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# When Steel meets Height

Adventuring into “ASCENT”

**2024-2025 CISC Student Design Competition**

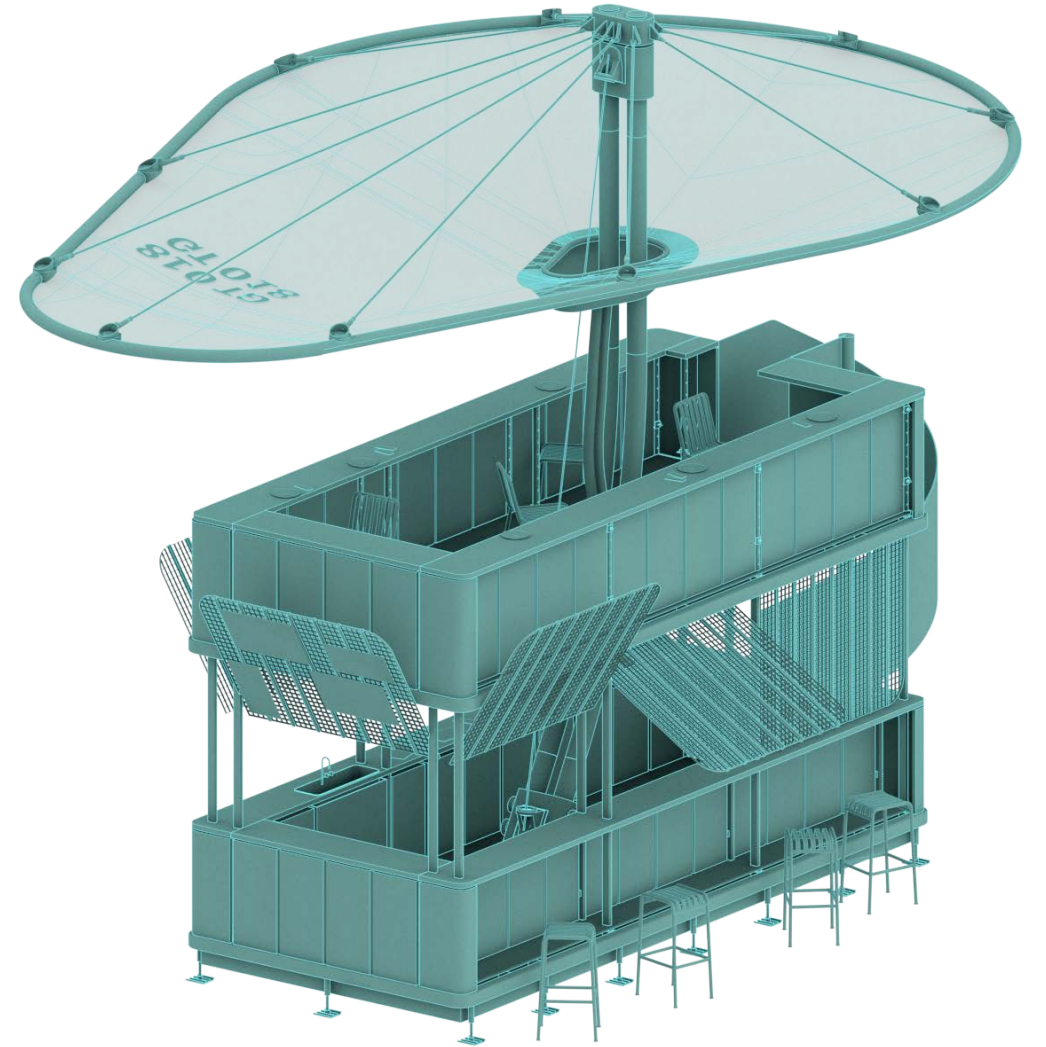
Professor Terri Meyer Boake

School of Architecture, University of Waterloo


CISC Education and Research Committee

# Topics to be covered:

- About the current competition
- Using Architecturally Exposed Structural Steel in your design projects
- Unpacking previous competition winners
- What does it mean to build tall with steel?



# 2024-2025 Competition – “ASCENT”



**architecturally exposed**

**ASCENT**

**Ascent: Competition Brief**

Students in Canadian Schools of Architecture and Engineering are asked to design an observation platform that is reached via a vertically motivated structural typology. A significant portion of the structure should be free standing, and so lateral stability needs to be considered. The primary access to the platform may be via stairs, but a lift is to be included to maintain barrier free accessibility.

The primary structure must be fabricated from Architecturally Exposed Structural Steel (AESS), with specific reference to the Categories and Characteristics as described in the CISC AESS Guide. Detailed references are available through the competition website.

The site is to be located in Canada to the specific discretion of the student team. The observation structure should have a significant relationship to and engagement with the view.

**1st Prize \$8,000 (faculty sponsor \$2,000)**  
**2nd Prize \$4,000 (faculty sponsor \$1,000)**  
**3rd Prize \$2,000 (faculty sponsor \$500)**

**SUBMISSION DEADLINE: MAY 16, 2025**  
 Register online to receive Q&A and latest updates

Information: <https://www.cisc-icca.ca/architectural-student-design-competition/>  
 Contact and questions: [education@cisc-icca.ca](mailto:education@cisc-icca.ca)

cisc icca **The 24th Annual CISC Architectural Student Design Competition 2024-2025**

# Eligibility and Jury



## Eligibility

The competition is open to all full-time students (individually or in teams of a maximum of 3) registered in a Canadian school that offers an accredited or non-accredited program of architecture or architecture / engineering of at least 3 years.

The competition may be conducted as part of a design studio project under the direction of the faculty sponsor or as an independent extracurricular self-directed project.

Winning entries and their faculty sponsor will receive stipulated prizes. Prizes will be divided evenly between group members.

Winning entries will be published on the CISC website and announced in our Advantage Steel publication. The projects will be displayed at the CISC Annual Conference.

## Competition Sponsors



## Jury

The jury is composed of Architects, Engineers and Fabricators who have been past CISC winners for their outstanding achievements in steel construction or whose work.

### Jury President

Sylvie Boulanger, ing./P.Eng., Ph.D.  
Senior Engineer  
MTB Consulting, Montreal

### Jury Members

Andrew Voth, P.Eng., Ph.D.  
Associate  
Read Jones Christoffersen Ltd., Toronto

Nicolas Demers-Stoddart, Lead Designer, Partner  
Architect, OAA, OAA, MRAIC, RIBA, B.Eng.  
Provencher\_Roy, Montreal

Andy Metten, P.Eng., Struct.Eng.  
Partner & Structural Engineer  
Bush, Bohiman & Partners LLP, Vancouver

Loraine Dearstynne Fowlow, Associate Professor,  
School of Architecture, Planning and Landscape  
University of Calgary

Owen Rose, Principal Architect, PA LEED  
rose architecture, Montreal

Marc Gasparetto, Project Director  
Cherubini Group, Dartmouth

The jury includes people from all parts of the industry: architects, engineers, fabricators and educators

*They know steel.*

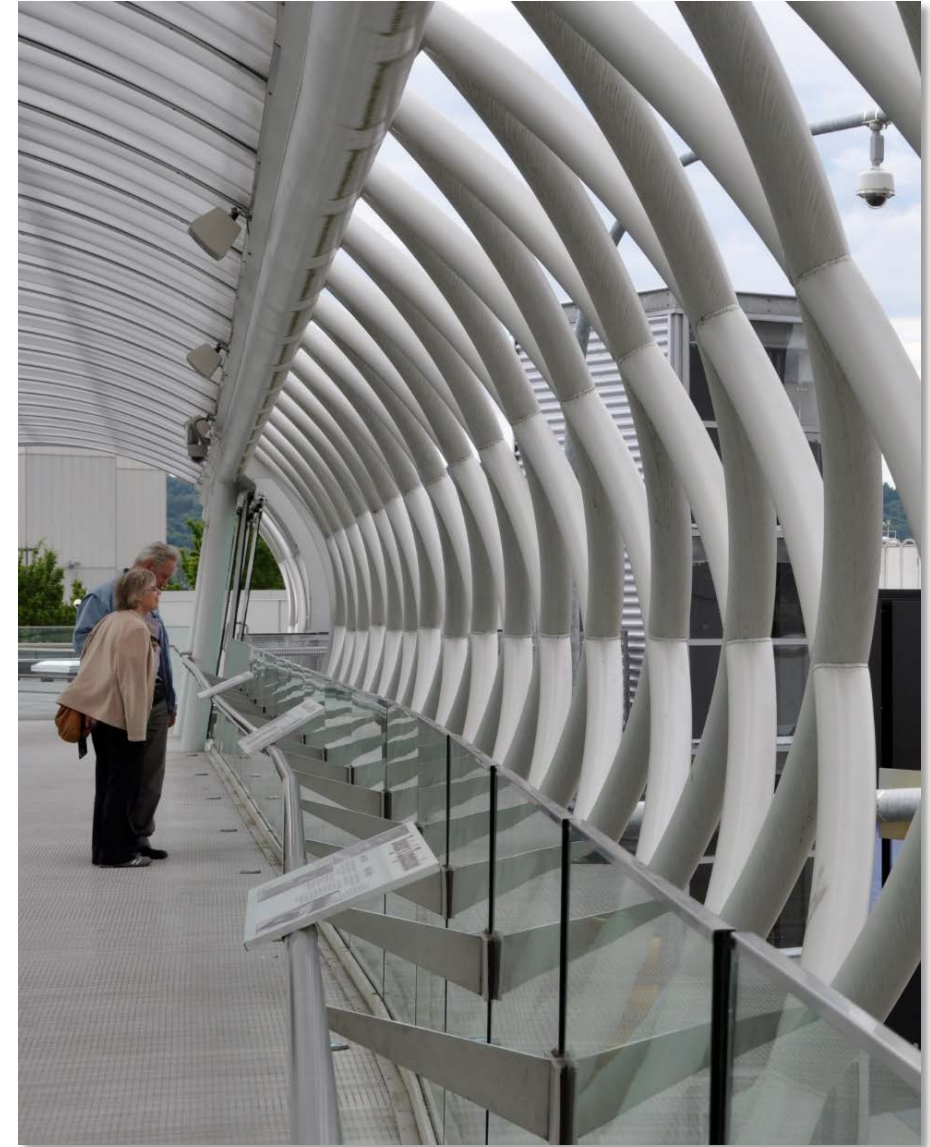
*And they all have particular aspects of the competition that they are keenly interested to see.*

You need to show them that you know steel too, and that you are adept at designing and pushing the limits with it, and maybe even love it.

