

Building 3005
Hanger 2



Photo #1 – Exterior View, West Side

Year Built: circa 1943
Truss Construction: Wood Bowstring
Building Const: Wood
Roofing Material: Torch-down Membrane, Fair
Overall Condition: Poor
Repair Need: **Replacement Needed**

Building 3005 is a timber frame structure utilizing a unique bowstring truss design supported by columns in the exterior wall. The trusses are placed every 25' on center and transfer both the vertical and lateral loads through the structure.

Truss #2 from the east end is in failure mode (see pictures #2 through #6) with lateral buckling and a split running along it's length. This truss needs immediate repair to mitigate any life safety issues. The other trusses vary from poor to fair condition with many of the truss connections showing signs of having been overstressed. A design analysis "Hanger Bowstring Truss Repair, Fort Wainwright, Alaska" dated June 24, 1987, by Loftus and Dailey, Inc. outlined general truss repairs for Hangers #2, #3 and #6. The report noted that some of the truss members were overstressed from 30 – 50% and the trusses as a whole were near their load-carrying capacity. Current inspection of

Building 3005

Hanger 2

the trusses shows that the checks, splits and cracks noted in the 2003, 2000 and the 1987 report still exist. The structure is currently in poor condition, even with the repairs done to the trusses. Deficiencies noted include a high incidence of checks and splits in the trusses and removed lateral bracing along the north and south side of the hanger. Splits were noted through web panel point connections on truss 1, 2, 3, 5, 6 and 8 (numbered from East to West). The expense of repairing these connections to current design requirements would require that substantial demolition be done to replace the affected trusses. Replacement of this building should be strongly considered.

The East end roof hatch is open letting water onto truss 1. The roof hatch should be covered to prevent decay of truss 1.

The low roof shingles over the hangar doors need to be replaced to prevent decay of the framing at the ends of the building.

The entry canopy is in a weathered deteriorated condition.

Engineering Mitigation Recommendation:

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.

Though repairs to the trusses were done in the late 1980's, it is questionable as to whether or not they have improved the strength of the trusses to meet current life-safety requirements. A detailed structural report may be considered to determine the current load carrying capacity of the truss members and existing capacity of the remaining lateral bracing that has been left in place. Even with this information, however, many of the truss connections are beyond rehabilitation. Recurring inspections of the deficient truss members are recommended as long as this building is occupied. Repair and/or replacement of the exterior catwalks and eyebrow roofs over the hanger door openings are recommended if this facility is to continue to be used. The low eyebrow roof shingles over the hangar doors need to be replaced to prevent decay of the framing at the ends of the building. Loose bolts need to be tightened. The roof hatch should be covered to prevent decay of truss 1. The entry canopy is in a weathered deteriorated condition and needs maintenance.

