BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G52.150
Issue 1, April, 1942
AT&T Co Standard

AERIAL CABLE
POLE TO BUILDING SPANS

Contents

1. GENERAL

1.01 This section covers the methods to be followed in making aerial cable entrances to buildings. Insulating joints in aerial cables entering buildings are not required except where specified in the detail plans.

2. METHOD OF SUPPORTING CABLE IN POLE TO BUILDING SPAN

2.01 Use suspension strand to support the cable between the pole and building, wherever practicable. Where it is not practicable to use suspension strand, the rigid structure method covered in Part 7 may be used.

2.02 The detail plans generally provide for a short span from the pole to the building (not over 50 feet for maximum size cable) so that the strain will not damage the building.

2.03 In pole-to-building spans 2200 pound strand may be used where the cable weight does not exceed one pound per foot and the span length does not exceed 65 feet. Where 2200 pound strand is used, the stringing tension shall not exceed 300 pounds. A 300-pound tension can be approxi-

mated in a 65-foot span by placing the strand with about 3 inches of sag. In shorter spans, heavier cables may be placed on 2200 pound strand. In general, the size of cable should be limited to 1-1/4 inches in diameter when placed in 1-1/2 inch rings. The span length in such cases should be limited to about 50 feet.

2.04 Strand, 6000 pound and larger in size, shall be placed at low stringing tensions, as shown in the following table.

Size of Suspension Strand (Pounds)	Approximate Stringing Tension (Pounds)
6,000	600
10,000	1,000
16,000	1,000

2.05 If the pole to building span tends to place a load on the pole that cannot be balanced by a guy, construct the span as a slack span, in accordance with Section G51.140.

2.06 Certain precautions, as covered in Part 10, should be observed in working on pole to building spans.

3. GUYING

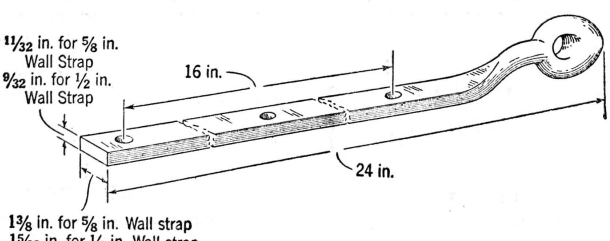
3.01 Pole-to-building spans shall be guyed at the pole, wherever possible. Where guying is not possible, the pole shall be ground braced.

4. WALL STRAPS

4.01 The following types of wall straps are available for use in terminating suspension strand to building walls:

(a) **The 1/2 inch Wall Strap** is for use in terminating 2,200 pound strand on the corner of a building wall.

½ IN. OR ⅝ IN. WALL STRAP

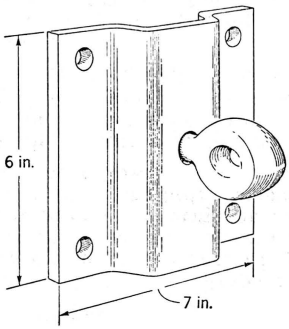


(b) **The 5/8 inch Wall Strap** is for use in terminating 6,000 pound and larger sizes of strand on the corner of a building wall.

(c) **The Corner Wall Strap** (See Paragraph 6.01(c)) is for use in connection with the 1/2 inch or 5/8 inch Wall Strap where the pull of the suspension strand is not in line with the building wall.

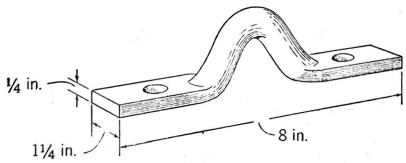
(d) **The Plate Wall Strap** is for use in terminating 2,200 or 6,000 pound strand on the face of a building wall

PLATE WALL STRAP



(e) **The U Wall Strap** is for use in terminating 2,200 or 6,000 pound strand on the face of a building wall, where a secure anchorage can be obtained with two anchors.

