Precast Concrete Structural Systems and Connection Design Course

16 – 20 November 2026
Addis Ababa

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Training Center

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Ref: 508_223726 **Date:** 16 – 20 November 2026 **Location:** Addis Ababa **Fees:** 6000 Euro

Overview

Precast Concrete Structural Systems and Connection Design Course is a one-week advanced course for structural engineers, precast designers, coordinators, and technical reviewers who leave with a Precast Structural Design Basis and Coordination Package. Participants integrate precast concrete structural design, system selection, load paths, diaphragm action, precast connection design, erection tolerances, and shop drawing coordination across building and infrastructure applications. Agile Leaders Training Center presents precast structural systems through evidence-based design decisions and coordinated delivery.

Who Should Attend

- Teams responsible for selecting structural systems and defining load paths
- Specialists responsible for member concepts, prestress interfaces, and connection behavior
- Coordinators responsible for models, shop drawings, embeds, openings, and interfaces
- Production and erection teams responsible for tolerances, handling, and temporary stability
- Reviewers responsible for design bases, calculations, quality records, and technical approvals

The course assumes participants already interpret structural drawings and engineering calculations; it leaves out authorization to practice, final design approval, and project-specific code substitution.

Departments and Industries

The course supports design and delivery functions across precast buildings and infrastructure assets.

- Structural engineering and multidisciplinary design consultancies
- Precast manufacturing, production engineering, and quality control
- Building contractors, erection specialists, and project management teams
- Transport, utilities, industrial facilities, and logistics infrastructure
- Asset owners, technical assurance teams, and independent reviewers

Learning Objectives

By the end of this course, participants will be able to:

- Analyze structural systems, grids, spans, and complete load paths
- Evaluate member concepts with prestress and serviceability awareness
- Apply force-transfer principles to connections, bearings, joints, and diaphragms
- Prioritize robustness, durability, fire, and constructability requirements
- Use tolerance, production, lifting, transport, and erection controls

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- Build a coordinated precast structural design-basis package

Course Agenda

Day 1: System Selection and Load Paths

- Project Design Basis and Applicable-Code Register
- Structural System Selection Matrix for Frames, Walls, and Floors
- Grid, Span, Repetition, and Standardization Study
- Gravity and Lateral Load-Path Mapping Method
- Structural Integrity, Stability, and Robustness Checklist

Day 2: Member Concept Design

- Precast Slab, Beam, Column, and Wall Behavior Models
- Prestress Effects and Serviceability Review Method
- Strength, Deflection, Camber, and Vibration Screening
- Bearing-Zone and End-Region Concept Checks
- Member Design Assumption and Calculation-Interface Register

Day 3: Connections Diaphragms and Joints

- Connection Force-Transfer Mechanism Classification
- Anchorage, Welding, Grouting, and Embedded-Plate Detailing Checks
- Floor Diaphragm Action and Collector Load-Path Model
- Bearing, Joint, Movement, and Volume-Change Coordination
- Ductility, Accidental Action, and Progressive-Failure Review

Day 4: Performance Production and Coordination

- Durability Exposure and Fire-Resistance Design Checklist
- Production, Erection, and Interfacing Tolerance Framework
- BIM Model, Embed, Opening, and Clash Coordination Protocol
- Shop Drawing and Connection Schedule Review Method
- Lifting, Transport, Temporary Stability, and Erection Sequence Plan

Day 5: Integrated Design Practice

- Exercise: Compare System Options Using the Selection Matrix
- Exercise: Trace Gravity and Lateral Actions Through a Sample Structure
- Exercise: Review Connection, Bearing, and Diaphragm Details
- Exercise: Audit Tolerances, Shop Drawings, and Erection Controls
- Capstone Exercise: Precast Structural Design Basis and Coordination Package

Practical Exercises

The course uses suggested activities that require project-specific verification before workplace use.

- Suggested activity: compare framing options against span, stability, repetition, production, and erection criteria.
- Suggested activity: mark load paths and review connection force transfer on coordinated drawings.
- Suggested activity: identify tolerance conflicts across members, bearings, embeds, and interfacing trades.
- Suggested activity: assemble the design basis, interface register, review checklist, and erection-control summary.

FAQs

Who suits the Precast Concrete Structural Systems and Connection Design Course, and what does it assume?

It suits engineers, designers, coordinators, production specialists, and reviewers who already read structural drawings and calculations. It assumes professional engineering experience rather than introductory concrete knowledge.

How does precast concrete structural design training differ from a general reinforced-concrete design course?

It focuses on discrete manufactured members, system interfaces, force-transfer connections, tolerances, handling, erection, and temporary conditions rather than primarily cast-in-place continuity and formwork.

Why is precast connection design central to structural performance?

Connections transfer forces between discrete members and must accommodate strength, ductility, movement, durability, fire, constructability, tolerances, and erection conditions within the overall structural system.

How do erection tolerances affect precast structural systems?

Tolerances influence bearing lengths, connection fit, alignment, interfaces, accumulated deviation, and safe erection. Design documents must coordinate production, erection, and interfacing allowances.

Does precast concrete structural design training authorize project approval?

No. Current applicable codes, project calculations, licensed structural review, and project-specific approval remain mandatory for real designs and construction decisions.

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Conclusion

Participants take back a Precast Structural Design Basis and Coordination Package containing system choices, load paths, member assumptions, connection interfaces, tolerance controls, and erection considerations. The package helps teams expose coordination gaps before production and site work. It supports traceable review without replacing calculations, applicable codes, or licensed approval.