

Guide on Building Information Modelling (BIM) e-Submission:

Fixed Installation (FI) Requirements

Part 1: SS550 TRACTION LIFT REQUIREMENTS

Part 2: SS626 ESCALATOR & MOVING WALK REQUIREMENTS

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OBJECTIVES

The objective of this Guide is to assist Specialist Professional Engineers (SPEs) and Lift&Escalator Contractors to prepare BIM model(s) for new FI installations and FI intended to undergo major addition or replacement (A/R). As announced in 2021, the government will be launching a new co-creation platform between the public agencies and industry to transform the current regulatory landscape and practices through adoption of BIM technologies and collaborative workflows. The new system, also known as CORENET X¹ system, will replace CORENET 2.0. The new regulatory approval process under CORENET X will require the industry to collaborate and coordinate their designs upfront before submission.

For construction projects involving gross floor area (GFA) larger than 5,000m², BIM models of the projects, with key data structures related to the properties of the different entities and objects of the building needs to be included in the model. All disciplines (Architecture, Structural and MEP) will be required to submit to the authorities in BIM.

This Guide presents the minimum requirements in BIM for FI (which are required to comply with the Singapore Standard SS550 and SS626) and their components to be included in the submissions to BCA for approval.

This Guide should be read together with the other BIM guides including “Code of Practice for Building Information Modelling (BIM) e-Submission Mechanical, Electrical & Plumbing (MEP) Requirements” and “BIM Essential Guide for MEP Consultants”. Softcopies of the guides can be found [https://www.corenet.gov.sg/general/building-information-modeling-\(bim\)-e-submission.aspx](https://www.corenet.gov.sg/general/building-information-modeling-(bim)-e-submission.aspx).

BCA has also prepared generic BIM lift&escalator component family to help users in preparation of the BIM plans for e-submissions. The family components include the essential

¹ CORENET X – for more information, please refer to <https://www1.bca.gov.sg/regulatory-info/building-control/corenet-x>

objects mentioned in Chapter 2 and 3 of this Guide. The family components are developed to be as 'lightweight' as possible and will only resemble the layout of the actual product, as it is meant to comply with code requirements. Industry is welcome to adapt and customize the BIM components to suit its own use. The family components generic models can be downloaded (at <https://www1.bca.gov.sg/regulatory-info/lifts-escalators/building-information-modelling-for-fixed-installation-design-plans-submission>) and adjusted for specific model use.

1 Submission Requirements

This guide should be read in conjunction with the **Guidebook for Plans Submission and PTO Application of Fixed Installations**. The guidebook illustrates the processes for the Fixed Installation (FI) Regulatory Regime at the various phases of the project to obtain the Permit to Operate (PTO).

New installation or major A/R of SS550 traction lifts and SS 626 Escalator and Moving Walk will require plan submission. Documentations and information required under the plan submission include equipment data details, layout plans and type test reports and certificates which is spelt out in the **Guidebook for Plans Submission and PTO Application of Fixed Installations**.

When CORENET X is launched, BIM submission will be required for projects with a GFA larger than 5000m².

The **BIM e-Submission Template** to be used for BIM Regulatory Submission, as well as the **BIM e-Submission Template Guide** which explains how the Template shall be used, can be downloaded from the CORENET website: [https://www.corenet.gov.sg/general/building-information-modeling-\(bim\)-esubmission.aspx](https://www.corenet.gov.sg/general/building-information-modeling-(bim)-esubmission.aspx)

1.1 General Requirements

To prepare the industry for launch of CORENET X, the file format acceptable will be Native File Format.

Model shall be created in full size of 1:1 scale and shall be in metric units. 2D views generated from the model shall be in the same drawing scales.

File naming, color standards and other document standardization should follow the conventions as listed under the 'Code of Practice for Building Information Modelling (BIM) e-Submission – General Requirements':

https://corenet.gov.sg/media/2157490/1_cp_for_bim_esubmission_gr_v1-1.pdf

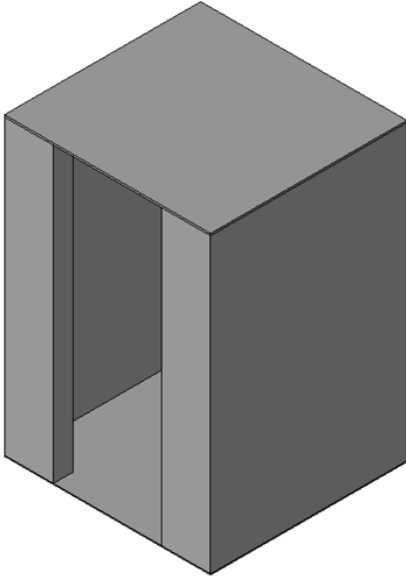
The submissions shall comprehensively cover important aspects of the lift&escalator design described in the following sections. When in doubt, the QP may consult the Electrical and Mechanical Engineering Group of BCA for clarification.

Format	What should the file consist of?
<p>Traction lift</p> <p>Native BIM File Format (.rvt, .pla, .dgn)</p> <p>Maximum File Size of 1GB each</p>	<ol style="list-style-type: none"> 1. Location of building 2. Location of lift (or groups of lifts) in relation to the building 3. Location of machine room (including access door dimensions and clearance spaces around machinery and control cabinets) 4. Location of lift shafts 5. Access path to machine room (if applicable) 6. Car position at the bottom level 7. Occupancy space below lift pit (e.g. underground carpark) if applicable 8. Dimensions and position of ladder in hoistway and/or lift pit 9. Lift components at the confirmed location <ol style="list-style-type: none"> a. Traction motor b. Governor c. Lift Car and safety gears d. Landing Door e. Buffer f. UPS/EBOPS, ARD g. Controller Box and/or Control Panels h. Counterweight i. Guide rails
<p>Escalator and Moving walk</p> <p>Native BIM File Format (.rvt, .pla, .dgn)</p> <p>Maximum File Size of 1GB each</p>	<ol style="list-style-type: none"> 1. Location of building 2. Location of escalators or moving walks in relation to the building 3. Access path to external control cabinet (if applicable) 4. Steps modelled with groove (if possible) 5. Safety barriers or restriction placed where there is a more than 1m fall from height 6. Escalator/Moving walk components at the confirmed location <ol style="list-style-type: none"> a. Step/Pallet b. Machine c. Balustrade/Handrail d. Landing plate e. Machinery space and standing area f. Access restriction device g. Anti-Fall device h. Anti-climb device i. Vertical deflector

2 Core Information for BIM objects (Traction Lift)

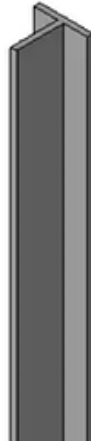
This section describes the essential properties/attributes of the model objects that shall be provided for SS 550: 2020 Traction Lift BIM submission.

2.1 Core Components

Lift Car	
	
Parameter Name	Sample Value
ClearHeight	2400mm
ClearWidth	1500mm
ClearDepth	1400mm
RatedLoad	980kg
Car_Mass	1080kg
MaxDécorWeight	200kg
CapacityPeople	13 pax
TravelHeight	25000mm
ControlDevice_OperableDistance	500mm
RopeCount	3
RatedSpeed	1.0m/s
External Height of lift car*	2900mm
Width *	1800mm
Depth*	1600mm
Lift Number	PL1
BarrierFreeAccessibility	Yes/No
Brand Name	BCA
Lift Type	Passenger Lift, Fire Lift
Model Number	BCA 980
SlungDirection	Under slung

*not MC parameter but modelling parameter only

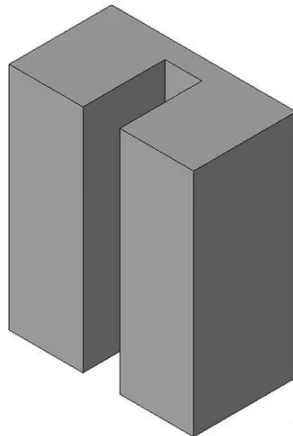
Guiderails



Parameter Name	Sample Value
Height*	5000mm
Width*	62mm
Depth *	89mm
Blade Width	8mm
Foot Thickness	8mm

