



Professional Profile

SEAN P. HAHN, CDT, EIT

ASSOCIATE ENGINEERING CONSULTANT

shahn@btc.expert

REGISTRATIONS

- Construction Document Technologist (**CDT**)
- Enrolled Professional Engineer Intern (**EIT**)

PROFESSIONAL ACTIVITIES

- Consultant Member of **International Institute of Building Enclosure Consultants (IIBEC – formerly RCI, Inc.)**
- Active Member of **IIBEC-Chicago** (formerly Chicago Area Chapter of RCI, Inc., **CAC-RCI**)



PROFESSIONAL EXPERIENCE

Sean Hahn has been involved with the evaluation, testing, and repair of building envelope components since the spring of 2017. Mr. Hahn has been involved in over 25 projects pertaining to the evaluation and repair of buildings.

Prior to joining Building Technology Consultants, Inc. in June 2017, Sean Hahn worked as a Restoration Engineering Intern with Walker Restoration Consultants in Chicago, Illinois in the spring of 2017. Sean worked as a Transmission Line Engineering Intern for Dashiell Corporation in Glen Ellyn, Illinois in the summer of 2016. Sean also worked as a Construction Engineering Intern for H.W. Lochner, Inc. in Chicago, IL from 2012 to 2015.

His professional experience includes:

- Assisting in the **forensic investigation** of **building facades, roofs, and parking garages**;
- Construction **contract administration**;
- Assisting in **structural design and analysis** for building components, roof structures, and parking structures;
- Investigation of **water leakage** issues;
- Construction **observations** and **documentation**;
- Assisting in performing **City of Chicago Ongoing Examinations** and **Architectural and Structural Iron Inspections**;
- Assisting in performing **condition assessments** for parking structures and **roofs**; and
- Destructive and nondestructive **testing**.

EDUCATION

Sean Hahn earned his Bachelor of Science degree in **Civil Engineering** from **Illinois Institute of Technology** at Chicago, Illinois in 2017. He also earned a Master of Engineering degree in **Structural Engineering** from **Illinois Institute of Technology** at Chicago, Illinois in 2017.

During his formal education, he attended numerous seminars and symposia related to civil engineering, structural engineering, and construction, including the 2014, 2015, and 2016 American Society of Civil Engineers National Convention. Sean Hahn has also **organized over 30 professional lectures** through Illinois Institute of Technology ASCE Student Chapter meetings.

Since his graduation from Illinois Institute of Technology, Sean Hahn has logged over 70 hours of professional development credits towards educational seminars and symposia related to building envelope design and restoration.

AWARDS

- Sidney A. **Guralnick Scholar** Award, Chicago, Illinois; Illinois Institute of Technology, 2016
- **Outstanding President Award**, Chicago, Illinois; Illinois Institute of Technology Greek Council, 2016
- **AISC/** Associated Steel Erectors of Chicago **Scholar**, Chicago, Illinois; AISC 2015

REPRESENTATIVE PROJECTS

1120 North Lake Shore Drive – Chicago, IL

Responsible for construction contract administration for a **fall arrest roof anchor tieback installation** project at this 18-story historic building. Constructed in 1925, this “L” shaped building features patinaed **standing seam copper roofs** and a narrow **low slope roof** supported by structural **steel** and **hollow clay tile**. An evaluation performed by BTC indicated that the existing roof structure would be **insufficient** in supporting a **5,000-pound** load from a fall event as required by OSHA for personal fall arrest equipment. As such, BTC's design incorporated **additional field-welded structural steel channels** along the low slope roof to support the installation of **18 roof tieback anchors**. An additional **6 tieback anchors** and **structural steel stanchions** with insulated enclosures were installed in the **concrete** floor slab within the east attic. The stanchions penetrated the copper gable roof of the attic, providing **facade access** along the building's east and west elevations.

401 North Michigan (formerly the Equitable Building) – Chicago, IL

Responsible for evaluation and construction contract administration services for a **fall arrest roof anchor tieback installation** and **davit rail certification** project at this 35-story office tower located along **Chicago's riverfront**. Constructed in 1965, the building's roof is constructed of a lightweight topping slab and a **4-1/2-inch thick reinforced concrete structural slab** supported by steel beams. This relatively thin structural slab necessitated that the roof anchors be secured with **through-bolts and steel plates** on the underside of the structural slab. However, the structural slab covers an open **2-story mechanical space** and **tenant office space**. This posed numerous **challenges** including constructing **scaffolding** around large mechanical equipment, working around **asbestos fireproofing**, and accommodating tenant needs regarding working hours and construction noise. **Non-destructive magnetic field detection technology** was used to identify anchor installation locations **simultaneously** from the topside and underside of the slab. This allowed the anchors to be installed around mechanical equipment and rooftop fixtures. BTC performed **load testing** and certified the anchors for use.

An original **steel davit rail** system is located along the roof perimeter and is still used for facade access. BTC **visually reviewed** the davit rail system and verified its structural integrity by coordinating **load testing** performed at various points along the building perimeter.

