

CHAPTER 3

Structures

3.1 Introduction. This chapter provides design guidance for structures in Corps-managed recreational areas when they are included in new construction or rehabilitation of facilities.

3.2 Universal Accessibility (UA). All newly constructed or rehabilitated structures shall be universally accessible in accordance with paragraph 1.19. Due to this blanket requirement, the need for universal accessibility will apply to, but not be mentioned with, each specific item covered in this chapter. Some specific mentions of UA have been added for emphasis on certain items.

3.3 Entrance Stations. Entrance stations are buildings located at park area entrances and designed for fee collection, security, and dispensing customer information. Table 3.1 contains guidance on entrance station design features. Drawings C-1 and C-2 and photos in Appendix J demonstrate some suggested layouts.

Table 3.1

Entrance Station Design Features	
Location	
Placed to provide one single point of entry to the recreation area	Required
Located to accommodate incoming and outgoing traffic flows, as dictated by local conditions including terrain and traffic volume	Required
Located in the center of the road whenever possible (<u>Photo J-1</u>)	Recommended
Located a minimum of 200 ft (61 m) from the intersection of the park access road and the main highway	Recommended
Placed to accommodate dual entry lanes to allow entry and exit by vehicles not required to stop at the entrance station (<u>Photos J-2, J-3, and J-4</u>)	Optional
Appearance & Maintenance	
Designed so that the exterior appearance of the entrance station building is in keeping with the theme of the recreation area (<u>Photo J-2</u>)	Required

Entrance Station Design Features	
Appearance & Maintenance	
Facility finishes, both interior and exterior, are selected for low maintenance and a high level of durability (<u>Photo J-2</u>)	Required
Safety and Security	
Provide for secure placement of a vault or safe	Required
Designed to accommodate daily, seasonal, or partial park closure for safety, security, and economy	Required
Have security gates to completely close the park	Recommended
Provide a turnaround area so that vehicles that cannot be accommodated can exit without entering the fee area (<u>Photos J-1 and J-2</u>)	Recommended
Have roadways marked appropriately to direct traffic flow (<u>Photos J-1 and J-3</u>)	Recommended
Placement of customer service parking to eliminate the need to cross traffic from the customer service parking area to the entrance station is encouraged. If a crosswalk is unavoidable, it should be marked (<u>Drawing C-3</u> , <u>Photos J-5 and J-6</u>)	Recommended
Design exterior windows for an unobstructed view of both incoming and outgoing traffic	Recommended
Have exterior lighting covering at least a 100-ft (30.5-m) radius around the building. Illumination may range from 5 lux ($\frac{1}{2}$ FC) at the edge of the radius to 20 lux (2 FC) within 25 ft (7.6 m) of the structure	Recommended
Provide public telephones outside or near the entrance station	Recommended
Provide a secure room out of view of the general public for counting fee collections and preparing vouchers	Optional
Provide a security camera and/or burglar alarm	Optional
Provide a power gate arm to regulate entering traffic	Optional
Customer Accommodations	
Designed to promote customer recognition of the park entry. Visual indicators besides the building itself may include items such as park entrance signs and gated access points	Required

Entrance Station Design Features	
Customer Accommodations	
Designed for ease in collecting fees and distributing information to park customers. This includes provision of a customer service parking area located out of the flow of traffic. The parking area shall be sized to accommodate full-length RV units plus towed units	Required
Entrance station shall be UA for customers	Required
Provide an outside service window, a customer walk-in area, or both (Photos J-7 and J-8)	Required
Provide walk-in area (Photo J-8)	Recommended
When an outside window is provided, it will include an overhang or porch for customer protection during inclement weather. The overhang or porch shall be placed to provide adequate clearance to prevent injury to customers or damage to their equipment (Photos J-9 and J-10)	Recommended
Automatic gates that can be operated from inside the entrance station and that allow after-hours departures (Photo J-11)	Recommended
Provide self-pay capability such as honor vault or automated pay station	Recommended
Provide Internet hookup to customers in close proximity	Optional
Entrance Station Worker Accommodations	
Entrance station shall be UA for attendants	Required
Provide interior work area sized to accommodate all required equipment (computers, printers, radios, weather radios, safes, etc.) and provide an adequate workspace (Photo J-12)	Required
Provide adequate power and lightning/surge protection for HVAC, computer, and communication equipment	Required
Provide a heating and cooling system adequate to protect computer equipment and provide comfort for attendants and customers	Required
Provide a unisex bathroom	Recommended

3.4 Group Shelters. Group shelters can range from small shade structures covering one or two picnic tables, to large screened or enclosed structures. The character and size of the structure should be consistent with the design theme and typical group

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sizes that use the park. A plaza approach combining multiple shelters and related amenities should be considered to serve large groups and extended family gatherings ([Photo P-1](#)). Consideration should be given to the use of pre-manufactured shelters for durability, ease of construction, and ease of maintenance. Table 3.2 contains guidance on group shelter design features ([Drawing H-1](#)).

