AMA Consulting Engineers

Response to comments on the SuDS Submission Condition 31

These comments were as follows.

> *They are aiming for a site discharge rate of 2 l/s. Runoff rate reduction is 95% and reduction in runoff volume is 23%, for the 1:100 return event including climate change. This rate is accepted.*
> *….*
> *They have proposed a buried attenuation tank with pumps. The basement drainage layout shows a geocellular tank of 13x2x0.8 m at invert level 98.20 m. Flow control with 2 l/s rating is shown on the tank.*
> *Issue 3 : storage details of the tank (void, internal capacity) and further information on the proposed flow controls are necessary. These would demonstrate the proposal's capacity to meet its targets. The information may be present already e.g. in the handwritten parts but should be highlighted in the main body.*
> *….*
> *the comments about green roofs attenuating rainwater should be explained or revised.*

Issue 3 Response
As suggested the attenuation tank calculation was included in the submission but a typed calculation is attached together with details of a flow control device.

Green Roofs.
Green roofs are susceptible to the antecedent rainfall conditions so they may be saturated before a storm event, during low frequency high intensity rainfall the green roof will become saturated. Therefore the green roof is not considered to contribute to the attenuation storage.

> Reference may be made to The London Borough of Camden *CPG Water and flooding* dated March 2013 Clause 3.14
> "*However, green roofs cannot be considered a permeable soil and should be assumed to be saturated at the point of intense storms (i.e. storms that are intense than a 1 in 10 year storm).*"

This is stated in the SuDS submission at 3.9. as follows.

> "In assessing the volume to be stored no account has been taken of ….. the green roof, as in the event of severe storms it is likely any soft surface will be saturated. *CPG Water and flooding*"

We do not believe this is an undue simplification of the CPG wording, but we would consider any alternative wording the Local Authority may wish.

18035/NAK/19 June 2020

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project	140 Highgate Road
job no	18035
drg/page no	C-SW-5
title	Attenuation Storage Calculation & Flow Control Device
scale	-
date	19/06/20
drawn	NK
checked	

ref

1. Attenuation Tank

1.1. Storage required 20.26 cu m

1.2. Geocell Units 0.5 X1.0 X 0.4 m 95% Voids Ratio
by Polystorm or Aquacell Wavin Or Equivalent approved

1.3. Storage provided 13m x 2 m x 0.8 High

1.4. Gross Volume = 13 x 2 X 0.8 =20.8 cu m

1.5. Nett Volume= .95 x 20.6 19.57 cu m

1.6. Add Manhole 1200 Dia .85 deep 0.96 cu m

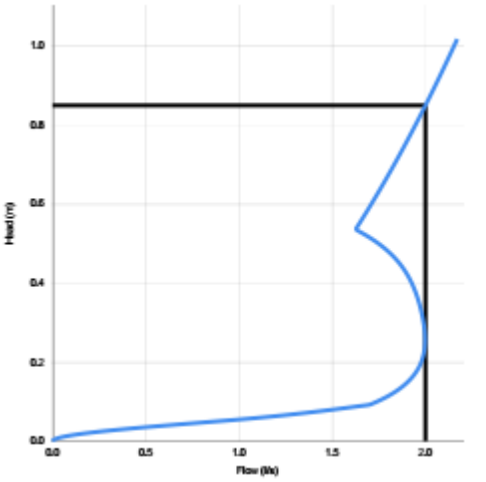
1.7. Total storage provided 20.54 cu m < 20.26 OK

2. Flow Control Device

2.1. Proposed vortex device as Hydro International Data sheet attached.

2.2. Design ref *SHE-0069-2000-0850-2000 Hydro-Brake Optimum®*

Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	0.850	2.000
Flush-Flo	0.257	1.998
Kick-Flo®	0.535	1.624
Mean Flow		1.752



Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	0.850	2.000
Flush-Flo	0.257	1.998
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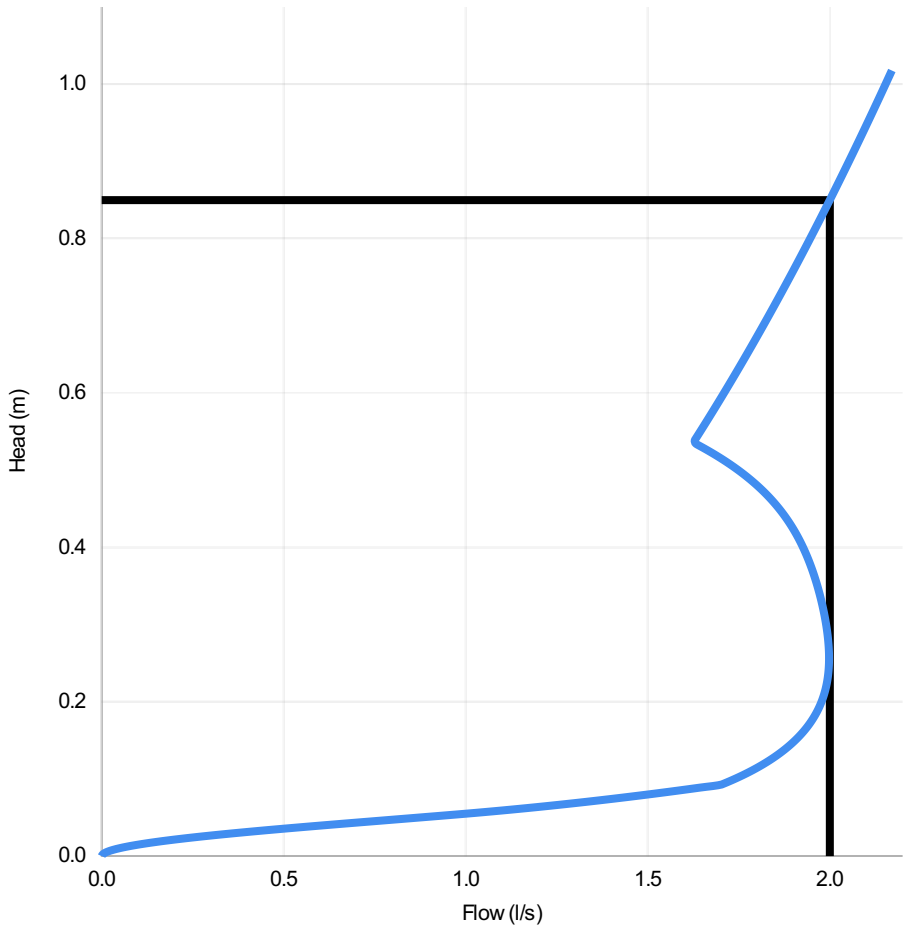
Mean Flow		1.752

BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE No 08/4596

WRc APPROVED
PT/329/0412

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.029	0.355
0.059	1.088
0.088	1.630
0.117	1.811
0.147	1.897
0.176	1.951
0.205	1.981
0.234	1.995
0.264	1.998
0.293	1.992
0.322	1.981
0.352	1.965
0.381	1.944
0.410	1.916
0.440	1.878
0.469	1.825
0.498	1.754
0.528	1.658
0.557	1.653
0.586	1.691
0.616	1.729
0.645	1.765
0.674	1.801
0.703	1.836
0.733	1.870
0.762	1.903
0.791	1.936
0.821	1.968
0.850	2.000

DESIGN ADVICE

The head/flow characteristics of this SHE-0069-2000-0850-2000 Hydro-Brake Optimum® Flow Control are unique. Dynamic hydraulic modelling evaluates the full head/flow characteristic curve.

! **The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.**

Hydro International®

DATE	19/06/2020 16:35
Site	140 Highgate Road
DESIGNER	Nick Kramer
Ref	18035

SHE-0069-2000-0850-2000

Hydro-Brake Optimum®

Technical Specification

Control Point	Head (m)	Flow (l/s)
Primary Design	0.850	2.000
Flush-Flo™	0.257	1.998
Kick-Flo®	0.535	1.624
Mean Flow		1.752

Hydro-Brake® Optimum Flow Control including:

- 3 mm grade 304L stainless steel
- Integral stainless steel pivoting by-pass door allowing clear line of sight through to outlet, c/w stainless steel operating rope
- Beed blasted finish to maximise corrosion resistance
- Stainless steel fixings
- Rubber gasket to seal outlet

