BARRETT MAHONY
CIVIL & STRUCTURAL
CONSULTING ENGINEERS

Planning Compliance Condition 8
Surface Water Drainage

Project:

Cuckoo's Nest

DOCUMENT CONTROL

Project: Cuckoo;s Nest

Project No: 24.167

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1. INTRODUCTION

We, Barrett Mahony Consulting Engineers (BM), are the consulting civil and structural engineers for the above development. We have set out below our response to Condition 8 of the granted Planning Permission Ref.SD22A/0285. in relation to the SuDS.

8. Removal of proposal for underground attenuation
The applicant shall incorporate additional natural SUDS features into the proposed drainage system for the development such as rain gardens, detention basins, filter drains, swales etc. In addition, the applicant shall provide for the removal of proposal for underground attenuation. Guidance on SuDS can be found on the South Dublin County Council Website searching SuDS Guide at sdcc-suds-explanatory-design-and-evaluation-guide.pdf The applicant shall fill in Table 3.1 – SuDS Measures Rationale and Justification, located under 'Item 3 - Sustainable Urban Drainage Systems, Surface Water and Attenuation and Green Infrastructure' of the Chief Executives Report, in response to the clarification of additional information response. The applicant shall provide clear explanations/rationale for selecting/not selecting additional natural SUDS measures.

REASON: To prevent the increased risk of flooding by ensuring the provision of a satisfactory means of surface water disposal is incorporated into the design and the build and that the principles of sustainable drainage are incorporated into this proposal and maintained for the lifetime of the proposal, in accordance with policies under the CDP 2022-2028.

2. BMCE REVISED SURFACE WATER DESIGN

The Surface water strategy in the planning application incorporate a combination of Green roof, tree pits, permeable paving and an attenuation tank.

It is now proposed to incorporate a blue roof to upper roof and terrace areas to remove the need for the attenuation tank. The surface water that falls directly on the hard landscaping at ground floor level will be collected and drain to a soakaway trench. This soakaway will have an overflow discharging to the public surface water sewer with a maximum discharge rate of 2l/s.

The total attenuation volume required for the site is 48 m^3, with 25 m^3 provided by the blue roof and the remaining 23 m^3 by the soakaway. The soakaway is positioned 5 meters from the building and 3 meters from the boundary. The design of the soakaway is based on the average infiltration values presented in the site investigation report and consists of a 600 mm thick layer of granular fill with 30% porosity for attenuation purpose over which is the stone layer which acts a capping layer for the road surface and additional storage area. Rainfall event simulation and network analysis were performed using Causeway Flow software. The inputs for the simulation, including drained areas, rainfall data, and SAAR value, are detailed below, followed by the attached results.

Refer to complete table 3.1 below for SuDS Measures Rationale and Justification

Table 3.1 – SuDS Measures Rationale and Justification

SuDS Measures	***Measures to be used on this site***	***Rationale for selecting/not selecting measure***	***Area of Feature (m2)***	***Attenuation volume of feature (m3)***
Swales	N	Insufficient space to due to constraints posed by the site layout and existing features.	N/A	
Integrated constructed Tree Pits	Y	Tree pits are designed to collect the runoff from the surrounding landscape. Attenuation storage not provided in the tree pits to prevent over watering of trees	20.5m^2 approx 2.5m^2 for each tree pit.	Not Included in Attenuation storage
Green/Blue Roofs (Intensive and Extensive Green Roofs)	Y	The roof areas of apartments are proposed to have green blue roof system.	643 m^2	25 m^3
Filter Drain Soakaway with Overflow	N	Runoff from hard standing areas is currently taken by adjacent permeable paving areas eliminating the need for filter drain	125 m^2	23 m^3
Permeable pavement (Grasscrete, Block paving, Porous Asphalt etc.)	Y	Permeable pavements act as SuDS feature by allowing to direct rainfall straight into a storage structure or infiltration into the ground. Footpath and Car parks areas are permeable pavements	552m^2	
Green wall	N	Not feasible within the site layout	N/A	
Filter strips	N	Absence of swales, detention basins or any channel like features due the constraints posed by the site layout eliminates the need of filter strips	N/A	
Bio-retention systems/Raing ardens	N	Insufficient space to due to constraints posed by the site layout and existing features.	N/A	
Blue Roofs	N	The roof areas of pub area, retail shop and apartments are proposed to have green blue roof system.	643	25m3
Detention Basins	N	Not feasible within the site layout	N/A	
Retentions basins	N	Not feasible within the site layout	N/A	
Ponds	N	Not feasible within the site layout	N/A	
Wetlands	N	Not feasible within the site layout	N/A	

3. CONCLUSIONS

Refer to BMCE Civil drawings in Appendix 2 of this report for SUDS details.

Should you need anything further in relation to condition 8 of planning permission ref SD22A/0285 do not hesitate to contact me.

Appendix 1

Surface Water Calculation

DRAINED AREA SUMMARY

Drained Area Summary

24.167 - Cuckoos Nest Pub

Area	Blue Roof	CV - 0.91	Green Roof	CV = 0.91	High Roof + Low roof	CV = 0.95	Permeable Paving	CV = 0.7	Road	CV = 0.95	Landscape	CV = 0.37	Total	Flow (ha)
S1.0	0	0	0	0	60	57	93	65.1	30.5	28.975	60	22.2	173.275	0.017
S1.3	0	0	0	0	120	114	113.4	79.38	120.3	114.285	33.4	12.358	320.023	0.032
S1.4	0	0	0	0	0	0	199.4	139.58	187	177.65	4.4	1.628	318.858	0.032
S1.5	0	0		0		0	0	0	0	0	0	0	0	0.000
S3.0	0	0	0	0	0	0	146.2	102.34	199	189.05	11	4.07	295.46	0.030
S2.1	0	0		0		0		0		0		0	0	0.000
S2.2	0	0		0		0		0		0	0	0	0	0.000
BR Tank	281.6	256.256	0	0										
	82	74.62	0	0										
	117	106.47	0	0										
	162	147.42	0	0										
	642.6	584.766												0.05848

Drained Area 2020.2 m2 0.202 ha

Total reduced 1692.382 m2 0.169 ha

RAINFALL DATA

```
Eastin and Northing Irish Grid Co-ordinates
east    north   Annual Average Rainfall(mm)
310000  227000  824
310000  228000  763
310000  229000  721   ----------Cuckoos Nest Pub
310000  230000  700
310000  231000  702
```

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 309976, Northing: 229348,

M5 - 60 : 17.7
M5 - 2D : 64.8

r = M5 - 60/M5 - 2D : 17.7/64.8 = **0.273**

SAAR = **721**

DURATION	Interval 6months	1year	Years 2	3	4	5	10	20	30	50	75	100	150	200	250	500
5 mins	2.5	3.7	4.3	5.3	6.0	6.6	8.5	10.6	12.1	14.2	16.1	17.6	20.0	21.9	23.4	N/A
10 mins	3.4	5.1	6.0	7.4	8.4	9.2	11.8	14.8	16.9	19.8	22.5	24.6	27.9	30.5	32.6	N/A
15 mins	4.0	6.0	7.1	8.8	9.9	10.8	13.9	17.4	19.9	23.3	26.5	28.9	32.8	35.8	38.4	N/A
30 mins	5.3	7.8	9.2	11.3	12.7	13.9	17.6	22.0	25.0	29.2	33.0	35.9	40.6	44.2	47.2	N/A
1 hours	7.0	10.2	11.9	14.5	16.3	17.7	22.4	27.8	31.4	36.5	41.0	44.6	50.2	54.5	58.2	N/A
2 hours	9.3	13.3	15.4	18.7	21.0	22.7	28.4	35.0	39.4	45.6	51.1	55.4	62.1	67.3	71.6	N/A
3 hours	10.9	15.5	18.0	21.7	24.3	26.2	32.7	40.1	45.0	51.9	58.1	62.9	70.3	76.1	80.9	N/A
4 hours	12.2	17.3	20.0	24.1	26.9	29.1	36.1	44.2	49.5	57.0	63.7	68.8	76.8	83.1	88.2	N/A
6 hours	14.4	20.2	23.3	28.0	31.1	33.6	41.6	50.6	56.6	64.9	72.4	78.1	87.0	93.9	99.6	N/A
9 hours	16.9	23.6	27.1	32.4	36.0	38.8	47.8	58.0	64.6	74.0	82.3	88.7	98.6	106.2	112.5	N/A
12 hours	19.0	26.3	30.2	36.0	40.0	43.0	52.8	63.8	71.1	81.2	90.2	97.1	107.7	115.9	122.7	N/A
18 hours	22.3	30.7	35.2	41.8	46.2	49.7	60.7	73.1	81.2	92.5	102.5	110.2	122.0	131.1	138.6	N/A
24 hours	25.0	34.3	39.2	46.4	51.3	55.0	67.1	80.5	89.3	101.5	112.3	120.6	133.2	143.0	151.1	179.0
2 days	31.4	41.9	47.4	55.4	60.7	64.8	77.7	92.0	101.2	113.9	125.0	133.4	146.3	156.2	164.3	192.1
3 days	36.5	48.0	54.0	62.6	68.3	72.6	86.4	101.4	111.0	124.2	135.6	144.3	157.6	167.6	175.9	204.1
4 days	40.9	53.4	59.7	68.9	74.9	79.5	93.9	109.5	119.5	133.2	145.0	153.9	167.5	177.8	186.2	214.8
6 days	48.7	62.7	69.7	79.7	86.3	91.3	106.9	123.7	134.3	148.7	161.2	170.6	184.7	195.5	204.2	233.8
8 days	55.7	70.8	78.4	89.2	96.3	101.6	118.2	135.9	147.1	162.3	175.3	185.1	199.8	210.9	219.9	250.4
10 days	62.0	78.2	86.3	97.9	105.3	110.9	128.4	147.0	158.7	174.5	188.0	198.1	213.3	224.8	234.0	265.4
12 days	67.9	85.2	93.7	105.9	113.7	119.6	137.9	157.2	169.3	185.7	199.6	210.1	225.8	237.5	247.1	279.2
16 days	78.9	97.9	107.3	120.5	129.0	135.4	155.1	175.8	188.7	206.1	220.8	231.9	248.3	260.7	270.7	304.2
20 days	89.1	109.7	119.7	133.9	143.0	149.8	170.8	192.7	206.3	224.5	240.0	251.6	268.7	281.6	292.0	326.7
25 days	101.0	123.3	134.2	149.5	159.2	166.5	188.8	212.1	226.5	245.7	261.9	274.1	292.0	305.5	316.3	352.4

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	17.700	Minimum Backdrop Height (m)	0.200
Ratio-R	0.273	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Depth (m)
S1.0	0.017	4.00	70.050	1200	0.762
S1.3	0.032	4.00	70.050	1200	0.915
S1.4	0.032	4.00	70.050	1200	1.038
S1.5	0.000	4.00	70.050		1.109
S3.0	0.030	4.00	70.050	1200	0.915
S1.6 TANK	0.000	4.00	70.050	1200	1.300
S1.7	0.000	4.00	70.050	1200	2.300
BR Tank	0.059	4.00	75.050	1200	0.500
BR MH	0.000	4.00	75.050	1200	5.742

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.002	S1.0	S1.3	34.300	0.600	69.288	69.135	0.153	224.2	225	4.77	50.0
1.003	S1.3	S1.4	27.690	0.600	69.135	69.012	0.123	225.0	225	5.30	50.0
1.004	S1.4	S1.5	16.000	0.600	69.012	68.941	0.071	225.4	225	5.61	50.0
1.005	S1.5	S1.6 TANK	4.000	0.600	68.941	68.923	0.018	225.0	225	5.69	50.0
2.000	S3.0	S1.5	16.000	0.600	69.135	69.028	0.107	150.0	150	4.33	50.0
1.006	S1.6 TANK	S1.7	2.000	0.600	68.750	67.750	1.000	2.0	225	5.69	50.0
1.000	BR Tank	BR MH	3.000	0.600	74.550	74.520	0.030	100.0	150	4.05	50.0
1.001	BR MH	S1.0	3.000	0.600	69.308	69.288	0.020	150.0	150	4.11	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.002	0.869	34.5	13.7	0.537	0.690	0.076	0.0
1.003	0.867	34.5	19.5	0.690	0.813	0.108	0.0
1.004	0.867	34.5	25.3	0.813	0.884	0.140	0.0
1.005	0.867	34.5	30.7	0.884	0.902	0.170	0.0
2.000	0.818	14.5	5.4	0.765	0.872	0.030	0.0
1.006	9.322	370.6	30.7	1.075	2.075	0.170	0.0
1.000	1.005	17.8	10.7	0.350	0.380	0.059	0.0
1.001	0.818	14.5	10.7	5.592	0.612	0.059	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.002	34.300	224.2	225	Circular	70.050	69.288	0.537	70.050	69.135	0.690
1.003	27.690	225.0	225	Circular	70.050	69.135	0.690	70.050	69.012	0.813
1.004	16.000	225.4	225	Circular	70.050	69.012	0.813	70.050	68.941	0.884
1.005	4.000	225.0	225	Circular	70.050	68.941	0.884	70.050	68.923	0.902
2.000	16.000	150.0	150	Circular	70.050	69.135	0.765	70.050	69.028	0.872
1.006	2.000	2.0	225	Circular	70.050	68.750	1.075	70.050	67.750	2.075
1.000	3.000	100.0	150	Circular	75.050	74.550	0.350	75.050	74.520	0.380
1.001	3.000	150.0	150	Circular	75.050	69.308	5.592	70.050	69.288	0.612

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.002	S1.0	1200	Manhole	Adoptable	S1.3	1200	Manhole	Adoptable
1.003	S1.3	1200	Manhole	Adoptable	S1.4	1200	Manhole	Adoptable
1.004	S1.4	1200	Manhole	Adoptable	S1.5		Manhole	Adoptable
1.005	S1.5		Manhole	Adoptable	S1.6 TANK	1200	Manhole	Adoptable
2.000	S3.0	1200	Manhole	Adoptable	S1.5		Manhole	Adoptable
1.006	S1.6 TANK	1200	Manhole	Adoptable	S1.7	1200	Manhole	Adoptable
1.000	BR Tank	1200	Manhole	Adoptable	BR MH	1200	Manhole	Adoptable
1.001	BR MH	1200	Manhole	Adoptable	S1.0	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1.0	70.050	0.762	1200	1	1.001	69.288	150
				0	1.002	69.288	225
S1.3	70.050	0.915	1200	1	1.002	69.135	225
				0	1.003	69.135	225
S1.4	70.050	1.038	1200	1	1.003	69.012	225
				0	1.004	69.012	225
S1.5	70.050	1.109		1	2.000	69.028	150
				2	1.004	68.941	225
				0	1.005	68.941	225
S3.0	70.050	0.915	1200	0	2.000	69.135	150
S1.6 TANK	70.050	1.300	1200	1	1.005	68.923	225
				0	1.006	68.750	225
S1.7	70.050	2.300	1200	1	1.006	67.750	225

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
BR Tank	75.050	0.500	1200				
				0	1.000	74.550	150
BR MH	75.050	5.742	1200	1	1.000	74.520	150
				0	1.001	69.308	150

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	17.700	Additional Storage (m³/ha)	20.0
Ratio-R	0.273	Check Discharge Rate(s)	x
Summer CV	1.000	Check Discharge Volume	x
Analysis Speed	Normal		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
3	0	0	0
5	0	0	0
30	0	0	0
100	20	0	0

Node S1.6 TANK Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	68.750	Product Number	CTL-SHE-0067-2000-1000-2000
Design Depth (m)	1.000	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node BR Tank Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	74.550	Product Number	CTL-SHE-0054-1000-0500-1000
Design Depth (m)	0.500	Min Outlet Diameter (m)	0.075
Design Flow (l/s)	1.0	Min Node Diameter (mm)	1200

Node S1.6 TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.29460	Safety Factor	2.0	Invert Level (m)	68.750
Side Inf Coefficient (m/hr)	0.29460	Porosity	0.30	Time to half empty (mins)	49

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	125.0	125.0	0.600	125.0	161.0	0.601	0.0	161.0

Node BR Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	74.790
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	500.0	0.0	0.060	500.0	0.0	0.061	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year 15 minute summer	94.812	26.829
1 year 30 minute summer	65.241	18.461
1 year 60 minute summer	46.576	12.309
1 year 120 minute summer	30.542	8.071
1 year 180 minute summer	24.413	6.282
1 year 240 minute summer	19.886	5.255
1 year 360 minute summer	15.835	4.075
1 year 480 minute summer	12.868	3.401
1 year 600 minute summer	10.879	2.976
1 year 720 minute summer	9.885	2.649
1 year 960 minute summer	8.378	2.206
1 year 1440 minute summer	6.355	1.703
1 year 2160 minute summer	4.759	1.315
1 year 2880 minute summer	4.087	1.095
1 year 4320 minute summer	3.234	0.845
1 year 5760 minute summer	2.743	0.702
1 year 7200 minute summer	2.384	0.608
1 year 8640 minute summer	2.120	0.541
1 year 10080 minute summer	1.918	0.489
3 year 15 minute summer	126.931	35.917
3 year 30 minute summer	86.433	24.458
3 year 60 minute summer	61.311	16.203
3 year 120 minute summer	39.814	10.522
3 year 180 minute summer	31.507	8.108
3 year 240 minute summer	25.463	6.729
3 year 360 minute summer	20.120	5.178
3 year 480 minute summer	16.262	4.298
3 year 600 minute summer	13.668	3.739
3 year 720 minute summer	12.376	3.317
3 year 960 minute summer	10.427	2.746
3 year 1440 minute summer	7.845	2.103
3 year 2160 minute summer	5.824	1.610
3 year 2880 minute summer	4.968	1.332
3 year 4320 minute summer	3.904	1.021
3 year 5760 minute summer	3.310	0.847
3 year 7200 minute summer	2.875	0.733
3 year 8640 minute summer	2.555	0.652
3 year 10080 minute summer	2.308	0.589
5 year 15 minute summer	143.632	40.643

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
5 year 30 minute summer	97.831	27.683
5 year 60 minute summer	68.624	18.135
5 year 120 minute summer	44.141	11.665
5 year 180 minute summer	34.931	8.989
5 year 240 minute summer	28.231	7.461
5 year 360 minute summer	22.262	5.729
5 year 480 minute summer	17.960	4.746
5 year 600 minute summer	14.991	4.100
5 year 720 minute summer	13.574	3.638
5 year 960 minute summer	11.436	3.011
5 year 1440 minute summer	8.604	2.306
5 year 2160 minute summer	6.388	1.765
5 year 2880 minute summer	5.449	1.460
5 year 4320 minute summer	4.275	1.118
5 year 5760 minute summer	3.611	0.924
5 year 7200 minute summer	3.128	0.798
5 year 8640 minute summer	2.773	0.707
5 year 10080 minute summer	2.505	0.639
30 year 15 minute summer	210.848	59.663
30 year 30 minute summer	144.699	40.945
30 year 60 minute summer	100.959	26.681
30 year 120 minute summer	64.296	16.992
30 year 180 minute summer	50.369	12.962
30 year 240 minute summer	40.396	10.675
30 year 360 minute summer	31.495	8.105
30 year 480 minute summer	25.196	6.659
30 year 600 minute summer	20.893	5.715
30 year 720 minute summer	18.815	5.043
30 year 960 minute summer	15.716	4.138
30 year 1440 minute summer	11.684	3.131
30 year 2160 minute summer	8.564	2.367
30 year 2880 minute summer	7.236	1.939
30 year 4320 minute summer	5.597	1.463
30 year 5760 minute summer	4.679	1.198
30 year 7200 minute summer	4.020	1.025
30 year 8640 minute summer	3.540	0.903
30 year 10080 minute summer	3.180	0.811
100 year +20% CC 15 minute summer	328.690	93.008
100 year +20% CC 30 minute summer	226.685	64.144
100 year +20% CC 60 minute summer	157.105	41.518
100 year +20% CC 120 minute summer	99.140	26.200
100 year +20% CC 180 minute summer	77.169	19.858
100 year +20% CC 240 minute summer	61.589	16.276
100 year +20% CC 360 minute summer	47.675	12.268
100 year +20% CC 480 minute summer	37.939	10.026
100 year +20% CC 600 minute summer	31.327	8.569
100 year +20% CC 720 minute summer	28.115	7.535
100 year +20% CC 960 minute summer	23.356	6.150
100 year +20% CC 1440 minute summer	17.232	4.618
100 year +20% CC 2160 minute summer	12.530	3.463
100 year +20% CC 2880 minute summer	10.523	2.820
100 year +20% CC 4320 minute summer	8.066	2.109

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +20% CC 5760 minute summer	6.699	1.715
100 year +20% CC 7200 minute summer	5.725	1.461
100 year +20% CC 8640 minute summer	5.021	1.281
100 year +20% CC 10080 minute summer	4.494	1.147

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	69.338	0.050	3.9	0.0787	0.0000	OK
15 minute summer	S1.3	10	69.212	0.077	9.3	0.1416	0.0000	OK
15 minute summer	S1.4	10	69.117	0.105	14.4	0.1835	0.0000	OK
15 minute summer	S1.5	11	69.072	0.131	18.9	0.0000	0.0000	OK
15 minute summer	S3.0	10	69.199	0.064	5.2	0.1145	0.0000	OK
30 minute summer	S1.6 TANK	23	68.875	0.125	17.7	4.8365	0.0000	OK
15 minute summer	S1.7	1	67.750	0.000	1.7	0.0000	0.0000	OK
120 minute summer	BR Tank	84	74.797	0.247	5.0	4.5464	0.0000	FLOOD RISK
15 minute summer	BR MH	10	69.339	0.031	1.0	0.0350	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.002	S1.3	3.8	0.414	0.110	0.3189	
15 minute summer	S1.3	1.003	S1.4	8.9	0.592	0.258	0.4183	
15 minute summer	S1.4	1.004	S1.5	13.9	0.661	0.403	0.3356	
15 minute summer	S1.5	1.005	S1.6 TANK	18.9	0.859	0.548	0.0880	
15 minute summer	S3.0	2.000	S1.5	5.2	0.739	0.357	0.1119	
30 minute summer	S1.6 TANK	Hydro-Brake®	S1.7	1.7				2.4
30 minute summer	S1.6 TANK	Infiltration		5.3				
120 minute summer	BR Tank	Hydro-Brake®	BR MH	1.0				
15 minute summer	BR MH	1.001	S1.0	1.0	0.459	0.069	0.0116	

