ENTRY FORM

DVASE
2018 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

Buildings under $5M	X	Buildings Over $100M	
Buildings $5M - $15M		Other Structures Under $1M	
Buildings $15M - $40M		Other Structures Over $1M	
Buildings $40M - $100M		Single Family Home	

Approximate construction cost of facility submitted:	$2.6M
Name of Project:	Lynah Rink - Wood Truss Remediation
Location of Project:	Ithaca, NY
Date construction was completed (M/Y):	9/2017
Structural Design Firm:	CVM
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	N/A
General Contractor:	LeChase Construction

Company Logo (insert .jpg in box below)

cvm

Important Notes:

- Please .pdf your completed entry form and email to bsagusti@barrhorstman.com.
- Please also email separately 2-3 of the best .jpg images of your project, for the slide presentation at the May dinner and for the DVASE website. Include a brief (approx. 4 sentences) summary of the project for the DVASE Awards Presentation with this separate email.

- Provide a concise project description in the following box (one page maximum). Include the significant aspects of the project and their relationship to the judging criteria.

This project involved reinforcing existing bowstring wood trusses from inside an existing ice rink without removing the existing roof.

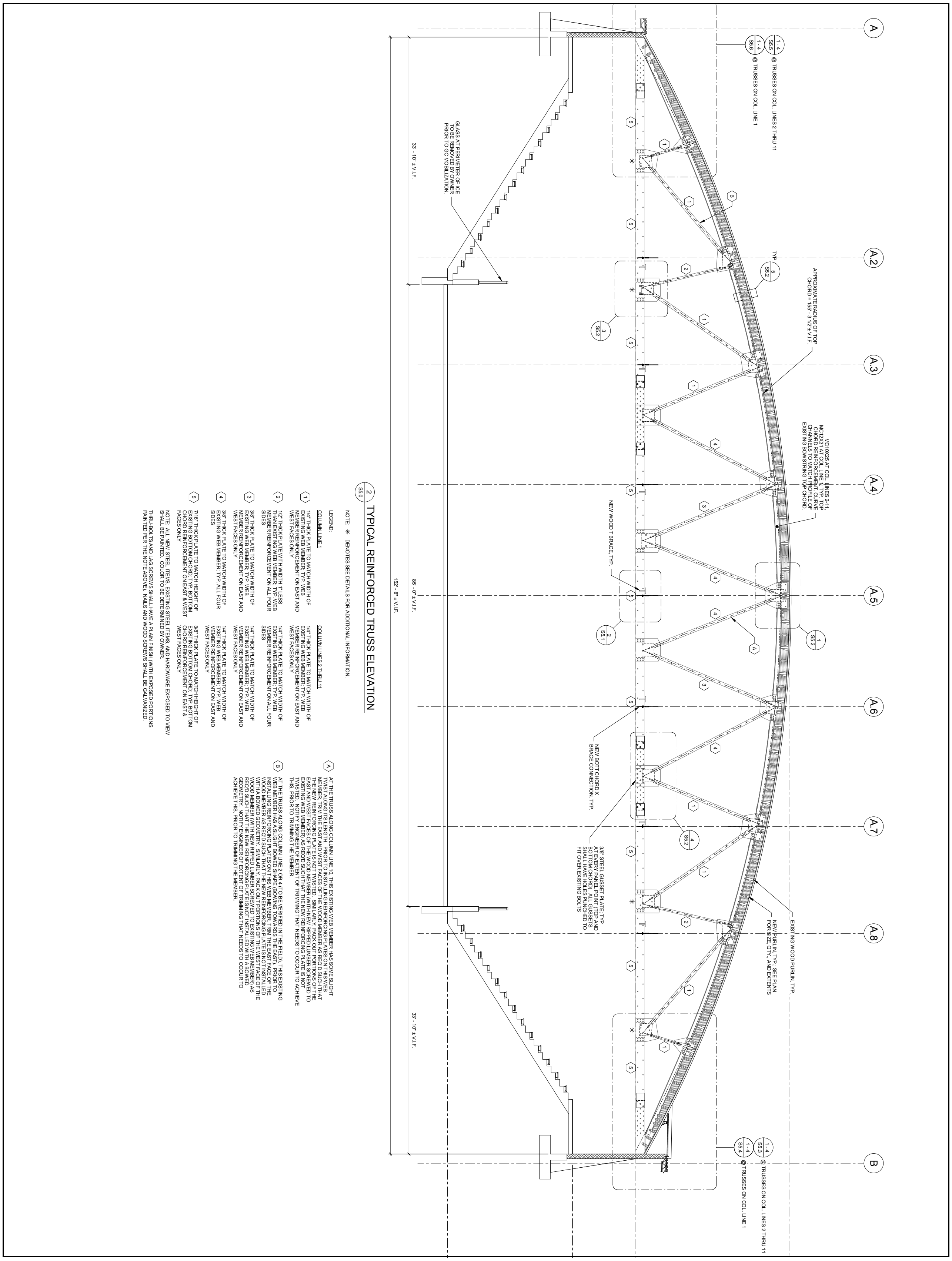
The Lynah Ice Rink at Cornell University, built in 1956, has a barrel roof that is supported by 11 bowstring wood trusses spanning approximately 153' each. The top and bottom chords were glulam members with solid sawn lumber webs. Additionally, the existing purlins (spaced at 4' o.c.) and roof deck (plywood spanning 4') were both overstressed and the roof required installation of an additional nearly 1,000 additional purlins. All of this needed to be complete in the six (6) months from April to September, when the hockey team could spare the rink.

