THE CATERPILLAR

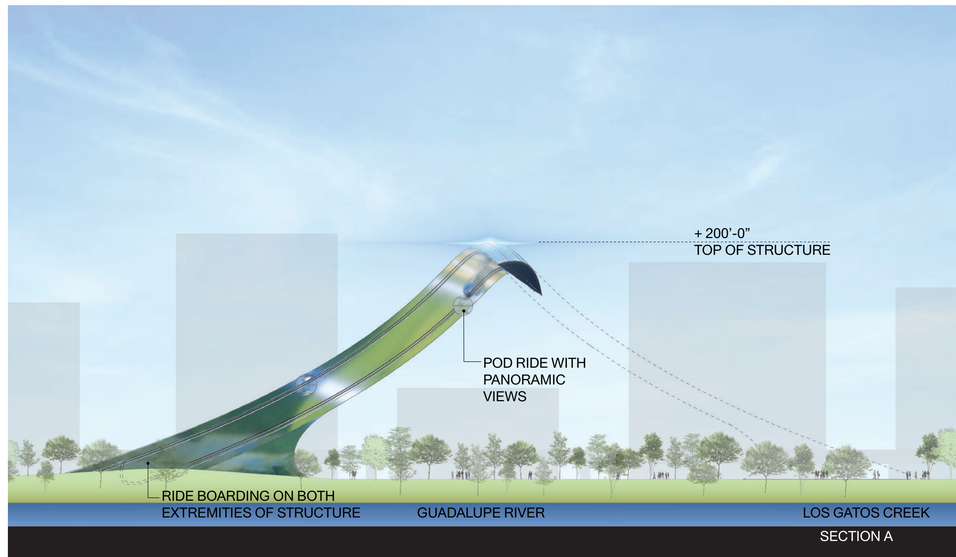
A DESTINATION OF INNOVATION

"The Caterpillar" celebrates the everchanging culture and innovative spirit of Silicon Valley. This landmark is the "gateway to the future" as a symbol of change, creativity, and innovation. The design evokes this by creating an everchanging experience that varies depending on the perspective and angle it is seen from. The structure stands at 200 feet tall and spans from east to west of the site over the Guadalupe River, respecting the existing nature of the park and the riparian corridor. On the West side of the site, as you walk from the corner of Santa Clara Street and Autumn Street, you will be welcomed by a large plaza that leads you to one of the two pavilions of the icon. The icon's two pavilions sit on its two ends, where visitors can purchase tickets and experience a gondola ride and experience panoramic views of the city and beyond. This iconic landmark anchors on both ends of the site creating an active place to be enjoyed day and night.

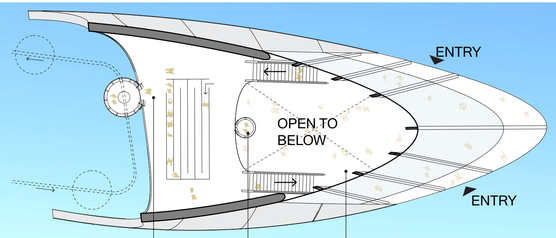
Its design embraces sustainability at its highest level giving Silicon Valley a Net Zero icon. The structure is envisioned to support the 2030 Challenge of a carbon-neutral built environment by reducing the overall energy consumption through the use of passive design strategies while using an integrated photovoltaic array on the top surface to harness energy to store and use on-site. Through the use of environmental and building simulation tools, we can analyze the amount of solar radiation that would fall on the solar panel array surface and calculate that it would produce an amount of XX KWh of energy per year.

"The Caterpillar" aims to create a unique urban identity for Silicon Valley by reflecting the ingenuity of the region as a global center of innovation and technology, and becoming the next international icon!

