



Future-Oriented Training and Consulting

EXECUTIVE DEVELOPMENT PROGRAM

Steel Structures Design & Fabrication

Building technical expertise in designing steel structures and understanding fabrication.

Proven Design Frameworks Structured frameworks for steel design and fabrication oversight.	Executive Case Studies Real-world examples of steel structure design and fabrication.
Hands-On Software Exposure Direct exposure to structural steel design software.	Fabrication-Ready Skills Builds the skills to design, detail, and oversee fabrication.

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Program Overview

This program builds technical expertise in designing steel structures and understanding fabrication processes.

Through case studies, executive discussions, simulations, and hands-on exposure to structural steel design software, participants will develop the practical skills to design, detail, and oversee the fabrication of steel structural elements.

Program Objectives

- **Understand Steel Material Behavior:** Grasp how structural steel behaves under load.
- **Design Structural Steel Members:** Size and design beams, columns, and trusses.
- **Apply Structural Steel Design Software:** Use software to model and verify steel designs.
- **Detail Connections for Fabrication:** Produce connection details that meet code and shop needs.
- **Ensure Code Compliance:** Verify designs against applicable structural steel codes.
- **Oversee Fabrication and Erection:** Build the coordination skills to oversee shop and field work.

Target Audience

This program is designed for professionals designing and fabricating steel structures, including:

- **Structural Engineers** designing structural steel elements.
- **Civil Engineers** coordinating structural work on projects.
- **Detailing Engineers & Draftspersons** producing steel connection drawings.
- **Fabrication & Shop Managers** overseeing fabrication quality and schedule.
- **Construction & Erection Engineers** managing steel erection on site.
- **Consultants & Design Advisors** guiding clients on steel structure design.
- **Entry-Level Engineers & Technicians** building foundational steel design skills.

Program Impact

Participants will complete this program with practical design and fabrication oversight skills. Graduates will return to their organizations ready to design, detail, and oversee the fabrication of steel structural elements.

Program Outline

MODULE 1: Foundations of Steel Structures

- Properties and grades of structural steel
- Load types and structural behavior fundamentals
- Overview of applicable structural steel codes
- Key terminology and design conventions
- Assessing project requirements and constraints

MODULE 2: Design of Beams and Columns

- Flexural and shear design of steel beams
- Axial and combined loading in columns
- Buckling and stability considerations
- Deflection and serviceability checks
- Hands-on exposure to structural steel design software

MODULE 3: Design of Trusses and Frames

- Truss analysis and member sizing
- Moment frame and braced frame design
- Lateral load resisting systems
- Frame stability and bracing requirements

MODULE 4: Connection Design and Detailing

- Bolted and welded connection design
- Moment and shear connection detailing
- Detailing for shop fabrication requirements
- Producing connection drawings and schedules
- Hands-on exposure to detailing software

MODULE 5: Fabrication Processes and Standards

- Cutting, welding, and shop fabrication methods
- Fabrication tolerances and quality standards
- Surface preparation and corrosion protection
- Applying fabrication standards to complex members

MODULE 6: Structural Steel Software in Practice

- Modeling steel structures in design software
- Running and interpreting analysis results
- Generating design documentation from software
- Verifying software output against hand calculations
- Avoiding common software modeling errors

MODULE 7: Quality Assurance and Code Compliance

- Reviewing designs for code compliance
- Coordinating design checks and peer review
- Managing revisions and design changes
- Reporting design decisions to stakeholders

MODULE 8: Erection and Site Coordination

- Coordinating design intent with erection teams
- Managing risk from field deviations and errors
- Inspecting connections and erection quality on site

MODULE 9: Leading Fabrication and Erection Delivery

- Leading design and shop teams through delivery
- Managing fabrication changes and constructability issues
- Communicating design and fabrication decisions effectively
- Building a culture of quality and precision

MODULE 10: Sustaining Design Excellence and Future Readiness

- Embedding lessons learned into future designs
- Anticipating emerging materials and fabrication methods
- Sustaining momentum beyond the program