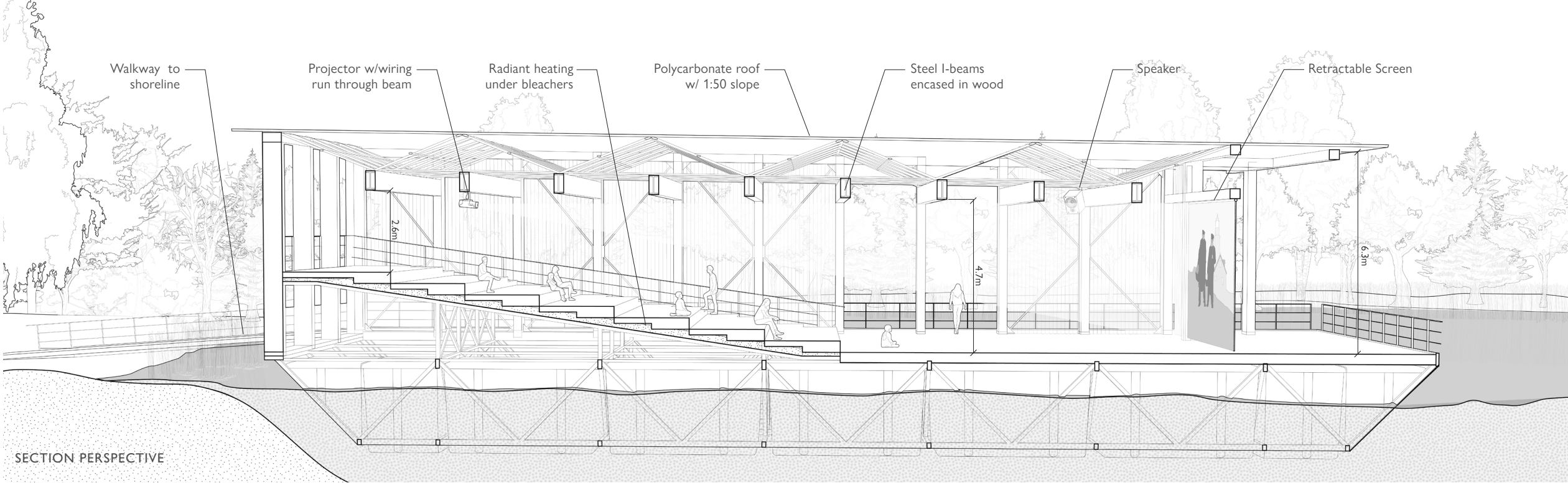
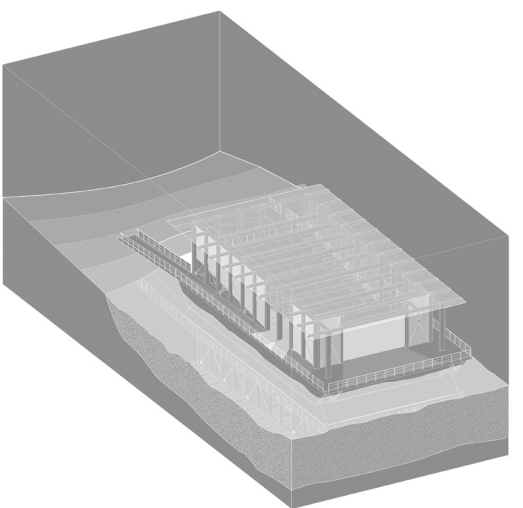
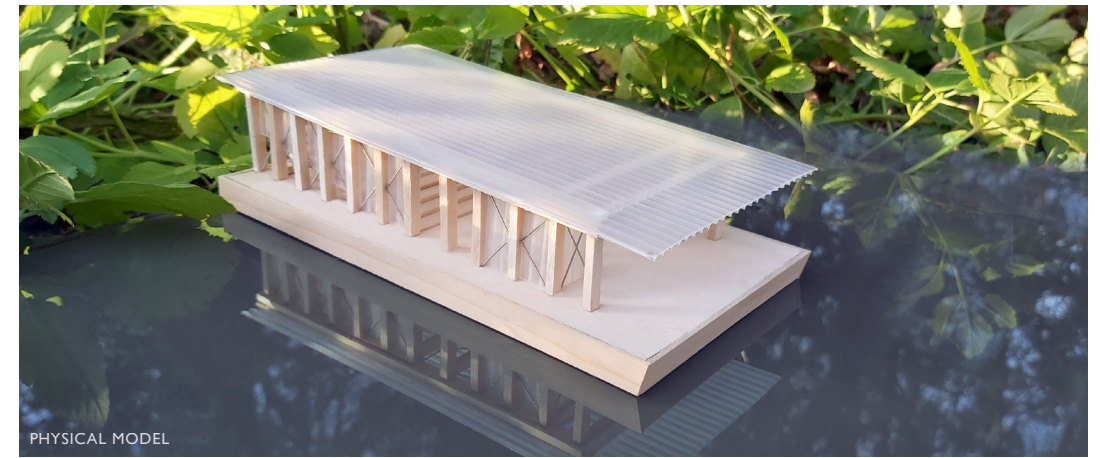
