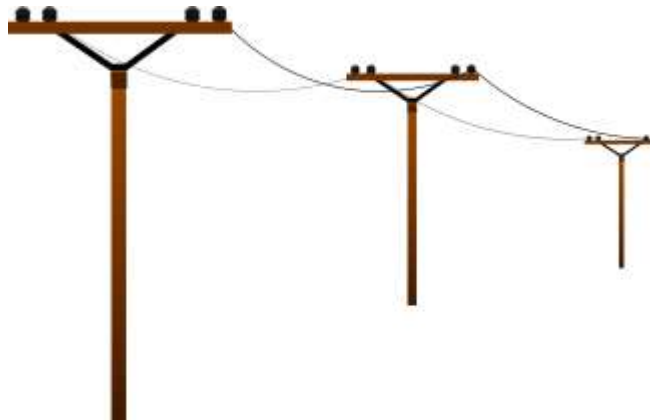




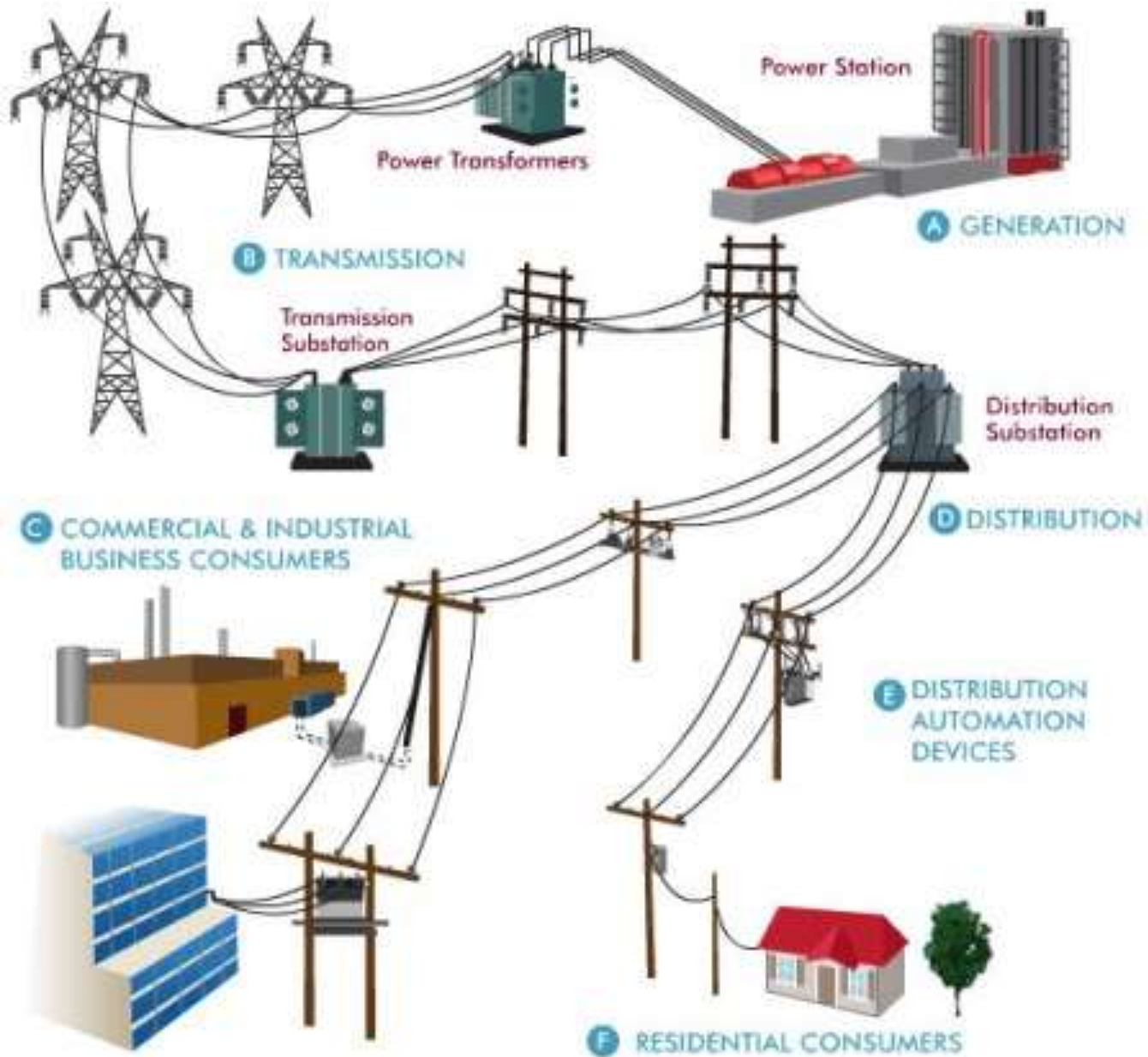
So, you want model Telephone and utility poles



We will be touching on:

- Schematic diagrams showing distribution
- Utility power poles
- Electric service to buildings
- Telephone/Signal systems pole lines

How power distribution works in real life



Common Utility Electrical Voltages:

13,800 (13.8kv)

4,160

2,300

These distribution voltages are all 3 phase, 3 wire (delta)

Note: All you need to model is 3 wires!

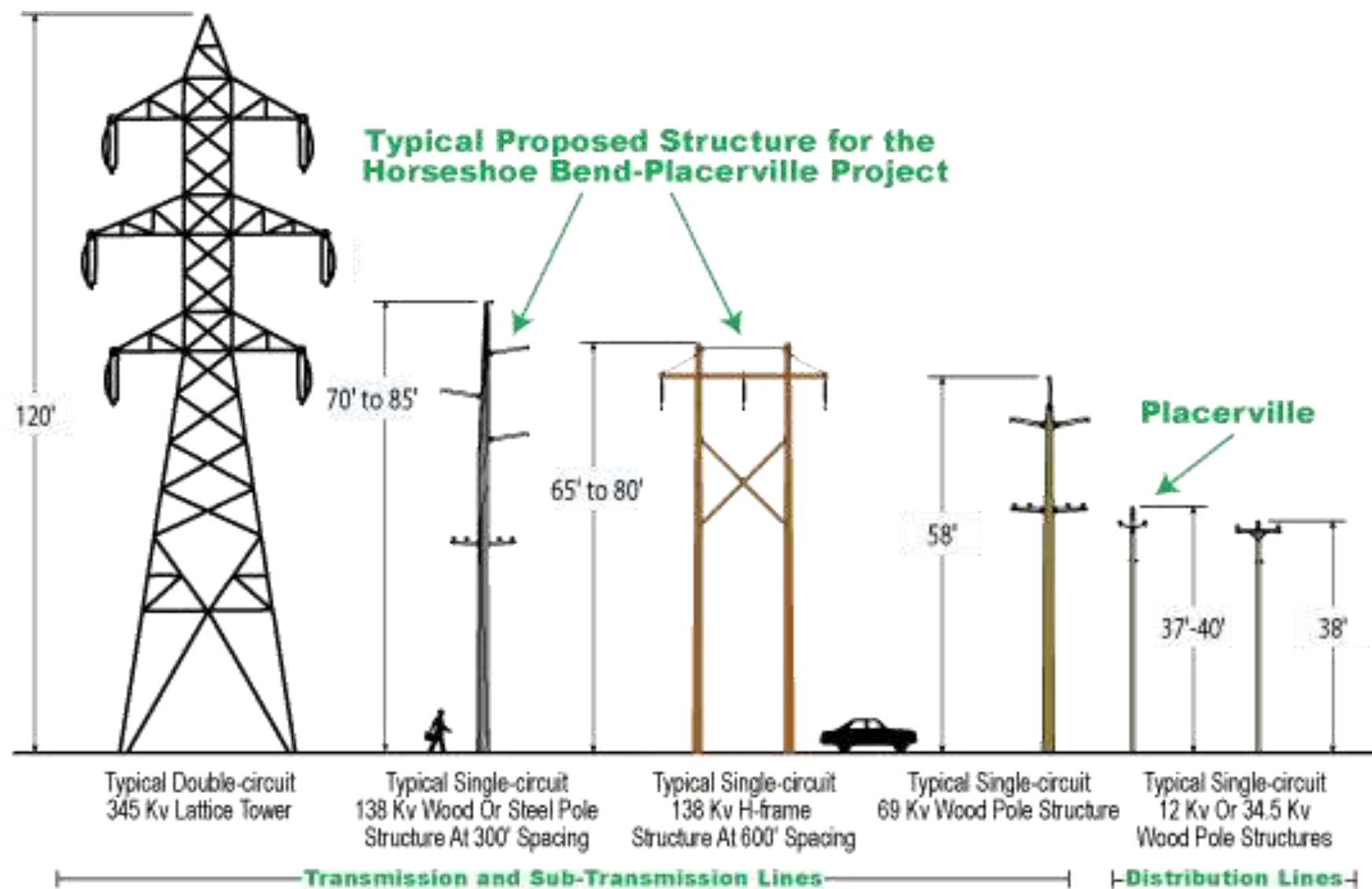
Common customer used voltages:

