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DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR PLUMBING FIXTURES (FOR LAND USE)

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 448

This specification was officially promulgated by the Federal Specifications Board on November 22, 1926, for the use of the departments and independent establishments of the Government in the purchase of plumbing fixtures (for land use).

[The latest date on which the technical requirements of this specification shall become mandatory for all departments and independent establishments of the Government is February 23, 1927. They may be put into effect, however, at any earlier date after promulgation.]

CONTENTS

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I. GENERAL SPECIFICATIONS

There are no general specifications applicable to this specification.

II. TYPES, GRADES, AND CLASSES

This specification covers such types, grades, and classes of plumbing fixtures as are enumerated under "Detail requirements," comprising vitreous ware and porcelain ware, enameled ironware, slate, soapstone, brass trimmings and fittings, supports, stops, cocks, valves, flushing mechanisms, pipe covering, etc.

III. MATERIAL AND WORKMANSHIP

See "Detail requirements."

IV. GENERAL REQUIREMENTS

Where United States Government master specifications are referred to, the latest revision of such specifications shall apply in all cases.

V. DETAIL REQUIREMENTS

1. VITREOUS WARE

(*a*) Quality of Vitreous Ware.—Vitreous fixtures shall be best quality vitreous china, thoroughly fused and vitrified, producing a material white in color, which when fractured shall show a homogeneous mass, close grain, and free from pores. All surfaces coming in contact with walls, floors, or surfaces of other fixtures shall be ground true. Closet bowl base with extended horn is not required to be ground.

(*b*) Dimensions and Variations.—The bowls of water-closets, urinals, lavatories, slop sinks, and other vitreous fixtures shall be not less than ½ inch thick at any point, except flushing rims and part forming overflows, which must be of substantial thickness. The dimensions shown on the figures shall be followed where given, but a variation of not more than 5 per cent plus or minus will be allowed. A warpage of not more than ¼ inch per foot will be allowed, but in no case shall the total warpage exceed ½ inch.

(*c*) Glazing.—Shall be white, thoroughly fused and united to body without discoloration, chips, or flaws on the glazed surfaces, and shall be absolutely free from craze. All surfaces shall be glazed except those coming in contact with walls or floors, and portion of rear of aprons on lavatories set off from wall required to be left unglazed for supporting fixture in kiln.

(*d*) Stamp.—The manufacturer's name or trade-mark and Government designation shall be in ink under glaze on each fixture. The Government designation shall be placed within a shield at the

point indicated and shall be a guaranty that ware of that make will stand the following prescribed test. Government designation is given under description of fixture. Shield shall be as indicated in Figure 1.

(*e*) TEST.—A fractured piece of material taken from any part of a vitreous china plumbing fixture, after being immersed in red aniline ink of good color strength for one hour, shall not show any discoloration through the glaze and shall not show absorption when broken, to a depth greater than ⅛ inch below surface of fracture at any point.

2. PORCELAIN WARE

(*a*) QUALITY OF PORCELAIN WARE.—Porcelain fixtures shall be best quality regular selection. The ware shall be made with a glaze over a heavy vitreous coating covering the fire-clay body, producing an exterior white in color. All exposed surfaces shall be glazed. All surfaces coming in contact with walls, floors, or surfaces of other fixtures shall be ground true.

(*b*) DIMENSIONS AND VARIATIONS.—All fixtures shall be heavy pattern, and all parts shall be of substantial thickness. The dimensions shown on the figures shall be followed where given, but a variation of not more than 5 per cent plus or minus will be allowed.

(*c*) GLAZING.—All surfaces exposed after fixtures are set shall be glazed; backs and undersides of urinals and laundry trays will not be required to be glazed. Glazing shall be thoroughly fused and united to body of fixture. Crowfeet or cracks will not be permitted in water-flushed surfaces. Crowfeet in glaze, except on water-flushed surfaces, shall not exceed ½ inch in diameter and shall be semi-glazed. Cracks in glaze, except on water-flushed surfaces, shall not exceed 1 inch in length nor $\frac{1}{32}$ inch in width. Discolored spots or bumps under the glaze shall not exceed 1 inch in diameter.

(*d*) STAMP.—The manufacturer's name or trade-mark shall be stamped in ware on each fixture.

3. ENAMELED IRONWARE

(*a*) QUALITY OF ENAMELED IRONWARE.—Enameled ironware shall be best quality cast iron of the necessary thickness to form fixtures of the best grade manufactured.

(*b*) Ironware shall have a porcelain enamel coat thoroughly fused on required surfaces. Enamel shall be smooth and of even thickness, white, without discoloration, chips, or other flaws, and free from craze. Exterior exposed surfaces not required to be enameled shall be treated with one coat of filler at factory.

(*c*) DIMENSIONS AND VARIATIONS.—The dimensions shown on the plates shall be followed where given, but a variation of not more than 3 per cent plus or minus will be allowed.

(*d*) LABELING ENAMEL WARE.—All fixtures shall have the manufacturer's guarantee label indicating first quality. Omission of this label may be sufficient cause for rejection.

4. SLATE

Slate shall be sound, hard, nonabsorbent, the exposed surfaces finished a smooth sand-rubbed finish, with exposed edges rubbed smooth. The slabs shall be of full thickness called for, with true surfaces and edges, and free from defects on manufacture, and the abutting edges shall be close jointed. Commercial ribbon stock slate meeting the above requirements will be acceptable.

5. SOAPSTONE

Soapstone shall be first quality, gray or bluish gray in color, close grained, nonporous, of uniform density and hardness and free from stratification; shall have a smooth finish, free from defects, with surfaces true and abutting edges close jointed.

6. MARBLE AND GLASS

Quality of these materials and finish of same shall be described in the specification for the work.

7. TRIMMINGS AND FITTINGS

(*a*) QUALITY.—All trimmings and fittings in connection with the plumbing system shall be of best quality, of heavy and substantial pattern.

(*b*) The brass mixture, except for red metal and where fittings for tanks are used on salt water, shall contain not less than 65 per cent copper and not more than 5 per cent lead.

(*c*) Composition for fittings where salt water is used shall contain not less than 88 per cent copper and not less than 8 per cent tin.

(*d*) Composition for cast trimmings and fittings where red metal is required shall contain not less than 85 per cent copper, 5 per cent tin, and not more than 7 per cent zinc, nor more than 4 per cent lead.

(*e*) When white metal is desired in lieu of brass it shall be called for in the specification for the work and shall be of the following composition: Copper, 54 to 58 per cent; nickel, 14 to 20 per cent; lead, 12 per cent, maximum; tin, 2½ per cent, maximum; zinc, 20 per cent, maximum; impurities including iron and manganese not more than 1 per cent.

(*f*) Where red metal trimmings and fittings or salt-water fittings are desired, they will be called for in the specifications for the work.

(*g*) FINISH.—All exposed brass, except red metal, shall be heavily nickel plated in a manner to produce a finish of high polish and durability, except where otherwise specified. When chromium plating is desired, it shall be so stated in the specifications for the work.

(*h*) Red metal shall be highly polished and finished and of uniform color for all castings, tubing, and fittings.

(*i*) NICKEL PLATING.—The average thickness of nickel on articles subject to abrasion, such as faucet handles, toilet door latches, coat hooks, etc., shall be not less than 0.0002 inch; and on articles not subject to abrasion, such as pipe, escutcheons, etc., shall be not less than 0.0001 inch. A tolerance of 10 per cent shall be permitted in these values to allow for uncertainties in measurement. These thicknesses are equivalent, respectively, to 0.144 ounce and 0.072 ounce per square foot, plating about one hour and one-half hour, respectively.

(*j*) TEST OF NICKEL PLATING ON BRASS.—The area of the piece should be measured as closely as possible. It is then cleaned by immersion in an alkaline solution, rinsed, and hung in a solution containing about 10 per cent by volume of chemically pure concentrated hydrochloric acid. The article is connected as the anode, and a strip of lead is made the cathode. A current is applied at 4 to 6 volts, until all the nickel is dissolved, usually in from one to two minutes. The resultant solution is diluted to a measured volume (for example, 250 cc) and a definite portion (for example, 10 cc) is used for the determination of the nickel content by the dimethylglyoxime method. If the area has been measured in square centimeters, the results can best be calculated to grams per 100 square centimeters or to thickness in millimeters, which may then be converted to ordinary units.

$$\frac{\text{Weight of nickel (g)}}{\text{Area of sample (cm}^2\text{)}} \times 100 = \text{grams per 100 cm}^2\ (\text{g/dm}^2)$$

$$\text{g/dm}^2 \times 1.15 = \text{thickness in millimeters.}$$

$$\text{Thickness (mm)} \times 0.039 = \text{thickness in inches.}$$

$$\text{g/dm}^2 \times 0.328 = \text{ounce per square foot.}$$

(*k*) STAMPING OR MARKING TRIMMINGS AND FITTINGS.—All faucets, ball cocks, and stops shall have manufacturer's name or trade-mark cast or stamped on body of the piece.

8. SUPPORTS AND FASTENINGS

(*a*) Where trimmings are secured to free standing marble, slate, soapstone, or glass they shall be fastened with ¼-inch brass through bolts. Where trimmings, tanks, or other work are secured to masonry walls they shall, unless otherwise specified, be fastened with ¼-inch brass expansion bolts not less than 4 inches long; to terra cotta walls or partitions with ¼-inch brass toggle or through bolts; to wood partitions with heavy, round head brass wood screws; to gypsum with ¼-inch brass through bolts. In cases where tanks or fixtures are supported by gypsum, iron, or steel plates ⅛ inch thick,

6 inches wide, and not less than 24 inches long shall be used at back of through bolts. The plates shall be drilled to receive at least two bolts.

(*b*) Where wood screws are used, screws shall go into solid wood, such as floor joists, studs, or solid pieces set between studs. Where through bolts are used, they shall be provided with plates or washers at back set so that heads, nuts, and washers will be concealed by plaster. Exposed heads of bolts and nuts shall be hexagon with rounded tops finished and nickel plated, with nickel-plated hexagon nuts to conceal end of bolts where exposed. Where necessary, exposed nuts and heads of screws shall be provided with nickel-plated brass washers.

(*c*) Expansion bolts shall be ¼-inch brass bolts with 20 threads to the inch and of sufficient length to extend at least 3 inches into solid concrete or brickwork, fitted with loose tubing or sleeves of proper length to bring expansion sleeves in the solid concrete or brick wall. This clause applies wherever expansion bolts are specified.

9. COMPRESSION STOPS

Shall be standard weight designed for 100 pounds working pressure, globe pattern, with full area opening having raised seat and composition disk; shall be finished brass, nickel plated, and provided with stuffing boxes and cast brass milled-wheel tee or cross handles. Angle pattern stops may be used where practicable.

10. BALL COCKS

(*a*) For flushing tanks shall consist of a ½-inch diameter brass, automatic, float-operated supply cock, guaranteed to close effectively against a water pressure of 100 pounds to the square inch, top supply pattern for high tanks, having brass refill and hush tube, and bottom supply with elevated ball cock and hush tube, or semielevated ball cock for low tanks. Float shall be of 16-ounce (0.0216 inch thickness) spun copper, vulcanized rubber, or of glass with brass stem connected to float and cock with screw threads; cock shall be constructed so it can readily be taken apart for repairs, pins forming bearings for levers shall be ⅛-inch brass cotter pins. Supports for ball cocks and lever fulcrum on high tanks shall be secured with through bolts and nuts to lugs cast on tanks having lead washers between tank lugs and supports.

(*b*) Supply pipes to ball cocks shall be ½-inch diameter fitted with a compression stop as shown in the figures.

11. FLUSHING TANK MECHANISM

(*a*) Flushing mechanism of high tanks shall consist of a cast brass gooseneck siphon with slotted guide sleeves and stable rubber washer. Siphons for urinal flush tanks shall be 1⅛ inches in diameter, and siphons for water-closet flush tanks shall be 1½ inches in diameter.

Siphons shall be properly secured to the operating levers indicated on figures in such a manner that they will be properly balanced and guided to secure a straight lift and proper reseating. The lever post shall be provided with an adjustable stud bolt that will limit the pull on the lever and prevent the guide on the gooseneck siphon from being pulled out of its sleeve.

(*b*) Flushing mechanism shall be operated by means of a nickel-plated brass plumber's chain not thinner than No. 20 Brown & Sharp gauge (0.032 inch), with a hardwood pull handle as shown on Figures 5, 7, or 8. Handle shall have a brass rod passing through same with nickel-plated brass ring nut and bottom nut sweated on rod. Chain shall be fastened to operating lever and ring nut by means of rings of ⅛-inch diameter nickel-plated brass with joints well soldered after chain is attached.

(*c*) Flushing mechanism of low tanks shall be of rubber ball design, having a 2¾ inches diameter, best quality, rubber ball, reinforced at top and center, with necessary brass stem, guide, and lever. Operation shall be quiet in action, shall be controlled by means of a nickel-plated brass or china lever handle, set at front of tank. A brass standpipe not less than 1-inch diameter, of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch), shall be properly installed for overflow.

(*d*) Each discharge shall be succeeded by an afterflush or refill that will fill the fixture trap to its overflow weir.

12. FLUSHING VALVES

(*a*) Shall be of a true flushometer type and of a pattern approved by the bureau or office concerned, operated either by push button, lever or oscillating handle. If of lever or oscillating handle type, the handle shall be all brass, nickel plated or white metal (nickel brass) and, in addition to this, if of lever handle type, the handle shall be integral with the lever.

(*b*) Flushing valves shall be easily operated by hand, and so designed that they will cause absolutely no water hammer in the piping system and if a regulating device is used to adjust the amount of water and give the proper afterfill, the regulating device shall be accessible without disconnecting or taking the valve apart.

(*c*) Flushing valves for water-closets shall provide successful flushing of fixture and refill the fixture trap at each operation with a discharge of not more than 4 gallons of water, under a pressure ranging from 15 to 100 pounds. Flushing valves for urinals shall discharge not less than 1 gallon nor more than 2 gallons of water under a pressure ranging from 15 to 100 pounds.

(*d*) Each flushing valve shall be provided with a cut-off cock adjacent to flushing valve and connected thereto with a nickel-plated

brass union or nipple. A lock shield gate valve may be used in lieu of the cut-off cock.

(*e*) Flushing valves for urinals shall have not smaller than ½-inch nor larger than ¾-inch diameter supply pipe connection; flushing valves for water-closets shall have not smaller than 1-inch nor larger than 1¼-inch diameter supply pipe connection.

(*f*) All exposed parts of flushing valves and cut-off cocks or gate valves shall be nickel plated, finished brass, or white metal. All other parts of flushing valves shall be of very best noncorrodible metal that will withstand frequent operation of valve without wear or breakage.

13. FIXTURE CONNECTIONS

(*a*) Connection between each water-closet and the cast-iron, steel, or wrought-iron soil pipe shall be made, unless otherwise specified, with a cast-iron heavy pattern floor flange as indicated in Figure 3, type D. Floor flange shall slip over the pipe and be calked into position. Where space conditions will not permit the use of standard fitting in conjunction with the cast-iron floor flange, special short radius fitting shall be provided.

(*b*) Where specification for the work requires a lead pipe connection between water-closet and soil pipe the connection shall be made with drawn lead pipe 4 inches inside diameter and weighing not less than 8 pounds to the linear foot. The lower end shall have heavy pattern cast-brass ferrule at least 4 inches long; the lead shall extend not less than 1 inch inside of the ferrule and connect to same with a wiped joint. The upper end of lead connection shall be soldered to a cast-brass floor flange. Floor flange shall be as per detail in Figure 3, type C.

(*c*) Where specification for the work requires brass floor flanges for closet connections to wrought iron or steel pipe, floor flanges shall be as indicated in Figure 3. Type A flange shall be used except where floor flange connects directly into a fitting, when type B shall be used.

(*d*) Connection between earthenware of any fixture and flanges on soil pipe shall be made absolutely gas and water tight with a one-piece special molded asbestos gasket, properly saturated to prevent rotting or drying. Rubber gaskets will not be permitted for this connection nor will putty be allowed.

14. INTERIOR DOWN-SPOUT GOOSENECK

(*a*) Interior down spouts shall be connected to the roof outlets with lead pipes of the same inside diameter as the down spouts. Lead goosenecks shall be enlarged to one and one-half times the area of the pipe at inlet and flanged under gutter or roof outlet box lining and soldered thereto.

(*b*) Where screw piping is used for down spouts the lower end of lead pipe, where space permits, shall be wiped to brass coupling (recessed for lead pipes), which shall be screwed to the iron down spout, or where space does not permit a wiped joint, the lead shall be soldered to the coupling. In lieu of the above a standard cast-iron flange union may be used, with the lead pipe flanged out to form gasket between flanges. The threads of the upper flange shall be reamed out to permit passage of lead pipe and the edge of flange rounded off so as to prevent cutting the gasket. If cast-iron down spouts are used, the lower end of the lead gooseneck shall be wiped to a heavy pattern brass ferrule at least 4 inches long, and ferrule shall be calked into the hub of the cast-iron down spout.

(*c*) The lead pipes forming the goosenecks shall be not lighter than the following weights per running foot: 2 inches diameter, 5 pounds; 3 inches diameter, 9 pounds; 4 inches diameter, 12 pounds.

15. ROOF DRAINS

(*a*) Shall be heavy pattern cast iron with integral cast-iron cup pattern fitting having an integral flange not less than 16 inches in diameter, and a satisfactory device for clamping or otherwise securing the roof covering so as to make a water-tight connection; or in lieu of the integral flange, shall have a 16-ounce (0.0216 inch) soft rolled copper or a 5-pound sheet lead flashing flange with not less than 4-inch lap on all sides extending into the roofing.

(*b*) For gravel or slag roofing the drain shall be provided with a suitable gravel stop.

(*c*) Shall have a cast-iron beehive or dome-shaped strainer, except on promenade roofs where strainer shall be flat. Openings in strainer shall have a combined area equal to twice the area of drain outlet.

(*d*) Outlet shall be equipped with necessary parts to make proper connection to screw pipe or cast-iron pipe as required of same size as down spout.

(*e*) When specified in specification for the work each roof drain shall be provided with a heavy pattern, cast brass or copper sleeve-expansion joint of thickness not lighter than No. 10 Stubbs gauge (0.134 inch) constructed so as to form a water and air tight flexible joint. Gaskets and packing shall be of asbestos fiber, soft lead, or other suitable durable material which shall not be located in the flow line of the drainage. Means of adjustment shall be provided for tightening or replacing packing.

16. PIPE SLEEVES

Cast iron, standard wrought iron, or steel pipe sleeves, properly secured in place, with approximately ¼-inch space all round between sleeve and pipe passing through same, shall be provided for all pipe

passing through basement walls (except pipe passing through waterproofed walls and pipe for wall hydrants and discharge nozzles of interior down spouts where same discharge at grade). Sleeves of No. 26 United States standard gauge (0.019 inch) galvanized iron shall be installed with approximately ¼-inch space all round for all pipes passing through walls, partitions, and floors above basement. In cases where cork covering is used the above sleeves shall be of sufficient size to permit installation of the covering with the usual clearance.

17. FLOOR, WALL, AND CEILING PLATES

(*a*) Where uncovered exposed pipes pass through floors, finished walls, or finished ceilings, they shall be fitted with floor and ceiling plates not less than $\frac{3}{32}$ inch thick. Plates on nickel-plated pipe shall be finished cast brass, nickel plated; plates on iron pipe shall be cast iron or steel. Wall and ceiling plates shall have round-head set screws. Floor, wall, and ceiling plates shall be one-piece pattern.

(*b*) Where necessary to cover beads of fittings special cast iron or cast brass deep escutcheons shall be provided.

18. PIPE COVERING

(*a*) Pipe covering, where required by the specifications for the work, shall be first-class, nonconducting, sectional removable, solid wool felt covering, not less than ¾ inch thick; covering for hot-water supply piping shall be lined with asbestos paper and for cold-water supply piping shall be lined with tar paper. All pipe covering shall be jacketed with commercial weight cotton cloth or canvas put on in a workmanlike manner, using brass lacquered tin-plated bands not over 18 inches apart of thickness not less than No. 36 Brown & Sharpe gauge (0.005 inch) and not less than ¾ inch in width. At each elbow there shall be two and at each tee there shall be three bands. Covering shall be neatly finished where pipe hangers occur. Fittings and valves shall be covered with plastic material containing not less than 35 per cent magnesia, or asbestos finished with a hard, smooth surface, flush with the pipe covering. Where space does not permit the installation of sectional covering, the pipes in wall chases may have the covering omitted, provided the chases are packed full of mineral wool, 35 per cent magnesia, or asbestos.

