

November 9, 2017

Mr. John Erickson  
DSGW Architects  
2 West First Street, Suite 201  
Duluth, MN 55802

Sent by Email to: [jerickson@dsgw.com](mailto:jerickson@dsgw.com)

**Re: Grand Rapids IRA Civic Center – West Venue Roof – Truss Web Failure  
NCE Job No. 17-665**

Dear John,

This report is a follow-up on our previous report dated 11-06-17 and our discussions and observations from our visit yesterday.

We visited the facility on Wednesday 11-8-17 to attend a meeting to discuss the results of our analysis. Those results show that a 15 psf unbalanced snow load will cause the truss to be at design capacity and that with 20 psf of uniform snow loading, the roof trusses are at or above the design capacity. Note: 15 psf is approximately 8" to 10" of normal weight snow or maybe 6" of heavy wet snow.

When we arrived, we walked the east bleachers and discovered a failed member of the 5<sup>th</sup> truss from the north end of the building. Based on our analysis, the failed member is one of the members most effected by an unbalanced loading condition.

We directed the manager to get the truss shored up immediately and to get the truss member replaced.

After the meeting, we observed the roof snow loading from the adjacent roof and noted that only a few inches of snow appeared to be on the roof. We also observed the truss again and noted that the adjacent web members were bowed significantly and appear to be in danger of failure. We directed the Manager to close the West Venue and to shore the truss.

This report is a follow-up on that conversation and our previous report.

**Recommendations and Opinions:**

1. Shoring: The top and bottom chord of the truss should be supported from the ground surface until the repair is made. It is not sufficient to shore only the bottom chord.

2. Since very light snow loading appears to have caused this failure and the failure appears to have nearly caused the collapse of a roof truss that could have endangered the entire facility and the occupants, it is our professional opinion that some long-term deterioration of the wood capacity has occurred. Based on our discussions with NRR1 this morning, this deterioration can be due to long term alternating wet and dry environments that can affect the fiber strength of the material.

3. Since the design capacity is extremely deficient as noted in our previous report, any deterioration of the capacity of the wood members is extremely concerning in our opinion.

4. In our professional opinion the West facility should not be used in the winter months unless / until the building official, building ownership and other parties agree on temporary measures to protect the public and adjacent structures.

We are available for the above recommended discussions and would appreciate the opportunity to find solutions to this issue. (see attached photos)

Sincerely,



Jon E. Aamodt, PE  
Principal Partner

**Professional Certification:**

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Jon E. Aamodt, P.E.  
MN Reg. No. 24838

Date 11-09-17

