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October 25, 2000

VIA COURIER

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Magalie Roman Salas
Secretary
Federal Communications Commission
The Portals - TW-A325
445 12th Street, S.W.
Washington, DC 20554

Re: **Ex Parte Presentation in Docket No. CC -00-176**

Dear Ms. Salas:

Pursuant to section 1.1206 of the Commission's rules, an original and six copies of this letter are being filed as notice that yesterday Patrick Musseau, a representatives of RCN-BecoCom, L.L.C. ("RCN"), talked by telephone with Ms. Suzon Cameron of the Common Carrier Bureau staff concerning the subject of pole boxing in connection with the pending application of Verizon-New England *et al* to enter the interLATA market in Massachusetts. At Ms. Cameron's request Mr. Musseau faxed to her Section 3 of the Bellcore Bluebook Manual of Construction Procedures, consisting of some 16 pages of text. A copy is enclosed herewith and a copy of this notice has been mailed to Ms. Cameron.

Because the information described above was provided in response to a staff request, the twenty page limit, as set forth in DA 00-129 does not apply.

Any questions concerning the foregoing should be directed to the undersigned.

Very truly yours,

William L. Fishman

cc: Suzon Cameron, Esq.

Enclosure

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List ABCDE

3 Clearances

3.1 General

Clearances between communication facilities, clearances for communication facilities above roadways and railroad tracks, and requirements for climbing space are in accordance with the requirements of the 1997 edition of the National Electrical Safety Code (NESC). Clearances between communication facilities of different companies or of the same company are in accordance with the Local Exchange Carrier (LEC) recommendations.

The minimum clearances of communication facilities over roadways, railroads, and other structures vary, depending on span length and storm-loading areas. Information on the storm-loading area and proper clearances for spans longer than those shown in this section may be obtained from the telephone company.

Conductor clearance is based on "closest approach," which will occur at either 120°F (49°C) or under ice conditions for the loading area involved. The clearances shown in Table 3-4 are intended to be applied under maximum sag conditions.

To determine the clearances required, it is necessary to know the voltage of the power wires and whether they are part of a grounded system. Clearances for grounded power systems are based on their voltage to ground. For other systems, clearances depend on the voltage between conductors. Most grounded power systems include a grounded conductor that has many connections to ground. These conductors are called multigrounded neutrals and are generally considered to be effectively grounded.

Some localities have codes that are more stringent than the NESC requirements covered in this section. In these localities, the requirements must comply with the local codes.

3.2 Clearances Between Communication Facilities

The clearance between communication cables supported on different suspension strands must be at least 12 inches (300 mm) at the pole. In most cases this will be a vertical clearance, but there are exceptions as explained in this section. Experience has shown that the 12 inch (300 mm) minimum clearance may be reduced as shown in Figure 3-1, provided the diagonal clearance is 12 inches (300 mm) and a minimum of 4 inches (100 mm) between bolt holes is maintained. Where more than one licensee's cable is attached, the licensee's cables may be closer than 12 inches (300 mm) if all parties involved agree. However, the bolt holes must never be closer than 4 inches (100 mm). Diagonal clearances apply to communications only, never to power clearances.

Since pole-mounted cabinets are of various sizes and shapes, it is impractical to establish firm locations for all facilities. However, pole-mounted cabinets must be located to provide the following:

- Sufficient clearance from power facilities - same rules as for cable
- Sufficient climbing space
- Least impairment to performance of work operations at terminals.

The locating of licensee power supplies, a frequently used pole-mounted facility, is covered in Section 13. When locating other pole-mounted facilities, consult with the local telephone company for the best location.

Pole-mounted cabinets of any significant size (over 3 inches [75 mm] long by 3 inches [75 mm] wide by 2 inches [50 mm] deep and weighing more than 1 pound [0.453 kg]) must not be placed on poles where the following types of telephone equipment are installed:

- Underground riser cables (including electrical facilities)
- Cross-connecting terminals
- Distribution terminals
- Closures
- Apparatus cases
- Loading coil cases
- Air driers
- Any other equipment of significant size.

On nonjoint-use poles, the minimum allowable distance between the top of the pole and a bolt hole is 10 inches (250 mm).

A minimum vertical clearance of 6 inches (150 mm) must be maintained between any strand-mounted equipment or cable expansion loops and telephone cable as shown in Figure 3-2. Detailed information on locating strand-mounted equipment can be found in Section 13.

