

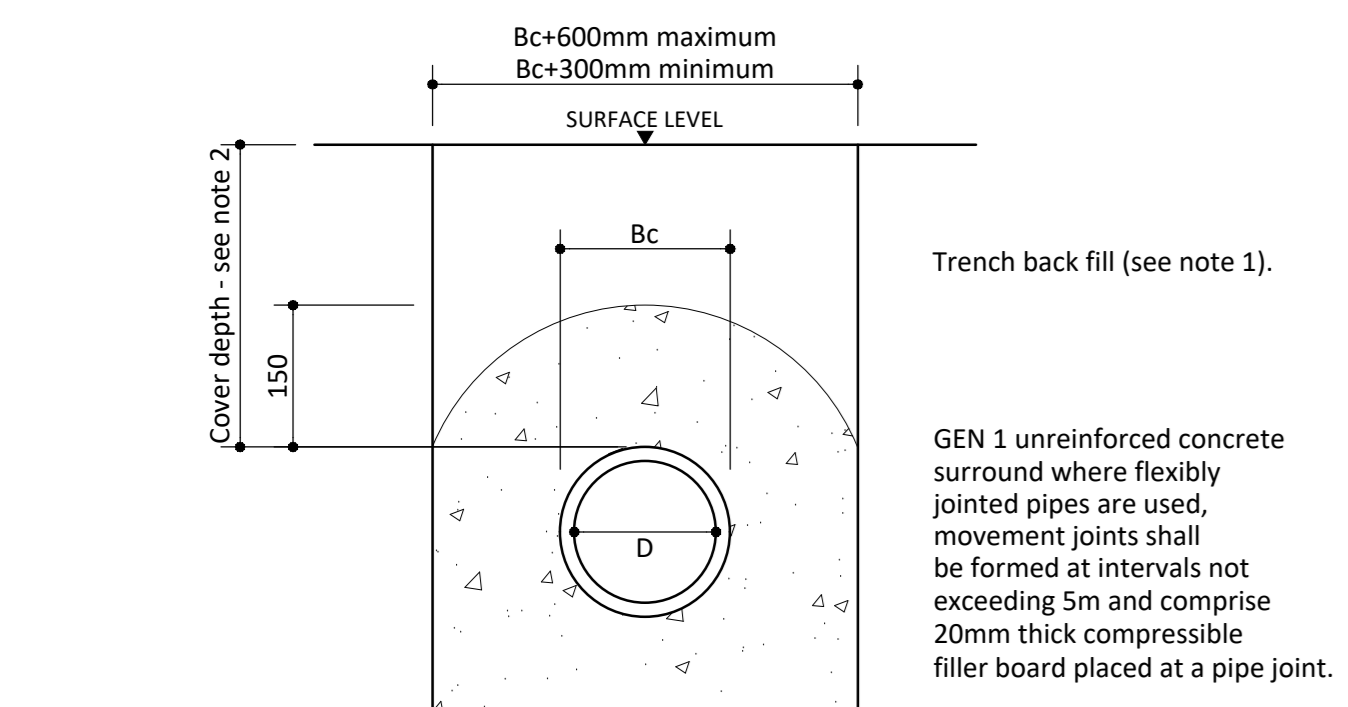
**NOTES AND SPECIFICATION**

- Processed granular bedding and side fill materials shall include aggregates to BS EN 12620 + A1 and lightweight aggregates to BS EN 13055-1 and shall be graded as defined in the following tables:

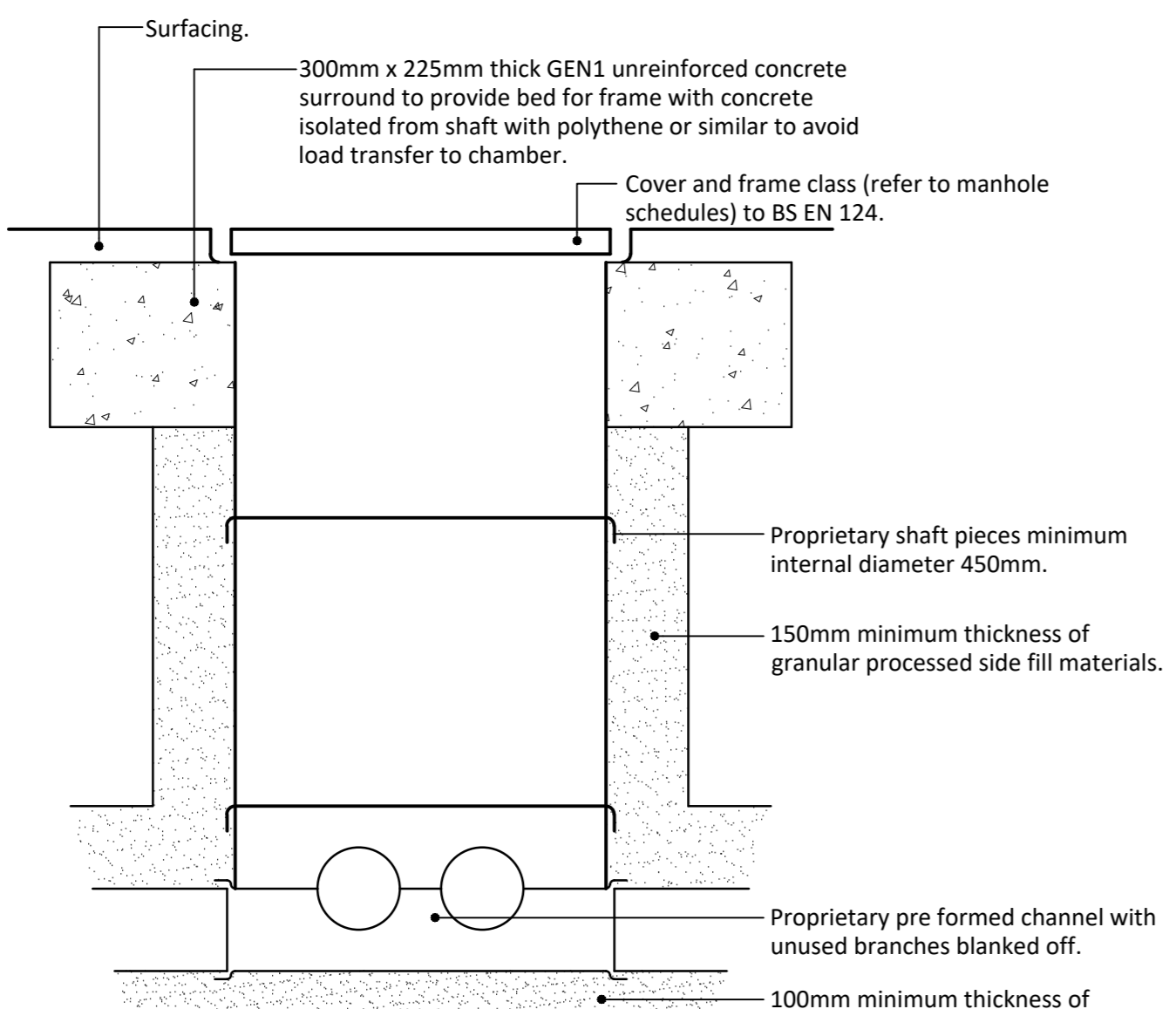
Pipe Nominal Size (mm)	Maximum Partical Size (mm)	Maximum CF Value	Material
100	10	0.15	10mm nominal single size
over 100 to 150	15	0.15	10 or 14mm nominal single size or 14 to 5mm graded.
over 150 to 300	20	0.15	10, 14 or 20mm nominal single size or 14 to 5mm graded or 20mm to 5mm graded.
over 300 to 550	20	0.15	14 or 20mm nominal single size or 14 to 5mm graded or 20mm to 5mm graded.
over 550	40	0.15	14, 20 or 40mm nominal single size or 14 to 5mm graded or 40 to 5mm graded.

- Suitable fills shall be capable of accepting compaction plant subject to the Engineer's approval and shall exclude boulders, lumps of concrete, bricks, timber and vegetable matter.
- Selected fill shall be readily compatible material free from roots, organic material, building material, and shall be in an unfozen condition. Selected fill shall exclude clay lumps exceeding 25mm size. Selected fill shall be carefully compacted around and above the pipe, taking care not to damage the pipe.
- Where the pipe is installed in areas which are paved or future settlement of back fills is not acceptable then back filling of the trench shall be carried out using type 1 sub-base to Highways Agency specification for Highway Works compacted to the same specifications.
- Minimum cover:
  - Cover shall be greater than:
    - 2000mm in areas subject to heavy construction plant.
    - 1000mm in areas subject to normal construction traffic.
    - 1200mm to finished level of new main road pavements.
    - 600mm in landscape areas, foot ways, gardens or fields
    - Otherwise use class Z bedding and surround.
- Flexible pipes shall be unplasticised UPVC to BS EN 13598
- Construction, subsequent testing, operation and maintenance shall be carried out in accordance with BS EN 752. Sewers to be adopted by water companies shall be installed in accordance with the current edition of 'Sewers for Adoption' produced by the Water Services Association. Sewers to be adopted by highway authorities shall be installed in accordance with the authority's specification.
- Workmanship shall be in accordance with BS 8000 - 14:1989