BE SURE NOT TO INCLUDE YOUR NAMES ON THE PANELS OR YOU WILL BE DISQUALIFIED

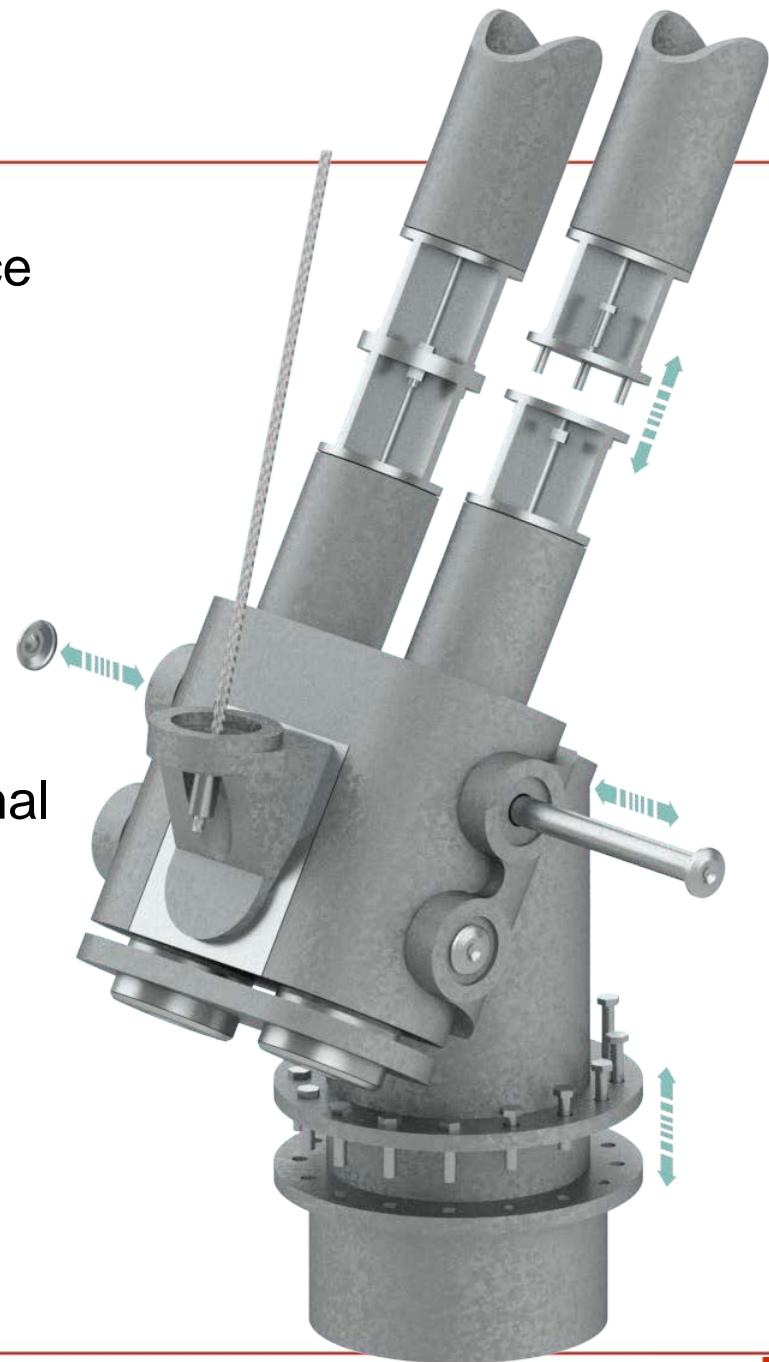
# ARCHITECTURALLY EXPOSED STRUCTURAL STEEL

- This is a steel competition and the steel will predominantly be expected to be featured, therefore exposed
- Please review the presentations on the competition website for a full explanation of the CISC AESS Specification method so that you can note it on your presentation boards and it can influence your designs
- The jury will want to see clear connection detailing (bolts or welds, member types, etc.)
- The Architectural jurors may be more interested in the experience and the aesthetics
- The fabricators/erectors will be looking at the credibility of your details and how it will go together
- The engineer may be looking at stability and structural integrity



# Creating a Winning set of Boards

- All of the following projects received an Award of Excellence in the past 10 years
- Range of entrants from Year one in an undergraduate architecture program through to Master of Architecture students
- Projects undertaken independent of a design studio
- These were final projects for a half credit technical course
- The work was largely done independently and without formal critiques from the faculty advisors (varies by institution and advisor)
- They all use a complete range of drawings and include credible details



# Fire Bird

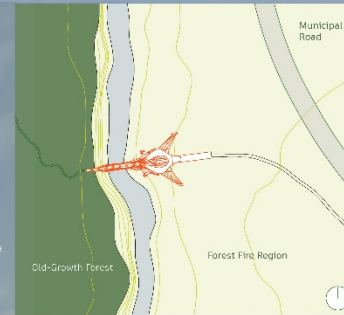
A bright orange tongue of flame reaches up towards the ancient cedars of Prince George, BC. A constant reminder of the ever-present threat of forest fires brought about through climate change.

The Fire Bird takes the human footprint and renders it into steel, putting the human footprint into an unignorable perspective. The pointed shape of the bridge manipulates the perception of the waters by creating converging lines to emphasize the vastness of old growth trees in comparison with the absolute devastation of uncontrolled wildfire.

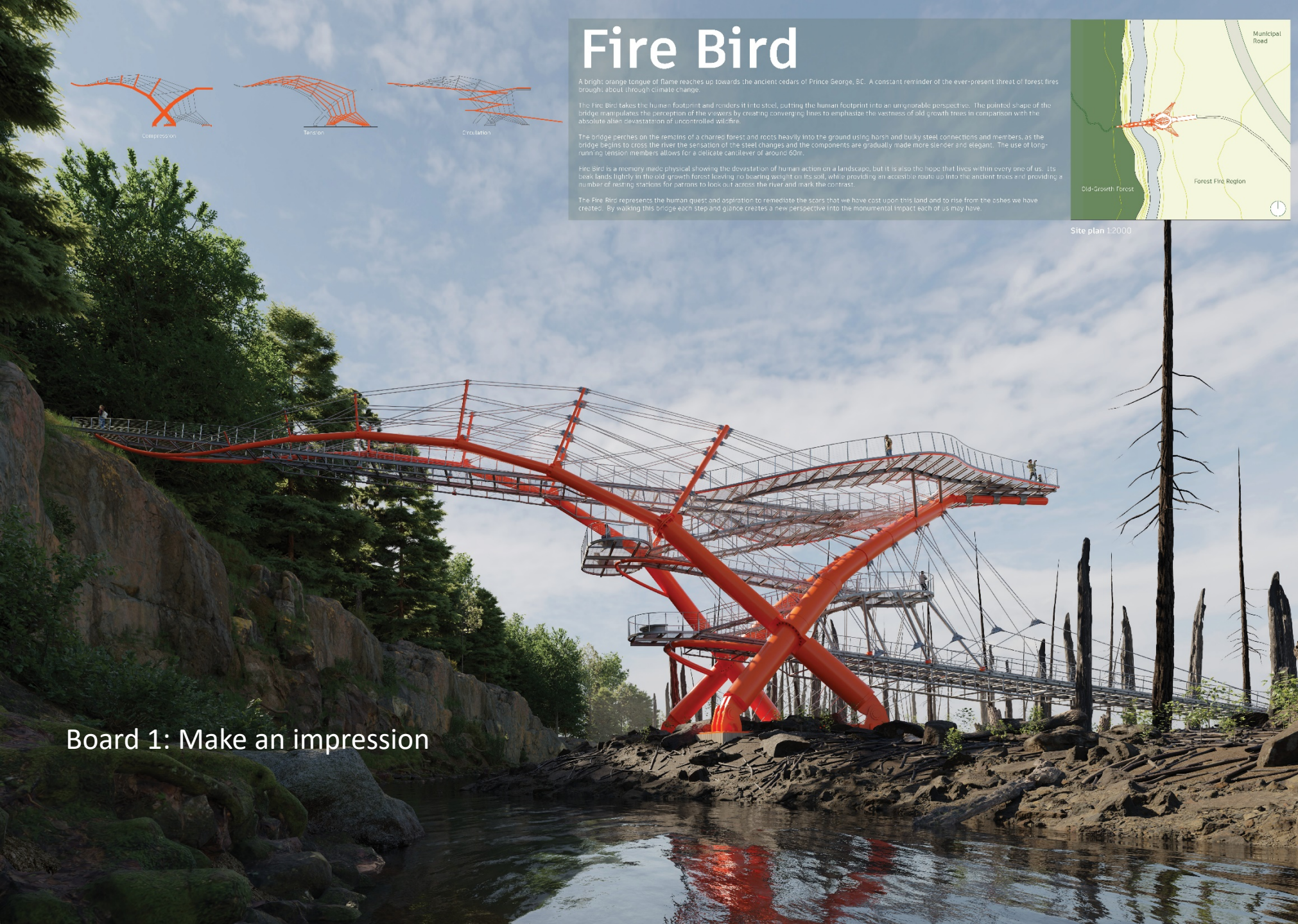
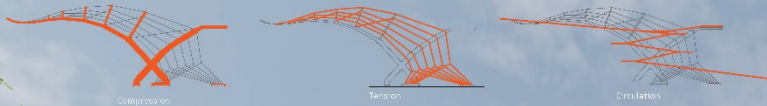
The bridge perches on the remains of a charred forest and roots heavily into the ground using harsh and bulky steel connections and members, as the bridge begins to cross the river the sensation of the steel changes and the components are gradually made more slender and elegant. The use of long-running tension members allows for a delicate cantilever of around 60m.

Fire Bird is a memory made physical showing the devastation of human action on a landscape, but it is also the hope that lives within every one of us. Its beak lands lightly in the old growth forest leaving no bearing weight on its soil, which provides an accessible route up into the ancient trees and providing a number of resting stations for patrons to look out across the river and mark the contrast.

The Fire Bird represents the human quest and aspiration to remediate the scars that we have cast upon this land and to rise from the ashes we have created. By walking this bridge each step and glance creates a new perspective into the monumental impact each of us may have.



