NON-TRADITIONAL PROJECT

PEDESTRIAN BRIDGE PUBLIC ART PROJECT

MARTIN LYDON AVE. AND WEST CREEK DRIVE, FORT WORTH, TX

COMPLETED JUNE 2021

Drift, a wood-and-steel pedestrian bridge, has been completed and installed in Fort Worth, TX in Summer 2021. Fabricated off site with an installation time of just a few hours, Drift is an innovative example of plug-and-play urbanism, an emerging sustainable and affordable design strategy that proposes building infrastructural elements off site and dropping them into place.

Drift straddles public art, civic design, architecture, and infrastructure. On one hand, it is a community-driven, site-specific project created to bridge a physical divide—a creek—between two halves of one neighborhood and their respective park systems. On the other, the fabrication and installation techniques employed can be applied to a wide range of communities and use cases.

The designer began conceptualizing Drift in response to a brief from the client for a pedestrian bridge spanning a creek in the South Hills residential neighborhood of Fort Worth that would enhance connectivity of the many communities along the Trinity River Trail System. Historically, there had been no place to cross the 80-foot-wide culvert for seven blocks. The design team implemented three central design principles: 1) Use sustainable material and minimize impact on natural habitat on site; 2) Reduce project cost through innovative design and project logistics; 3) Create a sense of place and connect the community. The budget was $375,000—a fairly slim sum for an infrastructure project of this scale.

The designer drew initial inspiration from the Westcreek site and its immediate surroundings. Depending on the season, the creek bed shifts from a container for flowing water to a dry basin filled with driftwood and felled plants. This process of transformation—and the driftwood and plant life that reflect it—drove the bridge's material palette and form. The mid-century modern ranch style homes that fill the neighborhoods on either side of the creek also offered fodder. Drawing a line between the bridge and the neighborhoods' dominant architecture, the designer looked to molded plywood innovations, such as Ray and Charles Eames' leg splint, made during the same era as the homes.

The resulting 62-foot-long bridge resembles a smooth, curving branch of driftwood or a bowed bentwood splint, arching over the creek and providing pedestrian connectivity between two parts of a neighborhood. From other angles it refers loosely to the hull of a ship, with a convex underbelly and a concave hull containing a pathway, benches, and railings. Uniquely, these elements are all built into a single form, where irregular undulations and curves are engineered for sitting and support. This innovation also draws inspiration from Eames' splint, "where every function occurs within a single figure." Embedding the benches was a means of placemaking. With them, Drift becomes a space for contemplation, recreation, and communing, rather than just a thruway or wayfinding mechanism.

While the initial idea was to fabricate the bridge as a solid piece of wood using cross-laminated timber techniques, budgetary and logistical constraints encouraged a different but equally innovative strategy. The design team used advanced computational design tools to transform the bridge form into a buildable steel and wood structure. Taking cues from shipbuilding techniques, the design and engineering team based the structure on two custom fabricated wide flange beams wrapped with steel ribs at regular intervals following the smooth undulating surfaces of the skin. It was then clad with mass-customized CNC milled boards. In this way, each plank is custom cut, then attached to the steel ribs, creating one large, volumetric, undulating form.

This technique accommodated the bridge's unique, flowing form and met the designer and client's shared interest in sustainable design strategies. A renewable resource available through sustainable forest management programs, wood is one of the most efficient and ecological building materials. The use of computational design and mass customized CNC fabrications also supported the designer's interest in plug-and-play urbanism. "In this way, the bridge could be fabricated off site, transported to the location by any oversize truck as one piece, and lifted into place with a crane," he says. "Our cities urgently need upgrades on all levels, and plug-and-play urbanism is an economically feasible way to produce mid-scale infrastructure offsite and deliver it to its urban context. We can leverage advancements in computational design to be efficient and innovative."


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design and innovation
working with some