

THE CLEARANCE GUIDELINES THAT FOLLOW ARE TAKEN FROM THE NATIONAL ELECTRICAL SAFETY CODE (NESC). THE CLEARANCE TABLES HAVE BEEN REVISED TO PROVIDE DESCRIPTIONS MORE SPECIFIC TO ELECTRIC UTILITIES AND TEXAS-NEW MEXICO POWER COMPANY.

THESE CLEARANCE STANDARDS ARE INTENDED TO BE GUIDELINES FOR ADHERENCE TO THE NESC CLEARANCE REQUIREMENTS. THESE STANDARDS DO NOT INCLUDE ALL NESC REQUIREMENTS OR ALL THE CONDITIONS THAT AFFECT THEM. THESE STANDARDS SHOULD NOT BE RELIED ON ABSOLUTELY FOR NESC COMPLIANCE.

FOR COMPLETE DETAILS ON CLEARANCES, REFER TO SECTION 23 OF THE NESC OR TNMP ENGINEERING DEPARTMENT.

The vertical clearances specified in the tables in this section apply under the following conductor temperature and loading conditions whichever produces the largest final sag.

1. 120 degrees F., no wind displacement.
2. The maximum conductor temperature for which the line is designed to operate, if greater than 120 degrees F. no wind displacement.
3. 32 degrees F., no wind displacement, with radial thickness of ice, if any, specified for the loading district concerned.

For voltage between 22 KV and 470 KV, phase to ground, clearances shall be increased as follows:

0.4 inch per kilovolt in excess of 22 kilovolts.

All clearances for lines over 50 kV shall be based on maximum operating voltage.

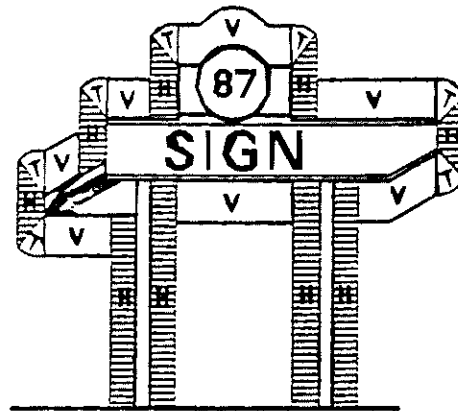
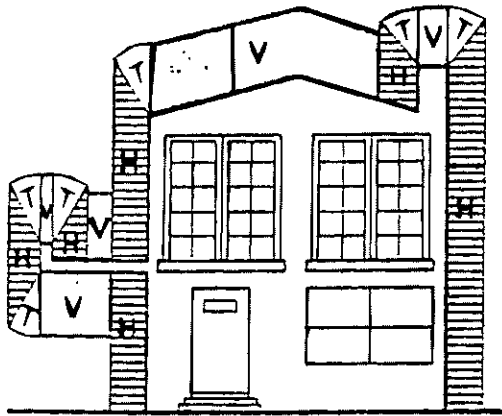
For voltage exceeding 50 KV, clearances shall be increased as follows:

3% for each 1000 ft in excess of 3300 feet above mean sea level.

Horizontal clearances apply with no wind displacement except where stated in the footnotes to the tables.

TRANSITION BETWEEN HORIZONTAL AND VERTICAL CLEARANCES.

THE HORIZONTAL CLEARANCE GOVERNS ABOVE THE LEVEL OF THE ROOF OR TOP OF AN INSTALLATION TO THE POINT WHERE THE DIAGONAL EQUALS THE VERTICAL CLEARANCE REQUIREMENT. SIMILARLY, THE HORIZONTAL CLEARANCE GOVERNS ABOVE OR BELOW PROJECTIONS FROM BUILDINGS, SIGNS, OR OTHER INSTALLATIONS TO THE POINT WHERE THE DIAGONAL EQUALS THE VERTICAL CLEARANCE REQUIREMENT. FROM THIS POINT THE TRANSITIONAL CLEARANCE SHALL EQUAL THE VERTICAL CLEARANCES AS SHOWN BELOW.



Nature of Surface Underneath Wires, Conductors, or Cables	① PRIMARY & SECONDARY NEUTRAL CONDUCTORS, GROUNDED GUYS  (FT)	Voltages are Phase to Ground		
		DUPLEX, TRIPLEX & QUADRUPLEX SECONDARY  (FT)	OPEN WIRE SECONDARY BARE OR COVERED  (FT)	PRIMARY CONDUCTORS TO 22 KV  (FT)
Where Wires, Conductors or Cables Cross Over or Overhang				
1. Track rails of railroads (except electrified railroads using over-head trolley conductors) ⑬	23.5	24.0	24.5	26.5
2. Highways, streets, alleys, county or other public roads. Texas* New Mexico	22.0* 15.5	22.0* 16.0	22.0* 16.5	22.0* 18.5
3. Driveways, parking lots, and alleys. ⑳	15.5 ⑦ ⑬	16.0 ⑦ ⑬	16.5 ⑦	18.5
4. Other land traversed by vehicles such as cultivated, grazing, forest, orchard, etc ㉑	15.5	16.0	16.5	18.5
5. Spaces and ways accessible to pedestrians or restricted traffic only ㉒	9.5	12.0 ⑧	12.5 ⑧	14.5
6. Water areas not suitable for sailboating or where sailboating is prohibited ㉓	14.0	14.5	15.0	17.0

