THEMBISILE HANI LOCAL MUNICIPALITY

UPGRADING OF THEMBALETHU WATER INFRASTRUCTURE (WARD 05)

SCOPE OF WORK

Thembisile Hani Local Municipality hereby invites quotations from suitably qualified service provider for the appointment of contractors for Upgrading of Thembalethu Water Infrastructure (Ward 05) Thembisile Hani Local Municipality.

The scope of work will entail: Upgrading of Thembalethu Water Infrastructure (Ward 05) Thembisile Hani Local Municipality as follows:

- Establishment of camps on site
- Accommodation of traffic
- Earthworks pipes
- Installation of uPVC and HDPE pipes.
- Installation of metered yard standpipes.
- Construction of Pump house
- Installation of pumps with pipes and telemetry system.
- Manage all site staff, CLO and local laboures, plant, equipment and materials
- Manage all quality controls as required by the Engineers

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1. **BACKGROUND**

1.1. Upgrade of Thembalethu Water Infrastructure.

2. **CURRENT STATE**

2.1. The Municipality currently orders the services on an ad hoc basis as-and-when required.

3. **TERMS OF REFERENCE**

3.1. <u>Payment for work completed</u>

3.1.1. Payments will be made within 30 calendar days after submission of Tax invoice.

3.1.2. Claims for payment shall be submitted on a monthly basis and shall consist of the following:

i. Description of work undertaken.

ii. Number of hours worked supported by signed time sheets.
iii. Suppliers invoice for materials used.
iv. Distance travelled in km for every category vehicle over and above that for any work included for in this contract.
v. Acceptance certificate signed by the representative of the council.

3.1.3. Tenderers must clearly state the rates to be charged in the spaces provided and must complete the price schedule.

3.1.4. The council reserves the right to add to or omit any plant to or from this contract.

3.2. Response time and work progress

3.2.1. The contractor shall at all times in the execution of his contract ensures that maintenance and repairs of equipment is done in such a manner as to disrupt services to a minimum, and to adhere to the council's requirements and site instructions within the stipulated time spans allocated.

3.3. Standard of Maintenance and Repair Work

3.3.1. All maintenance and repair work will be executed in a workmanlike manner to the satisfaction of the project manager.

3.3.2. The project manager reserves the right to execute such repairs and replacements with his own staff or by any other means.

3.3.3. The contractor will supervise his own workmen, provide his own tools, and where materials are used, this shall comply with the current SABS / SANS specifications, except where otherwise requested by the project manager. The completed repair work and maintenance shall comply with:

a) Occupation Health and Safety Act of 1993 as amended and the regulations pertaining to the said act and any SABS / SANS specifications for materials and installations, which may be applicable.
b) The SABS code of practice for wiring of premises SANS 10142-1, as amended
c) Thembisile Hani Local Municipality, Regulations, By-laws, Rules and other legal instructions.
d) Standard Specification of the Council.

3.3.4. In the event of failure of the contractor to maintain and/or repair any installation to the satisfaction of the project manager, the latter reserves the right to make any arrangements necessary, or expedient in regard to the said maintenance and/or repairs to any installation appearing in the schedule attached hereto and the contractor shall be liable to the council for payment of any damage which the council may suffer as a result of the contractor's default or neglect.

3.4. Labour Rates

3.4.1. Labour rates asked for in the price schedule shall make provision for supervisors, operations and helpers and shall include all insurance, supervision, holiday allowances, incentive bonuses, profit, insurance and guarantee cost, overheads, etc.

3.5. Commencement of Work and Official Order

3.5.1. No work shall be commenced without the approval of project manager or the representative of the project manager. Accounts submitted for extra work performed will not be entertained unless accompanied by a copy of such written instruction.

3.6. Quality of Supervision

3.6.1. All supervision shall be carried out and facility be kept in such condition that the requirements of the occupational health and safety act no. 85 of 1993 and regulations as amended, is satisfied in all respects. A high quality of cleanliness is required.

3.6.2. Any damages which may occur as a result of poor supervision shall be to the account of the contractor. The contractor will also be held responsible for the safety of all persons working on site.

3.6.3. The contractor will be responsible and answerable for any legal proceeding resulting from non-compliance by him or his staff to act within the boundaries of the facility or such activities associated with the operation of the facility.

3.7. Accommodation and Storage

3.7.1. The contractor shall make all arrangements for accommodation of his workmen and for all the safe storage of his tools, material and vehicles on site.

3.7.2. All plant and materials stored on site must be suitably protected against deterioration through any cause whatsoever, including damage or loss by theft or otherwise. The contractor shall remain fully responsible for all such plant and materials.

3.8. Transport and subsistence rates

3.8.1. Transport rates shall include travelling time and no separated claims for travelling time will be entertained.

3.8.2. Subsistence shall not be priced or paid separately and shall be included for in the labour rates as per this specification.

3.9. Labour Rates and Qualifications

3.9.1. Tenderers shall tender for an hourly labour rate for Key Personnel man-hours required to perform the work and the charge per man-hour shall be taken to cover all ancillary unskilled labour, use of workshop facilities, tools and all overhead and indirect expenses, subsistence and profit.

3.9.2. The council shall have the right to ask for the submittance of the qualifications of Key Personnel employed by the contractor in order to establish if the Key Personnel is duly qualified.

3.9.3. The contractor shall not make use of any learner artisan or learner technician labour unless under the supervision of a duly qualified Key Personnel.

3.10. Training

3.10.1. Tender/s shall indicate in the schedule of information whether they are prepared to assist the council during the contract period within:
a) on-site training of pupil artisans, and
b) upon mutual agreement, specific training at the contractors workshop.

3.10.2. Should such training be called for the details shall be negotiated with the contractor to obtain mutually acceptable training schedules, supervision, reporting, discipline etc.

3.11. Lubricants and Cleaning Materials

3.11.1. All cleaning materials and lubricants will form part of this contract and will be supplied by the contractor at his expense.

3.12. Tools and Workmanship

3.12.1. The contractor must provide all the tools required for the proper execution of the work at his own expenses. He will be responsible for all tools and equipment which is required by the inspector of machinery when inspections are carried out.

3.13. Reporting

3.13.1. It is required of the contractor to report to the representative of the project manager on site before commencing with any work to ensure proper liaison and supervision of all work carried out.

3.13.2. The contractor will also be responsible for conducting routine inspections and perform scheduled maintenance on equipment in accordance with the manufactures operations and maintenance manuals and compile monthly maintenance reports of all pump stations within all regions for reporting to the project manager on an Ad-hoc basis. Such Ad-hoc reports must be submitted on or before the seventh (7th) of every month for the duration of the contract.

3.14. Faulty Workmanship

3.14.1. All labour and transport costs, including those in connection with the breakdowns due to negligent and/or inadequate servicing on the part of the contractor, or faulty and defective equipment and materials etc. supplied by the contractor shall be for the expense of the contractor.

3.15. Functioning

3.15.1. The contractor shall not charge or alter the functioning or design of any piece of equipment or part thereof, without the prior written consent of the project manager.

3.16. Trained staff

3.16.1. Servicing and repair work shall at all times be done by fully trained staff, and under no circumstance may untrained workers be left on site to do any minor work without proper supervision of trained staff.

3.16.2. The contractor shall use competent trained staff directly employed and supervised by him and shall take all responsible care to repair and maintain the installations. The council reserves

the right to inspect the tender's premises for plant, equipment and general good management before tenders are awarded.

NOTE:
All Key Personnel certificate of qualification and apprenticeship contracts shall be submitted with the tender for evaluation by this council. A statement of experience gained and on what type of equipment shall be submitted with the tender for each Key Personnel employed. By not complying with this clause, the tender may not be taken in consideration and may lead to disqualification.

3.17. Site visit

3.17.1. It is essential that tenderers visit the sites, so as to acquaint themselves with the prevailing conditions and to check on the units to be serviced.

3.17.2. Inspection of the plants for the purpose of tendering is to be arranged with the Project Manager: Department of Water and Sanitation, THLM.

3.17.3. No claims stemming from the non-compliance with this requirement will be entertained.

3.18. Operation.

3.18.1. All pumping stations, treatment facilities, are generally in operation 24 hours per day, 7 days a week. Boreholes on the other hand are in operation for specific hours, usually 8 hours per day, and are set according to their sustainable yield and recovery time.

3.19. Safety

3.19.1. It will be the responsibility of the contractor to keep the installations safe and in good working order, and all plant rooms must be kept clean and tidy at all times. All work on plant shall conform to the requirements of the Occupational Health and Safety Act, 1993, as amended.

3.19.2. The safety rules and regulations shall be adhered to as stipulated in the OHS Act 1993. The appointed Contractor(s) take full ownership and responsibility for all your employee s' safety on site and clear the Employer from these responsibilities, this include subcontractors.

3.19.3. A safety file shall be submitted to THLM within **fourteen** days of acceptance of appointment, this file shall be kept to date for the duration of the contract and shall be available on request.

3.20. Corrosion

3.20.1. The contractor will be responsible to prevent corrosion on all components of the serviced equipment. Equipment colours or combinations of colours applied to the equipment shall be to the standard laid down by the project manager which are available on request and will generally be the same as the original coat of paint.

3.21. Log Book

3.21.1. It will be the contractor's responsibility to enter into the log book (which will be supplied by the department) all work carried out on any equipment or part thereof whether it be regular servicing, repairs, breakdowns or even routine inspection of the plant.

3.22. Guarantee and Insurances

3.22.1. The contractor shall guarantee all repair work done for a period of six months against poor workmanship.

3.22.2. A contractor's liability insurance, insurance of works and Third-party insurance shall be submitted to THLM within **fourteen** days of acceptance of appointment, this insurance documents shall be kept to date for the duration of the contract and shall be available on request.

3.23. After Hours Call Outs

3.23.1. The contractor shall be required to be available after hours every day for the duration of the contract to attend immediately to any emergency call outs for equipment breakdowns or major pipe breakages at purification works, water and sewer pump stations and on the bulk distribution pipelines.

3.24. Qualified staff

3.24.1. The contractor shall have qualified staff on site at all times when servicing and repair work is carried out on any equipment.

3.25. Materials and Spare Parts

3.25.1. The council reserves the right to either purchase materials and spare parts for use by and to supply it to the contractor or alternatively to accept the materials and spare parts at prices submitted by the contractor as per this agreement, whichever proves to be the most economical for the council.

3.26. Consumables

3.26.1. All consumables required for the maintenance and servicing of the works shall be supplied by the contractor. This includes all tools, testing equipment, transport, labour and scaffold as required. Under no circumstances are the department's tools, equipment or materials to be utilized.

3.26.2. Tenderers are to base their tenders on the information listed in the schedules of equipment and additional information established during his site visit. It is the responsibility of the tenderer to ensure that the quantities and technical information on which his tender is based are correct.

3.27. Security

3.27.1. The Service Provide is responsible to ensure safety of material provided for use under this contract prior to installation. Council will not be responsible for any losses.

4. SERVICE LEVEL AGREEMENT

4.1. A service level agreement will be entered into with the successful bidder before any work/task may be executed.

5. NON-COMPLIANCE AND PENALTIES

5.1. Failure to comply with any of the aforementioned clauses may invalidate the tender or cause cancellation of the contract.

5.1.1. THLM Reserve the Right to the following;

5.1.1. To implement penalties for poor quality of work,
5.1.2. To implement penalties for late delivery of work,
5.1.3. To terminate the contract if the response time by the contractor is more than that described on the incident management protocol of the Department,
5.1.4. o add additional items to the BoQ or to remove as required,
5.1.5. All rates are fixed & firm and all quantities are re-measurable.

SCOPE OF WORK AND SPECIFICATIONS

1. PROJECT OBJECTIVE

The purpose of the project is to appoint a service provider or service providers to do breakdown maintenance, replacement and repair work on a call-out basis to mechanical and electrical equipment at Water and Wastewater Treatment Plants, Pump Stations, Boreholes and on water and sewer networks within the Thembisile Hani' s area of jurisdiction. This call out shall be within one hour of notification that shall be by a duly delegated council official, to issue such notification, to render a service when the council capacity and resources are limited.

The objective of this contract is that the appointed service provider or service providers shall avail all the necessary personnel, equipment and transport on a 24/7 call out basis.

2. AREAS

The project is situated within Nkangala District Municipality in Mpumalanga province and it falls under Thembisile Hani Local Municipality. Thembalethu township also known as Enkeldoornoog B is situated 11 km North East of Kwamhlanga, they gain access via R573 road. The GPS coordinates and municipal wards of the townships are presented in a table below.

Table Error! No text of specified style in document.-1: Location of Area

No	Village name	Ward	Latitude (S)	Longitude (E)
1	Thembalethu	5	25°25'0.44"S	28°46'15.00"E
2	Thembalethu extension	5	25°24'47.65"S	28°47'17.66"E
3	Zenzele		25°25'27.12"S	28°47'22.27"E

3. SCOPE OF WORK

The service provider will be expected to demonstrate understanding of the work through a systematic assessment methodology, detailed task breakdown and sound safety management practices. The minimum scope of work is guided by, but not limited to, the following:

This list is not necessarily complete nor will it limit the extent of work to be carried out under this Contract:

- Establishment of camps on site
- Accommodation of traffic

- Earthworks pipes
- Installation of uPVC and HDPE pipes.
- Installation of metered yard stand pipes.
- Construction of Pump house
- Installation of pumps with pipes and telemetry system.
- Manage all site staff, CLO and local laboures, plant, equipment and materials
- Manage all quality controls as required by the Engineers

a. PUMPING STATION

Electrical Cables

i. Cable fault identification iv. Cable route tracing
ii. Cable jointing and terminations vi. Labelling;
iii. control panels and boxes and programming;
iv. soft starter or start/delta whichever is applicable;
v. control panels or boxes including programming;

Mechanical Equipment

i. Isolation of pumps for repairs;
ii. New Pumps;
iii. Valves and fittings;
iv. Mechanical/electrical chain hoists and fittings;
v. Rotork Valves and actuators; vii. Aerators, gearboxes, mixers, viii. Desludging valves

b. CIVIL WORKS AND STRUCTURES

i. Pump house
ii. Installation of fittings
iii. Pressure pipeline testing;

c. GENERAL

- Servitude / wayleave management (vegetation)
- Provision of spares (red line equipment

C3.2 ENGINEERING

C3.2.1 DESIGN

a) The Employer is responsible for the design of the Permanent Works as reflected in the Contract Documents unless otherwise stated.

b) The Contractor is responsible for the design of the Temporary Works and their compatibility with the permanent Works.

c) The Contractor shall supply all details necessary to assist the Engineer in the compilation of the as-built drawings.

C3.2.2 EMPLOYER'S DESIGN

The Employer is responsible for the design of the entire scope of works, including all peripheral repair and site works.

C3.2.3 CONTRACTOR'S DESIGN

Where Contractor is to supply the design of designated parts of the permanent Works or temporary Works he shall supply full working drawings supported by a professional engineer's design certificate.

C3.2.4 DRAWINGS

The Contractor shall use only the dimensions stated in figures on the Drawings in setting out the Works, and dimensions shall not be scaled from the Drawings, unless required by the Engineer. The Engineer will, on the request of the Contractor in accordance with the provisions of the Conditions of Contract, provide such dimensions as may have been omitted from the Drawings.

The Contractor shall ensure that accurate as-built records are kept of all infrastructure installed or relocated during the contract. The position of pipe bends, junction boxes, duct ends and all other underground infrastructure shall be given by either co-ordinates or stake value and offset. Where necessary, levels shall also be given. A marked-up set of drawings shall also be kept and updated by the Contractor. This information shall be supplied to the Engineer's Representative on a regular basis.

All information in possession of the Contractor, required by the Engineer and/or the Engineer's Representative to complete the as-built/record drawings, must be submitted to the Engineer's Representative before a Certificate of Completion will be issued.

The Drawings prepared by the Employer for the permanent Works shall be issued as and when required.

C3.2.5 DESIGN PROCEDURES

Existing infrastructure will be considered under this contract.

C3.4 CONSTRUCTION

C3.4.1 GENERAL SPECIFICATION

This section of the Contract documents should be read together with all other sections and Standardized and Particular Specifications included in the Contract documents or Standardized Specifications mentioned in the Contract documents, but separately available. The documents should be read and interpreted jointly to determine the full requirements of the Contract.

C3.4.2 SITE ESTABLISHMENT

The Contractor is responsible for Site Establishment. The construction yard will not be serviced, and the Contractor shall make arrangements to connect all necessary services to specific points. The Contractor shall bring to the Site all his necessary construction equipment and install all stationary construction equipment and plant at locations and in the manner accepted by the Engineer. The Contractor shall submit sufficiently detailed plans showing the proposed locations of such stationary equipment and other pertinent data. No installation of such stationary equipment shall be undertaken unless the corresponding plans have been accepted by the Engineer.

Services and facilities provided by the Employer

Source of water supply

The Contractor shall make his own arrangements for the supply of water for construction and testing purposes. The Contractor will be required to supply, install, operate, and maintain at his cost, such temporary pipework and storage facilities as may be necessary to ensure sufficient supply. The supply shall be metered. The Contractor will also be required to pay all connection fees, cost of water drawn from the water supply authority's system at the ruling tariffs in force at the time as well as include all such requirements throughout the duration of the Contract.

Source of power supply

The Contractor shall make his own arrangements temporary power supply for construction purposes. The Contractor will be required to make his own arrangements with, and pay all the requisite connection and consumption charges for whatever temporary power supplies he may require for his use on the site as well as include all such requirements throughout the duration of the Contract.

Facilities provided by the Contractor

Contractor's camp

On this Site, the Contractor shall be responsible in establishing the final grade for his site establishment requirements including; construction offices, storage areas, warehouse, machine and repair shops, fuel tanks, storage tanks, power and water distribution lines and provide such related facilities and sanitary conveniences that are necessary for maintaining health, peace and order, and safety in the work areas. The positions of all buildings constructed by the Contractor for his own use will be subject to the acceptance of the Engineer. Temporary and permanent fencing around the Contractor's Site establishment areas and electrical and mechanical apparatus connected to the electrical supply shall be erected by the Contractor where needed. On completion of work on Site, buildings constructed by the Contractor for his own use shall be demolished, including foundations, and the ground reinstated. Underground services to these buildings shall be removed.

The Contractor shall be responsible for all temporary services required by him both for the site establishment area, camp site and for construction purposes, including water, electricity, sewage, and communication facilities.

Covered accommodation for perishable or corrodible materials, fittings and the like shall be adequate and suitable for their purpose and, particularly in the case of cement stores, shall be well ventilated, weatherproof and waterproof with floors raised off the ground, so as to keep the materials perfectly dry and freely aerated. All such accommodation shall be subject to the approval of the Engineer who shall always have free access to the premises.

In addition to the above, the Contractor shall provide one toilet per 10 workmen. Portable toilet facilities shall be made available to workers of both male and female genders, the number provided to be in proportion to the ration of the sexes. The toilets shall be in the vicinity of the work site, shall be screened from public view and the use thereof shall be enforced. The Contractor shall, where applicable, make the necessary arrangements for the regular removal of night soil. The Contractor is to ensure portable toilet facilities are cleaned on a regular basis.

