PRESSURE TREATED WOOD PROVES TO BE THE MOST COST EFFICIENT BUILDING MATERIAL.

For many decades, pressure treated wood has enjoyed an outstanding reputation for proven performance and ability to withstand attack from insect attack, rot and fungal decay. It is also the most cost-effective building material in most structural applications where it is commonly specified. Proposed legislation in California would severely restrict the availability of treated wood in industrial markets. Those supporting the bill have stated that "economically viable" alternatives exist. In hopes to bring some facts to bear on such statements, this paper looks at current data and market information to compare the costs of treated wood versus alternative materials in key markets.

RAILROAD TIES

Treated wood ties have been the market leader since the beginning. Today's railroads operate at higher speeds, heavier tonnage, and at increased densities across main line track. Yet, the wood tie is still preferred by railroads for both cost and performance and is the products used in 94% of the nation's operating track.

According to the Railroad Tie Association (RTA), there is a distinct cost advantage for wood versus alternative materials. The advantage is two-fold, in that both the initial cost and the lifecycle cost of the product are lower. Treated wood also offers performance advantages and reduced maintenance and lower installation costs than alternative materials.

From a cost perspective, RTA reports that treated wood is 33-40% less expensive than concrete, 45-70% less than composite/plastic, and 55-60% cheaper than steel. Other cost savings accrue from the infrastructure of maintenance and installation methods where wood remains the predominant and preferred product by rail equipment manufacturers and workers.

UTILITY POLES

Treated wood poles are the market leader in lower voltage transmission and distribution utility poles. Not only because of price, but also because of over 100 years of proven product performance and reliability.

The price of pole materials is usually the first consideration by utilities when building a new line. However, utilities today commonly use a lifecycle analysis approach to consider other factors as well as initial cost. Such factors include

performance life, post-construction expenses for inspection, maintenance, repair, replacement and disposal.

In terms of evaluation, consider the following approximate material & shipping costs for comparison purposes:

Class 3, 45-foot utility pole, shipped to California location

Material	Price at Plant	Climbing Steps	Freight	Total
Wood	$250	$ 0	$ 50	$300
Steel	$315	$150	$120	$585
Fiberglass	$750	$150	$ 50	$950

Shipping poles to a location in California would be approximately $50 per pole for both wood and fiberglass. Shipping a steel pole would be approximately $120 per pole.

It is recognized by utilities that linemen prefer to work on wood poles because of greater familiarity and maneuverability, as well as the low electrical conductivity of wood. No added hardware is necessary to climb a wood pole. However, that is another factor to consider as most utilities find it necessary to add climbing steps for both steel and fiberglass poles. Climbing steps for either steel or fiberglass is at a minimum $150 additional per pole.

In 1997, Western Wood Preservers Institute commissioned Engineering Data Management, Inc. (EDM), of Fort Collins, Colorado to do a lifecycle analysis of different types of utility poles. The economic analysis examined wood, light-duty steel, fiberglass pole products.

In terms of purchase price, in all Class Sizes, light-duty steel was 1.25 to 2-times the price of wood; in Class C2 to C5, fiberglass was twice the price of wood poles. In terms of lifecycle costs, EDM concluded that light-duty steel was 1.25 to 1.5-times the cost of wood; fiberglass was 1.75-times the cost of wood poles.

In a 2000 study of the changes in pole structures needed to protect Raptors and endangered birds of prey, EDM concluded that the cost of making an existing wood pole “bird safe” were as much as 49% less ($297 per pole) that providing the same protection on a steel pole of similar size and class.

MARINE CONSTRUCTION

Material used in construction in and over freshwater and marine environments is subject to the harshest of conditions. Construction material is subject to constant wetting and dampness that can result in rot, decay, marine borer attack or corrosion.

In terms of evaluation, consider the following recent material costs for comparison purposes:

60 foot Class A Marine Piling

Material	Per Linear Foot	Price at Plant
Wood (20# Creo)	$11/lf	$ 660
Steel (hot dipped galv)	$35/lf	$2100
Black Pipe	$22/lt	$1320
Coal Tar Epoxy Pipe	$28/lt	$1680
Used Pritec Coated Pipe	$32/lf	$1920

In recent years, WWPI contracted for two case histories of structural marine applications installed in the state of Washington. They are available on line at http://www.WWPInstitute.org.

Case History A: *Homeowner Chooses Treated Wood – Saves $58,000 on Dock*

Structure
100-foot bulkhead
155-foot pier
15 x 30 foot dock

Construction Materials Considered	Cost Compared to TW
Treated Wood	
"GreenHeart" (Naturally durable foreign species)	150% more
Plastic Coated Steel	350% more
Concrete	100--200% more
Steel	200--300% more

GreenHeart was eliminated because of lack of performance standards or code accreditation. Plastic coated steel was not considered because of reported failures and lack of documentation of performance. Steel was eliminated because of concerns of corrosion and maintenance. Concrete and treated was used in the comparisons.

	Concrete	Treated Wood	Savings
Bulkhead	$ 36,630	$23,870	$12,760
Pier/Dock	86,600	41,000	45,600
Total	$123,230	$64,870	$58,360

In this case, treated wood construction materials represented almost a 50% savings. If the structure had been built using alternative materials, installed costs would have been significantly more.

Case History B: *Environment and Economics: Treated Wood: The Win Win Solution.*

In this case, the expansion of a popular family-owned restaurant was cost prohibitive because local authorities required steel. Ultimately, upon appeal, it was proven the structure could be built economically with no adverse environmental impact.

	Concrete & Steel	Treated Wood	Savings
Piling Structure	$56,400	$26,200	$30,200

Using treated wood represented a savings of over 50%. Building with treated wood was 46% the cost of the combination concrete and steel marine structure.

RESIDENTIAL BUILDING APPLICATIONS

In residential applications, treated wood costs will run from 40-70% less than alternative materials.

	Redwood	Plastic Wood	WR Cedar	PT Wood
4x4 Fence Post	$2.10 lf	n/a	$1.12 lf	$ .64 lf
2x6 Decking	$2.70 lf	$1.84 lf	$1.08 lf	$ .77 lf

Note: Plastic Wood does NOT have structural integrity necessary for posts.

COMMERCIAL BUILDING APPLICATIONS

According to the Western Wood Products Association, wood framed low rise (3-4 stories) construction is typically 30-50% less than using steel or masonry building materials. The building codes require sill plate and exposed structural sections of such structures to use treated wood and the cost compared to alternatives will be 60% or less.

CONCLUSION

In evaluating building materials, product price is your first consideration and treated wood products usually have the price advantage. Then, when you consider product performance, maintenance and installation costs, pressure treated wood products have the advantage over alternative building products every time.

BACKGROUND

The information contained in this report was based on industry interviews, building material dealer surveys, and studies conducted for WWPI.

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