CAST CONNEX®

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Evolution of Structures

Steel Castings in the Eye of the Design Team

NOVEMBER 7, 13, & 20, 2024

Featuring Speakers from Project Collaborators:

ELEMA MdeAS Severud Associates CONSULTING ENGINEERS P.C.

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ABOUT THE EVENT

This three-part webinar series showcases the diversity of industry professionals leveraging structural steel castings to achieve groundbreaking results.

Hear from industry experts who choose CAST CONNEX solutions to tackle ambitious architectural and structural projects worldwide. At CAST CONNEX, we believe that collaboration is key to innovation. This series will explore not only the projects but the diverse teams behind them—showcasing how professionals from a variety of disciplines come together to redefine what's possible in architecture and engineering.

Whether you're an experienced engineer or architect or new to the industry, you'll leave this series with actionable insights and a greater appreciation for how steel castings are shaping the future of construction.

These are AIA-accredited courses. You can earn 1 AIA LU/HSW per completed session.

AIA Provider No: 404108320

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AGENDA

November 7 . Session 1

Longueuil Downtown TOD: An Innovative Urban Centre

1 PM (EST) | 6 PM (GST)

ELEMA

November 13 . Session 2

Sphere at the Venetian: A Structural Genome

1 PM (EST) | 6 PM (GST)

Severud Associates
CONSULTING ENGINEERS P.C.

November 20 . Session 3

PENN 2: Creating a Future Destination

1 PM (EST) | 6 PM (GST)

MdeAS

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Session 1

Longueuil Downtown TOD: An Innovative Urban Centre

ELEMA

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SESSION 1

Evolution of Structures

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Longueuil Downtown TOD: An Innovative Urban Centre

This presentation will explore the design and engineering of the Longueuil Downtown Lot 2 project, which is part of a multi-million-dollar real estate development for the city's transit-oriented development (TOD) initiative – an upcoming urban centre in the Greater Montreal region. This project is made up of two 33-storey residential towers, each located on either side of the Longueuil–Université-de-Sherbrooke metro terminal tunnel. Its podium feature allows the towers above to overhang the infrastructures of the tunnels and platforms of the metro station while providing access for STM (Société de transport de Montréal) transit users to the station below. To provide commercial space and a food court in the podium feature, the design includes impressive "tree-shaped" steel structures which span the tunnels and platforms of the metro station below.

In this presentation, learn about the design and engineering of this project, along with the challenges of building over an existing transit line. Learn how the design team incorporated flexible design practices to account for existing yet imprecise infrastructure. Explore the architectural programming and how the architecturally exposed structural steel (AESS) trees, complete with custom-designed cast steel nodes, enabled large free-spans and architecture for commercial space and access for transit users to the metro tunnels and platform.

November 7, 2024

1 PM (EST) | 6 PM (GST)

SESSION 1

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Longueuil Downtown TOD: An Innovative Urban Centre

Learning Objectives:

1. Understand how the design and construction of the towers and podiums met the architectural and structural goals set by the project stakeholders: the city, the metro, and the developer.
2. Explore the flexible design methods the engineer of record used to adapt for the on-site imprecise or unknown geometry of existing infrastructure.
3. Quantify the effects of laying new foundations from existing metro installations from complex geotechnical and geomechanical studies.
4. Investigate how the architecturally exposed structural steel (AESS) trees with cast steel nodes support free-space architecture in the podium, enabling long spans for the food court and commercial area.

November 7, 2024

1 PM (EST) | 6 PM (GST)

SESSION 1

Evolution of Structures

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SPEAKER

ELEMA

FÉLIX BEDARD

Vice Président and Co-Founder | ELEMA experts-conseils

At Elema, I lead the engineering team for the design of multi-storey buildings in steel, concrete and wood frames, the seismic rehabilitation of existing structures and the dynamic analysis of structures. I also offer Elema's clients my expertise in structural glass, prestressed concrete and the design of reinforced concrete diaphragm walls.

I completed a Bachelor's degree in civil engineering at the École Polytechnique de Montréal in 2009 and a Master's degree in earthquake engineering in 2011. My research topic focused on the seismic behavior of reinforced concrete partition walls designed according to the 1975-1977

National Building Code. Over the course of my career, I have developed enviable expertise in seismic design and structural dynamic analysis of higher mode effects, particularly during the completion of several hospital projects such as the new CHUM and the Maisonneuve-Rosemont hospital, as well as during several high-rise commercial projects such as the TOM tower and the Quadrilatère de la Montagne.

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Session 2

Sphere at the Venetian: A Structural Genome

Severud Associates
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SESSION 2

Evolution of Structures

Steel Castings in the Eye of the Design Team

Sphere at the Venetian: A Structural Genome

Sphere at the Venetian is an 18,000-seat state-of-the-art multimedia venue in Las Vegas containing the world's highest resolution LED screen (engulfing the entire seating bowl) and Audio Beam Forming Technology, both of which deliver a uniquely immersive experience for showgoers. Additionally, the exosphere is fully clad in about 60 miles of LED puck strands, which fully illuminates the 600,000 square-feet exterior envelope and allows for advertising, as well as the enhancement of any outdoor experience. The 515-foot diameter semi-spherical venue structure is entirely enclosed within the exosphere, which itself is the largest spherical structure on Earth, rising some 366-feet from its foundations.