480/277- 3 phase- 4 wire (industrial/commercial) (wye)

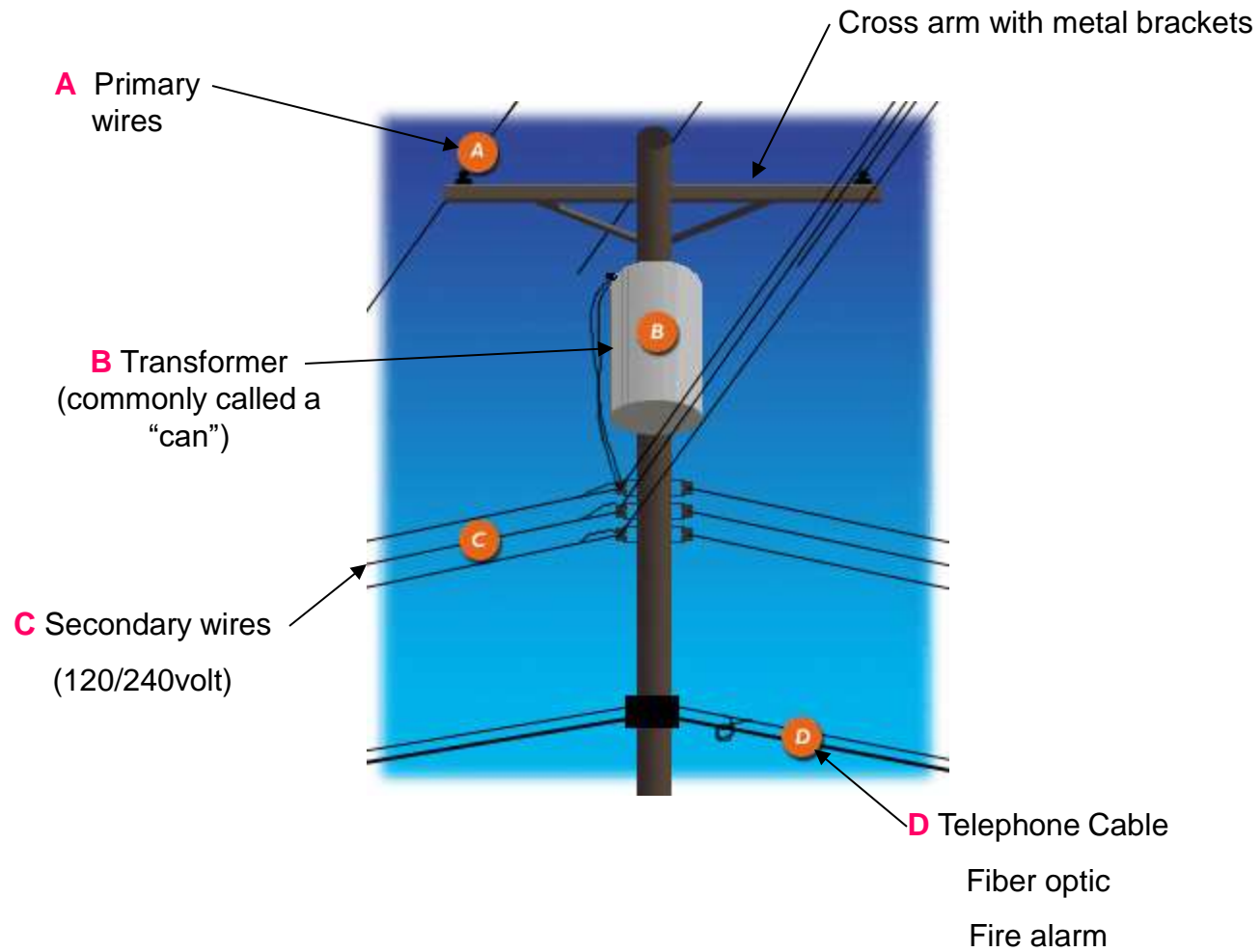
120/208- 3 phase- 4 wire (commercial) (wye)

120/240- single phase- 3 wire (residential)

Note: For these services you need to model 3 or 4 wires!



Wire and other stuff mounted on poles



Residential pole mounted services

Primary- 2300volts

Service lateral to house - 120/240 volts.

There are four service laterals from this pole.

