# POLE MOVING FRAME
## GENERAL

Contents



## 1. GENERAL

1.01 Sections G21.416.1 to G21.416.3 describe the use of the PM (Pole Moving) Frame with winch and derrick equipped trucks for moving pole lines that carry open wire telephone plant.

1.02 Section G21.416.1 covers general considerations. Section G21.416.2 covers pole line moves made with trucks equipped with T-type derricks and Section G21.416.3 covers pole line moves made with trucks equipped with middle-type derricks.

1.03 Section J6.144 covers the inspection, assembly, lubrication, and operation of the PM Frame.

## 2. PRECAUTIONS

2.01 The precautions outlined in Section J6.144, and all precautions pertaining to the work operations being performed shall be observed in all cases.

2.02 Before any poles are moved, the employee in charge shall survey the route of the pole line, and shall make a preliminary check of the following:

(a) The voltage to ground of any electric wires that cross over or under the telephone line.

(b) The existing vertical clearance between telephone plant (poles, line wires, transposition brackets, strand, etc.),

and **all** electric wires that cross over or under the telephone line.

(c) The amount by which this existing vertical clearance would be reduced if the telephone pole was lifted out of the hole. In general, the amount by which this clearance will be changed will depend on:

(1) how deep the pole is set,

(2) how high the butt of the pole will be raised above the ground during the moving operation, and

(3) the difference in ground level between the existing pole location and the new location.

2.03 If this preliminary check indicates that the separation between power wires and telephone plant at points of crossing, or between any part of the telephone pole and power wires would at any time be less than the minimum clearance value shown in Section G10.302 either have the electric wires deenergized during the period the move is being made, or lower the telephone attachments sufficiently to insure adequate clearance throughout the move. If unable to do either of the above, the pole should not be moved by the PM Frame method.

2.04 In every case where power wires cross over the telephone line and the power has not been shut off, tie down the telephone wires with dry ropes, free from metallic strands.

2.05 The employee in charge shall position himself at a reasonable distance from the pole and the frame so that he can observe the over-all job (clearances, position of the derrick, position of the workmen, condition of the line during the move, etc.), and also be in a position to give signals and direct the work.

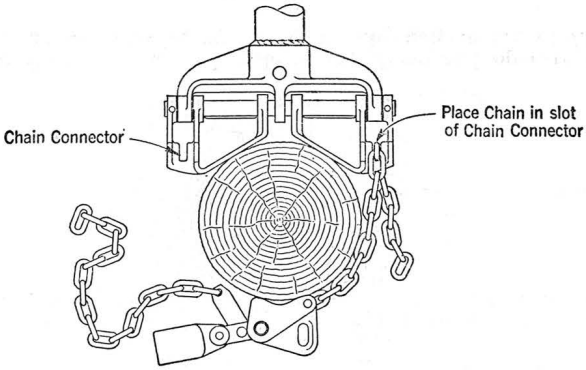
2.06 The attachment of the PM Frame to the pole should be made as near the ground line as practicable. Make sure that the part of the pole where the frame is to be attached and the section of the pole above this point are strong enough to withstand the strain which is placed on the pole when it is being moved. If the frame is attached a few inches above the ground line, the pole can usually be lifted about 6-1/2 feet or more depending upon how far the frame has been extended. If this distance is insufficient to lift the pole out of the hole, or in any case where the frame is approaching the 45 degree angle, the pole should be lowered back in the hole to at least one-half its former depth and held in that position by the winch line. If the section of the pole below the ground line is sound, the frame attachment may be lowered to permit the pole to clear the hole, or to keep the frame angle under 45 degrees when the pole is lifted.

2.07 The PM Frame should be securely attached to the pole before any attempt is made to pull the pole so that if the pole should break at or below the ground line during the pulling operation, the pole and the line load will still be held securely.

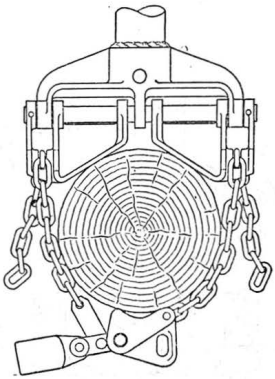
2.08 The head section of the frame is equipped with a pole saddle and a chain tightener for holding the pole against the saddle. The chain is in two sections with a toggle type tightening clamp in the middle. Care shall be exercised in positioning the pole saddle and chain tightener and when tightening the clamp to prevent injury to the hands.

2.09 To attach the frame to a pole proceed as follows:

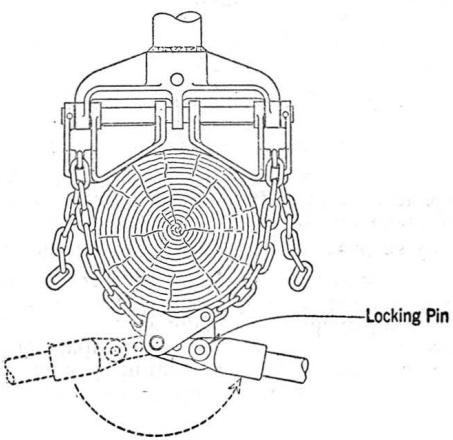
(a) Attach one end of the chain to the chain connector on one side so that the clamp is at a point about halfway around the pole from the saddle.



