| PIPE DIAMETER | CLASS OF BEDDING | IMPORTED GRANULAR MATERIAL (NOTE 1) |
|---|---|---|
| 100 | F<br>S<br>B | 10mm nominal size |
| OVER 100 to 150 | F<br>S<br>B | 10 or 14mm nom. single size<br>or 14 to 5mm graded |
| OVER 150 to 150 | F<br>S<br>B | 10,14,20mm nom. single size<br>or 14 to 5mm graded<br>or 20 to 5mm graded |
| OVER 500 (note 2) | F<br>S<br>B | 10,14,20mm nom. single size crushed rock<br>or 14 to 5mm graded<br>or 20 to 5mm graded<br>or 40 to 5mm graded |

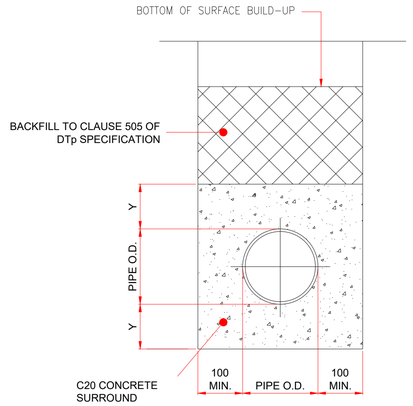
NOTES:

1. IMPORTED GRANULAR MATERIALS TO INCLUDE AGGREGATES AND AIR COOLED BLAST FURNACE SLAG TO BSEN 12620:2002 AND SINTERED PULVERIZED FUEL ASH TO BSEN 13055-1:2002.

2. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES

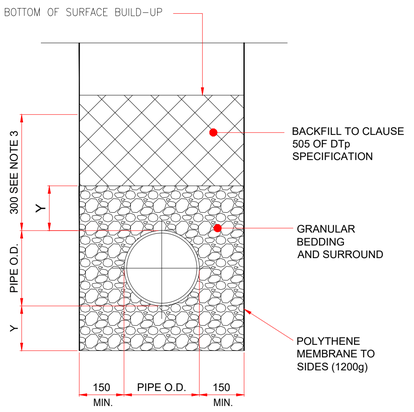
3. CLASS S BEDDING SHALL BE USED WITH ALL FLEXIBLE PIPES

## GRANULAR BEDDING & SIDEFILL MATERIALS FOR RIGID AND FLEXIBLE PIPES



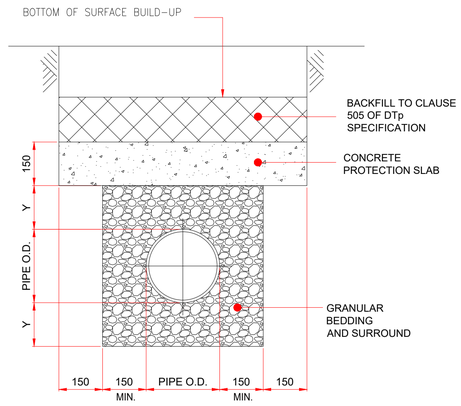

## CLASS Z BEDDING

PLAIN CONCRETE BED & SURROUND
(ALL PIPEWORK BELOW SLAB)
(BEDDING FACTOR 4.5)



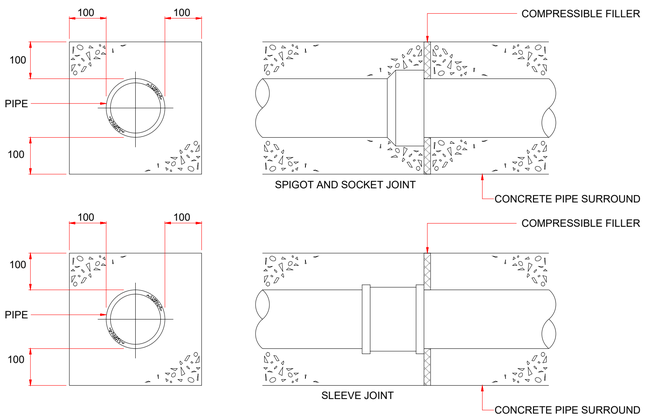

## CLASS S BEDDING

GRANULAR BED AND SURROUND
(PIPEWORK IN EXTERNAL AREAS WITH COVER TO SOFFIT GREATER THAN 600mm)
(BEDDING FACTOR = 2.2)




## CONCRETE SLAB PROTECTION OF PIPES LAID AT SHALLOW DEPTHS

(PIPEWORK IN EXTERNAL AREAS WITH DEPTH UNDER 600mm)




## JOINTS FOR CONCRETE ENCASED PIPES

| PIPE DIAMETER | Y minimum | | MAXIMUM TRENCH WIDTH | L |
|---|---|---|---|---|
| | Y1 min. | Y2 min. | | |
| 100 | 100 | 200 | 700 | 18 |
| 150 | 100 | 200 | 750 | 18 |
| 200 | 100 | 200 | 800 | 18 |
| 225 | 100 | 200 | 825 | 18 |
| 300 | 100 | 200 | 925 | 18 |

