AIR MOBILITY COMMAND

CENTRALIZED LIFE SUPPORT DESIGN GUIDE

The Air Mobility Team is improving the quality and availability of aircrew life support equipment and training. Having a consolidated team of aircrew life support technicians means better service and support and is critical to mission success. However, our facilities need to be upgraded to meet our equipment maintenance and aircrew training needs of today and tomorrow.

This guide is a blueprint for excellence for our strategic airlift centralized life support facilities. One-stop service provided by highly skilled and highly motivated life support professionals will help ensure AMC can carry out its vital mission…Global Reach for America…Every Day!

"The Air Mobility Team…Responsive Global Reach for America…Every Day!"

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Chapter 1

Introduction

A. Purpose

This guide provides the basic criteria to organize, evaluate, plan, program, and design Air Mobility Command (AMC) Centralized Life Support (CLS) facilities for strategic airlift squadrons. Criteria for tanker squadron life support facilities are included in the AMC Squadron Operations/Aircraft Maintenance Unit Design Guide.

The information presented is intended to make commanders and their staffs aware of important design considerations and to aid them in project development. This document is for use by commanders, base civil engineers, wing life support personnel, Headquarters AMC staff, design architects and engineers, and other involved personnel. It is intended to help all participants better understand CLS facility requirements and design criteria so they can effectively participate in the project development process. Use this guide to supplement other Air Force and Department of Defense (DoD) policies and instructions.

