

American National Standard

*For Sanitation –
Nonsewered Waste-Disposal Systems –
Minimum Requirements*



**Portable
Sanitation
Association
International**

ANSI®
Z4.3-2005
Revision of
ANSI Z4.3-1995

American National Standard
for Sanitation –
Nonsewered Waste-Disposal Systems –
Minimum Requirements

Secretariat
Portable Sanitation Association International

Approved August 8, 1995
American National Standards Institute, Inc.

American National Standard

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus and other criteria for approval have been met by the standards developer.

Consensus is established when, in the judgement of the ANSI Board of Standards Review, substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objectives be considered and that a concerted effort be made toward their resolution.

The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing or using products, processes or procedures not conforming to the standards.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute.

Published by

**American National Standards Institute
1430 Broadway, New York, New York 10018**

Copyright © 1995 by American National Standards Institute, Inc.
All rights reserved.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Printed in the United States of America

A1M987/5

Contents		Page
Foreward		ii
1	Scope and purpose	1
2	Definitions	1
3	General requirements for toilet facilities and toilet rooms.....	2
4	Requirements for permanent toilet facilities and permanent toilet rooms.....	3
	4.1 Number of lavatories.....	3
	4.2 Covered receptacles.....	3
	4.3 Construction of permanent toilet rooms	3
	4.4 Lighting	3
5	Requirements for portable toilet facilities and portable toilet rooms	3
6	Requirements for privies	3
	6.1 Privy pit	3
	6.2 Privy buildings	4
7	Types of toilet facilities	4
	7.1 Requirements for vault toilets	4
	7.2 Requirements for sealed-bag toilets	4
	7.3 Requirements for combustion or incinerating toilets	5
	7.4 Requirements for chemical toilets and biological toilets	5
	7.5 Requirements for nonwater-flush toilets	5
	7.6 Requirements for water-flush toilets	5
8	Disposal of grey water.....	5
9	Revisions to American National Standards referenced in this document	6
Tables		
	Table 1 Minimum number of toilet facilities.....	2

Foreword (This Forward is not part of American National Standard Z4.3-1995.)

The original version of this standard was published by the U.S. Public Health Service as Supplement No. 108 to the Public Health Reports in 1933. This was superseded by American National Standard for a Sanitary Privy, ANSI Z4.3-1935. The American National Standard was revised and expanded several times over the years. The 1987 edition superseded the American National Standard Minimum Requirements for Nonsewered Waste-Disposal Systems, ANSI Z4.3-1979.

Whereas ANSI Z4.3-1935, as its title indicates, was confined to requirements for a sanitary privy, ANSI Z4.3-1987 was much broader in scope and included all devices now available and acceptable for disposal of human waste where the lack of water or temporary nature of the installation makes water carriage systems impracticable.

The minimum requirements for nonsewered waste-disposal systems have taken on much greater importance with the acceptance by the public of clean portable restroom facilities. These facilities, once used primarily on construction projects, have become commonplace throughout the American scene, particularly because of the advent of durable plastics in bright colors. They are now found at parks, playgrounds, athletic events and literally any gathering of people that does not have access to permanent toilet facilities. The success or failure of clean portable restroom facilities is dependent on proper usage. The limited capacity of these units demands proper service. Current standards reflect the most up-to-date human engineering and state-of-the-art chemicals and procedures.

The provisions in this standard are the result of extended and careful consideration of available knowledge and experience on the subject of industrial sanitation and are intended to present minimum requirements recommended for use by employers, building owners and others. The provisions are also suitable for adoption by governmental administrative authorities.

Consensus for this standard was achieved by use of the Canvass Method. Suggestions for improvement of this standard will be welcome. They should be sent to the Portable Sanitation Association International, 7800 Metro Parkway, Suite 104, Bloomington, MN 55425.

The following organizations recognized as having an interest in the standardization of nonsewered waste-disposal systems were contacted prior to the approval of this standard. Inclusion in this list does not necessarily imply that the organization concurred with the submittal of the proposed standard to ANSI.

William F. Carroll, Executive Director (Portable Sanitation Association International)
Michael R. Pauling, Coordinator (Biffs, Inc.)

