

To:	Manchester City Council LLFA	Job number:	949-02
From:	Chris Kendrick	Date:	04/02/2022
Subject:	Medieval Quarter CDN/21/0878 Response to LLFA Comments 14 December 2021	Cc:	Adam Liu Frank Fitzpatrick

Title: Response to LLFA Comments 14.12.21

See below response to comments received for Phase 1A of the Medieval Quarter development

Comment: "Please provide evidence of flow control installation"

Response: See below photo of vortex flow control device installed at manhole SWMH4

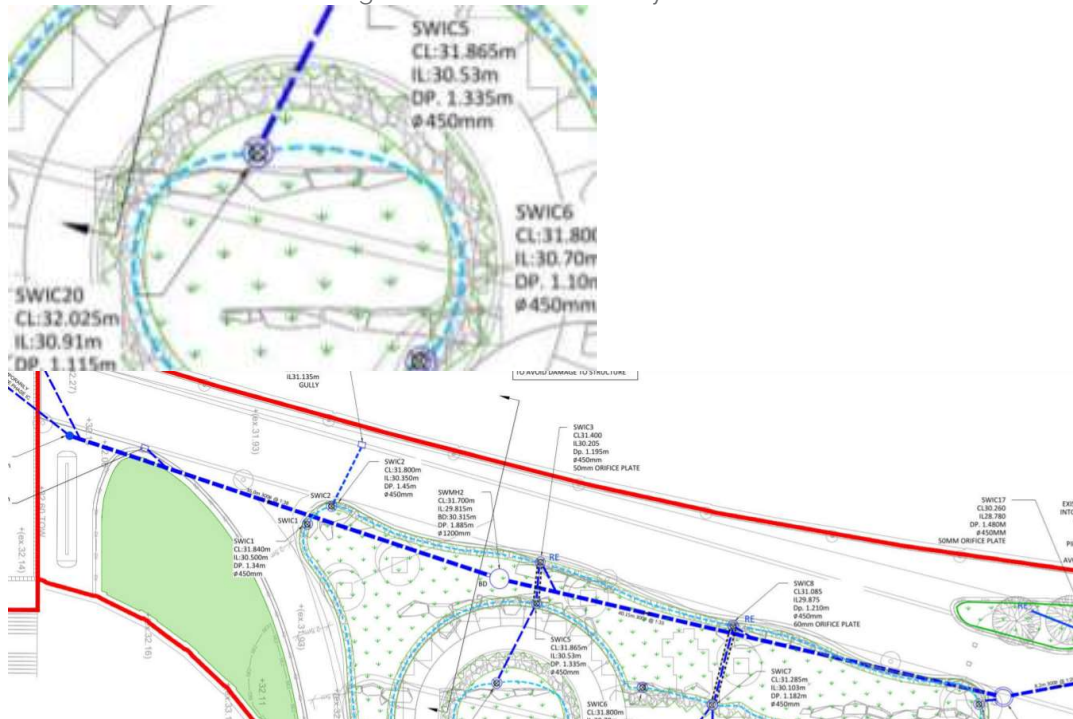


Title: Response to LLFA Comments 14.12.21

Comment: Regarding the differences between the As-built drawing and the approved scheme under CDN/21/0262, please provide:

- details of why the amendments were made;
- how the amended scheme still meets the approved criteria (this should include hydraulic calculations, considerations of overland flow routes, etc.);
- any implications on maintenance.

This should include addressing the below areas and any other deviations:



Response:

Final filter drain and chamber positions were adjusted on site to suit in ground unknown features identified during construction. These included buried services not identified on the GPR surveys undertaken or services at different depths or location to those identified previously.

The fundamental drainage design remains unchanged with equivalent lengths of filter drain, type 3 sub-base stone and the same number of inspection chambers to allow maintenance as per the submitted maintenance strategy.

As such the volume of storage material (type 3 stone) is equivalent to the volumes calculated within the submitted hydraulic calculations.

Overland flow routes are also unchanged with filter drains and gully positions as per the previously submitted proposals and surface finishes graded towards the filter drains and raingardens as well as other low points such as gully and channel positions.

Title: Response to LLFA Comments 14.12.21**Comment:**

- Maintenance Schedule:
 - Please provide any instruction manufacturer's specifications for proprietary products as referenced in the maintenance schedule.
 - Please advise whether post-construction CCTV will be given on handover as per maintenance schedule recommendation.

Response:

See enclosed CCTV drainage survey of the completed drainage system and below link to report and video footage.

