

Technical Criteria



Technical Criteria for U.S. Army Physical Fitness Facilities

Standard Design Criteria

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by

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I

Executive Summary

A. <i>Overview</i>	1
B. <i>Use of Document</i>	1
C. <i>Updates</i>	1
D. <i>Facility Allocation</i>	2
E. <i>Facility Evaluation – Program Area</i>	2

II

Facility Criteria

A. <i>Background</i>	3
B. <i>PFF Space Allowance Table</i>	6
C. <i>Allocation of Facilities – Programming</i>	7

III

Component Descriptions

A. <i>Fitness Module</i>	10
B. <i>Exercise Module</i>	11
C. <i>Structured Activity Module</i>	12
D. <i>Gymnasiums</i>	13
E. <i>Lobby</i>	16

IV

Functional Criteria

A. <i>General</i>	17
B. <i>Fitness Module</i>	22
C. <i>Exercise Module</i>	35
D. <i>Structured Activity Module</i>	41
E. <i>Gymnasiums</i>	62
F. <i>Indoor Jogging Track</i>	73
G. <i>Locker, Shower, and Toilet Area</i>	74
H. <i>Lobby Area</i>	81
I. <i>Administrative</i>	87
J. <i>Laundry</i>	90
K. <i>Corridors</i>	92

V

Natatorium

A. <i>General</i>	94
B. <i>Functions</i>	97
C. <i>Architectural Requirements</i>	110
D. <i>Functional/Operational Requirements</i>	114
E. <i>Mechanical Requirements</i>	125
F. <i>Electrical Requirements</i>	127
G. <i>References</i>	129

VI

Outdoor Sports

A. <i>General</i>	130
B. <i>Technical Requirements</i>	131

I

Executive Summary



A. Overview

Physical fitness is the cornerstone of readiness. It is an essential and critical element of Soldiering. The Army emphasizes the importance of a high level of physical capacity for the occupational tasks that Soldiers are required to perform. Staying fit is enhanced today with the growing popularity and use of cardiovascular and strength equipment among Soldiers. Physical Fitness Facilities (PFF) are required by the Army to promote the strength and fitness of the soldiers. Physical fitness and sports support Army Core values. In addition, PFF provide one of the most popular sources of recreation for the soldiers and their families. Sample Surveys of Military Personnel (SSMP) consistently show fitness/sports facilities as first in use and importance to soldiers and family members.

New PFF designed and constructed for the United States Army shall be state-of-the-art facilities that rival top facilities in communities and on college campuses. Spaces shall be open and inviting; and shall be provided with an abundance of natural daylighting. Functions shall be combined into large open areas as described in the criteria below; not only for the enhancement of the environment, but also for flexibility as fitness trends change over time. Materials shall be aesthetically pleasing and durable. Bright colors shall be used as accents to reflect high levels of activity of a PFF. As one enters the facility, they shall be able to see various different fitness activities at one time to enhance the excitement and activity. It is no longer acceptable to walk into a small crowded lobby with the only visible element being the desk. Non fitness activities such as administration, lockers, laundry, etc., shall NOT be in a prominent location as one enters the facility. Large expanses of glass shall also be provided to allow those on the outside of the facility to be able to see into the facility, to see both the equipment and the activity.

B. Use of Document

This document will be used, in conjunction with the Army Standard, for the design and construction of new PFF for the United States Army. Standards for new construction will meet the quality standards described in Section IV - Building Design Criteria. Renovation of existing facilities should be evaluated on a case by case basis, but where possible shall conform to the requirements of this standard.

C. Updates

When the Army Standard was developed in the early 2000's, and approved in the mid 2000's, the criteria used for determining square footage for the jogging track was interpreted as allowing the jogging track to not be included in the overall square footage of the facility.

When the Army Standard was updated in 2011, it was updated to only reflect a reduction in overall PFF to ensure the Army was getting the most efficient facilities possible.

In 2015, it was determined that the method of calculating square footage for the track was no longer in compliance with current criteria. Therefore, the gross building areas have been adjusted to reflect counting the jogging track as full square footage in accordance with criteria. This change has NOT resulted in an increase in the overall

size of the PFF, nor has it resulted in an increase in the cost of constructing a PFF.

The new areas for the PFF are provided in the paragraph below, and throughout this document.

D. Facility Allocation

Four PFF sizes are developed and presented herein. The total area of PFF authorized on an installation is allocated based on the Authorized Population (AP), which includes 100% of active duty military and 25% of their dependents. Retirees are not counted in the AP at this time. DoD civilians are included at 10% only if they exceed 60% of the total workforce for CONUS installations. OCONUS installations are authorized for 100% of the civilian population in their AP. The four PFF sizes include the following:

X-Small	251 to 1,000 AP	26,930 GSF (Gross Square Feet)
Small	1,001 to 3000 AP	45,710 GSF
Medium	3,001 to 6,000 AP	66,370 GSF
Large	6,001 to 10,000 AP	90,200 GSF

To calculate PFF building area for installations with APs that exceed 10,000, an “Increment” is provided, which is added to the Large building area to determine total authorized area. An Increment is added for each additional 5,000 persons over 10,000 and includes 24,340 GSF. Thus, an installation with a total AP of 21,000 would be authorized 163,220 GSF (Large @ 90,200 GSF + 3 increments @ 24,340 GSF each).

E. Facility Evaluation – Program Area

A breakdown of the Critical Function Modules (CFM) or components in the PFF is provided later in this document. Existing and new facilities should be inventoried and measured to assess compliance with these program areas. A PFF is considered to be in compliance with the PFF requirements when the following occurs:

- *If Fitness, Exercise and Shower/Locker/Toilet CFM components and their subcomponents individually meet a minimum of 95% of the net square foot required space, the CFM are considered in compliance.*
- *If the Gymnasium component has the required number of courts sized at 50'x94' regardless of whether the required bleacher and storage areas are met, the Gym Component is considered to be in compliance. If this requirement is not met, new Gymnasium modules should be provided per the PFF Space Allowance Table.*
- *If PFF components are brought into compliance with the above standards and the facility is a maximum of 10% over the allowed gross square foot area, the facility is considered to be in compliance. If the component sizes cannot be sized to meet the space standards defined above without exceeding a 10% overage, the PFF should be renovated or replaced to achieve a more efficient building design.*

II

Facility Criteria



A. Background

History of Development

Army G-9 and the Office of the Assistant Chief of Staff for Installation Management, in conjunction with the Corps of Engineers, have developed new design standards for Physical Fitness Facilities (PFF) for military bases in and out of CONUS. This report presents four PFF buildings to serve authorized populations ranging from 250 to 10,000. The facilities are categorized as X-Small, Small, Medium and Large.

In order to function as a PFF, a facility must, at a minimum, include the following Critical Function Modules (CFM):

- Fitness Module (cardiovascular, circuit and free weight areas)
- Exercise Module (exercise rooms for instruction, i.e. aerobics)
- Structured Activity Module (racquetball and other activities)
- Gymnasium Module (suitable for basketball and volleyball)



Other required functions include administration, locker/shower/toilet areas, and support areas such as storage and laundry.

To test the adequacy of the indoor spaces for each PFF, national participation statistics were used to predict the recreational interests of active duty personnel. The national participation statistics, from a civilian survey of approximately 50% men - 50% women, were adjusted to fit a military base demographic of 80% men - 20% women. National survey responses were narrowed to the 18-44 year age group which represents 96.9% of the active duty army personnel.

Each module was tested and adjusted to verify its ability to accommodate the recreation, fitness and health interests of Active Duty (AD) personnel during peak times. Peak use varies from activity to activity. For activities requiring instruction or teams, peak use fluctuates between 50-60% of the hours of operation. For walk-in and individual activities such as fitness or running peak use varies between 80-90% of operating hours. The total hours of operation are 100 per week and reasonable attendance is assumed. Utilization worksheets for all four facilities showing the usage calculations may be obtained from the Center of Standardization.

Findings

Utilization testing of Fitness, Exercise and Non-Structured Modules confirms that program areas are adequately sized to meet demand even when civilian statistics for fitness are nearly tripled. Module areas that fall short of meeting peak demand are Gymnasium (Medium and Large), Racquetball (Medium and Large) and Jogging Track (Large)

Recommendations

Gymnasium Module

- a) Constructing additional courts is not recommended to meet the short fall. A 50' x 94' court is a large area relative to the number of participants that can be accommodated for a basketball or volleyball game. Constructing and maintaining new courts is not an economically feasible solution to providing more game time. Programming half-court games, extending program hours, and providing outdoor courts are all viable alternatives.
- b) Recreation trends over the past ten years show steady interest in basketball but a downward trend in volleyball. Overall, national participation for volleyball for all age groups dropped from 25.1% in 1989 to 11.7% in 1999. This trend may result in a lower demand for volleyball court time.

Racquetball Court

- a) Recreation trends over the past ten years show a steady decline in racquetball of 8.2% in 1989 to 3.2% in 1999. Meeting the shortage in peak demand can be satisfied by using the Structured Activity Space for an additional court. The contingency space for every building size easily accommodates an additional racquetball or squash court.

Jogging Track

- a) Exercise walking, jogging and running are popular activities. Walking has grown 20% over the past ten years and is becoming a staple of recreational activity for all age groups. National statistics do not separate survey responses by indoor track, treadmill or outdoor participation. Notwithstanding, each installation will ultimately provide a minimum of one suspended track surrounding the gymnasium. Facilities in extreme climates can expand track areas by looping the track around other indoor components. Need should be reviewed on a case by case basis.

Future

The concept of the PFF is to be open and flexible to allow for easy changes to accommodate future fitness trends. The American College of Sports Medicine (ACSM) has predicted the following top 10 fitness trends for 2015 (Copied from "Recreation Management Magazine"):

1. Body Weight Training: Body weight training uses minimal equipment, making it more affordable. Not limited to just push-ups and pull-ups, this trend allows people to get "back to basics" with fitness.
2. High-Intensity Interval Training (HIIT): HIIT involves short bursts of activity followed by a short period of rest or recovery. These exercise programs are usually performed in less than 30 minutes.
3. Educated & Experienced Fitness Professionals: Given the large number of organizations offering health and fitness certifications, it's important that consumers choose professionals certified through programs that are accredited by the National Commission for Certifying Agencies (NCCA).
4. Strength Training: Strength training remains a central emphasis for many health clubs. Incorporating strength training is an essential

part of a complete exercise program for all physical activity levels and genders. (The other essential components are aerobic exercise and flexibility.)

5. **Personal Training:** More and more students are majoring in kinesiology, which indicates that they are preparing themselves for careers in allied health fields, such as personal training. Education, training and proper credentialing for personal trainers have become increasingly important to the health and fitness facilities that employ them.
6. **Exercise & Weight Loss:** In addition to nutrition, exercise is a key component of a proper weight loss program. Health and fitness professionals who provide weight loss programs are increasingly incorporating regular exercise and caloric restriction for better weight control in their clients.
7. **Yoga:** Based on ancient tradition, yoga utilizes a series of specific bodily postures practiced for health and relaxation.
8. **Fitness Programs for Older Adults:** As the baby boom generation ages into retirement, some of these people have more discretionary money than their younger counterparts. Therefore, many health and fitness professionals are taking the time to create age-appropriate fitness programs to keep older adults healthy and active.
9. **Functional Fitness:** This is a trend toward using strength training to improve balance and ease of daily living. Functional fitness and special fitness programs for older adults are closely related.
10. **Group Personal Training:** In challenging economic times, many personal trainers are offering more group training options. Training two or three people at a time makes economic sense for the trainer and the clients.

B. Physical Fitness Facility (PFF) Space Allowance Table

Net and gross areas for PFFs are itemized below. These spaces have been sized and tested for ability to meet peak demand based on a recommended square foot per person area published by the National Intramural-Recreation Sports Association (NIRSA) Space Standard for Indoor Facilities.

An “Increment” program area is provided to determine the authorized area for PFF for any given installation based on their Authorized Population. One increment will serve 5,000 persons above 10,000. Thus, a population of 19,000 is authorized 138,880 total Gross Area of PFF (90,200 SF + 2 increments of 24,340 SF)

PHYSICAL FITNESS FACILITY (PFF) SPACE ALLOWANCE								
CRITICAL FUNCTIONAL AREAS & TOTAL PFF BUILDING AREA (Areas in square feet)			X-SMALL Net Area	SMALL Net Area	MEDIUM Net Area	LARGE Net Area	INCREMENT (each 5,000 over 10,000)	
Minimum Population:			251	1,001	3,001	6,001	1	
Maximum Population:			1,000	3,000	6,000	10,000	5,000	
FUNCTIONAL AREAS	1. Fitness Module	Cardiovascular Area	550	1,350	2,550	4,000	1,900	
		Circuit Area	800	1,350	1,650	2,300	900	
		Free Weight Area	975	1,885	3,055	5,200	2,795	
		Storage - 10% of Cardio/Circuit/Free	233	459	726	1,150	560	
		Stretching	100	200	300	400	100	
		Fitness Assessment	125	200	275	350	75	
	2. Gym Module	Basketball Courts (Gymnasium)	9,775	17,400	25,200	33,000	8,400	
		Storage	700	1,050	1,400	1,750	350	
	3. Exercise Module	Large Group Exercise	1,200	1,600	2,600	4,200	1,600	
		Large Group Exercise Storage - 10%	120	160	260	420	160	
	4. Structured Activities	Select from optional activities and sizes		1,800	2,600	3,400	4,200	800
		OPTIONAL SIZES (SF): *A* *B* *C* *D*						
		Racquetball Courts	800 1600 2400 3200					
		Combatives	1600 3200 NA NA					
		Climbing Wall	600 1000 1400 1800					
Spinning Classroom		600 900 1200 1500						
Functional Training		1000 1500 2000 2500						
Small Group Fitness		800 1200 1600 2000						
Sauna/Steam Room		150 200 250 NA						
Addl Fitness Module	50 SF increments up to allowed							
5. Jogging Track		2,590	5,250	6,550	7,850	0		
TOTAL OF FUNCTIONAL MODULES			18,968	33,504	47,966	64,820	17,640	
SUPPORT AREAS	6. Lockers, Showers, Toilets (Approx.)		2,300	3,100	4,900	7,500	2,000	
	7. Support	Admin	Director's Office	120	120	120	120	10
			Program Mgr's Office	0	100	100	100	10
			Support Staff Workstations	128	128	256	320	64
			Copyfile/work/break Room	160	240	160	170	10
			Storage (Approx.)	20	29	32	36	5
		Public Area	Classroom/Training Room	0	0	420	420	0
			Classroom/Training Storage	0	0	60	60	0
			Internal Circulation (Approx.)	86	123	230	245	21
			Lobby (Approx.)	250	450	650	850	200
			Control Counter/Stor. (Approx.)	300	400	500	600	100
	Housekeeping	Public Toilets (Approx.)	300	450	600	750	150	
		Laundry (Approx.)	180	240	300	360	60	
		Janitor Closets (Approx.)	60	80	100	120	20	
8. Misc. @ ~20% (MEC, Circ., Struct.)		4,058	6,745	9,977	13,729	4,050		
TOTAL OF SUPPORT AREAS			7,962	12,206	18,404	25,380	6,700	
GROSS BUILDING AREAS:			26,930	45,710	66,370	90,200	24,340	

C. Allocation of Facilities – Programming

Method of Allocation

Physical Fitness Facilities are allocated on the basis of Authorized Population (AP). Authorized population is counted as follows:

- 100% of Active Duty personnel (AD)
- 25% of AD Dependents
- 10% of Civilians (in CONUS) if they are 60% of the total workforce
- 100% of Civilians (OCONUS) regardless of percentage of workforce

New Construction

If no PFF exists on post, the procedure for allocating facility size is to calculate AP and reference the Authorized PFF Space Allowance Table. Recommendations are presented this manual to establish criteria for designing, constructing and equipping a new facility.

Existing Facilities

If there is an existing PFF on the installation, the procedure for assessment is:

- Calculate total AP
- Determine the Authorized PFF Space Allowance (see below)
- Measure PFF from outside wall to outside wall (gross square feet)
- Inventory and measure interior spaces (net square feet)
- Compare actual net and gross areas to Authorized PFF Allowances
- Identify deficits
- Identify surplus
- Analyze the facility for conformity to minimum ISR quality standards
- Record inadequacies or inefficiencies (surplus areas)

Since facilities are allocated solely on the basis of authorized population, it is important to accurately calculate the total authorized population. Army guidelines provide for only 25% of dependents to be counted in the AP. DoD statistics report that Fifty-percent of active duty personnel are married with an average of 2.83 dependents. Failure to accurately count the total Authorized Population may result in a facility that is undersized. Some of the consequences of an under-programmed PFF will be overcrowding and shortened life-span of building resources and equipment.

The chart below indicates the total gross area for PFF on an installation based on the AP of the installation.

Minimum Population:		251	1,001	3,001	6,001	10,001	15,001	20,001	25,001	30,001	35,001	40,001	45,001	50,001	55,001	60,001	65,001
Maximum Population:		1,000	3,000	6,000	10,000	15,000	20,000	25,000	30,000	35,000	40,000	45,000	50,000	55,000	60,000	65,000	70,000
Fitness Module	Cardiovascular Area	550	1,350	2,550	4,000	5,800	7,600	9,400	11,200	13,000	14,800	16,600	18,400	20,200	22,000	23,800	25,600
	Circuit Area	800	1,350	1,650	2,300	3,250	4,200	5,150	6,100	7,050	8,000	8,950	9,900	10,850	11,800	12,750	13,700
	Free Weight Area	975	1,885	3,055	5,200	7,995	10,790	13,585	16,380	19,175	21,970	24,765	27,560	30,355	33,150	35,945	38,740
	subtotal	2,325	4,585	7,255	11,500	17,045	22,590	28,135	33,680	39,225	44,770	50,315	55,860	61,405	66,950	72,495	78,040
	Storage - 10%	233	459	726	1,150	1,705	2,259	2,814	3,368	3,923	4,477	5,032	5,586	6,141	6,695	7,250	7,804
Exercise Module	Stretch/Fit Assessment	225	400	575	750	925	1,100	1,275	1,450	1,625	1,800	1,975	2,150	2,325	2,500	2,675	2,850
	Large Group Exercise	1,200	1,600	2,600	4,200	5,800	7,400	9,000	10,600	12,200	13,800	15,400	17,000	18,600	20,200	21,800	23,400
Structured Activities	Storage - 10%	120	160	260	420	580	740	900	1,060	1,220	1,380	1,540	1,700	1,860	2,020	2,180	2,340
	subtotal	1,800	2,600	3,400	4,200	5,000	5,800	6,600	7,400	8,200	9,000	9,800	10,600	11,400	12,200	13,000	13,800
Gym Module	Gymnasium	9,775	17,400	25,200	33,000	41,400	49,800	58,200	66,600	75,000	83,400	91,800	100,200	108,600	117,000	125,400	133,800
	(# of Basketball courts)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Storage	700	1,050	1,400	1,750	2,100	2,450	2,800	3,150	3,500	3,850	4,200	4,550	4,900	5,250	5,600	5,950
Jogging Track	subtotal	10,475	18,450	26,600	34,750	43,500	52,250	61,000	69,750	78,500	87,250	96,000	104,750	113,500	122,250	131,000	139,750
	subtotal	2,590	5,250	6,550	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850	7,850
TOTAL AUTHORIZED AREA:		26,930	45,710	66,370	90,200	114,540	138,880	163,220	187,560	211,900	236,240	260,580	284,920	309,260	333,600	357,940	382,280

Programming

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 PFF Space Allowance Table on Page 5 which is based on the authorized population of the installation. This includes instances where a entirely new community is being developed away from the main installation.

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 the new facility. If the result indicates that you must build more than authorized in order to meet C1 status, please 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 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, a "Miscellaneous Area" has been provided to accommodate circulation, wall thickness, and mechanical/ electrical spaces, and other required spaces not identified elsewhere. This area is calculated at approximately 20% of the total net area of the functional modules. If there are larger mechanical and/or electrical requirements, 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.

4. Computation of Gross Areas. The gross area of facilities will be computed according to the definition in UFC 3-101-01. All interior space within the PFF shall be considered full-scope even if referred to as a balcony or mezzanine.
5. New PFF(s) will be designed in accordance with this document, the approved Army Standard, and other criteria maintained by the US Army Corps of Engineers Center of Standardization.

III

Component Descriptions



A. Fitness Module

Strength, cardiovascular and free-weight areas have moved from the dark recesses of gymnasium basements to become the most sought after and visible components of fitness facilities. High schools have incorporated fitness training into standard curriculum. Colleges now recognize that students come to their campus with a well-founded interest in fitness and wellness pursuits. Most young recruits will also be familiar with an array of workout equipment. Since military readiness is inextricably connected with fitness, this component should offer a stimulating environment that promotes an ongoing interest in physical proficiency.

Because of this enhanced purpose, army fitness modules should be designed for function and aesthetics. Many private sector facilities are used as much for socialization as fitness. Aesthetics in these private niche facilities is largely market-driven with interiors that sometimes resemble a nightclub. Community and collegiate recreation centers must appeal to a wider group satisfying more diverse expectations. These facilities generally benefit from a timeless design approach. Army fitness facilities should adopt a similar tactic. Newer thinking in fitness design integrates all equipment into one area, but creates separations in function by using halfwalls, dropped ceilings, and changes in flooring materials. Free weight equipment must be directly visible and directly accessible to the reception (control) desk. Recommended free weight flooring is rubber or synthetic flooring material. Dispersing cardiovascular equipment within lobbies or overlooks helps to bring movement throughout the facility and addresses differing individual workout needs. Army fitness facilities shall have cardiovascular equipment located in at least 2 areas of the facility. Cardiovascular “theaters” include overhead mounted television monitors. In all, electrical considerations must be taken into account to power not just existing equipment, but future equipment as well. In addition, future needs and flexibility must be considered.

Lighting is crucial to providing a stimulating fitness environment. Indirect lighting and a visual connection to indoor and outdoor vistas will have a positive influence on the users’ frame of mind. For safety reasons, primarily indirect lighting must be used in the free-weight area. An exposed, painted ceiling can contribute a high-tech look, providing some other acoustical elements are incorporated to offset the hard-surface. Wall materials should be durable but not institutional. Mirrors, graphics, soft textures and wallcarpeting will help to soften the entire fitness environment. Recommendations for finishes are provided in Section IV of this report.

Regardless of the finishes and other design features, inadequate ventilation and temperature control will result in an undesirable workout experience. Mechanical systems should be capable of adjusting to different internal loads and occupancies at different times of the day. Recommendations for temperature and humidity levels are provided in Section IV of this report.

B. Exercise Module

Over the past 30 years, group fitness activities have maintained steady growth and progression. Aerobic classes of the seventies were characterized by strained muscles and high impact movement in bare feet. Frequent injuries quickly taught instructors serious lessons about exercise safety. Since that time, improvements in flooring, footwear, equipment, and instruction technique have helped to generate safer, low impact movements that prevent injury.

Today, the list of popular classroom activities continues to grow including step aerobics, conditioning, yoga, martial arts, kick-boxing, dance, urban rebounding, etc. All of these activities provide aerobic or “cardio” conditioning. Some programs incorporate strength training by using steps, handheld weights, elastic bands and stability balls.

Fitness programs that support military readiness may include many of the above activities combined with individualized workouts in the fitness module. Providing adequate programming will be the greatest challenge for PFF facility operators. In addition, young recruits may have a desire for activities that imitate extreme sports. Flexibility in classroom design will be essential to accommodate a variety of programs.

The staff for each PFF should monitor the popularity of programs and equip the exercise modules accordingly. The desire to participate in group exercise will be influenced not only by trend, but also by the quality of the space. In addition, the quality of the instructors will play a significant role in the participation in exercise programs. A skilled and enthusiastic instructor will quickly create demand. Hiring and retaining proficient instructors is key to filling group programs.

Each PFF is programmed with a minimum of 1 large group exercise studio, which is provided with a movable wall to allow for dividing the space into 2 separate spaces. Storage is provided for both sides of the room and is designed for flow-through circulation to minimize down time during the class. The design criteria for the exercise module is provided in Section IV, and includes data for flooring, lighting and environmental conditions.

C. Structured Activity Module

Structured activity areas have very specific design requirements. However, the orientation of these components is subjective.

Racquetball courts can be provided with this allocation, or other elements that could include an indoor cycling classroom, climbing wall, squash court, combatives room, small group exercise room, etc. The chart below shows the options that are available for structured activities. The sizes of structured activities do NOT correspond to the size of facility. Any size may be selected as long as the total allowed area of structured activity is not exceeded.

OPTIONAL SIZES (SF):	"A"	"B"	"C"	"D"
Racquetball Courts	800	1600	2400	3200
Combatives	1600	3200	NA	NA
Climbing Wall	600	1000	1400	1800
Spinning Classroom	600	900	1200	1500
Functional Training	1000	1500	2000	2500
Small Group Fitness	800	1200	1600	2000
Sauna/Steam Room	150	200	250	NA
Additional Fitness Module	50 SF increments up to allowed			

Note: Racquetball participation is on the decline in the United States decreasing from 8.2% in 1989 to 3.2% in 1999. These spaces are expensive to construct and are not easily adapted to other use. A careful review of the need for racquetball courts should be reviewed by each installation before constructing new or additional courts. That said, court play is exciting to watch. A highly competitive game will draw spectators who may be on the way to or from their own activities. Views into racquetball from the lobby or main corridor system add vitality to the building.

D. Gymnasiums

Large volume gyms are often neglected by designers because function overwhelms creative possibilities. However, with careful planning, these “big-box” spaces will respond to a wide variety of program needs.

No other space can accommodate multiple activities as well as the gymnasium. Through the use of simple devices like divider curtains, concurrent basketball, volleyball, and even tennis is possible. Suspend the running track above the floor and runners or walkers can overlook floor activities. Such a large volume can incorporate interior views at many levels to look across to racquetball courts, high ceiling lobbies, or climbing walls. Views to the exterior offer visual variety from the inside and add interest in the facility to passersby. Windows have the added benefit of bringing in natural light in what traditionally has been an artificially lit and harsh environment. In short, careful planning of even the most utilitarian elements can make the gymnasium the visual and functional hub of the facility.

High performance materials, color, lighting, and ventilation are key elements that make gymnasiums attractive spaces. Ventilation systems should be designed with adequate air changes to maintain a suitable activity environment. Recommendations are provided in Section IV of this report. Color and lighting impact overall design. Neutral colors for walls and white ceilings can be easily combined with accent colors. Light colors are also reflective, making a large-volume space easier to illuminate. Darker colors hide marks on the walls, but absorb light requiring greater levels of artificial illumination. Selection and placement of light fixtures is crucial to achieving even but not harsh illumination. Downlighting alone may cause hot spots and glare on the playing surface. Indirect lighting alone may not provide sufficient light for competitive play. The preferred solution is a combination of indirect and direct lighting that illuminates the entire space with a minimum amount of glare. Recommendations for light level are provided in Section IV.

Suspending the running track helps to reduce the apparent volume of the gym module, as well as provide an opportunity to introduce accent colors and decorative elements via the railings and structural supports for the track. Accenting selected elements within the entire space can create a sense of energy and excitement, or in softer tones create a more relaxed atmosphere. Every element within the volume must be considered for its functional and visual impact on the whole.

Bleacher seating, basketball backstops, and divider curtains are other elements that provide opportunities for accenting and highlighting the space. Not only used for activity control, divider curtains form one of the strongest visual elements in the space. Careful consideration of mounting height and the proportion of solid versus open mesh material can prevent divider curtains from blocking views, lowering light levels, and constricting an otherwise light and open volume.

Flooring materials have the greatest impact on user satisfaction. Select high performance wood floors that utilize neoprene shock pads for impact absorption to reduce injuries while maintaining near perfect ball return characteristics. Maple floors are the industry standard, but a wide variety of appearance grades are possible. Lower grades may reduce cost for the same performance, but allow undesirable visual variation in the boards. Synthetic sports floors also offer competitive cost and performance characteristics while allowing the introduction of colors and durability. To repeat, careful planning and a reasonable understanding of how each element affects the visual quality of the space are key to creating a superior gymnasium. Technical guidelines for track and flooring elements are in Section IV.

The layouts follow regulations from nationally recognized sports associations like the United States Volleyball Association (USAV) and the National Collegiate Athletics Association (NCAA). It is required that new courts conform to competitive standards nationwide. The correct volume for the gymnasium module starts with the proper court dimensions, clear heights, and sideline allowances. Minimum clear height of the gymnasium is 28' from floor to lowest element.

As of October, 2003, the governing bodies for Volleyball and Basketball, along with some of the facility requirements, are listed below. Current regulations shall be followed. Actually Army requirements are defined further in this document.

Regulation Information from the USA Volleyball Rule Book

USA Volleyball (USAV) is the national governing body for the sport of volleyball in the United States and is recognized by the Federation International de Volleyball (FIVB) and the United States Olympic Committee (USOC).

Ceiling Height

The playing space is free from any obstructions to a height of 7 m (23') from the playing surface.

Playing Court

The playing court measures 18 m x 9 m (59' x 29'6").

Center Line

The axis of the center line divides the court into two team courts measuring 9m x 9 m (29'6" x 29'6") each.

Lines

All lines on the court are 5 cm (2") wide.

Boundary Lines

Boundary lines: Two sidelines and two end lines mark the playing court. All boundary lines are drawn inside the dimensions of the playing court.

Attack Lines

Attack lines are drawn in each team court so that the edge of the attack line farthest from the center line is 3 m (9'10") from the axis of the center line. Extensions of the attack lines outside the court shall be marked with five 6" lines spaced 8" apart to a total length of 70" (for national competition).

Area Around the Court (Free Zone)

The free zone surrounds the court with a recommended minimum width of 2 m (6'6").

Net Height FIVB, USAV, California Beach Volleyball Association (CBVA), Women's Professional Beach Volleyball Association WPVA

Net height for men, coed mixed 6, & outdoor is 2.43 meters or 7'11-5/8".

Net height for women, boy's 14-and-under & reversed mixed 6 is 2.24 meters or 7'4-1/8".

Net height for 12-and-under is 2.13m or 7'0".

Net height for girl's 10-and-under is 1.98m or 6'6".

Information from the NCAA for Basketball Court Dimensions and Markings

The ideal playing area is 50 feet wide by 94 feet long with at least 3 feet (preferably 10 feet) of open area outside the boundaries.

In addition to sidelines and end lines, markings include a center circle; a division line through the center circle from sideline to sideline, dividing the court into two equal parts; a free-throw lane (12 feet wide) and free-throw line (15 feet from the backboard) at each end of the court and a broken restraining line outside the court 6 feet from, and parallel to, the end lines. The center circle has a 6-foot radius. The area inside the circle may not be occupied by the eight nonjumpers until one of the two jumpers has tapped the ball.

The three-point arc, measured 19 feet 9 inches from the center of the basket, serves as the boundary line to let the referee know that three points shall be awarded for a successful field-goal attempt from beyond the line.

E. Lobby

A well-designed lobby serves to not only welcome visitors to the fitness facility, but also to motivate them. Functionally, the lobby provides a passageway to organize the building. Referred to as “public space” the lobby physically leads visitors from the exterior to the control point. The control desk should be adjacent to the entry for check-in/out and equipment issue. This facilitates monitoring and restricting access to the building and gives all visitors an arrival destination. From the control point, users can be easily directed to major activity areas and support spaces. Open views into the gymnasium, fitness facility and other activity modules instantly define building function and capture user attention. These views also enable supervision of activities from the control desk.

Features that make the lobby an inviting space include lounges to provide refuge for anyone waiting for a friend or for court time. However, recreation facility lounge areas should not resemble airport waiting areas with tandem seating. Instead, seating should be placed to invite socialization and relaxation with features that include an oversized television, comfortable seating and kiosk or message center. Small cafe-style tables and chairs may be provided if vending machines are available.

The shape of the lobby can either be classically geometric or a lineal concourse. The mall concept is newer and integrates retail thinking. A long passageway increases visual connection to fitness elements, thereby advertising activities. Lobby orientation is influenced by other factors including sun angles, tree coverage and pedestrian /vehicular circulation. Site context, massing and material selection also impact lobby design.

The aesthetic impact of the lobby relies on the placement and quality of finish materials. Durability and maintainability play a significant role in the selection of finishes for high-traffic areas. In general, warm colors and soft textures are most successful at creating an ambiance that invites users to linger in the transitory space. Terrazzo or porcelain tile floors add durability and quality. Suitable wall materials include burnished or split-face block, masonry or epoxy-painted concrete masonry units.

Lobby lighting should allow for natural light through large windows and clerestories and should be provided with a combination of natural and artificial light sources to utilize daylighting and daylight harvesting within the space. Various ceiling heights and drywall bulkheads help to define lobby functions.

More than any other space in the facility, the lobby furnishings and fixtures contribute to forming the user’s impression of the building. Furniture, display cases, refuse containers, plants, graphics and signage should all be carefully coordinated.

IV Functional Criteria



A. GENERAL

This chapter provides the criteria for the individual spaces and overall building area allowances for U.S. Army Physical Fitness Facilities (PFF).

All pictures not labeled “*Example*” are from recent Army PFF, and demonstrate the image desired for new Army PFF.

1. Program Areas:

Refer to the table below for the square footage for each of the functional areas of a PFF. Refer to the Army Standard, and individual space criteria below, for allowances in deviation from the areas shown below.

The gross building areas below replace the gross building areas shown in the Army Standard.

PHYSICAL FITNESS FACILITY (PFF) SPACE ALLOWANCE								
CRITICAL FUNCTIONAL AREAS & TOTAL PFF BUILDING AREA (Areas in square feet)			X-SMALL Net Area	SMALL Net Area	MEDIUM Net Area	LARGE Net Area	INCREMENT (each 5,000 over 10,000)	
Minimum Population:			251	1,001	3,001	6,001	1	
Maximum Population:			1,000	3,000	6,000	10,000	5,000	
FUNCTIONAL AREAS	1. Fitness Module	Cardiovascular Area	550	1,350	2,550	4,000	1,900	
		Circuit Area	800	1,350	1,650	2,300	900	
		Free Weight Area	975	1,885	3,055	5,200	2,795	
		Storage - 10% of Cardio/Circuit/Free	233	459	726	1,150	560	
		Stretching	100	200	300	400	100	
		Fitness Assessment	125	200	275	350	75	
	2. Gym Module	Basketball Courts (Gymnasium)	9,775	17,400	25,200	33,000	8,400	
		Storage	700	1,050	1,400	1,750	350	
	3. Exercise Module	Large Group Exercise	1,200	1,600	2,600	4,200	1,600	
		Large Group Exercise Storage - 10%	120	160	260	420	160	
	4. Structured Activities	Select from optional activities and sizes		1,800	2,600	3,400	4,200	800
		OPTIONAL SIZES (SF): *A* *B* *C* *D*						
		Racquetball Courts	800 1600 2400 3200					
		Combatives	1600 3200 NA NA					
		Climbing Wall	600 1000 1400 1800					
Spinning Classroom		600 900 1200 1500						
Functional Training		1000 1500 2000 2500						
Small Group Fitness		800 1200 1600 2000						
Sauna/Steam Room	150 200 250 NA							
Add Fitness Module	50 SF increments up to allowed							
5. Jogging Track		2,590	5,250	6,550	7,850	0		
TOTAL OF FUNCTIONAL MODULES			18,968	33,504	47,966	64,820	17,640	
SUPPORT AREAS	6. Lockers, Showers, Toilets (Approx.)		2,300	3,100	4,900	7,500	2,000	
	7. Support	Admin	Director's Office	120	120	120	120	10
			Program Mgr's Office	0	100	100	100	10
			Support Staff Workstations	128	128	256	320	64
			Copyfile/work/break Room	160	240	160	170	10
			Storage (Approx.)	20	29	32	36	5
			Classroom/Training Room	0	0	420	420	0
		Classroom/Training Storage	0	0	60	60	0	
		Internal Circulation (Approx.)	86	123	230	245	21	
		Public Area	Lobby (Approx.)	250	450	650	850	200
			Control Counter/Stor. (Approx.)	300	400	500	600	100
	Public Toilets (Approx.)		300	450	600	750	150	
Housekeeping	Laundry (Approx.)	180	240	300	360	60		
	Janitor Closets (Approx.)	60	80	100	120	20		
8. Misc. @ ~20% (MEC, Circ., Struct.)		4,058	6,745	9,977	13,729	4,050		
TOTAL OF SUPPORT AREAS			7,962	12,206	18,404	25,380	6,700	
GROSS BUILDING AREAS:			26,930	45,710	66,370	90,200	24,340	

2. Participant Loads:

The following table and chart indicate the participant loads to be used for a PFF. This is NOT the occupancy load as related to Life Safety Code, which must be calculated separately.

