FACILITY PLANNING AND DESIGN GUIDE

HAZMART
(Hazardous Material Pharmacy)

Air Force Center for Environmental Excellence

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HAZMART (Hazardous Material Pharmacy)
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1.0. Introduction

1.1. Purpose. This Guide provides the basic criteria to evaluate, program, and plan the facility requirements for a HAZMART on Air Force Installations. It presents guidance for the development of a HAZMART appropriate to each individual base and is local program operations and requirements.

This document is to be used by Base Commanders, Environmental, Safety, and Occupational Health Committees, Hazardous Materials Management Program (HMMP) teams, Base Environmental Managers, Base Civil Engineers, Base Supply Officers, Base Bioenvironmental Engineers, Major Command and Headquarters program managers, design architects and engineers and other involved personnel. It is intended to help all participants better understand Hazardous Material Pharmacy Program (HPP) business practices, requirements, and design criteria so they can effectively participate in the project development process.

1.2. Design Guide Scope and Use. This Guide is applicable to all projects for HAZMARTs Air Force wide. It applies to new facilities and major or minor retrofit/renovation projects. It provides criteria for determining program requirements, site evaluation and planning, overall facilities design, including design of indoor and outdoor spaces.

This document is not intended to provide all of the information needed to identify project requirements or successfully prepare project designs. It is to be used in the preparation of the DD Form 1391 and the Requirements and Management Plan (RAMP) and in conjunction with other Air Force and Department of Defense documents, OSHA Standards, and Environmental Regulatory requirements. Additional information on the unique program and design requirements of the local project must be obtained at the installation.

This document does not cover general professional knowledge with which architects and engineers are familiar. Concept and Contract Drawings designs should conform to Overall Project Design considerations in Chapter 3. The Illustrative Designs help explain the programming and design guidance of the preceding chapters.

1.3. HAZMART Pharmacy Mission. The mission of the Hazardous Material Pharmacy Program (HPP) is to provide a single point of control and management, accountability and tracking of the distribution and use of all hazardous materials brought on the base. A fully functional and properly configured HAZMART will, among other things, provide quicker response for mission essential materials and a reduction in the hazardous material placed on the functional organizations. It should be noted, however, a new or remodeled facility is not a mandatory prerequisite to implementation of an HPP. The functional categories of the HAZMART are Control and Management, Regulated Distribution, Material Reuse and Recycling, and Reduction of Hazardous Waste.

1.4. Functions. The functions of a HAZMART along with their associated HAZMART areas are:

1.4.1. Control and Management

1.4.1.1. Receiving: Used for the processing of Hazardous Materials shipped to the Pharmacy. This activity is used for inspecting, receiving and cataloging hazardous material shipped to the HAZMART in bulk form. Delivery vehicles range from small general-purpose vehicles to eighteen wheel tractor-trailer vehicles and low boys.

1.4.1.2. Storage: Holding Hazardous Materials stored in bulk for repackaging, breakout and distribution. Hazardous material will be stored in bulk in anticipation of repackaging, breakout and distribution. This activity must have the capability of compatible segregated storage for flammable, combustible, reactive, corrosive and toxic materials in accordance with OSHA storage standards.

1.4.1.3. Repackaging Area: Making Hazardous Materials available in the smallest units deemed reasonable. Hazardous materials may be repackaged into smaller, more usable quantities for distribution or simply taken out of cases and issued as a single item. Not included are transferring from one open container into another or dispensing of flammable liquids.

1.4.2. Regulated Distribution. An area designated for determining if returned Hazardous Materials will be returned to the pharmacy stock or is placed into the hazardous waste area. The customer service pickup area and a delivery staging point for outgoing material and incoming containers. This function will serve as the customer service pickup area. The customer will receive the requested material, a Materials Safety Data Sheet (MSDS), and a receipt. It is also used by HAZMART for pre-delivery staging of outgoing material and incoming empty containers and unused material.

1.4.3. Material Reuse, Recycling and Waste Management. All returned material must be inspected to determine if it can be reused, recycled or must ultimately be declared waste. A small segregation storage area, adjacent to the customer service area, should be reserved for this material. Once determination has been made, the material will be returned to the pharmacy stock, be recycled or be disposed of.

1.4.3.1. Tracking Automated Data Processing. This is the primary control mechanism for the pharmacy. It should be accessible to all functions. It is essential for daily operations, proving the status of demand levels, re-supply points, customer account billings and management reports. Although it may not have a separate dedicated area, it must be accessible to all functions, especially the customer service pickup window, where the customer service representative enters, the initial transaction. It also provides for the control and tracking of both the material and container. The system is essential for daily operations. It provides draw quantities and draw frequencies, authorized user list, management reports, and compliance the HPP business practices conformance data.

1.4.3.2. Administrative Area. This is the space for the four basic operators: pharmacy manager, stock control administrator, shelf life and waste controllers. Functions include record keeping and all operational and administrative needs.

1.4.4. Reduction of Hazardous Waste

1.4.4.1. Temporary Storage - Hazardous Waste Accumulation Point – This activity may provide a satellite hazardous waste accumulation point (72 hours limit when full).

