30 December 2005

AIR FORCE SERVICES FACILITIES DESIGN GUIDE

DESIGN: FITNESS CENTERS

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30 December 2005

AIR FORCE SERVICES FACILITIES DESIGN GUIDE (AFSFDG)

FITNESS CENTERS

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AIR FORCE SERVICES AGENCY

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

Change No.	Date	Location

The format of this document conforms to UFC 1-300-01; however, it is an Air Force-only document not included in the UFC (Unified Facilities Criteria) system.

30 December 2005

FOREWORD

The Air Force Services Facilities Design Guide (AFSFDG) provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to US Air Force Services projects. AFSFDGs will be used for all Air Force projects and work for other customers where appropriate.

AFSFDGs are living documents and will be periodically reviewed, updated, and made available to users for providing functional and technical criteria for military construction. Headquarters, U.S. Air Force Services Agency (AFSVA) is the OPR for this AFSFDG. This document has been coordinated and reviewed by AF/ILEC (Air Force Office of the Civil Engineer). Contact AFSVA for document interpretation and improvements.

This and other AFSVA Facilities Design Guides may be found at http://www-p.afsv.af.mil/FC/. Hard copies of documents printed from electronic media should be checked against the current electronic version prior to use to ensure that they are current.

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CHAPTER 1 - INTRODUCTION

1-1 PURPOSE AND SCOPE.

This guidance implements construction policies and processes approved for Fitness Centers. These standards advance the goal of achieving consistent, enhanced quality facilities at all installations. Developing and implementing facilities to achieve fitness facility excellence will help sustain a strong, productive, and viable Air Force.

This design guide is intended to:

- Highlight guidelines and criteria that should be considered during the evaluation, planning, programming, and design processes.
- Provide a consolidated listing of additional resources where more detailed information can be obtained.
- Present an appropriate USAF image for fitness facilities by organizing criteria into a concise user-friendly format for evaluating new or renovated fitness facilities.

The information in this guide applies to the design of all new construction projects as well as to major and minor renovation projects at main operating bases and reserve bases. While the space allocation in the guide does not apply to stand-alone Air National Guard (ANG) bases, the information in the guide may be used to help design the ANG fitness rooms at these locations, i.e., identify type of flooring, space per equipment items, etc. Specifically, it provides guidelines for determining required spaces, technical requirements, installation location, site design, and fitness facility space design.

The guide provides basic information and references that should be consulted in order to program, design, and execute a successful fitness facility project. Chapter 7 provides related AF documents and other related applicable government and industry reference documents.

Figure 1-1 Fitness Center and Health and Wellness Center, Andersen AB, Guam

1-2 DOCUMENT USERS.

This guide was developed for those who plan, operate, and evaluate Fitness Centers. It is also written so design architects, engineers, programmers, and planners can achieve consistent and enhanced quality fitness facilities throughout the Air Force.

1-3 FITNESS FACILITY DESCRIPTION.

1-3.1. Fitness Mission

The Air Force Fitness mission is to “Enhance combat readiness by supporting unit commanders’ fitness program and provide fitness and sports opportunities to all authorized users.”

1-3.2. Requirements

The Air Force Fitness Facility requirement is to "Facilitate the readiness, fitness, and morale of Air Force members by providing effective, efficient, and pleasant spaces for individual and group exercise, unit physical training (PT), team and individual sports, testing, training/education, and necessary support." The Fitness Facility shall provide spaces for the following functions:

- Fitness Equipment Spaces
- Unit PT and Group Exercise
- Fitness Testing
- Fitness Training
- Team and Individual Sports: intramural, extramural, varsity
- Administrative Functions
- Support Functions
- Health and Wellness

1-4 DOCUMENT ORGANIZATION.

The criteria are organized to parallel the design process:

- Programming Criteria provides the basic guidelines for sizing and configuring a facility and includes diagrams that clarify the desired relationships between functions, as well as a table summarizing scope requirements for each facility.
- Design Criteria covers information relevant to all phases of design and contains guidelines for organizing the site and designing and planning the building's utilities, layout, character and circulation, and systems.
- Functional Area and Space Guidelines provide detailed design requirements for each functional space in a typical facility. It includes diagrams that can aid in the preparation of preliminary and working drawings.
- Illustrative Design Information contains examples of floor plans that show how the guide's design principles can be applied to a particular project.
- Resources and Links

1-5 LIMITATIONS.

This guide must be used in conjunction with DOD and other documents that give related guidance. Unique design requirements of a specific project will be addressed at the installation level. This design guide is not a substitute for research required by programmers and designers. Further, programmers and designers must incorporate installation and Major Command design requirements.

1-6 GUIDE GOALS.

This design guide is intended to promote:

- Compliance with current policies, yet includes flexibility to meet local needs,

- Understanding of AF fitness goals and their implications for facility design, and
- Teamwork from requirements identification through beneficial occupancy.

CHAPTER 2 - PLANNING AND PROGRAMMING

2-1 OVERALL CONSIDERATIONS.

This chapter identifies the requirement for new and existing fitness facilities for Air Force installations. The space criteria shall determine the number and size of the core elements for each installation.

2-1.1 Project Team

The Project Team will identify and integrate applicable design criteria, site-specific design requirements, specific goals and strategies during programming, planning, design, and construction. Cooperation between participants representing all organizations is critical to the success of any project. Therefore, the organizations and individuals listed below should be involved early in the planning, programming, and design of a fitness facility to ensure that all functional requirements are met. Refer to the USAF Project Manager's Guide (Project Definition Chapter) for information concerning the Design Team Participants from other organizations.

- Commanders
- Base Services Squadron/Division; Combat Support Flight Commander; Fitness Center Director and Staff
- Base Civil Engineering Squadron; Project Manager; Trades representatives
- Installation Medical Group; Health Promotion Manager or Health Educator
- Headquarters, Air Force Services Agency fitness (SVPAF) and facilities (SVXFB) representatives
- Architectural and Engineering Consultants
- Contracting Officer
- Planners, Architects, Landscape Architects, Engineers, Interior Designers
- Base Support Team including Fire Department, Security Forces, Environmental, Bioenvironmental Engineering Safety, and other appropriate representatives
- Major Command Services and Civil Engineering representatives
- Others as appropriate

2-1.2 Project Planning

2-1.2.1 Overall Project Scope. The base population is the initial determinant for the total combined scope (space authorization) of all fitness facilities on an installation. For purposes of fitness center facility sizing, base population is defined by the following categories. See base population computation worksheet.

- Assigned military personnel: Including Air Force other U.S. military personnel, full-time Air Force Reserve, and Air National Guard; authorized military personnel included in interservice support agreements with other U.S. services; and authorized military personnel included in support agreements with foreign/NATO services.

- Family members: Fifty (50) percent of family members from assigned military personnel aged 13 years or older.
- Military transient population: When the installation regularly serves a substantial number (over 100) of military transients (PCS members, students, or members TDY) greater than 30 consecutive days, the average daily strength, based on a firm projection of the total yearly load of such transients, may be added to the base population. Use the following formula:

(Number of 30+ day TDYs* x length in calendar days) x Frequency per year / # of days Fitness Center is open per year** = Average Daily TDY Load

*30+ day TDYs include exercises, recurring courses, and other 30+ -day TDYs.
**Assume that Fitness Center is open 363 days per year.

EXAMPLE:

Course 1 - (200 persons X 60 days) * 6 times a year / 363 =	198
Course 2 - (50 persons X 90 days) * 2 times a year / 363 =	25
Exercise 1 - (550 persons X 179 days) * 1 times a year / 363 =	271
Total Average Daily TDY Load	494

For overseas bases, include:

- Assigned DOD civilians: Include NAF, AAFES, and DODEA (Department of Defense Education Activity) personnel as part of the base population. Do not include personnel as DOD civilians if they are counted as family members.
- For PACAF and USAFE: Include assigned military members of host nations or NATO alliances to the base population if written in the host nation agreement.

In accordance with AFRCH 32-1001, Standard Facility Requirements, Air Reserve Bases (ARB), will follow this design guide. A fitness center at an ARB will have a minimum of 17,000SF dedicated to fitness spaces and no space dedicated to a Health and Wellness Center (HAWC). When planning fitness facility projects, provide core spaces and enhanced spaces not found in other adequate installation facilities. For bases with multiple fitness facilities, ensure at least one facility includes all the core spaces. Enhanced spaces may be included at the discretion of the installation commander, but may not displace core spaces. Consider mission, weather, and customer demand when deciding to include indoor pools or whether a steam room or sauna is preferred. The space allocation for core and enhanced areas vary by the installation size. Flexibility and expansion requirements are significant issues to be addressed during the design of all facilities. The following table shows the base classifications and related space authorizations:

Table 2-1: Base Classification and Authorized Scope for Fitness Centers with a HAWC*

Category	*Population Bracket*			*Allowable SF*	*SM*
Small	0	-	1,000	55,029	5,112
Medium 1	1,001	-	2,000	62,229	5,781
Medium 2	2,001	-	3,000	69,429	6,450
Medium 3	3,001	-	4,000	76,629	7,119
Medium 4	4,001	-	5,000	83,829	7,788
Large	5,001	-	6,000	91,029	8,457
Mega 1	6,001	-	7,000	98,236	9,126
Mega 2	7,001	-	8,000	103,236	9,591
Mega 3	8,001	-	9,000	108,236	10,055
Mega 4	9,001	-	10,000	113,236	10,520
Mega 5	10,001	-	11,000	118,236	10,984
Mega 6	11,001	-	12,000	123,236	11,449
Mega 7	12,001	-	13,000	128,236	11,913
Mega 8	13,001	-	14,000	133,236	12,378
Mega 9	14,001	-	15,000	138,236	12,842
Mega 10	15,001	-	16,000	143,236	13,307
Mega 11	16,001	-	17,000	148,236	13,771
Mega 12	17,001	-	18,000	153,236	14,236
Mega 13	18,001	-	19,000	158,236	14,700
Mega 14	19,001	-	20,000	163,236	15,165
Mega 15	20,001	-	21,000	168,236	15,629
Mega 16	21,001	-	22,000	173,236	16,094
Mega 17	22,001	-	23,000	178,236	16,558
Mega 18	23,001	-	24,000	183,236	17,023
Mega 19	24,001	-	25,000	188,236	17,487
Mega 20	25,001	-	26,000	193,236	17,952
Mega 21	26,001	-	27,000	198,236	18,416
Mega 22	27,001	-	28,000	203,236	18,881
Mega 23	28,001	-	29,000	208,236	19,345
Mega 24	29,001	-	30,000	213,236	19,810

* See separate Space Calculator worksheet.

2-1.2.2 Project Requirements and Acquisition Planning.

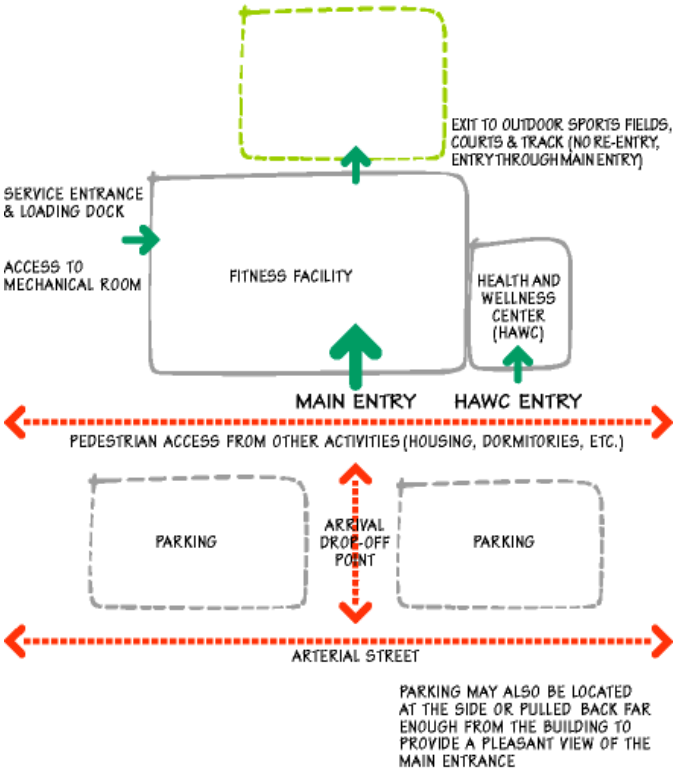
Develop a Requirements Document/Project Management Plan (RD/PMP) or Requirements and Management Plan (RAMP) that provides the design agent and the designer with information used in negotiating the design contract and completing the project definition phase. Use the information in this guide as the basis for developing major design issues, requirements, and costs as part of the RD. The PMP should also identify facility acquisition decisions. Refer to the *USAF Project Managers' Guide for Design and Construction* for useful information on developing a RD/PMP or RAMP.

2-1.3 Project Site Planning.

The selected site must be approved by the local installation commander and should be part of the base general plan. Preferably, the fitness facility should be located near dormitories, housing, community centers, outdoor sports facilities/fields, and other compatible facilities.

The selected site should allow for future expansion of the facility, parking, and outdoor activities, as required. Many factors should be carefully evaluated when determining the site. These considerations should include things such as the availability and capacity of required utilities, mass/scale of the facility relative to adjacent structures, proximity to historical districts, and relationships to existing vehicular and pedestrian circulation patterns.

Figure 2-1 Fitness Center and Health and Wellness Center Site Planning



2-2 FACILITY SPACE DISTRIBUTION

2-2.1 General Considerations.

The Space List and Area Recommendations are minimum guidelines. The size of the core areas will vary with the size of the installation.

- The total scope of all core areas will not exceed the authorized scope of core areas for the installation. However, the core areas must be present at each Air Force Installation before any enhanced areas are added.
- At least one fitness facility on an installation will contain all the core spaces.
- Enhanced areas above the core area authorized must be justified for each area added.

Table 2-1 identifies the space allocation for small to mega-24 facilities. Table 2-2 lists core areas for the fitness center and the HAWC (exception: the HAWC is not a core space on Reserve installations). All core spaces must be included before optional enhanced spaces may be added to the project. The total core space area must be within the authorized scope amount. When included, enhanced spaces may exceed the authorized scope amount. Provide justification for all enhanced spaces in the programming documents whether the program exceeds the authorized scope amount or not.

A Fitness Center Space Calculator (separate file) is an interactive tool, which allows the installation to determine the size of each functional space based on local requirements. Planning factors are included for each functional space that identifies the units by which each space increases. Installation Services and Civil Engineering counterparts should complete the worksheet together to help determine how the spaces will be allocated throughout the installation fitness facilities. All space requirements are shown as net area. Use a net-to-gross factor of 1.35 to estimate the gross area of the facility. The additional thirty-five percent includes space requirements for interior circulation between functional spaces, mechanical rooms, and exterior walls.

At mega-large bases, the MAJCOM and base should determine whether it is more cost-effective to build and staff one large complex or multiple smaller-sized facilities. Priority areas to consider for additional square footage with mega-large facilities are the fitness equipment spaces (e.g., cardiovascular, selectorized and free weight areas), Unit PT/group exercise spaces, locker rooms, and administration (as needed to accommodate additional staff).

