

TRAILER COACH



FACILITIES

NATIONAL PARK SERVICE
YELLOWSTONE NATIONAL PARK
JAN 15 1954
AUG 15 1954
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UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE



PREPARED BY

DIVISION OF DESIGN AND CONSTRUCTION

WALLACE A. JOHNSON

LANDSCAPE ARCHITECT

JUNE, 1954

ERRATA

Please insert this sheet inside the front cover of your copy of Trailer Coach Facilities.

Page 142nd Paragraph

The 1st and 2nd sentences should read: "Each water distribution system provided for a trailer court should be approved by the appropriate health authority. The recommendations of the United States Public Health Service will furnish additional guidance toward the development of a safe and satisfactory supply."

3rd Paragraph should read:"b. Sewage System

Except for areas where state or local authorities have jurisdiction, all plumbing installed in the trailer court should conform to the recommendations as set forth in the Report of the Coordinating Committee for a National Plumbing Code. This publication may be obtained, at 50 cents a copy, from the Superintendent of Documents, Washington 25, D. C."

Page 15

1st and 2nd lines: Delete "under pressure"

Page 384th Paragraph

The 3rd line should read: "of 10 percent DDT dust or 2½ percent chlordane dust in places...."

NATIONAL PARK SERVICE

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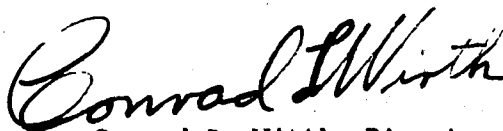
YELLOWSTONE NATIONAL
PARK

FOREWORD

The number of persons who travel with trailer coaches to enjoy areas administered by the National Park Service has been increasing each year. Evidence strongly supports the belief that trailer coaches are here to stay as an accepted mode of travel. In the past, campgrounds were adequate for trailerists. It is now evident that facilities designed especially for the sanitary and convenience fixtures contained in modern coaches are necessary in the public interest. The addition of these special facilities will be given consideration by the Service only for those areas containing other types of concession-operated overnight accommodations.

This handbook is prepared for the guidance of administrative and professional Service personnel, concessioners and others who are interested in vacationing trailerists.

The National Park Service was fortunate in obtaining the assistance of the Mobile Home Manufacturers Association, the Trailer Coach Association, operators of privately owned trailer courts, trailer coach owners, Federal and State agencies concerned with recreation, and the United States Public Health Service. Appreciation is expressed for the help and cooperation of these organizations and individuals whose contributions of ideas, experience, and material are incorporated in this handbook.



Conrad L. Wirth, Director
National Park Service

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DEFINITIONS

Trailer Court - Any plot of improved property upon which sanitary facilities and individual utility connections are available for two or more trailer coaches.

Trailer Coach - A vehicle without means of self-propulsion, but licensable as a conveyance on public streets or highways, and which is constructed to permit occupancy as a dwelling or sleeping place for one or more persons.

Dependent Trailer Coach - One which does not have a water closet and a bathtub or shower.

Independent Trailer Coach - One that has a water closet and a bathtub or shower.

Trailer Coach Lot - A plot of ground within a trailer court designated for the accommodation of one trailer coach.

Trailer Parking Space - A stabilized portion of the lot on which the trailer is parked.

Patio - A paved area adjacent to the trailer parking space, and accessible from the front door of the parked trailer.

Service Building - A building housing communal toilets, showers, and other sanitary facilities necessary for the health and convenience of the trailer occupants.

Area - Area administered by the National Park Service.

Service - National Park Service.

INTRODUCTION

The lives of most of us have been tinged with the color inherent in the tales of the exciting life of those pioneer families who traveled by, lived in, and fought from those historic homes-on-wheels called prairie schooners.

Less appealing in tradition, though old of use, is that mobile home known as the sheep-herder's wagon. Still active on the western American scene, these horse-drawn shelters, equipped with bunk, stove, and supply cabinets, were developed to answer the need of mobility and utility for those solitary herders entrusted with the protection of their constantly shifting, grazing sheep.

From such adventurous and practical beginnings the modern trailer has sprung, and trailer living is producing incidents from which legends will develop. Since its establishment in 1916, the National Park Service has witnessed a steady increase in the number of vacationists who travel in trailers. It has watched the evolution of the modern trailer from a facility for camping to a varied product adaptable to many environments and ways of life, including mobile structures equipped with complete facilities of the kinds generally associated with modern houses and modern living.

Until recently there were no trailer courts with complete and adequate utility connections in any areas administered by the National Park Service. Trailers were accommodated in campgrounds.

In 1953, a modern trailer court was made available to the public

in East Potomac Park, Washington, D. C. In 1954, two up-to-date courts will be operated at Lake Mead National Recreation Area, Ariz.-Nev. Located as they are, one in a metropolitan area, and two in a desert area primarily dedicated to recreation, conformance to instructions contained in the act creating the National Park Service presented fewer difficulties in planning than are anticipated in many of the national parks and monuments. This act, approved August 26, 1916, specified that the purpose of the Service is to conserve the scenery and the natural and historic objects and the wildlife in the national parks, monuments, and reservations, and to provide for the enjoyment of the same and in such manner and by such means as will leave them unimpaired for the enjoyment of future generations. Under these terms, all developments and improvements introduced for visitor use and enjoyment are necessarily intrusions upon the natural and cultural values of an area. Those in the National Park Service who are charged with the responsibility of development, have, as an objective, the planning of useful facilities that are economical in construction, unobtrusive and attractive in appearance, and susceptible of efficient operation and maintenance. To this end it has been found advantageous by the United States Government to encourage private capital, under concession agreements, to provide the greater portion of the needed public facilities for food and lodging.

In 1953, the National Park Service made a trailer-equipped spot study of the use, design, and operation of privately owned trailer courts. In addition, trailerist use of the national parks and monuments was examined. The purpose of the investigation was twofold--

to have at hand a working knowledge of trailer court operation assembled from experienced management, and to find a solution that will be a favorable compromise between the apparent conflicting purposes of providing for enjoyment by use thereof and of conserving the areas in a natural state. The material gathered and the experiences collected have greatly influenced the recommendations presented in this handbook. An equally important harvest of the trip, however, is that it serves to alert prospective concessioners and the Service on the differences between private operation and concession operation under public control. Broadly stated, private trailer establishments rent space and facilities to such long-term occupants as are acceptable to the owner. In national parks and monuments the concessioner collects payment for services he furnishes to transient, seasonal vacationers who come from all strata of society and arrive in trailers of great variety in size, kind, and quality.

Through the accepted medium of concession agreements, and allowing for the limitations imposed by the act creating the National Park Service, the Service will consider the establishment of modern, sanitary accommodations for trailerist vacationers in those areas where structures exist or are planned to accommodate overnight visitors. This limitation on distribution is based on the conclusion that trailer court construction and operation is a kin of lodging, and not a relative of camping.

The question of permitting visitors in house trailers to use campgrounds in areas where concessioner-operated trailer courts exist

has been a controversial subject. Presentation of the attitude of the Service toward the question seems timely.

By law, campgrounds are not a source of revenue in areas administered by the National Park Service. They are constructed and operated as a public service at public expense. For economy in construction and maintenance, campgrounds have developed around the use of community sanitary facilities. To reduce operating costs, reservations for campsites are not made, nor are they assigned on entrance. Campsites are available on a "first-come, first-served" basis. Any visitor who makes use of the campground, regardless of his means of camping, including the visitor with trailer, is a camper. Use of facilities and rules of conduct in campgrounds should apply equally to all.

An act, approved March 4, 1929, forbids the use of appropriations for the National Park Service where campground privileges are charged for. This law makes possible an overnight stop to all income groups in those areas administered by the National Park Service where overnight use is permitted.

As with tenters and car sleepers, there is also a considerable number of trailer travelers to whom the savings realized through free overnight stops influences the duration and distance of their traveling. It may even determine whether or not a touring vacation is possible at all. Traveling in these circumstances are frequently found the family group, parents and children, mutually intent on sharing experiences of recreation and education economically. There are also

those who camp during the summer in their permanent trailer homes. Many of the owners are retired couples of limited income. Camping in many environments is not only economical living to these people who have watched their savings shrink, it is an invigorating life to folks who fight stagnation through their interest in life, which includes a deep appreciation of the parks and forests. It is important to them that frugal living enables them to maintain their independence. There is a growing concern among them over the tendency of agencies of governments to turn their campgrounds over to concessioners whose charges for camping will deny to them many of the areas brought into being with their taxes.

The two groups described above, and those who seek relief in sickness, exemplify the reason the trailerists should continue to use campgrounds in national parks and monuments, even though a concessioner's trailer court is available. The handbook recommends some minor, though important, improvements in campground facilities and a suggestion for rules of conduct for campers to further the maintenance of sanitary and presentable campgrounds. The cooperation of all campers is essential.

This manual is presented as a guide to design and operation of facilities to serve trailerists in areas administered by the National Park Service. It is a guide, not a rule, because solid experience is lacking in the Service, and elsewhere, on the occupation of providing accommodations for transient trailerists under concessioner agreements. It can be expected that changes for improvement will be made as we learn by experience.

DESIGN AND CONSTRUCTION OF CONCESSIONERS TRAILER COURTS

General

A successful trailer court for national parks and monuments should meet three major considerations:

1. Area

The court should be located within the area with regard to conservation of natural features. Elements comprising the court should be adjustable to changes in ground forms and flexible enough to allow for useful arrangement while conserving natural features within the court boundaries.

2. Use

Parking spaces should be easy to locate and negotiate, stable, level in cross section, and border on lots of a size adequate for safety and privacy. Facilities and utilities should be sufficient in number and of a quality to promote a healthful environment, and of kinds consistent with the needs of trailerist visitors who come to enjoy the inherent values of the area.

3. Operation

The courts should have effective entrance and egress control from which visitors can be readily directed to, or checked out from, their space in the court. The court should be constructed of lasting materials that are economical to maintain in a sanitary and workable condition.

