

Hangar 3 (Building 3008) Structural Assessment Report



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Hangar 3(Building 3008)

History

Hangar 3 was constructed in 1942 by the US Army Air Corps on what was Ladd Field. The National Registry of Historic Places first listed Hangar 3 as a contributor to the National Historic Landmark District in 1984 and was listed as a Cold War Historic District contributor but not individually eligible in 2007. The construction of this structure is Birchwood bowstring trusses and walls with a concrete foundation.

Building Condition

The roof trusses have been in a failure mode since at least 1987. In June of 1987 Loftus and Dailey outlined repairs needed to bring the structure to a safe level. It was stated in the report that many of the trusses were overstressed from 30-50%. In the late 80's some repairs were performed, however when the Corps of Engineers inspected the trusses in 2007, most of the deficiencies were still present. In 2004 Ammann & Whitney performed a field assessment and structural analysis of Hangar 3 which included a list of repairs to the building structure. The Ammann & Whitney Hangar 3 report noted repairs so extensive that they included repairs to every type of structural member in the building including the foundation would be required. No repairs were generated based on the 2004 report. In 2007 the Corps of Engineers completed a structural inspection of the roof trusses. The assessment made this recommendation for hangar 3 **“This building has substantial structural deficiencies and needs replacing as soon as possible. It is recommended that snow not be allowed to accumulate on the roof.”**

No repairs were generated based on the 2007 report.

Recommendation

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In the attached report titled "Typical Failures in Bowstring Trusses and How They Relate to Hangars 2 and 3" It is noted that that Hangars 2 and 3 exhibit 9 of the 11 most common failure methods. There are 24 years of uncompleted repairs in this building to every major structural system in the hangar. It is to the point now that there is a significant risk to the life safety of the occupants. One issue with bowstring trusses is that when they fail they fail catastrophically especially in a fire situation. It is my recommendation that hangar 3 should be removed from service until the building can be repaired.

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