COMMERCIAL STANDARD **CS77-63**

Supersedes CS77-56

Enameled Cast Iron Plumbing Fixtures

A recorded voluntary standard of the trade published by the U.S. Department of Commerce

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U.S. DEPARTMENT OF COMMERCE

OFFICE OF TECHNICAL SERVICES

Commodity Standards Division

With the cooperation of the
National Bureau of Standards

EFFECTIVE DATE

Having been passed through the regular procedures of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective July 10, 1963.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Technical Services and with the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforcible through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The division by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the division assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Commodity Standards Division cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

The initial printing of CS 77-63 was made possible through the cooperation of the Plumbing Fixture Manufacturers Association.

Enameled Cast Iron Plumbing Fixtures

(Fifth Edition)

[Effective July 10, 1963]

1. PURPOSE

1.1. The purposes of this Commercial Standard are to establish a nationally recognized standard for enameled cast iron plumbing fixtures for the guidance of manufacturers, distributors, and purchasers; to promote better understanding between suppliers and users; and to serve as a basis for fair competition in furnishing enameled cast iron plumbing fixtures to meet the principal demands of the trade.

2. SCOPE

2.1 The standard applies to enameled cast iron plumbing fixtures, and includes requirements for materials, construction, inspection, testing, marking, labeling, and definitions. Standard types and sizes of fixtures currently in general use and demand are given for enameled cast iron bathtubs, lavatories, sinks, laundry trays, and urinals.

3. GENERAL REQUIREMENTS

3.1 **Material.**—The enameled cast iron fixtures shall be of one-piece high-grade cast iron, and the castings shall be strong, sound, true to form, and free from porosity, cracks and other defects that may affect the serviceability of the fixtures. The cast iron shall form a suitable base for the enamel coating, and shall be not less than $\frac{1}{8}$ inch thick at all points 1 inch or more from any edge.

3.2 **Enameling.**—The enameled surface of each fixture shall be coated with acid-resisting enamel applied by the dry process over a ground coat, and fired at or above a red heat so as to be thoroughly fused to the cast iron base. The enamel shall be glossy, of uniform color, and free from flaws that affect the appearance or may affect the serviceability of the fixtures. Blemishes shall be limited in accordance with the method of inspection specified in paragraph 6.1. The thickness of the enamel, as measured on a flat surface at least 1 inch from any edge, shall be not less than 0.025 inches. Unenameled surfaces shall be treated with one coat of filler, ground coat, or paint at the factory.

3.2.1 The enamel shall be acid resisting throughout the entire thickness of the enamel coating and shall successfully pass the tests specified in paragraph 7.2.

3.2.2 **Colored ware.**—Enameled cast iron plumbing fixtures are made in white and in several popular colors. The shade or tint of each color is determined by the individual manufacturer. It is recognized that differences in manufacturing conditions, base materials, and lighting produce minor variations in color which are commercially acceptable and are not cause for rejection.

3.3 **Dimensions and tolerances.**—Fixtures shall conform to the applicable dimensions and tolerances given herein. Where not otherwise indicated, a tolerance of plus or minus 3 percent shall apply. Maximum and minimum dimensions are not subject to a tolerance beyond the limits given.

3.3.1 The tolerance on length of apron bathtubs shall be plus or minus $\frac{1}{2}$ inch.

3.4 **Warpage.** Warpage of edges that set against the wall or floor, and edges that set into cabinets or counter tops, shall not exceed $\frac{1}{16}$ inch per foot when tested according to the method given in paragraph 7.1. Warpage of all other edges shall not exceed $\frac{3}{32}$ inch per foot when tested according to the same method.

3.5 **Illustrations.**—The illustrations (figures 1 through 28) are shown for convenience in identifying the various fixtures and for locating dimensions. The illustrations are not intended to indicate standard or required designs.

3.6 **Standard types and sizes.**—The fixture types and sizes described in Section 4 herein are recognized as standard. The standard fixtures are those most commonly used and are recommended as affording an adequate selection for all ordinary applications and for stock. It is intended, however, that other types and sizes may be provided as needed but not carried as stock items. Use of the standard types and sizes wherever possible will be generally beneficial through simplification of production practices, improved distribution, and better service to consumers.

4. FIXTURE TYPES AND SIZES

4.1 **Bathtubs. Standard types and sizes.**

(1) **Corner bathtubs.**—Concealed end, containing overflow and drain outlets, may be right or left. Front may be straight

or extended. Standard length, 5 feet; height 16 inches. (See figs. 1 and 4.)

(2) **Recess bathtubs, 16″ height.**—Overflow and drain outlets may be right or left. Front may be straight or extended. Standard length 4½, 5, and 5½ feet; height 16 inches. (See figs. 2 and 4.)

(3) **Recess bathtubs, 14″ height.**—Overflow and drain outlets may be right or left. Front may be straight or extended. Standard lengths, 4½ and 5 feet; height, 14 inches. (See figs. 3 and 5.)

4.1.1 **Bathtub outlet and overflow dimensions.**—Standard dimensions for finished overflow and drain outlets (after enameling) for corner and recess bathtubs, 16″ height, are shown in fig. 4; for recess bathtubs, 14″ height, in fig. 5.

4.2 **Lavatories. Standard types and sizes.**

(1) **Straight-front apron lavatories with straight back.**—Height of back 3½ to 7 inches; standard sizes: 19″ x 17″, 20″ or 21″ x 18″, and 22″ x 19″. (See fig. 6.)

(2) **Shelf-back lavatories with apron.**—Height of back, 2 inches minimum. Standard sizes: 19″ x 17″, 22″ x 19″, and 24″ x 18″. (See fig. 7.)

(3) **Rectangular flat-rim lavatories.**—Standard size: 20″ x 18″. (See fig. 8.)

(4) **Round flat-rim lavatories.**—Standard size: 18″ diameter. (See fig. 9.)

4.2.1 Faucet hole dimensions and spacing.

(a) Center-set fittings. Standard faucet-hole dimensions and spacing for center-set fittings are shown in fig. 10, detail "A".

(b) Separate faucets and combination fittings. Standard faucet-hole dimensions and spacing for separate faucets and combination fittings are shown in fig. 10, detail "B".

4.2.2 **Lavatory outlet dimensions.**—The standard dimensional limits for outlets of lavatories with overflow are shown in fig. 10, detail "C".

4.2.3 **Lavatory overflows.**—Location of overflow is optional, at front or back of basin.

4.3 **Kitchen sinks. Standard types and sizes.**

(1) **Ledge kitchen sinks with back and single drainboard.**—(For installation over cabinet.) Drainboard may be right or left. Standard size: 42″ x 24″ to 25″. (See fig. 11.)

(2) **Ledge kitchen sinks with back and double drainboard.**—(For installation over cabinet.) Standard size: 54″ x 24″ to 25″. (See fig. 12.)

(3) **Ledge kitchen sinks, double compartment, with back and double drainboard.**—(For installation over cabinet.) Standard sizes: 60″ x 24″ to 25″, 66″ x 24″ to 25″, and 72″ x 24″ to 25″. (See fig. 13.)

(4) **Flat-rim ledge kitchen sinks without drainboard.**—Standard sizes: 24″ x 21″ and 30″ x 21″. (See fig. 14.)

(5) **Flat-rim ledge kitchen sinks, double compartment, without drainboard.**—Standard sizes: 32″ x 21″, and 42″ x 21″. (See fig. 15.)

(6) **Flat-rim ledge kitchen sinks with single drainboard.**—Drainboard may be right or left. Standard size: 42″ x 21″. (See fig. 16.)

(7) **Flat-rim ledge kitchen sinks, double drainboard.**—Standard size: 54″ x 21″. (See fig. 17.)

(8) **Flat-rim kitchen sinks with center-outlet.**—Standard sizes: 24″ x 16″, 24″ x 18″, 30″ x 18″, 24″ x 20″, and 30″ x 20″. (See fig. 18.)

(9) **Flat-rim double compartment kitchen sinks.**—Standard size: 32″ x 20″. (See fig. 19.)

