



BSA

BROWN +
STOREY
ARCHITECTS

“Pangaea Station” EV Charging Station

for Electric Autonomy Canada’s Electric Fueling Station of the Future
Design Competition, 2021

Brown and Storey’s approach to the challenge of public electric car charging infrastructure along major highways treats the travelers as agential activators, engaging with technology, media, culture, and landscape. As much as the structures are architectural, they are apparatuses and instruments that interact with site and climate, and attempt to partially improve the environment they occupy.

We have selected an ONroute service station along Highway 401 near Bowmanville, Ontario, but have rethought its relationship

to the land in a more fundamental way. Where the large historic territory of Highway 401 has ignored geological strata, culverted rivers, fragmented forests and disconnected natural pathways and courses, Pangaea Station acts as an instrument to connect lines of energy and engagement of the landscape.

The two main structures of the station are a large pergola, which provides shade and cover for the charging area, and the adjoining atrium, which contains a series of defined internal rooms and facilities.



Aerial View of Pangaea Station

Pangaea Station: Between the Historic and Kinetic Landscape

Using the 'historic' site of the highway service station, the new charging station creates a fusion with a new energy infrastructure built form and a kinetic landscape on the site of the OnRoute service centre along the 401 east of Toronto at Bowmanville. Elements include the following:

- 1. String Figures**, pathways that span through the east-west layers organizing the site, gardens and the station's internal bent structures;
- 2. Solar Green Frieze and Talus Emplacements** establishing the first line of engagement along the 401, the frieze is made by elevated hexagonal frames serving as solar collectors, hedges, open frames and lighting;
- 3. Pollinator Meadow** interacting with the green frieze, strengthening the local ecology and promoting sustainable stormwater management
- 4. Striated Sound Baffle** with three mounded ridges running lengthwise in a rhythmic configuration;
- 5. Park Zone** containing garden plots and forest circles of varying sizes delineated by the north-south String Figures
- 6. Public Shade Pergola** reached by the access road containing the charging stations and parking, providing shade and cover, and acting as a panoramic frame of the foreground landscapes to the north and station structure to the south.
- 7. The Charging Station Structure** is organized out of a tessellated arrangement of hexagons that create 'fractal' boundaries, interlaced

interior and exterior skin conditions. The roof contains an array of solar energy collectors and measures to direct stormwater through the building and to the adjacent landscape;

- a. The Open Atrium:** an open yet covered primary entry into the Charging Station. This space is modified by a series of indoor/outdoor curtains that can adapt to seasonal and day-to-day needs. The atrium is a space for events, exhibits and media information.
 - b. Bents:** The main building is separated, following the alignment of the String Figures that have been carried through all of the east-west layers of the site, by seven "bents," contemporary interpretations of traditional barn framing.
 - c. Media Plinths:** The bents divide the main structure into eight large rooms strung together by exhibition plinths. These plinths contain media elements to promote local economy, tourism and culture.
 - d. Interior Program Elements:** a garden centre with exterior plantings, co-working offices, restaurants, indoor/ outdoor cafés, retail space, and room for other partner-user space potentials.
- 8.** The innervated wood forest is an encompassing landscape gesture for the site, but nevertheless a partial intervention within an expanded context. A broad, black walnut allee frames a space of emergent trees and new plantings that interconnect the sites flanking fragmented forest remnants.

The Shade Pergola

The space under the shade pergola is the main arrival and charging space. The pergola structure is a panoramic arc, a threshold to the Electric Station to the south and the multiple striations of gardens, meadows, and the Green Solar Frieze bordering the highway to the north. The pergola is interlocked with the main atrium structure, creating courtyard areas in between.

As a shade structure, it is intended to be large enough to compete with the adjacent landscapes. The long and elegant pergola, with its filtered light, becomes an arrival garden with special places to walk, pause, and enjoy a unique environment. The gardens and treed spaces along the underside of the shade pergola offer an opportunity for the travelers to unwind, pause, and have a coffee or something to eat from the adjacent restaurants.



