



# **SANDS THEATRE**

## Technical Rider and Handbook

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## CONTACT INFORMATION

### Mailing/Shipping Address

Marina Bay Sands Pte Ltd  
10 Bayfront Avenue  
Singapore 018956

Marina Bay Sands Enquiries

+65 6688 8868  
[inquiries@marinabaysands.com](mailto:inquiries@marinabaysands.com)

Hotel Room Reservations

+65 6688 8888  
[room.reservations@marinabaysands.com](mailto:room.reservations@marinabaysands.com)

Media Enquires (Marina Bay Sands related ONLY)

+65 6688 8868  
[mediarelations@marinabaysands.com](mailto:mediarelations@marinabaysands.com)

### Marina Bay Sands Entertainment Department

For all theatre venues, hire and technical enquiries [theatres@marinabaysands.com](mailto:theatres@marinabaysands.com)

Emergency (Internal)	+65 6688 0999
Singapore Fire/Ambulance	995
Singapore Police	999

## THEATER OVERVIEW

The MBS Theatres house two side by side North American Performing Arts Center Style theatres with a shared entrance, box office, retail and foyer.

The Stalls level in each theatre is reached from the main entry level or by entryways on the sides of each auditorium toward the front of the main floor sections. The Balcony levels are reached by a grand stair in the lobby, one for each theatre or by lifts to all levels.

The two theatres share a common loading dock and a scenic dock, which also separates the two stages. The smallest door from the loading dock is **2.9m high X 4.9m wide**.

## AUDITORIUM

The **Sands Theatre** has a total capacity of **1,679**seats

- **1046** Stall seats (including 52of which areon the Orchestra pit lift)
- **633**Dress Circle Seats

The audio mix position is located at the rear of the stalls in front of the control booth.

The mix position to orchestra pit and stage has 2 empty 200 mm beverage tubes for road cable. The Sands Theatre has 5 FOH catwalk positions for hanging lights, a follow spot booth, and a wall to wall and a forestage grid.

The Forestage grid extends 9000 mm from the proscenium wall into the auditorium 18765 mm above stage level.

	<b>Distance from Proscenium</b>	<b>Height above stage level</b>
Catwalk 1	6150 mm	16320 mm
Catwalk 2	10012 mm	16950 mm
Catwalk 3	14150 mm	17605 mm
Catwalk 4	17990 mm	17605 mm
Catwalk 5 & FS Booth	22545 mm	17045 mm

## STAGE

The stage is a concrete slab with a central trappable area filled with 4 x 8 platforms supported from the trap room floor. These platforms can be removed to open traps in this area as needed. Outside the trappable area the stage floor is a resilient (Bio-channel) performance floor laid on top of the concrete slab. Cable management troughs run in the stage floor for both lighting and audio cabling. Floor is rated at 10kN/m<sup>2</sup>. The Proscenium opening is protected by a fire safety curtain; the fire safety curtain travel may not be obstructed or blocked in any way. **This curtain must be able to close in case of emergency. (Fire door dead height may be adjusted for productions traveling with an elevated stage platform, this will be subjected to a cost by the MBS authorized Contractor.)**

The Theatre is equipped with a house curtain and a variable width and height portal system, consisting of a hard edged header and tracking hard edged portal legs.

### Overall Stage Dimensions

Stage width (Wall to edge of counterweight) 35990 mm (118' 1")

Stage Depth (Back of Pros to back wall) 15210 mm (49' 10")

Stage right – pros opening to wall 10000mm

Stage Left – pros opening to rigging 9000 mm

Apron edge to back of Proscenium 1610 mm (without orch pit – at center line)

Ds edge of orchestra pit lift to back of pros 5000 mm (at center line – orch pit lift as stage extension)

### Proscenium Opening

Width (hard opening w/o portal legs) **16000 mm**

Height (hard opening w/o header) **10000 mm**

Opening with Portal legs (Variable) **15000 mm** widest - **12000 mm** narrowest

### Gridiron:

Height of walking surface above stage **24900 mm**

Well separation **3500 mm** center to center (there is no well on centerline)