2.0. Programming Criteria

2.1. Project Initiation. Development of the facility space program for the HAZMART should take into consideration the existing HAZARDOUS MATERIAL Supply Storage facility on the installation. The facility should be evaluated in terms of its ability to fulfill current and future needs, the potential for retention and retrofit of existing structures, adding on to an existing facility, or a complete new construction project.

Facility Requirements. AFI 32-1024, Standard Facility Requirements and the Standard Facility Requirements Handbook address space requirements for the HAZMART. Note that the population figure to be used is based on the population logistically supported by the HAZMART.

Design issues and Relationships. Development of the space program includes consideration of the issues for overall building design and relationships discussed in Chapter 4. Each base may also determine that additional requirements are relevant to its local program. These considerations may affect the functional areas and space included in the program and the relative sizes.

Use this chapter for preparation of DD Form 1391 which initiates project development. This includes consideration of the functional relationships to accommodate the area requirements, overall building size, site evaluation, and special factors to be included in the project cost estimate.

2.2. Project Definition

2.2.1. The Requirements Document and Management Plan (RAMP) defines the program for design of an individual project, including functional requirements, design criteria, strategic project acquisition decisions, and cost information. The information in this Design Guide provides the basis for preparing a comprehensive RAMP. The RAMP provides an excellent vehicle to organize valid project requirements. The space programming guidance found in Chapter 4 provides the basis for preparation of the RAMP package. In addition, any unique local requirements concerning building program, phasing, design criteria, and technical systems should be included in the RAMP.

2.2.2. Use charrette techniques described in the Project Manager's Guide to get buy-in on Project Definition.

2.2.3. Design Documents. Design drawings and data are submitted in stages, typically including Project Definition and progressive stages of design phase documents based on the space program guidance specific to HAZMARTs.

2.3. Cost Considerations. The following special factors should be considered when establishing initial estimates of project costs, over and above the normal cost considerations. See relevant sections of Chapter 4 for a more detailed discussion of specific design requirements for each item of concern.

2.3.1. Secondary containment must be provided in all area where hazardous materials are stored or handled.

2.3.2. Emergency eyewash and shower stations shall be located in the material receiving, storage, repackaging and distribution.

2.3.3. The mechanical system must control temperature in ranges, which protect personnel and stored material.

2.3.4. The mechanical systems must satisfy airflow criteria as prescribed by the Occupational Health and Safety Administration.

2.3.5. Obtain preliminary soils analysis early to determine whether higher than normal site work and foundation costs will be required. Local wind, snow, seismic, and permafrost conditions must be considered for their impact on project cost.

2.4. Project Phasing Considerations. Develop an aggressive plan early to consolidate HAZMART functions. The plan should address immediate space needs necessary to consolidate functions, using short-term and long-term strategies, as well as a realistic execution schedule. Evaluate existing Base Supply, Hazardous Material Storage, and Hazardous Waste Areas to determine the required square footage. Develop an interim plan to supplement existing space with modular facilities to provide a complete and usable functional area. Modular units provide interim facility space until peak demand load on the facility has been documented or new construction completed.

2.5. Site Considerations.

2.5.1. Site Selection. This is generally part of the master planning process, prior to DD Form 1391 preparation for an individual project. However, site selection decisions are often reviewed and potentially revised base on the specific program developed in the 1391 phase. Guidance for this review is provided in Chapter 4.

2.5.2. Building Orientation. Orient and position the building to take advantage of positive and protect against negative climate and micro-climate conditions such as wind and glare; and shading from excessive sun in warm climate.

2.5.3. Location. Locate the HAZMART within the industrial complex where possible and in close proximity to the Base Hazardous Waste Accumulation Point or Treatment Storage Disposal Facility (TSDF). Site the facility in compliance with the Base Comprehensive Plan (BCP). Do not locate near sensitive receptors. See Figure A for a typical site plan. Locate the building to take advantage of positive and protect against negative climate and microclimate conditions. Examples may include providing protection from undesirable climatic exposure such as wind and glare; and shading from excessive sun in warm climate.

2.5.4. Site Size and Topography. Site size depends upon gross building square footage required, the number and size of flammable storage containers required, and GOV vehicle access and POV parking. Minimum fire separation distances must be observed. A preliminary site design should be completed to insure the basic building and site criteria can be accommodated. The topography of the selected site must be relatively flat.

