Alpha
Consulting Engineers Pte Ltd

FEEDBACK REPORT FORM

Ref No: 160-090614

To: CCG From: LFY

Job No./Project: Master Specification
Lift Installation – Section 6 – Lift Operating Systems *(where applicable)*

Source of feedback: Internal Review of Specifications

Scope of Feedback: * [ ]Quality [ ]Environmental [ ]Administrative [ ]Contractual
[ ]Technical [X]Specification [ ]Others

Section A : Problem & Cause

Double Deck lift operation which is rarely specified should be specified in a separate chapter.

Section B : Mitigating Action Taken, if any

Section C : Suggested Corrective Action

Remove double deck operation

Section D : Approved Corrective Action

Document Affected * : [✓]Yes [ ]No Affected Document : Mast Specs for LI.

Approved By : [signature] Date : 11/6.

Section E : Action

Action By : NA. [signature]

Targeted Completion : 18/6/2014.

Actual Completion : 17/6/2014 Verified By : [signature]

** Mark [X] where appropriate*

Distribution:

↳ To all staff via e-mail on 17 June 2014 - [signature]

(c) Moderate Up and Moderate Down Traffic

When incoming traffic at the lobby floor increases, as indicated by two cars leaving the lobby in the 'UP' direction, filled nearly to capacity within a predetermined adjustable time period, cars assigned to upper zones shall be called to the lobby without waiting for a lobby hall call.

Cars shall automatically be dispatched from the lobby when they become loaded nearly to capacity or, if not loaded to capacity, on a variable time interval calculated on the basis of the number of cars at the lobby and other data representative of traffic in the system.
The cars shall continue to operate in this manner until the lobby traffic has been reduced to a predetermined level.

When 'DOWN' calls above the lobby increase to a predetermined level, assignment of a car to the lobby ceases and the lobby car shall travel up to assist the other cars. Cars arriving at the lobby, after discharging passengers shall be dispatched upward.

The cars shall continue to operate in this manner until the down traffic has been reduced to a predetermined level.

(d) Load Weighing Bypass

A load weighing device shall be provided to operate and bypass all hall calls when the car is filled to a pre-determined percentage of the passenger capacity.

For double deck lifts, when the load weighing device of either the upper or lower car operates, the lift shall bypass all hall calls irrespective of whether the other car has been filled to the pre-determined capacity.

(e) Independent Service

Key operated switches shall be provided in the car operating panel of each lift car to remove a lift from the group for operation in response to car buttons only. On arrival at a floor on the last car call, the doors shall remain open until another car call is registered.

The hall lanterns shall not operate during independent service. The keys for the key switches can only be removed in the 'Automatic Position'.

(f) Overload Non-start

Overload non-start device shall prevent a lift from starting if it is overloaded. At the same time, the overload buzzer shall sound.

(g) Delayed Car

The system shall operate to automatically remove a car from group service in the event the car is delayed for a pre-determined time. A delayed lift shall be automatically restored to group service when the delay is corrected.

(h) Anti-Nuisance

The anti-nuisance feature shall be provided to reset the car calls, if an excessive number of calls are registered for the measured load.

(i) Hand or Inspection Operation

By means of the "AUTO/HAND" selection switches in the recessed switch cabinet on the car operating panels, it shall be possible to remove any one of the lifts out of the group operation and place the lift under Hand Operation.

During the Hand Operation, the car shall travel at a reduced speed of approximately 15 metre per minute by maintaining pressure on the "Up" or "Down" buttons in the recessed switch cabinet located on the car operation panel or the "Up" or "Down" buttons on the car top. By releasing the 'Up' or 'Down' buttons, the car shall stop immediately irrespective or whether the car is level at a landing or not. This Hand Operation is designed solely for maintenance and inspection purposes.

(j) Restaurant Floor Service

The _____ Storey shall be designated for 'Restaurant Floor Service'. The lifts shall be assigned uniformly at all floors at the beginning of lunch time. Towards the later half of lunch time, lifts shall preferentially be assigned to these restaurant floors.

6.5 Double Deck Lift Operation

Low Rise and High Rise double deck lifts shall each operate on a Multi-Car Group Control Operation as detailed in this Section taking into consideration the following requirements:

6.5.1 Response of Lifts at Main Lobby

The response of each group of lifts at the main lift lobbies at 1st and 2nd Storeys shall be as follows:

(a) During periods of heavy 'Up' traffic, a lift at the main lobby shall be selected for dispatching with the doors of both the upper and lower cars open and the corresponding 'Up' hall lanterns illuminated indicating it will be the next lift to depart. The 'Odd Storeys Only' and 'Even Storeys Only' digital display shall flash at the respective hall car position indicators.

