Direct Fed VHF Yagi Designs
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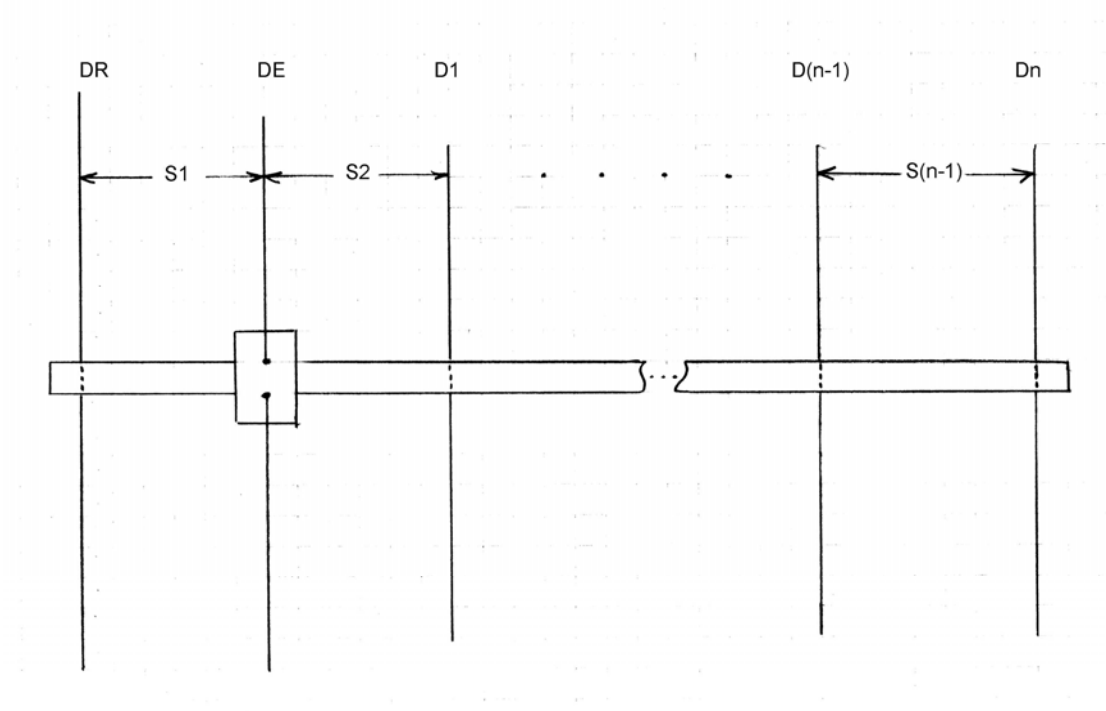
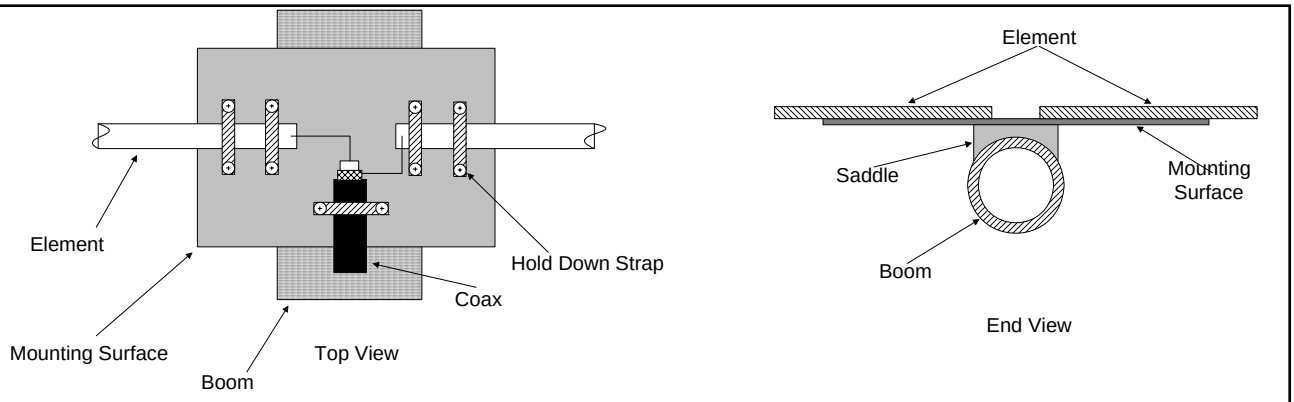
The designs presented here are intended to be direct fed by 50 ohm coaxial lines. Possible driven element construction configurations are presented. Boom material is assumed to be PVC or other insulated material. Conductive boom material will require element length adjustment. As such these beams are for light duty or portable use although in relatively benign environments, life should be quite good.
Suggested boom material is ¾ to 1½ inch schedule 40 PVC. Designs are presented for 3/16 to 3/8 inch element diameter. Element lengths are presented as ½ element length and must be doubled.

