



U.S. Department  
Of Transportation  
**Federal Highway  
Administration**

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

January 26, 1998

Refer to: HNG-14/SS-41A

Richard Strizki, P.E.  
Box 66K, RR #1  
Uniondale, Pennsylvania 18470

Dear Mr. Strizki:

This is in reply to your October 26, 1997, letter requesting Federal Highway Administration (FHWA) acceptance of design revisions of your New Jersey Breakaway Sign System (NJ-BSS). You included drawings and text explaining the revised method for connecting the signpost to the base plate. You stated that this improvement will allow correct installation in spite of minor misalignment of the bolts or variation in post depth. In response to our request, on January 6 you sent us revised drawings, which show the correct orientation of the load concentrating washers.

According to your drawings and description (see Enclosure 1), the principal changes to the NJ-BSS are as follows:

1. The brackets at the base of the signpost are removed. They are replaced by four "connecting tubes" which are welded to the outside of the post flanges.
2. A base plate [made of 690 Mpa (100,000 psi), minimum, steel] is added to the design. This base plate has eight holes: the four inner holes are for the bolts that hold the base plate to the bottom of the signpost (the bolts pass through the "connecting tubes" discussed above.) The four outer holes are for the breakaway couplings. It is your intent that the four "load concentrating washers" be attached to the base plate "in the shop" rather than installed separately in the field, thus improving quality control. This base plate may also be used as a template in the construction of the foundation to ensure that the anchor bars or bolts are in the correct alignment.

Your letter also described and illustrated an alternate method of installing the anchors. This method eliminates the need for a leveling plane (see Enclosure 2).

You also sent a drawing which showed the NJ-BSS in use with "Break-Safe" couplings. These couplings are a proprietary device distributed by Transpo Industries. This drawing, along with other details, are shown in Enclosure 3.

The changes you proposed to the NJ-BSS, which, as indicated, are described and illustrated in the enclosures, are not expected to change the breakaway performance of the NJ-BSS from that of the version previously found acceptable. Therefore, the revised NJ-BSS is acceptable for use on the National Highway System, (NHS) when requested by a State. All other conditions in our two previous letters on the New Jersey couplers remain in effect. These letters are:

SS-23, dated March 14, 1991, to FHWA Region1;  
SS-41, dated November 8, 1993, to you.

We understand that you have given Transpo Industries the exclusive right to use the revisions to the NJ-BSS covered in this letter. If the modified NJ-BSS is patented it will be considered as a proprietary product. To be used in Federal-aid projects, except exempt, non-NHS projects, proprietary products: (a) 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 products are contained in Title 23, Code of Federal Regulations, Section 635.411, a copy of which is enclosed.

Sincerely yours,

Dwight A. Horne, Chief  
Federal-Aid and Design Division

4 Enclosures

Supplemental Geometric and Safety Design Acceptance letter SS-41A

## Improved Version of the New Jersey Breakaway Sign System

### Purpose:

The purpose of this device is to provide horizontal and vertical adjustment for any misalignment of breakaway coupling centers or the like, between the post base and concrete footing. Therefore, the use of this device will eliminate present erection and replacement problems encountered with low profile breakaway ground-mounted sign supports.

In addition, the use of this device will reduce erection and material costs of the present low profile breakaway system. It will also eliminate these parts, the washer retainer, the hex studs, and permit the load concentrating washers to be securely attached to the base plate. This attachment of the L.C. washers in the shop by qualified employees rather than in the field will make the system more fool proof or reliable.

### Description:

The front and side elevation of the sketches shows the arrangement of the breakaway couplings with the base plate, leveling plate and anchor bars. The initial placement of the anchor bars into the footing can be done with the leveling plate and breakaway couplings attached to both the anchor bars and base plate. (Note: See later description for No leveling plate.) This will assure the proper alignment of the anchor bars with respect to the breakaway couplings and base plate.

These members should then be securely supported on the concrete form, after setting the base plate to the proper elevation and leveling it. The holes in the base plate for the post attachment bolts can be utilized in providing the support. The base plate is made from material having a minimum yield of 100,000 psi to limit its thickness and weight.

