

ENTRY FORM



DVASE 2022 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 | X | Other Structures Over \$1M | |
| Buildings \$40M - \$100M | | Single Family Home | |

| | | |
|--|--|---|
| Approximate construction cost of facility submitted: | \$35 Million | <i>*check IPS Project Spotlight in folder</i> |
| Name of Project: | Merck Project P, Building 63 | <i>*check IPS Project Spotlight in folder</i> |
| Location of Project: | West Point, PA | |
| Date construction was completed (M/Y): | March 2021 | |
| Structural Design Firm: | Mainstay Engineering Group, Inc. | |
| Affiliation: | All entries must be submitted by DVASE member firms or members. | |
| Architect: | Integrated Project Services, LLC (IPS) | |
| General Contractor: | Integrated Project Services, LLC (IPS) | |

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.

Merck tasked the project team with providing a new facility on the West Point, PA campus for the production of drug substance. The new building is a 3-story structure with a footprint of 19,000 square feet. The first floor of the building is utility support space and light warehousing. The second floor of the building is manufacturing space and office space. The third floor of the building is mechanical support spaces and office space. Mainstay was the engineer of record for civil design, elevated slabs, and foundations. The superstructure is a pre-engineered steel structure and envelope designed and supplied by a third party contractor. Mainstay was tasked with coordinating the required column grid and structural design criteria and compiling that information into a specification for the third party vendor. The project was delivered in a design-build target value design format with key contractors on board early in the project to assist with design constructibility reviews and estimating. Mainstay also designed and documented several access platforms, hoists, and lift points as the need presented itself due to the process design.

Superstructure Challenges:

- Because the clean room system is proposed to be located on the second floor, strict control of floor deflections were critical to prevent joint failure in the clean room wall panel joints. The clean room walkable ceiling was suspended from the 3rd floor framing and underside of the 3rd floor concrete metal deck with strict deflection control.
- The mechanical systems installed on the 3rd floor were modularized off-site and brought into the building as large skid frames. Close coordination between the rigging team and Mainstay was required to ensure that the skids could be moved into place without compromising the elevated concrete on metal deck floor. Mainstay studied the dolly loads and jacking loads at each point in the installation sequence.

Foundation Challenges.

- A concrete spread footing foundation system was used based upon the recommendations of site-specific geotechnical investigation. Rock was shallow in some areas of the building footprint and alternatives were explored to determine if foundations should be excavated down to rock or if foundations should be kept shallow bearing on virgin soils.
- The grade slopes approximately 8 feet from the north side of the site to the south side. As a result of the sloping grade, retaining walls were required to provide a level first floor. Exterior retaining walls were provided at the north end of the proposed building to set the first floor approximately 3 feet below existing grade and to provide a level area outside the main entrance of the building. As exterior grade slopes below the first-floor elevation, the building's perimeter foundation walls became retaining walls. Grade was approximately 4 feet below finished floor at the south side of the building to create the proposed loading docks.

