

Change 25
1 October 2003APPENDIX H
PHYSICAL FITNESS FACILITIES (APPROPRIATED)

TABLE OF CONTENTS

1. GENERAL AND SPECIFIC CRITERIA	H-2
a. General	H-2
b. The Center of Standardization (COS)	H-2
c. Applicability.	H-2
2. PLANNING GUIDANCE.	H-2
a. Project Justification.	H-2
b. Site Planning Criteria.	H-2
c. Funding Policy.	H-2
d. Programming Process	H-2
e. Computation of Gross Areas.	H-3
f. Space Criteria.	H-3
3. COMBINED FACILITIES.	H-4
4. DESIGN REQUIREMENTS.	H-4
a. General.	H-4
b. Standardization.	H-4
c. Site Design Criteria.	H-4
d. Architectural Criteria.	H-5
e. Options and Flexible Features.	H-7
f. Energy Conservation Criteria.	H-8
g. Electrical Criteria.	H-8
h. Mechanical Equipment Criteria.	H-8
i. Plumbing Equipment Criteria.	H-10
5. INDIVIDUAL SPACE REQUIREMENTS.	H-10
a. General Use Categories.	H-11
b. Gymnasium.	H-11
c. Fitness Module.	H-13
d. Exercise Module.	H-13
e. Structured Activity Area.	H-14
f. Indoor Jogging Track	H-15
g. Locker Rooms.	H-15
h. Shower Room.	H-16
i. Toilet Rooms.	H-16
j. Sauna/Steam Room.	H-17
k. Laundry Room.	H-17
l. Desk.	H-18
m. Public Toilets.	H-18
n. Manager's Office or Area.	H-19
o. Program Director's Area.	H-19
p. Clerical Area.	H-19
q. Conference Room.	H-19
r. Lobby.	H-19
s. Vending Area.	H-20
6. REFERENCES	H-20

Change 25
1 October 2003

APPENDIX H
PHYSICAL FITNESS FACILITIES (APPROPRIATED)

1. GENERAL AND SPECIFIC CRITERIA.

a. General. The specific criteria contained in this appendix are applicable to the design of Physical Fitness Facilities (PFF) that is normally funded from appropriated funds. The criteria are in accordance with the second edition of the Health/Fitness Standards and Guidelines published by the American College of Sports Medicine (ACSM). The general criteria contained in preceding chapters of Technical Instructions (TI) 800-01, Design Criteria are applicable where such criteria are not included in this appendix. Therefore, this appendix must be used with the chapters contained in this TI.

b. The Center of Standardization (COS). The COS for PFF is the Huntsville Engineering and Support Center (CEHNC).

c. Applicability.

(1) Except as modified here, the design of new PFF and existing facilities to be modernized will be in accordance with TI 800-01 and this appendix, including all references.

(2) New Criteria. The new criterion for the design of PFF is contained in the document "Technical Criteria for U.S. Army Physical Fitness Facilities", dated October, 2003 (reference H-1), and this appendix. The criteria document may be obtained by accessing the Physical Fitness Facilities area under the DA Facilities Standardization Program link at www.projnet.org.

(3) Obsolete Criteria. DG 1110-3-128, previous DA standard designs, and previous versions of the AEI and TI are obsolete and will not be used when designing PFF.

2. PLANNING GUIDANCE.

a. Project Justification. The requirements for PFF will be carefully determined, taking into consideration all pertinent factors such as the tenure of the installation, number of military personnel or population to be served, accessibility and capabilities of existing, similar civilian or military community-type facilities, climatic conditions affecting the use of the proposed facility, and the impact on morale.

b. Site Planning Criteria. Before proceeding with the site planning of a project, the project requirements should be verified to assure that they meet the user needs and that the selected site meets approval procedures. When these verifications are complete, a site design may be developed in accordance with the siting criteria in Chapter 3.

c. Funding Policy. Funding for the establishment, construction, maintenance, and operation of certain PFF will be according to DoD Directive 1015.6 (reference H-2).

d. Programming process. Programming a Physical Fitness Facility (PFF) requires several steps to accommodate the Army's goals to provide adequate PFF facilities at every installation.

(1) Determine if there are any PFF(s) existing on the installation already. If a PFF(s) already exists on the installation, determine whether the existing PFF(s) will be demolished or converted to some other use as part of this project, or shortly after the new facility is constructed, such that this new facility will be the only PFF on the installation. If no PFF exists, or the existing one will be removed from the inventory once the new one is built, use the gross areas provided in the Standard Criteria, which are provided in table H-1 below, based on the authorized population of the installation.

Change 25
1 October 2003

(2) If there are PFF facilities that will remain after the new facility has been constructed, determine if a Quantity Worksheet has been completed for the installation, which shows the total gross area of the facility as well as the net areas of all the functional modules.

(a) If the Quantity Worksheet has been completed, use the results from the worksheet to program for the new facility. If the result indicates that you must build more than authorized in order to meet C1 status, obtain MACOM approval as required. Also, evaluate the space in your existing PFF(s) to determine if the space could be utilized more efficiently, or if it would be wise to remove some of the facilities from your inventory. Utilize the Quality Worksheets from the ISR to help determine if a facility should be removed or renovated.

(b) If the Quantity Worksheet has not been completed, complete the worksheet and follow the procedure above. If a Quantity Worksheet cannot be completed before programming the new facility, use the Standard Criteria to determine the allowed area for the authorized population of the installation. Subtract from that number the total gross building area of any PFF that will remain. The result is the amount that may be programmed for a new PFF. Realize that without the Quantity Worksheet, this new building may not meet the requirements for C1, and another construction or renovation project may be required in the out years.

