



Fort Road

Sarra Hawes

To: Charlotte Smith

11 May 2021 at 11:58

Hi Charlotte,

I can ask them to start with some trial holes.

JOB DETAILS:**Client:** City Zen Design**Site:** Fort Road East**Date:** 18.03.2021

WELL AND WATER DATA		
Monitoring Point	Water level (mbgl)	Depth of well (m)
WS01	4.50	5.00

These are the results from YE.

Kind regards

Sarra Hawes

Our Ref: YEX1978

22nd March 2021

For the attention of Hawes Construction Group,

Ref: Land at Fort Road East, Wick, Littlehampton, West Sussex, BN17 7QZ

We thank you for your request to undertake permeability testing at the above mentioned site and take pleasure in enclosing the results of this work. The investigation was undertaken on the 18th March 2021 in accordance with your instruction to proceed. This letter describes the work undertaken, presents the data obtained and discusses the results of the tests.

Geology

An examination of the available British Geological Survey data of the area for the site has been examined and indicates that the site has superficial drift deposits composed of Raised Marine Deposits (clay, silt, sand and gravel), and bedrock deposits recorded as the Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation, Culver Chalk Formation and Portsdown Chalk Formation (chalk).

Fieldworks

The programme of this investigation included the excavation of one trial pit. The location of the soakaway test was selected by YourEnvironment in an accessible area.

During this work, the soils encountered were logged in general accordance with BS 5930: 1990, as amended in 2007, and full descriptions are given on the borehole records, which are also appended to this letter.

Soakaway Tests

During the soakaway tests the water achieved a fall from 75% to 25% of the effective depth of the storage volume. The results obtained from the soakaway tests are summarised below:

Table 1: Soakaway Test Results

WS	Soakage Area Dimensions (m)	Depth (m)	Soil Description (Base of TP)	Infiltration Rate (m/sec)	Drainage Characteristics
TP01 test1	1.40 x 0.30	1.70	Orange and mottled yellow SAND. Sand is fine - medium.	4.0E-5	Good
TP01 test2	1.40 x 0.30	1.70	Orange and mottled yellow SAND. Sand is fine - medium.	3.6E-5	Good
TP01 test3	1.40 x 0.30	1.70	Orange and mottled yellow SAND. Sand is fine - medium.	3.1E-5	Good

Discussion

The soils encountered beneath the site were recorded as predominantly SAND. The soakage rates obtained during the investigation were found to be good and permeable. Given the data from the test, it is considered that the use of soakaways is suitable for this site.

References

Building Research Establishment (BRE) Digest 365, *Soakaway Design*, September 1991.

British Standards Institution (1999) BS5930: *Code of practice for site investigations*, B.S.I., London.

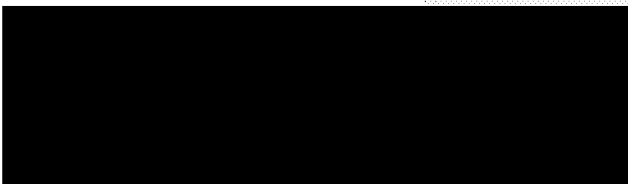
British Standards Institution (2007), Amendment No 1, BS5930: *Code of practice for site investigations*, B.S.I., London.

We trust that this information is of interest and should you have any other requirements do not hesitate to contact us.

For and on behalf of

YourEnvironment

Yours Faithfully,



Nick Hammond

Geo-Environmental Engineer

Enc.

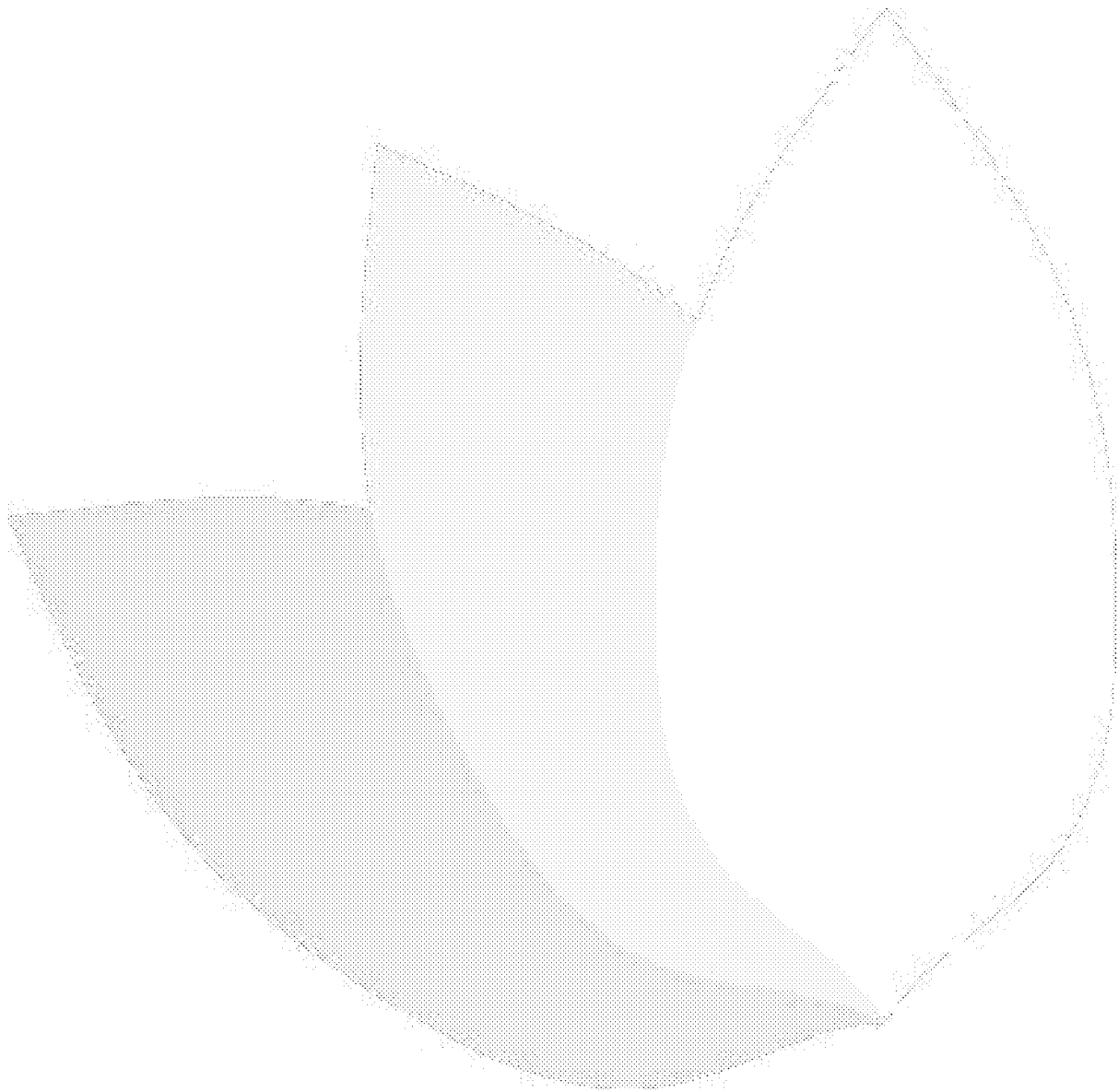
Appendix A: Site Investigation Plan

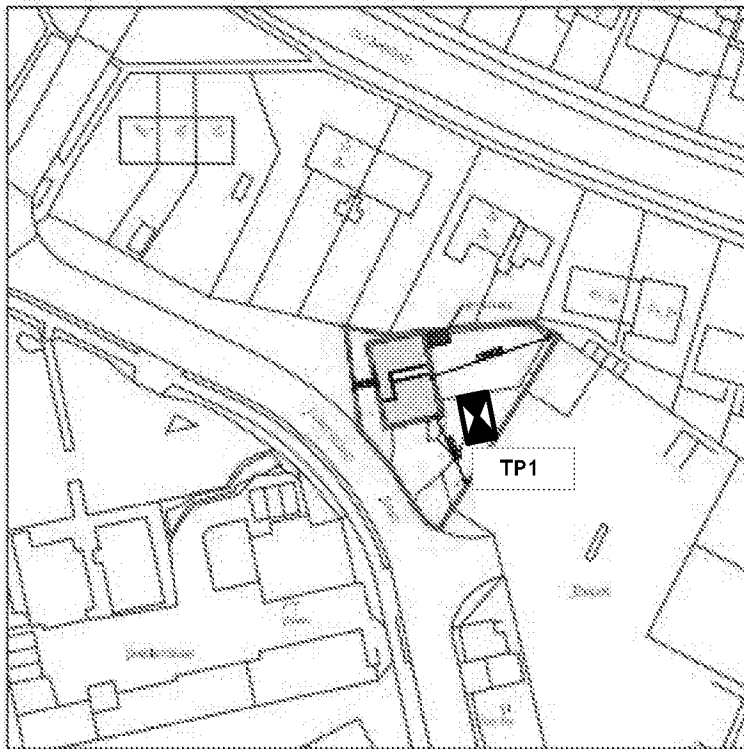
Appendix B: Trial Pit Logs

Appendix C: Soakaway Test Results

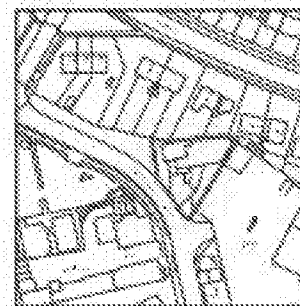
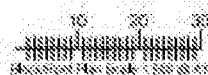
Appendix D: Photographs

APPENDIX A: Site Investigation Plan

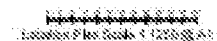




Block Plan, Scale 1:500



Location Plan, Scale 1:1250



Ground Investigation Location Plan - Not to Scale

YourEnvironment

Chilgrove Business Centre, Chilgrove, Nr Chichester, PO18 9HU
Tel: 01243 787150
Email: info@yourenvironment.org

Site Name:

Land at Fort Road East

Client:

Hawes Construction Group

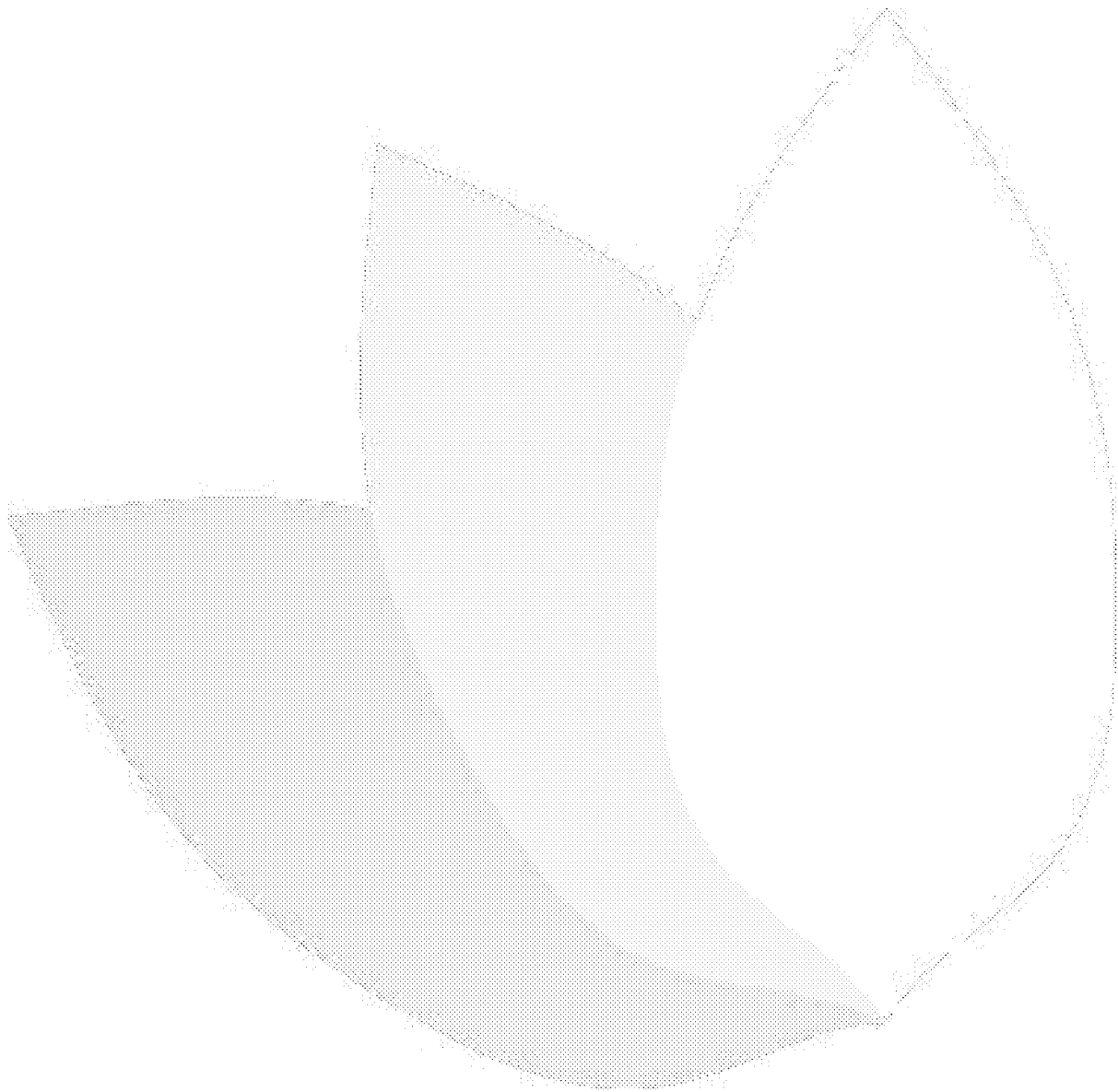
Date:

