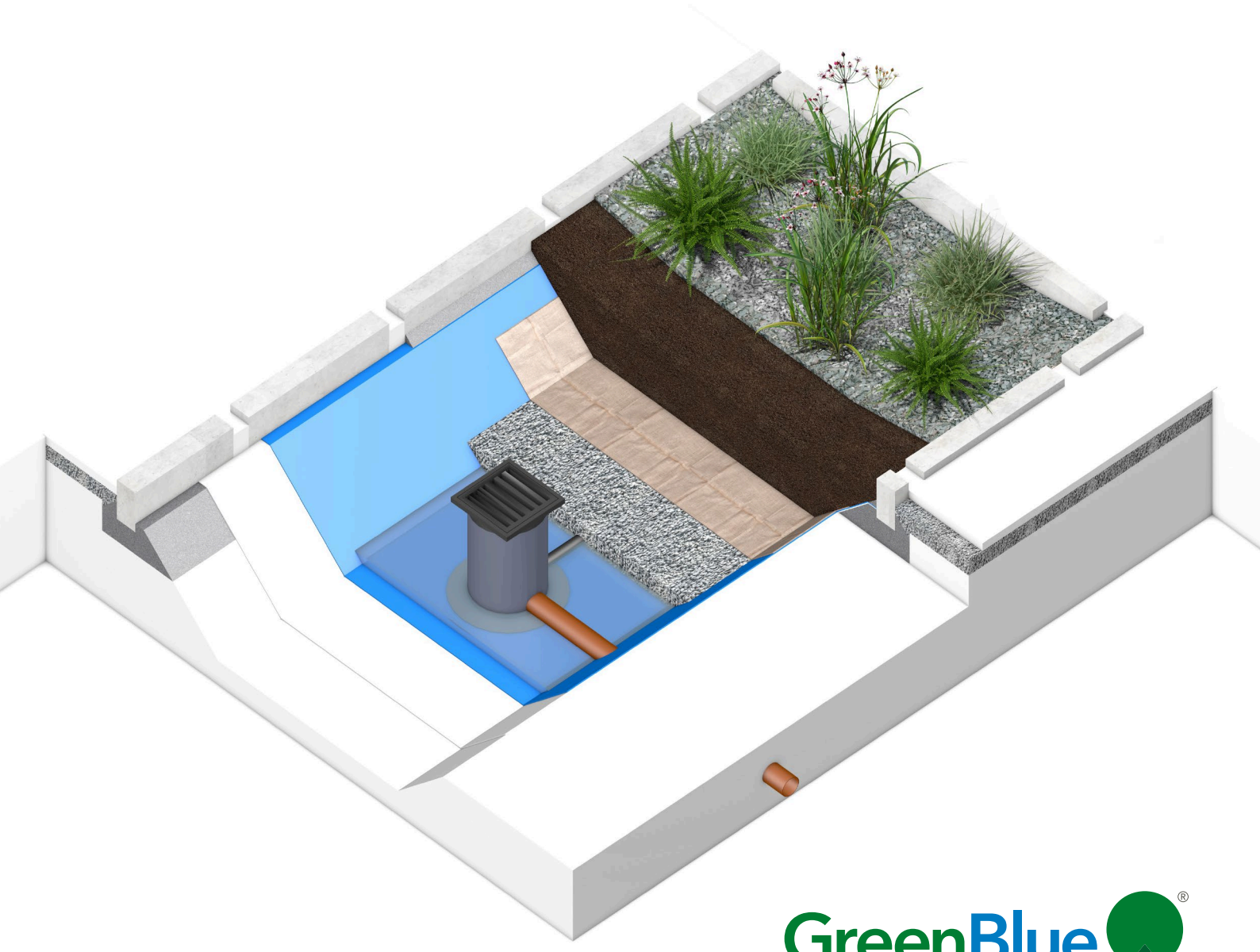
HydroPlanter FLEX

Flexible Rain Garden System



GreenBlue URBAN

Creating healthier spaces in harmony with nature

Introducing the HydroPlanter FLEX

Building on the enthusiastic reception and adoption of our HydroPlanter rain garden system, and in response to calls for more extensive rain gardens and flexibility of shape, GreenBlue Urban are excited to launch the first fully integrated rain garden system - the HydroPlanter Flex!

