

REFURBISHMENT OF THE KURUMAN TAXI AND BUS RANK PROJECT SPECIFICATIONS

PART

PROJECT SPECIFICATION

SCOPE

This project specification is set out in two portions. Portion 1 covers a general description of the project, the facilities available and the requirements to be met. Portion 2 covers variations and additions to standardised or particular specifications that are applicable to the contract.

The numbering method in portion 2 of this project specification deviates as follows from the method suggested in the Code of Practice SANS 0120.

Each clause with the prefix PS shall refer to the congruent clause in the appropriate section of the standardised or particular specification. Such clause shall either substitute, or supplement, or amend the clause with the same number. Where there is no such congruent clause in the standardised or particular specification, the PS clause shall be a new clause in the project specification. Any clause that is referred to in the standardised specification will also include the appropriate project specification.

PORTION 1 : THE WORKS

PS 1 GENERAL DESCRIPTION OF CONTRACT

The Contract entails the construction of civil engineering services w.r.t sewerage, water reticulation, stormwater systems as well as the construction of paved parking, court yards and sidewalks around the schooling facility.

PS 2 DESCRIPTION OF THE SITE AND ACCESS

The GLM as the project client, intends to implement this project by redeveloping the existing taxi and bus rank to formalize and expand the facility while improving efficiency and maximizing capacity usage of the available space. The redevelopment project will also ensure the facility complies with latest relevant standards and legislations.

The project is to be implemented in the same location as the existing taxi and bus rank, on ERF 2830 situated on Tsenin Road, Kuruman.

PS 3 NATURE OF GROUND AND SUBSOIL CONDITIONS ON SITE

A geotechnical investigation was carried out on the site. The geotechnical report states the following:

Based on the Geological Map Series of the Republic of South Africa Sheet 2722 (Kuruman), and Scale 1:250 000. The site is expected to be underlain Fine and Coarse-grained dolomite, chert and dolomitic limestone with prominent interbedded chert Vgd[3], of Ghaaplatto Formation, of the Campbell Group.

The Kuruman Mall is the only prominent structural feature indicated near the site. The site is underlain by potentially soluble rock formations such as dolomite and dolomitic limestone. The site is considered dolomitic.

No economic deposits are indicated in interest or in the surroundings that are expected to affect the development of the site.

PS 4 DETAILS OF THE CONTRACT

Work included in this contract involves the construction of the following:

- Design of water and sewerage reticulation
- Design of circulation road and parking
- Stormwater management
- Where required, propose connection to existing and bulk services
- The layout, size, and capacity of internal services and the construction methods and materials.

PS 5 CONSTRUCTION PROGRAM AND METHODS

The Contractor shall ensure the least possible disruption of movement of traffic and pedestrians during construction.

Construction methods must be such a nature that no property or life is endangered. The Employer accepts no responsibility for work that is done outside the site boundaries without the Engineer's approval.

The Contractor himself is responsible for liaison and the necessary arrangements with the relevant authorities in respect of the finalisation and

approval of the works program. The compilation of the construction program and any amendments there to during the course of construction shall be at the cost of the Contractor and shall not be measured elsewhere in this contract.

PS 8.2 SURVEY BEACONS

The Contractor shall be solely responsible for the protection of survey pegs. The Contractor's attention is specifically drawn to the requirements of SANS specification 1200 A: General, clause 5.1 survey, in this respect.

PS 8.3 "AS BUILT" DRAWINGS

As the work progresses, the Contractor shall keep full records of all amendments to and deviations from the drawings as issued to the Contractor at the start of the contract. The Contractor with his payment certificate, to the Engineer, must submit this information monthly. The true positions, invert levels, ground levels, offset dimensions and final road levels of all services shall be indicated on the drawings, for which purpose the Contractor shall receive a separate complete set of drawings from the Engineer, at no cost.

The completion certificate shall only be issued after the Engineer has received a properly completed set of "**as-built**" drawings from the Contractor. No separate payment shall be made for this service, as all costs related thereto shall be deemed to be included in the related items.

PS 8.5 EXISTING SERVICES

The positions of existing services are shown on the drawing. The Contractor shall note that although the drawings have been prepared using available information, they show only the approximate position of existing services and shall be a guide only. The Contractor's attention is drawn to clause 5.4 of SANS 1200 A.

PS 8.6 DEALING WITH WATER

The Contractor is responsible for the control of stormwater from adjoining areas, the site and groundwater.

No additional payment will be made and it will be deemed to be included in the rates of the relevant items.

PS 10 SOURCE OF MATERIAL

The Contractor will be held responsible for locating sources of all materials, complying with the relevant minimum requirements, to be used in this contract. No separate payment shall be made for this as all cost related thereto shall be deemed to be covered by the tendered rates.

PS 11 CONTRACTOR'S CAMP

Except for the necessary security personnel, no person shall be allowed on the construction site after normal working hours.

