

DROP AND BLOCK WIRING

MULTIPLE DROP WIRE PLACING

CONTENTS	PAGE
1. GENERAL	259
2. USE	259
3. PLANNING MULTIPLE DROP WIRE RUNS	259
4. MULTIPLE DROP WIRE RUNS ON BUILDINGS	260
5. MULTIPLE DROP WIRE RUNS ALONG A LEAD	262
6. DISTRIBUTING MULTIPLE DROP WIRE FROM TERMINAL POLES	262
7. PLACING D DROP WIRE CLAMPS ON MULTIPLE DROP WIRE	262
8. COLOUR CODING	263
9. TERMINATING MULTIPLE DROP WIRE IN CABLE TERMINALS	263
10. TERMINATING MULTIPLE DROP WIRE IN 116C PROTECTORS	264
11. TERMINATING MULTIPLE DROP WIRE IN 104B WIRE TERMINALS	264

1. GENERAL

1.01 This section covers methods for placing Multiple Drop Wire in spans and on buildings. It is reissued to update information and to incorporate Addendum.

2. USE

2.01 In general, Multiple Drop Wire should be used in preference to establishing a group

of drop wire runs to serve apartment buildings, multiple dwellings, small P.B.X.s, etc., and only under exceptional circumstances should it be used in lieu of cable as distribution facility, especially when intermediate terminals are required for distribution purposes. When used as a distribution facility the non-working or disconnected pairs shall be grounded at the cable junction terminal using a 5A or 6A Ground Strip as described in Section 638-310-105.

2.02 Multiple drop wire must **NOT** be used to serve subscribers' premises from open line wire or multiple line wire.

3. PLANNING MULTIPLE DROP WIRE RUNS

3.01 In planning Multiple Drop Wire Runs on building walls observe the rules outlined in Section 462-350-213CA. Particular attention should be given to the following suggestions.

(a) Select a location for the first attachment which will keep the drop wire clear of trees. In some cases an adjacent building may be used for the first attachment as a means of avoiding trees.

(b) Locate ring runs with a view to permanency and accessibility. Avoid runs requiring the use of long ladders.

(c) Make all runs horizontal or vertical insofar as practical. Horizontal runs should be placed out of reach of the public particularly children.

(d) Locate wire runs with a minimum of obstructions.

(e) Where necessary to cross or parallel electric wiring, rain spouts or other obstructions, the minimum separations covered in Section 620-220-011CA for drop wiring should be observed.

3.02 Multiple Drop Wire is supplied on large reels. It will be necessary to make a preliminary survey of a proposed installation to determine the length of wire required so as to avoid excess wire loss. Cut required length of wire from reel in garage or storeroom and if not over 250 feet, it can be coiled on the drop wire reel. If length is over 250 feet, coil the wire in a hand coil of convenient size. Should a number of installations be at close locations, it may be desirable to take the reel of wire to the job and distribute as required. A Roller Platform may be helpful in such cases.

3.03 Clearances over public and private swimming pools are not covered by Safety Codes or other practices. However, for reasons of safety, sanitation, and appearance, aerial drop wire crossing over swimming pools should be avoided.

4. MULTIPLE DROP WIRE RUNS ON BUILDINGS

4.01 First Building Attachment: Use a Drop Wire Hook installed on a Drop Wire Hook Strap as the first building attachment for multiple drop wire spans to buildings. The strap is provided with 5/16 inch No. 18 x 1/2 inch R.H. Galvanized Machine Screw for attaching the hook to the strap. **Only one multiple drop wire span shall be attached to a Drop Wire Hook.**

4.02 Install Drop Wire Hook Strap to the various types of building surfaces as follows:

Brick, Masonry, Substantial Brick Veneer	2—5/16-inch x 1-3/4-inch Hammer Drive Anchors
Wood Thin Composition Siding	2—2-inch No. 18 R.H. Galv. Wood Screws placed in studding. Use 1-1/2-inch screws on solid timber.
Thin Wall or Unsubstantial Brick Veneer, Heavy Composition Siding or Stucco on Wood	2—No. 18 R.H. Galv. Wood Screws. Screws to penetrate wood studding at least 1 inch.
Hollow Tile	2—5/16-inch x 5-inch R.H. Toggle Bolts. Bolts to be located in separate tiles where practical.