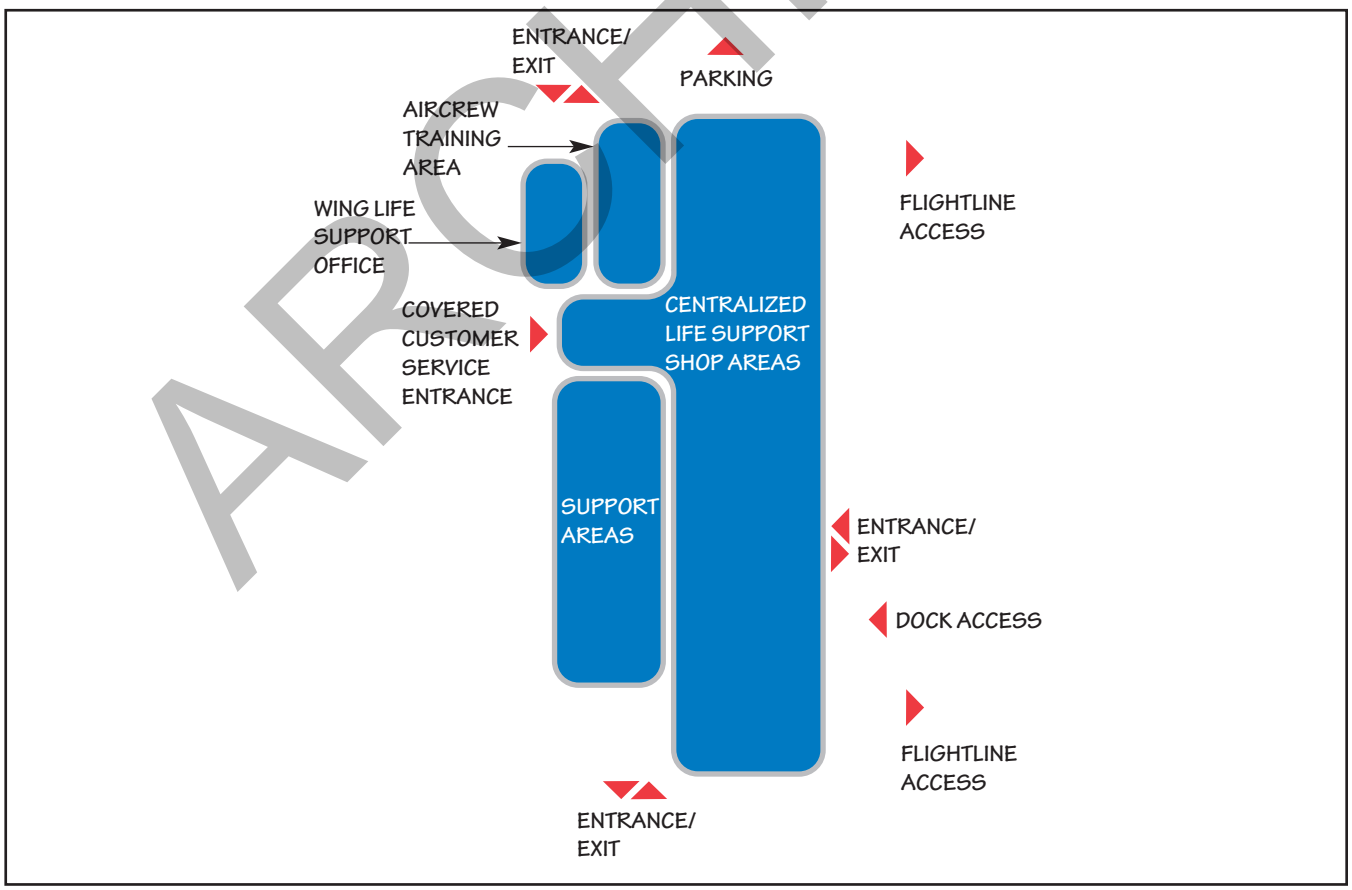

Figure 1-A: Functional Area Relationships.

B. Project Development

The key elements to successful facility delivery are planning, programming, design, and construction.

1. Planning

Good planning establishes the objectives for an effective program and provides the means to help meet the objectives of the CLS unit. Planning must be long-term and should include a detailed timetable for project completion.

When planning a new facility, complete the site selection prior to preparing a DD Form 1391, Military Construction Project Data, for an individual project.

2. Programming

Programming includes determining user requirements, developing solutions, identifying funding sources, and forwarding programming documents to the appropriate review and approval authorities. Each programmed project should be consistent with the base comprehensive plan for new and existing facilities. Work is classified as maintenance, repair, or minor construction.

Information required during preparation of the DD Form 1391, which initiates project development, is found throughout this guide. Included are considerations for space criteria, overall facility size, site evaluation, and special factors for use in estimating costs.

3. Design

Design includes concept development, design reviews, and construction documents. It is important for civil engineering and the user to actively communicate throughout the design process to bring about a successful project.

The designer should complete a comprehensive interior design (CID) standard for your facility before beginning any major design project. The CID standard addresses interior finishes, artwork, signs, and furnishings. It ensures even small upgrade projects support the design objectives for the entire facility. Refer to the AMC Interior Design Guide for an expanded discussion of interior design. Integration of engineering, architectural, and interior design considerations during project development creates a well-coordinated interior design. Analyze an existing facility's structural, electrical, communications, and mechanical systems before planning interior design upgrades. The designer should include infrastructure improvements concurrently with interior finish work when appropriate.

Life safety code requirements take precedence over other facility improvement requirements. All areas of the CLS facility should be barrier-free and accessible to the disabled in accordance with the Americans with Disabilities Act (ADA) and Uniform Federal Accessibility Standards (UFAS).

4. Construction

Quality reviews of the contractors' submittals by project engineers and frequent on-site inspections by civil engineering construction management personnel and the user will help ensure design goals are met. ■

Chapter 2
Exterior Elements

A. General

The exterior elements of the CLS facility provide the first impression visitors have of the facility and the quality of service and training received there. This chapter addresses the concept site plan, signs, landscaping, parking areas, entries, and entry paths. The architectural compatibility guide for each base will help in the design of these elements.

The CLS facility should be easily identifiable. Locate this facility either within walking distance of the individual flying squadron facilities or so that it is convenient for aircrews to stop en route to the aircraft.