Results for 3 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	69.344	0.056	4.9	0.0883	0.0000	OK
15 minute summer	S1.3	10	69.225	0.090	12.2	0.1638	0.0000	OK
15 minute summer	S1.4	10	69.140	0.128	19.1	0.2233	0.0000	OK
15 minute summer	S1.5	11	69.095	0.154	25.1	0.0000	0.0000	OK
15 minute summer	S3.0	10	69.211	0.076	6.9	0.1353	0.0000	OK
60 minute summer	S1.6 TANK	41	68.936	0.186	18.1	7.1764	0.0000	OK
15 minute summer	S1.7	1	67.750	0.000	1.8	0.0000	0.0000	OK
180 minute summer	BR Tank	124	74.802	0.252	5.2	6.7621	0.0000	FLOOD RISK
15 minute summer	BR MH	10	69.345	0.037	1.0	0.0414	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.002	S1.3	4.8	0.429	0.138	0.3841	
15 minute summer	S1.3	1.003	S1.4	11.7	0.618	0.340	0.5256	
15 minute summer	S1.4	1.004	S1.5	18.3	0.700	0.530	0.4171	
15 minute summer	S1.5	1.005	S1.6 TANK	24.9	0.938	0.723	0.1063	
15 minute summer	S3.0	2.000	S1.5	6.9	0.793	0.475	0.1385	
60 minute summer	S1.6 TANK	Hydro-Brake®	S1.7	1.9				4.6
60 minute summer	S1.6 TANK	Infiltration		5.5				
180 minute summer	BR Tank	Hydro-Brake®	BR MH	1.0				
15 minute summer	BR MH	1.001	S1.0	1.1	0.459	0.074	0.0140	

Results for 5 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	69.347	0.059	5.3	0.0929	0.0000	OK
15 minute summer	S1.3	10	69.230	0.095	13.6	0.1742	0.0000	OK
15 minute summer	S1.4	10	69.151	0.139	21.4	0.2434	0.0000	OK
15 minute summer	S1.5	11	69.107	0.166	28.1	0.0000	0.0000	OK
15 minute summer	S3.0	10	69.217	0.082	7.8	0.1459	0.0000	OK
60 minute summer	S1.6 TANK	41	68.969	0.219	20.1	8.4538	0.0000	OK
15 minute summer	S1.7	1	67.750	0.000	1.9	0.0000	0.0000	OK
180 minute summer	BR Tank	128	74.804	0.254	5.7	7.8629	0.0000	FLOOD RISK
15 minute summer	BR MH	10	69.347	0.039	1.0	0.0444	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.002	S1.3	5.3	0.439	0.152	0.4154	
15 minute summer	S1.3	1.003	S1.4	13.1	0.627	0.380	0.5782	
15 minute summer	S1.4	1.004	S1.5	20.5	0.716	0.594	0.4564	
15 minute summer	S1.5	1.005	S1.6 TANK	28.0	0.974	0.811	0.1145	
15 minute summer	S3.0	2.000	S1.5	7.8	0.815	0.537	0.1525	
60 minute summer	S1.6 TANK	Hydro-Brake®	S1.7	1.9				5.2
60 minute summer	S1.6 TANK	Infiltration		5.6				
180 minute summer	BR Tank	Hydro-Brake®	BR MH	1.0				
15 minute summer	BR MH	1.001	S1.0	1.1	0.459	0.077	0.0151	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	69.358	0.070	7.4	0.1101	0.0000	OK
15 minute summer	S1.3	10	69.253	0.118	19.5	0.2156	0.0000	OK
15 minute summer	S1.4	11	69.213	0.201	31.2	0.3507	0.0000	OK
15 minute summer	S1.5	11	69.157	0.216	40.5	0.0000	0.0000	OK
15 minute summer	S3.0	10	69.242	0.107	11.5	0.1912	0.0000	OK
60 minute summer	S1.6 TANK	43	69.113	0.363	29.3	14.0211	0.0000	SURCHARGED
15 minute summer	S1.7	1	67.750	0.000	2.0	0.0000	0.0000	OK
180 minute summer	BR Tank	144	74.816	0.266	8.3	13.5230	0.0000	FLOOD RISK
15 minute summer	BR MH	10	69.358	0.050	1.0	0.0568	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.002	S1.3	7.3	0.469	0.212	0.5402	
15 minute summer	S1.3	1.003	S1.4	19.0	0.656	0.550	0.8003	
15 minute summer	S1.4	1.004	S1.5	29.6	0.770	0.859	0.6129	
15 minute summer	S1.5	1.005	S1.6 TANK	40.4	1.117	1.171	0.1423	
15 minute summer	S3.0	2.000	S1.5	11.5	0.840	0.797	0.2343	
60 minute summer	S1.6 TANK	Hydro-Brake®	S1.7	2.0				8.0
60 minute summer	S1.6 TANK	Infiltration		6.0				
180 minute summer	BR Tank	Hydro-Brake®	BR MH	1.0				
15 minute summer	BR MH	1.001	S1.0	1.2	0.459	0.081	0.0198	

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	11	69.440	0.152	10.8	0.2404	0.0000	OK
15 minute summer	S1.3	11	69.418	0.283	29.2	0.5179	0.0000	SURCHARGED
15 minute summer	S1.4	10	69.355	0.343	41.5	0.5987	0.0000	SURCHARGED
60 minute summer	S1.5	46	69.349	0.408	42.7	0.0000	0.0000	SURCHARGED
15 minute summer	S3.0	10	69.397	0.262	17.9	0.4684	0.0000	SURCHARGED
60 minute summer	S1.6 TANK	46	69.347	0.597	42.4	23.0613	0.0000	SURCHARGED
15 minute summer	S1.7	1	67.750	0.000	2.0	0.0000	0.0000	OK
240 minute summer	BR Tank	228	74.840	0.290	10.1	25.2076	0.0000	FLOOD RISK
15 minute summer	BR MH	11	69.441	0.133	1.6	0.1499	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.002	S1.3	11.8	0.483	0.341	1.1730	
15 minute summer	S1.3	1.003	S1.4	25.4	0.673	0.737	1.1013	
15 minute summer	S1.4	1.004	S1.5	39.7	0.999	1.153	0.6363	
60 minute summer	S1.5	1.005	S1.6 TANK	42.4	1.139	1.229	0.1591	
15 minute summer	S3.0	2.000	S1.5	16.5	0.935	1.138	0.2817	
60 minute summer	S1.6 TANK	Hydro-Brake®	S1.7	2.0				11.8
60 minute summer	S1.6 TANK	Infiltration		6.6				
240 minute summer	BR Tank	Hydro-Brake®	BR MH	1.0				
15 minute summer	BR MH	1.001	S1.0	2.0	0.459	0.137	0.0511	

Appendix 2

BMCE Drawings

GENERAL NOTES

1. ALL WORKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CIVIL ENGINEERING SPECIFICATION AND STANDARD CONSTRUCTION DETAILS. CONSTRUCTION PRODUCTS SUPPLIED ON THIS PROJECT ARE TO BE IN ACCORDANCE WITH THE EU CONSTRUCTION PRODUCTS REGULATION (NO.305/2011-CPR). PRODUCTS ARE TO BEAR THE CE MARKING LABEL & ARE TO BE IN ACCORDANCE WITH THE HARMONISED EUROPEAN STANDARDS (HENS) OR, FOR PRODUCTS NOT COVERED BY THE HENS, ARE TO BE IN ACCORDANCE WITH THE EUROPEAN ASSESSMENT DOCUMENTS (EADS). THE NATIONAL STANDARDS AUTHORITY OF IRELAND (NSAI) HAS PRODUCED ADDITIONAL GUIDANCE TO SOME HENS IN THE FORM OF NATIONAL ANNEXES OR STANDARD RECOMMENDATIONS (SRS) WHICH SET OUT APPROPRAITE MINIMUN PERFORMANCE LEVELS FOR SPECIFIC INTENDED USES OF THE PRODUCT IN IRELAND. NSAI HOST THIS INFORMATION AT WWW.NSAI.IE
2. CONTRACTOR IS TO REFER TO GENERAL NOTES-STRUCTURAL DRAWING FOR DETAILS RELATING TO EXCAVATIONS, FOUNDATIONS & BACKFILLING, CAST IN-SITU CONCRETE ETC.
3. ALL DIMENSIONS IN METERS UNLESS SPECIFIED OTHERWISE.
4. ALL CO-ORDINATES ARE TO IRISH TRASVERSE MERCATOR.
5. ALL LEVELS ARE TO ORDNANCE DATUM (MALIN HEAD).
6. ALL EXISTING LEVELS, EXISTING SITE TOPOGRAPHY AND SURROUNDING SITE TOPOGRAPHY HAS BEEN TAKEN FROM 20240515_egl_laganara_tallagh SURVEY DRAWING REF: 20240515
7. THE CONTRACTOR SHALL CONFIRM ALL EXISTING DRAINAGE / MANHOLE INVERT LEVELS & THE LOCATION OF ALL EXISTING SERVICES ON SITE PRIOR TO COMMENCEMENT OF THE WORKS.
8. UISCE EIREANN
   - 8.1. ALL WATER SUPPLY WORKS TO BE IN ACCORDANCE WITH UISCE EIREANN "CODE OF PRACTICE FOR WATER INFRA-STRUCTURE". THE CONTRACTOR IS TO REFER TO UISCE EIREANN "WATER INFRASTRUCTURE STANDARD DETAILS". A SAMPLE OF RELEVANT DETAILS ARE PROVIDED AS BMCE DRAWING CND-BMD-00-00-DR-C-12215, HOWEVER THE CONTRACTOR IS ADVISED UISCE EIREANN'S DOCUMENT TAKES PRECEDENCE.
   - 8.2. ALL FOUL DRAINAGE WORKS TO BE IN ACCORDANCE WITH UISCE EIREANN "CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE". THE CONTRACTOR IS TO REFER TO UISCE EIREANN "WATER INFRASTRUCTURE STANDARD DETAILS". HOWEVER, A SAMPLE OF RELEVANT DETAILS IS ARE PROVIDED AS BMCE DRAWING CND-BMD-00-00-DR-C-12215. HOWEVER, THE CONTRACTOR IS ADVISED UISCE EIREANN'S DOCUMENT TAKES PRECEDENCE.
   - 8.3. PRIOR TO THE COMMENCEMENT OF WORKS ON SITE, THE CONTRACTOR IS TO CARRY OUT A FLOW TEST ON ALL EXISTING FIRE HYDRANTS ON THE SITE AND WITHIN 15m OF THE SITE BOUNDARY. TEST RESULTS ARE TO BE CIRCULATED TO THE PROJECT FIRE CONSULTANT AND BMCE FOR REVIEW.
   - 8.4. WITH REFERENCE TO UISCE EIREANN QUALITY ASSURANCE FIELD INSPECTION REQUIREMENTS MANUAL, BMCE WILL PROVIDE THE SERVICES AS LISTED FOR THE "DEVELOPER'S DESIGN ENGINEER".
   - 8.5. THE CONTRACTOR IS TO INCLUDE FOR ALL SERVICES AS LISTED FOR THE "DEVELOPER'S CONSTRUCTION ENGINEER" AND ALL LIASIONS WITH UISCE EIREANN FIELD ENGINEER. THIS INCLUDES ALL TESTING AND COMMISSIONING OF THE WATER AND/OR WASTEWATER INFRASTRUCTURE AND CONFIRMATION OF THE RESULTS OF ALL TESTING AND COMMISSIONING BY WAY OF ANCILLARY CERTIFICATES AND TEST RESULT CERTIFICATES, IN RESPECT OF THE ON-SITE, OFF-SITE TESTING AND COMMISSIONING OF THE WATER AND/OR WASTEWATER INFRASTRUCTURE. BMCE'S RESPONSIBILITY WILL BE LIMITED TO A DESKTOP REVIEW OF THE TESTING RECORDS CONDUCTED AND WITNESSED BY OTHERS (LOCAL AUTHORITY / UISCE EIREANN FIELD ENGINEERS) THAT THE WATER AND/OR WASTEWATER IFRASTRUCTURE HAS BEEN APPROPRIATELY TESTED ON SITE.
9. LOCAL AUTHORITY SURFACE WATER
   - 9.1. ALL SURFACE WATER DRAINAGE WORKS ARE TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL AUTHORITY CODE OF PRACTICE AND GDSDS.
   - 9.2. THE CONTRACTOR IS RESPONSIBLE FOR ALL APPLICATIONS TO THE LOCAL AUTHORITY FOR TEMPORARY ROAD OPENING LICENCES, TEMPORARY DRAINAGE CONNECTIONS ETC.
   - 9.3. THE CONTRACTOR IS RESPONSIBLE FOR ALL LIASIONS WITH THE LOCAL AUTHORITY RELATING TO DRAINAGE INSPECTIONS / FINAL SIGN-OFF.
10. GREEN / BLUE ROOFS
   - 10.1. THE MAIN CONTRACTOR (AND/OR THEIR APPOINTED SPECIALIST ROOF SUBCONTRACTOR) SHALL BE RESPONSIBLE FOR THE DETAILED DESIGN, COORDINATION, SPECIFICATION, DETAILING, INSTALLATION, INSPECTION, BCAR CERTIFICATION, WARRANTING AND MAINTENANCE SPECIFICATIONS FOR ALL GREEN/BLUE ROOFS AND PODIUM BUILD UP.
   - 10.2. FOR THE AVOIDANCE OF DOUBT BMCE ARE NOT RESPONSIBLE FOR THESE ELEMENTS. AS CIVIL ENGINEERS, BMCE ROLE IN THESE ELEMENTS, RELATES SOLELY TO THEIR USE AS SUDS DEVICES (WHERE APPLICABLE). WHERE BMCE INDICATE 'TYPICAL' GREEN BLUE ROOF BUILD UPS THIS SHALL NOT BE CONSTRUED AS A 'DESIGN' BY BMCE, AND IS DEMONSTRATIVE PURPOSES ONLY.
   - 10.3. FOR FURTHER INFORMATION REFER TO BMCE SUDS STRATEGY DRAWING FOR "GREEN BLUE ROOF & PODIUM BUILD-UPS - SuDS PERFORMANCE SPECIFICATION".
11. FIRE CERT & FIRE FIGHTING STRATEGY
   - (i) BMCE ARE NOT RESPONSIBLE FOR THE DEVELOPMENT FIRE CERT APPLICATION OR THE FIRE FIGHTING STRATEGY FOR THE SITE / DEVELOPMENT, WE NOTE UISCE EIREANN'S CODE OF PRACTICE FOR WATER INFRASTRUCTURE (JULY 2020 REVISION 2) CLAUSE 1.17 RELATING TO FIRE AUTHORITY LIAISON. WE NOTE ALL RESPONSIBILITIES RELATING TO "THE DEVELOPER" ARE NOT WITHIN BMCE'S SCOPE OF WORKS. WE ALSO NOTE RESPONSIBILITY FOR ANY "LIAISONS WITH THE FIRE AUTHORITY AND AGREEING ALL ARRANGEMENTS FOR THE PROVISION OF FIRE FLOW FOR FIRE FIGHTING PURPOSES" AS OUTLINED IN CLAUSE 1.17 ARE ALSO NOT PART OF BMCE'S SCOPE OF WORK.
   - (ii) THE CLIENT / PROJECT FIRE CONSULTANT ARE TO SATISFY THEMSELVES THAT ALL EXISTING AND PROPOSED FIRE HYDRANTS WILL PROVIDE SUFFICIENT FLOWS FOR FIRE FIGHTING PURPOSES.
   - (iii) BMCE WILL INDICATE THE EXISTING AND PROPOSED WATERMAIN LAYOUT FOR THE SITE INCLUDING THE LOCATION OF EXISTING AND PROPOSED FIRE HYDRANTS, HOWEVER AS OUTLINED ABOVE, WILL TAKE NO RESPONSIBILITY FOR THE PERFORANCE FOR FIRE FIGHTING PURPOSES.
12. CONSTRUCTION TRAFFIC MANAGEMENT
   - (i) THE CONTRACTOR IS RESPONSIBLE FOR THE MANAGEMENT OF ALL CONSTRUCTION TRAFFIC.
   - (ii) THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND ALTERING ROAD SPECIFICATIONS IF INTENDED TO BE USED AS TEMPORARY CONSTRUCTION ROUTES.
13. STORM WATER BURIED ATTENUATION TANKS TO BE DESIGNED AND SUPPLIED BY SPECIALIST SUBCONTRACTOR AND APPROVED VIA TECHNICAL SUBMITTAL. ALL TANKS TO BE DESIGNED FOR FIRE TENDER VEHICULAR LOADING UNLESS NOTED OTHERWISE.

ROADS / FOOTPATH NOTES

NOTE: ALL ROADS A PER DRAWING C-12100

1. ALTERNATIVE ROAD BASE MATERIAL:

AS AN ALTERNATIVE TO DENSE BITUMEN MACADAM ROADBASE THE CONTRACTOR CAN USE A LEAN MIX ROADBASE 150mm THICK. AGGREGATES FOR LEAN MIX CONCRETE MAY CONSIST OF EITHER COARSE AND FINE AGGREGATE BATCHED SEPARATELY, OR AN ALL-IN AGGREGATE, HAVING A MAXIMUM NOMINAL SIZE NOT EXCEEDING 40mm NOR LESS THAN 20mm AND SHOULD LIE WITHIN THE GRADING LIMITS SET OUT IN TABLE 1.1 BELOW.

TABLE 1.1 LEAN MIX CONCRETE - RANGE OF GRADING

SIEVE SIZE IS 24	PERCENTAGE BY MASS PASSING – NOMINAL MAXIMUM SIZE 40mm	20mm
75mm	100	-
37.5mm	95-100	100
20mm	45-80	80-100
5mm	30-40	35-45
600 µm	8-30	10-35
150 µm	0-6	0-6

PARTICLE SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND SIEVING METHOD OF BS 812: PART 103. THE RATIO, BY MASS OF CEMENT TO AGGREGATE, SHOULD BE SUCH AS TO PRODUCE 28 DAY CUBE STRENGTHS OF NOT LESS THAN 10N/mm² AND NOT MORE THAN 20N/mm². CURING OF LEAN-MIX ROAD BASE SHALL BE BY BUTUMINOUS SPRAYING TO CLAUSE 920 SPECIFICATION FOR ROAD WORKS

2. USE OF ROADBASE FOR CONSTRUCTION TRAFFIC.

THE ROADBASE MAY BE USED FOR CONSTRUCTION TRAFFIC PROVIDED IT IS INCREASED IN THICKNESS BY 50mm AND SURFACE DRESSED. SURFACE DRESSING SHOULD BE CARRIED OUT IN ACCORDANCE WITH THE MANUAL "SURFACE DRESSING" PUBLISHED BY THE DEPARTMENT OF THE ENVIROMENT. THE BINDER SHOULD BE CUTBACK BITUMEN OR CATIONIC BITUMEN EMULSION, COMPLYING WITH THE SPECIFICATION ISSUED BY THE DEPARTMENT OF THE ENVIRONMENT. OTHER BINDERS MAY BE USED, SUBJECT TO APPROVAL.

CUTBACK BITUMEN SHOULD BE OF THE APPROPRIATE GRADE RECOMMENDED IN THE MANUAL. CATIONIC BITUMEN EMULSION SHOULD HAVE A NOMINAL BITUMEN CONTENT OF 70%. THE BINDER SHOULD BE SPREAD AT THE APPROPRIATE RATE RECOMMENDED IN THE MANUAL. CHIPPINGS SHOULD BE OF A SINGLE SIZE (AS APPROVED BY THE LOCAL AUTHORITY), CUBICAL IN SHAPE AND SHOULD COMPLY WITH THE REQUIREMENTS OF TABLE 4 OF THE MANUAL.

3. DEPTH OF SUB-BASE & CAPPING LAYER

THE DEPTH OF THE SUB-BASE AND CAPPING LAYERS WILL VARY WITH THE SUBGRADE STRENGTH, AS INDICATED BY THE CBR TEST RESULTS.

THE THICKNESS OF THE SUB-BASE LAYER SHOULD BE 150mm FOR ALL FORMS OF ROADWAY CONSTRUCTION.

THE THICKNESS OF THE CAPPING LAYER WILL VARY WITH THE CBR VALUE, AS INDICATED IN TABLE 3.1 BELOW. IF THE CBR VALUE OF THE SUBGRADE EXCEEDS 15%, NO CAPPING LAYER IS REQUIRED.

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ROADS / FOOTPATH NOTES (Cont'd)

TABLE 3.1 CAPPING LAYER - MINIMUM CONSTRUCTION THICKNESS

LOWEST SUBGRADE CBR (%)	MINIMUM CAPPING LAYER THICKNESS (mm)
* LESS THAN 2	(SEE FOOTNOTE)
2–5	300
5–15	150
MORE THAN 15	NO CAPPING LAYER REQUIRED

* FOR SUBGRADES WITH A CBR OF LESS THAN 2%, A GEOTEXTILE SEPARATOR (e.g. TERRAM 1000) SHOULD BE USED AND SPECIALIST ADVICE SOUGHT REGARDING MINIMUM THICKNESS.

IF THE CONTRACTOR PROPOSES TO USE THE SUB-BASE FOR CONSTRUCTION TRAFFIC HE SHOULD SEEK APPROVAL FROM THE ENGINEER TO DO SO. SUCH APPROVAL WILL ONLY NORMALLY BE GIVEN ON CONDITION THAT THE SUB-BASE THICKNESS IS INCREASED. TYPICALLY FOR CBR VALUES £ 4% THE SUB-BASE THICKNESS WILL HAVE TO BE INCREASED BY 150mm. FOR CBR VALUES $ 4% AN INCREASE OF 80mm WILL BE SUFFICIENT. SUBGRADE STRENGTH SHOULD BE ESTABLISHED BY MEANS OF THE CALIFORNIA BEARING RATIO (CBR) TEST, IN ACCORDANCE WITH BS 1377: PART 4 : SECTION 7. SAMPLES SHOULD BE TAKEN AT THE RATE OF ONE PER 100m OF ROAD AND WHERE SIGNIFICANT VARIATIONS IN SOIL TYPE ARE ANTICIPATED. EXTRA SAMPLES MAY BE REQUIRED BY THE LOCAL AUTHORITY WHERE THE DIFFERENCE IN STRENGTH BETWEEN TWO ADJACENT SAMPLES INDICATES A SIGNIFICANT VARIATION IN SOIL TYPE. IN PREPARING THE TEST SPECIMEN, THE METHOD OF COMPACTION SHOULD BE THE STATIC COMPACTION METHOD 2, AS SPECIFIED IN PARAGRAPH 7.2.3.3 OF BS 1377: PART 4. UNLESS NOTED OTHERWISE CBR TESTS TO BE TAKEN AT 25m Crs. AT FORMATION LEVEL ALONG THE ROAD CENTRELINE.

4. MATERIAL SPECIFICATION FOR SUB-BASE AND CAPPING LAYER:

(a) SUB-BASE
SUB-BASE MATERIAL SHOULD COMPRISE TYPE B GRANULAR MATERIAL, IN ACCORDANCE WITH CLAUSE 804 OF THE SPECIFICATIONS FOR ROADWORKS. THE MATERIAL SHOULD LIE WITHIN THE GRADING LIMITS SET OUT IN TABLE 4.1 BELOW.