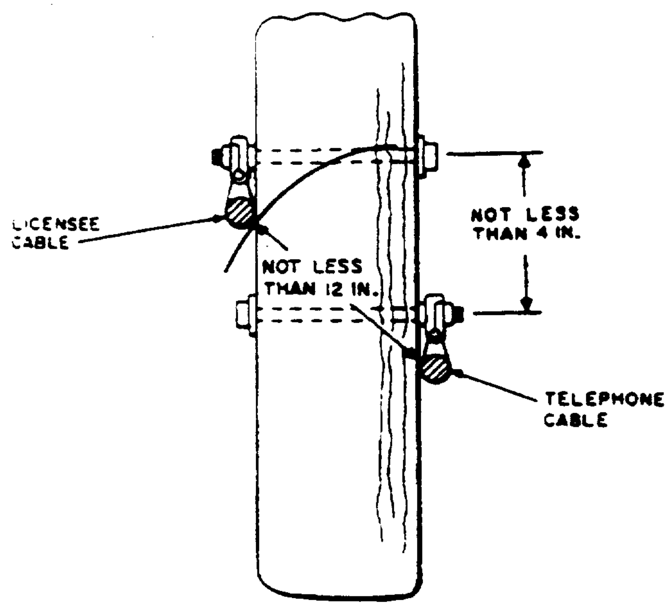

Figure 3-1. Clearance Between Licensee-Owned and Telephone Company Cables

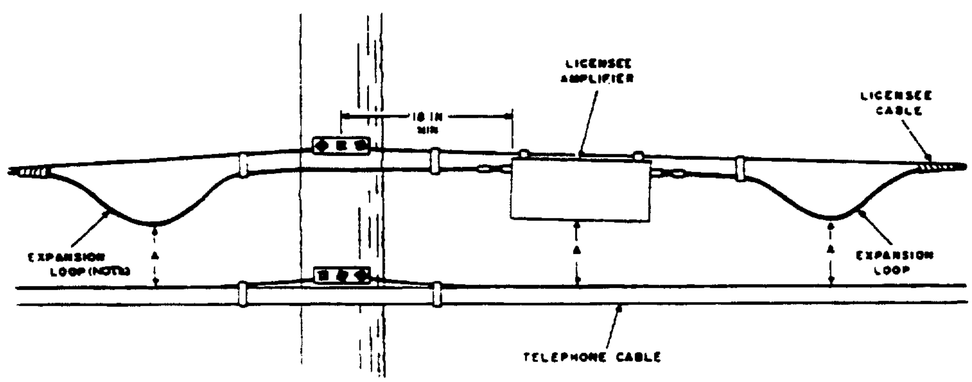

Figure 3-2. Vertical Separation Between Strand-Mounted Equipment and Other Cable

A = Minimum clearance of 6 inches (150 mm).

Note: Expansion loop should be placed to the right or left side of the pole with a minimum of 10 inches (250 mm) from the bolt to the first cable attachment.

3.3 Clearance Between Power and Communication Facilities

The required vertical clearances at the poles between power facilities and the metal parts of a communication facility that do not carry a current are given in Table 3-1. Figures 3-3 through 3-5 are referenced in Table 3-1. The clearances are based on Rule 238 of the NESC.

An optimal method of providing required clearance is to use standoff assemblies to support cable owned by an authorized licensee in situations where there is inadequate space on the pole for placement of an additional cable. Cable extension arms or standoff assemblies may be used to support cable, when necessary, to accomplish the following:

- Clear obstructions in the span
- Improve cable alignment
- Provide space for an additional cable where that space cannot be provided without replacing the pole.

IMPORTANT NOTE: When extension arms or standoff assemblies are being considered, obtain permission from the telephone company for its use, type, location, and method of installation.

Table 3-1. Minimum Vertical Clearances Between Power Facilities and Noncurrent-Carrying Parts of Communication Facilities on Poles

Facility	Clearance
Power Circuits, 0-8700 volts (Figure 3-3)	40 in (1 m)
Transformer case or capacitor case (nongrounded) 0-8700 volts (Figure 3-4)	40 in (1 m)
Transformer case or capacitor case (effectively grounded as uniform practice over a well-defined area) (Figure 3-4)	30 in (0.75m)
Transformer case or capacitor case (nongrounded) over 8700 volts (Figure 3-4)	[1]
Power circuits, 8701-50,000 volts	[1]
Streetlight and traffic-signal bracket (nongrounded) (Figure 3-5)	20 in (500 mm)
Streetlight and traffic-signal bracked (effectively grounded) (Figure 3-5)	4 in (100 mm)
Drip loop of a streetlight bracket (Figure 3-5)	12 in (300 mm)
Licensee strandoff assemblies	40 in (1 m)

Note:

[1] The clearance is 40 inches (1 m) plus 0.4 inch (10 mm) per kV over 8.7 kV.

