

# Glass Consulting

Providing Glass Consulting and Structural Engineering Services for Commercial Projects.

Glass consulting for building enclosures is rare. Aluminum, glass and glazing system design is not taught in universities. Finding the right engineering expert is more important than ever.

Building enclosure is moving toward more mixed material design including glass and glazing. Future cities are being designed by architects using glass exteriors to let in natural light, show off the buildings structure, and offer aesthetically pleasing visuals. Due to the increased use of glass, it has increased the need for innovations in glazing systems thermal efficiency and glass consulting.

**Call or write to discuss your specific needs.**



**816-505-0987**

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## Skylight Consulting

JEI Structural Engineers provide engineering expertise in skylight consulting.

JEI structural partners with manufacturers of skylight systems to provide design, engineering, and structural calculations stamped by a license Professional Engineer (P.E.). We also can offer installation/detailer referrals through our partner network, which enables us to offer a turn-key

project. Please contact JEI Structural Engineering during the design stage of your project so we may provide engineering and design assistance and offer value-engineered options to meet your specific project requirements.

The internet is filled with reasons why skylight installers should choose a high-quality skylight engineering company with experience in aluminum and glazing design. The codes are changing and its important skylight installers and glazing contractors understand the risks of poor design. Poor skylight design could result in injury, or even death if proper care isn't taken to ensure the design follows all pertinent code requirements.

JEI Structural Engineering is here to help, by providing fast, friendly and affordable skylight engineering, as well as curtain wall engineering and storefront design.

JEI Structural Engineering produces calculation packages for a variety of skylight types, including, but not limited to, steel and aluminum frames, two and four-sided construction, and point supported configurations. Skylight manufactures feature a full range of glazing options including a complete assortment of insulated glass, dynamic electronically tintable glass, photovoltaic glass, multi-wall polycarbonate panels, translucent panels, and acrylic or polycarbonate sheet.

- **Standard Skylights**
- **Custom Sloped Glazing**
- **Operable Venting Skylights**
- **Tubular Skylights**
- **Structural Sunrooms**

## **Glass Storefront Consulting**

JEI Structural Engineering offers glass storefront consulting services for a variety of interior and exterior components which include:

- Commercial Storefront
- Aluminum Window Walls and Sliding Glass Doors
- Glass and Glazing
- Standard and Custom Anchorage
- Sun Control Systems (Sunshades, Vertical and Horizontal Fins)

JEI works with a network of drafting experts to produce quality shop drawings and engineered structural calculations for the glass and glazing industry. Since its inception JEI has been involved in thousands of shop drawings for glazing subcontractors all over the country.

JEI Structural Engineering specializes in all aluminum manufacturers storefront, window and curtain wall systems, including custom designs. In addition, JEI is aligned with strategic partners that offer shop drawings for the following, but not limited to sunshades, louvers, translucent panel systems, decorative grills, slab edge covers, column covers and trellis systems.



## Window Blast Consulting Engineer



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JEI Structural engineers are experts in current codes and regulations govern the window blast consulting engineer. As recognized leaders in the window blast consulting industry, JEI Structural engineers have helped explain blast-mitigating criteria guidelines and best practices/techniques to glazing contractors, glazing systems manufacturers, architects and engineering companies. JEI engineers have natural communication skills and are trained to make complicated facts easy to understand.

The federal government has been changing and tightening codes since 1983, when the bombing of the U.S. embassy in Beirut ushered in the need for anti-terrorism building design solutions.

In response to the 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City, federal security measures have ushered in the development of anti-terrorism security design criteria for the U.S. Department of State, the General Services Administration, Federal Emergency Management Association, and the Federal Bureau of Investigation.

Recently, experts in security, anti-terrorism and risk to develop a rapid visual screening procedure for the Federal Emergency Management Agency (FEMA 455). This procedure assesses risk of terrorist attack for a single building, or the relative risk among buildings in a portfolio, community, or region as a prioritization tool for further risk management activities.

## **Facade Consulting**

In façade consulting, JEI engineers perform analysis and design services for all phases of building façade design and construction. We help project teams realize state-of-the-art, constructible and sustainable façade solutions that address code requirements, project design, function, installation, budget, and scheduling goals.

Just as skin is the largest, and most important organ in the human body. Building **facades** are one of the largest, most important elements in the overall aesthetic and technical performance of a building. It is the building's only defense against the exterior environment. Façade Engineering is the science and art of resolving aesthetic, environmental and structural issues to achieve the effective enclosure of buildings.

JEI Structural Engineering is dedicated to this niche sector of the building industry, working primarily with glazing contractors, drafters, manufacturers and architects. Generally, façade engineers are specifically qualified in the discipline of façade engineering. This expertise comes mainly through experience, since glass and glazing engineering are not taught in schools. JEI Structural engineers work with the design team on construction projects including **architects**, engineers, building owners, construction managers and product manufacturers. Façade engineers must consider aspects such as the design, certification, fabrication and installation of the building facades with regards to the performance of materials, aesthetic appearance, structural behavior, weather tightness, safety, serviceability, security, maintenance and constructability. The skill set will include matters such as heat transfer through two-and three-dimensional constructions, the behavior of materials, manufacturing methodologies, **structural engineering** and logistics.

