



Tender No.: FTP 25/MN

CIDB CLASSIFICATION: 6CE OR HIGHER

**REPAIR OF STORMWATER CHANNEL AND OVERFLOW SPILLWAY AT
GYPSUM DAM**



COMPILED BY:

Dartingo Consulting Engineers (Pty) Ltd
64 Underwood Road
Pinetown
3610

Contact Details:

Tel: (031) 266 0903
Fax: (031) 266 0906



**ON BEHALF OF
FOSKOR**

P O Box 208
RICHARDS BAY
4245

Contact Details:

Tell: (035) 902 3115
Fax: (035) 797 3941

NAME OF TENDERER : _____
CONTACT PERSON : _____
TELEPHONE N° : _____
E-MAIL : _____
PHYSICAL ADDRESS : _____
TENDER SUM (INCL. VAT) : _____

TENDER CLOSES: FRIDAY, _____ AT 12:00

THE CONTRACT

- C1 AGREEMENTS AND CONTRACT DATA
- C2 PRICING DATA
- C3 SCOPE OF WORK
- C4 SITE INFORMATION

C1. AGREEMENTS AND CONTRACT DATA

C1.1 Form of Offer and Acceptance

Offer

The Employer, identified in the acceptance signature block, has solicited offers to enter into a contract of the procurement of:

Tender No.: FTP 25/MN
Repair of stormwater channel and overflow spillway at Gypsum Dam

The Tenderer, identified in the offer signature block, has examined the documents listed in the tender data and addenda thereto as listed in the returnable schedules, and by submitting this offer has accepted the Conditions of Tender.

By the representative of the Tenderer, deemed to be duly authorised, signing this part of this form of offer and acceptance, the tenderer offers to perform all of the obligations and liabilities of the contractor under the contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the conditions of contract identified in the contract data.

THE OFFERED TOTAL OF THE PRICES INCLUSIVE OF VALUE ADDED TAX IS

.....
.....
.....**Rand (in words); R**..... **(in figures)**

This offer may be accepted by the employer by signing the acceptance part of this form of offer and acceptance and returning one copy of this document to the tenderer before the end of the period of validity stated in the tender data, whereupon the tenderer becomes the party named as the contractor in the conditions of contract identified in the contract data.

Signature

Name

Capacity

For the tenderer

(Name and address of organisation)

Name and signature of witness.....Date

CIDB registration number

Acceptance

Schedule of Deviations

Notes:

1. The extent of deviations from the tender document issued by the employer prior to the tender closing is limited to the permitted in terms of the Conditions of Tender
2. A Tenderers covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here,
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties becomes an obligation of the contract shall also be recorded here,
4. Any change or addition to the tender documents arising from the above arrangements and recorded here shall also be incorporated into the final draft of the Contract,

1 Subject: _____

Details: _____

2 Subject: _____

Details: _____

3 Subject: _____

Details: _____

4 Subject _____

Details: _____

5 Subject _____

Details: _____

6 Subject _____

Details: _____

By the duly authorised representatives signing this agreement, the employer and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to the documents listed in the tender data and addenda thereto as listed in the tender schedules, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the employer during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the receipt by the tenderer of a completed signed copy of this Agreement shall have any meaning or effect in the contract between the parties arising this agreement.

C1.3. Contract Data

The General Conditions of Contract (GCC) for Construction Works (2015), 3rd Edition, published by the South African Institution of Civil Engineering, are applicable to this contract.

Copies of these conditions of contract may be obtained from the South African Institution of Civil Engineering (Tel 011- 805-5947).

The General Conditions of Contract for Construction Works make several references to the Contract Data for specific data, which together with these conditions collectively describe the risks, liabilities and obligations of the contracting parties and the procedures for the administration of the Contract. The Contract Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the general conditions of contract.

	Clause (GCC 2015)	
		day which is proclaimed as a statutory public holiday
		4. all annual year-end shutdown periods as recommended by the South African Bargaining Council for the Civil Engineering Industry.
Year End Break	1.1.1.12	Builders Break as prescribed by SAFCEC
Time to Deliver Deed of Guarantee	6.2	14 days after commencement date
Liability of Guarantee	6.2 & 8.6	10% of Contract Sum
Time within which Works will commenced	5.3	14 days after Commencement Date
Programme to be furnished within	5.6.1	14 days after Commencement Date
Amount to cover professional fees for repairing damage and loss	8.6.1.1.3	14% of Required to be included in the insurance sum
If required, to be arranged by		Contractor
Amount of Special Risks Insurance	8.6.1.2	Sum of total tender amount
Minimum Amount of Liability Insurance	8.6.1.3	R 10, 000, 000.00 for each and every claim
Day work allowances*	6.5.1.2.3	_____ % on gross remuneration of workmen and foremen actually engaged _____% on net cost of materials actually used _____ % on Plant actually used No allowance will be made for work done or for materials and equipment for which dayworks rates have been quoted at a tender stage. Values to be filled by Tenderer <i>(*if not completed, Zero (0) shall apply)</i>
Time of Completion:*	5.5.1	_____ Weeks (to be filled by Tenderer)
Amount of penalty	5.13.1	The penalty for failing to complete the works is 0.04% of the total Tender Sum per calendar day up to a maximum of R25 000.00 per day
Practical Completion	5.14.1	The Works will not be deemed to have achieved Practical Completion until the Contractor has, inter alia, fully tested and commissioned the Works in the presence of the Employer's Agent and, where applicable, a representative of the Employer.
Contract Price Adjustment Schedule	6.8.2	x = 0,10 a = 0,25

- Detailed Programme - MS projects (linked to cashflow)
- Safety File
- Contractor's Work Insurance - to the value of 1.14 x the value of works
- Insurance - Special Risk insurance to the value of works
- Insurance - Public Liability insurance of R10 million
- Performance Guarantee / Sureties (as per tender document)
- Letter of Award and Acceptance Letters
- List of Sub-contractors to be used on this contract
- General Conditions of Contract (GCC) 3rd Edition 2015 (Guide to GCC-yellow book)
- Complete Set of SABS 1200
- Contractor to obtain a construction work permit from Department of Labour at least 30 days prior to any work being carried out on site

SIGNATURE OF TENDERER:

DATE:

Rate or price for base month of*	6.8.2	

Tenderers are to note that failure to provide a time for completion of the contract will invalidate the tender offer.

*** Delete inapplicable**

DATE:..... SIGNATURE OF TENDERER :.....

on behalf of

Address

To be completed by Tenderer

AND WHEREAS _____

Has/have at the request of the contractor agreed to give such guarantee;

NOW THEREFORE WE, _____ do hereby guarantee and bind ourselves jointly and severally as Guarantor and Co-principal Debtors to the Employer under renunciation of the benefits of division and excussion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions:

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Performance Guarantee and up to and including the date of issue by the Engineer of the Certificate of Completion of the Works or the date of payment in full of the Guaranteed Sum, whichever occurs first. The Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship.
 - 3.2 its obligation under this Performance Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 4.1 to 4.3:
 - 4.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2.
 - 4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum certified has still not been paid.
 - 4.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 4.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:
 - 5.1 the Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 5; or
 - 5.2 a provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 5; and
 - 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or

Capacity

Witness signatory (1)

Witness signatory (2)

Name:.....

Physical address:

.....

.....

Postal address:.....

.....

.....

E-mail address:

Fax Number:.....

Telephone Number:

Mobile Number:

The Contractor and the Employer will hereinafter be collectively referred to as the Parties.

The Parties entered into a Contract for
which provides that a dispute under or in connection with the General Conditions of
Contract for Construction Works, Third Edition (2015) must be referred to standing
adjudication.

The undersigned natural person has been appointed to serve as Adjudication Board
Member and together with the undersigned Parties agree as follows:

1. The Adjudication Board Member accepts to perform his duties in accordance with the terms of the Contract, the General Conditions of Contract for Construction Works' Adjudication Board Rules and this Agreement.
2. The Adjudicator undertakes to remain independent and impartial of the Contractor, Employer and Employer's Agent for the duration of the Adjudication Board proceedings.
3. The Adjudication Board Member agrees to serve for the duration of the Adjudication Board proceedings.
4. The Parties may at any time, without cause and with immediate effect, jointly terminate this Agreement.
5. Unless the Parties agree, the Adjudication Board Member shall not act as arbitrator or representative of either Party in any subsequent proceedings between the Parties under the Contract. No Party may call the Adjudication Board Member as a witness in any such subsequent proceedings.
6. The standing Adjudication Board's duties shall end upon the Adjudication Board Member(s) receiving notice from the Parties of their joint decision to disband the Adjudication Board.
7. The Adjudication Board Member shall be paid in respect of time spent upon or in connection with the adjudication including time spent traveling:
 - 7.1 A monthly retainer of R..... for months, and/or
 - 7.2 A daily fee of R..... based on a hour day, and/or

C1.6 Agreement In Terms Of Section 37(2) Of the Occupational Health and Safety Act No 85 Of 1993

(The successful Tenderer will be required to complete a written agreement in the form set out below before commencing any work on Site)

AGREEMENT OF INDEMNITY IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT 1993 ENTERED INTO BETWEEN

FOSKOR

duly represented herein byin his capacity as the
.....(designation)

(hereinafter referred to as "EMPLOYER")

and

.....(Name of contractor)

duly represented herein by (Name of representative)

in his capacity as the... (designation)

(hereinafter referred to as "MANDATARY")

The EMPLOYER and the MANDATARY hereby agree, in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act 1993 (Act 85 of 1993, hereinafter referred to as "the Act"), that as far as the work described in 1 hereafter, the following arrangements and procedures shall apply between them to ensure compliance by the MANDATARY with the provisions of the Act, namely:

1. DESCRIPTION OF WORK :

Tender No.:FTP 25/MN

Repair of stormwater channel and overflow spillway at Gypsum Dam

DEFINITIONS:

EMPLOYER : means any person who employs or provides work for any person and remunerates that person or expressly or tacitly undertakes to remunerate him, but excludes a labour broker as defined in Section 1(1) of the Labour Relations Act, 1956 (Act No 28 of 1956).

MANDATARY: includes an agent, a contractor or a subcontractor for word, but without derogating from his status in his own right as an employer or a user.

ARRANGEMENTS AND PROCEDURES:

The MANDATARY as an employer in his own right, undertakes to acquaint the appropriate officials and employees of the MANDATARY with all relevant provisions of the Act and the regulations promulgated in terms of the Act;

C2: PRICING DATA

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5. SPECIFICATIONS AND DESCRIPTIONS

Descriptions in the Schedule of Quantities are abbreviated and all Specification Clauses shall be read and deemed to apply to the items described in this Schedule of Quantities which are to be priced accordingly.

In the event of any Clause in the preceding Specifications being in conflict with any description and/or amplification thereof in the Schedule of Quantities the former shall prevail, and the Project Specification shall take precedence over the General Specification.

Directions and description of work and material given in the Specification are not necessarily repeated in the Schedule of Quantities. Reference is to be made to the Conditions of Contract, Specification and other relevant documents for this information. While references may be given in the Schedule, such references are not necessarily complete.

6. PRICING OF THE BILL OF QUANTITIES

The prices and rates to be inserted by the Tenderer in the Bill of Quantities shall be the full inclusive prices to be paid by the Employer for the work described under the several items, and shall include full compensation for all costs and expenses that may be required in and for the completion of the work and maintenance during the defects liability period of all the work described and as shown on the drawings as well as all overheads, profits, incidentals and the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the Tender is based. Reasonable unit rates and prices shall be entered in the Bill of Quantities as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

Each item shall be priced and extended to the "Total" column by the Tenderer, with the exception of the items for which only rates are required, or items which already have Prime Cost or Provisional Sums affixed thereto.

Price or rate shall be entered against each item where provision is made for such pricing in the Schedule of Quantities whether quantities are stated or not and no two or more items can be bracketed together for a single price or rate. Items against which N/A, left blank or – is entered are to be considered as incomplete and will invalidate the tender.

Items against which NIL or zero (0) is entered are to be considered to be fully priced and the tenderer will provide the items in question as specified at zero (0) or NIL price.

The Tenderer shall fill in rates for all items where the words "rate only" appear in the "Total" column. "Rate Only" items have been included where:

- (a) an alternative item or material is contemplated;
- (b) variations of specified components in the make-up of a pay item may be expected; and
- (c) no work under the item is foreseen at tender stage but the possibility that such work may be required is not excluded.

For "Rate Only" items no quantities are given in the "Quantity" column but the quoted rate shall apply in the event of work under this item being required. The Tenderer shall however note that in terms of the Tender Data the Tenderer may be asked to reconsider any such rates which the Employer may regard as unbalanced.

All rates and amounts quoted in the Bill of Quantities shall be in rand and cents and shall include all levies and taxes (other than VAT). VAT will be added in the summary of the Bill of Quantities.

mm	millimetre	hr	hour
m	metre	kilogram	kg
km	kilometre	t	ton (1000 kg)
m ²	square metre	No.	number
m ² .pass	square metre-pass	sum	lump sum
ha	hectare	MN	Mega-newton
m ³	cubic metre	MN.m	Mega-newton-metre
m ³ .km	cubic metre-kilometre	P C sum	Prime Cost sum
ℓ	litre	Prov sum	Provisional sum
kℓ	kilolitre	%	per cent
MPa	Mega-pascal	pers. days.	person days
kW	kilowatt		

13. SCALE

The scale to which the Drawings are made is only to be made use of when no figured dimensions are given either on the Drawings or in the tender documents and the figured dimensions are always to be followed though they may not coincide with the scale of the Drawings, but dimensions where possible are to be taken from the buildings.

14. VALUE ADDED TAX

The tender price must include for Value Added Tax (VAT). All rates, budgetary allowances, etc. in the Bills of Quantities must however be net (exclusive of VAT) with VAT calculated and added to the Total Value thereof in the Final Summary.

15. TERMS USED

In this Schedule of Quantities the following expressions shall have the meanings hereinafter assigned to them unless otherwise described in the items concerned:-

- (i) "ALLOW" Where the word "allow" is used in any item of the Schedule of Quantities the sum entered by the Contractor is at his risk and shall cover all costs and charges in respect of the work referred to during the period of the Contract.
- (ii) "PROVIDE" Where the word "provide" is used and a sum has been inserted by the Engineer to cover the cost of any particular item of work, the sum so entered shall be dealt with in accordance with the provisions of the General Conditions of Contract.
- (iii) "BUDGETARY ALLOWANCE" Where the word "budgetary allowance" is used, the sum inserted by the Engineer to cover the cost of the particular item of work will be omitted during the Contract and the work will be measured in accordance with the procedure set out in the Schedule of Quantities and valued at the rates contained in the priced Schedule of Quantities for similar work.

16. APPROVED, DIRECTED OR SELECTED

The words "approved", "directed" or "selected" refer to the approval, direction or selection of the Engineer.

17. TRADE NAMES, PROPRIETARY BRANDS, ETC

All materials, fittings, furnishings, etc., specified under a Trade Name, Proprietary Brand or Catalogue Reference, shall be:

C2.2 Bill of Quantities

Tender No.: FTP 25/MN

REPAIR OF STORMWATER CHANNEL AND OVERFLOW SPILLWAY AT GYPSUM DAM

DECLARATION

I/we, the undersigned, have read and understood the pricing instructions, all project specifications and drawings before pricing the Bill of Quantities.

I/We hereby declare that we have notified the engineer of any or all discrepancies between the Drawings, Bill of Quantities and the Project specifications, identified during the pricing of the bill of quantities

I/we hereby declare that the Bill of Quantities are properly priced forming Part C2.2 of this Contract Document, for the above Contract.

The offered total of the prices inclusive of value added tax (VAT) is:

R..... (in figures)

.....

.....

.....RAND (in words)

SIGNED ON BEHALF OF/BY THE TENDERER:

NAME		SIGNATURE
CAPACITY		DATE

SIGNED BY WITNESS:

NAME	SIGNATURE	DATE

C3.1 DESCRIPTION OF THE WORKS

PS-1.1 EMPLOYER'S OBJECTIVES

Foskor is embarking on a project to upgrade the stormwater infrastructure servicing the Gypsum Recovery Area in Richards Bay. Under this contract, Foskor (Pty) Ltd will be inviting tenders for the Construction of the Western (critical) stormwater channel, relining of the stormwater retention dam and construction of the dam wall.

These projects will contribute positively to the broad long-term plans to reduce and eliminate pollution challenges presented by the current contaminated stormwater disposal system and meet the infrastructure requirements for the Environmental Authorities.

PS-1.2 OVERVIEW AND EXTENT OF WORKS

Under this appointment the main tasks in the project involve the following:

Western Concrete Stormwater Channel

- Clear and grub site
- Remove 100mm layer of topsoil and a further 150mm layer of in-situ material.
- Rip and recompact 150mm layer of in-situ material.
- Import G5 quality material and compact to 98% of MOD AASHTO density.
- Construction of approx. 2322m of 100mm thick concrete lined stormwater channel.

Refer to DWG 1283/G-102 for catch pit details.

Stormwater Catch Pit

- Contractor to provide a method statement for approval by the engineer, for diverting of the stream before proceeding with the construction of the catchpit and subsequent road works.
- Demolish the existing masonry chamber and wing walls, and cart to spoil.
- Box cut in-situ clayey material up to 1.5m deep and cart to spoil.
- Import and place 1 x 200mm layer of 19mm stone aggregate and encase in geofabric at the bottom of the excavation.
- Import and compact G5 quality material in 150mm layers to 98% of MOD AASHTO density.
- Construction of a 5m x 5m reinforced concrete stormwater catchpit.
- Install cat ladder complete with grab rail.
- Install concrete bollards spaced at 1m centres on catchpit cover slab to prevent vehicular interactions.

Refer to DWG 1283/G-103 for catch pit details.

4. Installation of new concrete stormwater pipes, 1500mm and 1350mm in diameter, class 100D.
5. Construction of reinforced concrete outlet structures complete with reno-mattresses for scour purposes.
6. Upgrade of gravel road to allow adequate protection for new stormwater pipes.
7. Concrete encasement of new stormwater pipes.
8. Construction of 300mm thick reinforced concrete slabs over stormwater pipes.
9. Draining of the dam, removal of existing dam liner.
10. Construction of new dam liner to engineer specifications.
11. Demolition of existing masonry dam wall.
12. Construction of new reinforced concrete dam wall.

All operations necessary for the execution of the works and for the construction of any temporary works shall, as far as compliance with the requirements of the contract permit, be carried on so as to cause minimum interference with the local community and other contractors working in the area.

PS-2.2 EXTENT OF THE WORKS

Under this contract, the successful contractor will be required to undertake the following specific work:

- Clearing and grubbing
- Removing, maintaining and replacing topsoil
- Excavation works for new concrete channels, catchpits, road works and dam wall.
- Selection (sieving of bedding and fill material)
- Construction of pipeline bedding
- Pipe laying and jointing
- Pipe encasement
- Backfilling of pipeline
- Construction of concrete channels
- Construction of concrete catchpits and benching
- Construction of concrete slabs on road for pipe protection
- Removal and reconstruction of dam lining
- Demolition and reconstruction of dam wall
- Grass planting
- Finishing and tidying

PS3 LOCATION OF THE WORKS

PS-3.1 Access

The Gypsum Recovery Area (with GPS co-ordinates of 28°47'13"S; 32°00'05"E) is located in Richards Bay, KwaZulu-Natal. It is positioned 245m south of the R34. The site shares its eastern boundary with Bayside Aluminium. The Mhlatuze river runs parallel to the site's southern boundary. Adjacent to the western boundary is vacant well-kept land which spans to the R34. The area of the site has an extent of 125.74ha.

Access to the project site is as follows:

- From the N2 off ramp to Richards Bay:
- Take exit 327 for R34 toward Richards Bay/Ulundi/Empangeni
- Turn right onto John Ross Highway/R34
- Travel straight on John Ross Highway for approximately 8km

C3.2 ENGINEERING

PS-5 EMPLOYER'S DESIGN

PS-5.1 DESIGN BRIEF AND PROCEDURES

The Contractor shall use the designs availed by the Engineer in the contract document and is expected to submit a written program of works for both the permanent and temporary works prior to commencement of any work on site. The Contractor shall notify the Engineer of any changes to the program of works before any task execution.

Activity Work designed by, per design stage	Responsible Party
Concept, feasibility and overall process	Employer
Basic engineering and detail layouts to tender stage	Employer
Final design approved for construction stage	Employer
Temporary works	Contractor
Construction Permanent Works	Contractor
Preparation of as built drawings	Contractor

The Contractor shall be responsible for the design of the following:

TEMPORARY WORKS

The Contractor shall be required to carry out the following temporary works in accordance with minimum acceptable quality standards as stipulated in the reference standards.