(CONTINUED ON NEXT PAGE)

7. Water areas suitable for sailboating including lakes, ponds, reservoirs, tidal waters, rivers streams, and canals with an unobstructed surface area of: ①⑦⑧⑩⑬⑯⑰⑲⑳㉑

(a) Less than 20 acres	17.5	18.0	18.5	20.5
(b) 20 to 200 acres	25.5	26.0	26.5	28.5
(c) 200 to 2000 acres	31.5	32.0	32.5	34.5
(d) Over 2000 acres	37.5	38.0	38.5	40.5

8. Established boat ramps and associated rigging areas; areas posted with sign(s) for rigging or launching sail boats.

Clearance above ground shall be 5 ft greater than in 7 above, for the type of water areas served by the launching site

Where Wires, Conductors, or Cables Run Along and Within the Limits of Highways or Other Road Rights-of-Way but Do Not Overhang the Roadway

9. Highways, streets, alleys county or other public roads.	15.5	16.0	16.5	18.5
10. Roads in rural districts where it is unlikely that vehicles will be crossing under the line	13.5	14.0	14.5	16.5

\* ARTICLE 181.046 OF THE TEXAS STATE UTILITIES CODE REQUIRES THAT ELECTRIC LINES ACROSS PUBLIC ROADS MUST BE MAINTAINED AT A MINIMUM HEIGHT OF 22 ft. ABOVE GROUND.

⑦⑧⑬⑯⑰ REFER TO REFERENCED FOOTNOTES FOR TABLE 232-1 OF THE 1993 NESC FOR CONDITIONS WHERE CLEARANCE REDUCTIONS ARE APPLICABLE.

⑨ SPACES AND WAYS SUBJECT TO PEDESTRIANS OR RESTRICTED TRAFFIC ONLY ARE THOSE AREAS WHERE EQUESTRIANS, VEHICLES, OR OTHER MOBILE UNITS EXCEEDING 8 FT IN HEIGHT, ARE NOT NORMALLY ENCOUNTERED OR NOT REASONABLY ANTICIPATED.

⑪ NO CLEARANCE FROM GROUND IS REQUIRED FOR ANCHOR GUYS NOT CROSSING TRACKS, RAILS, STREETS, DRIVEWAYS, ROADS OR PATHWAYS.

⑰⑱⑲㉑ REFER TO REFERENCED FOOTNOTES FOR TABLE 232-1 OF THE NESC FOR PROPER APPLICATION OF TABLE.

㉓ FOR PURPOSES OF THIS RULE, TRUCKS ARE DEFINED AS ANY VEHICLE EXCEEDING 8 FT IN HEIGHT. AREAS NOT SUBJECT TO TRUCK TRAFFIC ARE AREAS WHERE TRUCK TRAFFIC IS NOT NORMALLY ENCOUNTERED OR NOT REASONABLY ANTICIPATED.

ALL VOLTAGES ARE PHASE TO GROUND

UPPER LEVEL          LOWER LEVEL	TELEPHONE CATV	PRIMARY & SECONDARY NEUTRAL CONDUCTORS GUYS, ARRESTER WIRES	DUPLEX, TRIPLEX & QUADRUPLEX SECONDARY	OPEN WIRE SECONDARY BARE OR COVERED	PRIMARY CONDUCTORS TO 22 KV
	(FT)	(FT)	(FT)	(FT)	(FT)
TELEPHONE CATV	2	2	2	4 (8)	5 (5)
DUPLEX, TRIPLEX & QUADRUPLEX SECONDARY	2	2	2	2	2
OPEN WIRE SECONDARY BARE OR COVERED	4 (9)	2	4	2	2
PRIMARY CONDUCTORS TO 22 KV	5 (5) (9)	2	2 (9)	2 (9)	2
PRIMARY & SECONDARY NEUTRAL CONDUCTORS, GUYS, (7) ARRESTER WIRES	2	2 (1)	2	2	2

- ① THIS CLEARANCE MAY BE REDUCED WHERE BOTH GUYS ARE ELECTRICALLY INTERCONNECTED.
- ⑤ THIS CLEARANCE MAY BE REDUCED TO 4 FT WHERE THE SUPPLY CONDUCTORS OF 750 V. TO 8.7 KV CROSS A COMMUNICATION LINE MORE THAN 6 FT HORIZONTALLY FROM A COMMUNICATION STRUCTURE.
- ⑦ THESE CLEARANCES MAY BE REDUCED BY NOT MORE THAN 25% TO A GUY INSULATOR, PROVIDED THAT FULL CLEARANCE IS MAINTAINED TO ITS METALLIC END FITTINGS AND THE GUY WIRES. THE CLEARANCE TO AN INSULATED SECTION OF A GUY BETWEEN TWO INSULATORS MAY BE REDUCED BY NOT MORE THAN 25% PROVIDED THAT FULL CLEARANCE IS MAINTAINED TO THE UNINSULATED PORTION OF THE GUY.