(3) In the overall gross areas for PFF, an allowance has been made for mechanical and electrical spaces. The "Miscellaneous Area" is the space to accommodate lobby, circulation, administration, wall thickness, and mechanical/electrical spaces. This area is calculated at 25% of the total net area of the functional modules. If there are mechanical and/or electrical requirements that will result in larger mechanical and/or electrical rooms, this additional space must be added during the programming phase. **FUNCTIONAL MODULES MAY NOT BE REDUCED IN AREA TO ACCOMMODATE MECHANICAL AND/OR ELECTRICAL REQUIREMENTS.** Areas provided for each functional module are directly related to the requirements in the Installation Status Report (ISR). Reduction of these areas will result in a lower "C" rating for the installation, even after the construction of a brand new facility.

e. Computation of Gross Areas. The gross area of facilities will be computed according to the definition in chapter 5 of the TI. Unless otherwise noted, mechanical, electrical, and electronics equipment room space as required will be added to the gross areas shown in the following subparagraphs when determining a single gross area figure for a project DD Form 1391.

f. Space Criteria. Table H-1 contains the space criteria for PFF. This type of facility is intended to be capable of supporting basic physical fitness skill training requirements. New PFF will be designed in accordance with Technical Criteria for U.S. Army Physical Fitness Facilities (reference H-1) as summarized in Table H-1 below.

TABLE H-1 SPACE CRITERIA FOR PHYSICAL FITNESS FACILITIES		
MILITARY POPULATION ¹	GROSS AREA	
	Square meters	(Square feet)
Up to 250	None	None
251 to 1,000	2580	(27,771)
1,001 to 3,000	4120	(44,347)
3,001 to 6,000	6020	(64,799)
6,001 to 10,000	8310	(89,448)
10,001 to 15,000 ²	11 160	(120,125)

Change 25
1 October 2003

¹ Military population is defined as active duty military personnel assigned to the installation, plus 25 percent of their dependents. Additionally, at those CONUS installations where the civilian work-force is 60% of the total work-force, then 10% of the civilian population may be used. At OCONUS installations, 100% of the civilian population may be used in the authorized population for the installation.

² For each authorized population increment of 5,000 personnel above 15,000, additional PFF space of 2,850 m² (30,677 ft²) gross area shall be added.

3. COMBINED FACILITIES. In general, construction and maintenance costs will be lowered and convenience to the users enhanced in recreation facilities if the use of multi-purpose recreation, and fitness and athletic centers is encouraged. See appendix "D" of this TI for criteria and guidance on the types of combined facilities. One of the most common facilities to be combined with a PFF would be a natatorium.

4. DESIGN REQUIREMENTS.

a. General.

(1) Coordination at all stages of design development of PFF new construction projects, including modernization projects in excess of \$150,000, is required with the MACOM engineer and MACOM PFF coordinator; the installation facilities engineer and using service PFF coordinator; and HQ DA (CFSC-ZR-RS). HQUSACE (CEMP-MA) will be notified immediately when project cost estimates exceed the DA approved Program Amount (PA).

(2) Provisions for Individuals with Physical Disabilities. All PFF will be fully accessible to individuals with physical disabilities in accordance with chapter 7 of the TI.

(3) Functional spaces are grouped according to similar function. These spaces are divided into four distinct groups, which represent primary plan elements.

(a) Activity spaces: Gymnasium, fitness area (cardio respiratory, circuit, and free weights), exercise area (small and large group exercise rooms), structured activity area (racquetball and squash courts and other structured activities).

(b) Support spaces: (Locker rooms, shower rooms, toilet rooms, sauna/steam rooms, laundry room, reception desk, and public toilets).

(c) Staff spaces: Manager's office/area, program director's area, clerical area, and conference area.

(d) Public spaces: Lobby and vending area.

(4) Adjacency. Spaces must be organized to provide optimum adjacency in relationships. Specific adjacency requirements are addressed below.

(5) Circulation. Spaces must be organized to establish a workable, convenient, and efficient circulation flow, which addresses the unique requirements of the different types of users (spectators, participants, staff, etc.).

(6) Evacuation. Spaces must be organized so that evacuation can be done effectively and safety. Consideration must be given to occupancy load and type, the location of emergency exits and other life safety features. Direct evacuation routes must be evident.

Change 25
1 October 2003

b. Standardization. CONUS and OCONUS PFF projects shall be based on Technical Criteria for U.S. Army Physical Fitness Facilities (reference H-1).

c. Site Design Criteria. A site design should be developed in accordance with the siting criteria discussed in Chapter 3 of the TI. Verification of project requirements, a site analysis, sketch site plan and concept site plan should be developed. Site must be provided with thorough site lighting, which complements the facility. Adequate parking shall be provided adjacent to the facility to accommodate all employees and users. Site must be handicapped accessible. Curbs and gutters shall be provided, and paved sidewalks must be provided from the parking area to the facility entrances. Dumpster, mechanical equipment, and electrical equipment must be screened in keeping with the overall building design, and must be located in a service area, which is located remote from the primary facility entrance. Additional site design guidance is provided in Unified Facilities Criteria (UFC) 2-600-01, Installation Design (reference H-5).

(1) Installation Design Guide. The guidance provided in specific project Installation Design Guide will be used to design these projects, (reference Chapter 3 of this TI).

(2) Landscape Planting Design. The landscape planting design will be accomplished in accordance with the requirements of TM 5-803-13 (reference H-6).

d. Architectural Criteria. The following paragraphs provide guidance on architectural criteria. They are intended to provide some minimum guidelines and not to limit the project designer. PFF shall be designed as first-class facilities, and the designer needs to evaluate all potential materials and finishes for aesthetics, durability, maintainability, and life-cycle cost.

(1) Exterior design and context. The overall site development and building design will consider the environment. Building placement will consider circulation patterns, landscaping, existing vegetation, views, climatic factors and solar effects. The character of the building design should blend with the surrounding environment without necessarily copying it. The blending can be achieved by sympathetic use of form, materials and/or color. Respect for local building style and techniques should be maintained where practicable. Exterior building materials should be selected for appropriateness, economy, availability, visual interest and energy conservation. All entrances must be provided with adequate lighting. In addition, the main entrance to the facility must be designed such that it is readily obvious that it is the primary entrance. The design of the entrance should be a prominent architectural feature of the facility.

(2) Materials and Finishes.

(a) Interior and exterior colors, finishes, and materials will conform to the standard criteria (reference H-1). Recommend the use of baked-on finishes in lieu of anodized finishes.

(b) Specific Concrete Masonry Unit (CMU) requirements.

1/ Bullnose blocks should be use whenever the corner (edge) of the block is exposed.