4.3.1 **Kitchen sink outlet dimensions.**—The standard dimensional limits for outlets of kitchen sinks are shown in fig. 20.

4.3.2. **Corner-radius.**—The standard radius of the outside corners of rims of flat-rim and ledge sinks designed for counter top installation is 1½ inches, plus or minus 3/16 inch.

4.4 **Wash sinks. Standard type and sizes.**

(1) **Wall-hanging wash sinks with back, with or without pedestals.**—Standard sizes: 4′ x 18″, 5′ x 18″, 6′ x 18″. Height of back 8″. (See fig. 21.)

4.5 **Service sinks. Standard type and sizes.**

(1) **Roll-rim service sinks with back, on trap standard.**—Standard sizes: 22″ x 18″, 24″ x 20″; depth, 12″ to 14″; height of back 10″ to 12″. (See fig. 22.)

4.6 **Sink and laundry tray combinations. Standard types and sizes.**

(1) **Ledge sink and laundry tray combinations with back.**—For installation over cabinets or on legs. Sink may be at right or left of tray. Standard size: 42″ x 24″ to 25″. (See fig. 23.)

(2) **Flat-rim sink and laundry tray combinations, reversible.**—Sink compartment may be at right or left of tray. Standard size: 42″ x 20″. (See fig. 24.)

(3) **Flat-rim sink and laundry tray combinations, with ledge.**—Sink compartment may be at right or left of tray. Standard size: 42″ x 21″. (See fig. 25.)

4.7 **Laundry trays. Standard types and sizes.**

(1) **Flat-rim laundry trays, single compartment.**—Standard size: 24″ x 20″. (See fig. 26.)

4.7.1 **Laundry tray outlet dimensions.**—The standard dimensional limits for outlets of laundry trays are shown in figure 27.

4.8 **Urinals. Standard type and sizes.**

(1) **Trough urinals with back.**—Standard lengths: 3, 4, and 6 feet. (See fig. 28.)

5. DEFINITIONS

5.1 **Enameled cast iron (as applied to plumbing fixtures covered by this standard).**— A product cast from molten iron and coated with enamel fused to the metal. The enamel coating is hard, glossy, opaque, and acid resistant, and in combination with the solid cast-iron base, produces a rigid, durable product.

5.2 **Inspection window.**—A circular opening 3 in. in diameter cut from a small sheet of any flexible material, such as rubber or paper, for convenience in sliding over irregular surfaces to determine segregation. A segregation is a collection of blemishes within the inspection window greater than permitted by table 1.

5.3 **Flaws.**

(1) **Cracked fixture.**—A fixture with a rupture extending through both the casting and enamel.

(2) **Craze.**—A crack in the enamel surface.

(3) **Lift.**—An area of metal base from which the enamel has separated.

(4) **Pinhole.**—A hole that extends through the enamel to the metal base.

5.4 **Blemishes.**

(1) **Dimple.**—A slight depression of the enamel surface.

(2) **Lump.**—A raised portion of the enamel surface.

(3) **Specks.**—Particles of foreign matter that produce areas of contrasting color on the surface, as follows:

Small: 1/100 to 1/64 in. in maximum dimension.

Medium: Over 1/64 to 1/32 in. in maximum dimension.

Large: Over 1/32 to 1/16 in. in maximum dimension.

(4) **Waviness.**—The appearance of irregular surface in the glaze. Some waviness in an enamel surface is unavoidable and is not cause for rejection.

5.5 **Ledge-back.**—A flat elevated surface at the back of a lavatory, sink or laundry tray, not more than 2 in. higher than the rim and extending the full length of the fixture, on which the supply fitting can be mounted and small articles placed; or a similar construction with a center panel suitable for mounting a supply fitting.

5.6 **Shelf-back.**—A flat elevated surface at the back of a lavatory higher than 2 in. above the rim and extending the full length of the fixture, on the top or front of which the supply fitting can be mounted, and on which small articles can be placed; or a similar construction with a center panel formed into the shelf suitable for mounting a supply fitting on either horizontal or inclined surface.

6. INSPECTION RULES

6.1 The fixture shall be examined with the eyes of the observer about 2 ft. from the surface observed. The light source shall be partially diffused daylight, supplemented if necessary with diffused artifical light, the total being of intensity approximating that usually available within a few feet of an unobstructed outside window, but not in direct sunlight. No actual count or measure of blemishes should be attempted except in case of doubt, since with practice, dimensional limits and numbers can readily be gaged by the eye. No flaws shall be allowed. Some waviness in an enamel surface is unavoidable and is not cause for rejection; other blemishes shall be limited to those listed in table 1.

7. METHODS OF TEST

7.1 **Test for warpage.**—The fixture shall be placed on a flat surface so as to ascertain the amount of deviation from the horizontal plane that exists at the edges of the fixture. If a feeler gage of thickness equal to the total allowable warpage will not slide under the fixture without forcing,

Table 1. Allowable blemishes.

Description	Size or appearance	Maximum number allowed per inspection window	Maximum number allowed per fixture
Specks . . .	(Small	4	Not to be counted
	(Medium	2	8
	(Large	1	5
Dimples . . .	. . . . .	2	8
Lumps	. . . . .	2	8

the fixture satisfactorily comes within the warpage limitations. If the fixture will rock on two opposite corners the horizontal plane shall be determined by placing one feeler gage of the total warpage allowed under a corner which does not contact the flat surface and holding the fixture firmly on this gage. If a second feeler gage of the same thickness will not slide under the fixture at any other point, the fixture is not warped out of the horizontal plane by more than the specified tolerance, and satisfactorily comes within the warpage limitations.

7.2 **Tests for acid-resistance.**

7.2.1 **Method of test.**—The enamel shall be subjected either to the lemon test or to the citric acid test, as specified below, but in cases of dispute the citric acid test shall be the umpire test. The test for subsurface acid resistance may be made at the option of the purchasing agency or the inspector.

7.2.2 **Lemon test.**—The cut side of a freshly cut half of a normally ripe lemon shall be placed on a cleaned area of the enameled ware, and after 24 hours at room temperature the lemon shall be removed and the surface washed with water and wiped dry. No effect on the enamel shall be visible upon careful inspection.

7.2.3 **Citric acid test (umpire test).**—A fresh test solution made of 1 part citric acid crystals to 10 parts water by weight shall be applied to the surface of the enamel for 15 minutes, at the end of which period, after washing and drying, no effect of the acid on the treated area shall be visible upon careful inspection. The ware and the acid solution shall have been stored for not less than 3 hours immediately preceding the tests in atmosphere at 80°F, plus or minus 10°F, and the test shall be made under these conditions of temperature. The test solution shall be applied to clean areas, in pools consisting of several drops, and covered with a watch glass to hold the solution in place.

7.2.4 **Test for subsurface acid resistance of enamel coatings on cast iron.**—The test is ordinarily made on a flat or nearly flat specimen 2 in. square cut from the fixture.

(1) Grind off the enamel so as to expose a smooth oblique section of the coating and part of the metal base. Specimens cut from the article may be ground along a cut edge. The oblique section of enamel shall be ¾ in., plus or minus ⅛ in. (1.6 to 2.2. cm) wide. The abrasive used in grinding shall pass a No. 150 sieve and shall be moistened during grinding.

(2) Restore the gloss to the ground enamel surface by refiring just sufficiently to obtain a fire polish. The polished surface shall permit ready cleaning, with a dry cloth, of marks made by a colored wax pencil.

(3) Apply the citric acid test, as specified in paragraph 7.2.3, to the full width of the fire-polished oblique section. The cut specimens may be immersed in the test solution. After application of the test solution for 15 minutes, the treated surface shall be washed and dried.

(4) The entire oblique section shall be rubbed with a colored wax pencil, and the deposit of colored wax rubbed with a dry cloth. If the wax cannot be readily and evenly removed from all portions of the treated area of enamel by rubbing, thus indicating that the enamel has been roughened by the test solution, the enamel shall not be considered acid resisting throughout.