PHYSICAL FITNESS FACILITY (PFF) SPACE ALLOWANCE										
CRITICAL FUNCTIONAL AREAS & TOTAL PFF BUILDING AREA (Areas in square feet)			X-SMALL Participants	SMALL Participants	MEDIUM Participants	LARGE Participants				
Minimum Population:			251	1,001	3,001	6,001				
Maximum Population:			1,000	3,000	6,000	10,000				
FUNCTIONAL AREAS	1. Fitness Module	Cardiovascular Area	11	27	51	80				
		Circuit Area	16	27	33	46				
		Free Weight Area	15	29	47	80				
		Storage - 10% of Cardio/Circuit/Free	0	0	0	0				
		Stretching	2	4	6	8				
		Fitness Assessment	2	3	4	5				
	2. Gym Module	Basketball Courts (Gymnasium)	15	30	45	60				
		Storage	0	0	0	0				
	3. Exercise Module	Large Group Exercise	24	32	52	84				
		Large Group Exercise Storage - 10%	0	0	0	0				
	4. Structured Activities	Select from optional activities and sizes								
		OPTIONAL SIZES (SF): "A" "B" "C" "D"								
		Racquetball Courts	800	1600	2400	3200	36	52	68	84
		Combatives	1600	3200	NA	NA				
		Climbing Wall	600	1000	1400	1800				
Spinning Classroom		600	900	1200	1500					
Functional Training		1000	1500	2000	2500					
Small Group Fitness		800	1200	1600	2000					
Sauna/Steam Room	150	200	250	NA						
Addl Fitness Module	50 SF increments up to allowed									
5. Jogging Track		32	66	81	99					
TOTAL OF FUNCTIONAL MODULES			153	270	387	546				
SUPPORT AREAS	6. Lockers, Showers, Toilets (Approx.)		0	0	0	0				
	7. Support	Admin	Director's Office	1	1	1	1			
			Program Mgr's Office	0	1	1	1			
			Support Staff Workstations	2	2	4	6			
			Copy/file/work/break Room	0	0	0	0			
			Storage (Approx.)	0	0	0	0			
			Classroom/Training Room	0	0	14	14			
			Classroom/Training Storage	0	0	0	0			
			Internal Circulation (Approx.)	0	0	0	0			
	Public Area	Lobby (Approx.)	0	0	0	0				
		Control Counter/Stor. (Approx.)	2	2	3	3				
		Public Toilets (Approx.)	0	0	0	0				
Housekeeping	Laundry (Approx.)	0	0	0	0					
	Janitor Closets (Approx.)	0	0	0	0					
8. Misc. @ ~20% (MEC, Circ., Struct.)		0	0	0	0					
TOTAL OF SUPPORT AREAS			5	6	23	25				
Total number of participants and staff:			158	276	410	571				
Total number of participants with 10% buffer (Preferred total). This is also the minimum number of lockers to be provided:			168	297	426	601				
Number of male participants/men's lockers (at 65%)			109	193	277	390				
Number of female participants/women's lockers (at 35%)			59	104	149	210				

3. Determining Authorized Population:

The formula for determining Population is as follows:

CONUS: Military Population + 25% of Dependents (as of December, 2013 dependents are calculated at 1.52 * Military Population).

If the Civilian population exceeds 60% of the Installation population, then add 10% of the total number of Civilians to the result above.

OCONUS: Military Population + 25% of Dependents (as of December, 2013 dependents are calculated at 1.52 * Military Population) + 100% of U.S. Civilians.

4. Plumbing:

- a. Restrooms shall be provided on each level of the PFF to accommodate staff and users. Restrooms in the locker rooms shall be considered for patrons only. Restrooms near the lobby shall be considered for spectators, visitors, and staff (if offices are located on first floor). Restrooms on the second floor shall be considered for patrons and staff (if offices are located on the second floor). A minimum of 60% of the restroom requirement for patrons shall be provided in the locker/shower area. Diaper changing stations shall be provided in the first floor restrooms near the lobby.
- b. Where an electric water cooler unit (EWC) is specified, it shall consist of either two water fountains in a single unit combination, or two separate units side by side to allow for one unit to be mounted at ADA height. Electrically cooled units are required. Water fountains shall be fed from dedicated 120V, 20A circuits.
- c. Provide the number of EWC as required by code for peak occupancy loads, located as specified in the requirements below. If all requirements stated below cannot be met by the number of EWC required by code, additional units will be required. A location of up to 100 feet away from the entrance is considered acceptable when the requirement states "near". Multiple activities may use the same EWC. EWC must be provided on all floors of the PFF.
- d. Provide a minimum of 1 EWC on each floor that has a bottle filling station. Water from both the spout and the filler shall be refrigerated, and shall deliver a minimum of 8.0 gph of 50 degree water at 90 degrees ambient and 80 degrees inlet water. Automatic bottle filler is preferred over manual control. Unless otherwise specified in this document, the location shall be centrally located on each floor. The model pictured is only to provide a visual representation of a bottle filling station.



Example

5. Ceiling Requirements:

Where acoustical lay-in ceilings are provided, the following apply:

Ceiling tiles in all functional areas shall be 2' x 2' tegular acoustical tile on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are preferred.

Surface light reflectance: No less than 0.75. Lighting placement and lamping types shall be considered when designing the ceiling.

Sound absorption for acoustical panels: No less than .55 noise reduction coefficient (NRC).

Overstock: Provide 2% for future replacement.

6. Wall Materials:

Walls throughout the Physical Fitness Facility shall be extremely durable and impact resistant. Where concrete masonry unit (CMU) walls are provided, use bullnose corner units or mechanically fastened corner guards at all outside corners. On gypsum board walls, use mechanically fastened corner guards on outside corners in high traffic areas, or where the potential for impact is significant.

7. Wall Finishes:

Where paint is used, paint shall be water based epoxy, semi-gloss finish. Apply one coat compatible primer with two finish coats of 5 to 6 mils dry film thickness (DFT).

Surface light reflectance: No less than 0.50. Lighting placement and lamping types shall be considered when designing the walls. Increase lighting output with light colors and/or panels with not less than 0.50 light reflectance.

Ferrous metals (window and door frames): water based epoxy. Apply one coat primer compatible with finish coat, and as barrier coat to factory primer. Apply two finish coats of 5 to 6 mils DFT.

8. Floor Finishes:

Vinyl composition tile (VCT) is not allowed in the PFF unless specifically allowed in this document.

Surface light reflectance: No less than 0.20. Lighting placement and lamping types shall be considered when designing the floor. Increase lighting output with off-white colors and/or textures with not less than 0.20 light reflectance.

9. Fixed Equipment:

Architectural Casework: Where storage cubicles (cubbies) are required, construction shall be as follows: Cubby design is generally an open face cube in modular "banks" aligned on one wall to counter top height or vertically with the tallest cubicle 5'-0" above finish floor. Cubbies may be provided with lockable doors as discussed below. Cubbies shall be minimum 14" x 14" (18" x 18" preferred) face opening and minimum 15" deep. Construct cubbies of minimum ½" dense particle board or veneer-core plywood shell with minimum ½" plywood horizontal shelves. Entire construction veneered with .048 horizontal grade, high pressure plastic laminate. As an alternative, if solid wood or hardwood veneer-core plywood is used throughout, the surfaces may be finished and sealed with a polyurethane, or equal, coating. Cubbies may also be made from a plastic or solid phenolic type material for added durability. The coating must be cleanable and able to withstand moisture without degrading. Edge trim of cubby frames shall be solid hardwood (bonded) or 3 mil PVC edging routed into panel edge. Use of plastic laminate edges is not allowed. If counter height, provide solid surfacing counter top with eased edge front and minimum 1" tall lip where the counter abuts the wall.

10. Mechanical Considerations:

- a. Enforce the replacement schedule of HVAC Air Handling Unit (AHU) filters. Especially in locations with a high sand environment.
- b. In locations with a high sand environment, duct smoke detectors could be falsely activated by the sand. Ensure that an identifiable system is in place to identify smoke detectors and are properly posted on site.

11. Options:

- a. Consider using electronic locks, with codes established by the patron, on lockers. Electronic locks must have an override feature that would allow staff to open the locker. Do NOT use locks that require the PFF personnel to provide a combination or key to open the locker.
- b. In addition, consider providing lockable cubbies, similar to those shown, where cubbies are required. Coordinate with the users for their preference.
- c. In two-story spaces, to include gymnasium, consider larger industrial high volume/low speed (HVLS) ceiling fans which are appropriate for commercial applications. See picture for an example.



Example



Example



B. FITNESS MODULE (Cardio, Circuit, and Free Weights)

1. Function/Description:

Dedicated area providing space for three separate functions within the Fitness Module (Cardiovascular (Cardio), Circuit (Selectorized), and Free Weights). Cardiovascular: training equipment such as treadmills, stationary bicycles, stair climbers, ellipticals, etc. Free Weight: free weight and plate loaded equipment, benches, and storage racks. Circuit: equipment with pin selected weights.

2. Essential Design Requirements:

- a. The Fitness Module must be visually and directly physically accessible from the control desk to ensure staff can monitor the activity in the free weight area. The desk and free weight area may not be separated by a wall or by a major circulation path. There are no exceptions to this requirement.
- b. For safety reasons, lighting must be designed so that it does NOT result in bright points of light that could be in the eyes of the lifters. See lighting paragraph below for more information.
- c. The circuit area and free weights must be collocated in the same area. In addition 50% - 75% of the cardio area shall be collocated with the circuit and free-weights. The installation may desire a visual/acoustical separation between the free weights and the other functions. The rest of the cardio area (25% - 50% depending upon amount collocated with circuits and free-weights) shall be in at least one (preferably more) different area(s) of the facility. The separation of cardio space is to address the different personal requirements for the workout environment of the participants. Options for the rest of the cardio requirement include a balcony overlooking other activity areas, nooks with views to the outside or other activity areas, an area close to the entrance to the jogging track, etc. A cardio theater shall be provided in at least one of the cardio areas. Cardio theaters, open ceilings, color and lighting will all help to draw users into the space. Utilize large expanses of glass in the exterior walls of the cardio and circuit areas for views into and out of these spaces. Translucent glazing may be used in all areas and may supplement the clear glazing requirements.
- d. Mirrors are required in the free weight and circuit areas as a minimum.
- e. The Fitness Assessment office must be accessible and easily seen by facility users. This office serves not only the Fitness Module, but also the Exercise Module as well.

3. Direct Adjacencies:

- a. As stated above, for safety reasons, the free weight area must be visually and directly physically accessible from the control desk. The free weight area has the highest potential for injury, and staff at the control desk must be able to see and to respond to any incident or unsafe activity within the space. Separation



between the free weight area and the control desk by walls, other equipment, or major circulation is not allowed.

- b. The Fitness Module Storage/Equipment Repair area shall be adjacent to and directly accessible to the Fitness Module. This storage/repair area must also have exterior access for transfer of fitness equipment. Doors, both from the storage area to the exterior and from the storage area to the fitness module, shall be a minimum of 8' wide to facilitate the moving of equipment.
- c. Also within the fitness module shall be an open space for stretching.
- d. Located adjacent to, and directly accessible from, the fitness module, will be an enclosed office type area for fitness assessments. This office will accommodate a couple pieces of fitness equipment for fitness testing as well as office space for the testers. The Fitness Assessment Room will have the same finishes as the Fitness Module.
- e. A direct adjacency to the lobby and open circulation will allow the fitness module to become a major focal point.
- f. Locker Rooms shall be located for convenient access to this module without requiring participants to exit from the "controlled area", which is the area of the facility which can be accessed only after checking in at the control desk. In other words, it is not acceptable to have participants exit into the lobby to access this space.

4. *Ceiling Height:*

Minimum of 12'-0" ceiling height with 14'-0" or more preferred. This clear height is to the lowest element. This becomes especially important where the structure is left exposed, thereby exposing pipes, ducts, conduit, structure, etc. It is also strongly recommended that at least a portion of this space be two-story in height.

5. *Ceiling Finishes:*

In lower spaces, exposed structure is acceptable provided acoustical treatment is provided in the space, and that the structure provides adequate light reflectance for the indirect lighting. As an alternative, consider ceilings of highly light reflective and sound absorbent materials such as 2'x 2' lay-in, wet-formed mineral fiber acoustical panels. In taller spaces, exposed structure is acceptable provided acoustical treatment is provided in the space. Consider use of acoustical "clouds" to enhance acoustics and support indirect lighting.

6. *Walls:*

- a. Provide 1/4" tempered mirror glass with 15 year warranty silver coating on at least half of two perpendicular walls in free weight and circuit area. Mount bottom of mirrors at 18" – 20" above the finish floor, to a height that provides full body visibility or align with door head height. Provide a solid molding (solid rubber, wood, metal) at the bottom of the mirrors to help ensure weight plates leaned up against the wall



will not come in contact with the mirror. Molding shall extend $\frac{3}{4}$ " – $1\frac{1}{2}$ " from wall at a distance of no more than $\frac{3}{4}$ " below the mirror ($1\frac{1}{2}$ " half-round mounted at the bottom of the mirrors would work, as would a piece of 1x or 2x wood mounted at the bottom of the mirrors).

- b. For the wall base, extend the flooring material (see below) up the face of wall a minimum of 16" a.f.f. and cap with a finished hardwood wainscot trim or other molding as defined in "Walls" paragraph above. The top of the wall base and trim/molding must be at least 18" a.f.f. Above average physical abuse to the lower half of walls is typical to Fitness modules. Rubber wainscot resists damage from foot scuffs, "tipping" of free weights against walls, and impact from equipment. To optimize adhesion, the paint finish must be deleted directly behind rubber wainscots. Utilize the molding to conceal and secure the top edge of this material. Other materials may be used as the wall base as long as equal or better protection is provided to the wall.
- c. Utilize a durable and scrubbable eggshell or satin finish, whichever has higher gloss, for painted walls.

7. *Windows and Doors:*

Provide views into adjacent spaces and/or public ways. Aluminum or hollow metal frames are recommended. Tempered glass should be typical to the module. It is preferable to keep this space open to the circulation as opposed to enclosing it into a room.

Where doors are provided into this area, doors will be provided with minimum 5 square foot vision panels. Also consider side lites.

8. *Flooring:*

Rubberized flooring:

Recommended for use throughout the Fitness Module, to include Free-weights, Circuit, and Cardio.

Critical item: It is recommended to perform a moisture test in order to measure retained and film forming moisture at the surface of the slab. The directly adhered rubber products recommended herein have maximum moisture content standards that cannot be exceeded prior to application of the flooring and over the entire warranty period of the floor. In deficient substrates, additional floor treatment may be necessary to meet these moisture constraints. It is recommended that the selected flooring manufacturer make recommendations suitable to their products and warranty requirements.

Type: Granulized new rubber, granulized EPDM, or both used in combination with polyurethane binders. Directly adhered. Recycled rubber is not acceptable for the top surface due to potential of off-gassing; use virgin rubber top surface. If tiles are used, they shall be manufactured in a mould and never cut from rolls, so that placing weights on the seams during installation is not necessary. Tiles should be as large as possible to minimize joints, which can cause cleaning and sanitation concerns. Surface shall be non-porous with as few joints as possible. All joints shall be tight, and preferably sealed, such that no



liquid may enter into the joint. "Puzzle piece" flooring is not allowed. Flooring shall be shock absorbing and shall resist denting.

Finish: Due to color variations inherent to the products, single, solid color floors are not recommended; instead, a speckled finish is preferred. Material shall be a minimum of 3/8" thick. Greater thicknesses are available and may be used when above peak-time activity is typical to the facility. Note: Flooring in excess of 3/8" may require special transitions to avoid access conflicts with the Architectural Barriers Act.

Material Weight: Density no less than 65 lbs./cu.ft.

Durability: Shore A hardness of no less than 60.

Transitions: If required, use solid rubber transition strips sized to match the heights of the dissimilar materials.

9. *Plumbing:*

Electric Water Coolers: Required within this module. Provide one unit minimum in the Fitness Module of the X-Small, Small, and Medium PFF. Provide a minimum of two units in the Large PFF. It is recommended that water fountains be placed outside normal traffic paths and recessed into the wall plane if possible.

10. *Mechanical (HVAC):*

Mechanical heating, ventilation, and humidity control of the module is mandatory.

Operating range: System able to maintain 68 - 74 degrees (F) year-round at 50% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Air movement / control: Fully ducted supply. Natural (non-mechanically driven) ventilation is not allowed. For ventilation rates, use rates for "Health club/weight rooms" from ASHRAE 62.1. Use demand controlled ventilation or heat/enthalpy recovery when cost effective.

Ceiling fans: Multi-speed ceiling fans shall be provided throughout. Fans shall be provided with independent wall mounted switches. It is not recommended that fans be controlled in groups. The blade size of the fan shall be no less than 48 inches in diameter. In two-story spaces, consider larger industrial ceiling fans which are appropriate for commercial applications.

- d. Cardio area: Required if a one-story space, preferred if two-story space. If two-story space, they can hang down from the ceiling. In a one story space, the distance from the floor to the fans is the minimum ceiling height. One fan per maximum of 400 sq. ft. Intent: air circulation and cooling of participants.
- e. Circuit/Free weights: Preferred, especially if one-story space. Spacing as desired. Intent: provide some air circulation.



Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

11. Lighting:

For the safety of the weight lifters, indirect (80% minimum) and direct (20% maximum) lighting is required in the free weight area if the space is provided with a finished ceiling at 14' or less. If the free-weight area is a taller volume, or exposed structure is utilized, lighting must be designed so that "point of lights", from direct/down lighting, are not directly above bench areas. Lighting around the perimeter of bench areas and fixtures provided with a reflective surface directly under the lamp are a couple of approaches that should be considered. If necessary, supplement with other lighting to overcome shadows from obstructions or to highlight certain areas.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended. In addition, grouping of lights so that a portion of the lights may be turned off, especially if natural daylighting is provided, is required. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity.

Light level: 40 footcandles at the floor, minimum.

Additional contribution of natural light via windows, clerestories, and/or skylights to utilize daylighting and daylight harvesting within the space is highly recommended. Again, care must be taken to avoid glare and direct illumination over the free weight area.

12. Power:

Convenience and specialized outlets required.

Convenience power (general cleaning and service): Provide receptacles rated 125V AC, 20A. Space receptacles at 10'-0" o.c. minimum around the perimeter of the room and at freestanding columns located more than 10'-0" from the walls or the nearest outlet.

Specialized (equipment) power: 120V, 20A dedicated circuits, unless equipment manufacturer's data indicates a larger circuit is required for the treadmills. Provide one per piece of equipment, minimum. In addition, convenience outlets must be provided for all of the cardio equipment to support built-in cardio theaters and other personal electrical requirements. Additional electrical power may be required to support the fitness data systems, such as FitLinxx. Use floor mounted, dual or quad outlet, recessed boxes as required to meet equipment count. Solid brass cover plates, flush mounted. Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.



Critical items:

- a. Floor boxes must be mounted above the substrate at a height equal to the thickness of the finish floor system. (i.e. 3/8" for rubber), including the thickness of the box cover plate. Cover plates with flip-up or hinged lids are not recommended. Where outlets are in use, cover plates should be removable or lay flush so as to not contribute to a tripping hazard.
- b. Early determination of equipment purchase and a preliminary equipment layout is highly recommended in order to determine in-floor power needs and box locations. The fitness module should be designed to the equipment.
- c. Spacing (preliminary): 8'-0" on center, each way.

13. Technology/AV:

Data, sound and video required. Provide as required for Cardio Theater and personal fitness tracking systems. Cardio Theater may be mounted to a wall, suspended from ceiling, or supported by posts from the floor. Consult with the user when determining cardio theater requirements.

Data outlets: Dedicated and located at points to be determined by project engineer as follows: Data outlets at cardiovascular equipment floor boxes to accommodate computerized equipment input / outputs, as occurs. 1 data port per each power outlet provided. In addition, data outlets are required in the cardio and circuit areas to support the fitness data systems, such as FitLinxx.

Data ports: Required for workstations used to track and/or monitor fitness performance. Assume 1 workstation minimum per 100 patrons / hourly at peak time. Locate in a centralized location. Data port required for card access device to monitor access security and peak occupancy. Data ports as required around the perimeter of room for mobile monitoring workstations. Provide 1 data port per convenience outlet location.

Provide infrastructure for CCTV cameras to cover areas that cannot be seen directly from the control desk.

14. Sound:

Sound system: Flush recessed ceiling speakers, 25 watt minimum output rating, capable of reproducing the entire audible range for (CD quality) music, minimum.

Sound sources: Sound for this area will be controlled by the control desk.

15. Acoustical Performance:

No extraordinary sound reduction treatments are required. In order to analyze the potential need for additional sound reduction, the following criteria apply: Optimum peak sound level is 40 to 50 db constant (at 1000hz minimum), during peak operation times. - PNC (Preferred Noise Criteria) Curve 55 to 60. Recommended average coefficient of sound absorption of all materials in combination is no less than .50. ("Live" acoustics are desirable). Reverberation time must equal 1.0-1.3



seconds. Provide noise attenuation measures to mitigate acoustical problems resulting from mechanical systems, plumbing systems, and vibration transmitted through the facilities structure.

16. Fixed Equipment:

Cubbies: Provide storage cubbies within the room for 40% - 50% of the participants, based on 50 sq. ft. per participant, for personal items. Locate cubbies along the wall. Benches are not required.

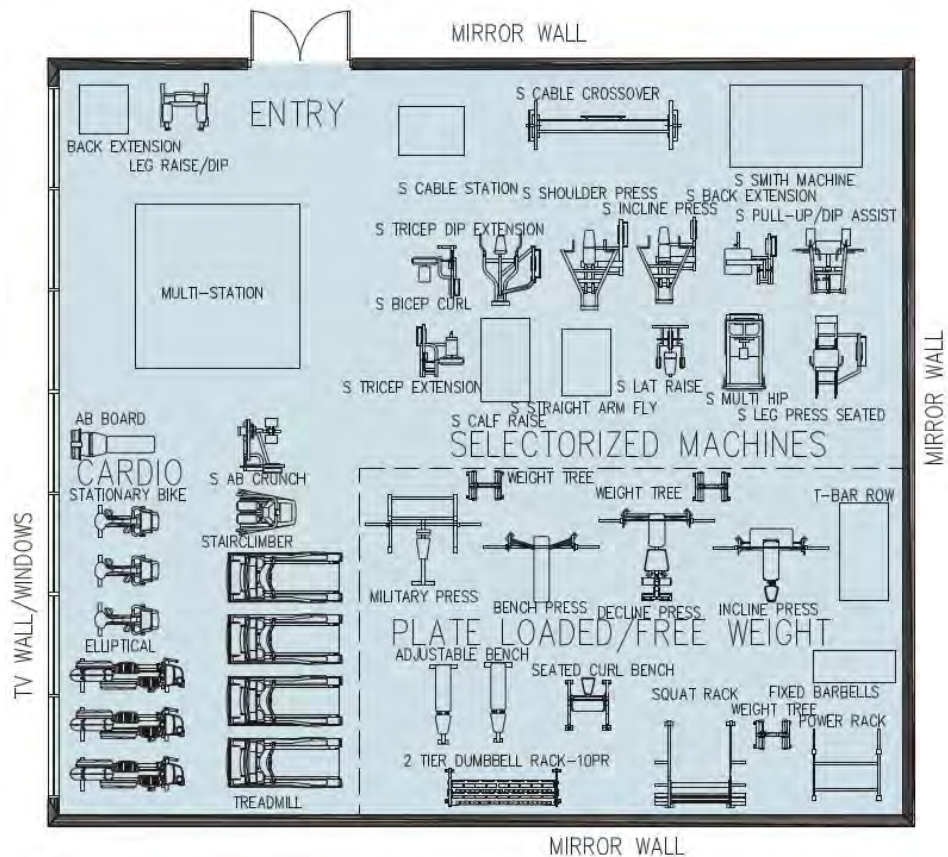
Provide self-serve equipment cleaning supply stations throughout that include disinfectant spray bottles and disposable or reusable towels (may be user provided). Provide AEDs in accordance with Service guidance.

17. Arrangement:

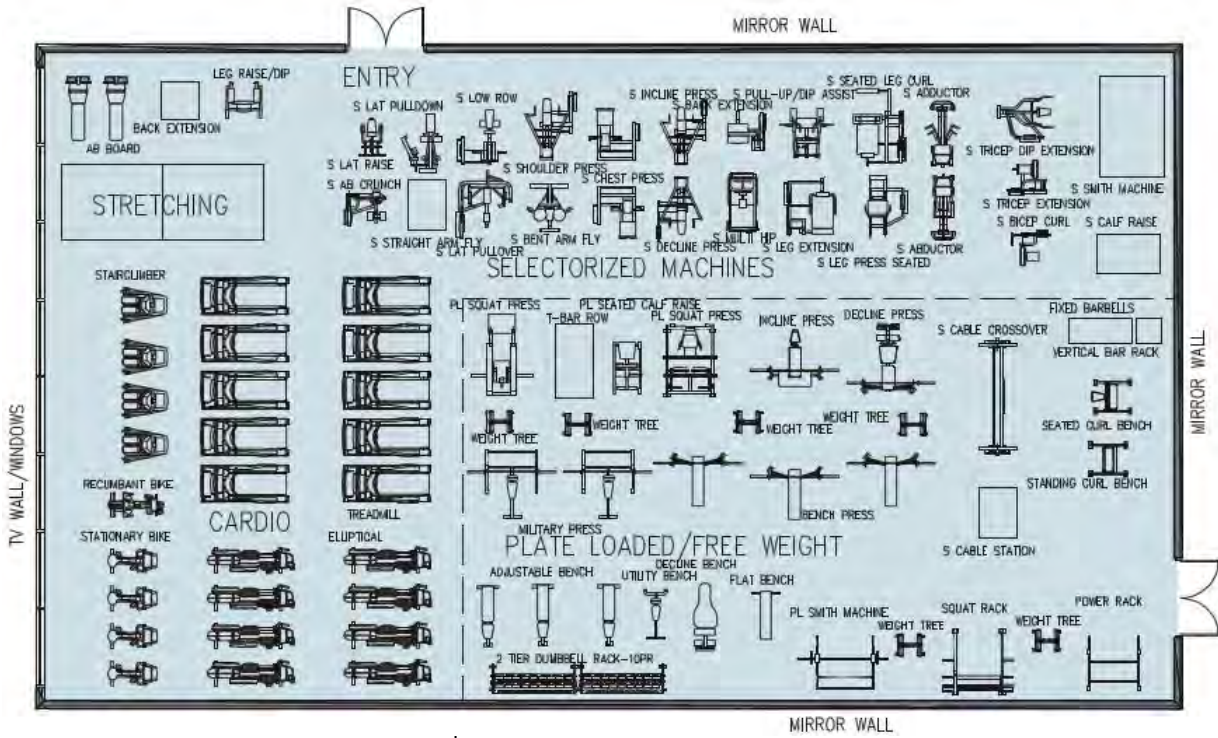
Provided below are diagrams for different sizes of the PFF that illustrate all of the equipment provided within the required space. As mentioned earlier in this document, a portion of the Cardio will be located elsewhere throughout the building. The equipment and space shown is the minimum to be provided. Other arrangements are allowed as long as all criteria is met. The diagrams do NOT indicate the relationship to the Control Desk, which MUST be physically and visually accessible to the Free Weight area.

Following the diagrams is a standard list of equipment that is typical for each size of facility. Please contact IMCOM G9 for current approved equipment

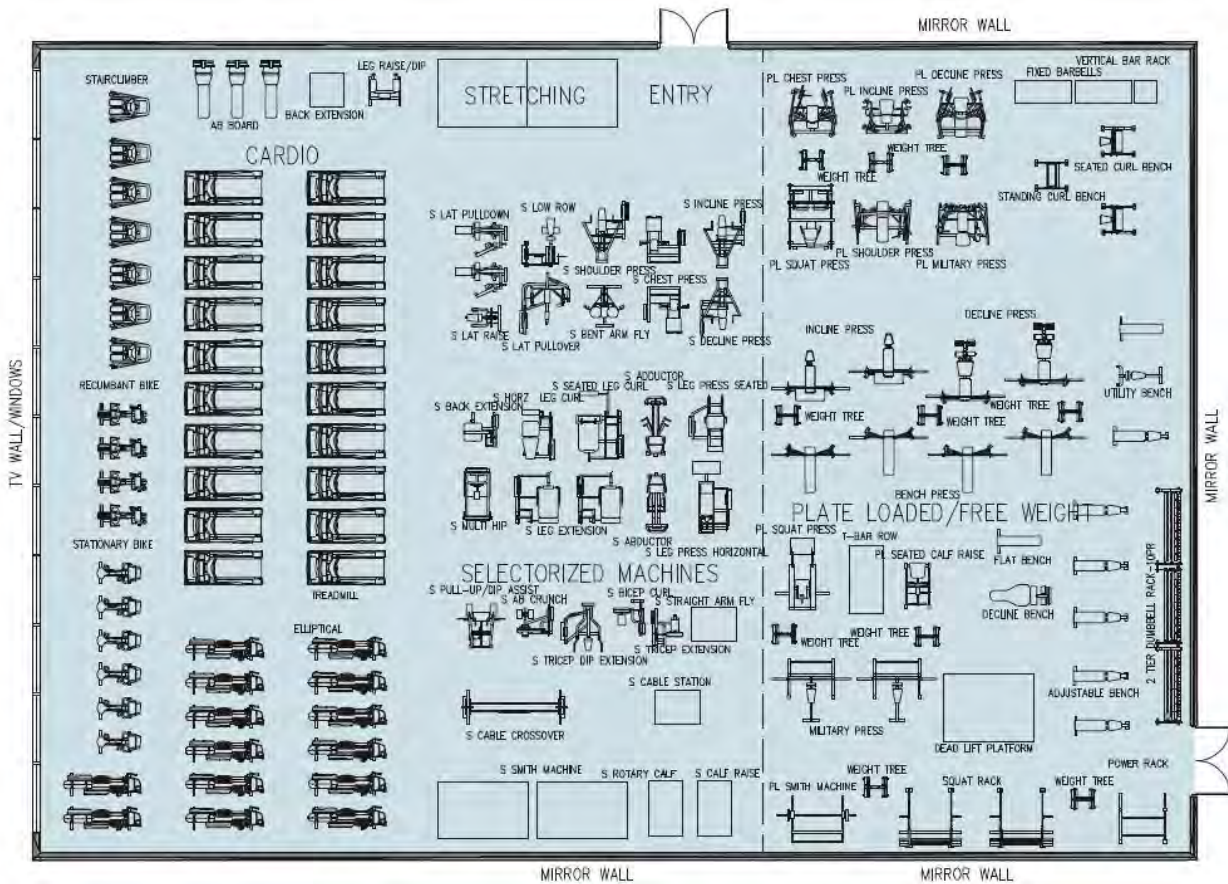
X-Small:



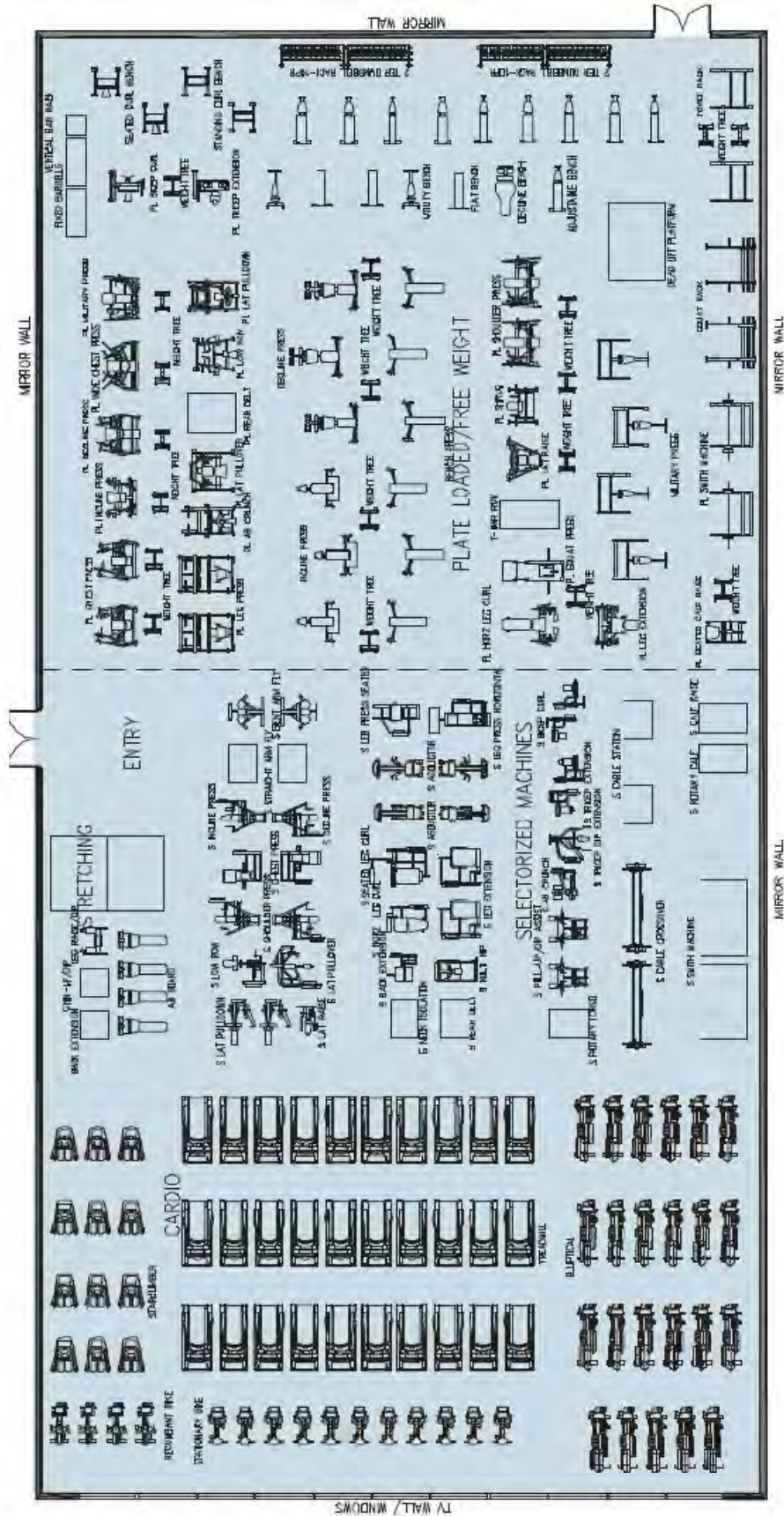
Small:



Medium:



Large:



Fitness Equipment:

Notes for the following charts:

- (A) Cross Trainer may be substituted for Elliptical Trainer.
- (B) Recumbent may be substituted for upright configuration.
- (C) Inclusive in Multi-Station machine as an example.
- (D) Alternate configurations may be substituted for typical exercise configuration (Ex. Horizontal, Standing, Kneeling, etc.).
- (E) Dip extension may be substituted for extension configuration.
- (F) Integral weight storage consideration to reduce Weight Tree and space requirements.
- (G) Actual count dependant on station count and requirements.
- (H) Plate Loaded Smith Machine may be substituted for Selectorized/Stack Weight Smith Machine.

