



CERAMIC TILE INSTITUTE OF AMERICA, INC.
12061 Jefferson Blvd., Culver City, CA 90230-6219

CTIOA FIELD REPORT R4-108-64
SUBJECT: STANDARD SPECIFICATIONS FOR
THE INSTALLATION OF TILE LINED ROMAN BATH TUBS

STANDARD SPECIFICATIONS
for the installation of tile lined
ROMAN BATH TUBS

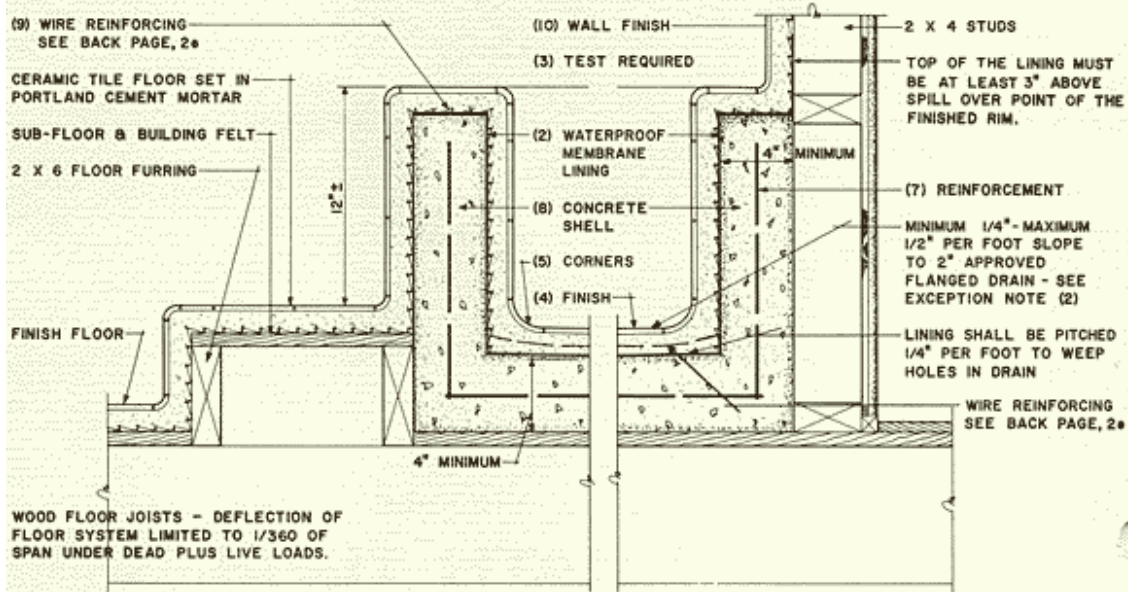
THIS STANDARD SPECIFICATION FOR THE INSTALLATION OF TILE LINED ROMAN BATH TUBS IS THE RESULT OF
EXTENSIVE STUDY AND RESEARCH BY THE:

Ceramic Tile Institute Associated Tile Contractors of Southern California, Inc. Tile Layers Local No. 18 of I.U.B.A.C., United States and
Canada Tile Finishers Local No. 11 of T.M.T.S. & F.I.U., United States and Canada International Association of Plumbing and Mechanical
Officials Technical and Job Problem Committee City of Los Angeles County of Los Angeles **S. B. Barnes & Associates, Structural
Engineers**

Approved by INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS as UNIFORM PLUMBING CODE
INSTALLATION STANDARD U. P. C.-I.S.-2-65 REVISED 1977, 1982

