Alpha
Consulting Engineers Pte Ltd

FEEDBACK REPORT FORM

Ref No: 138 - 200410 (S)

To: LCT From: LFY

Job No./Project: LIFT MASTER SPECS *(where applicable)*
Section 8 - Escalators & Passenger Conveyors

Source of feedback:

Scope of Feedback: * ☐ Quality ☐ Environmental ☐ Administrative ☐ Contractual
☐ Technical ☒ Specification ☐ Others

Section A : Problem & Cause

No standby operation / ~~[illegible]~~ Energy saving mode.

Section B : Mitigating Action Taken, if any

Section C : Suggested Corrective Action

Update specs.

Section D : Approved Corrective Action

Document Affected * : ☑ Yes ☐ No Affected Document : L/8-5

Approved By : (LCT) Date : 21/4

Section E : Action

Action By : NA Lim

Targeted Completion : April 2010

Actual Completion : 19 April 2010 Verified By : (LCT)

** Mark [X] where appropriate*

Distribution:							

Select one of the following headings

LIFT & ESCALATOR INSTALLATION

LIFT INSTALLATION

ESCALATOR INSTALLATION

There are 3 versions of Section 8 namely:
(i) Escalators
(ii) Passenger Conveyors
(iii) Escalators & Passenger Conveyors
Select the appropriate version to suit the project

SECTION 8 - ESCALATORS & PASSENGER CONVEYORS

8.1 General

The whole of the escalator & passenger conveyor installation shall conform to the current edition of Singapore Standard CP 15: Code of Practice for Installation, Operation and Maintenance of Escalators and Passenger Conveyors.

8.2 Arrangement and Floors Served

The arrangement of the escalators & passenger conveyors and the floors served are described under Schedule of this Specification and as shown on the Specification Drawings.

8.3 Control

The escalators & passenger conveyors shall be of the key-operated reversible type.

The following control switches and buttons shall be provided at both top and bottom landings for each escalator & passenger conveyor:

(a) Key-operated 'STARTING' switches for starting each escalator & passenger conveyor. These switches shall be located such that the operator can see the escalator & passenger conveyor steps when activating this switch.

(b) Key directional control switch.

(c) 'EMERGENCY STOP' buttons. These buttons shall be red in colour and shall be replaced in conspicuous and accessible positions at or near each entrance and exit, and shall be protected against accidental operation. The operation of these buttons shall cause the electrical supply to the driving machine and brake to be disconnected and bring the escalators & passenger conveyors to a smooth stop.

(d) Push buttons for the buzzer for communication between top and bottom landings.

8.4 Driving Machinery

The driving motor of each escalator & passenger conveyor shall be of the constant speed a.c. 3 phase 400 volt, 50 Hz induction motor with a worm or helical reduction gears made of phosphor bronze and a worm of high grade alloy steel. The braking system shall be mechanically applied and electrically held off. This braking shall bring the escalator & passenger conveyor to rest under conditions of maximum load, travelling in the down direction and maintaining it stationary under such conditions. The springs used for applying the brake shoes shall be of compression type and adequately supported.

Where chains are used to connect the driving machine to the main drive shaft, an additional brake shall be provided on this shaft, which will operate automatically, should the chains fail.

This brake shall also be the electrically released type. Roller type sealed bearings with means for lubrication and adjustment for wear shall be provided.

Provisions shall be made for handwinding the escalator & passenger conveyor in either direction; the direction of winding corresponding to the direction of movement of the escalator & passenger conveyor steps shall be clearly indicated.

8.5 Trusses and External Finishes

The steel truss of the escalator & passenger conveyor shall be designed to carry the entire weight of the escalator & passenger conveyor including the full capacity passenger load, balustrade covering and external cladding. Oil tight, steel drip pans shall be provided beneath the entire width and length of the truss and shall be of sufficient strength to withstand weight of workers.

Trusses and all ferrous-metal parts shall be anti-rust treated and painted as specified in the relevant clauses of this Specification. For the outdoor escalators & passenger conveyors, the trusses etc. shall be finished in 2 coats of weather-resistant enamel and the drain pans shall be galvanised.

The exterior covers and finishes of the escalator & passenger conveyor truss shall be as specified in Schedule 2 of this Specification. All finishes shall be subject to final review by the Architect.

8.6 Steps/Pallets for Escalator & Passenger Conveyor Installation Only

The steps shall be of a die-cast aluminium alloy with cleated steps and cleated riser to effect combing action between the rising and falling steps

Steps shall be covered on the underside with sound-deafening material which shall be removable from the escalators & passenger conveyors without disturbance to the balustrade or step drains.

Step demarcations strips shall be provided.

The running clearances of the steps shall comply with Standard CP 15. Moulded plastic demarcation combs shall be provided on the edge of the steps to easily distinguish one step from another. The colour of the combs shall be subject to review by the Architect.

For weatherproof escalators & passenger conveyors, all ferrous hardware steps axles and fastenings shall be zinc or cadmium plated.

8.7 Balustrades

The finishes for the balustrades shall be described in Schedule 2 of this Specification.

8.8 Handrails

Each balustrades shall be provided with a smooth and continuous handrail of suitably reinforced laminated vulcanized rubber moving in the same direction and essentially at the same speed as the steps, and at a height not less than 840 mm and not more that 1050mm, measured vertically from the nose of the steps.

Guards shall be provided at newel ends of the balustrades. Jointing of the handrails must be carried at the Manufacturer's works prior to shipment to site and not outside the manufacturer's works.

