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1.1. GENERAL SPECIFICATION

The General technical requirements for the Fire Protection Installation will be in accordance with the ASIB 12th edition rules and regulations.

The above documents are not incorporated but nevertheless form an integral part of this specification. The contract works must be carried out in accordance with the laid down requirements.

1.2. PROJECT SPECIFICATION

1.2.1. GENERAL INFORMATION

The work covered by this specification and the associated drawings must be carried out strictly in accordance with the requirements of the General Fire Protection Specification.

Should any requirements in the Project Specification differ from the General Fire Protection Specification, the requirements of the Project Specification will be given priority. Should there be any contradictions, it shall be brought to the attention of the Engineer prior to opening of tenders.

1.2.2. SITE

The site concerning this specification is situated at the premises of The East London Industrial Development Zone (EL IDZ), KuGompo City (East London), Eastern Cape.

1.2.3. DESCRIPTION OF WORKS

The description hereunder is a general guide only (not limited to) and tenderers are referred to the engineer's drawings for tender purposes.

The Contractor shall design (detail), supply, deliver, install, test, commission of remedial work to the existing sprinkler systems as described in the bills of quantities fire protection systems as specified in this document, and which briefly

1.2.4. APPROVALS

The contractor shall ensure that the design be verified by hydraulically calculating the system demand. The design validation, hydraulic information pertaining to the sprinkler system, including associated drawings, shall, prior to manufacturing of pipework be submitted to ASIB for approval. A copy of the approvals shall be returned to the Engineer.

1.2.5. DRAWINGS

A complete list of drawings accompanying this specification is included herein, see Part C4.1. The drawings form an integral part of and must be read together with this specification.

1.2.6. MAKING GOOD

Making good to wall finishes damaged during the execution of this contract will be carried out by others, provided that the damage caused is directly associated with the forming of holes.

Making good unnecessary damage will be the responsibility of the fire protection contractor. Any such damage will be adjudicated by the Engineer and the **Engineer's decision as to whether such damage was unavoidable or not shall be final.**

1.2.7. WORK PROGRAM

The fire protection subcontractor must at all times liaise with the Engineer and the Main Contractor to ensure the efficient running of the contract.

The subcontractor shall take into account that there will be other subcontractors on site and he must be prepared to work together and co-ordinate any activities with these subcontractors where necessary.

Items requiring special attention

The attention of tenderer's is directed to the following items requiring special attention:

2.1. CO-ORDINATION OF WORK

a) The nature of the total building program is such that accurate co-ordination and timing of all building and contractor operations is mandatory.

b) As such the successful tenderer (subcontractor) shall be required to work in close co-operation with the Main Contractor and other subcontractors (e.g. ceiling, ventilation, plumbing, building) to ensure that the work is properly sequenced, and to avoid any abortive work.

2.2. SITE MEETINGS

Regular site meetings will be held during the progress of the work. Attendance at such site meetings shall be required from time to time for all subcontractors. In the event that a representative is designated for any or all site meetings, such representative shall be empowered to make decisions on behalf of the firm, and to commit the firm to any course of action that may be decided at the meetings.

1.2.8. RUBBLE

The fire protection subcontractor shall clear away and remove all rubble and excess materials associated with his contract from site, on a regular basis due to the fact that it is an existing estate occupied by other residents. The site shall be entirely clean to the satisfaction of the Engineer, after completion of the contract. Care must be taken that cleaning materials are not used that can cause any damage to surfaces of walls, floors or ceilings, etc.

1.2.9. DELIVERY DATES

The fire protection contractor must ensure that all necessary materials are ordered and delivered in time. The delivery dates of such materials must be determined in good time. Claims for extending the contract period as a result of delays in the delivery of materials will not be considered.

1.2.10. SECURITY AND CLOTHING

The fire protection contractor's staff shall be clearly identified and shall wear acceptable clothing. Standard coloured overalls and identification tags shall be worn at all times. The fire protection contractor shall make due allowance for this in his tender price.

1.2.11. DOCUMENTATION

2.1. GENERAL REQUIREMENTS

a) The Contractor shall prepare workshop drawings indicating detail of all components and the composition of the installation. The drawings must be prepared in such a way that sufficient information and detail is shown in order that all equipment and components of the installation can be manufactured.

b) Workshop drawings of the equipment shall be submitted to the Engineer for approval before manufacturing and/or installation of components commences.

c) In the event that there is a deviation from the equipment specified, or there is a deviation of the equipment layout from the general layout as indicated on the drawings, such deviations shall be approved by the Engineer before the equipment is manufactured.

2.2. MODIFICATIONS TO DRAWINGS

a) After the Engineer has, where necessary, revised or modified drawings which had been submitted for approval, the Contractor shall supply to the Engineer one (1) copy of all revised and modified drawings as explained above.

b) In the event that drawings are revised or modified during the construction phase, a copy of a drawing indicating the modifications shall again be supplied to the Engineer.

c) Irrespective of the abovementioned copies, the Contractor or his representative shall keep one (1) copy of each drawing on site. Such drawings shall be made available to the Engineer on request on site.

d) All final drawings shall be certified as correct by the Contractor after the installation has been completed.