PS 12 APPLICABLE STANDARDISED SPECIFICATIONS

Although not bound in nor issued with this document, the following standardised specifications shall form part of the contract and, notwithstanding the provisions of sub clause 2.2 of SANS 1200 A, the editions specified below shall apply:

SANS 1200 A -	198	GENERAL
	6	
SANS 1200 AB-	198	ENGINEER'S OFFICE
	6	
SANS 1200 C -	198	SITE CLEARANCE (AMENDMENT
	0	1, 1982)

SANS 1200 D -	198	EARTHWORKS (AMENDMENT 1, 8 1990)
SANS 1200 DB-	198	EARTHWORKS (PIPE TRENCHES) 9
SANS 1200 DM-	198	EARTHWORKS (ROADS, 1 SUBGRADE)
SANS 1200 L -	198	MEDIUM-PRESSURE PIPES 3
SANS 1200 LB -	198	BEDDING (PIPES) 3
SANS 1200 LD -	198	SEWERS 1
SANS 1200 LE -	198	STORMWATER DRAINAGE 2
SANS 1200 ME-	198	SUBBASE 1
SANS 1200 MF-	198	BASE 1
SANS 1200 MJ -	198	SEGMENTED PAVING 4
SANS 1200 MK-	198	KERBING AND CHANNELLING 3

PORTION 2 : VARIATIONS AND ADDITIONS

Departures from and/or additions to specifications listed in portion 1 are set out on the following pages in accordance with the numbering system of the standardised or particular specification.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 A: GENERAL

A 3 MATERIALS

PS A 3.1 QUALITY

Substitute the second sentence of the first paragraph of A 3.1 with the following: Materials shall bear the official mark of the appropriate standard.

Substitute the second paragraph with the following:

The Contractor is responsible for the cost of all testing to ascertain that the materials do comply with the specified minimum requirements of the relative materials and no additional payment will be made for such testing.

The Contractor shall inform the Engineer of any control testing to be done at least 48 hours before such tests are required and must allow in his program for the time necessary for the tests and the processing of the results thereof.

A 5 CONSTRUCTION

A 5.1 SURVEY

PS A 5.1.1 Setting Out of the Works

Substitute the first sentence in A 5.1.1 with the following:

Setting out of the works is the sole responsibility of the Contractor and shall be done from survey pegs along the street reserve boundaries and from benchmarks as indicated on the drawings. The Contractor shall, within two (2) weeks after the site has been handed over to him, ascertain himself of the correctness of all pegs and benchmarks. Any discrepancy shall immediately be reported in writing to the Engineer. Any costs or subsequent costs arising from discrepancies, which had not been reported to the Engineer within the aforementioned period, shall be the sole responsibility of the Contractor.

PS A 5.2 WATCHING, BARRICADING, LIGHTING AND TRAFFIC CROSSINGS

Add the following to A 5.2:

The area of construction work must, as far as possible, be confined to the shoulders of the road. The contractor shall at all times have in place, sufficient advanced warning signs and markings. All excavations must be marked with drums, reflective tape and warning signs to the satisfaction of the Engineer.

Road Traffic Signs shall comply with the requirements of the “South African Development Community Road Traffic Signs Manual” and shall be approved by the Engineer before construction commences.

PS A 5.4 PROTECTION OF OVERHEAD AND UNDERGROUND SERVICES

Add the following to A 5.4:

The Contractor shall as soon as possible after handing over of the site, commence with the detection of existing services, and continue without interruption to finalise detection at least 7 days before excavation starts at that particular section.

Detected existing services shall be indicated on the “As Built” drawings.

Where the Contractor is responsible for the cost of repairs carried out by the Employer or other, the cost will be recovered by means of a deduction from the Contractor’s monthly payment certificate.

PS A 5.5 DEALING WITH WATER ON WORKS

Add the following to A 5.5:

Special treatment of water on site shall, where necessary, be specified separately.

PS A 5.6 POLLUTION

The Contractor’s attention is drawn specifically to dust disturbance (See PS D 5.1.4.1).

A 7 TESTING

PS A 7.4 STATISTICAL ANALYSIS OF CONTROL TESTS

Substitute A 7.4 with the following:

Test results shall not be evaluated by statistical methods. All results shall comply with the specified minimum requirements of the materials concerned.

A 8.8 TEMPORARY WORKS

PS A 8.8.2 Accommodation Of Traffic Unit : Sum

Add the following to A 8.8.2:

The rate shall cover all costs pertaining to the provision, erection, moving, re-erection and maintenance of all temporary barricades, road signs, lights, flagmen, etc. as required, for the guarding and protection of the works, for the construction, gravelling and maintenance of access roads and detours to the site of the works, borrow pits or spoil sites, as well as for the later removal or the cleaning and tidying up thereof, for making the necessary traffic arrangements and arrangements with regard to the moving and/or re-erection of existing traffic signs, as well as all other costs to accommodate the traffic during construction all according to the latest **S A D C Road Traffic Signs Manual**.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 AB: ENGINEER'S OFFICE

AB 3 MATERIALS PS AB 3.1 NAMEBOARDS

Substitute "South African Institution of Civil Engineers" in the first paragraph of AB 3.1 with "Consulting Engineers of South Africa".

PS AB 3.2 OFFICE BUILDINGS

Add the following to AB 3.2:

An office with carport is required for the engineer.

