DEFENCE AIRCRAFT PAVEMENT
FRICITION AND GROOVING POLICY

POLICY SPONSOR: DIRECTORATE OF ESTATE ENGINEERING POLICY, CIVIL ENGINEERING SECTION

Version 1.0: July 2017
Revision History

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<td>1.0</td>
<td>2017</td>
<td>SQNLDR Melissa Mailler</td>
<td>Initial Release, combining the previous ADF Friction Policy Manual and Grooving Policies</td>
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REFERENCES


The above list of references is not exhaustive. Specialist pavement engineering consultants are expected to consider all relevant and recognised standards / publications when making recommendations to the Australian Defence Force (ADF).

INTRODUCTION

1. The purpose of this policy is to provide guidance for the testing and management of both friction and grooving on sealed runways that are owned and operated by the ADF. This policy combines the previous ADF Friction Policy Manual and Grooving Policy.

COMPLIANCE REQUIREMENT

2. Braking performance on pavement surfaces is critical for aircraft operations. Under certain conditions, hydroplaning or unacceptable loss of traction can occur, resulting in poor braking performance and possible loss of directional control. To address this concern, ADF runways are to comply with the friction requirements in Reference A, specifically Clause 10.15.2 Runway Surface Friction.

3. ADF runways are required to meet the surface texture characteristics of sealed runways in accordance with Clause 6.2.9.1A of Reference A. Grooving is required for ADF runways regularly serving Code 4 jet aircraft and military fast jet aircraft, as well as sealed runways not meeting the minimum surface texture characteristics of Reference A.

4. Grooving of ADF airfields is to comply with Reference E, specifically Part 7, Item P-621 Saw-Cut Grooves.

BACKGROUND

5. Estate and Infrastructure Group (E&IG) manages the routine Pavement Inspection (PI) program for sealed ADF airfields, the Aerodrome Technical Inspection (ATI) program and the friction testing program for sealed ADF airfields.

6. The PI program includes the visual inspection of the runway surface texture and the condition of grooves (if present) to permit programming of pavement maintenance activities. Clause 10.15.2.2 of Reference A requires the ATI to confirm that the surface texture standard of the runway is being satisfied.
FRICITION TESTING

7. In accordance with References B and D, a continuous friction measuring device with self-wetting features shall be used to measure the friction level of the runway at the following intervals for ADF airfields:

a. on newly constructed runways
b. on newly resurfaced runways
c. on runways that have had a surface treatment (e.g. PME) or rubber removal undertaken
d. on an as-required basis to respond to concerns regarding frictional characteristics (e.g. operator feedback/concerns, excessive rubber build up, etc)
e. or otherwise annually

SURFACE TEXTURE TESTING

8. In accordance with References A and B, the average surface texture depth of a runway surface should not be less than 1mm in order to provide good friction characteristics when the runway surface is wet. Surface texture testing measures the macrotexture of the overall pavement surface, measurements are typically undertaken using one of the following methods:

a. sand patch test
b. grease patch test

9. Where possible the sand patch test is to be utilised due to the reduced time to complete the test, and the reduced apparatus required to clean the runway surface once the test has been completed.

10. The surface texture of the runway surface shall be measured at the following intervals for ADF airfields:

a. as an interim measure in particular circumstances where continuous friction testing could not be undertaken for whatever reason, at the interval stated in paragraph 7
b. on areas of runway pavement where it is not safe or practical to complete continuous friction testing
c. on an as-required basis to respond to concerns regarding frictional characteristics (e.g. operator feedback/concerns, excessive rubber build up etc)

CORRECTIVE ACTION

11. Restoring runway surface texture and friction to the levels specified by Reference A generally involves significant financial investment and requires careful deliberation. When deficiencies are identified by surface texture or friction testing, DEEP CES advice must be
sought to assist in determining the appropriate response, or whether corrective action required
The following aspects are considered in determining the appropriate corrective action:

a. **Traffic type and rate of use.** Whether Code 4 jet or military fast jet aircraft
   regularly use the runway and the frequency of aircraft operations.

b. **Environmental conditions.** Frequency and intensity of weather events such as rain
   or strong winds.

c. **User input.** Where there is limited Code 4 or military jet aircraft, engagement with
   the relevant stakeholders (e.g. BASO, BAEO, squadron operations) is necessary to
   establish user concerns over runway frictional characteristics. If there is concern
   regarding specific aircraft, type of operations or level of pilot experience, then
   corrective action should be taken.

