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DESIGN, SUPPLY AND INSTALLATION OF PEDESTRIAN BRIDGE LIFTS

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IC-DC-B381
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FOREWORD

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BASE SPECIFICATION

This document is based on Specification RMS B381 Edition 1 Revision 0.
RMS SPECIFICATION D&C B381
DESIGN, SUPPLY AND INSTALLATION OF PEDESTRIAN BRIDGE LIFTS

1 GENERAL

1.1 SCOPE

This specification sets out the requirements for the design, supply, installation and commissioning of machine room-less (MRL) passenger lifts at pedestrian bridges.

The requirements stated in this specification for the lift equipment and its installation are only of a general nature and are not intended to be exhaustive.

The lift as installed must be approved by the relevant Statutory Authority before it can be accepted by the RMS Representative.

1.2 STRUCTURE OF THE SPECIFICATION

This Specification includes a series of Annexures that detail additional requirements.

1.2.1 Project Specific Information

Project specific requirements are shown in Annexure B381/A.

1.2.2 (Not Used)

1.2.3 Schedules of HOLD POINTS and Identified Records

The schedules in Annexure B381/C list the HOLD POINTS that must be observed. Refer to Specification RMS D&C Q6 for the definition of HOLD POINTS.

The records listed in Annexure B381/C are Identified Records for the purposes of RMS D&C Q6 Annexure Q/E.

1.2.4 (Not Used)

1.2.5 Technical Details

Technical details to be provided by you are detailed in Annexure B381/E.

1.2.6 Referenced Documents

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 1234). For convenience, the full titles are given in Annexure B381/M.
1.3 Definitions

The terms “you” and “your” mean “the Contractor” and “the Contractor’s” respectively.

For the purpose of this Specification, the definitions contained in AS 1735.1 apply.

2 Design

2.1 General

2.1.1 Main Features

The main features of the pedestrian lift required are stated in Annexure B381/A.

2.1.2 Relevant Standards

Design, supply and installation of the lift must comply with the following standards:

(i) AS 1735 Parts 1, 2, 10, 11 and 12;
(ii) AS 1657;
(iii) AS/NZS 3000;
(iv) BS EN 81-1:1998;
(v) Building Code of Australia (BCA);
(vi) ASTM A240 / A240M - 12.

2.2 Components

In addition to the requirements stated in Annexure B381/A, the individual components of the lift must comply with the following requirements.

2.2.1 Control System

The control system must be a microprocessor based, two button, collective, simplex control system, with the following minimum features:

(a) The control system must enable the lift to travel up to answer down landing calls, and down to answer an up landing call, should this be the most effective method of answering a landing call.

(b) Should both “Up” and “Down” landing calls be registered at an intermediate floor, the lift must respond to the call that is registered for the direction in which the lift is travelling. In the event that no passengers enter the lift and the car having no previous car calls or further landing calls registered in that direction of travel, the lift must then become available for the opposite direction of travel.

(c) The control system must be designed to operate without malfunction caused by the operation from within the lift car of portable 2-way UHF radios.

2.2.2 Car Weighing Device

The lift must be provided with a car weighing device such that if the car is loaded in excess of its rated capacity, the reaction of the load on the car weighing device will cause a “Car Overloaded”
indicator to illuminate, an audible alarm to operate or a voice annunciator to announce that the car is overloaded. The operation of these devices must continue until the excess load is removed from the car.

The car must remain at the floor with its door open until the excess load has been removed from the car.

2.2.3 Hoist Motor Drive

The hoist motor drive must be a gearless, variable-voltage variable-frequency system that is capable of achieving ± 6 mm floor levelling accuracy under varying load conditions.

All suppression equipment including filters, transformers, capacitors, line inductors, reactors and any other components necessary to eliminate distortion and to avoid interference with the mains distributing system and any sensitive electrical and electronic equipment in the building must be included as part of the system.

Locate the hoist machine at the top section of the lift shaft in the lift overrun area.

2.2.4 Door Operation

2.2.4.1 General

The door drive operator must be microprocessor controlled, variable-voltage variable-frequency, capable of driving the car and landing doors quietly and smoothly in both directions of travel. The connecting mechanism between the car door and landing door must operate without snatch or bounce of the car and landing door panels.

The driving mechanism design must enable the doors to be held open against its driving action without damage to the door mechanism, and the closing movement of the doors can be reversed easily if necessary.

Fit the car door operator with sound isolation to prevent the transfer of vibration or noise to the car superstructure.

2.2.4.2 Landing Door Operation

The landing doors must provide a smooth operation of the lift car doors without causing snatch or bounce of the landing or car doors.

The doors must also be capable of providing continuous uninterrupted door operations during varying conditions of “landing to lift shaft” or “lift shaft to landing” air flows as may be experienced with a pedestrian bridge.

2.2.4.3 Landing Door Closing Device

Each landing door must be equipped with a door closing device which will close the door fully in event of the lift car leaving the landing for any reason while its landing doors are still open.