### **Façade Detailed Design & Engineering**

We offer complete engineering design to fulfill the architectural vision and deliver detailed drawings and prescriptive specifications. We also offer comprehensive preliminary analysis packages that can be used for project bidding. We collaborate closely with architects, developers and manufacturers to synthesize innovative design solutions that optimize performance and constructability.

### **Façade Bidding & Value Engineering**

We help clients to identify and interview potential bidders and answer bidders' questions about the performance and details of the façade design. This process helps bidders fully understand the design and enables them to provide more accurate and appropriate bids. We evaluate bidders' qualifications and proposal drawings to analyze their understanding of the design and ability to properly execute the work. We apply our knowledge of current construction practices, relative system costs and approaches used on similar projects to provide in-depth comparative analyses of engineering options. Correctly identifying the most qualified bidder minimizes client risk and saves time and money spent on construction.

# Aluminum Consulting Engineering

JEI Structural Engineering offers aluminum consulting engineering to glazing contractors, manufacturers, architects and other glass and glazing system industry professionals. As an independent company and leader in the design and engineering of aluminum and glass curtain walls, all-glass wall systems, storefront systems, skylights, glass handrails fittings, point supported glass fittings and metal panels.

## Specialties

Curtain wall, Storefront, Handrails, Animal Enclosures, Solar Reflectivity, Thermal modeling, Waterproofing, Engineering, Blast design, Drafting, Skylights, Consulting, Aluminum, Structural Engineering

# Curtain Wall Consulting

JEI Structural Engineering is a leader in curtain wall consulting.

## Building Envelope Engineering

JEI Structural Engineering is an independent company and industry leader in building envelopes. Including curtain wall consulting, design and engineering of aluminum and glass, glass handrails, animal enclosures, all-glass wall systems, skylights, and metal panels

JEI offers design and detailing services to glazing subcontractors and manufacturing firms in the building facade industry, throughout the United States. These firms count on JEI to develop workable details to meet project technical requirements for a wide range of cladding systems that assure excellent performance as well as value for their clients.

## System Design and Related Services

Glass/Aluminum Systems  
Unitized and Stick Curtain Wall  
Ribbon Windows  
Punched Windows  
Operable Windows/Vents  
Sliding Glass Doors  
Suspended and Structural Glass Systems  
animal enclosures  
All-Glass Walls  
Sloped Glazing  
Skylights  
Cladding Systems  
Composite and Monolithic Metal Panels

## Related Services

Extrusion Structural Analysis  
Proposal and Bid Drawings  
Thermal Analysis  
Blast Analysis/Design

## **Thermal Consulting Engineer**

Thermal consulting is another growing field, where JEI Structural engineers thrive.

### **Thermal Modeling**

JEI Structural Engineering offers thermal modeling and analysis services to building facade system manufacturers and glazing subcontractors during system design development and technical submission phases. We also offer these services to Architects and Construction Managers to define design parameters during project documentation phases, for LEED® certification purposes or to diagnose condensation/frost formation after facade system installation. In addition to providing basic thermal services, JEI can provide more advanced analyses using a variety of software packages, including Window, and Therm. We utilize these programs to offer thermal simulation services in accordance with the NFRC's guidelines.

### **Thermal Analysis & Design**

Today many building envelope elements, especially in high-rise construction, are pre-assembled at the factory. This trend that has led to the widespread use of curtain wall, window-wall, metal panels, and framing modules that can slide and snap together easily. Shipped to the site and ready for construction, pre-fab components provide cost and time savings for builders on a tight budget and schedule. But, internal to these modules are aluminum and steel components that are conductive, and in cold climates can cause thermal bridging.

Thermal bridging, occurs when metal elements inside a building's walls are not properly insulated and results in the increased transfer of energy between materials. This decrease in thermal performance is most significant when differences between the interior and exterior temperatures are highest.

JEI Structural Engineering provides Thermal Analysis & Design of curtain walls or exterior cladding systems, utilizing the current version of LBNL's **THERM** and **WINDOW** software programs.

Specification Sections require façade systems to meet certain thermal requirements. Standard systems produced by common manufacturers, come with detailed thermal analysis and testing standards. However, custom systems require computer simulation of in accordance with NFRC guidelines. JEI prepares thermal computer simulations of designs and products for project applications.



Therm Analysis is standalone service and can be combined with Window to provide comprehensive analysis. Therm is a 2-dimensional, finite element analysis thermal simulation software program. Therm analyzes heat flow through any cross section/component of a façade system. Window is a software program that determines thermal performance for glass and window components due to environmental conditions. Optic uses glass, laminate, coating spectral data provided by industry manufacturers to determine the performance of glazing assemblies.