Building 3005
Hanger 2

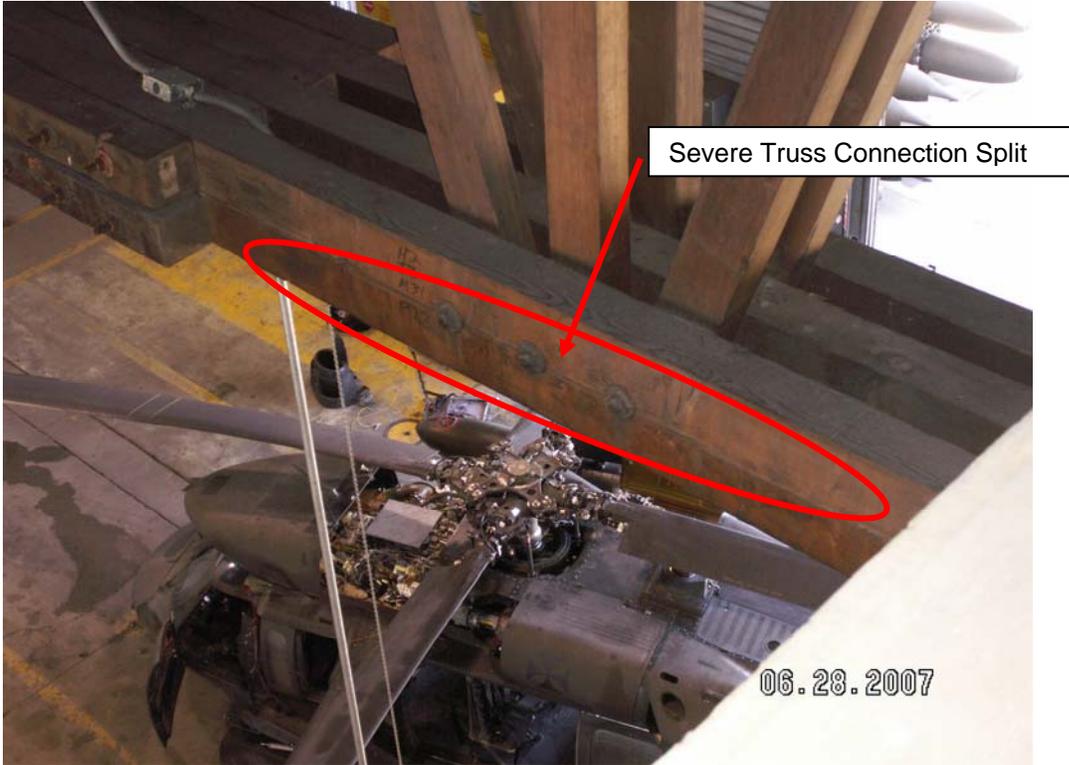


Photo #2 - Split truss bottom chord at a panel point.



Photo #3 - Web members split through connection @ panel points.