Mar-21

Job No:

YEX1978

APPENDIX B: Trial Pit Logs





Log of Boring

Sheet 1 of

TP1

1

YE Engineer

N. Hammond

Location

Land at Fort Road East, Wick, Littlehampton, BN17 7QZ

Date

March 18, 2021

Project Reference

YEX1978

Water level data

Completion: Depth NA m

Elevation NA m

Width 0.3 m

Length 1.4 m

Depth 1.7 m

24 hour: Depth m

Elevation m

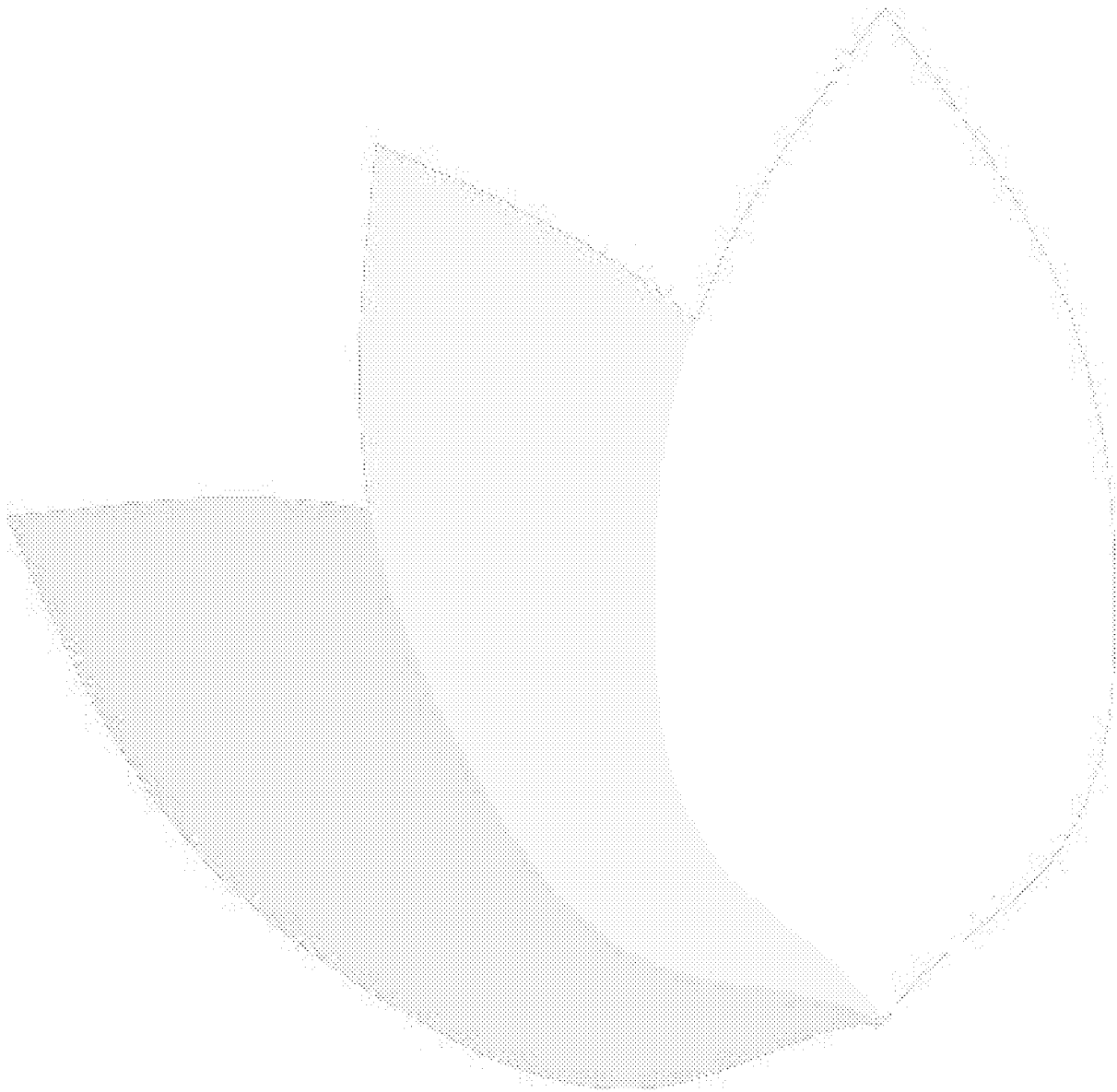
Method (Trial pit, window etc)

Trial Pit - Machine Excavation

Stratum		Sample Depth		Sample Type	GW	Install Details	LITHOLOGY
depth (m)		From	To				
From	To	m	m				
0.00	0.20					NONE	MADE GROUND. Brown clayey, sandy GRAVEL. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concrete fragments and mixed lithology.
0.20	0.25						MADE GROUND. Black Asphalt.
0.25	0.35						MADE GROUND. Brown clayey, sandy GRAVEL. Sand is fine - medium. Gravel is medium - coarse, angular of brick and concrete fragments and mixed lithology.
0.35							MADE GROUND. Orange and mottled brown SAND. Sand is fine - medium.
	0.60						Orange and mottled yellow SAND. Sand is fine - medium.
0.6							
	1.70						
							End of TP1

Remarks:

APPENDIX B: Soakaway Test Results

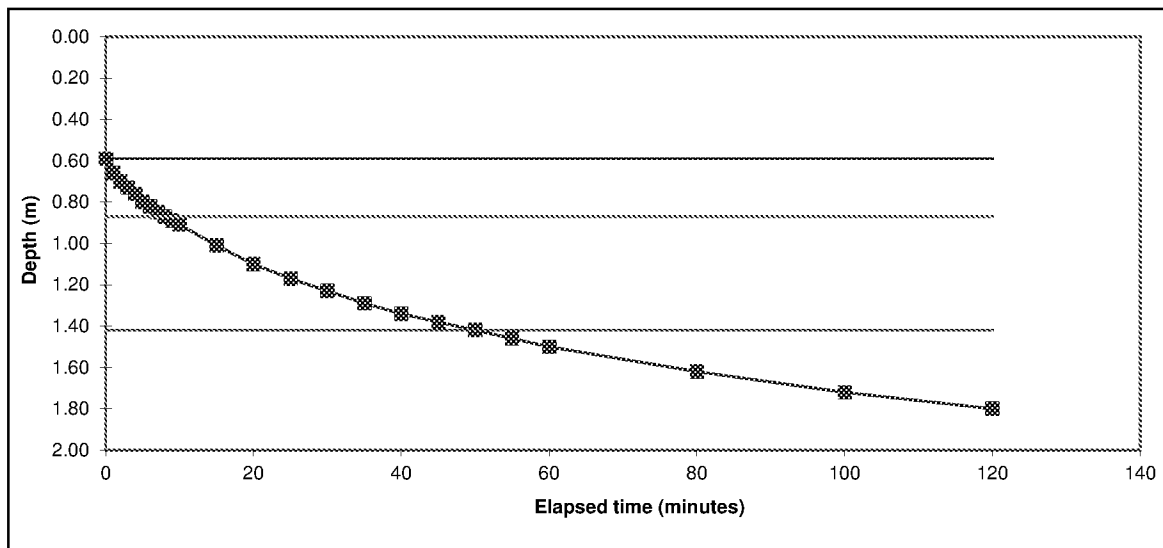


Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	1	Date:	18/03/2021
Length (m):	1.400	Datum Height:		0.00 m agl	
Width (m):	0.30	Granular infill:	None		
Depth (m):	1.70	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.590	30	1.230
1	0.660	35	1.290
2	0.700	40	1.340
3	0.730	45	1.380
4	0.760	50	1.420
5	0.800	55	1.460
6	0.820	60	1.500
7	0.850	80	1.620
8	0.870	100	1.720
9	0.890	120	1.800
10	0.910		
15	1.010		
20	1.100		
25	1.170		



Start water depth for analysis (mbgl):	0.59		
75% effective depth (mbgl):	0.87	Elapsed time (mins):	8.0
50% effective depth (mbgl):	1.15		
25% effective depth (mbgl):	1.42	Elapsed time (mins):	50.0
Base of soakage zone (mbgl):	1.70		
Volume outflow between 75% and 25% effective depth (m³):			0.231
Mean surface area of outflow (m²):			2.29
(side area at 50% effective depth + base area)			
Time for outflow between 75% and 25% effective depth (mins):			42.0

Soil infiltration rate (m/s):	4.0E-5
Remarks	Results processed following BRE 365 (2007).

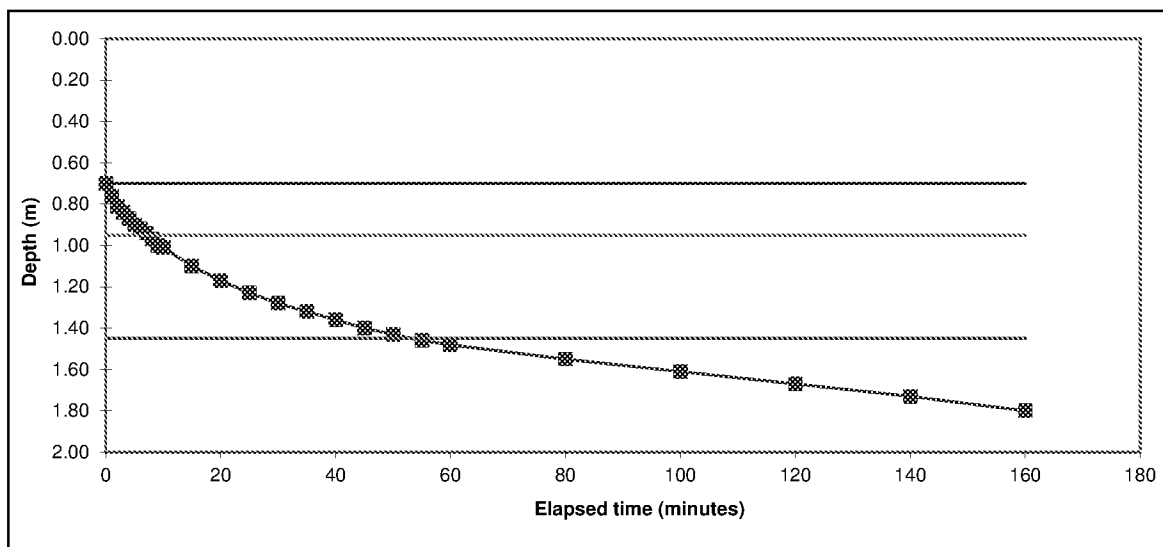
Client:	Hawes Construction Group	TP1
Site:	Land at Fort Road East	

Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	2	Date:	18/03/2021
Length (m):	1.400	Datum Height:			0.00 m agl
Width (m):	0.30	Granular infill:	None		
Depth (m):	1.70	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.700	30	1.280
1	0.760	35	1.320
2	0.810	40	1.360
3	0.840	45	1.400
4	0.870	50	1.430
5	0.900	55	1.460
6	0.920	60	1.480
7	0.940	80	1.550
8	0.970	100	1.610
9	1.000	120	1.670
10	1.010	140	1.730
15	1.100	160	1.800
20	1.170		
25	1.230		



Start water depth for analysis (mbgl)	0.70		
75% effective depth (mbgl):	0.95	Elapsed time (mins):	7.3
50% effective depth (mbgl):	1.20		
25% effective depth (mbgl):	1.45	Elapsed time (mins):	53.3
Base of soakage zone (mbgl):	1.70		
Volume outflow between 75% and 25% effective depth (m³):			0.210
Mean surface area of outflow (m²):			2.12
(side area at 50% effective depth + base area)			
Time for outflow between 75% and 25% effective depth (mins):			46.0

Soil infiltration rate (m/s):	3.6E-5
Remarks Results processed following BRE 365 (2007).	