Courtyard space between pergola, charging stations, and pavilion, 9PM.

The Atrium

The main building is separated by seven “bents,” which are contemporary interpretations of traditional heavy timber barn framing. The bents are composed of glass, textiles, curtains, open wood slats. They are equipped periodically with stairs that are distributed to selected bent locations as access to the solar roof, as well as carrying rainwater to grade and distributed to the adjacent forest.

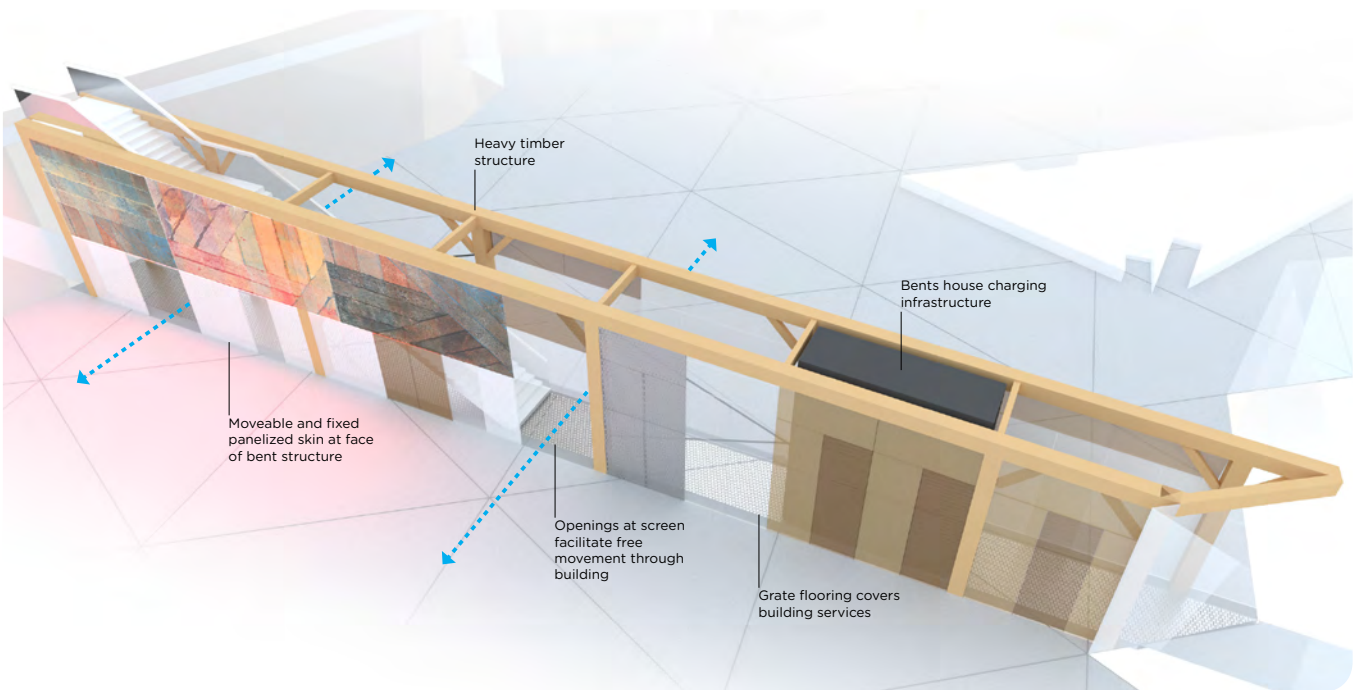
These bents divide the main structure into eight large rooms strung together by exhibition plinths containing media elements to promote

local economy and culture. The rooms can offer the travelers a number of programmed possibilities such as traveling art shows, short theatre performances, food festivals, indigenous art, history and enterprises.

