DRAINAGE STRATEGY REPORT FOR 190 GOLDHURST TERRACE, LONDON, NW6 3HN

DOCUMENT NUMBER.: C3075-R1-REV-A

PREPARED BY

Nimbus
ENGINEERING CONSULTANTS

Contents

APPENDICES

1. INTRODUCTION

1.1 Appointment

Nimbus Engineering have been appointed to provide an solution to discharge the following planning condition:

4. Prior to the commencement of development, full details to demonstrate:

a) The proposed internal water efficiency and/or water recycling equipment to ensure that the development will pose no additional strain on adjoining sites or the existing drainage infrastructure: and

b) The proposed internal measures to ensure that the development has been designed to mitigate flood risk and cope with potential flooding including a positive pump devise to protect against sewer flooding:
Should be submitted to the Local Planning Authority and approved in writing.

Reason: To reduce the rate of surface water run off from the buildings and limit the impact on the storm water drainage system in accordance with policies CC2 and CC3 of the London Borough of Camden Local Plan Policies and Policy SI 13 of the London Plan 2021.

1.2Limitations

The general limitations of this report are:

- A number of data and information sources have been used to prepare this report. Whilst Nimbus Engineering believes them to be trustworthy, Nimbus Engineering is unable to guarantee the accuracy of data and information that has been provided by others;

- This report has been prepared using the best data and information that was available at the time of writing. There is the potential for further information or data to become available, leading to changes in the conclusions drawn by this report, for which Nimbus Engineering cannot be held responsible.

2. WATER EFFICIENCY

The proposed internal water efficiency measures will ensure that the total water consumption is less than 110 litres per day, and this can be seen in the water efficiency calculator provided in Appendix A.

3. SUSTAINABLE URBAN DRAINAGE SYSTEMS

The total area of the site is 140m^2, and the existing impermeable areas at the site are 140m^2. Following the development proposals, the impermeable areas at the site will have decreased to 136m^2.

Surface water arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account.

Reducing the rate of surface water discharge from urban sites is one of the most effective ways of reducing and managing flood risk.

Traditional piped surface water systems work by removing surface water from our developments as quickly as possible, however this can cause various adverse impacts:

- Increased downstream flooding, and sudden rises in flow rates and water levels in local water courses.

- Reduction in groundwater levels and dry weather flows in watercourses.

- Reduce amenity and adversely affect biodiversity due to the surface water run-off containing contaminants such as oil, organic matter and toxic materials.

SuDS are defined as a sequence of management principles and control structures designed to drain surface water in a more sustainable fashion than conventional piped drainage techniques. SuDS should utilise the natural landscape of an area which as well as slowing down the rate of runoff provides a number of environmental, ecological and social benefits.

These include:

- Protection and enhancement of water quality. As well as providing on-site attenuation, SuDS treat the water, resulting in an improved quality of water leaving the site. This is achieved when the water passes through fine soils and the roots of specially selected plants. Pollutants washed off the hard landscaping by rainfall will be safely removed before the water reaches the natural receiving water course.

- A sympathetic approach to the environmental setting by providing opportunities to create habitats for flora and fauna in urban watercourses and open spaces.

- Meeting the amenity and social needs of the local community and residents in the creation of attractive green spaces.

The various types of SuDS include:

Permeable paving	
Soakaways;	
Swales and basins;	
Bioretention/ rain gardens;	
Green roofs and rainwater re-use;	

Preferably a combination of these techniques should be used as part of the surface water management train, and it is important for all stakeholders, such as developers, architects, landscape architects and engineers to work in order to determine a feasible solution.

3. PROPOSED SUDS SOLUTION

The development proposals involve the construction of a new basement floor below the existing ground floor dwelling, as per the drawings provided in Appendix B.

In order to ensure that the SuDS management train has been followed, the proposals involve one wall mounted rainwater harvesting tank at the new rear lightwell area, as there is no available space for any other form of SuDS, and the new basement floor is below an existing impermeable area.

The surface water run off from this new lightwell area will be conveyed to the existing combined sewer via a pumping station, as show on drawing number C3075-01.

4. FOUL DRAINAGE STRATEGY

The proposed foul drainage from this new basement floor will be conveyed via a pumping station to the existing combined manhole the front of the site, as show on drawing number C3075-01.

5. TIMESCALE AND MAINTENANCE OF WORKS

All drainage works will be completed prior to first occupation and there will be no adoption of any of the drainage works within the site, the homeowner will be responsible to oversee the long-term maintenance of their drains.

