Romualdi, Davidson & Associates
Consulting Engineers

Irving J. Oppenheim

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Areas of Specialization

Mechanics and dynamics, risk analysis, structural materials, structural design, architectural materials, building code safety requirements, building integrity, steel structures, concrete structures, masonry structures, timber structures, construction collapses, dynamic stability (balancing), friction effects, and mechanism behavior.

Professional Registration

Professional Engineer, Pennsylvania

Educational Background

Ph.D. - 1972 Cambridge University
M.S. - 1970 Lehigh University
B.C.E. - 1968 Cooper Union

Employment History

Romualdi, Davidson & Associates, 1981-Present
Carnegie Mellon University, 1972-Present
Professor of Architecture and Civil Engineering
Carnegie Mellon University, 1989-1990
Acting Head, Department of Architecture
GAI Consultants, 1980-1981
Senior Staff Engineer

Professional Experience

Teaching experience in engineering mechanics (statics, dynamics, structural analysis), structural design in civil engineering (steel, reinforced concrete, pre-stressed concrete), building science in architecture, structural design in architecture, probabilistic methods of risk analysis, earthquake engineering, and shell theory. Doctoral thesis supervision in structural stability, structural dynamics, control and computer-aided design.

Research experience in risk analysis, masonry shell theory, robot manipulator dynamics, stability of balancing systems, structural collapse states, and so on.

Professional experience included full scale testing of load capacity for pre-stressed concrete roof construction; numerous studies of collapses in timber construction, steel construction, light-gauge steel construction, and reinforced concrete in al forms; investigation of failures in major industrial structures.

Specific examples include determination of the cause of collapse of a 45-foot diameter conical steel shell, of several steel truss and long-span joist systems under construction, of column failures in large concrete structures, of wire rope failures, of fatigue failures, of welding failures, of collapses encountered during demolition activities, and so on.

Professional experience also includes evaluation of architectural materials and building performance; systemic cracking of masonry or precast concrete; slip-resistance of architectural flooring materials; building material degradation; building cladding failures; determination of architectural code compliance; proportioning of stairs, handrails, and guardrails.

Professional experience also includes reconstruction of vehicular accidents, determination of roadway geometry, simulation of accident dynamics, and measurement of driver's field-of-view.