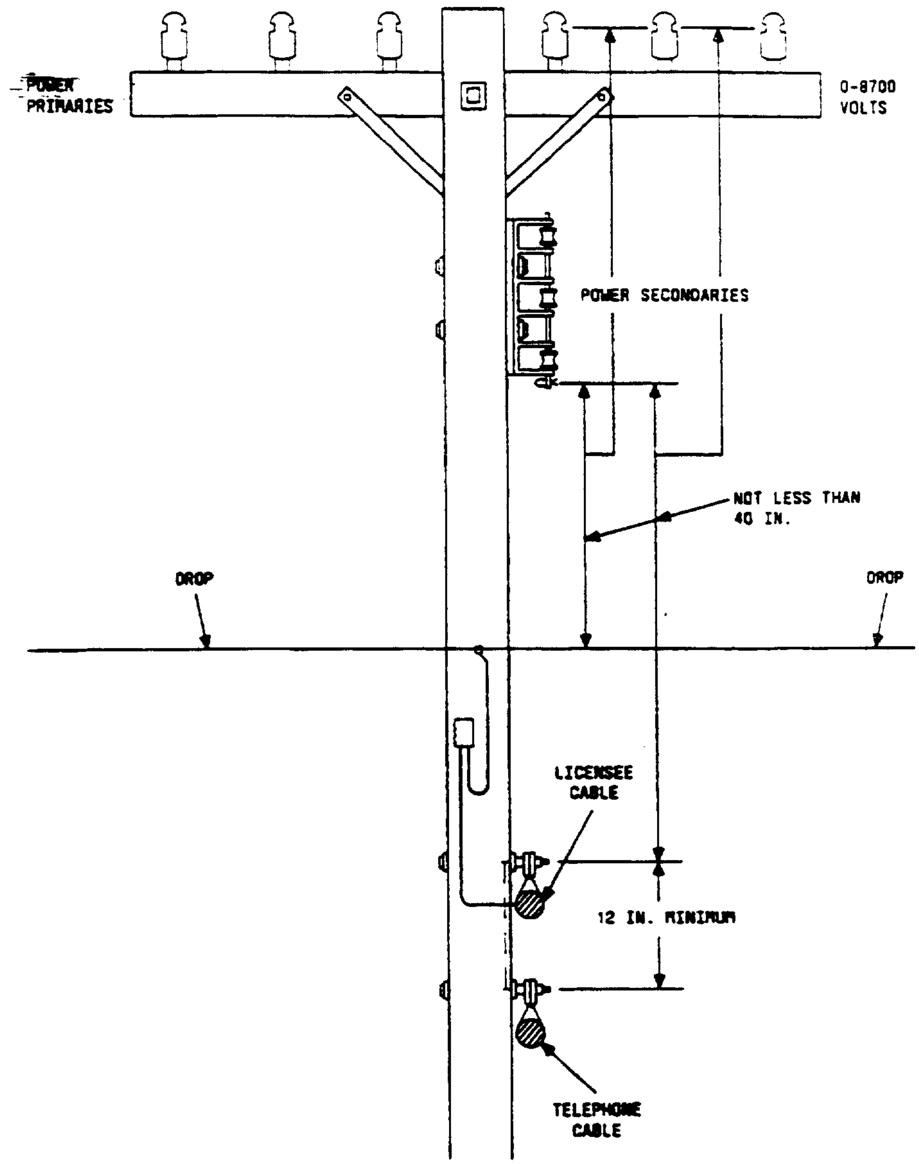

Figure 3-3. Clearances on Joint-Use Poles

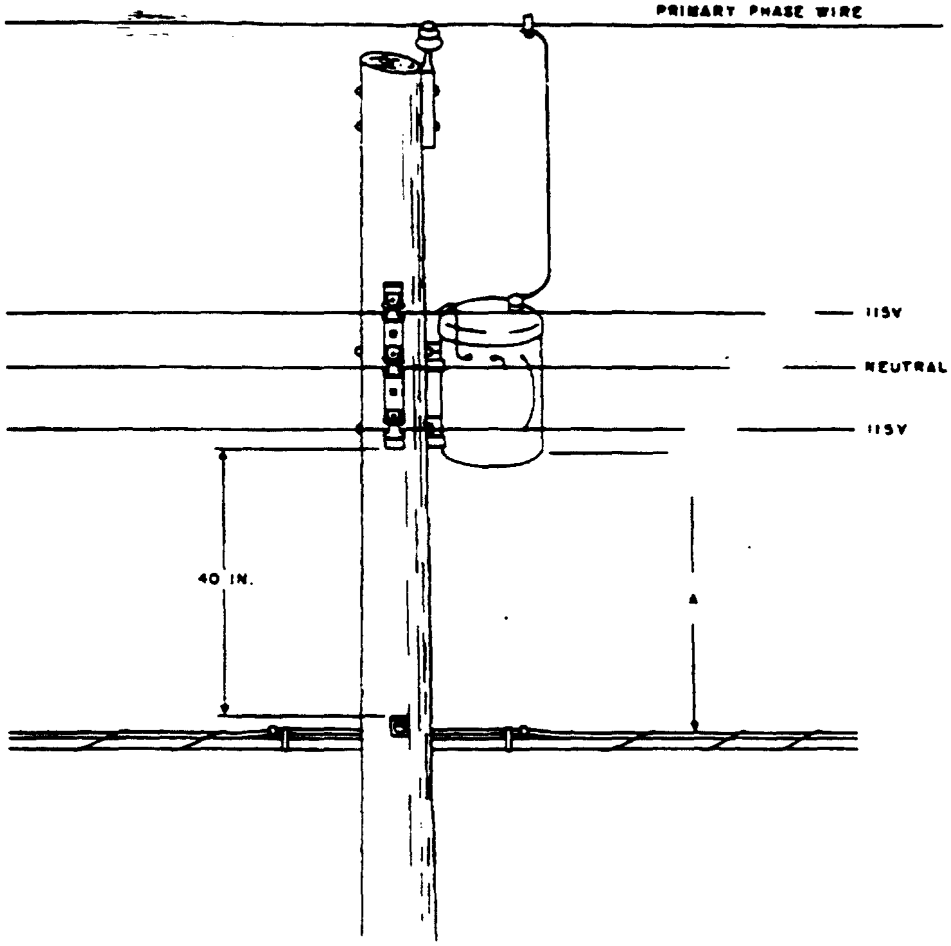

Figure 3-4. Clearances Between Power Transformer Voltage Regulator or Capacitor and Communication Wire or Cable

Note: A = 30 inches (0.75 m) if transformer is effectively grounded as uniform practice over well-defined area. Otherwise, 40 inches (1 m) for 