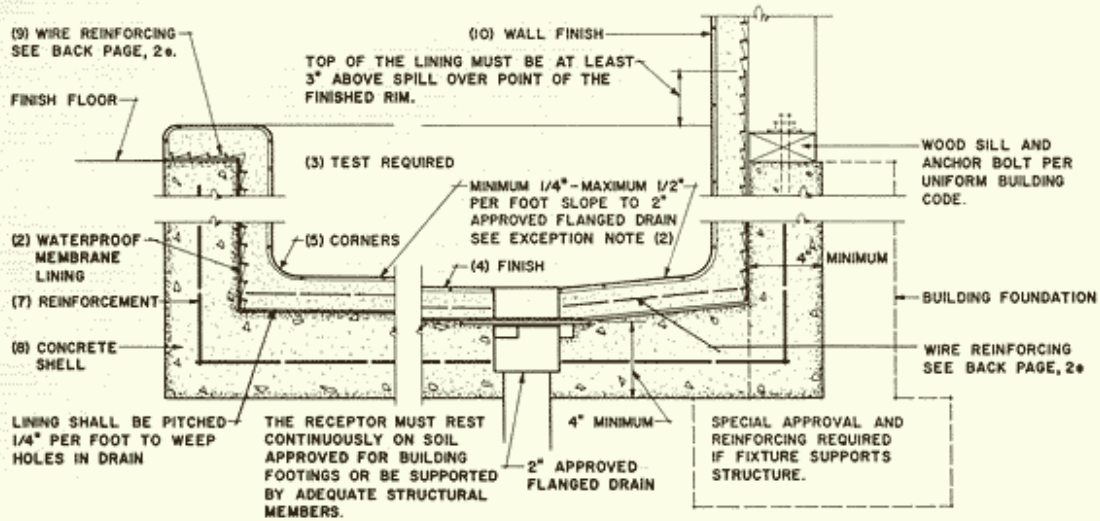
This is a recommended standard. Codes in some areas may permit other materials and construction. Check with your area administrative authority.

APPROVED CONSTRUCTION OF TILE LINED ROMAN BATH TUBS

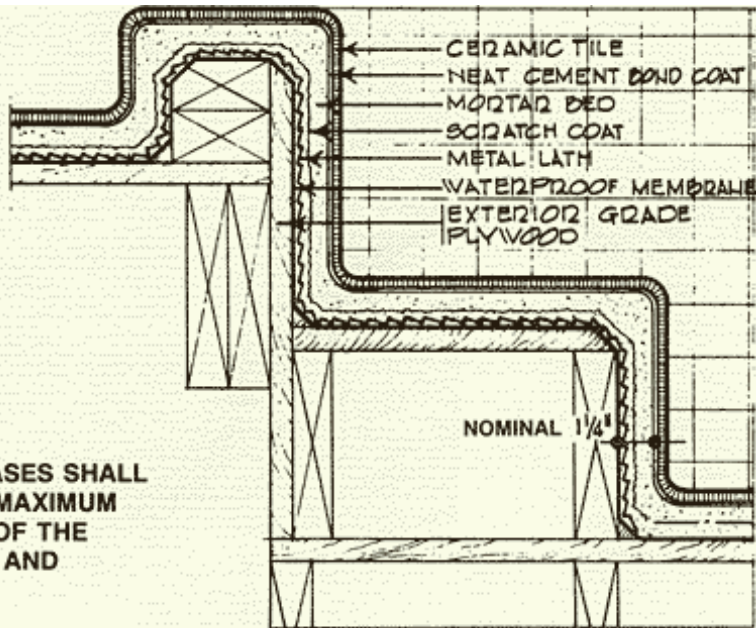


SCALE: 1 1/2" = 1'-0"

A vapor barrier consisting of at least one layer of 15 lb. asphalt-saturated felt shall be between wood surfaces and concrete.

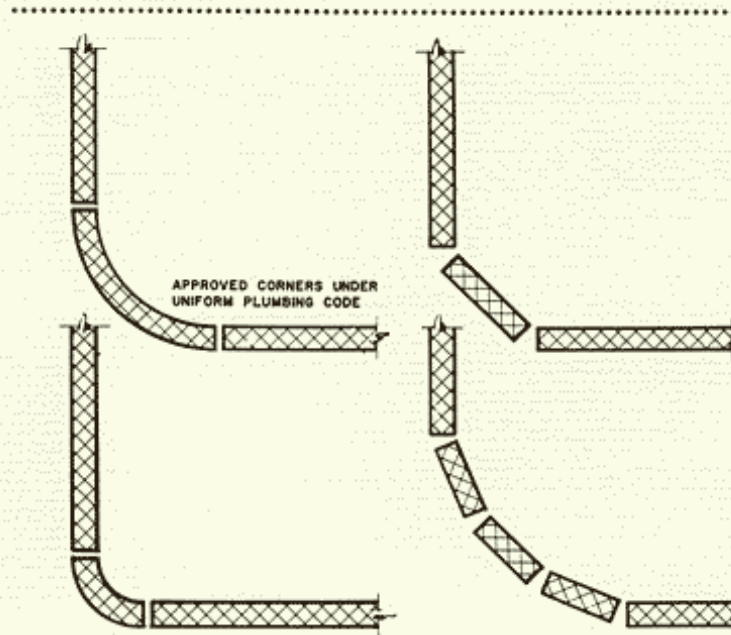


SCALE: 1 1/2" = 1'-0"



ALL WOOD FRAMED BASES SHALL BE DESIGNED WITH A MAXIMUM DEFLECTION OF $1/360$ OF THE SPAN, INCLUDING LIVE AND DEAD LOADS.