TABLE 4.1 SUB–BASE MATERIAL – RANGE OF GRADING

SIEVE SIZE IS 24	PERCENTAGE BY MASS PASSING
75mm	100
37.5mm	80-100
10mm	40-70
5mm	25-45
600 µm	8-22
75 µm	0-10

PARTICLE SIZE DISTRIBUTION SHOULD BE DETERMINED BY THE WASHING AND SIEVING METHOD OF BS 812: PART 103. ALL MATERIAL USED SHOULD BE FROST RESISTANT.

MATERIAL PASSING THE 425 mm SIEVE, WHEN TESTED IN ACCORDANCE WITH BS 1377, SHOULD BE NON-PLASTIC.

THE MATERIAL SHOULD HAVE A TEN PERCENT FINES VALUE OF 100kN, OR MORE, WHEN TESTED IN ACCORDANCE WITH BS 812.

THE SUB-BASE SHOULD BE LAID AND COMPACTED TO THE REQUIREMENTS OF CLAUSE 802 OF THE SPECIFICATION FOR ROADWORKS, WITHOUT DRYING OUT, OR SEGREGATION.

(b) CAPPING LAYER
CAPPING LAYER MATERIAL SHOULD COMPRISE EITHER CRUSHED ROCK, NATURAL GRAVEL, CRUSHED GRAVEL OR CRUSHED CONCRETE. THE MATERIAL SHOULD HAVE A MAXIMUM SIZE OF 100mm AND THE MAXIMUM ALLOWABLE PASSING THE 75 MICRON SHOULD BE 10%. THE MATERIAL SHOULD BE WELL GRADED THRO'UGHOUT ALL SIZES.

SELECTED DEMOLITION MATERIALS WHICH MEET THE ABOVE REQUIREMENTS MAY ALSO BE USED, SUBJECT TO APPROVAL.

5. CONCRETE FOR ROAD PAVEMENTS:

PAVING QUALITY CONCRETE SHOULD BE 40 N/mm² AIR ENTRAINED CONCRETE MADE FROM NATURAL AGGREGATES. CEMENT, WATER AND AIR ENTRAINING AGENT. AGGREGATES SHOULD BE NATURAL MATERIALS COMPLYING WITH IS 5. CEMENT SHOULD BE NORMAL PORTLAND CEMENT, COMPLYING WITH IS 1. THE AIR ENTRAINING AGENT SHOULD COMPLY WITH BS 5075. OTHER ADMIXTURES MAY BE USED, SUBJECT TO APPROVAL. THE CONSTITUENTS SHOULD BE PROPORTIONED AS SET OUT IN TABLE 5.1 BELOW:

TABLE 5.1 CONSTITUENTS FOR PAVING QUALITY CONCRETE

MINIMUM CEMENT CONTENT	325kg/m³
MAXIMUM FREE WATER/CEMENT RATIO	0.55
MAXIMUM AGGREGATE SIZE	20mm
MINIMUM FINE AGGREGATE CONTENT	30%
AIR CONTENT	3.5 - 6.5 %
SLUMP	50mm

6. REINFORCEMENT FOR CONCRETE SLABS SHOULD BE LONG MESH STEEL FABRIC, COMPLYING WITH BS 4483 AND SHOULD BE FREE FROM LOOSE MILL SCALE, RUST, DIRT, OIL, PAINT OR GREASE. THE MINIMUM WEIGHT OF REINFORCEMENT SHOULD BE 2.61kg/m². THE REINFORCEMENT SHOULD HAVE 50mm MINIMUM COVER FROM THE SURFACE AND SHOULD TERMINATE BETWEEN 250 AND 350mm FROM ANY TRANSVERSE JOINT BETWEEN 40 AND 80mm FROM A LONGITUDINAL JOINT. THE REINFORCEMENT SHOULD TERMINATE BETWEEN 100 AND 150mm FROM THE EDGE OF THE SLAB. REINFORCING MATS SHOULD OVERLAP SUCH THAT THE TRANSVERSE WIRE OF ONE MAT WOULD LIE WITHIN THE LAST COMPLETE MESH OF THE PREVIOUS MAT AND THE OVERLAP SHOULD BE AT LEAST 450mm. TRANSVERSE CONTRACTION JOINT SPACING FOR VARIOUS MESH SIZES SHOULD BE AS FOLLOWS:

LONG MESH REINFORCEMENT TO BS 4483	MAXIMUM SPACING (m) OF CONTRACTION JOINTS
C283	15m
C385	20m
C503	25m

7. SAWING OF JOINT GROOVES SHOULD BE UNDERTAKEN AS SOON AS POSSIBLE AFTER THE CONCRETE HAS HARDENED SUFFICIENTLY TO ENABLE A SHARP EDGED GROOVE TO BE PRODUCED, WITHOUT DISRUPTING THE CONCRETE AND BEFORE RANDOM CRACKS DEVELOP IN THE SLAB. THIS WOULD BE WITHIN 6 TO 24 HOURS AFTER THE CONCRETE IS POURED. THE GROOVES SHOULD BE BETWEEN ¼ & ⅓ THE DEPTH OF SLAB AND OF ANY CONVENIENT WIDTH NOT LESS THAN 3mm. THE GROOVE CAN BE WIDENED BY SAWING AT THIS STAGE, OR LATER, TO ACCOMMODATE THE JOINT SEALANT.

EXPANSION JOINT FILLER SHOULD BE COMPRESSIBLE BOARD 25mm THICK, FOR THE FULL DEPTH OF THE CONCRETE. THE TOP OF THE FILLER BOARD SHOULD BE ROUTED OUT LATER, TO A DEPTH OF 25mm, IN ORDER TO RECEIVE THE JOINT SEALANT.

PAVING SLABS / PAVIOURS

8. DOWEL BARS AND TIE BARS SHOULD BE GRADE 250 STEEL, COMPLYING WITH BS 4449 AND SHOULD BE FREE FROM OIL, DIRT, LOOSE SCALE AND RUST. DOWEL BARS SHOULD BE STRAIGHT, FREE OF BURRS AND OTHER IRREGULARITIES, WITH THE SLIDING END SAWN. DOWEL BARS SHOULD BE DEBONDED OVER THEIR LENGTH WITH A TOUGH, DURABLE PLASTIC SHEATH OF AVERAGE THICKNESS NOT GREATER THAN 1.25mm. FOR EXPANSION JOINTS, THE EXPANSION SPACE AVAILABLE IN THE WATERPROOF CAP SHOULD BE 10mm GREATER THAN THE THICKNESS OF THE JOINT FILLER BOARD.

9. JOINT GROOVES SHOULD BE SEALED WITH A HOT APPLIED JOINT-SEALING COMPOUND COMPLYING WITH BS 2499 TYPE A2 AND THE FINISHED SURFACE OF THE SEAL SHOULD BE 3mm BELOW THE SURFACE LEVEL OF THE CONCRETE. WHEN A MODULAR PAVEMENT IS TO BE CONSTRUCTED THE LAYOUT, LAYING PATTEERN AND STRUCTURAL DEGIGN IS TO BE IN ACCORDANCE WITH BS 7533

10. CLAY AND CALCIUM SILICATE PAVIOURS SHOULD COMPLY WITH BS 6677: PART 1, TYPE PB WITH CHAMFERS. 200 x 100 x 65mm FOR TRAFFICED AREAS & 50mm THICK FOR PEDESTRIAN AREAS

CONCRETE BLOCK PAVIOURS SHOULD COMPLY WITH BS 6717: PART 1, TYPE R. 200 x 100 x 80mm THICK FOR TRAFFICED AREAS & 60mm THICK FOR PEDESTRIAN AREAS.

HORIZONTAL INTERLOCK SHOULD BE GIVEN TO THE PAVING EITHER BY THE USE OF SHAPED BLOCKS, OR BY LAYING RECTANGULAR BLOCKS IN HERRINGBONE FASHION. AT THE EDGE OF THE PAVEMENT, RESTRAINT SHOULD BE PROVIDED, IN ORDER TO PREVENT THE PAVIOURS AND THE LAYING COURSE FROM MIGRATING OUTWARDS AND LOSING INTERLOCK.

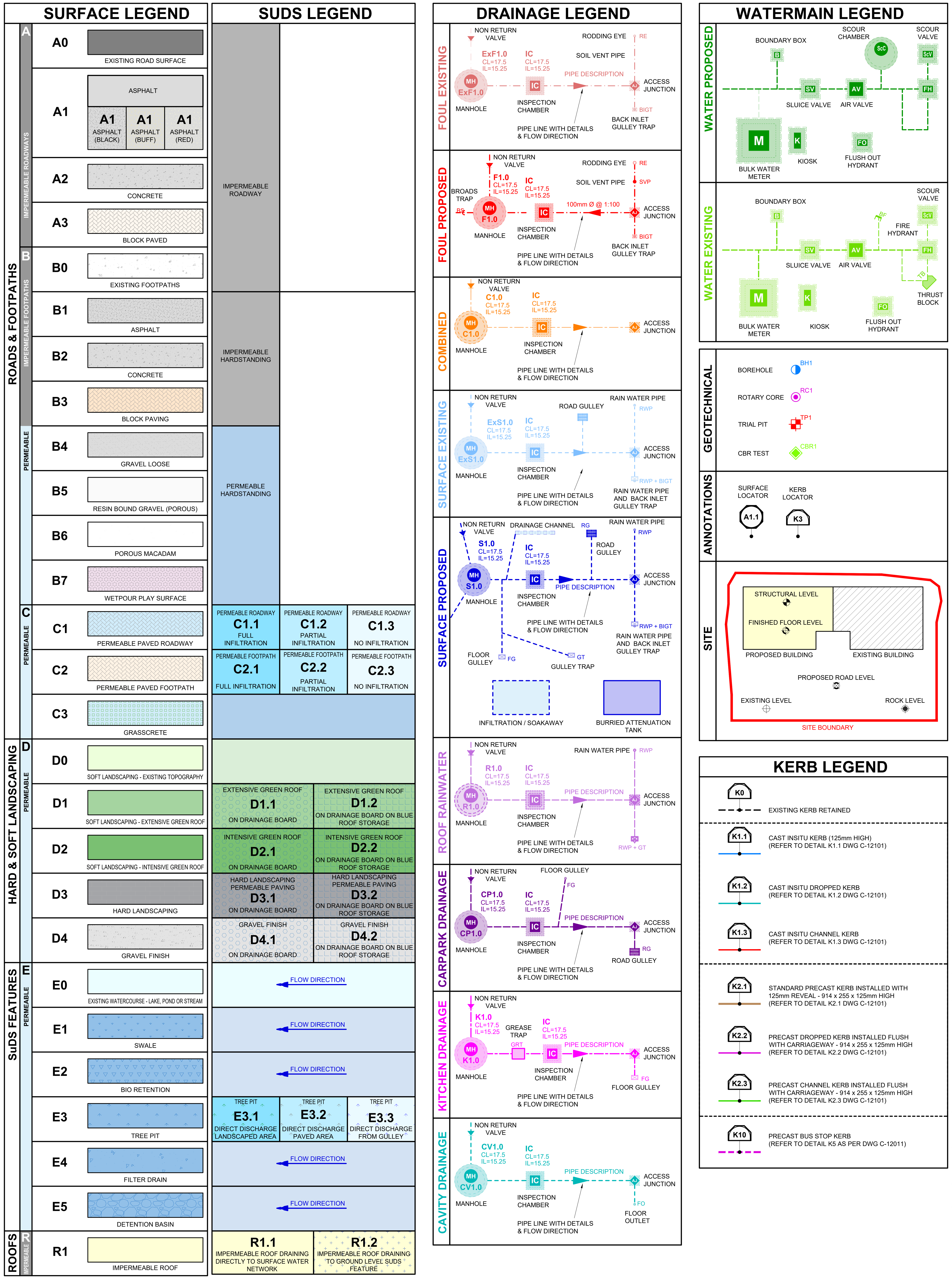
CLAY AND CALCIUM SILICATE PAVIOURS SHOULD BE LAID IN ACCORDANCE WITH BS 6677: PARTS 2 & S.

CONCRETE BLOCK PAVIOURS SHOULD BE LAID IN ACCORDANCE WITH BS 6717: PART 3.

11. LAYING COURSE SAND AND JOINTING SAND SHOULD COMPLY WITH GRADINGS C & F IN TABLE 5 OF IS 5 RESPECTIVELY. AS A GUIDE TO MOISTURE CONTENT, AFTER THE MATERIAL AHS BEEN SQUEEZED IN THE HAND AND THE HAND IS OPENED THE LAYING COURSE MATERIAL SHOULD BIND TOGETHER WITHOUT SHOWING FREE MOISTURE ON ITS SURFACE. WHERE LAYING COURSE MATERIAL IS STORED ON SITE IT SHOULD BE COVERED TO REDUCE MOISTURE LOSS DUE TO EVAPORATION, OR SATURATION FROM RAINFALL. IF THE LAYING COURSE MATERIAL BECOMES SATURATED AFTER LAYING THEN IT SHOULD BE REMOVED AND REPLACED WITH LAYING COURSE MATERIAL IN A CONDITION SUITABLE FOR THE BLOCK LAYING OPERATION. ALTERNATIVELY THE LAYING COURSE CAN BE LEFT IN PLACE UNTILL IT DRIES SUFFICIENTLY TI ALLOW BLOCK LAYING TO PROCEED.

12. JOINTS BETWEEN PAVIOURS TO BE LAID TIGHT (2mm to 5mm WIDE) AND FILLED WITH FINE SAND AS PER GRADING F TABLE 5 IS 5

NOTE:
BEFORE PAVIOURS / PAVEMENT WORKS ARE COMMENCED THE CONTRACTOR IS TO ESTABLISH IF THESE WORKS ARE TO BE TAKEN IN CHARGE BY THE LOCAL AUTHORITY. IF THIS IS THE CASE THE CONTRACTOR IS TO GET APPROVAL FROM THE LOCAL AUTHORITY FOR THE DETAILS SHOWN ON THIS DRAWING AND ESTABLISH INSPECTION AND TESTING REQUIREMENTS BEFORE COMENCING THE WORK



DETAIL No.	UISCE EIREANN - WASTEWATER DETAILS	REV
STD-WW-01	WASTEWATER SERVICE CONNECTION MAINTENANCE RESPONSIBILITY	2
STD-WW-02	TYPICAL LAYOUT FOR SEWER WITHIN NEW DEVELOPMENTS	2
STD-WW-03	DRAIN & SERVICE CONNECTION PIPEWORK	2
STD-WW-04	TYPICAL SEWER / SERVICE PIPE CONNECTION	2
STD-WW-05	TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES	2
STD-WW-05A	WASTEWATER SERVICE CONNECTION VERTICAL SEPARATION DISTANCES	0
STD-WW-06	RESTRICTIONS ON WASTEWATER INFRASTRUCTURE WORKS ADJACENT TO TREES	2
STD-WW-06A	RESTRICTIONS ON NEW TREES/SHRUBS PLANTING ADJACENT TO SEWERS	1
STD-WW-07	TRENCH BACKFILL & BEDDING	2
STD-WW-08	CONCRETE PROTECTION SLAB, BED, HAUNCH & SURROUND TO WASTEWATER PIPES	1
STD-WW-09	BLOCKWORK MANHOLE (<450MM DIA.)	3
STD-WW-10	PRE-CAST CONCRETE MANHOLE WITH CAST IN-SITU BASE	3
STD-WW-10A	PRE-CAST CONCRETE MANHOLE WITH PRE-CAST BASE	0
STD-WW-10B	PRE-CAST CONCRETE PUMPING STATION INLET MANHOLE WITH CAST IN-SITU CONCRETE BASE	0
STD-WW-10C	PRE-CAST CONCRETE PUMPING STATION INLET MANHOLE WITH PRECAST CONCRETE BASE	0
STD-WW-11	IN-SITU CONCRETE MANHOLE	3
STD-WW-11A	CAST IN-SITU CONCRETE PUMPING STATION INLET MANHOLE	0
STD-WW-12	BACKDROP AND CASCADE MANHOLES	3
STD-WW-13	PRIVATE SIDE INSPECTION CHAMBER	3
STD-WW-14	THRUST BLOCKS FOR RISING MAINS	2
STD-WW-15	SCOUR VALVE CHAMBER (FOUL RISING MAIN ≤200MM DIA.)	3
STD-WW-16	SLUICE VALVE DETAILS FOR RISING MAINS DUCTILE IRON (D.I.) PIPE (≤200MM DIA.) (SHEET 1 OF 2)	4
STD-WW-17	SLUICE VALVE DETAILS FOR RISING MAINS POLYETHYLENE (P.E.) PIPE (≤200MM DIA.) (SHEET 2 OF 2)	3
STD-WW-18	AIR VALVE CHAMBER (FOUL RISING MAIN ≤200MM DIA.)	3
STD-WW-19	DUCT CHAMBER	3
STD-WW-20	EMERGENCY OVERFLOW STRUCTURE & EMERGENCY OVERFLOW TO STORM SEWER	2
STD-WW-21	TYPICAL DITCH/STREAM CROSSING FOR GRAVITY SEWER (SHEET 1 OF 2)	2
STD-WW-22	TYPICAL DITCH/STREAM CROSSING FOR DUCTILE IRON RISING MAIN (SHEET 2 OF 2)	2
STD-WW-22A	TYPICAL DITCH/STREAM CROSSING FOR POLYETHYLENE RISING MAIN	0
STD-WW-23	TYPICAL BRIDGE CROSSING FOR RISING MAIN (SHEET 1 OF 2)	2
STD-WW-24	TYPICAL BRIDGE CROSSING FOR RISING MAIN (SHEET 2 OF 2)	2
STD-WW-24A	TYPICAL CULVERT AND SERVICES CROSSING DETAILS FOR RISING MAIN	0
STD-WW-25	SECURITY GATE & FENCING PALISADE OPTION (PREFERRED)	0
STD-WW-25A	SECURITY GATE & FENCING WIRE MESH OPTION	3
STD-WW-26	INDICATIVE PUMPING STATION SITE LAYOUT – ACCESS VIA LAY-BY	1
STD-WW-26A	INDICATIVE PUMPING STATION SITE LAYOUT – DIRECT ACCESS FROM PUBLIC ROAD	0
STD-WW-27	FLOW METER CHAMBER (FOUL RISING MAIN ≤200MM DIA.) CAST IN-SITU CONCRETE OPTION	3
STD-WW-27A	FLOW METER & VALVE CHAMBER (FOUL RISING MAIN ≤200MM DIA.) CAST IN-SITU CONCRETE OPTION	0
STD-WW-27B	FLOW METER & VALVE CHAMBER (FOUL RISING MAIN ≤200MM DIA.) PRE-CAST CONCRETE OPTION	0
STD-WW-27C	FLOW METER & VALVE CHAMBER (FOUL RISING MAIN ≤200MM DIA.) PRE-CAST CONCRETE OPTION	0
STD-WW-28	CAST IN-SITU INDICATIVE SUBMERSIBLE PUMPING STATION	3
STD-WW-28A	INDICATIVE PRE-CAST CONCRETE SUBMERSIBLE PUMPING STATION WITH CAST IN-SITU VALVE CHAMBER	2
STD-WW-28B	INDICATIVE PRE-CAST CONCRETE SUBMERSIBLE PUMPING STATION AND PRE-CAST VALVE CHAMBER	0
STD-WW-29	RISING MAIN DISCHARGE STAND-OFF MANHOLE	3
STD-WW-30	TYPE 1 PUMPING STATION CONTROL KIOSK	3
STD-WW-30A	TYPE 2 AND TYPE 3 PUMPING STATION CONTROL KIOSK	0
STD-WW-31	PUMPING STATION WET KIOSK	3
STD-WW-31A	PUMPING STATION WET KIOSK WATER SERVICE CONNECTION ARRANGEMENT	0
STD-WW-32	HARDSTANDING AREA PUMPING STATION (PERMEABLE & IMPERMEABLE)	2
STD-WW-33	LAMP BOLLARD & LAMP STANDARD	2
STD-WW-34	VENT STACK	2
STD-WW-35	RISING MAIN RODDING CHAMBER IN-SITU CONCRETE OPTION	0
STD-WW-35A	RISING MAIN RODDING CHAMBER PRE-CAST CONCRETE OPTION	0
STD-WW-36	MARKER POSTS/PLATES	0
STD-WW-37	SECTION SHOWING WASTEWATER SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 2.5M WIDE FOOTPATHS WITH 6.0M WIDE CARRIAGEWAY	0
STD-WW-38	LAYOUT PLAN SHOWING BELOW GROUND SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 2.5M WIDE FOOTPATHS WITH 6.0M WIDE CARRIAGEWAY	0
STD-WW-39	SECTION SHOWING WASTEWATER SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 1.8M WIDE FOOTPATHS, 2.5M WIDE PARALLEL PARKING BAYS WITH 6.0M WIDE CARRIAGEWAY.	0
STD-WW-40	LAYOUT PLAN SHOWING BELOW GROUND SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 1.8M WIDE FOOTPATHS, 2.5M WIDE PARALLEL PARKING BAYS WITH 6.0M WIDE CARRIAGEWAY.	0