8.7 kV or less and 40 inches (1 m) + 0.4 inches (10 mm) for each kV over 8.7 kV.

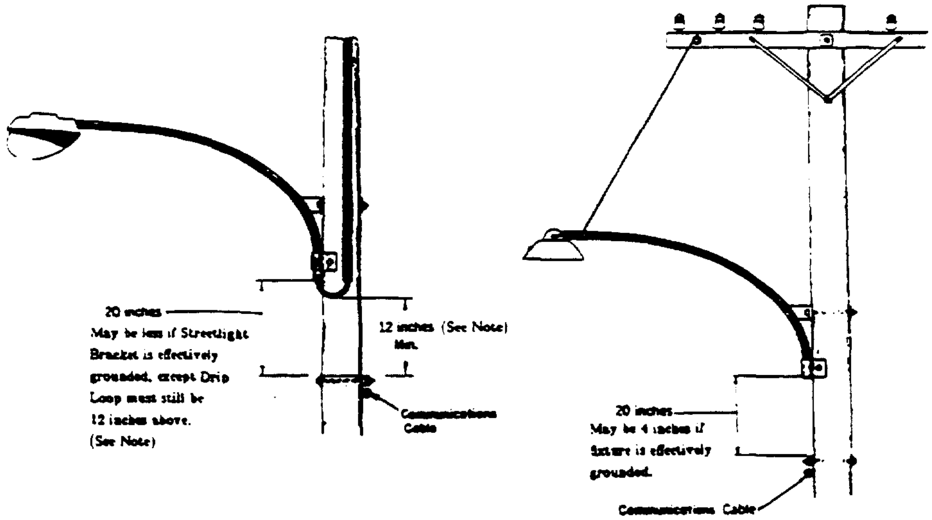

Figure 3-5. Clearance Between Streetlight Bracket and Communication Cable

NOTE: The 12 inch (300 mm) clearance may be reduced to 3 inches (75 mm) if the loop is covered by a suitable non-metallic covering that extends at least 2 inches (50 mm) beyond the loop.

