CHAPTER 5

Specific Areas

5.1 Introduction. This chapter provides design guidance for specific types of recreation areas when they are included in new construction or rehabilitation of facilities.

5.2 General Considerations. Chapters 1 and 2 outline general considerations that apply to the design and rehabilitation of specific areas. Three topics that are covered in detail in those chapters are also mentioned here for emphasis.

5.2.1 Universal Accessibility (UA). All new and updated facilities and environments shall be designed to be universally accessible. The target is for 100 percent of facilities such as campsites and picnic sites to be universally accessible. The standard that must be met is that the minimum number of universally accessible facilities such as campsites and picnic sites comply with current UA guidance (Para. 1.19).

5.2.2 Consideration of Seasonal Fluctuations. When designing and developing lake and riverside facilities, seasonal fluctuations in water levels shall be taken into consideration to avoid the placement of facilities in hazardous or high-maintenance areas. When planning lakeside development, the five-year flood frequency is a good general guideline although there may be other factors to consider (Para. 2.2.1).

5.2.3 Utilities Placement. Power and communication lines inside recreation areas should be placed underground. If overhead power lines are absolutely necessary they shall be placed where they will not become a safety hazard and in accordance with ER 1110-2-4401, “Engineering and Design - Clearances for Electric Power Supply Lines and Communication Lines Over Reservoirs” (see also Paras. 2.11.1.3 and 2.11.3).

5.3 Campgrounds. Camping areas are provided at projects as designated in an approved master plan or other approved documents. Various levels of campground development can be provided to satisfy diverse camper preferences. Camper surveys indicate a preference for water-oriented campsites. Table 5.1 contains some general considerations for campgrounds (Drawing C-1).

Table 5.1

Campgrounds – General Considerations	
Physically separated from day use areas	Required
Single point of entry to the campground provided	Required
Designed and developed to offer a variety of facilities and camping experiences	Required
Existing vegetation preserved for screening, buffering, and shade. Climate and geographic location mandate amount of shade and screening that is desirable for each development	Required
Access to sanitary dump station provided (except primitive areas) (Para. 3.8, Drawing C-8, Photos L-4 and L-5)	Required
Additional (or dual) sanitary dump stations provided for campgrounds with more than 125 sites	Recommended
Automatic gates that can be operated from inside the entrance station and that allow after-hours departures (Photo J-11)	Recommended
All campsites in an area have firm and stable access routes to the hardened living area	Required
All Park Attendant campsites in the campground are universally accessible	Required
RV sites placed on relatively flat areas to avoid: - Sloped sites that will not accommodate RVs - Excessive site work required to create level site	Recommended
Camping spurs should follow existing topography (Photos M-7 and M-8)	Recommended
Use more rugged terrain with fewer level areas for more primitive campsite developments	Optional

5.3.1 Campsite Types and Placement. Campgrounds may be developed with a range of campsite types from fairly primitive tent-only sites to highly developed multipurpose sites that will accommodate modern recreational vehicles (Drawings C-4, C-5, C-6, and C-7). Campgrounds may also include group and multi-unit campsites (Photo M-12). This provides a diversity of camping opportunities to accommodate different user types and groups, including persons with disabilities (Photos M-5 and M-6). Campsites may also be more efficiently sited within a campground

by utilizing a range of campsite types with differing spatial and spacing requirements.

5.3.1.1 Group Campsites. Where feasible, group campsites may be provided within a campground or in close proximity to an existing campground (Photo M-12). Ideally, group sites should be located some distance from other campers to prevent noise conflicts. Communal facilities such as shelters with picnic tables and group grill, shower houses, campfire circles, and open gathering spaces may be included in these areas.

5.3.1.2 Park Attendant and Volunteer Campground Host Campsites. Campsites of this type should be located near the campground entrance, preferably inside the gates (Photo M-13). This facilitates attendants' observation of both the entrance station and activities within the campground, and helps campers easily locate attendants in the event of an emergency. While the configuration of these sites may be similar to other campsites within a campground, they should be separate and screened for privacy.

5.3.2 Campsite Amenities and Support Items. Table 5.2 summarizes amenities and support items to be provided for typical multi-purpose campsites, tent-only sites, and campsites designated for Park Attendants including Volunteer Hosts. Guidelines for many of these items are addressed in Chapter 4 – "Support Items," the remainder are outlined in later sections of this chapter.

