



U.S. Department of Transportation  
Federal Highway Administration

MAY 29 1990

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

Refer to: HNG-14

C. Richard Briden, P. E.  
Engineering Manager  
P & K Pole Products  
84 Foundry Street  
Newark, New Jersey 07105

Dear Mr. Briden:

This is in response to your December 13, 1989, letter to Mr. Thomas O. Willett requesting acceptance by the Federal Highway Administration (FHWA) of your company's aluminum slipbase luminaire support for use on Federal-aid highway projects. A test was conducted to assess the compliance of the base with FHWA breakaway requirements, which cite Section 7 of the 1985 American Association of State Highway and Transportation Officials' (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. You enclosed for our review a Southwest Research Institute report (Project No. 06-3116-503), dated November 1989, containing results of the pendulum test on an aluminum pole with this base design. Further information, including a film of the test, was transmitted with your letters of January 12 to Mr. Nicholas Artimovich and April 25 to Mr. Willett.

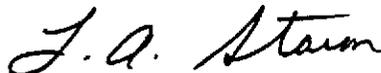
The test used an instrumented 1,800-pound pendulum fitted with a 10 stage crushable nose which simulates the left quarter point of a 1979 Volkswagen Rabbit. Impact speed was 20 mph. Details of the tested hardware and the measured and extrapolated results are summarized below:

Test No.	PK-5
Pole Type	Aluminum, with aluminum shoe base mounted on a four bolt aluminum and steel slip base.
Pole Bottom Diameter	10 inches O.D.
Pole Wall Thickness	0.25 inches
Pole Base Bolt Circle	12 inches (up to 15 inches acceptable)
Slip Base Bolt Circle	21 inches (1-inch diameter bolts, lubricated, nuts torqued to 150 foot-pounds)
Anchor Bolt Bolt Circle	15 inches
Mast Arm Length	15 feet
Mounting Height	50 feet
Pole, Arm, & Lum. Wt.	548.0 pounds
20-mph Test Delta V	12.9 f.p.s.
60-mph Calculated Delta V	14.3 f.p.s.
Stub Height	3.5 inches

This information shows that the tested pole-base combination will meet the change in velocity and stub-height requirements adopted by the FHWA.