PS AB 5.3 KEY PERSONNEL

Add the following to AB 5.3:

The Contractor shall inform the Engineer of the person to whom he has assigned duties with respect to the site in terms of the Occupational Health and Safety Act and the person(s) who are in possession of a valid certificate of competency in first aid. The Contractor shall give copies of the minutes of the site safety meetings to the Engineer

PS AB 5.7 SITE INSTRUCTION BOOK

Throughout the construction period the Contractor shall provide a carbon quadruplicate book as a site instruction book.

This book shall be kept on site and shall be accessible to both the Contractor and the Engineer at all times. It shall be used:

- a) by the Contractor for providing the Engineer with any information regarding the construction of the Works which may be requested, and giving information notification in writing of inspections, drawings, etc, required by the Contractor, and
- b) by the Engineer for the purpose of writing day-to-day instructions and confirming any verbal information or instruction given to the Contractor.

One copy of each site note issued shall remain in the book.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 C: SITE CLEARANCE

PS C 3 MATERIAL

PS C 3.1 DISPOSAL OF MATERIAL

Substitute the first sentence of C 3.1 with the following:

Materials arising from clearing and grubbing shall be disposed of at a suitable spoil site. The Contractor shall be responsible to make his own arrangements for a suitable spoil site and the rate for clearance shall include all hauling and loading required. Trees and stumps necessarily removed shall not be burnt unless authorised by the Engineer but shall be cut and stacked at areas designated by the Engineer.

PS C 5 CONSTRUCTION

PS C 5.1 AREAS TO BE CLEARED AND GRUBBED

Substitute the first sentence of C 5.1 with the following:

The Contractor may proceed with clearing and grubbing after the handing over of the site. Measurement and payment for clearing and grubbing shall only occur for areas as required in writing by the Engineer.

Substitute the last paragraph with the following:

The Contractor shall program his work in such a manner that re-clearing will not be necessary. The cost of re-clearing shall be borne by the Contractor.

PS C 8 MEASUREMENT AND PAYMENT PS C 8.1 SCHEDULED

ITEMS

PS C 8.2.2 Removal of roots and tree stumps Unit:
No

Add the following to 8.2.2:

The backfilling of holes shall be done with material of upper selected layer quality and shall be compacted to 93% of MAASHTO density

PS C 8.2.8 Demolish and remove structures/buildings and dismantle steelwork, etc.

.....Unit: No

Add the following to 8.2.8:

The rate shall cover the cost of excavation, removal, backfill and shaping of the site, loading, transport, spoil levelling and shaping thereof on the spoil site. The backfilling of holes shall be done with material of upper selected layer quality and shall be compacted to 93% of MAASHTO density

PROJECT SPECIFICATION: PORTION 2

SANS 1200 D: EARTHWORKS

PS D 3.3 SELECTION

PS D 3.3.1 General

Substitute the second paragraph of D 3.3.1 with the following:

The Contractor shall deal selectively with material from general excavation. Any imported material that do not comply with the minimum requirements for the respective layers, shall be removed and replaced with suitable material, all at the Contractor's expense.

The Contractor shall deal in such a way with materials from all excavations for streets, channels or pipe trenches to ensure that usable material is not contaminated with unsuitable material. If usable material is contaminated, such contaminated material shall be removed and replaced with suitable material, all at the Contractor's expense. No additional payment shall be made in respect of this and all relevant costs shall be deemed to be included in the tendered rates.

All unsuitable material shall be removed prior to importing fill material to such areas.

A suitable area will be provided within the freehaul distance for the stockpiling of selected topsoil. It shall be the responsibility of the contractor to maintain as directed by the engineer, such said stockpiles.

PS D 5.1 PRECAUTIONS

PS D 5.1.1.2 Safeguarding of Excavations

Any cost the Contractor may undergo in ensuring the safety of excavations or any additional excavation and backfilling he may have to undertake due to the unstable sides of excavations and trenches shall be held to his account and the various rates for excavation and trenching included in the Schedule of Quantities shall include full compensation therefore.

PS D 5.1.2 Existing Services

PS D 5.1.2.2 Detection, location and exposure

Add the following to D 5.1.2.2:

If existing services are not shown on the drawings but the existence thereof can be reasonably expected, the Contractor shall, in conjunction with all relevant authorities, determine the exact depth and location of such services before the commencement of construction. After locating the exact position of services, whether indicated on the drawings or not, such services shall be deemed to be known services and the Contractor shall be liable for all costs and subsequent costs arising from the damage thereof as a result of the Contractor's activities. These services must also be indicated on the "As Built" drawings.

PS D 5.1.2.3 Protection of Cables

Substitute "estimated position" in the second sentence of D 5.1.2.3 with "actual or exposed position".

PS D 5.1.4 Nuisance**PS D 5.1.4.1 Dust nuisance**

Add the following to D
5.1.4.1:

The Contractor is responsible for dust control and is liable for all claims that may result from dust nuisance on all parts of the site and at all times from the date of handing over of the site to the completion date of the contract. No payment regarding the above- mentioned will be made and all costs shall be deemed to be covered by the tendered rates.

PS D 5.1.4.3 Disposal of Surplus Material

Add the following to the sub-clause:

"All surplus or unsuitable materials, not used for fill material on site, arising from trench excavations, rocks, trees, debris and other unsightly material shall be disposed of at a suitable spoil site. The Contractor shall be responsible to make his own arrangements for a suitable spoil site".

