



U.S. Department
of Transportation
**Federal Highway
Administration**

400 Seventh St., S.W.
Washington, D.C. 20590

AUG 20 1990

Refer to: HNG-14

Mr. Joseph J. Brindlinger
Manager Engineering Services
Union Metal Corporation
P.O. Box 9920
Canton, Ohio 44711

Dear Mr. Brindlinger:

Thank you for your letter of July 3 to Mr. Thomas O. Willett requesting the Federal Highway Administration's (FHWA) acceptance for your company's A2849 transformer base shown on the enclosed drawing. You enclosed the Pendulum Test Report No. UMC-15 by the Southwest Research Institute (SWRI) which detailed the test article and impact results for the 20 mph test. A 20 to 60 mph extrapolation of the velocity change was also included in that report. In addition, fully dimensioned drawings and a material certification were included with your letter.

The test used an instrumented 1,800-pound pendulum fitted with a 10-stage crushable nose, which simulates a 1979 Volkswagen Rabbit. The results are summarized below:

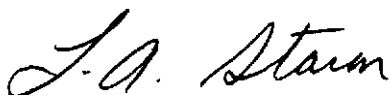
Test speed	20 mph
Velocity change	10.1 fps
Stub height	2.4 in.
Base tested	A2849 15-inch bottom bolt circle. Nuts torqued to 200 foot-pounds. Aluminum alloy S356 T6
Pole used	11I-9.0" x 4.82" x 41'9" steel.
Mast arm lengths	15.0 feet, (two were mounted perpendicular to the direction of impact.)
Luminaire mounting height	50 feet
Test article weight	810 pounds
Calculated 60 mph velocity change	12.89 fps

This information shows that the test and calculated change in velocity and stub-height of the tested pole-base combination met the breakaway requirements adopted by the FHWA.

Thus, this base, with a bottom bolt circle diameter of up to 15 inches and maximum bolt torque of 200 foot-pounds, as shown on the enclosed drawing, is acceptable for use on Federal-aid highway projects, if proposed by a State when used with support and luminaire combinations weighing up to 900 pounds. The use of this base with heavier poles is unacceptable without further justification. This acceptance is limited to breakaway characteristics of the base and does not cover its structural features. Presumably, you will supply potential users with sufficient information on structural design and installation requirements to ensure proper performance. We anticipate that the States will require certification from Union Metal Corporation that the bases furnished have essentially the same chemistry, mechanical properties, and geometry as the base used in the tests, and that the bases will meet the FHWA change in velocity requirements.

Since your company's transformer base design is a proprietary item, to be used in a Federal-aid highway project it; (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the State highway agency must certify that it is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or (c) it must be used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which was provided with prior correspondence.

Sincerely yours,

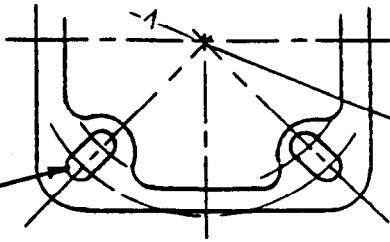


L. A. Staron
Chief, Federal-Aid and Design Division

Enclosure

MUST ACCEPT 1 1/4" DIA. PINS ON EXACT PATTERN. (11" THRU 12 1/2" B.C.)

1 5/16" W. SLOTS FOR 1" OR 1 1/2" Ø BOLTS 11" - 12 1/2" B.C.

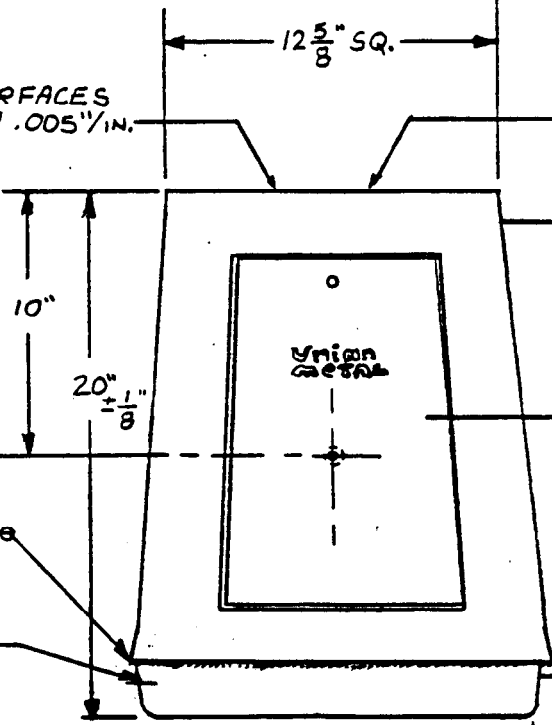


TOP & BOTTOM SURFACES PARALLEL WITHIN .005"/IN.

FLAT WITHIN .030"

#7 (.201") DRILL 1/4 = 20 NC2 TAP THRU (1) WALL OPPOSITE DOOR - REF.

356-F UPPER SECTION APA 2849-1 DWG. A2849-E1 R4



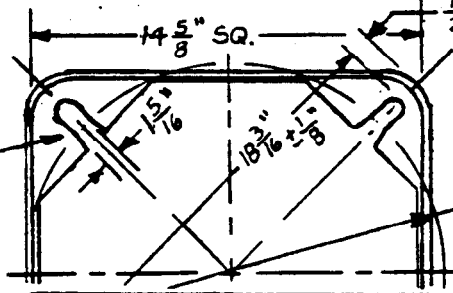
DOOR 356-F APA-2849-3 A2849-G3 3/8" SCREW SS 501946 SOC.

DRILL & TAP FOR GROUND PER CHART.

356-F LOWER SECTION APA 2849-2K3 A2849-E2. R6

MUST ACCEPT 1 7/16" DIA. PINS ON EXACT PATTERN. (15" THRU 15 1/2" B.C.)

FOR 1" BOLTS 15" - 15 1/2" B.C. PURCHASE TO DWG



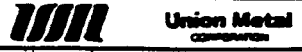
HEAT TREAT TO-T6

FINISH PAINTED	FINISH-AS CAST	GRD. TAP SIZE
218107	203530	1/2 -13 NC2
	205416	3/8 -16 NC2

DIMS. NOMINAL UNLESS OTHERWISE NOTED

ALUM. TRANSFORMER BASE ASSY.

R11	REV. LUG CLIP	1/2-13
R10	FINISH WAS CLEAN & BRIGHT	1/2-13



Union Metal COMPANY

MATERIAL	CLEARANCE	CONTROL NO.	SCALE G.P.A. DATE 11/3/78 DR.	DRAWING NO. A2849-G101
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