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		Other Structures Over $1M	
Buildings $40M - $100M		Single Family Home	

Approximate construction cost of facility submitted:	$8.5M
Name of Project:	Hillwood Estate, Museum and Garden- Collection and Research Center
Location of Project:	Washington DC
Date construction was completed (M/Y):	Nov / 2020
Structural Design Firm:	EwingCole
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	EwingCole
General Contractor:	Whiting-Turner

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.

Hillwood Estate, Museum & Gardens is a decorative arts museum in Washington, D.C. The former residence of Marjorie Merriweather Post, Hillwood is known for its large decorative arts collection that focuses heavily on the House of Romanov, including Fabergé eggs. The museum need more storage and research space, but had no room.

At the north end of the mansion and gardens is a visitor's center with a tiered concrete parking structure built in 1996 into a steeply sloped site. Due to tight site constraints and the strict neighborhood development association, construction of a new facility was extremely difficult and riddled with red tape. A decision was made to investigate the use the space below the existing parking deck for the required program, while re-purposing the existing facility and retaining available parking.

Built as a "hillside" structure with stepped foundations to fit the sloping site, the space below the parking deck was filled with unexcavated soil that daylighted for minor storage. To turn this into an occupied space suitable for storage of priceless art and artifacts required a number of design challenges.

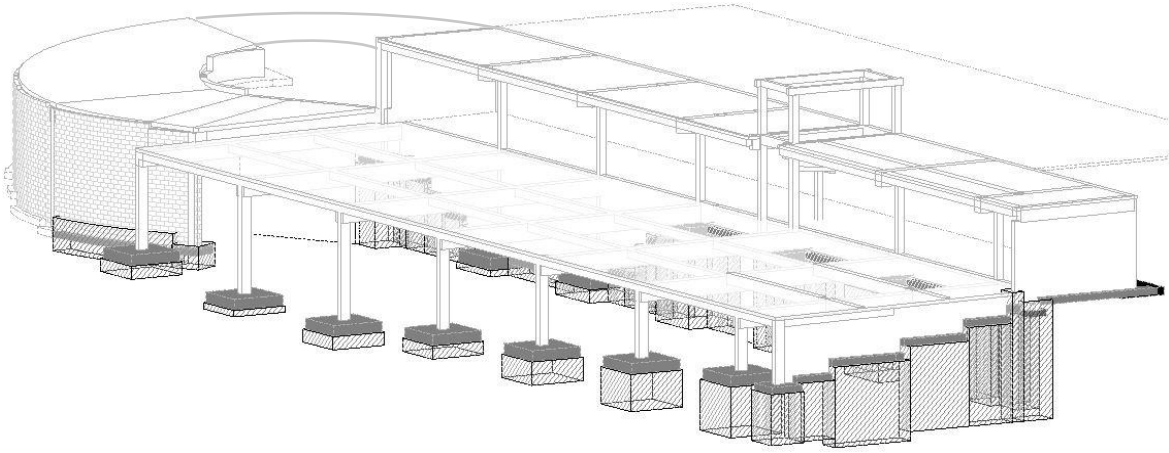
First, the entire parking structure had to be underpinned, both column footings and foundation wall footings, to extend the bottom for a new concrete floor slab and underground utilities below. With this came lateral stability challenges, turning a "hillside" structure into a 1-story building. The higher rear wall was underpinned the most. This underpinned basement wall was tied back with soil anchors since it could not be reinforced properly as a true basement wall. New masonry infill shear walls with new conventional foundations were required at the lower daylighted north wall. Existing concrete columns were 9-feet square, and all had to be underpinned below the new slab and frost depth. These were large obstructions that had to be accommodated within the program space.

Next, we had to provide access to the new space. Along the west side of the existing parking structure, a new covered walkway / bridge joined the upper lot to a new concrete elevator core and stair structure. Due to the steep site, sheeting and shoring were provided to allow construction of the concrete elevator core and site retaining walls. The process of installing sheeting and shoring had to be carefully coordinated with the underpinning operations.

Finally, the entire new space had to be waterproofed. Cracks in the existing concrete slab above had to be repaired and sealed with a waterproof traffic coating. A light gauge subroof was installed below the concrete roof as an added measure of protection. The underpinned concrete walls were also isolated from the space with double wall construction and floor drains.

