

UNIFIED FACILITIES CRITERIA (UFC)

DESIGN: NAVY AND MARINE CORPS OUTDOOR ADVENTURE CENTERS AND RENTAL CENTERS



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UNIFIED FACILITIES CRITERIA

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U.S. ARMY CORPS OF ENGINEERS

NAVAL FACILITIES ENGINEERING COMMAND (Preparing Activity)

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

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

Change No.	Date	Location

FOREWORD

The Unified Facilities Criteria (UFC) system is prescribed by MIL-STD 3007 and provides planning, design, construction, sustainment, restoration, and modernization criteria, and applies to the Military Departments, the Defense Agencies, and the DoD Field Activities in accordance with [USD\(AT&L\) Memorandum](#) dated 29 May 2002. UFC will be used for all DoD projects and work for other customers where appropriate. All construction outside of the United States is also governed by Status of forces Agreements (SOFA), Host Nation Funded Construction Agreements (HNFA), and in some instances, Bilateral Infrastructure Agreements (BIA.) Therefore, the acquisition team must ensure compliance with the more stringent of the UFC, the SOFA, the HNFA, and the BIA, as applicable.

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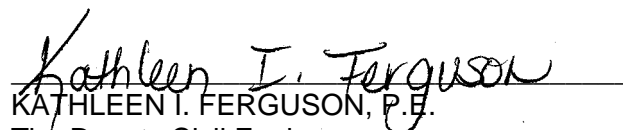
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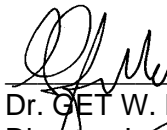
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CHAPTER 1

INTRODUCTION

1-1 **SCOPE OF DOCUMENT.** This UFC provides guidelines for evaluating, planning, and designing Navy and Marine Corps Outdoor Adventure Centers (OAC), Rental Centers (RC), and Outdoor Center & Other Rentals (OCOR). The information in this UFC applies to the design of all new construction projects as well as renovation projects. Renovation projects should update existing facilities to meet the guidance and criteria within budgetary constraints. This UFC is not intended to be a substitute for thorough review by individual Program Managers and Operations Staff in the appropriate Service during planning, programming, and design.

1-2 **USERS OF THIS DOCUMENT.** This UFC provides basic architectural information for all individuals involved in the planning, design, or evaluation of OAC, RC, and OCOR facilities. Note: where one Service's criteria vary from the other Services' criteria, it is noted in the text with the  (Service Exception) symbol. Specific users of this UFC include the following:

1-2.1 **Architects and Engineers.** Architects and Engineers (A/Es) who will provide design services under the direction of the individual design agencies, including the Naval Facilities Engineering Command (NAVFAC), Navy Personnel Command (NPC), Community and Family Support Center (CFSC), and Army and Air Force Exchange Service (AAFES).



1-2.2 **Planning Personnel.** Planning Personnel will use this UFC for pre-design planning or to assess the extent of improvements required in an existing OAC, RC, or OCOR in order to achieve the established standard.

1-2.3 **Additional Users.** Additional users include the following:

- Headquarters Staff
- Major Command Staff
- Installation Commanders
- Installation Facilities Managers
- Installation Technical Proponents
- Program Directors
- Facility/Program Operations Staff

1-3 **USERS OF FACILITY.** Outdoor and rental centers attract a wide variety of users and age groups. The typical users of OACs, RCs, and OCORs will be 18- to 30-year-old military personnel. However, some activities offered may be tailored to attract families. Additionally, some programs may be geared to youths and teens.

1-4 **RELATED DOCUMENTS.** This UFC augments [P-80, Facility Planning Criteria, Navy and Marine Corps Shore Installations](#). For more information also see the following sites:

-  [Navy Outdoor Recreation](http://www.mwr.navy.mil/mwrprgms/outrec3.htm)
(http://www.mwr.navy.mil/mwrprgms/outrec3.htm)
-  [Marine Corps Community Services](http://www.usmc-mccs.org) (MCCS) (www.usmc-mccs.org)



1-5 **SCOPE OF FACILITY.** Generally, OAC, RC, and OCORs described here are facilities that rent and/or sell goods that are associated with outdoor activities. There are three categories of outdoor and rental centers. While the goods may vary between facility types, the general criteria and basic design approaches for all three facility categories are similar. The three facility categories are described below, and Table 1-1 illustrates their respective missions with regard to equipment and program.

TABLE 1-1. FACILITY TYPES

Facility Type	Equipment Offered	Support ORP
OAC	OR	Yes
RC	H&G and/or OR	No
OCOR	H&G and OR	Yes

OR = Outdoor recreation equipment


H&G = Home and garden equipment/tools

1-5.1 **Outdoor Adventure Centers.** OAC operations are human powered and specific to outdoor recreation and adventure activities. An OAC supports an Outdoor Recreation Program (ORP).  The Marine Corps does not require that OAC or ORP operations be human powered. See Section 1-8 for additional information on the ORP. The activities offered take place in a natural area, front-country, backcountry, or wilderness environment. The name of the operation may reflect anything related to pursuits that fall within the respective Service's ORP.  Of the three facilities, the OAC is the preferred option within the Navy Morale Welfare and Recreation's (MWR's) Outdoor Recreation Program Master Plan.

1-5.2 **Rental Centers.** RCs carry a variety of equipment unrelated to outdoor recreation but may also carry outdoor recreation equipment. Equipment from both categories may include trailers, boats, dunk tanks, home and garden tools, camping gear, athletic equipment, party items, catering items, rental trucks and trailers, etc. While an RC may rent and/or sell goods associated with outdoor and adventure activities, it does not support an ORP, and as such, it differs from an OAC or OCOR.

Anything can be in the rental inventory that is appropriate and within the policies or local agreements, for example, agreements between Navy Exchange (NEX) and MWR. Instruction, repairs, and sales related to the equipment are appropriate. The name, image, and theme will be consistent with what is offered.

1-5.3 **Outdoor Center and Other Rentals.** An OCOR is a combination of the first two categories and rents both home- and garden-type equipment and outdoor adventure activity-type equipment that falls with the respective Service's ORP. The two classifications of items must be physically and visually separated into their own unique areas of the facility. They are marketed separately and have specialized employees for each area. An OCOR also supports an Outdoor Recreation Program.

1-6 **REMOTE AND SEPARATE FACILITIES.** Remote, separate facilities and buildings may be constructed on a case-by-case basis at sites where ORP-supported outdoor activities and programs are conducted by the outdoor staff on a regular basis. Athletic fields, campgrounds, and community parks do not qualify as ORP-supported recreation sites. In all circumstances, written rationale and justification for these structures is required from the Base and must be approved by  Navy: PERS 659 and Marine Corps: MCO P1700.29 (Semper Fit). Examples of possible remote and separate facilities to be considered are as follows:

1-6.1 **Bathrooms.** Consider providing showers and restrooms in areas where there may be concentrated activities such as rope courses, BMX tracks, skateboard and whitewater parks, outdoor climbing structures, surf activities, and recreation sites. Public lockers are not recommended.

1-6.2 **Storage.** Consider providing sheds to house equipment specifically used at the site, for example, climbing gear, boats, surfboards, kayaks, SCUBA gear, bikes, etc. Only site- and activity-specific material may be stored at remote and separate sites.

1-6.3 **Shelters.** Consider providing shelters for site- and activity-specific training functions, for example, near a river for last minute instruction on rafting safety procedures.

1-7 **RELATED PROGRAMS.** Related programs are Information, Tickets, and Tours (ITT) (includes both the ITT central office and the various kiosks); Military Recreation Centers; and Marinas. As noted under Paragraph 1-6, the ORP program may make use of other facilities, including other program facilities such as Marinas.

1-8 **DEFINITIONS OF TERMS.**

1-8.1 **Building.** For the purposes of this UFC, the building indicates the enclosed structure and does not include any outdoor space such as the outdoor display areas and outdoor storage.

1-8.2 **Facility.** For the purposes of this UFC, the facility includes the Building and the Site, including the outdoor display areas and outdoor storage. The facility may also include a ropes course, climbing apparatus, or other location-specific activities.

1-8.3 **Outdoor Recreation Program.** The ORP describes the different types of outdoor recreation operations found at the installation level. Each installation must choose and commit to the type of ORP that fills their needs prior to selecting a facility type. The two facilities that support the ORP are the OAC and OCOR. If an installation does not have an ORP, then an RC may carry outdoor recreation equipment to fulfill that need on base. **SE** The Navy requires that ORP-supported activities be human powered. The Marine Corps does not.

Descriptions of each center's focus can be found in *Department of the Navy Morale, Welfare, and Recreation Master Plan, January 2000*; the *Outdoor Adventure Center Manager's Guide: With Focus on Rentals, February 2001*; and the *Outdoor Recreation MWR Program Standards and Metrics*.

1-8.4 **Remote Facilities.** May include restrooms, picnic shelters for training, and storage for site- and activity-specific equipment and supplies. May not be used for general inventory or off-season storage.

1-8.5 **Remote Site.** May include local geographic features supportive of and used by the ORP.

1-8.6 **Special Activity.** **SE** Navy: A Special Activity is a human-powered activity with a particular focus or identity such as canoeing, rock climbing, kayaking, etc. Marine Corps: A Special Activity is an activity with a particular focus or identity such as canoeing, rock climbing, kayaking, etc.

CHAPTER 2

GENERAL DESIGN CRITERIA

2-1 MASTER/SITE PLANNING.

2-1.1 **Size Classifications.** The five facility size classifications and the typical active duty populations they serve are shown in Table 2-1.

TABLE 2-1. SIZE CLASSIFICATIONS

Size Classification	Active Duty Population Served
Regional/Extra Large	> 14,000
Large	7,001 – 14,000
Medium	3,001 – 7,000
Small	501 – 3,000
Extra Small	0 – 500

2-1.2 **Size Determinants and Space Programs.** Many factors must be considered to determine the size of the facility. Tables 2-2 – 2-6 illustrate the size programs for the five facility classifications. Also consider the following:

2-1.2.1 **Customer Base.** The customer base is the primary size determinant. The active duty population directly relates to the potential customer base (see Table 2-1). However, the customer base may also include active duty family members, youth and teen program participants, and others. Consider all potential users when determining the customer base.