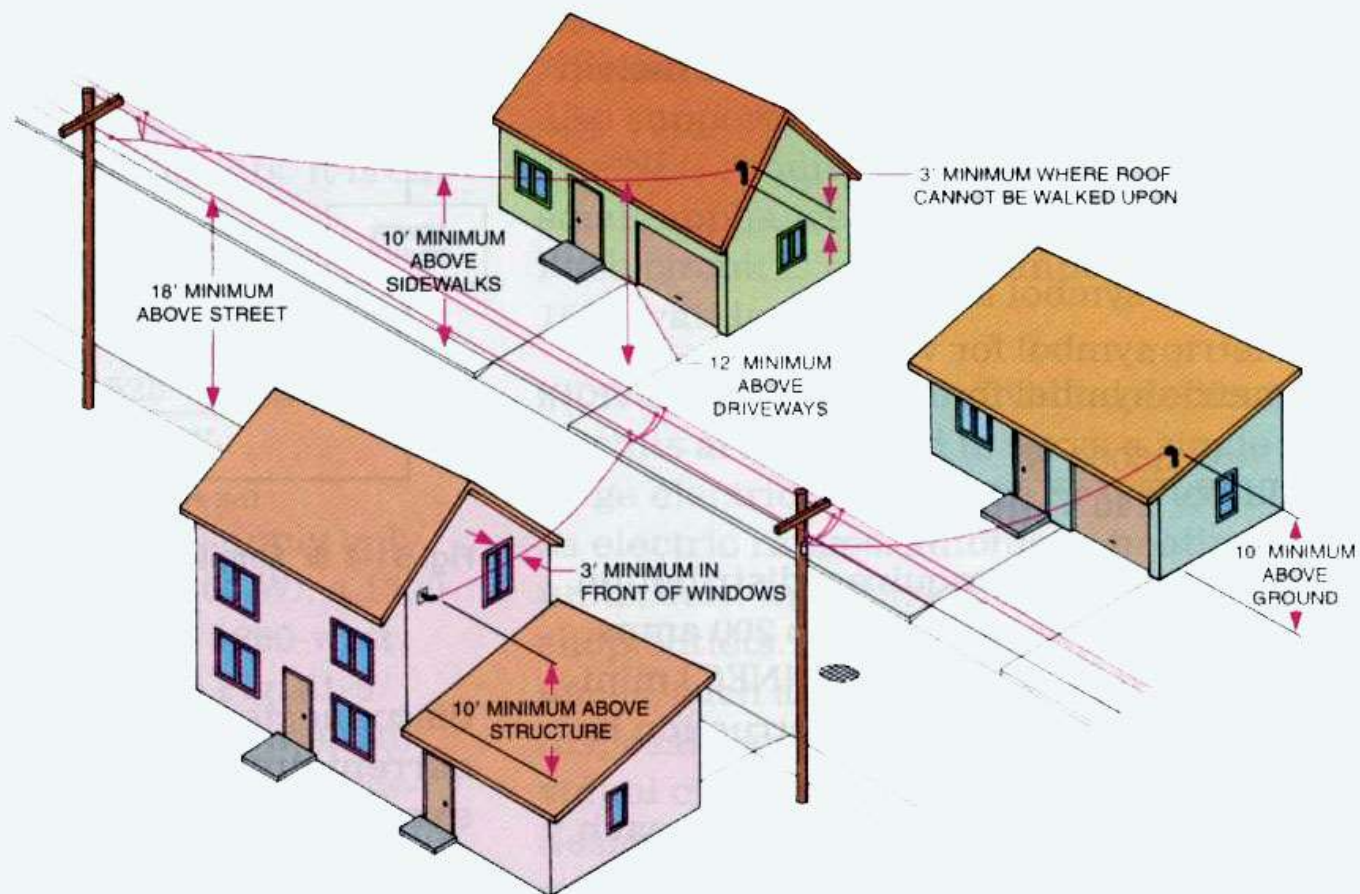
Transformer- Single phase 120/240volt



Telephone Cable

Cable TV

Fig. 31-2 ■ Minimum overhead service line clearances required by electrical code.

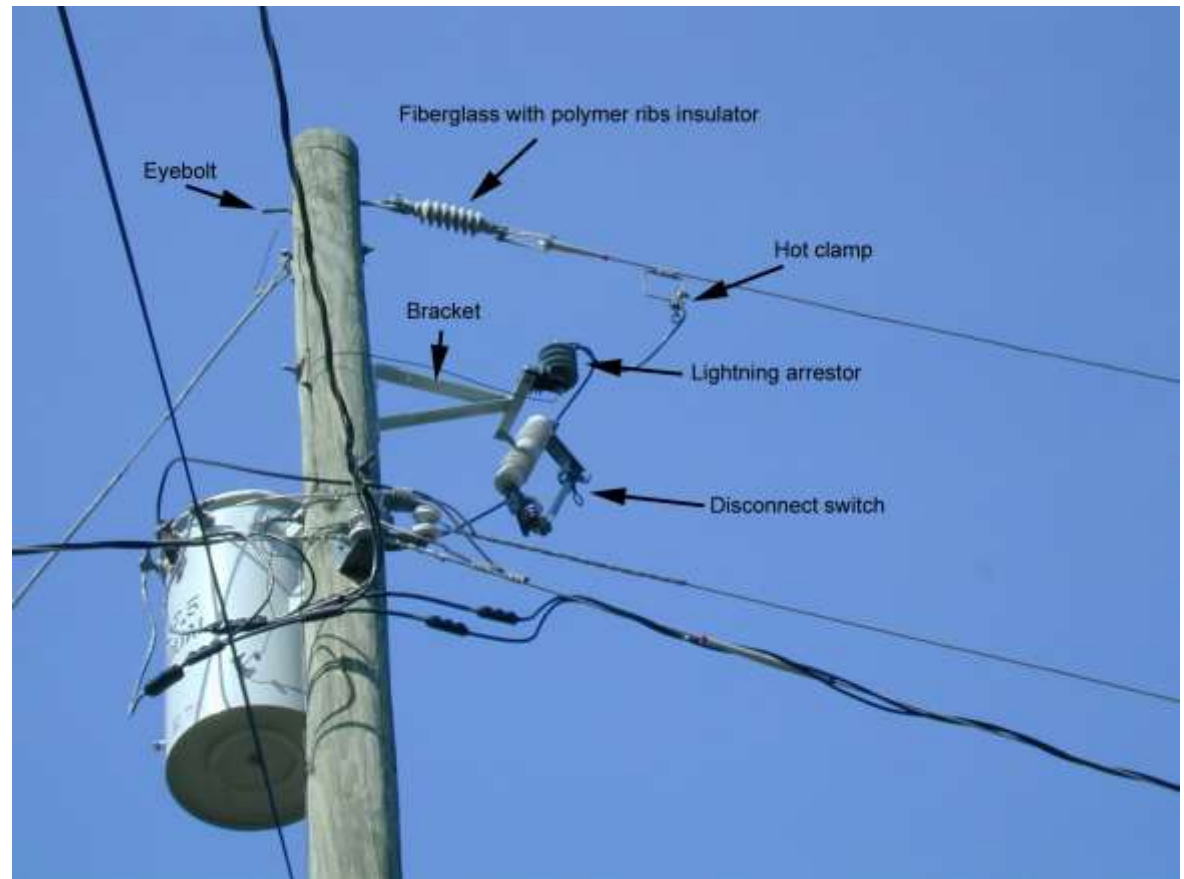




Matt style transformers mounted on a rack providing 300kva. Primary 3-phase conductors on top. Secondary service conductors on bottom. Note there are three wires for primary and four wires for secondary (277/480v-3phase-4wire)



Pad mounted transformer. All wiring is underground.



What you see here are transformers installed on power poles. Too often in model railroading you see photos in the magazines of beautiful layouts where the builder installed the plastic transformers that came in the box on poles carrying only signal circuits.

