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Please Quote Our Reference  
Number In Your Reply

Our Ref: LTA/DBC/R70.018.015

Date: 4 Sept 2017

## **CIRCULAR TO PROFESSIONAL INSTITUTIONS**

**Dear Sirs**

**M&E CHECKLIST FOR BUS SHELTER, TAXI / PASSENGER PICK-UP SHELTER, PEDESTRIAN OVERHEAD BRIDGE (POB) AND COVERED LINKWAY FOR DESIGN ASPECTS AND M&E CHECKLISTS FOR COVERED LINKWAY FOR MAINTAINENCE ASPECTS**

### **Who should know**

Building owners, developers, architects and engineers

### **Effective Date**

1 October 2017

### **M&E Plan Submission Checklist**

1. As part of LTA's continual effort in streamlining and enhancing the plan approval process, we are pleased to announce the launch of two new checklists which are as follows:
  - i. M&E Checklist for bus shelter, taxi/passenger pick-up shelter, pedestrian overhead bridge (POB) and covered linkway to address the design aspects
  - ii. M&E Checklist for covered linkway to address the maintenance aspects.

This new initiative aims to facilitate understanding of the relevant guidelines and to help QPs to make reference when preparing submissions of M&E plans to LTA for approval.

2. We would like to take this opportunity to highlight to the industry that all M&E submissions would be deemed to have complied with our requirements when the QPs endorse the M&E checklists.

3. The **M&E checklists** would be made available in Annex 2A and 2B of RT COP for Street Works proposal relating to Development Works. All future submissions made shall include the “M&E Checklist for Bus Shelter, Taxi/Passenger Pick-up Shelter, Pedestrian Overhead Bridge (POB) and Covered Linkway” and “M&E Checklist for Covered Linkway” for their M&E submissions.

**Enquiries**

4. We would appreciate it if you could convey the contents of this circular to the relevant members of your organisation and building owners/developers on the M&E Checklist. If you or your members have any queries concerning these checklists, please email either **Chan Wing Yew@lta.gov.sg** for design aspects or **ONG Kok Chin@lta.gov.sg** for maintenance aspect.

Thank you.

Yours faithfully



Hadi Wijaya  
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Mechanical and Electrical  
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# M&E CHECKLIST FOR BUS SHELTER, TAXI / PASSENGER PICK-UP SHELTER, PEDESTRIAN OVERHEAD BRIDGE (POB) AND COVERED LINKWAY

**Project:** \_\_\_\_\_

\_\_\_\_\_

(√) Tick the appropriate box for all items

Standard Requirements	Yes	NA	Remarks
<b>1. General</b>			
1.1 Drawings are in A1 series.	<input type="checkbox"/>		
1.2 Site plan, location plan and layout plans showing road reserve line and LTA's maintenance boundary are included.	<input type="checkbox"/>		
1.3 The proposed installations provided are within LTA's maintenance boundary.	<input type="checkbox"/>		
1.4 Electrical installations above PUB drains are complied with PUB's requirements.	<input type="checkbox"/>		
1.5 Design calculations with design parameters and acceptance criteria are included.	<input type="checkbox"/>		
1.6 Technical data, catalogues, relevant test certificates / certificates of compliance from accredited testing facilities for proposed equipment, cables, materials and accessories are included.	<input type="checkbox"/>		
1.7 All electrical drawings, documents and design calculations are endorsed by Licensed Electrical Worker (LEW).	<input type="checkbox"/>		
1.8 All lightning protection system drawings, documents and design calculations are endorsed by Electrical Professional Engineer (PE).	<input type="checkbox"/>		
1.9 Responses to LTA's previous comments are attached.	<input type="checkbox"/>	<input type="checkbox"/>	
1.10 All additions/deletions/amendments are clouded.	<input type="checkbox"/>	<input type="checkbox"/>	
1.11 Commuter facilities M&E requirements stated in LTA's Architectural Design Criteria (ADC) Section 4 are complied with.	<input type="checkbox"/>		

<b>2. Electrical Distribution</b>			
2.1 Design of the electrical distribution is complied with LTA's ADC requirements and drawings.	<input type="checkbox"/>		
2.2 Single line diagrams for OG box and/or distribution board are included.	<input type="checkbox"/>		
2.3 Electrical loading and cable sizing calculations are included.	<input type="checkbox"/>		
2.4 OG box details showing plan view, front view, back view, internal view, external view, sections and elevations are included.	<input type="checkbox"/>		
2.5 Type B MCB are provided for all outgoing circuits.	<input type="checkbox"/>		
2.6 Surge protection device is provided as per LTA's ADC requirements.	<input type="checkbox"/>		
2.7 SPPG approved OG Box location complete with the route of SPPG incoming cables are included.	<input type="checkbox"/>		
2.8 OG box is not in the path of commuter walkway and line of sight of commuters looking at the oncoming traffic (e.g. obstructing the sight of arrival bus)	<input type="checkbox"/>		
2.9 HD uPVC pipes for installation of armoured cables from the OG box to the proposed commuter facilities are provided with straight run or with gradual long bends.	<input type="checkbox"/>		
2.10 HD uPVC pipes complete with draw wires with straight run or with gradual long bends are provided for advertisement panel for bus shelters.	<input type="checkbox"/>		
<b>3. Lighting Design and Light Fittings</b>			
3.1 No up-lighters are to be provided.	<input type="checkbox"/>		
3.2 Lighting level simulation reports with lux plots (one meter apart) and dimensions of simulated areas correspond to the lighting layout plans are included.	<input type="checkbox"/>		
3.3 Lighting levels and uniformity ratio measured at the ground level are complied with LTA's ADC requirements.	<input type="checkbox"/>		
3.4 The maximum allowable power budget is complied with LTA's ADC requirements.	<input type="checkbox"/>		