(*b*) Drinking or ice-water supply piping when required by the specification for the work shall be covered with the best grade of sectional molded cork covering 1¼ inches thick of pure granulated cork, molded under pressure, and baked at high temperature, coated inside and outside with mineral rubber, impervious to water. Fittings and valves shall be covered the same as pipe with molded covering. Covering shall be applied in sections with end joints staggered, one-

half section overlapping next corresponding section. Covering shall be continuous through floors, walls, etc., and sleeves shall be of proper size to allow same. Pipe and fittings shall have jacket of commercial weight cotton cloth or canvas and bands same as other water-pipe covering.

(*c*) Where specification for the work requires covering to stop a certain distance above floors a cast-iron or steel one-piece ceiling plate held in place by set screw shall be used on vertical pipes at point where covering stops to protect the end of covering. Where nickel-plated brass pipe is used between the pipe covering and floor the ceiling plate shall be cast brass, nickel plated.

(*d*) Covering where required by the specifications for the work for horizontal roof-drainage piping exposed in attic, together with the fittings, shall be 2 inches in the thickness of hair felt with 8-ounce canvas jacket sewed on. Between the pipe and felt a sheet of heavy tar or rosin-sized paper shall be placed and a heavy tar or rosin-sized paper cover shall be placed before canvas jacket is applied.

19. HEATER AND TANK COVERING

Water heaters and hot-water storage tanks shall be covered with plastic material containing not less than 85 per cent magnesia not less than 1¼ inches thick. The final coat shall be mixed half and half with Portland cement and finished smooth. In lieu of plastic material, 85 per cent magnesia blocks not less than 1¼ inches thick properly tied with copper or brass wire may be used. Finish shall be same as required for plastic material.

20. PIPING

(*a*) Cast-Iron Soil Pipe, Fittings, and Connections.—Cast-iron soil pipe and fittings shall be in accordance with United States Government master specification, Federal Specifications Board specification No. 343.

(*b*) All changes in pipe size on soil, waste, and drain lines shall be made with reducing fittings or recessed reducers. Y-fittings and ⅛ or $\frac{1}{16}$ bends or combination Y and ⅛ bends shall be used where possible.

(*c*) Sanitary long-sweep bends and tees may be used for connections of branch lines to fixtures and on vertical runs of pipe.

(*d*) Joints between cast-iron pipe shall be made with a picked oakum gasket and pig lead; joint shall be run full at one pouring and caulked solid, flush with the hub.

(*e*) Joints between cast-iron pipe and wrought-iron steel or brass pipes shall be made same as above, the end of wrought-iron pipe shall have a ring or part of a coupling screwed on to form a spigot end.

(*f*) Connections between lead and wrought steel or cast-iron pipe shall be made with brass fittings and wiped joints.

(*g*) Joints between cast-iron and vitrified-clay pipe shall be made with picked oakum gasket and Portland-cement mortar mixed in proportion 1 part cement and 1 part clean, sharp sand, filled full depth and troweled to a smooth bevel around socket of pipe.

(*h*) WROUGHT-IRON PIPE.—Shall be standard-weight genuine wrought-iron galvanized pipe in accordance with United States Government master specification, Federal Specifications Board specification No. 242.

(*i*) STEEL PIPE.—Shall be standard weight galvanized steel pipe in accordance with United States Government master specification, Federal Specifications Board specification No. 162.

(*j*) FITTINGS AND CONNECTIONS FOR WROUGHT-IRON AND STEEL PIPE.—Fittings for soil and waste piping and for roof-drainage piping systems shall be cast iron, recessed and banded, screw-jointed drainage fittings, free from fins and burrs. Long turn fittings shall be used where space and other conditions permit, and the consent of the Government representative shall be obtained before any short-radius fittings are installed. Fittings on soil, waste, and roof drainage piping may be galvanized or plain, uncoated.

(*k*) Fittings for vent and water supply piping shall be standard banded cast or standard beaded or banded malleable iron. All fittings on water supply piping shall be galvanized. Cast fittings on vent piping may be galvanized or plain, uncoated. Malleable fittings on vent piping shall be galvanized.

(*l*) Changes in pipe sizes shall be made with reducing fittings or fittings bushed in the sand.

(*m*) Joints between brass and wrought-iron or brass and steel pipe shall be screw joints. Ends of all pipe shall be reamed out before being made up into fittings.

(*n*) Screw joints shall be made with a lubricant applied on the male thread only; threads shall be full cut and not more than three threads on the pipe shall remain exposed. Screw joints shall be made metal to metal and the caulking of screw joints to stop or prevent leaks will not be permitted.

(*o*) The use of long screws and bushings (except bushings cast in the sand) is prohibited.

(*p*) Where a union connection is shown or specified on any pipe 2 inches in diameter or smaller, same shall be heavy pattern all brass, with ground joint and both screw ends hexagonal or octagonal. Where not shown nor specified, but required for erection purposes, right and left couplings or right and left elbows shall be used.

(*q*) Where a union connection is used on soil, waste, vent, or drain piping 2½ inches in diameter or larger, a tucker connection or flange union shall be used. On all other pipes 2½ inches in diameter and larger flange unions shall be used. Gaskets on flange unions shall be best quality rubber gasket $\frac{1}{16}$ inch thick.

(*r*) BRASS PIPE, FITTINGS, AND CONNECTIONS.—Brass pipe shall be grade B or C in accordance with United States Government master specification, Federal Specifications Board specification No. 342.

(*s*) When specified in specification for the work, brass pipe shall be nickel plated. (See Sec. V, 7(*i*), of this specification.)

(*t*) Fittings and couplings on unfinished brass water-supply pipe shall be cast brass, beaded or banded malleable-iron pattern; couplings shall be brass.

(*u*) Fittings on nickel-plated brass pipe shall be cast brass, malleable-iron pattern, finished and nickel plated. (See Sec. V, 7(*i*), of this specification.)

(*v*) Screw joints shall be made with a lubricant applied on the male thread only; threads shall be full cut and not more than three threads on the pipe shall remain exposed. Screw joints shall be made metal to metal, and the caulking of screw joints to stop or prevent leaks will not be permitted.

(*w*) Unions on pipes 2 inches and smaller in diameter shall be heavy pattern, all brass, ground joint unions with both screw ends hexagonal or octagonal; shall be finished and nickel plated on nickel-plated pipes. Unions on pipes 2½ inches and larger in diameter shall be standard weight, galvanized, cast-iron flange unions with gasket of $\frac{1}{16}$ inch thick best quality rubber.

(*x*) PIPE THREADS.—Where iron-pipe size pipe threads are specified, they shall conform to United States Government master specification, Federal Specifications Board specification No. 238.

(*y*) VITRIFIED CLAY PIPE.—Shall be No. 1, first quality, standard weight, vitrified, salt-glazed, socketed, earthenware pipe practically free from fractures, large or deep cracks and blisters, laminations and surface roughness.

(*z*) Cracks at either end of pipe not exceeding 2 inches in length or a single fracture in the socket not exceeding 3 inches in width nor 2 inches in length will not be deemed cause for rejection.

(*aa*) Fittings shall be of corresponding quality and thickness. Y fittings and ⅛ or $\frac{1}{16}$ bends shall be used where possible.

(*bb*) The inner surface of sockets and the outer surface of spigot end of pipe and fittings 8 inches in diameter and larger shall be scored by triangular shaped or semicircular shaped rings about ⅛-inch deep

(*cc*) Joints between vitrified clay pipe shall be made with picked oakum gasket and cement mortar mixed in proportion of 1 part Portland cement and 1 part clean sharp sand, filled full depth and troweled to a smooth bevel around socket of pipe; each length of pipe after being firmly set in place shall be mopped out in order that no mortar will be left in pipe. Each joint shall be of uniform thickness at all points.

21. HANGERS, SUPPORTS, ETC.

Horizontal overhead runs of pipe shall be hung with approved heavy adjustable wrought-iron or malleable-iron pipe hangers, spaced not over 10 feet apart; vertical runs of pipe shall have heavy wrought-iron clamps or collars for support, spaced not over 20 feet apart; nickel-plated or finished-brass pipes shall be supported where required by cast-brass supports finished to match pipe. All hangers and collars shall be of a size proportionate to the weight of the pipe supported. Chain, perforated bar iron or wire hangers will not be permitted. Pipe supports shall be installed in an approved manner.

22. VALVES

(*a*) All gate valves shall be designed for a steam working pressure of 125 pounds per square inch, all globe and angle valves for a steam working pressure of 150 pounds per square inch, and shall have the name or trade-mark of the manufacturer and the guaranteed working pressure cast or stamped on the body.

(*b*) Except as noted, valves 2 inches and smaller in diameter shall be all brass, screw ends with rough body and finished trimmings, except that those on nickel-plated brass pipe shall be finished and nickel plated. Valves 2½ inches and larger in diameter shall have iron body, brass mounted, and shall have either screw or flange ends.

(*c*) Brass for valves shall have a minimum copper content of 80 per cent and a maximum lead content of 5½ per cent.

(*d*) All valves shall be gate valves unless otherwise specified.

(*e*) Gate valves in connection with sinks and laundry tubs, and gate or other valves in connection with boilers and hot-water tanks are not considered as a part of the fixtures, but shall be installed on supply pipes between fixtures and supply mains at the most convenient point as may be shown or specified.

(*f*) Gate Valves.—Shall be of the solid wedge pattern, double seat rising or nonrising stems with gland stuffing boxes, and iron wheels. Shall weigh not less than the following: ½-inch, 0.93 pound; ¾-inch, 1.56 pounds; 1-inch, 2.18 pounds; 1¼-inch, 3.50 pounds; 1½-inch, 5 pounds; 2-inch, 7.19 pounds; 2½-inch (screwed), 31 pounds, and (flanged), 41 pounds; 3-inch (screwed), 42 pounds, and (flanged), 57 pounds; 4-inch (screwed), 65 pounds, and (flanged), 85 pounds.

(*g*) Globe and Angle Valves.—Shall have renewable elastic disk, raised flat seats and gland stuffing boxes, iron wheel, ample lift and full-size openings. The globe valves shall weigh not less than the following: ½-inch, 1.25 pounds; ¾-inch, 2 pounds; 1-inch, 2.75 pounds; 1¼-inch, 4 pounds; 1½-inch, 5.5 pounds; 2-inch, 9 pounds. Unless otherwise specified, brass globe and angle valves of the union bonnet type with malleable iron union ring and malleable iron

stuffing nut will be acceptable if the malleable iron parts do not come in contact with water.

(*h*) CHECK VALVES.—Shall be horizontal swing check valves with composition rubber, leather, or brass disks. Valves with brass disks shall be of the regrinding type.

VI. METHOD OF TESTS

1. At the discretion of the purchaser, materials will be taken at random for test. If the test material does not meet the requirements of the specification, that entire lot shall be rejected and no allowance shall be made for destroyed material. Payment shall be made for all material destroyed in the tests, provided the material complies with the requirements of the specifications.

2. Methods of test shall be as given under "Detail requirements."

VII. PACKING AND MARKING

Packing and marking of shipments shall be in accordance with commercial practice unless otherwise specified.

VIII. NOTES

1. Section V, 13 (*a*) to 22 (*h*), inclusive, is for use in construction work and is recommended for use in connection with a general specification for the work, which should state which paragraphs apply.

2. Fixtures, supplies, and wastes from the fixtures to the wall or floor are included as parts of the fixtures unless otherwise stated in the order or general specifications for the work.

3. On sinks, barrack lavatory, and laundry tray outfits the supplies specified include bibbs only. If compression stops, etc., are required it should be so stated.

4. Trimmings and fittings for fixtures are generally specified to be nickel-plated brass. If white metal or red metal is desired, it should be so stated.

5. Partitions and inclosures for water-closets and shower baths are specified to be marble, slate, soapstone, or glass as required in specifications for the work. If marble or glass is used, the quality, etc., should be specified. If material other than that mentioned is used, this specification will not apply.

6. It is not intended that this specification shall be mandatory for minor repair work.

7. Inspectors should note particularly the following points during inspection:

(*a*) *Vitreous ware.*

(1) Government designation under glaze of fixtures except outfit No. 34, Figure 6 (see Sec. V, 1 (*d*)).

(2) Manufacturer's name or trade-mark under glaze of all fixtures (see Sec. V, 1 (*d*)).

(3) Red-ink test (see Sec. V, 1 (*e*)). In many cases this can be made by chipping a piece of the ware from the fixture at a point that will be concealed after the fixture is set.

(*b*) *Brass trimmings.*

(1) Red metal or white metal to be uniform throughout; may be checked easily with a file.

(2) Check size and gauge of tubing.

(3) Check iron-pipe size and weight of brass pipe.

(4) Cast (not spun) wall and floor plate of one-piece pattern on fixture supplies and waste.

(5) Check weight of valves, faucets, etc., in accordance with details, and stamping in accordance with Section V, 7 (*k*).

(*c*) *Lavatory supports and overflow.*

(1) Legs to be attached to fixture, so as not to be easily removed.

(2) Nickel-plated brackets to be cast brass, not iron.

(3) Overflows to have not less than 1½ square-inch area at every point.

(*d*) *Showers.*

(1) Cast brass body and face.

(2) Combination valve handles not less than 5 inches center to center.

MISCELLANEOUS, FIGURE 1

DETAIL NO. 1—*Street washers.*—Shall be of type shown; shall have an automatic nonfreezing drain, and shall be set above not less than 4 cubic feet of clean broken stone which will pass a 2-inch mesh screen.

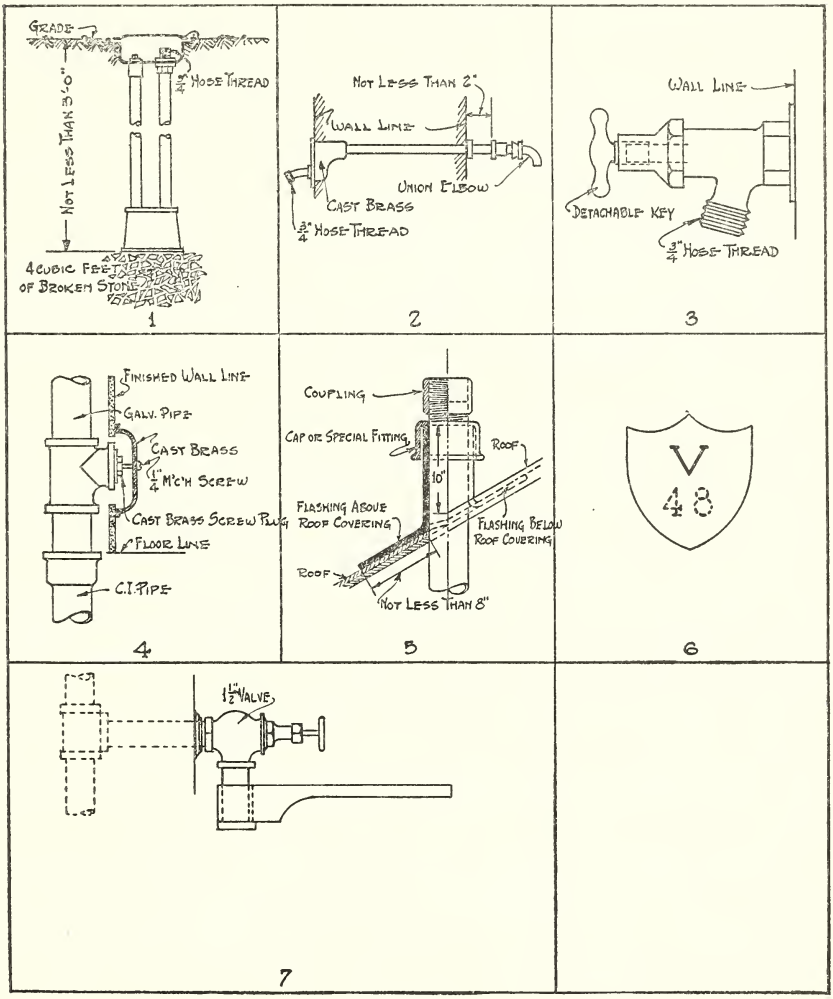


FIG. 1

The valve shall be in a cast-iron box placed not less than 36 inches below the ground; from this two ¾-inch pipes shall extend to surface and be connected to a cast-iron box with hinged cover marked "water," having top set level with grade. One of the pipes shall be fitted at upper end with cast-brass ¾-inch hose connection with jam nut; the other shall contain a brass valve operating rod. Furnish with each washer a short T handle key; all wrought-iron parts shall be galvanized.

DETAIL NO. 2—*Wall hydrant.*—Shall have brass face and detachable T-handle and nozzle for ¾-inch hose connection; shall be of sufficient length to go through wall with shut-off valve on inside of building wall and shall have heavy brass coupling and union elbow for ¾-inch pipe, as shown. The outer casing pipe passing through wall shall be galvanized and the inside operating rod shall be brass.

DETAIL NO. 3—*Sill cock.*—Shall be all brass compression type, with integral flange tapped for ¾-inch pipe, and a detachable T-handle key; hose connection shall be for ¾-inch diameter hose.

DETAIL NO. 4—*Clean-out plug.*—Shall be heavy cast-brass screw-jointed clean-out plug screwed into cast-iron screw-jointed tee pattern, 90° Y fitting as shown. On pipes 4 inches and smaller in diameter plug shall be same size as pipe; on pipes larger in diameter than 4 inches plug shall be 4-inch diameter. Where pipe is installed in chase in plastered rooms, a long turn branch or extension piece, if required, shall be placed in tee to bring plug flush with plaster or wainscot line. Plug shall be installed in pipe in such position that it is accessible.

Where clean-out plug occurs back of marble, slate, or other wainscoting, same shall be cut so that plug will be accessible.

A finished ⅛-inch thick cast-brass, nickel-plated flanged cover of the required size to cover opening shall be secured to each clean-out plug, covering opening in wall of finished rooms, as shown.

DETAIL NO. 5—*Flashing connections.*—Openings in roof for vent pipes shall be flashed with not lighter than 6-pound lead flashing, shall be flanged and made water-tight at roof, and the lead shall extend up around the vent pipes as shown.

When steel or wrought-iron pipe is used at top line of the lead flashing a drilled and threaded standard cast-iron or malleable-iron cap, galvanized, one size larger than vent pipe, shall be screwed to vent pipe to form counterflashing or rain guard, pipe shall extend through cap and shall be provided with coupling as shown.

A special cast-iron fitting to take the place of cap and coupling may be used, providing same is a one-piece fitting that will cover lead flashing, having double hub with screw threads to allow pipe to be extended if desired.

When cast-iron pipe is used lead flashing shall be turned over and down into the hub of the pipe at least 1 inch.

DETAIL NO. 6—*Stamp for vitreous ware.*—See Section V, 1 (*d*), of this specification.

DETAIL NO. 7—*Fire-hose rack.*—Shall be of the type and size required for hanging 1½-inch diameter hose in vertical loops on nondetachable pins or supports. Racks shall be malleable-iron or steel, red enameled. Any make of cast-iron or steel fire-hose rack of approximately the general construction as illustrated will be acceptable under this specification

Hose shall be as required by the specification for the work.

Each connection shall be made about 6 feet above floor and shall be provided with a 1½-inch diameter, angle globe valve with gland stuffing box, raised seat, elastic disk, and with brass hose nipple. Valve shall weigh not less than 6 pounds. Valve and wall plate are not parts of the fixture.