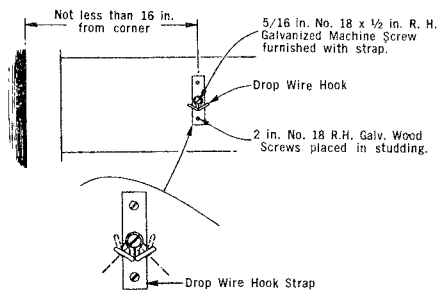


Illustration 1

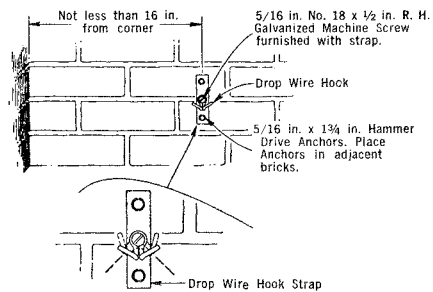


Illustration 1A

4.03 Second Building Attachment: Clamp the wire to the wall close to the Drop Wire Hook attachment with a No. 20 Cable Clamp. Attach clamp to walls as follows:

Masonry	1/4-inch x 1-inch Hammer Drive Anchor.
Wood Thin Composition Siding	1-1/2-inch No. 14 R. H. Galv. Wood Screw. Use 1-inch Screw on solid timber.
Stucco on Wood Heavy Composition Siding	2-inch No. 14 R. H. Galv. Wood Screw.

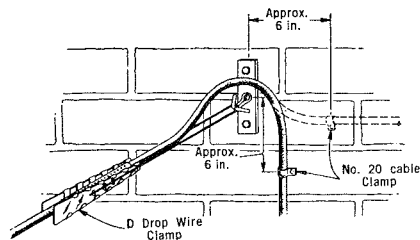


Illustration 2

4.04 Intermediate Building Attachments:

Where a high level of appearance is not of importance, support wire with $\frac{5}{8}$ -inch Drive or Bridle Rings spaced approximately 3 feet apart in horizontal runs and approximately 6 feet apart in the vertical runs. Use larger size rings if more than one multiple drop wire is in building run or where individual wires parallel multiple drop wire run. It will be necessary to spread the opening in the rings slightly in order to insert the multiple drop wire. Where a high level of appearance is of importance, attach wire runs along walls with No. 20 Cable Clamps spaced at reduced intervals when necessary.

4.05 Last Building Attachment:

Place a No. 20 Cable Clamp on the multiple drop wire approximately 6 inches from point of entrance to protector, wire terminal or building after pulling the wire taut in the building run. Attach clamp to wall as indicated in Para. 4.03.

4.06 Building Entrance: Provide a $\frac{3}{4}$ -inch hole when entering building with multiple drop wire. Slope entrance hole upward from outside, wherever practical. Tape wire and wedge tightly into entrance hole to avoid seepage of water between wire and building wall. Where it is not practical to slope entrance hole upward from outside, provide a 3-inch drip loop at entrance and tape and wedge wire tightly into entrance hole.

4.07 Typical wire run on outside building wall is illustrated below:

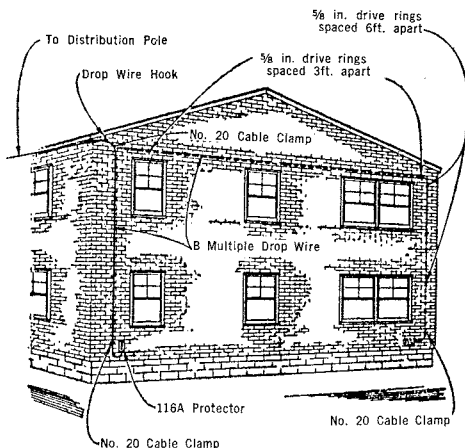


Illustration 3

Note: Use No. 20 Cable Clamps in place of rings where a high level of appearance is of importance.