3.5	LED type light fittings of weatherproof IP65, vandal proof minimum IK06, ultra-violet (UV) stabilised and colour rendering index of 80 to 89 with colour temperature between 2700K and 3000K are provided.	<input type="checkbox"/>		
3.6	Lighting layout plans and sections with detailed cable routes from the OG box to the respective light fittings are included.	<input type="checkbox"/>		
3.7	The layout arrangement of light fittings are generally in line with LTA's ADC drawings.	<input type="checkbox"/>		
3.8	Alternate lighting circuits are provided.	<input type="checkbox"/>		
3.9	High covered linkway lighting circuits are complied with LTA's ADC drawings.	<input type="checkbox"/>		
3.10	Covered POB is provided with intelligent lighting detection system as complied with LTA's ADC requirements.	<input type="checkbox"/>		
3.11	Cross-sectional mounting details of the proposed light fitting to demonstrate ease of maintenance is provided.	<input type="checkbox"/>		
<b>4.</b>	<b>Lightning Protection System</b>			
4.1	The lightning protection system is designed in compliance to SS 555 and SS551.	<input type="checkbox"/>		
4.2	Lightning protection layout plans, sections and installations details, such as lightning bonding, earth pit, etc. are included.	<input type="checkbox"/>		
4.3	Minimum 10mm thick aluminium honey comb roof panels complete with minimum 1 mm thick top panel are provided as air termination system for the lightning protection system.	<input type="checkbox"/>		
4.4	The roofs are bonded to the support posts and support posts are connected to earth pits as per LTA's ADC drawings.	<input type="checkbox"/>		
4.5	All exposed metal parts, such as metal railings, bus signage poles, notice boards, etc. within 2m radius of the commuter facilities perimeter are bonded to the lightning protection system.	<input type="checkbox"/>		
4.6	All metal structures are bonded to the rebar of the floor slab by means of a purpose made clamp or weld. Location of bonding and typical bonding details are provided.	<input type="checkbox"/>		

4.7	Each commuter facilities structures for POB, covered linkway, bus shelters, etc. are provided with an independent lightning protection system, including earth pits.	<input type="checkbox"/>		
4.8	The lightning protection system between two or more commuter facilities structures, such as POB, covered linkway, bus shelters, etc. are bonded and electrically continuous.	<input type="checkbox"/>		
4.9	Earth pits are not in the path of commuter walkway.	<input type="checkbox"/>		
<b>5.</b>	<b>Earthing System and Equipotential Bonding</b>			
5.1	Earthing requirements is provided in accordance to SS 551.	<input type="checkbox"/>		
5.2	Equipotential bonding are provided in accordance to SS CP5 for all exposed metal parts and metallic street furniture.	<input type="checkbox"/>		
5.3	Equipotential bonding layout plans, sections and cable route to OG box are included.	<input type="checkbox"/>		

\_\_\_\_\_  
Qualified Person (QP)

\_\_\_\_\_  
Date

Note: Please tick in appropriate box for all items.  
This checklist is to be submitted for every submission/re-submission.



## M&E CHECKLIST FOR COVERED LINKWAY

### Commuter Facilities and Systems Management (Maintenance Related)

**Project:** \_\_\_\_\_

(✓) Tick the appropriate box for all items

Standard Requirements	Yes	NA	Remarks
<b>1. General</b>			
1.1 Summary list of proposed items, with brand & model, to be used on site.	<input type="checkbox"/>		
1.2 Electrical and lightning protection system installations embedded in the slab of PUB drains complied with LTA's requirements (if applicable).	<input type="checkbox"/>		
1.3 Consult LTA's Commuter Facilities & Systems Management if the roof alignment of the covered linkway affects any existing Street Lights.	<input type="checkbox"/>		
<b>2. Electrical Distribution</b>			
2.1 Power supply source is standalone i.e. supply source does not come from building switch board or share with building system.	<input type="checkbox"/>		
2.2 The control switches/MCB for the different facilities are independent e.g. control switch for covered linkway only control the lightings within covered linkway.	<input type="checkbox"/>		
2.3 The OG box shall be located adjacent to the covered linkway and shall not in any way obstruct the view of motorists/road users.	<input type="checkbox"/>		
<b>3. Lighting Design and Light Fittings</b>			
3.1 The mounting details of the light fittings to the covered linkway beams/columns are included.	<input type="checkbox"/>		
3.2 The light throw of the light fittings is not affected by beams/columns i.e. minimise the discrepancy between the simulated lux and completed site measured lux.	<input type="checkbox"/>		

\_\_\_\_\_  
Qualified Person (QP)

\_\_\_\_\_  
Date

Note: This checklist is to be submitted for every submission/re-submission.