



Professional Profile

JOSHUA J. SUMMERS, SE, PE
PRINCIPAL STRUCTURAL ENGINEER
jsummers@btc.expert

Josh Summers is the Principal Structural Engineer at Building Technology Consultants, Inc.

REGISTRATIONS

- Licensed Structural Engineer (**SE**), Illinois
- Licensed Professional Engineer (**PE**), Illinois, Iowa, Kentucky, Tennessee, Pennsylvania, District of Columbia, Maryland, Virginia, Colorado, Wisconsin, Ohio, Massachusetts
- Registered Exterior Wall Consultant (**REWC**)



PROFESSIONAL EXPERIENCE

Josh Summers has been involved in the **forensic investigation**, design, analysis, repair, and **rehabilitation** of all types of **structures** and **building facades** for over 25 years. Prior to joining Building Technology Consultants, Inc. in 2004, he was employed by Thos. Rewerts & Co. in Chicago, Illinois from 2003 to 2004, C&I Engineering in Louisville, Kentucky from 1999 to 2003, Construction Technology Laboratories, Inc. in Skokie, Illinois from 1996 to 1999, and Commonwealth Edison in Downers Grove, Illinois from 1993 to 1996.

His professional experience includes:

- Investigation of building facades and **water leakage** issues;
- Structural analysis and design;
- **Condition assessment**;
- Nondestructive **testing**;
- **Failure** investigation;
- Repair and **retrofit design**;
- Project management;
- **Contract document** preparation;
- Construction **contract administration**; and
- **Expert testimony**

Josh Summers has managed over **500** structural and building facade projects. These projects have included **steel, concrete, masonry, timber**, and **aluminum structures**; and **concrete**, brick **masonry, terra cotta, limestone**, and **glass curtain wall facades**. The structures and facades have been associated with industrial, commercial, and high-rise residential buildings, parking garages, food processing plants, and recreational, power generation, oil refining, and material storage and handling facilities.

EDUCATION

Josh Summers earned his **Bachelor of Science** degree in Civil Engineering from the **University of Illinois** at Urbana-Champaign in 1991. He earned a **Master of Science** degree in Civil Engineering from the **University of Illinois** at Urbana-Champaign in 1993.

Since his graduation, he has attended numerous seminars and symposia related to structural repair and rehabilitation, failure analysis, and emerging structural material technologies.

PROFESSIONAL ACTIVITIES

- Member of American Society of Civil Engineers (**ASCE**)
 - Member of **Committee on Forensic Investigation** of the **Technical Council on Forensic Engineering (TCFE)**
- Member of Structural Engineers Association of Illinois (**SEAOI**)
- Member of American Concrete Institute (**ACI**)
- Member of International Concrete Repair Institute (**ICRI**)
- Member of American Institute of Steel Construction (**AISC**)
- Member of **International Institute of Building Enclosure Consultants (IIBEC** – formerly **RCI, Inc.**)
 - **Chairman of Education Committee**
 - **Major** contributor to development of **Exterior Masonry Wall** Course
- Member of Chicago Area Chapter of RCI, Inc.
- Member of American Welding Society (**AWS**)
- Member of American Architectural Manufacturers Association (**AAMA**)

PUBLICATIONS

- Kottra, C. and Summers J. “**EIFS Come and EIFS Go; A Case Study on EIFS Cladding Rehabilitation**” RCI Interface, January 2017.
- Summers, J. and Farahmandpour, K. “**Protecting the Building from Moisture: Air Barriers, Vapor Retarders and Weather-Resistive Barriers**” Sealant, Waterproofing & Restoration Institute, Applicator Magazine, Winter 2008, Volume 30, No. 4.
- Summers, J. and Farahmandpour, K. “**Understanding Air Barriers, Vapor Retarders and Weather-Resistive Barriers**” CSI Change Order Magazine, November/December 2007, Volume 54 No. 12.
- Summers, J. and Farahmandpour, K. “**Air Barriers, Vapor Retarders, and Weather-Resistive Barriers: Are They All the Same?**” Masonry Magazine, July 2007, Volume 46, No. 7.
- Summers, J. and Farahmandpour, K. “**Flushing Out Flashing Basics**” Masonry Magazine, April 2007, Volume 46.
- Summers, J. and Farahmandpour, K. “**Essential Elements of Durable Exterior Masonry Walls**” RCI Interface, May 2005.
- Summers, J. and Farahmandpour, K. “**Factors that Diminish the Sustainability of Masonry Walls**” Proceedings of The 2004 Building Envelope Technology Symposium.

