

# ENTRY FORM



## DVASE 2019 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

Buildings under \$5M		Buildings Over \$100M	
Buildings \$5M - \$15M	<input checked="" type="checkbox"/>	Other Structures Under \$1M	
Buildings \$15M - \$40M		Other Structures Over \$1M	
Buildings \$40M - \$100M		Single Family Home	

Approximate construction cost of facility submitted:	<b>\$10 million</b>
Name of Project:	<b>Hamilton Court Amenity Building</b>
Location of Project:	<b>3816-36 Chestnut Street, Philadelphia, Pennsylvania</b>
Date construction was completed (M/Y):	<b>November 2018</b>
Structural Design Firm:	<b>CVM</b>
Affiliation:	All entries must be submitted by DVASE member firms or members.
Architect:	<b>Coscia Moos Architecture</b>
General Contractor:	<b>H.C. Pody Company</b>

Company Logo (insert .jpg in box below)



Important Notes:

- Please .pdf your completed entry form and email to [bsagusti@barrhorstman.com](mailto: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.

The 9,200 SF Amenity Building at Hamilton Court, provides students attending the University of Pennsylvania and Drexel University who live in the apartment complex, access to their own private amenities. In addition to a new ground floor retail space, the amenity building includes a gym, pool/hot tub, and two levels of exterior terrace/gathering space. The exterior of the building is a mixture of brick, curtain wall and an aluminum perforated veil.

The structural system consists of a concrete slab on metal deck and metal roof deck spanning to steel beams. The lateral system is steel moment frames founded on concrete spread footings. The design called for a recessed pool/hot tub and multiple planter boxes on the exterior terrace levels. Super-imposed dead loads exceeded 450 psf on a significant portion of the terrace. With very generous floor to floor heights, this two story tall building was governed by seismic due to the heavy mass associated with the planters and pool.

Another design challenge was the requirement to control vibrations in the yoga studio located adjacent to the main gym area. A design was provided which met the requirements of AISC Design Guide 11 - Floor Vibrations Due to Human Activity.

The main feature of this building is the multifaceted perforated aluminum veil which covers the majority of the structure. Originally it was envisioned the veil design would be integral with the curtain wall mullions and be a delegated design. After preliminary pricing was obtained, it was determined it would be more economical for the veil support framing to be independent of the curtain wall and thus would require CVM to design and detail the framing system.

Due to the complex geometry, multiple planes, two large openings along Chestnut Street and subtle folds on every side, CMA created the desired shape of the veil in Rhino 3D. From Rhino 3D, the geometry was imported into Revit. CVM was able to take the Revit model and set working planes which allowed each member to be modeled. Finally, the Revit model was exported to RAM Elements where the design loads (dead, snow, wind, ice, seismic) were assigned, boundary conditions defined and member sizes optimized. Careful consideration was given to the deflection/drift of the veil and the interaction with the curtain wall system which abutted the vertical steel mullions.

With over 1,600 pieces of galvanized and painted steel to form the shape of the veil, CVM originally detailed the veil as stick built to allow for tolerance in all directions. After Tamburri Associates was awarded the steel package, they desired to shop fabricate the veil in large panel sections to limit the field welding required. CVM worked very closely with Tamburri to revise the connection details to achieve the panel layout and jointing they requested.

To aid in the review of almost 300 pages of veil shop drawings which had to convey all of the compound angles, joints and connections, Tamburri provided CVM the Tekla detailing model which greatly improved the review process. CVM was able to follow the installation sequence and how the panelized frames were to be fabricated to confirm the design intent was being achieved and the complex angles for the connections were correct. Despite the desire to shop fabricate large panels, there were only a few minor field/fit-up/tolerance issues during erection, which is a testament to the quality of the fabrication and erection of the veil.

The success of this project was an entire collaborative team effort, especially between CVM and Tamburri, to deliver the striking veil feature to the Amenity Building at Hamilton Court.