4.08 Fasten multiple drop wire to building walls with a No. 20 Cable Clamp at the beginning and end of the run in order to maintain dress of wire in ring run.

4.09 Where wire is run in auxiliary cable rings (strand supported block cable run) use No. 10 Lashed Cable Supports and $\frac{1}{4}$ -inch Cable Spacers in place of cable clamps to attach the multiple drop wire to strand at beginning and end of strand supported run. Place supports and spacers as outlined in Section 627-300-216.

4.10 Guards: To provide Mechanical Protection of Wires on Buildings or in the span, place the required length or lengths of P or C Wire Guards. The C Wire Guard will slide freely over the multiple drop wire and should be used where protection in a span is required. The C Wire Guard shall be held in place in the manner described in Section 624-030-105.

4.11 Terminations: The multiple drop wire may be terminated in a 6-pair wire terminal or a 6-pair protector as specified below.

(a) **No Station Protection Required:** Terminate wire on the outside wall or inside the building on a 104B Wire Terminal. Where appearance and wire would not be objectionable a 30A Connecting Block could be used for terminations inside the building.

(b) **Fuseless Station Protection Required:** Terminate wire on the inside of a building on a 117A Protector unless appearance of protector, etc., would be objectionable; in which case terminate the wire on the outside of a building in a 116C Protector. **TERMINATE ALL PAIRS (WORKING AND NON-WORKING) ON PROTECTORS.**

Note: In addition to 116C or 117A Protectors, 60 type (sneak current) fuses are required on P.B.X. trunks, tie lines and leased or special service lines, etc., as covered in the P.B.X. Installation and Maintenance Practices.

5. MULTIPLE DROP WIRE RUNS ALONG A LEAD

5.01 Attachments: Spans of multiple drop wire are supported at all dead ends and intermediate poles by the D Drop Wire Clamp. The clamp is supported on poles by a Drive Hook. *Only one multiple drop wire (not span) shall be attached to a drive hook.* Drive Hooks shall be located and installed on poles in the same manner as prescribed for individual drop wires in pole-to-pole and pole-to-building runs.

5.02 Where the placing of a multiple drop wire span interferes with climbing space on a jointly used pole, provide climbing space by distributing existing individual drop wires from span clamps or guard arms.

5.03 At intermediate poles, provide approximately 3 inches slack between clamps as for individual drop wires.

5.04 Guying: Unless poor soil conditions exist, there is no requirement for guying corners or deadends of a single multiple drop wire installation. Under adverse soil conditions individual judgment should be used to determine whether the corner or deadened pole should be ground braced, set deeper or guyed.

6. DISTRIBUTING MULTIPLE DROP WIRE FROM TERMINAL POLES

6.01 Distribute multiple wire in the manner described for individual drop wires.

7. PLACING D DROP WIRE CLAMPS ON MULTIPLE DROP WIRE

7.01 The D Clamp is designed primarily for use on Multiple Drop Wire. It consists of two identical semicircular shells and two flat wedges

held together by a tail wire. The clamp is illustrated below:

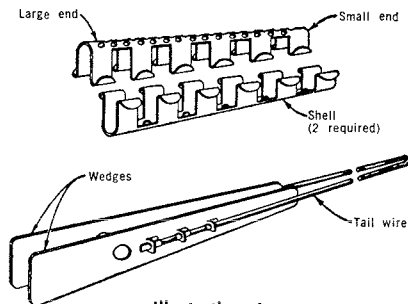


Illustration 4

7.02 Install the clamp on the wire in the following manner:

- (1) Interlock the two shells on the wire with the large ends toward the span.
- (2) Press the shells together and slide the wedges into the tab rails on the sides of the shells. Tap the wedges with pliers to seat them firmly.
- (3) Place the tail wire over the drive hook or drop wire hook.
- (4) Complete assembly of clamp on wires is illustrated below:

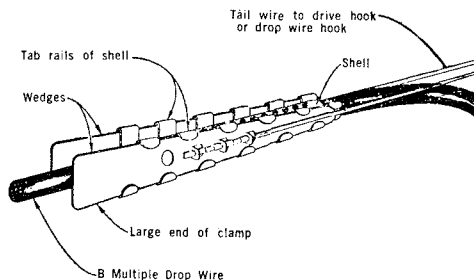


Illustration 5

7.03 Since the D Drop Wire Clamp is constructed from Stainless Steel, and consequently has an unlimited service life, care should be exercised in any removal operation involving this clamp to ensure its recovery for further use.

8. COLOUR CODING

8.01 The colour coding of the conductors of Multiple Drop Wire should facilitate the identification and termination of the individual pairs to a considerable degree.

8.02 The following patterns for Multiple Drop Wire shall be used when determining the order of terminations in all terminals or protectors.

Pair No.	Z Multiple Drop Wire	
	Tip	Ring
1	White	Blue
2	White	Orange
3	White	Green
4	White	Brown
5	White	Slate
6	Red	Blue

9. TERMINATING MULTIPLE DROP WIRE IN CABLE TERMINALS

9.01 When pairs in a multiple drop wire run are NOT terminated at the cable or other distribution facility terminal, each pair not cut into service shall be tagged with Drop Wire Tags at the time the wire is placed.

9.02 Wire Pairs shall be numbered or tagged in accordance with the colour code outlined in Para. 8.02.

9.03 Locate tag on the non-terminated pairs between the jacket and the first drive or terminated ring.

9.04 At Pole and Wall Mounted Terminals remove the outer jacket and glass yarn tape back to approximately two inches before the drive or bridle ring at which the routing of the standard wire run at terminal divides to provide wire slack for reterminations. Fan out the pairs, run them through the rings and terminate them in the terminal as prescribed for Block Wire.

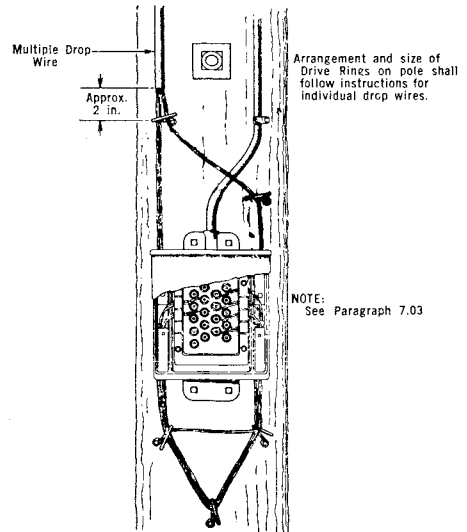


Illustration 6

9.05 When a sufficient length of a pair in multiple drop wire is not available for retermination by shortening the run in the drive or terminal rings, splice out the pair with Block Wire or reterminate the multiple drop wire in a 6-pair wire terminal and bridle between the wire and cable terminals.

9.06 Where a high rate of distributing cable pair changes is anticipated, such as in an apartment building, terminate the multiple drop wire in a 6-pair wire terminal and bridle between the Wire and Cable Terminals.

Note: The multiple drop wire should normally be terminated directly in the cable terminal for economic reasons.

9.07 At sheath Mounted Terminals remove outer jacket and glass yarn tape approximately one inch beyond terminal wiring ring nearest the pole. Fan out the pairs, run them through the rings and terminate them in the terminal as described for paired wire.