Building 3005
Hanger 2

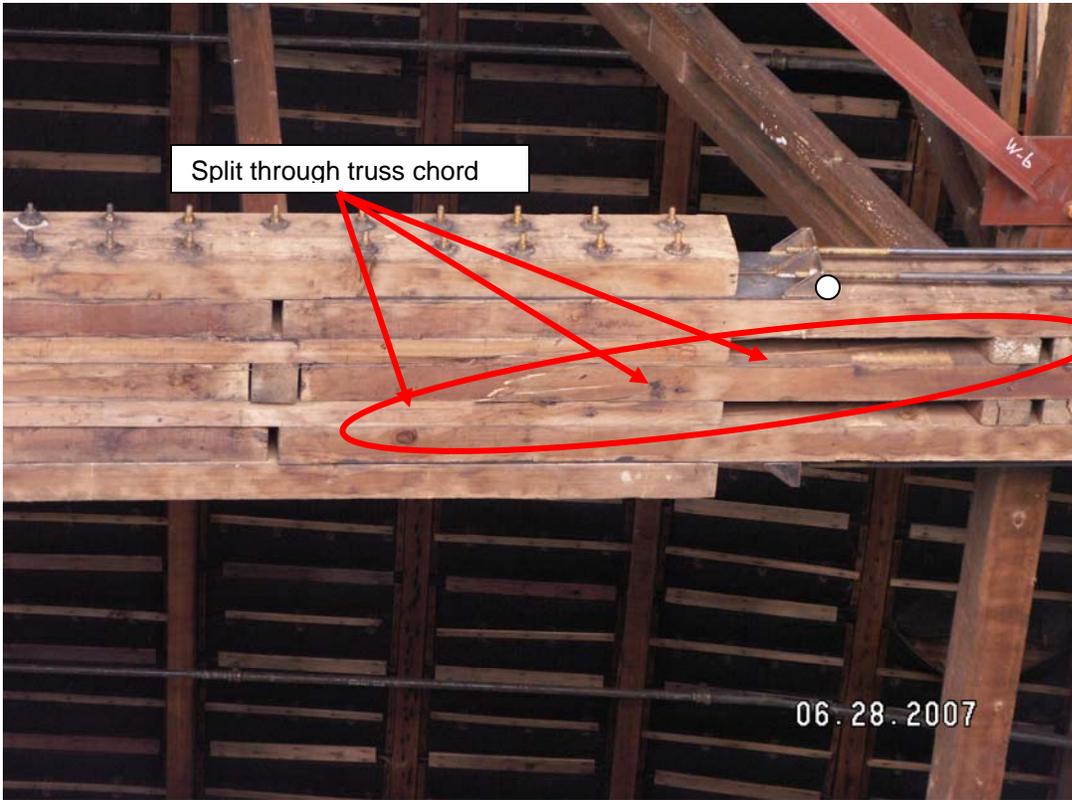
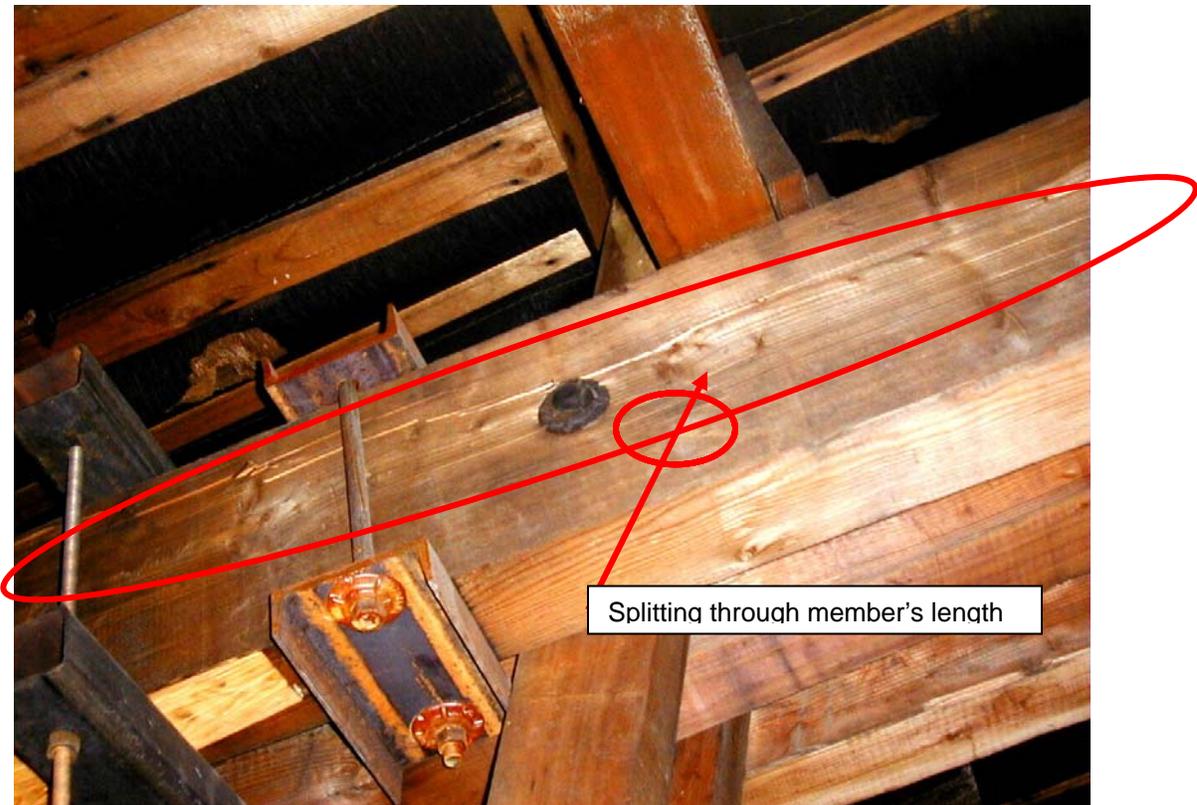


Photo #4 - Truss bottom chord fracture at repair.



Building 3005
Hanger 2

Photo #5 - Failing truss member (from 2003 report)

