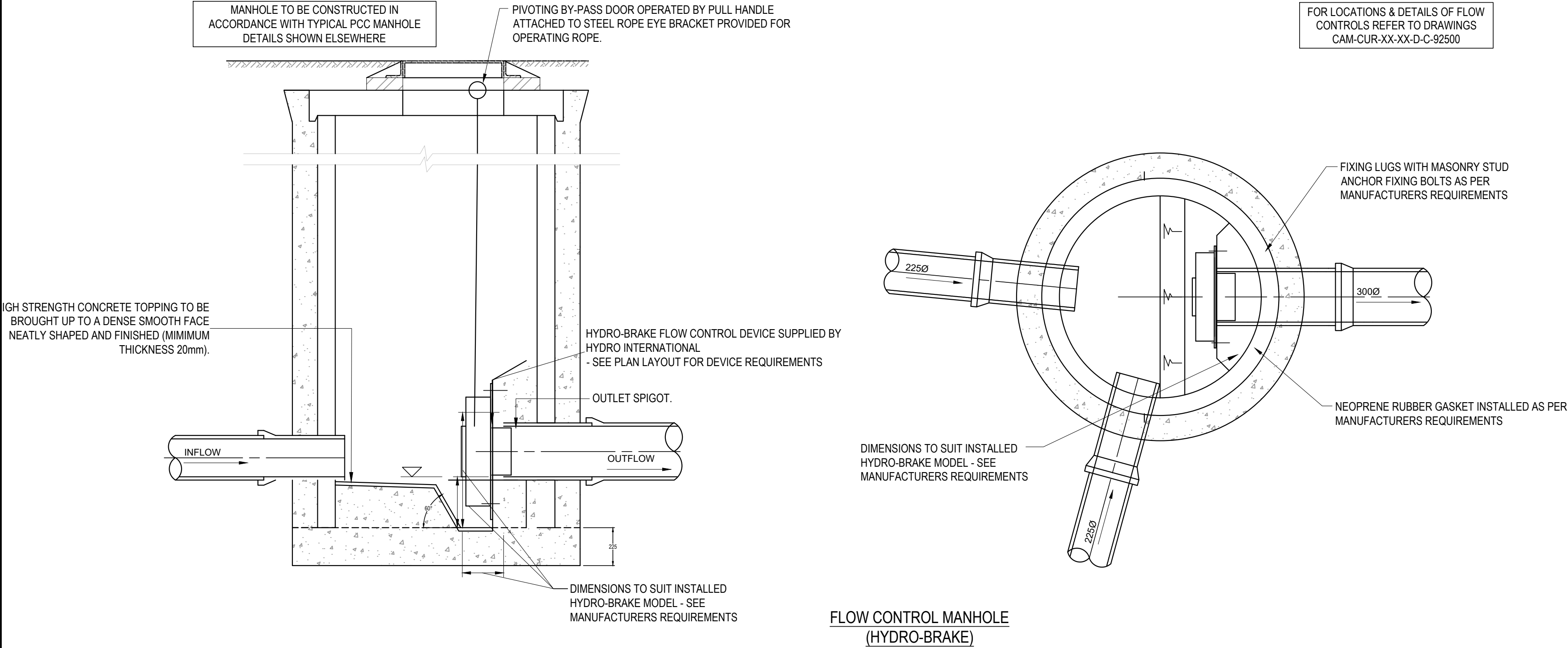
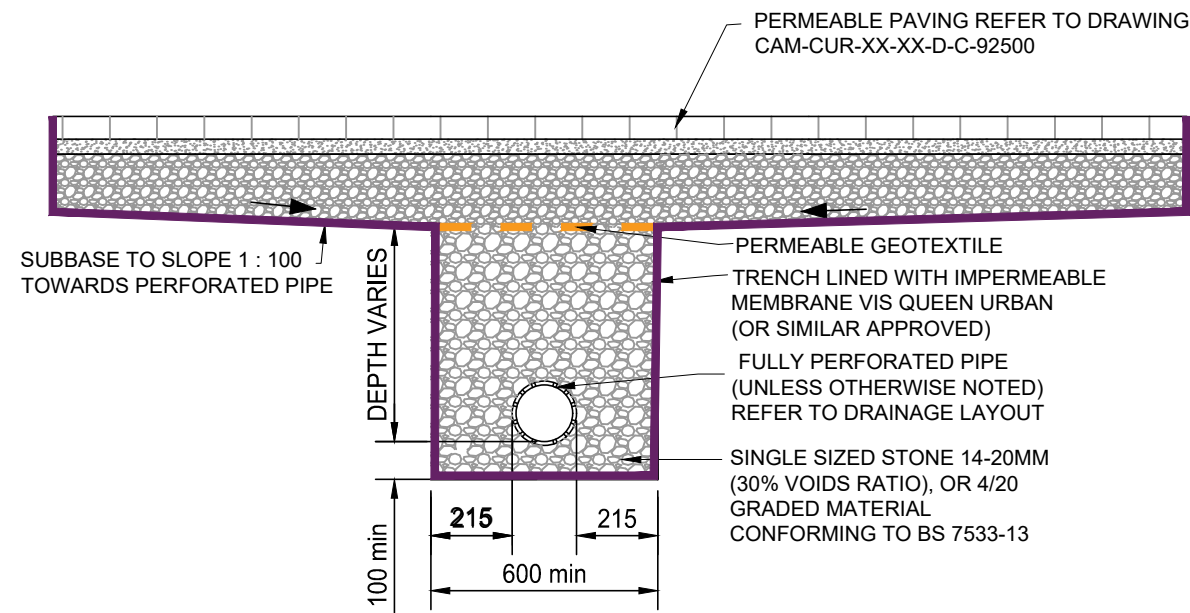




FLOW CONTROL MANHOLE (HYDRO-BRAKE)



PERMEABLE ASPHALT AND PERFORATED PIPE DETAIL

Technical Specification		
Control Point	Head (m)	Flow (l/s)
Primary Design	4.000	12.700
Flush-Flo™	0.543	8.816
Kick-Flo®	1.119	6.960
Mean Flow		9.429

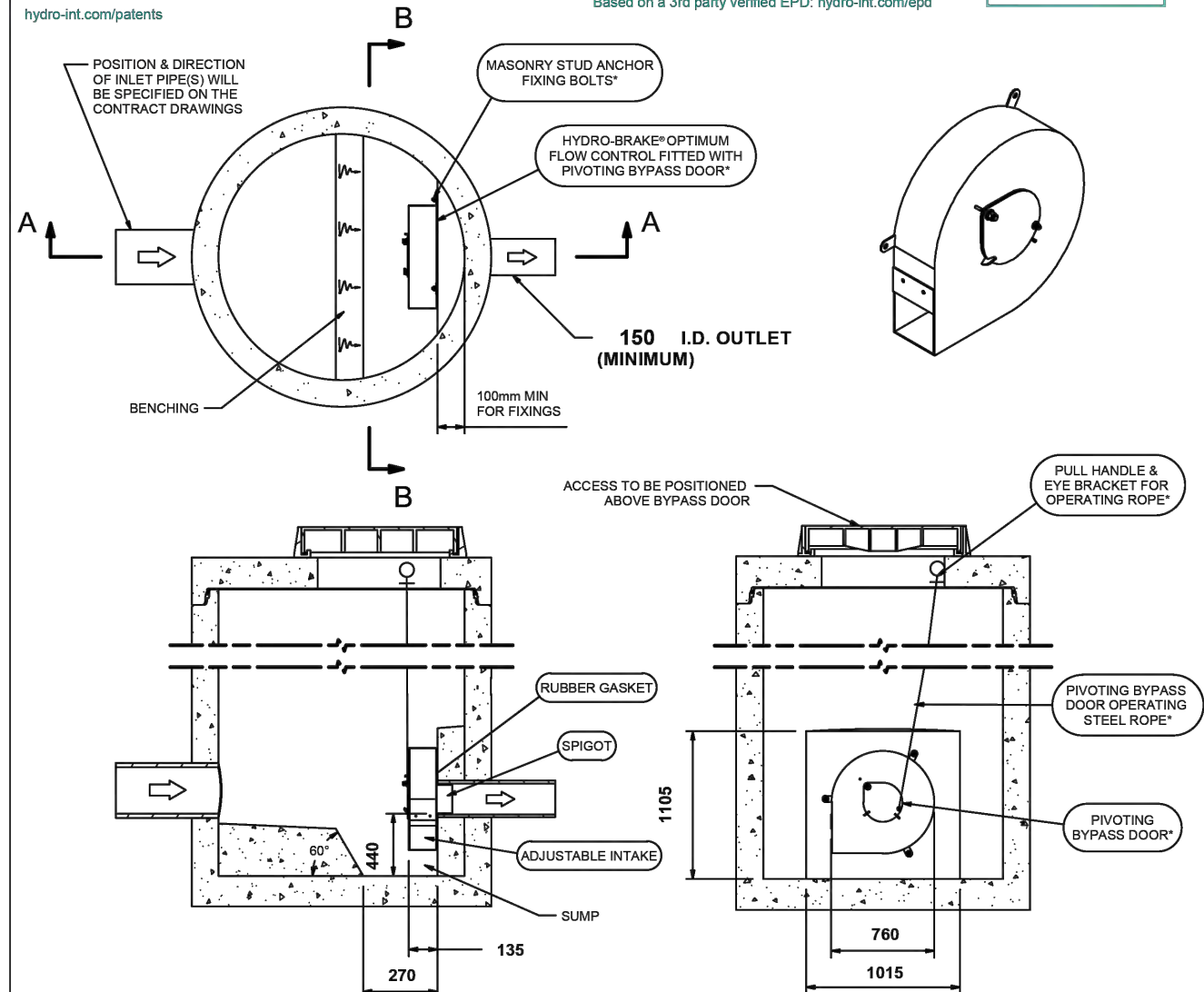
This Hydro-Brake® Optimum includes:

- All in 5 mm Grade 304L stainless steel
- Integral pivoting by-pass door allowing clear line of sight through to outlet, c/w operating rope
- Media blasted for corrosion resistance
- Variable flow rate post installation via adjustable inlet (if necessary)
- Indicative Weight: 50 kg
- Product Carbon Footprint: 221.1 kgCO2e

Based on a 3rd party verified EPD: hydro-int.com/epd



hydro-int.com/patents

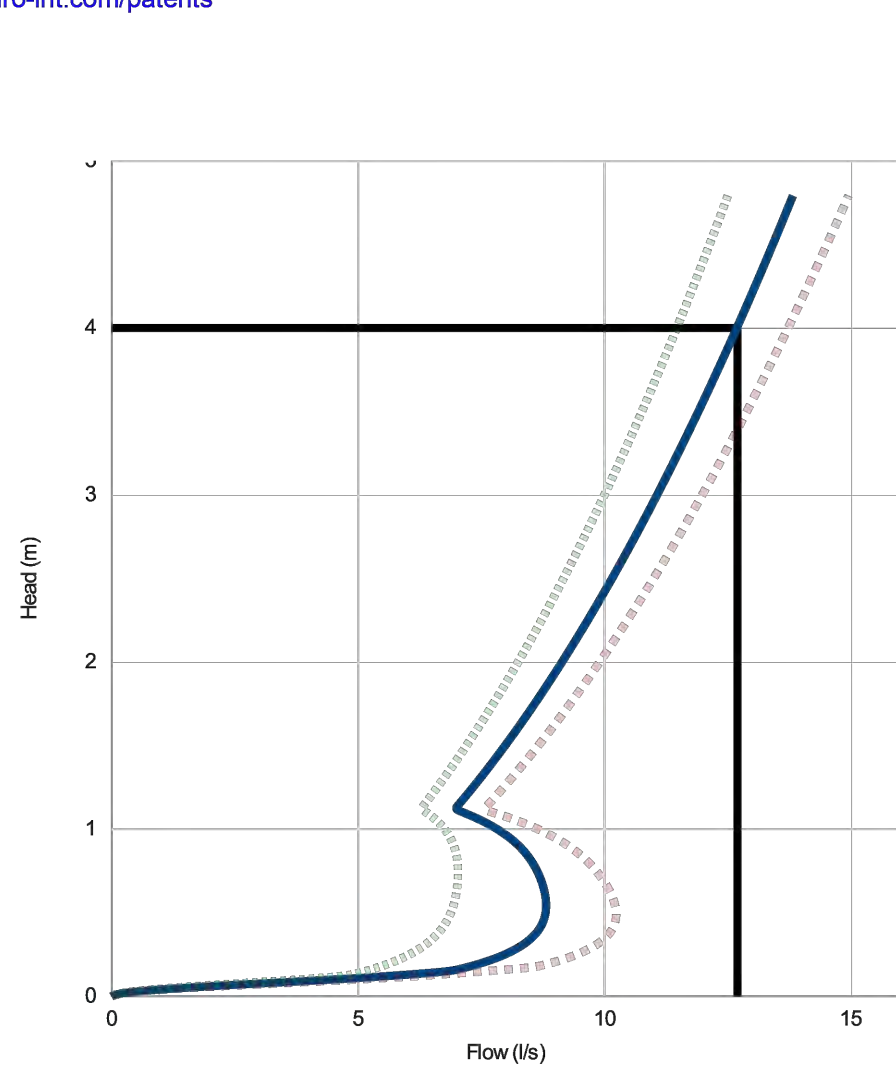


THIS DESIGN LAYOUT IS FOR ILLUSTRATIVE PURPOSES ONLY. NOT TO SCALE.

DESIGN ADVICE	The head/flow characteristics of this SHE-0125-1270-4000-1270 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.	 SHE-0125-1270-4000-1270 Hydro-Brake® Optimum
DATE	20/02/2026 15:59	
SITE	CAMBRIDGE HALLS	
DESIGNER	Andrew Losty	
REF	087754	
© 2026 Hydro International Ltd - Unit 2, Rivermead Court, Kern Business Park, Windmill Road, Kern, Clevedon, BS21 9FT • Tel: 01275 876371 • Website: hydro-int.com • Email: enquiries@hydro-int.com andy.losty@curtins.com		

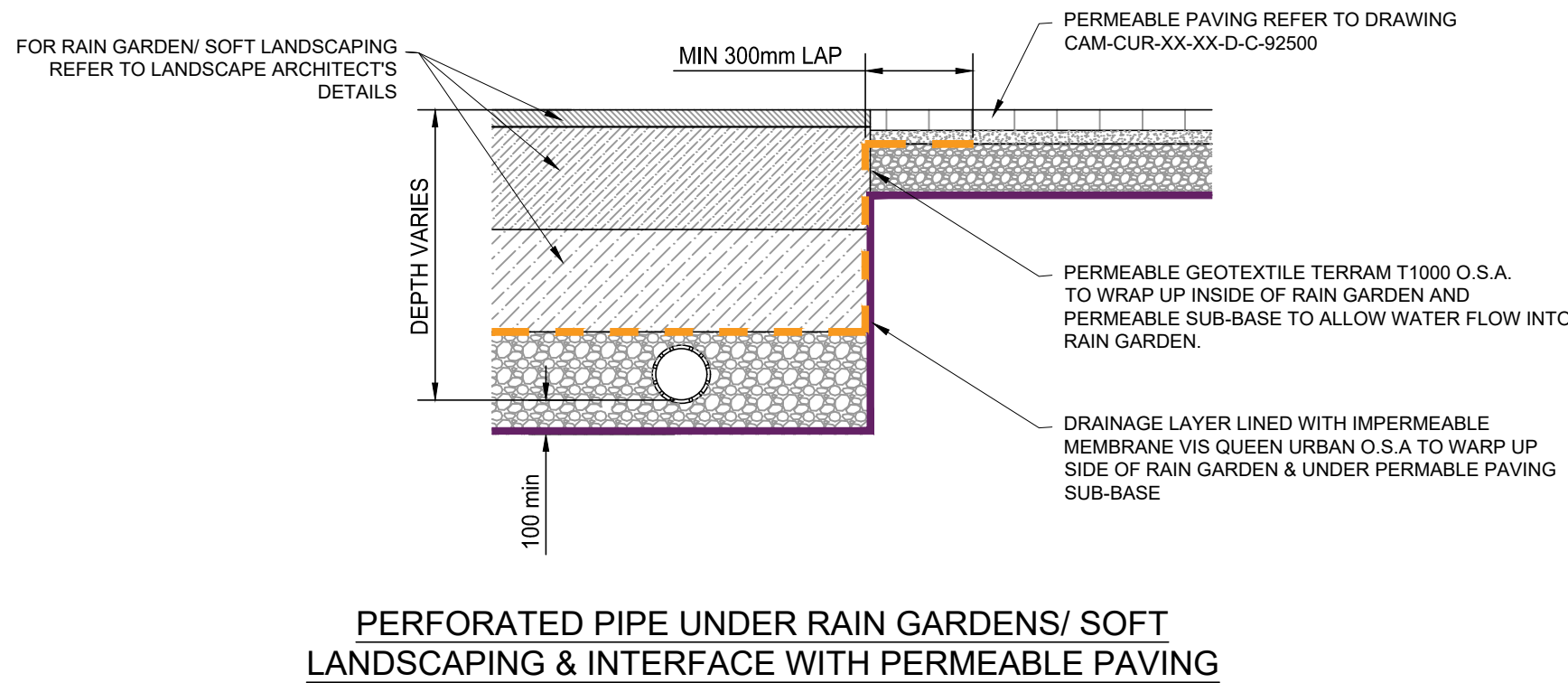
Technical Specification						
	Original Setting		Minimum Setting		Maximum Setting	
Control Point	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)	Head (m)	Flow (l/s)
Primary Design	4.000	12.700	4.000	11.469	4.000	13.728
Flush-Flo™	0.543	8.816	0.740	7.028	0.492	10.238
Kick-Flo®	1.119	6.960	1.120	6.274	1.116	7.544
Mean Flow		9.429		8.308		10.341

