

## SELECTION OF ROUTE FOR STATION WIRE AND CABLE

### 1.00 INTRODUCTION

1.01 This practice covers the general factors to be considered in running station wires or cables.

1.02 Fig. 1 shows the various points which should be considered in selecting routes for wires. Consideration should be given to the location of the telephone, protector, and ground clamp, as well as to the drop wire and point of entrance, before planning the wire route.

### 2.00 SELECTION OF BUILDING ENTRANCE

2.01 Inspect building thoroughly to locate service entrance conduit and use it if provided.

2.02 Where no service entrance conduit has been provided, select an entrance point from Table A.

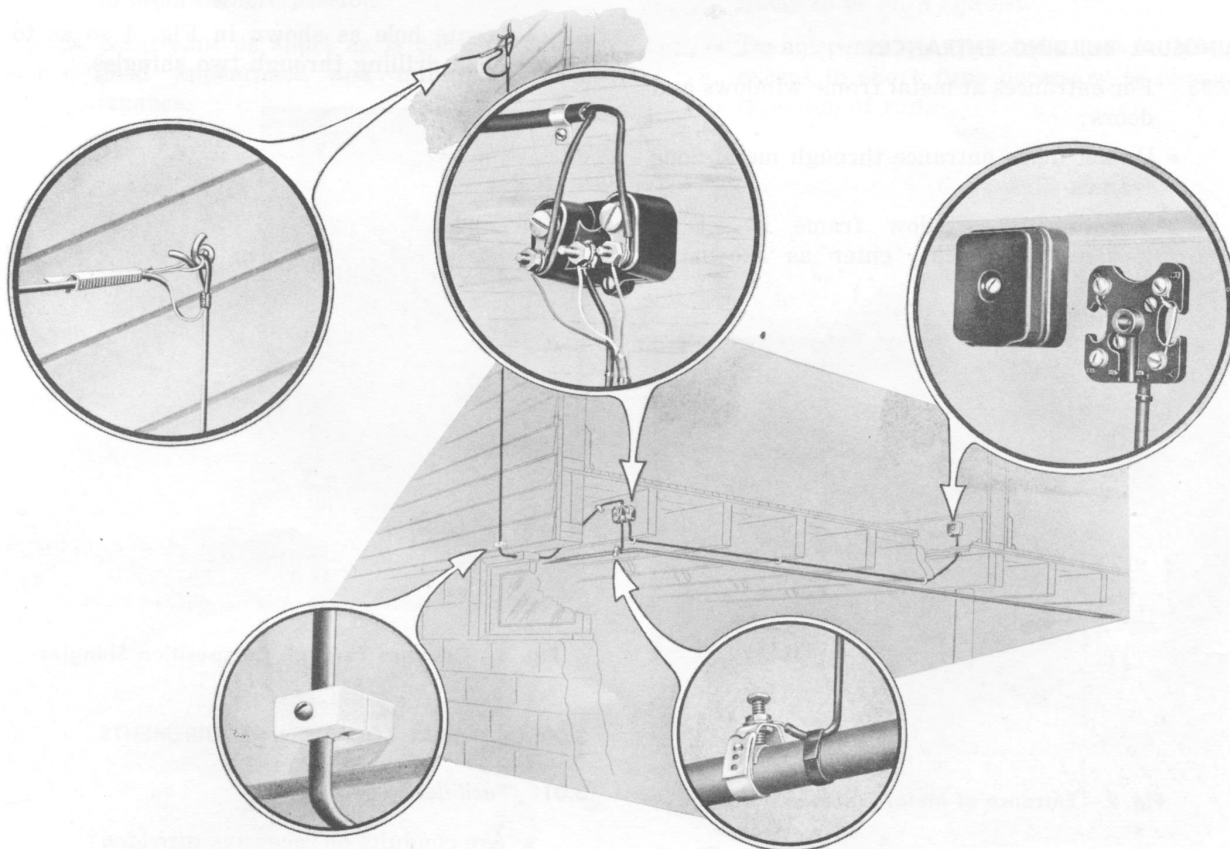


Fig. 1 — Typical Wiring Routes

TABLE A

Type of Construction	Point of Entrance				
	Wooden Window Frame	Wooden Door Frame	Foundation Sill	Outside Wall*	Metal Window Frame†
Masonry or Brick	•	•			•
Wood or Stucco on Wood (Basement Ceiling Unplastered)	•	•	•	•	
Wood or Stucco on Wood (Basement Ceiling Plastered)	•	•		•	