<i>Organizations Represented</i>	<i>Name of Representative</i>
Action Services, Inc.	C. Lee Sola
Alabama Department of Public Health	Sam Robertson
Andy Gump, Inc.	Barry Gump
Brauer Group	Don Brauer
International Sanitary Supply Association	Jack Ramaley
Porta-Jon of the Piedmont	Flay Anthony
Satellite Industries	John Taylor
Sunroc Corp.	Ronald Greenwald
U.S. Navy Environmental Health Center	J.B. Cockrum

American National Standard For Sanitation –

Nonsewered Waste-Disposal Systems – Minimum Requirements

1 Scope and purpose

1.1 Scope

This standard applies to sanitary waste-disposal systems for all places of employment where such systems are not connected to a sanitary sewer, septic tank or on-site sewage-disposal treatment facility.

1.2 Purpose

The purpose of this standard is to assure that employees are provided with healthful and adequate sanitary waste-disposal facilities at places of employment not having sewered waste-disposal systems.

2 Definitions

2.1 flush toilet facility: A flush toilet facility is one utilizing a water or nonwater flushing fluid that may be deposited into a container or receptacle, or may be recirculated by a closed system for flushing purposes. Such a facility may be housed in a permanent or portable structure.

2.1.1 water-flush toilet facility: A water-flush toilet facility is one wherein the waste is carried from the bowl and the bowl is cleansed by water, and the combined water and waste is deposited into a container or receptacle, or recirculated by a closed system for flushing purposes; such facilities include, but are not limited to, vacuum-toilet facilities.

2.1.2 nonwater-flush toilet facility: A nonwater-flush toilet facility is one wherein the waste is flushed from the bowl and the bowl is cleansed by a fluid other than water, with the fluid deposited in a container or receptacle, or treated and recirculated as in 2.1.1; such facilities include, but are not limited to, oil-flush toilet facilities.

2.2 nonflush toilet facility: A nonflush toilet facility is one wherein the waste is deposited directly into a container or receptacle without flushing.

2.2.1 chemical toilet facility: A chemical toilet facility is a nonflush toilet facility wherein the waste is deposited directly into a container containing a solution of water and chemical. It may be housed in a permanent or portable structure.

2.2.2 vault toilet facility: A vault toilet facility is one wherein the waste is deposited without flushing in a permanently installed, watertight, below-ground container.

2.2.3 sealed-bag toilet facility: A sealed-bag toilet facility is one wherein the waste of each user is deposited, without flushing, into a bag, generally plastic, which is then sealed for later disposal. The structure housing a sealed-bag toilet facility may be permanent or portable.

2.2.4 privy: A privy is a toilet facility consisting of a pit in the earth covered with a structure (**privy building**) affording privacy and shelter and containing one or more stools with an opening into the pit.

2.3 combustion or incinerating toilet facility: A combustion or incinerating toilet facility is one wherein the waste is deposited, with or without flushing, into a combustion chamber, where it is incinerated. The structure housing a combustion or incinerating toilet facility may be permanent or portable.

2.4 biological toilet facility: A biological toilet facility is one wherein the waste is deposited, with or without flushing, into a waste container integral to the toilet facility, where it is treated by means of biological agents or aeration.

2.5 toilet room: A toilet room is an enclosure containing one or more toilet facilities. A toilet room may be either permanent or portable.

2.6 toilet facility: A toilet facility is a fixture maintained within a toilet room for the purpose of defecation or urination, or both.

2.7 stool: A stool is a toilet facility maintained within a toilet room for the purpose of both defecation and urination.

2.8 urinal: A urinal is a toilet facility maintained within a toilet room for the sole purpose of urination.

2.9 lavatory.: A lavatory is a basin or similar vessel used for washing hands, arms, face and head.

2.10 grey water: Grey water is waste water from culinary activities, bathing and washing facilities and clothes washing facilities.

2.11 seepage pit: A seepage pit is a subsurface leaching pit for grey water.

2.12 number of employees: The term “number of employees” denotes the maximum number of employees present at any one time on a regular shift.

2.13 permanent: The term “permanent” means not readily or easily relocatable.

2.14 portable: The term “portable” means readily or easily relocatable.

3 General requirements for toilet facilities and toilet rooms

3.1 Toilet facilities shall be installed, maintained and operated in a manner that will not endanger the health or safety of employees.

3.2 Toilet facilities, in toilet rooms separate for each sex, shall be provided in all places of employment whether indoors, outdoors or underground, except that where toilet rooms will be occupied by no more than one person at a time, can be latched from the inside and contain at least one stool, separate toilet rooms for each sex need not be provided (See 3.6).