Table 5.2

Campsite Amenities and Support Item Checklist				
Item	**Multi-Purpose Site**	**Park Attendant Site**	**Tent-Only Site**	**Group Site**
Hardened impact area	Required	Required	Required	Required
Water (within 500 ft (152 m))	Required	Required	Recommended	Required
Picnic table	Required	Required	Required	Required
Fire ring/grill	Required	Required	Required	Required
Lantern hanger	Required	Required	Required	Required

Campsite Amenities and Support Item Checklist				
Item	**Multi-Purpose Site**	**Park Attendant Site**	**Tent-Only Site**	**Group Site**
Restroom (within 500 ft (152 m))	Required	Recommended	Required (except for primitive sites)	Required
Trash service	Required	Required	Required (except for primitive sites)	Required
Level parking spur	Required	Required	Recommended	Required
Access to additional parking	Required	Required	Optional	Required
Additional on-site parking (1-3 spaces)	Recommended	Recommended	Optional	Required
Individual water hookup	Recommended	Required	Optional	Optional
Individual electrical hookup	Recommended	Required	Optional	Optional
Individual sewage hookup	Optional	Required	Optional	Optional
Utility table	Optional	Recommended	Optional	Recommended
Pedestal grill	Optional	Optional	Optional	Optional
Group grill	Optional	N/A	Optional	Required
Tent pad (minimum 16 ft X 16 ft)	Optional	Optional	Optional	Optional
Shower house access	Recommended	Optional	Recommended	Recommended
RV pull through	Optional	Optional	N/A	Optional
Level, hardened spur for RV	Recommended	Required	N/A	Recommended

Campsite Amenities and Support Item Checklist				
Item	**Multi-Purpose Site**	**Park Attendant Site**	**Tent-Only Site**	**Group Site**
Multi-unit sites (Drawing C-5) (# based on user demand)	Optional	N/A	Optional	N/A
Individual shade shelter	Optional	Optional	Optional	Optional
Group shelter	Optional	N/A	N/A	Recommended
Small storage building	N/A	Recommended	N/A	N/A
Dedicated telephone line	N/A	Required	N/A	N/A

5.3.3 Campsite Design Guidelines. Table 5.3 provides general guidelines for individual campsite design.

Table 5.3

Campsite Design Guidelines (Drawing C-4)		
Item	**Criteria**	**Clarification**
Minimum width of vehicle spur	12 ft (3.7 m) Required	Widths greater than 12 ft (3.7 m) encouraged to provide extra parking at the site
Back-in campsite, standard length where terrain allows	Minimum 70 ft (21 m) Required	Site length measured from edge of road at the shortest side of the campsite. Shorter lengths acceptable if terrain and land base restrictions dictate. At least 30 ft (9.1 m) (where the RV will park) shall be level.
Back-in campsite alignment	40-60 deg angle Recommended	Angle measured from center line of road

Campsite Design Guidelines (Drawing C-4)		
Item	**Criteria**	**Clarification**
Pull-through campsite, spur width	Minimum 12 ft (3.7 m) wide Required	With 30-ft minimum turning radius in camping unit parking area measured from edge of road at the shortest side of the campsite
Pull-through campsite, parking area length	Minimum 70 ft (21 m) Required	Minimum length of parking area within the pull-through, measured from edge of road at the shortest side of the campsite
Pull-through campsite access	On right side of road Recommended	On right side of road when facing direction of traffic flow, so that RV living area faces away from the road
Campsite spacing, standard when terrain allows	Minimum 50-100 ft (15.2-30.5 m) Recommended	Measured center-to-center. Center defined as middle point of the hardened living area and hardened parking area combined
Campsite spacing, minimum overall average regardless of terrain	Minimum 75 ft (22.9 m) Recommended	Minimum overall average of center-to-center campsite distances in any one campground
Vertical curve	15 ft (4.6 m) Recommended	Measured from access road intersection with spur, when greater than 5 degrees up- or down-slope from access road to spur (Drawing C-5)
Placement of low-profile wheel stop	Minimum of 1 ft (0.3 m) from back edge of site Recommended	Wheel stop itself is optional. If placed, this is the recommended location
Campsite parking material	Crusher run or graded aggregate base rock Recommended	For ease of maintenance, initial economy, customer convenience

Campsite Design Guidelines (Drawing C-4)		
Item	**Criteria**	**Clarification**
Parking spaces for additional vehicles	Recommended	Built into the site as space allows
Natural buffer between campsites	Optional	Buffer of plants or trees (either existing or planted) encouraged where practical

5.3.3.1 Hardened Living Areas. The configuration of the campsite living area is dependent upon terrain, vegetation, or placement of the individual site amenities. The living area should fit within the site, conforming to the existing character as much as possible. Limited use of stair-stepped or terraced configurations in the living area is permissible when necessary due to terrain, and the living area may be sited in close proximity to existing trees or vegetation. Table 5.4 provides guidance for hardened living areas (Photos M-1, M-4, M-5, and M-6).

Table 5.4

Campsite Hardened Living Areas Checklist (Drawings C-4, C-6, and C-7)	
A hardened living area with a fine crushed stone or other hard surface provided for each campsite	Required
Bordered by concrete curbing, plastic timbers, or other approved materials	Required
Located on the passenger side of a back-in or pull-through spur	Required
Covers an area up to 625 ft^2 (62 m^2)	Required
An 18-ft (6.1 m) unobstructed area, measured from the utility pedestals into the hardened area, provided to accommodate RV slide-outs	Recommended

5.3.3.2 Utilities. Table 5.5 provides guidance for placement of utilities for campsites.

5.3.3.3 Tent Pads. Tent pads may be provided at selected campsites. The location of tent pads may vary due to terrain or existing vegetation. Table 5.6 provides guidance for tent pads.