The following outline maintenance strategy sets out recommended timescales for maintenance of the proposed drainage works, in line with CIRIA SuDS Design Guide. We have also provided a management and maintenance plan drawing, and this can be found in Appendix A:

- Regular inspection will comprise the inspection and cleaning of catchment, gutters, filters and tanks to reduce the likelihood of contamination, this is recommended to be carried out every 3 to 6 months.

- Regular cleaning and inspection of the slot drains to ensure there is no build up of sediment / litter.

Maintenance schedule	Required action	Typical Frequency
Regular maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdraw devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters. Withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional maintenance	Cleaning and/ or replacement of any filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 1: Operation and maintenance requirement for RWH systems.

6. CONCLUSIONS

The purpose of this report and associated drawings, is to provide the local planning authority with a water efficiency calculations, as well as a proposed drainage strategy that uses a pumping device to ensure there are no back up of flows of their proposed drainage system. Therefore all of the requirements of the planning condition have been met.

APPENDIX A – WATER EFFICIENCY CALCULATOR

PART G APPENDIX A – WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS

BUILDPASS

Site Name: Flat 1 190 Goldhurst Terrace London Job No.

Author: Andrew Sadler

Plot No: Flat 1

Stage: ***As Designed*** Date: 02/08/2023

Table A1: The water efficiency calculator

		(1)	(2)	(3)	(4)
Installation type	**Unit of measure**	**Capacity / Flow rate**	**Use factor**	**Fixed use (litres/ person/ day)**	**Litres/ person/day = [(1) x (2)] + (3)**
WC (single flush)	Flush volume (litres)	0	4.42	0	0
WC (dual flush) Full flush volume (litres)	Flush volume (litres)	6	1.46	0	8.76
Part flush volume (litres)	Flush volume (litres)	4	2.96	0	11.84
WCs (multiple fittings)	Average effective flushing volume (litres)	0	4.42	0	0
Taps (excluding kitchen/utility room taps)	Flow rate (litres/minute)	5.7	1.58	1.58	10.586
Bath (where shower also present)	Capacity to overflow (litres)	180	0.11	0	19.8
Shower (where bath also present)	Flow rate (litres/minute)	8	4.37	0	34.96
Bath only	Capacity to overflow (litres)	0	0.5	0	0
Shower only	Flow rate (litres/minute)	0	5.6	0	0
Kitchen/utility room sink taps	Flow rate (litres/minute)	9	0.44	10.36	14.32
Washing machine	Litres/kg dry load	5.88	2.1	0	12.348
Dishwasher	Litres/place setting	0.43	3.6	0	1.548
Waste disposal unit	Litres/use If present	0	3.08	0	0
	if pesent = 1, if absent =0				
Water softener	Litres/person/day	0	1	0	0
	(5)	Total calculated use = (Sum column 4)			114.2
	(6)	Contribution from greywater (litres/person/day) from			0
	(7)	Contribution from rainwater (litres/person/day) from Table 5.5			0
	(8)	Normalisation factor 0.91			0.91
	(9) Used for Code level requirements	**Total water consumption = [(5) – (6) – (7)] x (8)**			**103.9**
	(10)	External water use 5.0			5
	(11)	**Total water consumption = (9+10) (Litres/person/day)**			108.9

Maximum calculated consumption of potable water (litres/person/day)

Regulation 36 para (2)a	125
Regulation 36 optional requirement para (2)b	**110**
Code level 4	105

Detailed specification to be completed at as built stage

Table A2.1: Consumption calculator for multiple taps (excluding kitchen sink taps)

		(a)	(b)	(c)
	Tap fitting type	Flow rate (litres/min)	Quantity (No.)	Total per fitting type = [(a) x (b)]
1	Grohe Eurostyle Mono mixer	5.7	4	22.8
2				0
3				0
4			0	
(d)	Total (Sum of all quantities)		4	
(e)	Total (Sum of all totals per fitting type)			22.8
	Average flow rate (litres/min) = [(e)/(d)]			5.7
(f)	Maximum flow rate (litres/min)			5.7
	Proportionate flow rate (litres/min) = [(f) x 0.7]			3.99