hydro-int.com/patents



Head (m)	Flow (l/s)
0.000	0.000
0.138	6.367
0.276	8.158
0.414	8.701
0.552	8.816
0.690	8.721
0.828	8.476
0.966	8.001
1.103	7.109
1.241	7.306
1.379	7.675
1.517	8.025
1.655	8.360
1.793	8.680
1.931	8.988
2.069	9.285
2.207	9.572
2.345	9.850
2.483	10.119
2.621	10.381
2.759	10.636
2.897	10.885
3.034	11.127
3.172	11.364
3.310	11.596
3.448	11.823
3.586	12.045
3.724	12.263
3.862	12.476
4.000	12.686

DESIGN ADVICE	The head/flow characteristics of this SHE-0125-1270-4000-1270 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.	 SHE-0125-1270-4000-1270 Hydro-Brake® Optimum
DATE	20/02/2026 15:59	
Site	CAMBRIDGE HALLS	
DESIGNER	Andrew Losty	
Ref	087754	
© 2024 Hydro International, Rivermead Court, Kern Business Park, Windmill Road, Kern, Clevedon, BS21 9FT. Tel: 01275 876371 Fax: 01275 874679 Web: www.hydro-int.com Email: designtools@hydro-int.com		



GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. REFER TO DRAINAGE LAYOUT 85043-CUR-XX-XX-DR-C-92500 PROPOSED DRAINAGE LAYOUT FOR THE LOCATIONS OF FLOW CONTROL MANHOLES.
5. FLOW CONTROL TO BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS, INSTRUCTIONS AND RECOMMENDATIONS.
6. WHERE ALTERNATIVE FLOW CONTROL DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THERE IS ANY IMPACT ON THE UPSTREAM CAPACITY
7. FOR FULL DRAINAGE NOTES REFER TO DRAWING CAM-CUR-XX-XX-DR-C-92500

P03	FLOW CONTROL DETAILS AMENDED	20.02.26	ATL	MW
P02	DRAWING NUMBER CORRECTION	16.10.25	ATL	MW
P01	STAGE 4 ISSUE FOR COMMENT	08.10.25	JC	ATL
Rev:	Description:	Date:	By:	Chkd:

Curtins

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Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status:

Preliminary

Project:

Cambridge Halls Student Residences

Dwg Title:

DRAINAGE DETAILS SHEET 3

Drawn By	Designed By	Checked By
JC	JC	MW
Date	08/07/2025	Scales @ A1
		N/A

Project No -	Originator -	Function -	Spatial -	Form -	Discipline -	Number	Revision
CAM	-	CUR	-	XX	-	DR - C - 925022	P03

GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
- ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- ATTENUATION TANK TO BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
- WHERE AN ALTERNATIVE ATTENUATION TANK DEVICE IS PREFERRED, IT WILL BE SUBJECT TO REDESIGN TO CONFIRM WHETHER THE SYSTEM HAS CAPACITY.
- THE DESIGN OF THE TANK SHOULD BE PROVIDED BY THE MANUFACTURER OR SUPPLIER TO ENSURE THE TANK IS SUFFICIENT FOR THE SITE SPECIFIC CRITERIA.
- THE TANK DESIGN SHOULD INCORPORATE:
 - GRATES SUBJECT TO LOADINGS AS SHOWN.
 - SUITABLE MAINTENANCE ACCESS; AND
 - VENTING TO PREVENT TRAPPED AIR POCKETS.
- THE STRENGTH OF THE TANK SHOULD COMPLY WITH CIRIA C680 STRUCTURAL DESIGN OF MODULAR GEOCELLULAR DRAINAGE TANKS.
- ACCESS FOR MAINTENANCE SHOULD BE IN ACCORDANCE WITH CIRIA GUIDANCE.
- VENTING TO THE TANK SHOULD BE CONFIRMED BY THE TANK MANUFACTURER. VENTING SHOULD BE LOCATED WITHIN LANDSCAPED AREAS, OR ROUTED BACK TO THE NEAREST MANHOLE ABOVE THE DESIGN WATER LEVEL.
- CONSTRUCTION AND INSTALLATION OF THE TANK SHOULD BE STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION REQUIREMENTS.
- THE CURRENT DESIGN OF THE TANK IS BASED ON USE OF PSM1/ PSM4 (0.5 x 1.0 x 0.4m) MODULES. TO ALLOW AN ASSUMPTION OF UNIT SIZES WITHIN THE OVERALL DESIGN. HOWEVER, WHERE AN ALTERNATIVE SYSTEM IS PROPOSED, THE DIMENSIONS OF THE UNITS WILL NEED TO BE CHECKED WITHIN THE DESIGN AND MAY RESULT IN A REDESIGN.
- 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.

CURRENT DESIGN ASSUMPTIONS

DESIGN BASED ON GRAF ECOBLOC MAXX UNITS & FLEX UNITS.
800x800x350(D), MANUFACTURER TO CONFIRM EXACT TYPES REQUIRED.

DETAILED STRUCTURAL CALCULATIONS REQUIRED TO PROVE TANK HAS SUFFICIENT STRENGTH. REFER TO TABLE FOR TANK LOADINGS.

THE MANUFACTURER WILL NEED TO CONFIRM THAT THE TANK HAS SUFFICIENT STRENGTH FOR THIS LOCATION IN ACCORDANCE WITH CIRIA C680.

