

Horizontal Manual Pole Assembly & Installation

For In-Ground Mounted Power & Water Utility Poles

1.0 Purpose

The purpose of this technical instruction is to detail those actions necessary to ensure that steel power pole sections are joined, assembled and installed in compliance with the applicable design standards.

2.0 Scope

This procedure applies to the joining/assembly and installation of in-ground mounted steel power poles. Methods of horizontal pole assembly are detailed.

3.0 Procedure Details

Horizontal Pole Assembly

- 3.1 Each site should determine, document and train its personnel in safe work methods relevant to the site and to the pole assembly and installation.
- 3.2 Arrange the base section onto packing and level so that the underside of the pole section will be horizontal. If winching assembly lugs have been provided on either side of the section, arrange these so that they are horizontal. The height of the packing should be such that the base section is well clear of the ground.
- 3.3 Make sure that the pole base section is wedged to prevent rotation (refer figure 1).

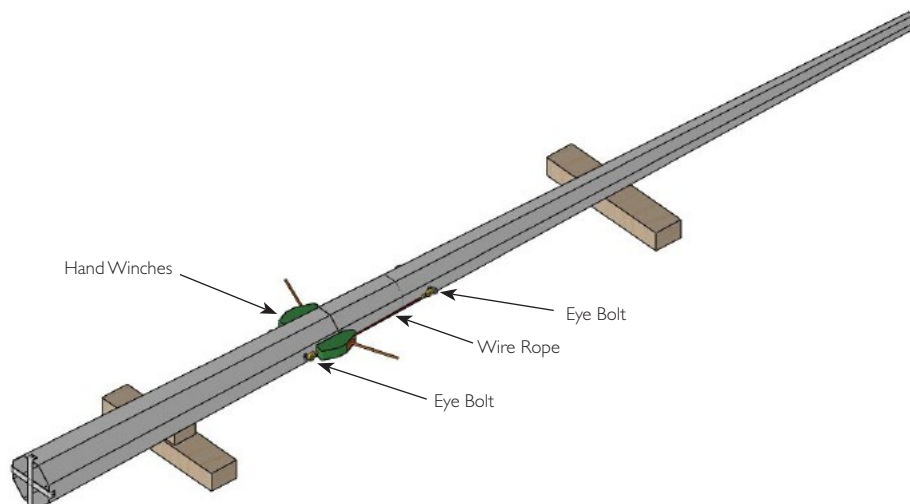
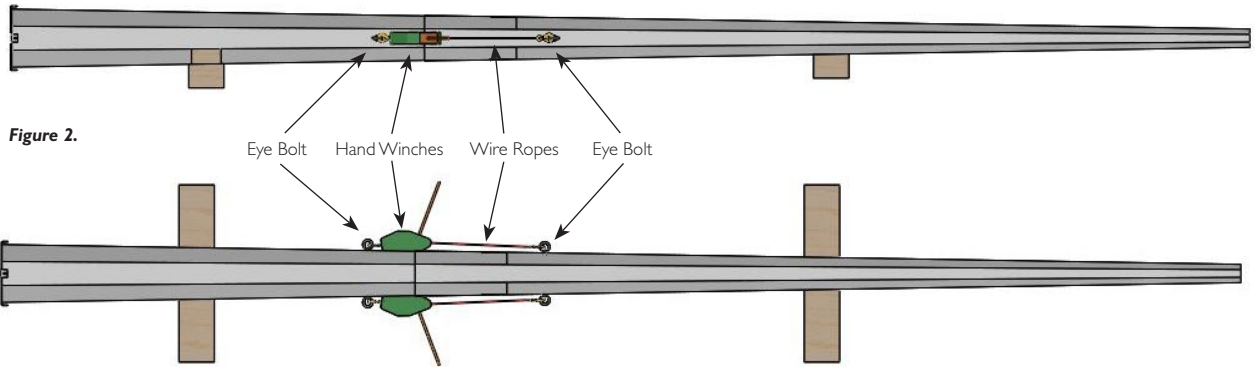


Figure 1.

- 3.4 Check that the design slip distance and minimum slip distance, are correctly marked near the top of the section. If the final slip length achieved is to be recorded then mark an additional spot 300mm past the design slip distance as a measuring reference.
- 3.5 Check that the packing is a minimum of 300mm clear of the slip joint length shown on the drawings to allow for any horizontal movement of the column during assembly.