Following nomenclature is used
DR=reflector
DE=driven element
D1= 1st director
D2= 2nd director
D3= 3rd director
Dn= nth director

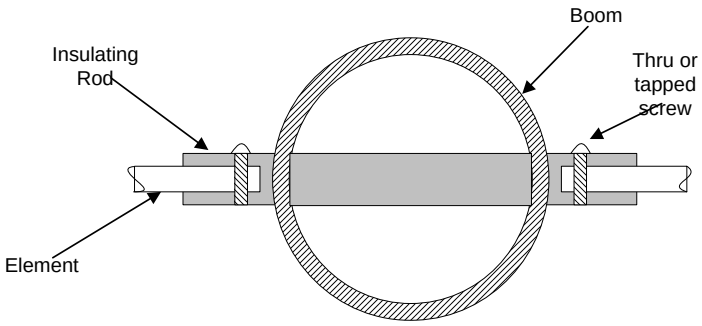
S1=reflector to driven element spacing
S2=driven element to 1st director spacing
S3=1st director to 2nd director spacing
Etc…….





Flat Surface Mounting

Fig 2



Through Boom Mounting

Fig 3

Figure 2 details the feedpoint construction when using a flat mounting plate of insulating material. Small wire clamps hold the half element pieces in place. Attachment of the coax feed can be made to the clamps where screwed down or if the element material is sufficiently large, it can be mounted with screws directly and the coax can be attached at the hold down screws. The element can also tapped and the feedline attached at those points.

Figure 3 shows an alternate method of feeding the split driven element. An insulated rod can be drilled and the element inserted and attached by screws. The insulated rod is inserted through the boom and the feedline is then attached to the element securing screw. The length of shield and center conductor from coax split to the element attachment screws must be subtracted from each side of driven element. This becomes more critical as frequency increases.

Other construction information
My personal preference is to use PVC for the boom material. If it's going to be hand held then additional boom is left to the rear of the reflector. If using PVC, drill pilot holes for the elements in the boom and then using a very sharp final bit drill to size progressively so as to make a clean and tight fit for the element. The element is then inserted (hopefully a tight fit) and centered in the boom. Keepers which look like internal shake washers may be used to hold the element in place if necessary. These are typically available from well stocked hardware stores or hardware suppliers. When using larger element or metal element a metal or machine screw can be inserted through the top or bottom of the boom into the drilled or tapped element

7 element data:

S=ELEMENT SPACING STARTING WITH REFLECTOR
D=1/2 ELEMENT LENGTH -- DOUBLE
ELEMENTS ARE 1/8"(.125") DIAMETER ROD
ELEMENT LENGTHS ARE CRITICAL AND ARE IN INCHES
ALL ELEMENTS ARE ASSUMED INSULATED FROM BOOM IF METAL

S0=0	DR=2.25
S1=2.25	DE=2.125
S2=3.875	D1=1.92
S3=6.375	D2=1.91
S4=9.75	D3=1.81
S5=13.125	D4=1.875
S6=15.75	D5=1.82

Spacing at the front and back of the boom is to users preference and based on how the user intends to support the boom.

The Texas Interconnect Team antennas were constructed from ¾" schedule 40 electrical PVC conduit 22" long. This provided 4" behind the Reflector to mount the antenna and 2" at the front. The Driven element was made from 1/8" Brass/Bronze rod. All other elements were 1/8" aluminum rod. The aluminum and Brass/Bronze rod is readily available from welding supply stores.