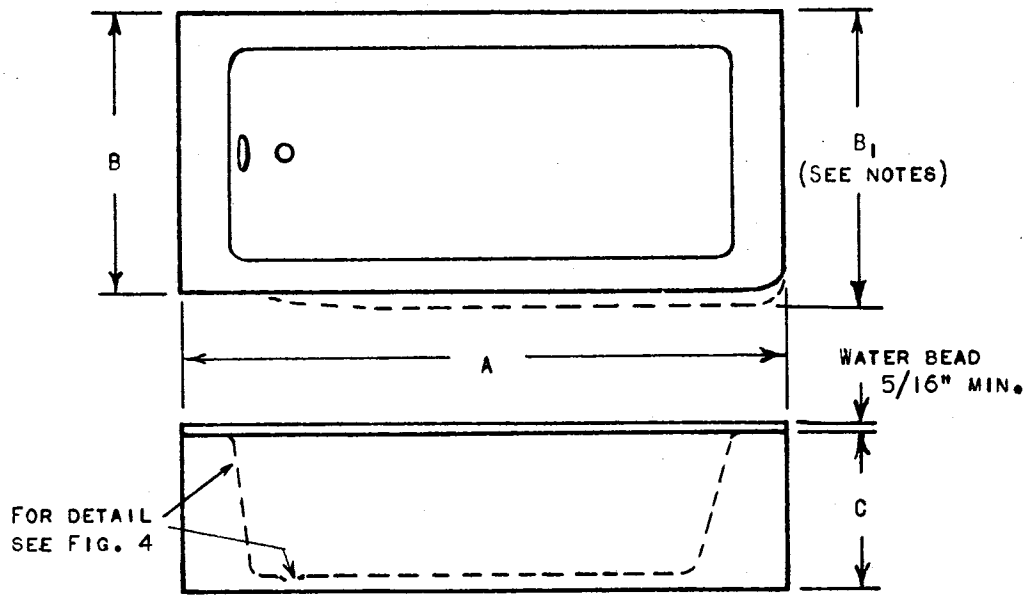
7.3 **Marking.**—Each fixture shall be marked with the manufacturer's name or registered trademark, and with the letters "A R" signifying acid-resisting enamel. These marks shall be legible, readily identified, and be applied so as to be permanent. Except for fixtures built into or for a counter or cabinet, the marks shall be located so as to be visible after the fixture is installed.

8. LABELING

8.1 In order that the purchaser may be assured that he is obtaining enameled cast iron plumbing fixtures conforming to this standard it is recommended that ware complying therewith shall bear a sticker or other label containing the following wording:

> This enameled cast-iron fixture complies with the requirements and tests of Commercial Standard CS77–63 as developed by the trade under the Commodity Standards Procedures, and issued by the U.S. Department of Commerce.

8.2 The label may be accompanied by the manufacturer's recommendation on handling, setting and cleaning up.

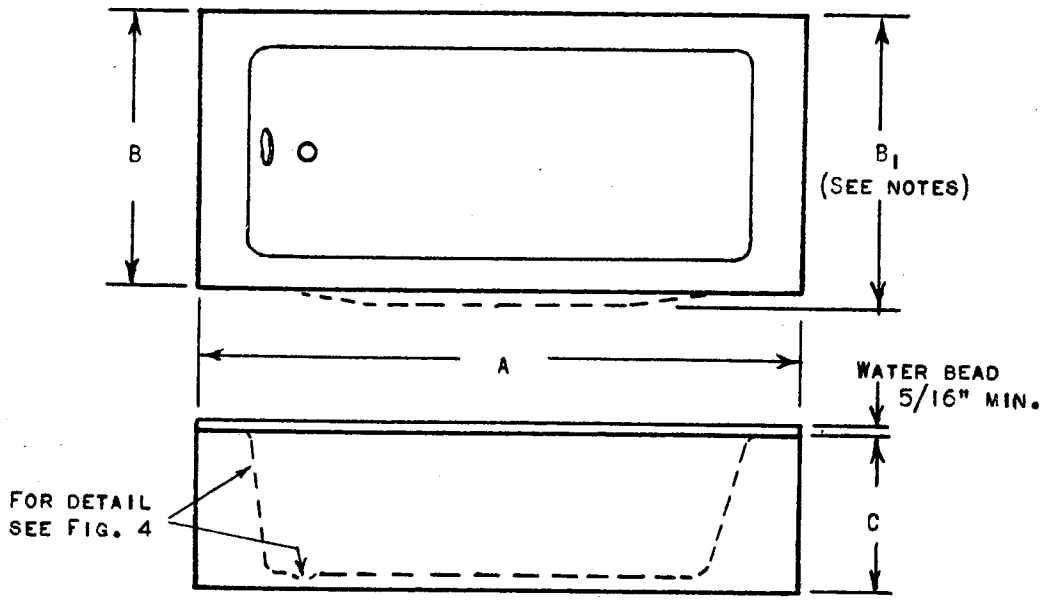


STANDARD SIZES, FEET	DIMENSIONS, INCHES		
A	B	B_1 (NOTE 1)	C
5	30 - 32	32 - 33	16"

FIGURE 1. CORNER BATHTUBS, RIGHT OR LEFT. (PAR. 4.1-1)

NOTE 1. DESIGN OF BATHTUBS AT OPTION OF MANUFACTURER WITHIN LIMITS OF REQUIREMENTS GIVEN HEREIN.

NOTE 2. FRONT OF BATHTUBS MAY BE STRAIGHT OR EXTENDED; DIMENSION B_1 APPLIES ONLY TO BETHTUBS WITH EXTENDED FRONT.

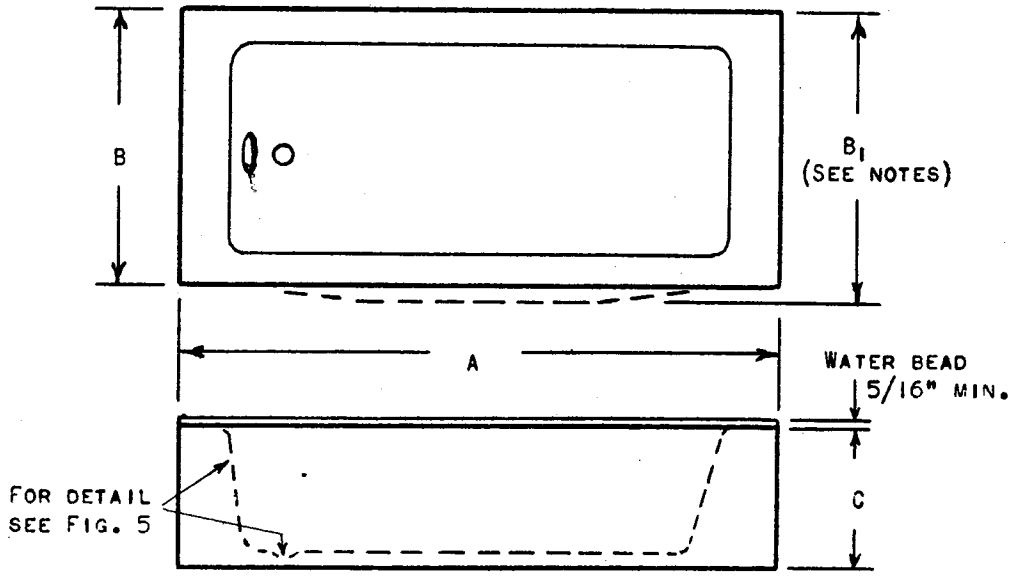


STANDARD SIZES, FEET	DIMENSIONS, INCHES		
A	B	B_1 (NOTE 1)	C
$4\frac{1}{2}$, 5, $5\frac{1}{2}$	30 - 32	32 - 33	16

FIGURE 2 RECESS BATHTUBS, 16" HEIGHT, RIGHT OR LEFT. (PAR. 4.1-2)

NOTE 1. DESIGN OF BATHTUBS AT OPTION OF MANUFACTURER WITHIN LIMITS OF REQUIREMENTS GIVEN HEREIN.

