

DROP AND BLOCK WIRE ATTACHING AND FASTENING

1. GENERAL

1.01 In order to obtain secure attachments and avoid damage to building surfaces, it is essential that the proper clearance and lead holes be used for fasteners as shown in Division 080.

1.02 This section is reissued to:

- Add new C wire loop that replaces the B wire loop which has been rated MD.
- Add new B masonry fastener that replaces the D masonry fastener which has been rated MD.
- Add KS-19094 anti-seize compound for use with dissimilar metals.
- Add new F drop wire (AT-8668) which will replace the C drop wire.

1.03 ♦ Apply KS-19094, List 1 anti-seize compound when installing galvanized attachments on aluminum siding to prevent galvanic action. Squeeze paste from tube onto finger and apply even coat to inside surfaces of attachment and mounting screws.♦

1.04 ♦ Apply KS-14681, List 1 anti-rust compound to mounting screwthreads when installing galvanized attachments on steel pipe or galvanized siding. Refer to Section 080-720-110 for application.♦

1.05 ♦ The B masonry fastener is a nail-type fastener used with the C wire loop at permanent installations. The D (MD) masonry fastener is a nail-type fastener used to support the B (MD) wire loop.♦

1.06 ♦ The C wire loop replaces the B (MD) wire loop and will accommodate the same number of wires or cables as did the comparable B (MD) wire loop.♦

1.07 ♦ F drop wire consists of two parallel No. 18-1/2 AWG copper-covered steel conductors

insulated with a single layer of black vinyl plastic compound. A single ridge tracer on the insulation surface provides conductor identification. As F drop wire becomes available, the C drop wire will be rated MD. Refer to Section 462-200-200 for information on F drop wire.♦

1.08 ♦ It is possible for foreign voltage to be present on buildings covered with metal siding.

Caution: Before making body contact with any portion of the metal siding, test siding with B voltage tester. Refer to Section 460-300-109 for use of B voltage tester.♦

2. TYPICAL FIRST ATTACHMENTS TO BUILDINGS AND STEEL STRUCTURES (Fig. 1 through 9)

2.01 Tables A, B, and C list anchoring devices of first attachments used on various surfaces.

2.02 Table D lists equipping information for first attachments.

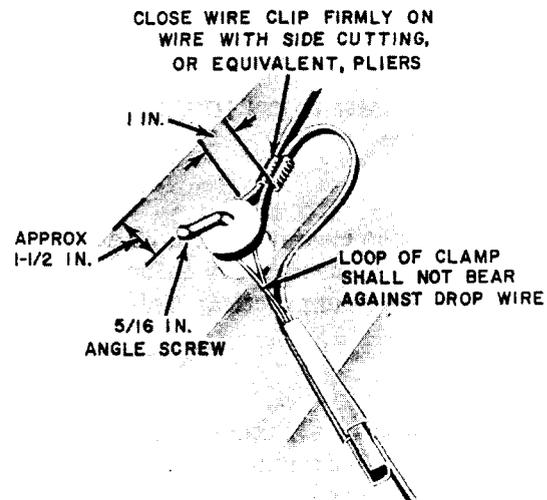


Fig. 1—First Attachment, Horizontal Run

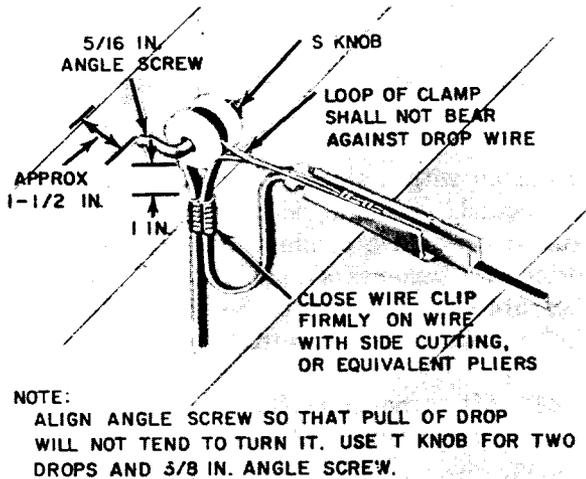


Fig. 2—First Attachment, Vertical Run

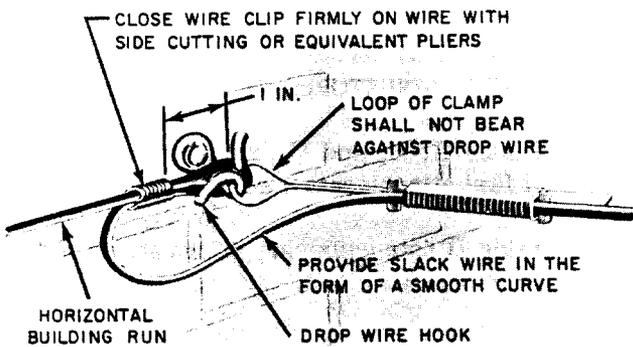


Fig. 3—First Attachment, Drop Wire Hook

3. FIRST ATTACHMENTS ON LOW BUILDINGS (Fig. 10 through 13)

3.01 Where house clearance fixtures are required but have not been provided or where joint use of a fixture is impractical, refer matter to supervision.

3.02 Where clearance fixtures are provided but the required minimum ground clearance for drops cannot be obtained, refer matter to supervision.