(b) During other traffic periods, registration of an 'Up' hall call shall be required to illuminate the 'Up' hall lanterns of both cars but only the doors of the corresponding car shall open. The 'Odd Storeys Only' and 'Even Storeys Only' digital display shall flash at the respective hall car position indicators.

(c) Upon entering the car, passengers shall be able to activate only the floor buttons of odd-numbered storeys if they are in the lower car; if the passengers are in the upper car, they shall be able to activate only the floor buttons of the even-numbered storeys. However, for the upper cars of Lifts Nos. 5 to 8 inclusive, the car call buttons for 41st Storey shall also be operable.

(d) The visual lift information display unit at the car operating panels shall indicate 'Odd Storeys Only' or 'Even Storeys Only' in the lower and upper cars respectively and similar message shall be announced through the voice synthesizer of the respective cars.

(e) If the doors of both the upper and lower cars of any lift open for loading/unloading and one of the car doors should close earlier than the other, then the message 'Serving Lower Deck' or 'Serving Upper Deck' as appropriate shall appear on the visual lift information display unit of the car

operating panel concerned, to be followed by a similar announcement through the speech synthesizer of that car. Under such situations, the pre-set closing time of the other car door shall automatically be reduced.

6.5.2 Answering 'Up' Car and Hall Calls

The response of the lifts to 'Up' car or hall calls above the main lift lobbies shall be as follows:

(a) As a car approaches a landing for which a car call has been registered, the lift shall stop automatically with the responding car at the landing and open its doors. The doors of the other car shall remain closed unless a hall call is registered for which that car is responsive, a message reading 'Serving Upper Deck' or 'Serving Lower Deck' as appropriate shall appear on the visual lift information display unit of the car operating panel concerned, to be followed by a similar announcement through the speech synthesizer of that car.

The 'Serving Lower Deck' or 'Serving Upper Deck' message shall remain until the lift starts. The hall lanterns of that lift shall be illuminated at both the landings irrespective of whether a car or hall call has been registered.

(b) As a lift approaches a landing in response to an 'Up' hall call, the 'Up' hall lanterns at both landings shall illuminate to indicate the arrival and direction of travel of that lift. The 'Odd Storeys Only' and 'Even Storeys Only' displays on the visual lift information display unit of the car operating panels of the lower and upper cars respectively shall be extinguished and all the car call buttons in both cars of that lift shall become operable. The lift shall stop automatically with the trailing (lower) car at that landing unless:

(i) A car call is registered in the upper car of that lift for the floor where the hall call is registered or

(ii) A car call is registered in the lower car of that lift for the floor below the hall car or

(iii) The 'Up' hall call is at the floor below the top landing. (applicable to High Rise Lifts only)

The doors of a car not answering a call shall remain close and the message and announcement as stated in (i) above shall be implemented.

(c) If the doors of one car should close earlier than the other car, then the provisions described in Sub-Clause 6.5.1(v) shall be implemented.

6.5.3 Answering 'Down' Car and Hall Calls

The response of the lifts to 'Down' car and hall calls above the main lift lobbies shall be as follows:

(a) The response of the lifts to 'Down car calls shall be similar to that describes in Sub-Clause 6.5.2(i) above.

(b) As a lift approaches a landing where a 'Down' hall call is registered, the 'Down' hall lanterns at both landings shall illuminate to indicate the arrival and direction of travel of that lift. The 'Odd Storeys Only' and 'Even Storeys Only' displays on the car operating panels of the respective car shall be extinguished

and all the car buttons in both cars of that lift shall become operable. The lift shall stop automatically with the trailing (upper) car at that landing unless:

(i) A car call is registered in the lower car of that lift for the floor where the hall call is registered or

(ii) A car call is registered in the upper car of that lift for the floor above the hall call.

The door of a car not answering a call shall remain close and the message and announcement as stated in Sub-Clause 6.5.2(i) shall be implemented.

(c) If the doors of one car should close earlier than the other car, then the provisions described in Sub-Clause 6.5.1(v) shall be implemented.

