

PART FOUR – EMPLOYER’S REQUIREMENTS

ALTERNATIVE BUILDING TECHNOLOGY (ABT) PROJECT IN ALLIANCE AND EAST RAND STATIONS
TURNKEY CONTRACT

EMPLOYER’S REQUIREMENTS

The Employer’s Requirements provided in this section of the document provides further information which the Contractor needs to consider in preparation of the tender. For the avoidance of doubt the conditions set out in this section will be considered part of the Particular Contract Conditions, should there be any conflict between the Conditions of Contract and the requirements below the Conditions of Contract shall take precedence.

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1 GENERAL DESCRIPTION OF THE WORKS

The sites are located at **Alliance and East Rand Station** in the **Daveyton - Germiston (link to Johannesburg) Corridor** in the South Gauteng Region.

The objective of the project is to provide Metrorail complete operational station facilities to enable the running of trains and collection of revenue through the design and construction of the Alternative Building Technology (ABT) solution using shipping containers.

The station facilities should make provision for ticket sales offices, security guards facilities, kitchenette, WC, Service Room, viewing deck for guards, access control at commuter entry points, car parking for staff, drop-off points for commuters, Universal Accessibility for people living with disabilities, ICT and Security features, signages, commuter facilities (includes ablutions and waiting shelters) including electrical infrastructure.

The project will be implemented in accordance with the PRASA Blueprint Specifications 2016, Norms Guidelines and Standards (NGS) for Station Facilities 2014 and PRASA Accommodation Policy 2010.

The services required for a Turnkey contractor are as follows:

1. Initiation
2. Planning
3. Execution
4. Close-out

The contractor on this project shall be a contractor with a CIDB 5GB or 5CE or higher on a Turnkey Contract. PRASA requires the delivery of this project in an expedited without compromising any of the objectives.

The below pictorials are amongst other areas of the scope of works:

Site 1: Alliance Station



Non-Operational Signal Cabin- which will be rehabilitated through Signalling Project. These will not be part of the ABT Programme.

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Burnt container Ticket Office – Container to be reused where possible as part of the ABT T/O facilities. This container will be inspected for durability and be repurposed if possible.



*Burn-out Ticket Sales Office Container Steel Foundation Safe in Ticket Office
The above will be inspected for durability and possibility of reuse otherwise be disposed.*

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Dug up Platform Surfaces to be resurfaced – Scope of work shall provide details



Dug Up Platform Surfaces to be resurfaced and the half brick wall to be extended too the height specified in the scope of work in-line with PRASA security requirements.

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Site 2: East Rand Station



Station Entrance old take away shop – To be demolished and space to be used as the new Ticket Sales Office



Vandalised platform ticket verification points – To be rehabilitated and ABT points to be implemented



Vandalised Ticket Office in the bushes – To be demolished and area cleared out.

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The construction of the project shall in accordance with the drawings from the design team be in line with the below outlined requirements.

1.1.1 The provision of Design and Build Contractor

- I. The provision of design and build contractor to develop the designs of the ABT projects from concept drawings to produce construction drawings and to construct the project in accordance with the designs.

The design team shall comprise of the following disciplines and appropriately registered with the relevant professional body:

	Profession	Professional body
1.	Architect	SACAP
2.	Quantity Surveyor	SACQSP
3.	Civil and Structural Engineer	ECSA
4.	Electrical and Mechanical Engineer	ECSA
5.	OHS Agent	SACPCMP

- II. The Lead Consultant should be experienced in the implementation of Design and Build (Turnkey) construction. This resource should be clearly identified and stated in the proposal.
- III. The Turnkey contractor shall make allowance and appoint a Community Liaison Consultant who will initiate, plan, execute and monitor the stakeholder management and consultation with the local communities in relation to the project.
- IV. A Community Liaison Officer shall then be appointed as part of the contract during the execution of the project to facilitate the implementation of the local community stakeholder management plan mentioned above.
- V. The professional team should have a minimum Professional Indemnity insurance of R2 800 000
- VI. The contractor shall be registered with the CIDB as CIDB 5GB or 5CE or higher.
- VII. The designs shall be in terms of the relevant professional council and standard industry practice to ensure the highest level of quality standards are met.
- VIII. The designs must be accompanied by a Hazard and Operability (HAZOP) study to assist PRASA on change management and the management or control of accompanied risks linked to the ABT in the station environment.
- IX. A Hazard and Operability Study will ensure a structured analysis of process design to identify process safety incidents that ABT facility is vulnerable to or determine possible

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failures that could result from operation of the ABT outside of design conditions. This report should be accompanied by a list of necessary actions and recommendation to improve safety and mitigate the consequences of hazards.

- X. Provision to be made for a Land Surveyor to provide surveyor’s drawings of the site including boundaries, elevations and contours for the sites. This shall be a once-off service to allow for the positioning of the buildings and services on the site.
 - XI. The design and build contractor to apply and obtain all necessary permits, approval and authorization for the project. This shall include the Site Development Plan and Building Plans approval by the relevant Local Authority in terms of the National Building Regulations.
 - XII. Where feasible the designs should endeavor to achieve the requirements for local production, where only locally manufactured goods that meet stipulated minimum threshold for local production and content may be used as per requirements of the Department of Trade and Industry (DTI).
 - XIII. The design and build contractor shall obtain approvals from the Safety Railway Regulator (RSR) for the Concept, Design Development and Construction stages of the project (per station). Refer to Annexure H for the documentation required for approval.
 - XIV. The design and build contractor is required to use local suppliers for all local content designated materials and services. The designation and threshold from DTI is hereto attached as **Annexure F**.
 - XV. The design and build contractor shall complete the local content declaration documentation when the designs are completed.
- 1.1.2 The design of the various ABT stations shall be in accordance with the set requirements of PRASA. These designs shall use the concept drawings as provided by PRASA as the basis for the development of the plans. The designs shall comply with the PRASA - Norms, Guidelines and Standards (NGS) for Station Facilities (2014) and the PRASA – Blueprint Specifications 2016 which are attached hereto as Annexure E1 and E2. The construction which includes the alterations and refurbishment of the shipping containers and the renovations of existing facilities will be based on the abovementioned designs. The modular designs shall ensure that the station is self-contained complete station that provides for the following needs:
- I. Ticket Sales/ administration office
 - II. Ablutions for staff
 - III. ICT and Security
 - IV. Guard House
 - V. Ablutions for Commuter
 - VI. Platform Ticket Verification points