The illustration on page 29 titled Trailer Court (Hypothetical), and the accompanying delineated details on pages 30 and 31, titled

Layout Details, represent a solution that meets these conditions. The illustrations are included in the manual because this design is not in common usage nor is information concerning it readily available. It is not implied that this is the only design acceptable to the National Park Service. In areas where there exists sufficient acreage that is fairly level in topography and relatively free of characteristic natural qualities, other designs may be as applicable. In areas where visitation by trailerists is small, indicating that a profitable undertaking will combine a small trailer court with another enterprise, such as a motel, then a more conventional plan may be appropriate. Expert advice can be had from the Mobile Home Manufacturers Association, 20 N. Wacker Drive, Chicago 6, Ill., and from the Trailer Coach Association, 607 South Hobart Boulevard, Los Angeles 5, Calif. Both organizations give free advice upon request to persons interested in the planning, construction, and operation of trailer courts.

The following discussion is intended to clarify the accompanying illustrations. Facilities generally provided in privately owned trailer courts are included in the text whether or not they are considered as essential for courts to be operated by concessioners in national parks and monuments in order to justify exclusions.

Site Selection

The ground should preferably have a slope for drainage. Ground slopes that vary between one per cent and six per cent offer the greatest opportunities in design, considering the limitations on the

grade of roads and grade and angle of parking spaces. The table on page 33 illustrates the relationship of ground slopes to the above limitations. Ground slopes between seven and 10 per cent can be used, but they allow only minus grades on circulation roads. The maximum usable ground slope within a site is 10 per cent. Slopes steeper than that within any site must be left as natural islands within the court.

Like all other developments, the site for a trailer court should contain sufficient area for expansion.

A buffer strip should be provided between the court and other types of development.

The facilities provided in a concessioner trailer court, and the operation of the court, align it with cabin development and other concession accommodations. As a consequence, trailer courts should be located within a section of an area set aside for concession development. Should it be necessary, also, to locate a court in the vicinity of a campground, there should be a natural barrier or sufficient distance between the court and the campground to discourage foot traffic between any campsite and the service buildings of the trailer court.

Incidental natural or cultural features within a site can be preserved by careful planning. A site that contains exceptional natural or cultural features should not be chosen.

There is such a great variety in the natural vegetative cover of areas administered by the Service that the subject is not proposed for discussion in this handbook. However, trailer courts are such a

network of roads and parking spaces that clearing for them in dense forest growth is a costly construction operation.

Entrance Development

Entrance Road

The entrance road should be capable of holding three or four trailers and their towing vehicles that may collect during registration without interrupting the flow of car traffic to and from the court. It should provide for complete circulation for trailer and car without resorting to the use of the roads in the court. Car parking spaces should be provided close to the registration office for occupant's use while making telephone calls or collecting mail or gathering information.

Registration Office

The registration office should be a small building located to facilitate control over both ingress and egress. There should be an uninterrupted view to both incoming and outgoing traffic. Access to both traffic lanes is desirable. Besides providing room for the usual office furniture and supplies, it should contain a lavatory, a wall space capable of holding a large space-assignment map of the court, shelves for a small supply of water and sewer connections, cubby holes for mail distribution, and, on the outside of the building, a public pay telephone. One public telephone is sufficient in a court because few incoming and outgoing calls are anticipated. The space allowed for mail can be small because the amount of mail received will be small.

Supply Building

It can be expected that for the next few years many trailers will enter without all the equipment needed to meet the sanitary requirements. These deficiencies will be found, for the most part, in the adapters for water-tight sewer connections. However, for various reasons, a number of other accessories will be in demand. A small building, separate from the registration office, will be needed to house utility connection supplies in quantity, and trailer accessories. It may also be used for the storage of maintenance materials and equipment. A parking space for a service truck should be convenient to it.

The Court Proper

Sanitary Facilities

In the following discussion it is assumed that the water supply and the facilities for the disposal of sewage and garbage are an approved area-wide service rather than a service confined to the trailer court alone. In the remote event that any of these services need planning for the sole use of the trailer court the latest edition of the United States Public Health Service Manual entitled Trailer Court Sanitation will be the authority to consult. The 1953 edition of the Manual is distributed by the Mobile Home Manufacturers Association. Trailer Court Sanitation has been a valuable guide in preparation of the following requirements of the design of sanitary facilities.

a. Water Distribution System

The water distribution system should be constructed of cast iron, wrought iron, copper, asbestos cement, or other material

specifically approved for such use. The piping should be able to supply six to eight gallons per minute at a minimum pressure of 20 pounds per square inch at each trailer space outlet.

An individual water connection should be provided at an appropriate location at each trailer coach space (see details on pages 30 and 31). The connection should consist of a riser terminating at least four inches above the ground surface, with two 3/4-inch valved outlets. Check valves should not be installed on the riser because a hot-water tank without a pressure relief may explode if the water cannot back up into the system. The outlets should be threaded so that a screwed connection may be made from one outlet to the coach's water-piping system, leaving the other for use as a hose connection for fire control or the use of court management.

The ground surface around the riser pipe should be graded so as to divert surface drainage away from the water service connection.

The courts will not be occupied during prolonged periods of freezing weather. Consequently no provisions are considered necessary against freezing of the standpipe. However, the system should be designed so it can be completely drained during the winter.

A drinking fountain should be installed in or near each of the service buildings. The fountains should be constructed of impervious material, and should have an angle jet with the base of the nozzle above the over-flow rim of the bowl. The nozzle should be

protected by a non-oxidizing guard. The bowl should be of easily cleanable design, without corners, and the bowl opening should have a strainer. The drain from the fountain should be trapped.

Sanitary precautions should be taken in laying all water pipes. They should not be laid in water, nor where they can be flooded by water or sewage during the laying process. Dirt and other contaminating material should be excluded from the pipe. All water pipes should be disinfected with a chlorine dosage of 50 parts per million before being placed into service.

Each water distribution system provided for a trailer court should be approved by the local health authority after construction and disinfection and before it is placed into use. The recommendations of the State and local health authorities will furnish additional guidance toward the development of a safe and satisfactory supply. (Public Health Service Publication No. 24, Individual Water Supply Systems, will also be helpful. Copies of this publication may be obtained, at 20 cents each, from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.)

b. Sewage System

All plumbing installed in the trailer court should conform to State and local plumbing-code requirements and the regulations of the State health department. (In the absence of specific regulations or codes, the recommendations as set forth in the Report on the Coordinating Committee for a National Plumbing Code may be used.)

All sewer lines should be laid in trenches separated at least

10 feet horizontally from any drinking-water-supply line under pressure, at a grade which will insure a velocity of 2 feet per second when the sewer is flowing full. All joints on the sewer line should be made watertight; every effort should be made to minimize groundwater infiltration into the sewerage system. All sewer connections and manholes should be so constructed as to prevent surface water from entering the sanitary sewers. Manholes should be provided at every change in direction, at every junction of 2 or more branch sewers, and at intervals of not more than 400 feet. Cleanouts extending to grade may be used instead of manholes on 4- and 6-inch lines. They should be provided wherever a manhole would otherwise be necessary and at intervals of not more than 100 feet. All cleanouts should be capped with watertight cleanout plugs.

Each sewer lateral serving a row of coaches may need to be vented at its upper end. These vents are especially necessary with tight manhole covers and cleanouts which prevent the entrance of air into the system.

Sewer mains will be designed to handle the estimated sewage flow; it is general practice to limit them to a minimum of 6 inches in diameter. However, due to the low consumption of water per coach space, 4-inch lateral lines may be constructed in the court's sewerage system, provided that sufficient grade is maintained. The minimum grade required to maintain a cleansing velocity will depend upon the estimated volume of sewage flow and the size of the sewer mains.

Each trailer space should be equipped with a 4-inch cast iron sewer connection, trapped below frost line. To insure a gravity flow from the trailer, the connection should extend a maximum height of 6 inches above the elevation of the parking space. To permit union with the trailer sewer hose, the connection should extend a minimum of 4 inches above the immediate ground surface. Into the connection should be firmly caulked a 3-inch threaded brass ferrule. The connection should be protected within a curb or by casting it in a concrete collar behind a wheel barrier as shown on pages 30 and 31. Metal eyes should be cast in the concrete on which to chain threaded brass plugs and adapters. One of the plugs should be solid so that the sewer connection can be closed against tampering when not in use. The other plug should be tapped to permit insertion of threaded adapters to hoses varying in size from 3/4 inch to 2-1/2 inches so that both dependent and independent trailers of various makes having different size discharge lines can be accommodated at different times on the same sewer connection.

c. Service Buildings

Each trailer court should have at least one service building. The maximum distance between any trailer space and the service building should be 300 feet.

The service building should be of permanent construction with an interior finish of moisture resistant material, preferably glazed structural units or ceramic tile, which will stand frequent washing

and cleaning. The floor should be impervious to water, preferably of ceramic or quarry tile, easily cleanable and sloped to floor drains connected to the sewage system.

Rooms should be well lighted at all times. The illumination level for all rooms should be at least 5 foot candles. In the toilet room, the area in front of the mirror should have an illumination level of 40 foot candles.

Every advantage of daylight should be taken in the service building. Window areas should be as large as practicable with a minimum of 12 percent of the floor area. Windows should be placed high in the wall and in more than one wall wherever possible, with the sill no lower than 4-1/2 feet from the floor. All exterior openings should be covered with 16-mesh screen.

The service building should have heating facilities capable of maintaining the temperature of 70°F. in cold weather. Hot water should be provided for lavatory and bathing fixtures, with facilities of sufficient capacity to supply 2 gallons per hour per trailer space.

Separate men's and women's toilet rooms should be provided and distinctly marked and should be separated by sound-resistant walls or a maintenance alley. A vestibule or screen wall should prevent direct view into the toilet rooms when exterior doors are open.

Shower rooms should be separated from the toilet rooms and accessible only from the outside, or from a vestibule.

The building need not contain a laundry room if a laundry, equipped with washing machines and dryers or drying yard, is available

elsewhere within the area for the use of all visitors. If such a laundry does not exist in the area, provision should be made in one of the trailer court's service buildings for at least 1 double compartment laundry tray, 1 washing machine, and 1 table for every 30 to 40 trailers. If mechanical clothes dryers are not installed, a drying area with 10 feet of line per trailer should be planned adjacent to the service building.

For the next few years, fixture requirements should be figured on the basis of 100 percent dependent trailers. Perhaps less than 10 percent of the total visitation by trailers at the present time is in independent trailers. The proportion will probably change in the future with the result that fixture requirements may be reduced. In this event controls will be established in operational procedures, by the assignment of spaces to dependent trailers at not more than 300 feet from a service building.