X-SMALL	SMALL	MEDIUM	LARGE
MODULE SIZE			

Cardiovascular Equipment

Commercial Grade Electronically Controlled

Treadmill	4	10	20	30
Elliptical Trainer	3	8	14	23
Cross Trainer/Hiker	A	A	A	A
Stationary Bike (Upright)	3	5	10	15
Stationary Bike (Recumbent)	B	B	B	B
Stairclimber/Stepper	1	4	7	12
Rowing Machine	0	0	0	0
Skier	0	0	0	0
Kayak Machine	0	0	0	0
Skate Machine	0	0	0	0
Subtotal	11	27	51	80

X-SMALL	SMALL	MEDIUM	LARGE
MODULE SIZE			

Strength Equipment

Commercial Grade Selectorized/Stack Weight Machines

Multi-Station (Ex. 6 stations)	1	0	0	0
Leg Extension	C	1	2	2
Leg Curl (Seated)	C	1	1	1
Leg Curl (Horizontal/Prone)	D	D	1	1
Leg Curl (Standing/Kneeling)	D	D	D	D
Leg Press (Seated/45deg)	1	1	1	1
Leg Press (Horizontal/Supine)	D	D	1	1
Leg Press (Lunge)	0	0	D	D
Calf Raise (Seated)	1	1	1	1
Calf Raise (Standing/Donkey)	D	D	D	D
Calf Raise (45deg)	D	D	D	D
Rotary Calf	D	D	1	1
Abductor	0	1	1	2
Adductor	0	1	1	2
Multi-Hip Machine (Rotary Hip)	1	1	1	1
Hip Extension	0	0	0	0
Glute Isolation	0	0	0	0
Bent Arm/Pectoral Fly	C	1	1	2
Straight Arm Fly/Rear Delt	1	1	1	2
Chest Press (Seated)	C	2	2	2
Chest Press (Horizontal/Supine)	D	D	D	D
Incline Press	1	1	1	1
Decline Press	0	1	1	1
Lat Pulldown	C	1	2	2
Lat Pullover	0	1	1	1
Low Row	C	1	1	1
High Row	0	0	0	0
Rear Deltoid (Seated)	0	0	0	1
Rear Deltoid (Horizontal/Prone)	0	0	0	D
Back Extension	1	1	1	1
Lateral/Deltoid Raise	1	1	1	1
Shoulder/Overhead Press	C	1	1	2
Bicep Curl	1	1	1	2
Tricep Extension	1	1	1	2
Tricep Dip Extension (Press)	1	1	1	1
Wrist Curl	0	0	0	0
Neck Isolation	0	0	0	1
Smith Machine (H)	1	1	2	2
Cable Crossover w/ Chin-up Bar	1	1	1	2
Cable Station (2 sided)	1	1	1	2
Ab Crunch	1	1	1	1
Rotary Torso	0	0	0	1
Pull-up/Dip Assist	1	1	1	2
Subtotal	16	27	33	46

X-SMALL	SMALL	MEDIUM	LARGE
MODULE SIZE			

Strength Equipment

Commercial Grade Plate Loaded Machines

Leg Extension	0	0	0	1
Leg Curl (Seated)	0	0	0	1
Leg Curl (Horizontal/Prone) (F)	0	0	0	D
Leg Curl (Standing/Kneeling)	0	0	0	D
Squat Press (Seated/45deg/Hip) (F)	0	1	1	2
Squat Press (Vertical/Hack) (F)	0	1	1	1
Squat Press (Horizontal/Supine) (F)	0	D	D	D
Squat Press (Jammer/Ground Based) (F)	0	0	0	D
Calf Raise (Seated)	0	1	1	1
Calf Raise (Standing)	0	D	D	D
Calf Raise (45deg)	0	D	D	D
Rotary Calf (F)	0	D	D	D
Tibia Dorsi Flexion	0	0	0	0
Abduction (F)	0	0	0	0
Adduction (F)	0	0	0	0
Glute Isolation	0	0	0	0
Chest Press (Seated) (F)	0	0	1	2
Chest Press (Horizontal/Supine) (F)	0	0	D	D
Wide Chest Press (F)	0	0	0	1
Incline Press (F)	0	0	1	1
Decline Press (F)	0	0	1	1
Military/Shoulder Press (F)	0	0	1	1
Lat Pulldown (F)	0	0	0	1
Lat Pullover (F)	0	0	0	1
Low Row (F)	0	0	0	1
High Row (F)	0	0	0	0
Rear Deltoid (Seated) (F)	0	0	0	1
Rear Deltoid (Horizontal/Prone) (F)	0	0	0	D
Back Extension	0	0	0	0
T-Bar/Lever Row	1	1	1	1
Lateral/Deltoid Raise (F)	0	0	0	1
Shoulder Press (F)	0	0	1	2
Shrug (F)	0	0	0	1
Bicep Curl	0	0	0	1
Tricep Extension	0	0	0	1
Tricep Dip Extension (F)	0	0	0	0
Wrist Curl	0	0	0	0
Hand Grip Isolation	0	0	0	0
Neck Isolation (F)	0	0	0	0
Smith Machine (F)	0	1	1	2
Ab Crunch	0	0	0	1
Rotary Torso	0	0	0	0
Subtotal	1	5	10	26

X-SMALL	SMALL	MEDIUM	LARGE
MODULE SIZE			

Strength Equipment

Commercial Grade Free Weight Equipment/Benches

Dumbbell Sets (10pr)	G	G	G	G
Dumbbell Rack-1 Tier/5pr	0	0	0	0
Dumbbell Rack-2 Tier/10pr	1	2	3	4
Fixed Barbell Set (10 Assorted)	1	1	2	2
Fixed Barbell Rack	G	G	G	G
Weights (Assorted 2.5#-45#)	G	G	G	G
Weight Tree/Rack	G	G	G	G
Bars (Assorted/Loose)	G	G	G	G
Bar Rack	G	G	G	G
Benches (Assorted)	2	6	10	16
Squat Rack (F) & Bar	1	1	2	2
Bench Press (F) & Bar	1	3	4	6
Incline Press (F) & Bar	1	1	2	3
Decline Press (F) & Bar	1	1	2	3
Military/Shoulder Press (F) & Bar	1	2	2	4
Dead Lift Platform/Rack (F) & Bar	0	0	1	1
Power Cage/Rack (F) w/ Bar	1	1	1	2
Curl Bench (Seated)	1	1	2	2
Curl Bench (Standing)	0	1	1	2
Leg Raise/Dip	1	1	1	1
Chin-Up/Dip	0	0	0	1
Back Extension	1	1	1	1
Abdominal Board	1	2	3	4
Subtotal	14	24	37	54

Equipment Summary

Cardiovascular Equipment

Electronically Controlled	11	27	51	80
Subtotal	11	27	51	80

Strength Equipment

Selectorized/Stack Weight Equipment	16	27	33	46
Plate Loaded Equipment	1	5	10	26
Free Weight Equipment/Benches	14	24	37	54
Subtotal	31	56	80	126

TOTAL	42	83	131	206
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C. EXERCISE MODULE (Large Group Exercise)

1. Function/Description:

Classroom(s) to accommodate instructional fitness programs that may include aerobics, martial arts, yoga, step-conditioning, kick boxing, etc. The exercise module shall be one large room that can be divided, through use of a movable wall (not accordion fold partition), into 2 separate group exercise areas. Consider use of an electrically operated wall system. The partition must be recessed into an alcove when opened, and the alcove shall have minimal impact on the function of the entire space. Rooms shall facilitate flexible arrangements for a variety of setups. Equipment setup and tear down time will affect the rollover of exercise modules. One side of the room will be considered as the “primary side”, as it will be required to control lighting and sound for not just its half, but for the entire room when the movable wall is opened. The “primary side” shall be 50% - 65% of the total space requirement for this module.

2. Essential Design Requirements:

- a. The Exercise Module must be designed to acoustically separate this space from other spaces. In addition, this space must be designed for proper acoustics for aerobic and other exercise classes.
- b. Storage rooms shall be provided for convenient access to exercise equipment. The storage room on the “primary side” shall be a flow-through design. In other words, the storage room shall be a linear arrangement with adjustable shelves/bins on both sides with a door at each end, so that patrons may enter one end of the room, pick up their equipment, and leave from the other end, without causing a traffic flow problem. This is shown in the diagrams in paragraph 3.p. below. Storage room on the “primary side” may be up to 25% larger than the other storage room, where 2 rooms are required.
- c. Provide natural light and views outside where appropriate based on the activities and requirement for mirrors within the space. Also provide view panels between the corridor and this space.

3. Direct Adjacencies:

- a. A minimum of one flow-through storage room shall be provided for the Exercise Module. For Medium and Large facilities, each side of the Exercise Module must be provided with its own storage room.
- b. Drinking fountain shall be located directly outside of this space if a wood floor is provided. Otherwise, the drinking fountain may be located within the space.

4. Ceiling Height:

10'-0" minimum. (See requirements for ceiling fans below)

5. Ceiling Finishes:



Provide ceilings of highly light reflective and sound absorbent materials.

Accent functional areas or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area. "Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit. Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first; then consider the pattern of the panels and placement of bulkheads. Where soffits exceed 36" in width and/or 12" in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

An open ceiling, exposed to the structure, is also acceptable as long as acoustic panels and/or banners are provided to provide the same level, or better, of acoustical treatment as an acoustical tile ceiling would.

6. Walls:

Mirrors: Provide ¼" tempered mirror glass with 15 year warranty silver coating on 50% of at least two perpendicular walls. Mount mirrors with the bottom no more than 12" (8" preferred) above the finish floor to a height that provides full body visibility or align with door head height.

7. Windows And Doors:

Tempered safety glass is typical where glazing is 18" or closer to the floor. Tempered or laminated safety glass above that point depends on the potential for impact from adjoining activities. It is recommended tempered glass be used when precise potential cannot be determined. Adding horizontal mullions at 32-36" A.F.F. also reduces risks from casual contact with glazing. Aluminum frames should be used when consistent with the interior design of adjacent spaces.

Doors shall be provided with a minimum 5 square foot vision panel. Also consider use of side lites next to the door.

8. Flooring:

Aerobic floor: Machine milled and formed solid maple strip flooring that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade.

Size and construction: 25/32" thick x 2 ¼" width minimum. Provide a floating system with two bonded bi directional plywood backing layers, supported on neoprene cushion pads (¾" high) and continuous 7/16" to ¾" thick EPDM cushion pad or other approved flooring system which is DIN certified for aerobic use. Floor will have noticeable flex but with firm feel during aerobic activities.



Alternate floor: Synthetic flooring, designated for aerobic classes, may be provided only if the general population served by this facility is primarily active-duty military, and these areas will be used more for martial arts, boxing, etc., with very limited aerobic classes with repetitive impact on the legs and joints.

9. Plumbing:

Electric Water Coolers: Required adjacent to this module, as described above, located close to entrances (maximum of 30' from entrance). Provide one unit minimum with any size module. Water fountains shall be placed outside normal traffic paths. This may be accommodated by providing an alcove or by recessing into the wall plane. If this module is provided with a synthetic floor, water fountains may be located inside the room, but must be recessed out of the activity floor area. If this module is provided with a wood floor, the water fountains will not be located inside the room.

10. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory.

Operating range: System able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct if existing ceiling is exposed structure. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Ceiling-mounted diffusers will be standard 2x2 units with directional vanes. Return air may be centralized. For ventilation rates, use rates for "Health club/aerobics room" from ASHRAE 62.1. Use demand controlled ventilation or heat/enthalpy recovery when cost effective. Natural (non-mechanically driven) ventilation is not allowed.

Ceiling fans: Multi-speed ceiling fans shall be provided throughout. Fans shall be provided with independent wall mounted switches. It is not recommended that fans be controlled in groups. The blade size of the fan shall be no less than 48 inches in diameter. The bottom of the fan must be no lower than 10'-0". Provide one fan per maximum of 400 sq. ft. Intent: air circulation and cooling of participants.

11. Lighting:

When ceilings heights do not allow pendant mounted or suspended lighting, indirect 2 x 2 or 2 x 4 lay-in fluorescent fixtures may be used. Direct 2 x 2 or 2 x 4 lay-in fluorescent fixtures may also be used, but are not recommended due to lower light quality (excessive glare and static light distribution; e.g. causes greater eye fatigue over long periods of time). Lighting shall be switched to allow for different levels of lighting. Natural light via windows may be provided, but direct sun-light and glare must be avoided. Windows providing internal views to other spaces is desirable.



Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended. In addition, grouping of lights so that a portion of the lights may be turned off, especially if natural daylighting is provided, is required. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity. Lighting on each side of the movable wall shall be controlled separately so each side of the room can function independently. In addition, the “primary side” must be able to control lighting for the entire room from a central location near where the instructor will be located.

Light level: 40 footcandles at the floor, minimum.

12. Power:

Convenience outlets required.

13. Technology/AV:

Provide for wall mounted televisions with internet and CATV capabilities.

Provide for CCTV cameras.

14. Sound:

- a. Provide speakers for main PA system, so that announcements from the desk can be heard in this space.
- b. Provide ceiling mounted speakers for high quality music reproduction. If a lay-in ceiling is provided the speakers shall be recessed. Speakers shall have a 100 watt minimum output rating and shall be capable of reproducing CD quality sound.
- c. Provide wiring, cabling, and other built-in support for a user provided sound system that will be plugged into the speaker system in the room. Provide connections for this sound system on both sides of the room, and these connections must be located near the location of the instructor. The “primary side” of the room shall be able to control sound in not only just that side, but in the whole room as well. This is required to accommodate larger classes when the dividing wall is opened, and the entire room is used. The system on the other side of the room shall only operate the speakers on that side of the room.
- d. Strongly consider providing a built-in, lockable rack for the GFGI sound system, and locate this rack near the location of the instructor.

15. Acoustical Performance:

Aerobic activity will require partitions to be sound rated to with a minimum STC rating of 50. Reverberation time must equal 1.0 second. Provide noise attenuation measures to mitigate acoustical problems resulting from mechanical systems, plumbing systems, and vibration transmitted through the facilities structure. Where glass walls are used to enhance interior views, front these walls to interior circulation and not into other activity spaces. One exception is the gymnasium. The movable wall shall have a minimum STC rating of 45.



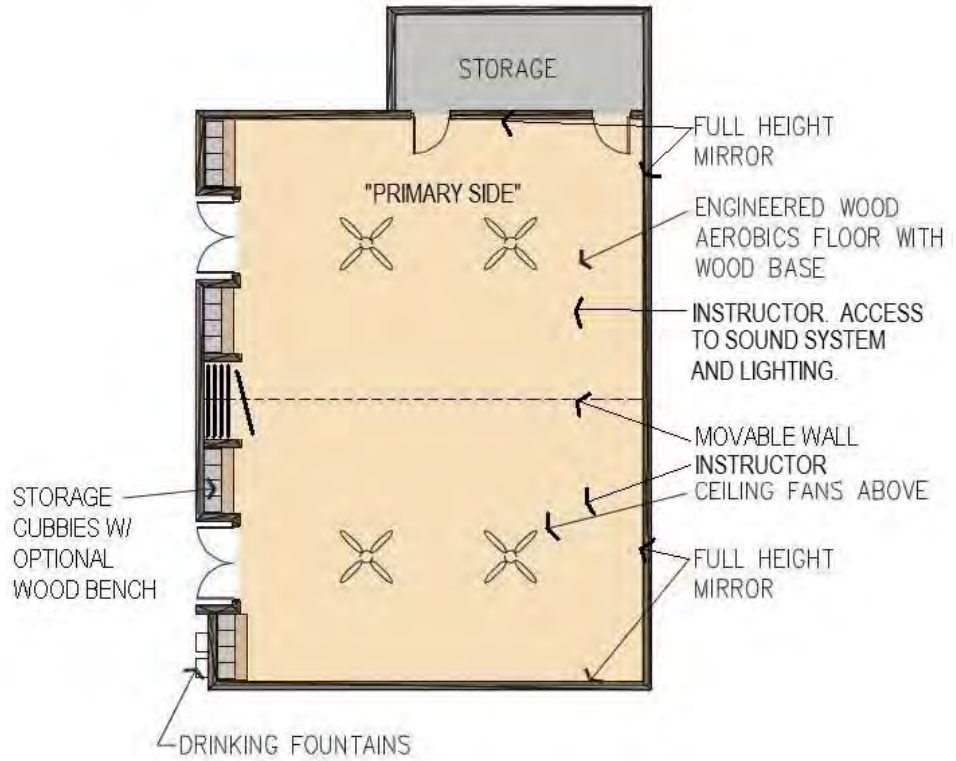
16. Fixed Equipment:

Architectural Casework: Provide storage cubicles (cubbies) along one wall of the module for incidental storage during activities: Provide minimum of one cubby for 50% of the total number of participants at room's maximum occupant load (based on 50 sq. ft. per person).

17. Arrangement:

Provided below are recommended arrangements for an X-Small/Small facility and for a Medium/Large facility. It is desirable for storage to be provided for both halves of the X-Small and Small facilities provided the space provided in each storage room is adequate to be functional and meet the needs of the user.

X-Small/Small:



Medium/Large:



D. STRUCTURED ACTIVITY MODULE

1. Function/Description:

The Structured Activity Module is discretionary space allocated for each facility size to allow the installation to determine what other activities are required at their installation. This space must be designed to accommodate the unique requirements of each activity. The table below indicates the various functions and allowable sizes for the Structured Activity Module. The sizes indicated below do NOT correspond to the size of the facility. In other words, a size "D" (Large) Indoor Cycling Classroom may be used in a small facility. The only governing criterion regarding size is that the total of selected functions may not exceed the total allowable space for the Structured Activity Module within a facility. The installation will determine what functions will be provided during the charrette process.

OPTIONAL SIZES (SF):	"A"	"B"	"C"	"D"
Racquetball Courts	800	1600	2400	3200
Combatives	1600	3200	NA	NA
Climbing Wall	600	1000	1400	1800
Indoor Cycling Classroom	600	900	1200	1500
Functional Training	1000	1500	2000	2500
Small Group Fitness	800	1200	1600	2000
Sauna/Steam Room (total)	150	200	250	NA
Additional Fitness Module	50 SF increments up to allowed			

The total net area of Structured Activity Module allowed by facility size is provided below.

- X-Small:** 1800 Square Feet
- Small:** 2600 Square Feet
- Medium:** 3400 Square Feet
- Large:** 4200 Square Feet

Total net area may be increased by:

1. Reduction in miscellaneous space by providing a more efficient circulation pattern, or a more efficient Mechanical/Electrical/Communication Room(s) layout.
2. Providing a gymnasium with no tournament court and no jogging track. See Gymnasium section below for more details.

Additional storage may be provided by reducing other storage areas throughout the building, or by deducting it out of the area provided in the chart above.



2. Racquetball Courts:

a. Essential Design Requirements:

1. It is preferred that these are located in a visible area, such as off the lobby. Courts shall be provided with full-height glass back walls for spectators. An area shall be provided for spectators. Seating may be accomplished by movable or built-in seating.
2. The United States Racquetball Association (USRA) and International Racquetball Federation (IRF) provide specification criteria for court design and construction. Courts shall be built to USRA/IRF standards to ensure they are suitable for all types of play, including international matches.
3. Finished assembly size of courts, including wall thicknesses, are approximately 1'-2" larger than interior dimensions.
4. Use panelized racquetball court construction, as opposed to plaster on concrete.
5. Racquetball facilities are essentially rooms within a room. Exterior envelope, floor and roof system are assumed to be existing. With regard to special treatment of the building envelope: the floor substrate should follow the same guidelines for the Fitness module whether wood floors for courts or synthetic floors in the adjacent seating / waiting area are under consideration. Floor tolerances and wall tolerances require precise construction in court systems. If space is tight, the exterior walls or interior partitions must be plumb to within $\frac{1}{4}$ " in 10'-0" in the vertical and horizontal planes prior to starting the walls for the courts. Courts construction must also wait until environmental conditions within the building envelope meet recommended minimums and can be maintained during and after construction.

b. Direct Adjacencies:

No specific requirements. However, it is desirable if these are located adjacent to the lobby so that the viewing area for the courts can be combined with the lobby seating. Also, with the glass back wall and the active nature of the sport, this makes for the active visual impact desired when entering the facility.

c. Finishes:

General: The necessary clear space above the inside height of the Racquetball court must take into account the thickness of the court roof, the height of lighting housings, clearance for ductwork overhead, and the depth of structural elements that are part of the floor/roof assembly above. As a preliminary guideline, allow 2'-0" plus the depth of the structure system above 20'-0" to accommodate these elements.

Material: Pre-formed high density (62 lbs / cu.ft.) resin core racquetball court panels on concealed T- spline system. Prefinished systems are preferred for their reduced life-cycle maintenance. Face design: Smooth. Recommend use of the same panels for the entire ceiling.

Panel Edge design: Flush butt joints with no more than a $\frac{3}{32}$ " gap between panels. Impact resistance: high impact and 80 shore A durability rating.

Metal wall studs: 33ksi yield strength, load bearing studs, 18 gauge minimum. Typically 4" studs for 20' height, spaced at 16" o.c. Six inch (6") studs are preferred.

Face finish: Smooth and flush. Surface variations equal to or less than 3/32" gaps or variations in plane at panel joints. System walls "float" in relation to one another. Inside corners are kept loose with 1/16"-1/8" gap at the vertical corners.

Critical item: Wall finish panels do not extend to the floor. End of panels are held off the substrate 1/2" minimum to allow walls to contract and expand without warping the surface. See floor guidelines below.

Ceilings must be smooth and flush as well. Sprinkler heads shall be recessed with a cover. Lights shall be provided with a lens that will withstand impact from the ball.

Fire strobes, alarms, speakers, and any other surface mounted item, must be located outside of the courts.

Back wall: Glass wall. Competition courts generally prefer that the back wall run full height, but can use an 8'- 12' high glass partition at the floor line and use a solid wall panel system for the remaining height. Glass wall system: 1/2" thick tempered glass walls and doors. Tall vertical walls (above 8'-0" a.f.f.) will require use of vertical glass stiffeners. Glass is structural and utilizes upper and lower channels only to retain 8' - 10'-0" high glass systems, with added edge panel hardware for tall glass systems.

Caution: Review glass panel attachments to floor line with supplier to provide proper support and understanding of the floor to floor transition between spectator floor and the court floor. If both systems are not wood systems, court substrate will be recessed approximately 2 1/2" in relation to the spectator area. Back wall doors shall be frameless glass doors with face finish to match wall system. In resin core applications, manufacturers of panels offer face panels for door applications. Door frames, where used, shall be heavy gauge aluminum with adjustable stops to provide a flush installation within regulation tolerances for court wall faces.

Critical Item: No surface fasteners or projecting hardware shall be used on the interior court face for any components. Accessory items, including doors and frames shall all use concealed fasteners. Door hardware shall be flush and recessed in the face of the door on the court side. Door width shall be no less than 34" clear for ADA use.

Sound absorption for panels: Fiberboard may be mounted directly behind resin core panels to reduce "drum" effect of hard panels systems. Sound batts are also provided to reduce transfer noise to other spaces or in multi-court applications.

Surface light reflectance: No less than .80.

Humidity resistance: Maximum as allowed by court manufacturer.

Fire resistance: Use only Class A rated materials as determined by Underwriters Laboratories (UL) Fire resistive gypsum board mandatory when used as part of the ceiling system.



d. Windows And Doors:

Glass doors integral to the glass wall system shall be provided.

e. Flooring:

Floor tolerances: No more than ¼" in 10'-0" each direction, non-averaged for the full length of the floor. Follow wood flooring supplier's recommendations for leveling uneven substrates.

Materials: Machine milled and formed solid maple strip flooring that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade.

Size and construction: 25/32" thick x 2 ¼" width minimum, bonded to 2 layer bi-directional ½" thick plywood panels. Provide a system with ¾" thick wood or metal and wood composite support sleepers mechanically fastened to floor panels or equal system. Cushion pads on the underside of the sleepers is optional. Expansion control is critical to floor system. DIN certified system for court use.

Floor Edge treatments: Racquet ball court floors do not extend to the wall surfaces. Floor edge is held back from wall a maximum of 3/16" at head walls and ½" maximum at side walls, to allow for expansion and contraction of floor system.

Floor finish: Catalyzed polyurethane finish system requiring multiple sanding and application steps for a sanding sealer / primer base coat and two finish coats of gloss urethane. Floor striping is accomplished between the first and second finish coats.

Court striping: Flooring striping is handled by the flooring manufacturer. Front and side wall striping is prefinished with resin core laminate panels. Consult with a national racquetball association like USRA (United States Racquetball Association) for standards particular to competition in the project region.

f. Plumbing:

Electric Water Cooler: Provide one unit near spectator area, but not necessarily directly adjacent to courts. It is undesirable for water to be available where it could be carried onto courts.

g. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: For racquetball courts, system shall be able to maintain 60 - 68 degrees (F) year-round at 50% or less relative humidity.

Air movement / control: Fully ducted supply and return. Passive or plenum return not recommended. Supply diffusers are to be heavy gauge fixed metal grilles with four-way air movement and blade-type vanes. Return air grilles may be perforated plate or blade type. All diffusers to be prefinished, designed to be impact resistant. Preferred location is back wall supply and return. Natural (non-mechanically driven) ventilation is not allowed.

Temperature controls: Independent to courts, with all controls centrally located, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended. Ductwork shall be insulated sheet metal rectangular or circular duct routed adjacent to diffuser locations. Use flexible duct drops to diffusers. Natural (non-mechanically driven) ventilation is not allowed.

h. Sound:

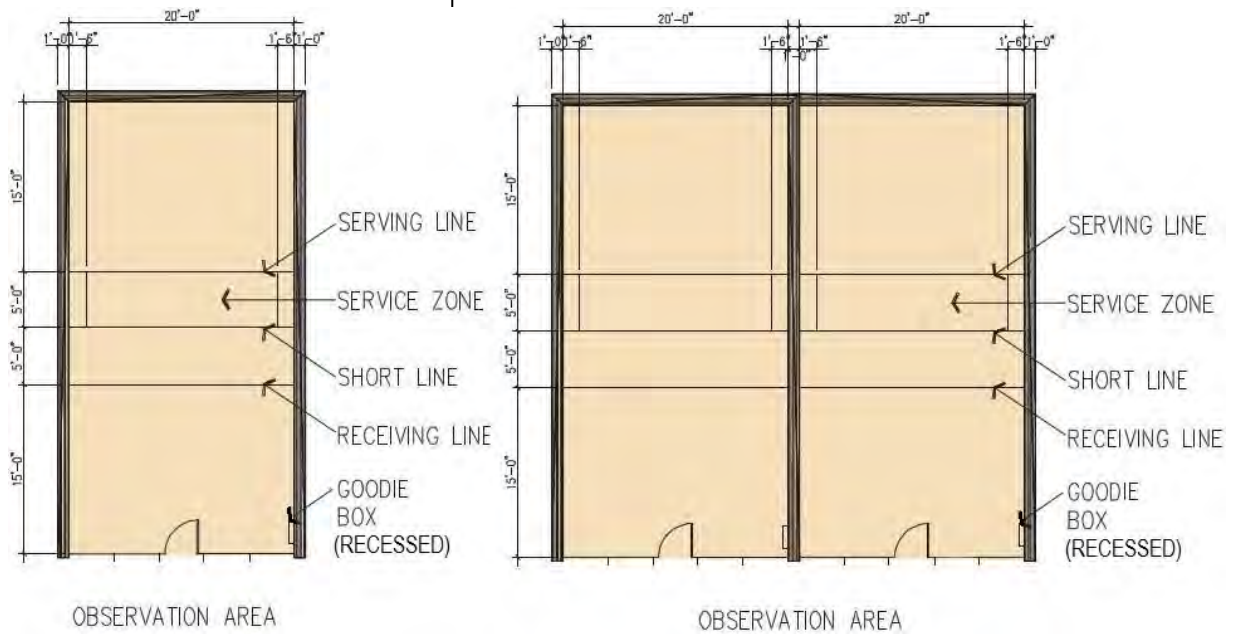
Sound system: Flush recessed speakers, 25 watt minimum output rating, capable of reproducing the entire audible range for human speech. Link speakers to paging system with input / output modes for single court or all court paging. Provide at least one speaker location in spectator / waiting area with court speaker at back upper wall.

i. Fixed Equipment:

"Goody box:" A "goody box" shall be provided in each court as a place for the storage of small valuables during play be provided for each court. Court manufacturers offer a recessed metal box with flush cover and concealed fasteners, accessible from the interior side of the court only.

j. Arrangement:

Provided below are arrangements for 1 and 2 racquetball courts. Markings must meet the current guidelines of the governing organization. Based on user preferences, more than 2 courts may be provided.





3. Combatives:

a. Function/Description:

This space is used for wrestling and man-on-man combat training. Padding, as described below, is provided on the floors and the walls for safety. Other important design considerations include elimination of projections into the mat area, removal of any safety concern, such as required cut-outs in the mats, and ensuring the size of the room meets the requirements for the floor mats.

b. Essential Design Requirements:

1. Room shall not have any external corners within the room. Columns, if required, must be fully buried within the wall, so the wall surface is perfectly flat. The room shall be sized to accommodate 1 or 2 mats as required by the installation. Floors and walls shall be provided with padding (mats). Padding on walls shall be provided to a minimum of 6' above the floor. No windows or doors may be provided within the padded area. Translucent glazing may be provided above the padding. Floor slab should be recessed to compensate for mat thickness, or plan for a transition area outside of the 36' x 36' mat area. Mats to be utilized are similar to wrestling mats, and are approximately 3" thick (walls and floor). There must be no gap between the floor mat and the wall mats. It is acceptable for the wall mats to overlap the floor mat, or for the floor mat to butt into the wall mats.
2. A storage room must be provided. Unlike the group exercise rooms, this storage room does not have to be a one-way flow-through configuration.
3. Space is required for hanging bags.
4. Provide a bench, off of the mat area, to allow for users to change shoes.
5. The 36' x 36' dimension for the mats is a minimum. Less than 36' x 36' per mat is unacceptable.
6. Walls shall be designed to withstand impact, and shall be acoustically treated to minimize the transmission of sounds from impact to other spaces. Gyp. Bd. alone is not an adequate wall material.
7. Walls shall be perfectly smooth and may not contain any outside corners, bracing, or outlets that would require cutting of the wall mats.
8. Room must be as close to square as possible within construction tolerances (+/- 1" within the 36' length of the mat), with the smallest dimension being no less than 36'.

c. Direct Adjacencies:

No special requirements.

d. Ceiling Heights:

10'-0" minimum

e. Ceiling Finishes:

Provide ceilings of highly light reflective and sound absorbent materials. For lay-in acoustical tile ceilings, hold down clips may be desirable.

f. Plumbing:

Electric Water Coolers: Provide one unit near this function.

g. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: System able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct if existing ceiling is exposed structure. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Ceiling-mounted diffusers will be standard 2x2 units with directional vanes. Return air may be centralized. Natural (non-mechanically driven) ventilation is not allowed.

h. Lighting:

Provide indirect 2 x 2 or 2 x 4 lay-in fluorescent fixtures. Direct lighting shall not be used for safety concerns. Lighting shall be switched to allow for different levels of lighting.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended.

Light level: 40 footcandles at the floor, minimum.

i. Power:

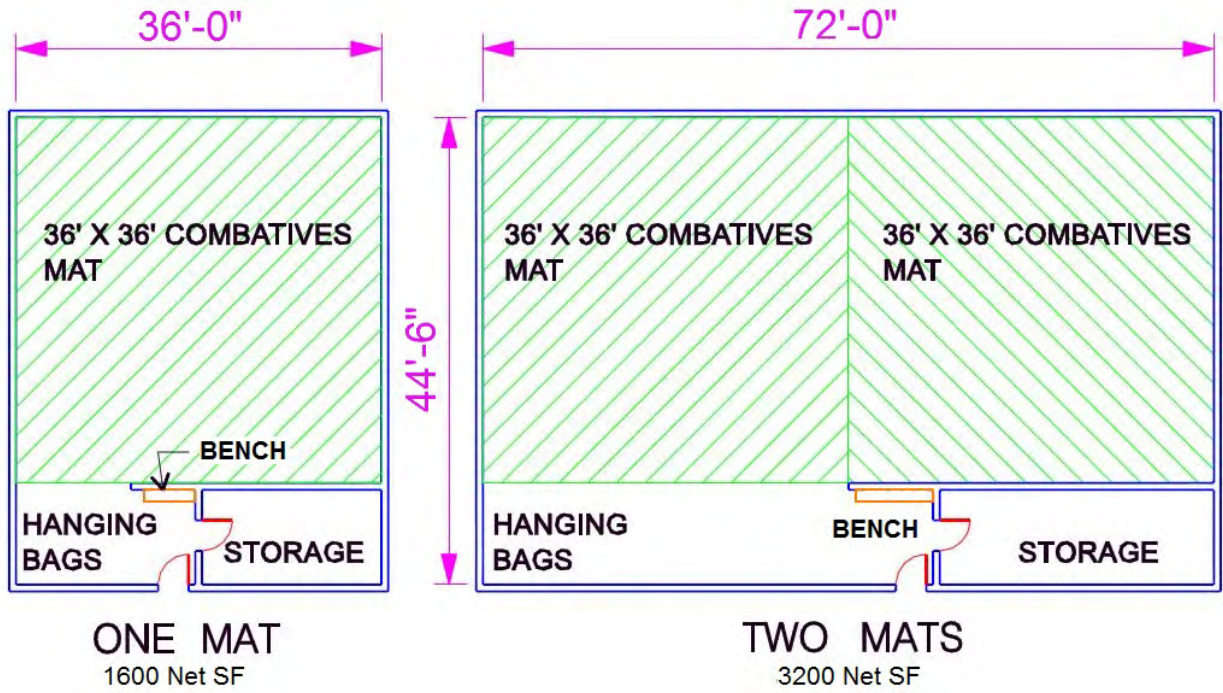
Locate convenience outlets to avoid safety concerns with cut outs in the wall padding. Best locations are where no padding is required and at a height above the padding. At each outlet above the padding, provide blank boxes and pull-strings at standard outlet mounting height behind the wall padding for use if the function of this space changes.

j. Sound:

Sound system: Flush recessed speakers, 25 watt minimum output rating, capable of reproducing the entire audible range for human speech. Link speakers to paging system.

k. Arrangement:

Provided below are recommended arrangements for Combatives Rooms.





4. Climbing Wall

a. Essential Design Requirements:

1. Climbing wall must be controlled for safety concerns.
2. Appropriate and adequate flooring and safety zone is required. Assume a depressed slab in this area. The depth of the material should be specified to attenuate a minimum of a 10 foot fall.
3. Strongly recommend providing a bouldering area, which does not require supervision, in this area as well. Consult with the user to determine if a bouldering area is desired in lieu of, or in addition to, a climbing wall.
4. A belay system must be provided. Coordinate with the users to select type of system desired. An auto belay system is the most convenient; however, they are expensive and require regular maintenance. A top rope belay system is less expensive, and is what would be used outside, but requires an additional person and users must be proficient in their use.

b. Direct Adjacencies:

The climbing wall must be visually and physically accessible from the Control Desk or a fully staffed area for control and safety. The climbing wall should be located in an open area, preferably off of the lobby and in direct view of the Control Desk. Locating it in a separate locked room is acceptable, but not desirable.

c. Ceiling Heights:

25'-0" minimum. Heights up to 40' are ideal.

d. Walls:

Extend the climbing wall surface material on to the adjacent walls to avoid scuffs from climber's shoes on the painted wall.

e. Flooring:

The flooring beneath the climbing wall must be Seamless Rubber Surfacing.

1. Description: Cushioned seamless floor system comprised of a cushioned impact course and colored cap surface, composed of peroxide-cured EPDM and recycled select rubber bonded by a specially formulated polyurethane binder. Completed system shall comply with applicable CSPC criteria for playground surfacing and the following:
 - a. Tested for shock attenuation under ASTM F1292 and HIC.
 - b. Tested for slip resistance under ASTM E303.
 - c. Tested for ignition characteristics under ASTM 02859.
 - d. Tested for fire resistance under ASTM E84.
 - e. Complies with AOAAG for wheelchair access.
2. Thickness: Adequate to safely attenuate a fall from at least 10'.
3. Acceptable Manufacturers and Products:
 - a. No Fault Industries 'Saf Dek'
 - b. Vitricon 'Vitriturf'
 - c. Approved substitute
4. Installation:
 - a. Areas of Installation: Climbing Wall Landing Surface.



- b. Proceed only when ambient and surface temperatures are within range recommended by the manufacturer, and substrate condition has been approved by the Installer.

f. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: If located in the open lobby area, temperatures should be appropriate for a combination of all of the functions. In a separate room, the system must be able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct if existing ceiling is exposed structure. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Ceiling-mounted diffusers will be standard 2x2 units with directional vanes. Return air may be centralized. Natural (non-mechanically driven) ventilation is not allowed.

g. Sound:

Sound system: Flush recessed speakers, 25 watt minimum output rating, capable of reproducing the entire audible range for human speech. Link speakers to paging system.



5. Indoor Cycling Classroom

a. Function/Description:

Classroom to accommodate indoor cycling classes, which includes an instructor on an indoor cycle and participants on indoor cycles as well. Indoor cycles are different from the stationary bikes utilized in the cardio area.

b. Essential Design Requirements:

1. The Indoor Cycling Classroom must be designed to acoustically separate this space from other spaces. In addition, this space must be designed for proper acoustics similar to an aerobics room. Recommend corner mount speakers with proper acoustical attenuation.
2. Storage room shall be provided.
3. Sound system shall be on a movable rack so that the instructor can locate the sound system adjacent to their cycle.
4. Consider items such as black lights, mirror balls, "disco" lights, etc.

c. Direct Adjacencies:

No special requirements.

d. Ceiling Height:

12'-0" minimum. Consider taller for theater style layout like shown in picture. (See requirements for ceiling fans below)

e. Ceiling Finishes:

Provide ceilings of sound absorbent materials.