WOOD FORM



- (1) Note -two stages of construction are covered. The reinforced concrete shell and the wire reinforced tile lining over the waterproof membrane.
- (2) Approved waterproofing membrane, mortar bed and finish construction shall conform to the general requirements of the Uniform Plumbing Code. Exception: In short sections where there is no foot traffic, finished floor may exceed $1/2$ " per foot slope.
- (3) Each concrete shell shall be filled to its overflow rim with water and shall remain watertight for not less than twenty-four hours before inspection and before the finish surface is installed.
- (4) The finish surface shall be ceramic tile installed with Portland cement mortar mixed to a proper consistency in the proportion of one part cement and four parts mortar sand by volume and having an approved waterproofing admixture' included. Ceramic tile joints shall be thoroughly grouted with approved waterproofing grout containing an admixture.
- (5) The concave interior surfaces shall be such as to permit ready cleansing and all corners shall be rounded or at angles not in excess of 45° . Grout is not acceptable for rounding corners. See details for approved corners.
- (6) Concealed overflow or built-in waste stopper may be used if designed and approved for this application.

(7) Reinforcement in center of concrete shell, use #3P @ 8" O.C. both ways.

(8) 2000 P.S.I. compressive strength concrete poured monolithically and having an approved waterproofing admixture included." Concrete to have not less than six sacks of Portland cement per batch.

(9) Reinforcing wire, as specified under materials in this standard or equal, shall be wired together in a self-supporting manner. Nails shall not be used through the waterproof membrane to fasten wire reinforcing.

(10) Shower wall in accordance with Section 909 of the Uniform Plumbing Code.

*Quantities of several approved waterproofing admixtures required per sack of cement:

Anti-Hydro -- 1 qt. per sack of cement

Sika 3A -- 1 qt. per sack of cement

Plastiment -- 1 lb. of powder per sack of cement

Suconem (RedLabel) -- 1 pint per sack of cement

Plastiment -- 2 oz. of fluid per sack of cement

1. GENERAL

- a. **Inspection of Work** -- All surfaces prepared by other shall be inspected by the installer before starting tile work and all satisfactory conditions reported to the Administrative Authority. Starting tile work by the tile installer shall be considered as acceptance of surfaces prepared by others.
- b. **Surfaces** -- All surfaces to receive tile work shall be clean, structurally sound and conform in every way to the local building code. (Note: No tile work shall proceed until the pan and drain construction has been inspected and approved by the Administrative Authority where required.)

2. MATERIALS

- a. **Tile Quality and Grade** -- Tile shall comply with ANSI A137.1 or CTI 69.5
- b. **Cement** -- Cement shall be Portland cement type I or type II conforming to ASTM C-150.
- c. **Sand** -- Sand shall be damp, clean and graded ASTM C-144.
- d. **Water** -- Water shall be potable.
- e. **Reinforcing** -- shall be 3.4 galvanized metal lath or 2" X 2" 16/16 gauge or 3" x 3" mesh , 13 x 13 gauge or 1½ x 2 mesh, 16 x 13 gauge steel wire conforming to ASTM A82 and A185.
- f. **Asphalt** -- shall conform to Federal Specification SS-A-0666 Type Z Grade 2, Class A
- g. **Plastic Roof Cement** -- shall conform to Federal Specification SS-C-153.
- h. **Waterproof Felt Membrane** -- The waterproof felt membrane shall be at least 15 lb. asphalt saturated felt conforming to Type I Federal Specification HH-F-191 (a).
- i. **Other Membrane** -- Where the Administrative Authority approves their use, non-metallic sub-pans or linings of lead sheets weighing no less than 4 lbs. per sq foot and copper pans of at least No. 24B & S gauge may be used
- j. **Waterproofing Admixture** -- The mortar bed of the receptor shall be mixed with a waterproof admixture approved by the Administrative Authority in the amounts allowed by such approval.