DRAINS, TRAPS, AND CLEAN OUTS, FIGURE 2

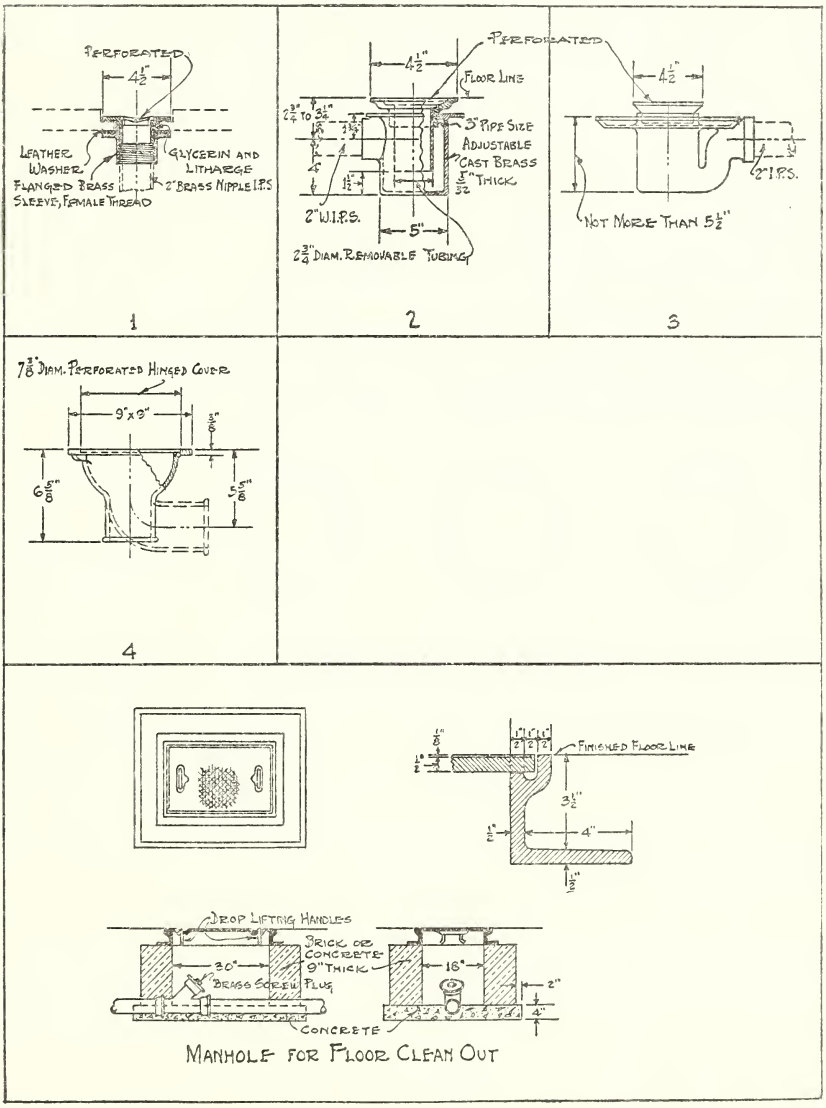


FIG. 2

DETAIL No. 1—*Drain.*—Shall be cast-brass shower or urinal drain as shown, with removable strainer; nickel plated or finished brass strainer and top flange.

DETAIL No. 2—*Combined drain and trap.*—Shall be cast brass combined drain, and trap as shown, with removable strainer; nickel plated or finished brass strainer and top flange. Water seal shall be not less than 1½ inches in depth.

DETAIL No. 3—*Combined drain and trap.*—Shall be heavy pattern cast iron combined drain and trap, as shown, with a cast-brass strainer. Strainer and top flange shall be nickel plated or finished brass. Water seal shall be not less than 1½ inches in depth.

DETAIL No. 4—*Area cesspool.*—Shall be extra heavy cast iron approximately of dimensions shown with perforated hinged cast-iron cover plate and with 3-inch connection for cast-iron pipe; without bell trap.

Side outlet cesspool shall be used only where space does not permit use of a bottom outlet type.

DETAIL No. 5—*Clean out on cast-iron pipe.*—Fitting shall be extra heavy cast-iron Y with heavy pattern brass ferrule and cast-brass screw jointed clean-out plug; shall be installed in manhole constructed for, and provided with cast-iron cover as shown. Cover shall have checkered top surface.

DOWN-SPOUT NOZZLE, FLOOR FLANGES, FIGURE 3

Down-spout nozzles.—Shall be unfinished cast brass of dimensions noted. Nozzle shall be screwed on pipe, screwed into drainage elbow at base of down spout, and extend beyond outside face of wall, as shown.

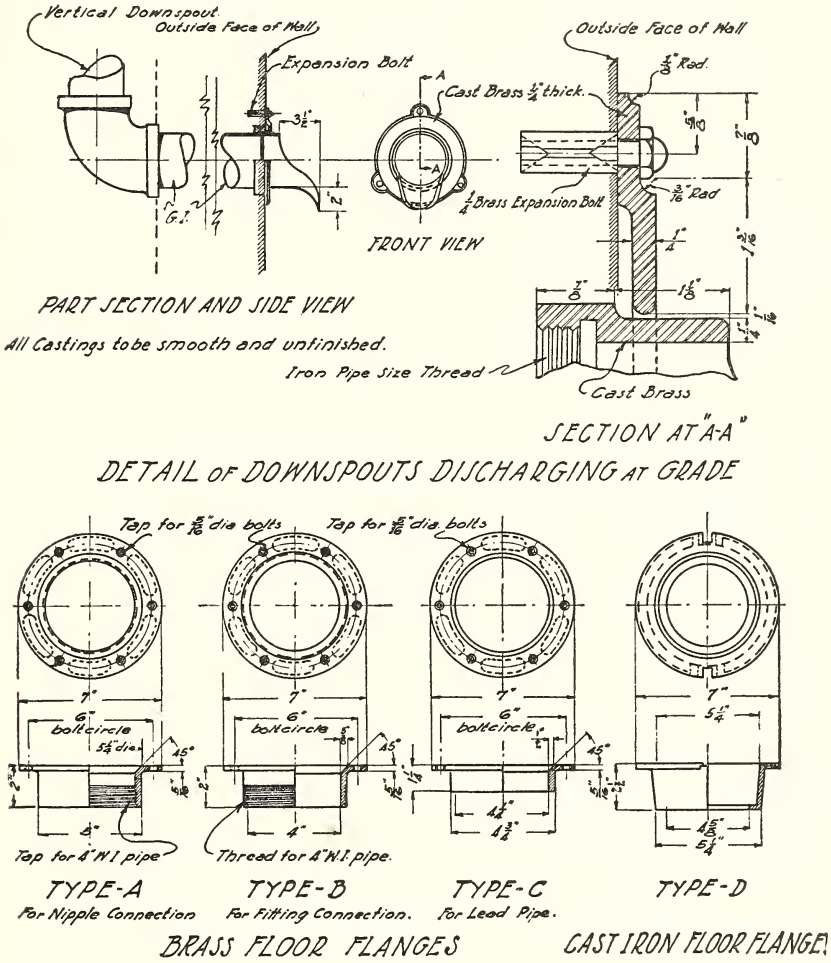


FIG. 3

Water-closet floor flanges.—Types A, B, and C shall be cast brass of dimensions shown. Type D shall be cast iron approximately of dimensions shown.

RUNNING TRAP, MANHOLES, FIGURE 4

DETAIL NO. 1—*Running trap.*—Where required shall be "extra heavy" cast iron, with fresh-air inlet on house side and with heavy

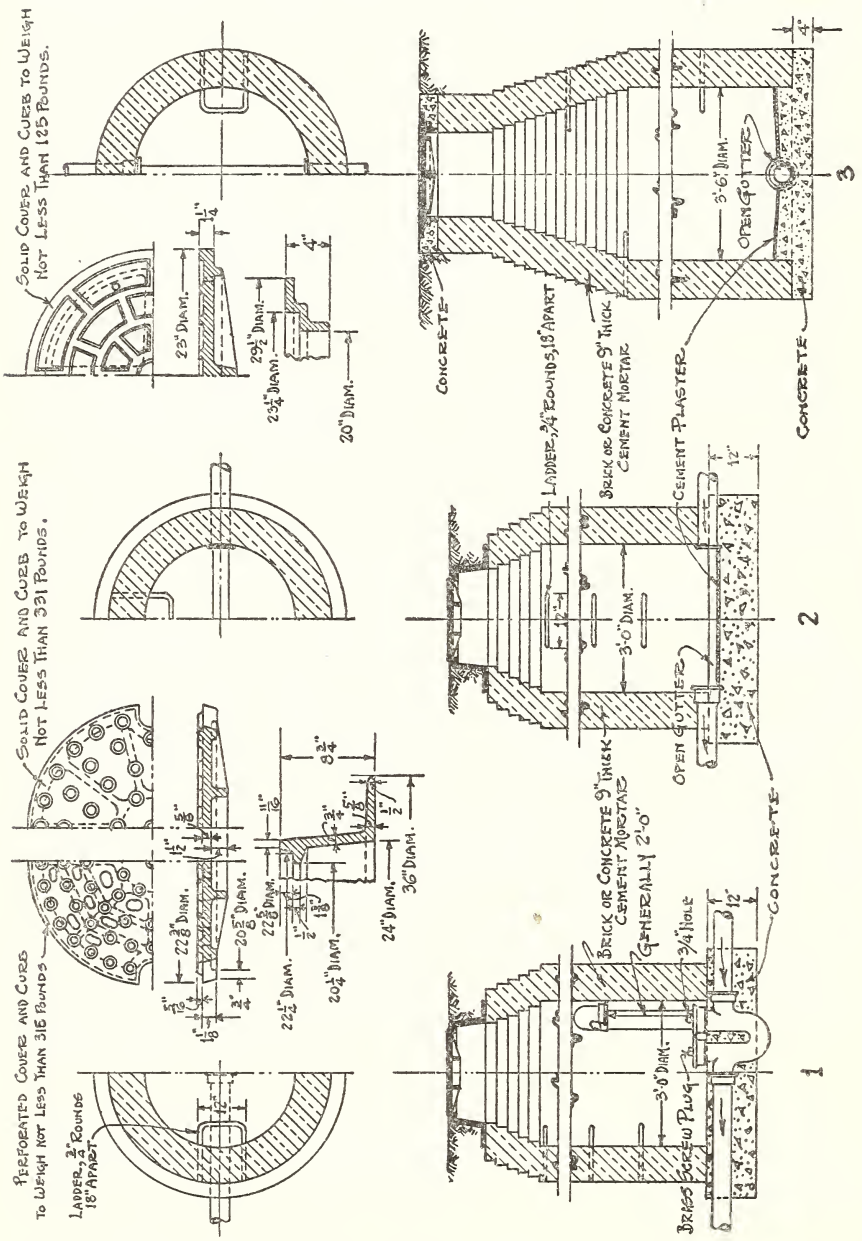


FIG. 4

pattern brass ferrule and cast-brass screw-jointed clean-out plug on sewer side. Fresh-air inlet shall be extended about 2 feet as

indicated, and shall be provided with return bend at top and a ¾-inch diameter hole shall be drilled into air-inlet pipe near bottom of manhole; 4-inch, 5-inch, and 6-inch traps shall have 4-inch diameter fresh-air inlet and clean-out plug; 8-inch trap and larger shall have 6-inch diameter fresh-air inlet and clean-out plug. Shall be installed in a manhole constructed for and provided with cast-iron curb and perforated cover, as shown.

DETAIL NO. 2—*Manhole for main sewer.*—Shall be constructed for and provided with heavy-weight cast iron curb and solid cover, as shown.

DETAIL NO. 3—*Manhole for main sewer.*—Shall be constructed for and provided with light-weight cast iron curb and solid cover, as shown.

Brickwork, concrete, etc.—All brick shall be full sized, dark red, hard-burned common brick, drenched in clean water before laying, and laid in cement mortar with a bond every sixth course. Mortar shall consist of 1 volume Portland cement, 3 volumes of clean, sharp, coarse sand, and sufficient clean water to obtain the proper consistency. All joints shall be neatly struck.

Concrete shall be composed of 1 volume of Portland cement, 2 volumes of clean, sharp, coarse sand, and 5 volumes of stone or gravel aggregate. The aggregate shall be free from dust, loam, clay, etc., and shall be of such size that will pass a 2-inch mesh and be retained on a ¼-inch mesh screen. The cement and sand shall be mixed to a mortar, the aggregate drenched and drained, and then mixed until each piece of aggregate is thoroughly coated with mortar and evenly distributed.

If other type or construction of manhole or cover is desired, it shall be so stated in the specification for the work.

WATER-CLOSET BOWL, FIGURE 5

Such of Section V, 1 (*a*) to 13 (*d*), inclusive, as is applicable shall apply to this figure.

Bowl.—Shall be vitreous ware, integral flushing rim, siphon jet, pedestal base, with trap molded in ware. Action of closet shall be practically instantaneous; water shall recede at practically the instant the lever of flushing device is pulled, and in no case shall water in bowl be increased materially. Bowl shall flush and refill properly with not more than 4 gallons of water. Bowl shall weigh not less than 48 pounds; water area shall be not less than 10 by 12 inches, and shall be not more than 5 inches from top of the rim on bowl; depth of water seal shall be not less than 3 inches; the siphon trap way shall pass a 2⅛-inch diameter solid ball. Floor flange is part of the fixture and, unless otherwise specified, shall be as shown in Figure 3, type D. Stamped 48V.

Vitreous tank.—Shall be as shown; high tank approximately 10 by 18 by 10 inches deep; low tank approximately 5 by 18 by 16 inches deep, or equal volume. Front of low tank may be straight, concave, or convex. Lid of low tank shall be held securely in position so it will not slide off without lifting.

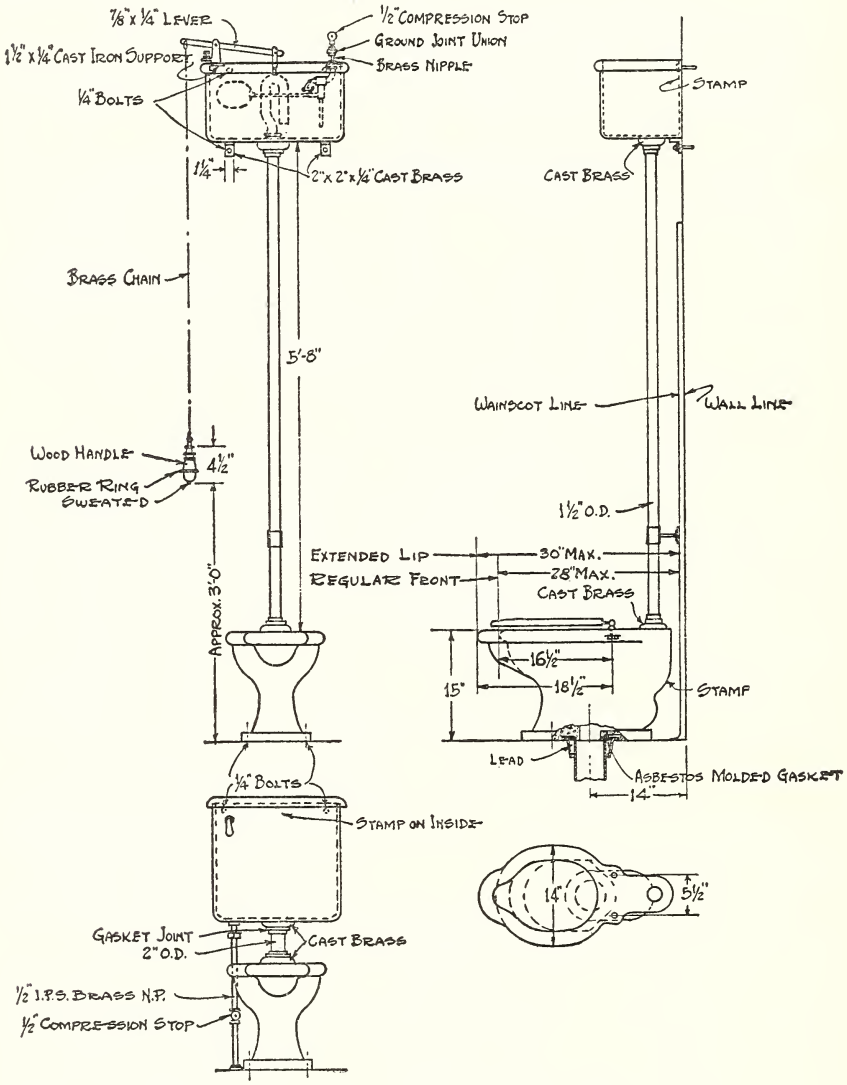


Fig. 5

High tank shall be stamped 18V.

Low tank shall be stamped 16V.

Tank shall be secured to wall with two bolts through back at top and, in addition, the high tanks shall be supported by means of cast-brass, nickel-plated angles, as shown.

Flush pipe shall be No. 17 Brown & Sharpe gauge (0.045-inch) brass tubing, of size noted.

Flush pipe and exposed connections between tank and bowl shall be nickel plated. Connections shall be made so that no threads will remain exposed.

Supplies to and including compression stop on high tank and to wall or floor, as required on low-tank outfits, and to and including cut-off cock on flushing-valve outfits, are included as part of the fixture.

Seat shall be without cover, of open front, saddle pattern, not less than $1\frac{1}{16}$ inches thick; of hard rubber composition, or so constructed that the covering or shell shall be of a good grade of hard rubber composition, not less than $\frac{3}{16}$ inch thick, well polished, without joints, acid proof, and impervious and without openings or crevices. Color, ebony, unless mahogany or white is specifically called for in specification. Seats shall be unqualifiedly guaranteed against splitting or cracking. Nickel-plated brass or polished white metal hinges shall be attached through back of seat to concealed metal inserts, with no exposed parts, top, or bottom. Long rubber bumpers attached to bottom with concealed screws. Suitable stop shall be provided on the hinge to prevent the seat striking the wall or wainscot. Seat shall bear the name or the trade-mark of the manufacturer.

If closed-front seat with regular front bowl is desired, it shall be so specified and shall conform in all other respects to the above specification.

OUTFITS

No. 48EV has extended lip bowl and high vitreous tank.
No. 48EVL has extended lip bowl and low vitreous tank.
No. 48EF has extended lip bowl and flushing valve.
No. 48V has regular bowl and high vitreous tank.
No. 48VL has regular bowl and low vitreous tank.
No. 48F has regular bowl and flushing valve.

WATER-CLOSET BOWL, FIGURE 6

Only Section V, 8 (*a*) to (*c*) and 9, inclusive, and Section V, 12 (*a*) to 13 (*d*), inclusive, are applicable to this figure.

Bowl.—Shall be vitreous ware, wash-down siphon type, with integral flushing rim, pedestal base, trap molded in ware. Action of closet shall be continuous without backing up or break in siphon action. Bowl shall flush and refill with not more than 4 gallons of water. Bowl shall weigh not less than 34 pounds; water area shall be not less than 7 by 8 inches; depth of water seal shall be not less than 2½ inches; and siphon trap way shall pass a 2-inch diameter solid ball.

7431°—26†——4

Tank.—Shall be vitreous ware 6 gallon low tank with lid; rubber ball flushing mechanism with operating lever; ⅜-inch or ½-inch water supply with wheel stop; ⅜-inch or ½-inch high pressure full elevated ball cock with hush tube or high-pressure semielevated ball cock.

Flush pipe shall be No. 17 Brown & Sharpe gauge (0.045 inch) brass tubing of size noted.

Flush pipe and exposed connections between tank and bowl shall be nickel plated.

Supply to floor or wall as required on tank outfits, and to and including cut-off cock on flushing valve outfits, and floor flange are

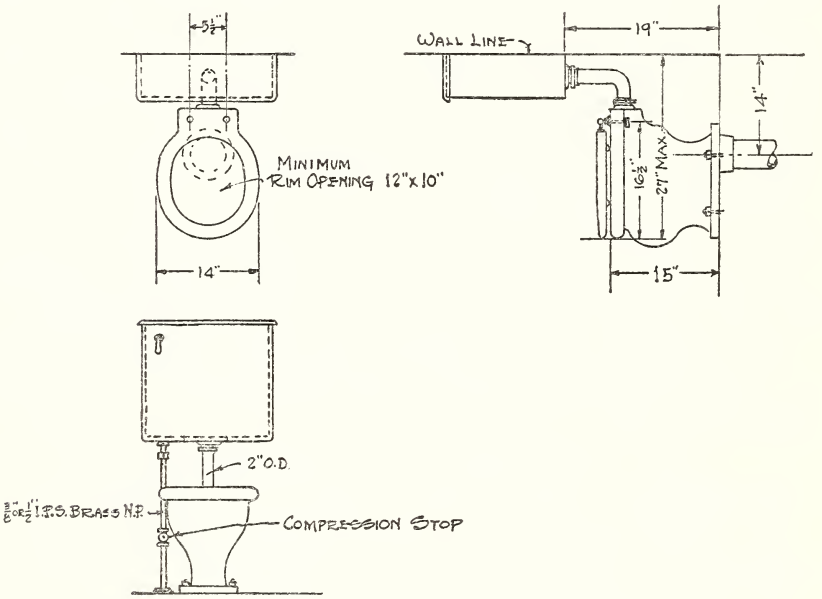


FIG. 6

included as parts of the fixture. Unless otherwise specified, floor flange shall be as shown in Figure 3, detail D.

Seat.—Shall be 1¼-inch finished thickness oval with square back, birch or oak seat without cover, with nickel-plated axle rod hinge.

When flushing valve is required in lieu of tank, it shall conform to requirements given in Section V, 12 (*a*) to (*f*).