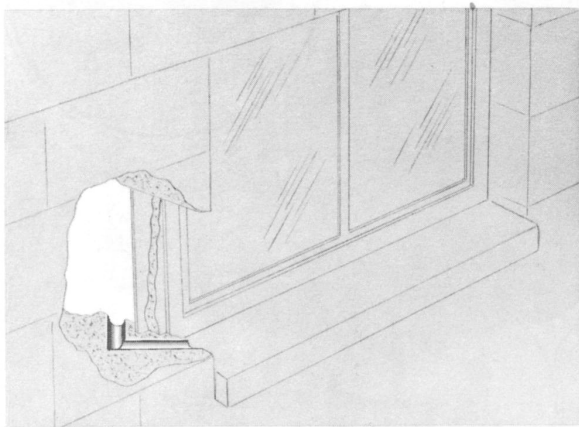
\* To wire direct to set or connecting block.

† See 2.03.

### UNUSUAL BUILDING ENTRANCES

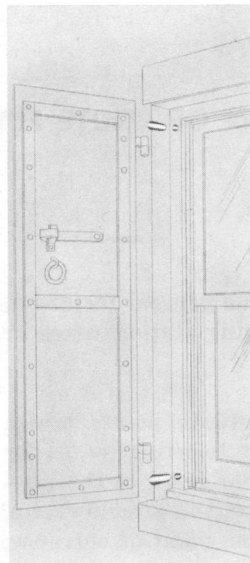
**2.03** For entrances at metal frame windows and doors:

- Do not make entrance through metal door frames.
- When metal window frame is set in masonry or bricks, enter as shown in Fig. 2.



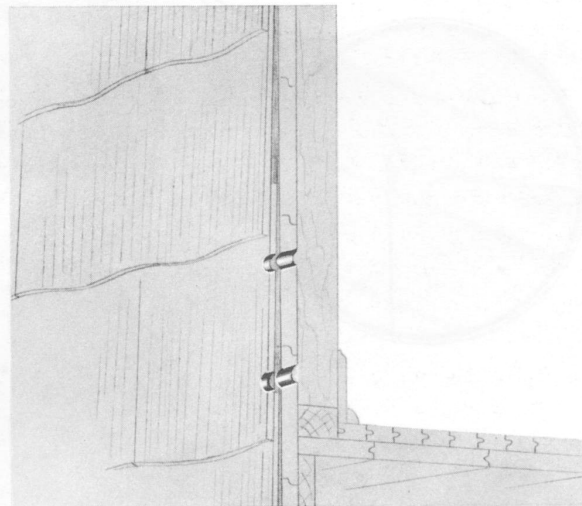
**Fig. 2 — Entrance at Metal Window Frame**

- Cut slot in seam of brick as shown in Fig. 3. Be sure slot is deep enough so wire is cleared when shutter or screen is operated.



**Fig. 3 — Entrance at Shutter of Fire Screen**

- Locate hole as shown in Fig. 4 so as to avoid drilling through two shingles.



**Fig. 4 — Entrance Through Composition Shingles**

### 3.00 GENERAL LOCATION REQUIREMENTS

#### 3.01 Facilities to Look For

- Are conduits or raceways provided?
- Is there wire or cable in place which can be re-used?

- Can wire or cable be concealed or run inconspicuously?
- Will wire run present a good appearance?

**3.02** Follow customer's wishes, considering:

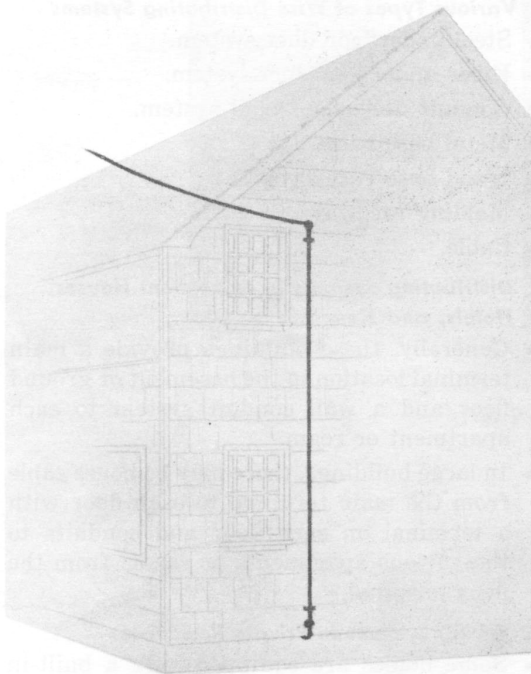
- Good safety sense.
- Minimum future maintenance.