<https://web.wincan.com/Project/1654433c-1c86-43d2-90fc-383f5fe80cc3/50faf8bb-f619-4751-8a94-4c6e07dbb8c5>

See attached manufacturer's specification for the Vortex Flow Control by Hydro International



Project

Project Name: 27194 BDB Special Projects Manchester 15 10 21 final win
Project Description: WinCan Import in Miraculix Standard
Project Date: 15/10/2021
Inspection Standard: MSCC5 Sewers & Drainage GB (SRM5 Scoring)



Table of Contents

Project Name	Project Number	Project Date
27194 BDB Special Projects Manchester 15 10 21 final win		15/10/2021

Project Information	P-1
Scoring Summary	P-2
Section: 1; Node A > SWMH1 (Node AX)	1
Section: 2; SWIC05 > SWIC03 (SWIC05X)	3
Section: 3; SWIC7 > SWIC8 (SWIC7X)	5
Section: 4; SWIC10 > SWIC7 (SWIC10X)	6
Section: 5; SWIC12 > SWIC10 (SWIC12X)	7
Section: 6; SWIC15 > SWIC7 (SWIC15X)	8
Section: 7; SWIC17 > SWMH4 (SWIC17X)	9
Section: 8; SWIC18 > SWMH4 (SWIC18X)	10
Section: 9; SWIC20 > SWIC5 (SWIC20X)	11
Section: 10; SWIC21 > SWMH4 (SWIC21X)	12
Section: 11; SWMH1 > SWMH2 (SWMH1X)	13
Section: 12; SWMH2 > SWMH3 (SWMH2X)	14
Section: 13; SWMH3 > SWMH4 (SWMH3X)	15
Section: 14; SWMH4 > Outfall (SWMH4X)	16

Project Information

Project Name	Project Number	Project Date
27194 BDB Special Projects Manchester 15 10 21 final win		15/10/2021

Client

Company: BDB SPECIAL PROJECTS Ltd
Department: OLD BRIDGE INN
Street: 60BURY NEW ROAD
Town or City: HEAP BRIDGE
County: BURY
Post Code: BL9 7HR



Site

Company: BDB SPECIAL PROJECTS Ltd
Contact: 27194 BDB Special Projects Manchester 15 10 21
Department: final survey



Contractor

Company: NRC WWS Ltd
Contact: DEREK KEARNS
Department: SALES MANAGER
Street: UNIT D, RUSSELL ROAD
Town or City: ROCK FERRY, BIRKENHEAD
County: WIRRAL
Post Code: CH42 1LU
Phone: 0151 643 0800
Mobile: 07557 231 879
Email: dkearns@nrcc.com



Scoring Summary

Project Name	Project Number	Project Date
27194 BDB Special Projects Manchester 15 10 21 final win		15/10/2021

Structural Defects

Section	PLR	Grade	Description
All inspected pipes are in an acceptable structural condition (< grade 3).			

Service / Operational Condition

Section	PLR	Grade	Description
All inspected pipes are in an acceptable service condition (< grade 3).			

Abandoned Surveys

Section	PLR	Description
1	Node AX	Survey abandoned

Information

These scoring summaries are based on the SRM grading from the WRc.

Section Inspection - 24/08/2021 - Node AX

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
1	1	24/08/21	9:48	N.R.C 35303	No Rain Or Snow	Yes	NODE AX
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		PF68 DWC		Crawler	Not Specified	Private Sewer	Not Specified

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	NODE A
Road:	Victoria Street	Inspected Length:	1.57 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	2.27 m	Downstream Node:	SWMH1
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	Upstream not connected as of yet. Capped off				
Recommendations:					

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
		0.70	CP	Start node type, catchpit, reference number: SWMH1	00:00:00		
		0.70	WL	Water level, 5% of the vertical dimension	00:00:00		
		2.27	SA	Survey abandoned: Capped of	00:00:10	Node AX_dfb9f7 65-3fdf-4c	
Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 24/08/2021 - Node AX

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
1	Upstream	NODE AX	N.R.C 35303	N.R.C 26950



Node
AX_dfb9f765-3fdf-4c79-9749-2480b181680b_20210824_0952
12_936.jpg, 00:00:10, 2.27 m
Survey abandoned, Capped of

Section Inspection - 15/10/2021 - SWIC05X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
2	1	15/10/21	12:42	27194	No Rain Or Snow	Unknown	SWIC05X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
P.WYLDE		Not Specified		Not Specified	Not Specified	Not Specified	1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC05
Road:	Victoria Street	Inspected Length:	2.78 m	Upstream Pipe Depth:	
Location:	Footway	Total Length:	2.78 m	Downstream Node:	SWIC03
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polypropylene		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post rehab inspection	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWIC03 SWIC05							
		0.00	IC	Start node, inspection chamber, reference: SWIC03	00:00:01		
		0.00	WL	Water level, 5% of the vertical dimension	00:00:02		
		0.00	RPL	Point repair, localised lining at 12 o'clock: START OF PATCH	00:00:03	SWIC05X_0fe94daa-ea73-4b8	
		1.00	RPL	Point repair, localised lining at 12 o'clock: END OF PATCH	00:00:15		
		2.78	ICF	Finish node, inspection chamber, reference: SWIC05	00:00:25		
Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 15/10/2021 - SWIC05X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
2	Upstream	SWIC05X	27194	



SWIC05X_0fe94daa-ea73-4b8a-9439-d2f074dc3fba_2021101
9_153859_851.jpg, 00:00:03, 0.00 m
Point repair, localised lining at 12 o'clock, START OF PATCH

Section Inspection - 24/08/2021 - SWIC7X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
3	1	24/08/21	11:44	N.R.C 26950	No Rain Or Snow	Yes	SWIC7X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		Not Specified		Push Rod	Not Specified	Private Sewer	1