NOTES:

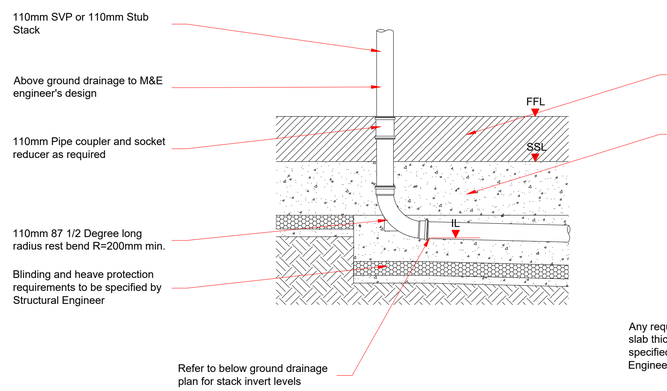
1. DIMENSION Y1 SHALL BE USED UNLESS Y2 IS SPECIFIED OR IS DIRECTED BY THE ENGINEER.

2. DIMENSION Y2 SHALL BE USED IN PLACE OF Y1 WHERE THE EXCAVATION IS IN ROCK OR IN MIXED SOILS CONTAINING ROCK BEDS, BOULDERS, LARGE FLINTS OR OTHER IRREGULAR HARD SPOTS.

3. DIMENSION Y2 SHALL BE INCREASE BY 40mm FOR EACH ADDITIONAL 1.0m OF COVER IN EXCESS OF 5.0m.

4. DIMENSION L IS THE WIDTH OF THE COMPRESSIBLE FILLER REQUIRED AT JOINTS IN CONCRETE PROTECTION TO PIPES.

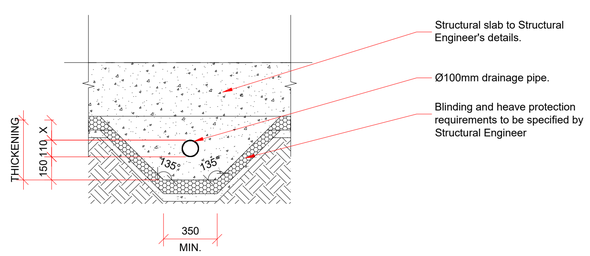
## DIMENSIONS FOR PIPE BEDDING




## CLASS Z BEDDING SHALLOW

PLAIN CONCRETE BED & SURROUND

(BEDDING FACTOR 4.5)




Any requirement for reinforcement tying of slab thickening into structural slab to be specified and designed by Structural Engineer.

NOTES:

1. REFER TO TABLES FOR DIMENSIONS AND BEDDING DETAILS.
2. IMPORTED GRANULAR MATERIALS TO INCLUDE AGGREGATES AND AIR COOLED BLAST FURNACE SLAG TO BSEN 12620:2002 AND SINTERED PULVERIZED FUEL ASH TO BSEN 13055-1:2002.
3. ANGULAR MATERIALS SHOULD BE CHOSEN TO ENSURE SUFFICIENT SUPPORT IS PROVIDED TO HEAVIER PIPES
4. CLASS S BEDDING SHALL BE USED WITH ALL FLEXIBLE PIPES
5. BEDDING BENEATH AND AT THE SIDES OF THE PIPE TO BE WELL COMPACTED.
6. THE FIRST 300mm OF FILL ABOVE THE CROWN OF THE PIPE IS TO BE LIGHTLY TAMPED BY HAND. MECHANICAL MAY BE USED ONLY ABOVE THIS LEVEL.
7. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER TO CONTAIN BEDDING MATERIAL IN CERTAIN SOILS, eg. RUNNING SAND, ETC.
8. IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BEDDING.
9. CONCRETE CRADLES AND ARCHES MAY BE EXTENDED TO THE SIDES OF THE TRENCH.
10. WHERE PIPES WITH FLEXIBLE JOINTS ARE USED THE CONCRETE PROTECTION IS TO BE INTERRUPTED OVER ITS FULL CROSS SECTION AT INTERVALS NOT EXCEEDING 5.0m (OR AS INDICATED BY THE ENGINEER) BY A SHAPED FORMER OF BITUMEN IMPREGNATED COMPRESSIBLE FILLER. THESE INTERRUPTIONS SHALL COINCIDE WITH PIPE JOINTS. SEE DIMENSIONS IN PIPE BEDDING TABLE FOR THICKNESS OF COMPRESSIBLE FILLER.
11. CONCRETE TO BE CLASS 2 SULPHATE RESISTING CONCRETE (GRADE GEN3).
12. WHERE FLEXIBLE PIPES ARE USED, CARE MUST BE TAKEN TO PREVENT THE PIPES FROM FLOATING.

