

Ted Stubbersfield

April 2016 - Special Edition

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Dear Reader

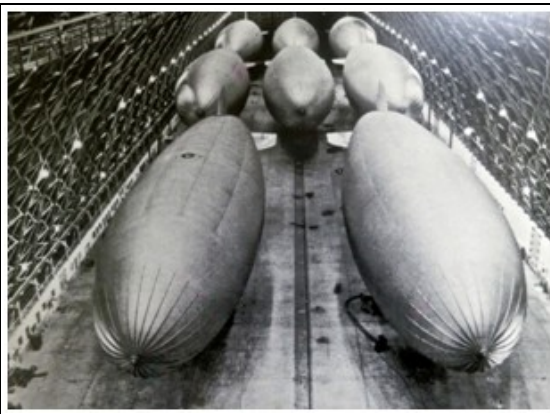
I am hoping to write the normal monthly newsletter on Recycled timber which should come out later in the month but the opportunity has arisen to issue a special issue. When writing last month's newsletter on large timber structures, I remembered that a friend Dr. Dan Tingly told me that he had designed one of the world's largest timber structures. ([If you missed that newsletter you missed a beauty](#), as the images were staggering). I asked him for some editorial and what he sent me was of such substance that it deserved a standalone newsletter. Dan's US company has conducted the survey on the Tillamook hangar below which we also saw last month. Either Dan or Bob Keller in his office designed a lot of the structures shown here. It would be a very foolish person that thought timber was yesterday's material.

If you want to know more about these buildings or large bridges contact Dan Tingly on Cell: 04 5957 6314 or 04 28983328 or email dant.tingley@gmail.com

LARGE BUILDINGS AND BRIDGES, SOME OLD SOME NEW!

Not a paid commercial

Tillamook Blimp Hanger (now Tillamook Air Museum)





Tillamook Air Museum is an [aviation museum](#) south of [Tillamook, Oregon](#), at [Tillamook Airport](#) in the United States. The museum is housed in a former [military blimp hangar](#), called "Hangar B", which is the largest [clearspan](#) solid sawn wooden structure in the world. [Constructed by the US Navy in 1942 during World War II for Naval Air Station Tillamook, the hangar building](#) housing the aircraft is 1,072 feet (327 m) long and 296 feet (90 m) wide, giving it over 7 acres (2.8 ha) of area. It stands at 192 feet (59 m) tall.