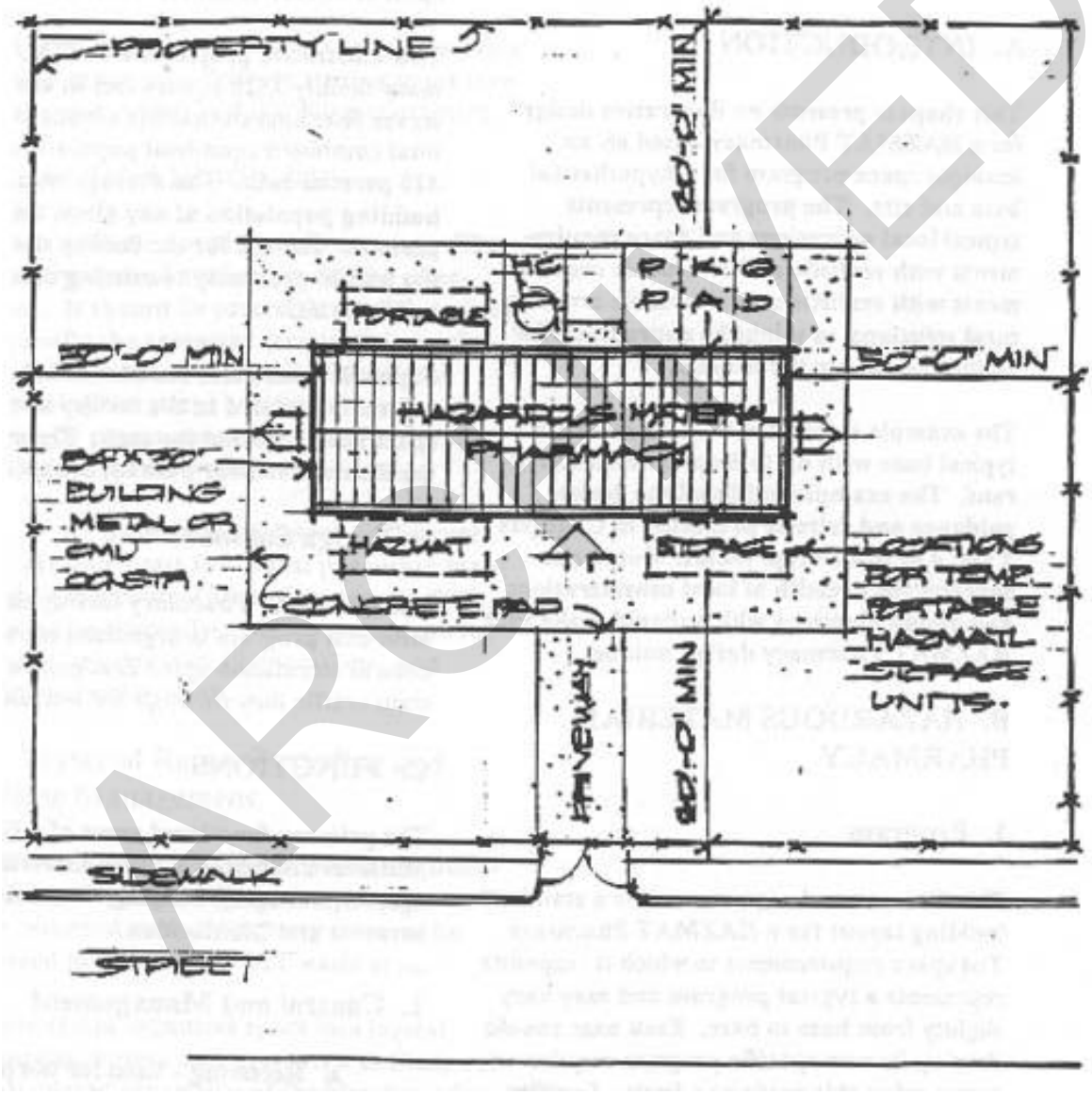
2.5.5. Access. Insure direct access from the base street network attempting to minimize vehicular traffic conflicts. Provide a clear, identified pedestrian access to the main entrance. Locate the building on the site to provide a convenient main entrance and vehicular access, parking and adequate space for flammable storage containers. Insure direct access from the base street network attempting to minimize vehicular traffic conflicts. Provide vehicular access for the customer service/distribution areas. Provide a breakaway gate and fire lanes in accordance with local fire codes.

2.5.6. Site Utilities. Provide water, sanitary sewer, electric, telephone, and fire alarm service and stream, as required and in accordance with local codes and standards. Locate the building as close to existing utilities as possible.

2.5.7. Landscaping. Use architectural and landscape elements, when possible, to help define the site and main entry and to present an attractive image for the facility.

2.5.8. Parking and Other Paved Areas. Provide separate government and privately owned vehicle parking areas. Insure a containment pad is sited to avoid major traffic congestion.

FIGURE A: SITE PLAN



3.0. Building Design Criteria

3.1. Building Organization & Circulation. Building space organization should be simple and as flexible as possible. General use functions and the receiving area separate hazardous waste storage and hazardous material storage areas. A double loaded circulation spine joins all three functions. See Figure B for typical functional area diagram.

Functional Organization. A good design organizes space into logical functional areas and presents a unified, well-articulated expression of the blending of two related functions while complying with fire safety standards. Access to all functional areas is through the central circulation spine. It should be designed for easy access to facilitate handling of the hazardous material.

The main entrance to the facility should provide direct access to the Customer Service Area. Customers should be able to easily proceed to the customer service counter to complete the necessary paper work to pick up or drop off material.

The toilet and locker area should have a centralized prominent location with easy access to the central circulation spine. This space will provide access for the physically handicapped and accommodate up to four employee lockers.

