



UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

TENDER FOR THE REPLACEMENT OF LIFTS

SPECIFICATION FOR THE PROPOSED DISMANTLING, REMOVAL OF
REDUNDANT MATERIALS, AND REPLACEMENT OF FOUR (4) PASSENGER
ELEVATORS

AT NOSWALL HALL

NUMBER 1 STIEMENS STREET

BRAAMFONTEIN

CONTENTS

1. BACKGROUND & PURPOSE.....	Page 3
2. THE UNIVERSITY'S OBJECTIVES.....	Page 4
3. SCOPE OF WORK.....	Page 4
4. STANDARDS & REGULATIONS.....	Page 6
5. DETAILED SPECIFICATION.....	Page 6
6. SERVICE & WARRANTY.....	Page 10
7. PROJECT PLAN.....	Page 11
8. CONTRACTUAL MATTERS.....	Page 11
9. ADDITIONAL REQUIREMENTS.....	Page 11

1 BACKGROUND & PURPOSE

The existing lifts, namely a four (4) car group operation were originally installed in 1973 by OTIS Elevator Company, the original equipment manufacturer, and subsequently underwent a Modernization/Upgrade in 2014.

Currently there are only two (2) lifts in operation in this high-rise building, with two (2) lifts in a shutdown state requiring extensive repairs and component replacements to the drive machines and controllers, which are not economically viable, nor readily available.

For this reason, the University of the Witwatersrand has decided to procure the services of accredited and experienced service providers to replace the four (4) lifts with more efficient and reliable equipment, ensuring long term reliability and sustainability in terms of effective maintenance with spare parts availability.



2. THE UNIVERSITY'S OBJECTIVES

The University of the Witwatersrand seeks to ensure that the vertical transportation systems within Noswall Hall meet the highest standards of safety, reliability, accessibility, and energy efficiency. The primary objective of this tender appointment is to replace the existing lifts with modern, compliant, and sustainable equipment that will:

- Enhance the safety and well-being of students, staff, and visitors in line with the Occupational Health and Safety Act and relevant SANS standards.
- Improve service reliability and reduce downtime, thereby supporting the effective functioning of a high-traffic academic environment.
- Align with the University's strategic commitment to sustainability through the adoption of energy-efficient lift technology and long-term maintainability.
- Ensure value for money by appointing a competent contractor who can deliver a quality installation, backed by comprehensive maintenance and lifecycle support

3. SCOPE OF WORK

The Service Provider shall undertake all works necessary for the full replacement of four (4) existing OTIS passenger lifts at Noswall Hall, University of the Witwatersrand. The scope includes, but is not limited to the installation of the following new components:

- Control System
- Main Motor Drive System
- Safety Devices
- Diagnostic and Monitoring System
- Car Door Drive System
- Buttons and Signal System
- Five –Way Communication system.

1. Disconnection and Strip-Out

- Isolate, disconnect, and dismantle all existing lift equipment, including machines, gearboxes, controllers, car frames, counterweights, guide rails, doors, door operators, architraves, travelling cables, and fixtures.
- Remove all redundant equipment from site and transport to a licensed waste disposal/recycling facility.
- Ensure compliance with environmental legislation and University waste management policies.

2. Making Good

- Repair, prepare, and make good the lift shafts, lobbies, pits, and machine rooms as necessary to accommodate the new installations.
- Modify structural or electrical provisions where required to meet SANS and OHS requirements.

3. Supply and Installation of New Lifts

MACHINE LOCATION	Machine Room Above or MRL
OPERATION	4-Car Group Operation
LOAD	1120 Kg/16 Passenger
SPEED	2.5 m/s
LANDINGS (PASSENGER)	21 stops/21 openings
LANDINGS (GOODS)	22 stops/22 openings
DOORS	1000mm w x 2100mm h
CAR SIZE	Optimise car size within existing shaft size (depth and width)
CAR INTERIOR	Brushed Stainless Steel wall panels, stainless steel tubular handrails, rubber floor, half height mirror on rear wall above handrail, stainless steel ceiling with LED downlighters
DOOR DRIVE	VVVF – Heavy Duty
DOOR PROTECTION	Infrared light curtain/door scanner
EMERGENCY EVACUATION	Automatic Rescue Device in the event of Power Outages
EMERGENCY COMMUNICATION	GSM Intercom
FINISHES: CAR & LANDING DOORS	Brushed Stainless Steel – for Full Replacement Option

4. Electrical, Controls, and Integration

- Install new controllers with microprocessor-based group control for four cars.
- Provide fire service recall, emergency power operation, and automatic rescue device (ARD).
- Integrate with the building's fire alarm and access control systems.
- Provide regenerative drives for energy efficiency.

