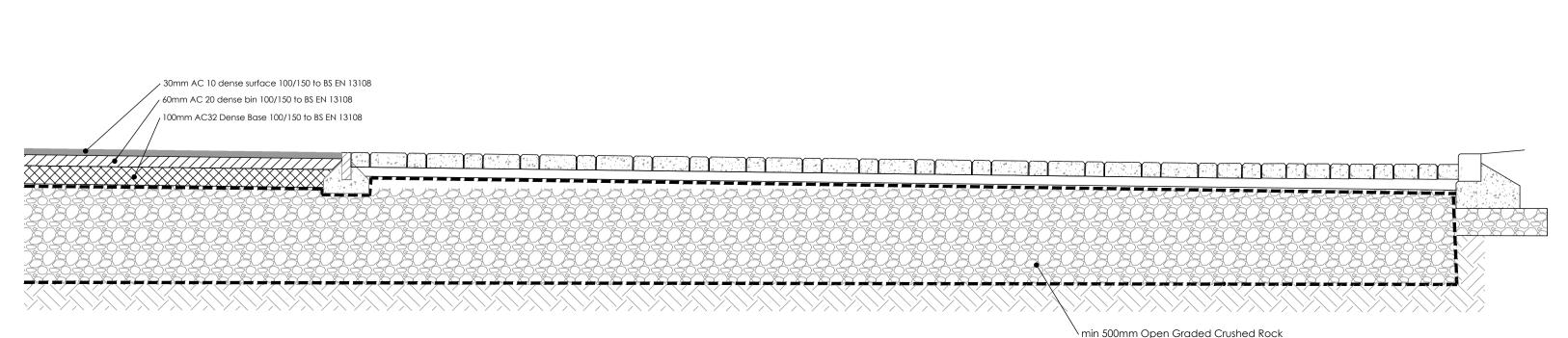
DRAINAGE NOTES FIGURE B12 landscape carriageway landscape 1. All private drainage must comply with the current edition of TYPICAL MANHOLE DETAIL - TYPE B DTLR Building Regulations approved document H. Depth from cover level to soffit of pipe 1.5m to 3m topsoil construction 2. Where drainage is to be adopted it should meet with the Flexible material construction requirements of Sewers for Adoption 8th edition. 3. Drainage design to be to BS EN 752-3 Trench excavation 4. Any intended changes to the drainage design must be backfill material suitable or as dua Mortar bedding and haunching Cover complying with Clause E2.32. discussed with the Engineer. If changes are made the Engineer backfill material under carriageways to cover and frame -600mm x 600mm clear opening must be supplied with as-constructed information to enable Compacted in and loadbearing to Clause E6.7 drawings to be suitably updated for the Health & safety file. layers not greater areas to be Type 1 than 150mm thick sub-base cl803 SHW Before works commence the contractor should satisfy Minimum 1 course of Class B themselves that the details of the drainage system to be Precast concrete slab connected into are correct i.e. cover, invert levels, line, engineering bricks or precast complying with E2.30 concrete cover frame seating rings condition and type of sewer. 50mm compressible 6. Private access chambers are to be appropriate to the depths layer beneath slab Load disconnecting assembly and loadings as follows:-Minimum 50mm gap between (footing and slab with flexible slab and plastic chamber unit seal) for granular surround Type S granular Depth to invert Access size (See Clause B5.2.22 bed and surround Up to 600mm Mini access chamber 300mmØ Type S granular Up to 1200mm Inspection chamber 475mm Ø (PPIC) bed and surround 600mmx450mm Brick/P.C.C units - Minimum clear access 600mm 675mm maximum to first -1200 to 1500mm P.C.C ring manhole 1050mmØ step rung from cover level 1500 to 3000mm P.C.C. ring manhole 1200mmØ (ring diameter increased if sewer TYPE S GRANULAR SURROUND BED **CONCRETE SLAB PROTECTION** areater than 475mmØ). To be used where cover to pipe soffit is greater than 1200mm in All manholes shall have a flexible joint within 150mm of the face To be used where cover to pipe soffit is less than 1200mm in vehicular areas and greater than 900mm in non-trafficked areas (ie of the structure and a "rocker pipe" which should not exceed vehicular areas and 900mm in non-trafficked areas (ie footpaths, verges, etc) 600mm in length. 8. Pipe materials shall be Vitrified clayware to BS EN 295 landscape carriageway Cast iron to BS EN 545:2010 minimum 150mm thick UPVC - BS EN 1401 PP - BS EN 1852 Plastic manhole units compacted granular bed Structure wall -BS EN 13476 and rings shall comply carriageway (type 20/5 or single size stone with Clause E2.31 construction max 20mm) or GEN3 9. For private sewers having 900mm or less cover beneath complying with E4.1 and BRE carriageways & hardstanding or 600mm in landscape areas Special Digest 1 in accordance size (DN) then they shall have concrete surround or slab protection. Slab with the manufacturer's protection to be 100mm thick C20concrete slab with mesh 100 instruction 10 nominal single size reinforcement and a bearing of 150mm each side of the trench. Trench excavation backfill material under carriageways Concrete surround to be 150mm C20 with flexible joints. 10 or 14mm nominal single size or and loadbearing areas to be 10. Trenches within 1.2m of load bearing walls should be filled with 14mm to 5mm graded Type 1 sub-base cl803 SHW concrete at least to the underside of the foundation. Where the 10, 14 or 20mm nominal single-size or over150-300 14mm to 5mm graded or 20mm to 5mm distance is more than 1.2m from the foundations the concrete should be taken at least up to a 45degree line from the bottom graded 20mm to 5mm graded of the foundations. Alternatively, the foundations could be 14, 20 or 40mm nominal single-size 150mm C20 concrete bed and taken to a deeper level to avoid undermining by the drainage crushed rock or 14mm to 5mm Self cleaning toe holes surround to Concrete trench (check with the Engineer where this is required). graded or 20mm to 5mm graded to be provided where channel protection to have 11. Pipe bed and surround to be granular Type S unless otherwise exceeds 600mm wide compressible filler over the full cross section at each pipe joint 14, 20 or 40mm nominal single-size over 550 by shaped compressible filler. crushed rock or 14mm to 5mm 12. Drains passing through walls or foundations should have either graded or 20mm to 5mm graded or an arched or lintelled opening to give 50mm clearance around 150mm to underside of channel 40mm to 5mm graded 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 