



STORMWATER - CLASS B BEDDING
Scale 1:20

NOTE:
For additional specification please refer to the standard specification SABS 1200 and SABS 0120 (Part 1 to 5), Sections DB, LB, L, and any further referenced specifications. The contractor's attention is particularly drawn to, but not limited to, the following extracts of the said standard specifications. Please refer to Extracts 1 to 4.

EXTRACT 1
SABS 0120: Part 3
Section DB-1982
Earthworks (pipe trenches)
1. PRE-TENDER CONSIDERATIONS

1.1 INVESTIGATIONS
1.1.1 Preparation of Trench Bottom
a) Where the trench bottom is coarse-grained, and reasonably dry, and variations in bearing qualities are insignificant, or where the bottom is fine-grained but dry, no problems are likely to arise and bedding can be constructed as specified.
b) Where water is present the contractor is responsible, in terms of Subclause 5.1.2.1 of SABS 1200 DB, for ensuring (by the sloping of the bottom, the provision of a channel on one side and the draining of water to low points, or the removal of water by pumping) that the bottom of the trench is always free from standing water. Where this has been achieved or is practicable, conditions on the trench bottom should be such that the situation given in (a) above is applicable.

c) Where the steps outlined in (b) above are impracticable because of the sloppy nature of the material in the bottom of the trench, it will be necessary to stabilize the trench bottom and to avoid disturbance and further softening of the trench bottom. This situation will arise in wet fine-grained soils such as soft clays, silts, and fine sands. Suitable granular material, crushed stone, crusher-run, or ash should be placed as necessary on the trench bottom immediately after the excavation has been completed. Such a layer should become effective before its thickness exceeds 200 mm. Where such steps are inadequate, a concrete raft should be constructed on top of the stabilizing layer. Where the condition of the soil to a depth exceeding 600 mm below the pipe invert level is poor, piles may be necessary to support a reinforced concrete raft constructed on the bottom of the trench. Normal bedding as described in (a) above should be constructed on top of the concrete. Attention is drawn to Subclause 3.1.4 of Section DB of Part 5 of the code, where further aspects of the problem are outlined.

3. DURING CONSTRUCTION
3.1 METHODS OF CONSTRUCTION

3.1.4 Trench Bottom Preparation (Subclause 5.5)
The contractor's attention is drawn to Subclause 3.1.5 of Section D. By inefficient working the contractor can create quagmire conditions on the bottom of a trench similar to those envisaged in Subclauses PSD 6.2.2 and PSD 6.2.3 given in Subclause 3.2.4 of Section D of Part 2 of the code. Where the contractor's method of working creates this situation in the trench bottom, it is unreasonable to expect the employer to pay for the stabilization or reinstatement of the trench bottom and the contractor must therefore expect to pay the costs of such work. In areas where conditions are difficult and the engineer is consulted he should decide on the action necessary and issue instructions to the contractor expeditiously to ensure that the situation is brought under control quickly and that any instability is checked within 300 mm of the designated trench bottom. Where unstable soils are known to be present, the trench should not be excavated more than approximately 100m in advance of the pipelaying operation, and the engineer should be advised of the precautions proposed by the contractor. Ash should not be used as a stabilizing agent where concrete pipes, asbestos cement pipes, or mortar caulked pipelines are to be laid unless a bedding cradle of other material is to be constructed of sufficient thickness to separate the pipeline from the ash.

EXTRACT 2
SABS 1200
Section DB-1989
Earthworks (pipes trenches)

5. CONSTRUCTION
5.3 SITE CLEARANCE
The Contractor shall clear (as specified in SABS 1200 C) an area of sufficient width along the route of the pipeline to ensure that his selection operations are not hampered (see 3.7). Where trenches are in servitudes or wayleaves of specified width, the Contractor shall ensure that clearing and damage to plant growth is restricted to the servitude or wayleave area.

5.4 EXCAVATION
Pipe trenches shall be excavated in lengths approved by the Engineer, to widths that, in each case, provide at least the appropriate side allowance (within trench supports and wales, if any) given in 5.2, and such that half of the base width is on either side of the designated centre-line of the pipe. The sides of each trench from the bottom up shall be as nearly vertical as possible for at least the height of the bedding. (See also the requirements relating to the stockpiling of excavated material given in 3.7 and those relating to excavated material given in Subclause 5.1.4.3 of SABS 1200 D or in Subclause 5.1.6 of SABS 1200 DA, as applicable.)