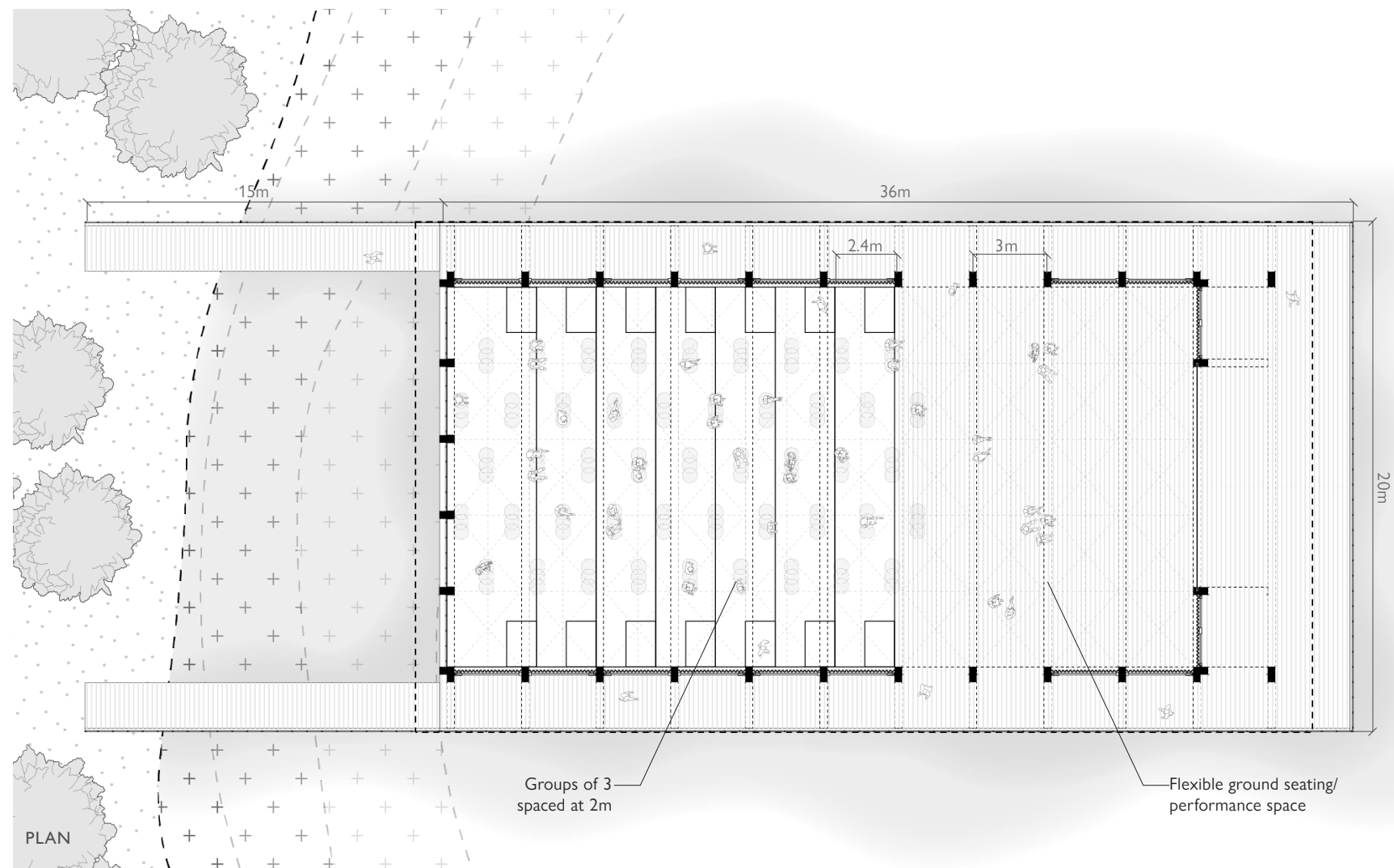
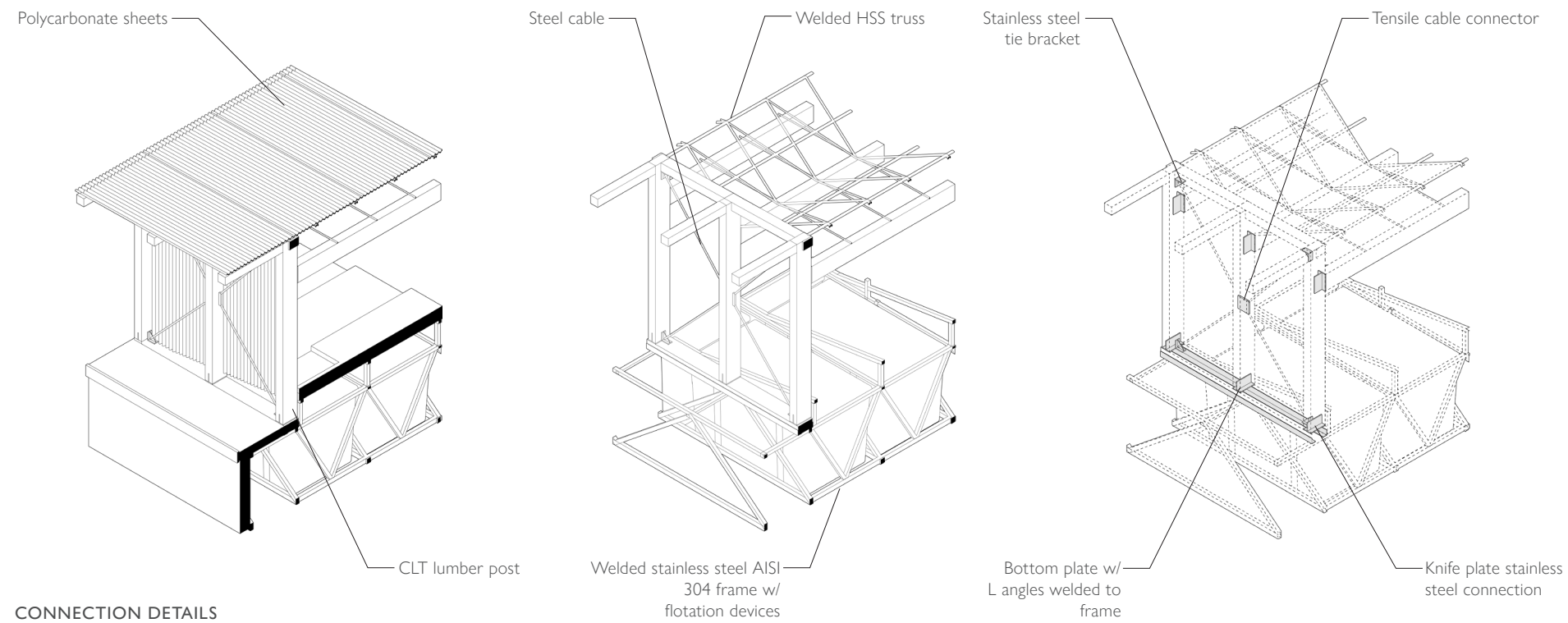


