

SEPARATION AND MECHANICAL PROTECTION

FOR WIRE AND CABLE

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1. GENERAL

1.01 This section specifies minimum separations required between foreign conductors and telephone wiring in or on buildings and in spans to buildings. It also describes mechanical protection required between telephone wiring and pipes, gutters, masonry, etc. However, uncovered steam and hot water pipes, stationary metal grating, etc. require extra consideration due to excessive heat and abrasion.

1.02 This section is being reissued to update material items and to delete redundant graphics.

2. PRECAUTIONS

2.01 All wire installed in explosive atmospheres shall be placed in accordance with the instructions pertaining to that equipment.

The separations shown in Tables A, B, and C are minimum requirements. Greater separations shall be provided where readily obtainable.

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- 2.02 Separations of less than 6 feet between drop, block, station wiring, station cabling, or telephone ground wires and lightning wires or rods are permissible where telephone, power, and lightning rod ground connections are made to a common grounding medium as specified in section 460-100-121. In no case shall the separation be less than 4 inches.
- 2.03 Separations and protection requirements for wiring which is placed on outside walls of buildings and is to be extended to off-premises stations, outdoor stations, loud ringing bells, etc. are the same as those specified for drop and block wire and are shown in Table B.
- 2.04 Whenever practical, avoid running telephone wire or cable in the same conduit, molding, or runway with foreign signal circuits which are operated by battery or from a stepdown transformer. Strict adherence to this recommendation will minimize the possibility of interference by either or both parties during placing or maintenance activities.

WIRE OR CABLE SHALL NOT BE PLACED IN PIPE, CONDUIT, OR COMPARTMENT CONTAINING ELECTRIC LIGHT AND POWER WIRES OR CABLES, NOR IN THE SAME OUTLET BOX, JUNCTION BOX, OR COMPARTMENT UNLESS SEPARATED FROM THE ELECTRIC LIGHT AND POWER WIRES BY A SUITABLE INSULATING PARTITION.

- 2.05 Cold water pipes sweat under certain humid conditions; therefore, cross wire over rather than under the pipes so as to protect the wire from wet conditions.

3. DEFINITION OF TERMS

- 3.01 Terms used in Tables A, B, and C are defined below:

Bare Wire - A conductor having no covering or insulation whatsoever.

Open Wiring - A wiring method using cleats, knobs, tubes, and flexible tubing for the protection and support of insulated conductors run in or on buildings, and not concealed by the building structure.

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Service Drop - The overhead service conductors between the last pole or other aerial support and the first attachment to the building.

Nonmetallic Sheathed Cable - An assembly of two or more insulated conductors having an outer sheath of moisture resistant, flame retardant, nonmetallic material.

3.02 Separations specified in Tables A, B, and C apply to crossings and parallel runs.

4. SEPARATIONS

4.01 A protective covering is required (Fig. 1) where it is not practical to obtain the minimum separation of crossings shown in Tables A and B or where wire and cable runs are subject to mechanical damage, abrasion, or excessive heat. Where Tables A and B list No Alternative, the minimum separation must be maintained. P wire guard, plastic tube, or two layers of friction tape shall be used in all cases where telephone wiring is subject to abrasion or mechanical damage.

4.02 Where plastic insulated station wire or cable passes through wall or floor adjacent to wall or baseboard, protection with friction tape or P wire guard is not required unless wire is subject to mechanical damage or abrasion.

4.03 Where station wiring passes over floor away from wall or baseboard, protect it from mechanical damage with overfloor ducts and associated fittings as covered in the section entitled Overfloor Ducts, Identification and Installation.

4.04 Tables A and B list the minimum separations between telephone wiring and foreign conductors or metallic objects outside or inside buildings.

4.05 Table A applies only to telephone wiring between the protector (fuseless or fused) and the telephone equipment and to the telephone wiring requiring no protection.

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4.06 Table B applies only to telephone wiring (drop or block) attached to the building and feeding a protector (fuseless to fused).

4.07 Table C lists the minimum separations that shall be obtained between drop wire in the span to a building and foreign conductors or metallic objects.

5. MECHANICAL PROTECTION

5.01 Where it is not practical to obtain recommended minimum separations at crossings other than those shown as No Alternative in Table A and B, or where wire or cable runs are subject to mechanical damage, abrasion, or excessive heat, a protective covering is required as shown in Fig. 1. The protective covering should be as follows:

- B Plastic Tube, and P Wire Guard, or two layers of vinyl extending 2 inches beyond each side of object being crossed.
- P Wire Guard, B Plastic Tube, or two layer of vinyl tape shall be used in all cases where telephone wiring is subject to abrasion and mechanical damage.

