Living Systems

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INNOVATIVE MATERIALS AND TECHNOLOGIES FOR LANDSCAPE ARCHITECTURE
Multi-Tiered Vine Park //
Raderschall Landschaftsarchitekten AG + Burckhardt & Partner AG

In MFO Park, the second of a series of four new parks planned for a major redevelopment area, Raderschall uses a complex open-air trellis to create a multi-tiered urban park. Referencing the neighborhood's industrial past, the steel cable tensile structure holds vegetation and park circulation in an architectonic form more than 100m (328ft) long and 17m (55.8ft) high. **THROUGH AN ELABORATE NETWORK OF CABLES AND PLANTING TRENCHES, THE STRUCTURE EMPLOYS THE SIMPLE GROWING HABIT OF VINES TO CREATE A SERIES OF SPECTACULAR IMMERSIVE LIVING VOLUMES.**

Two vegetal walls or skins envelope the interior and exterior perimeters of the steel matrix, defining the space of this unusual park. Situated between the vegetal skins, a circulation route of steel stairs and walkways allows access to the upper structure, which includes a sundeck and loggias. The wood-decked loggias are cantilevered internally, creating opportunities for viewing the central courtyard and for immersion within the filigree of vines and structure. Bounded by the vegetal structure, a courtyard of green glass aggregate contains seats, a fountain, and vine trellises shaped like inverted conical columns.

The vegetal skins are populated with multiple species of vines that grow upon the steel network of cables. The vine-growing nets are isolated from the main structure by about 50cm (20in) to prevent the vines from threatening the integrity of the structure. At the base, cables express the vine habit with radial bouquets extending upward, resulting in a form that both anticipates and abstracts naturalistic form. The form also consolidates the planting pits and creates more porous circulation on the ground plane.

To achieve a constant cover of foliage for the entire height of the 17m (55.8ft) structure, two strategies are employed. First, on the second level of the structure a series of trenches support a second tier of vines that are trained on a thinner network of cables. Secondly, vine varieties were chosen and distributed according to the height at which they grow and deploy foliage so that constant cover was achieved.

All together, 104 perennial vine varieties were chosen including vigorous woody vines, such as *Wisteria, Vitis, Ampelopsis*, and *Parthenocissus*. The symbiosis of structure and vegetation is reinforced by the assignment of a single species of vine to each vertical cable, such that the structure fades away, allowing the forms to be dominated by the dynamic character of the vines.

The vines are irrigated by a system that employs the site's internal watershed. The floor of the park is drained to the planting pits of the vines, which in turn are also drained to ensure that there is never standing water around the plants. The excess water that drains from the pits is collected in a cistern and then pumped to planting containers on the second level, ensuring that all plants on site benefit from the rain harvesting system. The cisterns also function to retain water on site during rain events and thus serve as a dry weather water source for site irrigation. The cumulative load that the vines will eventually place on the structure is variable and difficult to calculate. Factors such as wind resistance, rate of growth, and structural integrity of woody vines create an ultimately unpredictable stress on the structure that prescribes a strategy of structural oversight. The structure will have to be periodically monitored to ensure that the skeletal structure is not overcome by the living system it is designed to support.

MFO Park’s design hybridizes the dynamism of the vegetal medium with the scale and volumetric effect allowed by the matrix of steel cables. **THE RESULTANT EFFECTS ARE MANY, BUT PERHAPS THE MOST DRAMATIC IS THE STRIKING TEMPORAL TRANSFORMATIONS THAT THE VEGETATED VOLUME EMBODIES AND WITHIN WHICH VISITORS ARE IMMERSED.** With each seasonal cycle the structure shifts from a bare steel armature into a spectacular display of foliage and flowers. With each year, the vegetation consumes more of the skeletal steel structure, which slowly recedes into breathing, rustling, color-shifting and growing materiality.

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1. Two vegetal walls envelope the interior perimeter of the space and encase a steel staircase and walkways. 2. The east elevation demonstrates the relation between steel structures and vines.
Vertical planting plan shows 104 selected vine species, each assigned to a separate cable.
With each seasonal cycle the structure shifts from a bare steel armature into a spectacular display of foliage and flowers. Detail sections of vine planting areas and structural foundation. Detail of cable foundation. Radial bouquets of tensile cables extend upward, allowing for porous circulation on the ground plane. Detail of vine armature with a steel frame and tensile cables. Circulation routes of steel stairs and walkways are situated between the vegetal walls.