- 3.6 Sling the next section for assembly at its centre of gravity and engage the sections as far as easily possible, making sure that perfect alignment of the pole sections is maintained. Rotate the section being slung as necessary to maintain perfect alignment of the corner fold lines. Pole sections must be aligned both horizontally, when viewed from the side (refer figure 2), and must also at the same time be in a straight line when viewed from the end of the section (refer figure 3). The crane used to engage the next section can be used to hold the added section in perfect alignment while the joint assembly is being carried out.



Pole sections and climbing rung clips, if applicable, must be aligned along the length of the pole in accordance with the relevant pole drawings.

- 3.7 Attach the eye bolts to the nuts welded into the top and bottom sections of the pole.
- 3.8 Assemble two 3 tonne lift, 5 tonne pull hand winches or similar, one each side of the pole. Attach the hand winch cables to the eye bolts on either side of the joint. Orient the eye of the eye bolts in the line of pull.
- 3.9 Under strict supervision, operate the hand winches in unison to ensure that telescoping of the sections proceeds evenly about the column axis. During this the external surface of the slip joint can also be hammered via wooden block to assist in achieving a sound joint.
- 3.10 Misalignment of the sections for any reason may lead to jamming, which will prevent good telescoping of the joint and may be difficult to rectify.
- 3.11 Continue to apply pressure as described in 3.9 above **until no further movement can be achieved**. Check the design slip joint length with respect to the actual slip joint length achieved. If the slip joint length achieved is less than the design slip length, check that the minimum slip length has been achieved and that the joint appears to be tight all round. Contact INGAL EPS if the slip distance achieved is less than the minimum.
- 3.12 Leave the hand winches tensioned and attached to the eye bolts in preparation for installation.

Pole Installation

- 3.13 Safety considerations should be reviewed prior to any pole lift.
- 3.14 Before lifting the pole, ensure the pole orientation is correct with respect to any cross arms and the direction of the power line. If necessary, rotate the pole on the packing prior to lifting to facilitate the orientation.
- 3.15 Centre the lifting crane as shown in figure 4. All lifting tackle must be checked for its capacity and adequacy for the mass of pole being lifted.
- 3.16 A choked sling arrangement can be used to lift from. With this arrangement it is very important that the wire rope, chain or winches secured to the eye bolts across the slip joint, is taut. A rope may be attached to the choked lifting sling to enable it to be easily slid down the pole at completion of the installation. See Figure 5.
- 3.17 Following the above, the pole may now be lifted into the foundation hole. Keep well clear of the base of the pole while it is being lifted. The pole can be rotated into the correct alignment by hand or by choking a sling around the base above ground level and using a crow bar to help manoeuvre the pole.
- 3.18 The pole should be sufficiently secured to enable satisfactory placement and compaction of the fill and to maintain vertical alignment or back rake as required for the pole, while the pole foundation is stabilised.
- 3.19 Release the load from the lifting crane once the pole is satisfactorily secured in position.
- 3.20 Remove the lifting tackle and wire rope winches or chain positioned across the slip joint.

