

! CDM 2015 - RESIDUAL RISKS !

In preparing the designs illustrated by this drawing we have fulfilled our duties in the role of Designer as defined in the Construction Design and Management Regulations 2015. We have undertaken a full Hazard Identification and Risk Analysis and have designed out any special risks associated with the work, so that as far as possible there are no residual risks.

NOTE: Residual risks are defined as those risks arising from identified hazards which cannot be designed-out, and which a competent and experienced building contractor is unlikely to encounter during normal construction activities. Ordinary risks arising from normal construction operations have not been included.

Where hazards have been identified, the risks from which it has not been possible to eliminate during the design process, these are indicated on the drawing. It will be the responsibility of the Principal Contractor to develop Safe Systems of Work and/or Method Statements to minimise any risks associated with such hazards.

NOTES

- Do not scale from this drawing.
 - All dimensions are in metres and levels are in mAOD unless otherwise stated.
 - All drainage works are to be undertaken in accordance with the relevant adoption water authority specifications.
 - Any drawing errors of discrepancies should be reported to the Engineer as soon as possible.
 - All drainage design and installation to be carried out in accordance with the following:
BS EN 752: drain and sewer systems outside buildings.
BS EN 12056: gravity drainage systems inside buildings.
Building Regulations - part H.
Sewerage Sector Guidance
BS 8000 pt 14 - workmanship on building sites.
Engineering Design Layouts
 - Precast Concrete Manholes**
 - Precast concrete manhole units shall comply with the relevant provisions of BS EN 1917 and BS 5911-3. Units which bed into bases shall be manufactured so that imposed vertical loads are transmitted directly via the full wall thickness of the unit. The profiles of joints between units and the underside of slabs, shall be capable of withstanding applied loadings from such slabs and spigot-ended sections shall only be used where the soffit of the slab is recessed to receive them.
 - Precast concrete chamber sections for valves and meters shall be interlocking and comply with BS EN 1917 and BS 5911-3.
 - Manhole Covers and Frames**

Manhole covers and frames shall comply with the relevant provisions of BS EN 124, BS 7903 and Highways Agency Guidance Document HA 104/05. They shall be of non-rocking design which does not rely on the use of cushion inserts.
 - Manhole covers on foul only sewers shall be of low leakage types in order to prevent excessive surface water ingress.
 - As a minimum, Class D400 covers shall be used in carriageways of roads (including pedestrian streets), hard shoulders and parking areas used by all types of road vehicles.
 - Minimum frame depths for NRSWA road categories I to IV shall be as Table B.
 - Class B125 shall be used in footways, pedestrian areas and comparable locations.
 - In situations where traffic loading is anticipated to be heavier than would occur on a typical residential estate distributor road (i.e., braking or turning near a junction), a higher specification (E600) shall be used.
 - All manhole covers shall be the non-ventilating type and shall have closed keyways.
- 7. Manhole Steps**
- steps for manholes and other chambers shall be Type D Class 1, complying with the requirements of BS EN 13101.
 - Galvanized mild steel and plastic encapsulated steps are preferred.
- 8. Ladders**
- Ladders in manholes and similar structures shall comply with the requirements of BS EN 14396, with width of rung 380mm and two stringers, but shall not be made from aluminium.
 - Mild steel ladders for vertical fixing shall be fabricated from steel conforming to BS EN 10025-2. After fabrication, low carbon steel ladders shall not be hot dip galvanized in accordance with BS ISO 1461.
 - Stainless steel ladders for fixing shall be fabricated from Grade X5CrNiMo 17-12-2 steel conforming to BS EN 10088-3.
 - GRP ladders shall be manufactured from pultruded sections conforming to BS EN 13706-3. The surface shall be smooth with the fibres embedded and sealed against penetration from dirt and water. The Barcol hardness of the sections shall be at least 35 when tested in accordance with BS 2782-10.
- 9. Pipes and Joints Adjacent to Structures**
- Where rigid pipes are used, a flexible joint shall be provided as close as is feasible to the outside face of any structure into which a pipe is built, within 150mm for pipe diameters less than 300mm. The design of the joints shall be compatible with any subsequent movement.
 - The recommended length of the next pipe (rocker pipe) away from the structure shall be as shown in Table C.
- 10. Setting manhole covers and frames**
- Manhole frames shall be set to level, bedded and haunched externally over the base and sides of the frame in mortar, in accordance with the manufacturer's instructions. The frame shall be sealed on at least two courses of Class B engineering bricks, on precast concrete masonry units or on a precast concrete cover frame seating rings to regulate the distance between the top of the cover and the top rung to no greater than 675mm. A mortar fillet shall be provided where the corners of an opening in a slab are chamfered and the brickwork is not flush with the edges of the opening.
 - Frames for manhole covers shall be bedded in a polyester resin bedding mortar in all situations where covers are sited in NRSWA Road Categories I, II or III (i.e., all except residential cul-de-sacs).