U WALL STRAP



5. ATTACHMENTS TO BUILDING WALLS

5.01 Where strand is to be terminated on the corner of a building wall, the type of attachment and the anchoring devices are determined by the building structure as indicated in the following:

Type of Structure	Type of Attachment	Anchoring Device*
Reinforced Concrete or Brick	1/2 in. Wall Strap	Two-3/8 in. x 2 in. Hammer Drive Anchors
	5/8 in. Wall Strap	Two-1/2 in. x 3-1/2 in. Hammer Drive Anchors
	Corner Wall Strap	Two-3/8 in. x 2 in. Hammer Drive Anchors
Frame or Stucco on Wood	1/2 in. Wall Strap	Two-3/8 in. x 4 in Coach Screws in 1/4 in. lead holes.
	5/8 in. Wall Strap	Two-1/2 in. x 4-1/2 in. Coach Screws in 3/8 in. lead holes.
	Corner Wall Strap	Two-3/8 in. x 4 in Coach Screws in 1/4 in. lead holes.
Cinder Block Cement Block or Hollow Tile	Do not attach to corner of these Buildings	

*1/2 inch and 5/8 inch Wall Straps are provided with three mounting holes. An anchoring device shall always be placed in the hole adjacent to the eye end of the strap. A second anchoring device shall be placed in one of the other two holes depending on the type of structure, as follows:

(a) On frame or stucco buildings, place the second anchor in the end hole of the strap.

(b) On masonry buildings, place the second anchor in whichever hole will result in the more secure attachment.

5.02 Where strand is to be terminated on the face of a building wall, a 5/8-in. thimble eye bolt should be used as the strand attachment wherever possible. The eye bolt should be equipped with a 3/4 in. x 3 in. Square Washer at each end.

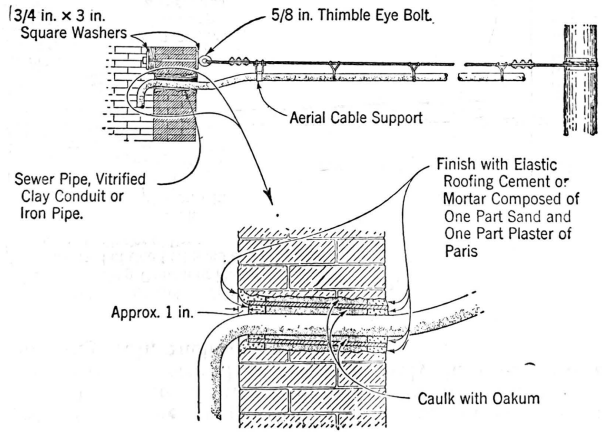
5.03 Where strand is to be terminated on the face of a building wall and it is not practicable to place an eye bolt, the type of attachment and the anchoring devices are determined by the type of building structure, as indicated in the following:

Type of Structure	Type of Attachment	Anchoring Device
Reinforced Concrete	U-Wall Strap	Two-1/2 in. x 3-1/2 in. Hammer Drive Anchors
Brick	Plate Wall Strap	Four-1/2 in. x 3-1/2 in. Hammer Drive Anchors
Cinder Block Cement Block or Hollow Tile	Attach only with Eye Bolt	—
Wood	Do not attach to face of wood building	—

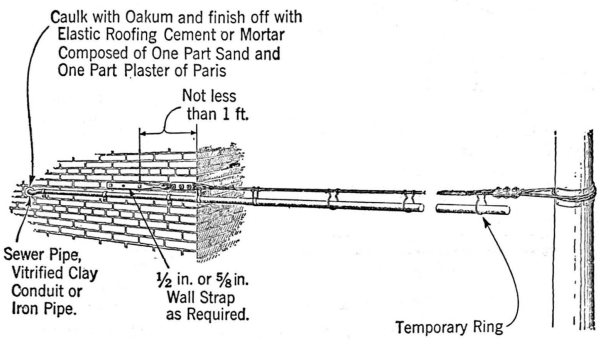
6. METHODS OF CONSTRUCTION—CABLE SUPPORTED ON STRAND

6.01 The following methods indicate typical construction to be used for pole-to-building spans. When a section of strand is placed between a pole and a building, use one 3-bolt guy clamp for securing 6,000 pound and larger strand, and a one bolt clamp for securing 2,200 pound strand, at each dead end point, as shown in the following illustrations.

(a) Where the suspension strand for supporting one cable is to be attached to the face of a building wall, anchor it as shown in the following or use Wall Straps in accordance with Paragraph 5.03.