DETAIL No.	UISCE EIREANN - WATER SUPPLY DETAILS	REV
STD-W-01	WATER SERVICE CONNECTION RESPONSIBILITY	1
STD-W-02	TYPICAL LAYOUT FOR WATERMAINS WITHIN DEVELOPMENTS	2
STD-W-03	CUSTOMER CONNECTION AND BOUNDARY BOX (25MM OD PIPE)	4
STD-W-04	GENERAL PIPE CONNECTIONS (SHEET 1 OF 7)	4
STD-W-05	GENERAL PIPE CONNECTIONS (SHEET 2 OF 7)	3
STD-W-06	GENERAL PIPE CONNECTIONS (SHEET 3 OF 7)	3
STD-W-07	GENERAL PIPE CONNECTIONS (SHEET 4 OF 7)	2
STD-W-08	GENERAL PIPE CONNECTIONS (SHEET 5 OF 7)	2
STD-W-09	GENERAL PIPE CONNECTIONS (SHEET 6 OF 7)	2
STD-W-10	GENERAL PIPE CONNECTIONS (SHEET 7 OF 7)	2
STD-W-11	TYPICAL SERVICE LAYOUT INDICATING SEPARATION DISTANCES	2
STD-W-12	RESTRICTIONS ON WATER INFRASTRUCTURE WORKS ADJACENT TO EXISTING TREES	2
STD-W-12A	RESTRICTIONS ON NEW TREES / SHRUBS PLANTING ADJACENT TO WATER MAINS	0
STD-W-13	TRENCH BACKFILL / BEDDING & REDUCED COVER PROTECTION SLAB DETAIL	2
STD-W-14	SLUICE VALVE FOR DUCTILE IRON (D.I.) PIPE (<350MM DIA.) (SHEET 1 OF 2)	4
STD-W-15	SLUICE VALVE FOR POLYETHYLENE (P.E.) PIPE (<350MM DIA.) (SHEET 2 OF 2)	3
STD-W-16	ON-LINE HYDRANT FOR DUCTILE IRON (D.I.) PIPE (SHEET 1 OF 4)	3
STD-W-17	OFF-LINE HYDRANT FOR DUCTILE IRON (D.I.) PIPE (SHEET 2 OF 4)	4
STD-W-18	ON-LINE HYDRANT FOR POLYETHYLENE (P.E.) PIPE (SHEET 3 OF 4)	3
STD-W-19	OFF-LINE HYDRANT FOR POLYETHYLENE (P.E.) PIPE (SHEET 4 OF 4)	4
STD-W-20	ON-LINE AIR VALVE FOR DUCTILE IRON (D.I.) PIPE (SHEET 1 OF 4)	3
STD-W-21	OFF-LINE AIR VALVE FOR DUCTILE IRON (D.I.) PIPE (SHEET 2 OF 4)	4
STD-W-22	ON-LINE AIR VALVE FOR POLYETHYLENE (P.E.) PIPE (SHEET 3 OF 4)	3
STD-W-23	OFF-LINE AIR VALVE FOR POLYETHYLENE (P.E.) PIPE (SHEET 4 OF 4)	4
STD-W-24	PRESSURE REDUCING / SUSTAINING VALVE CHAMBER IN-SITU R.C. OPTION	3
STD-W-25	BOOSTER PUMP STATION ARRANGEMENT	2
STD-W-26	ELECTROMAGNETIC METER CHAMBER (DN80 - DN250MM DIA.)	4
STD-W-26A	CHAMBER FOR FLANGED MECH. METER WITHOUT STRAINER (DN40 - DN250MM DIA.)	1
STD-W-26B	CHAMBER FOR FLANGED MECH. METER (DN100 - DN250MM DIA.) WITH SEPARATE STRAINER CHAMBER	0
STD-W-26C	THREADED ROTARY PISTON FLOW METER CHAMBER (DN30 - DN40MM DIA.) IN-SITU CONCRETE OPTION	0
STD-W-26D	THREADED ROTARY PISTON FLOW METER CHAMBER (DN30 - DN40MM DIA.) PRECAST CONCRETE OPTION	0
STD-W-26E	THREADED ROTARY PISTON FLOW METER CHAMBER (DN30 - DN40MM DIA.) BLOCKWORK OPTION	0
STD-W-26F	BY-PASS FLOW METER CHAMBER (25-32MM O.D. DIA) FOR DEVELOPMENTS WITH <20M3/DAY WATER USE	0
STD-W-26G	FLOW METER CHAMBER (25-32MM O.D. DIA.)	0
STD-W-27	MARKER POSTS / PLATES	3
STD-W-28	WATER MAIN THRUST AND SUPPORT BLOCKS	1
STD-W-29	DUCT CHAMBER	3
STD-W-30	SCOUR CHAMBER AND HEAD WALL ARRANGEMENTS	4
STD-W-30A	WASHOUT HYDRANT	3
STD-W-30B	SCOUR CHAMBER TO STORM SEWER ARRANGEMENTS	0
STD-W-31	TYPICAL DITCH / STREAM CROSSING FOR WATERMAIN DUCTILE IRON OPTION	2
STD-W-31A	TYPICAL DITCH / STREAM CROSSING FOR WATERMAIN POLYETHYLENE OPTION	0
STD-W-32	TYPICAL BRIDGE CROSSING FOR WATERMAIN (SHEET 1 OF 2)	1
STD-W-33	TYPICAL BRIDGE CROSSING FOR WATERMAIN (SHEET 2 OF 2)	2
STD-W-33A	TYPICAL CULVERT AND SERVICES CROSSING DETAILS FOR WATER MAIN	0
STD-W-34	SECURITY GATE AND FENCING PALISADE OPTION (PREFERRED)	0
STD-W-34A	SECURITY GATE AND FENCING WIRE MESH OPTION	3
STD-W-35	PIPE REPAIR TO EXISTING MAINS	2
STD-W-36	FLOW METER KIOSK	3
STD-W-36A	PRV / PSV CONTROL KIOSK	0
STD-W-37	LAMP BOLLARD AND LAMP STANDARD	2
STD-W-38	WATERMAIN LOOP DETAIL DUCTILE IRON OPTION	0
STD-W-39	WATERMAIN LOOP DETAIL POLYETHYLENE OPTION	0
STD-W-40	SECTION SHOWING WATER SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 2.5M WIDE FOOTPATHS WITH 6.0M WIDE CARRIAGEWAY	0
STD-W-41	LAYOUT PLAN SHOWING BELOW GROUND SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 2.5M WIDE FOOTPATHS WITH 6.0M WIDE CARRIAGEWAY	0
STD-W-42	SECTION SHOWING WATER SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 1.8M WIDE FOOTPATHS, 2.5M WIDE PARALLEL PARKING BAYS WITH 6.0M WIDE CARRIAGEWAY.	0
STD-W-43	LAYOUT PLAN SHOWING BELOW GROUND SERVICES SEPARATION DETAILS IN HIGH DENSITY DEVELOPMENTS 1.8M WIDE FOOTPATHS, 2.5M WIDE PARALLEL PARKING BAYS WITH 6.0M WIDE CARRIAGEWAY.	0

ALL FOUL AND SURFACE WATER DRAINAGE & WATER SUPPLY DETAILS ARE TO BE IN ACCORDANCE WITH UISCE EIREANN STANDARD DETAILS UNLESS NOTED OTHERWISE.

CODE OF PRACTICE:
https://www.water.ie/docs/connections/faqs/Water-Code-of-Practice.pdf

WATER INFRASTRUCTURE STANDARD DETAILS:
https://www.water.ie/docs/connections/faqs/Water-Standard-Details.pdf

WASTEWATER INFRASTRUCTURE STANDARD DETAILS:
https://www.water.ie/docs/connections/faqs/Wastewater-Standard-Details.pdf

ISSUE	DATE	DESCRIPTION	BY
P1	27.05.24	ISSUED FOR COMMENT	MR

Project Engineer: LMC | Project Director: JC

BM STAGE: **PRELIMINARY**

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CLIENT

PROJECT TITLE: CUCKOO'S NEST DEVELOPMENT

BM PROJECT No.: 24.167

MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: CIVIL GENERAL NOTES

DWG | DRAWING REFERENCE: CND-BMD-00-00-DR-C-10000 | STATUS: S0 | REVISION: P1

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - 'ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

BURIED DRAINAGE AND WATERMAIN LAYOUT

SCALE @ A1: 1:100
SCALE @ A3: 1:200

ISSUE	DATE	DESCRIPTION	BY
P2	13.06.24	UNDER FLOOR DRAINAGE ADDED	MR
P1	27.05.24	ISSUED FOR COMMENT	MR

Project Engineer: LMC | Project Director: JC

BM STAGE: **PRELIMINARY**

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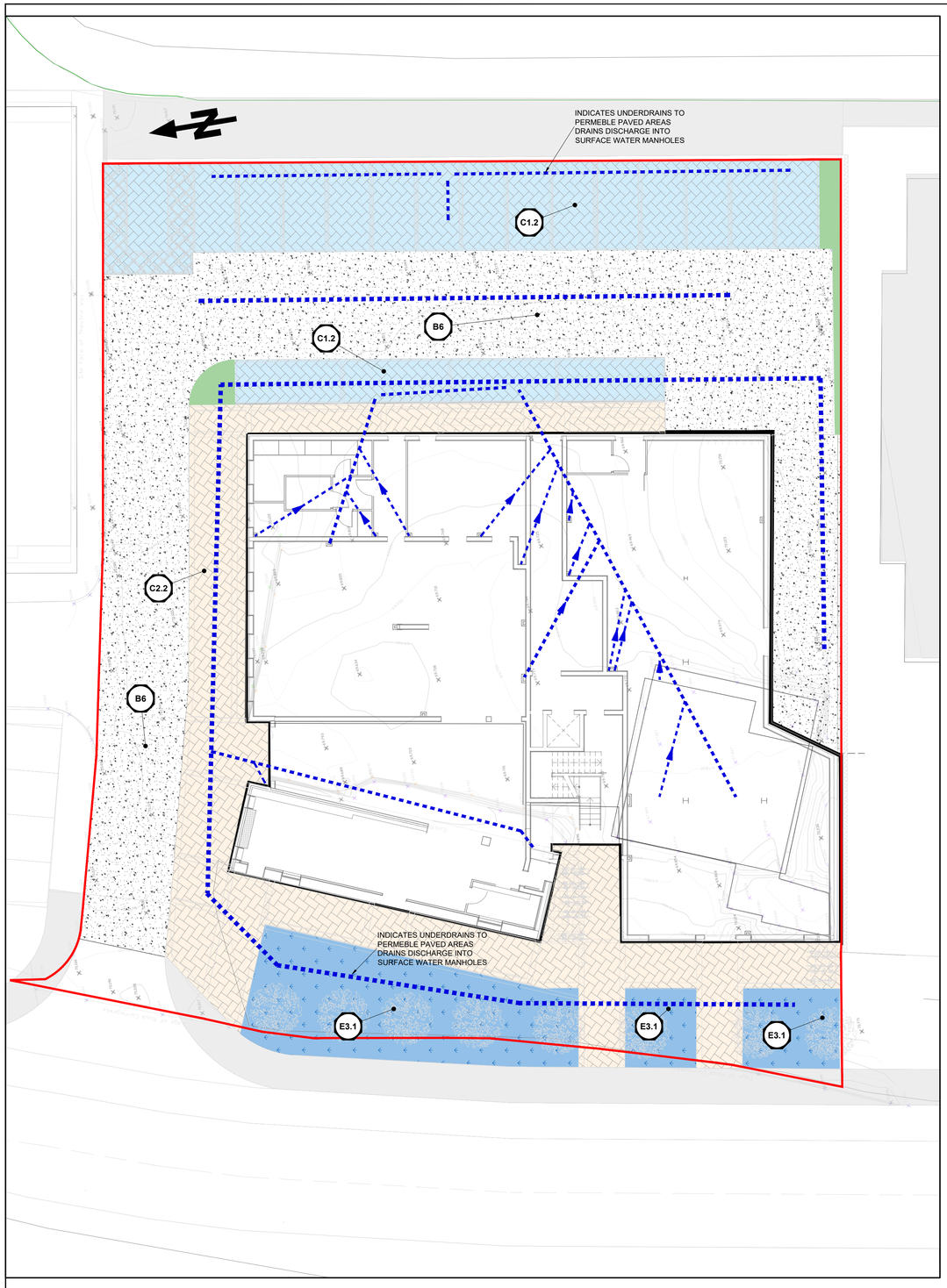
CLIENT: **BRIAN & KEN MULVANEY**

PROJECT TITLE: **CUCKOO'S NEST DEVELOPMENT** | BM PROJECT No.: **24.167**

MODEL | REFERENCE | SUITABILITY | REVISION

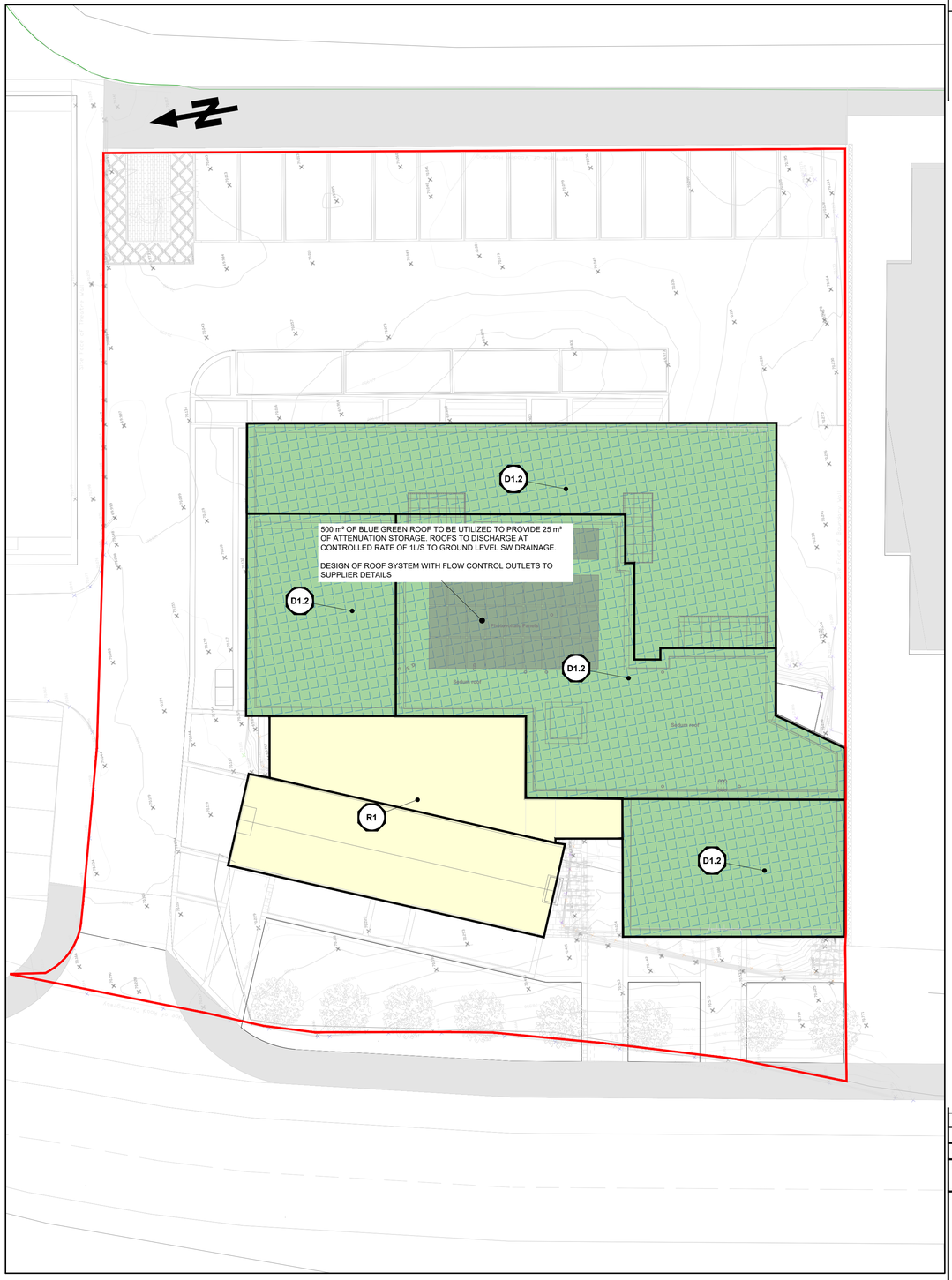
DRAWING TITLE: **BURIED DRAINAGE AND WATERMAIN LAYOUT**

DWG | DRAWING REFERENCE: **CND-BMD-00-00-DR-C-11200** | STATUS: **S0** | REVISION: **P2**



GROUND LEVEL FINISHES & SuDS LAYOUT

SCALE @ A1: 1:150
SCALE @ A3: 1:300



ROOF LEVEL FINISHES & SuDS LAYOUT

SCALE @ A1: 1:150
SCALE @ A3: 1:300

NOTES

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PLEASE REFER TO DRAWING CND-BMD-00-00-DR-C-10000 FOR GENERAL CIVIL NOTES AND LEGEND.

SuDS LEGEND

B6	POROUS ASPHALT MACADAM	AREA: 503 m²
C1.2	PERMEABLE PAVED ROADWAY	AREA: 265 m²
C2.2	PERMEABLE PAVED FOOTPATH	AREA: 284 m²
D1	SOFT LANDSCAPING	AREA: 15 m²
D1.2	EXTENSIVE GREEN ROOF ON DRAINAGE BOARD ON BLUE ROOF STORAGE	AREA: 650 m²
E3.1	TREE PIT	AREA: 146 m²
R1	IMPERMEABLE ROOF	AREA: 178 m²

TOTAL SITE AREA WITHIN THE RED LINE BPOUNDARY = 2043 m²

ISSUE	DATE	DESCRIPTION	BY
P1	21.05.24	ISSUED FOR COMMENT	MR

Project Engineer: LMC | Project Director: JC

BM STAGE: **PRELIMINARY**

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PROJECT TITLE: **CUCKOO'S NEST DEVELOPMENT**
BM PROJECT No.: **24.167**

MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: **SUDS LAYOUT**

DWG | DRAWING REFERENCE: **CND-BMD-00-00-DR-C-11300** | STATUS: **S0** | REVISION: **P1**

NOTES

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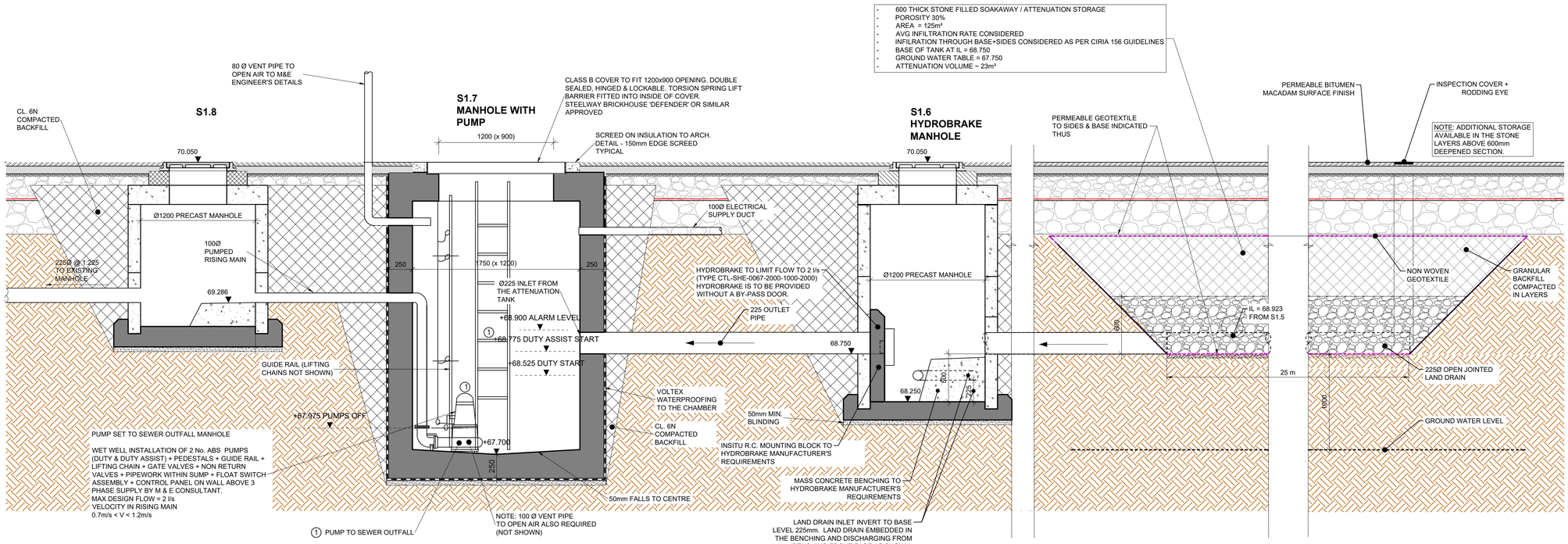
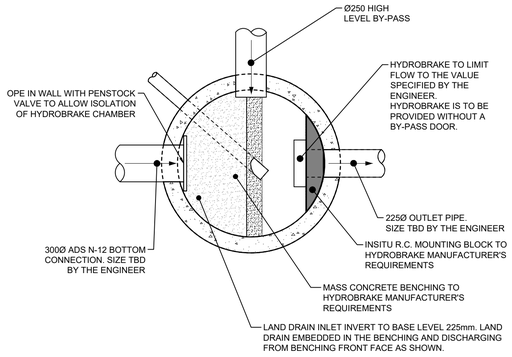
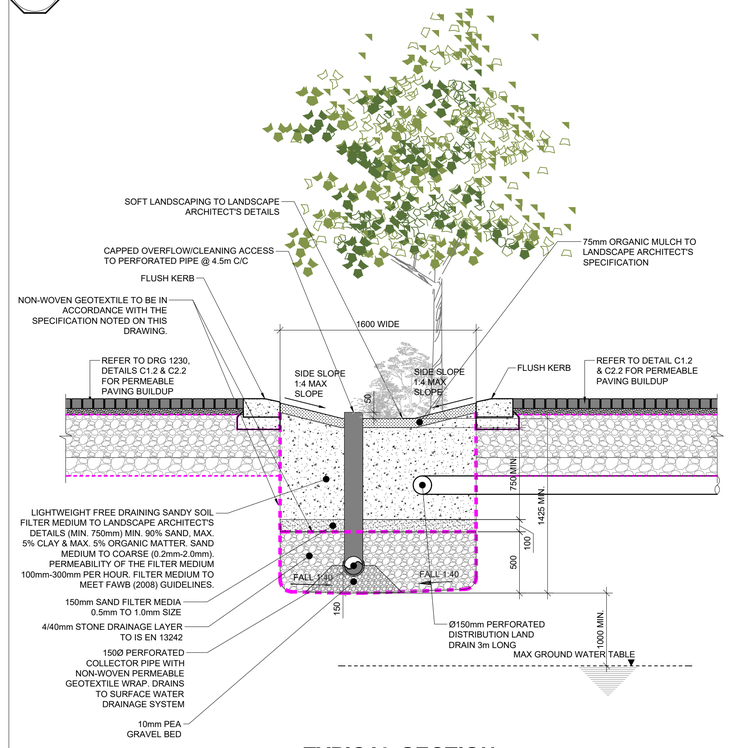


1 SECTION
11200
SCALE @ A1: 1:25
SCALE @ A3: 1:50



HYDROBRAKE MANHOLE PLAN SECTION
SCALE @ A1: 1:25
SCALE @ A3: 1:50

E3.1 TREE PIT AREA TAKING DRAINAGE FROM PAVING



TYPICAL SECTION
SCALE @ A1: 1:25
SCALE @ A3: 1:50

MAINTENANCE REQUIREMENTS FOR BIORETENTION SYSTEMS & TREE PITS

REGULAR INSPECTIONS
INSPECT INFILTRATION SURFACES FOR SILTING AND PONDING, RECORD DE-WATERING TIME OF THE FACILITY AND ASSESS STANDING WATER LEVELS IN UNDERDRAIN (IF APPROPRIATE) TO DETERMINE IF MAINTENANCE IS NECESSARY. FREQUENCY - QUARTERLY
CHECK OPERATION OF UNDERDRAINS BY INSPECTION OF FLOWS AFTER RAIN. FREQUENCY - ANNUALLY
ASSESS PLANTS FOR DISEASE INFECTION, POOR GROWTH, INVASIVE SPECIES ETC AND REPLACE AS NECESSARY. FREQUENCY - QUARTERLY
INSPECT INLETS AND OUTLETS FOR BLOCKAGE. FREQUENCY - QUARTERLY

