ENTRY FORM

DVASE
2018 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

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

Approximate construction cost of facility submitted:	$14 million
Name of Project:	Buck Hall, Lafayette College
Location of Project:	Easton, PA
Date construction was completed (M/Y):	2015
Structural Design Firm:	The Harman Group, Inc.
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	KSS Architects
General Contractor:	The Whiting-Turner Contracting Company

Company Logo (insert .jpg in box below)

THE HARMAN GROUP
structural engineering
parking planning and design

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.

Founded in 1826, Lafayette College is a small liberal arts college rich in tradition and cultural heritage. Located in Easton, Pennsylvania in the Lehigh Valley, the beautiful campus overlooks the historically significant Delaware River. Situated at the south entrance to the college and the first contact with visitors upon their arrival, Lafayette College transformed what was known as the 'North Third Street corridor' into the Williams Arts Campus – a home for the Film and Media Studies and Theater programs and a prominent gateway to both campus and community.

The selected site for Buck Hall, the new Film and Media Studies (FAMS) building, is located in the flood plain of the adjacent Bushkill Creek, caused by flood water backing up the creek from the Delaware River. Addressing the flooding, the new theater building was lifted above the 100-year base flood elevation, protecting the facility from future flood damage. The main entrance was raised above flood elevation on a podium and the occupied floors were raised up to the second floor, so that better finishes could be used. All areas below the base flood elevation have limited use for building access and parking, and the design accommodated the free flow of water in and out of the spaces. Since water cannot be prevented from entering these spaces due to doorways, water is allowed to enter and exit with flood vents. The areas below base flood elevation are Wet Waterproofed, and all materials are water resistant to protect against damage. Only a portion of the building falls in the floodway, that portion of the flood plain which has a higher water velocity and carries flood borne debris and results in high impact forces. The Harman Group structurally separated that portion of the structure that landed in the floodway from the rest of the building so the remaining structure could be designed with lessened flood load criteria.

The design team faced geotechnical issues with the subsurface conditions. The bedrock under the site is categorized as "Karst" geology, formed from the dissolution of soluble limestone and characterized by a pinnacled rock surface with sinkholes, dolines, and caves. Building over Karst subsurface conditions requires diligent attention to prevent sinkholes and maintain the long-term stability of the building. Caissons (drilled concrete shafts) were originally proposed for the site. The Harman Group examined this requirement with Maser Consulting, the geotechnical engineers, due to the tight site constraints and subsurface conditions. After careful analysis, micro-piles were determined to be better suited to the project.

Fissures (voids in the bedrock due to groundwater dissolution of the limestone) in the Karst bedrock led to some grout loss when placing the micro-piles. This was solved using a denser grout material to first fill the fissures before re-drilling the shaft and then doing final grouting.

The existing buildings on the site were built right up to the edge of the creek. Due to the 30-foot-high embankment and the need to extend the ground floor for parking toward the river, a series of existing retaining walls and piers were removed and replaced with a Redi-Rock precast modular large-block retaining wall. This wall allowed for the economical maximization of the ground floor space for parking and the extension of the arts plaza under the FAMS building, while reducing the amount of excavation and backfill. The building was located adjacent to the wall that supports the existing arts plaza, and also forms the water channel for the creek. Building foundations had to be designed so that they did not surcharge or impact this existing wall. The existing basement was adjacent to the wall, which fell below the extension of the plaza under the building and had to be back filled carefully using lifts of flowable fill with tie rods to maintain the stability of the existing plaza wall.

The building uses a combined lateral system of braced frames and moment frames to resist wind and seismic forces. Braces were purposefully not placed at the ground level to maximize the use of the arts plaza extension under the building and to allow the building to "float" above the 100-year flood plain.

The design team was able to devise effective solutions that addressed multiple geographical problems and bring to fruition Buck Hall, a new building fulfilling the institution's needs – complete with the Landis Cinema, a screening room with stadium seating for 184 occupants; as well as the Daniel H. and Sandra Weiss Black Box Theater, a state-of-the-art, 200-seat theater with an adjacent media room and scene shop to further expand their Film and Media program. The tech gallery, upper gallery, catwalk, rigging and follow spot booth are all housed structurally within the 38-foot-high black box volume. The resilient, state-of-the-art Film and Media Studies building boasts sustainable features such as photovoltaic panels on the roof of the black box theater and green roof tray assembly on the roof of the screen room.

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


ONE WAY
LAFAYETTE
DO NOT ENTER


LAFAYETTE
COLLEGE

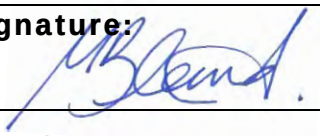

LAFAYETTE
WILLIAMS ARTS CAMPUS
COLLEGE

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 is granted 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: **Malcolm Bland, PE**	**Signature:** 	**Date:** **4/9/2018**

Submitting Firm:	**The Harman Group, Inc.**	
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