Storage and laboratory facilities

The Contractor shall provide all storage and laboratory facilities required for the proper execution of the works.

Other services and facilities

The requirements of the Engineer's Site establishment will be issued by the engineer as and when required.

Disposal of refuse

The Contractor shall be responsible for the disposal of refuse and waste generated by his staff daily. The site is to be kept clean, neat, and tidy, to the Employer's satisfaction.

Telephone facilities

The Contractor is to provide his own telephone facilities as well as facilities for the use of the Engineer, or his representative for the duration of the Contract.

Housing facilities

The Contractor will not be required to provide housing facilities for the Engineer's staff. No accommodation for the Contractor's employees will be permitted on site.

Notice boards

The Contractor will be permitted to display two notice boards advertising his Contract on or near the Site or access points to the project area. The notices shall be of a form and in a position accepted by the Engineer and shall include details of other parties involved (including the Employer) as well as the Contractor. No advertisement shall be displayed without the acceptance of the Engineer.

Site usage

Working with road reserves, Eskom servitudes, etc.

The Contractor is to confine his activities strictly to the indicated working areas and to the spoil sites and the direct access roads to these. He shall not work outside his designated working areas except with the prior approval of the Employer, in writing. It is advised that the Contractor takes note of damaged structures or parts thereof and report these to the Engineer in writing before work starts at or near an existing structure to prevent possible disputes with the occupant or owner.

Site safety and precautions against nuisance

The Works is to be conducted within residential areas with pedestrian and vehicular traffic. The watching, barricading, lighting, and traffic control on site shall be carried out where required in strict compliance with these specifications. The Contractor shall ensure that all safety measures are strictly adhered to.

Plant used on the Works shall be as efficiently silenced as possible and noisy operations will be permitted between the hours of 07:00 and 17:00 only. Any work outside normal working hours requires written approval by the Engineer 24 hrs in advance.

Dust suppression is required for all earthworks activities prone to form excessive dust. Any rock or debris falling from trucks on any haul road shall be removed immediately. Precautions shall be taken to prevent fouling of the site and public roads by trucks. The Engineer may instruct the Contractor to clean roads where any material or debris deposited by any construction vehicle may constitute a danger to the public.

The Contractor is solely responsible for the security of his camp, plant, and materials. The Contractor is to familiarise himself with the locality of the proposed site and allow sufficient security measures to protect the works. The Employer will not be held responsible for any damages, theft or

Permits and wayleaves

The Employer will make the arrangements for all security access permits and wayleaves necessary within the Works.

Alterations, additions, extensions, and modifications to existing works

Interfaces with existing works are indicated on the relevant drawings as far as possible. The Contractor shall take note of these and make appropriate allowances for dealing with, and where necessary, making modifications or tying into these services.

Inspection of adjoining properties

The Contractor will be required to inspect all properties within 50m radius of any excavation on site before and after completion of the works. A detailed written and photographic record of the inspections is to be submitted to the Engineer and Client prior to excavation activities commence.

Water for construction purposes

The Contractor is required to construct and maintain standpipes for construction water, in case of water carts and similar plants the contractor is required to follow all the rules and regulations that are in place in order for one to acquire water from local streams and rivers.

Survey control and setting out of works

Before commencing the operations, the Contractor shall locate and mark all survey pegs and beacons and shall immediately submit a written report in duplicate of any missing or damaged pegs and beacons to the Engineer's Representative, who shall verify the facts and return a countersigned copy of the report to the Contractor. Other than in the case of setting out pegs, the Contractor will be held responsible for the replacement by a registered land surveyor of all beacons or pegs found damaged or missing on completion of the Works which were not reported as such by the Contractor before commencing operations.

Survey records of beacons, bench marks, etc., replaced shall be submitted to the Engineer. Attention in this regard is drawn to Sections 35(1) and (2) of the Land Survey Act of 1927 which lays down the penalties applicable to those who are responsible for interfering with permanent survey beacons, bench marks, reference marks or trigonometric stations.

C3.4.3 PLANT & MATERIALS

Materials supplied by the Employer

No materials will be supplied by the Employer. The construction yard will not be serviced, and the Contractor shall arrange to connect all necessary services.

Materials, samples, and shop drawings

All materials required for incorporation into the permanent works are to be supplied by the Contractor. Where possible, these materials shall be sourced from within the area, considering availability of supply, price, and continuity of supply. In-situ material can be used where suitable. Spoiling and spreading of material will not be permitted on site and suitable temporary stockpile areas must be identified by the Contractor and approved by the Engineer prior to stockpiling.

C3.4.5 CONSTRUCTION EQUIPMENT

The Contractor shall provide all construction equipment and plant necessary to complete the works.

Requirements for equipment

All construction equipment shall be used for the purpose that it was designed for, should be in good working condition and shall be used in a safe manner and shall comply with all relevant legal and roadworthy aspects.

Equipment provided by the Employer

The Employer will not provide any plant and equipment required for construction purposes. All equipment and plant required shall be provided by the Contractor.

C3.4.5 EXISTING SERVICES

Known services

The position of the known existing services will be indicated on the layout drawings as far as reasonably possible. The Contractor shall, however, take note of the fact that this is a developed site which is adjoined and crossed by many services. The Contractor must therefore make provision for suitable means of locating and accommodating all services, including those not known or shown on the drawings. This, however, does not relieve the Contractor from responsibility of verifying if any additional services are present in the area by searching and probing the terrain in question for any existing services or indications of the presence of such services. The Contractor shall at all times exercise the

utmost care when working in their vicinity and shall take all necessary steps to protect any existing services whatsoever against damage which may arise as a result of his operations on site. The Contractor shall bear the cost of the repair of damage to any service the possible existence of which could reasonably have been ascertained by him in good time. All cables and pipes shall be considered "live" unless confirmed otherwise by the relevant service authority.

Treatment of existing services

Work will be carried out in the vicinity of existing services and all such services shall remain in operation at all times, except where arrangements have been made for the interruption of the service for the purposes of carrying out the Works under this Contract.

Existing overhead and underground services may be indicated on drawings held by the respective service providers. Should the Contractor find evidence of possible buried services, he shall notify the Engineer immediately thereof. The Engineer will assess the situation and instruct the Contractor on an appropriate course of action to be taken.

The Contractor shall be responsible for checking the locations of all services and to ensure that no damage is cause by construction operations.

The Contractor, before starting any excavations or where indicated in the scope of work or site information that underground services either cross or are located adjacent to the Works that is to be constructed, such services shall be exposed by hand ahead of trenching operations to enable any changes that might be needed in the design of the pipelines to be made timeously. Care shall be taken in exposing such services to avoid damaging them. An item has been allowed for in the Bill of Quantities for hand excavation or other methods to search for existing services.

All cables and pipes shall be considered "live" unless confirmed otherwise by the relevant service authority.

Use of detection equipment for the location of underground services

The Contractor shall be allowed to use non-intrusive equipment for the location of existing services if so agreed. Should excavation be required to identify and or expose any services this shall be for the account of the contractor and shall only proceed once the relevant permits or approvals have been issued by the Employer.

Damage to services

Should any existing services be damaged by the Contractor, the Engineer shall be informed immediately. The Contractor shall repair the damaged service if so instructed by the Engineer or shall assist in the repair of the service as instructed by the Engineer at the Contractor's own cost.

C3.4.5 PROCUREMENT

Preferential procurement procedures

The works shall be executed in accordance with the Preferential Procurement Policy Framework Act and Preferential Procurement Regulation 2022.

C3.4.6 SUBCONTRACTING

1. THLM as part of socio-economic development, the municipality must therefore identify procurement opportunities for designated groups where compulsory sub-contracting must be applied to all contracts/ projects above 5 000 000.00 where feasible.

a) With reference to contracts/ projects above R5 000 000.00 and above, the breakdown will be applicable;

i. R 0.00 – R 4 999 999.00.00 = No sub construction

ii. R 5 000 000.00 – R 10 000 000.00 = 7.5%
iii. R 10 000 000.00 – R 15 000 000.00 = 10%
iv. R 15 000 000.00 – R 20 000 000.00 = 15%
v. R 20 000 000.00 – R 25 000 000.00 = 20%
vi. R 25 000 000.00 – R 29 999 999.00 = 25%
vii. R30 000 000.00 above =30 %

2. Allocation of subcontractors per percentage component (CE and GB):
   a) R 5 100 000.00 – R 10 000 000.00 = 2 Sub-Contractors (2x Grade 1)
   b) R 10 000 000.00 – R 15 000 000.00 = 4 Sub-Contractors (3 x Grade 1 and 1 x Grade 2)
   c) R 15 000 000.00 – R 20 000 000.00 = 6 Sub-Contractors (4 x Grade 1 and 2 x Grade 2)
   d) R 20 000 000.00 – R 25 000 000.00 = 8 Sub-Contractors (6 x Grade 1 and 2 x Grade 2)
   e) R 25 000 000.00 – R 29 999 999.00 = 10 Sub-Contractors (8 x Grade 1 and 2 x Grade 2)

3. Sub construction tenders must be advertised by the main contractor with a condition that tenderers who fail to comply with this requirement would be disqualified. The requirement is sub-divided into two components which are the pre-qualification stage and the pricing stage as detailed below:
   a) Stage 1 – Pre-qualification stage - CIBD certificate, company registration certificate, tax clearance certificate, municipal account, CSD document, BBBEE and company profile.
   b) Stage 2 – Pricing stage – pricing of bill of quantities.
   c) For responsive tenderers to be considered for final evaluation, they must have satisfied/ met the requirements of Stage 1. Stage 2 entails the submission of bill of quantities which will have been issued by
   d) Timelines for the stages:
      i. Stage 1 – Advert to be issued by the main contractor for a briefing session, and tenders to close 5 days after the date of briefing.
      ii. Stage 2 – Bill of quantities to be issued 5 days after closure of the pre-qualification documents. Five days is to allow the main contractor to conduct evaluation of the pre-qualification documents. Stage 2 documents to close 3 days after bill of quantities will have been issued.
   e) Final evaluation:
      i. Final evaluation to be conducted taking the BBBEE certificate and lowest price into account, and responsive bidder shall be ranked in order of points (descending) they scored.
      ii. A 60:40 ratio will be used for the final selection of responsive bidders, with 60% preference allocated to locals of that particular Ward where the project is implemented, and 40% allocated to locals within other Wards of Thembisile Hani Local Municipality.

   Only Grade 1 – 3 CE and GB Contractors will be eligible for Sub Construction opportunities, and Contractors (companies) are to be appointed in only one project/ contract per financial year.

   Tenderers or contractors must submit proof of subcontracting arrangement between the main tenderer and the subcontractor. Proof of subcontracting arrangement may include a subcontracting agreement between main tenderer and the subcontractor.

   The responsibility to sub-contract with competent and capable subcontractors' rests with the main contractor/ supplier.

   The contract will be concluded between the main contractor and the institution, therefore, the main contractor and not the sub-contractor would be held liable for performance in terms of its contractual obligations.

   Main contractors/ suppliers are discouraged from subcontracting with their subsidiary companies as this may be interpreted as subcontracting with themselves and / or using their subsidiaries for fronting. Where primary contractor subcontracts with a subsidiary this must be declared in tender documents.

C3.5 PROJECT MANAGEMENT

C3.5.1 Management of works

C3.5.1.1 Planning and programming

The Contractor shall ensure that he:

- is well informed about the *Employer*'s overall implementation programme for construction and investigative projects and makes available resources as required to efficiently complete required services; and
- compiles designs, documentation, reports, and drawings timeously as not to unnecessarily delay the implementation of the construction or investigative projects.

The programme shall at minimum contain:

- Time Scale (minimum): Days, where the project period does not exceed three months. Weeks, where the project period exceeds three months.
- Time Scale (maximum): Months, where the project period does not exceed one year. Years, where the project period exceeds one year.
- Tasks: All construction tasks and activities shall be shown. Where phases or stages are anticipated, this shall be the highest level of division and all tasks related to the successful accomplishment of that phase of the project shall be grouped. Resources allocation and task dependency shall be indicated.
- Multiple Project Programming: Where multiple projects are part of the same Contract documentation, the Contractor shall provide a programme per project. However, where interdependency exists the programmes shall be integrated, but divided on the highest level per project followed subsequently by further divisions per phase or stage.
- Start and Finish Dates: All tasks shall have specific start and finish dates.
- Critical Path: All tasks forming the programme line that will establish any delays in the overall project period shall be clearly indicated and an indication of their sensitivity characteristics shall be provided.
- Progress Tracking: The Contractor shall be required to periodically (at minimum monthly) indicate the project progress per task graphically and on a percentage basis.
- Non-working Time: All South African public holidays, weekends, and the local traditional annual builder's break (as identified in the contract data) shall be incorporated in the programme.

The Contractor's Programme shall include:

- Dates for submission (by the Contractor) of designs and or design documents.
- Dates for ordering of special and/or long delivery items.
- Dates for issue of or approval of drawings for planning purposes.
- Dates for issue of or approval of drawings for manufacture and construction purposes requiring the approval of the Engineer.
- Dates for the placement of orders for material, receipt of material, fabrication, and manufacture, works (factory) testing, shipment, erection and commissioning.
- Dates showing start and completion of site construction of each section and each major component of the permanent works.
- Dates showing the delivery of all built-in steelwork, anchor bolts, etc.
- Dates for start and completion of Engineering Design (including allowances for review/approval by the Engineer).
- Dates for submittal and acceptance of drawings.
- Dates for submittal of operation and maintenance manuals.
- Dates for submittal of commissioning check lists and detailed commissioning schedules for acceptance (3 months before the commencement of commissioning).
- Dates for submittal of commissioning check lists and detailed schedules of approval (3 months before the commencement of commissioning).
- Dates for submission of complete schedules for all manufactured items.
- Dates for Test on Completion as defined in the Contract Data.

Activities shall be timed in week units except for commissioning or similar detailed programmers, which shall have activities, specified in days. Activities on which it is intended to operate multiple shifts working shall be clearly defined.

Method and resources statements are required for all critical items to prove that the period allocated to them fits the overall programme and that the Contractor's plant and labour are consistent with the time allowed. Critical items shall include (as a minimum) all reinforced, structural steelwork, pipework, tie-ins to existing services and specialist work.

The Contractor shall update and revise the Programme once a week or when required by the Engineer.

The submission to and acceptance by the Engineer of such updated and revised Programme, shall not relieve the Contractor of any of his duties or responsibilities under the Contract and existing laws.

Sequence of the Works

Whenever work being done by other Contractors is contiguous or related to the Works included in this Contract, the sequence of handling the Works shall be such that the least delay possible will result to each Contractor and such sequence may be determined by the Engineer. The Engineer will establish the respective rights of the various interests involved to secure the completion of the various portions of the Works in general harmony.

The Contractor shall be responsible for the co-ordination and proper execution of the Works, including co-ordination with other Contractors and organizations to the extent specified in the Contract Documents. The Contractor shall, as specified in the Contract Documents, afford all reasonable opportunities for carrying out their work to:

- any other Contractors employed by the Employer,
- the staff and workmen of the Employer, and
- the staff and workmen of any legally constituted public authorities who may be employed in the execution on or near the site of any work not included in the Contract, which the Employe*r* may require.

The Contractor shall obtain, co-ordinate and submit to the Engineer for his information all details (including details of work to be carried out off the Site) from Sub-contractors. The Contractor shall be responsible for the locations of their work or materials, in order to ensure that there is no conflict with the work of other Sub-contractors, the Contractor or other Contractors.

The Contractor shall give the *works* the constant attention necessary to facilitate the progress thereof and shall cooperate with the Engineer and other Contractors in every way possible.

C3.5.1.2. Software application for programming

Only the "Microsoft Project" or CCS software package will be accepted.

The Contractor shall make the programme available in MS Project format or CCS and in print version. The Contractor shall also ensure that all necessary hardware and software in this regard are always available on site and that at least one member of the permanent site staff is competent on their operation.

C3.5.1.3 Methods and procedures

C3.5.1.3.1 Monthly report

The Contractor shall prepare and submit to the Engineer within 15 days after the first day of every month a written progress report together with a monthly progress schedule summarizing the progress of the various sections of the work both at the place of manufacture and at site. Three (3) copies of the monthly progress report shall be submitted in accordance with the correspondence procedures.

Such progress reports shall indicate accurately the status of different activities covering design, material procurement, manufacture, works (factory) tests, shipping, erection, testing and commissioning and shall be related to key dates identified in the programmers referred to in the *conditions of contract*. The report shall also include data on labour strength and equipment employed. The programme submitted with the monthly report shall show cumulative progress towards scheduled completion, expressed as a percentage, of all items shown in the contract schedule.

The reports shall indicate the degree of criticality on each section of the Work, together with the slippage or impending slippage on any key event and shall be directly related to the contract schedule and supporting detail program for sections of work.

The monthly progress report shall be in the format acceptable to the Engineer and written in the English language and shall include:

- Photographs and detailed descriptions of progress, including each stage of design (if applicable), procurement, manufacture, delivery to the Site, construction, erection, testing and commissioning.
- Charts showing the status of construction documents, drawings, purchase orders, manufacture, and construction.
- For the manufacture of each main item of plant and materials, the name of manufacturer, manufacture location, percentage progress, and the actual or expected dates of commencement of manufacture, Contractor's inspections, tests and delivery.
- Records of personnel and Contractor's equipment on the Site.
- Copies of quality assurance documents, test results and certificates of materials.
- Safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- Comparisons of actual and planned progress, with details of any aspects which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome such aspects.
- Financial status of Contract.

C3.5.1.3.2 Weekly report

The Contractor's Site Manager shall prepare a weekly summary report covering all the site activities and submit it to the Engineer. This report shall include projected work activities for at least 2 weeks ahead of those being reported upon. In addition, this report shall include a weekly site labour return giving imported and local labour and each *Sub*-Contractor's labour, broken down into trades. Full details of site labour disputes (or off-site disputes affecting the Contract) shall be reported to the Engineer immediately. The weekly statement shall give details of all construction plant machinery, offices, and materials. The Contractor shall submit three (3) copies of weekly report to the Engineer which shall include.

- Summary of progress.
- Potential problems and proposed solutions.
- Project schedule update.
- Project permit status.
- Construction photographs.
- Status of orders and procurement.
- Drawing list.
- Plant test schedule.
- Construction schedule (critical path method, S-curve).

The Contractor shall submit to the Engineer a weekly return detailing the numbers of the various classes of workmen employed by him on the Site, the plant and Contractor's equipment on the Site or on order and any other information that may reasonably be required.

C3.5.1.3.3 Detailed programme and progress reports

Detailed monitoring of the progress of the Contract by the Contractor is to be achieved using critical path network planning and review techniques.

Following approval of the Programme, the Contractor shall submit within thirty (30) days, detailed program for all work to be executed during the Contract. These programs, which shall embrace design, supply, manufacture, and site construction shall be based on the Contract Programme and be used as target program and may be subject to revision. Further detailed program for progressive stages of the Contract shall be prepared by the Contractor as required by the Engineer.