Site plan 1:2000



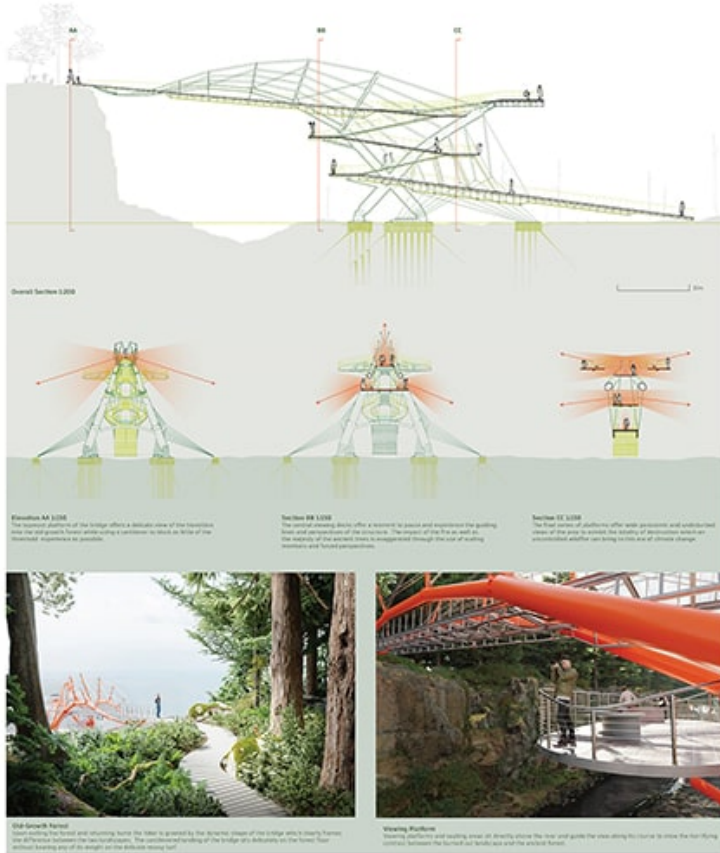
Board 1: Make an impression

The review of the boards happens in an online environment, so be sure that everything you include is very clear and able to be read on a screen.

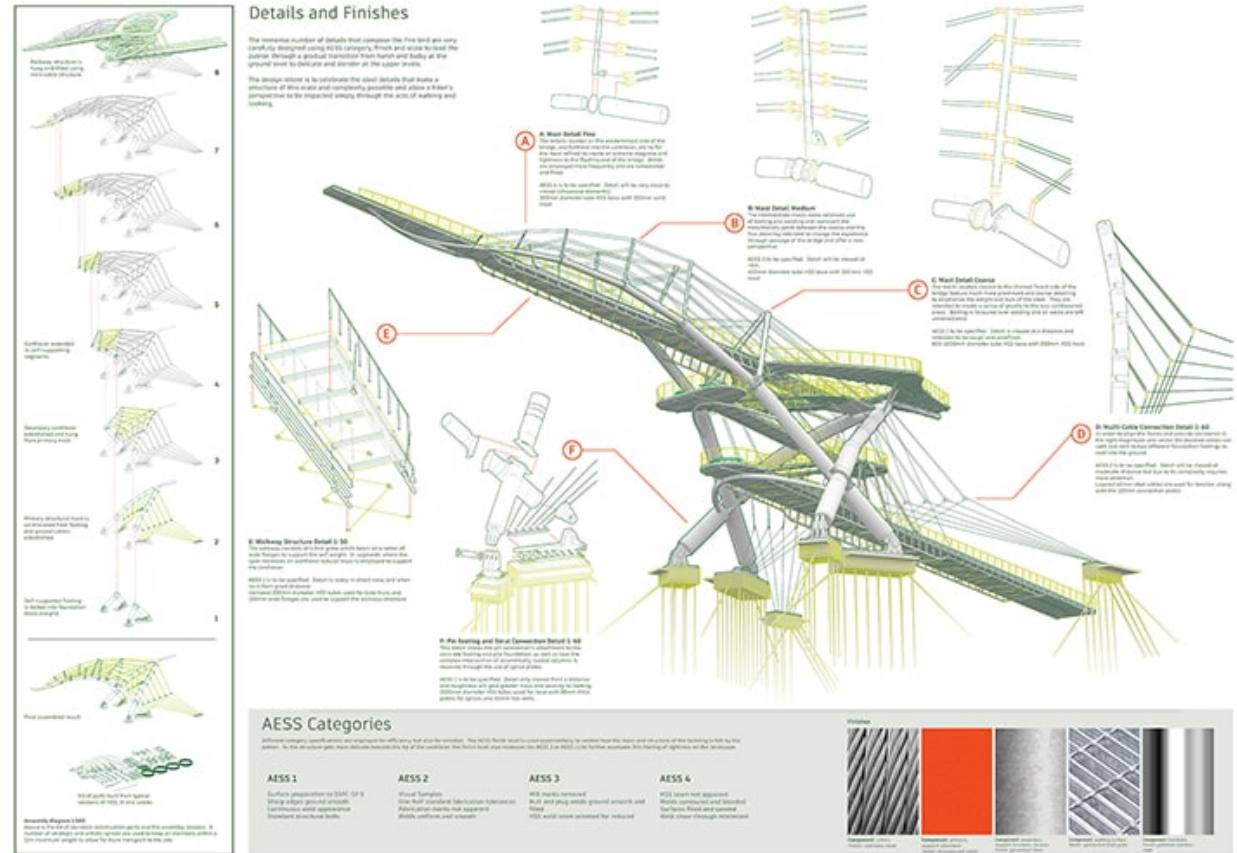
Some of the descriptive text on this board is very small so unlikely to be read.

Site and Perspective

Free Bird is carefully designed to use the unique properties of steel to create stress and tension throughout. The way that the angles of members change and disperse the loading lines create an emotional, forward perspective that can drift and confuse the user's sense of scale. The large panoramic viewing areas also allow visitors to create real time comparisons between landscapes.



Details and Finishes



Boards 2 and 3: Complete the picture

- Renders, the feeling of the structure, experience of the spaces – draw in the judges to look more closely
- Details that clearly show that you understand how steel works and that it is a critical feature of your design.



# MARKET ON ICE

Moncton, New Brunswick

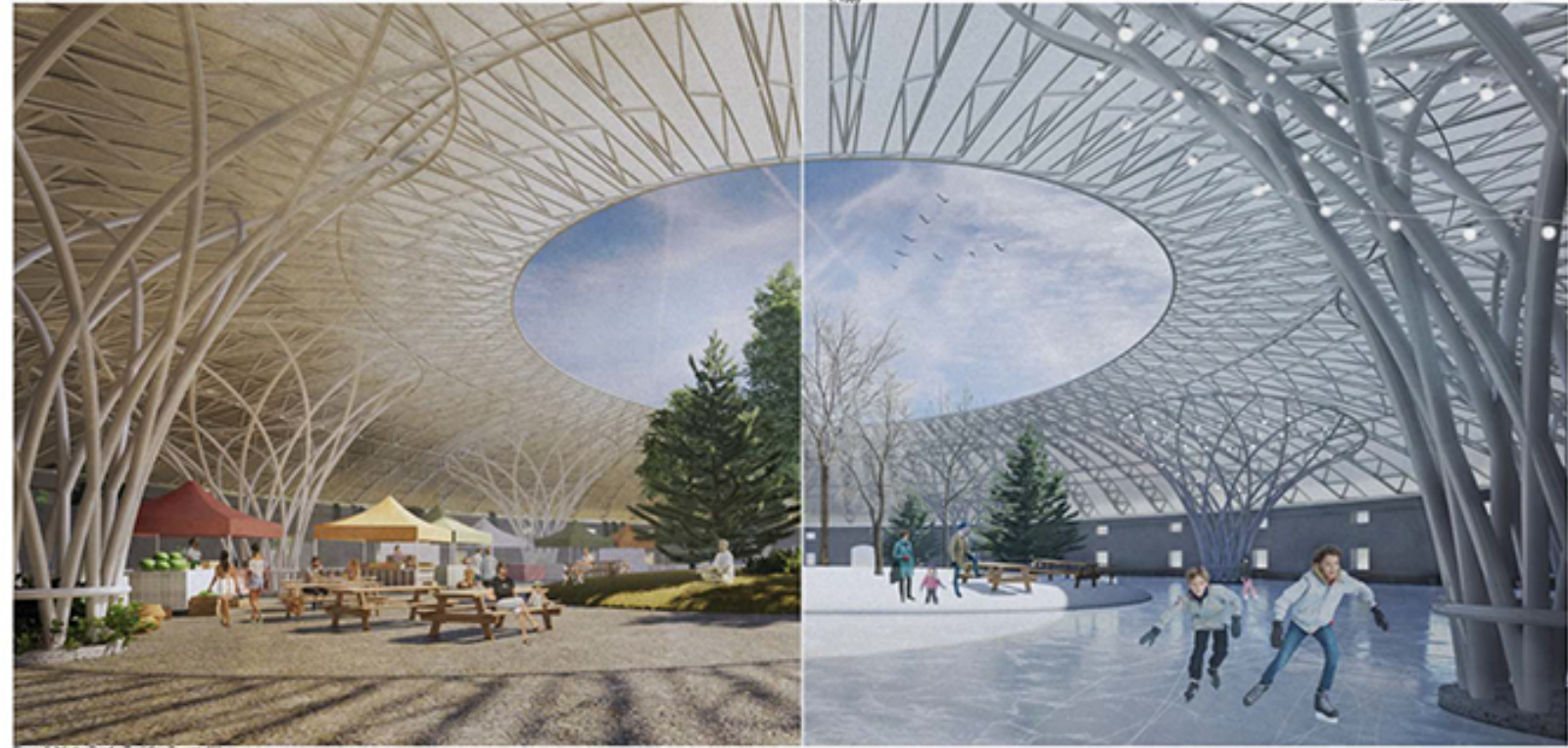


Figure 1. Interior Render Depicting Seasonal Uses

### Revitalizing the Sunny Brae Arena

In 1922, near the heart of the Greater Moncton Area, construction was completed on the Sunny Brae Rink, the largest skating rink in Atlantic Canada at the time. The circular building's large clear span interior made it a popular venue for hockey games, public skating, concerts, and festivals, but the life of the building was very short lived. In 1928, the rink's large conical wooden roof was destroyed by fire. Rebuilding the rink was too costly for the community so the surviving circular concrete base and walls have remained in ruin since.