SUBJECT TO TECHNICAL
APPROVAL

10.05.25	SWF	FIRST ISSUE.	EG	TB	P01
Date	By	Revision	QA'D	Chk'd	Ref

Status **S2 - FOR INFORMATION**



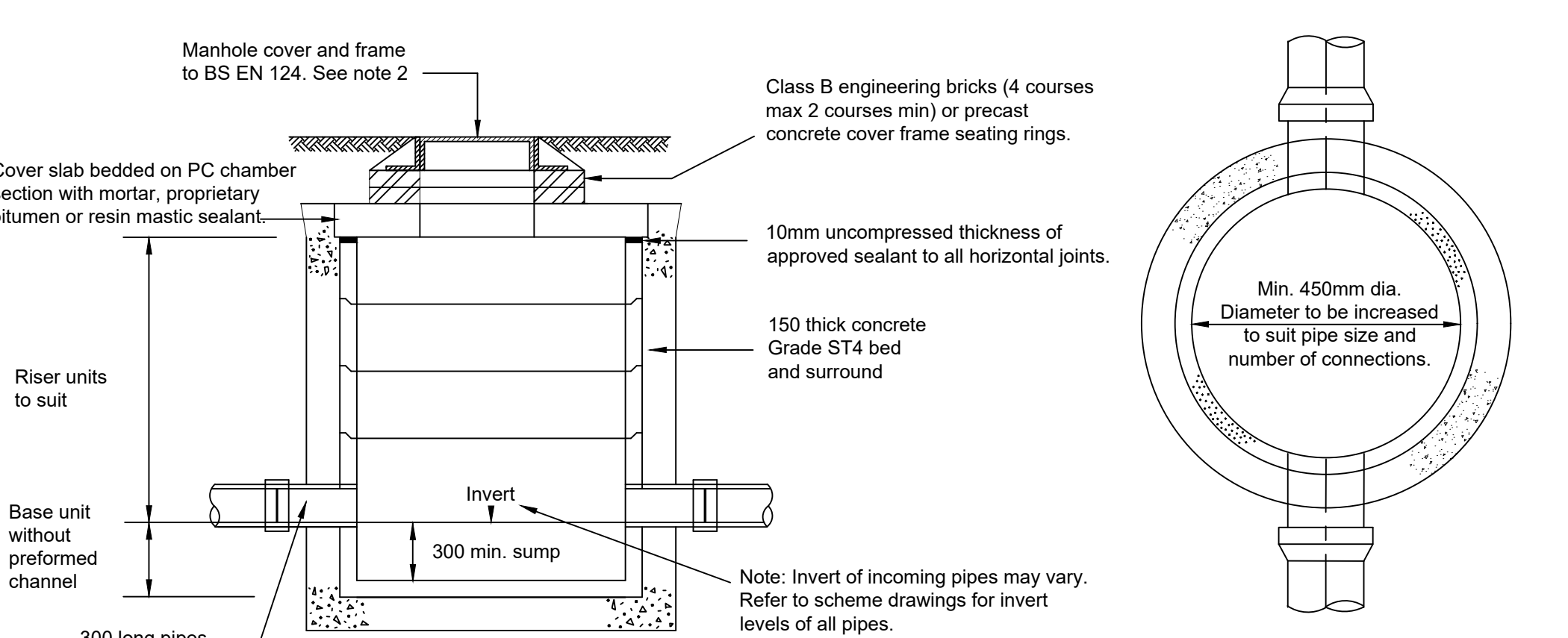
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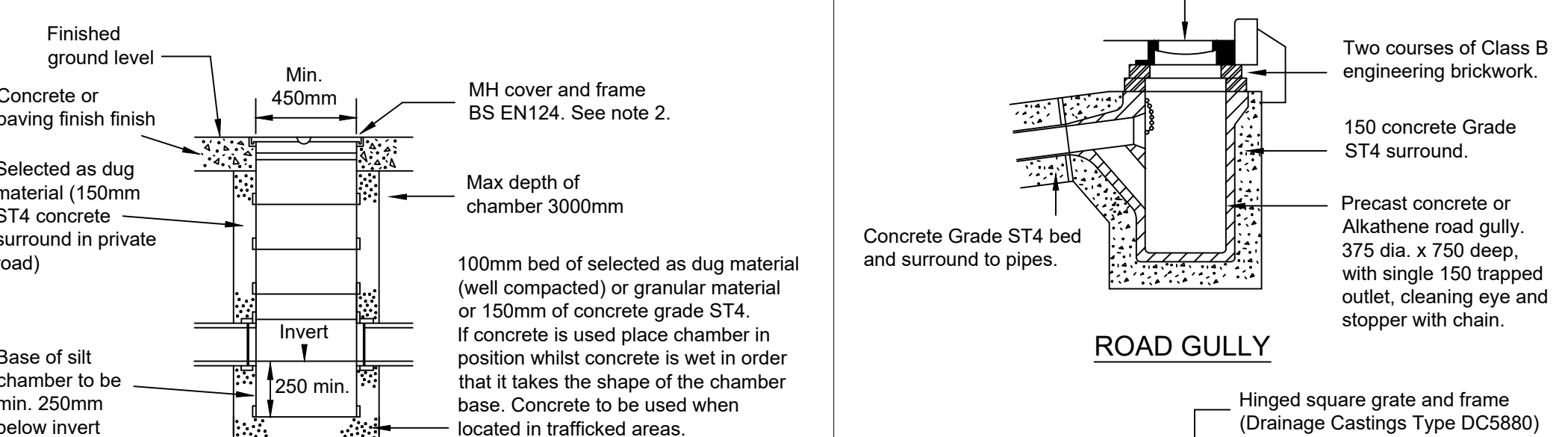
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Client	Project	COCKPITS FARM, FAIROAK	
Title	PRIVATE DRAINAGE DETAILS SHEET 1		
Date	10.05.25	Scale	NTS
Drawn	SWF	Chk'd	EG QA'D TB
Drg. No.	/401 P01		