The following requirements and the illustration on page 32 titled Typical Service Building assumes that a laundry building is available in the area for the use of all visitors.

Every trailer court should provide adequate toilet and shower facilities. In no instance should there be less than 2 water closets, 1 lavatory and 1 shower for women; and 1 water closet, 1 urinal, 1 lavatory and 1 shower for men.

A flushing rim service sink should be provided in each service building. This service sink should have hot and cold water faucets located over the bowl and should be provided with a flush

mechanism (preferably a flushometer valve) for the complete cleansing of the bowl. The service sink should be in an alcove of the service building, separate from the toilet and shower rooms, with a single direct opening to the outside. A floor drain should be installed.

One double laundry tray with hot and cold water should be located in an alcove accessible from the outside of the building. It may be combined in the same space with the service sink.

The facilities listed above will accommodate up to 20 dependent trailer coaches. One additional water closet and one additional lavatory for each sex should be provided for every 10 additional dependent trailers. (Urinals may be substituted for one-third of the additional water closets.) One additional shower for each sex should be provided for every 20 additional dependent trailers.

Each water closet should be in a separate compartment with self-closing doors and ceiling-hung partitions. The shower stall should be at least 3' x 3' in floor area. Showers should have a dressing compartment with stool or bench. The illustration on page 32 titled Typical Service Building will accommodate 70 dependent trailers.

d. Refuse Storage

All refuse should be stored in durable, flytight, watertight, rodent-proof and, in certain areas, deer- and bear-proof containers. They should be maintained in a clean condition and in good repair at all times. Sufficient capacity should be provided to prevent the overflowing of any container between collections. Each coach space

will require from 4 to 6 gallons of refuse-storage capacity per day. If refuse should be collected twice each week, a total of 15 gallons of storage space for each coach should be adequate.

Unless collection regulations or disposal methods require the use of separate containers for garbage and rubbish, they may be stored in the same container. Where separation is required, the containers should be plainly marked "garbage" (food waste) or "rubbish" (papers, cans, bottles, etc.).

Permanent locations should be selected for the refuse containers, and satisfactory racks or holders should be provided which will minimize spillage and container deterioration. The racks should have 12 inches of clear space beneath them to facilitate cleaning and to prevent rodent harborage. The rack stations should be not more than 150 feet from any trailer-coach space.

Circulation Roads and Parking

The circulation roads should be kept narrow to aid in the conservation of natural features. A continuous system of one-way roads having widths, generally, of 12 feet are recommended to accomplish this purpose. The base of the road need be no heavier than that normally provided for pleasure vehicles. The surface should be paved, or at least treated sufficiently, to control dust.

Curves on interior circulation roads should have a minimum inside radius of 25 feet. Curves on exterior circulation roads should have a minimum inside radius of 35 feet. Roadway widths on all curves with an inside radius of less than 40 feet should be 15 feet for one-way roads.

Pull-through parking spaces are proposed to permit a trailerist to park his own trailer and thus relieve court management of that task. The parking spaces are 55 feet long to accommodate a 35-foot-long trailer-coach and a 20-foot-long towing vehicle. This length will permit parking without disengaging the vehicles. The majority of trailers used for travel are 35 feet long or less, and towing vehicles vary in length between 16 and 20 feet. Trailers used for travel longer than 35 feet are so few in number that it is impractical to increase design standards to provide for them. The occasional trailer longer than 35 feet can be accommodated in the 55-foot space provided a few scattered car parking areas are constructed in the court for parking the towing car. Uniform parking lengths are proposed to simplify the assignment of spaces and to equalize visitor accommodations.

Curbing the entrance and exit throats to each parking space is needed to define the edge of the driving surface and to protect the lots from careless driving.

The inside radii of entrance and exit throats to parking spaces should be not less than 40 feet.

Trailer parking spaces should be on a grade for drainage, or if topography dictates, they may be on a vertical curve. Slopes to the rear of the trailer are preferred because in leveling the trailer, front to back, the vertical distance between the sewer connections of the trailer and the court will be increased. In all instances, the

cross section of parking spaces should be level, because there is no built-in device in trailers to level them sideways.

Island parking spaces are recommended for the right side of the road only (see lots 71 and 73, Avenue A) page 31. If placed on the left side of the road, the doors of a trailer, being on the right side, would face the island. The island must then become the trailer lot. The length of parking space and the length of utility lines necessary to make a 20-foot-wide lot of the island will increase construction costs considerably over that of other parking spaces.

Back-in parking spaces should be used sparingly and then only on the left so that the driver can see the utility curb (see lots 52 and 54, Avenue Q) page 30. Angles less than 60° result in patios too near the circulation road. Angles greater than 60° require circulation road widths greater than 12 feet. Back-in parking spaces should be long enough to accommodate only the trailer because the difficulty of parking increases as the backing distance increases.

Right-hand turns into parking space give better relationship of a trailer and patio to its lot than left-hand turns. The best angles of parking for right-hand turns are between 40° and 50° , though they may vary from 30° to 55° .

Left-hand angle of parking may vary from 30° to 45° , but note that at 30° on a left-hand turn the trailer must be parked forward in the space in order to locate the paved patio away from the circulation road (see lot 24, Avenue M, page 30). The patios of all angles are close to the circulation road on left-hand turns unless the

trailer is parked forward in the parking space. Left-hand turns with angles greater than 45° are difficult to negotiate with a 35-foot long trailer from a 12-foot wide road into a 55-foot long space. Angles greater than 45° also place trailers in such a position that they face the adjacent trailer.

Parking spaces 10 feet wide provide 8 feet for the trailer and 2 feet for the walkway.

The following controls are recommended for court roads and trailer parking:

<u>Description</u>	<u>Maximum Grades (per cent)</u>	<u>Widths (in feet)</u>	<u>Cross Section</u>
One-way circulation roads	-6 +4	12	concave
Two-way circulation roads	4	20	concave
Parking space	-1.5 +3	10	level

Backin uphill
Backin downhill

The concave cross section is recommended to eliminate the need for pipe culverts under the curbed parking spaces, and storm drains will be required. Exterior circulation roads are crowned and ditched on the outside as a means of intercepting surface drainage.

In spite of the restrictive grades on both circulation roads and the parking spaces, the angle parking design with one-way circulation roads adapts itself to considerable variations in topography. However, as the ground slope increases, the combinations of grade of road to angle of parking diminish rapidly. The tables on page 33 are included as an assist to the planner, and will be of interest only to

the planner while working over the drafting table. Not all the possible angles of parking are included, but there are enough shown to be a guide.

Patios

Patios are provided for concentrated outdoor living and are included to help protect the lot. They should have an area of about 90 square feet and be integral with the trailer parking space and accessible from the door of a parked trailer. They can be rectangular or curved, depending on site conditions and/or expense of construction.

Lots

Lots that vary in width are desirable, particularly where natural features are to be saved. (See lot 74, Avenue A, page 31; lots 51 and 53, Avenue Q and lot 24, Avenue M, page 30). Otherwise, a lot 30 feet wide, giving a distance of 20 feet between trailer parking spaces, is the minimum. Lots should be numbered conspicuously with scotchlited numerals.

Walks

A walk to the service building should cross the circulation roads about midway of the section served by the service building to reduce the walking distance that would otherwise be necessary on the circulation roads. Lots must be widened to provide for the walk. The walks should be located so the width of private space in front of any trailer is not reduced below the 20-foot minimum. (See illustration on page 29). The 12-foot wide circulation roads with a 10 mile speed limit will allow them to be used as walkways.

Power System

All electrical work shall conform to the requirements of the electrical code of the National Board of Fire Underwriters, or to State and local electrical codes and ordinances whichever is the most stringent.

For neatness and good appearance all power lines should preferably be located underground. The line shall be 110 volts single phase. Outlets shall be weatherproof receptacles with spring-activated cover, 125 volt, 30 ampere. Two types shall be furnished at each trailer space, one to be standard 2-wire, the other standard 3-wire polarized with the third contact solidly grounded. The receptacle should be set firmly in protective concrete, located inconspicuously close to the ground, but safe from ponding water with a minimum of 6 inches above the ground to the bottom of the receptacle. The illustrations on pages 30 and 31 show two acceptable methods of installing the individual connections.

Meters for individual spaces are not to be included because a separate charge will not be made to occupants for the power consumed.

Street Lights and Signs

Street lights will be needed for pedestrians. Because circulation roads are also walkways it is desirable to have one light at the junction of the interior circulation roads and the exterior circulation road, and one light at the junction of each walk and the interior circulation road. They may be located in the curbing or on 3-foot high standards set back 4 feet from the edge of the pavement with the

light directed downward toward the road. The intention is to provide only enough light to silhouette objects against the light. High, bright street light installations that shine in trailer windows are annoying to occupants. One light on each of the four walls of the service building will also be needed. Trailers will give additional illumination to the court.

Street signs should be scotchlited and set so the lettering is about 3 feet above the pavement. They may be combined with street lights on the same standard.

Clearance

Trailers will require a vertical clearance of 12 feet. Service trucks may require a greater clearance on circulation roads.

In general, no structure or facility higher than 12 inches should be constructed closer than 4 feet to the road. On straight-aways and flat curves, tree trunks can hug the edge of the pavement. On curves with a radius less than 40 feet, an additional clearance width of 2 feet on the inside of the curve should be provided.

Fire Protection

Two-inch hydrants or standpipes with 1-1/2 inch outlets for fire control shall be located not more than 300 feet from any trailer or court building, and 300 feet of 1-1/2 inch fire hose on a reel should be housed conveniently in the court. Portable fire extinguishers shall be placed in all buildings in the court.

Vegetative Treatment

The many environments encountered within the areas administered

by the National Park Service make a discussion of the activity popularly known as "landscaping" too lengthy and complex to be covered in this handbook. The planning and execution of planting and/or the selective removal of trees and shrubs should be performed by a landscape architect, just as the architecture and engineering should be performed by specialists in those fields. However, it might prove advantageous to propose an attitude toward the treatment of the lots between each parked trailer.

In privately owned trailer courts, the lots are generally maintained by the trailerist and used, with a few restrictions, much as private yards are used.

