



Case Study: Residential

Mendocino Suspension Bridge

Industry:
Residential

Location:
Elk, CA

Design/Build:
O2Treehouse

Completed:
August, 2020



Materials Used:



India Palm Lumber

Two houses divided by a ravine; connected by a bridge

Mendocino County in the 1960s and 1970s saw a large influx of creative young adventurers arriving from all over the country. This included writers and craftsmen, farmers and bohemians—a diverse group of creatives and makers seeking a new way of life. One couple and their children moved to Elk, CA, and moved into a previously built one-room cottage on one side of a ravine and began to build a family home on the other.

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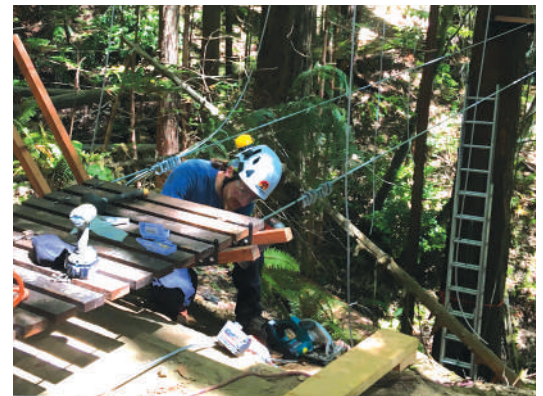
Once completed, the two structures were connected by a simple suspension footbridge made of redwood lumber sourced from the property. Over the years the bridge fell into disrepair and, for safety reasons, the cables were cut and the old bridge dropped to the ravine below.

In the spring of 2020, discussion of replacing the bridge and once again reconnecting the passage between the two structures began. The family was looking for something different from a materials perspective.

Durapalm (palmwood lumber) was a new and interesting material used primarily for interior design, but would it work for an outdoor application. Material testing performed at Oregon State University's Wood Science and Engineering school assured everyone on the project that the Indian sugar palm lumber possessed both the hardness and durability, as well as the weather- and rot-resistance needed for the application.

Dustin Feider of Oakland-based O2Treehouse was hired to perform the design/engineering and building of the bridge, Dan Smith, founder of Smith & Fong Co., the manufacturer of Durapalm, produced the bridge treads and advised on the use of the material.

As it was important to continue the sustainability and the history, the old bridge was left in place at the bottom of the ravine and reclaimed redwood was harvested from other older structures on the property. Now today the past and the present lead the way towards the future.



Physical / Mechanical Properties - India Palm Lumber

Dimensions:	Treads 1.5" x 3" x 36", lumber comes in many lengths and thicknesses
ASTM E84 Fire Rating:	Class C
ASTM D1037 Dimensional Stability:	Length 0.07% / width 3.28% / thickness 2.85% Average (OSU 2017)
Specific Gravity:	1.0318 Average (OSU 2017)
Janka Hardness:	3222 lbs. Average (OSU 2017)
AWPA E10 Soil Block Test. (OSU 2017) Rot Resistance:	Classified, highly resistant to fungal attack suggesting good performance in above ground applications.