PS D 5.1.6 Road Traffic Control

Add the following to D 5.1.6:

- a) Sufficient road signs must be erected in such a way that motorists will be warned in time of works, e.g. at the closing of a street sufficient signs to direct traffic must be erected at the preceding intersection.
- b) Bypasses and/or road signs shall be provided and/or erected at all locations where the free flow of traffic is obstructed and shall be approved by the Engineer before the commencement of construction. Where main roads are crossed, detours and temporary traffic signs must be provided as shown on the attached drawings.
- c) Where a trench crosses a street or any place where a trench crosses the direction of traffic flow, drums must be placed in the street and not just along the sides of the street with danger tape in between.
- d) Danger tape must be put up between drums and tied around the drums.
- e) Drums may not be filled with stones. The spacing of drums must be in such a way (maximum 5 m) that they are visible from all directions.
- f) Sufficient safety measures must be utilised for pedestrians.

All according to the latest **South African Road Traffic Signs Manual**.

PS D 5.1.6 Accommodation of Traffic

The Contractor shall tender a lump sum in Schedule 3 for accommodating traffic during the duration of the Contract, which sum shall cover all his obligations in this regard, including but not limited to temporary barricades; the erection and re-erection of existing and/or temporary traffic signs; lights and flagmen for the guarding and protection of the Works; and for making all necessary arrangements with the applicable traffic authorities. Payment shall be made monthly pro-rata to the overall progress of the Works.

PS D 5.2 METHODS AND PROCEDURES

PS D 5.2.1 Site Preparation

PS D 5.2.1.2 Conservation of topsoil

Add the following to D 5.2.1.2:

Removal of topsoil shall only occur in areas as approved, in writing, by the Engineer.

The topsoil shall be concerned for use elsewhere.

PS D 5.2.2 Excavation

PS D 5.2.2.3 Disposal

Substitute the second sentence of D 5.2.2.3 with the following:

All surplus and unsuitable material shall be disposed of at a dumping site. The Contractor shall be responsible to make his own arrangements for a suitable spoil site. No additional payment will be made for haulage.

PS D 5.2.2.4 Excavation by hand around existing services

Where hand excavation is required around existing services it shall be done within 3,0m above and on both sides of cables and within 500 mm above and on both sides of pipes, as well as underneath the services.

PS D 5.2.3.2 Backfilling of trenches and backfilling against structures

Add the following to D 5.2.3.2:

Backfilling around structures shall be compacted to 95 % of MOD AASHTO density.

When specified or ordered by the Engineer the backfilling against structures shall be done using a mixture of soil cement. The mixture shall contain 5 % cement and just sufficient water for the mixture to be placed and compacted like ordinary backfilling material.

PS D 5.2.2.2 BORROW PITS

The Contractor shall be responsible for making his own arrangement regarding the provision of pipe bedding material, if required, from commercial borrow pits.

The Contractor shall provide in his tender prices for all royalties payable and for the transport of the material to site.

PS D 8 MEASUREMENT AND PAYMENT PS D 8.3 SCHEDULED ITEMS**PS D 8.3.8.1 c) Hand excavate in soft material to expose existing services Unit:m³**

Where hand excavation around existing services does occur, it shall be measured within 1 m above and on both sides of cables, and within 500 mm above and on both sides of pipes. All excavations underneath the services will be measured.

Measurement shall occur in depth increments of 1 m.

The provisions of SANS 1200 DB: Earthworks (Pipe trenches) and the relevant project specification shall apply mutatis mutandis and payment will be made according to the applicable item of SANS 1200 DB.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 DB: EARTHWORKS (PIPE TRENCHES)

PS DB 2.2 APPLICATION

Substitute "pipe trenches" with "pipe and cable trenches" in DB 2.2.

PS DB 3 MATERIALS

PS DB 3.5 BACKFILL MATERIALS

- a) Substitute "from trenches" in DB 3.5(a) with "from trenches, channel or street excavations".
- b) Add the following to DB 3.5(b):
- c) All pipe trenches in street reserves shall be classified as areas subject to loads from road traffic.
- d) All pipe trenches underlying or adjacent to the carriageway shall be backfilled with sand complying with the requirements for A3 materials, as specified in PSD 3.4.

PS DB 4 PLANT

PS DB 4.1 EXCAVATION EQUIPMENT

Add the following to DB 4.1:

All excavations exceeding the specified widths, shall be backfilled with approved selected material. No payment shall be made for this and all relevant costs shall be deemed to be included in the tendered rates.

PS DB 5.1 PRECAUTIONS

PS DB 5.1.4 Existing Services That Intersect or Adjoin Trenches

Where any existing service occurs within the construction site and the immediate vicinity, and the presence of such service is known before being uncovered, then the protection of the service will be scheduled and measured as provided for in Clause 8.3.5 of 1200 DB. Only known services (as defined in Clause 5.4 of 1200A) shall be measured for payment.

Where an unknown existing service is damaged during construction, and the

Engineer orders that the Contractor should undertake the repair of such service, then such repair will either be measured and paid as dayworks or alternatively as a contractual variation in terms of Clause 6.3 of the General Conditions of Contract.

