



U.S. Department
of Transportation

Federal Highway
Administration

JAN 11 1990

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

REFER TO:
HNG-14

Mr. Arthur M. Dinitz
President
Transpo Industries, Inc.
20 Jones Street
New Rochelle, New York 10801-6024

Dear Mr. Dinitz:

We have evaluated the information forwarded with your letters of August 14, 18, and December 21, 1989, to Mr. Thomas O. Willett and other available information on your company's Pole-Safe breakaway couplings used with luminaire supports. Included in your transmittal were a Southwest Research Institute (SwRI) report (dated July 1989) and supplementary information on pendulum tests you had performed. The tests were conducted to assess the compliance of the Pole-Safe breakaway couplings with the requirements of the 1985 American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. These specifications have been adopted, with minor modifications, by the Federal Highway Administration (FHWA).

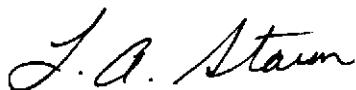
In total, we have reviewed the results of 11 dynamic tests of these devices, a 20-m.p.h. and two 60-m.p.h. automobile tests run by Caltrans, a 20-m.p.h. and a 60-m.p.h. bogie test run by FHWA, and six 20-m.p.h. pendulum tests run by SwRI. From the results of these tests, we conclude that your Pole-Safe couplings designated 201 and 301 will meet the FHWA breakaway criteria when used with conventional light poles weighing no more than 900 pounds.

Therefore, Pole-Safe breakaway couplings 201 and 301, as shown in the enclosed drawings, are acceptable for use on Federal-aid highway projects for use with conventional lighting poles weighing no more than 900 pounds, if proposed by a State. This acceptance is limited to breakaway characteristics of the couplings and does not cover their 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 Transpo Industries that couplings furnished have essentially the same chemistry, mechanical properties, and geometry as those used in the tests, and that the supports mounted on them will meet the FHWA breakaway requirements. By copies of this letter and the enclosed drawings of the couplings we will inform our field offices of this finding.

Since the Pole-Safe couplings are a proprietary item, to be used in a Federal-aid highway project they; (a) must be supplied through competitive bidding with equally suitable unpatented items; (b) the State 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

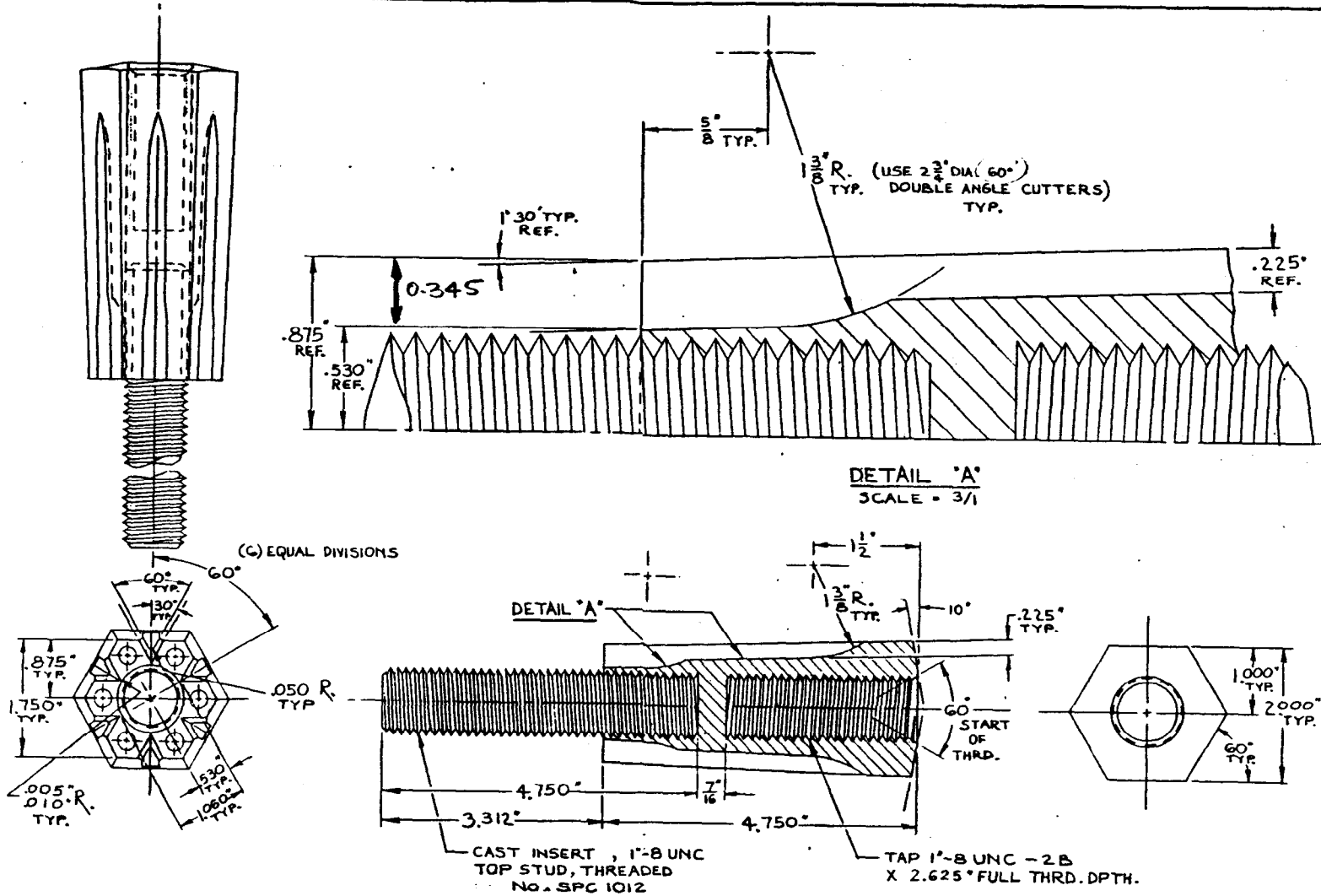
used for research or for a distinctive type of construction on relatively short sections of road for experimental purposes. Our regulations concerning proprietary products are contained in Title 23, Code of Federal Regulations, Section 635.411 and have been recently furnished to you with other correspondence.

Sincerely yours,

A handwritten signature in cursive script that reads "L. A. Staron". The letters are fluid and connected, with a prominent initial "L" and "A".

