ENTRY FORM

DVASE
2021 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:	$250 million
Name of Project:	Arthaus
Location of Project:	309 S Broad Street, Philadelphia, PA 19107
Date construction was completed (M/Y):	Topped Out – February 2021
Structural Design Firm:	The Harman Group
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architects:	Kohn Pederson Fox Associates, PC
General Contractor:	INTECH Construction

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.

Located at the corner of Broad and Spruce Streets in Center City, Philadelphia, Arthaus is a 47-story, 400,000 square foot residential tower that features 108 condominiums and above-ground parking for 151 cars. The development also includes more than 36,000 square feet of amenities, consisting of an indoor pool and a fitness center overlooking the Kimmel Center, a library, board room, club room, dining salon, café with demonstration kitchen, and kids' playroom. The ground floor houses more than 4,200 square feet of restaurant space. The parking level utilizes stackers to maximize the car count. Car elevators are used to take the cars to the second floor.

The Harman Group provided structural engineering and parking consultant services for the project, in partnership with developer, Dranoff Properties; architect, Kohn Pederson Fox Associates, PC; construction manager, INTECH Construction; and mechanical/electrical/ plumbing engineer, Alderson Engineering, Inc.

The structural system used on the project consists of cast-in-place reinforced concrete columns, shear walls, and two-way floor slabs. The majority of the vertical structural elements are supported on a 12' thick concrete mat supporting the central core and 8' thick under the perimeter tower columns with 6,000 psi concrete. A limited number of podium perimeter columns are supported on deep drilled caissons to avoid any impact on an adjacent historic church and an adjacent building tower.

The concrete core consists of 42" thick 14 ksi concrete at the base and steps to a 30" thick wall at level 8. Concrete strength varies from 12 ksi down to 8 ksi the remainder of the building. Additionally, the tower has a tall thin profile and features a supplemental damping system, a "tuned liquid damper" (slosh tank), located at the top of the building, to assure occupant comfort.

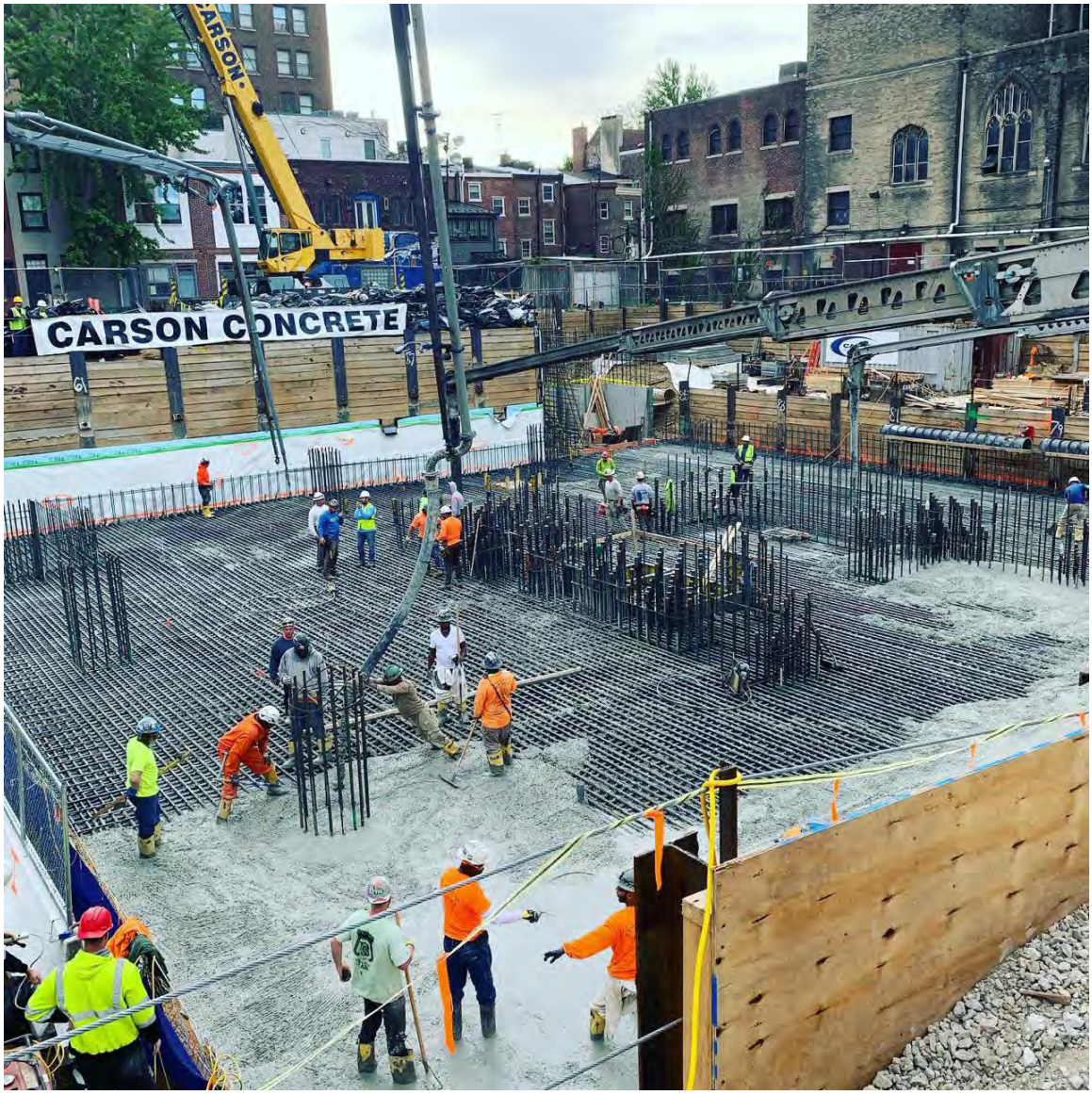
In order to obtain the architectural layouts of the interior unit plans while maintaining the desired architectural layout on the amenity floors, several columns walked or sloped towards the base of the building. The tension and compression forces into the floor plates were upwards of 1000 kips. #11 and #18 bars 80 and 100 ksi, respectively, were used to drag the forces into the shear walls.

The window wall wraps around the entire roof structure to create the effect of a taller building. The structure besides the core does not continue above Level 46. A series of double story vertical trusses were used to support the window wall as well as the window washing swing stages.

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

Renderings courtesy of KPF

Top reinforcement under way for the 12’ and 8’ thick mat foundation.
Bottom mat of reinforcement already placed.



6,000 psi concrete mix being poured for the 12’ and 8’ thick mat foundation.
Sensors were used to monitor the overall temperatures and differential temperatures.

#18 bars and stud rails for tension forces at 8th floor from walking columns

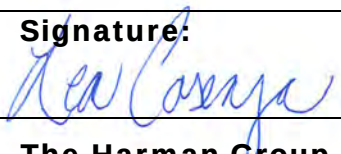
Under construction, March, 2021

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: **Lea Cosenza, PE**	**Signature:** 		**Date:** **4/2/2021**
Submitting Firm:	**The Harman Group**		
Mailing address:	**150 South Warner Road, Suite 100** **King of Prussia, PA 19406**		
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