## GRANULAR BEDDING & SIDEFILL MATERIALS FOR RIGID + FLEXIBLE PIPES

## NOTES

GENERAL:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING THE APPROPRIATE STATUTORY UNDERTAKERS, PRIOR TO THE COMMENCEMENT OF THE WORKS, TO ESTABLISH THE EXACT POSITION OF THEIR PLANT, WHICH SHALL BE CONFIRMED BY HAND DUG TRIAL PITS.

3. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH WATER UK, 'SEWERAGE SECTOR GUIDANCE', APPROVED VERSION 1.0 INCLUDING APPENDIX C "THE CODE" APPROVED VERSION 2.0, HIGHWAYS ENGLAND 'SPECIFICATION FOR HIGHWAY WORKS' PUBLISHED BY HMSO AND TO THE SATISFACTION OF BUILDING REGULATIONS PART H.

4. ALL CONCRETE AND CONCRETE PRODUCTS BELOW GROUND LEVEL SHALL BE SULPHATE RESISTING PORTLAND CEMENT CLASS GEN3 IN ACCORDANCE WITH BRE SPECIAL DIGEST 1.

5. ALL PIPE CONNECTIONS SHALL BE MADE SOFFIT TO SOFFIT.

6. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE DRAINAGE WORKS FOR THE DURATION OF THE CONTRACT.

7. DRAINS TO BE CONSTRUCTED USING FLEXIBLY JOINTED VITRIFIED CLAY PIPES TO BS 65:1991 "SUPER STRENGTH" SPECIFICATION AND BS EN 295-1:1995 (HEPWORTH SUPERSLEVE OR SIMILAR APPROVED) OR FLEXIBLY JOINTED CONCRETE PIPES TO BS 5911-1:2002 OR UPVC BUILDING DRAINAGE SYSTEM PIPE WORK TO BS EN 1401:2009, BEDDED AND BACK FILLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL TESTED IN ACCORDANCE WITH BS EN 1610:1998.

8. PRIVATE FOUL WATER AND SURFACE WATER DRAINAGE IS TO BE CONSTRUCTED IN ACCORDANCE WITH THE BUILDING REGULATIONS PART H (BS 8301:1985), BS EN 752:2008 AND RELEVANT AGREEMENT CERTIFICATES. ALL TESTED IN ACCORDANCE WITH BS EN 1610:1998.

9. ALL MANHOLE COVERS SHALL BE BADGED 'SW' FOR SURFACE WATER AND 'FW' FOR FOUL WATER ACCORDINGLY.

10. GULLY POTS SHALL BE PROVIDED WITH A HOT DIP GALVANISED STOPPER AND CHAIN WITH A BAYONET TYPE FIXING WITH A 150mmØ OUTLET PIPE.

11. THE GULLY GRATING AND FRAME SHALL BE SET AT A LEVEL OF +/-6mm BELOW THE FINISHED GROUND LEVEL.

12. ALL GULLY CONECTIONS MUST BE AIR TESTED IN ACCORDANCE WITH CL. 509 OF SHW.

13. RIGID PIPES ENCASED IN CONCRETE SHALL HAVE A MOVEMENT JOINT CONSISTING OF 13mm COMPRESSIBLE BOARD AROUND THE SPIGOT NEXT TO THE SOCKET, EITHER AT EACH JOINT OR NOT EXCEEDING 5 METRE INTERVALS.

14. CONCRETE COVER TO ANY OF THE PIPES MAY BE FORMED TO A RADIUS BATTER OR HORIZONTAL SURFACE.

15. REINFORCED IN-SITU CONCRETE TO CL. 1700 OF SHW. UNREINFORCED IN-SITU CONCRETE TO CL. 2602 OF SHW.

16. CEMENT MORTAR FOR BRICKWORK AND HAUNCHING TO MANHOLE COVERS AND FRAMES TO BE DESIGNATION (i) TO CL. 2404 OF SHW.

17. 'TOKSTRIP' SEALANT OR SIMILAR APPROVED TO BE USED IN ALL PRECAST JOINTS.

NOT FOR CONSTRUCTION

| Rev. | Description | Date | By |
|---|---|---|---|
| | | | |
| | | | |
| P1 | ISSUED FOR INFORMATION | 09.07.21 | MB |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Job Title: 79 AVENUE ROAD, LONDON

Client: FORM STRUCTURAL DESIGN

1463-SPW-Z0-ZZ-DR-C-6250
BELOW GROUND DRAINAGE DETAILS - SHEET 1

| Drawn | Date | Scale | Checked | CAD Filename |
|---|---|---|---|---|
| MB | 09.07.21 | 1:20 @ A1 | SK | C-6250 |

| Job No. | Drawing No. | Revision |
|---|---|---|
| 1463 | C-6250 | P1 |