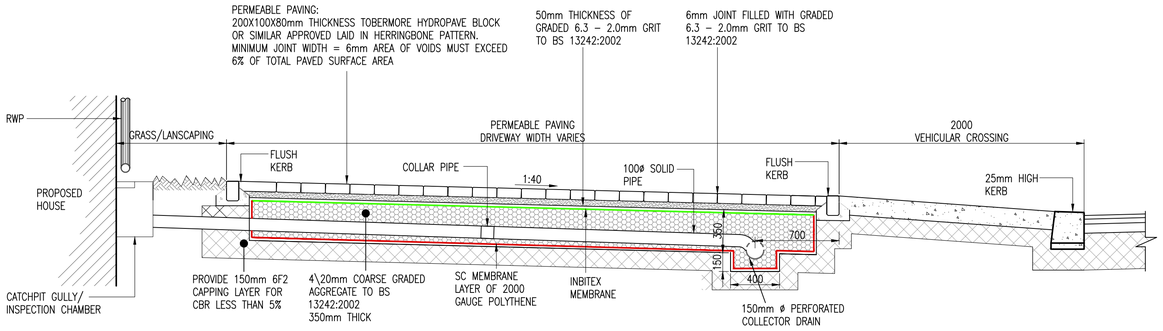
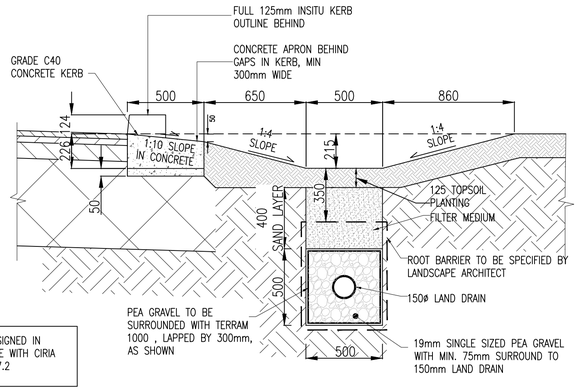


TYPICAL SECTION THROUGH PRIVATE DRIVEWAY PERMEABLE PAVING

SCALE 1:25



SWALES DESIGNED IN ACCORDANCE WITH CIRIA 735, FIG 17.2

SECTION OF SWALE

SCALE 1:20

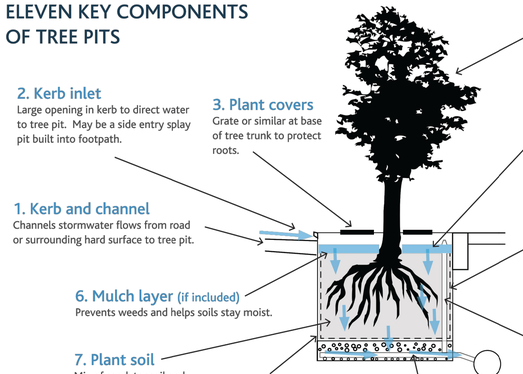
WHAT ARE TREE PITS?

Tree pits collect stormwater runoff from small carpark areas or roads. Runoff filters through the tree roots and surrounding soil mix, trapping sediment and pollutants before flowing to a piped stormwater system.

TREE PITS Construction Guide

STORMWATER DEVICE INFORMATION SERIES

ELEVEN KEY COMPONENTS OF TREE PITS



2. Kerb inlet
Large opening in kerb to direct water to tree pit. May be a side entry splay pit built into footpath.

3. Plant covers
Grate or similar at base of tree trunk to protect roots.

4. Plants
Usually one large shrub or tree to help filter runoff, look attractive, and withstand extreme wet and dry periods.

1. Kerb and channel
Channels stormwater flows from road or surrounding hard surface to tree pit.

5. Ponding area
Area around tree set lower than surrounding ground where stormwater ponds before filtering through soil.

8. Root barrier (if included)
Specially manufactured free-draining geotextile fabric used to line tree pit, preventing roots growing outside area and causing damage to utility services, building foundations and roadways.

6. Mulch layer (if included)
Prevents weeds and helps soils stay moist.

7. Plant soil
Mix of sand, topsoil and compost, without clay and silt to drain well.

9. Waterproof lining (if included) Used to avoid saturating tree pit in areas of poor draining soils or where groundwater lies close to ground surface.