No construction activity which may affect the integrity of telephone or electrical cables and poles or stays may be carried out without the prior written approval of the Engineer, which approval shall only be given subject to the acceptance of a *modus operandi* that will ensure the integrity of such structures during construction.

No construction activity which may affect the integrity of telephone or electrical cables and poles or stays may be carried out without the prior written approval of the Engineer, which approval shall only be given subject to the acceptance of a *modus operandi* that will ensure the integrity of such structures during construction.

The contractor will apply for way leaves, to all the relevant local council's services departments, Telkom, Optic fibre suppliers and Eskom, well in advance of any excavations to install services outside the boundaries of the site. No such excavations will be allowed unless the way leave approvals, or a copy thereof, are kept in a file in the site office.

PS DB 5.2 TRENCH WIDTHS

Trenches in general shall not exceed the widths laid down in Sub-Clause 8.2.3. If trenches exceed the specified width the Contractor shall be liable for the cost of any additional backfill or more expensive bedding which may be required as a result of the additional trench width.

PS DB 5.4 EXCAVATION

Add the following to DB 5.4:

Excavation and backfilling of pipe trenches on sidewalks in the residential area shall be done in such a way as to ensure the least possible disruption to the public and entrances to properties. No additional payment shall be made for this and all relevant costs shall be deemed included in the tendered rates.

The provisions of PSDB 5.2.2.4 shall apply *mutatis mutandis* for hand excavation.

PS DB 5.5 TRENCH BOTTOMS

Replace the first paragraph of this sub-clause "Material that compacted as directed" with the following:

Where a firm foundation cannot be obtained at the grade indicated due to soft or unsuitable material, the Engineer may instruct the Contractor to remove such unsuitable material and to backfill the excess depth with approved selected material or concrete, as directed by the Engineer in each particular case, at the cost of the Employer. Backfill other than concrete, shall be placed in layers of 100mm un-compacted thickness, each layer thoroughly compacted to the entire satisfaction of the Engineer, to provide adequate support for the pipe bedding to be placed on top of it.

Should the Contractor remove more ground than is required to secure the proper grade of the pipeline, the Contractor must, at his own cost, backfill the excess excavation with approved selected material or concrete, as directed by the Engineer in each particular case.

PS DB 5.6 BACKFILLING

PS DB 5.6.2 Material for Backfilling

Substitute "from trench excavations" in the first paragraph of DB 5.6.2 with "from trench, channel or street excavations".

PS DB 5.6.3 Disposal of Soft Excavation Material

Add the following to DB 5.6.3:

All surplus and unsuitable material as described in DB 5.6.3 shall be disposed of at the spoil site, (as described in PSDB 5.2.2.3). The Contractor shall be responsible to make his own arrangements for a suitable spoil site. No additional payment will be made for haulage.

Spoil, Rocks, trees, debris and other unsightly material from trench excavations shall be removed to a spoil area arranged by the Contractor. Where the pipeline is laid within a road reserve the route of the pipeline shall be finished neatly to be flush with the natural ground level or finished sidewalk level as may be applicable. Clause 5.6.7 of 1 200 DB shall apply to the cleaning of roadways.

PS DB 5.7 COMPACTION

PS DB 5.7.2 Areas Subject to Traffic Loads

Add the following to DB 5.7.2:

The requirements of Clause 5.7.2 shall apply only to pipes and sleeves crossing streets or paved areas and pipes running parallel to the road that fall in the street reserves, will be regarded as areas subject to traffic loads as described below.

All service trenches running parallel to the road of which the roadside edge of the trench is located less than 0.5 m away from the edge of the travelled way, will be subject to the requirements for the above-mentioned clause.

The measurement and payment will apply to the full trench width. Pipes and sleeves crossing streets or paved areas will be measured and paid for to a length equal to the width of road or length of pavement crossed plus 1,4 m either side of the travelled edges.

Compaction of other pipe trenches running parallel to the roadway shall be considered areas subject to traffic loads only where instructed by the Engineer in writing. The volume will be computed from the minimum base width determined in accordance with Sub- Clause 5.2 and the depth from the top of the back fill to the top of the bedding as specified in Sub-Clause 8.3.3.1.

DB 8 MEASUREMENT AND PAYMENT

DB 8.3 SCHEDULED ITEMS

PS DB 8.3.2 Excavation

PS DB 8.3.2 (a) Excavate in all materials for trenches, select, backfill, compact and dispose of surplus material Unit : m

Add the following to D 8.3.2(a):

The depth of excavation in street reserves shall be measured from the final finished level.

i) **Combined trenches**

The rate for excavation and backfilling of trenches with more than one service, shall allow for trench widths as set out in PS DB 5.2 and the bill of quantities. Extra bedding and fill blanket will be measured as in the case of normal pipe trenches.

The depth increment for combined trenches is determined by the deepest pipe in the trench.

PS DB 8.3.2 (d) Excavation by hand and backfilling Unit : m³

The provisions of PS DB 8.3.2(a), DB 8.3.2(b) and DB 8.3.2(c) shall apply mutatis mutandis for hand excavation.