Minimum clearances at crossings of communication wires or cables and power conductors, neutrals, guys, and other communication cables carried on different structures based on Section 23, Rule 233C and associated Table 233-1 of the 1997 Edition of NESC, are shown in Table 3-2. The clearances in Table 3-2 are based on the maximum sag for the power conductors. This will occur at either the maximum operating temperature of the conductor or with the radial thickness of ice for the loading district involved. In almost all cases, it will be necessary to contact the local power company for sag data on its conductors. The clearances apply when the power facility is above the communications facility.

Table 3-2. Vertical Clearance at Span Crossing Upper Conductor at Maximum Sag —Communication Conductor at Ambient

Between Communication Facility and	Vertical Clearance For		Remarks
	Wire & Cable	Guy	
Supply cables 750V or less	2 ft (0.6 m)	2 ft (0.6 m)	
Neutrals associated with systems of 22,000V or less to ground, if effectively grounded	2 ft (0.6 m)	2 ft (0.6 m)	If within 3 ft (900 mm) of pole, wire-to-pole clearance also applies
Open conductors 0-750V	4 ft (1.2 m)	4 ft (1.2 m)	2 ft. (600 mm) for drop wires
Open conductors and service drops 750V - 22kV	5 ft (1.5 m) [1]	5 ft (1.5 m)	May be 4 ft (1.2 m) if crossing more than 6 ft (1.8 m) horizontal from pole
Open conductors over 22kV	[2]	[2]	
Neutrals of systems above 22kV to ground, and any neutral not effectively grounded		Same clearance as phase wire	
Power cables having effectively grounded continuous metallic sheaths	2 ft (0.6 m)	2 ft (0. 6 m)	If within 3 ft (900 mm) of pole, wire-to-pole clearance also applies
Other power cables, including			Same clearance as for spacer cables open power wires of the same voltage
Service drops 750V or less	2 ft (0.6 m)	2 ft (0.6 m)	4 ft (1.2 m) required for cable crossing above open service drops. Should be avoided.
Guys, span wires, lightning protection wires	2 ft (0.6 m)	2 ft (0.6 m)	
Foreign communication cables, wires, and guys	2 ft (0.6 m)	2 ft (0.6 m)	

Notes:

[1] May be reduced to 4 feet (1.2 m) where supply conductors of 750V to 8.7kV cross a communication line more than 6 feet (1.8 m) horizontally from a communication structure (i.e., telephone pole).

[2] The vertical clearance should be 5 ft + 0.4 in/kV over 22kV (1.5 m + 10 mm/kV) over 22 kV.

3.4 Clearance Between Power and Communication Conductors in the Span

Generally, communication conductors at midspan must be no closer to power conductors of 50kV, phase-to-phase, than 75% of the clearance required at the supporting structure. This is a closest point of approach since the power conductor is assumed to be at final sag with radial thickness of ice as specified for the loading district or at maximum operating temperature, whichever produces the maximum sag.

The exception to the requirements in this section is that effectively grounded neutral conductors and power cables having an effectively grounded continuous metallic sheath or shield may have a minimum span clearance of 12 inches (300 mm) from communication conductors if a 30-inch (750-mm) clearance is maintained at the supports.

Power service drops may have a clearance of 12 inches (300 mm) from communication service drops at any point in the span and at the attachment to the building if the required clearance is maintained at the supporting structure.

The required minimum midspan clearances between power supply conductors and communication conductors are shown in Figure 3-8 and Table 3-3. These clearances are based on Section 23 of the NESC 1997 edition.

Table 3-3. Minimum Mid-Span and Vertical Clearances[1]

Power Conductor	Maximum Voltage (Phase to Ground)	Minimum Dimensions (See Figure 3-8)		Minimum Clearance at Pole [2]
		A	B[3]	
Open Conductors, Spacer Cable and Triplex and Quadraplex Cable (Figures 3-6 and 3-7)	0 to 8.7 kV	30 in (750 mm)	Does Not Apply	40 in (1 m)
	8.7 to 50 kV [5]	[5]	> or = 0	40 in + .4 in (I m + 10 mm) per kV over 8.7 kV
Other Cables With Grounded Sheath or inches Strand	> 50 kV	12 in (30 mm)	Does Not Apply	30 in (750 mm)
Effectively Grounded Neutrals	> 50 kV	12 in (30 mm)	Does Not Apply	30 in 0(750 mm)

Notes:

[1] Clearances are measured at the maximum sag condition of the power conductor and, for the communication conductor, at the final unloaded sag under the same ambient as the power conductor.