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

Enclosure



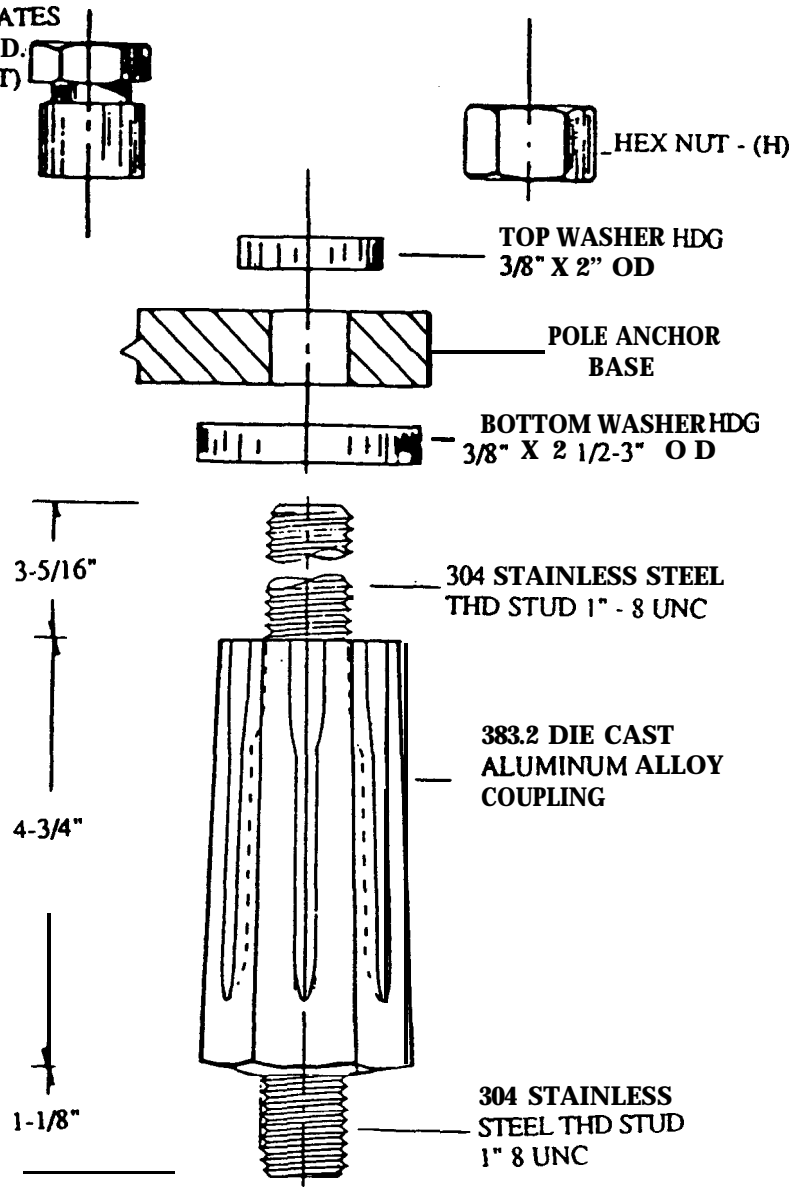
NOTES:

- THE CAST PART IS TO BE COATED AS FOLLOWS
1. IRRIDITE PER MIL-C-5541
 2. LUBRICATE INTERNAL THREADS
 3. APPROX. 6 MILS. OF BLACK NYLON FUSION BONDED POWDER COAT

MODEL # 201

TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.	
SCALE FULL	TOLERANCES FRACTION $\pm \frac{1}{16}$ DECIMALS $\pm .005$
DATE 5-18-87	DESIGNED BY JT
TITLE POLE-SAFE BREAKAWAY SUPPORT COUPLING	
MATERIAL ALUMINUM No. 380 (5C848) 3-100	

ALUM. TORQUE
CONTROL NUT
HEX SEPARATES
AT SPECIFIED
TORQUE) - (T)



SPECIFICATION

Breakaway Support Couplings (**longitudinally** grooved) conforms to AASHTO standards for breakaway supports for light poles and are approved for FHWA participation.

Tensile strength 25.0 kips min.
Restrained shear 3.6 kips min., 6.5 kips max.
Nut torque 175 ± 25 ft. lbs. or controlled by nut

Female Anchor 304 stainless steel
internal thread to fit
1\"-8UNC, 1 5/8\" deep

Coupling coating: Irridate and nylon (MIL-C-554 1)
Installation note: Support utilizes female anchoring system. It is installed **1/8\"** to **3/8\"** off the anchor foundation and provides for leveling.