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1.1.3 The modular designs should allow for:

- I. Standardisation
- II. Reduced construction schedules
- III. Modular and smart designs
- IV. Environmental sustainability
- V. Predictable construction costs
- VI. On and off-site construction
- VII. COVID-19 Protocols in the work environment and office layout, for commuter facilities including the waiting areas, queueing provisions, ablutions, etc.

1.1.4 The shipping container units are currently existing and are owned by Department of Transport (DOT) and PRASA will provide these containers. The sizes are as follows 2.5 in width, and standard lengths varying from 3 to 12m. Manufacturing process of the containers need to comply with ISO 9001:2015 and OSHAS 18001:2007, with a minimum rated lifespan of 20 years. The used containers are to be refurbished and repurposed to be in a good working condition functionally and aesthetically.

1.1.5 Alterations and refurbishment of shipping containers

- I. Refurbishment of containers (Wire brush, prime and paint containers), treatment of containers for corrosion and provide 20 years warranty against corrosion. Corrosion protection shall be done in terms of SANS 1200 HC or SANS 2001 CSI
- II. Configuration of the shipping containers shall be in terms of **Annexure B**
- III. Completed container to be wind and waterproof (Waterproof testing to be done in accordance with the Quality Management Plan and witnessed by PRASA official/Engineer on the project)
- IV. Bullet resistant doors
- V. Bullet resistant glass
- VI. Ticketing counters
- VII. Steel lined walling for treasury
- VIII. Insulation wall and ceiling
- IX. Vinyl flooring
- X. Air Conditioning
- XI. Roller shutter for windows and doors – electronic
- XII. Electrical work – 220V wiring in conduits, DB and main connection
- XIII. DB Board with earth leakages & circuit breakers
- XIV. Fluorescent lights, Bowl light - JD 90, Single plug points, Double plug points, Light switches and External lights – Bulkhead
- XV. Branding and signage (Based on PRASA’s Blueprint Document)
- XVI. Directional and Statutory signage
- XVII. Fire Extinguishers and fire protection

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- XVIII. Drop in Safe/Walk-in Safe for safe cash handling
- XIX. Sink and built-in taps and cupboards
- XX. Ablutions
- XXI. A solar system to provide back-up power to ensure station operations continue during power outages.

1.1.6 ICT, Telecoms and Security Requirements

No.	Item	Item Specification
1	48-port POE+ Switch	<ul style="list-style-type: none"> • Gigabit access switching with 48X10/100/1000 BaseT ports • PoE+ support up to 740W • 2 x 1G SFP uplink interfaces • Layer 2 access switching • Non-blocking switch backplane with at least 80 Gbps bandwidth support • Should have at least 60Mpps Packet Forwarding Throughput • Form factor 1U and 19" Rack mountable. Rack mount kit to be provided <p>3-year hardware warranty</p>
2	10Kva UPS with 2-hour backup time at full load	<p>10KVA On-Line UPS System, Single Phase Input & Single Phase output complete with batteries to provide backup time as per following requirements and technical specifications including battery rack & connecting loops with three years warranty on UPS & batteries</p>
3	ICT Station Equipment Cabinet 43U with cooling	<p>Cabinet 43U - (H 2200mm x W 750mm x D 1000mm)</p> <ul style="list-style-type: none"> - Lockable - Dedicated cooling - 12,000 BTU Aircon - Power distribution – PDU (Power Distribution Unit)
4	LTE Gateway for primary and/or failover connectivity	<ul style="list-style-type: none"> • Must support 4G LTE/3G/2G (South African frequency bands) • ICASA Approved • 10/100 Base-T RJ45 Ethernet port • VPN <ul style="list-style-type: none"> ○ IPsec, GRE, and SSL VPN Client ○ Support at least 3 concurrent tunnels ○ Split Tunnel ○ Dead Peer Detection (DPD) ○ Multiple Subnets ○ VPN Failover

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		<ul style="list-style-type: none"> • Security <ul style="list-style-type: none"> ○ Remote Authentication (LDAP, RADIUS and TACACS+) ○ DMZ ○ Inbound and outbound port filtering ○ Inbound and outbound Trusted IP ○ MAC Address Filtering <p>3-year warranty</p>
5	<p>Wi-Fi Aps (to be managed by existing Cisco controller) for integration purposes</p>	<ul style="list-style-type: none"> • Cisco AIR-AP1832I-E-K9 - 802.11ac Wave 2; 3x3:2SS; Int Ant; E Reg Domain or similar • Mounting brackets • 3-year warranty
6	<p>Security Requirements</p>	<p>Camera deployment</p> <p>➤ The ticket sales office will have two static bullet cameras on every top corner, and a fisheye camera on each ticket selling counter and another fisheye on the Dropoff safe.; Three (3) metre mast where a PTZ camera will be deployed to assist in the tracking and tracing of suspects in the event of an incident.</p> <p>Access Control</p> <p>Biometric readers will be installed on all doors, and this will be: -</p> <ul style="list-style-type: none"> ➤ Main Entrance- Gate. ➤ Entrance door into the ticket sales ➤ Entrance door into the security office ➤ Entrance door into the ICT office ➤ Gate motor (remote controlled)

- All access control systems must be compatible and be able to integrate into existing PRASA BABYLON system
- All CCTV must be compatible and be able to integrate into existing PRASA Dallmeier system.
- Provision has been made to house electronic equipment in a 19-inch rack.

