

**NOTES**

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS AND SPECIFICATIONS
- DO NOT SCALE FROM THIS DRAWING IN EITHER PAPER OR DIGITAL FORM. USE WRITTEN DIMENSIONS ONLY.
- Invert levels and positions of existing drains / chambers / sewers where new connections are to be made must be checked and confirmed to the engineer prior to the commencement of any works.
- All drainage works shall be carried out in accordance with the requirements of the Local Authority, the Environment Agency and in conjunction with all relevant British Standards, Codes of Practice and 'Sewers for Adoption' 7th Edition and any addendums as appropriate.
- All drainage shall comply with the typical details and the requirements of BS EN 752 and Part H of the Building Regulations.
- Any part of the existing drainage system to be retained as part of the new scheme shall be cleaned and inspected. Any structural defects shall be repaired using appropriate and approved means.
- For setting-out dimensions of SVP's, RWP's etc, refer to Architect's or Mechanical Engineer's drawings. Positions shown are indicative and subject to final design.
- All foul and RWP connections shall be 100mm diameter unless otherwise specified.
- All precast concrete units used in the drainage works shall be manufactured using sulphate resisting cement.
- Manhole covers and frames shall be to BS EN 124 and shall be Keramarked. Covers and frames shall be heavy duty D400 in carriageways and vehicular areas and medium duty B125 in footways and soft landscaping. In blocked/concrete paved areas covers shall be recessed fabricated steel. All recessed covers shall in accordance with the FACTA association gradings.
- All internal inspection chambers to be recessed, double sealed with screw down covers.
- Cover levels are to be adjusted locally to suit finished ground levels.
- At least one soil pipe at the head of each foul run shall vent to the atmosphere.
- Existing drainage to be removed is to be broken out to bed level and void backfilled with granular material, compacted in layers not exceeding 250mm.
- All drain runs from SVP's, stub stacks or FW gullies to be laid at 1:40 gradient unless otherwise stated. All RWP's to be laid 1:80 min unless otherwise stated.
- All manholes / inspection chambers in block paved areas, to have recessed covers. MH covers in paved areas to have cover & frame orientated 'square' with paving to minimise cut slabs or blocks.
- All private drainage to be laid to levels shown using flexibly jointed pipes, either uPVC to BS 4660 and BS 5481 or vitrified clayware to BS EN 295. Pipes below structural building slabs or basements shall be Cast Iron to BS 437.
- Rodding eyes, etc are to be laid to manufacturers minimum cover and depth to allow adequate fall from adjoining unit.
- All proposed trees to have appropriate tree barrier details linking pits to ensure roots are directed away from drainage.
- Where new sewers are constructed within 5m of a new or existing tree the sewer shall be concrete encased against root intrusion. Refer to drainage details.
- All new drainage to be jetted and CCTV surveyed on completion. Contractor to make sure that the drainage is fully operational. Refer to Drainage maintenance manual for maintenance details.
- All runs connecting into the public drainage network to be vitrified clay, extra length to BS EN 295 or BS65 with plain sleeved or socketed flexible joints.
- CDM note: All pipework, silt traps, catchpits, trapped gullies and attenuation tanks to be regularly inspected every three months and cleared out on a regular frequency for the first nine months. After this period the frequency can be reduced to every six months. Porous surface to be regularly swept three times a year to remove the silt.
- This drawing is to be read in conjunction with all relevant Conisbee drawings.
- HEALTH AND SAFETY: The works shall be carried out by specialist competent and experienced contractors who are members of a recognised national organisation. Operatives shall have received full and appropriate training for the operations they are to undertake. All work shall be carried out in accordance with all pertinent Health and Safety Regulations.

**NOT FOR CONSTRUCTION**

P1 12.12.16 Issued for Information	JC	TG		
Rev	Date	Description	Drawn	Check

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Project	Drawn	JC
Highgate Newton Community Centre London, N19 5DQ	Engineer	JC
	Project No	140009
	Drawing No	C131
DRAINAGE CONSTRUCTION DETAILS, SHEET 2	Revision	P1