**Flexible Carrier Drain, Class S Bedding, Surround And Sidefill**



**Specification For Bedding And Sidefill Materials For Flexible Pipes (Class S & B Bedding)**

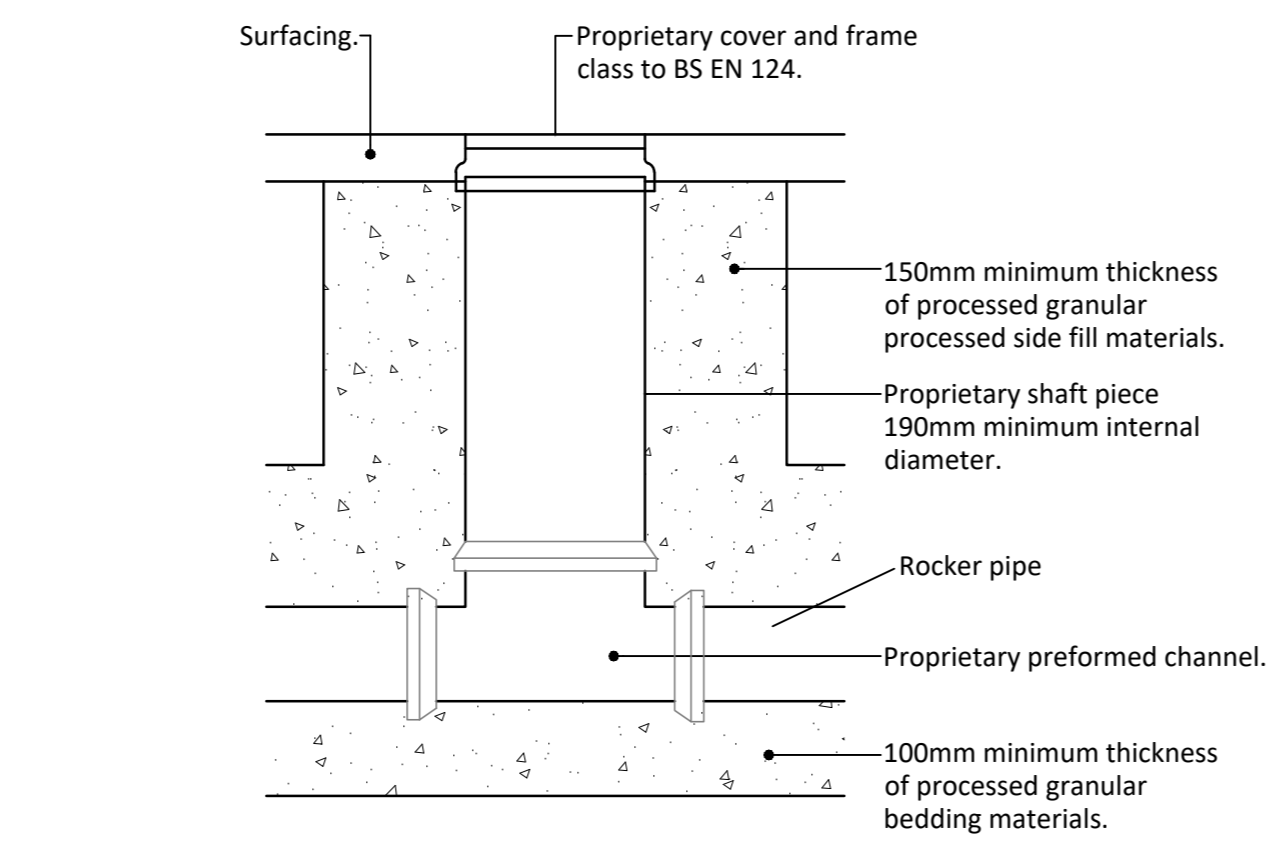


- Plastic inspection chambers shall be to BS 7158:1989.
  - Vitrified clay inspection chambers shall be to BS65: 1991 and BS EN 295-6: 1996.
  - Proprietary inspection chambers shall be installed strictly in accordance with manufacturers instructions.
  - Refer to JPP specification for granular processed bedding and side fill materials.
- LIMITATIONS OF USE**
- Chamber can be used in areas subject to light vehicular loading.
  - Chamber is unsuitable for adoption by water companies.
  - Chamber as detailed is not suitable for internal installation.
  - Maximum inlet and outlet size is typically 110mm.
  - Maximum depth to invert 4000mm.
  - Access for inspection and remotely operated equipment only.

