*ENTRY FORM*

# DVASE
# 2020 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 | x | Single Family Home | |

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|---|---|
| Approximate construction cost of facility submitted: | $75 million |
| Name of Project: | Rockwell Integrated Sciences Center |
| Location of Project: | Lafayette College, Easton, PA |
| Date construction was completed (M/Y): | October 2019 |
| Structural Design Firm: | The Harman Group |
| Affiliation: | **All entries must be submitted by DVASE member firms or members.** |
| Architect: | Payette Associates, Inc. |
| General Contractor: | Turner Construction Company |

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 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.

Rockwell Integrated Sciences Center (RISC) is a five-story, 103,000 square foot state of the art academic science and laboratory building. Featuring five occupied levels, plus a basement and penthouse for mechanical systems, Rockwell will house Lafayette's biology, computer science and environmental science departments, as well as the Dyer Center for Innovation and Entrepreneurship. The RISC will have flexible spaces that can adapt to new technology, varying group sizes, and diverse research experiences, and bring together different engineering and science departments in a collaborative and creative environment.

RISC is situated on the north side of the campus quad, adjacent to the Anderson Courtyard, between and connecting to two existing buildings and set into a hillside. This building placement required a unique structural configuration. The building terraces down the steep slope with the main entrance from Anderson Courtyard into the third floor with two floors and a basement below and three floors visible from the courtyard, giving the center a scale that matches the neighboring buildings on the courtyard. Terracing of the building provided opportunity for low roof plazas to create unique meeting and collaboration spaces for students.

Framed mostly in steel, Rockwell is shaped like a letter *L* in plan, featuring what is essentially a north-south wing that contains shared classrooms and the computer science facilities, and a larger east-west wing that houses the science laboratories, vivarium and custom roof greenhouse. At the point at which the two wings meet will be a large, open space – a four-story atrium that will feature a series of overlapping signature staircases and student study spaces beneath an organically shaped skylight; similarly formed openings in the floors will create sight lines and connections up and down the atrium floors.

The foundation system employs spread and mat foundations. The configuration of the lower levels was closely controlled to limit sheeting/shoring and underpinning of the existing buildings. Rather than demolishing an aging and leaning 15-foot-tall site retaining wall, it was incorporated in to the building to reduce the excavation footprint extending too far in to Anderson Courtyard. The structure is typically a concrete slab on metal deck floor system with a steel superstructure. However, a 16-inch thick cast-in-place concrete third floor slab, located only at the southern end of the building, allowed for the extension of Anderson Courtyard on top of the new building. The southern end of the fourth and fifth levels hang from cantilevers at the roof level and extend out over Anderson Courtyard to keep the ceiling at the third-floor main entrance as high as possible.

The façade is a combination of field laid brick on relieving angles and precast concrete wall panels connected to the building structure.

The steel frame construction was designed for flexibility for future changes in education and classroom practices. The building's structural steel framing includes wide-flanged columns, 14 inch diameter round columns, and custom-designed ladder columns built up from steel plates. A two-level, 28 foot tall Vierendeel truss, hidden behind the brick and wooden paneling of the atrium, will support the atrium's signature stairs and openings in the atrium floors and provide a column-free zone for the extensive glazing at the lobby's connection to a second-floor exterior plaza. Floor beams at the atrium were designed to control vibrations in the large, open atrium space for the comfort of users. The atrium stairs connect to cantilevered beams in the floor that connect to beams and girders and then columns or the Vierendeel truss -- the cumulative deflections of which were closely controlled for vibration. The atrium stairs feature custom-designed double-plate stringers with fully detailed connections for field erection adjustability. The plate stringers create a slot for glass railings that continue from the stairs and around the atrium floor openings.

The building was also strategically designed with vibration control to prevent hindrances on any research in the lab spaces. Vibration "maps" were developed to help the college locate and upgrade sensitive equipment within the spaces and relocate the equipment during future renovations.

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

Rendered view from Anderson Courtyard showing entrance at Third Floor.

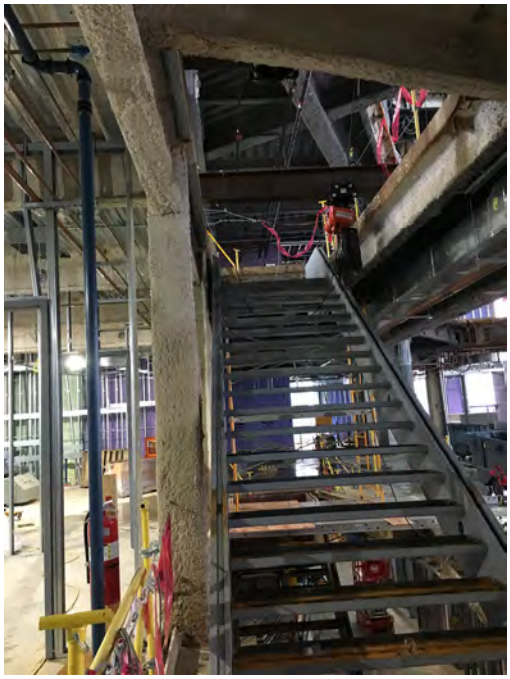
Existing site showing steeply sloped grade.