4. PRECAUTIONS

4.01 Observe the following precaution when planning attachments to a subscriber-owned clearance fixture.

- (a) Avoid climbing on roofs of subscriber premises.
- (b) Wear safety glasses when drilling or hammering
- (c) Before making attachment, inspect fixtures, but do not make an attachment if there is any doubt as to the strength or firmness of the fixture.
- (d) On joint-use fixtures observe location of the power service drops in order to avoid body contact. Wear rubber gloves and avoid body contact when making attachment to the fixture. Obtain a separation of at least 1 foot between telephone and power wires (Fig. 12 or 13).

5. INTERMEDIATE AND LAST ATTACHMENTS

5.01 Plan the wire run so that the locations of the point of entrance and the location of the station protectors, where the latter are required, will conform to the rules covered in Section 460-100-200 covering installation of station protector.

5.02 Do not use block wire as any part of the connection between exposed plant and the protectors, except when used as the bridle fuse wire on stations served from open wire, C rural, or 19-gauge multiple line wire with a 123A1A, 123B1A, or 128A1A-2 protector. Block wire may be used on the station side of protector.

6. SPACING OF ATTACHMENTS

6.01 Space drop wire attachments 9 feet apart or less on horizontal runs and 12 feet apart or less on vertical runs.

6.02 Space block wire attachments 4 feet apart or less on horizontal runs and 8 feet apart or less on vertical runs.

TABLE A
FASTENERS FOR DROP WIRE HOOK

WALL TYPE	FASTENERS		REMARKS
	QUANTITY	TYPE	
Wood Siding	1	2-in. No. 18 RH galvanized wood screw	Place screw in studding.
Stucco on Wood	1	2-in. No. 18 RH galvanized wood screw	Place screw in studding.
Rigid Composition Shingles	1	2-in. No. 18 RH galvanized wood screw	Drill clearance hole to avoid splitting shingle.
Masonry or Substantial Brick Veneer*	1	5/16-in. by 1-3/4-in. B drive anchor	Locate anchor in center of brick. Second drop wire hook should be located in separate brick.
Thin Wall Brick Veneer (Less Than 3-3/4 Inch Thickness)	1	6-in. No. 18 RH galvanized wood screw	Pass screw through the seam between bricks. Penetrate wood backing approximately 1 inch.
Hollow Tile	1	5/16-in. by 5-in. RH galvanized toggle bolt	Place 7/16 in. by 2-in. galvanized square washer between wall and drop wire hook.

* Do not use corner or top row of bricks.

TABLE B
FASTENERS FOR S AND T KNOBS

WALL TYPE	ATTACHMENT KNOB	FASTENERS		REMARKS	
		QUANTITY	TYPE		
Wood Siding	S	1	2-1/2 in. No. 18 FH galvanized wood screw	Place screw in studding.	
	T	1	3-1/2 in. No. 18 FH galvanized wood screw		
Stucco on Wood	S	1	3-in. No. 18 FH galvanized wood screw	Use 3-1/2 in.	If necessary to penetrate studding.
	T	1	3-1/2 in. No. 18 FH galvanized wood screw	Use 4-1/2 in.	
Rigid Composition Shingles	S	1	3-1/2 in. No. 18 FH galvanized wood screw	Drill clearance hole to avoid splitting shingle.	
	T	1	4-1/2 in. No. 18 FH galvanized wood screw		
Thin Wall Brick Veneer (Less Than 3-3/4 Inch Thickness)	S	1	7-in. No. 18 FH galvanized wood screw	Pass screw through the seam between bricks. Penetrate wood backing approximately 1 inch.	
	T	1	7-in. No. 18 FH galvanized wood screw		
Hollow Wall	S	1	5/16 in. by 5 in. RH galvanized toggle bolt	Place flat side of S knob against bolt head.	
	T	1	5/16 in. by 6 in. FH galvanized toggle bolt		

