

DRAINAGE NOTES

- All private drainage must comply with the current edition of DTLR Building Regulations approved document H.
- Where drainage is to be adopted it should meet with the requirements of Sewers for Adoption 7th edition.
- Drainage design to be to BS EN 752-3 1996
- Any intended changes to the drainage design must be discussed with the Engineer. If changes are made the Engineer must be supplied with as-constructed information to enable drawings to be suitably updated for the Health & safety file.
- Before works commence the contractor should satisfy themselves that the details of the drainage system to be connected into are correct i.e. cover, invert levels, line, condition and type of sewer.
- private access chambers are to be appropriate to the depths and loadings as follows :-

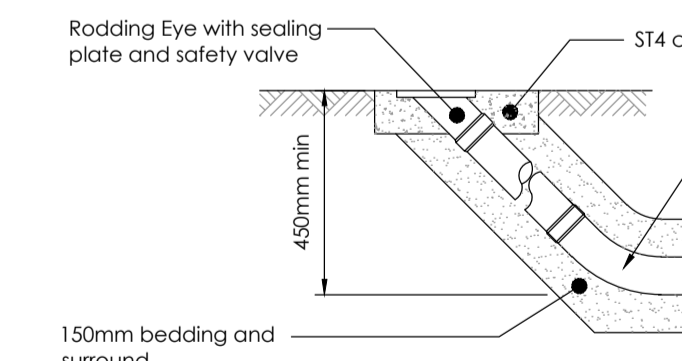
Depth to invert	Access size
up to 600mm	Mini access chamber 300mmØ
up to 1.200mm	Inspection chamber 475mm Ø (PPIC)
1200 to 1500mm	600mmx450mm brick/P.C.C. units
1500 to 3000mm	P.C.C. ring manhole 1050mmØ
	P.C.C. ring manhole 1200mm Ø (ring diameter increased if sewer greater than 475mmØ)

- All manholes shall have a flexible joint within 150mm of the face of the structure and a "rocker pipe" which should not exceed 600mm in length.
- Pipe materials shall be -
Vitrified clayware to BS EN 295
Cast iron to BS EN 545:2010
UPVC - BS EN 1401 PP - BS EN 1852 Structure wall- BS EN 13476
- For private sewers having 900mm or less cover beneath carriageways & hardstanding or 600mm in landscape areas then they shall have concrete surround or slab protection. Slab protection to be 100mm thick C20 concrete slab with mesh reinforcement and a bearing of 150mm each side of the trench. Concrete surround to be 150mm C20 with flexible joints.

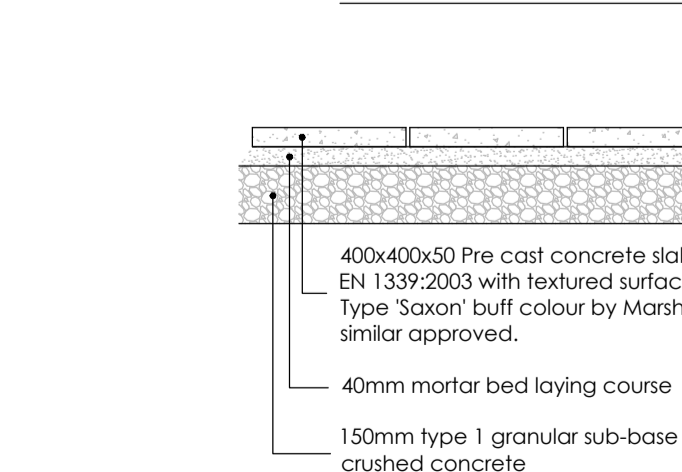
- Trenches within 1.2m of load bearing walls should be filled with concrete at least to the underside of the foundation. Where the distance is more than 1.2m from the foundations the concrete should be taken at least up to a 45degree line from the bottom of the foundations. Alternatively, the foundations could be taken to a deeper level to avoid undermining by the drainage trench (check with the Engineer where this is required).
- Pipe bed and surround to be granular Type S unless otherwise noted.
- Drains passing through walls or foundations should have either an arched or lintelled opening to give 50mm clearance around the pipe. The opening shall be masked both sides with a rigid non perishable material, or alternatively a short length of pipe may be built in solid if it is connected within 150mm to rocker pipes (max 600mm long) with flexible joints.
- Drainage under buildings should be bedded and surrounded by at least 100mm of granular material.
- Unless otherwise stated on the drawings or in the schedules then all private drainage shall be 100mmØ.
- All road gully connections to be 150mmØ and surrounded with 150mm C20 concrete surround.
- Where schemes require soakaways they shall not be positioned closer than 5m from the nearest dwelling or structure. Where solution features can occur in the underlying strata such as chalk then this distance will need to be increased to 10m.
- New connections to existing public sewers should be carried in accordance with appropriate Section 104 (Water Industry Act) 'connection consent' and also under the supervision of the Water Authority.
- Covers shall be to B.S. EN 124:1994

- Class A15 - areas where only pedestrians have access.
Class B125 - for use in car parks and pedestrian areas where occasional vehicular access is likely.
Class C250 - areas where not extending more than 500mm from kerb face into the carriageway areas where cars and lorries have access including carriageways, hard shoulders.
Class D400 -

- Cover and frames to be 150mm deep except residential cul-de-sacs
- It is recommended that drainage works should be constructed from the outfall particularly where the outfall depth is relatively shallow. If it is not possible to commence works from the outfall the contractor should satisfy themselves that the invert, line, position and type of existing outfall are correct.
 - Drainage works should be protected from possible damage by construction traffic loadings during the construction period. Protection may be provided by barriers. Materials should not be stored over drainage works.
 - Buildings up to 3 storeys shall have a rest bend at the base of the soil stack. 450mm min below the invert of the lowest incoming drain.
 - Buildings over 3 storeys must be a minimum of 750mm below the lowest incoming drain.
 - Buildings over 5 storeys then the ground floor drainage connections should have their own connections to the external drain.
 - Where piling works are undertaken the positions of existing sewers must be accurately located before piling takes place.