Payment shall only be made if so ordered by the Engineer.

PS DB 8.3.2(e) Extra over PS DB 8.3.2(a) for temporary stockpiling of material..... Unit : m³

Temporary stockpiling of material will only be measured and paid for if ordered so in writing by the Engineer and if it is not contaminated with unsuitable material.

The rate shall provide for the handling and stockpiling of the material within the

free haul distance.

DB 8.3.3 Excavation Ancillaries

PS DB 8.3.3.1 Make up deficiency in backfill material (provisional) Unit : m³

Add the following to the last paragraph of DB 8.3.1:

No payment will be made for the transport of material from commercial sources outside the site that the Contractor has selected.

PS DB 8.3.3.3 Compaction in road reserves..... Unit : m³

Add the following to DB 8.3.3.3:

Compaction in road reserves to 95 % MOD AASHTO density with soilcrete using a ratio of 1: 10, rate shall include all materials and labour. Positions, dates and Quantities shall be recorded in the site instruction book and accompany the Certificates for payment, the volume will be measured as specified in 8.2.2, 8.2.3 and 8.3.3.1.

All trenches in street crossings must have soilcrete filling

This item is only applicable to the backfill above the bedding and fill blanket.

PS DB 8.3.5 Existing Services that Intersect or Adjoin a Pipe Trench

Add the following item 8.3.5.c.....

Decommissioning of existing water pipe. Excavate, remove pipe, backfill the trench with suitable material and transport the decommissioned pipe to the relevant dump site or as ordered by the Engineer. The rate shall cover item excavation and backfilling the trench to 93% Mod ASSTHO density with suitable backfilling material. Make-up deficiency in backfilling and transportation of pipe pieces shall be paid under 8.3.3.1.a.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 LB: BEDDING (PIPES)

PS LB 3.2 SELECTED FILL MATERIAL

Substitute LB 3.2 with the following:

The requirements of PSLB 3.1 shall apply mutatis mutandis.

PS LB 8.2.2.3 FROM COMMERCIAL SOURCES

Add LB 8.2.2.3 with the following:

Provide Flexible pipe bedding selected **from commercial sources and compact to 93% Mod AASHTO density** (material P.I to be between 12 and 16)

Substitute LB 8.2.2.3.a with the following:

Selected granular material not exceeding 6 mm in diameter.

Substitute LB 8.2.2.3.b with the following:

Selected fill (compaction in 150 mm layers). First 150 mm above HDPE pipes to be

filled with material not exceeding 6 mm in diameter. (material P.I to be between 12 and 16)

PS LB 6 TOLERANCES

PS LB 6.1 TOLERANCES ON COMPACTION OF BEDDING MATERIAL

Degree of accuracy II shall prevail.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 L: MEDIUM-PRESSURE PIPELINES

L 8.2 SCHEDULED ITEMS

PS L 8.2.1 Supply, lay and bed pipes..... Unit: m

Substitute L 8.2.1 with the following:

Supply, butt weld jointing and lay approved solid wall HDPE (high density polyethylene),
type PE 100, Class PN 12.5 Pipe to SABS ISO 4427. Lay pipe in trenches.

Pipes to be supplied in 12 m lengths. For pipes of nominal diameter.

- a) 90mm
- b) 110mm

L 8.2 SCHEDULED ITEMS

PS L 8.2.2 Extra-over 8.2.1 for the Supplying, Laying, and Bedding of Specials Complete with Couplings.....Unit: No.

Substitute L 8.2.1 with the following:

Supply, butt weld jointing and lay approved solid wall HDPE (high density polyethylene)
type PE 100, Class PN 16 fittings to SABS ISO 4427. All fittings to be butt welded to HDPE

pipes. Each fitting must be supplied with stubs welded on the outside for securing fitting

into concrete anchor blocks. Stubs (Partial puddle flange) to be designed by fitting manufacturer for pipe size and maximum pressure rating as well as fitting configuration.

Each fitting shall be supplied with a minimum of two HDPE stubs

(25 mm thick by 0.25 x diameter of fitting high by 0.75 x diameter of fitting long), welded

to the outside. For fittings:

HDPE EQUAL T PIECE

- a) 90mm
- b) 110mm

HDPE LONG RADIUS 90 DEGREE BEND(SEAMLESS)

- a) 90mm
- b) 110mm

HDPE LONG RADIUS 45 DEGREE BEND(SEAMLESS)

- a) 90mm
- b) 110mm

HDPE LONG RADIUS 11 to 22 DEGREE BEND(SEAMLESS)

- a) 90mm
- b) 110mm

HDPE REDUCING T-PIECE

- a) 110 x 90mm

HDPE REDUCER(CONCENTRIC)

- a) 110 x 90mm

Extra over any fitting or pipe to supply and weld on, in factory, A HDPE stub and steel flange drilled to BS 4504 table 16. Rate include supply lay, installation and fixing as well as all bolts and nuts. For HDPE pipe or fitting diameters:

- a) 90 mm
- b) 110 mm

Extra over any fitting or pipe to supply and weld on, at site, a HDPE stub and steel flange drilled to BS 4504 table 16. Rate include supply lay, installation and fixing as well as all bolts and nuts. For HDPE pipe or fitting diameters:

- a) 90 mm
- b) 110 mm

Supply and install temporary end caps on the following pipe diameters

- a) 90 mm

PS L 8.2.5 supply and Place Pipes, Valves, and Specials.....Unit: No.

