



## Boeing's Everett Plant — Home of the 747 and a New Era of Air Travel

In 1968, the door to global air travel was flung wide open by The Boeing Company.

And that door — which happened to be close to the size of an NFL football field — was just one incredible feature of the 1.9-million square foot Boeing 747 assembly plant that The Austin Company designed and built in Everett, Washington.

Fifty years ago, Austin signed a contract with Boeing to design and construct an aircraft assembly facility that would be home to the world's then largest commercial jetliner — the 747. When completed in 1967, the facility covered over 43 acres in a suburb north of Seattle,

with an astonishing 205,600,000 cubic square feet in volume. It was, and remains, the world's largest usable space building.

Construction of the plant is legendary. In April 1966, Boeing had a \$525-million order from Pan Am to deliver 25 jumbo jets. And Boeing's CEO, Bill Allen, was determined to fill the order and increase demand for the planes.

To build the planes, however, Boeing needed a plant that could house the manufacturing of a plane that was two-and-a-half times larger than its then largest jetliners (707, 727 and 737). Its Renton, WA and Boeing Field facilities fell far short of meeting that requirement.

By late spring 1966, Boeing selected a 700-acre site adjacent to a Seattle-area airport (Paine Field) and hired its long-time design and construction partner, The Austin Company, to build what would become the largest manufacturing site in the world.

Beyond the enormity of building a facility that was the size of Disneyland, thousands of construction workers and hundreds of trade subcontractors overcame tremendous obstacles to achieve the 19-month completion schedule. Those obstacles included clearing, draining and leveling hundreds of acres of forest; developing a pedestrian tunnel system that would total over 3,000 lineal feet beneath the facility; constructing tracks that would link the plant to railway services to deliver construction materials; and persevere through windstorms, mudslides, 67 continuous days of rain, and snowstorms.



According to a *Daily Herald* (Everett) article of Jan. 24, 2016, retired Boeing engineer Joe Sutter said the Everett site was a wilderness. "It looked like a huge endeavor, because there was no main road from I-5 over to that site," he explained. "There was no railroad system up the hill, and there was a big forest with bears in it and a swamp. So, (Boeing's project director Bayne Lamb) had a helluva job."

Aside from horrendous weather, there were logistical challenges throughout the project, said retired Austin employee, Jim Burke. Burke served as a buyer for the expansion project and he



Snowstorms and weeks of rain challenged the crews working on Boeing's enormous expansion project in Everett.

was tasked with purchasing all of the steel and materials required for the temporary electrical services, as well as the building electrical services.

"One of the more memorable experiences of that project was when 12 rail cars of blue steel from Bliss Mill went missing," Burke recalled. "We were tracking all steel deliveries and knew that 12 rail cars, with the majority of the sub-assembly building columns, had left Bliss Mill (Salem, Ohio), but had not arrived to the jobsite as scheduled."

After a few days of checking with the railroad with no success, Austin rented a private aircraft and pilot and sent Burke into the sky to follow the railroad from the jobsite.

"We'd go all the way back to Ohio, if necessary, to find the missing steel," he said. Two days later, Burke spotted the blue steel on a railroad siding just outside of Missoula, Montana. The plane landed at a nearby airstrip and Burke rented a taxi to the railroad siding. He tracked down the siding master and convinced him to get an engine to the siding to reconnect the rail cars to get the steel moving again to Everett.

As progress was made in the construction of the facility in late 1966, Boeing brought in its first 113 production workers on Jan. 3, 1967. The group became known as "The Incredibles" as they began the initial phases of building the first 747 while construction of the gigantic facility



Several 747s are near completion in this 1969 photo.

The fuselage of the first 747 began assembled in the expanded Boeing plant in Everett, Wash.



### Quick Facts: Boeing's Everett Plant

- The factory has its own fire department, security force, fully-equipped medical clinic, day care center, fitness center, electrical substations and water treatment plant.
- More than 1,300 bicycles/tricycles are used by employees throughout the facility.
- The rail running uphill to the factory is the steepest active standard-gauge railroad in the U.S. It is managed by BNSF.
- More than 150,000 people tour the facility annually.

preceded just steps ahead of them.

The *Daily Herald* article included observations from a retired Boeing machinist, Paul Staley. "There were times you'd come into the machine shop, and it'd be filled up with fog because the building was still open at one end," he said. "We built the factory, the jigs and the airplane all at one time."

At the time of the factory's completion, the building measured 1.9-million square feet and featured a state-of-the-art circulation system. Because of the temperate climate in the Seattle area, the facility doesn't have climate control for temperature. Instead, the doors are opened in the summer on extremely hot days, and in the winter,

more than one million light bulbs and the body heat of 15,000 employees keep the work areas comfortable.

By the end of September 1968, Boeing's 747 prototype rolled out of the Everett plant to cheers of a crowd that had gathered to see the huge jetliner. Inside the plant, efforts continued by thousands of employees to assemble the growing number of 747s that had been ordered. By late 1967, the company had orders for 88 of the new 747s and was projected to build 400 by 1975.

Today, in 2016, 50 years after construction began in a forest 22 miles north of Seattle, Boeing's Everett aircraft facility remains the world's largest building by volume. Not only has Austin's design and construction stood the test of time, the facility has since been more than doubled in size — to 4.3 million square feet (472 million cubic feet in volume). Austin was Boeing's chosen partner for Everett's expansion projects that led to the production of the 767 and 777 jetliners.

Austin and Boeing's partnership ushered in a new era of jetliner that opened the door to global travel for billions of people since the first 747 left the runway in early February 1969.

## Quick Facts: Boeing's 747

- Length: 225 feet, with a tail as tall as a six-story building
- Wingspan: 196 feet; it could accommodate 45 cars
- Range: 6,089 miles
- Nicknames: "Jumbo Jet" or "Queen of the Skies"
- In the summer of 1965, during a fishing trip with Boeing CEO Bill Allen, Pan Am's founder, Juan Trippe, asked Allen to build a jet that was twice as big as the 707. In the mid-1960's airport traffic was becoming congested and Pan Am believed that fewer, larger jetliners would help the company operate more efficiently.
- The project timeline was so aggressive that the 747 prototype was built before the building's roof was finished.



### Sources:

<http://airwaynews.com/html/articles>  
<http://www.heraldnet.com/article/20160124/NEWS01/160129689>  
<http://www.boeing.com/company/about-bca/everett-production-facility.page#/history>  
<http://www.concretetech.com/project%20reports/boeingtunnel.html>  
<http://www.ericewe.com/travel/10-myths-facts-about-boeing-factory-tour-everett-wa/>  
<http://www.theaustin.com/case-study/boeing-company-747-aircraft-assembly-plant>  
[https://en.wikipedia.org/wiki/List\\_of\\_largest\\_buildings\\_in\\_the\\_world](https://en.wikipedia.org/wiki/List_of_largest_buildings_in_the_world)  
[http://www.encyclopedia.com/topic/The\\_Austin\\_Company.aspx](http://www.encyclopedia.com/topic/The_Austin_Company.aspx)  
<http://www.boldmethod.com/blog/lists/2014/11/16-little-known-facts-about-the-boeing-747/>

