Drainage Proposals

and

Standard Construction Details

for

Proposed Extension and Change of Use to Motor Showroom and Workshop

at

Airton House, Airton Road, Dublin 24

for

Green Car Distributors Ltd

November 2021

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PROJECT MANAGERS

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Proposed Extension and Change of Use to Motor Showroom and Workshop at Airton House, Airton Road, Dublin 24 for Green Car Distributors Ltd

Proposed Development Description

The proposed works to the will consist of alterations to the existing facades to the front and sides of the existing building including the removal of the existing walls along the northern and western sides facing Airton Road and with replacement glazing, extension to the rear block of the building, internal layout changes and associated site works. A number of small stairwell enclosures/projections will be removed from the front elevation. The rear part of the building, which will be converted to a workshop will be extended to the west to provide additional internal floor space.

The form and area of the main building will be retained unaltered with the exception of the proposed extension to the rear part of the building of approximately 99sq. The existing roof drainage will be retained as existing. The existing external yard area to the front, side and rear of the building, including the existing surface water drainage network will be retained unaltered and some additions to provide for the new roof drainage from the extension and the provision of surface water attenuation within the site. Alterations will be carried out to the landscaping to the front of the site in order to upgrade this area.

Surface Water

Flood Management
A copy of the relevant OPW flood map (obtained via floodmaps.ie) is appended to this report. The OPW mapping indicates that there is no flooding on the site for the 1% Annual Exceedance Probability i.e. 1 in 100 storm event. No further consideration in relation to flooding of the site is required.

Existing and Proposed Surface Water Drainage Design
The full extent of the existing site is covered either with paved/macadam surfacing or by the existing building. The existing piped surface water network within the site serving the building and the yard areas currently connects and discharges to a 1m dia. public sewer under Airton Road. The pipe network within the site incorporates oversized pipes (2No. 300mm diameter concrete pipes in parallel) discharging through a 150mm diameter pipe which throttle the outflow from the site to achieve a restriction in the discharge from the site.

As it is intended to extend the building as part of this development. The additional roof area which will replace a portion of the existing macadam surfacing, however it is also proposed to provide additional surface water attenuation within the site which will improve the storage capacity of the surface water system and reduce the discharge rate to the existing public sewer.

The existing surface water sewer network within the site has been modelled using Causeway Flow drainage design software. The pipe sizing has been checked and the site checked to ensure that no flooding occurs for a 1 in 30 year storm, and that any flooding for a 1 in 100 year storm will be contained within the site. The results of the design modelling and storm simulations are appended to this report. The calculations indicate the adequacy of the existing and proposed surface water sewer pipes.

The storm simulation results indicate that with the addition of the proposed new attenuation storage, no flooding occurs for the 1 in 30 year storm. The results indicate that some flooding occurs for the 1 in 100 year storm, being a volume of approximately 5.9 cu.m at manhole/node 2 which is located in the rear carpark. This would equate to a depth of water of approximately 12mm over a 500sq.m area of the rear carpark. This storage would be retained within the site and dissipate away through the surface water pipe network following

the subsidence of the storm, in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS).

The cover levels of the existing surface water pipe along the side and rear (north) of the building mean that the proposed attenuation must be located in the existing front car park area on the front/northern side of the site.

The attenuation area will be formed using Microstrain StormTech retention chambers (or similar system installed below ground on a stone bed and surrounded and covered in single sized stone in order to maximise the available storage and infiltration capacity. Product details for the StormTech chambers are appended to this report.

The existing macadam yards will generally remain unaltered with the exception of repairs/replacement are required due to the proposed extension and demolitions. The effect of the overall development will be to reduce the volume of surface water run-off into the existing public surface water sewer system.

The drainage proposals are indicated on drawing 21166-500 which is included as part of this planning application.

Foul Sewer

The existing sanitary facilities within the building will be rearranged and a new toilets, staff and customer facilitates will provided as indicated on the architects drawings. The discharge from these sanitary facilities will discharge via a new internal branch pipes below the floor of the building, into the existing 150mm dia. uPVC foul sewer pipe along the front (north) of the existing building. The pipe increases to a 225mm diameter towards the front of the site and ultimately discharges through a 300mm diameter concrete pipe to a 1m diameter public foul sewer under Airton Road.

A number of new toilets etc will be provided in the front block of the existing building towards the rear of this block. A new 150mm dia. uPVC foul sewer pipe will be provided to serve these facilities and this pipe will discharge to the existing 225mm dia. foul sewer pipe within the site.

Foul Sewer Calculations

Peak discharge through new 150mm Foul Sewer Pipe

Using Table 2 of IS EN 12056-2 to find discharge units for appliances

Total no of sinks	= 1 No. @ 0.8 l/s	= 0.8 units
Total no of Washbasins	= 3 No. @ 0.5 /s	= 1.5 units
Total no of WC's	= 3 No. @ 2.0 l/s	= 6.0 units

Total number of discharge units entering drainage system = 8.3 units

From IS EN 12056-2-6.3, expected flow rate

$Q_{ww} = K\sqrt{(\sum DU)}$

Where K = 0.5 for intermittent use (from Table 3, IS EN 12506-2)