6.5.4 Other Hall Call Situations

'Up' and 'Down' hall calls shall be answered by:

(a) The car of a parked lift at the landing where the call is registered.

(b) The lower car of a lift travelling down to answer the 'Up' hall call.

(c) The upper car of a lift travelling up to answer the 'Down' hall call.

For (ii) and (iii), if there are two 'Up' or two 'Down' hall calls at two consecutive floors, then the lift shall make only one stop to respond both 'Up' calls or 'Down' calls.

6.5.5 Transfer Floor Operation

The 30th and 31st Storeys shall be designated for the transfer floor operation to enable passengers from the low rise lifts to transfer to the high rise lifts and vice versa. The operation/features shall be as follows:

(a) The car call button for 30th Storey shall be provided only in the lower cars and the car call button for 31st Storey shall be provided only in the upper cars of both the low and high rise lifts.

(b) The car call buttons for 30th and 31st Storeys shall be operable only when the high rise lifts at both transfer floors.

(c) Only 'Up' hall call buttons and 'Up' hall lanterns shall be provided for the high rise lifts at both transfer floors.

(d) An 'Up' hall call at either transfer floor of the high rise lifts shall be handled as one single top of the lift (i.e. the lower car serving the 30th Storey while the upper car serving the 31st Storey) unless a car call is registered in the upper car of that lift for 32nd Storey or a 'Up' hall call is registered at the 32nd Storey in which case the lift shall make only one stop at 31st and 32nd Storeys. Passengers entering the car of the high rise lift at 30th or 31st Storeys shall both be able to activate the car call buttons for the main lift lobbies.

(e) Service to the transfer floors from the main lift lobbies shall only be available from the low rise lifts.

(f) Only 'Down' hall call buttons and 'Down' hall lanterns shall be provided for the low rise lifts at both transfer floors.

(g) A 'Down' hall call at either transfer floor of the low rise lifts shall be handled as one single stop of the lift, (i.e. the lower car serving the 30th Storey and the upper car serving the 31st Storey) unless a car call is registered in the lower car of that lift for 29th Storey or a 'Down' hall call is registered at the 29th Storey in which case the lift shall make only one stop at 29th and 30th Storeys.

The transfer operation shall be discontinued automatically during morning peak periods; the time duration and days of which shall be programmable over a 7-day period. When the transfer floor operation is discontinued, the following shall be implemented:

(i) The digital floor service indicator shall be extinguished and the 'No Service' signs at the hall car position indicators at the transfer floors of all the low and high rise lifts shall be illuminated.

(ii) The digital floor service indicators at the main lift lobbies of the low rise lifts shall be revised to exclude 30th and 31st Storeys.

(iii) The 'Up' hall call buttons of the low rise lifts at 29th Storey shall become inoperable.

(iv) The car and hall call buttons for the 30th and 31st Storeys of the low and high rise lifts shall become inoperable.

(v) The 'No Service' LED indication for 30th and 31st Storeys shall be illuminated at the Lift Supervisory Control and Repeater Panels.

The operation of the key switches called for in the Lift Supervisory Control Centre shall cause the transfer floor operation to discontinue or activate as required for each group of lifts, bypassing the peak hours programme.

6.6 Operation System for Dumbwaiters

The dumbwaiters shall be arranged for operation on call and send system with an 'Up' button and a 'Down' button at the lower and upper landings respectively. The control shall be so designed that the car can be called or dispatched from one terminal to the other by momentary pressure on the respective buttons providing all landing doors are closed. The arrival of the car at any landing shall be indicated either by a suitable light in the car visible through a glass panel in the hoistway door or other signal medium. All buttons shall be inoperative while the car is in motion and for a few seconds after arrival at a landing in order to allow time to open the door.

6.5 ~~6.7~~ **Emergency Power Operation of Lifts**

In the event of emergency (fire or power failure), all the lifts shall be brought up or down to their respective designated floor(s) to discharge the passengers.

The emergency power supplies which shall be made available for the various lifts during the mains power failure are indicated in the Schedule of this Specification.

It must be stressed that the capacities of the standby generators are designed to allow only the specified number of lifts to start-up and or operate simultaneously. Hence the controls for the lifts shall be so designed to ensure that the lifts in each group shall start and operate

When incoming traffic at the lobby floor increases, as indicated by two cars leaving the lobby in the 'UP' direction, filled nearly to capacity within a predetermined adjustable time period, cars assigned to upper zones shall be called to the lobby without waiting for a lobby hall call.