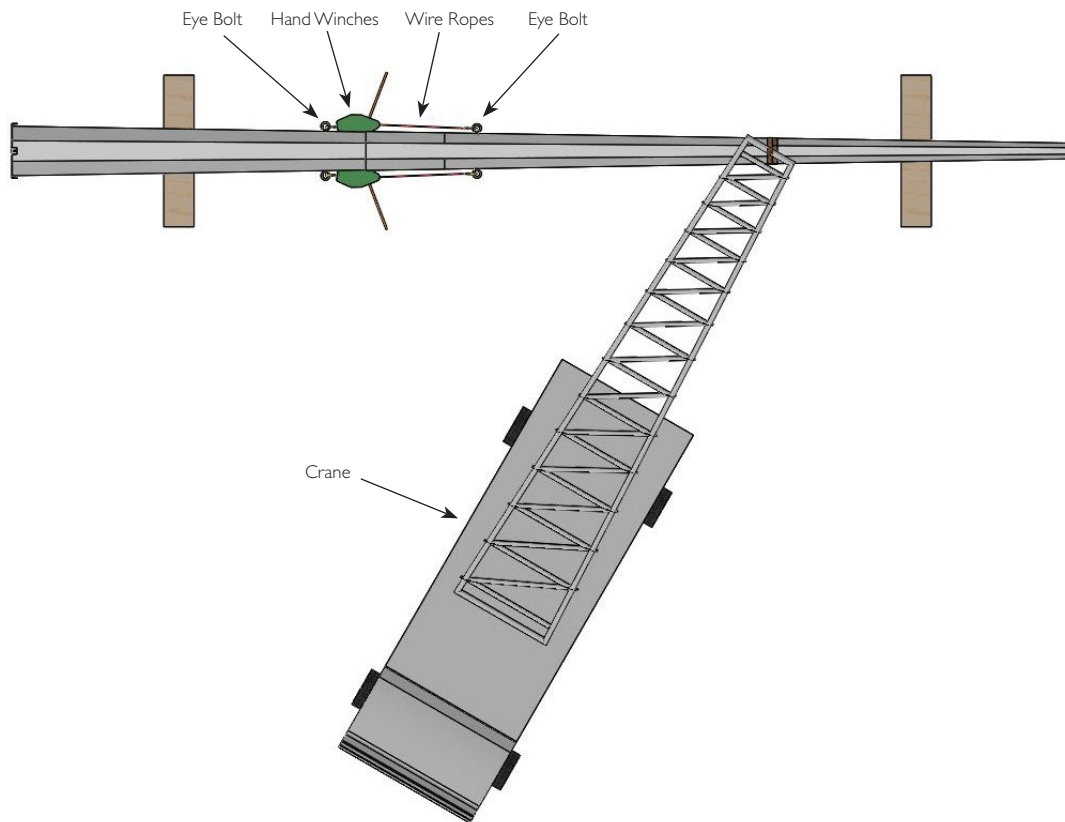


Figure 4.

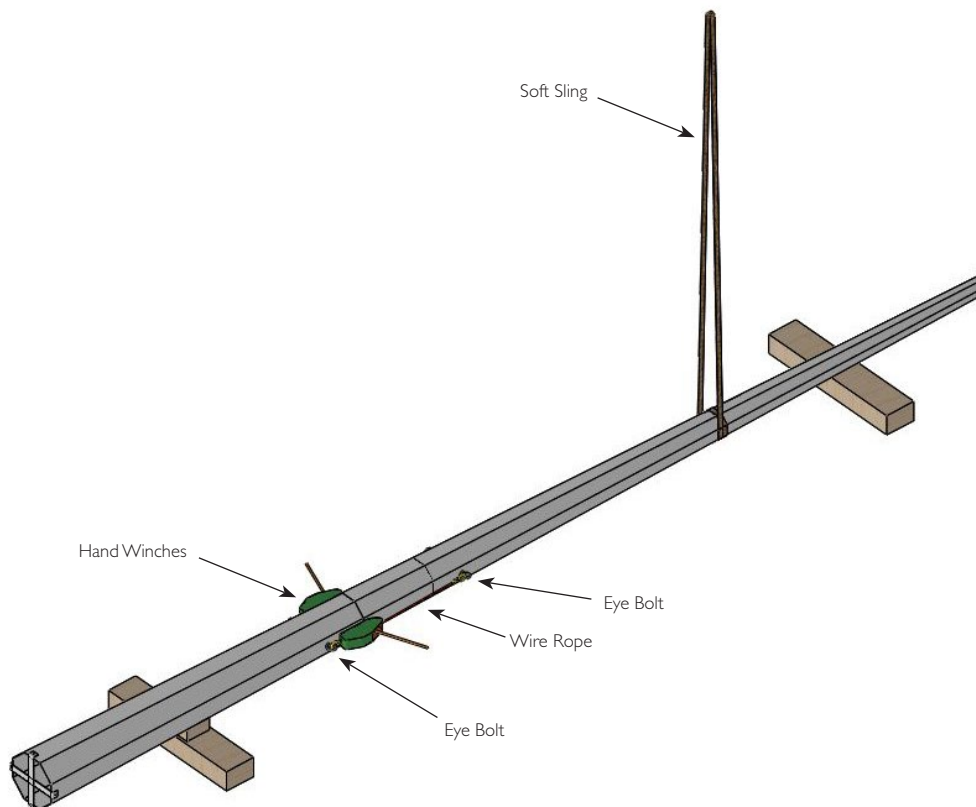


Figure 5.



4.0 Bill of Materials

Description	Qty
1 Soft Sling 6.0T 3.0m	2
2 Hand Winch 3.2T Lift 5.0T Pull capacity with Wire Rope 16mm diameter x 20.0m	2
3 Wire Rope 15.0m 3.0T WLL minimum with Thimble Eye one end, Brazed at other	1
4 Wire Rope Grip AS2076 to suit 15.0m 3.0T WLL minimum Wire Rope	3
5 Eye Bolt M24 3.2T WLL (in all directions) minimum	1
6 Bow Shackle 6.5T WLL minimum	5