**Carrier Drain - Class Z Bedding, Surround And Backfill**

**450Ø Proprietary Plastic Inspection Chamber**

**190Ø Proprietary Plastic Inspection Chamber**



- Plastic inspection chambers shall be to BS 7158:1989.
  - Notwithstanding the above detail, proprietary shallow chambers shall be installed strictly in accordance with manufacturers instructions.
  - Refer to manufacturers details for strengthening details when used in areas subject vehicular loads.
  - Refer to JPP specification for processed granular bedding and side fill materials.
- LIMITATIONS OF USE**
- Chamber is unsuitable for adoption by water companies.
  - Maximum inlet and outlet size is typically 110mm.
  - Chamber shall not be used in areas subject to vehicular loads unless agreed with the manufacturer.
  - Access is restricted to visual and depth limited by ability to manipulate a stopper at arms length.

**DESIGN DETAILS SHOWN ON THIS DRAWING ARE PRELIMINARY ONLY AND SUBJECT TO DETAILED DESIGN**

**ALL WORKS WITHIN THE ADOPTED PUBLIC HIGHWAY SHALL CONFORM TO NORTH LINCOLNSHIRE COUNCIL DESIGN GUIDE**

**ALL ADOPTABLE DRAINAGE WORKS TO BE IN ACCORDANCE WITH CODES FOR ADOPTION DESIGN & CONSTRUCTION GUIDANCE**

Northampton  
4 Gordon Way, Brighthelm,  
Northampton, NN2 5DZ  
T: 01604 781811

Weymouth  
Unit 12A, Weymouth Innovation Centre,  
Weymouth, Dorset, DT9 4LW, Weymouth, Dorset, DT9 4LW  
T: 01305 300000

Milton Keynes  
Dunstable Road, Milton Keynes, MK14 6LW  
T: 01908 889433

Pole  
Unit 1, Brimscombe Park House, Brimscombe Business Park,  
Brimmscombe Park, Pole, Oxford, OX12 1TD  
T: 01235 540888

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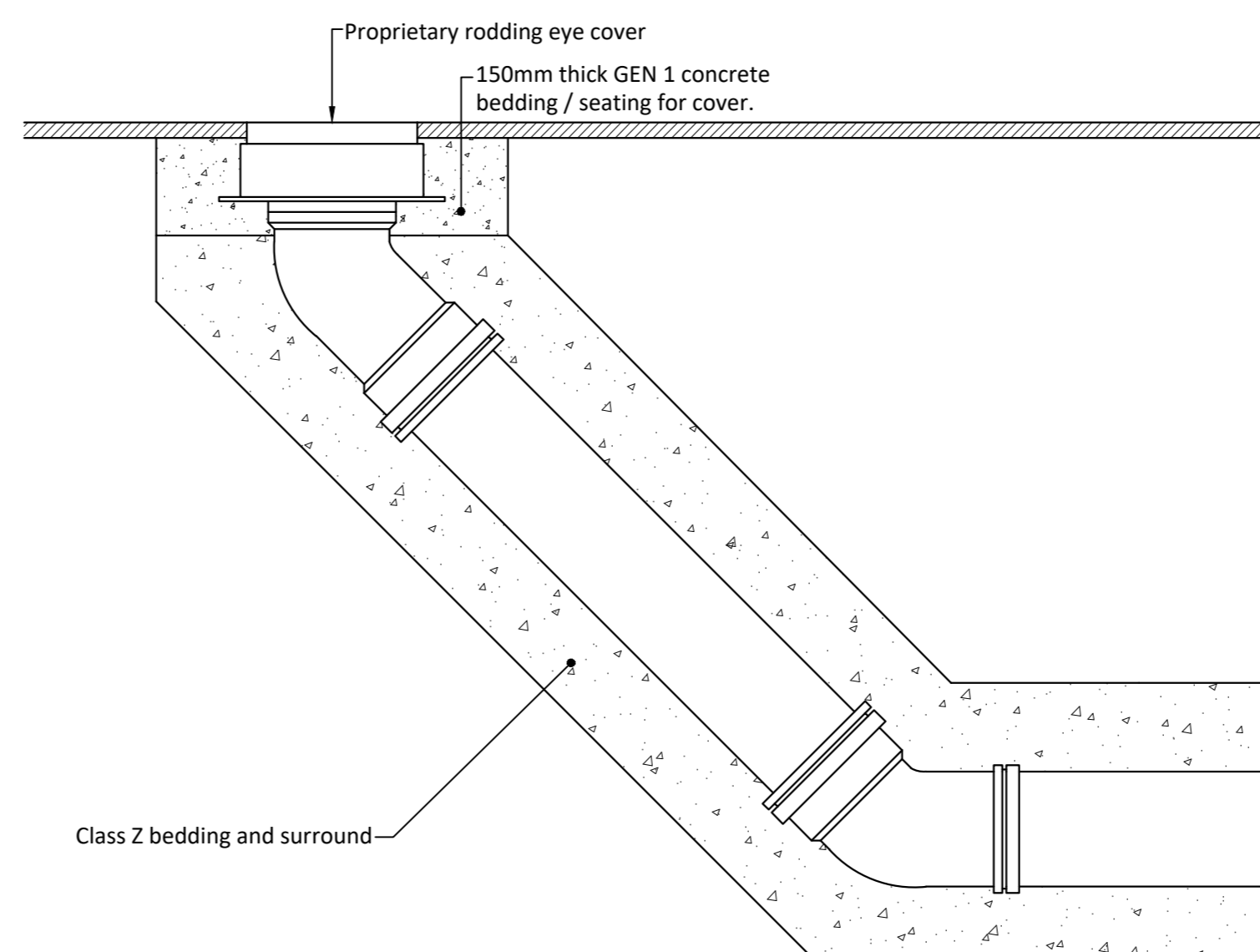
**NOTES AND SPECIFICATION**