*not MC parameter but modelling parameter only

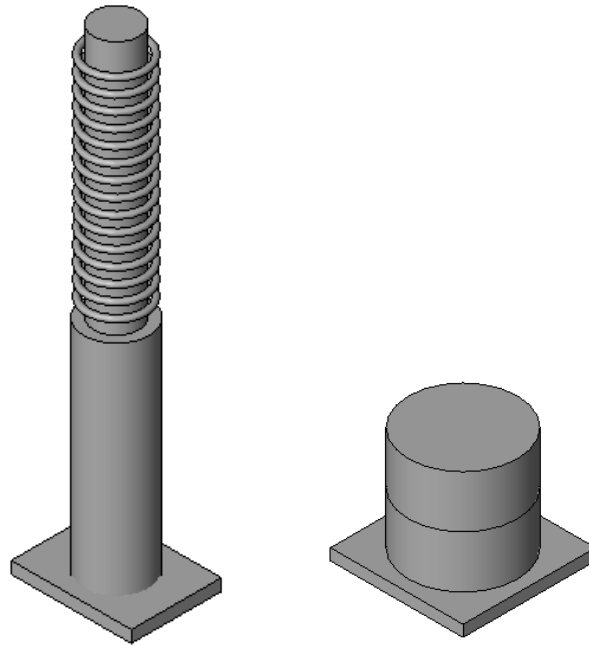
Safety Gears



	Parameter Name	Sample Value
Intrinsic Parameter	SafetyGear_RatedSpeed	1.0m/s
Safety Gear Housing	Width*	150mm
	Length*	150mm
	Height*	200mm
Guide Rail Slot	GuideRailSlot_Width	25mm
	GuideRailSlot_Depth	140mm
Type	SafetyGearType	Instantaneous / Progressive

*not MC parameter but modelling parameter only

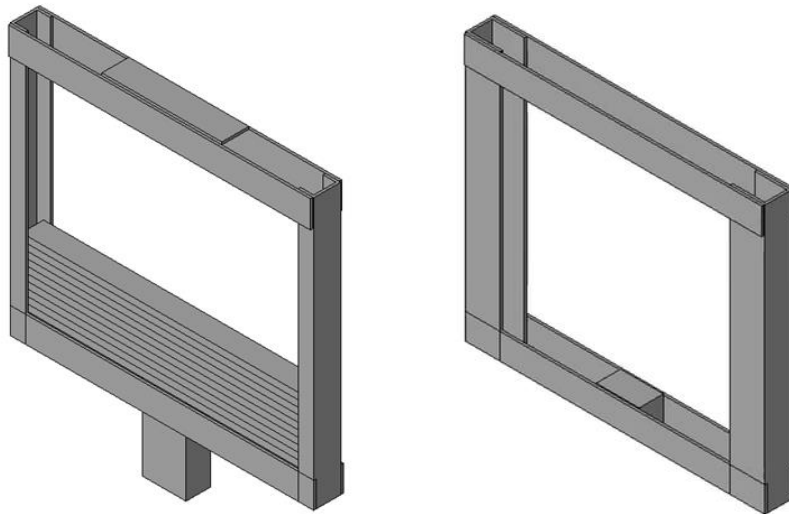
Car/Counterweight Buffer



	Parameter Name	Sample Value
Intrinsic Parameters	LiftBuffer_RatedSpeed	2m/s
	LiftBuffer_Stroke	100mm
	LiftBuffer_ImpactMassRange	450kg – 3000kg
Baseplate	Width*	200mm
	Length*	200mm
	Height	20mm
Column	Diameter*	150mm
	Height	200mm
Stroke/rubber	Diameter*	100mm
	Height	175mm
Others	LiftBuffer_FixedToCar	Yes/No

*not MC parameter but modelling parameter only

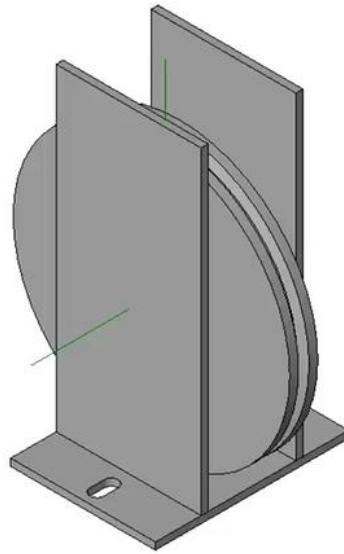
Counterweight



	Parameter Name	Sample Value
Intrinsic Parameter	CounterWeight_Weight	1500kg
Frame	Width*	200mm
	Length	1200mm
	Height	2000mm
Weight Plate	Width*	180mm
	Length	1180mm
	Height	150mm
Guide (Shoes)	Width*	111mm
	Length*	47mm
	Height*	78mm
Sheave	LiftSheave_Diameter	400mm

*not MC parameter but modelling parameter only

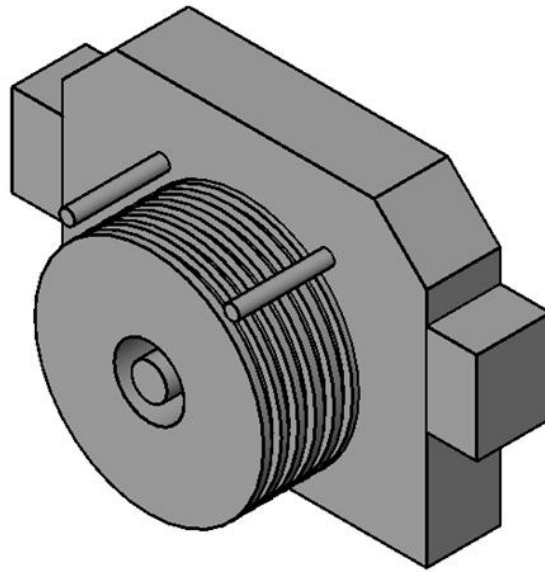
Governor



	Parameter Name	Sample Value
Intrinsic Parameter	Governor_RatedSpeed	1.5m/s
Baseplate	Width*	250mm
	Length*	320mm
	Height*	400mm
Pulley	Governor_Diameter	320mm
	Governor_GrooveAngle	15
	Governor_GrooveDepth	8mm
Type	GovernorType	Bi-Directional / Machine Room Less

*not MC parameter but modelling parameter only

Traction Machine and Brakes

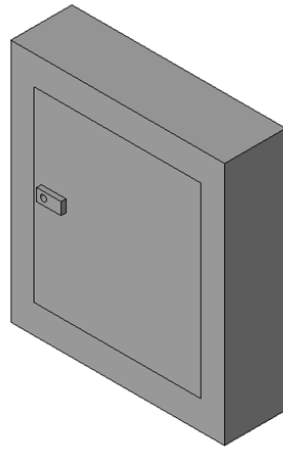


*gearless

	Parameter Name	Sample Value
Intrinsic Parameter	Machine_RatedSpeed	1.5m/s
	RopeCount	6
	RopeDiameter	10mm
	Roping	2:1
	Rope_Configuration	Single Wrap
	Rope_BreakingStrength	350N
Body	Outer Diameter*	600mm
	Inner Diameter*	400mm
	Width*	250mm
Others	DriveType	Traction
	Geared	Geared/Gearless
	BrakeType	Disc/Block/Belt
	Machine brake model	BCA DD55 Brake

*not MC parameter but modelling parameter only

Control Panel and Cabinets



	Parameter Name	Sample Value
Body	Width*	250mm
	Length*	750mm
	Height*	950mm
Others	CabinetType	Control Panel, EBOPS/UPS, E&I Panel
If "Control panel"	Model	BCA55

*not MC parameter but modelling parameter only

Landing Door and Landing Door Lock		
	Parameter Name	Sample Value
Body	Width*	50mm
	Length*	900mm
	Height*	2100mm
Others	OperationType	Vertically sliding/Not vertically sliding,Side/Centre opening
	Number of panel(s)*	2/4/6
	DoorLockOpenableFromPit	Yes/No
	Car Door Operator Brand	BCA
	Car Door Operator Model	BCA Drive X
	Light Curtain/Photocell Brand	BCA
	Light Curtain/Photocell Model	BCA55 Y
DoorSafetyDevice	Mechanical Safety Edge/Photocell/Light Curtain	

*not MC parameter but modelling parameter only

2.2 Peripheral Components

Notwithstanding the above-mentioned lift components, there are also other components which are essential to lift operations. However, these are usually not proprietary items to the lift models and can usually be shown in different manners. Hence, it is still critical for the following items to be shown in the BIM model(s) for submission to BCA.

- a) Car apron
- b) Trapdoor
- c) Interior design such as handrail and kickplate
- d) Main sheave and deflection sheave
- e) Brakes (if independent from traction motor)
- f) Counterweight mesh and mesh between lifts
- g) Pit access ladder
- h) Ventilation opening in hoistway (ventilation opening in lift car is optional)
- i) Spaces around machine and control cabinets

Accessories such as limit switches, door locking devices (contactor), landing sills, hall call buttons, call light and signal need not be shown.

2.3 Reference to requirements in SS 550 : 2020

The following list of parameters extracted from *SS550:2020 Code of Practice* for traction lifts should be reflected in the BIM submissions where possible. Parameters or properties that are not reflected in the submitted layout plans and drawings will need to be declared to be of compliance to *SS550:2020* requirements.