NOTE 2. FRONT OF BATHTUBS MAY BE STRAIGHT OR EXTENDED; DIMENSION B_1 APPLIES ONLY TO BATHTUBS WITH EXTENDED FRONT.



STANDARD SIZES, FEET	DIMENSIONS, INCHES		
A	B	B_1 (NOTE 1)	C
$4\frac{1}{2}$, 5	28 - 31	29 - 32	14

FIGURE 3. RECESS BATHTUBS, 14" HEIGHT RIGHT OR LEFT. (PAR. 4.1-3)

NOTE 1. DESIGN OF BATHTUBS AT OPTION OF MANUFACTURER WITHIN LIMITS OF REQUIREMENTS GIVEN HEREIN.

NOTE 2. FRONT OF BATHTUBS MAY BE STRAIGHT OR EXTENDED; DIMENSION B APPLIES ONLY TO BATHTUBS WITH EXTENDED FRONT.

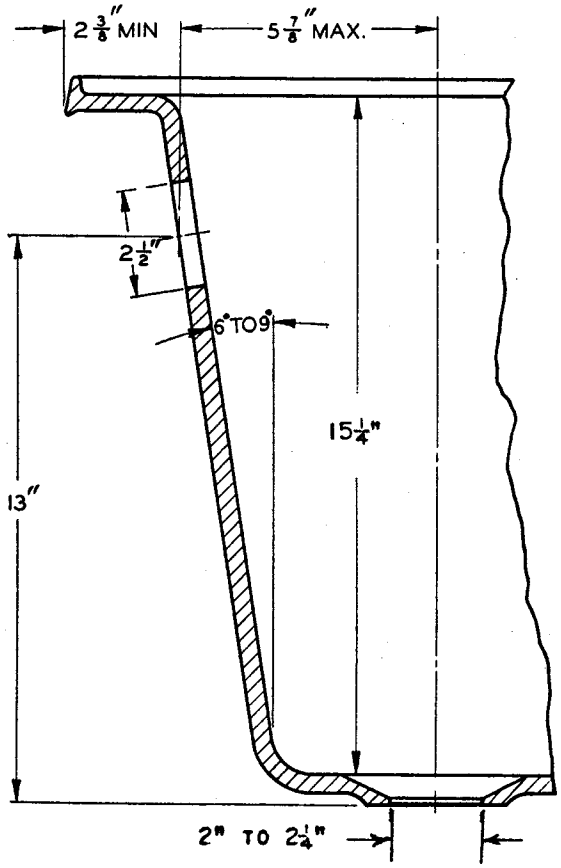


FIG. 4 OUTLET AND OVERFLOW DIMENSIONS FOR 16" HEIGHT BATHTUBS. (REF. FIGS. 1 AND 2)

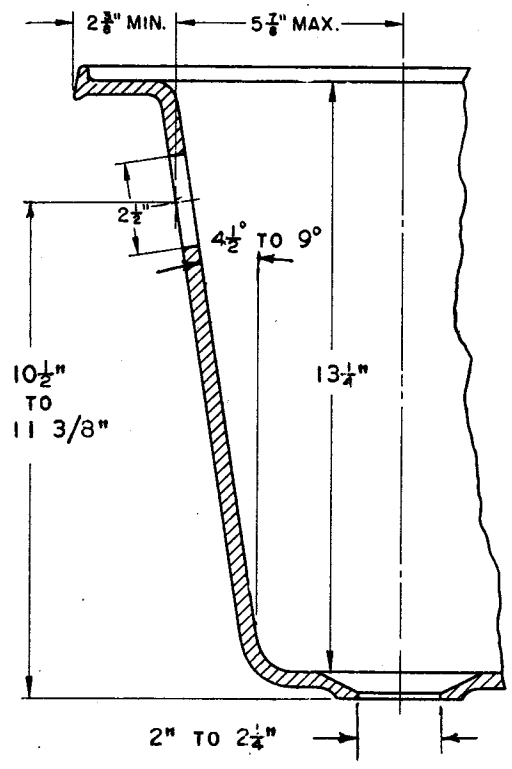
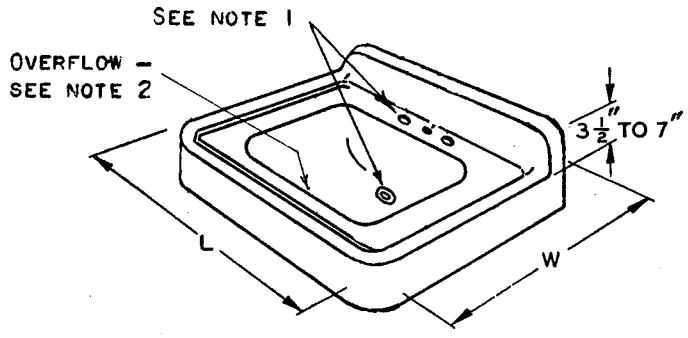


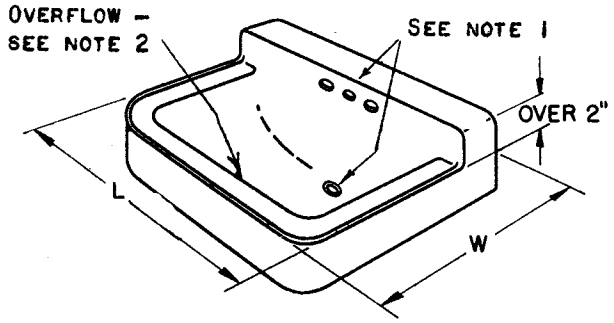
FIG. 5 OUTLET AND OVERFLOW DIMENSIONS FOR 14" HEIGHT BATHTUBS. (REF. FIG. 3)

690-734 O—68——2



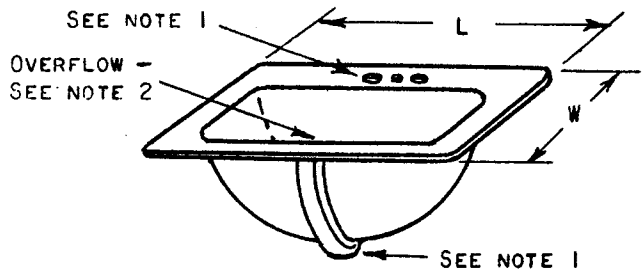
STANDARD SIZES, INCHES	
L	W
19	17
20 OR 21	18
22	19

FIGURE 6. STRAIGHT-FRONT APRON LAVATORIES WITH STRAIGHT BACK. (PAR. 4.2-1)
NOTE 1. SUPPLY OPENINGS AND OUTLET AS SHOWN IN FIG. 10, DETAILS A, B, AND C.
NOTE 2. OVERFLOW MAY BE AT FRONT OR REAR. (PAR. 4.2.3)



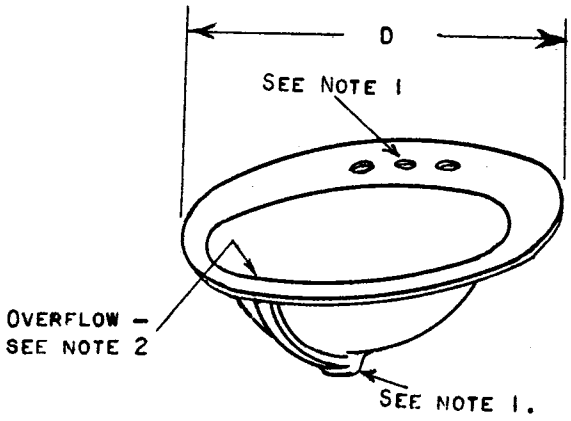
STANDARD SIZES, INCHES	
L	W
19	17
22	19
24	18

FIGURE 7. SHELF-BACK LAVATORIES WITH APRON. (PAR. 4.2-2)
NOTE 1. SUPPLY OPENINGS MAY BE IN FRONT OF SHELF OR IN AN INCLINED PANEL.
NOTE 2. OVERFLOW MAY BE AT FRONT OR REAR. (PAR. 4.2.3)



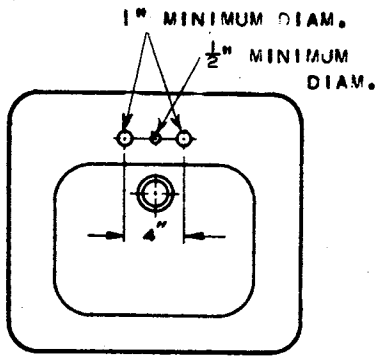
STANDARD SIZES, INCHES	
L	W
20	18

FIGURE 8. RECTANGULAR FLAT-RIM LAVATORIES. (PAR. 4.2-3)
NOTE 1. SUPPLY OPENINGS AND OUTLET AS SHOWN IN FIG. 10, DETAILS A, B, AND C.
NOTE 2. OVERFLOW MAY BE AT FRONT OR REAR. (PAR. 4.2.3)
NOTE 3. CORNER RADIUS 1 1/2" ± 3/16".