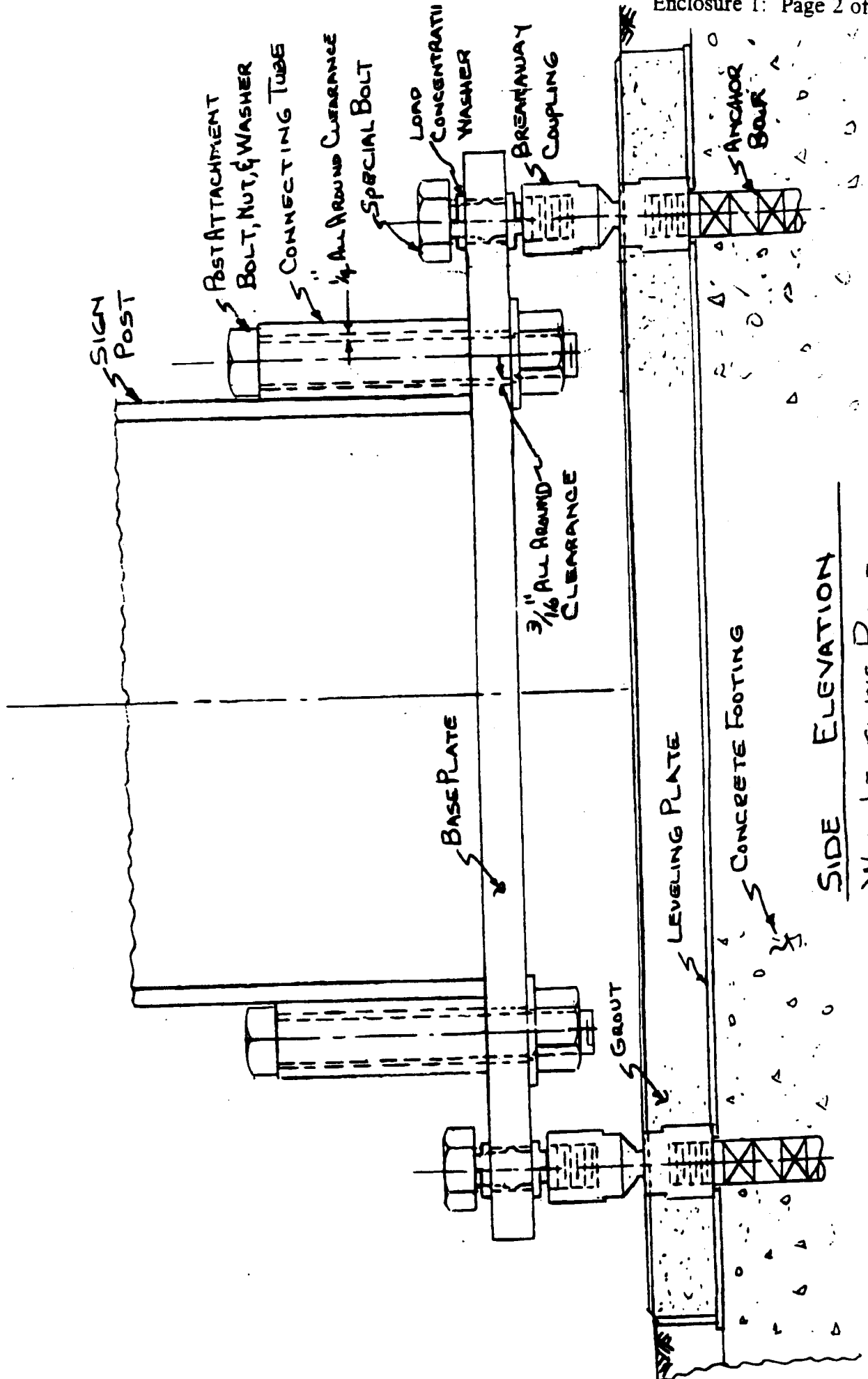
The footing is then poured to the top of the leveling plate around the outside. Grout is then placed inside the leveling plate as shown in the sketches.

After the concrete footing has cured, the post then can easily be installed. This is accomplished by inserting the post attachment bolts into the connecting tubes and then passing them through the oversized holes in the base plate. The oversized holes in both the connecting tubes and base plate compensate for any misalignment or variation in the post size. Shims or washers can be placed on the bottom of the connecting tubes, which can be circular, square, rectangular, or multisided in cross section, to level the post if necessary. The washers and nuts are then placed on the attachment bolts and tightened by the turn of the nut method. This completes the post installation to the footing.

In the event of a vehicle impact on the post, the grout and broken couplings are removed and new couplings are screwed on the anchor bars and the leveling plate is again filled with grout and the post reinstalled.

