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:

<table>
<thead>
<tr>
<th>Test speed</th>
<th>Velocity change</th>
<th>Stub height</th>
<th>Base tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 mph</td>
<td>10.1 fps</td>
<td>2.4 in.</td>
<td>A2849 15-inch bottom bolt circle.</td>
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<td></td>
<td></td>
<td></td>
<td>Nuts torqued to 200 foot-pounds.</td>
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<td></td>
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<td></td>
<td>Aluminum alloy S356 T6</td>
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</tbody>
</table>

Pole used: 111'-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,

[Signature]

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

Enclosure