2-1.2.2 **Program.** Although this UFC will develop a standard for each of the size categories, there is justification for deviation from those standards depending on the actual outdoor program developed and offered. The program's impact on space is primarily in the storage component. For instance, a small facility may support a water sport activity which requires more storage space than a large facility which does not support such a recreational activity. This is addressed in Tables 2-2 – 2-6 under Large Item Storage but should be considered further in the programming of every facility. If any of the following programs are to be supported by the facility, the Large Item Storage line item should be included in the space program:

- Kayaking/canoeing
- Biking
- Skiing/snowboarding/surfing
- Trailer rentals (site storage)

2-1.2.3 **Facility Type.** Each of the three facility types (OAC, RC, and OCOR) have different space requirements. Tables 2-2 – 2-6 are geared towards the OAC but can easily be adapted to the RC or OCOR:

2-1.2.3.1 Space allocations for functional spaces congruent to both RCs and OACs are equal. However, not all functional spaces required for an OAC are required for an RC. Functional spaces that are not required for the RC are identified with an asterisk (*). These should be subtracted from the totals when programming an RC.

2-1.2.3.2 OACs and OCORs have the same functional spaces; however, the space allocations are different. Since OCORs may carry both outdoor recreation equipment and home- and garden-type equipment, some areas such as display and storage will be larger. Therefore, Tables 2-2 – 2-6 include a percentage factor by which to increase total building area for the OCOR. Once the additional area for the OCOR has been determined in m² (ft.²), Tables 3-1 through 3-16 in [Chapter 3](#) describe how to distribute this area among the specific spaces. For example, if the factor in Tables 2-2 through 2-6 yields a 100 m² (1,076 ft.²) increase for a given OCOR, then Tables 3-1 through 3-16 will apply a certain percentage of that 100 m² to the display area, a certain percentage to the storage area, and so on.

TABLE 2-2. SPACE PROGRAM FOR EXTRA SMALL INSTALLATION

Functional Spaces	Space Allocation Standard			Extra Small Installation		
	m ²	ft. ²	Standard	No.	m ²	ft. ²
Activity Area						
Customer Service Area						
Point-of-Sale (POS)	2.04	22	per POS	1	2.04	22
Activity Sign-up *	1.39	15	per sign-up station	1	1.39	15
Customer Checkout	1.30	14	per person in line	1	1.30	14
ITT Kiosk †	0.93	10	per kiosk	1	0.93	10
Customer Dressing Rooms *	2.23	24	per dressing room	2	4.46	48
Indoor Equipment Display	13.94	150	per display	2	27.88	300
Information Resource Area	11.15	120	per area	1	11.15	120
Resale Area	18.58	200	per area	1	18.58	200
Training Rooms/Classrooms *	40.88	440	per room (20 occupants)	1	40.88	440
Staff Offices						
Director	11.15	120	per office	1	11.15	120
Programs Manager *	9.29	100	per workspace	0	0.00	0
Rental and Retail Shop Manager	9.29	100	per workspace	0	0.00	0
Outdoor Equipment Maintenance	0.00	0	In Equipment Repair Room	1	0.00	0
Customer Service	0.00	0	In customer service area	3	0.00	0
Inside Gear Wash	13.94	150	wash unit	1	13.94	150
Equipment Repair w/ Drop-Off	18.58	200	per repair station	1	18.58	200
In-Season Equipment Storage	26.01	280	per aisle of storage	2	52.02	560
Off-Season Equipment Storage	26.01	280	per aisle of storage	2	52.02	560
Large Item Storage (program dependant)	44.59	480	per aisle of storage	1	44.59	480
Activity Support						
Office Storage	5.57	60	per room	1	5.57	60
Staff Break Room	13.94	150	per room	1	13.94	150
Toilets (Male and Female)						
Water Closets/Urinals	2.32	25	per fixture	2	4.64	50
Lavatories	1.39	15	per fixture	2	2.78	30
Janitor's Closet	3.72	40	per closet	1	3.72	40
Staff Lockers and Showers						
Staff Lockers (Male and Female)	0.56	6	per locker	6	3.36	36
Staff Showers (Male and Female) *	1.67	18	per shower	2	3.34	36
Building Support						
Entrance Lobby	11.15	120	per lobby	1	11.15	120
Total Building Net Area					349.41	3,761
Circulation and Mechanical Building Factor @				15%	52.41	564
Total Building Gross Area					401.82	4,325
Site Support						
Staff Parking	41.81	450	per space	3	125.42	1,350
Patron Parking	41.81	450	per space	3	125.415	1,350
Gear Pick-up and Return Parking	60.39	650	per space	1	60.385	650
Outside Gear Wash	13.94	150	per wash unit	1	13.935	150
Outdoor Equipment Display	9.29	100	per display	2	18.58	200
Outdoor Storage	29.73	320	per aisle of storage	1	29.728	320
Large Item Storage (program dependant)	44.59	480	per aisle of storage	2	89.184	960
Bus Stop/Transfer Station (optional)	18.58	200	per shelter	0	0	0
Total Site Support					373.46	4,020
Total Facility (Building Gross and Site)					775	8,345
OCOR Building Factor (See Sect. 2-1.2.3 and Chapter 3 for details) @				16%	64.29	692
Total OCOR Facility (Building Gross and Site), Including Factor					839	9,037

* Not included in RC. Note: Satellite Kiosks may be required at each activity.

† ITT Kiosks are optional.

TABLE 2-3. SPACE PROGRAM FOR SMALL INSTALLATION

Functional Spaces	Space Allocation Standard			Small Installation		
	m ²	ft. ²	Standard	No.	m ²	ft. ²
Activity Area						
Customer Service Area						
Point-of-Sale (POS)	2.04	22	per POS	1	2.04	22
Activity Sign-up *	1.39	15	per sign-up station	1	1.39	15
Customer Checkout	1.30	14	per person in line	1	1.30	14
ITT Kiosk †	0.93	10	per kiosk	1	0.93	10
Customer Dressing Rooms *	2.23	24	per dressing room	2	4.46	48
Indoor Equipment Display	13.94	150	per display	4	55.76	600
Information Resource Area	11.15	120	per area	1	11.15	120
Resale Area	18.58	200	per area	1	18.58	200
Training Rooms/Classrooms *	40.88	440	per room (20 occupants)	1	40.88	440
Staff Offices						
Director	11.15	120	per office	1	11.15	120
Programs Manager *	9.29	100	per workspace	0	0.00	0
Rental and Retail Shop Manager	9.29	100	per workspace	0	0.00	0
Outdoor Equipment Maintenance	0.00	0	In Equipment Repair Room	1	0.00	0
Customer Service	0.00	0	In customer service area	3	0.00	0
Inside Gear Wash	13.94	150	wash unit	1	13.94	150
Equipment Repair w/ Drop-Off	18.58	200	per repair station	1	18.58	200
In-Season Equipment Storage	26.01	280	per aisle of storage	2	52.02	560
Off-Season Equipment Storage	26.01	280	per aisle of storage	2	52.02	560
Large Item Storage (program dependant)	44.59	480	per aisle of storage	1	44.59	480
Activity Support						
Office Storage	5.57	60	per room	1	5.57	60
Staff Break Room	13.94	150	per room	1	13.94	150
Toilets (Male and Female)						
Water Closets/Urinals	2.32	25	per fixture	2	4.64	50
Lavatories	1.39	15	per fixture	2	2.78	30
Janitor's Closet	3.72	40	per closet	1	3.72	40
Staff Lockers and Showers						
Staff Lockers (Male and Female)	0.56	6	per locker	6	3.36	36
Staff Showers (Male and Female) *	1.67	18	per shower	2	3.34	36
Building Support						
Entrance Lobby	11.15	120	per lobby	1	11.15	120
Total Building Net Area					377.29	4,061
Circulation and Mechanical Building Factor @ 15%				56.59	609	
Total Building Gross Area					433.88	4,670
Site Support						
Staff Parking	41.81	450	per space	3	125.42	1350
Patron Parking	41.81	450	per space	3	125.42	1350
Gear Pick-up and Return Parking	60.39	650	per space	1	60.39	650
Outside Gear Wash	13.94	150	per wash unit	1	13.94	150
Outdoor Equipment Display	9.29	100	per display	2	18.58	200
Outdoor Storage	29.73	320	per aisle of storage	1	29.73	320
Large Item Storage (program dependant)	44.59	480	per aisle of storage	2	89.18	960
Bus Stop/Transfer Station (optional)	18.58	200	per shelter	0	0.00	0
Total Site Support					373.46	4,020
Total Facility (Building Gross and Site)					807	8,690
OCOR Building Factor (See Sect. 2-1.2.3 and Chapter 3 for details) @ 16%				69.42	747	
Total OCOR Facility (Building Gross and Site), Including Factor					876	9,437

* Not included in RC. Note: Satellite Kiosks may be required at each activity.

† ITT Kiosks are optional.