The temporary works include the following but not limited to:

- Trench dewatering and site water control
- Dealing with stormwater
- Shoring of trenches
- Stream diversion during construction of Spillway
- Construction of temporary earth mounds and channels, inlet manholes, protection berms etc. that may be deemed necessary for the uncontrolled flow of stormwater

The Contractor shall be responsible for the design of the following:

- Dealing with stormwater during the construction of channels
- Shoring where required for deep excavations
- Dewatering of trench during excavations
- Stormwater control during construction of channels
- Concrete Mix designs
- Site layouts for the contractor's camp and office accommodation
- Site layouts for the Engineer Representative's temporary office accommodation
- Construction Methodology
- Formwork
- Scaffolding and all staging work
- All other temporary works

The costs of the designs will be deemed to have been included in the scheduled items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

PS-5.5 Interface with other Contractors

The contractor may be required to provide access to other contractors undertaking work as per the parallel contracts. The costs of this interface will be deemed to have been allowed for in the appropriate items in the Schedule of Quantities. No other additional payments will be certified to cover these activities.

C3.4 CONSTRUCTION

PS-7 APPLICABLE SABS STANDARDS

The standard specifications on which this contract is based are the South African Bureau of Standards Standardised Specifications for Civil Engineering Construction SABS 1200. Although not bound in nor issued with this Document, the following Sections of the Standardised Specifications of SABS 1200 shall form part of this Contract:

Standardised Specifications

SABS 1200 A	:	General
SABS 1200 AB	:	Engineer's Office
SABS 1200 C	:	Site Clearance
SABS 1200 D	:	Earthworks
SABS 1200 DA	:	Earthworks (Small Works)
SABS 1200 DB	:	Earthworks (Pipe Trenches)
SABS 1200 DK	:	Gabions & Pitching
SABS 1200 G	:	Concrete
SABS 1200 GA	:	Concrete (Small Works)
SABS 1200 LB	:	Bedding (Pipes)
SABS 1200 LE	:	Stormwater Drainage

Particular specifications

PA	:	Subsoil Drainage
PE	:	Pre-Construction and Health Plan
PG	:	Grassing
PLW	:	EPWP Specification
PMS	:	Method Statement
PW	:	Waterproofing

The variations and additions to the standardised specifications as well as the particular specifications listed above are included as C3.6 and C3.7 respectively. The variations to the standardised specifications are prefixed PS, and take precedence over the SABS Standardised Specification.

Where the particular specifications are in conflict with either the variations and additions to standardized specifications or the SABS Standardised Specifications, the particular specifications shall take precedence.

PS-7.1 APPLICABLE SANS STANDARDS

The following SANS specifications are also referred to in this document and the Contractor is advised to obtain them from Standards South Africa (a division of SABS) in Pretoria.

SANS 10396: 2003:	Implementing Preferential Construction Procurement Policies using Targeted Procurement Procedures
SANS 1921-1 (2004):	Construction and Management Requirements for Works Contracts Part 1: General Engineering and Construction Works

All buildings and latrines shall be in accordance with the Local Authority and State Health regulations and shall be kept in a clean, sanitary condition to the satisfaction of the Engineer.

PS-7.5.2 Accommodation of Employees

No employees except for security guards will be allowed to sleep or be accommodated on the site.

No housing is available for the Contractor's employees and the Contractor shall make his own arrangements to house his employees and to transport them to site.

No informal housing or squatting will be allowed.

The Contractor shall provide the necessary ablution facilities at his camp site and the site of the works for the use of his employees. Chemical toilets only will be allowed where temporary facilities have to be provided.

PS-7.5.3 Source of Water Supply

The Contractor shall make his own arrangements for the installation of a temporary metered supply of water with Mhlathuze Municipality. The contractor shall pay the necessary installation charges, monthly rentals and unit charges.

The Contractor will be required to ensure that the water account with Mhlathuze Municipality is in good standing prior to the issue of completion certificate. The Engineer will withhold any payments until arrears are cleared with Mhlathuze Municipality.

PS-7.5.4 Source of Power Supply

The power supply authority is Eskom. The Contractor will be required to make his own arrangements with and pay all the requisite connection and consumption charges to Eskom for whatever temporary power supplies he may require for his use on the site and his tender will be held to include for all such costs and charges.

PS-7.6 SITE FACILITIES REQUIRED

Facilities Required for the Engineer

PS-7.6.1 Temporary/Permanent Offices

The Contractor is to provide a temporary office for use by the Engineer as per clause PSAB 4.1. The offices should be able to accommodate one full time Engineer's Representative and his assistant.

PS-7.6.2 Laboratory Facilities

The Contractor will not be required to provide a testing laboratory on site for use by the Engineer.

PS-7.6.3 Sanitary Facilities

The Contractor shall provide such screened latrines as are necessary for his employees, the siting of which shall be to the satisfaction of the Engineer. They shall be constructed and maintained in accordance with the requirements of Government, Provincial and/or Local Authority.

Pit latrines will not be permitted and chemical toilets would be preferred. The latrines shall be kept in a thoroughly clean, sanitary and orderly condition.

These facilities shall be provided within two days of the commencement of the Works and the Contractor shall strictly enforce their use.

PS-7.11 Survey Control and Setting Out

The contractor shall provide the following survey equipment, in good condition, for use by the Engineer throughout the duration of the contract:

- A dumpy level with all the accessories for use with levelling
- Measuring tape

An assistant, when required, to assist the Engineer to operate survey equipment.

Clause	Specification data
	affected by the Works, have been shown on the drawings where available. The Contractor will be required to confirm the locations and status of all services irrespective of whether they are shown on the drawing or not prior to any other construction activity being undertaken. Where public services must be interrupted on account of the works, it shall be the Contractor's responsibility, in conjunction with the appropriate Authority to ensure that all users affected by the interruption are given due and sufficient notice of the date, time and duration of the interruption
4.17.4	The requirements for detection apparatus are not known at this stage but shall be reviewed at construction stage. Provisional Sums have been provided for in the bill of quantities, should the need arise.
4.17.7	In the event of any service being damaged or accidentally disconnected for any reason, the Contractor shall immediately contact the relevant authority for instruction and shall report the occurrence of the incident. The damage is to be repaired as soon as possible to the approval of the Engineer and the authority. The Contractor will be held responsible for paying all costs incurred by the authority or himself as a result of each such incident, where relevant.
4.18	The following standards and specifications shall be in addition to the provisions of 4.18: 1) Foskor Pre-Construction Health and Safety Specification and 2) Environmental Management Plan
4.18.2	It is important that the construction area (including all trenches) is barricaded to prevent unauthorized entry to the site of works. Plastic netting 1,5m in height supported off creosote poles shall be used. Chevron tape should be attached to the top of the fence all-round the site to clearly mark off the working area. Notices should be attached to the fence indicating that the site is for personnel employed on the contract only and not for unauthorised entry. At weekends or holidays the site must be completely closed off to the public. It is the responsibility of the Contractor to ensure that the sites are closed off. Standard type farm gates can be used for access points and locked when the Contractor is not in attendance. All fencing and gates must be maintained until the work is complete. Costs to be covered under compliance with OSHA
4.22	The works to be undertaken by selected subcontractors comprise: 1. Nil
Variations	
4.1.1 o)	Where reference is made to "SANS 2001", substitute with "SABS 1200"
Additional Clauses	
4.4	The Contractor will be solely responsible for the production of work that complies with the Specifications to the satisfaction of the Engineer. To this end it will be the full responsibility of the Contractor to institute an appropriate Quality Assurance (QA) system on site. The Engineer will audit the Contractor's quality assurance (QA) system on a regular basis to verify that adequate independent checks and tests are being carried out and to ensure that the Contractor's own control is sufficient to identify any possible quality problems which could cause a delay or failure. The Contractor shall ensure that efficient supervisory staff, the required transport, instruments, equipment and tools are available to control the quality of his own

Clause	Specification data
	before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice. The cost of such additional tests will be covered by a provisional sum provided in the schedule of quantities, but tests that failed to confirm compliance with the specifications, will be for the account of the Contractor.
4.15.6	The Contractor shall take special precautions to protect all permanent survey beacons or pegs such as benchmarks, stand boundary pegs and trigonometrical beacons, regardless whether such beacons or pegs were placed before or during the execution of the Contract. If any such beacons or pegs have been disturbed by the Contractor or his employees, the Contractor shall have them replaced by a registered land surveyor at his own cost. The Contractor shall do his utmost to maintain a good relationship with Landowners and Lessees in the area as the successful construction and subsequent operation of the scheme is dependent upon the goodwill of Landowners or Lessees. The Contractor shall be liable for any claims arising from use of land outside the designated area. The Engineer shall be kept fully informed of all negotiations which are in progress between the Contractor and Landowners or Lessees with respect to borrow pits, dumping grounds, additional working space, offices and housing sites; plan depots and storage areas, access roads and including use of any land which does not form part of the sites as shown on the drawings. It is essential that the Contractor make prompt payment for any royalties or other amounts, which he may have agreed with Landowners or Lessees. The Employer will, where necessary, obtain permanent servitudes and rights of way along the road routes indicated on the tender drawings. New servitudes will only be registered after completion of the Works.
4.17.8	The Contractor shall make himself acquainted with the position of all existing services, and expose them at the start of the Contract to verify their position and establish their depths, before any excavation or other work likely to affect the existing services is commenced. Damage to unknown services shall be reported as soon as possible to the service provider so that repairs can be effected immediately and liability shall be determined on site when such damage should occur. Known services will be indicated in the tender and contract documents. The Contractor will be responsible for identifying all services with the relevant Service Providers. Any information regarding existing services is given in good faith and without guarantee.
4.17.9	The Contractor shall so carry out all his operations as not to encroach on, or interfere with, trespass on, or damage adjoining land, buildings, properties, road structures, pipelines, places and things, in the vicinity of the Works.
4.19.3	The Contractor shall pay special attention to the following : <u>Natural Vegetation</u> The Contractor shall confine his operation to as small an area of the site as may be practical for the purpose of constructing the works. Only those trees and shrubs directly affected by the works and such others as the Engineer may direct in writing shall be cut down and stumped. The natural vegetation, grassing and other plants shall not be disturbed other than in areas where it is essential for the execution of the work or where directed by the Engineer. <u>Fires</u> The Contractor shall comply with the statutory and local fire regulations. He shall also take all necessary precautions to prevent any fires. In the event of fire the Contractor

The specified defects liability period in respect of any specific section of the Works shall commence on the date on which the relevant section is accepted by the Engineer as being completed, i.e. fully commissioned, including finishing and tidying.

On completion of the Contract the Contractor shall ensure that all materials used in the construction of the temporary Site office, workshop and storage yard are removed from Site.

Waste materials such as construction debris and soil contaminated with oil and fuel are to be disposed of at the solid waste disposal site used approved by the Engineer. Prior to the handover of the Site to the Employer, the Contractor and the Engineer will conduct a post construction audit to determine if any additional measures that are to be taken.

The Completion Certificate will only be issued after this stage.

PS-8.4 EMPLOYMENT OF LOCAL LABOUR

The Employer has determined that 100% of the Contractor's unskilled labour force shall be made up from within the local municipal area the contractor will have to liaise with the CLO and/or ward councillor and adjacent ward councillors for the recruitment of all local labour.

The Contractor will be required to provide details of the numbers of semi-skilled and unskilled workers he will require, together with their anticipated starting dates. The PSC through its labour sub-committee will then make this labour available to the Contractor.

A minimum of 50% of the local labour shall comprise of women and where appropriate disabled labour shall be employed. It is a requirement that tenderers acquaint themselves fully with requirements for registration with Unemployment Insurance Fund.

The Employer requires that the successful contractor registers all labour with the Unemployment Insurance Fund. The local labour rate has been determined at the latest SAFCEC rate. The task for excavation by hand has been agreed at 2,4 m³/day (e.g. 0,76 m x 1,0 m x 3,15 m) or a task will comprise of 7m³ of backfilling.

During project execution, the successful contractor will be required to provide progress reports indicating to what level these requirements have been met.

PS-8.5 REQUIREMENTS FOR ACCOMMODATION OF TRAFFIC

PS-8.5.1 General

The Contractor will be responsible for the safe and easy passage of public traffic past and on sections of roads of which he has occupation or where work has to be done near traffic.

Accommodation of traffic, where applicable shall comply with SANS 1921-2: 2004: Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor.

The Contractor shall obtain this specification from Standards South Africa if accommodation of traffic will be involved on any part of the construction works.

PS-8.5.2 Basic Requirements

The travelling public shall have the right of way on public roads, and the Contractor shall make use of approved methods to control the movement of his equipment and vehicles so as not to constitute a hazard on the road.

The Contractor shall ensure that all road signs, barricades, delineators, flagmen and speed controls are effective and that courtesy is extended to the public at all times.

The successful Tenderer shall, on receipt of notification that he has been awarded the contract, submit without delay his own documented Health and Safety Plan for the execution of the work under the contract. His Health and Safety Plan must at least cover the following:

- (i) a proper risk assessment of the works, risk items, work methods and procedures in terms of Regulations 7 to 28;
- (ii) pro-active identification of potential hazards and unsafe working conditions;
- (iii) provision of a safe working environment and equipment;
- (iv) statements of methods to ensure the health and safety of subcontractors, employees and visitors to the site, including safety training in hazards and risk areas (*Regulation 5*);
- (v) monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;
- (vi) details of the Construction Supervisor, the Construction Safety Officers and other competent persons he intends to appoint for the construction works in terms of Regulation 6 and other applicable regulations; and
- (vii) details of methods to ensure that his Health and Safety Plan is carried out effectively in accordance with the Construction Regulations 2014.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work.

The Contractor will not be allowed to commence work, or his work will be suspended if he had already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs

PS-8.6.3 Cost of compliance with the OHSA Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract.

Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

Items that may qualify for remuneration will be specified in the Safety Specifications included or in the Project specifications.

PS-8.7 ADVERSE WEATHER CONDITIONS

If during the time for completion of the works or any extension thereof abnormal rainfall or wet conditions shall occur then an extension of time in accordance hereof shall be granted by the Employer calculated in accordance with the formula given below for each calendar month or part thereof.

$$V = (Nw - Nn) + ((Rw - Rn)/X)$$

V	Extension of time in calendar days in respect of the calendar month under consideration.
Nw	Actual number of days during the calendar month on which a rainfall of Y mm or more has been recorded.
Nn	Average number of days, as derived from existing rainfall records, on which a rainfall of Y mm

STATISTICAL INFORMATION (RICHARDS BAY)STATION: LATEST		
Month	RAINFALL	
	Nn = Average number of days during the calendar monthsin which a rainfall of more than Y-mm has been received	Rn = Average monthly rainfall
January	7	98
February	6	68
March	5	48
April	3	23
May	1	10
June	1	4
July	1	6
August	1	5
September	2	12
October	3	27
November	7	66
December	6	96
Total	43	457

The Contractor is to supply and install an accurate rain gauge of modern design and all other necessary equipment within the site camp area, in a position to be confirmed by the Engineer on site in order to accurately measure rainfall.

This area shall be fenced off from the rest of the site camp area and shall have a single pedestrian gate with lock. Only the Engineer's Representative will have access to the key and will be allowed access to the rain gauge. Rainfall records read at this rain gauge shall be kept by the Engineer's Representative.

The Engineer's Representative shall use these rainfall records in order to confirm days on which rainfall results in a stoppage of work, critical to the completion of the whole of the Works.

The contractor's tendered rates shall be deemed to include for the supply and installation of the rain gauge, other related equipment, fencing, gate, lock, key etc.

PS-8.8 PREFERENTIAL PROCUREMENT

For the purpose of this contract the Contractor shall comply with the preferential procurement statement provided in C.3.3 of the Contract Data & C3.11 of the Tender Data.

C3.8.9 AS - BUILT INFORMATION

The position and depth of the following items shall be supplied:

Outside the trafficked areas, the Contractor is allowed 3 metres working space. All excavation shall be conducted in such a manner that there is minimum disruption of access into the properties.

It must be noted that services such as Water Mains, Sewer mains, Telkom, storm water drains; power cables, telephone and power poles, stay poles, sign posts and stay wires and fences may be located within close proximity of the pipeline centreline.

The Contractor will be required to take due care for the protection of and will be liable for damage to, or physical loss of, property (including agricultural crops) located within the pipeline route, and damage to channel structure outside the scope of works.

PS-8.15 EXCAVATION OF TRENCHES

Trial holes of minimum plan dimensions 0,5m x 1,0m shall be excavated by hand, at maximum, 50m intervals along the pipeline route, ahead of the Contractors programme. The trial holes shall be excavated to a depth equivalent to the proposed depth of infrastructure to be constructed under this contract

Excavation may be carried out by machine, where ordered by the Engineer, if intermediate or hard material is encountered at the trial holes. The length of excavation by machine shall be determined by the findings of trial holes further ahead. If no intermediate or hard material is encountered at trial holes, excavation shall be by hand.

All requirements of the OHS Act shall be complied with, with respect to shoring for both excavation methods.

PS-8.16 BACKFILLING OF TRENCHES

When pipelines are complete, tested and approved by the Engineer, trenches shall be backfilled as per specifications given in the contract document. Trench fill soils shall have uniform moisture content suitable for compacting to specified density.

If heaving, or shearing occurs under action of compaction equipment even though the soil meets density requirements, affected material shall be replaced to limits as directed by the Engineer.

Backfilling shall proceed without displacement of the grade and alignment of the pipeline and settlement of backfill shall be considered evidence of improper workmanship or inclusion of unsuitable backfill materials, or both, and will require re-grading and realigning the pipeline and removing and re-compacting settled material at no cost to the Employer

All trench shoring and supports shall be so removed that trench cave-in and settlement are minimized and no voids remain. Voids caused and left by sheeting and shoring removal shall be backfilled with pervious fill or other approved material and compacted at Contractor's expense.

All material displaced by slides, settlement, and trench cave-in shall be removed and replaced with specified soils at Contractor's expense.

PS-8.17 SECURITY LOCKS

Security locks supplied and installed to all chambers where specified are to be Master "Discus" high security locks, type code 370 and must be "keyed alike" to Foskor or specifications.

For security reasons, all locks ordered by the Contractor will be delivered to Foskor who will co-ordinate the installation of locks on site. Tax invoices are to be made out to the Contractor and accounts for locks are to be settled by the Contractor and claimed in payment certificates.

C3.6 PROJECT SPECIFICATIONS

PORTION 2: AMENDMENTS TO THE STANDARD AND PARTICULAR SPECIFICATIONS

INTRODUCTION

In certain clauses the standard, standardized and particular specifications allow a choice to be specified in the project specifications between alternative materials or methods of construction and for additional requirements to be specified to suit a particular contract. Details of such alternative or additional requirements applicable to this contract are contained in this part of the project specifications. It also contains additional specifications required for this particular contract.

The number of each clause and each payment item in this part of the project specifications consists of the prefix PS followed by a number corresponding to the number of the relevant clause or payment item in the standard specifications. The number of a new clause or payment item, which does not form part of a clause or a payment item in the standard specifications and which is included here, is also prefixed by PS, but followed by a new number which follows on the last clause or item number used in the relevant section of the standard specifications.

STATUS

Should any requirement of the project specification conflict with any requirement of the applicable standardised or particular specifications, the requirements of the project specification shall prevail.

TABLE OF CONTENTS		PAGE
C4.1	Site Information	C4.3
C4.2	Locality Plan	C4.4
C4.3	Geotechnical	C4.5
C4.4	Drawings	C4.6

C4.2 LOCALITY PLAN

REFER TO ATTACHED LOCALITY PLAN DRAWING NUMBER 1283\SW 100

C4.4 DRAWINGS

The drawings issued to tenders as part of the tender documents must be regarded as provisional and preliminary for the tenderer's benefit to generally assess the scope of work. The drawings are issued as a separate book of drawings.

The work shall be carried out in accordance with the latest available revision of the drawings approved for construction (AFC)

At commencement of the contract, the Engineer shall deliver to the Contractor copies of the AFC drawings and any instructions required for the commencement of the works. From time to time thereafter during the progress of the works, the Engineer may issue further drawings for construction purposes as may be necessary for adequate construction, completion and defects correction of the works.

All drawings and specifications and copies thereof remain the property of the Employer, and the Contractor shall return all drawings and copies thereof to the Employer at the completion of the contract.

