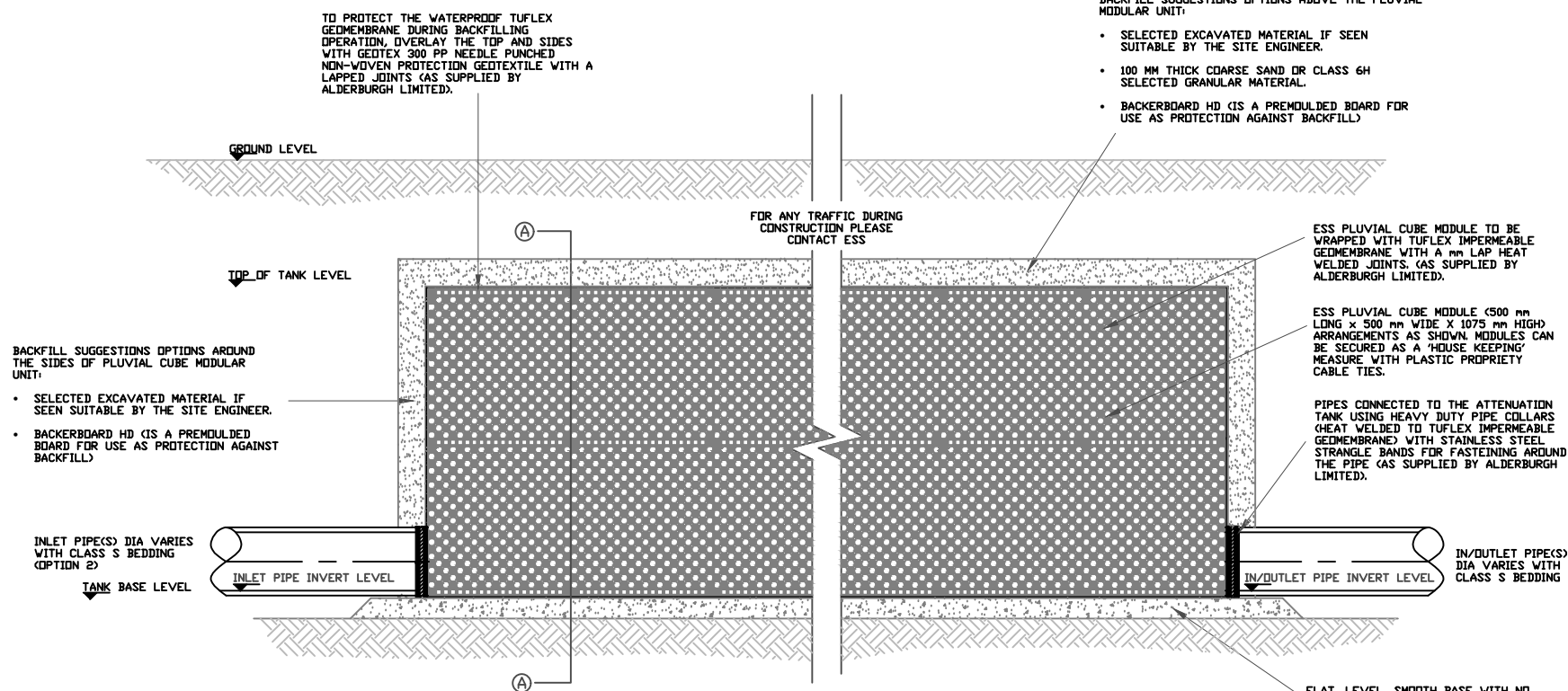




A 3 - 5% CBR HAS BEEN ASSUMED AT SUB-BASE LEVEL SHOULD THE CBR BE TESTED AND FOUND TO BE LESS THAN 3% THEN THE ENGINEER SHALL BE NOTIFIED. ALSO, ANY SOFT SPOTS FOUND AT SUB-BASE LEVEL SHALL BE REPORTED TO THE ENGINEER