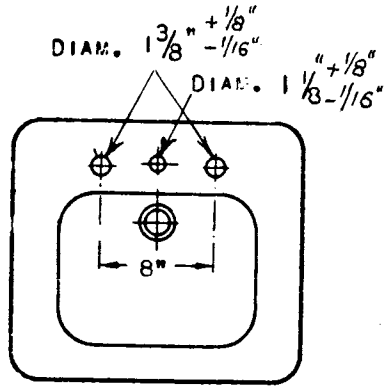


STANDARD SIZES, INCHES
D (DIAMETER)
18

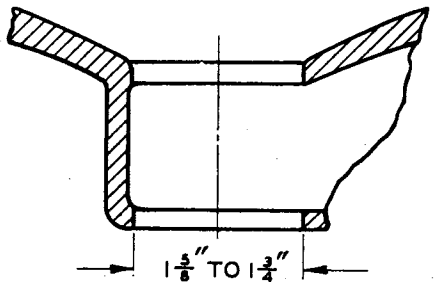
FIGURE 9. ROUND FLAT RIM LAVATORY. (PAR. 4.2-4)
NOTE 1. SUPPLY OPENINGS AND OUTLET AS SHOWN IN FIG. 10, DETAILS A, B, AND C.
NOTE 2. OVERFLOW MAY BE AT FRONT OR REAR.



DETAIL "A" – OPENINGS FOR CENTERSET SUPPLY FITTINGS.

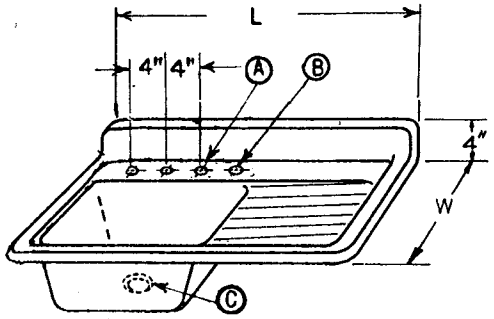


DETAIL "B" – OPENINGS FOR SEPARATE FAUCETS AND COMBINATION SUPPLY FITTINGS.



DETAIL "C" – LAVATORY OUTLET DIMENSIONS

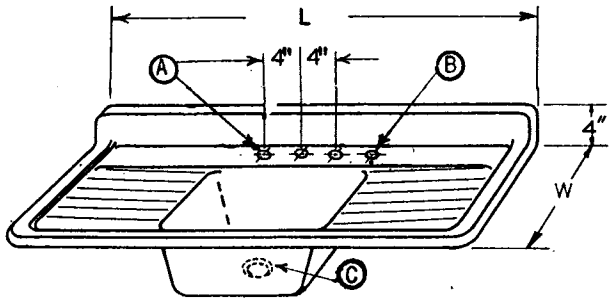
FIGURE 10. LAVATORY SUPPLY OPENINGS, AND OUTLET DETAILS.



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
42	24 TO 25

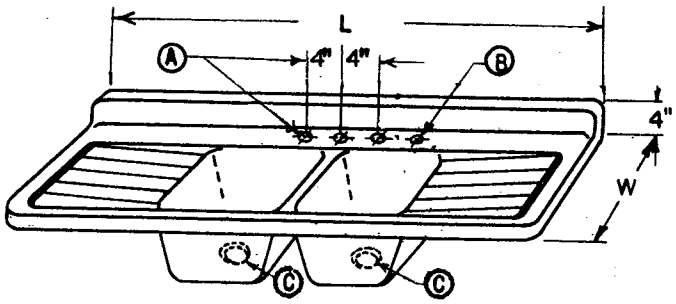
FIG. 11 LEDGE KITCHEN SINKS WITH BACK AND SINGLE DRAINBOARD RIGHT OR LEFT. (FOR INSTALLATION OVER CABINET) (PAR. 4.3-1.)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) OUTLET IS SHOWN IN FIG. 20

STANDARD SIZES, INCHES	
L	W
54	24" TO 25

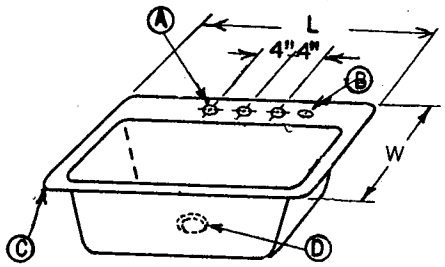
FIG 12 LEDGE KITCHEN SINKS WITH BACK AND DOUBLE DRAINBOARD. (FOR INSTALLATION OVER CABINET.) (PAR. 4.3-2.)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
60	24" TO 25
66	24" TO 25
72	24" TO 25

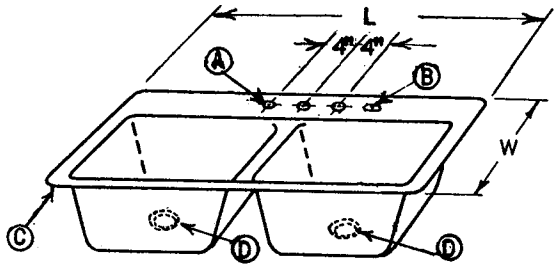
FIG. 13 LEDGE KITCHEN SINKS, DOUBLE COMPARTMENT, WITH BACK AND DOUBLE DRAINBOARD. (FOR INSTALLATION OVER CABINET.) (PAR. 4.3-3.)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2".
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) CORNER RADIUS 1-1/2" ± 3/16".
(D) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
24	21
30	21

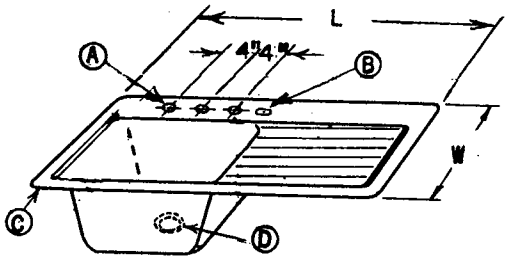
FIGURE 14 FLAT-RIM LEDGE KITCHEN SINKS. (PAR. 4.3-4)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) CORNER RADIUS 1-1/2" ± 3/16".
(D) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
32	21
42	21

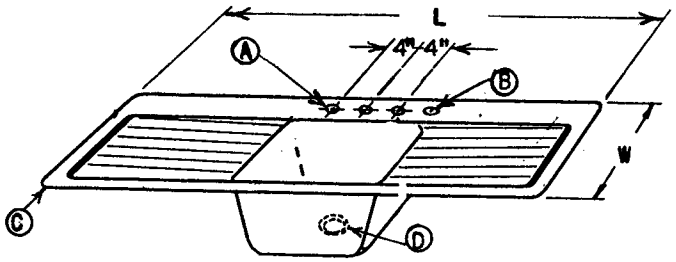
FIGURE 15 FLAT-RIM LEDGE KITCHEN SINKS, DOUBLE COMPARTMENT. (PAR. 4.3-5)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL.
(C) CORNER RADIUS 1-1/2" ± 3/16".
(D) OUTLET IS SHOWN IN FIG. 20