Q_{ww} = 1.44 l/s

Total flow rate to external drainage = 1.46 l/s

A 150mm dia uPVC pipe at min gradient 1:100; Capacity 22 l/sec => OK

Appendix 1

Surface Water Drainage Calculations and Storm Simulation Results

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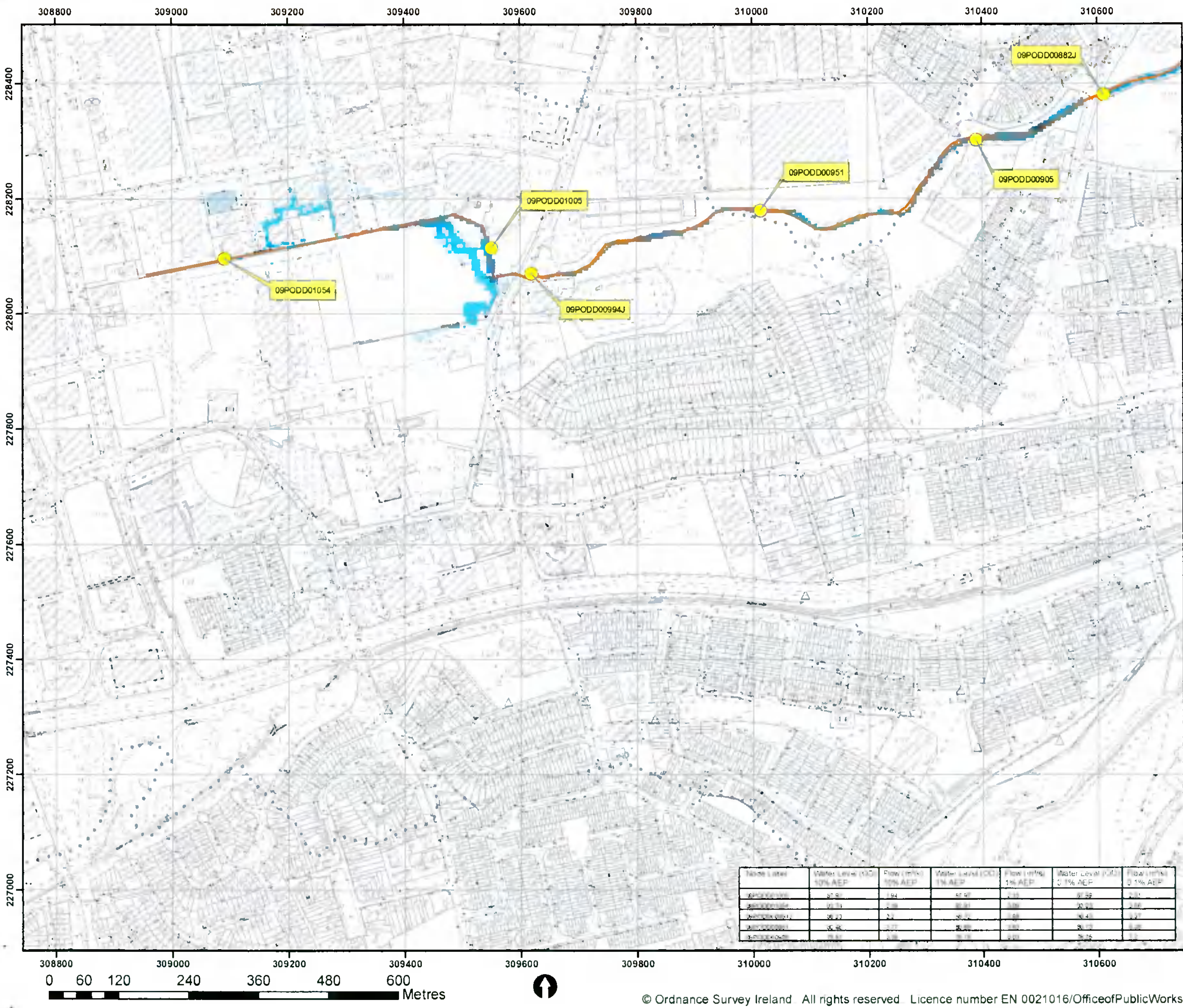
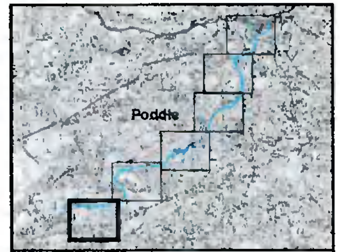


Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
[illegible]	[illegible]	1.94	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



IMPORTANT USER NOTE
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP

Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Node Point
- Node ID Node Label

FINAL

REV	NOTE	DATE

CFRAM

OPW RPS

Map:
Poddle River Fluvial Flood Extents

Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By: F.M.C.	Date: 11 August 2016
Checked By: A.S.	Date: 11 August 2016
Approved By: S.P.	Date: 11 August 2016

Drawing No.:
E09POD_EXFCD_F0_01

Map Series: Page 1 of 6

Drawing Scale: 1:6,050 @A3

Appendix 2

Surface Water Drainage Calculations and Storm Simulation Results

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Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	20.00
Return Period (years)	1	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.75
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	18.300	Minimum Backdrop Height (m)	0.200
Ratio-R	0.270	Preferred Cover Depth (m)	0.300
CV	0.770	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	✓

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	Link Type	T of C (mins)	Rain (mm/hr)
1.000	1	2	19.088	0.600	90.390	90.180	0.210	90.9	300	Existing Double Pipe	4.19	47.4
2.000	10	2	3.367	0.060	90.400	90.330	0.070	48.1	150	uPVC	4.03	48.0
1.001	2	3	22.177	0.600	90.180	90.090	0.090	246.4	300	Existing Double Pipe	4.56	46.0
3.000	20	3	17.122	0.060	90.630	90.240	0.390	43.9	150	uPVC	4.15	47.5
1.002	3	4	3.631	0.600	90.090	90.080	0.010	363.1	300	Existing Double Pipe	4.64	45.8
1.003	4	5	18.111	0.600	90.080	90.050	0.030	603.7	300	Existing Double Pipe	5.11	44.2
1.004	5	6	18.431	0.060	90.030	89.820	0.210	87.8	150	uPVC	5.34	1.0
1.005	6	7	22.518	0.600	89.670	88.160	1.510	14.9	300	Existing Single PIpe	5.43	43.3

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)	Pro Velocity (m/s)
1.000	1.649	233.2	4.7	0.400	0.410	0.036	0.0	30	0.667
2.000	1.857	32.8	0.7	0.470	0.410	0.005	0.0	15	0.751
1.001	0.997	140.9	13.1	0.410	0.700	0.102	0.0	61	0.628
3.000	1.948	34.4	6.6	0.300	0.700	0.050	0.0	44	1.512
1.002	0.819	115.8	21.8	0.700	0.720	0.171	0.0	88	0.631
1.003	0.633	89.4	27.6	0.720	0.820	0.224	0.0	114	0.558
1.004	1.355	23.9	0.7	0.990	1.510	0.236	0.0	17	0.596
1.005	4.091	289.2	28.4	1.510	3.130	0.236	0.0	63	2.634