Overseas installations may increase the net area requirements by an additional 10 percent in the fitness center to address higher utilization. This additional space should be applied within the net area of the core areas.

Table 2-2: Core and Enhanced Spaces

FITNESS CENTER CORE SPACES	HEALTH AND WELLNESS CENTER CORE SPACES
VISITOR & SPECTATOR SUPPORT	Reception/Waiting/Library
Vestibule/Entry Lobby	Office Space/Director
Lobby	Office Space/Other Private
Control Point/Reception	Support Staff Workstations
Equipment issue storage	Classrooms
Retail	Ergometry and Fitness Testing
Vending	Wellness Assessment Room
Public Restrooms	Equipment Demonstration Room (if not collocated w/ Fitness Center)
ADMINISTRATION	Janitor Closet/Storage
Fitness Center Director's Office	Restrooms
Sports Program Manager's Office	
Operations Manager	
NCOIC's Office	
Staff Workroom	
Conference/Classroom	
SUPPORT	
Laundry	
Storage	
Equipment Repair	
Service Entrance and Receiving	
Janitorial	
LOCKER ROOMS	
Men's Locker Room	
Women's Locker Room	
GYMNASIUM	
Basketball/volleyball	
Spectator seating	
Storage/support	
GROUP EXERCISE	
Stretching Area	
Group Exercise	
Group Exercise Storage	
FITNESS EQUIPMENT SPACES	
Stretching Area	
Cardiovascular Equipment	
Free Weights	
Fitness Director's Office	
Fitness Assessment Room	
RACQUETBALL COURTS	
TRACK (indoor or outdoor)	

FITNESS CENTER ENHANCED AREAS	HEALTH AND WELLNESS CENTER ENHANCED AREAS
Lap Pool	Relaxation Room
Distinguished Visitors (DV) Locker Rooms	Kitchen/Food Demonstration Room
Family Locker Room	
Parent/Child Area	
Massage Room	
Expanded Retail Area	
Juice Bar	
Expanded Juice Bar Seating	
Spa Area	

2-3 COST CONSIDERATIONS.

2-3.1 Site Cost Considerations.

Site Analysis Costs.

Project programmers must consider costs for:

- Preliminary soils analyses essential to determine whether extensive site work and foundation costs are required. Also, organic soil analyses for exterior landscape plant materials may be required.
- Local environmental and climatic conditions such as heavy snow loads, wind loads, high humidity, and extreme temperatures result in additional costs due to structural, and to a lesser extent, insulation requirements.
- Projects located in areas prone to seismic activity.
- Projects located in designated historic districts may incur additional cost in order to ensure compliance with historic preservation requirements.
- Site Grading. Include costs for cut/fill and other work to make the site usable.

2-3.1.3 Site Amenities. Consider bike racks, benches, outdoor track, and lighted walks as required per installation.

2-3.1.4 Infrastructure. Include communications and utility infrastructure requirements.

2-3.2 Building Systems Cost Considerations.

2-3.2.1 Mechanical Systems. Determine the type of new mechanical systems or explore the possibility of using existing energy sources to supply the new construction. Conduct Life cycle cost analyses to determine the most cost effective mechanical system for the facility.

2-3.2.2 Security Systems. Include requirements for security systems such as intrusion detection systems.

2-3.2.3 Fire Protection Systems. Fire protection systems shall be provided in accordance with *UFC 3-600-01, Fire Protection*. Consider that the protection system selected may increase the water demand and infrastructure requirements for the project.

2-3.3 Building Design Cost Considerations.

2-3.3.1 Codes and Standards. All current standards such as force protection, sustainability, and accessibility will be incorporated.

Projects will conform to *UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings* and will consider the impact these standards have on the overall construction cost of the project. Coordinate with the base security forces personnel for additional local guidance or requirements.

Accessibility and universal design is essential in fitness design and construction. Accessibility guidance is provided in the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines*.

2-3.4 Other Design Cost Considerations.

2-3.4.3 Signage. Include the primary exterior sign and all interior and exterior building signage, including room and informational signage, interior graphics, parking and street signage. All signage will be in accordance with the installation signage program and *UFC 3-120-01, Air Force Sign Standards*.

2-3.4.4 Interior Design. Provide a Structural Interior Design along with costs for attached equipment such as white boards, basketball goals, scoreboards, standards, etc.

2-4 PROJECT EXECUTION.

2-4.1 Design and Construction Process.

Successful fitness facilities require involvement of the entire facility design management team early in the process to fully develop facility requirements to identify the appropriate cost, develop programming documents, and deliver the project on-time and within budget. A design "charrette" session with participation from the entire project team serves as a kick-off to the design phase. Charrette goals are to confirm scope, clarify functional requirements, provide validation, identify cost requirements, obtain user feedback, and obtain concept "buy-in" from team members and Commanders.

Design-bid-build is the preferred method of execution although design-build, design-build plus, and other methods have been used. The execution method will be approved at the MAJCOM. Further guidance on the design process may be found in the *USAF Project Manager's Guide to Design and Construction*.

CHAPTER 3 - GENERAL DESIGN CRITERIA

This chapter provides general considerations and technical guidance relevant to all phases of design for new or renovated fitness centers. Guidelines are provided for planning and designing the site, building footprint, infrastructure, and building systems. Specific information that expands on these overall principles must be developed for each individual Fitness Center project.

Figure 3-1 Fitness Center, Ellsworth AFB

3-1 SITE SELECTION AND DESIGN

Although the emphasis in Fitness Center campus planning is to become part of the community facilities, it should be convenient to base administrative and mission related functions, proximity and access to common public use facilities is desired. When selecting a facility site, consider the condition, capacity, and location of utilities and their impact on future expansion. Ensure that activity spaces have room for expansion.

Involve the installation community planner, architect, landscape architect, and civil, mechanical, electrical, and communication engineers, and the Services staff. Reference *AFPAM 32-1010 Land Use Planning* for additional useful information and guidance on this subject.

3-1.1 General Site Design Considerations.

3-1.1.1 Organization. Develop a sense of order, arrival, orientation and community in planning the site. Ensure efficient use of real estate, but provide fire protection access ways, construction space, and required life safety egress space.

Transitional Spaces. Provide entrance courts and transition spaces (preliminary spaces adjacent to a destination space) for visitors to gather prior to events. Use outdoor spaces as transition spaces and for extended fitness uses, such as areas for Unit PT, runners, and bicyclists.

3-1.1.2 Climatic Considerations. Fitness Centers design and building orientation must take advantage of local climatic conditions. Where practical, use passive solar construction techniques to reduce energy consumption. Consider local climate conditions when creating outdoor spaces for fitness activities.

3-1.1.3 Building Orientation. Allow for the building to capture natural lighting in accordance with Sustainable Development recommendations. Ensure natural lighting does not cause glare or interfere with activities, especially in the gymnasium.

3-1.2 Circulation.

Plan organized, easily recognizable pedestrian, vehicular, bicycle, service, handicap, and fire emergency access. Make pedestrian pathways leading to the fitness facility obvious, and consider linking the pathways to other fitness trails and sports fields.

3-1.2.1 Vehicular Access.

Design vehicular paths, pedestrian paths and landscape to help define the boundary of the fitness facility campus while enhancing the flow into and out of the adjacent community areas. Provide access to fitness facilities from secondary (collector) streets to minimize the congestion associated with main arterial streets. Where possible, divide main entrances with landscaped traffic medians between entry and exit lanes. Because of the high volume of traffic using the entrances, the recommended minimum width of non-divided entry roads will be 7.3m (24'-0").

Consider passenger loading and/or "U" shaped drop off areas near the fitness facility entrances, providing convenience to guests. Consider delivery trucks, and required easement area.

Follow local threat assessment and force protection criteria defined in *UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings* for all vehicle access design, critical in determining allowable set-backs, eliminating lines of approach perpendicular to the building. Consider snow dumping where appropriate. Consider installing removable bollards as needed to restrict unauthorized vehicle access.

3-1.2.2 Emergency Service. Reference the *UFC 3-600-01–Fire Protection Engineering for Facilities* for a minimum separation required between fitness facilities and the closest adjacent building. This separation is for fire protection purposes but may also be dictated by force protection requirements and local fire protection policies. Provide access to fire protection vehicles from three sides. Obtain width, weight, and turning radii of fire fighting vehicles from the base fire department.

3-1.2.3 Service Vehicles. Provide paved access drives and parking areas designed to accommodate service vehicles. Avoid interior court areas.

Consider installing removable bollards as needed to restrict unauthorized vehicle access. Where possible, separate service entrances associated with delivery entrances, mechanical rooms or mechanical enclosures from visitor parking areas.

Provide access to side or rear service entrance for light delivery trucks; this may require a loading dock. Locate service entrance near main dumpster.

3-1.2.4 Bus Route Access. Where possible and appropriate, access to public transportation systems will be considered in project design. If the base provides bus service, designers will consider developing shelters and walks to serve guest needs. Bus shelters must be compatible with the architectural style of existing buildings and guidelines established by the base.

3-1.2.5 Pedestrian Access. Walkways to building entrances will be 2.4m (8'-0") wide. All other sidewalks will be 1.8m (6'-0") wide. Design and grade sidewalks to provide barrier-free access to the first floor of all fitness facilities and to any associated outdoor use areas. Provide connections to other functional areas of the base with pedestrian circulation systems. Consider including links to jogging/biking trails and outdoor Unit PT

areas as part of the site development process.

3-1.3 Parking.

3-1.3.1 Parking. Provide parking spaces as shown in AFH 32-1084. Provide accessible parking spaces to provide the most convenient access to the building entry in accordance with the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines*.

3-1.3.2 Motorcycle Parking. Provide motorcycle-parking areas as required based on local conditions.

3-1.3.3 Bicycle Parking. Provide bicycle parking as determined by local conditions. Racks will comply with base architectural guidelines. Provide all bicycle parking on concrete surfaces adjacent to sidewalks.

3-1.4 Site Design Considerations.

3-1.4.1 Finished Floor Elevation. Establishing the ground-level finished floor elevation to assure structural protection, positive drainage, and low sidewalk slopes. Consider grading, cut and fill, visual impact of the facility and interior-exterior transitions and the impact on the landscape architect's ability to effectively introduce plant materials into the new environment. The landscape architect, architect, and civil engineer must work closely together to achieve optimal design results. Grade the site to control the visual impact of the parking area, the fitness facility, mechanical equipment, and trash dumpsters.

3-1.5 Site Amenities.

3-1.5.1 Site Furniture. Provide site furniture that is in harmony with the architectural style of the fitness facility, complements the building, and makes the outdoor spaces more usable and organized. Provide bicycle racks, outdoor seating, sufficient trash disposal containers and recycling bins.

3-1.5.1 Site Accessories. Provide freeze proof drinking fountains. Consider bike racks, benches, and lighted walks as required per installation.

3-1.5.2 Site Lighting. Provide lighting to ensure occupants have a means of safely moving between outdoor and indoor spaces. All signage and lighting must be in compliance with the installation's standards. Provide adequate site lighting at any point where there is a change in grade requiring steps, near accessible parking areas, under stairwells, and near main entrances to buildings. Use the recommendations of the *Illuminating Engineering Society North America Lighting Handbook* to establish illumination levels. In particular, do not exceed foot-candle level requirements as stated in the Recommended Practice Manual: Lighting for Exterior Environments. Design exterior lighting such that zero direct-beam illumination leaves the building site.

3-1.5.3 Outdoor Areas. Include outdoor passive and/or active use areas in all fitness campus plans.

3-1.5.4 Sustainability. Incorporate sustainable design concepts into the fitness facility campus. Consider recycling centers and containers and other refuse issues when developing site design and landscaping. Coordinate locations of recycling and refuse containers with site furnishings and landscape to complement the campus and building design. Emphasize ease of use and service access to these containers.

3-1.5.5 Signage. Effective site signage should clearly identify the facility as a fitness facility. Follow the guidance defined in *UFC 3-120-01Air Force Sign Standards* and as supplemented in MAJCOM and installation standards.

Provide signage for direction to Unit PT area, Jogging Path, Fitness Trail, etc.

Display operational hours so they can be seen from the exterior.

3-1.5.6 Fencing. Fencing may be necessary on the Fitness Center site based upon location and surrounding facilities. Fencing materials used as screening should be compatible with the fitness campus and surrounding architecture and comply with base standards.

3-1.6 Landscape Architecture.

Landscape Requirements will conform to each installation's landscape standards and to the USAF Landscape Design Guide. Provide landscape beds for snow removal and consider snow fences in northern tier installations to prevent snowdrifts from forming near doorways. Consider using indigenous plants, water-conservation measures and xeriscape principles.

Figure 3-2 Landscape

Landscape plans require the services of a professional landscape architect working in conjunction with the other disciplines to achieve the total design intent for the project. The landscape architect must have an intimate knowledge of the indigenous plant materials for the region. Refer to the *USAF Landscape Design Guide* for further guidance. In addition, the landscape architect must conform with DOD force protection guidance referencing maximum height and location of plant materials adjacent to a fitness facility.

Consider the installation of an irrigation system to support the landscaping and adjacent sports fields.

3-2 BUILDING DESIGN.

All Air Force fitness facilities, regardless of location, must comply with applicable Department of Defense, Air Force and MAJCOM construction and design standards. Comply with local building codes where applicable. When a conflict exists, the more

stringent requirement shall apply. Reference AFI 32-1023, Design and Construction Standards and Execution of Facility Construction Projects for current guidance on applicable Air Force and DOD requirements.

3-2.1 Architectural Character

The form, color, material, massing, graphics, shapes, lighting, and finishes should express the active and energetic functions of the fitness facility. The function of the building, as a fitness facility, should be apparent in the appearance of the building.

The main entrance should be an identifiable focal point.

Consider grouping high bay spaces together. The massing of the building should relate to the surrounding structures. The high bay areas should not be too dominant.

Architectural compatibility with the MAJCOM and Installations' Design Standards and USAF Architectural Compatibility Guide at http://www.afcee.brooks.af.mil/dc/dcd/prch/acguide/liveacg/index.htm will influence the design of the exterior appearance of the building.

3-2.1.1 Flexibility and Expansion Potential. Program requirements and site restrictions may mandate the need for a multistory facility. Single-level facilities with elevated tracks are preferred. Accommodate peak demand by properly sizing the facility and organizing the functions.

3-2.2 Codes and Standards

3-2.2.1 Building Codes. Refer to UFC 1-200-01, *Design: General Building Requirements* http://65.204.17.188//report/doc_ufc.html for applicable codes.

Designs must conform to this guide as well as unique local requirements, design criteria, and applicable codes. Overseas projects must consider host-country requirements.

3-2.2.2 Force Protection. Follow UFC 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings* and UFC 4-010-10, *DOD Minimum Standoff Distances for Buildings (FOUO)* for guidance on all fitness construction. Refer also to AFI 10-245, *Air Force Antiterrorism Standards* and the *USAF Force Protection Design Guide* for additional guidance. Coordinate force protection counter-measure standards throughout the design process while recognizing goals for aesthetics and compatibility.

