

TFEC

Timber Frame Engineering Council
2024 Symposium
JST Detroit - Farmington Hills

WEDNESDAY, OCTOBER 16

INTRODUCTION - 8:30 AM

JST VENUE DESIGN - 8:35 AM

Joe Miller, PhD, PE, Fire Tower Engineered
Timber

**ASSESSMENT AND REPAIR OF HISTORIC WOOD
TRUSSES - 9:45 AM**

Justin Barden, PE, and Andrew Lobbestael, PE, WJE

EVALUATING ALTERNATIVE MATERIALS - 11:05 AM

Elyse Levy, SE, ICC Evaluation Service

**INTERMEDIATE TOPIC: WOOD SCIENCE FOR
STRUCTURAL ENGINEERS - 1:15 PM**

Brian Malone, PE, KL&A Structural Engineers &
Builders

**SHEAR STRENGTH OF BEAMS WITH COPEDED TENSION FACE
NOTCHES - 1:15 PM**

John Judd, PhD, SE, Brigham Young University

**INTERMEDIATE TOPIC: TIMBER FRAME DESIGN FOR
STRUCTURAL ENGINEERS - 2:25 PM**

Jeff Hershberger, PE, Slick Timberworks & Engineering

**ENGINEERING FOR TFG COMMUNITY BUILDING
PROJECTS - 2:25 PM**

Steve Lawrence, Community Building Projects Program
Director, Timber Framers Guild

ASTM D245 MEETS CSA 086 - 2:55

Michael Zwart, Tacoma Engineers

**LESSONS BEN HAS LEARNED, AND IS TRYING TO SHARE
- 3:50 PM**

Ben Brungraber, PhD, PE, Fire Tower Engineered
Timber

CLOSING REMARKS - 4:55 PM

TFEC SOCIAL, DINNER, & SLIDESHOW

THURSDAY, OCTOBER 17

JST FACILITY TOUR



JST VENUE DESIGN - JOE MILLER

JST - Japanese Solderless Terminal. They make all of those push-together wiring terminals found in electronics, battery packs, and under the dashboard of your car. While they design and manufacture products all of the world, having a facility close to the automotive capital of North America seemed like a logical step. Testing labs, sales buildings, and spaces for engineers all needed to be accommodated. The overarching design principle for the JST Detroit Engineering Center is to meld Japanese timber craft with American carpentry practices.

Seven years running (with several more to go), the project has included architects from Japan to New Jersey and used solid-sawn wood in pretty much every way conceivable. And has required analysis approaches almost as varied to achieve everyone's goals. This might just be the only project that has kept Joe up at night.

ASSESSMENT AND REPAIR OF HISTORIC WOOD TRUSSES - JUSTIN BARDEN & ANDREW LOBBESTAEL

Wood members and/or connections that have been in service for decades can sometimes fail unexpectedly under normal service loading, often with no more than dead load. When wood members are subject to relatively high stresses over long periods of time, a reduction in strength of the wood member can occur by a phenomenon referred to as creep rupture. This presentation summarizes current and historic wood reference design values, creep rupture, and investigation techniques and tools. Additionally, mini case studies will be presented, providing an overview of the assessment and repair design of multiple historic wood trusses with elements that failed in part due to load duration effects.

EVALUATING ALTERNATIVE MATERIALS - ELYSE LEVY

This presentation will introduce attendees to ICC-ES Evaluation Reports (ESRs) and will explain how these reports are compiled and how to find them. Development processes for ICC-ES Acceptance Criteria (ACs) will also be addressed. ACs and ESRs which are applicable to wood construction will be highlighted.

INTERMEDIATE TOPIC: WOOD SCIENCE FOR STRUCTURAL ENGINEERS - BRIAN MALONE

Few structural engineering programs focus on wood in a way that provides true material understanding. This presentation will explore wood as a structural material, focusing on the development of design values and the factors that drive strength, as well as the topic of moisture and how it affects wood. Attendees will gain a deeper understanding of how to design wood structures with a focused material perspective.



SHEAR STRENGTH OF BEAMS WITH COPED TENSION FACE NOTCHES - JOHNN JUDD

A TFG/TFEC sponsored research project to determine the shear strength of timber beams that are coped on the tension face at the bearing ends will be presented. Experimental tests were conducted on 4x10, 6x10, and 8x10 beams with linear and circular tapers, and finite element models of the beams were made using three-dimensional continuum elements. This presentation will present interim results from the research project.

INTERMEDIATE TOPIC: TIMBER FRAME DESIGN FOR STRUCTURAL ENGINEERS - JEFF HERSHBERGER

Structural analysis of timber frames is a unique process for engineers. The industry's business models, the minimal code acknowledgement, even the material itself can be a bit unfamiliar for an engineer as they step into the process. Taking a step back we will review a typical project flow from project set up through construction documents in effort to help attendees develop their own best methods for efficient review.

ENGINEERING FOR TFG COMMUNITY BUILDING PROJECTS - STEVE LAWRENCE

An overview of the Guild's Community Building Projects program and the various design tracks that we follow to bring projects to construction. We will outline to process for getting engineers, architect and designers on our team to develop our partners concept into construction documents, and how you can get involved in this important guild program.

ASTM D245 MEETS CSA 086 - MICHAEL ZWART

Using ASTM D245 is straight forward in the American context, However, the same cannot be said for the Canadian context. American building codes directly reference ASTM D245. Canadian codes indicate that ASTM D245 is the basis for the specified strengths in CSA O86, but provide minimal guidance as to how . Learn how one engineer adapts ASTM D245 to the Canadian context.

LESSONS BEN HAS LEARNED, AND IS TRYING TO SHARE - BEN BRUNGRABER

This session is also known as "The book Ben has been meaning to write." In his own words: "What I have learned about building and repairing heavy timber frames in fifty years of messing with them....Fifty, but with a five year run at a subway and a big iron interruption. I will cover frames, timbers, joinery, and hardware."