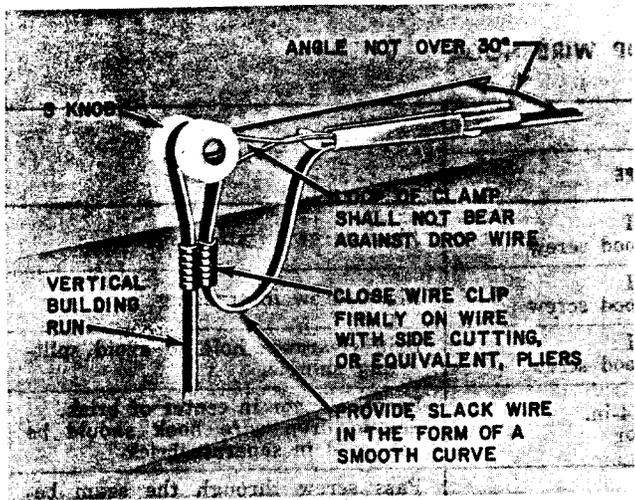


Fig. 4—First Attachment, S Knob

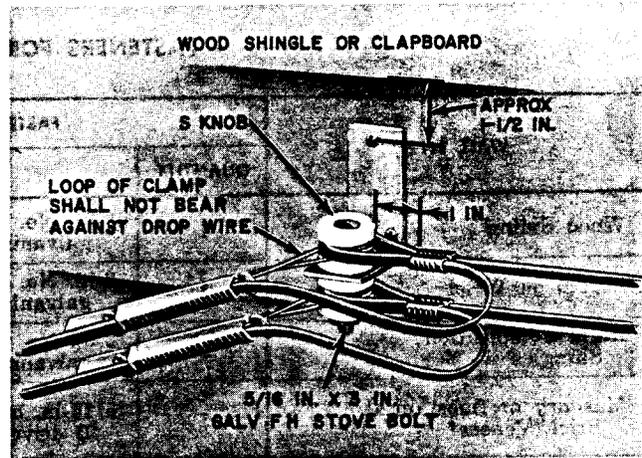


Fig. 6—First Attachment, House Bracket Horizontal Run

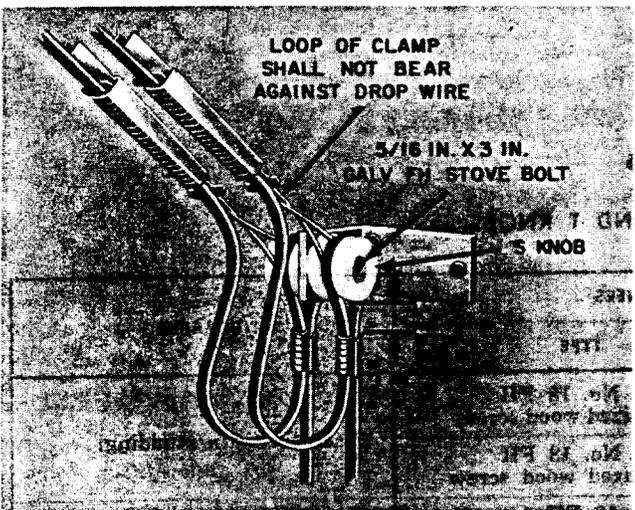


Fig. 5—First Attachment, House Bracket

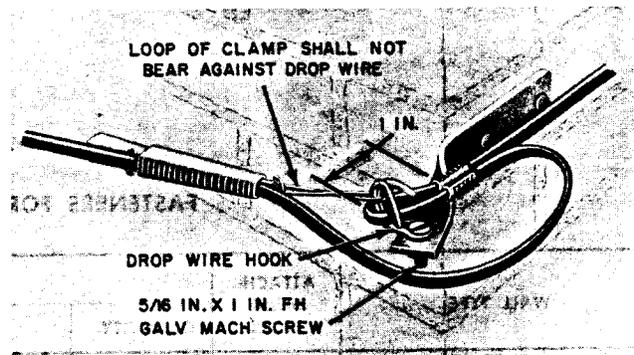


Fig. 7—First Attachment, Corner Bracket

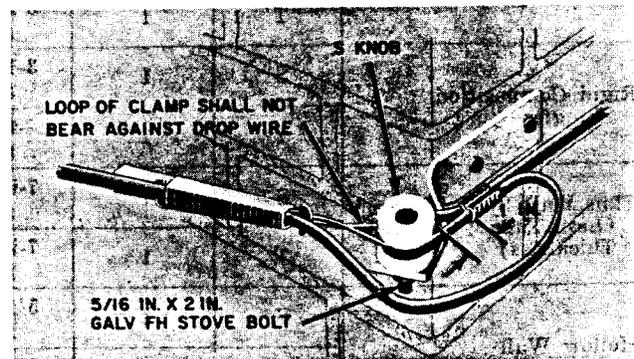


Fig. 8—First Attachment, Corner Bracket Using S Knob

6.03 Locate attachments so that fasteners will not be placed closer than 10 inches to the corner or the top of a wall, except in turning corners.

6.04 Place additional attachments as required to keep exposed wires terminated at fused-type protectors from touching flammable surfaces.

6.05 Where windows are available for making attachments on vertical runs, place an attachment at each floor.

TABLE C

FASTENERS FOR HOUSE AND CORNER BRACKETS

WALL TYPE	QUANTITY		FASTENERS	REMARKS
	HOUSE	CORNER	TYPE	
Wood Siding	3	2	2-in. No. 14 RH galvanized wood screws	Place screw in studding.
Stucco on Wood	3	2	2-1/2 in. No. 14 RH galvanized wood screws	Place screw in studding.
Rigid Composition Shingles	3	2	3-in. No. 14 RH galvanized wood screws	Drill clearance hole to avoid splitting shingle.
Masonry or Substantial Brick Veneer	2	2	5/16 in. by 1-1/4 in. B drive anchor	
Thin Wall Brick Veneer (Less Than 3-3/4 Inch Thickness)	2	2	6-in. No. 14 RH galvanized wood screws	Pass screw through the seam between bricks. Penetrate wood backing approximately 1 inch.
Hollow Wall	2	2	1/4 in. by 3 in. or 4 in. RH galvanized toggle bolt	

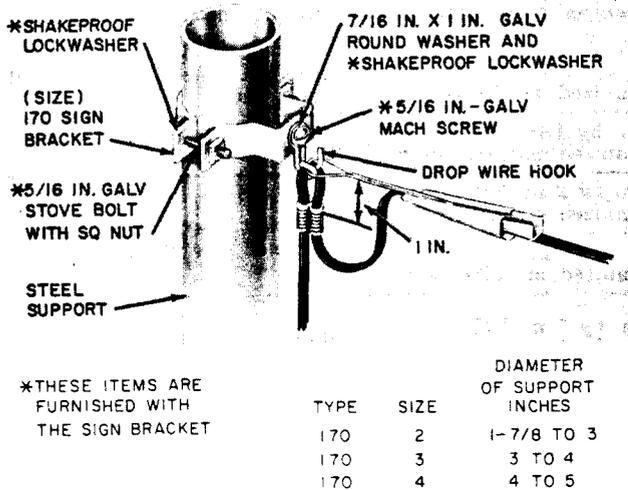


Fig. 9—First Attachment, Sign Bracket 170 Type

6.06 When establishing a wire run on a building wall where cable has been placed, the wire run should, in general, parallel the cable run.

