RESEARCH
Oregon Department of Transportation

Research Notes

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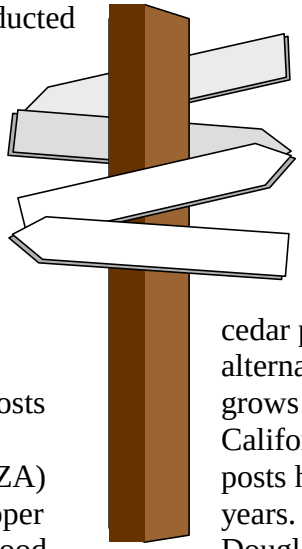
Signposts – Pressure Treated or Cedar?

Since August 1998, most of the signposts installed by the Oregon Department of Transportation (ODOT) have been Port Orford cedar. Prior to that time, pressure treated wood had been the primary signpost material. ODOT's Research Group was asked to compare the characteristics of cedar versus pressure treated wood for signposts.

Research staff investigated environmental issues, worker protection, price, disposal considerations, and durability. In addition, the staff conducted a survey of sign crews to determine their opinions on the use of pressure treated wood versus cedar. Port Orford cedar was found to be the most appropriate material for signposts that meet ODOT requirements, **assuming a 20-year service life is adequate**.



Pressure Treated Woods

There are two types of pressure treated posts used by ODOT, Douglas-fir treated with Ammoniacal Copper Zinc Arsenate (ACZA) and Hem-fir treated with Chromated Copper Arsenate (CCA). Pressure treating the wood forces preservatives deep into the cellular structure, lengthening the service life from less than 10-15 years to 40-50 years.

The purchase price for ACZA treated Douglas-fir is comparable to the price of Port Orford cedar. Quoted prices for CCA treated Hem-fir are lower, but suppliers are uncertain of the availability of Hem-fir posts that would meet ODOT specifications.

Although there have been some concerns about environmental impacts from the use of pressure treated wood, studies have shown it is not harmful to the environment and can be installed in sensitive aquatic habitats. The US Environmental Protection Agency does not consider CCA and ACZA treated wood to be a toxic substance or hazardous waste. Studies monitoring the leaching of chemicals into surrounding soil or groundwater have found levels of contaminant to be well below regulatory standards.

Disposal facilities accept pressure treated wood wastes in 29 out of 36 Oregon counties. The average disposal cost for pressure treated lumber, based on disposal at a landfill or waste transfer facility, is slightly higher than the costs of disposing cedar.

Port Orford Cedar

Sign crews are currently using Port Orford cedar posts as a naturally decay-resistant alternative to pressure treated posts. This cedar grows along the coastal regions of northwestern California and southwestern Oregon. Untreated posts have an average service life of about 20 years. The cedar is lighter in weight than treated Douglas-fir and Hem-fir.

As noted above, the purchase price and disposal costs for cedar are slightly lower than those for pressure treated Douglas-fir. Cedar wastes are accepted at all Oregon landfill or waste transfer facilities. In actual practice, however, sign crews are disposing of cedar wood waste in existing solid waste containers. The cost of the added cedar in the containers is negligible.

ODOT Sign Crew Survey

Each ODOT sign crew was surveyed to obtain their views on the use of Port Orford cedar versus pressure treated wood for signposts. They

overwhelmingly preferred the cedar; respondents felt it was the most effective material in terms of ease in installation, amount of defects, durability, etc. Crews reported that they replaced a very small percentage of posts due to rot or decay, and most felt that a 20-year service life was acceptable. One-half of the crews reported they liked steel posts, but high costs limited their use to areas with recurring vandalism or locations subject to high winds.

Worker Protection

The risks to workers from pressure treated wood and cedar are comparable. Dusts from any wood product can irritate sensitive areas of the eyes and nose, causing sneezing and tearing. Depending on the individual and the degree of exposure, both types of material can be a hazard to the worker.

ODOT has issued a Safety Advisory on working with pressure treated wood. The most serious risk for workers handling pressure treated wood is the development of a contact skin allergy to the preservative. This occurs in one to five percent of workers. Exposed areas of the body, such as the arms, should be covered.

A Disposal Alternative

An alternative to disposal of both cedar posts and pressure treated posts is recycling/reuse. Posts at least 1.2 meters long can be shipped to ODOT's Surplus Property Distribution Center in Salem for resale. Though an additional transport cost is incurred, the benefits of a reduction in the waste stream and the additional revenue earned are offsetting factors to consider.

The table below summarizes several points of comparison for pressure treated wood and cedar. Given the characteristics of the two types of wood and the results of the sign crew survey, this study concluded that ODOT should use Port Orford cedar for its signposts. A detailed report of the study's findings is available from ODOT.*

Characteristic	Pressure Treated Woods		Port Orford Cedar
	Hem-fir / CCA	Douglas-fir / ACZA	
Service Life	Over 50 years	30 - 40 years	20 years
Unit Weight	472 kg/m^3	550 kg/m^3	470 kg/m^3
Average Unit Price	\$262.31/m^3	\$402.50/m^3	\$391.06/m^3
Disposal Considerations	Consider recycling of pieces over 1.2 m long.		
	Accepted at landfills in 29 counties Wide range of charges, average \$35.60/Mg		Can dispose in existing waste containers. Accepted at all landfills, average \$32.70/Mg
Worker Protection	Long sleeved shirt and leather gloves, dust mask (when sawing wood)		Leather gloves, dust mask (when sawing wood)

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