Table A2.2: Consumption calculator for multiple baths

		(a)	(b)	(c)
	Bath fitting type	Capacity to overflow (litres)	Quantity (No.)	Total per fitting type = [(a) x (b)]
1	Ideal Standard ARC double ended	167	1	167
2				
3				
4				
(d)	Total (Sum of all quantities)		1	
(e)	l (Sum of all totals per fitting type)			167
	Average capacity to overflow = [(e)/(d)]			167
(f)	Highest capacity to overflow (litres)			167
	Proportionate capacity to overflow (litres) = [(f) x 0.7]			116.9

Table A2.3: Consumption calculator for multiple taps (kitchen/utility room sink)

		(a)	(b)	(c)
	Tap fitting type	Flow rate (litres/min)	Quantity (No.)	Total per fitting type =
1	Grohe Ambe Contempory 2 Har	9	1	9
2				
3				
4				
(d)	Total (Sum of all quantities)		1	
(e)	Total (Sum of all totals per fitting type)			9
	Average flow rate (litres/min) = [(e)/(d)]			9
(f)	Maximum flow rate (litres/min)			9
	Proportionate flow rate (litres/min) = [(f) x 0.7]			6.3

Table A2.6: Consumption calculator for multiple showers

		(a)	(b)	(c)
	Shower fitting type	Flow rate (litres/min)		Total per fitting type =
1	Grohe Grotherm 1000 shower mix	8	3	24
2	Grohe Grotherm 1000 concealed s	8	1	8
3				0
4				
(d)	Total (Sum of all quantities)		4	
(e)	Total (Sum of all totals per fitting type)			32
	Average flow rate (litres/min) = [(e)/(d)]			8
(f)	Maximum flow rate (litres/min)			8
	Proportionate flow rate (litres/min) = [(f) x 0.7]			5.6

Table A2.7: Consumption calculator for multiple WCs (a) (b) (c)

		(a)	(b)	(c)
	WC type	Effective flushing	Quantity (No.)	Total per fitting type =
1	Ideal Standrard Concept back	4.66	4	18.64
2				0
3				
4				
(d)	Total (Sum of all quantities)		4	
(e)	Total (Sum of all totals per fitting type)			18.64
	Average effective flushing volume (litres) = [(e)/(d)			4.66

Washing Machine

A Rated Miele Washer/Dryer WTD163 5.88 ltr per dry load

Dishwasher

A Rated Miele Dishwasher G5350 SCVi 0.43 ltr per place setting

Buildpass
12 Foster Way, Romsey, SO51 0AW.
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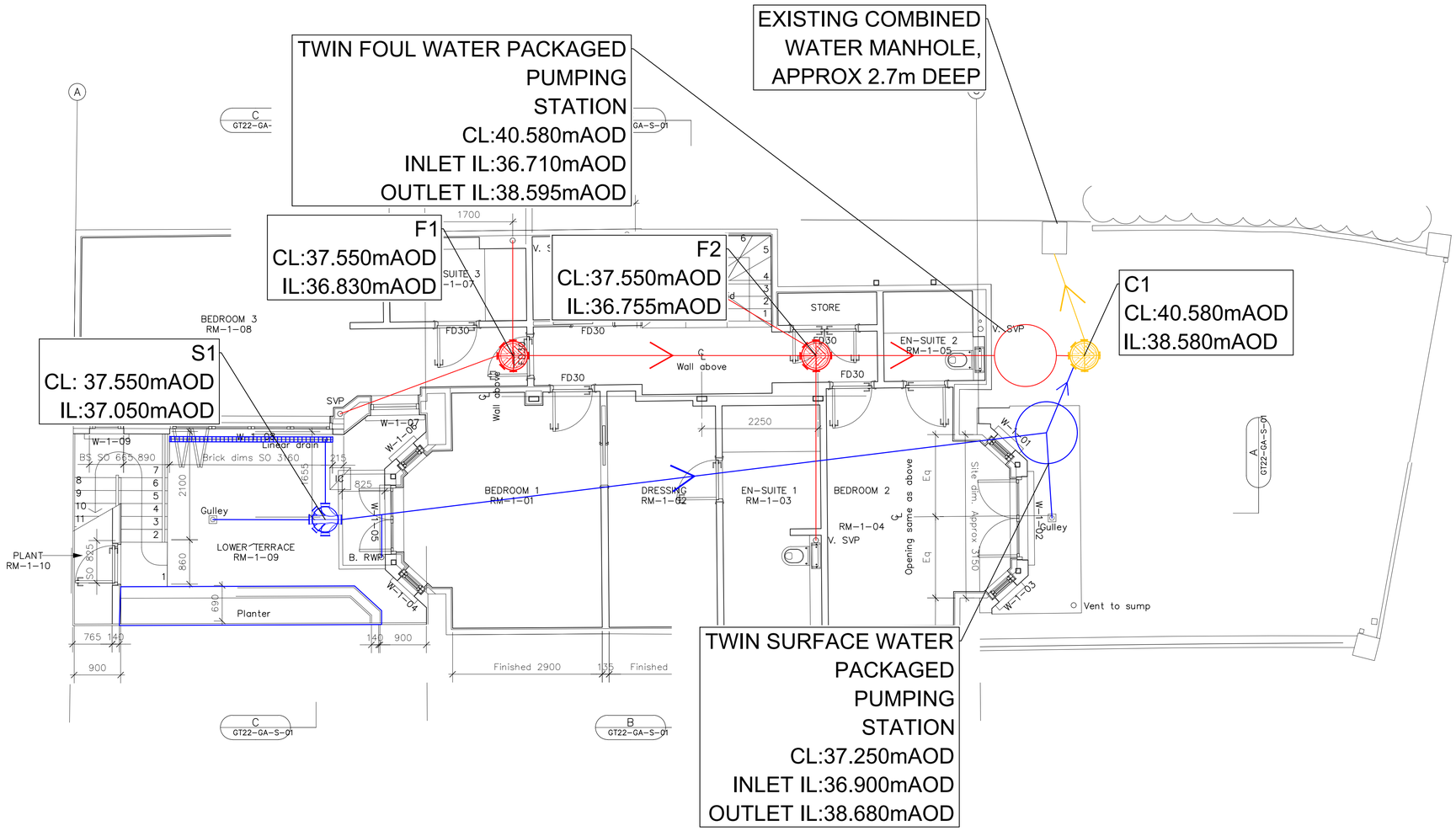
APPENDIX B – DRAWINGS