Table 5.5

Utilities Checklist (Drawings C-4, C-6, and C-7)	
Water (Also reference Table 4.4 for location/placement and construction and design features)	
As a minimum, one water spigot shall be provided per four campsites.	Required
Electric Pedestals	
Have 50-, 30-, and 20-amp (GFCI) hookups located at the pedestal (Photo M-15)	Required
Located: - Eleven ft from the center of the pad - Between 5 and 15 ft (1.5 and 4.6 m) from the back of the pad - At the driver side rear of the campsite	Required
Sewer Hookups	
Provided at individual sites where demand exists and local factors allow for installation	Optional
Where provided, sewer hookups located on the driver side minimum of 5 ft (1.5 m) forward of the utility pedestal	Recommended

Table 5.6

Tent Pads Checklist	
Have a hardened surface to provide a durable all-weather surface for campers. Crushed stone (screenings) is recommended surface	Required
Bordered by concrete curbing, plastic timbers, or other approved materials	Required
Minimum of 16 ft x 16 ft (4.9 m x 4.9 m) standard size	Required
Can be detached from the living area as long as the tent pad remains in close proximity with a pathway connecting both elements	Optional

5.4 Day Use Areas. Day use areas are provided at projects as designated in an approved master plan or other approved documents. Typical day use activities include picnicking, swimming, and boat launching (Drawings D-1 and D-2). Water

frontage, shade, and an aesthetic view enhance day use activities. Table 5.7 contains general considerations for day use areas. Guidance for specific types of day use areas is provided in the sections that follow.

Table 5.7

Day Use Areas – General Considerations (Drawings D-1 and D-2)	
Physically separated from campgrounds, marinas, or other types of potentially conflicting uses	Required
Activities and facilities easily accessible by vehicles and pedestrians	Required
Convenient, adequate parking provided	Required
Existing vegetation preserved for screening, buffering, and shade. Climate and geographic location mandate amount of shade that is desirable for each development.	Required
Designed to provide natural settings and to protect the environment	Required
At major day use areas, automatic gates which can be operated from inside the entrance station	Recommended

5.4.1 Boat Launch Ramps / Lake and River Access. Boat launch ramps shall provide convenient and safe public access to the water (Drawings E-1 and E-2). Table 5.8 provides guidance on design features for these facilities. Additional information on ramps and ramp facilities is available in EM 1110-2-410, Chapter 4.

Table 5.8

Boat Launch Ramps/Lake And River Access Design Features	
General (Photos N-1, N-2, N-3, and N-4)	
Each lake provides ramp access for extreme high and low water conditions	Recommended
Upper limit of launch lane extends a minimum of 1 ft (0.3 m) above ordinary high water elevation (Drawing E-3)	Recommended
Lower limit of a launch lane extends a minimum of 4 ft (1.2 m) below the typical low water elevation (Drawing E-3)	Recommended
Minimum launch lane width of 15 ft (4.6 m) (Drawings E-4 and E-5)	Required

Boat Launch Ramps/Lake And River Access Design Features	
General (Photos N-1, N-2, N-3, and N-4)	
Launch ramp slopes (Drawing E-3): - Minimum of 12 percent - Maximum of 16 percent	Required
Launch ramps' placement avoids areas subject to high wind and wave action, strong currents or high sedimentation	Recommended
Reinforced retaining walls not less than 1 ft (0.3 m) thick and 2 ft (0.6) deep constructed at the edges of all poured-in-place ramps to prevent undercutting (Drawing E-6)	Recommended
All launch ramp sites protected from wave erosion. Ramps with: - Low exposure use riprap or quarry run rock at a minimum - Moderate exposure incorporates breakwaters or jetties	Recommended
Capacity (Drawings E-4 and E-5)	
Minimum of two lanes for standard launch ramps, with actual number of lanes determined by usage demand (Photo N-2)	Required
Additional launch lanes considered where launch line waiting time exceeds 10 min during peak periods, and carrying capacity makes additional lanes feasible (Photo N-1)	Recommended
Approach	
Access roads to launch ramps require a deliberate turn from the approach onto the ramp (Drawing E-2). If a deliberate turn is not possible, use traffic control devices such as barricades, traffic islands, or berms to alert drivers that access roads are in direct alignment with the ramp	Required
A vertical curve (minimum of 15 ft (4.6 m)) constructed at the top of the ramp to: - Enhance the driver's vision while backing a trailer - Prevent dragging on the ramp surface at the juncture of the ramp apron (Drawing E-3)	Required
A ramp approach apron turnaround included with a minimum diameter of 75 ft (22.9 m) (Drawing E-4)	Recommended