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)
1.000	19.088	90.9	300	Existing Double Pipe	91.090	90.390	0.400	90.890	90.180	0.410
2.000	3.367	48.1	150	uPVC	91.020	90.400	0.470	90.890	90.330	0.410
1.001	22.177	246.4	300	Existing Double Pipe	90.890	90.180	0.410	91.090	90.090	0.700
3.000	17.122	43.9	150	uPVC	91.080	90.630	0.300	91.090	90.240	0.700
1.002	3.631	363.1	300	Existing Double Pipe	91.090	90.090	0.700	91.100	90.080	0.720
1.003	18.111	603.7	300	Existing Double Pipe	91.100	90.080	0.720	91.170	90.050	0.820
1.004	18.431	87.8	150	uPVC	91.170	90.030	0.990	91.480	89.820	1.510

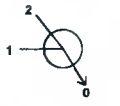
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	1	1500	Manhole	Adoptable	2	1500	Manhole	Adoptable
2.000	10	1200	Manhole	Adoptable	2	1500	Manhole	Adoptable
1.001	2	1500	Manhole	Adoptable	3	1500	Manhole	Adoptable
3.000	20	1200	Manhole	Adoptable	3	1500	Manhole	Adoptable
1.002	3	1500	Manhole	Adoptable	4	1500	Manhole	Adoptable
1.003	4	1500	Manhole	Adoptable	5	1500	Manhole	Adoptable
1.004	5	1500	Manhole	Adoptable	6	1200	Manhole	Adoptable

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)
1.005	22.518	14.9	300	Existing Single PIpe	91.480	89.670	1.510	91.590	88.160	3.130

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.005	6	1200	Manhole	Adoptable	7	1200	Manhole	Adoptable

Manhole Schedule

Node	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
1	91.090	0.700	1500		0	1.000	90.390	300
10	91.020	0.620	1200		0	2.000	90.400	150
2	90.890	0.710	1500		1	2.000	90.330	150
					2	1.000	90.180	300
					0	1.001	90.180	300
20	91.080	0.450	1200		0	3.000	90.630	150
3	91.090	1.000	1500		1	3.000	90.240	150
					2	1.001	90.090	300
					0	1.002	90.090	300
4	91.100	1.020	1500		1	1.002	90.080	300
					0	1.003	90.080	300
5	91.170	1.140	1500		1	1.003	90.050	300
					0	1.004	90.030	150
6	91.480	1.810	1200		1	1.004	89.820	150
					0	1.005	89.670	300
7	91.590	3.430	1200		1	1.005	88.160	300

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	Scotland and Ireland	Additional Storage (m³/ha)	20.0
M5-60 (mm)	18.300	Check Discharge Rate(s)	✓
Ratio-R	0.270	30 year (l/s)	50.0
Summer CV	1.000	100 year (l/s)	55.0
Winter CV	1.000	Check Discharge Volume	✓
Analysis Speed	Normal	100 year 360 minute (m³)	
Skip Steady State	✓		

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 %)
30	20	0	0
100	20	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 5 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	90.030
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	21

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	27.5	0.0	0.406	27.5	0.0	0.407	0.0	0.0

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 99.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	21	90.636	0.246	28.9	0.6891	0.0000	OK
30 minute summer	10	21	90.634	0.234	2.8	0.3020	0.0000	SURCHARGED
30 minute summer	2	21	90.638	0.458	44.0	1.5944	0.0000	FLOOD RISK
15 minute summer	20	9	90.722	0.092	23.7	0.3094	0.0000	OK
30 minute summer	3	21	90.643	0.553	56.9	1.1869	0.0000	SURCHARGED
30 minute summer	4	21	90.642	0.562	70.9	1.5764	0.0000	SURCHARGED
30 minute summer	5	21	90.635	0.605	69.5	12.3751	0.0000	SURCHARGED
30 minute summer	6	21	89.751	0.081	42.9	0.0916	0.0000	OK
30 minute summer	7	21	88.237	0.077	42.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	-17.0	-0.073	2.5259	
30 minute summer	10	2.000	2	2.2	0.067	0.0593	
30 minute summer	2	1.001	3	29.8	0.211	3.1234	
15 minute summer	20	3.000	3	24.2	0.703	0.2374	
30 minute summer	3	1.002	4	49.2	0.425	0.5114	
30 minute summer	4	1.003	5	64.6	0.723	2.5507	
30 minute summer	5	1.004	6	42.9	1.790	0.3243	
30 minute summer	6	1.005	7	42.7	0.148	0.3342	59.8

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.03%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	1	20	90.905	0.515	26.1	1.4406	0.0000	FLOOD RISK
30 minute summer	10	21	90.897	0.497	2.8	0.6423	0.0000	FLOOD RISK
30 minute summer	2	19	90.890	0.710	59.5	2.4744	5.9538	FLOOD
30 minute summer	20	20	91.015	0.385	28.3	1.2894	0.0000	FLOOD RISK
60 minute summer	3	35	90.902	0.812	49.1	1.7443	0.0000	FLOOD RISK
30 minute winter	4	20	90.900	0.820	66.2	2.3018	0.0000	FLOOD RISK
30 minute winter	5	20	90.893	0.863	66.5	12.8849	0.0000	FLOOD RISK
30 minute summer	6	19	89.759	0.089	50.6	0.1002	0.0000	OK
30 minute summer	7	19	88.244	0.084	50.5	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
30 minute summer	1	1.000	2	24.6	0.106	2.6883	
30 minute summer	10	2.000	2	4.8	0.145	0.0593	
30 minute summer	2	1.001	3	37.0	0.262	3.1234	
30 minute summer	20	3.000	3	26.0	0.755	0.3014	
60 minute summer	3	1.002	4	42.2	0.365	0.5114	
30 minute winter	4	1.003	5	61.4	0.687	2.5507	
30 minute winter	5	1.004	6	50.5	2.111	0.3237	
30 minute summer	6	1.005	7	50.5	0.175	0.3775	72.9