Tender drawings are issued separately in the Book of Drawings

LIST OF TENDER DRAWINGS

REPAIR OF STORMWATER CHANNEL AND OVERFLOW SPILLWAY AT GYPSUM DAM DRAWING LIST	
DRAWING NUMBER	DESCRIPTION
1283 /G-100	General Notes
1283 /G-102	Typical Channel Sections for Entire Gypsum Recovery Area
1283 /G-103	West Channel Discharge Chamber
1283 /G-104	East Channel Discharge Chamber
1283 /G-105	Transitions, Ladder, Joints, and Pound Lining
1283 /G-106	Dam Wall
1283 /G-107	West Headwall
1283 /G-108	East Headwall
1283 /SW100	Locality Plan
1283 /SW101	Site Layout
1283 /CR101	New Raised Gravel Track Over Outlet Pipes
1283 /CR102	New Track Layer works
1283 /SR101	West Chamber Reinforcement
1283 /SR102	East Chamber Reinforcement
1283 /SR103	West Track Slab Reinforcement
1283 /SR104	East Track Slab Reinforcement
1283 /SR105	West Headwall Reinforcement
1283 /SR106	East Headwall Reinforcement
1283 /SR107	Damwall Reinforcement

PSA REF.	SABS 1200 A	GENERAL (As applicable to SABS 1200A)						
4.2	5.4	Underground Services A sum has been provisionally allowed in Section A of the Schedule of Quantities for the hire and use of specialist equipment to locate underground cables. Payment against this item will be made on production of invoices by the Contractor.						
4.3	5.8	Ground and access to works Add the following: "On completion of operations the Contractor shall restore the ground surface, wherever it may have been disturbed, to its original condition by filling in all ruts with material similar to the material within the rut and levelling the ground and, where necessary, planting grass and shrubs as may be required. Any boundary fences which have been removed or damaged by his operations and activities shall be repaired and/or reinstated at the Contractor's expense".						
4.4	5.9	Accommodation of Traffic (<i>additional subclause</i>) Where construction work has to be carried out on or near public roads, the Contractor shall deal with traffic as specified in SANS 1921-2 (2004): Construction and Management Requirements for Works Contracts, Part 2: Accommodation of Traffic on Public Roads occupied by the Contractor. The Contractor is also referred to Project Specification						
5	7	CONTROL TESTING						
5.1	7.5	Add the following General Over and above the normal control tests which the Contractor is required to carry out and which are included in the rates tendered, control testing, as and when ordered by the Engineer, shall be carried out by an approved laboratory and shall be paid for on the basis of invoices only, from the provisional sum allowed in Section 1 of the Schedule of Quantities. Should the results of any test fail to comply with the specification, the cost of such test shall be borne by the Contractor. The Contractor shall submit such samples as laid down in the Specification or as required by the Engineer to be tested. Complete results of the tests done on behalf of the Contractor must be submitted with the samples. Samples must be submitted timeously so that tests can be completed before material is ordered. The Employer will not be prepared to consider claims for delays to the Works resulting from waiting for test results. It is in the Contractor's own interest to submit material samples, concrete cubes or other components required for testing in good time in order to assist in avoiding or restricting delays. Measurement and Payment <table><tr><td>Item</td><td>Unit</td></tr><tr><td>a)</td><td>Control Testing Stated Sum</td></tr><tr><td>b)</td><td>Overheads, charges and profit on % (a) above</td></tr></table>	Item	Unit	a)	Control Testing Stated Sum	b)	Overheads, charges and profit on % (a) above
Item	Unit							
a)	Control Testing Stated Sum							
b)	Overheads, charges and profit on % (a) above							
6	8	MEASUREMENT AND PAYMENT						
6.1	8.1.1	Method of Measurement, All Sections Amend as underlined below: Except where otherwise specified in Clause 8 of a Standardised Specification or in the Measurement and Payment clause of an applicable Standard or Particular Specification section or in the Project Specification or in the Preamble to the Schedule, all items.						

PSA REF.	SABS 1200 AB	ENGINEERS OFFICE (As applicable to SABS 1200AB)
1	1	SCOPE This specification includes the requirements for offices and the minimum associated facilities for the use of the Engineer on site.
2	3	MATERIALS
2.1	3.1	Nameboard Details of the nameboards are shown on the relevant drawings. The nameboard, as specified, shall be supplied and erected by the Contractor within two weeks of construction commencement.
3	4	PLANT
3.1	4.1	Telephone Delete the sub-clause and substitute the following: The contractor shall not provide a cellular phone for the use of the Engineer or his representative. The contractor will be required to pay all consumption and call charges with the provision allowed for in the Bill of Quantities (BoQ) <i>A provisional sum has been allowed in the BoQ. Claim against this item will be made to the contractor by the employer's agent for this item. The contractor will be entitled to the attendance/markup percentage/fee, provided by the contractor in the BoQ</i>
4	5	CONSTRUCTION
4.1	5.2	Engineers Office The Contractor shall supply, transport and erect a site office for the exclusive use of the Engineer, within the Contractors site establishment. The contractor shall arrange for the provision of an electrical power supply for the duration of the contract for the Engineers office. Should this not be available immediately, a generator is to be provided in the interim. The following furnishings must be provided for the sole use of the Engineer: The Contractor shall supply and furnish one-air conditioned "Kwikjack" (6m x 3m) for the use of the Engineer and his/her staff and one air-conditioned "Kwikjack" (9m x 3.4m) conference facility for conducting meetings. In addition the following shall be provided and properly maintained: • electrical installation to include a light and two 15a plug points plus two adequately sized air conditioning units (for heating and cooling) for each unit • one refrigerator of at least 100litre capacity • one kettle of at least 2 litre capacity • one tea set comprising six cups and saucers, six teaspoons, one teapot, one sugar bowl and one milk jug • covered parking for two vehicles • un-covered parking space for two vehicles • two "barhold" or similar wall mounted racks each with 6 clamps suitable for hanging a0 sized drawings • one large meeting table • ten additional chairs

PSA REF.	SABS 1200 C	SITE CLEARANCE (As applicable to SABS 1200C)
1	1	SCOPE This specification covers the removal of vegetation, boulders of size up to 0.15m ³ , surface obstructions and removal of structures, not directly associated with or incidental to any excavation.
2	3	MATERIALS
2.1	3.1	Disposal of Material Add the following: "The Contractor shall make his own arrangements for disposal of material".
3	5	CONSTRUCTION
3.1	5.1	Areas to be Cleared and Grubbed Clearing is required along the new pipeline routes and site of structures and ancillary works.
3.2	5.3	Clearing Add the following new Sub-Clause
3.2.1	5.3.1	Remove and Replace Fence (New Sub-Clause) Where the pipeline route crosses an existing fence, a section of fencing not exceeding 10m in length shall be temporarily removed for the construction of the pipeline. The fencing shall be reinstalled to original condition immediately the pipeline is backfilled in the vicinity of removed fence. The contractor shall erect a temporary fence at the end of each day's operations over the section of the removed fence.
3.3	5.5	Re-clear Surfaces The Contractor shall clear areas prior to commencing construction in the specific area. Consequently re-clearing will not be paid for and the costs of re-clearing will be to the Contractors account.
4	8	MEASUREMENT AND PAYMENT
4.1	8.2.1	Clear and Grub The payment width for trenches shall be the minimum base widths as stipulated in clause PSDB 3.4. The payment area for structures shall be the nett concrete plan foundation as per clause PSDB 3.5.

PSA REF.	SABS 1200 DA	EARTHWORKS (SMALL WORKS) (As applicable to SABS 1200DA)
		third and forth lines and substitute "regulations to the Occupational Health and Safety Act, 1993"
3.3	5.1.3	Existing Services (Refer SANS 1921-1 Clause 4.17) Add to the Sub-Clause: All existing services on the site may not be shown on the Drawings or be visible on the site. The Engineer may order excavation by hand in order to search for and expose services. An item has been included in the Bill of Quantities to cover the cost of such work if so ordered by the Engineer. Where a service is damaged because of the Contractor's negligence, he shall be liable for the costs involved in the repair of the service and any other costs consequent upon the interruption of the damaged services.
3.4	5.1.5	Excessive Pollution (Refer SANS 1921-1 Clause 4.19) Add the words "noise and", before the word "dust" in the first line.
3.5	5.1.6	Excavated Material Not to Endanger or Interfere (Refer SANS 1921-1 Clause 4.10) Delete the last sentence and substitute: "All material that is unsuitable or not required for backfilling shall be disposed of within the Project Area and spread. No additional payment will be made for these activities."
3.6	5.1.8	Road Traffic Control Delete from the third and fourth lines and words "and such barricades and warning lights as are ordered" and add: An item has been included in the Bill of Quantities to cover the relevant costs.
3.7	5.2.1	Site Preparation Delete the last sentence and substitute: "Material so removed shall be disposed of by the Contractor to Sites designated by the Engineer".
3.8	5.2.2	Excavation (Refer SANS 1921-1 Clause 4.10) Add to the Sub-Clause: (h) Where outside shuttering is ordered by the Engineer. the excavations shall be carried out for an extra width of not more than 600mm all around the structure, measured from the base of the face to be shuttered. to allow for the shuttering to be fixed. this extra excavation and refilling where necessary is to be measured and paid for under quantities allowed for this purpose in the Schedule. Outside shuttering shall be used for the construction of all major structures unless ordered otherwise by the Engineer. (i) Where permanent concrete is to be placed against an excavated face. the excavation shall be trimmed to ensure that there is no projection greater than 20mm protruding into the excavation profile. (j) The Contractor shall not spoil, waste or stockpile excavated material without approval.
3.9	5.2.3.1	Embankments In the thirteenth line delete "600mm" and substitute "300mm" In the sixteenth line delete "300mm" and substitute "150mm" Delete the nineteenth line and substitute the following:

PSA	SABS	EARTHWORKS (SMALL WORKS)
REF.	1200 DA	(As applicable to SABS 1200DA)

c) Compacted subgrade or finished level
One density and moisture content per 200m² of compacted surface area.

Should any of the above density tests fail to comply with the specified requirements, the Contractor shall at his own expense remedy the failure and submit a new test to the Engineer.

5.2	7.2	Determination of Compaction Add to the Sub-Clause:
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Determination of the standard of compaction achieved shall be carried out in accordance with Standard methods of testing road construction materials published by the Department of Transport Division of National Roads, Publication TMH.1.

5.3	7.2 (a)	Tests at the Employer's Request (New Sub-Clause) Where CBR, indicator tests and the like are required on materials from within the Contract Site the Contractor shall also make arrangements with a soils testing laboratory to undertake these tests, the costs of which have been allowed for in the Bill of Quantities as a provisional sum. Payment for such tests will be per sample tested and reported to the Engineer.
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6	8	MEASUREMENT AND PAYMENT
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6.1	8.1.1	Basic Principles Delete the third line of the first sentence and substitute:
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"Material in backfilling, forming embankments, etc., including any necessary additional offloading, stock-piling and reloading and the cost of disposal of any"

In the seventh line delete "Drawing DA-2" and substitute "Fig DA-2"

6.2	8.1.2	Basic Principles Delete the first line of the first sentence and substitute: <i>"Excavations which are required to be backfilled, or partially backfilled, will be measured as if taken out"</i>
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Delete the fifth and sixth lines and substitute:
"other such structures, the volume will be measured from the finished outline of the concrete, or the blinding to the concrete (as the case may be), as shown on the Drawings.

6.3	8.1.3	Basic Principles Delete the third line and substitute: <i>"will be measured as part of the bulk excavation or restricted excavation, as applicable".</i>
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6.4	8.3.1 (a)	Excavation Add to the Sub-Clause: Where removal to greater depths is ordered, the area measured for payment will unless otherwise scheduled, be increased pro rata to the average increase in depth.
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6.5	8.3.1 (b)	Excavation Drawing DA-1 in the third line to read "Fig DA-1"
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Delete the third line of the second sentence and substitute:

PS GA SABS EARTHWORKS (Pipe Trenches)
REF. 1200 DB (As applicable to SABS 1200 DB)

1. 1. SCOPE

Add the following:-

"Excavation for manholes, headwalls and associated pipe works are also covered by this section.

2. MATERIALS

2.1 3.1 Classes of Excavation

The provision of PS D 2.1 shall apply.

2.2 3.5 Backfill Materials

Add the following:

"c) The Contractor shall take positive steps to avoid burying or contaminating material which would be suitable for use as backfill as described in a) and b)".

2.3 3.6 Materials for Reinstatement of Roads and Paved Areas

Delete the Sub-Clause and substitute:

Material used in the reinstatement of roadways shall fall into the following relevant categories:

- a) Foundation material recovered from the excavation of trenches across existing roadways, which, if so instructed by the Engineer, shall be set aside and re-used as sub-base material.
- b) New material, which shall conform to the requirements of:
 - i) Clause 3.2.1 of SABS 1200 ME for the Subbase
 - ii) Clauses 3.2 and 3.3 of SABS 1200 MF for the base course
 - iii) Clause 3.2.2 of SABS 1200 ME for the Gravel Wearing Course
 - iv) Clause 3 of SABS 1200 MH for the asphalt surfacing

3 CONSTRUCTION

3.1 5.1.2.3 Sloping Ground

Delete the Sub-Clause and substitute:

The Contractor shall be responsible throughout the duration of the Contract, inclusive of the Defects Liability Period, for the provision of all soil erosion preventative measures necessary to protect the trenches, pipeline(s) and land utilised by the Contractor during the Contract from any adverse effects of soil erosion, settlement, scour, etc., resulting from the construction of the Works.

Cross embankments, generally extending across the full width of the working strip, consisting of low earth mounds shaped to rounded form and so oriented as to have a fall of 1% along their length, shall be constructed with compacted material having a minimum density of 90% modified AASHTO density and minimum dimensions and maximum spacings dependent on the slope of the ground along the length of the pipeline, as indicated in the following table:

Slope of Ground	Minimum Height	Minimum Base Width	Maximum Spacing
0%-2%	No cross-embankments required		
2% - 5%	300 mm	1,2 m	55m
5% - 10%	300 mm	1,2 m	40 m
10%-15%	375 mm	1,5 m	30m
Greater than 15%	450 mm	1,7m	20 m

The height of the cross-embankments for a distance of 1metre on either side of the trench centreline shall be raised 150 mm above the remainder of the cross-embankment to allow for settlement. In order to form a satisfactory drainage channel upstream of each cross-embankment (at a slope of 1%) the crown over the backfilled trench shall be removed for a distance of 0,5 m upstream of the cross-

PS GA REF.	SABS 1200 DB	EARTHWORKS (Pipe Trenches) (As applicable to SABS 1200 DB)
3.6	5.6	Backfilling
3.6.1	5.6.2	<u>Materials for Backfilling</u> Add the following:- "The Contractor is to indicate to the Engineer if unsuitable material for backfilling is encountered. Imported material for backfilling shall be obtained from designated areas or commercial sources and paid for as specified in SABS 1200 DB Clause 8.3.3.1 on written instruction from the Engineer."
3.6.2	5.6.8	<u>Transport for earthworks for trenches</u> Replace with: "Unless otherwise specified for earthworks for trenches, the requirements of sub-clause 3.13 of PSDA or sub-clause 3.14 of PSDA of this document, as applicable shall apply."
4	7	TESTING
4.1	7.1	Tests to the Contractors Account The Contractor shall arrange with a soils testing laboratory to undertake the following tests and to pass the test results to the Engineer. The costs of such tests shall be included in the rates tendered for the appropriate item in the Bill of Quantities. a) <i>Material imported from outside the Contract Site as working surfaces, subgrade improvement or for fill material</i> One CBR and indicator test per 200m3 of compacted material brought on site, (river sand will normally be exempted from this requirement). A sample and one CBR and indicator test of the material proposed for importation shall be submitted to the Engineer for approval prior to the commencement of importation. b) <i>Fill material in place</i> One density and moisture content per 100m3 of compacted fill c) <i>Compacted subgrade or finished level</i> One density and moisture content per 200m2 of compacted surface area. Should any of the above density tests fail to comply with the specified requirements, the Contractor shall at his own expense remedy the failure and submit a new test to the Engineer.
4.2	7.2	Determination of Compaction
		Add to the Sub-Clause:
		Determination of the standard of compaction achieved shall be carried out in accordance with Standard methods of testing road construction materials published by the Department of Transport Division of National Roads, Publication TMH.1.
4.3	7.2 a)	Tests at the Employer's Request (New Sub-Clause) Where CBR, indicator tests and the like are required on materials from within the Contract Site the Contractor shall also make arrangements with a soils testing laboratory to undertake these tests, the costs of which have been allowed for in the Bill of Quantities as a provisional sum. Payment for such tests will be per sample tested and reported to the Engineer.
5	8	MEASUREMENT AND PAYMENT
5.1	8.1	Add the following : "The bottom of excavations for manholes and headwalls in soft ground shall be thoroughly rammed and consolidated and compacted to 95% Mod AASHTO at the Contractor's expense before any concrete is placed".

PSA REF.	SABS 1200 DK	GABIONS AND PITCHING (As applicable to SABS 1200 DK)
1	3	MATERIALS
1.1	3.1	Gabions Unless otherwise specified on the Engineer's drawings or in the Schedule of Quantities the size, type and dimensions of gabions and the wire and mesh used in the manufacture of gabions shall be as follows : a) Gabion boxes shall be 1,0m deep, 1,0m wide and 2,0m long. b) Gabion mattresses shall be 0,30m deep, 2,0m wide and 6,0m long. c) Wire used for the fabrication of wire mesh and for lacing (binding) and bracing shall be plain zinc-coated mild steel wire, as specified in subclause 3.1.2.1 d) The nominal mesh cross dimension and the diameter of mesh wire for gabion boxes shall be 100mm and 2,7mm, respectively. e) The nominal mesh cross dimension and the diameter of mesh wire for gabion mattresses shall be at the Contractor's option 60mm and 2,0mm or 80mm and 2,2mm respectively.
1.2.	3.1.1.1	Quality Add to the Sub-Clause: The stone shall be subjected to the weathering test. The stone shall be subjected to the durability test.
1.3.	3.1.1.3	PVC Coating (New Sub-Clause) Add to the Sub-Clause: The wire used for the fabrication of wire mesh cages and for lacing and bracing operations shall be plain zinc-coated mild steel wire. No PVC coating will be required.
1.4	3.1.2	Gabions Cages The gabion baskets and mattresses shall be as follows: Gabion boxes constructed of double twisted, hexagonal wire mesh gabions of nominal 80 mm mesh, with 3,4mm o/d frame wire and 2,7mm o/d mesh wire. Complete with partitions at 1 m centres. All wire is mild steel to SANS 1580 - 2005, Class A, zinc coated by heavy duty hot dip galvanising to SANS 675 - 2007. Each basket shall be complete as described in SANS 1200 DK.
1.5.	3.1.3	Geotextile Add to the Sub-Clause: Geotextile filter blanket shall consist of "non-woven" spun-bound polyester fabric having a mass of 210 g/m², permeability of 0,003 m/s and multi-direction tensile strength of 16 000 N/m. The equivalent open size (EOS), strength and other properties of the geotextile blanket shall be as specified on the Engineer's drawing and/or in the Schedule of Quantities.
1.6	3.2.1	Stone Add to the Sub-Clause: The type of pitching shall be +Extra Heavy/+Heavy /+Medium/+Light In Table 2, Column 2, for extra heavy, replace 300 with 500.
1.7.	3.2.3	Wire Netting

PSA	SABS	GABIONS AND PITCHING
REF.	1200 DK	(As applicable to SABS 1200 DK)

The areas in which wired or grouted wire pitching is to be used will be indicated on site by the Engineer.

3.	8.	MEASUREMENT AND PAYMENT
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3.1.	8.2.3.	Extra Over 8.2.2 for Packing Selected Stone for Exposed Face
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Add to the Sub-Clause:

The method of selecting and packing stone for exposed faces as scheduled shall be as specified in Sub-clause 5.2.7 - Special Finish.

3.2.	8.2.5.	Footing to Pitching
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Where the Contractor is required to excavate for and construct a footing, irrespective of depth, or toes or edges to pitching separate payment will be made to that for pitching.