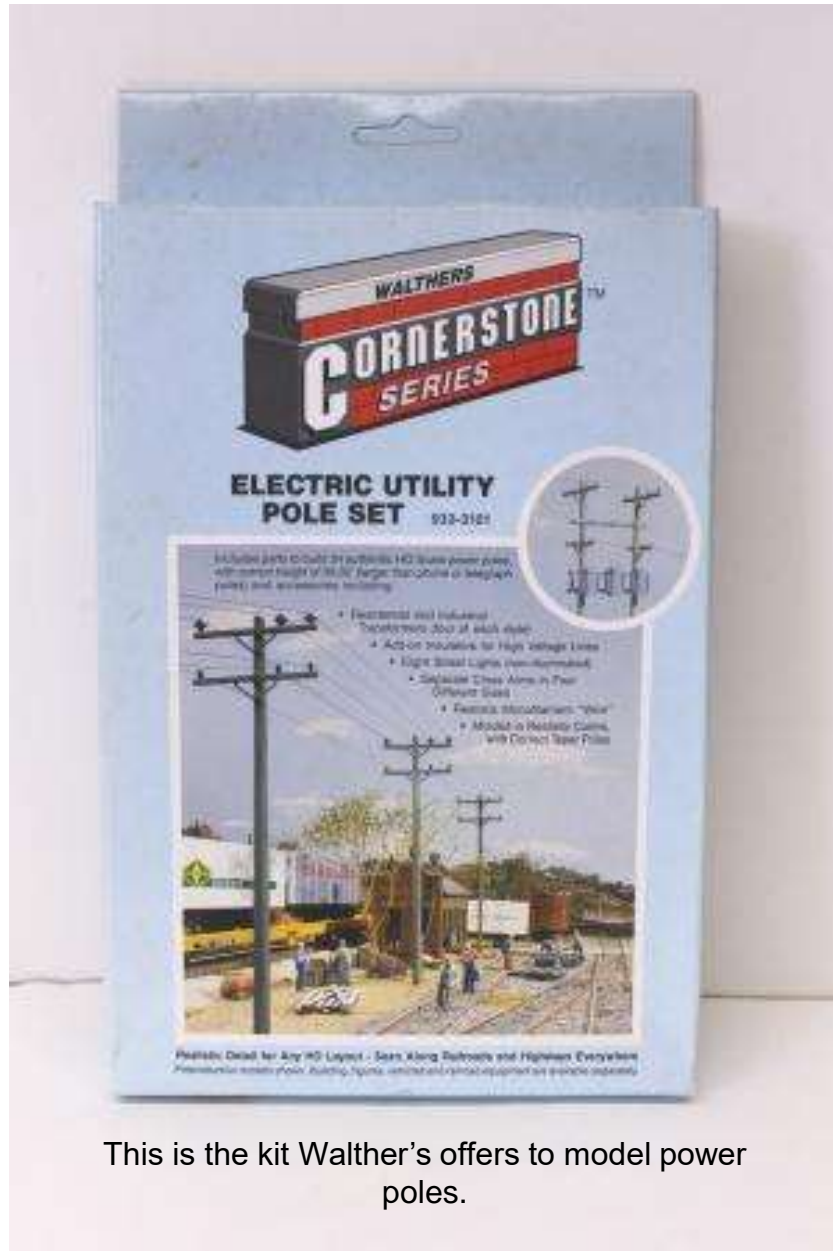


Hey!
Are you paying attention?

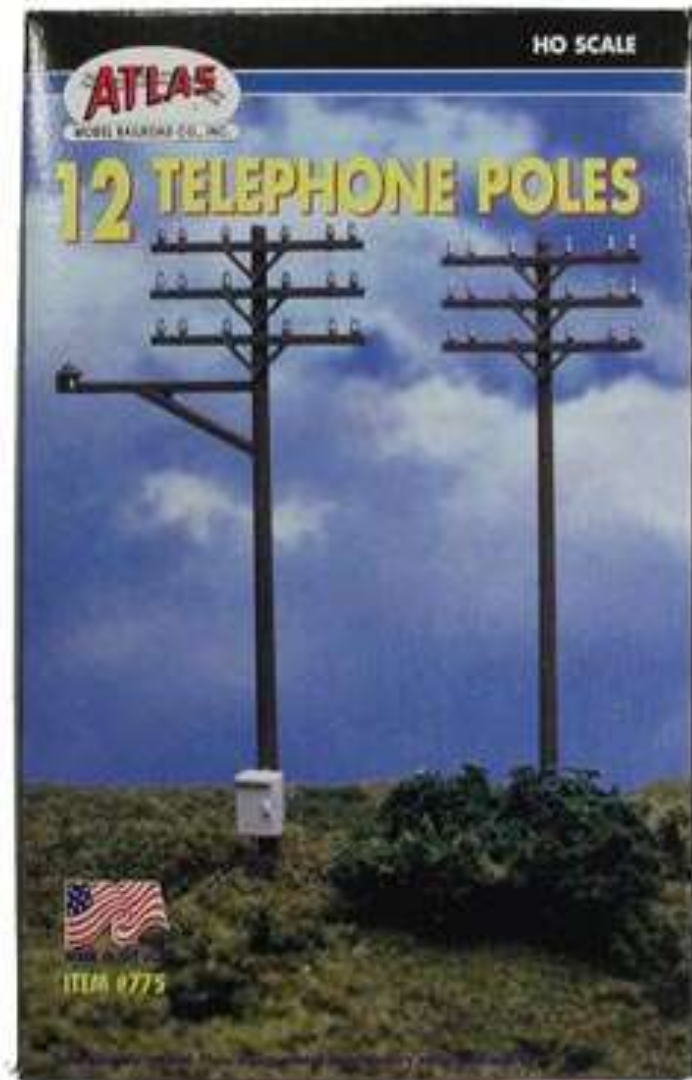
Modeling some utility power poles

Tools and supplies used to modify plastic poles





This is the kit Walther's offers to model power poles.



Atlas telephone poles come 12 per box. These are the poles used for this clinic.

Power poles under construction

Modified pole to create a utility power pole.

Atlas telephone pole from the box



Atlas provides these phone cabinets and transformers

Modifying pole:

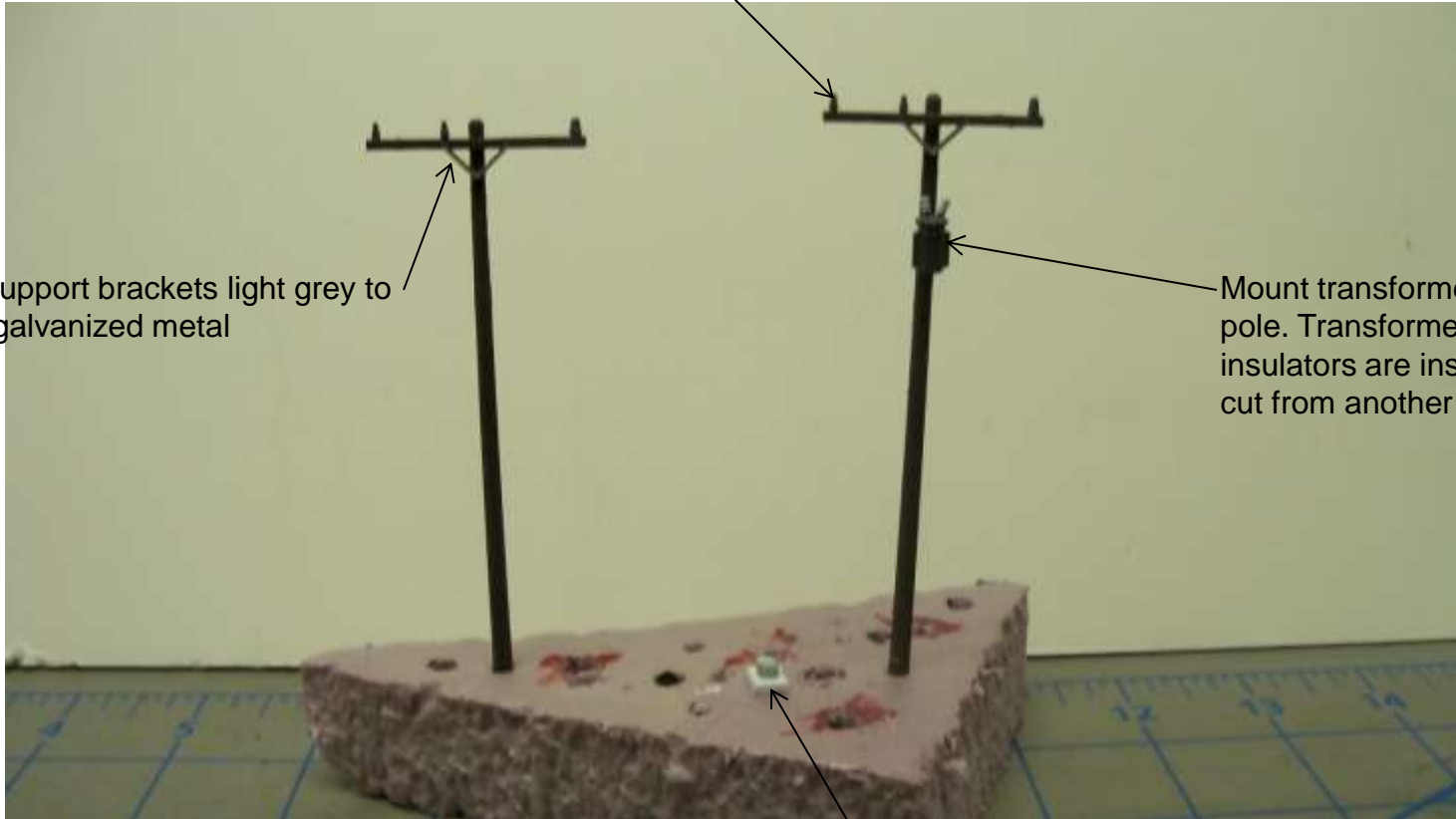
1. Remove two lower cross arms
2. Remove all but three insulators
3. Scrape pole with razor saw to create texture
4. Paint poles brown or grey

Paint the insulators dark
grey or dark brown

Paint the support brackets light grey to
represent galvanized metal

Mount transformer to
pole. Transformer
insulators are insulators
cut from another pole

Build a utility meter from scrap
styrene and sprue. Paint light grey
with white "glass" meter



Models of pole mounted transformers



Transformer rack on poles



Three-phase power to an industrial building. Note: there is no electric meter visible and service conductors are run underground here.