5. Testing, Commissioning, and Certification

- Carry out full testing and commissioning in accordance with SANS and LEPCR.
- Arrange final inspection and certification by a SANAS-Approved AIA.
- Provide all test reports, certificates of compliance, and type test certificates.

6. Documentation and Training

Operating instructions and maintenance manuals will be regarded as a critical item required for works completion. The information included and presentation must be functional, user-friendly, and accurate. The presentation of the operating instructions and maintenance manuals shall be as follows:

- ☐ Index
- ☐ Description of the elevator system and equipment detail
- ☐ User operating instruction and safety procedures
- ☐ Complete set of principal / wiring diagrams
- ☐ Certificates of Compliance
- ☐ Testing and commissioning certificates and data sheets
- ☐ Copy of the Contract Specification
- ☐ Planned Maintenance Schedule

7. Maintenance

- Provide a twelve (12) month defects liability and **free maintenance** period immediately following handover.
- Carry out monthly inspections, adjustments, and servicing as per OHS Act requirements.
- Provide 24/7 call-back and emergency support during this period.

4. STANDARDS & REGULATIONS

All newly installed equipment shall comply with the most recent **SANS 50081-21** standards: Adoption of EN81-21 – New Lift in Existing Buildings.

5. DETAILED SPECIFICATIONS

- 5.1 Machine Area
- 5.2 Overspeed Governor
- 5.3 Elevator Driving Motor
- 5.4 Elevator Control System
- 5.5 Elevator Drive Unit
- 5.6 Intercom Systems
- 5.7 Landing Door Locks
- 5.8 Landing Buttons
- 5.9 Hall Lanterns, Gongs and Indicators
- 5.10 Hoistway
- 5.11 Counterweight

- 5.12 Pit Equipment
- 5.13 Elevator Car
- 5.14 Car Door Operator
- 5.15 Car Door Protection
- 5.16 Travelling Cables
- 5.17 Levelling Accuracy

5.1 MACHINE AREA

- 5.1.1 An existing machine room is present to accommodate the equipment
- 5.1.2 The 220v distribution board located in the lift control system panel is to incorporate an Earth Leakage Unit, any 220v supply to any part of the elevator, elevator installation or Hoistway is to be sourced from the load side on the earth leakage unit.
- 5.1.3 The contractor is to ensure that the proposed power supply to the machine will complement the operating parameters of the equipment proposed.
- 5.1.4 All rotating elements are to be painted yellow and be suitably guarded (**all guarding shall comply with SANS 50081-21**).

5.2 OVERSPEED GOVERNOR

An overspeed governor, tension assembly and safety mechanism that is fully compliant with **SANS 50081-21**, shall be installed.

5.3 ELEVATOR DRIVING MOTOR

A driving motor designed specifically to be driven by a **VVVF** (Variable Voltage Variable Frequency) drive unit, shall be provided. The motor assembly may be geared or gearless.

5.4 ELEVATOR CONTROL SYSTEM

- 5.4.1 The elevator control system shall be capable of operating as a full collective four car group operation. The elevator controller shall be based, designed, and operated using micro-processor architecture.
- 5.4.2 Monitors and keyboards or handheld testing instruments for commissioning and fault analysis of the lift control systems shall be provided and shall always remain on site.
- 5.4.3 The control system shall incorporate an "Emergency Rescue" operating unit so designed that this operating unit includes an indicator to verify that the elevator car is in the "Door Unlocking Zone". This indicator shall be driven from a supply that is independent of the elevator main supply or the elevator 220v utilities supply. The indicator shall operate for at least one 1 (one) hour after occurrence of a power failure.
- 5.4.4 The Control system is to make provision for "Emergency Power Operation". The signal for the activation of this feature will be provided by the employer; in the form of a "Zero Volt Contact". This feature is to be provided regardless of whether the owner installs a standby generator or not.
- 5.4.5 "Fire Service Operation 1" shall be provided on the elevator. The contractor is to provide a "fire service activation key switch" located at the Main Landing of the elevator, as well as a feature in the control system to accommodate integration into the building fire alarm. Integration into the building fire alarm shall be achieved via the use of a "Zero Volt Contact". The fire service key switch in the car operating panel, shall not permit the removal of the key in the "ON" position. The key switch shall be a tamper proof type with contacts rated to carry the current in the associated circuit.