Cars shall automatically be dispatched from the lobby when they become loaded nearly to capacity or, if not loaded to capacity, on a variable time interval calculated on the basis of the number of cars at the lobby and other data representative of traffic in the system.

The cars shall continue to operate in this manner until the lobby traffic has been reduced to a predetermined level.

When 'DOWN' calls above the lobby increase to a predetermined level, assignment of a car to the lobby ceases and the lobby car shall travel up to assist the other cars. Cars arriving at the lobby, after discharging passengers shall be dispatched upward.

The cars shall continue to operate in this manner until the down traffic has been reduced to a predetermined level.

(d) Load Weighing Bypass

A load weighing device shall be provided to operate and bypass all hall calls when the car is filled to a pre-determined percentage of the passenger capacity.

(e) Independent Service

Key operated switches shall be provided in the car operating panel of each lift car to remove a lift from the group for operation in response to car buttons only. On arrival at a floor on the last car call, the doors shall remain open until another car call is registered.

The hall lanterns shall not operate during independent service. The keys for the key switches can only be removed in the 'Automatic Position'.

(f) Overload Non-start

Overload non-start device shall prevent a lift from starting if it is overloaded. At the same time, the overload buzzer shall sound.

(g) Delayed Car

The system shall operate to automatically remove a car from group service in the event the car is delayed for a pre-determined time. A delayed lift shall be automatically restored to group service when the delay is corrected.

(h) Anti-Nuisance

The anti-nuisance feature shall be provided to reset the car calls, if an excessive number of calls are registered for the measured load.

(i) Hand or Inspection Operation

By means of the "AUTO/HAND" selection switches in the recessed switch cabinet on the car operating panels, it shall be possible to remove any one of the lifts out of the group operation and place the lift under Hand Operation.

During the Hand Operation, the car shall travel at a reduced speed of approximately 15 metre per minute by maintaining pressure on the "Up" or "Down" buttons in the recessed switch cabinet located on the car operation panel or the "Up" or "Down" buttons on the car top. By releasing the 'Up' or 'Down' buttons, the car shall stop immediately irrespective or whether the car is level at a landing or not. This Hand Operation is designed solely for maintenance and inspection purposes.

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The emergency power supplies which shall be made available for the various lifts during the mains power failure are indicated in the Schedule of this Specification.

It must be stressed that the capacities of the standby generators are designed to allow only the specified number of lifts to start-up and or operate simultaneously. Hence the controls for the lifts shall be so designed to ensure that the lifts in each group shall start and operate sequentially i.e. the second lift (where applicable) within each group shall start to operate only after the first lift in that group has reached its designated floor or after a pre-determined time interval. Also, the controls shall also be so designed that not more than the specified number of lifts among the various groups can be started-up at any one time. The control should also allow for time adjustments for sequential operation of lifts within the group, recycling of the sequences and alteration of the sequence of lift operation in any of the groups at any time.

The following modes of operation shall be complied with:

(a) Emergency Operation of Lifts in the event of Power Failure

Upon sensing of power failure, all the lifts shall be brought to their respective designated floor and the cars shall park there with the doors remaining open and the car lights and ventilation fans off. Operation within each group shall be sequential i.e. one after the other.

Thereafter one or more lifts may resume operation on standby generators' supply on activation of key reset switches on the Lift Supervisory Control Centre.

Signals to initiate emergency power operation of the lifts shall be obtained from the changeover contactors auxiliary contacts (normally open or close as required) in the lift switchboards or the essential main switchboards concerned, provided by others.

(b) Emergency Operation of Lifts in the event of Fire

Upon receipt of the fire signal, all the lifts shall be brought to their respective designated floors, and the cars shall park there with the doors remaining open and the car lights and ventilation fans off. The lifts shall be rendered inoperative after they have been brought to their designated floor. Normal operation of the lifts can only be effected after the fire alarm signal has been reset and thereafter by the operation of a key reset switch in the Lift Supervisory Control Centre.

The fire alarm signals, shall be obtained from the auxiliary contacts (normally open or close as required) in the Fire Indicator Board provided via the terminals in the respective lift machine rooms for each group of lifts as shown on the Specification Drawings.

(c) Emergency Operation of Lifts in the event of Power Failure and Fire

The lifts shall be operated in the same manner as described in Clause 6.7 (ii) except that the lifts in each of the groups shall be brought to the designated floor, one by one in sequence.