PS G REF.	SABS 1200 G	CONCRETE (As applicable to SABS 1200 G)
2.2	4.5	FORMWORK
2.2.1	4.5.1	DESIGN <i>Add to the Sub-Clause:</i> The Contractor shall arrange for a Professional Engineer to design and sign the drawings for the formwork. The formwork shall be designed to limit deflection to a value not exceeding 1/360th of the span between supports.
2.2.2	4.5.2	FINISH <i>Delete the Sub-Clause and substitute the following:</i> The quality of the finished surfaces of the concrete shall be as shown on the drawings. Generally all surfaces are to be smooth, and only those surfaces which will be covered under permanent backfill may be cast using rough shutters.
2.2.3	4.5.3	TIES <i>Add to the Sub-Clause:</i> The spacing and method of fixing shutters and filling of voids shall be subject to the approval of the Engineer. Metal ties shall be placed in a plastic sheath with plastic cone plugs on either end to allow easy removal of the tie. Once the shutters are removed, the cone plugs shall be removed and the metal ties withdrawn. A heated reinforcing rod shall then be inserted into the plastic sleeve to allow removal of the sleeve. The voids left in the concrete once the ties and sleeves are removed, shall be thoroughly cleaned out, filled with an expansive grout and thoroughly compacted with a reinforcing rod. The use of non-recoverable metal ties cast into the concrete member is preferable. In the case of water retaining structures the non-recoverable ties shall be supplied with a centrally welded water bar.
3	5	CONSTRUCTION
3.1	5.1	REINFORCEMENT
3.1.1	5.1.2	FIXING <i>Delete from the eighth and ninth lines the following:</i> "or, if permitted by the Engineer, by welding".
3.1.2	5.1.3	COVER <i>Add to the Sub-Clause:</i> Binding wire used for fixing reinforcement must be tightly bound around the nodes at bar intersections with cut ends bent inwards. A nominal reduction of the minimum specified cover by 3mm will be allowed for binding wire. The Contractor shall use only high quality cement mortar cover blocks to maintain the specified cover to reinforcement. Mortar must be made using the same quality cement as specified for strength concrete and mixed in the same cement/sand proportions as employed in the concrete elements in which they are placed. Cover blocks shall not be less than 7 days old at time of installation and shall have been cured by full immersion in water for a period of not less than 3 days.
3.2	5.2	FORMWORK
3.2.1	5.2.1	CLASSIFICATION OF FINISHES <i>Add to the Sub-Clause:</i>

PS G REF.	SABS 1200 G	CONCRETE (As applicable to SABS 1200 G)
		The exposure conditions at the site of the Works are to be considered as being severe.
3.5	5.5.3	3.4 MIXING
3.5.1	5.5.3.1	Mixing at Construction Site <i>Add to the Sub-Clause:</i> Site batching shall be by mass using an approved type of weigh-batching plant.
3.5.2	5.5.3.2	Ready-Mixed Concrete Delete the first sentence and substitute the following: Concrete produced at a central facility, other than at the site of the Works, shall not be accepted for use in the Works except with the prior written approval of the Engineer. When such approval has been given, only concrete cubes prepared on site and crushed by an independent laboratory will be accepted.
3.6	5.5.5	PLACING
3.6.1	5.5.5.5	Dropping of Concrete Delete the Sub-Clause and substitute the following: Dropping concrete freely will only be permitted if the Engineer is satisfied that this is the only practical method of placing.
3.6.2	5.5.5.9	Pumping of Concrete Delete the Sub-Clause and substitute the following: The placing of concrete by pumping will not be permitted without the written approval of the Engineer.
3.6.3	5.5.5.10	Continuous Pours (New Sub-Clause) <i>Add new Sub-clause:</i> In the case of continuous walls, these are to be cast in lifts of such height that each lift can be poured uninterrupted in one continuous operation over the entire perimeter of the wall. No vertical or inclined construction joints of any kind will be permitted in continuous walls unless they have been specifically ordered or authorized by the Engineer. The placing of concrete shall commence at convenient points on the perimeter of the wall and shall proceed both ways simultaneously so that fresh concrete meets fresh concrete. Any rest pauses, such as for meals, shall be avoided as far as possible, and the Contractor may be required by the Engineer to make the operation continuous by working in shifts. A workable arrangement must be made before each concreting operation commences.
3.6.4	5.5.5.11	Blinding Layer (New Sub-Clause) <i>Add new Sub-clause:</i> Beneath all structural grades of concrete, or where shown on drawings or elsewhere if so ordered by the Engineer, the bottom of the excavation is to be covered by a blinding layer (screed) in Grade 15/19 concrete to a depth of 75mm (or 50mm in some instances) to prevent disturbance of the ground and to serve as an even, clean and accurately positioned working floor for setting steel and placing foundation concrete. This blinding layer shall be laid immediately after excavations have been taken out, trimmed to the required depths and have been inspected and approved by the Engineer.
3.7	5.5.7	CONSTRUCTION JOINTS
3.7.1	5.5.7.3	Preparation of Construction Joints <i>Delete Sub-Clauses (a), (b), (c) and (d) and substitute:</i>
3.7.1.1	5.5.7.3.1	Surface Preparation of Construction Joints All horizontal and vertical construction joints shall be cleaned of all dirt and loose particles and shall be prepared to the satisfaction of the Engineer. Formed keys

PS G **SABS** **CONCRETE**
REF. **1200 G** **(As applicable to SABS 1200 G)**

3.7.2.1 **5.5.9.2** **Hot Weather Concreting**

Delete the first two sentences and substitute:

When concrete operations are being carried out at ambient temperatures in excess of 32°C, the Contractor shall apply the relevant recommendations for hot weather concreting set out in American Concrete Institute publication ACI 305R-77 "Recommended practice for hot weather concreting".

3.7.2.2 **5.5.10** **CONCRETE SURFACES**

3.7.2.2.1 **5.5.10.2** **Unformed Concrete Surfaces**

Add to the Sub-Clause:

The unformed surfaces that require to be wood-floated or steel-floated or which are to receive other special treatment as well as the degree of accuracy, if this is not Degree of Accuracy II, are as indicated on the drawings. Generally, all unformed surfaces are to be steel-floated.

Table 6

Class	Description of Finishes
U3	Finish to horizontal or slightly inclined surfaces of concrete struck with an accurate straight edge to provide an even uniform surface and wood floated to remove screed marks (tolerance $\pm$ 3mm unless otherwise specified).
U4	As in U3, but using either a steel float or power float.

3.7.2.3 **5.5.12** **Concrete in Wet Ground**

Delete the Sub-Clause and substitute:

The Contractor shall be fully responsible for keeping the excavations free from water whilst the construction work is being carried out. The methods by which he proposes to achieve this shall be approved by the Engineer before being implemented. The cost of dewatering shall be included in the tendered rates for the construction work and no separate payment shall be made for such dewatering throughout the construction period.

3.7.2.4 **5.5.13** **GROUTING**

Add to the Sub-Clause:

Grouting shall be done to the instruction of the Engineer using materials of suitable consistency as follows. Unless otherwise directed, grouting mixtures shall consist of 1 part cement to 2 parts concrete sand by volume, well mixed and with sufficient water added to obtain the required consistency. Where recesses to be filled are of appreciable dimensions, the Engineer may direct the Contractor to replace a proportion of sand with fine stone to reduce shrinkage. The Engineer may also require the Contractor to use non-shrink or other additives in grouting mixtures.

3.7.2.4.1 **5.5.13.1** **Grouting of Pipes/Specials through Wall (New Sub-Clause)**

Add new Sub-clause:

Where entry holes for pipes/specials have been provided in the walls, the Contractor shall be responsible for the grouting in of such pipes/specials regardless of whether or not these have been supplied by himself.

Before commencing the positioning in holes of any pipes/specials the Contractor shall:

- Remove all shuttering and boxing remaining in the holes
- Make any alterations required to the position and shape of the holes and reinforcing steel (lacing bars, etc) in the holes
- Thoroughly clean and scabble the sides of the holes so as to obtain satisfactory bond surface for the new concrete

PS G REF.	SABS 1200 G	CONCRETE (As applicable to SABS 1200 G)
		Engineer and applied strictly in accordance with the manufacturer's specification. The Contractor shall match the colour of repair work with existing concrete where repair work is permanently exposed.
3.7.2.4.5	5.5.16	CEMENT MORTAR (NEW SUB-CLAUSE) <i>Add new Sub-clause:</i> Where cement mortar is specified for filling around pipes etc, water shall be added to obtain a firm paste which can be worked with a trowel but is not fluid. Surfaces to receive mortar shall be well wetted and excess water allowed to drain or be removed. The mortar shall be worked into place with a trowel or tamping rod, exposed surfaces floated off and covered with wet hessian for 24 hours and allowed to harden without disturbance.
3.7.2.4.6	5.5.17	MANHOLE COVERS AND FRAMES (NEW SUB-CLAUSE) <i>Add new Sub-clause:</i> The rates are to include for setting the covers into concrete with the upper edge 10mm above the concrete level to prevent the entry of rainwater where installed in positions exposed to rain and set into concrete so as to be flush with the concrete surface. The work is also to include for the thorough cleaning and painting of all exposed portions with two coats of epoxy tar paint, to comply with SABS 801, after setting into concrete work, in particular the exposed underside of the cover and the frame.
4	6	TOLERANCES
4.1	6.2	PERMISSIBLE DEVIATIONS
4.1.1	6.2.3	SPECIFIED PERMISSIBLE DEVIATIONS <i>Add to the Sub-Clause:</i> Except for the special smooth finish described in PSG 5 above, where applicable, the Contractor shall work within the limits of the permissible deviations laid down for Degree of Accuracy II with the following modifications: • Foundations (Sub-Clause 6.2.3(c)) • Position on plan ± 20mm • Surface level ±20mm • Above Foundations (Sub-Clause 6.2.3(d)) • Position on plan ± 10mm • Surface level ± 5mm
5	7	TESTS
5.1	7.2	TESTING
5.1.1	7.2.3	LABORATORY TESTING <i>Add to the Sub-Clause:</i> All test cubes shall be made, cured and tested in accordance with the requirements of SABS Standard Method 863 and 864. Test cubes shall be cured on site in an approved curing tank. After curing, the cubes are to be tested by an independent laboratory approved by the Engineer. Delivery of cubes for testing shall take place not less than 24 hours in advance of the specified time for testing. The Contractor shall keep accurate records of the exact position in the structure where the concrete batch represented by the cube tests was placed. All costs connected with sampling and testing of concrete, as described in this section of the project specification, shall be included in the relevant strength concrete rates.
5.1.2	7.2.5	TESTING GROUTING PROCEDURE (NEW SUB-CLAUSE)

PS GA REF. 1	SABS 1200 GA 3	CONCRETE (Small Works) (As applicable to SABS 1200 GA) MATERIALS
1.1.	3.2	CEMENT
1.1.1	3.2.1	Applicable Specifications Tenders shall be based on the use of one of the following cement types, which comply with specification SABS ENV 197-1. (a) CEM 1 32,5 (previously known as OPC) (b) CEM 11/A-S 32,5 or CEM 11/A-V 32,5 or CEM 11/A-W 32,5 (previously known as PC 15) Extenders such as Slag or Fly Ash may only be included in concrete mixes where the cement type used is CEM 1 32,5. Where an extender is included, it shall not be used in quantities exceeding 15% of the cement content.
1.1.2	3.2.2	Storage of Cement Cement shall not be kept in storage for longer than 6 weeks within 10 km of the coast and not longer than 10 weeks inland.
1.2	3.4	AGGREGATES
		Aggregates from beaches and the like (No reference) Aggregates from beaches, dredged from the sea or river estuaries, or from cretaceous deposits, may not be used.
1.2.1	3.4.2	Use of "Plums" "Plums" will not be permitted.
2.	4.0	PLANT
2.1.	4.4	FORMWORK
2.1.1	4.4.3	Ties Ties may be left in the concrete provided they are cut back to a depth at least equal to the specified cover of the reinforcement and filled as specified below. Holes left by the removal of ties shall be made good with a well rammed sand cement mortar of the same strength and colour when dry as the parent concrete.
3.	5	CONSTRUCTION
3.1.	5.1	REINFORCEMENT
3.1.1	5.1.2	Fixing The welding and the use of heat in cutting high tensile deformed bars (Y bars) shall not be permitted without the approval of the Engineer. Concrete used to make cover spacers shall be of the same grade as the parent concrete. Wire ties around reinforcement shall not encroach on the specified cover.
3.1.2	5.1.3	Cover Delete Subclause 5.1.3 and add the following: The cover to reinforcement shall be as follows unless specifically shown otherwise on the drawings.

PS GA **SABS** **CONCRETE (Small Works)**
REF. **1200 GA** **(As applicable to SABS 1200 GA)**

3.3.1.3
3.3.1.3.1

5.4.1.5

Strength Concrete

Cement Content and Aggregate Sizes (No reference)

Without relieving the contractor of his responsibilities in terms of Subclause 5.4.1.5 the minimum cement content, for durability, of the various grades of concrete shall be as stated hereunder.

CONCRETE GRADE (MPa)	MINIMUM CEMENT CONTENT (kg/m ³)	NORMAL USE UNLESS OTHERWISE SPECIFIED
15	200	Mass concrete filling and blinding.
20	250	Unreinforced structures.
25	300	Low stressed reinforced structures.
30	325	Normal reinforced structures.

The normal size of coarse aggregate shall generally be 26 mm but in concrete sections less than 100 mm thick the nominal size shall be reduced to 13 mm. In mass concrete work the nominal size may be increased to 38 mm.

3.3.1.3.2

Reduction in Cement Content (No reference)

No consideration will be given to reducing the minimum cement content specified in Subclause 3.3.1.3.1.

3.3.1.4 5.4.1.6

Ready-Mixed Concrete

The production of concrete off-site will only be allowed when this is done by an approved ready-mixed concrete company.

The Contractor may elect to use ready-mixed concrete subject to the prior approval of the Engineer.

Ready-mixed concrete shall not be delivered to site before the Contractor has furnished the Engineer with a copy of his letter to the Supplier in which he has included the following :

- i) The compressive strength of concrete at 28 days.
- ii) The nominal maximum size of aggregate
- iii) The type of cement.
- iv) The required slump at the point of delivery, being the site; and
- v) An instruction to the Supplier to provide details of the admixture he proposes to use, if applicable. The details/information provided shall be in accordance with the requirements of subclause 3.5.1 of SABS 1200G - Concrete (structural).

The Contractor shall have delivered with each truck load of ready-mixed concrete a delivery note from the Supplier on which the following information is noted:

- i) The compressive strength of the mix.
- ii) The slump.
- iii) The date and time at which the mixing of the batch was commenced.
- iv) The time of delivery; and
- v) The quantity of concrete supplied

These delivery notes are to be kept on site, being available for inspection at any time.

3.3.2. **5.4.8**
3.3.2.1 **5.4.8.2**

Concrete Surfaces

Wood Floated Finish

Wood-floated surfaces shall first be given a finish as specified in Subclause 5.4.8.1 of SABS 1200 GA and, after the concrete has hardened sufficiently, the screeded surface shall be wood floated, either by hand or machine, only sufficiently to produce a uniform surface free from screed marks.

PSA REF.	SABS 1200 LB	BEDDING (As applicable to SABS 1200LB)
1	1	SCOPE This specification covers the supply and laying of bedding for buried pipes carrying fluids flowing under pressure gravity.
2	2.3	DEFINITIONS Stone Bedding In wet subsurface conditions, the Engineer may specify the use of 19mm crushed stone as specified is SABS 1083.
3	3	MATERIALS
3.1	3.1	Selected Granular Material (Subclause 3.1) The material specified in Subclause 3.1 is designated selected Granular Material I. An alternative material, Selected Granular Material II, shall be selected soil of a granular nature that has a PI not exceeding 6 and that is free from vegetation and from lumps and stones of diameter exceeding 15mm, and has a compactibility factor not exceeding 0,5.
3.2	3.2	Selected Fill Material (Subclause 3.2) The material specified in Subclause 3.2 is designated Selected Fill material I. An alternative material, Selected Fill Material II, shall be material that has a PI not exceeding 18 in the case of ferricretes or 14 for other material that is free from vegetation and from lumps and stones of diameter exceeding 30mm.
3.3		Bedding and Selected Granular Fill for Subsoil Drains Bedding For Subsoil Drains Bedding for subsoil drains shall be 19mm single sized crushed for concrete complying with the requirements for SABS 1083. It shall be placed 100mm thick under the pipes and to provide a cover of 200mm to the subsoil pipe and shall be fully wrapped in a geofabric blanket Grade C, with a minimum lap of 150mm. The width of trench for subsoil drains shall conform to the requirements of subclause of SABS 1200 DB for construction, measurement and payment. Selected Material Fill for Subsoil Drains Selected fill for Subsoil Drains shall be a singularly graded river sand with a permeability of not less than 1×10^{-3} cm/second measured under constant head on the material compacted to visual optimum density. The contract shall provide the result of permeability tests to the Engineer at the rate of one test for every 100m³ of material placed. Selected fill material shall be placed in a layer 150mm thick or selected fill material shall be placed in a layer as detailed on the drawings.
3.4		Bedding uPVC and HDPE pipes shall be considered as flexible and bedded as per Drawing LB-2 (SABS 1200). All other pipes shall be considered rigid, and Class C bedding as per drawing LB-1(c) (SABS 1200) provided, except where the pipes are concrete encased.

PSA REF.	SABS 1200 LE	STORMWATER DRINAGE (As applicable to SABS 1200 LE)
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1.	3	MATERIALS
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1.1	3.1	CULVERT UNITS & PIPES
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1.1.1.	3.1(a)	Precast Concrete Pipes
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Pipes shall be reinforced spun concrete pipes of the class specified. Joints shall be either Spigot and Socket or Ogee. Ogee type joints are not acceptable where spigot and socket joints have been specified in the Schedule of Quantities. Where external rubber collars are specified for Ogee pipe joints the rubber collars shall conform to the following specification:

- i.) be approximately 200mm wide and 6mm thick;
- ii.) be fabricated from material conforming to SABS 924 and possess a shore hardness of 40°;
- iii.) Be able to ensure a tension in the rubber collar adequate to preclude the infiltration of liquids and fine materials.

Where tape is specified for Ogee pipe joints the tape shall be of low density polyethylene coated with a polyisobutylene pressure sensitive adhesive and conform to the following specification:

- Overall width 300mm
- Overall thickness 0,3mm
- Tensile strength 15MPa (Minimum)
- Elongation at break 300%
- Adhesion to steel 1,5N/mm of width (minimum)
- Adhesion to self 1,0N/mm of width (minimum)
- Temperature performance 20°C to 60°C

The tape must be applied to a clean concrete surface, free from grease, oil or other contaminants and relatively dry, which has been primed with a suitable, approved, primer evenly applied to the manufacturer's recommended specification. When the primer is dry, but tacky, the tape shall be applied to give a wrinkle free double-wrapped joint. At least 150mm of tape beyond the double-wrap shall be left after the tape has been cut and this is then firmly stuck into position.

1.1.2	No Ref	Sub-Soil Pipes
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Sub-soil pipes shall be perforated pitch fibre pipes conforming to SABS 921, or slotted uPVC pipes conforming to SABS 791 or "No Fines" concrete pipes conforming to BSS 1194.

1.2.	3.4	MATERIAL FOR MANHOLES, CATCHPITS AND ACCESSORIES
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1.2.1	3.4.1	Bricks
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"Burnt clay masonry units for foul-water and stormwater sewer manholes, stormwater inlets and inspection chambers shall be Non-Facing Extra (NFX) with a nominal compressive strength of 14 MPa to S.A.B.S. 227:1986.

1.2.2.	3.4.3	Covers and Frames
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Catchpits shall be fitted with precast concrete slabs or precast concrete frames and either precast concrete covers or cast iron covers as detailed on the Engineer's drawings.

Manhole covers and frames in areas not subject to road-traffic loads shall be either precast concrete or medium duty cast iron as detailed on the Engineer's drawings.

PSA REF.	SABS 1200 LE	STORMWATER DRINAGE (As applicable to SABS 1200 LE)
		A number of stormwater manholes with various types of inlet covers have been scheduled on this contract. The manholes are schedule by type and in depth increments of 500 mm. The unit of measurement shall be number (No.) and the tendered rate for each type shall include for the supply of all labour, plant and materials required to construct the manhole complete in accordance with the Standard Drawings and Specification, and inlet type cover as is specified in the contract drawings.
2.3.4	5.5.8	Headwalls The unit of measure for headwalls shall be Number (No.) and shall include for all labour, plant and materials required for the construction of the headwall inclusive of the base and cut-off walls. The construction of brickwork shall be as specified in Clause LE.8.2.8. Mortar shall conform to mix Class A as defined in the latest edition of the Standard Building Regulations.
3.	8	MEASUREMENT AND PAYMENT
3.1.	8.2	SCHEDULED ITEMS
1	8.2.1	Supply, Lay and Joint Pipe Culverts Irrespective of depth to invert, pipes will be measured in individual sizes and classes per horizontal linear metre from centre to centre of manholes or catchpits or to the end of the pipe at the face of headwalls or similar structures. No deduction will be made for manholes. Connections to existing systems will be measured by number and should include for making good. Tendered rates will be deemed to include for all costs to supply, lay and joint the stormwater pipes, for all cutting, damage and waste and to clean and inspect the system upon completion. Unless otherwise specified, progress payments will be made only for completed runs between structures and only after the run has been completely backfilled and the structures completed to sufficient extent to adequately protect the pipeline, as determined by the Engineer.
2	8.2.8	Supply and Install Manholes, Catchpits and the like The tendered rates for manholes and catchpits shall cover the cost of supplying and installing or laying (as applicable) the units complete as specified under subclause 8.2.8 and as detailed on the Engineer's drawings including for precast concrete frame and cover, and shall also cover the cost of dealing with any excavation (in all materials including disposal of surplus) that is additional to that measured under the item for pipe trench excavation (see subclauses 8.2.2 and 8.2.3 of SABS 1200 DB). Extra over payments will be made for the following items complete: - i.) Cast iron frame and cover, by number - ii.) Downstream pipe at grade steeper than 1 in 4, by number. - iii.) Backdrop manholes, by number and difference in invert levels. Progress payments will be for completed manholes and catchpits only. Tenderers are to note that manholes and inlets shall be measured according to type and varying depth only. The rate tendered for the manholes/inlets shall include for the different pipe sizes and benching configurations. The Contractor shall note that the rate for inlets shall include the cost of the graded channel in front of the inlet and / or splay and the cost of the transition kerb and channel upstream and downstream from each inlet. This will not form part of the payment for kerb and channel.