Rain gardens are increasingly chosen as a best practice option, supporting the four pillars of SuDS (water quality, water quantity, amenity, and biodiversity) due to being cost efficient and highly effective. Simple to retrofit into highways schemes and ideal for new developments of any size, the HydroPlanter Flex cuts the complexity and unknowns out of design and installation.

Whilst being simple to design and adapt to site constraints, this system is the perfect solution for engineers, contractors and housebuilders required to meet regional SuDS regulations.

Features

- Comprehensive package of components in a single system
- Impermeable liner, drainage stone, bioretention soil and pipework included
- Exceedance Chamber for overflow and inspection/maintenance
- Full design/specification support for architects and drainage/SuDS engineers

Cuts complexity with a single easy-to-use, off-the-shelf package

Drainage aggregates

Filtration membranes

Drainage Pipe System

Exceedance Flow System

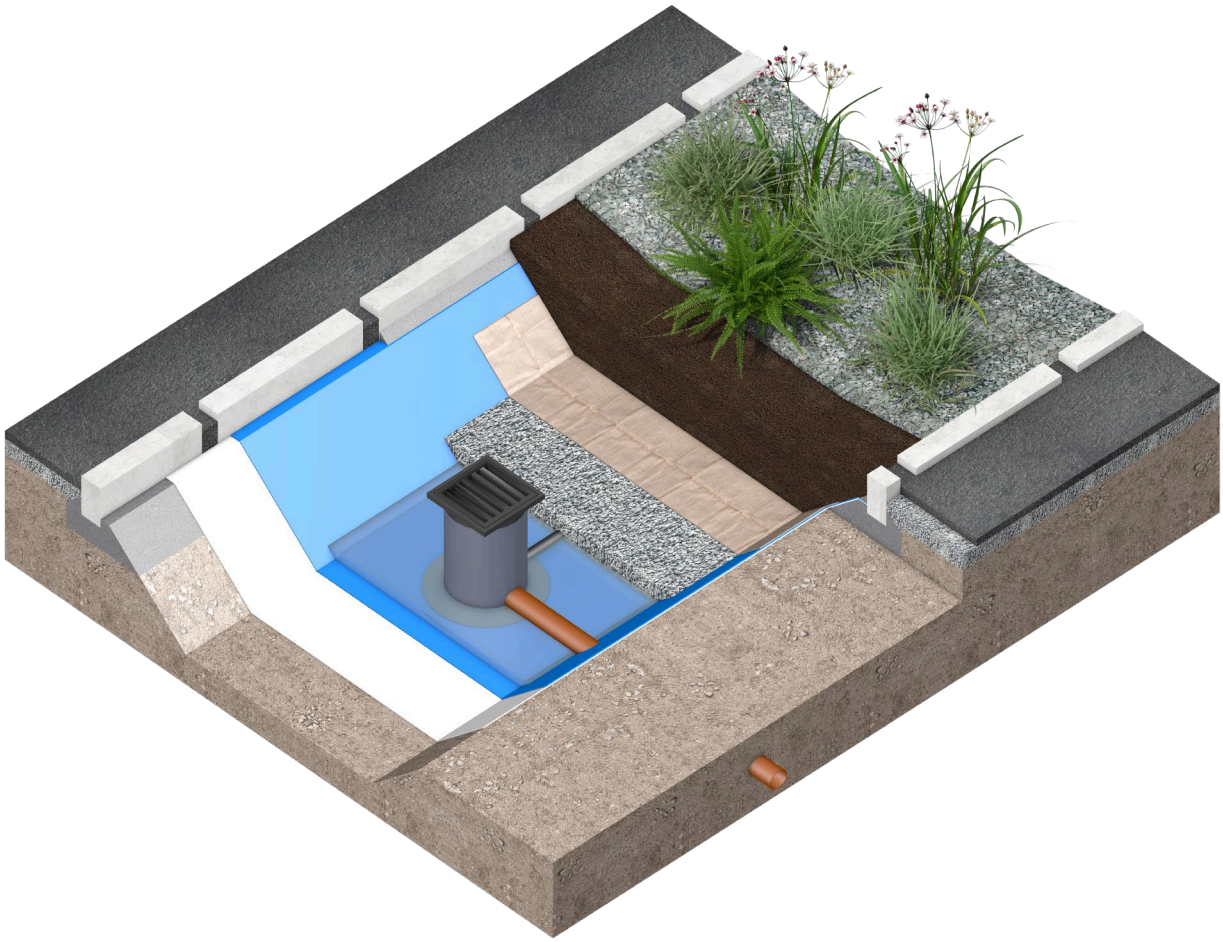
ASH-MAX bioretention soil

Benefits

- Cuts complexity in specification, design and installation
- Low maintenance
- Reduces flood risk
- Nature based water cleansing
- Delivers improved amenity values
- Enhanced biodiversity with green infrastructure