The Contractor shall, whenever required by the Engineer, also provide in writing for his information a general description and drawing or sketch of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works.

The Contractor shall plan in detail his section of the work using bar charts to record progress of the design, manufacturing, and delivery elements and using the critical path network procedure for work on site. The issue and approval of drawings shall be covered in detail using appropriate check points in the detailed programme, including design information interface events with others. The manufacturing work shall be broken down into check points in the detailed programme. The manufacturing work shall be broken down into sufficient detail for the information supplied to relate correctly to the erection detailed programme on which the activity durations shall not exceed four weeks. Activities shall cover all aspects for which the Contractor or his Sub-contractors are responsible and indicate site access, points at which terminals and access will be available to or required from others and services required from the *Employer.*

The Contractor shall ensure that the resources required to meet these programs are available to him and his Sub-contractors. A table shall be prepared indicating the expected level of each type of resource for the duration of the site work.

The detailed programs must be analyzed by the Contractor, either manually or by computer, and three copies of the following tabulations presented:

- A schedule tabulated in order of increasing total float showing for each activity:
    - event numbers,
    - brief description of activity and responsibility,
    - duration,
    - early and late starting and finishing dates,
    - total float.
- A schedule tabulated in order of early start date by total float for eight weeks ahead of the 'up-date' date. The information given in this schedule shall be the same as that indicated above.

All programs and progress reports shall be provided by the Contractor in a form acceptable to the Engineer. Full access shall be made available to the Engineer to visit the Contractor's and Sub-contractor's works to verify the status of design and manufacture.

Other requirements in respect of programs are given in the Conditions of Contract.

C3.5.1.3.4 Progress meetings

The Contractor will be required to attend regular formal construction progress meetings with the Engineer during manufacture and on site. The site meetings will also involve the other Contractors so that the progress of construction both on this Contract and the entire Project may be reviewed. Such meetings may be monthly and may require the up-dating of the Contractor*'s* Contract and detailed Programs, in which case three copies of the up-dated programme shall be submitted to the Engineer within 7 days of the agreed up-dating.

The Contractor shall also attend informal weekly meetings with the Engineer on site and provide a weekly estimate of the work anticipated on each work section.

The updated programme, if necessary, after reconciliation and incorporation of changes, shall become the new basis for further execution of the *Works* without any modification of the Contract's *completion date*. The updating of the programme shall not give rise either to any extension of time or to any entitlement for any additional payment.

C3.5.1.3.5 Interface meetings

The Contractor shall hold regular interface meetings with all other contractors who may be performing work on behalf of the Employer and with representatives of the Employer involved with the activities related to or in the vicinity of the works to be performed under this Contract.

The purpose of the interface meetings shall be to ensure that the work the Contractor is performing on the project is efficiently and effectively coordinated without duplication or miscommunication and that there is full compatibility between sections that are designed and constructed by the various contractors.

C3.5.1.4 Quality plans and control

C3.5.1.4.1 General

The Contractor shall have a well-organized Quality Control and Assurance System (QAS) based on ISO 9000 Series or equivalent (Quality System Model for Quality Assurance in design/development, production, installation and servicing) to assure that items and services, including subcontracted items and services, comply with the Works Information.

This clause specifies the minimum requirements necessary to ensure that proper attention is given to the materials used, the standard of workmanship, the manufacturing and construction processes, and the quality of all components.

The Contractor shall include in all his orders to Sub-contractors a note stating that materials and plant covered are subject to inspection by the Engineer.

C3.5.1.4.2 Quality Control and Assurance System

All design, manufacturing, processing, testing and inspection operations affecting the plant or material shall be governed by Quality Assurance procedures in accordance with the directives of the ISO 9001 standards while the production and installation shall be governed by quality assurance procedure in accordance with the directives of the ISO 9002 standards or equivalent. These may be subject to surveillance by the Engineer. A tentative QAS shall be submitted together with the tender and shall meet the requirements stated in the Design Procedure. Within thirty (30) days of the Commencement Date, the Contractor shall submit six (6) copies of his complete quality control and assurance procedures, manuals for review and acceptance by the Engineer. The manual shall include pro-forma checklists for all requirements of the Contractor*'s* quality control and assurance program and those called for in the Works Information.

The Quality Control and Assurance System to be submitted shall include but not necessarily be limited to the following:

Programme requirements for materials and plant procurement and manufacture with description of design control, purchased material control, quality verification tools, manufacturing control, materials and components selection, handling, and packaging, etc.

- Programme requirements for plant production with detailed description of Quality Assurance organization of the Contractor, Quality Assurance Functions and Procedures and Performance Monitoring.
- Quality Assurance Programme Tests with detailed description of the test procedures to be conducted.

- Quality Assurance Programme requirements for installation and commissioning (for turnkey Contracts with detailed description of Quality Assurance Organization of the Contractor, Quality Assurance Functions and Procedures, etc.).
- In addition to the requirements of these ISO Standards or their equivalents the Contractor shall:
- Establish procedures for adequate planning and resourcing of all quality related activities including the preparation of quality plans.
- Establish measures for the identification and control of items throughout all stages of the Contract. This shall include measures to maintain traceability as identified in agreed quality plans.
- Arrange for the protection of quality of the product to include delivery to the specified destination.
- Control their measuring and test equipment in accordance with established procedures for measurements and calibration systems and ensure that such equipment that may be used by Sub-contractors to verify work is similarly controlled.

Where any site installation and/or test and commissioning work is involved, the Contractor shall prepare contract specific quality assurance procedures in agreement with the Engineer prior to commencements of such works.

The Contractor shall be responsible for specifying the quality assurance requirements to his Sub-contractors, for approving Sub-contractor's quality assurance programme and for ensuring compliance with the requirements.

The Contractor shall ensure that all appropriate technical information is extracted from the Contract documents and specifications and passed on to the Sub-contractors.

The Contractor shall ensure that all computer systems and software to be utilized on the project is qualified for the application under consideration and such qualification is documented.
The following surveillance requirements shall be included for affirmation by the Engineer or his representative:
Record (R). Documentary evidence of the activity and statistical analysis of the data to be retained and copied to the Engineer.

Verification (V). The Engineer or his representative will not necessarily be present during the activity but documentary evidence to permit verification of compliance with the requirements is generated, retained, and copied to the Engineer.

Witness (W). The Engineer or his representative requires notification to permit witnessing of the activity. The notice period shall be agreed to depending on the nature of the activity and shall be reviewed from time to time. Documentary evidence shall be retained and copied to the Engineer.

Hold (H). The Contractor may not proceed to the following activity until the Engineer or his representative has approved the proceeding activity. Documentary evidence shall be retained and copied to the Engineer.

Random (R). Construction monitoring by random inspection. Random construction monitoring may be carried out at any stage of the activity or preparation for the activity. Documentary evidence shall be retained and copied to the Engineer.

Categorization

The following categories shall apply in determining the requirement for a Quality Control Plan:

Category	**Clarification**	**Quality Control Plan**
Critical	A component, group of components, structure, the failure of which to comply with the specifications may affect the performance of the works of which it is a part and /or will cause a detrimental	Required for all components.

Category	Clarification	Quality Control Plan
	environmental impact, and /or may result in hazardous or unsafe conditions.	
Major	A component, group of components, structure, element of a structure or facility, other than categorized as critical, the failure of which to comply with the specifications may compromise the performance of the works of which it is a part, result in increased, maintenance and/or impact negatively on the quality of the works.	As determined by the Contractor and to the approval of the Engineer.
Minor	All items other than those categorized as critical or major and which are visible and	As determined by the Contractor

C3.5.1.4.3 Quality management audit

The Contractor shall carry out periodic assessments of the adherence to the Quality Plan and Quality Control Plans by senior qualified staff who are not normally employed on the Site. The Engineer and/or his representative shall be invited to attend at the periodic assessments meeting and be afforded the opportunity to report on the implementation of the Quality System at the Site. The assessment reports shall be copied to the Engineer.

C3.5.1.4.4 Corrective action

The Contractor*'s* quality assurance programme shall provide for prompt detection and correction of all events and conditions adversely affecting quality, including failures, malfunctions, incidents, trends, deficiencies, deviations, non-conformances, and defective materials.

The Contractor shall establish and maintain methods for verifying and determining the cause of an adverse condition and for initiating necessary improvement and corrections to preclude repetition. Quality trends shall be analyzed to furnish a basis for improvement in work performance. The Contractor*'s* corrective action system shall extend to the performance of other participating Contractors and Sub-contractors when necessary and shall provide for the interchange of corrective action information. Identification of the adverse condition, its cause, and the corrective action taken shall be recorded and reported to appropriate levels of management.

The Contractor shall establish and implement procedures for reporting, verifying, analyzing, and correcting failures, including those that occur during development and qualification testing. The procedure shall provide assurance that the cause and mode of each failure are determined that the potential safety and availability implication is evaluated, and that corrective action is taken.

A failure report shall be prepared to identify the failed item and its origin or source of manufacture and shall describe the failure, the test status at time of failure, and the probable cause and mode of failure, and recommended corrective action.

Failure to confirm to the specified requirements will result in the issuing by the Engineer of a Corrective Action Request. Failure to rectify the deficiencies covered by a Corrective Action Request within the period stated will result in the Engineer invoking the provisions of GCC.

C3.5.1.5 Design revision and substitution of material

Any revision affecting the design and manufacturing of the *Works*, or any substitution of materials that is deemed necessary shall be notified by the Contractor to the Engineer for the latter's review and approval.

C3.5.1.4.6 Contractor*'s* responsibility

Acceptance by the Engineer of the Contractor*'s* quality assurance programme, quality plans and inspection and test plans, or of those of his Sub-contractors will not relieve the Contractor of his obligation to provide goods and services which meet the requirements of the Contract.

C3.5.1.4.7 Environment

The Contractor shall strictly comply with the requirements of the EMP issued for this *Works*. He shall be liable for any damages/destruction to the environment including penalties that will be imposed by the relevant government agency arising from non-compliance of the requirements of EMP occasioned in any manner by his acts or neglect, or his agents, employees, or workmen in the execution of the *works*.

C3.5.1.4.8 Accommodation of traffic on public roads occupied by the Contractor

The Contractor shall draft a traffic accommodation plan and submit to the Engineer prior to commencement of work on any road. The approval by the Engineer shall not relieve the Contractor of any of his responsibilities or obligation in terms of the legislation and plan.

C3.5.1.4.9 Other Contractors on site

The Contractor needs to take note that other contractors may also be working on the same site and allow therefore in his planning/work scheduling.

C3.5.1.5 Testing, completion, commissioning, and correction of defects

C3.5.1.5.1 General requirements

The Contractor shall be responsible for conducting all testing as described herein. Work under this section shall include all labour, materials, and support services required to completely test all hardware and software.

If a type of equipment does not meet the specifications or requirements as stated in these Specifications or the System Design Document, it shall be the Contractor's responsibility to correct the problem in all units of that equipment furnished, at no additional cost to the Employer.

All the components, sub-systems, interfaces and systems processes constituting the works shall be tested individually and together to demonstrate that they meet the contract requirements and provide a system that functions in accordance with the contract.

The Contractor shall be responsible for the performance of all the tests described below to satisfy the objectives of each testing phase as determined by the Engineer.

The Employer shall have the right to witness all tests.

Test plans shall be submitted to the Engineer a minimum twenty-one (21) days prior to the planned start of testing. Testing shall not commence until the plans have been approved.
Unless otherwise specified, all test plans shall include at a minimum the following:

- Overview of test including test objectives
- Pass/fail criteria
- Traceability matrix listing of all requirements and specifications from the Contract that are included/to be verified in the test and their cross-reference to the Specifications and System Design Document.
- Test setup and test measuring equipment (including descriptive diagrams)
- Listing of tools, test applications, simulators, etc. required to perform the test
- Entry/start-up conditions
- Exit/closing conditions
- Test procedures and scripts to be executed
- Test recording form
- Test comments form
- Signatures and verification form

The Employer reserves the right to direct, at no additional cost, the following changes to the test plans:

- The addition of procedural changes and other reasonable tests to reasonably assure System performance and conformance.
- Investigation into any apparent troubles or anomalies with respect to the System
- An audit of all test reports and verification of any or all previous tests and Measurements.

The Contractor shall provide written notification of readiness to test for all required test stages a minimum of two (2) weeks in advance of the testing.
Upon successful completion of any test, the Contractor shall prepare and submit within two (2) weeks a report summarizing the results with relevant test records appended. All such test reports will be reviewed by the Engineer.

C3.5.1.5.2 Test suspension criteria and defect resolution

The Contractor shall maintain a database of and shall track the status of all defects.

The Contractor shall develop and maintain a standard set of regression tests for each device or subsystem. Regression tests shall be run for any affected device or subsystem if any testing is halted and restarted in accordance with the requirements of the defect resolution.

C3.5.1.5 Training

C3.5.1.5.1 General

The Contractor needs to take note that the Employer aims to use the infrastructure contracts to expose students from various institutions to construction activities as part of their training programme. Full support needs to be provided by the Contractor in this programme to obtain maximum benefits for the students allocated to the contract.
The Contractor shall be responsible to train the Employer's designated personnel according to the requirements specified herein. The Contractor shall be responsible for the supply of all training materials including, at a minimum:

a) Training setups of equipment, including mounting and all power supplies and simulators required to simulate normal operation.
b) Instructor guides.
c) Student guides.

d) Operations manuals.
e) Training presentations.
f) Training handouts.
g) Quick reference guides.
h) Interactive videos or demonstrations.
i) Course and instructor comments sheets.

A Training Program shall be developed and submitted a minimum forty-five (45) days before delivery of training materials that describes:

- Each course to be conducted.
- An overview of delivery methods for each course, including hands-on and group work experience.
- The course objectives for trainees.
- An evaluation plan, including criteria for success of the course, based upon the goals and objectives, and evaluation steps and instruments to be employed.
- A proposed schedule for each class, keyed to the installation process and constrained by availability of trainees away from regular duties.
- A plan for developing or customizing course material.
- Resumes of personnel proposed to be trainers for each class, demonstrating that they are experienced, effective training professionals.

Training shall include course development, providing instructors, and supplying all handouts, materials, classroom aids, etc. required to conduct the training. Training shall take place at the site facilities. Practical training on equipment shall occupy a significant portion of all training classes. The training presentations and material shall be in English.

C3.5.1.5.2 Recording of weather

The Contractor shall be permitted to take his own rainfall measurements on site subject to the Engineer's approval, but access to the measuring gauge(s) shall be under the Engineer's control. The Contractor is to provide and install all the necessary equipment for accurately measuring the rainfall as well as to provide, erect and maintain a security fence plus gate, padlock, and keys at each measuring station, all at his own cost.

C3.5.1.5.3 Format of communications

All Contract communication shall be in English and in writing (letters, faxes, and electronic mail).

C3.5.1.6 Key personnel

The Contractor shall be required to allocate sufficiently experienced personnel to execute the Contract successfully.

C3.5.1.7 Management meetings

The Contractor and such other persons as may be nominated by the Engineer shall be required to attend periodic site meetings, the date and place for which will be set by the Engineer in consultation with the *Employer* and Contractor.

A main purpose of the site meetings will be to review and discuss progress and programme, and all persons attending the site meetings must be empowered to act on behalf of the firms they represent.

C3.5.1.8 Forms for contract administration

The Contractor shall maintain a file or files (hard copy and electronically) per Contract project, which shall contain:

- the details of the Sub-contractors, if any;
- project programme, with commencement and completion date;
- procurement information;
- progress reports, minutes, letters, faxes, emails of all project or project related correspondence;
- record documentation, reports, designs, and drawings;
- a copy of the Health and Safety Plan and the Environmental Management Plan;
- record of cost implications, variations, claims and disputes; and
- empowerment records.
- copy of quality (QMS) plan and all related documentation/procedures.

At the end of this Period of Performance the Contractor shall hand-over such hard copy files to the *Employer*, including all electronic records, documentation, reports, designs, and drawings.

C3.5.1.9 Daily records

The Contractor is to provide a site diary, which is to be kept on site, for the purpose of keeping daily records in respect of work performed on the site. This shall be made available to the Engineer upon request.

C3.5.1.10 Bonds and guarantees

If the Tenderer, when notified of the acceptance of his tender, fails to provide a guarantee within the period stipulated in the Contract Data and the *Employer* elects to cancel the contract on that ground, the *Employer* may demand a sum of R1 000 per day, or the *Employer* may take other action whether by way of a claim for loss or damage suffered by the *Employer* arising out of such breach.

C3.5.1.10 Payment certificates

The Contractor shall be required to complete a progress report before he will be allowed to complete the standard payment certificate required to be submitted with his tax invoice.

C3.5.1.10.1 Measurement of work for payment

All measurements for the purpose of payment shall be made by the Contractor and accepted by the Engineer. The Contractor shall be responsible for obtaining the Engineer's acceptance not later than one week after the measurements have been made.

C3.5.1.11 Permits

The Contractor shall acquire all permits, approvals and/or licenses from all local or national government authorities or public service undertakings in South Africa and abroad, which such authorities or undertakings require the Contractor to obtain and which are necessary for the performance of the Contract, including without limitation, visas for the Contractor*'s* and *Sub*-Contractor's personnel and entry permits for all imported Contractor*'s* plant and equipment.

C3.5.1.12 Lock-out procedure

Lock-out systems consist of isolation of electrical, hydraulic, pneumatic, mechanical systems and isolating valve and pipeline systems. Where the Contractor uses his own procedure, this procedure will be forwarded to the Engineer for review prior to commencement of work.
A lock-out procedure shall be available at all electrical distribution boards. Valves isolated shall be locked and the Contractor shall be in possession of the keys. The Contractor and his employees shall be trained in

accordance with this procedure and declared competent by the Contractor to lock out electrical equipment. They shall always adhere to the procedure's requirements.

C3.5.1.13 Permit to work

A system shall be implemented to control identified high risk activities. The Contractor shall ensure that the proper permit is issued as agreed upon and authorized by an appointed competent person before commencing with the work.
Some of the activities that may require a permit to work within a construction or plant area are:

- Cold work in areas where operational plant or equipment can pose a threat
- Radiographic works
- Working in confined spaces
- Excavation work (cable clearance permit)
- Blasting
- Piling
- Work being done within 50 m of an overhead power line
- Use of a hazardous substance, e.g. lead

Contractors are to ensure that all personnel who will be signing on work permits within the Site are trained in the work permit procedures and declared competent.

C3.5.1.14 Use of documents by the *Employer*

All information (communications, designs, drawings, documents, or reports) provided to the *Employer* by the Contractor, in the course of performing the service required for this Contract, are intended to ensure that the projects are implemented successfully.

C3.5.1.16. Property provided for the service provider's use

The Contractor shall provide all physical resources, including properties, for the successful execution of the project.

C3.5.1.17 Proof of compliance with the law

The Contractor shall ensure that he complies to all prevailing legislation that applies to the provision of his services as part of this Contract and indemnifies the *Employer* where he deliberately neglects compliance with such legislation.

