

U.S. AIR FORCE MUNITIONS FACILITIES STANDARDS GUIDE

Volume I

31 May 2004

**Contract Number:
F41624-00-D-8028
Task Order 0217**



Prepared By:
URS Group, Inc.
7720 North 16th Street, Suite 100
Phoenix, AZ 85020



TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

1.1	PURPOSE AND SCOPE.....	1-1
1.2	APPROACH.....	1-1
1.2.1	Document Organization.....	1-1
1.2.2	Maintenance Facilities	1-2
1.2.3	Storage Facilities.....	1-3
1.2.4	Transportation Facilities	1-3
1.2.5	Administrative Facilities.....	1-3
1.3	USING THIS GUIDE	1-4
1.3.1	Hyperlinks	1-4
1.3.2	Drawings	1-4





1.1 Purpose and Scope

This guide addresses criteria and standards for planning and programming 21 of the most common non-nuclear munitions facilities on United States Air Force (USAF) installations both within the continental United States (CONUS) and at overseas locations (OCONUS). They include active duty Air Force, Air National Guard (ANG), and Air Force Reserve Command (AFRC) facilities. This guide is not all-inclusive and may not cover unique mission or facility requirements. It lists criteria and standards for munitions facility planning and programming that are addressed by civil engineering (CE), weapons safety, munitions, security forces, communications and others involved in the review. The criteria also apply to the repair, renovation, and expansion of Air Force munitions facilities that require significant improvements to meet safety, security, and operational mission requirements.

The siting and construction of Air Force munitions facilities in foreign countries must comply with these guidelines as well as host nation requirements. Where United States and host nation requirements differ, the more restrictive criteria shall apply.

1.2 Approach

This document provides planning, site selection guidance, and design standards for munitions-related facilities. Most of these facilities will be located in the munitions storage area (MSA), an area designated for the storage and maintenance of large quantities of explosive materials. Facilities are categorized by CE Real Property Category Codes (Cat Codes). Facility function, type of construction, planning factors, and design criteria are organized in this document according to Cat Code. Each of the 21 munitions facilities covered by this guide can be placed into four distinct classes based on function and similar design features: Maintenance, Storage, Transportation, and Administrative.

1.2.1

Document Organization

The following paragraphs provide an overview of the contents that comprise this two-volume guide.

Volume I is organized to facilitate munitions facility planning, programming, and design process. An overview of each chapter follows:

Chapter 1: Introduction. This chapter explains the use and organization of this guide.



- Chapter 2: Planning, Programming, and Explosives Site Plan Approval.** This chapter explains the CE planning and programming process to the munitions user to better understand the steps associated with project development, funding, and construction. It also provides general guidance for use by the installation's Weapons Safety Manager (WSM) and CE to develop an explosives site plan (ESP) package for a project.
- Chapter 3: General Design Guidance.** This chapter provides general design standards common to munitions facilities. It discusses common issues such as site layout, architectural and structural requirements, safety, force protection, and security standards.
- Chapter 4: Design Standards.** This chapter provides specific and unique design standards for each of the 21 facilities types addressed in this guide. To the maximum extent possible, this chapter includes floor plans, elevations, and photographs to assist in the design of new munitions facilities. The designs included in this chapter are considered as the "best in class" for each of the facility types discussed in this document. In some cases, there are several designs from which to choose, all of which meet the standards for that facility type.
- Chapter 5: References, Forms, Abbreviations and Acronyms, and Terms.** This chapter provides references, including DoD, Army, Navy, Air Force, national code standards, related guidance, and information that can be used in conjunction with this guide.

Volume II, Munitions Facilities Assessment Checklists. Volume II contains condition assessment checklists for each of the 21 facility types covered in this guide.