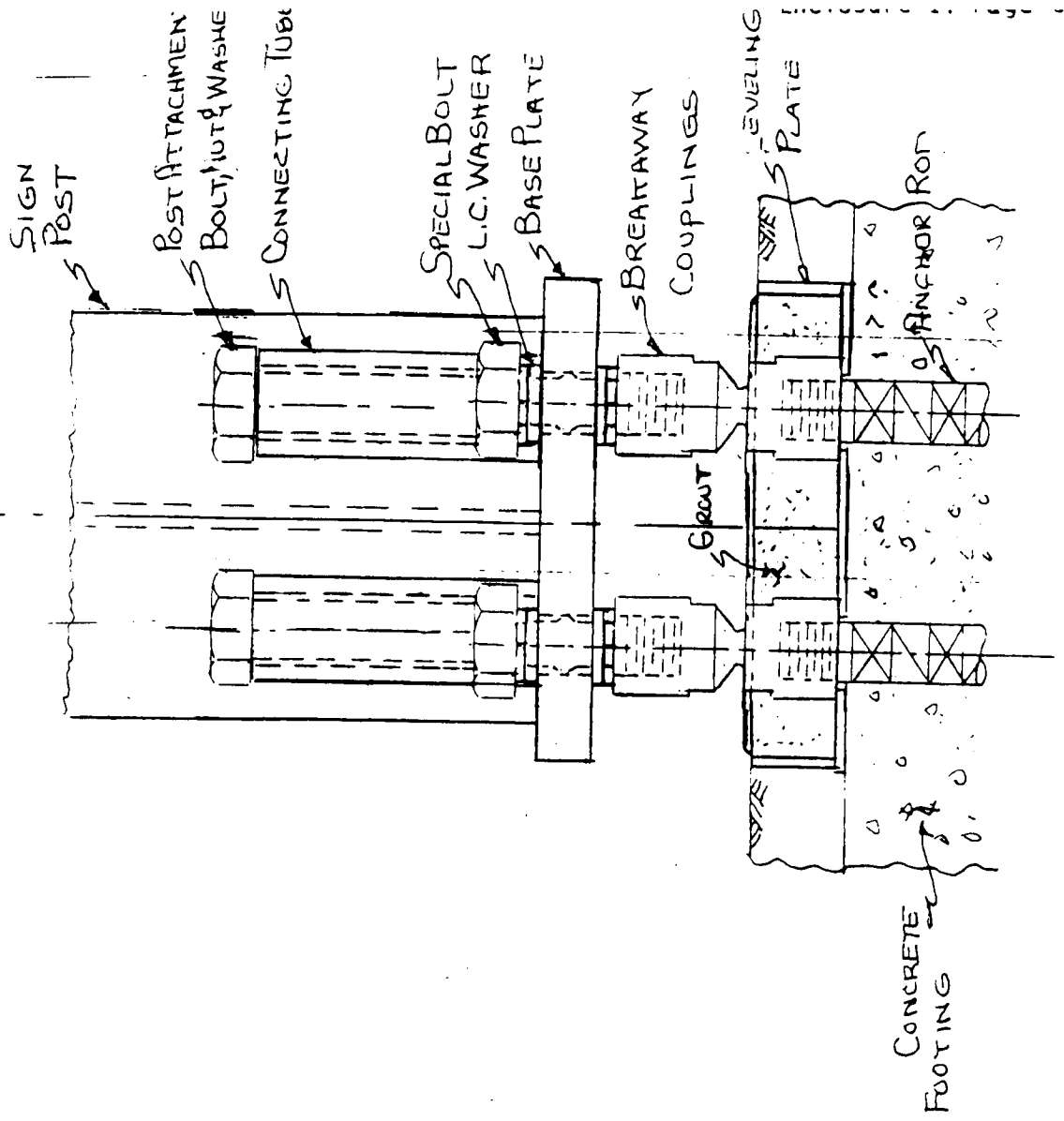
By Richard Strizki, P.E.