Boat Launch Ramps/Lake And River Access Design Features	
Surface & Materials	
Launch ramp and ramp approach turnaround apron constructed of reinforced concrete: minimum thickness of 6 in. over a 6-in. base of compacted aggregate	Required
A finished launch ramp surface of 1 in. by 1-in. "V" grooves to provide maximum traction and make the surface self-cleaning: - Aligned at 60 degrees to the longitudinal axis - "V" groove direction alternated from lane to lane to aid in launch lane delineation (Drawing E-4)	Required
Poured-in-place concrete ramps preferred. Pre-cast concrete units used where site conditions dictate.	Recommended
Access & Amenities	
Courtesy Docks provided (Para. 5.4.2)	Required
UA loading platform or other UA boarding means provided (additional information at NRM Gateway Website on the "Accessibility" page) (Drawings E-1 and E-2, Photos N-11 and N-12)	Required
Area lighting illuminates the launch ramp, parking area, and tie-down area	Required
Water safety, emergency phone numbers, and Title 36 regulations posted on protected bulletin boards that are located so that boaters see them before entering the water (Drawings E-1 and E-2)	Required
Restroom provided within 500 ft (152 m)	Required
Ramp sites easily accessible from main access roads	Recommended
Tie-down lane, turnout or temporary parking spaces for boat rigging and de-rigging provided at each launch ramp area to minimize traffic congestion at the approach and exit. Room to park and walk around vehicle and trailer out of the traffic lanes provided (14 x 100 ft (4.2 x 30.5 m) minimum) (Drawings E-1 and E-2, Photo N-4)	Recommended
Reflectors and/or painted lines used to delineate boat launching lanes	Recommended

Boat Launch Ramps/Lake And River Access Design Features	
Access & Amenities	
Flexible markers installed along the exterior edges to help boaters identify the ramp's edge	Optional

5.4.2 Courtesy Docks. Courtesy docks shall be provided at launch ramps for short-term docking, loading of gear, and passenger safety and convenience. Docks shall have a minimum width of 6 ft (1.8 m) and a minimum length of 20 ft (6.1 m). Docks should be located to avoid boat traffic congestion and ensure continued use of the ramp. Fixed piers or stationary loading docks should be used if the water fluctuation difference is less than 3 ft or when wind, wave, and rapid current action make other types impractical. Portable facilities such as floating docks, cable- guided docks, and push-pull docks on skids, or multilevel fixed piers should be used when water levels fluctuate more than 3-ft. Table 5.9 contains design guidance for courtesy docks.

Table 5.9

Courtesy Dock and Fishing Pier/Dock Design Features (Drawings F-1, F-2, F-3, and F-4) (Photos N-5, N-6, N-7, N-8, N-9, and N-10)	
General	
Maximum height of the deck above the water is 30 in. (0.8 m)	Required
Rust-resistant hardware	Required
Non-skid decking surface	Required
Rot-resistant construction materials	Required
Facility type: - Fixed pier where water fluctuates less than 3 ft (0.9 m) - Floating docks and platforms where water fluctuates more than 3 ft (0.9 m)	Recommended
Sidewalk access to docks (minimum 5 ft (1.5 m) wide)	Recommended
Flotation	
Fully encapsulated units resistant to oil, gas, marine organisms, and ultraviolet light	Required
Flotation units do not become waterlogged if punctured	Required
Gangways	
Minimum width 48 in. (1.2 m)	Required

Courtesy Dock and Fishing Pier/Dock Design Features (Drawings F-1, F-2, F-3, and F-4) (Photos N-5, N-6, N-7, N-8, N-9, and N-10)	
Gangways	
Handrails (34 in. high (0.9 m)) located on both sides if slope greater than 1:20 for UA. Guardrails 42 in. (1 m) high with an intermediate rail 21 in. (0.5 m) high (Drawing F-4)	Required
Capability to withstand a minimum live load of 50 psf (2393 pascal)	Required
Maximum gap height between the structure and the gangway lip not to exceed 1 in. for UA	Required
Attachments of the gangway to the dock, pier, or platform centered	Recommended
Special Considerations for Fishing Piers/Docks (Drawing F-3) (Photos N-13, N-14, N-15, N-16, N-17, and N-18)	
Fishing facilities such as piers and docks sized to carrying capacity and demonstrated need	Required
When safety railing is installed, 42 in. (1 m) high with a mid-rail 21 in. (0.5 m) high is the standard height, with lower sections dispersed throughout for UA	Required
Fishing rod notches are encouraged, spaced a maximum of 6 ft (1.8 m) apart (Photos N-17 and N-18)	Recommended

5.4.3 Shoreline Access and Fishing Facilities. Fishing platforms, piers, and docks are encouraged to enhance shoreline access and fishing opportunities. Where sufficient demand exists, fishing facility accommodations may be provided in conjunction with parking areas, picnic areas, and campgrounds. However, care should be taken to avoid interference with non-compatible facilities such as swim areas, boat ramps, or operational structures. Fishing facilities should be sited a minimum distance of 200 ft (61 m) from the edge of restricted use zones. Typical fishing access improvements may include:

- Road access.
- Parking area.
- Sanitary facilities.
- Trash facilities.
- Drinking water.
- Fee collection facilities.

