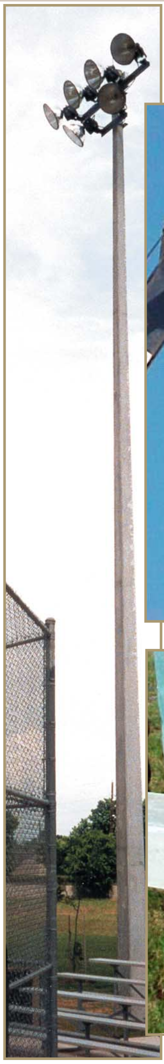
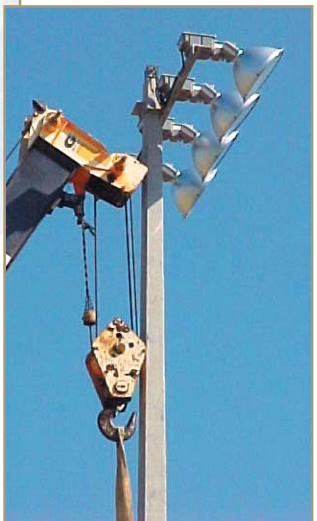
Technical Information





Strength

Ultimate strength design theory is used to determine the ultimate groundline moments shown in the technical charts. The location of the ultimate ground line moment is determined using an assumed embedment of 10% of the overall length of the pole plus 2 ft. In many cases a higher groundline moment may be attained without going to a larger pole. Please contact our technical staff for special requests.

Wind Loads

Wind loads for determining the maximum effective projected areas (EPA) presented in this catalog were determined in accordance with ASCE 7-02, *Minimum Design Loads for Buildings and Other structures.* The effective projected area is the actual projected area subjected to wind times the appropriate coefficient of drag (Cd). Please note our catalog features EPA's for 90 mph, 110 mph, 130 mph and 140 mph wind zones. EPA's for higher wind velocities can be attained by special design. Please contact our technical staff for special requests.

Wind pressures determined using the criteria of ASCE 7-02 are based on gust wind speeds. Editions previous to ASCE 7-95 were based on fastest mile (sustained) wind speeds. For example, if your specification calls for the design of a prestressed concrete pole to be based on a wind velocity of 100 mph with a 1.3 gust factor then you would select a pole from our catalog based on a gust wind speed of 130 mph. The following table provides a quick conversion of sustained wind speeds to gust wind speeds using a typical gust factor of 1.3:

Sustained Wind Speed Per ASCE 7-93 (mph)	Sustained Wind Speed Per ASCE 7-93 with 1.3 Gust Factor (mph)	Gust Wind Speed Per ASCE 7-02 (mph)
80	104	110
90	117	120
100	130	130

"10% plus 2 foot" Rule of Thumb for the Direct Embedment of Concrete Poles

Pole Length (Ft.)	Embedment (Ft.)	Height Above Grade (Ft.)
15	3.5	11.5
20	4.0	16.0
25	4.5	20.5
30	5.0	25.0
35	5.5	29.5
40	6.0	34.0
45	6.5	38.5
50	7.0	43.0
55	7.5	47.5
60	8.0	52.0
65	8.5	56.5
70	9.0	61.0

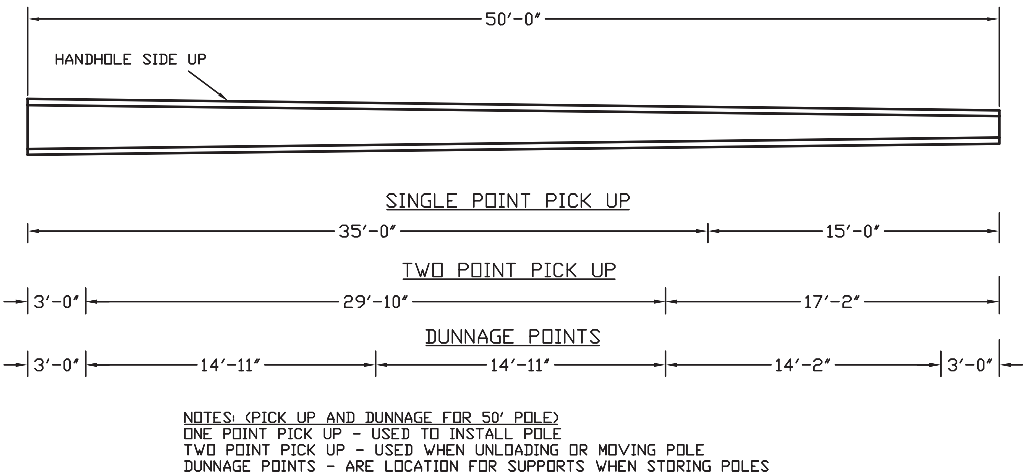
The hole diameter selected for the embedment should allow a minimum clearance around the corners of the pole butt of 4 to 6 inches. Hole sizes are generally specified in 6 inch increments to accommodate standard auger sizes. The hole diameter for octagonal poles may be determined by adding 8 to 12 inches to the width of the pole butt.

Handling and Installation Procedures E-2

Handling Instructions

- Prestressed concrete poles will withstand a considerable amount of bending but should not be shock loaded while under load.
- Prestressed concrete poles should never be handled or picked up by the tip.
- When shipping poles, the poles should be supported at a minimum of 3 points for poles up to and including 40 feet and 4 points for poles over 40 feet.
- Poles up to 50 feet in length may be unloaded using a one-point pickup at the balance point but should never be transported in this manner. A two-point pickup must be used to transport a pole at the job site.

Example



Installation Procedure

- Prior to installation of the pole, electrical wiring, brackets and luminaries can be installed while the pole is lying horizontally on the ground.
- Excavate the proper diameter and depth hole. The preferred method of excavation is by auger type drilling.
- To install, choke the pole with one end of a nylon sling 25% to 30% of the pole length from the top (see Handling section for location). Attach the other end of the sling to the lifting hook of the crane.
- Lift the pole allowing the butt to rest on the ground until vertical.
- Lift the pole over hole and lower until butt rests on bottom center of hole.
- While holding pole, add backfill in 4 to 6 inch layers, tamping between placement of each layer. Check for plumbness through out the backfilling process.
- If the pole is equipped for an underground connection, stop backfilling to a point 6 inches below the connection. Make the connection and then finish backfilling the hole to a point 2 inches above grade.

Direct Embedment

Direct embedment is the most common and recommended method of installation of prestressed concrete poles. Soil conditions vary from location to location and should be investigated by an engineer prior to designing the foundation. The “rule of thumb” for the depth of embedment is 10% of the overall length plus two feet. The table on the preceding page is based on the “rule of thumb.” Depending upon the type of soil, an appropriate backfill should be selected. The chart below contains suggested guidelines for the selection of backfill:

Good Soil: Compacted well graded sand and gravel, hard clay or well graded fine and course sand.	The excavated soil may be used as the backfill.
Medium Soil: Compacted fine sand and clay, compact sandy loam, losse coarse sand and gravel.	Requires select backfill. Clean, washed sand or minus 1/2 inch well graded gravel may be used.
Poor Soil: Soft clay, clay loam, poorly compacted sand or clays containing large amounts of silt.	Requires one of the following: cementitious earth, cement stabilized sand, limestone screenings, or urethane foam.