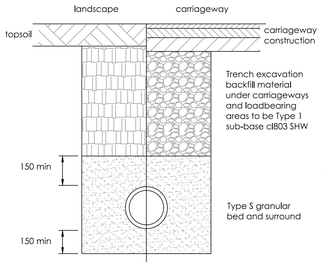
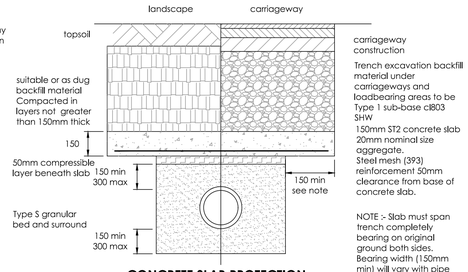


TYPE S GRANULAR SURROUND BED

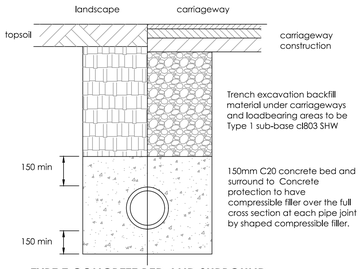
To be used where cover to pipe soffit is greater than 1200mm in vehicular areas and greater than 900mm in non-trafficked areas (ie footpaths, verges, etc)



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

CONCRETE SLAB PROTECTION

To be used where cover to pipe soffit is less than 1200mm in vehicular areas and 900mm in non-trafficked areas (ie footpaths, verges, etc)



TYPE Z CONCRETE BED AND SURROUND

To be used where cover to pipe soffit is less than 1200mm in vehicular areas and 900mm in non-trafficked areas (ie footpaths, verges, etc)

Pipe nominal size (DN)	Pipe Bedding Requirement (mm)
100	10 nominal single size
over100 150	10 or 14mm nominal single size or 14mm to 5mm graded
over150-300	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

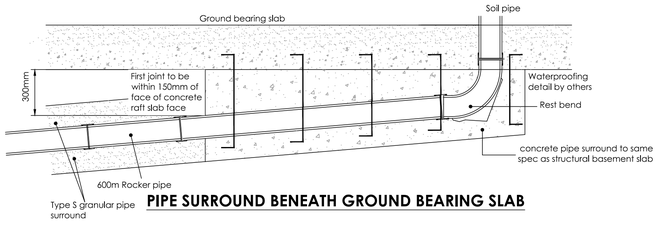
GRANULAR BEDDING AND SIDEFILL MATERIAL GRADINGS

10mm dia vertical reinforcement dowels with turned over ends.

Where a pipe line has less than 300mm cover under the floor slab it should be surrounded with concrete integral with the slab. Ideally this should be poured at the same time as the floor slab. The concrete surround should be tied into the slab with normal steel reinforcement placed vertically with turned over ends. No provision for flexibility within the concrete surround should be made, unless there is an expansion joint in the slab.

In normal stable ground conditions and with 300mm cover to the pipeline then a total granular surround can be used.

In buildings up to 3 storeys the rest bend at the base of the soil stack should be 450mm below the invert of the lowest incoming drain. In buildings over 3 storeys this should be increased to 750mm. In buildings over 5 storeys the ground floor drainage connections should have their own connections to the external drain.



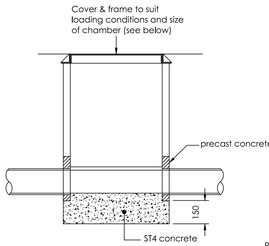
PIPE SURROUND BENEATH GROUND BEARING SLAB

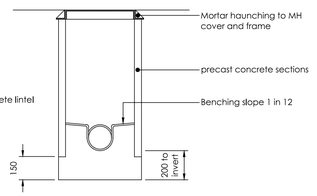
DRAINAGE NOTES

1. All private drainage must comply with the current edition of DTLR Building Regulations approved document H.
2. Where drainage is to be adopted it should meet with the requirements of Sewers for Adoption 7th edition.
3. Drainage design to be to BS EN 752-3 1996
4. 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.
5. 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.
6. 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 1200mm	Inspection chamber 475mm Ø (PPIC) 600mmx450mm Brick/P.C.C units
1200 to 1500mm	P.C.C ring manhole 1050mmØ
1500 to 3000mm	P.C.C. ring manhole 1200mmØ (ring diameter increased if sewer greater than 475mmØ).