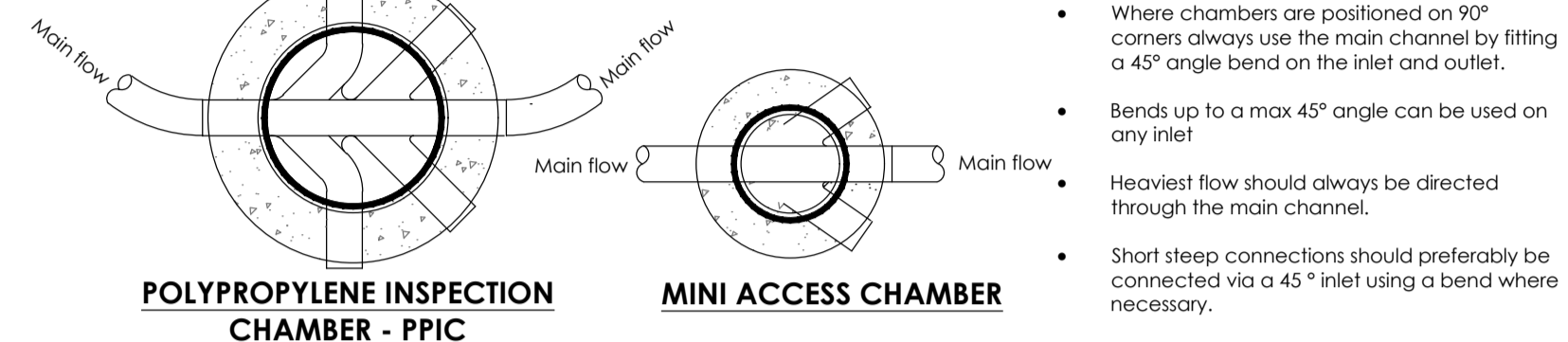
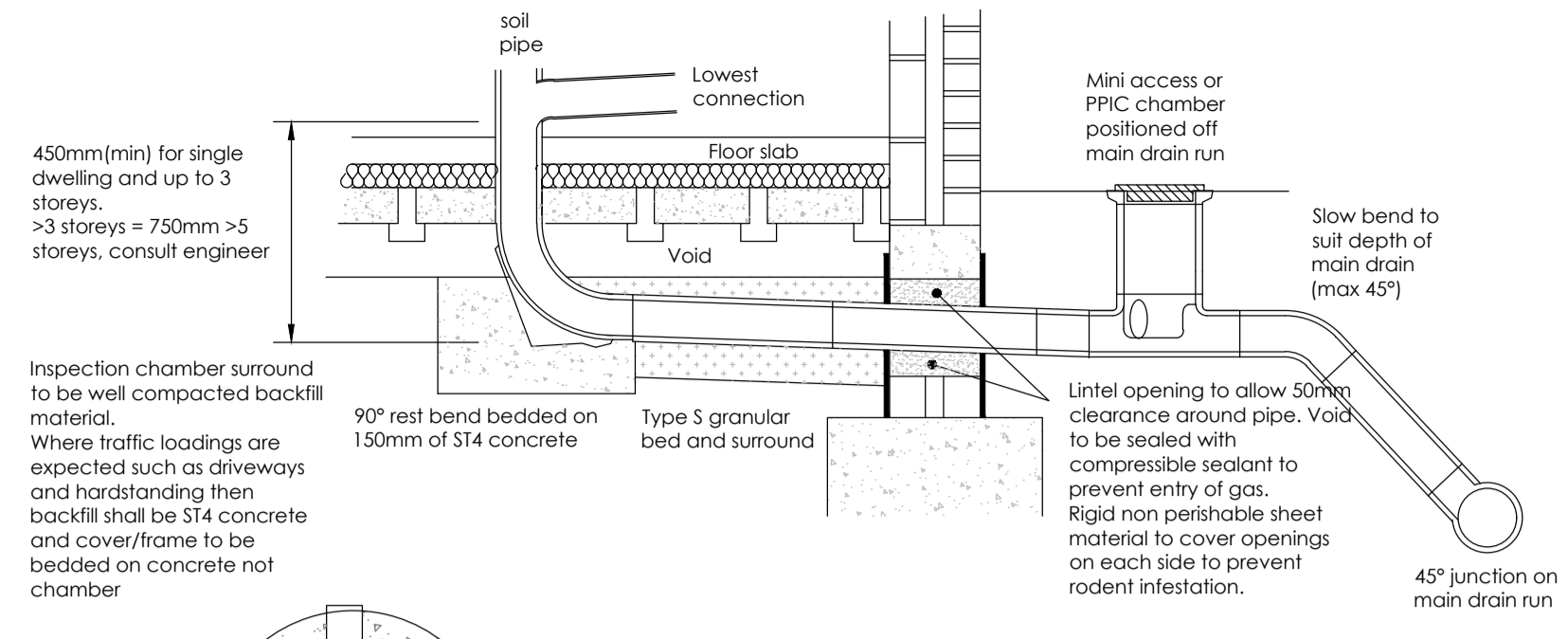
RODDING EYE DETAIL