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1.1.7 Existing facilities improvement

- I. Painting of platform lines to be in accordance with **Annexure E1 and E2.**
- II. Reinstating or provision of bulk electrical, sewer, and water supply and connections to facilities
- III. Provision of a water tank (tank, tank stand, pumps, protection of pump, electrical connections, etc) and necessary connections to provide back-up water to the station
- IV. Provision of a generator and generator room to provide back-up power to the station to ensure that operations continue during power black-outs. This to be integrated to solar panels system.
- V. Reinstating or provision of platform lights to ensure visibility
- VI. Provision of station fencing to be constructed from face brick material and 3 metre in height from natural ground level and allow for spikes on top of walls. The wall should be 1000m on either side of the station.

1.1.8 External Works

- I. Both sites will have different requirements in relation to earthworks and levelling. The design and build contractor to familiarise himself with the site condition in order to design and include the cost associated with this element in the pricing schedule for the works.
- II. Demolish existing buildings and cart away rubble to approved disposal site in-line with the disposal regulations.
- III. Landscaping and paving shall be included to provide walkways and parking spaces
- IV. Rehabilitate existing steel bridge and resurface where required. Weatherproof paint should be used.

1.1.9 Access points

- I. Renovate/improve access points into station facilities to ensure that fair evasion is minimised
- II. The designs for the access points to be in terms of **Annexures E1 and E2.**

1.1.10 Signages

- I. Stations signage to be renovated or replaced to be in terms of the PRASA standards (refer to Annexure E1 and E2)
- II. Provide directional signages and Occupational Health and Safety signage such fire escape, fire signages, and assembly points to comply with Local Authority requirements and Act 85 of 1993 requirements
- III. Provide appropriate signages at the access points to provide relevant information to commuters

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- IV. Provide information boards for commuters and customers per station. The number to be in terms of the **Annexure E1 and E2**.

1.1.11 Commuter facilities

- I. Provide commuter waiting area per platform adequate for the station size as per the criteria and categories contained in **Annexure E1 and E2**.
- II. Waiting areas to have adequate sitting facilities which are appropriately designed to be robust and vandal proof.
- III. Provision to be made for dustbin/waste bins which are fixed at appropriate intervals

1.1.12 Universal Accessibility (UA)

Design should allow for UA for people living with disability in the access points, ablutions facilities, waiting areas, tickets offices and entire station precinct.

1.1.13 Project timelines

The design and build contractor to provide a programme of works as part of the methodology and approach. The project duration or time for construction to completion is 90 days.

1.1.14 Compliance with Statutory Requirements

The design and build contractor shall comply with the following statutory requirements

- I. Occupational Health and Safety Act (85 of 1993)
- II. Construction Regulations
- III. COVID-19 Protocols and Regulations issued in terms of the Disaster Management Act
- IV. Railway Safety Regulator
- V. SANS standards especially 10400, 1200 and 2001
- VI. National Building Regulations and Standards Act
- VII. Council for Built Environment Act (43 of 2000)

1.1.15 Temporary utilities

The design and build contractor shall provide temporary utilities as necessary to execute the works. This should be priced for in the tendered contract sum under the Preliminaries. These shall include water, electricity, ablutions, telecommunications, and any other services that the contractor shall require for the execution of the project.

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1.1.16 Briefing Session

- I. The compulsory briefing session will be conducted virtually and the details of such briefing will be shared in the advertisement
- II. The virtual briefing session will be followed by an on-site inspection of the project wherein COVID-19 protocols will be enforced and adhered to. The details of which shall be shared with the bidders during the virtual briefing session.
- III. An attendance register will be kept of the briefing session. A copy of Form D signed by a PRASA SCM official will be emailed to all attendees as proof of attendance of the briefing session. This should form part of the bidder’s tender submission.

2 CONTRACTOR’S DESIGN SCOPE DESCRIPTION

2.1 The Contractor will be responsible for the development and completion of the design for the whole of the Works as described in the Employer’s Requirements, the co-ordination of their design and issue of working/production drawings (including as-built information). The design of the Works should meet all requirements as specified in the PRASA Blueprint and NGS documents.

2.2 The Contractor’s design shall incorporate COVID-19 regulations including the provision of physical barriers, marking for the provision of queuing, location of screening and sanitizing stations, etc.

2.2 Notwithstanding that information has been made available by the Employer prior to contract, it shall be the responsibility of the Contractor to analyse the information made available and prior to entering into a Contract, satisfy himself as the quality, accuracy and completeness of any such data and to ensure that he has sufficient information to develop the construction aspects of the design, produce working drawings and details and undertake the construction of the Works in accordance with terms and conditions of the Contract.

2.3 Notwithstanding that information has been made available by the Employer at tender stage, the Employer accepts no responsibility for its accuracy or completeness. The information will be deemed to have been checked and approved by the Contractor who will have the same

2.4 Insofar as the design of the Works is comprised in the Employer’s Requirements for the Contractor’s Documents and in accordance with the Employers Requirements provided by the Employer (including any further design which the Contractor is to carry out as a result of an Employer Instruction), the Contractor warrants and undertakes to the Employer that:

- He has exercised and will continue to exercise all the skill, care, diligence and best up-to-date practice to be expected of a properly qualified and competent Contractor experienced in designing and carrying out work of a similar scope, nature and size to the Works;
- The works will, when completed, comply with any performance specification or requirement included in the Employer’s Requirements provided by the Employer or Employer’s Requirements for the Contractor’s Documents or to be reasonably inferred there from;
- The Works have been or will be designed or specified using best up-to-date practice and to standards consistent with the intended use of the Works;

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- The Works comprise or will comprise only materials, plant and goods which are new and of sound and merchantable quality and all workmanship, manufacture and/or fabrication will be to standards consistent with the intended use of the Works;
- The Works will, when completed, comply with the local municipal / council development control requirements and any applicable statutory requirements or laws;

3. PLANNING APPROVAL

3.1 The Contractor will submit drawings for local council approval and the Contractor will pay the initial "Plan Fee" and the "Inspection Fee" under the Contract.