- 5.4.6 The elevators shall be capable of being operated in "Independent Service Mode". The independent service mode shall be capable of being activated from the elevator controller or from a key switch located in the car operating panel. The independent service key switch shall not permit the removal of the key in the "ON" position.
- 5.4.7 The elevator controller shall have sufficient overheating monitoring and protection. In the event of the controller overheating, the elevator is to travel to the nearest floor and remain there with the doors open. The re-instatement of the elevator to normal service shall not occur automatically and shall be performed by a competent person.
- 5.4.8 The elevator shall be equipped with a battery backup emergency lowering device. (ARD System)

5.5 ELEVATOR DRIVE UNIT

- 5.5.1 A motor driving unit specifically capable of successfully driving a new driving motor shall be provided. The drive unit shall be of the "Variable Voltage Variable Frequency" type.
- 5.5.2 The drive unit shall incorporate a fully regenerative static power converter.
- 5.5.3 If the drive system proposed is not an approved product of an OEM manufacturer, the contractor shall be required to prove that the drive system proposed can successfully accommodate the traffic demands and features specified in this tender. Only written proof/testimony from the contractor's senior engineer (local or overseas) will be accepted.

5.6 INTERCOM SYSTEMS

- 5.6.1 The proposed intercom system shall be a five (5) way system which will remain operative for at least 1 (one) hour in the event of a power failure and shall be compliant to **SANS 50081-1**.
- 5.6.2 Activation of the intercom system by a "Trapped Passenger" shall only require the "pressing" of the car emergency alarm button.
- 5.6.3 The preferred location for the intercom system power supply is the elevator control panel.
- 5.6.4 A GSM intercom system shall be installed.
- 5.6.4 The existing "hard wired" intercom system to the Security Office shall be retained as a backup system in the event of the failure of the GSM system

5.7 LANDINGS, LANDING DOORS AND LOCKS

- 5.7.1 A door release device (**complying with SANS 50081-21**) shall be installed to all landing doors. A door release key, and instructions limiting unauthorized usage, shall be always present in the control panel. The door release key is to be left on a plaque in the control panel inscribed with "Door Release Key".
- 5.7.2 For maintenance purposes, floor designation shall be clearly and permanently and neatly marked with at least 100 mm letters or numbers on the inside of the landing doors. (Black Alpha/Numeric on a white background).

5.8 LANDING BUTTONS

- 5.8.1 Landing buttons shall be a **vandal resistant type**.
- 5.8.2 The fire-service key switch shall be located at the main landing. This switch shall place the elevator on fire service phase one.
- 5.8.3 There shall be no exposed fastening screws on the button units or faceplates.
- 5.8.4 Illumination to confirm call registration shall be of the LED type.
- 5.8.5 Landing buttons may be incorporated with the direction arrows and position indicators

5.9 HALL LANTERNS, GONGS AND POSITION INDICATORS

- 5.9.1 All floors shall be equipped with a combination unit (position indicator and arrival/direction arrows).
- 5.9.2 Hall lanterns may be incorporated with the landing buttons.

5.10 HOISTWAY

- 5.10.1 The Hoistway of the elevator shall be equipped with lighting in compliance with **SANS 50081-21**.
- 5.10.2 The lighting shall be switched from a switch in the Hostway accessible from the lowest landing, a switch in the Hoistway accessible from the top floor landing and a switch in the control panel.
- 5.10.3 There shall be in the pit area of the Hoistway, a 15A plug socket in compliance with **SANS 50081-21**.
- 5.10.4 There shall be a ladder to access the pit.
- 5.10.5 The pit area shall be equipped with emergency stop switches accessible from the pit and the lowest landing; all switches are to be placed close to the pit access ladder.
- 5.10.6 Suitable signage shall be installed in a manner that a person is made aware of the potential hazards in the pit area, before the pit area can be accessed.
- 5.10.7 All apparatus in the pit area is to be treated with a rust neutralizer and paint.

5.11 COUNTERWEIGHT

- 5.11.1 The filler weights shall be painted yellow and shall be securely cleated.

