

A Clearer Vision: Illuminating the Material Selection Process for Higher Performing Buildings

Rebekah D. Burke, MSc., P.E and Kristen Parrish, Ph.D.

Arizona State University
Tempe, Arizona

Increasingly, stakeholders in the Architecture-Engineering-Construction (AEC) industry seek to clearly understand the environmental impacts of building materials, and look for transparency in the material selection process. Early design decisions have significant impact on many design and construction performance metrics. Likewise, materials selected early in the design process influence the overall environmental impact, as well as the constructability, of the building.

Well informed early design decisions, or schematic and preliminary designs, are commonly recognized as critical to the overall success of the design and construction of a building project (Gibson et al., 1994; Mollaoglu-Korkmaz et al., 2013). Further, engaging an integrated design team in the early design process contributes to the success factors for high performance, or sustainable buildings (Lapinski et al., 2006; Li et al., 2011; Magent et al., 2009; Robichaud et al., 2011). Just as integrated design teams in the early design process contribute to success, it is likely integrated material design decisions will contribute to the success of high performance buildings. The authors conducted three focus groups with expert designers in the high performing buildings market. Each participant in the group created a message sequence chart to document the early design process for material selection for a recently completed project. Then, after a brief introduction and discussion about environmental product information for building materials, they created a second message sequence chart to demonstrate how they anticipate this environmental product information could be most effectively incorporated into their design process.

Focus group participants elucidate that while environmental product information is available and important to their design process, it is less clear how to effectively act on that information when making early material design decisions. This poster will display the trends identified, and present potential opportunities for adjustments in the design process as reported by the industry experts. These changes have potential to improve the environmental performance, as well as the constructability, of the final building design.

Keywords: Building Materials, High Performing Buildings, Design Process

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