Parameter		Requirement
Component Specific		
Lift car	a) Interior clear height of lift car	Minimum 2000mm.
	b) Dimensions of lift car platform (width x depth)	Maximum car platform area to correspond to rated loading capacity given in the table 'Rated load and maximum available car area'.
	c) Lift car rated load and passenger capacity	<i>*Fire Lifts require a minimum platform area of 1.45m² with minimum rated load of 600kg.</i>
	d) Dimensions of lift car door (height x width x thickness)	Minimum 2000mm height.
	e) Lift rated speed	-
	f) Dimensions of emergency trap door	Minimum 400mm x 500mm.
	g) Provision of protective device (e.g. light curtain)	Minimally cover distance between 25mm to 1600mm above car door sill (for horizontally sliding doors)
	h) Provision and dimensions of apron below car sill	<ul style="list-style-type: none"> • Minimum width = Full width of clear landing entrance • Minimum 750mm length
Ropes and Sheaves/Pulleys	a) Means of fixing suspension rope ends to car, counterweight and suspension points	<ul style="list-style-type: none"> • Self-tightening wedge type socket, or • Ferrule secured eyes, or • Swage terminals
	b) Number of suspension ropes	Minimum 3.
	c) Diameter of suspension ropes	<ul style="list-style-type: none"> • Minimum 8mm rope diameter.
	d) Diameter of sheaves and/or pulleys	<ul style="list-style-type: none"> • Minimum 40:1 sheave/pulley diameter to rope diameter ratio (For round steel wire ropes)

Parameter		Requirement
Overspeed Governor	a) Diameter of governor ropes	Minimum 30:1 pulley diameter to rope diameter ratio
	b) Pitch diameter of pulley	
Declaration of equipment provision	a) Provision of emergency alarm device and intercom system	-
	b) Provision and location of Automatic Rechargeable Emergency Supply (ARES)	-
Lift Landing		
Clearance Distances	a) Horizontal distance between lift car sill and lift landing sill	Maximum 35mm
	b) Horizontal distance between leading edge of lift car door and lift landing door	Maximum 120mm
Landing Door	a) Dimensions of door (height x width x thickness)	Minimum 2000mm height
	b) Material of doors	<i>*Additional requirements for doors made of glass</i>
	c) Position of unlocking triangle on landing door	<ul style="list-style-type: none"> • Vertical plane: Maximum 2000mm height above landing • Horizontal plane (facing downwards): Maximum 2700mm height above landing
Lift Shaft		
Clearance Distances (involving lift shaft walls, lift car, counterweight, and pit access ladder)	a) Clearance between lift car and lift shaft walls	<ul style="list-style-type: none"> • Minimum 20mm (except on the side used for loading/unloading for lift car) • Maximum 150mm for the side of lift car doors
	b) Clearance between counterweight and lift shaft walls	Minimum 20mm
	c) Clearance between lift car and counterweight	Minimum 50mm

Parameter		Requirement
	d) Position of pit access ladder with respect to lift shaft wall and lift landing entrance	<ul style="list-style-type: none"> • Minimum 200mm clearance between back of rung of ladder and lift shaft wall • Maximum distance of 600mm between middle of ladder rungs and edge of lift landing entrance • Minimum 1500mm vertical distance between top of ladder uprights (or other suitable handhold) and landing sills
	e) Horizontal clearance between outer edge of lift car roof and lift shaft walls	For horizontal clearance >300mm: Balustrade required (dimensions in accordance to 5.4.7.4)
Compensation Means	a) Provision of compensation means	<ul style="list-style-type: none"> • For lifts with rated speed < 3 m/s: Chains, ropes or belts may be used • For lifts with rated speed > 3 m/s: Compensation ropes required • For lifts with rated speed > 3.5 m/s: Compensation ropes and anti-rebound device required <p><i>*For lifts with rated speed > 1.75 m/s, compensation means without tensioning shall be guided at the vicinity of the loop</i></p>
	b) Diameter of compensating ropes (if applicable)	Minimum 30:1 tensioning pulley diameter to rope diameter ratio
	c) Pitch diameter of tensioning pulleys (if applicable)	
Others	a) Distance between consecutive landing doorsills lift landings	<ul style="list-style-type: none"> • For distance >11m: Emergency doors of minimum 850mm width x 2000mm height must be provided) <p><i>For consecutive landing sills with distance > 18m, rescue hooks will be required in accordance with SS550:2020 Section 5.2.3.5 [Will be under SCDF requirement]</i></p>
	b) Length of guiderail	Minimally allows for additional 100mm travel from car/counterweight's highest position
	c) Position and size of vent opening	<ul style="list-style-type: none"> • Topmost part of lift shaft • Total unobstructed area of at least 1% of horizontal section of the lift shaft • Minimum 0.1 m² for each lift in the lift shaft

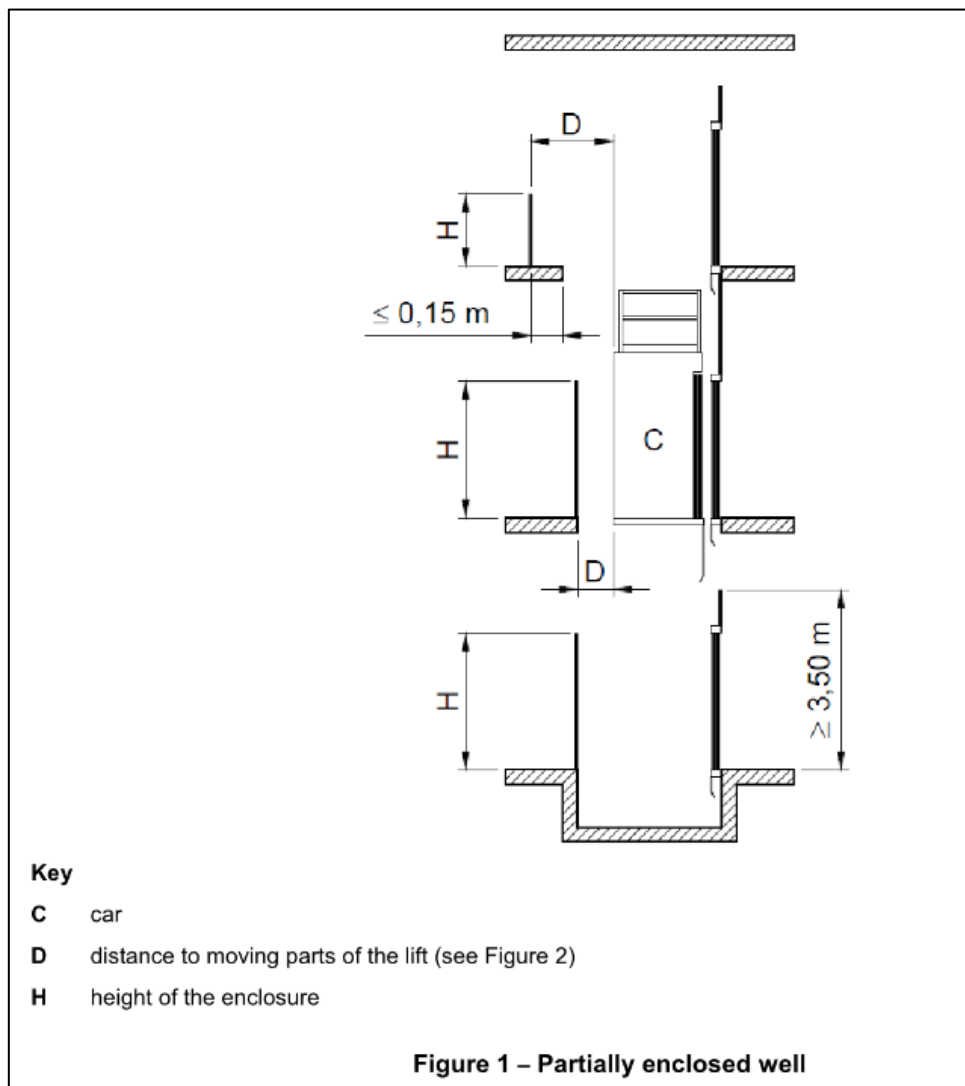
Parameter	Requirement	
Lift Pit		
Provision and location of components	a) Pit depth	-
	b) Provision of access door or ladder	<ul style="list-style-type: none"> • For pit depth < 2500mm: Ladder required minimally • For pit depth >2500mm: Access door required
	c) Stop switches	<ul style="list-style-type: none"> • For pit depth < 1600mm: <ul style="list-style-type: none"> ○ Maximum 2000mm vertical distance above pit floor ○ Minimum 400mm vertical distance above lowest landing floor ○ Maximum 750mm horizontal distance from door frame inner edge • For pit depth > 1600mm: 2 stop switches required <ul style="list-style-type: none"> ○ Top switch: Minimum 1000mm vertical distance above lowest landing floor ○ Top switch: Maximum 750mm horizontal distance from door frame inner edge ○ Bottom switch: Maximum 1200mm vertical distance above pit floor (must be operable from refuge space)
	d) Partition (required between moving parts of different lifts, if any)	<ul style="list-style-type: none"> • Minimum 2500mm between top of partition and lift pit floor • Maximum 300mm between bottom of partition and lift pit floor
Pit Access Ladder	a) Dimensions of pit access ladder	<ul style="list-style-type: none"> • Minimum 280mm width of ladder rungs • Space between ladder rungs to be between 250mm and 300mm (equally spaced)
	b) Cross-section of ladder rungs	<ul style="list-style-type: none"> • Circular or polygonal (square, or more than 4 sides) • Diameter or flat tread between 25mm to 35mm
	c) Cross-section of ladder uprights	Maximum 35mm width x 100mm depth
	d) Mechanical strength test of ladder uprights	As defined in <i>EN 131-2:2010+A1:2012, Clause 5.</i>
Buffer	a) Type of buffer	<ul style="list-style-type: none"> • Energy accumulation type buffer only allowed for lifts with rated speed < 1m/s (to be verified according to requirements in <i>EN 81-50:2014, 5.5</i>)
	b) Rated impact speed	-