(a) When paralleling cable is attached to building wall by cable clamps, place rings in every third cable clamp where clamps are 17 inches apart and in every other cable clamp where clamps are 26 inches apart.

(b) When paralleling cable is placed on strand, place separate cable rings for block wires and space them at double the spacing of the cable rings.

7. INTERMEDIATE ATTACHMENTS ON BUILDINGS (Tables E, F, G and Fig. 14 through 20)

7.01 Make all vertical or horizontal attachments on a straight line.

7.02 Wire loops, drive rings, or insulated screw eyes may be used for drop wire attachments at inside corners or for a change of direction. Drop wire hooks may also be used for this purpose.

7.03 Drop or block wires extending from unexposed plant should be supported with the following attachments:

- (a) Drive rings on wood frame building.
- (b) C wire loops and a suitable B masonry fastener on masonry surfaces.
- (c) Toggle bridle rings on hollow surfaces
- (d) Bridle rings as a substitute for drive rings when:
 - (1) Drive rings are likely to split woodwork.

TABLE D

EQUIPPING DROP WIRE ATTACHMENTS WITH S KNOB, T KNOB, OR DROP WIRE HOOK

ATTACHMENTS		EQUIPPED WITH			HARDWARE	REMARKS
		S KNOB	T KNOB	DROP WIRE HOOK		
Angle Screw	5/16 in.	1			Nut furnished	Place flat side of knob against beveled side of nut.
	3/8 in.		1			
House Bracket		1			5/16 in. by 2 in. FH galvanized stove bolt	Place flat side of first knob against house bracket.
		2*			5/16 in. by 3 in. FH galvanized stove bolt	Place flat side of second knob against beveled side of nut.
			1		3/8 in. by 3 in. galvanized machine bolt	Place flat side of first knob against bolt head.
			2*		3/8 in. by 5 in. galvanized machine bolt	Place flat side of second knob against nut.
				1	5/16 in. by 1 in. FH galvanized machine screw	Obtained locally.
Corner Bracket		1			5/16 in. by 2 in. FH galvanized stove bolt	Place flat side of knob against corner bracket.
		2*			5/16 in. by 3 in. FH galvanized stove bolt	Place flat side of top knob against bolt head and place nut against flat side of lower knob.
			1		3/8 in. by 3 in. galvanized machine bolt	Place flat side of knob against bolt head.
				1	5/16 in. by 1 in. FH galvanized machine screw	Obtained locally.
Insulator Supports	D	1			5/16 in. by 2 in. FH galvanized stove bolt	Place flat side of knob against beveled side of nut.
	C		1		3/8 in. by 3 in. galvanized machine bolt	
	D			1	5/16 in. by 1 in. FH galvanized machine screw	Obtained locally.
	C					
Sign Bracket, 170 Type				1	5/16 in. by 3/4 in. RH galvanized machine screw	Machine screw and lock washers furnished. Obtain 7/16 in. by 1 in. galvanized round washer locally.

* Locate one knob above and one knob below bracket.

(2) An intermediate support is needed for greater wire carrying capacity.

7.04 Drive rings equipped with a D drive anchor or C bridle rings equipped with a D plastic anchor may be used on masonry surfaces if they can be used in situations to better advantage than C wire loops.

7.05 Exposed drop wire runs that require fused protection and that are to be attached to a flammable surface should be supported with:

(a) Insulated screw eyes.

(b) C knob may be used if not more than two wires are to be placed.

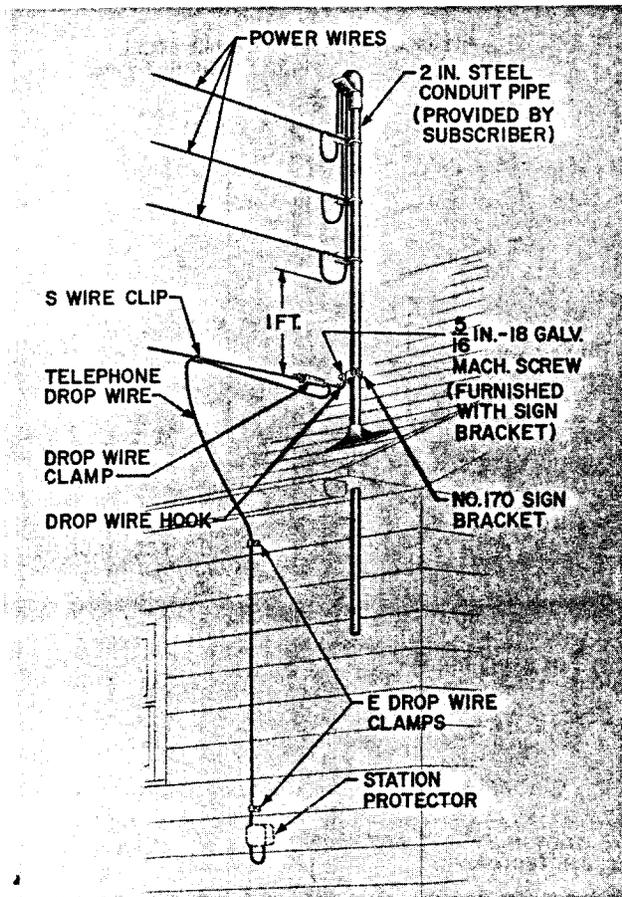


Fig. 10—Drop Wire Attached to Power Fixture

8. INTERMEDIATE ATTACHMENT INSIDE BUILDINGS

8.01 Drop wire runs between the point of entrance and the station protector should be kept as short as practicable.

8.02 Exposed runs that require fused protection and attach to flammable surfaces should be supported with insulated attachments.

