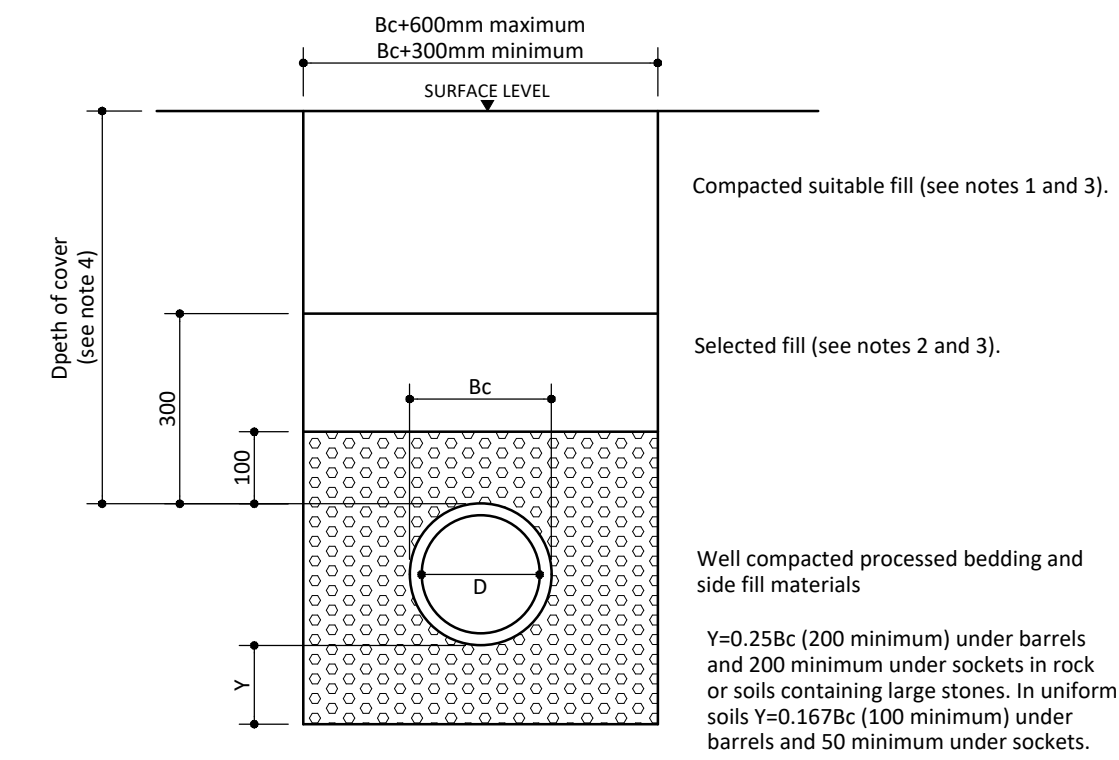
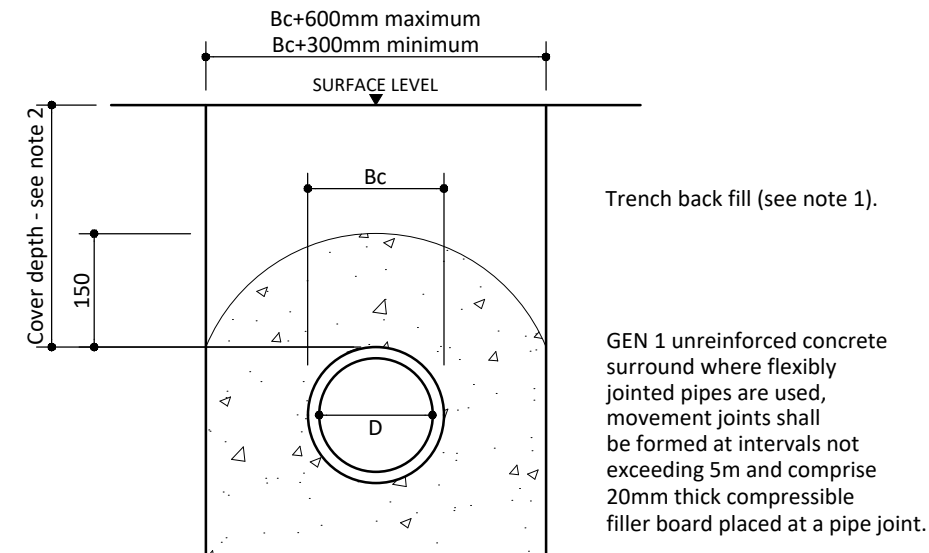




NOTES AND SPECIFICATION.