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



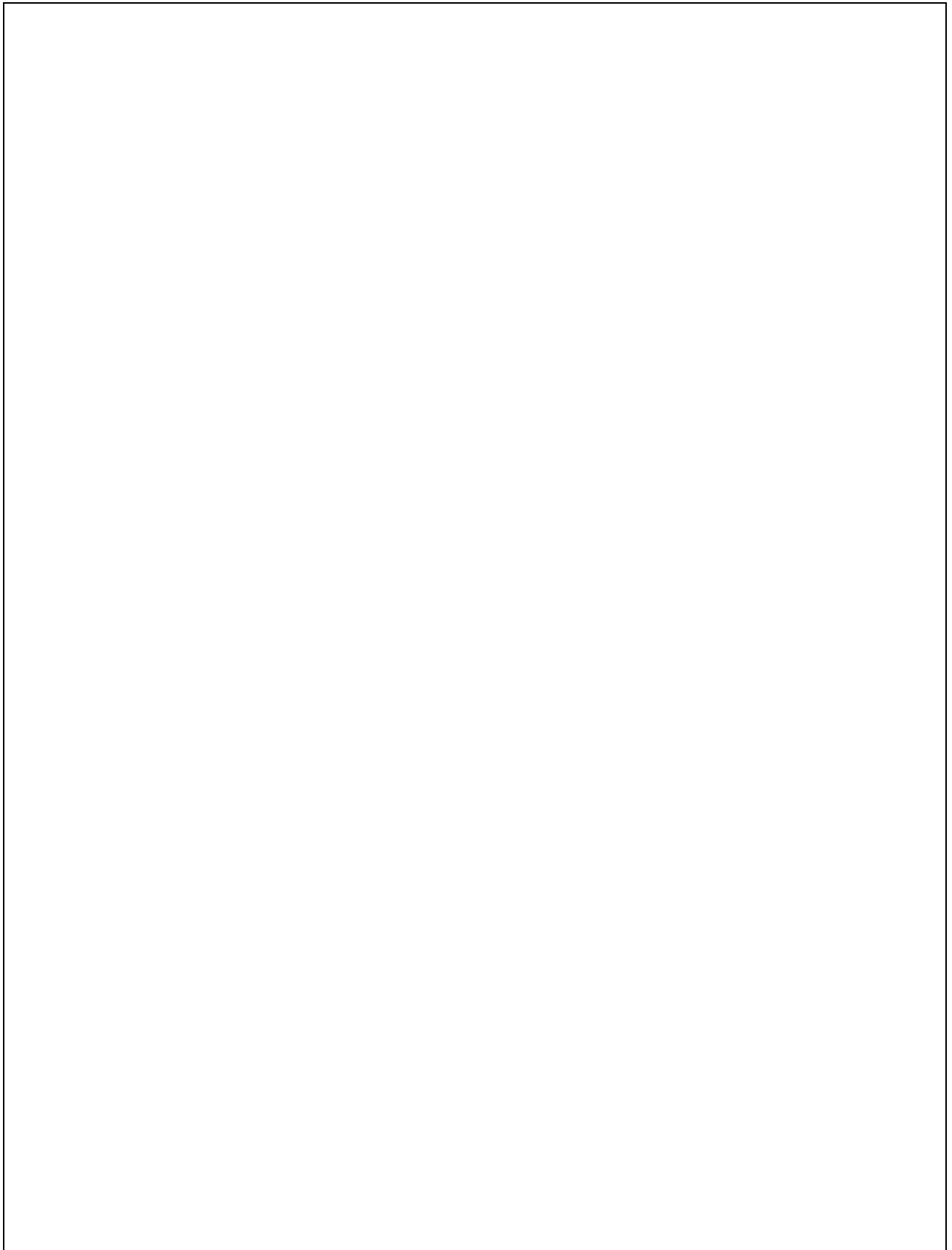
Rendering courtesy of IPS

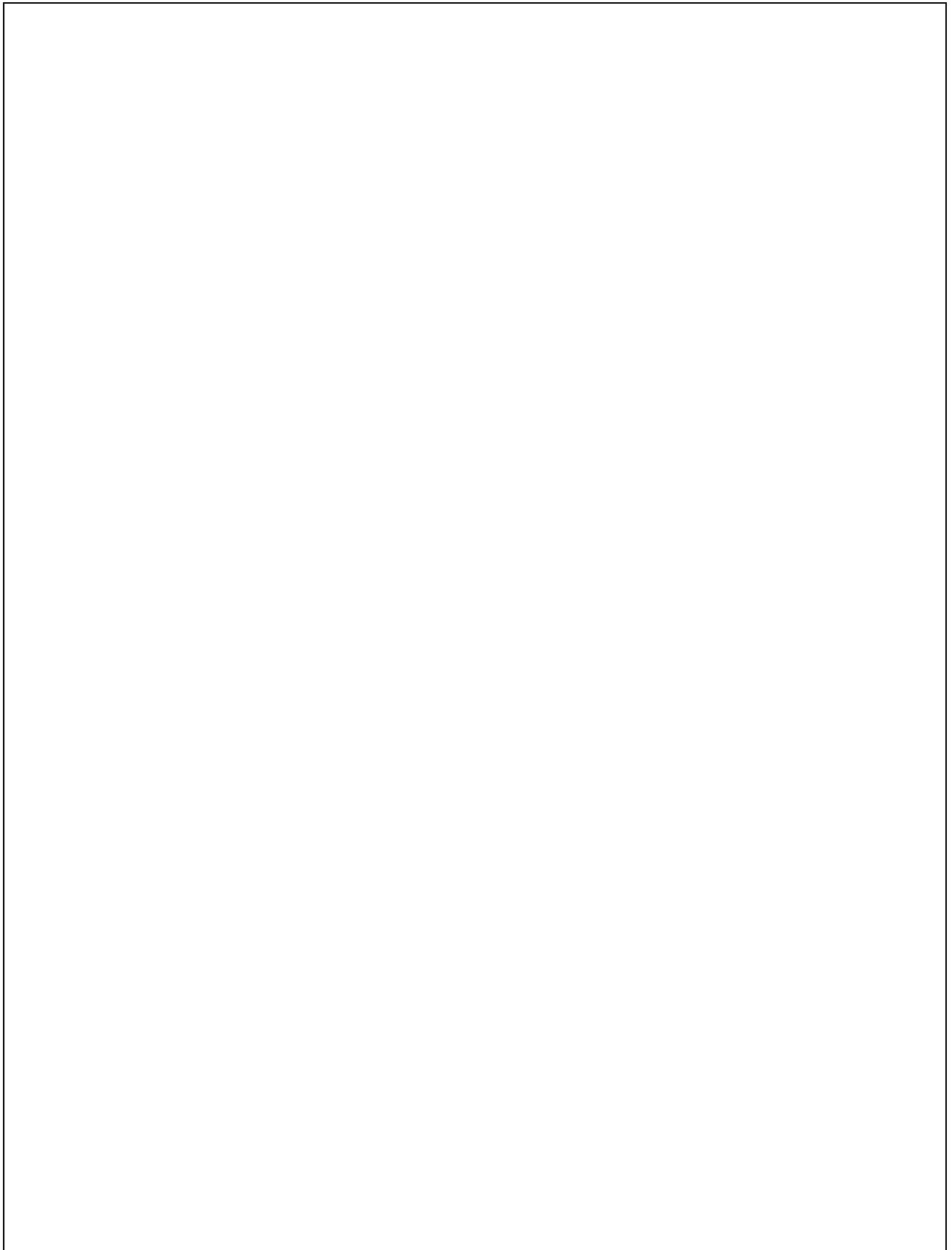


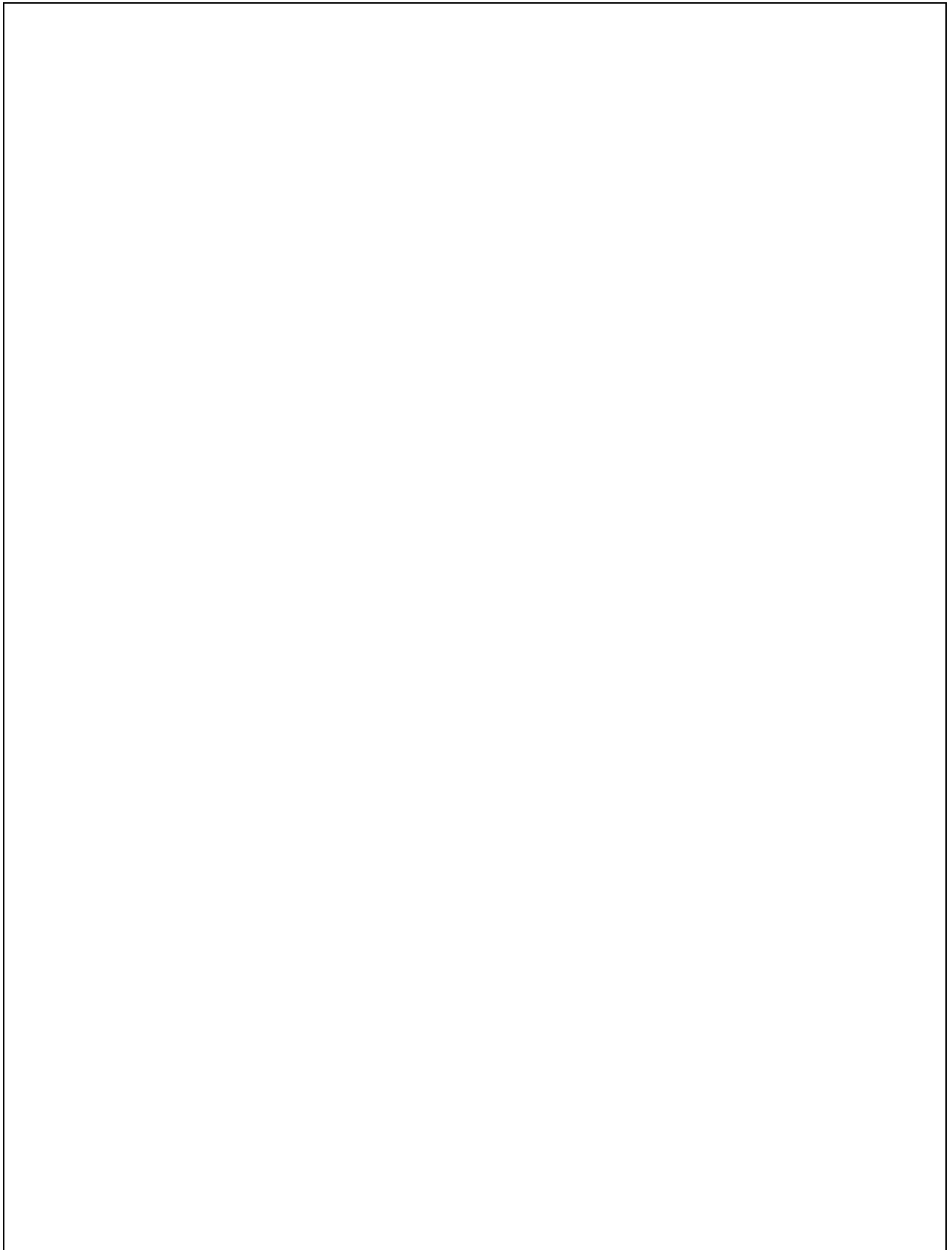
Exterior - photo courtesy of IPS



photo courtesy of IPS








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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|--|--|---------------------------------|
| Print name: Justin T. Ruby, PE | Signature:  | Date: 10-APR-2022 |
| Submitting Firm: | Mainstay Engineering Group, Inc. | |
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