5.02 Where plastic-insulated station wire passes through the wall or baseboard, protection with vinyl tape or P wire guard is not required unless wire is subject to mechanical damage or abrasion.

5.03 Where station wiring passes over floor away from wall or baseboard, protect it from machanical damage with overfloor ducts and associated fittings as covered in Section 461-350-100.

5.04 Figures 2 through 4 are typical examples of wiring requiring protection.

NOTE: DO NOT RUN WIRES OR CABLES THROUGH REMOVABLE GRATINGS.

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TABLE A - SEPARATION AND PHYSICAL PROTECTION FOR WIRING  
BETWEEN PROTECTOR AND TELEPHONE EQUIPMENT

This table applies only to telephone wiring from fuseless or fused protector to telephone equipment and to telephone wiring requiring no protector. Minimum separations between telephone wiring outside or inside buildings, and type of plant involved, are as follows. Separations apply to crossings and to parallel runs.

TYPE OF PLANT INVOLVED		MINIMUM SEPARATIONS	PROTECTION REQUIRED IF MINIMUM SEPARATIONS CANNOT BE OBTAINED (Note 1)
	Bare light or power wire of any voltage	5 ft (Note 2)	No Alternative (Note 2)
Electric Supply	Open wiring not over 300 volts	2 in.	See Note 3
	Wires in conduit or in armored or nonmetallic sheath cable, or power ground wires	None	
Radio and Television	Antenna lead-in and ground wires	4 in.	See Note 3
Signal or Control Wires	Open wiring or wires in conduit or cable	None	
Communication Wires	Community television systems coaxial cables with shields at ground potential	None	

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TABLE A (Continued)

Telephone Drop or Block Wire	Using fused protectors	2 in.	See Note 3
	Using fuseless protector or where no protector required	None	
Telephone Ground Wire		None	
Sign	Neon signs and associated wiring from transformer	6 in. (Note 4)	SK station wire with shield grounded or lead cable with sheath grounded. Ground requirements same as for signaling ground. See Section 638-210-100.
Lightning System	Lightning rods and wires	6 ft	See 2.01
Pipe	Steam or hot water or heating ducts	See Note 5	See Note 5
Stationary Grating, Metal Shutter Grillwork, etc.		P Wire Guard, or two layers of vinyl tape required in all cases to resist abrasion.	

Note 1: Applies only to crossings. For parallel runs the indicated minimum separations must be maintained.

Note 2: Power is to be turned off if working above bare wire. Ladders shall be placed to maintain a 5-foot minimum clearance.

Note 3: B Plastic tube; P wire guard; or two layers of vinyl tape extending 2 inches beyond each side of object being crossed.

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## TABLE A (Continued)

Note 4: To prevent accidental breakage, avoid neon sign location if alternate run is possible.

Note 5: Excessive heat may damage plastic-insulated wires, therefore, avoid heating ducts and other heat sources.

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TABLE B - WIRING BETWEEN BUILDING ATTACHMENT AND TELEPHONE PROTECTOR

This table applies only to telephone wiring (drop or block) attached to buildings and feeding a fuseless or fused protector. Minimum separations between telephone wiring outside or inside buildings, and type of plant involved, are as follows: Separations apply to crossings and to parallel runs.

TYPE OF PLANT INVOLVED		MINIMUM SEPARATIONS	PROTECTION REQUIRED IF MINIMUM SEPARATIONS CANNOT BE OBTAINED (Note 2)
Electric Supply	Bare light or power wire of any voltage	5 ft (Note 2)	No Alternative (Note 2)
	Service drops or open wiring not over 750 volts	4 ft.	
	Wires in conduit, or in armored or nonmetallic sheath cable, or power ground wires	2 in.	P Wire Guard extending 2 inches beyond each side of object being crossed
Radio and Television	Antenna lead-in and ground wires	4 in.	
Signal Wire	Open wiring or wires in conduit or cable	2 in.	
Communication Wires	Foreign open wiring and wires in conduit or cable	2 in.	
	Between exposed and unexposed Telephone Company wires		

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TABLE B (Continued)