- Processed granular bedding and side fill materials shall include aggregates to BS EN 12620 + A1 and lightweight aggregates to BS EN 13055-1 and shall be graded as defined in the following tables:

Pipe Nominal Size (mm)	Maximum Partical Size (mm)	Class of Bedding	Maximum CF Value	Material
100	10	S B	0.15 0.30	10mm nominal single size
over 100 to 150	15	S B	0.15 0.30	10 or 14mm nominal single size or 14 to 5mm graded.
over 150 to 300	20	S B	0.15 0.30	10, 14 or 20mm nominal single size or 14 to 5mm graded or 20mm to 5mm graded.
over 300 to 550	20	S B	0.15 0.30	14 or 20mm nominal single size or 14 to 5mm graded or 20mm to 5mm graded.
over 550	40	S B	0.15 0.30	14, 20 or 40mm nominal single sized crushed rock or 14 to 5mm graded or 40 to 5mm graded.

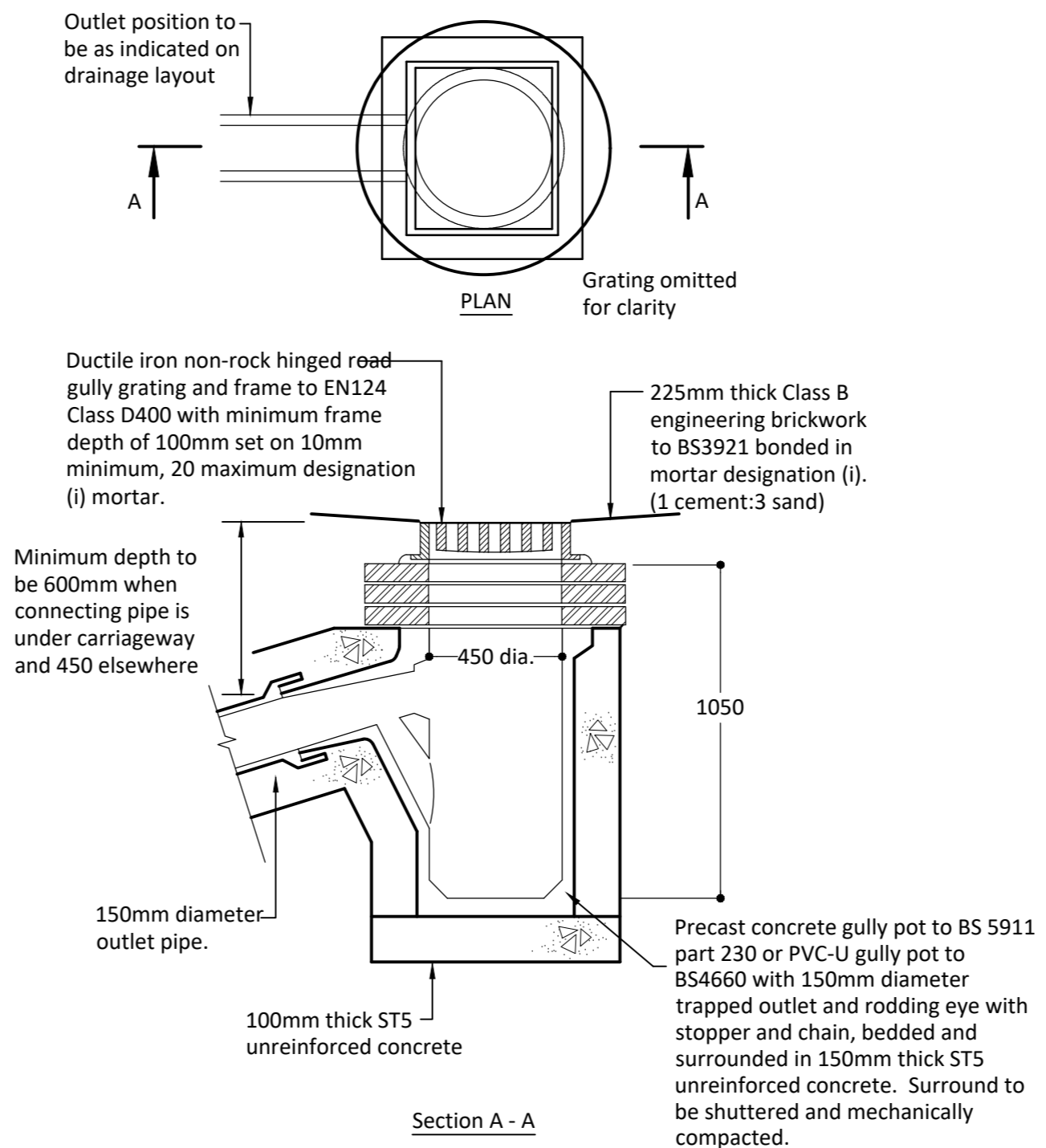
- The sulphate content of bedding and side fill materials shall not be greater than 0.3% as sulphur trioxide.
- The above specification has been produced based on the Water Industry specification publication No. 4-08-01 (issue 4) February 1994.
- Compaction factor (CF) shall be determined in accordance with water industry publication No 4-08-02 (issue 1) February 1994 - appendix B.

**Specification For Bedding And Sidefill Materials For Rigid Pipes (Class S & B Bedding)**



- For use in privately owned drainage systems at the head of a run where rodable access is required
- Detail based on Wavin database.