Accent functional areas or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area. "Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit. Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first; then consider the pattern of the panels and placement of bulkheads. Where soffits exceed 36" in width and/or 12" in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

An open ceiling, exposed to the structure, is also acceptable as long as acoustic panels and/or banners are provided to provide the same level, or better, of acoustical treatment as an acoustical tile ceiling would.

f. Walls:

Painted walls. Coordinate with users to find out any special images such as murals, etc. as well as preferred color (light vs. dark).



g. Flooring:

Rubber or wood floor typical. Provide flooring that is appropriate and industry standard for indoor cycling classrooms. Consider tiers for the classroom to provide better view of the instructor as shown in picture on previous page.

h. Plumbing:

Electric Water Cooler: Required adjacent to this module, located close to entrances. Provide one unit.

i. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: System able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct if existing ceiling is exposed structure. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Ceiling-mounted diffusers will be standard 2x2 units with directional vanes. Return air may be centralized. Natural (non-mechanically driven) ventilation is not allowed.

Ceiling fans: Multi-speed ceiling fans shall be provided throughout. Fans shall be provided with independent wall mounted switches and an infrared remote control to be used by the instructor. It is not recommended that fans be controlled in groups. The blade size of the fan shall be no less than 48 inches in diameter. It is strongly preferred that the bottom of fans is at 10'-0", but can be as low as 9'-6". Provide one fan per maximum of 400 sq. ft. Intent: air circulation and cooling of participants.

j. Lighting:

When ceilings heights do not allow pendant mounted or suspended lighting, indirect 2 x 2 or 2 x 4 lay-in fluorescent fixtures may be used. Direct 2 x 2 or 2 x 4 lay-in fluorescent fixtures may also be used, but are not recommended due to lower light quality (excessive glare and static light distribution; e.g. causes greater eye fatigue over long periods of time). Lighting shall be switched to allow for different levels of lighting. Natural light via windows may be provided, but direct sun-light and glare must be avoided. Windows providing internal views to other spaces is desirable.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended. In addition, grouping of lights so that a portion of the lights may be turned off, especially if natural daylighting is provided, is required. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity.

Light level: 40 footcandles at the floor, minimum.

k. Power:

Convenience outlets required.

l. Technology/AV:

1. Provide projectors with screens on the front wall, or plan for up to 3 large screen TV monitors on the front wall. The control for these shall also be in the center of the front wall near the instructor.
2. It is common for indoor cycling classrooms to be outfitted with other lighting systems, similar to dance clubs, to invoke a vibrant atmosphere. Coordinate with facility user to determine desired image.



m. Sound:

1. Provide speakers for main PA system, so that announcements from the desk can be heard in this space.
2. Provide ceiling mounted speakers for high quality music reproduction. If a lay-in ceiling is provided the speakers shall be recessed. Speakers shall have a 100 watt minimum output rating and shall be capable of reproducing CD quality sound.
3. Provide wiring, cabling, and other built-in support for a user provided sound system that will be plugged into the speaker system in the room. Provide the connection for the instructor near the center of the front wall. The instructor will position their stereo equipment close to their bike so they can adjust the music while working out.

n. Acoustical Performance:

Aerobic activity will require partitions to be sound rated to 53 STC minimum. Where glass walls are used to enhance interior views, front these walls to interior circulation and not into other activity spaces. One exception is the gymnasium. All other sound performance characteristics are comparable to the Fitness Module.

o. Fixed Equipment:

Architectural Casework: Provide storage cubicles (cubbies) along one wall of the module for incidental storage during activities: Provide minimum of one cubby for 30% of the total number of participants at room's maximum occupant load (based on 40 sq. ft. per person).



6. Functional Fitness

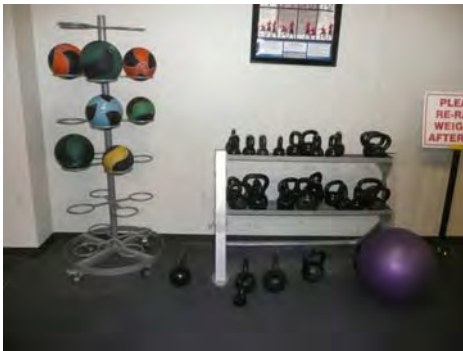
a. Function/Description:

Functional training is exercise performed to better enable the participant to move through normal life activities. Functional fitness implies performing exercise in an optimal way, to achieve certain goals that allow improved performance of regular activities outside the gym. This may mean more fluid precise movements, accomplishing necessary activities with the least possible wear and destruction, and remaining pain free in the performance of mundane tasks. Better function could have applications in pulling weeds, loading the dishwasher, waxing the car or carrying groceries home from the store.



Typical equipment in the Functional Fitness area includes A-frames used for various exercises with bands (similar to TRX Suspension Trainer), individual weight stations, and various kettle balls and other equipment (see below for sample list).

The pictures illustrate various functional fitness areas and the types of equipment required.



b. Essential Design Requirements:

1. A storage room must be provided.
2. Walls shall be CMU or reinforced concrete to withstand impact from weighted balls being thrown against the walls, which is a part of functional fitness training. Walls shall be acoustically treated to minimize the transmission of sounds from impact to other spaces.
3. Must be on first floor of facility due to dropping weights, etc.
4. Provide protective caging on sprinklers, lights, etc. to avoid damage.

c. Direct Adjacencies:

Ideally located with access directly outside to allow for running courses, etc.



d. Ceiling Heights:

14'-0" minimum

e. Ceiling Finishes:

Open structure is preferred; however, adequate acoustics must be maintained. Utilize spray-on acoustical material, acoustical deck, and/or acoustical panels and banners to ensure appropriate acoustics in the space.

f. Walls:

Must be able to withstand significant impact. Some exercises will include throwing weighted balls against the walls.

g. Flooring:

Flooring shall be the same as the flooring used in the free weight area. Consider use of free-weight material that is thicker, but allows the platform areas to be flush with the surrounding floor thereby reducing the need and expense of the platforms.

h. Plumbing:

Electric Water Cooler: Provide one unit near this function.

i. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: System able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Return air may be centralized. Natural (non-mechanically driven) ventilation is not allowed.

j. Lighting:

Recommend fluorescent lighting. Lighting shall be switched to allow for different levels of lighting.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended.

Light level: 40 footcandles at the floor, minimum.

k. Power:

Convenience outlets required.

l. Sound:

Sound system: Flush recessed speakers, 25 watt minimum output rating, capable of reproducing the entire audible range for human speech. Link speakers to paging system.

m. Equipment:

Below is a sample of the equipment that will be used in this space. This list would be appropriate for the 1000 – 1500 square foot size. This set up would allow up to 40 soldiers at any given time to train within the circuit. When not in use, the items in this circuit could be stored in an area of approximately 250 square feet. This list is not intended to indicate a specific vendor, but is provided only to show the types of equipment and activities to be housed in this space. The equipment would be GFGI.

DESCRIPTION	NOTES
Double Power Station (3")/Storage/Stainless	includes rack, bench, platform
Glute/Ham Bench (Split Pad)/Lineal	
Step Up Box with Plywood	
Olympic Lifting Bar 20 kg. 1-1/8" shaft 1800 pound test Zinc	
45 pound Bumper Plates	
35 pound Bumper Plates	
25 pound Bumper Plates	
10 pound Bumper Plates	
Olympic Plates-Grip Rubber	10, 5, and 2.5 pounds
Deluxe Dumbbells	15 - 60 pounds in 5 pound increments
Triple Tier Dumbbell Rack (15 pr.)	Bottom two levels for DB's. Top level for Kettlebells.
Band Attachments	
Vertical Medicine Ball Rack	
Kettlebells	Variety of weights up to 55 pounds
Olympic Curl Bar (26 pounds) 5 ft.	
Olympic Spring Lock Collars	
Medicine Ball	4/6/8/10/12/15/18/20/25/30 Elite Med Balls
TRX Straps	
Power Sled (Plate Loaded) Includes Harness and Belt	
	double ladder
	battling rope - 50'
	weight lifting bands

7. *Small Group Fitness*

a. **Essential Design Requirements:**

1. Follow the requirements for the Exercise Module (Large Group Fitness) above.
2. Must have one-way flow-through storage room directly accessible to the space.
3. Cubbies shall be provided based on 50% maximum occupancy based on 125 square feet per person.
4. Mirrors and flooring shall be coordinated with the users prior to design to determine anticipated usage of the room.



8. *Sauna*

a. **Function/Description:**

A sauna is a supplemental space within the locker area. Sauna rooms can take the form of:

1. A custom built space of any size with heating equipment and finishes designed specifically for that space.
2. A prefabricated assembly shipped broken down to the site and reassembled in place with all heating, lighting, controls, and accessories provided, or
3. A hybrid of a field constructed enclosure, utilities and controls, and specialized room finishes, purchased separately and installed on site. The guidelines provided herein are suitable for building any of the three types listed above.

b. **Essential Design Requirements:**

1. Separate saunas must be provided for men and women. Saunas shared by both genders are not allowed.
2. Sauna controls are to be accessible to staff only.
3. Provide an emergency call/alarm mounted within 36 in. of finished floor that sounds at the control desk until reset by the respondent.
4. An adjacent cool down space can serve the sauna, steam room (if provided), and hot tub (if provided). Include a wall-mounted, solid-composite bench and wall-mounted clothing/towel hooks.

c. **Direct Adjacencies:**

Locker Room, Shower, Toilet, Cool-down area.

d. **Ceiling Height:**

7'-0". Acceptable range is 6'-8" to 7'-6"

e. **Ceiling Finishes:**

Wood to match walls.

f. **Walls:**

Sauna interior finish: ½" thick x nominal 4" wide natural finish western red cedar tongue and groove boards. Other acceptable materials include white cedar, poplar, aspen, and redwood.

The veneer wall system should be placed over a 3 mil continuous sheet of polyethylene film to act as a vapor barrier and seal the room. The vapor barrier is attached to 1 ½" thick treated wood furring strips at 24" o.c. To insulate the sauna partition and reduce heat loss, in-fill the space between the furring strips with 1 ½" thick extruded polystyrene rigid insulation.

Ferrous metals: Do not use any ferrous metal products within the sauna interior. It is recommended that all fasteners and hardware are stainless steel. Exceptions are noted below.

g. **Windows And Doors:**

Door must open outwards.

h. Flooring:

Flooring shall be ceramic tile, up to 2" x 2" tiles maximum. Any tile suitable for shower use is suitable for sauna use. Other tile may be considered provided similar or better slip resistance is provided and flooring remains cool enough for walking on barefoot. Floor shall slope to floor drain.

i. Plumbing:

Floor drain shall be provided in the center of the room for cleaning purposes.

j. Mechanical (HVAC):

Outside mechanical heating and cooling is not applicable. Air movement is accomplished via passive ceiling and floor mounted vents, typically 24 square inches total for every 100 plan square feet, assuming 8'-0" ceiling height.

4 air changes per hour.

Temperature controls: Independent to room - Range 170 - 180 degrees F.

Relative humidity 5%.

k. Lighting:

Provide 10 foot candles of general ambient lighting. Lighting fixtures must be rated for wet applications with ambient temperature rating of at least 180 degrees F.

l. Sound:

Provide a speaker in the adjacent cool-down area.

m. Equipment Criteria:

Seating benches: Provide continuous 24" deep x 18" high, two tier bench seating constructed from 2 x 4 solid, knot-free western red cedar boards. Benches are generally arranged along two walls contiguous with one another. Fully sanded and sealed. All edges of every board in the bench construction shall be eased and sanded smooth. Knot-free aspen, poplar, and redwood are also acceptable for benches. Bottom of legs of benches shall be designed to reduce deterioration of the legs from cleaning the floor.

Sauna dry heat system: Estimate 1.7 KW per 100 square feet of sauna. Coordinate power with electrical provisions for the space. Factory wired timer for the heating unit is typically provided. Thermostatic and / or heat setting control is usually an option purchased with the equipment. Controls remote from heating unit housing will need to be coordinated in advance and wired by others during construction.

Provide a unit with a grated 30# or 60# (greater heat storage capacity) lava rock compartment.

Sauna accessories: Room temperature and humidity gauge, wall mounted. Optional towel or robe pegs, wall mounted.

9. Steam Room

a. Function/Description:

A steam room is a supplemental space within the locker area. It provides a warm, extremely humid (close to 100%) environment for therapy and relaxation.

b. Essential Design Requirements:

1. Separate steam rooms must be provided for men and women. Steam rooms shared by both genders are not allowed.
2. Steam room controls are to be accessible to staff only.
3. Provide an emergency call/alarm mounted within 36 in. of finished floor that sounds at the control desk until reset by the respondent.
4. Consider providing a prefabricated, packaged unit.
5. Design the entrance/exit to ensure steam is not trapped at this point. Consider providing an air exhaust at the ceiling above the entrance/exit to address this.
6. Provide a full-glass door with a door seal adequate to retain the steam within the room.
7. An adjacent cool down space can serve the steam room, sauna (if provided), and hot tub (if provided). Include a wall-mounted, solid-composite bench and wall-mounted clothing/towel hooks.

c. Direct Adjacencies:

Locker Room, Shower, Toilet, Cool-down area.

d. Ceiling Height:

7'-0" – 8'-0" typical.

e. Ceiling Finishes:

Tile on cementitious backer units, pitched for drainage down the walls.

f. Walls:

Full height ceramic tile with dark-colored epoxy grout on cementitious backer units.

g. Windows And Doors:

Door must open outwards.

h. Flooring:

Non-slip porcelain or ceramic tile with dark-colored epoxy grout. Slope tile to drain.

i. Plumbing:

1. Provide a cold water shower with a pull-chain. Provide floor drains.
2. Provide access to a keyed hose bibb with hot and cold water.

j. Mechanical (HVAC):

100 degrees F minimum, 110 degrees F maximum. Humidity 100% relative. Provide secured controls.

k. Lighting:

Provide 10 foot candles of general ambient lighting. Lighting fixtures must be rated for wet applications with ambient temperature rating of at least 110 degrees F.

l. Sound:

Provide a speaker in the adjacent cool-down area.

m. Equipment Criteria:

1. Provide ceramic tile benches in a single- or double-tiered arrangement.
2. Provide steam generator in an adjacent closet with a floor drain and exhaust system. Provide power to the steam generator.



E. GYMNASIUM

1. Function/Description:

The gymnasium is a dedicated space for team activities and competitive play, which includes basketball and volleyball. Multiple court gymnasiums with divider curtains will accommodate simultaneous activities. In facilities with 3 or more courts, the option exists to provide two separate gymnasiums. One of the gymnasiums shall be provided with the wood floor. The second gymnasium may be more of a multi-purpose space, if desired by the installation. A suspended indoor jogging/walking track shall be provided around the perimeter of the gymnasium.

2. Essential Design Requirements:

- a. Minimum clear heights must be maintained.
- b. Safety padding must be provided on the wall behind backstops. Doors, windows, electrical panels, etc. shall not be located in this area for safety reasons. This will require careful planning of door locations, as well as any other item that may be on or in the wall that would result in no padding. Padding shall be mounted no more than 6” above the floor, and extend to a minimum height of 6’-0” above the floor. The width of padding behind the goals shall be a minimum of 12’, centered on the backstop.
- c. Floor must be striped for basketball and volleyball, with a tournament basketball court located perpendicular and centered within 2 regular basketball courts. All basketball courts shall be to NCAA standards.
- d. Gymnasium storage must be provided that opens directly into the gymnasium.
- e. If a tournament court is provided, it must be perpendicular, and superimposed over the normal courts. Retractable bleachers must be provided to provide spectator space for the tournament court. It is recommended in gymnasiums with 3 courts, that the tournament court is superimposed over 2 courts. However, if the installation prefers, the tournament court may be centered within the gymnasium.
- f. Provide protection for sprinkler heads, exit signs, manual pull stations, lights, and other exposed components; minimize equipment that protrudes into activity space or safety zones near activity spaces, or install component equipment minimum 8 feet above finished floor (AFF) for safety considerations.

3. Direct Adjacencies:

- a. Restroom facilities, other than those in the locker rooms, will be provided to support the gymnasium spectators.
- b. Adjacency to the Control Desk and Lobby is desired for check-in and equipment issue, as well as for the convenience of the spectators.

4. Indirect Adjacencies:

- a. Activity Components
- b. Locker Rooms

5. Ceiling Height:

Minimum unobstructed height is 28’-0”. Lights, speakers, structure, etc., must be above the 28’ height.

Minimum ceiling height for the gymnasium storage room is 10'-0".

6. Ceiling Finishes:

General provisions: Exposed structural and mechanical systems are typical.

Structural Considerations: Roof trusses are typically designed to minimum load values for the spans involved resulting in the most economical truss (by weight) that can be provided. Gymnasiums have additional truss mounted loads that must be taken into account:

- a. Suspension of basketball backstops
- b. Divider Curtains and drapes for temporary backdrops
- c. Ductwork
- d. Lighting, Temporary Theater Lighting and Sound Equipment
- e. Company or squad decorative banners
- f. Suspended jogging track

The Engineer also has the responsibility of reviewing the pattern of the truss webs to coordinate passage of HVAC ductwork and installation of the correct lighting pattern. This should be done in consultation with the structural engineer at the earliest possible date.

Ceiling Finish: "Dry-fall" or "wet-fall" paint system for decking and trusses. Deck painted in white or off white preferred for maximum lighting distribution. Contrasting color of trusses and ductwork offer an opportunity for accent colors. Sprayed-on fireproofing is not recommended as it falls onto the floor.

7. Wall Materials:

Recommended wall construction for gymnasiums is an interior wythe of 8 inches thick to 12 inches thick concrete block, with 2 inches of rigid insulation in the wall cavity and a veneer system suitable to the context of surrounding buildings. The two most common structural systems for tall multi-wythe masonry walls are 1) load bearing masonry, or 2) steel frame with non-load bearing in-fill partitions. Concrete masonry units (CMU) recommended to be moisture controlled Type 1, normal weight, hollow core.

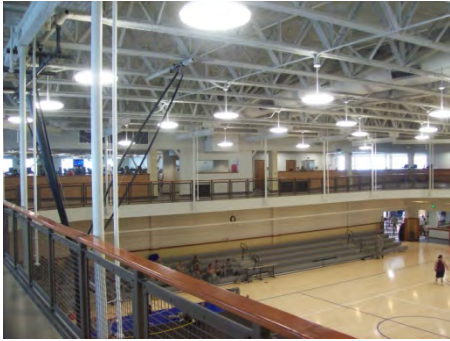
Safety: Minimum safety requirements provide for wall-mounted padding, meeting all applicable safety requirements, to be permanently affixed to the walls behind each backboard.

8. Wall Finishes:

Standard block with water based epoxy coating, semi-gloss. Apply a heavy acrylic block filler spray applied and backrolled to a pinhole free surface, and two epoxy finish coats of 5 to 6 mil Dry Film Thickness (DFT). Ferrous metals (doors and frames): water based epoxy. Apply one coat primer compatible with finish coat, and as barrier coat to factory primer. Apply two finish coats of 5 to 6 mils DFT.

9. Windows And Doors:

Views into the space from the lobby/control desk are required to the greatest extent possible. Views to other spaces and admittance of natural light are also recommended. Non-operable windows are mandatory for temperature / humidity control. Aluminum or hollow



metal frames are recommended. Tempered safety glass should be typical to the module. The potential for injury does not warrant selective location of safety glass. Do not locate windows, doors, or other obstructions within 7'-0" of all backboard centerlines. Doors into the gymnasium from the corridor and from other activity areas must be provided with a minimum of 5 square foot vision panel in each leaf.

Provide exterior double doors with removable latch post for equipment access.

Sun Shading devices: Ensure no glazing or lighting can create glare or distraction on the play areas. Also consider cross-court play. Do not use window treatments to mitigate glare. If natural lighting through windows is anticipated, shading devices may be necessary to avoid glare across courts at certain times of the day. Permanently mounted shading elements limit design flexibility and are unnecessary for a majority of module use time. A more cost effective solution to glare is a reduction in visible light transmittance of 38% to 18% in exterior insulated glazing, when floor level or tall windows are desired, without cost of shade devices. It is recommended to minimize east and west facing glazing, and provide adequate exterior shading on south facing glass.

Storage: A storage room is required per the standard. The storage room shall be provided with a minimum of one pair of 4'-0" W x 8'-0" H doors with removable latch post (opening size 8'-0" x 8'-0"). Consider a roll-up door as an option. This includes the doors from the storage into the gymnasium as well as from the storage to the exterior. Provide ramp at exterior door to facilitate equipment issue/delivery.

10. Flooring:

Substrates: Where possible, provide a min. 4 inch thick, level concrete slab on grade over properly graded crushed stone sub-base, with a 10 mil polyethylene sheet vapor barrier located directly between the slab and the subbase. Consider moisture control and prevention of condensation on floor surface. Utilize Relative Humidity (RH) Testing of the concrete slab, which is now considered the industry standard per the Maple Flooring Manufacturers Association. Consider under-floor ventilation requirements, under-slab vapor barrier, estimated dew point occurrence, local water table, and local soil conditions. Where continuous water is anticipated beneath floors due to local conditions, a subsurface drainage system is recommended.

Ballcourt floors: Machine milled and formed solid maple strip flooring, 25/32 inches thick x 2 ¼ inches width minimum, that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade. Expect some visual variation in color in the wood, but otherwise free from defects. Flooring system must be a PUR Compliant floor, as defined by MFMA. Provide all lines for basketball (per NCAA specifications) and volleyball. In gymnasiums with 2 or more courts, there will be a tournament cross-court as well.

Seamless padded polyurethane (SPP) flooring should be considered in facilities with 2 gymnasiums. Initial cost is very similar to maple flooring, but the SPP flooring is more durable for other non-sport activities that might occur in the gymnasium. This flooring shall be

considered a Point Elastic System per EN-14904, and shall be rated as Type 1, and shall have a ball rebound of at least 93%

Maple floors should last 40 – 50 years with proper care, to include yearly maintenance. SPP floors should last up to about 20 years but do not require yearly maintenance besides normal cleaning.

Flooring accessories: Provide volleyball built-in flush floor insert sleeves in each court. Consider floor inserts for gymnastics standards.

Court overruns: Provide 10’-0” of unobstructed space around the perimeter of each regulation-size basketball court. Provide 12’-0” minimum, with 15’-0” preferred, between courts.

For wood floors, consider forced under-floor ventilation.

11. Natural Lighting:

It is recommended that natural light be allowed into gymnasium spaces through the use of windows and / or overhead skylights. Wall construction will control the ease and relative cost of creating such openings. Avoid glare in window placement, and consider use of translucent wall panels to avoid glare and control heat gain. Linear skylights may be used to enhance natural lighting and enhance visual appeal of the module. Recommend an aluminum framed, gable type skylight with laminated safety glass. Glass should have visible light transmittance of no less than 56% to provide significant light to the floor. Again, pay close attention to direct sunlight and glare.

12. Plumbing:

Electric Water Cooler: 1 unit per two courts. Water fountains shall be located outside of the gymnasium, within 50 feet of an entrance to the gymnasium, to avoid damage to the wood flooring. It is recommended that water fountains be placed outside normal traffic paths and recessed into the wall plane if possible.

13. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements. Provide durable air grill covers and do not place air grills in line with basketball nets. Locate ductwork to avoid trapping balls.

Operating range: System able to maintain 68 - 74 degrees (F) year-round at 50% relative humidity or less.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Spiral duct for exposed use within gym module. Main supply with one branch duct per court, minimum. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution over courts areas. Return air may be centralized but locate low to floor. No through-wall relief dampers. Natural (non-mechanically driven) ventilation is not allowed. For ventilation rates, use rates for “Gym, stadium (play area)” from ASHRAE 62.1. Use demand controlled ventilation or heat/enthalpy recovery when cost effective. Smoke and



combustion duct detectors will be required. Consider larger industrial ceiling fans which are appropriate for commercial applications.
Acoustical performance: Insulate all supply ducts and moderate air flow to reduce noise. Isolate all air handling equipment in a separate mechanical space dedicated for that use. Provide sound dampening for all equipment.

14. Lighting:

High Intensity Discharge (HID) fixtures are not required; LED or fluorescent fixtures may be utilized provided they meet all the requirements for acceptable gymnasium lighting. Lighting selected shall be identified as suitable for the intended use and lighting design shall meet IESNA recommendations for Basketball Sports-Lighting, Class III (Class of Play) adjustable up to Class II. In general, lighting levels shall be a minimum of 50 foot candles at floor level, adjustable up to 80 foot candles. Fixtures shall be mounted not less than 28' above the finished floor. For overhead locations, protect luminaires with wire cages and/or provide appropriate shatterproof enclosed luminaires. Switching for lighting control shall provide different lighting options to take into account natural lighting and different activities (such as boxing matches, etc.). Do not locate fixtures directly above basketball backboards. Lighting control shall be located in a controlled area to avoid accidental and unauthorized switching. Do not install high-pressure sodium lighting.

15. Power:

Scorer's table is generally located for one designated court, at mid court, and requires one (1) 4-outlet, 20 amp power outlet and two (2) Cat5 or better data connections, both in recessed floor boxes, centered under the anticipated table location, but outside the court boundaries. Solid brass cover plates shall be provided for these outlets for when scoreboard equipment is not in use to provide good ball return value and skid resistance.

16. Technology/AV:

At a minimum, all facilities shall provide electronic scoreboards. Scoreboards to be visible to officials and players and be appropriate for programmed sports. If consistent with the mission of the facility, consider providing video connections, wall mounted in gymnasium for portable video camera use, with outlet linked via cable, to monitoring equipment (i.e. video recording, multiplex video control /output, TV monitors, or base wide cable system). Provide one recessed floor box mounted (1) 4-outlet, 20 amp duplex power outlet centered under the anticipated scorer's table location, but outside the court boundaries. Provide two directly interconnected communications outlets in gymnasiums for time clock and scoreboard connections. One outlet shall be recessed floor mounted with cover at the scorer's table location and one shall be wall mounted at the scoreboard location. Each outlet shall consist of one Cat 6 communications jack and one coaxial TV connector.

17. Sound:

Sound system: Built-in system for announcing events in the Gymnasium. Wall mounted speakers, 50 watt minimum output rating, capable of reproducing human speech, minimum. If multipurpose functions are considered, provide speakers capable of CD quality sound reproduction of music.

18. Acoustics

Design sound quality should be "lively" with no reverberation. For single court modules, reverberation time must equal 1.0 second. For two-court or larger modules, reverberation time must equal 1.8-2.0 seconds.

Provide additional acoustical control with wall baffles or panels, structure mounted acoustical baffles, acoustical structural metal deck, and/or spray-applied acoustical treatment. Provide noise attenuation measures to mitigate acoustical problems resulting from mechanical systems, plumbing systems, and vibration transmitted through the facility structure

Consider a flat panel, or exposed cell perforated metal deck with cell depth as required. Minimum sound absorption factor shall be 0.47, with a NRC of 1.00. Absorption values of 0.68 to 0.83 are easily reached for long span acoustical decks. Obtain highest level possible in new construction.

Any spray-applied acoustical treatment must be warranted against delamination. The product can contain no asbestos, fiberglass or other manmade mineral fibers, nor can it contain any Urea-Formaldehyde Resins. A portion of the material to be from recycled content.

19. Fixed Equipment:

Basketball backstops: Two per court, overhead mounted and electrically operated forward folding type. Mounted to trusses with provided pipe support frame.

Rectangular glass backboard: NCAA official size (3'-6" x 6'-0") fabricated from ½" tempered glass with continuous edge gasket mounted with aluminum flange and breakaway rims.

Goals: Safety reflex type, with 5/8" steel rod ring and "no-tie" steel attachments. 120 thread, retarding type netting.

Divider Curtains: For multi court gyms, divider curtains shall be provided between each standard basketball court. Curtains to be electrically operated, with manual override, vertical-folding/rolling mesh fabric with solid vinyl bottom panels. Curtain shall be fully retractable to the bottom of the structure. Curtains are mounted to bottom of trusses on steel subframes. Lower panels are made of solid polyester reinforced vinyl fabric, 18 oz./ sq. yd. min weight, to a height of 8' above the finished floor. Upper curtain portion is vinyl coated polyester mesh weighing not less than 8 oz. / sq. yd.- from 8' to no less than 20' above the finished floor.

Volleyball: Steel posts of hollow tubes 3 ½" diameter with powder coated or zinc plate finish. Nets are tensioned to the posts by use of ratchet winches with removable handles.

Floor plates and sleeves: Galvanized steel tubing, mated to the post diameter, is cast into the floor and the hole is covered with a solid brass plate with removable lid. Solid brass floor covers required to provide good ball return value and skid resistance. Use of flip up cover plates is not allowed. Plate lid must be removed from the area of play to prevent injury.

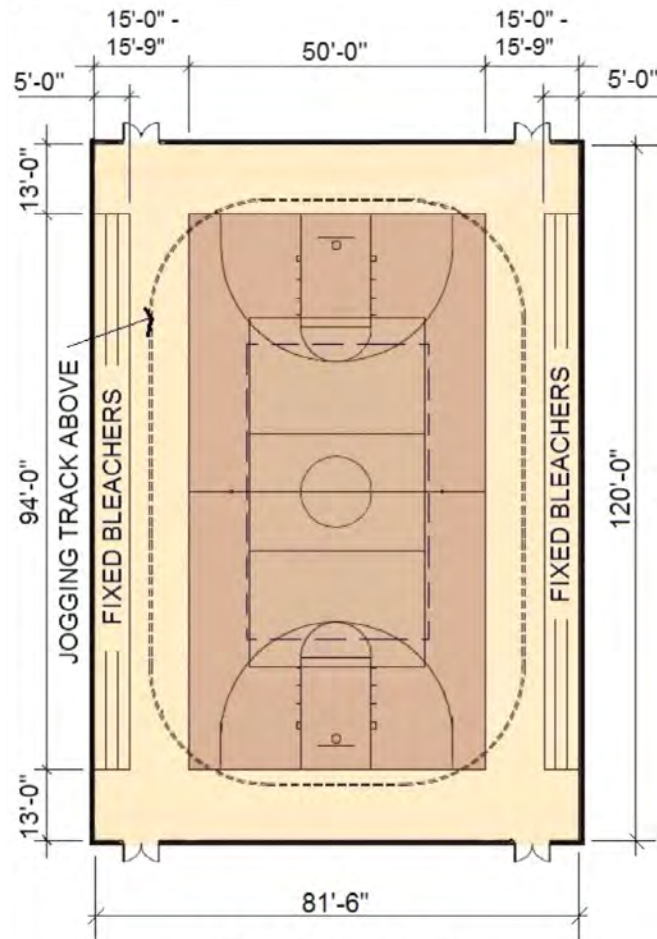


Bleachers: If a tournament court is provided (which is typically the case), retractable, wall-mounted bleachers shall be provided on both sides of the tournament court, the full length of the court. These bleachers shall be electrically operable with manual override, and shall be sized to accommodate normal spectator requirements. They shall maintain the adequate safety zone around the basketball court, and ensure adequate headroom under the track. Bleachers on the side wall(s) of the standard basketball courts shall be 3 row, tip and roll, aluminum bleachers (purchased by others). In the diagram below, these are referred to as “fixed bleachers” in that the rows are fixed. These fixed bleachers shall be provided for as many courts as possible.

Score Boards: For intramural courts, 2 score boards, one on each wall at end of court, is required for each court. For tournament courts a center hung 4-sided score board must be provided, which is in addition to the score boards required for the intramural courts. Two shot clocks shall be provided for each court (assume 1 shot clock for each backboard).

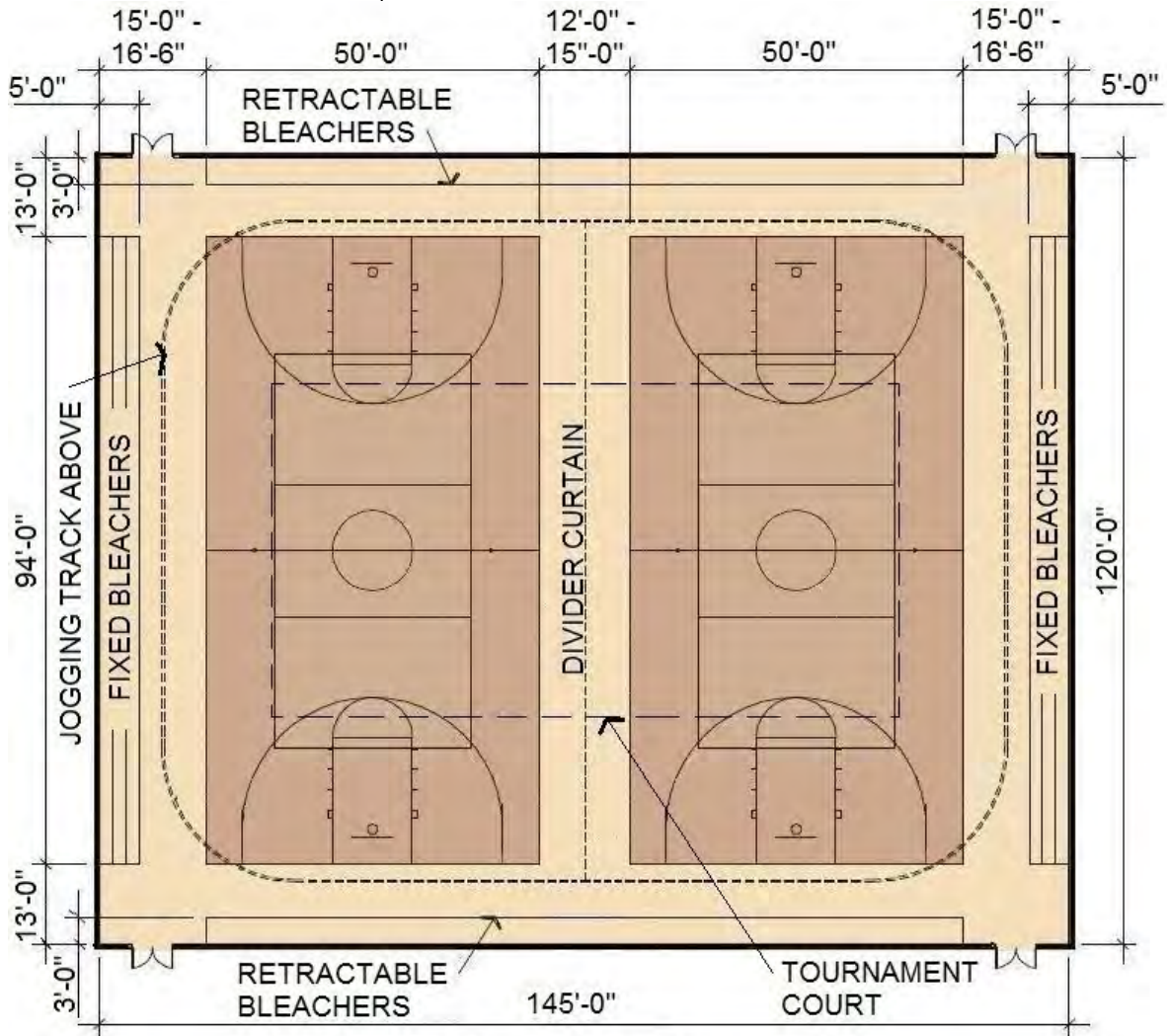
20. Arrangement:

Provided below is the recommended layout for a 1-court gymnasium. It is intended that the gymnasium will be the overall dimensions shown. However, it is possible that by going towards the minimum dimensions shown, there will be some area left over. Any savings in net area gained from using the minimum dimensions may be added to the structured activity area.