(b) With the clamp in the open position connect the other end of the chain to the connector on the other side as tightly as convenient.



(c) Place the clamp handle in the clamp and operate the clamp by swinging the handle through an arc of 180°.




(d) Be sure that the locking pin of the clamp snaps down into the locked position. Check this by attempting to swing the handle back toward the released position.

(e) Check the attachment to see that the pole is held securely. If the chain is not tight enough, release the clamp by pulling up on the locking pin and swinging the handle to the released position. Take up one link on the chain and reset the clamp.

## 3. PLANNING THE JOB

3.01 The field of use of the PM Frame method of moving poles carrying open wire lines will be limited by the size of the poles, the line attachments carried, the length of the move, the equipment and tools available, and other conditions encountered on the job. The following are some of the factors which should be given consideration in planning and laying out a pole moving job where the PM Frame is to be used.

3.02 The PM Frame is not adapted to moving H fixtures, A frames, and other multi-pole fixtures. In such cases, the fixture should either be dismantled, or one pole may be removed and the other pole handled as a single pole move. If a single pole move is to be made, a diagonal brace and 30-inch vertical braces (or the existing crossarm braces) may be used to position and support the outer ends of the crossarms in a manner similar to that shown for Extension Fixtures in Section G22.110.

3.03 The PM Frame method should not be used to move

(a) pole lines that carry power company attachments unless these power company wires have been deenergized. **Don't take chances by moving a hot line!**

(b) poles that have been condemned, unless special precautions are observed to see that the sections of the pole above ground are sound. Condemned poles shall be removed (not moved) if it is found that the winch line and the PM Frame cannot be attached to sound wood. Where poles are removed, it will be advantageous to use a wire spreader to keep wires apart. Existing crossarms may also be used as wire spreaders.

3.04 The PM Frame method should not be employed where very rough ground or severe grade conditions would subject either the work equipment or the telephone plant to undue strains which might result in damaging the equipment or plant.

**Trucks, Derricks, etc.**

3.05 Pole moving operations can be handled better by trucks equipped with T-type derricks than by trucks with middle-type derricks. Due to the fixed position of the middle-

type derrick, it will be necessary to erect the derrick for operation in the truck position and to use the pole jack when pulling a pole, or have another derrick equipped truck assist in pulling the pole. Two or more trucks equipped with PM Frames may be used to advantage when a large number of poles are to be moved.

3.06 In general, poles less than 35 feet in length and carrying not more than 3 full crossarms of wire can be moved with 1-1/2 ton trucks where the earth is reasonably level and solid. Where the length of the pole or the attachment load exceeds the above, or less satisfactory ground conditions exist, larger trucks will usually be required. The maximum lengths of poles that can be handled conveniently with the various types of derricks are shown in Section J6.130.

3.07 Poles may be moved from the field side or from the road side. Where local conditions are favorable, and when permission can be obtained from the property owner, pole lines shall be moved from the field side to avoid obstructing the roadway and the inconvenience of maneuvering the truck on a narrow roadway, over drainage ditches, fills, embankments, etc. If rough ground is levelled before moving a pole carrying open wire attachments, there will be less tendency for the line wires to swing and become crossed. Planks or skids may also be used to provide a firm, smooth path for the truck.

**Slack in the Line Wire**

3.08 For spans up to 150 feet, the normal amount of slack in the line wire will usually be sufficient to permit a pole to be moved at least 6 feet. For spans greater than 150 feet, the maximum move that can be made without untying the line wires or cutting in slack will increase proportionally. Moves up to 12 feet can be made for spans up to 150 feet, and for greater distances for spans longer than 150 feet by loose tying the line wires at three or four poles at the starting end of the section to be moved. In general, poles should not be moved more than 30 feet as a single stage moving operation.

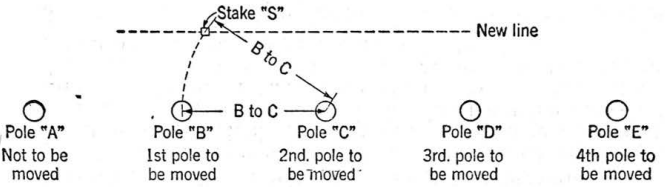
3.09 The need for cutting-in slack can in many cases be avoided by planning the moves so that the existing slack in the line wires can be used. Where practicable, start the move at a pole that is to be moved only a short distance, and then work along the line in the direction toward the pole that requires the longest move. If a corner in the line is to be removed or reduced, and the pole is to be moved into the corner, the need for cutting in slack may be avoided by moving the corner pole first. If excessive slack is introduced by this move, cut out slack line wire to avoid service interference. If

the move is away from the corner, slack may be cut in at the corner preparatory to moving the corner pole and before moving the remaining poles, or the other line poles may be worked toward the corner pole, and slack cut in before moving the corner pole.