TABLE 2-4. SPACE PROGRAM FOR MEDIUM INSTALLATION

Functional Spaces	Space Allocation Standard			Medium Installation		
	m ²	ft. ²	Standard	No.	m ²	ft. ²
Activity Area						
Customer Service Area						
Point-of-Sale (POS)	2.04	22	per POS	2	4.08	44
Activity Sign-up *	1.39	15	per sign-up station	1	1.39	15
Customer Checkout	1.30	14	per person in line	2	2.60	28
ITT Kiosk †	0.93	10	per kiosk	1	0.93	10
Customer Dressing Rooms *	2.23	24	per dressing room	2	4.46	48
Indoor Equipment Display	13.94	150	per display	6	83.64	900
Information Resource Area	11.15	120	per area	1	11.15	120
Resale Area	18.58	200	per area	1	18.58	200
Training Rooms/Classrooms *	40.88	440	per room (20 occupants)	1	40.88	440
Staff Offices						
Director	11.15	120	per office	1	11.15	120
Programs Manager *	9.29	100	per workspace	1	9.29	100
Rental and Retail Shop Manager	9.29	100	per workspace	0	0.00	0
Outdoor Equipment Maintenance	0.00	0	In Equipment Repair Room	1	0.00	0
Customer Service	0.00	0	In customer service area	2	0.00	0
Inside Gear Wash	13.94	150	wash unit	1	13.94	150
Equipment Repair w/ Drop-Off	18.58	200	per repair station	1	18.58	200
In-Season Equipment Storage	26.01	280	per aisle of storage	4	104.04	1,120
Off-Season Equipment Storage	26.01	280	per aisle of storage	4	104.04	1,120
Large Item Storage (program dependant)	44.59	480	per aisle of storage	2	89.18	960
Activity Support						
Office Storage	5.57	60	per room	1	5.57	60
Staff Break Room	13.94	150	per room	1	13.94	150
Toilets (Male and Female)						
Water Closets/Urinals	2.32	25	per fixture	2	4.64	50
Lavatories	1.39	15	per fixture	2	2.78	30
Janitor's Closet	3.72	40	per closet	1	3.72	40
Staff Lockers and Showers						
Staff Lockers (Male and Female)	0.56	6	per locker	6	3.36	36
Staff Showers (Male and Female) *	1.67	18	per shower	2	3.34	36
Building Support						
Entrance Lobby	11.15	120	per lobby	1	11.15	120
Total Building Net Area					566.43	6,097
Circulation and Mechanical Building Factor @				15%	84.96	915
Total Building Gross Area					651.39	7,012
Site Support						
Staff Parking	41.81	450	per space	4	167.22	1,800
Patron Parking	41.81	450	per space	6	250.83	2,700
Gear Pick-up and Return Parking	60.39	650	per space	1	60.39	650
Outside Gear Wash	13.94	150	per wash unit	1	13.94	150
Outdoor Equipment Display	9.29	100	per display	3	27.87	300
Outdoor Storage	29.73	320	per aisle of storage	2	59.46	640
Large Item Storage (program dependant)	44.59	480	per aisle of storage	4	178.37	1,920
Bus Stop/Transfer Station (optional)	18.58	200	per shelter	0	0.00	0
Total Site Support					579.70	6,240
Total Facility (Building Gross and Site)					1,231	13,252
OCOR Building Factor (See Sect. 2-1.2.3 and Chapter 3 for details) @				16%	104.22	1,122
Total OCOR Facility (Building Gross and Site), Including Factor					1,335	14,373

* Not included in RC. Note: Satellite Kiosks may be required at each activity.

† ITT Kiosks are optional.

TABLE 2-5. SPACE PROGRAM FOR LARGE INSTALLATION

Functional Spaces	Space Allocation Standard			Large Installation		
	m ²	ft. ²	Standard	No.	m ²	ft. ²
Activity Area						
Customer Service Area						
Point-of-Sale (POS)	2.04	22	per POS	2	4.08	44
Activity Sign-up *	1.39	15	per sign-up station	2	2.78	30
Customer Checkout	1.30	14	per person in line	2	2.60	28
ITT Kiosk †	0.93	10	per kiosk	1	0.93	10
Customer Dressing Rooms *	2.23	24	per dressing room	4	8.92	96
Indoor Equipment Display	13.94	150	per display	8	111.52	1,200
Information Resource Area	11.15	120	per area	2	22.30	240
Resale Area	18.58	200	per area	2	37.16	400
Training Rooms/Classrooms *	40.88	440	per room (20 occupants)	2	81.76	880
Staff Offices						
Director	11.15	120	per office	1	11.15	120
Programs Manager *	9.29	100	per workspace	1	9.29	100
Rental and Retail Shop Manager	9.29	100	per workspace	1	9.29	100
Outdoor Equipment Maintenance	0.00	0	In Equipment Repair Room	1	0.00	0
Customer Service	0.00	0	In customer service area	2	0.00	0
Inside Gear Wash	13.94	150	wash unit	2	27.88	300
Equipment Repair w/ Drop-Off	18.58	200	per repair station	1	18.58	200
In-Season Equipment Storage	26.01	280	per aisle of storage	6	156.06	1,680
Off-Season Equipment Storage	26.01	280	per aisle of storage	4	104.04	1,120
Large Item Storage (program dependant)	44.59	480	per aisle of storage	2	89.18	960
Activity Support						
Office Storage	5.57	60	per room	1	5.57	60
Staff Break Room	13.94	150	per room	1	13.94	150
Toilets (Male and Female)						
Water Closets/Urinals	2.32	25	per fixture	4	9.28	100
Lavatories	1.39	15	per fixture	4	5.56	60
Janitor's Closet	3.72	40	per closet	1	3.72	40
Staff Lockers and Showers						
Staff Lockers (Male and Female)	0.56	6	per locker	8	4.48	48
Staff Showers (Male and Female) *	1.67	18	per shower	4	6.68	72
Building Support						
Entrance Lobby	11.15	120	per lobby	1	11.15	120
Total Building Net Area					757.90	8,158
Circulation and Mechanical Building Factor @				15%	113.69	1,224
Total Building Gross Area					871.59	9,382
Site Support						
Staff Parking	41.81	450	per space	5	209.03	2,250
Patron Parking	41.81	450	per space	8	334.44	3,600
Gear Pick-up and Return Parking	60.39	650	per space	2	120.77	1,300
Outside Gear Wash	13.94	150	per wash unit	2	27.87	300
Outdoor Equipment Display	9.29	100	per display	4	37.16	400
Outdoor Storage	29.73	320	per aisle of storage	2	59.46	640
Large Item Storage (program dependant)	44.59	480	per aisle of storage	4	178.37	1920
Bus Stop/Transfer Station (optional)	18.58	200	per shelter	0	0.00	0
Total Site Support					788.72	8,490
Total Facility (Building Gross and Site)					1,660	17,872
OCOR Building Factor (See Sect. 2-1.2.3 and Chapter 3 for details) @				16%	139.45	1,501
Total OCOR Facility (Building Gross and Site), Including Factor					1,799	19,373

* Not included in RC. Note: Satellite Kiosks may be required at each activity.

† ITT Kiosks are optional.

TABLE 2-6. SPACE PROGRAM FOR REGIONAL/EXTRA LARGE INSTALLATION

Functional Spaces	Space Allocation Standard			Regional/Ex.Lg. Installation		
	m ²	ft. ²	Standard	No.	m ²	ft. ²
Activity Area						
Customer Service Area						
Point-of-Sale (POS)	2.04	22	per POS	3	6.12	66
Activity Sign-up *	1.39	15	per sign-up station	2	2.78	30
Customer Checkout	1.30	14	per person in line	6	7.80	84
ITT Kiosk †	0.93	10	per kiosk	2	1.86	20
Customer Dressing Rooms *	2.23	24	per dressing room	4	8.92	96
Indoor Equipment Display	13.94	150	per display	10	139.40	1,500
Information Resource Area	11.15	120	per area	2	22.30	240
Resale Area	18.58	200	per area	2	37.16	400
Training Rooms/Classrooms *	40.88	440	per room (20 occupants)	2	81.76	880
Staff Offices						
Director	11.15	120	per office	1	11.15	120
Programs Manager *	9.29	100	per workspace	1	9.29	100
Rental and Retail Shop Manager	9.29	100	per workspace	1	9.29	100
Outdoor Equipment Maintenance	0.00	0	In Equipment Repair Room	2	0.00	0
Customer Service	0.00	0	In customer service area	2	0.00	0
Inside Gear Wash	13.94	150	wash unit	3	41.82	450
Equipment Repair w/ Drop-Off	18.58	200	per repair station	2	37.16	400
In-Season Equipment Storage	26.01	280	per aisle of storage	10	260.10	2,800
Off-Season Equipment Storage	26.01	280	per aisle of storage	10	260.10	2,800
Large Item Storage (program dependant)	44.59	480	per aisle of storage	5	222.95	2,400
Activity Support						
Office Storage	5.57	60	per room	1	5.57	60
Staff Break Room	13.94	150	per room	2	27.88	300
Toilets (Male and Female)						
Water Closets/Urinals	2.32	25	per fixture	6	13.92	150
Lavatories	1.39	15	per fixture	6	8.34	90
Janitor's Closet	3.72	40	per closet	1	3.72	40
Staff Lockers and Showers						
Staff Lockers (Male and Female)	0.56	6	per locker	12	6.72	72
Staff Showers (Male and Female) *	1.67	18	per shower	6	10.02	108
Building Support						
Entrance Lobby	11.15	120	per lobby	1	11.15	120
Total Building Net Area					1,247	13,426
Circulation and Mechanical Building Factor @				15%	187.09	2,014
Total Building Gross Area					1,434	15,440
Site Support						
Staff Parking	41.81	450	per space	5	209.025	2,250
Patron Parking	41.81	450	per space	12	501.66	5,400
Gear Pick-up and Return Parking	60.39	650	per space	3	181.155	1,950
Outside Gear Wash	13.94	150	per wash unit	3	41.805	450
Outdoor Equipment Display	9.29	100	per display	4	37.16	400
Outdoor Storage	29.73	320	per aisle of storage	3	89.184	960
Large Item Storage (program dependant)	44.59	480	per aisle of storage	6	267.552	2,880
Bus Stop/Transfer Station (optional)	18.58	200	per shelter	0	0	0
Total Site Support					1,060	11,410
Total Facility (Building Gross and Site)					2,494	26,850
OCOR Building Factor (See Sect. 2-1.2.3 and Chapter 3 for details) @				16%	229.44	2,470
Total OCOR Facility (Building Gross and Site), Including Factor					2,723	29,320

* Not included in RC. Note: Satellite Kiosks may be required at each activity.

† ITT Kiosks are optional.

2-1.3 **Location Determinants.** Prior to initiating the physical planning of the OAC, RC, or OCOR, perform a space analysis of the existing base. This analysis should identify any existing functions which are programmatically considered an essential element of the ORP program. Following that analysis, consider the following factors to determine the location of the facility.

2-1.3.1 **Overall Business Viability.** Business viability is the primary location determinant. A location favorable to sustaining a self-sufficient operation is needed. Patron access, as described in Paragraph 2-1.3.4 below, is one major component of business viability, but it must also consider the entertainment and adventure elements of the facility. The location should be attractive with proximity to natural areas and other retail or recreational services.

2-1.3.2 **Existing Program Elements.** On some bases, existing program elements may be clustered in one area. Consider any existing program elements when locating the new facility to take advantage of the population's activity patterns, habits, and knowledge base. This will help with advertising the new facility. This determinant is more important in siting the OAC and OCOR facilities but should also be considered when site planning an RC.