PSA SABS STORMWATER DRINAGE
REF. 1200 LE (As applicable to SABS 1200 LE)

4.7 River Sand Backfill for Subsoil Drain Filter

"River sand for subsoil drain filter shall consist of clean river sand conforming to the following grading:-

Sieve size mm	67	475	150	75
% Passing	100	90 -100	0 - 15	0 - 3

And having a Fineness Modulus of 2,0 - 3,5."

PA SUBSOIL DRAINAGE

PA 1 SCOPE

This specification covers the construction of subsoil drainage systems.

PA 2 INTERPRETATION

Not applicable.

PA 3 MATERIALS

PA 3.1 Classes of Excavation

Material shall be classified in accordance with SABS 1200 DB.

PA 3.2 Pipes

Pipes for subsurface drains shall have a specified internal diameter, which shall not be less than 100mm, and shall be one of the following types:

- a) Perforated pitch fibre pipes complying with SABS 921;
- b) Perforated or slotted unplasticised PVC pipes complying with SABS 791.

The size of perforations in perforated pipes shall in all cases be 8 mm diameter $\pm$ 1,5mm and the number of perforations per metre shall not be less than 26 for 100mm pipe and 52 for 150mm pipe. Perforations shall be spaced in two rows for 100mm pipes and four rows for 150mm pipes.

Slotted pipes shall have a slot width of 8mm with a tolerance of 1,5 mm in width. The arrangement of slots shall be to the Engineer's approval but the total slot areas shall not be less than specified for perforations.

Pipes without slots or perforations that are required for transporting subsoil water from the subsoil drain proper to the point of discharge, shall be unperforated pitch fibre, PVC or concrete pipes complying with SABS 677 Class A.

PA 3.3 Filter Materials

Permeable filter materials for subsurface drains shall consist of sand and/or crushed stone of suitable grading. Use may also be made of synthetic fibre filter fabrics. All aggregates shall comply with SABS 1083.

PA 4 PLANT

Not applicable.

PA 5 CONSTRUCTION

PA 5.1 Trench Bottom

The requirements of SABS 1200 LE shall apply

PA 5.2 Bedding and Laying

PA 5.2.1 General

Trenches for pipe drains shall be excavated to the dimensions and gradients shown on the Drawings or directed by the Engineer.

A layer of permeable material of the class and thickness as shown on the drawings shall be placed on the bottom of the trench and lightly tamped and finished to the required gradient. Pipes of the type and size required shall then be firmly bedded on the permeable material true to level and grade, coupled where required and the trench backfilled with further permeable material to such height above the pipes as shown on the drawings or directed by the Engineer. The permeable material shall be lightly compacted and finished to the required level. Further layers of finer permeable material shall then be placed, lightly compacted and finished to an even surface as directed by the Engineer. The remainder, if any, of the trench shall be backfilled with approved impermeable material as required by the Engineer, in layers not exceeding 100mm and compacted to at least the same density as the surround material. The trench must be specially protected against the ingress of water before completing the impermeable layer.

Permeable material must be placed in layers of not more than 300 mm at a time and lightly compacted. The total thickness of each type of permeable material must be carefully controlled, and when placing the thinner layers, suitable spacers must be used for this

PA SUBSOIL DRAINAGE

PA 8.1.4	Supply and install stone backfill to trench	Unit : m ³
PA 8.1.5	Supply and install river sand backfill to trench	Unit : m ³
PA 8.1.6	Supply and install Polyethylene sheeting	Unit : m ³
PA 8.1.6	Supply and install Polyethylene sheeting	Unit : m ³
PA 8.1.7	Rodding eyes	Unit : No.
	The tendered rate shall include full compensation for installation of the rodding eye and connection into the subsoil pipes including any additional cost of fittings measured extra over scheduled item	
PA 8.1.8	Subsoil drain outlet	Unit : No.
	The tendered rate shall include full compensation for the construction of the outlet headwall but excluding the stone pitching which is measured elsewhere.	
PA 8.1.9	Fittings (Type specified)	Unit : No.

- 5.14. Occupational Health and Safety (OHS) Signage
- 5.15. Public and Site Visitor Health & Safety
- 5.16. After Hours Work
- 5.17. Pedestrian Access, traffic management and camp site

6. Physical Requirements

- 6.1. Structures
- 6.2. Demolition
- 6.3. Excavation Works
- 6.4. Temporary Works
- 6.5. Isolation Lockout
- 6.6. Dust Control
- 6.7. Scaffolding
- 6.8. Explosive actuated fastening devices
- 6.9. Confined Space
- 6.10. Blasting
- 6.11. Fall Protection - Fall Risk Works
- 6.12. Waste Removal, Stacking/Storage of Materials

7. Plant, Machinery and Equipment

- 7.1. Construction Vehicles and Mobile Plant
- 7.2. Vessels under Pressure
- 7.3. Lifting Machines, Tackle and Lifting Operations
- 7.4. Ladders and Ladder work

8. Occupational Health

- 8.1. Industrial Hygiene (Exposure to Physical and Chemical Stresses)
- 8.2. Hazardous Chemical Substances (HCS)
- 8.3. Storage and use of flammable liquids
- 8.4. Welfare Facilities
- 8.5. Alcohol and Other Drugs

Annexures

- I. Annexure C - OHS Declaration for Tenders*
- II. Annexure D - OHSE Bill of Quantities*
- III. Annexure C - Assignment of Principal Contractor's & Contractors' Responsible Persons*
- IV. Annexure D - Contents and Numbering System for the H&S File*
- V. Annexure E - Covid 19 Specification*

- I. To bring to the attention of the Bidding Principal Contractors that they need to make an undertaking that the costs for executing the project includes the costs of complying with the OHS Act, Act 85 of 1993, all applicable regulations including Client Specific requirements. Such undertaking is made by appending signatures on the OHS Declaration for Tenders. **See Annexure A**
- II. To bring to the attention of the Bidding Principal Contractors that they need to price accordingly for the provision of OHSE management for the execution of this project. The OHS BOQ template provides the OHS items that is to be taken into consideration when tendering for this project. **See Annexure B**
- III. Ensure that the Principal Agent as the Professional Service Provider appointed by Foskor to manage the project on its behalf in terms of the Conditions of Contract applicable to this project ensures that the contents of this document and the attached Baseline Risk Assessment are taken into consideration during design by all professionals appointed and that the OHSE Specification is incorporated into the tender documents.

1.2. Limitation of Liability

- I. The Client or its Agent shall not be responsible for any acts or omissions of any Contractor which may directly or indirectly result from the application of the OHSE specification or any project specific version thereof.
- II. All contractors must ensure that articles, work, equipment, machinery, plant, and work practices are, at all times, compliant to the legal requirements as these apply.
- III. The client or its Agent shall limit its responsibility to the application of the Construction Regulations', Client Requirements, and any other applicable Regulation only.
- IV. The Principal Contractor shall enter into a Mandatory Agreement with the client, as defined in Section 37(2) of the Occupational Health and Safety Act.
- V. The Principal Contractor shall ensure that each contractor appointed by the Principal Contractor and each and sub-contractor appointed by a contractor also enter into a Mandatory Agreement with the Principal Contractor, as defined in Section 37(2) of the Occupational Health and Safety Act. These agreements shall be included in the Principal Contractor's H&S file on site

1.3. Contractual Issues

Acceptance by the Principal Contractor of the contract with Foskor shall constitute acknowledgement that the Principal Contractor has familiarized him/herself with the contents of the OHSE Spec and that he/she will comply with all its obligations in respect thereof.

Due to the fact that this document is based on legislative requirements, the Client requires that all Contractors comply with the requirements of this document and all other relevant legislative requirements not covered by this document.

The Client or its duly appointed Construction H&S Agent reserves the right to stop any Principal Contractor or Sub-Contractors from working whenever Safety, Health or Environmental requirements are being violated as required by regulation 5(1)(q). Any resultant costs of such work stoppages will be for the relevant Contractor's account.

The requirements as specified by the Client in this document must not be deemed to be exhaustive and the Client reserves the right to make changes as and when the Client deems fit to address issue of OHSE Compliance.

The Client will not entertain any claim of any nature whatsoever which arises as a result of costs incurred or delays being experienced due to the Contractor not complying with the requirements of this document and/or any other applicable legislative requirements imposed on the Contractor.

1.4. Interpretation

This specifications document is a legal compliance document compiled in terms of the OHS Act and is therefore binding. The document must be read in conjunction with other relevant legislation including: **The Occupational Health & Safety Act 85/1993; Construction Regulations 2014; SANS 10085-2004 (scaffold code); SANS 10142 (The wiring of premises); SANS 10400 (Building Code); SANS 1200 all other Regulations and Codes**

"Fall Protection Plan" Means a documented plan, which includes and provides for-

- a. All risks relating to working from a fall risk position, considering the nature of work undertaken;
- b. The procedures and methods to be applied in order to eliminate the risk of falling; and
- c. A rescue plan and procedures;

"Health and Safety File" Means a file, or other record containing the information in writing required by these Regulations;

"Health and Safety Plan" Means a site, activity, or project specific documented plan in accordance with the client's health and safety specification;

"Health and Safety Specification" Means a site, activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;

"Medical Certificate of Fitness" Means a certificate contemplated in regulation 7(8) of Construction Regulations 2014;

"Principal Contractor" Means an employer appointed by the client to perform construction work.

"Construction Safety Officer" A person deemed competent by SACPCMP under the relevant category of registration.

"Professional Engineer or Professional Certificated Engineer" Means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"COVID 19" means Coronavirus disease 2019

"Coronavirus disease" is an infectious disease caused by a newly discovered coronavirus.

"COVID 19 compliance officer" designated person that oversee the implementation of the COVID-19 site management plan.

2.2. Scope and description of works

The project entails the repairs of stormwater channel and overflow spillway at Gypsum Dam. Under this contract, the successful contractor will be required to undertake the following specific work:

- Clearing and grubbing
- Removing, maintaining and replacing topsoil
- Excavation works for new concrete channels, catchpits, road works and dam wall.
- Selection (sieving of bedding and fill material)
- Construction of pipeline bedding
- Pipe laying and jointing
- Pipe encasement
- Backfilling of pipeline
- Construction of concrete channels
- Construction of concrete catchpits and benching

includes the measures that the contractor intends to implement to ensure a safe construction site as far as is reasonably practicable.

2.4.2. The Designer's Responsibilities:

In terms of Regulation 6 of the Construction Regulations the **Designer** of a structure is responsible for *inter alia* the following:

1. Ensure that the applicable safety standards incorporated into the Regulations under Section 44 of the Act are complied with in the design;
2. Take into consideration the health and safety specification submitted by the Client;
3. Inform the Client in writing of any known or anticipated dangers or hazards relating to the construction work, and make available all relevant information required for the safe execution of the work upon being designed or when the design is subsequently altered;
4. Refrain from including anything in the design of the structure necessitating the use of dangerous procedures or materials hazardous to the health and safety of persons, which can be avoided by modifying the design or by substituting materials;
5. Take into account the hazards relating to any subsequent maintenance of the relevant structure and must make provision in the design for that work to be performed to minimise the risk;
6. When mandated by the Client to do so, carry out the necessary inspections at appropriate stages to verify that the construction of the relevant structure is carried out in accordance with the design: provided that if the designer is not so mandated, the client's appointed agent in this regard is responsible to carry out such inspections;
7. When mandated as contemplated above, stop any contractor from executing any construction work which is not in accordance with the relevant design's health and safety aspects: provided that if the designer is not so mandated, the Client's appointed agent in that regard must stop that contractor from executing that construction work;
8. When mandated as contemplated above, in his or her final inspection of the completed structure in accordance with the National Building Regulations, include the health and safety aspects of the structure as far as is reasonably practicable, declare the structure safe for use, and issue a completion certificate to the Client and a copy thereof to the contractor; and
9. Take cognisance of the ergonomic design principles during the design stage, in order to minimize ergonomic related hazards in all phases of the life cycle of the structure.
10. The designer of temporary works must ensure:
11. All temporary works are adequately designed so that it will be capable of supporting all anticipated vertical and lateral loads that may be applied;
12. The designs of temporary works are done with close reference to the structural design drawings issued by the contractor, and in the event of any uncertainty consult the contractor;
13. All drawings and calculations pertaining to the design of temporary works are kept at the office of the temporary works designer and are made available on request by an inspector; and
14. The loads by the temporary works and any imposed loads are clearly indicated in the design

2.4.3. The Contractor(s) Responsibilities

1. The Chief Executive Officer of the Principal Contractor in terms of Section 16 (1) of the Act to ensure that the Employer (as defined in the Act) complies with the Act
2. All OH&S Act (85 /1993), Section 16 (2) appointee/s as detailed in his/her/their respective appointment forms to regularly, in writing, report to their principals on matters of health and safety per routine and ad hoc inspections and on any deviations as soon as observed, regardless of whether the observation was made during any routine or ad hoc inspection and to ensure that the reports are made available to the principal Contractor to become part of site records.
3. On a monthly basis, the principal contractor's health, and safety management system (SHE Plan) and workplace activities will be audited by the appointed Agent to assess compliance with the project health and safety requirements. Any deviation from these requirements (i.e., non-conformance) that places the health or safety of any person in immediate danger will result in the specific activity being stopped until the non-conformance is corrected.
4. For each non-conformance identified during any audit, the contractor will identify and implement appropriate corrective actions.
5. For each corrective action, a responsible person must be designated and an appropriate timeframe (target date) for completion of the corrective action must be specified. Progress on implementing

15. The construction manager shall ensure that contractors have evidence of both registration and good standing in terms of COIDA and shall not permit any contractor to start work or to continue with work on site unless a valid Certificate of Good Standing is on site.
16. Additional to the requirements of the Construction Regulations, the Principal Contractors' construction manager shall ensure that all sub-contractors appointed by any of the contractors of the Principal Contractor comply with the construction regulations and, in particular, the construction manager shall:
 - a. Ensure that the H&S plans of all these sub-contractors are approved; without such approval, these contractors are not permitted onsite;
 - b. Ensure that employees of these sub-contractors are also inducted in the H&S induction. Audits of these sub-contractors are conducted monthly.
 - c. Stop unsafe work or work not in accordance with the approved H&S plan.
17. The construction manager together with the safety officer shall ensure that daily inspections of the health and safety compliance of all contractors and all sub-contractors on site are performed and documented in the Principal Contractors' H&S file.
18. The construction manager together with the safety officer shall ensure that monthly site audits and document verification is conducted of all contractors and all sub-contractors on site.
19. The construction manager shall stop all construction work which is not in accordance with the OHSE Specification or with the principal contractor's health and safety plan or which poses a threat to the health and safety of persons.
20. The construction manager shall ensure that, where changes are brought about to the design and construction on the site, sufficient health and safety information and appropriate resources are made available to any contractor to which the changes apply.
21. The construction manager shall hand over a consolidated health and safety file to the client agent upon completion of the construction work.
22. The construction manager shall ensure that a comprehensive and updated list of all the contractors on the site that is both those directly accountable to the principal contractor and those accountable to other contractors is kept in the H&S file. The list must refer also to the work performed by the contractors, the date of the approved H&S plan, the expiry date of the COIDA Letter of Good Standing, the last monthly audit date, and any agreements between the parties.
23. The construction manager shall ensure that no employee accesses the worksite unless that employee is in possession of a valid medical certificate of fitness specific to the construction work to be performed and filed on site in the H&S file.
24. The construction manager shall ensure that site rules and regular communication processes are in place in order to obtain co-operation between all contractors on site.
25. The construction manager shall ensure that all persons on site have undergone the relevant site health and safety induction of the Principal Contractor.
26. An up-to-date register of all employees on indicating the date of H&S induction, the expiry date of medical certificates of fitness and the employee's job title
27. The construction manager shall ensure that all fall risk work is performed in accordance with the fall protection plan and that, at all times, an updated fall protection plan is filed in the H&S file on site. Where fall recovery procedures are defined, the construction manager shall be responsible for ensuring that the necessary emergency engineering- and administrative risk controls are in place, on stand-by and adequately controlled to ensure immediate assistance at all times when work is performed which poses a suspension risk. Where environmental conditions prevent safe work, the construction manager shall ensure timeous work stoppage.
28. The construction manager shall ensure that all work on site is performed under supervision of a competent person appointed by the Principal Contractor.
29. The construction manager shall ensure that all incidents are investigated and that the final reports thereof are assessed and approved in writing by the construction manager.
30. The construction manager shall ensure that all Finding- and Audit Reports are assessed that corrective action is planned and executed and confirmed in writing.

Construction Health & Safety Officer CR 8.5

1. The Principal Contractor shall appoint a competent Construction Safety Officer. The appointment of a Construction Health & Safety Officer/s will be determined on the scope of works as per the project.
2. The Construction Safety Officer shall be full time on the construction site for this project.
3. The Principal Contractor shall define the duties of the appointed safety officer as per the standard scope of services for construction health and safety officer registered in terms of the Project and Construction

The hazards/ hazardous activities/operations foreseen, together with written safe work procedures must form part of the construction-phase health and safety plan submitted for assessment, comment, and approval to the Client. The principal contractor shall submit his task specific risk assessments at least 7 days before the task can commence for review and approval.

Nil works will commence without the task specific risk assessment has been approved. An assessment of the risks associated with each hazardous activity must also be conducted by making use of a recognised risk rating system/programme/matrix.

These risk assessments must include:

- a. A list of hazards identified as well as potentially hazardous tasks and situations;
- b. The risks (probability of injury / damage), based on the list of hazards and tasks;
- c. A set of safe work procedures to be implemented with the aim of eliminating or if this is not possible, reducing and/or controlling the risks as far as reasonably practicable;
- d. A monitoring and review procedure of the risk assessments as they change i.e. how will the risk assessments be reviewed, when will they be reviewed and by whom.

The Principal Contractor must ensure that contractors inform, instruct, and train their workers regarding any hazards, the associated risks, and the related safe work procedures to be implemented before any work commences and thereafter at regular intervals as the risks change and as new risks develop.

This training should be carried out in the form of toolbox health & safety talks. Contractors must conduct their own toolbox talks (training on activities and risk assessments) and submit proof of these talks in the form of attendance registers to the Principal Contractor at least weekly or before new activities begin.

3.1.6. Baseline risk assessment

A Baseline Hazard Identification and Risk Assessment must be carried out during the preliminary stages of the construction project for the purposes of attempting to reduce the possibility of accidents or ill health occurring.

Taking into account the constraints of time and resources, every effort must be made to identify the hazards and recommend possible solutions. It is not reasonably practicable to expect the baseline risk assessment to identify all hazards, which is why task risk assessments are carried out on site.

Contractor is to include protests/riots unrest as a risk to this project and adequate mitigating measures are to be provided. This will be in line with the principal contractors Emergency Preparedness Plan.

3.1.7. Task Risk Assessment

Once on site, every contractor shall perform task risk assessments, using the baseline risk assessment as a guide.

The Risk Assessment should be reviewed once on site and thereafter after any incident or every 3 months period, whichever occurs first. Additional hazards highlighted or a change in the risk factor should have a separate risk assessment carried out and filed.

3.1.8. Continuous risk assessment

In order to maintain a safe and risk-free environment continuous risk assessment (e.g. Daily Safety Task Instructions (DSTIs)) must be undertaken on a daily basis for all activities undertaken.