Flanked by a CN railroad track, by Halls Creek, and by one of the city's oldest neighbourhoods, this abandoned structure sits amid the city's centuries-old foundational roots in the locomotive and shipbuilding industry. Additionally, with its proximity to the old Moncton High School, and the city's largest university, reviving this site and restoring its communal purpose is essential in preserving the city's cultural history.

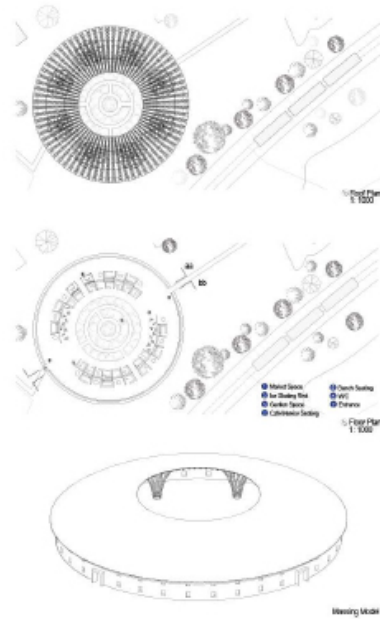
Market on Ice is a new public gathering space that revives the historical use of the site. It functions predominantly as an outdoor marketplace in the summer and ice arena during the winter months. Derived from the geometrical design of an outdoor sports stadium, a steel and fabric canopy hovers over the existing concrete rink, preserving its historical beauty. The openness of the structure, organic columns, and central park creates a conversation with nature, effortlessly blending the steel structure with the natural environment, making it difficult to distinguish the interior and exterior programmatic elements.



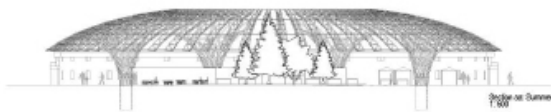
**Board 1:** What can you add that maximizes the impact or versatility of the design?



Figure 2: Exterior Render



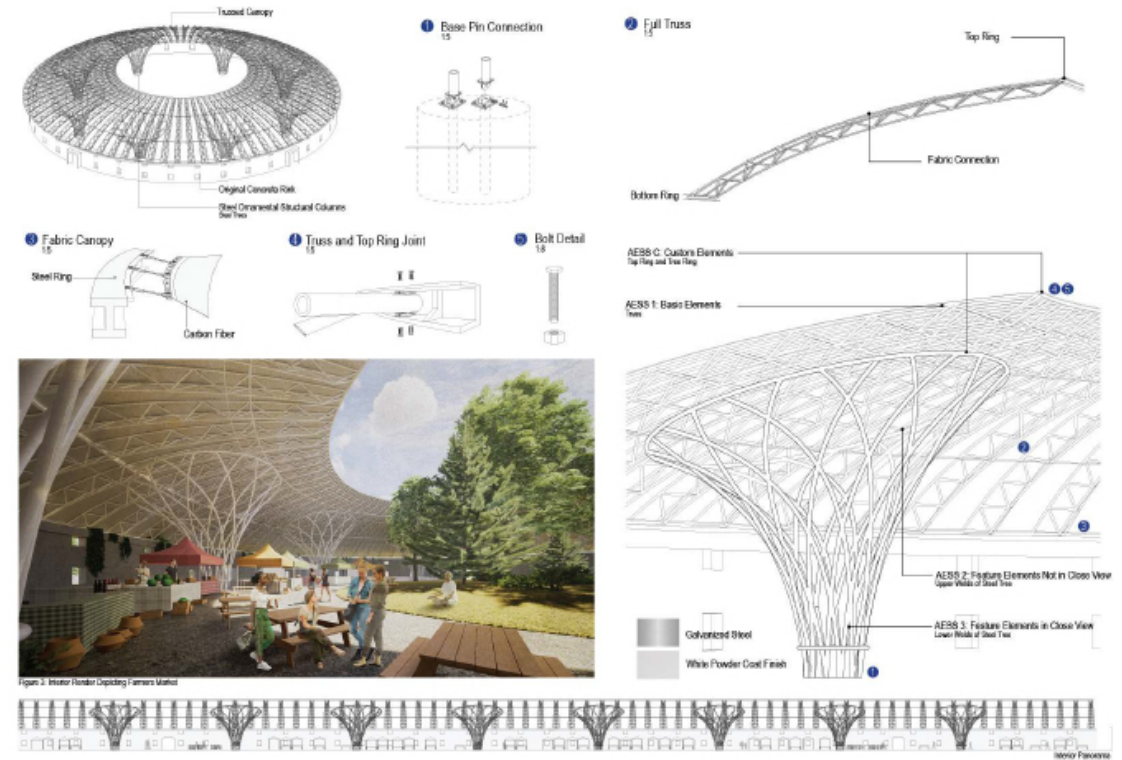
Missing Model



Spring Air Summer 2020



Section Perspective Mt. Walker 2020



## Boards 2 and 3: Make a coherent set

- Include the full orthographic set as required
- Intermix with renders and details to create a compelling and balanced presentation
- Make the idea of the structure and its stability very clear
- Annotate sufficiently to explain the use of the steel.



SUMMIT

Located precariously at the peak of Blackcomb Mountain in Whistler, BC, Summit is a sleek, steel tower that brings explorers to a point higher than ever before. Reaching a height of 26m, Summit offers breathtaking views of the sublime, mountain landscape that thousands of people travel each year to experience.

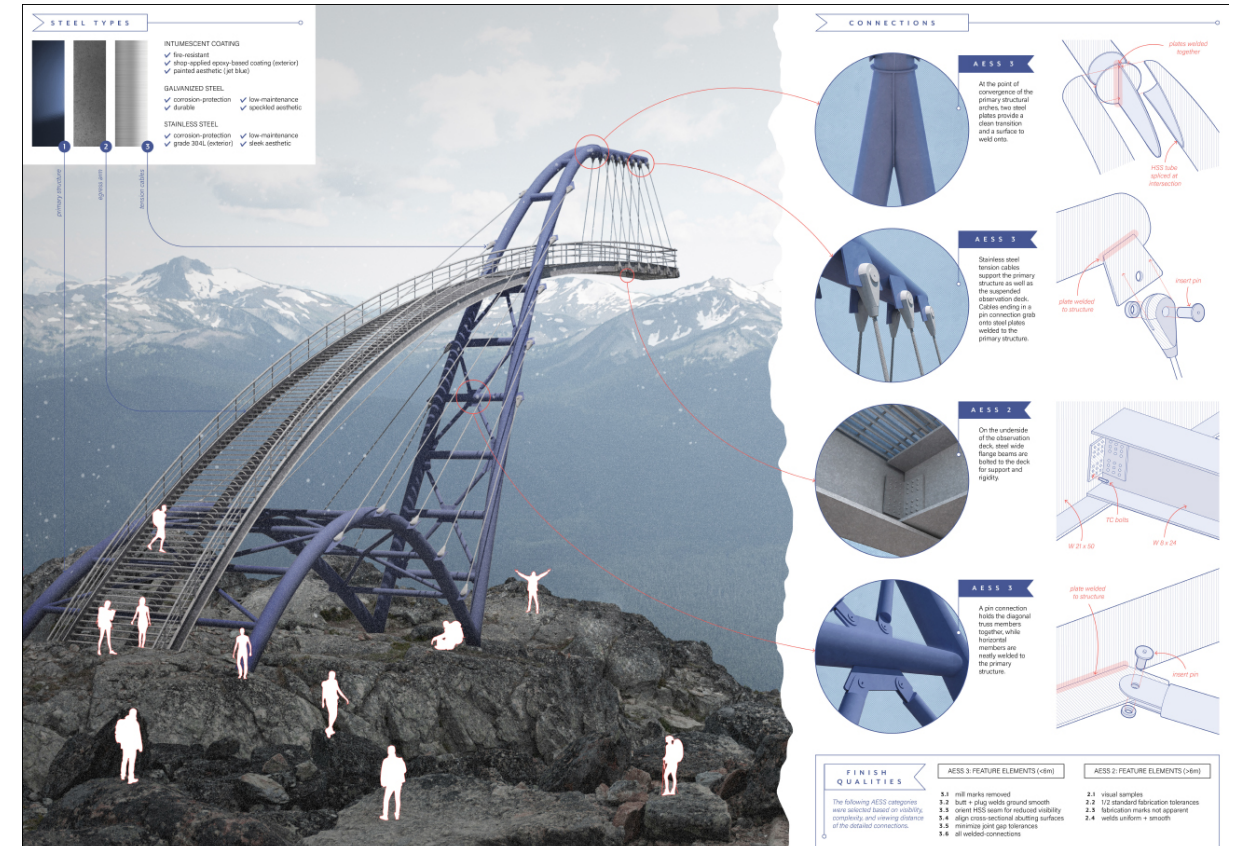
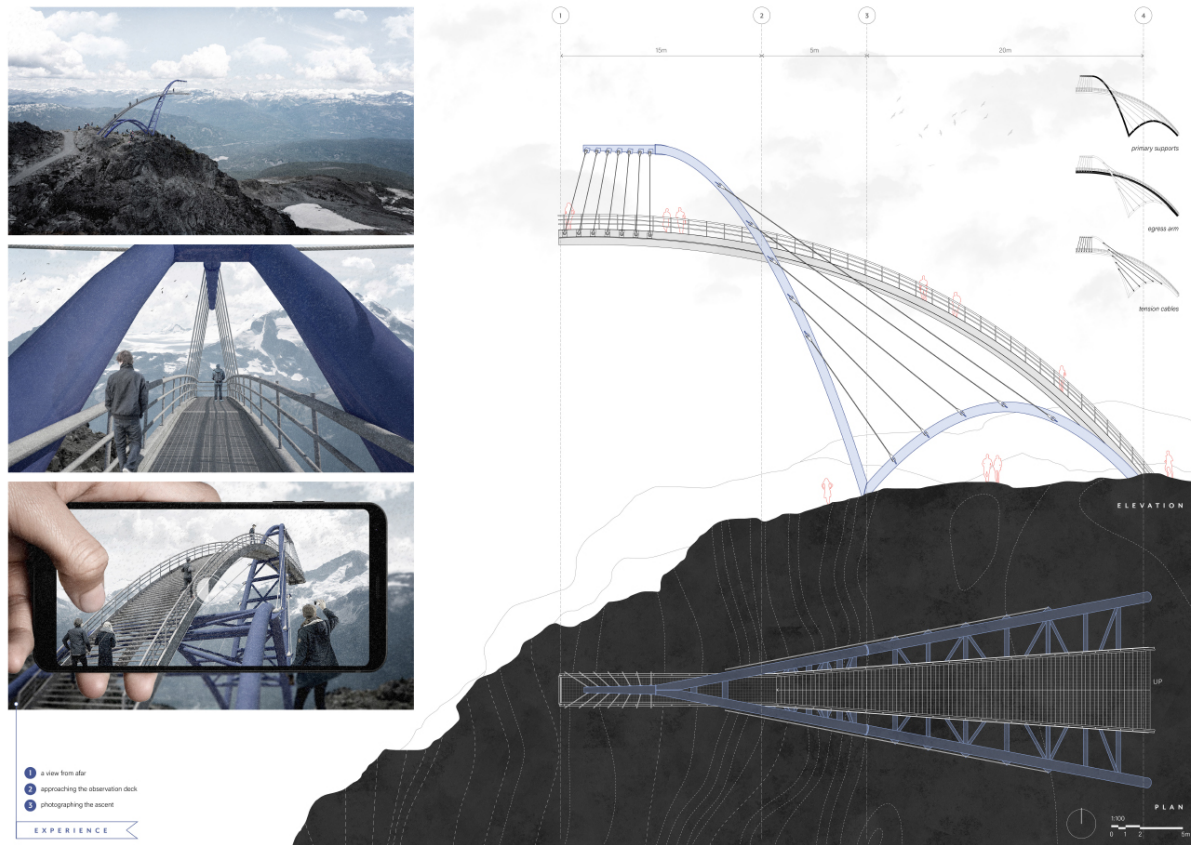
The design of the tower consists of three main structural components: a primary tubular support structure, an egress arm with stairs and observation deck, and a series of tension cables that tie back the structure. Alluding to the surrounding landscape, the primary support structure takes the form of a pair of adjacent arches that converge at a single point to support the suspended observation deck, much like the adjacent pair of twin mountains - Whistler Mountain and Blackcomb Mountain - that comprise the site.