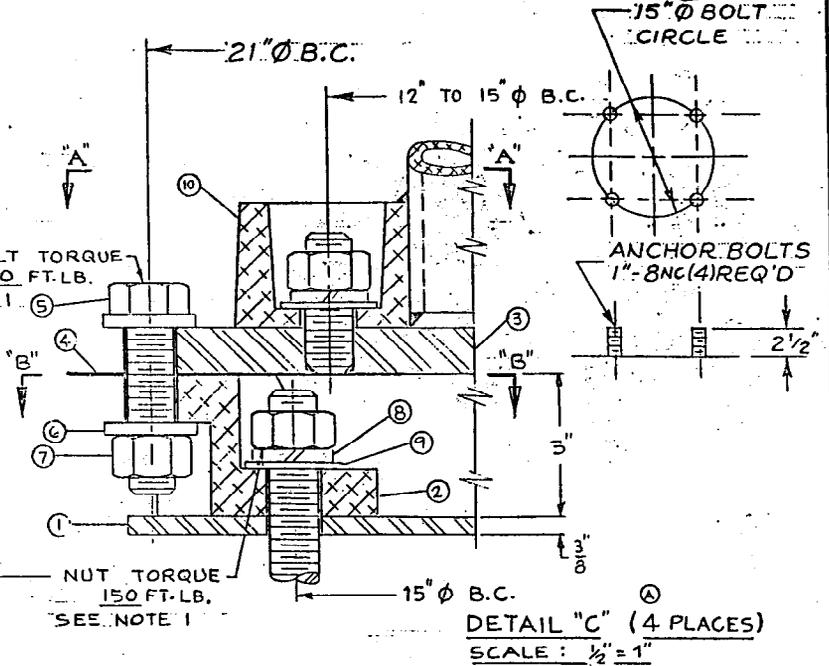
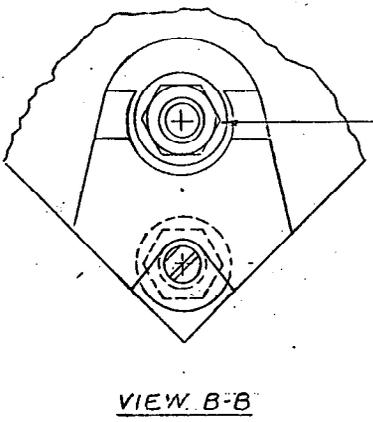
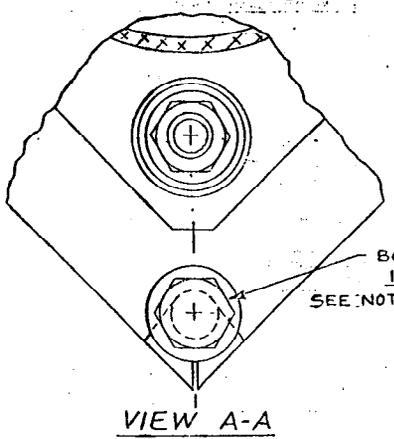
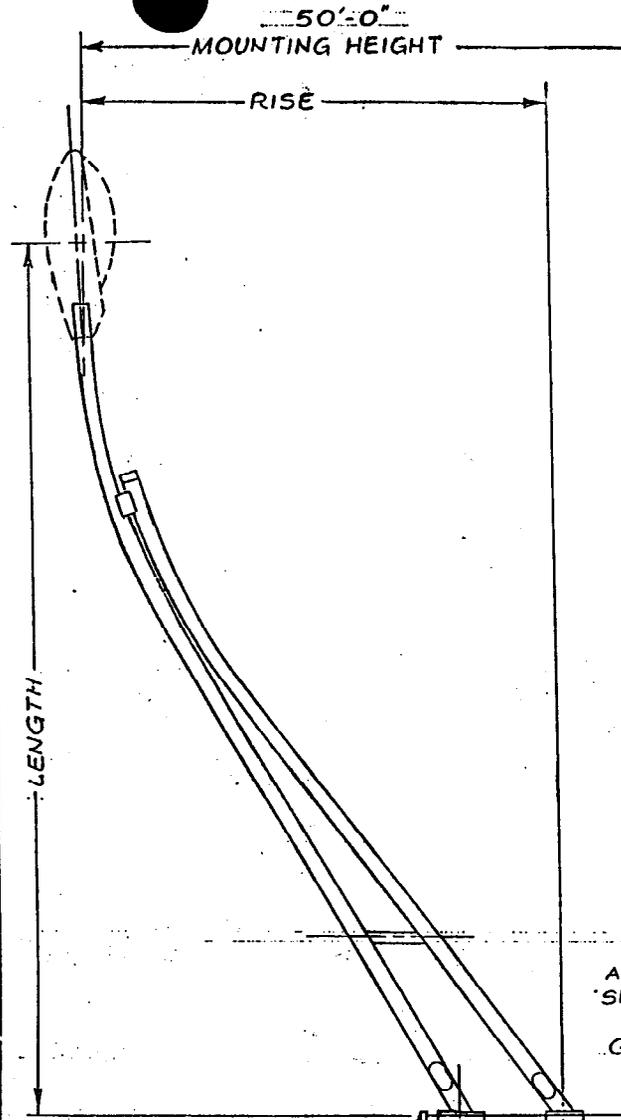
Thus, your company's aluminum slipbase for 10-inch O.D. supports, with maximum support and luminaire weights of 575-pounds and minimum pole wall thicknesses of 0.250 inches, when installed as shown on the enclosed drawings, is acceptable for use on Federal-aid highway projects, if proposed by a State. 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 limitations, including resistance to torsion and overturning, and on installation requirements to ensure proper performance. We anticipate that the States will require certification from P & K Pole Products that the bases furnished have essentially the same chemistry, mechanical properties, and geometry as the base used in the test, and that supports with those bases will meet the FHWA breakaway requirements.

Sincerely yours,



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

Enclosures



**ARM**  
ALLOY 6063-T6  
SIZE 15' LENGTH  
60" RISE  
G-72663

**SHAFT**  
ALLOY 6063-T6  
SIZE 10" O.D. x .250 WALL  
TAPER 10 x 6  
HANDHOLE

ITEM	PART NO.	DESCRIPTION	QTY/ASSY
10	-	SHOE BASE-VARIOUS STYLES	1
9	AS-724	FLATWASHER 1" (1/8" THK x 2" O.D.)	8
8	AS-729	LOCKWASHER 1", GALV.	8
7	AS-712	HEX. NUT 1"-8NC-2, GALV.	12
6	A-76027	FLATWASHER, GALV. 1 (1/8" THK x 2 1/2" O.D.)	8
5	AS-95661	HEX HD. BOLT 1"-8NC-2 x 4" LG	4
4	SKB-6044	PLATE, KEEPER, GALV.	1
3	B-96306	PLATE, SLIP GALV. STL.	1
2	B-96222	CLEAT, ALUM. SLIP	4
1	B-96307	PLATE, FOUNDATION, GALV. STL.	1