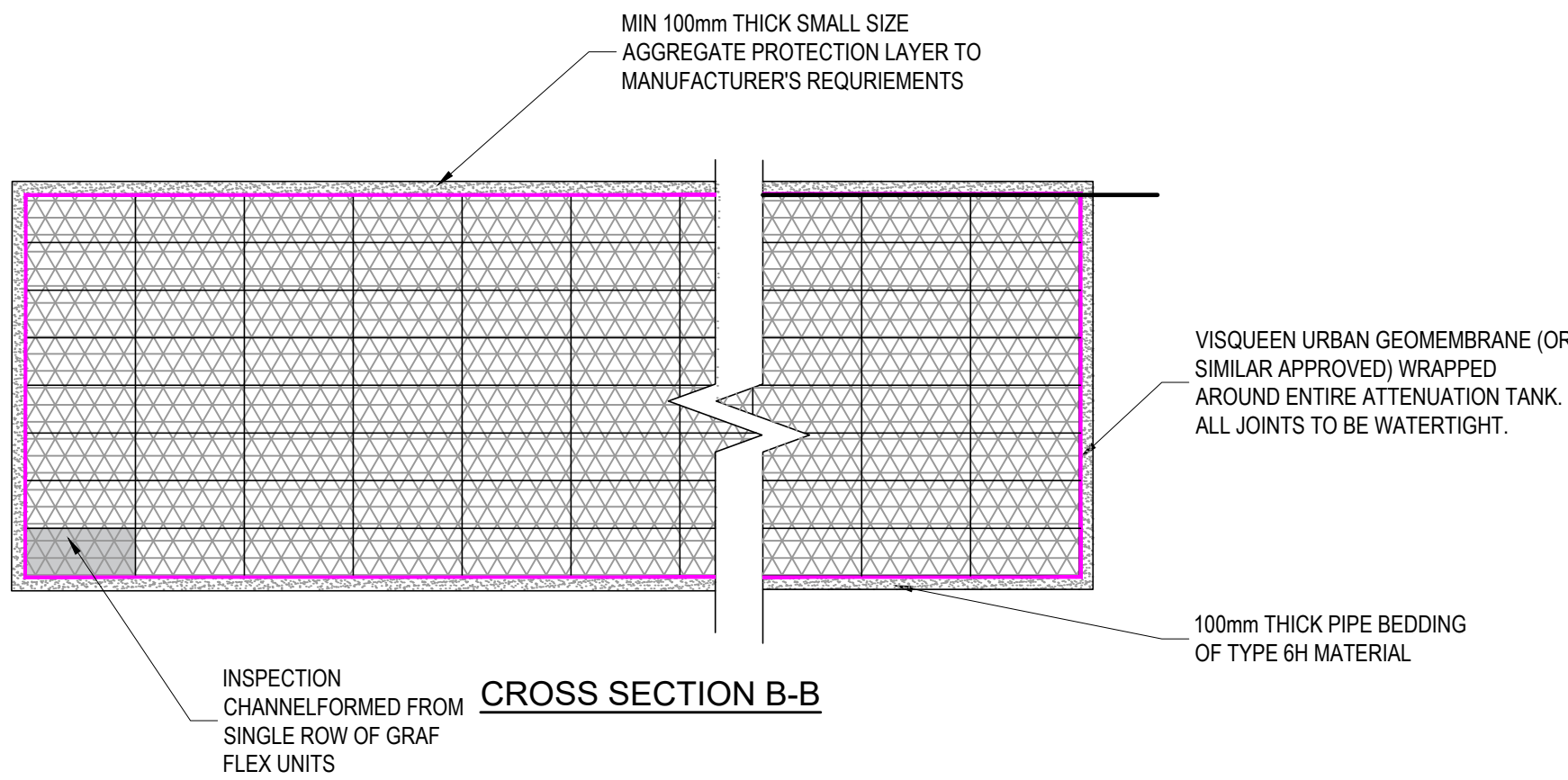
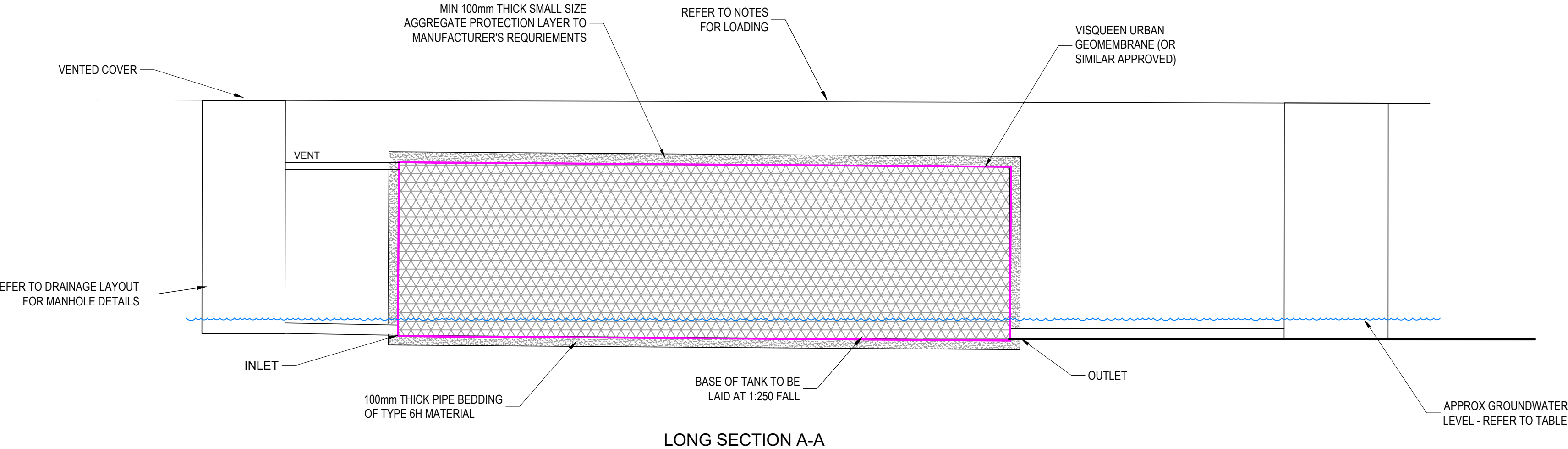
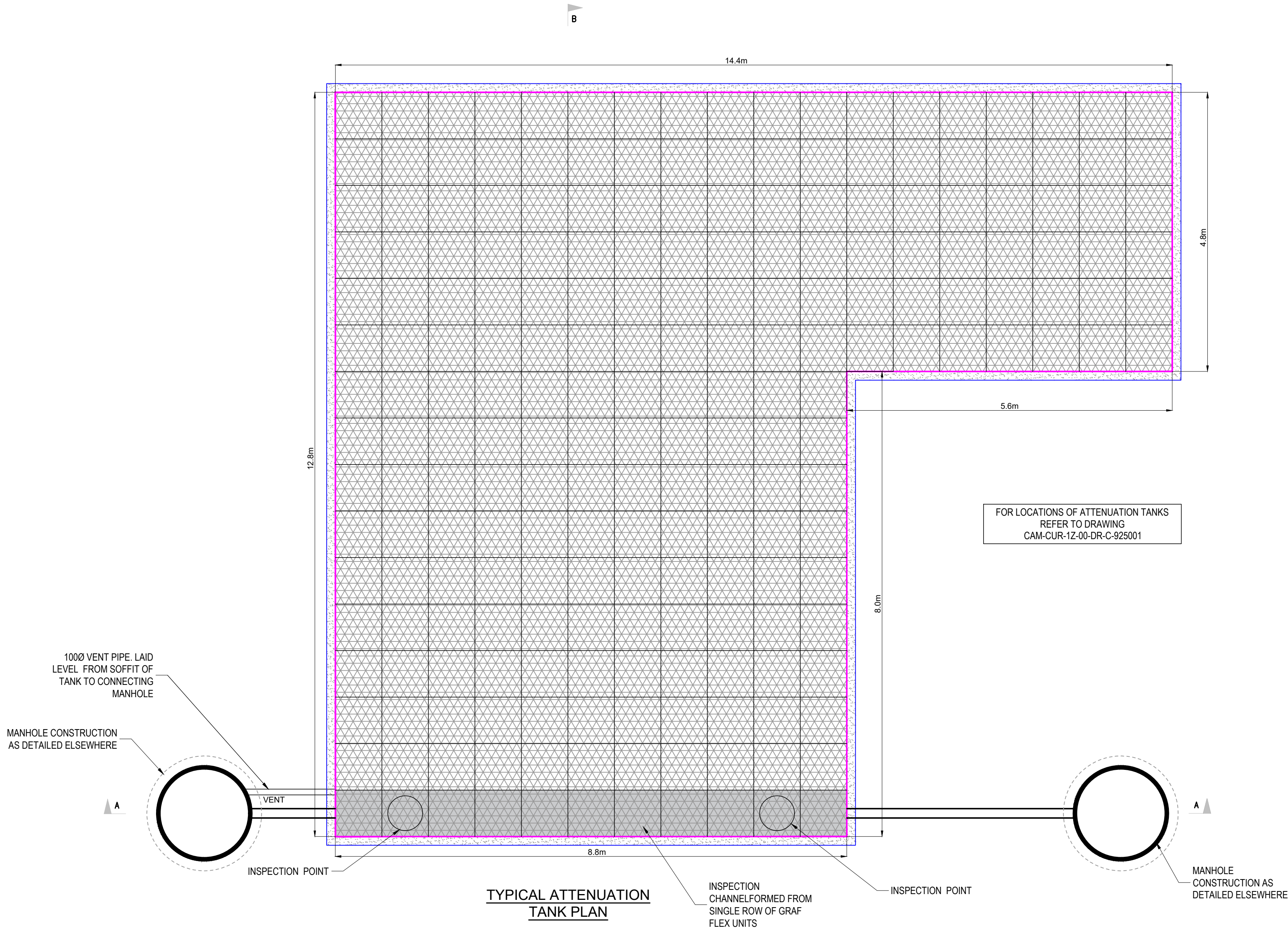
SEE TABLE FOR INVERT LEVELS, COVER LEVELS & COVER DEPTHS

SEE TABLE FOR DIMENSIONS OF TANKS AND VOLUMES
ATTENUATION VOLUME, BASED ON 95%

IMPERMEABLE MEMBRANE, BED AND SURROUND TO BE CONFIRMED WITH THE MANUFACTURER.