AWARDS

- **Outstanding Educator Award**, RCI, Inc., 2017
- First place **Excellence in Report Writing Award** for Anchor Bank Exterior Facade Evaluation Report, Anchor Bank, Madison, Wisconsin; RCI Inc., 2013
- **Trinity Project Award**, Exterior Wall and Roof Repairs, The 1717 Rhode Island Avenue Building, Washington, DC; SWR Institute, 2012
- Third place **Large Roofing/Waterproofing/Exterior Wall Construction Project Document Award** for Exterior Wall and Roof Repairs, The 1717 Rhode Island Avenue Building, Washington, DC; RCI Inc., 2012
- **Award of Merit**, Buttress and Exterior Facade Repairs, Alice S. Millar Chapel, Northwestern University, Evanston, Illinois; International Concrete Repair Institute, 2011

REPRESENTATIVE PROJECTS

Fisher Corporate Office Building – Elgin, IL

Responsible for repair design, bidding assistance, and construction phase services associated with **exterior facade rehabilitation** at this 4-story office building constructed in 1992. The building was originally clad in **pre-fabricated** exterior insulation and finish system (EIFS) panels, and aluminum frame **strip windows**. Facade rehabilitation was required due to **water leakage** through the EIFS panels and strip windows. Over 6,400 linear feet of EIFS panels were removed and replaced with a **water-managed 3-coat stucco system**. Splices in the strip window system were also sealed.

1717 Rhode Island Avenue NW – Washington, DC

Responsible for repair design, bidding assistance, and construction phase services associated with **exterior wall and roof repairs** at this 10-story **Class A office building** in the historic **DuPont Circle** neighborhood of **Washington, DC**. Repairs to the **building envelope** were required due to extensive **water leakage** and **condensation** at the interior of the building. Repairs addressed **deficiencies** in through-wall **flashing** at shelf angles and lintels; poorly installed or missing **weather resistive barrier** throughout the entire facade; lack of proper integration of through-wall flashing with adjacent waterproofing membranes, **metal roofing**, and **skylights**; lack of thermal breaks in **window frames**; lack of window jamb flashing; cracked limestone units due to improper expansion joints and lack of adequate support; and damaged roof components. Work required removal of 100% of the masonry to perform the required repairs. Served as one of the trial experts during litigation on this project.

The Wrigley Building – Chicago, IL

Responsible for **evaluation** and **repair design** of the **architectural terra cotta facade** on the 21-story north tower and 30-story south tower of this building. Terra cotta cracking, spalling, and displacement was caused by corrosion of shelf angles and other embedded steel support hardware. With approximately **250,000 individual terra cotta pieces** cladding the two towers, data management for pieces requiring replacement and repair was critically important to the success of this project.

Responsible for **visually monitoring** cracking and displacement of the terra cotta facade during adjacent **construction activities** at the new Trump Tower. Work included a review of the foundation details and methods of construction, as well as installation of accelerometers in the basement and tower of the Wrigley Building to monitor vibrations.

Responsible for establishing a **cleaning program** for the architectural **terra cotta** facade. Testing of various cleaning chemicals was performed to find the most **effective** and **least harsh** method for cleaning the building.

The Renaissance Building – Chicago, IL

Responsible for **evaluation** and **repair design** of the **brick** and **limestone facade** on this **vintage** 19-story condominium building. Excessive **corrosion** of **shelf angles** caused extensive cracking and displacement of brick and limestone. Repairs to the building included **replacement** of shelf angles, removal and/or **repair** of deteriorated brick and limestone, and **repointing** of mortar joints.

1529 South State Street Building – Chicago, IL

Responsible for **evaluation** and **analysis** of several **construction defects** in the **brick facade** and **concrete balconies** of this newly constructed 20-story building. Extensive cracking in the brick facade and at balcony corners caused concern to Owner. Work was performed in support of a **dispute** between the Owner and Developer.

20 East Cedar Building – Chicago, IL

Responsible for **evaluation** and **repair design** of the **brick** and **architectural terra cotta facade** on this **vintage** 20-story condominium building. **Deferred maintenance** allowed **water** to **penetrate** the exterior wall system causing corrosion of terra cotta support steel and general deterioration of wall components. **Corrosion** of terra cotta **support steel** cracked a large number of the terra cotta units on the building. The repair project included removal and replacement of deteriorated terra cotta, replacement of corroded shelf angles, and repair of displaced parapet walls.