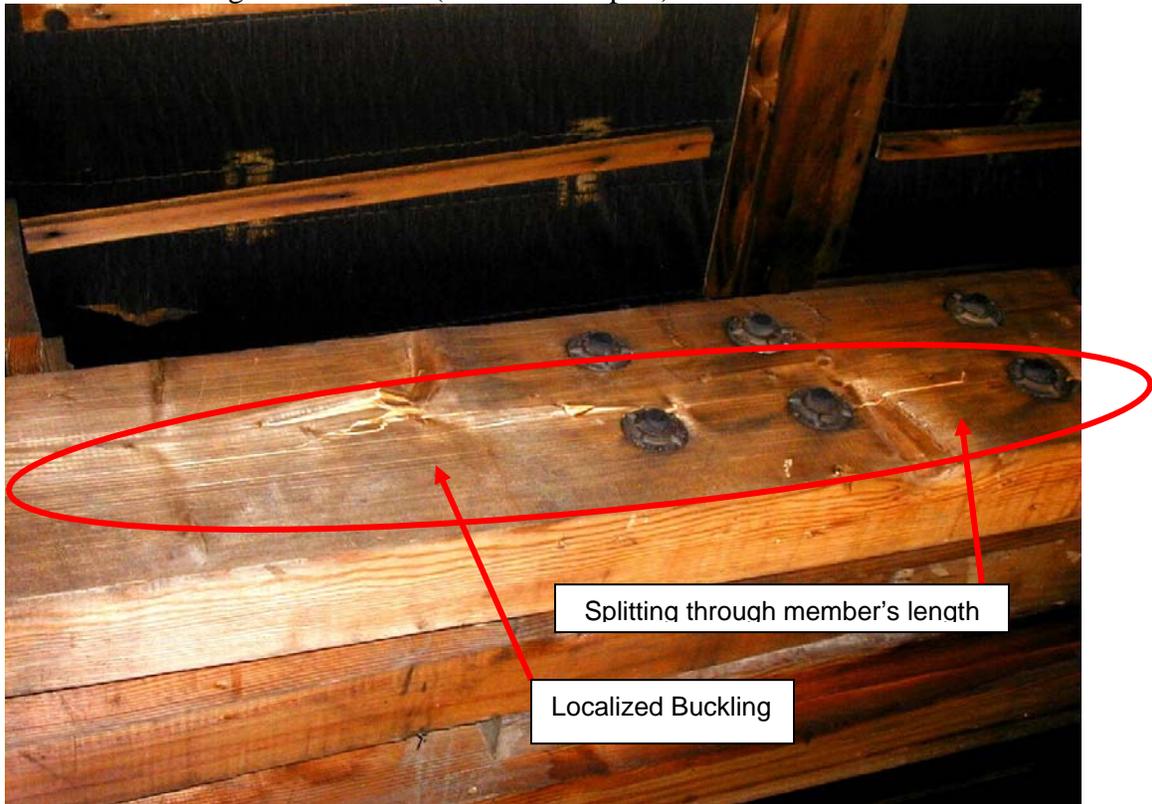
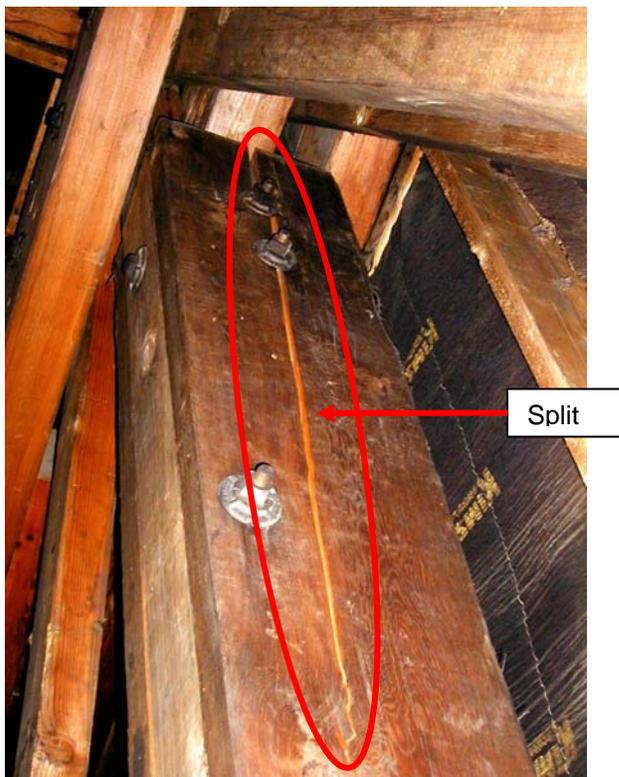


Photo #6 - Failing truss member, cont'd (from 2003 report)



Building 3005
Hanger 2

Photo #7 - Failed truss splice (from 2003 report)