REFER TO DRAINAGE LAYOUT CAM-CUR-1Z-00-DR-C-925001 FOR INLET/ OUTLET LOCATIONS

ATTENUATION DETAILS													
REF	U/S MANHOLE	BASE LEVEL	TOP OF TANK LEVEL	MIN GROUND LEVEL	MAX GROUND LEVEL	MIN COVER TO TOP OF TANK	MAX COVER TO TOP OF TANK	LOADING	PLAN AREA	DEPTH 'Z'	VOLUME	GROUND WATER LEVEL	
TANK 1	S22	32.90m	35.39m	36.12m	36.46m	0.73m	1.07m	B125	140m²	2.49m	333m³	TRAIL PITS FROM GI REPORT RECORDED GW LEVEL AS 3.1m BELOW EXISTING GROUND LEVEL	



P03	UPDATED IN LINE WITH CHANGE IN MANUFACTURER	20.02.26	ATL	MW
P02	DRAWING NUMBER CORRECTION	16.10.25	ATL	MW
P01	STAGE 4 ISSUE FOR COMMENT	08.10.25	JC	ATL

Rev:	Description:	Date:	By:	Chkd:
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manchester@curtins.com
www.curtins.com

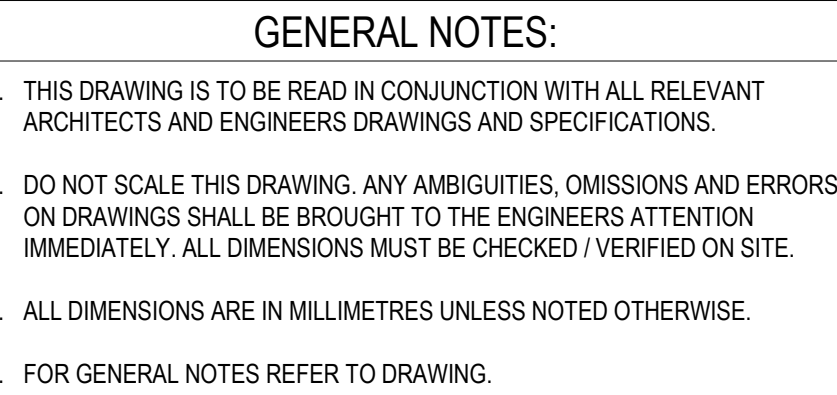
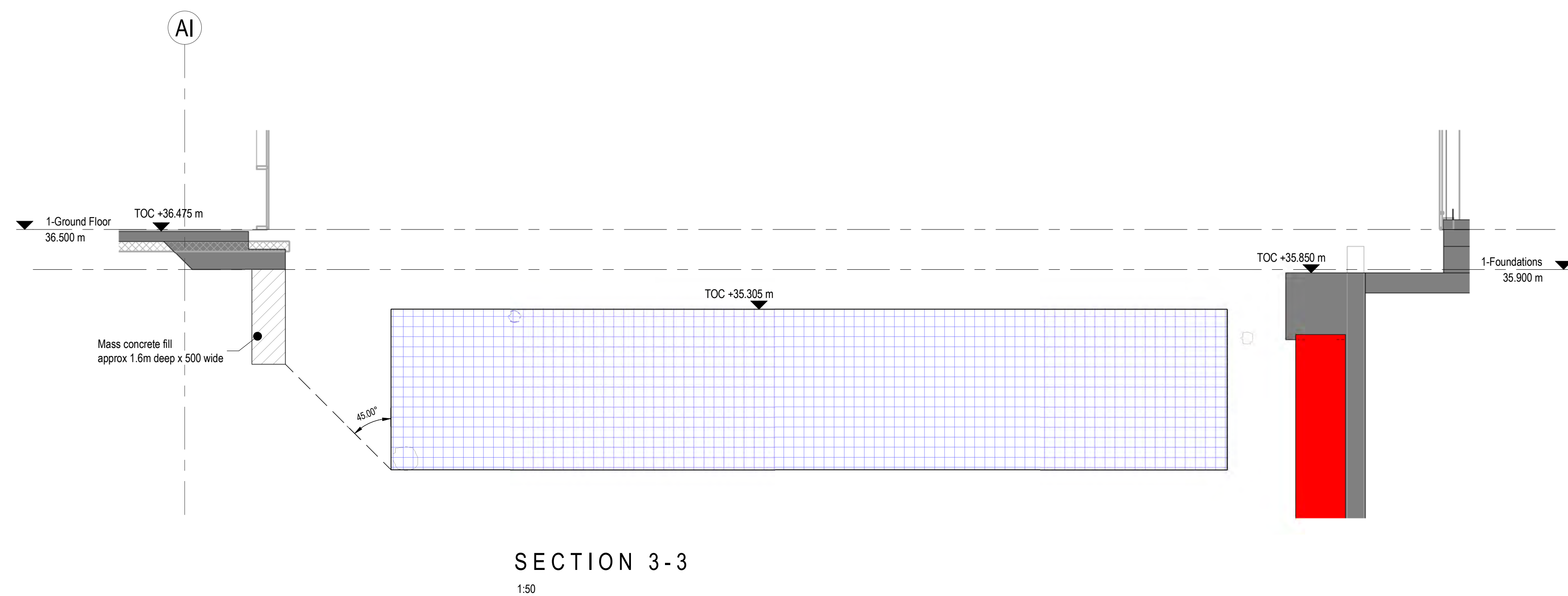
Civils & Structures • Transport Planning • Environmental • Infrastructure • Geotechnical • Conservation & Heritage • Principal Designer
Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: Preliminary

Project: Cambridge Halls Student Residences

Orig Title: DRAINAGE DETAILS SHEET 4

Drawn By	Designed By	Checked By
JC	JC	MW
Date	08/07/2025	Scales @ A1
N/A		
Project No - Originator - Function - Spatial - Form - Discipline - Number		
CAM - CUR - XX - XX - DR - C - 925023		
Revision		
P03		



Appendix G

Blue Roof Calculations

Blue Roof Plans

Client:

Project: B252515_Cambridge Halls

Location: Manchester, M15 6TT

Roof Location: Phase 2 Courtyard - Lvl 01

Roof Details:

BlueRoof453 m²x 100 %

Additional Catchment28 m²x 100 %

Effective Area481 m²

Storage Details:

Area453 m²

Depth200 mm

Porosity95 %

Slopenone

Rainfall Details - FEH Method:

Return Period100 years

Climate Change Factor45 %

Summer Storm Profile

Duration	Intensity	Required storage(m ³)
	mmmm/h	
5 min	21.2254.8	10.1
10 min	31.0186.2	14.6
15 min	38.8155.1	18.0
30 min	51.6103.3	23.4
45 min	59.679.5	26.4
60 min	65.665.6	28.4
2 hours	78.339.1	31.0
6 hours	100.116.7	30.7
24 hours	132.75.5	22.2
48 hours	152.93.2	15.1

Outflow Details:

Attenuation ControlBlueRoof Outlet

ControlTwist Std. Position 1

Sump DepthNone

Discharge rate1.43 l/s

Outlet2 No

Flow Per Outlet0.71 l/s

Emergency overflows are required. See calculation in Red below

Result:

OutcomePass

Critical Storm Duration3.48 hrs

Hmax73 mm

Required Volume31.3 m³

Time to half empty3 hrs

Roof Loading*69.09 Kg/m²

The roof loading refers only to the weight of water on the roof.

Industry best practices recommend the provision of a minimum of two outlets per roof area. Where a single blue roof outlet is specified a second overflow only outlet should be installed.

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product. Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. Please NOTE: the overflows are designed to ensure the roof cannot be overloaded in an exceedance event. The overflows will require a head of water to achieve the required discharge rate (typically 35mm). This additional height of water and load should be allowed for.

Emergency Overflow requirement (in accordance with BSEN12056-3:2000, CAT 1 storm):

Total overflow discharge: 481m2x0.018l/s/m2 = 8.66l/s.

(This would require 1no. additional DN100 outlet set at Hmax. Max capacity of overflows: 1.9l/s x 2no. (integrated) + 5.4l/s x 1no. (dedicated) = 9.2l/s).

Client:

Project: B252515_Cambridge Halls

Location: Manchester, M15 6TT

Roof Location: Phase 2 Plant - Lvl 01

Roof Details:

BlueRoof

124 m²

x 100 %

Additional Catchment

25 m²

x 100 %

Effective Area

149 m²

Storage Details:

Area

124 m²

Depth

100 mm

Porosity

95 %

Slope

none

Rainfall Details - FEH Method:

Return Period

100 years

Climate Change Factor

45 %

Summer Storm Profile

Duration

Intensity

Required storage(m³)

mm

mm/h

5 min

21.2

254.8

3.1

10 min

31.0

186.2

4.4

15 min

38.8

155.1

5.4

30 min

51.6

103.3

6.9

45 min

59.6

79.5

7.7

60 min

65.6

65.6

8.1

2 hours

78.3

39.1

8.4

6 hours

100.1

16.7

7.7

24 hours

132.7

5.5

4.4

48 hours

152.9

3.2

2.5

Outflow Details:

Attenuation Control

BlueRoof Outlet

Control

Twist Std. Position 1

Sump Depth

None

Discharge rate

0.71 l/s

Outlet

1 No

Emergency overflows are required. See calculation in Red below

Result:

Outcome

Pass

Critical Storm Duration

2 hrs

Hmax

71 mm

Required Volume

8.4 m³

Time to half empty

1.6 hrs

Roof Loading*

67.74 Kg/m²

The roof loading refers only to the weight of water on the roof.