2-1.3.3 **Goods Access.** These facilities handle large and cumbersome goods and equipment. The site should offer easy access and room to maneuver the goods and equipment both for delivery and for rental.

2-1.3.4 **Patron Access.** The facility needs to be visible and easily accessible to the users. Consider locating near other high-visibility areas and related functions. This could be along the pedestrian paths to the existing barracks, existing MWR/NEX/MCCS facilities, and/or the dining facility. To accommodate moving equipment and quick patron access, provide adequate parking as close as possible to the facility, taking into account Antiterrorism/Force Protection (ATFP) requirements.

2-1.3.5 **Cost.** These facilities should be designed with the objective of achieving the lowest life cycle cost over a 30-year period. To do so, the project's design program must adequately define the scope and performance requirements and match those needs against a budget. Conversely, the budget must adequately support an appropriate and high-quality program and the performance requirements outlined and identified in this UFC.

2-2 LAYOUT AND ADJACENCIES.

2-2.1 **Functional Relationship Bubble Diagrams.** Figure 2-1 applies to an OAC and an RC. Figure 2-2 applies to an OCOR. These bubble diagrams are not intended to represent mandatory or even suggested designs but are provided to indicate acceptable relative adjacencies of functional spaces. Circulation space is variable but must be included in overall area calculation.

FIGURE 2-1. OAC AND RC FUNCTIONAL RELATIONSHIP BUBBLE DIAGRAM

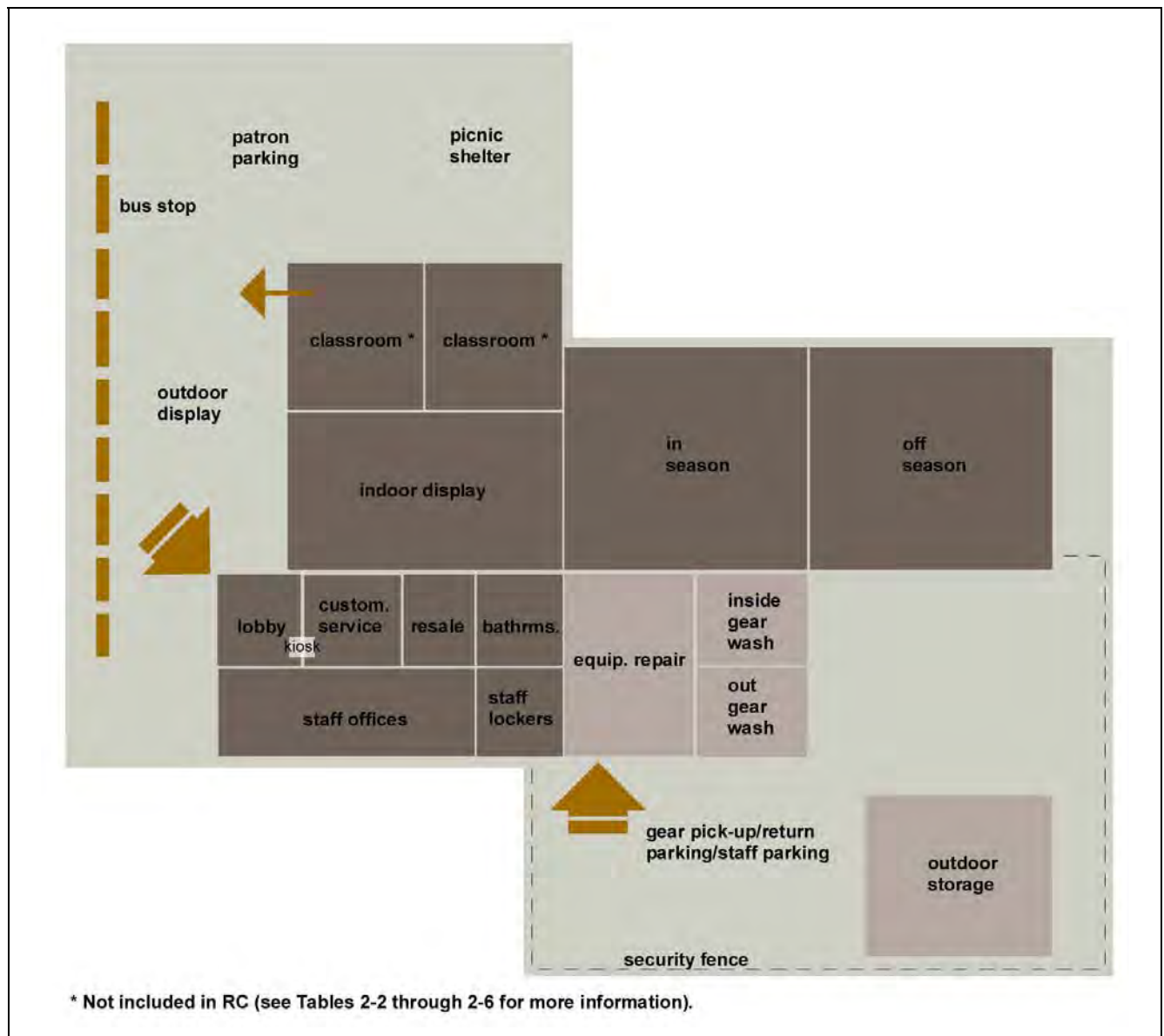
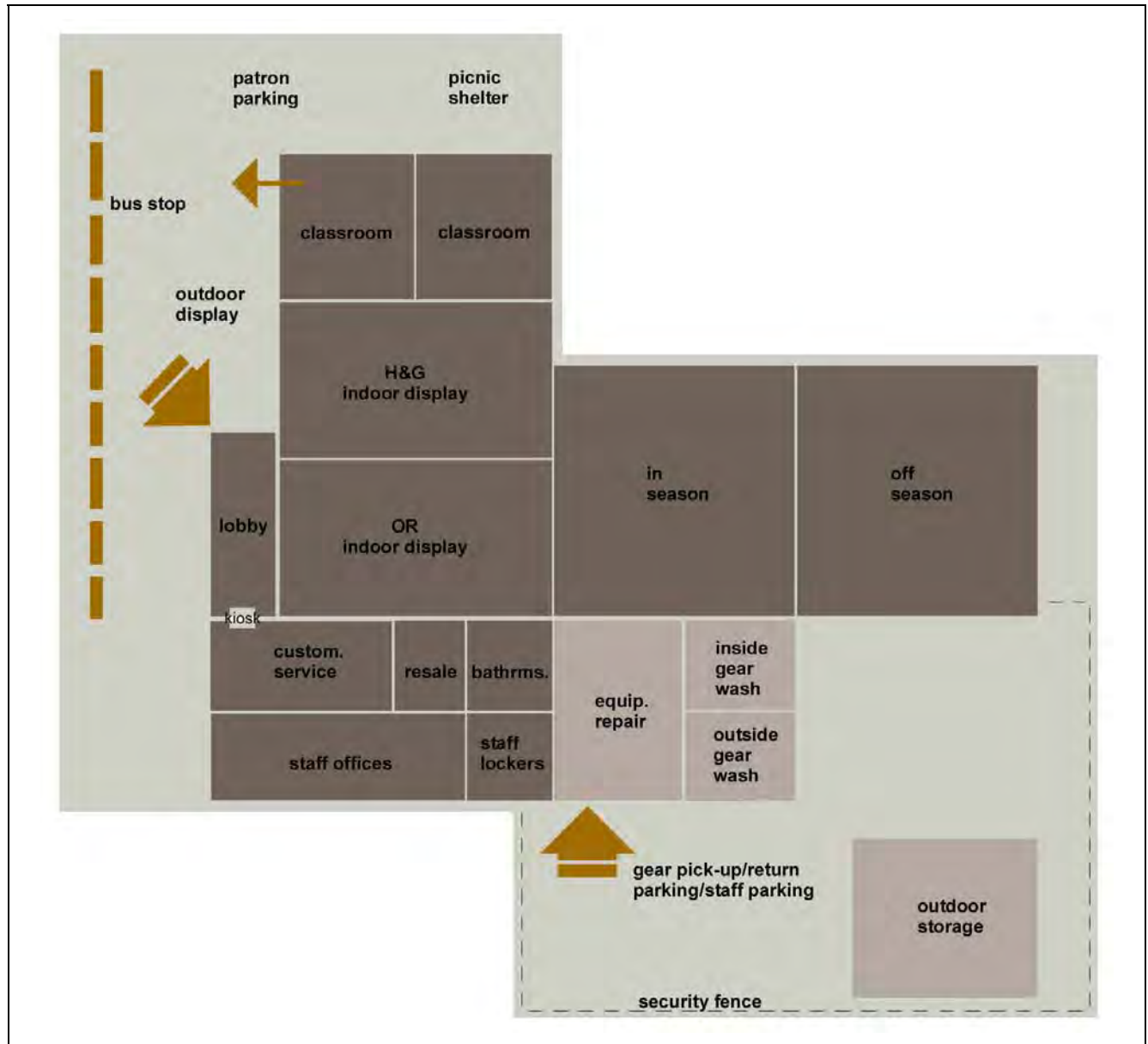


FIGURE 2-2. OCOR FUNCTIONAL RELATIONSHIP BUBBLE DIAGRAM



2-2.2 **Adjacency Matrix.** Tables 2-7.1 and 2-7.2 further illustrate the acceptable relative adjacencies of functional spaces and should be used in Conjunction with Figures 2-1 and 2-2.