⑧ THIS CLEARANCE MAY BE REDUCED TO 2 FT FOR SUPPLY CONDUCTORS CROSSING

CLEARANCE OF	PRIMARY & SECONDARY NEUTRAL CONDUCTORS, ARRESTER WIRES, GROUNDED GUYS	VOLTAGES ARE PHASE TO GROUND				
		DUPLEX, TRIPLEX & QUADRUPLIX SECONDARY, 0 TO 750 V.	UNGUARDED RIGID LIVE PARTS 0 TO 750 V.	OPEN WIRE SECONDARY BARE OR COVERED	PRIMARY CONDUCTORS TO 22 KV	UNGUARDED RIGID LIVE PARTS OVER 750 V. TO 22 KV
(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)

**BUILDINGS**

HORIZONTAL

To walls and projections	4.5 <sup>①②</sup> <sub>⑦</sub>	5.0 <sup>①②</sup>	5.0 <sup>①②</sup>	5.5 <sup>①</sup> <sub>②⑨</sub>	7.5 <sup>①②</sup> <sub>⑩⑪</sub>	7.0 <sup>①②</sup>
To unguarded windows ⑧	4.5	5.0	5.0	5.5 ⑨	7.5 ⑩⑪	7.0
To balconies and areas accessible to pedestrians ③	4.5	5.0	5.0	5.5 ⑨	7.5 ⑩⑪	7.0

VERTICAL

Over or under roofs or projections not accessible to pedestrians ③	3.0	3.5	10	10.5	12.5	12.0
Over or under balconies and roofs accessible to pedestrians ③	10.5	11.0	11.0	11.5	13.5	13.0
Above roofs accessible to vehicles, but not subject to truck traffic ⑥	10.5	11.0	11.0	11.5	13.5	13.0
Above roofs accessible to truck traffic ⑥	15.5	16.0	16.0	16.5	18.5	18.0

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CLEARANCE OF	PRIMARY & SECONDARY NEUTRAL CONDUCTORS, ARRESTER WIRES, GROUNDED GUYS  (FT)	VOLTAGES ARE PHASE TO GROUND				
		DUPLEX, TRIPLEX & QUADRUPLIX SECONDARY, 0 TO 750 V.  (FT)	UNGUARDED RIGID LIVE PARTS 0 TO 750 V.  (FT)	OPEN WIRE SECONDARY BARE OR COVERED  (FT)	PRIMARY CONDUCTORS TO 22 KV  (FT)	UNGUARDED RIGID LIVE PARTS OVER 750 V. TO 22 KV  (FT)

Signs, chimneys, billboards, radio and television antennas, tanks, and other installations not classified as buildings or bridges

HORIZONTAL ④

Portions readily accessible to pedestrians.	4.0	5.0	5.0 ① ②	5.5 ⑨	7.5 ⑩ ⑪	7.0 ① ②
Portions not accessible to pedestrians.	3.0	3.5	5.0 ① ②	5.5 ① ② ⑨	7.5 ① ② ⑩ ⑪	7.0 ① ②

VERTICAL

Over or under catwalks and other surfaces on which people walk.	10.5	11.0	11.0	11.5	13.5	13.0
Over or under other portions of such installations. ④	3.0	3.5	5.5	6.0 ①	8.0	7.5

① ② ⑦ ⑩ REFER TO REFERENCED FOOTNOTES FOR TABLE 234-1 OF THE 1993 NESC FOR CONDITIONS WHERE CLEARANCE REDUCTIONS ARE APPLICABLE.

③ A ROOF, BALCONY, OR AREA IS CONSIDERED ACCESSIBLE TO PEDESTRIANS IF THE MEANS OF ACCESS IS THROUGH A DOORWAY, RAMP, WINDOW, STAIRWAY, OR PERMANENTLY MOUNTED LADDER. A PERMANENTLY MOUNTED LADDER IS NOT CONSIDERED A MEANS OF ACCESS IF ITS BOTTOM RUNG IS 8 FT OR MORE FROM THE GROUND OR OTHER PERMANENTLY INSTALLED ACCESSIBLE SURFACE.

④ THE REQUIRED CLEARANCE SHALL BE TO THE CLOSEST APPROACH OF MOTORIZED SIGNS OR MOVING PORTIONS OF INSTALLATIONS.

⑥ FOR THE PURPOSE OF THIS RULE, TRUCKS ARE DEFINED AS ANY VEHICLE EXCEEDING 8 FT IN HEIGHT.

⑧ WINDOWS NOT DESIGNED TO OPEN MAY HAVE THE CLEARANCES PERMITTED FOR WALLS AND PROJECTIONS.

⑨ THIS CLEARANCE SHALL BE NOT LESS THAN 6.5 FT WITH THE CONDUCTOR

	VOLTAGES ARE PHASE TO GROUND			
	DUPLEX, TRIPLEX, & QUADRUPLIX SECONDARY UNGUARDED RIGID LIVE PARTS 0 TO 750 V. (FT)	OPEN WIRE SECONDARY BARE OR COVERED (FT)	PRIMARY CONDUCTORS TO 22 KV (FT)	UNGUARDED RIGID LIVE PARTS OVER 750 V. TO 22 KV (FT)