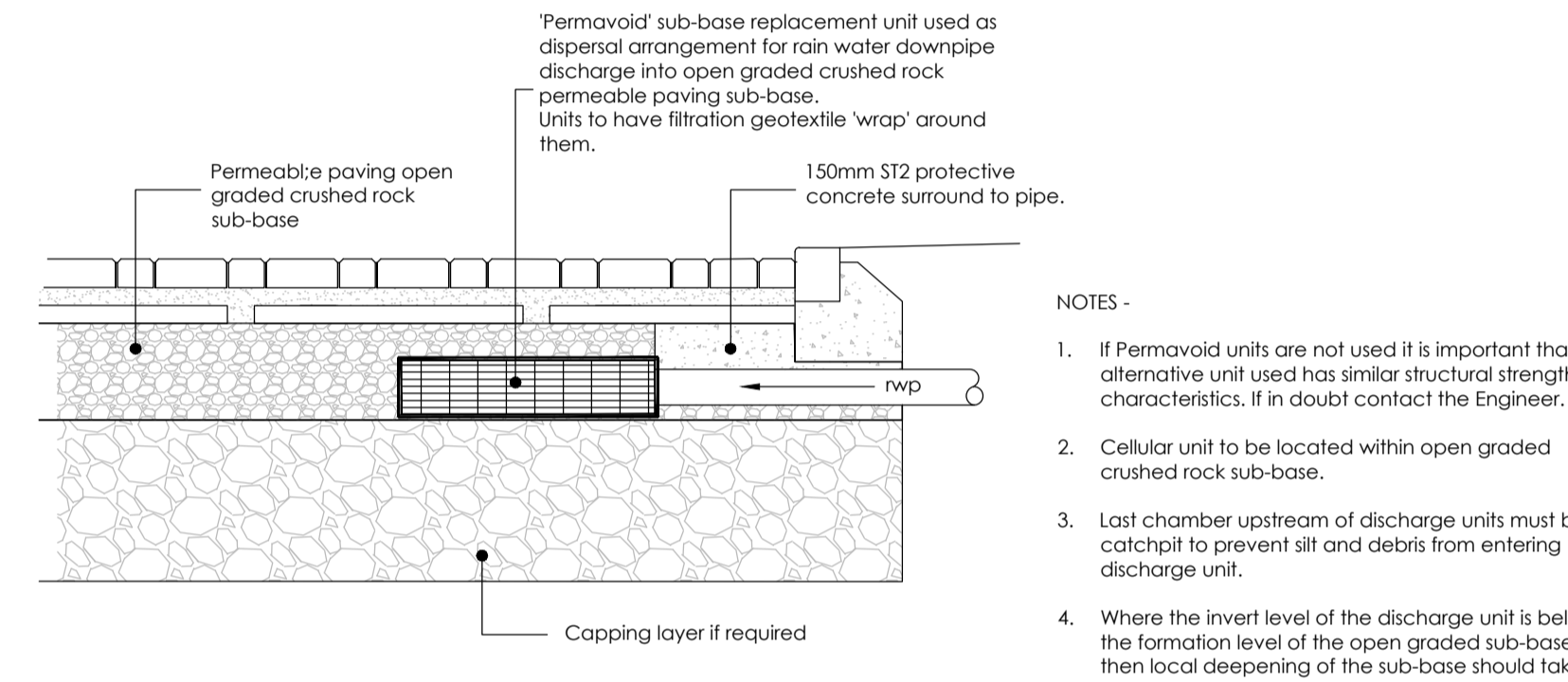
SLABBED PAVING DETAIL



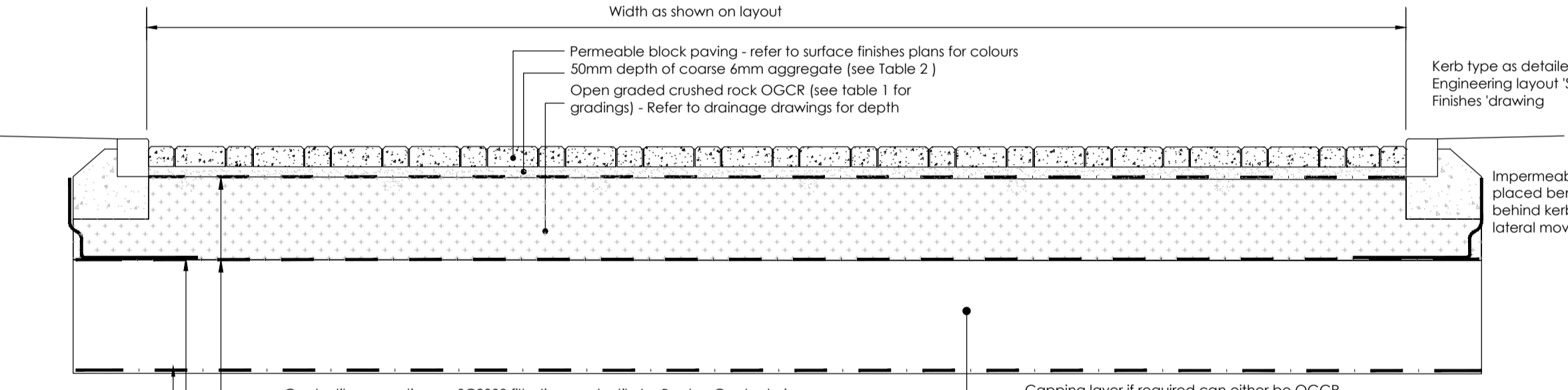
GRASS REINFORCEMENT SYSTEM



Chamber Type	Internal Diameter	Max No Inlets	Max Depth
Polypropylene Mini Access Chamber (mac)	300	3	600
Polypropylene Inspection Chamber (PPIC)	475	5	1250



PERMEABLE PAVING RAINWATER DOWNPIPE DISCHARGE DISPERSAL



NON-ADOPTABLE PERMEABLE PAVEMENT ACCESS ROAD/PARKING AREA TYPICAL SECTION

TABLE 1

Sieve size mm	Percentage by mass passing % 4/20
80	-
63	-
40	100
31.5	98 - 100
20	90 - 99
10	25 - 70.0
4.2.8	- 15
	0 - 5

TABLE 2

single sized aggregate SIEVE SIZE (mm)	Percentage by mass passing %
14mm	100
10mm	98-100
6.3mm	80-99
2mm	0-25
1mm	0-5
0.075mm	0-2*

TABLE 3

Subgrade CBR	Adjustment to thickness of open graded crushed rock course (mm).
>5%	0
5%	250
4%	275
3%	350
2%	450
<1.5%	400 + subgrade improvement required consult engineer

Grading for sub-base material for permeable paving pavements (BS EN 12620:2002 Gc 4/20 coarse aggregate)

Grading for laying course material for permeable paving (BS EN 12620:2002 Gc 80/20 2/6.3 coarse aggregate)

* (BS EN 12620:2002 fines category 12)

Soil infill material to be general Loam/sandy loam multi purpose top soil. Seeded with a 'general landscape grade mix' eg perennial Ryegrass 40%, CORIAL A=Slender Creeping Red Fescue 30%, RAISA Chewing Fescue 25%, HIGHLAND Browntop Bent 5%

Modular grass reinforcement system 500x500x50mm eg Bodpov85 or similar. tel 01621 874200