8/6/97



SIDE ELEVATION  
 WITH LEVELING PLATE

By RICHARD STRIZKI  
 DIAID



FRONT ELEVATION  
 WITH LEVELING PLATE

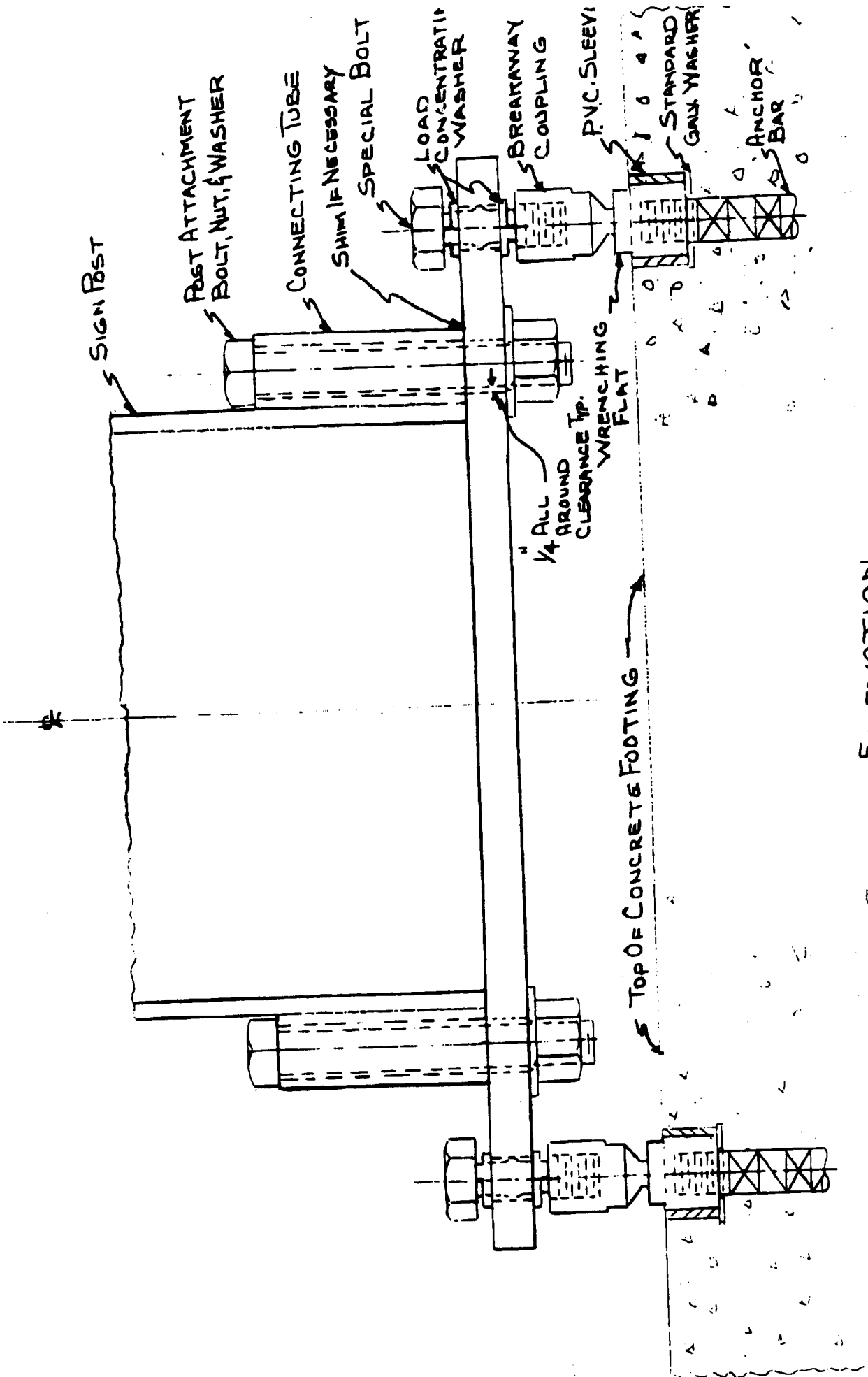
Description of Improved Version of the New Jersey Breakaway Sign Support System  
Without Leveling Plate

The following is an addition to [the previous] pages of the "Improved Version of the New Jersey Breakaway Sign System." This addition eliminates the need for the leveling plate. This elimination is shown on the two sketches dated 8/12/97. On these sketches a galvanized washer is placed between the bottom of the breakaway coupling and bottom-threaded portion of the anchor bar. The diameter of this washer is such that it will not permit its movement below the bottom thread of the anchor bar. A close fitting P.V.C. sleeve is then slipped over the top of the breakaway coupling. This sleeve is then brought down to the top of this washer. The function of the P.V.C. sleeve is to prevent any bonding action between the lower barrel of the breakaway coupling and the concrete. Thereby allowing easy removal of this portion of the breakaway coupling after vehicle impact using the coupling's wrenching flats to unscrew it.

The entire assembly consisting of the breakaway couplings connected to the base plate, along with the P.V.C. sleeve and washer installed on it and the anchor bar attached are then placed on the footing form. This assembly is then set to the proper elevation, leveled, and secured to the footing form. The post attachment holes in the base plate may be used for this securing of the assembly.

Then the footing is filled with concrete and allowed to cure before the signpost is attached using the post attachment bolts. The oversized holes in the connecting tubes on the post and in the base plate provided ample allowance for any misalignment or post variation.