Town or Village:	Manchester	Inspection Direction:	Downstream	Upstream Node:	SWIC7
Road:	Victoria Street	Inspected Length:	6.04 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	6.04 m	Downstream Node:	SWIC8
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:53	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWIC7 0.00 0.00 5.25 5.78 6.04 SWIC8 Depth: m							
		0.00	CP	Start node type, catchpit, reference number: SWIC7	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		5.25	LR	Line deviates right	00:00:19		
		5.78	WL	Water level, 5% of the vertical dimension	00:00:24		
		6.04	CPF	Finish node type, catchpit, reference number: SWIC8	00:00:27		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC10X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
4	1	24/08/21	11:36	N.R.C 26950	No Rain Or Snow	Yes	SWIC10X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		Not Specified		Push Rod	Not Specified	Private Sewer	1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC10
Road:	Victoria Street	Inspected Length:	4.91 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	4.91 m	Downstream Node:	SWIC7
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWIC7 0.00 0.00 2.43 4.87 4.91 SWIC10 Depth: m							
		0.00	CP	Start node type, catchpit, reference number: SWIC7	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		2.43	LR	Line deviates right	00:00:09		
		4.87	SC	Pipe size changes, new size(s), 50mm high	00:00:27		
		4.91	CPF	Finish node type, catchpit, reference number: SWIC10	00:00:30		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC12X

Item No. 5	Insp. No. 1	Date 24/08/21	Time 10:38	Client's Job Ref N.R.C 26950	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SWIC12X
Operator LAWRENCE		Vehicle Not Specified		Camera Push Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID 1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC12
Road:	Victoria Street	Inspected Length:	14.02 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	14.02 m	Downstream Node:	SWIC10
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale: 1:121	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWIC10 0.00 0.00 0.21 4.28 10.53 14.02 CP WL LL LR LR CPF Start node type, catchpit, reference number: SWIC10 Water level, 0% of the vertical dimension Line deviates left Line deviates right Line deviates right Finish node type, catchpit, reference number: SWIC12 00:00:00 00:00:01 00:00:06 00:00:19 00:00:35 00:00:47						
SWIC12 Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC15X

Item No. 6	Insp. No. 1	Date 24/08/21	Time 11:38	Client's Job Ref N.R.C 26950	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SWIC15X
Operator LAWRENCE		Vehicle Not Specified		Camera Push Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID 1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC15
Road:	Victoria Street	Inspected Length:	5.42 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	5.42 m	Downstream Node:	SWIC7
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water		Pipe Shape:	Circular	
Type of Pipe:	Gravity drain/sewer		Dia/Height:	100 mm	
Flow Control:	No flow control		Material:	Polyvinyl chloride	
Year Constructed:	Not Specified		Lining Type:	No Lining	
Inspection Purpose:	Post completion condition survey		Lining Material:	No Lining	
Comments:	CCTV SURVEY				
Recommendations:					

Scale: 1:50 Position [m] Code Observation MPEG Photo Grade

The diagram shows a vertical pipe section with two circular nodes at the top and bottom. The top node is labeled 'SWIC7' and the bottom node is labeled 'SWIC15'. A blue arrow on the left points upwards. Depth markers are shown on the right side of the pipe, with corresponding data in the table.

Depth: m	Code	Observation	MPEG	Photo	Grade
0.00	CP	Start node type, catchpit, reference number: SWIC7	00:00:00		
0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
0.38	LU	Line deviates up	00:00:03		
4.82	LR	Line deviates right	00:00:16		
5.29	SC	Pipe size changes, new size(s), 50mm high	00:00:19		
5.42	CPF	Finish node type, catchpit, reference number: SWIC15	00:00:20		

Depth: m

SWIC7

0.00

0.00

0.38

4.82

5.29

5.42

SWIC15

Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC17X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
7	1	24/08/21	12:14	N.R.C 26950	No Rain Or Snow	Yes	SWIC17X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		Not Specified		Push Rod	Not Specified	Private Sewer	1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC17
Road:	Victoria Street	Inspected Length:	2.71 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	2.71 m	Downstream Node:	SWMH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH4 SWIC17							
		0.00	MH	Start node type, manhole, reference number: SWMH4	00:00:01		
		0.00	WL	Water level, 5% of the vertical dimension	00:00:01		
		2.18	LU	Line deviates up	00:00:15		
		2.71	CPF	Finish node type, catchpit, reference number: SWIC17	00:00:21		
Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC18X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
8	1	24/08/21	12:16	N.R.C 26950	No Rain Or Snow	Yes	SWIC18X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		Not Specified		Push Rod	Not Specified	Private Sewer	1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC18
Road:	Victoria Street	Inspected Length:	3.45 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	3.45 m	Downstream Node:	SWMH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:50	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH4 0.00 0.00 0.72 3.43 3.45 SWIC18							
		0.00	MH	Start node type, manhole, reference number: SWMH4	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		0.72	LL	Line deviates left	00:00:08		
		3.43	SC	Pipe size changes, new size(s), 50mm high	00:00:18		
		3.45	CPF	Finish node type, catchpit, reference number: SWIC18	00:00:20		
Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC20X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
9	1	24/08/21	10:30	N.R.C 26950	No Rain Or Snow	Yes	SWIC20X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		Not Specified		Push Rod	Not Specified	Private Sewer	1