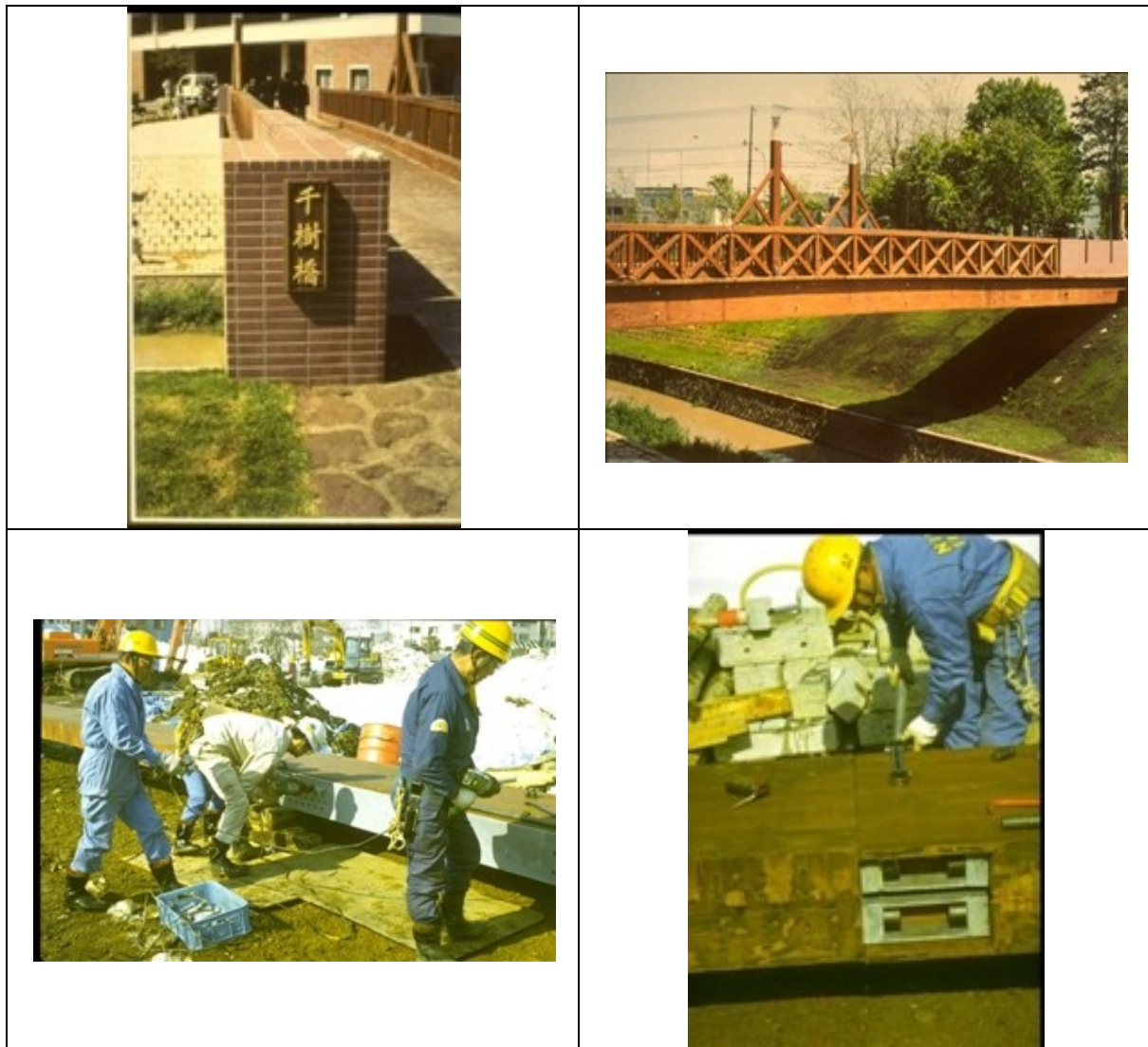
Belledune and Superior Dome Buildings



The Superior Dome, shown in the right hand photos, opened as the "world's largest wooden dome" on September 14, 1991, is a domed stadium on the campus of Northern

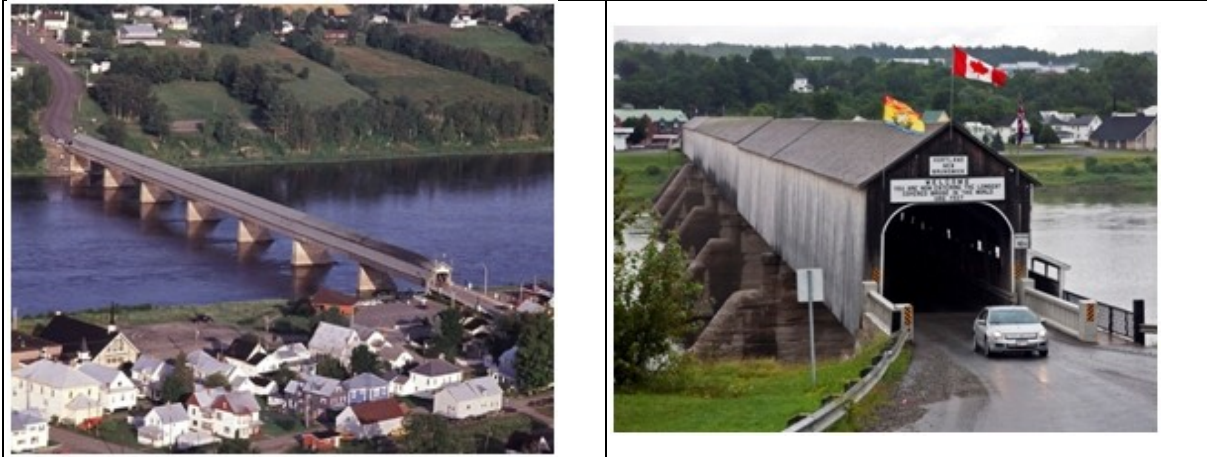
Michigan University in Marquette, Michigan, in the United States. It is home to the Northern Michigan Wildcats football team, as well as a variety of campus and community events. The dome is 14 stories tall, has a diameter of 536 feet (163 m), and covers an area of 5.1 acres (21,000 m²). It is a geodesic dome constructed with 781 Douglas Fir beams and 108.5 miles (174.6 km) of fir decking. The Belledune Coal storage building is located in Belledune, New Brunswick, Canada.