3.2 Any amendments to the Employer's Requirements that become necessary to conform to the approval for any reserved matters and with all specified planning conditions imposed by the planning authority will be notified to the Contractor prior to implementation. Such amendments shall be regarded as a Variation (Clause 13.0) and the Employer shall pay all fees and costs in connection therewith.

4 PRELIMINARIES

The Contractor will provide the Works with due regard to the following preliminaries.

4.1 General Requirements

4.1.1 All matters concerning the Contractor's access to the site shall be agreed between the Contractor and the Employer, local authority requirements shall be complied with in all respects.

4.1.2 The Contractor is to allow for and provide a schedule stipulating the existing condition including photographic and video (including accompanying commentary) records for all areas of the site and adjoining boundaries that relate to the Works and is to agree same with the Employer and any relevant parties.

4.1.3 The Contractor shall adequately maintain approaches to the site and keep such free from debris. Any contamination of surrounding roads by site traffic shall be removed immediately. The Contractor is to provide hoarding to the perimeter of the working area.

4.1.4 The Contractor shall not allow his or any other operatives employed on the Works to trespass upon the grounds or buildings outside the boundaries of the Site.

4.1.5 Any arrangements which the Contractor may make for the use of land outside the specific requirements of the Contract must be made outside this Contract and the interests, rights and liabilities of the Employer must be fully protected and indemnified at all times.

4.1.6 The Contractor shall not use any portion of the site for any purpose other than that connected with the Works.

4.1.7 The Contractor shall give written notice to the Employer at least 48 hours before the day on which any work outside normal working hours is proposed. In an emergency it is the Contractor's primary responsibility to make arrangements to deal with the emergency and then to telephone and advise the Employer of his action. In any event the Contractor is to ensure that constant and proper supervision is

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provided for all Works undertaken, including that undertaken by Subcontractors and suppliers during and outside normal working hours.

4.1.8 Procedure for Dealing with Discrepancies (post contract)

In the event of any discrepancies being discovered in the documents, the Contractor shall at once notify the Employer in writing. If amendments to the design or installation are required as a result of discrepancies in the documents, then such amendments shall not be regarded as a compensation event and the Contractor shall pay all fees and costs in connection therewith.

4.1.9 The Contractor shall inform the Employer in advance of all safety provisions and procedures (including those relating to materials which may be harmful) that will require the compliance of the Employer or the Employer’s Representative when visiting the site. Provide protective clothing and / or equipment for the Employer and his representative as appropriate.

4.1.10 The Contractor shall protect and shall ensure the safety and continued operation of adjacent buildings/structures, paved surfaces and roadways adjacent to the works and shall make good immediately any damage resulting directly or indirectly from his operations.

4.1.11 The Contractor shall ensure that any external scaffolding is fully netted and protected, windows and other openings secured in site areas. It is furthermore the duty and responsibility of the Contractor to ensure that all scaffolding is safe, fit for purpose and where required safe pedestrian access is provided at all times throughout the duration of the project. Scaffolding certificates must be displayed indicating “Safe for use” and maybe requested upon the discretion of the Employer.

4.2 Procurement

4.2.1 Disbursement Arising from the Employment of Work Staff

The Contractor shall allow for all payments, costs and expenses incurred in complying with any statute or statutory instrument formally applied to the contract.

The Contractor shall allow for all payments, costs and expenses incurred in supporting statutory and private pension schemes.

4.2.2 Procurement of Sub-Contractors in Terms of the Contract

The Contractor shall comply with the provision of the PFMA and the SCM policies of PRASA in the procurement of Sub-Contractors, Suppliers, specialist services and provisions as may be required in terms of the contract where the Employer instructs the same as Variation to the contract.

4.3 Provision, Content and Use of Documents

4.3.1 Definitions of Dates and Amendments of French and / or EU design Standards and / or US design Standard.

Where references to French and / or EU and /or US design standards, and codes of practice do not give year of issue or dates of amendments, the published version at the Base Date shall apply

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4.3.2 Provision of drawings to the Contractor

The Contractor will be provided with one paper copy of each issued drawing.

4.3.3 Taking Dimensions from Drawings

All drawing dimensions are for information only and are to be verified by the Contractor/ Subcontractor by site survey or the production of working drawings.

4.3.4 Procedure for Dealing with Discrepancies (post contract)

In the event of any discrepancies being discovered in the documents, the Contractor shall at once notify the Employer in writing. If amendments to the design or installation are required as a result of discrepancies in the documents, then such amendments shall not be regarded as a compensation event and the Contractor shall pay all fees and costs in connection therewith.

4.4 Management of the Works

4.4.1 Contractor's Design — General Requirements

- I. The Contractor shall ensure that all tolerances to be incorporated or allowed in the various elements of the Contractor's Documents are co-ordinated as between any such work executed by the Contractor and his Subcontractor. The Contractor is to take or cause to be taken, in due time, any measurements on site required for the manufacture of any elements of the Contractor's Documents including cutting out existing construction as necessary.
- II. The Contractor shall effectively supervise the Works and his Documents, to ensure that the design is being provided in a proper and timeous manner consistent with the accepted programme and thereafter to ensure that the work comprised in each element is being installed into the Works in accordance with the design. The Contractor shall allow for the employment of such suitably qualified and experienced staff as may be required to provide such supervision.
- III. The Contractor shall provide datum's and any other information necessary for the setting out of each element on site and checking such setting out before work commences.
- IV. The Contractor shall ensure that all Subcontractors undertaking elements or parts of elements of the Works, are provided with copies of drawings or other instructions issued by the Employer which relate to or affect the respective elements of the Contractor's Documents and with copies of any subsequent revisions to such drawings or instructions.
- V. The Contractor is to ensure that all elements of the Contractor's Documents are adequately protected at all times during the course of and after completion of the Works, irrespective of whether such protection is actually provided by the Contractor or by any Subcontractor appointed to carry out the work.