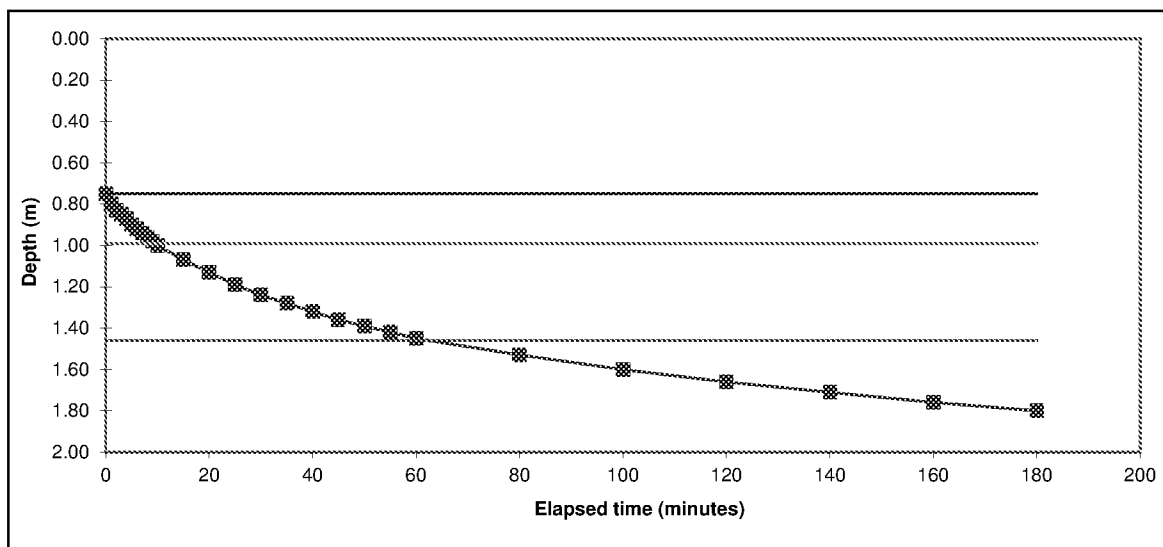
Client:	Hawes Construction Group	TP1
Site:	Land at Fort Road East	

Your Environment

Soakaway Test

Trial Pit No:	TP1	Test No:	3	Date:	18/03/2021
Length (m):	1.400	Datum Height:			0.00 m agl
Width (m):	0.30	Granular infill:	None		
Depth (m):	1.70	Porosity of infill:	1	(assumed)	

Elapsed time (minutes)	Water Depth (m below datum)	Elapsed time (minutes)	Water Depth (m below datum)
0	0.750	30	1.240
1	0.800	35	1.280
2	0.830	40	1.320
3	0.850	45	1.360
4	0.870	50	1.390
5	0.900	55	1.420
6	0.920	60	1.450
7	0.940	80	1.530
8	0.960	100	1.600
9	0.980	120	1.660
10	1.000	140	1.710
15	1.070	160	1.760
20	1.130	180	1.800
25	1.190		

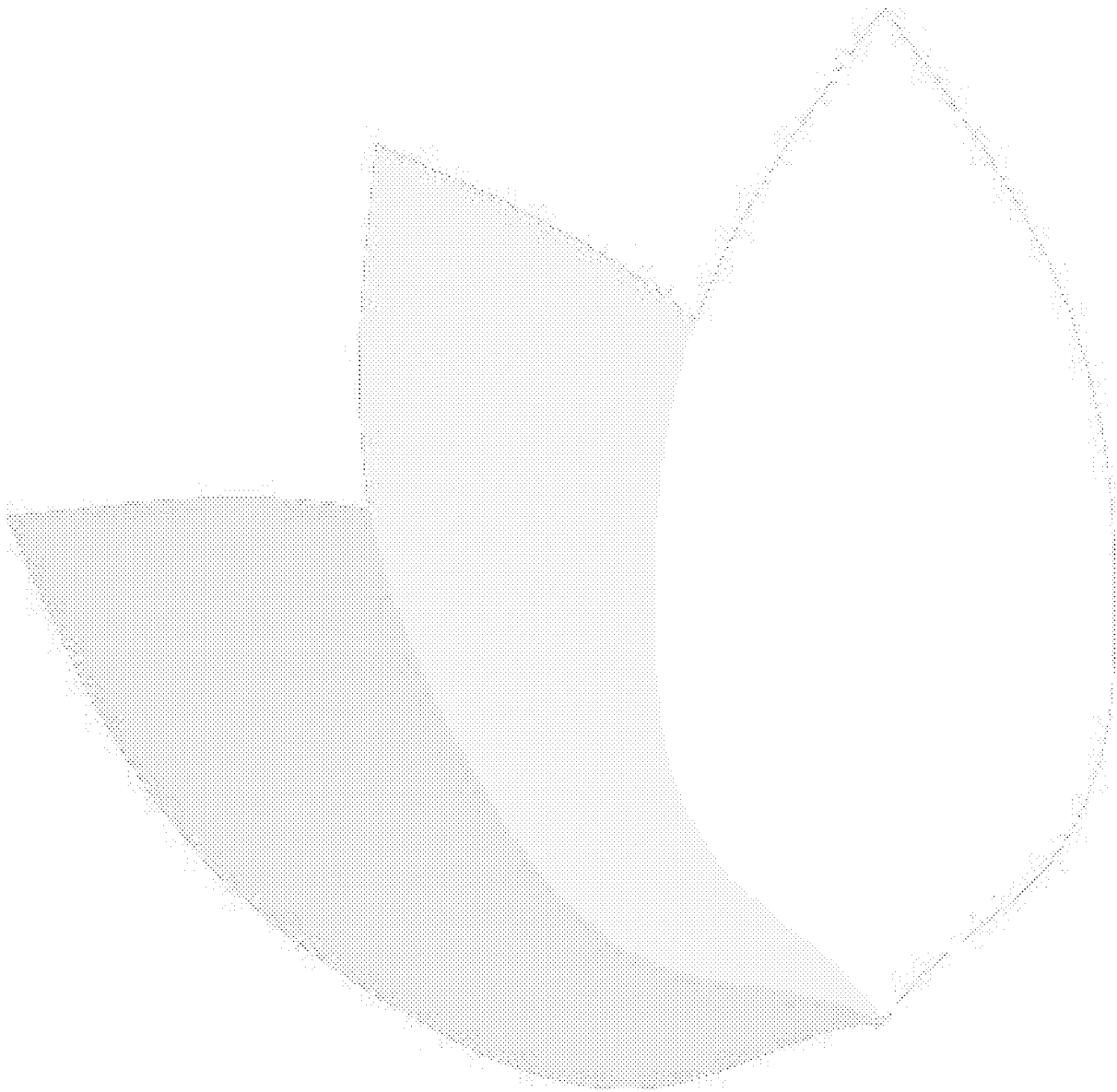


Start water depth for analysis (mbgl)	0.75		
75% effective depth (mbgl):	0.99	Elapsed time (mins):	9.5
50% effective depth (mbgl):	1.23		
25% effective depth (mbgl):	1.46	Elapsed time (mins):	62.5
Base of soakage zone (mbgl):	1.70		
Volume outflow between 75% and 25% effective depth (m³):			0.197
Mean surface area of outflow (m²):			2.02
(side area at 50% effective depth + base area)			
Time for outflow between 75% and 25% effective depth (mins):			53.0

Soil infiltration rate (m/s):	3.1E-5
Remarks	Results processed following BRE 365 (2007).

Client:	Hawes Construction Group	TP1
Site:	Land at Fort Road East	

APPENDIX D: Photographs



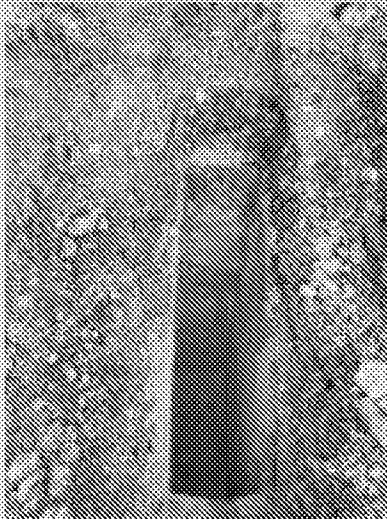
A.



B.



C.



D.



Your Environment

A. TP1

B. TP1

C. TP1

D. TP1



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

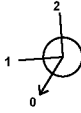
Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SS	0.000		3.470	450	502252.961	102642.840	1.800
S1	0.002	4.00	5.000	450	502244.938	102664.087	1.000
S2	0.000		5.000	450	502260.961	102664.890	1.200
S3	0.009	4.00	4.626	600	502261.803	102652.511	1.300
RE	0.007	4.00	5.000	150	502245.553	102651.259	1.200
S5	0.005	4.00	3.600	1050	502256.012	102643.060	1.365

Links (Results)

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)
1.000	0.850	6.8	0.3	0.900	1.100	0.002	0.0	14
1.001	1.432	11.2	0.3	1.100	1.150	0.002	0.0	11
2.000	1.247	9.8	0.9	1.100	1.150	0.007	0.0	21
1.002	3.179	56.2	2.4	1.150	1.215	0.018	0.0	21
1.003	4.360	77.0	3.1	1.215	1.650	0.023	0.0	21

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SS	502252.961	102642.840	3.470	1.800	450		1	1.003	1.670
S1	502244.938	102664.087	5.000	1.000	450		0	1.000	4.000
S2	502260.961	102664.890	5.000	1.200	450		1	1.000	3.800
S3	502261.803	102652.511	4.626	1.300	600		0	1.001	3.800
							1	2.000	3.376
							2	1.001	3.376
							0	1.002	3.326

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE	502245.553	102651.259	5.000	1.200	150				
							0	2.000	3.800
S5	502256.012	102643.060	3.600	1.365	1050		1	1.002	2.235
									
							0	1.002	2.235

Simulation Settings

Rainfall Methodology	FSR	Analysis Speed	Normal
FSR Region	England and Wales	Skip Steady State	x
M5-60 (mm)	20.000	Drain Down Time (mins)	240
Ratio-R	0.400	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Check Discharge Rate(s)	x
Winter CV	0.840	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
10	0	0	0
30	0	0	0
100	40	0	0

Node SS Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.11600	Invert Level (m)	1.670	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.11600	Time to half empty (mins)	413	Inf Depth (m)	
Safety Factor	3.0	Pit Width (m)	5.000	Number Required	1
Porosity	0.95	Pit Length (m)	3.000		

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m³)	
Full Bore Velocity	✓		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	109.521	30.991	30 year 15 minute summer	268.706	76.035
1 year 15 minute winter	76.857	30.991	30 year 15 minute winter	188.566	76.035
1 year 30 minute summer	71.439	20.215	30 year 30 minute summer	174.929	49.499
1 year 30 minute winter	50.133	20.215	30 year 30 minute winter	122.757	49.499
1 year 60 minute summer	48.435	12.800	30 year 60 minute summer	116.589	30.811
1 year 60 minute winter	32.179	12.800	30 year 60 minute winter	77.459	30.811
1 year 120 minute summer	30.053	7.942	30 year 120 minute summer	70.438	18.615
1 year 120 minute winter	19.966	7.942	30 year 120 minute winter	46.797	18.615
1 year 180 minute summer	23.233	5.979	30 year 180 minute summer	53.298	13.715
1 year 180 minute winter	15.102	5.979	30 year 180 minute winter	34.645	13.715
1 year 240 minute summer	18.475	4.882	30 year 240 minute summer	41.604	10.995
1 year 240 minute winter	12.274	4.882	30 year 240 minute winter	27.641	10.995
1 year 360 minute summer	14.169	3.646	30 year 360 minute summer	31.221	8.034
1 year 360 minute winter	9.210	3.646	30 year 360 minute winter	20.295	8.034
1 year 480 minute summer	11.185	2.956	30 year 480 minute summer	24.324	6.428
1 year 480 minute winter	7.431	2.956	30 year 480 minute winter	16.160	6.428
1 year 600 minute summer	9.182	2.511	30 year 600 minute summer	19.756	5.404
1 year 600 minute winter	6.274	2.511	30 year 600 minute winter	13.498	5.404
1 year 720 minute summer	8.203	2.199	30 year 720 minute summer	17.490	4.687
1 year 720 minute winter	5.513	2.199	30 year 720 minute winter	11.754	4.687
1 year 960 minute summer	6.768	1.782	30 year 960 minute summer	14.215	3.743
1 year 960 minute winter	4.483	1.782	30 year 960 minute winter	9.416	3.743
1 year 1440 minute summer	4.949	1.326	30 year 1440 minute summer	10.161	2.723
1 year 1440 minute winter	3.326	1.326	30 year 1440 minute winter	6.829	2.723
10 year 15 minute summer	211.819	59.937	100 year +40% CC 15 minute summer	488.233	138.153
10 year 15 minute winter	148.645	59.937	100 year +40% CC 15 minute winter	342.620	138.153
10 year 30 minute summer	136.831	38.718	100 year +40% CC 30 minute summer	320.551	90.705
10 year 30 minute winter	96.022	38.718	100 year +40% CC 30 minute winter	224.948	90.705
10 year 60 minute summer	90.826	24.003	100 year +40% CC 60 minute summer	214.603	56.713
10 year 60 minute winter	60.342	24.003	100 year +40% CC 60 minute winter	142.577	56.713
10 year 120 minute summer	54.899	14.508	100 year +40% CC 120 minute summer	129.587	34.246
10 year 120 minute winter	36.474	14.508	100 year +40% CC 120 minute winter	86.094	34.246
10 year 180 minute summer	41.666	10.722	100 year +40% CC 180 minute summer	97.729	25.149
10 year 180 minute winter	27.084	10.722	100 year +40% CC 180 minute winter	63.526	25.149
10 year 240 minute summer	32.645	8.627	100 year +40% CC 240 minute summer	75.977	20.078
10 year 240 minute winter	21.689	8.627	100 year +40% CC 240 minute winter	50.477	20.078
10 year 360 minute summer	24.632	6.339	100 year +40% CC 360 minute summer	56.677	14.585
10 year 360 minute winter	16.012	6.339	100 year +40% CC 360 minute winter	36.841	14.585
10 year 480 minute summer	19.260	5.090	100 year +40% CC 480 minute summer	43.979	11.622
10 year 480 minute winter	12.796	5.090	100 year +40% CC 480 minute winter	29.219	11.622
10 year 600 minute summer	15.690	4.291	100 year +40% CC 600 minute summer	35.604	9.738
10 year 600 minute winter	10.720	4.291	100 year +40% CC 600 minute winter	24.327	9.738
10 year 720 minute summer	13.925	3.732	100 year +40% CC 720 minute summer	31.433	8.424
10 year 720 minute winter	9.358	3.732	100 year +40% CC 720 minute winter	21.125	8.424
10 year 960 minute summer	11.365	2.993	100 year +40% CC 960 minute summer	25.432	6.697
10 year 960 minute winter	7.528	2.993	100 year +40% CC 960 minute winter	16.847	6.697
10 year 1440 minute summer	8.174	2.191	100 year +40% CC 1440 minute summer	18.055	4.839
10 year 1440 minute winter	5.493	2.191	100 year +40% CC 1440 minute winter	12.134	4.839