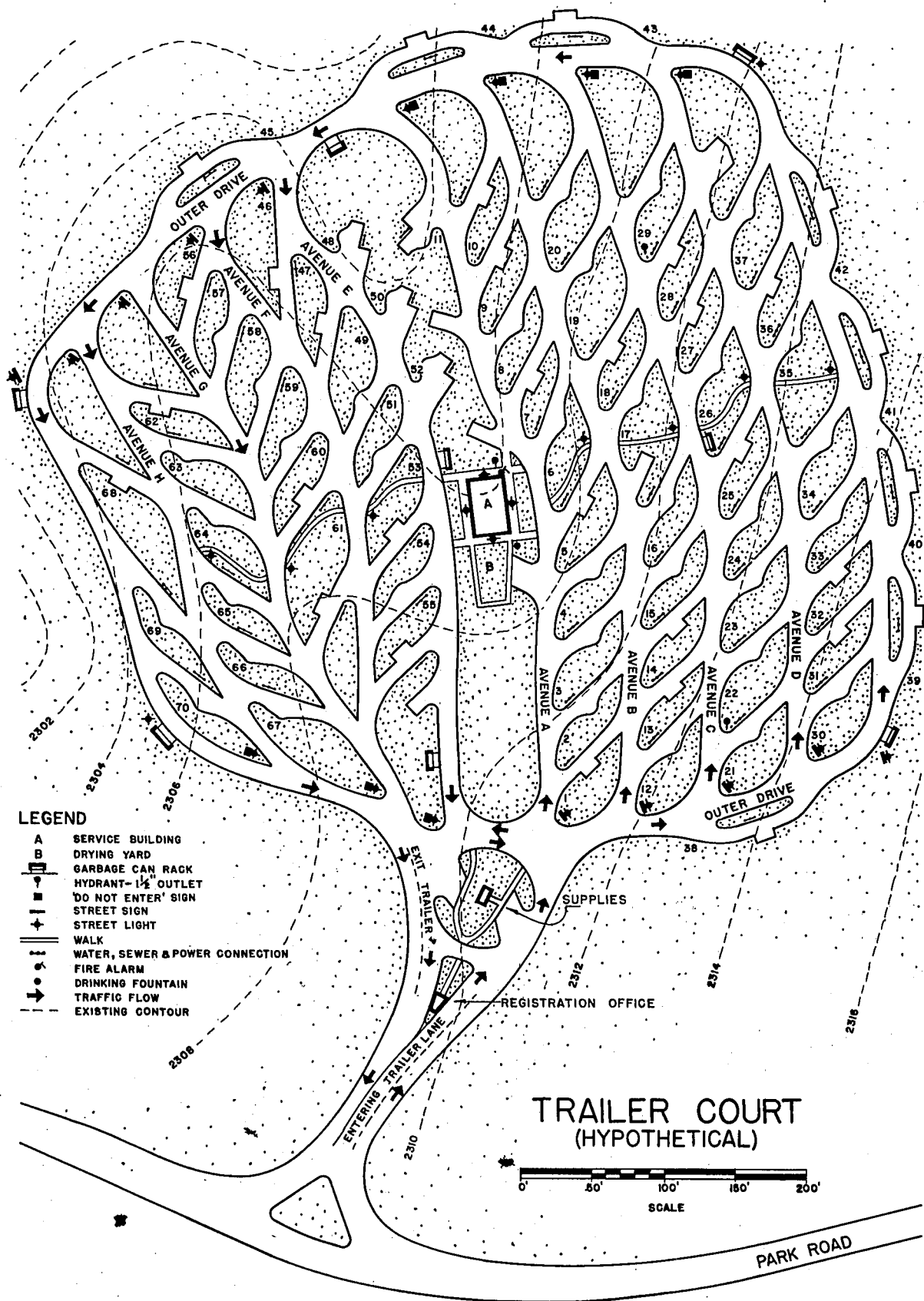
In trailer courts to be operated by concessioners in national parks and monuments, the lots will be maintained by the concessioner because of the transient nature of the enterprise. Treatment of the lots should, then, be as economical in maintenance as possible. To accomplish this, the lot should not be developed primarily as a private yard for the trailerist, but should be considered as a space set aside to furnish privacy and safety. Conservation of native trees, shrubs, and woody ground cover or planting them will make a pleasant lot that will not invite repeated wearing use. In desert areas, where trees are not indigenous, the sand itself may deter the overuse of the lot and erection of ramadas may suffice for treatment. Sod, is, of course, one of the toughest ground covers and its use may be the only answer in some localities. However, its maintenance is a never-ending job.

Clothes-drying Yard

Because a rule of the court will forbid the hanging of clothes on individual lots, the court should provide an area for this purpose, even though a laundry is not constructed. Where a laundry is not included in the service building, and because of staggered use, about 3 feet of line per trailer should suffice. Drying yards should be made inconspicuous with informal groupings of native plant materials.

Entertainment and Games

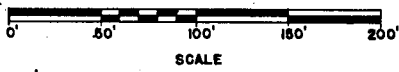
A recreation building is not needed in the court because the parks and monuments themselves provide the visitors' recreation. Besides the roads and trails, there is available the educational and informational interpretive programs offered by the Service. Concessioners in many areas also offer a variety of entertainment. For the same reason, competitive games and playgrounds are not needed. Barbecue pits and picnic tables are excluded from the court because these facilities for picnicking are provided by the Service elsewhere in the area.



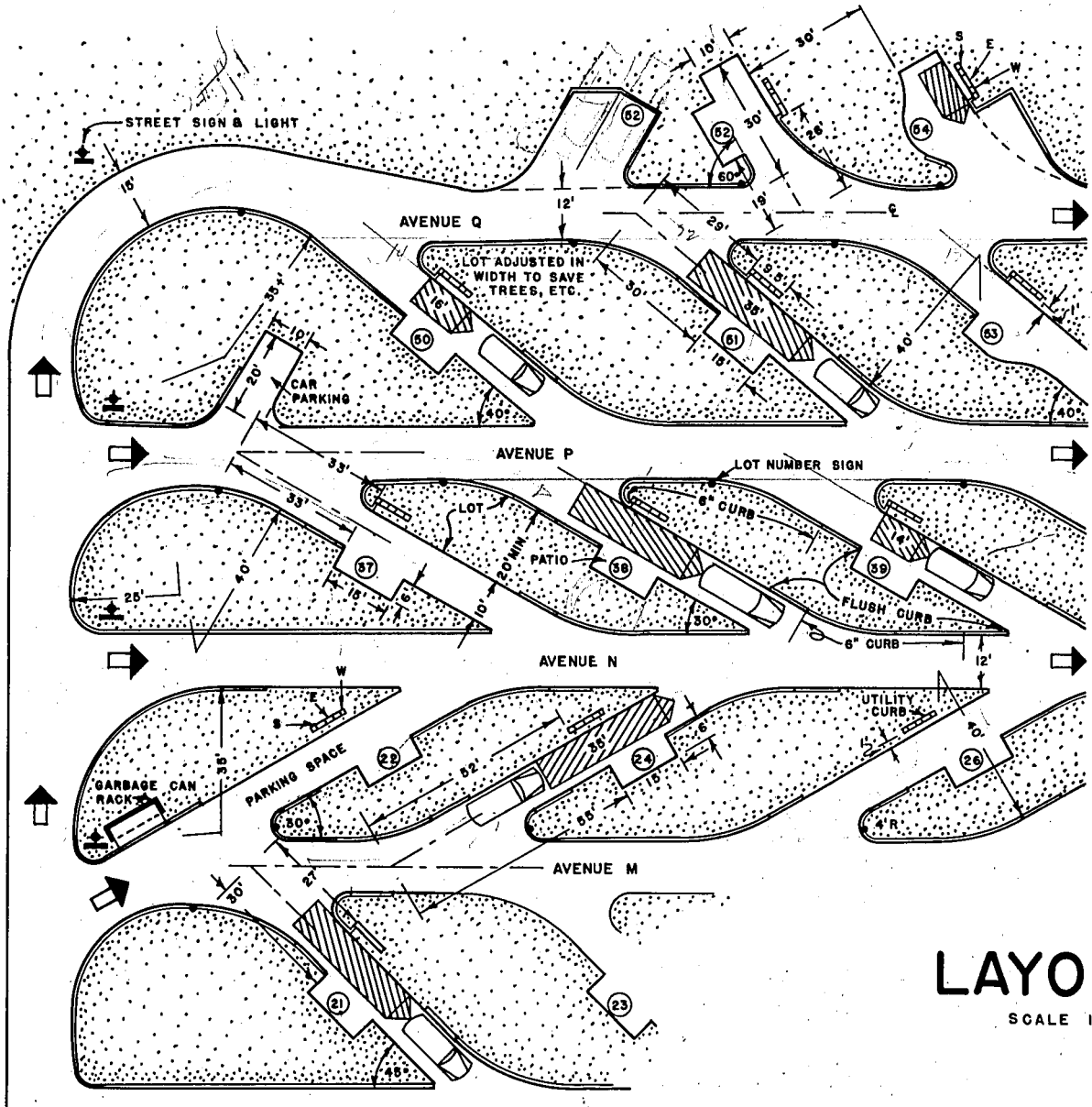
LEGEND

- A SERVICE BUILDING
- B DRYING YARD
- Garbage can rack
- Hydrant-1/2 OUTLET
- 'DO NOT ENTER' SIGN
- STREET SIGN
- STREET LIGHT
- WALK
- WATER, SEWER & POWER CONNECTION
- FIRE ALARM
- DRINKING FOUNTAIN
- TRAFFIC FLOW
- EXISTING CONTOUR

