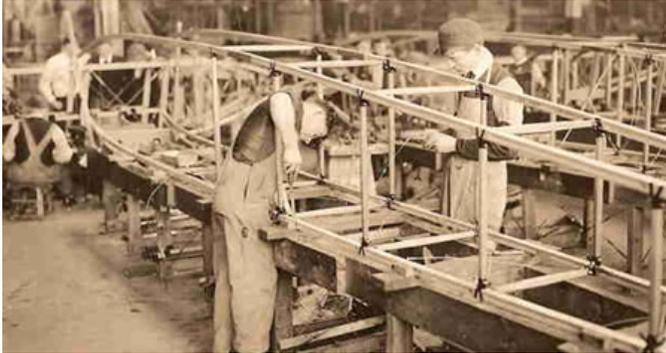


# Pioneers in Aircraft Manufacturing Facility Design-Build

## What was it like to design and build an aircraft manufacturing facility 100 years ago?

*Written by Mike Pierce – May 2, 2016*



As Austin celebrates 100 years of designing and building world-class facilities for manufacturing, maintaining, and developing aircraft, airplanes and other aeroplanes, I wonder what it was like to do these projects 100 years go.

Austin's history is rich with significant accomplishments for aviation. Many of these milestone projects were during war years, starting with World War I and again with World War II. Invariably, the projects were completed in incredibly short schedules to respond to immense and urgent demands for these aircraft.

While these projects are a well-recorded part of Austin's history, the journey to landing these efforts is not. There is another part of that story – an important one – that requires some forensic deduction to piece together.

The Curtiss Aeroplane and Motor Company was being commissioned to provide hundreds of aircraft for pilot training for WWI. At this time, Austin had already been in business 38 years, and had been performing integrated design-build for about 15 years. In that time, Samuel Austin and his son began to expand well beyond their Cleveland base, taking advantage of the growing railroad network to move people, materials and supplies to project sites around the country.

They began to prefabricate and ship steel assemblies for industrial structures, enabling them to erect a building much faster than commonly done in those times – pioneers in the field of pre-engineered buildings and modular construction.

That innovation and entrepreneurship (although I doubt the term was invented yet) put them ahead of the curve and consequently, they offered what few firms could offer at that time – a single source for designing and building plants, with the vertically integrated resources and resourcefulness to accomplish projects in record time.

Those accomplishments should not be underestimated. Things that were taken for granted even in the 1960s did not yet exist when the Austins were making history with industrial milestone projects nationwide.

- The Interstate Highway System was a product of the Eisenhower administration in 1956.
- Commercial aviation was formalized in 1926.
- While widespread use of the telephone in business began in the early 1900s, the telegraph was still used widely, as telephone to remote locations was unreliable. The telegraph was often used for daily communications, as well as intercontinental communication, as late as the 1960s – I remember getting a telegraph in the 60s with news of my brother's recovery from an illness when he was serving in the Air Force in Viet Nam.



WE'VE BEEN THERE...WE'LL BE THERE.

# Pioneers in Aircraft Manufacturing Facility Design-Build

Imagine trying to sell, organize, supply and execute a challenging project when daily communications between project stakeholders located in different cities were a futuristic concept.

Each project in a new location meant sending planners, engineers, builders, accountants, business managers and others to a remote location – typically by rail, maybe even by stagecoach (if west of the Mississippi), followed by equipment, supplies, materials and tools. Also, consider the schedule of the Curtis project – design and construction of a gigantic 540,000 square-foot facility and 63,000 square-foot plant within 120 days – and imagine the sheer logistics of it (also doubt that was a word then).

Achieving that schedule required the delivery of materials to the site to facilitate speedy erection, probably on a “just-in-time” basis. The project manager had to make sure the site was organized, materials arrived on time, and construction flowed on a predicated path – all without the aid of Primavera, MS Project, or even a ball point pen (which came into popular use after WWII).

I cannot write this piece without offering a few glimpses of those things that enabled this schedule performance to go faster than what we might accomplish today. Standard building codes were just being conceived. EPA, OSHA and ADA were all creations of the past 50 years. This is not meant as an editorial comment on the value of those things, just a comment that without them, a schedule would be faster.

So it is 1916, and Wilbert Austin asks you to move to Buffalo for the next 6 months and in that time design, engineer and construct a building for manufacturing aircraft, putting about 12 football fields under one roof, with the war effort is depending on you. The genius of the Austins was that they had standardized much of the work, so that your focus would be on the execution and not the creation of the basic plan. That standardization allowed scheduled shipments to the job site (by rail or ship and later by local truck) of prefabricated steel trusses, materials, tools and equipment.

That standardization was an innovation that played an important, and unheralded, role in the industrial power of the U.S. as it became a world economic power. And, as Paul Harvey used to say, “now you know the rest of the story.”

*“The industrial revolution that defined the first half of the 20<sup>th</sup> Century marked the start of modern business, typified by high-volume, large-scale organizations. Mechanization created a culture of business derived from the capabilities and needs of the time.”*

**Steven Sinofsky**

*“Necessity ... the mother of invention.”*

**Plato**