Table 3.2

Group Shelter Design Features	
Location	
Located no more than 30 to 50 ft (9.1 to 15.2 m) from parking areas, with an optional drop-off area included adjacent to the shelter to accommodate universal accessibility and for loading and unloading of supplies (Photo P-4)	Recommended
Located within 500 ft (152.3 m) of a restroom	Recommended
Located in close proximity to an open field for play space where terrain permits (Photos Q-5 and Q-6)	Recommended
Maintenance and Access Considerations	
Sited on a concrete pad that extends a minimum of five ft beyond the edge of the support posts to accommodate universal access, designed for positive drainage (Drawing H-1 , Photos P-2 and P-5)	Required
All floors and access surfaces designed to provide adequate drainage	Required
Vehicular service access for maintenance	Required
Roof trusses flush against the roof to reduce sites where birds can build nests (Photo P-3)	Recommended
All interior surfaces designed for pressure cleaning	Recommended
Amenities to be Provided (Photos P-5, P-6, P-7, P-8 and P-9)	
Electrical outlets with GFCI	Required
Two water hydrants: one near a pedestal grill, one near the shelter	Recommended
Group pedestal grills within 15-20 ft (4.6-6.1 m) of shelter	Recommended
Utility table either under the roof or near the grill	Recommended
Picnic tables	Required
Convenient trash facilities	Required
Convenient restroom facilities	Required

Group Shelter Design Features	
Amenities to be Provided	
Restrooms built into the shelter	Optional
Screening or enclosure of the shelter	Optional
Horseshoe pits, volleyball court, playground equipment, etc. provided nearby	Optional
Lighting to be Provided	
Inside the shelter, lighting levels for nighttime use should range from 150 to 200 lux (15 to 20 FC)	Recommended
Exterior lighting that illuminates the area within a 50-ft (15.2-m) radius of the structure. Illumination levels may vary from 5 lux ($\frac{1}{2}$ FC) at the outer edge of the radius to 20 lux (2 FC) adjacent to the lighting source	Recommended
Light fixtures with vandal-resistant protective covers	Recommended
Light switches, timers, motion detectors, and/or photocells should be used when practical	Recommended

3.5 Restroom and Shower House Buildings. Restrooms shall be provided within campgrounds and day use areas. Shower houses shall be provided at campgrounds and at beaches when feasible. Table 3.3 describes location and parking considerations.

Table 3.3

Restroom and Shower House Buildings Locations and Parking			
Feature	Day Use Areas Restrooms	Campgrounds Restrooms	Shower Houses
Located no farther than 500 ft (152.3 m) from nor closer than 75 ft (22.9 m) to any campsite, picnic site, or swim area	Recommended	Recommended	N/A
Located no farther than 500 ft (152.3 m) from nor closer than 75 ft (22.9 m) to the facility they serve	N/A	N/A	Recommended

Restroom and Shower House Buildings Locations and Parking			
Feature	Day Use Areas Restrooms	Campgrounds Restrooms	Shower Houses
Located in close proximity to the access road	Optional	Optional	Recommended
Located within 100 ft (30.5 m) of parking areas	Recommended	Optional	Optional
Parking spaces proportionate to the size of the building (Drawing C-9)	Required	Required	Required

3.5.1 Minimum Facilities. The minimum restroom facility that shall be provided for users is a unisex restroom. Vault or self-contained restrooms may be used to supplement waterborne facilities or when sewage treatment facilities are not available ([Photo K-1](#)).

3.5.2 Unisex Facilities. The provision of unisex restroom facilities shall be considered in the design of all restroom and shower house buildings (Photos [K-1](#), [K-2](#), [K-4](#), and [K-5](#)). Advantages of unisex facilities to our customers include the following:

3.5.2.1 Caregivers can assist the elderly or persons with disabilities.

3.5.2.2 Customers with security concerns can immediately view the facility in its entirety when opening the door, instead of walking into the typical multi-user facility with partitions that make it difficult to determine if anyone else is in the room.

3.5.2.3 Single parents can either go into the facility with a child of the opposite sex, or can check the facility before the child enters the restroom alone.

3.5.3 Common Building Features. Table 3.4 describes considerations for all restroom and shower house buildings where water and sewage treatment are available.