Colour-green, recycled material

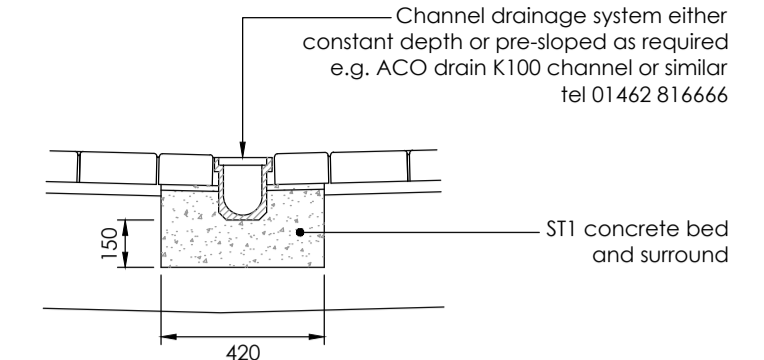
Modular units filled with sand/soil/rootzone mix

50mm laying course of sand/soil/rootzone mix

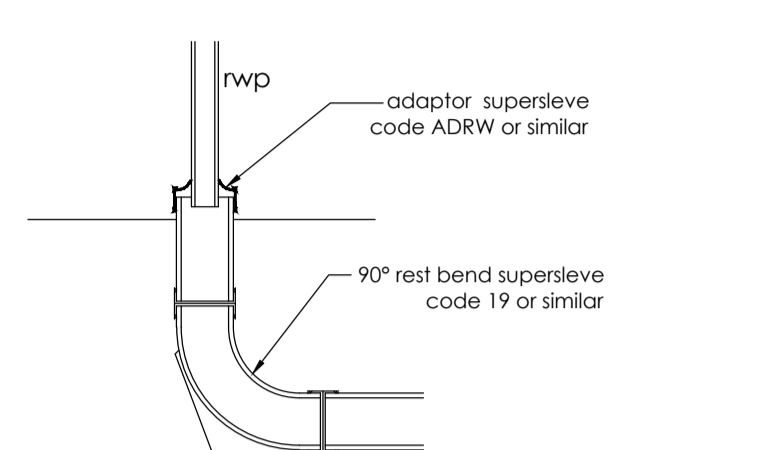
Separation geo-textile 'Terram 1000' or similar

250mm of crushed concrete sub-base to Type 1 grading (CBR>5%)

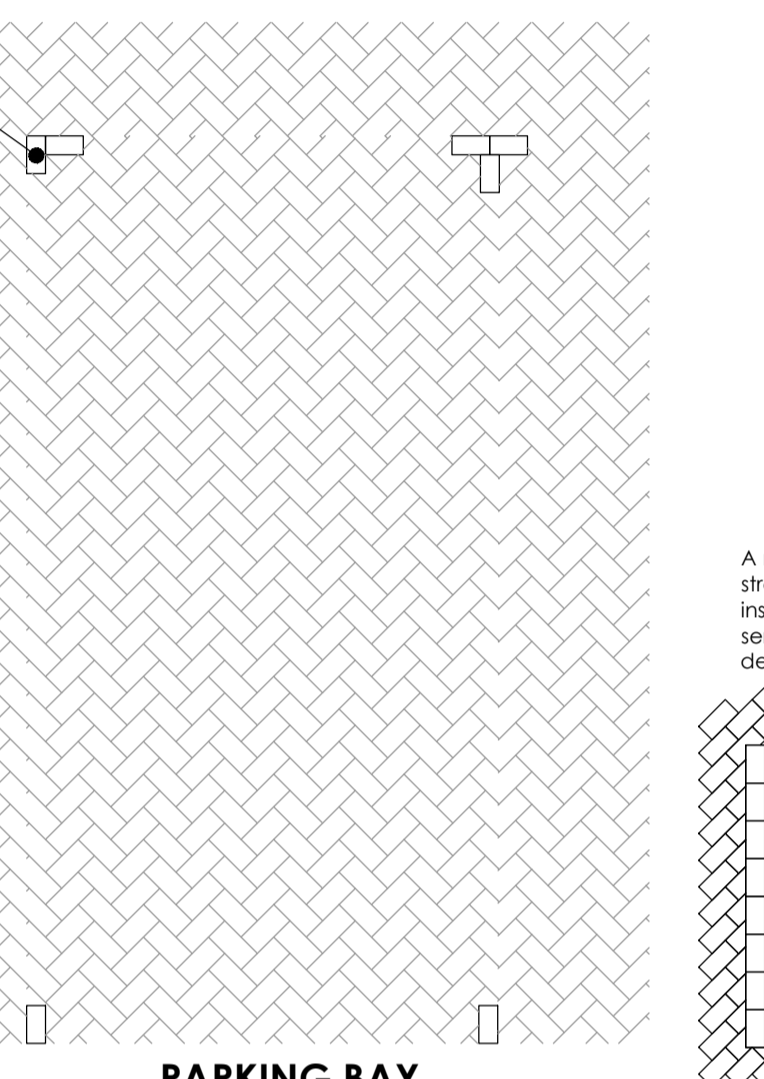
Formation Geogrid eg Triax Ax160 or similar



