ENTRY FORM

DVASE
2017 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

Buildings under $2M		Buildings Over $100M	
Buildings $2M-$10M	X	Other Structures Under $5M	
Buildings $10M - $30M		Other Structures Over $5M	
Buildings $30M - $100M		Single Family Home	

Approximate construction cost of facility submitted:	Confidential
Entry Fee:	**FREE**
Name of Project:	SAC Parking Structure Vertical Expansion, Villanova University
Location of Project:	Villanova, PA
Date construction was completed (M/Y):	April 2016
Structural Design Firm:	The Harman Group, Inc.
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	Voith & Mactavish Architects
General Contractor:	Shoemaker Construction Company

Company Logo (insert .jpg in box below)

Important Notes:

- Please .pdf your completed entry form and email to bkoroncai@barrpino.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.

As part of Villanova University's new student housing building project, there was a need to provide additional parking on campus. The existing two level SAC Garage was selected for a vertical expansion of two additional levels. The existing precast garage capacity of 270 spaces was increased to 493 spaces with the vertical expansion. This resulted in a net gain of 223 spaces for the University.

Challenges for the project included upgrading the lateral structural elements for the vertical expansion, integrating a new ramp between the existing and new levels, adding an elevator and pedestrian bridge for accessibility and enhancing the architectural appearance of the expanded garage.

The original garage was designed in the early 1990s and did not provide adequate lateral support provisions for a vertically expanded garage. The lateral design criteria had became more stringent under subsequent editions of the Building Code. New cast-in-place concrete shearwalls were provided at the existing precast garage. New precast shearwalls where installed atop this with the new precast superstructure. The shearwalls bear on caps and micropiles. Micropiles were selected due to the low overhead clearance beneath the existing garage floor.

Another challenge of the project was integrating the new garage ramp with the existing garage structure. The ramp was required for accessing the two new levels built above the existing. Galvanized steel beams, cast in place concrete and special precast detailing were required to provide a smooth transition between the new and existing garage portions.

An elevator and a pedestrian bridge were added at opposite ends of the expanded parking garage. The elevator was provided for accessibility to all levels of the garage. The elevator shaft was carefully inserted into an opening that previously accommodated a stair. Careful design and detailing as well as some underpinning of an existing retaining wall at the elevator pit, allowed for the elevator to be inserted into the existing garage. The pedestrian bridge allowed for a better and more convenient connection to the heart of the Villanova campus.

The architectural design of the newly expanded parking garage was important to the University. The original, two level garage was masked by the sloping site. The perceived mass of the expanded garage was much greater and required appropriate architectural detailing to break down its scale and blend more contextually with the campus. Buttressed shaped column covers with integral stone veneer cast into the precast were provided to provide a three dimensional quality to the garage facades. Stone veneer was also added to the shearwalls at the ends of the garage. The difference architecturally between the original and the vertically expanded garage is very pronounced and has been well received by the University's community."

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


Before


EXIT
ENTER
After


Before


After

New Pedestrian Bridge

New Cast in Place Concrete Shearwall

New Cast in Place and Precast Shearwalls at Perimeter

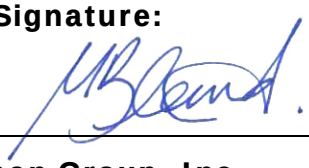
New Ramp to Access New Upper Levels

New Ramp to Existing Garage Interface

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.

Submitted by:

Print name: **Malcolm D. Bland, PE, LEED AP**	**Signature:** 	**Date:** **4/17/2017**
Submitting Firm:	**The Harman Group, Inc.**	
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