Fitness facilities are a potential target of terrorist attack. A "threat assessment" is therefore required to prepare proper force protection measures. An assessment applicable to the installation's fitness facility should be completed prior to the start of design, whether it is a renovation project or new construction.

The USAF Installation Force Protection Guide should also be used when planning, programming, and designing facilities.

Fitness facilities have a higher pedestrian customer base than other types of military facilities.

The provision of vehicular access close to the building, such as drop off and service entrances must be weighed against the potential for terrorist attack at that facility/base.

Consider the use of drop-down or manually removable bollards to comply with AT/FP requirements.

3-2.2.3 Sustainability. Sustainability is defined as the responsible stewardship of our natural, human, and financial resources through a practical and balanced approach. This subject is addressed in detail in the USAF Sustainable Facilities Guide and the USAF Environmentally Responsible Facilities Guide, http://afcee.brooks.af.mil/dc/dcd/arch/rfg/index.html.

Each facility must meet a level of "certified" under the Leadership in Energy and Environmental Design (LEED) in accordance with current policies.

3-2.2.4 Accessibility. All Air Force fitness facilities shall be designed to be accessible to and usable by persons with disabilities. New construction, as well as alterations to existing facilities, must be designed and constructed to meet the requirements of the Uniform Federal Accessibility Standards (UFAS) and the Americans with Disabilities Act Architectural Guidelines (ADAAG); in the event of differing requirements, comply with whichever allows for equal or greater access to persons with disabilities.

3-2.2.5 Fire Protection/Life Safety

Construct the facility to meet the requirements of UFC 3-600-01, *Design: Fire Protection Engineering for Facilities*. This UFC contains information on all fire protection and life safety feature requirements, construction requirements, detection and suppression system requirements and egress components.

Establish independent egress points from each of the functional areas that have different operating hours from the fitness center, e.g., pool, HAWC, etc.

Provide electronic alarms and clear labels on doors that cannot be viewed directly from the control point.

3-2.2.6 Interior Design

Use materials and finishes that accommodate many different uses. Try not to use materials that are specific to one function as a permanent application, except where the specific activity requires special flooring, such as gymnasiums and group exercise areas, e.g., aerobics rooms where flooring must meet DIN (Deutsches Institute fur Normung) standards. Locally determine whether to include center or perimeter court logos/designs. Options may include the base logo, e.g., Kunsan Wolfpack logo, Air Force logo, or other locally approved logo/design. Refer to the Room Finish Schedule (separate file) for additional information.

Consider specifying low-VOC emitting finishes for improved indoor air quality.

3-2.2.6.1 Acoustics

Use finishes that limit unwanted noise within the building.

Consider using non-rectilinear room configurations to limit reverberation.

Refer to AFMAN 32-1090, *Noise and Vibration Control*,

http://www.e-publishing.af.mil/pubfiles/af/32/afjman32-1090/afjman32-1090.pdf.

3-2.2.6.2 Doors

Ensure exterior/interior doors are wide enough for accessibility and moving large equipment.

3-2.2.6.3 Locker Room and Shower Finishes

Use medium to dark-colored grout in the shower floor tiling.

Provide flooring materials with an integral slip-resistant surface throughout; consider large tile flooring with dark grout in the dressing room and smaller tile flooring in the showers.

Use moisture-resistant finishes throughout. Consider rustproof materials and avoid dissimilar metals for the lockers.

Do not use wall coverings.

3-3. Building Systems

3-3.1 Structural

Use a structural system that allows for flexibility and expansion.

Minimize the number of load bearing walls to allow for reconfiguration.

Use a structural system that allows for large, column-free areas.

If practical, provide a structure that can accommodate future vertical expansion at facilities that have site constraints.

3-3.2 Heating, Ventilation, and Air Conditioning (HVAC)

Base the HVAC system's total capacity by following the design conditions criteria outlined in AFH 32-1163(I) Engineering Weather Data.

As a general guideline for heating and cooling system sizing, maintain the inside design temperatures of occupied spaces in the range of 72 degrees F for heating and 78 degrees F for cooling. Refer to ASHRAE Standard 55a-1995 and to the ACSM guidelines for temperature and humidity. Cycle ergometry testing room(s) has (have) additional requirements for temperature control. During testing, the temperature must be from 68 to 72 degrees F. When the temperature is 73 to 75 degrees F, a fan must circulate the air throughout the room. Testing must be ceased if the temperature is 76 degrees F or higher. Provide for adequate humidity control, especially outside steam room(s). NOTE: Engineering Technical Letter (ETL) for humidity control.

Provide an adequate amount of conditioned outside air (as calculated by a mechanical engineer) to satisfy the more stringent of either that required by ASHRAE Standard 62-89, Ventilation for Acceptable Indoor Air Quality or that required to maintain the facility under a slight positive pressure with respect to the outdoors while the facility exhaust systems are operating.

Filter supply air using filters having an efficiency of at least 7 MERV (Minimum Efficiency Reporting Value) when tested in accordance with ASHRAE Standard 52.2.

Design HVAC systems in accordance with the principles and practices described in the ASHRAE Handbook of Fundamentals.

Design mechanical systems and select equipment that are energy efficient and in compliance with 10 CFR 435 Performance Standard for New Federal Buildings.

Design systems for the lowest life cycle costs. Consider measures to take advantage of favorable climatic conditions as a means of reducing energy consumption.

Isolate rotating mechanical equipment from the building structure by providing vibration isolators designed for an efficiency of at least 98 percent. To ensure proper isolation,

consider internal vibration isolation furnished with the equipment, if available from the equipment manufacturers.

Independently zone mechanical systems based on functional area and occupancy schedules. Provide dedicated systems for areas requiring containment, such as a room housing a pool.

Select systems that are simple to operate, easy to maintain and common to the installation. Locate equipment where it is easily accessible by maintenance staff without the need for ladders or other portable means.

Provide electronic programmable controls capable of adjustable occupancy scheduling, temperature setback, duty cycling and other energy saving routines. Provide room temperature controls for areas such as group exercise rooms, fitness equipment areas, etc. Controls shall be capable of remote monitoring through EMCS.

Consider the minimization of utility runs when locating the HVAC equipment.

Facility design will follow the criteria described in ETL 04-3: Design Criteria for Prevention of Mold in Air Force Facilities.

Provide ceiling fans where necessary to provide a comfortable environment, e.g., locker rooms, fitness equipment spaces, Unit PT/group exercise rooms.

3-3.3 Plumbing

Provide plumbing systems to meet requirements of the Uniform Plumbing Code (UPC).

Provide appropriate floor drains for all showers. Ensure the floor is sloped to the drain to prevent standing water

Provide floor drains in the drying area.

Provide a hose bib and floor drain in wet areas for wash down.

Locate irrigation controls in the maintenance area.

Provide exterior access to the pool pump room.

Provide recirculating hot water loop systems for showers.

Design the water supply system such that individual showers can be isolated without shutting down the entire shower room and/or facility.

Provide water softeners where required.

3-3.4 Electrical

3-3.4.1 Power

Use electrical systems and equipment that are energy efficient, reliable, flexible, easy to maintain, and of sufficient capacity.

Provide electrical systems that will meet the requirements of building codes, specifically the latest edition of the National Electrical Code. In addition, comply with the applicable Air Force standards, guidelines, and UFCs.

Size electrical systems to allow for maximum operating efficiency of the electrical systems and for adequate future expansion capabilities.

Provide dedicated electrical rooms to house all major electrical equipment. Comply with UFC 3-520-01, Interior Electrical Systems..

Provide power outlets throughout the building to serve all equipment and to allow for the future reconfiguration of equipment layouts.

Provide a grid of floor-mounted power outlets in open areas to allow for flexibility in locating equipment. Consider a grid of overhead drops only if it can be integrated with the architectural systems.

Provide power outlets and television cable outlets at 7'-0" above finished floors or where needed to accommodate wall-/floor-mounted TV sets/screens. Analyze the power diversity requirements for electrical exercise equipment.

Consider the special electrical requirements of specific exercise equipment, such as dedicated 220-volt service for treadmills.

Minimize utility runs.

3-3.4.2 Lighting

Determine lighting levels in accordance with the Air Force standards and guidelines. In case these standards and guidelines do not cover all the types of spaces in the building, then lighting levels shall be determined in accordance with the Illuminating Engineering Society's Illuminance Selection Procedure. This procedure will then be used to establish target maintained illumination levels. Specific influences of glare, task complexity, surface reflectance characteristics, and brightness of the source shall be evaluated during the different design phases, in order to establish the type, quantity, and location of light fixtures. Reference UFC 3-530, *Lighting Design and Controls*.

Minimize, if not totally eliminate, the use of incandescent down lights. Utilize energy-efficient lamps with high power factor ballasts, which are CBC (Certified Ballast Manufacturers) certified and have low harmonic characteristics.

Use energy-efficient lamps and electronic ballasts throughout the building. Minimize the number of different types of lamps to be used throughout the facility.

In the gymnasium area, use HID (High Intensity Discharge) type, metal halide light fixtures with lenses and guards to protect the light fixtures.

Lights in each space shall be locally controlled. In addition, consider the use of a lighting control system where lights throughout the building can be controlled from the Control Point or, if provided, from the building management system.

Provide the sufficient horizontal and vertical chases for rewiring of equipment.

Refer to UFC 3-520-01, *Interior Electrical Systems* for additional information.

Refer to the Table 4: Lighting Schedule for additional information.

3-3.4.3 Communications

Provide telecommunications outlets (telephone and data) throughout the building.

Provide for an internal Public Address (PA) system throughout.

Comply with UFC 4-021-1, *Design and O&M: Mass Notification Systems*.

Provide for a music system throughout the facility, which can accommodate different radio

stations in the various activity spaces.

Provide television audio output jacks, or infrared transmitters for audio output from televisions to exercise equipment.

Design for access card systems and closed circuit monitoring in appropriate spaces, such as activity spaces and the parent/child area if they are not in the line of sight of the reception/control desk.

Allow for the technical requirements for audio/visual systems in the appropriate rooms.

Control point and administration area should be connected to the installation's central computer network.

Provide public address system and communications connections in all occupied spaces with an emergency call/alarm in locker rooms.

Provide a duress alarm notification in the control desk area from the steam and sauna rooms and indoor pool (if applicable).

Consider methods for connecting exercise machines to the building and/or the installation computer network for customer fitness program monitoring/tracking purposes.

Provide for computer LAN (local area network) data lines that allow for flexibility in the use of areas.

Reference 4-010-01, DOD Minimum Antiterrorism Standards for Buildings.

3-4 Furniture, Fixtures and Equipment

Provide furniture, fixtures and equipment as listed in attached FF&E Schedule (separate file).

CHAPTER 4 - FUNCTIONAL AREA DESIGN CRITERIA

This chapter provides criteria and technical guidance relevant to design for new or renovated Fitness Center spaces, support functions, circulation, including detailed design requirements for each functional space. Follow these design guidelines when organizing the facility:

The control point should be central to the facility with direct views into all activity spaces and should also separate the secured from the unsecured areas.

Figure 4-1 Lobby

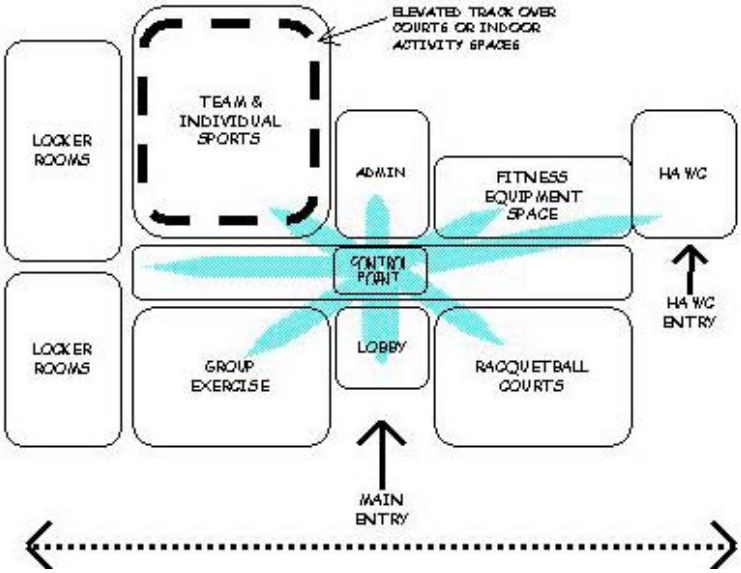
Multiple egress points to outdoor activities are allowed, but return access should be funneled into the control access points.

- The interior of the facility should be open and flexible.
- Avoid creating an institutional appearance when designing the interior environment.
- Consider a "main-street" circulation system, which creates a dynamic flow of movement through the facility.
- Create visual connections between the entrance and activity spaces, thereby creating a "visual menu" for users.
- Allow natural light into the facility, keeping in mind force protection, glare in critical activity spaces, and energy conservation issues.
- Directional signage should be clear and visible.
- Design for flexibility and expansion.
- Make spaces multifunctional.
- Locate the activity spaces that receive the greatest number of users near the main entrance.
- Locker rooms should be directly accessible to and from the pool, if applicable.
- Minimize the number of corridors where practical.

This diagram below shows the functional relationships between the many core spaces in a fitness facility. It does not represent the only possible layout. Other floor plan configurations are acceptable if they maintain the same relationships between spaces. For those facilities that will have enhanced areas, refer to example floor plans in Chapter 5 for relationships. As appropriate for the facility or installation, allow for use of common access

cards for entry.

Figure 4-2 Fitness Center Functional Diagram



4-1 VISITOR & SPECTATOR SUPPORT

4-1.1 Vestibule

This space is used to transition from outdoors to the controlled indoor environment. It also serves as an air lock entry recommended for energy conservation, especially in extreme weather climates. Provide these special requirements:

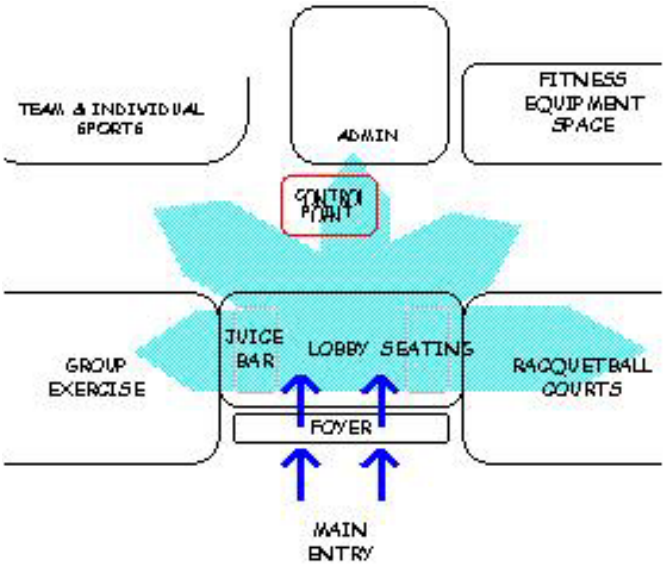
- Mud scrapers, walk-off mats, and non-slip flooring or proper wet transition area.
- Grated snow-trap (northern tier bases).