1.2.2

Maintenance Facilities

Maintenance facilities are defined as those facilities where munitions and related support equipment are inspected, assembled, repaired, and maintained. The applicable Cat Codes are:

- 171-875 Munitions Loading Crew Training Facility
- 212-212 Missile Assembly Shop/Integrated Maintenance Facility (IMF)
- 212-213 Tactical Missile/Glide Weapons Maintenance Shop
- 215-552 Weapons and Release Systems Shop
- 215-582 Surveillance and Inspection Shop
- 216-642 Conventional Munitions Shop



218-712 Aircraft Support Equipment Shop/Storage Facility (Aerospace Ground Equipment (AGE) Facility) – Used for Munitions Support Equipment Maintenance

1.2.3

Storage Facilities

Storage facilities are those facilities where large quantities of munitions are stored for extended periods of time. These facilities include magazines (earth-covered or above ground), multi-cubes, open buildings/warehouses, sheds, inert spares, and open pads. The applicable Cat Codes are:

422-253 Multi-cubicle Magazine Storage
422-256 Rocket Check Out and Assembly Storage
422-257 Segregated Magazine Storage
422-258 Above Ground Magazine Storage
422-264 Storage Igloo (Earth-covered Magazine)
422-265 Inert Spares Storage
422-271 Module Barricaded Storage
422-275 Ancillary Explosives Facility (Classification Yards, Holding Yard, Inspection Station, Interchange Yard, Loading Dock, Ready Explosives Facility, and Bomb Preload Station/Munitions Assembly Conveyor (MAC) pad)

1.2.4

Transportation Facilities

Transportation facilities are defined as those facilities that support the transportation, movement and temporary storage of munitions. The applicable Cat Codes are:

116-662 Pad, Dangerous Cargo
422-277 Flight Line Munitions Holding Point
851-147 Roads (Streets) – Primary and Alternate Explosives Movement Routes
852-261 Vehicle Parking Operations – Used for Munitions Sub Pool Parking
890-158 Load and Unload Platform (Railhead) – Used for Munitions Operations

1.2.5

Administrative Facilities

Administrative facilities (squadron or flight) typically include office and training space for munitions personnel. These facilities house administrative functions including quality assurance, Munitions Control, flight/squadron offices, training rooms, break rooms, and other munitions



support functions usually housed in a stand alone facility. For the purpose of this guide, Line Delivery and Storage Dispatch functions fall under this Cat Code. Administrative areas (field offices) located within munitions operations facilities are discussed as part of the primary functional facility requirements in Chapter 4, Design Standards, of this guide. The Cat Code for munitions administration facilities is:

610-144 Munitions Administration Facility

1.3 Using This Guide

This guide contains two volumes. Volume I provides the standards for planning, programming, and designing munitions facilities. It also references supporting publications focused on a variety of explosives-related topics (see Chapter 5, ‘References, Forms, Abbreviations and Acronyms, and Terms’). The intent is to provide guidelines and hyperlinks to other resources that will assist the user in designing munitions facilities. It assists munitions personnel in understanding the process for programming, planning, and designing facilities to support munitions operations. It also assists CE personnel and designers in understanding functional requirements for munitions facilities.

The facilities assessment checklists, included in Volume II, are used to evaluate the condition of existing facilities and compare them against the standards contained in this document. These checklists may also be used to assist in the planning process for new construction. The checklists are easily downloaded and provide a standardized format for munitions facilities condition assessment.

1.3.1

Hyperlinks

Hyperlinks (**[bolded blue, underlined text](#)**) are used to provide electronic access to related documents and reference material. In most cases, they provide direct access to key Department of Defense (DoD) and Air Force documents, national code standards, and other information necessary to plan, program, and design munitions facilities. Some of the hyperlinks provide access to an information directory that includes a link to the referenced material, or provides instruction on how to acquire it. In the event a hyperlink does not work, please notify the referenced document’s office of primary responsibility (OPR).

1.3.2

Drawings

Some munitions facilities have standardized designs that are Department of Defense Explosives Safety Board (DDESB)-approved and may be applicable for use in new construction (e.g., storage igloo, segregated magazine storage). These designs may be used “as-is” or can be site-adapted to meet mission or site requirements. Chapter 4, “Design



Standards” includes “best in class” designs for each of the facility types discussed in this document.

Designs for some munitions facilities do not require DDESB approval (e.g., pre-engineered steel buildings, loading docks). “Best in class” designs for each of these facility types are also provided in Chapter 4, “Design Standards.” These drawings identify prime examples of features used in new construction and the modification of existing munitions facilities. Although construction design is not approved by the DDESB, explosives siting approval or licensing may be required dependent upon a facility’s function and location.