SITE PLAN

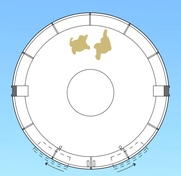


SECTION A



PAVILION PLAN

TYP. POD SECTION



TYP. POD PLAN

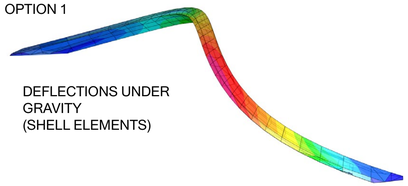
STRUCTURAL ANALYSIS

A preliminary sensitivity study was conducted to test the structural framework of this bridge-like structure that spans approximately 800 ft from one bank to another and rises to a height of 200 ft. Thetarget frequency was set to avoid resonance in the event of wind. Two baseline structral approaches were studied:

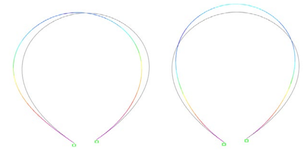
Option 1 – steel plate structure. Continuous steel mesh was optimized to trapezoidal shape to fit within the architectural shell constraints. The trapezoidal shape of the simplified beam frame component follows the rotation of the ribbon. In order to meet service level requirements and structural frequency target, at a 15'-height the thickness of the plates are 2 and 3 in.

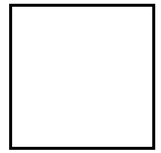
Option 2 – truss scheme. After analyzing the Option 1, we further optimized the structural components implementing truss scheme to provide primary structural resistance through compression and tension in the elements allowing to reduce steel tonnage. Steel elements were sized to meet the serviceability constraints.

OPTION 1

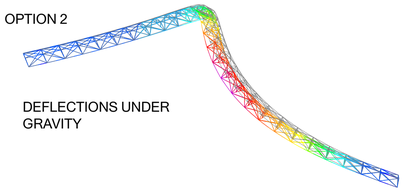


DEFLECTIONS UNDER GRAVITY (SHELL ELEMENTS)

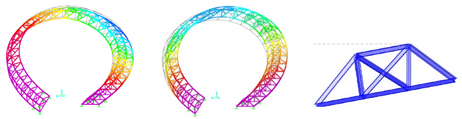




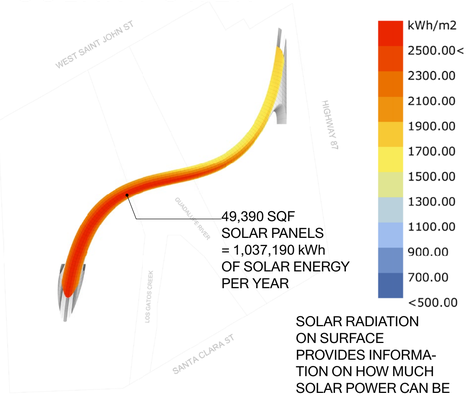
OPTION 2



DEFLECTIONS UNDER GRAVITY

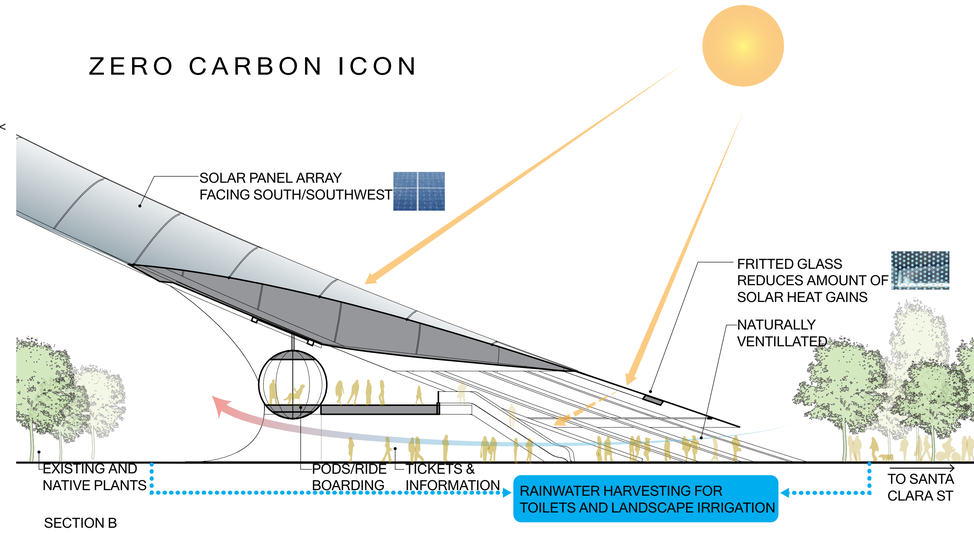


SOLAR POWER



SOLAR RADIATION ON SURFACE PROVIDES INFORMATION ON HOW MUCH SOLAR POWER CAN BE COLLECTED.

ZERO CARBON ICON



SECTION B

AN ICON AWAITS