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EICO/vrd
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From: Commander, Naval Facilities Engineering Command, Engineering Innovation and Criteria Office (EICO)

To: Distribution

Subj: INTERIM TECHNICAL GUIDANCE (ITG 02-04) – AIRFIELD/HELIPORTS
SURFACE DRAINAGE DESIGN

Ref: (a) MIL-HDBK 1005/2, “Hydrology” - Inactive for New Design
(b) MIL-HDBK 1005/3, “Drainage Systems” - Inactive for New Design
(c) MIL-HDBK 1021/6, “Airfield Pavement Design for Frost Conditions and Subsurface Drainage”, 15 Apr 00
(d) UFC 3-260-01, “Airfield and Heliport Planning and Design”, 01 Nov 01

1. Purpose. The purpose of this guidance is to provide basic criteria and information for the design of surface drainage of airfields and heliports.

2. Background. References (a) and (b) are “Inactive for New Design” due to wide variation of state regulatory practices for stormwater management. Reference (c) provides guidance for airfield subsurface drainage practices. Currently the Naval Facilities Engineering Command (NAVFAC), Engineering Innovation and Criteria Office (EICO) is jointly participating in the development of Unified Facility Criteria (UFC) for airfield drainage design. The Army and the Air Force recently published interim airfield drainage guidance that differs from the Navy’s current practice.

3. Discussion. Good civil engineering practice would be to design drainage facilities to handle a storm with a minimum 10-year return interval. The drainage area surrounding the airfield is unusually large and, as required by airfield geometric criteria, reference (d), essentially flat. Maintaining adequate cover over drainage pipes while meeting pipe slope requirements and maintaining positive drainage is difficult for design storms above 2-year return interval. Typically, the grassed area surrounding an airfield provides a fairly large area that designers can use to pond water with no adverse impact on operational characteristics of the airfield. The Navy traditionally uses a 2-year return interval to optimize initial costs incurred in constructing new drainage systems and to accommodate the desires of most state regulatory agencies. The Navy has also traditionally located storm water retention and detention ponds away from airfields due to bird and wildlife hazards to aircraft. Design drainage criteria listed below are based on the premises that:

- (a) Runways and taxiways would likely be closed during high intensity rainfall events.
- (b) Air and hangar ground crew will need access to parked aircraft on aprons during moderate rainfall events.

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- (c) Hangars protect aircraft in various stages of repair.
- (d) Hangar structures and their contents are very costly to replace.

4. Criteria.

- (a) Use the following guidance for airfield drainage design facilities:
 - Runway and Taxiway Pavements 2-yr. return interval
 - Apron Pavements 2 to 5-yr. return interval
 - Hangars and Other Important Airfield Facilities 10-yr. return interval
- (b) Prior to initiating an airfield drainage modification/improvement project, conduct a system capacity assessment to ensure design discharge noted above does not exceed the down stream drainage system capacity.
- (c) Use a minimum 12” pipe size to facilitate maintenance and clean out of drains.
- (d) Locate associated stormwater retention and detention ponds away from the airfields to the greatest extent possible.

5. Action.

- (a) Design. Design all new projects using guidance above.
- (b) Criteria. NAVFAC EICO will participate with U.S. Air Force Civil Engineer Support Agency and U.S. Army Corps of Engineers in the development of a UFC for airfield drainage criteria.

5. Coordination. This guidance has been coordinated with the airfield pavements and civil/geotechnical engineers at each EFD, EFA, PWC, and NFESC. Address comments and questions on the use of this guidance to the POC.

6. Point of Contact. For clarification or additional information related to this subject, please contact Mr. Vincent Donnally, P. E., DSN 262-4204, Comm. (757) 322-4204, Fax (757) 322-4416 or e-mail donnallyvr@efdlant.navy.mil.

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