**3.03 Common Sense Factors**

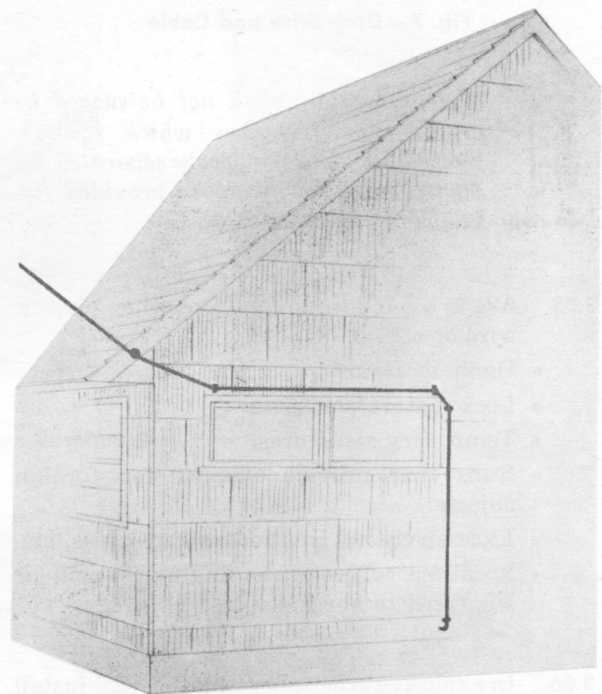
- Run wire or cable horizontally or vertically in a straight line.
- Choose color of wire or cable to blend with or match surfaces.
- Use baseboards or other trim where conduit is not provided.
- Make use of wooden surfaces in preference to others where possible.
- Keep runs as short as is consistent with good appearance and minimum maintenance.

**3.04** After location of first attachment has been determined, consider the following factors:

- Locate the drop or block wire run on the building with a view to permanency, accessibility, and appearance.
- On building walls finished with stucco, rigid composition shingles, brick veneer, and similar materials, locate attachments on wood trim where practicable.
- Locate preferably on the rear and side walls of a building (see Fig. 5).
- Place horizontal run above the reach of the public (see Fig. 6).
- Locate the run so as to require the minimum length of wire and as few turns as practicable.
- Do not run wires in front of signs, doors, windows, fire escapes, awnings, etc.
- Do not place wire runs on walls which are likely to be built against.
- Do not run wires diagonally on a building, except in short runs necessary to change direction of run.



**Fig. 5 — Typical Drop Run**



**Fig. 6 — Horizontal Drop Run**

- Avoid attachments on tin, sheet metal, or other materials requiring frequent repairs or renewals.
- Avoid locating on intermediate structures of a deteriorated or temporary construction. Select alternate route.
- When making a wire run on a building wall near cable, proceed in one of the following ways:
  1. Use rings installed with cable clamps as shown in Fig. 7.
  2. Remove nails or screws that hold cable clamps and replace with drive rings.
  3. Install separate wire run paralleling cable.

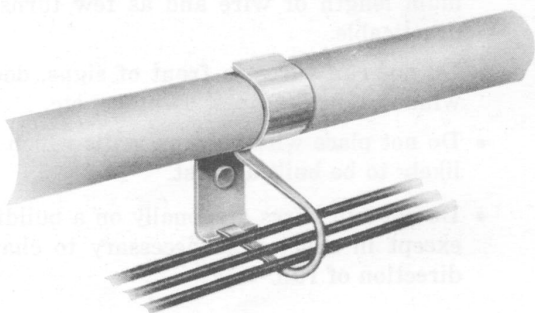


Fig. 7 — Drop Wire and Cable



*Wires or cables shall not be placed in conduits or raceways which contain electric wires not properly separated by partitions from the space provided for telephone wires or cables.*

**3.05 AVOID** the following locations when placing wire or cable:

- Damp locations.
- Locked storerooms, etc.
- Temporary structures.
- Runs that provide support for foreign objects.
- Excessively hot locations, steam pipes, etc.
- Locations where wires and cables will be subjected to abrasion.