**TRAILER COURT
(HYPOTHETICAL)**



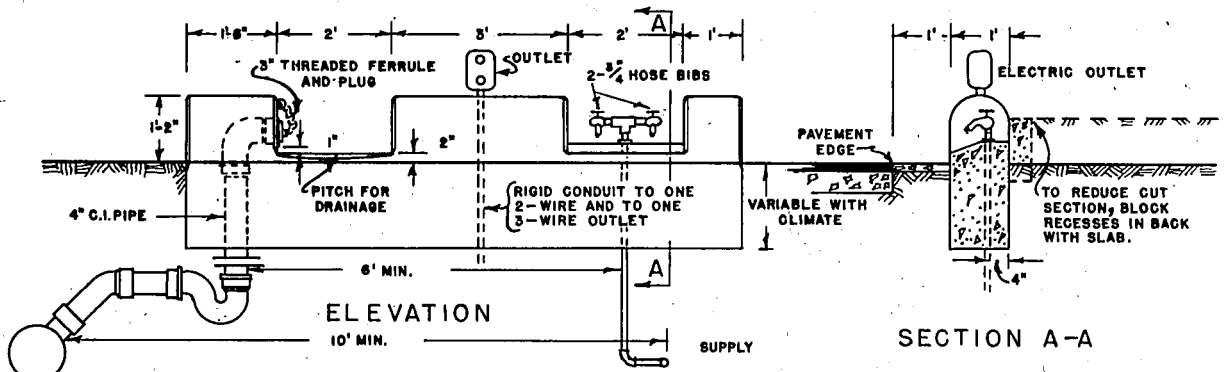
PARK ROAD



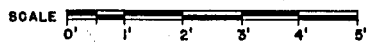
LAYOUT

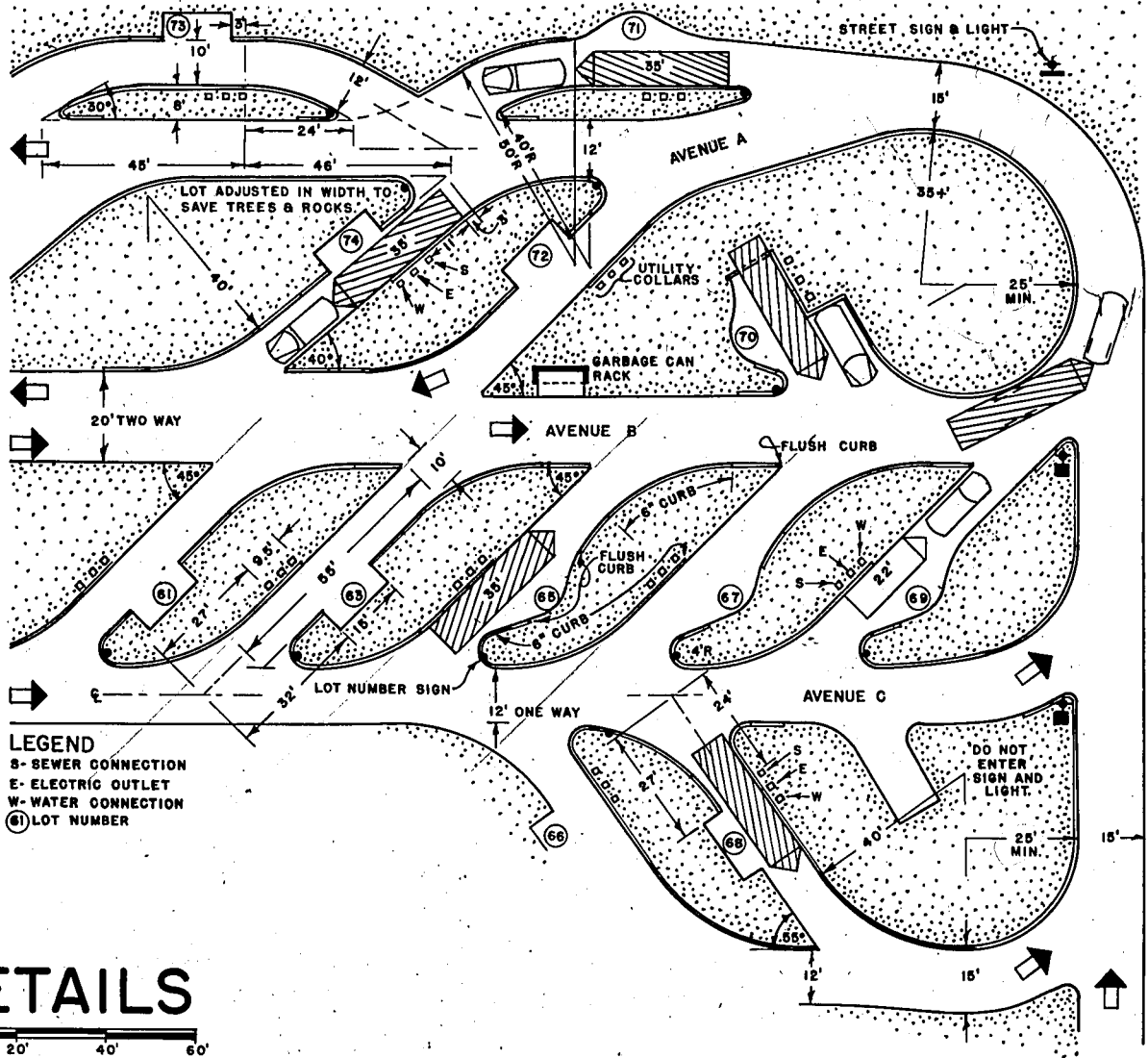
SCALE IN FEET

1, 6
2
3,
2
1
9-6

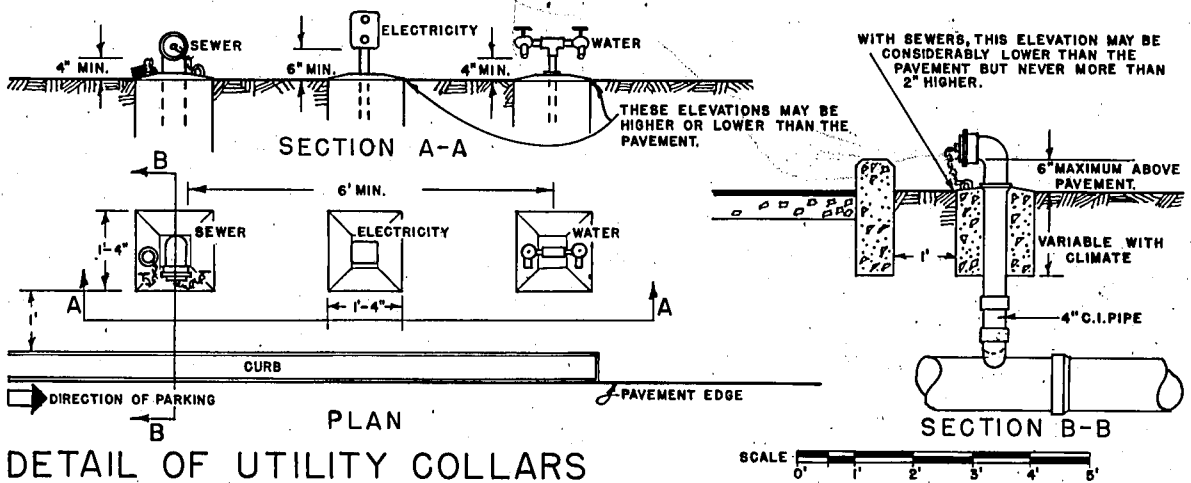


DETAIL OF UTILITY CURB

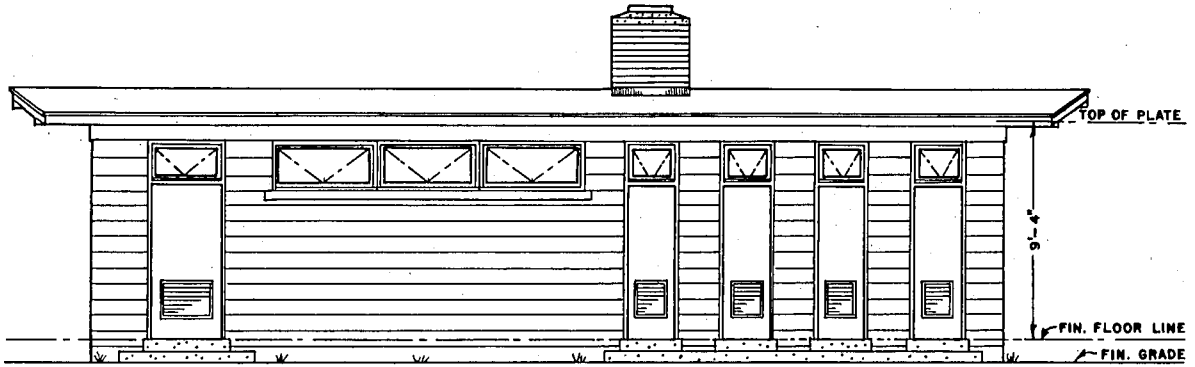




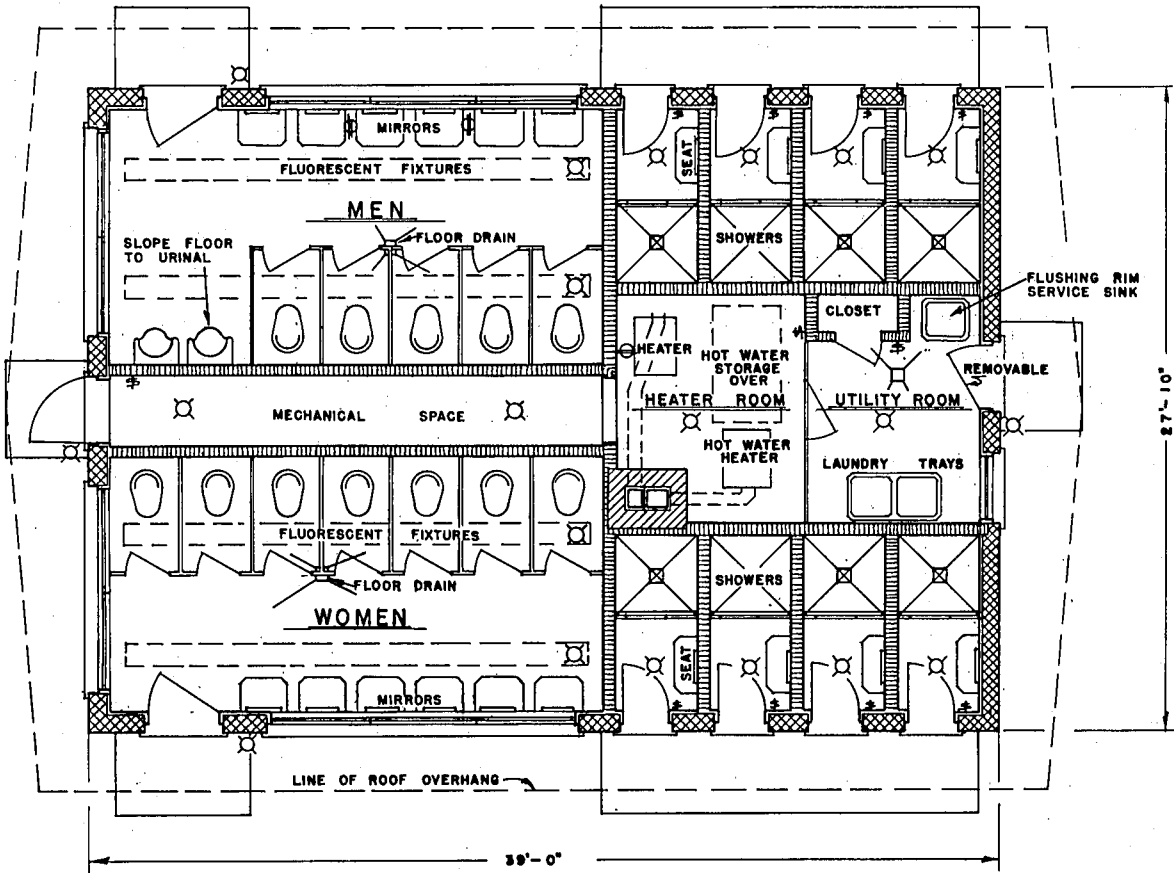
DETAILS



DETAIL OF UTILITY COLLARS



F R O N T E L E V A T I O N



F L O O R P L A N



TYPICAL SERVICE BUILDING

TABLES FOR DRAFTING ROOM USE IN PLANNING

<u>Ground Slope</u> (Percent)	<u>Grade of Cir- culation Road</u> (Percent)	<u>Angle of Parking</u> (Degrees)	<u>Resulting Approx. Grade of Parking</u> (Percent)
10	-6.0	30	+2.5
8	-6.0	45	+2.0
	-5.0	40	+2.8
	-5.0	30	+1.8
	-4.0	30	+3.0
6	-5.0	30	-1.4
	-5.0	55	+1.6
	-4.0	45	+2.6
	-3.0	30	+2.2
	* +4.0	30	-0.8
4	-3.0	55	+1.8
	-1.0	30	+2.4
	+4.0	55	+2.0
	+4.0	45	+2.8
	* +3.5	30	+1.4
	* +3.0	45	-1.0
	* +2.0	30	-1.4
2	* -1.0	45	+1.4
	-0.5	55	+2.2
	+2.0	30	+2.0
	* +2.0	45	+1.2
	* +2.0	55	+0.8
	* +1.0	30	-0.8

* The gradient signs \pm may be reversed in columns two and four.

Measurements Between Inside Pavement Edges of Circulation Roads
to Give Parking Space Lengths of 55 feet

<u>Angle of Parking</u> (Degrees)	<u>Perpendicular Distance Between Circulation Roads</u> (In feet)
30 - 39	37
35 - 42	40
40 - 45	43
45 - 48	46
50 - 50	48
55 - 53	51

OPERATION AND MAINTENANCE OF CONCESSIONERS TRAILER COURTS

General

The purpose of the following text is to present an idea for effective operational procedure, integrated with the trailer court plan, to promote safe, sanitary, and attractive accommodations for transient trailerists.

From a management standpoint, the plan of the court has the following intentions:

Entrance controls located where first contacts can be effective in dispensing information and collecting fees.

A road system which gives uninterrupted circulation both within the court and within the entrance proper, while providing egress control.

A parking system allowing the trailerist to park his trailer and towing vehicle and to connect utilities.

The size of the lots and the distribution and kind of facilities permit safe and satisfying occupancy.

Design standards that promote economical maintenance.

These intentions can only be as effective and lasting as operation and maintenance practices allow them to be.

Utilities

Water supply, sewage-disposal plants, garbage collection and disposal are functions generally operated and maintained by the National

Park Service, or by an arrangement with a concessioner, for an area-wide service. They are operated, in most respects, similar to like municipal services. Telephone service, if available, is generally furnished by a utility company. Electric power source is various; in some areas it is generated by the Service, in others by a concessioner, and in still others it is supplied by power companies. Whenever it is feasible to do so, utility companies are being encouraged to replace generating plants with commercial power. Rates for services vary between areas, depending upon construction, operation, and maintenance costs.

Sanitation

General

In the following discussion of the maintenance of sanitary facilities, it is assumed that water supply, sewage disposal plant, and garbage collection and disposal are not a function of the management of the trailer court. In the event that any, or all, of these sanitary facilities are installed for the sole use of a trailer court, maintenance requirements can be found in the bulletin prepared by the United States Public Health Service entitled Trailer Court Sanitation. This publication is available through the Mobile Home Manufacturers Association.

Water System

In order to maintain the system in a safe and satisfactory condition, samples of the water should be collected each month and tested bacteriologically for organisms of the coliform group.

The water system should be drained before freezing temperatures set in.

Chlorinated supplies should be tested daily for chlorine residual.

Sewerage System

All traps and fixtures connected to the sewer system should be drained or treated to prevent freezing during the winter.

Service Building

The floors and all plumbing fixtures located in the service building should be maintained in a sanitary condition at all times; they should be washed and disinfected at least once daily.

Refuse Storage and Collection

The storage, collection, and disposal of refuse from the court should be so conducted as to avoid the creation of health hazards, such as rodent harborage or insect-breeding areas, air pollution, and accidents. The court area should be kept free of litter, rubbish, and flammable material at all times.

Occupants should be required to drain and wrap garbage as this practice helps to eliminate fly-breeding, reduces the frequency of container-washing, and minimizes odors.

Garbage should be collected at least twice weekly. Rubbish should be collected often enough to prevent overflowing of containers. Frequent collections of garbage and rubbish will require less storage capacity.

Insect and Rodent Control

Mosquito Control.--The trailer court should be kept free of cans, jars, buckets, old tires, and other articles which may hold water and provide temporary breeding places for mosquitoes. Permanent mosquito-control measures should include the draining or filling of every depression in which water may collect, with such supplemental larvicidal treatment as may be necessary. Storm water catch basins may require regular larvicidal treatment.