- Signs and bulletin boards.
- Gate, fence, or other restrictive barrier.
- Fish-cleaning station.
- Fixed fishing pier.
- Floating fishing facility or icehouse.

Table 5.9 contains guidelines for fishing piers and docks. Table 5.10 contains guidelines for shoreline access and other fishing facilities.

Table 5.10

Shoreline Access and Fishing Facility Design Features	
Safe access to shoreline fishing developed in accordance with current UA standards, with target of 100% accessibility	Required
Where UA not possible, access may be: - Steps - Ramps - Grouted riprap	Required
Handrails provided in conjunction with stairways or ramps	Required
All concrete surfaces have rough-broom finish	Required
Located in areas that are safely and easily accessible to users, with adequate parking	Recommended
Fish habitat provided near the facility to improve fishing opportunities	Recommended
Of the possible amenities, emphasis on provision of: - Seating - Fishing wells - Fish-cleaning stations (Para. 3.7) - Shade - Trash receptacles	Recommended

5.4.4 Designated Swim Areas. Designated swim areas may be provided at lakes and rivers as authorized in the project master plan or other approved documents. Swim areas may be designed in support of multiple use activities, as single use areas, for use by a specific group or in conjunction with facilities such as shelters. Designs with moderate slopes allow for larger areas to be delineated and provide greater dispersion of swimmers. Historic water levels during the typical operating season should be assessed prior to final site selection. The slope of the land both above and below the water line is one of the determining

factors in the site selection for a good swim area. Moderate slopes are preferred because they allow larger areas to be buoyed to provide for greater dispersion of swimmers.

5.4.4.1 Swim Area Capacities. Swim area sizing should be based on the assumption that approximately 60 percent of the total number of bathers will be on the swim area at one time, with 30 percent in the water and 10 percent elsewhere. As a rule of thumb, a turnover factor of 3 will be used for design purposes. Ideally 50 ft^2 of sand and turf and 30 square feet of swimming area inside the buoyed safety area should be provided for each person. Swim area capacities will vary according to the attendance, supervision, size of swim area, anticipated usage, and type of swim area experience desired. Any space standard used to compute swim area capacity should be flexible enough to accommodate these factors. Parking areas should be sized to prevent overcrowding of swim areas.

5.4.4.2 Swim Area Design and Safety. Water quality and swim area planning must go hand in hand. The effects of the proposed swim area's physical site features on future operation and maintenance requirements must be considered as well. Safety of all users is the controlling factor at designated swim areas. It is paramount that the underwater swim area gradient be smooth and constant and that the underwater limit of this gradient be delineated in a manner that the user can easily recognize. These criteria meet user expectations for safe wading in a visually identified area. Table 5.11 contains swim area design and safety guidelines.

Table 5.11

Swim Area Design Guidelines (Drawings G-1, G-2, G-3, and G-4) (Photos O-1 and O-2)	
Pollution Protection & Water Quality	
Barriers and coves often offer protection against wind and wave action, but dead-water coves should be avoided. Swim areas shall be located where adequate water circulation is present to: - Assure continued acceptable water quality - Remove surface debris that may deposit on the swim area	Required
Swim area sites located in areas where extensive sedimentation will not be a problem	Required

Swim Area Design Guidelines (Drawings G-1, G-2, G-3, and G-4) (Photos O-1 and O-2)	
Pollution Protection & Water Quality	
Design of swim areas provides protection from boats, fuel spillage, and drainage from sewage and boat wakes	Required
Runoff and drainage with pollution potential from any area upland of the swim area must be diverted.	Required
Diversion methods should complement the swim area development and minimize impact to the site. Acceptable diversion methods include: - Grassed swales - Terracing - Inlets - Landscaped walls	Recommended
Gradient (Drawing G-4)	
Daily, seasonal, and yearly water level fluctuations due to irrigation, flood control, evaporation, power generation, or other factors must be considered in swim area design to assure optimum utilization	Required
Swim area gradient smooth and constant, without underwater obstructions, and designed to eliminate sudden changes in grade or drop-offs in the 0 to 5-ft (0 to 1.5-m) depth	Required
Slopes in the underwater portion of swim areas: - Range from 2% to 5% - Do not exceed 10%	Required
The maintained underwater gradient shall extend a minimum of 10 ft (3 m) beyond the delineated swim area	Required
The maintained underwater gradient shall be designed for water depths not to exceed 6 vertical ft (1.8 m) at the normal pool elevation typically experienced during the swimming season	Required
Delineation & Safety (Drawing G-3)	
Swim area limits shall be delineated (Photo O-1). Options include: - Floating pipeline - Buoy line	Required

