ENTRY FORM

DVASE
2018 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

Buildings under $5M		Buildings Over $100M	X
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:	$155.5 million
Name of Project:	Laboratory and Office for Pfizer
Location of Project:	St. Louis, MO
Date construction was completed (M/Y):	mid-2019
Structural Design Firm:	EwingCole
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	EwingCole & Forum Studio
General Contractor:	Clayco

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.

Pfizer's new 285,000 square foot dual-purpose facility in St. Louis, MO will house a state-of-the-art biological development laboratory and office facility. EwingCole provided structural engineering design services as part of the design-build team providing turnkey build-to-suit services for the project, collaborating with a national developer, multiple architectural teams, and MEP design assist contractors. The overall project is comprised of multiple structures: a three-story U-shaped office/lab building with a mechanical penthouse, a one-story combined pilot plant and central utility plant (CUP) with a mechanical penthouse, and a utility yard housing cooling towers, bulk gas storage and flammable storage.

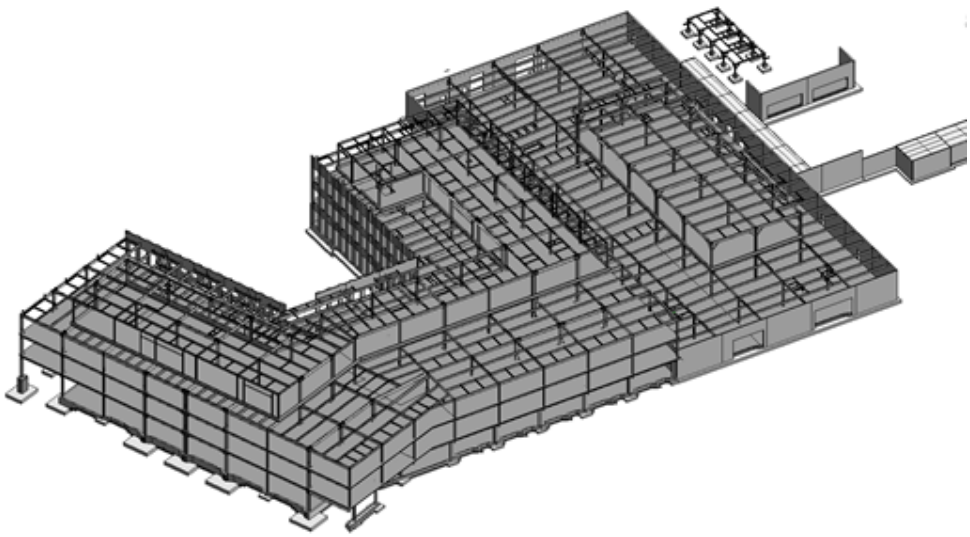
The superstructure of the office/lab and pilot plant/CUP buildings consists of steel frames with sections of tilt-up concrete bearing walls. Lightweight concrete composite slabs are the typical floor construction with normal weight concrete composite slabs provided at the penthouse floors. Foundations consist of concrete spread footings with vibro stone column ground improvement under the footings. The one-story pilot plant/CUP utilizes concrete tilt-up bearing walls around the entire perimeter. The three-story office/lab building utilizes three story tilt-up concrete bearing walls with punched windows along the perimeter of the courtyard created by the interior of the U. Additionally, the steel columns on the eastern side of the building, or the bottom of the U, are set back at the bottom floor to create a cantilevered effect with the upper floors, which required the use of cantilevered transfer girders at the second floor.