C3.6 HEALTH AND SAFETY

The following particular and generic specifications are applicable to this contract.

(1) Occupational Health & Safety

C3.6.1 HEALTH AND SAFETY REQUIREMENTS AND PROCEDURES

C3.6.1.1 Framework for an occupational health and safety plan

C3.6.1.1.1 Introduction

The Principal Contractor must demonstrate to the Employer that it has a suitable and sufficiently documented Occupational Health and Safety plan as well as the necessary competencies,

experience and resources to perform the construction work safely. The Principle Contractor could be required to submit the following documentation for perusal and verification by the Employer:

- Management structure.
- Quality plan.
- Human resources plan.
- Registered workplace skills plan.
- "Letter of good standing" from the Compensation Commissioner or licensed compensation insurer.
- Proof of Induction and other training of employees.
- Example copy minutes of previous Occupational Health and Safety Committee meetings and copies of Incident Investigation reports.

The following specifications are supplied as a guide only. The Employer's Health and Safety Agent may amend and/or expand on the specifications by means of an addendum to Tender or after the award of the Contract.

C3.6.1.1.2 OH&S plan at tender stage

Tenderers shall submit an OH&S plan with their tender document. This shall be a preliminary plan that may be expanded on and finalised after the award of the contract. The OH&S Plan should be based on the following principles:

- A proper risk assessment of the construction work.
- Pro-active identification of potential hazards and unsafe working conditions.
- Informing and/or training of employees in hazards and risk areas.
- Provision of a safe-working environment and safety equipment.
- Ensuring the safety of sub-Contractors through their safety plans.
- Monitoring the health and safety on the construction works on a regular basis.
- Using competent safety officers.

C3.6.2 Contents of an occupational health and safety plan

C3.6.2.1 Occupational Health and Safety Management Programme

- Management of Occupational Health and Safety risks.
- Occupational Health and Safety structures and appointments.
- Programme of Occupational Health and Safety inspections.
- Occupational Health and Safety Representatives.
- Occupational Health and Safety committee.

C3.6.2.1.1 Communication and management of the work

- Management structure and responsibilities.
- Details of the construction supervision and his appointed assistants.
- Details of the Construction Safety Officer.
- Occupational Health and Safety goals for the project and arrangements for monitoring and review of Occupational Health and Safety performance.
- Arrangements for:
  - Regular liaison between parties on site.

- Consultation with the workforce.
- The exchange of design information between the Employer, designers, supervisors and Contractors on site.
- Handling design changes during the project.
- Selection and control of Contractors.
- The exchange of Occupational Health and Safety information between all Contractors.
- Security.
- Site induction and onsite training.
- Facilities and first-aid.
- The reporting and investigation of accidents and incidents.
- The production and approval of risk assessments and method statements.
- Site OH&S rules.
- Fire and emergency procedures.
- Reporting to the Employer i.e. results of Occupational Health and Safety inspections, incident and incident investigations and committee meetings.
- Reporting of incidents to the Department of Labour and Compensation insurer where appropriate.

C6.2.1.2 Arrangements for controlling significant site risks

The following are some examples of the arrangements for controlling the most significant site risks:

C3.6.2.1.3 Safety risks

- Services, including temporary electrical installations.
- Preventing employees from falling into excavations, from trucks etc.
- Work with, on or near fragile materials.
- Control of lifting operations.
- The maintenance of plant and equipment.
- Traffic routes and segregation of vehicles and pedestrians.
- Traffic control during pipeline crossing of existing roads.
- Handling and storage of hazardous materials.
- Dealing with existing unstable structures/land.
- Working in confined spaces.
- Working at elevated heights (> 3,0 m).
- Other significant safety risks as and when identified.
- Working in excavations to a depth of 7,0 metres.

C3.6.2.1.4 Health risks

- Working environment.
- Handling, storage and use of hazardous chemical substances.
- Dust containing cement, silica and other hazardous substances.
- Dealing with contaminated land or material.
- Manual handling.
- Reducing noise and vibration.
- Provision of adequate lighting.
- Ventilation considerations.

- Extreme heat and cold temperature considerations.
- Dealing with HIV/Aids and other illnesses.
- Provision of and maintaining ablution and eating facilities.
- Other significant health risks as and when identified.

C3.6.2.1.5 Special risks

Contractors are to take note of the special risks that may be encountered during the project and to include these special risks in the OH&S plan.

C3.6.2.1.6 Working environment

- Rotating machinery (and pumps if required).
- Electrical infrastructure not indicated on “As Built” drawings.
- Electrical storms during summer months.
- Traffic control during pipeline crossings of existing roads.

C3.6.2.1.7 Installation work

- Use of electricity may be hazardous in wet conditions.
- Working space may be limited.
- Lifting and placing of heavy equipment, pipes and manhole rings and covers.

C3.6.2.1.8 Preparation of an occupational health and safety operational reference file/manual

The Principle Contractor shall open and maintain an OH&S file for the duration of the contract. On completion of the contract the Principle Contractor shall hand the OH&S file to the Employer.

C3.6.2.1.9 Following are some of the requirements to be addressed

- Layout, format and content requirements.
- Arrangement for the collection and gathering of information.
- Storage and archiving of all the information.
- Copy to the Client at completion of project.
- Appointment of a health and safety officer in writing.

C3.6.2.1.10 Contents of an OH&S file/manual

- OH&S Policy.
- Notice of new project.
- Site start-up.
- Security measures.
- Written designations and appointments.
- Arrangements with Contractors / mandatory’s
- OH&S rules and procedures.
- Induction.
- OH&S training.
- OH&S promotion.

- OH&S representatives.
- OH&S committees.
- Workplace facilities e.g. ablutions, sheltered eating areas etc.
- Protective equipment.
- Workplace inspections and audits.
- Investigation and reporting of incidents/accidents.
- Mechanical safeguarding.
- Electrical safeguarding.
- Safeguarding against trench excavations with depths ranging between 2 to 7 metres.
- Safeguarding against hazardous substances.
- Lifting machinery and equipment.
- Construction vehicles and mobile plant.
- Welding, heating and flame cutting.
- Protection of the environment affected by construction activities.
- Keeping of records in terms of the OH&S Act (85 of 1993).
- General details of construction methods and materials used.
- Details of equipment and maintenance facilities within the structures.
- Maintenance requirements and procedures for structures / equipment / plant.
- Manuals produced by suppliers and specialist Contractors, including operating and maintenance procedures and schedules for plant and equipment.
- Details of the location and nature of utilities and services, including emergency and fire-fighting systems.

(a) Construction Regulations, 2003

The Contractor shall be required to comply with the Occupational Health and Safety Act, 1993: Construction Regulations, 2003 (the regulations) as promulgated in Government Gazette No 25207 and Regulation Gazette No 7721 of 18 July 2003. (Not included in this Volume). Non-compliance with these regulations, in any way whatsoever, will be adequate reason for suspending the Works.

The proposed type of work, materials to be used and potential hazards likely to be encountered on this Contract are detailed in the Project Specifications, Schedule of Quantity and Drawings, as well as in the Employers' health and safety specifications (regulation 4(1)) of the Construction Regulations 2003, which are bound in the Contract document

The Contractor shall in terms of regulation 5(1) provide a comprehensive health and safety plan detailing his proposed compliance with the regulations, for approval by the Employer.

The Contractor shall at all times be responsible for full compliance with the approved plan as well as the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the abovementioned plan or regulations.

Payment items are included in the Schedule of Quantities to cover the Contractor's cost for compliance with the OHS Act and the abovementioned regulations.

C3.6.2 PROTECTION OF THE PUBLIC

The Contractor shall at all times ensure that his operations do not endanger any member of the public.

C3.6.3 <u>BARRICADES AND LIGHTING</u>

All excavation must be marked with drum, reflecting tape and warning signs to satisfaction of the engineer and OHS appointed official.

PS11 APPLICABLE STANDARDIZED SPECIFICATIONS

Although not bound nor issued with this document, the following standardized specifications shall form part of the contract and, notwithstanding the provisions of sub-clause 2.2 of SANS 1200A, SANS 1200 series in its entirety.

PS10.2 Particular Specification

PSVC : Security Fencing (Removal of Fencing)
PF : Masonry

The newest editions of the above specifications up to and including the month of this tender will prevail.

PROJECT SPECIFICATION

PORTION 2: VARIATIONS AND ADDITIONS TO STANDARDIZED SPECIFICATIONS

SANS 1200 A: GENERAL

PS A 3 MATERIALS

All the Contractor's suppliers are to be approved and inspected by the Engineer before they are engaged.

PS A 3.1 QUALITY

Where there is a standardised mark programme for any material, all such material supplied shall bear the official standardisation mark. The Engineer's approval is based on tests conducted by the Contractor as required by this Contract.

All materials proposed by the Contractor for incorporation into the work shall where required, be tested in accordance with the Specification. The Contractor is responsible for the cost of all testing to ascertain that the materials do comply with the relevant minimum requirements and all such costs shall be deemed to be included in the tendered rates. The cost of control tests done by the Engineer and for which the result to not comply with the minimum requirements shall be for the Contractor's account.

All test results shall be submitted to the Engineer for approval prior to such materials being built into the works. No material shall be built into the works without such approval. All costs involved in this testing shall be deemed to be included in the rates tendered.

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

The handling, storage, transport and erection of equipment, machinery and materials shall be strictly in accordance with the requirements of the supplier and/or manufacturer.

All materials shall be new and of the best quality available unless otherwise specified. They must function satisfactorily under the prevailing climate and weather conditions at the place of installations.

The Contractor is totally responsible for the implementation of an approved QA system equivalent to ISO 9000.

The system shall be submitted to the *Engineer* for approval within 14 days of the start of the Contract and shall define methods to ensure that all necessary quality standards are attained. The *Engineer* will audit the applications of the QA system on a regular basis during this Contract.

PSA 4 PLANT

All plant provided by the Contractor for the execution and maintenance of the works shall be of a character comparable with the scope of the works.

The *Contractor* shall provide and maintain sufficient plant to meet all contractual requirements and shall not remove any of this plant from the site without the written permission of the *Engineer*. He shall, however, remove unsuitable, obsolete or worn-out plant from the site when ordered to do so by the *Engineer* and replace these with plant approved by the *Engineer.*
The approval of any plant on the site by the *Engineer* shall in no way relieve the *Contractor* of any of his obligations under the Contract.

PS A 4.2 Contractor's Offices, Stores and Resources

Add the following to A 4.2:

No housing is available for the Contractor's employees and the contractor must make his own arrangements for accommodation and transport of his employees.

PS A 4.3 Hand Tools

The contractor shall provide and maintain all hand tools required for the execution of the Works.

PS A 5 CONSTRUCTION

On completion of the scope of work associated with each construction drawing, the *Contractor* shall

provide a marked-up "as-built" copy of the drawing. These drawings shall incorporate all changes, amendments and additions that have occurred and the drawings shall be signed by the *Contractor's* representative and submitted to the *Engineer* for signature and acceptance.

Where surveying is necessary to determine as-built conditions, the *Contractor* shall provide a land surveyor on Site to undertake the as-built survey within 24 hours of being so instructed by the *Engineer*.

PS A 5.1. SURVEY

PS A 5.1.1 Setting out of the Works

Substitute the first sentence in A 5.1.1 with the following:

Setting out of the work is the sole responsibility of the Contractor and shall be done from the layouts given to him. The proposed network pipes must be placed 2,0m away from the ERF boundaries in the road reserve. Any discrepancy shall immediately be reported in writing to the Engineer. Any costs or subsequent costs arising from discrepancies, which had not been reported to the Engineer, shall be the sole responsibility of the Contractor. The *exact position of the network pipes shall be determined on site in conjunction with the Engineer and must be approved before construction of the specific section starts.*

The Engineer may alter any part of the works to suit the local conditions. The Contractor must therefore contact the Engineer immediately after the preliminary setting out of any part of the works before starting with detail setting out, or construction. Only after the Engineer has approved a specific site or part of works, may the detail setting out and construction commence.

PS A 5.2 WATCHING, BARRICADING, LIGHTING AND TRAFFIC CROSSINGS

Add the following to A 5.2.

The crossing of existing tar and dirt roads must be done in half widths, while the total traffic is accommodated on the other lane.

Road traffic signs shall comply with the requirements of the "South African Road Traffic Signs Manual" and shall be approved by the Engineer before construction commences.

PS A 5.6 TRANSPORTING OF MATERIALS

Where the transporting of materials outside of the site is such as to generate a nuisance, the material shall be covered during transport.

Precautions shall be taken during the transporting of muddy and other materials to prevent its fouling completed construction or roads.

Any rock or debris falling from trucks on to roads shall be removed immediately.

Access Roads to Site - **The *Contractor* shall keep in good and constant repair all access roads to and on the site.**

Any route that the *Contractor* wishes to use to the place where water is obtained or any other route that is used by the *Contractor* shall be subject to approval by the *Engineer*.

All the *Contractor's* vehicles on the Site must be in a roadworthy condition. The number of the *Contractor's* vehicles on the Site will be subject to approval by the *Engineer*.

PS A 7 TESTING

PS A 7.1 APPROVED LABORATORIES

The *Contractor* may appoint an accredited independent testing laboratory to the approval of the *Engineer*.

The *Engineer* shall be given free access to any appointed laboratory.

PS A 7.4 STATISTIICAL ANALYSIS OF CONTROL TESTS

Substitute A 7.4 with the following:

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

PS A 8 MEASUREMENT AND PAYMENT

PS A 8.1.2.3 The Contractor to Price all Items

In addition, the *Contractor* shall provide a detailed schedule itemising the breakdown of each item listed in the Preliminary and General section of the Schedule of Quantities, in terms of all personnel, plant, structures, facilities etc. not covered by the construction rates elsewhere in the schedule. The rate for each item in the detailed schedule shall cover all direct and overhead costs, profit and all other costs for provision of the item.

PS A 8.2 PAYMENT

PS A 8.3 Fixed Charge and Value-Related Items

PS 8.3.1 Contractual Requirements ……..
Unit: Sum

The sum shall cover the Contractor's initial costs of providing sureties, insurance of the works and plant, third party or public liability insurance and unemployment insurance to cover his compliance with the requirements of the Workmen's Compensation Act, 1941 (Act No. 30 of 1941) and any other initial financing obligations of a preliminary and general nature, such contributions of the CEITB.

The tendered amounts for fixed charge and value related items will not be increased, if extension of time for the completion of the works is awarded.

PS A 8.3.2 Establishment of Facilities on the Site

PS A 8.3.2.1 Facilities for Engineer

a) Furnished office (No) ……..… Unit: Sum
b) Nameboards (1 No) ……..……. Unit: Sum

PS A 8.3.2.2 Facilities for Contractor

a) Offices, workshops and storage sheds ……..…. Unit: Sum
b) Living accommodation ……... Unit: Sum
c) Ablution and latrine facilities ……..…… Unit: Sum
d) Access …….. Unit: Sum

PS A 8.3.3. Other Fixed Charge Obligations

This item as listed under Schedule A of the Bill of Quantities is as specified in the standardized specification SANS 1200 A.

PS A 8.3.4 Removal of Site Establishment

The sum shall cover the cost of the demolition on and the removal from the surface of the site of all items established in terms of 8.3.2 and 8.3.3, and shall provide for the making good and the restoring of the site to the satisfaction of the Engineer.

PS A B 8.3.5 OCCUPATIONAL HEALTH AND SAFETY

PS A B.8.3.5.1 Contractor's initial obligations in respect of the Occupation Health and Safety Act and Contractual Regulations

……..…Unit: Sum

The amount will be paid on the scheduled rate on condition that:

(a) The contractor has notified the Provincial Director of the Department of Labour in writing of the project.
(b) The client has approved the contractor's Health and Safety Plan.
(c) The contractor has set up his Health and Safety File and Safety Plan.
(d) The contractor has appointed a Health and Safety Officer.

The provisional sum shall represent full compensation for that part of the contractor's general obligations in terms of Occupational Health and Safety Act and the Construction Regulation which are mainly a function of time. The sum for the supply of all safety clothing, first aid kit, etc. in order to adhere to the occupational Health and Safety Act specifications. The Contractor must familiarize himself with the conditions as per Occupational Health and Safety Act and adhere thereto. Compliance with the Occupational, Health and Safety Act (Act 85 of 1993) as amended, read with the Hazardous Biological Agents Regulations. In light with the current Covid-19 pandemic, Section 8 (1) of OHS Act as amended requires the employer to provide and maintain as far as is reasonably practicable a working environment that is safe and without risk to the Health of employees The rate shall cover the Contractor's overheads, changes, and profit payments for the service Provider. Contractor to note that this item covers the costs for the preparation and submission of Health and Safety plan and file.

Payment shall be as specified for item 1.3 in the standard specifications.

PS A B.8.3.5.2 Occupational Health and Safety Act ……..…… Unit: Sum

Handling cost in respect of sub-item 8.3.5. A percentage of the payment made to the Occupational Health and Safety Act will be paid to the contractor under this section. The rate shall cover the Contractor's overheads, changes, and profit on payments for the Occupational Health and Safety Act.

(a) Provision of Safety Officer

The Contractor should appoint the safety officer who will be fulltime responsible for all safety issues on site, and he or she should be fulltime on site.

The tendered rates include the full compensation for that part of the provision of safety officer in terms of the Occupational Health and Safety Act and the Construction Regulation which are mainly a function of time. Payment shall be made monthly.

(a) Handling cost in respect of sub-item 8.3.5.2 (a). A per percentage of the payment made to the Safety Officer will be paid to the Contractor. The rate shall cover the Contractor's overheads, changes and profit on payments for the Safety Officer.

PS A B.8.3.5.3 Contractor's time related obligation in respect of the OH & S Act and Construction Regulation

The tendered lump sum shall represent full compensation for that part of the contractor's general obligations in terms of Occupational Health and Safety Act and the Construction Regulations which are mainly a function of time. The lump sum will be paid monthly only after payment for item 1.3.3 and item 1.1.5 has been made. Payment of the lumpsum shall be made monthly (calculated by the division of the lumpsum by the number of months remaining).

PS A 8.2.2 Time-Related Items

The tendered amount for a time-related item will be increased; if any extension of time for the completion of the works is awarded on the condition that the activity related to the item tendered for must be sustained during the extended period.

The ratio between the increased amount for a time-related item and the tendered amount must be the same as the ratio between the extension of the time period for the completion of the works and the original time period allowed for completion of the works.

If the works is completed before the end of the original time period allowed for completion of the works, the tendered amount of time related item that is influenced by the earlier completion would be reduced similarly.

PS A 8.4 SCHEDULED TIME RELATED ITEMS

PS A 8.4.2.1 Facilities for Engineer

a) Furnished offices ..... Unit: Sum
b) Telephone for engineer's representative ..... Unit: Sum

PS A 8.4.2.2 Facilities for Contractor

The sum shall cover the Contractor's initial costs of providing sureties, insurance of the works and plant, third party or public liability insurance and unemployment insurance to cover his compliance with the requirements of the Workmen's Compensation Act, 1941 (Act No. 30 of 1941) and any other initial financing obligations of a general and preliminary nature, such contributions to the CEITB. Establishment of Facilities on the Site Facilities for Engineer.

