

Pole Finish

A transmission pole can be made out of a variety of materials. Steel, wood, and laminated wood are the most commonly used materials for transmission and distribution poles in the Pacific Northwest. Different types of pole finishes are also available, depending on the pole material. The decision to use a certain type of finish is often based upon accessibility to the pole, characteristics of the surrounding environment, community preference, and/or environmental restrictions. In a forested area, a naturally weathering steel pole with a rusted brown finish or a wood pole might be the preferred look while galvanized or coated steel structures may be the finish of choice in commercial and industrial settings.

While pole finish is principally a subjective design characteristic, there are tradeoffs for each option. The design options and tradeoffs are below.

Design Tradeoffs	Galvanized Steel	Naturally Weathering Steel	Natural Wood or Glulam Pole	Powder Coated Steel
Gray in color	✓			
Other color Options				✓
Brown/rust colored		✓	✓	
Higher Maintenance			✓	
Lower Maintenance	✓	✓		✓

Note: In some scenarios, design options are limited due to conditions and/or circumstances that do not allow for design flexibility.

Design Options and Tradeoffs

Galvanized Steel

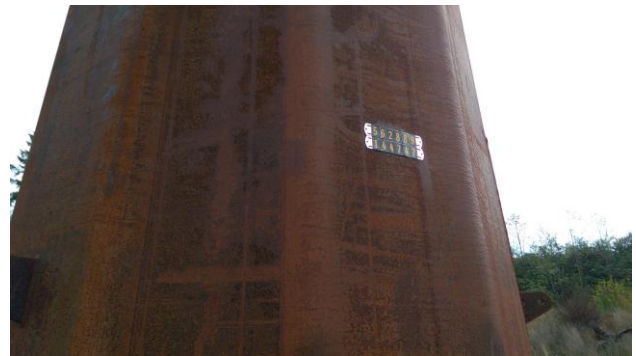
Galvanized steel is a common finish on transmission poles, as well as street lamps, chain link fences, and used in many other outdoor applications. Galvanized steel is a common choice for transmission poles because of its durability and low maintenance characteristics. The pole is coated with a layer of zinc that prevents the steel from rusting. Initially, the steel can have a shiny finish, but as the zinc weathers it typically becomes dull in appearance. Galvanizing provides decades of protection for steel from the elements.

Naturally Weathering Steel

Naturally weathering, or self-weathering, steel is another common transmission pole finish, as it is long-lasting and low maintenance. When the steel is exposed to moisture and air, a rust patina forms. Unlike ordinary structural steel, once the patina forms on weathering steel, a protective layer prevents it from further corrosion. As the structure rusts it becomes brown in appearance, and over time the patina darkens in color.



Above: Galvanized steel poles. Note: Photos are for discussion purposes only and do not represent final engineering or design. Photo credit: Puget Sound Energy.



Above: Weathered steel pole. Note: Photos are for discussion purposes only and do not represent final engineering or design. Photo credit: Puget Sound Energy.

Powder Coated Steel

In rare cases, a powder coated finish can be used for the steel poles. The process of powder coating provides an even and durable low maintenance finish, but because the process of powder coating steel is labor intensive and expensive, it is usually reserved only for mitigation purposes or special projects.

Right: Powder coated steel pole (at Ardmore substation in Redmond). Note: Photos are for discussion purposes only and do not represent final engineering or design. Photo credit: Puget Sound Energy.



Wood and Laminated Wood Poles

Wood poles require more inspection and maintenance, as wood can be worn down by weather, human activity, animals, and insects. Wood poles, commonly used for 115 kilovolt (kV) transmission, electrical distribution and communication lines, have strength limitations. Single wood poles are typically not strong enough to support the conductors used with 230 kV lines; therefore, for wood to be an option, laminated wood poles, also known as glulams, are used. Glulam poles are rectangular in shape and have a more noticeable taper from the base to the top. Glulams are often larger in size at the base than their steel counterparts, especially if a longer span is desired. Both glulam and natural wood poles have much shorter lifespans than steel poles.



Above: Examples of wood and laminated wood “glulam” poles. Note: Photos are for discussion purposes only and do not represent final engineering or design. Photo credit: Puget Sound Energy.