Stamp.—Government stamp or designation will not be required for this outfit. Manufacturer's name or trade-mark and pottery stamp shall be placed on bowl and tank.

OUTFITS

No. 34V has vitreous tank.

No. 34F has flushing valve.

NOTE.—This outfit is recommended for temporary or semipermanent construction only.

VITREOUS URINAL STALL, FIGURE 7

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

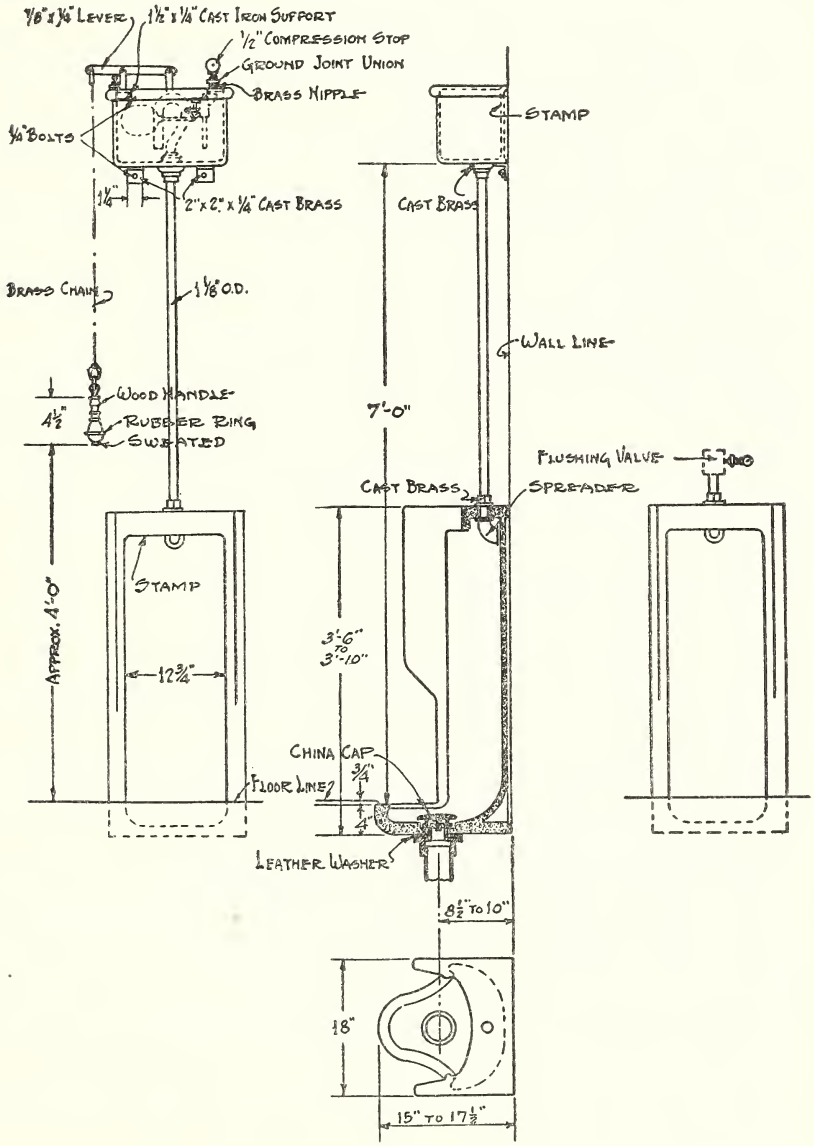


Fig. 7

Stall.—Shall be one piece vitreous ware, set singly or in battery, as called for in specification for the work. Urinals set in battery shall be of uniform heights set at least 6 inches from each other or from side wall or any other fixture. Stamped 18VV.

Lips of stalls shall be set ¾ inch below finished floor as shown in the figure, except in cases where structural conditions will not permit, then lips shall be set ¾ inch above finished floor. Outlet shall be as shown in Figure 7 or Figure 8, unless otherwise specified. If outlets in Figure 2 are desired, it shall be so stated in the specification for the work.

Tank.—Vitreous tanks shall be as shown, approximately 14 by 8 by 10 inches deep. Stamped 14V.

Flush pipe shall be No. 17 Brown & Sharpe gauge (0.045 inch) brass tubing, of size noted.

Flush pipe and exposed connections between tank and stall shall be nickel plated. Connections shall be made so that no threads will remain exposed.

Each tank shall be secured to wall with two bolts through back of tank near top and supported by cast-brass nickel-plated angles.

Spreader shall be finished cast-brass adjustable fan spreader of suitable design to thoroughly flush the stall without spraying the floor.

Supplies to and including compression stop on tank outfits, and to and including cut-off cock on flushing-valve outfits, are included as part of the fixture.

OUTFITS

No. 18VV has vitreous tank.

No. 18VF has flushing valve.

PORCELAIN URINAL STALL, FIGURE 8

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Stall.—Shall be one-piece porcelain, set singly or in battery, as called for in specification for the work. Urinals set in battery shall be of uniform height, set at least 6 inches from each other or from side wall or other fixtures.

Lips of urinals shall be set ¾ inch below finished floors, as shown in the figure, except in cases where structural conditions will not permit, then lips shall be set ¾ inch above finished floor. Outlet shall be as shown unless otherwise specified. If outlets in Figure 2 are desired, it shall be so stated in the specifications for the work.

Tanks.—Vitreous tanks shall be as shown, approximately 14 by 8 by 10 inches deep. Stamped 14V.

Flush pipe shall be No. 17 Brown & Sharpe gauge (0.045 inch) brass tubing, of size noted.

Flush pipe and exposed connections between tank and stall shall be nickel plated. Connections shall be made so that no threads will remain exposed.

Each tank shall be secured to wall with two bolts through back of tank near top and supported by means of cast-brass nickel-plated angles.

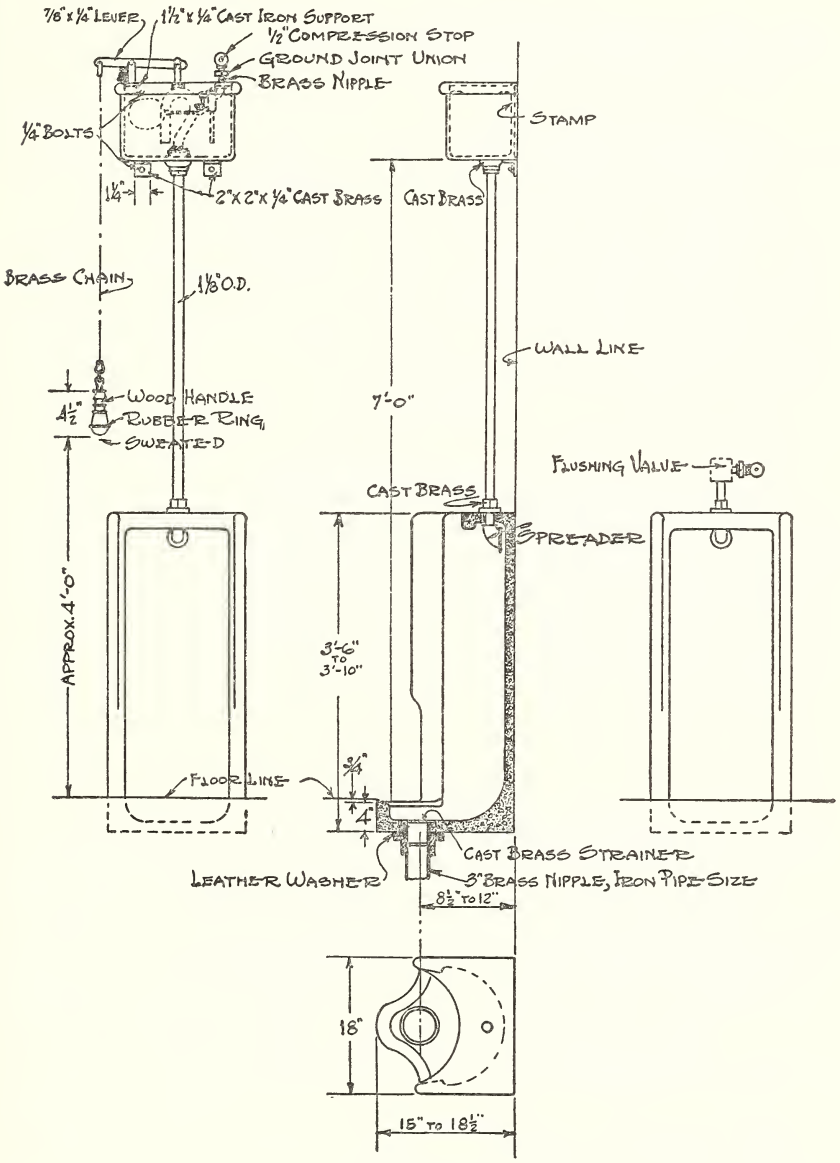


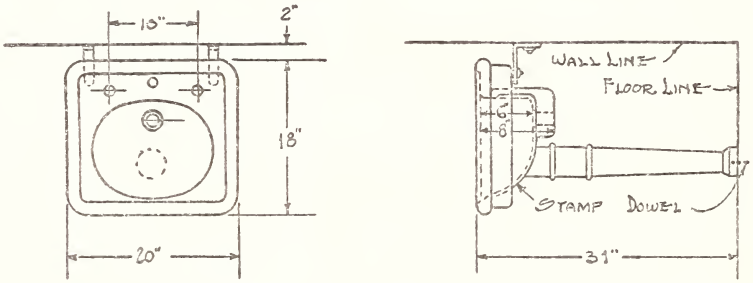
Fig. 8

Spreader shall be finished cast-brass adjustable fan spreader of suitable design to thoroughly flush the stall without spraying the floor.

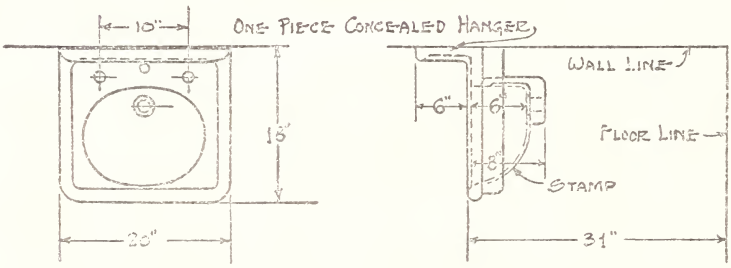
Supplies to and including compression stop on tank outfits, and to and including cut-off cock on flushing-valve outfits, are included as part of the fixture.

OUTFITS

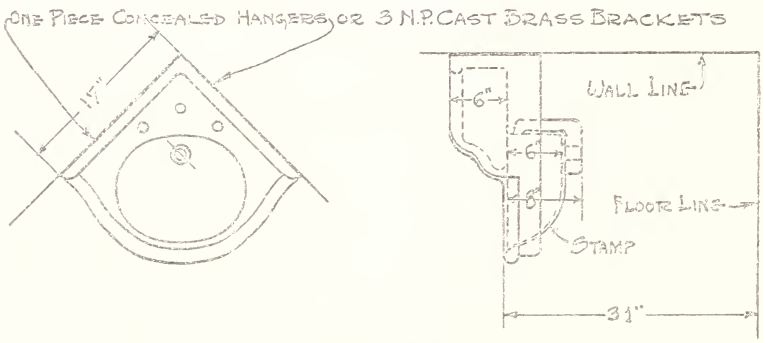
No. 18PV has high vitreous tank.
No. 18PF has flushing valve.



20 RV



20 RVB



17 CVB

FIG. 9

VITREOUS LAVATORIES, FIGURE 9

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Lavatories.—Shall be one-piece vitreous ware, with apron, oval bowl, open integral overflow and rim. Rim may be roll or flat; apron and back may be flush or may have roll or flat rim. Stamped 20RV; 20RVB; or 17CVB, as the case may be.

Bowls shall be of the following approximate sizes: Rectangular lavatory, 11 by 14 inch bowl; corner lavatory, 11 by 14½ inch bowl.

Overflow shall have a cross-sectional area of not less than 1½ square inches at every point.

Supports.—No. 20RV lavatory shall have pedestal base or leg support and cast-brass knee pieces not less than 1½ inches by $\frac{3}{16}$ inch thick. Leg shall be vitreous of suitable design, doweled to the floor, and provision shall be made at the top to prevent lateral movement. Variation from the design of leg support shown will be permitted. No. 20RVB lavatory shall be supported on a one-piece concealed hanger of suitable design. No. 17CVB lavatory shall be supported on two concealed hangers of suitable design, or on three suitable nickel-plated cast-brass brackets.

Where two or more lavatories are set in battery, there shall be a space of 4 inches between lavatories.

Waste, supplies, etc.—Unless otherwise specified, each lavatory shall be provided with waste complete with lavatory plug, P or S trap as required; chain stay; hot and cold water supplies, with compression faucets and stops; supply and waste connections to wall or floor as required.

For details of waste and supply connections and chain stay, see Figures 26 and 27.

OUTFITS

No. 20RV.
No. 20RVB.
No. 17CVB.

VITREOUS BARRACK LAVATORIES, FIGURE 10

Such of Section V, 1 to 13, inclusive, as is applicable, shall apply to this figure.

Lavatories.—Shall be one piece vitreous ware, with apron, oval bowl, open integral overflow, and rim. Rim may be roll or flat; apron and back may be flush, or may have roll or flat rim. Stamped 20RVB or 20RVS.

Lavatory bowls shall be approximately 11 by 14 inches.

Overflows shall have a cross-sectional area of not less than 1½ inches at every point.

Hangers and supports.—Each No. 20RVB lavatory shall be supported by one piece cast-iron concealed hanger of suitable design. No. 20RVS lavatories shall be supported on cast-iron standards as shown, or any other first-class type of standard will be acceptable.

Waste, supplies, etc.—Unless otherwise specified, lavatories shall be provided with continuous wastes complete of No. 17 Brown & Sharpe guage (0.045 inch) brass tubing of size noted and cast brass

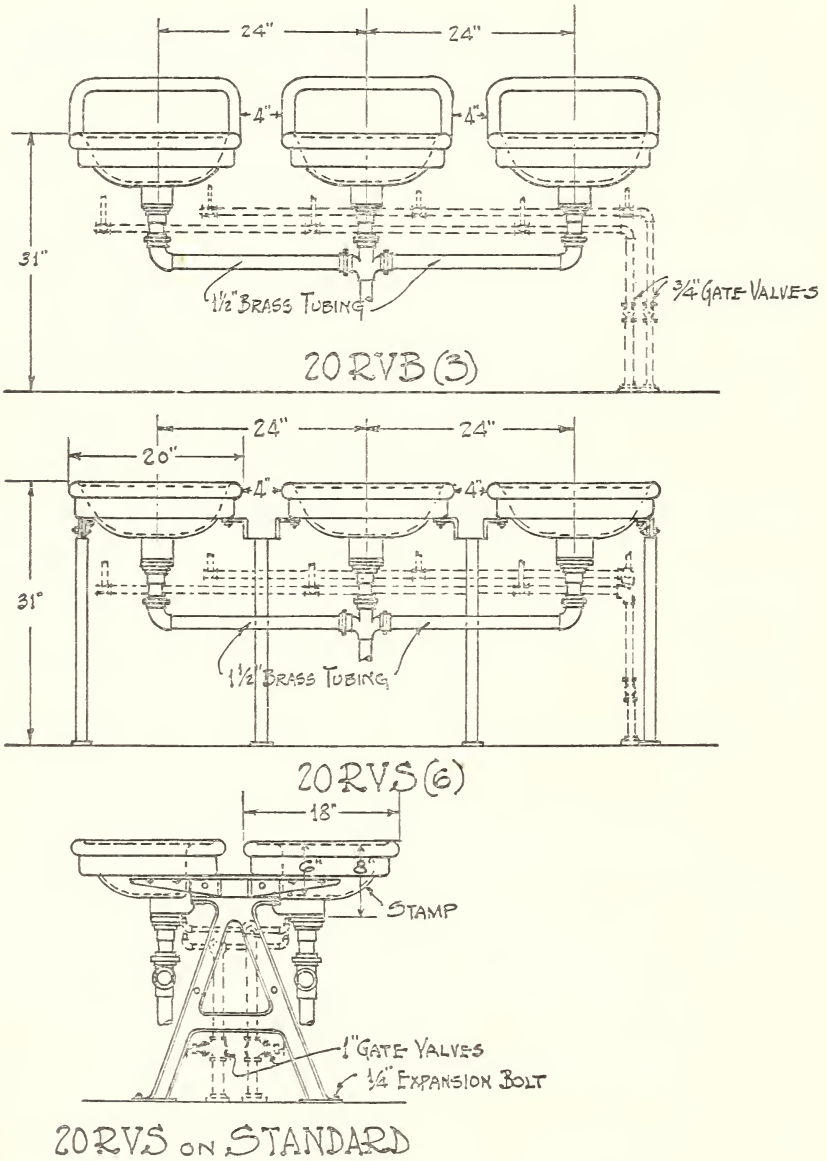


FIG. 10

fittings, and with lavatory plug, P trap with connection to wall or S trap with connection to floor, as required. Exposed parts of wastes shall be nickel plated; connections shall be made so that no threads will remain exposed.

Each lavatory shall be provided with hot and cold water, self-closing faucets and chain stay, unless otherwise specified.

Unless otherwise specified, supply branches to faucets shall be as shown. They shall be galvanized or brass as required by specification for the work, but are not part of the outfits.

For details of lavatory, plug, traps, faucets, and chain stay, see Figures 26 and 27.

OUTFITS

No. 20RVB(2), 2 lavatories.
No. 20RVB(3), 3 lavatories.
No. 20RVS(4), 4 lavatories on standards.
No. 20RVS(6), 6 lavatories on standards.

VITREOUS LAVATORIES, VITREOUS SLOP SINK, FIGURE 11

Such of Section V, 1 to 13, inclusive, as is applicable, shall apply to this figure.

Lavatories.—Shall be one-piece vitreous ware, with apron, oval bowl, open integral overflow, and rim with bowl approximately 12 by 15 inches. Rim may be roll or flat; apron and back may be flush or may have roll or flat rim. Stamped 24RV or 24RVB, as the case may be.

Overflow shall have a cross-sectional area of not less than $1\frac{1}{2}$ square inches at every point.

Supports.—Each lavatory shall have pedestal base or leg support and cast brass knee pieces not less than $1\frac{1}{2}$ inches by $\frac{3}{16}$ inch thick. Leg shall be of suitable design doweled to the floor and provision shall be made at the top to prevent lateral movement. Variation from the design of leg support shown will be permitted.

Waste, supplies, etc.—Unless otherwise specified, each lavatory shall be provided with waste complete with lavatory plug, P or S trap as required; chain stay, hot and cold water supplies with compression faucets and stops, supplies and waste connections to wall or floor, as required.

For details of waste and supply connections and chain stay, see Figures 26 and 27.

OUTFITS

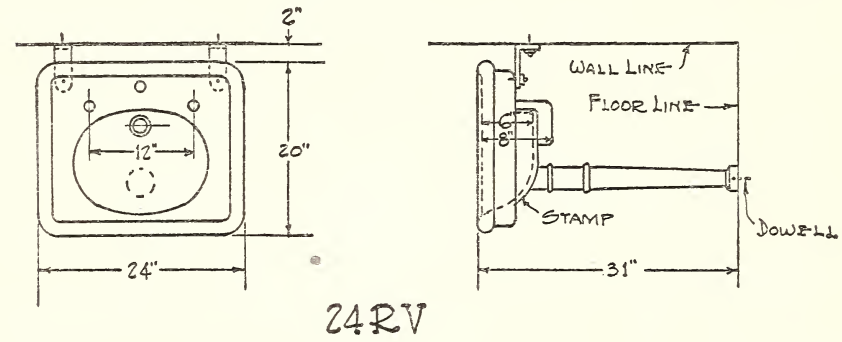
No. 24RV.
No. 24RVB.

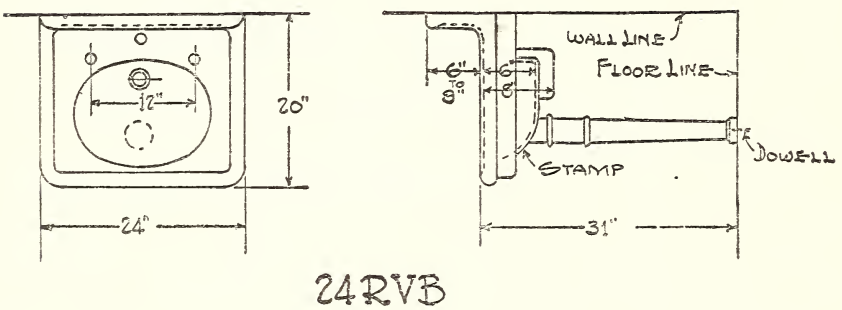
VITREOUS SLOP SINK

Bowl shall be vitreous ware, roll rim; shall have nickel plated brass strainer, with cast-brass threaded shank; shall be supported on and secured to trap standard. Stamped 22V.