Industry best practices recommend the provision of a minimum of two outlets per roof area. Where a single blue roof outlet is specified a second overflow only outlet should be installed.

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product. Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissionsor otherwise arising therefrom.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. Please NOTE: the overflows are designed to ensure the roof cannot be overloaded in an exceedance event. The overflows will require a head of water to achieve the required discharge rate (typically 35mm). This additional height of water and load should be allowed for.

Emergency Overflow requirement (in accordance with BSEN12056-3:2000, CAT 1 storm):

Total overflow discharge: 149m2x0.018l/s/m2 = 2.68l/s.

(This would require 1no. additional DN100 outlet set at Hmax. Max capacity of overflows: 1.9l/s x 1no. (integrated) + 5.4l/s x 1no. (dedicated) = 7.3l/s).

Client:

Project: B252515_Cambridge Halls

Location: Manchester, M15 6TT

Roof Location: Phase 2 Plant - Lvl 12A

Roof Details:

BlueRoof

213 m²

x 100 %

Additional Catchment

18 m²

x 100 %

Effective Area

231 m²

Storage Details:

Area

213 m²

Depth

100 mm

Porosity

95 %

Slope

none

Rainfall Details - FEH Method:

Return Period

100 years

Climate Change Factor

45 %

Summer Storm Profile

Duration	Intensity		Required storage(m³)
	mm	mm/h	
5 min	21.2	254.8	4.8
10 min	31.0	186.2	7.0
15 min	38.8	155.1	8.6
30 min	51.6	103.3	11.2
45 min	59.6	79.5	12.6
60 min	65.6	65.6	13.5
2 hours	78.3	39.1	14.7
6 hours	100.1	16.7	14.5
24 hours	132.7	5.5	10.3
48 hours	152.9	3.2	6.9

Outflow Details:

Attenuation Control

BlueRoof Outlet

Control

Twist Std. Position 1

Sump Depth

None

Discharge rate

0.72 l/s

Outlet

1 No

Emergency overflows are required. See calculation in Red below

Result:

Outcome

Pass

Critical Storm Duration

3.28 hrs

Hmax

73 mm

Required Volume

14.8 m³

Time to half empty

2.9 hrs

Roof Loading*

69.48 Kg/m²

The roof loading refers only to the weight of water on the roof.

Industry best practices recommend the provision of a minimum of two outlets per roof area. Where a single blue roof outlet is specified a second overflow only outlet should be installed.

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product. Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. Please NOTE: the overflows are designed to ensure the roof cannot be overloaded in an exceedance event. The overflows will require a head of water to achieve the required discharge rate (typically 35mm). This additional height of water and load should be allowed for.

Emergency Overflow requirement (in accordance with BSEN12056-3:2000, CAT 1 storm):

Total overflow discharge: 231m2x0.018l/s/m2 = 4.16l/s.

(This would require 1no additional DN100 outlet set at Hmax. Max capacity of overflows: 1.9l/s x 1no. (integrated) + 5.4l/s x 1no. (dedicated) = 7.3l/s).

Client:

Project: B252515_Cambridge Halls

Location: Manchester, M15 6TT

Roof Location: Phase 2 Plant - Lvl 12B

Roof Details:

BlueRoof

115 m²

x 100 %

Additional Catchment

2 m²

x 100 %

Effective Area

117 m²

Storage Details:

Area

115 m²

Depth

100 mm

Porosity

95 %

Slope

none

Rainfall Details - FEH Method:

Return Period

100 years

Climate Change Factor

45 %

Summer Storm Profile

Duration

Intensity

Required storage(m³)

mm

mm/h

5 min

21.2

254.8

2.4

10 min

31.0

186.2

3.5

15 min

38.8

155.1

4.2

30 min

51.6

103.3

5.4

45 min

59.6

79.5

5.9

60 min

65.6

65.6

6.2

2 hours

78.3

39.1

6.3

6 hours

100.1

16.7

5.6

24 hours

132.7

5.5

2.9

48 hours

152.9

3.2

1.5

Outflow Details:

Attenuation Control

BlueRoof Outlet

Control

Twist Std. Position 1

Sump Depth

None

Discharge rate

0.65 l/s

Outlet

1 No

Emergency overflows are required. See calculation in Red below

Result:

Outcome

Pass

Critical Storm Duration

2 hrs

Hmax

58 mm

Required Volume

6.3 m³

Time to half empty

1.3 hrs

Roof Loading*

54.78 Kg/m²

The roof loading refers only to the weight of water on the roof.

Industry best practices recommend the provision of a minimum of two outlets per roof area. Where a single blue roof outlet is specified a second overflow only outlet should be installed.

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product. Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. Please NOTE: the overflows are designed to ensure the roof cannot be overloaded in an exceedance event. The overflows will require a head of water to achieve the required discharge rate (typically 35mm). This additional height of water and load should be allowed for.

Emergency Overflow requirement (in accordance with BSEN12056-3:2000, CAT 1 storm):

Total overflow discharge: 117m2x0.018l/s/m2 = 2.11l/s.

(This would require 1no. additional DN100 outlet set at Hmax. Max capacity of overflows: 1.9l/s x 1no. (integrated) + 5.4l/s x 1no (dedciated) = 7.3l/s).

Drawing Original Size
A0

Notes
Unless indicated, this drawing is for information only and should not be used for construction. It is the responsibility of the client to ensure that the drawing is used for its intended purpose. The drawing should be printed and read at the original size, as stated. Cartwright Pickard Architects accept no responsibility for errors that occur as a result of reworking this drawing at any other size.

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Cartwright Pickard Architects accept no liability for any alterations to, additions to or omissions from the drawing or for any changes to background information which occur after it has been issued by Cartwright Pickard Architects.

STAGE 3 DESIGN INTENT
HIGH RISK BUILDING
Design subject to Stage 3 design development and Planning Consent, Building Control and Building Safety Act approval which may have impact on the proposed information.

The proposed information is to be developed with the main contractor, relevant sub-contractor(s) and specialist designers prior to procurement and construction. Current design proposals are subject to Gateway 2 approval prior to construction.

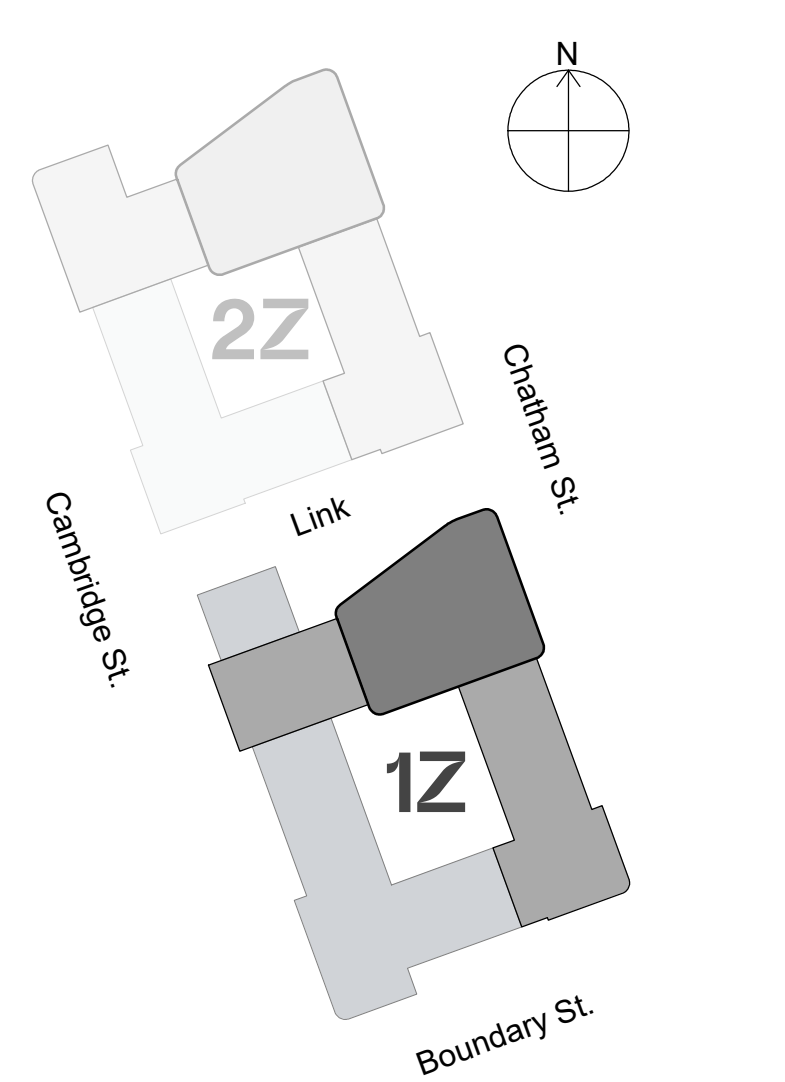
Any discrepancies from the Employer's Requirements are to be clarified prior to design conclusion and procurement of the relevant package.