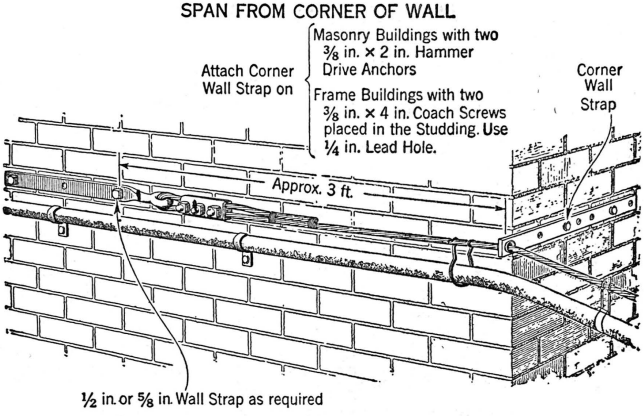
(b) Where the suspension strand for supporting one cable is to be attached to the corner of a building wall and the strand is approximately in line with the building wall, anchor it as shown below.



Attach ½ in. Wall Strap on
- Frame Buildings with two ⅜ in. × 4 in. Coach Screws placed in the Studding. Bore ¼ in. Lead Hole.
- Masonry Buildings with two ⅜ in. × 2 in. Hammer Drive Anchors.

Attach ⅝ in. Wall Strap on
- Frame Buildings with two ½ in. × 4½ in. Coach Screws placed in the Studding. Bore ⅜ in. Lead Hole.
- Masonry Buildings with two ½ in. × 3½ in. Hammer Drive Anchors.

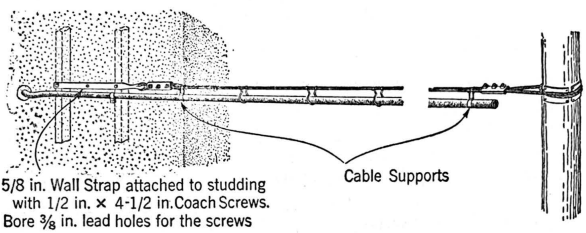
(c) Where the suspension strand for supporting one cable is to be attached to the corner of a building wall and the strand pulls out of line with the building wall, place a Corner Wall Strap in addition to the 1/2 inch or 5/8 inch Wall Strap, as shown in the following illustration.



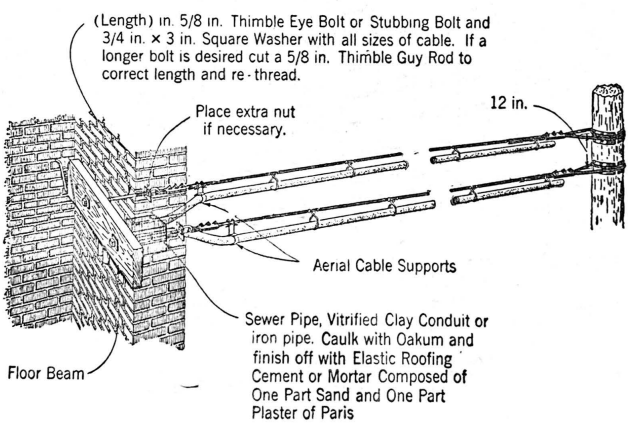
Attach 1/2 in. Wall Strap on
- Frame Buildings with two 3/8 in. × 4 in. Coach Screws placed in the Studding. Bore 1/4 in. Lead Hole.
- Masonry Buildings with two 3/8 in. × 2 in. Hammer Drive Anchors.

Attach 5/8 in. Wall Strap on
- Frame Buildings with two 1/2 in. × 4 1/2 in. Coach Screws placed in the Studding. Bore 3/8 in. Lead Hole.
- Masonry Buildings with two 1/2 in. × 3 1/2 in. Hammer Drive Anchors.

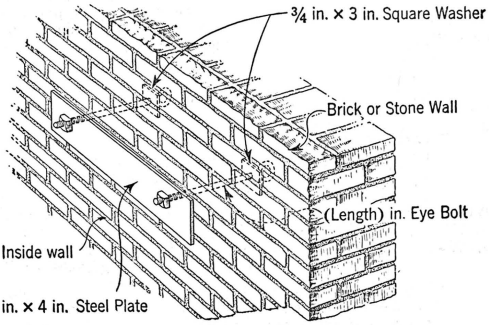
(d) Where the suspension strand is to be attached to a frame or stucco-on-wood building, place a Wall Strap as shown in the following, making certain that each Coach Screw is attached to the studding.