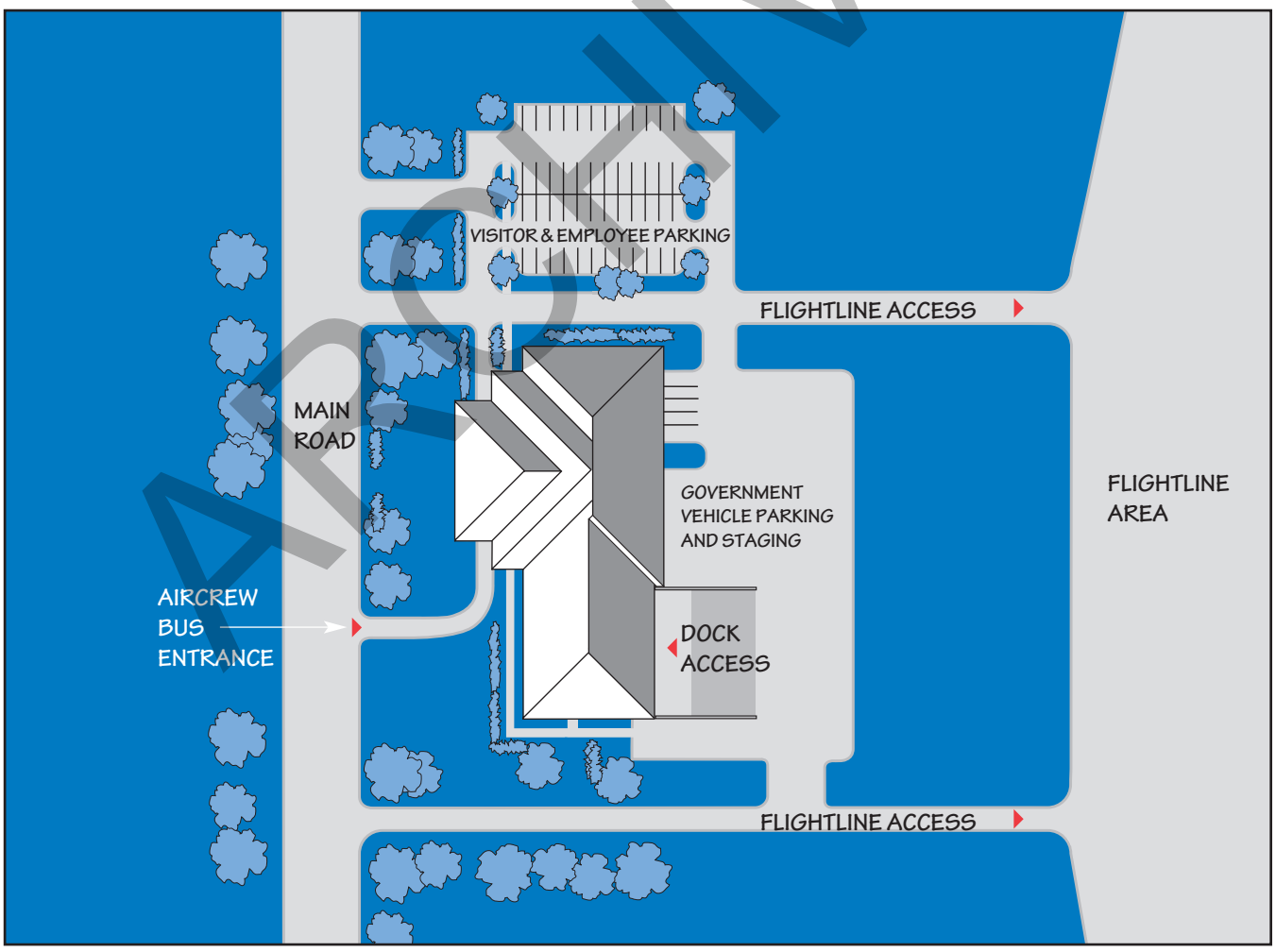

Figure 2-A: Concept Site Plan.

B. Signs

Provide facility, directional, and parking signs that comply with AMC sign standards. Also locate building entry signs on the site to direct visitors to the main entrance.

C. Landscaping

Landscaping elements help create a quality appearance for visitors entering the CLS facility. Use these elements to screen parking areas and to define the building entries. Landscaping elements include earth berms, shrubs, trees, and flowers. Refer to the AMC Landscape Design Guide for specific information.

D. Parking Areas

Include designated spaces for visitors and employees. Locate handicapped parking near building entries. Parking requirements will depend on the size of CLS operations at each base. Provide lighting in the parking areas and at the building entries.

E. Entries and Entry Paths

The facility entries and entry paths should be easily identifiable to first-time visitors. The designer should include a large roof overhang for weather protection at the main entrance and the entrance to the wing life support office. ■

Chapter 3

Functional Areas

A. General

The mission of the AMC life support (LS) program is threefold. This program provides aircraft installed life support equipment (LSE) that is mission ready; personal, fail-proof LSE for aircrews; and survival continuation training to enhance survival capability for aircrews.

CLS facilities are comprised of three functional areas: the wing life support office, the aircrew training area, and the CLS shop areas.

Use Table 3-A as a guide for functional space requirements for active duty and associate reserve CLS squadrons.

B. Wing Life Support Office

The wing LS office manages the life support program for the entire wing. This includes the management of programs for decentralized LS shops associated with tanker units and the CLS program for strategic airlift units.

This area should have its own side entrance. Locate the LS office within the facility so that it is distinctly separate from the CLS shop. Include separate offices for the wing LS officer, the wing LS superintendent, and the wing aircrew training NCO, or arrange this area in an open-office concept using systems furniture.

The wing LS office provides administrative support for all LS personnel in the wing and should include administration space and a conference room for daily meetings.

C. Aircrew Training Area

Aircrew training is responsible for LS and survival continuation training for the wing. Locate aircrew training adjacent to the wing LS office with easy access for aircrews arriving at the facility.

Training in life support equipment, chemical decontamination, chemical defense, and combat and water survival is conducted in this area. Realistic training is provided through hands-on techniques in a laboratory-style environment. Seating must accommodate 20 to 30 individuals at removable tables. Ensure flexibility for table storage and provide seating for 50 personnel attending mass training/briefings. Include a rear projection room for audiovisual and computer equipment. Install a sound absorbent, movable partition to divide the room in the event two training classes must be held simultaneously.