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute winter	SS	116	1.820	0.150	1.0	2.1564	0.0000	OK
15 minute winter	S1	10	4.015	0.015	0.3	0.0030	0.0000	OK
15 minute winter	S2	11	3.811	0.011	0.3	0.0018	0.0000	OK
15 minute winter	S3	10	3.349	0.023	2.6	0.0095	0.0000	OK
15 minute winter	RE	10	3.822	0.022	1.0	0.0029	0.0000	OK
15 minute winter	S5	10	2.256	0.021	3.3	0.0198	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
120 minute winter	SS	Infiltration		0.2			
15 minute winter	S1	1.000	S2	0.3	0.511	0.045	0.0099
15 minute winter	S2	1.001	S3	0.3	0.613	0.026	0.0060
15 minute winter	S3	1.002	S5	2.6	1.632	0.046	0.0175
15 minute winter	RE	2.000	S3	1.0	0.797	0.102	0.0204
15 minute winter	S5	1.003	SS	3.3	1.937	0.042	0.0175

Results for 10 year Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	SS	172	1.981	0.311	1.4	4.4817	0.0000	OK
15 minute summer	S1	10	4.021	0.021	0.6	0.0042	0.0000	OK
15 minute winter	S2	11	3.816	0.016	0.6	0.0025	0.0000	OK
15 minute winter	S3	10	3.358	0.032	5.2	0.0134	0.0000	OK
15 minute winter	RE	10	3.831	0.031	2.0	0.0042	0.0000	OK
15 minute winter	S5	10	2.265	0.030	6.6	0.0278	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
180 minute winter	SS	Infiltration		0.2			
15 minute summer	S1	1.000	S2	0.6	0.609	0.089	0.0159
15 minute winter	S2	1.001	S3	0.6	0.747	0.051	0.0095
15 minute winter	S3	1.002	S5	5.2	1.992	0.092	0.0287
15 minute winter	RE	2.000	S3	2.0	0.968	0.204	0.0336
15 minute winter	S5	1.003	SS	6.6	2.183	0.085	0.0292

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	SS	228	2.091	0.421	1.5	6.0714	0.0000	OK
15 minute summer	S1	10	4.023	0.023	0.7	0.0046	0.0000	OK
15 minute winter	S2	10	3.817	0.017	0.7	0.0027	0.0000	OK
15 minute winter	S3	10	3.362	0.036	6.6	0.0152	0.0000	OK
15 minute winter	RE	10	3.836	0.036	2.6	0.0048	0.0000	OK
15 minute winter	S5	10	2.268	0.033	8.4	0.0313	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
240 minute winter	SS	Infiltration		0.2			
15 minute summer	S1	1.000	S2	0.7	0.634	0.104	0.0178
15 minute winter	S2	1.001	S3	0.7	0.781	0.060	0.0107
15 minute winter	S3	1.002	S5	6.6	2.129	0.117	0.0342
15 minute winter	RE	2.000	S3	2.6	1.040	0.265	0.0407
15 minute winter	S5	1.003	SS	8.4	2.246	0.109	0.0311

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.66%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	SS	344	2.604	0.934	2.0	11.5556	0.0000	OK
15 minute summer	S1	10	4.031	0.031	1.3	0.0063	0.0000	OK
15 minute winter	S2	10	3.823	0.023	1.3	0.0037	0.0000	OK
15 minute winter	S3	10	3.376	0.050	12.0	0.0209	0.0000	OK
15 minute winter	RE	10	3.850	0.050	4.7	0.0068	0.0000	OK
360 minute winter	S5	344	2.604	0.369	3.0	0.3465	0.0000	SURCHARGED

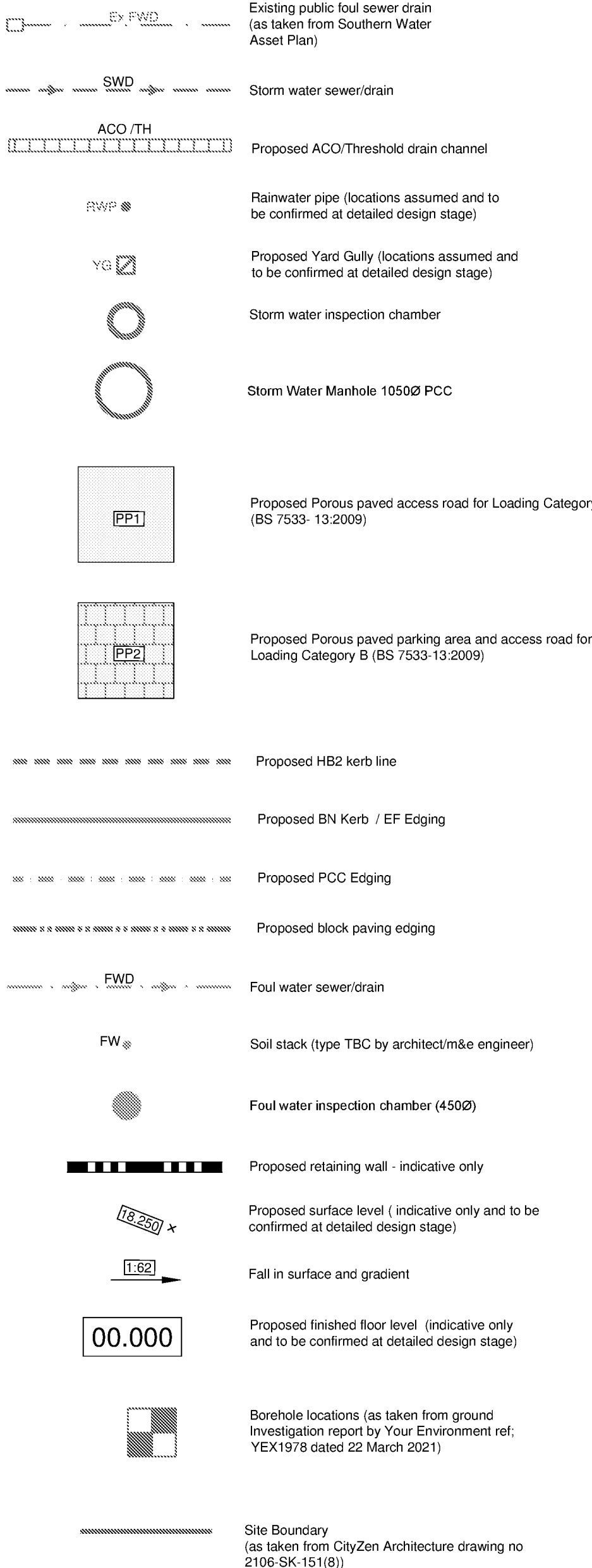
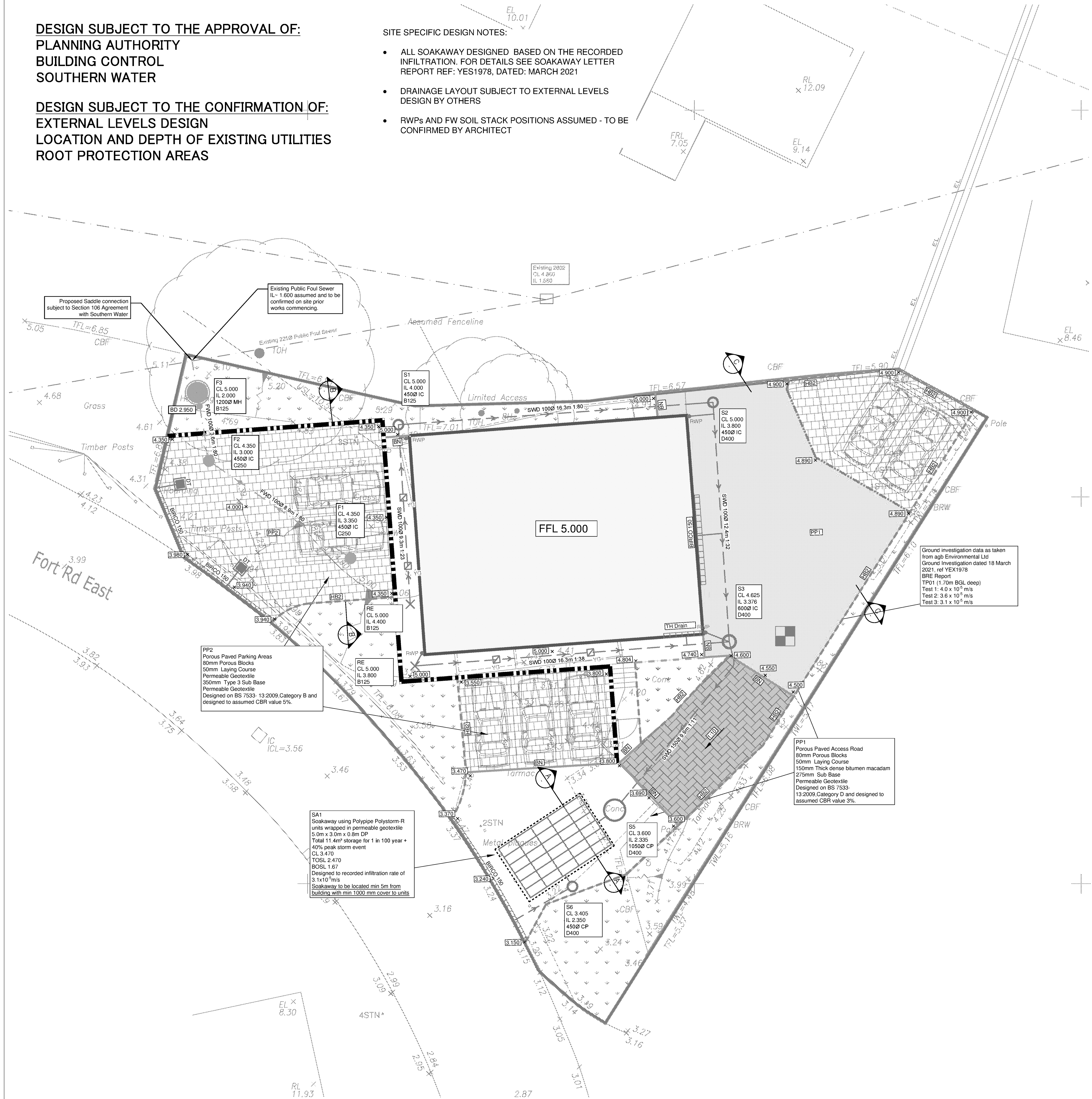
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
360 minute winter	SS	Infiltration		0.3			
15 minute summer	S1	1.000	S2	1.3	0.751	0.193	0.0280
15 minute winter	S2	1.001	S3	1.3	0.939	0.114	0.0169
15 minute winter	S3	1.002	S5	12.0	2.504	0.213	0.0530
15 minute winter	RE	2.000	S3	4.7	1.212	0.479	0.0632
360 minute winter	S5	1.003	SS	2.0	1.384	0.026	0.0539

DESIGN SUBJECT TO THE APPROVAL OF:
PLANNING AUTHORITY
BUILDING CONTROL
SOUTHERN WATER

DESIGN SUBJECT TO THE CONFIRMATION OF:
EXTERNAL LEVELS DESIGN
LOCATION AND DEPTH OF EXISTING UTILITIES
ROOT PROTECTION AREAS

