

ENTRY FORM



DVASE 2019 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	X

Approximate construction cost of facility submitted:	Undisclosed
Name of Project:	Confidential
Location of Project:	Bucks County, PA
Date construction was completed (M/Y):	04/2018
Structural Design Firm:	Mainstay Engineering Group, Inc.
Affiliation:	All entries must be submitted by DVASE member firms or members.
Architect:	IPS
General Contractor:	Integrated Construction Services Inc.

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.

This stately private residence is full of charm and function yet it has a few structural challenges. This 7,000+ SF private residence located in New Hope, PA, is built on a site with grade that starts relatively level then quickly slopes on the north side. With two stories of living space and a finished walkout basement, this residence features one attached two car garage and an additional detached two car garage with a shop. The two garages are separated by a connector trellis path with a porte-cochere and auto court. To the east of the main house is a pool and pool house. The pool house is a two-story structure with a rooftop observation deck, a main level living space, and a lower level storage shed. Further east of the property, a series of solar panels can be seen which creates for an efficient home.

The structural design of this palatial home is exceptional. Designing for open concept living gives rise to unique framing and larger spans.

This house is composed of wood roof truss framing and standard I-joist floor framing. The members are supported by bearing walls or multi-ply conventional wood lumber or engineered wood girders. Plywood sheathing is used for the roof and Warmboard-S plywood decking sub floor is used for the floor. This flooring system integrates plywood and tubing to create a unique radiant system. With its 7-ply plywood panel and tubing, it creates a 1 1/8" thick radiant panel, which allows it to become the primary structural decking.

The pool house is composed of standard conventional lumber and engineered wood girders. Steel tube columns are used to support the timber materials.

The foundations are Superior Walls Systems that are insulated precast concrete wall panels allowing for faster installation. The panels are joined together using bolts and a polyurethane sealant. The footing is integrated with the panels on a bed of crushed stone determined by the soil bearing capacity of the site.

CHALLENGES

To create a more open concept feel in the basement, Mainstay designed structural steel wide flange beams to minimize the use of interior columns. This in turn is integrated with the décor of the home to create an industrial feel to the space.

To create cantilevered framing for the bridge on the second floor overlooking the main entrance, Mainstay designed metal strapping on the floor joists over the girder beam and back to the floor joist back span.

The pool house was a challenge because of the lower level shed, one of the main level columns would have been in the way of the door opening. So Mainstay introduced wide flange steel to support the column and clear the shed door opening.

The challenge with the precast foundation system was the coordination of the required pocket for the support of the floor girders. One mislocated beam pocket would have caused a delay in the construction of the home. Mainstay supplied the reactions of the girders to the manufacturer in order to provide proper reinforcement of the precast walls.