INTENDED USE

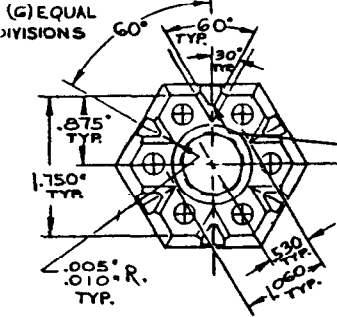
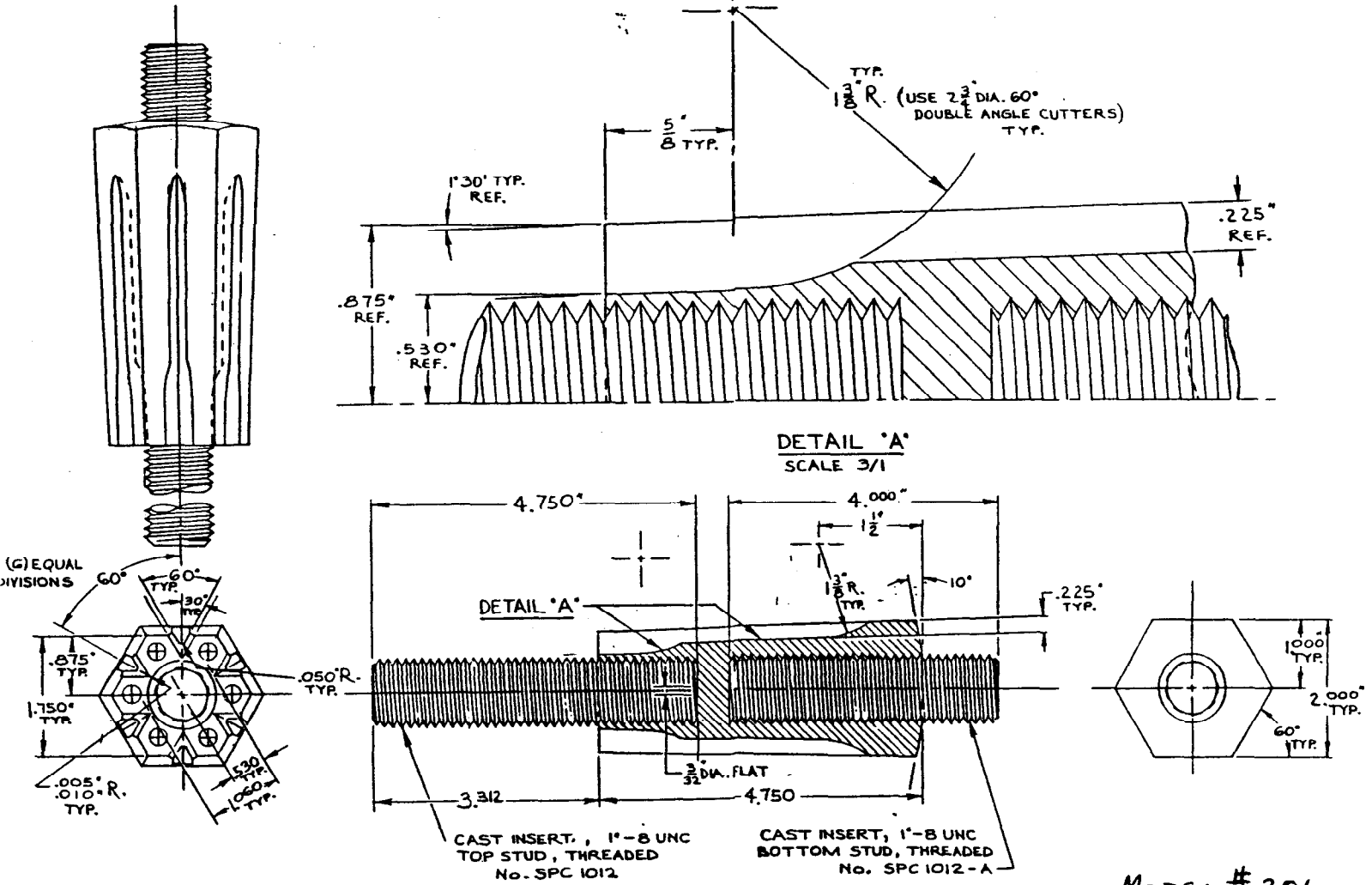
The breakaway support coupling is used with **poles** which will be **installed** in locations exposed to vehicular collisions, on female anchor system-304 stainless **steel**- internal thread to fir **1\"-8UNC -1 5/8\"** deep.

BREAKAWAY SUPPORT COUPLINGS
FOR LIGHT POLES - FOR FEMALE ANCHOR
SYSTEM (1")
Model No. 301-(H or T)

pole-safe[®]

BY

TRANSPD[®]
INDUSTRIES, INC.



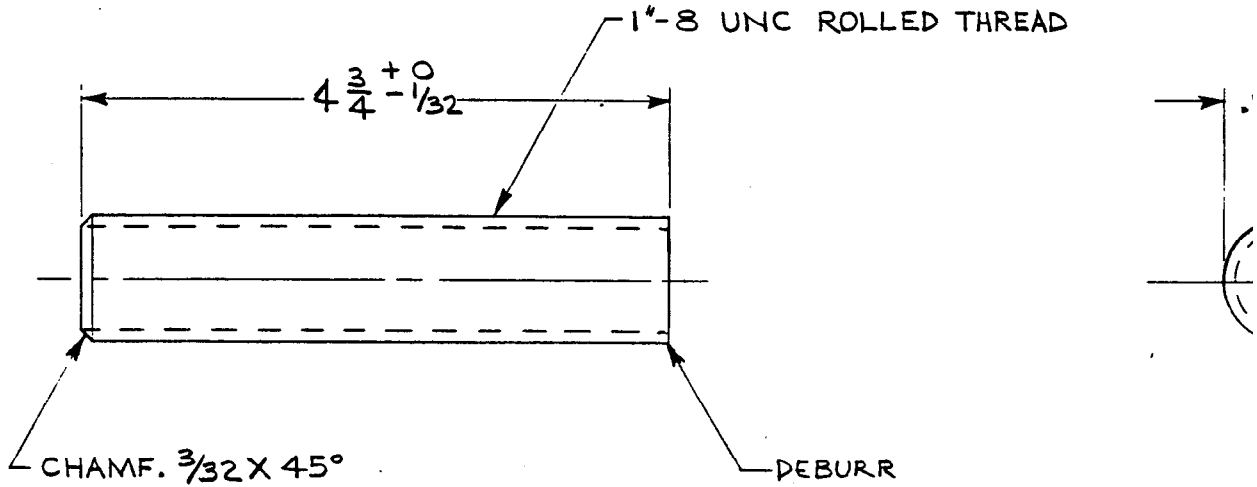
NOTES:

- THE CAST PART IS TO BE COATED AS FOLLOWS.
1. IRRIDITE PER MIL-C-5541
 2. APPROX. 6 MILS. OF BLACK NYLON FUSION BONDED POWDER COAT

MODEL # 301

TRANSPO INDUSTRIES INC.			
NEW ROCHELLE		N.Y.	
SCALE: FULL	APPROVED BY:	TOLERANCES: FRACTIONS 1/64	DESIGNED BY: JT.
DATE: 2-3-87		DECIMALS: 2.008	REVISED:
TITLE: LOW PROFILE POLE-SAFE BREAKAWAY SUPPORT COUPLER			
MATERIAL: ALUMINUM No. 380 (SCB4-B)			QUANTITY: 3-991

DATE

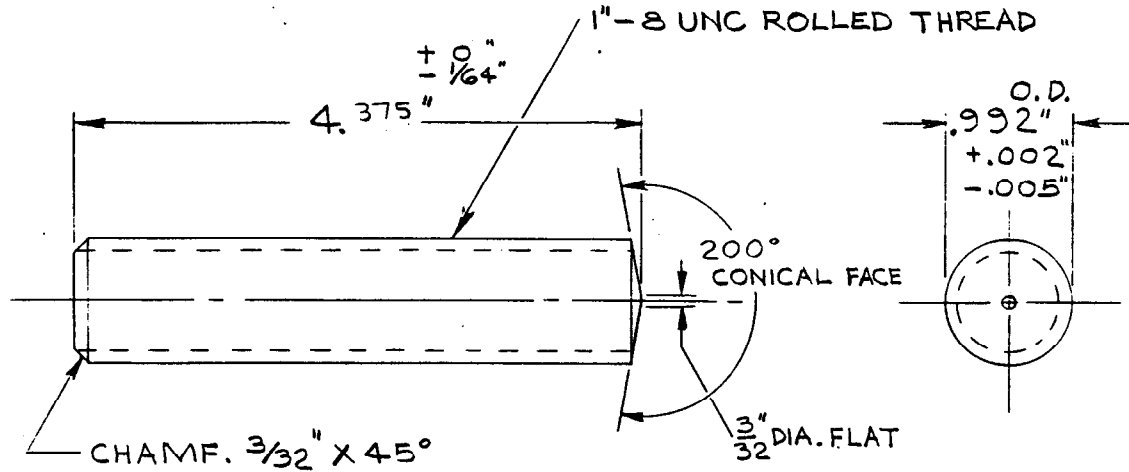


NOTES :

I - MATERIAL : 304 ST. STL.