2/ Patterned CMU (split face, ribbed, etc.) should be used instead of painted block, especially in public areas.

3/ Block fill should be used prior to painting masonry block.

(3) Interior Design. Interior design packages will be developed and funded in accordance with ER 1110-345-122 (reference H-7). See Chapter 6 of this TI. Interior finishes and colors will present a unified concept relating to building design, furniture and equipment. Selection will be based on

Change 25
1 October 2003

indigenous materials, availability, durability, maintenance and user requirements and comfort. A specific color scheme will be developed throughout the building. Materials should be selected on the basis of compatibility with the design character and color scheme. Vinyl wall coverings and fabrics should be close weave, solid color or muted tones. Recommend materials such as stone, tile, masonry pavers and wood if life cycle costs justify their use. Use of daylighting, open spaces, and bold colors should be considered to provide an enhanced interior environment.

(a) Floor finishes.

1/ Vinyl composition tile. Offices, corridors.

2/ Ceramic tile. Toilet rooms, shower areas, and locker rooms.

3/ Concrete. Mechanical, electrical, and electronic equipment rooms. Stained or patterned concrete can also be used in circulation paths if appropriate to the architectural style of the building. If handled properly, can also be provided in the locker areas.

4/ Masonry pavers. Recommend brick, quarry tile or other durable and aesthetically pleasing materials for lobby and lounge. This material may also extend to the corridors of the facility.

5/ Resilient athletic flooring. Option for the Exercise Module.

6/ Hardwood floor. Gymnasium, Exercise Module, Racquetball Courts.

7/ Rubber tile. Fitness Module, especially the free weights area.

8/ Commercial carpet. Option for the cardiovascular and circuit area of the Fitness Module, Offices. Carpet can also be used in the locker area.

(b) Wall finishes. Paint or vinyl wall covering. Multi-color paint systems may be considered to hide dirt, but are more expensive and harder to repair.

(c) Ceiling finishes.

1/ Suspended 600 by 1200 mm or 600 by 600 mm (two feet by four feet or two feet by two feet) (minimum 19 mm (3/4 inches) thick) lay-in acoustical tile with exposed grid. Primary ceiling construction throughout the PFF. Special tile systems, such as concealed spine and/or patterned acoustical tile can also be provided. They should primarily be used in public areas such as lobby and lounge areas. In addition, use of exposed structure as a ceiling can be considered in the fitness module, gymnasium, and lobby.

2/ Gypsum board (epoxy paint). Toilet rooms, janitor's closet and laundry.

3/ Exposed structure. Mechanical/electrical rooms, storage rooms, and Gymnasium. If handled properly for aesthetics and acoustics, exposed structure may also be used in the fitness module and gymnasium, as well as circulation and public spaces.

(4) Furniture and equipment. Furniture and equipment will be selected based on durability, comfort and safety. Furniture is an integral part of the overall design scheme and must be clearly coordinated with selected colors and finish for consistency in appearance and quality. Detailed

Change 25
1 October 2003

requirements should be established for individual functional activities. Items that will be procured as part of the construction contract and those, which will be procured by others, must be carefully specified and coordinated.

(a) Permanent equipment. Furniture and equipment permanently built into or attached to the structure include the following:

- 1/ Built-In counters, sinks and shelving.
- 2/ Drinking fountains and water coolers.
- 3/ Central Public Announcing and speaker system and scoreboard.
- 4/ Telephone, fire alarm and Intercom systems.
- 5/ Built-In bleachers and lockers.
- 6/ Built-In movable partitions.
- 7/ Floor and window coverings.
- 8/ Chalkboards, bulletin boards, wall mirrors, projection screens and display cases.
- 9/ Basketball backboards and built-in wall mats.
- 10/ Signs and graphics.

(b) Portable and detached equipment. Furniture and equipment that are portable or detached from the structure will be furnished by the installation and funded with some appropriation other than Military Construction Army (MCA).

(c) Furniture style will be simple in shape and proportion and will be consistent with the building design. Furniture materials will be durable but avoid a cold, sterile effect on the users. Neutral colors, which relate to the building materials and finishes are recommended for general furniture groupings with careful use of accent colors to achieve a warm and varied environment. Furniture finishes will complement construction materials; highly decorative and artificial finishes are to be avoided.

(d) Built-In furniture such as millwork will reflect the highest industry construction standards and be of finishes and colors that complement adjacent areas. Bleachers in the gymnasium and the lockers in the locker rooms should be built-in type.

(e) Durability is a major factor in furniture selection. Furniture items will be able to withstand extended use as well as regular cleaning. Materials must be flame retardant.

(5) Signage. A comprehensive signage system will be developed which clearly and concisely presents necessary information. The system will relate interior to the exterior signage system and will enhance the building in terms of color, texture, graphics and placement. Economy, availability, durability, flexibility and standardization will be considered in selecting the signage system. Refer to EP 310-1-6a (reference H-8) for specific guidelines on signage.

(a) Identification signs. Pictorial graphics can be used to identify areas such as toilets, handicapped facilities or to regulate activities such as no entry, no smoking or danger.

Change 25
1 October 2003

Signs will be coordinated with the identification criteria prescribed in EP 310-1-6a (reference H-8) and this document.

(b) Directional signs. Directional signs will be judiciously located along major circulation paths.

(c) Notice boards. A general notice board will be in a major circulation area and small notice boards may be within specific section areas as required. Notice boards will be constructed of fabric-wrapped tack panels and will be securely wall mounted at a height that relates to other signs and building components such as door heights and headers.

e. Options and Flexible Features.

(1) Optional Features.

(a) Saunas and/or steam rooms.

(b) Handball/racquetball seating.

(c) The indoor jogging track may be deleted for a specific project as long as an existing PFF contains an indoor jogging track that meets all of the quality requirements of the ISR.

(2) Flexible Features.

(a) Locker room male to female ratio and configurations, to include use of “convertible” locker rooms, team locker rooms, and uni-sex or family changing rooms.

(b) Use of doors versus cased openings as codes allow.

(c) Size of mechanical, electrical, and electronic equipment rooms.