TABLE 2-7.1. ADJACENCY MATRIX

Functional Spaces	Activity Area	Customer Service Area	Customer Dressing Rooms *	Indoor Equipment Display	Information Resource Area	Resale Area	Training Rooms/Classrooms *	Staff Offices	Inside Gear Wash	Equipment Repair w/ Drop-Off	In-Season Equipment Storage	Off-Season Equipment Storage	Large Item Storage (program dependant)	Indoor Interactive Feature	Activity Support	Staff Break Room	Toilets	Staff Lockers and Showers
	Activity Area																	
Customer Service Area			2	1	1	1	2	3						2			3	
Customer Dressing Rooms *		2																
Indoor Equipment Display		1			2	1		2						1				
Information Resource Area		1		2		2								2				
Resale Area		1	2	1	2													
Training Rooms/Classrooms *		2																
Staff Offices		3		2														
Inside Gear Wash										1	3	3	3					
Equipment Repair w/ Drop-Off									1		3	3	3			3		3
In-Season Equipment Storage									3	3		3	3					
Off-Season Equipment Storage									3	3	3		3					
Large Item Storage (program dependant)									3	3	3	3						
Indoor Interactive Feature		2		1	2													
Activity Support																		
Staff Break Room										3								1
Toilets		3																
Staff Lockers and Showers										3						1		
Building Support																		
Entrance Lobby		2		2	2									2				
Site Support																		
Staff Parking																		
Patron Parking														2				
Gear Pick-up and Return Parking									3	1	3	3	3					
Outside Gear Wash										2	3	3	3					
Outdoor Equipment Display		2/3																
Outdoor Storage										2	3	3	3					
Large Item Storage (program dependant)										2	3	3	3					
Bus Stop/Transfer Station (optional)																		

Direct physical access/adjacency 1
 Direct visual access/visual control 2
 Near but not necessarily adjacent 3
 * Not included in RC


TABLE 2-7.2. ADJACENCY MATRIX (continued)

Functional Spaces	Building Support	Site Support	Staff Parking	Patron Parking	Gear Pick-up and Return Parking	Outside Gear Wash	Outdoor Equipment Display	Outdoor Storage	Large Item Storage (program dependant)	Bus Stop/Transfer Station (optional)
	Entrance Lobby									
Activity Area										
Customer Service Area	2						2/3			
Customer Dressing Rooms *										
Indoor Equipment Display	2									
Information Resource Area	2									
Resale Area										
Training Rooms/Classrooms *										
Staff Offices										
Inside Gear Wash					3					
Equipment Repair w/ Drop-Off					1	2		2	2	
In-Season Equipment Storage					3	3		3	3	
Off-Season Equipment Storage					3	3		3	3	
Large Item Storage (program dependant)					3	3		3	3	
Indoor Interactive Feature	2		2							
Activity Support										
Staff Break Room										
Toilets										
Staff Lockers and Showers										
Building Support										
Entrance Lobby				2/3			1/2			2/3
Site Support										
Staff Parking										
Patron Parking		2/3					2			
Gear Pick-up and Return Parking						3		1	1	
Outside Gear Wash					3			3	3	
Outdoor Equipment Display		1/2		2				3		2
Outdoor Storage					1	3	3		1	
Large Item Storage (program dependant)					1	3		1		
Bus Stop/Transfer Station (optional)		2/3					2			
Direct physical access/adjacency	1									
Direct visual access/visual control	2									
Near but not necessarily adjacent	3									

* Not included in RC

2-2.3 **Space Assessment.** See the Functional Data Sheets in [Chapter 3](#) for additional information on the space types and their relationships to each other.

2-3 ALTERATIONS TO EXISTING FACILITIES.

2-3.1 **Regulatory Authorities.** The authorities are contained in OPNAVINST 11010.20F, *Facilities Project Manual*, and NAVFACINST 11010.45, *Comprehensive Regional Planning Instruction*. Prior to planning alterations to an existing facility to convert it to an OAC, RC, or OCOR, the activity should consult the following:  Navy: NPC (Pers 656D/659) and Marine Corps: MCCA HQ (MRS/MRD)

2-3.2 **Other Considerations.** Consider the site of the existing facility and its limitations with regard to the OAC, RC, or OCOR's needs. Only permanent facilities should be considered for conversion to an OAC, RC, or OCOR. Exceptions may be made for other buildings that are in excellent condition, subject to the location determinants in Paragraph 2-1.4. Consideration of adaptability to the intent of the building program must be given. For instance, is the building tall enough for inclusion of a 9.14 m (30 ft.) tall climbing wall as a centerpiece? Whether planning a conversion, alteration or new construction, ATRP requirements must be taken into account (see Section 2.10).

2-4 **MODEL BUILDING CODES.** Use UFC 1-200-01, *Design: General Building Requirements*, for guidance on the use of model building codes for design and construction of Department of Defense facilities.

2-5 **EXTERIOR DESIGN.** In general, the building's image, theme, and fixtures must be consistent with the programs offered. The building design should reflect the local geographical and cultural environment. The building's interior and exterior are presented as a recreational, not a warfare, facility. The building and site should provide a visually attractive and welcoming appearance with ample parking, and signs giving directions to the site. Avoid a hangar- or warehouse-like industrial appearance. The building should offer some type of interactive activity as a visual centerpiece (e.g., climbing wall, wave pool, etc. are highly desirable).

2-5.1 **Structure.** This building is most efficient as a single-story structure. In the storage areas, smaller, lighter items could be placed on a mezzanine level if space limitations require.

2-5.2 **Exterior Finishes.** The color, texture, and design should be consistent with the programs offered and the local environment and be appropriate for the building type. Relate the exterior finishes to the interactive, architectural centerpiece noted in Paragraph 2-4. The exterior design should coordinate with the local Base Exterior Architectural Plan (BEAP), if available.

2-6 **INTERIOR DESIGN.** Construction and finishes (walls, floor, ceiling) should support the image and theme of the facility and be consistent with the programs offered. As with the exterior, coordinate the interior design with the interactive, architectural centerpiece noted in Paragraph 2-4. The interior design should offer the same interest, excitement, and professionalism that can be found in commercial facilities. For example, consider the use of small-scale interactive displays in addition to the centerpiece. Also consider finish materials that capture the look and feel of the

outdoors. Finishes should take into account the intended uses and be appropriately durable. For more information on finishes in specific areas, see the tables in [Chapter 3](#).

2-7 **ACOUSTICS.** The materials selected for this facility, by their nature, may not provide the appropriate sound attenuation necessary for satisfactory acoustical performance. Reverberant sound in the large open display areas must be absorbed and controlled to avoid distractions to customers and staff. The use of fabric baffles and/or ceilings with high NRC values are recommended. The NRC for these materials should exceed .90 and provide a surface area of at least 50% of the ceiling area (horizontal projection). Walls and floors should also contribute to sound absorption, whenever and wherever possible.

To avoid the transmission of noise from the Equipment Repair area and similar spaces into the customer areas, provide floor-to-structure partitions with an STC equal to or greater than 45. Insure that all openings are protected and dampened for sound and avoid direct transfer ducts through the partitions.

2-8 **SERVICES.** Also see Section 2-11 for information on sustainable design and energy consumption.

2-8.1 **Plumbing.** Design domestic hot and cold water, sanitary and storm drainage, propane, fuel oil, or natural gas systems to meet the requirements of MIL-HDBK-1003/1, *Plumbing*. UFC 3-420-01, *Plumbing*, is in draft form and when completed will supersede MIL-HDBK-1003/1.

2-8.2 **Heating, ventilating, and air conditioning (HVAC).** Design of the HVAC system must comply with the requirements of the International Mechanical Code (IMC.) Use MIL-HDBK-1003/3, *Heating, Ventilating, Air Conditioning and Dehumidifying Systems* as supplemental guidance until it is replaced.

2-8.3 **Fire Protection.** Fire protection and life safety must comply with UFC 3-600-01, *Design: Engineering Fire Protection*.

2-8.4 **Electrical.** Provide electric service and distribution equipment, wiring receptacles and grounding, interior and exterior lighting and control, emergency lighting, telephone, communication systems, fire alarm, and intrusion systems in accordance with NEC and the latest installation design requirements. See the latest edition of *Electric Current Abroad*, U.S. Department of Commerce, to determine voltages and cycles in overseas locations. Service grounding system and all wiring methods shall meet the current NFPA 70, *National Electric Code (NEC)* requirements. All service equipment must be Underwriters Laboratories (UL) listed. Alternately, published proof from an approved independent testing laboratory may be provided. Additionally, consider that some high-powered equipment may be used for the maintenance and repair of inventory.

2-8.4.1 **Alarm System.** Consider providing an alarm system for intrusion detection to protect equipment and assets and to guard against unauthorized use of

high-risk activities (e.g., climbing wall). Provisions for an alarm system must be justified during the planning/programming process.

2-8.4.2 **Closed Circuit Television (CCTV).** Consider providing a CCTV system. Provisions for a CCTV system must be justified during the planning/programming process. **SE** Service requirements vary on CCTV systems. Note the following criteria:

2-8.4.2.1 **Navy.** Conduit (minimum 19 mm (.75 in.)) and cabling shall be provided in the Indoor Display Area with the central monitors located in the offices. The conduit shall be used to accommodate government-furnished/government-installed, locally-funded video equipment. This may require outlets higher in the ceilings, walls or both. Electrical service shall be provided adjacent to anticipated location of cameras and monitors.

2-8.4.2.2 **Marine Corps.** Provide the entire CCTV system including cameras, monitors, conduit, cabling, power, and junction boxes for CCTV system.

2-9 **SITE WORK.**

2-9.1 **Landscaping.** Landscaping should reflect the programs offered and the local geographical environment. The plant selection should be easy to maintain and enhance the visual quality of the facility in all seasons. Native species are preferred. Do not use poisonous plants.

2-9.2 **Site Lighting.** Ensure that parking areas and the compound have adequate lighting for safety and security measures.

2-9.3 **Outdoor Activities.** If space permits, consider providing activities that support the ORP. These activities should relate to the facility site plan and contribute to the image and theme of the facility. However, consider that some of these activities may be "attractive nuisances" and may need to be secured for safety reasons. Examples are as follows:

- Single track, dirt mountain bike and running trails constructed of and on mineral soil
- Environmental interpretive trails
- Challenge courses
- Climbing walls/towers and bouldering walls
- Snowboard/ski terrain parks
- Wave pools/whitewater parks
- BMX park/tracks


- Skateboard/rollerblading parks
- Dive wells
- Kayak training pool
- High ropes course

2-10 **BARRIER-FREE DESIGN REQUIREMENTS.** OAC, RC and OCOR's must be designed to be barrier-free and accessible in compliance with the Architectural Barriers Act (Public Law 90-480) of 1968, <http://www.access-board.gov/ufas/ufas-html/ufas.htm> - ABA. Provide barrier-free design requirements in accordance with the *Uniform Federal Accessibility Standards* (UFAS), published as Federal Standard (FED-STD)-795, <http://www.access-board.gov/ufas/ufas-html/ufas.htm>, and 28 CFR Part 36, the *Americans With Disabilities Act Accessibility Guidelines for Buildings and Facilities* (ADAAG), <http://www.access-board.gov/adaag/html/adaag.htm>. Use the criteria that provide the greatest accessibility.