This drawing is to be read in conjunction with all other relevant Architect's, Structural Engineer's, Services, Fire, Acoustic and Other Consultants information and specifications.

Design subject to further development and co-ordination. Airtightness, Thermal, Acoustic & Fire performance to be in accordance with the Architect's specification.

FABRIC PERFORMANCE REQUIREMENTS
Performance requirements to be read in conjunction with MEP Overheating & Energy Statement information.

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Ground Floor U-Value: 0.12 W/m²K
Roof U-Value: 0.12 W/m²K
Roof U-Value: 0.12 W/m²K
Glazing U-Value: 0.8 W/m²K (Triple Glazing)
Glazing G-Value: 0.4
Glazing L-T Value: 0.7
External Door U-Value: 1.6 W/m²K
Building Air Permeability: 3m³/h.m² @ 50Pa



Drawing Revisions				Check:
Date:	Rev:	Note:		CP
30.05.25	P01	Stage 3 Issue		

CARTWRIGHT PICKARD

Client
Unite Students and Manchester Metropolitan University

Project
CAM | Cambridge Halls

Building Name
Cambridge Halls

Drawing Title
Roof Details - Roof Types Phase 1

Scale
As indicated @ A0

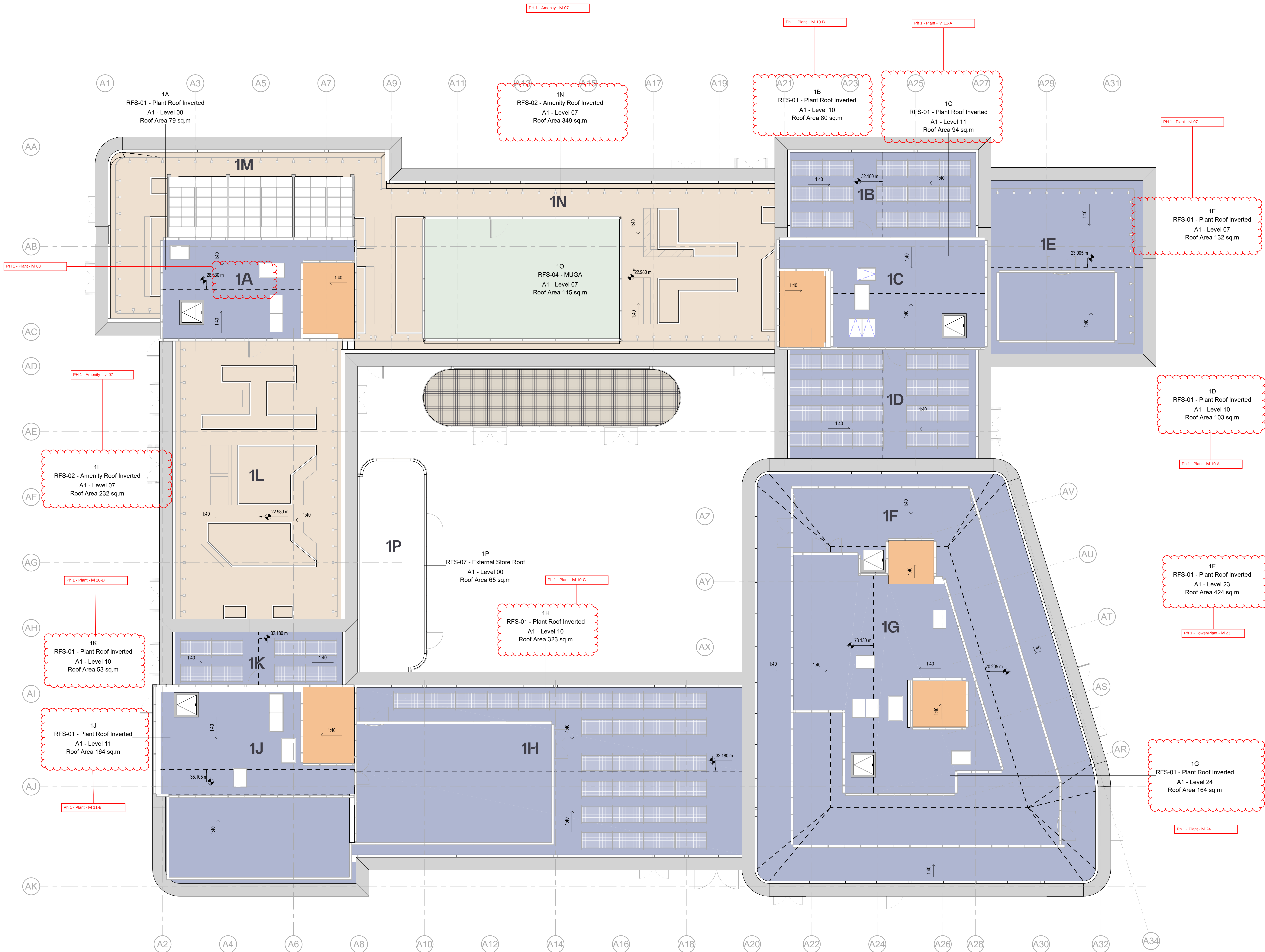
Drawing Created
May 2025

Revision
P01

Drawing No.
CAM-CPA-1Z-ZZ-DR-A-003500

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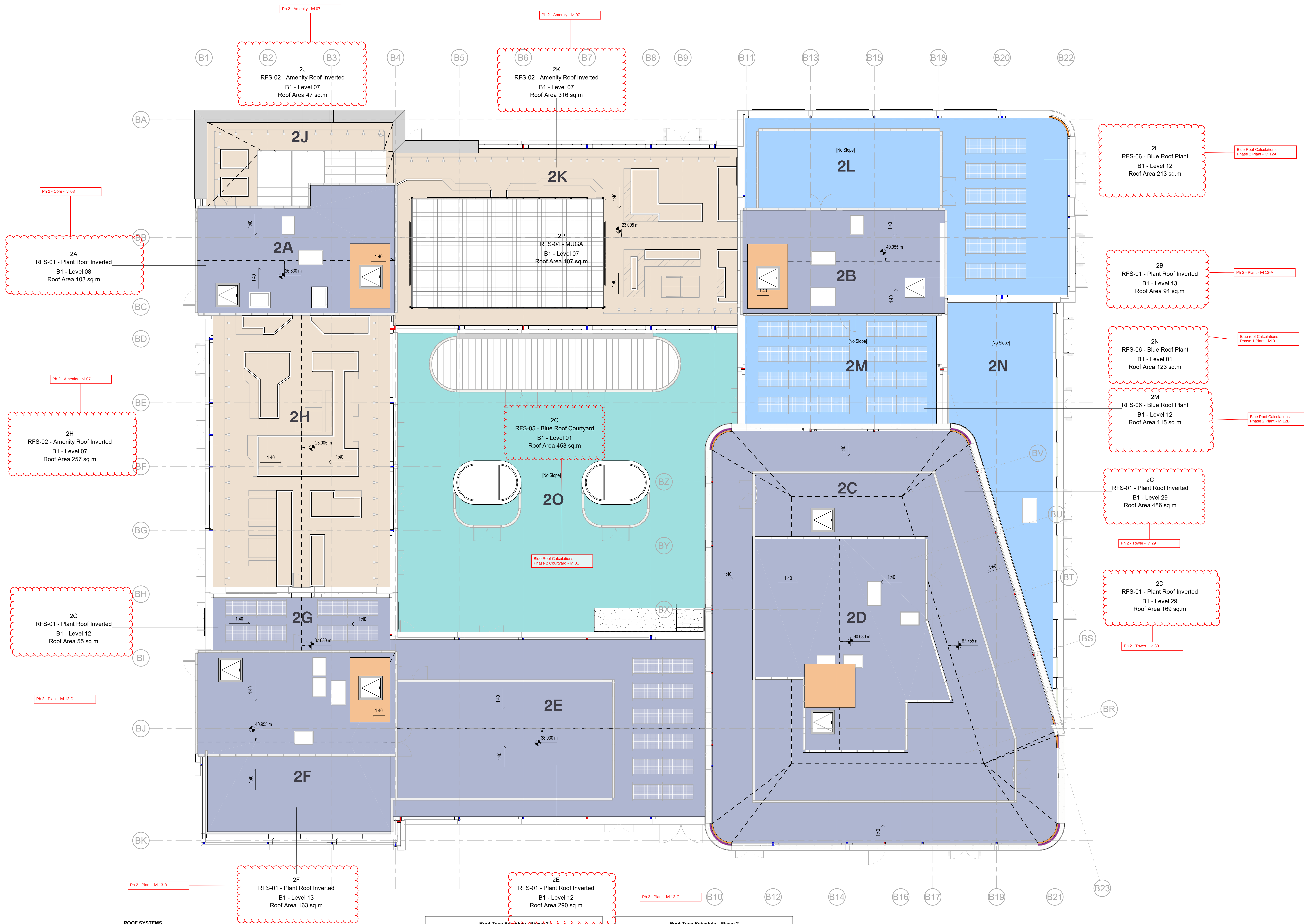


