Formwork & Falsework Design and Safety Course

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Milan (Italy)



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Introduction:

Formwork and falsework design and safety course principles govern the structural engineering, erection verification, and hazard mitigation of temporary moulds and load-bearing falsework during concrete placement operations. This intensive one-week course equips construction managers and temporary works engineers to deliver a Temporary Works Formwork and Falsework Design and Safety Plan. Delivered at practitioner depth through an inspection walkthrough practical mode, participants interpret ACI 347R-14 Guide to Formwork for Concrete alongside BS 5975-1:2024 temporary works procedures. Construction professionals master formwork and falsework design and safety course competencies with Blackbird Training Centre to maintain structural integrity across critical site operations.

Course Objectives:

- Distinguish between formwork moulding systems and falsework load-bearing shoring to assign structural design responsibilities.
- Compare ACI 347R-14 lateral pressure formulations versus CIRIA Report 108 concrete head equations to determine formwork wall tie spacing.
- Apply BS 5975-1:2024 procedural controls to govern temporary works coordinator appointments and permit-to-pour sign-offs.
- Select appropriate proprietary modular panel systems versus traditional timber formwork assemblies based on pour heights and reusability.
- Interpret ASTM C1074 concrete maturity data alongside pullout test results to establish safe striking schedules.
- Justify multi-tier shoring and reshoring load redistribution sequences to prevent structural overloading of early-age slabs.

Target Audience:

- Temporary works design coordinators responsible for reviewing scheme submissions who must choose between proprietary modular falsework and bespoke steel systems.
- Structural site construction managers responsible for concrete operations who must decide when to approve permits to pour under strict safety criteria.
- Quality assurance and civil inspection leads responsible for pre-pour verifications who must determine whether formwork alignment and bracing meet tolerance standards.
- Site safety and temporary works risk controllers responsible for physical site safety who must select between active exclusion zones and access barricades during pours.



Course Outline:

Day 1: Formwork and Falsework Structural Principles and Loads

- Formwork vs Falsework Systems: Defining Primary Differences Between Moulding Elements and Structural Shoring Frameworks
- Dead and Live Construction Loads: Calculating Vertical Pressures Imposed by Wet Concrete and Workers
- Environmental Wind Load Analysis: Determining Lateral Force Allowances on Exposed Falsework Tower Assemblies
- Plywood Sheathing Bending Capacity: Evaluating Allowable Deflection Limits Under Uniform Fresh Concrete Pressure
- BS EN 12812 Load Classes: Categorising Falsework Systems by Performance Requirements and Structural Rigour

Day 2: International Standards, Design Codes, and Procedural Controls

- ACI 347R-14 vs BS 5975-2:2024: Comparing Global Design Philosophies for Concrete Formwork and Falsework Engineering
- BS 5975-1:2024 Procedural Framework: Establishing the Temporary Works Coordinator Hierarchy and Site Responsibilities
- Temporary Works Register Management: Tracking Classification Categories and Independent Design Check Levels Systematically
- ACI SP-004 Design Manual: Applying Standard Architectural Tolerances and Formwork Safety Factor Guidelines
- Design Brief Formulation: Establishing Structural Parameters, Loading Constraints, and Construction Sequence Assumptions

Day 3: Lateral Pressure Analysis, Shoring, and Component Design

- Lateral Concrete Pressure Formulations: Calculating Maximum Hydrostatic Pressures Under Varying Concrete Temperatures
- Wall Forms vs Column Forms: Designing Tie Rod Spacing and Timber Waler Reinforcement Assemblies
- Proprietary Steel Props vs Heavy Shoring Towers: Selecting Vertical Supports Based on Slenderness Ratios
- Multi-Tier Shoring Load Distribution: Calculating Load Factors Transferred Across Successive Concrete Slab Levels
- Foundation Sill Beam Sizing: Preventing Differential Ground Settlement Beneath Heavy Load-Bearing Falsework Legs