The principal contractor shall include a method for risk review ensuring that all risks on site are adequately managed

All risk assessments must document all H&S controls which any Contractor plans to put in place.

3.1.9. General Record Keeping

The Principal Contractor must keep and maintain all the necessary Health and Safety records to demonstrate compliance with these Specifications, with the OHS Act 85/1993, and with the Construction Regulations. The Principal Contractor must also ensure that all records of incidents/injuries, emergency procedures, training, Baseline HIRA and Health & Safety Specifications planned maintenance inspections, monthly contractor audits, etc. are kept in the health & safety file(s) held in the site office. The Principal Contractor must also ensure that its Contractors keep their own health & safety files, maintain the files, and make them

- Total Man-hours and DIFR
- Monthly Environmental audit report
- Environmental rehabilitation status
- SHE Non-conformances (current/outstanding)
- Principal Contractor's project SHE File

Handover of the consolidated H&S file can only commence once all personnel has been demobilized and nil man-hours are recorded.

The SHE Agent will have to evaluate the SHE performance of the principal contractor i.e. compliance, performance, quality and refer same in their cover letter which will be added to the Principal Contractors portfolio of evidence.

4. PRINCIPAL CONTRACTORS, CONTRACTORS, AND SUB-CONTRACTORS

4.1. Principal Contractors' and Contractors' Requirements

- 1) The Principal Contractor must ensure that all Contractors appointed by it comply with these Specifications as well as with the OHS Act, the Construction Regulations, and other relevant legislation including project- specific rules and guidelines documentation that may relate to the activities directly or indirectly.
- 2) A Contractor when appointing other Contractors as 'Sub-contractors', shall mutatis mutandis ensure compliance as if it was the Principal Contractor.
- 3) The Principal Contractor shall ensure that all contractors and sub-contractors under his control, plan the construction work in an H&S Plan, approved by the Principal Contractor.
- 4) Whenever a contractor or sub-contractor's H&S plan is approved, the Principal Contractor shall communicate with the Agent for acknowledgement of the approval done by the Principal Contractor.
- 5) Principal Contractors shall ensure that all contractors and sub-contractors comply with their H&S Plans, based on all applicable H&S Specifications, the requirements of the OHSA and all other relevant legislation.
- 6) Regular planned task observations planned H&S inspections and monthly audits of all contractors and subcontractors must be recorded and filed in the principal contractor 's H&S File, for inspection by the client Agent.
- 7) The Principal Contractor shall ensure that the comprehensive and updated list of all the contractors and subcontractors on site includes:
 - a) A reference to the agreements between the parties, including all contractors' Section 37(2) agreements with the Principal Contractor.
 - b) The type of work being done.
 - c) The date of the approval of the H&S plan.
 - d) The date of expiry of the COIDA certificate of good standing.
 - e) The date of the last monthly audit.

The Principal Contractor may only allow a Contractor to begin work on site after receiving a suitable health & safety plan which must include a project-specific hazard identification, risk assessment and safety & health procedures documentation.

4.2. Principal Contractor / Contractor Competency Assessment

The Principal Contractor must be reasonably satisfied that the contractors it intends to appoint have the necessary competencies and resources to safely conduct the work they will be appointed for.

This should be established at tender stage and before appointments are made.

Once the contractor is appointed, but before it begins work on site a site- specific safety plan must be discussed and negotiated with the Principal Contractor.

Such health & safety plan must be approved for implementation by the Principal Contractor.

4.3. Pricing for health and safety compliance

- k. A detailed outline of the site-specific emergency and accident arrangements on site. Particular attention must be made to fall risk and confined space work emergency management. Emergency preparedness must be relevant to the project and contractor must provide control measures to mitigate the risks.
- l. An outline of the PPE to be used and the management of such PPE onsite.
- m. A list of the inspection registers which will be kept on site.
- n. Medical certificates of fitness for all employees planned to start work.
- o. The Principal Contractor's actions to ensure that all appointed contractors and subcontractors fully comply with the Regulations and with this SSHSS, including but not limited to:
 - I. The approval methodology for H&S plans of contractors and sub-contractors, approvals to be done by Principal Contractor.
 - II. An inclusion of signed agreements in terms of Section 37(2) between Principal Contractor and every contractor & sub-contractor appointed at the start of construction.
- p. The site-specific health and safety induction document used to ensure that all employees and all visitors on site are conversant with the risks on site and the content of the health and safety plan and what role they are expected to play in ensuring health and safety on the construction site.
- q. The Principal Contractor shall submit a Covid 19 Management Plan for review and approval. Kindly refer to **Annexure "E"** for covid specification

4.5. Contractors' Health & Safety File(s)

- 1) The Principal Contractor shall provide and maintain an H&S File, containing all relevant documents as prescribed in the OHS Act and applicable Regulations and all forms or records referred to in the H&S Plan.
- 2) The start-up H&S file shall be presented together with the H&S plan to the client's representative for approval prior to work starting.
- 3) The H&S File shall be kept on the construction site and available for inspection by the client Agent or the Department of Labour's Inspectors.
- 4) The content of the H&S file shall follow a specific order and be in line with the H&S Plan.
- 5) Additional controls or chapters may be added at the end pending the risk exposure
- 6) The H&S File shall include an index. The content of the SHE File is to as per Annexure "D"
- 7) The H&S File becomes the property of the client after completion of the project. The principal contractor is also required to scan the file in an electronic format and hand over the electronic format to the appointed Agent for review and to prepare a close out report

5. SITE OPERATIONAL REQUIREMENTS

5.1. Site Establishment

The location of the site office should be in an area that will not require visitors to pass through or enter area where construction work is active and will not require the re-location of the office as the project progresses.

The Principal Contractor will submit a Site Establishment Plan for the repair of stormwater channel and overflow spillway at Gypsum Dam for review and approval as this site will be an operational site during construction works.

The site camp site must be fenced off with controlled access points provided (this means locked access gates and access control personnel to be located at entrances to the construction work areas), preventing access to unauthorised persons.

Where fencing is required, such fencing must be at least 1.8m high 'Ready Fence' panels or similar, erected in a vertical position and adequately secured from displacement.

It is further required that the fencing is fitted with shade cloth to assist with dust containment.

5.2. Provision of water and electricity

Electricity

The provision for electrical power supply for all construction work activities and site establishment shall be the responsibility of the Principal Contractor.

The Principal Contractor/Contractor shall ensure lighting circuits and power circuits are fitted with suitable earth leakage systems and installed by an approved authority.

construction work.

- 5) When working on the site, each employee of any contractor and sub-contractor accessing the site, including management, shall complete the principal contractors' induction; the principal contractor shall ensure that none of his or his contractors' employees accesses the site unless having been inducted by the principal contractor.
- 6) Each visitor to the site shall be inducted in the risks and risk controls which the visitor may be exposed to; the visitor's induction and method to ensure compliance shall be documented in the H&S plan.
- 7) The Principal Contractor shall ensure that each of the Project Team and their employees are inducted in the applicable H&S controls on site.
- 8) The induction must include the exposure to snakes while working in a greenfield site, adequate control mitigation must be implemented by the Principal Contractor. Control measure must be pro-active such as animal and plant search and rescue, active monitoring of animal movement on site, wearing of appropriate personal protective equipment and sourcing the services of the snake catcher if required.

5.6. Health & Safety Audits, Monitoring and Reporting

- 1) The safety agent shall conduct monthly health and safety audits of the construction work operations including a full audit of physical site activities as well as an audit of the administration of health and safety.
- 2) The Principal Contractor shall perform monthly internal health and safety audits on himself, and such reports must be signed by the Construction Manager on a monthly basis to prove that he has been made informed of the OHS Compliance of this site.
- 3) The principal contractor is obligated to conduct similar audits on all contractors that they have appointed at least on a monthly basis.
- 4) Detailed reports of the audit findings shall be reported on at all levels of project management meetings/forums.
- 5) Copies of all audit reports shall be kept in the project health and safety file.

5.7. Occupational Health

- 1) The H&S Plan shall include:
 - a. The occupational hygiene surveys which are planned as a result of the baseline risk assessment if required.
 - b. All medical certificates of fitness for all employees working on the site.
 - c. All pre-placement medical surveillance records of employees who are or are required to be under medical surveillance; this record may be the latest periodical medical examination report.
- 2) The standard for the occupational medical testing is defined hereunder.
- 3) Medical certificates of fitness issued by a registered occupational medicine practitioner are deemed valid.
- 4) The Principal Contractor and every contractor shall ensure that a Person-Job Specification is issued for each job title deployed on the construction site.
- 5) Where employees have current medical certificates of fitness at the start of construction, these shall be assessed for compliance by the Agent for approval.

5.8. Emergency Preparedness

- 1) Prior to commencement on site, the Contractor shall submit a detailed Emergency Procedure, for approval by the Client. The Emergency Procedure shall account for the potential emergency situations that may occur on site.
- 2) The purpose of the Emergency Procedure includes:
 - To generate, enforce and give effect to rules or guidelines that protect human health and property;
 - To provide for efficient reaction to emergency situations; and
 - To designate key personnel to participate in the emergency procedure.

- 4) Safety signage shall be prominently displayed in all areas where fire extinguishers are located. The Principal Contractor shall arrange for the training of the relevant personnel, in the use of fire extinguishers.
- 5) The fire extinguisher inspection registers and the letter of appointment of the competent inspector shall be included in the H&S Plan.
- 6) Welding and flame cutting is only allowed under controlled conditions that includes written hot work permits
- 7) Flameproof switches and fittings are to be used in the flammable atmosphere
- 8) Good housekeeping is maintained to prevent the accumulation of unnecessary combustibles
- 9) Adequate and suitable fixed and portable firefighting equipment is provided and maintained in good working order.
- 10) All small plant powered by fuel will be placed on a drip tray and operated with a serviced fire extinguisher available on site.
- 11) Regular inspection by a competent person appointed in writing and keeping a register
- 12) Annual inspection and service by an accredited service provider
- 13) All employees are instructed in the use of the firefighting equipment and know how to attempt to extinguish a fire;

5.12. Portable Electrical Tools, Live Energy Work and Electrical Reticulations and Machinery

- 1) The Principal Contractor shall appoint a competent electrician who shall ensure zero potential of all electrical reticulations worked on and who shall ensure that dedicated power sources are safely installed for the use during the construction. A registered competent Electrician shall also be responsible to ensure safe and compliant electrical installations.
- 2) The Principal Contractor shall appoint a competent person to identify and inspect all exposed underground cables, overhead cables, or any other electrical installations to ensure that these are not a hazard to any person.
- 3) The competent person shall certify and inspect all temporary electrical installations and machinery; the frequency shall be determined in the H&S plan.
- 4) The letters of appointment, proof of competency and registers applicable to these inspections shall be included in the H&S Plan.
- 1) All electrical cables shall be assumed "alive" and, where applicable, the Principal Contractor shall take adequate steps to ensure that all persons are prevented from accessing any electrical installations.
- 2) All existing electrical services must be assumed live at all times.
- 3) No live energy work shall be performed. Contractors will ensure that all energy is brought to zero potential, that residual energy is purged, that energy sources are switched off and locked out by all employees working in the danger zone and are tagged, prior to any work being performed on the energy source or reticulation. The contractor shall include a zero Potential, Lock Out and Tag Out method statement and safe work instruction(s) in the H&S Plan.
- 4) The principal Contractor shall ensure that all electrical testing equipment to be used on site has a valid calibration and that the calibration sticker is affixed to the equipment, clearly indicating the calibration date and the next due date.
- 5) Any unsafe condition shall be reported immediately to the client and the Principal Contractor shall take immediate steps to prevent employees or members of the public from gaining access to the dangerous installation and the area surrounding it.
- 6) The Principal Contractor shall appoint a competent person to inspect all portable electrical tools, including leads. The letter of appointment and template of this inspection register shall be included in the H&S Plan.
- 7) The Principal Contractor shall include a method statement for the safe use of portable electrical tools, including the management of the hazards of extension leads.
- 8) Where temporary installations are installed a COC for these installations shall be included in the H&S File.
- 9) Where applicable, the contractor shall include any 'electrical dangerous work procedure' in the H&S Plan.
- 10) Wayleave or permits must be obtained in those work sections whereby works are executed close to railway lines, underground services line where applicable.
- 11) All equipment must be fitted with a switch to allow for safe and easy starting and stopping.

5.13. Site Hoarding and Access Control

- 2) Where week-end work is planned, the principal contractor shall ensure that its construction supervisor is on site; this applies even if only contractors or sub- contractors are working on the site.
 - 3) Where week-end work is planned, each contractor or sub-contractor shall ensure that its construction supervisor is on site; this applies even if the principal contractors' manager or supervisor is on the site.
 - 4) The site risk assessment shall include a fatigue risk assessment. Abnormal working hours shall be included in the risk assessment. A fatigue management procedure shall be defined in the H&S plan.
-
- 1) **Pedestrian Access, traffic management and camp site** All employees of all contractors working at the construction site shall access site in vehicles which have seats firmly secured and adequate for the number of employees to be carried; this means that strictly no personnel may be transported in the load body of an LDV or a truck and that all construction personnel must be brought to site in a bus, taxi or inside the cab of a vehicle.
 - 2) No employee shall be transported together with goods or tools.
 - 3) Each vehicle shall have a serviced portable fire extinguisher at all times.
 - 4) The Principal Contractor shall ensure that all employees and visitors are aware and comply with the site's safe speed restriction, defined by the principal contractor at the hand of the risk assessment.
 - 5) All activities planned to occur in the campsite shall be risk assessed and planned; this includes risk controls for the parking of staff- and visitor's vehicles, parking of mobile plant and machinery, dedicated storage areas, planned and compliant stacking practices, traffic controls, including the safe separation of pedestrian (employee) transport from risk areas
 - 6) When working in or near the road where change of traffic flow or warning of motorists is needed, the South African Road Traffic Signs Manual Volume 2 Part 13 must be used, in order to warn oncoming traffic with the appropriate display of signage. The required Traffic Management Plans must be submitted for review and approval prior to commencement of any road works.

6. PHYSICAL REQUIREMENTS

6.1. Structures

- a) The contractor shall ensure:
- b) All reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is a temporary state of weakness or instability due to the carrying out of the construction work.
- c) No structure or part thereof is loaded in a manner which would render it unsafe.
- d) All design drawings of the relevant structure are kept on site and are available onrequest.

6.2. Demolition

Without derogating from any specific duty imposed on the contractor by Regulation 14 of the Construction Regulations, 2014 special attention needs to be given to the following aspects regarding demolition.

- 1) A competent person must be appointed in writing to supervise demolition work
- 2) A competent person must carry out a detailed structural engineering survey in order to ascertain the method of demolition to be done and to draw up a method statement prior to commencement of demolition.
- 3) During the demolition a competent person shall check the structural integrity of the structure at intervals determined in the method statement mentioned above.
- 4) Ascertain as far as possible the location and nature of electricity, water, gas, or other similar services, which may be affected by the demolition and the necessary steps to render the circumstances safe for all persons involved.
- 5) The contractor shall ensure that no person works under overhanging material or a structure which has not been adequately supported, shored, or braced.
- 6) The contractor shall ensure where the stability of an adjoining building, structure or road is likely to be affected by the demolition work on a structure that the necessary steps are taken to ensure the stability of such structure or road and the safety of persons.
- 7) The contractor shall ensure that no material falls outside the exterior walls of the structure unless that area is adequately protected.
- 8) All asbestos related work must be carried out in accordance with the provisions made in the Asbestos

- Furthermore, an additional person, trained in resuscitation, to be in full-time attendance immediately outside the confined space.
- Additional serviceable breathing and rescue apparatus is kept immediately outside the confined space for rescue purposes.
- All pipes, ducts etc. that may leak into the confined space to be blanked off sufficiently to prevent any leakage or seepage.
- The employer must ensure that all employees have left the confined space after the completion of work.
- Where flammable gas is present in a confined space no work may be performed in close proximity to the flammable atmosphere.

6.4. Temporary Works

Without derogating from any specific duty imposed on the contractor by Regulation 12 of the Construction Regulations, 2014 Special attention needs to be given to the following aspects regarding Temporary Works.

- 1) All temporary work shall be carried out under the supervision of a competent person who has been appointed in writing for this purpose.
- 2) All formwork and support work must be strong enough to support any loads that may be imposed on them.
- 3) The designs of the formwork and support work must be done with close reference to the design drawings and the designer shall be consulted for any uncertainties.
- 4) Detailed activity specific design drawings pertaining to the design of temporary works structures are kept on the site and are available on request to the inspector, other contractors, the Client, the Client's Agent, or any employee.
- 5) The temporary works drawing, or any other relevant document shall include construction sequences and method statements.
- 6) A competent person must inspect all temporary work structures immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site.
- 7) Upon casting concrete, the temporary work structure must be left in place until the concrete has acquired sufficient strength to support safely not only its own weight but also any imposed loads, and not removed until authorisation has been given by the competent person mentioned above.
- 8) The foundation conditions must be suitable to withstand the weight caused by the formwork and support work structure and any imposed loads. The employees erecting the formwork and support work must be given adequate training and instruction.
- 9) All equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used.

6.5. Dust Control

The principal contractor shall be responsible for implementing a dust control program to ensure that adequate protection is provided. It will be required to ensure that the scaffolding structures are covered with the necessary adequate material such as shade cloth or wooden boards to limit the release of dust generated by the construction activities.

6.6. Scaffolding

- 1) A competent person shall be appointed to supervise the scaffolding work. Proof of his competency will be kept on site.
- 2) Proof of competency of scaffold erectors, team leaders and inspectors will be kept on site.
- 3) A copy of SANS 10085 shall be kept on site and scaffolding must be built according to the SANS specification.
- 4) Scaffolding shall be inspected after erection, daily thereafter and after changes have been made to it as well as after bad weather. Registers of the inspections shall be kept on site.
- 5) All erected scaffolding structures shall be numbered for reference on inspection registers.
- 6) "Safe to use/ Not Safe to Use" scaffolding tags shall be displayed on all access points onto scaffolding. Where scaffolding is declared safe for use but still requires employees to wear their safety harnesses when accessing such scaffolding, relevant signage needs to be displayed to inform them thereof.
- 7) All scaffolding used must be of sound and safe material, must have base plates, sufficient braces, safe

- roads leading to the blast area to ensure no access to the site.
- 6) Cognizance must also be taken of the possibility of blasted rocks or other loose objects rolling from heights to other areas adjacent to the blast. Relevant mitigation measures to be provided in the Blasting Plan to be submitted for approval.

6.10. Fall Protection – Fall Risk Works

A designated person will prepare and maintain a fall protection plan, and the plan will be implemented and will be adhered to. The fall protection plan must document all risks relating to working from an elevated position (considering the nature of work undertaken) and set out the procedures and methods to be applied in order to eliminate the risk. In addition, the plan must include the processes for evaluating the physical and psychological fitness of the employees that are to work at elevated positions, and the training of these employees, as well as the inspection and maintenance of fall protection equipment.

- 1) The construction work includes fall risk work (working at height).
- 2) The Principal Contractor shall submit the name and the curriculum vitae of the competent person who has been appointed to prepare the fall protection plan together with the signed letter of appointment, in the H&S Plan.
- 3) The fall protection plan shall strictly comply with the requirements of the OHSA, Construction Regulations 10, and the applicable unit standards pertaining to fall protection namely:
 - 229998; Explain and perform fall arrest techniques when working at height
 - 229995, Install, use, and perform basic rescues from fall arrest systems and implement the fall protection plan
 - 229994 Assess a worksite for work at height and prepare a fall protection plan and the planning shall be commensurate with the fall risk work.
- 1) The fall protection plan shall include all fall risk work which is planned to be performed by contractors or subcontractors.
- 2) The Principal Contractor and any contractor shall ensure that:
 - a) All fall risk work is planned and forms part of the safe task instructions; not that
 - b) Work from a ladder or work where ladders are used as access tool are potential exposures of employee to falling either from, off or into and such work is considered 'heights work'.
 - c) There is no minimum of maximum height defining fall risk. iii. Fall risk work done on an ad hoc basis or which forms part of abnormal or emergency processes shall be risk assessed and employees shall be instructed in the safe work process prior to work commencing
- d) Only trained and competent persons with a valid medical certificate of fitness are permitted to perform fall risk work.
 - 1) All medical certificates of fitness for fall risk work are issued by a registered occupational medical practitioner and are included in the H&S file.
 - 2) A copy of the fall protection plan, the signed appointment letter and proof of competency must be included in the H&S file.