SITE SPECIFIC DESIGN NOTES:

- ALL SOAKAWAY DESIGNED BASED ON THE RECORDED INFILTRATION. FOR DETAILS SEE SOAKAWAY LETTER REPORT REF: YES1978, DATED: MARCH 2021
- DRAINAGE LAYOUT SUBJECT TO EXTERNAL LEVELS DESIGN BY OTHERS
- RWPs AND FW SOIL STACK POSITIONS ASSUMED - TO BE CONFIRMED BY ARCHITECT



ABBREVIATIONS

MH - MANHOLE
IC - INSPECTION CHAMBER
AC - ACCESS CHAMBER
CP - CATCHPIT
BC - BRAKE CHAMBER
RE - RODDING EYE
IL - INVERT LEVEL
SL - SUMP LEVEL
CL - COVER LEVEL

- STANDARD DRAINAGE NOTES
- DO NOT SCALE FROM THIS DRAWING. REFER TO FIGURED DIMENSIONS ONLY. THE CONTRACTOR SHOULD CHECK ALL DIMENSIONS ON SITE.
 - ALL DIMENSIONS IN MILLIMETRES AND ALL LEVELS ARE IN METERS UNLESS NOTED OTHERWISE.
 - THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECT AND ENGINEERING DETAILS, DRAWINGS AND SPECIFICATIONS.
 - ANY DISCREPANCIES SHOULD BE REPORTED TO THE ARCHITECT AND/OR ENGINEER IMMEDIATELY, SO THAT CLARIFICATION CAN BE SOUGHT PRIOR TO THE COMMENCEMENT OF WORK.
 - BEFORE COMMENCING CONSTRUCTION THE CONTRACTOR MUST CHECK THE INVERT LEVELS OF EXISTING SEWERS TO WHICH CONNECTIONS ARE MADE. IN ADDITION THE CONTRACTOR MUST LOCATE AND DETERMINE INVERT LEVELS OF THE EXISTING SPURS TO WHICH CONNECTIONS ARE PROPOSED. ANY DISCREPANCIES ARE TO BE NOTIFIED TO THE ENGINEER IMMEDIATELY, PRIOR TO CONSTRUCTION.
 - ALL DRAINAGE WORKS SHOULD COMMENCE AT THE PROPOSED DOWNSTREAM CONNECTION POINT. THE WORKS CONTINUING UPSTREAM FOLLOWING CONFIRMATION OF THE TIE-IN INVERT LEVELS TO THE ENGINEER. CONNECTIONS TO MANHOLES OR LARGER SIZED PIPES ETC. SHOULD BE SOFFIT TO SOFFIT UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER, IF THIS IS NOT POSSIBLE INFORM THE ENGINEER IMMEDIATELY.
 - COVER LEVELS SHOWN ARE APPROXIMATE. COVERS AND FRAMES SHALL BE SET TO FINISHED GROUND LEVELS AND FALLS.
 - ALL UN-REFERENCED PIPES ARE ASSUMED TO BE 100mm DIA.
 - ALL PIPES TO BE ADOPTED, OR CONNECTING TO ADOPTED SEWERS, TO BE VITRIFIED CLAY TO BS EN 285 AND BS85 (SWS ONLY), OR CONCRETE PIPES TO BE EN 1916 AND BS5911-PART 1.
 - ROAD GULLY OUTLET PIPES ARE TO BE 150mm DIA. WITH CONCRETE SURROUND AND FLEXIBLE JOINTS. ALL GULLIES SHALL BE FITTED WITH GRADE D400 GRATINGS AND FRAMES TO BS EN124, UNLESS OTHERWISE STATED.
 - ALL ADAPTABLE SEWERS SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATION LAID DOWN DOWN IN 'SEWERS FOR ADOPTION' 6th EDITION, WITH A VIEW TO ADOPTION UPON COMPLETION OF WORKS.
 - ALL PRIVATE DRAINAGE TO BE IN ACCORDANCE WITH THE BUILDING REGULATIONS APPROVED DOCUMENT PART-H, AND TO THE SATISFACTION OF THE BUILDING CONTROL INSPECTOR.
 - THE CONTRACTOR IS TO KEEP A RECORD OF ANY VARIATIONS MADE ON SITE, INCLUDING THE RELOCATION OF SEWERS OR DRAINS, SO THAT AN AS CONSTRUCTED DRAWING CAN BE PREPARED UPON COMPLETION OF THE PROJECT.
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 - IF ANY SUB SOIL DRAINAGE SYSTEMS ARE UNCOVERED DURING THE WORKS CONTACT THE ENGINEER FOR INSTRUCTIONS. SUB SOIL DRAINS ARE TO BE DIVERTED AROUND NEW WORKS AND CONNECTED INTO THE SURFACE WATER.
 - NO PRIVATE AREAS ARE TO DRAIN ONTO ADAPTABLE AREAS AND VICE VERSA.
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 - UPON COMPLETION BUT PRIOR TO HANDOVER, CONTRACTOR TO CARRY OUT FULL COVY SURVEY OF DRAINAGE SYSTEM WHICH IS TO BE REVIEWED BY ENGINEER TO ENSURE SATISFACTORY INSTALLATION.
 - MANHOLE AND CHAMBER COVER GRADES:

- 'A15' IN ALL LANDSCAPED AREAS AND ON FOOTPATHS
- 'B125' IN ALL DRIVEWAYS
- 'C250' IN PRIVATE PARKING AREAS
- 'D400' IN CARRIAGEWAY/ACCESS ROAD



Prefix to drawing numbers shall signify the following:-

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C = CONSTRUCTION These are the only drawings that shall be used for construction purposes

R = RECORD Record of actual completed work

P-	17.06.21	PRELIMINARY ISSUE	TZ	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP
CLIENT HAWES CONSTRUCTION GROUP					
ARCHITECT CITYZEN ARCHITECTURE					
JOB TITLE FORT ROAD, LITTLEHAMPTON					
DRAWING TITLE PROPOSED DRAINAGE STRATEGY PLAN					
DRAWN	TZ	ENGINEER	TZ	CHECKED	CS
DATE	June 2021	SCALE @ A1	1:100		
JOB No.	C1622	STATUS	P	DRAWING No.	100
		REV.	P		

PRELIMINARY



DRAWING LEGEND:

- Proposed Roof Area (0.016 ha)
- Proposed Permeable Driveway and Parking Area (0.036 ha)
- Proposed Footpath (0.004 ha)
- Proposed Drive Ramp Area (0.004 ha)
- Masonry retaining wall

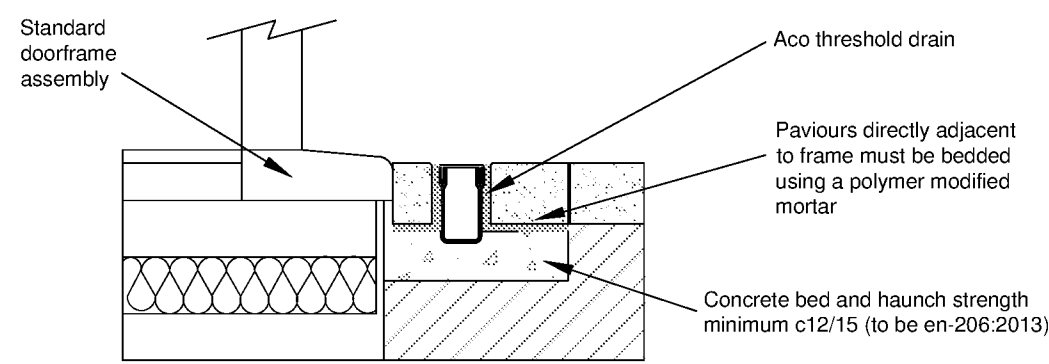
- STANDARD DRAINAGE NOTES
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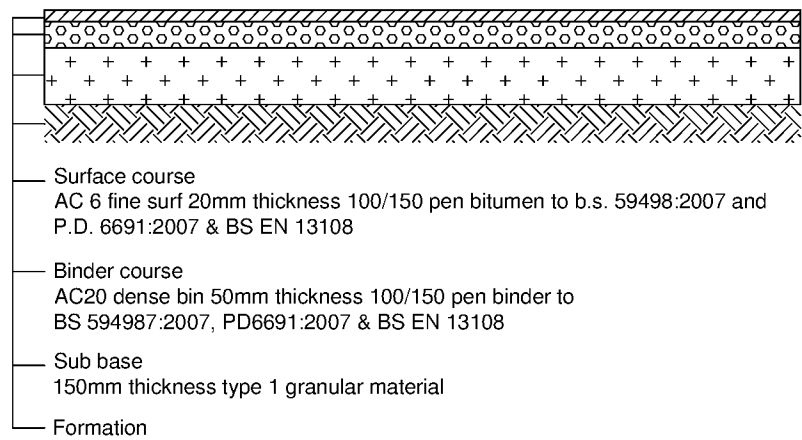
PRELIMINARY
NOT FOR CONSTRUCTION

P-	17.06.21	PRELIMINARY ISSUE	TZ	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP
 Consulting Civil Engineers					
CLIENT HAWES CONSTRUCTION GROUP					
ARCHITECT CITYZEN ARCHITECTURE					
JOB TITLE FORT ROAD, LITTLEHAMPTON					
DRAWING TITLE PROPOSED IMPERMEABLE AREA PLAN					
DRAWN TZ		ENGINEER TZ		CHECKED CS	APPROVED CS
DATE June 2021			SCALE @ A1 1:100		
JOB No. C1622		STATUS P	DRAWING No. 200		REV. P

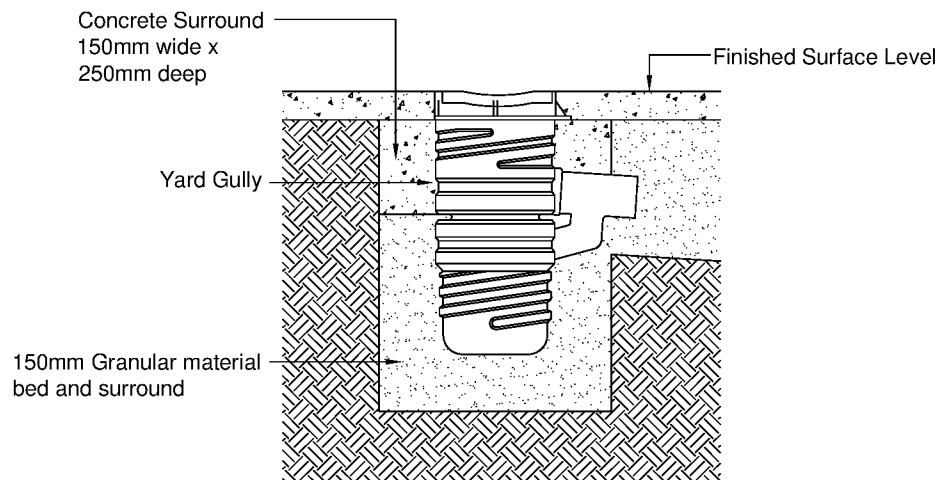
PRELIMINARY



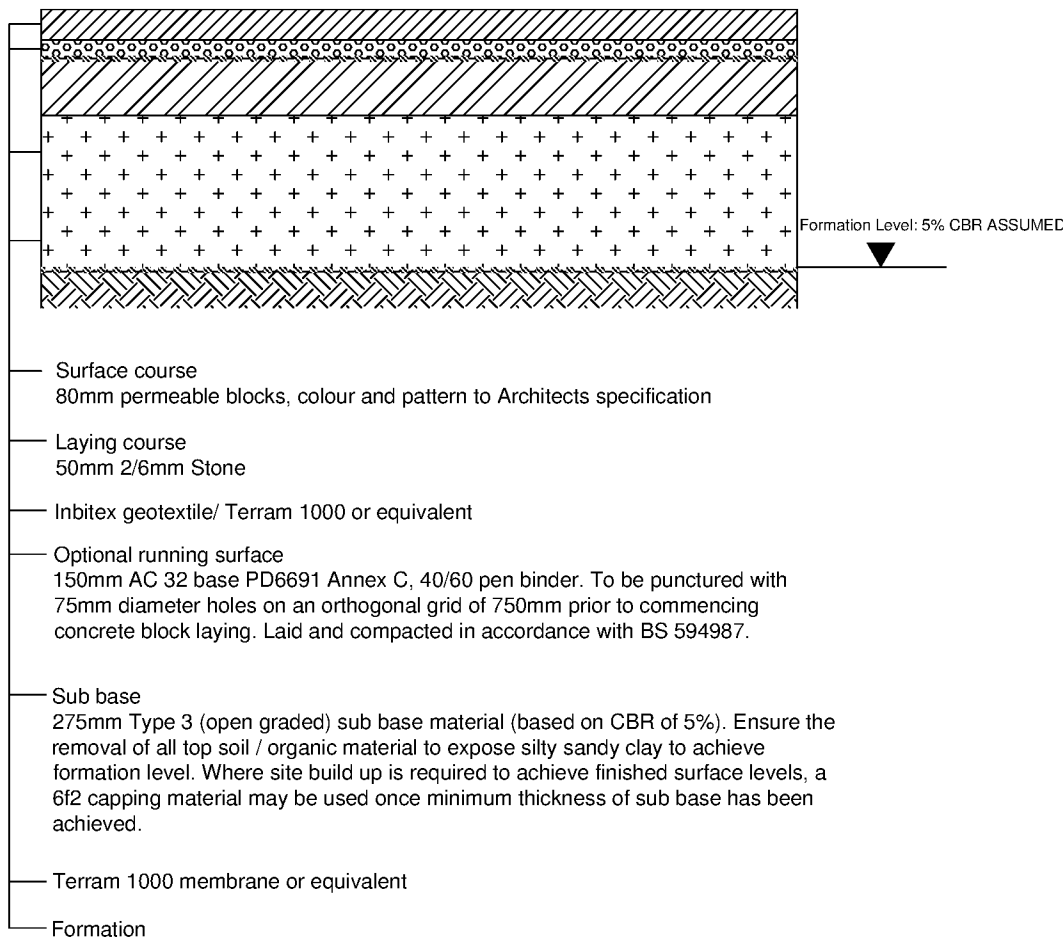
Aco Threshold Drain
(1:10)



