



# John F. Vincent, P.E., S.E.

## PRINCIPAL STRUCTURAL ENGINEER

John Vincent is a principal structural engineer at CTLGroup. He is in charge of complex projects involving analysis of strength and serviceability deficiencies in a variety of structures, and the design of innovative repairs to enhance structural performance and long-term durability. Mr. Vincent has been involved in the analysis and repair of reinforced concrete (both conventional and prestressed reinforcement), structural steel, masonry and wood structures and components. These structures include buildings, bridges, and specialized structures within industrial plants, manufacturing facilities, and power plants. In addition to his expertise in resolving complex structural problems, Mr. Vincent has managed large, multi-disciplinary structural rehabilitation projects. On these projects, he led teams of structural, mechanical, and electrical engineers and architects.

### Academic Credentials

M.S. in Civil Engineering  
University of Illinois at Chicago,  
1986

B.S. in Civil Engineering  
Iowa State University, 1981

### Licensure/Certification

Structural Engineer  
AZ, IL

Professional Structural Engineer  
AK, IA, LA

Professional Engineer  
IL, IN, MI, PA, WA

Certified Structural Engineer

Structural Engineering  
Certification Board

### Professional Affiliations

American Concrete Institute (ACI)

American Institute of Steel  
Construction (AISC)

American Society Of Civil  
Engineers (ASCE)

Structural Engineers Association  
of Illinois

### Contact Information

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Skokie, IL 60077

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### Representative Project Experience

#### Structural Performance Evaluation

- Performed structural evaluation, load testing and structural monitoring of the 300,000-square-foot composite structural steel and concrete floor system of an air cargo facility at a major Midwest airport. Based on findings of the investigation, repairs were designed to upgrade strength of beam-girder connections and enhance the performance and durability of the floor system.
- Performed structural evaluation of distress in the brick masonry supports of a reinforced concrete, hyperbolic paraboloid roof structure of a church located in the Midwest. Finite element modeling was used to evaluate the behavior of the roof and supporting piers when subjected to thermal, shrinkage and creep strains. Based on findings of the evaluation, repairs were designed and constructed to restore integrity and enhance structural performance of the building.
- Performed a causation analysis of early-age floor deflections and spandrel beam cracking in the exposed reinforced concrete frame of a high-rise building. Analysis work involved field surveys, structural analysis of the floor system during construction utilizing submitted shoring/reshoring schemes, and laboratory testing of samples extracted from the structure.
- Investigated foundation settlement and related distress in a century-old building at a major university. The settlement occurred as part of the construction of deep foundations for a bridge adjacent to the building. Designed an underpinning system to stabilize the building and remedial repairs to correct damaged masonry bearing walls and wood floor system components. Oversaw construction of the repairs.
- Investigated the causes of uncontrolled settlements of a newly constructed foundation for a large printing press. Investigation included field as-built surveys, an evaluation of supporting soil, and structural analyses. Gross deficiencies in construction were identified making the existing foundation impractical to repair. A new foundation was designed and constructed through a design-build approach.

#### Deterioration Evaluation

- Investigated the causes and extent of deterioration in a reinforced concrete, waffle slab floor system of a parking structure at a major Midwestern university. The project also included evaluation of significant deficiencies in the site drainage for the parking structure and adjoining building. Extensive deterioration was identified which made isolated repairs impractical from durability and economic standpoints. Repairs were designed that involved complete removal and replacement of the elevated level of the parking structure while concurrently maintaining the integrity of the plaza level above the parking deck. The project also involved upgraded lighting systems, upgraded mechanical systems, extensive site drainage revisions, and ADA upgrades.