Town or Village:	Manchester	Inspection Direction:	Downstream	Upstream Node:	SWIC20
Road:	Victoria Street	Inspected Length:	6.18 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	6.18 m	Downstream Node:	SWIC5
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:54	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWIC20 0.00 0.00 6.18 SWIC5 Depth: m							
		0.00	CP	Start node type, catchpit, reference number: SWIC20	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		6.18	CPF	Finish node type, catchpit, reference number: SWIC5	00:00:21		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWIC21X

Item No. 10	Insp. No. 1	Date 24/08/21	Time 12:18	Client's Job Ref N.R.C 26950	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SWIC21X
Operator LAWRENCE		Vehicle Not Specified		Camera Push Rod	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID 1

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWIC21
Road:	Victoria Street	Inspected Length:	6.25 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	6.25 m	Downstream Node:	SWMH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	100 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		
Comments:	CCTV SURVEY				
Recommendations:					

Scale:	1:54	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH4 0.00 0.00 1.27 6.25							
		0.00	MH	Start node type, manhole, reference number: SWMH4	00:00:00		
		0.00	WL	Water level, 0% of the vertical dimension	00:00:01		
		1.27	WL	Water level, 5% of the vertical dimension	00:00:08		
		6.25	CPF	Finish node type, catchpit, reference number: SWIC21	00:00:27		
SWIC21 Depth: m							

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0

Section Inspection - 24/08/2021 - SWMH1X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
11	1	24/08/21	9:21	N.R.C 35303	No Rain Or Snow	Yes	SWMH1X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
LAWRENCE		PF68 DWC		Crawler	Not Specified	Private Sewer	Not Specified

Town or Village:	Manchester	Inspection Direction:	Downstream	Upstream Node:	SWMH1
Road:	Victoria Street	Inspected Length:	34.92 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	35.62 m	Downstream Node:	SWMH2
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:308	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH1 SWMH2 Depth: m							
		0.70	CP	Start node type, catchpit, reference number: SWMH1	00:00:00		
		0.70	WL	Water level, 5% of the vertical dimension	00:00:00		
		1.44	JN	Junction at 9 o'clock, diameter: 150mm	00:00:08		
		6.34	JN	Junction at 9 o'clock, diameter: 150mm	00:00:37		
		35.62	JN	Junction at 6 o'clock, diameter: 300mm: Drop shaft	00:02:34		
		35.62	MHF	Finish node type, manhole, reference number: SWMH2: Manhole in view	00:02:37		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 24/08/2021 - SWMH2X

Item No. 12	Insp. No. 1	Date 24/08/21	Time 13:26	Client's Job Ref N.R.C 26950	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SWMH2X
Operator LAWRENCE		Vehicle PF68 DWC		Camera Crawler	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWMH2
Road:	Victoria Street	Inspected Length:	38.05 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	38.75 m	Downstream Node:	SWMH3
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale: 1:335	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH3						
	0.70	MH	Start node type, manhole, reference number: SWMH3	00:00:00		
	0.70	WL	Water level, 0% of the vertical dimension	00:00:01		
	19.74	JN	Junction at 2 o'clock, diameter: 150mm	00:01:14		
	36.62	JN	Junction at 3 o'clock, diameter: 150mm	00:02:24		
	38.75	MHF	Finish node type, manhole, reference number: SWMH2	00:02:37		
SWMH2 Depth: m						

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 24/08/2021 - SWMH3X

Item No. 13	Insp. No. 1	Date 24/08/21	Time 13:38	Client's Job Ref N.R.C 26950	Weather No Rain Or Snow	Pre Cleaned Yes	PLR SWMH3X
Operator LAWRENCE		Vehicle PF68 DWC		Camera Crawler	Preset Length Not Specified	Legal Status Private Sewer	Alternative ID Not Specified

Town or Village:	Manchester	Inspection Direction:	Upstream	Upstream Node:	SWMH3
Road:	Victoria Street	Inspected Length:	6.60 m	Upstream Pipe Depth:	
Location:	Road	Total Length:	7.30 m	Downstream Node:	SWMH4
Surface Type:		Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm		
Flow Control:	No flow control	Material:	Polyvinyl chloride		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post completion condition survey	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:63	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: m SWMH4 0.70 0.70 1.23 7.30 SWMH3 Depth: m							
		0.70	MH	Start node type, manhole, reference number: SWMH4	00:00:00		
		0.70	WL	Water level, 5% of the vertical dimension	00:00:01		
		1.23	LL	Line deviates left	00:00:06		
		7.30	MHF	Finish node type, manhole, reference number: SWMH3	00:00:32		

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Inspection - 15/10/2021 - SWMH4X