The door closing device must operate quietly and must be actuated by either a recoil spring device or guided weight in conjunction with a steel wire aircord.
2.2.4.4 Door Scanning Device

The door scanning device must be of the 3D type that uses an infrared light source. The units must be capable of reversing the doors where an intrusion is sensed at any point above the car sill, from between 50 mm to 1600 mm. The doors when operating in 3D mode must be capable of sensing an object 300 mm out from the door entrance.

The device must be rigidly constructed and mounted in a manner which ensures stability of aim and focus, and minimises the effects of vibration and bumps. The device design must prevent ingress of dust.

2.2.4.5 Delayed Door Closure

If closing of the doors is delayed as a result of the door protection system being deliberately operated for an extended period of time, or the door protection system becoming inoperative for any reason, provide a means to continue the operation of the lift.

Where the delay results from operation of the door protection system, it must be rendered ineffective after an adjustable time of 15 to 50 s and the doors must close fully at a substantially reduced speed and pressure while a warning buzzer sounds. The “door open” button must remain effective during this cycle of operation.

Following a door closure under the above conditions, the timing device must be automatically reset to provide normal operation as soon as the door has closed and the car has commenced to move away from the floor.

2.3 DESIGN SUBMISSION

2.3.1 Design Documentation

Prior to commencing fabrication of the lift, submit to the RMS Representative for review, three printed copies in English of the following:

(a) shop drawings showing the general setout, equipment location including CCTV, structural loads and work by other trades;
(b) car enclosure and finishes, including car operating and indicator panels;
(c) electrical power details and circuit diagrams;
(d) indicators and signage;
(e) landing entrances including door layouts and call button panels;
(f) design calculations;
(g) information required under Annexure B381/E;
(h) lift manufacturer’s certification that the design complies with this Specification.

2.3.2 Modification to Lift Shaft

At least 10 working days prior to the commencement of construction of the lift shaft (by the Structural Works Contractor), notify the Structural Designer of any required modification to the lift shaft.
2.3.3  **Samples**

Provide samples of the surface materials proposed for use on the inside of the lift car and the doors and surrounds as specified in Annexure B381/A.

3  **ASSOCIATED WORKS**

The following is a summary of work associated with the lift services work.

Coordinate with the parties carrying out these associated works.

3.1  **STRUCTURAL WORKS**

3.1.1  **Lift Shaft and Landing**

*This work is carried out by the Structural Works Contractor.*

Construct the lift shaft and door openings to the details shown on the Design Documentation drawings.

The lift shaft walls must be plumb and true to the design dimensions within the tolerances stated in Specification RMS D&C B80 for walls.

Where required, build in bond blocks or inserts in locations shown on the Design Documentation drawings. Place inserts so that they are flush with the lift well surface, each row exactly horizontal and each unit within 10 mm of plan dimensions.

Construct openings as shown on the Design Documentation drawings for lift door frames. Provide a recess in the floor slab at the bottom of each door opening for the door sills.

Provide penetrations at the top of the lift shaft for the lift shaft ventilation as required by the lift manufacturer.

Locate accurate datum points for lift sill threshold at each level to enable installation of door frames.

Make openings for button boxes and indicators as shown on the Design Documentation drawings and cast in the button boxes and indicators.

Slope the finished floor levels of the lift landings to drain water away from the lift shafts.

3.1.2  **Lift Overrun Pit**

Construct the lift overrun pit and sump to the details shown on the Design Documentation drawings.

Waterproof the pit before installation of lift equipment using an approved torched-on tanking membrane.

Fit an automatic pumping system in the pit to drain the pit in the event of water ingress.
3.1.3 Top of Lift Shaft Ventilation

Supply and install a weatherproof louvre at the top of the lift shaft for natural ventilation. The louvre must provide a minimum area of 0.1 m² per lift in accordance with the Design Documentation Drawings.

3.2 ELECTRICAL WORKS

This work is carried out by the Electrical Works Contractor.

3.2.1 Sub-mains

Supply, install and connect to the lift main circuit breaker panel a 3-phase and neutral, fire-rated sub-main from the main switchboard to the lift control panel distribution board. Locate the lift distribution board in the control/drive centre at the top level served by the lift.

3.2.2 Lift Car Emergency Telephone

Provide two 3-pair telephone cables terminated in a junction box located in the control/drive centre located in the lift shaft at the top level served by the lift.

3.3 FIRE SERVICES

This work is carried out by the Fire Services Contractor.

Provide smoke detectors at the top of the lift shaft and high temperature sprinklers in the lift pits in accordance with Code requirements.

Coordinate with the Lift Contractor for the installation of the sprinklers and smoke detectors.

3.4 CCTV SERVICES

This work is carried out by the CCTV Services Contractor.

Use CCTV camera equipment types that conform to APTA IT-CCTV-RP-001-11.

Provide in each lift car a camera mounted inside the car, with a field of view capable of full coverage of the car interior and entrance, to monitor passenger activity. The camera and any sensors must be concealed to minimise vandalism. The camera must be activated when the lift is in operation.

The video surveillance system must provide time stamping of the video images.

Coordinate with the Lift Contractor for the installation and commissioning of the lift car CCTV.