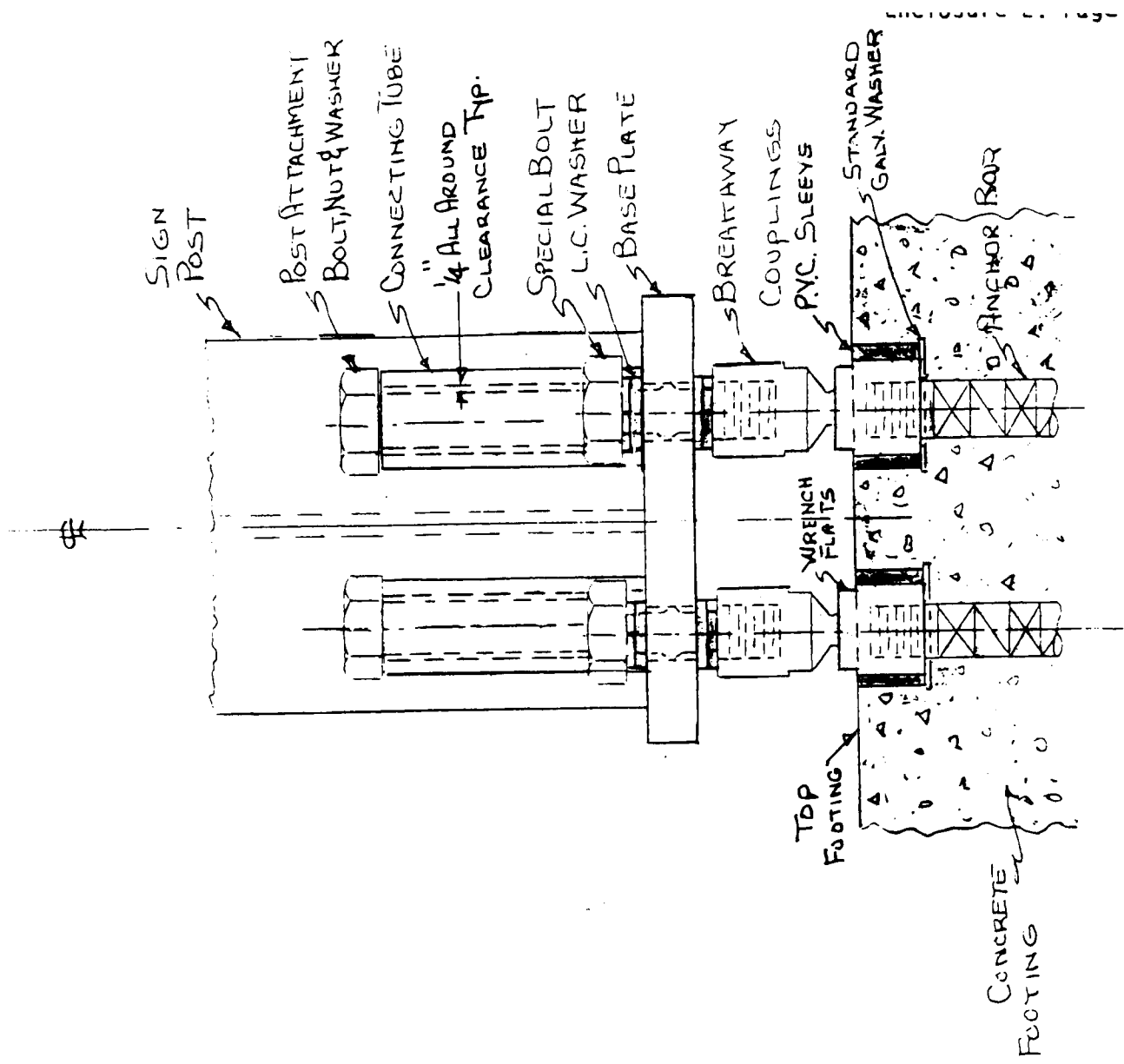
By: Richard Strizki, P.E.  
2/23/97



SIDE ELEVATION

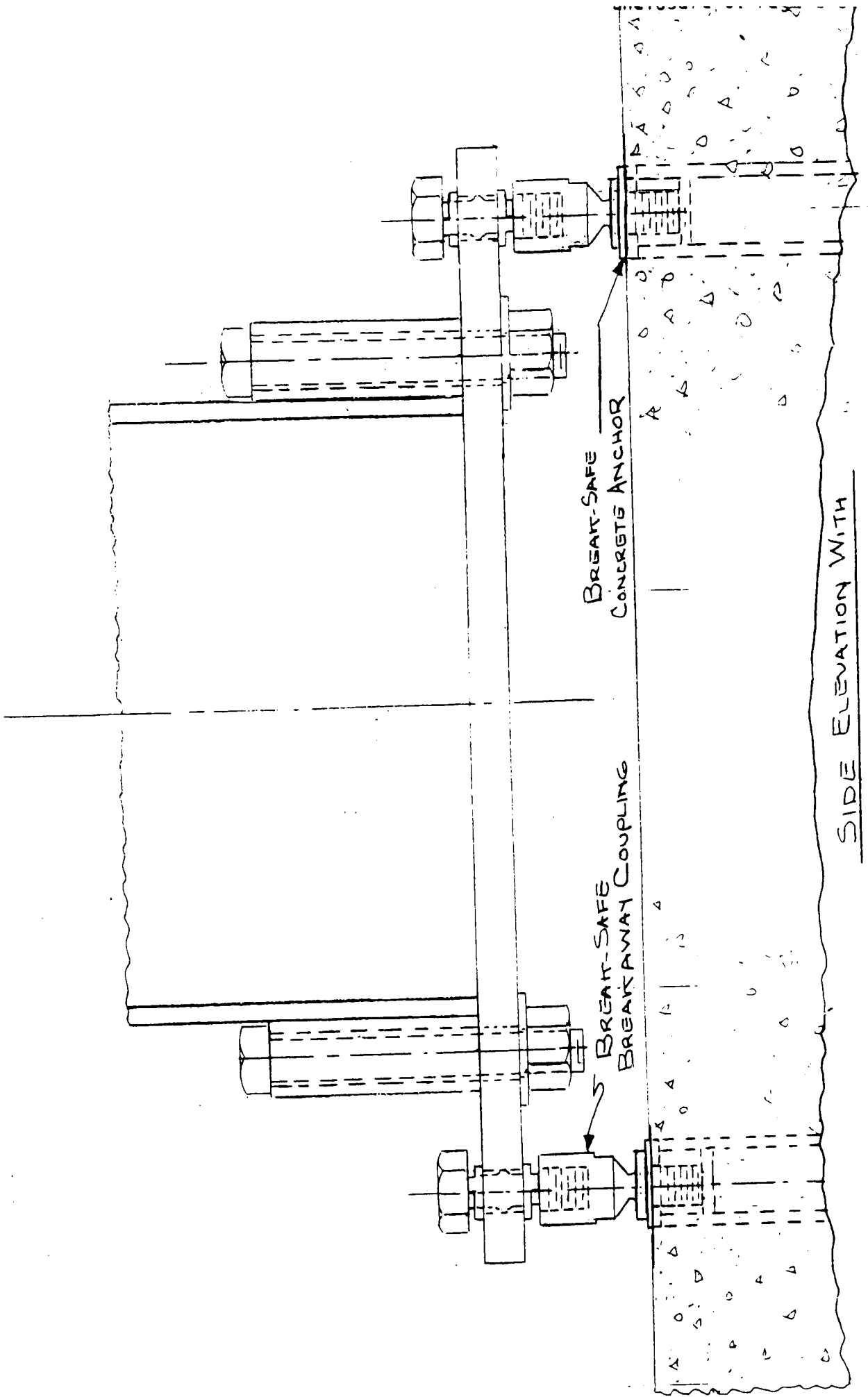
BY RICHARD STRIZKI  
 DIVISION