10. Underdrain
Set in base of pit to collect water draining through pit and direct to stormwater network.

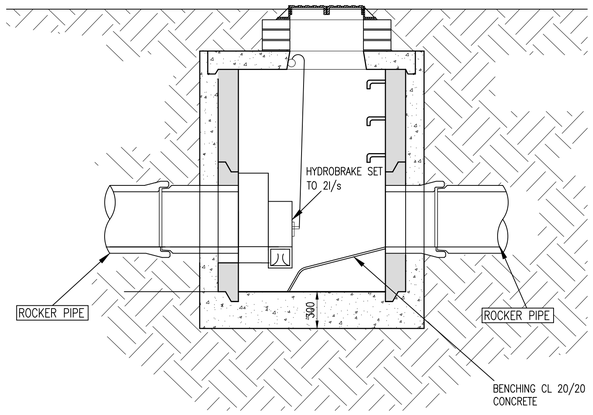
11. Overflow and observation well (if included) is a standpipe or channel grate to divert higher than usual flows from tree pit to piped stormwater network. Observation well, similar to capped riser, to monitor water depth and drainage rates in pit. Discharge and overflow pipes may also have clean-out and inspection points, usually capped.

TREE PIT DETAIL (N.T.S)

USE A PROPRIETARY BIO-RETENTION SUDS TREE PIT, OR SIMILAR APPROVED".

NOTES:

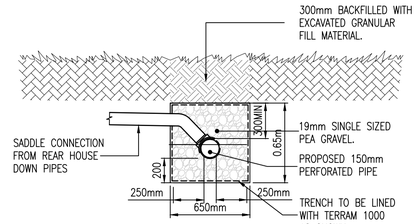
1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.



PROPOSED HYDROBRAKE MANHOLE

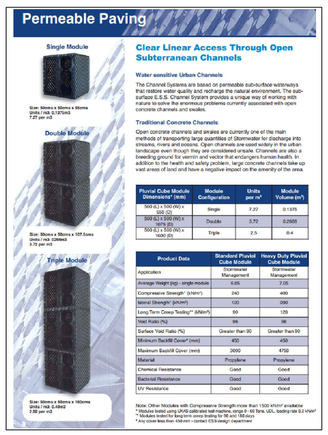
SCALE 1:25

NOTE: FOR FURTHER DETAILS ON MANHOLE CONSTRUCTION PLEASE REFER TO DRAWING 13-119 P4210 & 4211 FOR DETAILS



FILTER DRAIN DETAIL

SCALE 1:25 @ A1

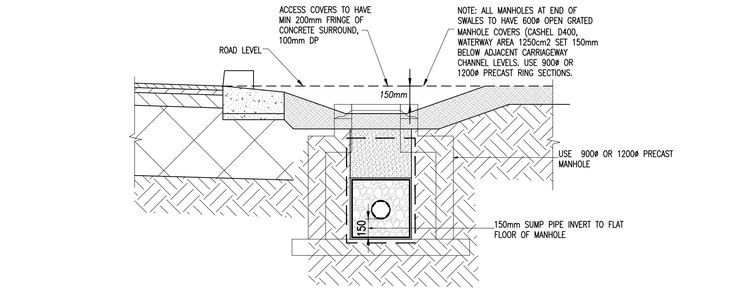


Pluvial Cube Module Dimensions (W / H / L)	Module Configuration	Units per m^3	Module Volume (m^3)
500 (L) x 500 (W) x 500 (D)	Single	7.27	0.1375
500 (L) x 500 (W) x 1000 (D)	Double	3.72	0.2650
500 (L) x 500 (W) x 1500 (D)	Triple	2.5	0.4

Product Data	Standard Pluvial Cube Module	Heavy Duty Pluvial Cube Module
Application	Stormwater Management	Stormwater Management
Average Weight (kg) - single module	6.86	7.25
Compressive Strength* (kN/m²)	240	400
Lateral Strength* (kN/m²)	120	200
Long Term Creep Testing** (kN/m²)	60	120
Void Ratio (%)	96	96
Surface Void Ratio (%)	Greater than 90	Greater than 90
Minimum Backfill Cover*** (mm)	450	450
Maximum Backfill Cover (mm)	2000	4750
Material	Polypalene	Polypalene
Chemical Resistance	Good	Good
Bacterial Resistance	Good	Good
UV Resistance	Good	Good

Note: Other Modules with Compressive Strength more than 1300 kN/m² available
* Modules tested using UKAS calibrated self-machine, range 0 - 60 Tons, UDL, loading rate 0.3 m/min²
** Modules tested for long term creep testing for 56 and 180 days
*** Any cover less than 450 mm - contact ESS Design Department