Parameter		Requirement
	c) Total possible stroke of buffer	<ul style="list-style-type: none"> Minimum 650mm, or twice the gravity stopping distance corresponding to 115% of the rated speed, whichever longer. For energy dissipation type buffer: In accordance to SS550: 2020, 5.8.2.2
Counterweight Screen	a) Dimension and position of counterweight screen	<ul style="list-style-type: none"> Minimum width = Width of counterweight Top of counterweight screen to be minimally 2000mm vertical distance from the pit floor Bottom of counterweight screen to be at most 300mm from pit floor, or covers minimally the lowest point of the counterweight (resting on the fully compressed counterweight buffer), whichever lower.
	b) Clearance between counterweight and counterweight screen	Minimum 20mm
Machine Room (if applicable)		
Structural	a) Headroom from machine room floor	<ul style="list-style-type: none"> Minimum 2100mm at working areas (or minimum 1500mm for secondary machine room) Minimum 1800mm at other areas
	b) Difference in levels of machine room / machinery space floors	<ul style="list-style-type: none"> For level difference of > 380mm: A standard railing of minimum 1100mm height shall be provided at the edge of the higher level, and stairs/ladders shall be provided for access between levels
	c) Access ways	Minimum 500mm width (or 400mm where there are no moving parts or hot surfaces)
	d) Dimensions of machine room and maintenance doors	Minimum 1000mm width x 2000mm height
	e) Height of curb around openings for ropes	Minimum 50mm
Ship's Ladder (if applicable)	a) Angle of inclination to the horizontal	Maximum 60°
	b) Height of ladder	Maximum 4000mm
	c) Dimensions of non-slip threads	<ul style="list-style-type: none"> Minimum 430mm width x 130mm depth

Parameter		Requirement
		<ul style="list-style-type: none"> Maximum 305mm rise
	d) Design working load (minimum 1.5 kN)	Minimum 1.5 kN
Other General Requirements		
Access Doors	a) Access doors to pulley rooms	Minimum clear opening of 1400mm height x 600mm width
	b) Access trap doors for persons to machine and pulley rooms	<ul style="list-style-type: none"> Minimum clear passage of 800mm x 800mm Counterbalanced (?)
	c) Inspections doors	Maximum 500mm height x 500mm width
Machinery Spaces or Pully Rooms	a) Access to machinery spaces or pulley rooms	<ul style="list-style-type: none"> Maximum 4000mm above level accessible by stairs Sheltered passageway required with minimum 1000mm width and 2000mm height
	b) Dimensions of room	Minimum 1500mm clear height for movement
	c) Equipment clearance	<ul style="list-style-type: none"> Access ways of minimum 500mm width Minimum 500mm x 600mm area clearance for maintenance/inspection of moving parts Minimum 300mm clear vertical distance above unprotected pulleys
Machinery and Working Space Clearances	a) Clear height dimensions	<ul style="list-style-type: none"> Minimum 2100mm at working areas Minimum 1800mm at other areas
	b) Horizontal clearance of machinery	<ul style="list-style-type: none"> Minimum 700mm depth Minimum 500mm width, or the full width of the cabinet/panel, whichever longer. Minimum 500mm x 600mm area clearance for maintenance/inspection of moving parts
	c) Vertical clearance of machinery	<ul style="list-style-type: none"> Minimum 500mm Minimum 300mm for unprotected rotating parts
Other Declarations	a) Car top clearances (car position at top floor)	<ul style="list-style-type: none"> Minimum 2 refuge spaces on car top when lift car is at its highest position Allowable types of refuge spaces as shown in '<i>Dimensions of refuge space in headroom (Table 3)</i>'

Parameter		Requirement
	b) Car bottom clearances (car position at bottom floor)	<ul style="list-style-type: none">• Minimum 2 refuge spaces in lift pit when lift car is at its lowest position• Allowable types of refuge spaces as shown in the table '<i>Dimension in refuge spaces in the pit (Table 4)</i>'