Day 4: Failure Modes, High-Risk Concrete Pours, and Striking Controls

- Hydrostatic Concrete Head vs Controlled Pour Rate: Managing High Fluid Pressures During Placement
- Progressive Collapse Failure Mechanisms: Diagnosing Instability Triggers from Defective Bracing and Overloaded Props
- Pre-Pour Striking vs Post-Pour Reshoring: Scheduling Shore Removal Using Concrete Compressive Strength Benchmarks
- In-Situ Maturity Monitoring Methods: Utilising Maturity Meters and Direct Pullout Tests for Striking
- Hazard Zone Exclusion Planning: Mitigating Fall from Height and Structural Blowout Safety Risks

Day 5: Inspection Walkthrough and Temporary Works Safety Plan Consolidation

- Pre-Pour Inspection Checklist Walkthrough: Auditing Component Plumb, Tie Tightness, and Diagonal Bracing Onsite
- Permit-to-Pour vs Permit-to-Dismantle Procedures: Executing Controlled Handover Sign-Offs Across Concrete Pour Cycles
- Falsework Deflection Monitoring Walkthrough: Tracking Real-Time Optical Level Readings During Bulk Concrete Placement
- Site Non-Conformance Corrective Walkthrough: Remediating Misaligned Shoring Legs and Unapproved Field Modifications Safely
- Formwork Safety Plan Consolidation: Finalising the Temporary Works Formwork and Falsework Management Plan

Skills You Will Gain:

- Lateral Pressure Calculation
- Falsework Tower Bracing
- Temporary Works Coordination
- Shoring Load Redistribution
- Concrete Maturity Evaluation
- Permit-to-Pour Auditing
- Deflection Tolerance Assessment

Why Attend This Course:

- From relying on informal site judgements to applying standardized ACI 347R-14 and BS 5975-2:2024 engineering calculations for formwork stability.
- From uncoordinated concrete placement to synchronising pour rates with structural formwork pressure limits and lateral bracing capacities.
- From premature stripping based on arbitrary cure times to determining formwork removal schedules through validated concrete maturity and strength data.
- From fragmented temporary works records to delivering an approved Temporary Works Formwork and Falsework Design and Safety Plan.



Conclusion:

Formwork and falsework engineering provides the essential temporary structural stability that enables safe and precise cast-in-place concrete construction. This course clarifies the operational distinctions between formwork fluid pressure resistance and falsework load-bearing capacity, empirical rule-of-thumb assembly versus calculated engineering verification, and arbitrary striking schedules versus concrete maturity-based striking approvals. Designed for temporary works coordinators, structural site engineers, and construction managers seeking practitioner competence without committing to extended multi-week academic programmes, this intensive curriculum delivers the analytical frameworks and inspection protocols required to ensure site safety.

Frequently Asked Questions FAQ:

What is formwork and falsework design and safety?

Formwork and falsework design and safety entails the structural engineering, risk control, and operational monitoring of temporary moulds and supporting structures during concrete construction. It guarantees that temporary assemblies withstand wet concrete pressure, environmental forces, and construction loads until the permanent concrete structure achieves sufficient self-supporting strength.

What is the difference between formwork and falsework in formwork and falsework design and safety?

Formwork refers specifically to the temporary moulds and sheathing that shape and contain freshly poured concrete. Falsework comprises the structural framework, shoring towers, and props that temporarily support the formwork, wet concrete, workers, and equipment until the slab or beam can support its own weight.

Which international standards govern formwork and falsework design and safety?

Formwork and falsework design and safety is governed internationally by ACI 347R-14 for formwork design and lateral pressure calculations, BS 5975-1:2024 and BS 5975-2:2024 for temporary works procedures and falsework execution, and BS EN 12812:2008 for performance requirements and falsework load classification.

Is this formwork and falsework design and safety course suitable for site construction managers?

Yes, site construction managers benefit directly because the course provides practical methods to evaluate temporary works schemes, verify shoring stability, enforce permit-to-pour controls, and prevent structural failures without requiring prior specialist design engineering experience.