1. Clearance over bridges ①				
A. attached ③	3.0	3.5	5.5	5.0
B. not attached	10.0	10.5	12.5	12.0
2. Clearance beside, under, or within bridge structure ⑥				
A. Readily accessible portions of any bridge including wing, walls, and bridge attachments ①				
(1) attached ③	3.0	3.5 ⑧	5.5 ⑨	5.0
(2) not attached	5.0	5.5 ⑧	7.5 ⑨	7.0
B. Ordinarily inaccessible portions of bridges (other than brick, concrete, or masonry) and from abutments ②				
(1) attached ③⑤	3.0	3.5 ⑧	5.5 ⑨	5.0
(2) not attached ④⑤	4.0	4.5 ⑧	6.5 ⑨	6.0

① WHERE OVER TRAVELED WAYS ON OR NEAR BRIDGES, THE CLEARANCES OF OH-2-3 ALSO APPLY



- ② BRIDGE SEATS OF STEEL BRIDGES CARRIED ON MASONRY, BRICK, OR CONCRETE ABUTMENTS WHICH REQUIRE FREQUENT ACCESS FOR INSPECTION SHALL BE CONSIDERED AS READILY ACCESSIBLE PORTIONS.
- ③ CLEARANCE FROM SUPPLY CONDUCTORS TO SUPPORTING ARMS AND BRACKETS ATTACHED TO BRIDGES SHALL BE THE SAME AS SPECIFIED IN TABLE 235-6 (RULE 235E1) IF THE SUPPORTING ARMS AND BRACKETS ARE OWNED, OPERATED, OR MAINTAINED BY THE SAME UTILITY.
- ④ UNGROUNDED GUYS AND UNGROUNDED PORTIONS OF GUYS BETWEEN GUY INSULATORS SHALL HAVE CLEARANCES BASED ON THE HIGHEST VOLTAGE TO WHICH THEY MAY BE EXPOSED DUE TO A SLACK CONDUCTOR OR GUY.
- ⑤ WHERE CONDUCTORS PASSING UNDER BRIDGES ARE ADEQUATELY GUARDED AGAINST CONTACT BY UNAUTHORIZED PERSONS AND CAN BE DE-ENERGIZED AND GROUNDED FOR MAINTENANCE OF THE BRIDGE, CLEARANCES OF THE CONDUCTORS FROM THE BRIDGE. AT ANY POINT, MAY HAVE THE CLEARANCES SPECIFIED IN TABLE 235-6 FOR CLEARANCE FROM SURFACES OF SUPPORT ARMS PLUS ONE-HALF THE FINAL UNLOADED SAG OF THE CONDUCTOR AT THAT POINT.
- ⑥ WHERE THE BRIDGE HAS MOVING PARTS SUCH AS A LIFT BRIDGE, THE REQUIRED CLEARANCES SHALL BE MAINTAINED THROUGHOUT THE FULL RANGE OF MOVEMENT OF THE BRIDGE OR ANY ATTACHMENT THERETO.
- ⑦ WHERE PERMITTED BY THE BRIDGE OWNER, SUPPLY CABLES MAY BE RUN IN RIGID CONDUIT ATTACHED DIRECTLY TO THE BRIDGE. REFER TO PART 3 OF THE NESC FOR INSTALLATION RULES.
- ⑧ THIS CLEARANCE SHALL BE NOT LESS THAN 3.5 FT WITH THE CONDUCTOR OR CABLE DISPLACED BY WIND. SEE RULE 234D1b.
- ⑨ THIS CLEARANCE SHALL BE NOT LESS THAN 4.5 FT WITH THE CONDUCTOR OR CABLE DISPLACED BY WIND. SEE RULE 234D1b.

VOLTAGES ARE PHASE TO GROUND

PRIMARY & SECONDARY NEUTRAL, GROUNDED GUYS, ARRESTER WIRE	DUPLEX TRIPLEX & QUADRUPLEX SECONDARY	OPEN WIRE SECONDARY BARE & COVERED	PRIMARY CONDUCTORS TO 22 KV
(FT)	(FT)	(FT)	(FT)

A: Clearance in any direction from the water level, edge of pool, base of diving platform, or anchored raft