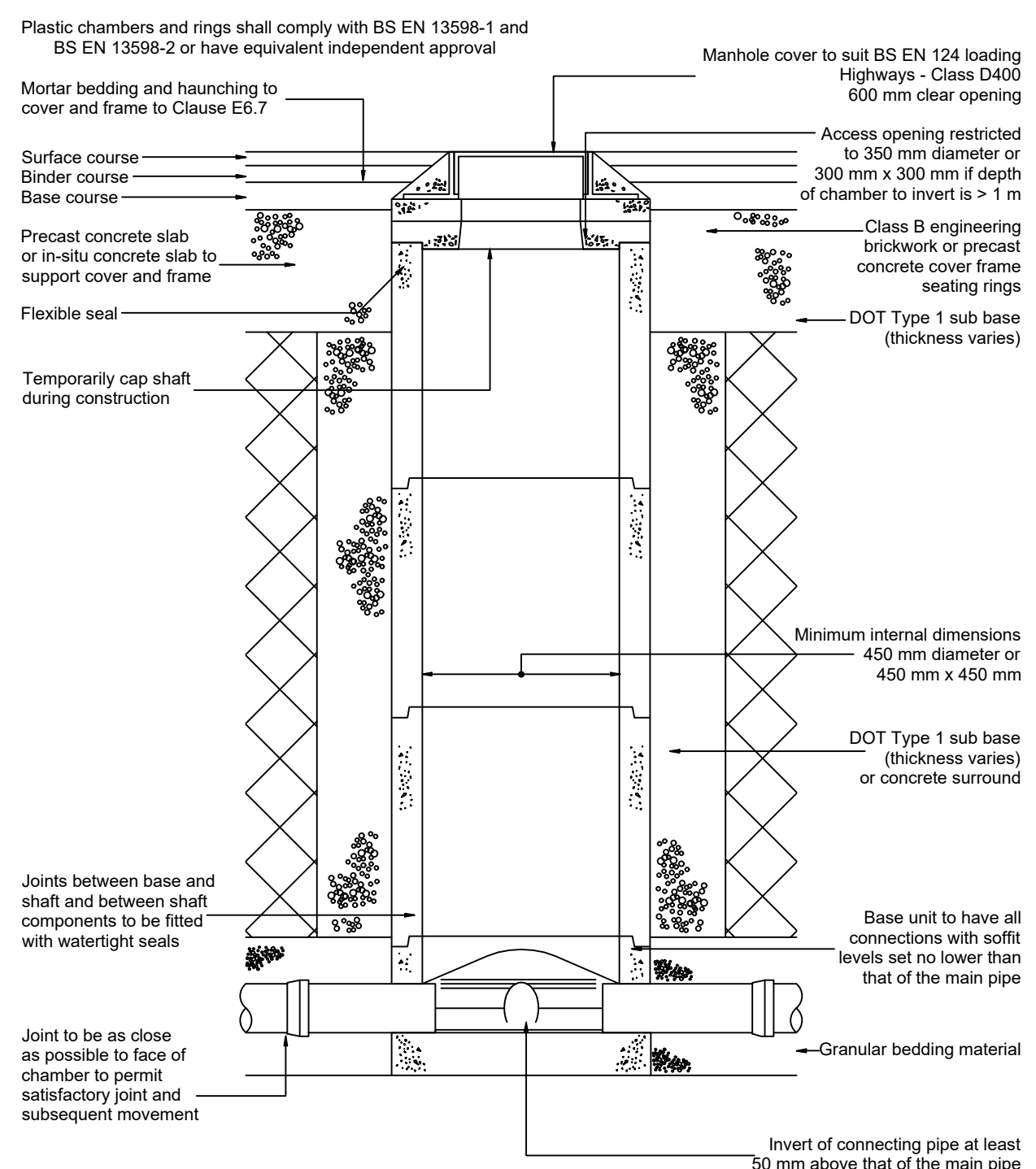
PRECAST CONCRETE CATCHPIT
Max. depth 3000mm (to base)



POLYPROPYLENE SILT TRAP CHAMBER
Maximum depth to base 3000mm

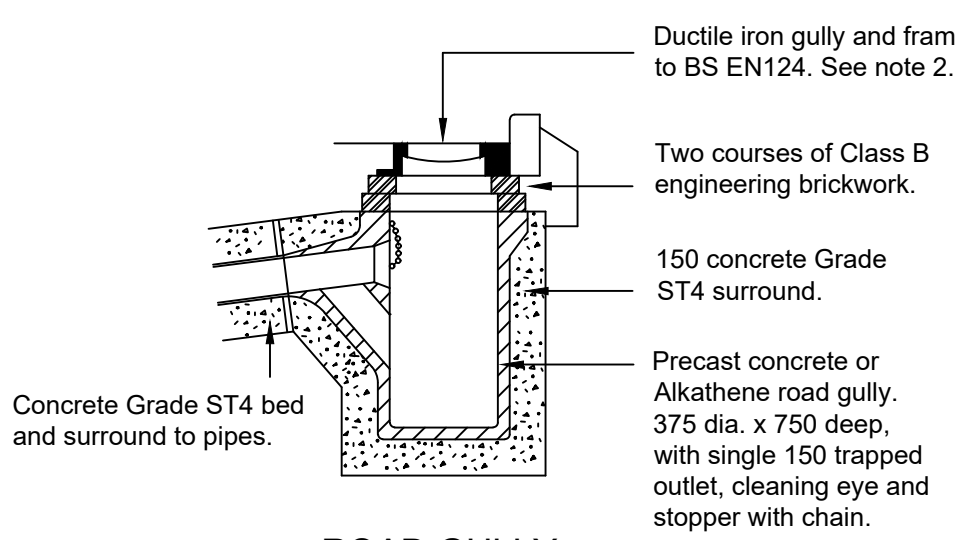
NOTE
Polypropylene chambers greater than 1200mm deep shall be provided with restricted access not in excess of 350mm diameter.