### Stage Traps:

Trappable area width **12350 mm**

Trappable area depth **9850 mm** (starts **2600 mm** US of back of the pros wall)

Trap room height **6120 mm** (from floor to top of trap opening)

**Onstage Galleries:**

<b>Stage Right:</b>	<b>Height</b>	<b>Distance from Centerline</b>
Fly Gallery	12425mm	14500 mm
Lower loading Gallery	20750 mm	15500 mm
Upper Loading Gallery	23420 mm	15500 mm

**Stage Left:**

Pin Rail Gallery	12425 mm	14500 mm
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**Upstage:**

Crossover Gallery	12425 mm	(860 mm wide along back wall)
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**TRAP ROOM**

15830 mm wide

13070 mm deep (upstage of orchestra pit platform to back wall)

5540 mm high to bottom of beams – 6120 to top of stage trap platforms

(Floor in trap room is not leveled nor sealed. Productions who wish to use this area for any automated machinery must make provision for leveling or damper to reduce harmonic vibration)

**STAGE EQUIPMENT & RIGGING SYSTEM**

- The stage is equipped with a single purchase counterweight manual rigging system with 77 Line Sets.
- The line sets are undedicated 6 line sets (no line on center)
- Battens: a ladder truss 21000 mm batten
- Line Sets spaced on 150mm (6") centers\*\* up to 11800 mm upstage of the proscenium and then at 300mm (12") centers until the last line set, downstage of the crossover catwalk
- Each line set has a capacity of **1545Lbs (700kg)** above pipe weight.
- Each full counter weight brick is 12.5kg.
- There is a counterweight pit and all battens have full travel.
- There are two locking rails located at stage level and at the fly gallery.
- The rigging system is located on Stage left away from the loading door and scenic dock.

## ORCHESTRA PIT LIFT

- The Orchestra Pit lift is controlled from the pit lift or at the proscenium stage left
- The lift has preset stops at stage level
- 300 mm above stage level (over travel for show decks)
- At orchestra pit playing level 2750 mm below stage level
- At seat wagon storage 4600 mm below stage level

Orchestra pit will not be usable as an elevated trap platform for performance due to local site safety protocol. Special request may be explored subject to risk assessment and performance need.

## STAGE DRAPES & TRACKS

- 1 house curtain
- 1 hard portal border (Black)
- 1 set hard portal legs on traveler (Black)
- 5 borders 3M x 21 M (Black)
- 5 sets of legs 3 M x 9.75 M (Black)
- 1 full stage black scrim (shark tooth gauze)
- 1 full stage white scrim (shark tooth gauze)
- 1 full stage seamless white Cyclorama
- 2 sets stage traveler

## AUDIO & VIDEO

### MAIN THEATREPA

#### Left / Right Arrays (each)

4 d&b` J-8 line array elements (Balcony)  
3 d&b J-Sub cardioid subwoofer array element  
6 d&b` J-8 line array elements (Orchestra)  
2 d&b J-12 line array elements (Orchestra near fill)  
Powered by (9) d&b D-12 amplifiers (each)  
1 Spare d&b D-12 Amplifiers (Main PA)  
4 d&b D-12 Amplifiers for additional Patch (8 Channels)

#### Centre Array

16 d&b` T-10 line array elements  
Powered by (4) d&b D-12 amplifiers

#### Front Fills

7 Meyer`MM-4 speakers concealed in the Orchestra pit wall, powered by (2) d&b D-12 amplifiers

#### Stage Subwoofers

4 d&b J-Infra Subs (Cardioid-21" drivers) 2-each side,  
L/R of the Proscenium  
Powered by (4) d&b D-12 amplifiers (total)

#### Under Balcony

7 d&b E-8 speakers mounted in the under balcony ceiling  
Powered by (2) d&b D-6 amplifiers