TYPICAL 160# VENT/ACCESS PIPE CONNECTION
OPTION 1



TYPICAL INLET PIPE CONNECTION

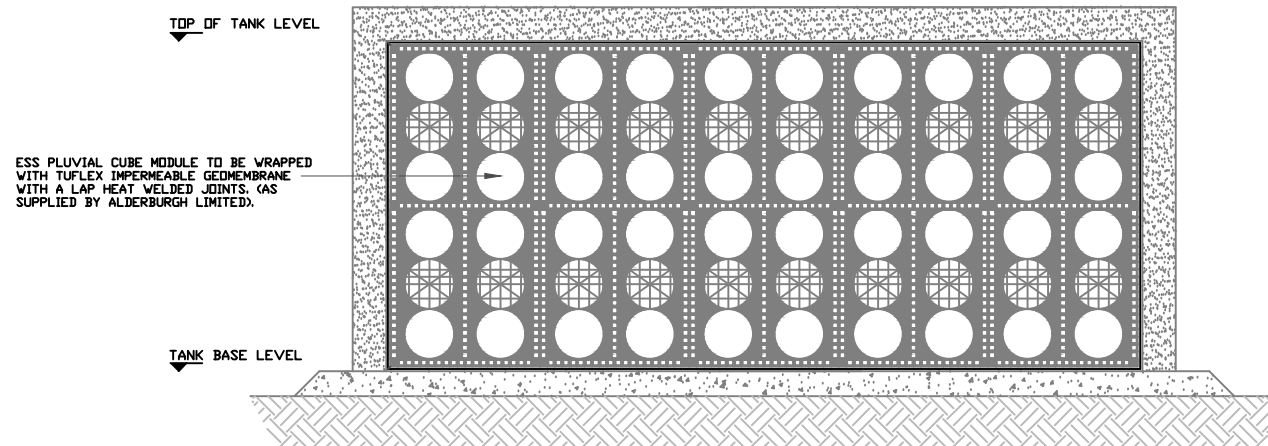
TYPICAL IN/OUTLET PIPE CONNECTION

TYPICAL DETAILS OF ATTENUATION TANK USING PLUVIAL CUBE MODULE UNITS

VENT/ACCESS FINISHING DETAILS OPTIONS TO SUIT SITE AND ENGINEER REQUIREMENTS

THE CONTRACTOR SHALL PROHIBIT THE MOVEMENT OF CONSTRUCTION PLANT ACROSS THE STORAGE TANK AND WHERE NECESSARY PROVIDE ADDITIONAL SUPPORT AND PROTECTION TO THE STRUCTURE. PARTICULARLY POST CONSTRUCTION. TEMPORARY FENCING CAN BE USED TO PROHIBIT TRADE STOCKS, PILING MATERIALS, HEAVY PLANTS ETC.,

INLET/OUTLET PIPES MUST BE SUPPORTED WITH CONCRETE TO PROTECT IT DURING BACKFILLING



TYPICAL DETAILS OF ATTENUATION TANK USING PLUVIAL CUBE MODULE UNITS
SECTION A-A

- Notes :-
- ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, METHOD STATEMENTS AND RECOMMENDATIONS OF ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED, ROCHDALE.
 - THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS / SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 - THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
 - THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF PUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
 - ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 - THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN / NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
 - THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY TO PROTECT PEDESTRIANS AND VEHICLES FROM THE WORKING AREAS.
 - TO PROTECT THE ESS AQUADRAIN MODULAR ATTENUATION AND STORAGE TANK FROM CONSTRUCTION SITE DEBRIS, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK UNITS, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS / DRAINAGE HAS BEEN COMPLETED.
 - UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE, NO DEBRIS SHALL BE PERMITTED TO ENTER THE TANK STORAGE SYSTEM.
 - NUMBER OF VENT UNITS DEPENDS ON THE SIZE OF THE TANK (REFER DRAWING)
 - REFER SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY (CONTACT ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED)

