

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:	\$40+ million
Name of Project:	Powel Elementary and Science Leadership Academy Middle School
Location of Project:	Philadelphia, PA
Date construction was completed (M/Y):	November 2020
Structural Design Firm:	CVM
Affiliation:	All entries must be submitted by DVASE member firms or members.
Architect:	Rogers Partners Architects + Urban Designers
General Contractor:	BSI Construction, LLC

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.

The School District of Philadelphia recently partnered with Drexel University to construct a new building for K-8th grade students in West Philadelphia. The 87,000 square foot building will house a total of 720 students from the Samuel Powel Elementary School and the Science Leadership Academy Middle School. The approximately \$40+ million building, owned by Drexel University and leased by the School District, was funded by many private and public entities, all with the goal of creating a 21st Century School.

The two-story structure, with a partial basement, sits on an irregularly shaped site on the west edge of Drexel University's campus. The challenges for the building structure began from the ground up. The soil on the site was found to contain a significant layer of fill on top of a layer of compressible, soft, and loose silt. It was determined that a shallow foundation system was only feasible if ground modification was performed to densify the subsoil. The Geotechnical Engineer recommended that a system of aggregate piers could be used on the site to successfully provide a suitable subsurface for spread footing foundations. With successful coordination between CVM and the subcontractor's Engineer, a ground improvement system consisting of over 300 geopiers was designed to support the base of the foundations at varying elevations throughout the site.

The classroom and office portions of the building are constructed with precast concrete planks on steel moment frames at the 2nd floor and the roof. It was the architect's desire to align the steel columns and beams with the classroom demising walls and align the face of the columns with the corridor walls. This allowed the steel frame to be exposed within the classrooms themselves and hidden in the corridors. The precast concrete planks are also exposed as the ceilings of the classrooms. The classroom floors are an unbonded polished concrete topping slab. The façade of the classroom building is a combination of brick and metal panel with punched window openings. The steel fabricator/erector requested utilizing end plate moment connections for the beam to column moment connections, in lieu of fully welded moment connections, to decrease the erection time and amount of required field welding. This decision was closely coordinated between the Contractor, Fabricator, Architect and Structural Engineer to determine where these connections would be permitted based on the load type and magnitude, as well as the aesthetics of the exposed structure. In the end, it was decided that end plate moment connections could be used for a large majority of the WF beam to column flange moment connections. Reserving the field welded moment connections for WF beam to column web connections and locations with large gravity moments, like the 12' cantilevered portion of the 2nd floor over the main entrance.

There are two central open stairs within the building that are intended to encourage interaction between the elementary and middle school students. The stairs are part of double-height circulation spaces with steel framed light monitors that extend above the roof level to allow abundant natural light into the interior spaces. These areas allow for informal learning spaces and gathering spaces for the students.

The gymnasium and cafetorium are double-height spaces constructed with metal roof deck on long-span steel joists and HSS moment frames. The façades on these double height spaces are a combination of brick, glass storefront, and translucent polycarbonate panels. An intricate system of HSS horizontal, vertical, and diagonal members are required to provide lateral and gravity support for the various façade systems. The HSS members are all fully field welded to provide a clean aesthetic and the translucent panels are backlit to provide a glow to the structure in the evenings.

The collaboration between the design team and the construction manager proved to be essential in the success of the project. Construction began in the fall of 2019 with the major portions of the superstructure scheduled to be erected in the early spring of 2020. Due to the essential nature of the building, the construction did not stop during the pandemic, but very few visits to the site were permitted. With the use of technology, remote site visits/observations were performed, questions were answered, and construction was able to continue almost seamlessly. Construction was completed on time and the school is ready to be occupied by students and staff as soon as possible.

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

Rendering from Rogers Partners: View looking North-West from 36th Street. Shows the "glow" of the Translucent panels at the Cafetorium.



