

# TRI-SERVICE PAVEMENTS WORKING GROUP (TSPWG) MANUAL

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## AIRFIELD PAVEMENT DRAINAGE LAYERS



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**TRI-SERVICE PAVEMENTS WORKING GROUP MANUAL (TSPWG M)**

**AIRFIELD PAVEMENT DRAINAGE LAYERS**

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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND

AIR FORCE CIVIL ENGINEER CENTER (Preparing Activity)

Record of Changes (changes are indicated by \1\ ... /1/)

<b>Change No.</b>	<b>Date</b>	<b>Location</b>

## **FOREWORD**

This Tri-Service Pavements Working Group Manual provides guidance to DoD agencies and contractors for siting airfield pavement drainage layers and improving their design, construction, and maintenance. It supplements guidance found in other Unified Facilities Criteria, Unified Facility Guide Specifications, Defense Logistics Agency specifications, and service-specific publications. The information in this TSPWG Manual is referenced in technical publications found on the Whole Building Design Guide. It is not intended to take the place of service specific doctrine, technical orders (TOs), field manuals, technical manuals, handbooks, Tactics, Techniques, and Procedures (TTPs), or contract specifications, but should be used along with these to help ensure pavements meet mission requirements.

All construction outside of the United States is also governed by Status of Forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA). Therefore, the acquisition team must ensure compliance with the most stringent of the TSPWG Manual, the SOFA, the HNFA, and the BIA, as applicable.

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**TRI-SERVICE PAVEMENTS WORKING GROUP (TSPWG) MANUAL  
NEW SUMMARY SHEET**

**Document:** TSPWG M 3-260-02.11-4, *Airfield Pavement Drainage Layers*

**Superseding:** Engineering Technical Letter (ETL) 11-4, *Airfield Pavement Drainage Layers*, 13 December 2011

**Description:** This manual provides guidance to DoD agencies and their contractors for siting airfield pavement drainage layers and improving their design, construction, and maintenance.

**Reasons for Document:**

- To ensure the latest methodologies and technologies are available to all services.
- To achieve unification among the services.

**Impact:**

- The addition of drainage layers increases design cost and initial construction cost. However these cost increases are offset by the life cycle costs.

**Unification Issues:**

None

## **1 PURPOSE AND APPLICABILITY.**

This manual supplements Unified Facilities Criteria (UFC) 3-230-06A, *Subsurface Drainage*, providing guidance to identify where drainage layers are required and ways to improve design, construction, and maintenance of airfield pavement drainage layers. It applies to DoD agencies and their contractors engaged in airfield design and construction.

## **2 REQUIREMENTS.**

UFC 3-230-06A design criteria provide satisfactory drainage layer performance if properly constructed and maintained. Follow the UFC to ensure that the material properties, drainage layer thickness, length and slope of the drainage path, water collection systems, and other design considerations meet the design requirements.

### **2.1 Siting.**

Drainage layers are required on Air Force primary pavements, except as noted in paragraphs 2.1.1 and 2.1.2. Primary pavements are mission-essential pavements such as runways, parallel taxiways, main parking aprons, arm-disarm pads, alert aircraft pavements, and overruns (when used as a taxiway or for take-off roll). Drainage layers can be used on other pavements if determined to be beneficial by lifecycle analyses.

**2.1.1** Drainage layers are not required at bases in non-frost areas where the subgrade permeability is greater than 20 feet per day/6 meters per day.

**2.1.2** Drainage layers are not required for flexible pavements in non-frost areas where the total thickness of pavement above the subgrade is 8 inches/203 millimeters or less.

**2.1.3** A waiver from the DWG is required for other exceptions. Situations meeting 2.1.1 or 2.1.2 do not require a waiver from the DWG.

### **2.2 Quality Assurance/Quality Control.**

Monitor construction of pavement drainage layers closely to ensure they will be functional after construction. Any construction error that can cause flow restrictions compromises the effectiveness of the drainage system and must be addressed immediately.

#### **2.2.1 Examples of Improper Construction.**

Problem areas may include, but are not limited to, incorrect placement of outlet pipes, inverted slopes of collector and drainage pipes, absence of headwalls in outlet structures, and use of improper aggregate gradations. These issues must be avoided in all circumstances.

### **2.2.2 Design Changes.**

Changes to design during construction must take into account the impact on the overall system. Any change to the original design of the drainage system must be reviewed and approved by the designer. Furthermore, this type of action should be closely monitored, and quality control/quality assurance (QC/QA) procedures must be in place and followed to ensure construction practices produce the intended product.

### **2.3 Maintenance.**

Implement a routine maintenance program for pavement drainage systems on airfields. Maintenance should include clearing all soil and vegetation from the flow path to prevent clogging. System components to be monitored include storm drain manholes, junction boxes, and outlet structures.

### **2.4 Documentation.**

As-built data and drawings must be available for future construction and rehabilitation projects. Furthermore, this data must be consulted for every construction project around a pavement area that contains a subsurface drainage system to avoid interfering with its functionality.

## **3 WAIVERS.**

The Pavements DWG or their designated representative can waive guidance in paragraph 2. Pavements satisfying paragraphs 2.1.1 or 2.1.2 do not require a waiver.