This instruction implements AFPD 32-10, *Installations and Facilities*, and provides guidance for establishing and maintaining a roof management program. It also specifies use of the *Manual for Inspection and Maintenance* of various roofing systems, which is published by The National Roofing Contractors Association. This publication applies to all Air Force, Air Force Reserve Command (AFRC), and Air National Guard (ANG) units and personnel. This publication may be supplemented at any level, but all direct Supplements must be routed to the Office of Primary Responsibility (OPR) of this publication for coordination prior to certification approval. The authorities to waive wing/unit level requirement in this publication are identified with a Tier (“T-0, T-1, T-2, T-3”) number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. Refer recommended changes and questions about this publication to the OPR using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.
SUMMARY OF CHANGES

This document has been substantially revised and must be completely reviewed. Major changes include the addition of Tier waiver authority requirements, updated office symbols, and updated references.

1. Program Objective. The objective of a roof management program is to optimally manage roof systems over their life cycles to meet the required levels of service for Air Force real property. Roof management involves an asset management approach, taking into account performance measures, periodic inspections, routine maintenance and repair, and correct application of quality roofing products.

2. Responsibilities.

2.1. Air Force Director of Civil Engineers (AF/A4C):

2.1.1. Establishes policies for roofing systems.

2.2. Air Force Civil Engineer Center (AFCEC):

2.2.1. Establishes standards and criteria for design, maintenance, repair, and management of roofing systems IAW mandatory requirements of UFC 3-110-3, Roofing and UFC 3-110-4, Roofing Maintenance and Repair. (T-0)

2.2.2. Reviews emerging technologies and evaluates for applicability to the Air Force.

2.2.3. Evaluates roofing training conducted internally by the Air Force.

2.2.4. Assists major commands (MAJCOMs) and bases in troubleshooting roofing-related issues.

2.3. MAJCOMs:

2.3.1. Manage roofing programs within the command.

2.3.2. Appoint a roof engineer to monitor command roofing programs.

2.4. Base Civil Engineer Squadron:

2.4.1. Manage the base roofing program as required by Executive Order 13327, Federal Real Property Asset Management (EO 13327) in accordance with asset management principles and as a component of the facilities Activity Management Plan (AMP). (T-0)

2.4.2. Design and maintain roofs IAW mandatory requirements of UFC 3-110-3 Roofing and, UFC 3-110-4, Roofing Maintenance and Repair. (T-0)

3. Roof System Database. The purpose of the database is to help in effectively managing roof system assets. BUILDER™ Sustainment Management System (SMS), a Government Off-the-Shelf (GOTS) tool, is the primary Air Force SMS system. BUILDER™ must be utilized, updated, and maintained by the installation. (T-0) It tracks information on the type and age of roof and assigns a condition to the roof based on a fixed set of criteria. With this information, it can provide a remaining service life prediction, and reveal when to execute corrective maintenance or repair actions. Other Commercial Off-the-Shelf (COTS) and GOTS tools are authorized, at the installation’s expense, as a secondary database to support BUILDER™ for greater project-level details helpful to the base roof technicians and roof engineer.
4. **Condition Assessment.** Accomplish condition assessments in accordance with criteria in BUILDER™ SMS. If a roof section is not inventoried in SMS, upload data as part of the annual maintenance inspections. (T-1)

5. **Maintenance Inspections.** To promote the efficient and economical use of Air Force real property assets as required by EO 13327, inspect all roofs at least once annually in accordance with the inspection guidelines outlined in the BUILDER™ Condition Assessment Manual. (T-1)

JUDITH A. FEDDER, Lieutenant General, USAF
DCS/Logistics, Installations & Mission Support
Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References
Department of Defense:

AFI 33-360, Publications and Forms Management
AFI 91-203, Air Force Consolidated Occupational Safety Instruction
AFI 32-1023, Design and Construction Standards and Execution of Facility Construction Projects
AFMAN 33-363, Management of Records
UFC 3-110-03, Roofing
UFC 3-110-04, Roofing Maintenance and Repair
UFGS 07 22 00, Roof and Deck Insulation
UFGS 07 31 13, Asphalt Shingles
UFGS 07 31 26, Slate Roofing
UFGS 07 32 13, Roof Tiles
UFGS 07 32 14, Clay Tile Roofing Replacement or Repair
UFGS 07 41 13, Metal Roof Panels
UFGS 07 41 63, Fabricated Roof Panel Assemblies
UFGS 07 42 13, Metal Wall Panels
UFGS 07 51 13, Built-Up Asphalt Roofing
UFGS 07 52 00, Modified Bituminous Membrane Roofing
UFGS 07 53 23, Ethylene-Propylene-Diene-Monomer Roofing
UFGS 07 54 19, Polyvinyl Chloride Roofing
UFGS 07 55 00, Protected Membrane Roofing (PMR)
UFGS 07 57 13, Sprayed Polyurethane Foam (SPF) Roofing
UFGS 07 60 00, Flashing and Sheet Metal
UFGS 07 61 01, Copper Roof System
UFGS 07 61 14.00 20, Steel Standing Seam Roofing
UFGS 07 61 15.00 20, Aluminum Standing Seam Roofing

Note: Above publications can be found at [http://www.wbdg.org/index.php](http://www.wbdg.org/index.php)

Suggested Training Sources:
The Civil Engineer School at the Air Force Institute of Technology, “Roofing Design and Management (ENG 440)”
366th Training Squadron/Detachment 6, NCBC, Gulfport, MS

Various Courses offered by National Roofing Contractors Association located on-line at http://www.nrca.net/roofing/Course-index-288

Various Courses offered through Department to Engineering Professional Development at University of Wisconsin found at http://www.epd.engr.wisc.edu

**Suggested Reading Materials:**

RIEI Roofing Maintenance Manual

*Repair Manual for Low-slope Membrane Roof Systems*

*SPRI/NRCA Manual of Roof Inspection, Maintenance, and Emergency Repair for Existing Single-ply Roofing Systems*


*NRCA Roofing Manual: Membrane Roof Systems*

*NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing*

*NRCA Roofing Manual: Steep-slope Roof Systems*

*NRCA Roofing Manual: Metal Panel and SPF Roof Systems*

All are available at: The National Roofing Contractors Association, O’Hare International Center 10255, Higgins Road, Suite 600 Rosemont IL 60018-5607, 1-800-323-9545

Industry Professional Roofing Periodicals:

*RSI - Roofing Siding Insulation*, 600 Superior Avenue E, Suite 1100, Cleveland OH 44114 (216) 706-3700

*Western Roofing, Insulation, and Siding*, 546 Court Street Reno NV 89501-9834 (702) 333-1080

*Metal Architecture and Metal Construction News*, Both are available at Modern Trade Communications 7450 N. Skokie Blvd. Skokie IL 60077 (708) 674-2200

Books


*The Science and Technology of Traditional and Modern Roofing Systems*, by H.O. Laaly, 2 volumes, Laaly Scientific Publishing, 1992, 9037 Mount Mar Drive, Los Angeles CA 90035

**Prescribed Forms**

None.

**Adopted Forms**

AF Form 847, *Recommendation for Change of Publication*

AF Form 1768, *Staff Summary Sheet*
DD Form 67, Form Processing Action Request

Abbreviations and Acronyms
AFCEC—Air Force Civil Engineer Center
AFI—Air Force Instruction
AFRC—Air Force Reserve Command
AFRIMS—Air Force Records Information Management System
AMP—Activity Management Plan
ANG—Air National Guard
COTS—commercial off-the-shelf
GOTS—government off-the-shelf
MAJCOM—major command
NRCA—National Roofing Contractors Association
OPR—Office of Primary Responsibility
RDS—Records Disposition Schedule
SMS—Sustainment Management System