Although the cost of the project could have supported a new 3-story structure, the re-use of the space and the minimal impact on the site and surrounding neighbors made the project a success.

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



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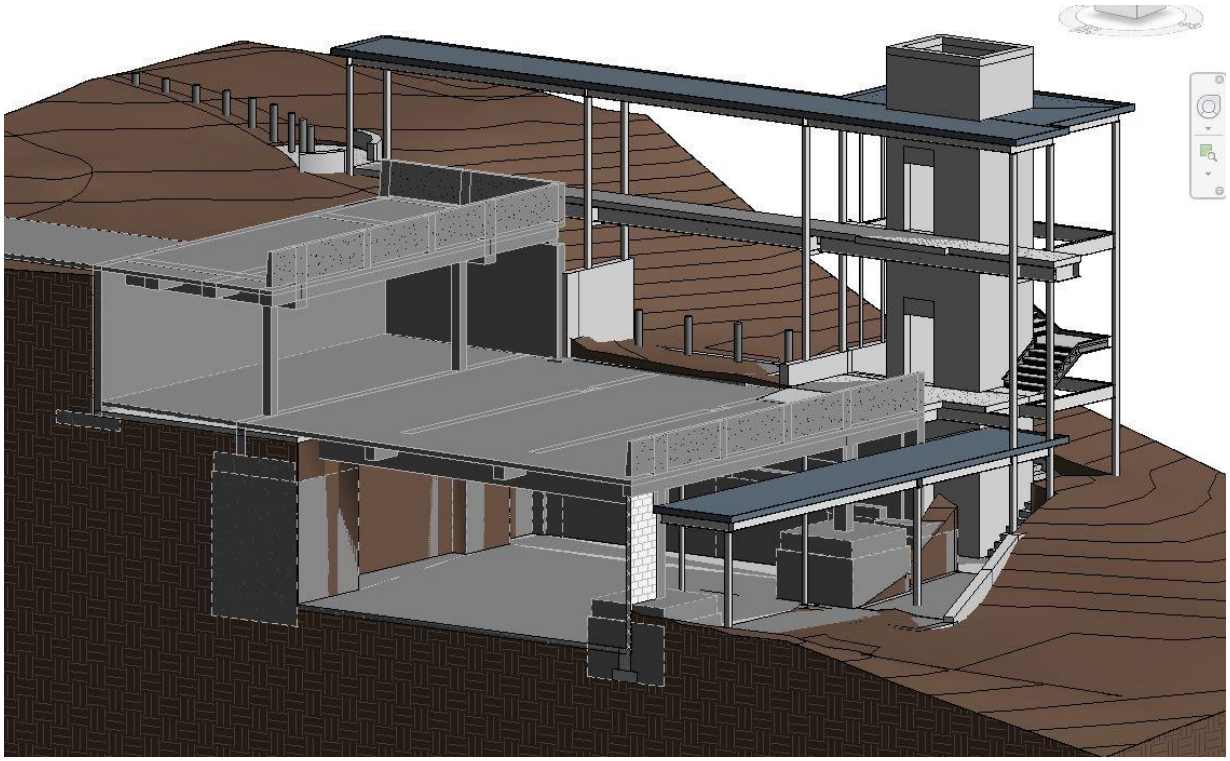

EWING COLE


KOMATSU
PC
228US
LC


Shoring and Underpinning fully installed

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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:	**Signature:**	**Date:**
Craig Nentwick		3.18.2021

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SUMMARY

Hillwood Estate, Museum & Gardens is a decorative arts museum in Washington, D.C. that needed more storage and research space, but had no room and a very challenging site.

The original tiered parking structure built to fit the sloping site was turned into an occupied space below, suitable for storage of priceless art and artifacts, offering a number of design challenges.

The entire parking structure had to be underpinned to extend below a new floor slab. Construction sequencing, lateral stability, access to the new space and waterproofing if the new interior space all had to be addressed as part of the structural scope.

Although the cost of the project could have supported a new 3-story structure, the re-use of the space and the minimal impact on the site and surrounding neighbors made the project a success.