Appendix 3

Rainfall Intensity Data for the site obtained from Met Eireann

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Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 309319, Northing: 228248,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.6,	3.8,	4.5,	5.5,	6.2,	6.8,	8.6,	10.8,	12.3,	14.3,	16.2,	17.7,	20.0,	21.8,	23.4,	N/A ,
10 mins	3.6,	5.3,	6.2,	7.7,	8.6,	9.4,	12.0,	15.0,	17.1,	20.0,	22.6,	24.7,	27.9,	30.4,	32.5,	N/A ,
15 mins	4.2,	6.2,	7.3,	9.0,	10.2,	11.1,	14.1,	17.7,	20.1,	23.5,	26.6,	29.0,	32.8,	35.8,	38.3,	N/A ,
30 mins	5.5,	8.1,	9.5,	11.6,	13.1,	14.2,	18.0,	22.5,	25.4,	29.6,	33.4,	36.4,	41.1,	44.7,	47.7,	N/A ,
1 hours	7.3,	10.5,	12.3,	15.0,	16.8,	18.3,	23.0,	28.5,	32.2,	37.4,	42.0,	45.7,	51.3,	55.8,	59.4,	N/A ,
2 hours	9.6,	13.7,	16.0,	19.3,	21.7,	23.5,	29.4,	36.2,	40.7,	47.1,	52.8,	57.3,	64.2,	69.6,	74.1,	N/A ,
3 hours	11.2,	16.0,	18.6,	22.5,	25.1,	27.2,	33.9,	41.6,	46.7,	53.9,	60.4,	65.4,	73.2,	79.2,	84.2,	N/A ,
4 hours	12.6,	17.9,	20.7,	25.0,	27.9,	30.1,	37.5,	45.9,	51.5,	59.4,	66.4,	71.9,	80.3,	86.8,	92.3,	N/A ,
6 hours	14.8,	20.8,	24.1,	29.0,	32.3,	34.9,	43.3,	52.8,	59.1,	68.0,	75.9,	82.0,	91.5,	98.8,	104.9,	N/A ,
9 hours	17.3,	24.3,	28.0,	33.6,	37.4,	40.4,	49.9,	60.7,	67.9,	77.9,	86.8,	93.7,	104.3,	112.5,	119.3,	N/A ,
12 hours	19.4,	27.1,	31.2,	37.4,	41.5,	44.8,	55.2,	67.1,	74.8,	85.7,	95.4,	102.9,	114.4,	123.3,	130.7,	N/A ,
18 hours	22.8,	31.6,	36.4,	43.4,	48.1,	51.8,	63.7,	77.1,	85.9,	98.2,	109.1,	117.5,	130.4,	140.4,	148.7,	N/A ,
24 hours	25.5,	35.3,	40.5,	48.2,	53.4,	57.5,	70.5,	85.1,	94.7,	108.1,	119.9,	129.1,	143.1,	153.9,	162.9,	194.1,
2 days	32.1,	43.3,	49.1,	57.7,	63.4,	67.8,	81.8,	97.3,	107.3,	121.2,	133.4,	142.7,	156.9,	167.8,	176.7,	207.6,
3 days	37.5,	49.7,	56.1,	65.3,	71.4,	76.1,	91.0,	107.2,	117.7,	132.1,	144.6,	154.2,	168.7,	179.8,	188.9,	220.2,
4 days	42.1,	55.4,	62.1,	71.9,	78.4,	83.3,	98.9,	115.9,	126.7,	141.6,	154.5,	164.4,	179.2,	190.5,	199.8,	231.5,
6 days	50.4,	65.1,	72.6,	83.4,	90.5,	95.8,	112.7,	130.8,	142.4,	158.1,	171.7,	182.0,	197.5,	209.2,	218.8,	251.5,
8 days	57.6,	73.7,	81.8,	93.5,	101.0,	106.7,	124.7,	143.8,	156.0,	172.5,	186.6,	197.3,	213.4,	225.6,	235.4,	269.0,
10 days	64.3,	81.6,	90.2,	102.6,	110.6,	116.6,	135.5,	155.6,	168.2,	185.4,	200.1,	211.1,	227.7,	240.2,	250.4,	284.8,
12 days	70.5,	88.9,	98.0,	111.0,	119.4,	125.8,	145.5,	166.4,	179.5,	197.3,	212.4,	223.8,	240.9,	253.8,	264.2,	299.3,
16 days	82.1,	102.4,	112.4,	126.6,	135.7,	142.5,	163.7,	186.1,	200.1,	218.9,	234.9,	246.9,	264.8,	278.3,	289.2,	325.7,
20 days	92.8,	114.8,	125.6,	140.8,	150.5,	157.8,	180.3,	204.0,	218.7,	238.4,	255.2,	267.7,	286.4,	300.4,	311.7,	349.5,
25 days	105.4,	129.3,	140.9,	157.2,	167.6,	175.4,	199.5,	224.5,	240.0,	260.8,	278.4,	291.5,	311.0,	325.6,	337.3,	376.6,

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

Appendix 4

Technical Details for Proposed Stormtech Underground Attenuation Chambers

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Product Catalog

Underground Stormwater Chambers

Save Valuable Land and Protect Water Resources℠

StormTech®

Detention • Retention • Recharge

Subsurface Stormwater Management™

StormTech® Subsurface Stormwater Management

The advanced design of StormTech's chambers allows stormwater professionals to create more profitable, environmentally sound installations. Compared with other subsurface systems, StormTech's innovative chambers offer lower overall installed costs, superior design flexibility and enhanced long-term performance.

Superior Design Flexibility for Optimal Land Use

StormTech chambers are ideal for commercial, municipal and residential applications. One of the key advantages of the StormTech chamber system is design flexibility. StormTech chambers can be configured into beds or trenches, in centralized or decentralized layouts to fit on nearly any site.