**TABLE 11 Min. dimensions for access fittings and inspection chambers**

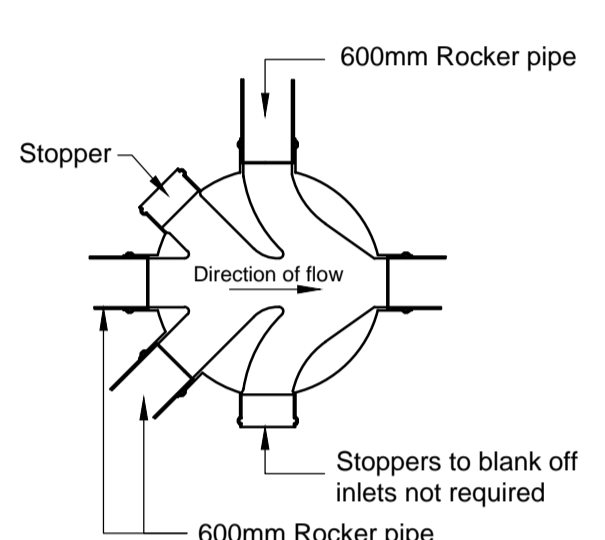
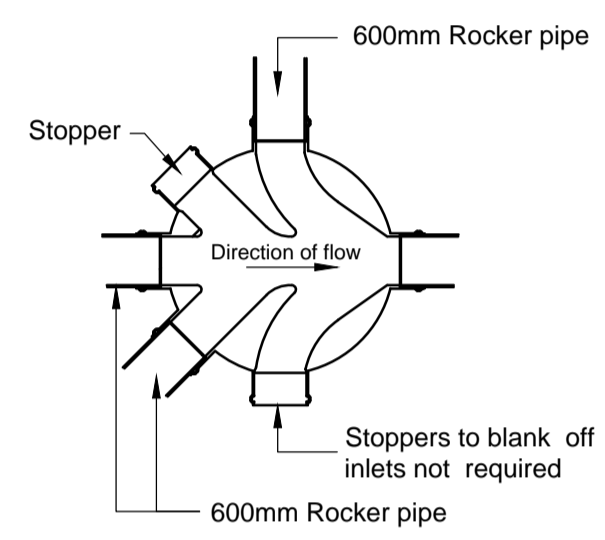
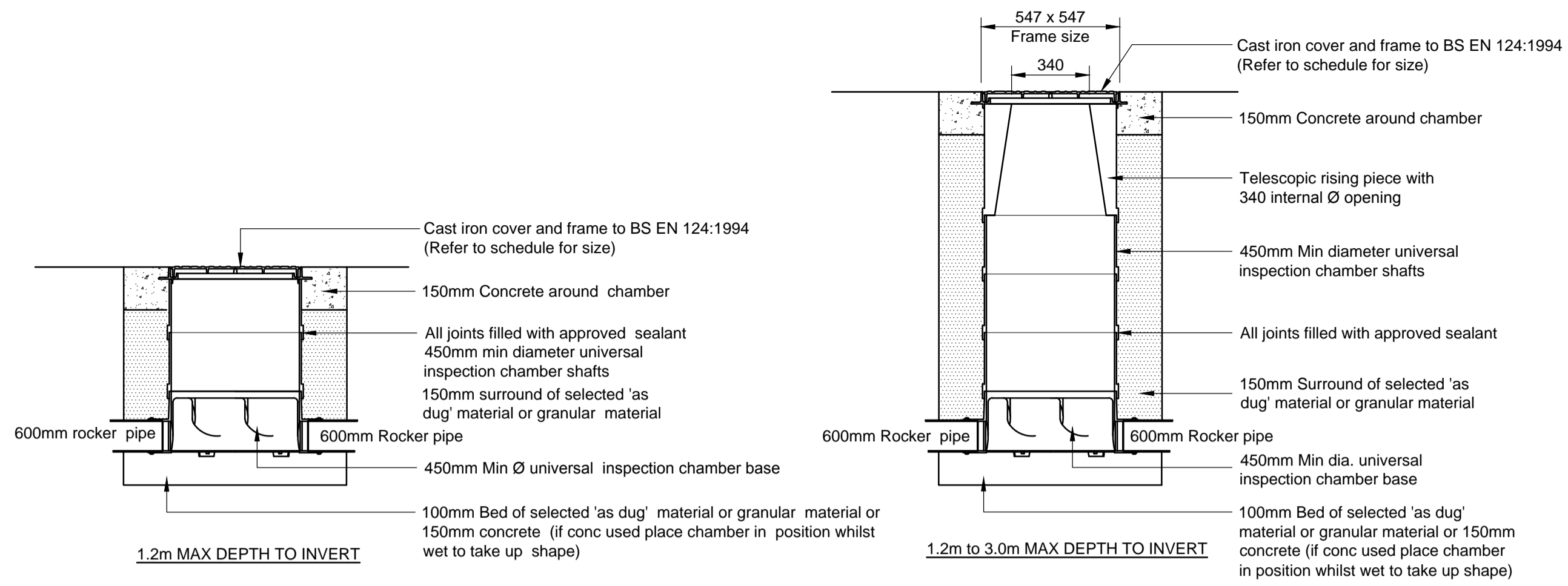
Type	Depth to invert from cover level (m)	Internal sizes		Cover sizes	
		Rectangular length and width	Circular diameter	Rectangular length and width	Circular diameter
Rodding Eye		As drain but min 100			Same size as pipework (1)
Access Fittings	0.6 or less, except where situated in a chamber				
small	150 dia	150x100	150	150x100 (1)	Same size as access fitting
large	225x100	225x100	225	225x100 (1)	
Inspection Chamber					
Shallow	0.6 or less	225x100	190 (2)	-	190 (1)
Deep	1.2 or less	450x450	450	Min 430x430	430
	>1.2 but <3.0	450x450	450	max 300x300 (3)	Access restricted to max 350 (3)