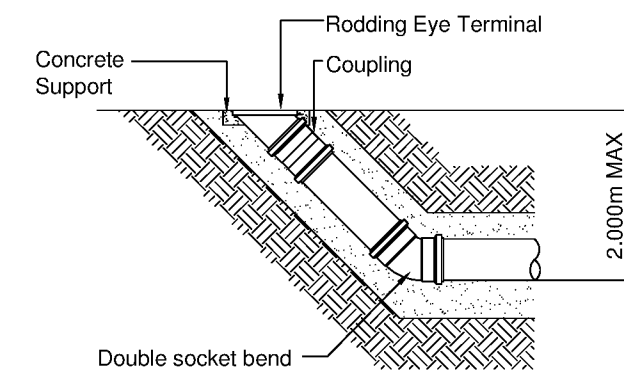
Flexible footway construction



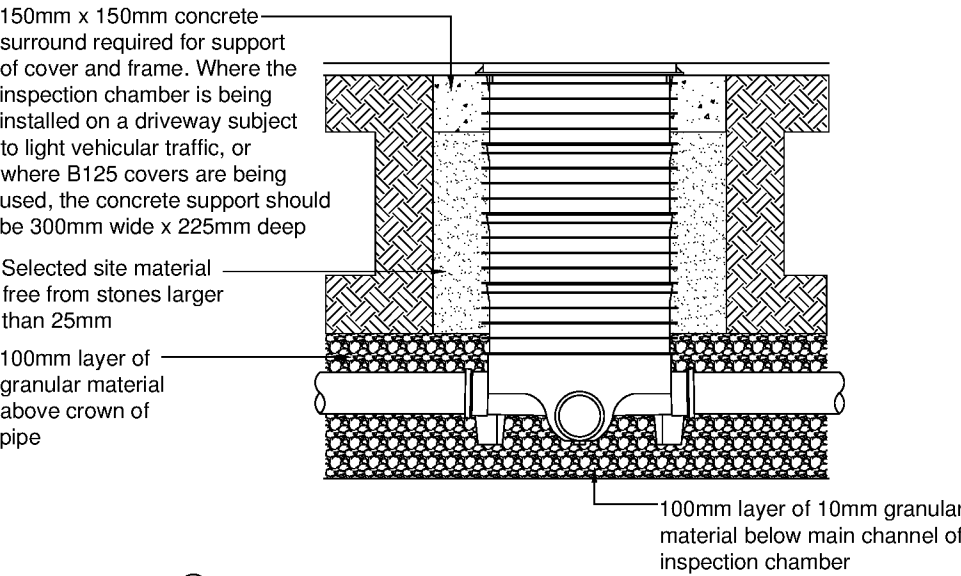
Yard Gully Detail



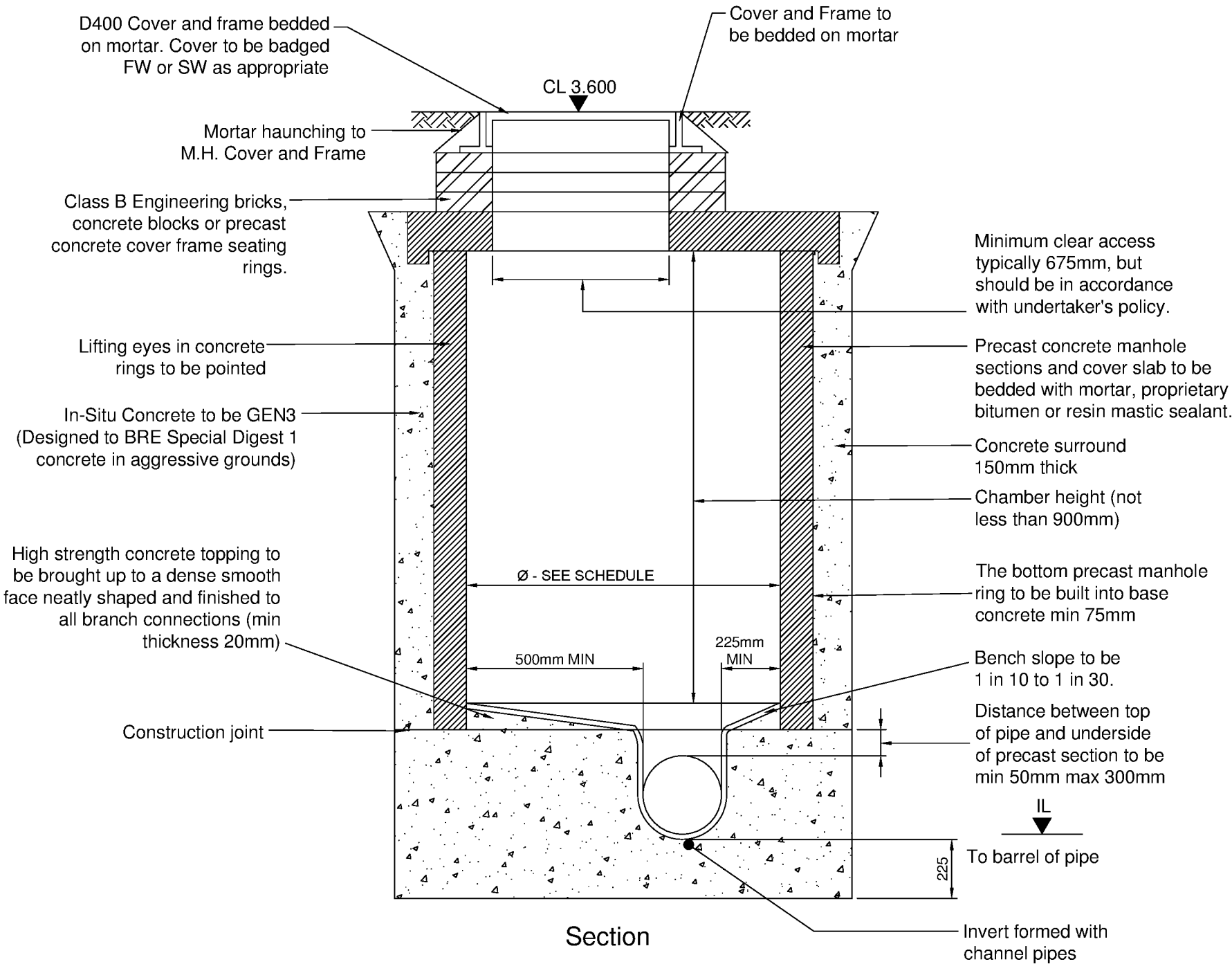
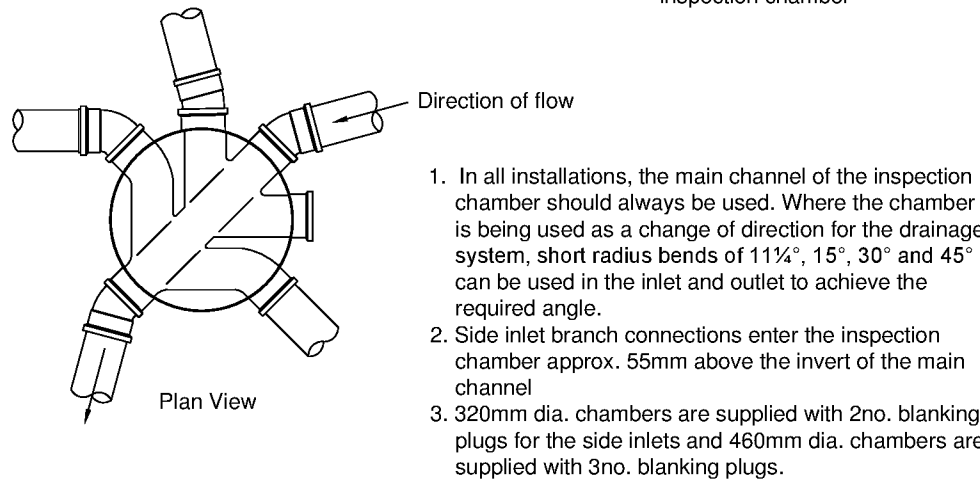
Permeable block paving construction
(PP1) Section B-B