12. Where immediate corrective action is not considered necessary (subject to resolving
   any relevant stakeholders concerns) a NOTAM (Notice to Airmen) and/or permanent AIP-
   ERSA entry must be issued stating the existing conditions in detail, while regular surface
   texture and/or friction testing continues in order to identify any further deterioration.

**GROOVING**

13. Depending on the pavement surface type, grooving is often the preferred way to
   ensure that the friction requirements of Reference A are satisfied. Grooving is required on all
   ADF airfields that regularly cater for Code 4 jet aircraft (military and civilian) and military
   fast jet aircraft, to the standard detailed in Reference E.

14. **Timeframe.** In accordance with Reference E, saw cutting of grooves in new or
   resurfaced pavements must not be undertaken until the material has cured to the extent that
   the grooves can be cleanly cut without any damage to the groove edges. This is not less than
   30 days for asphalt pavements and not less than 28 days for concrete pavements. The actual
   duration must be determined by the airfield pavement designer.

15. **Dimensions.** Nominal dimensions for grooves shall be (with appropriate
    construction tolerances) in accordance with Reference E. (i.e. 6mm wide x 6mm deep at
    38mm centres). Trapezoidal grooving may be used subject to written agreement by DEEP-
    CES.

16. Grooving must be perpendicular to the centreline and extend the full length of the
    runway between the inside edges of the runway edge markings. Exceptions to this include:

a. **Asphalt threshold (THR).** Grooving is to cease approximately 80m from the THR
   in order to minimise the risk of FOD associated with turning aircraft dislodging
   aggregate from the pavement surface.

b. **Concrete THR.** Grooving is not to occur if there are concrete THRs that meet the
   surface texture requirements.

c. **Operational Readiness Platforms (ORPs)/Turing Nodes.** Grooving is to cease
   prior to the end (furthest from the THR) of the ORP/turning node or 80m from the
   THR (whichever is greater). This is to minimise the risk of FOD associated with
   turning aircraft dislodging aggregate from the pavement surface.

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d. **Inset AGL.** Where inset lighting exists in the pavement, care must be taken to ensure grooving does not damage the light fitting or interfere with any AGL cabling. Additionally, the area around the light that remains ungrooved should be minimised to as small an area as practicable.

e. **Aircraft Arrestor Systems (AAS).** Where there are permanent arrestor installations or footings for temporary systems, grooving shall cease no less than 1m from the arrestor cable (at the completion of the nearest full width grooving run). Care must be taken to ensure grooving does not impede the normal operation of the AAS and takes into account the ramping of the asphalt layer around the AAS pavement as per the recommendation of the engineering specialist.

17. **Rapid Exit Taxiways (RET).** Specialist pavement engineering advice is to be sought in determining the need for grooving of RETs considering the following factors:

   a. aircraft traffic mix
   b. weather conditions
   c. grading and drainage performance of the RET
   d. geometry of the RET intersections with the runway and taxiway
   e. precedent and previous experience

18. Should it be determined that the RET requires grooving, the grooves are to be cut perpendicular to the centreline of the RET between the inside edges of the taxiway edge markings. At the intersection of the RET and runway, grooves may be perpendicular to the centreline of the runway so that groove cutting is not interrupted at the edges of the runway.

19. **Cross Runways.** The entire length of the primary runway will be grooved perpendicular to the centreline of the runway. The secondary runway grooving will cease in the vicinity of the intersection with the main runway.