ROOF SYSTEMS

- RFS-105: Liquid-Applied Inverted Roof Covering Systems (D)
Ss 30, 40, 30, 42
RFS-01 - Inverted Roof - Plant Area - Bauder Baker Hot Melt System
- RFS-105: Liquid-Applied Inverted Roof Covering Systems (D)
Ss 30, 40, 30, 42
RFS-02 - Inverted Roof - Amenity Area - Bauder Baker Hot Melt System
- RFS-111: Reinforced Bitumen Membrane Warm Roof Covering Systems (D)
Ss 30, 40, 30, 72
RFS-03 - Warm Roof - Plant Area - Bauder Total Roof System
- RFS-04 - MUGA Surface - SEL Sport
Refer to Landscape Architect design and specification
- RFS-941: Blue Roof Systems - Pedestal System
Ss 30, 40, 30, 07
RFS-05 - Blue Roof - Courtyard Area - Bauder Blue Storm Pedestal System over Warm Roof
- RFS-945: Blue Roof Systems - Ballast System
Ss 30, 40, 30, 07
RFS-06 - Blue Roof - Plant Area - Bauder Blue Roof Ballasted System over Warm Roof

Roof Type Schedule - Phase 1				
Mark	Base Level	Type	Area	
1A	A1 - Level 08	RFS-01 - Plant Roof Inverted	79 m ²	
1B	A1 - Level 10	RFS-01 - Plant Roof Inverted	80 m ²	
1C	A1 - Level 11	RFS-01 - Plant Roof Inverted	94 m ²	
1D	A1 - Level 10	RFS-01 - Plant Roof Inverted	103 m ²	
1E	A1 - Level 07	RFS-01 - Plant Roof Inverted	132 m ²	
1F	A1 - Level 23	RFS-01 - Plant Roof Inverted	424 m ²	
1G	A1 - Level 24	RFS-01 - Plant Roof Inverted	164 m ²	
1H	A1 - Level 10	RFS-01 - Plant Roof Inverted	323 m ²	
1J	A1 - Level 11	RFS-01 - Plant Roof Inverted	164 m ²	
1K	A1 - Level 10	RFS-01 - Plant Roof Inverted	53 m ²	
RFS-01 - Plant Roof Inverted: 11			1,631 m ²	
1L	A1 - Level 07	RFS-02 - Amenity Roof Inverted	131 m ²	
1M	A1 - Level 07	RFS-02 - Amenity Roof Inverted	232 m ²	
1N	A1 - Level 07	RFS-02 - Amenity Roof Inverted	349 m ²	
RFS-02 - Amenity Roof Inverted: 3			712 m ²	

Roof Type Schedule - Phase 1			
Mark	Base Level	Type	Area
1A	A1 - Level 24	RFS-03 - Plant Roof Warm	12 m ²
1B	A1 - Level 12	RFS-03 - Plant Roof Warm	19 m ²
1C	A1 - Level 09	RFS-03 - Plant Roof Warm	19 m ²
1D	A1 - Level 12	RFS-03 - Plant Roof Warm	19 m ²
1E	A1 - Level 24	RFS-03 - Plant Roof Warm	10 m ²
RFS-03 - Plant Roof Warm: 5			80 m ²
1F	A1 - Level 07	RFS-04 - MUGA	115 m ²
RFS-04 - MUGA: 1			115 m ²
1P	A1 - Level 00	RFS-07 - External Store Roof	65 m ²
1J	A1 - Level 10	RFS-07 - External Store Roof	65 m ²
Grand total: 21			2,603 m ²



Drawing Original Size
A0

Notes
Unless indicated, this drawing is for information only and should not be used for construction. Dimensions should be checked on site. The drawing should be printed and read at the original size, as stated. Cartwright Pickard Architects accept no responsibility for errors that occur as a result of reviewing this drawing at any other size.

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Cartwright Pickard Architects accept no liability for any alterations to, additions to or omissions from any drawings or changes to such background information which occur after it has been issued by Cartwright Pickard Architects.

STAGE 3 DESIGN INTENT
HIGH RISK BUILDING
Design subject to Stage 3 design development and Planning Consent, Building Control and Building Safety Act approval which may have impact on the proposed information.

The proposed information is to be developed with the main contractor, relevant sub-contractor(s) and specialist designers prior to procurement and construction. Current design proposals are subject to Gateway 2 approval prior to construction.

Any discrepancies from the Employer's Requirements are to be clarified prior to design conclusion and procurement of the relevant package.

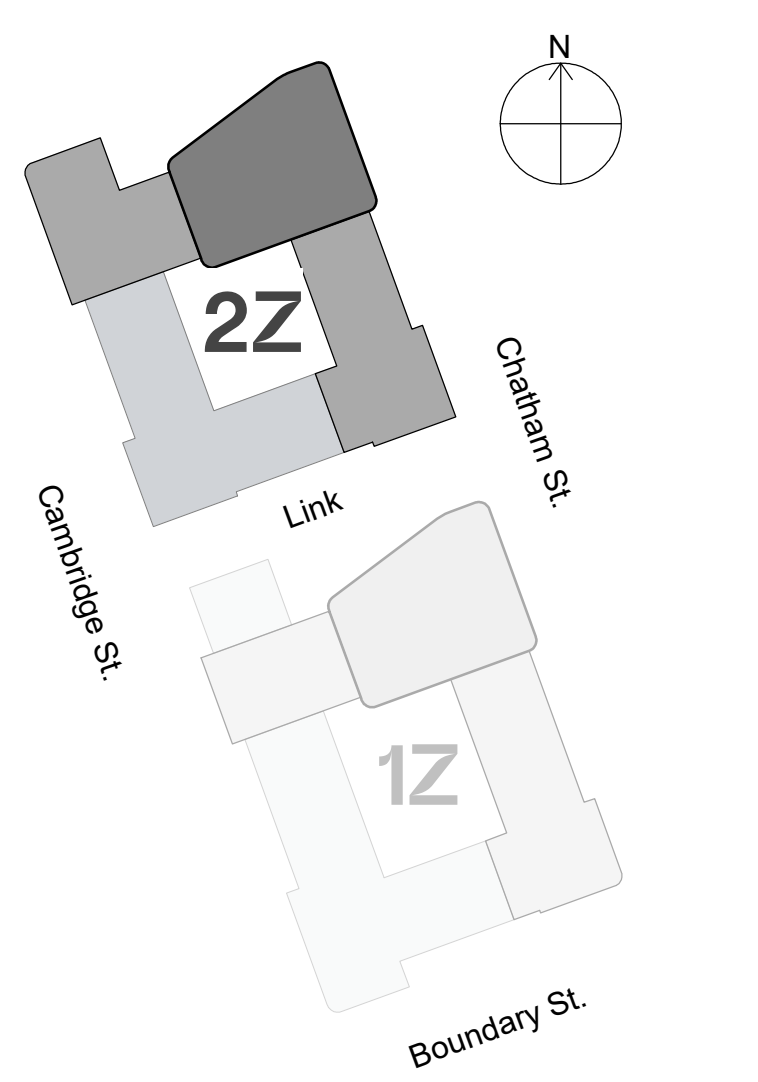
This drawing is to be read in conjunction with all other relevant Architect's, Structural Engineer's, Services', Fire, Acoustic and Other Consultants information and specifications.

Design subject to further development and co-ordination. Airtightness, Thermal, Acoustic & Fire performance to be in accordance with the Architect's specification.

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Drawing Revisions
Date: 30.05.25 Rev: P01 Note: Stage 3 Issue Check: CP



Client
Unite Students and Manchester Metropolitan University

Project
CAM | Cambridge Halls

Building Name
Cambridge Halls

Drawing Title
Roof Details - Roof Types Phase 2

Scale
As indicated @ A0

Drawing Created
May 2025

Revision
P01

Drawing No.
CAM-CPA-2Z-ZZ-DR-A-003501

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