Swim Area Design Guidelines (Drawings G-1, G-2, G-3, and G-4) (Photos O-1 and O-2)	
Delineation & Safety (Drawing G-3)	
A minimum of two depth markers (delineating each 1-ft (0.3-m) change in water depth) installed in the designated swimming area. The number of depth markers installed adequate for all water users to determine the water depth (Photo O-1)	Required
The recommended water depth within the delineated swim area is 3-ft (0.9-m), and should not exceed 5-ft (1.5-m)	Recommended
A minimum of 2 “Boats Keep Out” buoys installed not less than 100-ft (30.5-m) beyond the delineated swim area	Required
Water safety, emergency phone numbers, and Title 36 regulations posted on protected bulletin boards that are located so that swimmers see them before entering the area	Required
An effective means of communication for emergency services such as a nearby pay phone or call box provided at each designated swim area	Recommended
Life-saving devices such as a ring buoy and line, and/or a 10- to 12-ft (3- to 3.7-m) pole (shepherd’s hook) may be located at designated swim areas	Optional
Beach Surface	
Sand beach locations usually need a minimum depth of 20 in. (0.5 m) of sand	Recommended
A compacted gravel base for sand beaches overlying silt to prevent mud rising through the sand layer	Recommended
Concrete beaches may be installed	Optional

5.4.4.3 Swim Area Amenities. Swim areas are integral parts of many recreation area developments and should offer customer-focused amenities. Table 5.12 is a swim area amenities checklist.

Table 5.12

Swim Area Amenities Checklist (Drawings G-1 and G-2)	
Restrooms within 500 ft (152 m) of all designated swim areas (Table 3.3)	Required
Change facility or shower house provided (Para. 3.6, Photos K-12, K-13, and K-14)	Recommended
Swim areas developed with vehicular access in mind: - Vehicular access points do not interfere with other uses, create safety hazards, or adversely impact the area - Design teams consider entrances that are separated from other uses, and allow operational staff to control access into the swim area	Recommended
Parking areas located within 500 ft (152 m) of the swim area	Recommended
Parking requirements based on swim area capacity (Table 2.4)	Recommended
Walkways, ramps, and stairs provided between parking areas, support facilities and the swim area. A firm and stable path to the ordinary high-water mark provided to allow users to cross sand and other obstacles to the water	Recommended
Adequate seating provided to encourage adult supervision. Approximately 50% of seating areas should be shaded through vegetation, shelters, arbors, or other means	Recommended
Trash collection facilities convenient to the swim area to reduce the need for swim area cleanup	Recommended
When practical, a grass sunbathing area may be provided adjacent to the swim area and separated from parking areas with an adequate buffer zone. Shading of the grass area should not exceed 50%. Existing trees preserved where practical	Optional
In highuse areas, consideration should be given to screening the beach from the parking lot and access road to discourage cruising and resulting traffic problems	Optional

5.4.5 Picnic Sites. Table 5.13 provides guidelines for individual and multi-table picnic sites. Group shelter

guidelines may be referenced at paragraph 3.4. Single or Multi-Table Picnic Site Amenities. Table 5.14 is a checklist of amenities for a standard picnic site.

Table 5.13

Picnic Site Design Guidelines (Drawing H-2)	
Separated from non-compatible uses such as campgrounds and marinas by a minimum of 200 ft (61 m)	Required
Scattered throughout a day use area, and developed to provide water frontage, shade and aesthetic views	Recommended
Located within 500 ft (152 m) of a restroom facility	Recommended
Trees or structures shade at least 50% of sites (Photos P-11, P-12, and P-13)	Recommended
Located in conjunction with other amenities like swim areas, open fields, and playgrounds	Recommended
Located at least 50 ft (15.2 m) from main park circulation roads	Recommended
Parking located from 40 to 200 ft (12.2 to 61 m)from the picnic site	Recommended
Picnic sites separated a minimum of 30 ft (9.1 m) from center to center of hardened pad	Recommended
In addition to individual picnic sites, consider multi-table picnic sites of 2-6 tables to accommodate customer demand (Photo P-14)	Recommended

Table 5.14

Picnic Site Amenities Checklist (Drawing H-2)	
Access to trash facilities. At parks using individual trash receptacles, one container provided for every four tables	Required
Pedestal grill	Required
Access to drinking water	Recommended
At a multi-table site, a larger grill should be provided (Photos P-5, P-8, P-10)	Recommended
Concrete pad and/or shelter (shade) (Photos P-11 and P-12)	Optional