(e) Where two suspension strands are to be attached to the face of a building wall, anchor the thimble eye bolts through the floor beam adjacent to the inside wall of the building, as shown in the following.

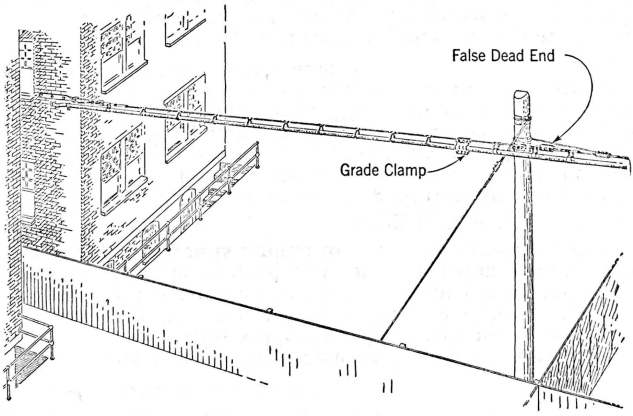


(f) Where two suspension strands are to be attached to the face of a building wall and it is impracticable to anchor the eye bolts as shown in (e) above, place a steel plate against the inside wall of the building, as shown in the following illustration.



(g) Where more than two cables are to enter a building, an underground rather than an aerial entrance is recommended.

(h) Where the building is so located that the length of the span from the pole in the cable line to the building would be abnormally great, an additional pole, properly guyed, should be placed nearer the building. This type of construction is shown in the following illustration.



7. METHODS OF CONSTRUCTION—CABLE SUPPORTED ON RIGID STRUCTURE

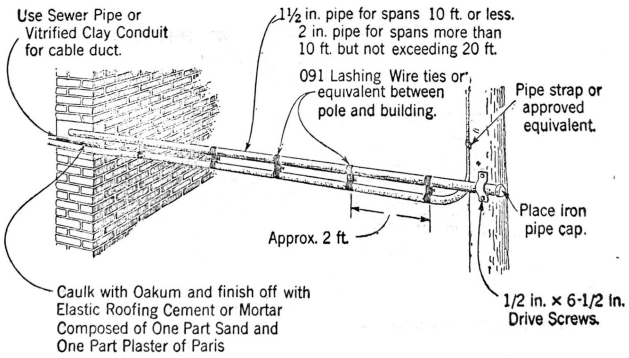
7.01 Rigid structure may be used as an alternative method for supporting cables in pole-to-building spans where it is impracticable to use suspension strand because of inadequate guying facilities or where the span is so short that it is impracticable to dead end the suspension strand. This type of construction is limited to spans not exceeding 20 feet.

7.02 Support the cable on a 1-1/2 inch galvanized steel pipe for spans not exceeding 10 feet, and on a 2 inch galvanized steel pipe for spans more than 10 feet, but not exceeding 20 feet. Place two pipes at the time the first cable is installed if there is a possibility that a second cable is to be placed within a short time. Where more than two cables are to enter a building, an underground rather than an aerial entrance is generally preferable.

7.03 Provide sliding supports at either the pole or the building in order to prevent loosening of the attachments and to decrease the possibility of damage to the building and telephone plant.

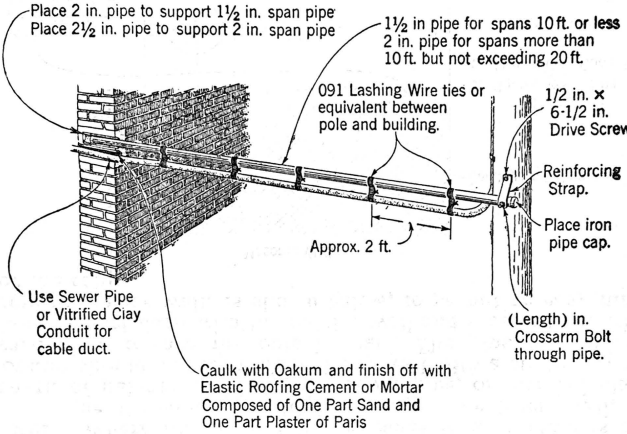
(a) Sliding Support at the Pole. Make a sliding support at the pole by securing the supporting pipe to the pole with a pipe strap or clamp as shown in the following. The pipe strap or clamp should be slightly larger than the diameter of the pipe to permit the pipe to slide freely at the pole.