**Rodding Eye**

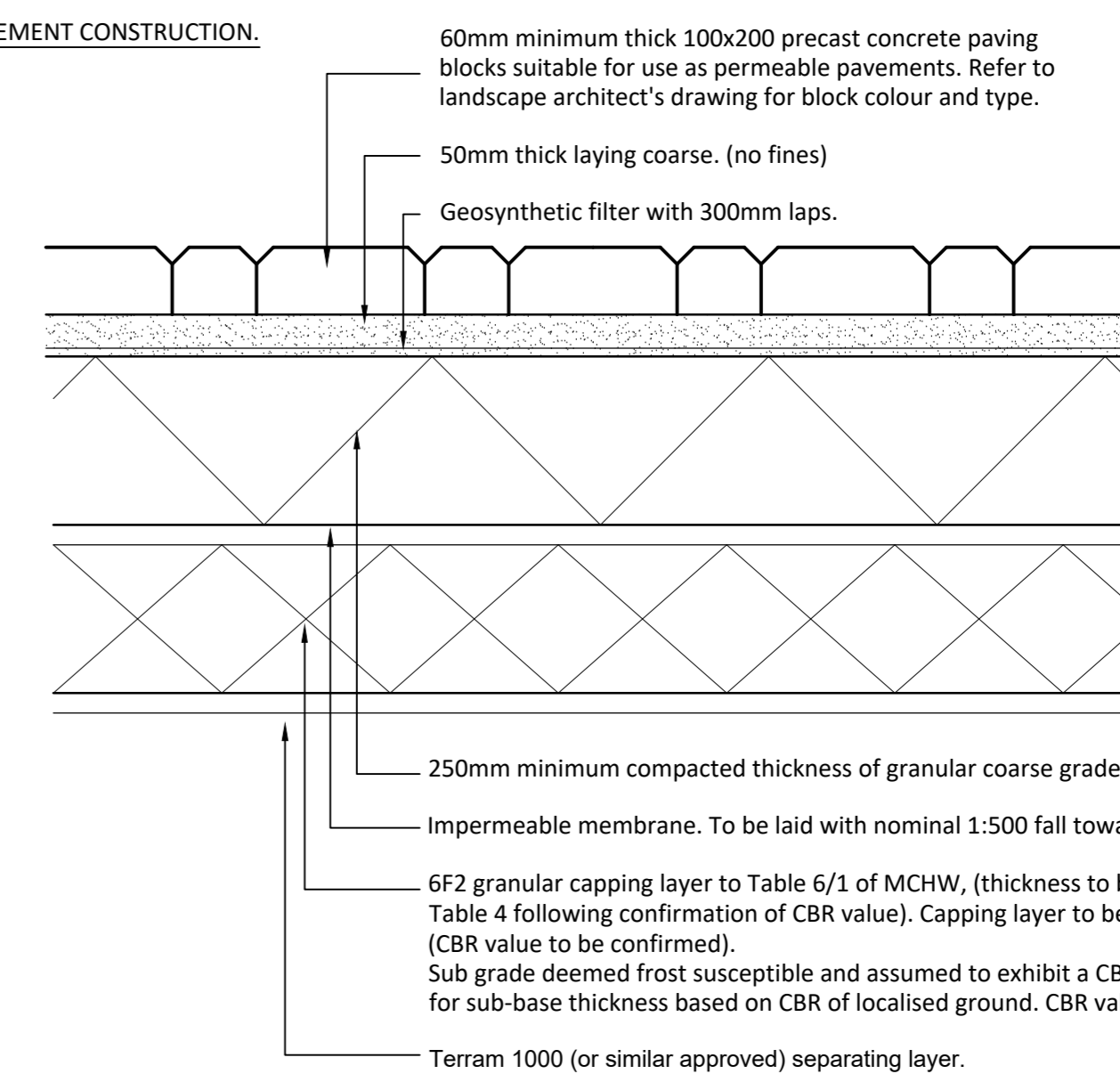


- Plastic inspection chambers shall be to BS 7158:1989.
  - Notwithstanding the above detail, proprietary shallow chambers shall be installed strictly in accordance with manufacturers instructions.
  - Refer to manufacturers details for strengthening details when used in areas subject vehicular loads.
  - Refer to JPP specification for processed granular bedding and side fill materials.
- LIMITATIONS OF USE**
- Chamber is unsuitable for adoption by water companies.
  - Maximum inlet and outlet size is typically 110mm.
  - Chamber shall not be used in areas subject to vehicular loads unless agreed with the manufacturer.
  - Access is restricted to visual and depth limited by ability to manipulate a stopper at arms length.

**Table 1: Operation and maintenance requirements for pipes, gullies and manholes**

Maintenance schedule	Required action	Record frequency
Regular maintenance	Inspect and identify areas that are not operating correctly. If required, take remedial action	Monthly for first 3 months and then six monthly
Regular maintenance	Debris removal from catchment surface (where evidence of risk to performance)	Monthly
Regular maintenance	Remove sediment from pre-treatment structure (e.g. gullies)	Annually or as required
Regular maintenance	Cleaning/jetting of annually, or as required, pipes and manholes	As required

**PAVEMENT CONSTRUCTION**



**FORMATION/SUBGRADE**

The CBR results are to be confirmed prior to construction to confirm sub-base and capping thickness.

**SURFACE COMPACTION**

Prior to placement of the sub-base the formation shall be trimmed and rolled to MCHW clause 609. Any soft areas shall be brought to the attention of the Engineer for selection of appropriate remedial measures.

**SURFACE TOLERANCE**

Laid blocks shall be subject to passes of a vibrating plate compactor with a minimum plate area of 0.25m<sup>2</sup> which gives an effective force per unit area of plate of 75 kN/m<sup>2</sup> with a frequency of 65-100Hz with a minimum mass of 200kg, or as required by the block manufacturer. Sufficient passes shall be made to produce an even surface.

**PAVEMENT LOADING LIMITS**

This pavement is unable to withstand jockey wheel loads.