TYPICAL INSPECTION CHAMBER DETAIL - TYPE 3 (Flexible material detail)
Maximum depth from cover level to soffit of pipe in areas subject to vehicle loading 3 m, non-entry

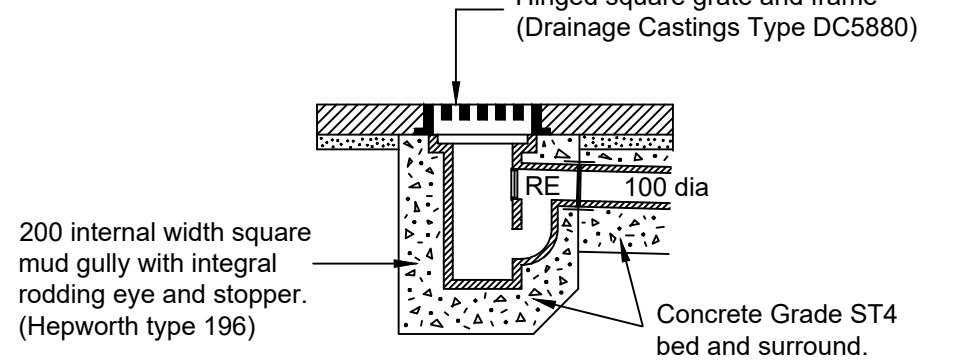


Note: Where the access chamber is in the highway the Highway Authority can have specific requirements