The Contractor is to co-ordinate the works of any two or more Subcontractors on site in

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connection with the Contractor’s Documents with particular regard to the sequence and setting out of such work and any conflicts that may arise as a consequence of the detailed interpretation of drawings by operatives on site.

- VI. The Contractor is to co-ordinate the design and detailing of all interfaces between the elements or parts of elements of the Contractor’s Documents.

4.4.2 Management of the Works, Including Subcontractors.

The Contractor shall accept responsibility for co-ordination, supervision and administration of the Works. Arrange and monitor a programme with each Subcontractor, supplier, local authority and statutory undertaker, and obtain and supply information as necessary for co-ordination of the work including commissioning.

The Contractor shall include in his tender all costs associated with the above and for providing appropriate supervision to all Subcontractors and statutory undertakers.

4.4.3 Publicity

Any article which a Contractor may wish to publish regarding this Contract shall be submitted to the Employer for vetting and approval allowing such time as may be necessary for the Employer to seek the approval. The Employer reserve the right to insist on any alteration, amendment, or complete withdrawal if they so choose. The Contractor shall obtain written approval to publish before so doing.

4.4.4 Labour and Plant Records

The Contractor shall issue a weekly summary to the Employer of the number of operatives and major items of plant in each trade employed on the Works including those of all Subcontractors.

The Contractor shall prepare daily, written labour return sheets, which shall state the names of operatives, their trade and the times that they commenced / finished work.

The Contractor shall also prepare daily written plant return sheets which shall state the plant type and their arrival/departure times from site.

The format of these daily labour and plant returns shall be subject to the agreement of the Employer.

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4.4.5 Record Drawings

The Contractor shall maintain during the progress of the Works complete records of all variations and amendments encountered or otherwise instructed to the details indicated in the Employers Requirements.

Two weeks prior to completion of the works the Contractor shall provide 3 complete sets of drawings showing the completed Works. Additionally, provide one reproducible negative of the drawings and provide the same information in an approved CAD format manner to the Employer.

Accepted drawings showing the complete works installed under the contract together with accepted maintenance manuals for each separate component and installation shall be produced by the Contractor and handed over to the Employer two weeks prior to completion of the Works.

During the period of construction mark up the drawings set aside for this purpose with any differences between the contract drawings, incorporate any change orders issued and also the actual installation. Any drawing revisions issued as the Contract proceeds shall be substituted for the original and complete record kept.

Prior to the final preparation of the drawings and the collation of the maintenance manuals agree with the Employer's Representative what information needs to be shown and prepare drafts for approval, make such amendments thereto as may be required to achieve the Employer's approval.

A Taking-Over Certificate will not be issued until all accepted drawings, accepted test certificates and accepted statutory compliance certificates, accepted operation and maintenance manuals and all other documents as required by the Employer's Requirements, have been handed over to the Employer and approved by the Employer's Representative.

A soft-copy file on a USB disk including all information stated above shall be submitted to the Employer as part of the final submission to the Employer.

4.4.6 Progress Records and Photographs

Digital progress photographs of construction are to be taken by the Contractor, on a weekly basis. The Contractor shall on a monthly basis submit a photographic report to the Employer's Representative. The report shall capture all areas of progress of the Works

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during the reporting period.

4.4.7 Notice Before Covering Work to be measured

The Contractor shall give reasonable notice to the Employer before covering up work which the Quantity Surveyor requires to be measured, or which the Contractor considers should be brought to the attention of the Employer and/or Quantity Surveyor.

4.4.8 Sample of materials

Samples of materials and workmanship shall be submitted to the Employer's Representative before any work containing the samples is started, together with the results of any tests carried out on such materials or workmanship in compliance with the specifications within the Employer's Requirements or appropriate standard.

The Contractor will be required to submit a detailed sample schedule for approval to the Employer's Representative, clearly outlining the samples that will be provided and when these will be available for review, inspection and approval.

The sample schedule should as a minimum include, but not be limited to the following key components:-

- a) All finishing material samples
- b) Second Fix Mechanical, Electrical and Wet Services items including but not limited to:
 - Sockets
 - Switches
 - Grills
 - Lights
 - Statutory Signage
 - Sprinkler Heads
 - Detectors
 - DB's
 - Taps
 - Etc.
- c) All equipment specification sheets (pipes, wires, ducts, valves, electrical trays etc.).

The Contractor is required to submit such a schedule within 21 days after the execution of the Contract Agreement.

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All products are to be new unless otherwise specified.

Where a choice of manufacturer or source of supply is allowed for any particular product or material, the whole quantity required to complete the work must be of the same type, manufacturer and/or source unless otherwise agreed. Written evidence of sources of supply are to be provided as and when required by the Employer's Representative.

Ensure that the whole quantity of each product and material required to complete the work is of consistent kind, size, quality and overall appearance. If materials are prone to deterioration or have a limited shelf life, order in suitable quantities to the accepted programme and use in appropriate sequence.

In addition to the above the Contractor is required to construct an in-situ mock up after the approval of the design and samples provided, but prior to the placement of all orders.

Any deviation from the technical standards or brand standards for design and Construction will require approval in writing from the Employers Representative. The Contractor will be required to submit in writing a request for such an approval and allow a maximum period of 5 working days for feedback on such a request.