Local municipalities can also take advantage of this space to promote local business and tourist opportunities, as well as expositions of farm equipment and technologies with innovative farming practices typical of the surrounding site’s expanded context.



Interior space with dining area, 10 AM



Media Bents



Conceptual site plan

Key Statistics

Parking Spaces

Electric Vehicle Parking Spaces: 107
 Supplementary Spaces: 51
 Total Spaces: 158
 Potential Future Spaces: 93

Building Dimensions

Length: 225 m
 Width: 105 m
 Total Internal Area: 9,776 m²
 Combined Area of Bents: 849.2 m²

Linear Forest

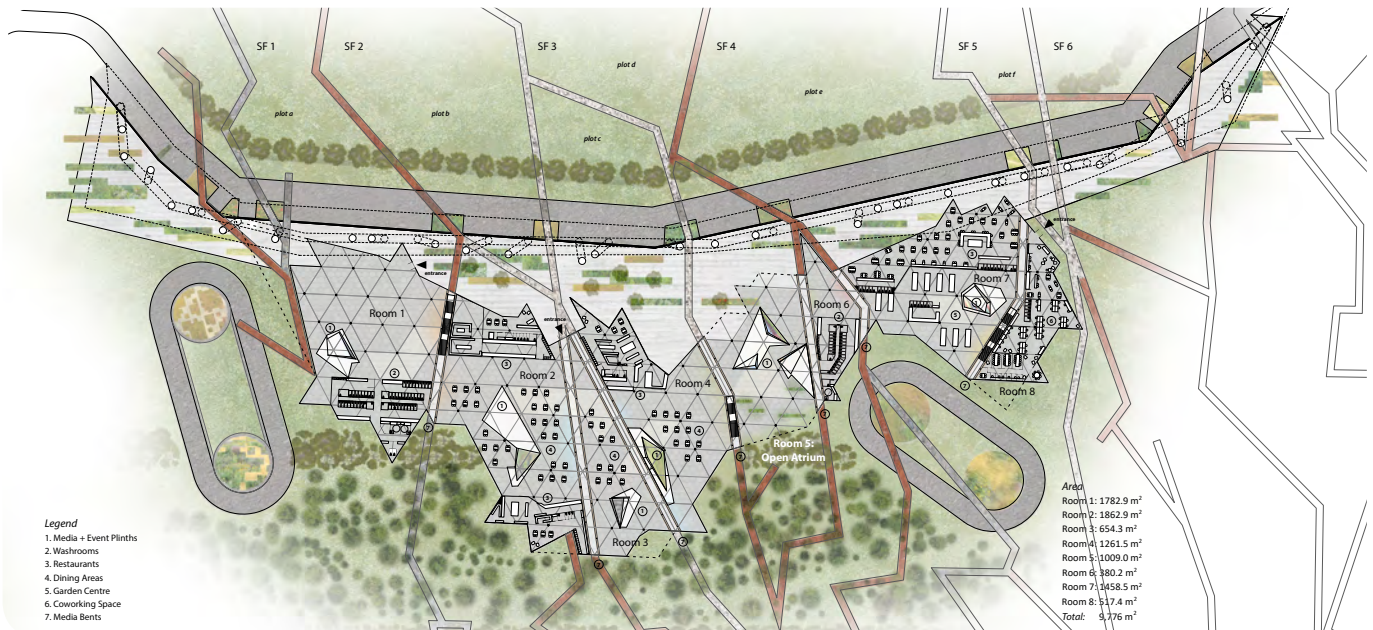
Area: 65,128 m²
 Number of New Trees in Allees: 456

Solar Panels

Solar Panels on Roof: 407
 Solar Panels on Roundabout: 55
 Total Number of Solar Panels: 462
 Total Area of Solar Panels: 5,124 m²

Pergola

Length: 379 m
 Width: 7.5m to 31.0m
 Area: 4915 m²



Floor plan

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