II - VAPOR DEGREASE STUDS

TOLERANCES (EXCEPT AS NOTED)	TRA NEW P
DECIMAL ±	MATERIAL NOTI
FRACTIONAL ±	TITLE TOP :
ANGULAR ±	DATE 4-29-85



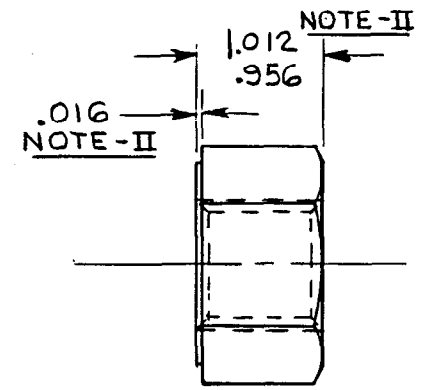
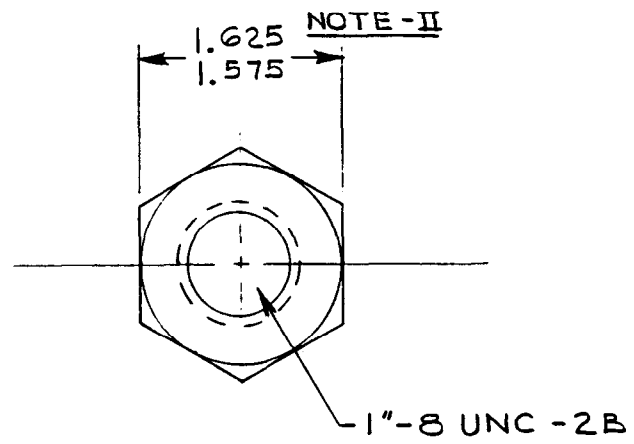
NOTES:

- I- MATERIAL: 304 ST.STL.
- II- VAPOR DEGREASE STUDS

POLE - SAFE

TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.		
SCALE: FULL	APPROVED BY:	DRAWN BY JTG
DATE: 5-19-87		REVISED
TITLE BOTTOM STUD, THREADED		
		DRAWING NUMBER SPC 1012-A

DATE	SYM	REVISION	RECORD	AUTH	DR.	CK.

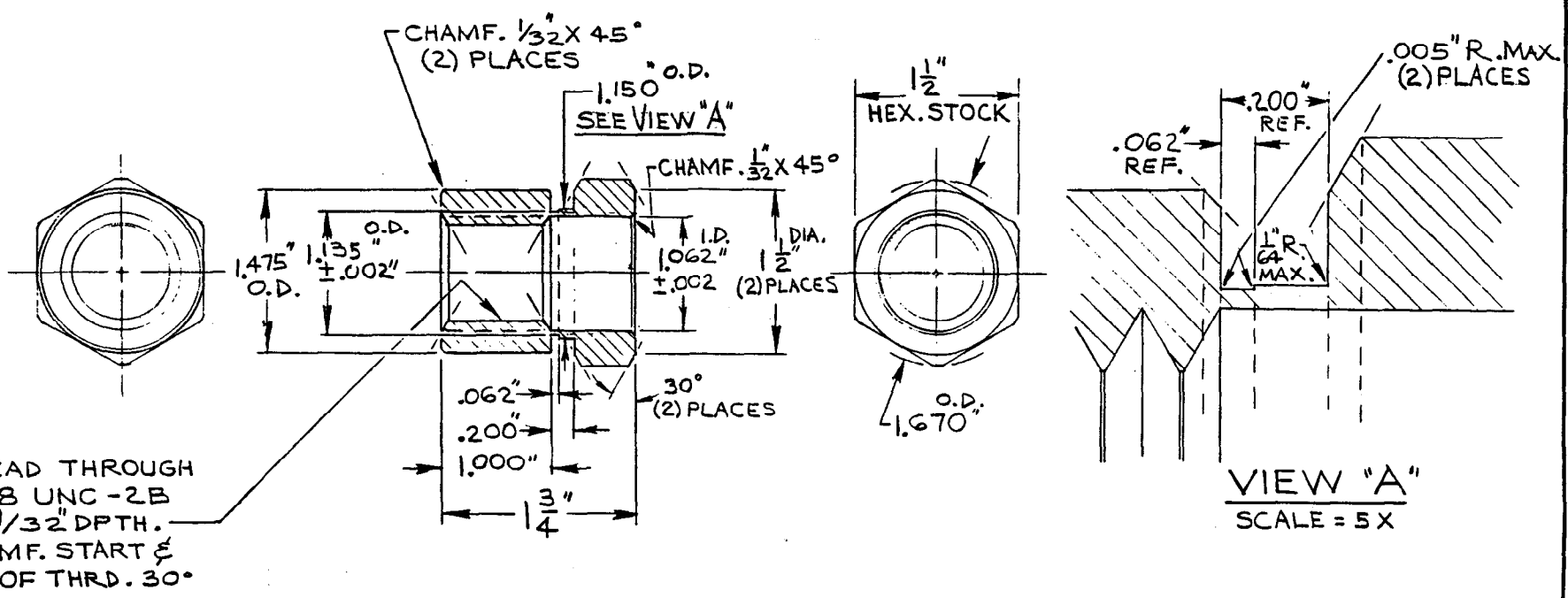


NOTES :

- I - MECHANICAL PROPERTIES : ASTM A563, GRADE A
- II - DIMENSIONS : ANSI B1B.2.2
- III - COATING : HOT DIP GALVANIZE PER ASTM A-153