Notes :- All the Dimensions by Millimeters

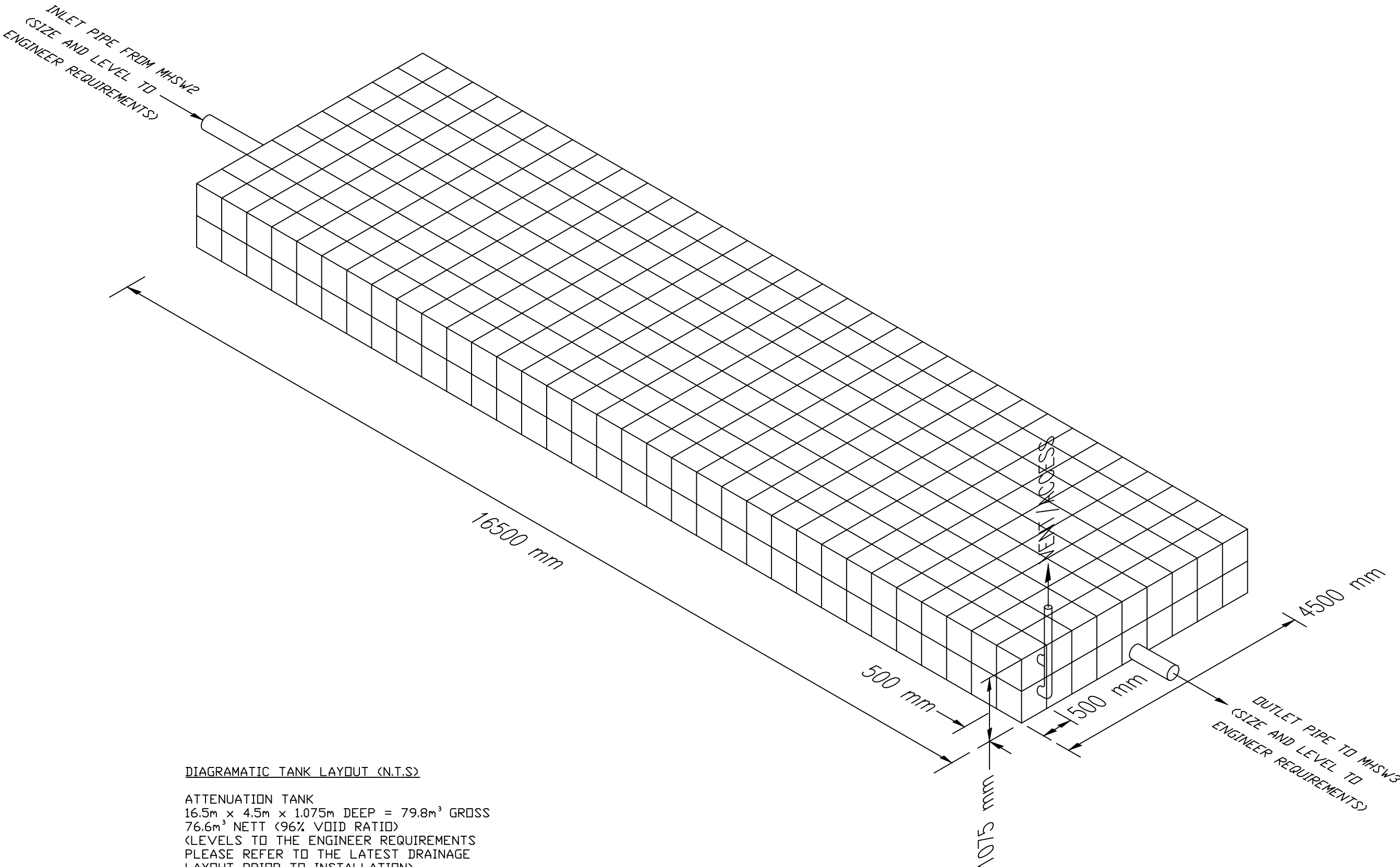


ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED
SOLUTIONS HOUSE
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785
EMAIL: TECHNICAL@Y-ESS.COM

PROJECT
ISLINGTON WHARF PHASE 4,
MANCHESTER M4 6DN
ATTENUATION TANK - DETAILS

TITLE
ATTENUATION / STORAGE TANK
LAYOUT USING PLUVIAL CUBE
MODULES UNITS.

Scale N.T.S.	Drawn AY	Checked KD
Date 12/02/2021	Drawing No. PCST - 2.0 Job Ref. (RP/17120)	Revision R0



DIAGRAMATIC TANK LAYOUT (N.T.S.)