(d) Shape and layout (within functional requirements) of various Functional Modules.

f. Energy Conservation Criteria. Chapter 11 of the TI provides the energy conservation criteria for PFF. These facilities shall be designed to utilize as many Sustainable Building features as possible.

g. Electrical Criteria. In addition to chapter 12 of the TI, special electrical design requirements exist for the various functional areas of PFF.

(1) The electrical outlets will be designed with the flexible purpose of the PFF in mind.

(2) Placement of electrical outlets in playing surfaces or in floors subject to wet cleaning processes or utilizations should be avoided.

(3) Electrical outlets will be placed in a flexible grid on the floor in the cardio area to allow for the equipment to be used. Data requirements must also be met in this grid to accommodate video walls and cardio theaters. Circuits must also be appropriately sized.

(4) Lighting will be in accordance with the Illuminating Engineering Society Lighting Handbook, as modified below. Lighting for finished spaces will be part of the ceiling design with standard ceilings and modular recessed lighting fixtures. The ratio of maximum to minimum illumination shall not exceed three to one within a given area. Direct and indirect lighting should be used where appropriate.

Change 25
1 October 2003

- (5) Sight lines of players and spectators should not permit direct view of light sources.
- (6) Administrative telephones will be provided as required. Telephone requirements must be coordinated with the user and the local Director of Information Management.
- (7) A PA system and intercom system must be hard-wired throughout the building. The systems must be controllable by room. The master control shall be located in the reception desk.

h. Mechanical Equipment Criteria. In addition to chapters 13 and 14 of the TI, special mechanical design criteria is provided below. For safety concerns, it is strongly recommended that PFF be air conditioned, in compliance with table H-2 below and applicable chapters of this TI. Where there is conflicting information, the information in this appendix will govern. A nominal amount of space for mechanical equipment has been included in the miscellaneous area in table H-3. If it is anticipated that additional space will be required, it must be added to the total gross areas in table H-3 during the programming phase.

TABLE H-2 SPACE CRITERIA FOR PHYSICAL FITNESS FACILITIES		
Area	Criteria	New Standard ¹
Fitness-Testing, Health Promotion, and Wellness Areas	Temp. Range (F)	68 to 76
	Rel. Humidity	50%
	Ventilation	20 cfm/person ³ 8 to 12 ACH ²
Exercise Classroom	Temp. Range (F)	66 to 72
	Rel. Humidity	50%
	Ventilation	25 cfm/person. Will be provided with CO ₂ sensor. 8 to 12 ACH ²
Fitness Floor	Temp. Range (F)	68 to 74
	Rel. Humidity	50%
	Ventilation	25 cfm/person. Will be provided with CO ₂ sensor. 8 to 12 ACH ²
Multi-Purpose Recreation Areas (Gymnasium)	Temp. Range (F)	68 to 74
	Rel. Humidity	50%
	Ventilation	20 cfm/person. Will be provided with CO ₂ sensor. 8 to 12 ACH ²
Enclosed Sports Court Areas ⁵	Temp. Range (F)	60 to 68
	Rel. Humidity	50%
	Ventilation	20 cfm/person ³ 8 to 12 ACH ²
Indoor Running Track Areas	Temp. Range (F)	68 to 74
	Rel. Humidity	50%

Change 25
1 October 2003

TABLE H-2 SPACE CRITERIA FOR PHYSICAL FITNESS FACILITIES		
Area	Criteria	New Standard ¹
	Ventilation	20 cfm/person. Will be provided with CO ₂ sensor 8 to 12 ACH ²
Control Desk Areas	Temp. Range (F)	68 to 76
	Rel. Humidity	50%
	Ventilation	20 cfm/person ³ 8 to 12 ACH ²
Laundry Room Areas	Temp. Range (F)	68 to 80
	Rel. Humidity	50%
	Ventilation	15 cfm/person ³ 8 to 12 ACH ²
Locker Room Areas	Temp. Range (F)	70 to 78
	Rel. Humidity	50%
	Ventilation	0.50 cfm/ft ² ⁴ 8-12 ACH ²

Table Notes:

1. New standard has been developed from private industry, Army guidance, and ACSM.
2. Air changes per hour (ACH) as taken from ACSM.
3. Cubic feet per minute per person (cfm/person) as taken from ASHRAE 62.
4. Cubic feet per minute per square foot (cfm/ft²) as taken from ASHRAE 62.
5. Enclosed sports courts (racquetball) will be provided with occupancy sensors that will set back the temperatures to the temperature of the adjacent area when the courts are not in use. These sensors may also be used to control other systems such as lighting and ventilation.

i. Plumbing Equipment Criteria. In addition to chapter 15 of the TI, any special plumbing design criteria are provided in the paragraphs for individual space requirements of this appendix.

5. INDIVIDUAL SPACE REQUIREMENTS. Individual space requirements for physical fitness activities will conform to the Technical Criteria for U.S. Army Physical Fitness Facilities (reference H-1), as shown in table H-3 below. The areas shown below are the total area for each functional area within an installation. For example, an installation has an authorized population of 2500 and has 2 existing PFF with a combined total of 150 m² of Free Weight Area would be authorized another 50 m² of Free Weight Area. Areas of existing PFF should only be considered if the PFF meets the quality requirements of the ISR or will be renovated to meet those requirements. The areas for the functional modules may NOT be reduced. Reduction of these areas can result in a lower grade for the installation in the ISR. If additional mechanical and electrical space is required, it must be added to the totals in table H-3.