Weber Leisure Center – Skokie, IL

Responsible for construction contract administration services for a **65,000 square foot roof replacement** project at this two-story steel frame **ice arena and recreation center** to address water leakage issues. The original portion of the building that houses the ice arena was constructed in 1966, and **subsequent additions** were constructed around the ice arena in 1996 and 1998. **Water infiltration** issues had been primarily reported along the **interface** between the 1996 addition and the original building. BTC previously performed a comprehensive evaluation of these and other water infiltration issues, and attributed them to inadequate **roof base flashing**, deficiencies in the **EIFS cladding**, open joints in sheet metal transitions, failed sheet metal joints at skylights, and deficient window perimeter sealant. The existing roof system consisted of a ballasted EPDM membrane and foil-faced insulation over **cementitious wood fiber deck** panels and **steel deck**. The existing roof deck was reviewed during roof tear-off, and new **polyisocyanurate** insulation, **gypsum cover board**, and flexible **PVC roof membrane** were installed throughout the roof.

SoNo Condominiums – Chicago, IL

Responsible for design and construction phase services for **window and balcony repairs** at this **28-story** residential building constructed in 2008. The **concrete frame** structure is clad with an **aluminum window wall** system, exposed **steel beams**, and projecting **concrete balconies**. BTC's prior investigation revealed that **deficiencies** in window frame **extrusion splice joints** and mitered corners of **operable window sashes** attributed to water leakage. The investigation also revealed that **cracks** through the concrete balconies allowed moisture to infiltrate into the ceilings of the unit below. The repair design consisted of silicone sealant repairs at window extrusion splice joints, sealant at

mitered corners of the operable window sashes, and traffic bearing membrane repairs at concrete balconies.

Responsible for the **evaluation** of reported **water leakage** through the walls and ceiling of an **elevator equipment room** within the penthouse. The penthouse is constructed of **cast-in-place** concrete core, with projecting **precast** concrete walls. Several investigative techniques were used to evaluate the source of water leakage including high voltage **electronic leak detection**, **moisture survey**, **hydrostatic** water testing, and **spray rack** water testing in general accordance with ASTM E1105. BTC's investigation revealed that cracks within the cast-in-place concrete walls, including the parapet wall, allowed moisture to penetrate into the roof assembly.

1550 North Lake Shore Drive – Chicago, Illinois

Responsible for assisting in construction phase services associated with **lobby reconfiguration** for this **33-story** concrete frame and masonry-clad building. Significant deterioration of **exterior column marble cladding**, and a desire to improve lobby size and **accessibility**. The work included complete demolition of existing exterior column cladding, exterior terrazzo walkways, aluminum storefront, and concrete driveway. Interior partitions and finishes were also demolished to accommodate a new management office, reception desk, parcel room, mail area, and meeting room. However, a center aisle of existing marble flooring remained, and was refurbished in place while new tile flooring was added throughout the remainder of the lobby.

Responsible for performing a **facade evaluation**, as well as coordinating **suspended scaffolding access** and temporary sheet metal repairs to address water leakage. The evaluation identified significant weathering and cracking of brick masonry mortar joints, improper configurations of retrofit air conditioning sleeves, and deteriorating window perimeter sealant.

Piano Factory Townhomes– Chicago, Illinois

Responsible for assisting in evaluation and construction contract administration services associated with **masonry facade repairs**. Due to identified **water leakage**, adjacent **parapet walls** were partially deconstructed and new waterproofing membrane was installed on concrete masonry unit (CMU) substrate. Following parapet wall reconstruction, areas adjacent to parapet wall were **repointed**. After these repairs had been completed, water infiltration was no longer reported in the units identified with previous leaks.

100 East Huron Condominiums – Chicago, Illinois

Responsible for assisting in design, bidding, and construction phase services associated with **interim roof repairs**. The repair work was performed over three separate roofs throughout the building. Repair work included the identification and replacement of delaminated **traffic bearing membrane**, spalled concrete, and deteriorated sealant.

Malibu East Condominiums – Chicago, Illinois

Responsible for assisting in **investigation** of tower **column cracking** and creating a **digital 3D model** with Google SketchUp. The investigation revealed that an expansion joint was constructed incorrectly, and **thermal expansion** between the tower column and the

adjacent parking garage attributed to the cracking. The 3D model served to help visualize the complex column and concrete waffle slab connection including the existing condition, the proposed demolition, and the proposed repair design which included a new corbel and expansion joint.

Gibson's/ Hugo's Frog Bar & Fish House – Chicago, Illinois

Responsible for assisting in **investigation** of **water related deterioration** and documenting findings. The repair contractor made **exploratory openings** in the parking garage above the restaurant to reveal a **bituminous waterproofing** layer and trapped moisture which was ultimately attributed to an inadequate drain pipe. Further investigation was performed in the restaurant ceiling to reveal water related deterioration and corrosion of steel members.

Cermak Road Elevated CTA Green Line Station – Chicago, Illinois

Responsible for assisting in calculating estimates for **change orders**, maintaining **as-built drawings**, assisting in responding to **Requests for Information**, and **documenting daily activity** of the contractor during construction. The project involved the construction of three separate buildings for entering the station and a 260-foot long structural **steel tube** to enclose the elevated station platform.