FRONT ELEVATION

BY RICHARD STRAZIKI 8/18/97



SIDE ELEVATION WITH

BREAK-SAFE COUPLINGS AND ANCHORS

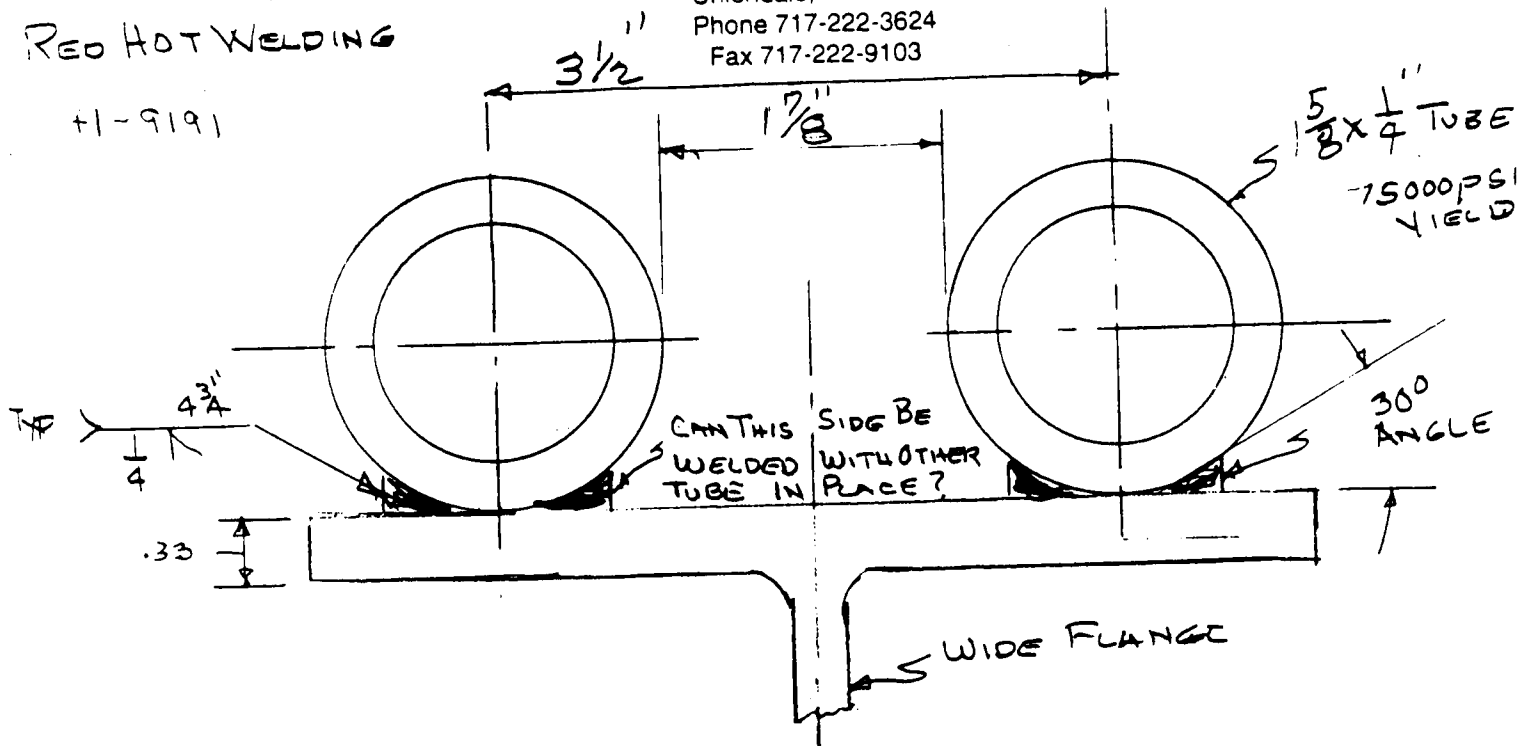
R. Strizki

