

Airfield Maintenance HANDBOOK

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Foreword

Airfield maintenance is a critical element in ensuring the safety and efficiency of airport operations. When maintenance activities are completed at the right time and with the right process, the lifespan of these assets can be either increased or at least maintained as originally designed. Maintenance programs will also minimize the costs of major failures, reduce the probability of unexpected infrastructure closures or system failures, and minimize airport disruptions while improving overall levels of safety.

Delays in essential maintenance interventions can lead to the significant detriment of airside infrastructure and critical assets, especially pavement and markings, leading to a decrease in the designed lifespan. Planning and coordination are vital to a successful asset management program.

The content of this handbook includes a repository of airfield maintenance practices, including data collection and analysis to allow for data-driven decision-making, information on the new ICAO pavement classification rating (ACR/PCR), and best practices on maintenance programmes for pavement, signs, markings, and electrical systems. While remaining short and succinct, the Airfield Maintenance Handbook provides case studies, as well as explanations of different methodologies of repairs. This application of the recommendations and best practices contained in this document must be tailored to the circumstances of each aerodrome.



In the area of staff development, ACI's Global Training offers courses relevant to airfield maintenance, via both classroom delivery and online, and it will continue to develop additional training in the future.

Special thanks to the members of the Safety Technical Standing Committee and industry experts who worked to update this handbook as well as to ADB SAFEGATE and Shanghai GuiMu Robot Co. LTD, for supporting the final editing and publication efforts.

A handwritten signature in black ink, appearing to read 'Luis Felipe de Oliveira'.

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Contents

FOREWORD	5
1 Introduction	9
1.1 Airfield Maintenance Requirements	9
1.2 Safety Precautions.....	9
1.3 Management Responsibilities	9
2 Management of Airfield Maintenance	11
2.1 Maintenance Plan Strategies	11
2.1.1 Proactive and Preventive Maintenance.....	11
2.1.2 Ad hoc Maintenance	13
2.2 Asset Management.....	15
2.2.1 Identification of Critical Assets.....	16
2.2.2 Collection of Data on the Performance of Critical Assets.....	16
2.2.3 Level of Services	17
2.2.4 Future Demand.....	17
2.3 Management of Drawings:.....	19
3 Pavement Maintenance	20
3.1 Pavement Surface Evaluation	20
3.2 Pavement Classification Rating (PCR).....	24
3.3 ICAO Overload Criteria:	26
3.4 Friction Testing.....	28
3.4.1 Runway Surface Friction Evaluation	28
3.4.2 Maintenance Considerations	30
3.5 Rubber Removal.....	30
3.6 Foreign Object Debris (FOD)	33
3.7 Pavement Maintenance and Repair.....	34
Digital Solution as Part of Life-cycle Maintenance of Airport Pavement	35
3.7.1 Localized Repairs	36
3.7.2 Global Preventive Maintenance.....	38
4 Markings	41
4.1 When to Maintain.....	41

4.2	Surface Preparation	42
4.3	Contaminants to be Removed	42
4.4	Equipment to prepare surfaces	42
4.5	Pavement Marking Removal	43
4.6	Application Procedures	43
4.7	New Markings	45
4.8	Repaint Existing Markings	45
4.9	Material Requirements	46
5	Airfield Electrical Systems Maintenance	47
5.1	Apron Lighting	47
5.1.1	High Mast Lighting.....	47
5.2	Airfield Ground Lighting (AGL).....	49
5.2.1	Maintenance Strategy and Establishment of a Maintenance Cycle.....	49
5.2.2	Documentation and Record Upkeep	51
5.2.3	Airfield Lighting Photometry	51
5.2.4	Training and Technological Improvements	51
5.2.5	AGL Manual and Reference Documents.....	52
5.2.6	AGL Design for Effective Maintenance	52
5.2.7	Technological Advancements and the Impact on AGL Maintenance	52
5.2.8	Workshop Facilities and Maintenance Set-up	53
5.2.9	AGL Faults and Troubleshooting Procedures.....	53
5.2.10	AGL Faults and Troubleshooting Procedures.....	54
5.3	Maintenance Strategy	56
5.4	AGL Control and Monitoring System.....	58
5.4.1	Maintenance Strategy	59
5.5	Power Supply Systems.....	60
5.5.1	Airfield Power Supply and Emergency Power Supply	60
5.5.2	Fixed Ground Power	63
5.6	Aircraft Visual Docking Guidance System.....	63
5.6.1	Maintenance Strategy	64
	Visual Airside Maintenance – No Asset Left Behind	65