Notes:  
 (1) The clear opening may be reduced by 20mm in order to provide proper support for the cover and frame.  
 (2) Drains upto 150mm.  
 (3) A larger clear opening may be used in conjunction with a restricted access. The size is restricted for health and safety reasons to deter entry.

**TABLE 12 Minimum dimensions for manholes**

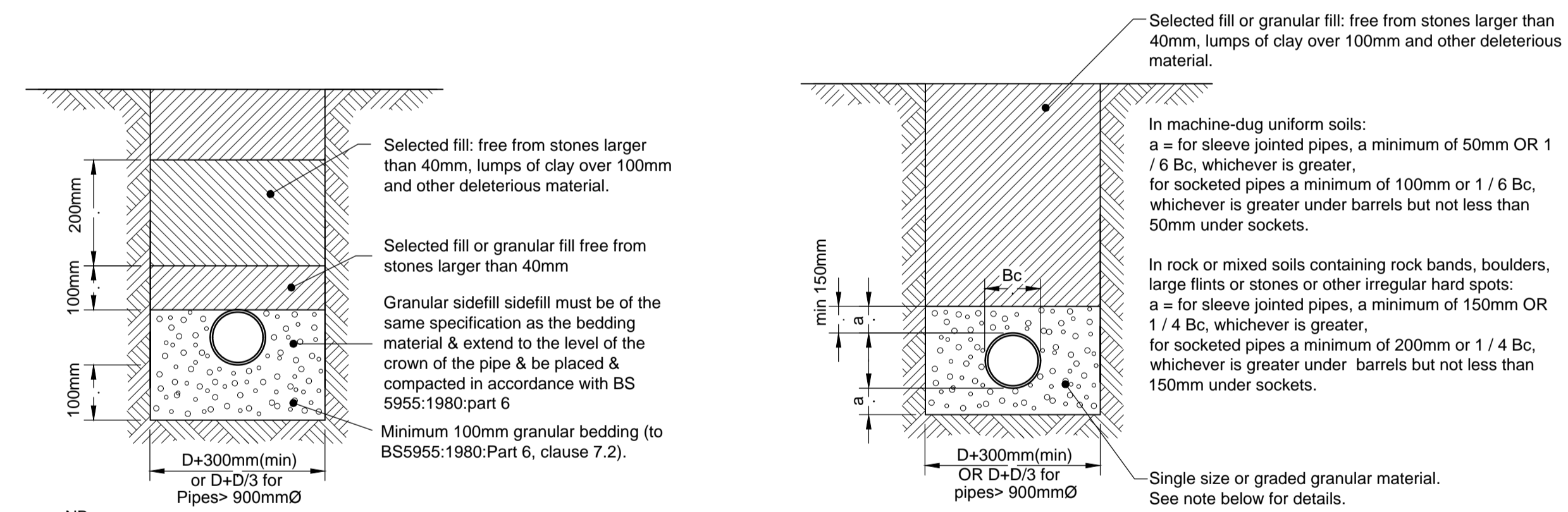
Type	Size of largest pipe (DN)	Min. internal dimensions (1) Rectangular length and width	Circular diameter	Min. clear opening size (1) Rectangular length and width	Circular diameter
Manhole					
<1.5m deep to soffit	<= 150 225 300 >300	750 x 675 (7) 1200 x 675 1200 x 750 1800 x (DN+450)	1000 (7) 1200 1200 The larger of 1800 or (DN+450)	750 x 675 (2) 1200 x 675 (2)	na (3)
>1.5m deep to soffit	<= 225 300 375-450 >450	1200 x 1000 1200 x 1075 1350 x 1225 1800 x (DN+775)	1200 1200 1200 The larger of 1800 or (DN+775)	600 x 600	600
Manhole shaft (4)					
>3.0m deep to soffit of pipe	Steps (5) Ladder (5) Winch (6)	1050 x 800 1200 x 800 900 x 800	1050 1200 900	600 x 600 600 x 600 600 x 600	600