Table H-3 CRITICAL FUNCTIONAL AREAS & TOTAL PFF BUILDING AREA						
Areas in square meters (square feet)		X-SMALL (Population 251 - 1000)	SMALL (Population 1001 - 3000)	MEDIUM (Population 3001 - 6000)	LARGE (Population 6001 - 10,000)	INCREMENT (5000 increments over 10,000)
Fitness Module	Cardiovascular Area	51.0 (550)	126.0 (1350)	237.0 (2550)	371.5 (4000)	186.0 (2000)

Change 25
1 October 2003

	Circuit Area	74.5 (800)	107.0 (1150)	139.5 (1500)	213.5 (2300)	107.0 (1150)
	Free Weight Area	91.0 (975)	200.0 (2145)	303.0 (3250)	483.0 (5200)	241.5 (2600)
	SUBTOTAL	216.5 (2325)	433.0 (4645)	679.5 (7300)	1068.0 (11,500)	534.5 (5750)
	Storage - 10%	21.7 (233)	43.3 (465)	68.0 (730)	106.8 (1150)	53.5 (575)
Exercise Module	Large Group Exercise	111.5 (1200)	153.5 (1650)	260.5 (2800)	417.5 (4500)	209.0 (2250)
	Small Group Exercise	93.0 (1000)	116.0 (1250)	163.0 (1750)	233.0 (2500)	116.0 (1250)
	SUBTOTAL	204.5 (2200)	269.5 (2900)	423.5 (4550)	650.5 (7000)	325.0 (3500)
	Storage - 10%	20.5 (220)	27.0 (290)	42.4 (455)	65.1 (700)	32.5 (350)
Sauna, Lockers, Showers, Toilets		223.0 (2400)	353.3 (3800)	543.5 (5850)	817.5 (8800)	279.0 (3000)
Structured Activity Module	Racquetball Courts	79.0 (850)	79.0 (850)	79.0 (850)	158.0 (1700)	79.0 (850)
	Other Structured Activities	107.0 (1150)	107.0 (1150)	200.0 (2150)	214.0 (2300)	107.0 (1150)
	SUBTOTAL	186.0 (2000)	186.0 (2000)	278.0 (3000)	372.0 (4000)	186.0 (2000)
	Storage - 10% of Struc. Act.	10.7 (115)	10.7 (115)	20.0 (215)	21.4 (230)	10.7 (115)
Gym Module	Basketball Courts (Gymnasium)	947.2 (10,200)	1616.5 (17,400)	2285.4 (24,600)	2954.0 (31,800)	780.8 (8400)
	Support (Toilets & Storage)	94.7 (1020)	161.7 (1740)	228.5 (2460)	295.4 (3180)	78.1 (840)
	SUBTOTAL	1041.9 (11,220)	1778.2 (19,140)	2513.9 (27,060)	3249.4 (34,980)	858.8 (9240)
Indoor Jogging Track (Area shown is half scope)		139.3 (1500)	195.1 (2100)	246.2 (2650)	297.3 (3200)	0
TOTAL NET AREA OF MODULES		2064.0 (22,213)	3296.0 (35,455)	4816.0 (51,810)	6648.0 (71,560)	2280.0 (24,530)
MISCELLANEOUS AREA (25% of net)		516.0 (5553)	824.0 (8864)	1204.0 (12,953)	1662.0 (17,890)	570.0 (6133)
TOTAL GROSS AREAS		2580.0 (27,771)	4120.0 (44,347)	6020.0 (64,799)	8310.0 (89,448)	2850.0 (30,677)

a. General Use Categories. The areas of the PFF are classified according to general use categories in terms of functional use, adjacency relationships, special considerations, furniture or equipment, and space allocations. Mechanical, electrical, electronic equipment rooms, administrative spaces, janitor closets, general circulation corridors, vestibules, lobby, and thickness of walls are intrinsic to a PFF and not included in the discussions of the general PFF use categories. These areas are combined in the "Miscellaneous Area" category in the table above. The PFF general use categories are:

- (1) Activity spaces: gymnasium, fitness module (cardiovascular, circuit, and free weights), exercise module (small and large group exercise rooms), structured activity area (racquetball and squash courts and other structured activities), and jogging track.

Change 25
1 October 2003

(2) Support spaces: locker rooms, shower rooms, toilet rooms, sauna/steam rooms, laundry room, reception desk, and public toilets.

(3) Staff spaces (miscellaneous area): manager's office/area, program director's area, clerical area, and conference room.

(4) Public spaces (miscellaneous area): lobby and vending area.

b. Gymnasium.

(1) Functional Use.

(a) Basketball, boxing, wrestling, volleyball, tennis, team handball, and indoor soccer.

(b) Competition sports with spectator seating (intramural basketball, badminton, volleyball and indoor soccer).

(c) Other uses: entertainment events, troop exercises, troop assemblies.

(2) Architectural Requirements.

(a) Space dividers. White ceiling-hung nets that appear opaque with proper illumination from above will be divide activity areas within the gymnasium space. Electrically operated nets will also be manually operable from the floor and catwalk.

(b) Scoreboards. Provide a four-sided scoreboard capable of recording scores of two teams (199 to 199), with a start/stop clock capable of recording passing time in seconds and a countdown mechanism with a preset facility. Scoreboard should be compatible with all sports to be performed in the gymnasium. Thirty second alarms and clocks are required, one at each end of the competition basketball court, to be operated from the scorer's table, with a sound distinct from scoreboard sounds. Provide necessary power leads. For practice basketball courts, consider additional wall mounted scoreboards separate from the four-sided board in the center. An on/off switch should be located in the reception desk or some easily accessible location (Consider the use of an infrared control switch).

(c) Catwalk. A 1.8 m (6-foot) roof structure catwalk should be provided in order to position special lighting, for lamp replacement and to manually manipulate space dividing curtains if required.

(d) Acoustics. Sound levels in the gymnasium should be kept at no more than 90 decibels.

(e) Ceiling Height. Provide minimum 9.2 m (30-ft) ceiling clear-height.

(f) Floors in the gymnasium should have a concrete base covered by a sleeper system and a maple tongue-and-groove hardwood surface. The flooring shall meet the appropriate Deutsches Institut für Normung (DIN) characteristics.

(g) Staff must have visual access or total coverage video-surveillance of the gymnasium.

(3) Electrical Requirements.

Change 25
1 October 2003

(a) Power receptacles. Receptacles and circuits required for custodial equipment will be coordinated with the local facilities engineer. Convenience receptacles will be provided as needed. The use of floor-mounted receptacles is to be avoided with the exception of the outlets provided for the scorer's table. Outlets should be provided at more than one location to allow for operation of the scoreboards with the bleachers in use and with the bleachers retracted.

(b) Emergency lighting. Emergency lighting in compliance with NFPA 101 will be provided for the gymnasium and paths of egress.