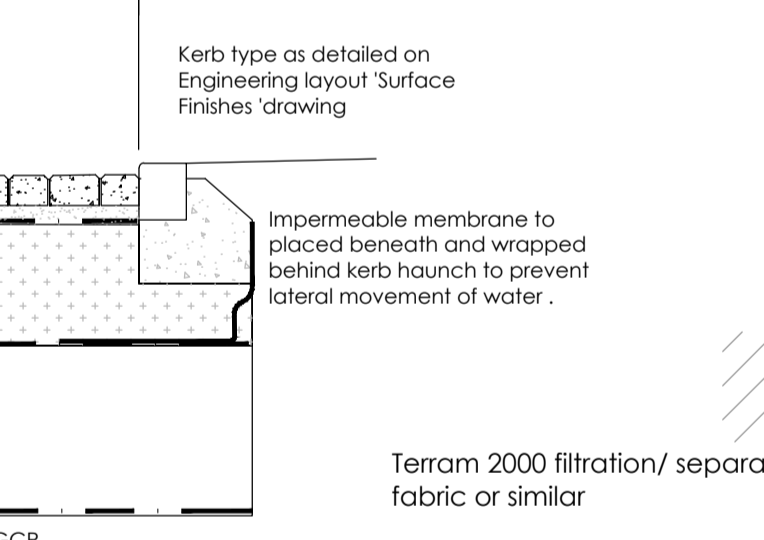
CHANNEL DRAIN SECTION



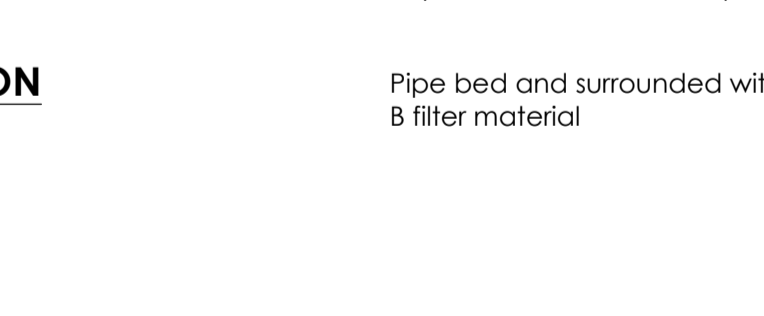
RAIN WATER DOWNPIPE CONNECTION



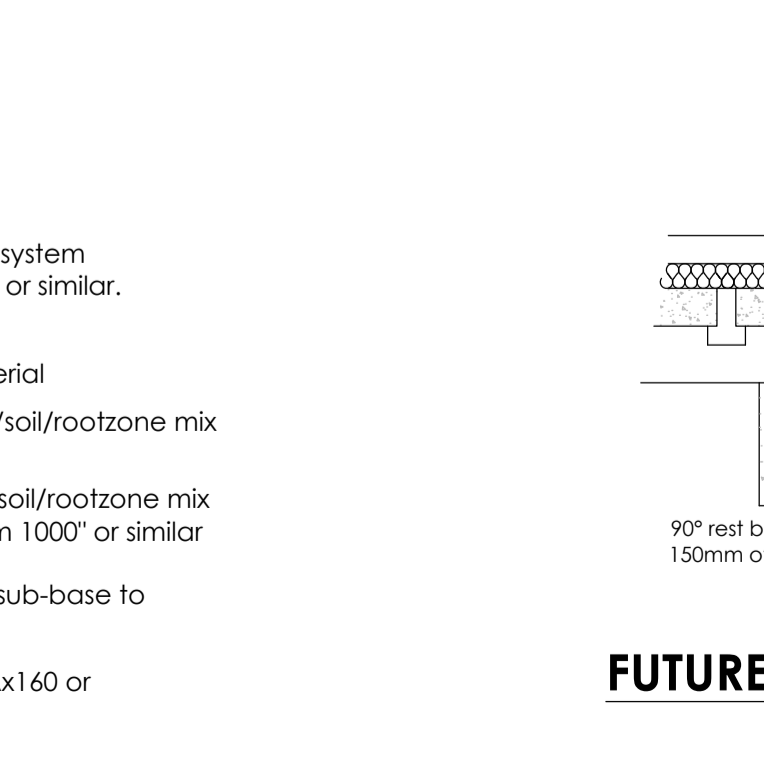
PARKING BAY DELINEATION DETAIL