Single-phase pole mounted transformer

Preparing buildings for electric service

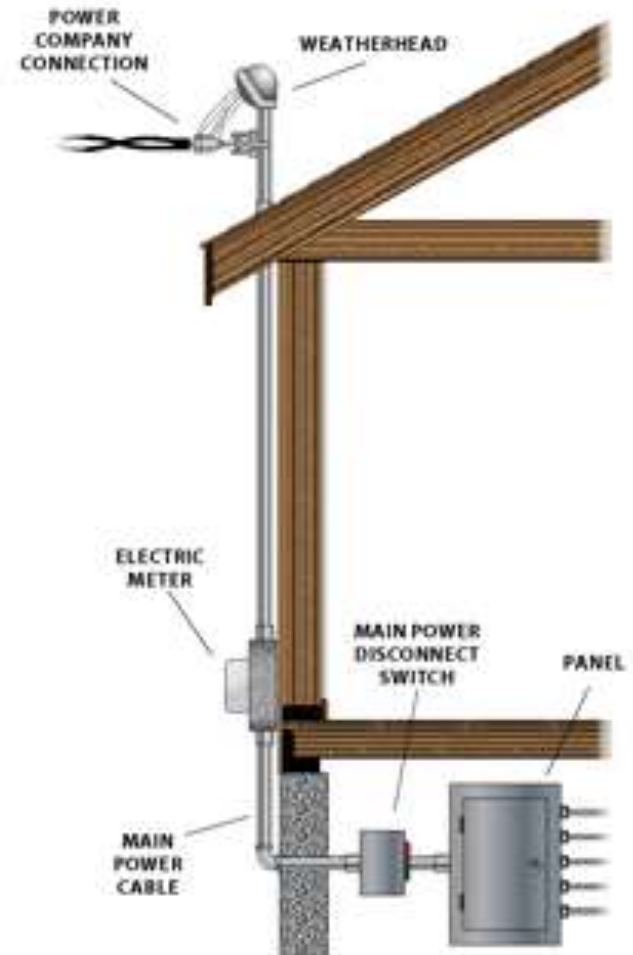
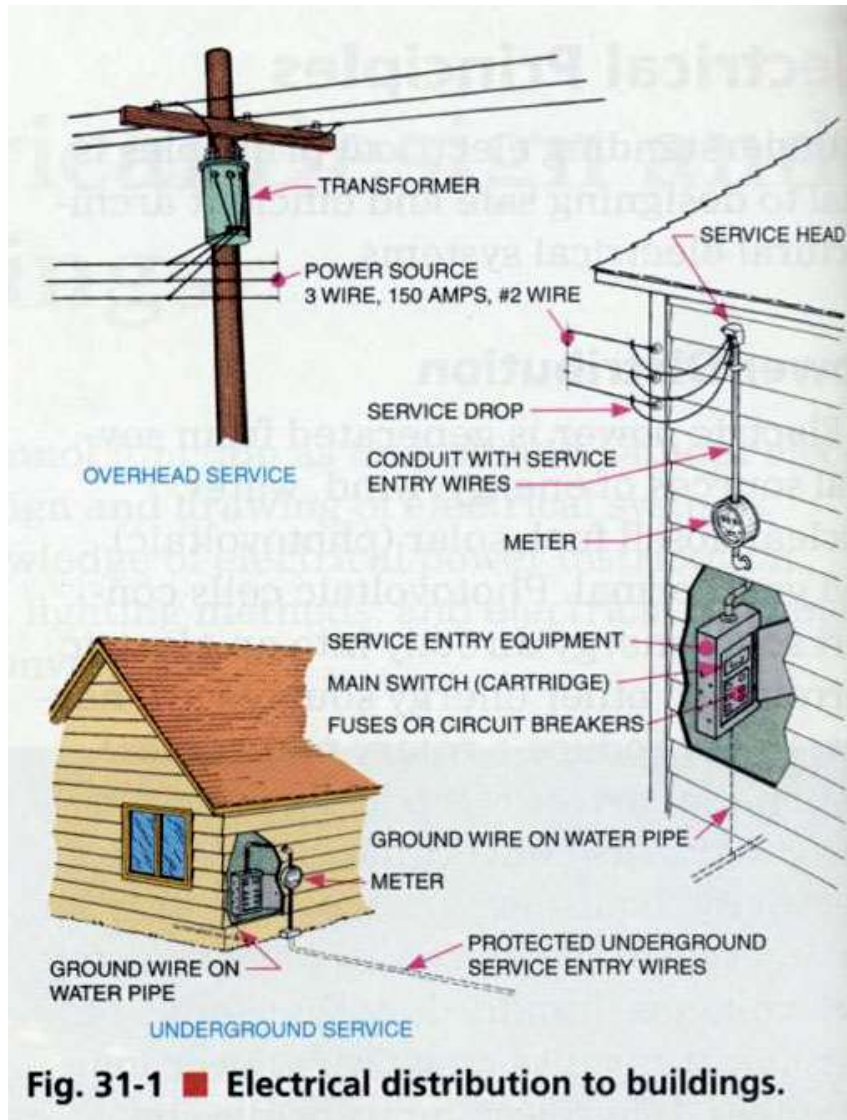
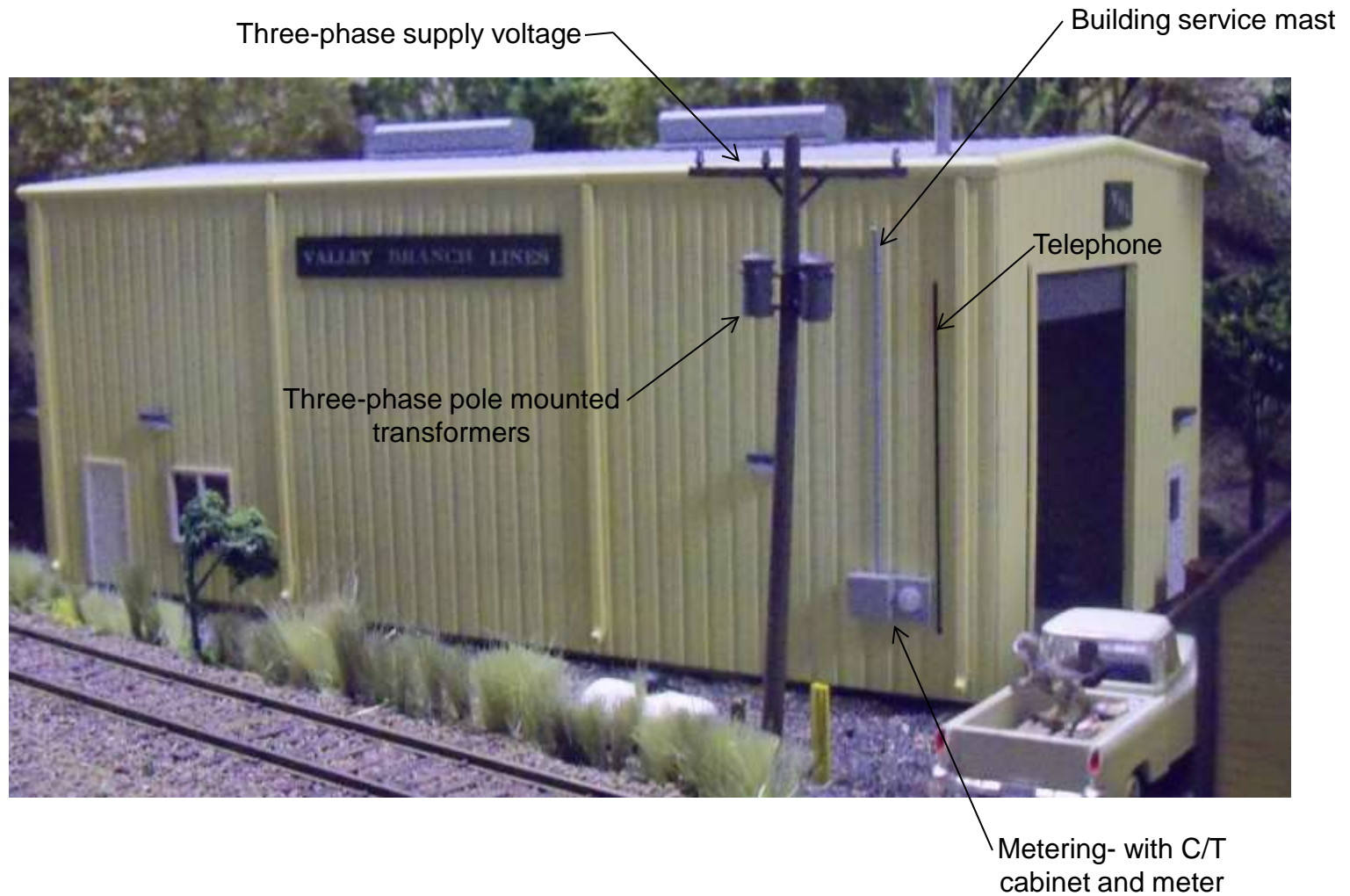


Fig. 31-1 ■ Electrical distribution to buildings.

Building Service- Three phase



Building service- Single phase



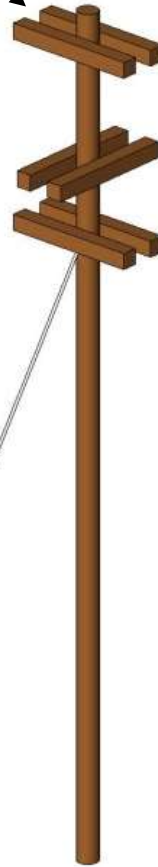
Utility pole lines



A typical street scene. Power poles on the right side of street and telephone poles on left side of street. Note extension on telephone pole. Typical power pole is 40 feet.

Turning corners

Wire is installed in straight lines so wire weight is evenly distributed pole-to-pole with no pulling forces on the pole.



To change direction wire is attached to cross arm perpendicular to the pull and jumper wires are used to connect from high cross arm to lower cross arm.

Guy wire with anchors are used to anchor poles and counter pull forces that are not balanced. Guys are also used when pole lines round sweeping curves.

Cross arms arranged to turn distribution wires 90 degrees.
Note jumpers from top cross arm down to lower cross arm.



Guy wire anchor to counteract the pulling
forces from the wire.

Model of turning pole



The top cross arm was cut off, rotated 90 degrees and glued in position. Two back stays would be required here.