2.3.1 SS550 : 2020 Figures



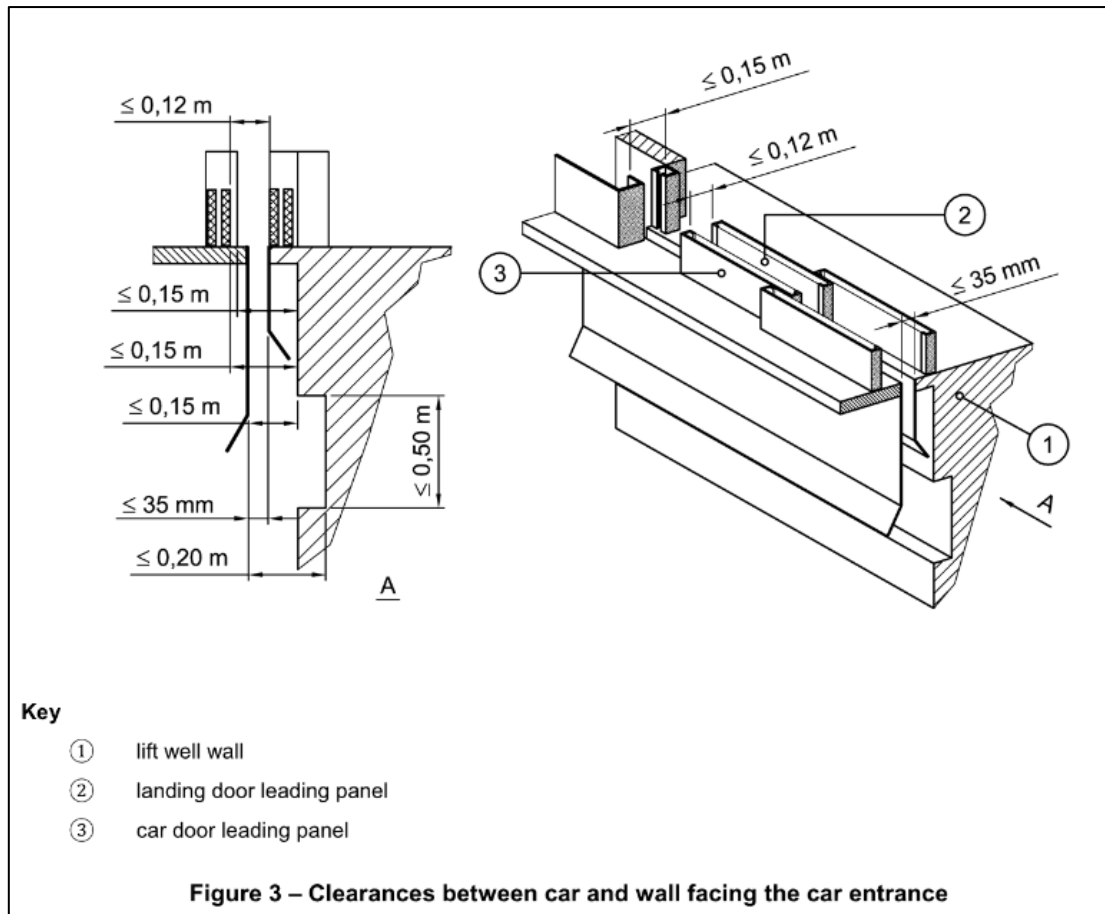


Table 3 – Dimensions of refuge spaces in headroom






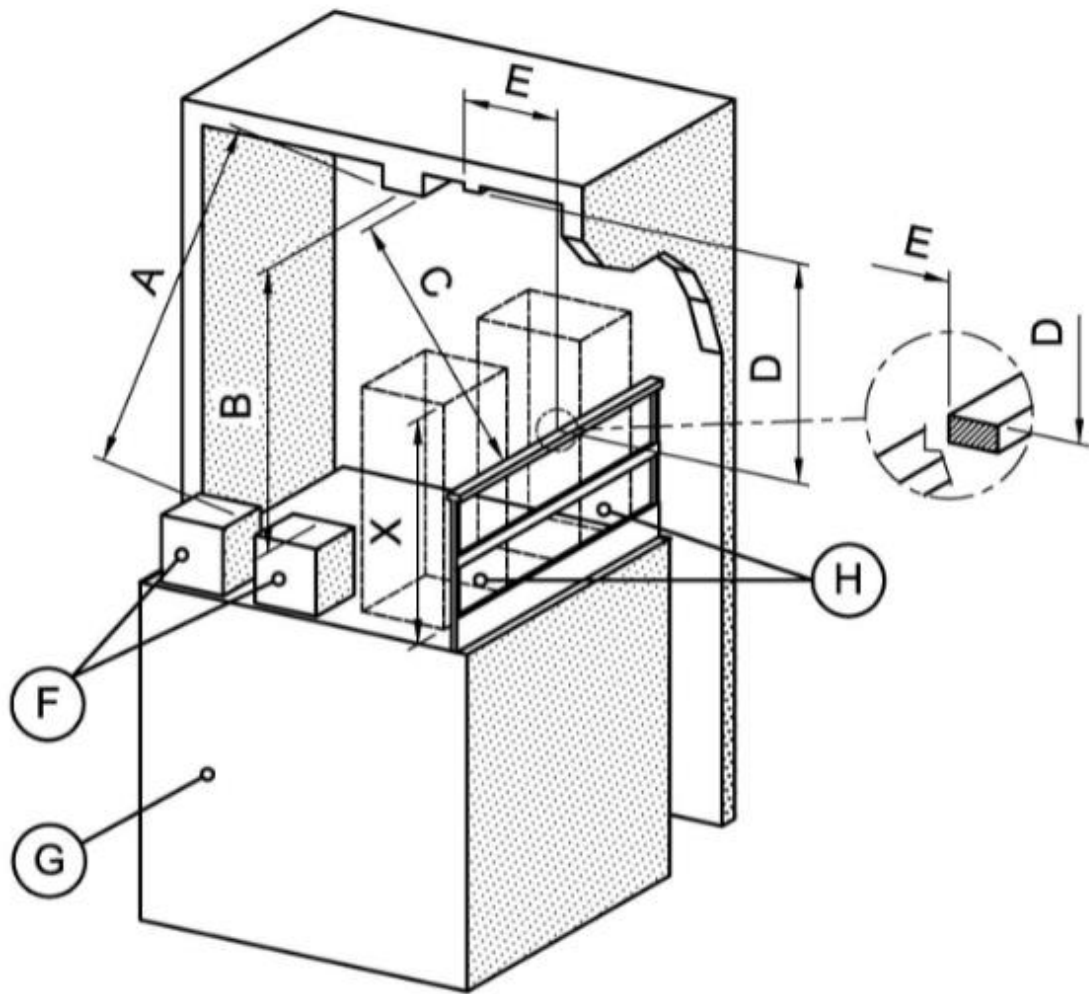
Type	Posture	Pictogram	Horizontal dimensions of the refuge space (m x m)	Height of the refuge space (m)
1	Upright		0,40 x 0,50	2,00
2	Crouching		0,50 x 0,70	1,00
Key for pictograms				
① black colour				
② yellow colour				
③ black colour				

Table 4 – Dimensions of refuge spaces in the pit

Type	Posture	Pictogram	Horizontal dimensions of the refuge space (m x m)	Height of the refuge space (m)
1	Upright		0,40 x 0,50	2,00
2	Crouching		0,50 x 0,70	1,00
3	Laying		0,70 x 1,00	0,50
Key for pictograms ① black colour ② yellow colour ③ black colour				



Key

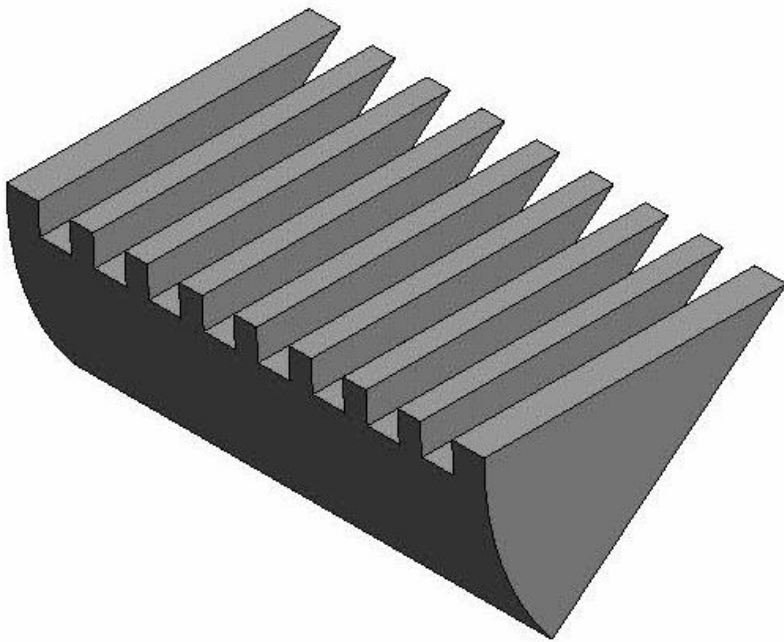
- | | | | |
|---|---|---|---|
| A | distance $\geq 0,50$ m (5.2.5.7.2 a) | F | highest parts installed on the car roof |
| B | distance $\geq 0,50$ m (5.2.5.7.2 a) | G | car |
| C | distance $\geq 0,50$ m (5.2.5.7.2 c) 2) | H | refuge space(s) |
| D | distance $\geq 0,30$ m (5.2.5.7.2 c) 1) | X | height of refuge spaces (Table 3) |
| E | distance $\leq 0,40$ m (5.2.5.7.2 c) 1) | | |

Figure 5 – Minimum distances between parts fixed on car roof and lowest parts fixed to ceiling of well

3 Core Information for BIM objects (Escalator and Moving Walk)

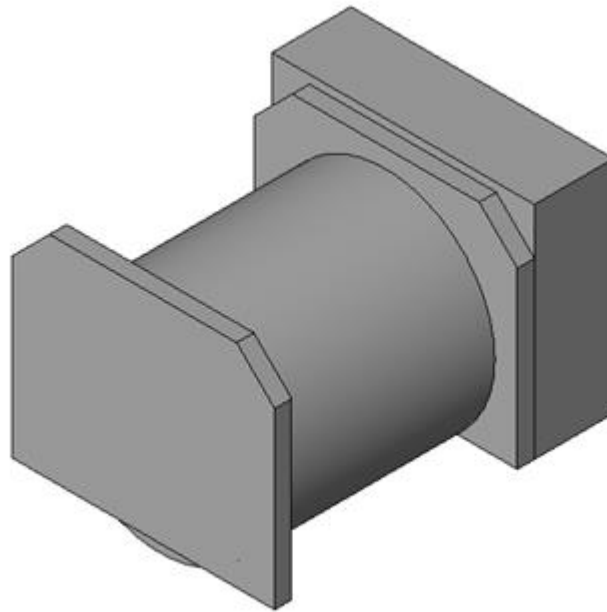
This section describes the essential properties/attributes of the model objects that shall be provided for SS 626: 2017 Escalator and Moving Walk BIM submission.

3.1 Core Components

Step/Pallet	
	
Parameter Name	Sample Value/Units
Groove Depth*	40mm
Groove Width*	40mm
StepDepth	380mm
StepHeight	240mm
StepWidth	600 mm

*not Model-Checker parameter but for modelling purpose only

Machine



Parameter Name	Sample Value/Units
Base Width*	780mm
Diameter of Motor*	800mm
Height of Base*	70mm
Weight of braket*	1000mm
Width of Bracket*	1260mm

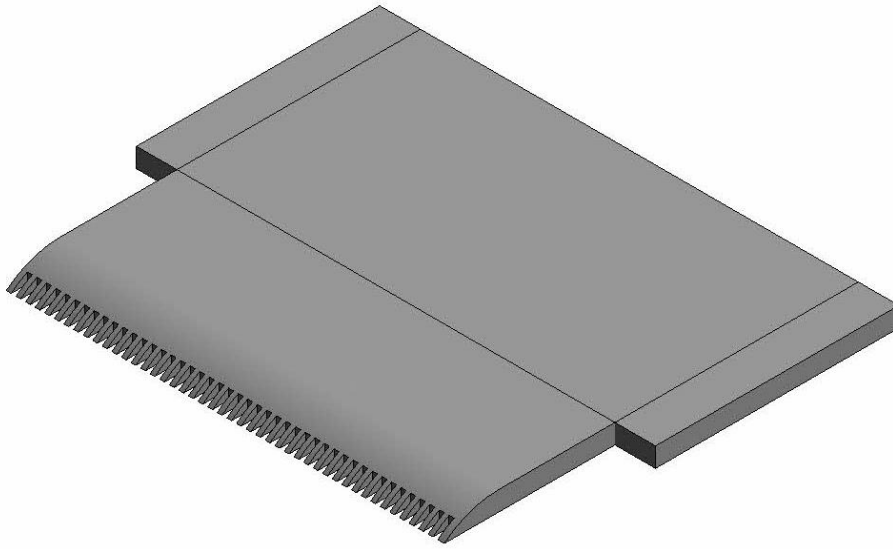
*not Model-Checker parameter but for modelling purpose only