Supply a CCTV for installation by Lift Contractor.
3.5 SITE PROVISIONS

This is provided by the Structural Works Contractor.

Provide temporary power for construction purposes together with permanent power for the testing and commissioning of the lift equipment.

Establish datum levels for the alignment and positioning of the lift equipment.

Hand over the lift shaft in a clean condition with all formwork and ties removed, openings cleaned, the pit and pit sump cleared of water and debris, and safe and unimpeded access to all lift lobbies.

4 LIFT MANUFACTURE AND INSTALLATION

4.1 LIFT MANUFACTURE

4.1.1 Lift Manufacturer

The lift manufacturer must be certified to AS/NZS ISO 9001 and have at least five (5) years recent experience in the manufacture, supply and installation of public passenger lifts in Australia.

The same lift manufacturer must supervise the installation of all lifts under the Project Deed.

4.1.2 Other Suppliers

Use only suppliers that have been assessed by you as being capable of providing lift services that conform to this Specification.

4.1.3 Stainless Steel

All stainless steel used in manufacture of faceplates and panels must conform to ASTM A240 Grade 316 and be finished to a satin finish. The stainless steel must be free from visible signs of pitting corrosion, and fabricated in a workshop free of carbon steel grinding or cutting.

Stainless steel used for faceplates must have a minimum thickness of 2.5 mm. All panels must be flat and smooth, and where welded must show no evidence of weld or heat marks. Screw-type fixings where used must be of the raised Phillip-head type.

Provide all stainless steel finishes with adequate protection from the time of manufacture to the time of handover of the completed lift system.

4.1.4 Certification of Materials

Submit to the Project Verifier a certification that all materials to be provided for the Works meet the requirements stated in the manufacturer’s current product literature and this Specification.
4.2 LIFT INSTALLATION

4.2.1 General

Lift installation must comply with the requirements of Clause 2 of this Specification.

4.2.2 Trailing Cables

Use flexible trailing cables of the multi-core type specifically designed for lift operation with conductor sizes adequate for the current to be applied. Install woven wire-mesh screens with tension adjustment to prevent cables from rubbing against the lift shaft walls.

Install a total number of cores such as to provide at least 10% spare cores, divided equally among the multi-core cables used.

Take appropriate precautions to ensure that a short circuit between any two cores cannot cause a car to move away from a landing when the door is open.

Use only screened, communication grade, trailing cables including IP Category 6 or equivalent that are suitable for use with any of the microphone, telephones, intercom, lift indicators and CCTV equipment.

4.2.3 Guide Rails

Install the car and counterweight guide rails as a fully plumbed, aligned, gauged system to effect the ride quality characteristics as detailed.

Provide a clear space at the top of all guide rails so that they are not subject to any vertical force from the lift shaft roof slab or the building structure.

Carry out a detailed re-balance, both static and dynamic, as well as roller guide shoe set out, at completion of the rail works.

4.2.4 Ride Quality and Noise Levels

Carry out the measurements of the ride characteristics when the lift is loaded by the rated capacity and travelling at the rated car speed, over a frequency range from 1 to 12 Hertz, and any installed fan turned off.

The ride performance and noise levels must conform to the requirements set out in Table B381.1.

Table 381.1 – Lift Ride Quality Requirement

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral quaking (side to side and front to rear)</td>
<td>(&lt; 0.20 \text{ m}^2/\text{s}^2) average pk-pk</td>
</tr>
<tr>
<td>Vertical acceleration</td>
<td>(\leq 0.8 \text{ m}/\text{s}^2)</td>
</tr>
<tr>
<td>Jerk</td>
<td>(\leq 2.0 \text{ m}/\text{s}^3)</td>
</tr>
<tr>
<td>Noise level in car – moving</td>
<td>(\leq 55 \text{ dB(A)})</td>
</tr>
<tr>
<td>Noise level in car – doors operating</td>
<td>(\leq 60 \text{ dB(A)})</td>
</tr>
<tr>
<td>Noise level at a lift landing with cars operating</td>
<td>(\leq 55 \text{ dB(A)})</td>
</tr>
</tbody>
</table>
Provide all equipment and labour necessary for the detailed re-balance of the guide rails and for all measurements involved.

Submit for each lift a ride quality report, stating the measured values of each characteristic listed in Table B381.1 at completion of the re-balance, to be used as baseline for lift maintenance.

### 4.2.5 Hoist Machine Sound Isolation

Fit vibration isolating pads between the bed plate and the hoist machine support beams. The isolating pads must be of a type that prevents the transmission of machine vibration to the building structure. Alternatively, you may fit the isolating pads between the machine support beams and the building structure.

The location and deflection characteristics of the isolating pads must be such as to produce uniformly loaded pads under all operating conditions up to the rated lift capacity. The bed plates must include positive means to prevent lateral displacement of the machine or the isolation pads.

### 4.3 Lift Performance

The installed lifts must, at all times, meet the performance criteria detailed in Table B381.2.

