



U.S. Department  
of Transportation

**Federal Highway  
Administration**

JUL 27 1992

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

Refer to: HNG-14

Jeffrey A. Bloom, P.E.  
Vice President  
Adian Engineering Corporation  
900 Orchard Way  
Silver Spring, Maryland 20904

Dear Mr. Bloom:

Thank you for your letter of July 6 to Mr. James H. Hatton requesting Federal Highway Administration's (FHWA) acceptance of the Adian Breakaway Base for Luminaire Supports, Model TB-01. Your letter reported on static and pendulum testing conducted to assess the breakaway performance of the base. Requirements for breakaway supports are found in the 1985 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. These specifications have been adopted, with minor modifications by the FHWA.

The base consists of five components — a flanged upper base section, a mating flanged lower base section, a horizontally oriented, torsion resisting shear pin centered at the interface between the upper and lower flanges, a retaining ring consisting of three equal segments that hold the flanges of the upper and lower base sections together, and a breakaway strap around the retaining ring segments. The flanged upper and lower base sections and the retaining ring are shown in the enclosed drawing. Upon impact, the upper base section moves, breaking the stainless steel strap (banding) holding the three retaining ring pieces in place, thus, releasing the retaining ring segments and allowing the upper base section to slide off the lower base section. In addition, except for impacts aligned with the axis of the shear pin, the shear pin will be partially or fully sheared when the upper section of the base moves.

The test results are summarized below:

<u>Test</u>	<u>Preliminary Test</u>	<u>Qualification Test</u>
Support Type	Aluminum	Aluminum
Test Article Mass, kg (weight, lbs.)	196 (431)	241.5 (531.4)
Test Article Mass, kg (weight, lbs.)	196 (431)	241.5 (531.4)

Mounting Height, m (ft)	Unreported	15.2 (50)
Pendulum Mass, kg (weight, lbs.)	818 (1800)	818 (1800)
Impact Speed, km/h (mph)	31.9 (19.8)	30.6 (19.0)
Velocity Change, m/s (fps)	1.8 (5.9)	1.6 (5.4)
Calculated High Speed Velocity Change, m/s (fps)	Not Calculated	3.7 (12.1)
Stub Height, mm (in)	75 (3)	75 (3)

The results of these tests meet the change in velocity and stub height requirements adopted by AASHTO and the FHWA. Therefore, the Adian Breakaway Base for Luminaire supports described above is acceptable for use on Federal-aid highway projects, within the range of conditions tested, if proposed by a State.

Our acceptance is limited to the breakaway characteristics of the system 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 Adian Engineering or the manufacturer or supplier that the hardware furnished has essentially the same chemistry, mechanical properties, and geometry as that used in the tests, and that it will meet the FHWA change in velocity requirements.

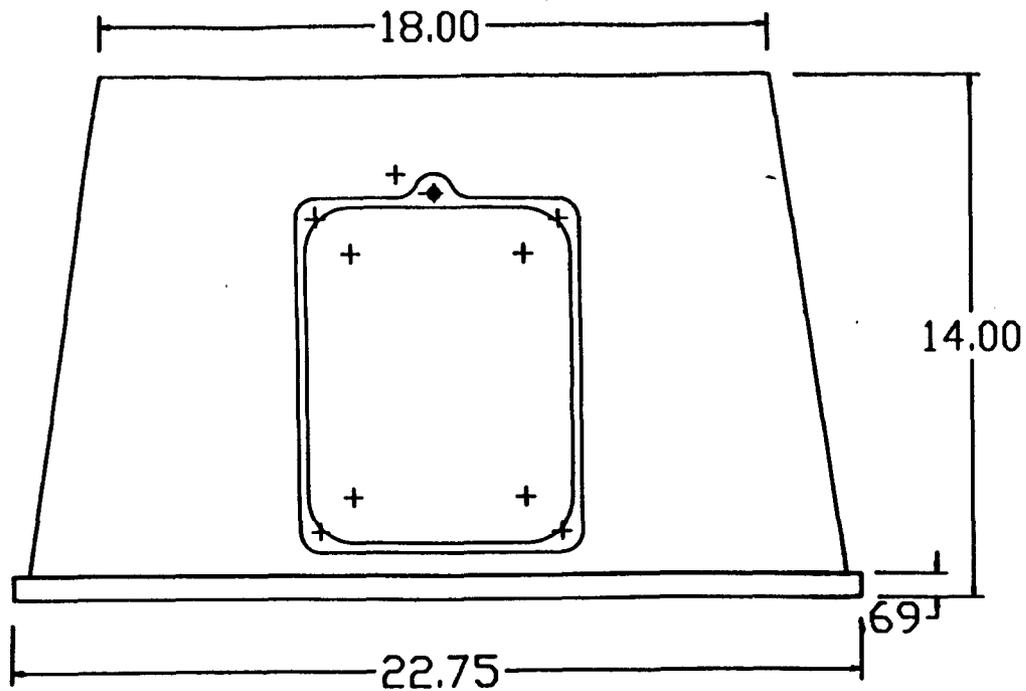
It is our understanding that the Adian Breakaway Base is proprietary. For proprietary products to be used in Federal-aid highway projects: (a) they must be supplied through competitive bidding with equally suitable unpatented items; (b) the highway agency must certify that they are essential for synchronization with existing highway facilities or that no equally suitable alternate exists; or (c) they 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 projects are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