The Lantern was designed to engage with and contrast its surroundings, providing a singular experience for both users and observers. This floating structure serves as an outdoor cinema, a gathering place, and a space to explore the ecology of Jericho Beach Park. Exterior walkways place the user between structure and landscape. As the user moves along these walkways, large columns establish a clear rhythm to the theatre. When the user reaches the opening in the façade, the walkways give way to a large interior space. The interior polycarbonate panels lining the center space blur the boundary between inside and outside, painting the walls with the colours and movement of Jericho Beach Park.

A retractable screen offers a variety of programmatic options. When the screen is retracted, the dense marsh on the opposite shoreline becomes the focus of the space. Large wooden columns on either side frame the scene, emphasizing the landscape and transforming it into a backdrop for live performances or lectures. When the screen is down, the space becomes an intimate theatre. All structural elements and sightlines accentuate the screen. From the outside, the polycarbonate panels pick up the glow of the movie's lights, turning the structure into a floating lantern.





The Lantern

Design Intent

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COVID + User Environment Considerations

Circulation

The two ramps linking the Lantern to the land have the potential to be one-way entrance and exit paths, minimizing direct contact between users and generating a COVID-conscious system of circulation. The ability for users to move through the center of the space or around the edge of the structure creates multiple circulation routes (both beneficial in terms of COVID precautions and for users that want to bypass movie-watchers).

Seating

Flexible bleacher seating provides ample space for social distancing while allowing for post-COVID usage. The seat depth permits a variety of positions and groupings, giving users agency in how they engage with the space.