FINAL DRONE PHOTOGRAPHY



ERECTION OF PRECAST CONCRETE WALL PANELS



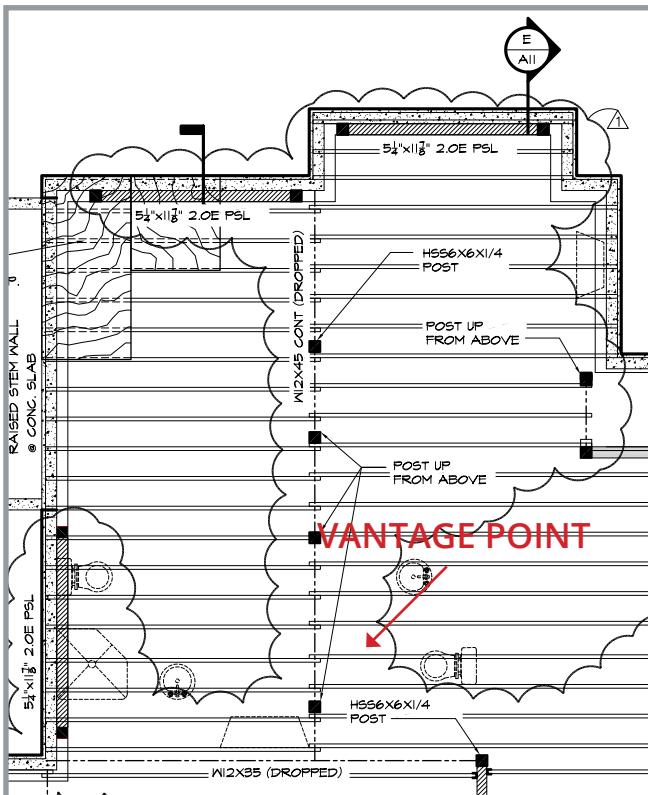
PRECAST CONCRETE WALL PANELS AT WALKOUT BASEMENT AREA



FRONT ENTRANCE - CONSTRUCTION PHASE



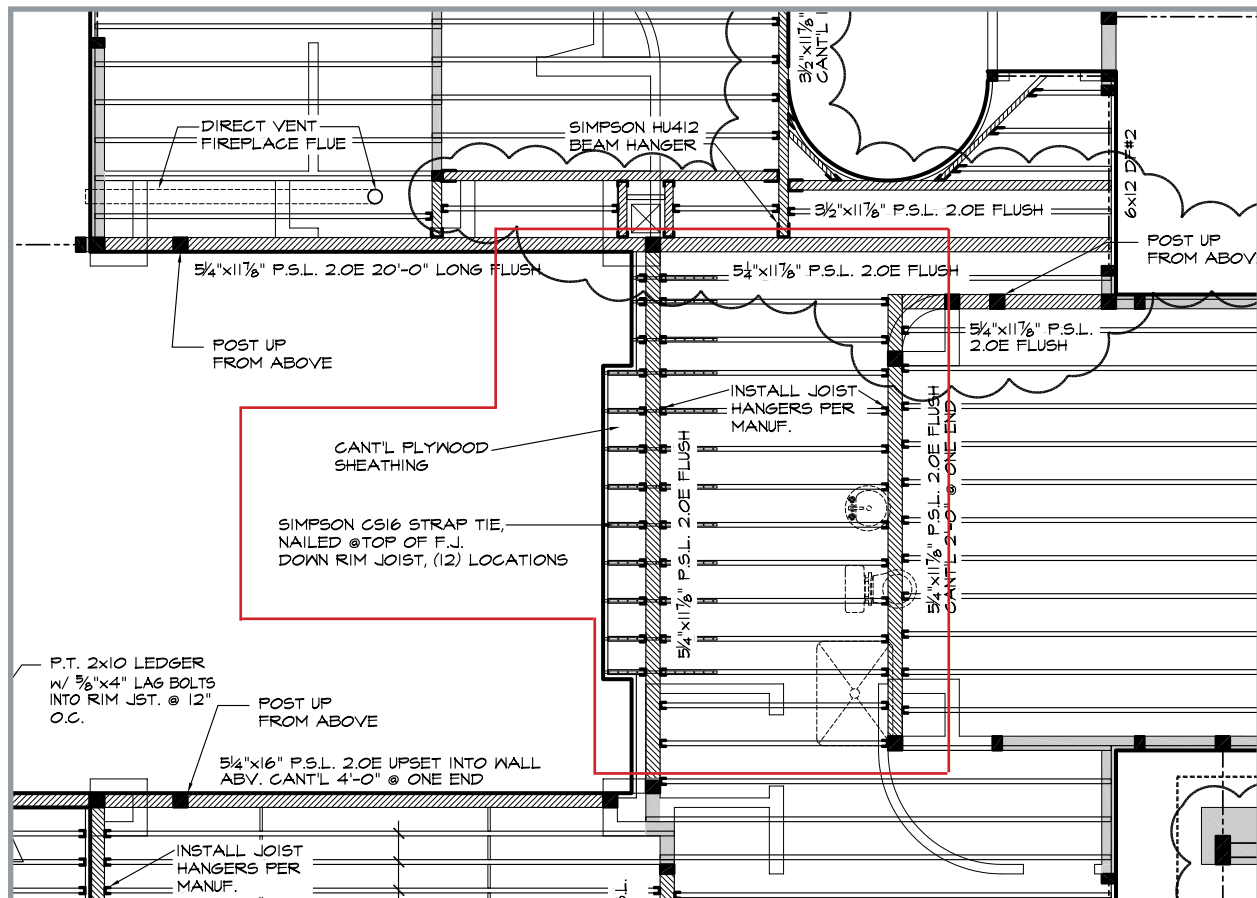
FRONT ENTRANCE - COMPLETED PHASE