4-1.2 Lobby

The lobby is accessible by anyone entering the fitness facility whether it is from one or more entries. Access to all other areas is controlled. Provide a seating area proportional to the size of the facility.

Consider providing a computerized interactive fitness station (or a card file), used by regular customers, to store workout routines, workout logs, and schedules.

Figure 4-3 Fitness Center Lobby Functional Diagram



Provide a Display Area with the following Furnishings and Equipment:

- Durable, easy to clean, moisture resistant furnishings.
- Trophy case (if desired).
- Health kiosk for promotional brochures or information.
- Event schedule board.
- Fitness center operational information board.
- Walking, jogging, cycling trail maps.
- Facility orientation plan.
- Automatic, self-administered blood pressure measuring machine.
- Staff Board with photos, names, and title/credentials.

Provide appropriate blocking for hanging miscellaneous items on the walls.

4-1.3 Control Point/Reception

The design of the control point should allow for ID checks of all that enter. It serves as the Supervision, Security, Access, and Egress control point. Electronic devices should be considered to expedite the check-in progress. Once past the lobby, the control point is used for checking in users to all other controlled areas. The central control point should have either direct visual contact or an electronic monitoring system to adequately observe all activity spaces.

Special Requirements:

- Provide close access to the administrative office area.
- Consider access devices such as an electronic card reader and turnstiles, etc. to permit an express lane entry as well as personal contact with the receptionist.

- Provide computer, data connection, printer, public address system, and security monitor (if necessary to maintain visual connection with all spaces).
- Provide for towel pick-up/drop-off IAW current guidance.
- Provide for equipment checkout.
- If providing an automatic external defibrillator (AED), consult the local AED program OPR for guidelines on location and access.

Figure 4-4 Automatic External Defibrillator

4-1.4 Retail

Provide Vending machines or over-the-counter beverage sales retail service at the control point/reception if an enhanced sales/juice bar area is not provided.

4-1.5 Public Restrooms

Provide restrooms separate from locker restrooms to separate spectator or visitor usage from team locker room usage during a game break, half time, etc. Locate these restrooms near the gymnasium and off the main circulation. Include diaper-changing area/table in both men's and women's restrooms.

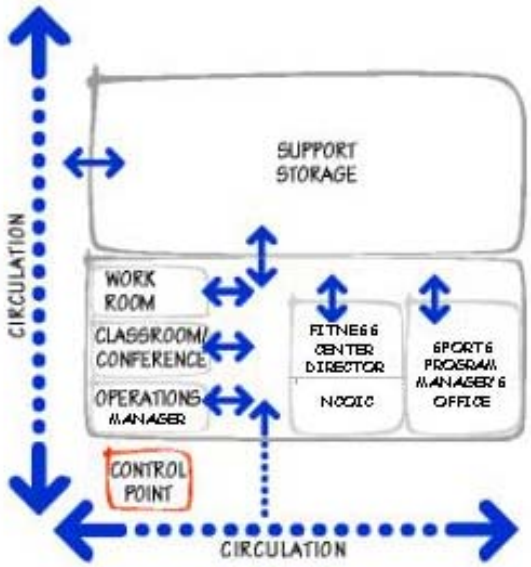
4-1.6 Corridors and Hallways

Ensure hallways are wide enough for moving large equipment. Provide electric water coolers. Provide courtesy telephone (class A line) in the fitness center and HAWC lobbies.

4-2 Administration

This area should be easily visible to customers and be near the lobby. The administration suite should provide offices for the Fitness Center Director, Operations Manager/NCOIC (Non-commissioned Officer in Charge), and Sports Program Manager, and include a common workroom for other employees. The administration suite should be adjacent to the control point. The Fitness Director's office should be near the fitness activity areas.

Figure 4-5 Fitness Center Administration Area Functional Diagram



4-2.1 Fitness Center Director's Office

This should be a securable individual, private office with seating for visitors and visual access to the staff workroom. Consider a window with a view of the lobby area. Provide:

- Telephone communications.
- A computer, network connections, and shared printer.
- Standard finish furniture.

4-2.2 Sports Program Manager's Office

This should be a securable individual, private office with seating for visitors and visual access to the staff workroom. Consider a window with a view of the lobby area. Provide:

- Telephone communications.
- A computer, network connections, and shared printer.
- Standard finish furniture.
- A whiteboard.

4-2.3 Operations Manager's Office

This should be a securable individual, private office with seating for visitors and visual

access to the staff workroom. Provide:

- Telephone communications.
- A computer, network connections, and shared printer.
- Standard finish furniture.

4-2.4 NCOIC's Office

This should be a securable individual, private office with seating for visitors and visual access to the staff workroom. Provide:

- Telephone communications.
- A computer, network connections, and shared printer.
- Standard finish furniture.

4-2.5 Staff Workroom

This should be a securable, multi-workstation office with a shared work area. Provide an adjacent break area or room with a sink, microwave, coffeemaker, and refrigerator. Provide:

- Telephone communications.
- A computer, network connections, and shared printer.
- Standard finish furniture.
- Worktable.
- Whiteboard.
- A copy machine and fax.
- File storage.

4-2.6 Conference/Classroom

This should be a securable meeting space for staff, sports officials, and other program gatherings. This space will only be provided when the HAWC is not co-located as the HAWC classroom must be a shared space with the fitness center. It will provide:

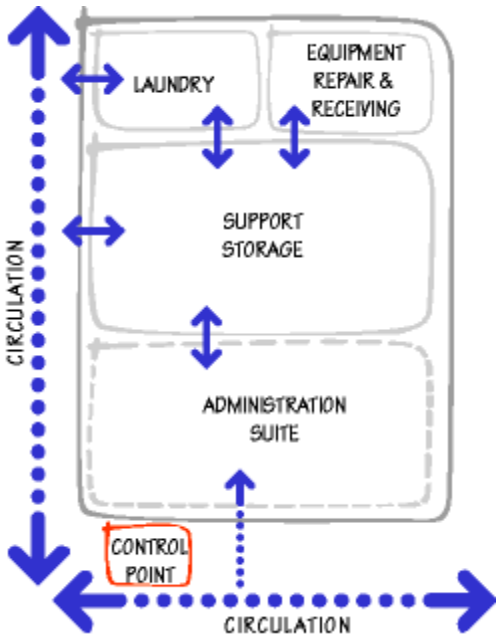
- Seating for 25.
- A whiteboard.
- Telephone communications.
- A computer and network connections.
- Standard finish furniture.
- Lighting controls.
- Computerized audio/visual projection capability.

4-3 Support

These program and staff support spaces should be adjacent to the service entrance and

the administration suite.

Figure 4-6 Fitness Center Support Area Functional Diagram



4-3.1 Storage

This securable space is for fitness equipment, operations equipment, and consumables (soap, paper, etc) storage. It should have direct access to laundry and equipment repair areas.

4-3.2 Janitorial

This space is securable storage for cleaning supplies and equipment such as janitor's cart, mops, buckets, and brooms. It should have direct access to main circulation areas on each floor level. Provide a utility lighting, floor mount mop sink with hose connection, shelving, and a floor drain.

4-3.3 Laundry

This space is intended to launder and store recyclable towels. Provide IAW current policy. Provide:

- Convenient access from laundry room to towel distribution point.
- Oversized or double doors for equipment delivery.
- Space for commercial laundry equipment secured as necessary to prevent unwanted movement.
- A drain system compatible with washing machine drain system, e.g., if washing machine is a bottom drain or has a pump that pumps water up to a wall drain.
- A proper ventilation and exhaust for equipment.
- A bin storage for soiled and cleaned linens.
- A storage area for cleaning materials.

- A folding table.
- Access to storage room.
- Electrical connections and power supply compatible with the equipment.

4-3.4 Equipment Repair

This space is provided for in-house repair, assembly, and holding unusable fitness equipment. It should be near the service entrance for equipment delivery/pick-up, storage, and near fitness equipment spaces for ease of transporting equipment. It should be sized to house several pieces of equipment at a time while maintenance is being performed. Provide:

- Access to the storage room.
- A sink for washing equipment parts.
- Communications and data connections (for trouble shooting w/ manufacturer).
- Shelving and clothes racks.
- Parts and equipment storage.
- A workbench with storage space for tools.
- Task lighting and electrical outlets for workbench.
- Double-door lockable entry.
- Lockable storage cabinets.

4-3.5 Service Entrance and Receiving

This space is provided for receiving deliveries or loading unusable fitness equipment and other large, heavy items. Ensure pavement is designed for heavy loading. Provide:

- Double-door entry.
- Direct access from service entrance to main corridor.
- Grade-level deliveries. (Consider dock/leveler system if a raised delivery level is required.)

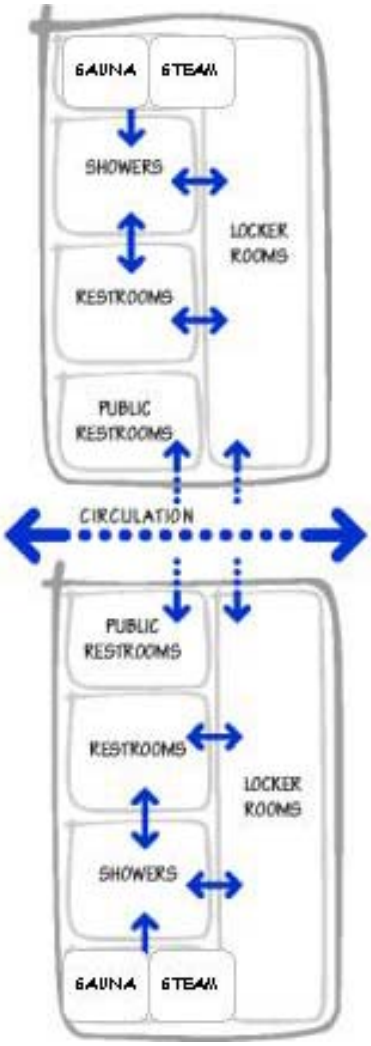
4-4 Locker Rooms

Men's and women's locker rooms contain dressing, toileting, bathing, and access to wet areas such as sauna, steam room, or a pool. Ensure there is no direct vision into the locker room or restrooms from the corridor. The installation determines whether a sauna or steam room (or both) best meets the customers' needs. Arrange the shower area as the transitional space from dressing areas to the sauna, steam room, or the pool when provided. This promotes bathing prior to use of the sauna, steam room, and the pool.

Locate locker rooms to facilitate the addition of an adjacent pool if anticipated. If there is no anticipated requirement for a pool, a more central location for the locker rooms may be preferable.

Consider using a linear configuration to allow for expansion. Consider using strategically located "soft storage space" adjacent to locker rooms to allow for future expansion.

Figure 4-7 Locker Rooms Functional Diagram



4-4.1 Dressing Room

Dressing rooms are dry areas that supports changing into and out of fitness wear and street clothes. Design to ensure proper air exchange to ventilate wet areas. Provide:

- Space throughout locker room for coat racks, shelves and hooks for coats and hats.
- Vanities with and without lavatories. Both should have mirrors, sufficient task lighting, and sufficient electrical outlets.
- At least 2 full length mirrors.
- Wall mount hair dryers at vanities.
- Ceiling fans.
- A scale.
- Proper drainage (i.e., floor drains).
- A telephone.
- Lockers.

- The number of lockers required will vary by location, daily customer usage, and locker size. The number of lockers should be equivalent to the participant load of the building. The participant load is established by determining the maximum expected participant capacity of each of the activity areas.
- Mount lockers at a level above the floor, which provides reachable operating hardware.
- Consider placing benches adjacent to lockers rather than in an island between lockers to maximize space and allow access to persons with disabilities. Benches should be at least 300 mm (12”) wide and 102mm (4”) away from the lockers to allow customers to sit comfortably.
- Use well-ventilated (louvered) and moisture-resistant lockers.
- Provide security latch on each lockable locker for use with personal locks. Consider using open, professional-styled lockers.
- Allow 20-30 mm (6'-8") minimum between face of lockers.
- Lockers should be a minimum of 381 mm (15") wide and at least 381 to 457 mm (15” to 18”) deep.
- Consider using a combination of 1-tier, 2-tier, or Z-tier lockers as needed to accommodate the number of customers. Total unit height of the locker tiers should be at least 1829 mm (72”). Lockers should be large enough to accommodate at least a regular sized clothes hangar with clothes hanging on or folded over the hangar; a pair of large sized boots/shoes; a workout bag; and other basic items. Provide a higher percentage of 1-tier lockers in northern tier installations for parka storage.
- Avoid U-shaped locker configurations.
- Eliminate storage areas above lockers. Consider using sloped tops.

4-4.1.1 Family Changing Room. Consider including a family changing room for facilities that are open to use by families. This could be an additional room adjacent to the men’s and women's locker rooms that would provide privacy and restroom facilities for parents with young children.

4-4.2 Showers

Do not allow direct views into the shower room areas. The Space Allocation Worksheet will aid in estimating the number of showers required. Locally determine the distribution of showers between the men and women’s locker rooms. Provide all private showers with attached drying area enclosures for men. Consider adding shower caddies and/or built-in shelves. Determine whether to use shower doors or shower curtains by comparing lifecycle costs and maintenance requirements for both. Provide:

- Private shower and drying area enclosures (minimum size of the standard shower stall, 36”x42”).
- Towel/clothing hooks in drying areas.
- Showerheads mounted on a sidewall of the shower to allow for adjusting water

temperature.

- Commercial-grade built-in soap dispensers.
- Proper drainage (i.e., floor drains and/or perimeter trench drains).
- Natural lighting whenever possible and waterproof lighting fixtures in all showers. Glass and glazing must not allow visual access from adjacent buildings or outside areas.

4-4.3 Restrooms

Separate restrooms from all dressing rooms in a negative-pressure atmosphere. Do not locate restroom stalls directly within the locker room area.

- Provide direct public access if separate public restrooms are not available.
- Provide lavatories with commercial-grade built-in soap dispensers.

4-4.4 Sauna Room

The sauna area will contain a dry heat room and an adjacent cool-down area. Refer to the Ramsey/Sleeper Architectural Graphic Standards for detailed information on sauna room design. Provide:

- A clock visible from the room and securable thermostat controls.
- A duress alarm with notification in the control desk area.
- Seating/reclining area for 6 to 12 customers. Seating should be a safe distance from the heating element.
- Natural ventilation that allows air to flow freely from the inlet and outlet, located on opposite walls at approximately the same height. Provide manual louvers to adjust the flow of air from the inside of the sauna, and consider using outside air to supply the sauna.
- Convection heater, stone bed, and heat enclosure. Temperature should be 170 to 180 degrees Fahrenheit; humidity should be 5 percent relative. Consider using commercially available units.
- Heat-sensing device 300 mm (12") below the ceiling.
- Insulated interior paneling, tongue and groove wood paneling of white or western cedar, and duckboard flooring system. Redwood should be fire rated for at least 260 degrees Fahrenheit.
- A floor drain and nearby wall hydrant.