6 Other General Maintenance	67
6.1 Maintenance of Unpaved Areas	67
6.1.1 Runway and Taxiway Strip.....	67
6.1.2 Runway Ends and Runway End Safety Areas (RESA)	69
6.1.3 Runway and Taxiway Shoulders.....	69
6.1.4 Areas Beyond the Runway and Taxiway Strips.....	69
6.2 Snow Removal	70
6.3 Night Maintenance.....	72
6.4 Drainage Facility Maintenance	73
6.5 Grass Maintenance	75
6.5.1 Grass Maintenance Policy	75
6.5.2 Land Use Policy and Grass Cutting	75
6.5.4 Grass Cutting Program	75
7 Training.....	79
7.1 Objectives of Airfield Maintenance Training	79
7.2 Training Content.....	80
7.3 Training Plan	81
7.4 Training Format and Delivery Method	81
7.5 Frequency of Training	82
8 Coordination Procedures for Maintenance Activities	83
8.1 Framework For Coordination	83
8.2 Initiation of Coordination Process.....	83
8.3 Coordination For NAVAIDs Maintenance.....	85
8.4 Closures/NOTAM – Maintenance During Operations	86
8.5 Procedures For Hand Over/Take Over Before/After Maintenance.....	86
8.6 Procedures for Protection of Sites for Radar and NAVAIDs.....	87
Appendix 1 Best Maintenance Practices of AGL at Narita International Airport: Aeronautical Lighting Maintenance Centre at Narita International Airport.....	89
Appendix 2 Safety Precautions.....	96
Appendix 3 Maintenance of Inset lights - A Case Study from Copenhagen Airport	100
Appendix 4 Acronyms and Abbreviations	104

1 Introduction

1.1 Airfield Maintenance Requirements

Airports have a huge range of infrastructure, especially in airside areas, requiring proper planning and procedures for maintenance activities, ideally without affecting aircraft operations or jeopardizing operational safety. Careful planning, scheduling, and coordination of maintenance activities can minimize disruption of normal aircraft operations and avoid situations that compromise operational safety. An airport operator has the overall responsibility for all the maintenance activities of its infrastructure. As such, the airport operator must understand the impact of such maintenance activities on aircraft operations, both in developing an effective maintenance plan and executing it.

Coordination procedures are essential to ensure safe and seamless operations during the execution of maintenance activities as such actions affect multiple stakeholders operating at the airport. Among the key airport stakeholders involved in these coordination procedures are aircraft operators, ground handlers, air navigation service providers, other concessionaires and subcontracted agencies working at the airport, as well as various internal departments of the airport operator. For major maintenance activities, coordination, and approval from the Civil Aviation Authorities (CAA) may be required. The airport operator should check their local regulations regarding the need for coordination with the relevant CAA.

1.2 Safety Precautions

Many activities take place airside, within a congested and time-sensitive environment. While the general principles of workplace health and safety apply to airside maintenance activities, several additional factors specific to airports and the ground handling of aircraft must be considered, including the types of accidents, incidents, and other occurrences. The maintenance plan should carefully examine all safety issues and implement corrective measures promptly.

The maintenance plan and its related activities should also be consistent with the established Safety Management System (SMS) processes of the airport. Depending on individual state regulations, and in accordance with the ICAO recommendation on Safety Management Systems (SMS), the airport operator may also be responsible for preparing safety-risk assessments of proposed maintenance activities and ensuring that recommended actions are taken to mitigate safety risks.

Appendix 2 provides details on the safety measures to be taken in maintenance areas.

1.3 Management Responsibilities

Airport management is responsible for the maintenance of its infrastructure, including the responsibility to propose, fund, and contract maintenance activities. It is essential that the airport management is aware of the proactive and ad hoc maintenance requirements of all their airfield assets.

Even in cases where another entity at the airport carries out maintenance activities on behalf of the airport operator — for example, AGL maintenance undertaken by a sub-contracted agency — the airport operator remains responsible for ensuring the construction is undertaken in accordance with its rules, regulations, and safety practices.

In accordance with ICAO requirements, airport operators have responsibility for the provision, operation, and maintenance of airport facilities and services under ICAO standards and national regulations. They are also obliged to provide immediate notices to Air Navigation Service Providers (ANSPs) and aircraft operators of obstacles, hazards, reductions in levels of service, closures of airside movement areas, and other conditions that affect the safety of the airport. These responsibilities are usually defined more specifically and enforced by individual state civil aviation authorities (CAAs) and their respective national regulations, as discussed later in this section.