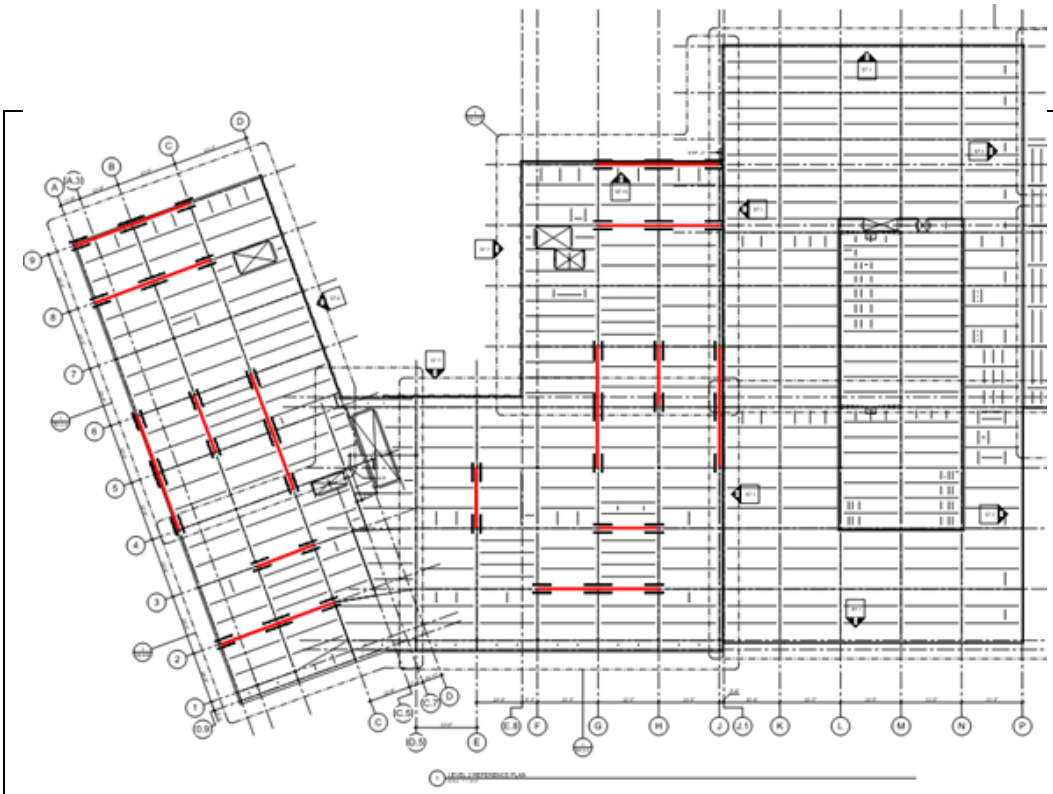
Through the use of cone penetration tests and seismic piezocones the geotechnical engineer was able to classify the site class as C. This allowed the design team to use Seismic Design Category C for determining seismic loads and allowed for a lot more flexibility in selecting lateral force resisting systems than if site class D and SDC D governed. The one-story pilot plant/CUP, which is isolated from the three-story office/lab building by an expansion joint, utilizes some of the perimeter tilt-up concrete bearing walls as shear walls in combination with interior braced frames as the lateral force resisting system. For the three-story office/lab building, a number of different lateral options were evaluated in order to determine the most cost-effective solution. Two different braced frame arrangements as well as a conventional moment frame system were evaluated. EwingCole also partnered with SidePlate Systems, Inc. to evaluate a moment frame system with SidePlate connections. In the end, the developer, with input from EwingCole, selected the SidePlate moment frames as the most cost effective system. In addition to being slightly more economical than braced frames, this system allowed for the most flexibility in the layout of the lab and office spaces.

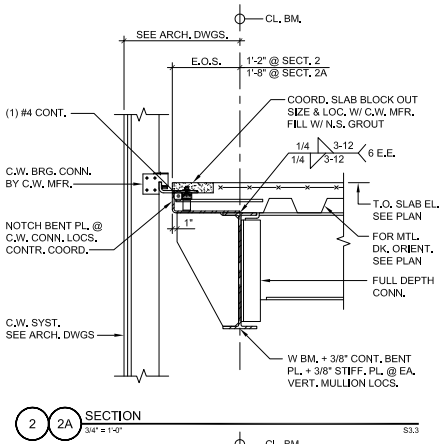
As mentioned above, concrete tilt-up walls are utilized at a number of locations. EwingCole designed several different types of tilt-up panels. The one-story bearing walls are made up of either solid panels with an architectural cladding or exposed sandwich panels made up of a structural wall, insulation, and a thin concrete exterior wythe. Cantilevered tilt-up walls are provided around the bulk gas and flammable storage areas. On the three-story office/lab building, the developer elected late in the design phase to swap out a portion of the steel supported curtain wall around the courtyard for three story tilt-up concrete bearing walls. These three-story panels consist of vertical strips of concrete interrupted by curtain wall panels. To accommodate the curtain wall strips, panels of variable thicknesses were designed and punched openings were provided. These panels, therefore, were designed as a concrete frame with concrete beams spanning between the exposed concrete columns.

BIM coordination was a team effort to ensure quality and constructibility of the project. Coordination between the various disciplines took place within Revit and Autodesk BIM 360 programs at weekly coordination meetings that began during the design phase and continued through construction. Of particular importance was the coordination with the MEP design assist contractors for penetrations through the tilt-up walls to ensure proper load paths were maintained.