3.3 The number of facilities to be provided for each sex shall be based upon the number of employees of that sex for whom the facilities are furnished and shall be in accordance with Table 1. Where single-occupancy toilet rooms have more than one toilet facility, only one such facility in each toilet room shall be counted for the purpose of Table 1.

Where employees of more than one employer are present at a place of employment (such as, but not necessarily limited to, construction sites with employees of several subcontractors), it shall be the responsibility of each employer to provide toilet facilities sufficient for the total number of his own employees.

Number of employees	Minimum number of toilet facilities
	<u>If serviced once per week*</u>
1-10	1
11-20	2
21-30	3
31-40	4
Over 40	1 additional facility for each 10 additional employees
	<u>If serviced more than once per week*</u>
1-15	1
16-35	2
36-55	3
56-75	4
76-95	5
Over 95	1 additional facility for each 20 additional employees

**“Servicing” refers to the emptying of waste and the cleaning of the toilet facility. A camp equipped with flush toilets shall meet the standard for “minimum number of toilet facilities if serviced more than once per week”.

Where the number of employees at a place of employment fluctuates widely, the number of toilet facilities required shall be determined by the maximum number of employees present on a regular shift.

3.4 It shall be the responsibility of the employer to insure that all toilet rooms and facilities are maintained in a clean and sanitary condition. If toilet facilities are of the type that require periodic servicing, it shall be the responsibility of the employer to provide sufficient toilet facilities and servicing to prevent the stated capacity of those facilities from being exceeded; the employer shall also assure ready access to the toilet facilities by the required servicing equipment.

3.5 Toilet rooms shall be located so as to be readily accessible to the employees for whom they are furnished (See 3.6).

3.6 The requirements of 3.2 and 3.5 do not apply to mobile crews or to normally unattended work locations so long as employees working at these locations have transportation immediately available to toilet facilities that meet the other requirements of Section 3. The determination of whether work crews are mobile is dependent upon factors such as worksite

operations and circumstances. In general, “mobile crews” job functions require continual or frequent movement from jobsite to jobsite on a daily or hourly basis. Such is not the normal situation for work crews involved in housing construction.

3.7 Toilet paper with a holder shall be provided for every stool. An adequate supply of toilet paper shall be maintained at all times.

3.8 Every stool shall have a seat made of substantial material having a nonabsorbent finish; this does not preclude a seat molded into the stool when a urinal is provided.

3.9 Every toilet seat shall be provided with a hinged lid.

4 Requirements for permanent toilet facilities and permanent toilet rooms

4.1 Number of lavatories. For each three required toilet facilities, at least one lavatory shall be located either in the toilet room or adjacent thereto. Where only one to two toilet facilities are provided, at least one lavatory shall be provided.

4.2 Covered receptacles. Covered receptacles shall be provided in all toilet rooms used by women.

4.3 Construction of permanent toilet rooms

4.3.1 Each stool shall occupy a separate compartment with a door and walls or partitions between fixtures sufficient to assure privacy.

4.3.2 In all toilet rooms, the floors and side walls, excluding doorways and entrances, shall be watertight and shall be joined by a watertight cove.

4.3.3 The floors, walls, ceilings, partitions and doors of all toilet rooms shall be of a finish that can be easily cleaned.

4.4 Lighting. Where electricity is available, lighting shall be provided with an intensity of not less than 20 footcandles, when measured 76 cm (30 in) above the floor.

5 Requirements for portable toilet facilities and portable toilet rooms

5.1 Buildings housing portable toilet rooms may be

mobile trailers or prefabricated, skid-mounted or otherwise portable structures. If they contain more than one stool, each stool shall occupy a separate compartment with a door and walls or partitions between stools sufficient to assure privacy. Toilet rooms intended for male use shall have urinals. Urinals need not occupy separate compartments.

Where it is impractical to locate a portable toilet room, such as in mines or high-rise structures, nonsewered toilet facilities may be located without a structure so long as privacy while using the facility is assured.

5.2 The interior floors, walls, ceilings, partitions and doors of all portable structures shall have a finish that can be easily cleaned.

5.3 Every portable toilet room shall provide adequate space for the user with minimum inside dimensions of 91 cm (3 ft) front-to-back and side-to-side, inside clear height of 1.98 m (6 ft 6 in) and a stool riser height of 35 to 51 cm (14 to 20 in).

5.4 The door of a building or partitioned area housing a single toilet facility shall be provided with an inside latch. Any door leading to the outside shall be self-closing.