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum door opening time</td>
<td>2.0 s</td>
</tr>
<tr>
<td>Maximum door closing time</td>
<td>3.0 s</td>
</tr>
<tr>
<td>Door dwell times</td>
<td>4.0 s in response to a landing call or combined car and landing call</td>
</tr>
<tr>
<td></td>
<td>2.0 s in response to a car call</td>
</tr>
<tr>
<td>Door protection monitoring</td>
<td>Dwell time to be reduced to 1.0 s after re-establishment of door passenger protection device or pushing of a door close button on the car operating panel</td>
</tr>
<tr>
<td>Floor levelling accuracy</td>
<td>± 6 mm under varying load conditions</td>
</tr>
</tbody>
</table>

### 4.4 Finishes and Painting

The finish of the components supplied for the lifts must be of the same quality as the submitted samples.

Prepare, paint and finish all component surfaces strictly in accordance with the manufacturer’s instructions and the Design Documentation drawings, as appropriate.

Apply protective treatment to all lift shaft/lift car steelwork to minimise the effects of corrosion and galvanic action. Protect all lift shaft/lift car steelwork that is not specified as galvanized or in stainless steel, by applying a paint coating of durable surface tolerant epoxy with a minimum dry film thickness of 100 microns.

Prior to dispatch from the manufacturer, treat the surfaces of all plant and equipment with suitable dressings or temporary protection coatings against the action of dampness, moisture and weather during transport to the site and subsequent erection.
Finish in matt black all car, landing and lift shaft equipment that is visible past the line of entrance when the car is at a landing with its doors open.

On completion of the installation and operation of the lift, make good any damage to paint coating or plating.

### 4.5 KEYS AND TAGS

On completion of the Works, provide the following keys fitted with suitable identifying tags:

(a) Three (3) complete sets of Master Locksmith Access Key (MLAK) keys to operate each type of key-operated switch and lock associated with the lift system.

(b) The key combination for each function must be of the restricted key type and must be attached to the same key ring with a tag identifying the purpose of each key.

### 4.6 CLEANING DOWN

On completion of installation, carry out a complete and thorough clean down of the entire lift installation to remove all cement, plaster, temporary protective coatings and other foreign material adhering to the lift equipment and finishes.

All stainless steel finishes must be thoroughly cleaned with a recommended stainless steel cleaner prior to the lift being placed into service.

### 5 TESTING AND APPROVALS

#### 5.1 GENERAL

Submit full details of the equipment and procedures proposed for lift testing, along with a testing schedule, to the Project Verifier for approval.

<table>
<thead>
<tr>
<th>HOLD POINT</th>
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<tbody>
<tr>
<td>Process Held</td>
</tr>
<tr>
<td>Submission Details</td>
</tr>
<tr>
<td>Release of Hold Point</td>
</tr>
</tbody>
</table>

#### 5.2 LIFT TESTING

Test the installed lifts to verify ride quality (refer Clause 4.2.4), performance and safety as required under BS EN 81-1:1998 and AS/NZS 3000.

If required by the Project Verifier, carry out the following:

(a) any tests necessary to comply with legislative requirements;
Test the operation and calibration of each piece of equipment, individually and as part of a complete operating system.

If the tests reveal defects or unsatisfactory performance of the lifts, rectify these nonconformities to the satisfaction of the Project Verifier.

Provide copies of all results and readings obtained during the testing and re-balancing to the Project Verifier at completion of the testing, together with certification that the final results comply with this Specification. Include a certification that the doors and frames comply with the requirements of AS 1735.11.

Submission of test results showing that the lift is performing satisfactorily will not relieve you from any of your obligations under the deed.

5.3 **DELAY IN CARRYING OUT TESTING**

If you delay in carrying out the lift testing past the dates stated in the submitted testing schedule, the RMS Representative may arrange for the lift testing to be carried out by others, after giving you 7 days written notice of the intention to do so.

5.4 **APPROVALS BY STATUTORY AUTHORITY**

Arrange for all inspections, testing and approvals required by the relevant Statutory Authority to be carried out.

Provide to the Project Verifier the certificate of approval by the relevant Statutory Authority for the lift installation.

6 **LIFT MAINTENANCE**

6.1 **GUARANTEES OR WARRANTIES**

Provide a minimum five year written guarantee or warranty from the date of installation, from the lift manufacturer on the operation and components of the lifts, together with a commitment to rectify all defects in the lift services and components within this period.

The lift maintenance service provider nominated by the lift manufacturer must have at least five years recent experience in maintaining lifts similar to those provided for the Works. Unless specified otherwise, any guarantees or warranties must be transferred to the RMS in accordance with the Project Deed.

Remove and replace any part of the lift that becomes defective within the guarantee or warranty period. All replacement parts and consumables used must be new and of the same model and manufacture as the original.

The maintenance service provider must record all of the routine and defects maintenance attendance (refer Clauses 6.3 and 6.4) within the guarantee or warranty period in a book kept in a dedicated holder within the machine cubicle. The entries must include the date and time of the personnel and the reasons for the attendance.
6.2 LIFT OPERATION AND MAINTENANCE MANUAL

Prior to completion of lift installation, provide to the RMS Representative two copies of the Lift Operation and Maintenance Manual. Provide an additional copy to be stored in a dedicated holder at the lift control/drive centre.