3. INSTALLATION

- a. **Drains** -- An approved type drain with sub-drain shall be installed with every such shower membrane. Flange of each sub-drain shall be accurately set exactly level with sloping sub-floor and shall be equipped with a clamping ring or other approved device to make a tight connection between the membrane and the sub-drain. The sub-drain shall have weep holes into the waste line. The drain shall be of such design that there will be not less than 2" depth from the top of the sub-drain flange to top of the strainer. A ring of absorbent material must be placed around the weep holes to keep them open when the finish materials are installed.

- b. **Sloping Sub-Floor and Membrane** All lining materials shall be pitched one quarter ($1/4$) inch per foot to weep holes in the subdrain by means of a smooth and solidly formed sloping sub-base. All such lining materials shall extend upward on the side walls of the tub to a point not less than (4) inches above the top of the finished dam or threshold and shall extend outward over the top of the rough threshold and be turned over and fastened on the outside face of the rough threshold. All ledge tops within four inches above the rough threshold shall be covered with the lining material.

Non-metallic sub-pans or linings shall be built-up on the job site and shall consist of not less than three (3) layers of standard grade fifteen (15) pound asphalt impregnated roofing felt. The bottom layer shall be mopped to the formed sub-base with hot asphalt and each succeeding layer thoroughly hot mopped to that below, on the basis of twenty pounds of asphalt per layer per square. All corners shall be carefully fitted and shall be made strong and water-tight by folding or lapping, and each corner shall be reinforced with suitable woven glass fiber webbing hot-mopped in place. All folds, laps and reinforcing webbing shall extend at least four (4) inches in all directions from the corner and all glass fiber webbing shall be of approved type and mesh, producing a tear strength of not less than fifty (50) pounds per square inch in either direction. Non-metallic sub-pans or linings may also consist of approved equivalent materials suitably reinforced and recognized on CTIOA's *TESTED MATERIAL LIST* and installed according to manufacturer's recommended installation procedures.

Linings shall not be nailed or perforated at any point which will be less than one (1) inch above the finished dam or threshold.

Where lead and copper pans are used as membranes, the installation shall be made in similar manner as required for felt membranes except the asphalt moppings, and in addition, the pans shall be insulated from all concrete and mortar surfaces and from all conducting substances other than their connecting drain by 15 lb. asphalt saturated felt or an approved equivalent, hot mopped to the lead or copper pans. Joints in lead and copper pans shall not be soldered, but shall be burned or silver brazed respectively.

- c. **Tests** -- Upon installation all concrete tub shells shall be tested for water tightness by being filled to the top of the rough threshold with water for 24 hours to establish their water tightness.
- d. **Roman Bath Tub** -- Floor shall be of ceramic tile set in Portland cement mortar mixed in the proportion of one part Portland cement to four parts of mortar sand by volume and shall be provided with an approved shower drain designed to make a water-tight joint at the floor. The mortar mixture shall be of such consistency that a troweled surface readily assumes a smooth, slickened surface. All concrete mortar bases shall be mixed with an approved waterproofing admixture and properly reinforced with 3.4 galvanized metal lath or 2" x 2" 16/16 gage or 3" x 3" mesh, 13 x 13 gage or 11/2 x 2 mesh, 16 x 13 gage cold drawn welded steel wire fabric located in the approximate center of the mortar bed and extending up the side walls but in no case less than 1" above the finished threshold. Corners shall be lapped and the reinforcing shall extend over the threshold and ledges.

The total thickness of the floor mortar shall not be less than 1 $1/4$ " at any point. The tile floor shall have a minimum of $1/4$ " pitch and a maximum of $1/2$ " pitch toward the drain per foot. Bath tub walls to a minimum height of 3" and not less than 1" above the finished dam shall be lined with ceramic tile set in Portland cement mortar, mixed with an approved waterproofing admixture.

- e. All wood framed bases shall be designed with a maximum deflection of $1/360$ of the span, including live and dead loads.
- f. Shower walls over Roman bath tubs shall be constructed of dense, non-absorbent waterproof materials in accordance with the requirements of Section 909 of the Uniform Plumbing Code.
- g. Roman bath tub enclosures shall be constructed of approved type shatterproof materials such as wire-glass, laminated safety glass, fibre-glass reinforced plastics or equivalent materials. Hinged shower doors shall open outward. Written permission must be obtained from the Ceramic Tile Institute to reproduce this either in whole or in part.