8.03 Space attachments 16 inches apart on runs between the point of entrance and the protector or connecting block. Spacing will vary at corners with type of attachment used.

8.04 Where drop or block wires are extended from unexposed plant, or where block wire is extended from the station side of a fuseless protector, the method of fastening between the point of entrance and the connecting block or

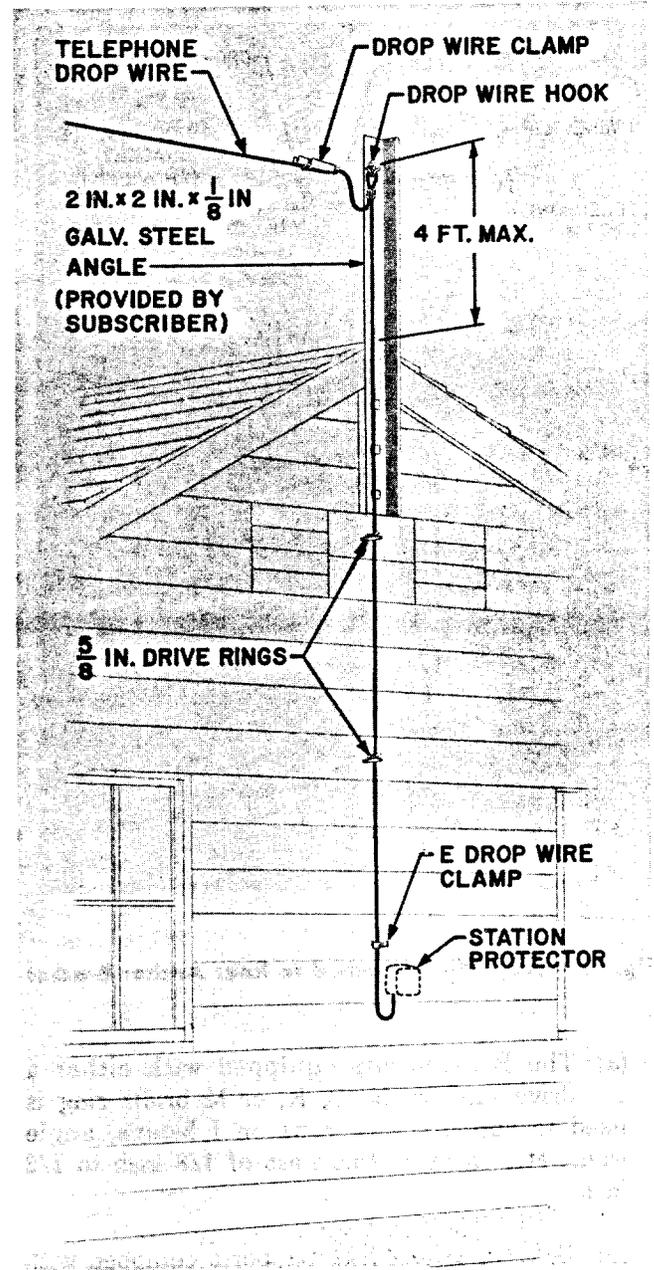


Fig. 11—Drop Wire Attached to 2-inch Angle Iron

subscriber set is the same as for fastening station wire.