As a larvicidal agent, use either 5 per cent DDT in No. 2 fuel oil, or No. 2 fuel oil alone, either of which may be applied with hand sprayers. A 5 per cent DDT oil emulsion may be used as a residual spray in the interior of the service building, protected portions of the exterior, and other areas about the court which may serve as resting places for mosquitoes, such as the space under trailer coaches.

Fly Control.--Flies can be controlled most effectively by eliminating their breeding places. Primarily this requires careful management of all garbage. Cans should be repaired or replaced when so damaged that their lids do not fit in a flytight manner. The area surrounding the garbage-can racks must not become littered with garbage, nor saturated with waste liquids from garbage. All garbage cans should be washed frequently, and should be fastened securely on the racks, to prevent overturning by animals. If supplemental larviciding should be necessary, a 2 per cent chlordane oil emulsion may be used.

Rodent Control.--The most effective ways to prevent or eliminate rodent infestation in any area are to destroy actual and potential harborage and to remove sources of food. Harborage can be eliminated by the orderly stacking of such materials as lumber, pipes, and wood, 18 inches above the ground, and the complete destruction of unnecessary scrap materials. The space beneath coaches should never be used to store supplies under which rats may find harborage. All buildings within the court should be adequately rat-proofed.

Control of Other Vectors.--The presence of ticks and chiggers may create a problem in many trailer-court areas, and especially in recreational areas. Tick- and chigger-control measures should include the elimination of all harborage for the hosts of the ticks by removing all rubbish and debris, clearing brush and weeds, and cutting tall grass.

Ticks may be controlled, also, by dusting infested areas with a 10 per cent DDT dust, at the rate of 10 ounces to 1,000 square feet or 30 pounds to an acre. Chiggers may be controlled by spraying infested areas with an emulsion of benzine hexachloride or chlordane, at the rate of 2 pounds per acre.

Fleas of dogs and cats (which are a nuisance), and fleas of rats (which may carry murine typhus), may be killed by the application of 10 per cent DDT dust of 2½ per cent chlordane dust in places frequented by these animals.

Cockroaches may be eliminated by the use of a 2 per cent

chlordane spray for the German and brown-banded roaches (water bugs), and a spray of 10 per cent DDT dust or a 5 per cent DDT spray solution for the American and Oriental roaches.

In most trailer courts, especially those located in suburban areas and in or adjacent to wooded areas, precautions should be taken against contact with poison ivy, poison oak, and poison sumac. Ragweed should be eliminated for the benefit of people subject to hay fever. Keeping the grass and weeds cut in all areas of the courts will control most undesirable or poisonous weeds.

Communicable Diseases

The trailer-court operator must notify the local health authority immediately of any known or suspected case of communicable disease. In case of a disease diagnosed as quarantinable, the park attendant should not permit the departure of a trailer coach or its occupants, or the removal therefrom of clothing or other articles that have been exposed to the infection, without approval of the health authority.

Assignment of Spaces

Water and Sewer Connections

Prior to registering visitors or assigning spaces to them the operator of the court should satisfy himself that the water and sewer connections carried by the trailerist are adequate to meet sanitary requirements. Court regulations require watertight sewer and water connections. Until such time as legislation and court operation practice elsewhere universally require watertight connections for

water supply and waste disposal, there will be trailerists entering the park ill-equipped with accessories to meet high sanitary requirements. This is particularly true of sewer connections. Deficiencies in this respect, however, will decline each year because organizations representing manufacturers, dealers, and court operators are seeking standardization. Nonetheless, for as long as the situation remains, it will be necessary at the time of registration for the operator to acquaint each entering trailerist with the regulations and discover the suitability of his accessories. If unsatisfactory, the trailerist must either arrange for acceptable equipment or agree to seal his trailer's waste drain and water intake before he is admitted to the court. A supply of accessories should be kept at hand by the operator. For sanitary reasons, water and sewer connection parts should be sold, not rented. The parts that will be in greatest demand, singly, or in combinations, will probably be couplings, connector clamps, hose, and caulking. The first four items will be needed in sizes ranging from 3/4" to 3" to fit different trailers. Caulking should be a material that, when packed, will not damage the threads of the 3" brass ferrule in the court sewer connection.