Item No.	Insp. No.	Date	Time	Client's Job Ref	Weather	Pre Cleaned	PLR
14	1	15/10/21	13:01	27194	No Rain Or Snow	Unknown	SWMH4X
Operator		Vehicle		Camera	Preset Length	Legal Status	Alternative ID
P.WYLDE		PK20 SYX		Crawler	Not Specified	Not Specified	Not Specified

Town or Village:	Manchester	Inspection Direction:	Downstream	Upstream Node:	SWMH4
Road:	Victoria Street	Inspected Length:	8.66 m	Upstream Pipe Depth:	1.980 m
Location:	Footway	Total Length:	8.66 m	Downstream Node:	OUTFALL
Surface Type:	Concrete Highway	Joint Length:		Downstream Pipe Depth:	
Use:	Surface water	Pipe Shape:	Circular		
Type of Pipe:	Gravity drain/sewer	Dia/Height:	300 mm		
Flow Control:	No flow control	Material:	Polypropylene		
Year Constructed:	Not Specified	Lining Type:	No Lining		
Inspection Purpose:	Post rehab inspection	Lining Material:	No Lining		

Comments:
Recommendations:

Scale:	1:75	Position [m]	Code	Observation	MPEG	Photo	Grade
Depth: 1.98 m SWMH4							
		0.00	CP	Start node type, catchpit, reference number: SWMH4	00:00:00		
		0.00	WL	Water level, 5% of the vertical dimension	00:00:00		
		1.72	SC	Pipe size changes, new size(s), 225mm high	00:00:11		
		4.16	LR	Line deviates right	00:00:24		
		7.36	RPL	Point repair, localised lining from 12 o'clock to 12 o'clock: Start Of Patch	00:00:40	SWMH4X _1efb133e -cbb1-49b	
		7.71	LL	Line deviates left	00:02:10		
		7.71	SC	Pipe size changes, new size(s), 300mm high	00:02:12		
		8.66	RPL	Point repair, localised lining from 12 o'clock to 12 o'clock: end of patch	00:02:27	SWMH4X _4fe15750 -e136-467	
		8.66	OCF	Finish node type, other special chamber, reference number: Outfall: End	00:02:29		
		Outfall					
		Depth: m					

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	STR Peak	STR Mean	STR Total	STR Grade	SER No. Def	SER Peak	SER Mean	SER Total	SER Grade
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Section Pictures - 15/10/2021 - SWMH4X

Item No.	Inspection Direction	PLR	Client's Job Ref	Contractor's Job Ref
14	Downstream	SWMH4X	27194	



SWMH4X_1efb133e-cbb1-49ba-8a6b-ce4472694a3b_20211019_153845_315.jpg, 00:00:40, 7.36 m
Point repair, localised lining from 12 o'clock to 12 o'clock, Start Of Patch



SWMH4X_4fe15750-e136-467e-83f6-88fe7f023eca_20211019_153850_128.jpg, 00:02:27, 8.66 m
Point repair, localised lining from 12 o'clock to 12 o'clock, end of patch

SALES QUOTE



Quote No: HQT-077210

Quote Date: 16/03/2021

Sell To: Chris Kendrick
Civic Engineers
Carver's Warehouse
77 Dale Street
MANCHESTER
M1 2HG

Site Address: Medieval Quarter Glade Of Light

Manchester
M

Account No: CON-011127

Hydro Ref: 21_21_1550 Medieval Quarter Glade of Light

Item No	Description	Quantity	Unit Price	Amount
PQT1410.SHE	Hydro-Brake®Optimum Type HBO-SHE Product Code: SHE-0275-4230-0960-4230 Design Objective: Minimise upstream storage Design Flow = 42.3l/s; Design Head = 0.96m BBA Approved (08/4596 Product Sheet 1) WRc Approved (PT/329/0412) 3 mm thick Stainless Steel Grade 304L Designed to suit a minimum 300 mm outlet pipe and a minimum 1800 mm chamber Complete with: Lugs; Fixed Inlet and Pivoting Bypass Door	1.00	4,388.94	4,388.94

TOTAL GBP Excl. VAT 4,388.94



Tips!

Click to get safer, faster installation

Switch to a curve mount unit, or a Hydro-Brake® Chamber
with your unit ready-installed

Product design, fabrication, standard installation details and delivery to UK mainland site or port included.

Delivery via specialist vehicle (Hiab, FORS, Crossrail etc.) not included, rates available on request.

Off-loading (unless specified) and equipment installation at site excluded.

Prices valid for 30 days from issue, standard payment terms 100% due with order unless alternative credit terms have been agreed in writing.

Flow control lead time 2 to 3 working weeks (unless stated otherwise) from receipt of approved drawings and checklists.

Lead time for all other products is longer and should be confirmed before ordering.

Product warranty - one year from date of purchase, only considered for those defects or faults reported in writing.

You can see our terms and conditions of sale on our website at <https://www.hydro-int.com/TC01.pdf>

Hydro International (UK) Ltd, Shearwater House, Clevedon Hall Estate
Victoria Road, Clevedon, BS21 7RD
Tel: +44 (0)1275 878371 Fax: +44 (0)1275 874979 Web: www.hydro-int.com

Registered in England No. 1474012, Registered Office: as above.