- Water Quantity
- Water Quality
- Amenity
- Biodiversity

HydroPlanter FLEX Components

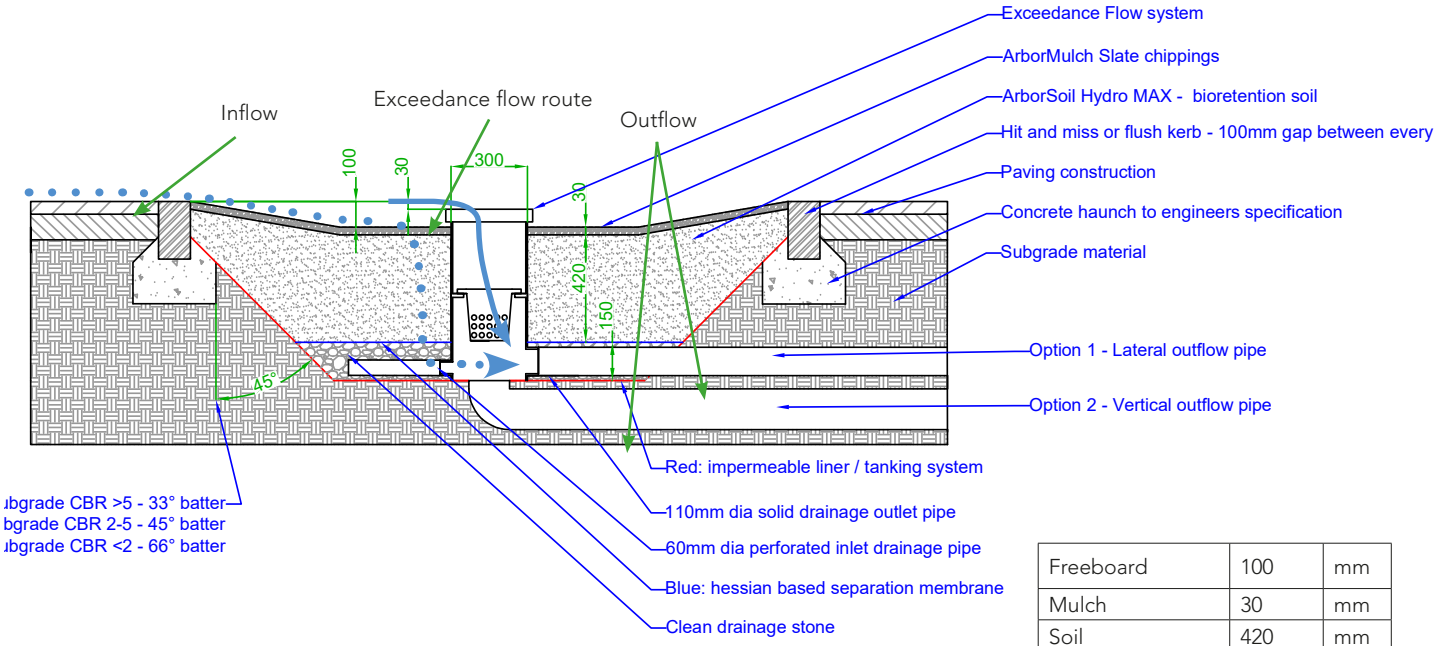


Product code	Description	Unit
HPFRGSN	HydroPlanter Flex Rain Garden System - Non-Infiltration	Square meter
HPFRGSI	HydroPlanter Flex Rain Garden System - Infiltration	Square meter
IMJTA	HydroPlanter Flex Doublesided Tape	Roll

Included in the system:

- Liner system (Infiltration or Non-Infiltration options)
- Drainage aggregates
- Filtration membranes
- Drainage pipe system
- ASH-MAX bioretention soil
- Exceedance flow system
- Stone mulch layer

Lateral & vertical drain outlet options



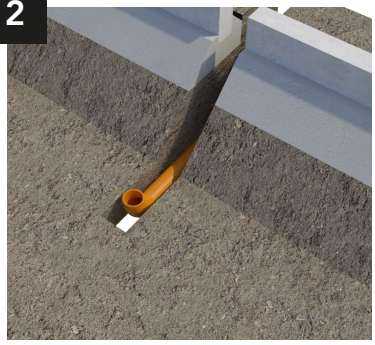
Freeboard	100	mm
Mulch	30	mm
Soil	420	mm
Drainage stone	150	mm
TOTAL DEPTH	700	mm

Installation Overview

View full install guide online.
