BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G21.115
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Standard

PLACING POLES

LOCATING POLES AND STUBS

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1. GENERAL

1.01 The requirements covering the spacing of poles are more exacting for lines which will support open wire carrier or repeatered circuits than for lines which will support cable or exchange wire plant.

1.02 Place poles which are to support open wire carrier or repeatered circuits at the staked or otherwise designated locations, except that in order to comply with the wishes of property owners desiring a change made in a proposed pole location or in order to avoid difficult rock excavation, three transposition poles per transposition section may be shifted not more than 10 feet ahead or back on line without advance approval of the plant engineer. Advise the plant engineer of any such changes made. If it appears necessary to shift more than three transposition poles in a transposition section, refer the matter to the plant engineer before the work is done.

1.03 The following general requirements covering the locating of poles and stubs apply to all classes of lines, with the exception that special consideration, as mentioned above, must be given to those cases where it appears necessary to shift from a staked location, a transposition pole which will support open wire carrier or repeatered circuits.

(a) Measure off the span lengths specified for the line along the route designated by the engineer and for which the necessary rights of way have been secured until

an obstacle or a fixed pole location, such as a corner, dead end, or crossing, is reached. Locate a pole at a satisfactory distance from the obstacle or at the fixed location. If it is then found that the span adjacent to this stake is 10 per cent. over or 20 per cent. under the specified length of span, relocate a sufficient number of the adjoining stakes to make all spans come within these limits. Drive stakes at the proposed pole and stub locations. Where the line requires poles of different heights for grading, the pole height required should be marked on the corresponding pole location stake. The number of poles specified per mile of line should, in general, not be increased or decreased by more than one pole, except where long span construction occurs. In selecting the route, it is important that consideration be given not only to providing a direct route, but also one that will be convenient of access, so as to reduce construction and maintenance difficulties.

(b) Locate poles in line, except corner poles, as provided below. (See Paragraph 2.01 (b)).

(c) Locate poles so that required clearances from other lines, railroad tracks, etc., will be obtained.

(d) Locate dead end poles so as to obtain good guying facilities and so that, if there is to be an underground connection, the conditions will be favorable for building the subsidiary conduit and pulling in the cable. Where conditions would make it difficult to provide the required guying, consider the use of slack span construction.

(e) Along the highway, except in municipalities, locate line, in general, close to the highway fence line, except that where distance between fence line and drainage ditch will permit, place poles so as to avoid having crossarms overhang private property. If conditions make it desirable to have crossarms overhang private property, obtain the necessary permission for such overhang. It is also important that poles be placed as far back from the shoulder of drainage ditches or other banks as practicable so as to lessen the possibility of poles kicking out. When conditions permit, locate poles at transverse fence or property lines.

(f) Do not set poles between drainage ditch and highway without special approval of county, state, or other authorities having jurisdiction.

(g) In connection with locating a pole line, take into account the possibility of future highway widening, so as to avoid the necessity for shifting the line at a later date. In cases of road intersections where it is anticipated that the intersecting road may be widened, locate poles

at a sufficient distance from the intersecting road line to avoid the necessity for later shifting.

(h) Where local regulations provide a definite location for pole lines, for example, at a fixed distance from the center of the highway, comply with the regulations.

(i) Avoid long curves—line should preferably consist of straight sections and corners, so as to reduce the amount of guying that would otherwise be required.

(j) Avoid locating poles in inaccessible places, such as marshes, steep banks, banks that are exposed to washes, etc.

(k) Avoid the use of long or short poles for grading the line by shifting the stake locations (but not more than 10 per cent. over or 20 per cent. under the specified span length) so as to keep poles off the bottoms of depressions. If carrier or repeatered circuits are involved, observe also the limitation contained in Paragraph 1.02.

(l) Avoid pole locations which will involve the wires in tree branches or foliage, unless satisfactory pruning rights have been obtained.

(m) Locate exchange poles so as to facilitate joint use.

2. REQUIREMENTS FOR LOCATING POLES AT CORNERS

2.01 The principal factors to be considered in locating poles at corners are as follows:

(a) Locate corner poles so as to obtain good guying facilities.

(b) Where conditions favor the raking of corner poles, they shall be "set in" to give the proper rake. (See Section G21.140.) A stake should usually be placed to show where the pole hole is to be dug.

(c) In open wire lines carrying 128 or larger wires, use a single pole corner where the pull will be less than 30 feet. Where the pull on a single pole would be 30 feet or greater, in general make the corner on 2 or more poles. Where a 2 or more-pole corner is impracticable, a single pole corner with double crossarm or buck arm construction may be used. (See Section G22.110.)

(d) In open wire lines carrying wires smaller than 128, use a single pole corner where the pull will be less than 40 feet. Where the pull on a single pole would be 40 feet or greater, in general make the corner on 2 poles. Where a 2-pole corner is impracticable, a single pole corner with double crossarm or buck arm construction may be used. (See Section G22.110.)