9.08 The requirements for protection that apply to individual drop wires also shall be observed in multiple drop wire runs. Where cable or wire requires 6 mil gap protection use the 116D Protector. When a multiple drop wire run extends

into an exposed area the unexposed status of the feeder or distribution cable can be maintained, provided the cable is effectively grounded and a 116C Protector (3 mil gap) is placed at the junction of the multiple drop wire and unexposed cable.

10. TERMINATING MULTIPLE DROP WIRE IN 116C PROTECTOR

10.01 The 116C Protector is equipped with a housing smaller than the 10-pair N-Type Terminal. The new housing is provided with suitable bosses and holes which eliminate the use of the 45A bracket and permit mounting directly on either a flat surface or a pole. Install the 116C Protector on wood by means of two—2 inch No. 14 R.H. Galv. Wood Screws. On masonry the 116C Protector may be attached with two No. 12 Plastic Screw Anchor and two — 2 inch No. 14 R.H. Galv. Wood Screws.

10.02 A drip loop shall be formed in the multiple drop wire where it enters the protector housing if the protector is mounted outdoors. When mounted vertically, the multiple drop wire shall enter at the bottom of the protector. When mounted in a horizontal position wire entrance grommets shall be at the bottom.

10.03 The protector shall be grounded with a 102 mil (No. 10), or larger, Ground Wire connected to a metallic public water system ground and where no water system exists, in accordance with the provisions covered in appropriate sections on grounding. The ground wire shall be connected to the protector housing with the ground clamp provided on the outside of the housing.

10.04 Insert the multiple drop wire into either end of the protector as desired. It will greatly facilitate pair terminations if the end of the multiple drop wire is stripped of its outer jacket before inserting the wire into the protector housing.

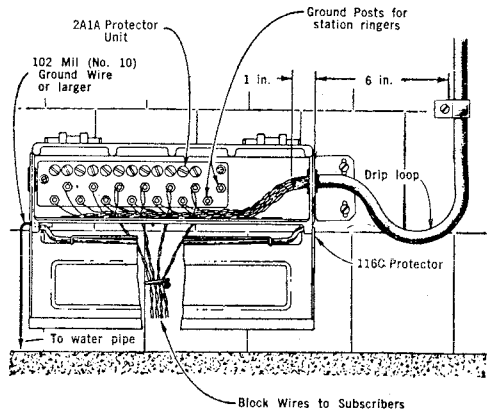


Illustration 7

10.05 Dress the multiple drop wires so that they will be close to the back of the box. The individual pairs shall be terminated, in accordance with the colour code outlined in Para. 8.02, under the bottom nut on each binding post. The individual drop or block wire connections enter through the series of grommets as for N Type Terminals and are terminated between the top and bottom nuts of the binding posts.

11. TERMINATING MULTIPLE DROP WIRE IN 104B WIRE TERMINAL

11.01 When no protection is required, multiple drop wire may be terminated in a 104B Wire Terminal. The 104B Wire Terminal is equipped with a housing similar to the 116C protector and is mounted in the same manner as described in Para. 10.01 for the 116C Protector.

11.02 Insert the multiple wire in one of the outer holes of the wire terminal so that about one inch of the jacket extends inside the housing. It will greatly facilitate conductor termination if the end of the multiple drop wire is stripped of its outer jacket before inserting the wire into the terminal housing.

11.03 Terminate the conductors under the bottom nut on each binding post, following the colour sequence described in Para. 8.02. Terminate the station drop wires between the top and bottom nuts on the binding post.

11.04 This terminal can also be used at the end of a drop wire run as a distribution point for stations not requiring protection and when specified on the work plans it shall be installed at intermediate poles as shown below.

Note: At the intermediate terminals the through multiple drop wire run shall be cut and the individual pairs from both directions shall be twisted together and terminated between the washers under the bottom nuts. All pairs from both directions shall be terminated in order to effectively protect the complete drop wire run. In twisting the individual pairs together prior to terminating, the colour coded pattern outlined in Para. 8.02 shall be followed.