D. Centralized Life Support Shop Areas

1. General

The CLS shop manages the operations to support the strategic airlift aircrew members and aircraft with LSE, and it includes areas for the NCOIC and Assistant NCOIC, Life Support Staging, Aircrew Support, Aircraft Support, and Helmet and Oxygen Mask Repair.

- Maintain relative humidity between 40 and 60 percent in the CLS shop areas.

2. NCOIC and Assistant NCOIC

These personnel manage the daily operations of the strategic airlift CLS shop. Provide a separate office with computer hook-up for each individual.

3. Life Support Staging Area

Personnel working in this area are responsible for the 24-hour operation of the CLS shop. Locate this area near the main entrance and adjacent to the aircrew support area where aircrews have easy access for equipment pick-up and delivery. Locate equipment for the Command and Control Information Processing System (C2IPS), computer hook-ups, and the mobile-based radio in this area.

4. Aircrew Support Area

a. Helmet and Aircrew Chemical Defense Ensemble Storage and Issue - This area is a technician work space for storage and issue of helmets, oxygen masks, and Aircrew Chemical Defense Ensembles (ACDEs). Locate this area near the aircrew training area adjacent to and with access to helmet and mask repair.

Provide 24"H x 27"W x 40"D individual lockers for helmets and ACDE. Consider a mechanized material storage and handling system (MMSHS) to maximize use of space. Include a counter space for customer service and a computer hook-up.

b. Associate Reserve Storage Area - This area supports storage for associate reserve aircrew LSE.

c. Night Vision Goggle Test Center - Locate a 10' x 30' room near the helmet and ACDE area to test and calibrate individual aircrew night vision goggles (NVGs). This room must be completely dark when the lights are off.

5. Aircraft Support Area

a. Equipment Storage - This area is for storage of mobility equipment and LSE items installed in aircraft. Design for access to a covered loading dock through overhead doors. Orient the loading dock on the flightline side of the facility and construct to accommodate a 48"-high truck bed for pick-up and delivery of equipment. To maximize floor space, consider using an MMSHS which is capable of storing items such as oxygen masks, life rafts, life preservers, and parachutes. Include hot and cold water to clean field training equipment.

b. Flightline Inspection - Provide a work area with computer hook-ups for technicians to inspect and maintain aircraft-installed LSE. Locate with exterior access to a covered loading dock.

c. Explosives and Flares Storage - Include storage for explosive survival signaling devices and ballistic charges. Locate this room with direct access to flightline inspection. Design as a secure room in compliance with AFR 127-100, Explosives Safety, for "Class 3" munitions storage.

6. Helmet and Oxygen Area

a. Helmet and Oxygen Mask Repair - Provide an area for the inspection and overhaul of aircrew helmets, ACDE, and oxygen equipment. Design this area so that a lint-free environment can be maintained. Locate adjacent to helmet storage and include an area for inspection of masks.

Also include the following:

- Double stainless steel kitchen sink and counter top
- Computer hook-ups
- Hot and cold water
- Ventilation fan
- Two compressed air service outlets (15 psi) near the sink
- Separate room (approximately 125 SF) for a thermal plastic liner oven
- Washer and dryer with a dryer exhaust port

b. Oxygen Bottle Maintenance - Include a workroom for maintenance and overhaul of emergency high pressure oxygen cylinders. This room must be oil- and lint-free with explosion-proof fixtures and receptacles. Include an area for inspection of equipment.

c. Night Vision Goggle Maintenance - Provide a secure room for storage, maintenance, and repair of aircrew NVGs.

d. Associate Reserve Support Area - This area supports maintenance for associate reserve aircrew LSE.

E. Support Areas

1. General

These areas include the rest rooms, storage rooms, mechanical room, communications/electrical room, janitor's closet, locker room, break room, recycling room, and a vending area.

2. Rest Rooms

Locate rest rooms for men and women near the administration area and aircrew training classrooms.

- Men's rest rooms should include toilets, urinals, sinks, partitions, mirrors, soap dispensers, toilet paper dispensers, paper towel dispensers, and waste receptacles.
- Women's rest rooms should include the same rest room accessories as the men's, excluding the urinals, but including sanitary napkin dispensers and disposal.

3. Storage Rooms

In addition to storage areas mentioned for LSE, locate a walk-in storage room near the wing life support office and aircrew training areas for miscellaneous supplies and equipment.

4. Mechanical Room

Provide sound insulation in this room to prevent the equipment noises from disrupting the facility's operation. Locate this room away from the administration areas, especially training and conference rooms. Include a double service door to the exterior and a concrete ramp to conveniently move large equipment parts into the room.