4-4.5 Steam Room

The steam room area will contain a moist heat room and an adjacent cool-down area. Refer to the Ramsey/Sleeper Architectural Graphic Standards for detailed information on steam room design. Provide:

- For a clock visible from the room and securable thermostat controls.
- A floor drain and wall hydrant in the steam room.

- A convenient cool-down area adjacent to the steam room.
- A duress alarm (with notification to the control desk).
- Seating/reclining area for 6 to 12 customers.
- Controlled temperature of 100 to 110 degrees Fahrenheit and 100 percent relative humidity.

4-5 Gymnasium

The gymnasium is intended to support indoor sports such as basketball, volleyball, and badminton, as well as spectators. Other large-venue, non-fitness events may also occur such as Commander's Calls, expositions, etc.

Plan for a minimum of one NCAA standard size basketball court at a small base, with more courts provided at medium, large, and mega 1-24 installations. Refer to the UFC 4-740-02N, *Indoor Sports Facilities*, Ramsey/Sleeper Architectural Graphic Standards, and the ACSM Standards for Basketball Court for detailed information on gymnasium design.

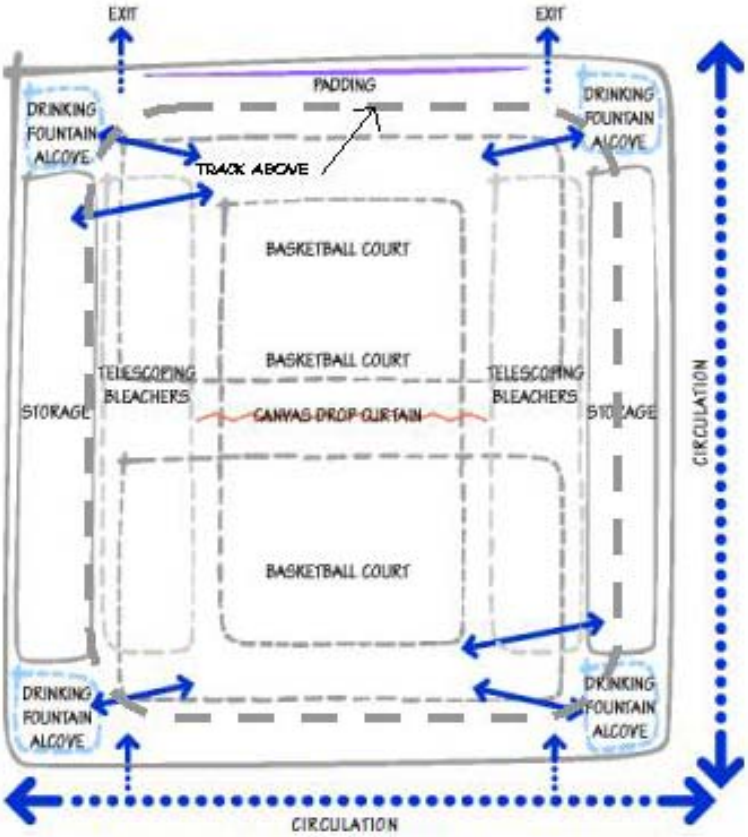
Consider orienting courts head to head instead of side by side to accommodate an indoor track (if applicable).

Incorporate natural light as much as is practical, being careful to avoid direct sunlight that can interfere with players' and spectators' vision.

Consider providing a rollout protective flooring cover for use during special events. Provide proper storage space that is conveniently located.

Refer to Chapter 6 for Sport Flooring information.

Figure 4-8 Gymnasium Functional Diagram



Provide the following:

- Removable or retractable, basketball goals and backboards to maximize space.
- Power and securable controls as needed for electrified equipment, e.g., divider curtain, bleachers, and basketball goals.
- Floor-mount sockets for volleyball and badminton nets.
- Telescoping bleachers to maximize the flexibility of the space and to allow sideline space for gymnasium events.
- Accessible seating.
- An alcove for drinking fountains. Protect hardwood flooring, or conveniently locate drinking fountains outside the gymnasium.
- Crash padding where appropriate; these pads can be removable.
- At least one double-door entry for equipment.
- Incorporate a divider curtain to increase flexibility.
- Sufficient equipment storage for folding chairs, nets and goals, boxing ring, gymnastic equipment, etc.

Figure 4-9 Boxing Equipment

Provide the following utility support:

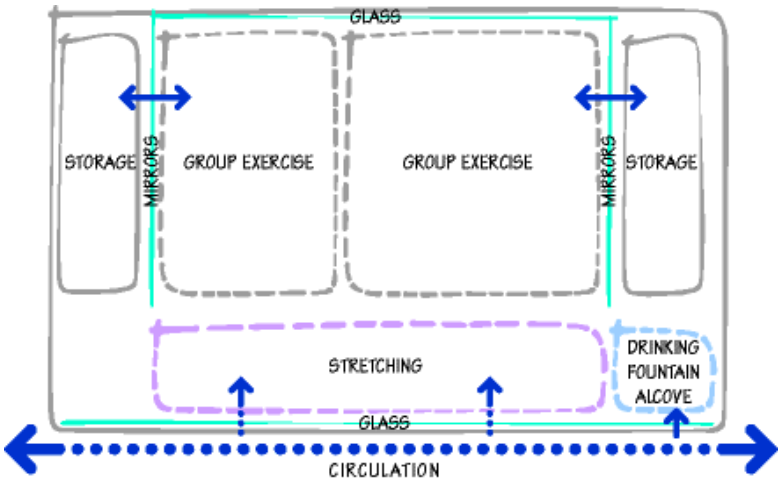
- Public address, shot clocks, and scoreboard control outlets for the scorekeeper.
- Electronic scoreboard for competitive sports; consider using wireless scoreboard systems.
- Proper air exchanges and movement.
- Natural lighting where appropriate.

4-6 Unit PT/Group Exercise

The Unit PT/group exercise spaces should be flexible and allow multipurpose use. Consider the needs of activities such as small to large unit physical training (PT), aerobics exercise classes, exercise equipment such as stationary cycles, martial arts, boxing, and wrestling when programming and designing group exercise spaces. Also, consider the needs of activities such as rock climbing and combative sports.

The size and number of exercise rooms will vary with the size of each installation.

Figure 4-10 Unit PT/Group Exercise Functional Diagram



Provide the following:

- Acoustical separation from the rest of the facility and in between the rooms. Allow for the room(s) to be acoustically closed off with temporary or moveable partitions.
- One or more sound systems, as locally required, to provide music when the room is divided into smaller rooms.
- Some visual connection to the rest of the facility. Consider blinds for windows as needed.
- A waiting area outside the group exercise room (this could be a widened corridor).
- A method of fastening padding on walls for use during combative sports and storage space for the mats.
- A continuous stretching bar on at least one wall.
- Alcoves for drinking fountains away from the hardwood flooring, or conveniently locate drinking fountains outside the group exercise room(s).
- Securable storage or perimeter storage around the room(s) for mats, aerobic equipment, etc.
- Small cubby-type storage for customer's keys, glasses, etc.
- Make provisions for future uses. Allow for increased numbers of power outlets, data lines, and other technical requirements.
- Ceiling fans.
- Boxing equipment such as punching bags and speed bags as local programming dictates.
- 72-inch tall mirrors on at least two walls at a minimum of 457 mm (18") above the floor.
- Finishes in the exercise rooms should allow for multipurpose use.
- A floor surface that meets impact IAW DIN Standards; refer to Chapter on Sport

Flooring for more information.

- Ceiling-hung TV monitors.
- Natural lighting where appropriate.

Figure 4-11 Group Exercise Room

Provide the following utility support:

- A lighting system with lighting level controls.
- Sound system that is contained in a securable area, and has permanently mounted speakers. The controls should be easily accessible to the instructor.

4-7 Fitness Equipment Spaces

This space is for improving physical fitness with the use of various types of equipment. Provide an office for the Fitness Director next to this space.

Stretching, cardiovascular equipment, selectorized (machine) training equipment, and free weight equipment should be combined into a single space to allow greater flexibility.

Refer to AF Services Fitness and Sports Golden Eagle Standards for information regarding AF equipment standards.

When the HAWC is collocated, this equipment serves the HAWC equipment demonstration functions.

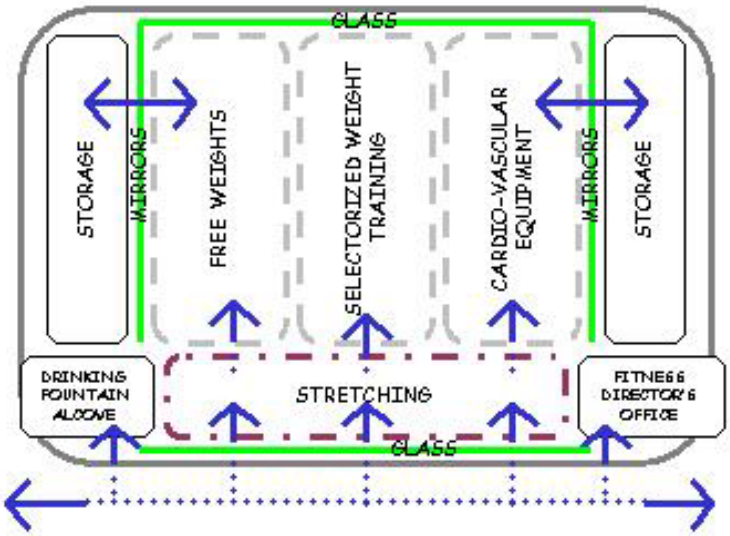
Size this room to efficiently layout equipment. Consult users and fitness and equipment design specialists when designing this room

Allow an average of 4.65 m^2 (50 sq. ft.) for most cardiovascular and selectorized equipment stations and an average of 6.04m^2 (65 sq. ft.) for free weight equipment stations. This includes circulation paths around each station. Equipment with large footprints may need additional space. This guideline does not include the circulation needs for egress and internal circulation.

Consider providing a staff “help-station” located in the fitness equipment area(s).

Consider providing a computerized interactive fitness station (or a card file), used by regular customers, to store workout routines, workout logs, and schedules.

Figure 4-12 Fitness Equipment Functional Diagram



Provide the following:

- Alcove(s) for drinking fountains within the fitness equipment rooms.
- Supplies for customers to wipe down equipment after use IAW current policy.
- Sufficient trash receptacles.
- Stretching areas as an integral part of fitness equipment room(s). Use these spaces as transition spaces for warm up, cool down, push-ups, crunches, etc.
- Separate selectorized equipment, free weights, and cardiovascular equipment, while maintaining an open atmosphere. This can be achieved through the use of large planters, moveable mirrors, or other moveable space partitions to separate the space as desired.

Figure 4-13 Fitness Equipment

Provide the following utility support:

- Audio for video monitors and radio stations. Consider wireless audio, video

monitors on each piece of cardiovascular equipment, and other technologies.

- Provide sufficient power, data, and communications outlets.
- Provide 220-volt flush-floor or wall outlets for commercial-grade fitness equipment. Ensure outlet placement minimizes the hazards of exposed wiring.
- Provide dedicated circuits as needed to meet equipment manufacturer's requirements.
- Provide cable, power outlets, and TV monitor mounts at proper viewing height from cardiovascular exercise machines.
- Provide as much natural lighting as possible. Use general lighting throughout to provide for flexibility.

Provide the following materials:

- Provide 72-inch tall mirrors on at least two walls at a minimum of 457 mm (18") above the floor.
- Use permanently adhered impact flooring with a nonporous, high-density rubber/elastic surface. Composite products such as recycled rubber may be used; however, the top layer should be virgin (unrecycled) material chemically bonded to the sub layers. Avoid the use of interlocking impact flooring tiles.
- Provide sound-absorbing materials to reduce echo.

4-7.1 Fitness Director's Office

Locate this securable office near the fitness activity areas. This should be a private office with seating for visitors. If possible, a window for viewing the activity areas; include blinds for privacy during testing. The office may also be used for fitness testing and counseling. Provide the following:

- Telephone communications.
- Fitness assessment equipment (if applicable).
- Computer, network connections, and printer.
- Standard finish furniture.
- A whiteboard.

4-7.2 Fitness Assessment Room

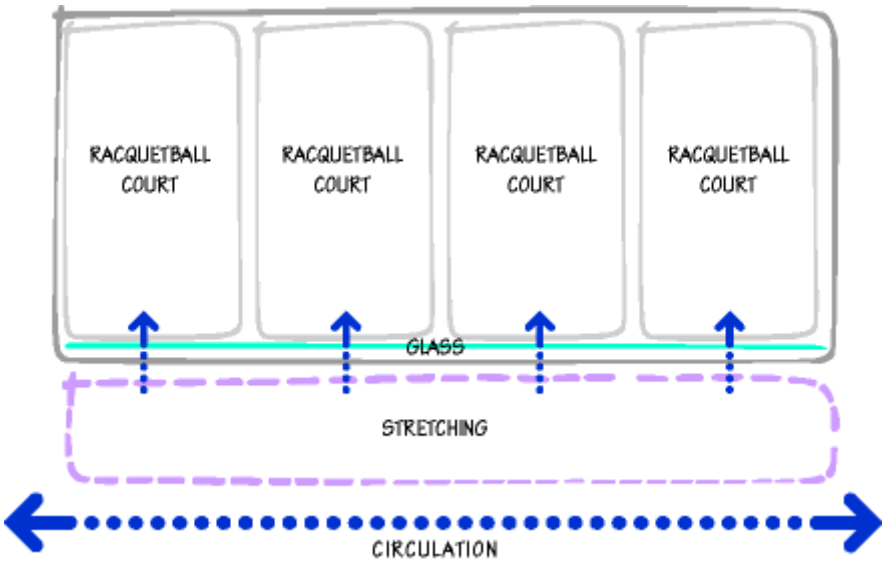
This room is intended for a fitness staff member to evaluate an individual's overall fitness. Place them adjacent to the Fitness Director's office. Provide the following:

- Fitness assessment equipment.
- Computer with network connections and printer.
- Standard finish furniture.

4-8 Racquetball Courts

The racquetball courts should be located along a circulation path with areas for stretching, viewing, and officiating. The standard size of a racquetball/handball court is 6100 mm wide by 12200 mm long and 6100 mm high (20 LF wide by 40 LF long and 20 LF high). Refer to the Ramsey/Sleeper Architectural Graphic Standards and the ACSM standards for reference material regarding Racquetball Courts.

Figure 4-14 Racquetball Functional Diagram



Provide the following:

- Shatterproof glass back wall/door for viewing and officiating.
- Stretching areas outside each court. Use these spaces as transition spaces for warm up and cool down.
- Mounting sockets and netting for Wallyball games in one or more courts.
- Wallet lock-boxes in one sidewall of each court.
- Consider providing one court with a movable front or rear wall to allow one racquetball court to be converted into a squash court.

Provide the following utility support:

- Appropriate temperature, humidity, and air circulation levels.

Provide the following materials:

- Front and sidewalls should be made of hard plaster, concrete, laminated composition panels, or non-splintering durable wood.
- Refer to Chapter 6, Sport Flooring for additional information.