9. ATTACHING TO STEEL STRUCTURES

9.01 Manufacturing buildings, warehouses, piers, etc, require special means of attaching.

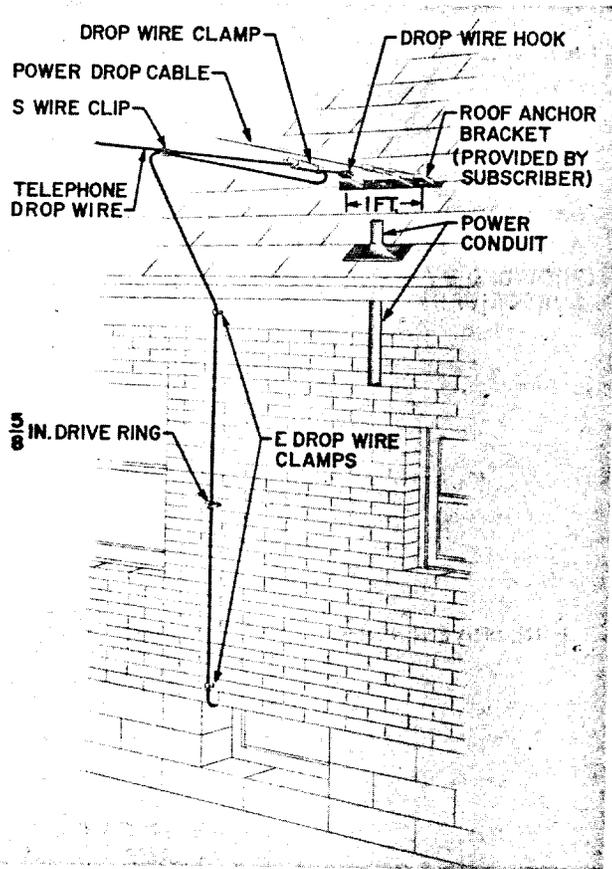


Fig. 12—Drop Wire Attached to Roof Anchor Bracket

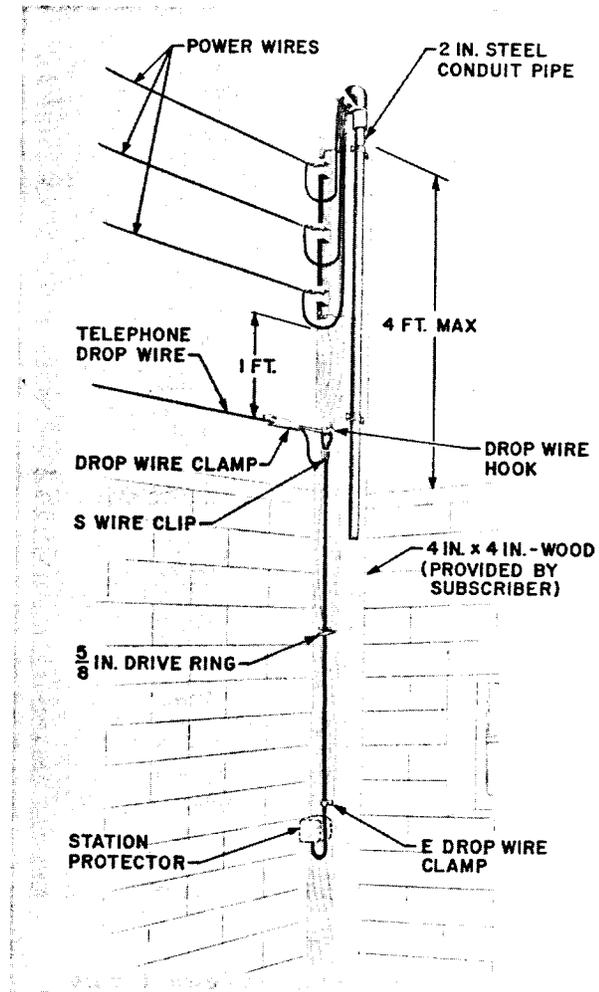


Fig. 13—Drop Wire Attached to Subscriber Pole

(a) The B beam clip equipped with either a drive ring or the B, K, or M bridle ring is used to support wire runs on I beams, angle irons, etc, on beam thickness of 1/8 inch to 1/2 inch.

(b) B, C, or D insulator supports equipped with C or T knobs, bridle rings, or a one-bolt clamp can be used in various applications to attach to I beams, angle irons, etc.

(1) B insulator support will accommodate B or M bridle rings only. It can be attached to steel structures up to 3/4 inch in thickness.

(2) D insulator support will accommodate S knobs or B, K, or M bridle rings. It can be attached to steel structures up to 3/4 inch in thickness.

10. AERIAL BLOCK WIRE SPANS

10.01 Block wire must not be used in aerial spans that will introduce an exposure.

10.02 Where aerial span crosses driveway or private property, provide proper clearances.

10.03 Where span is 5 feet or less, bridle wire may be run without special supports. Where appearance is not essential and run is out of persons reach, this distance may be increased to 12 feet.

10.04 Where only a few bridle wires will be run and the span is 35 feet or less in length, provide drop wire hooks and clamps to support run.

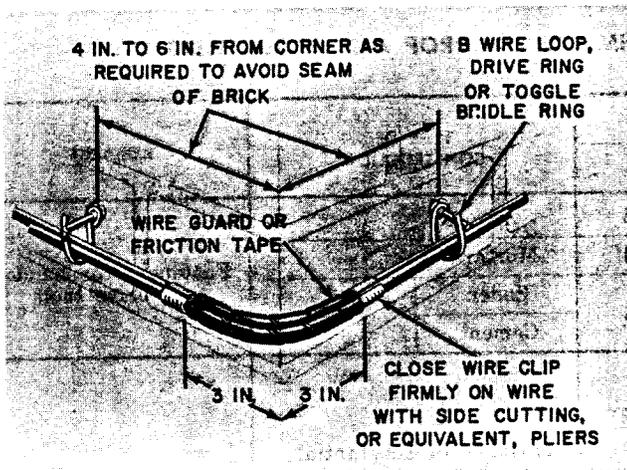


Fig. 14—Spacing Attachments at Outside Corner of Building

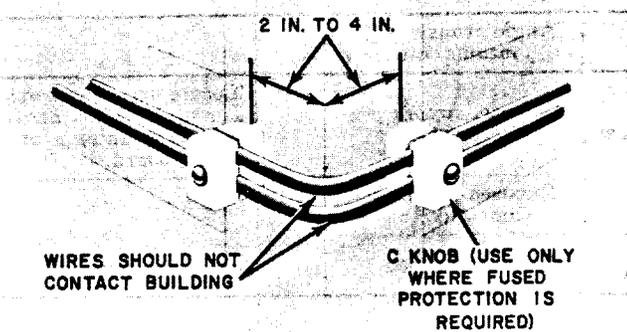


Fig. 15—Spacing C Knobs on Outside Corner of Building

10.05 Where span is more than 35 feet in length, use either drop wire attached at each end on drop wire hooks or bridle wire supported on 2200-pound strand.

10.06 Where span exceeds lengths specified in 10.03 or 10.04, bridle wire may be run in 1-1/2 inch No. 22 cable rings attached to 2200-pound strand. Space cable rings 3 feet apart. Place a drag line in the rings of the crossing span at the time they are attached. The drag line should always be replaced after it has been used for pulling wires across the aerial block wire span.