5.12 PIT EQUIPMENT

- 5.12.1 The car buffer and counterweight buffer shall be matched to the elevator speed.
- 5.12.2 A switch shall be installed on the governor rope tension assembly to monitor the stretch or breakage of a governor rope. The switch shall conform to the requirements of an "Electrical Safety Device".
- 5.12.3 A button that activates the emergency alarm is to be provided in the pit area or permanently under the elevator car.

5.13 ELEVATOR CAR

- 5.13.1 The top of the elevator car shall be equipped with an inspection control station compliant with **SANS 50081-21**.
- 5.13.2 The top of the elevator car shall be equipped with a 15A 220v socket.
- 5.13.3 The car shall be equipped with a load weighing device. If the elevator car is overloaded by 10 % or more, the elevator shall remain stationary at floor level with the car doors open. An audible or visual warning is to be provided to indicate that an overload condition is present. All moving apparatus on the car top shall be adequately guarded.
- 5.13.4 Adequate signage informing service personnel of the hazards on the car top shall be permanently affixed in a clearly visible position.
- 5.13.5 Rigid guardrails and toe guards in compliance with **SANS 50081-21** are to be installed on the car top.
- 5.13.6 A push button to activate the emergency alarm/intercom, is to be provided on the car top.
- 5.13.7 **Vandal-resistant micro-touch type buttons** are to be installed. The buttons are to incorporate Braille characters.
- 5.13.8 The illumination on buttons shall be of the "LED." type.

- 5.13.9 A position indicator unit that is compatible with the proposed system shall be installed.
- 5.13.10 The emergency alarm button shall be clearly distinguishable from the normal call buttons. The marking on the alarm button alone will not be considered as meeting the criteria.
- 5.13.11 The direction indicators shall be of the "LED." type.
- 5.13.12 The call buttons, alarm button, position indicator and direction indicator may be collectively incorporated in a single car operating panel.
- 5.13.13 Car lighting shall be compliant to **SANS 50081-21**.
- 5.13.14 A compliant emergency alarm and light unit shall be installed.
- 5.13.15 A compliant telephone notice is to be installed inside the lift car

5.14 CAR DOOR OPERATOR

- 5.14.1 The door operator unit shall be a **heavy duty** "Variable Voltage Variable Frequency" type.
- 5.14.2 The "car gate switch" shall consist of contacts on the driven and non-driven doors.

5.15 CAR DOOR PROTECTION

- 5.15.1 The car door operator shall incorporate a "torque monitoring feature". This feature may be part of the car door controller software and shall cause the car door to re-open in the event of an obstruction being present in the path of the closing car door.
- 5.15.2 The elevator car is to be equipped with an infra-red electronic door detector.
- 5.15.3 If the door detector is obstructed for any reason the car doors are to remain open (NO nudging feature)

5.16 TRAVELLING CABLES

The selection of travelling cables shall ensure that there is provision for additional intercoms and CCTV camera systems as specified. There shall be in the travelling cables, provision for additional device integration. Two twisted pairs and a co-axial (or CAT5) cable are to be provided. The cores of the travelling cable shall have no adverse effect on the core used for the intercom signal transmission.

5.17 LEVELLING ACCURACY

A 3 mm tolerance for levelling accuracy shall always be maintained.

6. SERVICE & WARRANTY

The Service Provider shall provide a comprehensive warranty for all equipment, materials, and workmanship associated with the lift installations. The warranty period shall extend for a minimum of twelve (12) months from the date of practical completion and handover, during which time the Contractor shall, at no additional cost to the Employer, rectify any defects, failures, or non-compliance that may arise.

This preventative maintenance service shall include monthly inspections, adjustments, and the replacement of defective components using genuine OEM parts.

In addition, the Service Provider shall provide a 24-hour call-out facility to address breakdowns or entrapments, ensuring the lifts remain safe and reliable for continuous service. The Service Provider warrants that spare parts and technical support will remain available for a minimum of twenty (20) years following installation.

7. PROJECT PLAN

The Service Provider shall achieve practical completion of the Works within the agreed contract period, commencing from the date of notification of award.

At tender stage, each tenderer is required to submit a detailed and binding contract implementation programme in Microsoft Project (or approved equivalent) format. This programme shall clearly indicate the sequence of activities, critical milestones, dependencies, and the overall timeline for the dismantling, installation, testing, commissioning, and handover of all four lifts. Key deliverables include safe strip-out and disposal of redundant equipment, completion of all building and electrical works, full installation of compliant lifts, testing and commissioning, certification by a SANAS-accredited AIA, and submission of all O&M documentation.