© Can Stock Photo - csp7475643

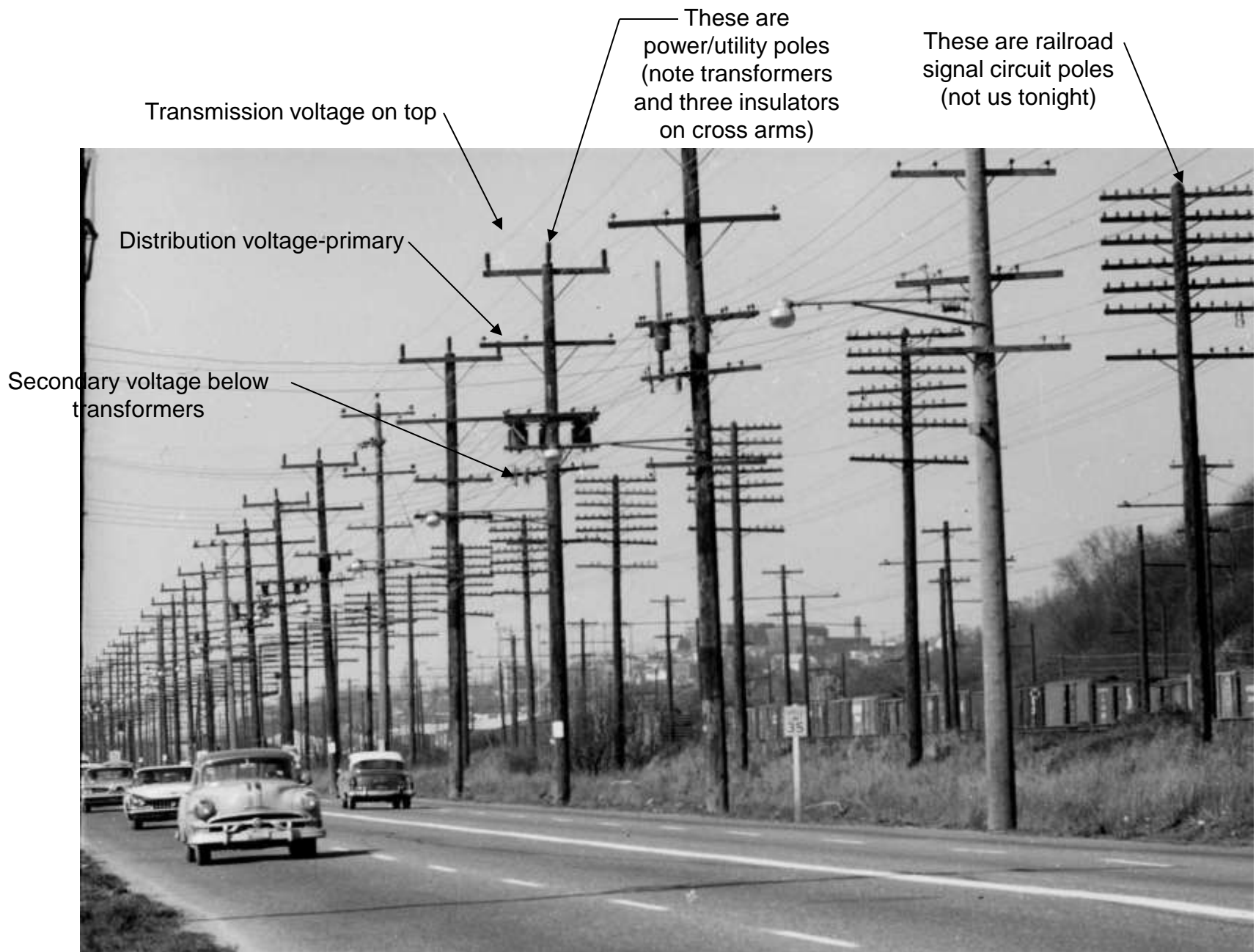
Stay awake.....we're almost done!

Telephone/signal circuit systems in real life



These poles carry signal circuits which could include telegraph, telephone, track signal circuits or other low voltage systems. Typical voltage is 48 volts DC. Transformers don't work on DC circuits.

Spotting feature is closely spaced multiple insulators. Typical poles are 24 feet tall.



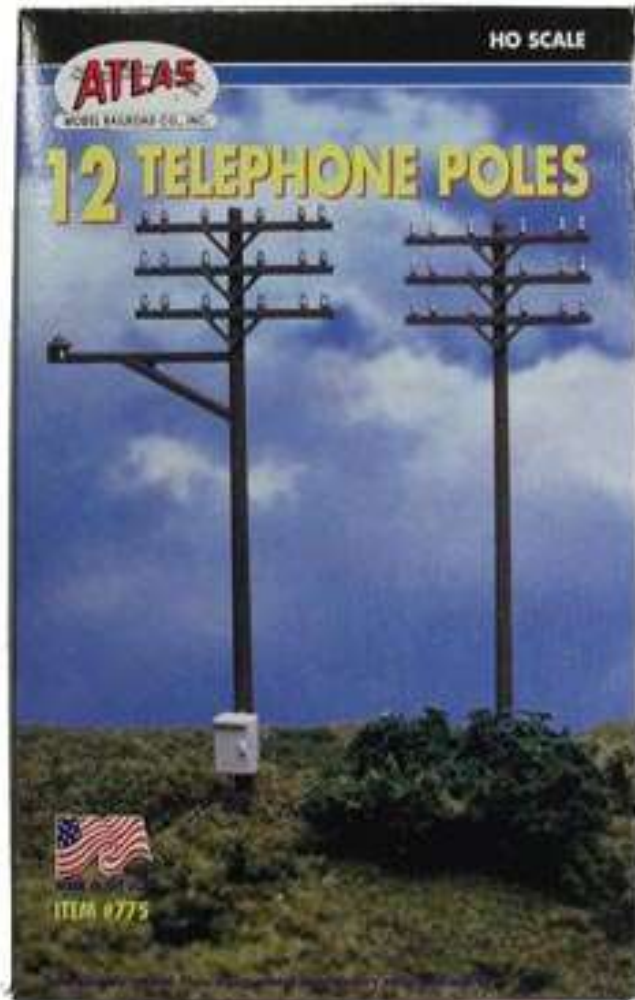
Modeling this would be a challenge!



Use w/ Crossarms 628-31 or 35 (Both sold separately)

Walthers Part # 628-30, p. 281 Walthers 2014 HO Scale Reference
HO scale, \$6.95, currently in stock at Walthers

This is the kit Walthers offers to model telephone/telegraph poles.



Atlas telephone poles come 12 per box.
These are the poles used for this clinic.