Add LB 8.2.5 with the following: 8.2.5.b Water Meters

Supply and install water meters complete with all parts as shown on drawing

On the following pipe diameters reticulation mains. HDPE stub and steel flange measured elsewhere.

- a) 90mm
- b) 110mm

PS L 8.2.13 Valve and hydrant chambers, etc.....Unit: No.

Add LB 8.2.13 with the following: 8.2.13.b non-return valves

Extra-over above for the installation of non-return valves inside valve boxes for the following pipe diameters:

- a) 90 mm
 - b) 110 mm
- Isolating Valves

Supply and install isolation valves complete with all parts as shown on

drawing

With the following pipe diameters reticulation mains.

HDPE stub and steel flange measured elsewhere.

a) 90 mm

b) 110 mm

PS L 8.2.3 Supply, Fixing and Bedding of Valves and Fire Hydrants..... Unit
: No

Add the following to L 8.2.3:

The rate for valves shall cover all extra costs for cutting of pipes supplying of extra couplings, excavation, labour, backfilling with approved selected material from commercial sources, compacted to 93 % of MAASHTO density and connecting thereof as shown on detail drawings.

PS L 8.2.16 Cut Into and Connect To Existing Mains..... Unit : No

The number of each type and diameter of pipe cut into shall measure the cutting into existing mains.

The tendered rate shall include full compensation for all arrangements with the relevant authorities, isolating the main, cutting into the main to accommodate the connecting, fitting, dewatering, excavating, removing of excess material, taking steps to prevent the ingress of soil, stones and other material into the main as well as material and labour to connect the pipe.

PROJECT SPECIFICATION: PORTION 2

PROJECT SPECIFICATION: PORTION 2

SANS 1200 LD: SEWERS

PS LD 3 MATERIALS

PS LD 3.1 PIPE MATERIAL

PIPES - HDPE

Supply, butt weld jointing and lay approved solid wall HDPE (high density polyethylene), type PE 100, Class PN 10 Pipe to SABS ISO 4427. Lay pipe

in trenches or insert into sleeves. Sleeves measured elsewhere. Pipes to be supplied in 12 m lengths. For pipes of nominal diameter.

a) 110mm

b) 160mm

LD 8 MEASUREMENT AND PAYMENT

LD 8.2 SCHEDULED ITEMS

PS LD 8.2.3 Manholes Unit: No

MANHOLES - PRE-MANUFACTURED - HDPE

Construct manhole complete from a single length 1000 mm diameter HDPE (8 kN / m² ring stiffness) pipe Type PE 100 to SABS ISO 4427. See sewer drawing as per detail drawings. Price includes complete manhole with benching, step irons, concrete base and ring beam at top. Manhole covers measured elsewhere. Note: all sewer manholes to be watertight, the allowable leakage is zero.

FACTORY FITTED BENCHING - HDPE LARGE MANHOLES

Extra over to factory fit HDPE manholes with connections, channels and benching for site welding on (not rubber socket ends) of HDPE pipes of nominal diameter and configuration as follows:

110 mm straight channel

110 mm channel at 22.5 degrees bend

110 mm channel at 45 degrees bend

110 mm channel at 90 degrees bend

160 mm channel straight channel

160 mm channel at 22.5 degrees bend

160 mm channel at 45 degrees bend

160 mm channel at 90 degrees bend

MANHOLE COVERS

Cast iron manhole covers and frames (SABS 558) build into roofs of valve,

stormwater and sewer chambers. See Drawing for details. For type:

- a) Type 4 (heavy duty for paved or open area)
- b) Type 1A (heavy duty for roads)

PROJECT SPECIFICATION: PORTION 2

SANS 1200 DM: EARTHWORKS (ROADS, SUBGRADE)

PS DM 3 MATERIALS

PS DM 3.2 CLASSIFICATION FOR PLACING PURPOSES

PS DM 3.2.2 Fill

Remove

“Sand at 100% of modified AASHTO”:

PS DM 3.2.3 Selected Layers

Remove

“Sand at 100% of modified AASHTO

PS DM 5 CONSTRUCTION

PS DM 5.2 METHODS AND PROCEDURES

PS DM 5.2.2.3 b) Cut to spoil

Substitute DM 5.2.2.3(b) with the following:

All surplus and/or unsuitable material shall be removed from the site and disposed of at the spoil site (as described in PSDB 5.2.2.3) and shall be shaped to establish a free draining surface.

The Contractor shall be responsible to make his own arrangements for a suitable spoil site. No additional payment will be made for haulage.

PS DM 5.2.2.4 Temporary stockpiling of materials

Add the following to DM 5.2.2.4:

The Contractor shall program the works in such a manner that suitable excavated material shall, if practically possible, be placed directly in the appropriate position to ensure that temporary stockpiling is limited to an absolute minimum. No payment shall be made for the temporary stockpiling of material where such material is to be used for backfilling of pipe trenches, except when so ordered in writing by the Engineer.