1.2.12. FINAL DRAWINGS, OPERATOR'S AND MAINTENANCE MANUALS

2.1. GENERAL

a) All manuals shall be bound properly and thoroughly in a durable hard plastic cover. The contents of the manual shall be clearly legible, well-structured and supplied with an index.

b) No Completion Certificate shall be issued before all drawings, two copies of the operator's manuals and two copies of the maintenance manuals have been supplied to and approved by the Engineer.

c) Concept issues of final drawings and manuals shall be ready and available with the first take over and commissioning and no take over shall be considered without such drawings and manuals.

1.2.13. STANDARDS AND REGULATIONS

The standards shall apply to fire protection installation

ASIB 12th Edition Rules and Regulations	
SANS 10400-W	The application of the National Building Regulations Part W: Fire Installations
SANS-15614-1:2007	Specification and Qualification of Welding Procedures for Metallic Materials – Welding Procedure test Part 1: Arc and Gas welding of steels and arc welding of nickel and nickel alloys
SANS10252-1	Water supply and drainage for building Part 1: Water supply installations for buildings

1.2.14. QUALITY OF MATERIALS

Only materials of first-class quality shall be used and all materials shall be subject to the approval of the Representative/Agent or the Client.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards (SANS/SABS), specifications, or to NFPA /UL/FM Standards, where no SABS/SANS Specifications exist.

Materials wherever possible, must be of South African manufacture.

Wherever a trade name for any product has been described in the **bills of quantities / lump sum document**, the tenderer's attention is drawn to the fact that any other product of equal quality may be used subject to the written approval of the **principal agent** being obtained prior to the closing date for submission of tenders

If prior written approval for an alternative product is not obtained, the product described shall be deemed to have been tendered for.

1.2.15. SPRINKLERS

Sprinklers shall be of a make and type approved by UL and Factory Mutual and accepted by ASIB.

All sprinkler heads shall be of the same make, model type throughout the installation unless otherwise specified.

Sprinkler finishes shall be as applied by the sprinkler manufacturer in accordance with approval criteria.

No modifications of any sort, including painting, of sprinkler heads shall be accepted.

1.2.16. PIPEWORK

All pipework shall be hot dipped galvanised steel.

The following standards shall apply to pipes and fittings.

Steel Pipes	SANS 62-1 SANS 719
Grooved pipe ends and fittings	SANS 815-2
Threaded pipe fittings	SANS 14 / BSP

All sprinkler pipework concealed or exposed either above ground or in-ground shall be suitably cleaned, primed and painted with a finished coat in accordance with SANS 10140- 3.

All pipework shall, prior to delivery to site, be primed and painted with finished coat.

Pipes shall be protected, for example, by caps against the entry of foreign matter, such as rubble and cordage, and shall be examined for such matter before erection.

All pipework where buried, encased in concrete or penetrating concrete or brickwork shall be suitable wrapped with denso tape in the affected areas.

1.2.17. PIPE JOINTS

No pipework shall exceed 6m in length without either threaded, mechanical or flanged joint.

2.1. GENERAL APPLICATION OF JOINTS

Item	Joining Method
Pipework of nominal diameter up to and including 40mm	Threaded
Pipework of nominal diameter exceeding 50mm up to and including 150mm	Mechanical coupling
Pipework of nominal diameter exceeding 200mm	Flanged joints

2.2. THREADED COUPLINGS & JOINTS

Threaded fittings shall be malleable cast iron with hot dipped galvanised finish.

All threaded fittings shall be in accordance with SANS14.

2.3. MECHANICAL COUPLINGS

Mechanical couplings shall comprise of two ductile iron spheroidal sections complete with sealing gasket designed to engage in rolled groove pipe ends to form a water tight seal.

Mechanical shall be in accordance with SANS 815.

2.4. FLANGES

All flanges shall be fabricated of ductile iron.

All Flanges shall be in accordance with SANS 1123.

Flanges shall be welded to pipework prior to galvanising.

2.5. WELDING

All welding shall be performed by a qualified coded welder. A copy of the welders' qualifications shall be made available on request.

All welding fabrications shall be manufactured off-site.

Welds shall be tested in accordance with SANS-15614-1:2007.

All weld joints shall undergo visual, dye penetrant testing

All fabrications shall be subjected to hydrostatically pressure testing of 2 times the working pressure or 2000 kPa, whichever is greater.

1.2.18. PAINTING

All piping, including pipe fittings, couplings and flanges shall be primed and painted prior to installation.

Metal surfaces shall be prepared using a suitable degreaser, followed by one coat of etching primer and two coats of enamel paint (Signal Red).

The following paints, or similar approved shall be used for coating of pipework.

Degreaser	
Galvanised	Plascon Metalcare Galvanised Iron Cleaner
Plain	Plascon Metalcare Waterbased Degreaser
Primer	Plascon Metalcare Etch Primer

Final coat	Plascon Super Universal Enamel (Signal Red: G7)

The manufacturer's guideline shall be adhered to in the surface preparation and application of coatings.

