Structural Renovation Of Buildings Training

Description

Course Description

As more and more buildings are being renovated rather than demolished, lack of reliable knowledge on the topic of their renovation is becoming critical. Technical journals and specialty conferences provide plenty of data—sometimes contradictory—but they tend to focus on specific types of structures and on rather narrow issues. By contrast, this seminar provides the broadest possible overview of challenges that commonly arise during building renovation projects.

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Based on a new book with the same title, the seminar covers the practical methods of upgrading all major types of building materials and structural systems; steel, concrete, masonry, wood, and pre-engineered buildings. It examines typical renovation provisions of building codes and the issue of renovation vs. rebuilding. The must-have details for upgrading buildings for lateral loads and rehabilitation of building envelope are included.

The bulk of the seminar's time is devoted to problems likely to be experienced by building structures and to specific renovation techniques to remedy these problems. For each material, the discussion starts with a brief overview of past construction methods, outlines typical problems, explains why they occur, and presents practical remedial solutions. The seminar is jam-packed with useful design tips and renovation details. The participants should leave with a sense of being able to tackle all kinds of design and construction issues related to building renovation, from evaluation of existing buildings and feasibility studies to preparation of construction documents

Course Objective

- Learn when a renovated building must be upgraded to comply with the code for new construction and when it can be grandfathered. Find out when it is appropriate to renovate and when to consider replacement instead. Discuss typical code provisions for structural renovations.
- Study the available methods of investigating existing conditions. Learn where to find information about the original structural design and how load testing can help determine load-carrying capacities of the framing when its exact properties are unknown.

- Learn about the early practices for cast-iron and steel construction, the allowable stresses of vintage steel and fasteners, how to determine whether the steel is weldable, and how to identify open-web joists in the field. Explore various methods of strengthening steel framing and connections.
- Discuss the methods of strengthening various concrete structural systems. Find out how to improve load-carrying capacities of beams, one- and two-way slabs, columns, and how to safely make openings in slabs. Examine typical properties of old concrete and reinforcing steel. Discover the most effective methods of concrete repair and how to prevent premature—and unfortunately very common—failures of concrete repairs.
- Learn how pre-engineered buildings work, where the areas of potential weakness are, and how to strengthen, expand, or modify these deceptively simple structures.
- Discuss why many common wall materials fail prematurely and how to specify them correctly. Learn about typical weaknesses of various systems and the must-have details for their repair.

Course Outline

- Introduction
- Why renovate?
- Challenges of structural renovation
- Code provisions for renovations
- Renovate or rebuild?
- Investigating existing conditions
- Renovating steel-framed buildings
- Strengthening concrete buildings
- Repairing deteriorated concrete
- Renovating wood buildings
- Renovating masonry buildings
- Wind and seismic retrofit
- Renovating building facade
- Renovating metal building systems
- Conclusion

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