	Community television systems coaxial cables with shields at ground potential	None	
	Downspouts and gutters	2 in.	
Metallic Object	Stationary Gratings, etc.	P Wire Guard or two layers of vinyl tape required in all cases to resist abrasion	
Telephone Ground Wire		None	
Sign	Neon signs and associated wiring from transformer	6 in.	P Wire Guard, 12 inches long (Note 3)
Lightning System	Lightning rods and wires	6 ft	See 2.01
Telephone Ground Rods to Other Ground Rods		6 ft	No Alternative
<p>Note 1: Applies only to crossings. For parallel runs the indicated minimum separations must be maintained.</p> <p>Note 2: Power is to be turned off if working above bare wire. Ladders shall be placed to maintain a 5-foot minimum clearance.</p> <p>Note 3: To prevent accidental breakage, avoid neon sign location if alternate run is possible.</p>			

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TABLE C - MINIMUM SEPARATIONS BETWEEN DROP WIRE SPANS  
AND OTHER EQUIPMENT OR WIRING

Minimum separations between drop wire spans to buildings, and type of plant involved, are as follows:			
TYPE OF PLANT INVOLVED		DROP WIRE SPAN TO BUILDING MINIMUM SEPARATION	
		CROSSING	PARALLEL
Electric Supply	Service drops or open wiring not over 750 volts	2 ft	1 ft
	Wires in conduit, or in armored or nonmetallic sheath cable	4 in.	4 in.
Radio and Television	Antenna lead-in and ground wires	2 ft	1 ft
Signal Wires	Open wiring	2 ft	1 ft
	Wires in conduit or cable	4 in.	4 in.
Communication Wires	Foreign open wiring	2 ft	1 ft
	Foreign wires in conduit or cable	4 in.	4 in.
	Community television systems coaxial cables with shields at ground potential	4 in.	4 in.

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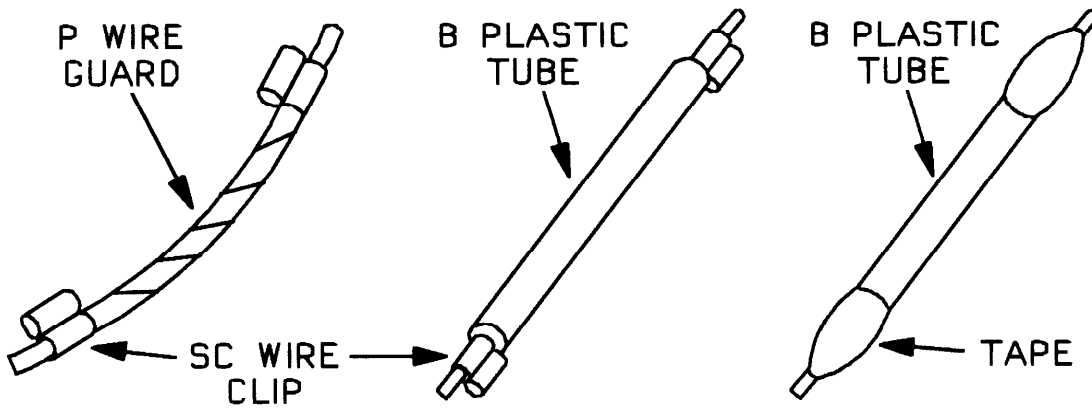
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TABLE C (Continued)

Metallic Objects	Rain spouts, gutters, etc.	4 in.	4 in.
Ground Wires	Ground wires (except radio, tele- vision, and lightning ground wires)	4 in.	4 in.
Lightning	Lightning wires and rods	6 ft	6 ft
Signs	Neon sign and associated wiring from transformer	1 ft	1 ft

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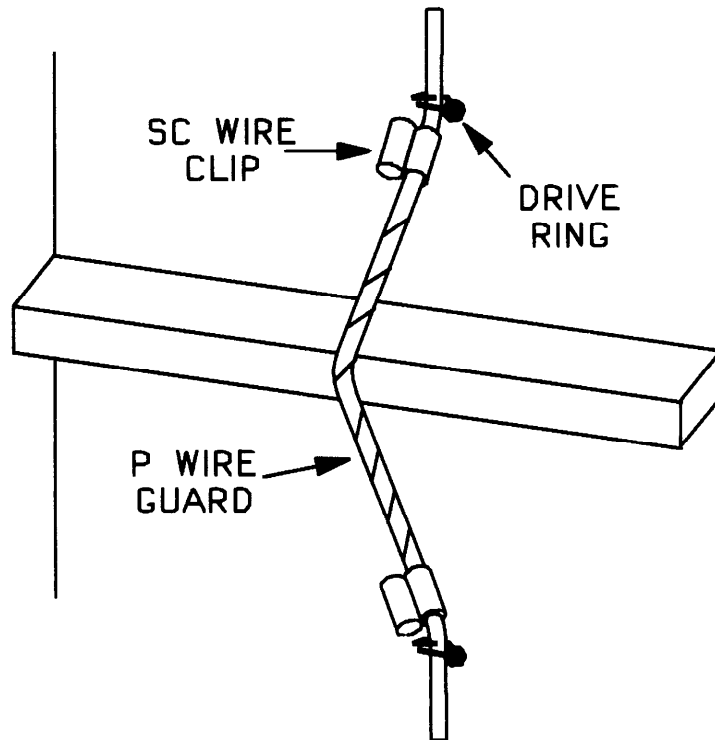


