



Guidelines on Safe Operations of Passengers Boarding Bridge

Preface and Acknowledgement

A passenger boarding bridge, if not operated and maintained properly in a well-coordinated manner may result in serious, fatal or even catastrophic accidents. The purpose of this document is to provide guidelines to airport operators on how identify the safety risks arising from the operations of passenger boarding bridges and mitigate them.

These guidelines are the results of the selfless efforts of Working Group 1 of the ACI Asia-Pacific & Middle East Regional Operational Committee for the benefit of the association's membership in the region. The Working Group was headed by the Chair of the Committee, Narayanasamy Venkatachalapathy (GMR Hyderabad). He was joined by Ahmed Faseel (Maldives), Herman Chung (Hong Kong), Jean Luc Meyts (Doha), Kevin Huang (Taoyuan, Taipei), Mohammad Nabil Mahmoud Al Nababteh (AIG Jordan), Naoki Naser Mohamed AlMannaei (Bahrain), Nojima (Narita), Orlando Hei Wo Chou (Macau), Siwan Yeom (Korea Airports Corporation), and Tony Sewell (Perth). Ahmad Shiwan (Maldives), Akhil Menon (Dubai), Emilie Coureau (Dubai), Meera Alhammadi (Dubai), Mike Sidlow (GCAA, UAE, Mohamed Yousif (Dubai), Shaiful Abdul Rahman (Malaysia), and Vivian Chen (Taoyuan Taipei) although not members of the Committee, also participated actively in the drafting work. Their contributions to ACI are gratefully acknowledged here.

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Guidelines of the Safe Operations of Passengers Boarding Bridge

Purpose

This document provides guidelines to aerodrome operators on the safe operations of passenger boarding bridges (PBB)¹ to prevent accidents involving PBB with aircraft, ground support equipment (GSE), vehicles, passengers, and operating personnel.

Scope

The guideline covers safety measures to be considered during and after the mobilization of PBB, the maintenance, the competency of the PBB operator, and other stakeholders involved directly or indirectly with PBB operations.

Safety hazards arising from the operations of PBB

In determining safe operations of PBB, the operator should identify the safety hazards arising from the operations of PBB. The following are examples of safety hazards of PBB operations:

- Collisions between the PBB and aircraft, or between the PBB, personnel, vehicles, and GSE on the apron.
- The PBB and the aircraft on the stand may collide and sustain damage due to:
 - A significant misalignment of the aircraft nose gear from the stop position marking;
 - Inadequate training of PBB operators and maintenance personnel;
 - Malfunctioning or mechanical failure of PBB due to maintenance issues or errors in the PBB operating software; or
 - Non-adherence to standard operating procedures on the part of PBB operating personnel.
- Injuries to operating personnel or passengers during and after operations of PBB, e.g., fall from height, and personnel trapped in PBB during its retraction.

Safety Mitigations

Based on the safety hazards identified and risks assessed, mitigation measures such as those in the following should be taken:

- Ensure apron design includes ACI-recommended markings to delineate the operating range of PBB and the exclusion zone for GSE and vehicles.
- Ensure no equipment or vehicle operating underneath the PBB.
- Conduct regular maintenance checks, especially after each software upgrade or critical hardware component change, to ensure proper functioning of the PBB as per original equipment manufacturer (OEM) recommendation.
- Ensure that an operator's presence in the PBB cabin during boarding and disembarkation facilitate emergency response and consider integrating this requirement into the overall airside safety regulations.
- Ensure PBB operations are in full compliance with OEM recommendations.

¹ ICAO State Letter AN4/1.1.58-23/33 date 30 May 2023 proposes that the terms “passenger bridge”, “loading bridge” and “aerobridge” be unified to “passenger **boarding** bridge” because the word “loading” is reminiscent of cargo loading.

- PBB operator shall be trained and verified as competent of the PBB to be operated and to undergo refresher training, preferably once a year or as determined by the airport operator. To that effect, there should be a PBB operator permit system (similar to the one for the Airside Driving Permit) to ensure only competent PBB operators are allowed to operate the PBB.
- Consider integration between the PBB and Visual Docking Guidance System (VDGS) wherever possible to prevent inadvertent incursion by PBB during aircraft docking.

Reference

ACI Apron Safety Handbook

ACI Apron Markings & Signs Handbook

ICAO Manual on Ground Handling Doc 10121

ICAO Safety Management Manual Doc 9859