4.5 Compliance with Regulations

4.5.1 Safety, Health and Welfare

- a) The contractor shall ensure that there is compliance with the Occupational Health and Safety Act (85 of 1993) including the Construction Regulations during the planning, execution and close-out of the Works. The Contractor shall ensure that an allowance is made in the Contract for compliance with all requirements of the OHS Act 85 of 1993 and the Construction Regulations.
- b) The Contractor shall ensure that an allowance is made in the Contract for compliance with COVID-19 Regulations during the execution of the Works.
- c) The Contractor shall be responsible for making the necessary applications and notifications to the Department of Labour in terms of the Construction of Regulations regarding the Construction Work Permit/Notification of Construction Work.
- d) The site shall be designated as a hard hat area. The Contractor shall be responsible for ensuring that all persons on the site wear a hard hat, high visibility jacket/vest and steel toe capped boots. In the event that a person is found not to be wearing appropriate protective equipment by the Employer or his Representatives, that person shall be immediately evicted from the Site.

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- e) The Contractor shall provide clean hard hats, high visibility vests and steel capped boots for use by visiting members, the Employer’s Representatives and the Employer’s guests.
- f) The Contractor is to ensure that all safety and welfare measures required under or by virtue of the provisions of any enactment or regulations or the working rules of any industry connected with the construction works are strictly complied with.
- g) Safety helmets shall be worn by any person entering the site.
- h) No alcohol shall be permitted to be consumed on site. No anti-social behaviour will be tolerated on the site and the Employer may request offenders to be removed from the site.

4.5.2 Risks to Health and Safety

In addition to complying with statutory requirements for the use of products, methods of work and protective measures which will minimise health and safety hazards. The Contractor shall inform the Employer in advance of all safety provisions and procedures (including those relating to materials which may be deleterious) which will require the compliance of the Employer or his representatives as appropriate.

The Contractor shall provide the Employer with copies of all method statements, correspondence or reports submitted to the independent health and safety consultant appointed by the Contractor. The Contractor shall be responsible for the appointment of an independent, qualified health and safety consultant.

4.5.3 Railway Safety Regulator

The Contractor shall at all times observe any regulations and instructions issued by the Railway Safety Regulator in relation to the Works.

4.6 Access for Inspecting the Works

- 4.6.1 The Contractor shall allow the Employer and the Employer’s Representative’s or his representatives’ facilities for the inspection (including filming by video) and testing of the quality of the work, materials, exposed surfaces and spoils from the works. Access shall be arranged as necessary to any place of manufacture off-site. Similar access shall be arranged for Subcontractors works.

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4.6.2 Any work found to be defective and not in accordance with the Employer’s Requirements will be dealt with in accordance with the terms of the Contract.

4.6.3. *Inspection/Test Certificates*

Inspection/test certificates are to be produced in accordance with the specifications within the Employer’s Requirements and appropriate standards or statutory requirements.

4.7 Setting out Accuracy

The Contractor shall be responsible for setting out the Works using methods and measuring instruments and within the permissible deviations contained within the specification.

Submit details of methods and equipment to be used in setting out the Works. The Contractor shall be cognisant with the following for which he is responsible:

- a) Recording information on a drawing and 2 No copies submitted to the Employer.
- b) All floor and roof levels are to be established to theoretical levels, unless the Employer instructs otherwise.
- c) Tolerance on setting out is to be in accordance with the National Building Regulations and Building Standards Act
- d) Upon completion of setting out the main elements the Employer’s Representative or his representatives are to be informed for inspection and approval.
- e) For verification on site of all dimensions. Where these vary from theoretical dimensions the Employer’s Representative or his representatives are to be informed.

Arrange for setting out, erection, juxtaposition of components and application of finishes (working within the practical limits of the design and the specification within the Employer’s Requirements) to ensure that there is satisfactory fit at junctions and that the finished work has a well aligned, true and regular appearance;

- f) Wherever satisfactory accuracy, fit and/or appearance of the Works are likely to be critical or difficult to achieve, obtain the approval of the proposals or of the appearance of the relevant aspects of the partially finished work as early as possible from the Employer’s Representative or his representatives; and
- g) The Contractor shall prepare setting out and construction details and these are to be submitted to the Employer for acceptance prior to the Commencement Date.

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4.8 Commissioning of System

4.8.1 Service Testing

Mechanical, electrical, plumbing, electronic, fire and all other services installation must have final tests and commissioning carried out so that they are in full working order at the Completion Date.

4.8.2 Covering up Completed Work for Inspection

The Contractor shall agree dates for inspections of works to be covered up with the Employer or his representatives five working days in advance. On the previous working day to each such arranged inspection confirm that the Work in question will be complete and ready for inspection, or that it will not be ready, in which case agree a new date.

Do not cover up such work until authorised to do so.

4.8.2 Arrangements for Opening Up and Remedying Defective Work

The Contractor shall as soon as possible after any part(s) of the work or any materials or goods are known or appear to be not in accordance with the Employers Requirements, submit proposals to the Employer’s Representative for opening up, inspection, testing, making good or removal and re-execution.

The Contractor shall allow for the possibility that such proposals may be unacceptable to the Employer's Representative or his Representatives, and that the Employer's Representative may issue contrary instructions.

damage.

4.8.4 Completion, Cleaning and Making Good

On completion and before handing over the Works to the Employer, the Contractor, shall clean down all the surfaces after removal of all plant, tools, temporary structures, materials, protective casings and coverings etc. leaving the Works and the site in a perfect condition, clean and free from all defects whatsoever, all to the satisfaction of the Employer’s Representative.

The Contractor shall prepare a detailed testing and commissioning programme for review and approval by the Client within 10 weeks from the Commencement Date and prepare any subsequent updated programme to align with the actual progress and programme of the Works.