TYPE Z CONCRETE BED AND SURROUND GRANULAR BEDDING AND SIDEFILL pipes (max 600mm long) with flexible joints. To be used where cover to pipe soffit is less than 1200mm in vehicular MATERIAL GRADINGS 13. Drainage under buildings should be bedded and surrounded by areas and 900mm in non-trafficked areas (ie footpaths, verges, etc) at least 100mm of granular material. - Base plate with overhang compacted granular bed 14. Unless otherwise stated on the drawings or in the schedules then (type 20/5 or single size stone all private drainage shall be 100mmØ. max 20mm) or GEN3 POLYPROPYLENE INSPECTION complying with E4.1 and BRE 15. All road gully connections to be 150mmØ and surrounded with Where chambers are positioned on 90° 150mm C20 concrete surround. Special Digest 1 in accordance corners always use the main channel by **CHAMBER - PPIC** with the manufacturer's fitting a 45° angle bend on the inlet and 16. Where schemes require soakaways they shall not be positioned installation closer than 5m from the nearest dwelling or structure. Where solution features can occur in the underlying strata such as Bends up to a max 45° angle can be used on chalk then this distance will need to be increased to 10m. Joint to be as close as possible to face 17. New connections to existing public sewers should be carried in of manhole to permit satisfactory joint Heaviest flow should always be directed accordance with appropriate Section 106 (Water Industry Act) and subsequent movement 'connection consent' and also under the supervision of the through the main channel. Water Authority. Short steep connections should preferably be 18. Covers shall be to B.S. EN 124 connected via a 45° inlet using a bend Chamber walls to be formed using where necessary. Class A15 - greas where only pedestrians have access 300mm or 450mm dia twin wall Pipe joint with channel to be Class B125 - for use in car parks and pedestrian areas In buildings up to 3 storey's the rest bend at pipe eg Polypipe Ridgidrain or located minimum 100mm where occasional vehicular access is likely. the base of the soil stack should be 450mm inside face of manhole Class C250 - areas where not extending more than Delow the invert of the lowest incomina 300mm Ø max depth 600mn 500mm from kerb face into the carriageway drain.In buildings over 3 storey's this should be 450mm Ø max depth 1200mm Class D400 - areas where cars and lorries have access increased to 750mm.In buildings over 5 including carriageways, hard shoulders. storey's the ground floor drainage Minimum width of Double step rungs — Cover and frames to be 150mm deep except residential cul-de-sacs Chamber Type Diameter connections should have their own complying with Clause E2.33 benching to be 225mm Inlets 19. It is recommended that drainage works should be constructed connections to the external drain. from the outfall particularly where the outfall depth is relatively Pipe wall to be core drilled Olypropylene Inspection 475 shallow. If it is not possible to commence works from the outfall to accept incoming and Chamber (PPIC) the contractor should satisfy themselves that the invert, line, outgoing pipes. Joint position and type of existing outfall are correct. between pipes to be sealed with weldable membrane 20. Drainage works should be protected from possible damage by or sealant. construction traffic loadings during the construction period. Pipe wall set into concrete Protection may be provided by barriers. materials should not be 'Permavoid' sub-base replacement unit used as dispersal arrangement 450mm minimum base minimum 50mm while for rain water downpipe discharge into open graded crushed rock from edge of stepping concrete still plastic SILT TRAP DETAIL 21. Buildings up to 3 storeys shall have a rest bend at the base of permeable paving sub-base. (See Clause B5.2.29) the soil stack 450mm min below the invert of the lowest Units to have filtration geotextile 'wrap' around them. incomina drain. Permeable paving open 22. Where piling works are undertaken the positions of existing graded crushed rock sub-base 150mm ST2 protective concrete surround to pipe. sewers must be accurately located before piling takes place. Drainage Channel Monodrain PD150.D 10.0 -Grating Class D400 or similar Concrete surround C20/25 (1)(2)(3)(4)Indicative kerb shown. Refer to surface finishes drawing for kerb type 1. If Permavoid units are not used it is important that alternative unit used has similar structural strength characteristics. If in doubt contact the Engineer. Concrete bed & haunch -Strength minimum C20/25 2. Cellular unit to be located within open graded crushed rock 3. Last chamber upstream of discharge units must be a catchpit to prevent silt and debris from entering discharge unit. 4. Where the invert level of the discharge unit is below the formation ACO MONODRAIN DETAIL