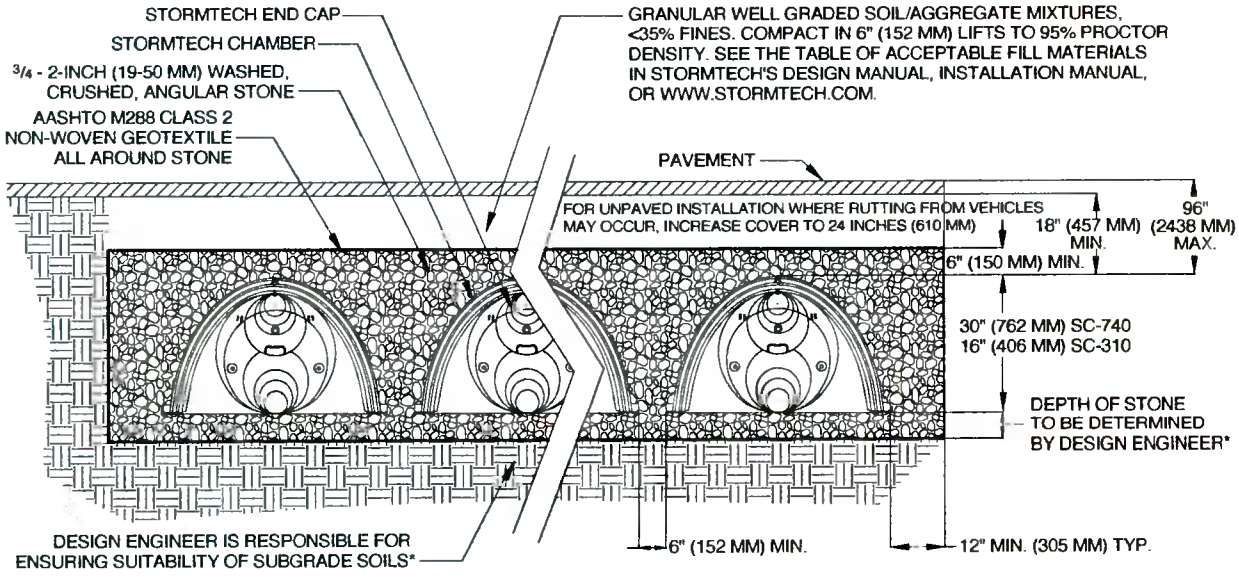
L to R: SC-310 chamber and SC-740 chamber

Product Features and Benefits

The advanced features and innovative technology of StormTech chambers streamline installations while lowering overall installed costs. StormTech chambers offer these unique advantages:

- Lightweight, two people can install chambers quickly and easily, saving time and money
- Extensive product research & development and rigorous testing ensure long term reliability and performance
- Versatile product design accommodates a wide range of site constraints with cost-effective system designs
- The chamber length can be cut in 6.5" (165 mm) increments – reducing waste and optimizing the use of available space
- Injection molded polypropylene ensures precise control of wall thickness and product consistency
- Isolator Row – a patent pending technique to inexpensively enhance total suspended solids (TSS) removal and provide easy access for inspection and maintenance
- Corrugated Arch Design – a proven geometry for structural integrity under H-20 live loads and deep burial loads, also provides high storage capacity

Typical Cross Section Detail (not to scale)



Detention-Retention-Recharge

The StormTech SC-740 chamber optimizes storage volumes in relatively small footprints by providing 2.2 ft³/ft² (0.67 m³/m²) (minimum) of storage. This can decrease excavation, backfill and associated costs. The StormTech SC-310 chamber is ideal for systems requiring low-rise and wide-span solutions. The chamber allows the storage of large volumes, 1.3 ft³/ft² (0.4 m³/m²) (minimum), at minimum depths.

StormTech SC-740 Chamber
(not to scale)

Nominal Chamber Specifications

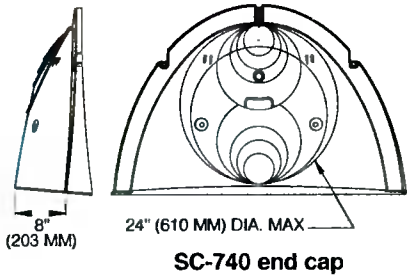
Size (L x W x H)
85.4" x 51.0" x 30.0"
(2169 x 1295 x 762 mm)

Chamber Storage
45.9 ft³ (1.30 m³)

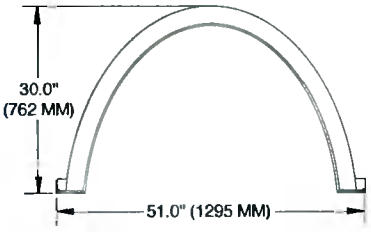
Minimum Installed Storage*
74.9 ft³ (2.12 m³)

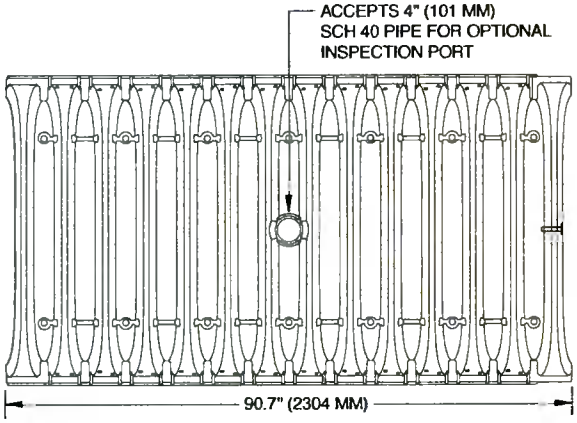
Weight
74.0 lbs (33.6 kg)

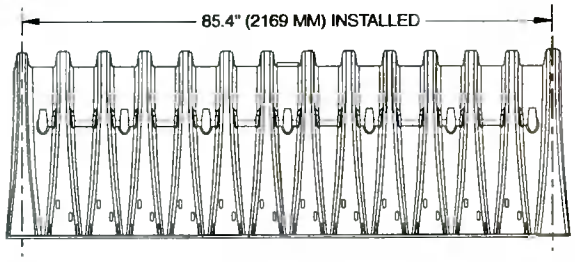
Shipping
30 chambers/pallet
60 end caps/pallet
12 pallets/truck