Summit is finished in a jet blue, epoxy-based, intransigent coating to emphasize its grand form within the landscape. The egress arm is constructed of galvanized steel for durability and differentiation. The tension cables and connectors are composed of stainless steel, which simultaneously provides strength, corrosion protection, and a sleek finish.

The precarious aesthetic of Summit inspires the bravest of travelers to ascend and experience the incredible views that it offers. Higher than the birds, higher than the clouds, Summit is a unique architectural structure that brings humanity beyond the 2,436m limit of the ancient mountain on which it stands.



Board 1: Takes you into the project and clearly makes a connection with the theme



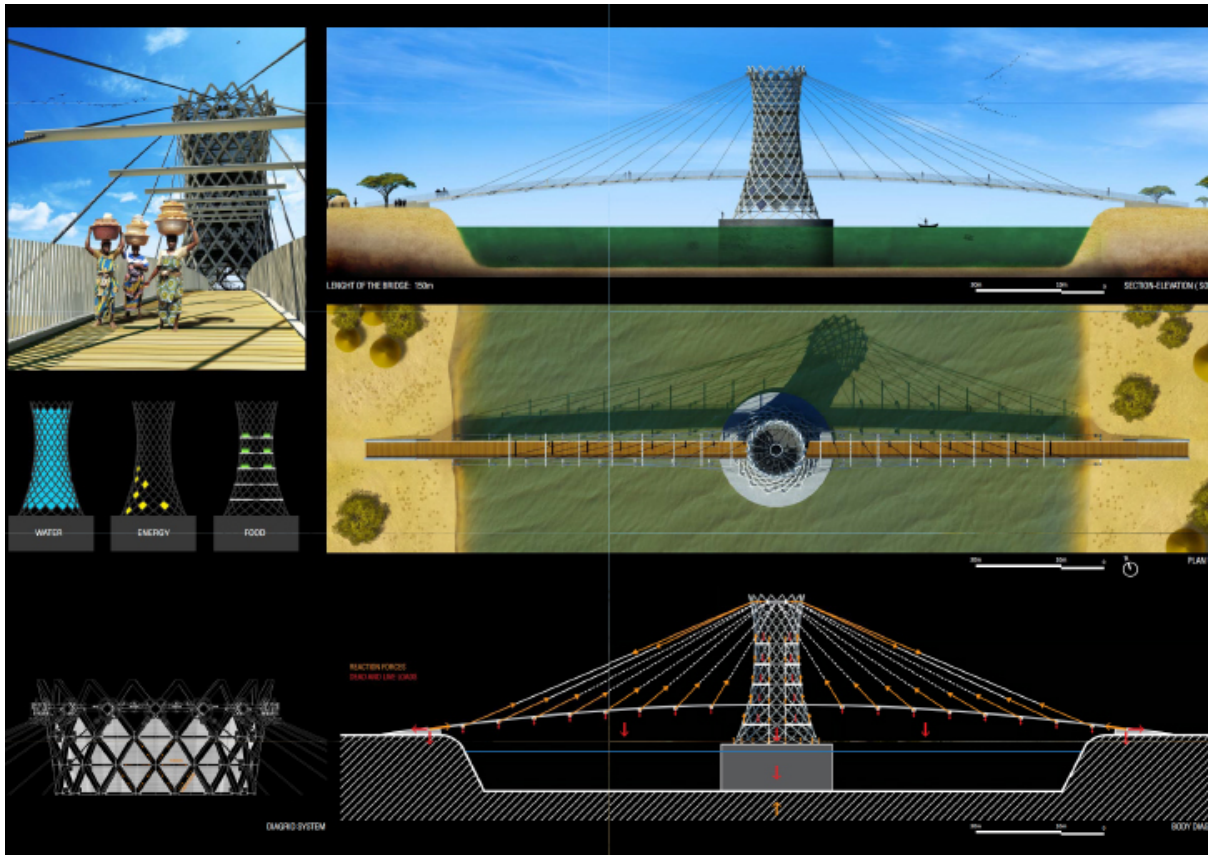
## Boards 2 and 3: Complete the set

- Make sure the views are all different – inside, outside, top view, experiential view
- Details should be large and clearly show how the steel is connected (including AESS designations)



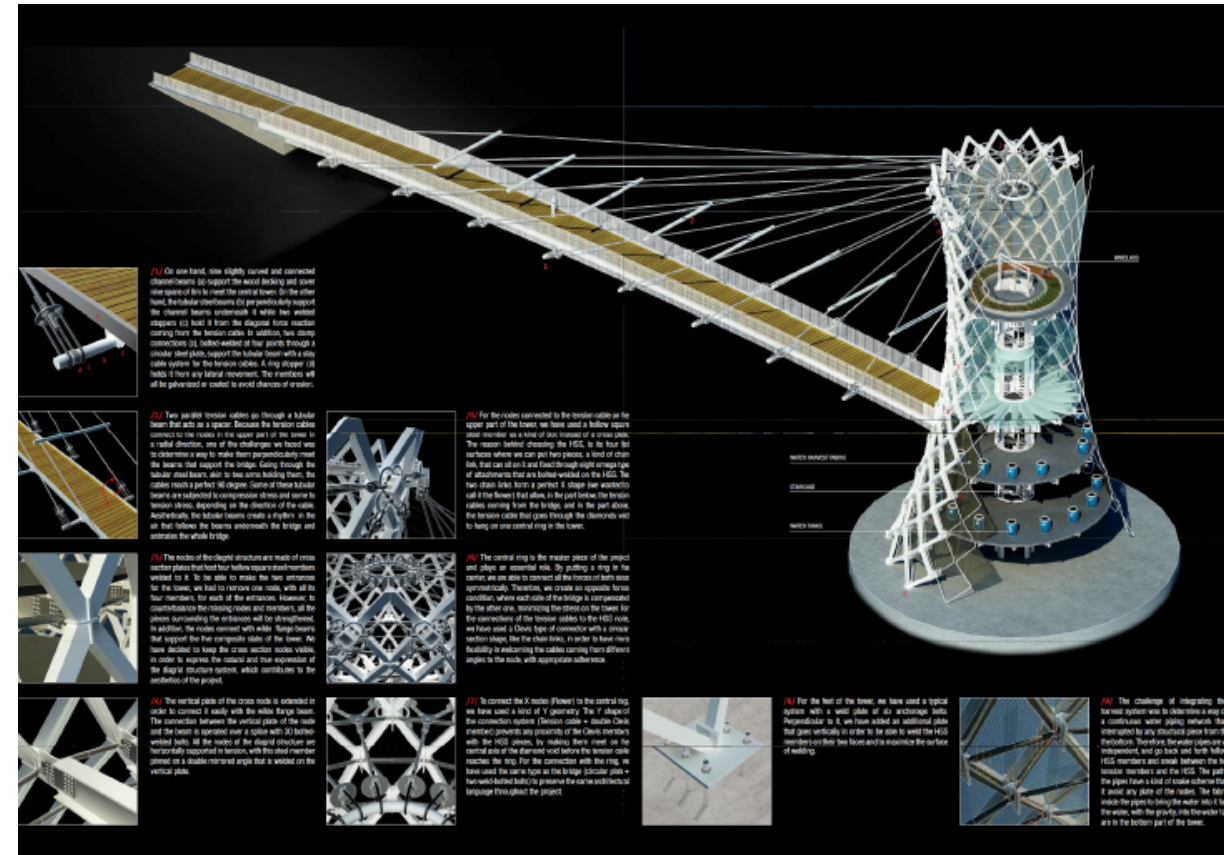
**Board 1:** compelling image and a clear and concise explanation

- Did you add any extra special value to your program that will set yours apart and above the other entries?