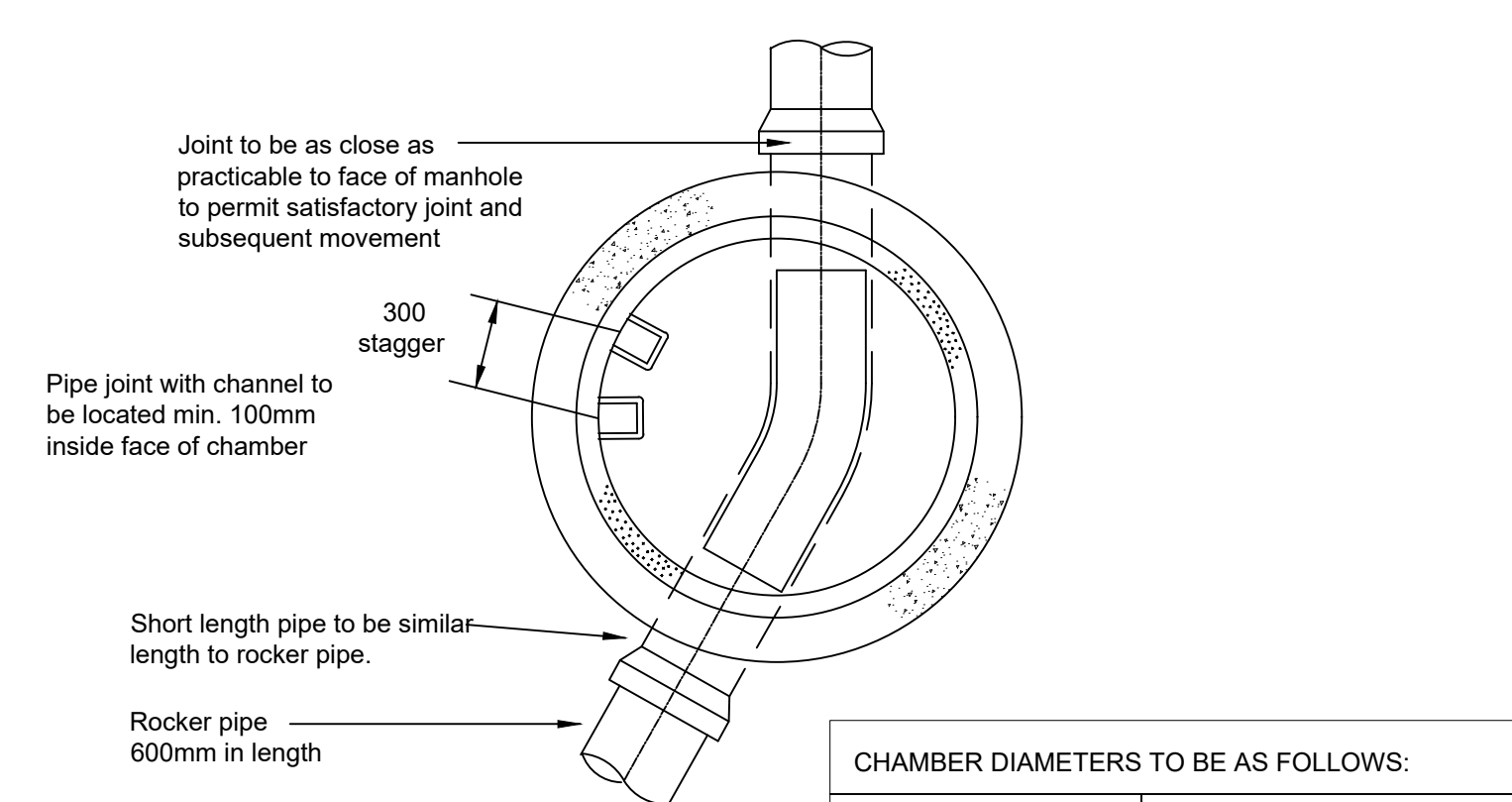
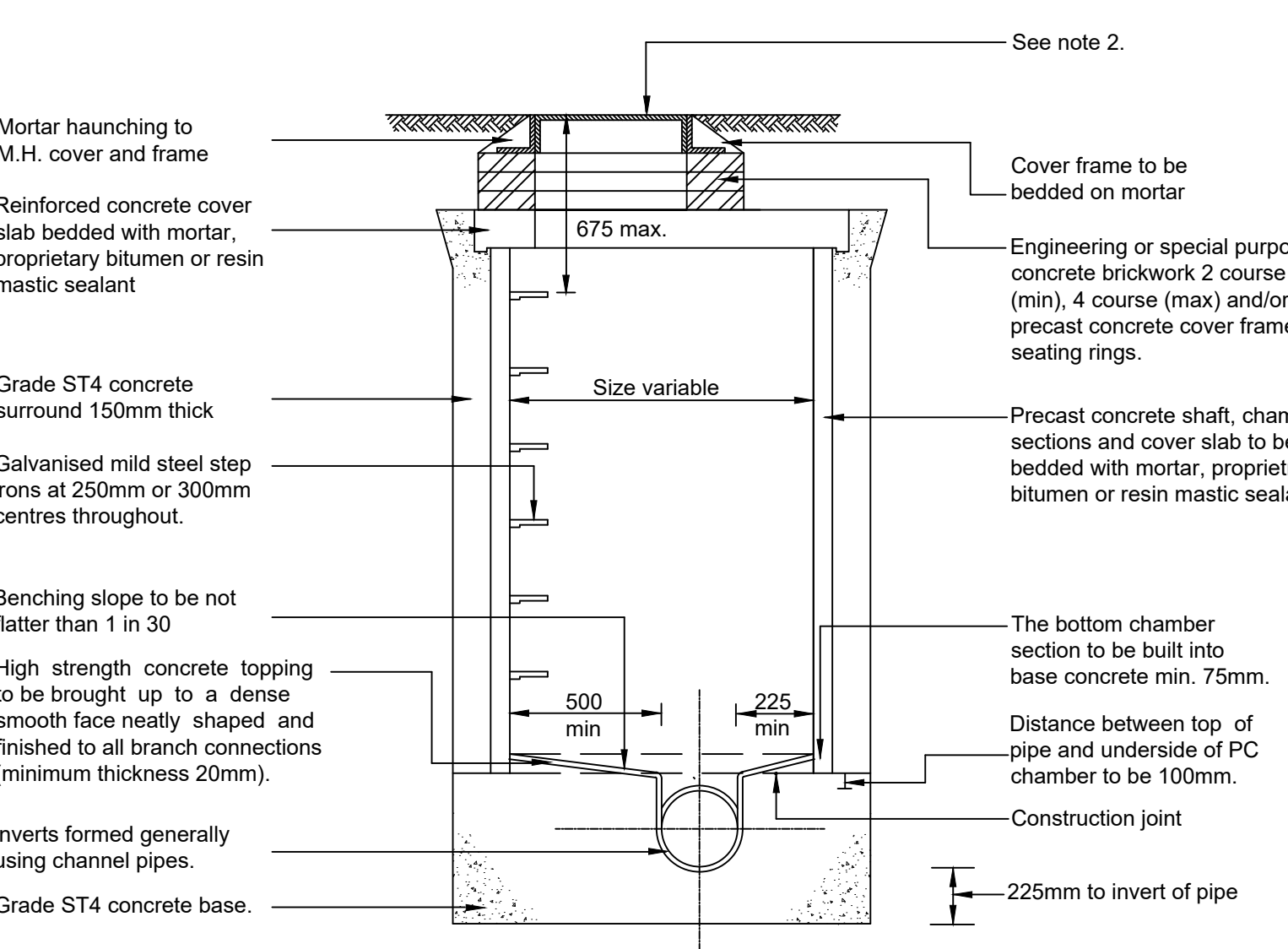
Not to scale



