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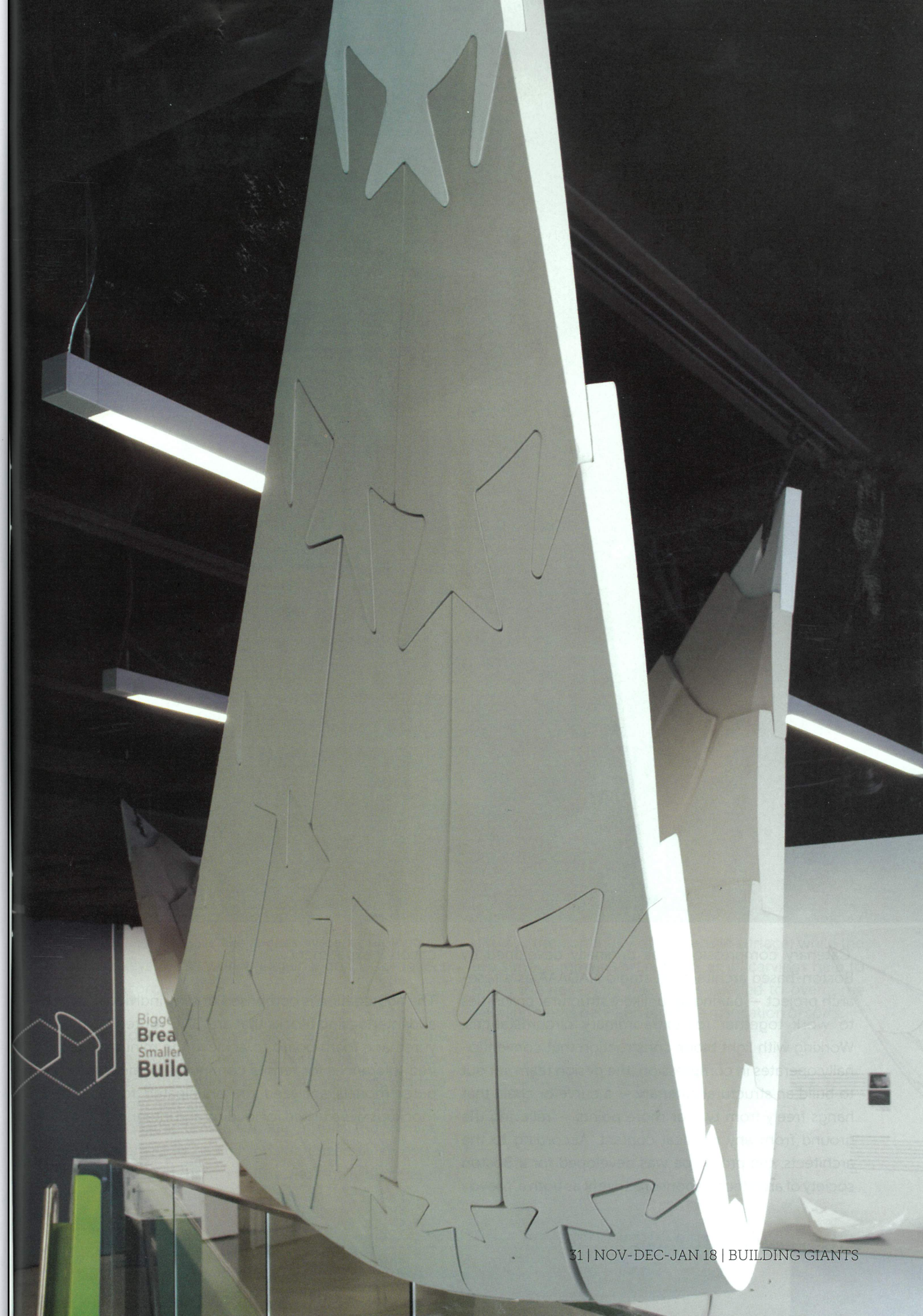
In this issue we visit contemporary fabrication possibilities defined by principles of advanced mathematics that continue to allow architecture to experiment and push against its defined boundaries. Each project included has a strong singular principle of physics or mathematics informing its design evolution and/ or fabrication.