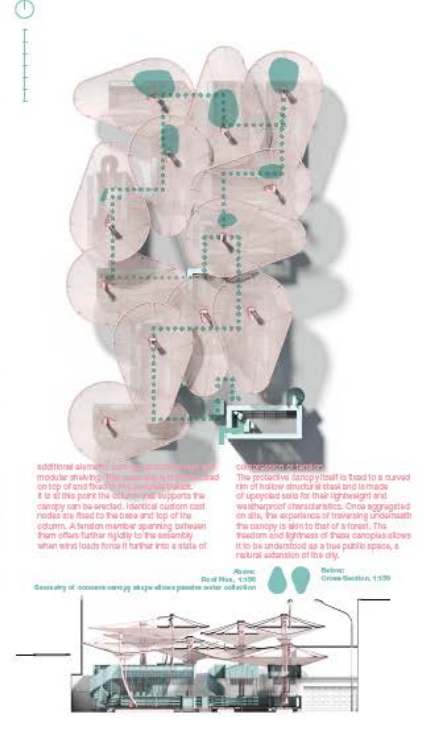
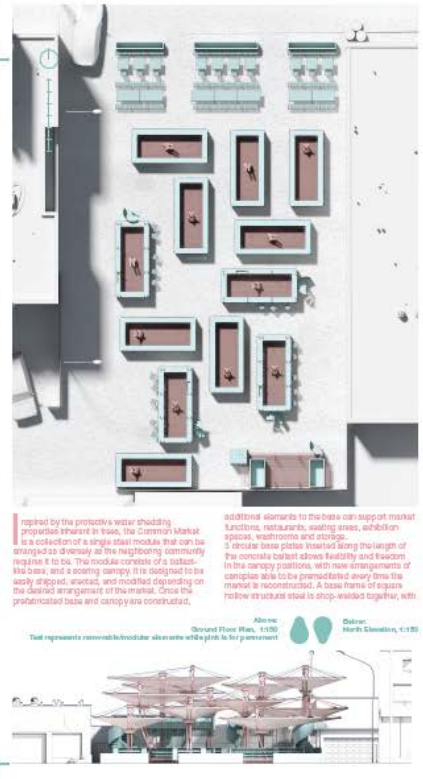
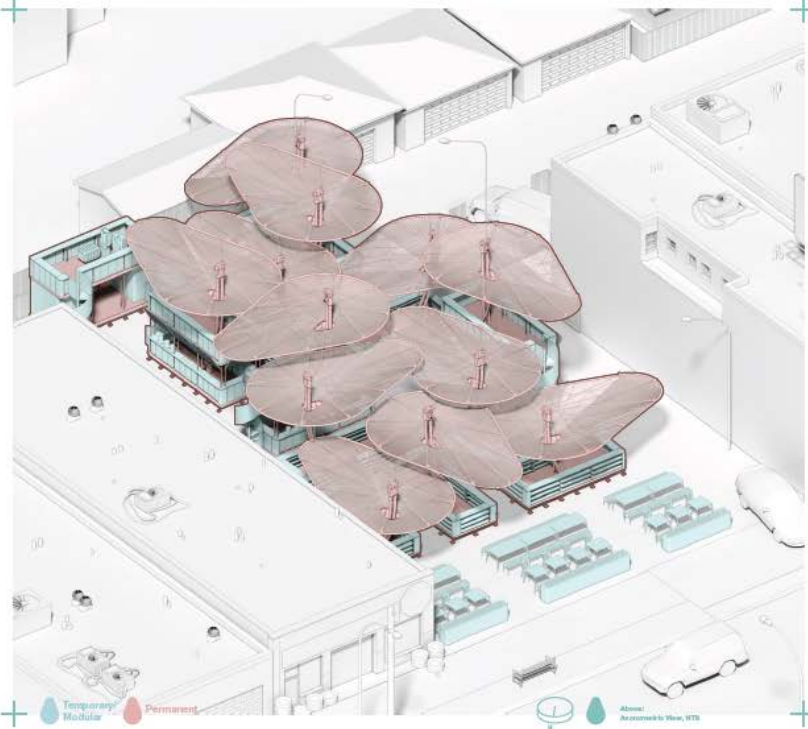
## Boards 2 and 3: Complete the set

- Details clearly show the steel connections.
- Orthographics can also be used to animate the explanation
- The added program was explained





# COMMON MARKET



## Board 1:

- This one chooses to make a more complete statement on the front vs a singular "money shot"



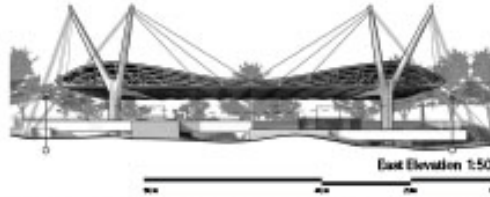


# Cloudscape Canopy

An adaptive regeneration of the historic "Place Des Nations"

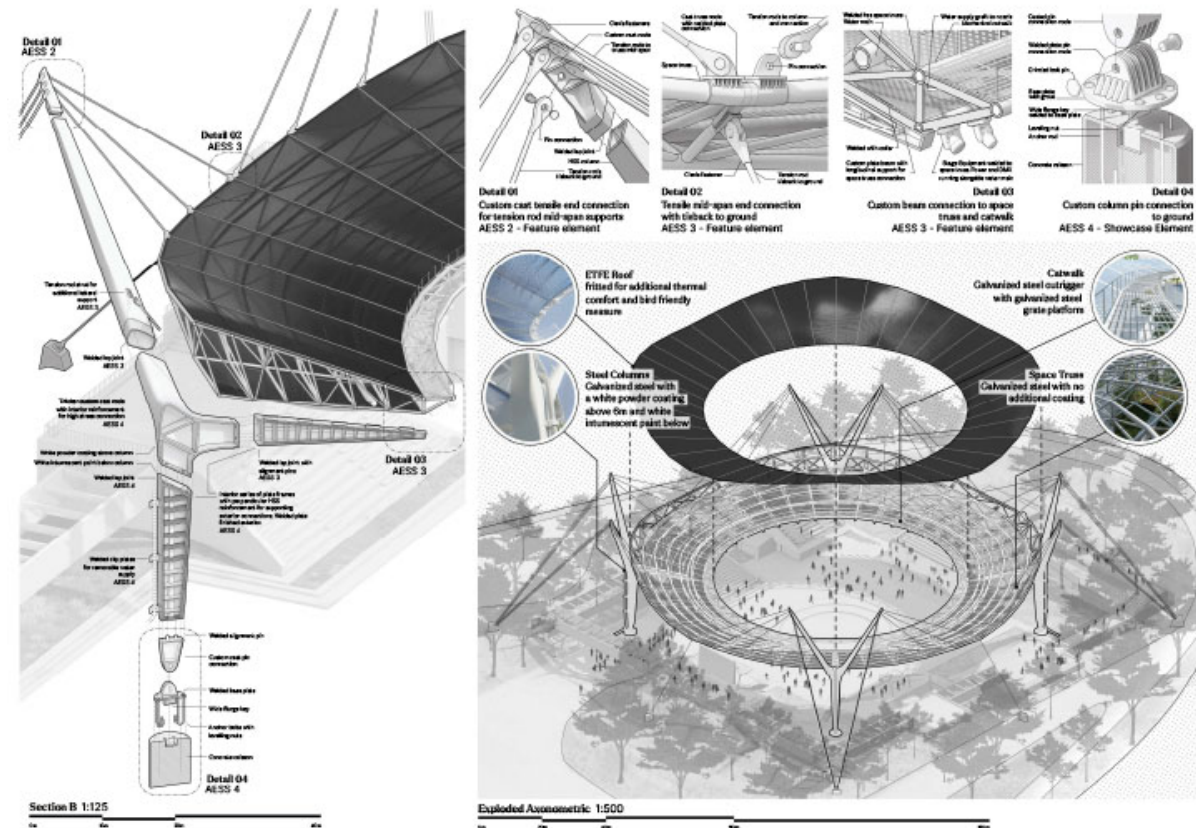
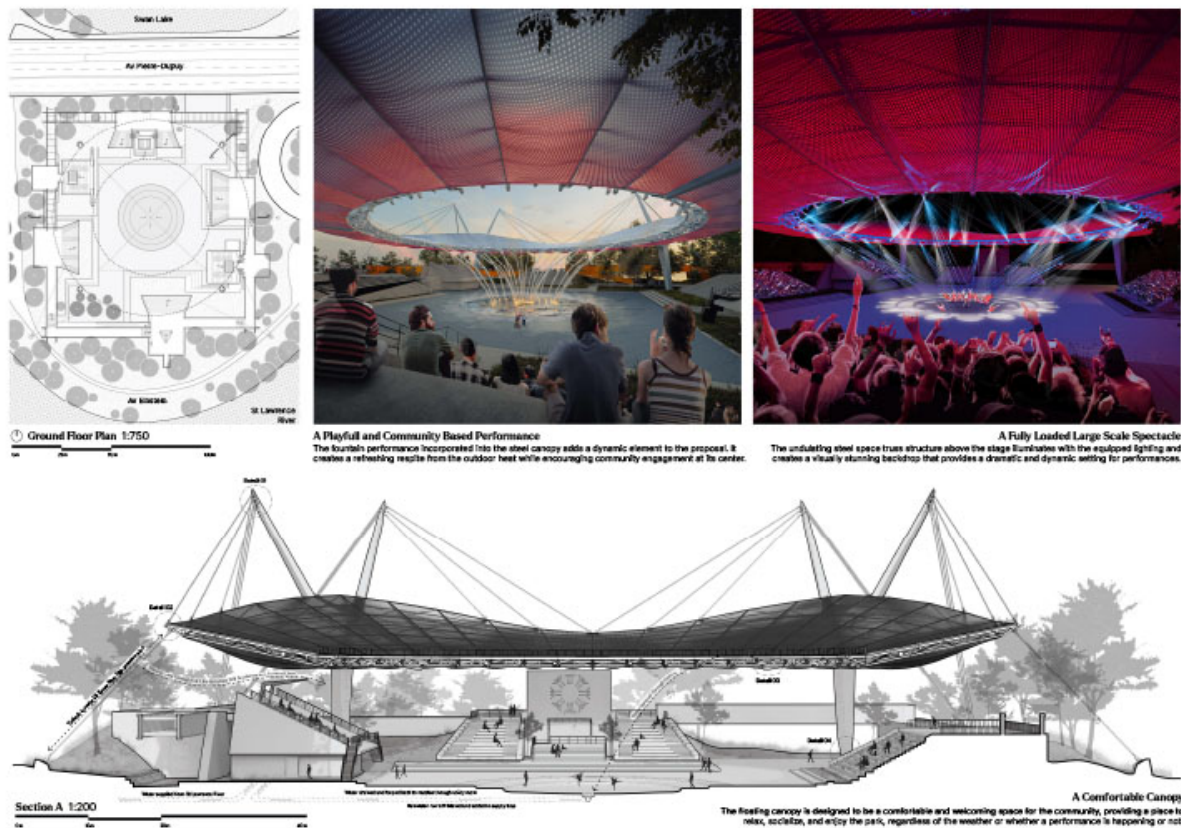
## Project Description

Located in the heart of Montreal, Place Des Nations was once a large-scale outdoor amphitheater built for the World Expo in 1967 but has since fallen into near abandonment. The Cloudscape Canopy intends to restore public excitement into the existing historic amphitheater by transforming it into a vibrant performance and community space. Taking advantage of the lightness of steel, the proposal features a large-scale steel space truss supported by four sculptural steel columns, giving it the appearance of floating. The canopy is then equipped to improve the current conditions of the park through its various integrated systems. Performances are created through lighting and sound systems which are focused on large scale theatre. Community space is created through a series of fountains embedded in the steel structure, and thermal comfort is created through its fritted ETFE cladding. With new public programming, performance, and comfort systems injected into the amphitheater, The Cloudscape Canopy aims to create a landmark in Montreal which not only embraces its historical space - but regenerates it for community use.