BBA APPROVAL INSPECTION TESTING CERTIFICATION CERTIFICATE 08/4596

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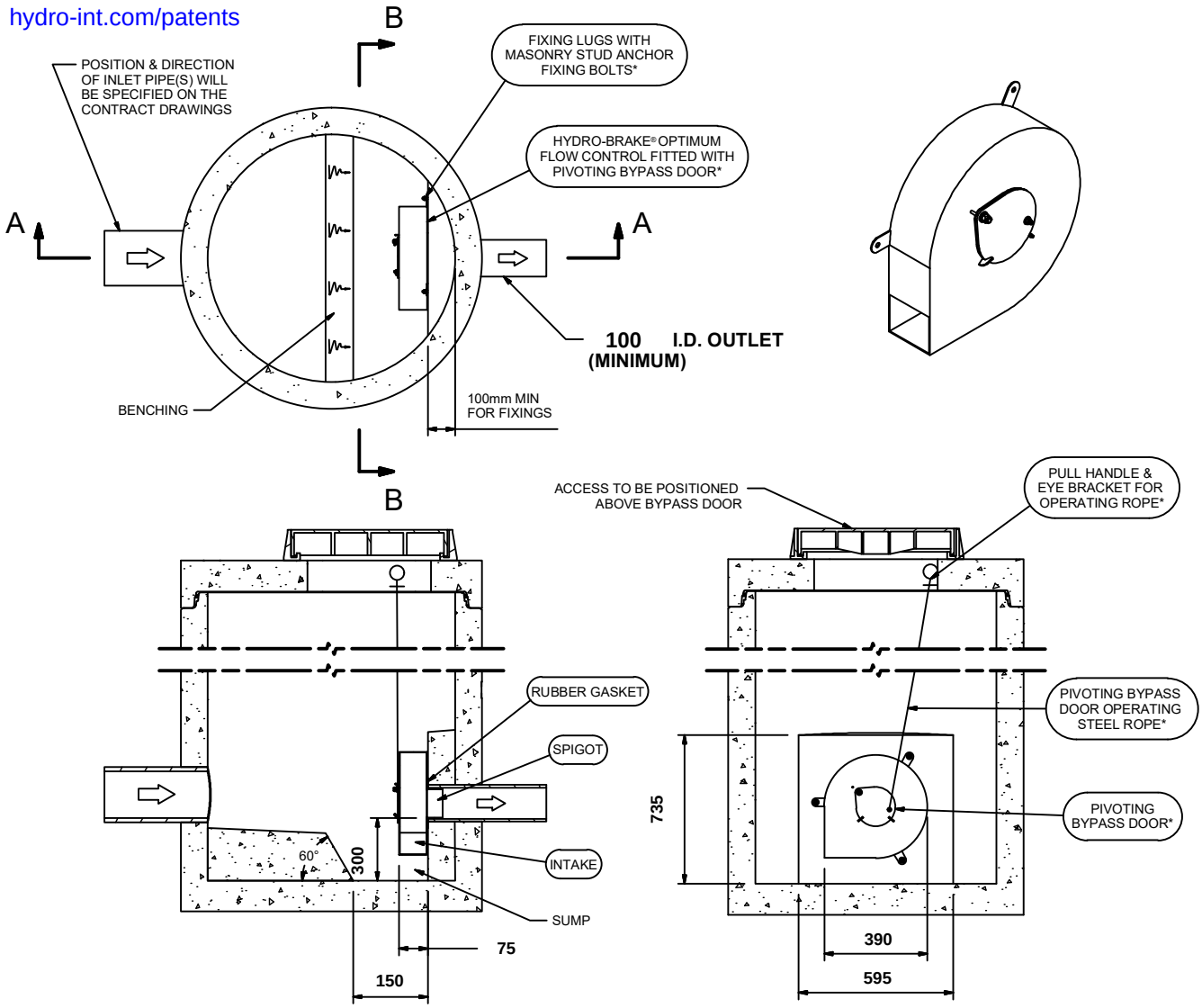

SECTION A-A

SECTION B-B

IMPORTANT: (oval) LIMIT OF HYDRO INTERNATIONAL SUPPLY
THE DEVICE WILL BE HANDED TO SUIT SITE CONDITIONS
FOR SITE SPECIFIC DETAILS AND MINIMUM CHAMBER SIZE REFER TO HYDRO INTERNATIONAL
ALL CIVIL AND INSTALLATION WORK BY OTHERS
* WHERE SUPPLIED
HYDRO-BRAKE® FLOW CONTROL & HYDRO-BRAKE® OPTIMUM FLOW CONTROL ARE REGISTERED TRADEMARKS FOR FLOW CONTROLS DESIGNED AND MANUFACTURED EXCLUSIVELY BY HYDRO INTERNATIONAL

THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE

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The use of any other flow control will invalidate any design based on this data and could constitute a flood risk.

Hydro International®

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Hydro-Brake® Optimum

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