Catenary Compression

Provocation and Experiment

Catenary Compression was developed as a research project, pairing up unlikely structural properties to work together for extraordinary circumstances.





'Catenary compression' was originally developed by Boston-based architectural studio NADAAA as a research project — pairing up unlikely structural properties to work together for extraordinary circumstances. Working with light block construction that conventionally operates in compression, the design team set out to build an structural catenary — a curve or chain that hangs freely from two or more points — relieving the ground from any physical contact. According to the architects, the prototype was developed for a Boston society of architects- sponsored event as both a 'provo-

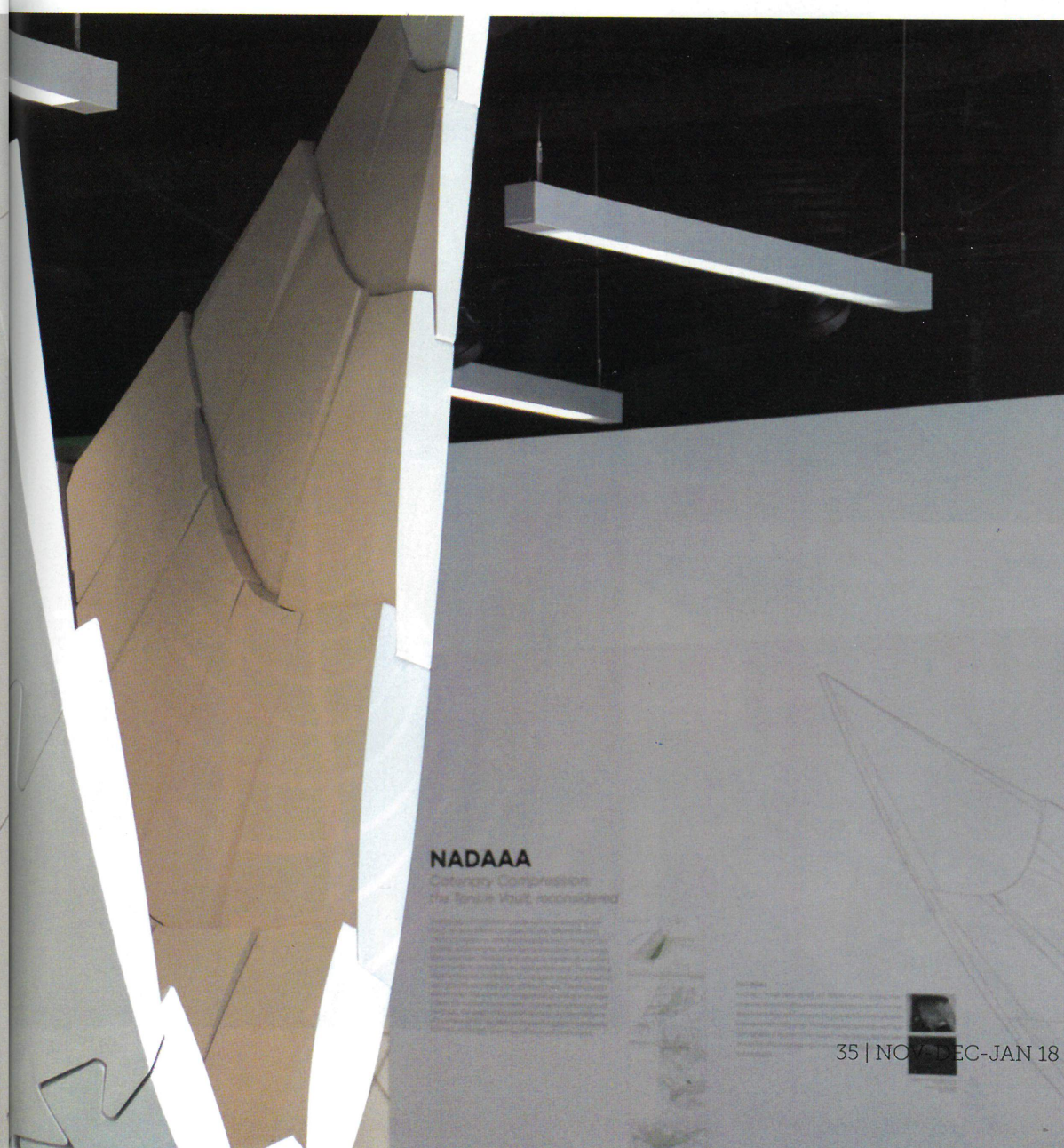
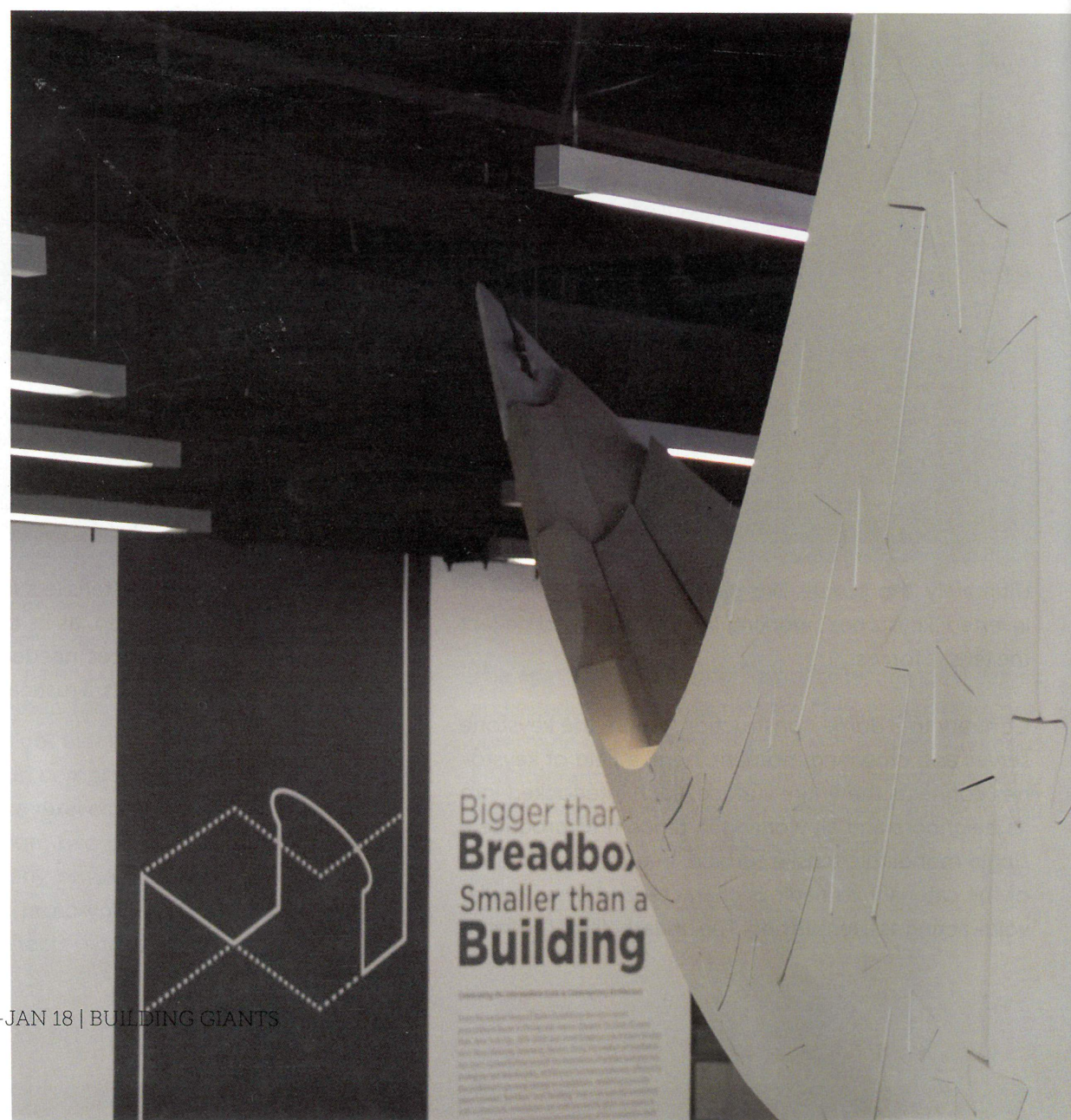
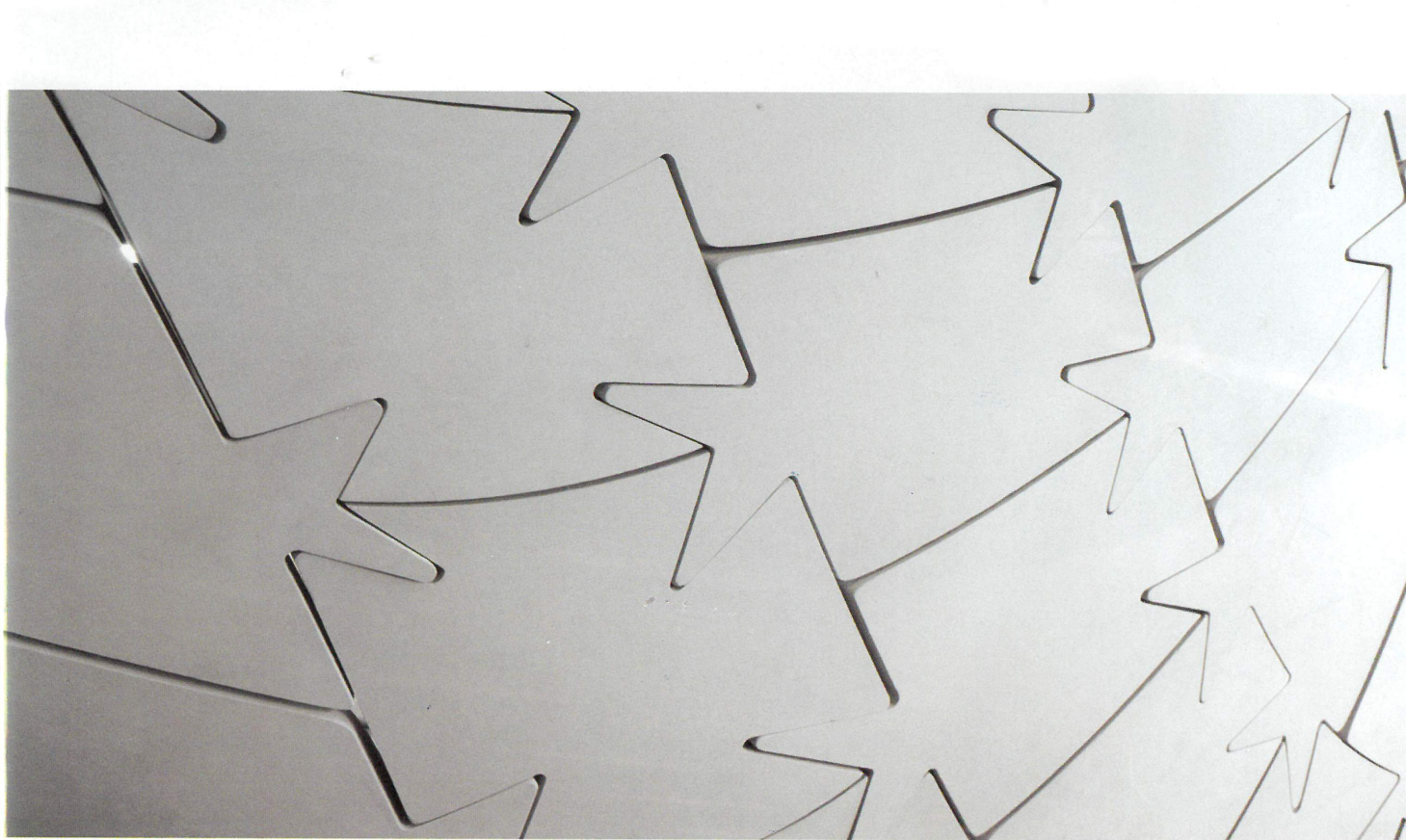
cation & experiment'.