(c) Lighting. The gymnasium requires a general lighting level of 540 lux (50 foot candles) at the surface of the floor, with the capacity to increase to 860 lux (80 foot-candles) on tournament courts and 1080 lux (100 foot-candles) on boxing/wrestling rings. Illumination will be uniform above primary playing areas for all skills sports. Light fixtures will be protected from damage by wire guards or other design features.

(d) Special Systems. The sound system will be designed to deliver a maximum sound pressure level of not less than 95 decibels to the bleacher seats. The sound system will transmit via radio waves to wireless headsets for persons with impaired hearing. Outlets must be provided for microphone locations. Outlets and wiring must be provided for the scoreboard and controls.

(4) Mechanical Requirements. The Gymnasium will often operate with only a few occupants. However, during major events the Gymnasium will be fully occupied with spectators and athletes. The HVAC system will be designed with variable or multiple step capacity to satisfy these various load conditions. The design should also minimize the stratification of warm/hot air at higher levels.

(5) Furniture and Equipment Requirements. MCA funded: Anchors recessed in floor for volleyball, badminton and tennis nets; electric scoreboards (see special considerations); glass backed basketball goals meeting NCAA specifications (must have breakaway rims), ceiling mounted; mesh net dividers, electrically operated; recessed refrigerated drinking fountains; recessed mouth rinse receptacle; wall-mounted padding on the wall area immediately behind each backboard as a minimum, and built-in retractable bleacher seating. OMA funded: Portable floor-type boxing ring with padding, corner post and ropes; standards and nets for volleyball, badminton and tennis; wrestling mat (either in gymnasium or exercise room); and wireless headsets.

c. Fitness Module.

(1) Functional Use.

- (a) Individual weight training.
- (b) Cardiovascular and weight machine exercise.
- (c) Body building.

(2) Architectural Requirements.

(a) Three separate weight rooms are provided in all facilities. One of these weight rooms will house "free weights", the second room will house cardiovascular machines, and the third room or area will house circuit training machines. The cardiovascular machines and the circuit training machines may be collocated in one large area.

Change 25
1 October 2003

(b) Allow for space in weight rooms for stretching, rest, evaluation and viewing of demonstration and instruction.

(c) Minimum ceiling clear-height of 3.66 m (12 feet).

(d) Flooring in the free weight area shall have a rubber-based resilient floor or similar, which is appropriate for the use and which is easy to maintain and keep clean.

(e) The free weight area must be physically adjacent to the reception desk. Cardio and circuit area must have visual access from the reception desk or must be totally covered by a video-surveillance system.

(f) Consider locating some "cubbies" in the fitness area for storage of personal items.

(3) Electrical Requirements. Coordinate to determine if any of the equipment to be installed requires a source of power. Additional floor outlets will be required in the Cardiovascular area for increased electrical requirements. These outlets will be provided on a grid so that the equipment may be plugged in without use of extension cords. The placement of outlets must be flexible to allow for reconfiguration as pieces of equipment change. There is also a requirement for a wall of video monitors that are wired directly to the pieces of cardio equipment through data cables. This allows users to watch TV while listening with headphones plugged into the equipment.

(4) Mechanical Requirements. Noted in table H-2.

(5) Equipment Requirements. Mirrors shall be provided on at least half of two perpendicular walls. Mirrors shall extend from 600 mm (2 feet) to 2.1 m (7 feet) above the floor.

d. Exercise Module.

(1) Functional Use. Aerobics, martial arts, combative sports, fencing, classroom (continuing education and conferences), gymnastics, dance instructions, and individual exercise classes.

(2) Architectural Requirements.

(a) Minimum ceiling clear-height of 3 m (10 feet) because of activities in exercise room.

(b) Room may be used as a classroom with portable chairs.

(c) Wall and ceiling finishes selected to reduce reverberation.

(d) Consider a movable partition between areas in the exercise room for greater flexibility (minimum STC rating of 42).

(e) Natural light.

(f) Flooring appropriate for aerobic activities.

(g) Staff must have visual access or video-surveillance of the entries into the different spaces within the Exercise Module.

(3) Electrical Requirements. No unique requirements.

(4) Mechanical Requirements. Noted in table H-2.

Change 25
1 October 2003

(5) Equipment Requirements. The exercise module should have mirrors on at least two of its four walls. At a minimum, provide mirrors the full length of one wall from 300 mm (12 inches) to 2 m (7 feet) above the floor and exercise bar mounted on wall. In addition, the user may require training bags with chains and ceiling anchors, wrestling mat (mat truck), boxing mat (mat truck), exercise mats (mat truck), wall projection screen, chalkboard, storage cabinet, shelving, and refrigerated drinking fountain.

e. Structured Activity Area.

(1) Functional Use.

- (a) Competition racquetball/squash games with spectator seating.
- (b) Recreational racquetball/squash games without spectator seating.
- (c) Other activities that require specialized equipment or have unique requirements, such as climbing walls, spinning classes, fitness testing and evaluation, etc.

(2) Architectural Requirements.

- (a) In racquetball/squash courts, install security box flush with wall surface for wallets, keys and ball cans. The security box door will be transparent. The box shall be located on the sidewall in the rear corner.
- (b) Court access doors will be flush or invisibly hinged with flush ring pull on interior and knob set on exterior of the court.
- (c) The walls of enclosed courts should be constructed of hard plaster or laminated composition panels. The studding on the front walls should be placed close enough to prevent dead spots. Studs will not be placed farther than 400 mm (16") apart. Ceilings should be made of either plaster or laminated composition panels. Acoustical material will be used on the back 2.4 m (8 feet) of the ceiling.
- (d) Back wall of tempered glass including door where a spectator gallery is provided.
- (e) Upper level, back wall, of courts will be open to the balcony when a tempered glass back wall is not provided.
- (f) Tell tale panels for squash play in one racquetball court only with painted receiving/serving line in that court.
- (g) Hardware for volleyball activity if desired.
- (h) Enclosed squash and racquetball courts should have cushioned hardwood floors.
- (i) Staff must have visual access or video-surveillance of the entries into racquetball and squash courts. Visual or physical access, by the staff, to other activities within the Structured Activity Area is dependent on the risk associated with the activity. For example, if a climbing wall is provided, staff must have direct physical access.