Scan the QR code to view online.

1

2



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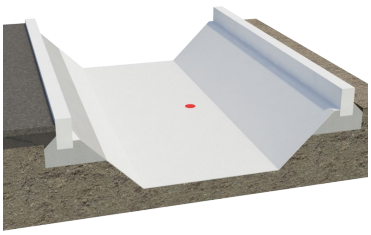

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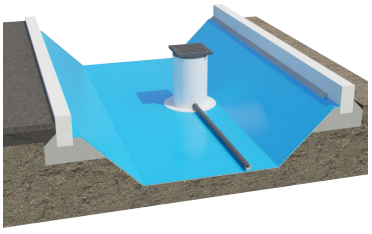

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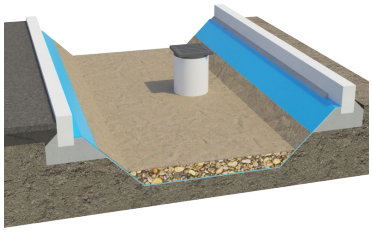

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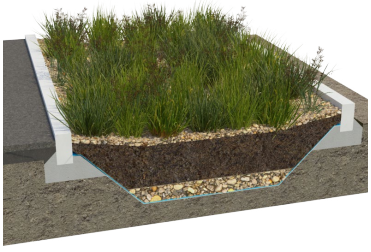


Planting Schemes & Suggested Plants

When building a planting pallette care must be taken to select plants that are drought tolerant rather than wetland plants as the average UK raingarden would spend a considerable proportion of it's working life in dry conditions.

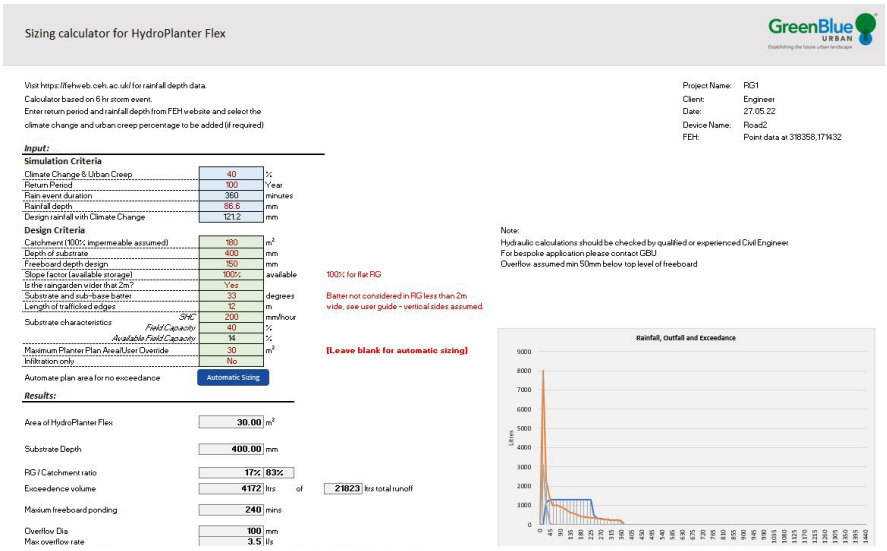
This is a suggested list of plants which are suitable for rain gardens.

