

KNITTING TOGETHER THE URBAN FABRIC

THE STORY OF JANET ECHELMAN'S GREENWAY AERIAL INSTALLATION

World-renowned artist Janet Echelman is creating an aerial installation for Boston's Rose Kennedy Greenway to be unveiled on May 11, 2015. Her iconic works of art have been exhibited internationally, but never before on the East Coast. Her current Greenway project promises to place Boston on the map as a destination for world-class public art.

Echelman's sculptures were recently ranked No. 1 on Oprah Winfrey's "List of 50 Things That Make You Say Wow!" The one that is coming to Boston is made from over 100 miles of rope and 542,500 knots, and will suspend over one of the busiest roads ever involved in one of her installations. At 365 feet, it will be installed at a higher altitude than any other work, and is designed to withstand the strongest wind gusts at 105 mph. The sculpture weighs approximately one ton, the longest span is 600 feet, the projected area is almost half an acre and it will be illuminated by 32 individually programmed LED lights. "Janet's work is ambitious, dramatic and accessible. Her work allows Boston as a community to dream bigger about what we are capable of," said Jesse Brackenbury, the executive director of the Rose Kennedy Greenway Conservancy.

By winning a National Endowment for the Arts grant the first time they applied, the Greenway was able to attract the patronage of their lead sponsor, the Richard and Susan Smith Family Foundation, which has never supported a public art project before. In addition to these two generous gifts, Brackenbury has won additional



support from ArtPlace America, The Lynch Foundation, Goulston & Storrs and other donors.

STEM TO STEAM

Lucas Cowan, the Conservancy's new public art curator, is excited about what it means for Boston to exhibit this sculpture. "It's a great piece of public art, and it's putting Boston's strengths on exhibit as a world leader in science, technology, engineering and math in the creation of a world-class work of

public art," he said. "It's moving Boston from STEM (Science Technology Engineering and Math) to STEAM (Science Technology Engineering Art and Math)."

When Echelman was invited to create a new work of public art for Boston, she conducted extensive research about the Greenway and the surrounding buildings to determine where they could attach the sculpture. At 125 High Street, the custodian asked her if she wanted to view the sea wall that

She Changes, Porto, Portugal, 2005 (photograph by Enrique Diaz; courtesy Studio Echelman).

was built when John Adams had an office there. As in many other places in Boston, the place where the Greenway is now located was originally the ocean shore; this inspired Echelman to think about all of the ambitious ways Bostonians have sculpted their landscape to create and re-shape their city.

The form of her sculpture has within it three internal voids, recalling the

The sculpture has been fabricated in the Puget Sound region of Washington, with each knot spliced by hand. It will arrive in a crate on the back of a pickup truck, then lifted into place by five cranes simultaneously. It will tie into four structural points on the steel girders of each building. When any one of the elements moves in the wind, every other element is affected.

over the past three years, Autodesk has developed a soft-body modeling tool that allows Echelman's team to simulate their monumental designs. It incorporates the constraints of her craft, like twine thickness, stiffness and strength, and then exerts the forces of gravity and wind in order to find their real form.

Autodesk Senior Director Rick Rundell said that working with Studio Echelman stimulates research into new areas, furthering Autodesk's mission to "help people imagine, design, and create a better world." Artists often use Autodesk design software, and Autodesk Maya is the primary piece of software Echelman uses.

Studio Echelman also collaborated with global engineering firm Arup for over a year to develop the final iteration of the design. Arup's Structural Engineering Leader Patrick McCafferty explained how his team analyzes the flow of forces within and outside the structure to find the right structurally sound shape within the appropriate attachment points.

Previously, Echelman's work utilized steel armatures for support to create a perimeter boundary around the sculpture. By integrating a new spiderweb-like structural top net, she has been able to eliminate heavy steel and attach directly into the existing built environment. For that reason, the sculptures act as soft counterpoints to the hard-edged buildings, taking the shape of the voids in the cityscape.

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"Tri-Mountain" which was razed in the 1700s to create tracts of land in place of the harbor. The sculpture recalls the energy of the former elevated highway, which when opened in 1959 contained the widest vehicular tunnel in the world. The sculpture's colored banding recalls the six lanes of traffic.

The sculpture itself is completely soft and made of many different types of braided ropes and fibers - some of which are 15 times stronger than steel, pound for pound. It will float above the Greenway, bringing the viewer's gaze skyward.

Structurally, the sculpture engages the untapped lateral strengths of the buildings surrounding the Greenway. This sharing of weight is a metaphor for teamwork and the way Echelman collaborates to create her sculptures. Echelman has assembled an all-star crew to design the artwork; Autodesk, Arup and Shawmut are three of the Boston companies collaborating with the artist on this project.

"This artwork wouldn't have been possible without the custom software tool built by Autodesk," said Echelman. In partnership with Studio Echelman



THE GREENWAY
BOSTON,
MASSACHUSETTS
MAY 11 THROUGH
OCTOBER 31

LEFT: *Greenway Aerial Installation*, from North 1 Square, at night, Boston, Mass., 2015, rendering (courtesy Studio Echelman).
RIGHT: *Impatient Optimist*, permanent installation, February 2015, in Seattle (Photograph by Ema Peter; courtesy Studio Echelman).





Skies Painted with Unnumbered Sparks, Vancouver, Canada, temporary, March 2014 (photography by Ema Peter; courtesy Studio Echelman).

In their preliminary assessment, the team identified seven or eight buildings that could sustain the force and support the structure. That number was quickly reduced to three: Chiofaro Company International Place, Tishman-Speyer/125 High Street, and the Intercontinental Hotel. This meant they had to tie into two points on one building. Brackenbury was able to get permission from the building owners with reassurance from the engineers at Arup that their design was structurally sound.

This is the first time Echelman has collaborated with Shawmut, who anticipates that the lifting of the piece with all five cranes will be choreographed like a ballet. Senior Project Manager Micah O'Neil confided that working on this project is "as complex to coordinate as building a high-rise." They will raise the giant net and tension, tighten and re-tension again a few weeks after the initial installation.

While Echelman has created these awe-inspiring works of art all over the world, she has never had a chance to build one in her hometown, until now. In daylight, the porous form blends with the sky and casts shadow-drawings onto the ground below. At night it becomes an illuminated beacon. Since the sculpture will be on view through October 2015, the artist hopes people will have the opportunity to visit several times, linger under the sculpture and experience the city in a new way.

| Donna Dodson

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