PS A 8.4.3 Supervision for Duration of Construction

The sum shall cover the costs of on-site supervision and such local administration as the Contractor considers necessary for the proper completion of the Works, and shall cover the cost of the salaries, wages and allowances paid to the site agent, general foreman, section foreman (where applicable), site surveyors, timekeepers, assistants and other site supervisory staff, and of transport incurred in connection with such staff. Plant (designated plant or plant for designated operations or plant for use during Supervision for Duration of Construction)

PS 8.4.4. Company and Head Office Overhead Costs for the Duration of the Contract ..... Unit: Sum

The sum shall cover the contractor's company and head office overhead costs.

PS A 8.5 SUMS STATED PROVISIONALLY BY ENGINEER

PS A 8.5. (a) 1 Community Liaison Officer
Unit: Sum

The Contractor must pay a salary to a person appointed as the Community Liaison Officer for the project. The amount of payment and payment dates will be determined as soon as the Community Liaison Officer is appointed.

PSA 8.5(a) 2 PSC Meetings Attendance

Unit: Sum

The tendered rate shall cover the compensation of all members of Project Steering Committee for attending meetings. The amount of payment and payment dates will be determined on the commencement date of the project. The Engineer should authorize payment before it is made. Proof of payment has to be submitted to the Engineer before claim can be certified.

Maximum number of PSC Members shall be 6. All 6 PSC members shall be compensated for one PSC meeting per month (Minutes and attendance register should be provided for payment). Only the chairperson and secretary will attend the site progress meeting and be compensated (The chairperson should present the minutes of the PSC meeting).

The rate is R250.00 per PSC member per sitting.

PS A 8.5(a) 3 Overheads, Charges and Profit on (1) above

Unit: %

Handling costs and profit in respect of sub-item 8.5 (a) 1 & 1. A percentage made to the Community Liaison Officer and PSC Meeting attendance will be paid to the contractor. The rate shall cover the Contractor's overheads, charges and profit on payments for the Community Liaison Officer and PSC members.

PS A 8.5(b) 1 Training

The name and contact details of the Training Company will be supplied by the Employer through the Engineer.

PS A 8.5(b) 2 Overheads, charges and profit on (1) above

Handling costs and profit in respect of sub-item 8.5 (b) 1. A percentage of the payment to the Training Company will be paid to the Contractor. The rate shall cover the Contractor's overheads, changes, and profit on payments for the Training Company. No payment will be made under this item before any payment is made to the Training Company.

PS C 8.5 EXISTING SERVICES

The services parallel to the pipeline routes must only be removed and re-erected at the positions as indicated and approved by the Engineer and repaired where it was damaged. When the pipeline routes across the fencing or gates temporary wire gates must be provided that must be kept closed. After completion of the work these fences or gates must be repaired to the same condition as before commencement of the work.

PS A 8.5(c)2 Overheads, changes and profit from (1) above

Unit: %

Handling cost in respect of sub-item 8.5 (c) 1. A percentage of the payment made to the service provider will be paid to the Contractor. The rate shall cover the contractor's overheads, changes, and profit on payments for the Service Provider.

PS A 8.7 DAYWORK

Replace A 8.7 with the following:

Daywork will be paid according to the percentage allowance method. For calculating the total remuneration, the General Conditions of Contract for Construction Works, Second Edition, 2010 shall apply, with the amendments as in the appropriate special conditions of contract, which is bound into this document. A daywork schedule will be provided for filling in the necessary information.

A 8.8 TEMPORARY WORKS

PS A 8.8.2 Accommodation of Traffic

Unit: Sum

Add the following to A 8.8.2:

The rate shall cover all costs pertaining to the provision, erection, moving and re-erection and maintenance of all temporary barricades, road signs, lights, flagman, etc. as required for the guarding and protection of the works, for the construction, gravelling and maintenance of access roads and detours to the site of the works, borrow pits or spoil sites, as well as for the later removal or the cleaning and tidying up thereof.

A 8.9 ITEMS NOT SCHEDULED SEPARATELY OR INCLUDED IN SCHEDULE OF QUANTITIES

The *Contractor* shall describe and price any other work described in the Specifications or appearing on the drawings, which is not scheduled separately or included in the Schedule of Quantities and for which he desires to enter a separate charge. If no separate charge is made thereunder then the scheduled items shall be held to include all costs for such work or obligations for the execution of the works.

PROJECT SPECIFICATIONS

PORTION 2: VARIATIONS AND ADDITIONS TO STANDARDIZED SPECIFICATIONS

SABS 1200 AB: ENGINEER'S OFFICE

PS AB 3 MATERIALS

PS AB 3.1 NAME BOARDS

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

The Engineer will provide the drawing for the contract name board.

PS AB 3.2 OFFICE BUILDING

Replace AB 3.2 with the following:

Prior to commencing with work, contractor shall provide and furnish for the use of the engineer's representative and his staff one office (3.0 x 4.5m Wendy House Type with a veranda) in an approved position. The Engineer will indicate the position. All plans shall be submitted to the Engineer for approval before the commencement of erection.

The office with a minimum floor area of 13.50m^2 (the smaller dimension at least 3.0m) with a ceiling height of minimum 2.1m, shall also have one toilet apart from the office building for the exclusive use of the Engineer's Representative.

The Office shall be provided with lined walls and boarded ceilings and floor and suitable door with secure locks. The office shall be ventilated, weather proof and water proof and shall have windows with an area of at least 20% of the floor area. The office shall be insulated to provide comfortable working conditions.

Internal furnishings shall include:

- One desk (1.5m long x 1.0m wide x 0.9m high) with lockable drawers with keys.
- One drawing table

- Eight desk chairs
- One table (2.0m long x 1.0m wide x 0.9m high) with smooth top.

PS AB 4 PLANT

PS AB 4.1 TELEPHONE AND FAX

Replace AB 4.1 with the following:

The Contractor shall supply the Engineer with a cellular telephone service for the exclusive use of the Engineer and the Engineer's Representative for official purposes for the duration of the contract.

PS AB 5 CONSTRUCTION

PS AB 5.1 NAME BOARDS

The name boards shall be erected within a month of the commencement date of the contract and shall be placed at the position indicated by the Engineer. Any damage to these boards shall be repaired within seven days of a written instruction issued by the Engineer. No payment shall be made in terms of the contract prior to the erection of the name boards.

The contractor will be permitted to erect a maximum of two of his own name boards, in positions approved by the Engineer. The Engineer reserves the right to order the removal of these boards if they are not kept in good repair.

PS AB 5.5 SURVEY ASSISTANTS

Substitute "two or more suitably educated survey labourers" in the first sentence of PS 5.5. with "two semi-skilled labourers."

PS AB 5.6 SURVEY EQUIPMENT

The Contractor shall provide the following tested and approved survey equipment on site for the duration of the contract and for the use of the Engineer whenever needed.:

(a) One tachometer capable of reading to minimum 20 seconds and a maximum of 6 seconds of arch, plus tripod;
(b) One automatic level plus tripod;
(c) Two tachometer staffs and one level staff, all graduated metrically;
(d) One 5m and one 100m tape measure; and
(e) Diverse surveyor's necessities like paint, pegs, etc.

The above-mentioned equipment may by arrangement be shared between the Contractor and the Engineer's representative.

The Contractor shall keep the equipment continuously insured against any loss, damage or breakage, and he shall indemnify the Engineer and the Employer against any claims in this regard.

The Contractor shall maintain the equipment in good working order and keep it clean throughout the contract period.

PS AB 8 MEASUREMENT AND PAYMENT

PS AB 8.2 PAYMENT

PS AB 8.2.2.(a) Office Buildings

Unit: Sum

The rate shall cover all time-related costs pertaining to the office building as prescribed in PS AB 3.2

PS AB 8.2.2(b) Telephone and Fax

Unit: Sum

The rate shall cover all time-related costs pertaining to the telephone and fax as prescribed in PS AB 4.1

PS AB 8.2.2(c) Name Boards (2 off)

Unit: Sum

The rate shall cover all time related costs pertaining to the name board/s as prescribed in PS AB 5.1

PS AB 8.2.2.(d) Survey assistance and equipment

Unit: Sum

The rate shall cover all time-related costs pertaining to the survey assistants and equipment as prescribed in PS AB 5.6

PROJECT SPECIFICATION

PORTION 2: VARIATIONS AND ADDITIONS TO STANDARDIZED SPECIFICATIONS

SABS 1200 C: SITE CLEARANCE

PS C 3 MATERIAL

PS C 3.1 DISPOSAL OF MATERIAL

Substitute the first sentence of C 3.1 with the following:

Material obtained from clearing and grubbing shall be disposed of at the site indicated at the site inspect. If such a site is indicated at the tender stage, the cost of transporting material and debris will be included under 8.2.1.

Loading and off-loading should be done by hand and the contractor must price accordingly under item 8.2.1.

PS C 5 CONSTRUCTION

PS C 5.1 AREAS TO BE CLEARED AND GRUBBED

Substitute the first sentence of C 5.1 with the following:

Unless otherwise indicated by the Engineer, clearing and grubbing are limited to a 2,5m wide strip along the pipe route. Measurement and payment for clearing and grubbing shall only occur for areas as required in writing by the Engineer.

The Contractor may proceed with clearing and grubbing after the handing over of the site.

PS C 5.2 CUTTING OF TREES

PS C 5.2.3 Preservation of Trees

PS C 5.2.3.2 Individual Trees

Add the following to C 5.2.3.2:

Trees outside pipeline routes must be left standing and undamaged, except where otherwise ordered in writing by the Engineer.

A penalty of **R15 000,00** per tree for trees damaged and/or removed will be charged.

PS C 5.3 EXISTING FENCING

The fencing parallel to the pipeline routes must only be removed and re-erected at the positions as indicated and approved by the Engineer and repaired where it was damaged. When the pipeline routes cross fencing or gates temporary wire gates must be provided that must be kept closed. After completion of the work these fences or gates must be repaired to the same condition as before commencement of work.

PS C 8 MEASUREMENT AND PAYMENT

PS C 8.2 SCHEDULED ITEMS

PS C 8.2.1 Clear and grub (1.0m wide)

Unit: m

The removal of all rocks and boulders on site over 0.15 m^3 will be paid under sub-clause D 8.3.2 (b). The removal of hard rocks other than boulders will be paid under the sub-clause PS DB 8.3.2 (b).

PS C 8.2.2 Remove and grub large tree stumps of girth.

a) Over 1m and up to and including 2m …… Unit: No.
b) Over 2m and up to and including 3m …… Unit: No.

The girth of a tree or stump will be measured at the narrowest point of the tree or stump in the first meter of its height above ground level. Trees and stumps of girth exceeding 1m will be measured individually and classified according to site in increments of 1m as indicated above.

The rate shall cover the cost of clearing and grubbing trees and stumps of all sizes, cutting branches, backfilling holes, and removing, transporting, and disposing of all such trees, stumps, and branches and associated material.

PS 8.2.3 Remove and grub all trees and tree stumps regardless of girth
…….... Unit: No

In exceptional circumstances, where construction is carried out through plantations or where the quantity of trees or girth exceeding 1m renders individual measurement impracticable the Project Specification may provide that clearing and grubbing of trees be measured in hectares. If this method of measurement is used the areas to which it is applicable will be defined clearly on the drawings and the reason for adopting the method of measurement will be stated in the project specification.

The rate shall cover the cost of all operations specified in 8.2.2.

PS C 8.2.5 Take down existing fence

The rate shall cover the cost of taking down the fences, coiling wire and stacking all material at sites indicated by the Engineer and the cost of loading, transporting and offloading such material.

SABS 1200 DB: EARTHWORKS (PIPE TRENCHES)

PS DB 1 SCOPE

This specification covers earthworks for trenches for all types and sizes. It covers excavation, the preparation of a trench bottom, backfilling and the reinstatement of surfaces.

PS DB 3 MATERIALS

PS DB 3.1 CLASSIFICATION FOR EXCAVATION PURPOSES

PS DB 3.1.1 Method of Classifying

Substitute DB 3.1.1 and D.B.3.1.2 (a), (b) and (c) with the following:

The Engineer shall classify excavated materials as Soft, intermediate and Hard excavation will be measured individually as extra-over items.

TABLE 1: CLASSIFICATION OF MATERIALS

CLASSIFICATION	DESCRIPTION
Soft excavation	All material other than rock
Hard excavation	Material which cannot be economically fragmented and loosened for removal by hand implements and pneumatic tools, except by drilling and blasting or the use of rock breaking equipment.

In the first instance, the classification shall be based on the descriptions given in Table 1. In the event of disagreement between the Contractor and the Engineer, the Engineer shall reclassify the material in accordance with the relevant specifications and without being unreasonable to the Contractor. The decision of the Engineer on the classification shall then, subject to the provisions of the contract, be final and binding.

The Contractor shall notify the Engineer of the presence of what he considers to be rock immediately upon discovery thereof. The Engineer will inspect the material and decide whether or not it warrants the use of pneumatic tools or rock breaking equipment. In the case of isolated boulders set in a soil matrix, the Engineer may order the Contractor to either widen the excavation or roll the boulders sideways or lift the boulders out of the trenches.

In the event that the Engineer decides that the use of pneumatic tools, rock breaking equipment, or blasting is necessary, he will classify the material accordingly and arrange for the quantity thereof to be measured. The Construction Manager will supply necessary pneumatic equipment and arrange for others to break up rock into manageable pieces.

PS DB 3.1.2 Classes of Excavation (Sub clause 3.1.2)

Omit all of Sub clause 3.1.2 and add the following:

The excavation of materials will be classified as follows for purposes of measurement and payment.

Rock - shall mean materials found in ledges or masses, in its original position which in the opinion of the *Engineer* would have to be loosened by blasting or by pneumatic tools, or, if excavated by hand, by wedges and hammers. Naturally occurring boulders or detached pieces of material conforming to the above definition will not be classified as rock unless they exceed 0,2m^3 in volume.

Topsoil - shall mean the upper layer of soil which, in the opinion of the Engineer is capable of sustaining vegetable growth. Common - shall mean all materials not included in rock or topsoil.

PS DB 3.5 BACKFILL MATERIALS

a) Substitute “from trenches” in DB 3.5(a) with “from trenches and street excavations”.

Add the following to DB 3.5 (b)

b) Road crossings, access to services, farms and camps and any section that fall within the road reserve shall be classified as areas subject to loads from road traffic and must be compacted accordingly to the top of the trench (natural ground level).

PS DB 3.7 SELECTION OF MATERIAL FOR REPAIR WORK

If the excavation of a pipeline damages and existing road surface, the Contractor must stockpile material from the top 200mm of such a road surface to reuse it as sub base for the repairing of the road crossing.

If necessary gravel material that is suitable for the reparation of road surfaces must be imported.

The Contractor must make provision in his tariffs for compaction in road reserves for the selection of excavation material as specified above.

PS DB 4 PLANT

PS DB 4.1 EXCAVATION EQUIPMENT

Add the following to DB 4.1

An adequate number of suitable tools, including hand stampers, wheelbarrows and hosepipes shall be provided by the Contractor. The Contractor will supply mechanical compaction equipment and when required pneumatic and rock breaking equipment.

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

PS DB 4.3 TRANSPORT

Delete the words "normally open to the public" in the second paragraph.

PS DB 5 CONSTRUCTION

PS DB 5.1 PRECAUTIONS

PS DB 5.1.1.1 Water in Trenches

Water in pipe trenches may cause movement of the pipes because of floatation and backfilling must therefore be executed as quickly as possible. If movement of the pipes does not occur the contractor must, unless otherwise instructed by the Engineer, remove pipes from the trench and reinstall it at his own expense.

PS DB 5.1.2.4 Negligence

Any unknown service exposed during Bulk Earthworks is to be reported to the Engineer. Other than the costs involved in repairing damaged services and damage caused by such, no other penalties associated with this clause will be imposed.

Delete “the Contractor will not be required to remove topsoil from any area in which the average depth of soil is less than 150mm".

PS DB 5.4 EXCAVATION

Add the following to DB 5.4:

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

PS 5.5 TRENCH BOTTOM

Substitute "90%" in the second paragraph of DB 5.5 with "93%".

PS DB 5.5.1 Over Excavation of Trenches

Where pipe trenches are excavated deeper than specified or shown on the drawings, these excavations must be backfilled with suitable approved material in layers of not more than 150mm uncompacted thickness and must be compacted to the thickness of the adjoining in-situ material or as prescribed by the Engineer.

PS DB 5.6 BACKFILLING

PS DB 5.6.1 General

Backfilling in road reserves must be compacted in 100mm layers up to natural ground level.
Where prescribed by the Engineer all surplus material must be neatly piled over the real trench width to a height not more than 150mm high than the adjoining level.

PS DB 5.6.3 Disposal of Soft Excavation Material

Add the following to DB 5.6.3:

All surplus and unsuitable material as described in DB 5.6.3 shall be disposed of at the spoil site, (as described in PS D 5.2.2.3) and leveled.

PS DB 5.7 COMPACTION

PS DB 5.7.2 Areas Subject to Traffic Loads

Add the following to DB 5.7.2:

All pipe trenches within road crossings, accesses to services, farms and camps that fall within the road reserve, will be regarded as areas subject to traffic loads. Backfilling of trenches that are subject to traffic loads will be executed in layers of 100mm as follows:

Item	% mod AASHTO	Final Layer Thickness
Approved Backfill	93%	200mm
Main Backfill up to road layers	96%	200mm
Sub-base	97%	200mm
Base	98%	150mm

PS DB 5.9 REINSTATEMENT OF SURFACE

PS DB 5.9.2 Private Property and Commonage

Add the following to DB 5.9.2:

Gardens and lawns shall be repaired to the original standard where they were crossed. Grass and plants shall be taken out of the ground, temporarily stocked, watered during construction and replanted after backfilling.

PS DB 7 TESTING

PS DB 7.1 Taking and Testing of Samples

Determination of the standard of compaction achieved shall be carried out in accordance with TMH 1.

Each layer shall be tested once for every 300m² or part thereof. There shall be at least one test by the sand replacement method for every 20 tests by an approved nuclear device. Procedures for use of nuclear testing devices shall be approved prior to testing

Costs of testing shall be included in the rates for compaction.

PS DB 8 MEASUREMENT AND PAYMENT

PS DB 8.2 COMPUTATION OF QUANTITIES

PS DB 8.2.3 Measurement

Amend the 7th line to read "..... accept the cross sections or an estimate of the quantities provided by the Engineer for ...."

Earthworks will be measured by volume once only.

Restricted excavations for structure and foundations shall be measured in cut.

Cut to spoil or stockpile operations shall be measured in cut.
Cut to fill operations and borrow to fill operations shall be measured in compacted fill

Computation of Quantities (Sub clause 8.2.3)

PS DB 8.2.4 Shoring

Add the following to DB 8.2.4:

Shoring will only be measured and paid for, if the Engineer gives written approval before it is installed.