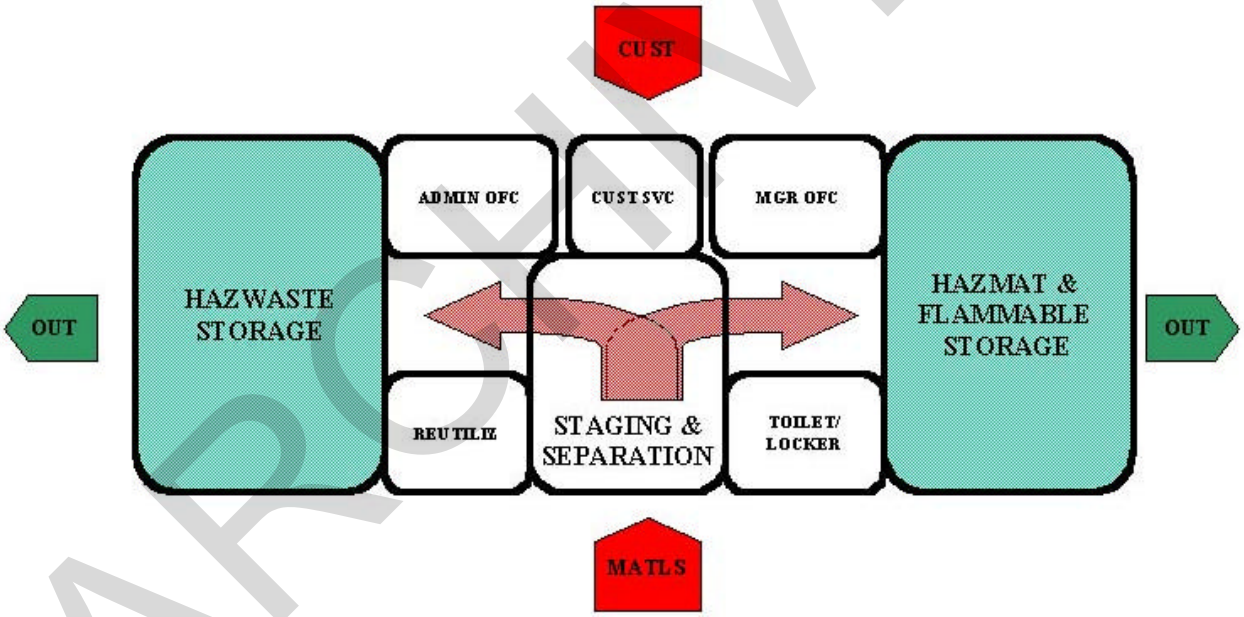


FIGURE B: FUNCTION AREA RELATIONSHIPS

3.2. Architectural Character and The architectural character of the facility is industrial in nature and should reflect the major command and base architectural guideline for facilities sited in the industrial area of the base.

Use of natural light via windows is a minimal requirement and is restricted for use in administrative areas only. Use of windows in storage and material handling areas is not allowed. Overhead translucent panels for natural day lighting may be used to help light the facility and to avoid the "tunnel" effect of a long enclosed dark hallway within.

3.3. Interior Design. Interior design and finishes should reflect the character and use of the facility. Selected finish material must resist the severe usage that is normal for the day to day activities associated with a facility of this nature. Coordinate material, finish, color, and texture sections to compliment the overall building design and image.

An interior designer should select surface materials and furnishings. Selections shall be based on consideration of anticipated use, maintenance qualities, life cycle cost, fire and other safety requirements.

Figure C: INTERIOR FINISH SCHEDULE

ROOM NAME	FLOOR	BASE	WALLS	CEILING
Staging And Segregation	C	-	GWB,CMU	VCI
Re-Utilization	C	-	GWB,CMU	VCI
Hazwaste Storage	C	-	GWB,CMU	VCI
Restroom / Lockers	CT	CT	GWB	GWB
Mgr / Admin	VCT	RB	GWB	GWB
Customer Service	VCT	RB	GWB	GWB
Mgr / Office	VCT	RB	GWB	GWB
Hazardous Material & Flammable Storage	VCT	-	GWB,CMU	VCI

FINISH LEGEND:

C	Concrete W/Static Resistive Coating
CT	Ceramic Tile
VCT	Vinyl Composition Tile
RB	Rubber Base
GWB	Gypsum Wallboard (Painted)
CMU	Concrete Masonry
VCI	Vinyl Covered Insulation

Color. Select colors and finishes must be compatible and express professionalism, warmth, and a strong, positive image. Pride of ownership and quality of life issues can be achieved utilizing imaginative color schemes even though the finishes are industrial in nature. Permanent and semi-permanent surface materials such as metal, concrete, masonry, insulation cover and floor tile should be in neutral colors such as beige, taupe or gray. Accent colors, such as the squadron color, can be used on surfaces that can be easily changed. For example, painted surfaces, such as lockers, doors, and furniture could be used to introduce accent colors, which could reflect a variety of color schemes, subject to change as missions change.

Furnishings. The use of furniture is minimal and should be systems furniture to maximize the use of the small spaces identified for administrative functions.

3.4. Handicapped Access. All areas of the HAMART Pharmacy shall be barrier-free and accessible to the physically handicapped in accordance with Uniform Federal Access Standards. Design the site and building to enable physically handicapped persons to act independently in the administration areas of the facility. The industrial and materials handling areas of the facility must be restricted to able-bodied personnel only.