5. Communications/Electrical Room

Wall-mount the power and telephone distribution equipment, and floor-mount the local area network (LAN) computer file server in this room. Locate this room adjacent to the mechanical room and allow for inside access when repairing or replacing equipment. Separate this room from the mechanical equipment because the humidity and steam (depending on the type of heating system) are detrimental to the electrical equipment.

6. Janitor's Closet

This room should contain a mop sink and storage shelves for cleaning supplies.

7. Locker Room

Provide storage for the personal gear of assigned personnel.

8. Break Room

This is a room for personal relaxation.

9. Vending Area

Provide an area for vending machines. ■

Functional Space Requirements by Squadrons (SQs) Supported					
Area Names	**2 SQ**	**3 SQ**	**4 SQ**	**5 SQ**	**6 SQ**
Active Duty Requirements					
Wing Life Support Office					
Wing Life Support Officer	100	100	100	100	100
Wing Life Support Superintendent	100	100	100	100	100
Wing Aircrew Training NCO	100	100	100	100	100
Administration Support	100	100	100	100	100
Wing Life Support Conference Room	180	180	180	180	180
Aircrew Training Area					
Survival Training Room	650	650	650	650	650
Mock-up Decontamination Room	650	650	650	650	650
Rear Projection Room	300	300	300	300	300
Centralized Life Support Shop Areas					
NCOIC and Assistant NCOIC	200	200	200	200	200
Life Support Staging Area	300	300	300	300	300
Helmet and ACDE Storage and Issue	2,910	3,395	3,880	4,365	4,850
NVG Test Center	300	300	300	300	300
Equipment Storage	3,320	3,840	4,360	4,880	5,400
Flightline Inspection	810	945	1,080	1,215	1,350
Explosives and Flares Storage	80	100	120	140	160
Helmet and Oxygen Mask Repair	400	500	600	700	800
Oxygen Bottle Maintenance	420	490	560	630	700
NVG Maintenance	300	350	400	450	500

Table 3-A: Functional Space Requirements (Cont'd on Next Page).[1]

Functional Space Requirements by Squadrons (SQs) Supported (Cont'd.)					
Area Names	**2 SQ**	**3 SQ**	**4 SQ**	**5 SQ**	**6 SQ**
Active Duty Requirements					
Support Areas					
Men's Rest Room	200	260	325	325	325
Women's Rest Room	130	130	130	130	130
Storage Rooms	300	325	350	375	400
Mechanical Room	800	900	1,000	1,100	1,200
Communications/Electrical Room	250	250	250	250	250
Janitor's Closet	50	50	50	50	50
Locker Room	300	420	560	700	840
Break Room	350	375	400	425	450
Vending Area	100	100	125	150	150
Associate Reserve Requirements(2)	3,500	4,000	4,500	5,000	5,500
Subtotal	17,200	19,410	21,670	23,865	26,035
Circulation and Overhangs (20% of Subtotal)	3,440	3,880	4,330	4,775	5,205
Gross Total	20,640	23,290	26,000	28,640	31,240

Table 3-A: Functional Space Requirements (Cont'd.).(1)

Legend for Table 3-A

(1) Space requirements are shown in square feet. To convert to square meters, multiply by .0929.

(2) Associate reserve squadron requirements include space for storage and support areas.

