

ENTRY FORM



DVASE 2021 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

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

Approximate construction cost of facility submitted:	\$31 million
Name of Project:	Chandler-Ullmann Hall
Location of Project:	Lehigh University (Bethlehem, PA)
Date construction was completed (M/Y):	09/19
Structural Design Firm:	CVM
Affiliation:	All entries must be submitted by DVASE member firms or members.
Architect:	MGA Partners Architects
General Contractor:	Turner Construction, Inc.

Company Logo (insert .jpg in box below)



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 annual virtual presentation 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.

Located at the heart of Lehigh University's mountainous Asa Packer campus in Bethlehem, PA, the historic Chandler-Ullmann Hall, built in 1884, was considered one of the most technologically advanced buildings of its time. The original building was named after William H. Chandler, a professor of chemistry at Lehigh from 1871 to 1905, who helped design the building with prominent Philadelphia architect Addison Hutton. The original building won a design prize at the Paris Exposition of 1889 for its technological design. Chandler changed the modern laboratory concept with this building as chemists could train simultaneously rather than as apprentices or individual workers. An identifiable characteristic of this building is the 60 chimneys, which ventilated the chemical spaces in combination with fresh air intakes built into the walls.

The present-day Chandler-Ullmann Hall is composed of the original "T" shaped building, constructed in 1884 with two subsequent additions later in its life that flank the "T" shape. The original building is a three-story structure, with a fourth story only over the center part of the building. It is comprised of perimeter masonry bearing walls, a combination of interior masonry bearing walls and built-up wrought iron columns, brick floor arches spanning between the wrought iron beams and timber trusses, wood rafters and wood boards making up the roof structure. The west wing addition was constructed in 1929 and consists of a three-story structure with perimeter masonry bearing walls, reinforced concrete floor slabs spanning between steel beams, and steel roof trusses along with reinforced concrete roof slabs. The east wing addition was added in 1937 and is a three-story structure comprised of perimeter masonry bearing walls, reinforced concrete waffle floor slabs or joist slabs spanning between steel beams, and steel roof trusses along with wood roof rafters.

The renovations to the original building and subsequent additions consisted of several new door openings and passageways in masonry walls requiring new lintels, a new elevator pit and shaft, openings in the existing floor framing for one new stair, several floor penetrations for ductwork in the existing floor framing, removal of a stepped framed floor area at a tiered lecture hall in one of the wings that was replaced with new floor framing, partial removal and replacement of floor framing in another wing, and reinforcement of wood roof framing. Where new door openings and passageways in masonry walls were created, several different types of exposed architectural lintels were used in the walls. These lintel types consist of multiple wide-flange beams for walls with a thickness up to 39", channels with top and bottom plates to create an aesthetically pleasing lintel integrated with wall furring, and a unique arch squeeze lintel constructed from bent angles with thru-bolts and a bottom plate supporting a 27" thick brick wall. Openings for the new stair and floor penetrations required the original brick arch floor construction to be demolished back to the nearest steel support beam, then infilled with steel framing making connections to the existing steel with beam clamps as the original steel was not weldable and therefore not able to be drilled.

At the East Hyphen of the original building a tiered lecture hall separated the first floor of the East Wing from the balance of the building. To accommodate additional offices for staff members, the floor framing was removed and replaced with new floor framing and concrete filled metal floor deck joining the East Wing to the rest of the building. Load bearing masonry walls supporting the second-floor framing above also had to be removed from this area. Because the walls were supported by the existing floor framing that was removed, they had to be temporarily shored and supported on the new steel floor framing once it was installed. For this area of floor infill, W30 beams were used to clear span 38 feet with integrated splices to allow installation within the confines of the existing building. While it was minor in nature, the existing wood roof framing needed reinforcement at several locations to accommodate snow guards that were added to the roofing in several locations.

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



At top, Lehigh's Chandler-Ullmann Hall. Above, architecturally-exposed lintel and brick floor arches.



Existing floor framing and support columns were removed, with new floor framing (below) allowing for the creation of an open classroom space.




Opening created in 32"-thick masonry wall with new lintel.

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:

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