Common Name	Latin Name	Habit	Sunlight and Aspect
Guelder Rose	Viburnum opulus	Perennial shrub	Any
Dogwood	Cornus sanguinea	Perennial shrub	Any
Culvers root	Veronicastrum virginicum	Herbaceous perennial	Full sun or partial shade
Aster	Aster spp.	Herbaceous perennial	Full sun or partial shade
Black eyed susan	Rudbeckia hirta	Herbaceous annual or biennial	Full sun or partial shade
Stinking hellebore	Helleborus foetidus	Herbaceous perennial	Full sun or partial shade
Montbretia	Crocosmia spp.	Deciduous rhizomatous perennial	Partial shade
Bugle	Ajuga reptans	Rhizomatous perennial	Partial shade
Columbine	Aquilegia spp.	Herbaceous perennial	Full sun or partial shade
Inula	Inula hookeri	Herbaceous perennial	Partial shade
Hemp agrimony	Eupatorium cannabinum	Herbaceous perennial	Full sun or partial shade
Bellflower	Campanula glomerata	Herbaceous perennial	Full sun or partial shade
Sneezeweed	Helenium sp.	Herbaceous perennial	Full sun
Lesser periwinkle	Vinca minor	Perennial sub-shrub	Any
Elephants ear	Bergenia sp.	Rhizomatous perennial	Full sun or partial shade
Plantain lilies	Hosta spp.	Herbaceous perennial	Partial shade
Yellow flag	Iris pseudocorus	Rhizomatous perennial	Full sun or partial shade
Siberian flag	Iris sibirica	Rhizomatous perennial	Full sun or partial shade
Garlic and onions	Allium spp.	Bulbous perennial	Full sun
Soft rush	Juncus effusus	Evergreen perennial	Full sun or partial shade
Pendulous sedge	Carex pendula	Rhizomatous perennial	Full sun or partial shade
Zebra grass	Miscanthis sinensis	Deciduous perennial grass	Full sun
Switch grass	Panicum virgatum	Deciduous perennial grass	Full sun
Royal fern	Osmunda regalis	Deciduous fern	Any
Male fern	Dryopteris felix-mas	Deciduous or evergreen fern	Full sun or partial shade
Broad buckler fern	Dryopteris dilatata	Deciduous or evergreen fern	Full sun or partial shade

(Note that care must also be taken when selecting trees within the planting pallette, ensure that rooting volume provided is sufficient for the selected species. Please review our publication 'Tree Species Soil Volume Guide')

HydroPlanter Flex Hydraulic Calculator

GreenBlue Urban are proud to announce a brand new calculator tool for engineers, councils and contractors to automatically size HydroPlanter Flex rain gardens. The calculator will generate an accurate hydrograph showing water inflow and outflow rates, and any exceedance flow.