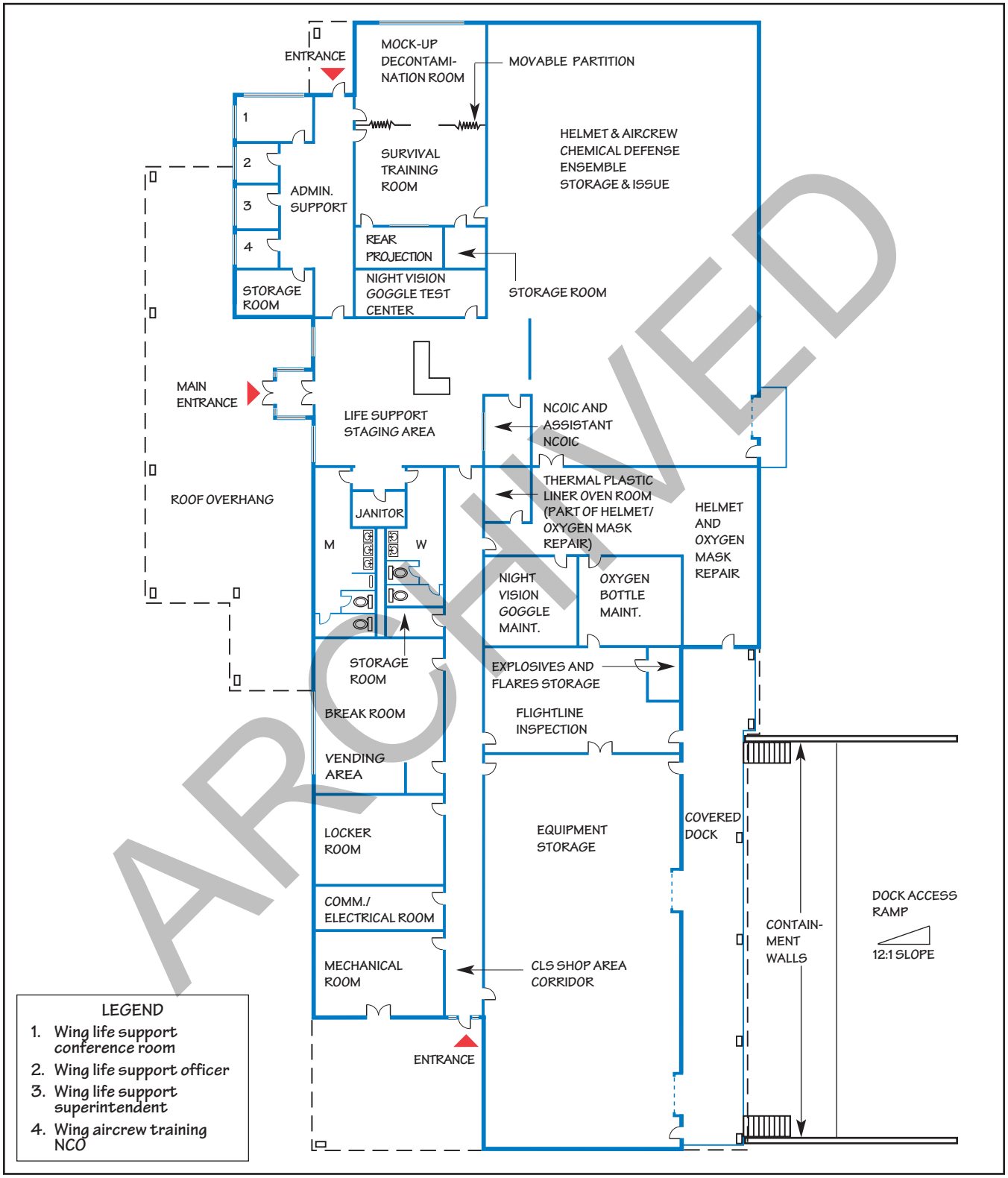

Figure 3-A: Concept Floor Plan.

Figure 3-B: Artist's Illustration of the Centralized Life Support Facility.