NOTES:

1. SURFACE WATER DRAINS ARE TO BE 150mm NOMINAL DIAMETER LAID AT A GRADIENT NOT FLATTER THAN 1/150, UNLESS STATED OTHERWISE. FOUL WATER DRAINS ARE TO BE 100mm NOMINAL DIAMETER AS SHOWN, LAID AT THE LEVELS SHOWN ON THE MANHOLE SCHEDULE, UNLESS STATED OTHERWISE.
2. FOUL DRAINS WITHOUT AT LEAST ONE W.C. CONNECTED ARE TO BE LAID NOT FLATTER THAN 1/40.
3. DRAINS ARE TO BE CONSTRUCTED USING UPVC PIPES TO BS4660, ALL WITH FLEXIBLE JOINTS, BEDDED AND BACKFILLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS AND BS8301. SEE NIMBUS GENERAL DETAILS OF DRAINAGE WORKS.
4. COVERS AND FRAMES FOR MANHOLES/INSPECTION CHAMBERS MUST COMPLY WITH BS EN 124, CLASS B125 EXCEPT FOR COVERS IN TRAFFICKED AREAS SUBJECT TO GREATER LOADS THAN 12.5 TONNES WHICH ARE TO COMPLY WITH CLASS D400.
5. A VENTILATING DRAIN SHOULD BE PROVIDED AT, OR NEAR THE HEAD OF EACH MAIN DRAIN RUN, ANY BRANCH LONGER THAN 6m SERVING A SINGLE APPLIANCE OR 12m SERVING A GROUP OF APPLIANCES.
6. ELSEWHERE, DISCHARGE STACKS MAY BE TERMINATED WITH AIR ADMITTANCE VALVES VENTILATED IN THE ROOF SPACE.
7. ALL RAINWATER PIPES AND SVP's SHOULD BE PROVIDED WITH RODDABLE ACCESS.
8. ALL PIPE SOFFITS TO BE LAID LEVEL UNLESS NOTED OTHERWISE.
9. LONG RADIUS BENDS TO BE USED AT THE BASE OF ALL SOIL & VENT PIPES AND SOIL STACKS.
10. ALL FINISHED FLOOR LEVELS ARE BASED UPON ARCHITECTS PROPOSED SITE PLAN, ALL LEVELS ARE TO BE CONFIRMED PRIOR TO CONSTRUCTION.
11. ALL RAINWATER PIPES TO BE 350mm BELOW FFL TO INVERT UNLESS NOTED OTHERWISE.
12. SVPs ARE TO BE INSTALLED AS STATED OR AT A DEPTH OF 650mm(Min).
13.ALL ENTRANCES TO NEW PROPERTIES TO HAVE 100mm(w) SLOT DRAIN INSTALLED..
14. ALL DRAINAGE IS TO BE TESTED AND THOROUGHLY CLEANED ON COMPLETION. EXISTING DRAINAGE WHERE RE-USED, IN THE SYSTEM, IS TO BE JETTED THROUGH.
16. PROPOSED TIE-IN DEPTH FOR COMBINED WATER SEWER TAKEN AS 1.0m FROM GL, AND IS TO BE SURVEYED PRIOR TO CONSTRUCTION.
17. REFER TO THAMES WATER ASSET PLANS FOR EXISTING SEWER CONFIGURATIONS.
18. ALL COVER LEVELS APPROXIMATE AND TO BE CONFIRMED ON SITE
19. ALL INTERNAL MANHOLES TO BE DOUBLE SEALED