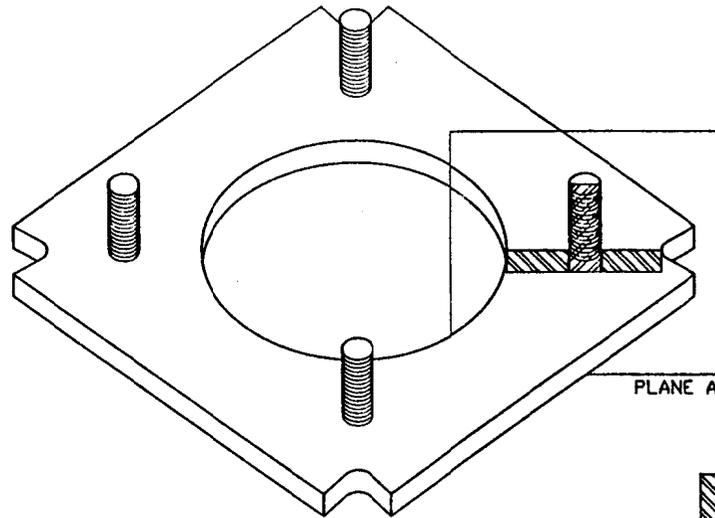
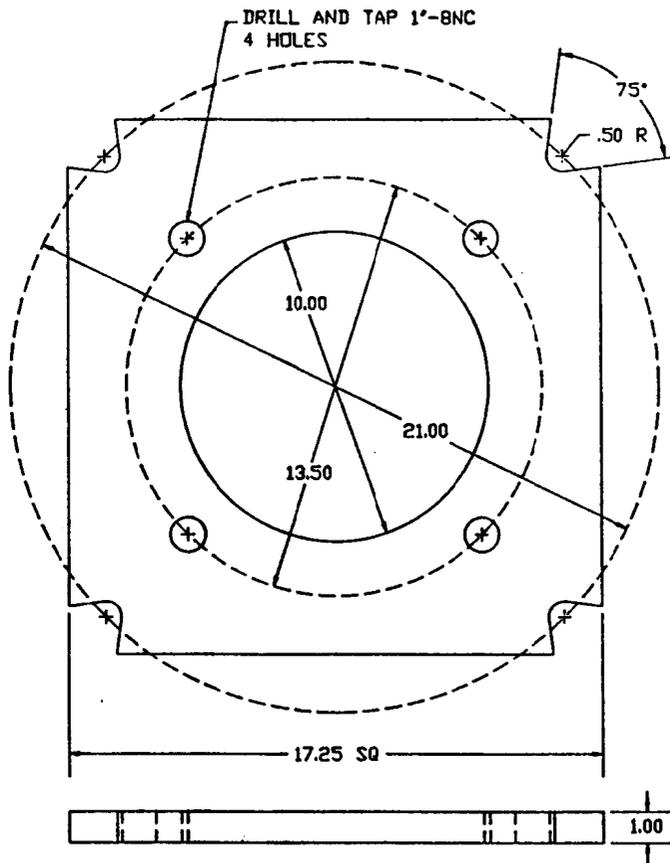
WT:	
POLE	388 #
ARM	48 #
SLIPBASE	62 #
LUM.	50 #
<b>TOTAL</b>	<b>548 #</b>

**NOTE:**  
1. THREADS LUBRICATED BEFORE TORQUE.

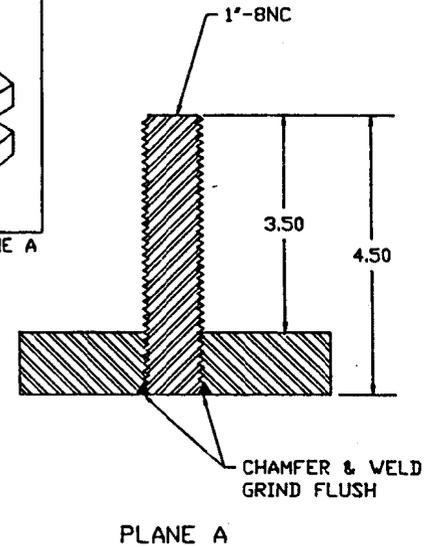
\* SHOE BASE (VARIOUS STYLES)