## Board 1:

- Includes the "money shot" as well as an explanation and some of the line drawings.



## Boards 2 and 3:

- Show the jury how it is made, how the connections work
- Include experiential views, day vs night, lighting. Draw them into the project so that they feel it



**Board 1:**  
 - The “money shot” and an explanation of this student’s take on the theme of bridge

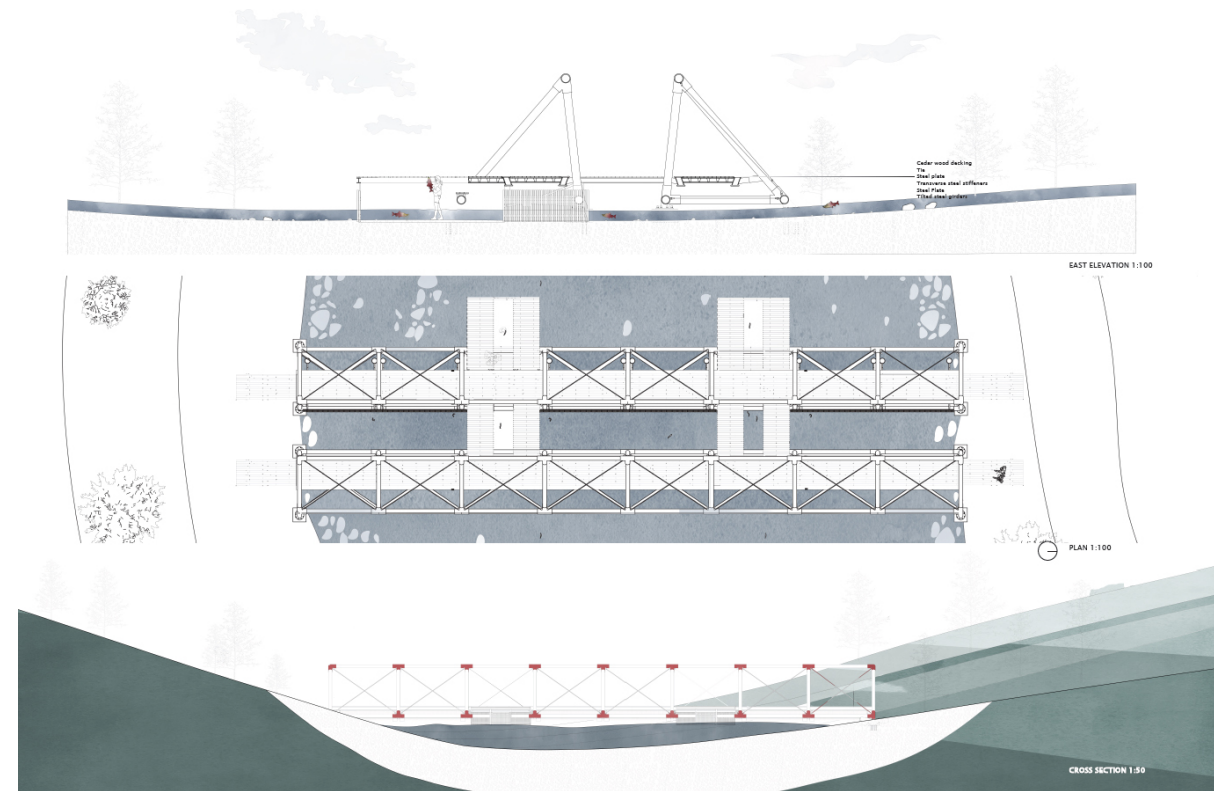
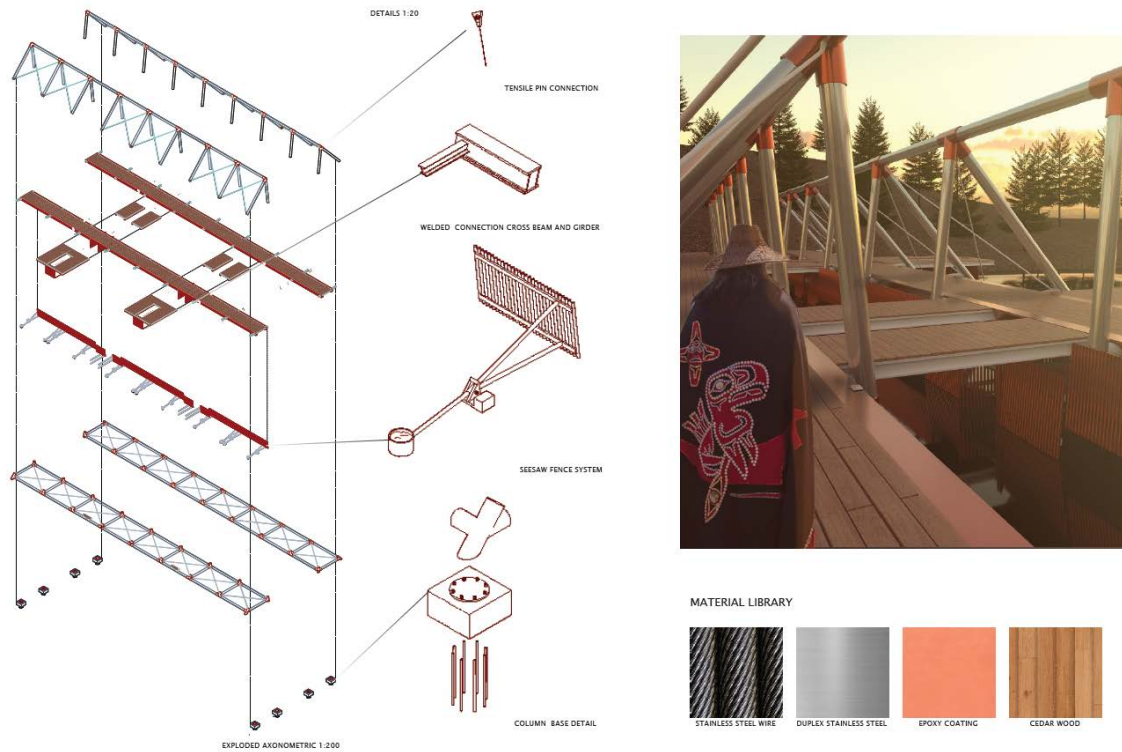


# Koeye Sentinel

Koeye Sentinel is an immersive path that connects users to the spirit of the Koeye River waters through an application of traditional Haida Nation salmon fishing weirs in a steel design. Amidst the looming threat of extinction faced by the Sockeye salmon, each step across the bridge serves as a permanent reminder to protect the ancestral traditions of the community and makes a stand in regards to regaining governance over their practices and the water. The bridge serves as a spiritual nexus, with its two parallel paths converging at smaller pathways, wherein users are invited to sit by the edge, observe the operable steel components at work, and be submerged in the fishing practices as they learn from the processes of monitoring of the salmon.



**Board 1:**  
- Award of Merit winner, first year undergrad students

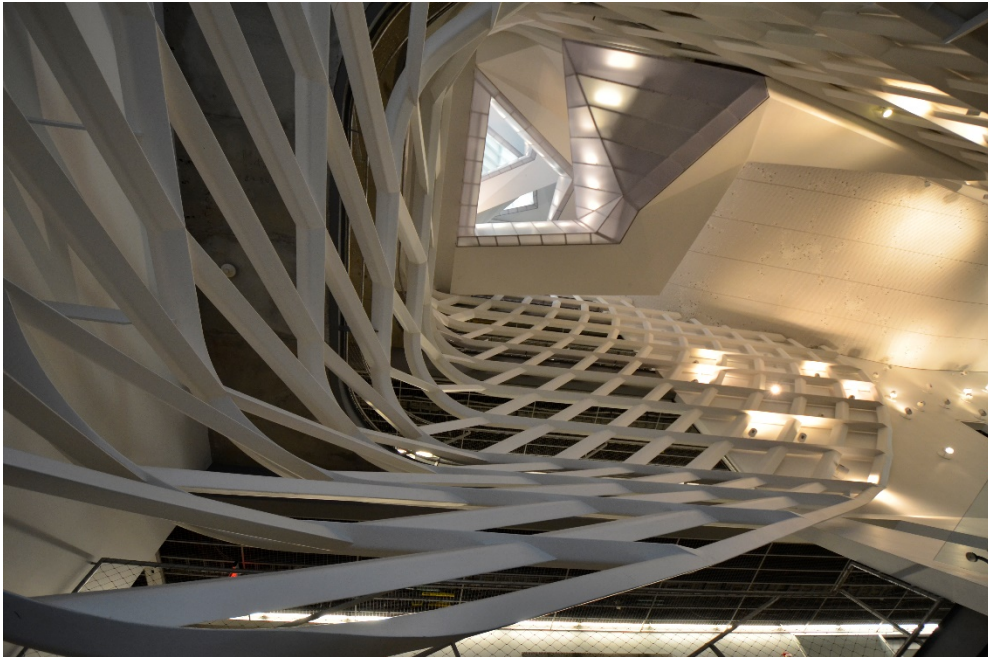


### Boards 2 and 3:

- Provide full details and convince the jury of the stability of the structure
- Explain the experience of the project

# ASCENT – The Competition Theme

- Ascent - a climb or walk to the summit of a mountain or hill.
- The theme is an experiential action and not necessarily a building type
- It infers a destination, maybe with a view
- Intentionally pretty open



# Ascent is experiential – about the climb





# But the ascent must be “inclusive”

- Experiences are not just for the able bodied
- You must provide an alternate and equally interesting means of “ascent” that can accommodate the mobility challenged – including wheelchairs, strollers, scooters



# Vertical Transportation



View up the elevator shaft

It is suggested that competition entrants explore the integration of vertical transportation as a potential method of providing inclusivity and engagement.