REGULAR MAINTENANCE
REMOVE LITTER AND SURFACE DEBRIS AND WEEDS. FREQUENCY - QUARTERLY (OR MORE FREQUENTLY FOR TIDINESS OR AESTHETIC REASONS)
REPLACE ANY PLANTS, TO MAINTAIN PLANTING DENSITY. FREQUENCY - AS REQUIRED
REMOVE SEDIMENT, LITTER AND DEBRIS BUILD-UP FROM AROUND INLETS OR FROM FOREBAYS. FREQUENCY - QUARTERLY TO BIANNUALLY
INFILL ANY HOLES OR SCOUR IN THE FILTER MEDIUM, IMPROVE EROSION PROTECTION IF REQUIRED. FREQUENCY - AS REQUIRED
REPAIR MINOR ACCUMULATIONS OF SILT BY RAKING AWAY SURFACE MULCH, SCARIFYING SURFACE OF MEDIUM AND REPLACING MULCH. FREQUENCY - AS REQUIRED

REMEDIAL ACTIONS
REMOVE AND REPLACE FILTER MEDIUM AND VEGETATION ABOVE. FREQUENCY - AS REQUIRED BUT LIKELY TO BE > 20 YEARS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE/OPEN LID ON INLINE DRAIN
A.2. REMOVE AND CLEAN FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
A.5. IF SEDIMENT IS AT, OR ABOVE, 80 mm PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
B. ISOLATOR ROW
B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
ii) FOLLOW H&S REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
B.3. IF SEDIMENT IS AT, OR ABOVE, 80 mm PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 1.1 m OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

ISSUE	DATE	DESCRIPTION	BY
P1	27.05.24	ISSUED FOR COMMENT	MR

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PROJECT TITLE
CUCKOO'S NEST DEVELOPMENT

BM PROJECT No.
24.167

MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE
SuDS DETAILS.
ATTENUATION STORAGE SECTION

DWG | DRAWING REFERENCE **CND-BMD-00-00-DR-C-12200** | STATUS **S0** | REVISION **P1**

NOTES

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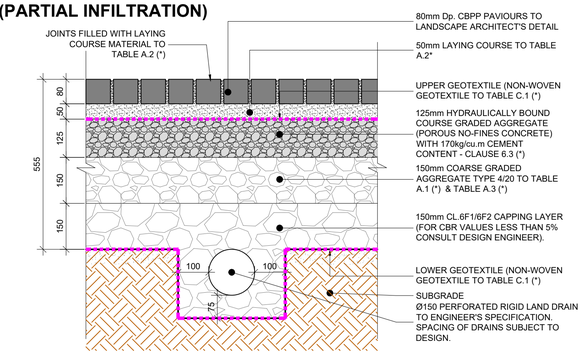
C1.2 SYSTEM 'B' PERMEABLE PAVING TO TRAFFICKED AREAS (PARTIAL INFILTRATION)

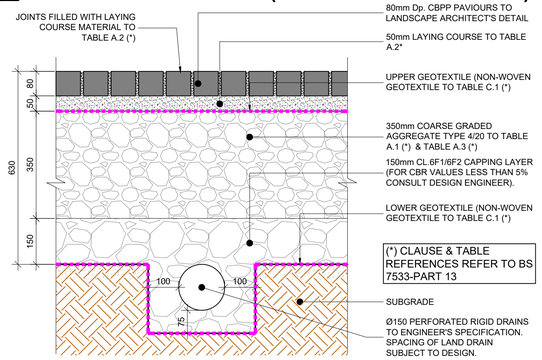


TYPICAL CROSS SECTION
SCALE @ A1: 1:10
SCALE @ A3: 1:20

(*) CLAUSE & TABLE REFERENCES REFER TO BS 7533-PART 13

NOTE: FOR PAVED AREAS SUBJECT TO OCCASIONAL HGV LOADING (e.g. EDGE OF ROAD PARKING BAYS') INCREASE THE HYDRAULICALLY BOUND AGGREGATE LAYER THICKNESS TO 200mm

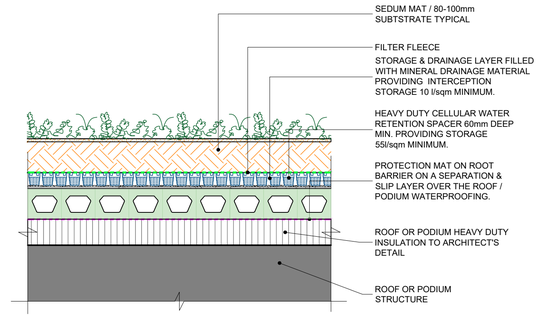
C2.2 SYSTEM 'B' PERMEABLE PAVING TO PEDESTRIAN AREAS (PARTIAL INFILTRATION)



(*) CLAUSE & TABLE REFERENCES REFER TO BS 7533-PART 13

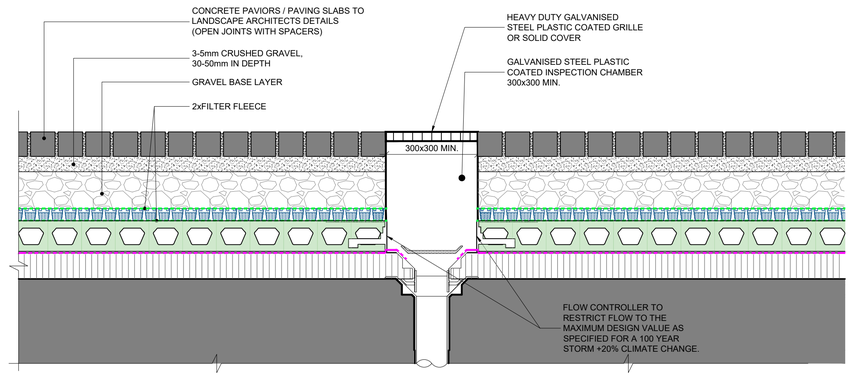
TYPICAL SECTION
SCALE @ A1: 1:10
SCALE @ A3: 1:20

D1.2 SOFT LANDSCAPING - EXTENSIVE GREEN ROOF ON DRAINAGE BOARD ON BLUE ROOF STORAGE



TYPICAL DETAIL
SCALE @ A1: 1:10
SCALE @ A3: 1:20

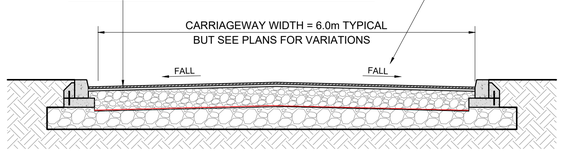
D3.2 HARD LANDSCAPING - PERMEABLE PAVING ON DRAINAGE BOARD ON BLUE ROOF STORAGE



TYPICAL DETAIL
SCALE @ A1: 1:10
SCALE @ A3: 1:20

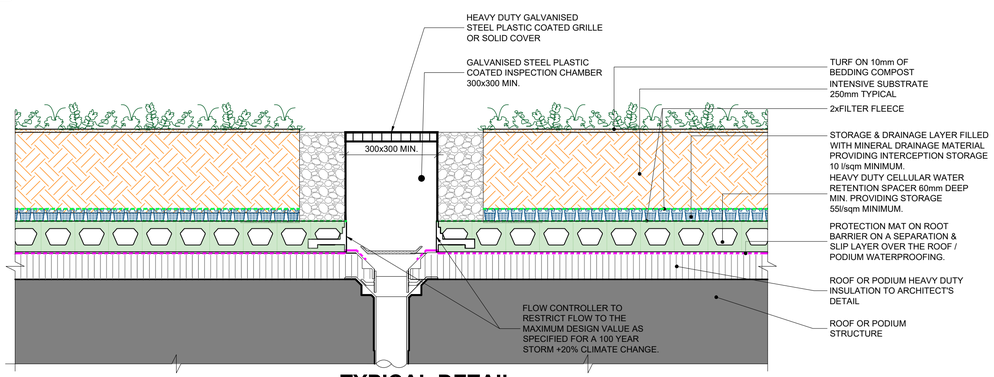
B6 POROUS ASPHALT MACADAM

B6 INTERNAL ROAD



TYPICAL CROSS SECTION
SCALE @ A1: 1:50
SCALE @ A3: 1:100

D2.2 SOFT LANDSCAPING - INTENSIVE GREEN ROOF ON DRAINAGE BOARD ON BLUE ROOF STORAGE



TYPICAL DETAIL
SCALE @ A1: 1:10
SCALE @ A3: 1:20

MAINTENANCE REQUIREMENTS FOR GREEN ROOFS

REGULAR INSPECTIONS. ANNUALLY AND AFTER SEVERE STORMS.
INSPECT ALL COMPONENTS INCLUDING SOIL SUBSTRATE, VEGETATION, DRAINS, IRRIGATION SYSTEMS (IF APPLICABLE), MEMBRANES AND ROOF STRUCTURE FOR PROPER OPERATION, INTEGRITY OF WATERPROOFING AND STRUCTURAL STABILITY.
INSPECT SOIL SUBSTRATE FOR EVIDENCE OF EROSION CHANNELS AND IDENTIFY ANY SEDIMENT SOURCES.
INSPECT DRAIN INLETS TO ENSURE UNRESTRICTED RUNOFF FROM THE DRAINAGE LAYER TO THE CONVEYANCE OR ROOF DRAIN SYSTEM
INSPECT UNDERSIDE OF ROOF FOR EVIDENCE OF LEAKAGE.

REGULAR MAINTENANCE
REMOVE DEBRIS AND LITTER TO PREVENT CLOGGING OF INLET DRAINS AND INTERFERENCE WITH PLANT GROWTH. SIX MONTHLY AND ANNUALLY OR AS REQUIRED
DURING ESTABLISHMENT (I.E. YEAR ONE), REPLACE DEAD PLANTS AS REQUIRED. MONTHLY (BUT USUALLY RESPONSIBILITY OF MANUFACTURER)
POST ESTABLISHMENT, REPLACE DEAD PLANTS AS REQUIRED (WHERE > 5% OF COVERAGE). ANNUALLY (IN AUTUMN)
REMOVE FALLEN LEAVES AND DEBRIS FROM DECIDUOUS PLANT FOLIAGE. SIX MONTHLY OR AS REQUIRED
REMOVE NUISANCE AND INVASIVE VEGETATION, INCLUDING WEEDS SIX MONTHLY OR AS REQUIRED MOW GRASSES, PRUNE SHRUBS AND MANAGE OTHER PLANTING
(IF APPROPRIATE) AS REQUIRED - CLIPPINGS SHOULD BE REMOVED AND NOT ALLOWED TO ACCUMULATE. SIX MONTHLY OR AS REQUIRED

REMEDIAL ACTIONS
IF EROSION CHANNELS ARE EVIDENT, THESE SHOULD BE STABILISED WITH EXTRA SOIL SUBSTRATE SIMILAR TO THE ORIGINAL MATERIAL, AND SOURCES OF EROSION DAMAGE SHOULD BE IDENTIFIED AND CONTROLLED. FREQUENCY AS REQUIRED.
IF DRAIN INLET HAS SETTLED, CRACKED OR MOVED, INVESTIGATE AND REPAIR AS APPROPRIATE. FREQUENCY AS REQUIRED.

MAINTENANCE REQUIREMENTS FOR PERMEABLE PAVEMENTS

REGULAR MAINTENANCE
BRUSHING AND VACUUMING (STANDARD COSMETIC SWEEP OVER WHOLE SURFACE). ONCE A YEAR, AFTER AUTUMN LEAF FALL, OR REDUCED FREQUENCY AS REQUIRED, BASED ON SITE-SPECIFIC OBSERVATIONS OF CLOGGING OR MANUFACTURER'S RECOMMENDATIONS - PAY PARTICULAR ATTENTION TO AREAS WHERE WATER RUNS ONTO PERVIOUS SURFACE FROM ADJACENT IMPERMEABLE AREAS AS THIS AREA IS MOST LIKELY TO COLLECT THE MOST SEDIMENT
STABILISE AND MOW CONTRIBUTING AND ADJACENT AREAS. FREQUENCY - AS REQUIRED
REMOVAL OF WEEDS OR MANAGEMENT USING GLYPHOSPATE APPLIED DIRECTLY INTO THE WEEDS BY AN APPLICATOR RATHER THAN SPRAYING. FREQUENCY - AS REQUIRED - ONCE PER YEAR ON LESS FREQUENTLY USED PAVEMENTS

REMEDIAL ACTIONS
REMEDIATE ANY LANDSCAPING WHICH, THROUGH VEGETATION MAINTENANCE OR SOIL SLIP, HAS BEEN RAISED TO WITHIN 50mmOF THE LEVEL OF THE PAVING. FREQUENCY - AS REQUIRED
REMEDIAL WORK TO ANY DEPRESSIONS, RUTTING AND CRACKED OR BROKEN BLOCKS CONSIDERED DETRIMENTAL TO THE STRUCTURAL PERFORMANCE OR A HAZARD TO USERS, AND REPLACEMENT OF LOST JOINTING MATERIAL. FREQUENCY - AS REQUIRED
REHABILITATION OF SURFACE AND UPPER SUBSTRUCTURE BY REMEDIAL SWEEPING. FREQUENCY - EVERY 10 TO 15 YEARS OR AS REQUIRED (IF INFILTRATION PERFORMANCE IS REDUCED DUE TO SIGNIFICANT CLOGGING)

MONITORING
INITIAL INSPECTION: MONTHLY FOR THREE MONTHS AFTER INSTALLATION. INSPECT FOR EVIDENCE OF POOR OPERATION AND/OR WEED GROWTH AND IF REQUIRED, TAKE REMEDIAL ACTION
THREE-MONTHLY, 48 H AFTER LARGE STORMS IN FIRST SIX MONTHS: INSPECT SILT ACCUMULATION RATES AND ESTABLISH APPROPRIATE BRUSHING FREQUENCIES.
MONITOR INSPECTION CHAMBERS ANNUALLY

REFER TO DRAWING REFERENCE C-10000, CIVIL ENGINEERING GENERAL NOTES FOR ROAD / FOOTPATH NOTES FOR ALL NOTE REFERRALS ON THIS DRAWING

ISSUE	DATE	DESCRIPTION	BY
P1	27.05.24	ISSUED FOR COMMENT	MR

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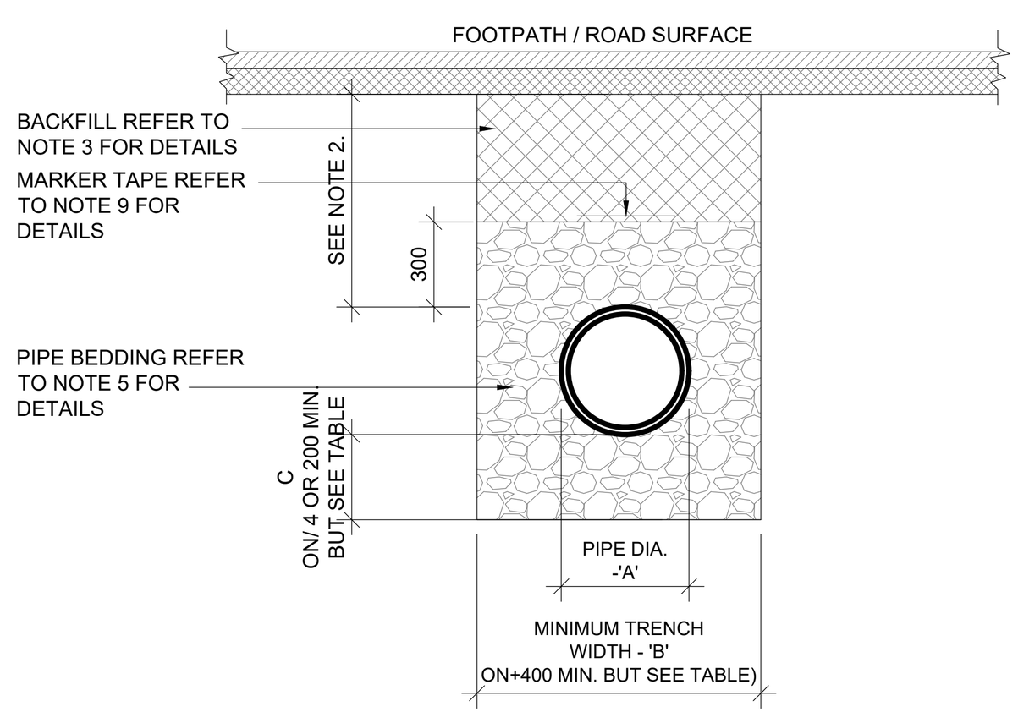
PROJECT TITLE
CUCKOO'S NEST DEVELOPMENT

BM PROJECT No.
24.167

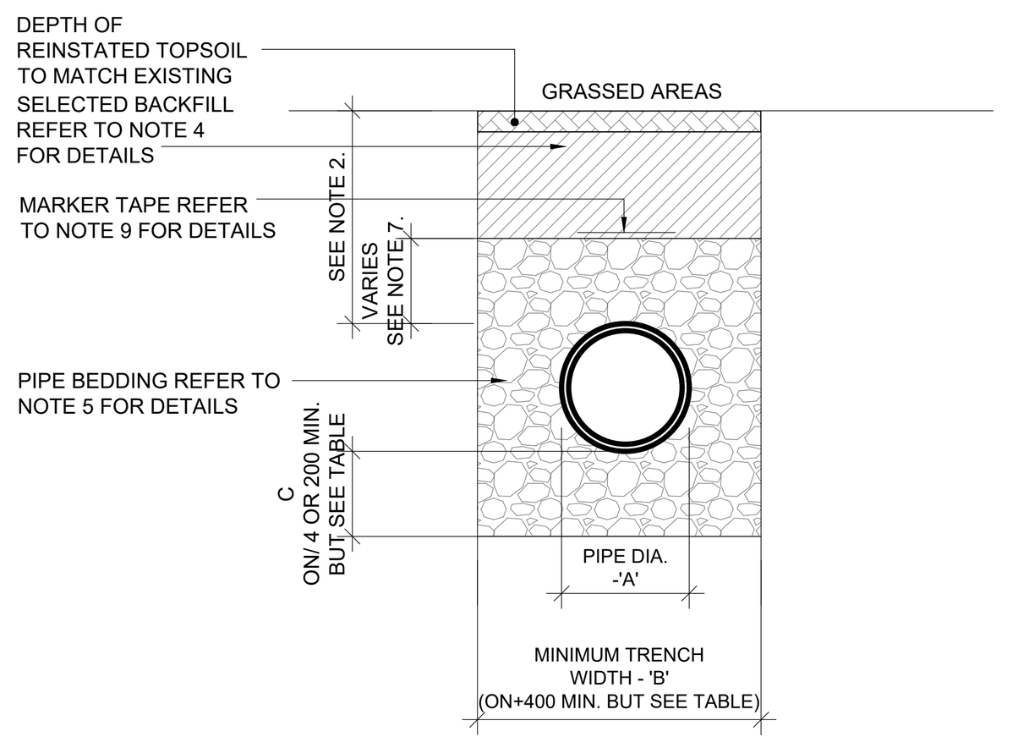
MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE
SuDS DETAILS

DWG | DRAWING REFERENCE | STATUS | REVISION
CND-BMD-00-00-DR-C-12210 | **S0** | **P1**



A1 CROSS SECTION IN PAVED AREAS



A2 CROSS SECTION IN GRASSED AREAS / SOFT LANDSCAPING

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE
2. THE MINIMUM DEPTH OF COVER FROM THE FINISHED SURFACE TO THE CROWN OF GRAVITY PIPES WITHOUT PROTECTION SHOULD BE AS FOLLOWS :
   A) GARDENS AND PATHWAYS WITHOUT ANY POSSIBILITY OF VEHICULAR ACCESS - DEPTH NOT LESS THAN 0.5 M . (THIS WOULD NORMALLY RELATE TO DRAINS IN PRIVATE PROPERTY . SHALLOW PIPES OF THIS NATURE ARE UNDESIRABLE AND SHOULD BE INSTALLED IN ACCORDANCE WITH THE CURRENT BUILDING REGULATIONS) .
   B) DRIVEWAYS, PARKING AREAS AND YARDS WITH HEIGHT RESTRICTIONS TO PREVENT ENTRY BY VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.75 M .
   C) DRIVEWAYS, PARKING AREAS AND NARROW STREETS WITHOUT FOOTWAYS (E.G.MEWS DEVELOPMENTS) WITH LIMITED ACCESS FOR VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 0.9 M .
   D) DEPTHS OF SEWERS IN GATED ESTATES SHALL BE SIMILAR TO THAT OUTLINED ABOVE .
   E) AGRICULTURAL LAND AND PUBLIC OPEN SPACE - DEPTH NOT LESS THAN 0.9 M .
   F) OTHER HIGHWAYS AND PARKING AREAS WITH UNRESTRICTED ACCESS TO VEHICLES WITH A GROSS VEHICLE WEIGHT IN EXCESS OF 7.5 TONNES - DEPTH NOT LESS THAN 1.2 m . IF THE MINIMUM COVERS LISTED ABOVE ARE NOT ACHIEVED THE PIPES ARE TO BE FULLY ENCASED IN CONCRETE AS PER DETAIL B2.
3. CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS IS TO BE USED AS BACKFILL MATERIAL WHERE THE SEWER MAIN IS LOCATED IN ROADS, FOOTPATHS OR WHEN THE NEAREST PART OF THE TRENCH IS WITHIN 1 m OF THE PAVED EDGE OF THE ROADWAY. CLAUSE 808 IS TO BE COMPACTED AS PER CLAUSE 802 OF THE TII SPECIFICATION FOR ROAD WORKS .
4. SELECTED EXCAVATED MATERIAL (eg. CLASS 2C MATERIAL TO TABLE 6.1 OF TII SPECIFICATION FOR ROADWORKS) MAY BE USED IN GREEN - FIELD AREAS ABOVE GRANULAR PIPE SURROUND MATERIAL SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE .
5. PIPE BEDDING SHALL COMPLY WITH WIS 4-08-02 AND IGN 4-08-01 GRANULAR MATERIAL SHALL BE 14 mm TO 5 mm GRADED AGGREGATE OR 10 mm SINGLE SIZED AGGREGATE IS EN 13242 CONCRETE BED , HAUNCH & SURROUND WHERE REQUIRED (NOTE: CONCRETE BED AND HAUNCH REQUIRED IN AREAS TO BE TAKEN IN CHARGE BY DUBLIN CITY COUNCIL) , SHALL BE TO DETAIL B1.
6. IN SOFT GROUND CONDITIONS (CBR < 5) THE MATERIAL SHOULD BE EXCAVATED AND DISPOSED OF IN ACCORDANCE WITH THE WASTE MANAGEMENT ACT AND CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS SHALL REPLACE THE EXCAVATED MATERIAL WRAPPED IN GEO - TEXTILE WRAPPING . ALTERNATIVELY , SPECIAL PIPE SUPPORT ARRANGEMENTS , INCLUDING PILING ETC . MAY BE REQUIRED WHERE THE DEPTH OF SOFT MATERIAL IS EXCESSIVE.SUCH ARRANGEMENTS SHALL BE SUBJECT TO ASSESSMENT BY THE EMPLOYERS REPRESENTATIVE BEFORE ADVANCING WITH THE WORK .
7. IN GREEN FIELD AREAS , TYPE B BACKFILL (SELECTED EXCAVATED MATERIAL) WILL BE ALLOWED ABOVE THE SIDE HAUNCH GRANULAR MATERIAL IN THE CASE OF RIGID PIPES . A GRANULAR SURROUND OF A MINIMUM DEPTH OF 150 mm ABOVE THE CROWN OF THE PIPE IS REQUIRED FOR FLEXIBLE PIPES , AND TYPE B MATERIAL MAY BE USED AS BACKFILL ABOVE THIS . ALL RISING MAINS IN GREENFIELD AREAS SHALL HAVE A MINIMUM COVER OF 300 mm OF GRANULAR MATERIAL ABOVE THE EXTERNAL CROWN OF THE PIPE .
8. PIPES SHALL NOT BE SUPPORTED ON STONES , ROCKS , OR ANY HARD OBJECTS AT ANY POINT ALONG THE TRENCH . ROCK SHALL BE EXCAVATED TO A DEPTH OF 150 mm BELOW THE ACTUAL DEPTH OF THE TRENCH WITH THE VOID FILLED WITH CLAUSE 808 MATERIAL IN ACCORDANCE WITH THE TII SPECIFICATION FOR ROAD WORKS . THE GRANULAR MATERIAL SHALL BE LAID ABOVE THIS VOID BACKFILL MATERIAL
9. NON DEGRADABLE MARKER TAPE SHOULD BE INSTALLED AT TOP OF PIPE BEDDING LAYER . .
10. TRENCH WIDTHS FOR PIPE SIZES 80 mm MAY BE < 500 mm , SUBJECT TO CONSIDERATION BEING GIVEN TO THE TRENCH DEPTH , HEALTH & SAFETY & CONSTRUCTION ACCESS REQUIREMENTS .