10.07 Fasten 1/2-inch wall strap to wooden building with two 3/8-by 4-inch coach screws installed

in studding. Bore 1/4-inch lead holes for drive screws.

11. EQUIPPING AND INSTALLING W LEADER BRACKET

11.01 The W leader bracket is a metal strap designed to be installed over small obstructions such as pipes, rain spouts, etc., on walls. The bracket will clear obstructions extending 5 inches from wall surfaces. The W leader bracket has a single-tapped hole in the center for equipping it with a B, K, or M bridle ring.

12. LAST ATTACHMENTS

12.01 The last attachment should be located within 18 inches of the building entrance hole.

12.02 Use the C knob on exposed wires that pass through a flammable surface. The E drop wire clamp is used on unexposed wires.

13. BUILDING ENTRANCE HOLES FOR DROP AND BLOCK WIRES

13.01 Use plastic tubes at building entrance holes for drop wire where fused protection is required and the wire passes through a flammable surface. Cut plastic tubes with a hack saw or diagonal pliers. Do not use split tubes at entrance holes.

13.02 The B entrance plug is intended primarily for use with NP, C, E, or F drop wires and is furnished in 1/2- and 3/4-inch diameter sizes. This plug may be used:

- To seal unused entrance holes in buildings to prevent entrance of rain, wind, insects, etc.
- To mechanically protect wire against abrasion.
- In place of plastic tube at building entrance hole on stations not requiring fused protection.

13.03 B entrance plug may be added to existing drop wire by separating partial split provided on inside surface of plug.

13.04 When drilling building entrance holes, consider the following:

- Drill holes away from side where appearance is most important.

◆ TABLE E ◆

FASTENERS FOR INTERMEDIATE ATTACHMENTS ON DROP AND BLOCK WIRE

ATTACHMENT		FASTENER		TYPE OF CONSTRUCTION		REMARKS
		QUAN	TYPE			
C Wire Loops	No. 1/2 No. 5/8 No. 7/8 No. 1-1/4	1	B Masonry Fastener	No. 3	Concrete	Fasteners for hand- type drive tools
				No. 4	Mortar	
				No. 5	Cinder	
Cement						
Drive Rings	1/2 in.	1	3/16 in. x 5/8 in. D Drive Anchor	Masonry or substantial brick veneer		
	5/8 in. and 7/8 in.	1	1/4 in. x 1 in. D Drive Anchor			
	5/8 in. L* 7/8 in. L* 1-1/4 in. 1-1/4 in. L*	1	1/4 in. x 1 in. D Drive Anchor			
C Bridle Rings	7/8 in.	1	No. 12 D Plastic Anchor	Masonry or substantial brick veneer		
	1-1/4 in. 1-5/8 in.	1	No. 16 D Plastic Anchor			
	3 in.					
B, K, or M Bridle Rings		1	B beam clip insulator support	Angle irons, I beams, etc		
C Knob (used only where fused protectors are required)		1	2-1/2 in. No. 10 RH galvanized wood screw	Exposed woodwork (outdoors)	Locate screw approxi- mately 1 in. above bottom shingle or clapboard.	
		1	2 in. No. 8 RH blued wood screw	Exposed woodwork (indoors)		
		1	3 in. No. 10 RH galvanized wood screw	Stucco on wood		
E Drop Wire Clamp	No. 1/2 No. 5/8 No. 7/8 No. 1-1/4	1	D Masonry Fastener	No. 3	Concrete	Fasteners for hand- type drive tools
				No. 4	Mortar	
				No. 5	Cinder	
	Cement					
		1	3/16 in. x 1 in. B Plastic Anchor	Brick		
	1	1 in. No. 8 RH galvanized wood screw	Wood siding or shingle and Metallic siding on wood	Locate screw approxi- mately 1 in. above bottom shingle or clapboard.		
	1	3/16 in. x 3 in. toggle bolt	Hollow wall			

* The L type is equipped with longer shank.

(b) Slope holes upward from outside.

(e) Drill clearance hole on all types of shingle siding.

(c) Use seams when drilling through masonry.

(d) Exercise care to avoid splintering wood or cracking masonry or brick.

13.05 Sizes of building entrance holes for wires and plastic tubes are shown in Table G.

◆ TABLE F ◆

CAPACITY OF WIRE LOOPS, DRIVE RINGS, BRIDLE RINGS FOR DROP AND BLOCK WIRE

TYPE OF RING OR INSULATED SCREW EYE	SIZE	MAXIMUM NUMBER OF WIRES		
		NP, C, E, or F DROP WIRE	BLOCK WIRE	MULTIPLE DROP WIRE
Drive Rings	1/2	2	3	0
	5/8 and 5/8 L*	6	9	1
	7/8 and 7/8 L*	16	22	2
	1-1/4 and 1-1/4 L*	30	40	5
C Wire Loops†	No. 1/2	2	3	0
	No. 5/8	6	9	1
	No. 7/8	16	22	2
	No. 1-1/4	30	40	5
C Bridle Rings	7/8	6	9	1
	1-1/4	16	22	2
	1-5/8	30	40	5
	3	100	140	16
B, K, or M Bridle Rings	1-1/4	16	22	2
Insulated Screw Eyes	5/8 S and L*	4		0
	1 S and L*	10		1

* L represents longer shank.

† Install with suitable B masonry fasteners.

