

TABLE 1 – MINIMUM DIMENSIONS (FEET)

VOLTAGE	115 KV		138 KV		161 KV		230 KV	
	7	8	8	9	10	11	12	13
NUMBER OF INSULATORS	7	8	8	9	10	11	12	13
A	6.0	7.0	7.0	7.5	8.5	9.0	10.0	10.5
B	7.0	8.0	8.0	8.5	9.5	10.0	11.0	11.5
C	8.0	9.0	9.0	10.0	11.0	12.0	13.0	14.0
D	5.5	6.5	6.5	7.5	8.0	9.0	10.0	11.0
E	AS REQUIRED (BY ENGINEER)							
F	AS REQUIRED (BY ENGINEER)							
G	AS REQUIRED (BY ENGINEER)							

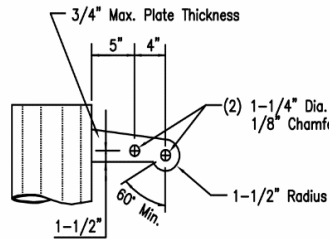
TABLE 2 – MINIMUM CLEARANCES (INCHES)

VOLTAGE	115 KV		138 KV		161 KV		230 KV	
	7	8	8	9	10	11	12	13
NUMBER OF INSULATORS	7	8	8	9	10	11	12	13
NO WIND	42	48	48	54	60	65	71	77
6 PSF WIND	26	26	30	30	35	35	52	52
EXTREME WIND	10	10	12	12	14	14	20	20

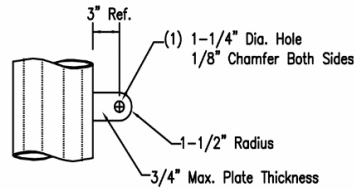
NOTES:

- Dimensions and clearances in tables are minimums and based on the use of porcelain bells. Greater dimensions may be required to improve insulator swing, galloping performance, or separation requirements. A 30 degree shielding angle is assumed. For structures of heights greater than 75 feet, the shield angle should be decreased. For high isokeraunic levels, high contamination areas, or high ground resistance, use the larger number of insulators (second column for each voltage).
- A maximum altitude of 3300 feet above M.S.L. is assumed. For higher altitudes, clearances in Table 2 should be increased.
- The number of insulators in Table 2 are for tangent and small angle structures. For angle structures (TUS-3 and 4), one additional insulator bell should be used. For the deadend structures (TUS-5, TUS-1M, and TUS-1AM), two additional bells should be used.
- If crossarms are used for OHGW support, dimension "D" may be reduced as long as an adequate shielding angle is maintained.
- Arm length is from face of pole to end of arm shaft. Vertical dimensions between arms are from centerline to centerline of bottom attachment holes.
- Type 1 end plates for crossarms are to be used with TUS-1 and TUS-1A. Type 2 plates are to be used with TUS-1M and TUS-1AM. See drawing TM-S1, detail "C".
- For structures TUS-1B and TUS-1C, the length of the crossarms to the inside of the line angle may be less than the indicated minimum dimensions in Table 1.

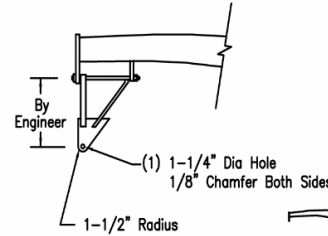
TRANSMISSION LINE STRUCTURE	
GUIDE FOR STEEL POLE STRUCTURE DIMENSIONS (115 KV – 230 KV)	
SCALE:	DATE: JANUARY '97
N.T.S.	TUS (Series)



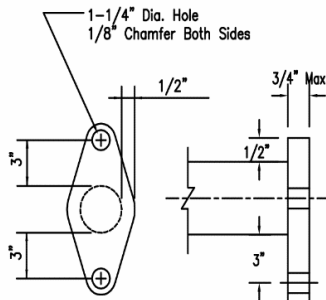
STANDARD DETAIL "A"
OHGW SUSPENSION
VANG DETAILS



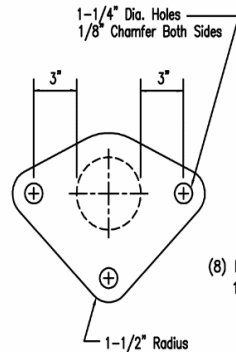
STANDARD DETAIL "B"
CONDUCTOR OR OHGW
STRAIN VANG
(OR GUYING VANG)
DETAILS



TYPICAL DETAIL "D"
SWINGING ANGLE
BRACKET DETAILS
(When Required)