4-9 Track

A track is a core feature; the installation determines whether an indoor or outdoor track best meets the needs for the local climate. Indoor tracks should be at least 1/8 mile long to provide a venue for Air Force fitness testing at locations with temperature extremes. For outdoor tracks refer to UFC 4-750-02, *Outdoor Sports and Recreational Facilities*, http://www.ccb.org/docs/UFC/4_750_02.pdf

Figure 4-15 Elevated Track

The indoor track should not interfere with building circulation.

Consider locating the track on the second floor or an upper portion of a high-bay space. Use natural lighting and views to the outside to break up the monotony of running on an enclosed track.

The track should be a minimum of 1/8 of a mile in length (to accommodate the AF 1.5 mile run test) based on the inside radius, and have a minimum width of 3660 mm (12 ft.). If necessary for addition/alteration projects, the minimum track length should be 1/10th of a mile. The turns should have a minimum inside radius of 6100 mm (20 ft.) and a minimum outside radius of 9150 mm (30 ft.). The distance of 1/8 of a mile must be accurate due to runners timing themselves based on number of laps, and the reference point must be consistent. The inside lane must be the designated minimum length.

Provide the following:

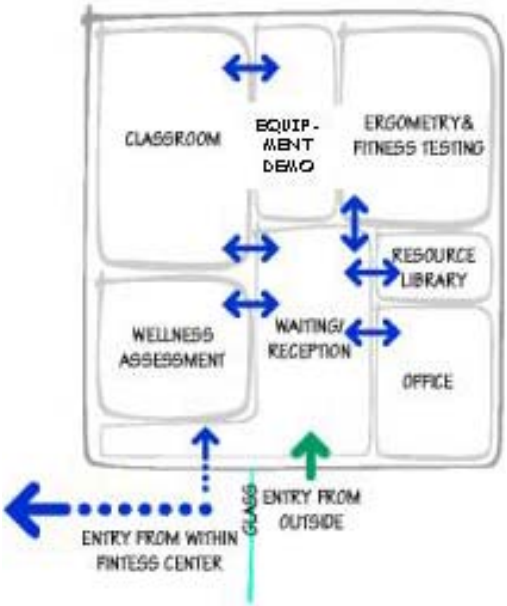
- A minimum of four lanes with each lane being 915 mm (3 ft.) wide; walking and running lanes.
- A large digital clock.
- Resilient running surface, such as rubber. Consider using banked curves. The height of banked curves on an indoor track should be 25 mm per meter (1" per foot) of track width.
- Stretching, warm up, and cool down areas with toe bars.
- Electric water cooler.

4-10 Health and Wellness Center

The Health and Wellness Center (HAWC) is a core space at main operating bases, but not at Reserve installations. The HAWC is the physical location for the Health Promotion Programs (HPP). While the AF HPP focuses on the “core” areas of nutrition, physical

fitness, stress management, cancer and cardiovascular disease prevention, body composition improvement, and tobacco cessation, there are other behavioral, social and cultural issues that create HP opportunities such as child safety, balanced lifestyles, to name a few. Based on local needs, determine whether the HAWC should be accessible from both the exterior and interior of the fitness facility.

Figure 4-16 Health and Wellness Center Functional Diagram



4-10.1 Reception/Waiting/Library

This space may be combined for reception, waiting, and customer education. Include storage for educational materials and reading tables with task lighting. Provide the following:

- Seating for waiting area.
- Space for display materials.
- Space for the information manager's office.
- Communications and data connections.
- An adjacent space for a computer and resource library.

4-10.2 Office Space

These offices are used by the HAWC staff and provide areas of privacy for counseling for the Health Promotion Manager (HPM) or Health Educator (HE), the Registered Dietitian (RD) and the Fitness Program Manager (FPM) who provides oversight for the AF Fitness Program as well as office space for said program managers for testing, consultation, and program management. Provide the following:

- Four private offices in small facilities. At larger facilities, add additional private or semi-private offices to accommodate local staff.
- Communications and data connections.

4-10.3 Classrooms

These enclosed, securable large and small classrooms are shared equally by the Fitness and HAWC staff for classes, particularly the mandatory Healthy Living Program (HLP) and the Body Composition Improvement Program (BCIP), meetings, training, etc. and should be accessible from the fitness center corridor. Provide the following:

- A moveable partition to divide the large classroom into two spaces.
- Audiovisual equipment, communications, and data lines.
- Controllable lighting.
- A white/tack board.

4-10.4 Ergometry and Fitness Testing

These cubicles are intended for the Fitness Assessment monitor (FAM) or the FPM to test an individual's fitness using cycle ergometry when cleared and approved by member's Primary Care Provider . Place rooms adjacent to the wellness assessment room in the quietest area of the HAWC. The number of testing cubicles is determined by providing not more than one testing station per 1500 active duty (1:1500) assigned to the base and no less than one testing station. Rooms must be equipped with a thermometer, rooms by AFI are mandated to be regulated between 68-72 Fahrenheit, and oscillating fans to circulate air to ensure adequate ventilation. Provide the following:

- Enclosed testing cubicles measuring 2440 x 3050 mm (8'-0" x 10'-0"). The floor must be level to ensure accuracy of the ergometry and weight scale calibration.
- Testing computer with data connection and printer access.
- Cycle Ergometry bike.
- Fitness mats and foot holds should be available for testing of other fitness components.

Provide the following utility support:

- Individually zone room for HVAC.

4-10.5 Wellness Assessment Room

This room is intended for a FAM or FPM to evaluate an individual's overall fitness. Place them adjacent to ergometry testing . Provide the following:

- Testing equipment to include heart rate monitor, mats, etc.
- Testing computer with data connection.

Provide the following utility support:

- Individually zone room for HVAC.

4-10.6 Janitor Closet/Storage/Restrooms

Consider adding restrooms if not convenient from the fitness center. See 4-3.2 for Janitor design requirements:

4-10.7 Equipment Demonstration Room

If not collocated with the Fitness Center, include a room approximately 400 square feet, to accommodate cardiovascular equipment and minimal strength conditioning equipment for customer demonstration.

4-10.8 Restrooms and Changing Areas

If not collocated with the Fitness Center, restrooms and changing areas must be provided.

4-11 Enhanced Areas

This section provides information on enhanced areas that may be included in addition to the mandatory core areas of a fitness facility. These enhanced spaces may be included at the discretion of each installation commander, provided that all core space requirements have been met. These areas will be different at every installation depending on the unique requirements of each base. Customer survey feedback data can be used to justify the need for enhanced areas. The enhanced areas at each facility should be integrated into the master plan to take advantage of design opportunities. For example, a climbing wall could be used to create a dramatic focal point, or a climbing machine could be used to meet this need if space is limited.

The location of enhanced areas depends upon the specific layout of the fitness facility. Certain areas for enhanced activities such as a rock-climbing wall or machine should be located within core areas, such as the gymnasium. These types of activities should be within sight of the control point. The following are examples of enhanced areas:

Lap Pool

DV (Distinguished Visitors) Lockers

Family Locker Room

Parent/Child Area (PCA)

HAWC Relaxation Area

HAWC Kitchen/Food Demonstration Area

Massage Room

Expanded Retail Area

Juice Bar

Spa Area

Outdoor Fitness Trail or Par Course

4-11.1 Lap Pool

The design of a pool requires specialized knowledge, expertise, and close coordination between the design team members. Attention to the long-term performance of the building systems in the pool area is critical.

Design pools to meet competition requirements with a minimum of six lanes 13720 mm wide by 22860 mm long (45 LF wide by 75 LF long).

Consider climate and additional staff funding requirements when justifying the requirements for an indoor pool. Lifeguard requirements must be locally or MAJCOM funded.

Figure 4-17 Lap Pool

The pool should be deep enough for water aerobics. It should be securable. The pool should be directly accessible from the locker rooms and a shower area should be provided as a transition. Provide a spectator area with a separate entrance, if required.

There should be no diving areas. Consider incorporating coiling overhead doors to allow the pool area to be opened up to the outside.

Provide the following:

- As much natural lighting as possible.
- Slip and moisture resistant materials.
- Moveable starting block mounts and lane markers.
- Adequate storage for floats, flippers, life vests, lane markers, etc. in securable storage areas.
- Proper storage/display of safety equipment, e.g., backboards, rescue tubes, etc.
- Readily accessible storage for skimmers and other pool equipment within pool maintenance area.
- Lifeguard stations.
- Handicapped access to the pool.
- Staff office (if necessary).
    - Telephone communications.
    - A computer, network connections, and shared printer.
    - Standard finish furniture durable in a pool environment.

Provide the following utility support:

- Connections for time clock, public address system and scorer's table.
- Proper humidity control.

4-11.2 Distinguished Visitors (DV) Locker Rooms

Provide male and female DV locker rooms independent from the core locker rooms with access into main locker rooms for easy access to sauna or steam room. These rooms may be adjacent to, but visually separate from group locker rooms.

See design requirements for shower, locker and dressing rooms in section 4-4. Additionally, provide private showers, dressing stalls, vanity countertop, lavatories, and toilet area.

4-11.3 Family Locker Room

Provide individual room(s) equipped with changing area, shower, toilet, sink, diaper changing table, and lockers intended to accommodate adults with small children.

Locate near the pool (if provided) or near the parent/child area.

4-11.4 Parent/Child Area (PCA)

The PCA provides the parent/legal guardian a venue in which to exercise while maintaining line of sight with their child and must meet the requirements listed below.

Part of the room has exercise equipment for the parent/legal guardian to use while the other part is designated for children. The two areas should be divided by a clear partition 30 inches high to allow the parent/legal guardian to see and access their child at all times, e.g., one-half inch thick shatterproof plexi-glass partition with a central entry/exit that can isolate the child play area completely from other areas.

Supply adequate power and communication lines as required. Locate the PCA near the locker rooms, public toilets, or family changing rooms (if applicable) for the convenience of the parent.

Coordinate all aspects of this space with the local Family Member Programs Flight when designing the PCA.

Figure 4-18 Parent/Child Area

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Provide the following in the Adult Exercise Area:

- 4.65 m^2 (50 sq. ft.) per piece of equipment.
- Audio for video monitors and radio stations. Consider wireless audio, video monitors on each piece of cardiovascular equipment, and other technologies.
- Provide sufficient power, data, and communications outlets.
- Provide 220-volt flush-floor or wall outlets for commercial-grade fitness equipment. Ensure outlet placement minimizes the hazards of exposed wiring.
- Provide dedicated circuits as needed to meet equipment manufacturer's requirements.
- Provide cable, power outlets, and TV monitor mounts at proper viewing height from cardiovascular exercise machines.

Provide the following in the Children's Area:

- 3.25m^2 (35 sq. ft.) per child.
- Child-sized tables and chairs; appropriate books; shelving units.
- TV with built-in device for playing movies.
- Lighting controls.

4-11.5 HAWC Relaxation Room

This therapy room should be located in a remote area of the HAWC that is free from noise and distractions. Provide the following:

- 110-volt electrical outlets.
- Controlled lighting.
- Acoustic treatment to reduce sound transmission into the room.
- Comfortable lounge seating for 4 to 6 patrons.

4-11.6 HAWC Kitchen/Food Demonstration Area

This demonstration room should be located adjacent to the classroom. Provide the following:

- Kitchen demonstration island with a range, vegetable sink, overhead mirror, and countertop workspace.
- Appropriate exhaust for range and oven(s).
- Countertop workspace with a double sink and upper/lower closed storage cabinets.
- Refrigerator/freezer, dishwasher, double oven, microwave, and miscellaneous equipment to demonstrate healthy methods of food preparation.
- 110-volt and 220-volt electrical outlets for all appliances.
- Space for classroom/participant seating for at least 10 participants.

4-11.7 Massage Room

This therapy room should be located in a remote area of the Fitness Center that is free from noise and distractions. Provide the following:

- Power outlets and lighting level controls.
- Duress alarm with notification in the control desk area.
- Massage tables, chairs, and equipment.
- A securable storage cabinet for supplies and equipment.
- Access to water, such as an adjacent restroom or a small wash sink.
- Dedicated HVAC controls.

4-11.8 Expanded Retail Area

This sales area should be located within the central open core next to the lobby. Provide the following:

- Lighted glass display cases with counters.
- Freestanding hanging clothes display racks and slatted wall display systems for various merchandise.
- A sales counter with computer/cash register, phone and credit card authorizer.
- Consider including a safe to secure funds IAW local policy.
- A stock storage room with shelves and open space.
- Indirect access to the loading area and double doors opening into the stock room for wide deliveries.

4-11.9 Juice Bar

This sales area should be located within the central open core next to the lobby. Provide the following:

- Controlled lighting, power outlets, communication lines and data lines for cash registers.
- Consider including a safe to secure funds IAW local policy.
- Plumbing connections and a double sink, dishwasher, and ice machine.
- Countertop workspace.
- Refrigeration, appliances, and refrigerated display cabinets.

4-11.10 Spa Area

Allow access to the spa area (e.g., whirlpool, hot tub) through the shower area and place it adjacent to the sauna or steam room. Refer to ACSM Guidelines for detailed information regarding the design of a Spa Area. Provide the following:

- A water-resistant surface for floors, walls, and ceiling.
- Non-slip flooring surface.

- A duress alarm with notification in the control desk area.
- Equipment room with electrical service, dedicated water heater, water pump, chemical storage cabinet, and water supply.
- Towel hooks, seating bench, towel dispenser, and an adjacent dressing area.
- A timer-operated switch to be operated by the customer.
- Waterproof lighting fixtures, outlets, and switch gear.
- Consider aluminum or nonferrous metals for hardware, AC ducts, AC registers, and door frames.
- Slope all floor surfaces away from the spa area and divert into floor drains.
- Adequate conditioned air and exhaust fans.

4-11.11 Outdoor Fitness Trail or Par Course

This area may be identified solely for walking/jogging or combined with calisthenics stations to provide a variety of outdoor physical fitness activities for individual and Unit PT use. Provide the following:

- Durable, weather resistant running surface, e.g., polyurethane.
- Signage marking the length of the course/trail.
- Calisthenics stations, as desired, with appropriate equipment and signage.

4-12 Building Support Areas

Communications Room. Provide to support local conditions.

Electrical Equipment Room. Provide to support local conditions.

Mechanical Equipment Rooms. Provide adequate mechanical equipment space with access from the outside. Consolidate entry with other service entries. Provide to support local conditions.

CHAPTER 5 - ILLUSTRATIVE DESIGNS

This chapter contains examples of a typical fitness facility that conforms to the requirements and the functional relationship guidelines found in the rest of the guidebook. Use these examples to see how a fitness facility works, how the building relates to the site, and how the elements relate to each other. The plans also show how a fitness facility can be arranged and how an expansion can be accommodated while maintaining the same functional relationships and circulation system. The schedules and tables included in this chapter provide guidance on the recommended space, finishes, lighting levels, and HVAC requirements appropriate for each space.