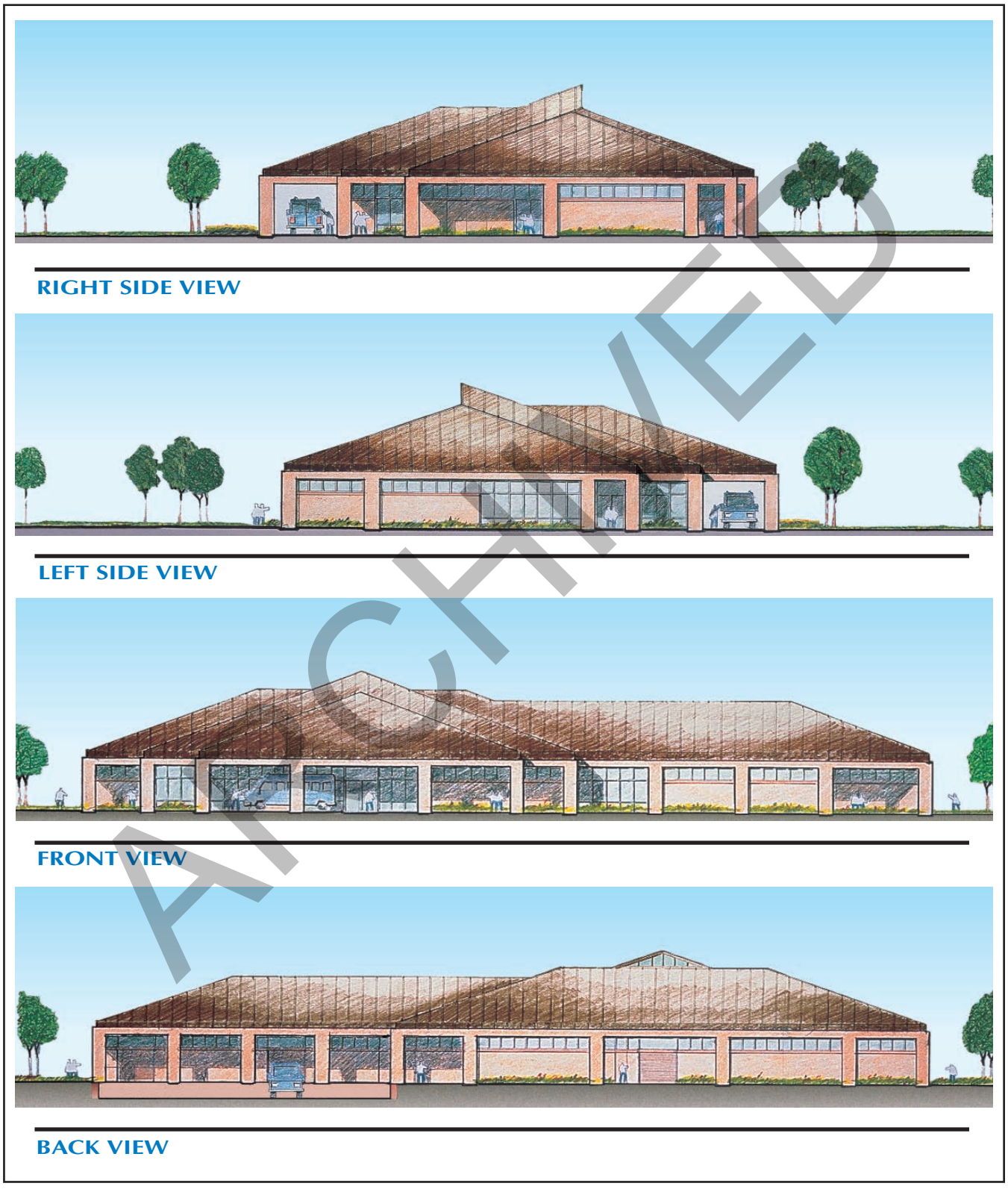

Figure 3-C: Concept Exterior Front, Side, and Back Views of the Centralized Life Support Facility.

Chapter 4

Interior Standards

A. General

A quality CLS facility reflects the AMC standard of "understated excellence" and creates an environment where professionals can provide quality service and training in a comfortable, functional setting. Select facility finishes for cost-effectiveness, life cycle maintenance, as well as appearance. Interior finishes that are durable and easy to maintain are essential to user satisfaction.

Coordinate materials, finish, color, and texture selections to complement the overall building design and image. Select colors and finishes to express professionalism, warmth, and a strong, positive image. Quality interiors provide an environment which improves job performance and customer satisfaction.

B. Color Concepts

Designers should give special attention to color selection. Use colors to highlight and differentiate spaces designed to accommodate different types and levels of activity.

Use accent colors sparingly to complement a neutral color scheme. Select accent colors for carpets, wallcoverings, upholstery, and systems furniture wall panels that are subject to periodic change. Incorporate accent colors in graphics, borders, accessories, and artwork for design theme consistency.

C. Floor Coverings

Consider bold patterned carpet tile for high-use areas such as hallways, waiting areas, and training rooms. Avoid stripes and linear designs that are hard to line up with walls in corridors, vestibules, and irregularly shaped areas. Select neutral colored carpet for offices to create lighter rooms which appear larger. Use vinyl composition tile in smaller storage areas and maintenance rooms where there is a higher potential for spills and dirt that would permanently stain or damage carpet. Provide ceramic tile in rest rooms, where frequent water spills occur. For durability, select a sealed concrete finish in storage rooms, the mechanical room, the communications/electrical room, and the janitor's closet.

D. Wallcoverings

Use vinyl wallcovering, ceramic tile, and paint finishes for ease of maintenance and to present a less institutional appearance.

E. Ceilings

Use suspended acoustical ceiling tile with a concealed grid or revealed edge finish. A standardized 2'x2' tile is recommended as the consistent module throughout the facility. A gypsum board ceiling works well with water-resistant paint finishes in rest rooms.

F. Window Coverings

Vertical blinds and mini blinds filter daylight and allow outdoor views. Use lined draperies to block daylight in the conference and training rooms for visual presentations.

G. Accessories

Framed artwork, wall murals, and plants complement the interior finish and reinforce the design theme. Choose only professionally framed pictures, paintings, and awards with color schemes and images that contribute to the facility's decor. Live plants or professional-quality silk plants are optional.

H. Signs

Develop an interior sign plan as part of the comprehensive interior design. Use professionally made signs, appropriately sized for viewing distance, and compatible with the facility design scheme. Signs should clearly direct visitors to specific areas within the CLS.