STANDARD SIZES, INCHES	
L	W
42	21

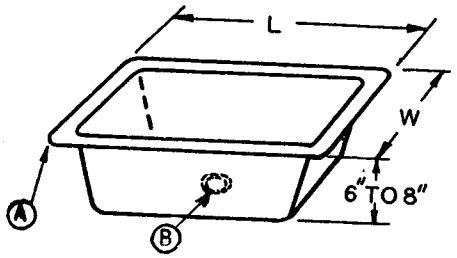
FIGURE 16 FLAT-RIM LEDGE KITCHEN SINKS WITH SINGLE DRAINBOARD, RIGHT OR LEFT. (PAR. 4.3-6)



(A) ALL HOLES 1-1/2" ± 1/8" DIAM. SUPPLY HOLES MAY BE IN AN INCLINED PANEL ABOVE LEDGE, IN WHICH CASE DISTANCE BETWEEN CENTERS MAY BE 4-1/2 INCHES.
(B) SPRAY HOLE AND ITS LOCATION ARE OPTIONAL
(C) CORNER RADIUS 1-1/2" ± 3/16".
(D) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
54	21

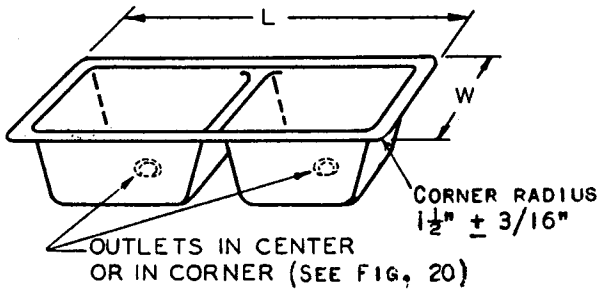
FIGURE 17 FLAT-RIM LEDGE KITCHEN SINKS, DOUBLE DRAINBOARD. (PAR. 4.3-7)



(A) CORNER RADIUS 1-1/2" ± 3/16".
(B) OUTLET IS SHOWN IN FIG. 20.

STANDARD SIZES, INCHES	
L	W
24	16
24	18
30	18
24	20
30	20

FIG 18. FLAT-RIM KITCHEN SINKS WITH CENTER-OUTL (PAR. 4.3-8.)



STANDARD SIZES, INCHES	
L	W
32	20

FIGURE 19. FLAT-RIM DOUBLE COMPARTMENT KITCHEN SINKS. (PAR. 4.3-9)

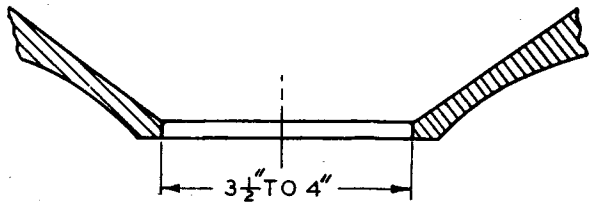
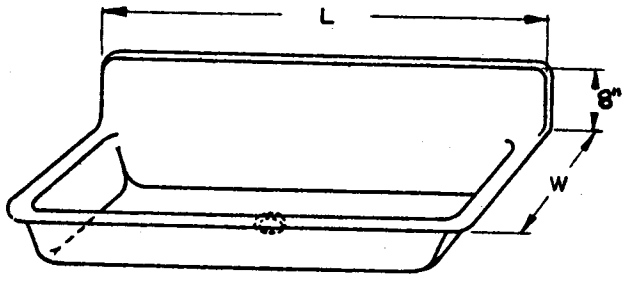
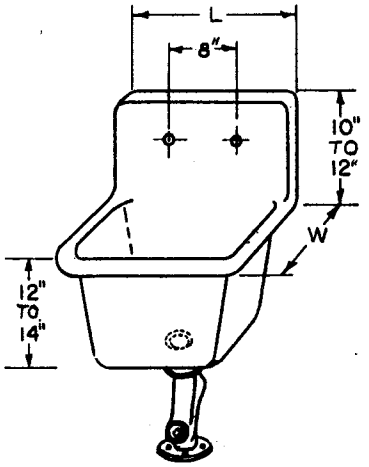


FIGURE 20. KITCHEN SINK OUTLET DIMENSIONS. (PAR. 4.3-10)



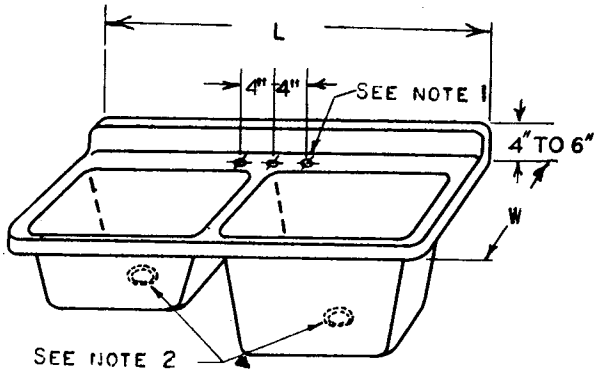
STANDARD SIZES, INCHES	
L (FEET)	W (INCHES)
4	18
5	18
6	18

FIGURE 21. WALL-HANGING WASH SINKS WITH BACK, WITH OR WITHOUT PEDESTALS. (PAR. 4.4-1)



STANDARD SIZES, INCHES	
L	W
22	18
24	20

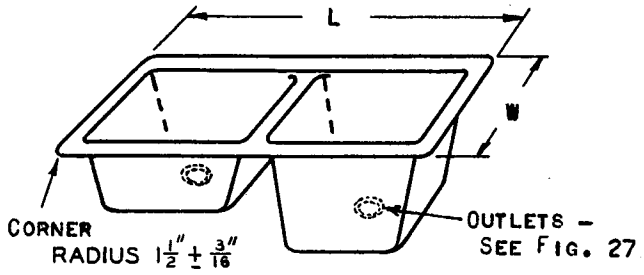
FIGURE 22. ROLL-RIM SERVICE SINKS WITH BACK, ON TRAP STANDARD. (PAR. 4.5-1)



STANDARD SIZE, INCHES	
L	W
42	24 TO 25

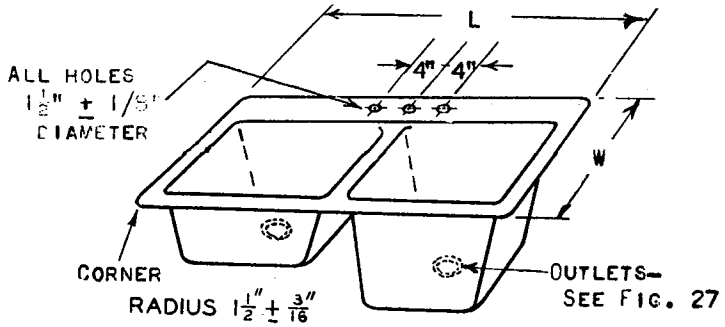
FIGURE 23. LEDGE SINK AND LAUNDRY TRAY COMBINATIONS WITH BACK, SINK AT RIGHT OR LEFT. (PAR. 4.6-1)

NOTE 1. ALL HOLES $1\frac{1}{2}$" $\pm$ 1/8" DIAMETER.
NOTE 2. OUTLETS IN CENTER OR IN CORNER. SEE FIG. 27.