ROAD GULLY

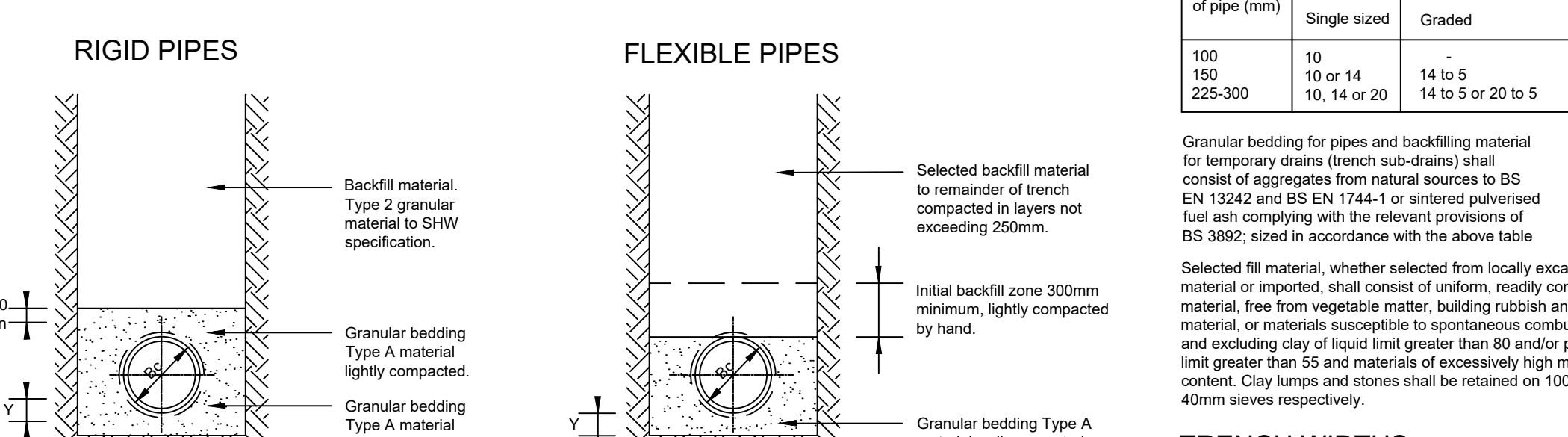


YARD GULLY

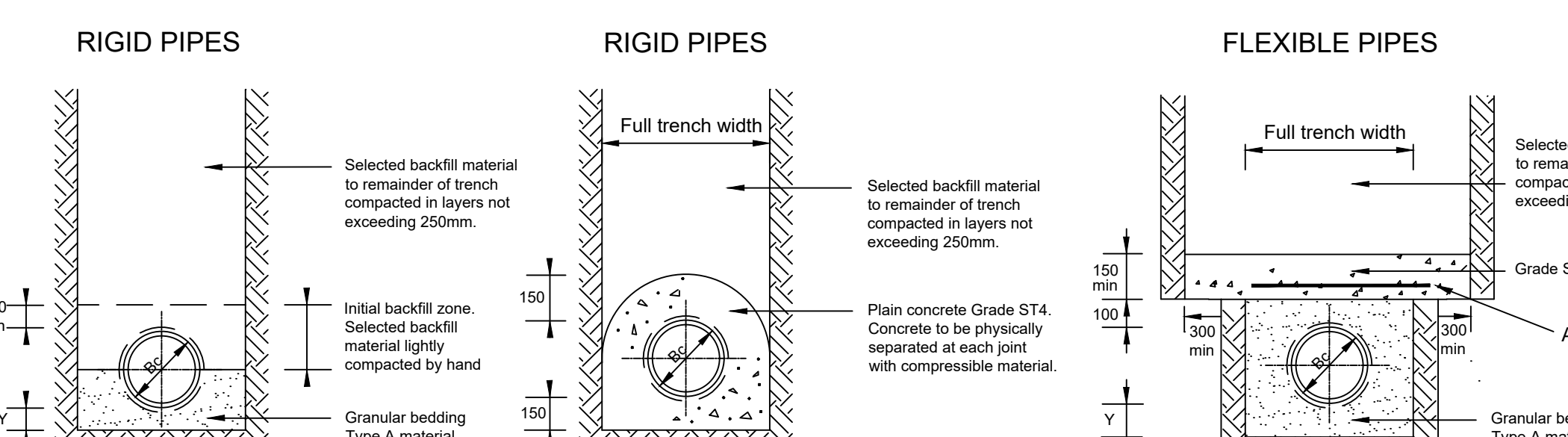


PRECAST CONCRETE MANHOLE
Depth to soffit 1.0 to 3.0

CHAMBER DIAMETERS TO BE AS FOLLOWS:	
Diameter of largest pipe in manhole.	Chamber section diameter.
mm	mm
Less than 300	1200 (1050 where depth to soffit is less than 1.5m)



CLASS S BEDDING
(On trafficked areas)



CLASS B BEDDING
(Non-trafficked areas)

For cover to pipes of less than 1.00m in paved areas, and less than 0.45m in open spaces.