- 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 unfrozen 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



Notes and Specification

- Trench excavation shall be back filled as follows:
 - Outside road pavements or areas where surface settlement cannot be accepted, back filling shall be carried out using suitable fills. 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.
 - In areas below road pavements (or where surface settlement cannot be accepted)
 - Where soffit of pipe is less than 0.5m below formation, back fill with GEN 0 unreinforced concrete.
 - Where soffit of pipe is between 0.5m and 1.0m below formation, back fill with Type 1 sub-base.
- Cover to pipes shall be:
2000mm or less in areas subject to heavy construction plant.
1000mm or less in areas subject to normal construction traffic.
1200mm or less to finished level of new main road pavements.
600mm or less in landscape areas, foot ways, gardens or fields
Otherwise use other specified surround and back fill details.
- Pipes, unless otherwise stated, shall be:
 - Clay pipes with min FN of 40 to BS EN 295 and BS65
 - Concrete pipes to BS 5911 and BS EN 1916 or
 - Flexible pipes shall be unplasticised UPVC to BS EN 13598.Concrete pipes shall not be used for foul sewers unless otherwise stated.
- 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.
- Back filling shall only be undertaken when the concrete bedding and surround has obtained sufficient strength to accommodate back filling operations.
- This detail shall not be used where the drainage is to be adopted by Water companies.
- Workmanship shall be in accordance with BS 8000 - 14: 1989

Carrier Drain - Class Z Bedding, Surround And Backfill

NOTES AND SPECIFICATION

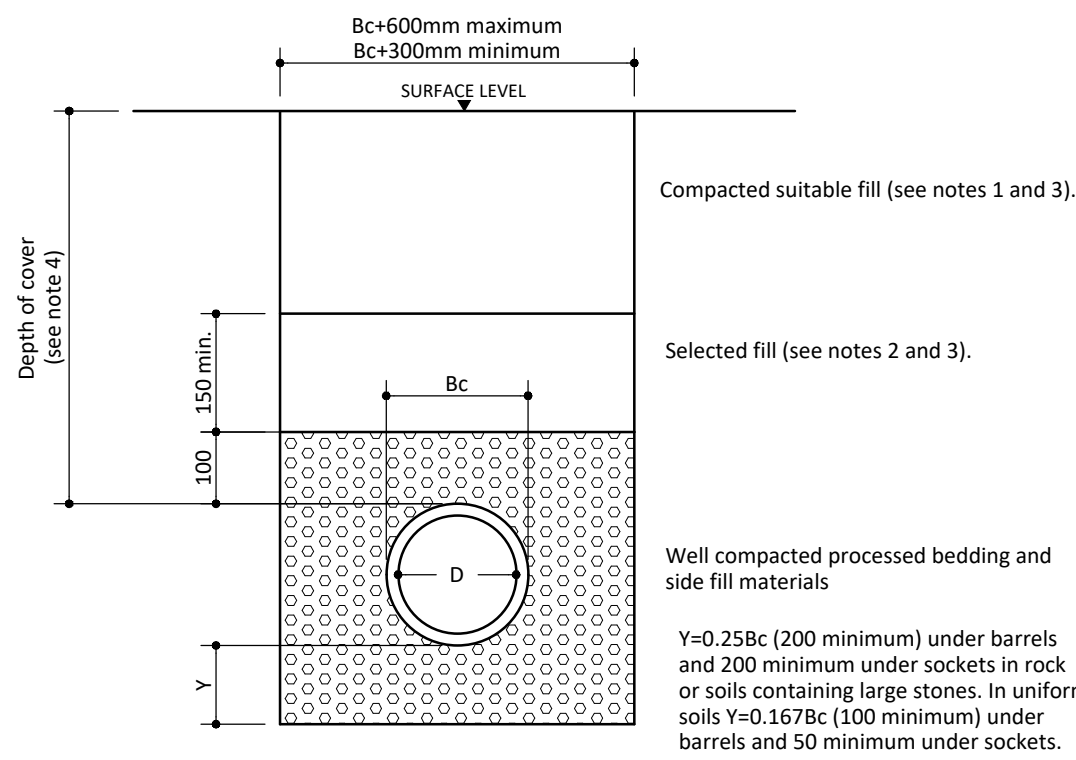
- Processed granular bedding and side fill materials shall include aggregates to BS EN 12620 + A1 and lightweight aggregates to BS EN 13055-1 and shall be graded as defined in the following tables:

TABLE 1

Pipe Nominal Size (mm)	Maximum Partial 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 20mm 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 the water industry publication No 4-08-02 (issue 1) February 1994 - appendix B.

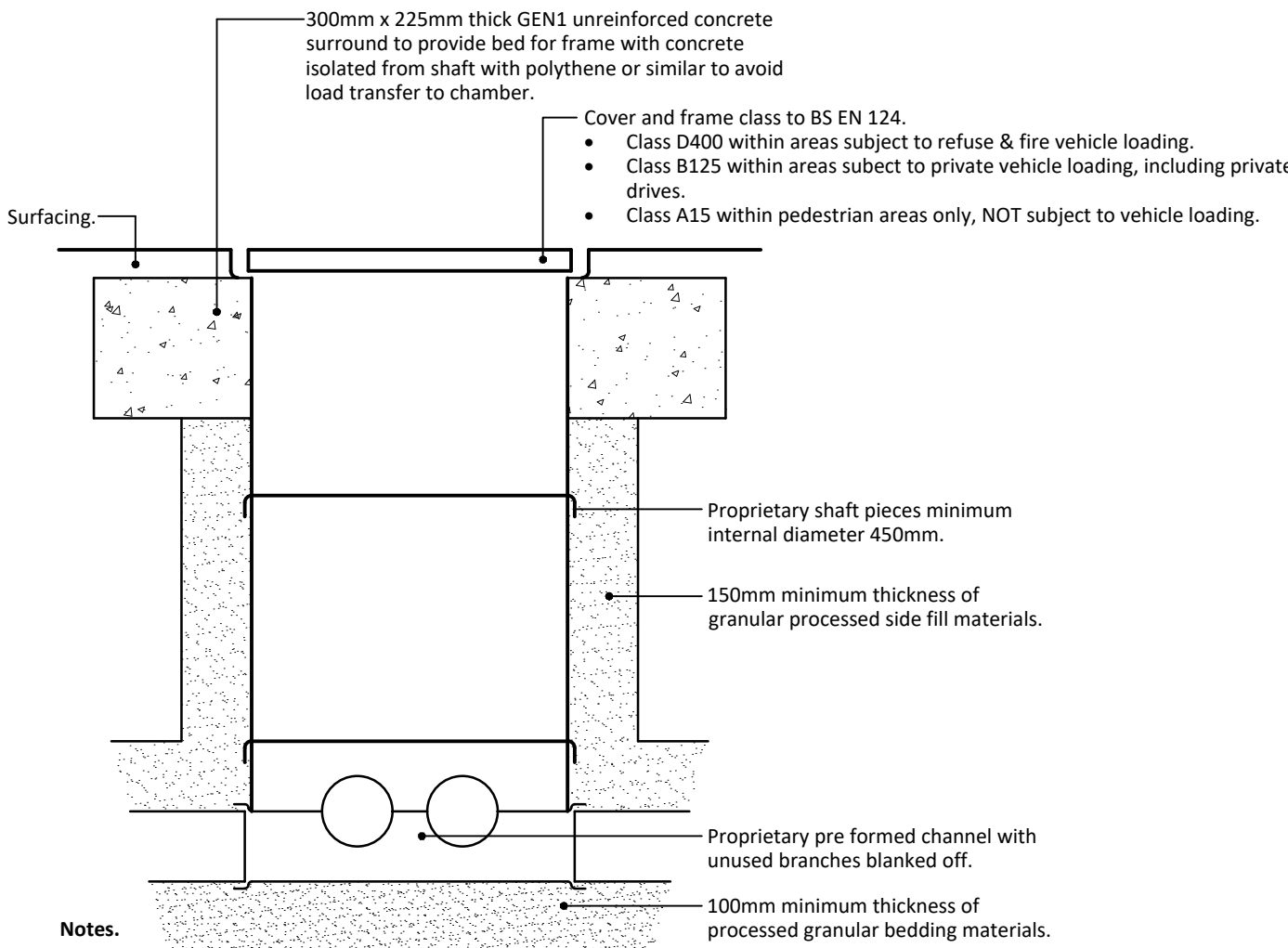
Specification For Bedding And Sidefill Materials For Flexible Pipes (Class S & B Bedding)