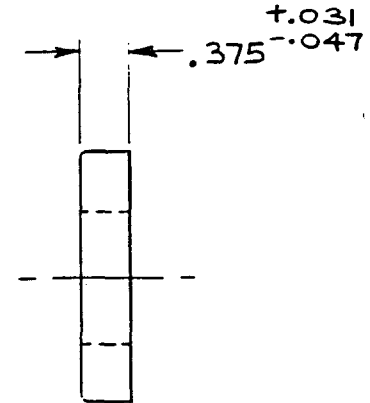
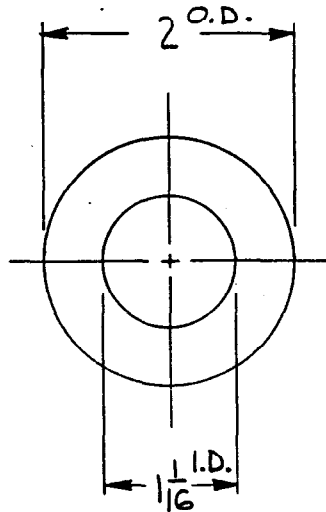
POLE SAFE

TOLERANCES (EXCEPT AS NOTED)		TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.			
DECIMAL ±	MATERIAL NOTE - I	SCALE FULL	DRAWN BY JTG	APPROVED BY	
FRACTIONAL ±	TITLE NUT, HEAVY HEX WASHER FACE				
ANGULAR ±	DATE 4-29-85	DRAWING NO. SPC 1013			



TRANSCO INDUSTRIES INC. NEW ROCHELLE N.Y.			
SCALE: FULL	APPROVED BY:	TOLERANCE: DECIMAL $\pm .010$ FRACTIONAL $\pm 1/64$	DRAWN BY JTG
DATE: 3-14-88			REVISED
TITLE: TORQUE LIMITING NUT, 1" DIA. POLE SAFE			
MATERIAL: ALUMINUM 6262-T9			DRAWING NUMBER: SPC1014A

DATE	SYM.	REVISION RECORD	AUTH.	DR.	CK.



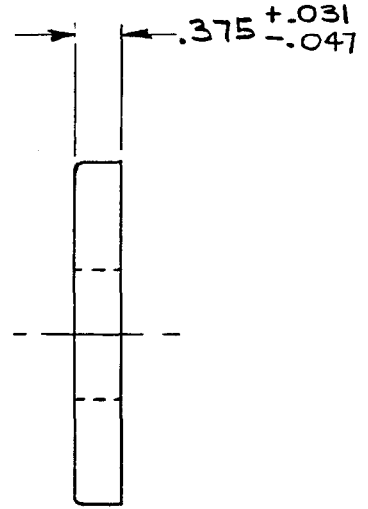
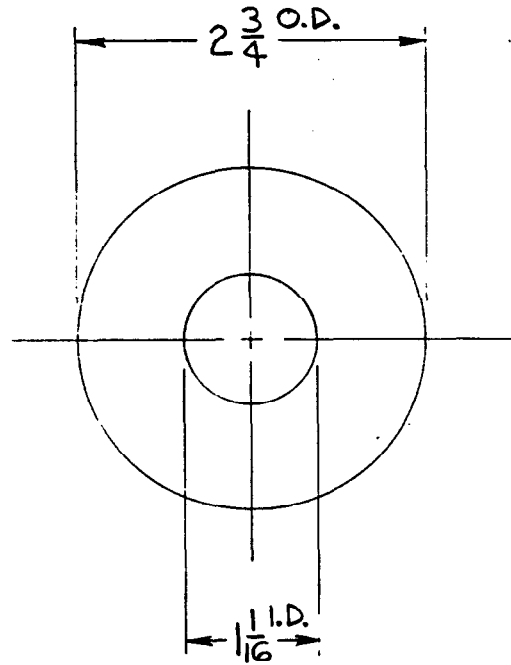
NOTES :

- I-MATERIAL : CARBON STEEL
AISI 1018
- II-COATING : HOT DIP GALVANIZE,
ASTM A-153

POLE SAFE

TOLERANCES (EXCEPT AS NOTED)		TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.	
DECIMAL ±	MATERIAL NOTE -I	SCALE FULL	DRAWN BY JTG APPROVED BY
FRACTIONAL ± 1/32	TITLE WASHER , ROUND		
ANGULAR ±	DATE 4-30-85	DRAWING NO. SPC 1015	

DATE	SYM.	REVISION	RECORD	AUTH.	DR.	CK.



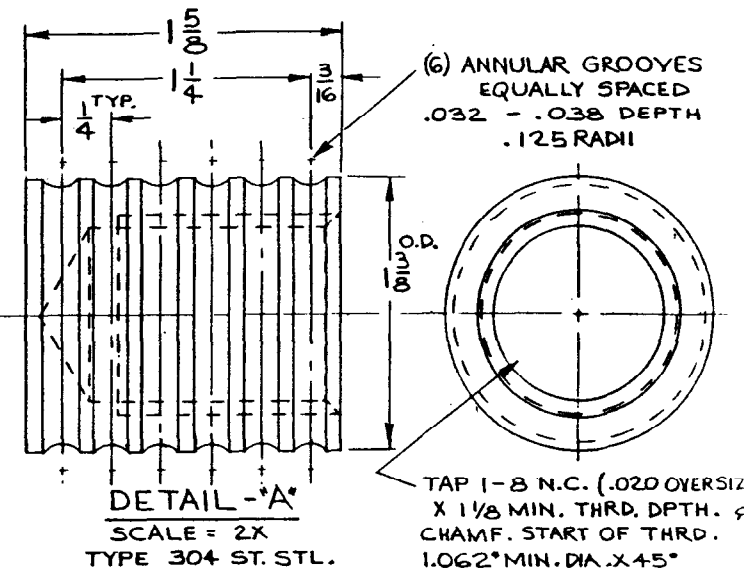
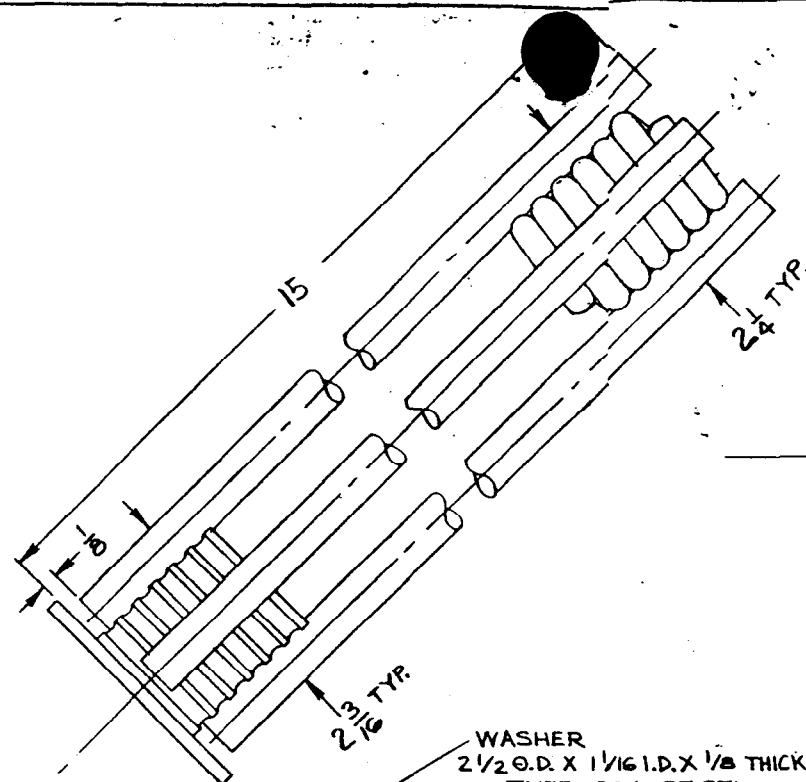
NOTES:

- I - MATERIAL: CARBON STEEL
AISI 1018
- II - COATING: HOT DIP GALVANIZE,
ASTM A-153

POLE SAFE

TOLERANCES (EXCEPT AS NOTED)	TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.		
DECIMAL ±	MATERIAL NOTE - I	SCALE FULL	DRAWN BY JTG APPROVED BY
FRACTIONAL ± 1/32	TITLE WASHER, ROUND		
ANGULAR ±	DATE 4-30-85	DRAWING NO. SPC 1016	

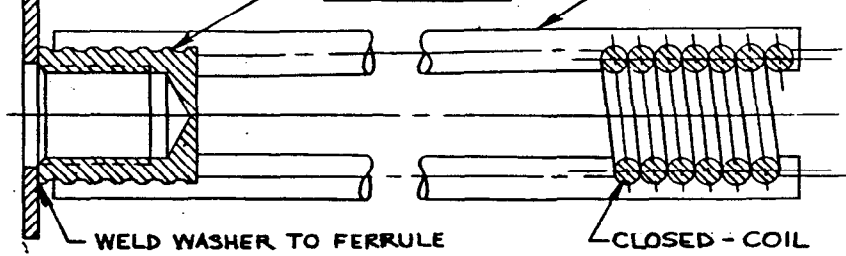
DATE	SYM.	REVISION	RECORD	AUTH.	DR.
5-4-85	A	DWG.	596		JTG
5-9-7	B	DWG.	58AIP		



WASHER
2 1/2 O.D. X 1 1/16 I.D. X 1/8 THICK
TYPE 304 ST. STL.

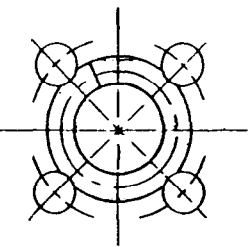
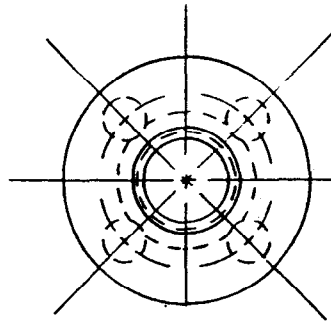
FERRULE
SEE DETAIL 'A'

(4) WIRE .437 DIA.
C-1035 MEDIUM CARBON
ASSEMBLY - SEE NOTES - II, - III



WELD WASHER TO FERRULE
SEE NOTES - I, - III

CLOSED - COIL
.290 DIA. WIRE
C-1035 MEDIUM CARBON
6-TURNS, 1 29/64 O.D. X 2 1/2 LG.



- NOTES :
- I - FILLET WELD WASHER TO FERRULE AT 4 PLACES 90° APART
- WELD MUST NOT PENETRATE THROUGH THE WASHER
- WASHER MUST BE PERPENDICULAR TO THE FERRULE CENTER LINE
 - II - WIRES (4) TO BE PERCUSSION WELDED TO FERRULE AND TO THE CLOSED - COIL
 - III - WELD MUST NOT PENETRATE TO FERRULE INTERIOR THREADS

BREAK - SAFE

TOLERANCES (EXCEPT AS NOTED)	TRANSPO INDUSTRIES INC. NEW ROCHELLE N.Y.		
DECIMAL ± .005	MATERIAL SPECIFIED	SCALE FULL	DRAWN BY JTG APPROVED BY
FRACTIONAL ± 1/32	TITLE ANCHOR, TYPE 'B' LOW PROFILE		
ANGULAR ±	DATE 5/2/85	DRAWING NO. 58ABP	

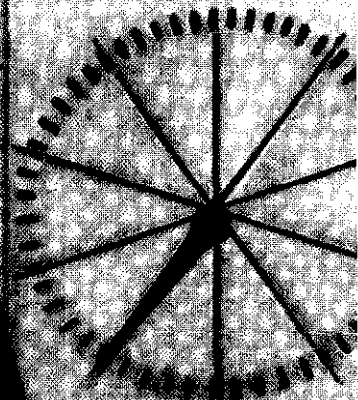


pole-safe

Lightpole Breakaway Support System



**APPROVED
FOR
USE ON
FEDERAL AID
PROJECTS**



pole-safe® is Approved For Use on Federal Aid Projects and Meets AASHTO Specifications

Model 301

For New Construction Lightpole Installation

Install the Model 301 female anchor into new concrete footing for new pole placement. It will accept the 301 coupling, which simply screws into the female anchor. The light pole base attaches to the top of the couplings.