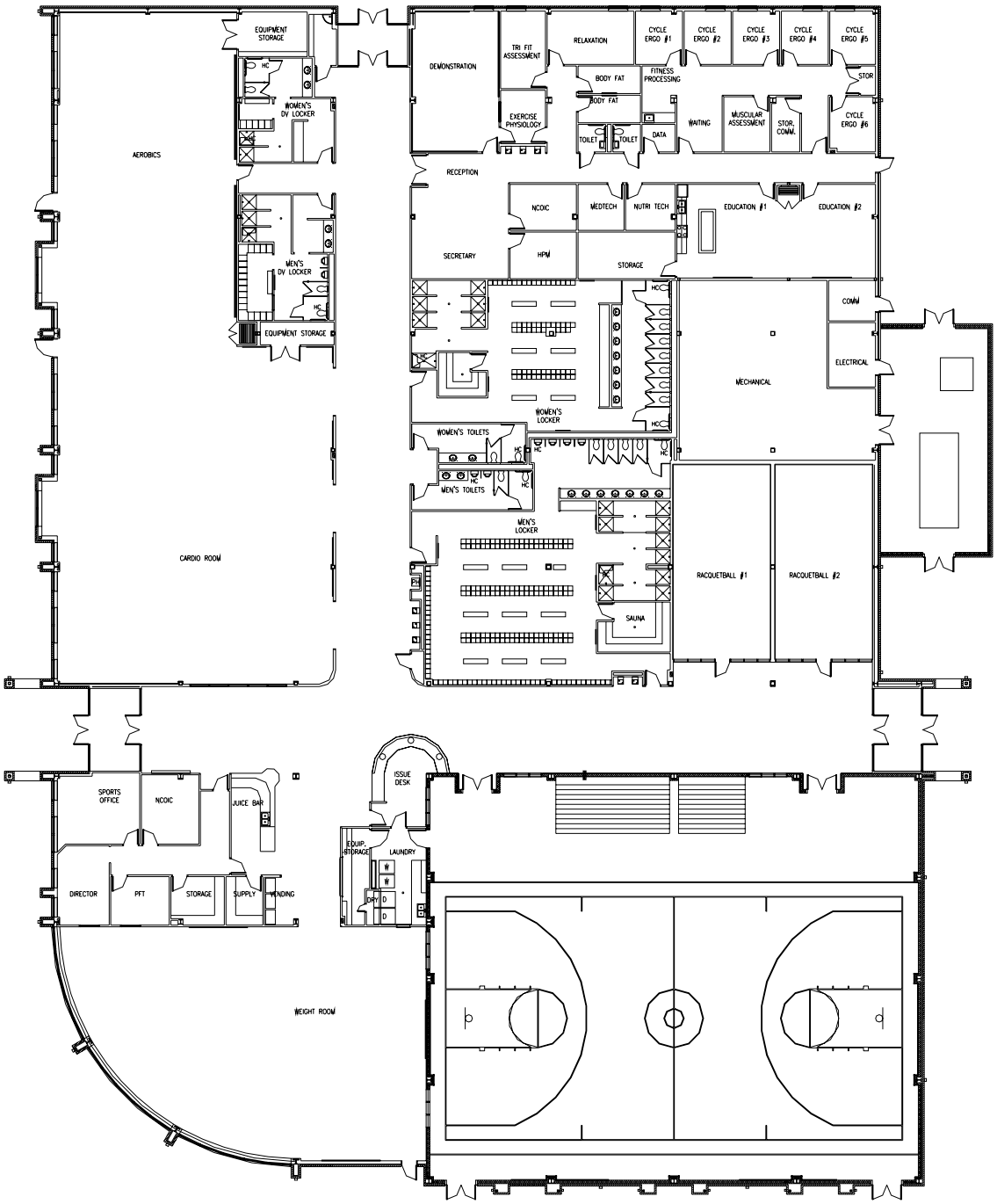
Example Floor Plans

A medium facility example floor plan has been omitted because it is so similar to a small facility. Medium facilities will be larger than small facilities based on the allowable square footage for each area as defined in the Fitness Center Population Space Worksheet 2-1.

These examples are intended only as representative floor plans to show functional proximity as a starting point for design of the facility and should not be considered as a standard design. As this guide is utilized on future projects, examples of successful floor plans may be added as attachments.

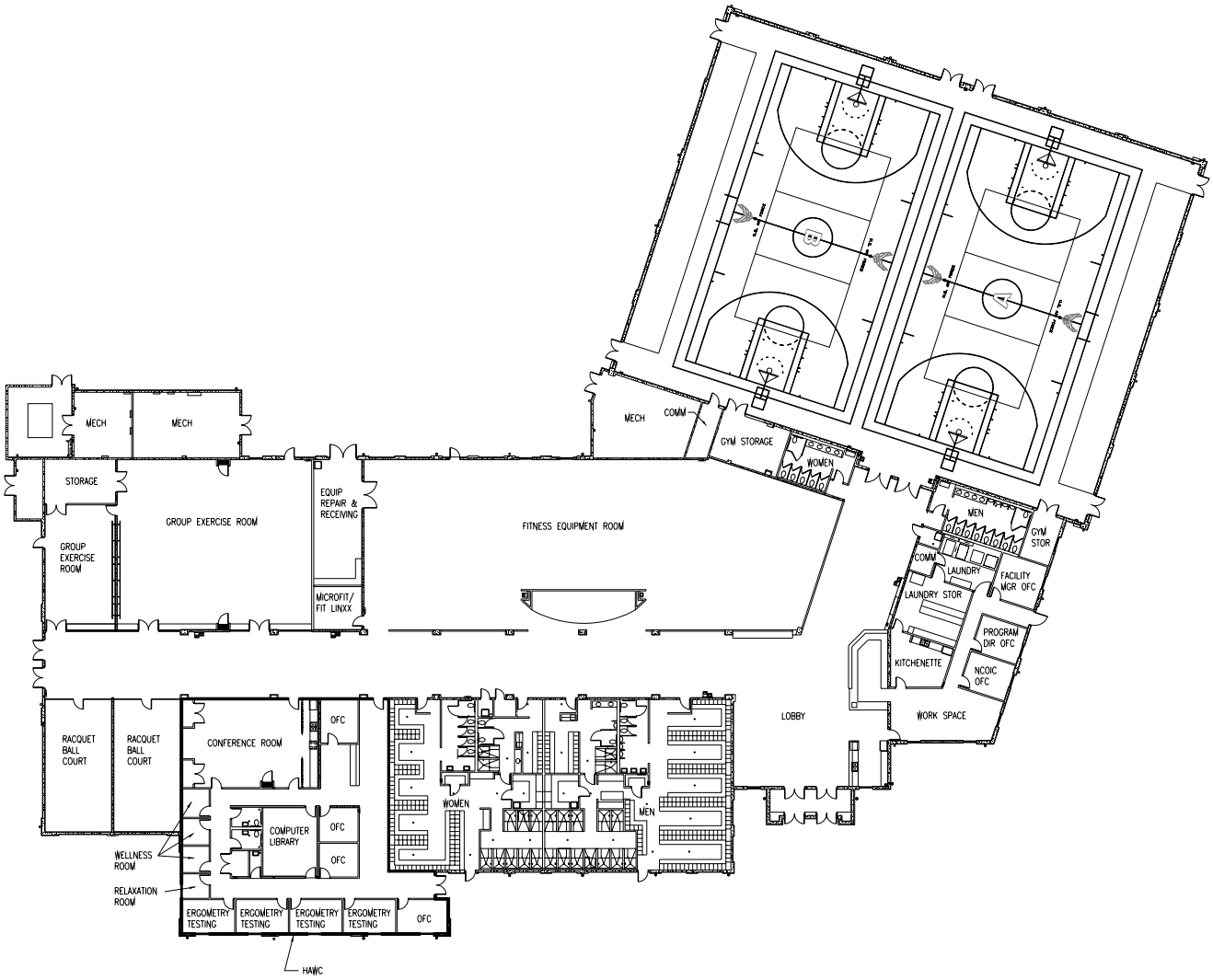
5-1 Small Facility

Figure 5-1 Small Fitness Center Plan



5-2 Large Facility

Figure 5-2 Large Fitness Center Plan



CHAPTER 6 - SPORT FLOORING

The use of proper sport flooring will help ensure the highest possible athletic performance, injury prevention, and durability. DIN (Deutsches Institute fur Normung) standards have identified six areas of quality control and performance tests to assess different floor systems. Refer to Table 3: Sports Flooring Performance Characteristics.

- Force Reduction or Shock Absorption. This is a floor's ability to absorb the shock of an impact. A solid concrete slab is used as a reference point. The minimum allowable score for a sports floor according to DIN standards is a 53% force reduction. A higher force reduction value is desired for aerobic exercise floors.
- Standard Deformation or Resilience. This is a floor's ability to deflect, or "give," when impacted by the athlete. The minimum allowable score for a sports floor according to DIN standards is 2.3 mm (0.09").
- Deformation Control. This is a floor's ability to control the area spread of the deformation as outlined in the previous test. The maximum allowable score for a sports floor according to DIN standards is 15%. This means that a maximum of 15% of an impact's deformation can be spread to a point 500 mm (19.69") from the point of impact.
- Ball Rebound. This is a floor's ability to provide a suitable surface for ball bounce. The minimum allowable score for a sports floor according to DIN standards is 90%. This means that a sports floor must produce a bounce rebound height of at least 90% of that produced by a concrete floor.
- Behavior Under a Rolling Load. This is a floor's ability to withstand the weight of a rolling load, such as bleachers or other portable equipment. According to DIN standards, a sports floor must be able to withstand trauma caused by a rolling cart carrying 1500 Kg (3,307 lbs.), without damage. This weighted cart is rolled over a surface 300 times. After the test, the sports floor is disassembled to examine the condition of the components. A floor passes the test only if none of its components have been damaged.
- Sliding Behavior. This is a floor's ability to control the sliding of the athletes who are playing on the floor. In short, a DIN certified floor must not allow excessive slide that would cause an athlete to lose control and fall, but will allow sliding when severe force is exerted.

Energy Management of Impact Forces. All sports flooring systems can be categorized into three groups depending on the way they respond to athletic impact forces: area elastic, point elastic, and combination. Each group has the ability to absorb the energy of impact, and is considered far superior to the safety characteristics of a completely rigid floor. The three groups differ in the way in which energy is managed after impact. The characteristics of the three types of floor are as follows:

- **Area Elastic Floors**
    - "Hard" athletic surface, usually hardwood.
    - Returns some of the impact energy to the athlete.
    - Preferred surface for court and aerobic exercise spaces.

- Point Elastic Floors
  - "Soft," usually synthetic surfaces.
  - Laid in sheets or poured continuously.
  - Virtually no impact energy return.
  - Known for their high frictional coefficients.
  - Low in maintenance and extremely durable.
- Combination Surface
  - Durable, multi-use surface.
  - A synthesis of point and elastic surface.
  - Less expensive than a pure hardwood surface.

Table 6-1: Sports Flooring Performance Characteristics

Properties	Point Elastic	Area Elastic	Combination
Cushioning	Good	Fair	Fair-Good
Energy Return	Poor	Good	Fair
Frictional Coefficient	High	Low	High
Durable	High	Good	Good
Maintenance	Low	Medium	Low

Floor Type	Point Elastic	Area Elastic	Combination
Gymnasium	Unsuitable	Recommended	Acceptable
Group Exercise	Unsuitable	Recommended	Acceptable
Fitness Equipment Spaces	Recommended	Unsuitable	Unsuitable
Racquetball Courts	Unsuitable	Recommended	Unsuitable
Indoor Track	Acceptable	Unsuitable	Acceptable

CHAPTER 7 - RESOURCES AND LINKS

This chapter provides a list of references, including other Air Force, Department of Defense and national standards documents that give related guidance, to be used in conjunction this design guide.

7-1 Government

10 CFR 435, Performance Standard for new Federal Buildings

Americans with Disabilities Act Accessibility Guidelines ADAAG: http://www.access-board.gov/adaag/html/adaag.htm

EPA website: http://www.epa.gov/cpg/products

UFAS, Uniform Federal Accessibility Standards UFAS: http://www.access-board.gov

7-2 Department of Defense Publications:

DOD 5100.76-M, Design Guide for Physical Security of Facilities

DODI 6055.6, Department of Defense Fire Protection Program

DOD MIL-HDBK-1190, Facility Planning and Design Guide: http://www.ccb.org/

UFC 3-120-01, Design: Air Force Sign Standard: http://65.204.17.188//report/doc_ufc.html

UFC 1-200-01, Design: General Building Requirements: http://65.204.17.188//report/doc_ufc.html

UFC 3-520-01, Design: Interior Electrical Systems: http://65.204.17.188//report/doc_ufc.html

UFC 3-530, Lighting Design and Controls: http://65.204.17.188//report/doc_ufc.html

UFC 3-550-01, Exterior Electric: http://65.204.17.188//report/doc_ufc.html

UFC 3-600-01 Design: Fire Protection for Facilities Engineering Design and Construction: http://65.204.17.188//report/doc_ufc.html

UFC 4-010-01, Design: DOD Minimum Antiterrorism Standards for Buildings: http://65.204.17.188/report/doc_ufc.html

UFC 4-740-02N, Design: Indoor Sports Facilities: http://65.204.17.188//report/doc_ufc.html

UFC 4-750-02N, Design: Outdoor Sports and Recreational Facilities:

http://www.ccb.org/docs/UFC/4_750_02.pdf

7-3 Department of the Air Force

AFI 10-248, Fitness Program

http://www.e-publishing.af.mil/pubfiles/af/10/afi10-248/afi10-248.pdf

AFPD 23-3, Air Force Energy Management

http://www.e-publishing.af.mil/pubfiles/af/23/afpd23-3/afpd23-3.pdf

AFI 31-209, Protection of USAF Resources

AFPD 32-10, Installations and Facilities: http://www.e-publishing.af.mil/pubfiles/af/32/afpd32-10/afpd32-10.pdf

AFPAM 32-1010, Land Use Planning: http://www.e-publishing.af.mil/pubfiles/af/32/afpam32-1010/afpam32-1010.pdf

AFI 32-1021, Planning and Programming of Facility Construction Projects: http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1021/afi32-1021.pdf

AFI 32-1023, Design and Construction Standards and Execution of Facility Construction Projects:

http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1023/afi32-1023.pdf

AFI 32-1024, Standard Facility Requirements: http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1024/afi32-1024.pdf

AFI 32-1032, Planning and Programming Real Property Maintenance Projects Using Appropriated Funds (APF): http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1032/afi32-1032.pdf

AFH 32-1084, Facility Requirements: http://www.e-publishing.af.mil/pubfiles/af/32/afh32-1084/afh32-1084.pdf

AFH 32-1163 (I), Engineering Weather Data

AFJMAN 32-1090, Noise and Vibration Control

AFI 32-1022, Planning and Programming of Nonappropriated Fund Facility Construction Projects:

http://www.e-publishing.af.mil/pubfiles/af/32/afi32-1022/afi32-1022.pdf

AJMAN 32-1058, Masonry Structural Design for Buildings: http://www.e-publishing.af.mil/pubfiles/af/32/afji32-1058/afji32-1058.pdf

AFI 32-7062, USAF Comprehensive Planning: http://www.e-publishing.af.mil/pubfiles/af/32/afi32-7062/afi32-7062.pdf