The colour of handrails shall be subject to review by Architect.

8.9 Deckboard

The entire length of the deckboard shall be reinforced to provide rigid panels of hairline stainless steel finish. All horizontal joints shall be butted to provide smooth floor surface.

8.10 Skirt Guard

The skirt guard of each escalator & passenger conveyor above the steps shall be of hairline stainless steel finish.

8.11 Lighting of Inside Panels

The entire balustrades for all escalators & passenger conveyors shall be lit by internally concealed slim-line fluorescent lighting fittings. The fluorescent lights shall be located along the entire length of the balustrades on both sides of each escalator & passenger conveyor, underneath the handrails and shall be provided with white acrylic diffuser. Switches of appropriate rating shall be located on the deckboards for each escalator & passenger conveyor.

8.12 Safety Devices

The following minimum safety devices shall be provided for each escalator & passenger conveyor; the activation of any one of these devices shall cause the electricity supply to the driving motor to be disconnected and also the brake to be operated.

(a) Built-in overload, short circuit including single phasing protection such that in the event of the current exceeding rated current of the motor, the relay operated automatically and stops the escalators & passenger conveyors instantaneously.

(b) Emergency stop buttons as described in the above mentioned Clauses.

(c) For a.c. induction driving motor with a slip exceeding 10%, a speed governor shall be provided which shall be activated when the speed exceeds the contract speed by more than 20%.

(d) Electro-mechanical interlock for up and down contactors.

(e) Drive chain safety device which shall operate when the drive chain which serves to convey power, elongates excessively or breaks.

(f) Combplate safety switches.

(g) Step chain safety device, which shall operate when the step chain stretches excessively or breaks or the motion of the chain is interrupted.

(h) Skirt guard safety switches which shall operate when foreign objects are caught between skirt guards and steps.

(i) Electro-mechanical brakes shall operate when there is a failure in the power supply or whenever one of the safety devices, i.e. stop/emergency button operates.

(j) Key operated starting switches as described in the above mentioned Clause.

(k) Handrail guards with handrail guards switches at entrances of moving handrails which shall stop the escalator & passenger conveyor if any object is caught between the handrail guard and handrail.

8.13 Combs, Combplates and Floor Plates

The step combs, combplates, manhole cover and landing plates shall be provided at the upper and lower landings of each escalator & passenger conveyor and shall be of extruded aluminium material except for the step combs which shall be of black moulded resin. The stop comb shall comprise several easily replaceable segments, the teeth of which shall mesh with, and be set into the grooves in the tread surface such that the points are always below the upper surface of the treads. The combplates shall be adjustable vertically. The non-slip surface of the landing plates shall have the matching design to that of the combplates. The landing plates shall be secured against unauthorised access. Each landing plate shall be provided with suitable inscription to identify the floor concerned.

8.14 Step Demarcation Lights

Green step demarcation lights located below the steps shall be provided at both landings of each escalator & passenger conveyor in an area not exceeding 400mm from the associated combplate. A minimum of two fluorescent lighting fittings shall be provided at each landing. The lights shall be activated whenever the escalator & passenger conveyor concerned is in operation.

8.15 Sprockets

Noiseless type sprockets shall be provided and installed at each stop landing for each of the escalators & passenger conveyors.

8.16 Control Panels

Control panels shall be in accordance with the requirements specified for the control panels of the lifts.

8.17 Machinery Spaces

There shall be a permanent light, suitably protected, in every machinery space which can be switched without passing over or reaching over any part of the machinery. A 13 amp switch socket outlet shall also be provided and installed adjacent to the light switch. Suitable ventilation for the space shall also be provided.

8.18 Vibration Isolation

All the escalators & passenger conveyors shall be isolated from the supporting structure with bridge bearing pad (BBP) isolators of minimum 37mm thick and of 50 durometer. The pads shall be sized so that they will be loaded between 280 KN/sq m to 350 KN/sq m. BBP isolators shall be product of Mason Industries or equivalent. Any restraints or anchoring bolts, if provided, shall be isolated from the mounting base and/or structure with neoprene inserts of minimum 10mm thickness. The entire mounting system shall be captive and in the event of failure of pad mounts, shall not allow equipment/base to move more than the thickness of the pads.

8.19 Dirt Troughs

To ease escalators & passenger conveyors cleaning, dirt troughs of the same width as the steps shall be provided in the upper and lower return stations. They shall be designed for easy removal from the escalator & passenger conveyor truss.

8.20 Weatherproof Escalators & Passenger Conveyors

Weatherproof escalators & passenger conveyors where called for in the Schedule of this Specification or Specification drawings shall be specifically designed and treated for continuous

operation in climatic conditions as mentioned elsewhere in this Specification. All skirt panels, truss deck boards, exposed hardware shall be stainless steel and the skirt and deck board panels backing shall be painted with a coating of wood preservation and be sealed against moisture penetration at joints with caulking. All electrical wiring, fittings, exposed control switches and buttons, etc. shall be weatherproof. All items of ancillary equipment such as thermostatic control heaters, etc. which are obviously necessary for the proper functioning of the weatherproof escalator & passenger conveyor installation or which are generally provided in accordance with good accepted engineering practice particularly to this trade but not described or detailed hereunder shall be provided.

8.21 Standby Operation/ Energy Saving Mode

The escalators & passenger conveyors shall be equipped with built-in sensors, equipment, etc. for standby operation or energy saving mode. The escalators & passenger conveyor shall be able to operate at low speed or automatically stop once under no-load condition and resumes normal operation when approaching passengers are detected.