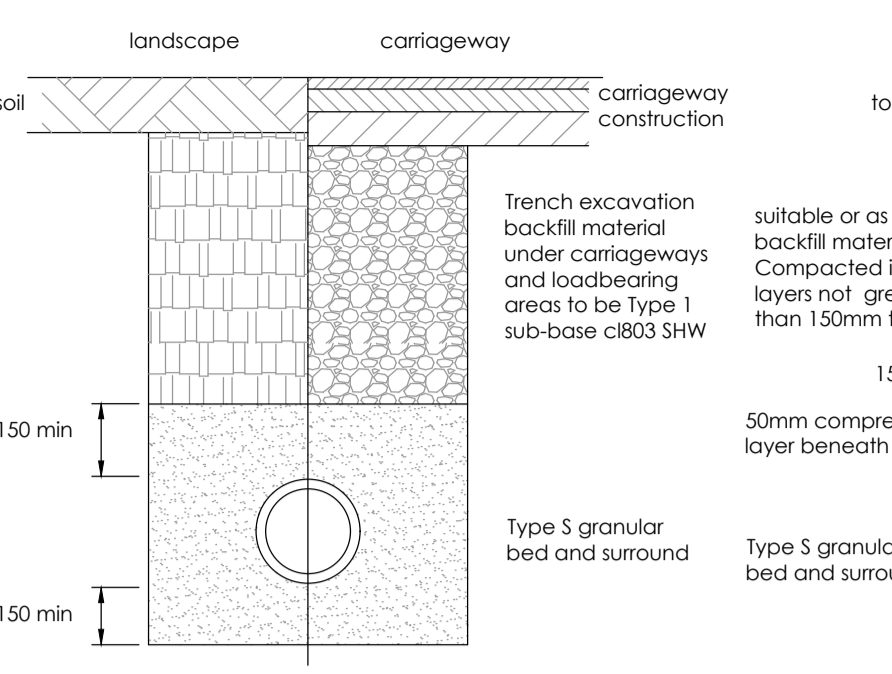
SERVICE COVER DETAIL



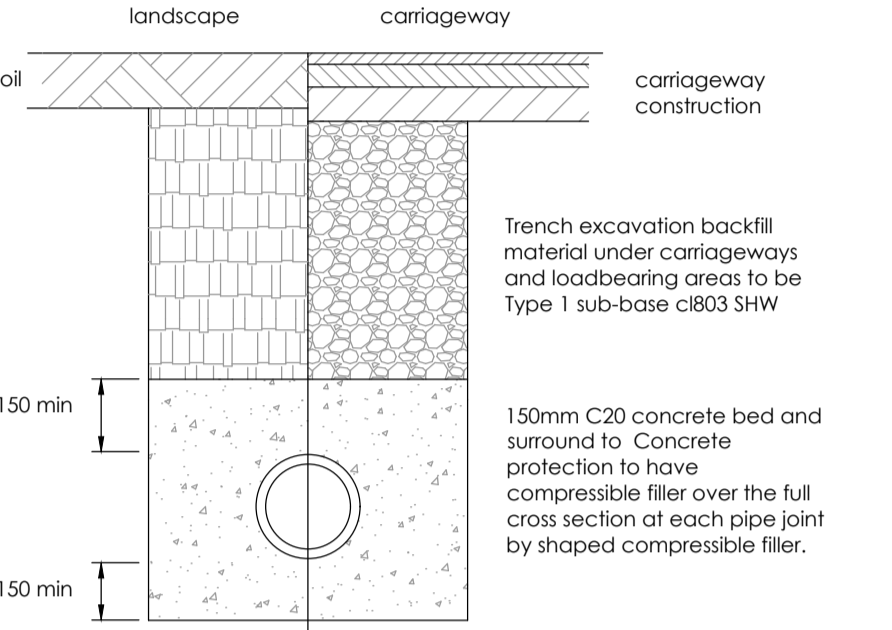
FILTER DRAIN



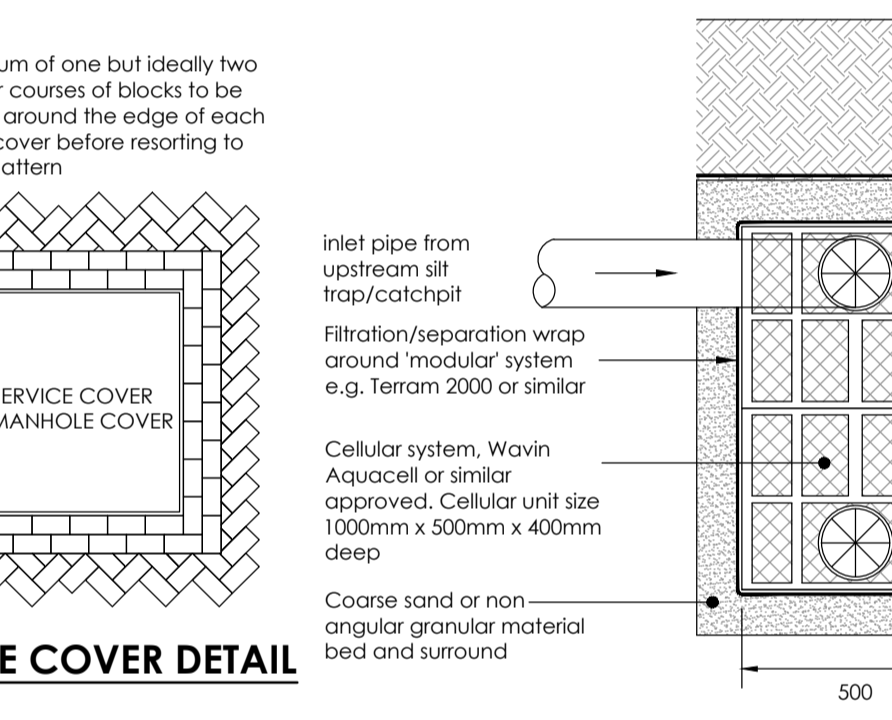
FUTURE SHOWER PROVISION DETAIL