Model 201

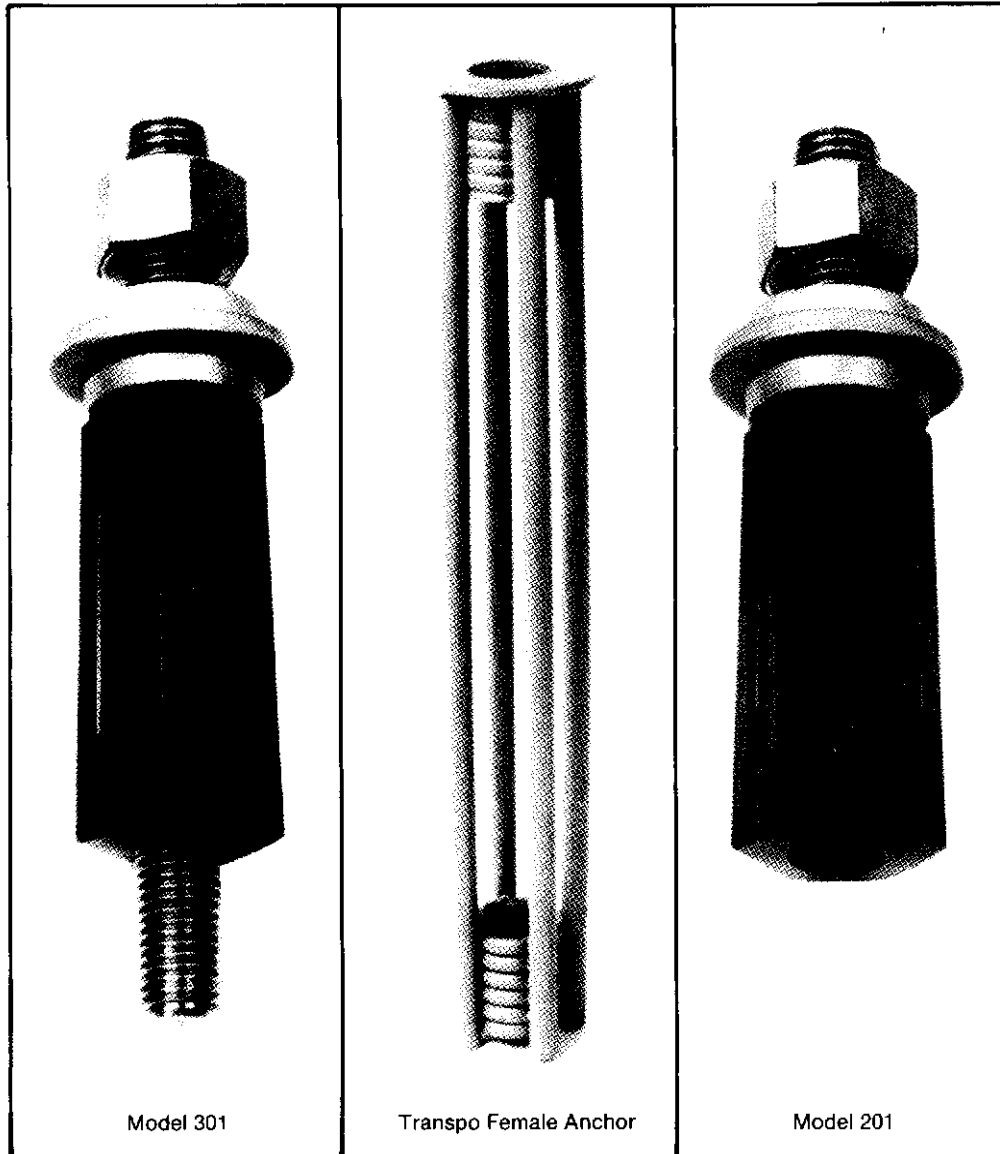
For Existing & Retrofit Lightpoles

The Model 201 coupling screws down on standard, 1" hot dipped galvanized anchor bolts. It easily unscrews from a concrete base and lightpole for simple replacement after impact occurs. A new Model 201 coupling can quickly replace the original. It simply screws into an existing or new lightpole and base.

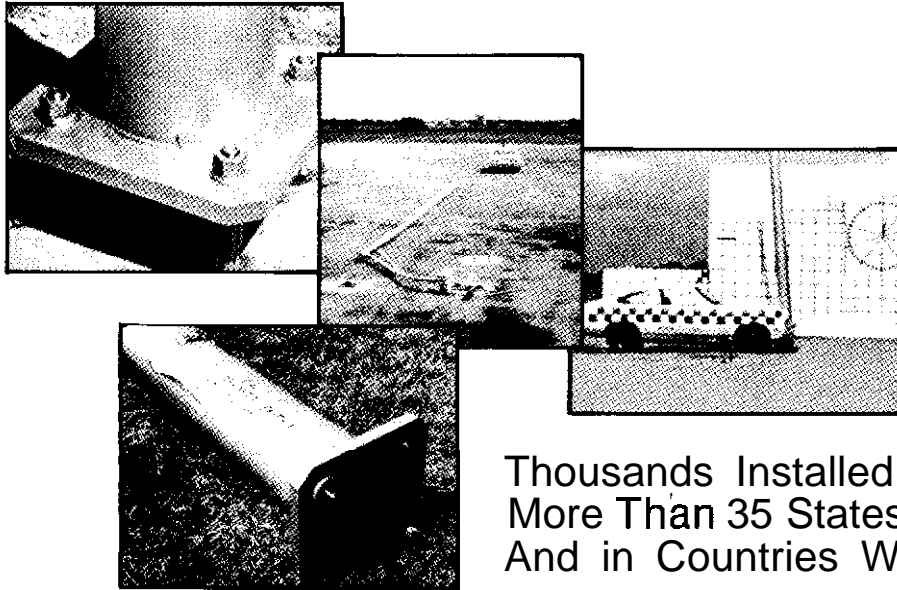
New, Improved Design Offers These Benefits...

- Meets AASHTO standards for roadway lightpole breakaway support systems.
- Approved for FHWA participation.
- Exhibits effective and consistent breakaway characteristics on vehicle impact from any angle.
- Economical and easy to install on new or existing (retrofit) lightpoles...requires no torque maintenance.
- Eliminates or greatly reduces pole and foundation damage...simple to replace after impact.
- Independent laboratory corrosion and material fatigue test data available.
- Model 301 eliminates need for "chipping out" concrete and replacing bent or damaged anchor bolts before replacing lightpole.
- Saves expensive, time-wasting efforts.
- Assures faster, simpler turnaround for repositioning pole after impact.

