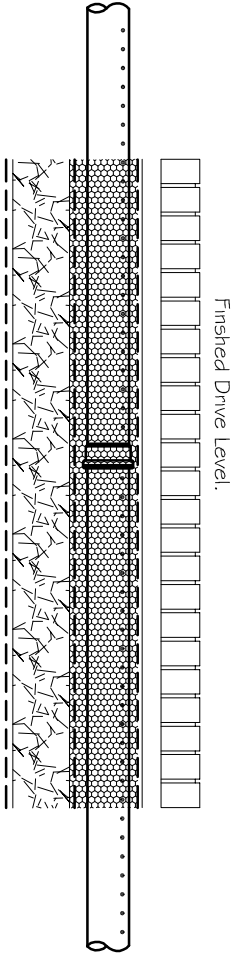


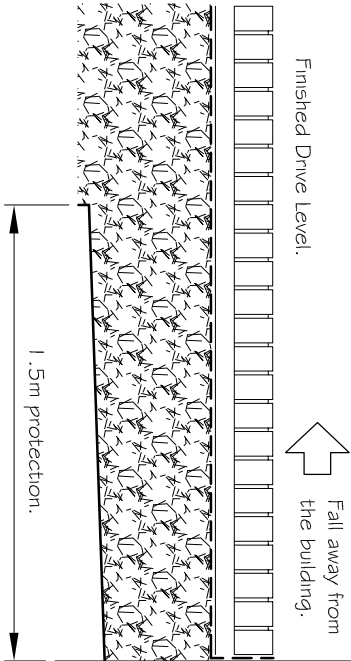
Section through the proposed permeable block paving

The geotextiles must be permeable.

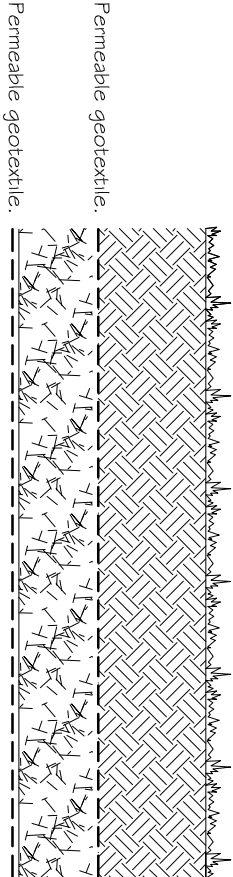


Section through the proposed permeable block paving

Indicating overflow pipe



Section through the proposed permeable block paving adjacent to building.



Section through the proposed lawn area

The geotextiles must be permeable.

- 1 30mm thick surfacing consisting of 80mm thick permeable block pavers over 50mm of 6mm to 2mm clean gnt laying course
- Permeable subbase to be 180mm thick course graded aggregate 4-40mm nominal size material unless otherwise agreed.
- Provide a capping layer say 150mm thick (dependent on CBR results). Material to be rolled and graded GF5 open graded crushed rock course graded as a minimum in accordance with the Specification for Highway Works.

Owing to the system being a partial infiltration system provide a 100mm perforated pipe to assist in the drainage of the permeable block paving. Perforated pipe to discharge into the main surface water system. Perforation positioned upper.

Wall of building.

Provide impermeable membrane local to the buildings below the permeable subbase to prevent water infiltration close to the foundations. It is suggested that a 1.5m protection is afforded but is dependent upon the nature of the subsoil.

Drainage Notes.

- The base specification for drainage works shall be the Water Authorities Association 'Sewers for Adoption (Latest Edition)'.
 - For details of ground conditions, refer to the Ground Investigation report prepared by * dated *
- This drawing is to be read in conjunction with all other relevant Engineer's and Architect's details.
- All external building and car park drainage to be constructed in accordance with BS6301 - Code of Practice and Part H of the Building Regulations Latest Edition.
- The following pipe strengths shall be adopted unless noted otherwise:-
 - Pipes up to and including 150mm dia. to be 28kN/m strength to BS EN295 - 1.
 - Pipes between 225 - 300mm dia. to be Class 160 to BS EN295 - 1.
 - Pipes above 300mm dia. to be Class M Concrete.
 - Plastic pipes, bends and junctions to be FVC - U to BS 4660 or BS 5481 with flexible joints. Kitemarked Plastic Inspection Chambers to meet the requirements of BS 7158
- All Pipe Runs to be laid with flexible joints.
- All Pipes entering and exiting manholes are to be connected with pipe soffits level unless noted otherwise.
- Bedding and Surround to be as follows:-

