

SECTION 964
NON-FERROUS METAL MATERIALS AND ITEMS
(Other than Aluminum)

964-1 Bronze Castings and Rolled Bronze.

Bronze castings shall conform to the requirements of ASTM B 22. The various alloys shall be as required by that specification for the particular use or as designated on the plans.

Bronze bearing and expansion plates shall conform to ASTM B 100, Alloy No. 510. Where self-lubricating expansion plates are specified, the requirements of 964-2 shall also apply.

964-2 Self-Lubricating Bearing Plates.

Except as might be specified otherwise in the plans, self-lubricating bearing plates shall conform to the following requirements:

The bronze alloy shall be either rolled plate conforming to ASTM B 100, Alloy No. 510, or castings conforming to ASTM B 22, Alloy 911.

The plates shall be provided with recesses (not grooves) which shall be filled with a lubricating compound.

The lubricant shall be of the solid type and shall consist of graphite-metallic substances having lubricating properties, and a lubricating binder. Lubricating materials shall be of a type capable of withstanding atmospheric elements and which will not promote chemical or electrolytic reactions. The lubricant shall be integrally molded and pressed into the recesses by hydraulic pressure of at least 6,000 psi [40 MPa], to form a dense, nonplastic lubricant.

The recesses shall be arranged in a geometric pattern such that successive rows shall overlap in the direction of motion. The entire bearing area of all surfaces which have provision for motion shall be lubricated by means of these lubricant-filled recesses. The total area of recesses shall comprise not less than 25% nor more than 35% of the total bearing area of the plate.

Bearing plates shall be furnished of the size shown in the plans. Bearing surfaces shall be machine-finished and the surface roughness shall not exceed 125 micro-inches [3 μm], when measured in accordance with ANSI (ASA) standards. The lay of the tool marks shall be in the direction of motion. All machined surfaces shall be flat within 0.005 inch per inch [mm per mm] of length and width.

For mating curved surfaces, concave surfaces shall have a positive tolerance not exceeding 0.01 inch [0.25 mm] and convex surfaces a negative tolerance not exceeding 0.01 inch [0.25 mm].

The coefficient of friction between self-lubricating plates and steel surfaces machined to ANSI No. 125 finish shall not exceed 0.10, under unit loading of 1,200 psi [8.3 MPa].

Prior to erection, the self-lubricating plates and the steel surfaces on which they bear shall receive a coating of graphite lubricant, in stick or paste form.

964-3 Babbitt Metal.

Babbitt metal for bearings shall conform to the requirements of ASTM B 23. Unless otherwise shown in the plans, Alloy Grade No. 3 shall be used.

964-4 Copper Water Stops.

Unless a different requirement is shown in the plans copper water stops shall meet the requirements of ASTM B 370.

964-5 Mill Analysis Tests.

Tests on bronze castings, rolled bronze, self-lubricating bearing plates and babbitt metal will be waived provided the manufacturer furnishes the Department's State Materials Engineer, six certified

copies of the mill analysis, containing all tests required by the specifications, and properly identified by project number.