NOTES AND SPECIFICATION.

- 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 unfrozen 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 or bridging slab if drainage is to be adopted by a Water Company.
- Rigid pipes shall be:
 - Clay pipes with min FN of 40 to BS EN 295 and BS65.
 - Concrete pipes to BS 5911 and BS EN 1916.Concrete pipes shall not be used for foul sewers unless otherwise stated.
- 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

Rigid Carrier Drain - Class S, Bedding, Sidefill And Backfill



Notes.

- Plastic inspection chambers shall be to BS7158: 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.
- The minimum access opening for chambers 1.2m deep or less is 430mm dia. For chambers .1.2m deep the access opening shall be restricted top 350mm dia.

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 150mm.
- Maximum depth to invert 3000mm.
- Access for inspection and remotely operated equipment only.

450Ø Proprietary Plastic Inspection Chamber

NOTES AND SPECIFICATION

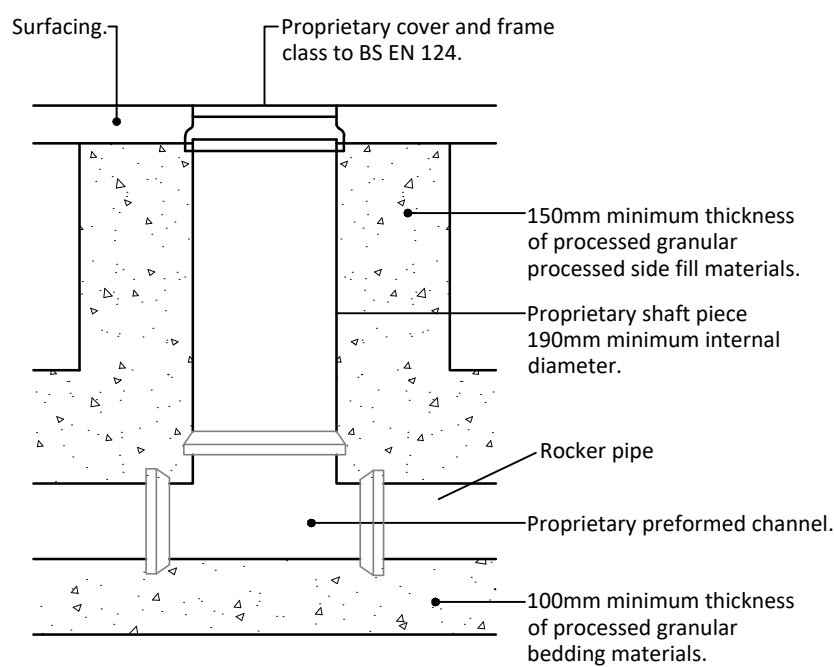
- Processed granular bedding and side fill materials shall include aggregates to BS EN 12620 + A1 and lightweight aggregates to BS EN 13055-1 and shall be graded as defined in the following tables:

TABLE 1

Pipe Nominal Size (mm)	Maximum Partial 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 20mm 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)



NOTES.

- 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.
- Maximum depth to invert is 600mm.
- 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.

190Ø Proprietary Plastic Inspection Chamber

General Notes

- All dimensions are in metres unless otherwise stated.
- All levels are in metres.
- This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.
- Do not scale from this drawing.