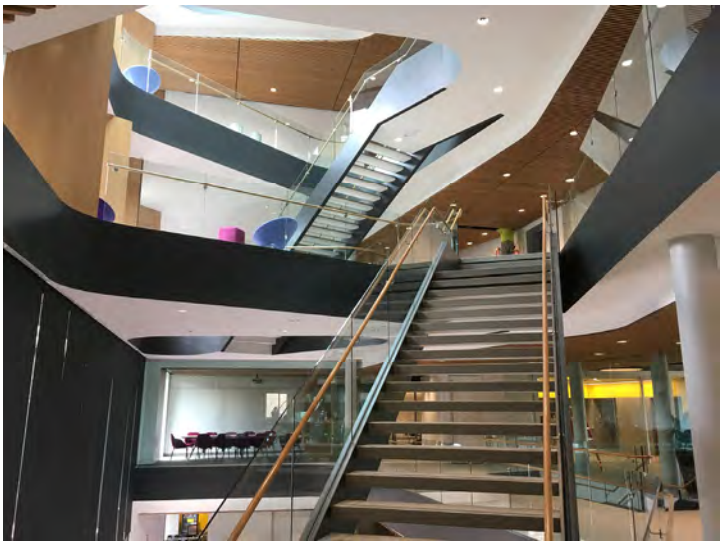
Steel superstructure erected with formwork for 16” cast-in-place concrete slab to support courtyard extension on to building

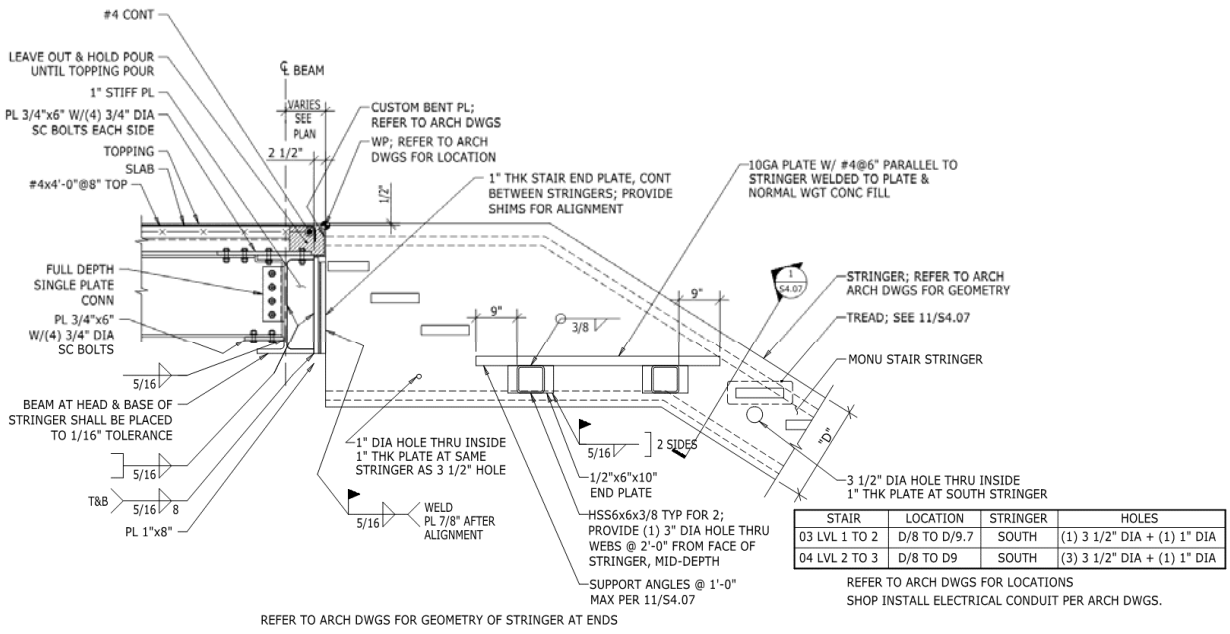
Current view of the RISC from Anderson Courtyard.

Custom designed ladder column with stitch plates, supporting the Vierendeel truss.


Complex atrium framing forming organically shaped floor openings, sized for vibration control of the atrium stairs, and showing beam web openings.








| STAIR | LOCATION | STRINGER | HOLES |
|---|---|---|---|
| 03 LVL 1 TO 2 | D/8 TO D/9.7 | SOUTH | (1) 3 1/2" DIA + (1) 1" DIA |
| 04 LVL 2 TO 3 | D/8 TO D9 | SOUTH | (3) 3 1/2" DIA + (1) 1" DIA |

REFER TO ARCH DWGS FOR LOCATIONS
SHOP INSTALL ELECTRICAL CONDUIT PER ARCH DWGS.

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Custom designed double plate stringers for the atrium monumental stairs, designed to control vibration.

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, LEED AP | **Signature:** | **Date:** **3/31/20** |

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|---|---|---|
| **Submitting Firm:** | **The Harman Group** | |
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