



Professional Profile

SEAN P. HAHN, PE (IL), REWO, CDT
SENIOR ENGINEER
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REGISTRATIONS

- Licensed Professional Engineer (**PE**) in Illinois
- Registered Exterior Wall Observer (**REWO**)
- Construction Document Technologist (**CDT**)
- **FAA** Certified Remote Pilot for small Unmanned Aircraft Systems (**sUAS**)

PROFESSIONAL ACTIVITIES

- Consultant Member of **International Institute of Building Enclosure Consultants (IIBEC)**
- Director and active member of local **IIBEC-Chicago** chapter

PROFESSIONAL EXPERIENCE

Sean Hahn has been involved with the evaluation, testing, and repair of building envelope components and systems since 2017. Mr. Hahn has been involved in over 50 projects pertaining to the evaluation and repair of buildings, including the evaluation of water leakage issues, building deterioration, and construction deficiencies in numerous buildings and parking structures in the Chicago area and across the Midwest.

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, Illinois from 2012 to 2015.

His professional experience includes:

- **Facade** and **roof** evaluations;
- Building and parking structure **condition assessments**;
- **Forensic investigation of water leakage** and building performance issues;
- Destructive and nondestructive **testing**;
- **Structural analysis**;
- Project **management**;
- Repair **design** of building enclosure systems including **roofs, exterior walls, windows/doors, waterproofing**, etc.; and
- Construction **observations** and **documentation**.

EDUCATION

Sean Hahn earned Master and Bachelor Degrees in Structural Engineering and Civil Engineering, respectively, from Illinois Institute of Technology 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 numerous 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

1448 North Lake Shore Drive, Facade Repairs – Chicago, IL

Responsible for **construction contract administration** services for implementing long-term masonry facade repairs at this 19-story, 53-unit cooperative constructed in the **mid-1920s**. The building structure consists of structural steel framing encased in concrete for fire protection. **Corrosion** of structural steel components led to significant deterioration of **brick and limestone facade** components. BTC designed repairs with the intent to address underlying causes of deterioration, not just the symptoms. Repairs included removing cladding and concrete encasement to repair deteriorated structural steel columns. Repairs also included **replacing shelf angles and lintels**, and miscellaneous masonry and sealant repairs.

Bitter Pops, Curtain Wall Evaluation and Repairs – Chicago, IL

Responsible for evaluation, design, bidding assistance, and construction contract administration services for resolving **persistent curtain wall leaks** in this neighborhood-favorite taproom, coffee bar, kitchen, and craft retail shop. **Investigative water testing** indicated that the **internal zone dams** of the window system were deficient, causing the curtain wall system to become easily **overwhelmed from typical rainstorms**. Repairs included the removal and reinstallation of insulated glazing units (IGUs) along the north elevation, as needed to properly seal the **internal zone dams** of the curtain wall system.

Stroger Hospital, Curtain Wall Evaluation – Chicago, IL

Responsible for performing a field investigation and **structural analysis** associated with evaluating the adequacy of the existing **aluminum curtain wall** to receive **bullet-resistant glazing**, which is nearly **60% heavier** than typical insulated glazing units. Critical information was obtained by reviewing the existing detailed curtainwall **shop drawings**, including member profiles and material properties. Pertinent information was verified at representative locations by **exploratory openings** and measuring thickness of existing framing members using an **ultrasonic thickness gauge**. Ultimately, calculations indicated the existing system was **structurally adequate** to support the heavier bullet-resistant glass.

Illinois Institute of Technology, Building Enclosure Consulting – Chicago, IL

Responsible for **design** and **construction** contract administration services for **structural concrete repairs** and building enclosure reconstruction for Kacek (Bailey) Hall, Cunningham Hall, and Carman Hall dormitories. The **3 dormitories** are similar in construction, and were designed by **Mies van der Rohe** in the 1950s. BTC worked alongside **Dirk Denison Architects** and **Gilbane** between 2019 and 2021 to design and implement significant structural repairs to the **reinforced concrete frame**, and to design new **masonry** knee walls, **aluminum window systems**, terrace **waterproofing**, and low-slope **roofing** systems.

1120 North Lake Shore Drive, Roof Anchorage Consulting – 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. BTC has provided anchorage recertification services and miscellaneous consulting services for the corporation since 2018.

401 North Michigan, Roof Anchorage Consulting – 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, Roof Replacement – 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, Window Wall Leakage Evaluation and Repairs – Chicago, IL

Responsible for evaluation, design, and construction phase services for various **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 investigations revealed that **deficiencies** in window frame **extrusion splice joints** and mitered corners of **operable window sashes** attributed to water leakage. Our investigations 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, Lobby Reconfiguration and Repairs – 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.

1550 North Lake Shore Drive, Facade Repairs – Chicago, Illinois

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 mortar joints, spalled bricks, improper configurations of retrofit air conditioning sleeves, and deteriorating window perimeter sealant. Subsequent testing, design, and mock-up related services led to the development of a vented sheet metal enclosure to significantly reduce the potential for wind-driven rain to infiltrate through air conditioning wall sleeves. Masonry repairs and vented enclosure installation were performed in a multi-year phased approach throughout the building.

Piano Factory Townhomes, Facade Repairs – Chicago, Illinois

Responsible for assisting in evaluation, design, bidding assistance, 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, Roof Repairs – 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, Column Cracking Evaluation – 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.