Where the use of any harnesses is indicated in the fall protection plan, the H&S Plan shall contain the following:

- a) The need for the use of fall prevention- or fall arrest harnesses
- b) The safe application, attachment, and maintenance processes for harnesses
- c) The type of harness and the type of hook to be used
- d) The specific attachment points applicable to the fall risk work; any safety attachment shall be risk assessed by a competent person appointed in writing who shall also inspect and finally approve the attachment.
- e) The method of storing the harnesses when not in use
- f) The method and register for the safety inspection of harnesses
- g) A fall recovery method statement.

A method statement shall be included to control the safe placement of sheeting on the roof structure during construction; the number of sheets per pack, the method of strapping packs for lifting and for placement on site and the attachment of packs to the roof structures in such a manner that inclement weather risks are mitigated.

safe operating condition.

- 3) Without derogating from any specific duty imposed on the contractor by Regulation 23 of the Construction Regulations, 2014 special attention needs to be given to organizing the construction site in such a way that pedestrians and vehicles can move safely and without risks to health, due to the magnitude of this project.
- 4) There is no planned/scheduled maintenance work to be conducted on any plant or machinery used on site.
- 5) All planned /scheduled maintenance works are to be done off site.
- 6) Emergency repairs will be permitted to be conducted on site, provided the required control measures are implemented to mitigate any environmental contamination on site.
- 7) Drip trays must be placed beneath all plant or machinery when parked on site.
- 8) All plant and machinery used on site, must be operated by a competent person and records of appointment must be in file.

7.2. Vessels under Pressure

The Principal Contractor must comply with the Pressurized Equipment Regulations (PER), including:

- Providing competency and awareness training to the operators/users;
- Providing the relevant PPE and clothing;
- Inspecting equipment regularly (every 3 months) and keeping records of these inspections;
- Providing appropriate fire-fighting equipment (Fire Extinguishers) on hand;
- Ensuring that oxygen and acetylene bottles are secured in an upright position, do not show signs of corrosion or damage, and have flash back arrestors fitted on both torch & bottle ends of hoses.
- Operators must be competent and proven as such.

7.3. Lifting Machines, Tackle and Lifting Operations

The following shall apply to any mobile crane used on site, including truck mounted cranes on delivery vehicles:

- 1) Each crane shall have (in the cab or operating area), the following legal documents on site at all times:
 - a) The latest and up-to-date load certificate of the crane.
 - b) A record of the 6-monthly inspection of the crane by a registered inspector.
 - c) The crane operator(s) current crane license;
 - d) The crane operator(s) medical certificate of fitness, issued by an occupational medical practitioner;
 - e) The inspection registers or certification of 3-monthly inspection of all lifting equipment used with the crane;
- 1) The H&S Plan shall include the method statement for safe use of the mobile crane, including the method of communication, the protection of fall zones and the method of determining whether the weather permits safe mobile crane work.
- 2) Any mobile crane's load test certificates shall be included in the H&S file.
- 3) All lifting equipment and gear used on site shall be identified, SWL-indicated, and listed in a register contained in the H&S file.
- 4) A template inspection register of the lifting gear shall be included in the H&S Plan.
- 5) The H&S plan shall include a specific method statement listing the planned lifts and the planned methods of attachment and rigging.
- 6) Where man-lift equipment is used, the principal contractor shall ensure compliance with Driven Machinery Regulation 18 and that competent persons are appointed in writing to ensure:
 - a) That all scissors' lifts, cherry pickers, forklift with man-cages or any other lifting machine used to lift personnel are used only by a trained and competent operator in possession of a competency certificate issued by and accredited provider who holds a valid accreditation issued by an authorized body, in terms of the SAQA Act, and who is approved by the Chief Inspector, in terms of the Driven Machinery Regulation 18.

That all lifting machines are load tested and inspected as required in Driven Machinery Regulation 18 and that the records thereof are either with the machine or in the principal contractor's H&S file.

- 4) Inhalation of dust (silica, etc.), fumes, vapours, and other hazardous chemicals/particulates/ fibres (asbestos). **Asbestos containing materials have been identified by an AAIA inspection of the externals and during the assessment of the internal spaces e.g. roof sheeting, gutters, downpipes, barge boards, toilet cisterns.**

Chemical stressors identified by the Contractors on this project must be managed by the respective contractors who must also prevent exposure to workers/visitors other than their own employees.

8.2. Hazardous Chemical Substances (HCS)

- 1) With respect to hazardous chemical substances used, the contractor shall ensure that:
 - a) All MSDS are included in the H&S file
 - b) A HCS risk assessment is included in the H&S plan. The safe use, storage, emergency procedures and safe disposal of hazardous substances are addressed in a method statement/s, included in the H&S Plan.
 - c) Proof of competency and signed letters of appointment of the person responsible for chemical handling, is included in the H&S file.
 - d) Any hazardous chemical substance intended to be applied on site during the project (i.e., after approval of the H&S Plan) shall be subject to an issue-based risk assessment and method statement, which must be presented to the client/Agent prior to the substance being introduced on site.
- a. A sign indicating the capacity of the store to be displayed on the door

8.3. Storage and use of flammable liquids

- 1) No flammable substance must be stored on site unless these are stored in a flammable store or cabinet approved by the Municipal Chief Fire Officer; no other materials shall be stored in the flammable store or cabinet.
- 2) Where required, the H&S Plan shall include a method statement detailing the safe use, storage, decanting and spill controls for all flammable liquids used or stored on site.
- 3) Flammables stored on a construction site are stored in a well-ventilated, reasonably fire-resistant container, cage or room that is kept locked with access control measures in place. Sufficient firefighting equipment is installed, and fire prevention methods practiced.
- 4) The flammable store to be designed and constructed such that in the event of spillage of liquids the store is able to contain the full quantity + 10% of the liquids stored
- 5) Only one day's quantity of flammable is to be kept in the workplace;
- 6) Containers (including empty containers) to be kept closed to prevent fumes/vapors from escaping and accumulating in low lying areas;
- 7) Metal containers to be bonded to earth whilst decanting to prevent build-up of static forces; and
- 8) Welding and other flammable gases to be stored segregated according to the type of gas and empty and full cylinders

8.4. Welfare Facilities

- 1) The Principal Contractor shall document the construction site's method to ensure the statutory application of employee's rights in terms of employee facilities as defined in the OHSA, the General Safety Regulations and the Construction Regulation, including:
 - a) The provision of facilities for safekeeping and changing
 - b) The method of ensuring that employees requiring changing on site can do so in privacy
 - c) The provision of an eating area
 - d) The provision and maintenance of sufficient toilets on site for each sex
 - e) Portable drinking Water
- 2) Contractor's toilets must be:
 - a) Fixed so as to avoid becoming wind-blown

Annexure A

CONTRACTOR'S SAFETY, HEALTH, AND ENVIRONMENTAL DECLARATION FOR TENDERS

INTRODUCTION

In terms of *Construction Regulation 5(1) (h)* of the *Construction Regulations of February 2014* a Contractor may only be appointed to perform construction work if the Client is satisfied that the Contractor has the necessary competencies and resources to carry out the work safely in accordance with the *Occupational Health and Safety Act, Act 85 of 1993* and the *Construction Regulations of February 2014*. In line with this requirement the Contractor is required to read through this document carefully, sign it and submit it with his/her Tender.

DECLARATION

- 1) I the undersigned hereby declare and confirm that I am fully conversant with the
- 2) Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health and Environmental Specification attached in the tender document.
- 3) I hereby declare that my company and its employees has the necessary competency and resources to safely carry out the construction work under this contract in compliance with the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health, and Environmental Specification.
- 4) I hereby confirm that adequate provisions has been made in my tender to cover the cost of all Safety, Health and Environmental duties and responsibilities imposed on me by the Occupational Health and Safety Act, Act 85 of 1993, the Construction Regulations of February 2014 and the Construction Safety, Health, and Environmental Specification.
- 5) I confirm that I may not commence with any part of construction work under the contract until my Construction Safety, Health and Environmental Plan has been approved in writing by the Client.

I hereby confirm that copies of the following documentation will be kept on site for viewing and inspection purposes for the duration of the construction work:

- a) Client's Construction Safety, Health, and Environmental Specification
- b) Approved Construction Safety, Health, and Environmental Plan
- c) Occupational Health and Safety Act, Act 85 of 1993, and
- d) Construction Regulations of February 2014.

1) I agree that my failure to complete and execute this declaration to the satisfaction of the Client will mean that I am unable to comply with the requirements of the Occupational Health and Safety Act, Act 85 of 1993 and Construction Regulations 2014, and accept that my tender will be rejected.

Duly signed at on this the day of 20.....

Full name of Signatory

Name of Enterprise

Capacity of Signatory

Signature of authorised representative of Bidder

3.8	Face Mask for COVID-19 (respiratory protection	No			
3.10	Safety goggles/ Eye Protective Equipment	No			
3.11	Safety gloves	No.			
3.12	Latex Gloves (Cleaning team)				
3.13	Ear Plugs/Muffs	No.			
3.14	Other	No.			
4	Training	No.			
4.1	Safety Representative Training	Once off			
4.2	Fire Fighting Training	Once off			
4.3	Allow for HIV/AIDS awareness and Implementation programmes, including STI and TB, including COVID 19 management	Once off			
4.4	Allow for all compulsory health and safety awareness programme	Once off			
4.5	Other competence training as per project requirements	Once off			
5	H&S Salaries				
5.1	CHS Manager (N/A)				
5.2	CHS Officer - Full Time	Monthly			
5.3	Other. E.g., SHE Reps	Monthly			
6	Specific Items				
6.1	Allow for Pre-employment medical examinations: yearly	Annual			
6.2	Allow for exit medical examinations	Once off			
6.3	Screening of Employees with COVID 19 symptoms	As require			
6.4	Non-contact thermometers	Once off			
6.5	HCS Spill kits	No			
6.6	Hand Sanitizer	No			
6.7	Cleaning and detergents for Disinfection/sanitizing everyday	No.			
6.8	Provision for the supply and maintenance of Road Traffic Signs as in terms of the South African Road Traffic Signs Manual and the implementation of the Traffic Management Plan	Once off			
6.9	Appointment of AIA for asbestos	Once off			

Annexure C

ASSIGNMENT OF PRINCIPAL CONTRACTOR'S AND CONTRACTORS' RESPONSIBLE PERSONS

The Principal Contractor must make all the management appointments as set out below.

Item	Appointment	Legal Reference	Requirement
A1	CEO Assignee	OHA Act, Section 16(2)	A competent person to assist the CEO in achieving compliance with the OHS Act - P/Contractor's / Contractor's Responsible Person.
A2	Construction Manager	CR 8.1	A full time competent person to supervise and be responsible for health & safety related issues on site. The person is appointed by the Section 16(2) assignee.
A3	Construction Safety Officer	CR 8.5	A full time S.A.C.P.C.M.P registered safety officer is to be appointed on this project
A4	Section and Activity Supervisors	CR 8(7) and 8(8)	The appointment of supervisors specific to trades, activities, sections, areas on site.
A5	Health & Safety Representative(s)	Section 17	A competent person(s) to be appointed to represent the workforce in H&S matters. Reps may attend safety meetings, conduct monthly site audits, attend incident/injury investigations, and make recommendations as far as H&S goes.
A6	Incident Investigator	GAR 9	A competent person to head up the investigation team and co-ordinate incident/injury investigations on site.
A7	Risk assessment co-ordinator	CR 9	A competent person to co-ordinate the drafting/reviewing/distribution of risk assessments on behalf of the Principal Contractor. The same applies to Contractors.
A8	Fall protection plan developer	CR 10	A competent person to co-ordinate the drafting/reviewing/distribution the fall protection plan.
	Formwork, support work, back-propping, bracing supervisor (Temporary works supervisor) Temporary works designer(s)	CR 12	A competent person to supervise all formwork & support work erection & dismantling as well as back-propping/bracing of existing building and structures. This person must also ensure that the equipment is safe and that all the necessary inspections (pre, during, post & every day thereafter) are carried out & records kept by the competent inspectors. Design drawings must be issued, and site inspections carried out.
A9	First Aider(s)	GSR 3	A certificated person to be appointed. Each work site will have an appointed first aider
A10	Excavation inspector and supervisor	CR 13	Competent persons must be appointed first of all supervise excavations on site and then a person to undertake the daily inspections of the excavations.
	Demolition Supervisor	CR 14	Competent person to supervise all demolition works onsite
A11	Scaffolding inspector	SANS 10085 - 2004; CR 16	A competent person to inspect scaffolding before use and every time after bad weather, etc.

Annexure D

CONTENTS AND NUMBERING SYSTEM FOR THE H&S FILE

1. Index of the H&S File
2. H&S Plan and other applicable management plans
3. Issue Based Risk Assessments, Registers and DSTI records
4. Risk monitoring and review records
5. Start-up and Updated Organisational charting
 - a. Updated Project and OHS organogram
 - b. Signed letters of the appointed competent persons and evidence of competency (registrations, qualifications, and other proof of competency)
 - c. Employee lists
 - d. Contractor list
 - e. Medical Certificates of Fitness
6. Training and Competency Matrix and Training records
 - a. H&S Induction records (including HIRA training)
 - b. Training and competency records for method statements, operating procedures, and safe work instruction
 - c. Visitor Induction Records
7. Monthly statistics
8. Incident Register & Investigation reports & COIDA Accident and incident management
9. H&S Inspection & Maintenance Registers
10. PPE Issue Register
11. Internal Audits
12. Letters of approval of contractors and sub-contractors H&S Plans
 - a. Agreement between client and the principal contractor
 - b. Agreement between principal contractor and each contractor/s and sub-contractors
13. Letters appointment of contractors and sub-contractors
14. Signed Section 37(2) agreements
15. Audits by Client Agent
16. Corrective / Preventive Action plans for client audits
17. Principal contractor's contractor- and sub-contractor audits
18. Occupational hygiene records and references
19. Material Safety Data Sheets
20. Updated COIDA Letter of Good Standing Principal Contractor
21. Updated Notification and proof of delivery (if applicable)
22. Waste Manifests
23. DOL audits
24. Emergency Preparedness
25. H&S management system of principal contractor (if referred to in H&S plan)

The covid management documentation will be maintained in a separate file for record purposes.

The PrCHSA would visit the site regularly to ensure compliance to an approved H&S plan and report any non-compliances to the client or the appointed Principal Agent.

Contractors would have an H&S system that guides them in terms of their operational requirements, and against their programme of work. Principal contractors would have a full construction H&S officer (CHSO) who would be responsible for the coordination and monitoring of all H&S activities with the site supervision. Ongoing inductions, daily site task instructions (DSTIs) and toolbox talks are some of the tools used to manage daily exposures and risks.

3. High Risk Issues

The appointed Principal Contractor is to ensure that all issue based risk assessments are done in line with the requirements of the covid 19 management.

The following list is not exhaustive, and risks will vary due to sites and type of project. The individual risks will need to be addressed as an amendment to existing BRAs and provided to the Principal Contractors (PCs).

Close monitoring and auditing during construction will identify how risks are being managed. Failure to comply may result in the site being closed until compliance is achieved.

Identified risk factors:

- Transportation, to, from and on sites.
- Manual labour for physical tasks and tasks that will not allow for social distancing.
- Workers arriving at work with a temperature or other symptoms of Covid-19.
- Management of isolating potentially infected workers, and tracing of family/contacts.
- The lack of clean ablution facilities.
- The lack of clean welfare facilities where workers congregate for lunch break.
- Lack of cleaning and hand washing facilities.
- Confined working areas.
- Too few emergency supplies, first aiders and first aid boxes.
- Sanitization of frequently used environments throughout the working day.
- The need to continually monitor site activities.
- Underlying chronic diseases and age of workers (experienced workers).
- Specialized contractors having older workers, or need to cross borders, and
- Rural projects, or small/private projects ignoring the current legislation.

Preparation of the work area will be required to ensure that workers will be able to arrive at work will have the required facilities, social distancing, and appropriate working environment.

4. The site specific covid management plan

The principal contractor is to ensure the applicable legislative and Covid 19 guidelines are included into the covid management plan.

The following headings and sub-headings are provided and are not exhaustive.

4.1. Demographic of Labour

It will be incumbent upon the PC to establish a suitable and sufficient procedures for the identification of potentially infected employees and workers, the management of exposure to the corona virus on the project, including visitors and suppliers.

- Passengers provided with hand sanitizer and face masks prior to boarding.
- Vehicle sanitized before boarding, and hand sanitizer provided to passengers prior to boarding, after each stop where passengers leave the vehicle for comfort breaks, and
- Frequent hand sanitizing is recommended during transit.

4.8. Social Distancing

Social distancing has been shown to be an effective method to slow down the spread of the corona virus. It will be incumbent on the contractor to ensure that the construction site and facilities are set up in such a way that it will be possible as far as is practicable to maintain the required social distancing of a minimum of 1 metre between persons when at work.

4.9. Tasks that require more than 1 person to complete

Where it is not possible to maintain the required distance between workers due to the nature of the work activity, e.g. curb laying, confined working areas, rebar tying, preparing wire cages, the contractor will be required to implement, maintain, and enforce a procedure to adequately protect such workers against potential infection with the corona virus.

This includes but is not limited to:

- Providing adequate supplies of suitable PPE such as face masks, task specific gloves, safety glasses, disposable/additional coveralls.
- PPE used during multi-person activities to be exchanged immediately after the task is completed.
- Sealed bins to be provided for disposable PPE such as masks, disposable coveralls, disposable gloves, etc.
- Sealable bags provided to each person for keeping PPE requiring laundering, such as gloves and overalls, and
- Sanitising/washing facilities provided for immediate sanitizing of hard hats, safety glasses, shoes, safety harnesses etc. on completion of multi-person tasks.

All the above to be utilized when breaking for lunch or leaving the site, and before commencing with the next or new work activity.

4.10. Access/Egress of Site, Welfare Facilities, Meeting Areas

The PC is to ensure there is suitable and adequate provision to minimize the risk of persons who may be infected with Covid-19 entering the site, the spread of the virus between persons who work on or visit the site and the risk of potentially contaminated persons leaving the site and accessing public spaces or going home to their families. To achieve this, the contractor is required to implement, *inter alia* the following measures:

- All staff to report to the site camp before reporting to their respective worksites.
- Persons accessing the site in groups to maintain social distancing of at least 1 metre while waiting to access the site.
- Persons waiting to access the site to be segregated from the public where required by the provision of dedicated, prominently identified public pedestrian walkways situated in such a way that social distancing is maintained between site personnel and the public.
- Daily screening of each person who enters the site will be done as follows:
 - I. Each staff to fill out a questionnaire for record and tracking purposes
 - II. The temperature of each staff will be taken with a no-touch infrared thermometer. The staff will be sanitised using a sanitiser with 70% alcohol-based content.
 - III. Any staff found/suspected to present with signs and symptoms of the COVID 19 virus will not be permitted to enter site and will be isolated in a designated area for further management.
- Dedicated facilities for safekeeping of personal for each person. Such facilities are to allow for total segregation of belongings and must be easy to sanitize. Provision of such facilities for safekeeping to be accompanied with a procedure for the use and sanitizing of the storage facility to reduce the risk of cross-contamination.

required to be staggered access at all times.

The following aspects are to be included in a policy document as to how such issues will be managed, inter alia:

- Staggered access to site.
- Introduce staggered start and finish times for sub-contractors to reduce congestion and contact at all times.
- Monitor site access points to enable social distancing – consideration for the number of access points, either increase to reduce congestion or decrease to enable monitoring.
- 50-100mm deep trough to be placed at entrances to site. Disinfectant is to be placed in the trough and all shoes coming onto site or leaving site will be disinfected, without wetting shoes themselves.
- Remove or disable entry systems that require skin contact e.g. fingerprint scanners or biometric system.
- Require all workers to wash or clean their hands before entering or leaving the site.
- Ensure social distancing between people waiting to enter site.
- Regularly clean common contact surfaces in reception, office, access control and delivery areas e.g. scanners, turnstiles, screens, telephone handsets, desks, particularly during peak times.
- Reduce the number of people in attendance at site inductions and consider holding them outdoors wherever possible, and
- Drivers should remain in their vehicles if the load will allow it and must wash or clean their hands before unloading goods and materials.

4.15. Procurement and storage for covid-19 PPE and general supplies

Availability of personal protective equipment PPE is an imperative and should be available at all times. Where this is not so, the work related to the activity will be stopped until adequate supplies are available. Storage of PPE is to be tightly controlled, with records of issue. Damaged PPE is to be managed in the usual way, but all to be disposed of as if contaminated.

4.16. Waste management for covid-19 waste

Waste management arrangements to be updated to include provision for the disposal of additional waste generated due to preventative measures implemented. ***All waste to be managed as hazardous waste.***

Disposal of any gloves, masks

The contractor shall dispose of all used gloves and masks as hazardous waste and provide sealable bags and containers for the safe disposal of this waste.