The University of the Witwatersrand reserves the right to monitor progress against the approved programme, and late completion will attract penalties as stipulated in the contract.

8. CONTRACTUAL MATTERS

TERMS OF PAYMENT

Payments to the contractor will be in accordance with the terms of award, appointment and Agreement concluded.

9. ADDITIONAL REQUIREMENTS

It is a compulsory requirement that the Service Provider comply with the following:

9.1 SITE SUPERVISOR

The Service Provider shall appoint in writing, a Site Supervisor who will always be on site while there is work in progress. This person shall be a “Competent Person” as defined by **Regulation LER 828**. The appointment of the competent person shall also fulfil the requirements of the “Employer’s Responsible Person” as detailed in **clause 16.2 of the OHS Act of 1993**.

9.2 PROJECT TEAM STRUCTURE AND COMPETENCE

The Service Provider shall, as part of the tender submission, provide a detailed organogram of the proposed project team, clearly indicating reporting lines and key responsibilities. The submission shall include the full structure of the team, together with the names, relevant qualifications, and levels of experience of all key personnel to be assigned to the project. The University reserves the right to review and approve the suitability of the proposed team, and to request replacements where competence or experience is deemed insufficient.

9.3 SAFETY AND SECURITY

It is stressed that safety and security requirements form an integral part of this contract, and non-compliance therewith will result in all work being stopped by the project manager or the University’s representative until such time as all requirements are complied with. No payment or claims will be considered for such stoppages. At the time of Tender submission, the contractor is required to furnish a package containing:

1. The Service Provider’s safety policy.
2. The Service Provider’s compulsory work procedures.
3. The Service Provider’s safe work practices, methodology statement (relative to this specific project).

9.4 MAINTENANCE

The appointed Service Provider shall continue with monthly maintenance activities as required by the **OHS Act (Lift, Escalator and Passenger Conveyor Regulations, Clause 6 – Inspections and Tests)** after the completion of the project.

The appointed Service Provider shall at the commencement of work, take over the maintenance and repair of the two existing (2) units in service and ensure reliable operation.

9.5 DOMESTIC SUB-CONTRACTOR

The Service Provider may appoint a Domestic Sub-Contractor to install the elevator equipment, however in this case the following conditions shall apply:

1. The Service Provider shall remain responsible for the day-to-day management of the installation and on-site works and shall attend all the design, and site meetings.
2. Should the Domestic Sub-Contractor not perform in accordance with the works information, the Client reserves the right to have the Domestic Sub-Contractor removed from site and replaced with staff directly employed by the Service Provider.

9.6 SITE VERIFICATION AND SERVICE PROVIDER'S RESPONSIBILITY

1. Verification of Dimensions

The Service Provider shall, prior to the submission of shop drawings, procurement of equipment, or commencement of works, conduct a full and independent verification of all site dimensions and conditions relevant to the lift installation. This shall include but not be limited to shaft dimensions, vertical rise, headroom, pit depth, sill-to-sill measurements, shaft plumbness, and clearances.

2. Accuracy and Reliance

The Service Provider shall not rely solely upon the drawings, schedules, or information issued by the University. The Service Provider accepts full responsibility for confirming the accuracy of all measurements and site conditions required for the correct manufacture, supply, and installation of the Works.

3. Liability for Errors or Omissions

Should any error, omission, or discrepancy in site measurements result in delay, additional cost, rework, or modification of equipment, the Service Provider shall bear the full cost and risk thereof. No claim for additional payment, time extension, or variation shall be entertained in respect of such errors or omissions.

4. Employer Indemnity

The Service Provider shall indemnify and hold harmless the University from any loss, liability, or expense arising out of or connected with the Service Provider's failure to accurately verify site dimensions or conditions.

5. Final Responsibility

Responsibility for the suitability and correctness of all equipment ordered, delivered, and installed remains entirely with the Service Provider.

9.7 STRUCTURAL WORKS AND ENGINEER APPOINTMENT

Should any structural modifications, alterations, or interventions be required which may, in the opinion of the University, affect the structural integrity of slabs, walls, foundations, or any part of the building, the University shall retain the exclusive right to nominate and appoint a Structural Engineer of its choosing. Such appointment shall be binding on the Service Provider, Structural Engineer full access, cooperation, and assistance in the execution of his duties. Unless expressly stated otherwise in the Contract, the costs associated with such appointment and the services of the Structural Engineer shall be borne by the Service Provider.