Table 3.4

Common Building Features for All Restrooms and Shower Houses Where Water and Sewage Treatment Are Available	
Feature	
UA Accessible	Required
Toilet partitions constructed from solid, vandal-resistant panels	Required
Privacy latches for stalls and dressing areas	Required
Lighting (Table 3.8)	Required
Sinks	Required
Potable water faucet	Required
Trash receptacle	Required
Urinals for 50% of men's toilet fixtures at non-unisex facilities	Required
Provide 50% more toilet fixtures for women than men at non-unisex facilities	Required
Minimum ventilation rate of 2 cubic ft per minute (cfm) per square ft (9 liter per second per square meter) (Para. 3.5.9)	Required
Automatic flushers for stools and urinals	Recommended
Motion-activated faucets and hand driers	Recommended
Window screens where insects are a nuisance	Recommended
Door hardware that prevents slamming to reduce noise and wear and tear	Recommended
Diaper-changing station where adequate room and usage warrant	Recommended
Heating and air conditioning where warranted for extended season use	Optional

3.5.4 Specific Building Features. Table 3.5 describes building features specific to day use area restrooms, campground restrooms, and shower houses.

Table 3.5

Specific Building Features for All Restrooms and Shower Houses Where Water and Sewage Treatment Are Available			
Feature	Day Use Area Restrooms	Campground Restrooms	Shower Houses
At least one restroom facility will be waterborne	Recommended	Recommended	N/A

Specific Building Features for All Restrooms and Shower Houses Where Water and Sewage Treatment Are Available			
Feature	Day Use Area Restrooms	Campground Restrooms	Shower Houses
Provide a minimum of 1 stool per gender, per 30 parking spaces	Required	Optional	Optional
Provide a minimum of one restroom fixture per gender, for each 25 campsites	N/A	Recommended	Recommended
Sinks inserted into counters for increased user convenience (Photo K-6)	Optional	Required	Required
1 sink per each 25 campsites per gender	N/A	Recommended	Recommended
Additional sinks for women	Optional	Optional	Optional
Electric hand dryer or paper towel dispenser, 1 per every 2 sinks	Optional	Required	Required
Shelving above sinks and clothing hooks nearby (Photos K-7 and K-10)	Optional	Required	Required
Shelf for toiletries in shower stall (Photo K-8)	N/A	N/A	Required
GFCI protected electrical outlets, 1 per every 2 sinks (Photo K-6)	Optional	Required	Required
Mirror, vandal proof, 1 above each sink	Optional	Required	Required
Drinking fountain	Required	Required	Required
Provide a minimum of one showerhead per gender, for each 25 campsites	N/A	N/A	Recommended
Install showerheads so that water is directed away from door opening	N/A	N/A	Recommended
Provide a minimum of one fully equipped (privacy latch, toilet fixture, showerhead, sink, mirror, hand dryer) unisex shower unit at each campground	N/A	N/A	Required

Specific Building Features for All Restrooms and Shower Houses Where Water and Sewage Treatment Are Available			
Feature	Day Use Area Restrooms	Campground Restrooms	Shower Houses
An individual dressing area for each shower stall (a bench, shelf, and clothing hooks (Photo K-9))	N/A	N/A	Required
Coin-operated laundry facilities. Where provided, should include washers, dryers, and a fiberglass or hard plastic utility sink	N/A	N/A	Optional

3.5.5 Building Interior Finishes. Table 3.6 summarizes considerations for building interior finishes.

Table 3.6

Building Interior Finishes	
Surfaces without a waterproof impenetrable finish painted with permanent waterproof paint, facilitating removal of graffiti	Required
Light in color	Recommended
Designed for pressure-wash cleaning	Recommended
Low maintenance, highly durable materials	Recommended

3.5.6 Building Exterior Finishes. Exterior finishes shall be neat and clean, in keeping with the theme of the recreation area and blend with environment. Special consideration should be given to facility finishes and designs that are low maintenance, have a high level of durability, and are in keeping with the theme of the recreation area and/or region.

3.5.7 Building Floors. Table 3.7 summarizes considerations for building floors.

Table 3.7

Building Floors	
Comprised of non-skid materials, such as non-skid porcelain or ceramic tile, poured-in-place epoxy flooring, or any other durable waterproof material	Required

Building Floors	
Sloped a minimum of ¼ in./ft (1:50) toward shower and floor drains for quick and complete drainage of water	Required
Color choice visually separates floors from walls, partitions, and other interior features	Required
Floor and wall have a 70% contrast at the base (Photo K-11)	Required

3.5.8 Building Lighting. Lighting and color shall be designed to provide consistent, uniform lighting levels both inside and out for the safety and security of customers. Table 3.8 contains lighting considerations.

