

Structural-Condition Assessment of Existing Structures

Purpose and Background

This seminar is an intensive overview of material evaluation practices and procedures used for assessing the structural condition of existing structures and covers as many aspects of evaluating structures and structural material conditions as possible. State-of-the-art information on visual inspections, destructive and nondestructive testing (NDT), and the hands-on experience provided in this seminar, are essential for those involved in evaluating concrete, masonry, wood, and metal structures.

After a brief review of structural condition assessment procedures and guidelines, the seminar will cover condition surveys, planning a materials evaluation, destructive and nondestructive testing, limitations of NDT testing, statistical evaluation of test data, and interpretation and use of test results. Nondestructive testing techniques for establishing in-place material properties for concrete, masonry, wood and metals are a primary focus.

The hands-on workshop and case studies will enhance understanding of condition survey and inspection procedures, and destructive and nondestructive testing techniques.

Seminar Instructor

LARRY D. OLSON, P.E., M.ASCE, is President of Olson Engineering. He has a broad range of expertise in the areas of geotechnical and materials engineering with specialization in nondestructive testing and evaluation of buildings and infrastructure. Since cofounding Olson Engineering, Inc. in 1985, he has been actively involved in the management and performance of nondestructive testing and evaluation, forensic, vibration and geophysical engineering, and applied research and development projects. Mr. Olson has conducted investigations to determine the conditions of such concrete-based facilities as bridges, slabs and pavements, nuclear reactors, buildings, deep foundations, dams and tunnels. He has also performed nondestructive testing of wood and steel pile foundations, masonry structures and steel columns for integrity evaluations. He is active in ACI Committees and is the Chairman of the Evaluation committee of International Concrete Repair Institute. Mr. Olson has over 50 technical publications and has been the Principal Investigator on a number of research projects involving nondestructive testing of infrastructure.

- For group training, contact John Wyrick (JWyrick@asce.org) or Stephanie Tomlinson (STomlinson@asce.org)

Summary Outline

DAY ONE

- Structural Condition Assessment Procedure
- Conducting a Condition Survey
- Planning the Evaluation
- Statistical Procedures
- Destructive and Nondestructive Testing for Concrete and Masonry
- Pros and Cons of Nondestructive Testing
- Establishing Strength and Quality of In-Place Concrete and Masonry
- Evaluating Cracks in Concrete and Masonry
- Analyzing Wet Masonry Walls
- Evaluating Corrosion
- Interpreting and Using Destructive and Nondestructive Test Results

DAY TWO

- Conducting Condition Surveys of Wood and Metal Structures
- In-Place Evaluation of Wood-Based Materials and Metals
- Planning the Evaluation
- Inspection Procedures
- Destructive and Nondestructive Testing of Wood-Based Materials and Metals
- Establishing In-Place Strengths for Wood and Metals
- Understanding the Limitations of Nondestructive Testing
- Investigating Defects and Damage
- Evaluating Wood and Steel Connections
- Case Studies
- Interpretation and Use of NDT Results
- Wood NDE Equipment Vendors

Seminar Benefits

- Plan and implement an effective structural evaluation program
- Use Guidelines for Structural Condition Assessment of Existing Buildings, SEI/ASCE 11-99
- Examine the latest destructive and nondestructive investigation techniques for evaluating concrete, masonry, wood and metals
- Identify the pros and cons of common destructive and nondestructive testing techniques and find out how to select the best techniques to suit your projects
- Understand how to interpret and use destructive and nondestructive tests results
- Identify quick and simple evaluation techniques
- Plan and conduct a condition survey for concrete, masonry, wood and metal structures
- Develop a condition survey inspection checklist
- Design a materials evaluation program for your structural condition assessment projects
- Select the best destructive and nondestructive testing techniques for your projects
- Identify the limitations of various nondestructive testing techniques
- Diagnose problems and assess strengths and weaknesses of structural materials
- Evaluate test data statistically

Who Should Attend?

- Engineers
- Architects
- Designers
- Contractors
- Developers
- Inspectors
- Other building professionals in both private and public practice
- Building industry professionals involved in evaluating concrete, masonry, wood and steel; destructive and nondestructive testing; inspecting; conducting structural condition assessment; repair; and restoration of existing structures.

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