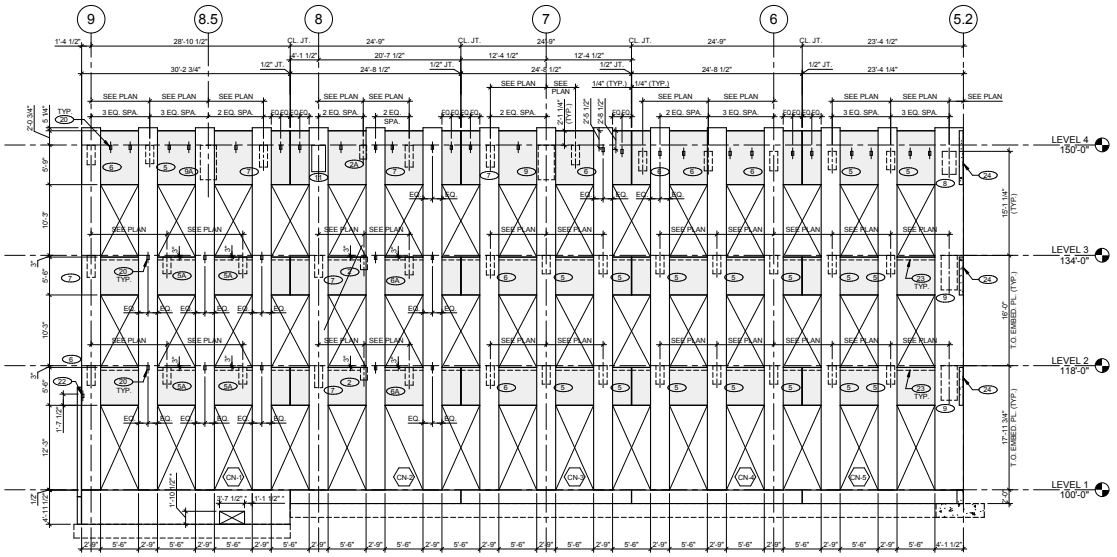
- The following 5 pages (maximum) can be used to portray your project to the awards committee through photos, renderings, sketches, plans, etc…





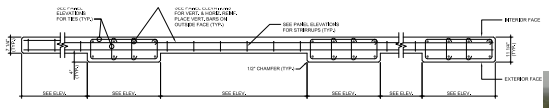


2 2A SECTION
3/4" = 1'-0"
S3.3

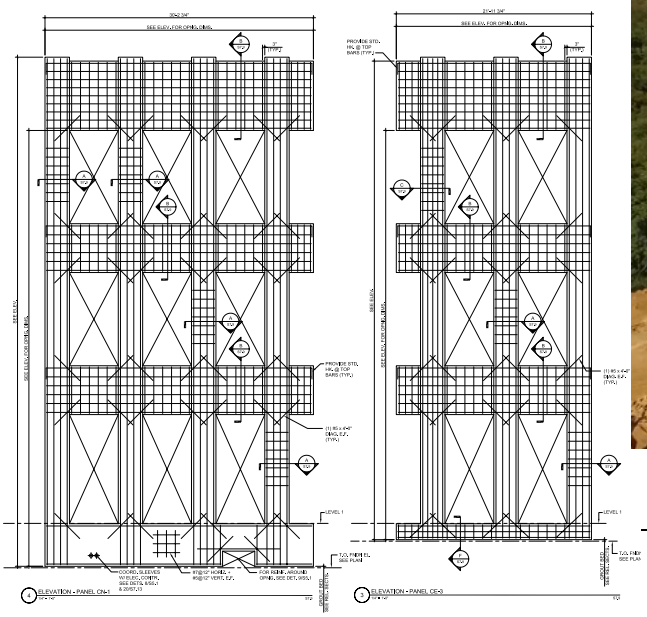


2 NORTH ELEVATION - COURTYARD
SCALE: 1/8" = 1'-0"

NOTE: SHADED AREAS INDICATED 4" RECESS IN EXTERIOR FACE OF PANEL.
NOTE: ALL EMBED. PLATES SHALL BE LOCATED ON THE INTERIOR FACE (FAR SIDE) OF THE PANELS. EMBED. PLATES LOCATED ON THE EXTERIOR FACE (NEAR SIDE) OF THE PANELS SHALL BE NOTED THUS, (N.S.) IN THE ELEVATION.



1 PLAN DETAIL - COURTYARD PANEL
SCALE: 1/4" = 1'-0"



A ELEVATION - PANEL CN-1
SCALE: 1/4" = 1'-0"

A ELEVATION - PANEL CE-3
SCALE: 1/4" = 1'-0"

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: Bryan Crawford, PE	**Signature:** 	**Date:** 4.9.18

Submitting Firm:	EwingCole	
Mailing address:	100 N. 6th Street Philadelphia, PA 19106-1590	
Telephone: 215.625.4452	**Fax:** 215.574.9163	**Email:** bcrawford@ewingcole.com