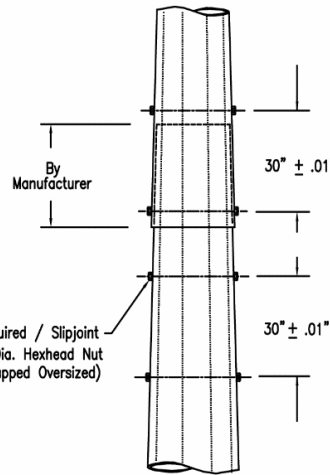


TYPE 1
STANDARD DETAIL "C"
CONDUCTOR OR OHGW
END PLATES DETAILS

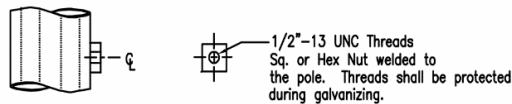


TYPE 2

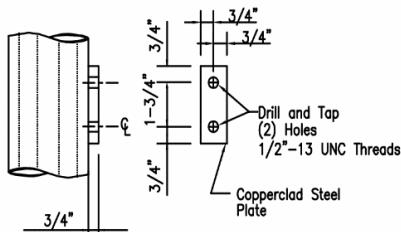
(8) Required / Slipjoint
1" Dia. Hexhead Nut
(Tapped Oversized)



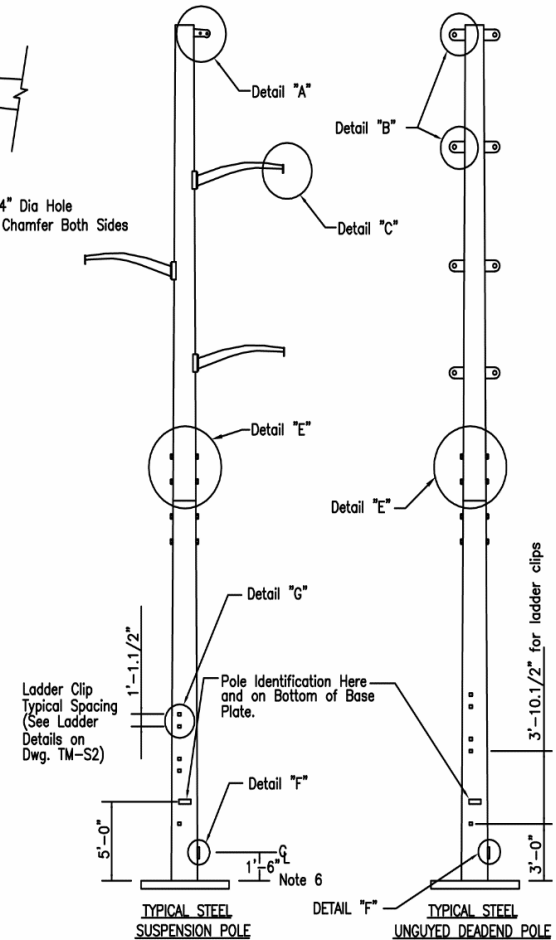
STANDARD DETAIL "E"
JACKING NUT DETAIL
FOR SLIP JOINTS



GROUNDING NUT DETAIL



GROUNDING PLATE DETAILS
STANDARD DETAIL "F"



5. Engineer to specify the length of the swinging angle bracket (Detail D).
6. For direct embedded steel poles, locate grounding nut or grounding plate 6" above groundsleeve.

TRANSMISSION LINE STRUCTURE	
GUIDE FOR STEEL POLE STRUCTURE DETAILS	
SCALE:	DATE: JANUARY '97
N.T.S.	TM-S1

NOTES:

1. Connection design and detailing to be by fabricator. Details shown hereon are only typical of the shapes and dimensions desired. Fabricator shall be responsible for the structural adequacy and proper fit-up of all parts of the structures without damage to protective coatings.
2. Additional or alternate attachments not shown hereon (such as grounding connections, permanent climbing devices, etc.) may be required; these shall be shown by the engineer on a separate drawing.
3. Type 1 end plates are to be used for TUS-1 and TUS-1A structures. Type 2 are for TUS-1M and TUS-1AM structures.
4. Engineer to specify the type of ground connection (Detail F).