ATTENUATION TANK
16.5m x 4.5m x 1.075m DEEP = 79.8m³ GROSS
76.6m³ NETT (96% VOID RATIO)
(LEVELS TO THE ENGINEER REQUIREMENTS
PLEASE REFER TO THE LATEST DRAINAGE
LAYOUT PRIOR TO INSTALLATION)

- Notes :-
1. ALL STORAGE TANK DRAINAGE WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE SPECIFICATIONS, METHOD STATEMENTS AND RECOMMENDATIONS OF ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED, ROCHDALE.
 2. THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS / SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORKS ON SITE. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 3. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
 4. THE CONTRACTOR SHALL ALLOW FOR DEALING WITH SURFACE WATER RUN-OFF INTO EXCAVATIONS AND FROM GROUNDWATER BY MEANS OF PUMPS, PUMPING AND DE-WATERING AS APPROPRIATE, IN ORDER TO KEEP THE EXCAVATION AS REASONABLY DRY AS POSSIBLE DURING THE CONSTRUCTION OF THE WORKS.
 5. ALL LEVELS AND DIMENSIONS SHALL BE VERIFIED ON SITE PRIOR TO THE COMMENCEMENT OF ANY WORKS. ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
 6. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY PRECAUTIONS IN LINE WITH CURRENT LEGISLATION WHEN WORKING IN / NEAR CONFINED SPACES, DEEP EXCAVATIONS AND MACHINERY.
 7. THE CONTRACTOR SHALL TAKE ALL NECESSARY SAFETY TO PROTECT PEDESTRIANS AND VEHICLES FROM THE WORKING AREAS.
 8. TO PROTECT THE ESS AQUADRAIN MODULAR ATTENUATION AND SOAKAWAY STORAGE TANK FROM CONSTRUCTION SITE DEBRIS, THE CONTRACTOR SHALL ENSURE THAT STOPPERS ARE SECURELY PLACED IN ALL CONNECTIONS IMMEDIATELY UPSTREAM OF THE TANK UNITS, ONLY TO BE REMOVED ONCE THE FINAL CLEANING OF THE ROADS / DRAINAGE HAS BEEN COMPLETED.
 9. UPON COMPLETION OF THE WORKS THE CONTRACTOR SHALL CLEAN ALL DRAINAGE BY JETTING, REMOVING ALL DEBRIS FROM SITE, NO DEBRIS SHALL BE PERMITTED TO ENTER THE TANK STORAGE SYSTEM.
 10. NUMBER OF VENT UNITS DEPENDS ON THE SIZE OF THE TANK (REFER VENT DRAWING)
 11. REFER SEQUENCE OF WORK DOCUMENT FOR DETAILED INSTALLATION METHODOLOGY (CONTACT ENVIRONMENTAL SUSTAINABLE SOLUTIONS (ESS) LIMITED)

Notes :- All the Dimensions by Millimeters



ENVIRONMENTAL SUSTAINABLE SOLUTIONS
(ESS) LIMITED
SOLUTIONS HOUSE
DANE STREET
ROCHDALE
OL11 4EZ
TEL: 01706 374416
FAX 01706 376785
EMAIL: TECHNICAL@Y-ESS.COM

PROJECT
ISLINGTON WHARF PHASE 4,
MANCHESTER M4 6DN
ATTENUATION TANK - LAYOUT

TITLE
ATTENUATION / STORAGE TANK
LAYOUT USING PLUVIAL CUBE
MODULES UNITS.

Scale N.T.S.	Drawn AY	Checked KD
Date 12/02/2021	Drawing No. PCST - 2.1 Job Ref. (RP/17120)	Revision R0

Appendix E

Notes:

- This drawing is to be read in conjunction with all relevant drawings, specifications and documentation.
- The position, size and levels of all drains are to be confirmed on site prior to the commencement of the works and any discrepancies reported immediately to the Engineer.
- Do not scale from this drawing, work to dimensions or co-ordinates provided. All levels are in metres and all dimensions are in millimetres, unless otherwise noted.
- The Contractor shall allow for the protection, temporary and permanent support and diversion works as necessary, to all existing services to the satisfaction of the public utilities.
- The Contractor shall allow for dealing with surface water run-off into excavations and from groundwater by means of sumps, pumping and de-watering as appropriate, in order to keep the excavation as reasonably dry as possible during the construction of the works.
- Any gradients of drains indicated are indicative only and the Contractor shall install the drains to the specified levels shown for each manhole (U.N.O). Catchpit invert levels are for the outgoing pipe with the sump level specified separately.
- Co-ordinate setting out information for manholes is to the intersection the drains and not the centre of the manhole.
- Cover levels of the manholes are provisional and subject to adjustment on site to suit the finished ground levels. All external works construction areas to be as located by the architect.
- Positions and sizes of above ground foul and surface water drainage connections are to be confirmed prior to construction with the Architect and M&E Engineer.
- Diameter of PCC manholes varies with pipe size, and is to be in accordance with the tables shown on the accompanying Hydrock Standard Details drawings.
- Channels are to be sized by the supplier and approved by the Engineer in writing prior to ordering. Drainage channels to be installed to manufacturers' requirements. Design of channels shall be based on a 1 in 30 year storm return period, 15 minute duration.
- All works are assumed to be within public highway or within land owners lands & no works are required on third party land owners property.
- Design assumes that no water authority sewers or other drainage systems require modification, diversion or abandoning.
- All works within the public highway to be reinstated to highway authority requirements.
- No deep rooting trees/vegetation should be planted within 5.0m of any drainage works.
- All WPC's, SRWP's and RWP's are shown indicatively. Locations shall be confirmed by others.
- All manholes less than 1.5m deep are considered as none man entry and shall be maintained from ground level.
- Rainwater downpipe locations in abeyance.

Notes:

- All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Project Manager for verification. Figured dimensions only are to be taken from this drawing.
- This drawing is to be read in conjunction with all relevant Contract Issue drawings and specifications.
- Finer details may vary subject to detailed design, such as location of linear drainage, exact positioning of pipes and manholes.

Key:

- Proposed Surface Water Drainage
- Proposed Foul Water Drainage
- Proposed Combined Drainage
- Proposed Filter Drain Type K to HCD F2
- Existing Combined Drainage
- Existing Private Drainage to be Abandoned
- Drainage Channel ACO Multidrain M150PPD with Heelguard Slotted Ductile Iron Grating

C15	09.05.23	Drainage channel gully amended	CF	NB
C14	13.04.23	Drainage channel information added	CF	NB
C13	11.04.23	Drainage amended to match as-built, Drainage channel information added	CF	NB
C12	15.02.22	Drainage amended to match as-built	CF	NB
C11	12.01.22	Addition of CPSW2a, invert levels amended to match as-built	CF	NB
C10	15.12.21	Pop-ups amended to match arch. layout	CF	NB
C09	09.12.21	Minor Amendments	SJ	CF
C08	26.11.21	Floor gullies amended	SJ	CF
C07	09.11.21	MHSW2 to CP, tail sizes added	SJ	CF
C06	11.10.21	Architect's layout updated.	SJ	CF
C05	15.09.21	Architect's layout updated. 5 no. floor gullies added	SJ	CF
C04	13.09.21	MHSW1 changed to PPIC. Addition of PPICSW1 & PPICSW2. Manholes adjusted to avoid pilecaps	SJ	CF
C03	02.09.21	Attenuation tank updated. Manholes adjusted to avoid existing substation	SJ	CF
C02	20.07.21	Attenuation tank updated	SJ	CF
C01	02.07.21	Issued for construction	SJ	CF
P08	01.07.21	Updated in line with contractor comments	SJ	CF
P07	22.06.21	Pop-ups updated	SJ	CF
P06	05.05.21	Manhole connection updated. Pop-ups updated	BP	NB
P05	04.02.21	Pop up SS-01 removed. MHCB1 adjusted	ME	NB
P04	26.01.21	Outfall Connection amended	BP	NB
P03	11.12.20	Drainage amended to suit pop-up locations	CF	NB
Rev	Date	Description	By	Ckd

Architect :

Ryder

Hydrock Consultants Ltd
15 Baker Street, London W1A 0UE
T: +44 (0)20 7123 3940
www.hydrock.com

Client :

WATER-SIDE
PLACES

Project Title:

ISLINGTON WHARF - PHASE 4
MANCHESTER

Drawing Title:

DRAINAGE LAYOUT

Drawing Status:

CONSTRUCTION

Hydrock Job No:

C10042

Drawn	Checked	Scale @ A1	Date	Issue Date
BP	NB	1:100	09.10.2020	09.10.2020

Drawing Number:	Revision:
IW4-HYD-XX-XX-DR-C-0210	C15

SAFETY, HEALTH AND
ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION

MAINTENANCE / CLEANING

DECOMMISSIONING / DEMOLITION

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT

This drawing is the copyright of Hydrock Consultants Ltd