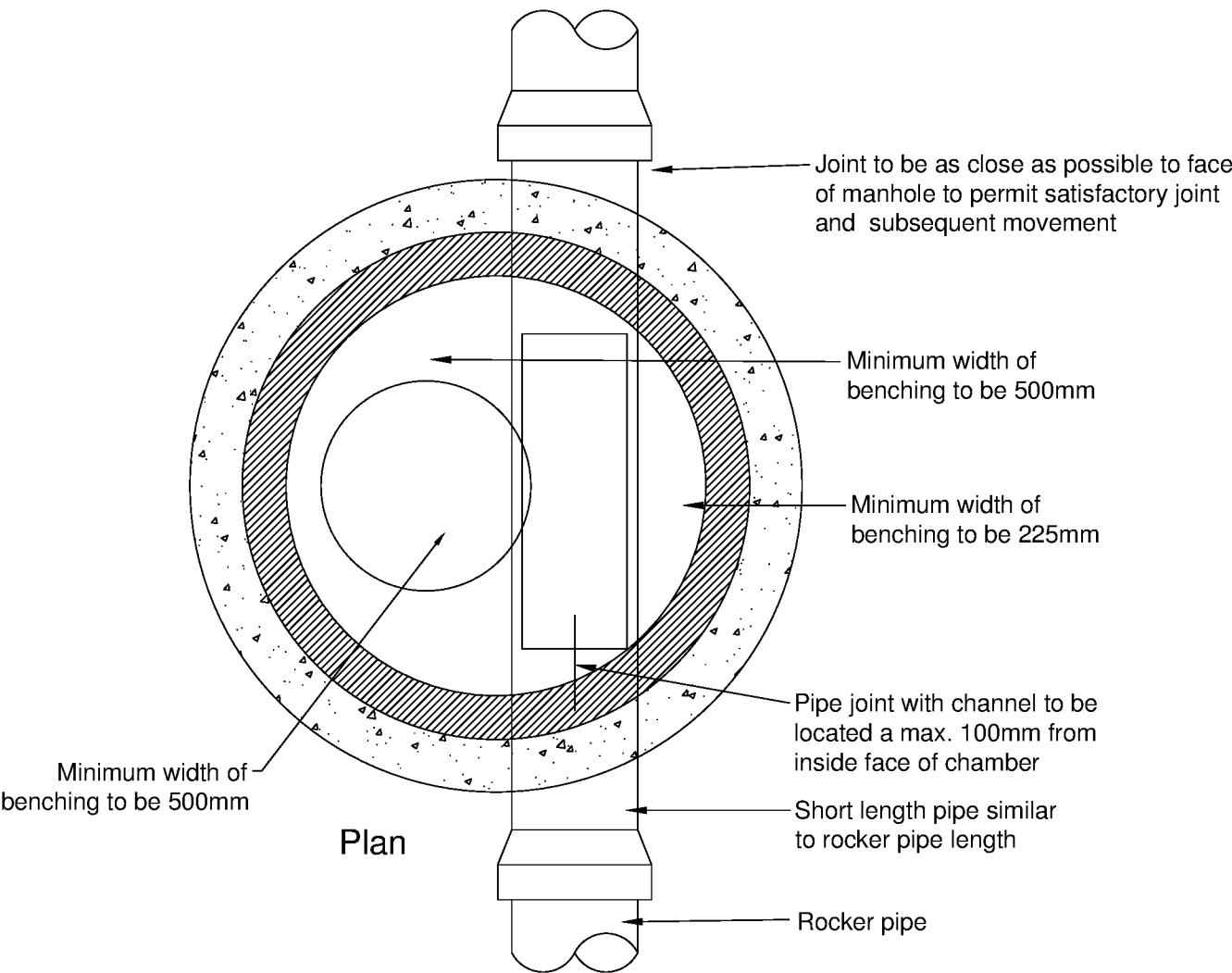
Rodding eye detail



460mmØ INSPECTION
CHAMBER DETAIL

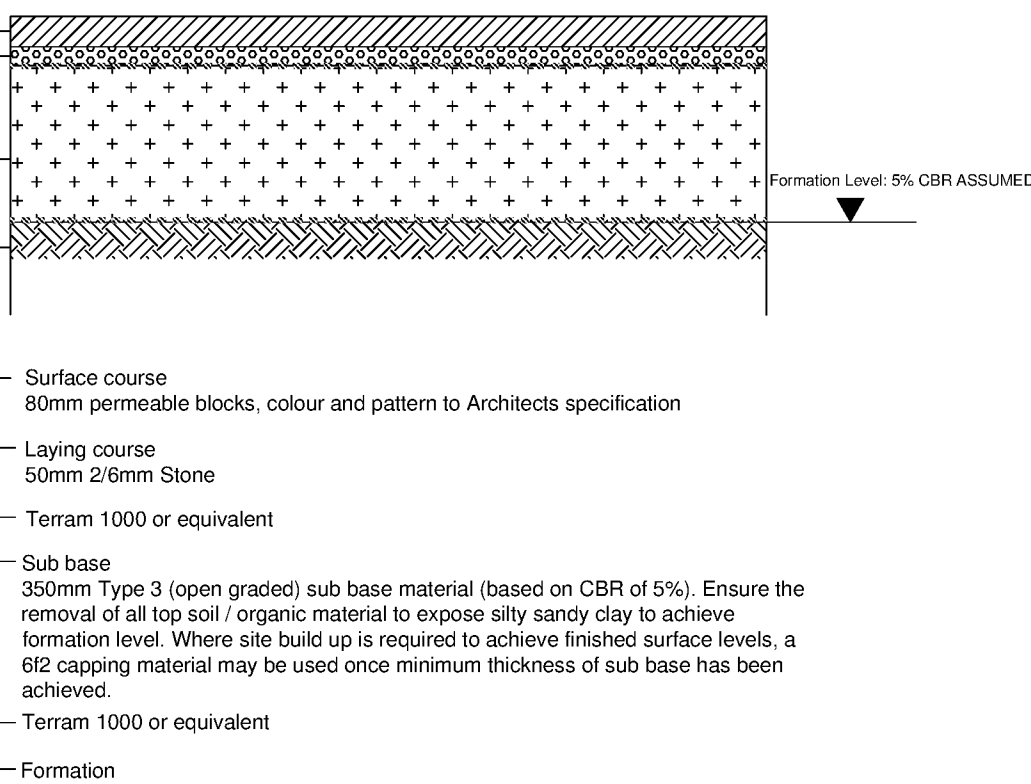


Typical Catchpit Manhole Detail -
Type B
Maximum depth from cover level to soffit of pipe 3.0m

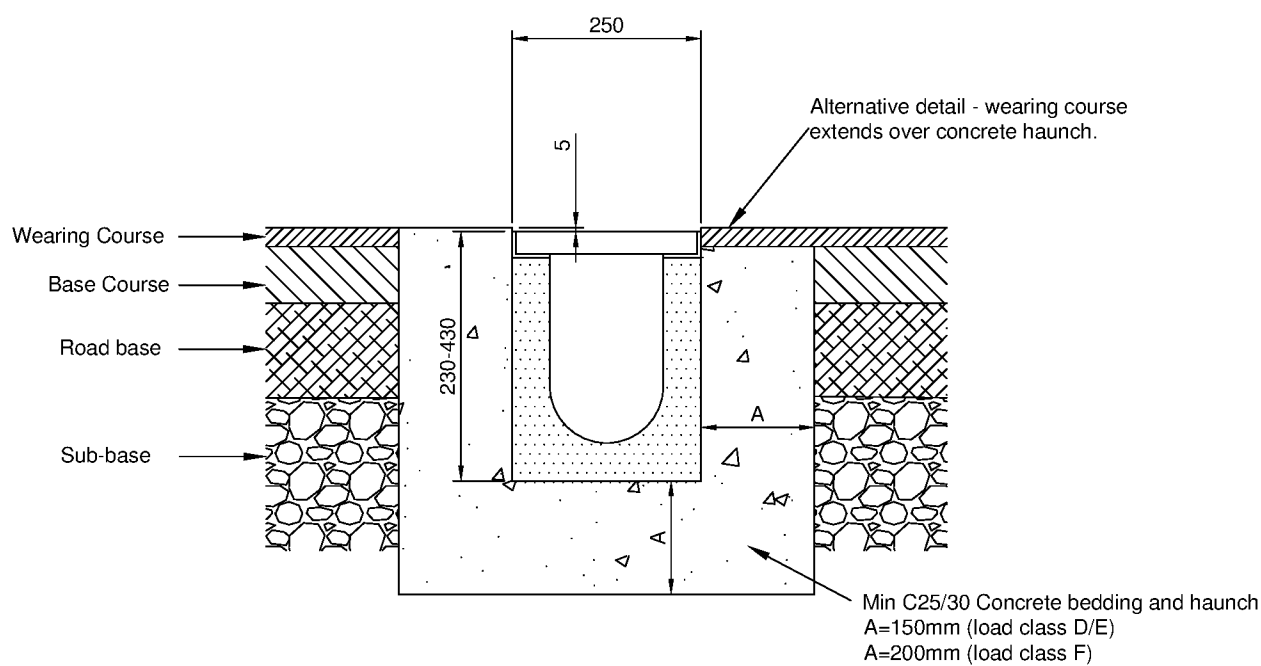


NOMINAL DIAMETER (mm) DN	EFFECTIVE ROCKER PIPE LENGTH (m)
150 - 600	0.6
675 - 750	1.0
OVER 750	1.25

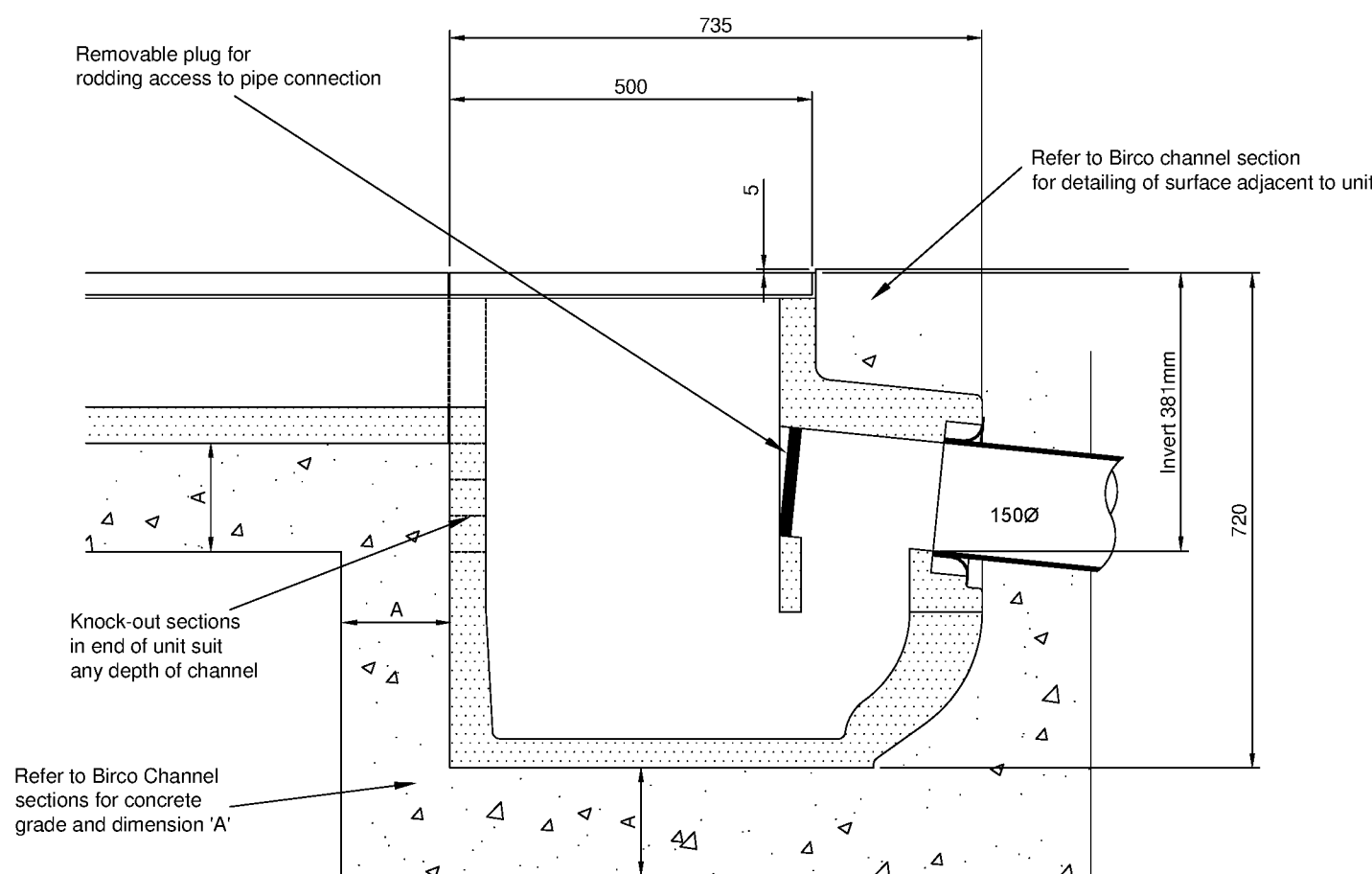
DIAMETER OF LARGEST PIPE IN MANHOLE (mm) DN	INTERNAL DIAMETER OF MANHOLE (mm)
< 375	1200 (1050 WHERE SOFFIT IS 1.35-1.5m)
375 - 450	1350
500 - 700	1500
750 - 900	1800
> 900	CONSULT UNDERTAKER



Permeable block paving construction
(PP2) Section B-B



Marshall's Typical BIRCO 150 Installation Detail
Bituminous Construction
Loading Class D to F (1:10)



Birco 150 - Inline End Outfall
(Unit is 250mm wide)

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REV	DATE	DESCRIPTION	BY	CHK	APP



CLIENT
HAWES CONSTRUCTION GROUP

ARCHITECT
CITYZEN ARCHITECTURE

JOB TITLE
FORT ROAD, LITTLEHAMPTON

DRAWING TITLE
TYPICAL
CONSTRUCTION DETAILS SHEET 1

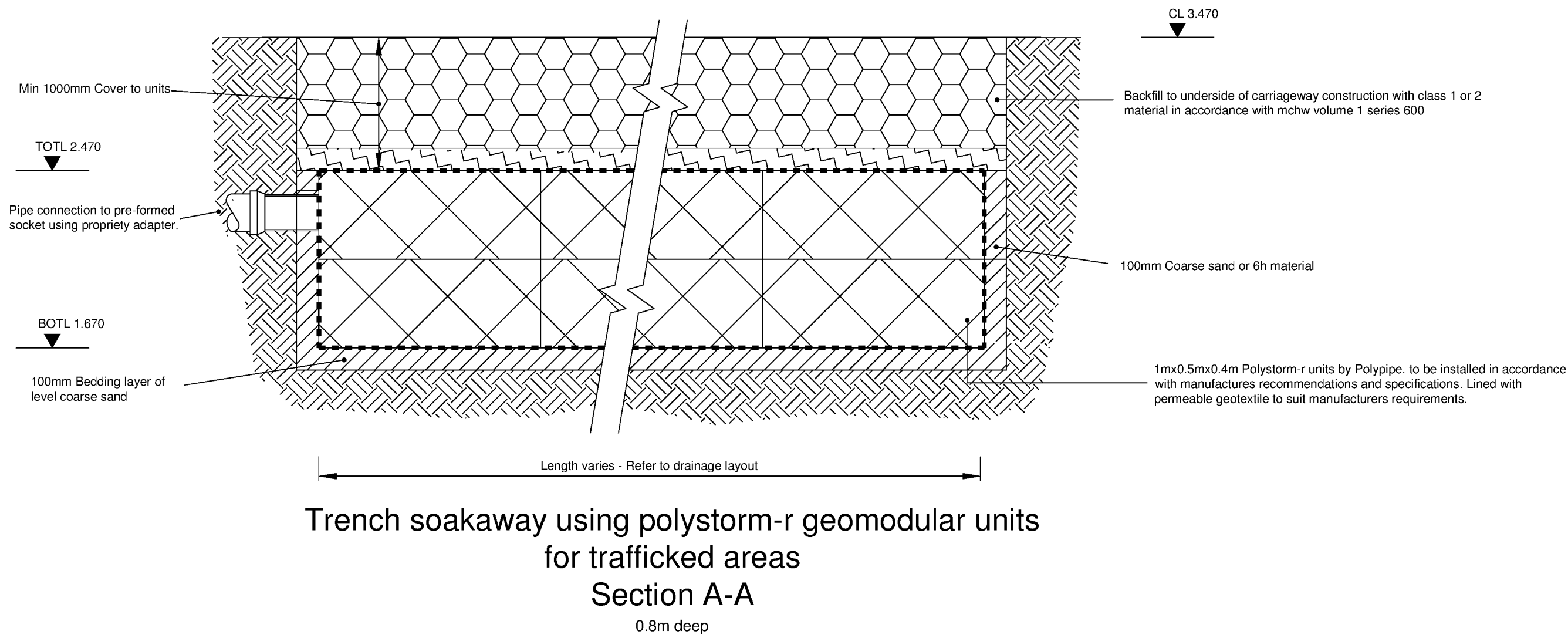
DRAWN	TZ	ENGINEER	TZ	CHECKED	CS	APPROVED	CS
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DATE
June 2021

