

# MEYER | BORGMAN | JOHNSON

STRUCTURAL DESIGN + ENGINEERING

## MEMORANDUM

DATE: Tuesday, November 27, 2012  
TO: Amana Construction  
ATTN: Mr. Moses Wazwaz  
PROJECT: 25 Empire Drive, St. Paul, MN  
PROJECT NO.:  
WRITTEN BY: Chris Scheevel

### Background and Description of Structure

Meyer, Borgman, Johnson Structural Design and Engineering (MBJ) was hired to provide shoring recommendations for the building at 25 Empire Dr. St Paul, MN due to the failure of the wood roof trusses. On November 26, 2012, a visit to the building site was conducted to investigate the status of the existing building and the failure of the roof trusses.

The building consists of unreinforced limestone exterior walls with wood trusses bearing on and spanning between the north and south exterior walls. The structure was reinforced with horizontal steel X-bracing at the roof level after the original construction. This was likely added to replace the roof horizontal (diaphragm) strength when large skylights were cut into the roof. The roof system is reported to be a tar paper and gravel system.

### Description of Damage

1. Several roof trusses are crushed at their end bearing on the south wall. Water stains indicate water penetration created a suitable environment for decay fungi to attack and weaken the trusses (Photo 1). There is no discernable strength in the trusses at this location. It is our professional opinion that these trusses pose an unsafe condition.
2. The exterior limestone walls are sufficiently bowed to require further analysis to determine the stability of the walls (Photo 2). The walls do not appear to present an unsafe condition but this cannot be verified without further analysis. This analysis is outside the scope of this investigation.
3. One of the steel members in the X-bracing system is buckled, possibly due to movement of the exterior walls.

### Recommendations

1. The south ends of the roof trusses require shoring to prevent a sudden collapse. We recommend this shoring be accomplished immediately and before a significant snowfall. Please see the attached sketch for recommended shoring loads and locations..
2. Due to the bowing of the exterior limestone walls, we recommend the walls be analyzed to determine the wall stability under gravity and wind loads.
3. We recommend the X-bracing be analyzed to determine the cause of buckling, and reinforced or replaced, as required.

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The truss shoring design, and the structural analyses of the limestone walls and the X-bracing are outside the scope of this project. As part of MBJ's Preservation Engineering Group, we can provide these services as an additional service. We can also provide a full range of structural engineering and design services to modify the building for future uses

Don't hesitate to call or e-mail with questions or for additional information.

Sincerely,



Chris Scheevel, EIT



Chris Hartnett, PE, LEED AP

Attachments

1. 2 Photos
2. 25 Empire Dr. Shoring Plan

Photo 1: Failed Roof Truss

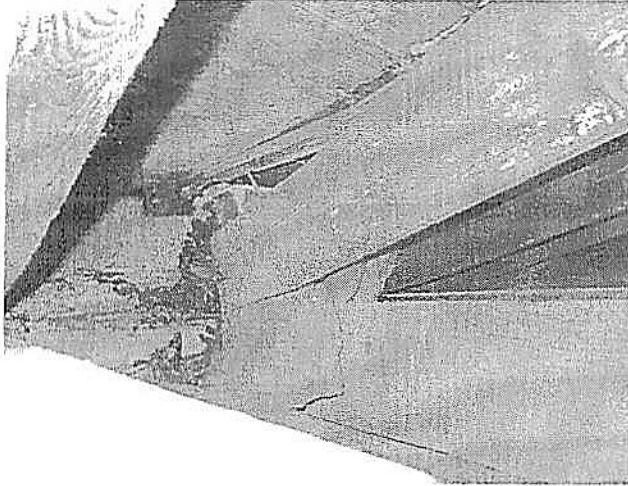
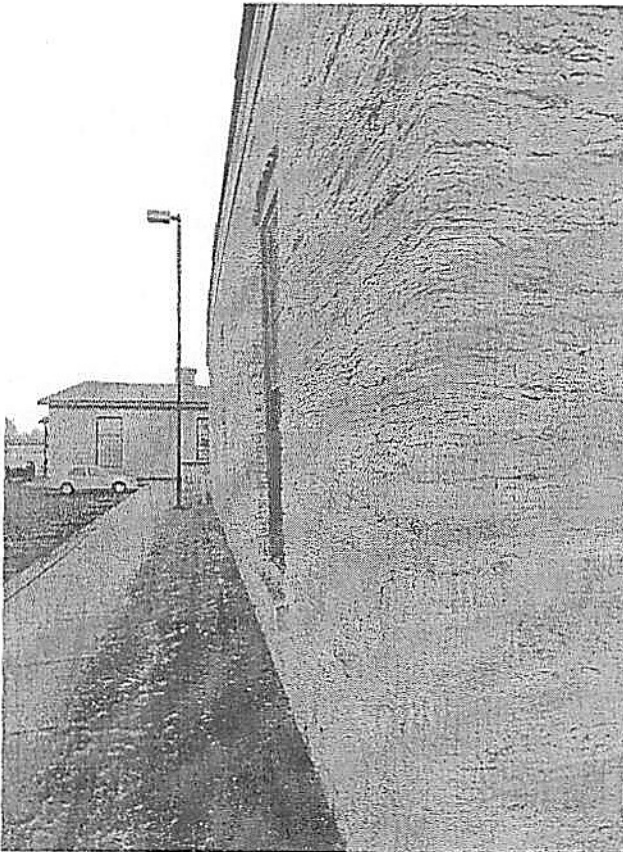