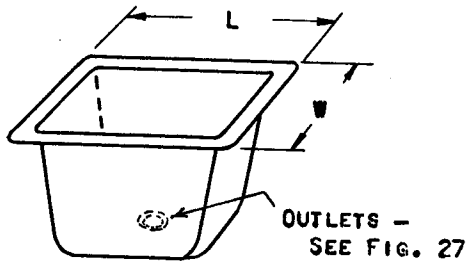
STANDARD SIZE, INCHES	
L	W
42	20

FIGURE 24. FLAT-RIM SINK AND LAUNDRY TRAY COMBINATIONS, REVERSIBLE. (PAR. 4.6-2)



STANDARD SIZE, INCHES	
L	W
42	21

FIGURE 25. FLAT-RIM SINK AND LAUNDRY TRAY COMBINATIONS, WITH LEDGE, SINK AT RIGHT OR LEFT. (PAR. 4.6-3)



STANDARD SIZE, INCHES	
L	W
24	20

FIGURE 26. FLAT-RIM LAUNDRY TRAY, SINGLE COMPARTMENT. (PAR. 4.7 1)

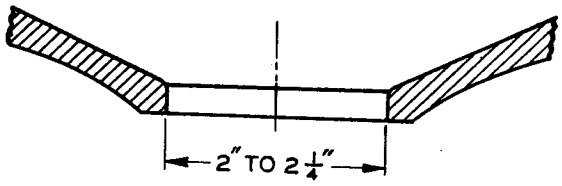
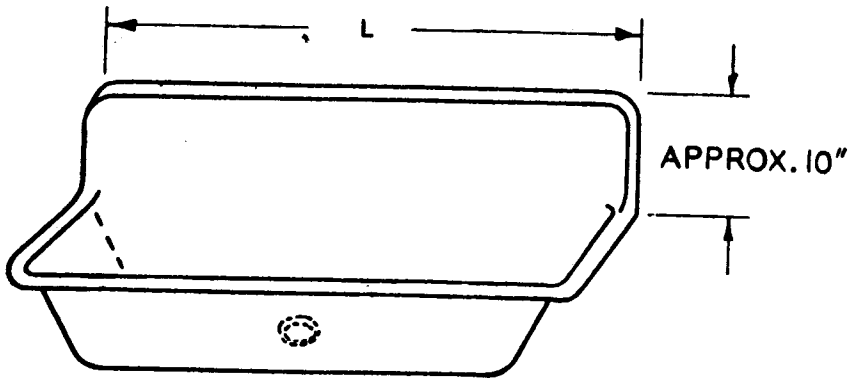


FIGURE 27. LAUNDRY TRAY OUTLET DIMENSIONS. (PAR. 4.7.1)



STANDARD SIZES, FEET
L
3, 4, OR 6

FIGURE 28. TROUGH URINALS WITH BACK. (PAR. 4.8 1)

HISTORY OF PROJECT

First edition.—In response to a request from the Sanitary Cast Iron Enameled Ware Association on March 28, 1939, the preparation of a Commercial Standard for the ware was undertaken in cooperation with the industry. Upon consideration of the initial draft, the scope of the standard was enlarged, and following a review by interested firms representing diverse interests, it was circulated to all elements of the trade as a recommendation for general acceptance. The response showed broad public support for the recommendation and an intention to utilize the standard as far as practicable in the production, distribution and application of the products covered. On this basis of industry support, Commercial Standard CS77–40, Sanitary Cast Iron Enameled Ware, was announced April 25, 1940, as the first printed edition.

Second, third, and fourth editions.—After satisfactory experience with the standard for several years, the Enameled Cast Iron Plumbing Fixtures Association on May 13, 1946, submitted proposals for modifying certain provisions to bring them into line with changes in industry practices. Following general industry concurrence on the modifications, the second edition was announced on April 30, 1948, as CS77–48, Enameled Cast Iron Plumbing Fixtures. Subsequent revisions were proposed by the same Association on May 15, 1950, and again on December 29, 1954. Following industry endorsement of the changes, revisions were issued, respectively, on December 7, 1951, as CS77–51, and on August 15, 1956, as CS77–56.

Fifth edition.—Further changes in industry practices were reflected in proposals submitted by the Plumbing Fixture Manufacturers Association on December 13, 1961. Modifications in dimensions and other details were desired to include modern designs having better appearance and greater utility. A recommended revision, TS–5597, was circulated to the trade on September 28, 1962, for consideration. It was prepared with the cooperation of the Standing Committee representing manufacturers, distributors and users so as to embody the views of all interests. The response gave satisfactory evidence of general acceptance, and on June 7, 1963, Commercial Standard CS77–63, effective July 10, 1963, was announced.

Project manager: A. S. Best, Commodity Standards Division, Office of Technical Services.
Technical adviser: J. C. Richmond, Mineral Products Division, National Bureau of Standards.

STANDING COMMITTEE

The following individuals comprise the membership of the Standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, U.S. Department of Commerce, which acts as secretary for the committee.

N. R. Held, Kohler Co., Kohler, Wis. (Chairman).
D. J. Quinn, American-Standard Plumbing & Heating Division, 40 West 40th St., New York 18, N.Y.
E. G. Schmidt, Crane Co., P.O. Box 780, Johnstown, Pa.
J. V. Cannon, Jr., The Murray Corporation of America, Eljer Plumbingware Division, Three Gateway Center, Pittsburgh 22, Pa.
J. H. Peery, Central Supply Association, 221 N. LaSalle St., Chicago 1, Ill.
Alfred E. Ellis, Johnson Plumbing Supply Co., 999 W. 37th St., Chicago 9, Ill.
C. H. Beiger, Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Ill.
E. W. Breese, Hajoca Corporation, Ardmore, Pa.
Richard E. White, 1011 S. Michigan St., South Bend 18, Ind. (Repre. National Association of Plumbing Contractors)
Robert J. Piper, American Institute of Architects, 1735 New York Ave., N.W., Washington 6, D.C.
Harold W. Weigert, Eugene Duklauer, Inc., 215 E. 38th St., New York, N.Y.
Jack R. Allen, Western Plumbing Officials Association, P.O. Box 247, South Pasadena, Calif.

ACCEPTORS

The manufacturers, distributors, users and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the standard as far as practicable but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grademark or label. Purchasers are encouraged to require such representation of compliance, which may be given by the manufacturer whether or not he is an acceptor.

ASSOCIATIONS

(General Support)

American Institute of Architects, Washington, D.C.
American Specification Institute, Chicago, Ill.
Associated General Contractors of America, Washington, D.C.
Central Supply Association, Chicago, Ill.
National Association of Plumbing, Heating & Cooling Contractors, Washington, D.C.

FIRMS AND OTHER INTERESTS

Aeronca Manufacturing Corp., Metal Products Division, Middletown, Ohio (General Support)
Ahrens & McCarron, Inc., St. Louis, Mo.
Alexandria, City of, Alexandria, Va.
Allegheny, County of, Health Department, Pittsburgh, Pa.
American Plumbing & Steam Supply Co., Tacoma, Wash. (General Support)
American Radiator & Standard Sanitary Corp., Plumbing & Heating Division, New York 18, N.Y.
American Sanitary Manufacturing Co., Abingdon, Ill. (General Support)
Andrew, W. T., Co., Detroit, Mich.
Atlas Supply Co., Winston-Salem, N.C.
Augusta, City of, Augusta, Ga.

Banks-Miller Supply Co., Huntington, W. Va.
Bayonne Plumbing Supply Co., Inc., Bayonne, N.J. (General Support)
Bial, Geo. F., Hasbrouck Heights, N.J.
Blodgett Supply Co., Inc., Burlington, Vt.

Boston, City of, Boston, Mass.
Bradley, J. R., Co., Inc., Reno, Nev.
Bridgeport, City of, Bridgeport, Conn.
Brust & Brust, Milwaukee, Wis.

Camlet, J. Thomas, Garfield, N.J.
Careva Co., Inc., York, Pa.
Carstens Plumbing and Heating Co., Ackley, Iowa
Case Manufacturing, Division of Ogden Corp., Robinson, Ill.
Cash, Harry, Co., Inc., Baton Rouge, La.
Central Supply Co., Fort Wayne, Ind.
Central Supply Co., Indianapolis, Ind.
Chandler Co., Cedar Rapids, Iowa
Chicago, City of, Plumbing Testing Laboratory, Chicago, Ill.
Chicago Pottery Co., Chicago, Ill.
Cleveland Clinic Foundation, Cleveland, Ohio
Columbia Pipe & Supply Co., Chicago, Ill.
Commercial Enameling Co., Los Angeles, Calif.
Connor Co., Peoria, Ill.
Conrad & Cummings, Associated Architects, Binghampton, N.Y.
Consolidated Supply Co., Portland, Oreg.
Cook Supply Co., Oklahoma City, Okla.
Crane Co., Plumbing-Heating-Air Conditioning Group., Johnstown, Pa.
Crane Supply Co., Denver, Colo.

