

# **TS3**

Timber Structures 3.0



**Feasibility Study (Stage 2) to:**

**Timber Structures 3.0 AG**

**August 6, 2021**

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**MANUFACTURE OF  
SCRIMBERED ENGINEERED LUMBER AND PANELS  
AS A STRUCTURAL BUILDING PRODUCT  
(DRAFT 1.3)**

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**REPORT TO:  
TIMBER STRUCTURES 3.0 AG**

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**FEASIBILITY STUDY (STAGE 2):  
MANUFACTURE OF  
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# **FEASIBILITY STUDY (STAGE 2): MANUFACTURE OF SCRIMBERED ENGINEERED LUMBER AND PANELS AS A STRUCTURAL BUILDING PRODUCT**

## **EXECUTIVE SUMMARY**

The researchers have become even more confident that there is a global opportunity to commercialize Scrimbered Engineered Lumber (“SEL”). Two major differentiating factors which make SEL an attractive product, including:

- Extremely high wood fiber yield of 85-90% compared to 40-45% for conventional dimension lumber.
- Suitability for lower-cost pulpwood thinnings and small-diameter logs as the wood fiber raw material, versus conventional sawmills that use larger sawlogs and chip-n-saw logs.

Laboratory tests have already established that several species, including the Southern Yellow Pine that is the focus of this study, make suitable scrimbered fiber for this SEL product and manufacturing process. Certain other commercial species have not yet been tested or make suboptimal SEL compared to the SYP.

Another less recognized, but also important, advantage is that SEL can be produced in wide widths and lengths greater than 30' (transportation effectively constrains the maximum sizes). There are many major end use markets, such as the sizable truss chord market, where long length lumber is an advantage by providing fewer pieces per finished truss, more consistent properties, and virtually eliminating dimensional instability. Another major target end-use could be as core material for CLT. At present CLT uses narrow, limited length conventional lumber, which dramatically increases the number of component pieces, and opportunity for defective glue bonds, in this

engineered wood product. Wider, longer-length lumber commands a substantial premium relative to shorter lengths.

The advantages of SEL as a building material include these same benefits, plus lower glue usage and better structural properties versus existing engineered lumber at a much lower cost. While dimension lumber prices have recently fallen from their historic peak, lumber is still extremely costly compared to the pre-pandemic price.

While we focus on Southern Yellow Pine in this Study, it is worth noting that scrimbered Bamboo for non-structural flooring and wall panels is produced in China and elsewhere. Scrimbered Bamboo beam and column samples have been produced at the Meridian plant.

Potential process technology-equipment suppliers and experienced project engineers provided updated information and costs to give realistic estimate for the Project in terms of time and money, and to assure that the layout of the plant, as configured and equipped, could be accomplished. Based on our many conversations, we are confident that the log yard, log infeed system, debarking, crush rolls, pre-dryers, scrim roll sections, glue supply, spreaders, post-dryers, press system (whether a conventional single-opening press or a state-of-the-art continuous press), finishing, packaging, conveyors, and other equipment could be provided within a reasonable period.

Small-scale prototypes of all of the equipment described above, except for the conventional and continuous presses mentioned elsewhere, are operable at the pilot plant in Meridian, Mississippi. The Meridian pilot plant uses an enclosed steam-injected press to produce thick billets. Instead, we recommend the use of single/multi-opening hydraulic or continuous presses that efficiently make dimension lumber thicknesses, use proven technology, and are readily available from several well-known German, Italian, and USA equipment suppliers. For testing purposes, several testing laboratories around the U.S. have hydraulic presses.