PERMEABLE PAVING RAINWATER DOWNPIPE

DISCHARGE DISPERSAL



level of the open graded sub-base then local deepening of the

each side and bed of 100mm. A filtration geotextile should be placed at the new formation level beneath the discharge unit.

sub-base should take place to give a minimum surround of 300mm

ISSUE DATE DRAWING TITLE Typical Construction Details 1/1 Oxford Technology Park, Unit 6 (A & B) Infrastruct CS Ltd MBD Not To Scale PROJECT NUMBER STATUS ISSUE PURPOSE SNN INFORMATION OTP6 ICS 01 XX DR C

Bitmac/Permeable Paving Interfase Construction

(1) 80mm Block Paving.

(see table 1 for gradings).

50mm depth of coarse 6mm aggregate (see Table 2)

(3) Filtration/separation geotextile eg Polypipe Permafilter or similar

500mm Open Graded Crushed Rock (OGCR) no fines sub-base

Note where permeable paving is adjacent to a structure then

membrane M380 shall be laid to the sides of the permeable

an impermeable membrane such as Marshalls Tanking

paving sub-base to reduce lateral movement.

Percentage by mass

98 - 100

90 - 99

25 - 70

0 - 5

Grading for sub-base material for

permeable paving pavements

(BS EN 12620:2002 Gc 4/20 coarse

aggregate)

TABLE 1

5052-OTP6-ICS-01-XX-M2-C-0200_Drainage Design

31.5

2.8

passing % 4/20

INGLE SIZED AGGREGATE

* (BS EN 12620:2002 fines category f2)

Grading for laying course material for

permeable pavina

(BS EN 12620:2002 Gc 80/20 2/6.3 coarse

aggregate)

TABLE 2

SIEVE SIZE (mm)

10mm

6.3mm

2mm

PERMEABLE PAVEMENT TYPICAL SECTION

0.063mm

mass passing

100

98-100

0-25 0-5

reported to the engineer immediately.

carriageway

150 min

see note

footpaths, verges, etc)

Pipe Bedding Requirement

carriageway

construction

material under

carriageways and

Trench excavation backfill

loadbearing areas to be

150mm ST4 concrete slab

Type 1 sub-base cl803

20mm nominal size

reinforcement 50mm

clearance from base of

NOTE:- Slab must span

trench completely

bearing on original

ground both sides.

Cover & Frame to suit loading conditions,

vehicular loading situations

around pipe.

Generally A15 Pedestrian and B125 light

Cover & Frame set on C20 concrete collar

Cover must not sit directly on pipe wall

150mm side fill as dug material with

no particle sizes larger than 40mm.

be used in Trafficked area.

150mm C20 concrete surround to

Silt trap pipe wall to sit in 150mm

eep C20 concretebase

—Asphalt Pavement

Access Road Only

(OGCR) no fines sub-base

Bearing width (150mm

min) will vary with pipe

Steel mesh (393)

concrete slab.

aggregate.

. 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 CDM

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