FRAMING SHOWING CONTINUOUS STEEL BEAM SUPPORTING MULTIPLE POST LOADS FROM FLOOR ABOVE



PHOTO OF STEEL BEAMS INTEGRATED WITH ROOM DÉCOR



FRAMING SHOWING CANTILEVERED SECTION OF BRIDGE

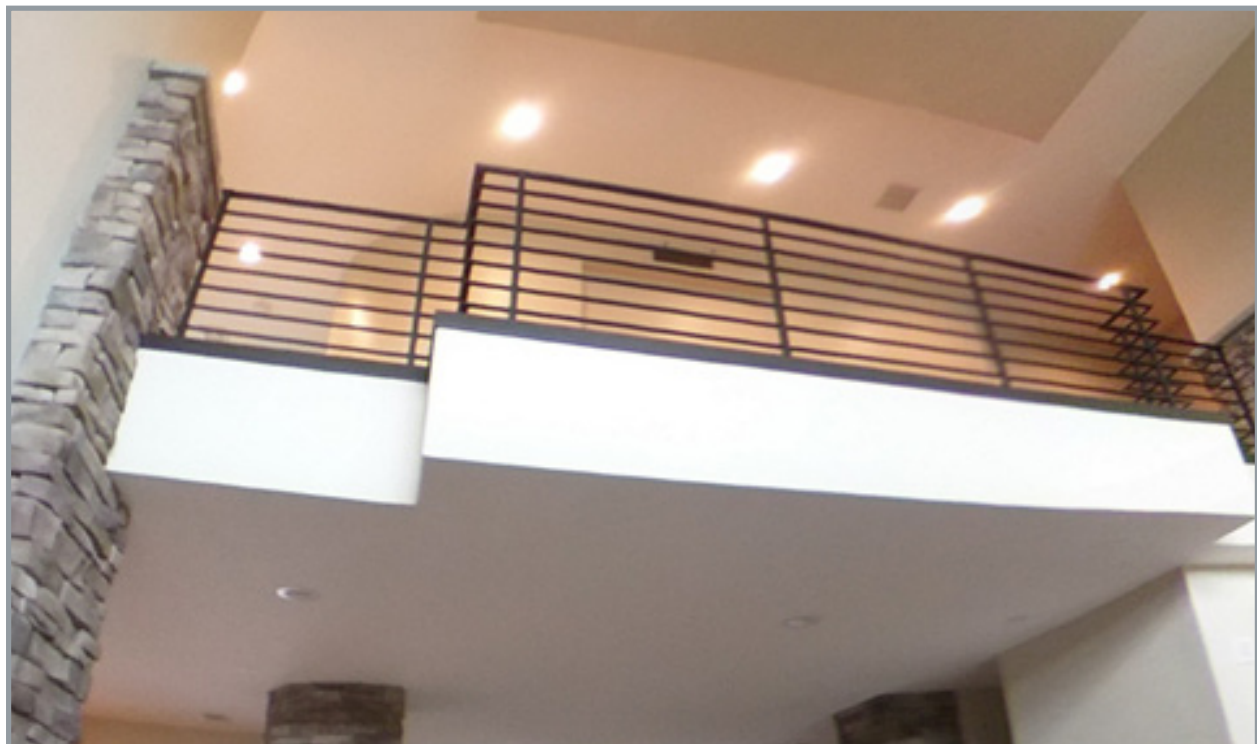
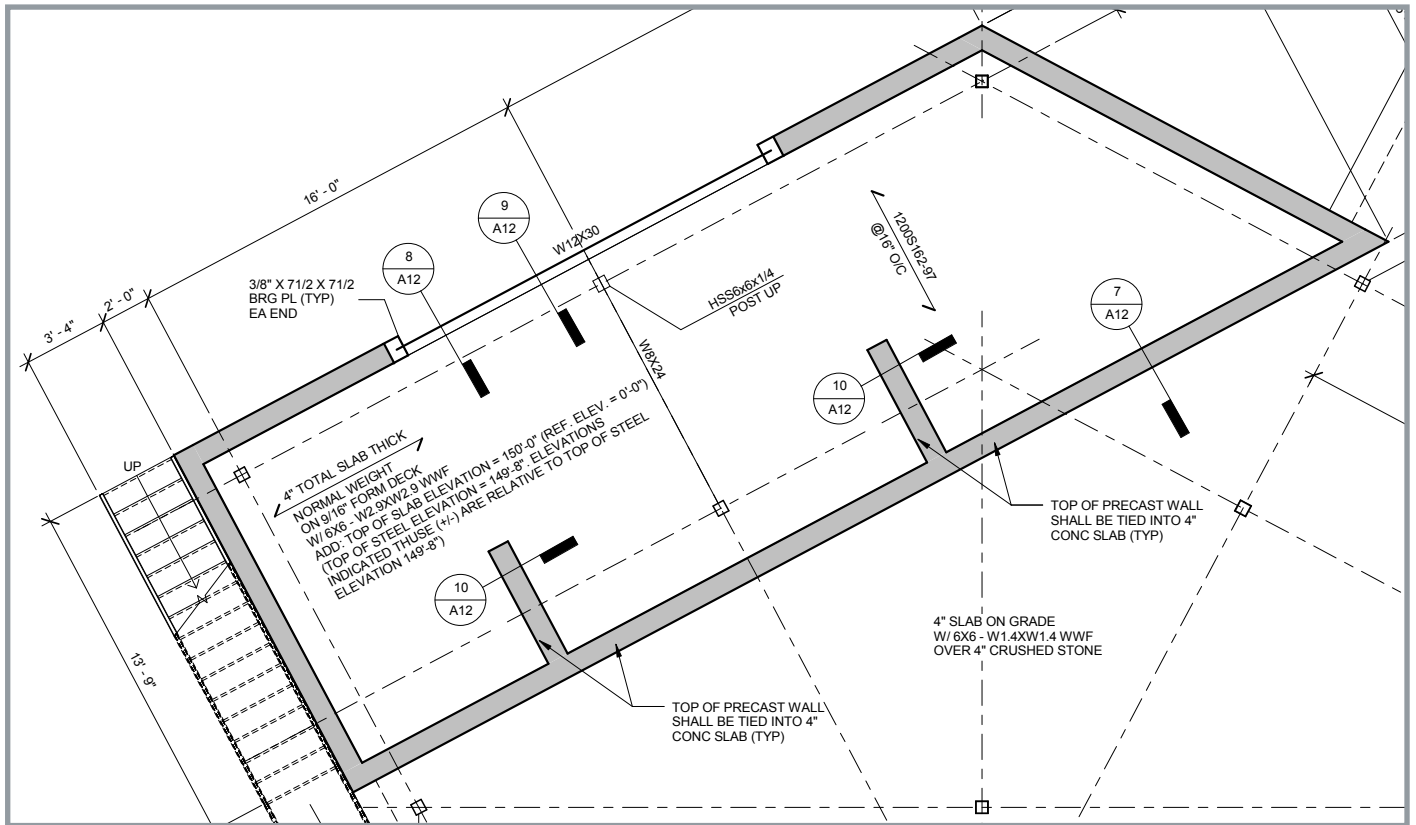


PHOTO SHOWING FINAL LOOK OF CANTILEVERED SECTION OF BRIDGE



PLAN SHOWING STEEL FRAMING FOR POST UP SUPPORT



PHOTO OF FINAL LOOK OF POOL HOUSE

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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