TYPICAL DETAILS OF PLUVIAL CUBE UNITS



SECTION OF SWALE THROUGH LAND DRAIN OVERFLOW MANHOLE

SCALE 1:20

Dimensions and Weights

General arrangement drawings of all units are available for download from: http://www.hydro-int.com/en-gb/products/downstream-defender-0

Unit	External Diameter of Unit (mm)	Inlet & Outlet Pipe Diameter (mm)	Depth (m) A	Depth (m) B	Depth (m) Component Depth a)	Lift Weight (t)
1.2 m Sealed Manhole System with HD Cover Slab	1460	300	1.910	2.600	2.830	
HD Cover Slab b)					0.230	0.6
Base Section					0.825	1.5
Top Section					1.765	2.5
1.8 m Sealed Manhole System with HD Cover Slab	2160	450	2.510	3.800	4.050	
HD Cover Slab b)					0.290	1.4
Base Section					1.235	5.0
Top Section					2.485	8.0
2.55 m System with HD Cover Slab	2850	600	2.950	4.750	4.950	
HD Cover Slab b)					0.200	2.8
Base Section					1.750	8.0
Top Section					3.000	10.0
3.0 m System with HD Cover Slab	3350	750	3.125	5.000	5.200	
HD Cover Slab b)					0.200	4.6
Base Section					2.000	12.5
Top Section					3.000	14.0

Notes:
a) Base and Top Section component depths are shown as the total height during transportation / before assembly on site. The total depth is the depth of the assembled unit.
b) Cover slabs are heavy duty, suited for highways loading and are supplied with one or two access openings for maintenance.
c) Inlets and outlets are supplied with cast-in holes only. No stub pipes are provided.

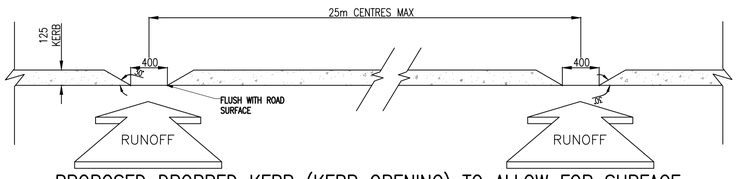
Dimensional Tolerances: Height ± 25 mm; Diameter ± 12 mm; Wall Thickness ± 10 mm

Table 2 - Downstream Defender® dimensions and weights.

Page 3 of 4

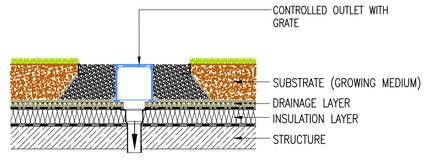
The Hydro StormTrain® Series

StormTrain® Hotline: 01275 337955
stormtrain@hydro-int.com



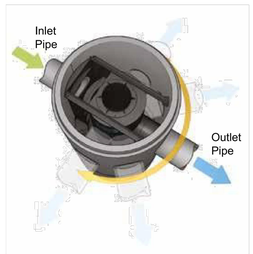
PROPOSED DROPPED KERB (KERB OPENING) TO ALLOW FOR SURFACE WATER RUN-OFF

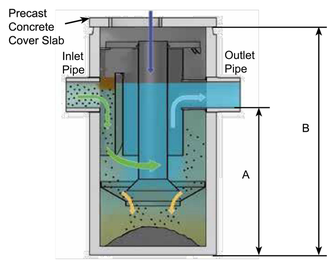
SCALE 1:25



GREEN ROOF PODIUM OUTLET

SCALE 1:25





DOWN STREAM DEFENDER

N.T.S

1:25 0 0.5 1.0 1.5 2.0 2.5m

1:1 0 10 20 30 40 50 60 70 80 90 100m

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
BLOCK S, EASTPOINT BUSINESS PARK, ALFIE BYRNE ROAD, DUBLIN D03 K7W7 IRELAND.
Tel: (01) 664 8900 Fax: (01) 661 3618
Email: info@waterman-moylan.ie www.waterman-moylan.ie

CLIENT	GERARD GANNON PROPERTIES
ARCHITECT	CONNOLLY ARCHITECTS
PROJECT	LANDS AT KILNAHUE & GOREY HILL, GOREY
TITLE	TYPICAL SuDS DEVICES & HYDROBARKE MANHOLE DETAILS

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA	MD	MARCH 2022
SCALE 1:25 @ A1	JOB NO. 13-119	DRG. NO. P4251	REVISION