Trap standard.—Shall be cast-iron open pattern, enameled inside, 3 inches diameter without vent, with brass screw cleanout plug, and water seal not less than 2 inches in depth. Shall be for floor or wall connection, as required for the work, and shall have tapped

inlet to receive the threaded shank of the strainer. Trap standards for wall connection shall be tapped for 3-inch pipe, and shall be adjustable as to height. Trap standard for floor connection to cast-iron hub and spigot pipe shall be provided with spigot end at outlet





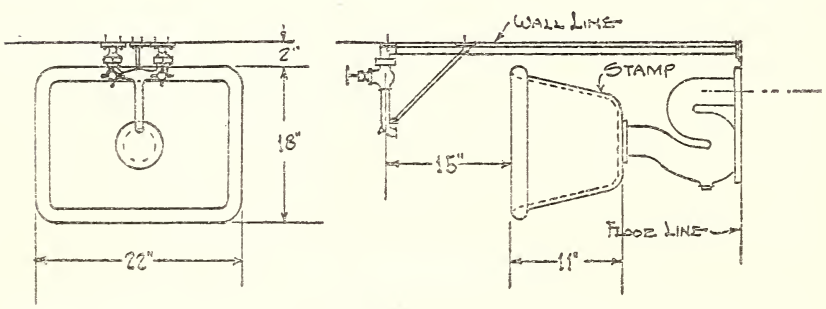


FIG. 11

below floor, and loose flange at base for calking into hub of cast-iron pipe; trap standard for floor connection to screw pipe shall be provided with horn at outlet and a heavy brass floor flange tapped

for 3-inch pipe or a cast-iron floor flange similar to type D, Figure 3, shall be provided with an asbestos molded gasket and bolts for fastening fixture. Vitreous china nonsiphonage trap in lieu of trap shown will be acceptable.

Supplies.—Shall be a combination compression supply fitting, with globe-pattern china-index control valves, with bucket hook and brace to wall, with ¾-inch iron-pipe size supplies to floor or wall as required. All exposed metal parts shall be nickel-plated brass.

Angle-pattern china-index control valves will be acceptable where concealed supplies are used.

Rim guard.—Shall be constructed of ⅜-inch brass tubes not less than No. 14 Brown & Sharpe gauge (0.064 inch) in thickness, with cast-brass knobs on ends of rods and cast-brass spacing and holding bars. Holding bars to have brass spring plates or thumbscrew attached for fastening guard to rim of sink. All parts of rim guard shall be nickel plated.

OUTFITS

Sink No. 22V.—Sink without rim guard.

Sink No. 22VG.—Sink with rim guard.

Sinks 20 by 22 inches will be acceptable in lieu of sinks 18 by 22 inches.

SHOWER FIXTURES, FIGURE 12

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Outfit No. 48.—Shall consist of a shower fixture complete with curtain frame, and curtain for installation over a recessed or corner bathtub.

Shower fixture shall consist of a combination compression valve fixture with ½-inch supply to shower head, ½-inch union valves, elbows, and connections complete for connecting to concealed tees of bath faucet; cast-brass escutcheons at wall and support as shown. All pipe and nipples shall be iron-pipe size and thickness brass pipe.

Shower head shall be cast-brass body and face. Face shall be threaded and removable, approximately 4 inches in diameter, with round perforations, not smaller than No. 58 drill (0.042 inch diameter) delivering a rain shower.

Curtain frame shall be straight for recessed tub and angle pattern for corner tub; shall be of suitable length for the recess and tub; shall be of not less than ⅞-inch diameter brass tubing, of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch), with cast-brass flanges at wall; curtain hook for each grommet in curtain and holdback for curtain, with wood screws.

All metal parts shall be nickel-plated brass.

Curtain shall be not less than 10-ounce white duck, 6 feet long; shall be of width suitable for the outfit and shall have nickel-plated

brass grommets spaced not over 6 inches apart. Duck shall conform to United States Government master specification, Federal Specifications Board Specification No. 159.

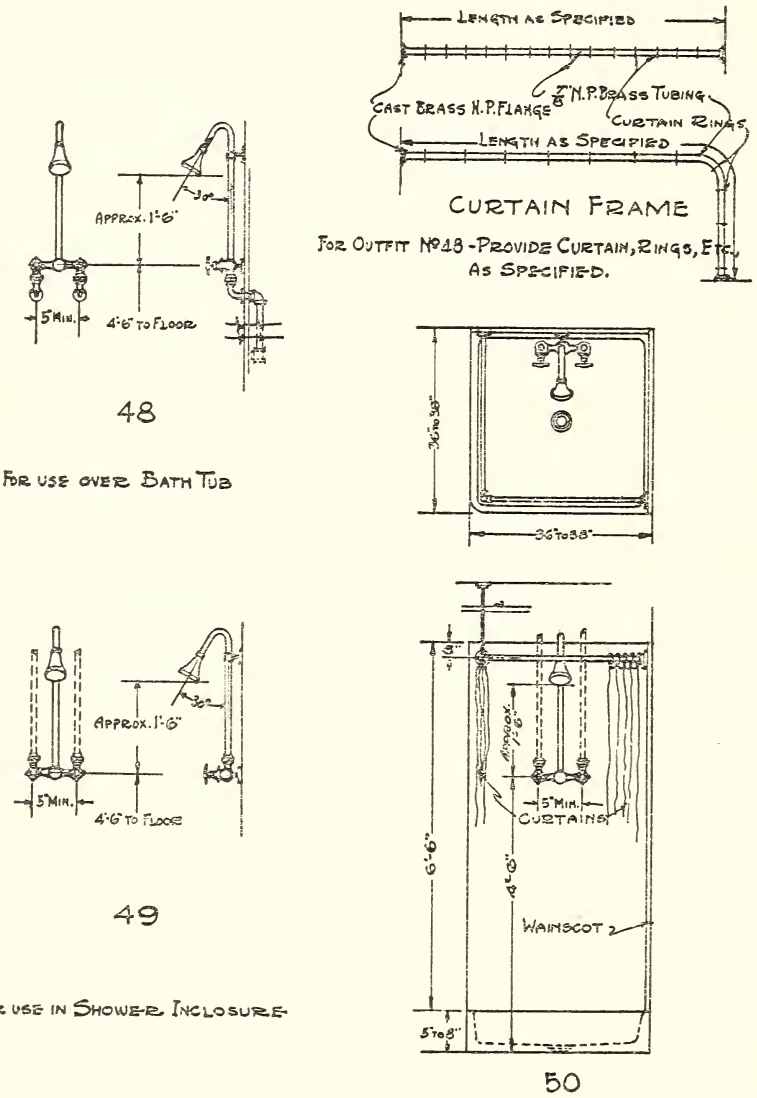


FIG. 12

Outfit No. 49.—Shall consist of a shower fixture complete for installation in a shower bath inclosure similar to those shown in Figures 21 and 22.

Shower fixture shall consist of a combination compression valve fixture with ½-inch union valve connections and ½-inch supply to

shower heads with supports as shown. The supply piping from the union valves to the supply mains of the building are not part of the fixture, and shall be as specified in the specification for the work.

Shower head shall be cast brass body and face. Face shall be threaded and removable, approximately 4 inches in diameter, with round perforations not smaller than No. 58 drill (0.042 inch diameter) delivering a rain shower. All exposed parts shall be nickel-plated brass.

Drain No. 1, Figure 2, shall be furnished except when specification for the work requires a combined floor drain and trap, in which case either drain No. 2 or No. 3, Figure 2, shall be furnished.

Outfit No. 50.—Shall consist of a shower fixture complete with shower head, curtain and curtain frame, and receptor as shown.

Shower fixture shall consist of a combination compression valve fixture with ½-inch union valve connections and ½-inch supply to shower head, with supports as shown. The supply piping from the union valves to the supply mains of the building are not part of the fixture, and shall be as specified in the specification for the work.

Shower head shall be cast brass body and face. Face shall be threaded and removable, approximately 4 inches in diameter, with round perforations not smaller than No. 58 drill (0.042 inch diameter) delivering a rain shower. All exposed parts shall be nickel-plated brass.

Curtain frame shall be of ¾-inch steel pipe with cast-iron or steel flanges at wall and ⅜-inch steel pipe ceiling support with flange. All parts shall be galvanized, and shall have a nickel-plated brass curtain hook for each grommet in curtain.

Curtain shall be not less than 10-ounce white duck 6 feet 6 inches long; shall be in two pieces, each not less than 3 feet wide and shall have nickel-plated brass grommets spaced not over 6 inches apart. Duck shall conform to United States Government master specification, Federal Specifications Board specification No. 159.

Receptor shall be one piece porcelain of dimensions shown, glazed over all exposed surfaces.

Drain No. 1, Figure 2, shall be furnished except when specification for the work requires a combined floor drain and trap, in which case either drain No. 2 or No. 3, Figure 2, shall be furnished.

Mixing valve.—When outfit number is followed by the letters MV, as 48MV, or 50MV, the outfit shall be as specified for the respective numbers, except that the shower fixture shall have a mixing valve between the two compression valves, which shall be of lock shield type.

Mixing valve shall be of heavy construction, compression type, and if of the yoke type shall have renewable seats, china or brass index, and shall have a capacity to deliver not less than 10 gallons of cold

or mixed water per minute with an initial pressure at inlets of 45 pounds per square inch. Mixing valve shall be of a type that admits cold water first.

OUTFITS

No. 48.—Shower fixture, with frame and curtain.

No. 49.—Shower fixture, with floor drain.

No. 50.—Shower fixture, with frame and curtain, receptor, and floor drain.

No. 48MV.—Shower fixture, with mixing valve, frame and curtain.

No. 49MV.—Shower fixture, with mixing valve, and floor drain.

No. 50MV.—Shower fixture, with mixing valve, frame and curtain, receptor, and floor drain.

CAST-IRON LAVATORIES, CAST-IRON SINKS, FIGURE 13

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Lavatories.—Shall be one-piece cast iron with full apron, oval bowl, and integral overflow and roll rim, enameled on inside, over rim, apron, and back.

Bowls shall be of the following approximate sizes: No. 24CI, 12 by 15 inch bowl; No. 21RCIB, 10½ by 15 inches; No. 19CCIB, 10½ by 15 inches.

Overflow shall have a cross-sectional area of not less than 1½ square inches at every point.

Supports.—No. 24CI lavatory shall have a cast-iron pedestal base support, enameled on outside. No. 21RCIB lavatory shall be supported on a one-piece concealed hanger of suitable design. No. 19CCIB lavatory shall be supported on two concealed hangers of suitable design.

When two or more lavatories are set in battery there shall be a space of 4 inches between lavatories.

Waste, supplies, etc.—Unless otherwise specified, each lavatory shall be provided with waste complete with lavatory plug, P or S trap, as required, chain stay, hot and cold water supplies with compression faucets and stops, supplies and waste connections to wall or floor, as required.

For details of waste and supply connections, and chain stay, see Figures 26 and 27.

OUTFITS

No. 24CI.

No. 21RCIB.

No. 19CCIB.

KITCHEN SINKS

Kitchen sinks.—Shall be one-piece cast iron, approximately 6 inches deep, with roll rim and integral back. Sink No. 52CI shall have integral drain board.

Sinks shall be enameled on inside, over rim, back, and drain board, if any.

Supports.—Sinks Nos. 30CI and 36CI shall be supported on a one-piece cast-iron concealed hanger of suitable design. Sink No. 52CI

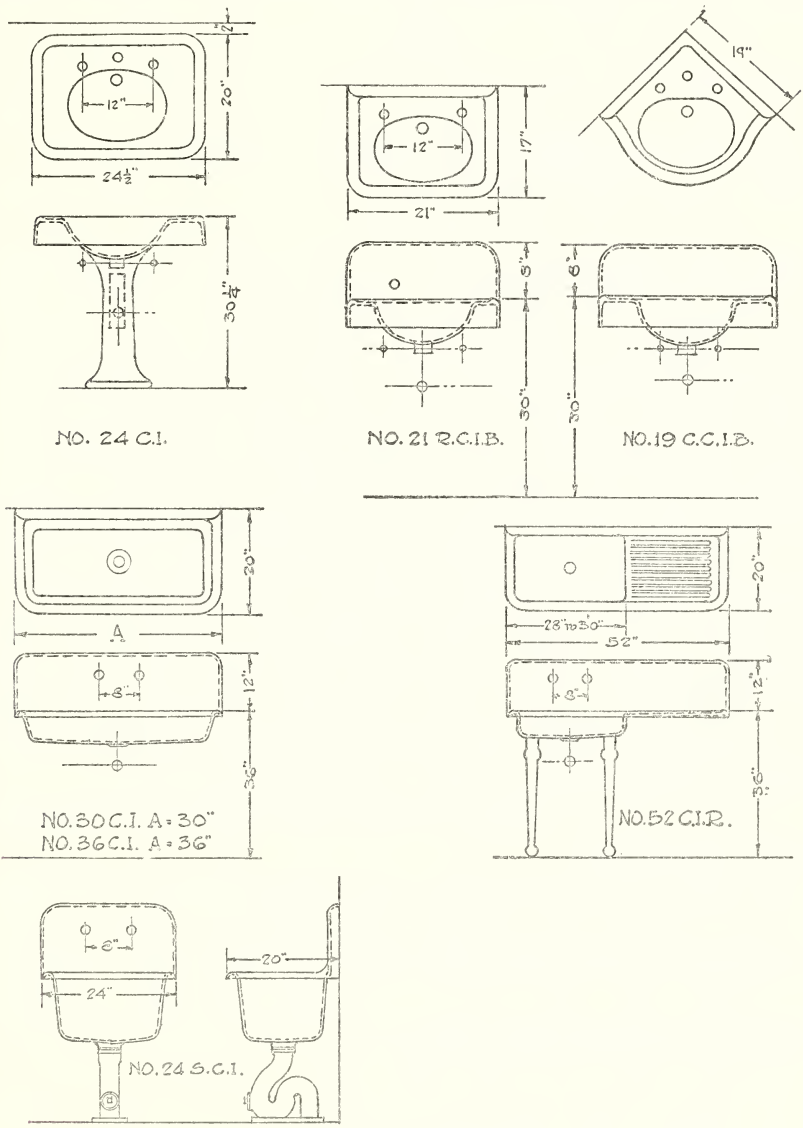


Fig. 13

shall have two painted cast-iron legs and two cast-iron concealed hangers of suitable design.

Waste, supplies, etc.—Unless otherwise specified, each sink shall be provided with sink plug and P trap with connection to wall or S trap

with connection to floor as required and as detailed in Figure 27, also one hot and one cold water ½-inch bibb, detail No. 5, Figure 26. Cold-water bibb shall have hose thread.

The connections from the bibbs to the supply lines of the building shall be as called for in the specification for the work and are not parts of the fixtures.

OUTFITS

No. 30CI.
No. 36CI.
No. 52CIR with right-hand drain board, as shown.
No. 52CIL with left-hand drain board.

SLOP SINK

Slop sink.—Shall be one-piece cast iron, at least 12 inches deep, with roll rim and integral back enameled inside and over rim and back. Shall have a nickel-plated brass strainer with cast-brass threaded shank; shall be supported on and secured to a trap standard.

Trap standard.—Shall be cast iron, open pattern, enameled inside, 3-inch diameter, without vent, with brass screw clean-out plug, and with water seal not less than 2 inches in depth; shall be for floor or wall connection, as required for the work, and shall have tapped inlet to receive the threaded shank of the strainer. Trap standard for wall connection shall be tapped for 3-inch pipe and shall be adjustable as to height; trap standard for floor connection to cast-iron hub and spigot pipe shall be provided with spigot end at outlet below floor, and loose flange at base for caulking into hub of cast-iron pipe; trap standard for floor connection to screw pipe shall be provided with horn at outlet and a heavy brass floor flange tapped for 3-inch pipe, or a cast-iron floor flange similar to type D, Figure 3, shall be provided, with an asbestos molded gasket and bolts for fastening fixture.

Supplies.—Each sink shall be provided with one hot and one cold water ¾-inch bibb, detail No. 5, Figure 26. Cold-water bibb shall have a hose thread.

Rim guard.—Shall be constructed of ⅜-inch brass tubing of thickness not less than No. 14 Brown & Sharpe gauge (0.064 inch) in thickness with cast-brass knobs on ends of rods and cast-brass spacing and holding bars. Holding bars shall have brass spring plates or thrumbscrew attached for fastening guard to rim of sink. All parts of rim guard shall be nickel-plated.

OUTFITS

No. 24SCI. Sink without rim guard.
No. 24SCIG. Sink with rim guard.

BATHTUBS, FIGURE 14

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Recessed tubs.—Shall be one piece cast iron with flat rim at back and both ends, designed to be built into a recess and a full extended front, enameled on all exposed surfaces.

When 3-inch roll rim is required in lieu of the extended front it shall be so stated in the specification for the work. In such cases, tub shall be enameled on inside and over rim only.

Supplies shall consist of a concealed combination over rim nozzle supply fitting with ½-inch valves connected to the nozzle by means of I. P. S. brass pipe and cast-brass fittings. Valves may be at a higher elevation than the nozzle or at the same elevation as shown. Hot and cold water supplies shall be fitted with ½-inch compression stops and iron pipe size supplies furnished as a part of the fixture.

Valves shall be of the regular compression type with four arm china index handles and constructed so that the bonnet may be removed at the front after installation for repairs and renewals; shall have china escutcheons covering all metal parts except stem which shall be held in place by adjustable threaded nuts; shall have ground joint unions for connections to ½-inch diameter hot and cold water supplies, and heavy pattern nozzle of proper length to discharge over rim of tub and shall be fitted with a china escutcheon at wall.

Waste shall consist of a concealed connected waste and overflow fixture of 1½-inch brass tubing of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch) and cast-brass fittings; strainer on waste; strainer and chain stay on overflow. Attached to chain stay shall be a brass plumbers' chain of thickness not less than No. 20 Brown & Sharpe gauge (0.032 inch) with 1½-inch diameter rubber stopper. Chain shall be secured to chain stay and stopper with rings of ⅛-inch thick brass with joints well soldered.

The waste tee shall have on the outside a 1½-inch standard male thread for a 1½-inch pipe fitting, and shall have on inside a fine thread for 1½-inch tubing. The tee shall be reversible so that the outlet may be set parallel with the waste arm.

Supplies and waste shall be at right or left end as called for in the specification for the work.

All exposed metal parts of supply and waste shall be nickel plated.

The trap indicated on figure and supplies from the compression stops to the building mains shall be as called for in the specification for the work and are not parts of the fixture.

Corner tubs.—Tubs shall be one piece cast iron with flat rim at back and at one end designed to be built into the wall with full extended front and other end. Tub shall be enameled on all exposed surfaces. Concealed supplies and waste as specified for recessed tub shall be furnished.