7. 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.
8. 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
9. For private sewers having 900mm or less cover beneath carriageways & hard standing or 600mm in landscape areas then they shall have concrete surround or slab protection. Slab protection to be 100mm thick C20concrete slab with mesh reinforcement and a bearing of 150mm each side of the trench. Concrete surround to be 150mm C20 with flexible joints .
10. 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).
11. Pipe bed and surround to be granular Type S unless otherwise noted.
12. 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.
13. Drainage under buildings should be bedded and surrounded by at least 100mm of granular material.
14. Unless otherwise stated on the drawings or in the schedules then all private drainage shall be 100mmØ
15. New connections to existing public sewers should be carried in accordance with appropriate Section 106 (Water Industry Act) 'connection consent' and also under the supervision of the Water Authority.
16. Covers shall be Class A15 to B.S. EN 124:1994
17. 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.
18. 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.
19. 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.
20. Where piling works are undertaken the positions of existing sewers must be accurately located before piling takes place.



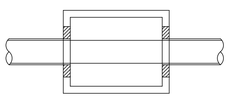


Pipes entering manholes shall have a flexible joint within 600mm of the inside face of the manhole joining with a short rocker

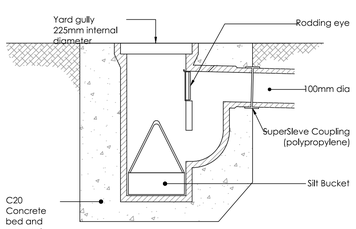
DEPTH	CHAMBER SIZE
up to 0.65m	300mm diameter
0.60 to 1.20m	450mm diameter or 600 x 450
1.2-2m	1200x750
	1050mm diameter below 1.5m deep
	1200mm diameter over 1.5m deep

or as governed by no. of connections and Code of Practice BS 8301

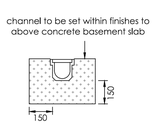
All 100mmØ pipework to be Marley Plastic or Supersleve laid in 150mm surround. If cover to pipe is less than 1200mm in carriageway or 900mm in verges/soft landscaping then bed and surround to be flexibly jointed concrete. If cover is greater than the above then 10mm pea shingle is to be used. Concrete bed and surround to be used if chambers are within the likely mature canopies of existing or proposed trees.