SC-740 end cap







SC-740 chamber

StormTech SC-310 Chamber
(not to scale)

Nominal Chamber Specifications

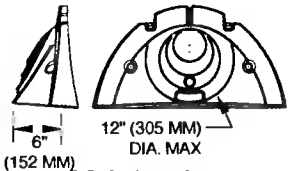
Size (L x W x H)
85.4" x 34.0" x 16.0"
(2169 x 864 x 406 mm)

Chamber Storage
14.7 ft³ (0.42 m³)

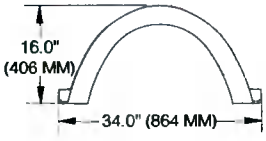
Minimum Installed Storage*
31.0 ft³ (0.88 m³)

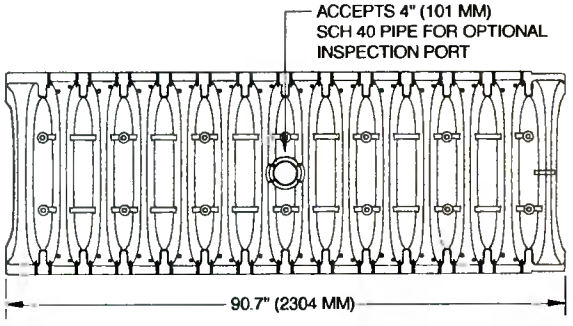
Weight
37.0 lbs (16.8 kg)

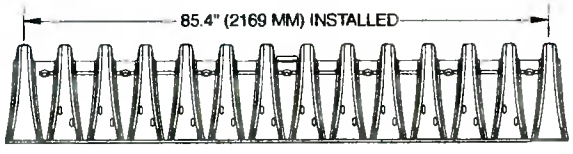
Shipping
41 chambers/pallet
108 end caps/pallet
18 pallets/truck



SC-310 end cap







SC-310 chamber

*This assumes a minimum of 6 inches (152 mm) of stone below, above and between chamber rows.

Advanced Structural Performance for Greater Long-Term Reliability

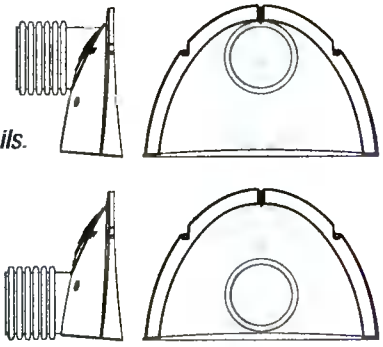
StormTech developed a state of the art chamber design through:

- Collaboration with world-renowned experts of buried drainage structures to develop and evaluate the structural testing program and product design
- Designing chambers to exceed AASHTO LRFD design specifications for HS-20 live loads and deep burial earth loads
- Subjecting the chambers to rigorous full scale testing, under severe loading conditions to verify the AASHTO safety factors for live load and deep burial applications

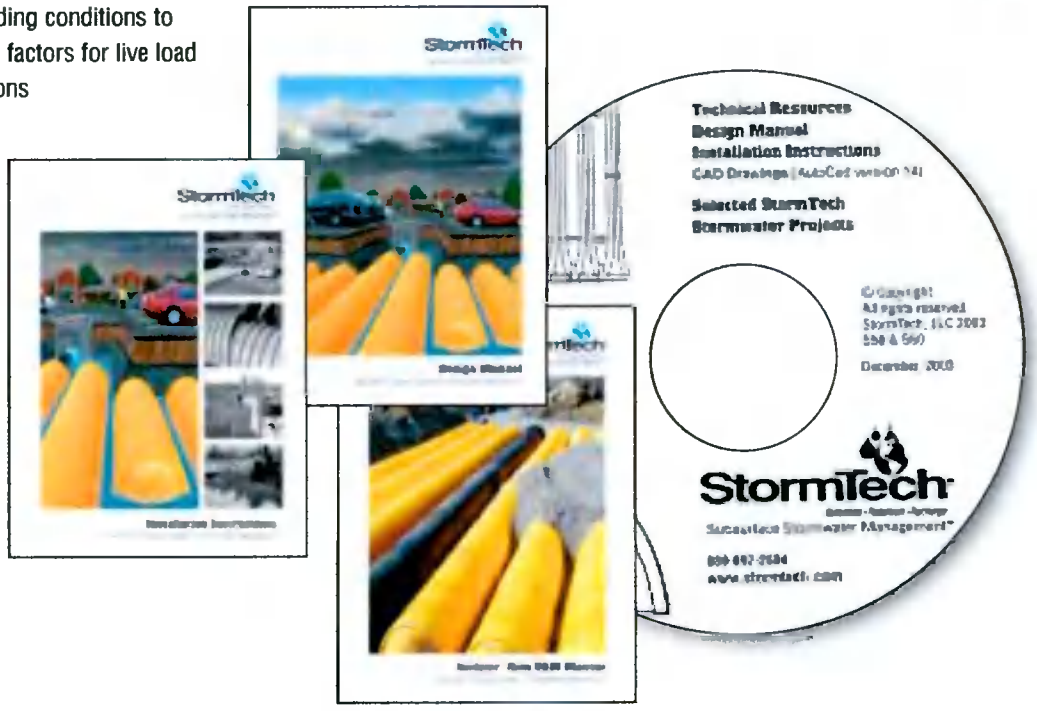
StormTech continues to conduct research and consult with outside experts to meet customer needs for alternative backfill materials, designs for special loadings and other technical solutions.

Technical Assistance

StormTech's technical support staff is available to provide assistance to engineers, contractors and developers. Please contact one of our engineers or product managers to discuss your particular application. A wide variety of technical support material is available in print, electronic media or from our website at www.stormtech.com. For any questions, please call StormTech at 888-892-2694.



Fabricated End Caps
Contact StormTech for details.