Enclosure 3: Page 2 of 3

TO MART  
RED HOT WELDING

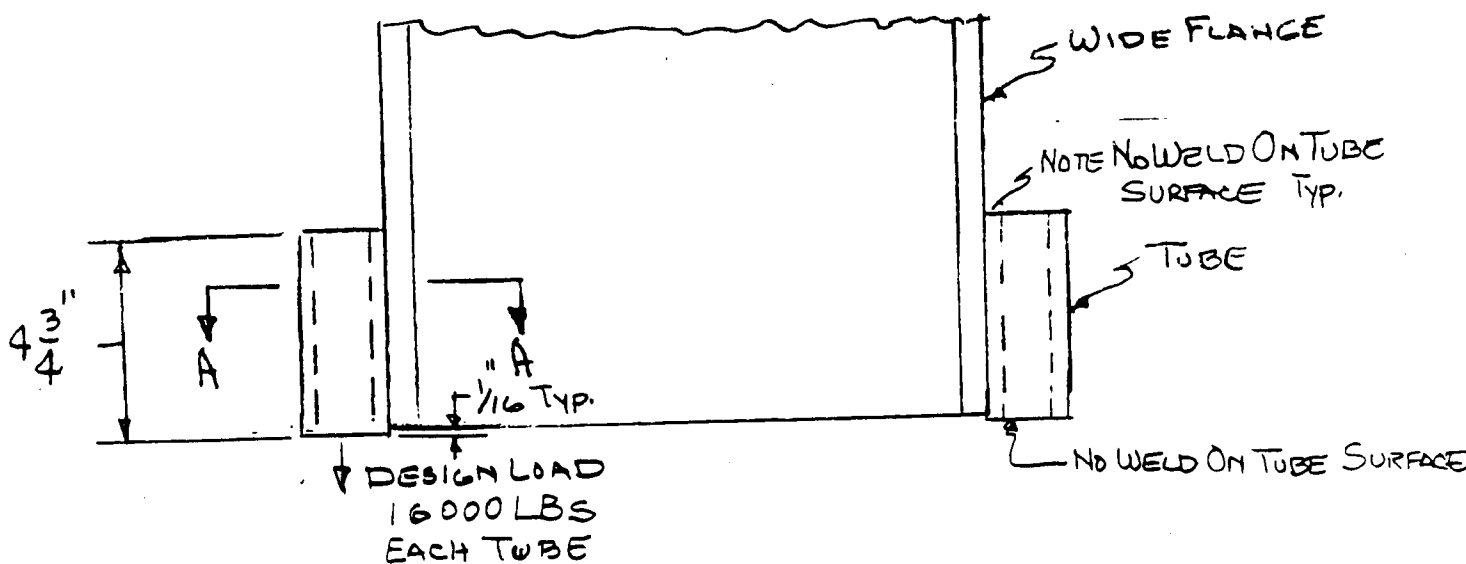
Box 66K RR#1  
Uniondale, PA 18470  
Phone 717-222-3624  
Fax 717-222-9103