Photo 2: Bowed Exterior Limestone Wall



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Job No.: \_\_\_\_\_ Sheet: 1

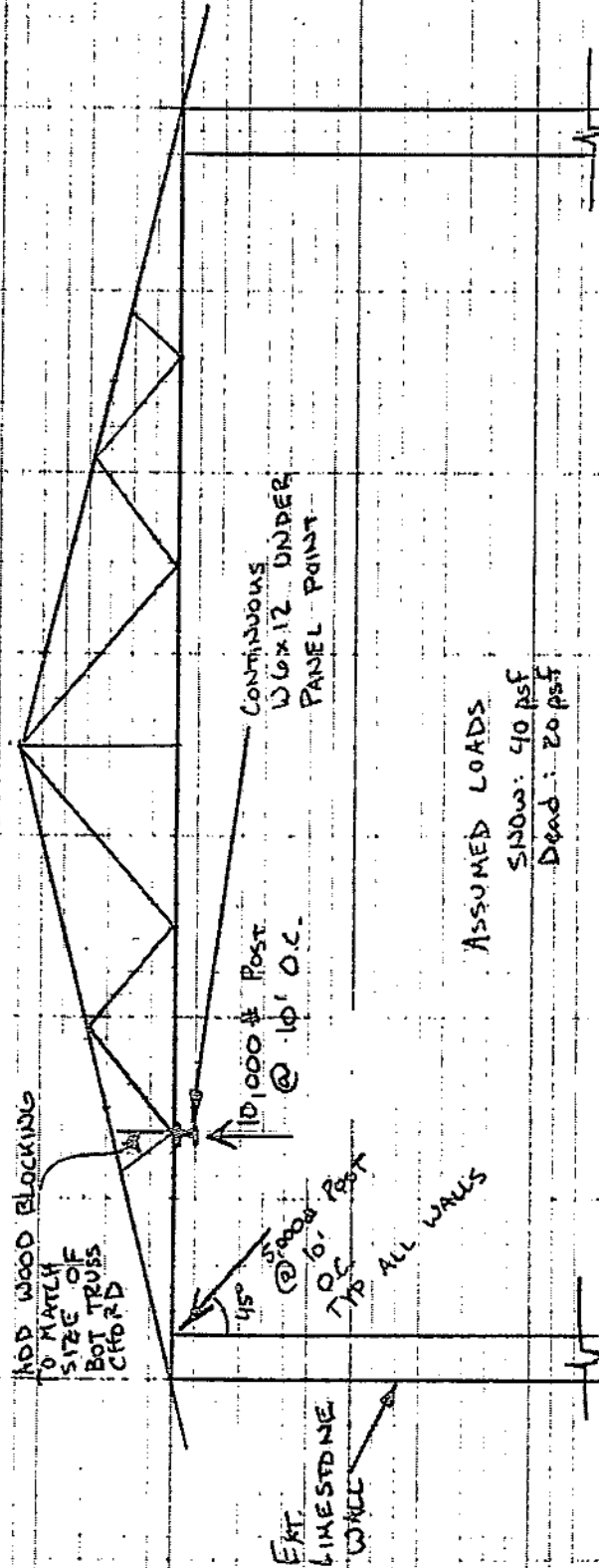
Project: 25 EMPIRE DR

By: CSS Date: 11/26/12

25 EMPIRE DR SHEDDING PLAN

N

ADD WOOD BLOCKING  
TO MATCH  
SIZE OF  
BOT TRUSS  
CHORD





# Jackson Street Shops Heritage Preservation District