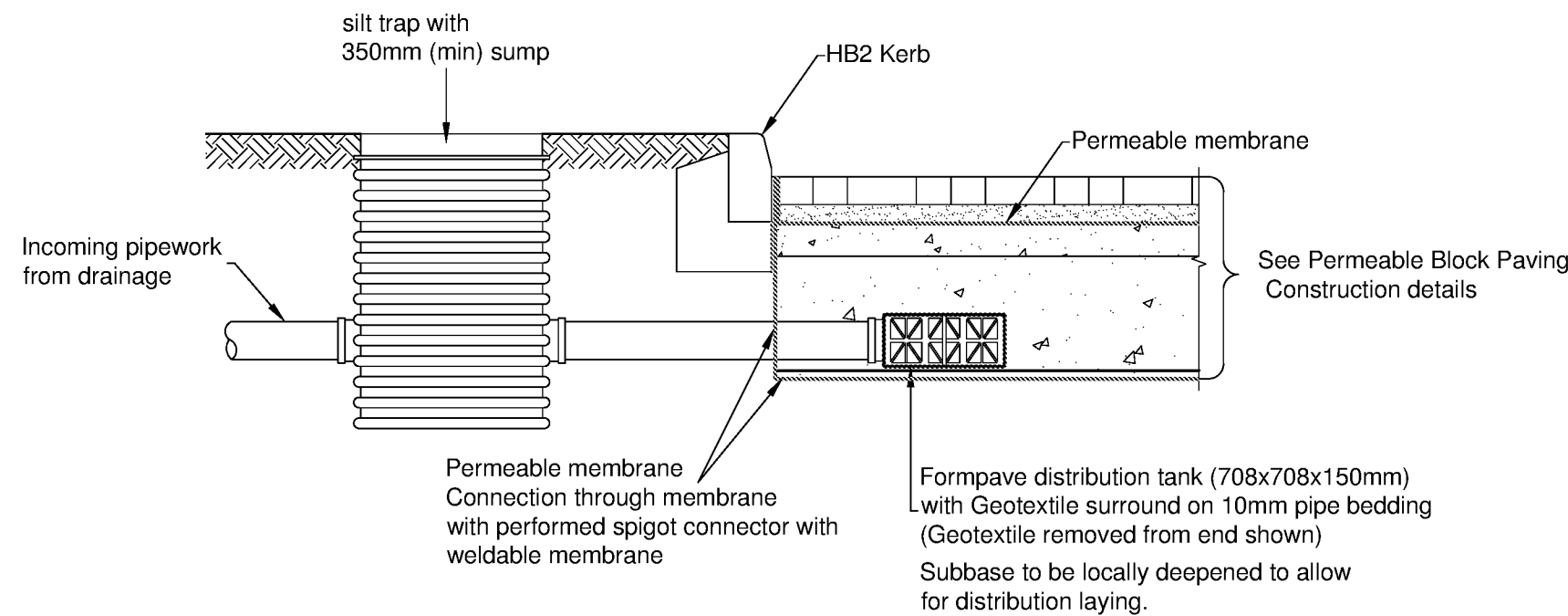
SCALE @ A1
1:20

JOB No.	C1622	STATUS	P	DRAWING No.	500	REV.	P
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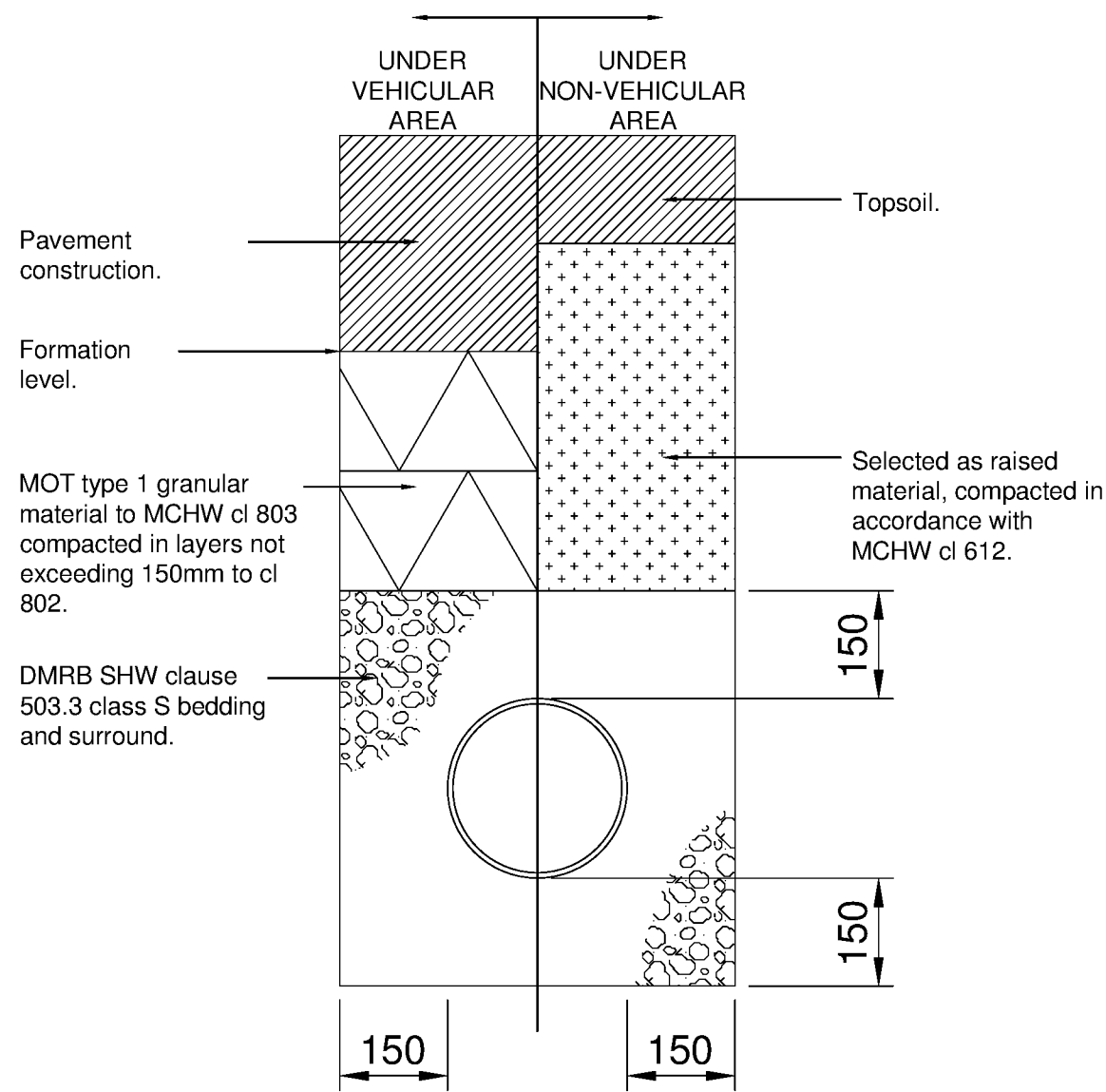
PRELIMINARY



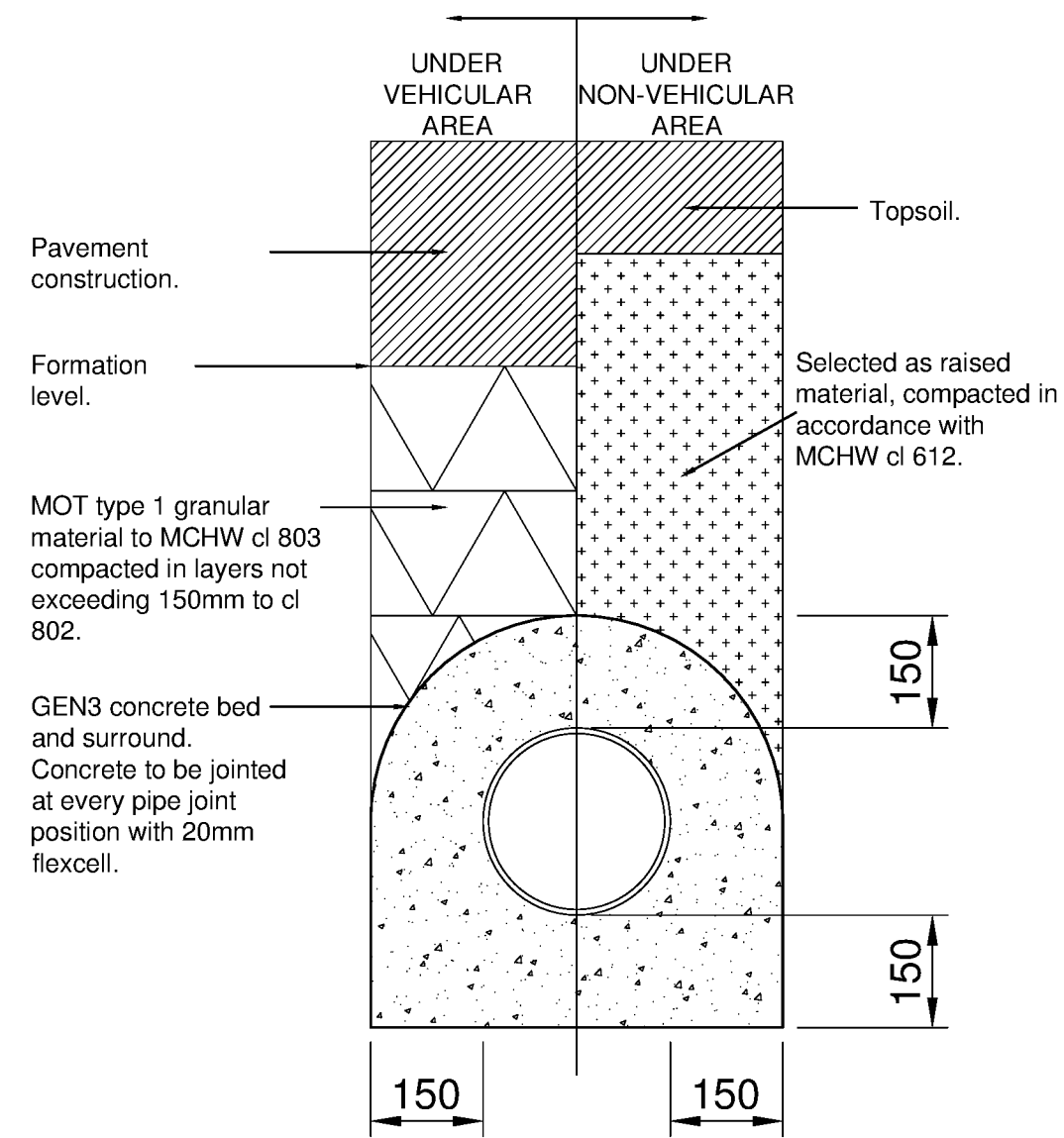
Trench soakaway using polystorm-r geomodular units for trafficked areas
Section A-A
0.8m deep



Typical Distribution Tank
Outflow Detail



Class S granular pipe bed and surround
To be used for plastic, vitrified and concrete pipework where cover to crown is greater than 900mm.



Class Z granular pipe bed and surround
To be used for plastic, vitrified and concrete pipework where cover to crown is less than 900mm.

Pipe Bedding Details

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P-	17.06.2021	PRELIMINARY ISSUE	TZ	CS	CS
REV	DATE	DESCRIPTION	BY	CHK	APP

 Consulting Civil Engineers			
CLIENT	HAWES CONSTRUCTION GROUP		
ARCHITECT	CITYZEN ARCHITECTURE		
JOB TITLE	FORT ROAD, LITTLEHAMPTON		
DRAWING TITLE			
TYPICAL CONSTRUCTION DETAILS SHEET 2			
DRAWN	ENGINEER	CHECKED	APPROVED
TZ	TZ	CS	CS
DATE	SCALE @ A1		
June 2021	1:20		
JOB No.	STATUS	DRAWING No.	REV.
C1622	P	501	P

PRELIMINARY