

## Section 1 - Luminaire Supports

Introduction

Crashworthy luminaire supports are designed to breakaway or yield when struck by a vehicle. Testing parameters and criteria to determine acceptable breakaway performance are found in the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals."

In 1975 AASHTO issued this combined sign and luminaire support specification and the FHWA adopted the 1975 edition for application on Federal-aid highway projects. During the period from 1976 through 1987 FHWA's Office of Engineering issued numerous letters to luminaire support manufacturers accepting their devices for use on Federal-aid projects. These devices had been tested and produced results which satisfied the criteria in the 1975 edition of the AASHTO specification. The acceptance letters are on file in the Geometric and Roadside Design Branch.

During 1985 AASHTO issued a new edition to the sign and luminaire specification. In 1988 FHWA adopted the 1985 edition of the AASHTO specification for application on Federal-aid projects. Key changes in the 1985 edition involving testing parameters and acceptance criteria for breakaway supports were:

1. The weight of the crash test vehicle was lowered from 2,250 pounds to 1,800 pounds.
2. The criterion for acceptable dynamic performance was changed from a maximum change of momentum of 1,100 pound-seconds for the test vehicle (which implied a change of velocity of 15.7 ft/sec for a 2,250 pound test vehicle) to a maximum change in velocity of 15.0 ft/sec for the new 1,800 pound test vehicle.
3. The establishment of a 4-inch maximum stub height criterion.

Following FHWA adoption of the 1985 edition of the AASHTO specification, the Office of Engineering has been issuing acceptance letters to manufacturers of luminaire support systems which have been tested in accordance with the parameters in the 1985 edition of the AASHTO specification and produced satisfactory performance. A compilation of these acceptance letters is included in this section. Typically, the acceptance letters provide a description along with a drawing of the device tested; test results; and, information on limitations on use of the device, such as the weight of the system tested.

It is noted that breakaway luminaire support systems other than those covered by this compilation could be acceptable for use on Federal-aid highway projects. The FHWA's Office of Engineering has issued these acceptance letters as a service to help promote continuity and uniformity in review. However, it is not a requirement of FHWA that such a letter be issued for each breakaway luminaire support system to be used on a Federal-aid project. If, for a particular luminaire support system, it can be demonstrated to the satisfaction of the highway agency and FHWA's Division Office that a support system has been tested in accordance with recognized procedures and the results are satisfactory, than that support system could be accepted for use on a Federal-aid project by the Division Office.

## Luminaire Supports

## Listing of FHWA Acceptance Letters

| Code  | Date                | Manufacturer/Supplier | Device  |
|-------|---------------------|-----------------------|---|
| LS-1  | 6/15/88<br>11/10/88 | Sherman International | Fiberglass Luminaire Support MB 36-D-50-56  |
| LS-2  | 6/29/88             | Akron Foundry         | TB Series AL Transformer (TB1-AF 1315-17 and modifications) (See LS-4)  |
| LS-3  | 6/24/88             | Union Metal           | Cast Aluminum Base A2940, 14.5" BC  |
| LS-4  | 1/12/89             | Akron Foundry         | Reaffirmation of TB1 bases, 10.5" to 15" BC   |
| LS-5  | 3/14/89             | Hapco Division        | Impact Safety Coupling 67238  |
| LS-6  | 4/4/89<br>3/5/90    | Shakespeare Products  | Direct Burial Fiberglass Light Poles Series BH20, BH24, BH30, BH35, BS30, BS35, BX30, BX35, BA41, BA47, BB30, BB35, BB41, BB47, BC30, BC35, BC41, BC47. |
| LS-7  | 11/8/89             | Shakespeare Products  | Fiberglass poles, series AA,AB,AC,AD on Transpo Safety 201 or 301 couplings. Pole heights of 39' to 47'.  |
| LS-8  | 1/11/90             | Transpo Industries    | Pole-Safe breakaway couplings for Conventional luminaire supports weighing no more than 900#.   |
| LS-9  | 1/24/90             | Akron Foundry         | TB-2 and TB-3 Al Transformer Bases (TB-2 B.C. increased via LS-15)  |
| LS-10 | 2/26/90             | PrecisionForm         | PrecisionForm Coupler PFI 200-1 for poles weighing no more than 800#.   |
| LS-11 | 5/15/90             | Union Metal           | A2850-C1R10 Al Transformer Base 12.5 inch maximum bolt circle   |