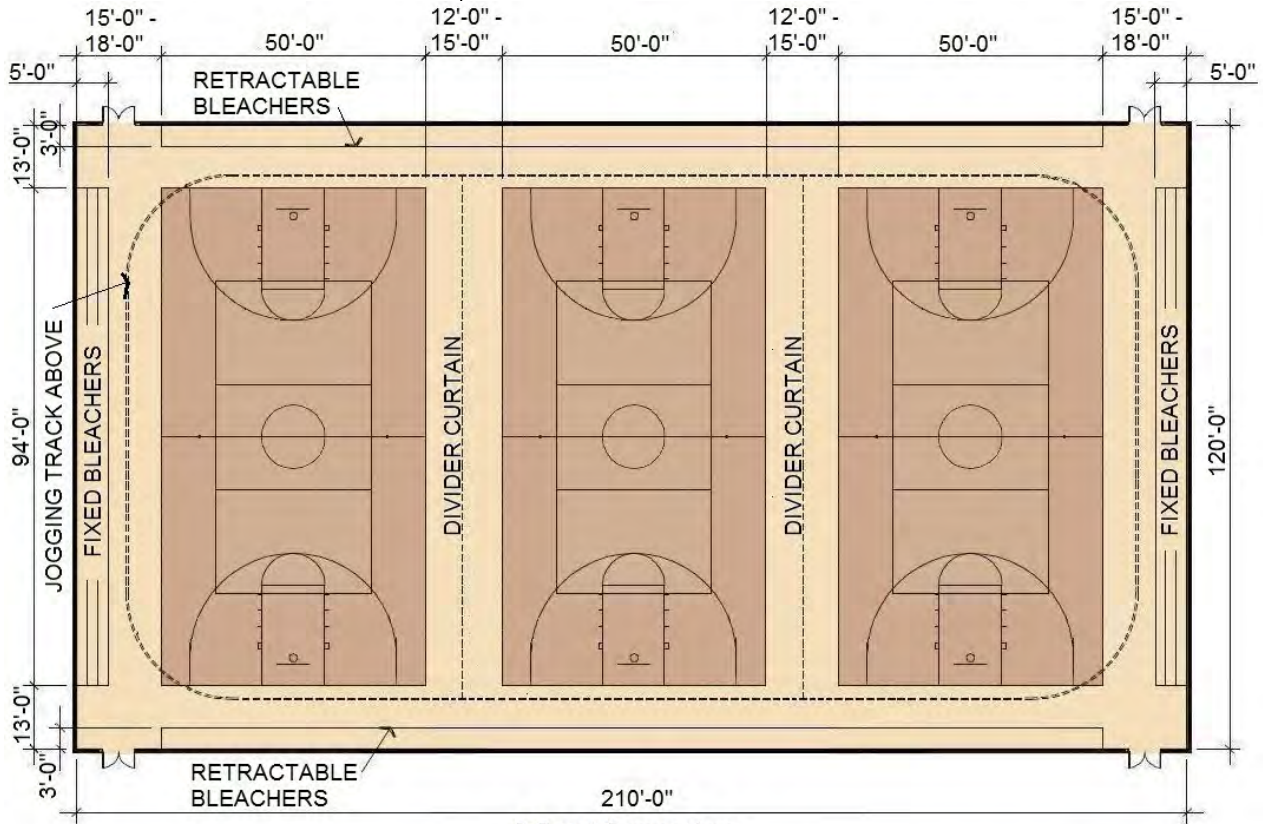
1 Court Gymnasium

Provided below is the recommended layout for a 2-court gymnasium. It is intended that the gymnasium will be the overall dimensions shown. However, it is possible that by going towards the minimum dimensions shown, there will be some area left over. Any savings in net area gained from using the minimum dimensions may be added to the structured activity area.



2 Court Gymnasium

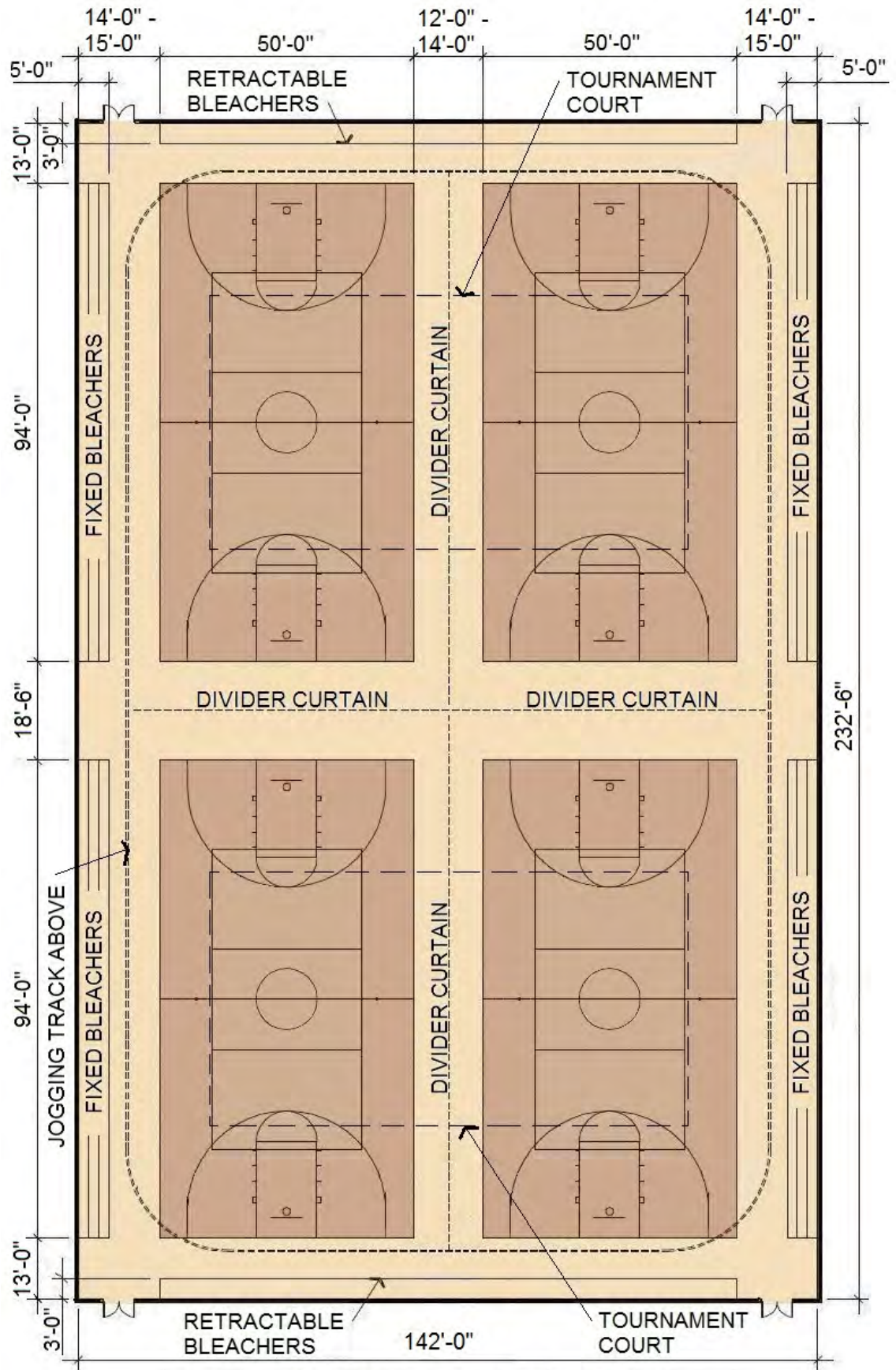
Below is the recommended layout for a 3-court gymnasium. In most cases a tournament court will be provided, which will result in these layouts. If a tournament court is not provided, the retractable bleachers shown will not be provided. There will be no reduction in the dimensions. It is intended that the gymnasium will be the overall dimensions shown. However, it is possible that by going towards the minimum dimensions shown, there will be some area left over. Any savings in net area gained should first be utilized to accommodate 2 gymnasiums (if 2 are provided) or it may be added to the structured activity area. It is possible that the 3 court gymnasium will be separated into 2 different gymnasiums in a specific project to allow for increased programming flexibility.



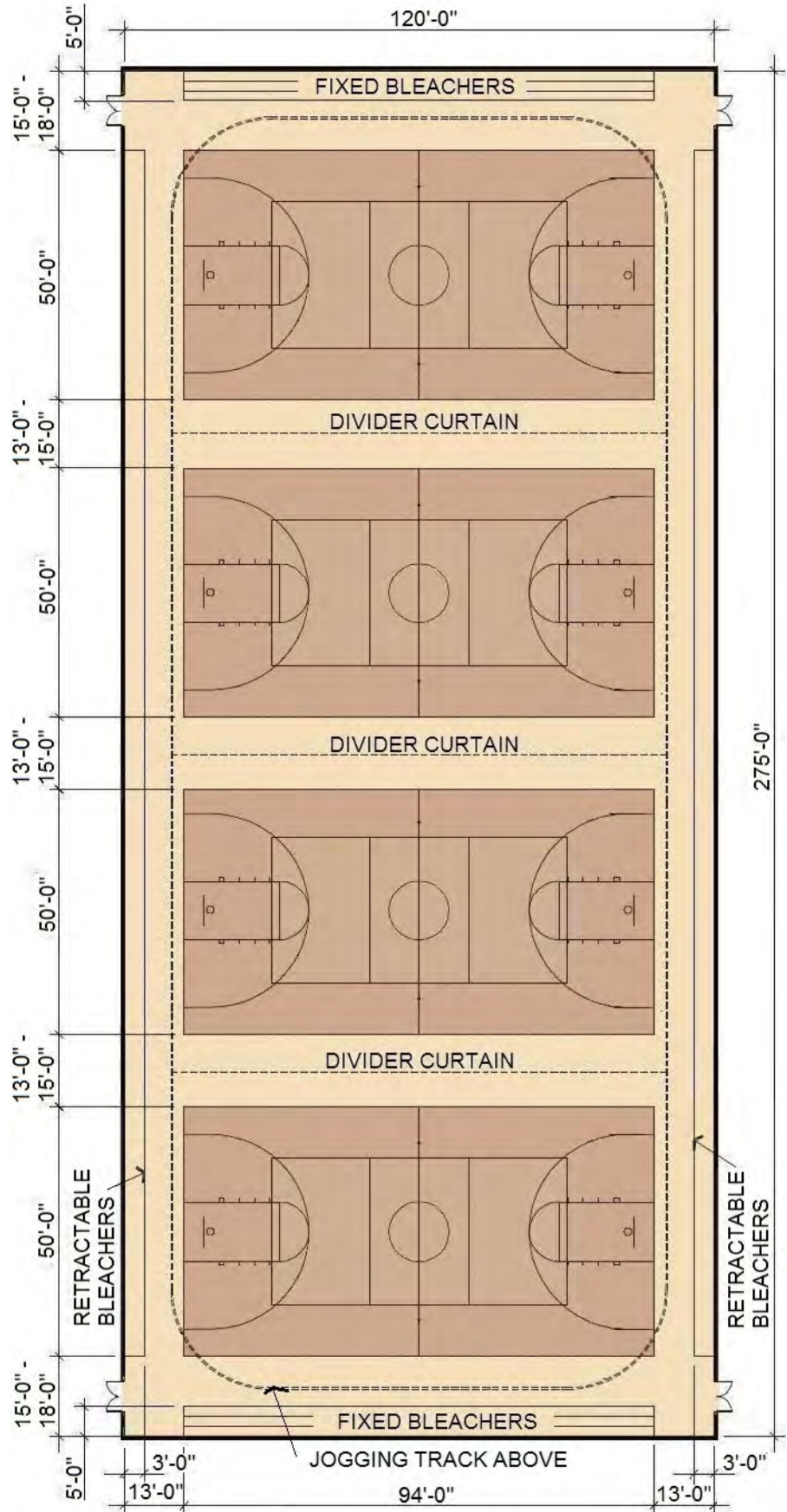
3 Court Gymnasium

Tournament court not shown. It shall be perpendicular to courts shown, and shall be centered either over 2 courts (preferred) or all 3 courts.

Provided below are recommended layouts for a 4-court gymnasium. Often times, a 4-court gymnasium will be broken into 2 separate gymnasiums to allow for increased programming flexibility. Coordinate with the user to determine their needs. If all 4 courts are to be in one gymnasium, option A is better for intramural play as fixed bleachers are provided for each court. Option B is better if a tournament court is required, and less emphasis on intramural play since it will allow for the retractable bleachers on both sides. Option A, provides slightly less safety zones than Option B in order to meet the net area requirement. If a tournament court is not provided, the retractable bleachers will not be provided; however, there is no reduction in the dimensions. It is intended that the gymnasium will be the overall dimensions shown. However, it is possible that by going towards the minimum dimensions shown, there will be some area left over. Any savings in net area gained should first be utilized to accommodate 2 gymnasiums (if 2 are provided) or it may be added to the structured activity area.



4 Court Gymnasium - Option A



4 Court Gymnasium - Option B



F. INDOOR JOGGING TRACK

1. Function/Description:

The indoor track provides space for running, jogging, and walking. It is expected that the track will be suspended above the gym area as shown in the previous diagrams.

2. Essential Design Requirements:

- a. In all sizes except the X-small, the track shall have 3 lanes. The track in an X-small gymnasium shall have 2 lanes.
- b. The inner-most lane of the track shall NOT have banked corners to accommodate ADA requirements. The other lanes shall have banked corners.
- c. The lobby, and track entrance, shall be located as close to the middle of a straight-a-way as possible.
- d. Lane width shall be a minimum of 39", with a preferred width of 42".
- e. The minimum radius of the inside corners is 20 feet.
- f. The jogging track may not overhang the corners of the basketball court by more than 3'-0".

3. Direct Adjacencies:

The jogging track shall be directly adjacent to a lobby area with space for stretching. In addition, some pieces of cardiovascular equipment may be located in this lobby area. For safety reasons, the door onto the track will NOT open into the track itself. It is preferred that an alcove be provided between the door and the actual track, regardless of the swing of the door.

4. Ceiling Heights:

Minimum 10'

5. Flooring:

Resilient, cushioned running surface, such as rubber or urethane, designed for indoor jogging tracks, with permanent lane lines.

6. Plumbing:

Electric Water Cooler: A unit must be provided in or adjacent to the track lobby area.

7. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. The requirements are the same as the space in which the track is located.

8. Windows And Doors:

It is ideal to provide views to the outside along the track. These windows will also provide natural lighting for the Gymnasium. However, it is important to avoid glare and direct sunlight.

9. Fixed Equipment:

Provide cubbies in the lobby area for storage of smaller personal items.

G. LOCKER, SHOWER, AND TOILET AREA



1. Function/Description:

Support space to facilitate showering and changing before and after physical activities. Half and full lockers are provided in each locker room. Showers in both the men’s and women’s shower area shall be individual shower stalls with adjacent private drying booths.

2. Essential Design Requirements:

- a. Individual shower stalls and drying booths for both the men’s and women’s locker rooms are required.
- b. If a whirlpool is provided within a locker/shower area, ensure that maintenance can be performed outside of the locker/shower area.
- c. Shower stalls and drying booths shall be a minimum of 36” wide.
- d. The net area provided for this function in the table in paragraph 1.A. is an estimate. If all required functions can be provided in less area without negatively impacting the function of the spaces (to include circulation of patrons through the areas), then the extra area may be utilized for other functions. If more square footage is required to accommodate all the functions, this extra space must come from the miscellaneous area (which includes circulation, structure, mechanical/electrical/communications rooms, etc.)
- e. Within the locker room area, a dedicated grooming area must be provided. This area will not conflict with the circulation through the locker room, and shall consist of a counter, electrical outlets above the counter for personal hair dryers, and large mirror above the counter. This area must be provided in both the men’s and the women’s locker rooms.
- f. There must be no line-of-sight concerns when designing the entrances to the locker rooms. Airport style vestibules are acceptable as long as a person cannot see into any part of the locker/shower/toilet area from outside. Even if doors are provided, the entrances must be designed so that a person cannot see into any part of the locker/shower/toilet area from the outside when the doors are opened.

3. Direct Adjacencies:

- a. Main corridor system
- b. Major activity components such as Fitness and Gymnasium
- c. If a natatorium is included as part of the project, or anticipated as an addition in the future, the locker rooms shall be designed to provide an entrance to the natatorium in the wet portion of the locker/shower/toilet area. However, this entrance must be designed so that the locker rooms comply with life safety codes regarding number of exits when the pool is closed. It is NOT allowable to exit directly through the pool area as there will be times when the pool is closed but the rest of the facility is open. Locate the showers nearer to the access to the natatorium.



4. Ceiling Height:

10'-0" minimum in locker area except where furred down. 9'-0" minimum in shower and toilet areas.

5. Material Definition:

"Wet areas" are defined as rooms where direct contact at walls and floors with water is expected. This includes showers, drying areas, and toilet / grooming areas directly adjacent to the showers. Wet areas may be considered "humid" space.

"Humid" is defined as above 60% relative humidity during typical room function over the entire period of normal hours of operation. Humid areas include locker rooms adjacent to showers and toilet rooms open to shower areas. Humidity varies by degree with "high" humidity occurring only in areas with continuous open water sources such as whirlpools, steam rooms, and swimming pool areas.



6. Ceiling Finishes:

General provisions: Highly light reflective and sound absorbent materials for locker areas. Provide 2'x 4' or 2'x 2' lay-in, wet-formed mineral fiber acoustical panels, on "humid" rated "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are preferred. Non-directional fissured face designs are preferred to reduce installation cost and waste. Provide "Flush" (Square edge) edge design.

Sound absorption for acoustical panels: No less than .55NRC for standard tiles, .70 for film or ceramic faced units.

Locker Room - Humidity and mold resistance: Manufacturers offer "plastic" film faced units, ceramic, and painted finishes for humidity and mold control. Most standard tiles are "non-sag" but not mold resistant. Units should be treated for low moisture absorption and mold formation. The most expensive (high humidity resistant) to least expensive (adequate humidity resistance) ceiling tile options are: 1) Aluminum grid with ceramic faced tiles, rated for wet (pools) conditions. Use with extreme peak load activities and constant humidity (100%) produced by existing, deficient air handling systems or constant shower activity. 2) Factory applied paint finish for steel grids rated for "humid" conditions with ceramic faced "high humidity" tiles or "high humidity," unfaced tiles. Recommended as best cost to benefit ratio. 3) Factory applied paint finish for steel grid with "humid" rated tiles. Lower initial cost offset by higher maintenance costs.

Toilet and Shower - Humidity and mold resistance: Provide veneer plaster finish on gypsum board or true plaster on mesh lath or plaster base (board) ceilings in shower rooms. Toilet rooms can use painted, suspended gypsum board ceilings. Where shower / toilet room combinations exist, use plaster finished ceilings of either type. Epoxy paint system typical throughout. Use dropped soffits or false gypsum board beams between toilet / shower areas and locker rooms. This will divide ceiling systems and provide a barrier, at the ceiling line, for odor and moisture confinement to the higher humidity areas.

7. Wall Materials:

Provide ceramic tile, full height in showers, behind toilets and urinals (as per most health codes), and as a 4' high wainscot throughout the

room(s). Minimum acceptable is "full" height ceramic tile defined as 6' - 8' above the finished floor at toilets, full height at showers and deleted elsewhere. Use gloss finish tiles. Consider creating a pattern of accent tiles or trims in complimentary colors to improve visual appearance. Avoid using darker colors as the main background color. Partial height ceramic tile or fiberglass panels in shower units are not allowed. Use bullnose edge tiles at all outside corners. Use coved base tiles to match wall or floor system. Do not use wood base. Do not use rubber or vinyl base in wet areas.

Where ceramic tile is not used, epoxy paint system is required for optimum moisture and stain resistance.

8. Windows And Doors:

Views into the space are prohibited. Aluminum or hollow metal frames are recommended. Natural light can still be provided by use of translucent glazing panels.

9. Flooring:

Locker rooms: Slip-resistant porcelain or ceramic tile floor to match shower and toilet rooms. As an alternative, only when approved by the user, solution dyed, level loop nylon carpet, with microbial treatment for resistance to mold and mildew can be used. Carpet to be 26 oz yarn weight, 45-60 oz finished weight with woven polypropylene backing. 5/64 gauge minimum. 10 year wear / abrasion warranty. Minimum pile height .166" to .1875".

Shower and toilet rooms: Ceramic mosaic or porcelain tile. 2" x 2" preferred. In shower area, the maximum size of floor tile is 2" x 2", with smaller sizes being preferred. Mud set with floors sloped to drain. Slope to drain in showers (located one per cubicle), keep flat in toilet rooms with slight depression around floor drains. Overall floor slope should not exceed 1/2" in 10'-0". Wet and dry skid resistance is the priority. Non-glazed mosaic tiles for floor use are typically provided with a roughened face texture. Natural (flat) finish tile may also be satisfactory.

10. Plumbing:

Plan on grouping toilets and urinals. Whenever possible, provide back to back plumbing for efficiency. Locker rooms and wet areas should be separated by a full-height barrier. Provide automatic sensors for faucets and toilets/urinals. One, electrically cooled, two station unit, designed for ADA use, shall be provided in each locker room or one unit shall be located directly outside the main entrance to the locker rooms.

Floor drains: Provide one drain per shower, and one floor drain per 250 square feet of floor area. Typically, one drain centered near toilet / urinal wall is adequate for unexpected overflows.

Fixture counts: Unless the minimum number of fixtures provided in the table below is increased by other code or criteria requirements, the table below provides the minimum number of fixtures in the locker/shower/toilet rooms, based on a ratio of 65% male and 35% female.

	X-Small	Small	Medium	Large
Men's Showers	8	12	18	26
Men's Toilets & Urinals	4	6	9	13
Men's Lavatories	4	6	9	13
Women's Showers	4	6	9	14
Women's Toilets	3	5	7	10
Women's Lavatories	2	4	5	8

11. Mechanical (HVAC):

Mechanical heating, ventilation, and humidity control of the module is mandatory. Shall exceed the current ASHRAE requirements.

Operating range: System able to maintain 70 - 78 degrees (F) year-round at 50% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

If the shower stalls are separated by full-height partitions, then each shower stall shall be provided with an exhaust to help dry the area and keep air moving.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Dedicated supplemental exhaust for toilets. Passive or plenum return not recommended. Supply diffusers are to be adjustable metal grilles with four-way air movement and blade-type vanes. Return air grilles may be perforated plate or blade type. All diffusers to be pre-finished.

Ductwork shall be insulated sheet metal rectangular or circular duct routed adjacent to diffuser locations. Use flexible duct drops to diffusers. Natural (non-mechanically driven) ventilation is not allowed.

12. Sound:

Ceiling mounted speaker for public announcements.

Sound system: Flush recessed ceiling speakers, 10 watt minimum output rating, capable of reproducing human speech, minimum. Speakers shall be weatherproof in wet areas.

13. Technology/AV:

Provide for wall-mounted flat-screen televisions throughout the locker rooms.

14. Fixed Equipment:

Lockers, benches, wall mounted hair/hand dryers.

Shall provide plastic or color-through phenolic half-height "Z" lockers with non-corrosive hardware. Lockers must be a minimum of 15" wide and 18" deep. Minimum height is 60" per stack of 2 lockers. Particle board and metal are not allowed. Provide locking mechanism on lockers to accept user's padlocks as a minimum. Consider using electronic locks, with codes established by the patron, on lockers. Electronic locks must have an override feature that would allow staff to open the locker. Do NOT use locks that require the PFF personnel to provide a combination or key to open the locker (ie. Built-in

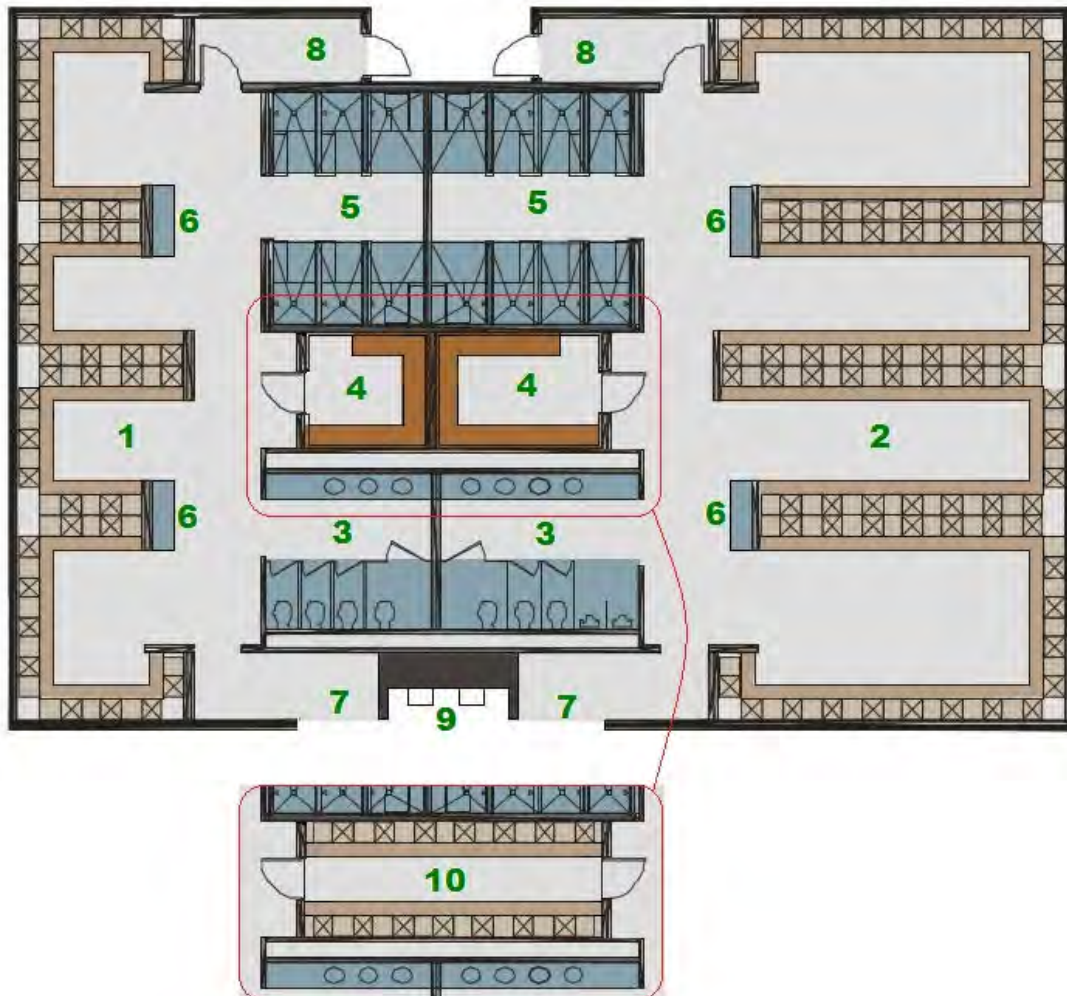
combination locks and built-in locks requiring a physical key are not allowed). Tops of lockers shall be sloped unless the lockers are fully enclosed by a furr-down over the locker.

Provide benches either integral to the base of the locker, or permanently attached between banks of lockers. Please consult with user before finalizing type of bench to be provided.

Where locker rooms support a natatorium, provide a minimum of 2 spin-type swimming suit dryers in the men's and in the women's locker rooms. Locate the dryers in a tiled alcove out of the traffic path. Provide a floor drain beneath them.

Shower stalls shall be provided with corner shelves and/or recessed shelves for the users' soap, shampoo, etc. Protruding shelves are not allowed due to safety and maintenance concerns.

Provide shower curtain and rod for each shower between the shower and the dressing booth, and provide another shower curtain and rod for each dressing booth between the booth and circulation. Provide a towel pin/hook in each dressing booth, as well as a bench. Bench shall be fold up with a support leg on the front edge for durability. If bench is spring loaded, ensure that the bench or leg do not create a finger pinching hazard.



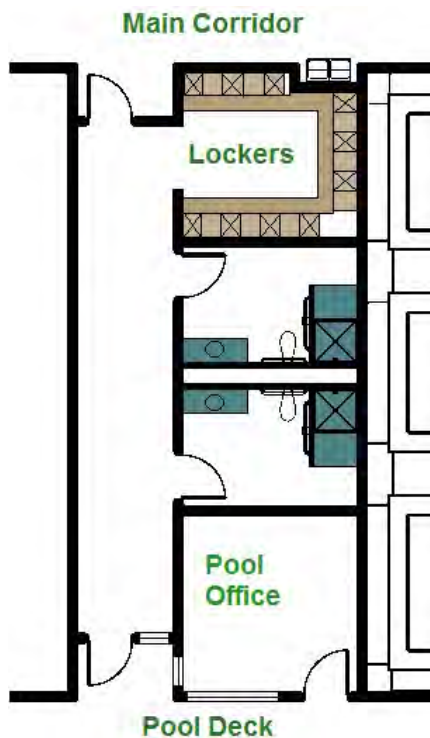
<u>Minimum locker count</u>	<u>X-Small</u>	<u>Small</u>	<u>Medium</u>	<u>Large</u>
Total number of lockers	186	298	426	600
The following distribution of lockers is based on 65% male, 35% female, and should be considered the standard unless otherwise noted. The distribution between rooms may vary +/- 5%				
Men's Lockers	121	194	277	390
Women's Lockers	65	104	149	210
If a convertible locker room is provided, the following distribution would be appropriate. The distribution between rooms may vary +/- 5%:				
Men's Lockers	110	174	250	350
Women's Lockers	60	94	134	190
Convertible Locker Room	16	30	42	60

15. Arrangement:

Provided on the previous page is a relationship diagram of the locker room area, which is based on the ratio of 65% male and 35% female. Another consideration, which is shown in the diagram below, is the inclusion of a “convertible” locker room. The convertible locker room is a smaller room with lockable access from both the men’s side and the women’s side. When needs shift, one of the doors can be locked to provide a larger ratio of lockers to a specific gender. The convertible locker room may contain up to 10% of the total locker requirement for each gender.

Legend:

1. Women’s Locker Room, illustrating half-height and full-height lockers
2. Men’s Locker Room, illustrating half-height and full-height lockers
3. Toilet Area
4. Optional Sauna or Steam Room
5. Showers and Dressing Booths
6. Grooming Area
7. Main Entry from Circulation Path
8. Exit to Natatorium or secondary means of egress if required by code
9. Electric Water Coolers
10. Optional Convertible Locker Room. If both saunas and convertible locker room are provided, the configuration of the locker rooms will require alteration.



16. Family Changing Rooms:

Family changing rooms are only required when a natatorium is included in the project or if there will be fitness programs for children in the PFF. It is recommended that at least 1 Family Changing Room be provided in the PFF, not only for the children programs mentioned above, but also for anyone who requires assistance in changing/showering, etc. The diagram to the left shows one possible arrangement of 2 Family Changing Rooms. The separate locker area, that cannot be locked, is mandatory. The intent is that families will change in one of the shower/toilet rooms (aka. Family Changing Rooms), and then put their clothes into the locker. By providing the lockers in a non-lockable area, patrons may retrieve their possessions at any time. Each Family Changing Room must meet the requirements of the ABA, and be provided with a shower stall that meets the

requirements above, toilet, lavatory, diaper changing station, clothes hooks, spin-type swimming suit dryer, and a fixed bench. Each room shall be lockable, with a lock that can be opened from the outside with a key.

For water area of 6300 square feet or less, only one changing room is required. For water areas of 6301 – 12,600 square feet, two changing rooms are required. For water areas in excess of 12,601 square feet, at least three changing rooms are required.



H. LOBBY AREA

1. *Function/Description:*

The Lobby is the welcoming space to the facility. The lobby serves as the primary entrance to the facility for patrons, visitors, and spectators. It is also a transitional space used for visitors and users to check-in upon entry and orient themselves to various activities. The lobby must be open and friendly in design and serve to introduce the rest of the facility. Immediately adjacent to the lobby is the waiting/display area which provides an area for customers to relax and for the facility to display trophies, as well as, information regarding special activities and program offerings. A control desk is required within the lobby to facilitate security procedures and to issue and collect equipment such as basketballs, volleyballs, towels, etc. The Lobby area consists of the Entry Lobby, Waiting/Display area, Control Desk, Equipment Storage, and Vending.

The net area of the Lobby Area may be increased from what is shown in the chart of Program Areas; however, space added to the lobby must come from reduction in miscellaneous space (ie. Mechanical/Electrical/Communication Rooms, circulation, structure, etc.)

2. *Essential Design Requirements:*

- a. Control desk Requirements:
 - i. Staff **MUST** have direct visual and physical access to the fitness module. The free-weight and cardio areas (specifically treadmills) are the locations with the largest potential for injury. The staff at the desk must be able to see and respond to any unsafe behavior or incidents immediately. Providing elements that obstruct or impede this are not acceptable.
 - ii. Staff must be able to control who enters the building, and be able to provide a convenient check-in arrangement.
 - iii. Staff must have visual access or total coverage video-surveillance of cardiovascular area, circuit area, gymnasium and exercise areas.
 - iv. Staff must have visual access or video-surveillance of the entrances to the locker room and the general area of the racquetball courts.
 - v. Staff must have video-surveillance of all interior stairwells as well as the outside of all doors that could be used to access the facility.
 - vi. Storage must be provided behind the counter or in an adjacent room for issue items such as balls, towels, racquetball goggles, etc. These items will be issued from the control desk. In addition, some vending may occur at the control desk. Coordinate with users to determine vending requirement and provide utilities as required.
 - vii. The PA system and sound (stereo) system that is used throughout the facility must be located at the desk or just inside the adjacent storage room if provided.
- b. Design the PFF to require access at one main entry point sized in accordance with egress requirements of NFPA 101. To determine the occupant load of the gymnasium, use “Assembly Use - Without Fixed Seating” from NFPA 101. If



the main entrance is not sized to accommodate the occupant load of a special event (e.g., Change of Command, award ceremonies), a separate gymnasium special event entrance with a paved path to the parking area is required.

3. *Direct Adjacencies:*

- a. Entry Vestibule and vertical circulation to upper level areas.
- b. Control desk must be adjacent to the fitness module, and must have direct access to this area.
- c. Some installations may require direct access to the gymnasium from the Lobby Area.

4. *Indirect Adjacencies:*

- a. Corridor system to activity areas.
- b. Restrooms.
- c. Laundry.

5. *Ceiling Height:*

Minimum of 12'-0"; higher preferred with 9'-0" min. to lowest ceiling element over the control desk. In 2-story PFF, it is strongly desired that the lobby be a 2-story space.

The intent for lobby ceiling design is to encourage interest and traffic into the facility. Bright, open volumes with views into the facility provide that impression. Though higher ceilings will require an increase in heat / cooling input, it is recommended that the facility utilize the largest volume possible within the space criteria guidelines.

6. *Ceiling Finishes:*

Highly reflective and sound absorbent materials. If an acoustical lay-in ceiling system is used, consider options for face design that introduce a distinctive element to the lobby space. Also consider use of acoustical "clouds" in taller spaces. Consider lighting placement and lamping types while considering ceiling design. The lobby is the primary area to consider decorative fixtures which may require areas of the ceiling reserved for pendant hung fixtures and/or up-lighting of ceiling features. See lighting guidelines below.

Additional Considerations: Other ceiling treatments are acceptable, as described below.

Accent functional areas, "mirror" floor patterns, or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area. "Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit.

If the lobby is a part of an overall large volume area, it is also appropriate to not provide a ceiling. Provide sound absorption through either suspended or wall-mounted acoustical panels or baffles, or an acoustic decking. Consider use of a lower element over the control



desk to provide a visual focal point and to bring the scale down to a more human scale.

Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first; then consider the pattern of the panels and placement of bulkheads. Consider pendant hung decorative lighting. Where soffits exceed 36 inches in width and/or 12 inches in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

7. Wall Materials:

Consider use of accent materials or textures throughout the lobby area. Provide accent wall materials and/or colors around control desk to make this area visually interesting and easy to locate.

Provide a low-maintenance, durable finish with enhanced aesthetics. Utilize a durable and scrubbable eggshell or satin finish, whichever has higher gloss, for painted surfaces. Exposed smooth face CMU block is not allowed in this area.

8. Windows And Doors:

Window and Door requirements shall meet the Force Protection / Anti Terrorism requirements.

Aluminum framing preferred, with hollow metal frames acceptable.

Provide aluminum entrance frames with an insulated aluminum door (i.e. as if for exterior use) with an insulated glass insert for all exterior frames. Option exists to continue use of aluminum framing and aluminum / glass doors within the lobby for openings visible from within the lobby area. Aluminum finishes may then match in color / sheen and durability.

Utilizing aluminum window system framing to create large open views into adjacent activity spaces and /or to the exterior is highly recommended. Window shading devices may become necessary for tall glass with south to southwest exposures. Consider afternoon sun angles and control desk locations to avoid glare conflicting with the control desk monitoring functions.

Tempered glass is typical to the module.

Door hardware: Satin stainless steel or satin finish chrome preferred. High frequency ball bearing butt hinges are an acceptable minimum. Continuous gear-operated hinges preferred. Concealed or surface applied pivot hinges are not recommended. Continuous hinges will require custom color coordination with the door frames.

9. Flooring:

Provide a low-maintenance, durable, moisture and slip-resistant finish suitable for this high traffic area. Acceptable finishes include terrazzo, porcelain tile, stone, or other hard surface. Colored, patterned, and sealed concrete is also an option; however, plain sealed concrete is not allowed. Provide a base that matches the flooring.



Resilient Tile (VCT) is not allowed for lobby due to aesthetics and durability. Carpet is not allowed due to high frequency traffic and direct adjacency to the outside.