Balustrade/Handrail/Newel



Component	Parameter Name	Sample Value/Units
Intrinsic	RatedSpeed	0.5m/s
Balustrade	InclinationAngle	35°
	Rise	6000mm
	BalustradeGlassThickness	6mm
	BalustradeWidth	300mm
	LowerInnerDecking_Width	30mm
	LowerInnerDeckingIncline	25°
	UpperRadiusCurvature	1000mm
	LowerRadiusCurvature	1000mm
Handrail	Handrail_Thickness	20mm
	Handrail_Width	70mm
	Handrail_VerticalHeight	900mm
	Horizontal portion of the handrail beyond comb intersection	300mm
Newel	Newel_Radius	300mm
	Newel_HeightfromFloor	100mm

Landing Plate

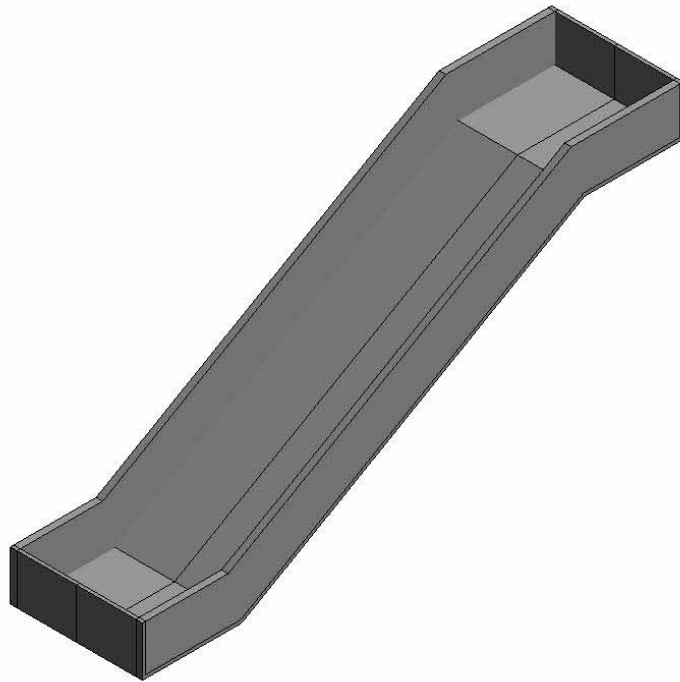


Component	Parameter Name	Sample Value/Units
Landing Area	LandingDistance	850mm
Landing Plate	LandingPlate_Thickness	20mm
	LandingPlate_Length	2000mm
Comb	CombTeethWidth*	2.5mm
	CombTeethRadius*	2mm
	CombTeethAngle*	35°

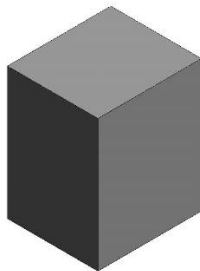
*not Model-Checker parameter but for modelling purpose only

Machinery Space and Standing Area

Machinery Space



Standing Area




Component	Parameter Name	Sample Value/Units
Standing Area	Height	2000mm
	Depth	700mm
	Width	500mm
	Area	350000mm ²
	Space Type	Driving/Return Station
Machinery Area	Is cladding mechanically fastened?	Yes/No

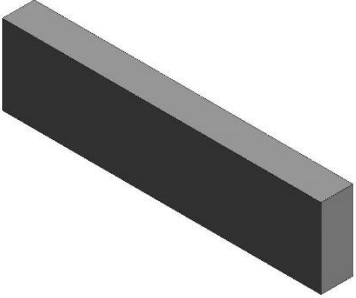
3.2 Peripheral components

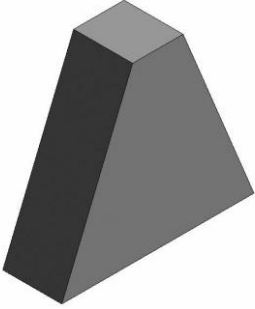
There are also other components which are usually not proprietary items to the specific escalator/moving walk models and can usually be shown in different manners. However, it is still critical for the following items to be shown in the BIM model(s) for submission to BCA.


- a) Access Restriction Device
- b) Anti-slide Device
- c) Anti-climb Device
- d) Vertical deflector
- e) Control Cabinet

Accessories such as e-stop switches, direction (light) indicators, safety switches, step demarcation, skirt panel brush need not be shown.

Access Restriction Device		
		
Component	Parameter Name	Sample Value/Units
Access Restriction Device	Height	1000mm
	Thickness	10mm
	Width	500mm

Anti-Slide Device		
		
Component	Parameter Name	Sample Value/Units
Anti-slide Device	Height	20mm
	Thickness	10mm
	Width	500mm

Anti-Climb Device		
		
Component	Parameter Name	Sample Value/Units
Anti-Climb Device	Length	1000mm
	Height	600mm
	Width	200mm
	TaperAngle	25°

Vertical Deflector		
		
Component	Parameter Name	Sample Value/Units
Vertical Deflector	Height	300mm
	Thickness	20mm
	Length	200mm
	Taper Angle	45°
Other	Distance between outer edge of handrail and obstacle	400mm

3.3 References to requirements in SS626:2017

The following list of parameters extracted from *SS626:2017 Code of Practice* for escalator and moving walk should be reflected in the BIM submissions where possible. Parameters or properties that are not reflected in the submitted layout plans and drawings will need to be declared to be of compliance to *SS626:2017* requirements.

Parameter		Requirement
Component Specific		
Core Components		
1.Step/Pallet/Belt		
Step/Pallet	a) Step Height	<ul style="list-style-type: none"> • Shall not exceed 0.24m
	b) Step Depth	<ul style="list-style-type: none"> • Shall not be less than 0.38m
	c) Groove Width	<ul style="list-style-type: none"> • Shall at least be 5mm and not exceed 7mm
	d) Groove Depth	<ul style="list-style-type: none"> • Shall not be less than 10mm
	e) Web Width	<ul style="list-style-type: none"> • Shall be at least 2.5mm and not exceed 5mm
Belt	f) Groove Width	<ul style="list-style-type: none"> • Shall be at least 4.5mm and not exceed 7mm
	g) Groove Depth	<ul style="list-style-type: none"> • Shall not be less than 5mm
	h) Web Width	<ul style="list-style-type: none"> • Shall be at least 4.5mm and not exceed 8mm
Common	i) Height Difference between steps	<ul style="list-style-type: none"> • A vertical difference in level of 4mm is permitted between two consecutive steps
	j) Clear height	<ul style="list-style-type: none"> • Shall not be less than 2.3m
	k) Minimum height	<ul style="list-style-type: none"> • Shall not be less than 2.1m
	l) Side Edges	<ul style="list-style-type: none"> • Shall not finish with a groove
2.Balustrade/Handrail/Newel/Free Area		
Balustrade	a) Angle of Inclination	<ul style="list-style-type: none"> • Shall not exceed 30° but for rises not exceeding 6m and a nominal speed not exceeding 0.5m/s the angle of inclination is permitted to be increased up to 35°. • Angle of Inclination of moving walks shall not exceed 12°.
	b) Vertical Height from step to top of handrail	<ul style="list-style-type: none"> • Shall not be less than 0.9m and not exceed 1.1m
	c) Gaps between interior panels of balustrades	<ul style="list-style-type: none"> • Shall not be wider than 4mm and edges shall be rounded off or bevelled.

	d) Interior panels of balustrades	<ul style="list-style-type: none"> • If glass is used for the interior panel, it shall be laminated toughened glass. • The thickness of at least one layer shall not be less than 6mm
	e) lower inner decking/interior panel	<ul style="list-style-type: none"> • Shall have an angle of inclination of at least 25° to the horizontal. This does not apply to the horizontal part of the lower inner decking that directly joins the interior panel. • The horizontal part of the interior panel shall be less than 30mm. • The width of each lower inner decking inclined at an angle of less than 45° to the horizontal shall be less than 0.12m.
	f) Radius of Curvature	<ul style="list-style-type: none"> • The radius of curvature in the upper transition from incline to horizontal shall be: <ul style="list-style-type: none"> i) At least 1.00m for nominal speeds $v \leq 0.5\text{m/s}$ (inclination of max 35°) ii) At least 1.50m for nominal speeds $0.5\text{m/s} < v \leq 0.65\text{m/s}$ (inclination of max 30°) iii) At least 2.6m for nominal speeds $v > 0.65\text{m/s}$ (inclination of max 30°) • The radius of curvature in the lower transition from incline to horizontal of the escalator shall be at least 1.00m up to 0.65m/s the nominal speed and at least 2.00m above 0.65m/s. • For belt moving walks, the radius of curvature in the transition from incline to horizontal shall be at least 0.40m.
	g) Perpendicular distance between top edge of skirting or lower edge of the rigid part of the skirt deflectors and the tread surface of the pallets	<ul style="list-style-type: none"> • Shall be less than 25mm
Newel	h) Horizontal Projection beyond comb intersection	<ul style="list-style-type: none"> • Shall project horizontally beyond the comb intersection by at least 0.6m in the longitudinal direction.
	i) Horizontal projection beyond comb intersection	<ul style="list-style-type: none"> • Shall continue longitudinally at the landings for a distance of at least 0.3m.
Handrail	j) Width	<ul style="list-style-type: none"> • Shall be between 70mm and 100mm
	k) Distance between handrail and edge of balustrade	<ul style="list-style-type: none"> • Shall not exceed 50mm

	l) Difference in Distance between center line of handrails and skirting-skirting length	<ul style="list-style-type: none"> • Shall not be more than 0.45m
	m) Height of handrail entry into newel from finished floor level	<ul style="list-style-type: none"> • Shall not be less than 0.1m and not exceed 0.25m
	n) Horizontal distance between furthest point of handrail and newel entry	<ul style="list-style-type: none"> • Shall be at least 0.3m. If this is greater than the difference in distance between furthest point reached by the handrail and the comb intersection line vs the straight portion of the handrail measured from the comb intersection, the handrail shall enter the balustrade at an angle of 20° to the horizontal
	o) Distance between outer edge of handrail and walls or other obstacles	<ul style="list-style-type: none"> • Shall not be less than 80mm horizontally and 25mm vertically
	p) Distance between handrails	<ul style="list-style-type: none"> • Shall not be less than 160mm