- Investigated the causes and extent of deterioration in the structural steel supports for a traveling screen system at a potable water treatment plant located in the Midwest. Findings of the investigation were utilized to develop rehabilitation recommendations.
- Evaluated several precast, prestressed concrete parking structures in the Midwest and Middle Atlantic. These structures were deteriorating and distressed as a result of improper details to accommodate thermal movements and seismic forces, as well as exposure to deicing salts. Repairs were designed to enhance service life.
- Evaluated the precast concrete exterior wall panels for four mid-rise dormitory buildings at a major Midwestern university. Corrosion in the steel connections between the panels and building frame were identified. Corrosion was attributed to improper detailing. Retrofit connections were designed.
- Investigated extensive deterioration in an 1100 vehicle, post-tensioned concrete parking structure located in the Midwest. The post-tensioning system was found to have been damaged by previous attempted repairs. Extensive deicing salt-related corrosion of the post-tensioning system and conventional reinforcement was also discovered. Repairs were designed that involved replacing damaged post-tensioning components and installation of a composite, bonded overlay to the elevated slabs. Repair work has more than doubled the service life of the structure.
- Investigated concrete deterioration in precast concrete roof deck channel slabs at several manufacturing facilities and potable water treatment plants. Developed a supplemental support system for structurally deficient members. Designed enhanced durability replacement channel slabs.

#### **Structural Strengthening**

- Investigated causes of the partial construction collapse of a reinforced shotcrete storage dome being constructed in the Great Plains. Based on findings of this work, repairs were designed to strengthen the structure.
- Designed a wind load retrofit to a large, public high school building located in the Midwest. Repair work included construction of steel truss diaphragm members around the periphery of the structure to brace existing masonry exterior walls.
- A change of use was planned for the concrete floor system of a 1950's church building that included additional dead and live loading. The floor system was analyzed and found to be inadequate for the proposed loads. A strengthening system was designed to accommodate the new loading.

#### **Power Industry**

- Developed a procedure and special process to expose the containment vessel plate for assessment of corrosion at the Davis Besse Nuclear Plant. Procedure and process development required the construction of full-size specimens of the containment including the concrete and underlying containment vessel plate. Specimens were used to investigate methods of concrete removal that would expose the containment vessel plate without damage to the plate. The process was successfully utilized on-site.
- Evaluated causation of early age cracking in a reinforced concrete protected service water building at the Oconee Nuclear Plant. The project involved site assessment of conditions, investigation of concrete components, thermal analyses, and structural analyses.
- Provided a condition survey of deteriorating reinforced concrete in the shells of the cooling towers of the Montour Steam Electric Plant in Washingtonville, PA. Field quality assurance services were provided during construction of repairs.
- Performed an evaluation of distressed precast concrete cooling system support members within the cooling towers at Plant Bowen in Cartersville, GA. Based on findings of the evaluation, repair recommendations were formulated.

## **Publications**

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Vincent, J. F. and Henline, T. A., "Containment Vessel Plate Evaluation," Nuclear Plant Journal, Vol. 34, No. 3, May-June 2016.

Hartt, W. H., Vincent, J. F., and Ivanov, V. I., "Wire Strand Slippage – A Potential Failure Mode for Post-Tensioning Tendons," Materials Performance, Vol. 54, No. 10, October 2015.

VanDuyne, E. and Vincent, J. F., "Doubling Down," The Parking Professional, January 2014.

Vincent, J. F., "Structural Repairs Stabilize a Modernist Church," Structure Magazine, A Joint Publication of NCSEA/CASE/SEI, September 2006.

Vincent, J.F., "Evaluation of Distress in Supports of a Hyperbolic Paraboloid Shell," ASCE Journal of Performance of Constructed Facilities, Vol. 20, No. 1, February 2006.

Vincent, J. F., and Wiese, W. F., "Repairs to the Parking Structure at Krannert Center for the Performing Arts," The Parking Professional, April 2000.

Vincent, J. F., and Kolf, P. R., "Repairs to Paulina Street Parking Structure," Concrete International, March 1994.

Vincent, J. F., "Comprehensive Parking Garage Restoration Requires Innovative Repairs," Concrete Repair Bulletin, November/December 1993.

Vincent, J. F., Corley, W. G., and Kosel, H. C., "Do Not Disturb, A Retrofit of an Indiana School's Exterior Walls was Carried Out Before and After School Hours to Minimize Disruption," Modern Steel Construction, February 1993.