The manual must be written in English and must include, but not be limited to the following:

(a) index for quick reference;
(b) description of the installation, operation and sequence;
(c) contact details for normal and after hours service difficulties;
(d) details of basic operating principles and special controls;
(e) schedule of equipment models and serial numbers;
(f) schedule of equipment suppliers;
(g) equipment warranty registration certificates;
(h) schedule of maintenance and servicing procedures and their required frequencies;
(i) procedure for fault rectification;
(j) recommended cleaning procedure for components in public view;
(k) list of major items of equipment including reference terminology;
(l) details of authorities requirements and certification of test and approval;
(m) set of “As-Installed” drawings and wiring diagrams.

6.3 ROUTINE MAINTENANCE

The lift maintenance service provider must carry out the scheduled routine maintenance of the lifts on a monthly basis for a period of 12 months after acceptance of lift installation in accordance with Annexure B381/A.

The routine maintenance must include the replacement of lift car lighting luminaries where required.

Provide monthly service reports to the RMS Representative for each routine maintenance work carried out.

Carry out retrieval and changing of video surveillance tapes as part of the routine maintenance function. When requested by the RMS Representative, forward the video surveillance tapes to the RMS Representative.

Before completion of the 12 months maintenance period, provide appropriate diagnostic tools for the lift control system to the RMS Representative.

6.4 DEFECTS MAINTENANCE

Monitor service calls over the telephone continuously during the guarantee or warranty period.

Attend to these calls:

(a) within 24 hours for non-emergency calls,
(b) within 2 hours for a lift stoppage,
(c) within 1 hour for a passenger entrapment.

Notifications of all callouts must be automatically copied for information purposes only to the RMS base communication lift maintenance system unit in RMS Sydney Maintenance.

Act on any instruction issued by the RMS Representative within the guarantee or warranty period to rectify defective work, unsuitable standard of performance or ride quality.

Provide defect service reports to the RMS Representative for all defects maintenance carried out.
## ANNEXURE B381/A – PROJECT SPECIFIC REQUIREMENTS

Refer to Clause 1.2.1.

The lift services must include, but not be limited to, the following:

<table>
<thead>
<tr>
<th><strong>Number of Lifts</strong></th>
<th>[Insert number of lifts required]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>[Insert capacity e.g. “680kg, 9 persons”, “1200 kg, 16 persons”, etc.]</td>
</tr>
<tr>
<td><strong>Floor Levels Served</strong></td>
<td>[Insert number of levels served]</td>
</tr>
<tr>
<td><strong>Travel Distance</strong></td>
<td>To be confirmed prior to ordering of the equipment</td>
</tr>
<tr>
<td><strong>Rated Car Speed</strong></td>
<td>1.00 m/s</td>
</tr>
<tr>
<td><strong>Drive System</strong></td>
<td>Variable-voltage variable-frequency gearless drive</td>
</tr>
<tr>
<td><strong>Control System</strong></td>
<td>Microprocessor-regulated, programmable simplex control</td>
</tr>
<tr>
<td><strong>Automatic Shutdown</strong></td>
<td>Provide an adjustable timer facility to enable the lift to be shutdown out of hours. During shutdown periods each landing indication must display “Out Of Service”.</td>
</tr>
<tr>
<td><strong>Shutdown Override</strong></td>
<td>Provide an MLAK spring-return key switch in each landing button panel to enable the shutdown mode to be overridden for a single lift trip. On completion of the single lift trip, the lift must return to its shutdown mode.</td>
</tr>
<tr>
<td><strong>Motor Starts Per Hour (sph)</strong></td>
<td>100 sph</td>
</tr>
<tr>
<td><strong>Number of Car Entrances</strong></td>
<td>One (front)</td>
</tr>
<tr>
<td><strong>Entrance Type</strong></td>
<td>Two panel centre parting</td>
</tr>
<tr>
<td><strong>Entrance Dimension</strong></td>
<td>1000 mm wide x 2100 mm high</td>
</tr>
<tr>
<td><strong>Emergency Lowering</strong></td>
<td>Provide a battery back up system to return the lift to the bottom floor and open the lift doors during a power outage</td>
</tr>
<tr>
<td><strong>Stretcher Capacity</strong></td>
<td>To be provided for lifts operating over a 12 m travel</td>
</tr>
<tr>
<td><strong>Facilities For Disabled Persons</strong></td>
<td>Facilities for lift access to be provided in the lift car and at the lift lobbies in accordance with the requirements of the AS 1735.12 and the BCA</td>
</tr>
<tr>
<td><strong>Counterweight Safety Gear</strong></td>
<td>Not required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Lift Shaft Dimensions:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lift Shaft Plan</td>
</tr>
<tr>
<td>Top of Shaft Overrun</td>
</tr>
<tr>
<td>Lift Pit Depth</td>
</tr>
<tr>
<td>Car and Landing Entrances</td>
</tr>
<tr>
<td><strong>Door Scanning Device</strong></td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td><strong>Labels and Notices</strong></td>
</tr>
<tr>
<td><strong>Distribution Board</strong></td>
</tr>
<tr>
<td><strong>Emergency Lighting</strong></td>
</tr>
<tr>
<td><strong>Wiring Diagrams</strong></td>
</tr>
<tr>
<td><strong>Penetrations</strong></td>
</tr>
<tr>
<td><strong>Lifting Eyes</strong></td>
</tr>
<tr>
<td><strong>Lift Shaft – General:</strong></td>
</tr>
<tr>
<td><strong>Guide Rail Fixings</strong></td>
</tr>
<tr>
<td><strong>Lighting</strong></td>
</tr>
<tr>
<td><strong>Buffers</strong></td>
</tr>
<tr>
<td><strong>Buffer Steelwork</strong></td>
</tr>
<tr>
<td><strong>Pit Ladder</strong></td>
</tr>
<tr>
<td><strong>Bondblocks and fixings</strong></td>
</tr>
</tbody>
</table>
### Design, Supply and Installation of Pedestrian Bridge Lifts