If 3-inch roll rim in lieu of the full extended front and end is desired, it shall be so stated in the specification for the work. In such cases tub shall be enameled on inside and over rim only. Sup-

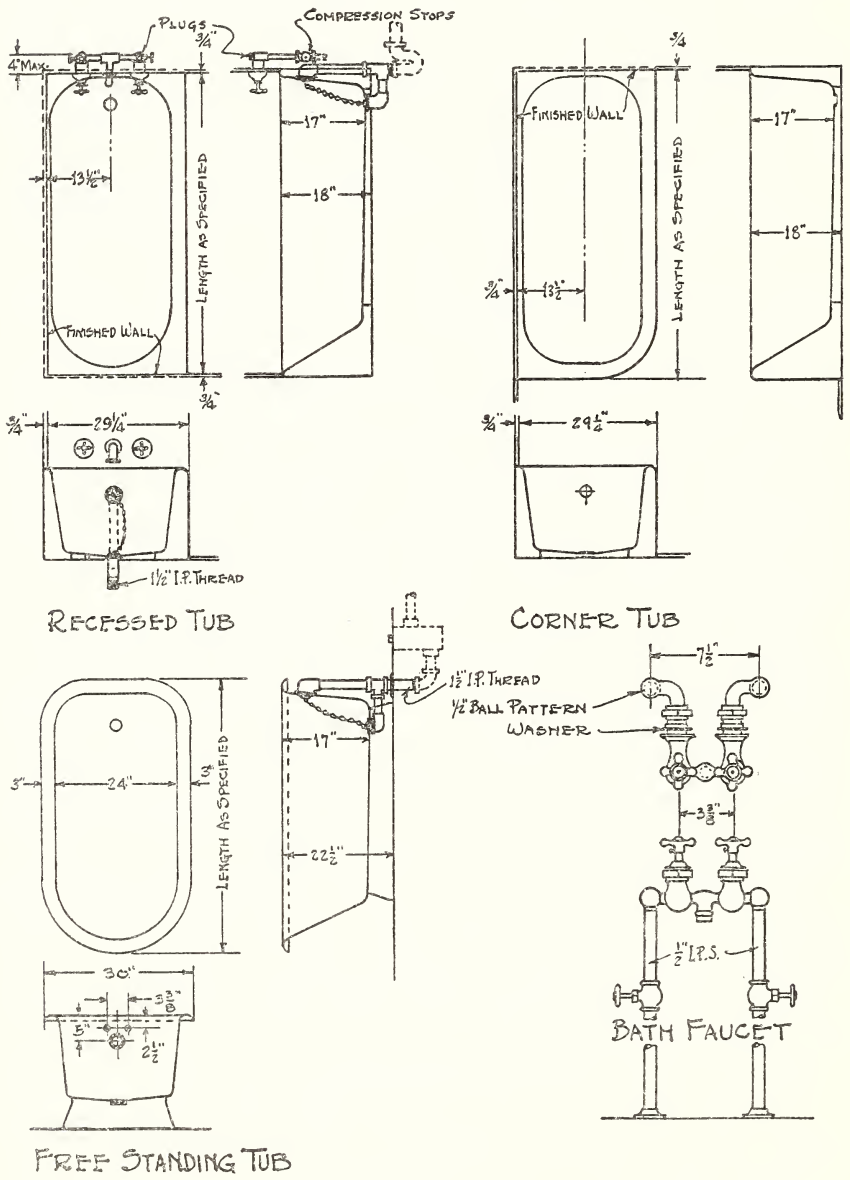


FIG. 14

plies shall consist of an exposed combination compression type faucet as shown on detail with four-arm all brass, china index handles, and elbows with ground joint unions and connections with compression

stops to floor or wall, as required. The outlet of faucet shall have a female thread to take the standard thread of a hose coupling. The minimum weight of faucet without elbows shall be 44 ounces.

Waste shall consist of an exposed connected waste and overflow fixture with chain stay, chain stopper, etc., as specified for recessed tubs, except that the waste tee is not required to be reversible. A cast-brass escutcheon shall be provided at floor to cover the unfinished fitting.

All exposed metal parts of supplies and waste shall be nickel plated.

Free standing tubs.—Shall be one piece cast-iron flat bottom pattern with 3-inch roll rim, enameled on the inside and over rim. Tub shall set on four cast-iron feet or on separate one piece cast-iron base, as required by designation.

Supplies shall consist of a combination type faucet as shown on detail with four-arm all brass, china index handles and elbows with ground joint unions and connections with compression stops to floor or wall, as required. The outlet of faucet shall have a female thread to take the standard thread of a hose coupling. The minimum weight of faucet without elbows shall be 44 ounces.

Waste shall consist of a connected waste and overflow fixture of 1½-inch brass tubing of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch) and cast-brass fittings; strainer on waste; strainer and chain stay on overflow. Attached to chain stay shall be a brass plumber's chain of thickness not less than No. 20 Brown & Sharpe gauge (0.032 inch) with 1½-inch diameter rubber stopper. Chain shall be secured to chain stay and stopper with rings of ⅛-inch thick brass with joints well soldered; shall have brass escutcheon at floor.

All metal parts of supply and waste shall be nickel plated.

Connection from tailpiece of waste fitting shall be as called for in the specification for the work and is not part of the fixture.

OUTFITS

No. 54R, recessed tub, nominal commercial length, 54 inches.

No. 60R, recessed tub, nominal commercial length, 60 inches.

No. 66R, recessed tub, nominal commercial length, 66 inches.

No. 54CR, corner tub for right-hand corner, as shown, nominal commercial length, 54 inches.

No. 60CR, corner tub for right-hand corner, as shown, nominal commercial length, 60 inches.

No. 66CR, corner tub for right-hand corner, as shown, nominal commercial length, 66 inches.

No. 54CL, corner tub for left-hand corner, nominal commercial length, 54 inches.

No. 60CL, corner tub for left-hand corner, nominal commercial length, 60 inches.

No. 66CL, corner tub for left-hand corner, nominal commercial length, 66 inches.

No. 54B, free-standing tub on base as shown, nominal commercial length, 54 inches.

No. 60B, free-standing tub on base as shown, nominal commercial length, 60 inches.

No. 66B, free-standing tub on base as shown, nominal commercial length, 66 inches.

No. 54F, free-standing tub on feet, nominal commercial length, 54 inches.

No. 60F, free-standing tub on feet, nominal commercial length, 60 inches.

No. 66F, free-standing tub on feet, nominal commercial length, 66 inches.

PORCELAIN LAUNDRY TRAYS, FIGURE 15

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Trays.—Shall be one-piece porcelain of dimensions shown. Backs shall be at least 6 inches high.

Supports.—Each tray shall be supported on two porcelain or painted cast-iron legs, braces, and angles, as shown. Variations from design of leg shown will be permitted. Trays in battery shall be set with a 2-inch space between them.

Waste, supplies, etc.—Unless otherwise specified, each tray shall be supplied with a tray plug and brass stopper, P trap with connection to wall or S trap with connection to floor, as required. Stopper shall be secured to bibb with a brass plumber's chain not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) with ring of ⅛-inch brass at stopper and bibb having joints in ring well soldered. For details of tray plug and trap, see Figure 27.

Each No. 30PB tray shall be provided with one hot and one cold water ½-inch laundry tray bibb, detail No. 6, Figure 26; each No. 30P tray shall be provided with one hot and one cold water ½-inch bibb, detail No. 4, Figure 26. All bibbs shall have hose connections.

The connections from bibbs to the water supplies of the building shall be as called for in the specification for the work and are not parts of the fixture.

Wringer base.—Wringer base shall be constructed of well-seasoned ash, bound with heavy metal band, with recess dowels for wringer clamps. All metal parts shall be finished brass, nickel plated, and secured with galvanized rods and thumbscrews.

When wringer base is required, it shall be so stated in the specification for the work.

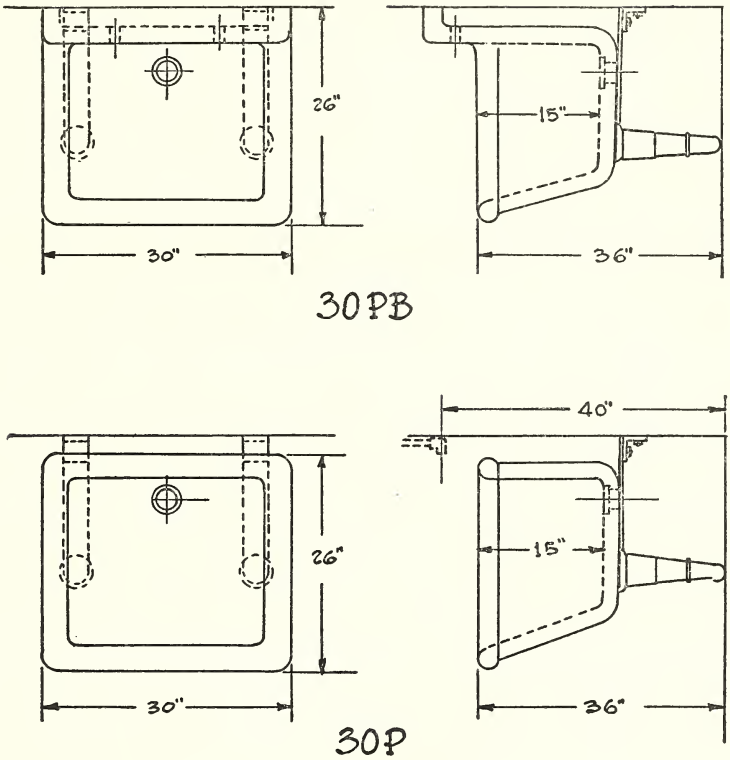


FIG. 15

OUTFITS

No. 30PB.
No. 30P.

SLATE OR SOAPSTONE LAUNDRY TRAYS AND SIN S, FIGURE 16

Such of Section V, 1 to 13, inclusive, as is applicable shall apply to this figure.

Unless otherwise stated in the specification for the work, laundry trays and sinks will be acceptable in either slate or soapstone. All slate or soapstone shall be 1¼ inches thick and joints shall be interlocking, tongued and grooved, cemented with litharge and glycerin cement.

Laundry trays.—Shall be approximately of dimensions shown; compartments shall be approximately of equal areas; backs where required shall be integral.

Supports.—Trays shall be supported on painted steel angle iron frame, continuous under all compartments, with standards under each compartment; shall be properly braced and riveted.

Waste, supplies, etc.—Unless otherwise specified, each single-tray outfit shall be provided with waste complete with P trap with connection to wall, or S trap with connection to floor, as required. Each two or three compartment outfit shall be provided with a continuous waste, constructed of 1½-inch brass tubing of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch) with cast-brass fittings and P trap with connection to wall or S trap with connection to floor, as required. Each compartment shall be provided with a tray plug with brass stopper. Stopper shall be secured to bibb with a brass plumber's chain, not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) with ring of ⅛-inch brass at stopper and bibb, having joints in ring well soldered. For details of tray plugs and trap, see Figure 27.

Each tray outfit shall be provided with one hot and one cold water ½-inch bibb, detail No. 4 or No. 6, Figure 26, as specified for each compartment. All bibbs shall have hose connections.

The connections from bibbs to the supply lines of the building shall be as required in the specification for the work and are not parts of the fixture.

OUTFITS

No. 72S, 3-compartment tray, without back, as shown.
No. 48S, 2-compartment tray, without back.
No. 24S, 1-compartment tray, without back.
No. 72SB, 3-compartment tray, with back, as shown.
No. 48SB, 2-compartment tray, with back.
No. 24SB, 1-compartment tray, with back.

SINKS

Sinks shall be approximately of dimensions shown with integral backs.

Supports.—Each sink shall be supported on two painted cast-iron legs as shown.

Waste, supplies, etc.—Unless otherwise specified, each sink shall be provided with a tray plug with brass stopper and a P trap with connection to wall or S trap with connection to floor, as required.

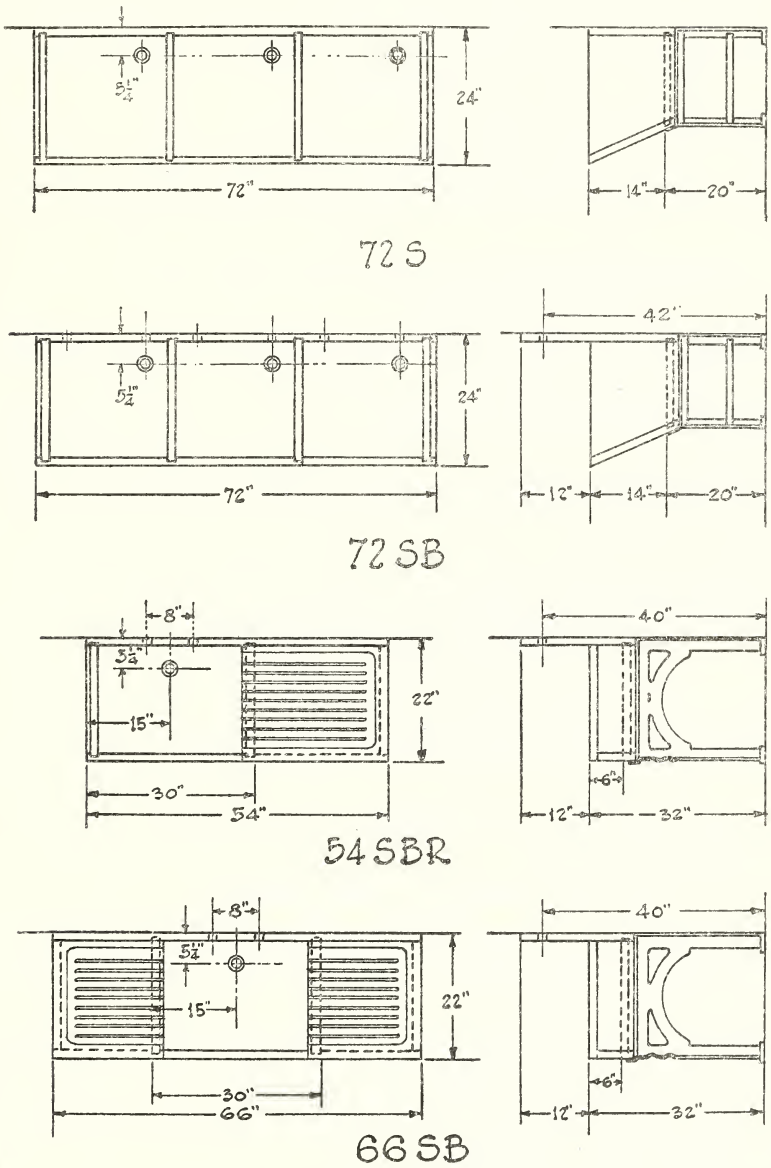


Fig. 16

Stopper shall be secured to bibb with a brass plumber's chain, not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) with ring of ⅛-inch brass at stopper and bibb, having joints in ring well soldered. For detail of tray, plug, and waste connection see Figure 27.

Each sink shall also be provided with one hot and one cold water ½-inch bibb, detail No. 5, Figure 26. Cold-water bibb shall have hose connection.

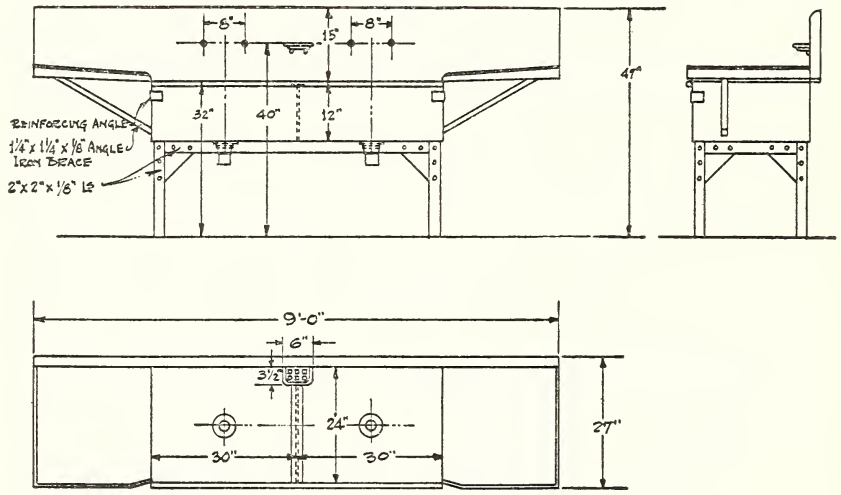
Connections from bibbs to the supply mains of the building shall be as called for in the specification for the work and are not parts of the fixture.

OUTFITS

No. 54SBR, 54-inch sink, with right-hand drain board, as shown.

No. 54SBL, 54-inch sink, with left-hand drain board.

No. 66SB, 66-inch sink, with right and left hand drain boards, as shown.



60DB

FIG. 17

STEEL SCULLERY SINK, FIGURE 17

Sink.—Shall be two compartments, with or without integral drain boards; integral back; roll rim at front and on back, leaving space behind back for supplies.

Sink shall be constructed of No. 12 United States standard gauge (0.109 inch thick before galvanizing) galvanized steel, welded, or riveted. Partition shall be welded or riveted to the bottom and both sides, and bordered on each side and at top with 1-inch galvanized band iron, riveted on.

Supports.—Sink shall be supported on galvanized steel angle frame, as shown, riveted to sink and bolted to floor.

Supplies.—Each compartment of sink shall be supplied with one cold and one hot water ¾-inch bibb, detail No. 5, Figure 26. Cold-water bibb shall be provided with hose connection.

Waste.—Each compartment of sink shall have a 2-inch sink plug with strainer bars and brass stopper. Stoppers shall be fastened to bibbs with plumber's chain of not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) brass, with ⅛-inch thick ring at stopper and bibb with joints well soldered. Waste from sink plugs to building drain including grease trap or interceptor is not part of the fixture and shall be as called for in the specifications for the work.

OUTFITS

No. 60DB, with drain boards, as shown.
No. 60, without drain boards.

WATER HEATER AND HORIZONTAL STORAGE TANK, FIGURE 18

Heaters.—Shall be circular in form and made of the best quality gray cast iron, free from imperfections. Inside surface of the fire section shall be corrugated and the fire pot not less than 14 inches deep. The design of the heater shall be such that all surfaces may easily be cleaned of soot and dust.

All heater sections shall be tested to 100 pounds hydrostatic pressure at the shop and also when assembled on the premises where same will be used.

Grates shall be heavy cast iron, sectional, rocking and dumping, of sizes noted in figure, and easily removable without disturbing the heater. All doors and base shall be heavy cast iron.

Shaker lever and cleaning appliances shall be furnished.

Tanks.—Heads and shell shall be constructed of best quality homogeneous flange steel of a tensile strength between 55,000 and 65,000 pounds per square inch, and shall have all openings properly reinforced.

Tanks No. 20HP and 24HP shall have handhole in end; tank No. 36HP shall have a manhole in end. Handholes and manholes may be either in center of head or in head near bottom, and shall be provided with plate, yoke, and gasket.

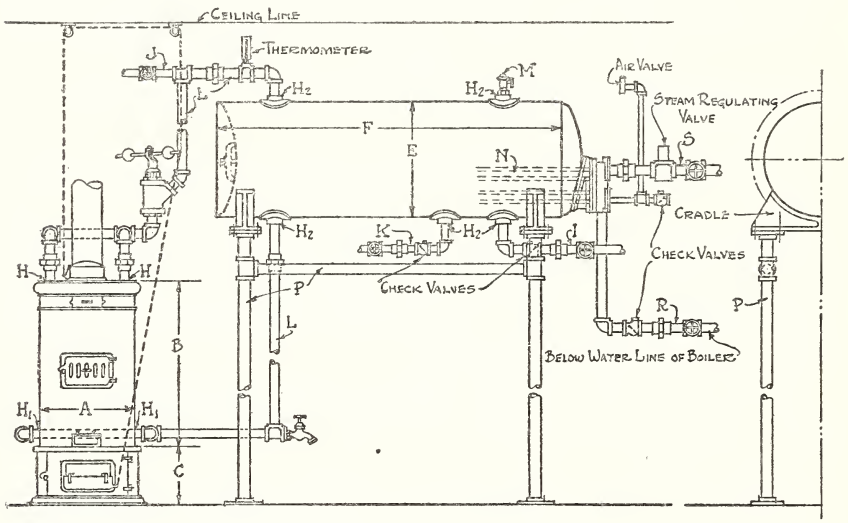
Seams shall be riveted for not less than 100 pounds working pressure, and shall be tested at shop to a hydrostatic pressure of 150 pounds.

Marking.—The name of manufacturer and working pressure shall be marked on a brass plate secured to tank or be stenciled on the tank.

Supports.—Tank No. 20HP shall be supported from ceiling with strap hangers of 1½ by $\frac{5}{16}$ inch strap iron or ¾-inch round iron around tank and secured to ceiling at both ends in an approved manner. Tanks No. 24HP and 36HP shall be provided with cast-iron cradles and supported from floor with a pipe frame as shown. Pipe frame shall be constructed of plain wrought iron or mild steel pipe, steam pattern fittings and floor flanges; floor flanges shall be fastened to floor and cradles with two bolts to each flange.

Trimmings.—Each tank shall be provided with a ¾-inch diameter spring loaded brass water-relief valve, set 25 pounds above high-water pressure, excepting fire pressure, and a ¾-inch angle pattern, hot-water mercury thermometer graduated from 40 to 240° F.