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



North Facade along Chestnut Street - Veil Panels Partially Installed



North Facade along Chestnut Street: Retail on Ground Floor with Fitness Amenities on Second Floor



ABOVE: Installation of the Veil Framing



RIGHT: Installation of Veil Framing with Corner Opening & Purlin Sub-frame System



Veil Framing with Curtain Wall



Veil Outriggers and Interaction with Curtain Wall along Chestnut Street

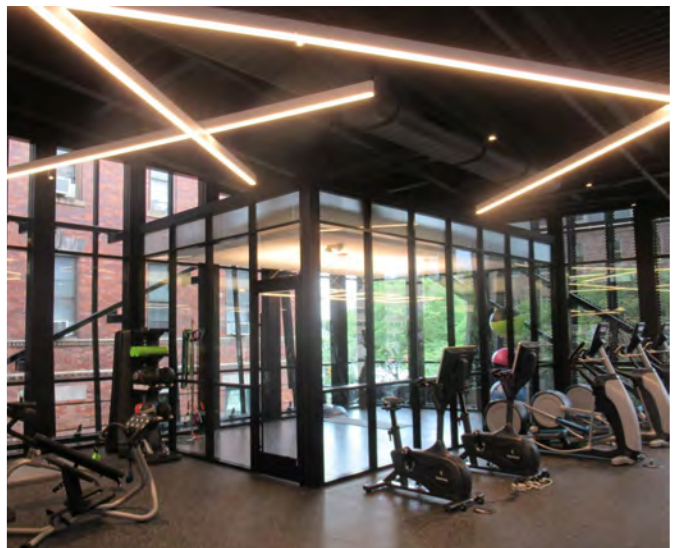


LEFT: View from under Veil Framing Along Chestnut St.

BELOW: Gym with Terrace Beyond & Yoga Room



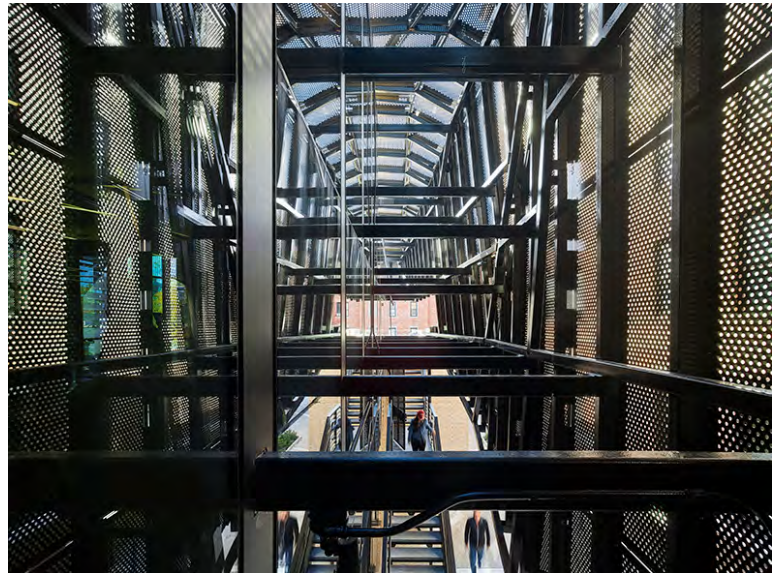
BELOW: Exterior Stairs from 2nd Floor Terrace to 3rd Floor Terrace





LEFT: Terrace Pool and Hot Tub.