Each entry shall have a recessed mat, constructed of pre-finished metal retaining strips with nylon fiber, or shredded rubber inserts. Semi-open design. Floor mat recesses shall span the width of the entry opening or vestibule and be 4'-6' long in the direction of travel. Mats are intended to be removable to facilitate periodic cleaning of the mat and the floor recess. Floor drains under the mats are optional but recommended for heavy rainfall or snowfall locations.

It is recommended that if a storage room is provided adjacent to the control desk, it is provided with the same flooring for continuity.

10. Natural Lighting:

Lobby appeal is enhanced by a combination of natural and artificial light. Centrally located skylight or clerestory window for hub type lobby or several smaller skylights/clerestories for linear spaces is highly recommended. Attempt to position natural light to accent control area. The Army prefers the use of clerestory windows over the use of skylights.

11. Plumbing:

Electric Water Cooler: One unit shall be provided adjacent to the public restroom function which is located in or adjacent to the lobby.

12. Mechanical (HVAC):

Outside air infiltration should be controlled with use of a vestibule / airlock with two sets of entry doors.

Provide an emergency shut-off control per AT requirements.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity or less. Shall meet or exceed ASHRAE 62 for the ventilation rate.

Temperature controls: Independent to zone.

13. Lighting:

Main module lighting to be a combination of 1) recessed fluorescent down lighting (PL lamps) with pendant hung decorative lighting or 2) pendant hung direct / indirect fluorescent fixtures. Decorative wall sconces or other decorative fixtures are recommended to accent functions or highlight focal points.

Provide lobby lighting control center at control desk. Dimming function or multiple level lighting function should be provided.

Provide accent lighting over control desk counters, and ensure adequate task lighting is provided.

Provide display lighting within casework for merchandising or issue functions at Control desk.

Provide under cabinet lighting of counters where wall cabinets are used. Low profile LED lighting is acceptable under cabinet lighting.

Provide accent lighting throughout the lobby to enhance architectural features of the area.

14. Power:

Power to circuits as needed to Control Desk, for computer terminals (2 minimum in the X-small and Small, 3 minimum in the medium, 4 minimum in the large), counter mounted video monitors, multiplex video receiver, tape backup, sound processor for multiple paging sources, music source (such as a CD player) and sound amplifier. In addition, other general use receptacles are required. Also, vending functions can be provided as an over-the-counter service at the control desk, which will require additional power. The location of vending must be determined during the very early stages of design. Without specific guidance, expect 2 vending machines to be located in this area.

Provide electric and data for electronic message boards to be located on lobby walls.

Utilize custom raceway in casework. See Architectural Woodworking guidelines above.

15. Technology/AV:

Main power and communications needs are at the Control Desk.

Empty conduit routing, (recommend 2" min. diameter) for present or future video cabling from security camera sources around facility. Stub up into base cabinets and continue up into ceiling cavity above control desk.

Provide at least 2 CATV outlets in the lobby area. Coordinate location with users.

Provide one telephone line per two points of sale (POS). Provide at least two additional general purpose phone lines. In facilities that include a multipurpose field, provide a means for communication between the field kiosk and the control desk.

CCTV monitors must be viewable by personnel working at the Control Desk

Provide data outlets as needed to Control Desk, for computer terminals (2 minimum in the X-small and Small, 3 minimum in the medium, 4 minimum in the large). In addition, provide data and other infrastructure as required for the computers, copier/printer/fax, ID check system, counter mounted video monitors, multiplex video receiver, tape backup, sound processor for multiple paging sources, and music source. Coordinate with users to determine requirements. In addition, provide a minimum of 25% spare capacity for flexibility.

Provide a duress alarm with controls next to the POS units. The alarm control must be out of sight from patrons, and must directly signal the MP station.

16. Sound:

PA system shall be provided, and shall be controlled from the Control area. PA system shall be able to broadcast through the entire facility at

once, or multiple rooms, or a single room. Shall be able to broadcast voice and music.

17. Acoustical Performance:

Provide sound absorbing materials to reduce reverberations in this area.

18. Fixed Equipment:

Architectural Woodwork: For the control desk, provide a visually attractive focal point for 1) entering patrons, 2) control and security functions, and 3) information. The control area shall be contiguous with both the Lobby and Fitness modules. Provide a 24-in.- (610-mm-) deep counter with built-in base cabinets. Provide file drawers and storage drawers with a minimum of two lockable drawers for each POS. The counter must be dual height for standing transactions, seated office functions, and ADA customer service. Note that ADA-height counter must have knee-hole space on both sides of the counter. Modesty panels and apron must be of durable materials. Consider supports such as steel angle braces for counters with knee-hole space. Consider providing wall cabinets. Expect to provide counters and casework for a minimum of two stations / control personnel within this area in an X-small or a Small facility. Add 1 person for each size larger than a Small. Provide two tier counter system, more to block view of countertop clutter and controls, than as a privacy barrier. Direct visual control of lobby and fitness areas is critical. "Back wall" (if available) counters may be standard seating height for more extended paperwork functions. A minimum of 50% of the counter shall be standing height.

Casework: Premium grade. Recommend all wood construction for flexibility in configuration. Solid wood fronts, veneer plywood exposed sides and knee spaces. Interior dividers may be fused and bonded vinyl or plastic laminate particle board. Recommend only 3/8 inch thick min. plywood for shelving 3'-0" wide and under (1/2 inch thick otherwise), with wood veneer or fused and bonded vinyl finish. Solid wood face edging for shelving and door edges recommended. PVC edging is an alternative. Drawer and door hardware: to be commercial grade. Drawer glides to be side mounted, and use ball bearings and/or nylon wheels with minimum 75 lb. capacity for drawers less than 2.0 cu. ft, minimum 100 lb. capacity for drawers between 2.0 and 4.0 cu. ft., and minimum 150 lb. capacity for drawers larger than 4.0 cu. ft. Guides shall be provided with positive out and in stops. Use concealed door hinges and an integral pull or any metal cabinet pull style. Plastic or nylon pulls are not allowed.

Counters: Solid 1/2 to 3/4 inch thick counters. Provide 1 1/2 inch dia. half round edges. Avoid square edges toward patrons. The counter must be a durable solid material such as quartz/recycled material, granite, concrete, or solid plastic/polymer. Plastic laminate is not acceptable. Provide through the counter grommets for covering holes needed for computer and device wiring from counter mounted devices. Provide a towel return drop opening in the counter top with space for a laundry cart below, if required by operations.



I. ADMINISTRATIVE

1. Function/Description:

Administration space (offices, work/break room, meeting space) for facility director and staff.

The breakdown of individual spaces in the Administrative Area is provided in the chart at the end of this section.

2. Direct Adjacencies:

Typically, offices are centralized with individual offices connected to an open office core for shared administrative services. The office suite does not have to be adjacent to the control desk. It is preferred that this area be away from the main entry, as it is desired that the facility portrays an active facility upon entering, as opposed to an administrative facility. If a large Training/Conference Room is provided, this room must be accessible from the corridor as well as the admin office area. The door into the admin office area should be lockable to avoid access during after hour meetings or training.

It is ideal if the administrative area can be located on an exterior wall so that offices can benefit from natural daylighting. It is also ideal for the administrative area to overlook activity areas such as the fitness module and/or the gymnasium. A large expanse of glass in one facility allows the administrative area to look into the lobby and the adjacent fitness module on the floor below.

3. Ceiling Height:

9'-0" minimum.

4. Ceiling Finishes:

Provide lay-in acoustical tile ceiling. Random fissured, non-directional face design preferred. Main offices or conference / office space may benefit from continuing a textured or decorative face tile from centralized office entry points in an office suite. Avoid solid gypsum board ceilings. Perimeter soffits are acceptable. Maintain access above ceilings for HVAC maintenance and future data network upgrades.

5. Walls:

Acrylic latex paint with a scrubbable eggshell or satin finish, whichever has higher gloss, is minimum. Wall Covering may also be considered.

6. Flooring:

Carpet tile is principle material for centralized office suites. The minimum is commercial, solution dyed nylon in 26 oz yarn weight, 45 oz total finished weight. Provide carpet with static control. Increasing total finished weight closer to 60oz is preferred. Carpet should be darker tones and patterned to hide stains. Provide vinyl or rubber base. VCT is allowed in the Copy/Work/Break Room. Hard tiles (such as porcelain, etc.) are also acceptable.

7. Windows And Doors:

Doors into all areas shall be provided with vision panel (minimum 5 sq. ft.) and an adjacent sidelite, which is a minimum of 12" wide, and the full height of the door.

8. Plumbing:

In the copy/file/work/break room, provide a minimum 1 compartment kitchen-style sink, plus water hook-up for icemaker in refrigerator.

9. Mechanical (HVAC):

Outside air is not recommended. Air movement should be controlled with ducted supply to each office. Variable air volume (VAV) devices are recommended for thermostatically controlling individual offices. Office temperature controls may be centralized as a minimum, with individual controls preferred.

Utilize main corridors as ducted or plenum return air paths for office suites.

Provide acoustically lined ducts when routing ducts across several grouped offices.

For sound transfer control between offices, always maintain at least two elbow turns in hard ductwork prior to connecting the main duct run to a flex duct to ceiling diffusers.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity.

10. Lighting:

Primarily (minimum 75%) indirect lighting fixtures, to reduce computer glare, are required. Add recessed downlighting or other accent lighting for accent effects in main office or waiting spaces to office suites. Lay-in lighting fixtures with integral HVAC diffusers in a slot arrangement on the fixture frame do not provide a good distribution of air and tend to increase air noise; therefore, these are not recommended.

11. Power:

In copy/file/work/break room, provide outlets at built-in counter area for microwave, coffee pot, refrigerator, and other cooking devices. Provide ground fault protection of outlets as required by code.

12. Technology/AV:

Data and telephone cable routed adjacent to convenience outlets, on desk wall if identifiable at time of design. See furniture considerations below.

Competitive sports or training may require the use of video taping to gauge performance. Offices for fitness directors may benefit from a TV monitor bracket mounted 72" a.f.f. for the purpose of reviewing recordings.

Provide CATV outlet in Classroom/Training Room and Director's Office.

In the Classroom/Training Room provide Provide an electrically operated recessed projection screen and a built-in ceiling multimedia projector mount, bulletin board with tack surface. and dry-erase board.

13. Sound:

None. Avoid extending paging systems into offices or office suites.

14. Acoustical Performance:

Design office walls to maintain an STC (sound transmission class) rating of 45 or better to ensure a minimum level of privacy.

For the Classroom/Training Room, provide walls with a minimum STC rating of 49.

Monitor and seal all tops of walls, duct, and pipe penetrations through walls. Sound insulate toilet and roof drain piping in walls shared with offices.

15. Fixed Equipment:

Kitchenette Cabinets: Premium grade. Solid wood fronts. Solid wood face edging for shelving and door edges recommended.

Counters: Solid ¾" thick counters. The counter must be a durable solid surface material such as quartz/recycled material, granite, concrete, or solid plastic/polymer; laminate is not permitted. Drawer glides to use nylon wheels or ball-bearing drawer guides, rated for 50 lbs. minimum. Provide 2 separate counter areas, one for food/break functions and one for administrative functions (i.e. fax, printer, etc.)

16. Miscellaneous:

Furniture Considerations: It is preferred that offices are designed in anticipation of a particular grouping of furniture. It is anticipated that private offices will be outfitted with a modular U-shaped workstation with a conferencing peninsula with 2 guest chairs. Provide adequate shelves and file storage along with a vertical unit to provide space for coat storage. Open offices will typically be a modular 8' x 8' U-arrangement with a guest chair at the end of one leg of the "U". A vertical unit with file drawers and hanging space should be provided at the other end of the "U". Provide a dry-erase board in each office. Once satisfied with a basic arrangement, then power and data ports can be located with greater confidence.

Provide space in kitchenette area for a minimum 18 cu. ft. refrigerator at the end of the counter.

Furniture and refrigerator shall be GFGL.

ADMIN REQUIREMENTS:	X-Small	Small	Medium	Large
Director's Office (Minimum 120 sq. ft., with free-standing modular furniture).	Quantity of 1	Quantity of 1	Quantity of 1	Quantity of 1
Program Manager's Office (Minimum 100 sq. ft., with free-standing modular furniture).	None	Quantity of 1	Quantity of 1	Quantity of 1
Support Staff Workstations (Minimum 64 sq. ft. systems furniture workstations).	Quantity of 2	Quantity of 2	Quantity of 4	Quantity of 5
Copy/File/Work/Break Room.	160 sq. ft.	240 sq. ft.	160 sq. ft.	170 sq. ft.
Storage (Approx). This can be combined with the Copy/File/Work/Break Room if adequate storage cabinets/shelves are provided.	20 sq. ft.	29 sq. ft.	32 sq. ft.	36 sq. ft.
Classroom/Training Room.	None	None	420 sq. ft.	420 sq. ft.
Classroom/Training Storage.	None	None	60 sq. ft.	60 sq. ft.
Internal Circulation (Approx).	86 sq. ft.	123 sq. ft.	230 sq. ft.	245 sq. ft.



J. LAUNDRY

1. *Function/Description:*

Laundry for cleaning and distribution of towels and/or sports gear, and includes extractor(s), tumbler(s), laundry sink, folding table, storage cabinet, and space for laundry carts.

2. *Direct Adjacencies:*

- a. Laundry may need to be in close proximity to the Control Area depending upon staffing levels and anticipated usage. If the laundry is located near the main entrance, special care must be taken to avoid the laundry smells as one approaches the building, and the laundry area shall not be visible by the patrons.
- b. A connection to a service corridor and one outside wall is also preferred.
- c. If the laundry is located away from the control desk, space must be provided for 2 carts within the laundry room.
- d. In some locations it may be mandatory that this room be located on an exterior wall to allow for direct through-the-wall venting of the dryers.

3. *Ceiling Height:*

9'-0" minimum.

4. *Ceiling Finishes:*

Highly reflective and moisture resistant materials. Provide 2'x2' or 2'x4' lay-in, wet formed mineral fiber acoustical panels, on phosphatized or otherwise humidity controlled "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria.

Face design: Random fissured, non-directional face ceramic frit (film faced tile) is minimum and preferred.

Edge design: "Flush" (square) edge. Avoid textured surface tiles or expending resources on decorative tiles. Laundry issue rooms will require flat, cleanable tiles to maintain their appearance.

Impact resistance: Standard durability rating. High impact resistance preferred.

Humidity: Non-sag, humidity controlled tiles.

Material specifications and lighting: 2' x 2' or 2' x 4' lay-in recessed fluorescent fixtures with prismatic lenses, mounted in the ceiling grid are minimum. Fixtures to be rated for damp conditions.

Solid moisture resistant sheet rock and solid plaster ceilings are also acceptable.

5. *Walls:*

Must be appropriate for damp/humid location.



6. Flooring:

Sealed concrete floors preferred. Provide 4" raised concrete platforms for washers and dryers.

7. Plumbing:

Provide one exposed hot and cold water manifold with taps at each machine, to serve washing machines. Provide one individual floor drain for each machine, located to the back right corner. Manifold and drains should fall within a 2'0" alleyway created behind any bank of machines. Pipe manifold shall be 36" high at individual taps. Insulate all cold and hot water lines. Provide a laundry sink.

8. Mechanical (HVAC):

Outside air is not recommended. Air movement should be controlled with ducted supply and make up air balanced against dryer exhaust. Variable air volume (VAV) devices are recommended for thermostatic control. Ducted return air.

Dryer exhaust ducts will impact headroom clearances if dryers are not located directly on an outside wall. Size dryer equipment as early in the design process as possible. Locate or group dryer ducting and plan for an exhaust route to the outside when locating space.

If gas operated dryers are used, path for vertical flues shall be provided.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity. Shall meet or exceed ASHRAE 62 for the ventilation rate.

9. Technology/AV:

One data and telephone port.

10. Sound:

None. Avoid extending paging systems into Laundry rooms.

11. Acoustical Performance:

Guard against sound transfer to adjacent modules with full height walls minimum.

12. Equipment Criteria:

The following is provided as a planning guideline. Commercial washer extractors and dryer tumblers shall be used unless other guidance is provided by the customer.

X-Small: One 25 lb min. commercial washer extractor, two 25 lb min. dryer tumblers.

Small: One 35 lb min. commercial washer extractor, two 35 lb min. dryer tumblers.

Medium: Two 30 lb min. commercial washer extractors, three 30 lb min. dryer tumblers.

Large: Two 50 lb min. commercial washer extractors, three 50 lb min. dryer tumblers.



K. CORRIDORS

1. *Function/Description:*

General building circulation serves to connect spaces visually as well as physically. Corridors should be broken into two main functions, central public axis and service corridors. Service corridors are isolated by doors for security and privacy when possible, and connect loading and off-loading entries to mechanical rooms and main corridors, when required.

2. *Essential Design Requirements:*

An elevator will be required for any facility with more than 1 floor. It is mandatory that the elevator be sized to allow for the movement of treadmills and elliptical trainers between floors. These items must be accommodated assembled, and without manhandling (i.e. tipping the equipment, turning it on its side, etc.).

3. *Ceiling Height:*

Public corridors: 10'-0" and above with minimum 9'-0" to lowest ceiling element.

Service corridors: No less than 9'-0"

Ceiling heights serve to identify main public corridors and may vary based on the width and visual axis desired within the facility. Gymnasium and Fitness modules utilize high ceilings and connecting corridors should take advantage of vertical views by use of tall interior window systems when possible. Generally, lobby and main corridor ceiling heights should match, with lower ceilings reserved for service corridors and corridors leading to auxiliary spaces serving the main module. If the corridor ceiling must be lower than the Lobby, then the transition between the lobby and corridor needs to be designed so that it is apparent that the corridor is the primary circulation path.

4. *Ceiling Finishes:*

Highly reflective and sound absorbent materials. Provide 2'x2' or 2'x4' lay-in, wet formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria. See optional considerations below.

Ceiling design: Public corridors are to follow level of finish and design utilized in the Lobby module. This includes continuation of dropped soffits or false beam patterns utilized in the Lobby module. Refer to design considerations in that module for more details. Service corridors out of public view and secondary corridors not visually connected to main corridor ceilings may reduce finishes to minimums.

Material Specification & Lighting: Refer to Lobby module guidelines.

Special considerations: Main corridors will serve as routes for hidden utilities. Use accessible ceilings as much as possible. Avoid large areas of dropped gypsum ceilings as accents in corridors unless dedicated accessible paths for utility routing can be accommodated. Use of gypsum board decorative ceilings should take into account HVAC and plumbing valves, damper and control locations above hard



ceilings. These will require access doors to service these devices that will detract from the visual impact of the space.

Where service corridors will be opened to the outside air on a regular basis, use high humidity rated acoustical tiles.

5. Flooring:

Public corridors can extend the Lobby module finishes. Hard durable surfaces are required. Resilient (VCT) tile is not allowed.

Service corridors: resilient tile preferred with clear or tinted sealed concrete as a minimum.

6. Plumbing:

A drinking fountain may be required along main corridors. When required, provide one electrically cooled two station unit, designed for ADA use.

7. Technology/AV:

Expect main conduit routing and data cable routing to take place in corridor ceilings.

8. Sound:

Ceiling mounted voice quality only speakers every 24'-0" o.c. in Main Corridors for paging system. Option to upgrade to music quality speakers if broadcasting of CD quality source is expected. Provide speakers with wide dispersion, 120 degrees or more, for ceilings 12 feet and lower.



Natatorium

A. GENERAL

This chapter provides the criteria for a Natatorium, also referred to as an Indoor Aquatics Center. A Natatorium is not a required part of a Physical Fitness Facility (PFF), but often times is included as part of a PFF project. The Natatorium is calculated separately as it has a different category code than a PFF.

1. Authorized Areas:

The first table below provides the areas for different pool sizes that will be attached to a PFF. The second table provides the additional areas for free-standing Natatoriums.

Pool Sizes:	Number of Points	Water Area	Water and deck area	Seating Area (5%)	Pool Office	Storage (5%)	Restroom Area	Dressing/ Lockers	Family Changing Room	Pool Equipment (10% of water area)	Chemical Storage	Mechanical Room (8%)	Misc. (circulation, structure, etc) (10%)	TOTAL AREA NOTE 1
22x48 (3' - 5' depth)	1	1,056	3,276	53	150	53	230	90	400	106	30	352	439	5,179
35x60 (3' - 5' depth)	2	2,100	4,950	105	150	105	230	168	400	210	30	508	635	7,491
42' x75- 1 1/4" (25yd, 5-6L) (~5' depth)	3	3,155	6,827	158	175	158	230	258	500	316	45	694	867	10,228
58' x 75'- 1 1/4" (25yd, 8L) (~5' depth)	4	4,357	8,589	218	200	218	230	354	600	436	60	873	1,091	12,869
82'-1 1/2" x 75'-1 1/4" (25 m x 25 yds) (~5' depth)	6	6,168	11,140	309	240	309	230	498	600	617	90	1,123	1,404	16,560
168'-1 3/4" x 75'-1 1/4" (50m, 8L) (~5' depth) INCLUDES movable bulkhead	12	12,629	19,321	632	300	632	460	894	800	1,263	180	1,959	2,449	28,890

Pool Sizes:	Lobby/Admin (10%)	Additional Locker/ Toilet/Shower space	Training/ Structured Activity (10%)	Additional Mechanical Room (8%)	Addl Misc. for stand-alone facility (10%)	TOTAL AREA NOTE 2	Notes:
22x48 (3' - 5' depth)	Not allowed in a free-standing facility						10' deck on sides, 15' deck on ends
35x60 (3' - 5' depth)	Not allowed in a free-standing facility						10' deck on sides, 15' deck on ends
42' x75- 1 1/4" (25yd, 5-6L) (~5' depth)	Not allowed in a free-standing facility						6-7' lanes with no extra width, or 5-8' lanes with 1' outside of lanes 1 and 5. Length includes touch pads at both ends. 10' deck on sides, 15' deck one end, 20' other.
58' x 75'- 1 1/4" (25yd, 8L) (~5' depth)	436	1,184	436	165	1,509	16,599	8-7' lanes; 1' outside of lanes 1 and 8. Length includes touch pads at both ends. 10' deck on sides, 15' deck one end, 20' other.
82'-1 1/2" x 75'-1 1/4" (25 m x 25 yds) (~5' depth)	617	1,328	617	205	1,933	21,260	8-9' lanes in 25 m direction. Length includes touch pads at both ends. 1'-6 5/8" outside of lanes 1 and 8. Could have 10-7.2' wide lanes. 10' deck on sides, 15' deck one end, 20' other. Assume whole pool is 5' deep or less
168'-1 3/4" x 75'-1 1/4" (50m, 8L) (~5' depth) INCLUDES movable bulkhead	1,263	2,154	1,263	375	3,395	37,340	8-9' lanes in 50 m direction. Length includes touch pads at both ends and movable bulkhead. 1'-6 5/8" outside of lanes 1 and 8. Could have 10-7.2' wide lanes. 10' deck on sides, 15' deck one end, 20' other. Assume 30% of pool >5' deep.

The table below provides the areas for additional functions that may be added to the Natatorium if approved.

	Number of Points	Water Area	Water and deck area	Seating Area	Pool Equipment (10% of water area)	Chemical Storage	Mechanical Room (8%)	Misc. (circulation, structure, etc) (5%)	TOTAL AREA
Additions:									
Diving Tank (minimum 13' deep)	3	1,600	4,200	0	160	30	352	527	5,269
Diving Extension (11'-6" or 13')	2	1,600	3,600	0	160	30	304	455	4,549
Diving Depth (Note 3)	1	0	0	0	0	0	0	0	0
Splash Pad (20 x 25) with minimum 3 play features	1	500	2,000	0	200	25	178	267	2,670
500 sf addition *may be needed for zero-depth entry	1	500	2,400	0	25	5	195	292	2,917
Hot Tub (appx. 14 pn)	2	256	1,296	0	200	40	123	185	1,844
Spectator Balcony (80' length) ~300 pn	1	0	0	2,000	0	0	160	240	2,400

NOTES:

1. Use these areas for a natatorium that is part of a Physical Fitness Facility
2. Use these areas for a stand-alone Natatorium.
3. Maximum 11'-6" depth for 25 m pool or less. Maximum 14'-0" depth for 50 m pool.

2. Participant Loads:

Pool Sizes:	Bather Load @ 15 sf/person <=5', 25 sf/person >5'	ANSI-IAF 9-2005 units based on 7500 SF/unit	Based on ANSI-IAF, total number of toilets (inc. urinals)	Based on ANSI-IAF, total number of lavatories	Based on ANSI-IAF, total number of showers	Number of lockers based on 20% of bather load
22x48 (3' - 5' depth)	71	1	3.7	1.85	2	15
35x60 (3' - 5' depth)	140	1	3.7	1.85	2	28
42' x75'- 1 1/4" (25yd, 5-6L) (~5' depth)	211	1	3.7	1.85	2	43
58' x 75'- 1 1/4" (25yd, 8L) (~5' depth)	291	1	3.7	1.85	2	59
82'-1 1/2" x 75'-1 1/4" (25 m x 25 yds) (~5' depth)	412	1	3.7	1.85	2	83
168'-1 3/4" x 75'-1 1/4" (50m, 8L) (~5' depth) INCLUDES movable bulkhead	741	2	7.4	3.7	4	149

3. Determining Authorized Population:

The formula for determining Population is as follows:

CONUS: Military Population + 70% of Dependents (as of December, 2013 dependents are calculated at 1.52 * Military Population).

If the Civilian population exceeds 60% of the Installation population, then add 10% of the total number of Civilians to the result above.

OCONUS: Military Population + 70% of Dependents (as of December, 2013 dependents are calculated at 1.52 * Military Population) + 100% of U.S. Civilians.

4. Determining Indoor Pool Authorization:

First, from the table below, determine number of points based on authorized population plus any additional credits (such as remote or Power Projection Platform). After determining this subtotal, add or subtract the percentage based on climate. Then, determine the number of points of existing indoor pools that will remain on the Installation, based on 1 point per 1050 sq. ft. of water area. Finally, utilize the first 3 tables in this chapter to determine the size and options for the pool being programmed.

Authorized Population (Military strength +70% family members)	Base Points	Additional Points for PSP	Additional Points for PPP	Add Points for SWET	Remote (Note 2)	Subtotal Points	Hot Climate (Note 3)	Cold Climate (Note 4)
251-1000	2	1	2	1	1		-50%	+100%
1001-3000	3	1	2	1	1		-50%	+100%
3001-6000	6	1	2	1	1		-50%	+100%
6001-10,000	10	1	2	1	1		-50%	+100%
10,001-15,000	11	1	2	1	1		-50%	+100%
15,001-20,000	12	1	2	1	1		-50%	+100%
20,001-25,000	13	1	2	1	1		-50%	+100%
25,001-30,000	14	1	2	1	2		-50%	+100%
30,001-35,000	15	1	2	1	2		-50%	+100%
35,001-40,000	16	1	2	1	2		-50%	+100%
40,001-45,000	17	1	2	1	2		-50%	+100%
45,001-50,000	18	1	2	1	2		-50%	+100%
50,001-55,000	19	1	2	2	3		-50%	+100%
55,001-60,000	20	1	2	2	3		-50%	+100%
60,001-65,000	21	1	2	2	3		-50%	+100%
65,001-70,000	22	1	2	2	3		-50%	+100%
70,001-75,000	23	1	2	2	3		-50%	+100%
75,001-80,000	24	1	2	2	4		-50%	+100%
80,001-85,000	25	1	2	2	4		-50%	+100%
85,001-90,000	26	1	2	2	4		-50%	+100%
90,001-95,000	27	1	2	2	4		-50%	+100%
95,001-100,000	28	1	2	2	4		-50%	+100%
100,001-105,000	29	1	2	3	5		-50%	+100%
105,001-110,000	30	1	2	3	5		-50%	+100%
110,001-115,000	31	1	2	3	5		-50%	+100%
115,001-120,000	32	1	2	3	5		-50%	+100%

NOTES:

1. Receive 1050 sq. ft. of water area per point
2. Remote is defined as travelling more than 5 miles from one indoor pool to another, or from a housing area to an indoor pool. If you must leave the installation and then re-enter the installation (like on the other side of a highway), then each side needs to be considered as a separate installation.
3. Hot climate is defined as a location where outdoor pools are open year around.
4. Cold climate is defined as a location where outdoor pools are not usable some portion between Memorial and Labor Days



B. FUNCTIONS

1. *Lap Pool:*

Lap pool shall be appropriate for swim competitions. The length of the pool shall provide for touch pads at both ends of the pool, and remain within tolerances that are allowed for competition events. If a movable bulkhead is provided, the competition length must be met with the bulkhead in place. The bulkhead must be electronic. Manual bulkheads are too cumbersome and difficult to adjust regularly. Unless noted otherwise, the lap pool shall be 25 yards wide to allow for short course meets across the pool. The width of 25 yards must allow for touch pads at both ends. Class of play for this pool shall be classified as IESNA Class II. Maintain pool water in the 78 – 84 degree F range. Provide permanent lane markings on the bottom and ends of the pool (paint is not considered permanent) per competitive requirements. Provide starting platforms/blocks to allow for events in both directions, with platforms located as required to support all standard swim competitions. Pool depths at the starting platforms shall exceed the minimum depth specified by the governing organizations. Slope of platform, height above water, and distance from edge of water shall comply with the requirements for competitive swim meets as dictated by the governing organizations. Starting platforms shall be removable, and the anchor sleeve shall be provided with a cover for use when the platforms have been removed. At some point in the pool, the pool depth shall be as shallow as 3.5 – 4 feet deep to allow for shallow water fitness classes, unless another pool is provided for that function. The overflow system shall be concrete or stainless steel recessed or semi-recessed surge gutter. Provide a minimum deck space of 10 feet on the sides, 15 feet on the ends unless diving is provided, in which case a 20 foot deck is required. Minimum deck width between this pool and an adjacent pool is 15 feet. Clear height from deck to lowest elements of ceiling plane shall be a minimum of 16'. Provide a recessed toe ledge at 4 feet below the water surface on all sides where water depth exceeds 5' in depth unless not allowed by the governing body that will be used for swim meets to be held in this pool. Toe ledges must start no farther than 4 lineal feet to the deep side of the 5 foot slope break. Toe ledge design is addressed in paragraph D.20. Underwater lighting is required.

2. *Deep Water Area/Tank:*

Maintain pool water in the 80 – 84 degree F range. The overflow system shall be concrete or stainless steel recessed or semi-recessed gutter. Provide a recessed toe ledge at no less than 4 feet below the water surface on all sides where water depth exceeds 5' in depth. Toe ledge design is addressed in paragraph D.20. Provide a minimum deck space of 10 feet on the sides of the tank, 15 feet between an adjacent pool, and 20 feet where the boards and platform are located. Clear height from pool deck to lowest element in the ceiling plane must comply with FINA requirements. Depth shall meet or exceed the minimums required by FINA or other governing codes. Underwater lighting is required.

3. *Multi-Purpose/Recreational Pool:*

Water area shall be same (+/- 5%) as the water area authorized for a rectangular lap pool. Pool shall be provided with at least 3 of the following features, or as directed by the installation: zero-depth entry, waterfalls, slides, lap lines, climbing wall, zip lines, basketball and/or volleyball court, fountain/splash/spray elements, whirlpools, vortex,

lazy river, in-pool seating areas, etc. Pool water will be maintained in the 82 – 88 degree F range. If it is a smaller pool, used for therapy, the pool temperature could increase to 92 degrees F. Per the United States Water Fitness Association, the water temperature in the typical indoor multi-purpose pool in the USA is 84 – 86 degrees. This pool may be used for Shallow Water Egress Trainer (SWET) exercises, rehabilitation, soldier initiation to swimming, water exercise, as well as learn to swim and other recreational uses during non training hours. Overflow system shall be surface skimmers or semi-recessed concrete or stainless steel gutter. Provide a recessed toe ledge at 4 feet below the water surface on all sides where water depth exceeds 5' in depth. Toe ledges must start no farther than 4 lineal feet to the deep side of the 5 foot slope break. Toe ledge design is addressed in paragraph D.20. Provide a minimum deck space of 10 feet at the narrowest point on the sides of the pool, a minimum of 15 feet at the narrowest point at the shallow end of the pool, a minimum of 15 feet at the narrowest point between pools, and a minimum of 20 feet where at the narrowest point at the deep end of the pool. Pay close attention to the functions provided in the multipurpose pool, as waiting areas, entries, or other functions may dictate a larger deck. Underwater lighting is required. Color changing LED underwater lights are strongly recommended for this pool. The lights shall be programmable to remain a constant color, or select from several different color changing programs.

4. Pool support functions:

This includes a Pool Office, Staff Room/First Aid Station, Storage, Chemical Storage, and Pool Equipment.

- a. Pool Office: The pool office must have direct visual access to all pools it is responsible for. This visual access shall include an operable window that allows for interaction from the pool deck to the pool office. At least a portion of the window shall be provided with a solid surfacing transaction counter for completing any paperwork that might be required. The operable window shall be sized and designed so that it opens easily, and the counter shall be sized such that it does not impede staff opening the window. This area must be finished appropriately for the damp environment. The Pool Office will be provided with built-in solid surfacing counters on at least the wall perpendicular to the wall with the visual access to the pool(s). Metal, particle board and MDF are NOT acceptable. Provide space adjacent to counter, with electrical outlet, for a minimum 18 cu. ft. refrigerator. This office will also function for First Aid and Staff Room, and therefore adequate space must be maintained for First Aid requirements.
- b. Service Areas: Locate all pool equipment and mechanical equipment rooms away from public access. Doors or openings shall be sized to permit the replacement of all equipment. Ventilation is required for motors and heaters. A service road must be provided to the Service Areas.
- c. Chemical Storage: Provide separate chemical storage rooms for chlorine and every other chemical requiring isolated storage. Locate this storage area within the mechanical equipment compound or in a room adjacent to the pool equipment that is not accessible to the public, but facilitates

the delivery of bulk chemicals. Vehicular access is required to the Chemical Storage room(s). Doors shall be secure from break-ins and warning signs shall be posted concerning chlorine storage and the need for protective clothing and equipment. The chemical storage room(s) shall be fire and explosion proof and shall have a vent fan capable of one complete air change in one to four minutes. OSHA approved eye wash station(s), gloves, and protective goggles are required in the pool equipment and chemical storage areas. Spill containment shall be provided to ensure a chemical spill in one of these rooms does not migrate into another area or to the outside. Provide an alarm system that will notify the control desk of any spills that might occur.

- d. **Storage Rooms:** Storage rooms associated with each of the pools must open directly to that pool deck to avoid moving wet equipment through the facility. Provide double doors to the pool deck. Locate storage near area where the equipment will be utilized. Provide floor drain(s) in the storage rooms. In addition, provide shelving, hooks, and open space for user supplied equipment.

5. Other Functions:

The following support functions are provided for a Natatorium only if the facility is a free-standing Natatorium, and not part of a Physical Fitness Facility (PFF).

- a. **Control Desk:** The control desk shall be located in the Lobby and shall be able to monitor the main entrance into the facility in order to ensure all users appropriately check in. The facility may only have one main entrance, and this entrance must be controlled. The control desk must also be able to monitor the entrances into the locker rooms and the different pool rooms either through direct visual contact, or through a CCTV system. In addition, CCTV will be used to monitor all of the pool areas. Provide adequate electrical and data outlets for up to 3 computers (depending on size of facility), a POS computer, ID scanning, and fax/printers. Ceiling should be the same as the lobby, or may have a lowered ceiling element to accent the desk area. The control desk shall be easy to exit in case the control desk personnel must assist with an emergency. A storage room shall be located off of the control desk to store items that might be provided at the desk, such as life jackets, etc.
- b. **Lobby:**
 1. **Function/Description:** A transitional space used for visitors and users to check-in upon entry and orient themselves to various activities. Also provides a waiting area. A control counter within the lobby facilitates security procedures and way finding. The Lobby area consists of the Entry Lobby, Waiting/Display area, Control Desk, Equipment Storage, and Vending. In addition, the dry corridor shall follow the same requirements.



2. **Essential Design Requirements:** The lobby shall be adjacent to the main entrance and the control desk. The lobby shall be a larger volume with upgraded finishes. The lobby shall provide a seating area and an area for at least 2 vending machines in close proximity. In addition, the lobby will be provided with clear glass walls into the pool area. Men's and women's restrooms for visitors, staff, and spectators shall be provided adjacent to the lobby. These restrooms will be separate from those in the locker rooms. The Lobby must contain the Control Desk. The functions of the control desk include ensuring the staff can visually and physically control who enters the building. The desk must provide a convenient check-in arrangement, with high and low counters that comply with the requirements of the ABA. Staff must have visual access or total coverage video-surveillance of all of the pool areas. Staff must have visual access or video-surveillance of the entrances to the locker rooms. Any doors into a pool area from the lobby must be electronically controlled from the control desk to ensure no unauthorized person enters the pool area.