Notes:  
 (1) Larger sizes may be required for manholes on bends or where there are junctions.  
 (2) May be reduced to 600 by 600 where required by highway loading considerations, subject to a safe system of work being specified.  
 (3) Not applicable due to working space needed.  
 (4) Minimum height of chamber in shafted manhole 2m from benching to underside of reducing slab.  
 (5) Min clear space between ladder or steps and the opposite face of the shaft should be approximately 900mm.  
 (6) Winch only - no steps of ladders, permanent or removable.  
 (7) The minimum size of any manhole serving a sewer (i.e. any drain serving more than one property) should be 1200mm x 675mm rectangular or 1200mm diameter.



**TYPICAL 450Ø PPIC INSPECTION CHAMBER DETAIL**

SCALE 1:20



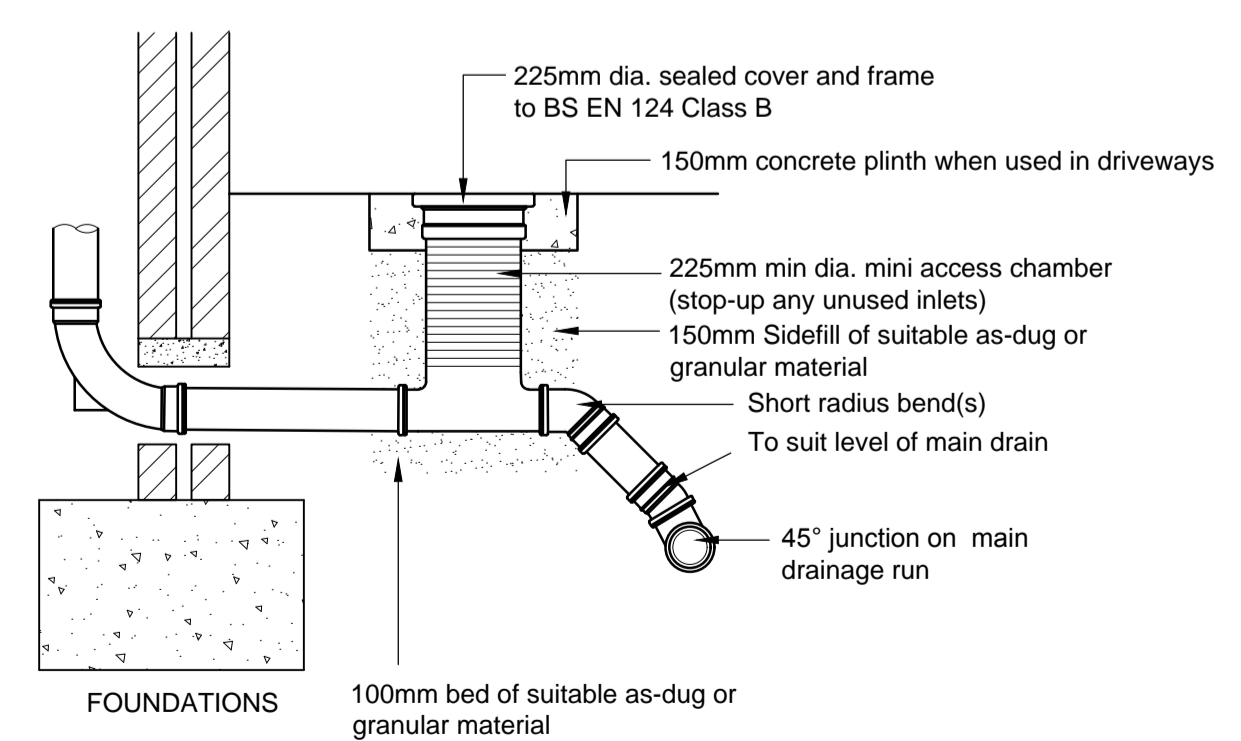
NB: Granular material - Granular material should conform to BS EN 1610 Annex B Table B.15 and should be single size material or graded material from 5mm up to a maximum size 10mm for 100mm pipes, 14mm for 150mm pipes, 20mm for pipes from 150mm up to 600mm diameter. Compaction fraction maximum 0.3 for class N or B and 0.15 for class F.