PIPE DIAMETER A (mm)	TRENCH WIDTH B (mm)
80 RISING MAIN	SEE NOTE 10.
100	500
150	600
200	600
250	750
300	750
350	750
400	900
450	900

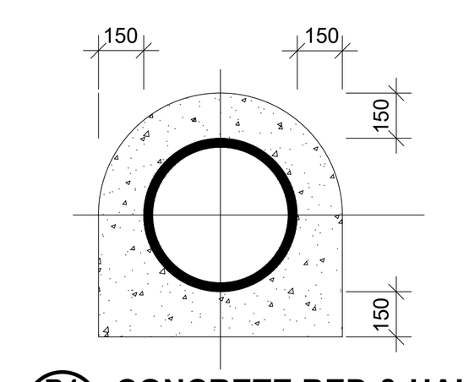
PIPE MATERIALS

UNLESS SPECIFICALLY NOTED OTHERWISE IN THE DRAINAGE LAYOUT THE PIPE MATERIAL WILL BE AS FOLLOWS:

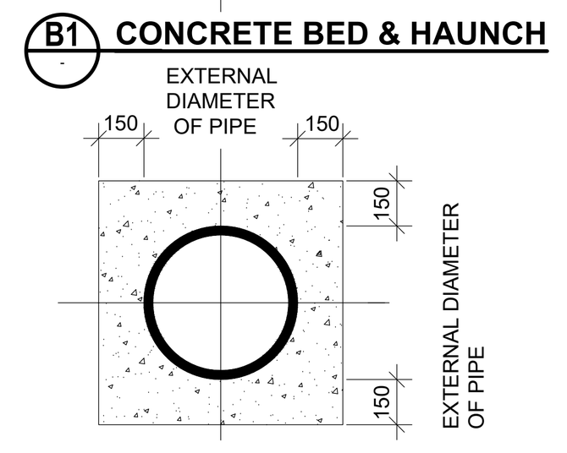
PIPE DIAMETER < 225mm: USE uPVC PIPE WORK
PIPE DIAMETER ≥225mm: USE CONCRETE PIPE WORK.
PIPE MATERIAL TO BE IN ACCORDANCE WITH THE FOLLOWING:

1. CONCRETE PIPES TO HAVE SPIGOT & SOCKET JOINTS AND RUBBER RING FITTINGS TO IS EN 1916 (2002); BS5911, PART 1 , (2002- 2010) AND IS 6 (2004), STRENGTH CLASS 120
2. uPVC PIPES, JOINTS AND FITTINGS TO COMPLY WITH THE PROVISION OF IS EN 1401-PART 1 AND BS 4660 (NOTE: uPVC PIPES NOT PERMITTED IN AREAS TO BE TAKEN IN CHARGE BY DUBLIN CITY COUNCIL)

A TRENCH BACKFILL & BEDDING

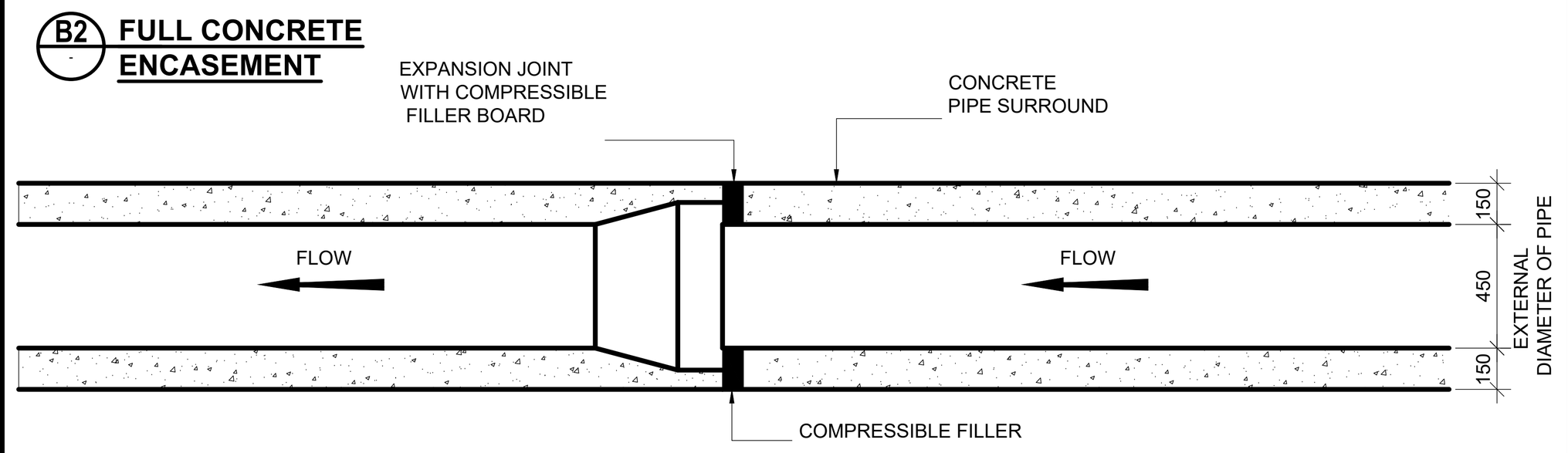


B1 CONCRETE BED & HAUNCH



B2 FULL CONCRETE ENCASEMENT

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. CONCRETE PIPE BEDS AND HAUNCHES MAY BE REQUIRED TO ADDRESS MINIMUM COVER SITUATIONS. AND SHALL BE SUBJECT TO SUBMISSION AND ASSESSMENT BY THE EMPLOYERS REPRESENTATIVE BEFORE ADVANCING WITH THE WORKS.
3. CONCRETE PIPE BEDS AND HAUNCHES SHALL HAVE MINIMUMTHICKNESS OF 150 mm WITH AN ABSOLUTE MINIMUM DEPTH OF COVER ABOVE THE EXTERNAL CROWN OF THE PIPE OF 150 mm .
4. CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 AND TO BE CLASS C 16 / 20.
5. THE HAUNCHES AND SURROUNDS TO BE FORMED USING FORMWORK TO PROVIDE A ROUGH CAST FINISH .
6. EXPANSION JOINTS IN THE CONCRETE SHALL BE PROVIDED AT ALL PIPE JOINTS TO ALLOW FOR PIPE FLEXIBILITY , COMPRESSIBLE FILLER BOARD TO BE IN ACCORDANCE WITH BS EN 622-1 AND BS EN 622-4. AND TO BE 18mm THICK .
7. POLYETHYLENE PIPES SHALL BE WRAPPED IN PLASTIC SHEETING HAVING A COMPOSITION IN ACCORDANCE WITH BS 6076 BEFORE BEING CAST INTO CONCRETE.
8. BITUMINOUS MATERIAL SHALL NOT BE PUT IN CONTACT WITH PE OR PVC PIPES .

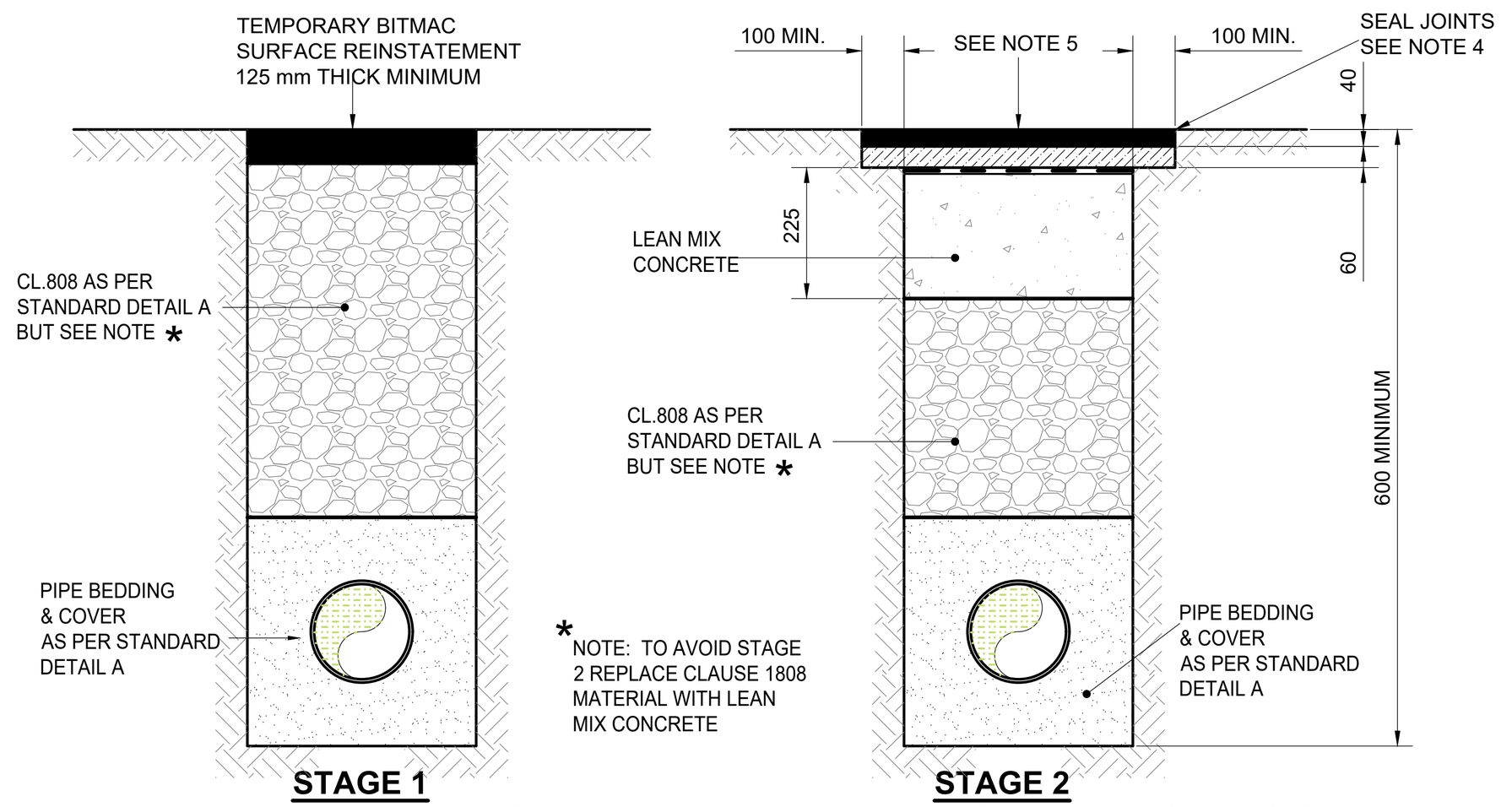


SPIGOT AND SOCKET JOINT

B CONCRETE HAUNCH, BED & SURROUND

NOTE:

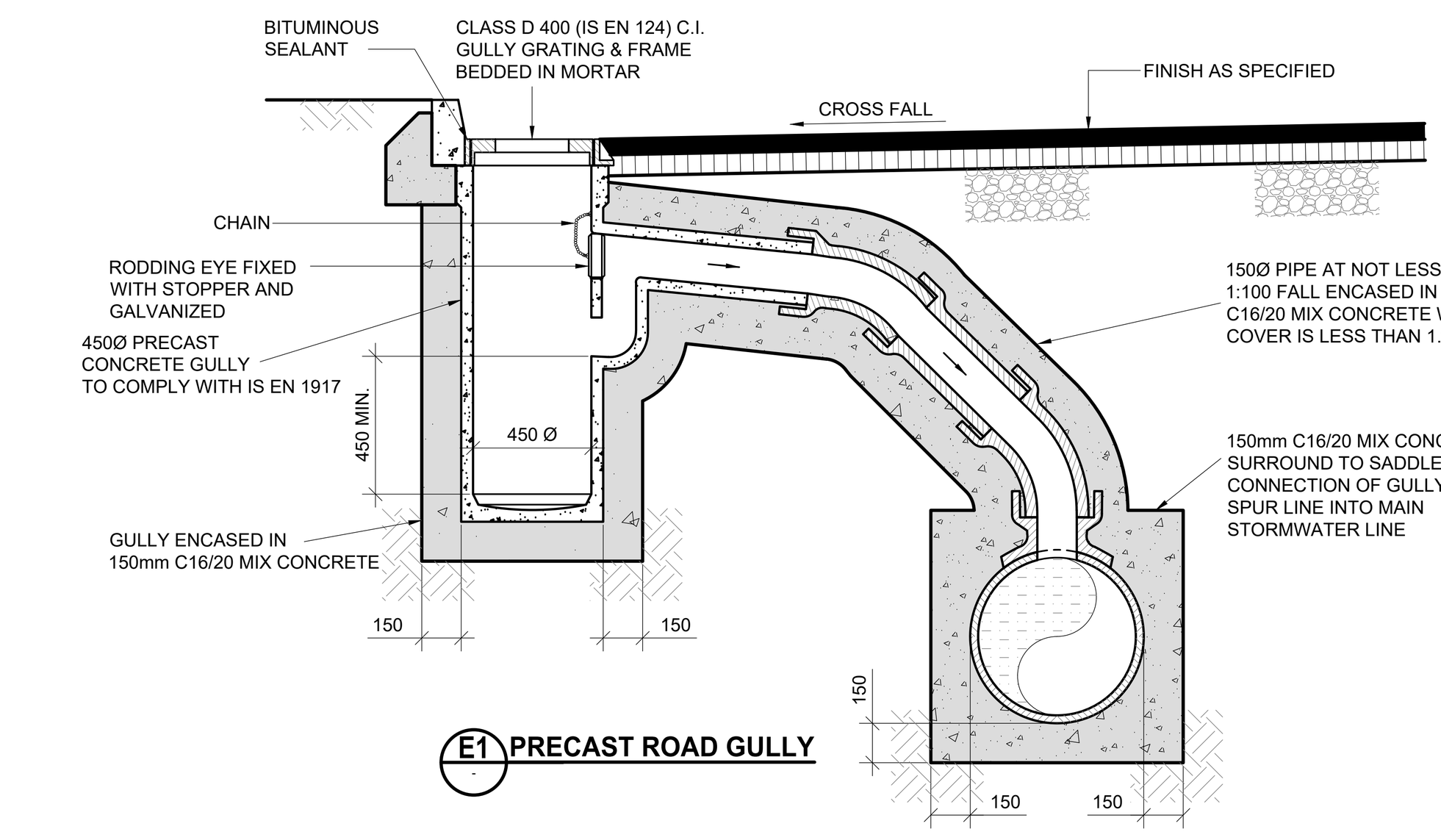
1. FORM A SAW CUT 100mm DEEP AT A MIN. OF 100mm FROM SIDES OF EXCAVATION PRIOR TO PERMANENT REINSTATEMENT. WHERE ANY TRIM LINES ARE WITHIN 400mm OF ROAD EDGE, JOINT OR OTHER REINSTATEMENT, THE TRIM LINE SHOULD BE EXTENDED TO THE INTERFACE OF SUCH SITUATIONS.
2. LEAN-MIX SURFACE TO BE SPRAYED AS PER CLAUSE 920 (TII SPEC.) PRIOR TO APPLICATION OF BINDER COURSE MACADAM.
3. 100°C HOT BITUMEN BINDER 50 PEN OR COLD THIXOTROPIC BITUMEN 50 - 70 PEN TO BE APPLIED TO ALL VERTICAL CUTS IN ACCORDANCE WITH IS EN 13108-4 PRIOR TO APPLICATION OF BITUMINOUS MATERIAL.
4. JOINTS SEALED WITH HOT BITUMEN AND TOPPED WITH FINE SAND / GRIT TO GET A MINIMUM 55 SKID RESISTANCE VALUE AS DETERMINED BY THE PORTABLE SKID RESISTANCE PENDULUM USED IN ACCORDANCE WITH ROAD NOTE 27 AND SHALL NOT EXCEED 3mm THICKNESS AND 25mm WIDTH.
5. SURFACE REINSTATEMENT
   ASPHALT CONCRETE ROAD -
   40mm MIN THICK OF 'SMA 10 surf 70/100 des' SURFACE COURSE TO IS EN 13108 and NSAI's S28; ON 60mm MIN THICK OF 'AC 20 dense bin 70 /100 des' BINDER COURSE TO IS EN 13108 AND NSAI's S28; ON BITUMEN SPRAY TO Cl.920 OF TII SPECIFICATION FOR ROAD WORKS ON 225mm THICK LEAN MIX CONCRETE. SAW CUT AND REINSTATE TO 100mm FROM EDGE OF TRENCH EXCAVATION. JOINTS SEALED WITH HOT BITUMEN AS NOTE 4



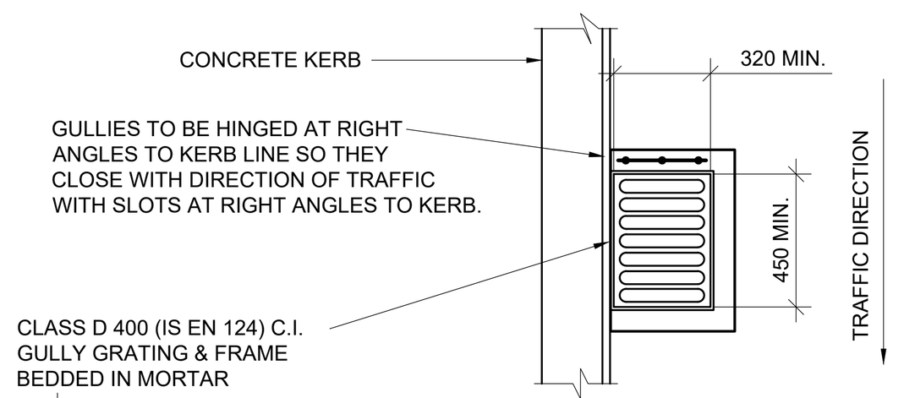
STAGE 1
LEAVE FOR 6 MONTHS TO CONSOLIDATE

STAGE 2
DIG OUT SURFACING & TOP 225mm OF CL808 MATERIAL & REPLACE WITH NEW WIDER SURFACING ON 225mm LAYER OF LEAN-MIX CONCRETE
SEE NOTE ABOVE FOR DETAILED METHOD STATEMENT