|        |                              |                       |  |
|--------|------------------------------|-----------------------|--|
| LS-12  | 5/14/90                      | P&K Pole Products     | 7" & 8" Al shoe bases, 10" slip base                                       |
| LS-13  | 5/29/90                      | P&K Pole Products     | 10" slipbase   |
| LS-14  | 5/30/90                      | Valmont Industries    | Cast Al transformer base No. 0283093 15 inch maximum bolt circle           |
| LS-15  | 5/30/90                      | Akron Foundry         | TB-2 Al Transformer base, 12" B.C.<br>TB-1 Al Transformer base, 950# pole. |
| LS-16  | 6/29/90                      | Valmont Industries    | Slip Base specifications   |
| LS-17  | 8/6/90                       | Akron Foundry         | w-300 and CS-370 Al Transformer Eases (tests of Feralux bases)             |
| LS-18  | 8/6/90                       | Akron Foundry         | F-1300 and F-1302 Al Transformer Bases (tests of Pole Lite bases.1         |
| LS-19  | 8/6/90                       | Akron Foundry         | TB-3-17, TB-5-9, TB-6-9 Transformer Bases, 11.5 to 15.5" BC                |
| LS-20  | R/20/90                      | Union Metal           | A2849 Al Transformer Base, 15" BC  |
| LS-21  | 9/7/90                       | Shakespeare Products  | Fiberglass poles ASW27 thru ASW35 and AHW27 thru AHW35 with Al shoe base   |
| LS-22  | 9/19/90                      | Akron Foundry         | Chart summarizing approval letters LS-2, LS-4, LS-3, LS-15, LS-19          |
| LS-23  | 2/7/91<br>11/20/92           | PrecisionForm         | Revision to PF200-1 breakaway coupler.<br>Supplement Removes Conditions    |
| LS-24  | 7/22/91                      | Akron Foundry         | Revisions to TB-1, TB-2, TB-3<br>Cast aluminum transformer bases           |
| LS-25  | 10/10/91                     | Utah DOT              | Four-bolt luminaire slip base.   |
| LS-26  | 6/10/92                      | Sherman International | Direct Burial Breakaway Fiberglass Luminaire supports                      |
| LS-26A | 3-15-96                      | Sherman International | Additional poles added to those accepted in LS-26                          |
| LS-26B | 4-18-97                      | Sherman International | Additional poles added to those accepted in LS-26                          |
| is-27  | 7/20/92<br>9/1/92            | Hapco Division        | Breakaway Aluminum Shoe Base, 11" BC                                       |
| LS-28  | 7/27/92                      | Adian Engineering     | Adian Breakaway Base for Luminaire Supports<br>Model TB-01, 16" to 17" BC  |
| LS-29  | 4/26/93                      | Hapco                 | Extruded Al.Basas A73089, A73088, 11" & 15" BC                             |
| LS-30  | 1/27/93<br>(Memo to Regions) |                       | FHWA Breakaway Timber Utility Pole (Operational)<br>(six-bolt slip base)   |
| LS-31  | 6/17/93                      | Syro Steel            | ADD. Breakaway Timber Utility Pole<br>(Four-bolt slip base)                |

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|--------|-------------------------------|---------------------------|---|
| LS-32  | 9/3/93                        | Rapco Division            | Cast Al.Shoe Bases TP3405 & TP3406, 9" & 12" BC                                       |
| LS-33  | 10/12/93                      | Manitoba Safe-T-Base      | Cast iron breakaway couplings   |
| LS-34  | 10/5/93                       | Millerbernd Manufacturing | Progressive Shear Bases 40C63 and 40C49 on stainless, high carbon, and CORTEN A poles |
| LS-35  | 2/16/95                       | Hapco Division.           | "X"and "Y" extruded al.slip bases, 11" & 15" BC                                       |
| LS-36  | 4/24/95<br>(memo to Region 8) | —                         | Wyoming Road Closure Gate   |
| LS-37  | 7/13/95                       | P&K Pole Products         | SB-2AFG Cast Al.Breakaway Base for 10" Poles  |
| LS-38  | 8/4/95                        | Component Products        | CPI-BAS-1 Cast Al. Breakaway Base for signals, 14" BC                                 |
| LS-39  | 8/30/95                       | P&K Pole Products         | BA-3 Cast Al. Breakaway Base for 10" Poles, 15" BC                                    |
| LS-40  | 8/30/95                       | P&K Pole Products         | TB-2CBA Cast Al.Transformer Base for 10" Poles, 15" BC                                |
| LS-41  | 8/30/95                       | P&K Pole Products         | TB-2A Cast Aluminum Transformer Base, 15" BC  |
| LS-42  | 8/30/95                       | P&K Pole Products         | SB-3G Cast Aluminum Call Box Base, 8.5" BC  |
| LS-43  | 8/30/95                       | P&K Pole Products         | SB-2g Cast Al. Shoe Base for Slotted Al. Shaft, 12" BC                                |
| LS-44  | 5/28/96                       | Valmont                   | Breakaway Coupling / Miniature four-bolt slip base                                    |
| LS-44A | 2/24/97                       | Valmont                   | Production Model of above Breakaway Coupling  |
| LS-44B | 4/2/97                        | Valmont                   | Use of ASTM A574 fasteners in above coupling  |
| LS-45  | 3/5/96                        | Transpo Industries        | Double Neck Pole Safe Coupling for signs and luminaires.                              |
| LS-45A | 4/29/96                       | Transpo Industries        | (LS 45 and LS-45A are for the Prototype coupling)                                     |
| LS-45B | 1/16/97                       | Transpo Industries        | Production Model of Double Neck Pole Safe Coupling                                    |
| LS-46  | 2/24/97                       | Region 7                  | Nebraska and South Dakota Road Closure Gate<br>Revised June 13, 97                    |