

MICROFILMED
MAR 12 1979
REPRODUCTION

SPECIFICATION FOR SELF-LUBRICATING BRONZE BEARING PLATES

Self-Lubricating bronze bearing plates shall be made by an established manufacturer of these products and shall conform to the following requirements:

(a) Cast phosphor bronze shall conform to Sec. M-7.11 of the Construction and Material Specifications, ASTM Designation B22, Alloy B, and shall have an allowable unit stress of 2,500 psi in compression.

(b) The lubricant shall be of the solid type and shall consist of graphite, metallic substances having lubricating properties and a lubricating binder. Materials which do not have lubricating qualities or which promote chemical or electrolytic reactions, will not be acceptable. The lubricant shall be compressed into the lubrication recesses with hydraulic pressure of at least five times the design unit loading to form a dense, non-plastic lubricant.

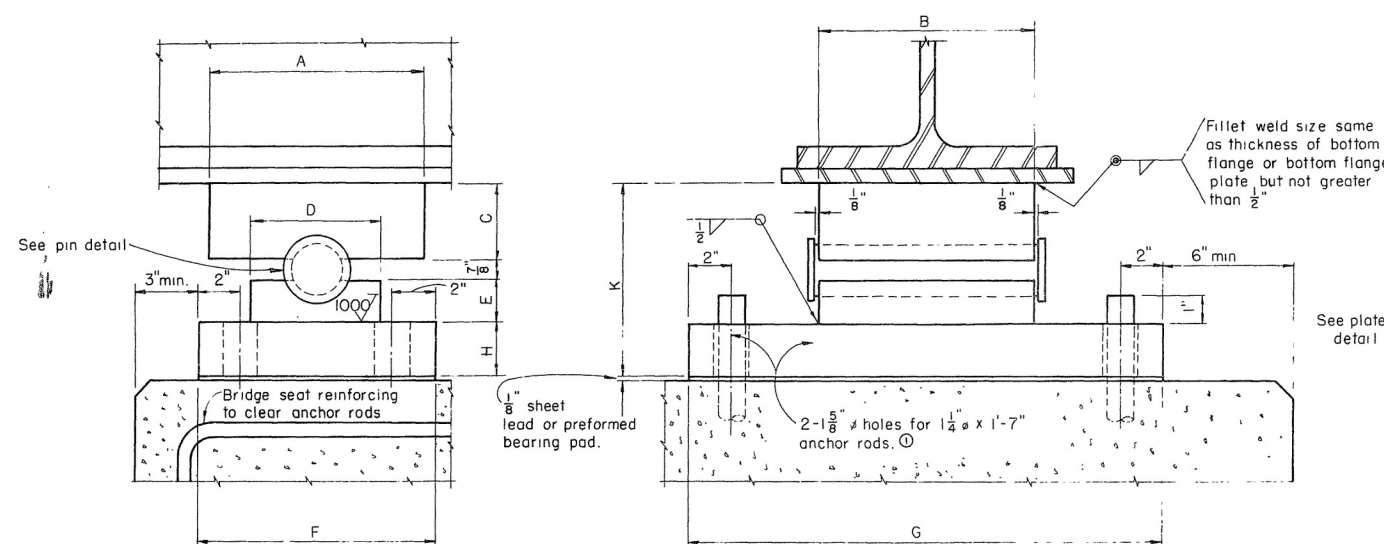
(c) The recesses for the lubricant shall consist of annular rings with or without central circular recess with a depth at least equal to the width of the ring or diameter of hole for proper containment of lubricant.

(d) The recesses shall be arranged in a geometric pattern such that successive rows shall overlap in the direction of motion and the distance between extremities of recesses shall be closer in the direction of motion than that perpendicular to 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 these recesses shall comprise not less than 25 per cent nor more than 35 per cent of the total bearing area of the plate.

(e) Bearing surfaces of the bronze bearing plates and opposing steel plates shall be machine finished to the surface roughness shown on this Standard Drawing. The lay of the tool marks shall be in the direction of motion. All machine surfaces shall be flat within 0.005 inch per inch of length and width.

(f) For mating curved surfaces of steel and bronze, the concave surface shall have a positive tolerance not exceeding .010 inch and the convex surface a negative tolerance of .010 inch.

(g) The coefficient of friction between the bronze self-lubricating plates and the steel plates in contact with them shall not exceed 0.10 when subjected to the design loading.