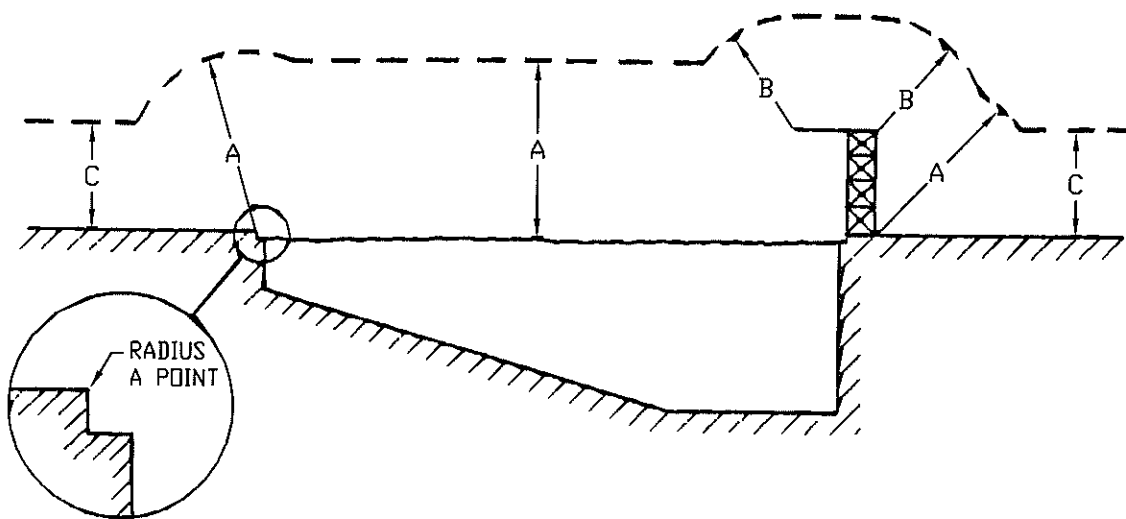
22.0      22.5      23.0      25.0

B: Clearance in any direction to the diving platform tower