#### Balcony Rear Delay

8 d&b E-8 speakers mounted in the balcony rear ceiling  
Powered by (1) d&b D-6 amplifier

#### Surround Side & Rear

36 d&b E-0 speakers concealed in the side/rear whisper walls at Orchestra, Mezzanine and Balcony levels Powered by (8) d&b D-6 amplifiers



**FOH and Monitor Consoles**

2 Studer Vista 5 Digital Console 42 Fader Desk –

112 inputs / 48 Outputs

2 Studer VST Plug-in EFX package

1 Digidesign D-Show C/W Sidecar (Subject to availability)

72 inputs / 32 Outputs

1 Waves LIVE Bundle TDM

1 Yamaha CL5

2 RIO3224 (64 Inputs / 48 Outputs)

## **Stage Performance and Monitor System**

*(The Following equipment is split between the two Theatres – availability to be confirmed upon show advance)*

### **Left / Right Side Fills (each)**

8 d&b` C-7 Subs

4 d&b C-7 Tops

4 d&b E-12D Tops

4 E-15 Subs

Powered by (4) d&b D-12 amplifiers (Total)

### **Portable Wedges**

8 d&b` M-2 Wedges Active (2x 12", 1.4" horn)

16 d&b` M-4 Wedges Active/Passive (1x 15", 1.3" horn)

Powered by (8) d&b D-12 amplifiers (Total)

### **Splitter**

4 Whirlwind – Jensen transformer Splits 48 channel

With Direct out Mains, Iso-Out #1 Monitors, Iso-Out #2 Broadcast

12 and 28 pair stage mult-box systems for stage inputs

### **Microphones**

6 Shure KMS-9 condenser cardioid-super cardioid vocal mic

12 Shure Beta 57 dynamic cardioid instrument mic

6 Shure SM58s Switched mic

8 Shure SM58 Dynamic Mic

8 Shure SM57 Dynamic Mic

7 Shure Beta 58 dynamic cardioid vocal mic

11 Shure SM-81 condenser instrument mic

2 Shure Beta 52a dynamic kick drum mic

11 Shure Beta 98D/S condenser drum mic

4 Shure SM-94 condenser mic

8 Sennheiser MD-421 dynamic cardioid instrument mic

4 Sennheiser E-609 dynamic guitar amp mic

2 EV RE-20 large diaphragm studio mic

8 AKG C-414 ULB multi pattern condenser instrument mic

8 (16 Ch.) Shure UR124D / Beta 87c UHF R series dual channel wireless w/ Beta 87C handhelds and UR-1 belt packs/ WL-50 lavaliers

12 Radial JD1 Direct Box

4 Radial ProAV2 Direct Box

## INTERCOM SYSTEM

Each theatre is equipped with a 4 channel Party-line intercom system from Clear-Com. There are dedicated Intercom plugging outlets at every possible location in the theater. Some locations offer all 4 channels of intercom (ABCD) other locations have one or two intercom outlets that can be assigned to intercom channels A or B or C or D via a Clear-Com Matrix.

Both Theatres intercom power supplies are on UPS for emergency communications during power outages.

A ClearcomFreespeak wireless intercom system is resident in each theatre. With as many as 5 on stage belt packs and 5 back of house belt packs.

### Intercom Inventory

2 Clear-Com RCS 2700 8x24 Intercom matrix

2 Clear-Com PS-704 4 channel power supply

1 Clear-Com IF4W4 4 wire interface

2 Clear-Com RM-704 4 channel remote station

4 Clear-Com KB-702- GM 2 ch. Speaker biscuit station

12 Clear-Com HS-6 Handsets

12 Clear-Com RS-601 1 channel Beltpack

6 Clear-Com RS-602 2 channel Beltpack

2 Clear-Com FL-7 Intercom Call light Flasher

24 Single Muff headset.

8 Lite weight headset

1 Clear-Com "Free Speak" wireless intercom Base station

1.88 GHz – 1.93 GHz DECT Cellular roaming technology

Interfaces to all 4 wired party-line channels

8 Clear-Com "Free Speak" wireless Belt Packs

Provides point to point and small group wireless communication Belt-Pack to Belt Pack as well as 2 channel access to wired intercom channels.