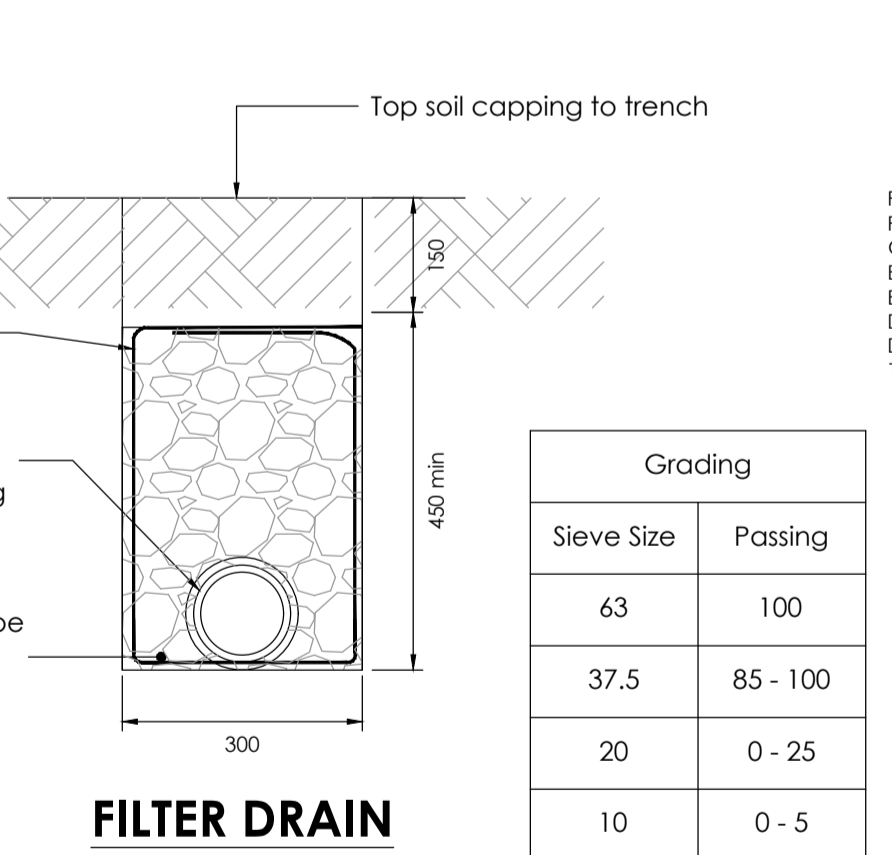
TYPE S GRANULAR SURROUND BED



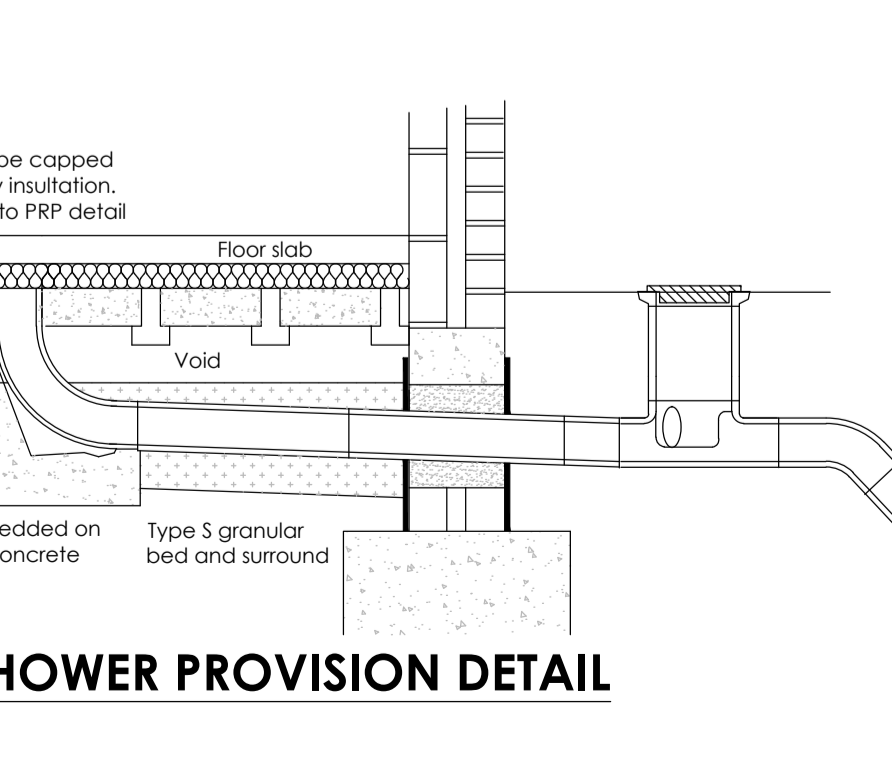
TYPE Z CONCRETE BED AND SURROUND



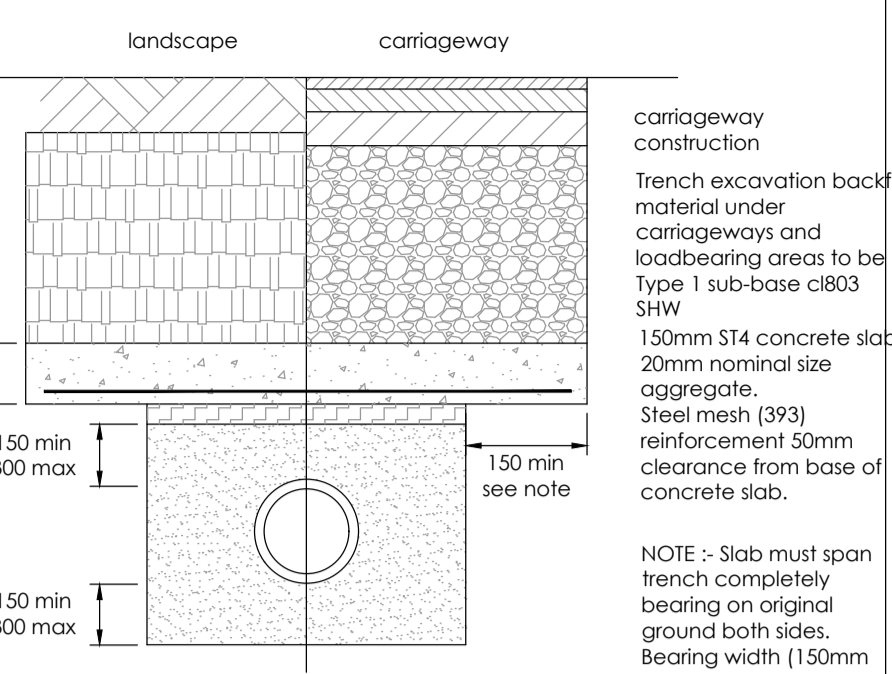
CELLULAR SOAKAWAY (SECTION DETAIL)