[2] The minimum clearance at poles may have to be greater to meet mid-span requirements.

[3] For spans longer than 150 feet (45 m).

[4] Includes neutral, if not effectively grounded.

[5] Seventy-five percent of pole clearance (last column).

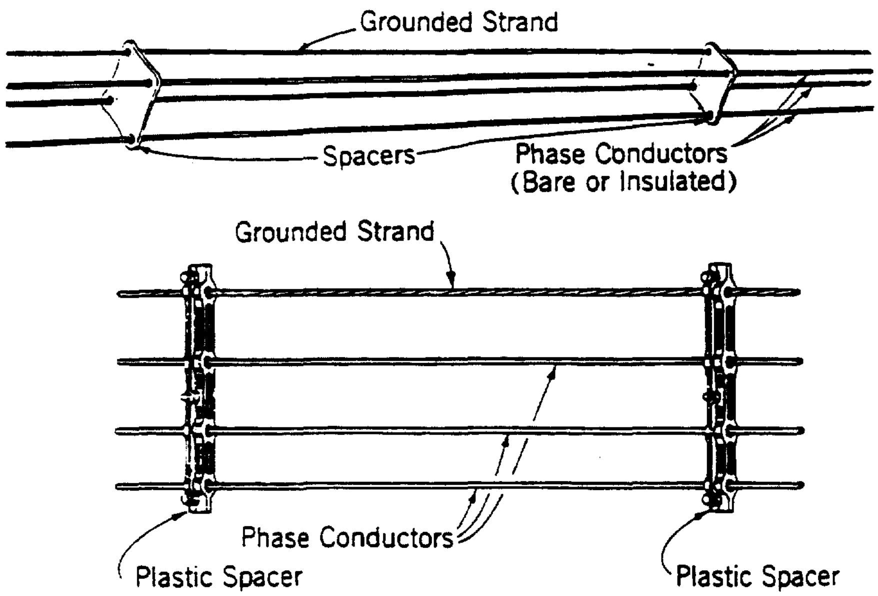

Figure 3-6. Spacer Cables

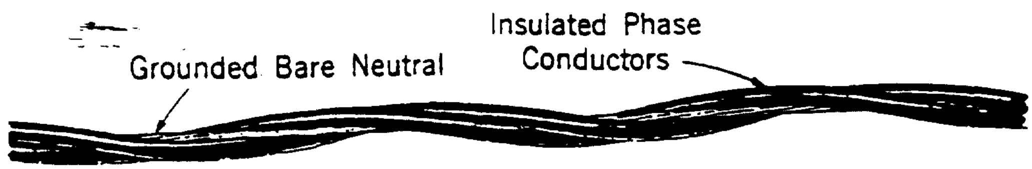

Figure 3-7. Triplex Power Cable

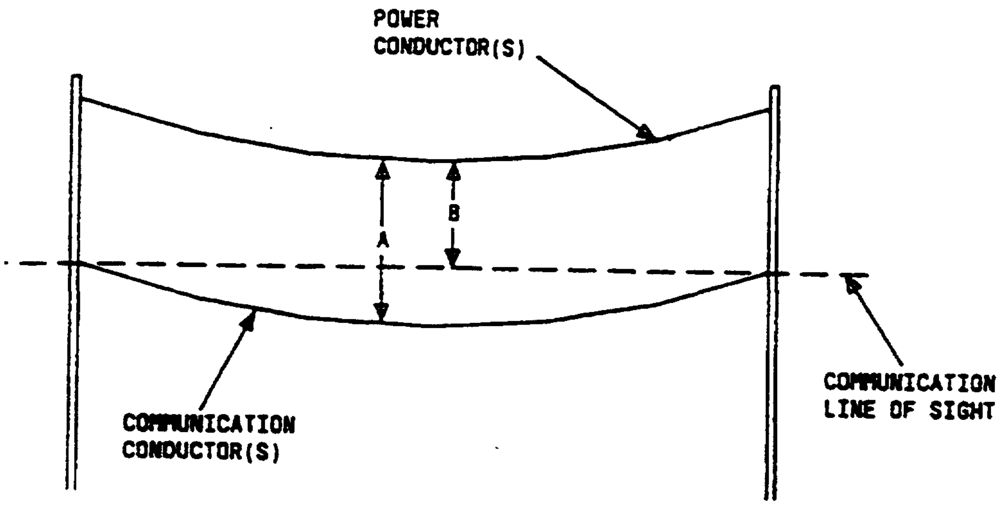

Figure 3-8. Midspan Clearance

3.5 Clearances Above Roads, Rails, and Other Structures

Clearances for all sizes of strand and all weights of cable are shown in Table 3-4.