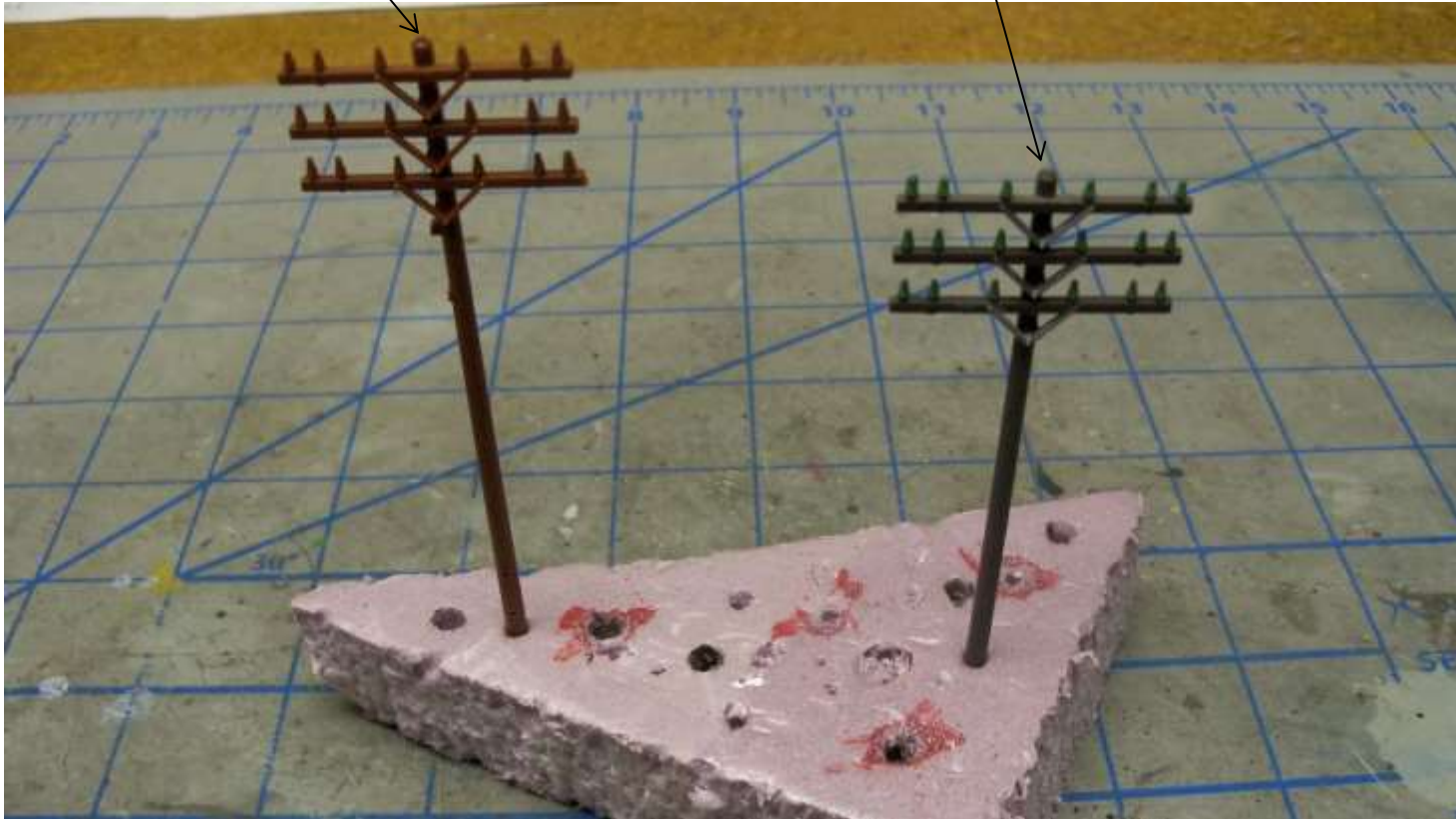


This is the kit Rix Products offers to model power poles.

Modeling some telephone/signal poles

Atlas telephone pole from the box

This pole has been painted like the power poles except for the insulators are painted light green



Typical height for telephone/signal poles is 24 feet but taller poles are needed to bridge over obstacles

Model of signal circuit poles



Telephone/signal lie poles on the left, Power poles on the right.



Height of telephone/signal lines raised to clear track

Super detail your poles

You can earn “extra points” for these ideas.



That is a Mountain Lion sitting on that power pole.
Taken on my way to work today.



April 29, 2011



You can always add details to your
pole lines!



Pole line going to sea



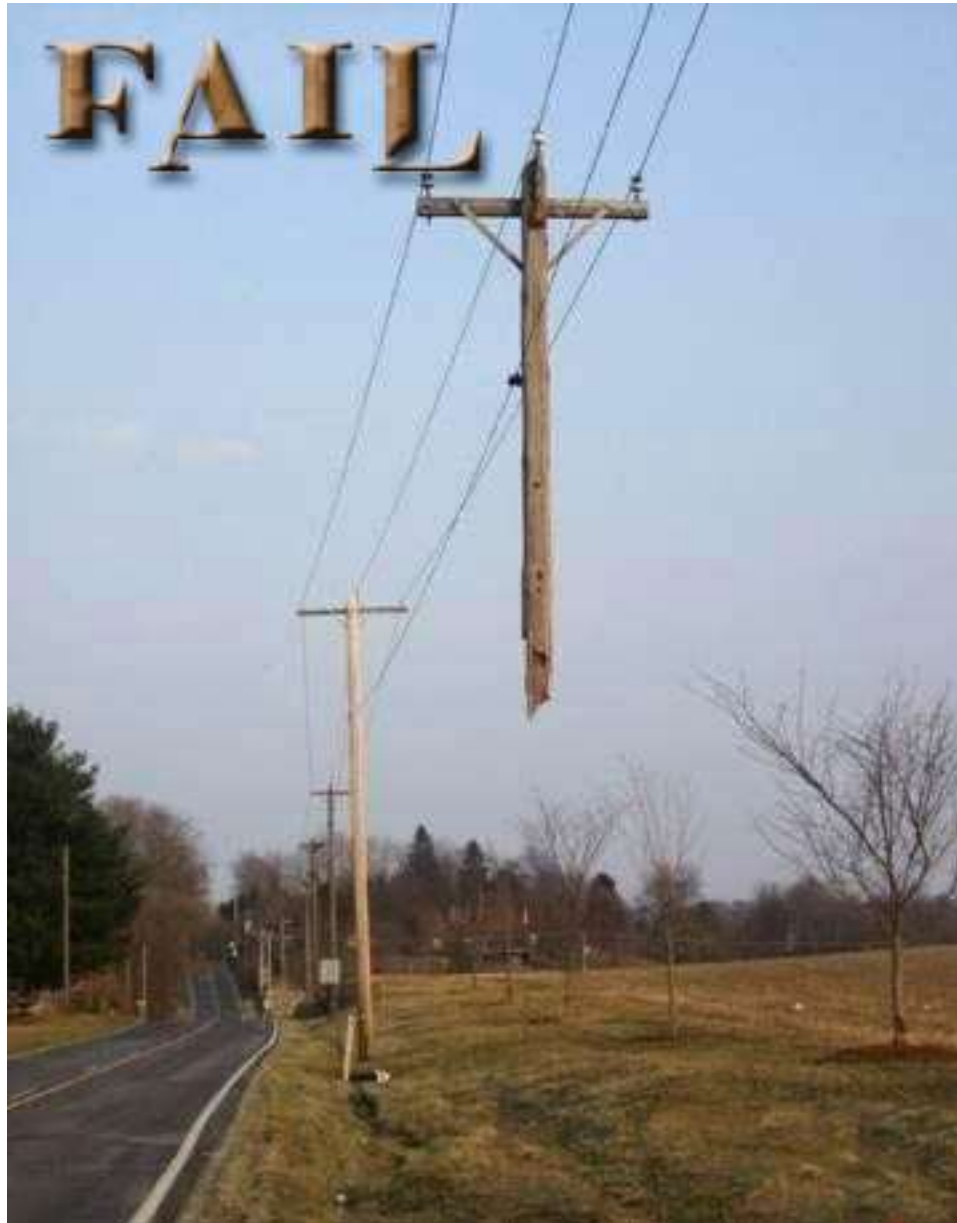
Contest winner!



Extra tall pole



Note bricked in windows
from the inside



What your newly constructed pole line will look like after an operation session!



We're done!



Remember to always watch your signals!

(that is because the dispatcher gave you clearance only to the next signal)

Until next time.....**SHARE THE FUN OF MODEL RAILROADING**