Sizing calculator for HydroPlanter Flex

GreenBlue URBAN

Visit https://fehweb.ceh.ac.uk/ for rainfall depth data.
Calculator based on 6 hr storm event.
Enter return period and rainfall depth from FEH website and select the climate change and urban creep percentage to be added (if required)

Project Name: RG1
Client: Engineer
Date: 27.05.22
Device Name: Road2
FEH: Point data at 318358,171432

Input:

Simulation Criteria		
Climate Change & Urban Creep	40	%
Return Period	100	Year
Rain event duration	360	minutes
Rainfall depth	86.6	mm
Design rainfall with Climate Change	121.2	mm
Design Criteria		
Catchment (100% impermeable assumed)	180	m²
Depth of substrate	400	mm
Freeboard depth design	150	mm
Slope factor (available storage)	100%	available
Is the rain garden wider that 2m?	Yes	
Substrate and sub-base batter	33	degrees
Length of trafficked edges	12	m
Substrate characteristics SHC	200	mm/hour
Field Capacity	40	%
Available Field Capacity	14	%
Maximum Planter Plan Area/User Override	30	m²
Infiltration only	No	
Automate plan area for no exceedance	Automatic Sizing	

100% for flat RG

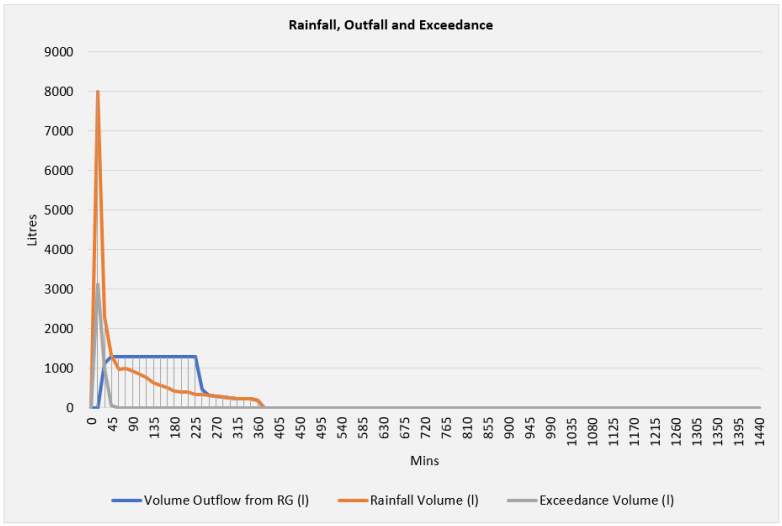
Batter not considered in RG less than 2m wide, see user guide - vertical sides assumed.

[Leave blank for automatic sizing]

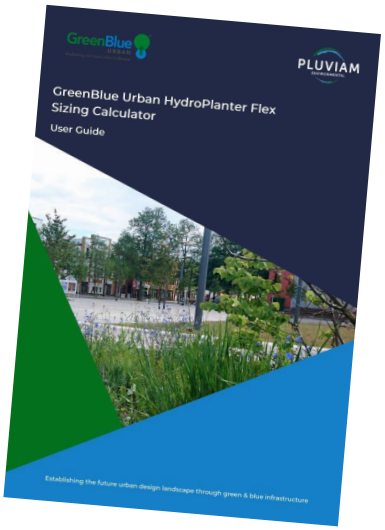
Note:
Hydraulic calculations should be checked by qualified or experienced Civil Engineer
For bespoke application please contact GBU
Overflow assumed min 50mm below top level of freeboard

Results:

Area of HydroPlanter Flex	30.00	m²
Substrate Depth	400.00	mm
RG / Catchment ratio	17%	83%
Exceedence volume	4172	ltrs of 21823 ltrs total runoff
Maxium freeboard ponding	240	mins
Overflow Dia	100	mm
Max overflow rate	3.5	l/s



Example hydrograph



The HydroPlanter Flex Hydraulic Calculator User Guide

- Automatic sizing of HydroPlanter Flex rain gardens
- Generate accurate hydrograph
- Based on realistic soil characteristics such as field capacity, saturated hydraulic conductivity, etc.
- Calculates ponding times and exceedance volumes
- Provide max outflow rates
- Infiltration or fully lined systems
- Allows for correct structural design for adjacent to highways
- Constrained space override
- Specifies minimum outflow duct sizes
- Calculates subgrade infiltration rate requirements
- Simulate variable climate change and urban creep allowances
- Based on FEH rainfall data

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