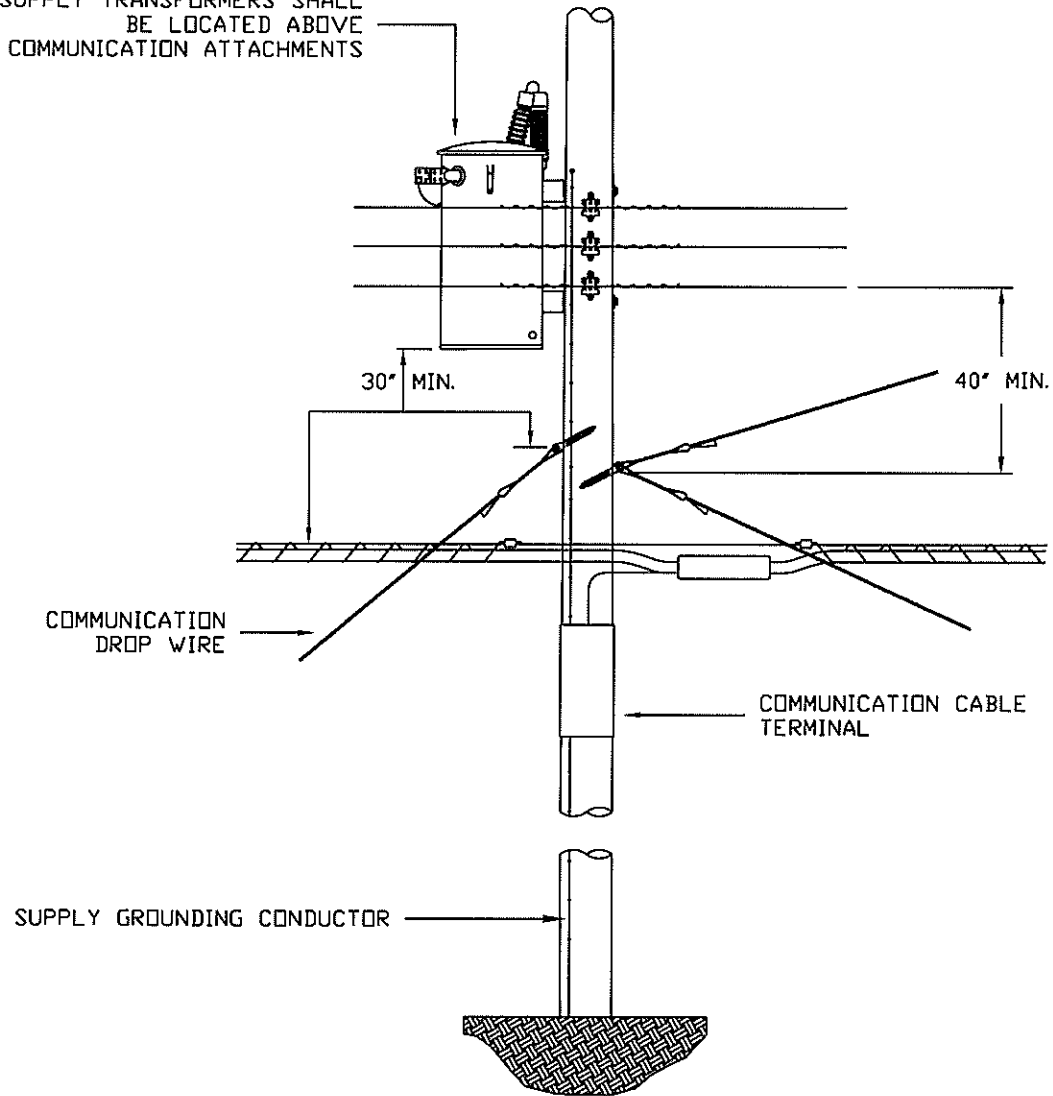
14.0      14.5      15.0      17.0

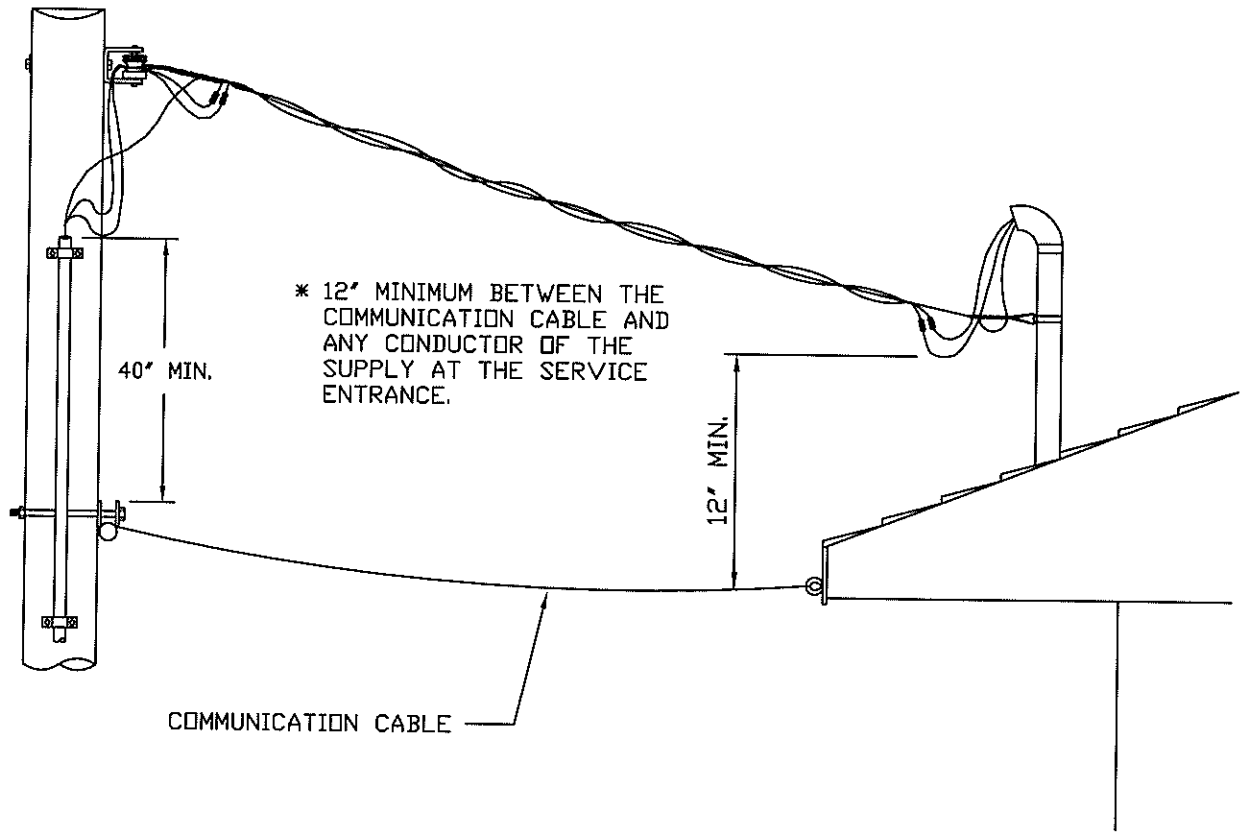
C: Vertical clearance over adjacent land