3.5. Building Systems

3.5.1. Structural

3.5.1.1. Select an economical structure system based on facility size, projected load requirements, local availability of materially and labor, and wind, snow, seismic, geologic, and permafrost conditions.

3.5.1.2. Select and design the structural system based on analysis of projected future needs, to accommodate future expansion requirements economically. However, do not overdesign the initial construction.

3.5.1.3. Design building structural modules to reflect space requirements, economy, and sub-system dimensions (e.g., ceiling grid, masonry units, framing members, etc.).

3.5.2. Heating, Ventilation, And Air Conditioning (HVAC)

3.5.2.1. Develop HVAC space requirements with emphasis on an optimum mechanical system, taking into account initial construction cost, life-cycle cost of operation, future system modification requirements, and access to equipment for maintenance. During the analysis determination the best type of equipment to provide comfort cooling, i.e. air conditioning, evaporative cooling, mechanical ventilation, or natural ventilation.

3.5.2.2. Provide cooling for administrative and toilet/locker areas only, and those areas requiring temperature and/or humidity control to maintain integrity of stored materials.

3.5.2.3. Consider connecting to base-wide heating and cooling systems. If a base-wide heating system is not available, provide a central boiler located in an area free of flammable vapors and dusts. Locate the boiler where the source for combustion air and the area of discharge for products of combustion are outside areas that are rated as hazardous. The boiler shall be a medium-temperature water type. If a base-wide cooling system is not available use the system determined to be the most optimum.

3.5.2.4. Air conditioning shall be designed on the basis of a 2.5% dry bulb (DB) temperature and a corresponding 2.5% mean coincident wet bulb temperature as specified in AFMAN32-7046, Engineering Weather Data. Heating shall be designed on the basis of the 97.5% DB temperature specified in AFMAN32- 7046, Engineering Weather Data.

3.5.2.5. The air conditioning inside design temperature for personnel comfort shall be 15 degrees F less than the 2.5% outside DB weather condition, but will not exceed 78 degrees F DB or be less than 75 degrees F DB. The design relative humidity will be 50% minimum or the design temperature will be equal to the outside air dew point design temperature, whichever is less.

3.5.2.6. Use Air Force Engineering Technical Letters, (ETLs) for HVAC control systems.

3.5.2.7. Connect to the base-wide Energy Monitoring and Control System (EMCS), if available, and provided a life cycle cost analysis shows payback within a reasonable time period.

3.5.2.8. Provide ventilation and/or heating for those areas not requiring cooling. It shall be provided in accordance with the latest editions of American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. (ASHRAE) Handbooks.

3.5.3. Plumbing

3.5.3.1. Plumbing will comply with the National Standard Plumbing Code and AFJMAN32-1070, CH4, Plumbing.

3.5.3.2. Provide a plumbing system to include a cold and hot water supply system; fixture and fixture traps; soil and waste piping and vent system; and storm water drainage.

3.5.3.3. Provide freeze protection for any part of the plumbing for any part of the plumbing system exposed to potential freezing temperatures.

3.5.3.4. Provide domestic water, sanitary sewer, and storm sewer connections to the building.

3.5.3.5. Provide hose bibs on two exterior walls.

3.5.4. Electrical

3.5.4.1. Provide electric service and distribution equipment, wiring, receptacles and grounding, interior and exterior lighting and control, emergency lighting, telephone, fire alarm, and lighting protection and intrusion systems as required. General receptacle spacing shall be a minimum of 12 ft.-0 in. on center

3.5.4.2. Service-entrance equipment will be located in readily accessible spaces to facilitate disconnection of power in case of emergency.

3.5.4.3. Service ampere capacity should be designed based upon the following minimum criteria for the facility:

- Interior Lighting 2.5 Watts per sq ft
- Receptacles 0.50 Watts per sq ft
- Exterior area lighting 0.30 per sq ft

3.5.4.4. Evaluate and include the following power needs to determine the electric service capacity: HVAC system, plumbing equipment, other special equipment by user. A reserve of approximately 10 to 20 percent for future growth should be considered.

3.5.4.5. All service equipment shall be Underwriters laboratories (UL)-listed. Alternately, published proof from a bona fide independent testing laboratory shall be provided.

3.5.4.6. Provide metering for electric power as appropriate. Energy usage and demand meters will not normally be asked for with this type of facility. Authorization must be obtained from your command and HQ AFCESA/CESM.

3.5.4.7. Secondary underground service raceways may be PVC Schedule 40 where applicable. Wiring systems in hazardous locations will conform to NEC, according to the particular hazard encountered.

3.5.4.8. Service grounding system and all wiring methods shall meet NEC requirements.

3.5.4.9. General lighting shall be direct fluorescent with low temperature energy efficient ballasts and lamps, as applicable. Indirect lighting systems of the high intensity discharge or fluorescent types may be used where practical.

3.5.4.10. Incandescent lighting shall be minimal. When provided, incandescent lamps shall have an extended life of at least 2500 hours.

3.5.4.11. Provide exterior lighting of parking and storage areas utilizing high intensity discharge light sources (color corrected).