PS DB 8.3.2 Excavation

(a) Excavation in all material for trenches, backfill, compact and dispose of surplus material …… Unit: (m)

Item will be provided for various pipe diameters in steps not greater than those specified in 5.2. and various depths in increments of 1.0m measured to the bottom of the bedding layer (refer to provided drawings). Where measured volumentrically in terms of 8.1.2 (a), the volume of excavation will be computed in accordance with 8.2.2 and 8.2.3.

The rate shall cover the cost of the same operation in heading where the Contractor elects to use such a method of excavation. The volume or length will be measured for payment on the assumption that normal trench excavation has been carried out. The volume or length in the undisturbed prism of material between the top of the tunnel and ground level will be classified as soft excavation in terms of 3.1. No additional payment will be made for such headings and no deductions will be made for reduced excavation quantities.

(b) Extra-over item (a) above for:

1. Intermediate excavation …….…….…. Unit: m^3
2. Hard rock excavation ……..…….. Unit: m^3

3. Hand excavation and backfill where added by the Engineer ……..…… Unit: m^3
4. Soil Crete backfilling where directed by the Engineer ……..…… Unit: m^3

Separate items will not be provided for depth increment, volume will be computed from the trench width determined in accordance with 8.2.3 and the depth from the top of the intermediate or hard rock excavation, as the case may be, either to the bottom of the same material or to the bottom of the trench as specified in (a) above, whichever is the lesser (refer to provided drawings).

The rates shall cover the additional cost of the excavation and hauling of the more difficult material of unsuitable material.

(c) Excavate and dispose of unsuitable material from trench bottom (provisional) ……. Unit: m^3

The volume will be computed from the trench width determined in accordance with 8.2.3 and m^3 the additional depth ordered.

The rate shall cover the cost of the excavation of the additional depth in any material, the disposal of the unsuitable material as specified for soft excavation in 5.6.3 within freehaul distance and the backfilling of the additional depth with suitable material from the site of the trench.

PS DB 8.3.3 EXCAVATION ANCILLARIES

PS DB 8.3.3.1 Make up deficiency in backfill material

a) From other necessary excavations on site …….. Unit: m^3
b) By importation from designated borrow-pits ……..…… Unit: m^3
c) By importation from commercial or off-site sources selected by the Contractor …… Unit: m^3

Items (b) and (c) above will not be measured for payment unless importation has been ordered in writing. The volume will be computed from the trench width determined in accordance with 8.2.3 and the depth from the top of the backfill to the top of the bedding as shown on drawings or the actual depth of the backfill used to make up the deficiency or the depth of additional excavation in terms of B3.2(c), as applicable.

The rate for material from other necessary excavations on site shall cover the cost of selection of suitable material, the moving of the material to points alongside the trench spaced to suit the contractor's method of working, and the disposal of the material that is replaced, all within freehaul distance.

The rate of material from commercial or off-site sources selected by the Contractor shall cover the cost of the acquisition of the material (including royalties, if applicable), the moving of the material to points alongside the trench spaced to suit the Contractor's methods of working, and the disposal of the material that becomes surplus as a result of the importation, all within freehaul distance (see Sub-clause 5.2.5.1 of SABS 1200 D or Sub-clasue 5.2.6.1 of SABS 1200 DA, as applicable).

PS DB 8.3.3.2 Opening up and closing down of designated borrow pit ……..… Unit: Sum

This item will only be scheduled when a new borrow-pit has been established or when access to any existing borrow-pit has to be established.

Except for the cost of the removal and spreading back of the topsoil (if scheduled), the sum shall cover the cost of opening up and of restoring the Site as specified in Schedule 5.2.2.2 of SABS 1200 D or Subclause 5.2.2 (f) of SABS 1200 DA, as applicable.

PS DB 8.3.4 Importing materials

The rate for importing materials shall also include for mixing, placing, spreading and compacting as specified on the drawings.

PS DB 8.3.5 Existing Services

Existing services – that intersect or adjoin a Pipe Trench (see Sub-clauses 5.1.2 and 8.3.8 of SABS 1200 D or Sub-clauses 5.1.3 and 8.3.5 of SABS 1200 DA, as applicable).

(a) Services that intersect a trench (angles between center-lines in plan of 45-90^{o}) … Unit (No)

Except where water pipes are to be recovered, existing water pipes, sewers, stormwater pipes, concrete-lined channels and drains, box culverts, electric cables, ducts, kerbs, channels, erf connections and various sizes of pipes and services that intersect a trench of specified width and require various degrees of care, whether or not their presence is known before they are uncovered, will be measured separately. The unit refers to one service, but services that are so grouped that they can be contained within a horizontal dimension of 200mm measured at right angles to the axis of the services will be measured as one unit.

(b) Services that adjoin a trench (parallel to or at an angle between center-lines in a plan of less than 45^{o}) …… Unit: No.

In case where a trench of specified width

Runs parallel to or at an angle (in plan) of less than 45^{o} to an existing service, and is such that the nearer side of the bottom of the trench lies at least partly between the vertical plane and a plane that lies at an angle of 45^{o} below the horizontal, both planes passing through the axis of the service, the length of the service within the minimum base width of the trench, determined in accordance with 5.2, will be measured for payment under this item and the remaining length, the side of the trench which, in the opinion of the Engineer, is rendered liable to collapse because of the existence of such service, will be measured for shoring (see 8.3.4 (a)). The rate for an item scheduled in terms of (a) and (b) above shall cover the additional cost of

(i) Care in excavation necessitated by the presence of such service in or across the trench
(ii) Protection and maintaining such service in operation by means of temporary supports or shoring, as necessary;
(iii) Repairs necessitated by damage caused by the Contract.

PS DB 8.3.6 Finishing

PS DB 8.3.6.1 Reinstate road surfaces complete with all courses Unit: m2

Replace D.B 8.3.6.1 with the following:

a) Gravel

Unit: m^2

The area will be calculated from the length of finished road and paved surfaces as applicable and with the trench width taken as 0.8m. Payment for finishing will be additional to that for excavation covered by 8.3.2.

The rate shall cover the cost, selective excavation (including the equipment that is required to break up, removed and, if necessary, stockpile the original surface material), and subsequently of reinstating and compaction and shall include the cost of delays and the cost of any risk of having to repair damage as specified in DB 5.10. Compaction to be according to PS DB 5.7.2.

SABS 1200 GA: CONCRETE (SMALL WORKS)

PSG1 SCOPE

This specification covers the requirements for concrete (plain and reinforced) for small works associated with pipelines, roads, railways, pump stations, etc. It covers the basic materials, the plant formwork required, the quality, manufacture, arid curing of concrete, tolerances in workmanship, testing and the methods by which the finished structure is to be measured for the purposes of the payment.

PSGA 3 MATERIAL

PSGA 3.2.1 Applicable Specifications

Add the following to G 3.2.1:

Portland cement that conforms to SABS 471

PSGA 3.2.2. Storage of Cement

Add the following to G 3.2.2:

Consignments of cement shall be used in the same sequence as that in which they are delivered on site. No cement shall be used which has been stored on site for a longer period than 6 (six) weeks. All cement so stored for a longer period than 6 (six) weeks, all cement damaged in any way, and all cement which does not comply with the specification, shall be removed immediately and permanently from the site.

PSGA 4. PLANT

PSGA4.4 Formwork

PSGA 4.3.3 Ties

Add the following to G 4.4.3:

No ties will be allowed in vertical walls and permanent metal ties shall have a minimum concrete cover of 40mm. Tie holes shall be filled with an approved non-shrink epoxy grout.

PSAGA 5 CONSTRUCTION

PSGA 5.1 REINFORCEMENT

PSGA 5.1.3 Cover

Substitute G 5.1.3 with the following:

The cover of concrete over reinforcement, unless otherwise indicated on the drawings, shall be not less than 40mm.

Spacers and lifting blocks required for providing cover shall be formed of sand / cement mortar with a minimum cement: water ratio of 2,5, or shall be patent units manufactured from materials which will not corrode. The units shall be sufficiently strong for the purpose required and shall be provided with fixing devices suitable for maintaining the units in the required positions. The units shall be compatible with the type of finish required.

PSGA 5.2 FORMWORK

PSGA 5.2.1 Classification of Finishes

Add the following to G 5.2.1:

The following surface conditions are required in the various portions of the finished concrete:

(a) Rough

Concealed surfaces and surfaces lower than 100mm below finished ground level.

(b) Smooth

All surface finishes not classified as “rough” in paragraph (a) shall be classified as “smooth”. All exposed edges otherwise indicated on the drawings, shall be chamfered 20 mm x 20 mm by means of triangular fillets fixed to the formwork.

PSGA 5.4 CONCRETE

The type of aggregates and cement, and their sources of supply, shall not be altered during the contract without the prior written agreement of, or instruction from, the *Engineer*.

Not less than two weeks before the start of any concrete work in the site, the *Contractor* shall submit a statement of mix designs providing the following information:

PSGA 5.4.1 Quality

PSGA 5.4.1.2 Consistency

Add the following to sub clause G 5.5.1.2:

The slump of concrete used in water retaining structures may not be less than 30mm and not more than 60mm.

PSGA 5.4.1.5 Strength of Concrete

Add the following to G 5.5.1.7:

The grade of strength of concrete and the maximum normal size of coarse aggregate for each portion of the works, unless otherwise indicated on the drawings, shall be as follows:

(a)	Blinding layers and encasing of pipes	20 MPa/19mm
(b)	Benching	20 MPa/19mm
(c)	Screeds	20 MPa/10mm
(d)	Reinforced concrete	30 MPa/19mm

PSGA 5.4.1.7 Durability

Concrete shall be so proportioned to ensure that the water/cement ratio does not exceed 0,5 and, to ensure workability, water-reducing admixtures of approved manufacture shall be used in preference to increasing the cement content.

PSGA 5.4.7 Curing and Protection

The method of curing and protection shall be to the *Engineer’s* approval.

PSGA 5.4.8 Concrete Surfaces

Add the following to GA 5.4.8.1:

Concrete surfaces under screeds, granolithic finishes or benching shall be brought up to a plane, uniform surface with a suitable screed board.

PSGA 5.4.9 Water tight concrete

Watertight concrete is to be constructed in accordance with the recommendations of BS 8007. The Contractor shall test all water-retaining structures for water-tightness in accordance with BS 8007. The *Contractor* shall submit proposed procedures for such tests to the *Engineer* for approval.

PSGA 5.4.10 Defects

After removal of the forms, if the concrete shows any defect or if subsequently any defect attributable to the quality of the concrete or its constituents should develop, the *Contractor* shall, at his own cost, on and in accordance with instruction from the *Engineer*, remove all defective concrete and replace it or make good such defects. No patching or making good shall be carried out by the *Contractor* without prior approval of the *Engineer*. See also General Contract Terms in relation to Defects.

The *Engineer's* approval of proposed patching techniques shall be obtained at the start of the *Contract* and all patching shall be done under strict supervision. Only work which is unsatisfactory in limited respects shall be allowed to be patched.

PSGA 5.4.11 Construction Joints

The use of construction joints must be minimized and may only be placed as shown on the drawings or at positions as approved by the Engineer.

At all construction joints in walls a PVC water stop without a center bulb must be placed as shown on the drawings.

Alternative materials with similar properties may be proposed but may only be installed after approval of the Engineer.

PSGA 5.5.10.4 Wood-floated finish

Where wood-floating is specified or scheduled, the surface shall first be given a finish as specified in G 5.5.10.1 and after the concrete has hardened sufficiently, it shall be floated to a uniform surface free from trowel marks. The screed surface shall be wood-floated, either by machine or hand, only sufficiently to produce a surface free from screed marks.

PSGA 5.5.10.5 Steel-floated finish

Where steel floating is specified or scheduled, the surface shall be treated as specified in PS G 5.5.10.4 except that, when the moisture film has disappeared and the concrete has hardened sufficiently to prevent laitance from being worked to the surface, the screed surface shall be steel-troweled under the firm pressure to produce a dense, smooth, uniform surface free from trowel marks.

PSGA 8 Measurement and Payment

PSGA 8.1.1 Formwork

Formwork, other than formwork covered by 8.1.1.2 and 8.1.4, will be measured as the net area of the face of the concrete to be supported during the disposition of concrete. No deduction will be made for fillets and splays of size up to 50mm x 50mm or for openings of diameter up to 0,7 m or of area up to 0,5 m^2.

Formwork in continuous lengths of narrow widths and of filters or splays over 20 mm x 20 mm will be measured by length, the width or range of widths being stated in the schedule. Boxing-out, the forming of holes, and other such operations will be measured by number, basic dimensions, perimeters, or drawing references, as stated in the schedule.

The unit rate shall cover the cost of all parts of formwork in contact with the concrete, and the necessary bearers, struts, and other supports, plush the labour and plant necessary to erect and stick such formwork.

PSGA 8.1.2 Reinforcement

Steel for normal reinforced concrete will be measured net by mass of all bars, including supporting steel detailed on the reinforcing schedules. The mass will be computed from the nominal bar size and nominal mass per unit length. No allowance will be made for cutting, waste, spacer devices (material other than steel bars), or binding wire.

Steel reinforcement for precast concrete units will not be measured unless so scheduled (see 8.6).

Welded mesh will be measured by area as shown on the drawings, no allowance being made for cutting, waste, laps or deductions for end cover. The areas measured will be those of the concrete floor or slab being reinforced by means of mesh. In the case of continuous unit partly reinforced by mesh, the area will be computed from the outside dimensions of the area covered by mesh regardless of whether or not additional reinforcing shall be present in the same area.

Welding of reinforcement in any position in any structure is not permitted, unless approved in writing by the Engineer.

PSGA 8.1.3 Concrete

a) Concrete will be measured net to the dimensions shown on the drawings or to the dimensions cast, whichever are the smaller. Structural elements that are undersized will be measured for payment only if they are accepted by the Engineer.
b) No allowance will be made for concrete required to make up overbreak in soft excavation, but payment will be made for additional concrete or formwork, or both, ordered in writing by the Engineer to replace unsuitable material or overbreak in hard rock or in intermediate excavation (see (d) below).

The unit rates shall cover the cost of the provision of concrete (made with ordinary Portland cement unless otherwise scheduled), mixing, testing, placing, compacting, the forming of stop-ends and unforeseen construction joints, striking of for levelling as applicable, and curing and repairing where necessary, together with the cost of all parts of formwork in contact with the concrete aid the necessary bearers, struts, and other supports, plush layout and plant necessary to erect and strike such formwork.

STANDARDIZED SPECIFICATION

SABS 1200 VC: FENCING

PSVC 1SCOPE

This specification covers the erection of a new 2.4m high fence with 1 x motor gate 2.4 x 2.4 m.

PSVC 4.2 SECURITY FENCING

Add this item to cover the erection of a new 2.4m high fence.

PSVC 4.2.1 Material

(a) Straining posts, standards and droppers

Straining posts, stays, standards and droppers shall be of the type and size indicated on the drawings. Steel sections shall comply with the requirements of CKS 82 and timber posts with the requirements of SABS 457. Timber posts shall be treated with a preservative in accordance with the requirement of sub clause 5402 (b)(i).

Droppers shall be 0.56kg ridge pack pattern droppers.

Tubular posts and stays shall be galvanized in accordance with SABS 763 for class B1 articles, or shall be painted as specified in section 8400 as may be required on the drawings, and shall have a wall thickness of at least 2.95mm. unless otherwise shown on the drawing, all tubular posts shall be provided with a 230mm x 230mm footplate and a pressed steel or cast-iron cap. Tubular stays shall have a nominal bore of at least 60mm.

Rolled steel section shall be provided with a protective coating of tar or other approved material.

(b) Bolts for strays

Bolts shall be galvanized steel bolts of the required length and a diameter which shall not be less than 12mm. All the necessary bolts, nuts and washers, shall be supplied with each post.

B5507 Erecting Fence Wire

All the fence wire shall be tied to the sides of standards or posts to prevent the wires from being displaced or becoming loose. The wire shall be carefully tensioned without sagging and true to line, care being exercised not to tension the wire to such an extent that it will break, or that end, corner, straining or gate posts will be pulled out or that it will be easily damaged during veld fires.

Each strand of fencing wire shall be securely tied in the correct position hard/up to each standard with soft galvanized tying wire. The tying wire for each strand shall pass through a hole or notch in the standard, while the ends of the tying wire shall be wound at least four times around the fencing wire to prevent it from moving in a vertical direction.

B 5513 GENERAL REQUIREMENTS

The completed fence shall be plumb, taut, true to line and ground contour, with all posts, standards and stays firmly set. The height of the lower fencing wire about the ground at posts and standards shall not deviate by more than 25mm from that shown on the drawings. Other fencing wires shall not deviate by more than 10mm from their prescribed vertical positions.

B 5514 MEASUREMENT AND PAYMENT

Item

Unit

55.01 Cleaning the fence line 2m wide strip …… m(m)

The removal of trees and stumps with a girth exceeding 1m shall be paid as specified in section 1700.

B 55.02 Supply and erect new fencing material for new fence and for supplementing material in existing fences which are being repaired or removed:

(a) Zinc-coating barbed wire 3 mild steel grade, double stand 2.5mm diameter unidirectional twist (SABS 675)
(b) Zinc-coating smooth wire 2.24mm diameter, high tensible fencing wire (SABS 675)

The unit of measurement shall be erected as specified in the drawings completely drilled with steel cap and base plate and painted. The price shall also include full compensation for the excavation of 300mm x 300mm x 800mm deep holes and the backfill with concrete.

Gate

Single motor gate (2.4 x 2.4 mm) …….. Unit (No.)

The unit of measurement shall be the number of gates erected. The two wings of the double gates shall be considered as one gate. The tendered rate shall include full compensation for the procurement and supply of all material including gates, gate posts, hinges, bolts, mesh, binding wire, concrete, etc., as well as the erection of the gates as specified and indicated in the drawings.

TO STANDARDIZED SPECIFICATIONS

SABS 1200 H: STRUCTURAL STEELWORK

PSH1 SCOPE

This specification covers the execution of work entailed in structural steelwork generally for buildings and other structures. It covers the basic materials, the quality, manufacture, tolerances in workmanship, testing and the methods by which the finished structure is to be measured for the purposes of the payment.

PSH 3 MATERIAL

PSH 3. 6 Bolts, nuts and washers

All site connections are to be bolted unless otherwise specified. The *Contractor* is to supply all bolts including chemical anchors used as holding down bolts. Site bolts are to be suitably bagged and labelled. Bolt grades are to be as follows, unless specifically noted on the drawings:

Structural Connections	: Grade 8.8 M20 with 22 mm diameter holes
Hand railing, Stair Tread Connections	: Grade 4.8 M16 with 18 mm diameter holes
HSFG Connections	: Grade 8.8S M24 tightened by the "turn-of-the-nut method".

