

International Conference on

CIVIL & STRUCTURAL ENGINEERING

June 21-22, 2018 Paris, France

Bamboo - The Wonder Material For Sustainable Built Environment

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Guidance has been provided in NBC 2016 Part 11 'Approach to sustainability' for making buildings and built environment energy efficient and environmentally compatible. In article 9.2.1.8 it is stated that Bamboo can contribute to sustainable development. Further it is stated that " as a building material, it had been abundantly used in the country for traditional huts and hermitages for long besides as scaffolds. With the understanding of its physical and mechanical properties, it has been recognized as an engineering material with scope of buildings and structures to sustain among others the lateral forces including earthquake forces, etc. Bamboo can be used as structural material in buildings. Bamboo structure shall be designed in accordance with Part 6 Structural design, Section 3B Bamboo. Raw bamboo has been used as a structural material for centuries. Traditionally, the bamboo pole is used intact and tethered to adjacent poles to create a structure. The most significant advantage bamboo has over timber is found in its structural properties. All allowable stresses except for compression parallel to the grain are greater for raw bamboo than those of most wood species. This information indicates that raw bamboo poles are a good material for beams, but not necessarily for columns. If bamboo is laminated to form structural components, the material properties become significantly better than those of laminated wood. Laminated bamboo (LBL) is ten times stronger in tension and six times stronger in compression and flexure than laminated timber (LVL). and yet, laminated bamboo is only recently becoming a material of interest to designers. Other advantages of LBL are that it has 15% less embodied energy in processing than wood and is 20% more stable than wood in moisture and temperature changes. The code is silent on structural design using Laminated Bamboo structural components. Modular design, Pre fabricated unit and assembled at site, affordable housing unit with ECO aspects is a successful venture to be adopted in India. The building code shall be strengthened with sufficient design data and construction techniques and skill guidelines.

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