**3.06** In explosive atmospheres, locate and install wiring as covered by specific instructions in accordance with the equipment being installed.

**3.07 Requirements for Ground Wire Runs**

- Make runs as short as possible.
- Locate wire where it is least likely to be disturbed.
- Run protector ground wire exposed, except where conduit has been provided.
- Do not place protector ground wire in ring runs.
- Signal ground wire may be placed in rings.
- When existing protector ground wire has become enclosed by a ceiling or partition, re-use if continuity can be checked and ground clamp is accessible.

**4.00 MAKING USE OF WIRE DISTRIBUTING SYSTEMS**

**4.01 Distributing Systems in Office Buildings**

- Office buildings are generally provided with an exchange cable terminated in a main terminal on the ground floor and distributed to each floor through a building or house cable.
- In some cases, the exchange cable may be distributed directly to each floor.
- For information regarding the building conduit system, consult the plan at the main terminal or contact the building superintendent.

**4.02 Various Types of Wire Distributing Systems**

- Steel underfloor duct system.
- Fiber underfloor duct system.
- Conduit underfloor wall system.
- Metal base raceways.
- Wood base raceways.
- Molding raceways.
- Cable.

**4.03 Distributing Systems in Apartment Houses, Hotels, and Hospitals**

- Generally, these buildings provide a main terminal location in the basement or ground floor and a wall conduit system to each apartment or room.
- In large buildings, there may be house cable from the main terminal to each floor with a terminal on each floor and conduits to the various apartments or rooms from the floor terminal.

**4.04 Wiring Systems in Private Residences**

- Some homes are equipped with a built-in protector cabinet and/or conduit to the proposed location of the telephone.



- Conduit may be provided to a service entrance head from the protector cabinet.
- Pull-wires or specially built wiring channels may be provided.
- Telephone outlets may have been placed and wired during construction of building.
- Always inspect for or inquire about these facilities and make use of them wherever possible.

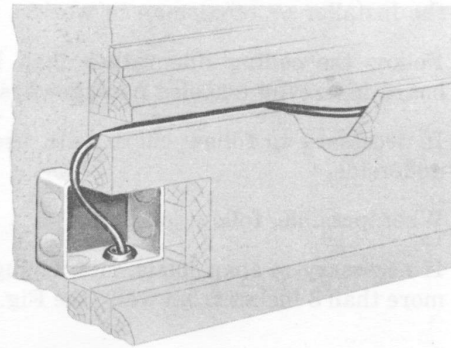
## 5.00 SELECTION OF EXPOSED WIRING ROUTE

**5.01** In general, an exposed wire route should be used only where no concealing facilities are available.

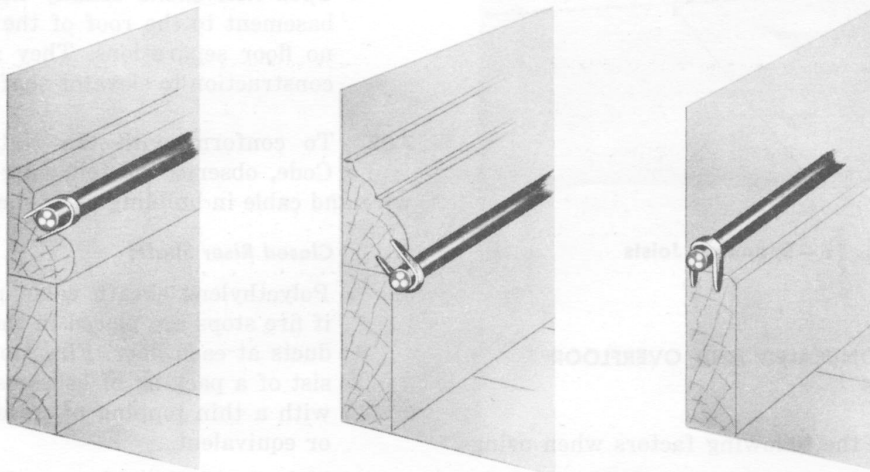
### 5.02 *Wiring in Finished Rooms and Offices*

- Run wires along baseboards, on top of picture moldings, or on door or window casings, so that they will be as inconspicuous as possible (see Fig. 8, 9, and 10).