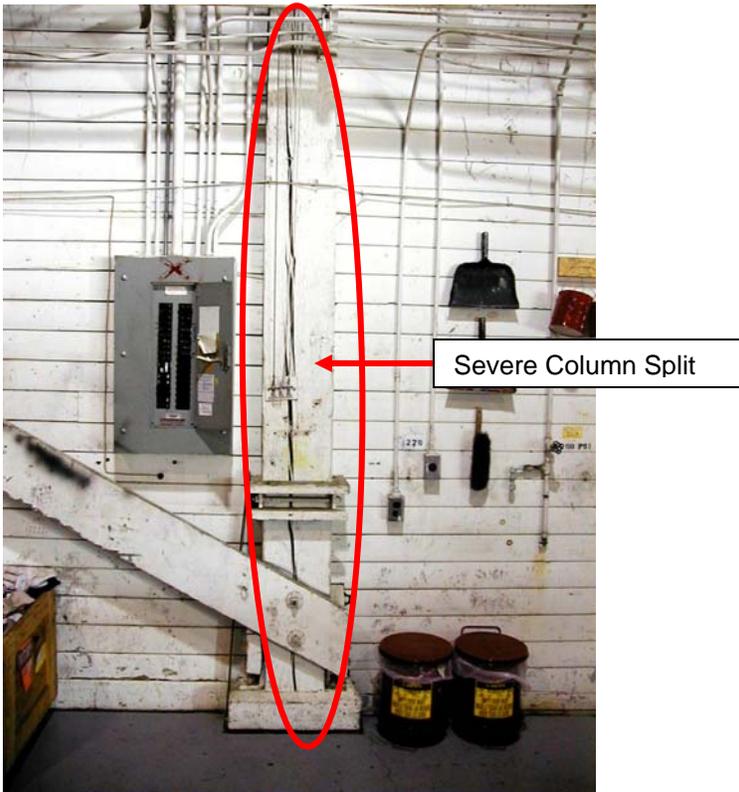


Photo #8 - Failing column (from 2003 report).

Building 3005
Hanger 2



Photo #9 - Failing column closeup (from 2003 report).



Photo #10 - Interior View Showing Repaired Truss Connection, Typical. Note extensive lateral cracks and truss repair clamps (taken from 2000 report).

Building 3005
Hanger 2

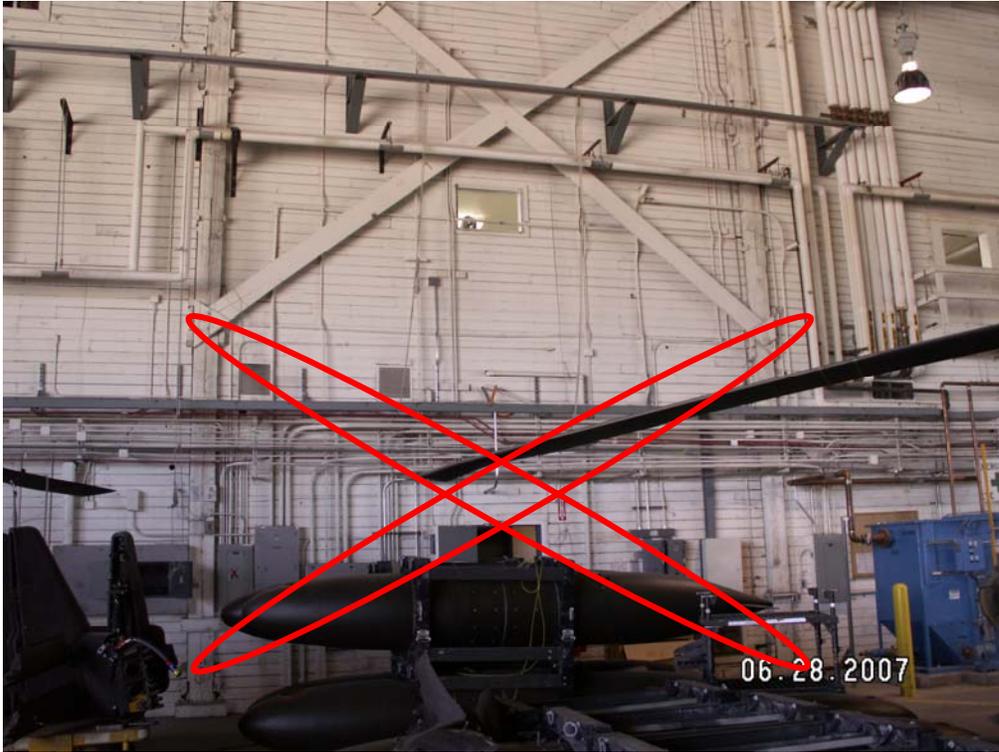


Photo #11- Removed lower cross bracing .



Photo #12 - Shingles on low roof above overhead doors need replacement.

Building 3005
Hanger 2



Photo #13 - Metal roof and fascia on the South canopy is in a weathered condition.