Photo of Courtyard Looking East

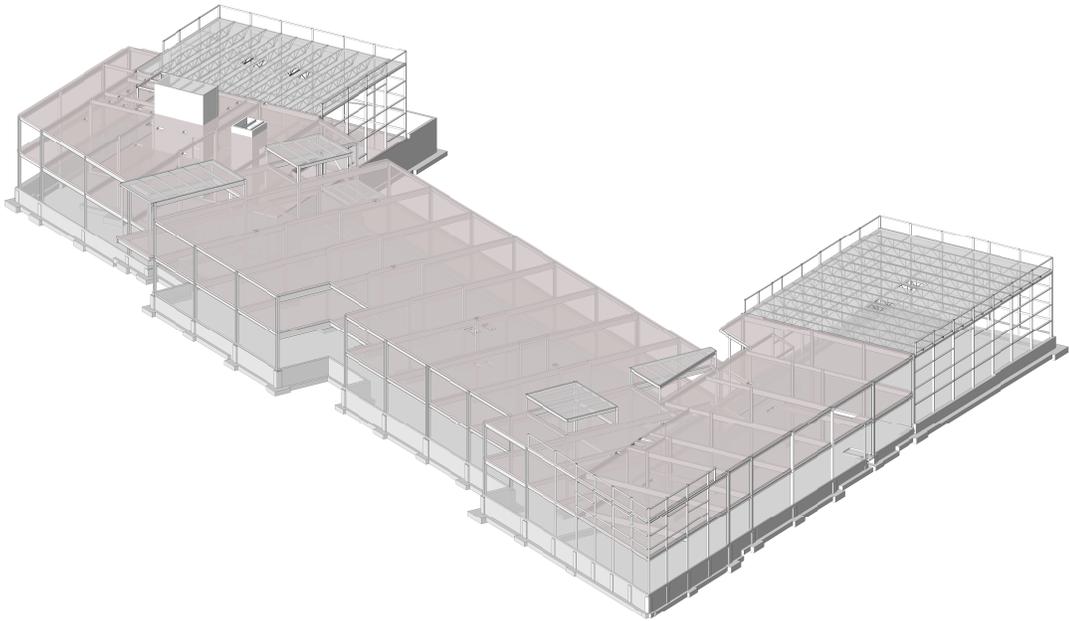


Photo of Courtyard Looking East

Photo Credit - School District of Philadelphia



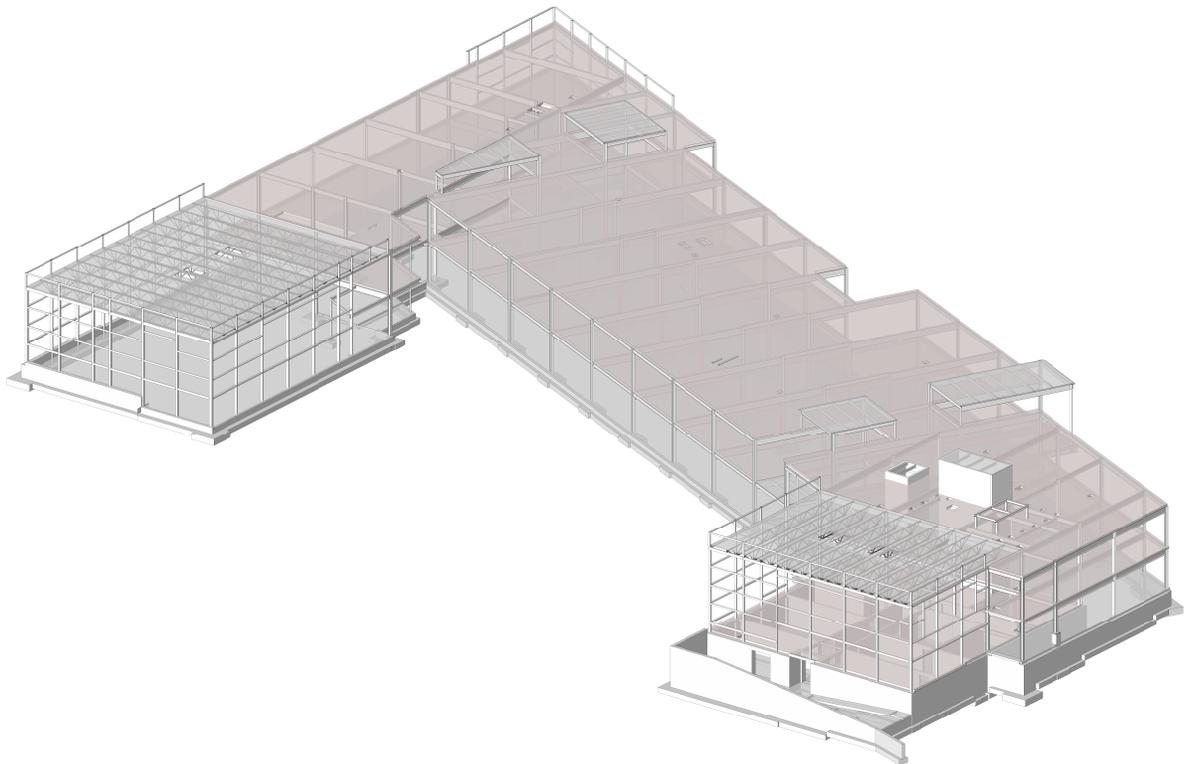
3D Revit Image - Looking South-East



3D Revit Image - Looking South-East Structure Only



3D Revit Image - Looking North-West



3D Revit Image - Looking North-West Structure Only



Rendering from Rogers Partners: View looking South-West from Warren Street.
North-East Entry, large cantilever gathering space



Photo - NE Entry Cantilever and