Dallas, City of, Dallas, Texas
Dalziel Plumbing Supplies, San Francisco, Calif.
Danser Hardware & Supply Co., Clarksburg, W. Va.
Danser Hardware & Supply Co., Weston, W. Va.
Dearborn Brass Co., Cedar Rapids, Iowa (General Support)
Detroit, City of, Department of Buildings & Safety Engineering, Detroit, Mich.
Du-Kane Supply Co., Pittsburgh, Pa.
Duklauer, Eugene, Inc., New York, N.Y.
Duluth, City of, Duluth, Minn.
Duner Co., Chicago, Ill.

Fall River Steam & Gas Pipe Co., Corp., Fall River, Mass.
Field & Shorb Co., Decatur, Ill.
Fleck Bros. Co., Camden, N.J.
Flannagan, Eric G., & Sons, Henderson, N.C.
Florida Automobile & Gas Engine Co., Tampa, Fla.

Gerber Plumbing Fixtures Corp., Chicago, Ill.
Gerber, Max, Inc., Chicago, Ill.
Gibbons, M. J., Supply Co., Dayton, Ohio
Gibbons, M. J., Supply Co., Middletown, Ohio
Glauber, Inc., New York, N.Y.
Globe Machinery & Supply Co., Des Moines, Iowa
Globe Valve Corp., Delphi, Ind.
Graning Co., El Monte, Calif.

Hajoca Corp., Ardmore, Pa.
Heffley Co., Battle Creek, Mich.
Hirzel, Charles K., New York, N.Y. (General Support)
Hope, Frank L., & Associates, San Diego, Calif.
Hospital Center at Orange, Orange, N.J.
Hughes Supply, Inc., Orlando, Fla.

Ingersoll-Humphryes Division, Borg-Warner Corp., Mansfield, Ohio
Iowa Methodist Hospital, Des Moines, Iowa

Jacobson. A. D., Plumbing & Heating Co., Inc., Kansas City, Mo.
Jardine-Plumbing Co., Chillicothe, Ohio
Johnson Plumbing Supply Co., Chicago, Ill.
Johnson, J. D., Co., Inc., Pensacola, Fla.

Kennedy Co., Cleveland, Ohio
Kohler Co., Kohler, Wis.
Koller Bros. Co., Cleveland, Ohio
Kretschmer Tredway Co., Dubuque, Iowa

La Crosse Plumbing Supply Co., La Crosse, Wis.
Lebanon Plumbing Supply Co., Inc., Lebanon, Pa.
LeValley-McLeod, Inc., Elmira, N.Y.
Long Supply Co., Chicago, Ill.
Lower Merion Township, Ardmore, Pa.

M-Supply Co., Bay City, Mich.
McGowin Lyons Hardware & Supply Co., Mobile, Ala.
McNeill & Dugger, Inc., Herrin, Ill.
McPherson Co., Greenville, S.C. (General Support)
Malone Plumbing Supply Co., Pittsburgh, Pa.
Mansfield Sanitary, Inc., Perrysville, Ohio
Marbut Co., Valdosta, Ga.
May Supply Co., Mobile, Ala.
Methodist Hospital of Gary, Gary, Ind.
Miller, Miller & Associates, Terre Haute, Ind.
Miller Supply Co., Chicago, Ill.
Milstead, Austin, Texas
Miner Supply Co., Red Bank, N.J.
Mott Bros. Co., Rockford, Ill.
Murphy Supply Co., Green Bay, Wis.
Murray Corporation of America, Eljer Plumbingware Division, Pittsburgh, Pa.
Murray W. Sales Co., Division of White Sewing Machine, Detroit, Mich.

National Plumbing Fixture Corp., Columbus, Ohio

O'Hair, P. E., & Co., Fresno, Calif.

Parish, Archie G., St. Petersburg, Fla.
Patterson, W. L., Co., Appleton, Wis.
Price, Beryl, Philadelphia, Pa.
Peerless-Oklahoma Co., Oklahoma City, Okla.
Plumbers Supply Co., New Bedford, Mass.
Plumbing & Industrial Supply Co., Inc., Evansville, Ind.
Poekert, R. A., Brooksville, Fla.
Prier Brass Manufacturing Co., Kansas City, Mo.
Proctor Community Hospital, Peoria, Ill.

Raffel Supply Co., Inc., Chicago, Ill.
Riechle Supply Co., Saginaw, Mich.
Reid, Wm. H., Whittier, Calif.
Resnikoff, Abraham, Bronx, N.Y.
Rheem Manufacturing Co., Chicago, Ill.
Richards Manufacturing Co., Grand Rapids, Mich.
Roberts-Hamilton Co., Minneapolis, Minn.
Robischung-Kiesling Contracting Corp., Houston, Tex.
Rundle Spence Manufacturing Co., Milwaukee, Wis.

Salt Lake City Corp., Salt Lake City, Utah
Sloan, Samuel, & Co., Rochester, N.Y.
Schaeffer, Wilson & Evans, Bloomington, Ill.
Seaford Plumbing Supply Co., Seaford, Del.
Sears, Roebuck & Co., Chicago, Ill.
Sherwood Brass Works, Detroit, Mich.
Shirley-Onstad, Inc., Fargo, N. Dak.
Smith & Williams, South Pasadena, Calif.
Snow & Jones, Inc., Brockton, Mass.
Southern States Supply Co., Columbia, S.C.
Southland Supply Co., Inc., Dallas, Tex.
Spiegel, Inc., Chicago, Ill.
Springfield, City of, Springfield, Mo.
Square Supply Co., Knoxville, Tenn.
Stoetzel, Ralph, Inc., Chicago, Ill.

Texas, University of, School of Architecture, Austin, Tex.
Thackray Supply, Inc., Johnstown, Pa.
Throm Supplies Inc., Toledo, Ohio
Tillman & Booth, Inc., Eugene, Oreg.
Trenton, City of, Division of Plumbing Inspection, Trenton, N.J. (General Support)
Trumbull Plumbing Supply Co., Inc., Warren, Ohio

United States Plumbing Fixture Corp., Columbus, Ohio
U.S. Supply Co., Wichita, Kans.
Universal-Rundle Corp., New Castle, Pa.

Virginia, University of, Dept. of Architecture, Charlottesville, Va.
Vogel, Willis A., Toledo, Ohio

W-B Engineering Co., Chicago, Ill.
Warburton's, Madera, Calif.
Warner Co., Inc., Denver, Colo.
Webb, F. W., Manufacturing Co., Boston, Mass.
Weber, C. L. & Co., Inc., Philadelphia, Pa.
Welch, Carroll E., Huntington, N.Y.
Whittier Pipe & Supply Co., Whittier, Calif.
Willow Supply Corp., New York, N.Y. (General Support)
Wolf, Louis G., Henderson, Ky.
Wolverine Brass Works, Grand Rapids, Mich.
Woolcock Plumbing & Heating Co., Inc., Niagara Falls, N.Y.
Worthington, Geo., Co., Cleveland, Ohio

U.S. GOVERNMENT

Atomic Energy Commission, Washington, D.C.
General Services Administration, Federal Supply Service, Washington, D.C.
Health, Education & Welfare, Department of, Division of General Services, Washington, D.C.
Health, Education & Welfare, Department of, Public Health Service, Washington, D.C.
Interior, Department of the, Division of Property Management, Washington, D.C.
Justice, Department of, Bureau of Prisons, Washington, D.C.
Navy, Department of, Bureau of Yards & Docks, Washington, D.C.
Post Office Department, Washington, D.C.
Veterans Administration, Washington, D.C.

ACCEPTANCE OF COMMERCIAL STANDARD

CS77-63 ENAMELED CAST IRON PLUMBING FIXTURES

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date_____

Commodity Standards Division
Office of Technical Services
U. S. Department of Commerce
Washington 25, D. C.

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production[1] distribution[1] purchase[1] testing[1]

of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer_____
(In ink)

_____

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Organization_____
(Fill in exactly as it should be listed)

Street address_____

City, zone, and State_____

(Cut on this line)

[1] Underscore the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

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