The Contractor shall coordinate the testing and commissioning of all services installations to ensure the timely handover to the Employer in accordance with the Contract Programme.

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The Contractor shall ensure necessary witnessing, testing, commissioning and training is provided as part of the testing and commissioning programme with all relevant parties.

4.9 Security/Safety/Protection

4.9.1 Requirements for Security of Works during Construction

The Contractor shall adequately safeguard the site, the Works products, materials, plant, and any existing buildings affected by the Works from damage and theft. Take all reasonable precautions to prevent unauthorised access to the site and the Works.

4.9.2 Prevention of Nuisance and Danger to Persons

The Contractor shall confine to the site all persons employed on the Works, including Subcontractors, keep all unauthorised persons off the site, take all measures to safeguard the works against theft and provide, erect, maintain and alter as necessary temporary fences, barriers and the like required for this purpose. The Contractor shall keep watchmen or other guards on the site for the whole or any period of the Contract.

4.9.3 Protection and Maintenance of Existing Services and Mains

The Contractor's attention is drawn to the existence of live services in the vicinity of the site and is responsible for ascertaining the exact location of all mains and services likely to affect the construction of the Works.

The Contractor is responsible for ascertaining the exact location of all mains and services likely to affect the construction of the Works. The Contractor shall make the necessary allowances in this Contract for this purpose.

Particular care shall be taken to avoid damage to existing services, electricity mains and all supports therefore including wrapping, lagging, etc. In the event of damage repairs shall be carried out in close liaison with the Employer by a specialist contractor in the fastest possible time. The Contractor shall be responsible for all arrangements damage repairs.

Any damage to the mains or services shall be notified immediately to the Employer and be made good at the Contractor's expense.

The Employer may make such arrangements as in his opinion are necessary whether by the employment of the Contractor or otherwise to effect repair of services and the Contractor shall compensate the Employer for all such damage and repair costs.

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The Contractor shall not cut, isolate or otherwise interrupt any existing services without prior approval.

4.9.4 Protection Against Fire

The Contractor shall as necessary provide fire-fighting facilities within the construction site in the form of fire extinguishers. In addition, the Contractor shall ensure that fire escape routes are clearly marked on site and that a suitable audible method of temporary fire alarm is in place.

4.9.5 Protection of the Works Against Inclement Weather

The Contractor shall be responsible for adequately protecting the Works against damage arising from weather conditions, construction, other contractors, warping, distortion, humidity or other environmental conditions, which would have an adverse effect upon the Works. Anticipate all possible damage problems; take all necessary steps to protect, including altering protection as necessary during the construction process.

4.9.6 Removal of Rubbish and Debris

The Contractor will remove all rubbish and debris as it occurs in the course of the Works. The Contractor shall comply with the current environmental law of the country for the removal of rubbish and debris to authorised areas / dumps. The Employer reserves the right to request for proof that rubble is being dumped at an authorised site.

The site, compounds and access routes shall be maintained in a clean and tidy condition throughout the Contract.

Storage of all materials, including waste, shall be restricted to within the confines of the site.

The Employer reserves the right to remove untidy or badly stacked materials, rubbish and debris, etc., and contra charge the Contractor all costs in consequence if the Contractor fails to comply with the above.

4.9.7 Explosives

Explosives shall not be used.

4.9.8 Protection of Existing Trees.

All trees outside the site boundary shall be fenced and protected from any disturbance to

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their roots or branches before the start of construction.

The contractor shall be responsible for reporting any damage to the existing trees to the Local Authority and simultaneously to the Employer’s Representative or his representatives.

Plans and details of protective fencing to existing trees shall be submitted to the Employer for approval before the start of works.

4.10 Employer’s requirements for facilities/temporary works/services

4.10.1 Name Board and Advertising

The Contractor shall allow for the construction and erecting of one site notice or advertising board incorporating the Employer, the Employer’s Representatives and the Contractor’s name. The layout, content, format and size shall be agreed with the Employer prior to erection.

4.10.2 Telephones for the Use of the Contractor

The Contractor shall make all necessary arrangements for the supply of telephones and facsimile machines required by him and the Employer’s Representative, and shall provide an E-Mail facility

4.10.3 General Requirements for Site Establishment, Maintenance and Removal

The Contractor must obtain the permission of the Employer before siting any offices, huts, stores etc. The Contractor is responsible for maintenance of all offices, huts, stores etc. and for removal on completion.

4.10.4 Final Clean

The Contractor is to allow for a final deep clean of the site both externally & internally on completion.

4.11. Handover (including Operation / Maintenance) of the Finished Building

Prior to the handover of the site the Contractor will be required to ensure that he provides the following information to both the Employer. The format of such documentation is to be mutually agreed by all parties.

4.11.1 Product Guarantees

The Contractor is responsible for providing any product guarantees. A warranty schedule will need to be provided by the Contractor and issued for review by the Employer prior to the handover.

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The commencement of any after sales service maintenance contract will only commence once the premises are handed over officially to the Employer.

4.11.2 Training of Employer’s Staff

The Contractor shall provide a training regime for the Employer's staff linked to the operating and maintenance manuals. All training is to take place before the Time for Completion.

4.11.3 Security at completion. The Contractor shall leave the Works secure with all accesses locked. The Contractor shall account for and adequately label all keys and hand over to the Employer with itemised schedule, retaining duplicate schedule signed by the Employer as a receipt.

4.11.4 Making good defects. The Contractor shall make arrangements with the hotel operator and the Employer’s Representative and give reasonable notice of the precise dates for access to the various parts of the Works for purposes of making good defects. The Contractor shall inform the hotel operator and Employer’s Representative when remedial works to the various parts of the Works are completed.