General Drainage/Private Drainage Notes

- All pipe lengths and gradients are based on centre of manhole to centre of manhole.
- The exact position, level, size and use of existing sewers to be confirmed on site and reported to the Engineer prior to the commencement of works.
- All pipes are to be laid with level soffit's or as indicated.
- All private drainage works to accord with the requirements of Building Regulations 2015, Part H (drainage and waste disposal).
- All pipes to be bedded and backfilled in accordance with Part H, diagram 10. Shallow pipes shall be protected in accordance with Part H, diagram 11.
- Unless otherwise stated, all private drainage to be 100mm diameter. Gradients have been shown where there are pipe capacity issues, however minimum gradients are as below:
Surface water 100mm diameter pipes shall not be laid flatter than 1 in 100
Surface water 150mm diameter pipes shall not be laid flatter than 1 in 150
Foul water 100mm diameter pipes shall not be laid flatter than 1 in 40 unless there is a WC connected upstream at which it can be laid at 1 in 80
Foul water 150mm diameter pipes shall not be laid flatter than 1 in 150 providing there are minimum of 5 WC's connected.
- Foul water sewers serving more than 10 dwellings shall have a minimum diameter of 150mm
- Pipes which run adjacent to buildings shall be installed in strict accordance with Part H, clauses 2.23 to 2.25 and diagram 8.
- All private manholes and inspection chambers situated in areas subject to light vehicular loading to have Class B125 covers and frames and those not subject to vehicular loading to have class A15 covers and frames all to BSEN 124
- All drains near existing or proposed trees shall be constructed in accordance with the requirements of NHBC's practice note 3 'building near trees'.
- Excavation of drain trenches must not be lower than the foundation of any nearby buildings. If the trench is within 1m of foundations, the trench needs to be filled with concrete up to the lowest level of the foundation. If the trench is further than 1m away from the foundations, the trench needs to be filled with concrete to a level below the lowest level for the building, equal to the distance from the building, less than 150mm.
- Adequate surface water drainage systems shall be provided to prevent unregulated discharge of water from a private drive onto the highway. These measures shall be implemented before the development in brought into use.
- Perforated pipework to be used for distributor runs within permeable block paved areas.
- Trapped road gullies to be used for all gullies designed in shared parking areas.
- All concrete and concrete products shall satisfy sulphate classification DS-1 & ACEC Class AC-1 to BRE Special Digest 1. All concrete grades must be capable of resisting the above sulphate classification'

Health, safety & the environment

In accordance with the Construction (Design and Management) Regulations 2015, the designs and details on this drawing have been the subject of a Designers Risk Assessment, to identify risks in the construction, use, or demolition of the scheme.

It is not considered necessary for Designers to highlight obvious and/or common risks (such as deep excavations, manual handling and working around heavy plant) which Contractors should be familiar with, and be able to control by good management and site practice.

So far as is reasonably practicable, the risks inherent in the design have been eliminated. Where it has been considered that elimination of a risk (or part of a risk) is not reasonably practicable, it has been reduced.

This drawing has been based/developed using the following external drawings					
Type	Company	Drawing date	Drawing title	Date received	Rev
Site Layout	JGA Architects	04.05.2022	20050 0102-P06 Proposed Site Layout-Model Space	04.01.2023	P06
Topographical survey	EMP Surveys LTD	July 2022	1021_Pinchbeck Topographical Survey_Final	04.01.2023	P05

☐	Northampton 4 Ironstone Way, Brinkworth, Northampton, NN6 9UD T: 01604 781811
☐	Warwick Unit 12A, Warwick Innovation Centre, Warwick Technology Park, Gallops Hill, Warwick, CV34 6UW T:02476 100530
☒	Milton Keynes Suite B2A, Denbigh Business Park, 23 First Avenue, Denbigh, Milton Keynes, MK1 1DN T: 01908 889433
☐	Poole Suite 8, Branksome Park House, Branksome Business Park, Bourne Valley Road, Poole, Dorset, BH12 1ED T: 01202 540888

E: mail@jppuk.net
W: jppuk.net

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

Drawn By:	AD	Client	Burmor Construction
Chkd By:	LC	Project	Land East of Surfleet Road Pinchbeck
Scale @ A1:	NTS	Title	Private Drainage Construction Details (Sheet 1)
Date:	February 2023		
Status:	FOR TECHNICAL APPROVAL		
Project No.:	26043	Drawing No:	116 (1)
Rev:	-		