The aggregation is comprised of sixty individual carved and interlocking blocks that are CNC routed from pol-yurethane foam board to achieve the minimally required tolerances for tensile continuity. Numerous computer models analyzed the anticipated forces, and mockups were tested for loading and integrity.

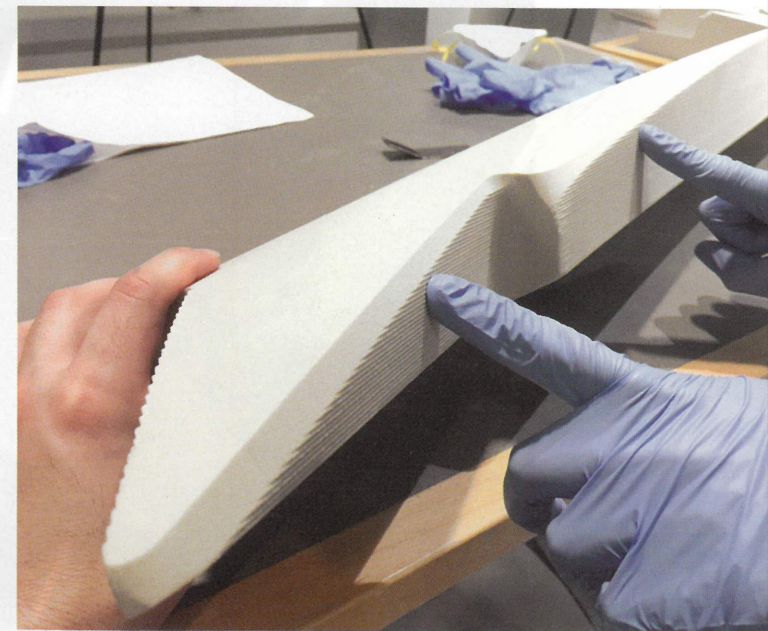
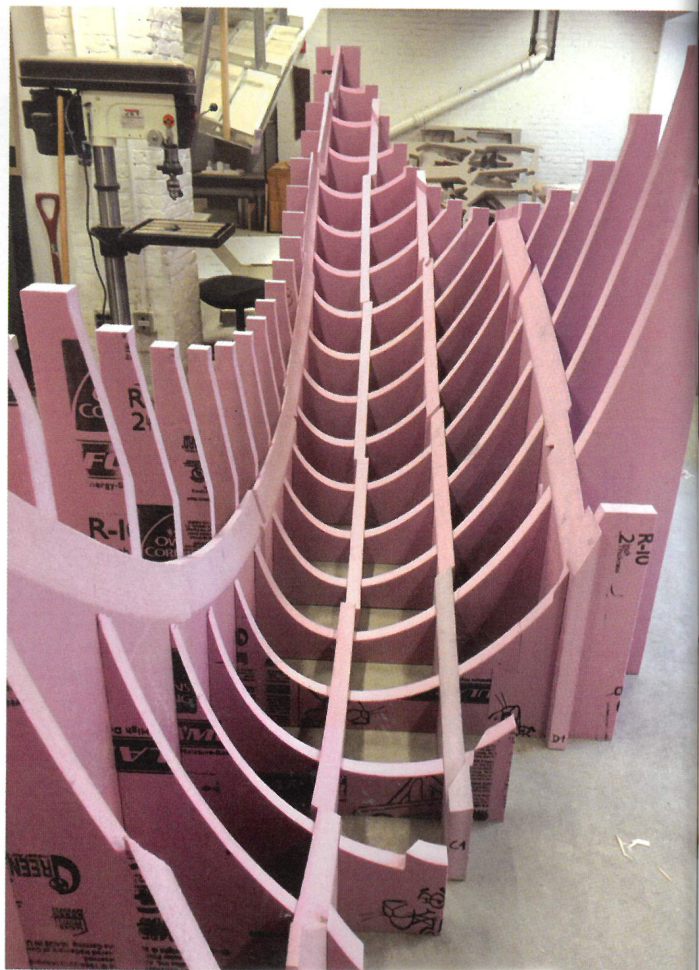
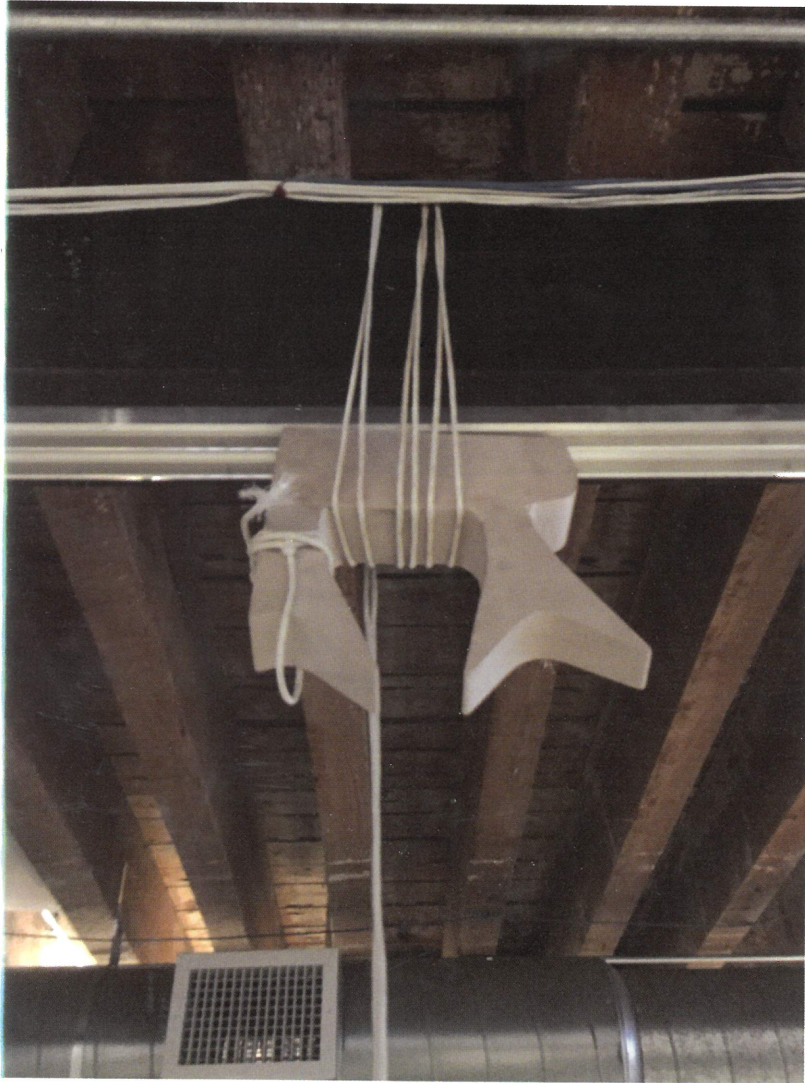
Ultimately the puzzle-like pieces were conjoined by inverted 'keystones', working against gravity to deflect the tensile forces.