**equipment.**

Supply and install masonry fixings where required.

**Sump Cover**

Provide a sump cover with positioning lugs to the lift pit.

**Protective Barriers**

Provide protective barricades across the lift landing entrance during the construction works.

**Lift Shaft Flushing**

Galvanized or zinc-annealed, stiffened, non-perforated panels.

**Landing Entrances:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrance Type and Size</td>
<td>Two panel centre parting doors providing 1000 mm wide x 2100 mm high clear opening</td>
</tr>
<tr>
<td>Landing Door Surrounds</td>
<td>Grade 316 stainless steel satin finished standard shallow depth (box type) surrounds</td>
</tr>
<tr>
<td>Landing Door Frames</td>
<td>Heavy duty to resist vandalism</td>
</tr>
<tr>
<td>Landing Door</td>
<td>Grade 316 stainless steel satin finished door panels</td>
</tr>
</tbody>
</table>

**Landings General:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landing size</td>
<td>Size the lift landings to permit wheelchair turning with a minimum circulation space of 1540 mm × 2070 mm.</td>
</tr>
<tr>
<td>Entrance Finishes</td>
<td>Grade 316 stainless steel satin finished</td>
</tr>
<tr>
<td>Entrance Grouting and Protection</td>
<td>Where installed to masonry or concrete walls, the door frames must be protected, properly braced and carefully grouted</td>
</tr>
<tr>
<td>Landing Sills</td>
<td>Provide landing sills constructed of extruded hard aluminium alloy. Each sill must be installed flush with the landing floor finishes. Supply and install all necessary support angles, brackets and fixing necessary for the installation of the door sills.</td>
</tr>
<tr>
<td>Landing Doors Closers</td>
<td>Landing door closers must be of the spring return or counterweight type designed to operate quietly under all conditions over the operating life of the equipment.</td>
</tr>
<tr>
<td>Landing Call Buttons</td>
<td>One riser with Dewhurst US90/91 illuminating call recorded mechanical buttons installed to the requirements of the AS 1735.12. Both button plates must feature a MLAK spring return key switch.</td>
</tr>
<tr>
<td>Maintenance Access Device</td>
<td>The door unlocking device requested by Regulations must be located in the landing door jamb at each level.</td>
</tr>
<tr>
<td>Maintenance Egress Device</td>
<td>Provide an egress device to the bottom level landing doors.</td>
</tr>
<tr>
<td>Fireman Service Recall Switch</td>
<td>Provide to Fireman recall switch to the lower level landing button panel.</td>
</tr>
<tr>
<td>Landing Indication:</td>
<td>Provide at each level served by the lift, a Dewhurst dot matrix indicator featuring direction of travel arrows, lift position and electronic tone chimes. The indicator must also be able to display the words “Out Of Service”.</td>
</tr>
<tr>
<td>Lift Car and Counterweight Guides</td>
<td>The car frame and counterweight assembly must be equipped with guides that will operate quietly and smoothly throughout the travel of the car and counterweight.</td>
</tr>
<tr>
<td>Car Frame Hoisting Point</td>
<td>The support point for hoisting the lift car must be at the centreline</td>
</tr>
</tbody>
</table>
of the lift car. Cantilever car frames are not permitted.

**Car Enclosures:**

- **Front Wall Returns:** Grade 316 stainless steel satin finished
- **Handrails:** One located on a sidewall of the lift car in Grade 316 stainless steel satin finished designed and installed in accordance with the requirements of the AS 1735.12
- **Side Walls:** Grade 316 stainless steel satin finished panels
- **Lighting:** Fluorescent T5 or compact fluorescent lighting behind acrylic opal diffusers with expanded steel mesh protection. Design the lighting to provide a minimum illumination of 100 lux when measured at the car door sill.
  - Provide timers or sensors to turn the lights off during periods of non lift usage.
- **Ceiling:** Grade 316 stainless steel satin finished panels incorporating T5 or compact fluorescent light fittings
- **Flooring:** Grade 316 stainless steel checker plate flooring with non-slip tread pattern

**Lift Car Internal Dimensions:**

1400 mm wide x 1700 mm deep x 2300 mm

**Lift Car Indication:** Dewhurst dot matrix indicator displaying floor numbering and direction of travel arrows

**Car Ventilation**

- Provide mechanical fan ventilation to the lift car which must be designed with a handling capacity to change the volume of air in the lift car in less than 5 minutes.
- Provide timers or sensors to turn the fan off during periods of non lift usage.