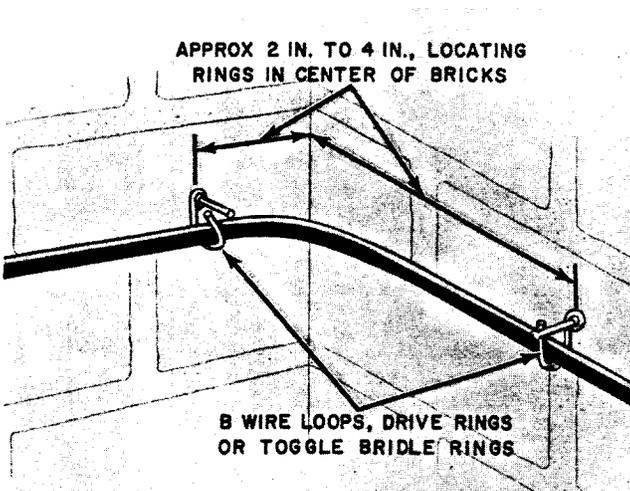


Fig. 16—Spacing Attachments at Inside Corner of Building

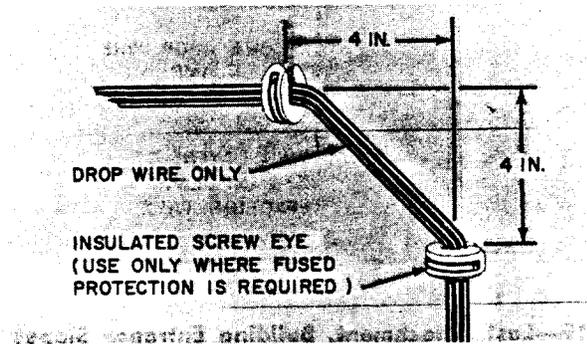


Fig. 17—Spacing Insulated Screw Eye When Changing Direction of Wire Run

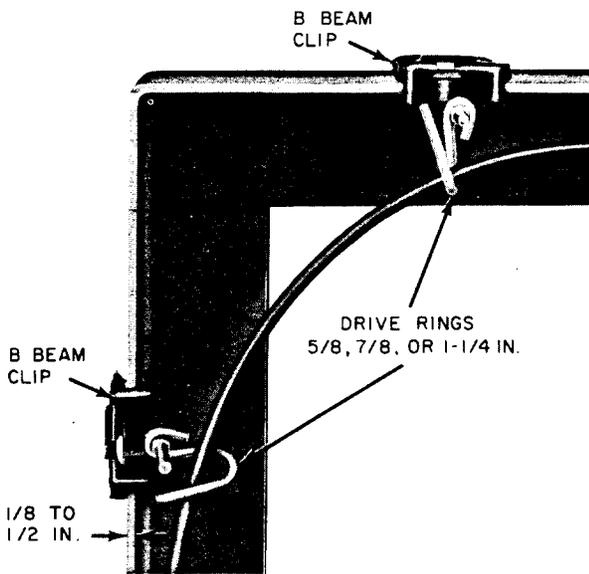


Fig. 18—B Beam Clips

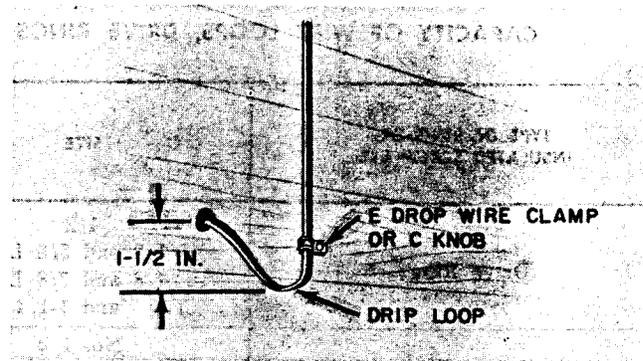


Fig. 20—Last Attachment, Building Entrance Hole Does Not Slope Upward From Outside

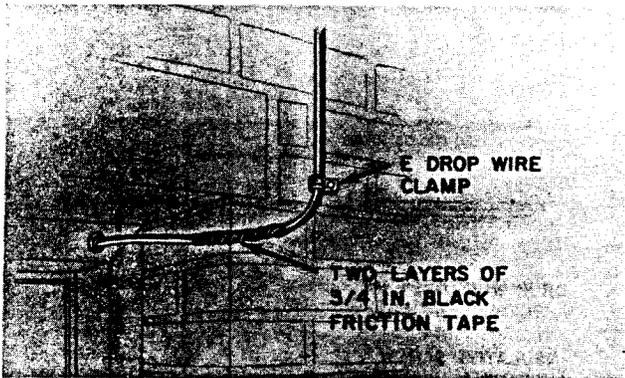


Fig. 19—Last Attachment, Building Entrance Slopes Upward From Outside

◆ TABLE G ◆

**SIZES OF BUILDING ENTRANCE HOLES
FOR DROP AND BLOCK WIRES AND PLASTIC TUBES**

TYPE	WIRE, QUANTITY						
	D block (bridle)				2	3	4
NP, C, E, or F drop	1	2	3	1	2	3	4
	PLASTIC TUBE REQUIRED			TUBE NOT REQUIRED			
TUBE SIZE, INCH	3/8	1/2	5/8				
ENTRANCE HOLE SIZE, INCH	1/2	5/8	3/4	3/8	1/2	5/8	3/4

Note: When porcelain tubes are used, the size of the hole must be increased.