Table 3.8

Building Lighting	
Interior	
Dark areas avoided in all areas of the facility	Required
A minimum of two light sources to accommodate UA. May be accomplished with windows on two walls or a combination of sources, i.e. electric lighting, skylight, or window	Required
Light and color sufficient on floor surfaces that objects are visible to all users	Required
Lighting levels range from 100 to 200 lux (10 to 20 FC)	Recommended
Skylights installed to provide sufficient daytime illumination and reduce utility costs	Recommended
Timers, motion detectors, and/or photocells control interior lighting when practical	Recommended
Exterior	
Vandal-resistant, bug-proof exterior lighting be provided	Required
Exterior lighting illuminates the area within a 50-ft (15.2-m) radius of a building	Recommended
Illumination levels vary from 5 lux (½ FC) at the outer edge of the radius to 20 lux (2 FC) adjacent to the facility	Recommended

3.5.9 Ventilation. A minimum ventilation rate of 2 cubic ft per minute (cfm) per square ft (9 liter per second per square meter) shall be incorporated in restrooms and shower houses. All aspects of indoor air quality should be examined when determining ventilation rates. Additional factors that contribute to

adequate ventilation should also be considered in new construction and renovation activities. This includes architectural style since high, vaulted ceilings provide better cross-ventilation than low and flat ceilings. Also, lighter interior wall colors tend to be cooler. Other factors to consider include the size of the building (square footage), the number of urinals and/or stools, and local building codes.

3.6 Change Houses. The use of stand-alone change houses is discouraged. Whenever possible, change houses should combine change areas with sanitary facilities. Shower houses that combine shower facilities as well as sanitary and change facilities are encouraged, and free-standing shower facilities outside the change house shall be considered where a shower house cannot be provided. Table 3.9 summarizes standards for change houses when provided:

Table 3.9

Change Houses	
Exterior of the structure in keeping with the theme of the recreation area	Required
Located no farther than 500 ft (152.3 m) from the swim area (Photo K-12)	Recommended
Freestanding open-air or outdoor showers used where practical to reduce cost, located outside the change house for sand removal (Photos K-13 and K-14)	Recommended
Showers utilize multilevel showerheads (Photos K-13 and K-14)	Recommended
Dressing areas include individual stalls with doors and privacy latches	Recommended
All surfaces designed for pressure wash cleaning	Recommended
A 3- to 4-ft (0.9- to 1.2-m) roof shelter considered for protection from the rain and sun when open-air structure is the only facility provided	Optional

3.7 Fish-Cleaning Station Design Guidance. Table 3.10 provides considerations for fish cleaning stations (Photos [L-1](#), [L-2](#), and [L-3](#)).

Table 3.10

Fish-Cleaning Stations	
Potable water available	Required
Interior light levels ranging from 500 (152.3 m) to 700 lux (50 to 70 FC)	Required
Exterior lighting illuminates the area within a 50-ft (15.2-m) radius of the fish cleaning station with an outer edge minimum of 5 lux ($\frac{1}{2}$ FC), increasing to 50 lux (5 FC) next to the structure	Required
Located away from other user activities	Recommended
Ties into the recreation area or municipal sanitary systems when possible	Recommended
Allows ease of access for pumping if a holding tank is used	Recommended
Provides adequate parking, including pull-through spaces sufficient to accommodate both vehicles and trailers	Recommended
Timers, motion detectors, and/or photocells used to control interior lighting	Optional

3.8 Sanitary Dump Stations. Table 3.11 provides considerations for sanitary dump stations (Drawing C-8, Photos L-4 and L-5).

Table 3.11

Sanitary Dump Stations	
Sanitary dump station provided for each park containing a campground (except primitive areas)	Required
Each station equipped with a 4-in. (100 mm)(minimum) sewage pipe with hinged cap	Required
Sewage pipe encased in a concrete pad extending to the discharging camping unit. The pad located for access from the driver side of the vehicle (<u>Drawing C-8</u> and Photos <u>L-4</u> and <u>L-5</u>).	Required
Sewage pipe pad extends a minimum of 2-ft (0.6 m) on all sides of the sewage pipe and slopes 2-3% toward the sewage pipe from all directions	Required
Provide two separate water supplies, each clearly marked: wash down and potable water. Wash-down faucet with anti-siphon valve located at the dump station.	Required

Sanitary Dump Stations	
The potable water supply may be located separate from but near the dump station	Optional
Sited on the right side of the road near the campground exit	Recommended
Additional or dual stations provided for campgrounds with more than 125 sites	Recommended
Parking area level or sloped so that the vehicle tilts slightly toward the sewage pipe to help empty the holding tank	Recommended
Area paved consistent with adjoining roadway	Recommended
Area within a 50-ft (15.2-m) radius lighted to an average of 20 lux (2 FC)	Recommended
Trash receptacles provided	Recommended