## VIDEO SYSTEM & BROADCAST SUPPORT

The Sands Theatre contains excellent FOH balcony rail cameras in HD over VGA and infrared cameras. The Theatre has monitor screens in all dressing rooms and camera inputs throughout the stage, house and other locations which can be connected throughout the building via a modulated feed to all areas. The balcony rail camera can be sent throughout the building as well.

The building contains a video wiring backbone to support all kinds of camera inputs throughout the auditorium and stage house. All the camera inputs and backbone necessary for video and broadcast support are available through the AV control room and at a panel on the loading dock for hook up to a broadcast truck. Additionally, dedicated broadcast power exists at the loading dock location. Isolated audio device power exists throughout the building and isolated audio power is available for any additional equipment from a complete PA to any augmentation to the house or stage monitor system. Video system is for show support and broadcast support.

## WIRELESS TX/RX GUIDELINES

Both Theatres are built with superb wireless isolation and are under strict Infocomm Development Authority of Singapore (IDA) Regulations.

All productions are to adhere to the following frequencies for all wireless Mics, Coms, 2 way Radios, Automation, and any other production wireless devices:

0.51 – 1.60 MHz 57 dB $\mu$ /Vm @ 3m  
40.66 – 40.70 MHz 65 dB $\mu$ V/m @ 10m  
88.00 – 108.00 MHz 60 dB $\mu$ V/m @ 10m  
180.000 – 200.000 MHz 112 dB $\mu$ V/m @ 10m  
470.00 – 806.00 MHz 10 mW ERP

If you need any additional frequencies outside the pre-approved bandwidth or power, a formal license must be produced with the IDA before that device can be powered on.

For a **complete list** of approved Frequencies and powers for all modes of wireless TX/RX, please contact us.

## LIGHTING SYSTEM & EQUIPMENT

### STAGE LIGHTING SYSTEM:

#### PLEASE NOTE:

*3K dimmers/relays are 16 amp 240 volt Cee Form style connectors.*

*5k relays are 32 amp 240 volt (single phase) Cee Form style connectors.*

768 ETC Sensor dimmers hardwired throughout the Theatre

744 – 3 kW; 24 – 5 kW ; 124 relay switches for non-dim circuits

## ETC EOS Console

Circuits are distributed as follows

### STAGE

#### Grid:

288 – 3kW Dimmers

2 – 5kW dimmers

48 – 3kW non dim

#### SL Gallery

36 – 3kW dim

1 – 5kW dim

6 – 3kW Non dim

#### SR Gallery:

36 – 3kW dim

1 – 5kW dim

6 – 3kW Non dim

#### Stage Deck:

#### USL:

12 – 3kW dim

4 – 5kW dim

2 – 3kW Non dim

#### USR:

12 – 3kW dim

4 – 5 kW dim

2 – 3kW Non dim

#### DSL:

6 – 3 kW dim

1 – 5 kW dim

1 – 3 kW Non dim

#### DSR:

6 – 3kW dim

1 – 5 kW dim

1 – 3kW Non dim

### Orchestra Pit:

6 – 3kW dim

2 – 3 kW Non dim

### Trap Room:

12 – 3 kW dim

2 – 3 kW Non dim

### FRONT OF HOUSE

#### Forestage Grid:

48 – 3kW dim

2 – 5kW dim

8 – 3 kW Non dim

#### Catwalks 2 -4 (Each catwalk as follows):

30 – 3 kW dim

6 – 3kW Non dim

#### Catwalk 5:

24 – 3 kW dim

4 – 3 kW Non dim

#### Follow Spot Booth:

6 – 3 kW dim

2 – 3 kW Non dim

#### Balcony Rail:

24 – 3kW dim

2 – 5 kW dim

4 – 3 kW Non dim

#### Box Boom Positions:

Near, Middle & Far on each side (SIX POSITIONS

TOTAL – 3 per side)