3.Landing Area/Comb

Landing Plate	a) Landing Area	<ul style="list-style-type: none"> • Shall have a surface that provides a secure foothold for a minimum distance of 0.85m measured from the root of the comb teeth
	b) Travel of steps/pallets/belt from comb	<ul style="list-style-type: none"> • Steps leaving the comb shall move horizontally for a length of at least 0.8m • At nominal speeds above 0.5m/s and not more than 0.65m/s or rises above 6m this length shall be at least 1.2m • At nominal speeds above 0.65m/s this length shall be at least 1.6m • At the upper landings of moving walks with an inclination of more than 6°, the pallets or belt shall move for a length of at least 0.4m at a maximum angle of 6° before entering or after leaving the comb • The front edge of the pallet leaving the comb and the rear edge of the pallet entering the comb shall move without changing the degree of angle over at least 0.40m
Combs	c) Width of the comb teeth	<ul style="list-style-type: none"> • Shall not be less than 2.5mm
	d) Radius of the comb teeth	<ul style="list-style-type: none"> • Shall not be greater than 2mm
	e) Design angle	<ul style="list-style-type: none"> • Shall not exceed 35°

	f) Mesh depth of the comb into the grooves of the tread	<ul style="list-style-type: none"> • Shall be at least 4mm
	g) Clearance between root of comb teeth and step surface	<ul style="list-style-type: none"> • Shall not exceed 4mm

4. Machinery Space

Machinery Space	a) Standing Area	<ul style="list-style-type: none"> • In machinery spaces, especially in driving and return stations inside the truss, the size of the standing area shall be at least 0.30m² and the smaller side shall be at least 0.50m long • Where the main drive or brake is arranged between the user side of the step, pallet or belt and the return line, a level standing area in the working zone of not less than 0.12m² shall be provided. The minimum dimension shall be not less than 0.30m.
	b) Clear Height	<ul style="list-style-type: none"> • At least 2.00m at working areas • At least 1.80m at access ways to working areas (width of at least 0.5m. Can be reduced to 0.4m where there are no moving parts)
	c) Clear Horizontal Area	<ul style="list-style-type: none"> • The area in front of the control panels and cabinets is defined as follows: <ul style="list-style-type: none"> a) Depth of at least 0.70m b) Greater of the following: 0.50m or the full width of the cabinet or panel • At least 0.50m x 0.60m for maintenance and inspection of moving parts at points where necessary
	d) Unrestricted area at the exit of the escalator	<ul style="list-style-type: none"> • Width shall at least correspond to the distance between the outer edges of the handrails plus 80mm on each side • Depth shall be at least 2.50m measured from the end of the balustrade. It shall be permissible to reduce it to 2.00m if the width of the unrestricted area is increased to at least double of the distance between the outer edges of the handrails plus 80mm on each side

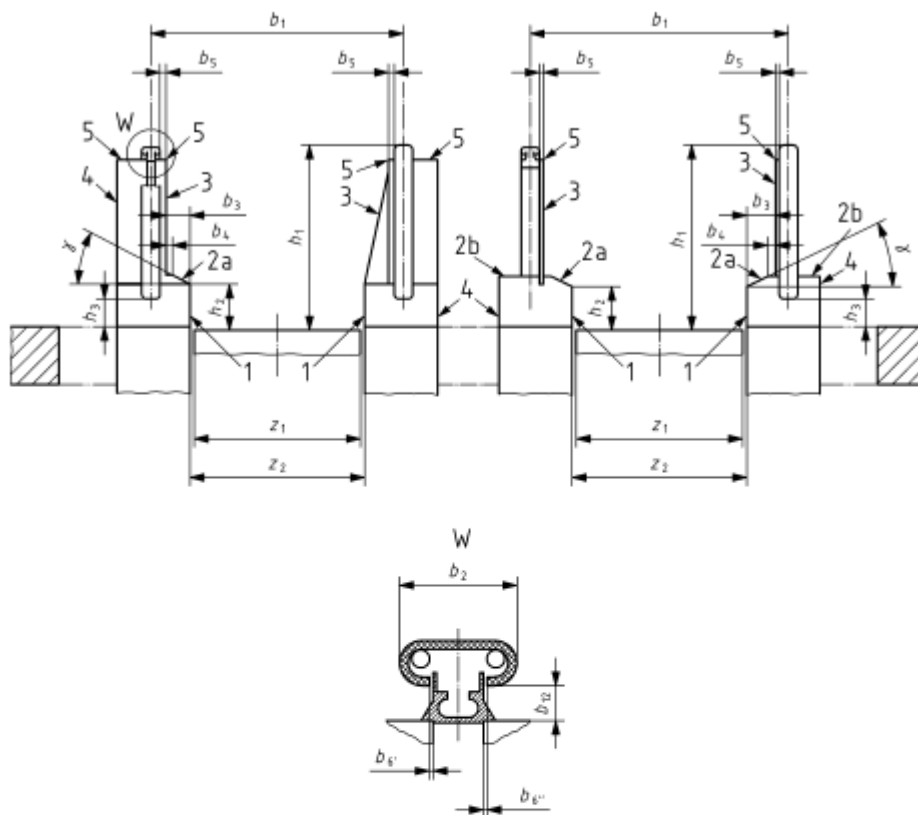
Peripheral Components

1. Access Restriction Device

Access Restriction Device	a) Lower outer decking width/Combined balustrade decking width	<ul style="list-style-type: none"> Device shall be provided at the top and bottom ends of escalator when the decking width exceeds 125mm
	b) Height of Device	<ul style="list-style-type: none"> Shall extend to a height of no closer than 25mm and no further than 150mm from bottom of handrail
2.Anti-Slide Device		
Anti-Slide Device	a) Distance between structure of the building and centerline of the handrail	<ul style="list-style-type: none"> Device shall be provided when distance is greater than 300mm.
	b) Distance to handrail	<ul style="list-style-type: none"> Shall not be closer than 100mm
	c) Distance between adjacent handrail centerlines	<ul style="list-style-type: none"> Device shall be provided when distance between centerlines of handrails is greater than 400mm Distance Shall not be greater than 1800mm apart
	d) Height of Device	<ul style="list-style-type: none"> Shall not be less than 20mm
3.Anti-Climb Device		
Anti-Climb Device	a) Distance of device from floor level	<ul style="list-style-type: none"> Shall be installed at 1000+/-50mm above the floor level and where the bottom of the device intersects with the balustrade decking
	b) Length of device	<ul style="list-style-type: none"> Shall extend to at least 1000mm parallel with the balustrade decking where no stepping is possible
	c) Height of device	<ul style="list-style-type: none"> Shall extend to a height of no closer than 25mm and no further than 150mm from bottom of handrail
4. Vertical Deflector		
Vertical Deflector	a) Height of Device	<ul style="list-style-type: none"> Shall not be less than 0.30m Shall be placed above the handrail level and extend at least 25mm below the lower edge of the handrail
	b) Distance between outer edge of handrail and any obstacle	<ul style="list-style-type: none"> Device shall be installed when the distance between the outer edge of the handrail and any obstacle is less than 400m

Principal dimensions	Clause	Principal dimensions	Clause
b_7 5 mm to 7 mm (step treads and pallets)	5.3.2.2.5	$h_8 \geq 4$ mm	5.7.3.3.1
b_7 4,5 mm to 7 mm (belts)	5.3.2.3.2	h_{13} Rise	-
b_8 2,5 mm to 5 mm (step treads and pallets)	5.3.2.2.7	L_1 Root of the comb teeth	-
b_8 4,5 mm to 8 mm (belts)	5.3.2.3.4	L_2 Comb intersection line	-
h_1 0,90 m to 1,10 m	5.5.2.1	l_1 Distance between supports	-
h_2 0,10 m to 0,25 m	5.6.4.1	$l_2 \geq 0,60$ m	5.5.4.1
$h_3 \geq 2,30$ m	A.2.1	$l_3 \geq 0,30$ m	5.5.4.2
$h_3 \geq 0,30$ m	A.2.4	$l_4 \geq 0,30$ m	5.6.4.2
$h_4 \leq 4$ mm	5.7.3.3.2	α Angle of inclination	-
$h_7 \geq 10$ mm (step treads and pallets)	5.3.2.2.6	$\beta \leq 35^\circ$	5.7.3.2.3
$h_7 \geq 5$ mm (belts)	5.3.2.3.3		

NOTE This figure has not been drawn to scale. It only serves to illustrate the requirements.