FIXED BEARING

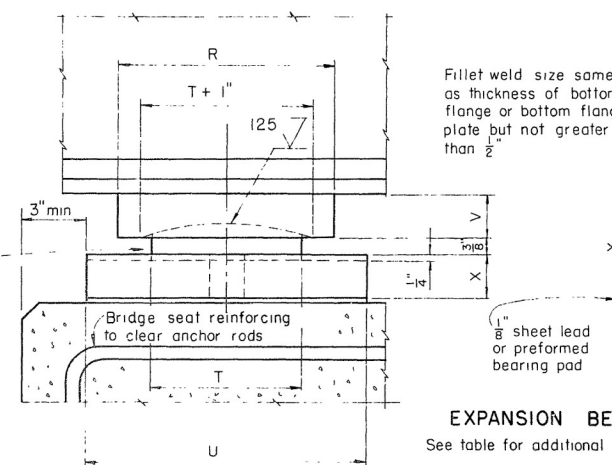
See table for additional dimensions

Fixed Bearing No.	Expansion Bearing No.	Fixed Bearings											Weight ea. (lb.)	Expansion Bearings										Maximum Load (lb.)
		Dimensions (inches)												Dimensions (inches)										
		A	B	C	D	E	F	G	H	K	d		R	S	T	U	V	W	X	Y				
① F-50	E-50	6	6	1½	3	1¼	8	16	1½	5⅝	2	100	10	6	6	12	2	1⅝	2	4⅜	152 + 13.10 (M-S)	50,000		
① F-100	E-100	7	9	1¾	4	1½	9	18	1½	5⅝	2	143	10	8	6	12	2	1⅝	2	4⅜	180 + 13.10 (M-S)	100,000		
F-150	E-150	9	9	2½	5	1½	11	20	2	6⅞	2½	244	10	9	7	13	2	1⅝	2	4⅜	205 + 13.72 (M-S)	150,000		
F-200	E-200	10	10	3	6	2	11	22	2	7⅝	2½	300	10	12	7	13	2	1⅝	2	4⅜	250 + 13.72 (M-S)	200,000		
F-250	E-250	11	10	3½	7	2	12	24	2½	8⅞	3	400	12	13	8	14	2½	1½	2¼	5⅝	337 + 18.16 (M-S)	250,000		
F-300	E-300	12	11	3¾	8	2½	14	25	2½	9⅝	3	502	12	15	8	15	2½	1½	2¼	5⅝	389 + 18.85 (M-S)	300,000		
② F-350	② E-350	12	11	3¾	8	2½	16	25	2½	9⅝	3	540	12	16	9	17	2½	1¾	2¼	5⅝	443 + 20.23 (M-S)	350,000		
② F-400	② E-400	12	12	3¾	8	2½	18	26	2½	9⅝	3	610	12	17	10	18	2½	1⅞	2¼	5⅝	484 + 20.92 (M-S)	400,000		

① Only 2 anchor rods required, placed in diagonally opposite corners

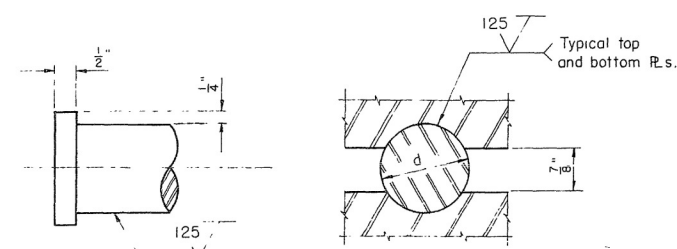
② Bearing stiffeners are required.

Weights given are for one complete bearing (including sheet lead, anchor rods and self-lubricating bronze plate for the expansion bearing).

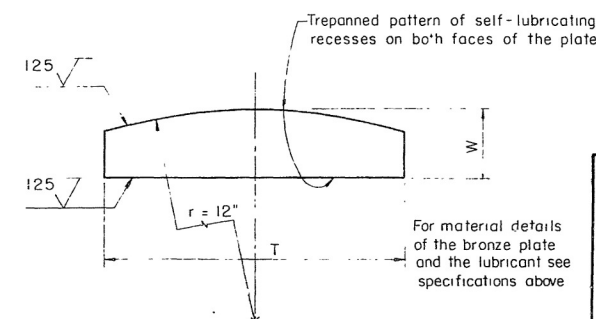


EXPANSION BEARING

See table for additional dimensions



BEARING PIN DETAIL



SELF-LUBRICATING

PLATE DETAIL

DESIGN SPECIFICATIONS: This standard drawing conforms to the requirements of "Design Specifications for Highway Structures" of the State of Ohio, Department of Highways, dated September 1, 1957, together with revisions thereof dated February 21, 1958, and February 15, 1961, except that the masonry plates for the fixed bearings are designed on the basis of a 50% increase in allowable bending stress assuming uniform distribution of bearing on the concrete.

STEEL: Plates shall conform to ASTM Designation A-373, pins to A-108 and rods to A-7.

LIMITATIONS: The expansion bearing design shall not be used where the anticipated movement is in excess of 3 inches plus or minus. When the roadway gradient at a bearing is over 4.0%, the top of the upper steel plate shall be beveled to match the roadway gradient.

COEFFICIENT OF FRICTION: For design purposes a value of 0.10 shall be used.

REVISIONS		STATE OF OHIO DEPARTMENT OF HIGHWAYS DIVISION OF DESIGN AND CONSTRUCTION BUREAU OF BRIDGES	
		STANDARD FIXED AND SLIDING BEARINGS FOR STEEL BEAM AND GIRDER BRIDGES REACTIONS 50,000 lb. TO 400,000 lb.	
APPROVED: <i>J. H. Gorman</i> DATE: 4-19-62 ENGINEER OF BRIDGES		DRAWING NO. FSB-1-62	
PREPARED JM	TRACED MKH	CHECKED WCK	REVIEWED HHH