At Each Position:

18 – 3 kW dim

1 – 5 kW dim

2 – 3 kW non dim

**Additional electrical power (company Switches) are available as follows:**

Qty	Type	Location
(6)	200A	Electrics Gallery (stage left Fly Gallery)
(1)	60A	Electrics Gallery
(1)	60A	Fly Gallery
(1)	60A	DSL
(1)	60A	DSR
(1)	60A	USL
(1)	60A	USR
(2)	200A	Trap Room
(2)	100A	Forestage Grid
(2)	60A	Stage Grid
(1)	200A	Counterweight Pit
(1)	200A	Followspot Booth (also serving catwalks)

**FIXTURES**

*\*Equipment is shared between the two Theatres; please seek confirmation with MBS before scheduling equipment.*

	No.
ETC Source Four 10° 750w	30
ETC Source Four 14° 750w	10
ETC Source Four 19° 750w	10
ETC Source Four 26° 750w	65
ETC Source Four 36° 750w	60
ETC Source Four 50° 750w	10
ETC Source Four PAR-EA 750w	30
ETC Source Four 15°-30° Zoom	12
PAR 64 (Various lamps)	48
Desisti Giotto 4-Way Horizontal Cyc	14
Robert Juliet Cyrano 2.5 KW Followspot	3
Vari-Lite VL 3000 Spot	6
Vari-Lite VL 3500 Wash	14
MartinMac 700 Wash	10
Martin Mac700 Profile	10

**FIXTURE ACCESSORIES**

Ocean Optics SeaChanger for Source Four	24
A-Size Template Holder for Source Four	90
A-Size Glass Template Holder for Source Four	30
Drop-in Iris for Source Four	2
Top Hat for Source Four 19°-50°	50
Top Hat for 10° Source Four	30
Top Hat for 5° Source Four	30
Donut for Source Four 19°-50°	10
Top Hat for Source Four PAR / Zoom / 14°	15
Barn Doors for Source Four PAR	20

**STAGE HARDWARE**

City Theatrical Safer Sidearm - 24" w/ 2 tees	50
3m Schld. 40 Pipe, threaded for boom base	10
50 lb. Boom Base	10
Tie-Off Ring for Sched. 40 Pipe	10

**CABLE & ELECTRICAL SUPPLIES**

1.5M CEE17 16A Cables; 5M CEE17 16A Cables	70 EACH
10M CEE17 16A Cables	70
20M CEE17 16A Cables	30
30M CEE17 16A Cables	10
CEE17 16A Splitter	20
1.5M DMX Cable	20
5M DMX Cable	30
20M DMX Cable	15
30M DMX Cable	10
5', 10', 25', 50' ProPlex CAT5e EtherCon Cable	10 EACH



## WORK SAFETY AND HEALTH POLICY

At MBS, we are committed to safe guard all personnel onsite with a safe environment to work in, and in accordance with Singapore's Ministry of Manpower's Workplace Safety and Health Act, if you are an employer or are a manager/supervisor that is representing the employer, it is your responsibility to protect the safety and health of all employees or workers working under your direct control, as well as all who may be affected by their work. Your responsibilities include:

- 8.1.1 Conducting risk assessments to remove or control hazards that may exist in the workplace.
- 8.1.2 Maintaining safe work facilities and provisions for the workers (i.e. PPE etc.).
- 8.1.3 Ensuring safety in machinery, equipment, plant, articles, substances and work processes at the workplace.
- 8.1.4 Developing and implementing control measures for dealing with emergencies.
- 8.1.5 Providing workers with adequate instruction, information, training and supervision.