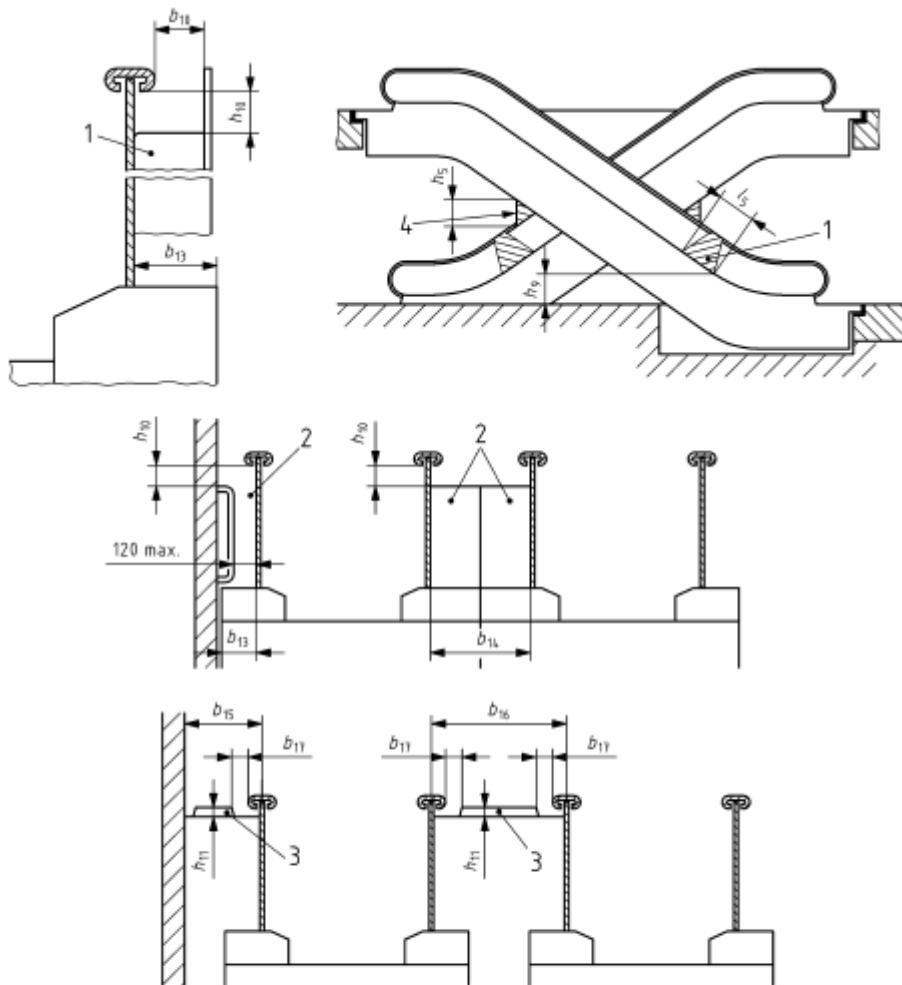
Key

- | | |
|----------------------------------|--------------------------------|
| 1 skirting (5.5.3) | 3 interior panel (5.5.2.4) |
| 2a lower inner decking (5.5.2.6) | 4 exterior panel (5.2.1.2) |
| 2b lower outer decking (5.5.2.2) | 5 balustrade decking (5.5.2.2) |

Principal dimensions	Clause	Principal dimensions	Clause	Principal dimensions	Clause
$b_1 \leq z_1 + 0,45$ m	5.6.3	$b_6 + b_7 \leq 8$ mm	5.6.2.1	$z_0 = z_1 + 7$ mm; distance between skirting	5.5.5.1
b_2 70 mm to 100 mm	5.6.2.2	$b_{10} \geq 25$ mm	A.2.2		
$b_3 < 0,12$ m (if γ less than 45°)	5.5.2.6.2	h_1 0,90 m to 1,10 m	5.5.2.1	$\gamma \geq 25^\circ$	5.5.2.6
$b_4 < 30$ mm	5.5.2.6.1	$h_2 \geq 25$ mm	5.5.3.1		
$b_5 \leq 50$ mm	5.6.2.3	h_3 0,10 m to 0,25 m	5.6.4.1		

NOTE This figure has not been drawn to scale. It only serves to illustrate the requirements.

Figure 3 — Escalator/moving walk (sectional view), principal dimensions



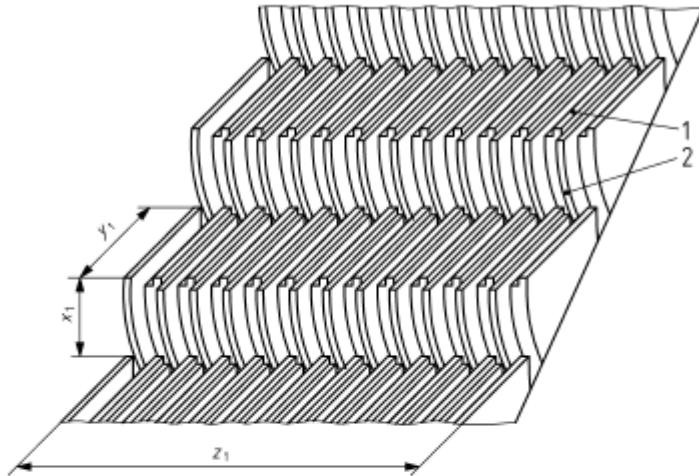
Key

- 1 anti-climbing device (5.5.2.2) 3 anti-slide device (5.5.2.2)
 2 access restriction device (5.5.2.2) 4 vertical deflector (A.2.4)

Principal dimensions	Clause	Principal dimensions	Clause
$b_{13}, b_{14}, b_{15}, b_{16}$	5.5.2.2	$h_{17} = 25 \text{ mm to } 150 \text{ mm}$	5.5.2.2
$b_{17} \geq 100 \text{ mm}$	5.5.2.2	$h_{11} \geq 20 \text{ mm}$	5.5.2.2
$h_9 \geq 0,30 \text{ m}$	A.2.4	$l_8 \approx 1000 \text{ mm}$	5.5.2.2
$h_9 = (1000 \pm 50) \text{ mm}$	5.5.2.2		

NOTE This figure has not been drawn to scale. It only serves to illustrate the requirements.

Figure 4 — Anti-misuse devices



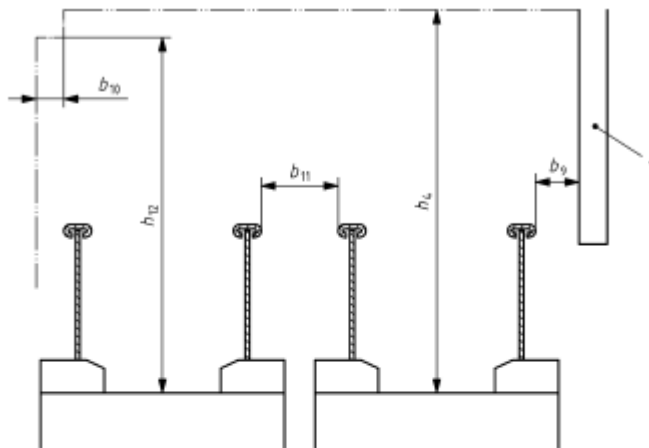
Key

- 1 step treads
- 2 step risers

Principal dimensions	Clause
$x_1 \leq 0,24 \text{ m}$	5.3.2.2.1
$y_1 \geq 0,38 \text{ m}$	5.3.2.2.2
$z_1 \geq 0,58 \text{ m to } 1,10 \text{ m}$	5.3.2

NOTE This figure has not been drawn to scale. It only serves to illustrate the requirements.

Figure 5 — Steps, principal dimensions



Key

- 1 obstacle (e.g. column)

Principal dimensions	Clause	Principal dimensions	Clause
$b_{10} \geq 400 \text{ mm}$	A.2.4	$h_{14} \geq 2300 \text{ mm}$	A.2.1
$b_{11} \geq 80 \text{ mm}$	A.2.2	$h_{12} \geq 2100 \text{ mm}$	A.2.2
$b_{13} \geq 160 \text{ mm}$	A.2.3		

NOTE This figure has not been drawn to scale. It only serves to illustrate the requirements.

Figure A.1 — Clearances between building structure and escalator/moving walk units