3. **Ceiling Height:** The intent for lobby ceiling design is to encourage interest and traffic into the facility. Bright, open volumes with views into the facility provide that impression. Though higher ceilings will require an increase in heat / cooling input, it is strongly desired that the facility utilize the largest volume possible within the space criteria guidelines. Ceiling height shall be no less than 10'-0" at any point except for a furr-down or other accent ceiling above the Control Desk.

4. **Ceiling Finishes:** Highly reflective and sound absorbent materials. If an acoustical lay-in ceiling system is used, consider options for face design that introduce a distinctive element to the lobby space. Use tegular tiles if a lay-in system is used. Consider lighting placement and lamping types while considering ceiling design. The lobby is the primary area to consider decorative fixtures which may require areas of the ceiling reserved for pendant hung fixtures and/or up-lighting of ceiling features. See lighting guidelines below.

Additional Considerations: Other ceiling treatments are acceptable, as described below.

Accent functional areas, "mirror" floor patterns, or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area. Also consider the use of "Acoustical clouds"

or panels of other material such as finished wood or metal.

"Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit. If the lobby is a part of an overall large volume area, it is also appropriate to not provide a ceiling. Provide sound absorption through either suspended or wall-mounted acoustical panels or baffles. Use a lower element over the control desk to provide a visual focal point and to bring the scale down to a more human scale.

Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first, then consider the pattern of the panels and placement of bulkheads. Consider pendant hung decorative lighting. Where soffits exceed 36 inches in width and/or 12 inches in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

5. Wall Materials: Consider use of accent materials or textures.

6. Flooring:

Selection criteria are based on appearance, durability, and yearly maintenance.

Some options for the lobby and dry circulation areas include terrazzo, porcelain tile, ceramic tile, and sealed colored and patterned concrete. Plain sealed or broom finished concrete is not acceptable. Floors must be slip resistant even though this is considered "dry" areas.

Resilient Tile is not allowed for lobby due to aesthetics and durability. Carpet is not allowed due to high frequency traffic and direct adjacency to the outside, although carpeting may be considered in the seating portion of the waiting area. Inclusion of carpet must be coordinated with user.

Each entry shall have a recessed mat, constructed of pre-finished metal retaining strips with nylon fiber, or shredded rubber inserts. Semi-open design. Floor mat recesses shall span the width of the entry opening or vestibule and meet the requirements for LEED credit. Mats are intended to be removable to facilitate periodic cleaning of the mat and the floor recess. Floor drains under the mats are optional but recommended for heavy rainfall or snowfall locations.

7. Natural Lighting: Lobby appeal is enhanced by a combination of natural and artificial light. Provide

glazing to the outside that allows for views into, and out of, the facility where possible. Centrally located skylight or clerestory window for hub type lobby or several smaller skylights/clerestories for linear spaces is highly recommended. Attempt to position natural light to accent control area. The Army prefers the use of clerestory windows over the use of skylights. High efficiency light tubes may also be considered for use throughout the facility.

8. Plumbing: Provide electrically cooled, two station unit(s), designed for ABA use, linked to the public restroom function in or adjacent to the lobby, as indicated above. Shall be provided with water bottle filling capability.
9. Mechanical (HVAC): Outside air infiltration shall be controlled with use of a vestibule / airlock with two sets of entry doors.

Operating range: System shall be able to maintain 68 F winter and 76 F summer at 50% relative humidity or less.

10. Lighting: Main module lighting to be a combination of 1) recessed fluorescent lighting, which is primarily indirect, with pendant hung decorative lighting or 2) pendant hung direct / indirect fluorescent fixtures. Decorative wall sconces are recommended to accent functions or highlight focal points.

Provide lobby lighting control center at control desk. Dimming function or stepped switching is required in order to reduce light level as necessary. Ability to turn off some lights to account for natural daylighting is required.

Provide down lighting directly over all control desk counters.

Provide under cabinet lighting of counters where wall cabinets are used. Low profile LED lighting is acceptable under cabinet lighting. In addition, linear low profile fluorescent or "puck" style metal halide is acceptable. Metal halide system requires concealed low voltage power supply.

11. Power: Power to circuits as needed to Control Desk, for 3 computer terminals, card reader, counter mounted CCTV video monitors, multiplex video receiver, tape backup, sound processor for multiple paging sources, music source (such as a CD player) and sound amplifier.

In addition, provide power for a touch screen kiosk for information.

Utilize custom raceway in casework. See Architectural Woodworking guidelines below.



12. Technology/AV: Main power and communications needs are at the Control Desk. Ensure data is provided for the equipment listed in Power paragraph above, to include the kiosk.

Empty conduit routing, (recommend 2 inches min. diameter) for present or future video cabling from security camera sources around facility. Stub up into base cabinets and continue up into ceiling cavity above control desk. Conduit system is to be concealed, not exposed to view.

In addition, provide capabilities in the pool areas to show instructional videos, exercise videos, movies, etc. Consider providing WIFI capability throughout the facility.

13. Sound: PA system shall be provided, and shall be controlled from the Control area. PA system shall be able to broadcast through the entire facility at once, or multiple rooms, or a single room. Shall be able to broadcast voice and music. Some of the pool areas have specific requirements. In addition, a PA system controlled by the pool office for the specific pool area is required. All components must be appropriate for the wet and corrosive environment.
14. Fixed Equipment: Provide an electronic display in the lobby to broadcast cable TV, local television, as well as local events such as swim meet results, pool schedules, etc. Ensure that wiring, conduit, brackets, etc., are provided.
15. Architectural Woodwork: For the control counter, provide a visually attractive focal point for 1) entering patrons, 2) control and security functions, and 3) information. The control area shall be contiguous with both the Lobby and Fitness modules. Provide counters and casework for a minimum of two stations / control personnel within the desk area. Make provisions for lower counter for ABA access. Provide two tier counter system, more to block view of countertop clutter and controls, than as a privacy barrier. Direct visual control of lobby and fitness areas is critical. "Back wall" (if available) counters may be standard seating height for more extended paperwork functions. A minimum of 50% of the counter shall be standing height.

Casework: Premium grade. Provide all wood construction for flexibility in configuration. Solid wood fronts, veneer plywood exposed sides and knee spaces. Recommend minimum 1/2 inch thick plywood for shelving 3 feet-0 inch wide and under and 3/4 inch thick plywood for shelving over 3 feet-0 inch wide, with wood veneer or fused and bonded vinyl finish. Solid wood face edging for shelving and door edges.

Counters: Provide stone or solid polymer resin counters (plastic laminate is not acceptable). Provide 1 ½ inch dia. half round edges. Avoid square edges toward patrons.

Drawer and door hardware: Commercial grade. Drawer glides to be side mounted, and use ball bearings and/or nylon wheels with minimum 75 lb. capacity for drawers less than 2.0 cu. ft, minimum 100 lb. capacity for drawers between 2.0 and 4.0 cu. ft., and minimum 150 lb. capacity for drawers larger than 4.0 cu. ft. Guides shall be provided with positive out and in stops. Use concealed door hinges and an integral pull or any metal cabinet pull style. Plastic or nylon pulls are not allowed. Provide through the counter grommets for covering holes needed for computer and device wiring from counter mounted devices.

- c. Training/Classroom: The training/classroom shall be accessible from both the wet corridor and the dry corridor. Since this space will be accessed and used from the wet corridor, finishes in this space shall be appropriate for damp/wet environment. Furniture shall not be provided with fabric (unless water proof) nor be made from particle board or MDF. Tables shall not be provided with data and/or electrical outlets. No electrical or data outlets shall be provided in the floor. Provide an electrically operated, recessed in the ceiling pull-down screen, minimum of 6 feet tall and 10 feet wide. Equip this room for a ceiling mounted projector, which includes the mounts (mounts and projector will be supplied by the Government, but installed by the Contractor), data, and electrical outlets. The front wall of the room must be provided with white boards for a minimum of 50% the width of the room. Provide electrical and data connections for TV, computers, and Internet. Ceiling shall be minimum of 10 feet tall with 2 feet x 2 feet tegular acoustical tile. Lighting levels shall be adjustable, with the ability to turn off all lights near the screen and the ability to have lower level lighting throughout the room. Walls shall have an STC rating of 50 or better.
- d. Admin area. Provide offices for the facility manager, assistant manager, pool operator; workstation area for instructor/head lifeguard/other staff; and a break/work room. Ceilings in these areas shall be minimum of 9 feet and shall be 2 feet x 2 feet tegular acoustical tile. Lighting shall be lay-in fluorescent fixtures that provide primarily indirect lighting. Office walls shall have STC rating of 45 or better. The break/work room shall have STC rating of 50 or better. Flooring shall be modular carpet tiles.

The facility manager office shall be 150 net square feet, and shall provide space for modular free-standing U-shaped workstation with additional filing and 2 guest chairs. This office shall have easy access to the control desk and should be provided with window(s) into the pool area if possible. Provide adequate electrical and data outlets to accommodate a monitor for the security camera system in addition to their computer workstation. The other offices shall be a minimum

of 100 net square feet each, and shall provide space for modular free-standing U-shaped workstation with 2 guest chairs. Each office shall be provided with at least 2 data drops for computers on opposite walls to allow for different furniture arrangements. The office area for the workstations shall provide adequate space for 4 cubicles, minimum size of 6 feet by 8 feet, 16 linear feet of lateral files, and circulation. All offices shall be able to hear the PA, and have intercom capabilities.

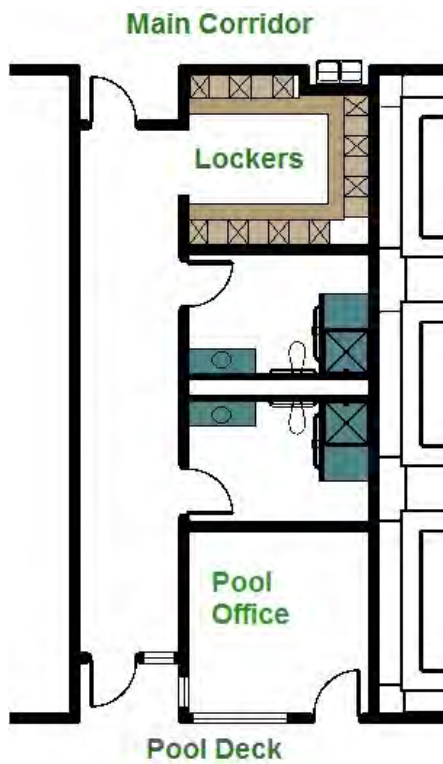
The break/work room must provide a kitchenette with solid-surface counter and integral sink on base cabinets, and space for a microwave and minimum 18 cu. ft. refrigerator. The refrigerator shall be provided with water for an ice maker. In addition, a solid surface counter and base and wall cabinets will be provided for fax machine, printer, etc. Cabinets shall be commercial quality, aesthetically pleasing, and appropriate for the use. In addition, this room shall provide enough space for a table with 6 chairs and a couch. Provide data and electrical to support the equipment listed as a minimum.

e. Locker/Shower/Toilet Rooms

1. Function/Description: Support space to facilitate changing before and after swimming. A combination of full-height and half-height lockers will be provided in each locker room. Showers shall be individual stalls with attached dressing compartments. Locate showers close to the entrance to the wet corridor. Locate toilet areas so that they are easily accessible from both the dry and wet side. All aspects of these areas must comply with ABA.
2. Family Changing Rooms: Family changing rooms are required, not only for young children, but also for anyone who requires assistance in changing/showering, etc. The diagram to the left shows one possible arrangement of 2 Family Changing Rooms. The separate locker area, that cannot be locked, is mandatory. The intent is that families will change in one of the shower/toilet rooms (aka. Family Changing Rooms), and then put their clothes into the locker. By providing the lockers in a non-lockable area, patrons may retrieve their possessions at any time. Each Family Changing Room must meet the requirements of the ABA, and be provided with a shower stall, toilet, lavatory, diaper changing station, clothes hooks, spin-type swimming suit dryer, and a fixed bench. Each room shall be lockable, with a lock that can be opened from the outside with a key.

For water and deck area of 6000 square feet or less, only one changing room is required. For water and deck areas of 6001 – 12,000 square feet, two changing rooms are required. For water and deck areas in excess of 12,001 square feet, at least three changing rooms are required.

See requirements below for other requirements for general locker/ restroom/shower rooms that will also apply to these rooms

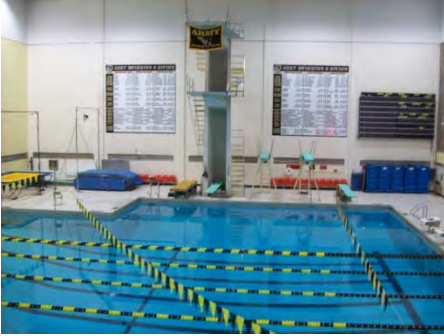


3. Essential Design Requirements: Access to the locker rooms shall be provided from both the dry and the wet corridors. Individual shower stalls (minimum 36" x 36") and drying booths (minimum 36" x 36") for both the men's and women's locker rooms are required. The control desk must have either visual and/or CCTV control of all entrances into the locker rooms. Do not place the entrances into the men's and women's locker rooms in one vestibule or at the same location. Provide some separation between the two entrances. Absolutely no line of site shall exist from outside to inside the locker/shower rooms, from any angle, upon opening of the doors (or when walking by an airport-style entry). This must be accomplished through close attention to detail in the design of entry areas. Provide the number of showers required by code as a minimum.
4. Direct Adjacencies: Must be directly accessible from the dry corridors, and from the wet corridor which will lead directly to the different pools.
5. Ceiling Height: In all areas shall be minimum of 9 feet.
6. Material Definition: "Wet areas" are defined as rooms where direct contact at walls and floors with water is expected. This includes showers, drying areas, grooming areas, and toilet areas directly adjacent to the showers. Wet areas may be considered "humid" space.

"Humid" is defined as above 60% relative humidity during typical room function over the entire period of normal hours of operation. Humid areas include locker rooms adjacent to showers and toilet rooms open to shower areas. Humidity varies by degree with "high" humidity occurring only in areas with continuous open water sources such as whirlpools, steam rooms, and swimming pool areas.

7. Ceiling Finishes: Locker Room - Highly light reflective and sound absorbent materials for locker areas. Provide 2 feet x 2 feet lay-in, wet-formed moisture resistant acoustical panels, on "humid" rated 15/16 inch "T" shaped metallic corrosive resistant grid system. Provide non-directional flush (square edge) tiles. Humidity and mold resistance: Manufacturers offer "plastic" film faced units, ceramic, and painted finishes for humidity and mold control. Most standard tiles are "non-sag" but not mold resistant. Units shall be treated for low moisture absorption and mold formation. Sound absorption for acoustical panels shall be no less than 0.70 NRC for film or ceramic faced units.

Toilet and Shower - Humidity and mold resistance: Provide true plaster on mesh lath or plaster base (board) ceilings in shower rooms. Toilet rooms can use painted, suspended gypsum board ceilings. Where shower / toilet room combinations exist, use plaster finished ceilings of



either type. Epoxy paint system typical throughout. Use dropped plaster soffits or false plaster beams between toilet / shower areas and locker rooms. This will divide ceiling systems and provide a barrier, at the ceiling line, for odor and moisture confinement to the higher humidity areas.

8. **Wall Materials:** Provide porcelain, glass, and/or ceramic tile, full height in showers, behind toilets and urinals, and as a minimum 4'-8" feet high wainscot throughout the room(s). Where mirrors are located, provide tile to the top of the mirror as a minimum. Use a pattern of accent tiles or trims in complimentary colors to improve visual appearance. Partial height ceramic tile or fiberglass panels in shower units are not allowed, however, use of corian, ½ inch solid plastic, marble/granite are acceptable options. Use bullnose edge tiles at all outside corners. Do not use wood base. Do not use rubber or vinyl base in wet areas. Ceramic tile is not required at wall surfaces blocked by the installation of lockers. Where ceramic tile is not used, epoxy paint system is required for optimum moisture and stain resistance.

9. **Flooring:** Locker rooms: Ceramic tile floor to match or complement the shower and toilet rooms.

Shower and toilet rooms: Ceramic mosaic tile. 2 inch x 2 inch maximum, 1 inch x 1 inch preferred. Floors sloped to drains. Each shower stall must be provided with its own drain. Additional drains shall be provided, and floors shall be slightly sloped to the drains to avoid ponding. Ensure there is no depression or area in the tile floor that will allow water to pond. Keep floors flat in toilet rooms with slight depression around floor drains. Overall floor slope should not exceed ½ inch in 10 feet- 0 inch. Wet and dry skid resistance is the priority. Non-glazed mosaic tiles for floor use are typically provided with a roughened face texture. Natural (flat) finish tile may also be satisfactory. Floors and walls in all shower stalls must be water and vapor proofed by a sheet applied membrane in accordance with the TCA B422 method.

10. **Plumbing:** Plan on grouping toilets and urinals. Whenever possible, provide back to back toilet walls dividing mens' and womens' facilities. Lavatories should be on a separate wall, but grouped together in one counter assembly. Locker rooms and wet areas shall be separated by a full-height barrier. Toilet areas shall be separate from showering areas.

Floor drains: Provide one drain for each shower, and one floor drain per maximum of 250 square feet of floor area. Typically, one drain centered near toilet / urinal wall is adequate for unexpected overflows.

For each shower, provide low flow shower heads.

Provide a hose bib under the lavatories in both of the toilet areas.

Water coolers as indicated above.

11. Mechanical (HVAC): Mechanical heating, ventilation, and humidity control of the module is mandatory.

Operating range: System able to maintain 70 - 78 degrees (F) year-round at 50% relative humidity or less.

Air changes wet areas: 6-8 air changes per hour, negative pressure.

Air changes dry areas: (<50% RH) 6-8 air changes per hour, positive pressure.

12. Technology/AV: Ceiling mounted speaker for public announcements.

Provide mounts, and electrical/data connections for up to 4 wall mounted TV's in each locker room.

Sound system: Flush recessed ceiling speakers, 60 watt minimum output rating, capable of reproducing human speech, minimum.

13. Windows And Doors: Views into the space are prohibited. Natural light may be provided through high windows, clerestories, translucent glazing and/or skylights. Skylights must be thoroughly detailed to ensure they do not leak. Doors and frames shall be corrosive resistant. Aluminum, galvanized hollow metal, or stainless steel hollow metal frames shall be utilized.

14. Fixed Equipment: Lockers, benches, wall-mounted hair/hand dryers, wall-mounted spin type swim suit dryers.

Shall provide plastic or color-through phenolic half-height "Z" lockers with non-corrosive hardware. Lockers must be a minimum of 15" wide and 18" deep. Minimum height is 60" per stack of 2 lockers. Particle board and metal are not allowed. Provide locking mechanism on lockers to accept user's padlocks as a minimum. Consider using electronic locks, with codes established by the patron, on lockers. Electronic locks must have an override feature that would allow staff to open the locker. Do NOT use locks that require the PFF personnel to provide a combination or key to open the locker (ie. Built-in combination locks and built-in locks requiring a physical key are not allowed). Tops of lockers shall be sloped unless the lockers are fully enclosed by a furr-down over the locker.

Benches shall be either integral to the locker base, or shall be mounted to the floor between rows of lockers.

Coordinate with the user for their preference. Movable or portable bleachers are not acceptable.

Locate the swim suit dryers in a tiled alcove out of the traffic path. Provide a floor drain beneath them.

Shower stalls shall be provided with corner shelves and/or recessed shelves for the users' soap, shampoo, etc. Protruding shelves are not allowed due to safety and maintenance concerns.

Provide shower curtain and rod for each shower between the shower and the dressing booth, and provide another shower curtain and rod for each dressing booth between the booth and circulation. Provide a towel pin/hook in each dressing booth, as well as a bench. Bench shall be fold up with a support leg on the front edge for durability. If bench is spring loaded, ensure that the bench or leg do not create a finger pinching hazard.

15. Provide conduit and switch location for potential future ceiling fans. If ceiling fans are provided as part of the project (based on user input), the fans shall be rated for outdoor use.

- f. Building support. Provide Mechanical, Electrical, Communications, and Janitor's Rooms as required. In addition, provide public toilets for spectators adjacent to the entry lobby. Provide circulation as required, avoiding the intermixing of dry and wet areas. Mechanical Rooms must open directly to the exterior of the facility for access control. Electrical and Communications Rooms (these 2 functions must be in separate rooms) shall not open off of wet corridors, again for access control and conflict between wet and dry functions. Access to the roof must be from a room that opens directly to the exterior of the facility.

C. ARCHITECTURAL REQUIREMENTS:

1. Consider grouping pools into 1 facility for convenience for users and for cost savings from construction and staffing.
2. It is extremely important to maintain separation between dry and wet circulation. All pools must be accessible from the wet circulation. The dry circulation will provide access to functions by people in their street clothing.
3. Wet entrances into the pool must be designed to accommodate some pools being closed, while others are in operation. In addition, the wet corridor may need to serve as a secondary means of egress from the locker rooms.
4. Pool decks shall be constructed of an impervious material, such as concrete, bluestone, ceramic tile, glazing tile, or other hard, non-slip surface. The deck area around the pool is considered a wet area and needs to be designed to prevent slipping when wet. Concrete surfaces of pool decks and benches shall be sealed, and sealed surfaces shall ensure a non-slip surface. Water shall not be allowed to puddle or pond on the deck area. All areas shall be pitched to provide positive drainage away from the pool with a minimum slope of 1/4 inch per foot and not more than 1/2 inch per foot. Water depths and “No Diving” signs that are integral to the deck surface shall be placed at the pool edge and inside the pool.
5. All pool areas shall be provided with an emergency/accident alarm that rings an audible alarm in the pool room as well as notifies the control desk. Alarms, other than alarms dictated by code, shall have user adjustable volume and shall have different tones to distinguish the alarms. User controlled volume cannot be reduced to zero.
6. All pool decks shall be provided with non-metallic linear trench drains on the deck. The deck shall slope towards the drain from both the pool and from the wall. The drain shall not be located against the wall. Drains on the deck must be drained to the sewer, and not be recirculated back into the pool.
7. Avoid street shoes on the pool deck. Design spectator seating with access from areas other than the pool deck. This may mean providing a “fenced” spectator area off of the lobby, or may be a second floor balcony for spectators.
8. Provide a minimum of 2 shower heads on the deck for each pool adjacent to each entrance into the pool area from the “wet” corridor. At least one of the showers on each pool deck must meet ABA.
9. Doors: Exterior doors and frames opening to spaces other than corridors or lobbies shall be insulated hollow metal of 316L STAINLESS STEEL PAINTED WITH HIGH PERFORMANCE COATING, or aluminum (to avoid corrosion). Hardware finish shall be type 316L stainless steel. Doors leading outside, other than the main entrance and any doors leading to an enclosed outdoor patio area, shall sound an alarm at the door and at the

control desk, and shall have a delay before opening as allowed by code.

10. There shall be no electrical panels mounted in public areas. They must be in dedicated electrical closets.

11. Building Interior

- a. Space Configuration: Arrange spaces in an efficient and functional manner. Structure interior spaces to allow maximum flexibility and ease of circulation. Separate circulation paths must be provided for dry (visitors, patrons in street-shoes, etc.) and wet (patrons headed to and from the pools). Provide glass panels between functions when appropriate to enhance the open concept of the facility. Maximize use of natural lighting and daylighting within the constraints of the applicable codes and UFC 4-010-01.
- b. Material and Finishes: Interior surfaces, details, finishes, fixtures, and fittings shall be carefully selected for resistance to corrosion, wear, impact, and vandalism. Because of the high humidity associated with pools and showers, all materials selected shall be resistant to water and mildew. Use only non-hygroscopic materials in pool areas; i.e. 304 stainless shall be used rather than 316L stainless. Utilize professional interior designers with experience in aquatic facility design. Interior design selections shall be based on consideration of anticipated use, maintenance characteristics, life cycle cost, fire protection, and other safety requirements. Appearance retention is the top priority for building related finishes. Provide low maintenance, easily cleaned room finishes that are commercially standard for the facility occupancy specified, unless noted otherwise. In general, use neutral tones with contrasts. Bright color accents or schemes may be considered for areas where appropriate. Facility should have a bright and energetic feel. Use local materials to the greatest extent practicable to reinforce the user's sense of place or region.
 1. Flooring: Floor and deck surfaces in wet areas must be slip resistant. Utilize non-skid ceramic tile, concrete, or other skid resistant material for natatorium floors and in areas adjacent to the pool deck (such as pool office, staff room, etc.). Concrete surfaces of pool decks and benches shall be sealed, and sealed surfaces shall ensure a non-slip surface. Tile floors shall be 1 inch x 1 inch or 2 inches x 2 inches maximum. All floors shall have adequate slope and drains to prevent standing water. Vinyl Composition Tile is not allowed in this facility unless specifically noted otherwise.
 2. Interior Walls: Wall surfaces shall be selected to minimize abrasions in case of accidents or stumbles by customers and staff. Walls shall be durable and easy to clean, especially in public areas. Depending upon project specific requirements, walls may be painted CMU block, painted masonry, moisture resistant gypsum board, Portland cement plaster, or high strength gypsum plaster.



Comply with ASTM C 36 Gypsum Wallboard. Minimum panel thickness shall be 5/8 inch. Use of gypsum board is restricted to the lobby and admin areas only. Consider use of impact resistant gypsum board. Ceramic tile may be installed either full height or as a wainscot.

3. Ceilings: Ceilings shall utilize moisture-resistant materials, like sealed wood, concrete, moisture resistant gypsum board, plaster, galvanized or epoxy painted metal, or other factory finishes impervious to water, chemicals, and mold/mildew. The minimum pool ceiling height above the water surface for the deep water training tank is based on the height of the highest board or platform. Ensure window placement does not create glare for life guard, spectators, or participants. Drop ceilings of any type are not allowed.
- c. Building Circulation: Circulation schemes must support easy way-finding within the building. Consider locating the control desk on the right side as you enter the facility to avoid cross traffic conflicts when entering the facility. Ensure wet circulation is kept separate from dry circulation.
- d. Interior Doors and Frames
 1. Hollow Metal Doors: Comply with SDI/DOOR A250.8. Doors shall be minimum Level 2, physical performance Level B, Model 2; factory primed. Hollow metal doors shall be mounted in hollow metal frames. Doors shall be 316L stainless steel, painted with high performance coating (to avoid corrosion).
 2. Hollow Metal Frames: Comply with SDI/DOOR A250.8. Frames shall be minimum Level 2, 16 gauge, with continuously welded corners and seamless face joints; factory primed. Frames shall be 316L stainless steel, painted with high performance coating (to avoid corrosion).
 3. Side Lites: Provide ¼ inch clear tempered glass at all door lites.
 4. Interior Door Hardware: Door hardware and security requirements must be coordinated with the functional, code, and environmental requirements. At a minimum, provide closers on all fire-rated doors, locker room doors, and restroom doors. If possible, utilize “airport” entrances to locker rooms and other applicable areas to minimize wear on finishes and hardware. Hardware finish shall be type 316L stainless steel. Door hardware must be able to compensate for the negative pressure in the pool area. A preferred alternative to stainless steel door and frames are fiberglass doors. These would be the best doors and frames for doors leading directly to the pools.
 5. Interior doors shall be rated the same as the wall in which they are installed.

- e. Casework: Provide casework complying with AWI Section 400, Custom Grade flush overlay cabinets with stained wood. Work surfaces and counters shall be solid surfacing material or a material with at least the same durability qualities. Laminate countertops are not allowed. Install casework complying with AWI Section 1700.
- f. Special Acoustical Requirements: Acoustics must be considered in the design to minimize reverberation. Use of ceiling and/or wall mounted panels shall be utilized for acoustical control. Panels must be appropriate for the humid environment, and will not require constant maintenance. Design and construct exterior walls and roof/ceiling assemblies, doors, windows and interior partitions to provide for attenuation of external noise sources such as airfields in accordance with applicable criteria. The indoor pool shall have a minimum STC rating of 50 and a measured reverberation time of 0.8 to 1.4 s. The minimum background Noise Criterion (NC) level for an indoor pool is 38.
- g. Moisture Resistive Construction
 1. Spray-on acoustical treatment and/or fire proofing is not permitted.
 2. Utilize exposed roof construction in pool areas to avoid build-up within void of roof/ceiling system.
 3. Avoid use of perforated acoustical metal deck which may permit moisture to accumulate in insulation above metal deck.
 4. Use moisture resistive materials for wall construction, or finished wall surface, of pool areas to reduce deterioration from moisture and physical abuse.
- h. Signage
 1. Provide a display area for SOP and other important information. This should be separate from general information.
 2. Signs for rules shall be provided at each pool entrance.
 3. Rule signs shall be engraved or raised letters and shall be mounted on wall next to door. Sign will either be provided by contractor based on input from the installation, or will be provided by the installation for mounting by the contractor. Avoid placing pool hours on these signs.

D. FUNCTIONAL/OPERATIONAL REQUIREMENTS

1. The facility and contained pools must comply with all applicable codes, standards, and criteria, which include, but are not necessarily limited to, those listed below and in section G.
2. Comply with the Model Aquatics Health Code (MAHC), TM 5-662, TB Med 575, Federation Internationale de Natation (FINA), and other governing bodies for water sports (i.e. USA Swimming, NCAA, etc.).
3. Comply with the American College of Sports Medicine (ACSM) Health/Fitness Facility Standards and Guidelines and the Technical Criteria – U.S. Army Physical Fitness Facilities (no older than the October 2003 edition), except where modified by this document.
4. Reference material for comparable private sector facilities is accessible from the American College of Sports Medicine website: http://www.acsm.org/AM/Template.cfm?Section=Home_Page.
5. Examples of private sector State-of-the-Art athletic facilities may be found at the Athletic Business website: <http://athleticbusiness.com/galleries/ArchitecturalShowcase.aspx>.
6. The design of the pools and supporting equipment must be performed by a firm with published aquatic facility design experience, and must either be a preferred provider for USA Swimming (www.usaswimming.org) or have designed at least 2 facilities published in the Athletic Business Architectural Showcase within the last 5 years.
7. The Contractor must take samples and analyze the potable water supply. They shall prepare a calculation for each pool of what it takes to bring it into balance according to Langalier Saturation Index. In addition, the Contractor must prepare a video to show how to maintain this balance.
8. The Contractor must provide an operation manual and video training on the equipment as well as on-site training every 30 days for the first 90 days starting at the completion of the facility. The person providing equipment training must be a Certified Pool Operator Instructor. After the pool has been in operation for 30 days the Contractor shall provide a Certified Pool Operator class for all personnel who will be involved in any aspect of the maintenance or operation of the pools. O&M manual to include maintenance procedures and life cycles for all pool related equipment including anticipated costs for annual maintenance shall be provided to the facility.
9. QARs, QC Managers, inspectors, etc. must have documented experience with larger scale commercial pool construction.
10. Minimum Pool Related Warranties:
 - a. Defects in the pool structure resulting in a loss of water-5 years
 - b. Defects in the pool piping systems resulting in a loss of water-5 years



- c. Filter Warranty
 - 1. Tank and tank lining 10 years
 - 2. Internal Filter Components 10 years
 - 3. Valve bodies 5 years
 - 4. Valve operators, controller and bump mechanisms 1 year
 - 5. Remainder of filter system components 1 year
- d. Deck equipment 1 year
- e. Defects in material or installation of all mechanical equipment not specifically mentioned 1 year
- f. Ultra Violet Supplemental Sanitization System 5 years (not including consumables having a limited life such as wiper blades, wiper bushings, UV lamps, quartz sleeves, and seals).
- g. Sanitizer feed system 1 year
- h. pH feed system 1 year

11. Accessibility Requirements: All aquatic facility functional areas shall be barrier-free and accessible to people with disabilities as required by the Architectural Barriers Act (ABA). Site, sidewalks, building, and pool designs shall enable people with disabilities to act independently and enjoy the full range of programs provided. Level changes may be included, but must be accommodated by ramps suitable for wheelchair access, both indoors and outdoors. Accessible entry to pools may be accomplished by utilizing zero entry depth ramps with slope and handrails that are ABA compliant, or by lift and assistance equipment designed specifically for people with disabilities. Utilize lifts that do not require assistance by another person, and that are operated by rechargeable batteries. The need for special equipment, such as transfer benches, crane lifts, or ramps into the pool shall be considered during the design process.

12. Pool and Spa Safety: In accordance with VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT, PUBLIC LAW 110-140, each public pool and spa in the United States shall be equipped with anti-entrapment devices or systems that comply with the ASME/ANSI A112.19.8 performance standard, or any successor standard; and each public pool and spa in the United States with a single main drain other than an unblockable drain shall be equipped, at a minimum, with one or more of the following devices or systems designed to prevent entrapment by pool or spa drains:

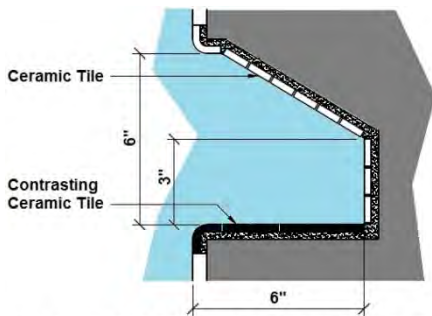
- a. Safety vacuum release system.--A safety vacuum release system which ceases operation of the pump, reverses the circulation flow, or otherwise provides a vacuum release at a suction outlet when a blockage is detected, that has been tested by an independent third party and found to conform to ASME/ANSI standard A112.19.17 or ASTM standard F2387.
- b. Suction-limiting vent system.--A suction-limiting vent system with a tamper-resistant atmospheric opening.
- c. Gravity drainage system.--A gravity drainage system that utilizes a collector tank.
- d. Automatic pump shut-off system.--An automatic pump shut-off system.

- e. Drain disablement.--A device or system that disables the drain.
 - f. Other systems.--Any other system determined by the Commission to be equally effective as, or better than, the systems described in (a) through (e) of this paragraph at preventing or eliminating the risk of injury or death associated with pool drainage systems.
 - g. Outlet covers located in less than 6 feet of water shall be unblockable covers, flush with the floor rather than domed, to avoid trip hazards.
13. Ladders and Grab Rails: Steps and ladders shall be recessed or set into the pool wall. No ledges or projections are permitted under the water surface. Recessed ladders shall be provided in other areas. Grab rails and recessed steps are recommended over projecting ladders. Maximum spacing between grab rails shall be approximately 60 feet. Locate grab rails and recessed steps at both ends of the long walls near the corners for 25-meter pools. Intermediate grab rails shall be provided on 50-meter or uniquely shaped pools. Locate a ladder with grab rails no more than 16 feet, 5 inches from a diving board or water slide to get users out of the water quickly. This enables users to essentially head right back toward the edge of the pool directly, so the next diver or slider can proceed safely. Position ladders so that swimmers don't have to cross the landing areas of diving boards and water slides if at all possible. This allows lifeguards to keep their focus at all times on the area around the board or slide by eliminating the need to track an exiting swimmer that has to leave the immediate area of the board or slide, which makes supervising the next diver or slider problematic.
14. Depth Markings: Unless requirements of local, state, or national codes are more stringent, depth markers are required at each 1 foot increment of water depth, at maximum and minimum depths, at transitions between deep and shallow water, and at diving areas. Shallow pool areas 5 feet or less shall be labeled with the international no diving symbol. Depth markers shall be located on the pool deck beside the pool edge and on the vertical side of the pool wall or gutter system above the water line so they are visible from inside the pool. The figures shall be at least 4 inches high, in a color that contrasts with the background. Depths shall be provided in both feet and meters. Mark a black or dark blue line at least 4 inches wide on a sloping pool bottom wherever the depth reaches 5 feet.
15. Competitive Swimming: Swim competitions may be held at this facility, and therefore lane and target markings, starting blocks, and timing system must be provided. Facility requirements and rules may vary depending upon the different institutions that may be desired to sanction competitive events. For example, lane bottom and target wall marking requirements are different for many of the major governing institutions that sanction major events. Consider the impact of specific institutional and host nation requirements if competitive swimming will be a part of the program requirements. Major swimming institutional organizations include:

- FINA – [Federation Internationale de National](#)
- NCAA – [National Collegiate Athletic Association](#)
- USS – [USA Swimming](#)

The most common organizations to consider for Army facilities are NCAA and USS.