The presentation will focus on the design and construction of the venue’s main superstructure, dome roof, suspended grillage system, and the exosphere, with particular emphasis on how the use of parametric design, structural steel, and cast-in-place concrete enabled the construction of this venue and its unique aspects

November 13, 2024

1 PM (EST) | 6 PM (GST)

SESSION 2

Evolution of Structures
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Sphere at the Venetian: A Structural Genome

Learning Objectives:

1. Explain how parametric design was beneficial during the design phase of the Sphere.
2. List some of the unique challenges of designing a spherical structure and why structural steel and CIP concrete made the construction possible.
3. Understand the design criteria and requirements to accommodate the specialty curved LED screen and audio equipment.
4. Explain how working collaboratively throughout the project's design and construction phases was paramount to its successful completion.

November 13, 2024

1 PM (EST) | 6 PM (GST)

SESSION 2

Evolution of Structures
Steel Castings in the Eye of the Design Team

SPEAKER

Severud Associates
CONSULTING ENGINEERS P.C.

STEPHEN REICHWEIN, PE, SE

Associate Principal | Severud Associates

Steve is licensed as a structural engineer in Nevada and as a professional engineer in New York and New Jersey. He was certified by SECB until the program's sunset in 2022. He earned a Bachelor of Architectural Engineering and a Master of Architectural Engineering, both from Pennsylvania State University.

Steve's background in architectural engineering along with his design experience has enabled him to engineer his clients' visions effectively, regardless of their complexity. Steve is a leader of the firm's parametric and algorithmic design team, a group whose analyses inform critical engineering decisions for major projects. These include the immersive entertainment venue Sphere in Las Vegas, Nevada, and 20 Times Square and Madison Square Garden V–The Transformation, both in New York, to which Steve made significant contributions.

He is also co-author of "Steel Sphere," which appeared in Modern Steel Construction in September 2023.

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Evolution of Structures

Steel Castings in the Eye of the Design Team

Session 3

PENN 2: Creating a Future Destination

MdeAS

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SESSION 3

Evolution of Structures

Steel Castings in the Eye of the Design Team

PENN 2: Creating a Future Destination

This presentation will describe the design and engineering process behind the renovation and expansion of PENN 2, a 1960s office building positioned directly above the largest public transportation hub in the Western hemisphere: Penn Station. The addition to the building, dubbed The Bustle, is perched nearly 50 feet above the ground and supported by sloping columns that rest upon the original station's foundations. The top and bottom cast steel pin connectors of these columns are celebrated as a beautiful architectural element of the project, connecting to custom formed gusset plates that elegantly engage with the plaza below and the LED ceiling above. The double height, free-spanning floors of The Bustle are also supported by chevron bracing HSS columns with cast steel pin connectors. The column-free space within is unlike anything else in New York City, spanning430 feet long by 75-feet wide by 25-feet high.

This presentation will also discuss major design elements such as the new triple height glass fin lobby and the over-cladding of the existing building's façade with a new high-performance curtain wall. Ultimately, the strategic repositioning of the building has created a new building without demolishing the existing structure.

November 20, 2024

1 PM (EST) | 6 PM (GST)

SESSION 3

Evolution of Structures
Steel Castings in the Eye of the Design Team

PENN 2: Creating a Future Destination

Learning Objectives:

1. Understand strategies for structural modifications of existing buildings
2. Examine repositioning as a sustainable strategy for preserving embodied carbon and improving energy performance of buildings
3. Identify design elements that create successful retail, workspace, and public space projects.
4. Explore applications of standardized cast steel pin connectors

November 20, 2024

1 PM (EST) | 6 PM (GST)

SESSION 3

Evolution of Structures

Steel Castings in the Eye of the Design Team

SPEAKER

MdeAS

MIKE ZABORSKI

Principal | MdeAS Architects

Mike, a principal at MdeAS, is both a conceptual and pragmatic thinker who consistently and creatively brings design concepts into reality. Whether overseeing projects or mentoring the architecture staff, he promotes and evolves MdeAS' commitment to sustainability and craft in architecture and planning.

Since joining the firm in 1998, he has worked on a diverse range of projects, including master plans, commercial buildings, retail, residential, mixed-use developments, curtain wall re-clad and over-clad, and lobby expansions and renovations.

Most recently, Mike completed the renovation of the Alumni Auditorium and new Schaefer Awards Gallery at Columbia University Irving Medical Center, honored as Best of Year Design Finalist by Interior Design. For the past decade, Mike has worked closely on the 3.5 million SF mixed-use master plan in Long Island City comprising of Gotham Center Building B2 (Department of Health) completed in 2011, and the AIA Long Island winning project, The JACX, completed in 2020.

SESSION 3

Evolution of Structures
Steel Castings in the Eye of the Design Team

SPEAKER

Severud Associates
CONSULTING ENGINEERS P.C.

MATTHEW PEITZ, PE, SE

Principal | Severud Associates

Matt is licensed as a structural engineer in Nevada and as a professional engineer in New York and three other states. He was certified by the Structural Engineering Certification Board until the program's sunset in 2022. He earned a Bachelor of Science in civil engineering from Pennsylvania State University and a Master of Engineering in civil engineering from Rutgers University.

Matt uses his advanced education and more than 15 years of experience to engineer and manage large-scale and complex structures such as transportation facilities and medical research laboratories. His portfolio of challenging projects includes New York University's mixed-use John A. Paulson Center, NYU Langone Health's Science Building, and the Penn 2 office building redevelopment, all in New York City. Among Matt's other significant projects are the high-rise One Vanderbilt Avenue, expansion of the Hood Museum of Art at Dartmouth College in Hanover, New Hampshire, and the Reva and David Logan Center for the Arts at the University of Chicago, Illinois.

Matt contributes to the structural engineering profession through his work with the Structural Engineers Association of New York, where he is a past director.

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