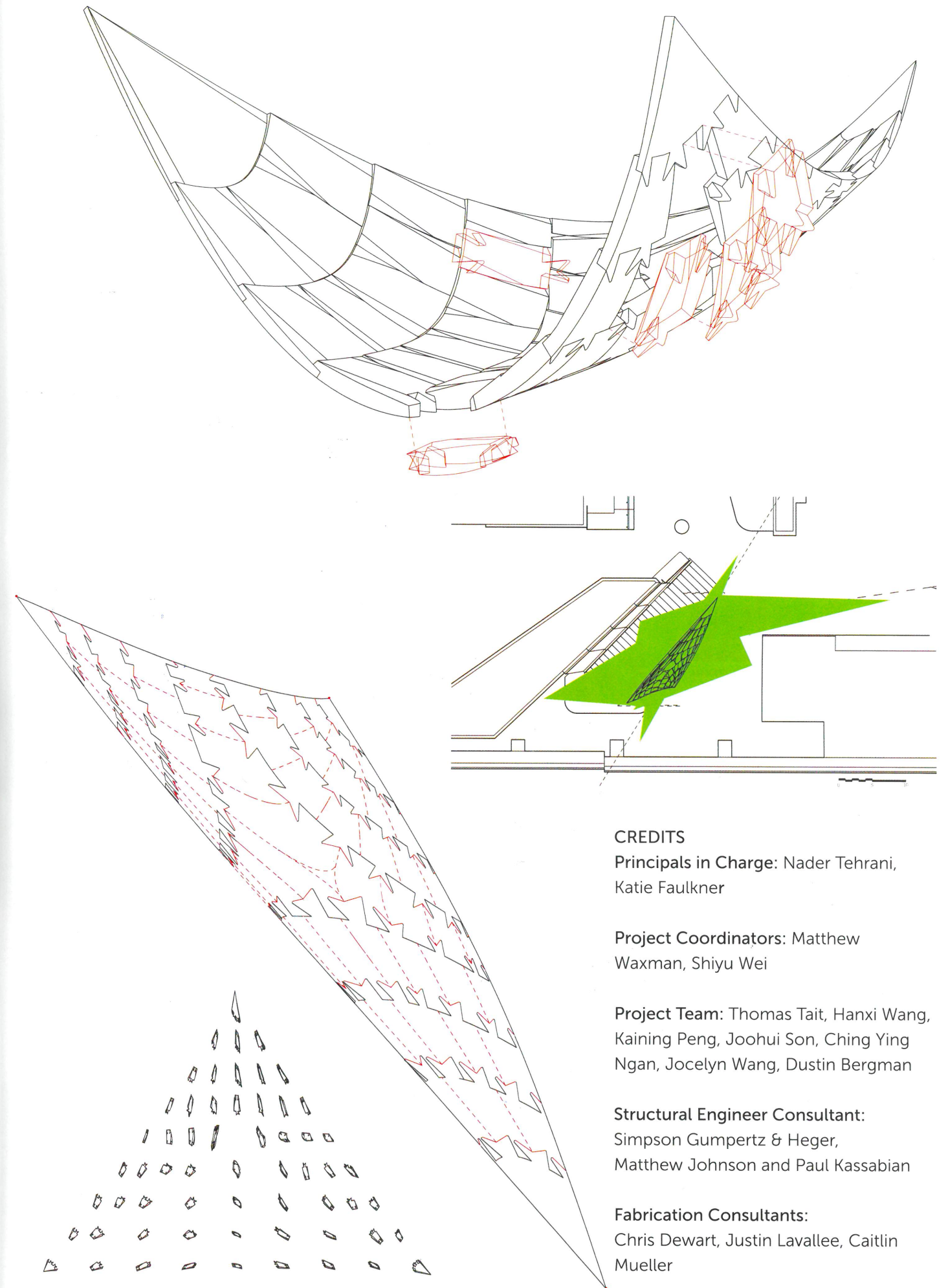
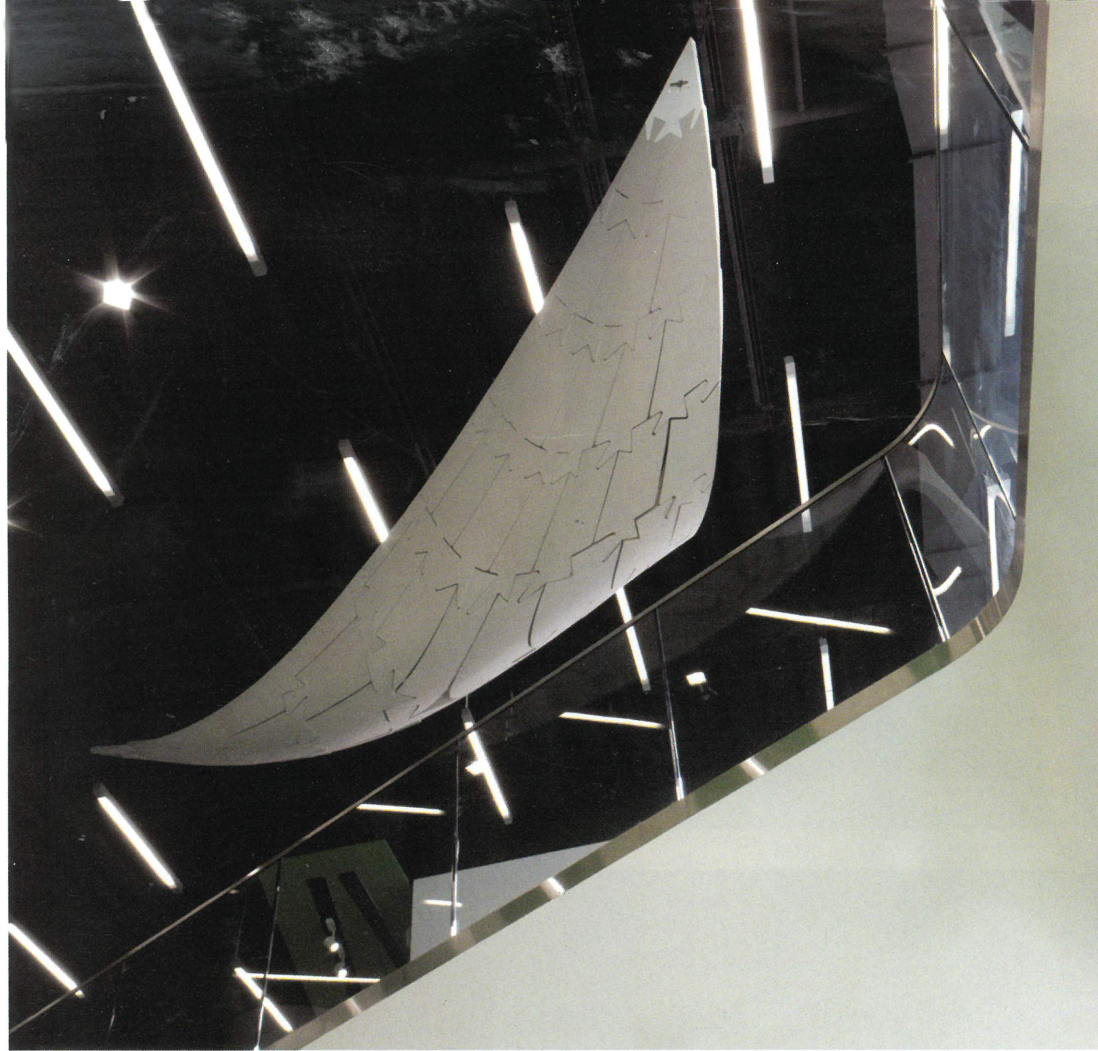
Contrary to a dome construction, where the keystone serves as a crowning moment, here, a field of keystones connects the entire surface, each interlocked into its neighbors and all working in tandem to produce a single monolithic tensile surface. In turn, the terminus of the catenary, its nadir, is characterized by an ocular void- acting as a tensile ring. The underbelly of the vault

displays the continuity of the tensile surface, while the top surface remains articulated, as its carvings help to offset the necessary tolerances needed to overcome misalignments between blocks, a rustication of sorts.



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