PS DM 7 TESTING

PS DM 7.2 PROCESS CONTROL

Amend table 1 of DM 7.2 as follows:

Substitute "2 000 m²" with "1 500 m²", "1 500 m²" with "1 200 m²" and "5 000 m²" with "3 000 m²".

PS DM 7.3 ROUTINE INSPECTION AND TESTING

Substitute DM 7.3.2 with the following:

No density shall be less than the specified minimum density for the relevant layer.

The cost of all routine testing done by the Engineer, and of which the results do not comply with the specified minimum requirement for the material, shall be borne by

the Contractor and will be subtracted from the monthly payment certificates.

PS DM 8.3.7 Cut to Spoil or Stockpile Unit: m³

Add the following to DM 8.3.7:

Payment for temporary stockpiling shall be made under PSDM 8.3.11, only if so, instructed in writing by the Engineer. The Contractor shall be responsible to make his own arrangements for a suitable spoil site. No additional payment will be made for haulage.

PS DM 8.3.11 Extra-over for item DM 8.3.5 and PSDM 8.3.7 for temporary stockpiling of material..... Unit: m³

Add the following to DM 8.3.11:

Contractor to arrange approval from landowners and the Engineer for sites to stockpile any material if necessary

PS DM 8.3.19 Extra-over for the PSDM 8.3.7 for the removal of unsuitable material.....Unit: m³

The volume measured for payment is the volume of unsuitable material, removed on written instruction of the Engineer in accordance with clause DM 5.2.3.2, below the level of the initial roadbed.

The rate is extra-over for item PSDM 8.3.7 and covers all additional costs in respect of the removal and spoil of unsuitable material, as well as all additional costs in respect of the backfilling thereof. Payment for backfilling shall be made under DM 8.3.4 or PS DM 8.3.5, which ever may be applicable. The Contractor shall be responsible to make his own arrangements for a suitable spoil site. No additional payment will be made for haulage.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 ME: SUBBASE

**PS ME 8 MEASUREMENT AND PAYMENT PS ME 8.2 COMPUTATION
OF QUANTITIES**

Substitute PSME 8.2 with the following:

Measurement and payment shall be to the exact dimensions as shown on the drawings.

PROJECT SPECIFICATION: PORTION 2

SANS 1200 MF: BASE

PS MF 6 TOLERANCES

PS MF 6.1 DIMENSIONS, LEVELS,

ETC PS MF 6.1.2 Grade

Add the following to PSMF 6.1.2:

In addition to the above-mentioned requirements, the surface shall be of such a grade that all surface water shall drain freely to the adjacent kerbs and/or channels, and all subsequent costs to rectify the surface to comply hereto shall be borne by the Contractor.

PS MF 7 TESTING

PS MF 7.2 PROCESS CONTROL

Substitute Table 3 of PSMF 7.2 with the following:

A maximum of two tests may be done per layer.

PS MF 7.3 ROUTINE INSPECTION AND TESTING

Substitute PSMF 7.3.2 with the following:

No density shall be less than the specified minimum density for the relevant layer.

PROJECT SPECIFICATION: PORTION 2

SABS 1200 MJ: SEGMENTED PAVING

MJ 3 MATERIAL

MJ 3.1 UNITS

PS MJ 3.1.2 Class, Strength And Type

Add the following to MJ 3.1.2:

All paved roads and parking areas shall be constructed of 60 mm thick Type S-A class 25 precast concrete blocks

MJ 5 CONSTRUCTION

MJ 5.1 PREPARATION

PS MJ 5.1.2.3 Stabilized subbase

Add the following to MJ 5.1.2.3:

The subbase for the parking areas shall be stabilized.

MJ 6 TOLERANCES

MJ 8 MEASUREMENT AND PAYMENT

MJ 8.2 SCHEDULED ITEMS

PS MJ 8.2.6 Extra Over for Segmented Paving in Other Colours Unit : m²

The rate shall cover the extra cost for any other colour paving than grey as described in the Schedule of quantities.

PROJECT SPECIFICATION : PORTION 2**SANS 1200 MK : KERBING AND CHANNELLING****PS MK 3 MATERIALS****PS MK 3.2 PRECAST KERBING AND CHANNELLING****PS MK 3.2.3Strength**

Substitute MK 3.2.3 with the following:

Precast kerbs and edging shall be of grade 20 MPa/13 mm concrete.
V-Channels shall be of grade 25 MPa/19 mm concrete. U-Channels shall be of grade 30 MPa/19 mm concrete.

PS MK 5 CONSTRUCTION**PS MK 5.2 PRECAST CONCRETE KERBING AND CHANNELLING**

Substitute the first sentence of MK 5.2 with the following:

Precast concrete kerbing and channelling shall be laid and bedded on 95% MOD AASHTO density complying with the requirements of PS MK 3.9 and to the dimensions shown on the drawings.

PS MK 8 MEASUREMENT AND PAYMENT PS MK 8.1 BASIC**PRINCIPLES**

Substitute the second sentence of MK 8.1.1 with the

following: Deductions will be made for catchpits, etc.

Add the following to MK 8.1.1:

Payment shall include the provision of expansion joints as specified.