The operation of the Fire Lift Switch as well as any other fire overriding switches shall cause the Fire Lift(s) and other lifts (associated with the fire overriding switches) to operate according to Clause 6.8 (as well as the requirements stipulated in SS 550), independent of the emergency operations described below.

6.6 Fire Lift Switch

In the event of the Fire Lift Switch, specified elsewhere in this Specification, being operated, the Fire Lift concerned shall travel immediately to the designated floor irrespective of any car or hallway calls registered, and shall park with the doors open at that floor until the system has been reset. During this period, the lift may be opened manually from the car operating panel to stop at all designated floors except the Basements. Pressing of the hall button at any of the lift landings shall have no effect on the system.

It shall be so arranged that turning the Fire Lift Switch 'On' will change the lift from collective to non-collective control so as to avoid the possibility that a fireman, after operating the fire switch, might lose control of the lift through the continued operation of a collective control. If the Fire Lift Switch is turned back to the 'off' position, the lift shall automatically revert back to the mode of operation under which the lift was running prior to the activation of the Fire Lift Switch. This feature shall enable the Fire Lift concern to be reset and allow for its recall from any position to the designated floor for the re-use of the firemen.

The Fire Lifts shall be tested to the requirements of the Local Authority concerned.

Other than the Fire Lift Switch, fire overriding switches where called for in the Schedule with the same function as the Fire Lift Switch shall be provided at the Lift Supervisory Control Centre for initiating operation to the first passenger lift opening at the designated floor upon receiving the fire alarm signal. This particular lift shall then operate as a fire lift.

Each Fire Lift as well as those passenger lifts provided with fire overriding switch shall be provided with an operational feature to enable the firemen to cancel the first call which had been inadvertently made to the floor on fire. The design/details of such provisions shall be subjected to the Local Authority's approval.

6.7 Emergency Power Supplies to Lift Car Lighting, Ventilation and Alarm System

Each lift shall be provided with an emergency power supply unit to be located in the lift machine room to power the lift car lighting, lift car ventilation and alarm system in the event of mains power failure.

The emergency power supply units shall consist of constant voltage float charges, 12 volt nickel cadmium or nickel alkaline batteries of sufficient ampere-hour capacity to operate the car emergency lighting fittings, car ventilation fans and the emergency bells for each car for at least 4 hours in the event of mains power failure. The recovery rate of the batteries after 4 hours continuous use shall be not less than 50 per cent in 8 hours and 80 per cent in 16 hours.

The batteries shall be housed in a self-contained, free standing cabinet fabricated from sheet steel of thickness not less than 1.6mm (16 SWG), vermin-proof and ventilated, anti-alkaline treated internally and finished similar to the lift control panels.

The chargers shall be electronic constant voltage float type complete with all HRC fuses or MCCBs, over-discharge protection, ammeter to read the d.c. charging and load current and d.c. voltmeters to indicate both the float and boost charge voltages, 'mains on' indicating lamp, non-locking load test switch, disconnect switch and suitable test load with the voltmeters scale clearly marked in red showing the terminal voltage considered desirable when feeding the test load, battery charger failure alarm, battery cut-off alarm, battery earth-leakage detectors, suitably engraved instruction labels for manner and duration of tests, other labels, wiring and all other necessary items. Proprietary design and made, the inverter shall be incorporated, if required, for the operation of the lift car lighting and ventilation fans.

The battery-operated emergency power supply units shall conform to the current edition of Singapore Standards SS 209: Standard Specification for Battery-Operated Emergency Power Supply for Lighting and Ventilation of Passenger Lifts.

Automatic rescue device need only be specified for apartment lifts where there is no Provision of standby generator supply.

6.8 Automatic Rescue Device

A battery operated Automatic Rescue Device shall be provided for each of the lifts where indicated in the Schedule.

In the event of mains power failure, the automatic rescue device automatically take over the control of the lift and at the same time disconnect the lift from its main lift controller. If the lift is already at a landing floor, it will simply open the door; otherwise the lift car will be driven to the next landing and open the door. Once this process is completed, it will reconnect the lift to its main lift controller.

The emergency power supplies for the automatic rescue device shall be as described in Clause 6.9 of this Specification. The batteries shall be of sufficient ampere-hour capacity to operate the device twice before recharging.