The clearances shown in Table 3-4 represent communication conductor or cable sag at "**worst case**" condition, i.e., maximum temperature or with radial thickness of ice for the loading district involved. Although the clearance numbers appear radically different from earlier code editions because of the different form in which they are expressed, attachment heights are essentially unchanged in the heavy loading districts. The clearances shown in Table 3-4 must not be applied at 60°F (15°C), but are intended to be applied under maximum sag conditions.

Table 3-4. Clearances for All Sizes of Strand and Weights of Cable

Situation	Typical Clearances All Loading Areas [1]	Remarks
Crossing Above		
• Railroad Tracks	23.5 ft (7 m) [2]	For special railways using cars less than 22 ft (6.7 m) high, see Table 232-1 of the NESC
• Public Roads	15.5 ft (4.8 m)	
• Public Alleys	15.0 ft (4.6 m)	
• Nonresidential Driveways	15.0 ft (4.6 m)	Includes parking lots
• Residential Driveways	15.0 ft (4.6 m)	Communication Service Drops - 11.5 ft (3.5 m)
• Walks & Lanes	95 ft (2.9 m)	
• Flat Roof Buildings	10.5 ft (3.2 m)	Vertical
• Peak Roof Buildings	3.0 ft (900 mm)	Vertical
• Billboards	3.0 ft (900 mm)	Horizontal and Vertical
• Signs	3.0 ft (900 mm)	Horizontal and Vertical
• Waterways		See Table 232-1 of the NESC or the proper administrative authority
Paralleling Public Roads		
• Urban	15.5 ft (4.8 m)	15 feet (4.6 m) if in back of vehicular deterrents such as curbs
• Rural (Light Traffic)		
—Back of Obstacle	9.5 ft (2.9 m)	Unlikely to have vehicles passing under the line. Obstacles include ditches, fences, embankments
—Not Back of Obstacle	13.0 ft (4 m)	
• Public Alleys	15.0 ft (4.6 m)	

Notes:

[1] Represents clearances that are usually applicable but are often modified by specific conditions covered by Table 232-1 of the NESC.

[2] The minimum size strand required for crossing is 6M strand.

3.6 Climbing Space

In addition to the clearances covered in Sections 3.2 through 3.5, proper climbing space must be maintained. Climbing space is an unobstructed vertical space along the side of a pole. In general, it consists of an imaginary box 30 inches (750 mm) square, extending at least 40 inches (1 m) above the highest communication cable or other facility and 40 inches (1 m) below the lowest communication cable or other facility. Figure 3-9 illustrates how the 30-inch (750-mm) climbing space can be maintained where drop wires are involved. Note that in Figure 3-9 (g) and (h) this is accomplished by using span clamps attached to the strand supporting the cable.