5.5 If the structure contains a tank in which waste is stored, that tank shall be vented to the outside of the structure with a minimum nominal vent area of 45 cm² (7 in²).

5.6 Portable toilet rooms that are not ventilated by mechanical means shall be provided with a screened ventilation opening having a cross-sectional area of at least 0.09 m² (1 ft²) per stool.

6 Requirements for privies

6.1 Privy pit

6.1.1 Unless otherwise specified by local or state law or regulation, a minimum distance of 30 m (100 ft) shall be maintained between a privy and a well, spring or other source of water supply for drinking, bathing or culinary purposes.

6.1.2 At no time shall the bottom of a privy pit extend into ground water nor shall it be constructed within 30 m (100 ft) of the shoreline or any open body of water. Phreatic water, such as may be found in surface soil

at depths of 3 m (10 ft) or less, shall not be interpreted as ground water unless there is evidence of positive directional flow through the pit.

6.1.3 The privy shall be so located and so constructed that no surface water may enter into the pit either as runoff or as flood water.

6.1.4 The pit shall be constructed of such material and in such a manner as to prevent rapid deterioration, provide adequate capacity and facilitate maintenance in a satisfactory manner under ordinary conditions of use.

6.1.5 The pit and seat area shall be vented by a flue or vent pipe having a nominal cross-sectional area not less than 45 cm² (7 in²) so as to provide as continuous escape of odors. This pipe shall extend a minimum of 30 cm (12 in) above the roof.

6.1.6 The pit shall provide a capacity of 1.4 m³ (50 ft³) for each seat installed in the privy building. That portion of the pit within 40 cm (16 in) of the surface grade shall not be counted as part of the 1.4 m³ capacity.

6.1.7 Pit cribbing, when required, shall fit firmly, shall be in uniform contact with the earth walls on all sides, shall rise at least 15 cm (6 in) above the original ground line and shall descend to the full depth of the pit.

6.1.8 An earth plateau shall be constructed level with the top of the pit cribbing and shall extend horizontally for a distance of at least 45 cm (18 in) before sloping to the original ground level.

6.2 Privy building

6.2.1 The privy building shall be firmly anchored, rigidly constructed and free from hostile surface features, including but not necessarily limited to exposed nail points, sharp edges and rough or broken boards and shall provide privacy and protection from the elements. It shall be ventilated by leaving a 10 cm (4 in) opening at the top of the walls just beneath the roof.

6.2.2 The building shall be of fly-tight construction; doors shall be self-closing; where screening is used, it shall be 16-mesh.

6.2.3 The seat shall be so spaced as to provide a minimum clear space of 60 cm (24 in) between each seat in multiple-unit installations and shall provide at least 30 cm (12 in) clear space from the seat opening to the side wall in single and multiple-seat units.

6.2.4 The seat riser shall have an inside clearance of not less than 53 cm (21 in) from the front wall and not less than 60 cm (24 in) from the rear wall of the privy building.

6.2.5 The seat top shall not be less than 30 cm (12 in) nor more than 51 cm (20 in) above the floor.

6.2.6 The floor and riser shall be built of nonabsorbent material or tongue and groove lumber and in a manner to deny access to insects.

7 Types of toilet facilities

7.1 Requirements for vault toilets

7.1.1 The vault toilet shall be durable and corrosion-resistant and shall provide a minimum capacity of 378 L (100 gal) per seat.

7.1.2 Where a caustic chemical is used, the charge per seat shall be a minimum of 11.3 kg (25 lbs) of caustic dissolved in 37.5 L (10 gal) of water.

7.1.3 The chemical shall be drained and the receptacle recharged every 6 months when in continuous use, or at least at the beginning of each season of operation when in intermittent use, or when three-fourths full, whichever occurs first.

7.1.4 Tanks shall be vented to the outside with a minimum nominal venting area of 45 cm² (7 in²).

7.1.5 The tank shall be equipped with a manhole external to the structure for cleaning and for removal of caustic chemicals. The manhole shall be covered so as to prevent escape of gases and odors.

7.2 Requirements for sealed-bag toilets

7.2.1 All materials and fittings shall be corrosion resistant.

7.2.2 The bag shall be made of material of sufficient strength so as not to leak and, once sealed, so as to retain waste until such time as the bag is removed

from the toilet for disposal.