Specific attention should be given to the possibility of back-siphonage; any trailer coach with fixtures from which waste water can back into the water system should not be connected to the court's water system until the defect has been corrected.

Court inspections will be necessary to insure that the utility connections are watertight. The inspections can be made, in conjunction with other duties, by the court maintenance man if he is

given training in observation and corrective measures.

Registration of Occupants

Every trailer-court operator should maintain a register containing a record of all trailer coaches and occupants permitted to use the trailer court. The register should be available to any authorized person inspecting the court, and should be preserved for a period designated by the health officer. The register should contain (1) the names and addresses of all trailer-coach occupants; (2) the make, model and license number of each motor vehicle and trailer coach; (3) the country, State, territory or county issuing the trailer license; and (4) the dates of arrival and departure of each trailer coach.

Directions

A practical assignment board for trailer space is a large-scale wall-hung map of the court on which tabs are hung showing the spaces occupied or reserved and the length of occupation.

A companion device is a small-scale letter-size map of the court, similar to the illustration on page 29, for distribution to the entering trailerist. It should have the streets named and the lots numbered in agreement with signs in the court. With this map in hand the trailerist should be oriented by the operator, and the route to his parking space should be marked as well as the exit road to follow.

In assigning lots, there should be an endeavor to satisfy occupants by taking into account three considerations:

1. Occupants in trailers without bathrooms are dependent on the service building.

2. Trailerists without children prefer neighbors without children.

3. Back-in parking spaces should be assigned only to visitors who plan to stay several days.

Information

To confirm or supplement verbal information given at the time of registration, printed material presented to the visitor is instructive. The printed information could economically be placed on the reverse side of the above-mentioned letter-size map of the court. A sample presentation will be found on page 47.

Fee Collection

Fees should be charged only on a daily basis. By this means a time limit of occupancy of less than a week can be enforced, when necessary, on short notice. This practice will eliminate the need for reading individual meters and the billing of trailerists for the electricity used. The fee will include the use of all facilities provided in the court. Fees should be collected in advance, based on the entering trailerists estimated length of occupancy. If the registration office is manned 24 hours a day, collections for overtime occupancy can be made at the time the occupant leaves. Part-time manning of the registration office, say from 6 a. m. to 10 p. m. will require procedures to handle the following two situations:

1. Preparation should be made to collect fees at the trailer space for overtime occupancy.

2. Preparation should be made to accommodate night arrivals with temporary space when vacancies exist. To accomplish this, three

or four spaces should be tentatively set aside. Their locations should be near a service building on a circulation road that is easy to follow by direction of scotchlited signs, as represented by lots numbered 4, 5, 6, and 7 shown on the drawing titled Trailer Court (Hypothetical) on page 29. Assignments of nighttime arrivals should be made to other spaces, if available, the next morning. If no other spaces are available, the space used for overnight stop should be assigned to the occupant. When the court is full, new arrivals to the area should be so informed by placing a "No Vacancy" sign at the junction of the entrance road to the court and the park road.

An additional charge may be made for extra services such as connecting a trailer to utilities or for collecting and filling LP-gas tanks.

Rates

All rates and prices charged to the public by a concessioner for accommodations, services, or goods, furnished or sold shall be subject to regulation and approval by the Service not inconsistent with an opportunity for the concessioner to make a fair profit from the total of his operation.

Reasonableness of rates and prices will be judged primarily by comparison with those currently charged for comparable accommodations, services, or goods furnished or sold outside of the areas administered by the National Park Service under similar conditions. Due allowance must be made for length of season, provision for peak loads, average percentage of occupancy, accessibility, availability and cost of labor.

and materials, type of patronage, and other conditions customarily considered in determining charges. However, consideration may also be given to other factors as the Service may deem significant.

Duration of Occupancy

All accommodations in areas administered by the Service are established for the benefit of the visiting public. In order to provide equal opportunities to all people the operator of a trailer court should be prepared to enforce a time limit of occupancy at any time that demand for individual space is greater than the capacity of the court. At peak seasons, the time limit, subject to the approval of the Director of the National Park Service, should be based on a reasonable number of days necessary for the visitor to see the area in which the court is located.

Fire Protection

The operating staff shall be instructed in the use of the court fire protection equipment and in their specific duties in the event of fire, as well as in the administration of first aid. Periodic employee fire drills shall be held.

The rules and regulations for fire prevention and control shall be conspicuously posted.

Provisions shall be made for giving a general alarm in the event of fire.

Open fires for picnicking or burning rubbish or for any other purpose, should not be allowed in or adjacent to the court.

The Standards for Trailer Coaches and Trailer Courts, a publication available for 25¢ through the National Fire Protection Association,

60 Batterymarch Street, Boston 10, Mass., is a source of further information in providing adequate fire protection.

The National Park Service fire fighting equipment, if available, is subject to call to supplement the court's fire protection.

Preservation Measures

The National Park Service conducts educational programs which enlist the cooperation of visitors in preserving natural and cultural features and public and private property. Such an educational endeavor makes people conscious of the destruction caused by carelessness, thoughtlessness, and callousness. A concessioner will also find it profitable to take every opportunity to appeal to the reason of court occupants to protect and preserve all the growing things and constructed facilities within the court and its surroundings. Vandalism, the deliberate destruction or defacement, can also be reduced by such appeals to reason.

Law Enforcement

The National Park Service rangers are its law enforcement officers. They are resident in all areas offering overnight accommodations, and are primarily interested in maintaining order in all sections and developments of areas under the administration of the National Park Service.

Residences for Employees

It is recommended that trailer court employees be housed in trailers located in the court. It may be advantageous to employ people who live and travel in trailers to take advantage of their experience.

Government Assistance

Regular inspections are made by the United States Public Health Service employees to assist the operator in maintaining a sanitary court.

The advice of professional and administrative employees of the National Park Service is available upon request.

SAMPLE INFORMATION LETTER TO COURT OCCUPANTS

VACATIONERS TRAILER COURT
Peoples National Park
Telephone No.

Concessioner's Name

Concessioner's Address

Dear Friend:

Welcome to Peoples National Park! The facilities of Vacationers Trailer Court are provided for your use and enjoyment. Please use them with consideration of your neighbor and those who will follow you. The information below is offered to assist in making your stay a pleasant one.

Please report to the manager any defective fixture or facility.

Mail addressed in care of this court can be obtained at the Registration Office, where there is also a pay telephone.

Liquified petroleum gas deliveries within the court are considered unsafe. It is available at (the described location).

Metered washing machines are in operation in Peoples National Park at (the described location).

Facilities for picnicking are provided at (the described location).

Copies of the General Rules and Regulations for national parks and monuments can be obtained from the Superintendent. They are applicable within this court, as are the following rules:

Water and sewer connections must be watertight.

Open outdoor fires of any kind are not permissible.

Parents must accompany children to the service building.

Speed limit is 10 miles per hour.

Fees for space are on a daily basis and payable in advance. Please notify the manager of extended stay prior to the expiration of your assignment date.

Wrap garbage and place with trash in the covered trash cans.

Please rinse and clean wash bowls and shower stalls after use.

Clean night-pails in the special toilet located in each service building.

Hang clothes or laundry on the lines provided near the service building.

Awnings may be erected over the patios, but no other shelter or fence may be placed, nor any articles stored or hung around the lot.

Thank you.

Signed _____
Concessioner

TRAILERS IN CAMPGROUNDS

Introduction

This chapter is not an attempt to control campground layout. It is rather an effort to impart to the planners of campgrounds an attitude toward visitors in trailers who use campgrounds, and to present a means of providing sufficient accommodations for them. There has been a steady increase in the popularity of trailer camping since the 1930's. The first impact of these tandem vehicles was devastating to the roadsides in the campgrounds where parking spaces were built for cars only. Since that time, layout plans for campgrounds have shown a steady increase in the number of parking spaces that will accommodate trailers, plus their towing vehicle. The recognition of the trailer in planning has materially reduced the damage from this one-of-many sources of campground devaluation. The trend toward constructing larger parking spaces is herein encouraged to the extent that campgrounds should provide as many trailer parking spaces as can be incorporated without undue damage to natural roadside and park values by their size. The alternate scheme is segregation of campers in trailers from campers using other means of camping. The advantages of intermingling trailers with tenters and people sleeping in cars, buses, or sleeping bags are as follows:

1. Administration and housekeeping will be simplified by giving campers, regardless of their means of camping, equal opportunities to identical facilities. Segregation by the Service would immediately recognize their differences; and, to the camping visitor,

would lend support to their requests for special conveniences to suit their particular mode of camping.

2. An accepted and logical approach to campground layout design includes the packaging of a number of functional sections. This arrangement permits alternate closing-down of sections of the campground during slack periods of the season to permit recover of plant growth and immobilization of the community utility facilities. If this approach is accepted as a sound one, then intermingling of the various campers seems economical. Otherwise, during slack periods of the camping season, at least two units must be operated; one for trailers, one for other campers. It also means that at least two trailer sections would be required in order to provide for occasional periods for rest and recovery.

3. The assignment of sites to campers requires extra employees. Parking spaces large enough for trailers are usable to other campers, and will allow continuance of the present practice of not assigning campsites. In any event, it is difficult to estimate accurately the proportion of sites needed for any one type of camper because of fluctuations in visitation during the summer.

Electricity

A utility omitted from the majority of campgrounds that most camping trailerists want, and are willing to pay for, is electricity. This source of light, heat, and refrigeration is a convenience that the National Park Service considers beyond the scope of accommodations generally needed for campers. The cost of installation of metered

electricity and its maintenance would also be a drain on appropriations that could be put to more appropriate use to satisfy more urgent needs in other fields. It is also very likely that a great many of the trailers now dispersed in campgrounds of the U. S. Forest Service, State, county and city would be attracted to national park campgrounds for that facility alone, unless electric connections were also installed in campgrounds administered by the other agencies.

The installation of electricity may be justified in areas where there is no firewood available and electric power is economically available near by. However, before planning electric connections for any campgrounds, other sources of heat should first be considered. Wood, charcoal, or commercially produced sawdust logs are all products that can be shipped into the area and sold to campers. The fires resulting from these products would be more in keeping with camping lore than heat produced through electricity.