4.11.5 Prior to handover the Contractor will be required to ensure that the following items have taken place and witnessed by the Employer’s Representative:-

- a) proper chlorination of the water tanks and all domestic water reticulations
- b) good cleaning of all areas by blowing all networks to get dust away, cleaning ducts, vacuuming all floors and shafts, ensure all debris taken from voids and false ceilings, all drains tested and unclogged.
- c) full pest control is done at second fix time, and in rooms during fit out installation (to ensure no wooden bugs into woods before fitting them)
- d) water analysis, for hardness, bio-tests, and legionella get provided to the Employer
- e) a thermo-graphic scanning of all cables get done before certifying the electrical networks are done
- f) Employer witness testing of the lightning protection system
- g) Employer witness a technical fire drill with all interfaces in place and evacuation system programmed as per local code and Operator's standard.
- h) energy bills, must remain at the charge of the Contractor, until the official handover to Employer has been signed-off, and official reading of meters (water, electricity) will need to happen at handover date.

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4.4.2 Management and Staff

- 4.12.1 The Contractor shall provide competent and appropriately experienced personnel to undertake the following roles in connection with this contract.
- 4.12.2 The Contractor must maintain continuity of the person-in-charge and the key people until the Time for Completion. However, if for reasons beyond the Contractor's control a change has to be made then the maximum possible notice will be given to the Employer before changing the key people. Similar appropriately qualified and experienced people shall be used as replacement and this aspect shall be evaluated by the Employer before permitting such replacement.
- 4.12.3 The Contractor shall provide a design co-ordinator/Lead Consultant who shall ensure the full co-ordination of the design and further design, including the detailed design of interfaces between the elements designed by the various subcontractors and/or the main contractor, undertaken in accordance with the Contractor's Documents.

4.12.4 Site Accommodation

4.13.1 Offices and Storage Sheds

The Contractor will be responsible for the provision of site accommodation and of Subcontractor's temporary accommodation facilities. The location of site accommodation will be within the site boundaries or any other place that the Contractor deems fit for purpose. The Contractor will be responsible for proposing and maintaining the site accommodation. The Contractor is aware of the fact that limited space is available for site accommodation and shall allow for all costs of identifying, securing and maintaining of the necessary site accommodation.

All items of plant, tools and materials brought onto the Site are the Contractor's sole responsibility and when not in use they are to be stored in a location that the Contractor deem safe and fit for purpose.

The locations of all offices, storage sheds, and welfare facilities must be contained within the Contractor's compound unless written agreement is received from the Employer.

The Contractor shall provide for the duration of the Works and obtain approval of suitable dedicated, secure and lockable temporary accommodation for use by the following (but not limited to relevant authorities):

- a. Main Contractor
- b. Sub-contractor
- c. Client's Representatives

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4.13.2 Toilets, Washing, Drying and First Aid Facilities

The Contractor will provide all required accommodation, drying and first aid facilities, as part of his own site set up. All costs in maintaining site facilities shall be met by the Contractor.

4.13.3 Measures for Safety, Health and Welfare

The Contractor shall allow periodic inspection of his site offices, working and storage areas by the Employer in respect of fire precautions and health provisions and to carry out any such instructions deemed to be necessary as a result of such inspections at the Contractor's expense. Such inspections in no way relieve the Contractor of his responsibilities under this clause.

All combustible materials shall be stored on site in a position and in a manner deemed safe.

4.14 Services and Facilities

4.14.1 Power, Lighting and Water for the Works

The Contractor shall provide for all artificial lighting and distribution, electric power and other energy required for the execution of the Works and providing lighting of temporary fences, barriers, hoardings etc. Clear away the temporary installation on completion and make good all works disturbed.

The Contractor shall appoint a suitably qualified person to be responsible for the temporary installations, their use and maintenance and supervision of tests required by regulations imposed; a notice of this person's name and designation shall be on prominent display adjacent to the main switching device.

The Contractor shall provide all wiring, lamps and equipment necessary for installing the temporary installations and ensure that adequate supplies of electrical energy are available for executing the Works.

Electricity and water supplies may be taken from the site. The provision for connection of these services is to be agreed with the Employer prior to work commencing. All distribution, pipe work and wiring shall be provided by the Contractor. The Contractor shall be responsible for all temporary municipal services connections and the cost and the maintenance thereof during the Contract period.

The Employer will not be held responsible for the effects of any failure or restriction in electricity or water supply. In addition, the Employer cannot guarantee that a suitable supply

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will be available in close proximity of the site.

The Contractor shall use only clean and uncontaminated water.

4.14.2 Fuels for Testing and Commissioning and at Taking-Over Certificate

The Contractor shall provide all fuel necessary for testing and commissioning. The Contractor shall ensure that the generator fuel tanks and all gas storage are all filled to maximum allowable capacity at the time of Taking-Over Certificate.

4.15 Permission of adjoining owners

The Contractor shall allow for obtaining permission from the Employer and adjoining property owners before erecting any hoardings, gantries, scaffolding, etc., on or above their property or erecting any cranes which may overhang or swing over their property. The Contractor shall allow for all costs in complying with the foregoing.

4.16 Work by Statutory Authorities

The Contractor shall provide all notices in accordance with the Conditions of Contract or the local authority and pay all fees and charges required under the Conditions of Contract or by the local authority. The amount of all such fees and charges shall be deemed to be included in the Contract Price.

4.17 Existing Services

Notwithstanding any information which the Employer may make available regarding the position of existing services, it shall be the responsibility of the Contractor to satisfy himself as to the accurate locations and conditions of any and all such services.

The Contractor shall uphold and protect all pipes, dust, sewers, service mains, overhead cables, and statutory undertaker's apparatus and make good at own expense any damage caused thereto.

The Contractor shall make all necessary arrangements with the statutory authorities concerned where appropriate, for the diversion, if necessary, for the execution of the Works.