713 Wrightwood Porch Collapse – Chicago, IL

Responsible for preliminary **structural analysis** to assess possible **collapse** mechanisms of the 3-story **timber-framed porch**. Collapse of the porch occurred while it was occupied by a large number of people on all levels of the porch. Several key structural members and connections were evaluated for their ability to support code prescribed loads, as well as anticipated loading at time of collapse. Work performed in support of litigation.

Sears Logistics Warehouse – Romeoville, IL

Responsible for the **failure investigation** of the partial **roof collapse** at this 500,000 square foot warehouse facility. Roof framing consisted of open web steel joists and steel joist girders. Calculations indicated that the lack of sufficient drains in conjunction with flexible roof framing members led to the partial collapse of the roof through **excessive ponding**. Work performed in support of litigation.

One River Place Condominiums – Chicago, IL

Responsible for the **failure investigation** of **concrete patch repairs** on the exterior facade of this 8-story building originally constructed in 1929. As part of the renovation to convert the building occupancy to condominiums, deterioration of the exterior concrete elements were repaired. Review of the facade after transition of the building to the condominium association indicated **continued deterioration** of the original exterior concrete elements, failure of previous concrete repairs completed throughout the life of the building, as well as failure of concrete repairs completed during renovation. Served as the mediation expert for this project.

2120 Lincoln Park West Building – Chicago, IL

Responsible for **evaluation** and **analysis** of several **construction defects** in the brick facade of this newly constructed 20-story building. Discovery of construction defects occurred during the City of Chicago required **Critical Examination**. Work was performed in support of a **dispute** between the Owner and Developer.

Wildbrook Commercial Buildings – Prospect Heights, IL

Responsible for **investigating** the **collapse** of a **light-gauge framed roof** and **masonry wall** on one of two identical single-story **commercial buildings**. Collapse of wall and roof occurred during construction. **Cause of collapse** was attributed to removal of masonry **wall braces** prior to complete installation of roof sheathing. Provided demolition and **reconstruction procedures**. Performed subsequent **calculations** to **evaluate** the lateral load carrying capacity of the structures. Provided details to address **deficiencies** identified during this evaluation.

State Building No. 2 – Harrisburg, PA

Responsible for evaluation of **precast** concrete facade **panel cracking** and **spalling** on this 22-story building. Precast panels were typically 30 feet long by 12 feet tall, and were supported on the buildings structural steel framing. Spalling was found to be caused by **carbonation** of the concrete and subsequent corrosion of **shallow reinforcing steel**. **Cracking** was primarily attributed to ordinary **drying shrinkage**.

Historic Dubuque Buildings – Dubuque, IA

Responsible for the **repair design** of four **historic masonry buildings**. Severe distress was caused by **differential settlement** of the foundations caused by construction of an adjacent parking garage. Repair design included **compaction grouting** beneath each of the buildings to stabilize the soil. Structural repairs included reinforcing the **timber** and **concrete diaphragms**, and attaching those diaphragms to the **shear walls**.

The Latin School of Chicago – Chicago, IL

Responsible for determining the cause of **distress** to the **masonry walls** within the gymnasium of the school. The masonry walls were originally built in 1969 and performed without problem for 35 years until they started to bulge at several locations throughout the gym. The lower 10 feet of the 30 foot high walls consisted of **glazed clay tile**, restrained on all four sides. A review of the pattern of distress, the underlying conditions behind the clay tile, and the lack of climate control within the gym indicated that the distress was being caused by **restrained volume change** of the clay tile.

Frenchmen's Cove Condominium – Buffalo Grove, IL

Responsible for the evaluation of **severe interior finish distress** in this 4-story **wood framed** residential building. The objective of the investigation was to determine the cause for the extensive drywall cracking. Several previous investigations and subsequent repair programs were unsuccessful in identifying and eliminating the cause of the cracking. Investigation work included **visual assessments** of interior and exterior walls, **crack mapping**, interior elevation surveys, exploratory openings, **moisture testing**, and soil borings within several ground floor units. The extensive drywall cracking was found to be due to **differential settlement** of the foundation. This settlement was attributed to locally **excessive bearing pressures** and **soil desiccation** due to the presence of large trees near the building.