Water and Sewage

Of greater concern to the Service than the installation of electricity is the maintenance of health standards in campgrounds where community sanitary facilities have become the accepted form of development. This discussion is not primarily concerned with the disposal of excrement, because application of the present Service standards of location, materials, and fixtures in this regard will reduce that source of danger to a minimum. This text is concerned with the disposal of all other waste generated through the use of water, and applies to all campers. There is no difference in this respect between

campers in tents and campers in trailers if their source of water is identical.

To conserve water and at the same time discourage campers from adapting public faucets to an individual water source it is recommended that self-closing water faucets, without threads for hose connections, be installed on all community standpipes.

Although small amounts of wash water from hand washing may not contain pathogenic bacteria, the kitchen and laundry waste water is considered sewage waste and should be disposed of in a similar manner to toilet waste. Such water contains enough foreign matter that when repeatedly and carelessly disposed of on, or in, the ground, it will create fly-breeding areas and odor nuisances. The proper place for its disposal is in the sewage system. To provide for disposal, proper receptacles connected with the sewer must be distributed conveniently throughout the campground and so located that there will be no increase in the camptender's work of keeping the interior of the comfort station clean. One flushing rim service sink with a 3" outlet and a water area, including a water tap above it for rinsing, should be installed in an alcove of each comfort station. The alcove should have access only from the outside and the floor should be sloped toward a drain. The door should be removable during the use season. This is a minimum number for every campground where flush toilets are installed. In areas where pit privies must serve, separate seepage pits should be provided for this waste.

A second requirement is a set of rules of conduct for campers which would include the following:

1. A private connection to the public water faucet is not allowed, even though a camper is prepared to add an extra spigot for public use.

2. All wash water and other waste shall be collected in containers and disposed of without spillage in the flush-type slop sink, located in each comfort station.

3. No improvised toilets shall be used, nor any facility substituted, for the purpose for which the water closets in the public comfort station are provided.

The third requirement for the proper use of the sanitary facilities is enforcement of the rules. The selling of good health habits to campers by Service personnel will probably be more effective than law enforcement. However, cooperation from the campers can be expected if they are all treated alike and proper facilities that are easy to maintain are provided.

Parking Units

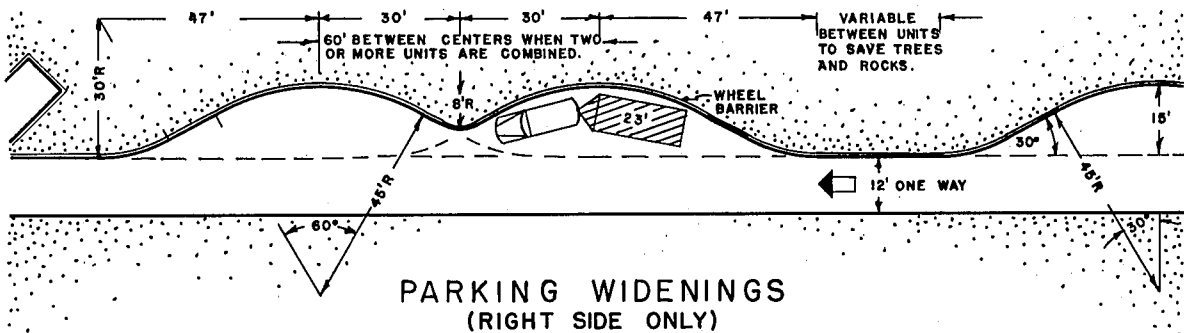
The size of the parking units has been limited to that needed to conveniently park a 23-foot long trailer, plus a 20-foot-long towing vehicle. It is anticipated that the majority of trailers over that length will be independent trailers and will patronize concessioners' trailer courts where one exists in the same park. If a concessioner's court does not exist, there will probably not be enough visitation of the longer trailers to justify the additional construction costs to provide for them by increasing over-all design standards. With some maneuvering, combinations longer than 43 feet can use the spaces.

Trailer parking units for campgrounds are illustrated on page 54.

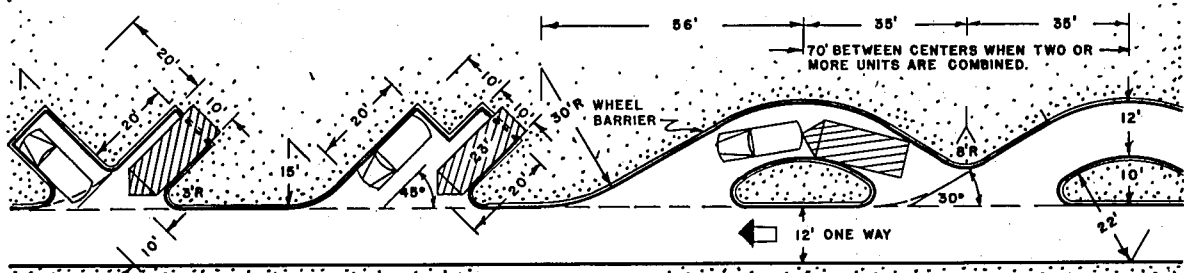
The variation of the parking units for the left and right side of the road is determined by the door position on the right side of the trailers.

The pull-through units, less the provision for utilities, that are illustrated for concessioners' trailer courts also make satisfactory parking spurs in campgrounds. Their length may be decreased from 55 feet to 43 feet, though the campsite area should be increased over that designated for lot sites.

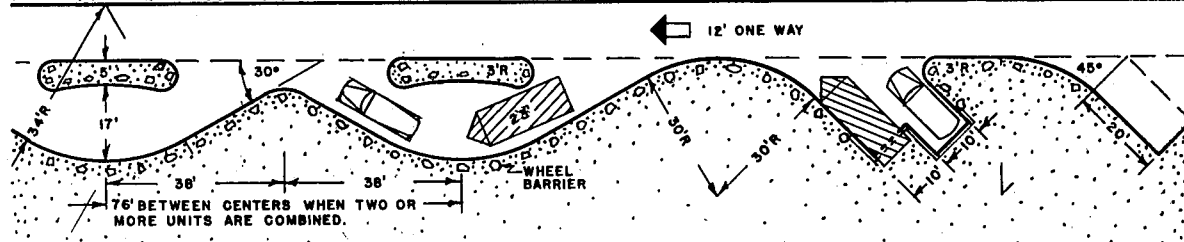
Wheel barriers are recommended near, or at, the edges of the parking area pavement to protect adjacent natural features. They should preferably be of native materials, such as boulders spaced about 5 feet apart, rock curb, or preservative-treated logs placed as curb or post. Conventional curbing of concrete or asphalt is satisfactory if native materials are not economically available.



PARKING WIDENINGS
(RIGHT SIDE ONLY)

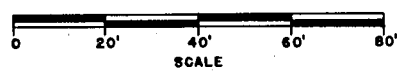


BACK-IN AND ISLAND PARKING UNITS
(FOR THE RIGHT SIDE)



BACK-IN AND ISLAND PARKING UNITS
(FOR THE LEFT SIDE)

TRAILER PARKING UNITS FOR CAMPGROUNDS



LIMITATION OF TRAILER USE

There are certain areas in which the tandem length of trailer and towing vehicle, or their combined weight, is too great to be anything but a burden to the trailerist, or an interference with other visitors. In these instances the use of the area with a trailer should be restricted. Under constricted city conditions, trailerists accept their limitations and park their trailer outside the congested sections before touring the town. The same attitude should be accepted in constricted areas administered by the National Park Service.

There is no rule of thumb to apply to these areas. Each one must be examined for a solution to its particular limitations. A few examples may help in determining a policy.

Saguaro National Monument

The narrow one-way circulation road of the self-guiding tour with its small parking areas for two or three cars has been developed to preserve the examples of sciences and history it features. Towing a trailer over the route requires distractingly careful driving to prevent damage to both roadside values and the trailer. If one of the parking areas is occupied by a car, the trailerist must either block the circulation road waiting for the parking area to empty or forego the features for which the parking area was constructed. If the trailer and towing vehicle is first to occupy the parking area, visitors in cars must either block the road awaiting the departure of the trailerists, or fail to see or read about the feature displayed

from it. For the benefit of the visitors with trailer and other visitors in cars, a trailerist should be required to unhitch the trailer in a parking area provided near the entrance before taking the self-guiding tour.

Wind Cave National Park

The existing parking areas are inadequate during much of the vacation season for the number of visitors. Expansion area for parking facilities is limited due to topographical conditions.

To park a 30-foot trailer requires a distance of about 100 feet. Standing in tandem, the trailer and car occupy the space required for four automobiles. It seems only fair, for the greatest good for the greatest number, to invite a trailerist to return to the cave after first insisting that the trailer be parked elsewhere.

Castillo de San Marcos National Monument

Parking space is at a premium here, due to city conditions of St. Augustine, Fla. The same solution applies here as is suggested for Wind Cave National Park.

General

In all areas administered by the Service, trailerists should be encouraged to park the trailer before touring an area. Attention to the trailer distracts the driver of the towing vehicle from values along the route, and the combined bulk of trailer and car is distracting to sight-seers in other vehicles.

TRAILER COACHES FOR EMPLOYEES

The National Park Service has found it advantageous in some areas to furnish trailer coaches for housing seasonal employees. Patterns of seasonal public use and protection requirements have fairly well established the locations where Service employees are needed for brief periods of time. Mobile homes provide a means to expedite employee activities in the public interest. The policy adopted by the Service toward trailer coach housing is as follows:

1. Service-owned trailer coaches are to be used for housing seasonal employees only.
2. Stable parking spaces, with adequate lots, and individual connections to water, sewer, and electricity shall be provided.
3. Trailers are to be used as constructed. The wheels are not to be removed, and no additions of any kind are to be made to them.

Because Service trailer coaches will be independent, there will be no need for a service building. They will rarely be in concentrations greater than 4 or 5, so there is little need to present here an illustration of facilities for them. Limitations on utility connections, roads, parking, and lots are similar to those that apply to design and construction of concessioner's trailer courts. However, the coaches will be transported and parked through arrangements by the Service and not by the personal car of the employee. Therefore, the parking spaces need be no longer than the trailer, and may be designed as back-in units. A parking space for the private car of the employee should be located conveniently to his trailer.