3.5.4.12. Provide a public address system.

3.5.5. Fire Protection

3.5.5.1. HAZMART facilities shall conform to the requirements of MIL-HKBK-1008, "Fir Protection for Facilities Engineering, Design, and Construction." Means of egress shall comply with NFPA 101, "Life Safety Code." Storage of flammable and combustible liquids shall comply with NFPA 30, "Flammable and Combustible Liquids Code." Storage of hazardous waste materials shall comply with MIL-HDBK-1005/13, "Hazardous Waste Storage Facilities."

3.5.5.2. HAZMART facilities shall be of noncombustible protection (Uniform Building Code Type I or Type II).

3.5.5.3. Exterior walls shall be provided with the following fire rating:

3.5.5.4. Use a 4-hour fire rating when the HAZMART facility is attached to another structure or located within 10-ft (3 m) of an important building or property line. Use a 2-hour rating when the HAZMART facility is located more than 10-ft (3 m) but less than 50 ft (15 m) from an important building or property line.

3.5.5.5. Use noncombustible construction when the HAZMART facility is 50 ft (15 m) or more from an important building or property line.

3.5.5.6. Separate warehouse areas shall be established within the HAZMART building for flammable and combustible liquid storage, other hazardous materials storage (ordinary combustibles), and hazardous waste storage. These areas shall be separated by interior firewalls with a minimum of 2-hour fire rating. Ceiling height shall not exceed 30 ft (9.1 m). *Exception*: Flammable and combustible liquid storage and other hazardous materials storage may be combined in the same warehouse area if the area does not exceed 1000 ft^2 (93m^2) in area; and, the ordinary combustibles are separated horizontally from the liquids by a minimum of 8 ft (2.4m) either by aisles or open racks.

3.5.5.7. Exterior roofs shall be rated for 2-hour fire resistance. Roofs of one-story buildings shall be permitted to be of lightweight, noncombustible construction if the separating interior firewalls have minimum 3-ft (0.9 m) parapets.

3.5.5.8. Openings in interior and exterior walls with fire-resistance ratings shall be provided with normally closed listed fire doors. Doors shall be rated for 1-hour fire resistance in 2-hour walls, for 3-hour fire resistance in 4-hour walls. Doors (including roll-up doors) shall be permitted to stay open during materials handling operations if the doors are arranged to

close automatically in a fire emergency using listed closure devices. Any door in a means of egress shall meet the requirements listed for Storage Occupancies in NFPA 101, "Life Safety Code."

3.5.5.9. Arrange required exits so there are not less than two means of egress from every area, reached by different paths of travel in different directions. A common path of travel is not permitted. Travel distance shall not exceed 75-ft (23 m). Dead-end pockets, hallways, corridors, passageways or courts shall not be permitted. *Exception:* One means of egress shall be permitted for rooms and spaces not greater than 200 ft^2 (18.9 m^2), having an occupant load of not greater than three persons and having a maximum travel distance to the room door of 25 ft (7.6 m).

3.5.5.10. Finish interior ceilings and walls with materials of Class A or B classification in exit enclosures (if used), and with materials of Class A, B or C classification in storage areas. Flame spread and smoke development ratings shall meet the requirements of MIL-HDBK-1008.

3.5.5.11. The HAZMART building shall be protected with an automatic sprinkler system providing 100 percent coverage. The sprinkler system shall be electrically connected to a fire reporting system for transmission of sprinkler water flow alarms. Provide in-rack sprinklers and design sprinkler densities in accordance with MIL-HDBK-1008, Section 4.11. Foam-Water sprinklers may be considered when storage of Class I flammable liquids exceeds 660 total gallons with approval fo the MAJCOM. Aqueous Film Forming Foam (AFFF) sprinkler systems are permitted for protecting flammable and combustible liquids. Water reactive materials shall be protected in accordance with MIL-HDBK-1008.

3.5.5.12. Dispensing of flammable liquids (Class I) shall not be permitted. Combustible liquids (Class II and III) shall not be dispensed at temperatures at or above their flash points. (Note: Deflagation (explosion) venting, limits on rooms size and increased capacity ventilation systems would be required if dispersing was permitted).

3.5.5.13. Ordinary (not classified) electrical equipment shall be provided. (Note: Classified electrical equipment would be required if dispensing of flammable liquids was permitted).

3.5.5.14. Class IA and unstable liquids shall be stored in containers not to exceed 1 gal (4 L). (Note: Deflagation (explosion) venting would be required if larger containers were permitted).

3.5.5.15. Means shall be provided to prevent the flow of liquids under emergency conditions into other areas of the HAZMART. Features shall be provided to handle the worst-case spill from the single largest container plus the volume of fire-protection water from the automatic sprinkler system for a period of 20 minutes. Features may include:

3.5.5.16. Noncombustible, liquid tight raised sills, curbs, or ramps of suitable height.

3.5.5.17. Open-grated trenches across the entire width of each opening (including interior roll-up doors). Open-grated trenches must be located on the inside of the room and drain the collected liquid to a safe location. The drainage system shall be designed to handle the expected flow of water from sprinklers and hose streams. Drains shall be directed to a containment system or other location designated as secondary containment. Secondary

containment areas located outside shall be sized to accommodate the rainfall from the 25-year, 24-hour storm.