AFI 33-111, Telephone Systems Management: http://www.e-publishing.af.mil/pubfiles/af/33/afi33-111/afi33-111.pdf

AFI 33-133, Joint Technical Architecture—Air Force JTA-AF: http://www.e-publishing.af.mil/pubfiles/af/33/afi33-133/afi33-133.pdf

AFI 34-105, Programming for Nonappropriated Fund Facility Requirements: http://www.e-publishing.af.mil/pubfiles/af/34/afi34-105/afi34-105.pdf

AFI 34-266, Air Force Fitness and Sports Programs: http://www.e-publishing.af.mil/pubfiles/af/34/afi34-266/afi34-266.pdf

AFI 40-101 Health Promotion Programs

AFI 64-101, Cable Television Systems on Air Force Bases: http://www.e-publishing.af.mil/pubfiles/af/64/afi64-101/afi64-101.pdf

AFI 65-106, Appropriated Fund Support of Morale, Welfare and Recreation and Nonappropriated Fund Instrumentalities: http://www.e-publishing.af.mil/pubfiles/af/65/afi65-106/afi65-106.pdf

7-3.1 Air Force Policies

ETL 94-4, Energy Use Criteria for Facilities in the Military Construction Program
http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

ETL 01-1, Reliability and Maintainability R&M Design Checklist
http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

ETL 01-12, Communications and Information System Criteria for Air Force Facilities
http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

ETL 02-12, Communications and Information System Criteria for Air Force Facilities http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

ETL 03-2, Design Criteria for Prevention of Mold and Mildew in Air Force Facilities in Humid Climates http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

ETL 03-3, Air Force Carpet Standards http://www.afcesa.af.mil/library/etl.asp?Category=Engineering%20Technical%20Letters

7-3.2 Air Force Guides

Air Force Services Fitness and Sports Golden Eagle Standards

https://www-r.afsv.af.mil/FT/

Achieving Design Excellence

Air Force Cost Guides/Handbooks

USAF Base Architectural Compatibility Guide

USAF Environmentally Responsible Facilities Guide

USAF Project Managers' Guide for Design and Construction: http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

USAF Landscape Design Guide: http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

USAF Master Landscape Construction Specifications http://www.afcee.brooks.af.mil/dc/dcd/land/mstrland/mlcs.asp

USAF Sustainable Facilities Guide http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

USAF Force Protection Design Guide: http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

USAF Interior Design Guides: http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

HQ AFCEE Accessibility Page: http://www.afcee.brooks.af.mil/dc/products/dcproducts.asp

USAF Cost Guides/Handbooks: http://www.afcesa.af.mil/

JTA-AF Fixed Base Technical Architecture, Vol. 6, Building 1040 Wiring Architecture: http://www.afcesa.af.mil/

TIA/EIA 570 Residential Communications Standard with CAT 5 cable: http://www.afcesa.af.mil/

7-4 RELATED NON-GOVERNMENT RESOURCES

ACSM - American College of Sports Medicine Standards

ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers Fundamentals Handbook

ASHRAE - Standard 62-89 Ventilation for Acceptable Indoor Air Quality

CBC - Certified Ballasts Manufacturers

DIN - Deutsches Institute fur Normung Standards

IES - Illuminating Engineering Society's Illuminance Selection Procedure

NFPA - National Fire Protection Association

NEC - National Electrical Code

NPC National Plumbing Code

Ramsey/Sleeper Architectural Graphic Standards (Current Edition)

CHAPTER 8 - ACRONYMS

ARB	Air Reserve Bases
AAFES	Army-Air Force Exchange Service
ACSM	American College of Sports Medicine Standards
ADAAG	Americans with Disabilities Act Architectural Guidelines
AED	Automatic External Defibrillator
AFRCH	Air Force Reserve Command Handbook
ASHRAE	American Society of Heating Refrigeration and Air-Conditioning Engineers
CFR	Code of Federal Register
DIN	Deutsches Institute fur Normung
DOD	Department of Defense
DODEA	Department of Defense Education Activity
DV	Distinguished Visitor
EMCS	Energy Management and Control System
ETL	Engineering Technical Letter
FOUO	For Official Use Only
HAWC	Health and Wellness Center
HID	High Intensity Discharge
HQ AFSVA	Headquarters Air Force Services Agency
HVAC	Heating Ventilation and Air Conditioning
LEED	Leadership in Energy and Environmental Design
m2	Square Meters
MAJCOM	Major Command
MERV	Minimum Efficiency Reporting Value
mm	Millimeters
NAF	Nonappropriated Fund
NCOIC	Non-commissioned Officer in Charge
O&M	Operations and Maintenance
OPR	Office of Primary Responsibility
PACAF	Pacific Air Force
PCA	Parent/Child Area
PCS	Permanent Change of Station

PT	Physical Training
RAMP	Requirements and Management Plan
RD/PMP	Requirements Document/Project Management Plan
sq. ft.	Square Feet
SVPAF	Fitness And Sports Branch (HQ AFSVA/SVPAF)
SVXFB	Facilities Design Branch (HQ AFSVA/SVXFB)
TDY	Temporary Duty
UFAS	Uniform Federal Accessibility Standards
UPC	Uniform Plumbing Code
USAF	United States Air Force
USAFE	United States Air Forces, Europe

CHAPTER 9 -- SPACE CALCULATOR

9-1 Purpose

Use the Space Calculator (separate spreadsheet file) to determine the overall authorized space for all Fitness and HAWC facilities for an installation. It is designed to generate a total space program for core and enhanced spaces for all Fitness and HAWC facilities on an installation. It can also compare the existing space with the authorized space.

9-2 Instructions

- Fill in designated boxes only.
- Gather installation population figures and replace default data on TDY and Population sheet. This will show allowable areas for Fitness Center & HAWC spaces along with the minimum number of gymnasium courts to provide.
- Answer questions in questionnaire by replacing default data with projected data.
- The Space Allocation Chart will show what is authorized for your base and develop a square footage allocation for each sub space.
- A comparison of space in existing facilities with the authorized amount can be made using the last sheet.

	Planning Factor	Space	Factors
CORE SPACES			
VISITOR & SPECTATOR SUPPORT			
Vestibule/Entry Lobby	Provide up to 1 per primary entry per bldg	100 SF	per Bldg
Lobby	Provide 3 sf for each Spectator Seat	3 SF	per PN
Control Point/Reception	Provide 3 sf per gym spectator	125 SF	per PN
Equipment issue storage	Provide up to 1 per building	175 SF	per Control Point
Retail	Provide up to 1 per building when combined with Control point	50 SF	per PN
Vending	Up to 1 per building (provide if no retail)	20 SF	per Machine
Public Restrooms	1 Lav/WC per 100 Spectators	50 SF	per 100 spectators
ADMINISTRATION			
Fitness Center Director's Office	1 office per bldg (include 1 staff; 3 visitors)	125 SF	per Private Office
Sports Program Manager's Office	1 office per installation (include 1 staff; 1 visitor)	100 SF	per Private Office
Operation's Manager	1 office per installation (include 1 staff; 1 visitor)	100 SF	per Private Office
NCOIC's Office	1 office per installation (include 1 staff; 1 visitor)	100 SF	per Private Office
Staff Workroom	# of 6 x 8 workstations + work area	80 SF	per workstn
Conference/Classroom	Use a baseline of 25 pn; provide only if HAWC is not collocated	25 SF	per PN

SUPPORT			
Laundry	Installation specific; include 1W/2D, commercial grade; folding table, sink, storage shelves, laundry carts, and optional ice machine per unit. Min 1.	200 SF	per room unit
Storage	35% of Fitness Equip Space		
Equipment Repair	10% of Storage (min 100SF)		
Service Entrance and Receiving	10% of Fitness Equip Space (min 100SF)		
Janitorial	Provide 1 per major bldg wing/floor	60 SF	per room

LOCKER ROOMS	Provide 1.5 lockers for max number of participants in bldg		
Men's Locker Room	# of men's lockers is the percentage of men users times the total lockers needed		
Dressing Room (Standard Lockers)	Provide percentage of standard lockers needed	8 SF	per Floor Lkr
Dressing Room (Cold WX)	Remainder from standard lockers needed	10 SF	per Floor
Double Tier Lockers	Provide percentage of 2-tier lockers needed		
Single-tier Lockers	Remainder from 2-tier lockers needed		
Total Mens Lockers	Percentage of men users times the total lockers needed		
Shower/Drying	1 Shower per 20 lockers	35 SF	Shower
Restrooms	1 Lav/WC per 30 lockers	50 SF	per Lav/WC
Sauna Room	1 PN per 15 lockers	15 SF	per PN
Steam Room	1 PN per 15 lockers	15 SF	per PN
Circulation	50% of all locker room spaces		
Women's Locker Room	Remainder from men's lockers		
Dressing Room (Standard Lockers)	Provide percentage of standard lockers needed	8 SF	per Floor Lkr
Dressing Room (Cold WX)	Remainder from standard lockers needed	10 SF	per Floor Lkr
Double Tier Lockers	Provide percentage of 2-tier lockers needed		
Single-tier Lockers	Remainder from 2-tier lockers needed		
Total Women's Lockers	Percentage of women users times the total lockers needed		
Shower/Drying	1 Shower per 20 lockers	35 SF	Shower
Restrooms	1 Lav/WC per 30 lockers	50 SF	per Lav/WC
Sauna Room	1 PN per 20 lockers	15 SF	per PN
Steam Room	1 PN per 20 lockers	15 SF	per PN
Circulation	50% of all locker room spaces		
Gymnasium			
etball/volleyball	NCAA Court + 10' safety area all sides (est 40 participants/court)	8,800 SF	Per Court
Spectator courtside seating (90 LF)	1 section=4 rows of seats, 200 pn	900 SF	200PN Bleacher Section
Spectator court-end seating (50 LF)	1 section=4 rows of seats, 100 pn	500 SF	100PN Bleacher Section
ge/support	Provide 700 sf for first court	700 SF	1st Court
storage (per addl. ct)	Provide additional 350 sf per addl court	350 SF	per 2nd Court or more

Group Exercise			
Stretching Area	Provide 1 area per 50 participants	100 SF	per rm over 50PN
Group Exercise	Provide 50 sf/participant for max Unit PT group (added to participant count)	50 SF	per PN
Group Exercise Storage	10% of the exercise space	10% SF	of Group Exercise
Fitness Equipment Spaces	(1-participant per mach/station)		
Stretching Area	Provide 100 sf per 50 participants	100 SF	per 50PN
Cardiovascular Equipment	Provide 50 sf per machine (use actual or estimate 10 machines for small, 30 med, 50 large)	50 SF	per Machine
Selectorized Weight Training	Provide 50 sf per station (use actual or estimate for a 16pc set; 1 set per small base)	50 SF	per station
Crossover machine	Provide 60 sf per station (use actual or estimate1 per small base)	60 SF	per station
Chin/Dip Assist machine	Provide 40 sf per station (use actual or estimate1 per small base)	40 SF	per station
Free Weights	Provide 65 sf per station (use actual or estimate for a 17pc set; 1 set per small base	65 SF	per station
ss Program Director's Office	Provide an Fitness Program Director's Office (include 1-staff, 1-participant, 1- visitor, 1 pc cardio equip)	150 SF	per PN
Fitness Assessment Room	Provide 1 per facility (include 1-staff, 1-participant, 1- visitor)	125 SF	per PN
Racquetball Courts	Provide a minimum of 2 per facility (include 6-participants, 6 visitors per court)	800 SF	per Court
Racquetball Spectators	Provide a 25 person spectator area; 1 min	160 SF	per area (min 1)
Indoor Track*	Provide up to one indoor 1/8 mi track per bldg (include 16-participants)	4,000 SF	per Track (half scope)
Indoor Track Lobby*	Provide an access point for tracks (include 4 visitors)	144 SF	per Track

HEALTH AND WELLNESS CENTER			
Reception/Waiting/Library	Provide 300 sf per center (include 1-staff, 10 visitors)	300 SF	per HAWC
Office Space/Director	Provide 1 office per center (include 1 staff; 1 visitors)	125 SF	per Office
Office Space/Other Private	Provide 1 office per center (include 1 staff; 1 visitors)	100 SF	per Office
Support Staff Workstations	# of 6 x 8 workstations + work area	80 SF	per Workstation
Classrooms (large room w/ a divider to create 2 rooms)		25 SF	per PN
Ergometry and Fitness Testing	1-station per 1500 active duty	80 SF	per Stn
Wellness Assessment Room	Provide 125 sf per system	125 SF	per Fitness Testing System
Equipment Demonstration Room (if not collocated w/ Fitness Center)	Provide 50 sf per machine (maximum of of [illegible] SF)	50 SF	per Machine
Janitor Closet/Storage	[illegible]vide 1 per center	60 SF	per room
Restrooms	Provide 1 lav/wc per 15 visitors	50 SF	per WC/Lav

ENHANCED AREAS			
Lap Pool	25m x 6 lanes	7,616 SF	
Lap Pool (alt)	25m x 8 lanes	9,371 SF	
Distinguished Visitors (DV) Locker Rooms		61 SF	per room
Men			
Dressing Room (Standard Lockers)	Provide percentage of standard lockers needed	8 SF	per Floor Lkr
Dressing Room (Cold WX)	Remainder from standard lockers needed	10 SF	per FloorCold WX Lkr
Double Tier Lockers	Provide percentage of 2-tier lockers needed		
Single-tier Lockers	Remainder from 2-tier lockers needed		
Total Lockers	Estimate # of lockers needed		
Shower/Drying	1 Shwr per 20 lockers	35 SF	Shower
Circulation	50% of all locker room spaces		
Restrooms	1 Lav/WC per 30 lockers	50 SF	per Lav/WC
Women			
Dressing Room	1 lkr per participant (enter % of Std Lockers)	8 SF	per Floor Lkr
Dressing Room (Cold WX)	1 lkr per participant (enter % of Cold WX)	10 SF	per FloorCold WX Lkr
Double Tier Lockers	Choose % of 2-tier lockers		
Single-tier Lockers			
Total Lockers			
Shower/Drying	1 Shower per 25 lockers	35 SF	Shower
Circulation	50% of all locker room spaces		
Restrooms	1 Lav/WC per 30 lockers	50 SF	per Lav/WC
Family Locker Room (Dressing, Lockers, Rest Room)		160 SF	per shower, wc, lav, changing, and locker
Parent/Child Area (PCA)	Provide 60 sf per child (include 35sf/child and 1 adult machine per 2 children)	60 SF	per child
HAWC Relaxation Room	Provide 100 sf per room (incl 1 staff; 1-participant)	100 SF	per room
HAWC Kitchen/Food Demonstration Room	Provide 400 sf per room (incl 1 staff, 10-participant)	400 SF	per room
Massage Room	Provide 100 sf per room (incl 1 staff, 1-participant)	120 SF	per room
Expanded Retail Area	Provide 100 sf per area	100 SF	per room
Juice Bar	Provide 150 sf per area	150 SF	per room
Expanded Juice Bar Seating	Provide 80 sf per 4-top table seating	80 SF	per room
Spa Area	Provide 150 sf per room (incl 6-participant)	150 SF	per room