Sincerely yours,

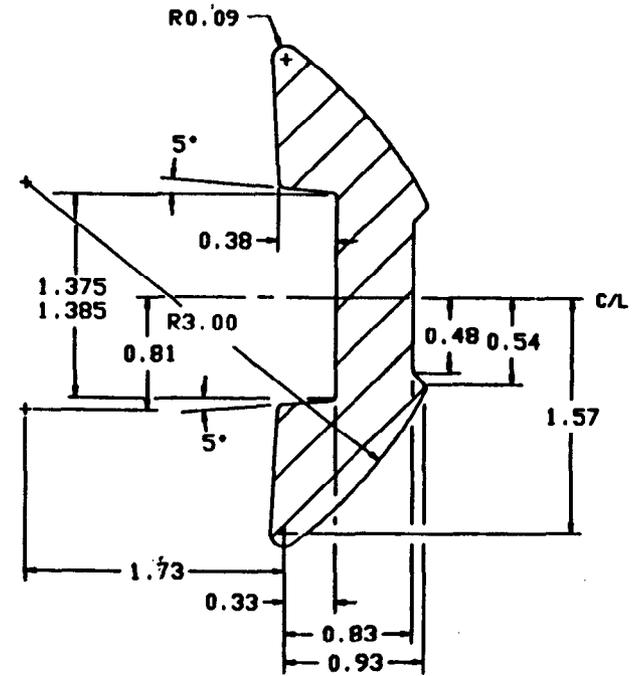


Lawrence A. Staron  
Chief, Federal-Aid and Design Division

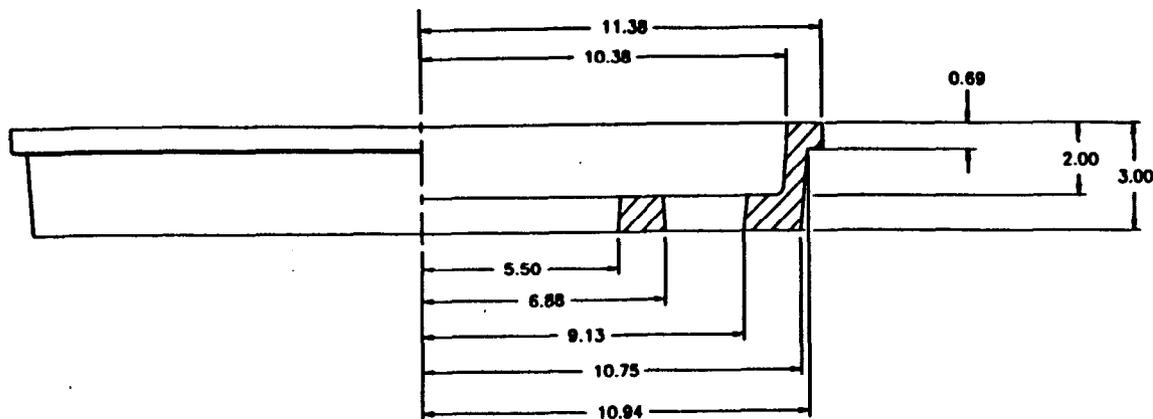
Enclosures



UPPER BASE 356 Aluminum



RETAINING RING 6061-T6 Aluminum



LOWER BASE 356 Aluminum

ADIAN BREAKAWAY BASE FOR LUMINAIRE SUPPORTS

MODEL TB-01

UPPER BOLT CIRCLE DIAMETER RANGE - 12 TO 13 INCHES

LOWER BOLT CIRCLE DIAMETER RANGE - 16 TO 17 INCHES

tinctive type of construction on relatively short sections of road for experimental Purposes.

(b) When there is available for purchase more than one nonpatented, & proprietary material, semifinished or finished article or product that will fulfill the requirements for an item of work of a project and these available materials or products are judged to be of satisfactory quality and equally acceptable on the basis of engineering analysis and the anticipated prices for the related item(s) of work are estimated to be approximately the same, the PS&E for the project shall either contain or include by reference the specifications for each such material or product that is considered acceptable for incorporation in the work. If the State highway agency wishes to substitute some other acceptable material or product for the material or product designated by the successful bidder or bids the lowest alternate, and such substitution results in an increase in costs, there will not be Federal-aid participation in any increase in costs.

(c) A State highway agency may require a specific material or product when there are other acceptable materials and products, when such specific choice is approved by the Division Administrator as being in the public interest. When the Division Administrator's approval is not obtained, the item will be nonparticipating unless bidding procedures are used that establish the unit price of each acceptable alternative. In this case Federal-aid participation will be based on the lowest price so established.

(d) Appendix A sets forth the FHWA requirements regarding (1) the specification of alternative types of culvert pipes, and (2) the number and types of such alternatives which must be set forth in the specifications for various types of drainage installations.

(e) Reference in specifications and on plans to single trade name materials will not be approved on Federal-aid contracts.

#### § 635.411 Material or product selection.

(a) Federal funds shall not participate, directly or indirectly, in payment for any premium or royalty on any patented or proprietary material, specification, or process specifically set forth in the plans and specifications for a project, unless:

(1) Such patented or proprietary item is purchased or obtained through competitive bidding with equally suitable unpatented items; or

(2) The State highway agency certifies either that such patented or proprietary item is essential for synchronization with existing highway facilities, or that no equally suitable alternate exists; or

(3) Such patented or proprietary item is used for research or for a dis-