PSH 5 CONSTRUCTION

PSH 5. 1 Drawings and shop details

PSH 5. 1. 1 Design drawings

The *Engineer*'s drawings will include a general arrangement of the proposed structure indicating all structural member sizes and special connections. For standard types of connections, specific design loadings will be indicated and shall be sufficiently comprehensive to allow the detailing of these connections. If no specific loadings are supplied, it should be assumed that:

- For cross-bracing members, the connection shall be designed to carry the full tension capacity of the member, unless otherwise noted.

- For compression bracing members, the connection shall be designed to carry the compression capacity of the member taking cognisance of the effective length of the member, unless otherwise noted.

To assist the Fabrication *Contractor* in the preparation of shop fabrication details, the *Engineer* can provide an electronic copy of the drawings in AutoCAD 2007 format. Electronic drawings are issued in good faith, and it is the responsibility of the *Contractor* to ensure they are not in conflict with the issued hard copy drawings (which take preference). No claims in this respect will be entertained.

PSH 5. 1. 2 Contractor provides shop details

The *Contractor* is responsible for producing all shop drawings for the project.

Connections shall be designed per the following:

- No eccentricities in connections are permitted unless shown on the *Engineer*'s drawings, or as requested by the *Contractor* and approved by the *Engineer* in writing. Should approval be given for eccentric connections, the *Contractor* is to design these connections to resist the secondary effects of these eccentricities.

- For angle connections, bolts are to be placed on the standard back mark position, which is to correspond with the centreline shown on the *Engineer*'s drawing.

- The *Contractor* must ensure that suitably qualified and experienced technical staff are employed to undertake the design and draughting of connections.

- The *Contractor* shall ensure that details that are likely to initiate corrosion are avoided.

The *Contractor* shall, at his own expense, prepare and submit one copy of shop drawings of all fabricated work, working or setting out drawings, shop details and schedules to the *Engineer* for review by the *Engineer*, and fabrication of such work shall not be performed by the *Contractor* until such acceptance has been confirmed.

Unless otherwise agreed with the *Engineer*, shop drawings shall be complete in every respect, prepared to show all details of fabrication and erection of all components and assemblies. All shop drawings must be submitted with issue slips, clearly stating the drawing number and revision of each shop drawing.

The *Engineer* will generally only review member sizes regarding the general arrangement and correct implementation of the design on the detail drawings. Responsibility for design and dimensional accuracy of connections not fully detailed on the *Engineer*'s drawings remains the responsibility of the *Contractor*. Acceptance by the *Engineer* relates to conceptual adequacy, and does not absolve the *Contractor* of his obligations and responsibilities in this regard. The *Engineer* will retain a copy of the drawing and it will be returned to the *Contractor* within 7 working days with the *Engineer*'s comments or acceptance. Shop details must be accepted in writing by the *Engineer* prior to the commencement of fabrication.

PSH 5. 4 Setting out

Concrete work to support the steelwork shall be constructed by the main structure *Contractor*. The structural steel *Contractor* shall, before commencing erection check all holding down bolts for deviation from line and level and report in writing to the *Engineer* any deviations which fall outside the tolerances specified. Commencement of erection shall infer acceptance of the holding down bolts and concrete work as constructed or remedied.

The *Contractor* shall agree with the main structure *Contractor* the proposed method of fixing the holding down bolts.

PSH 5. 5 Erection

PSH 5. 5. 1 Procedure

The *Contractor* shall submit for the *Engineer*'s review a method statement describing the proposed erection procedure.

PSH 5. 6 Grouting of supports

PSH 5. 6. 2 Bedding- of Stanchions in Foundation Pockets.

Chemical anchor bolts for fixing steelwork to concrete elements shall be installed in accordance with the manufacturer's recommendations for hole diameter, depth of embedment and tightening torque.

PSH 6 TOLERANCES

PSH 6. 1 General

PSH 6. 1. 1 Verification of dimensions

Where modifications or extensions are made to existing structures, all relevant dimensions are to be checked on site before commencing fabrication drawings or fabrication.

PSH 7 TESTING

PSH 7. 1 Test certificates

The *Contractor* shall supply manufacturer's test certificates pertaining to the steel to be used to the *Engineer* on a regular basis.

PSH 7. 3 Inspection and testing of welds

Additional Sub clause

Non-destructive testing of welds is required to be performed per AWS D1.1 by suitably qualified and competent personnel. All test procedures techniques and acceptance criteria are to be as specified in ASW D1.1. The following are specifically required by the *Engineer* as a minimum:

Visual Inspection	:	All welds
Dye Penetrant Tests	:	10% of all welds
Magnetic Particle Tests	:	10% of all base plate welds
UT or X-Ray Tests permitted by the *Engineer*	:	10% of the length of all butt welds and all site welds if

Welds not satisfying the acceptance criteria are to be repaired accordingly at the *Contractor*'s account.

PROJECT SPECIFICATIONS

PORTION 2: VARIATIONS AND ADDITIONS

TO STANDARDIZED SPECIFICATIONS

SABS 1200 HC: CORROSION PROTECTION OF STRUCTURAL STEELWORK

PSHC1 SCOPE

This specification covers the execution of work entailed in the corrosion protection of structural steel. It covers the basic materials, the quality, manufacture, tolerances in workmanship, testing and the methods by which the finished structure is to be measured for the purposes of the payment.

PSHC 3 MATERIAL

PSHC 3. 1 Packaging

Where a manufacturer's product is specified, generic alternatives shall not be used without the *Engineer*'s prior written approval.

PSHC 5 CONSTRUCTION (EXECUTION OF WORK)

PSHC 5. 4 Preparation for Coating

PSHC 5. 4. 1 General

Preparation of the steelwork and application of the coating system shall take place at an approved location.

PSHC 5. 4. 2 Removal of Contaminants

After fabrication, but prior to any form of preparation, all steelwork shall be washed down and cleaned to remove grease and other contaminants.

PSHC 5. 4. 3 Methods of Preparation
PSHC 5. 4. 3. 1 Abrasive Blast Cleaning

The required standard of blast cleaning, measured in terms of Swedish Standard SIS 05 59 00, is specified with the coating system.

PSHC 5. 6 Cleaning of Surfaces about to be Coated

Within four hours of preparation, the substrate shall be cleaned of all dust and the first coat of the coating system shall be applied

PSHC 5. 7 Coating Systems

Tables of Coatings:

PREPARATION OF STEELWORK	METHOD : SABS 064 STANDARD : ISO 8501-1:1998 - Sa 2½	
COAT	**PAINT TYPE**	**DFT**
Primer	Inorganic Zinc Silicate with minimum 85% zinc in the dry film	75-100 µm
Intermediate	Recoat able MIO Epoxy	75-150 µm
Finish	Water borne Acrylic	40-70 µm

All coating systems are to be applied in strict accordance with the manufacturer's instructions. Equivalent products from other manufacturers of the same generic types may be used with written approval of the *Engineer*.

PSHC 5. 8 Application of Paint Coatings

After erection, repair any damage and apply the finishing coats specified in the coating system.

The method of coating application shall be strictly in accordance with the manufacturer's recommendations.

There shall be a colour contrast between successive coats.

All bolts, nuts and washers shall be primed and painted as specified for the steelwork.

No painting on site shall be carried out in inclement weather or when humidity or frost is liable to cause wet or damp conditions on the surfaces to be painted.

PSHC 5. 9 Application of Metal Coatings

Hot dip galvanising shall comply with the requirements of SABS 763.

All bolts, nuts and washers shall be hot dip galvanised.

Flame cutting and welding of galvanised members will not be permitted.
Holes may be drilled through galvanised members only with the *Engineer*'s written approval in each case, and the exposed steel shall be made good as specified in Sub clause PSHC.2.6.2.

PSHC 5. 10 Repair of Damaged Coatings

All items of steelwork shall be examined on site, before and after erection, for damage to coatings.

Damaged areas shall be repaired in accordance with Clause 5.10.

Where approved site cutting or welding are required, the area for a distance of about 50 mm on either side of the cut shall be cleaned of all coatings, the cutting or welding carried out, the weld de-slagged, all flux and weld spatter removed, the steelwork ground down to "white metal" and coated as specified above.

PROJECT SPECIFICATIONS

PORTION 2: VARIATIONS AND ADDITIONS

TO STANDARDIZED SPECIFICATIONS

SABS 1200 L: MEDIUM-PRESSURE PIPELINES

PSL1 SCOPE

This specification covers the supply and installation of pipelines of diameter up to 1 000 mm, Complete with ancillary works, for transporting water and sewage under working pressures of up to 2.5 MPa. It covers the basic materials, the quality, manufacture, tolerances in workmanship, testing and the methods by which the finished structure is to be measured for the purposes of the payment.

PSL 3 MATERIAL

PSL 3. 1 General

Where a manufacturer's product is specified, generic alternatives shall not be used without the *Engineer*'s prior written approval.

- Buried Fittings shall be of an approved type with joints and pressure class ratings compatible with the pipe used.
- All materials of construction will be new, free from all defects and imperfections such cracks, tears or porosity, and shall be suitable for the intended application
- Pipes shall not be used for grounding of electrical services.
- All components supplied shall be adequately protected against rust and corrosion during storage, and operational life of the equipment in their planned environment/s.
- No unit will be considered complete until accepted by Engineer.
- The Engineer must have access, at all reasonable times, to those parts of the manufacturing facilities engaged in the manufacture of items in terms of this specification. He is authorized to witness any stage of manufacture, tests and inspect documentation.
- The Engineer is authorised to reject any items not manufactured to the requirements of the agreed standards and this specification.
- All equipment must be inspected at the Supplier's works prior to delivery, to ensure compliance with the specification.
- Machined surfaces, nuts, bolts, washers and screw threads must be protected with suitable corrosion inhibitors.

PSL 5 CONSTRCUTION

PSL 5. 1 Laying

PSL 5. 1. 1 General

- Unless approved, pipe work shall not be run under structures and when pipe must be run under structures, special precautions shall be taken, including the following:

PSL 5. 1. 2 Damage

Pipes, valves, hydrants, and fittings shall be inspected for damage when received and shall be inspected prior to installation.

- All pipe, fittings and valves shall be carefully lowered into the trench using appropriate equipment and carefully examined for cracks or other defects while suspended above the trench.
- Plain ends shall be inspected for signs of damage prior to installation.
- Under no circumstances shall water main materials be dropped or dumped.

PSL 5. 2 Jointing Methods

- When it is necessary to join metal pipe with pipe of dissimilar metal, the joint shall be insulated against the passage of an electric current using an approved method.

PSL 5. 10 Disinfection of potable water pipelines

- Underground piping, from the water supply to the system riser, and lead-in connections to system riser shall be completely flushed before connection is made to downstream system piping.
- The flushing operation shall be continued for a sufficient time to ensure thorough cleaning.

PSL 7 TESTING

PSL 7. 1 General

- Vendors and Sub-contractors will submit test reports, certification for materials of construction and the results of the appropriate Non-Destructive Testing (NDT) and collate these documents into the Quality Control Dossier.
- All piping and attached appurtenances subjected to system working pressure shall be hydrostatically tested at 3.5 bar more than the system working pressure, and shall maintain that pressure without loss for 2 hours.

PSL 8 MEASUREMENT AND PAYMENT

PSL 8. 1 General

Payment for pipe laying shall include for the supply, delivery, laying and jointing of pipes together with the trimming or cutting of pipes at junction structures and for all plant, equipment and labour necessary for these operations.

PROJECT SPECIFICATIONS

PORTION 2: VARIATIONS AND ADDITIONS

TO STANDARDIZED SPECIFICATIONS

SABS 1200 LB: BEDDING PIPES

PSLB1 SCOPE

This specification covers the bedding (bedding cradle and selected fill blanket) for buried pipes carrying fluids under pressure or gravity. It covers the basic materials, the quality, manufacture, tolerances in workmanship, testing and the methods by which the finished structure is to be measured for the purposes of the payment.

PSLB 3 MATERIAL

PSLB 3. 1 Selected granular material

Selected Granular Materials (sub clause 3.1)

Delete the word "singularly"

PSLB 3. 3 Bedding

uPVC pipelines shall be regarded as flexible and the class of bedding to be used shall be as shown on the drawings. All other pipes shall be regarded as rigid and a Class B bedding shall be used.

PSLB 3. 4 Selection

Suitable selected bedding material will occasionally be available from trench excavations along the route.

PSLB 5 CONSTRUCTION

PSLB 5. 1 Trench

PSLB 5. 1. 4 Compacting

The use of mechanical compaction equipment will not be permitted within 300mm above the crown of the pipe

PSLB 6 TOLERANCES

PSLB 6. 1 Moisture Content and Density

The degree of accuracy shall be II.

C5. OHS Specifications for Construction Projects

5.1. Specifications

1. PREAMBLE

In terms of Construction Regulation 4(1)(*a*) of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), the Department of Public Works, as the Client and/or its Agent on its behalf, shall be responsible to prepare Health & Safety Specifications for any intended construction project and provide any Principal Contractor who is making a bid or appointed to perform construction work for the Client and/or its Agent on its behalf with the same.

The Client's further duties are as described in The Act and the Regulations made there-under. The Principal Contractor shall be responsible for the Health & Safety Policy for the site in terms of Section 7 of the Act and in line with Construction Regulation 5 as well as the Health and Safety Plan for the project.

This 'Health and Safety Specifications' document is governed by the "Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), hereinafter referred to as 'The Act'. Notwithstanding this, cognizance should be taken of the fact that no single Act or its set of Regulations can be read in isolation. Furthermore, although the definition of Health and Safety Specifications stipulates 'a documented specification of all health and safety requirements pertaining to associated works on a construction site, so as to ensure the health and safety of persons', it is required that the entire scope of the Labour legislation, including the Basic Conditions of Employment Act be considered as part of the legal compliance system. With reference to this specification document this requirement is limited to all health, safety and environmental issues pertaining to the site of the project as referred to here-in. Despite the foregoing, it is reiterated that environmental management shall receive due attention.

Due to the wide scope and definition of construction work, every construction activity and site will be different, and circumstances and conditions may change even on a daily basis. Therefore, due caution is to be taken by the Principal Contractor when drafting the Health and Safety Plan based on these Health and Safety Specifications. Prior to drafting the Health and Safety Plan, and in consideration of the information contained here-in, the contractor shall set up a Risk Assessment Program to identify and determine the scope and details of any risk associated with any hazard at the construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard. *This Risk Assessment and the steps identified will be the basis or point of departure for the Health and Safety Plan.* The Health and Safety Plan shall include documented 'Methods of Statement' (see definitions under Construction Regulations) detailing the key activities to be performed in order to reduce as far as practicable, the hazards identified in the Risk Assessment.

2. SCOPE OF HEALTH AND SAFETY SPECIFICATION DOCUMENT

The Health and Safety Specifications pertaining to the project; "Makhushane Water Scheme Phase 5A" etc. etc. – *see paragraph 8 on page 13*), cover the subjects contained in the index and is intended to outline the normal as well as any special requirements of the Department pertaining to the health and safety matters (including the environment) applicable to the project in question. These

Specifications should be read in conjunction with the Act, the Construction Regulations and all other Regulations and Safety Standards which were or will be promulgated under the Act or incorporated into the Act and be in force or come into force during the effective duration of the project. The stipulations in this specification, as well as those contained in all other documentation pertaining to the project, including contract documentation and technical specifications shall not be interpreted, in any way whatsoever, to countermand or nullify any stipulation of the Act, Regulations and Safety Standards which are promulgated under, or incorporated into the Act.

3. PURPOSE

The Department is obligated to implement measures to ensure the health and safety of all people and properties affected under its custodianship or contractual commitments, and is further obligated to monitor that these measures are structured and applied according to the requirements of these Health and Safety Specifications.

The purpose of this specification document is to provide the relevant Principal Contractor (and his /her contractor) with any information other than the standard conditions pertaining to construction sites which might affect the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; and to protect persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work during the carrying out of construction work for the Department of Public Works. The Principal Contractor (and his /her contractor) is to be briefed on the significant health and safety aspects of the project and to be provided with information and requirements on inter alia:

a) safety considerations affecting the site of the project and its environment;
b) health and safety aspects of the associated structures and equipment;
c) submissions on health and safety matters required from the Principal Contractor (and his /her contractor); and
d) the Principal Contractor's (and his /her contractor) health & safety plan.

To serve to ensure that the Principal Contractor (and his /her contractor) is fully aware of what is expected from him/her with regard to the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the Regulations made there-under including the applicable safety standards, and in particular in terms of Section 8 of the Act.

To inform the Principal Contractor that the Occupational Health and Safety Act, 1993 (Act 85 of 1993) in its entirety shall apply to the contract to which this specification document applies. The Construction Regulations promulgated on 18 July 2003 and incorporated into the above Act by Government Notice R 1010, published in Government Gazette 25207 shall apply to any person involved in construction work pertaining to this project, as will the Act.

4. DEFINITIONS

"Purpose of the Act" –

To provide for the health and safety of persons at work and the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith.

"Agent" –

means any person who acts as a representative for a client;

"Client" –

means any person for whom construction work is performed;

''*Construction Work"* is defined as any work in connection with –

(a) the erection, maintenance, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure;
(b) the installation, erection, dismantling or maintenance of a fixed plant where such work includes the risk of a person falling;
(c) the construction, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system or any similar civil engineering structure; or
(d) the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work;

"Contractor" –

means an employer, as defined in Section 1 of the Act, who performs construction work and includes Principal Contractors;

"Health and Safety File" –

means a file, or other record in permanent form, containing the information required a contemplated in the regulations;

"Health and Safety Plan" –

means a documented plan which addresses hazards identified and includes safe work procedures to mitigate, reduce or control the hazards identified;

"Health and Safety Specification" –

means a documented specification of all health and safety requirements pertaining to the associated works on a construction site, so as to ensure the health and safety of persons;

"Method Statement" –

means a document detailing the key activities to be performed in order to reduce as reasonably as practicable the hazards identified in any risk assessment;

"Principal Contractor" –

means an employer, as defined in section 1 of the Act who performs construction work and is appointed by the client to be in overall control and management of a part of or the whole of a construction site;

"Risk Assessment" –

means a program to determine any risk associated with any hazard at a construction site, in order to identify the steps needed to be taken to remove, reduce or control such hazard.

5. OCCUPATIONAL HEALTH & SAFETY MANAGEMENT

5.1 Structure and Organisation of OH&S Responsibilities

5.1.1. *Overall Supervision and Responsibility for OH&S*

*The Client and/or its Agent on its behalf to ensure that the Principal Contractor, appointed in terms of Construction Regulation 4(1)(c), implements and maintains the agreed and approved H&S Plan. Failure on the part of the Client or Agent to comply with this requirement will not relieve the Principal Contractor from any one or more of his/her duties under the Act and Regulations.

*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. The pro forma Legal Compliance Audit may be used for this purpose by the Principal Contractor or his/her appointed contractor.

*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 (Health & Safety File).

*The Construction Supervisor and Assistant Construction Supervisor/s appointed in terms of Construction Regulation 8 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 (Health & Safety File).