2-11 **ANTITERRORISM/FORCE PROTECTION.** The requirements of UFC 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* must be met.

2-12 **SUSTAINABLE DESIGN.** Use an integrated approach to the planning and design of OACs, RCs, and OCORs that minimizes energy consumption and optimizes life cycle cost renewable energy possibilities. Use a practical combination of site selection and siting, energy conserving building envelope technologies, energy efficient lighting, occupant sensing controls, variable frequency drives for motors and exhaust fans, and high efficiency HVAC systems to achieve this goal. Incorporate renewable energy principles such as day-lighting, passive and active solar heating, natural ventilation, and photo-voltaics where they are life cycle cost effective.

2-12.1 The United States Green Building Council (USGBC) *LEED™ Green Building Rating System* should be used to measure the sustainability of the completed project. It can also be used during planning and design as a source of green building strategies. LEED™ addresses sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. It can be downloaded from USGBC at <http://www.usgbc.org/programs/index.htm>.

2-12.2  See the following Service-specific and general references for more information:

2-12.2.1 For the Navy and Marine Corps, follow the guidance in *ITG FY92 – 02 Design Energy Target Reductions*, NAVFAC Interim Technical Guidance to achieve energy-conserving designs.

2-12.2.2 When specifying products that are included in EPA's list of affirmative procurement guideline items, designers must include the requirement for these products to meet or exceed the recycled material content standards established by EPA. The list of products and their corresponding recycled content requirements are found at

www.epa.gov/cpg/products. Listed products likely to be used in OACs, RCs, and OCORs include building insulation, carpet and cushion, cement and concrete, latex paint, floor tiles, patio blocks, shower and restroom dividers, and structural fiberboard.

2-12.2.3 The “Whole Building Design Guide” www.wbdg.org further explains the environmental issues related to building materials and provides technical guidance on green building material selection.

2-12.3 Design of new facilities must ensure that building energy consumption does not exceed the DoD energy budget figures.

CHAPTER 3
FUNCTIONAL CRITERIA

3-1 **Functional Data Sheets.** Tables 3-1 through 3-17 are the Functional Data Sheets which present a description and the necessary functional criteria for each space within the facility.

TABLE 3-1. SITE AND OUTDOOR EQUIPMENT DISPLAY

Description/ Usage	An exhibit area at the front of the facility that may contain scene displays of equipment or activities which support the facility.
Min. Ceiling Ht.	N/A
Finishes	Walls. N/A Floor. N/A Ceiling. N/A
Plumbing	N/A.
HVAC	N/A
Fire Protection	N/A
Power	Provide outdoor-rated outlets for exhibits.
Lighting	Site lighting for displays and aesthetics.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. None required. Telephone. None required. Data. None required. Security. None required.
Casework	N/A
Furnishings Fixtures & Equipment (FF&E)	N/A
Special Requirements	None required.

TABLE 3-2. ENTRANCE LOBBY

Description/ Usage	This area will serve as the primary entry for the facility and have some space for seating. An air lock is also recommended.
Min. Ceiling Ht.	2.74 m (9 ft.)
Finishes	Walls. Paint w/ eggshell sheen on gypsum wallboard. Limited use of special material finishes such as wood, fabric, or stone. Floor. Stained concrete or vinyl tile. Ceiling. Lay-in acoustical panel. Limited use of gypsum wallboard.
Plumbing	One electric water cooler.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and for water cooler.
Lighting	540 Lux (50 ft. candles).
Communication	CCTV. 1 outlet for camera. CATV/Internal Video. None required. PA/Audio. Provide one speaker. Telephone. Provide one line for pay phone. Data. None required. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	Bench seating.
Special Requirements	Provide a door counter on each patron entrance. When designing an OCOR, approximately 2% of the additional OCOR area (as calculated per Section 2-1.2.3) should be applied to this space.

TABLE 3-3.1. OAC INDOOR EQUIPMENT DISPLAY

Description/ Usage	The center of the facility's activity and main customer area, this space establishes the theme and image to be carried throughout the facility. Its overall appearance must convey the sense of excitement and adventure that accompanies outdoor activities. Integrate activity functions such as climbing walls, etc. into this space where possible. Consider other visual elements such as monitors and windows that allow patrons to view outdoor activities.
Min. Ceiling Ht.	4.57 m (15 ft.) minimum
Finishes	Walls. Display walls. Floor. Carpet in retail areas with harder, more durable materials in circulation space. Ceiling. ACP or none.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and those necessary to operate dedicated equipment.
Lighting	540 Lux (50 ft. candles) general ambient lighting. Consider track/accent lighting, and provide as much daylight as possible.
Communication	CCTV. None required. CATV/Internal Video. Ceiling or wall hung monitors. PA/Audio. Provide speakers throughout. Telephone. Provide one line. Data. ITT Kiosk. Security. None required.
Casework	Adjustable display shelving.
Furnishings Fixtures & Equipment (FF&E)	Modular storage and display cabinets, tables, and chairs.
Special Requirements	Large double-door access to Equipment Storage. If security system is provided, provide outlets for the system in this area.

TABLE 3-3.2. RC INDOOR EQUIPMENT DISPLAY

Description/ Usage	The center of the facility's activity and main customer area, this space establishes the theme and image to be carried throughout the facility. If the RC offers outdoor recreation equipment, its overall appearance should convey the sense of excitement and adventure that accompanies outdoor activities. In these cases, integrate activity functions such as climbing walls, etc. into this space where possible. Consider other visual elements such as monitors and windows that allow patrons to view outdoor activities.
Min. Ceiling Ht.	4.57 m (15 ft.) minimum
Finishes	Walls. Display walls. Floor. Carpet in retail areas with harder, more durable materials in circulation space. Ceiling. ACP or none.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and those necessary to operate dedicated equipment.
Lighting	540 Lux (50 ft. candles) general ambient lighting. Consider track/accent lighting, and provide as much daylight as possible.
Communication	CCTV. None required. CATV/Internal Video. Ceiling or wall hung monitors. PA/Audio. Provide speakers throughout. Telephone. Provide one line. Data. ITT Kiosk. Security. None required.
Casework	Adjustable display shelving.
Furnishings Fixtures & Equipment (FF&E)	Modular storage and display cabinets, tables, and chairs.
Special Requirements	Provide large double-door access to Equipment Storage. When an RC facility stores and displays outdoor recreation equipment separately from home and garden equipment (like an OCOR), increase the area of this space as described for the OCOR in Table 3-3.3. If security system is provided, provide outlets for the system in this area.

TABLE 3-3.3. OCOR INDOOR EQUIPMENT DISPLAY

Description/ Usage	The center of the facility's activity and main customer area, this space establishes the theme and image to be carried throughout the facility. Its overall appearance must convey the sense of excitement and adventure that accompanies outdoor activities. Integrate activity functions such as climbing walls, etc. into this space where possible. Consider other visual elements such as monitors and windows that allow patrons to view outdoor activities. Since the OCOR supports the ORP, the display area for OR equipment must have a distinct identity in terms of design and finishes from the display area for the H&G equipment.
Min. Ceiling Ht.	4.57 m (15 ft.) minimum.
Finishes	Walls. Display walls. Floor. Carpet in retail areas with harder, more durable materials in circulation space. Ceiling. ACP or none.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and those necessary to operated dedicated equipment.
Lighting	540 Lux (50 ft. candles) general ambient lighting. Consider track/accent lighting, and provide as much daylight as possible.
Communication	CCTV. None required. CATV/Internal Video. Ceiling or wall hung monitors. PA/Audio. Provide speakers throughout. Telephone. Provide one line. Data. ITT Kiosk. Security. None required.
Casework	Adjustable display shelving.
Furnishings Fixtures & Equipment (FF&E)	Modular storage and display cabinets, tables, and chairs.
Special Requirements	Large double-door access to Equipment Storage. When designing an OCOR, approximately 45% of the additional OCOR area (as calculated per Section 2-1.2.3) should be applied to this space. If security system is provided, provide outlets for the system in this area.

TABLE 3-4. RESALE AREA

Description/ Usage:	This area is for the display and sale of new equipment or equipment that is no longer used for rentals. This area should compliment the Display Area in its look and feel. This area should also have a direct relationship to the circulation path established for the facility and should be visible from the front door. Consider other visual elements such as monitors that allow patrons to view outdoor activities.
Min. Ceiling Ht.:	4.57 m (15 ft.) minimum.
Finishes:	Walls. Display walls. Floor. Carpet. Ceiling. ACP or none.
Plumbing:	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and those necessary to operated dedicated equipment.
Lighting	540 Lux (50 ft. candles) general ambient lighting. Consider track/accent lighting, and provide as much daylight as possible.
Communication	CCTV. None required. CATV/Internal Video: Ceiling or wall-hung monitors. PA/Audio: Provide speakers throughout. Telephone. Provide one line. Data. ITT Kiosk. Security. None required.
Casework:	Adjustable display shelving.
Furnishings Fixtures & Equipment (FF&E):	Modular storage and display cabinets, clothing racks, tables and chairs.
Special Requirements:	If security system is provided, provide outlets for the system in this area.

TABLE 3-5. CUSTOMER SERVICE AREA

Description/ Usage	This is the primary customer contact point. Functions include activity sign-up and reservations over the phone and in person, general paperwork, gear check-out, and point of sale (POS) for gear sales and services. Staff also uses this area to contract with patrons and vendors and to do research and collect information. Small retail items are displayed here. Should be bright with high ceilings and plenty of natural light.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. A mixture of gypsum wallboard and slat wall. Floor. Durable carpet. Ceiling. Consider gypsum wallboard; ACP; and painted, exposed structure.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code with one additional quad outlet per POS.
Lighting	Lighting levels 860 – 1,290 Lux (80 - 120 ft. candles). Types should include general ambient lighting, task lighting, and flood specific retail lighting.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Provide controls with staff-only access. Telephone. Provide one line per POS. Provide one additional (credit card) line per every two POS. Data. Provide one line per POS. Security. None required.
Casework	Provide a durable, smooth, chemical resistant, and waterproof counter with recessed POS. Include under-counter storage and some display area. Counter width is no less than 610 mm (24 in.). Height is ergonomically correct for doing paperwork while standing.
Furnishings Fixtures & Equipment (FF&E)	Includes one stool, phone, and computer per POS. Also includes small display racks.
Special Requirements	When designing an OCOR, approximately 2% of the additional OCOR area (as calculated per Section 2-1.2.3) should be applied to this space. When designing an RC, the Activity Sign-up function can be eliminated (see Section 2-1.2.3 for more information).