**Private Permeable Block Paved Driveway (Treatment only)**



**Notes & Specification For Permeable Block Paving**

- Permeable block paving construction shall generally be carried out in accordance with the current Highways Agency Specification for Highway Works (MCHW) and BS7533. Guide to the design, construction and manufacture of concrete block permeable pavements produced by Intertape.
- The coarse graded aggregate subbase has not been designed to carry construction traffic. It is vital that subbase is kept free from traffic and construction debris. If the subbase is required to be used for construction traffic, the Engineer shall be consulted prior to trafficking.
- Due to the nature of the coarse graded aggregate, the Contractor shall construct a trial area (min. 10mx10m) and test typical construction plant on this area to determine suitability. The Contractor shall consult with all sub-contractors to ensure they are satisfied their plant can be used on the subbase materials prior to construction.
- Coarse graded aggregate shall comply with BS EN 13242 and shall be designated Type 4/20 and shall be graded as follows:-

Sieve Size mm (nearest UK equivalent)	Coarse aggregate 40mm to 5mm	Properties	Category to BS EN 13242 or BS 12620
40	100	Grading	4/20 (preferred) or 4/40, GC: BS-15, GTC: 20/17.5
31.5	98 - 100	Fines Content	F <sub>150</sub>
20	90 - 99	Shape	Fl <sub>20</sub>
10	25 - 70	Resistance to Fragmentation	LA <sub>10</sub>
4	0 - 15	Durability: Water absorption to BS EN 12620-2:2002, Clause 7 - for WA > 2%	WA <sub>10</sub>
2	0 - 5	Magnesium Sulphate Soundness	MS <sub>10</sub>
		Resistance to Wear	M <sub>10</sub>
		Acid Soluble Sulphate Content: - Aggregates other than air-cooled blast-furnace slag - Air-cooled blast-furnace slag	AS <sub>10</sub>
		Total Sulphur: - Aggregates other than air-cooled blast-furnace slag - Air-cooled blast-furnace slag	≤ 3% by mass
		Volume Stability of Blast-Furnace and Steel Slags: - Free from di-calcium silicate and iron disintegration in accordance with BS EN 13242: 2002, 6.4.2.2	≤ 2% by mass
		- Air-cooled blast-furnace slag - Steel slag	V <sub>5</sub>
		Leaching of Contaminates	100%
		10% Fines	100%
		Other Properties	100%

Blast furnace slag and other recycled materials should meet the requirements of the Environment Agency 'Waste Acceptance Criteria' for Inert waste when tested in accordance with BS EN 12457-3.

Particles shall be rough and angular to provide good interlocking between particles. Sands and gravels with rounded particles shall not be used.

**Table 2: Operation and maintenance requirements for detention basin**

Maintenance schedule	Required action	Record frequency
Regular maintenance	Remove litter, debris and trash	Monthly
Regular maintenance	Cut grass - for landscaped areas and access routes	Monthly (during growing season) or as required
Regular maintenance	Cut grass - meadow grass in and around basin	Half yearly; Spring (before nesting season) and Autumn
Regular maintenance	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
Occasional maintenance	Reused areas of poor vegetation	As required
Occasional maintenance	Prune and trim trees and remove cuttings	As required
Occasional maintenance	Remove sediment from pre-treatment system when 50% full	As required
Remedial actions	Repair erosion or other damage by reseeded or re-planting	As required
Remedial actions	Repair or rehabilitate inlets, outlets and overflows	As required
Remedial actions	Relevel uneven surfaces and reinstates design levels	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
Monitoring	Inspect bankside, structures, pipework etc for evidence of physical damage	Monthly
Monitoring	Inspect inlets and pre-treatment systems for silt accumulation; establish appropriate silt removal frequencies	Half yearly
Monitoring	Inspect infiltration surfaces for compaction and ponding	Monthly

**Table 3: Operation and maintenance requirements for permeable pavements**

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard domestic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations - pay particular attention to areas where water runs onto porous surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
Occasional maintenance	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required - once per year or less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil loss, has been raised to within 50mm of the level of the paving	As required
Remedial Actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
Monitoring	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
Monitoring	Inspect for evidence of silt accumulation and/or weed growth - if required, take remedial action	Three monthly, 48 hr after larger storms in first six months
Monitoring	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
Monitoring	Monitor inspection chambers	Annually

Permeable paving and drainage within the road areas will be the responsibility of a management company. On-plot drainage will be the responsibility of the individual plot owners.

- Infrastructure Design
- Geotechnical & Environmental
- Structural Engineering
- Surveying
- Development Planning
- Professional Advice

Drawn By:	GM	Client:	Asbby House Land and Development Ltd
Chkd By:	DO	Project:	Housing Development Land at Thorne Road Sandtoft, Doncaster
Scale @ A0:	NTS	Title:	Private Construction Details
Date:	March 2022		
Status:	FOR PLANNING		
Project No.:	11021	Drawing No.:	105
Rev:			