ALTERATIONS					MATERIAL		P&K POLE PRODUCTS 84 Foundry St., Newark, N.J.	
ALT.	DESCRIPTION	DATE	BY	CH	STOCK SIZE	FINISH OR TEMPER	TITLE	DR. D.C.R.
A	WAS B-96222						RTA0X50*AT15.802	
B	WAS (3) PLACES	7.25.87						
	ADDED PART NOS. AND TABLE	10-11-87						
					UNLESS OTHERWISE SPECIFIED TOLERANCES SHALL BE:	DECIMALS ±	DR. D.C.R.	DATE
					ANGLES ±	FRACTIONS ±	CH.	DATE
					CUSTOMER	APP.	SCALE:	PWS. NO.
							AS NOTED	C-96360
							REV.	(B)

PK 5



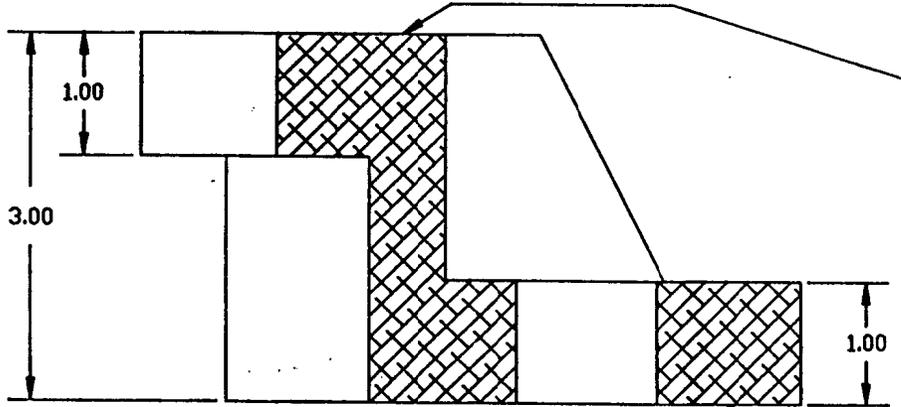
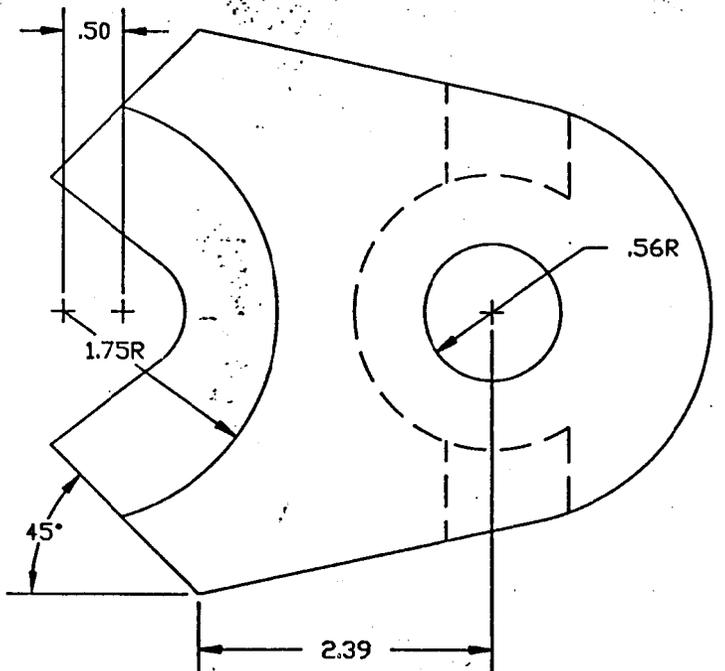
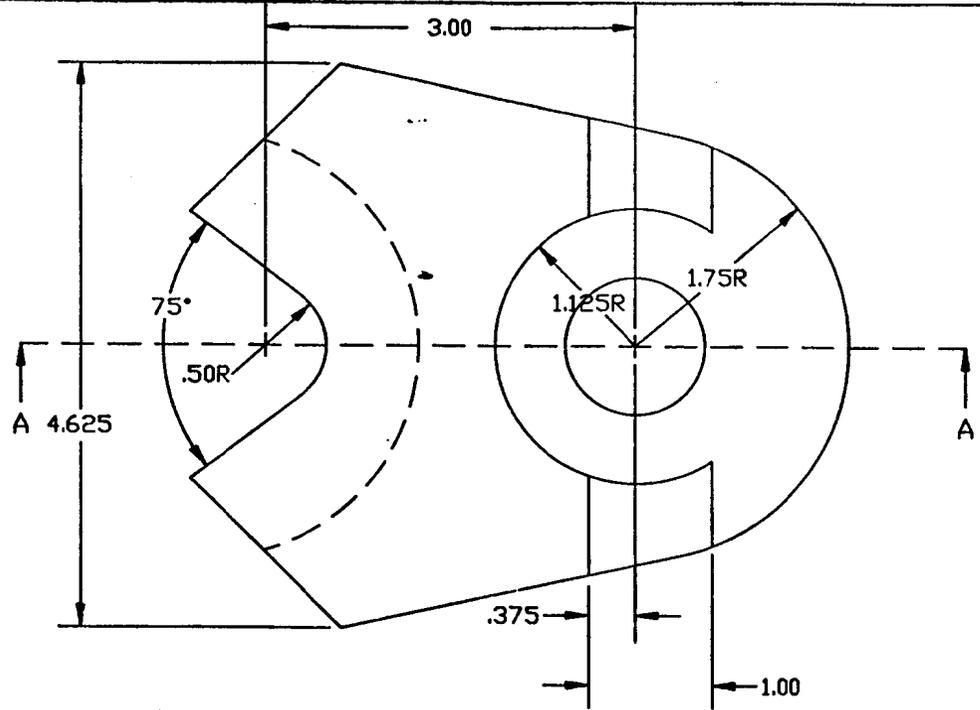
COMPLETED ASSEMBLY  
WITH STUDS INSTALLED