Paper towels

The contractor shall provide adequate supplies of paper towels on site. At points where these towels are provided lined waste bins to be placed in order to collect all used towels and then to be disposed of in hazardous waste.

Disinfectant solution

The contractor to provide adequate supplies of disinfectant on site where the use of water and soap for cleaning is not practical. If disinfectant dispensers are not refilled it should be disposed with other hazardous waste.

Wastewater

Wastewater at washing points, toilets, and bathrooms to be contained in a drainage system that prevent surface spills. If wastewater is contained in waste buckets it must be sealed when removed and disinfected after it is cleaned.

4.17. Signage

(locked) or in bags to be either removed as medical/biological waste by registered service provider.

Face Shields

The principal contractor could also look at options such as full-face shields for preventing spreading of virus through eyes. This would assist the employee who is doing hard physical work to breathe more easily but still protecting the mouth, eyes, and nose.

Face shields should be cleaned daily before the shift and at the end of the shift. Proper cleaning agents/disinfectant must be used. Face shields should be issued to employees and no sharing is allowed.

Overalls

All employees must be issued with minimum 2 overalls (1 overall wearing; 1 overall in the wash). This will ensure that the employee will be able to wear clean hygienic overalls. This must form part of the COVID-19 training for all employees.

Employees are not to use their work PPE when travelling to and from work.

Hand Gloves

It is preferable that surgical gloves are not worn unless indicated and workers trained in the proper use thereof. Gloves must only be used when the activity demands the wearing of specific type of hand gloves. This will be directed by the PC risk assessment.

Site office personnel need to be made aware of the risks in the office environment, this includes the handling of documents and plans. These employees could be issued with the appropriate hand gloves or sufficient hand wash / sanitizing facilities must be available in the site office.

4.22. Consequence management

Each Principal contractor / contractors to ensure that regular information pertaining to COVID 19 and or any Health and Safety matters is distributed to ensure that required measures / controls are timely addressed. There are various information platforms available to the Employer and or employee that can assist in keeping them informed:

- Local Authority / Legislation
- World Health Organizations
- Health Care Departments / Health Care Professionals / Centres / Hospitals
- Public Service Announcements - National News

Each employer is responsible and required to keep his or her employees informed by means but not limited by conducting the following.

- Awareness campaigns -i.e. posters within workplaces
- Daily site task Inspections (DSTIs)
- Toolbox talks / Daily briefings
- Meetings
- Company policies / procedures / Employee Wellbeing interaction
- Company newsletters
- Telecommunications - Cell phones Apps / e-mail

4.23. Succession Planning

Employees who are performing specialized work/activities (including plant operators) must be identified. The Principal Contractor is to ensure that alternate employees can be employed if any of these employees does become infected.

Key personnel on site should also have competent alternative employees that could perform these functions when needed. Where possible administrative staff should be working from home to limit any opportunistic exposure.

- ☐ Break times should be staggered to reduce congestion and contact at all times.
- ☐ Hand cleaning facilities or hand sanitiser should be available at the entrance of any room where people eat and should be used by workers when entering and leaving the area.
- ☐ Workers should be asked to bring pre-prepared meals and refillable drinking bottles from home.
- ☐ Social distancing to be applied whilst eating and avoid all contact.
- ☐ Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced.
- ☐ Tables should be cleaned and disinfected between each use.
- ☐ All rubbish should be put straight in the bin and not left for someone else to clear up.
- ☐ All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, vending machines and payment devices.

Bidding tenderers are to note that the Covid 19 Management Plan will be amended from time to time in line with the applicable Covid 19 legislation.

At the time of implementation, the current legislation applicable to the Covid 19 pandemic will be applicable

PG GRASSING

Axonopus Compressis 500 g

All seed supplied shall be labelled in accordance with the Government Seed Act No. 20 of 1961 and the Contractor shall produce such certification as the Engineer may require to verify compliance with the Act.

The seed type and composition may be varied by the Engineer.

PG.4.2.2 Fertilizer

Fertilizer shall be 3.2.1 granular (22) which is to be included in each tank load (5000 litres) at the rate of 20 kg per tank added and mixed.

PG.4.2.3 Compost

The Contractor shall incorporate in each 5000 litres tank load, 0,5 m³ of relatively fresh chicken manure. The manure shall not contain more than 10% other materials such as wood shavings, soil, feathers, etc.

PG.4.2.4 Mulch

The mulching agent shall consist of either wood cellulose fibre mulch or fresh threshed hay or straw and shall be free of contaminants. The mulch shall be suitably prepared, so that when mixed it will become uniformly suspended and form a homogenous slurry.

The mulching agent shall be applied at a rate of 120 kg per 5000 litre tank.

PG.4.3 EQUIPMENT

The seed mixture shall be applied by a "Hydroseeder" type distributor approved by the Engineer.

The distributor shall incorporate a built in agitator system and be capable of even and regulated distribution with a spray range of 25 metres.

PG.4.4 PREPARATION OF UNDISTURBED SOIL:

Undisturbed soil shall be prepared by thoroughly loosening to a minimum depth of 75 mm by hand picking or rotovating and where future maintenance will be required, all loose stone larger than 75 mm removed from the surface.

PG.4.5 PREPARATION OF CRUSTY TOPSOIL:

Where a crust has formed on topsoil, it shall be thoroughly loosened before hydroseeding.

PG.4.6 APPLICATION OF HYDROSEEDING MIXTURE:

The seed, fertilizer, compost and mulch shall be added and mixed before application. The mixture shall be applied at a rate of 5000 litre/1000 m² uniformly over the area to be hydroseeded.

PG.4.7 WATERING:

The Contractor shall apply water as specified for grassing. Water shall be uniformly applied with a fine spray which will not disturb growth or cause erosion.

PG.5 ADDITIONAL PROTECTIVE MEASURES

PG.5.1 DESCRIPTION:

In addition to hydroseeding or grassing the Engineer may order the following additional protective measures:

- a) The spraying of a plastic soil consolidating agent on cut slopes subject to erosion after hydroseeding or grassing.
- b) The application of a suitable fabric sheeting over the hydroseeded or grassed area.

PG.5.2 MATERIALS:

a) Plastic Soil Consolidation Agent

The soil consolidation agent shall consist mainly of a dispersion of plastic materials such as "Surfasol" or similar approved. The grade of consolidation agent to be used for the soil encountered shall be to the approval of the Engineer.

b) Protective Fibre Sheeting

PLW	EPWP CONDITIONS AND SPECIFICATIONS
PLW 1	Employment Targets The contractor needs to provide a realistic estimate on the number of jobs that the project has the potential to create throughout the project duration as the project will be implemented using Labour Intensive Construction methods on elements where it is economical and feasible for this construction method.
PLW 2	Employment requirements Tenderers are advised that this contract will be subject to the Expanded Public Works Program (EPWP) aimed at alleviating and reducing unemployment. Tenderers must allow for any costs for the following employment requirements of the EPWP 1. 55% of unskilled labour to be women 2. 40% of unskilled labour to be youth aged between 18 and 35 years 3. 5% of unskilled labour to be people living with disability 100% unskilled labour utilised must reside within the boundaries of the Municipality ward where this contract is executed, with preference to the local community closest or at the walking distance to the contract site. Wherever possible local skilled tradesmen are to be employed on this contract with the view to maximize utilization of local resources.
PLW 3	Labour rate and payment intervals The contractor should ensure that labour rate paid to unskilled local labour is commensurate to the daily task. When determining the rate, consideration should be given to that EPWP beneficiaries are mostly bread winners in their families, as the program intends alleviating poverty. There should also be consideration that the labour rate promotes creation of expanded number of jobs created and person days of work. Contractors should make endeavours to ensure that labourers, particularly unskilled are remunerated on fortnight basis and prior notification be made should there be a shortfall on their wages. The labour rate for local unskilled shall also be determined in consideration of the location of the project, i.e. for projects implemented in urbanized municipalities will not be the same as that for rural municipalities, but the rates to be used must be gazetted as per the Department of Labour.
PLW 4	Labour Intensive Construction (LIC) method On site there must a person(s) having competency in managing and implementing LIC methods. a) Foreman @ NQF Level 4 the Unit Standard on Implementing LIC methods on site. b) Site Agent/ Managers @ NQF level 5 the Unit Standard on Manage Labour-Intensive Skills Programme both must be CETA accredited
PLW 5	Labour Intensive Construction Method Those parts of the contract to be constructed using Labour Intensive methods will be marked in the BoQ with letter LI (indicating Labour Intensive) against every item so designated. Such works will only be constructed using method so indicated. Reference is to be made to the Guidelines for the implementation of Labour Intensive Infrastructure projects under EPWP. "Scope of Work in Respect of Work Relating to the Expanded Public Works Programme (EPWP)"

PLW	EPWP CONDITIONS AND SPECIFICATIONS
	the contractor representative, in order to assist the Contractor in the procurement of any local labour, etc. required for this project. The Contractor is to liaise with the CLO and afford him any assistance needed in ensuring sound working relations with the local community.
	Key Responsibilities of the CLO are envisaged to include and not necessary be limited to:
	1. Assisting local leadership in conducting skills and resources audit which facilitates sourcing labour from within the ward or targeted areas for employment, as required by contractor 2. Assisting in sourcing labour-only domestic sub-contractors and the procurement of materials from local resources, as required by the contractor. 3. Assisting the contractor by identifying areas of potential conflict and or threats to the project or to stakeholders in the project and recommend appropriate action to the contractor. 4. Assisting contractor and stakeholders in the project in the resolution of any conflict which may arise. 5. Establishing and ensuring that sufficient and open communication channels between the contractor and the work force are maintained. 6. Establish and ensuring that efficient and open communication channels between the contractor and the community are maintained 7. Identifying and reporting to the Contractor regarding issues where communication between stakeholders is necessary, recommend courses of action and facilitate such communications 8. Assisting the Contractor and the work force in the establishment of grievance procedures and necessary recommendation to the Contractor regarding the grievances and solution thereto. 9. Attending to site meetings and project implementation meetings as required by the Contractor and prepare periodic reports as may be required by the Contractor from time to time. 10. Attending to such other duties which are consistent with the functions of a CLO, as may be required by the Contractor from time to time. 11. Keeping the Contractor advised on community issues and issues pertaining to local security. 12. Assisting in setting up meetings or negotiations with affected parties (eg for moving of fences, crops and labour issues). 13. Act as a source of information for the community and the Ward Councillors on issues related to the Contract 14. Liaise with a Project Committee, as anticipated in the EMP, for community representation 15. Keep a site diary and record details of labour/community issues that may arise 16. Monitor and report on general Health and Safety issues on site 17. Assist in HIV/AIDS awareness programmes 18. Attend contract site meetings and report on labour/community issues 19. Any other duties that may be required by the Contractor.
	Responsibility for the identification of a pool of suitable unskilled local labour for temporary tasks shall rest with the CLO. The Contractor shall have the right to choose from that pool. The Contractor shall have the right to determine the total number of local labourers required at any one time and this may vary during the contract. This does not include the Contractor's permanent staff.
	The Contractor shall have the right to replace labour that is not performing adequately. Should such an occasion arise, it must be done in conjunction with the CLO.
	The CLO shall have no authority to issues any instructions to the Contractor. The CLO shall be neutral to all parties and endeavour to remain impartial should any conflict arise. Responsibility for identifying a pool of suitable labour shall rest with the CLO, although the Contractor shall have the right to choose from the pool. The Contractor (and subcontractors) shall have the right to determine the total number of labourers required at any one time, which

PLW	EPWP CONDITIONS AND SPECIFICATIONS
	The Contractor may allow for attendance upon the PPG's concerned to execute the work. The Contractor is to allow the PPG's the use of any scaffolding belonging to him while it remains so erected on the site.
	Where scaffolding is necessary for the use by any PPG and the Contractor has not erected any for his own use or has removed same after his own use, the Contractor shall supply sufficient scaffolding to the PPG to be erected and dismantled by the PPG and returned to the Contractor.
	This attendance upon PPG's to execute the work is to include for the scaffolding provisions as aforesaid and, in addition, is to include for co-operating to the fullest extent with all the parties, attending on off-loading materials, providing suitable storage for tools and materials used by the PPG's, use of general facilities such as latrines, etc., supply and cost of power, lighting, water and the like.
PLW 15	EPWP contract for labour
	It is compulsory that shortly after the contractor and or sub-contractor has appointed local labour, the employment contract should be signed by both parties, prior to commencement with works on site. The employment contract forms part of the Ministerial Determination or from the regional EPWP officials.
PLW 16	EPWP Scope of Work
	Note: Contractors are to price any item on the Bill of Quantities having below, bearing in mind that they are regarded as main sources of job creation, whether sub contracted or undertaken by the main contractor.
	Elements on the scope of work where application of Labour Intensive Construction methods as will indicated with letters (LI) are regarded feasible are as follows:
	This specification establishes general requirements for activities which are to be executed by hand involving the following:
	i. trenches having a depth of less than 1.5 metres ii. stormwater drainage iii. low-volume roads (typically less than 500 vehicles per day); iv. sidewalks and non-motorised transport infrastructure v. water and sanitation
PLW 16.1	Precedence
	Where this specification is in conflict with any other standard or specification referred to in the Scope of Works to this Contract, the requirements of this specification shall prevail.
PLW 16.2	Hand excavateable material
	Hand excavateable material is:
	a) granular materials: i) whose consistency when profiled may in terms of table 2 be classified as very loose, loose, medium dense, or dense; or ii) where the material is a gravel having a maximum particle size of 10mm and contains no cobbles or isolated boulders, no more than 15 blows of a dynamic cone penetrometer is required to penetrate 100mm; b) cohesive materials: i) whose consistency when profiled may in terms of table 2 be classified as very soft, soft, firm, stiff and stiff / very stiff; or ii) where the material is a gravel having a maximum particle size of 10mm and contains no

PLW	EPWP CONDITIONS AND SPECIFICATIONS
	Backfilling to trenches shall be placed in layers of thickness (before compaction) not exceeding 100mm. Each layer shall be compacted using hand stampers a) to 90% Proctor density; b) such that in excess of 5 blows of a dynamic cone penetrometer (DCP) is required to penetrate 100 mm of the backfill, provided that backfill does not comprise more than 10% gravel of size less than 10mm and contains no isolated boulders, or c) such that the density of the compacted trench backfill is not less than that of the surrounding undisturbed soil when tested comparatively with a DCP.
PLW 16.5	Excavation
	All hand excavateable material including topsoil classified as hand excavateable shall be excavated by hand. Harder material may be loosened by mechanical means prior to excavation by hand. The excavation of any material which presents the possibility of danger or injury to workers shall not be excavated by hand.
PLW 16.6	Clearing and grubbing
	Grass and small bushes shall be cleared by hand.
PLW 16.7	Shaping
	All shaping shall be undertaken by hand.
PLW 16.8	Loading
	All loading shall be done by hand. Haulage equipment should be selected in a manner that allows loading by hand to the extent possible.
PLW 16.9	Haul
	Excavation material shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150 m.
PLW 16.10	Offloading
	All material, however transported, is to be off-loaded by hand, unless tipper-trucks are utilised for haulage.
PLW 16.11	Spreading
	All material shall be spread by hand.
PLW 16.12	Compaction
	Small areas may be compacted by hand provided that the specified compaction is achieved. Appropriate rollers should be used where higher (than can be achieved by hand) levels of compaction are required.
PLW 16.13	Grassing
	All grassing shall be undertaken by sprigging, sodding, or seeding by hand.
PLW 16.14	Stone pitching and rubble concrete masonry
	All stone required for stone pitching and rubble concrete masonry, whether grouted or dry, must be collected, loaded, off loaded and placed by hand. Sand and stone shall be hauled to its point of placement by means of wheelbarrows where the haul distance is not greater than 150m. Grout shall be mixed and placed by hand.
PLW 16.15	Manufactured Elements
	Elements manufactured or supplied by the Contractor, such as manhole rings and cover

PMS METHOD STATEMENTS

PMS 1 METHOD STATEMENTS

The Contractor shall furnish the Engineer with a method statement for all critical construction activities at least 14 days prior to the anticipated start of such activities

These method statements shall be in sufficient detail for the Engineer to determine their practicality and as a minimum shall include details of construction methods, plant and equipment particulars including details of critical standby equipment, a construction programme and in the case of river/stream crossings, methods for dealing with water and for blasting of rock if required

PW WATERPROOFING

Tensile strength - finished waterstop
ASTM D4 1: 2: 3: 000 psi 211 1 kg/cm²)
Ultimate elongation - sheet material
ASTM D4 12: 370 %
Stiffness in flexure
ASTM 746: 750 psi
Low temperature brittleness
ASTM 746 not higher than 35 degrees centigrade
Durometer hardness - 1 5 sec., Shore A
ASTM D 1706: 706 approx. S
Specific Gravity
ASTM D297 : 1,38 maximum
Water absorption (48 hours)
ASTM D570:0,5 %

The amount of filler in the waterstop shall not exceed 20 %.

Re-cycled PVC will not be permitted.

The Contractor shall submit to the Engineer all available details of the physical and chemical properties of the materials, together with the results of performance tests carried out by an independent testing laboratory.

PW.4 CONSTRUCTION

PW.4.1 Sealants

PW.4.1 Preparation

All joints shall be prepared in accordance with the details shown on the Drawings. Where the Contractor has prepared the grooves and joints to be sealed, the Sealant Applicator shall inspect these and shall accept each section of the work in writing.

Should the application of the sealants commence prior to acceptance of the preparatory work in writing, the work will be deemed to have been accepted by the Sealant Applicator.

Sealant grooves shall be prepared in accordance with the Manufacturer's instructions and shall be sand-blasted to form a sharp firm key on the surfaces for bonding. All grooves shall be free from dust, oil, grease, water and any other contaminants.

The application of sealant shall commence immediately after sandblasting.

PW.4.2 Sealant Application

Sealants shall be applied only by an applicator who is a specialist sub-contractor approved by the Engineer.

Sealants shall be applied in strict accordance with the Manufacturer's instructions with particular attention to correct heating temperatures for Hot Applied Joint Sealants, drying times, curing and the pot life of the Sealant. Hot sealants that have cooled to below acceptable temperatures shall be discarded.

Sealant shall be applied after insertion of bond breaker type back-up material, where required, and priming. Polysulphide and Polyurethane sealants shall be applied under pressure with a suitable gun. Suitable melting/pouring equipment shall be used for Hot Applied Joint Sealants.

The sealant grooves shall be completely filled after application.

Where required, the sealant shall be tooled using tooling sealant recommended by the Manufacturer to ensure an air-free seal and maximum adhesion

As the work progresses, sealant shall be cleaned from the surfaces adjacent to the grooves using cleaning materials and solvents as recommended by the Manufacturer

Following application, all sealants shall be protected from damage due to further construction in the vicinity.

PW.4.3 Waterstops

PW.4.2.1 Jointing

PW WATERPROOFING

All vents and manholes shall be sealed, with the exception of the opening at which the gauge for measurement of the water level has been fitted.

At a time arranged by the Contractor and agreed by the Engineer, the water level in the pump station shall be measured and recorded as the baseline for the watertightness test.

PW.5.3.5 Monitoring and Acceptance Criteria

The water level in the pump station will be monitored and recorded by the Engineer, or his representative, at intervals of 24 hours for a period of 7 days.

The pump station will be accepted in terms of watertightness when;

- i. Drop in water level over the full test period of 168 hours does not exceed 10 mm and
- ii. There are no visible signs of leakage or dampness from the pump station walls, joints or puddle pipes.

The points of entry of the proposed pipework to the water tower will be inspected by the Engineer, or his representative, at intervals of 24 hours for a period of 14 days. The water tower will be accepted in terms of watertightness when there are no visible signs of leakage or dampness from the soffit of the floor to the elevated tank.

PW.6 REMEDIAL MEASURES

In the event of failure of the structure in terms of the watertightness test, the defects shall be identified and the structure shall be drained.

The Contractor shall submit to the Engineer all details of proposed remedial work for his approval. The Engineer reserves the right to reject any remedial measures that, in his opinion, do not comply with the requirements of the Specification.

The Contractor shall bear all costs associated with the remedial work including penalties for delays and costs of water supplies.

PW.7 MEASUREMENT AND PAYMENT

PW.7.1 Waterbars and Sealants

No items will be measured under this specification for waterbars and sealants as these shall be included in the rates for joints as scheduled under SABS 1200 G.

PW.7.2 Watertightness Tests

Watertightness testing will be measured as a sum. The Contractor shall include for the supply and installation of monitoring equipment in his price.