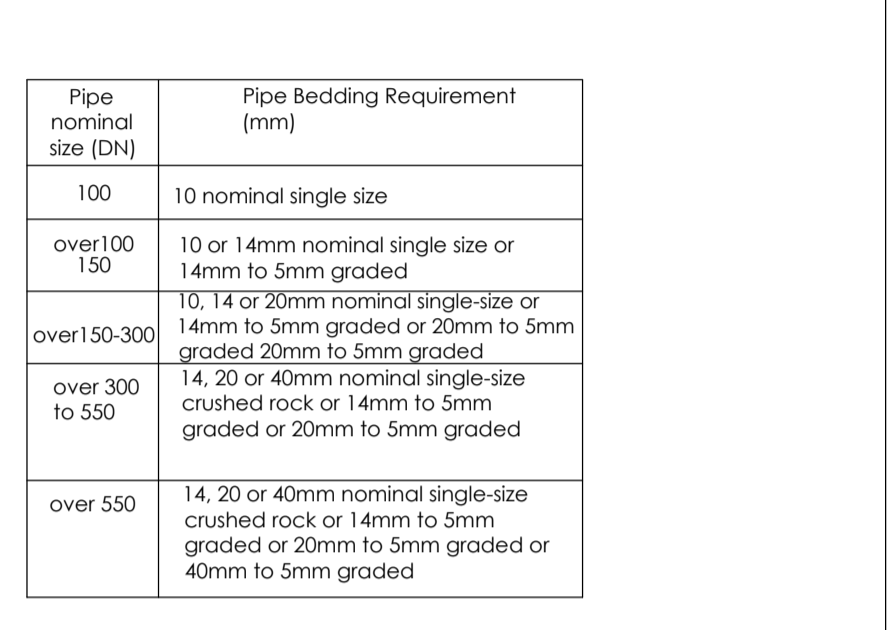
TYPICAL CATCHPIT MANHOLE DETAIL



GRASS REINFORCEMENT SYSTEM



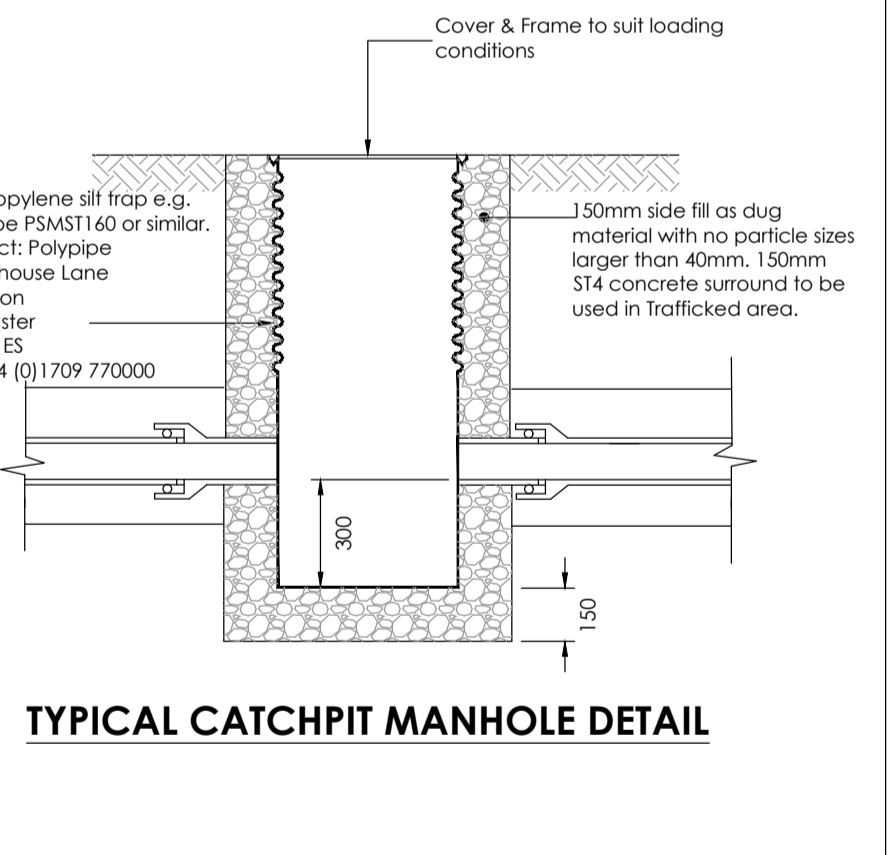
CONCRETE SLAB PROTECTION



GRANULAR BEDDING AND SIDEFILL MATERIAL GRADINGS

Pipe nominal size (DN)	Pipe Bedding Requirement (mm)
100	10 nominal single size
over 100 150	10 or 14mm nominal single size or 14mm to 5mm graded
over 150-300	10, 14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded 20mm to 5mm graded
over 300 to 550	14, 20 or 40mm nominal single size crushed rock or 14mm to 5mm graded or 20mm to 5mm graded
over 550	14, 20 or 40mm nominal single size crushed rock or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

GRANULAR BEDDING AND SIDEFILL MATERIAL GRADINGS



TYPICAL CATCHPIT MANHOLE DETAIL



GRASS REINFORCEMENT SYSTEM

NOTES

- All dimensions and levels are in metres unless otherwise noted
- This drawing is to be read in conjunction with the relevant Architect's Engineer's drawings, specifications and CDW documentation
- This drawings has been produced electronically and may have been photo reduced or enlarged when copied. Work to figured dimensions only (DO NOT SCALE). All dimensions to be checked on site. Any errors or omissions to be reported to the engineer immediately.
- This drawing contains coloured lines / information that may not be clear if reproduced in black and white.

Trench excavation backfill material under carriageways and loadbearing areas to be Type 1 sub-base c1803 SHW

150mm ST4 concrete slab

20mm nominal size aggregate.

Steel mesh (393) reinforcement 50mm clearance from base of concrete slab.

NOTE - Slab must span trench completely bearing on original ground both sides. Bearing width (150mm min) will vary with pipe size, consult Engineer

Pipe nominal size (DN)	Pipe Bedding Requirement (mm)
100	10 nominal single size
over 100 150	10 or 14mm nominal single size or 14mm to 5mm graded
over 150-300	10, 14 or 20mm nominal single size or 14mm to 5mm graded or 20mm to 5mm graded 20mm to 5mm graded
over 300 to 550	14, 20 or 40mm nominal single size crushed rock or 14mm to 5mm graded or 20mm to 5mm graded
over 550	14, 20 or 40mm nominal single size crushed rock or 14mm to 5mm graded or 20mm to 5mm graded or 40mm to 5mm graded

GRANULAR BEDDING AND SIDEFILL MATERIAL GRADINGS



CELLULAR SOAKAWAY (SECTION DETAIL)

Rev	Drawn by	Chkd by	Comments	Date
C02	ATD	TST	Gross reinforcement system added	05/04/17
C01	ATD	TST	Issued for construction.	14/07/16
P01	ATD	TST	Initial issue	05/07/16

DRAWING TITLE
Private Construction Details

PROJECT
Phase 2
Bicester Eco Village
Bicester
Oxon

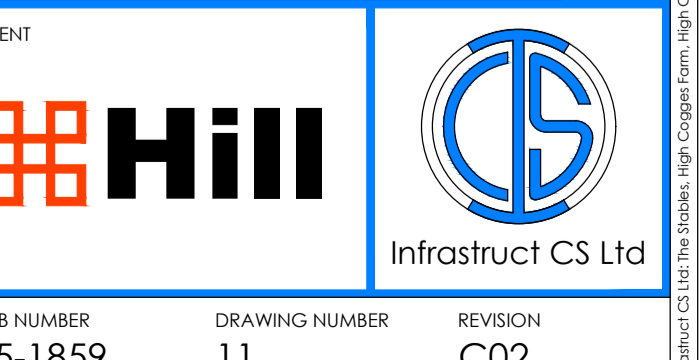
DESIGNED BY	DRAFTED BY	APPROVED BY
TST	ATD	DJ

DATE
05/07/16

STATUS
CONSTRUCTION

SCALE
1:20 @ A1

0m 0.5m 1.0m
Scale Bar @ 1:20



JOB NUMBER	DRAWING NUMBER	REVISION
15-1859	11	C02