GRANULAR BEDDING

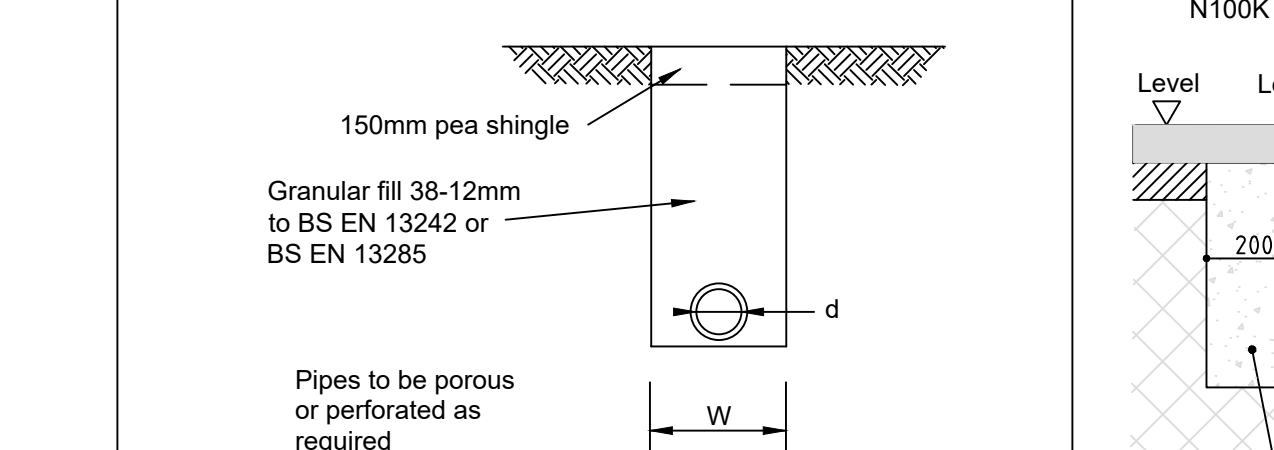
Nominal bore of pipe (mm)	Alternative Aggregate sizes (mm)	
	Single sized	Graded
100	10	-
150	10 or 14	14 to 5
225-300	10, 14 or 20	14 to 5 or 20 to 5

Granular bedding for pipes and backfilling material for temporary drains (trench sub-drains) shall consist of aggregates from natural sources to BS EN 12342 and BS EN 1744-1 or sintered pulverised fuel ash complying with the relevant provisions of BS 3892, sized in accordance with the above table.

Selected fill material, whether selected from locally excavated material or imported, shall consist of uniform, readily compactible material, free from vegetable matter, building rubbish and frozen material, or materials susceptible to spontaneous combustion, and excluding clay of liquid limit greater than 60 and/or plastic limit greater than 55 and materials of excessively high moisture content. Clay lumps and stones shall be retained on 100mm and 40mm sieves respectively.