3.5.5.18. Emergency lighting shall be provided per NFPA 101, Section 5-9. Fixtures with wall-mounted battery packs shall not be used.

3.5.5.19. Illuminated exit signs shall be provided per NFPA 101, Section 5-10. Light emitting diode (LED)-type exit signs should be used. Radioluminus and incandescent exit signs are not permitted.

3.5.5.20. Tactile signs shall be provided at each exit per NFPA 101 and Uniform Federal accessibility Standards.

3.5.5.21. Temporary, portable hazardous materials storage modular units (lockers) shall meet the requirements of MIL-HDBK-1008, Section 4.11.6, NFPA 30, Section 4-6, and the following: Locker size shall not exceed 400-ft2 (37 m^2). Lockers shall be located a minimum of 20 ft (6 m) from the property line. Lockers shall be located a minimum of 5 ft (1.5 m) from the HAZMART building and any other lockers. Lockers shall be provided with an automatic fire suppression system. The locker may be connected into the HAZMART building sprinkler system or be provided with a dry chemical fire extinguishing system.

3.5.5.22. Portable fire extinguishers shall be provided in accordance with NFPA 10, "Portable Fire Extinguishers." Recessed or semi-recessed enclosed cabinets shall be provided in office areas. At least one portable fire extinguisher having a rating of not less than 20-B shall be located outside of storage areas containing flammable or combustible liquids.

4.0. Function Area and Space Criteria

4.1. General. Below are criteria specifically for design of each functional area and space in a HAZMART. The HAZMART consists of receiving, storage, repackaging of hazardous material and associated support areas linked together by a central circulation spine. The criteria apply most readily to installations other than depots, but can be adapted for depot use. The recommendations may be modified during the design of an individual project to reflect local program requirements and capacity needs. Applicable environmental rules and regulations must be observed.

4.2. Control and Management or Hazardous Material: Primary Design Considerations

4.2.1. Receiving. This area should be easily accessible for outside approach by Pharmacy customers and deliveries from the supply function.

- 20' x 24' space
- Rolling door
- Crane/Chain Fall Lifting Device (3,000 lb. Maximum lift)
- Spill Containment Pit
- Scale (Zero to 500 lb capability)
- Required installed safety equipment/facilities, e.g. eyewash, deluge shower
- Spill containment pits

4.2.2. Hazardous Material Storage. This area will contain flammable, reactive, corrosive and toxic materials.

- Shelved storage bays (14 ft stacking height)
- 1 drum storage bay
- Spill containment pit
- Required installed safety equipment and facilities, e.g. eyewash
- Mezzanine storage area

4.2.3. Repackaging Area. This area is the same physical area as the receiving area but will contain the following functions and equipment/material.

- Work area for packaging, and labeling material
- Safety gear, emergency equipment, spill cleanup material

4.2.4. Distribution. This area is customer service pickup.

- 9' x 10' area
- Customer Service counter
- Automated Data Processing Equipment and bar-code equipment
- Communication gear (telephone, radio)
- Required office furniture

4.2.5. Hazardous Material

4.3. Regulated Distribution of Hazardous Materials: Primary Design Considerations

4.3.1. Automated Data Processing

4.3.2. Administrative Area. Office areas shall be temperature controlled with adequate lighting and provide for coordinated interface between management and staff.

- 2 separate 9’ x 10’ offices (Automated Data Processing & Administration) with access to receiving and repackaging areas
- Additional computer equipment required to administratively operate the Pharmacy
- Required office furniture
- Storage of office supplies
- Sufficient electrical outlets to accommodate the computer, printers, , fax and copy machine.
- Electrical outlets shall be adjacent to the customer service window for access by the database computer.

4.3.3. Material Reuse, Recycling and Waste Management. This area will be used to hold unused material returned to the Pharmacy for possible reuse or recycle. It should have adequate lighting to run tests and inspection procedures.

4.3.4. Reutilization Area
- 1 12’ x 10’ with shelving
- Safety gear available, emergency equipment, sill cleanup material
- Spill containment pit
- Refrigerator

4.3.5. Recycling Holding Area
- 1 bay 10’ x 12’ capable of two-tiered drum storage
- Drums should be fitted with funnels for easy material accumulation
- Spill containment pit

4.4. Hazardous Waste Storage. This is a short term holding area. This plan provides for a waste accumulation point only (72 hours when full).
- 1 bay 10’ x 12’ capable of drum storage
- Required installed safety equipment and facilities, e.g. eyewash

4.5. Optional Mezzanine Deck. A metal structure with safety guard rails running the length of one side of the building (over the customer service side) approximately 7 feet in width. This allows for dry goods, empty containers, packing materials, spill containment materials and miscellaneous storage requirements. This mezzanine will have multiple ladder access from the hazardous waste, hazardous material and central areas. Consideration should be given whether this area needs to be divided by interior firewalls.