5.5 TRENCH BOTTOM
Material that the Engineer considers to be unsuitable as the bottom of the trench shall be excavated to the depths and disposed of in the manner directed. The resulting space shall be refilled, as ordered, with approved material and compacted as directed. Should bedding of the pipeline in accordance with SABS 1200 LB form part of the contract, the depth of the trench shall be such that the specified depth of the cradle can be placed under the pipeline, and the trimming and grading of the bottom of the trench shall be such that the barrel of each length of pipe can be uniformly supported over its full length, free at the joints, and at the correct grades and levels.

Except where the trench excavation is in rock, hard objects and boulders that may adversely affect the uniformity of the foundation shall be removed to a depth of 100 mm below the specified trench bottom. Where the bottom of the trench has been loosened during excavation, it shall be compacted at OHC to 90% of modified AASHTO maximum density prior to bedding and pipe laying. The bottom of trenches shall be sufficiently straight (or true to alignment in the case of curved pipelines) to enable the pipes to be laid without reduction of the side allowances given in 5.2 and in conformity with the applicable tolerances specified in any standardized specification covering pipework that forms part of the contract.

5.6 BACKFILLING
5.6.1 General. Backfilling of pipe trenches shall commence after the pipe has been laid and firmly bedded in the specified cradle and the blanket has been placed and adequately compacted at OMC around, under the overhang and over the top of the pipe to the height of blanket cover specified elsewhere in the contract (see Drawing DB-1). Backfilling shall be carried out in accordance with 5.6.2 over the full extent of the actual trench excavation and to original ground level, except where otherwise directed. Unless prior approval has been obtained, no filling shall be placed in water. (See also 5.1.2.)

EXTRACT 3
SABS 0120: Part 3
Section LB-1983
Bedding (Pipes)
1. PRE-TENDER CONSIDERATIONS

1.1 INVESTIGATIONS
1.1.3 Selected Granular Material
When searching for a material suitable for use as a selected granular material, bear in mind the following facts:

The main requirement for this material is that it should be free-running so that it can easily take up the shape of the pipe to form a sound support. For this purpose a non-cohesive material that is neither too coarse nor too angular is the best, a pea-gravel (i.e. a gravel-like material consisting of particles similar in size and shape to a pea and most commonly found in river beds) being ideal. The function of the bed is to provide continuous uniform support to the lower segment of the barrel of the pipe, and also perhaps to allow some longitudinal drainage if the trench is situated in waterlogged ground. Select a local material or a blend of local materials such that it resembles as closely as possible a dry non-plastic singularly graded rounded fine gravel or a medium sieved sand and, if such a material is not available, consider importing the material.

NOTE: The terms fine gravel and medium sand have the meanings given in BS 5930, the grain sizes being between 0.6 mm - 6 mm for fine, 6 mm - 19.0 mm for medium sand (see Subclause 3.1 of SABS 1200 LB).

EXTRACT 4
SABS 1200
Section LB-1983
Bedding (Pipes)

3. MATERIALS
3.1 SELECTED GRANULAR MATERIAL
Selected granular material shall be material of a granular, non-cohesives nature that is singularly graded between 0.6mm and 19mm, is free-draining, and has a compactibility factor (as determined by the test given in Section LB of Part 3 of SABS 0120) not exceeding 0.4 or such other value as is laid down in the project specifications.

3.2 SELECTED FILL MATERIAL
Selected fill material shall be material that has a PI not exceeding 6 and that is free from vegetation and from lumps and stones of diameter exceeding 30mm.

3.3 BEDDING
Bedding for rigid pipes shall be of Class A, B, C, or D (see Drawing LB-1) and bedding for flexible pipes shall be selected granular material and selected fill material (see Drawing LB-2). The bedding cradle for Class A bedding shall be concrete (see 5.2.1(a)). Bedding cradles for Class B, C, and D bedding shall be of selected granular material (see 3.1). The material for the selected fill blanket shall in all cases comply with the requirements of 3.2.

5. CONSTRUCTION
5.1 GENERAL
5.1.1 Trench
5.1.1.1 Width. The Contractor shall so excavate each trench that the width conforms to the requirements of Subclause 5.2 of SABS 1200 DB.

5.1.1.2 Bottom. The Contractor shall prepare the trench bottom in accordance with the requirements of Subclause 5.5 of SABS 1200 DB.
5.1.2 Details of Bedding. Pipes shall be bedded and protected in accordance with the details shown on

a) Drawing LE-1, appropriate to the class of bedding scheduled or ordered for rigid pipes; and
b) Drawing LB-2 for flexible pipes.

