



# HO Structure Kit INTERMEDIATE POWER POLES

933-4173

Thanks for purchasing this Cornerstone kit. Please read the instructions and study the drawings before starting construction. All parts are made of reinforced ABS engineering plastic; use compatible paint and glue to finish and assemble your model. PLEASE NOTE: If desired, mounting points at the end of each insulator string can be drilled out to accept Wire (#933-3344, sold separately); use a #70 bit (not included). Additional kits, each sold separately can easily be combined to build a longer line.

Although modern power grids include several elements, the most common part of the distribution system are the various types of supports that carry power lines. As a rule of thumb, the higher the support the higher the voltage and specific types are used based on the line voltage. Since electricity can't easily be stored in large quantities, and is critical to modern lifestyles, there must be a constant flow to end-users, who may be hundreds of miles away from the generating stations. Because of the distance and the gradual loss of power, electricity from the power plant is boosted from 30,000 volts using a generating substation that raises the voltage from 155,000 to as much as 765,000 volts. These transmission lines are carried on tall steel towers, although more compact mono-poles that fit easily into urban areas and are less obvious in the environment have also been used since the 1970s. Along the route, power is redirected into a sub-transmission system, where step-down transformers lower voltage to about 70,000 volts, with lines supported on medium height poles. This voltage is routed through secondary transformers and reduced to about 7,200 volts, with these lines carried on intermediate height poles. Lines from these poles run to the small wooden utility poles, where residential transformers lower the voltage to the standard 120-240 volts used in North America, feeding service lines running to individual homes and businesses. An authentic detail for modern HO layouts, your new model can easily be used with the Lakefront Energy Power Plant with Dust Collector (#933-4175), Cornerstone Metro Power & Light (#933-4052), High-Voltage Transmission Towers (#933-3121), Modern High Voltage Transmission Tower (#933-3343) Northern Light & Power Substation (#933-3025), along with the SceneMaster Electric Utility Pole Set (#949-4120) and assorted Utility Trucks (#949-11636 to 11895) each available separately to model a complete network. For additional figures, structures, vehicles and more, see your local dealer, check out the current Walthers Model Railroad Reference Book or visit us online at walthers.com.

## Before Starting ...

Each Pole (1) has a large mounting pin at the bottom to simplify layout installation "below ground." Also note that both sides have mounting points to simplify installation and alignment of the various Insulators. Carefully remove Insulators from sprues to prevent damaging small mounting pins, and small loop at end of each insulator string. If you wish to install nonworking lines, see optional Step 2 below.

When planning your layout installation, we suggest placing the poles where they're less likely to be bumped; make a small opening slightly smaller than the pole mounting pins and press-fit into your scenery for ease of repairs, just in case! Plan for turns to the left or right if/as needed. Rights-of-way are kept free of buildings, trees and brush, so you may need to relocate or remove some details.

1) PLEASE NOTE: The #3 Insulators have a longer pin to fit the center mounting point and may be installed at left or right as shown; the #2 style has a shorter pin and fits the top and bottom mounts on the right side of the poles. All mounting pins are molded with a slight upward angle to match prototype practices; make sure Insulators face upward and glue in place as shown.

## 2) Optional Wire Installation

Nonworking lines can be installed using High-Voltage Power Transmission Wire (#933-3344, sold separately). If you haven't already done so, drill out the inset area of the small loops on each insulator with a #70 bit (sold separately) - for ease of handling, you may wish to do this with the Insulators attached to the sprue..

3) PLEASE NOTE: Start with the top line farthest away from you, and thread - do not glue - the end of the line through each opening. Do not pull the lines tight; prototype lines have a characteristic droop between poles to allow them to expand and contract. On your model, this allows them to "give" slightly without pulling the poles should they accidentally be bumped.

4) Adjust the line as needed; glue only the ends of the line to the first and last Insulator (CA is suggested, sold separately) and trim.