StormTech®

Detention • Retention • Recharge

Subsurface Stormwater Management℠

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860.529.8188 | 888.892.2694 | fax 866.328.8401 | www.stormtech.com

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Appendix 5

Standard Construction Details

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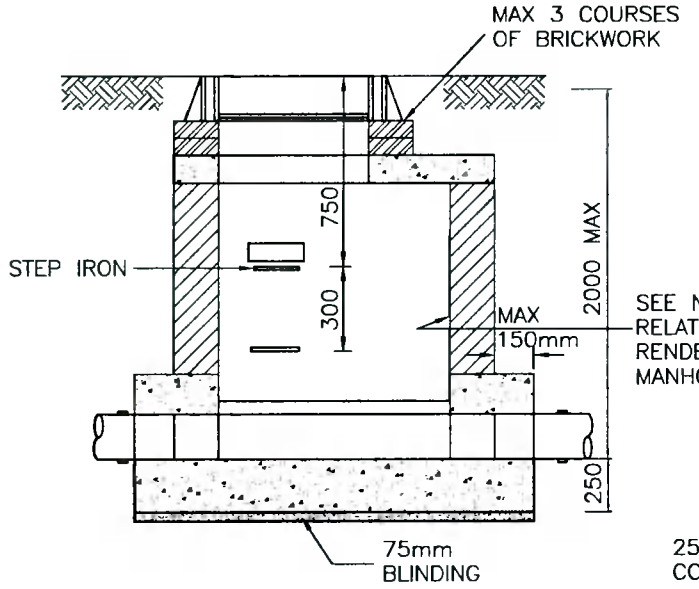
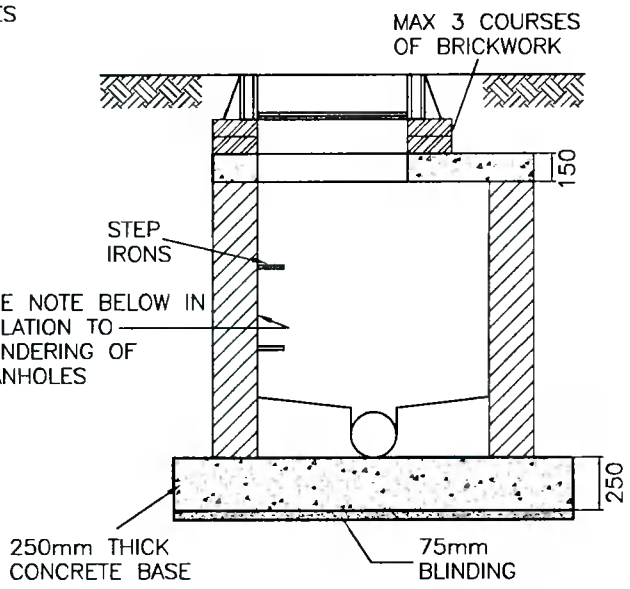
project MOTOR SHOWROOM AT AIRTON ROAD

title BLOCKWORK MANHOLE

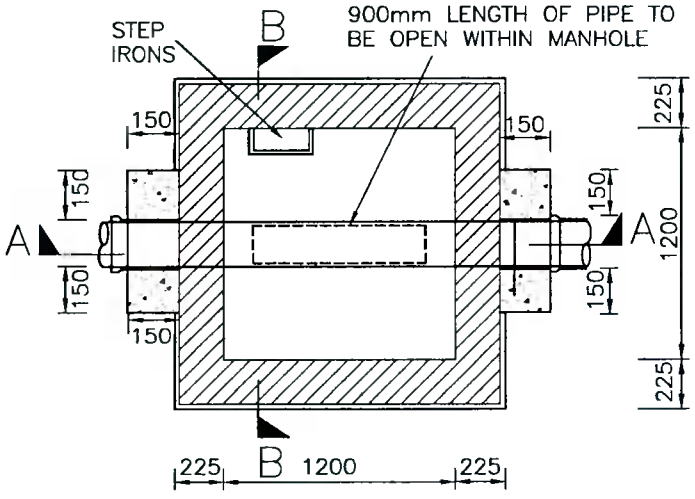
scale	drawing no	rev	date
NTS	21166–SK01	–	SEP21



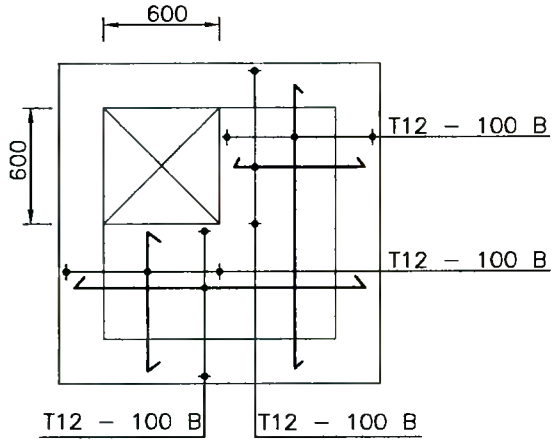
SECTION A–A



SECTION B–B



SECTION PLAN



ROOF PLAN

NOTES:

MANHOLE CONSTRUCTION

MANHOLES TO BE CONSTRUCTED IN SOLID CONCRETE BLOCKWORK TO I.S. 20 (TYPE A 10.5N/mm²) AND CEMENT MORTAR BLOCKWORK TO BE MIN 225mm THICK FOR DEPTHS OF UP TO 2m. PIPES 225mm DIAMETER AND OVER SHALL HAVE AN R.C. LINTEL OVER THE PIPE TO THE FULL THICKNESS OF THE BLOCKWORK AND THE FULL LENGTH OF THE WALL.

COVERS

MANHOLE COVERS AND FRAMES TO BE DUCTILE IRON, NON–ROCK, GRADE C250 E.N. 24 WITH A 600mm SQUARE OR 600mm DIAMETER CLEAR OPENING – REXEL BY CAVANAGH FOUNDARIES OF NOROC BY PAM

BENCHING

BENCHING IS TO BE FORMED IN C28/35 CONCRETE AND SHOULD RISE UP UNIFORMLY FROM THE TOP EDGE OF THE CHANNEL TO A HEIGHT NOT LESS THAN THAT OF THE SOFFIT OF THE OUTLET AND SLOPE UPWARDS TO MEET THE WALL OF THE MANHOLE AT A GRADIENT OF 1:10 (MIN RISE 25mm). IT SHOULD BE FLOATED WITH A STEEL FLOAT TO A SMOOTH HARD SURFACE WITH A 25mm THICK COAT OF 1:1 CEMENT MORTAR LAID WHILE THE BENCHING CONCRETE IS STILL GREEN.