KEY

- SURFACE WATER UPVC PIPES
- 100mm (w) SLOT DRAINS
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- FOUL WATER UPVC PIPES
- PROPOSED FOUL SEWER INSPECTION CHAMBER
- WASHDOWN GULLY

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PROJECT:
190 Goldhurst Terrace

TITLE:
DRAINAGE STRATEGY LAYOUT PLAN

CLIENT:
HAI & SHUQI LIN

Nimbus ENGINEERING CONSULTANTS
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CHECKED BY:	DATE:	APPROVED BY:	DATE:
S.L	04-08-23	S.L	04-08-23
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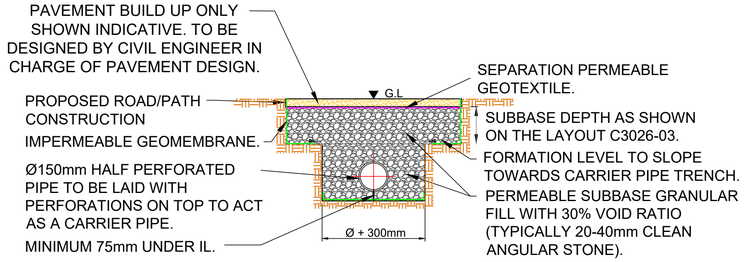
DATE: 04-08-23	SIZE: A1		



SUBBASE ATTENUATION TANK - TYPICAL SECTION

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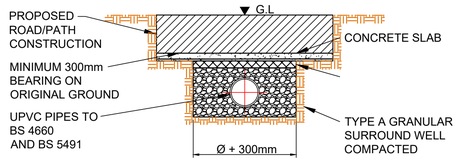
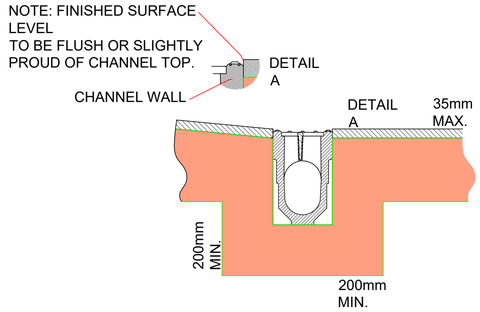


PROTECTION FOR PIPES LAID AT

SHALLOW DEPTHS

(UPVC PIPES)

NOT TO SCALE



ACO ROAD DRAIN DETAIL

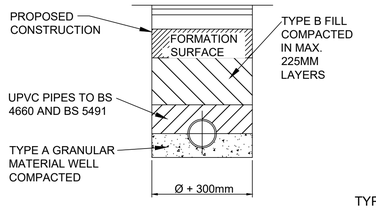
(FOR USE IN PRIVATE LAND)

NOT TO SCALE

TRENCH BEDDING AND FILL MATERIALS

GRANULAR BEDDING TYPE A

TYPE	USE FOR NOMINAL PIPE (DIA.)	% PASSING BY MASS BS 410 SIEVE SIZES (mm)						
		63	37.5	20	14	10	5	2.36
A40	>1350	100	85-100	0-25	–	0-5	–	–
A20	600-1350	–	100	85-100	–	0-25	0-5	–
A14	300-525	–	–	100	85-100	0-50	0-10	–
A10	<300	–	–	–	100	85-100	0-25	0-5