## SECURING PLASTIC TUBES OR E WIRE GUARD

Figure 1

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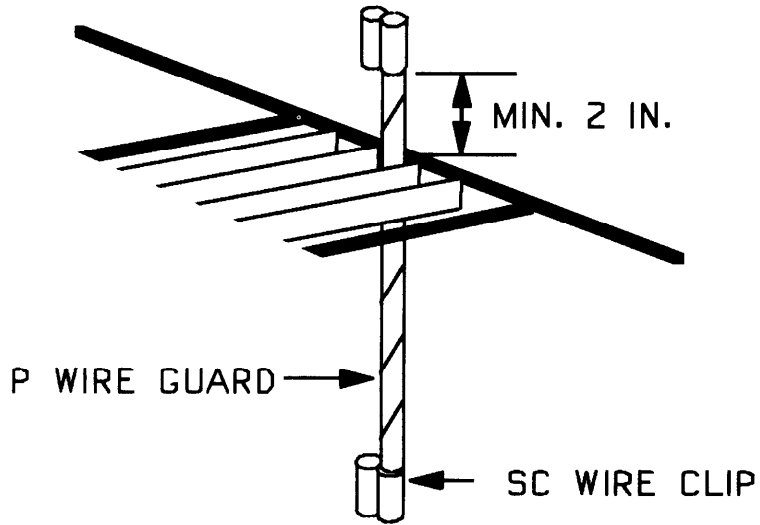


## CROSSING MASONRY BUILDING PROJECTION

Figure 2

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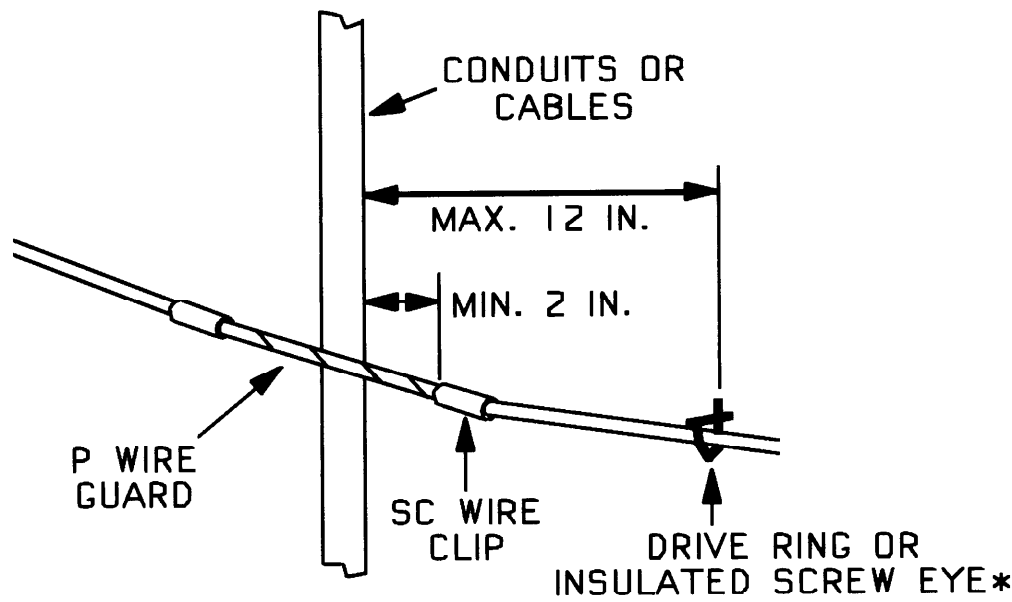


### PROTECTING WIRE RUN THROUGH STATIONARY METAL GRATING

Figure 3

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\* USE INSULATED ATTACHMENTS WHERE FUSED PROTECTION IS REQUIRED.

**WIRES CROSSING CABLES, CONDUITS, SIGNAL OR GROUND WIRES ON WOOD, STUCCO OR METAL SIDING**

Figure 4

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