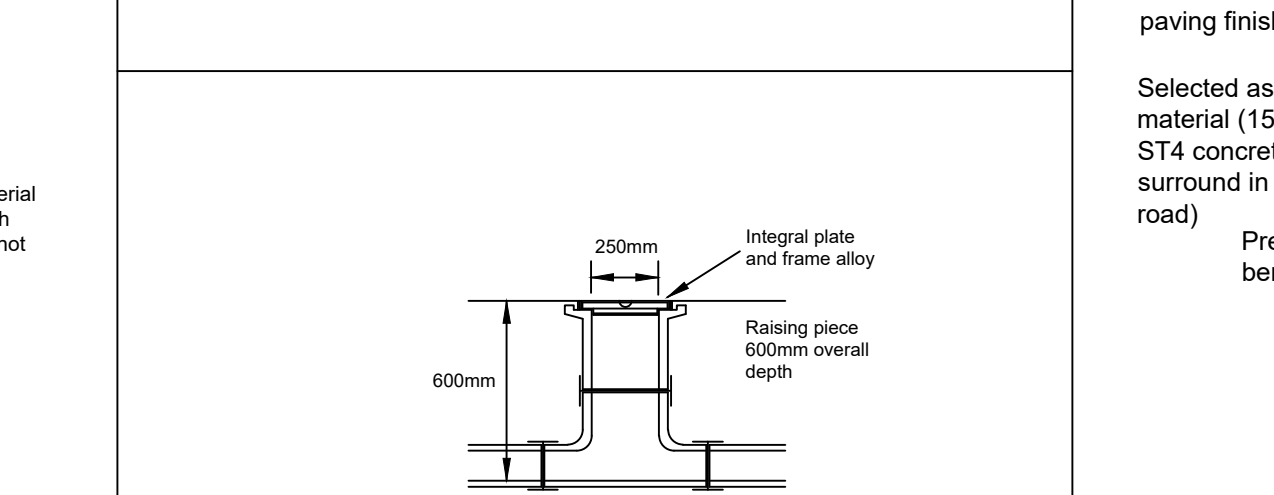
TRENCH WIDTHS

Pipe Dia	Trench width max.	Y
100	600	100
150	600	100
225	700	100
300	750	100



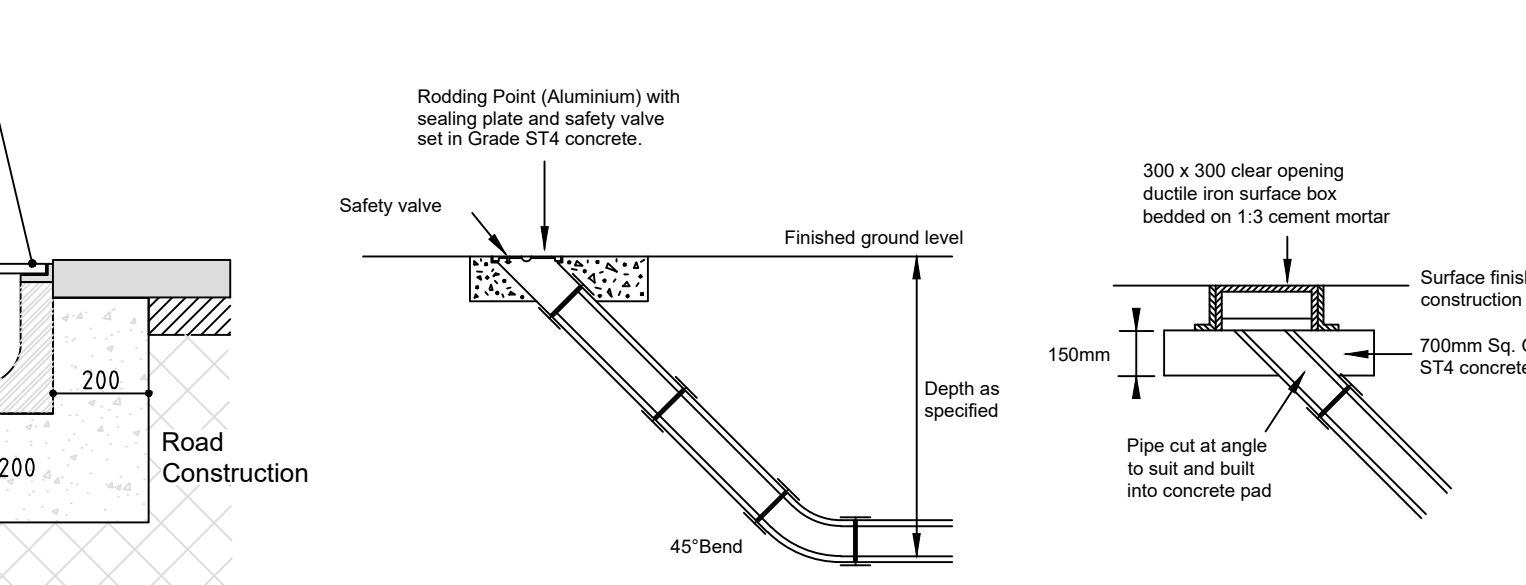
Pipe Dia (d) mm	Trench width W mm
100	300
150	450
225	450
300	450

LAND DRAIN



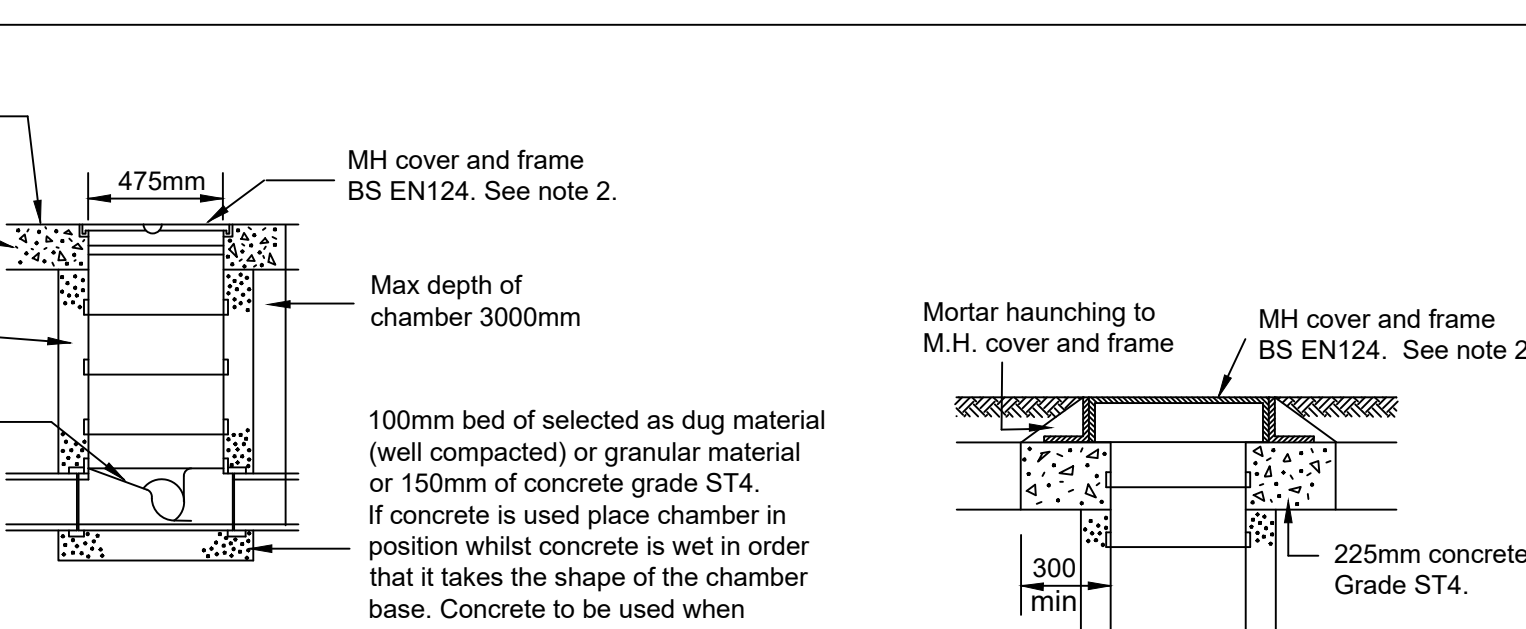
POLYPROPYLENE INSPECTION CHAMBER
Maximum depth to invert 3000

NOTE
Polypropylene inspection chambers greater than 1200mm deep shall be provided with restricted access not in excess of 350mm diameter.



LINEAR DRAIN

RODDING EYE
Used in areas accessible to vehicles



HEAVY DUTY COVER DETAIL
Used in trafficked areas

DO NOT SCALE THIS DRAWING