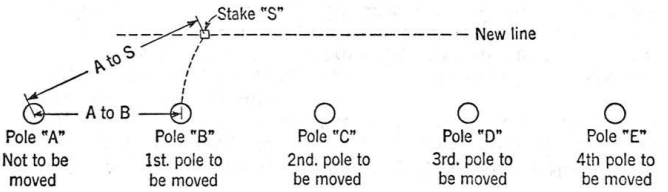
3.10 Where slack is required, the amount to be cut in may be estimated as follows:

(1) Pole A to remain at location shown, Poles B, C, D, etc., to be moved.

(2) Measure the distance B to C, and swing tape from Pole C. At the point where the tape crosses the new location line, drive stake.



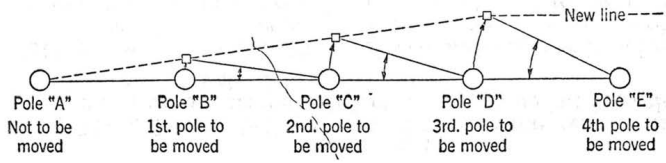

(3) Measure the distance A to B, and from A to stake S.




(4) The difference between these measurements represents the minimum amount of slack that must be cut in each wire to permit Pole B to be moved.

3.11 Moves greater than 30 feet should preferably be handled as multi-stage moves. One or more poles may be moved part way, and set temporarily, in order to get back to the new line location. Poles set temporarily may then be moved the remaining distance to their permanent location. Two or more trucks equipped with PM Frames may be used to advantage on such moves.

3.12 Where additional slack is not required to make the first move, the following method may be employed in staking new hole locations.




(1) To get new location for Pole B, measure the distance from B to C, swing the tape from Pole C, and drive stake for Pole B where the free end of the tape crosses the new location line.

(2) To get new location for Pole C, (and other poles to be moved) proceed as above by measuring the distance from C to D, swinging the tape from Pole D, and driving stake for Pole C where the free end of the tape crosses the new location line.

(3) If in staking new locations for poles it is found that the distance from the old hole to the stake at the new location is greater than shown in Paragraph 3.08, it may be necessary to cut in slack before the pole is moved.

(4) Due to the varying conditions encountered on the job, it will be difficult to determine in advance how many poles can be moved without cutting in or cutting out slack. The experience of the forces doing the job will enable them to judge when it is necessary to stop the moving operations and to adjust the slack in the line.

3.13 In staking new hole locations, it is important to know in advance where the pole moving operations are to be started, the order in which the poles will be moved, and the locations where it will probably be necessary to cut in or cut out slack. When the new holes are bored or dug, the diameter of the hole should be greater than usual to enable the butt of the pole to be shifted to the desired position, and to avoid untying (and later retying) the line wires to obtain alignment of the pole top. It is desirable to use a bar or butting board in the new hole particularly where loose soil conditions exist.

**Tools and Other Equipment**

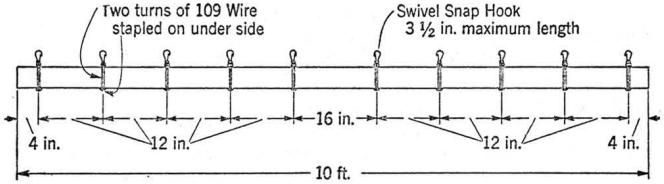
3.14 The following tools and equipment will facilitate the work associated with pole line moves when the PM Frame is employed.

(a) Wire Raising Tools—Two tools recommended for raising and lowering the winch line and winch line hook on the pole, and for maintaining line wire clearance.

(b) Pike Poles—As tamping and backfilling are not done at once following the moving of a pole, at least 6 additional pike poles will be required.

(c) Range Rods (or equivalent)—At least two range rods should be available to indicate the location of the new hole and to assist in guiding the truck driver to the desired location.

(d) Wire Spreaders—These should be made up locally in the quantity required. May be made of round or square wood stock about 1-1/2 inches thick. Snap hooks, wire hooks or bridle rings should be spaced according to the pin spacing on the crossarm. Handlines are used to pull the wire spreader away from the pole toward the desired location in the span. Crossarm braces may be used to separate spacers in those cases where more than one crossarm of wire is involved. The arrangement of a spreader which is suitable for use with wires supported on Type A crossarms is shown in the following illustration:




(e) Earth Boring Equipment—The use of this equipment, where available, will facilitate digging greater diameter pole holes.

(f) Prop Extension—For trucks with T-type derricks (see J6.139).