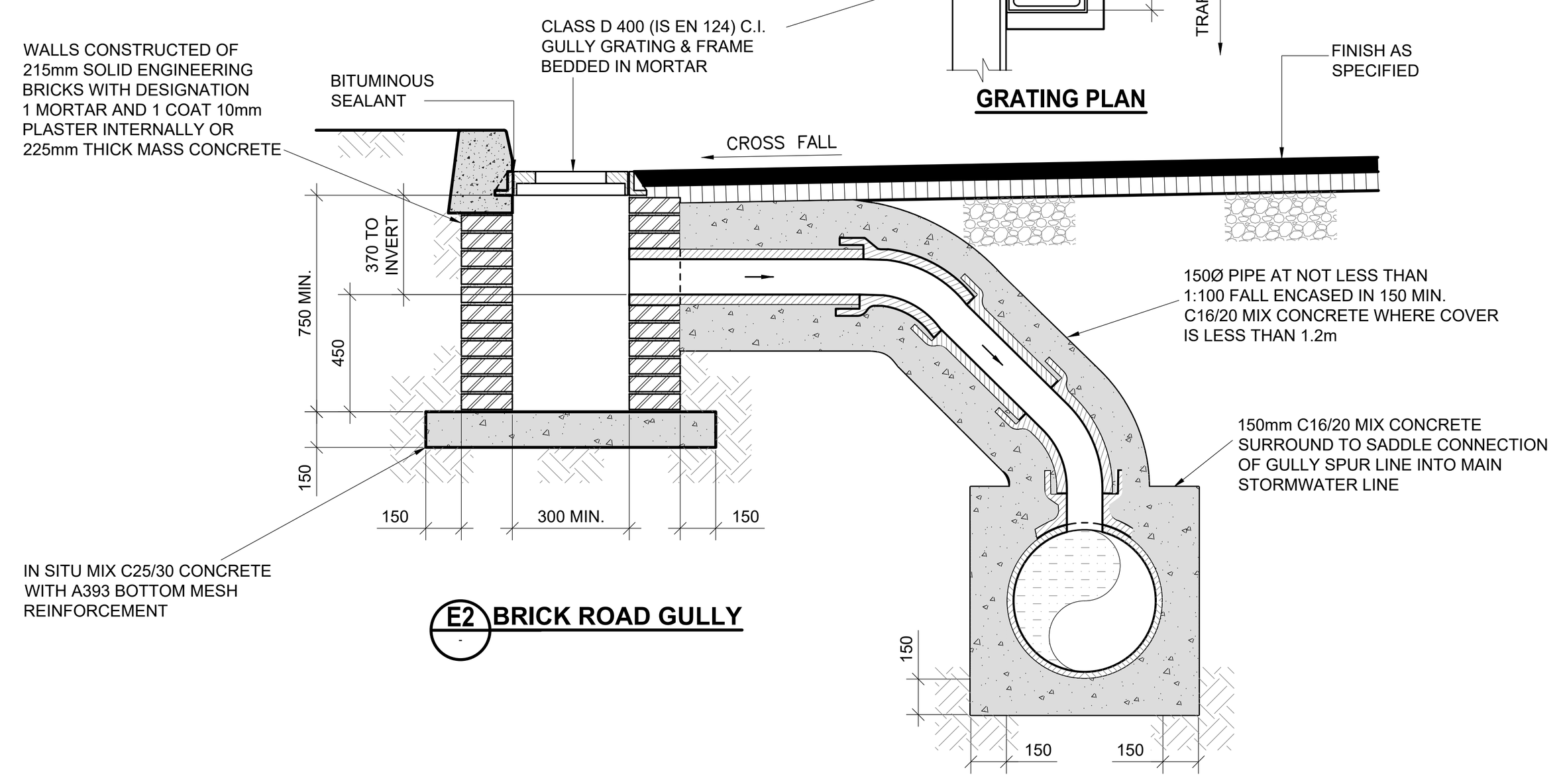
D REINSTATEMENT OF PIPE TRENCH IN EXISTING ROAD



E1 PRECAST ROAD GULLY



GRATING PLAN



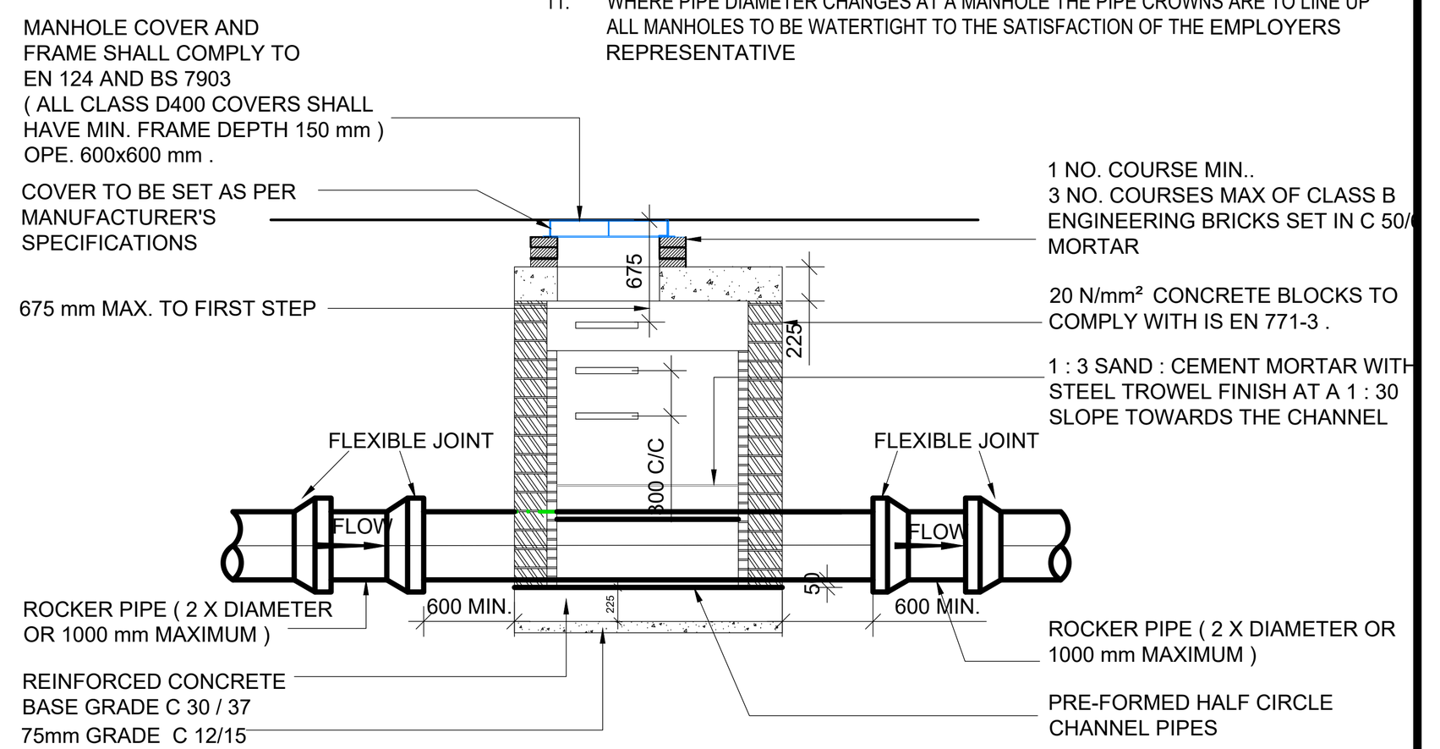
E2 BRICK ROAD GULLY

E TYPICAL SECTION THROUGH ROAD GULLY

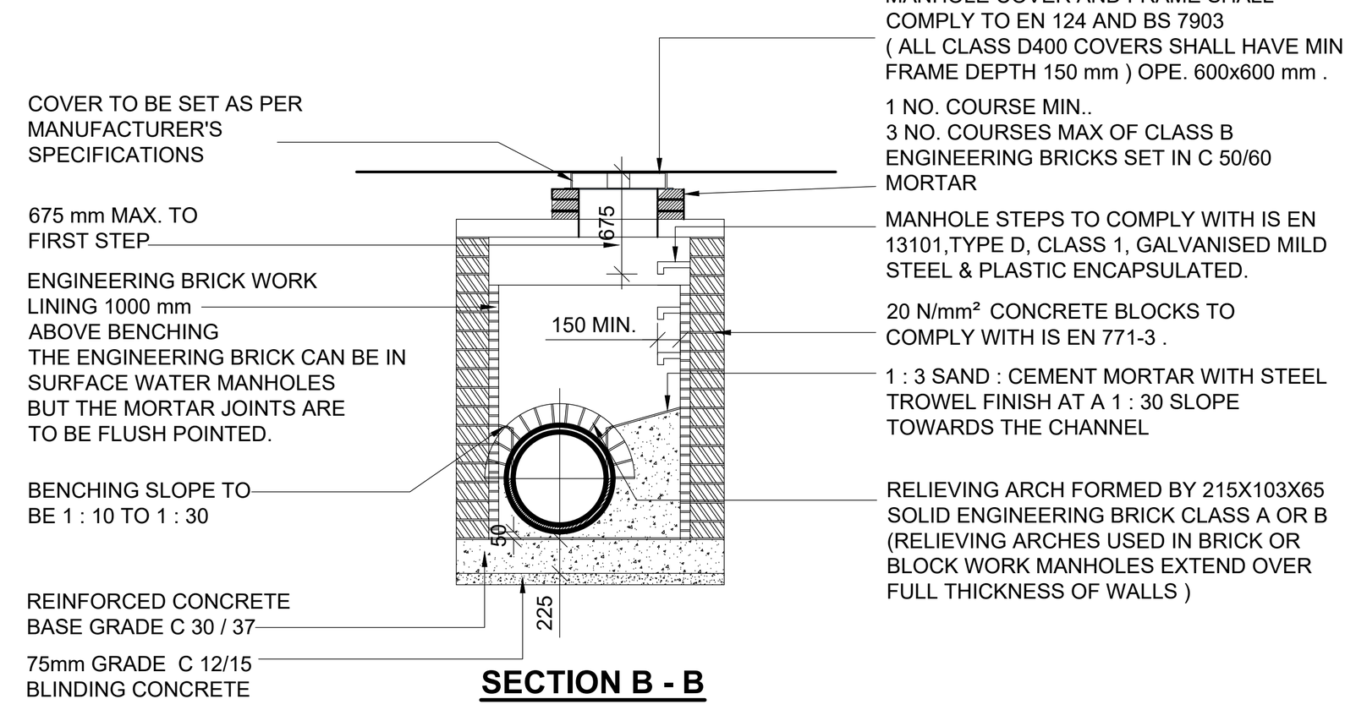
NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - `ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.
3. WASTE DRAINAGEDETAILS TO BE IN ACCORDANCE WITH IRISH WATER REQUIREMENTS UNLESS NOTED OTHERWISE. REFER TO IRISH WATER DETAILS FOR ADDITIONAL INFORMATION.
4. REFER TO THE STRUCTURAL WATERMAIN DETAILS DRAWING FOR A TYPICAL SERVICE LAYOUT UNDER A FOOTPATH
5. CONNECTION OF BRANCHES TO THE MAIN LINE ARE TO BE BY MEANS OF 45° BRANCH CONNECTIONS, SADDLE CONNECTIONS NOT ALLOWED.
6. INTERNAL GROUND FLOOR FOUL CONNECTIONS TO DRAIN SEPARATELY FROM THE UPPER STOREYS.
7. ALL BURIED PIPES UNDER GROUND FLOOR SLABS TO BE ENCASED IN CONCRETE.
8. ALL GULLY GRATINGS AND LIDS TO BE MIN. D400 RATING.

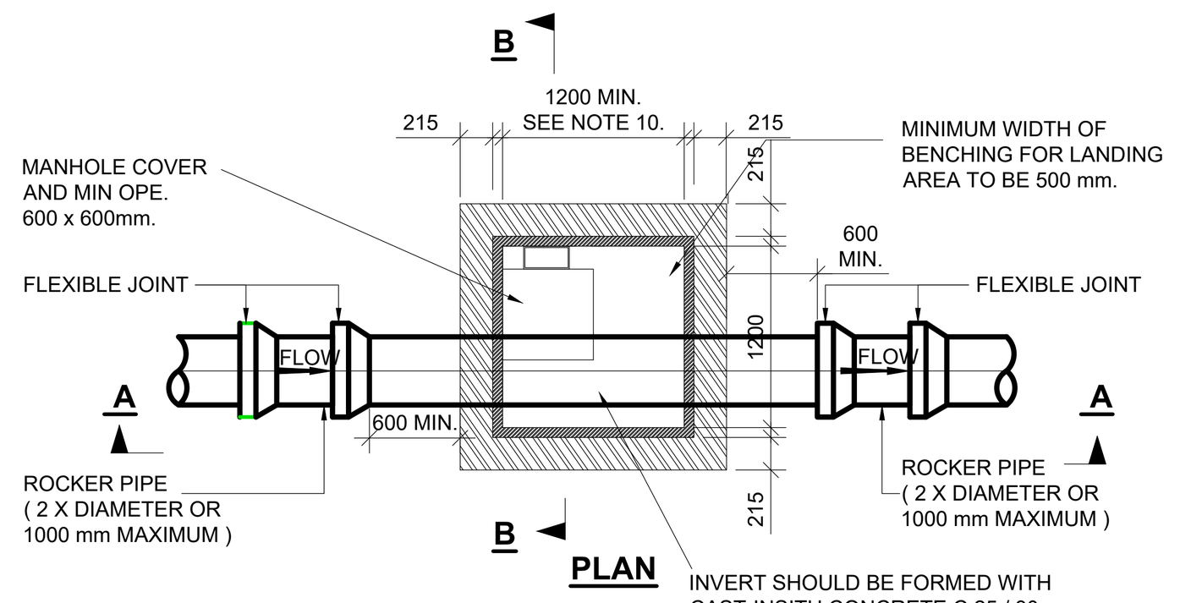
1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. SOLID BLOCKWORK TO BE OF HIGH STRENGTH (20 N/mm) TO IS EN 771 .
3. MAXIMUM DEPTH OF BLOCK WORK MANHOLE IS 2.0 m (THE USE OF BLOCK WORK IN DEEPER MANHOLES WILL BE CONSIDERED BUT SUCH USE WILL REQUIRE DETAILED STRUCTURAL DESIGN AND WRITTEN APPROVAL FROM THE EMPLOYERS REPRESENTATIVE) .
4. WALLS TO BE FLUSH POINTED INTERNALLY. FOR FOUL MANHOLES PROVIDE, INTERNAL LINING OF ENGINEERING BRICK TO IS EN 771-1 TO A HEIGHT OF 1 m ABOVE BENCHING. ENGINEERING BRICK TO BE BONDED TO BLOCK WORK USING ENGLISH GARDEN WALL BOND
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS FOR ROOF AND BASE SLABS TO BE PROVIDED BY THE CONTRACTOR AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW .
6. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTAT
7. 200mm ALL AROUND, 100mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS STEEL METAL BAND AROUND COVERS IN GREEN AREAS.
8. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE CONTRACTOR BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE .
9. ALL CONCRETE TO BE ACCORDANCE WITH IS EN 206: 2013 .
10. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
11. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE



SECTION A - A



SECTION B - B



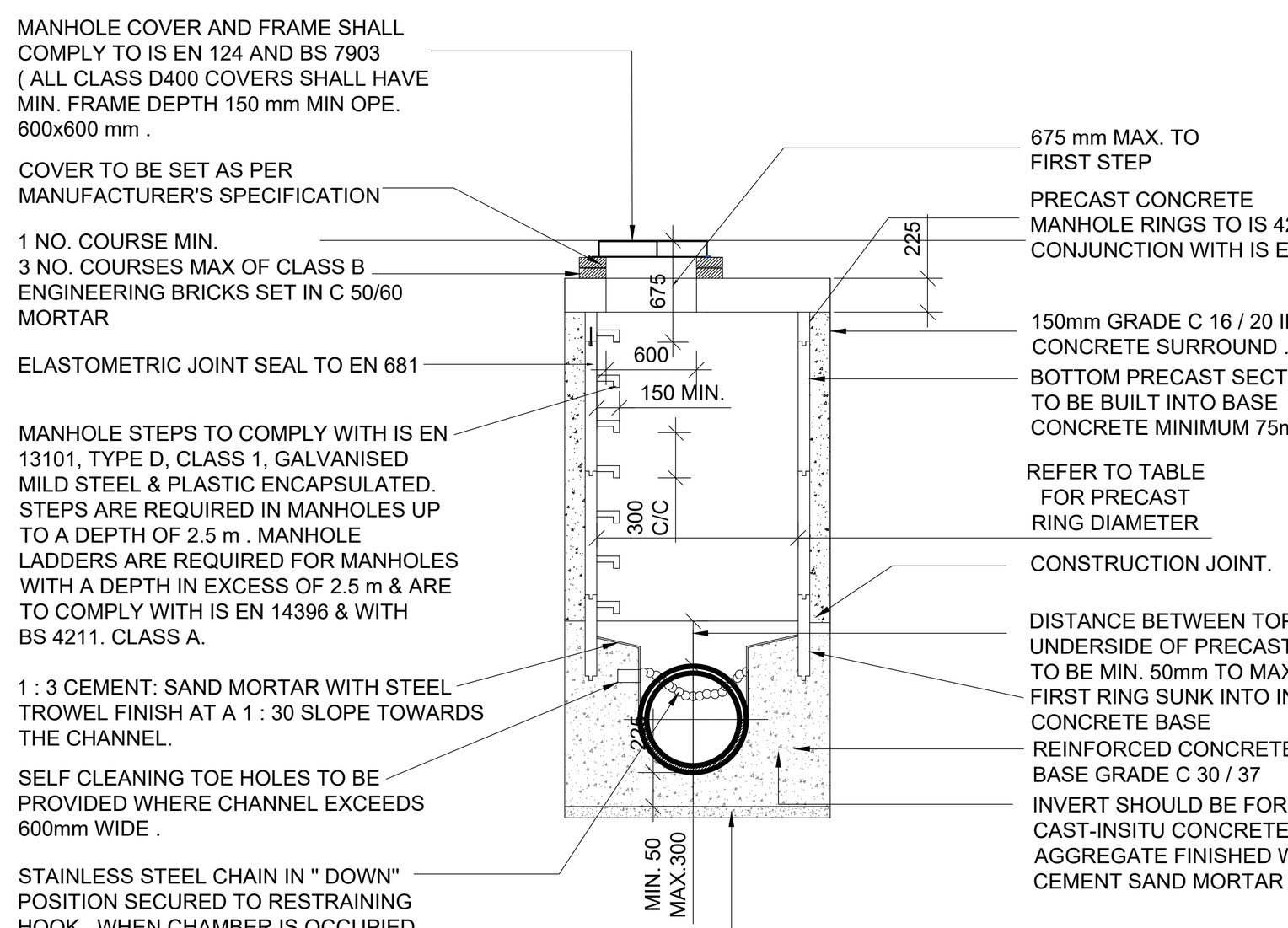
PLAN

INVERT SHOULD BE FORMED WITH CAST-INSITU CONCRETE C 25 / 30 20mm AGGREGATE FINISHED WITH A 1:3 CEMENT SAND MORTAR .

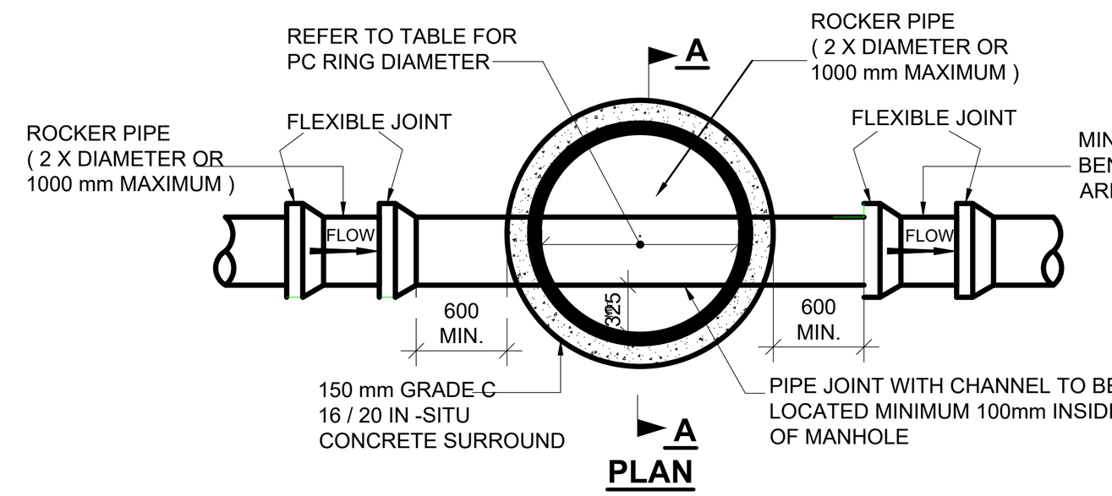
F BLOCKWORK MANHOLE < (450mm DIAMETER & DEPTH TO INVERT ≤ 2m)

SD06.C1210 / Rev1

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. PRE-CAST MANHOLES UNITS : COMPLYING WITH REQUIREMENTS OF IS EN 1917 AND BS 5911-PART 3 .
3. THICKER MANHOLE BASES REQUIRED FOR SEWERS IN EXCESS OF 3m DEEP WHERE THE SIZE IS GREATER THAN THE STANDARD MINIMUM SIZE .
4. APPROVED PRE-CAST CONCRETE BASES MAY BE USED INCORPORATING CHANNELS , BENCHING ETC. SUBJECT TO THE EMPLOYERS REPRESENTATIVE APPROVAL AND COMPLYING WITH BS 5911-PART 4 2002 .
5. STRUCTURAL DESIGN AND REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW .
6. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO THE EMPLOYERS REPRESENTATIVES APPROVAL .
7. MANHOLE ROOFS SHOULD CONSIST OF RE-INFORCED CONCRETE SLAB OF IN-SITU CONCRETE , C 30 / 37 ,WITH A MINIMUM THICKNESS OF 225mm. DESIGNED TO CARRY ALL LIVE AND DEAD LOADS, ALTERNATIVELY, APPROVED PRE-CAST CONCRETE ROOF SLABS MAY BE USED SUBJECT TO THE EMPLOYERS REPRESENTATIVES APPROVAL AND COMPLIANCE WITH BS 5911 PART 4 : 2002.
8. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVES
9. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
10. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE CONTRACTOR, BASED ON GROUND CONDITIONS WITHIN THE SITE . SHOULD ANTI FLOTATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE
11. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 : 2013 .
12. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
13. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP
14. MANHOLE SHAFTS ARE RECOMMENDED IN DEEP MANHOLES . THE DISTANCE BETWEEN THE TOP OF THE BENCHING AND THE SOFFIT OF THE MAIN ROOF SLAB SUPPORTING THE SOFFIT SHOULD BE NOT LESS THAN 2.1m , THE MINIMUM SHAFT SIZE SHOULD BE 900mm.
15. ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE.