CLEARANCE SHALL BE AS REQUIRED BY OH-2-3 & OH-2-4

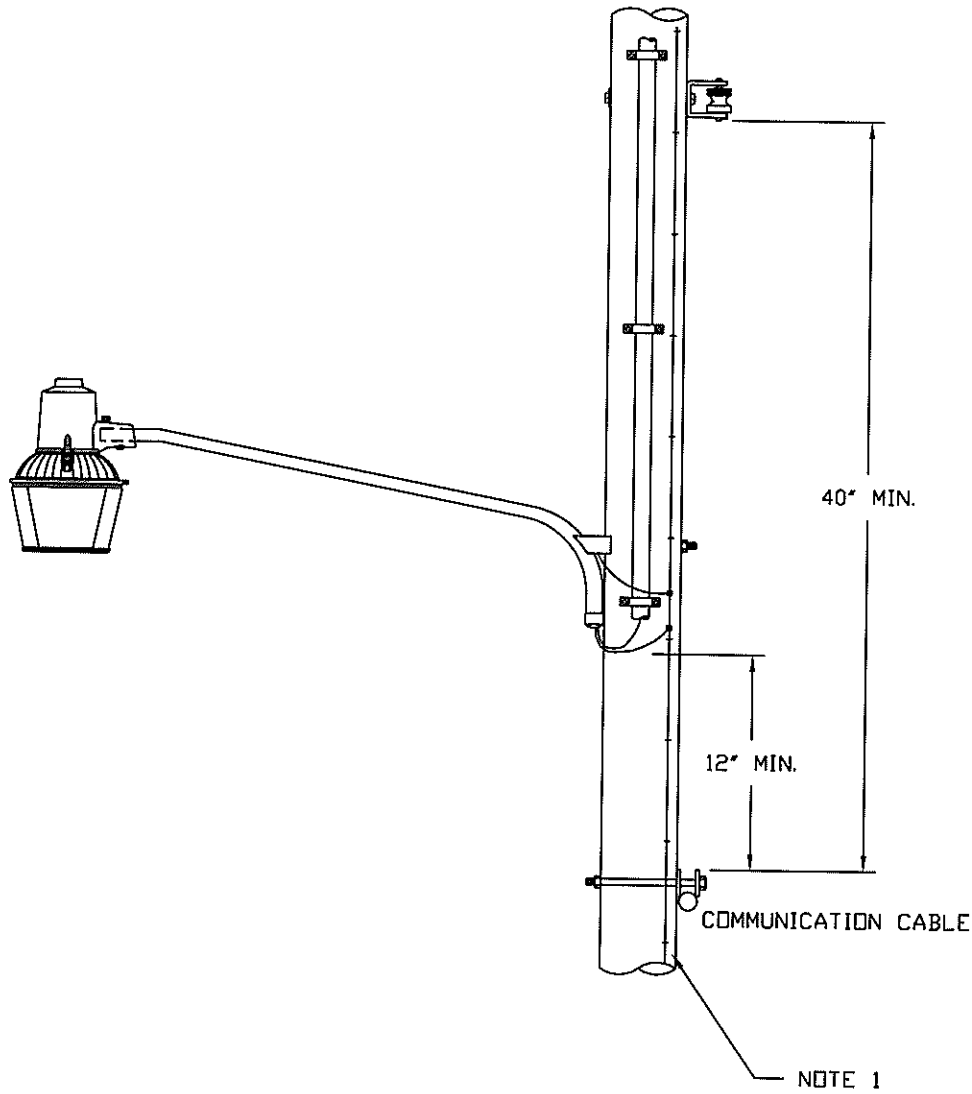


SUPPLY TRANSFORMERS SHALL  
BE LOCATED ABOVE  
COMMUNICATION ATTACHMENTS

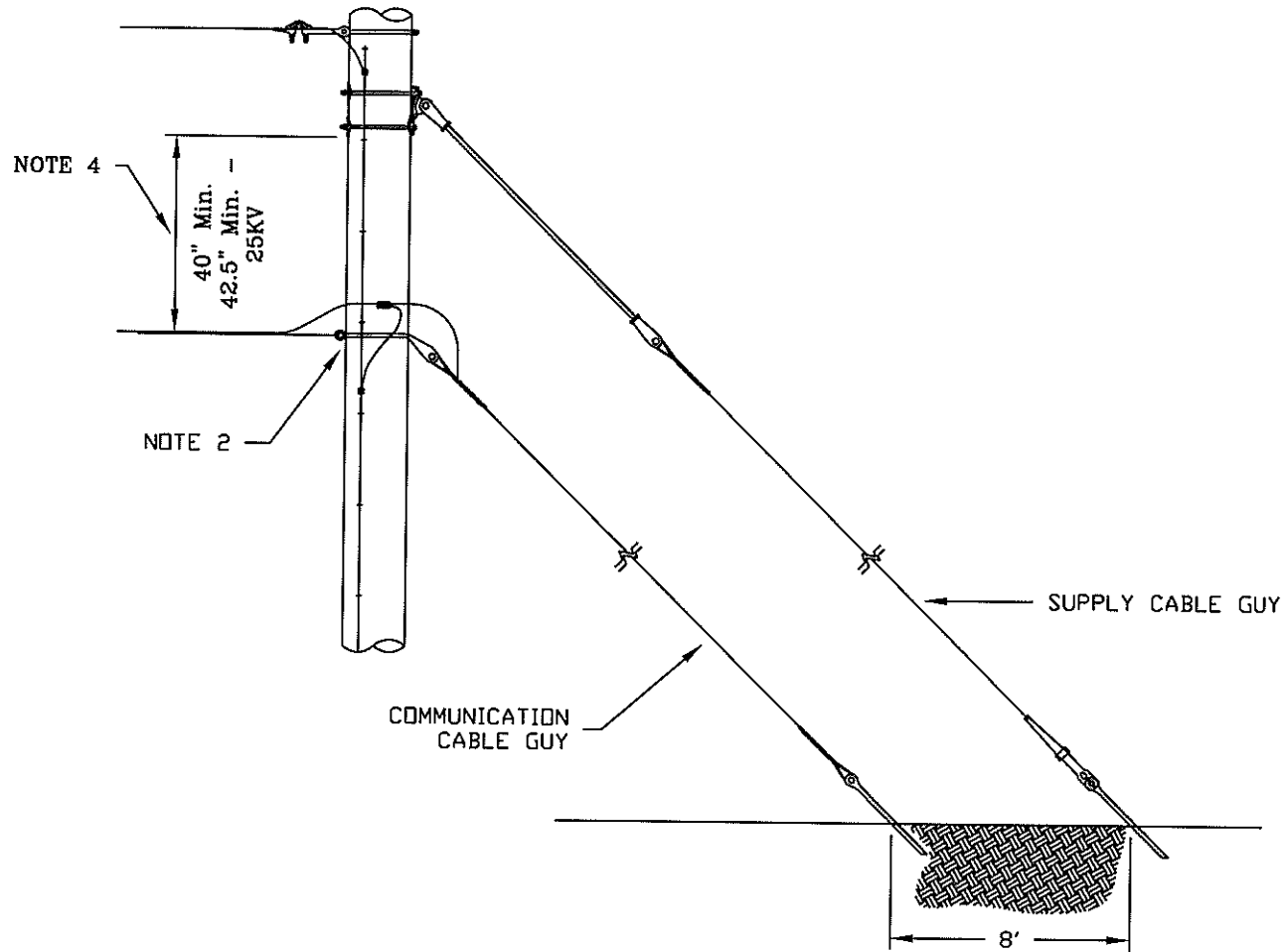




COMMUNICATION CABLE

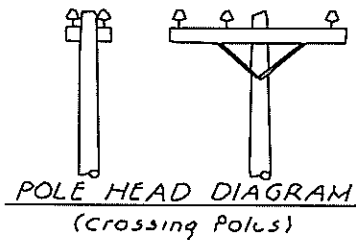
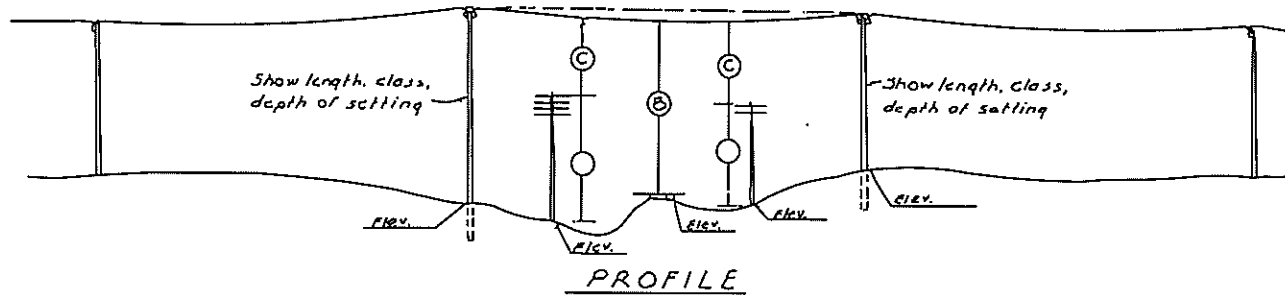
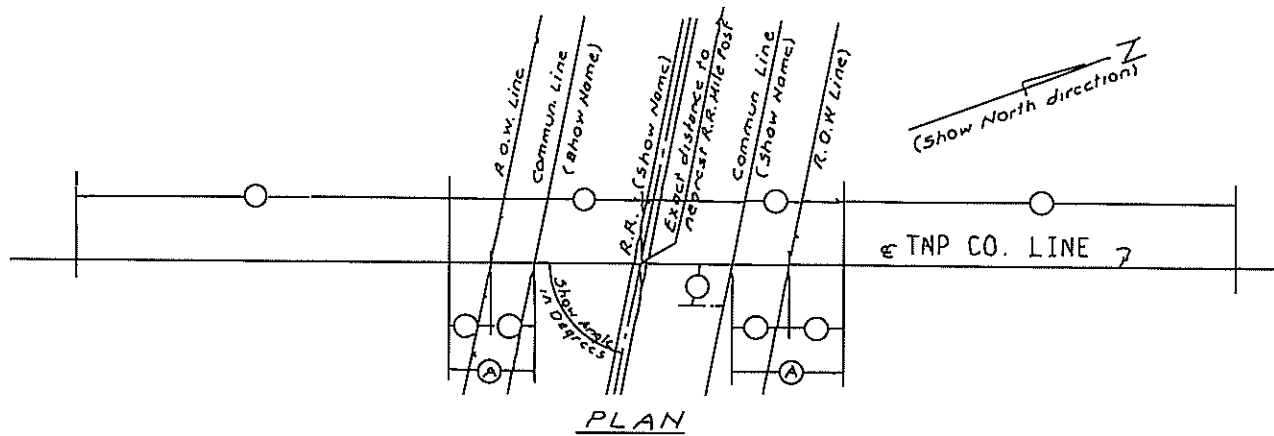


NOTE:  
1. MINIMUM CLEARANCE OF 2" OF AIR OR WOOD BETWEEN ALL  
HARDWARE AND COMPONENTS



NOTE:

1. EACH COMPANY (SUPPLY AND COMMUNICATION) SHALL INSTALL INDEPENDENT GUYS AND ANCHORS FOR THEIR RESPECTIVE FACILITIES. AUXILIARY ANCHOR EYES ON SUPPLY ANCHOR RODS SHALL NOT BE ALLOWED.
2. COMMUNICATION CABLE STRAND AND DOWN GUY SHALL BE BONDED AND CONNECTED TO POLE GROUND.
3. COMMUNICATION DOWN GUYS SHALL BE INSTALLED BEFORE THE CABLE MESSENGER IS SAGGED TO TENSION.
4. DIMENSIONS ARE CLOSEST POINT VERTICAL MEASUREMENTS BETWEEN ANY PORTION OF SUPPLY AND COMMUNICATION EQUIPMENT.



DATA

VOLTAGE \_\_\_\_\_  
 CONDUCTORS (Number, size, material & type) \_\_\_\_\_  
 POLES (Length, class & material) \_\_\_\_\_  
 CROSSARMS (Dimensions & material) \_\_\_\_\_  
 PINS (Material & cat. no.) \_\_\_\_\_  
 INSULATORS (Type & Cat. No.) \_\_\_\_\_  
 GUY WIRE (size & material) \_\_\_\_\_  
 (Supply additional data which may apply)

NOTES

- 1- Relative elevation of rails and at pole setting locations to be determined when crossing layed out. This data required for calculating pole lengths necessary to provide required clearances above rails and communication lines.
- 2- Sag calculated for length of span and loading district in which crossing is located
- 3- Dimensions indicated by open circles to be recorded in field when crossing layed out.
- 4- Dimunions indicated by letters in circles are minimum horizontal and vertical clearances which must exist in completed crossing.
  - Ⓐ must not be less than 8 feet.
  - Ⓑ and Ⓒ must not be less than values specified in clearance tables OH-2-3 and OH-2-4