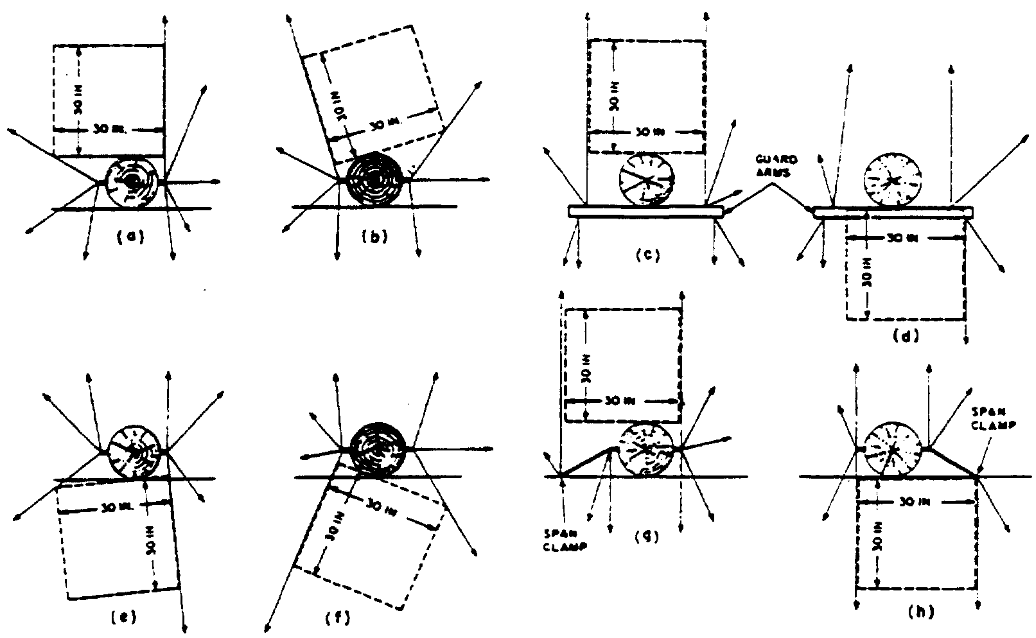

Figure 3-9. Climbing Space Where Drop Wires Are Involved

The minimum vertical clearance (the closest distance from the ground to the span) in Figure 3-10 is 17 feet (5.2 mm). This does not include the sag due to storm loading. To calculate total vertical height over a surface, storm loading must be added.

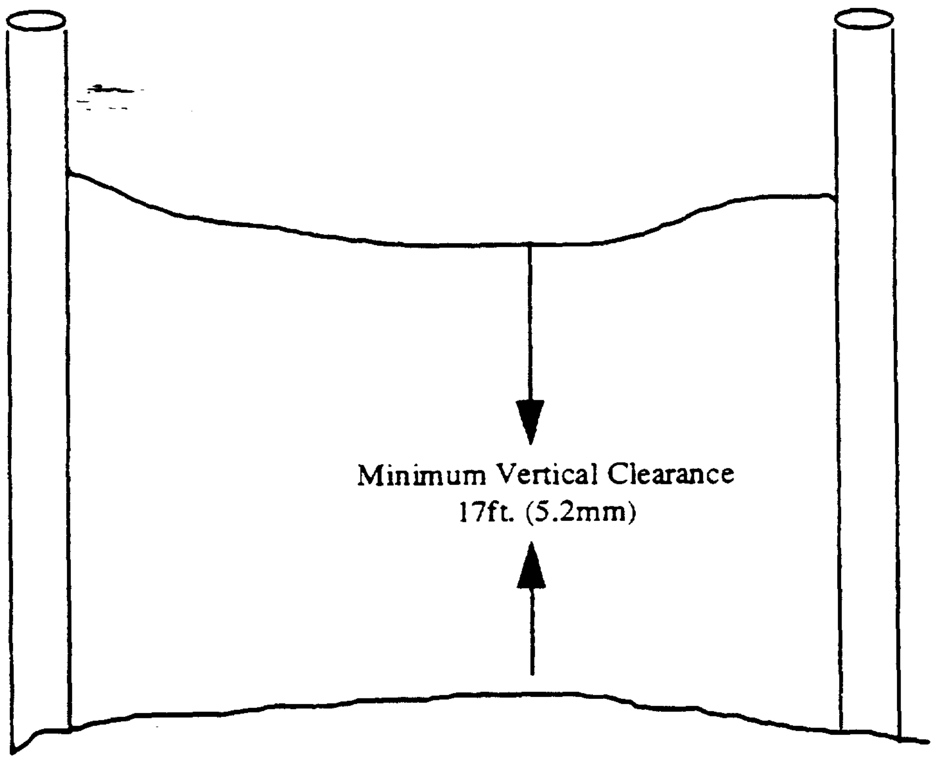

Figure 3-10. Minimum Vertical Clearance

3.6.1 Calculations

The height at which a cable is to hang above a surface such as a street, pedestrian path, navigable waterway, etc., is determined as follows:

Minimum Vertical Clearance
+ Sag Due to Storm Loading
= Total Vertical Height Over Surface

It is necessary to assume the wind and ice loads that may occur on a line. Three general degrees of loading due to weather conditions are recognized and are designated as heavy, medium, and light loading. Figure 250-1 of the NESC shows the districts where these loadings apply. Table 3-5 shows the radial thickness of ice and the wind pressures to be used in calculating loads. Ice is assumed to weigh 57 lb/ft^3 (913 kg/m^3).

Table 3-5. Ice, Wind, and Temperature

	Loading Districts (For With For Use With Rule 250B)			Extreme Wind Loading (For Use With Rule 250C)
	Heavy	Medium	Light	
Radial Thickness of Ice	0.50 in (12.5 mm)	0.25 in (6.5 mm)	0 in (0 mm)	0
Horizontal Wind Pressure	4 psf (190 Pa)	4 psf (190 Pa)	9 psf (430 Pa)	Refer to Figure 250-2 of the NESC
Temperature	0°F (-20°C)	15°F (-10°C)	30°F (-1°C)	+60°F (+15°C)