1.2.19. PIPE SUPPORTS

Pipe supports shall be of type accepted by ASIB for use on sprinkler systems.

The maximum spacing of hangers shall not exceed the allowable spacing as per ASIB rules and regulations

1.2.20. INSTALLATION CONTROL VALVES

The installation must be provided with a set of installation control valves which shall conform to the original approval standard.

The installation control valve arrangement shall comprise of:

a) A main isolating stop valve.
b) A secondary isolating valve downstream of the alarm valve
c) An alarm valve.
d) A water motor alarm and gong.
e) A "B" pressure gauge located upstream of the alarm valve and "C" pressure gauge located downstream of the alarm valve.
f) A 15 mm test pipe.
g) A 50 mm drain pipe.
h) A 50 mm flushing connection.
i) A centrifugal false alarm prevention pump or approved retarding chamber.
j) Fire brigade booster connections.
k) Flow switch
l) Flow switch test line
m) By-pass arrangement comprising non-return valve with one isolating valve upstream and one downstream thereof.

1.2.21. PRESSURE GAUGES

All pressure gauges fitted to a sprinkler system shall:

a) Read in kPa.
b) Have a maximum scale value of 150% of the maximum working pressure of the system.
c) Have divisions not exceeding 20 kPa for pressures up to 1000 kPa.
d) Have divisions not exceeding 50 kPa for pressures above 1000 kPa and up to 1600 kPa.
e) Have divisions not exceeding 100 kPa for pressures above 1600 kPa.
f) Have a dial face of not less than 100 mm in diameter.
g) Be of the glycerine filled type.
h) Be fitted with an isolating gauge cock with bleed to be able to confirm gauge operation back to zero and enable each pressure gauge to be readily removed without interruption of the installation water supplies.

1.2.22. FALSE ALARM PREVENTION PUMP

Close coupled centrifugal pump driven by single phase electrical motor capable of boosting the system pressure to a maximum of 1200 kPa.

1.2.23. PROVING TEST ARRANGEMENT

The assembly shall be of an approved direct reading flow meter type and accurate to within 5%.

The measuring device must be designed to be fitted directly on the downstream side of the installation control valves, to straight pipes or into elbow fittings or globe valves or their hydraulic equivalent.

The drain pipe work downstream of the proving pipe must be galvanised and be well secured to prevent movement.

The pipe work must terminate with a horizontal pipe routed to discharge water without flooding into a drain.

1.2.24. WATER METER

Water Meters shall be of the inferential type with interchangeable mechanism fitted with a magnetic coupling drive and straight-reading, registering in m^3.

The counter shall be sealed to IP68 meter must have built in capability of generating inductive pulse signals.

The meter must be supplied with a pressure tapping as standard. Body flanges to be dual drilled to BS10 table D and BS 4504 Table 16 specifications from sizes.

1.2.25. STRAINERS

Strainers shall be of the in-line type with heavy duty stainless steel sieve which is securely supported at the top and bottom of the strainer body.

The sieve element can be removed from the top for cleaning purposes without disturbing the flange joints.

The flanges to be dual drilled to allow connection to either BS11 Table D or BS4504 Table 16 flanges.

1.2.26. VALVES

All valves shall be of type suitable for use in automatic sprinkler systems and have a nominal pressure rating of no less than 16 Bar / 1600kPa.

Butterfly shall be bronze, stainless steel or cast-iron construction with stainless steel disc and the body shall be of fusion bonded epoxy finish.

Ball valves shall be of stainless-steel construction.

1.2.27. HOSE REELS

Any hose reel installed in such building shall comply with the requirements in SANS 543, shall be installed in accordance with SANS 10105-1 and SANS 10400-W.

All hose reels installed shall bear, in a prominent position on the reel disc facing the user, a certification mark from an accredited certification body.

All hose reel drums, including inlet pipe and mounting brackets, shall be of stainless-steel construction and the hose of PVC in accordance with SANS 1086.

1.2.28. FIRE EXTINGUISHERS

All portable fire extinguishers installed with the requirements in SANS 1910, and shall be installed, maintained and serviced by competent persons in accordance with SANS 1475-1 and SANS 10105-1.

Such portable fire extinguishers shall bear a certification mark from an accredited certification body.

1.2.29. EVACUATION SIGNAGE

All evacuation and safety signage shall be of the photoluminescent type and comply with the requirements of SANS 1186-5.

Signage shall be mounted on a 1,2mm thick aluminium backing which shall be wall mounted using suitable anchor bolts.

1.2.30. TESTING

The sprinkler system shall by hydrostatically tested to 2000 kPa for a period of 1 hour

Engineer shall be notified timeously before testing is performed in order to witness the test.

1.2.31. MAINTENANCE OF INSTALLATIONS

With effect from the date of the Practical Completion Certificate the Contractor shall at his own expense undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

If during the said period the installations is not in working order for any reason for which the Contractor is responsible, or if the installations develops defects, he shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however be so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory during the said period the Contractor shall, if called upon by the Representative/Agent or the Client, at his own expense replace the whole of the installations or such parts thereof as the Representative/Agent or the Client may deem necessary with apparatus specified by the Representative/Agent or the Client.