Hokkaido Bridge



Hokkaido Bridge Japan is a 38m clear span two lane highway bridge including trucks. HS 20 rated. Called "Bridge of a Thousand Trees", it has 1m deep beams due to a waterway restriction needing clear height. The spacing of the girders was 4 foot on center and they were reinforced with high strength fiber. Mitsubishi was the contractor. The bridge had a glulam vertical lam deck and a wood rail system. It was shipped in short length components and fixed end moment connectors were used to make long span girders for installation on site.

Hartland Covered Bridge



The **Hartland Bridge** in [Hartland, New Brunswick](#), is the world's longest [covered bridge](#), at 1,282 feet (391 m) long. It crosses the [Saint John River](#) from Hartland to [Somerville, New Brunswick](#), Canada. The framework consists of seven small [Howe Truss](#) bridges joined together on six piers. Plans and specifications of the bridge began in 1898 and the bridge was constructed in 1901 by the Hartland Bridge Company.

Large Timber Bridges (other)



The **Lower Burnett Road Bridge** is a three-span, timber arch bridge in Buckley,

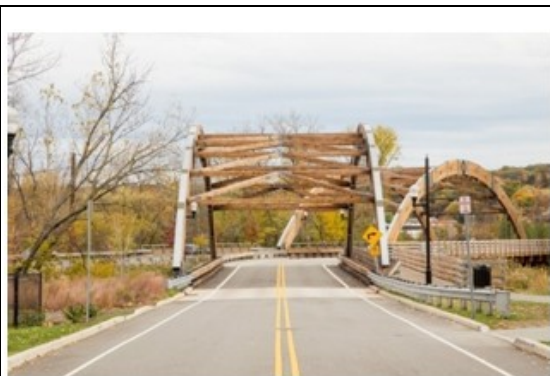
Washington. The bridge is located in the middle of a switchback where the old railroad grade gained 60.96m (200 ft) in a little more than 3.2 km (2 miles), with a horizontal radius of 198m (650'-0"). The bridge spans South Prairie Creek and Lower Burnett Road with a total span of 118.86m (389'-11½"). The structure is 5.49m (18'-0") wide and is designed to carry H15 vehicle loading in addition to the 4.07kPa (85 psf) pedestrian load



The **Bow Bridge** on Big Wood River _ Draper, ID - 160' x 6' Pinned Arch Timber Bridge, which crosses the Big Wood River at the Draper Preserve in Hailey. The Bow Bridge of the Big Wood River was designed to mimic a recurve bow that appears to have been dropped from the sky, landing string side down. The bridge now connects the East and West banks of the Big Wood.



The **Whistlestop Forest Service Bridge** in the Chugach National Forest on Alaska's Kenai Peninsula. At 280 feet, this camel back truss structure is the longest clear-span timber bridge in the US. The bridge is 14'-10 $\frac{3}{4}$ " wide with a 6'-0" wide walkway. The top of the bridge to the water level is approximately 50 feet with 20 feet of clearance from the water and about 30 feet of total bridge height in the center of the span. The bridge was designed with enough clearance to ensure that any ice bergs coming down stream during periods of high flow would pass freely under the bridge. Douglas fir glulam treated with pentachlorophenol preservative was used for the truss members, floor beams, purlins, and all bracing members. The 280-foot trusses are 15-feet high at the ends and more than 27-feet high at midspan. The structure rests on steel H-piles driven about 40 feet into the ground at the east and west ends.



The entrance to **Overpeck Park** in Bergen County, New Jersey, lies immediately adjacent to the interchange of the Interstate 80 and Interstate 95 freeways. The county, recognizing that thousands of commuters would see this entrance structure daily, chose identical glulam arch bridges for this entrance structure. Each bridge is a 42.67m (140'-0") tied arch bridge with a 9.14m (30'-0") roadway and a 3.05m (10'-0") walkway on one side only.

Unusual Timber Bridges



In the depths of northeastern India, in one of the wettest places on earth, bridges aren't built - they're grown. The living bridges of Cherrapunji, India are made from the roots of the *Ficus elastica* tree. This tree produces a series of secondary roots from higher up its trunk and can comfortably perch atop huge boulders along the riverbanks, or even in the middle of the rivers themselves. The root bridges, some of which are over a hundred feet long, take ten to fifteen years to become fully functional, but they're extraordinarily strong - strong enough that some of them can support the weight of fifty or more people at a time. Because they are alive and still growing, the bridges actually gain strength over time - and some of the ancient root bridges used daily by the people of the villages around Cherrapunji may be well over five hundred years old.