Ventilation

Large east-west openings near the center provide both entry to the structure and crucial cross ventilation. The north side of the Lantern is permanently open, while the south can be opened or closed using the retractable screen.

Heating

An embedded radiant heating system is included in the Lantern's bleacher seating. This system would function similarly to underfloor heating systems shown in figure 4. This minimizes thermal loss through the air and keeps ventilation pathways open in the theatre.

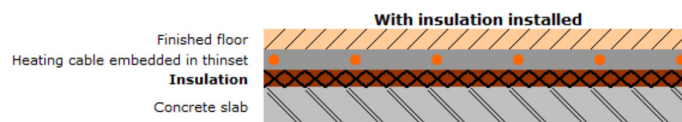


Figure 1: Floor embedded heating system

Location

The Lantern is situated in the marsh at the center of the park. It was determined that the structure floating on the surface of the would not impact the habitats and species present in the marsh. This location presents multiple programmatic opportunities. The Lantern has the potential to be used by environmental and educational services, providing information on the marsh while fully immersed in it. It is also a relatively neglected part of the park, despite its ecological importance and natural beauty. As a result, the Lantern will encourage users to more fully experience the park and its variety of landscapes.

The theatre (20m x 36m) has 720 m² of area for flotation device utilization. By using standard marine flotation devices designed for docks, the Lantern gets over 218,000kg of flotation. This gives sufficient flotation to accommodate 120 average-sized males (82kg) and the weight of a boat rated for over 120 people (acknowledging a boat of that size is likely to weigh more than our total structure). The self-contained nature of the structure allows for potential relocation as well - for instance, the Lantern could be transported and placed at Jericho Beach depending on season and marsh conditions.

Structural Design

The columns are 600mm by 300mm, spaced 3000mm on center. To avoid having columns in the viewing area, the Lantern uses a simple truss system that distributes load onto beams that span the area (14800mm). These beams have a larger section to withstand the bending moment in the center of the span. The analysis conducted in SAP2000 software considered a 1.8kPa of snow load with an additional 0.2kPa rain-on-snow load, as specified in the Climatic Design Data for Selected Locations in British Columbia table in Division B of the British Columbia Building Code. Lateral bracing was added in the form of cable crosses to withstand the 0.45kPa expected maximum wind load.

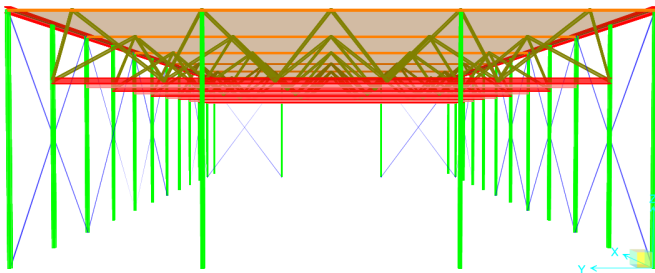


Figure 2: SAP2000 model of the structure before loads were applied. Ground connections are considered pin connections.

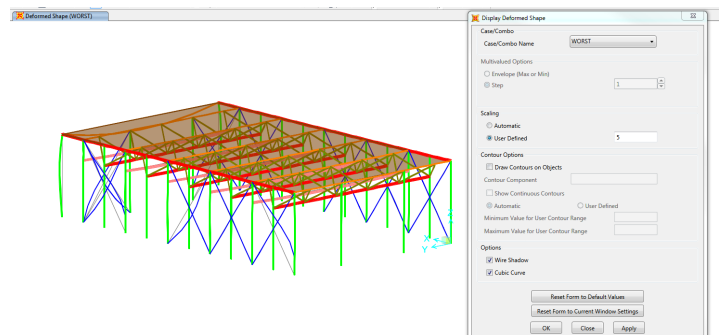


Figure 3: Deformed shape of the structure under loading conditions, 5x magnified.

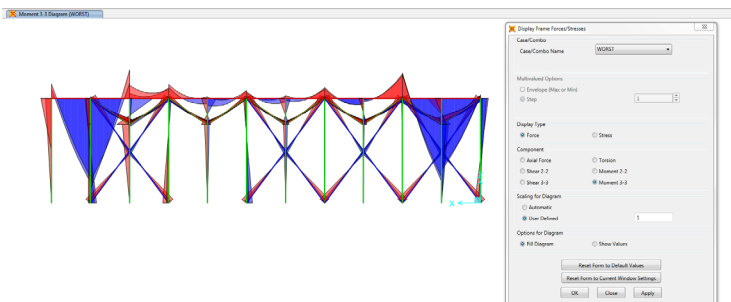


Figure 4: Moment diagram of the cross section under worst-case loading conditions