Turning Water Around...®

Technical Specification

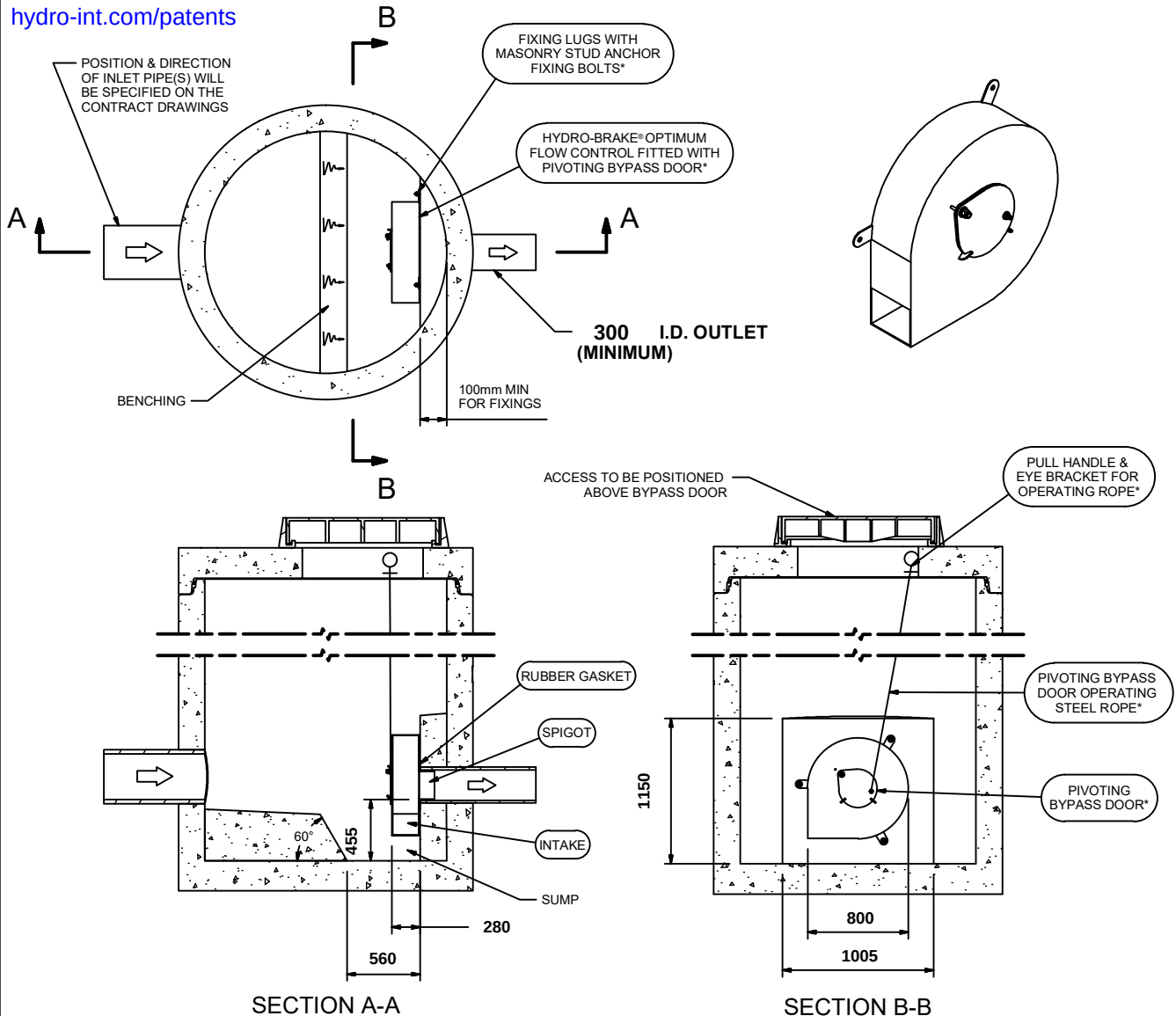
Control Point	Head (m)	Flow (l/s)
Primary Design	0.960	42.300
Flush-Flo™	0.421	42.299
Kick-Flo®	0.750	37.562
Mean Flow		34.111

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



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IMPORTANT:

○ 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**



The head/flow characteristics of this SHE-0275-4230-0960-4230 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	3/16/2021 1:51 PM
SITE	21 21 1550 Medieval Quarter Glade of Light
DESIGNER	
REF	HQT-077210