The trusses had seen failures in multiple connections over the years that prompted Cornell to institute a snow removal program. This required manpower to shovel snow from the 37,000 sq ft of standing seam barrel roof.

The cost of replacing the roof to make reinforcing the trusses easier made the project impractical, which meant that the trusses needed to be reinforced all from inside the space. The degree of overstress in both members and connections varied, with some as high as 500% overstressed. We considered several different options, including post tensioning the bottom chord and building new trusses between the existing. After all options were considered, in-situ reinforcement proved to be the most efficient and cost effective.

Each existing truss was reinforced with steel cladding with the entire existing truss, including connections, left in place and unshored. The reinforcement sizes and connections were selected to ensure that the existing wood members and existing connections would not be overstressed when subject to the full dead load and their share of the snow load. The project had to be detailed in such a way to allow all new reinforcement pieces and gusset plates to be installed without removal of any existing truss hardware.

- The following 5 pages (maximum) can be used to portray your project to the awards committee through photos, renderings, sketches, plans, etc…

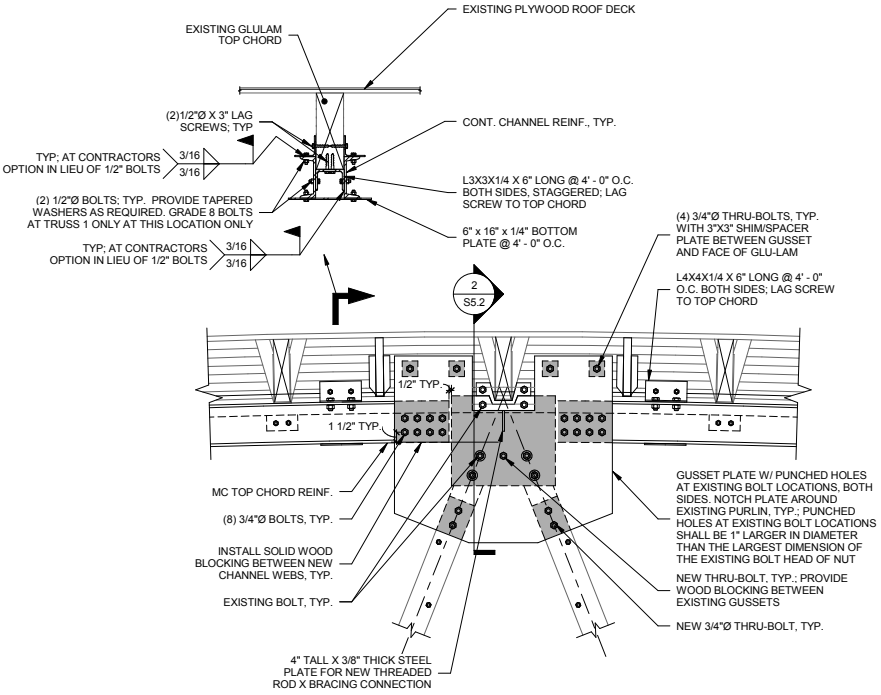


BEFORE

AFTER

BEFORE

AFTER



1 / S5.2 TYPICAL CONNECTION AT TOP CHORD PANEL POINT

NOTES:

1. SEE TYPICAL REINFORCED TRUSS ELEVATION 2/S5.0 & 3/S5.2 FOR ADDITIONAL INFORMATION.
2. DENOTES PROVIDE SHIM PLATES (WITH HOLES) AS REQ'D SUCH THAT INSIDE FACE OF NEW GUSSET PLATE IS VERTICAL (TOLERANCE = ±1/32" FROM VERTICAL). SOME OR ALL OF THESE PLATES WILL BE REQUIRED AT EACH CONNECTION TO ACCOUNT FOR DIFFERENCES BETWEEN THE THICKNESSES OF THE EXISTING GUSSET PLATE, THE NEW MC WEB, AND THE NEW WEB MEMBER REINFORCEMENT PLATES.
3. WHERE EXISTING BOLT GOES THROUGH EXISTING GUSSET ONLY AND DOES NOT ENGAGE ANY WOOD OR OTHER ELEMENT, CONTRACTOR MAY REMOVE THESE BOLTS IN LIEU OF PROVIDING OVERSIZED HOLE TO FIT AROUND BOLT HEAD/NUT.

BEFORE

AFTER

By signing, signatory agrees to the following and represents that he or she is authorized to sign for the structural design firm of record.

All entries become the property of DVASE and will not be returned. By entering, the entrant grants a royalty-free license to DVASE to use any copyrighted material submitted.

If selected as an award winner, you may be offered the opportunity to present your project at a DVASE breakfast seminar. Would you be willing to present to your colleagues? ☒ ***YES*** ☐ ***NO***

Submitted by:

Print name: Mark Yerges, PE	**Signature:** 	**Date:** 4/9/2018

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