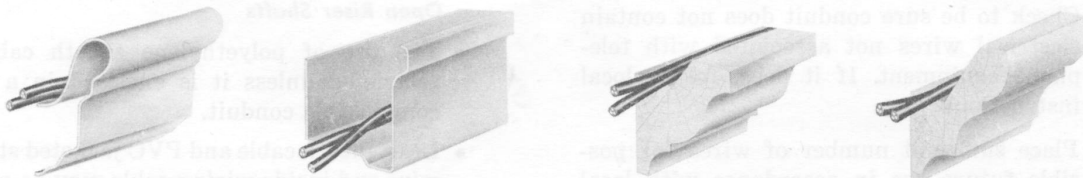
- Where trim cannot be followed, run wires horizontally or vertically but not diagonally.
- Choose color of wire and fasteners to match or blend with color of surface where wires are attached.



**Fig. 8 — Wiring from Conduit to Baseboard**



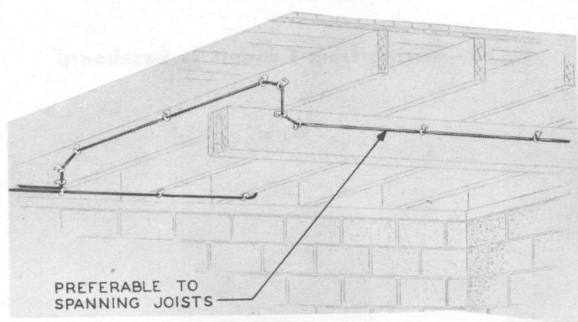
**Fig. 9 — Wiring on Baseboards**



**Fig. 10 — Wiring in Picture Moldings**

**5.03 Wiring in Cellars, Factories, Storerooms, etc**

- Place wire and cable where they will be least likely to be broken or detached. Provide protection if necessary.
- Consider the shortest, most direct right-angle route unless otherwise specified.
- Choose a safe place for the wiring and for the installer or repairman to work.
- Follow the ceiling line rather than baseboard in heavily traveled passageways.
- If necessary to follow chair rails, use the underside.
- When possible, follow joists.
- If necessary to span joists, run wiring not more than 3 inches from wall (see Fig. 11).

**Fig. 11 — Spanning Joists****6.00 USING CONCEALED AND OVERFLOOR CONDUITS**

Consider the following factors when using conduits:

- Whenever conduit is provided for telephone wires and it meets the prescribed specifications, it should be used.
- Check to be sure conduit does not contain electrical wires not associated with telephone equipment. If it does, follow local instructions.
- Place sufficient number of wires for possible future use in accordance with local procedures.

- Conduit systems are part of the permanent installation and are furnished, installed, and maintained by the building people.
- Consult the building people before extending wiring beyond the provided system.
- When necessary to provide wiring through concrete floors or similar construction from floor to floor and conduit is not provided, inspect premises for pipes through floor which may be provided for such use.

**7.00 PLACING STATION WIRE AND CABLE IN BUILDING RISER SHAFTS**

**7.01** Building riser shafts are generally of two types:

- **Closed riser shafts** consist of a series of closets, aligned vertically one above the other, usually beginning in the basement and extending throughout the height of the building. The closets are interconnected by a cable slot or pipe sleeves through the floors.
- **Open riser shafts** usually extend from the basement to the roof of the building with no floor separations. They are similar in construction to elevator shafts.

**7.02** To conform with the National Electric Code, observe the following when placing wire and cable in building riser shafts:

**Closed Riser Shafts**

- Polyethylene sheath cable may be placed if fire stops are placed in the slots or floor ducts at each floor. Fire stops should consist of a packing of asbestos or fibre glass with a thin topping of water plug cement or equivalent.
- If lead sheath cable or polyvinyl chloride (PVC) jacketed station wire and inside wiring cable is placed, fire stops are not required.

**Open Riser Shafts**

- The use of polyethylene sheath cable is restricted unless it is enclosed in a non-combustible conduit.
- Lead sheath cable and PVC jacketed station wire and inside wiring cable may be placed with no restrictions.