**BEDDING DETAIL FOR FLEXIBLE PIPES**

SCALE 1:20

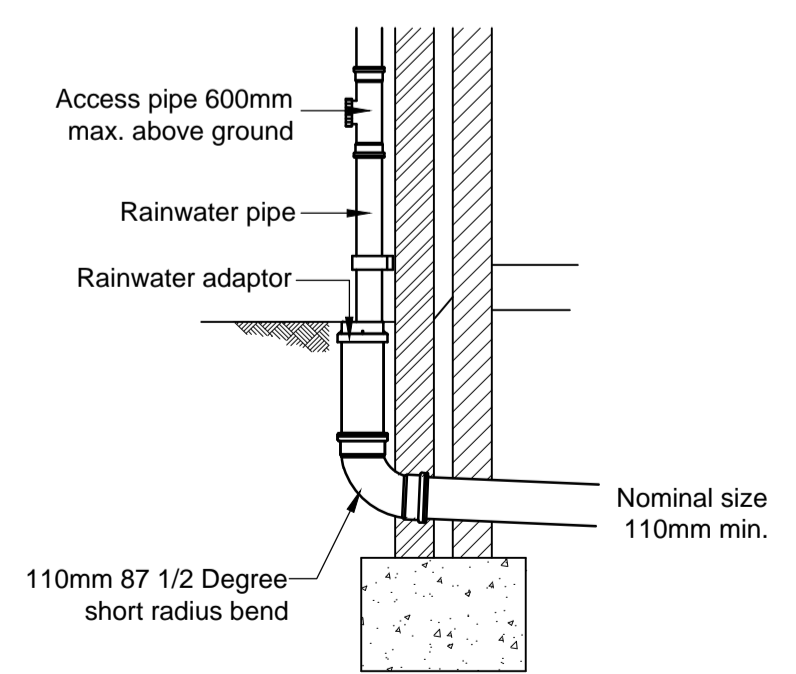
**BEDDING TYPES DETAILS FOR RIGID PIPES**

SCALE 1:20



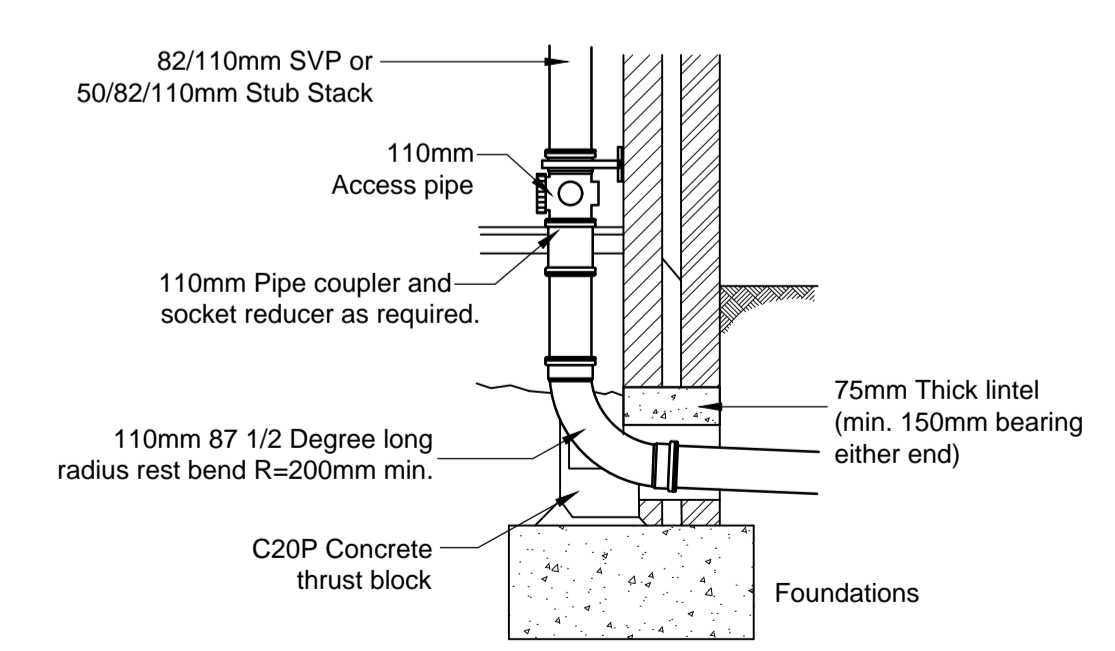
**TYPICAL 250Ø PPIC INSPECTION CHAMBER DETAIL**

FOR USE IN SOFT AREAS & FOOTPATHS ONLY  
 SCALE 1:20



**EXTERNAL RAINWATER PIPE TO DRAIN**

SCALE 1:20



**SOIL & VENT PIPE CONNECTION & STUB STACK CONNECTION**

SCALE 1:20