Roof Pop-Up



Photo - North Facade Classroom Spaces

Renderings by Rogers Partners - Interior Informal Learning and Double-Height Circulation Spaces



Photo - Double-height space and light monitor

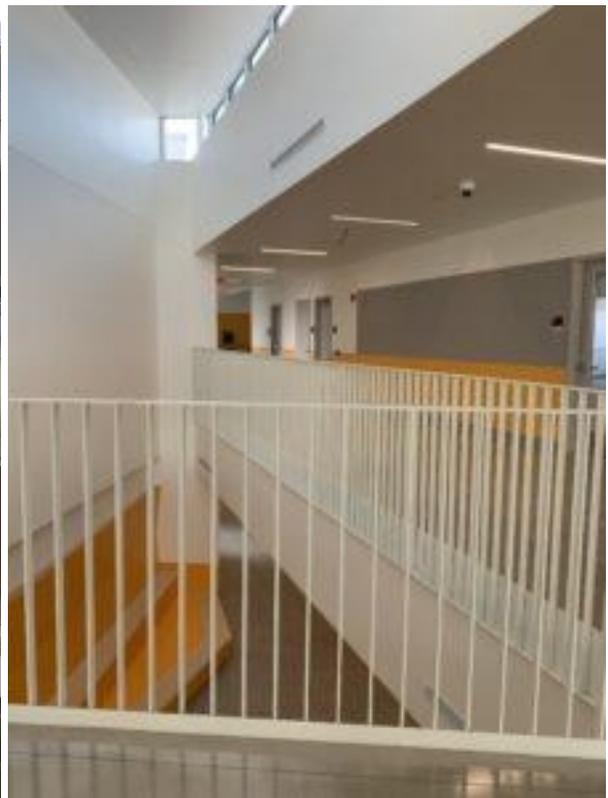


Photo - Double-height space and light monitor

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: Erin M. Johnson, PE	Signature: 	Date: 4-1-2021
Submitting Firm:	CVM	
Mailing address:	1002 West 9th Avenue King of Prussia, PA 19406	
Telephone: 610-989-3800	Fax: 610-989-3677	Email: ejohnson@cvmprofessional.com