

Accumulus

Project Statement

The world's great architectural icons emerged at the confluence of technology and design, pushing the boundary of what was possible in the creation of iconic form. As the center for global innovation, Silicon Valley deserves an icon that celebrates its rich history. Building upon the lineage of revolutionary architectural thought, *Accumulus* establishes a new paradigm for the interdependent understanding of form, structure, materiality, and performance through use of cutting-edge computational design.

Drawing upon the intelligence of natural systems, the synthesis of computational simulation and physical prototyping enables precise prediction of material behavior to maximize strength and material efficiency. Leveraging steel for its high structural integrity and infinite recyclability, this project looks to the ubiquitous steel strip as its starting point. In contrast with traditional steel structures, which require excessive cutting and welding operations, *Accumulus* uses robotic precision to perforate the steel. The precise hole placement establishes a geometry that allows linear strips to weave together simply into a doubly-curved monocoque shell, elegantly carrying loads through the thin minimal surface. By minimizing use of a highly recyclable material, *Accumulus* simplifies construction and reduces costs.

By nightfall, solar-powered low-luminance LED strips bring *Accumulus* to life with colorful displays of animated lights that dance along the structure, captivating nearby visitors without disturbing wildlife or airplanes. The Tower and Pavilion activate Arena Green with multi-functional gathering spaces and various amenities for the community at large, and integrate with local wildlife and greenery, further reducing the overall carbon footprint of the project. The lattice structure provides an elegant scaffolding for climbing plants and holds custom birdhouses for local cavity-nesting birds. The edge of the ramped path serves to integrate hydroponic beds for hanging plants that use the ramp's slope as part of an embedded passive irrigation system.

While architectural icons of the past have been monuments to technology alone, *Accumulus* is emblematic of a more contemporary paradigm where humanity and nature coexist, presenting an architecture that welcomes and encourages the natural ecosystem to expand within the structure. Rather than looking to biology purely for aesthetics, bio-inspired computational design embraces the systemic and behavioral principles found in nature and translates, rearranges, and adapts them to be drivers for the creation of space and form. *Accumulus* proudly expresses the collective ingenuity of Silicon Valley commemorating its achievements and stands as a beacon for future generations.