**Top of Car GPO**

- Provide a double general purpose outlet to the top of the lift car.

**Car Door:**

- **Drives:** Variable-voltage variable-frequency drive doors with microprocessor controls. The doors drive and linkages must provide for a smooth and positive operation without causing snatch or bounce of the doors.
- **Dimensions:** Two panel centre parting, providing 1000 mm wide x 2100 mm high clear opening.
- **Frame:** Heavy duty to resist vandalism.
- **Finishes:** Grade 316 stainless steel satin finished door panels
- **Sill:** Provide car door sill to the lift, of extruded hard aluminium alloy, installed flush with the car floor finishes

**Car Operating Panel**

- Two panels in Grade 316 stainless steel satin finished in accordance with the requirements of the AS 1735.12, with Dewhurst US 90/91 illuminating call recorded mechanical buttons. Each car operating panel must be provided with the following features:
  - (a) Hands free auto dialling telephone
  - (b) Alarm button
(c) Illuminated car destination buttons
(d) Door open and door close buttons
(e) Fan and light key switch (main panel)
(f) Independent service key switch (main panel)
(g) Fireman’s Service control switch (main panel)

Voice Annunciation
To be provided in accordance with the requirements of AS 1735.12

Load Notice
Provide an engraved load notice to the lift car displaying capacity and emergency contact number.

Lift Shaft Ventilation
Provide details and location of the top of lift shaft ventilation penetration.

Trailing Cables
Provide communication grade, screened trailing cables including IP Category 6 or equivalent suitable for use with any of the microphone, telephones, intercom, lift indication and CCTV equipment provided in the lift car.

The total number of cores installed must be such as to provide at least 10% spare cores, divided equally among the multi-core cables used.

Communications and Alarm:

Alarm Bell System/Buzzer
Provide alarm bell on lift car roof operated by alarm button on the car operating panels.

Communication Facilities
Provide a Telstra approved auto dialling hands free emergency phone with operating instructions to the lift car. Phone to be activated by pressing lift car alarm button for a minimum of 4 s.

Top of Car and Lift Pit
Provide an alarm/communication device at the top of the lift car and in the lift pit in accordance with the requirements of AS 1735.2.

CCTV
Provide suitable cables (IP Category 6 or equivalent) in the lift trailing flex for the installation of CCTV camera to the lift car. CCTV camera supplied by CCTV contractor.

Key Switches and Keys
All key switches to be keyed with MLAK keys.

Stainless Steel Finishes:
Grade 316 satin finish
- Door Skin 2.5 mm thick stainless steel
- Buttons and Indicators 2.5 mm thick stainless steel

Painting
Paint all non-galvanized or stainless steel work, well flushing, toe guard, door head, back of landing and car doors, and support components to be painted matt black.

Hoisting
Allow for all hoisting and craning of materials and equipment.

Allow for all internal lift shaft scaffolding or false cars as may be required for the installation of the equipment.

Guarantee
Provide a five-year guarantee or warranty on the operation and components of the lifts.

Maintenance
Provide 12 months full comprehensive maintenance, including attendance for 24 hour emergency call-outs, during the maintenance period.
ANNEXURE B381/B – (NOT USED)

ANNEXURE B381/C – SCHEDULES OF HOLD POINTS AND IDENTIFIED RECORDS

Refer to Clause 1.2.3.

C1 SCHEDULE OF HOLD POINTS

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Testing of the lift</td>
</tr>
</tbody>
</table>

C2 SCHEDULE OF IDENTIFIED RECORDS

The records listed below are Identified Records for the purposes of RMS D&C Q6 Annexure Q/E.

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description of Identified Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3.1</td>
<td>Lift design documentation and shop drawings</td>
</tr>
<tr>
<td>2.3.2</td>
<td>Modification to lift shaft</td>
</tr>
<tr>
<td>4.2.4</td>
<td>Ride quality report</td>
</tr>
<tr>
<td>5.1</td>
<td>Details of the proposed testing equipment and procedures to be used</td>
</tr>
<tr>
<td>5.2</td>
<td>Lift testing results</td>
</tr>
<tr>
<td>5.4</td>
<td>Certificate of approval by Statutory Authority</td>
</tr>
<tr>
<td>6.1</td>
<td>Guarantees or warranties</td>
</tr>
<tr>
<td>6.2</td>
<td>Lift Operation and Maintenance Manual</td>
</tr>
<tr>
<td>6.3</td>
<td>Monthly service reports</td>
</tr>
<tr>
<td>6.4</td>
<td>Defect service reports</td>
</tr>
</tbody>
</table>

ANNEXURE B381/D – (NOT USED)
ANNEXURE B381/E – TECHNICAL DETAILS TO BE PROVIDED BY THE CONTRACTOR

E.1 POWER REQUIREMENTS

Load imposed on A.C. sub-mains ……. Amps
Lift accelerating with full load up ……. Amps
Lift running at constant speed with full load up ……. Amps

E.2 HOIST MOTOR

Manufacturer ..................................................
Rated starts per hour ……… sph

E.3 CAR FRAME HOISTING POINT

Lift car hoisting point (i.e. centre point of car or underslung) ..................................................