5.0. Illustrative Design.

5.1. Introduction. This chapter presents an illustrative design for a HAZMART based on an example space program for a hypothetical base and site. The program represents typical operations and space requirements with realistic and affordable requirements with realistic and affordable architectural solutions, as might be appropriate for an individual Air Force base. The breadth of local considerations and design decisions should make each HAZMART design unique. The number of functions and sizes may vary, as appropriate, to fit the individual project needs at each base, within the criteria established in the guide. Each base should develop its own specific program requirements using this guide as a basis. The design solution should be appropriate to local functions, operating patterns, size requirements, site constraints, and desired architectural character. The illustrative program and design is meant to help local users better understand the design guidance and criteria in the development of individual local solutions. This illustrative design represents a standard building layout for a HAZMART.

5.2. Illustrative Program. The example here represents a base with a population of 2,000 and two (2) persons on the largest work shift. Using AFH 32-1084, 2,800 square feet of Warehouse Space, 270 square feet for Administrative Offices, and 1,000 square feet of Safety Storage or Shed Space is authorized. This illustrative project is a HAZMART facility totaling 3,070 square feet. The average maximum building population at any given time is ten persons. The sample HAZMART complex includes a 2,800 square foot facility, as shown in Figure E with the balance of the complex available for additional storage to be accommodated by portable storage sheds and palletized materials. The use of portable storage sheds will accommodate large amounts of hazardous material handled during the initial stages of the transition to the HAZMART and will minimize over-building real property until track records reveal actual requirements.

5.3. Illustrative Spaces and Sizes. The functional areas and spaces are shown below for the illustrative HAZMART facility.

Figure D: HAZMART Space Program

ROOM #	ROOM NAME	SCOPE (SF)
1.	Staging and Segregation	690
2.	Re-Utilization	150
3.	Hazardous waste Storage	775
4.	Restroom/Lockers	135
5.	Manager/Administration	135
6.	Customer Service	135
7.	Manager/Office	135
8.	Hazardous Material &Flammable Storage	775
	Subtotal	2930
	Walls	140
	Total	3070

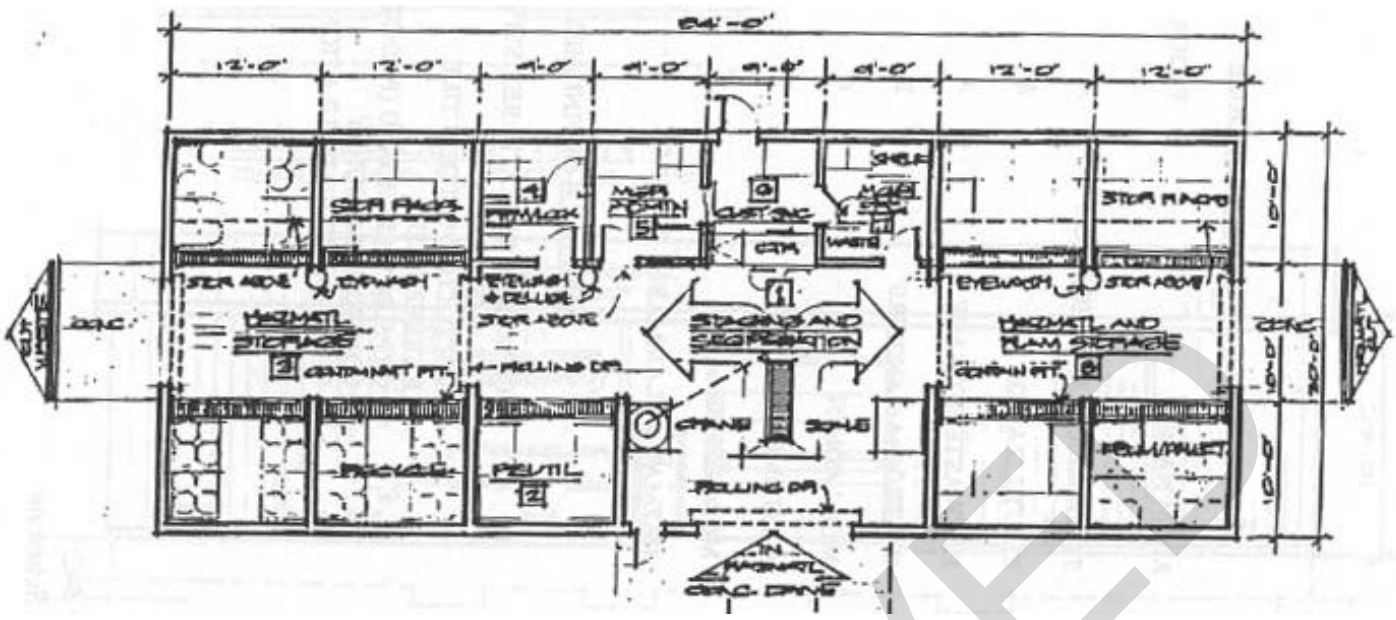


Figure E: FLOOR PLAN (NO SCALE)

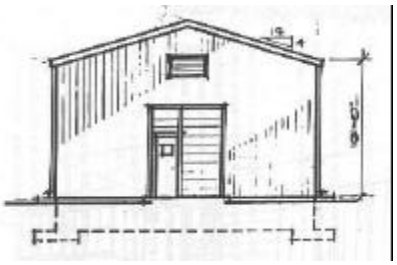


Figure F: BUILDING ELEVATIONS (NO SCALE)