Gebler, S. H., Kolf, P. R., Seegebrecht, G. W., Litvin, A., and Vincent J. F., "Shotcrete: Surveillance for Durable Structures - Case Histories," Second CANMET/ACI International Conference on Durability of Concrete, August 1991.

Corley, W. G., Vincent, J. F., Lim, M. K., and Olson, C. A., "Nondestructive Evaluation and Repair of an Understrength Building," Evaluacion de Estructuras de Concreto, Mexico City, May 1991.

Michols, K. A., and Vincent, J. F., "Reinforced Overlay and Shotcrete Restore Integrity to a Multistory Parking Structure," Concrete International, September 1990.

Michols, K. A., and Vincent, J. F., "Investigation of and Measures Taken to Correct Design and Construction Flaws in a Newly Constructed, Reinforced Concrete Parking Garage; A Case History," American Society of Civil Engineers Eighth Structures Congress, Baltimore, Maryland, May 1990.

## **Presentations**

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"Case Studies in Concrete Evaluation and Repair in Nuclear Power Plants," for the course: Concrete Technology and Codes – Nuclear Regulatory Commission, sponsored by the Portland Cement Association, Skokie, IL, May 6-17, 2019.

"Durability of Precast Parking Structures," Structural Engineers Association of Illinois Forensic Forum, Chicago, IL, June 14, 2018.

"Containment Vessel Plate Evaluation," Exelon Structural Partners Meeting, Warrenville, IL, February 2, 2017.

"Concrete Bridge Deterioration, Evaluation, + Repair," for the course: CAE508, Bridge Inspection, Rehabilitation, Repair and Management, Illinois Institute of Technology, March 15, 2008.

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“Concrete Bridge Deterioration, Evaluation, and Repair,” for the course: CAE508, Bridge Inspection, Rehabilitation, Repair and Management, Illinois Institute of Technology, February 25, 2006.

“Investigation of Slab Deflection Problems in a High-Rise Condominium Structure,” American Concrete Institute Fall 2004 Convention, Session: Case Studies on Serviceability, October 25, 2004.

“Rehabilitation of Krannert Parking Structure,” paper presented at the Midwest Traffic Engineering and Parking Seminar, Peoria, IL, April 4, 2002.

“Upgrading Structural Members to Correct Strength and Performance Deficiencies,” paper presented at a workshop entitled, “Practical Applications of Strengthening and Retrofitting of Concrete Structures,” sponsored by the International Concrete Repair Institute and the National Research Council of Canada, Baltimore, Maryland, October 30, 1999.

“Repairs to Two Different Parking Structures Address the Need for Project-Specific Rehabilitation Solutions,” paper presented at a workshop entitled, “How to Make Today’s Repairs Durable for Tomorrow: Corrosion Protection in Concrete Repair,” sponsored by the International Concrete Repair Institute and the National Research Council of Canada, Houston, Texas, March 21, 1998.

“Inspection, Evaluation & Repair of Small Concrete Dams,” Instructor for Special Program for Federal Energy Regulatory Commission at Cement and Concrete Center, Portland Cement Association, 1993 and 1994.

“Renovation of Paulina Parking Structure,” paper presented at the ACI Fall Convention, Minneapolis, Minnesota, 1993.

“Nondestructive Testing of Concrete,” Instructor for Advanced Concrete Technology Courses at the Portland Cement Association, 1989-1992.

“Investigation of and Measures Taken to Correct Design and Construction Flaws in a Newly Constructed, Reinforced Concrete Parking Garage; A Case History,” paper presented at the ASCE Eighth Structures Congress, Baltimore, Maryland, 1990.

### **Prior Experience**

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CTLGroup, Skokie, Illinois

Principal Structural Engineer, 2000-present

Senior Structural Engineer, 1992-2000

Senior Evaluation Engineer, 1990-1992

Evaluation Engineer, 1988-1990

Associate Evaluation Engineer, 1987-1988

The University of Illinois at Chicago, Chicago, Illinois

Teaching Assistant for Statics and Dynamics Classes, 1984-1986

De Leuw Cather and Co., Chicago, Illinois

Associate Structural Engineer, 1981-1984