SLIDING SUPPORT AT POLE



(b) Sliding Support at the Building. Make a sliding support at the building by terminating the supporting pipe in a short piece of pipe having a 1/2 inch larger diameter than that of the supporting pipe.

SLIDING SUPPORT AT BUILDING



8. PLACING CABLE

8.01 Cable that is to be placed in pole-to-building spans may be either ring supported or lashed.

8.02 In general, for spans less than 25 feet in length, it is recommended that the cable be placed in rings. For spans of this length, the rings should be placed from a ladder rather than a cable car.

8.03 For spans exceeding 25 feet in length, where the strand is attached to the building wall by means of an eye bolt, consideration should be given to lashing the cable to the strand. Where the lashing method is practicable, the following procedure is recommended:

(1) Place an Aerial Cable Guide on the strand close to the building wall.

(2) Pull the cable from the reel through the cable guide until a sufficient length of cable has been obtained to reach the terminating point in the building.

(3) Clamp the cable to the building wall, unless the point of entrance for the cable to the building is directly below the strand attachment on the building.

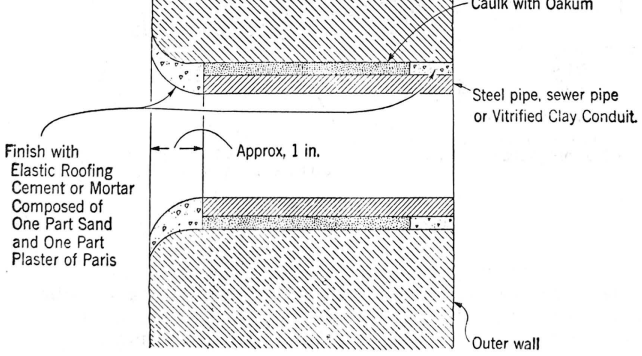
(4) Place the Cable Lasher on the strand between the cable guide and the building wall and adjust the cable lifters so that the cable is properly positioned in the Cable Lasher.

(5) Attach one pulling line to the Cable Guide and one to the Cable Lasher and lash the cable in accordance with the instructions covered in Section G52.124. The method of terminating the lashing wire is covered in Section G52.125.

8.04 For spans exceeding 25 feet in length, where the strand is attached to the building by means of a wall strap, or where the lashing method is not practicable, place the cable in rings.

9. BUILDING ENTRANCES

9.01 Where the aerial cable entrance to a building is to be through a reinforced concrete or brick wall, a length of galvanized steel pipe, sewer pipe, or vitrified clay conduit should be set in the building wall with a slight downward pitch toward the outside wall. The pipe or conduit should be set flush with the outside wall and recessed slightly from the inside wall, as shown below, to permit an easy turn for the cable.



9.02 Where the aerial cable entrance to a building is to be through a frame or stucco-on-wood wall, a length of galvanized steel pipe or wood conduit should be set in the building wall with a slight downward pitch toward the outside wall. The space between the pipe or conduit and the inner and outer walls should be sealed with putty.

9.03 Seal the duct at both ends by packing oakum around the cable in the duct and finishing off at each end with mortar composed of one part sand and one part Plaster of Paris. If desired, elastic roofing cement may be used instead of the mortar.

10. PRECAUTIONS

10.01 Work on 2,200 pound strand shall always be performed from a ladder as this strand is not intended to support the weight of a man and a cable car.

10.02 A ladder shall always be used when working on strand that is attached to the building by any means other than an eye bolt.

10.03 When using a ladder on a strand that is attached to a building, the ladder should be set, wherever possible, so that it will tend to push the wall strap against rather than away from the building.

10.04 When lashing cable to a strand that is attached to a building, avoid any excessive downward pull on the line that is used to pull the Cable Lasher. The line should be held at as small an angle with the strand as will permit the Cable Lasher to operate without slipping.