5.4.6 Playgrounds. Playgrounds should be integrated within the site with access to parking and safe pedestrian access routes that provide separation from vehicular traffic. Playgrounds should be located in close proximity to other high-use activities such as group use facilities. The shape or limits of playgrounds are influenced by the existing conditions of the site and the play components that are provided. The playground area may be defined to allow the placement of desirable trees within the limits of the playground to provide shade. The National Recreation and Parks Association (NRPA) is a good source of information on playground safety and inspector certification. The Architectural and Transportation Barriers Compliance Board ("Access Board") has developed accessibility guidelines for newly constructed and altered play areas that supplement the Americans with Disabilities Act Accessibility Guidelines (ADAAG) (see NRM Gateway Website on the "Accessibility" page, "Policy and Procedures" at http://corpslakes.usace.army.mil/employees/policy.cfm?Id=access&Code=All).
Table 5.15 contains playground design guidelines (Photos Q-1, Q-2, Q-3, and Q-4).

Table 5.15

Playground Design Guidelines	
All play areas, surfaces, and facilities shall meet: - Consumer Product Safety Commission (CPSC) guidelines for safety - American Society for Testing and Materials (ASTM) Standard Consumer Safety Performance Specifications for Playground Equipment for Public Use - When in conflict, the stricter standard will prevail	Required
Benches shall be provided at every playground, to encourage adult supervision of children. At least one to be located in the shade	Required
Restroom located within 500 ft (152 m)	Required
Drinking fountain provided near the playground	Required
Site graded for adequate drainage	Required
Slides positioned to face north or east in order to avoid heat from southern or western sun exposure	Recommended
Low tree limbs removed to discourage climbing	Recommended

Playground Design Guidelines	
Play area built above the ground with edge material raising the finished grade of the playground area a minimum of 6 in. (150 mm), bordered by concrete curbing, plastic timbers, or other approved materials	Recommended
Provide a separation of uses for children between the ages of 3 and 5 and the ages of 6 and 13 when possible	Recommended
Safety, low maintenance, and durability are primary concerns in choosing playground equipment. Pre-manufactured, modular, commercial-grade equipment is the most durable in most instances.	Recommended
Minimum of one playground provided for each park where activities such as camping or picnicking take place	Recommended
Located a minimum of 50 ft (15.2 m) from any roadway	Recommended
Trees or structures shade approximately 50% of the playground from direct sunlight	Recommended

5.4.7 Open-Field Play Areas. Open-field play areas typically support team sport activities such as soccer, volleyball, and badminton, and serve large groups and extended family gatherings. Two to four acres of open-field should be provided for these activities where demand exists and terrain permits. Open-field play areas should be provided for all age groups, with consideration given to participation by persons with disabilities. These areas shall be designed with distinct boundaries to separate users from spectators and minimize environmental impacts. Table 5.16 contains open-field play area guidelines (Photos Q-5 and Q-6).

Table 5.16

Open-field Play Area Guidelines	
Open-field play areas located in conjunction with other facilities such as parking, restrooms, and group shelters	Recommended
Consider additional amenities such as benches, trash receptacles, trails, fencing and lights for nighttime activities	Recommended
Areas sited so that the need for pedestrians to cross roadways is eliminated	Recommended

Open-field Play Area Guidelines	
Where pedestrian crossings do occur: - Provide an adequate line of sight and stopping distance along the roadway - Adequately sign and mark crossings - Consider use of speed-control devices such as rumble strips or speed bumps	Recommended
Game facilities such as volleyball, badminton, soccer, and softball each should be orientated in a north/south direction to prevent participants from looking directly into the sun in the morning and evening	Recommended

5.4.8 Interpretive Facilities. Interpretive facilities may be used to interpret man-made, natural, and cultural resources. They may also be provided to interpret major lake features, resources, events, Corps history and mission, or management practices.

5.4.8.1 Amphitheaters. Amphitheater facilities should be constructed of materials that are indigenous to the site or reminiscent of a local character and style so that the structure blends with the natural environment of the park. Durable construction materials that can withstand exposure to weather and the year-round impacts of users should be used (Photo M-16). Table 5.17 contains amphitheater design guidelines (Drawing C-10).

Table 5.17

Amphitheater Design Guidelines	
Sited to minimize distracting noises from boats, campsites, or other activities	Required
Impact areas such as walkways, aisles and the area in front of benches surfaced with gravel or crushed stone to provide a firm and stable surface	Required
Accessible seating areas and companion seats	Required
Permanent seating provided, fanning out from the stage	Recommended
Seating capacity: One seating space per campsite, day use site, or average number of group users at the facility being served	Recommended
Target audience has easy access from a trail or road	Recommended