WT: 62 #

ALTERATIONS		MATERIAL	P&K POLE PRODUCTS	
		HRS - 1020	84 FOUNDRY STREET, NEWARK, N.J.	
		STOCK SIZE	SLIP PLATE, SLIP BASE	
		1" THICK		
		FINISH OR TEMPER	WRB 7/20/89	
		HOT DIP GALV.		
			B-96306	

ORIGINAL

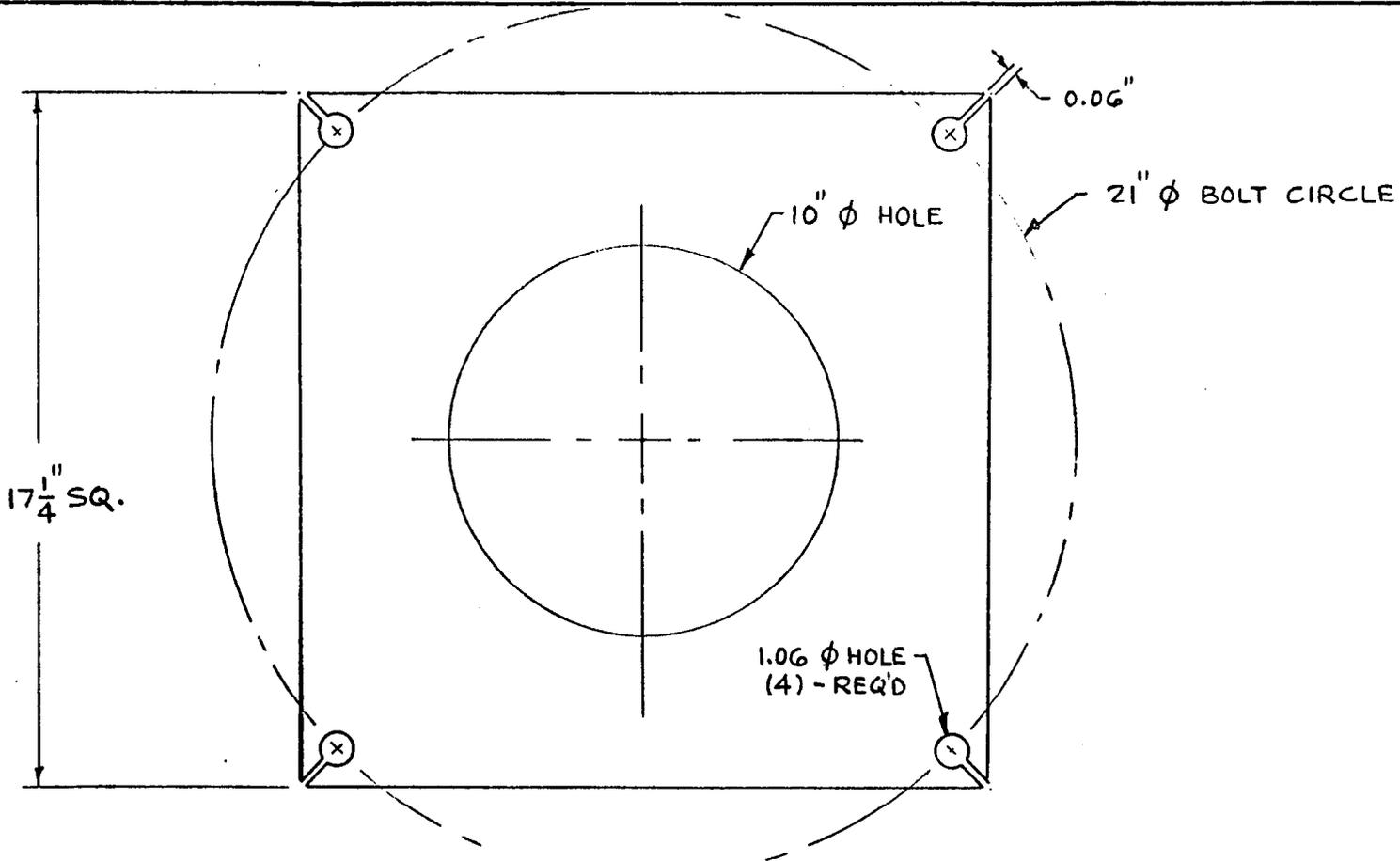


SECTION A-A

TOP AND BOTTOM SURFACE  
EDGES BEVELED 5°

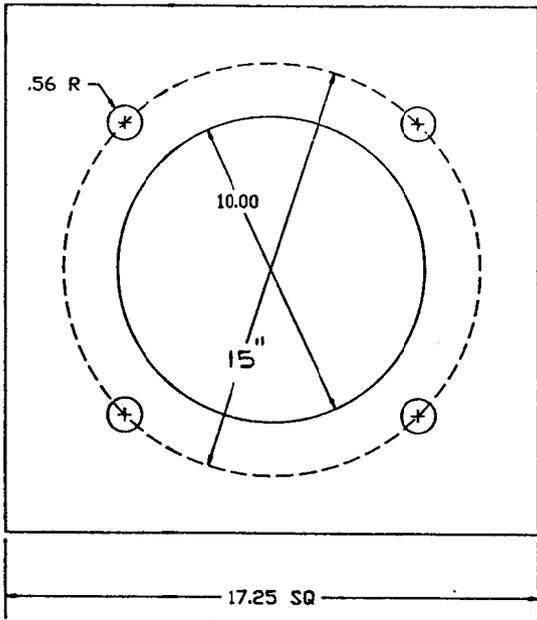
MATERIAL	AL. ALLOY		P&K POLE PRODUCTS	
STOCK SIZE			84 FOUNDRY STREET, NEWARK, N.J.	
FINISH OR TEMPER			CLEAT, SLIP	
	WRB	7/12/89	B-96222	
			REV. A	

DO NOT SCALE DRAWING



ALTERATIONS					MATERIAL		P&K POLE PRODUCTS 84 Foundry St., Newark, N.J.	
ALT	DESCRIPTION	DATE	BY	CH	GALV. SHEET METAL		TITLE	
					STOCK SIZE 20 GAGE (.0359) x 17 1/4" SQ.		PLATE, KEEPER	
					FINISH OR TEMPER			
					UNLESS OTHERWISE SPECIFIED TOLERANCES SHALL BE		DR MMS	DATE 8.18.89
					} DECIMALS ± FRACTIONS ± ANGLES ±		CH	DWG NO
					CUSTOMER		APP	8KB-6044
							SCALE: NONE	

S O NO
--------



ALTERATIONS			MATERIAL		P&K POLE PRODUCTS	
A	15" WAS 13.50	10/24/89	HRS - 1020		84 FOUNDRY STREET, NEWARK, N.J.	
			STOCK SIZE		FOUNDATION PLATE, SLIP BASE	
			.375' THICK			
			FINISH OR TEMPER		WRB	
			HOT DIP GALV.		7/20/89	
					B-96307	
					REV. (A)	