SHE-0275-4230-0960-4230
Hydro-Brake® Optimum

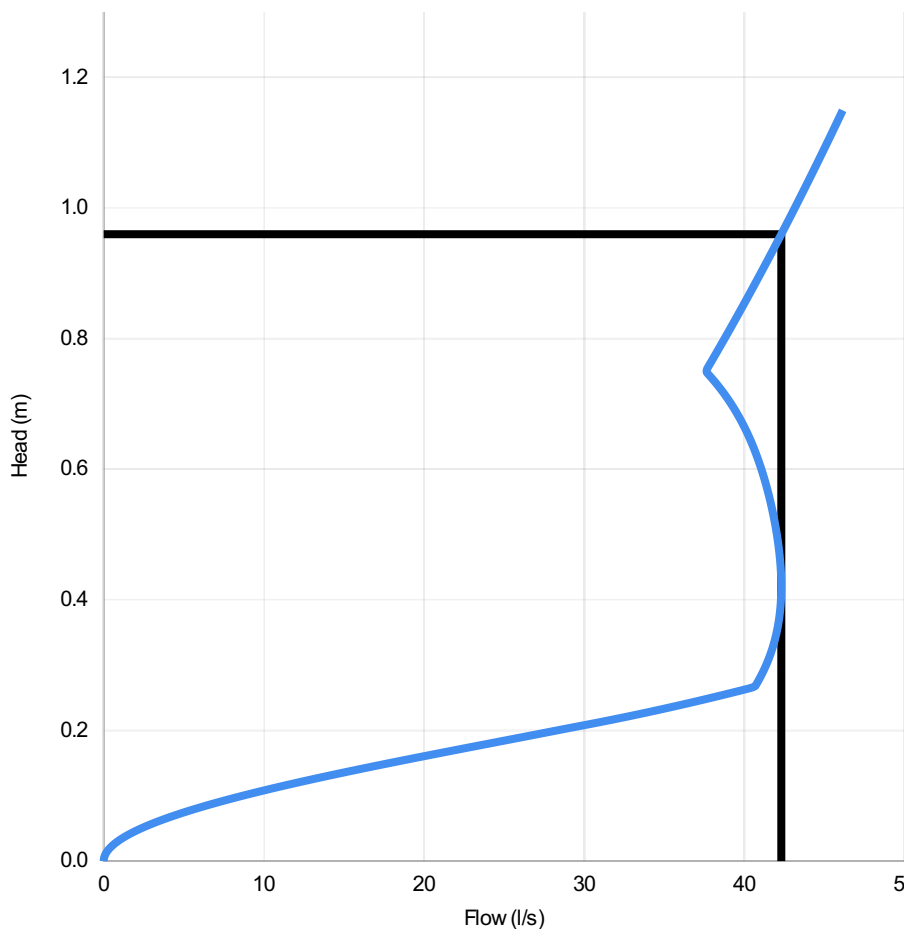
Technical Specification

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PT/329/0412

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Head (m)	Flow (l/s)
0.000	0.000
0.033	1.041
0.066	3.990
0.099	8.545
0.132	14.355
0.166	21.006
0.199	27.980
0.232	34.674
0.265	40.346
0.298	41.312
0.331	41.808
0.364	42.118
0.397	42.270
0.430	42.294
0.463	42.213
0.497	42.046
0.530	41.805
0.563	41.496
0.596	41.112
0.629	40.638
0.662	40.046
0.695	39.297
0.728	38.342
0.761	37.846
0.794	38.626
0.828	39.390
0.861	40.139
0.894	40.872
0.927	41.593
0.960	42.300

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Hydro
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DATE	16/03/2021 13:51
Site	21_21_1550 Medieval Quarter Glade of Light
DESIGNER	
Ref	HQT-077210

SHE-0275-4230-0960-4230
Hydro-Brake Optimum®

Technical Specification

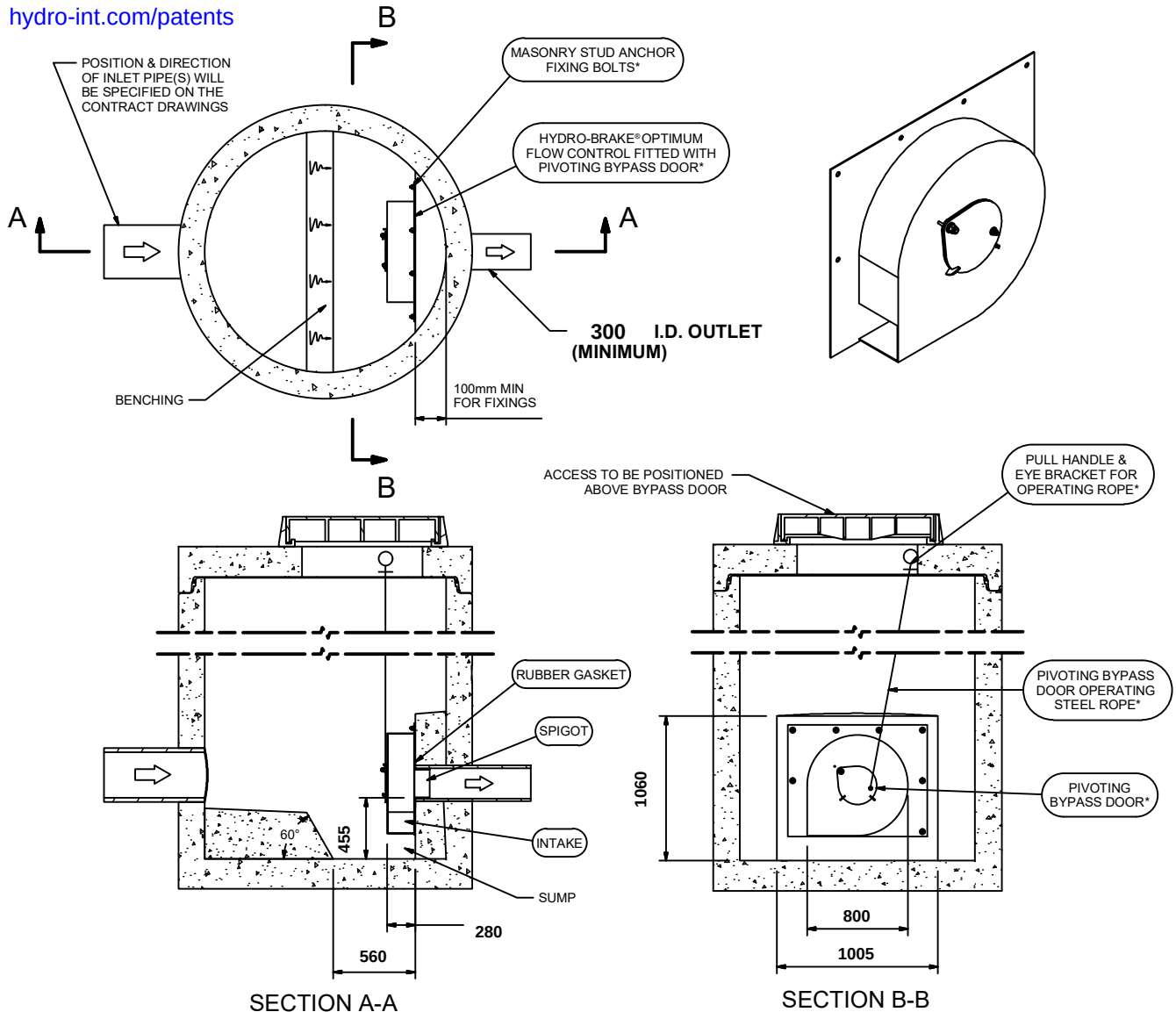
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DATE 3/16/2021 7:03 AM