TABLE 3-6. INFORMATION RESOURCE AREA

Description/ Usage	This area should function as part of the Customer Service Area and should be friendly and accessible. Provides reliable information and advice on all local outdoor activities, areas, instruction, and gear. Resources are available to educate the customer or offer information needed for self-directed outdoor activities. This includes videotapes, maps, guidebooks, brochures, gear lists, weather and ski reports, etc. The atmosphere is comfortable, relaxing, and a good place to socialize.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard. Floor. Carpet w/ vinyl base. Ceiling. ACP or gypsum wallboard.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and those necessary to operate dedicated equipment.
Lighting	540 Lux (50 ft. candles)
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. Provide one line. Data. Provide one line. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	TV with video and DVD capability. Sound system with CD Player. Bulletin board. Computer and printer. Soft, high back chairs, sofas, coffee tables, and bookshelves.
Special Requirements	None required.

TABLE 3-7. TRAINING ROOMS/CLASSROOMS

Description/ Usage	These rooms provide meeting and instructional space for facility users. Views to the outside and/or inside activities are important. These rooms may serve as an after-hour gathering point for remote activities. Direct access to the outside and controlled access to the interior will support the gathering function.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard. Floor. VCT with vinyl base. Ceiling. ACP.
Plumbing	Consider providing a small sink (see Casework)
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and additional outlets necessary to operate dedicated equipment.
Lighting	540 Lux (50 ft. candles) ambient lighting from fluorescent fixtures. Dimmable recessed lighting.
Communication	CCTV. None required. CATV/Internal Video. Provide one outlet. PA/Audio. Provide one speaker. Telephone. Provide one outlet. Data. Provide one outlet. Security. None required.
Casework	None required. Consider providing kitchenette area with a counter, sink, and cabinets.
Furnishings Fixtures & Equipment (FF&E)	Tables and chairs. TV with video and DVD capability. Recessed projection screen. Window shade control (blackout). Marker board.
Special Requirements	STC 49 minimum at perimeter walls and partitions.

TABLE 3-8. CUSTOMER DRESSING ROOMS

Description/ Usage	Private area for customers to try on rental gear (such as wet suits and snow suits) and retail clothing prior to rental or purchase. Thematic rooms consistent with the overall theme of the facility.
Min. Ceiling Ht.	2.44 m (8 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard with full-length mirror. Floor. Carpet with vinyl base. Ceiling. ACP or none.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code.
Lighting	540 Lux (50 ft. candles). General ambient lighting.
Communication	CCTV. Not permitted (privacy). CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. None required. Data. None required. Security. None required.
Casework	Provide a sitting feature (continue architectural themes, as appropriate). Provide clothes hanging hooks.
Furnishings Fixtures & Equipment (FF&E)	None required.
Special Requirements	Provide louvered doors for each dressing room.

TABLE 3-9. TOILETS (MALE AND FEMALE)

Description/ Usage	Convenience facilities for patrons and staff.
Min. Ceiling Ht.	2.44 m (8 ft.) minimum.
Finishes	Walls. Ceramic tile on all wet walls to a minimum of 1830 mm (6 ft.) above the finish floor. Gypsum wallboard with enameled paint at all other locations. Floor. Non-slip ceramic tile with integral ceramic tile covered base. Ceiling. Painted gypsum wallboard.
Plumbing	Floor drains, hot and cold domestic water, venting, and other accessories per code. Plumbing equipment: water closets and urinals with flush valves, lavatories with faucets. Hose bib with removable key under lavatory counter.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum. Provide dedicated, 100% exhaust directly to the outside.
Fire Protection	Building system.
Power	Provide outlets per code.
Lighting	540 Lux (50 ft. candles) ambient lighting. Provide additional down light in front of mirror.
Communication	CCTV. None permitted. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. None required. Data. None required. Security. None required.
Casework	Solid-surface countertop with either underhung or integral sink. Solid composite toilet and urinal partitions. Toilet accessories: toilet paper dispensers, toilet seat cover dispensers, paper towel dispenser with integrated trash receptacle, robe hooks, sanitary napkin dispensers, grab bars, and soap dispensers. Mirror.
Furnishings Fixtures & Equipment (FF&E)	None required.
Special Requirements	STC 42 minimum at all perimeter walls and partitions. Ensure accessibility for the physically challenged. Door closer and mop plate required on entrance door.

TABLE 3-10. STAFF OFFICES

Description/ Usage	The director has a private office; other staff in open office plan with systems furniture. Offices are used for planning, developing, organizing, supervising, implementing, promoting, and evaluating the facility operations and a comprehensive outdoor recreation program (OAC and OCOR). The offices should be free from frequent distraction—this is not a customer service area. However, the office area should have a view of the customer service area. The offices should have a professional appearance and a sense of work place.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard. Floor. Carpet w/ vinyl base. Ceiling. ACP.
Plumbing	N/A.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code and one quad outlet per staff. Provide additional outlets as necessary to operate shared equipment such as printers, fax, etc.
Lighting	Lighting levels 860 – 1,290 Lux (80 – 120 ft. candles). General ambient fixtures.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. Provide one line per staff plus one additional line for fax and copier. Data. Provide one line per staff plus one line for each printer, copier, scanner, etc. Security. None required.
Casework	Consider providing work counter space and office supply storage.
Furnishings Fixtures & Equipment (FF&E)	Director's office provided with private office furniture. General office space provided with systems furniture. File Cabinets. Chairs for each workstation.
Special Requirements	Should have exterior windows. The safe is likely in this area. When designing an RC, the Program Manager's office can be eliminated (see Section 2-1.2.3 for more information). If provided, locate controls for CCTV system here.

TABLE 3-11. STAFF BREAK ROOM

Description/ Usage	Lunch room for staff and possibly for informal staffing meetings.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard. Floor. VCT with vinyl base. Ceiling. ACP.
Plumbing	Water supply for sink, coffee machine, and possibly a refrigerator and dishwasher.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code. Provide one additional outlet at counter height for convenience. Provide additional outlets necessary to operate dedicated equipment such as the coffee machine, refrigerator, garbage disposal, dishwasher, and microwave.
Lighting	540 Lux (50 ft. candles)
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. Provide one line. Data. Provide one line. Security. None required.
Casework	Solid-surface countertop
Furnishings Fixtures & Equipment (FF&E)	Table and chairs Bulletin Board with tackable surface.
Special Requirements	

TABLE 3-12. STAFF LOCKERS AND SHOWERS

Description/ Usage	Changing and bathing area for staff and instructors. The staff count for this area needs to include all instructors who may be involved in instruction both at the facility and any remote facilities.
Min. Ceiling Ht.	2.44 m (8 ft.) minimum.
Finishes	Walls. Ceramic tile wainscot w/ painted gypsum wallboard above in locker area with ceramic tile floor to ceiling in showers. Floor. Ceramic tile. Ceiling. Painted gypsum wallboard in locker area.
Plumbing	Water supply for showers, hot water heater, and a water closet and lavatory. Drains for showers, dressing area, and water heater.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code. Provide additional outlets at counter height for convenience of items such as blow dryers and electric razors.
Lighting	540 Lux (50 ft. candles). Provide additional lighting in dressing areas and at countertop.
Communication	CCTV. None permitted. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. None required. Data. None required. Security. None required.
Casework	Solid-surface countertop.
Furnishings Fixtures & Equipment (FF&E)	Mirrors. Double tier metal lockers, ventilated, 460 mm wide by 380 mm deep by 760 mm high (18 in. by 15 in. by 30 in.) minimum size, padlock hasp. Benches.
Special Requirements	Specify appropriate gypsum wallboard for use in wet areas. Might be appropriate to consider a single water closet and lavatory in each area. When designing an RC, the shower component can be eliminated (see Section 2-1.2.3 for more information).

TABLE 3-13. EQUIPMENT REPAIR WITH DROP-OFF

Description/ Usage	Repair area for all types of equipment that is rented. Storage area for tools and some commonly used parts. Equipment pick-up and return area where equipment is checked for damage, cleaned, then returned to rental stock.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard with modular "peg-type" backboard for hanging tools and equipment. Also consider painted CMU or fiber cement paneling. Floor. Sealed concrete. Ceiling. None.
Plumbing	Floor drain.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code. Provide additional outlets for convenience and as necessary for the operation of dedicated equipment. Provide 220v outlets/circuits as necessary for the operation of dedicated equipment such as ski tuners, arc welders, etc.
Lighting	1080 Lux (100 ft. candles) with additional adjustable task lights.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide one speaker. Telephone. Provide one line. Data. Provide one line. Security. None required.
Casework	Plastic laminate countertop as writing surface and computer area. Shelving for parts storage.
Furnishings Fixtures & Equipment (FF&E)	Workbenches with drawers. Modular, lockable cabinets for the storage of tools and valuable parts. Chairs.
Special Requirements	Minimum 1830 mm (6 ft.) wide opening to adjacent storage and exterior drop off area. Consider roll-up doors, budget permitting. Consider a covered drop off.

TABLE 3-14. INSIDE GEAR WASH

Description/ Usage	Cleaning of all rental equipment that is to be stored in the inside equipment storage areas only.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum.
Finishes	Walls. Painted gypsum wallboard. In areas subject to spray washing, consider fiber reinforced epoxy coated CMU or Cement Backer Board. Floor. Sealed Concrete. Ceiling. None.
Plumbing	Water supply for washers, spray units, and service sinks. Provide general floor drains. Provide additional floor drains in wash areas.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum. Exhaust for clothes dryers.
Fire Protection	Building system.
Power	Provide waterproof outlets per code. Provide additional outlets as necessary to operate dedicated equipment.
Lighting	1080 Lux (100 ft. candles). Consider waterproof luminaries.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide a speaker. Telephone. None required. Data. None required. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	Commercial grade washers and dryers. Tables for folding clothing. Pressure washers.
Special Requirements	Provide curbs at wash areas to contain water. Slope floors minimum of 1 percent (.125 in. per 12 in.) to all floor drains.