Heating section.—Each HP tank shall be provided with a removable heating section constructed of seamless drawn brass or seam-



Outfit Number		100 HP	200 HP	300 HP
Number of Heater		100 C I	200 C I	300 C I
Diameter of Grate		12"	15"	18"
Diameter of Heater (Approximately)	A	18"	20"	23"
Height of Heater (Minimum)	B	27½"	35"	35"
Height of Base (Minimum)	C	12"	12"	12"
Number and Size of Flow Taps	H	2 - 1½"	2 - 2"	2 - 2"
Number and Size of Return Taps	H1	2 - 1½"	2 - 2"	2 - 2"
Number of Tank		20 HP	24 HP	36 HP
Diameter of Tank	E	20"	24"	36"
Length of Tank	F	60"	72"	96"
Thickness of Shell		¼"	¼"	5/16"
Thickness of Heads		3/8"	3/8"	½"
Size of All Taps	H2	1½"	1½"	2"
Size of Cold Water Supply	I	1"	1¼"	1½"
Size of Hot Water to Building	J	1"	1¼"	1½"
Size of Hot Water Circulation from Building	K	¾"	1"	1¼"
Size of Circulation Between Heater and Tank	L	1½"	1½"	2"
Size of Relief Valve	M	¾"	¾"	¾"
Square Feet of Surface in Heating Coil	N	4.90	9.75	18.25
Size of Steam Inlet	S	1¼"	1½"	2"
Size of Steam Return	R	1"	1¼"	1½"
Size of Pipe Stand	P	As Specified	2½"	3"

Fig. 18

less copper tubing either in the form of U bends or straight tubes with a floating head. The heating surface of coils shall be not less than noted on the figure.

When the letter P is omitted from designation of tank, the heating section and headpost shall be omitted, and all other requirements shall be the same as for the HP tanks.

Piping other than heating section is not part of the fixture, and shall be as called for in the specification for the work.

Regulator.—Each tank connected to a coal-burning heater shall be provided with a thermostatic regulator with necessary chains and pulleys to operate the draft door and check draft on heater, adjusted so as to close draft door and open check draft when temperature of water is 140° F. in tank.

In case gas burners are used in the heater, regulator shall be connected to operate the gas supply to heater.

Each tank containing a steam coil shall be provided with a thermostatic regulator with necessary connections and valve to control the steam supply to the coil, adjusted so as to close steam valve when temperature of water is 140° F. in tank.

Regulator shall be inserted preferably in head of tank, and shall consist of a tube with necessary attachments containing a volatile liquid or an expanding tube containing a nonexpanding member, or both, the expansion and contraction of which shall operate valve direct or cause a metal diaphragm or metal bellows to expand and contract, thus controlling the steam supply.

Either type of regulator will be acceptable, viz, one that controls the steam supply to coil and operates the draft dampers or gas burners, as the case may be, or type that requires regulator for steam valve to coil with an independent regulator to control the dampers on heater.

Regulators that operate by water of the plumbing system will not be permitted.

Regulators shall have the name or trade-mark of manufacturer stamped or cast on body of valve, or shall have a separate plate with name of manufacturer bolted to valve.

OUTFITS

No. 100HP heater, No. 100CI, with No. 20HP tank having heating section.

No. 200HP heater, No. 200CI, with No. 24HP tank having heating section.

No. 300HP heater, No. 300CI, with No. 36HP tank having heating section.

No. 100H heater, No. 100CI, with No. 20H tank without heating section.

No. 200H heater, No. 200CI, with No. 24H tank without heating section.

No. 300H heater, No. 300CI, with No. 36H tank without heating section.

No. 20HP tank having heating section, without heater.

No. 24HP tank having heating section, without heater.

No. 36HP tank having heating section, without heater.

WATER HEATER AND VERTICAL STORAGE TANK, FIGURE 19

Heaters.—Shall be circular in form and made of the best quality gray cast iron, free from imperfections. Inside surface of the fire section shall be corrugated and the fire pot not less than 14 inches deep. The design of the heater shall be such that all surfaces may easily be cleaned of soot and dust.

Outfit Number		100 B	200 B	300 B		
Number of Heater		100 C.I.	200 C.I.	300 C.I.		
Diameter of Heater (approximately)	A	18"	20"	23"		
Height of Heater. (Minimum)	B	27½"	35"	35"		
Height of Base. "	C	12"	12"	12"		
Diameter of Grate		12"	15"	18"		
Number and Size of Flow Openings.	H	2-1½"	2-2"	2-2"		
" " " " Return " .	H_1	2-1½"	2-3"	2-2"		
Number of Tank.		36 V.	42 V	48 V		
Size of Tank	D×F	36"×60"	42"×60"	48"×60"		
Thickness of Shell of Tank.		¼"	¼"	¼"		
Thickness of Convex Head of Tank.		5/16"	5/16"	5/16"		
" " Concave " " "		3/8"	3/8"	7/16"		
Size of all Pipe Openings.	H_2	1½"	2"	2"		

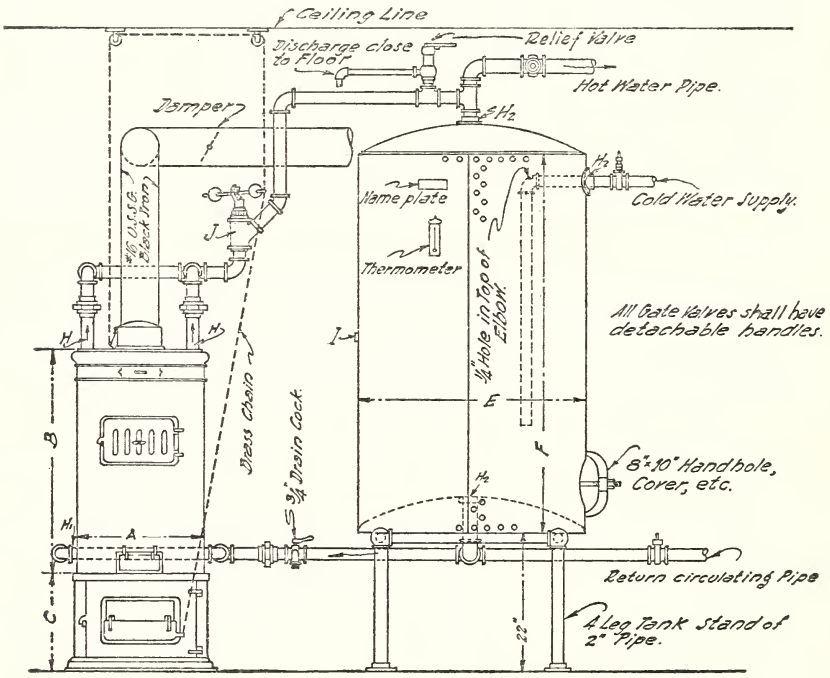


FIG. 19

All heater sections shall be tested to 100 pounds hydrostatic pressure at the shop and also when assembled on the premises where same will be used.

Grates shall be heavy cast iron, sectional, rocking and dumping, of sizes noted on plate and easily removable without disturbing the heater. All doors and base shall be heavy cast iron.

Shaker lever and cleaning appliances shall be furnished.

Tanks.—Shall be constructed of best quality homogeneous flange steel of tensile strength of between 55,000 and 65,000 pounds per square inch, and shall have all openings reinforced. Handhole shall be provided with cover plate, yoke, and gasket, and when tank is set on stand, handhole shall be located in an accessible position.

Seams shall be riveted for not less than 100 pounds working pressure, and shall be tested at shop to a hydrostatic pressure of 150 pounds.

Marking.—The name of manufacturer and working pressure shall be marked on a brass plate secured to tank or shall be stenciled on tank.

Supports.—Tanks shall be supported from floor with a pipe frame as shown, constructed of plain wrought iron or steel pipe, malleable railing fittings and floor flanges.

Trimmings.—Each tank shall be provided with a ¾-inch diameter spring loaded brass water relief valve set at 25 pounds above maximum water-supply pressure, excepting fire pressure, and a ¾-inch hot water mercury thermometer graduated from 40 to 240° F.

Piping.—Piping indicated is not part of the fixture and shall be as called for in the specification for the work.

Regulator.—Each tank shall be provided with a thermostatic regulator with necessary chains and pulleys to operate the draft door and check draft on heater, adjusted so as to close draft door and open check draft when temperature of water is 140° F. in tank.

Regulator shall consist of either a tube inserted in tank at point marked *I* containing a volatile liquid or containing an expanding tube with a nonexpanding member, the expansion or contraction of which shall operate the damper and check draft or regulator may be of the all metal bulb type placed in pipe connection at *J*; within the bulb shall be an expansible metallic bellows surrounded by a volatile liquid, the expansion of which shall operate the damper and check draft.

OUTFITS

No. 100B, heater No. 100CI, with tank No. 36V.
No. 200B, heater No. 200CI, with tank No. 42V.
No. 300B, heater No. 300CI, with tank No. 48V.

WATER-CLOSET INCLOSURES AND PARTITIONS, FIGURE 20

Inclosures and partitions shall be marble, slate, soapstone, or glass as called for in the specifications for the work, the finished thickness of which shall be not less than that noted, and shall be constructed, supported, and braced as shown.

Each inclosure shall be provided with a solid four paneled door constructed of well-seasoned, clear, selected wood of same material and finish as entrance door to room, door hinges shall be secured to

slab work and to doors with socket fastenings and through bolts. The springs shall be set so as to hold doors open inside of inclosures. Each door shall be fitted with door latch and stop.

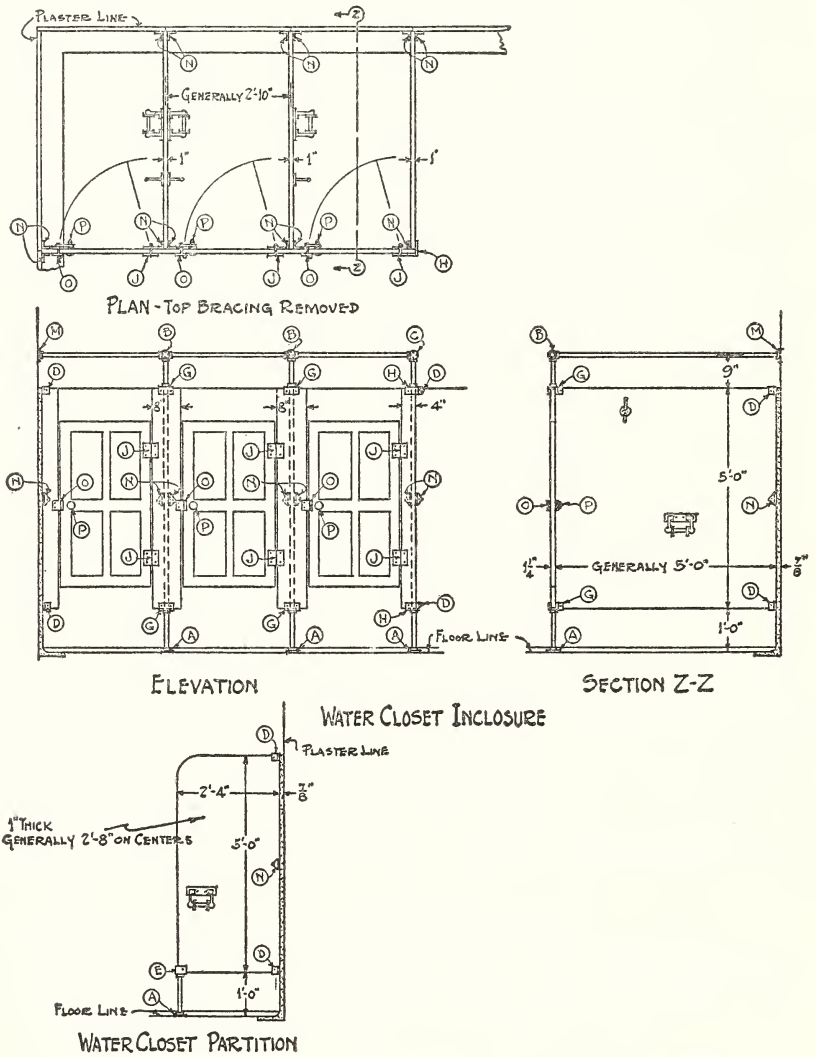


FIG. 20

Trimmings.—Trimmings indicated in Figure 20 shall always be provided with inclosures unless specifically omitted by the specifications for the work and shall be as shown in Figure 23.

Accessories.—Accessories shown are for locations only and shall be installed when required by the specification for the work.

BATH INCLOSURE, ETC., FIGURE 21

Bath inclosure.—The partitions forming shower-bath inclosure and dressing room in connection with same shall be marble, slate, soapstone, or glass, as called for in the specifications for the work, the

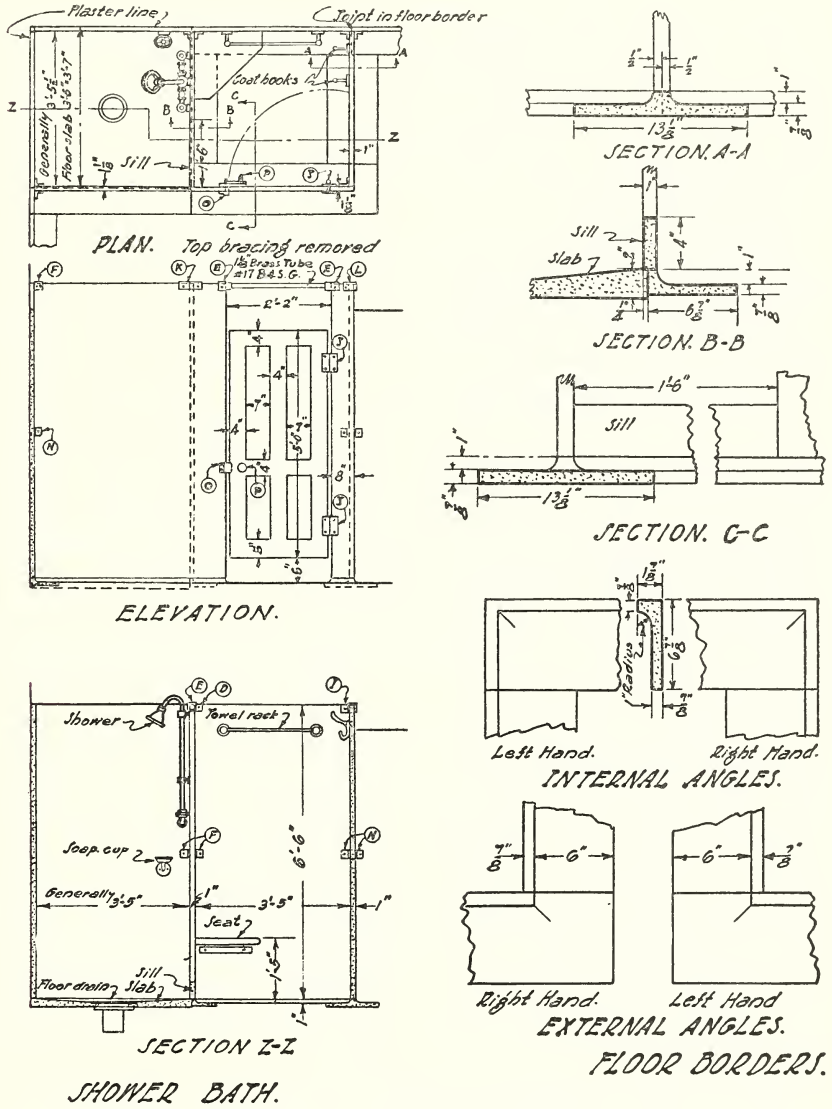


FIG. 21

finished thickness of which shall be not less than that noted, and shall be constructed, supported, and braced as shown.

Arrangement of inclosures and partitions shall be as shown on plans for the work. When door is indicated at end of inclosure, the

side slabs shall be 1 inch thick in lieu of 1⅛ inches shown; the stiles shall be 1¼ inches.

Joints in slab work of shower-bath inclosure and between the floor drain and floor slab shall be made water-tight with cement composed of glycerin and litharge.

Each inclosure shall be provided with a solid four-paneled door constructed of 1¼ inch finished thickness well-seasoned, clear, selected wood of same material and finish as entrance door to room; door hinges shall be secured to slab work and to door with socket fastenings and through bolts. The springs shall be set so as to hold door open inside of inclosure. Each door shall be fitted with door latch and stop.

Trimmings.—Trimmings indicated in Figure 21 shall always be provided with inclosures, unless specifically omitted by the specifications for the work, and shall be as shown in Figure 23.

Accessories.—Accessories shown are for locations only and shall be installed only when required by the specification for the work.

BATH INCLOSURE WITH LEAD PAN, ETC., FIGURE 22

Bath inclosure.—The partitions forming shower-bath inclosure and dressing room in connection with same shall be marble, slate, soapstone, or glass, as called for in the specifications for the work, the finished thickness of which shall be not less than that noted and shall be constructed, supported, and braced as shown.

Arrangement of inclosures, partitions, and base shall be as shown on plans for the work. When door is indicated at end of inclosure the side slabs shall be 1 inch thick in lieu of 1⅛ inches shown; the stiles shall be 1¼ inches thick.

Shower-bath inclosure shall be placed above general floor level and shower space and dressing room floors shall be set in a water-tight pan of sheet lead weighing not less than 6 pounds per square foot. Lead pan shall be soldered or secured water-tight to floor drain and turned up and folded at corners, not cut and soldered. The concrete or terra-cotta fill upon which the lead pan is laid shall be given a smooth cement finish and when dry shall be given a coat of bituminous paint. The top of the lead pan shall be given a similar coat of bituminous paint before the topping is laid. The cement mortar above pan shall consist of 1 part Portland cement and 3 parts clean sharp sand. Waste pipe from shower shall be run in floor fill or at ceiling below as shown on plans for the work.

Joints in slab work of shower-bath inclosure and between the floor drain and floor slab shall be made water-tight with cement composed of glycerin and litharge.

Each inclosure shall be provided with a solid four-paneled door constructed of 1¼-inch finished thickness well seasoned, clear, se-

lected wood of same material and finish as entrance door to room; door hinges shall be secured to slab work and to doors with socket fastenings and through bolts. The springs shall be set so as to hold door open inside of inclosure. Each of the inclosure doors shall be fitted with door latch and stop.

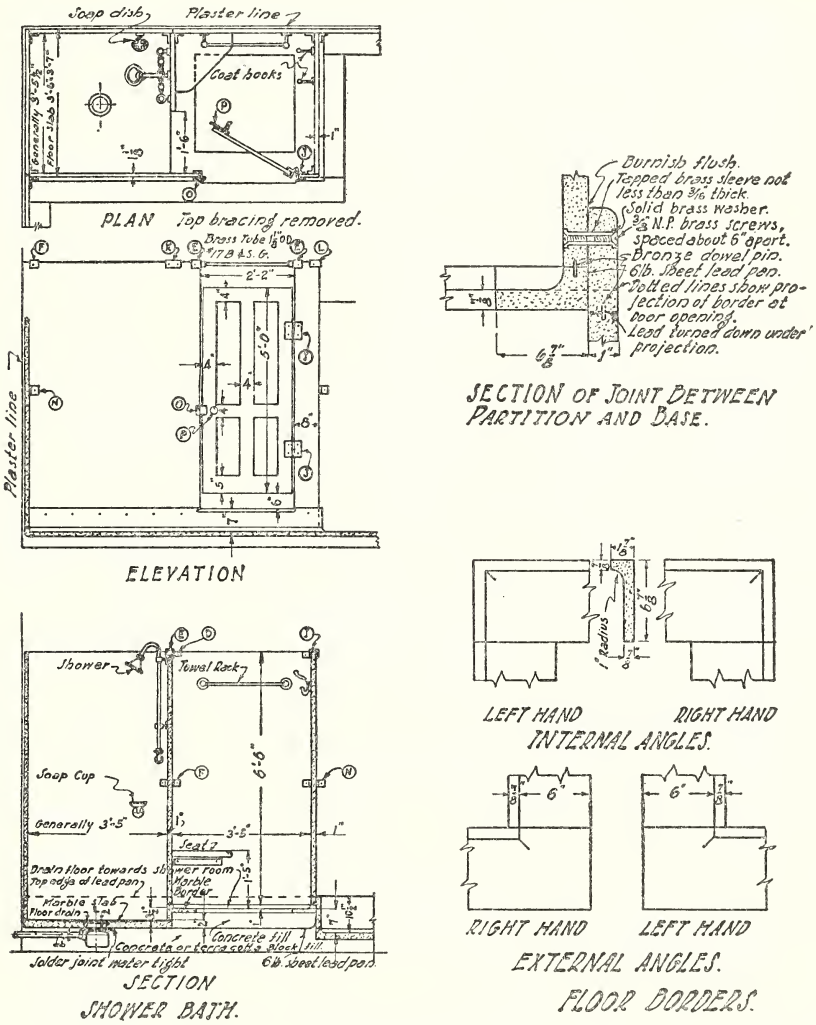


FIG. 22

Trimmings.—Trimmings indicated in Figure 22 shall always be provided with inclosures, unless specifically omitted by the specifications for the work and shall be as indicated in Figure 23.