SECTION A - A



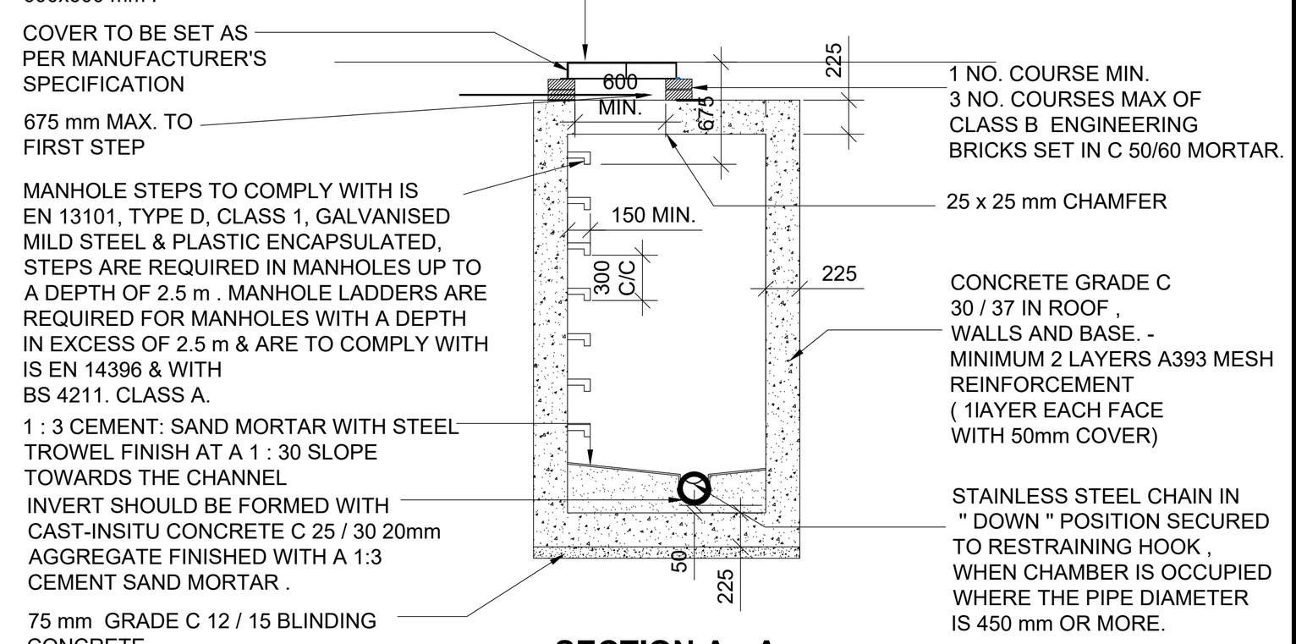
PLAN

MINIMUM MANHOLE DIAMETERS

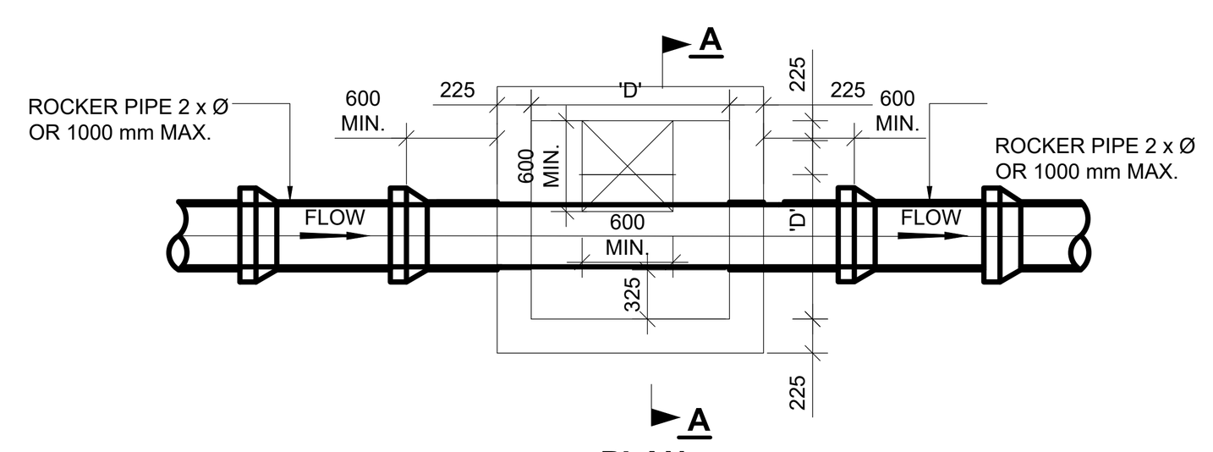
DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIAMETER OF MANHOLE (mm)
LESS THAN 375	1200
375 TO 450	1350
500 TO 750	1500

G PRE- CAST CONCRETE MANHOLE

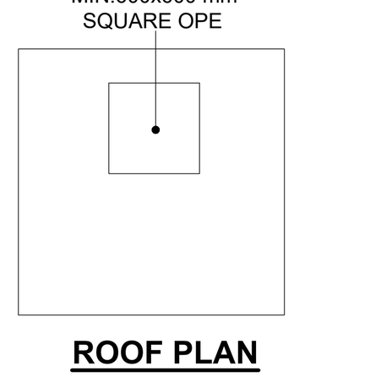
1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. IN-SITU MANHOLES TO HAVE A MINIMUM WALL AND FLOOR THICKNESS OF 225mm FOR MANHOLE DEPTHS UP TO 3.0 m AND 300 mm OR MORE WHEN THE MANHOLE DEPTH EXCEEDS 3.0 m .
3. STRUCTURAL DESIGN & REINFORCEMENT DETAILS TO BE PROVIDED BY THE DEVELOPER AND SUBMITTED TO THE EMPLOYERS REPRESENTATIVE FOR REVIEW
4. MANHOLES GREATER THAN 3m IN DEPTH WILL REQUIRE A DETAILED STRUCTURAL DESIGN AND BE SUBJECT TO THE EMPLOYERS REPRESENTATIVE APPROVAL .
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE
6. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
7. ALL CHAMBERS TO BE IN CHECKED FOR UPLIFT BY THE CONTRACTOR, BASED ON GROUND CONDITIONS WITHIN THE SITE . SHOULD ANTI FLOTATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE ER.
8. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206 : 2013 .
9. BRANCH PIPES INTO MANHOLES: BENCHING TO BE SHAPED SO AS TO GUIDE THE FLOW IN THE FLOW DIRECTION. THE MINIMUM LENGTH OF THE MANHOLE BASED ON THE SIDE WITH THE GREATEST NUMBER OF BRANCHES EQUAL TO 300mm PLUS THE SUM OF THE BRANCH DIAMETERS PLUS 200mm PER BRANCH FOR BRANCHES UP TO 150mm (OR 300mm FOR BRANCHES GREATER THAN 150mm DIAMETER).
10. WHERE PIPE DIAMETER CHANGES AT A MANHOLE THE PIPE CROWNS ARE TO LINE UP
11. MANHOLE SHAFTS ARE RECOMMENDED IN DEEP MANHOLES . THE DISTANCE BETWEEN THE TOP OF THE BENCHING AND THE SOFFIT OF THE MAIN ROOF SLAB SUPPORTING THE SOFFIT SHOULD BE NOT LESS THAN 2.1m , THE MINIMUM SHAFT SIZE SHOULD BE 900mm.
12. ALL MANHOLES TO BE WATERTIGHT TO THE SATISFACTION OF THE EMPLOYERS REPRESENTATIVE.



SECTION A - A



PLAN



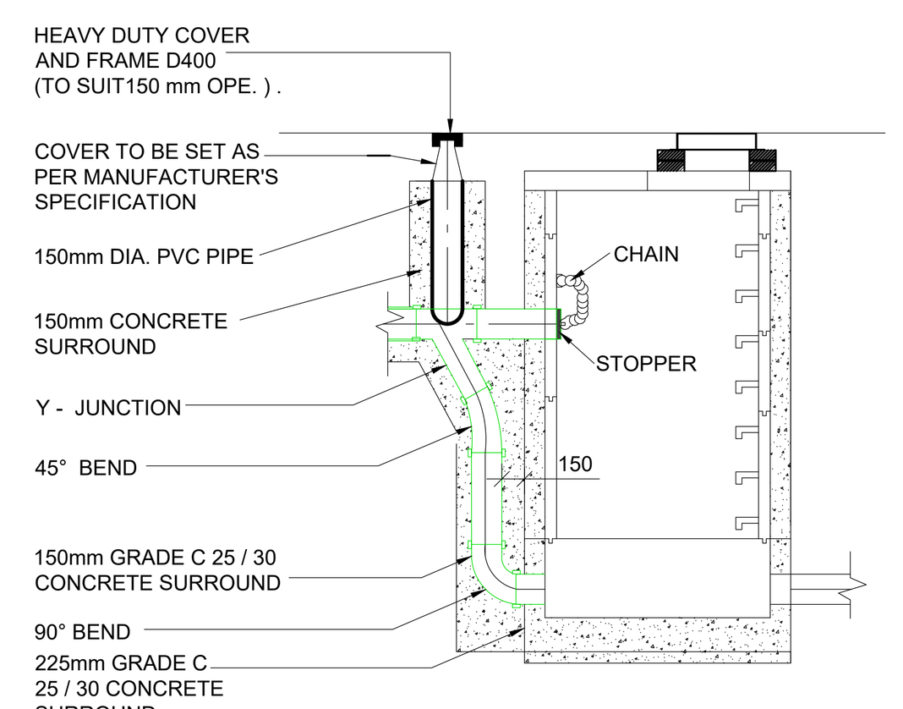
ROOF PLAN

MINIMUM MANHOLE DIMENSIONS " D "

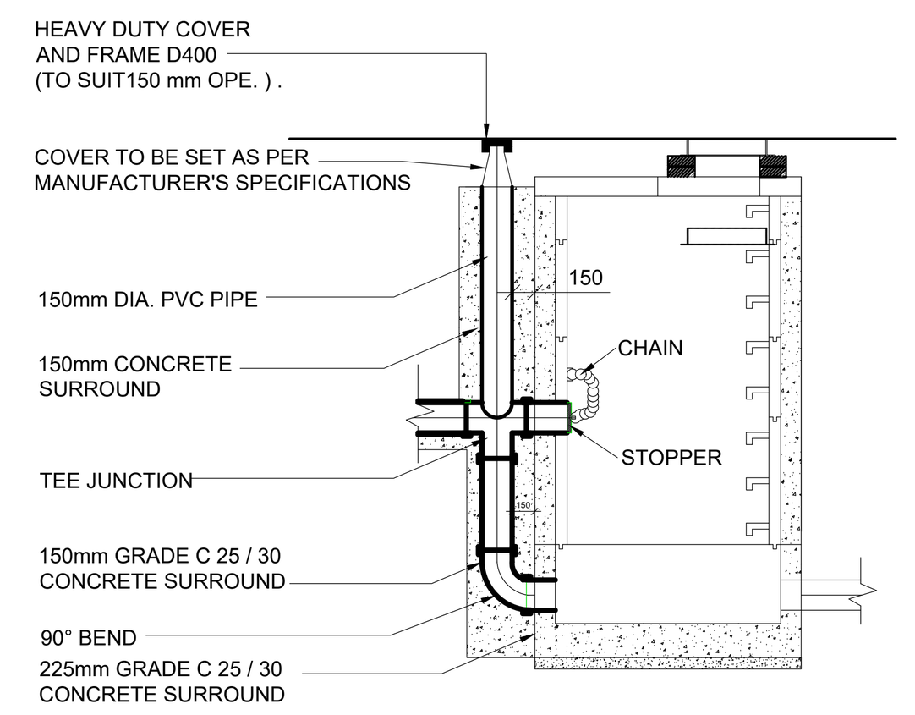
DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	INTERNAL DIMENSION OF MANHOLE (mm)
LESS THAN 375	1200
375 TO 450	1350
500 TO 750	1500

H IN- SITU CONCRETE MANHOLE

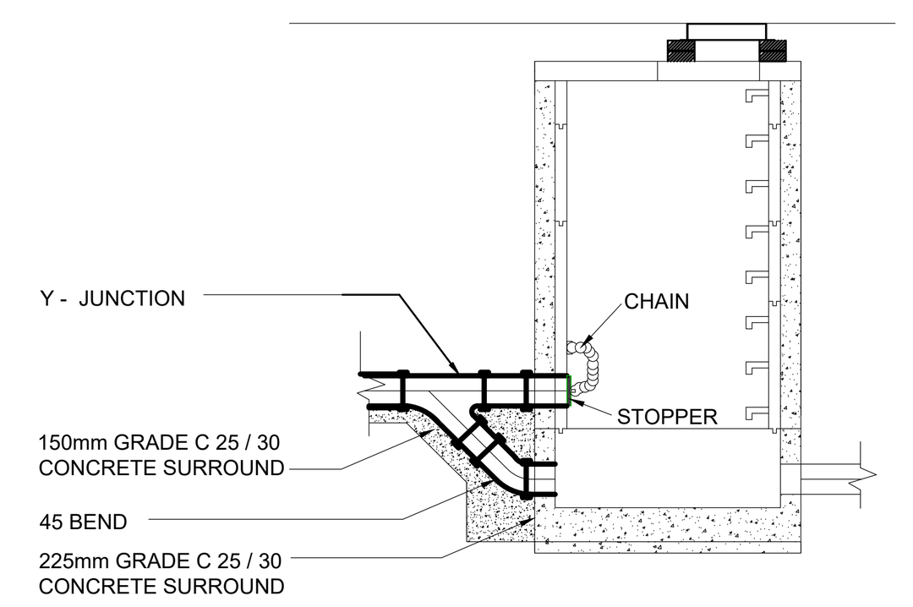
1. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
2. RODDING EYE CHAMBER SHALL BE COVERED WITH APPROVED HEAVY DUTY METAL COVERS TO IS 261 AND BS 5834. COVER AND FRAME SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS AND IS SUBJECT TO THE APPROVAL OF THE EMPLOYERS REPRESENTATIVE
3. ALL CHAMBERS TO BE CHECKED FOR UPLIFT BY THE DEVELOPER BASED ON GROUND CONDITIONS WITHIN THE SITE. SHOULD ANTI FLOATATION MEASURES BE REQUIRED THEY SHALL BE SUBJECT TO APPROVAL FROM THE EMPLOYERS REPRESENTATIVE.
4. ALL CONCRETE TO BE IN ACCORDANCE WITH IS EN 206.
5. MANHOLE DETAILS TO BE IN ACCORDANCE WITH DETAILS F,G & H



TYPE NO. 1
150mm - 450mm DIA. (INCL.) DROP GREATER THAN 1700mm
500mm - 900mm DIA. (INCL.) DROP GREATER THAN 2300mm.

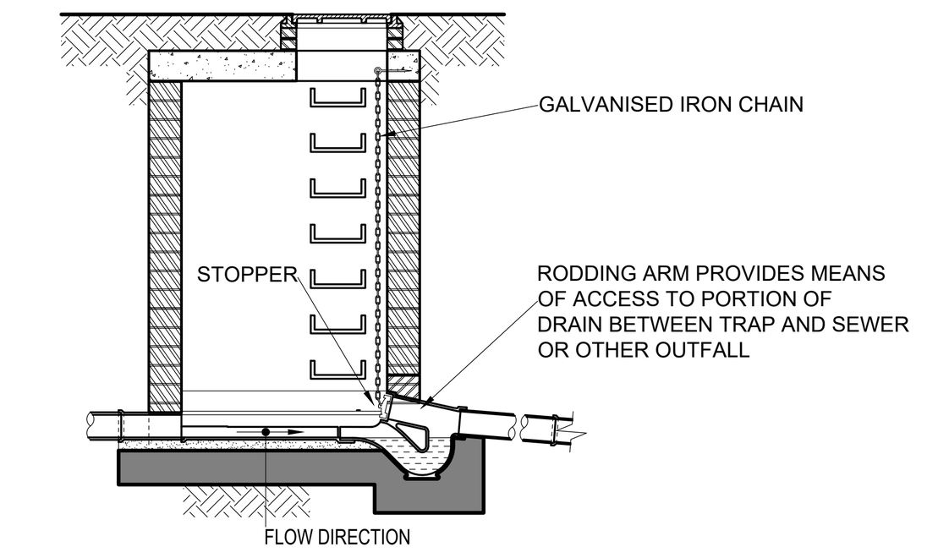


TYPE NO. 2
150mm - 450mm DIA. (INCL.) DROP GREATER THAN 900 AND LESS THAN 1700mm
500mm - 900mm DIA. (INCL.) DROP GREATER THAN 1300mm AND LESS THAN 2300mm.

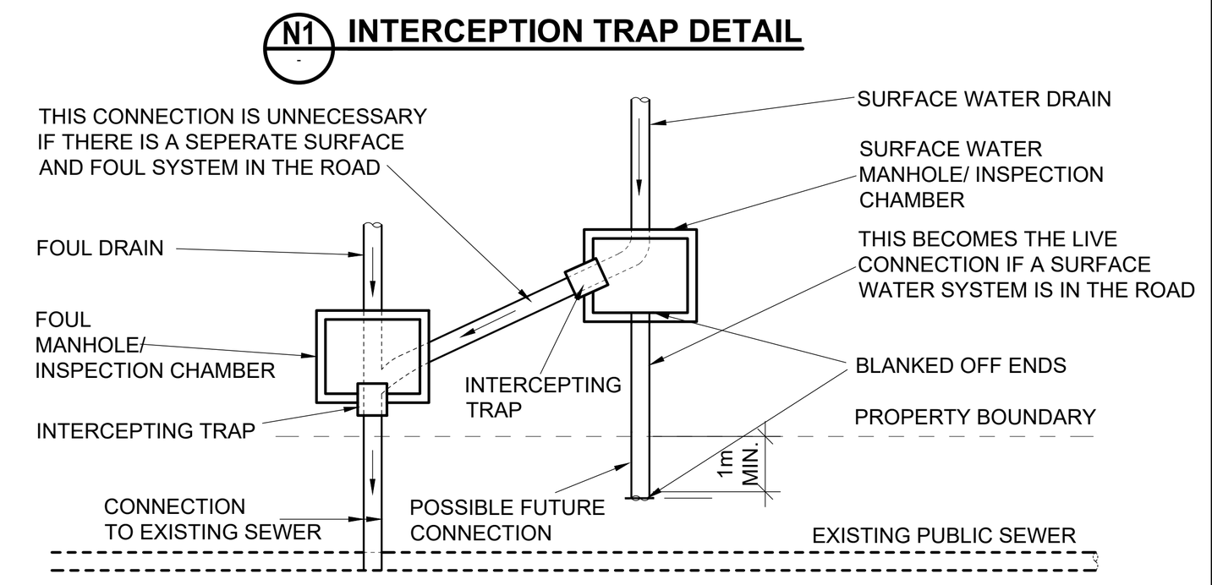


TYPE NO. 3
150mm - 450mm DIA. (INCL.) DROP GREATER THAN 600mm AND LESS THAN 900mm
500mm - 900mm DIA. (INCL.) DROP GREATER THAN 600mm AND LESS THAN 1300mm.

L BACKDROP MANHOLE



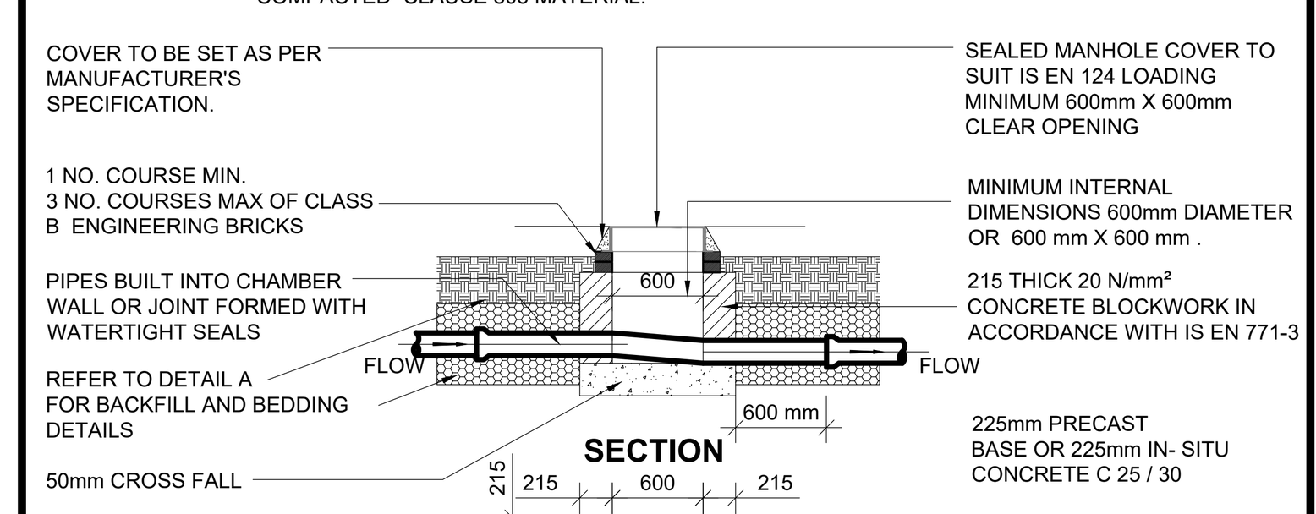
N1 INTERCEPTION TRAP DETAIL



PLAN OF SEPARATE CONNECTION TO COMBINED SEWER N.T.S.

N CONNECTION OF SEPARATE F & SW SYSTEMS TO COMBINED SEWER

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS NOTED OTHERWISE.
2. AN INSPECTION CHAMBER SHOULD BE LOCATED AT OR WITHIN 1m OF THE PROPERTY BOUNDARY AT THE UPSTREAM END OF EACH SERVICE CONNECTION ON THE PRIVATE SIDE OF THE CURTILAGE , IF PRACTICABLE .
3. ANY PIPE AND ASSOCIATED ACCESS UPSTREAM OF THE POINT OF CONNECTION TO A PUBLIC SEWER IS A PRIVATE DRAIN AND SHOULD BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS .
4. ACCESS POINTS SHOULD BE LOCATED SO THAT THEY ARE ACCESSIBLE AND APPARENT TO THE MAINTAINER AT ALL TIMES FOR USE .THEY SHOULD AVOID REAR GARDENS OR ENCLOSED LOCATIONS AND THEY SHOULD NEVER BE OVERLAIN WITH SURFACE DRESSING, TOPSOIL , ETC.
5. COVERS AND FRAMES SHALL BE SUITABLE FOR ROAD AND TRAFFIC CONDITIONS SUBJECT TO APPROVAL FROM IRISH WATER .
6. 200 mm ALL AROUND, 100 mm DEEP CONCRETE PLINTH WITH PROTECTIVE STAINLESS METAL BAND AROUND COVERS IN GREEN AREAS.
7. PROPRIETARY PREFABRICATED CHAMBER UNITS MAY ALSO BE USED, SUBJECT TO APPROVAL FROM THE ENGINEER.
8. CONCRETE CHAMBERS SHALL BE SURROUNDED BY A MINIMUM OF 150mm COMPACTED CLAUSE 808 MATERIAL.



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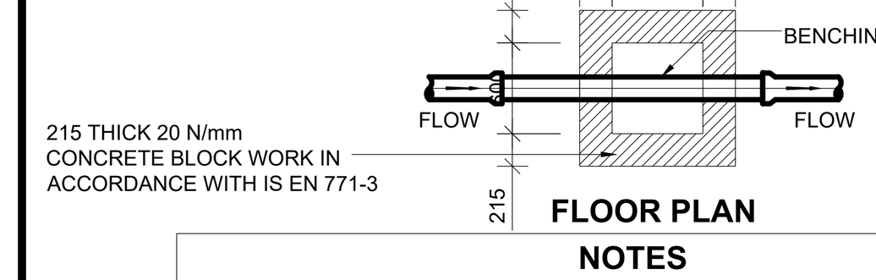

FLOOR PLAN

NOTES

1. ACCESS JUNCTIONS (AJ) TO BE USED FOR INVERT DEPTHS UP TO 0.6m
2. INSPECTION CHAMBERS TO BE USED FOR INVERT DEPTH 0.6m TO 1.0m INSPECTION CHAMBERS CAN BE CONSTRUCTED IN BLOCKWORK (AS DETAIL 'N') OR BE PROPRIETARY TYPE PRECAST OR uPVC SUBJECT TO ENGINEERS APPROVAL
3. FOR INVERT DEPTH'S IN EXCESS OF 1.0m DEEP USE MAHOLE TYPE CONSTRUCTION

M INSPECTION CHAMBER (BLOCKWORK CONSTRUCTION)

ISSUE	DATE	DESCRIPTION	BY
P1	27.05.24	ISSUED FOR COMMENT	MR

Project Engineer: LMC | Project Director: JC

BM STAGE: **PRELIMINARY**

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CLIENT: **BRIAN & KEN MULVANEY**

PROJECT TITLE: **CUCKOO'S NEST DEVELOPMENT**
BM PROJECT No.: **24.167**

MODEL REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: **STANDARD DRAINAGE DETAILS**

DWG DRAWING REFERENCE: **CND-BMD-00-00-DR-C-12215** | STATUS: **S0** | REVISION: **P1**

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