Engineered for superior strength and reliability, all "Pole Safe" couplings are made of longitudinally grooved, die-cast aluminum and have stainless steel threaded upper studs. They are easy to install, require little, if any, maintenance and deliver proven, consistent breakaway performance. They are supplied complete with: 1" couplings, nuts and washers - (4 per set for each pole installation). 1" female anchors are available for the Model 301 coupling.



pole-safe[®] Assures Safe Breakaway - Proven in Crash Tests with 900 lb., 50 ft. Lightpoles

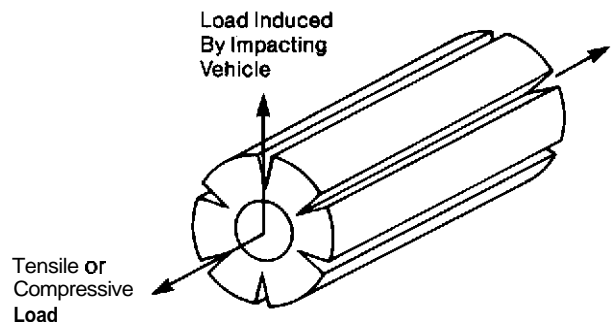


Thousands Installed in
More Than 35 States...
And in Countries Worldwide

1985 American Association of State Highway and Transportation Officials (AASHTO) "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" stipulates that all lightpoles or ground mounted sign posts within 30 ft. (9.14m) of a highway shall be placed on Breakaway Supports to minimize injury to the occupants and damage to the impacting vehicle. According to these AASHTO Specifications, "Satisfactory dynamic performance is indicated when the maximum change in velocity for a standard 1800 lb. (816.48kg) vehicle, or its equivalent, striking a breakaway support at speeds from 20mph to 60mph (32 kmph to 97 kmph) does not exceed a velocity change of 16 ft. per second.

The US Federal Highway Administration reviewed 11 dynamic tests of the new "Pole-Safe" 201 and 301 devices which included 20mph and two 60mph vehicle crash tests; and 20mph and 60mph "bogie" tests. In addition, Southwest Research Institute conducted six 20mph pendulum tests. Subsequently, the Federal Highway Administration concluded that "Pole-Safe" couplings 201 and 301 meet the new AASHTO breakaway criteria when used with conventional lightpoles weighing up to 900 lbs.

How "Pole-Safe" Provides High Tensile Load Capacity and Low Breakaway Force Requirements



Under tensile load, the longitudinal coupling grooves do not become stress-risers since the stress field is parallel to the groove root as shown. Therefore it can support required structural loads. Under vehicle impact, forces are perpendicular to the grooves, efficiently concentrating stresses at the groove root and initiating fracture which is propagated down along the groove. This allows the threaded stud to break out of the aluminum coupling inducing a "peel-away action" and rapid breakaway at relatively low impact force levels.

pole-safe® Assembly and Installation

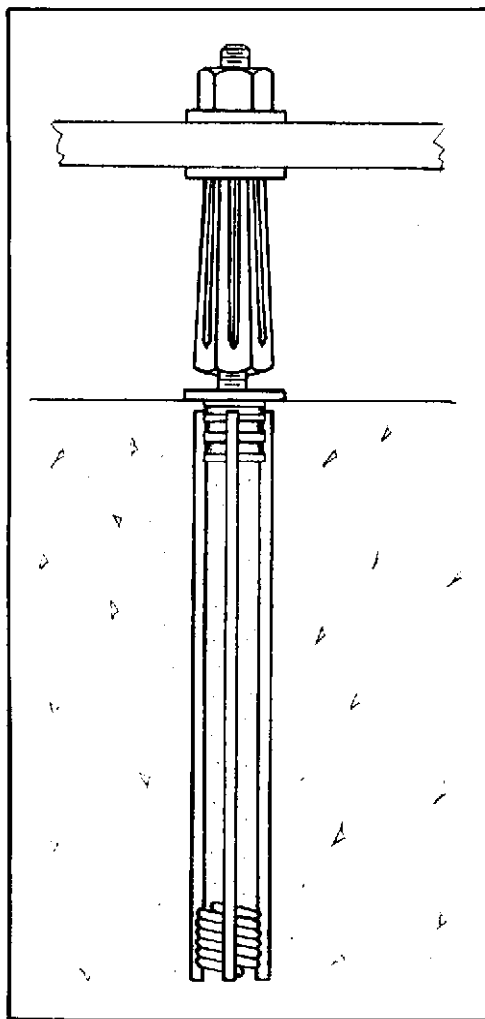


(1) Fasten couplings and level.

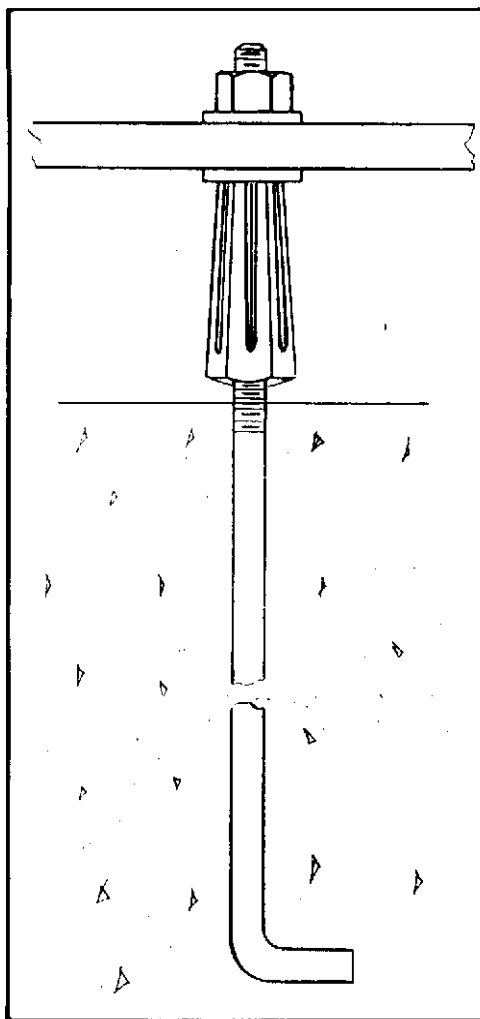
(2) Set pole in place.

(3) Tighten nuts to specified torque to complete installation.

(4) Installation with cover skirt.



Model 301 Coupling
Transpo Female Anchor



Model 201 Coupling
Standard HDG Anchor Bolt Supplied By Others

Performance Specifications

Breakaway Support Couplings (longitudinally grooved) shall conform to 1985 AASHTO specifications for Breakaway Supports for lightpoles and shall be approved for FHWA participation. The Breakaway Support Couplings shall be as manufactured by Transpo Industries Inc., New Rochelle, NY 10801. Models 201 and 301 "Pole-Safe" 1" couplings are available for lightpole mounting heights up to 50 ft. and weights to 900 lbs. The Breakaway Support Coupling is intended for use with poles installed in non-pedestrian locations exposed to vehicular collisions.

US PATENT 4,007,526

CALL FOR ENGINEERING AND DESIGN AID.



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FAX: (914) 636-1282

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