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PORTLAND INTERNATIONAL AIRPORT REDEVELOPMENT PROJECT

How Timberlab Fabricated a Sustainable and Cost-Effective Mass Timber Roof with Manufacton

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Executive Summary:

The Terminal Core of the Portland International Airport (PDX) is currently undergoing a $2 billion redevelopment project to transform the facility, making it sustainable and resilient to natural disasters, like earthquakes. The centerpiece of this project is the terminal's new 400,000-square-foot mass timber roof, which is being manufactured by Timberlab, a full-service mass timber systems provider. To execute this project and avoid disruption to the surrounding communities, Timberlab built the new roof in a manufacturing facility and will assemble segments above the existing roof over the course of one year – aided by the technological innovations of Manufacton.

"We partnered with Manufacton before this redevelopment project to become more agile and better equipped to foster mainstream adoption of mass timber and expand our sustainability efforts. These benefits were maximized during the manufacturing and procurement of materials for the roof because we were able to track an enormous number of pieces and materials, helping us remain on time and aware of progress during every step."

Chris Evans, President at Timberlab

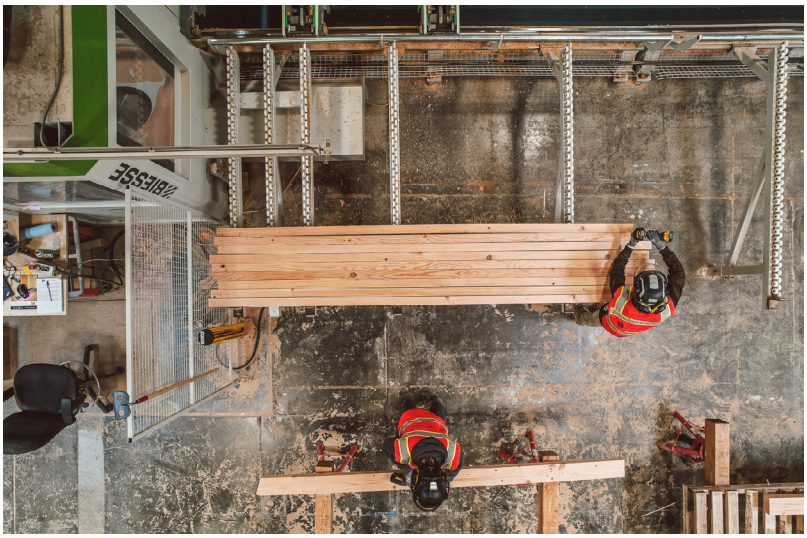
Project Overview:

The Terminal Core Redevelopment Project is part of a significant expansion project at PDX, named PDX Next, which began in 2020 and is expected to be completed by 2025. PDX Next is a $2 billion project to expand the airport and ensure it can accommodate the steadily increasing number of annual travelers while minimizing its carbon impacts.

The roof is comprised of approximately 3.3 million board feet of Douglas Fir, and all the timber was procured within 300 miles of the site from regional manufacturers, local landowners, and Pacific Northwest tribes, aligned with the goal of being sustainable and cost-effective. The actual design includes 400 80-foot glulam arches, a Mass Plywood Panel roof diaphragm and skylight curbs, and a lattice of 3x6 Douglas Fir inspired by regional weaving traditions.

How Manufacton Helped:

For this project, Timberlab relied on Manufacton to help its team stay on track and remain aware of progress made with its real-time visibility and communications capabilities. This is especially critical for the project as it is being manufactured offsite and the team needed the ability to track materials and ensure quality control at every stage of production.



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Notably, to install the roof, it will be disassembled into 100x300 modules and assembled above the existing roof in segments over an entire year. Manufacton helps Timberlab by providing real-time access to the BIM Model drawings for the redevelopment projects onsite, which means the team can understand where materials and modules should go once they show up at the jobsite. In fact, the team can place QR codes on the modules in the factory so that when they arrive onsite, the installation team can quickly scan the piece and understand exactly where it should go while completing the assembly of the roof.

“The Manufacton team really supported us at Timberlab for this exciting and monumental project that continues to be recognized globally,” said Chris Evans, President at Timberlab. “They participated in weekly meetings with us and committed to providing us excellent customer service as we navigated this job and stayed on top of other projects, all thanks to the offsite construction platform. We were thrilled to see President Biden visit PDX while in development and talk about Mass Timber, which is where we see the construction industry heading, in tandem with industrialized construction principles.”

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