I. Systems Furniture

This furniture includes interchangeable wall panels, desk components, and storage modules which combine to form office work stations. These stations allow for a reconfiguration of office areas. Select systems furniture that easily integrates computer hardware. Systems furniture panels should incorporate integrated conduits for electrical and communications service to conceal unsightly wires. Sound absorbent fabric panels will reduce background noise and provide a quiet work area. Finish work surfaces in plastic laminate or wood. Plastic laminate with a wrapped edge is an easily maintainable finish. Use systems furniture throughout the CLS facility.

J. Lighting

Natural and artificial lighting are important factors in creating a quality interior appearance. Lighting affects the perception of space, as well as the color of interior finishes. Design lighting to enhance the design theme. The designer should provide natural and accent lighting in administration areas. Include task lighting at office desks and use high efficiency fluorescent lighting in lieu of incandescent lighting.

K. Communications

Provide telephone and computer system wiring to support fire alarm systems and other equipment. Equip the facility with the capability for intercom, Defense Systems Network, fax lines, on- and off-base lines, mobile based station radio, and LAN connections. Fiber optic connectivity will be required for the C2IPS. The designer should contact the base civil engineer and the base communications unit for specific communications requirements before planning major building upgrades or modifications. Incorporate these internal and external requirements in building design and modification specifications. ■

	FLOORS							BASE		WALLS			CEILING	
	Carpet	Vinyl Composition Tile	Ceramic Tile	Sealed Concrete	Vinyl	Ceramic Tile	Paint	Vinyl Wallcovering	Acoustic Wallcovering	Ceramic Tile	Acoustical Ceiling Tile	Painted Gypsum Board	Painted Exposed Structure
Wing Life Support Office													
Wing Life Support Officer	♦				♦			♦			♦		
Wing Life Support Superintendent	♦				♦			♦			♦		
Wing Aircrew Training NCO	♦				♦			♦			♦		
Administration Support	♦				♦			♦			♦		
Wing Life Support Conference Room	♦				♦			♦			♦		
Aircrew Training Area													
Survival Training Room	♦				♦				♦		♦		
Mock-Up Decontamination Room	♦				♦				♦		♦		
Rear Projection Room	♦				♦		♦				♦		
Centralized Life Support Shop Areas													
NCOIC and Assistant NCOIC	♦				♦			♦			♦		
Life Support Staging Area	♦				♦			♦			♦		
Helmet and ACDE Storage and Issue		♦			♦		♦				♦		
NVG Test Center		♦			♦		♦				♦		
Equipment Storage				♦			♦						♦
Flightline Inspection		♦			♦		♦				♦		
Explosives and Flares Storage				♦			♦						♦
Helmet and Oxygen Mask Repair		♦			♦		♦				♦		
Oxygen Bottle Maintenance		♦			♦		♦				♦		
NVG Maintenance		♦			♦		♦				♦		
Support Areas													
Men's Rest Room			♦			♦				♦		♦	
Women's Rest Room			♦			♦				♦		♦	
Storage Rooms				♦			♦					♦	
Mechanical Room				♦			♦						♦
Communications/Electrical Room				♦			♦						♦
Janitor's Closet				♦			♦						♦
Locker Room		♦			♦		♦					♦	
Break Room		♦			♦			♦			♦		
Vending Area		♦			♦			♦			♦		
CLS Shop Area Corridor		♦			♦			♦			♦		

Table 4-A: Interior Finish Schedule.

References

AFI 31-209	Resources Protection Program
AFI 32-1023	Design and Construction Standards and Execution of Facility Construction
AFI 32-1024	Standard Facility Requirements
AFI 32-1032	Planning and Programming Real Property Maintenance Projects Using Appropriated Funds
AFM 88-3	Structural Design Criteria Loads
AFP 88-40	Sign Standards
AFR 127-100	Explosives and Safety
AMCI 11-301	Aircrew Life Support Program
ADA	Americans with Disabilities Act
DoD 4270.1-M	Construction Criteria Manual
FED STD. 795	Uniform Federal Accessibility Standards
MIL-HDBK 1008B	Fire Protection for Facilities Engineering, Design, and Construction
MIL-HDBK 1190	Military Building Code
NFPA 101	Life Safety Code
NFPA 220	Types of Construction
10 CFR Chapter 11	Energy Conservation Voluntary Performance Standards for New Buildings
AMC	Commander's Guide to Facility Excellence
AMC	Architectural Compatibility Plans
AMC	Interior Design Guide
AMC	Landscape Design Guide
AMC	Sign Standards, "Engineering Technical Letter" (ETL 93-02)
AMC	Squadron Operations/Aircraft Maintenance Unit Design Guide
------	Consumer Products Safety Standards

AIR MOBILITY COMMAND...

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Prepared by Directorate of Civil Engineering
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