5.1.3 Placing
5.1.3.1 No bedding shall be laid until the Engineer has approved the trench, measured the depth if necessary, and authorised pipelaying to proceed.

5.1.3.2 Except in the case of Class A bedding, the joint holes shall be refilled with fine granular material and lightly compacted to prevent the migration of adjacent pipe bedding material into the holes and to obviate the production of hard spots under joints (see Drawing LE-2).

5.1.3.3 In the placing of bedding, all voids under the overhang of the pipes shall be filled and the compaction shall be carried out uniformly on each side of the pipe so as not to cause any lateral or vertical displacement of the pipe.

5.1.3.4 Bedding shall be carried out as pipelaying proceeds, and shall be completed before the acceptance test is carried out. Compacting. The degree of compaction attained for bedding (other than concrete and the material over the top of the pipeline) shall be 90 % of modified AASHTO maximum density (see 6.1).

5.3 PLACING AND COMPACTION OF FLEXIBLE PIPES
In addition to complying with the applicable requirements of 5.1, the Contractor shall construct bedding for flexible pipes in accordance with the following requirements:

a) Bedding cradle. Flexible pipes shall be supported on a continuous bed of selected granular material of compacted depth at least 100 mm and covering the full width of the trench. The granular material shall be compacted to the density specified in 5.1.4. Additional selected granular material shall then be placed carefully and evenly between the sides of the trench and the pipeline, in layers of uncompacted thickness approximately 100 mm, as shown on Drawing LB-2 and in accordance with the construction details shown for flexible pipes on Drawing LB-3(d), specified in 5.1.4. Particular care shall be exercised to prevent damage, deflection, or displacement of the pipeline.

b) 200 mm selected fill blanket. After completion of the bedding cradle, selected fill blanket shall be placed carefully in layers of 100 mm uncompacted thickness over the full width of the trench and shall be compacted to the density specified in 5.1.4 up to a height of at least 300 mm above the crown of the pipeline. Special care shall be taken when compacting over the pipeline.

LEGENDS

REVISIONS

No.	Date	By	Description
00	JAN 2020	JM	
01	JUN 2020	JM	FOR OUTLINE SERVICES SCHEME REPORT (OSSR) SEWER REVISED BY ACCORDANCE WITH WETLAND

DRAWING STATUS

FOR OSSR

CLIENT



CLIENT APPROVAL

Project leader	Signature
Date	

CLIENT DRAWING NUMBER



PRETORIA	012-941 1616	KRUGERSDORP OFFICE
HARRISMITH	058-822 1297	20 Ontdeklers Road
SASOLBURG	016-576 0950	PO Box 8013
VAN DER BURG	016-581 0591	Westgate 1734
KRUGERSDORP	011-965 5334	
RICHARDSBAY	035-753 1083	
SECUNDA	017-534 8695	
NEWCASTLE	034-312 6164	

SACAS ISO 9001:2015

THIS DRAWING IS THE PROPERTY OF ILIFA Africa Engineers (PTY) Ltd. AND IS ISSUED TO THE RECIPIENT FOR A PARTICULAR PURPOSE. IN THE UNDERSTANDING THAT THIS DRAWING SHALL NOT BE COPIED, NOR DUPLICATED IN ANY DIGITAL FORM, NOR PASSED ON TO OTHER PARTIES, DIRECTLY OR INDIRECTLY, NOR USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH IT IS SPECIALLY FURNISHED, AND/OR THE INSTALLATION AND/OR MAINTENANCE OF EQUIPMENT TO WHICH IT REFERS.

Designed:	Ilifa Africa Engineers
Drawn:	J.V.S. MOUTON Pr. Tech. Eng (201370186)
Checked:	A.B. KRIEL Pr. Eng (20010142)
Drawing Approved:	12 June 2020 Date

PROJECT TITLE

**PROPOSED GREENGATE EXT. 98
SITUATED ON PORTION 260 (A PORTION
OF PORTION 114) OF THE FARM
RIETVONTEIN 189-IQ**

DRAWING TITLE

STORMWATER BEDDING DETAILS

DATE:	SCALE:	
JUN 2020	AS SHOWN	A3
PLAN No.		

CONSULTING ENG. DRAWING NO:	Rev
K19-040-02-220	00