7.3 Requirements for combustion or incinerating toilets

7.3.1 All external surfaces, including bowl and hopper, shall be easy to clean.

7.3.2 The residue of combustion or incineration shall be sterile and inert.

7.3.3 The flue effluents shall be free of viable bacteria.

7.3.4 The combustion system and all fuel and electrical parts shall be safe and in compliance with applicable gas and electrical codes of local authorities. Where such codes do not exist, the installations shall comply with American National Standard National Electric Code, ANSI/NFPA 70-1993, or with American National Standard for Gas-Fired Toilets, ANSI Z21.61-1983 (R1989), and American National Standard National Fuel Gas Code, ANSI Z223.1-1992.

7.4 Requirements for chemical toilets and biological toilets

7.4.1 Waste containers shall be fabricated from nonabsorbent, watertight materials.

7.4.2 Portable chemical and biological toilets and urinals that are free-standing and not installed in a toilet room do not require a ventilation system.

7.4.3 Chemicals or biological agents, if used in the waste containers, shall be in accordance with applicable federal, state and local provisions.

7.5 Requirements for nonwater flush toilets

7.5.1 All materials such as bowl, piping and fittings that are in contact with waste and chemicals shall be nonabsorbent and corrosion-resistant.

7.5.2 Waste passages shall have smooth surfaces and shall be free of obstructions, recesses or chambers that would permit fouling.

7.5.3 Flushing shall be accomplished by controls operable without special knowledge. Upon flushing, fluid shall enter the bowl and pass through with a vigorous flow sufficient to carry the waste from the bowl into the waste container.

7.5.4 Chemicals, if used in the waste container, shall be in accordance with applicable federal, state and local provisions.

7.6 Requirements for water flush toilets

7.6.1 All materials such as bowl, piping and fittings that are in contact with waste and chemicals shall be nonabsorbent and corrosion-resistant.

7.6.2 Waste passages shall have smooth surfaces and shall be free of obstructions, recesses or chambers that would permit fouling.

7.6.3 Flushing shall be accomplished by controls operable without special knowledge.

7.6.4 Chemicals, if used, shall be in accordance with applicable federal, state and local provisions.

8 Disposal of grey water

8.1 General. Grey water may be discharged of in a seepage pit or by any other manner as approved by local authorities.

8.2 Requirements for seepage pit. Seepage pits shall be constructed in accordance with applicable state and local regulations; if no such regulations exist, the requirements of 8.2.1 through 8.2.11 shall apply.

8.2.1 At no time shall the bottom of the seepage pit extend into ground water, nor shall it be constructed with 30 m (100 ft) of the shoreline of any open body of water. Phreatic water, such as may be found in surface soil at depths of 3 m (10 ft) or less, shall not be interpreted as ground water unless there is evidence of positive directional flow through the pit.

8.2.2 The seepage pit shall be so located and so constructed that no surface water may enter into the pit either as runoff or as flood water.

8.2.3 The seepage pit shall be constructed of such material and in such a manner as to prevent rapid deterioration, provide adequate capacity and facilitate maintenance in a satisfactory manner under ordinary conditions of usage.

8.2.4 Seepage pit cribbing, when required, shall fit firmly, shall be in uniform contact with the earth walls on all sides, shall rise at least 15 cm (6 in) above the

original ground line and shall descend to the full depth of the seepage pit.

8.2.5 An earth plateau shall be constructed level with the top of the seepage pit cribbing and shall extend horizontally for a distance of at least 45 cm (18 in) before sloping to the original ground level.

8.2.6 The seepage pit may be filled with stone or rubble having a nominal diameter not less than 2.5 cm (1 in) or cribbing may be used.

8.2.7 Seepage pits shall be of such dimensions as to provide side-wall area equal to at least 0.93 m² (10 ft²) per person served by the facility or such greater area as may be required by the health agency having jurisdiction.

8.2.8 Temporary piping connections from sinks or shower platforms may be discharged beneath the floor if they have traps.

8.2.9 The platform covering the seepage pit shall be built of impervious, rigid material such as metal or concrete and installed in a manner to exclude insects.

8.2.10 The platform shall be provided with an opening of at least 30 cm (1 ft) in each dimension and shall have a rim around the opening at least 2.5 cm (1 in) above the platform floor to prevent precipitation from entering the pit.

8.2.11 The platform opening shall be covered with a self-closing lid so constructed that it can be easily opened by foot or hand and so installed that when closed it will exclude insects and fit closely over the rim of the opening.

9 Revisions to American National Standards referenced in this document

When the American National Standards referenced in this document are superseded by a revision approved by the American National Standards Institute, Inc., the revision shall apply.