TYPICAL PIPE BEDDING DETAIL

(UPVC PIPES)

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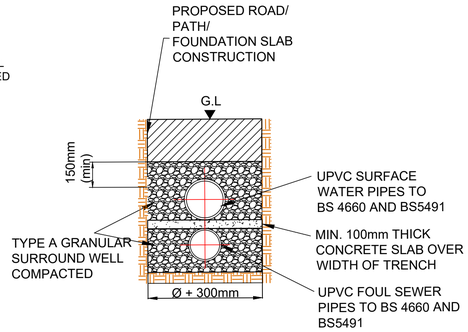
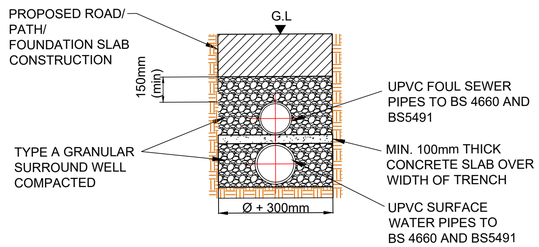


PROTECTION FOR SURFACE WATER SEWER

CROSSINGS ABOVE FOUL SEWERS

(UPVC PIPES)

NOT TO SCALE

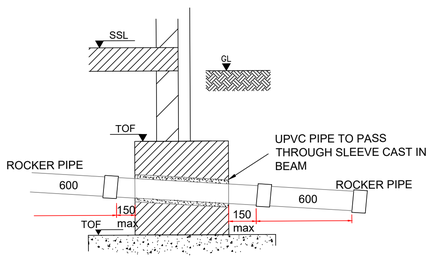


PROTECTION FOR FOUL SEWER CROSSINGS

ABOVE SURFACE WATER SEWERS

(UPVC PIPES)

NOT TO SCALE

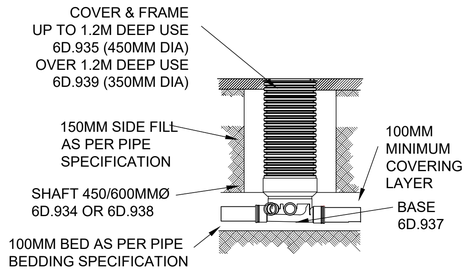


DETAIL OF DRAIN PASSING

THROUGH GROUND BEAM OR

OTHER STRUCTURE

NOT TO SCALE



TYPICAL INSPECTION CHAMBER DETAIL

(WITHIN PRIVATE LAND)

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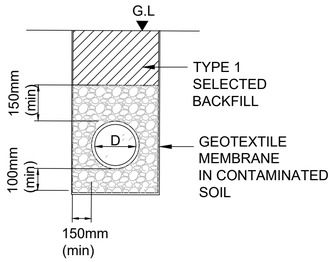

FULL GRANULAR SURROUND

CLASS S

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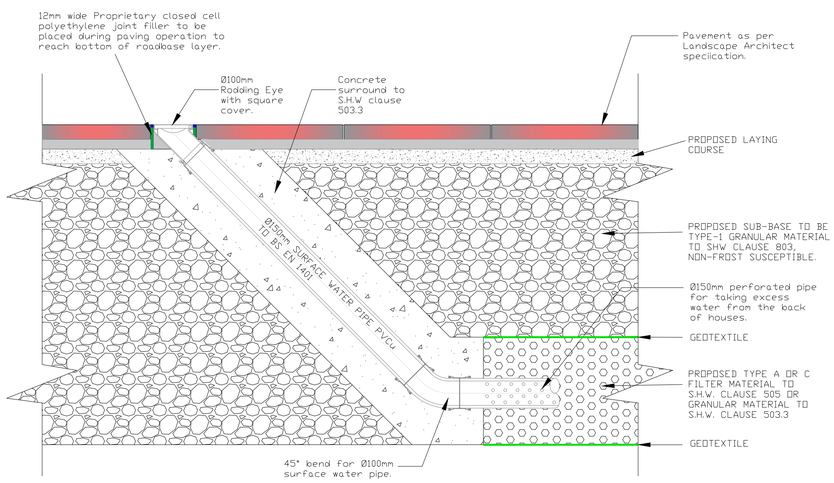

RODDING EYE STANDARD DETAIL

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PROJECT:

190 Goldhurst Terrace

TITLE:

DRAINAGE DETAILS

CLIENT:

HAI & SHUQI LIN

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