11-9191



SECTION A-A

FULL SIZE

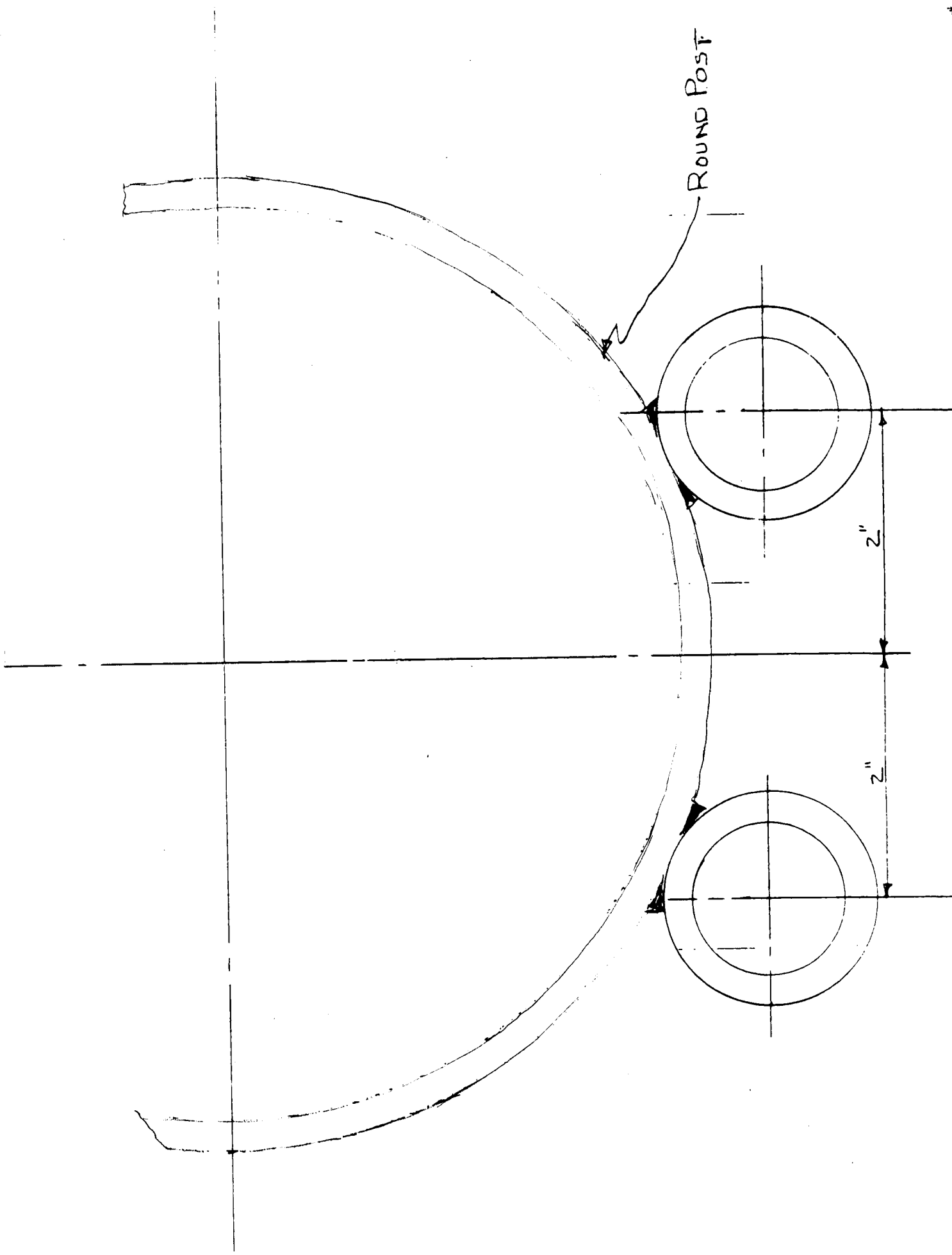


MART

I WILL CALL YOU TOMORROW ABOUT THIS SKETCH

RICH STRIZKI

NOTE: WELDER CALLED BACK AFTER THIS SHEET WAS FAXED TO HIM AND SAID THIS COULD BE DONE



Round Post

2"

2"