Accessories —Accessories shown are for locations only and shall be installed only when required by the specifications for the work.

TRIMMINGS FOR WATER-CLOSET AND BATH INCLOSURES, ETC., FIGURE 23

Section V, 7 (*a*) to 8 (*b*), inclusive, apply to this figure.

Trimmings for slab work shall be of the design and dimensions shown; shall be cast brass, exposed surfaces finished and nickel

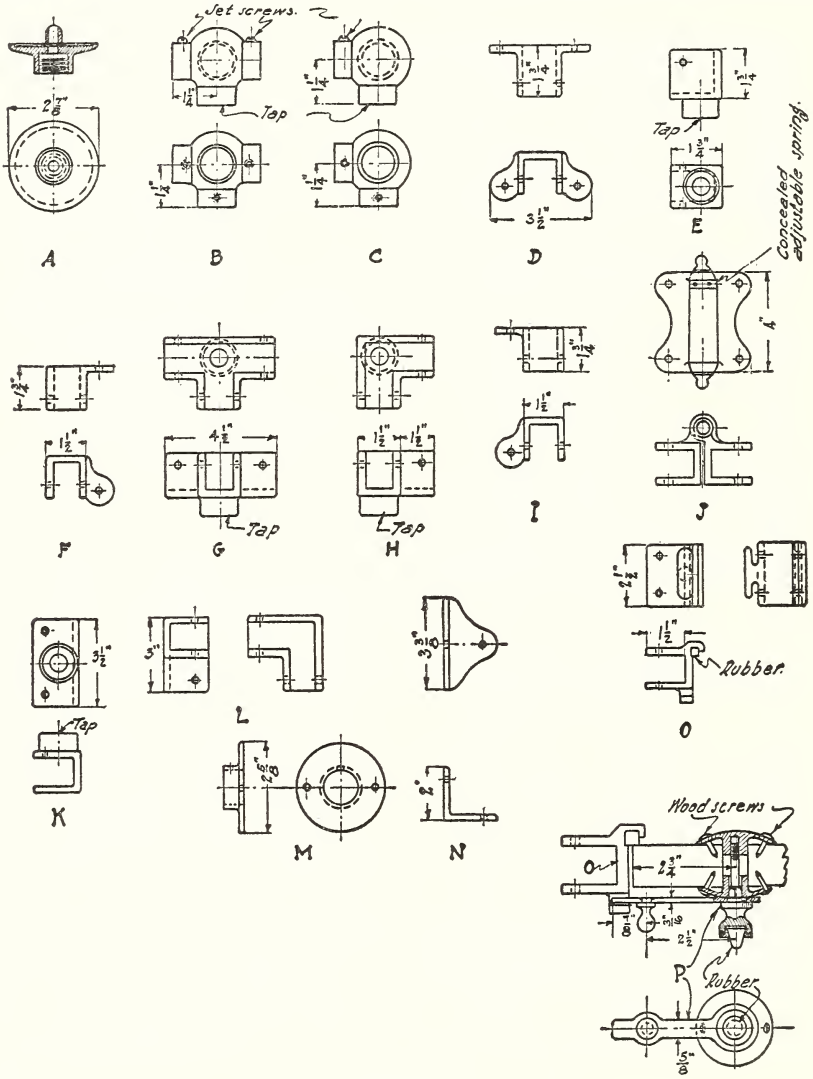


FIG. 23

plated, with slots of proper size for the marble, slate, etc.; standards shall be 1¼-inch brass tubing and all bracing shall be 1-inch outside diameter, of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch) polished and nickel plated.

Hinge (*J*).—Shall be heavy pattern, cast or wrought brass, with clamp adjustable from 1⅛ to 1⅜ inches, not thinner than 0.09 inch, with inclosed adjustable spring.

ACCESSORIES, FIGURE 24

Section V, 7 (*a*) to 8 (*b*), inclusive, apply to this figure.

All metal shall be brass with exposed parts finished and nickel plated, except brackets for wood seat, detail 8, which may be unfinished brass.

No. 1, soap cup.

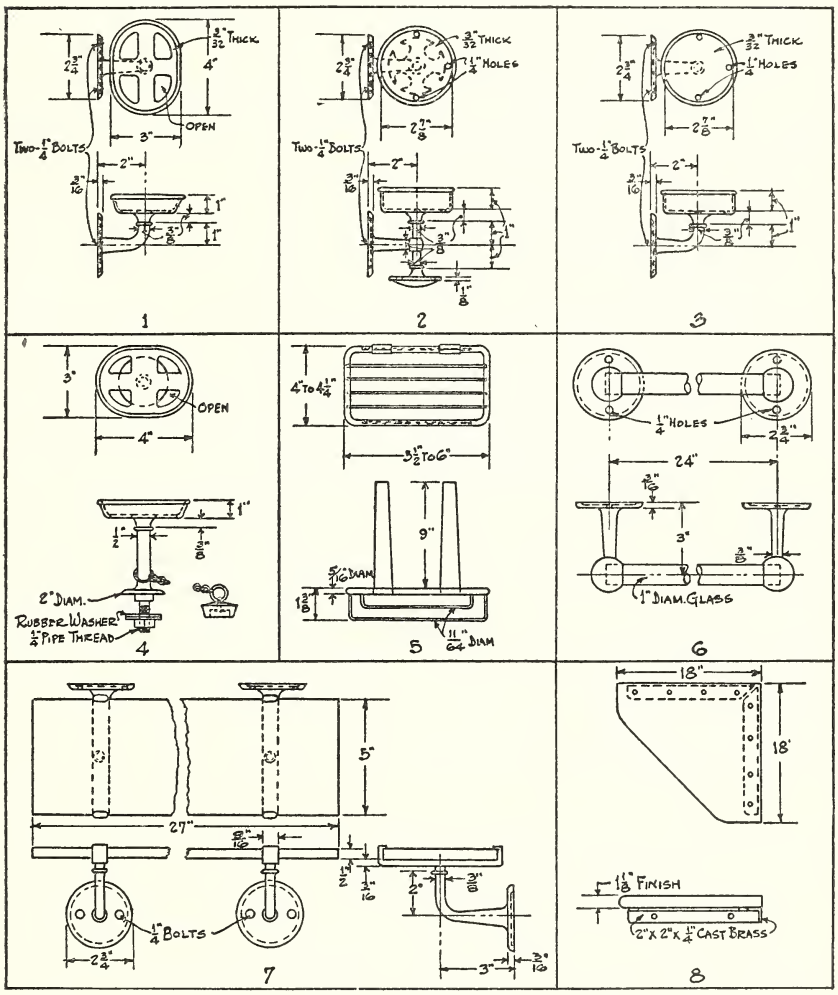


FIG. 24

No. 2, tumbler and toothbrush holder.

No. 3, tumbler holder.

No. 4, soap dish with chain stay.

Chain shall be a nickel-plated, brass plumber's chain not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) with 1¼ inches diameter rubber stopper, to fit the lavatory plug, detail No. 1, Figure

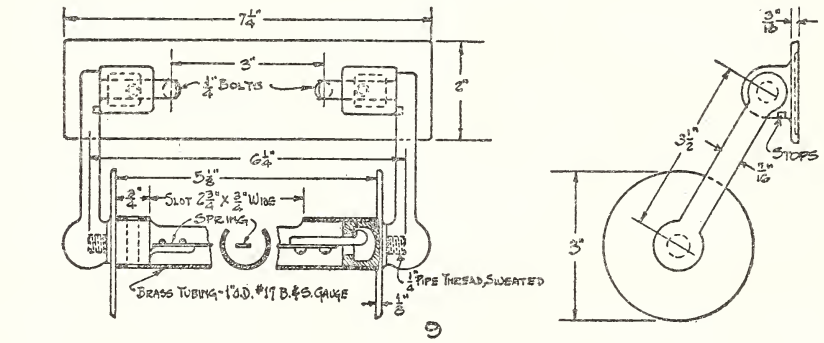
27. Chain shall be attached to chain stay and stopper with rings of ⅛-inch brass with joints well soldered.

No. 5, soap dish for bathtub.

No. 6, glass-rod towel rack. Where required to be installed back of battery of lavatories, rods shall extend the length of all lavatories in the battery, and one more bracket than lavatories is required, the intermediate brackets being drilled through so the glass rods will butt in the brackets.

No. 7, glass shelf.

No. 8, wood seat shall be constructed of finished oak, secured to the brass angles. Wood shall be filled and finished with three coats of spar varnish, rubbed and polished.



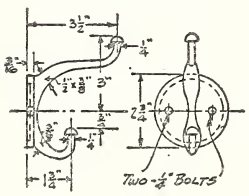


Fig. 25

ACCESSORIES, FIGURE 25

Section V, 7 (*a*) to 8 (*b*), inclusive, apply to this figure.

All metal shall be brass, with exposed parts finished and nickel plated.

No. 9, toilet paper holder, with spring catch as shown, to prevent removal of paper rolls.

No. 10, coat hook.

Note.—Where accessories other than those specified are desired, it shall be so stated in the specifications for the work.

LAVATORY SUPPLIES, ETC., FIGURE 26

Section V, 7 (*a*) to (*i*), inclusive, apply to this figure.

All exposed parts shall be finished brass, nickel plated.

DETAIL No. 1.—*Lavatory supplies, with compression faucets.*—Shall consist of a best quality cast-brass compression type faucet with four-arm brass handles with china index; shank, tailpiece and compression stop with connections to wall or floor of brass, iron pipe size pipe with cast-brass wall or floor flange as required. Stop shall be straight way or angle pattern as required for the work. The minimum weight of faucets including tailpiece shall be 21½ ounces.

When self-closing faucets are called for in the specification for the work, the faucets shall be best quality cast-brass self-closing faucet with four, five, or six arm brass handle with china index shank and tailpiece. The mechanism of faucet shall be perfect in every respect; shall be closed against the water pressure by means of a phosphor bronze spring. The spring shall close faucet against 100 pounds water pressure per square inch and the faucet shall be easily operated at any pressure up to 100 pounds. Faucet shall operate on ball or roller bearings, and check lugs or other suitable method shall be provided to prevent handle from making complete turns. The minimum weight of faucet including tailpiece shall be 26 ounces.

Connections from faucets to wall or floor, and wall or floor flange are parts of the fixtures.

DETAIL No. 2—*Combination faucet.*—Shall consist of a best quality cast-brass combination faucet of the compression type with brass lever index handles, shanks and tailpieces and compression stops with connections from tailpieces to wall or floor of brass, iron pipe size pipe with cast-brass wall or floor flange as required. Stops shall be straightway or angle pattern as required for the work. The minimum weight of faucet including tailpieces shall be 57 ounces. Connections from faucets to wall or floor and wall or floor flange are parts of the fixtures.

DETAIL No. 4—*Sink bibb.*—Shall be full ½-inch or ¾-inch, as specified, brass compression type with four-arm china index handle and standard male thread. When hose connection is specified bibb shall be provided with thread for ¾-inch diameter hose. Minimum weight of ½-inch bibb shall be 14 ounces and of ¾-inch bibb shall be 18 ounces.

DETAIL No. 5—*Sink bibb.*—Shall be full ½-inch or ¾-inch, as specified, brass compression type with four-arm china index handle, shank as shown, cast-brass adjustable flange with set screw or flange threaded on shank; standard male thread. When hose connection is specified bibb shall be provided with thread for ¾-inch diameter hose.

The minimum weight of ½-inch bibb, including flange, shall be 19 ounces, and the minimum weight of ¾-inch bibb, including flange, 20 ounces.

Detail No. 6—*Laundry tray bibb.*—Shall be brass compression type stub pattern with brass T handle and integral female flange

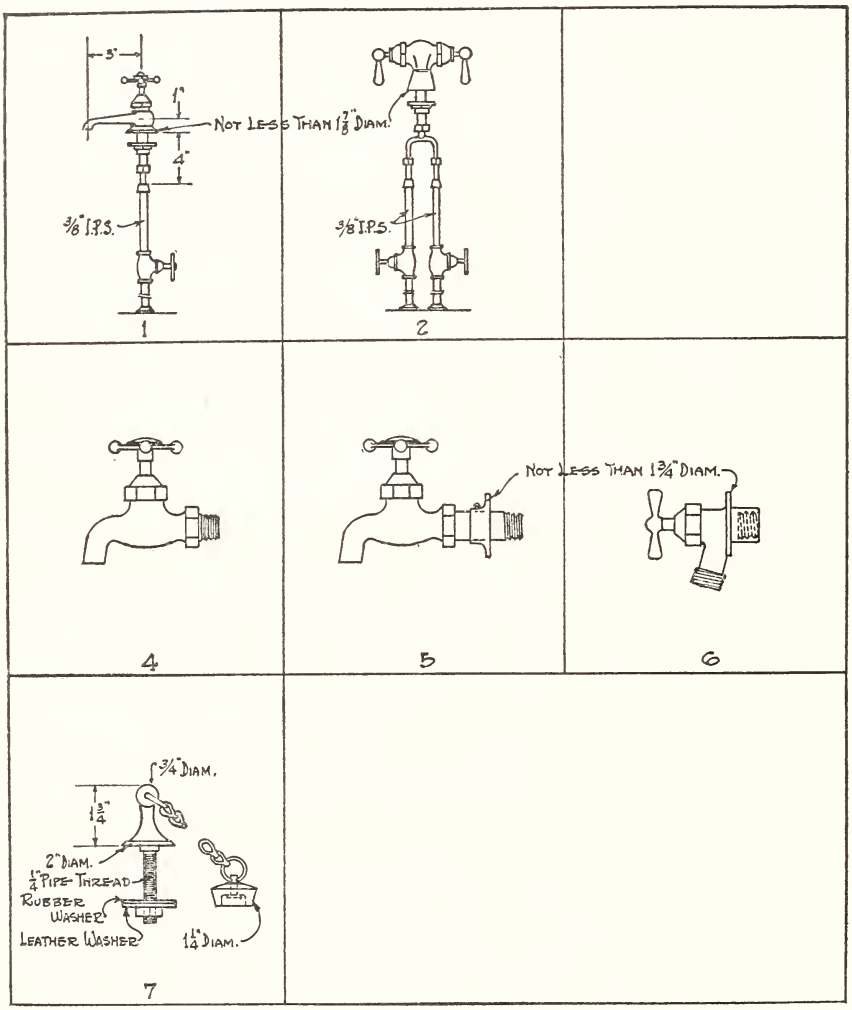


Fig. 26

tapped for ½-inch or ¾-inch pipe as specified; shall have thread for ¾-inch diameter hose.

The minimum weight of ½-inch bibb shall be 12½ ounces, and of ¾-inch bibb shall be 13 ounces.

Detail No. 7—*Chain stay.*—For lavatories shall be cast-brass stay of dimensions shown. Attached to chain stay shall be a nickel-

plated brass plumber's chain not lighter than No. 20 Brown & Sharpe gauge (0.032 inch) with 1¼-inch diameter rubber stopper, to fit the lavatory plug, detail No. 1, Figure 27. Chain shall be attached to chain stay and stopper with rings of ⅛-inch brass with joints well soldered.

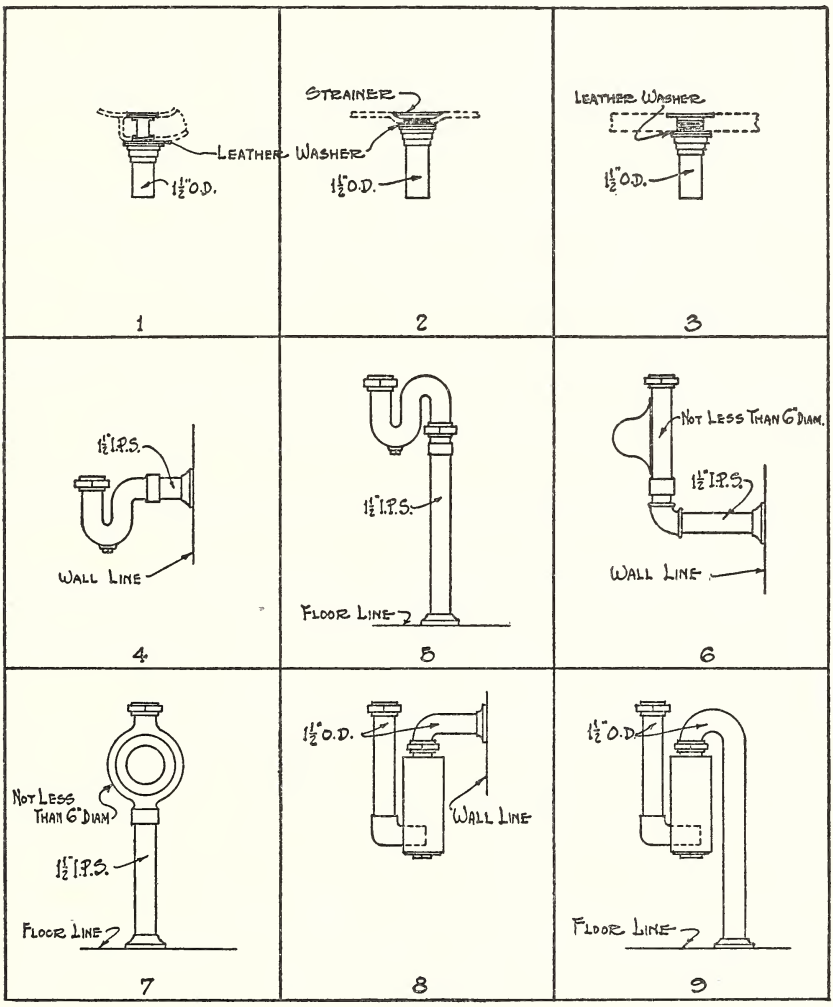


FIG. 27

LAVATORY WASTES, ETC., FIGURE 27

Section V, 7 (*a*) to (*i*), inclusive, apply to this figure.

All exposed parts shall be finished brass, nickel plated.

DETAIL No. 1—*Lavatory plug.*—Shall be cast brass with rod strainer and with overflow openings for vitreous or cast-iron lavatory as required, jam nut, leather washer, opening for 1¼-inch diameter

rubber stopper; tailpiece of 1½-inch brass tubing of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch).

DETAIL No. 2—*Sink plug.*—Shall be cast brass with removable strainer; jam nut and leather washer; coupling and 1½-inch tailpiece of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch).

DETAIL No. 3—*Tray plug.*—Shall be cast brass with rod strainer and ground opening for 1¼-inch diameter metal stopper; jam nut and leather washer; coupling and 1½-inch tailpiece of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch).

DETAIL No. 4—P *trap.*—Shall consist of a 1½-inch cast-brass P trap with cast-brass clean-out plug; slip joint with cast-brass nut and rubber washer at inlet for connecting to the plugs, details Nos. 1, 2, or 3; band with a 1½-inch standard pipe tap at outlet.

Connection and wall flange indicated in the figure are part of the lavatory waste.

DETAIL No. 5—S *trap.*—Shall consist of a 1½-inch cast-brass S trap with cast-brass clean-out plug; slip joint with heavy cast-brass nut and rubber washer at inlet for connecting to the lavatory plugs, details Nos. 1, 2, or 3; ground joint union with a standard 1½-inch pipe tap at outlet.

Connection and floor flange indicated on the plate are part of the lavatory waste.

DETAIL No. 6—*Nonsiphoning trap.*—Shall consist of a cast-brass nonsiphoning trap with a cast-brass interior partition, integral with body of the trap; slip joint with heavy cast-brass nut and rubber washer at inlet for connecting to the lavatory plugs, details Nos. 1, 2, or 3; band with a 1½-inch standard pipe tap at outlet.

Connection and wall flange indicated in the figure are part of the lavatory waste.

DETAIL No. 7—*Nonsiphoning trap.*—Shall be as specified for trap in detail No. 6.

Connection and floor flange indicated in figure are part of the lavatory waste.

DETAIL No. 8—*Clean-sweep trap.*—Shall consist of a cast-brass body trap (commercially known as the clean sweep or centrifugal), slip joint with heavy cast-brass nut and rubber washer at inlet for connecting to the lavatory plugs, details Nos. 1, 2, or 3; slip joint or union connection at outlet. Connection and wall flange indicated in figure are parts of the lavatory waste, and shall be of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch).

DETAIL No. 9.—Shall be as specified for trap in detail No. 8, except that tubing at outlet shall be for floor connection as shown.

Connection and floor flange indicated in figure are parts of the waste connection, and shall be of thickness not less than No. 17 Brown & Sharpe gauge (0.045 inch).

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