Amphitheater Design Guidelines	
Located within 500 ft (152 m) of a parking area or pedestrian access	Recommended
Sited in a north-south direction to avoid direct exposure to the late afternoon sun	Recommended
Slope of the site does not exceed 30 degrees	Recommended
A flat or gently sloped area included within the area for lawn chairs, blankets, etc.	Recommended
Fire rings located downwind from the screen and seating area	Recommended
Vehicle and exterior lights screened to prevent them from shining on the projection screen or stage area	Recommended
Lighting with adjustable illumination levels provided along walking paths and in the stage area	Recommended
Drinking fountain and restroom provided within 500 ft (152 m)	Recommended
Stage/backdrop provided for use during slide shows or movies	Recommended
Projection screen no larger than 12 ft x 12 ft (3.7 m x 3.7 m), painted flat white surrounded with a dull black border	Recommended
Electricity with GFCI provided to support necessary equipment, with all electrical outlets and switches protected to prevent vandalism and misuse	Recommended
A speaker podium, stage area, campfire circle, and lockable storage area for supporting equipment may be provided	Optional

5.4.8.2 Campfire Circles. Campfire circles are interpretive facilities that are located near group gathering areas or interpretive facilities. One or more campfire circles may be located in an area served by a larger amphitheater for presentations without audiovisual support, including user-initiated activities. A 10-ft (3-m) vertical clear space above the campfire circle should be provided to avoid damage to trees. Campfire circles should be constructed on a coarse aggregate porous base to promote drainage.

5.4.8.3 Kiosks. Kiosks are stand-alone interpretive structures that may serve a variety of purposes within recreation areas. They are typically comprised of a covered structure with provisions for small bulletin boards, and pockets for distribution of information. Provision of Internet service may be considered. Kiosks typically display both permanent and

temporary information, and may include: emergency phone numbers, hours of operation, general park information, Title 36 regulations, special events, location maps, site features, camping registration and fees. Table 5.18 contains kiosk design guidelines.

Table 5.18

Kiosk Design Guidelines	
Kiosks shall be located in selected areas of high activity where interpretation can be effective, and many people will have access to the posted information. Ideal locations include main entrances near parking areas, trailheads, and group picnic sites or restrooms	Required
The kiosk area as well as the materials posted on the kiosk must meet UA requirements (posted height of materials, font, etc.)	Required
Provide bilingual or multilingual information where appropriate	Recommended
During the evening hours, a light source should be provided so that the kiosk is readable and safe in low light conditions	Recommended
Kiosks may include multimedia presentations	Optional

5.4.8.4 Bulletin Boards. Bulletin boards can be used to display permanent or temporary information. Table 5.19 contains design guidelines for bulletin boards.

Table 5.19

Bulletin Board Design Guidelines	
As a minimum, a secured bulletin board, protected from the elements (i.e. provide a roof overhang and/or lexan cover) installed in each recreation area	Required
Roof overhangs constructed to provide adequate clearance to prevent injury to customers	Required
The bulletin board shall meet UA requirements. The materials posted shall also meet UA requirements (posted height of materials, font, etc.)	Required
Provide bilingual or multilingual information where appropriate	Recommended

Bulletin Board Design Guidelines	
Bulletin boards may be freestanding, mounted on existing exterior structures (Photo I-6), or installed in buildings	Optional

5.4.8.5 Wayside Exhibits/Overlooks. Table 5.20 contains design guidelines for wayside exhibits and overlooks.

- Wayside Exhibits. Wayside exhibits are a form of interpretive signage that may include plaques and markers along roadways or at scenic overlooks. Wayside exhibits provide interpretation without the service of staff members. The information on these panels is usually permanent and specific to the location.
- Overlooks. Overlooks are usually larger scale interpretive areas that may be developed to provide a view of features with outstanding scenic value, unique interest to the visitor, or a view of a lake.

Table 5.20

Wayside Exhibits and Overlooks Design Guidelines	
Location	
Waysides and overlooks adjacent to steep slopes located so that a minimum of vegetation clearing is necessary	Recommended
Where wholesale clearing is unavoidable for the desired site, consult a professional geotechnical engineer about the potential slope destabilization that should be factored into final site selection or site work	Recommended
Exhibits	
Exhibits placed approximately 90 degrees from the parking area and screened using natural or man-made materials to discourage vandalism by persons in passing vehicles	Recommended
Weather- and vandal-resistant display materials used	Recommended
Overlooks	
Design ensures the safety of the viewing public	Required
Design of overlook in harmony with the surrounding area and relates to the feature being viewed	Recommended
Adequate parking provided	Recommended

Wayside Exhibits and Overlooks Design Guidelines	
Location	
Interpretive signs, plaques, or other interpretive devices incorporated into the design	Optional
Sanitary facilities provided	Optional

5.4.8.6 Visitor Centers. Visitor centers are being addressed separately by a Visitor Center Initiative Team and are beyond the scope of this document. Visitor center guidance and policy is available on the NRM Gateway Website "Visitor Center Program" page.

5.4.9 Trails. EM 1110-2-410, "Design of Recreation Areas - Access and Circulation," contains detailed specifications for trails.

5.4.10 Marinas. RESERVED