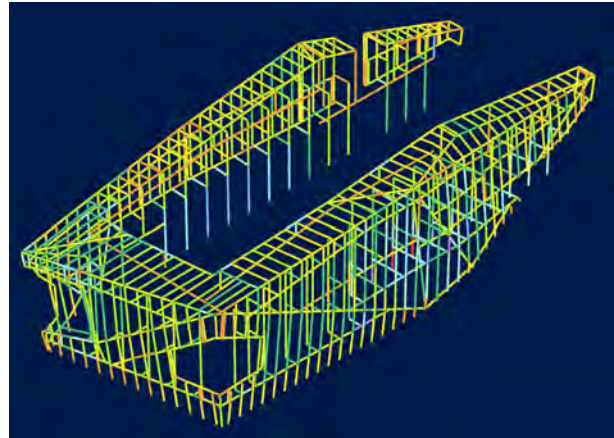
BELOW: View of Veil Framing between Panels and Curtain Wall



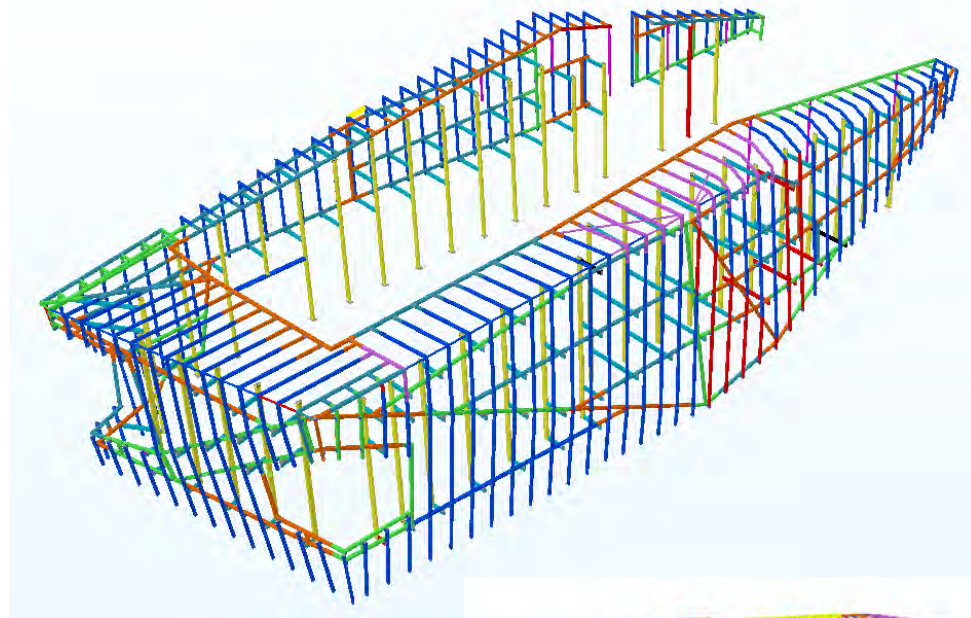
LEFT: 2nd Floor Terrace Looking at 3rd Floor Terrace. Veil Panel are Partially Installed on Left Side at Time of Photo



Revit Isometric of the Veil Framing

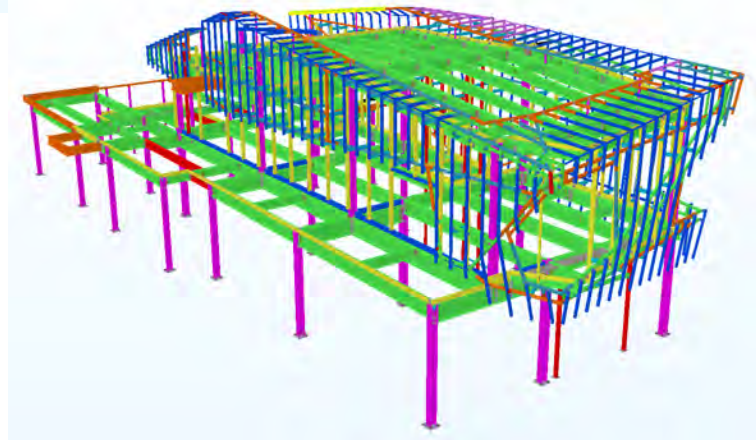


RAM Elements Model of the Veil Framing



ABOVE: Tekla model showing color coded panels of shop fabricated sections.

RIGHT: Tekla model of veil framing with main structure.




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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