SITE

DESIGNER Sharon King

REF

SHE-0275-4230-0960-4230

Hydro-Brake® Optimum

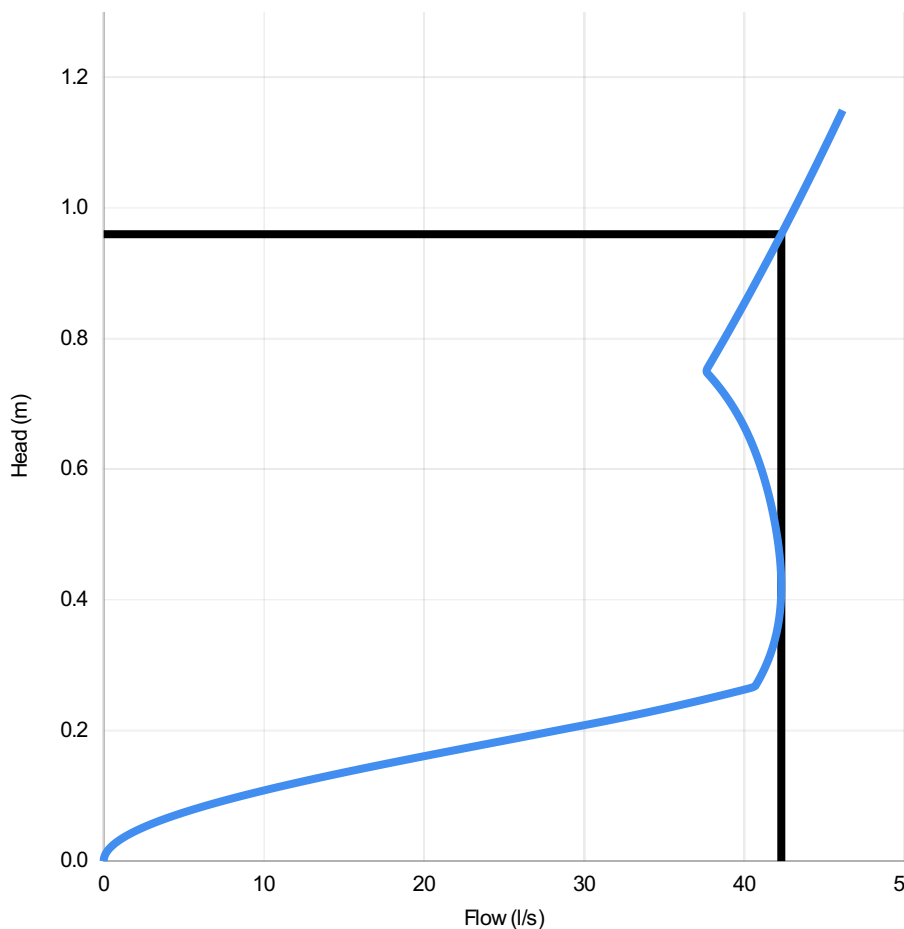
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PT/329/0412

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DATE 16/03/2021 07:03

Site

DESIGNER Sharon King

Ref

SHE-0275-4230-0960-4230

Hydro-Brake Optimum®