RENDERING

SURFACE WATER MANHOLES SHALL BE RENDERED INTERNALLY IN 1:3 CEMENT MORTAR 25mm THICK AND FINISHED WITH A STEEL TROWEL. FOUL MANHOLES SHALL BE RENDERED INTERNALLY AND EXTERNALLY IN 1:3 CEMENT MORTAR.

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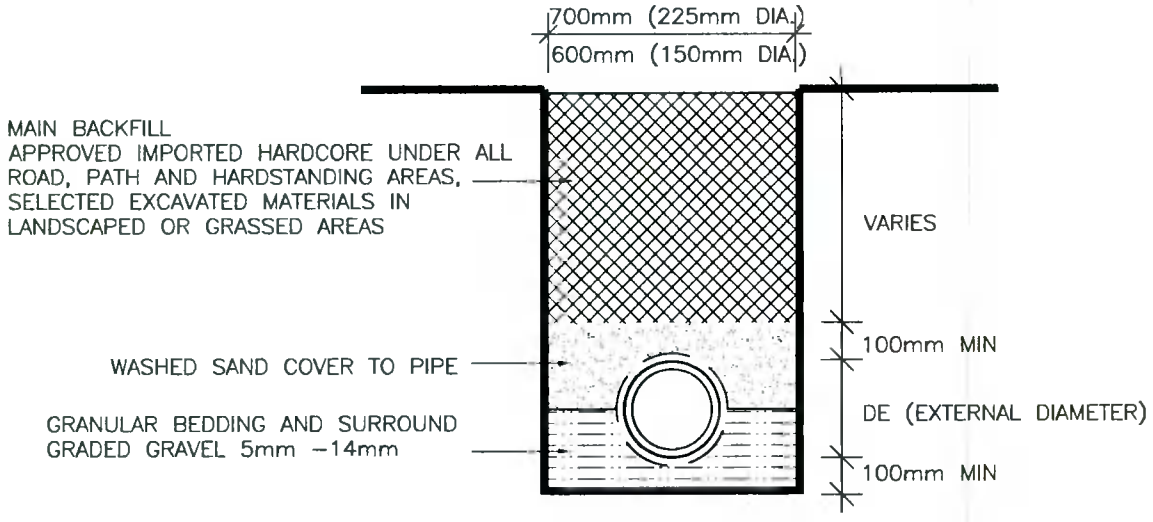
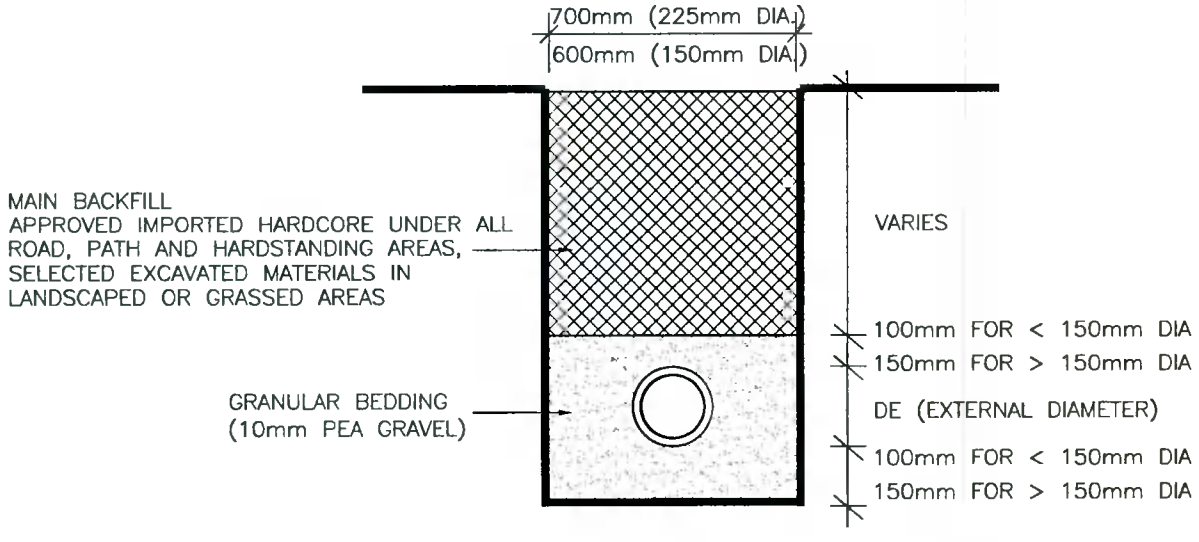
project MOTOR SHOWROOM AT AIRTON ROAD

title SEWER BEDDING DETAILS

scale	drawing no	rev	date
NTS	21166–SK02	–	SEP21



GRANULAR BEDDING FOR CONCRETE PIPES



GRANULAR BEDDING FOR uP.V.C. FLEXIBLE PIPES

NOTE:

(A) IN TRENCHES IN ROADS, MAIN BACKFILL SHALL BE GRANULAR MATERIAL TO CLAUSE 804 M.O.T. SPECIFICATION AND SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 500mm LOOSE DEPTH.

(B) WHERE COVER IS LESS THAN ALLOWABLE, I.E. 1.20m IN ROADS AND 0.9m ELSEWHERE. A 150mm (20N MIX) CONCRETE SURROUND IS TO BE PLACED AROUND PIPE.
THE CONCRETE SURROUND SHALL HAVE 25mm BREAKS EVERY 6.0m (uPVC ONLY.
THE BREAKS ARE TO BE FILLED WITH A COMPRESSIBLE MATERIAL.