TYPICAL INSPECTION CHAMBER



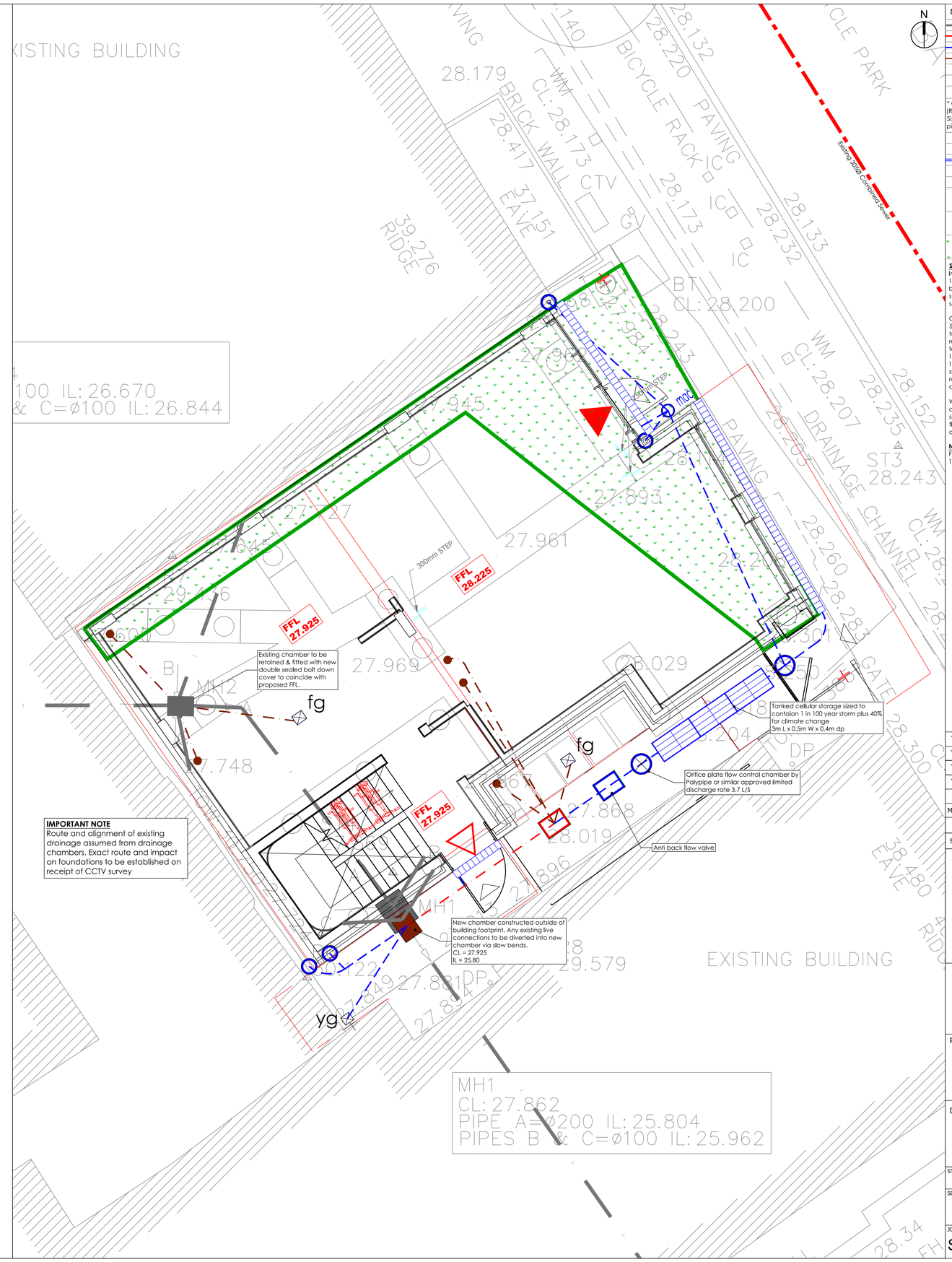
YARD GULLY



TYPICAL DRAINAGE CHANNEL DETAIL

- Drainage channel to be class C (NW100) with slotted cast iron grating laid to manufacturers recommendations. Units to be laid in 30m (max) lengths falling to trapped drain gullies with 150mm connection to main sewer. Gratings should be set 2-3mm below finished road levels
- Ensure that when concreting, asphalting or paving near channels they should be strutted for example by inserting gratings

For further information refer to manufacturers literature.



IMPORTANT NOTE
Route and alignment of existing drainage assumed from drainage chambers. Exact route and impact on foundations to be established on receipt of CCTV survey

NOTES/KEY:

- Existing combined water sewer (Adopted)
- Proposed combined drain run
- Surface water drain (private/non adoptable)
- Foul water drain (private/non adoptable)
- PPIC - 475mmØ *
- P.C.C. units/brick *
- P.C.C. units/brick *

* General note
(Refer to standard details & long sections for chamber sizes. Size may need to increase dependant on number of incoming pipes/size of incoming pipes)

- Rain water down pipe (roddable access)
- Soil vent pipe/soil stack
- Linear drainage channel
- fg Floor gully (trapped)
- yg Yard gully (150m - 200mmØ trapped)
- Building Access - Primary
- Building Access - Secondary
- Brown/Green roof system

Surface Water Drainage Strategy
In terms of surface water drainage, the existing site equated to 100% impermeable drained surface associated with the existing building, external yard and bar terrace. Based on a 1 in 100yr storm event, the site discharged 7.8 l/s into the 200Ø combined sewer which runs through the site.

Condition 6 of the Planning Consent (Ref:2015/0023/P) requests a 50% reduction in surface water flows off site, which would equate to a flow rate of 3.9 l/s. This rate falls well below the minimum recommended rate for flow control chambers and as such is not feasible. In addition, the site area equates to approximately 151sqm, and with a consented building footprint of approx 132sqm (87%), there is little room other than the roof to facilitate sustainable drainage systems. As such the scheme utilises green roofs to all flat roof elements which equates to an area of approximately 40sqm.

With these elements of green roofs to provide surface water attenuation and surface water volume reduction. Based on the same 1 in 100yr storm event, the proposed development reduces flows down to 5.6 l/s, offering a 30% reduction in surface water run off from site.

NOTE
For SVP & RWP positions please refer to Sprunt drawing 12456-SPR-RES-1000

MARK	DATE	BY	CHKD.	REVISION NOTES
T5	23/08/16	TST	JT	Surface Water storage added.
T4	11/08/16	TST	JT	Existing drainage updated
T3	05/08/16	TST	JT	RWP updated
T2	26/07/16	TST	JT	RWP and SVP's updated
T1	20/07/16	TST	JT	Initial Issue

C.D.M.

SIGNIFICANT RISKS AND HAZARDS:

iesis SPECIAL STRUCTURES
IESIS SPECIAL STRUCTURES
20 IRONMONGER LANE
LONDON
EC2V 8EP
T: +44 (0)207 6002912
www.iesis.net

PROJECT:
81 A/B Bayham Street
Camden

DRAWING TITLE:
Drainage Strategy Plan

STATUS: INFORMATION

SCALE AT A1:	DATE:	DRAWN:	CHECKED:
1:50	08/01/2016	NJ	TST

JOB NUMBER:	DRAWING NUMBER:	REVISION:
SE1233	300	T5