AD

INNOVATIVE DESIGN

See How a 3-D Printed Bridge Is Being Built

The structure will soon span a canal in Amsterdam's red-light district
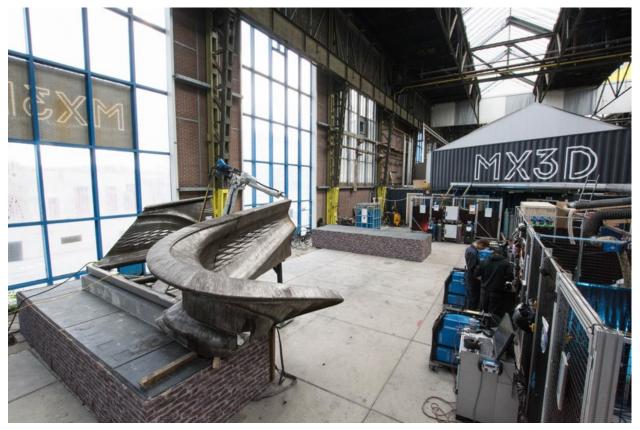
TEXT BY **TIM NELSON**

A look at where the 3-D printed bridge will be located in Amsterdam.   Photo: Courtesy of MX3D

It's a bit dishonest to label 3-D printing as the future at this point, given how it's used to create everything from art objects to housing to food. However, there are still some barriers to cross when it comes to 3-D printing larger, more complex structures out of heavier-duty materials. Luckily, a recently unveiled nonprofit research project by Dutch robotics manufacturing company MX3D seems set to push the limits of what 3-D printing can achieve.

Thanks to sophisticated software developed in partnership with Autodesk, Lenovo, and other tech companies, the team was able to transform a manufacturing robot and a welding machine into a de facto 3-D printer capable of creating a metal pedestrian bridge. Once completed, the ornately designed structure will span 39 feet across one of Amsterdam's canals in the red-light district.

A look inside of the factory producing the world's first 3-D-printed bridge.   Photo: Courtesy of MX3D

As you could expect with a product that pushes the current limits of materials and processes, it wasn't always easy. The structural integrity (or lack thereof) of the ancient canal walls at Oudezijds Achterburgwal meant that MX3D had to scrap its initial plans to build the bridge on site. But after going back to the drawing board and homing in on a streamlined design that met safety requirements, the 3-D printing recommenced, and the first three feet was completed in March. Despite the setbacks, the design is on track to finish in early 2018, with installation to take place after renovation to the canal walls themselves.

Nelson, Tim. "See How a 3-D Printed Bridge Is Being Built," *Architectural Digest*, November 22, 2017.

A closer look at the bridge, which will feature a swirling end that anchors itself to the canal wall.

Photo: Courtesy of MX3D

The learning process won't stop once pedestrians and cyclists start using the bridge to cross the canal, however. A series of sensors will record data points such as displacement, strain, and vibration, suggesting methods for refining future 3-D-printed infrastructure projects. Until then, MX3D's visitor's center will afford the curious a chance to see the autonomous printing process at work.