(3) Electrical Requirements. Court lighting may be high intensity discharge or fluorescent and must be flush with the ceiling and protected from impact. If available, consider lighting options that allow for relamping without requiring a lift be brought into the court. The illumination level should be at least 540 lux (50 foot candles) at the surface of the floor.

Change 25
1 October 2003

(4) Mechanical Requirements. Supply and return air diffusers and registers will be mounted flush on the sidewalls, near the back wall, or flush with the ceiling surface in a location such that they will not impact play.

(5) Equipment Requirements. None.

(6) Space Allocation Requirements. Standard four-wall court for handball and racquetball is 6.1 m (20 feet) wide by 12.2 m (40 feet) deep by 6.1 m (20 feet) high.

f. Indoor Jogging Track.

(1) Functional Use.

(a) Area to walk, jog, and run indoor to alleviate weather and safety concerns.

(2) Architectural Requirements.

(a) Track is 3 lanes wide.

(b) Track may be suspended around perimeter of gymnasium, or may be on upper level around the fitness module. If the track circles the fitness module, and/or other modules, no portion of the track may be used for circulation to these spaces. If circulation paths must cross the track, these crossings must be carefully planned, and kept to a minimum.

(c) Track surface is a composite, synthetic material specifically engineered for running and walking with a durable, resilient, cushioned covering.

(d) Track shall be provided with banked corners.

(e) Note that the area provided for this function in table H-3 is calculated as half-scope. The area was based on a mezzanine type structure circling the gymnasium.

g. Locker Rooms.

(1) Functional Use.

(a) Facility participants will change clothes and store belongings here.

(b) Coaches and team members will meet here during competition games.

(2) Architectural Requirements.

(a) Impervious and non-skid floor finish.

(b) Built-in lockers 200 mm (8 inches) to 400 mm (16 inches) above the floor on a base to permit hosing of the floor. It is recommended that integral benches, built into the base of the lockers, be provided.

(c) Corrosion-resistant hardware on doors.

(d) Staff must have visual access or video-surveillance of the entries into the locker rooms.

Change 25
1 October 2003

(3) Electrical Requirements. Provide ground fault protected outlets in wet areas. Provide vapor proof light fixtures in wet areas. Provide emergency lighting.

(4) Mechanical Requirements. Refer to Table H-2.

(5) Plumbing Requirements. Floor drains will be provided.

(6) Furniture and Equipment Requirements. Benches integral with locker base or stationary center aisle, chalkboard, clock, full length wall mirrors, hair drying blowers or provisions for user supplied hair dryers, built-in lockers, a maximum of 60% of the lockers shall be at least 375 mm (15 inches) wide by 450 mm (18 inches) deep by 750 mm (30 inches) high, a minimum of 40% of the lockers shall be at least 375 mm (15 inches) wide by 450 mm (18 inches) deep by 1500 mm (60 inches) high. Where lockers are only 750 mm (30 inches) high, consider use of lockers that have 2 different heights in the same locker to provide increased hanging height. In addition, mirrors with counter top (for dressing areas), refrigerated drinking fountain, and tack-board shall also be provided.

h. Shower Room.

(1) Functional Use. Personal hygiene.

(2) Architectural Requirements.

(a) Impervious and non-skid floor finish.

(b) Floor sloping to drain.

(c) Provide individual shower stalls in both locker rooms. Allow approximately 2.8 m² (30 ft²) per shower head. Consider individual drying stalls adjacent to each shower stall in the women's shower room as a minimum.

(3) Electrical Requirements. Provide vapor proof light fixtures. Provide supplemental electrical heating fixtures requirements.

(4) Furniture and equipment. Towel bars, robe hooks, liquid soap dispensers or recessed soap dish, benches in drying area(s).

i. Toilet Rooms.

(1) Functional Use. Personal hygiene.

(2) Architectural Requirements.

(a) Impervious non-skid floor finish.

(b) Locate additional mirrors away from access to lavatories.

(c) Locate paper towel dispensers away from access to lavatories.

(3) Furniture and Equipment Requirements. Toilet paper dispensers, mirrors, liquid soap dispensers, paper towel dispensers and receptacles, sanitary products dispenser.

j. Sauna/Steam Room.

Change 25
1 October 2003

- (1) Functional Use. Heat therapy for athletes.
- (2) Architectural Requirements.
 - (a) Sauna floor, walls ceiling and benches of redwood with floor of removable redwood slats to clean the subfloor.
 - (b) Sauna and steam room doors will have a panic bar latch for easy exit.
- (3) Electrical Requirements. Provide emergency lighting. Provide hookups for sauna/steam heaters, lighting and controls.
- (4) Mechanical Requirements. Sauna temperature controls will include a maximum temperature set point and be accessible to staff only. Consider a panic button in the sauna that will activate an alarm at the reception desk.
- (5) Plumbing Requirements. Plumbing will be as required by the equipment manufacturer.
- (6) Furniture and Equipment Requirements. These items are integral to the purchase packages.
- (7) Space Allocation Requirements.
 - (a) Sauna, minimum of 2.4 m (8 feet) by 3.7 m (12 feet) by 2.1 m (7 feet) high is required.
 - (b) Steam room, minimum of 2.4 m (8 feet) by 2.7 m (9 feet) by 2.1 m (7 feet) high is required.

k. Laundry Room.

- (1) Functional Use. Wash and dry towels and uniforms that then go to supply/issue for storage and distribution.
- (2) Architectural Requirements.
 - (a) Allow space at machines for maintenance and repair.
 - (b) Provide double doors into room to accommodate wide equipment.
- (3) Electrical Requirements. Provide appropriate hookups for equipment to be supplied.
- (4) Furniture and Equipment Requirements.
 - (a) A minimum of 2 heavy duty, 31.8 kg (70 lb) capacity, washer. A 15.9 kg (35 lb) capacity washer may be provided for the x-small facility.
 - (b) A minimum of 2 heavy duty, 31.8 kg (70 lb) capacity, dryer. A 15.9 kg (35 lb) capacity dryer may be provided for the x-small facility.

l. Reception Desk.