### **If you are an employee or supervisor**

- 8.1.6 You must follow the safe working procedures and principles introduced at the workplace.
- 8.1.7 You must not engage in any unsafe act that may endanger yourself or others working around you.
- 8.1.8 You must use, in proper manner, any personal protective equipment, devices, equipments or other means provided to secure your safety, health and welfare while working. And, you must not tamper or misuse such items provided.

Further, it is the responsibility of everyone, both employer and employee (regardless of position level), to upon the discovery of any safety or health risk, to take corrective action to promptly eliminate or reduce the chance of a workplace incident, injury or illness.

### **Risk Assessment**

Due to the uniqueness of each production and possible risk involved, the following work and acts will require a proper written Risk Assessment to be submitted to MBS prior to load in for approval.

- 8.2.1 Any use of pyrotechnics onsite.
- 8.2.2 Any use of naked flame or fire effects.
- 8.2.3 Any hot work, this will require a hot work permit from MBS FacilityDepartment.
- 8.2.4 Any use of water or liquid on stage.
- 8.2.5 Any use of pneumatic Canon
- 8.2.6 Any Audience interaction, participation during performance.
- 8.2.7 Any use of trip drop on stage or over audience area.
- 8.2.8 Any aerial acrobatics acts or human flying.
- 8.2.9 Any use of diesel or petrol engines on stage
- 8.2.10 Any use of strobe light, or when lighting design requires beams to be scanning the audience
- 8.2.11 Any use of laser beams
- 8.2.12 Any use of live stock or animal during performance.
- 8.2.13 Any exposure to sound over 115 db peak level C scale.

8.2.14 Any unconventional use or alternation to existing equipment outside of manufacturer recommendation.

In the event where Risk Assessment can only be done when production team is onsite, or when MBS is made known to any hazard outside of the above, MBS reserve the right to stop production from carrying out these work and acts, or the use of these work is deem adequately addressed.

**MBS will try and help production to address these hazards in a timely and efficient manner, but will not be held responsible for any delay as a result of addressing these hazards. A mandatory safety and emergency briefing will be held at the start of any load in, and before the start of any rehearsal with artists. It is the responsibility of the production company to schedule this briefing into their production schedule. The production company is also required to sign off after this briefing.**

## STAFFING

Marina Bay Sands has small technical team which is designated into the respective areas of Staging, Rigging, Lighting, Audio and Visual Media. This is primarily due to the complexity and scale of the equipment and systems at MBS as well as in response to the level of specialization and standards required by hirers of similar venues worldwide.

Marina Bay Sands do not supply working crew other than helping to supervise. It is the hirer responsibility to engage external contractors, like set builders, equipment hire companies, truck loaders, load in & out crew and show crew. However, the hirer is still fully responsible for the competency and conduct of their contractors. Any Hirer and their representative must be supervised by MBS staff and adhere to all instructions issued where security or health and safety issues exist. Hirers and their contractors must abide by Ministry of Manpower regulations with regard to the nature of work being performed. There are minimum crew numbers for certain tasks, and other Workplace Safety and Health Act (WSH) procedures must be followed. MBS reserves the right to exclude any company or individuals from the premises.

MBS Crew must take a clear an hour meal break.

MBS Crew must have a clear ten hour break between shifts.

Presenters will not be permitted to work in a venue without the presence of MBS staff.

## STAGE DOOR & LOADING DAY

Stage door entry to the MBS Theatres is from Bayfront Avenue on Street Level (Level One). There are two controlled access stage doors to both theatres. Blue door for Grand Theatre and Red door for Sands Theatre. Access to the theatre backstage area is via stairs or lift down to stage level (B2M) or to dressing room and wardrobe (B1) level. The Theatre Administration offices are on level 2.

The MBS Theatres share a loading dock and scenery dock. The scenery dock is situated between the two stages. The loading dock has 3 truck bays, 2 of which are usable for unloading 40ft containers. Containers need to be on **low bed trailer to access** the loading dock. Rollup Door from loading dock to scene dock 3360mm H x 3985mm W. The Loading doors from the scene dock to the stages 4850mm H X 3980mm W.