Cushing Terrell

Mass Timber

Structural Services

Our structural service sector provides mass timber engineering and consultation for residential, commercial, retail, education, and government structures across the United States. Our experienced team has been working with these materials for over a decade and specializes in engineer-of-record, deferred/specialty engineering, and construction assistance services.

Our engineers are innovating in this new space to provide exciting opportunities for robust, sustainable structures to stand the test of time. Our engineers are licensed in all 50 U.S. states and most provinces of Canada.

We take pride in our responsive, friendly customer service and consistently receive positive feedback for our out-of-the box thinking and willingness to adapt to challenges.

Engineer of Record

We provide Engineer of Record engineering services for mass timber/hybrid structures and building elements in commercial, residential, educational, retail, government, and industrial sectors.

We provide standard CAD or Revit drafting to supplement structural drawings for a project. When appropriate, we also use Building Information Modeling (BIM) to model CLT/MPP panels down to a 1/16th-inch gap in panel splices and submit information to the manufacturer for implementation into their programs, streamlining coordination and production.

We use cutting-edge Finite Element Analysis (FEA) modeling software in conjunction with engineering mechanics to complete the structural engineering for mass timber elements. The variety of tools at our disposal allows us to efficiently analyze complicated loading and framing considerations.

Deferred/Specialty Engineering

We provide deferred engineering for CLT and mass timber structural elements such as roofs, walls, columns, and floors, and we also collaborate on niche projects such as elevator shafts, sawmill structures, pavilions, and canopies.

Deferred engineering saves time and effort for other firms that need specialized expertise on a deadline. CLT deferred engineering may include gravity design, lateral design, and connection design.

Peer Review

Our experts conduct third-party peer reviews to assist building departments in ensuring that mass timber projects are in accordance with local and state building codes.

Technical review of mass timber engineering includes basis of design, mathematical modeling, interpretation of analysis results, and review of structural drawings including connections, specifications, and general notes.

Construction Assistance

Lifting/Rigging

Cushing Terrell provides specialty engineering for the lifting and/or rigging of mass timber panels, beams, and columns. Using FEA software, we model unique mass timber panels to be supported at pick points that see acceleration forces during the raising of the panel to its final location. Design of the rigging device, their installation locations, and the number and size of fasteners are provided for each individual panel.

Bracing

Cushing Terrell provides specialty engineering design for the temporary bracing required during construction, including working directly with the contractor. We understand that jobsites can be busy and that site-specific restrictions may impact the ability to easily temporarily brace the structure during erection. The sequence of installation can also lead to challenges—and our experienced engineers have seen it all.

Cushing Terrell provides structural calculations to establish the bracing design forces required by ASCE 37. We collaborate with the contractor for a plan to efficiently brace the structure during erection. Whether using field-built braces or proprietary braces, or a combination of both, our deliverable is a temporary bracing design that meets all safety requirements.

When the structural diaphragm is not able installed until after the timber installation is complete, Cushing Terrell can assist with providing temporary diaphragm design and detailing to ensure the structure remains stable until the main lateral force-resisting system is in place.

Scissor Lifts and Staging Loads

How difficult is raising a building when you can't stage your materials or drive a scissor lift on it? Cushing Terrell provides design for the contractor to ensure that they can safely stage material and drive scissor lifts on the structure without fear of damaging or overstressing the final product.

Have questions about mass timber design?

Contact us. We'd love to talk.

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