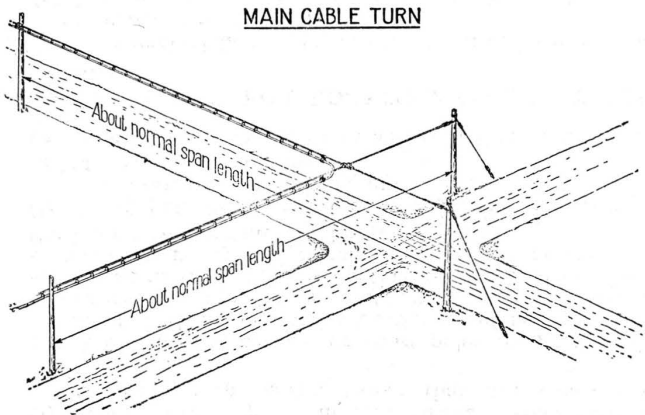
(e) In aerial cable lines, carrying exchange cables or the smaller sizes of quadded cables, construct corners on a single pole, provided that guying conditions permit and the pull will be less than 50 feet. Where the pull on a single pole would be 50 feet or greater, construct the turn with a two-pole corner if conditions permit.

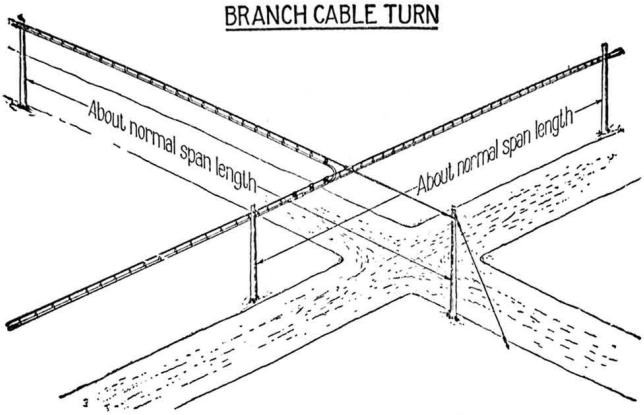
(f) In the case of full size quadded cables, construct a two or more-pole corner, if practicable, where the pull on a single pole would be greater than 20 feet.

(g) If conditions do not permit the construction of a two or more-pole corner in accordance with (e) or (f), construct the turn on a single pole or a strand crossover. (See instructions covering Aerial Cable Construction.)

(h) At street corners, where conditions such as radius curbs, sewer inlets, obstructions, etc., will not permit the construction of a single pole or two-pole corner, construct the turn as shown in the following illustrations.

MAIN CABLE TURN





3. REQUIREMENTS FOR LOCATING POLES OR STUBS IN TOWNS AND CITIES

3.01 The following requirements apply more specifically to locating poles and stubs in towns and cities, and supplement the more general requirements set forth above.

(a) Avoid injury to trees, and inconvenience to property owners, tenants, or the public.

(b) Locate poles and stubs so that they will be as inconspicuous as practicable.

(c) In placing poles and stubs on private property, endeavor to locate them in the most desirable location from the telephone company's standpoint. If the owner of the property prefers other locations, endeavor to comply with his requests. If it appears, however, that such changes in locations are likely to introduce construction or maintenance difficulties, explain to the owner why it is not desirable to place the poles or stubs in the suggested locations, and if possible obtain permission to locate them elsewhere, where they will be free from these difficulties.

(d) Avoid locations that would interfere with driveways, entrances to fields, street gutters, gates, coal chutes, windows and doors of stables or garages.

(e) Locate poles carrying large terminals away from inflammable structures and material, and so that they will be as inconspicuous as practicable.

(f) On Highways.

(1) Locate poles and stubs so that the street side of the pole or stub will be at least six inches from the street side of curb. Correct curb line should be obtained from city engineer or other proper authority where curb line is indefinite or subject to change. Where local experience indicates that a greater clearance is desirable, provide it.

(2) Locate poles at property lines and entrances to alleys to facilitate distribution.

(g) In Alleys.

(1) Locate poles and stubs on transverse property lines and close to side lines of alleys, avoiding, where practicable, the use of extension fixtures.

(2) Locate poles from which drop wire or cable is to be led to buildings for wall distribution so as to facilitate direct runs.

(3) Where practicable, locate poles having terminals so that drop wire may be run directly to all parts of the area served from that terminal.

(h) At street corners, locate poles away from the corner so that if catch basins are installed or the curb radius is changed, it will not be necessary to shift poles. It may be necessary to locate jointly used poles that are to carry street lights, at street corners.

(i) Locate interior block poles so as to obtain the best and most direct distribution from poles to buildings.