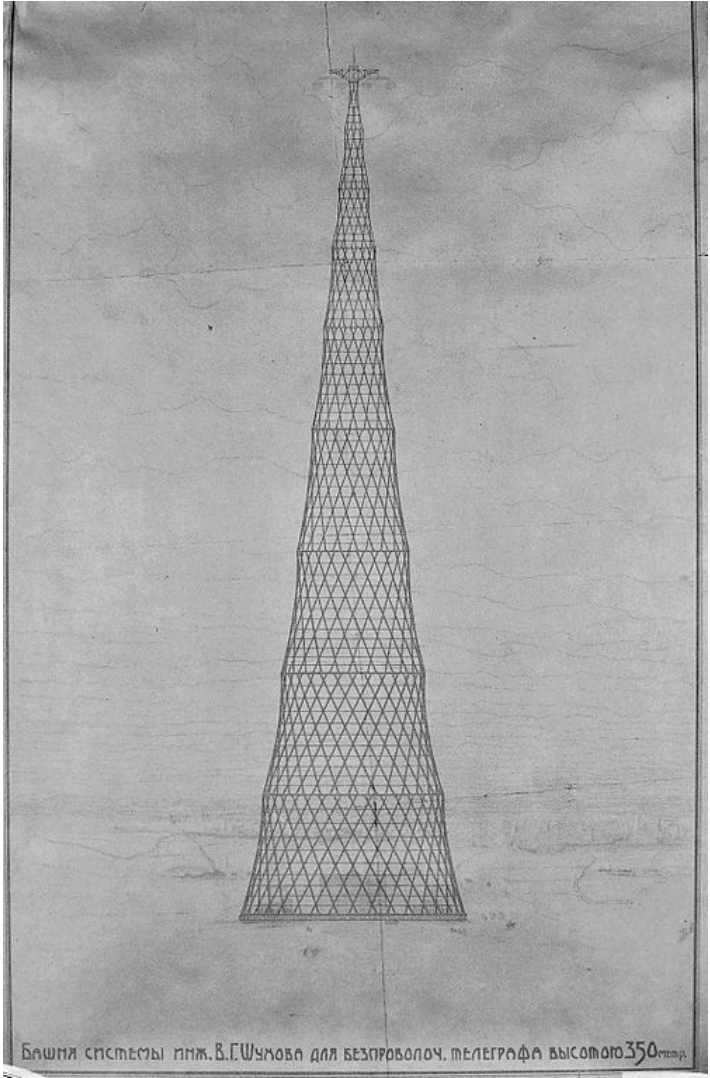
View through the elevator and out through the steel

# Experience the steel itself!



*A history of strength. A sustainable future of possibilities.*

# Stability - traditional



# Stability – more challenging





Toshima City Green Tower  
Tokyo, Japan







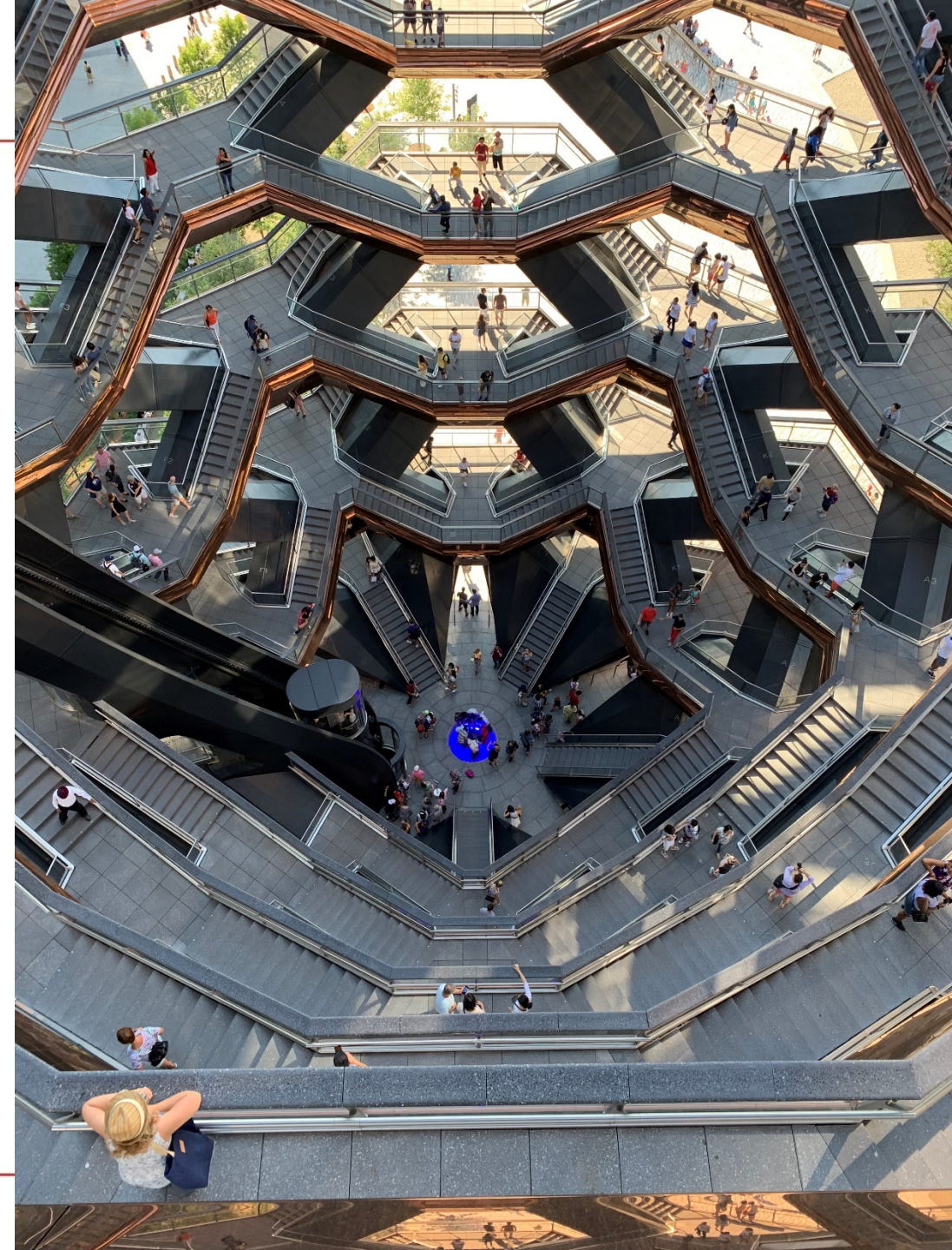
Enoshima Sea Candle  
Japan







The Vessel  
New York City







# Ultimately, the ascent is really about the view!



Site and location may be selected by the team

# QUESTIONS AND ADDITIONAL INFORMATION

Full competition details are available at <https://www.cisc-icca.ca/architectural-student-design-competition/>

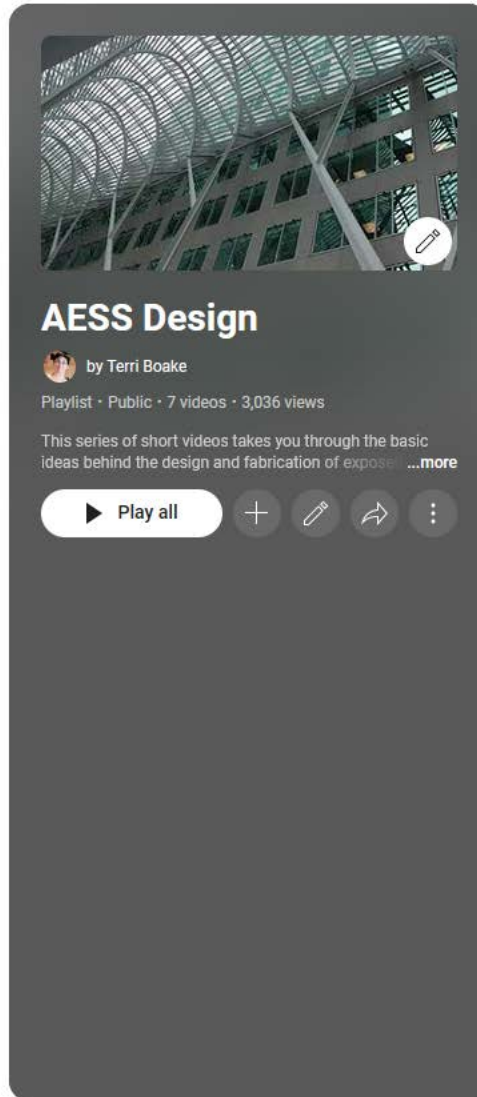
Be sure to check out all of the resources to help in better understanding how to make the best use of steel in your projects!

## Youtube educational videos:

[https://www.youtube.com/playlist?list=PLQFKq2fmhuuDylcuJkLXbFZ7E\\_Ju-7VxZ](https://www.youtube.com/playlist?list=PLQFKq2fmhuuDylcuJkLXbFZ7E_Ju-7VxZ)

## Fun is in the Details website:

<http://tboake.com/SSEF1/index.shtml>



**AESS Design**  
by Terri Boake  
Playlist · Public · 7 videos · 3,036 views  
This series of short videos takes you through the basic ideas behind the design and fabrication of exposed structural steel. ...more

▶ Play all + Share More options



**Architecturally Exposed Structural Steel - Part 1 - The Basics**  
Terri Boake · 11K views · 9 years ago



**Architecturally Exposed Structural Steel - Part 2 - Finishes**  
Terri Boake · 5K views · 9 years ago



**Architecturally Exposed Structural Steel - Part 3 - Connections**  
Terri Boake · 28K views · 9 years ago



**Architecturally Exposed Structural Steel - Part 4 - Custom Connections**  
Terri Boake · 6.1K views · 9 years ago



**Architecturally Exposed Structural Steel - TENSION**  
Terri Boake · 6.7K views · 9 years ago



**Architecturally Exposed Structural Steel - SPAN**  
Terri Boake · 1.8K views · 9 years ago



**Architecturally Exposed**  
AISC · 8.8K views · 9 years ago