Location.	Cover to Sffit.	Bedding.
Roads.	> 1.2m	Class S Granular Bed and Surround. Class A1
Non - adoptable sewers below car parking.	>0.9m	Class S Granular Bed and Surround. Concrete surround. Class A1
Hard and Soft Landscaping.	>0.6m	Class S Granular Bed and Surround. Class A1
	<0.6m	Concrete surround. Class A1
- The following concrete mixes are to be used (all in accordance with BS5328) :-

Location.	Mix Reference. (Where applicable).	Details
Concrete Surround to pipes.	****	*
Concrete Base and Surround to Manholes.	****	*
Cover Slab.	****	*

The above concrete mixes have been selected for BRE 363 Class *** Sulphates.
- All precast concrete products (i.e. Pipes, Manholes, Kings etc.) shall be of suitable concrete mix to cater for Class ** Sulphates.
 - Pre-formed channels are to be used in manholes where applicable.
- Granolithic concrete benching to be steel trowelled to a dense, smooth face, neatly shaped and finished to all branch connections and laid in accordance with the specification.

- All dimensions are in millimetres unless noted otherwise.
- All connections to be turned in direction of flow using pipe bends.
- Manhole covers and frames to be ductile iron heavy duty Grade D400 double triangular to BS EN124 and are to be Grade A standard in vehicular trafficked areas.
- Manhole covers and frames to be ductile iron medium duty Grade B125 circular or rectangular to BS EN124 positions outside vehicular trafficked areas.
- Manhole covers and frames to be ductile iron medium duty Grade A15 covers in soft landscaping.
- First flexible joint in pipes adjacent to a manhole shall be a maximum of 600mm from inside face of manhole. The length of rocker pipe is as follows:-

Pipe Diameter.	Length of Rocker Pipe.
150mm - 600mm	600mm
675mm - 750mm	1000mm
825mm & over	1250mm
- First flexible joint in pipes adjacent to a manhole shall be a maximum of 600mm from inside face of manhole. The length of rocker pipe is as follows:-

- Manholes with outgoing pipes greater than 600mm diameter shall be fitted with guard bars, safety chains or other safety devices.
- The Principle Contractor shall be responsible for checking the existing line and invert levels of any connection points for both the foul and surface water systems, prior to undertaking installation of any new drainage works. Any deviation to the levels and positions indicated on the drawing should be brought to the immediate attention of the Project Engineer.
- All inverts specified are outgoing (except backdrop).
- Road gully connections to be 150mm dia. laid at a minimum gradient of 1:150 unless noted otherwise.
- RWP connections to be 100mm dia. laid at a minimum gradient of 1:80 unless noted otherwise.
- All foul connections to be 100mm dia. laid at a minimum gradient of 1:40 unless noted otherwise.
- All connections to be made by purpose made junctions as far as practicable.
- Internal inspection chambers and access fittings to be provided with lockable double sealed manhole cover and frames Grade A15, B125 or D400 to BS EN 124 to suit loading conditions.
- All petrol interceptors are to be installed strictly in accordance with the manufacturer's recommendations. Where located within trafficked areas, a 300mm thick concrete cover slab mix RC 35 reinforced with 2 layers of A393 mesh shall be constructed over the petrol interceptor.
- All polypropylene inspection chambers shall be in accordance with BS 7158.
- All drains to be tested prior to backfilling, after backfilling and upon completion of hard landscaping. In addition, all drains to be inspected by CCTV methods prior to hard landscaping.
- All drainage works within the zone of influence of trees are to be constructed in accordance with the NHBG standards and tree preservation officers's requirements.
- All contractor designed rainwater drainage systems are to be checked by the M&E consultant (if appointed) prior to installation.

- Do not scale this drawing. If in doubt ask.
- This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialist drawings and specifications.
- All dimensions are in millimetres unless noted otherwise. All levels are in metres unless noted otherwise.
- Any discrepancies noted on site are to be reported to the Engineer immediately.

Client		Cambridge Holdings Ltd	
Project		New Detached House Fredora Avenue, Hayes UB4 8RH	
Drawing Title		Proposed drainage details	
Drawing Title		Proposed drainage details	
Lathkill House RTC Business Centre London Road, Derby DE24 8UP t: 01332 258836 f: 01332 258838		Lathkill House RTC Business Centre London Road, Derby DE24 8UP t: 01332 258836 f: 01332 258838	
rev		date	amendment
by			
Confidential - This drawing is released to parties on the strict condition that none of the data herein shall be divulged, reproduced or made available to any third party, unless with our prior written consent.			
Drawn by S Walker		Checked by	Scale 1:20
Date 16.12.14		Date	Signs Approval
Proj No. P-DER-966-02		Rev.	