*All Health and Safety Representatives (SHE-Reps) shall act and report as per Section 18 of the Act.

5.1.2. *Legal Appointments*

Several appointments or designations of responsible and /or competent people in specific areas of construction work are required by the Act and Regulations. The following competent appointments, where applicable, in terms of the Construction Regulations are required to ensure compliance to the Act, Regulations and Safety Standards.

Required appointments as per the Construction Regulations: -

Item	Regulation	Appointment	Responsible Person
1.	5(1)(s)	Principal contractor for each phase or project	Client
2.	7(1)(c)	Contractor	Principal Contractor
3.	8(1)	Construction Manager	Contractor
4.	8(7)	Construction supervisors	Construction Manager
5.	8(8)	Construction supervisor sub-ordinates	Contractor
6.	8(6)	Construction Safety Officer	Contractor
7.	9(1)	Person to carry out risk assessment	Contractor
8.	9(3)	Trainer/Instructor	Contractor
9.	10(1)(a)	Fall protection planner	Contractor
10.	12(3)(a)	Formwork & support work supervisor	Contractor
11.	12(3)(f)	Formwork & support work examiner	Contractor
12.	13(1)	Excavation supervisor	Contractor
13.	13(2)(b)(ii)(bb)	Professional engineer or technologist	Contractor
14.	13(2)(k)	Explosives expert	Contractor

15.	14(1)	Supervisor demolition work	Contractor
16.	14(2) + (3)	Demolition expert	Contractor
17.	14(11)	Explosives expert	Contractor
18.	16(1)	Scaffold supervisor	Contractor
19.	17(1)	Suspended platform supervisor	Contractor
20.	17(2)(c)	Compliance plan developer	Contractor
21.	17(8)(c)	Suspended platform expert	Contractor
22.	17(13)	Outrigger expert	Contractor
23.	19(8)(a)	Material hoist inspector	Contractor
24.	20(1)	Batch plant supervisor	Contractor
25.	20(2)	Batch plant operator	Contractor
26.	24(d) and (e)	Power tool expert	Contractor
27.	24(d) and (e)	Power tool controller	Contractor
28.	22(a)	Tower crane operator	Contractor
29.	23(1)(d)(i)	Construction vehicle and mobile plant operator	Contractor
30.	23(1)(k)	Construction vehicle and mobile plant inspector	Contractor
31.	24(d)	Temporary electrical installations inspector	Contractor
32.	24 (e)	Temporary electrical installations controller	Contractor
33.	28 (a)	Stacking and storage supervisor	Contractor
34.	29 (h)	Fire equipment inspector	Contractor

This list may be used as a reference or tool to determine which components of the Act and Regulations would be applicable to a particular site, as was intended under paragraph 3 & 4 of the Chapter “Preamble” (page 4) above. This list must not be assumed to be exclusive or comprehensive.

5.2 *Communication & Liaison*

5.2.1 OH&S Liaison between the Employer, the Principal Contractor, the other Contractors, the Designer and other concerned parties shall be through the Project Committee as per the procedures determined by the Project Committee.

5.2.2 In addition to the above, communication may be directly to the Client or his appointed Agent, verbally or in writing, as and when the need arises.

5.2.3 Consultation with the workforce on OH&S matters will be through their Supervisors and H&S Representatives (‘SHE – Reps’)

17. The Principal Contractor will be responsible for the dissemination of all relevant OH&S information to the other Contractors e.g. design changes agreed with the Client and/or its Agent on its behalf and the Designer, instructions by the Client and/or his/her agent, exchange of information between Contractors, the reporting of hazardous/dangerous conditions/situations etc.

6. RESPONSIBILITIES

6.1 Client

6.1.1 The Client or his appointed Agent on his behalf will appoint each Principal Contractor for this project or phase/section of the project in writing for assuming the role of Principal Contractor as intended by the Construction Regulations and determined by the Bills of Quantities.

6.1.2 The Client or his appointed Agent on his behalf shall discuss and negotiate with the Principal Contractor the contents of the health and safety plan of the both Principal Contractor and Contractor for approval.

6.1.3 The Client or his appointed Agent on his behalf, will take reasonable steps to ensure that the health and safety plan of both the Principal Contractor and Contractor is implemented and

maintained. The steps taken will include periodic audits at intervals of at least once every month.

6.1.4 The Client or his appointed Agent on his behalf, will prevent the Principal Contractor and/or the Contractor from commencing or continuing with construction work should the Principal Contractor and/or the Contractor at any stage in the execution of the works be found to:

- have failed to have complied with any of the administrative measures required by the Construction Regulations in preparation for the construction project or any physical preparations necessary in terms of the Act;
- have failed to implement or maintain their health and safety plan;
- have executed construction work which is not in accordance with their health and safety plan; or
- act in any way which may pose a threat to the health and safety of any person(s) present on the site of the works or in its vicinity, irrespective of him/them being employed or legitimately on the site of the works or in its vicinity.

6.2 Principal Contractor

6.2.1 The Principal Contractor shall accept the appointment under the terms and Conditions of Contract. The Principal Contractor shall sign and agree to those terms and conditions and shall, before commencing work, notify the Department of Labour of the intended construction work in terms of Regulation 3 of the Construction Regulations. Annexure B of this Specification contains a “Notification of Construction Work” form. The Principal Contractor shall submit the notification in writing prior to commencement of work and inform the Client or his Agent accordingly.

6.2.2 The Principal Contractor shall ensure that he is fully conversant with the requirements of this Specification and all relevant health and safety legislation. This Specification is not intended to supersede the Act nor the Construction Regulations or any part of either. Those sections of the Act and the Construction Regulations which apply to the scope of work to be performed by the Principal Contractor in terms of this contract (entirely or in part) will continue to be legally required of the Principal Contractor to comply with. The Principal Contractor will in no manner or means be absolved from the responsibility to comply with all applicable sections of the Act, the Construction Regulations or any Regulations proclaimed under the Act or which may perceivable be applicable to this contract.

6.2.3 The Principal Contractor shall provide and demonstrate to the Client a suitable and sufficiently documented health and safety plan based on this Specification, the Act and the Construction Regulations, which shall be applied from the date of commencement of and for the duration of execution of the works. This plan shall, as appendices, include the health and safety plans of all Sub-contractors for which he has to take responsibility in terms of this contract.

6.2.4 The Principal Contractor shall provide proof of his registration and good standing with the Compensation Fund or with a licensed compensation insurer prior to commencement with the works.

6.2.5 The Potential Principal Contractor shall, in submitting his tender, demonstrate that he has made provision for the cost of compliance with the specified health and safety requirements, the Act and Construction Regulations. (Note: This shall have to be contained in the conditions of tender upon which a tenderer’s offer is based.)

6.2.6 The Principal Contractor shall consistently demonstrate his competence and the adequacy of his resources to perform the duties imposed on the Principal Contractor in terms of this Specification, the Act and the Construction Regulations.

6.2.7 The Principal Contractor shall ensure that a copy of his health and safety plan is available on site and is presented upon request to the Client, an Inspector, Employee or Sub-contractor.

6.2.8 The Principal Contractor shall ensure that a health and safety file, which shall include all documentation required in terms of the provisions of this Specification, the Act and the Construction Regulations, is opened and kept on site and made available to the Client or

Inspector upon request. Upon completion of the works, the Principal Contractor shall hand over a consolidated health and safety file to the Client.

6.2.9 The Principal Contractor shall, throughout execution of the contract, ensure that all conditions imposed on his Sub-contractors in terms of the Act and the Construction Regulations are complied with as if they were the Principal Contractor.

6.2.10 The Principal Contractor shall from time to time evaluate the relevance of the Health and Safety Plan and revise the same as required, following which revised plan shall be submitted to the Client and/or his/her Agent for approval.

7. SCOPE OF WORK

These specifications are applicable to the specific scope of work pertaining to the project as detailed in the tender documents. *Refer to Project Specification.*

8. HEALTH AND SAFETY FILE

The Principal Contractor must, in terms of Construction Regulation 5(7), keep a Health & Safety File on site at all times that must include all documentation required in terms of the Act and Regulations and must also include a list of all Contractors on site that are accountable to the Principal Contractor and the agreements between the parties and details of work being done.

The Health and Safety File will remain the property of the Client and/or its Agent on its behalf throughout the period of the project and shall be consolidated and handed over to the Client and/or its Agent on its behalf at the time of completion of the project.

The safety file shall contain the following documentation:

- safety records
- notification documents
- appointment letters
- records of incidents
- records of safety meetings
- records of PPE provision
- and any other documented related to safety issues on site.

9. MONITORING AND REVIEWING OH&S PERFORMANCE

The Principal Contractor is required to maintain an acceptable incident rate and report on this to the Client and/or its Agent on its behalf on a monthly basis. The frequency rates must reflect permanent disability, lost workdays, restricted workdays, medical treatment and first aid treatment.

10. HAZARDS AND DEVELOPMENT OF RISK ASSESSMENTS

The Principal Contractor is required to develop Risk Assessments, Standard Working Procedures (SWP) and Method Statements for each activity executed in the contract or project. This identification of hazards is over and above the hazards identification programme and those hazards identified during the drafting of the Health and Safety Plan. Hazard identification should be conducted continuously over and above the baseline risk assessment.

11. ARRANGEMENTS FOR MONITORING AND REVIEW

11.1 Monthly Audit by Client

The Client and/or its Agent on its behalf will be conducting Periodic Audits at times agreed with the Principal Contractor Audit to comply with Construction Regulation 4(1)(*d*) to ensure that the principal Contractor has implemented, is adhering to and is maintaining the agreed and approved OH&S Plan.

11.2 Other audits and inspections by client and/or its agent on its behalf.

The Client and/or its Agent on its behalf reserves the right to conduct any other ad hoc audits and inspections as it and/or its Agent on its behalf deem necessary.

A representative of the Principal Contractor and the relevant Health and Safety Representative(s) (SHE-Reps) must accompany the Client and/or its Agent on its behalf on all Audits and Inspections and may conduct their own audit/inspection at the same time. Each party will, however, take responsibility for the results of his/her own audit/inspection results. The Client and/or its Agent on its behalf may require to be handed a copy of the minutes of the previous Health and Safety Committee meeting reflecting possible recommendations made by that committee to the Employer for reference purposes and any other related issues.

12.3 Reports

11.3.1 The Principal Contractor shall report all incidents where an employee is injured on duty to the extent that he/she dies, becomes unconscious, loses a limb or part of a limb, is injured or becomes ill to such a degree that he/she is likely either to die or to suffer a permanent physical defect or likely to be unable for a period of at least 14 days either to work or continue with the activity for which he/she was usually employed or where a major incident occurred, the health or safety of any person was endangered, where a dangerous substance was spilled, the uncontrolled release of any substance under pressure took place, machinery or any part of machinery fractured or failed resulting in flying, falling or uncontrolled moving objects, machinery ran out of control, to the Provincial Director of the Department of Labour within seven days and at the same time to the Client and/or its Agent on its behalf.

11.3.2 The Principal Contractor is required to provide the Client and/or its Agent on its behalf with copies of all statutory reports required in terms of the Act and the Regulations.

11.3.3 The Principal Contractor is required to provide the Client and/or its Agent on its behalf with a monthly “SHE Risk Management Report”.

11.3.4 The Principal Contractor is required to provide a.s.a.p. the Client and/or its Agent on its behalf with copies of all internal and external accident/incident investigation reports. As soon as the occurrence of any accident/incident of whatever nature comes to the notice of the Principal Contractor, it shall be reported immediately to any of the following:

*the Occupational Health and Safety Section of the Pretoria Regional Office of the Dept. of Public Works.

11.4 Review

The Principal Contractor is to review the Hazard Identification, Risk Assessments and Standard Work Processes at each Production Planning and Progress Report meeting as the construction work develops and progresses and each time changes are made to the designs, plans and construction methods and processes. The Principal Contractor must provide the Client and/or its Agent on its behalf, other Contractors and all other concerned parties with copies of any changes, alterations or amendments.

11.5 Site Rules and other Restrictions

11.5.1 *Site OH&S Rules*

The Principal Contractor must develop a set of site-specific OH&S rules that will be applied to regulate the Health and Safety Plan and associated aspects of the construction. When required for a

site by law, visitors and non-employees upon entering the site shall be issued with the proper Personal Protective Equipment (PPE) as and when necessary.

11.5.2 *Security Arrangements*

The Principal Contractor must establish site access rules and implement and maintain these throughout the construction period. Access control must include the rule that non-employees shall at all times be provided with fulltime supervision while on site. The Principal Contractor must develop a set of Security rules and procedures and maintain these throughout the construction period.

If not already tasked to the H&S Officer appointed in terms of Construction Regulation 6(6), the Principal Contractor must appoint a competent Emergency Controller who must develop contingency plans for any emergency that may arise on site as indicated by the risk assessments. These must include a monthly practice/testing programme for the plans e.g. January: trench collapse, February: flooding etc. and practiced/tested with all persons on site at the time, participating.

11.6 Training

The Principal Contractor shall ensure that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.
The Principal Contractor shall ensure that all labourers are informed regarding any hazard as stipulated in the risk assessment before any work commences, and thereafter at such times as may be determined in the risk assessment.
The Principal Contractor shall ensure that as far as is reasonably practicable, ergonomic are analysed, evaluated and addressed in the risk assessment.
No Principal Contractor shall allow or permit any employee to enter any site, unless such person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.
The Principal Contractor shall ensure that all visitors to a construction site undergoes health and safety instruction pertaining to the hazards prevalent on the site and shall be provided with the necessary personal and protective equipment: Provided that where visits are made only to the site office which is not in direct contact with the construction work activities, those health and safety instructions and the provision of personal protective equipment may not apply.
The contents and syllabi of all training required by the Act and Regulations including any other related or relevant training as required must be included in the Principal Contractor's Health and Safety Plan and Health and Safety File.

11.6.1 *General Induction Training*

The Principal Contractor must ensure that the employees on site are conversant with the general health and safety requirements on site. All employees of the Principal and other Contractors must be in possession of proof of General Induction training

11.6.2 *Site Specific Induction Training*

All employees of the Principal and other Contractors must be in possession of Site Specific Occupational Health and Safety Induction or other qualifying training.

11.6.3 *Other Training*

All operators, drivers and users of construction vehicles, mobile plant and other equipment must be in possession of valid proof of training. All employees in jobs requiring training in terms of the Act and Regulations must be in possession of valid proof of training as follows:

- General Induction (Section 8 of the Act)
- Site/Job Specific Induction (also visitors) (Sections 8 & 9 of the Act)
- Site/Project Manager
- Construction Supervisor
- OH&S Representatives (Section 18 (3) of the Act)
- Training of the Appointees indicated in 12.6.1 & 12.6.2 above
- Operation of Cranes (Driven Machinery Regulations 18 (11)
- Operators & Drivers of Construction Vehicles & Mobile Plant (Construction Regulation 21)
- Basic Fire Prevention & Protection (Environmental Regulations 9 and Construction Regulation 27)
- As a minimum basic First Aid to be upgraded when necessary (General Safety Regulations 3)
- Storekeeping Methods & Safe Stacking (Construction Regulation 26)
- Emergency, Security and Fire Co-ordinator

11.7 Accident and Incident Investigation

The Principal Contractor is responsible to oversee the investigation of all accidents/incidents where employees and non-employees were injured to the extent that he/she/they had to receive first aid or be referred for medical treatment by a doctor, hospital or clinic. (General Administrative Regulation 9).
The Principal Contractor is responsible for the investigation of all non-injury incidents as described in Section 24 (1) (b) & (c) of the Act and keeping a record of the results of such investigations including the steps taken to prevent similar incidents in future. Notwithstanding the requirements of Section 24 of the Act, ALL incidents shall be investigated and reported on in writing, irrespective of whether such incident gave rise to injury or damage.

11.8 H&S Representatives and H&S Committees

11.8.1 *Designation of H&S Representatives*

Where the Principal Contractor employs more than 20 persons (including the employees of other Contractors (sub-contractors) he has to appoint one H&S Representatives for every 50 employees or part thereof. (Section 17 of the Act and General Administrative Regulation 6. & 7.). H&S Representatives have to be designated in writing and the designation shall be in accordance with the Collective Agreement as concluded between the parties as is required in terms of General Administration Regulation 6.

11.8.2 *Duties and Functions of the H&S Representatives*

The Principal Contractor must ensure that the designated H&S Representatives conduct at least a weekly inspection of their respective areas of responsibility using a checklist and report thereon to the Principal Contractor, after which these reports shall be consolidated for submission to the Health and Safety Committee. H&S Representatives must be included in and be part of accident/incident investigations. H&S Representatives shall be members of at least one H&S Committee and must attend all meetings of that H&S committee.

12.8.3 *Establishment of H&S Committee(s)*

The Principal Contractor must establish H&S Committees consisting of designated H&S Representatives together with a number of Employers Representatives appointed as per Section

19(3) that are not allowed to exceed the number of H&S Representatives on the committee. The persons nominated by the employer on a H&S Committee must be designated in writing for such period as may be determined by him. The H&S Committee shall co-opt advisory (temporary) members and determine the procedures of the meetings including the chairmanship.

12. HOUSEKEEPING

Good housekeeping will be maintained at all times as per Construction Regulation No. 25. Poor housekeeping contributes to three major problems, namely, costly or increased accidents, fire or fire hazards and reduction in production. Good housekeeping will enhance production time.

Particular emphasis is to be placed on the following crucial elements of a construction site:

- Phase priorities and production/plant layout
- Enclosures
- Pits, openings and shoring
- Storage facilities
- Effective, sufficient and maintained lighting and illumination
- Principal sources of injuries, e.g., stairways, runways, ramps, loose building material
- Oil, grease, water, waste, rubble, glass, storm water
- Colour coding
- Demarcations
- Pollution
- Waste disposal
- Ablution and hygiene facilities
- First aid disposals
- Hazardous chemical substances

This is list must not be taken to be an exclusive or exhaustive

In promotion of environmental control all waste, rubble, scrap etc., will be disposed of at a registered dumping site and records will be maintained. Where it is found to be impractical to use a registered dump site or it is not available, the Principal Contractor will ensure that the matter is brought to record with the client or his representative, after which suitable, acceptable alternatives will be sought and applied. Dross capable of fermentation, putrefaction or constituting a nuisance shall be treated or disposed of by methods approved by an inspector.

13. OPERATIONAL CONTROL

The Principal Contractor shall take reasonable steps to ensure that necessary control measures are taken to promote a safe working environment during all operational works. Routine safety inspections shall be carried out to ensure plant, machinery and tools are safe enough for employees to work with. Operational control measures shall be taken for the following activities and plant or machinery where applicable:

- Fall protection;
- Excavation work;
- Scaffolding;
- Mobile plants;
- Electrical installation and machinery; and
- Other associated activities

15. OFFENCES AND PENALTIES

Any contractor who does not comply with the requirements of the Act, will be penalized or punished as per Section 38 of the Act. The Principal Contractor must also note that the Client may stop the execution of

construction work if it is not in accordance with the health and safety plan or if it poses a threat on the health and safety of employees and the public.