TABLE 3-15. OUTSIDE GEAR WASH

Description/ Usage	Cleaning of all rental equipment that is to be stored in the outside equipment storage areas only.
Min. Ceiling Ht.	2.74 m (9 ft.) minimum if covered.
Finishes	Walls. None. Floor. Sealed Concrete. Ceiling. None.
Plumbing	Water supply for washers, spray units, and service sinks. Provide additional floor drains in wash areas.
HVAC	None required.
Fire Protection	None required. Verify if covering is provided.
Power	Provide waterproof outlets per code. Provided additional outlets as necessary to operate dedicated equipment.
Lighting	None required.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. None required. Telephone. None required. Data. None required. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	Pressure washers.
Special Requirements	Provide curbs at wash areas to contain water. Slope floors minimum of 1 percent (.125 in. per 12 in.) to all floor drains. Consider covering if budget allows. Provide oil/water separator where equipment using hydrocarbon fuels or lubricants is to be washed.

TABLE 3-16. IN-SEASON AND OFF-SEASON EQUIPMENT STORAGE

Description/ Usage	Storage of all rental equipment. This space should have a warehouse-type character that may also be used as a retail area depending on the approach that is taken to how rental equipment is procured. This area is inclusive of the Large Item Indoor Storage.
Min. Ceiling Ht.	4.57 m (15 ft.) minimum and never less than the Indoor Equipment Display areas.
Finishes	Walls. Painted gypsum wallboard, steel panels, or CMU. (Exposed structure of exterior walls). Floor. Sealed concrete. Ceiling. None.
Plumbing	General floor drains.
HVAC	20 C (68 F) minimum, 26 C (78 F) maximum.
Fire Protection	Building system.
Power	Provide outlets per code.
Lighting	540 Lux (50 ft. candles).
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. Provide speakers as necessary for general coverage. Telephone. Provide one line. Data. None required. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	Storage shelving designed for both general all-purpose storage and the storage of specialty items such as skis, bikes, etc. Storage shelving for large items.
Special Requirements	Overhead beams should be sized and designed to allow for the support of gear. Large access doors to adjacent spaces to facilitate the movement of goods. When designing an OCOR, approximately 35% of the additional OCOR area (as calculated per Section 2-1.2.3) should be applied to this space.

TABLE 3-17. OUTDOOR STORAGE

Description/ Usage	Storage of all rental equipment that is large or by its nature better suited for outside storage. Most or all of the area should be covered.
Min. Ceiling Ht.	4.57 m (15 ft.) minimum when covered.
Finishes	Walls. None required. Floor. Sealed concrete, asphalt, or gravel. Ceiling. None required.
Plumbing	Water supply to a yard hose bib.
HVAC	None required.
Fire Protection	See UFC 3-600-01 for outdoor storage requirements.
Power	Provide outlets per code.
Lighting	None required.
Communication	CCTV. None required. CATV/Internal Video. None required. PA/Audio. None required. Telephone. None required. Data. None required. Security. None required.
Casework	None required.
Furnishings Fixtures & Equipment (FF&E)	Storage shelving designed for both general all-purpose storage and the storage of specialty items such as canoes, kayaks, etc. Storage shelving for large items.
Special Requirements	Walls are not necessary when this area is within the facility security enclosure. Consider fencing when it is not within the facility security enclosure. When designing an OCOR, approximately 16% of the additional OCOR area (as calculated per Section 2-1.2.3) should be applied to this space.

3-2 **SPECIAL ACTIVITY REQUIREMENTS.** Each special activity that is separate from the OAC should have a kiosk to provide information.

3-2.1 **Climbing Wall.** All climbing walls must be in compliance with Outdoor Industry Association Climbing Wall Industry Advisory Council (www.outdoorindustry.org) standards: *Climbing Wall Engineering Standards* and *Climbing Wall Route Setting Guidelines*.

3-2.2 **Fresh and Saltwater Activities.**

3-2.2.1 An outside wash area is available for gear and equipment used in water

3-2.2.2 Equipment such as boats, paddles, motors, dry bags, PFDs wetsuits, etc. used in saltwater are to be rinsed thoroughly with fresh water and completely dried before storing. Saltwater can degrade hull materials and nylon and corrode metal parts. All gear used in fresh water must also be washed to remove sand, water plants, mud, grime, etc.

3-3 **SPECIAL STORAGE REQUIREMENTS.** In all cases follow manufacturer recommendations for equipment storage, maintenance, and care. See Appendix B for more information on special storage requirements.

APPENDIX A

REFERENCES

GOVERNMENT PUBLICATIONS

1. Unified Facilities Criteria Program

http://www.wbdg.org/ccbref/pa_dod.php?category=pa

UFC 1-200-01, Design: General Building Requirements

UFC 3-420-01, Plumbing (this is still in draft but will supersede MIL-HDBK-1003/1)

UFC 3-600-01, Design: Engineering Fire Protection

UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings

2. Naval Facilities Engineering Command
Engineering Innovation and Criteria Office
1510 Gilbert Street
Norfolk, VA 23511

757-322-4200

<http://criteria.navfac.navy.mil>

MIL-HDBK-1003/1, Plumbing (in future will be superseded by UFC 3-420-0)

P-80, Facility Planning Criteria, Navy and Marine Corps Shore Installations

ITG FY92-02, Design Energy Target Reductions

NAVFACINST 11010.45, Comprehensive Regional Planning Instruction

3. Department of the Navy
Morale, Welfare, and Recreation

www.navy.mil

www.mwr.navy.mil

DON Morale, Welfare, and Recreation Master Plan, January 2000

Outdoor Adventure Center Manager's Guide: With Focus on Rentals, February 2001

Outdoor Recreation MWR Program Standards and Metrics

OPNAVINST 11010.20F,
Facilities Projects Manual

Electric Current Abroad

4. Department of Commerce
1401 Constitution Avenue
Washington DC 20230

www.commerce.gov

5. Architectural and Transportation Barriers
Compliance Board (The Access Board)
1331 F Street NW, Suite 1000
Washington DC 20004-1111
800-872-2253 (v)
800-993-2822(tty)
202-272-0081 (fax)
email: info@access-board.gov
www.access-board.gov

Pub Law 90-480, Architectural
Barriers Act

UFAS, Uniform Federal
Accessibility Standards

ADAAG, Americans with
Disabilities Act Accessibility
Guidelines

NON-GOVERNMENT PUBLICATIONS

1. National Fire Protection Association (NFPA)
1 Batterymarch Park,
PO Box 9101
Quincy MA 02269-9101
617-770-3000
www.nfpa.org

NFPA 70, National
Electrical Code

2. National Institute of Building Sciences (NIBS)
1090 Vermont Ave., NW Suite 700
Washington, DC 20005-4905
202-289-7800
www.nibs.org

Whole Building Design
Guide web site
(www.wbdg.org)

3. U.S. Green Building Council (USGBC)
1015 18th Street, NW, Suite 805
Washington, DC 20036
202-828-7422
202-828-5110 (fax)
email: info@usgbc.org
www.usgbc.org

LEED Green Building
Rating System
(www.usgbc.org/programs/index.htm)

4. Outdoor Industry Association
Climbing Wall Industry Advisory Council
3775 Iris Avenue, Suite 5
Boulder CO 80301

Climbing Wall Engineering
Standards

UFC 4-740-03
1 NOVEMBER 2002

303-444-3353
303-444-3284(fax)
email: info@outdoorindustry.org
www.outdoorindustry.org

Climbing Wall Route Setting
Guide

APPENDIX B

SPECIAL STORAGE REQUIREMENTS

B-1 **SPECIAL STORAGE REQUIREMENTS.** The following is background information on special storage requirements for outdoor adventure equipment.

B-1.1 Kayaks.

B-1.1.1 Sunlight can degrade most kayak hull materials, including, fiberglass, plastic, and coated fabric. The best way to protect against sun damage is to store boats inside.

B-1.1.2 Collapsible fabric kayaks are to be disassembled and stored indoors.

B-1.1.3 Storing kayaks indoors will protect them from most weather-related threats with the exception of extreme cold freezing and thawing.

B-1.1.4 Most kayaks will deform or bend (oilcan) over time if the hull is not evenly supported. Plastic and fabric hulls are the most susceptible to damage, but distortion may also occur in fiberglass and wood-hulled boats.

B-1.1.5 Always store kayaks with the weight of the kayak supported over its entire length. The boat should be supported by at least two points along its length, using padded cradles, angled surfaces or wide nylon straps that conform to the curve of the hull.

B-1.1.6 Do not store boats by any of the systems below unless the manufacturer recommends it:

- Supported from its ends only
- Standing up on one end
- Hanging from grab loops
- Laying down on its side on a flat surface
- Stacked on top of each other

B-1.1.7 Excessive heat encourages hull distortion. Do not store any boat near a significant heat source like a furnace or a water heater.

B-1.2 Canoes.

B-1.2.1 With the exception of aluminum boats, sunlight degrades canoe hulls just as it does kayaks.

B-1.2.2 Canoe storage methods are the same as kayaks with the exception that canoes may be stored upside down on their gunnels and supported equally at all points

B-1.2.3 Do not store boats by any of the systems below unless the manufacturer recommends it:

- Supported from its ends only
- Standing up on one end
- Hanging from grab loops, grab handles, or thwarts
- Laying down on it's side on a flat surface
- Stacked on top of each other
- Upside down on the ground

B-1.3 Rafts.

B-1.3.1 Sunlight degrades most raft materials. The best way to protect against sun damage is to store boats inside.

B-1.3.2 Store clean, dry rafts deflated and unfolded on top of each other off the ground and out of the weather.

B-1.4 Sleeping Bags.

B-1.4.1 To maintain loft and insulation properties sleeping bags are stored unrolled, untied, and out of stuff sacks, and compression bags.

B-1.4.2 Stack them on top of each other or hang them off the ground.

B-1.4.3 Bags may be stored in large storage bags manufactured especially for the individual bag's size and weight.

B-1.4.4 Store clean, dry sleeping bags inside and off the floor.