16. Lane and Area Dividers: Lane dividers shall be wave quelling disk-type which run the full length of the lanes. Lane Dividers must be in multiple sections to allow for 50 m, 25 m, and 25 yd lanes. Area dividers consist of a set of continuous floats strung on a cable or cord. They are attached at hoops anchored in the pool walls.
17. Racing Lanes and Target Markings: Provide racing lane and target markings according to the appropriate governing entity that may be involved in competitive events (NCAA, FINA, etc.). Provide a recall line (for backstroke events) suspended above the racing course at least 4 feet above the water surface. For a 25-meter course, it shall be located 40 feet from the starting end. For a 50-meter course, it shall be located 50 feet from the starting end. The recall line and poles shall be removable and covers shall be provided for the deck sleeves. Sleeves shall be designed to avoid any standing water. Racing lines and targets shall be maximum 3” x 3” tile.
18. Starting Platforms: Starting platforms shall be supplied for each course lane in the pool area. Starting platforms shall be removable. Provide covers for deck sleeves. Sleeves shall be designed to avoid any standing water. Platforms shall be provided at both ends of 50 m and 25 yd courses. Platforms must be a style and design acceptable to the sanctioning body.
19. Timing System: The lap pool shall be provided with a complete timing system that includes the touch pads, score board, and sound system for the starting gun. Provide finish contact pads. Contact pads shall be a minimum of 6 feet, 6 inches wide by 2 feet in depth. They shall be installed in a fixed position in the center of the lane and flush with the water level.
20. Diving and Deep Water Areas: This area is used for competitive diving, recreational diving, scuba training, survival training, and other activities requiring deep water. Deep water tank must comply with the requirements of FINA, to include board/platform spacing, horizontal tank dimensions, tank depth, and vertical clearances. Provide a recessed toe ledge at no less than 4 feet below the water surface on all sides of any pool where water depth exceeds 5’ in depth. See adjacent figure 20-1 for the recommended design of the toe ledge. Diving and deep water areas may be accommodated in three possible ways:
 - a. The preferred method is to locate diving areas adjacent to the deep end of a general use pool as demonstrated in the typical “L” shaped configuration.



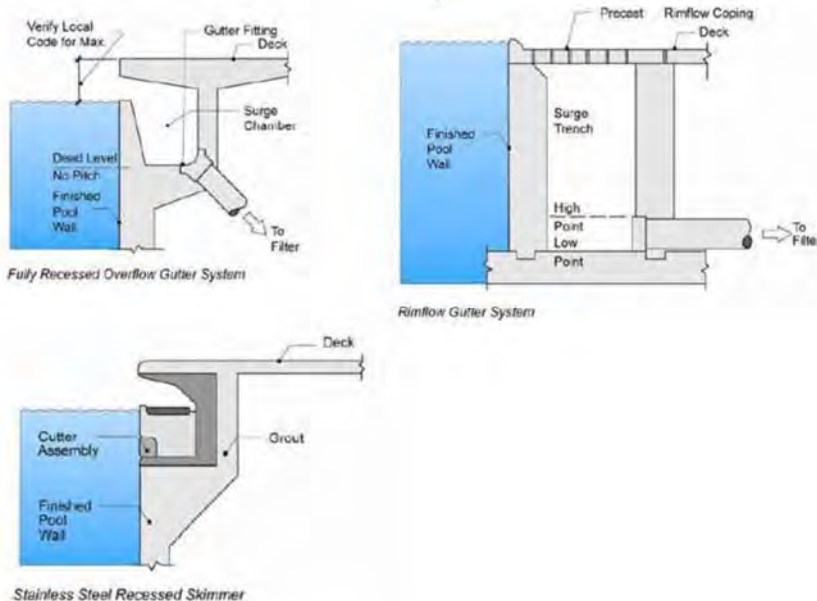
20-1 Figure: Toe ledge design



- b. Incorporate the diving area into the deep end of a general use pool.
- c. Provide a separate pool exclusively for diving or deep water training and programs. Do not locate a separate diving tank adjacent to the shallow end of another pool.

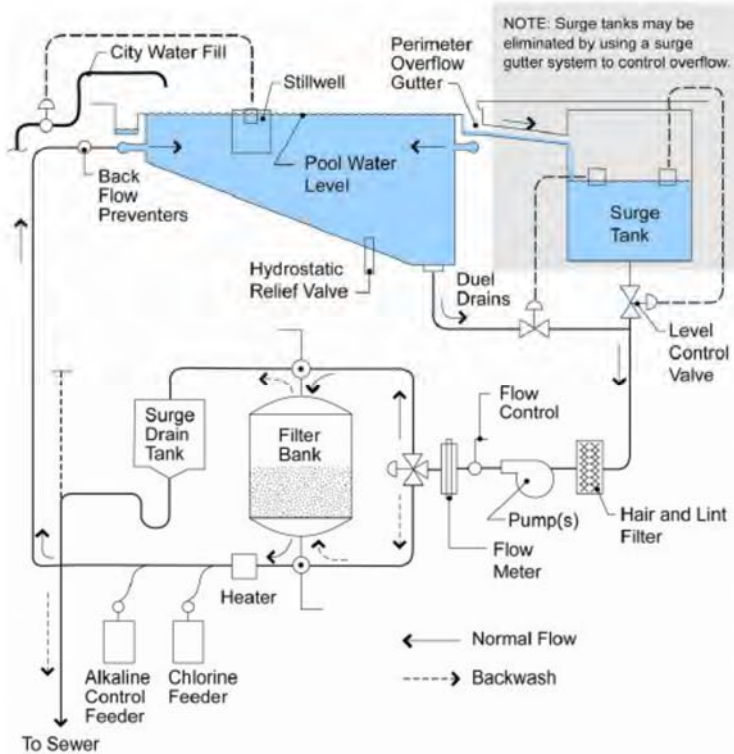
21. Diving Boards and Platforms: Provide aluminum competition springboards, as desired. For springboards of 3 meters (10 feet) or more above the water, an open-grating type of construction is required to permit divers to view the water below. The installation shall be level. The number of springboards depends on the size of the diving area to be included. Springboard anchors shall be embedded in the pool deck or other level surface of sufficient mass, in accordance with manufacturer's requirements. The fulcrum shall be adjustable through a range of 2 feet forward from a point 5 feet, 6 inches from the rear anchor of the board. The fulcrum mechanism shall be covered to prevent injury to fingers or toes. Diving boards over 2 feet in height must have 3 feet high handrails extending to the water's edge. Provide a water surface agitator under each 1 meter diving board and the 3 meter platform to increase diver visibility utilizing water jets from the overflow system or air bubble inlets in the pool bottom. Pool Depths for diving boards must meet FINA Standards.

22. Overflow Systems: A continuous overflow perimeter system is recommended in the main pool. Examples of this system are shown in 19-1 Figure: Overflow Rim Systems. Prefabricated, stainless steel surge gutter systems are preferred because they provide constant skimming of the surface water to help remove debris and provide surge storage capacity for water displaced by swimmers. Scuppers that utilize a thin layer of water falling over a weir may be used to skim water from wading and training pools; however they do not adequately handle the surge requirements of main pools. Antiquated scum gutters offer little surface collection effectiveness and are generally used in conjunction with surge storage tanks and pump pits.



19-1 Figure: Acceptable Overflow Rim Systems

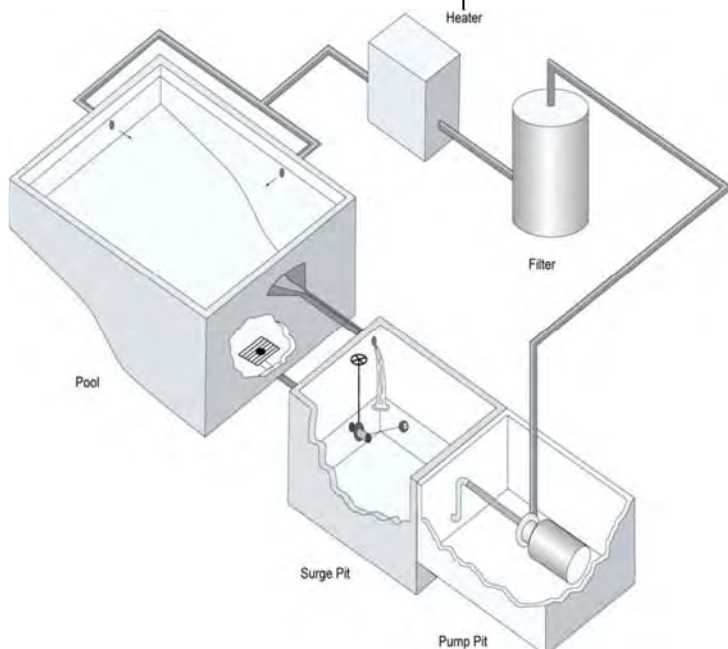
23. Circulation and Filter Systems: If multiple pools are provided in the facility, each pool must have its own system. All portions of the water distribution system serving the swimming pool and auxiliary facilities shall be protected against backflow. Water introduced into the pool, either directly or into the circulation system, shall be supplied through air gap fittings. There shall be no direct physical connection between the sanitary or storm sewer system and any drain from the swimming pool recirculation system. Provisions shall be made for complete, continuous circulation of water through all parts of the swimming pool by appropriately sized, non-corrosive pipes. Heavy grades of schedule 40 polyvinyl chloride (PVC) or schedule 80 in active seismic zones may be utilized for most circulation piping requirements. The valves and draining system for the pool shall be sized to prevent flooding (surcharging) of the sanitary or storm drainage system. Circulation piping shall be designed for a maximum velocity of 10 feet per second. All suction piping shall be designed for a maximum of 6 feet per second. A hair and lint filter of stainless steel with removable basket shall be provided to filter and remove leaves, hair, and other solids entering the drainage system. A centrifugal circulation pump shall be provided of sufficient capacity to provide the minimum turnover rate to the pool, plus an additional allowance of 30%. Provide VFD's so that the flow rates can be adjusted to meet load conditions with the systems designed for the following minimum turnover rates:



23-1 Figure: Water Circulation Systems Schematic

- a. Main Pools, to include diving tanks: 4 hours
- b. Wading Pools: 2 hours
- c. Specialty Pools, such as recreational pools: 1 hour

24. Recirculation System Minimum Requirements: A recirculation system, consisting of pumps, piping, filters, feeders, water conditioning equipment, city water make-up, surge tank, and other accessories shall be provided to clarify and disinfect the pools. Under normal operating conditions, water shall be re-circulated from the main drain and through the overflow gutter into the circulating pumps. Approximately 30% of the water shall enter the main drain, while 70% “skims” over the gutter system through the surge tank and hence into the pumping system. The main drain outlet and piping must be capable of 100% of the required recirculation. The gutter or surface skimmers must be capable of 100% of the required recirculation. Additional information concerning swimming pool layout and recirculation requirements can be found in TM 5-662, TB Med 575, The Model Aquatics Health Code (MAHC), and at the National Swimming Pool Foundation website. All integral capacity motors shall meet the requirements for Premium Efficiency Motors per EPAct05.
25. Surge Tanks and Surge Control: Circulation systems shall be equipped with concrete, cast-in-place surge tanks. The purpose of the surge tank is to allow water displaced by pool occupants to be collected in the surge tank and later returned to the pool as occupancy decreases. Surge tanks shall have surge capacity of 1 gallon per square foot of water surface area. Provide flow control valves to modulate water flow from the main drain and from the surge tank. A surge tank and pump pit diagram is provided in 22-1 Figure: Surge Tank and Pump Pit.



22-1 Figure: Surge Tank and Pump Pit Diagram

26. Motor Controls and Auxiliaries: Provide magnetic starters for the control of the circulation pump. Do not use stainless steel enclosures for electrical equipment due to susceptibility to corrosion. Use NEMA 3R FRP components for all electrical and control items subject to corrosion. All filter pump motors shall have VFD's.

27. Pumps: Pumps are utilized to displace a liquid or gas to create a directed flow and many different types of pumps may be required for pool equipment, such as chemical feed pumps, transfer pumps, vacuum pumps, circulation pumps, booster pumps, hydrotherapy pumps, and compressor pumps. All pumps should be flooded suction, only fractional or small horse power pumps designed for special uses, such as draining pools, should be self-priming pumps. Utilize mesh-bucket filters immediately in front of circulation pumps to protect the internal components of the pump from larger, solid objects and to strain hair and lint from the re-circulating water. A pump pit may be required adjacent to the surge tank to circulate water for filtration, heating (if required), and return it to the pool.
28. Flow Meters: Provide a flow meter in each main line serving a swimming pool or wading pool. Flow meters are also demanded by the health department codes in most states and provinces. Install flow meters on a straight, uninterrupted section of pipe at least 10 pipe diameters down-stream from the last fitting with about five diameters distance “clean run” beyond so that the smooth, linear flow is not disturbed to ensure accurate readings. In addition, provide a mercury type manometer flow meter at the discharge of the circulating pump to control primary flow and backwash. Provide a flow control valve so that the operator may manually control the circulation rate of the pump, thereby maintaining the turnover rate throughout a filter cycle from clean to dirty.
29. Filters: Filtration is the physical process of removing soils which would interfere or impede the disinfection process if not removed. Filters only remove solids and any dissolved elements must be removed as part of the disinfection process. Filters shall be automatic regenerative media filters utilizing perlite (Diatomaceous is not acceptable), with a dry feed vacuum transfer pump, programmable bump mechanism, operate at a maximum flowrate of 1.3 gpm/sf and backwash by gravity drain. Filters must be backwashed periodically according to the manufacturer’s specifications and discharged directly into the sanitary or storm sewer where allowed by code.
30. Drains and Inlets: Dual main pool drains are mandatory to prevent entrapment hazards unless the single drain is “unblockable” as defined by ASME A112.19.8a-2008. Inlets and drains shall not protrude into the pool or allow entrapment of extremities. Drains and drain covers to be tamper proof and entrapment proof. Refer to the current guidance provided by the Consumer Product Safety Commission publication “Guidelines for Entrapment Hazards: Making Pools and Spas Safer” for information regarding the prevention of entrapment hazards. At least one main drain will be provided in the deepest part of the swimming pool. For pools at least 30 feet wide, multiple drains will be spaced no more than 15 feet from a side wall.

Each drain shall have a removable but secure grate that has sufficient area to maintain water velocity at or below 1 foot, 6 inches per second. One inlet shall be provided for each 300 sq. feet or 15,000 gallons, whichever is greater and all inlets will be

Some general guidelines for water temperatures are listed, but please note that variations to these recommendations may be necessary. Also, specialized populations may require specific water temperatures for safe and effective programming.

Limited research is available regarding prenatal women and recommended water temperatures for exercise. The range listed in the following chart is based upon research that indicates exercise in 85 F is safe for pregnant women.

RECOMMENDED WATER TEMPERATURE

- Competitive Swimming 78 – 82 F *
 - Resistance Training 83 – 86 F Min range
 - Therapy & Rehab 90 – 95 F **
 - Low function program – cooler temperatures may be more appropriate for higher intensity programs and specific populations
 - Multiple Sclerosis 80 – 84 F
 - Parkinson's Disease 90 – 92 F ***
 - Pregnancy 83 – 85 F
 - Arthritis 83 – 90 F ****
 - Appropriate range for the full Arthritis Foundation aquatic program; 91-94 degrees F for lower intensity with more range of motion exercises and no endurance component
 - Older Adults 83 – 86 F
 - Moderate to high intensity; 86 – 88 F for low intensity
 - Children, fitness 83 – 86 F
 - Children, swim lessons 84 F *
 - Varies with age, class length, and programming; ideal learn to swim programs is best suited for 84 – 89 F when available
 - Infant programs 90 – 93 F
 - Obese 80 – 86 F
- * USA Swimming
 ** Aquatic Therapy & Rehab Institute (ATRI)
 *** American Parkinson Disease Association (APDA)
 **** Arthritis Foundation

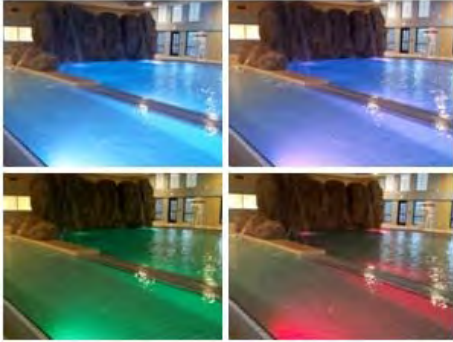
located on the pool sides or floor in a manner that completely distributes the water. Utilize butterfly, ball and globe style inlet valves made partially or completely of PVC or other high quality plastic for new pools and renovations. Fresh water may also be supplied through a fill spout at least 6 inches above the pool deck.

All pools will comply with the VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT, PUBLIC LAW 110-140.

To prevent injuries and to slightly disturb the water for better diver visibility in the diving area, this spout shall have no sharp edges and be located under one of the diving boards.

31. Pool Vacuum: Provide a pump, mounted on stainless cart with 50' to 100' cord, water proof switch, GFI protector, and barbed hose fittings on suction and discharge. Pump shall be 110 volt either 3/4 HP or 1 HP. Prefer a 50' cord and 3/4 HP because of reduced issues with over loading and kicking the circuit breakers. Properly sized outlets shall be located around the pool perimeter based on a 50' cord. In addition to the vacuum pump provide two 1.5" x 50' vac hoses with coupler, 1.5" x 20' discharge hose, 22" vac head and either a 12' x 24' fiberglass telescoping vacuum pole or three 8' stainless steel poles connected to make a 24' pole. This equipment shall be included as part of the pool construction package.
32. Life Guard Stands: Life guard stands will be movable so they can be located where necessary around the deck. As such, they will not be part of the construction project but will be provided by the installation. Life guard stands must be side access.
33. Hydrostatic Uplift Prevention: Verify level of water table and possibility of accumulation of water in the areas occupied by pools and water chambers. Provide system of relief drains to relieve hydrostatic pressure and prevent uplift of pools and water chambers which may be subject to hydrostatic uplift pressure when pools and water chambers are empty.
34. Heating and Water Temperature: Heaters are necessary for all indoor pools. The selected water heater shall have the capacity to bring the pool up to the desired temperature within 24 hours. Pool heaters to meet the requirements of EPA05 and ASHRAE 90.1. If multiple pools are provided in the facility, each pool must have its own separate heater system. Pool water temperatures must meet the recommendations of associations such as the Aquatic Exercise Association and the United States Water Fitness Association. The table to the left was taken from the Aquatic Exercise Association's website (<http://www.aeawave.com/publicpages/education/standardsguidelines.aspx>) in January, 2014.
35. Water Quality: The design and method for pool disinfection must be coordinated with the installation. Use of chlorine gas is not allowed.

It is strongly recommended that water is piped to the chemical storage rooms for introduction of chemicals as opposed to chemical lines running through the mechanical room and other areas to supply chemicals to the water.



Automatic Chemical Controllers are required which measure ORP and pH (this is part of the BLS).

An Ultra Violet (UV) System is required for supplemental disinfection/ sanitation. Each pool circulation and filtration system shall be provided with an automated UV Supplemental Sanitization system and an automatic water level control system. UV units shall operate within the UVC electromagnetic spectrum, emitting wave lengths in the range of 200 nm to 400 nm, must be NSF-50 listed, equipped with an automatic internal wiper, UV monitor, and energy control.

A water softener system shall be provided when required based on the water quality.

- 36. Underwater Lighting Criteria: Underwater lighting types and dimensions shall conform to the National Electric Code (NEC) Article 680 regulations and shall comply with the IESNA Class of Play. The use of LED underwater lighting is strongly recommended. Low voltage wiring should be used for all dry or wet niche lighting fixtures. This requires a transformer located, by code, a specific distance away from the pool wall and above deck. Either wet niche or dry niche fixtures may be used as described in 33-1 Table: Underwater Lighting Criteria.

Where appropriate based on the functions of the pool, utilize programmable, color-changing LED lighting for underwater lighting.

Expect to provide 1/2 watt/SF of surface area or equivalent for LED.

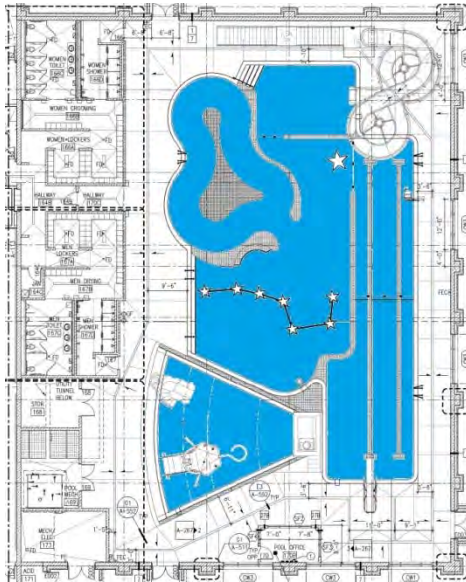
	Description	Installation Technique	Installation Depth	Servicing Technique
Wet Niche	Completely sealed but removable fixture that is constantly surrounded by water	Mounted into recess in pool wall.	Maximum depth of 6100 mm (2 feet) from pool water surface.	Extra rubber covered electrical cord is coiled in the niche. Fixture is removed from niche and lifted to deck for servicing.
Dry Niche	Permanently enclosed fixture that doesn't come into contact with water.	Installed behind pool wall and covered by glass sealed to a metal frame with gaskets.	Can be installed at any depth, usually 6100 mm (2 feet) below shallow water surface.	Serviced via a pipe tunnel or manhole behind the pool wall.

33-1 Table: Underwater Lighting Criteria

- 37. Cameras: Provide underwater cameras in water deeper than 8'-0" deep. Video from these cameras will be monitored at the pool office through wireless capabilities. Provide access to the cameras that will allow the cameras to be changed or adjusted without the cameras getting wet or without the need to drain the pool.
- 38. Testing Adjusting and Balancing: Test and balance pool systems and equipment, using a firm certified for testing and balancing by the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting, and Balancing Bureau (TABB). The prime contractor

shall hire the TAB firm directly, not through a subcontractor. Perform TAB in accordance with the requirements of the standard under which the TAB Firm's are approved. All recommendations and suggested practices contained in the TAB Standard shall be considered mandatory. All quality assurance provisions of the TAB Standard such as performance guarantees shall be part of this contract. For systems or system components not covered in the TAB Standard, the TAB Specialist shall develop TAB Procedures.

39. Commissioning: Commission all Pool systems, equipment and controls in accordance with ASHRAE Guideline 0. Hire a Commissioning Authority (CA), certified as a CA by AABC, NEBB or TABB as described in Guideline 0. The CA will be an independent subcontractor and not an employee of the Contractor nor an employee of subcontractor of any other subcontractor on this project, including the design professionals (i.e., the DOR or their firm(s)). The CA will communicate and report directly to the Government in execution of commissioning activities. The Contracting Officer's Representative will act as the Owner's representative in performance of the duties spelled out under OWNER in Annex F of ASHRAE Guideline 0.



E. MECHANICAL REQUIREMENTS

1. Mechanical systems for natatoriums must be capable of maintaining an indoor air temperature of 3 degrees F above the water temperature at the highest temperature of the ranges given previously. Maintain relative humidity of 50-60%, and ventilation of at least 6 complete air changes per hour during high occupancy. Pool water temperature shall be monitored and be provided as an input to the HVAC Control System in order to maintain the indoor air temperature 3 degrees higher than the water temperature. The potential for mold growth and deterioration of materials throughout the facility should be anticipated and minimized with proper mechanical design (example, ducted instead of plenum return air) and wall transmission values. Air velocity in the immediate pool area should be minimal. Provide heating, ventilating, and air conditioning (HVAC) systems in compliance with UFC 3-410-01FA, Design: Heating, Ventilating, and Air Conditioning and UFC 3-410-02A, Design: Heating, Ventilating, and Air Conditioning (HVAC) Control Systems. Also comply with the recommendations of the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), where applicable.

2. Indoor Air Quality: Achieving good Indoor Air Quality in Natatoriums is extremely important, and is a little challenging. Poor air quality in Natatoriums impacts the health of those in the area. Poor air quality is caused by compounds that off-gas from the pool water, even when the pool water is maintained properly; and, there is no way to prevent it from forming. The primary compound which leads not only to health concerns, but also to the degradation of surfaces within the pool area is the inorganic chloramines, trichloramine. It is a potent respiratory irritant with effects similar to chlorine gas. It is formed from water treated with chlorine or other disinfectants coming in contact with nitrogenous organic material. Agitation of the water increases the formation of trichloramines. Training exercises where people in street clothes enter the water also increases the formation. In addition to not resolving the problems with trichloramine formation, normal HVAC systems will also circulate the vapor throughout the facility. UV will help remove chloramines from the water, but will not eliminate trichloramines from the air. In order to effectively remove trichloramines, a ventilation system shall be provided in the Natatorium that captures air at the deck level (a level close to the waterline) and exhausts it to the outside. A gentle air movement (1 – 2 fpm is ideal) across the pool water surface shall be provided in the air circulation system. Fresh air shall be provided to replace the trichloramine vapor. This system is separate from and in addition to the normal HVAC system. This “source capture and exhaust” system shall be provided unless another system, which has been proven with actual examples to eliminate trichloramines from the pool environment, is proposed. Any other system proposed must first be evaluated and approved by the Government before implementation.

3. Provide for air flow from the dry side of the Men’s And Women’s Locker/Dressing/Shower/Toilet space to the exhaust intakes in the wet area.

4. Recommend the use of heat exchangers to use waste heat to heat water, etc. Also use dehumidification heat to heat pool water.
5. For rooms containing the pools, it is acceptable to provide specialized natatorium HVAC package systems that include direct expansion coils. The package HVAC system shall be suitable for the high humidity and chlorine environment found in such rooms. The system shall have the capability of defrosting coils if necessary and continue to maintain space conditions.
6. Air movement/control: All ductwork in this facility shall be fully ducted supply and return. Ductwork in the pool rooms shall comply with the recommended natatorium practices in the ASHRAE Applications Handbook. Galvanized metal and aluminum ductwork is acceptable in the pool rooms if it is doublewall insulated and painted. Ductwork in other areas of the facility shall be exterior-insulated galvanized metal, with flexible duct limited to diffuser drops. Use of “duct socks” is acceptable provided the required air flow is maintained.

F. ELECTRICAL REQUIREMENTS

1. Natatoriums shall be considered wet and corrosive environments.
2. Electrical equipment (to include lighting) must be damp or wet location listed as applicable.
3. In each pool area, provide an electric wall clock visible from the pool deck area.
4. Pool Lighting: Pool water surface and pool deck light levels shall meet the following MINIMUM maintained light levels: Indoor Water Surface – 30 horizontal footcandles. Pool Deck – 10 horizontal footcandles. Higher levels may be required for acceptable spectator viewing for competitive swimming and diving events. Coordinate with facility users prior to determining actual footcandle requirements. If higher levels are required, lighting shall be adjustable so that the minimum levels stated above may be utilized when there is no competitive event. **LUMINAIRES SHALL NOT BE INSTALLED ABOVE THE WATER SURFACE.**

Area lighting should be designed to reduce direct glare and reflections on the water surface. Glare is a serious concern from a safety standpoint. Incorporate technologies to reduce glare from natural light sources by incorporating items such as window film, UV screens, shading devices, etc. Ground fault circuit interrupters (GFCI) are required for all electrical equipment (vending machines, pool lights, water coolers, etc.). Provide power sources for additional lighting that may be needed for television, movies, and special events.

5. PA System: A centrally controlled public address and two-way communication system is required for all pool facilities. At least one public address speaker shall be provided in each locker room, office, check-in, public toilet, and lobby. One indoor speaker shall be provided for every 800 sq. feet of net floor area. The MNS must override the PA. Announcements or music shall be by all-call or by room. Locate the master station at the Control Desk with input for music source. Provide speakers in all habitable spaces. If speakers are mounted on/in a wall, ensure they are mounted at least 8' above the floor. If an outdoor deck area is included in the project, provide weather-proof speakers in the deck area. The PA system must be separate from the MNS system.
6. Individual Room Sound Systems:
 - a. In the lap pool/diving tank area, provide a zoned PA system throughout.
 - b. In the Multi-purpose/Recreational Pool area, CD quality sound for music shall be provided. Suspended directional ceiling speakers, 200 watt minimum output rating. The system must be suited for the humid and corrosive environment. Speakers shall be located above the pool deck only.

7. Emergency/Accident Alarm: All pool areas shall be provided with an emergency/accident alarm that rings an audible alarm in the pool room as well as notifies the control desk.
8. 911: Ability to dial 911 from each pool area and from the control desk must be provided.
9. CATV System: Provide a CATV system to distribute incoming television signals and user supplied transmissions. Distribution point shall be the communications room. Outlets shall be in the lobby, locker rooms, conference rooms, and training/classroom. Run cables in conduit.
10. Closed Circuit TV: A closed circuit TV system is required to address safety concerns, to monitor authorized access, and for general pool supervision. The system must oversee the lobby and entrances to the pool (to include locker room entrances), and must provide full coverage of the entire pool area.

G. REFERENCES

The following references are mandatory. Utilize the latest version unless noted otherwise. Where references refer to the Americans with Disabilities Act (ADA), replace ADA with Architectural Barriers Act (ABA). Where there is a conflict between references and/or this document, follow the more stringent requirement. Or, consult the Center of Standardization for a ruling.

1. Model Aquatic Health Code (MAHC) from the Centers for Disease Control and Prevention.
2. TB Med 575, Occupational and Environmental Health Swimming Pools and Bathing Facilities
3. H.R. 6: Title XIV – Pool and Spa Safety (Virginia Graeme Baker Pool and Spa Safety Act)
4. TM 5-662, Technical Manual, Swimming Pool Operation and Maintenance
5. State/Country Codes and Standards.
http://www.nspf.org/en/resources/news_statecodes.aspx

VI

Outdoor Sports

Draft

A. GENERAL

This chapter provides the criteria for Outdoor Sports Fields. Outdoor Sports Fields are not a required part of a Physical Fitness Facility (PFF), but often times is included as part of a PFF project. Ideally, these fields should be located near the PFF. Outdoor Sports Fields are calculated separately since they have a different category code than a PFF. There are 2 different types of fields – Softball fields and Multi-Purpose Fields. For each field type, there are 2 different types of fields – Competitive and Community Sports Fields.

The maximum quantity of fields authorized is provided in the tables below:

SOFTBALL FIELDS		Type of Field		TOTAL (Maximum authorized)
		Competitive (Minimum #)	Community (Maximum #)	
Cat. Code 75021				
Population	251 - 1000	1	0	1
	1001 - 3000	1	1	2
	3001 - 6000	1	2	3
	6001 - 10,000	2	2	4
	10,001 - 20,000	2	4	6
	20,001 - 40,000	3	5	8
	40,001 - 60,000	4	6	10
	60,001 +	5	7	12

MULTI-PURPOSE FIELDS		Type of Field		TOTAL (Maximum authorized)
		Competitive (Minimum #)	Community (Maximum #)	
Cat. Code 75022				
Population	251 - 1000	1	0	1
	1001 - 3000	1	1	2
	3001 - 6,000	1	2	3
	6001 - 10,000	2	3	5
	10,001 - 20,000	2	5	7
	20,001 - 35,000	3	6	9
	35,001 - 50,000	4	7	11
	50,001 - 65,000	5	8	13
	65,001 +	6	9	15

The formula for determining Population is as follows:

CONUS: Military Population + 25% of Dependents (as of December, 2013 this was calculated at 1.52 * Military Population).

If the Civilian population exceeds 60% of the Installation population, then add 10% of the total number of Civilians to the result above.

OCONUS: Military Population + 25% of Dependents (as of December, 2013 this was calculated at 1.52 * Military Population) + 100% of U.S. Civilians.

B. TECHNICAL REQUIREMENTS

1. TYPES OF FIELDS

- 1.1 Competitive. Competitive fields shall comply with the following criteria:
- a. Field shall be artificial turf (see artificial turf criteria below). With special approval, natural turf can be used in lieu of artificial turf. Important considerations include, but are not limited to, the climate allows the fields to be used and recover quickly, the installation is able to maintain the field to a high level of quality, life cycle costs analysis shows no savings with artificial turf, and there are no issues with irrigation. If natural turf is used, the fields must be laser graded, sodded, and there shall be no rocks over ¼" in any dimension. See paragraph on turf below.
 - b. Field shall be provided with an electronic scoreboard that is controlled remotely through wireless technology.
 - c. Field shall be provided with bleachers with a minimum total capacity of 200, with the bleachers located on a concrete pad. For softball fields, the bleachers shall be covered with half of the total number provided on each side of the backstop. Multipurpose fields shall have bleachers on one side only.
 - d. Perimeter fencing, minimum 8' tall, shall be provided to control access to the complex. Provide gates wide enough for movement of equipment such as goals, trailers, etc.
 - e. Lighting shall be provided to industry standards for upper level sports, but not necessarily to the level for televised events. Lighting shall be remotely controlled, and shall be able to be controlled by timer and from off-site by means of telephone or internet.
 - f. A PA system shall be provided that is controlled from both a central location in the complex for overall announcements as well as on the field for field specific announcing.
 - g. Provide adequate parking for 4 teams per field along with spectator parking sized at 50% the number of participant spaces.
 - h. Electrical outlets shall be provided within 50' of the field. Minimum locations are at each dugout on a softball field and on opposite sidelines of a multi-purpose field.
 - i. Provide basic landscaping with entry house and main entrance aesthetically pleasing gates. Signage board shall also be provided.
 - j. For softball fields, provide grade level, breathable 40' x 10' x 8' tall covered dugout shelters. Dug outs shall be provided with electrical outlets.
 - k. Netting for foul balls and behind soccer goals. Netting behind soccer goals shall be minimum 16' high and 60' long. Netting shall be minimum of 24' from goal line.
 - l. Storage for tractors and equipment.
 - m. Ice machine in main building for injuries.
 - n. Sidewalks sized and constructed to withstand service vehicles.
 - o. Competitive fields must be arranged in a complex of no less than 3 fields, which can be a combination of softball and multi-purpose fields. Installations with an authorized population of 10,000 or less are authorized to have only 1 complex. Community

fields may be located in the same complex if space allows. The maximum number of fields in a complex shall be determined based on area available, ability to control fields from the central facility, and proximity to housing, fitness, and recreational areas.

p. The complex must contain a central complex facility. This facility must provide restrooms, concessions (with capability to dispense fountain and bottled drinks; space for refrigerator and freezer unit(s); adequate space for popcorn popper, hotdog cooker, food warmers, etc.; and provided with adequate electrical outlets), storage, support offices, conference room, and a room configured for monitoring and scoring games on the fields. This room must be on an upper level. Facility shall be air conditioned. Facility shall also have a built-in weather monitoring system, to include lightening detection system.

1.2 Community. Community fields shall comply with the following criteria:

- a. Field shall be natural turf, laser graded, sodded, and with no rocks over ¼” in any dimension. With approval, artificial turf can be used in lieu of natural turf if any of the following conditions apply: The climate does not allows the fields to be used and recover quickly (too wet, too dry, periods of snow during the playing season, etc.), the installation is not able to maintain the natural field (either due to cost or lack of equipment/personnel) to a high level of quality, life cycle costs analysis shows a significant savings with artificial turf, or they are located in an arid region where significant irrigation would be required. If artificial turf is used, refer to the artificial turf criteria.
- b. Backstops shall be provided and fencing shall extend down the first and third base lines. The outfield fence may be a movable fence. The multi-purpose fields shall be fenced and netting provided behind soccer goals to stop missed shots. Fencing shall be 8’ high from the backstop to the dugouts, and then minimum of 4’ high beyond that. Fencing around multi-purpose fields shall be a minimum of 4’ tall. Protective covering must be provided on the top rail of the fence.
- c. Scoreboard is required.
- d. Lights and PA system are not required.
- e. Restrooms, vending machines, and water must be available within 500 feet of the field.
- f. For softball fields, provide grade level, breathable 32’ x 8’ x 8’ tall covered dugout shelters.
- g. At least one duplex outlet must be provided on the backstop of the softball field.
- h. Provide space for portable bleachers to be provided by the installation.
- i. Provide parking (paved or gravel) for the equivalent of 3 teams per field.
- j. Provide underground conduit and pull strings for future lighting.

2. SOFTBALL FIELDS

2.1. Softball fields shall comply with the latest criteria by the National governing body for the sport. Where multiple organizations exist with differing criteria, follow the requirements for NCAA. Field size shall provide for a 300 – 315 foot outfield fence.

3. MULTI-PURPOSE FIELDS

3.1. Multi-purpose fields shall comply with the latest criteria by the international governing body for the sport of soccer (FIFA). Playing field size shall be 80 yards x 120 yards. Playing field must be able to accommodate Rugby and flag football. Minimum of 5 yards of space must be provided on all sides of the field for player safety, which therefore requires a minimum “finished” field area of 90 yards x 130 yards. The buffer zone around the field must be free of any permanent items such as lights, bleachers, etc.

3.2. Consider providing a jogging track around one or more multi-purpose fields. These are not to be regulation Track and Field tracks.

4. ARTIFICIAL TURF

Under Development.