E.4 ACCURACY OF FLOOR LEVELLING (GUARANTEED)

Load: 2 person ± ……. mm
Load: rated capacity ± ……. mm

E.5 DOOR EQUIPMENT

Door operator manufacturer ..................................................
Door lock equipment manufacturer ..................................................
Door track material (e.g. steel) ..................................................

E.6 LIFT CONTROLS

Control manufacturer ..................................................
Fully closed to fully open ……… s

E.7 LIFT DRIVE

Drive manufacturer ..................................................
Regenerative drive Yes / No
Regenerative drive efficiency ..................................................

E.8 DOOR OPERATING TIMES (GUARANTEED)

Fully open to fully closed ……… s
Fully closed to fully open ……… s
E.9 LOADING ON BUILDING STRUCTURE

Machine platform ……… kN
Lift pit ……… kN
Lift rails:
  Horizontally X ……… kN
  Horizontally Y ……… kN

E.10 CAR AND SHAFT DIMENSIONS

Car width, height and depth W x H x D ……… mm x ……… mm x ……… mm
Door dimensions W x H ……… mm x ……… mm
Top of lift shaft overrun
Pit depth
Lift shaft plan

E.11 KEY SWITCHES

Key switch manufacturer ………………………………………
MLAK compliant Yes / No

E.12 LANDING DOOR UNLOCKING DEVICES

Location of landing doors unlocking device (door panel or
door jamb?) ………………………………………

E.13 CAR VENTILATION

Fan design and manufacturer ………………………………………
Fan size (diameter) ………………………………………
Air changes ……… / hour

E.14 SHAFT VENTILATION

Lift shaft ventilation penetration dimensions ……… x ………
Penetration location ………………………………………

E.15 LIFT CAR LIGHTING

Number type of lights ………………………………………
Type of luminare ………………………………………
Illumination level – measured at the lift car door sill ……… Lux
### E.16 LIFT CAR EMERGENCY LIGHTING
- **Type of emergency lighting**: 
- **Illumination level** – measured at the main car operating panel: ...... Lux

### E.17 STAINLESS STEEL FINISHES
- **Grade of stainless steel**: 
- **Steel thickness** – Car operating panels and landing indicator/button panels: ...... mm
- **Steel thickness** – Car/landing door panels, car interior panels: ...... mm

### E.18 CAR AND LANDING BUTTONS
- **Button manufacturer**: 
- **Button model number**: 

### E.19 CAR AND LANDING INDICATORS
- **Indicator manufacturer**: 
- **Indicator model number**: 

### E.20 LIFT CAR EMERGENCY LIGHTING
- **Type of emergency lighting**: 
- **Illumination level** – measured at the main car operating panel: ...... Lux

### E.21 ROUTINE MAINTENANCE
- **Schedule frequency of regular service visits**: 
- **Number of expected call-outs per lift during the maintenance period (excluding nuisance calls)**: 

### E.22 DEFECTS MAINTENANCE
- **Number of expected callouts per lift per annum (excluding nuisance calls)**: 
- **Response time to breakdowns during**:
  - **Normal working hours (with no trapped passengers – maximum 60 minutes)**: ...... mins
  - **Normal working hours (with trapped passengers – maximum 30 minutes)**: ...... mins
  - **Outside regular working hours (with no trapped passengers – maximum 90 minutes)**: ...... mins
  - **Outside regular working hours (with trapped passengers – maximum 45 minutes)**: ...... mins
  - **Passenger entrapment**: ...... mins
ANNEXURES B381/F TO B381/L – (NOT USED)

ANNEXURE B381/M – REFERENCED DOCUMENTS

Refer to Clause 1.2.6.

**RMS Specifications**

RMS D&C Q6 Quality Management System (Type 6)
RMS D&C B80 Concrete for Bridgeworks

**Australian Standards**

AS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation
AS 1735 Lifts, escalators and moving walks
  - AS 1735.1 General requirements (Amendment 1, incorporating Appendix A - Variation to International Standards for Application in Australia, not to be considered)
  - AS 1735.2 Passenger and goods lifts - Electric
  - AS 1735.10 (Int) Tests
  - AS 1735.11 Fire-rated landing doors
  - AS 1735.12 Facilities for persons with disabilities
AS/NZS 3000 Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS ISO 9001 Quality management systems - Requirements

**Other Standards**

ASTM A240 / A240M – 12 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
BCA Building Code of Australia
BS EN 81-1 Safety rules for the construction and installation of lifts. Electric lifts
APTA IT-CCTV-RP-001-11 Recommended Practice for Selection of Cameras, Digital Recording Systems, Digital High-Speed Networks and Trainlines for Use in Transit-Related CCTV Systems