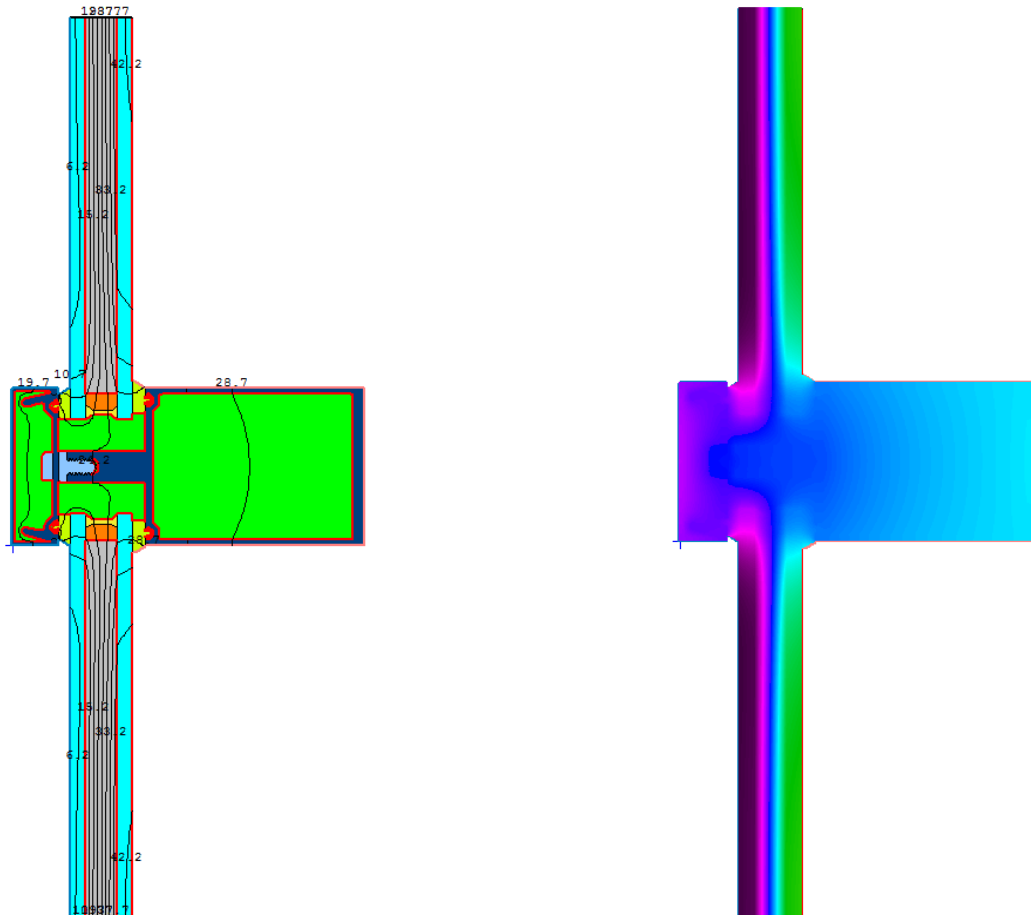


Figure 1: Cross sections from Therm 6.3

## Zoo Consulting Engineer

The entire concept of 'Zoos' has changed over the last several decades. Zoos are now highly associated with animal conservation and protection rather than just human entertainment. During these difficult times when species are becoming extinct, Zoo Designing & Zoo Conservation are the important issues of the day.

JEI Structural Engineers aid in that endeavor. Glass engineering of zoo habitats offers a wonderful solution for animals and humans. JEI Structural Engineers partners with zoo

consultants and zoo designers to ensure glass enclosures meet the most current codes, specifications and regulations.

Animal enclosures provide problems for designers & engineers. The weight, strength, speed, ability to use tools and propensity to attack the glass all need to be considered above and beyond the safety of the animal enclosed and the human viewers. JEI Structural Engineers works with architects and zoo professionals to understand their needs and the animal requirements to determine the best glazing system solution for the job.

There are numerous uses for glass in contact with water and aquariums. Unlike most other architectural applications the load applied by water to glass is constant but not uniform. The greater the height of the water in relation to the glass the greater the pressure. The ability of glass to withstand a constant force is lower than that for transitory stresses. JEI is well versed in all code, and specification requirements, ensuring that proper loads are compared with appropriate allowable stresses, ensuring the glazing is not over engineered. The design stress is adjusted accordingly to allow for the different conditions that the glass must endure.

When working on zoo consulting projects, there are many variables to be considered when working with animal enclosures. Zoo Consulting Engineer.

**JEI applications for glass in zoo consulting engineering:**

- Commercial Aquarium
- Observation windows
- Glass floors
- Exhibition tanks
- Glass habitats for animals
- Animal Enclosures

**Related articles. Zoo Consulting Engineer.**

[Polar Bear Breaks Glass](#)

[Habitats & Glass Engineering](#)

[Hogle Zoo Project](#)

*These skills are very rare and not taught in most university programs.*

*Experience Counts!*

**Contact us today!**



**JEI Structural Engineering. Cladding engineer experts.**



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