- (1) Functional Use.
 - (a) Control point for the facility. Location of majority of facility staff.

Change 25
1 October 2003

(b) Storage and distribution of athletic equipment, uniforms and towels.

(c) Reservation of racquetball/handball courts.

(2) Architectural Requirements.

(a) Minimum 3 m (10-foot) ceiling height. Should be an open desk and can be part of the lobby. Should be located in an open area that is inviting and aesthetically pleasing.

(b) Floor must be impervious to wheeled laundry and equipment carts.

(c) Must be immediately visible upon entering the facility.

(d) Must have, as a minimum, visual access, or video-surveillance, of the gymnasium, cardiovascular area, circuit area, exercise modules, and the entrances to locker rooms and racquetball courts.

(e) Must be physically adjacent to laundry. Strongly recommended that the reception desk also be physically adjacent to the free weight area for safety reasons. If not located adjacent to the free weight area, total video-surveillance or space for a staff member located within the free weight area must be provided.

(3) Electrical Requirements. Provide sound system control console with override capacity.

(4) Plumbing Requirements. A floor drain will be provided.

(5) Furniture and Equipment Requirements. Counter, desk and chair, pair board, racks and bins for equipment, shelving both flat and tilted, tack-board, sound system control console. Water and drain shall be provided for icemaker to provide ice for injuries. Icemaker may be located at the reception desk or in the adjacent laundry.

m. Public Toilets.

(1) Functional Use. For use by spectators, visitors and staff.

(2) Architectural Requirements.

(a) Minimize potential of congestion at peak use periods.

(b) Minimum ceiling height of 2.4 m (8 feet).

(3) Mechanical Requirements. Provide adequate ventilation.

(4) Plumbing Requirements. Provide floor drains.

(5) Furniture and Equipment Requirements. Mirrors, paper towel dispenser, toilet tissue dispenser, and waste receptacles.

n. Manager's Office or Area.

(1) Functional Use. A working center for the facility manager.

(2) Architectural Requirements. Provide a sound system control console with override capacity.

Change 25
1 October 2003

- (3) Electrical Requirements. Provide sound system control console with override capacity.
 - (4) Furniture and Equipment Requirements. Credenza, desk and chair, file cabinet, two side chairs, sound system control console.
 - (5) Space Allocation Requirements. Provide a minimum area of 3.1 m (10 feet) by 3.7 m (12 feet) or 11.2 m² (120 ft²).
- o. Program Director's Area.
- (1) Functional Use. A working center for the facility Program Director.
 - (2) Furniture and Equipment Requirements. Desk and chair, file cabinet, bulletin board, either 1.2 m (4 feet) by 1.8 m (6 feet) or 1.5 m (5 feet) by 2.1 m (7 feet), and two side chairs.
 - (3) Space Allocation Requirements. Provide a minimum area of 3.7 m (12 feet) by 3.1 m (10 feet) or 11.2 m² (120 ft²).
- p. Clerical Area.
- (1) Functional Use. A working center for the facility secretary.
 - (2) Furniture and Equipment Requirements. Desk and chair, file cabinet, and two side chairs.
 - (3) Space Allocation Requirements. Provide a minimum area of 2.4 m (8 feet) by 3.7 m (12 feet) or 8.9 m² (96 ft²).
- q. Conference Room.
- (1) Functional Use. A meeting center for the facility staff.
 - (2) Architectural Requirements. Provide acoustical privacy.
 - (3) Furniture and Equipment Requirements. Table with 10 chairs, chalk and tack boards, and side table for audio-visual equipment.
 - (4) Space Allocation Requirements. Provide a minimum area of 3.7 m (12 feet) by 5.5 m (18 feet) or 20.1 m² (216 ft²).
- r. Lobby.
- (1) Functional Use. The lobby is a central organizational element of the building providing access to major activities for both spectators and participants.
 - (2) Architectural Requirements.
 - (a) Large, open two-story spaces should be developed for a dramatic effect.
 - (b) Visibility is encouraged whenever possible, opening the adjacent activity areas to the view of anyone entering the facility.
 - (c) Direct relationship with reception desk. Must be properly designed to accommodate traffic flows past the reception desk into the facility.

Change 25
1 October 2003

(3) Electrical Requirements. Provide outlets for lighting display cases and emergency lighting.

(4) Furniture and Equipment Requirements. Display cases, doormats, lounge seating, and public telephones.

s. Vending Area.

(1) Functional Use. Provide snack food and drinks for purchase by spectators, participants and staff. May also provide ability to purchase fitness related gear, such as racquetball goggles, gym shorts, etc.

(2) Architectural Requirements.

(a) Security surveillance where possible (keep area open as possible).

(b) Frequent maintenance required.

(c) Provide for consumption of food and drink.

(d) Vending area should be located in the lobby in order to keep food and drink out of activity areas.

(e) May be separate area, or can be located at the reception desk so that staff can manage the activity.

(3) Furniture and Equipment Requirements. Vending machine(s) (snacks, sports drinks, soft drinks, etc.), and waste receptacles. If located at reception desk, vending machines can be replaced with display cases and coolers.

(4) Space Allocation Requirements.

(a) Allow 1000 mm (40 inches) minimum depth to accommodate vending machines.

(b) Allow minimum 1200 mm (4 feet) for circulation at a single loaded condition.

(c) Allow minimum 1800 mm (6 feet) circulation at double loaded condition.

6. REFERENCES

H-1 Technical Criteria for U.S. Army Physical Fitness Facilities, October 2003

H-2 DoD Directive 1015.6, Funding of Morale, Welfare and Recreation (MWR) Programs, 3 August 1984, revised 29 November 1985

H-3 ER 1110-345-700, Design Analysis, Drawings, and Specifications, 30 May 1997

H-4 ER 1110-345-100, Design Policy for Military Construction, 15 February 1994

H-5 UFC 2-600-01, Installation Design, 30 June 2000

H-6 TM 5-803-13, Landscape Design and Planting, 6 August 1988

H-7 ER 1110-345-122, Interior Design, 22 March 1999

Change 25
1 October 2003

H-8 EP 310-1-6a & 6b, Sign Standards Manual, Volumes I and II, 1 April 1985