

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	X
Buildings \$15M - \$40M		Other Structures Over \$1M	
Buildings \$40M - \$100M		Single Family Home	

Approximate construction cost of facility submitted:	\$500,000
Entry Fee:	FREE
Name of Project:	Lehigh Valley Iron Pigs Left Field Video Display
Location of Project:	Allentown, PA
Date construction was completed (M/Y):	April 2017
Structural Design Firm:	Michael A. Beach & Associates
Affiliation:	All entries must be submitted by DVASE member firms or members.
Architect:	Daktronics
General Contractor:	Daktronics

Company Logo (insert .jpg in box below)



Michael A. Beach & Associates
Consulting Structural Engineering

- Provide a concise project description in the following box (one page maximum).

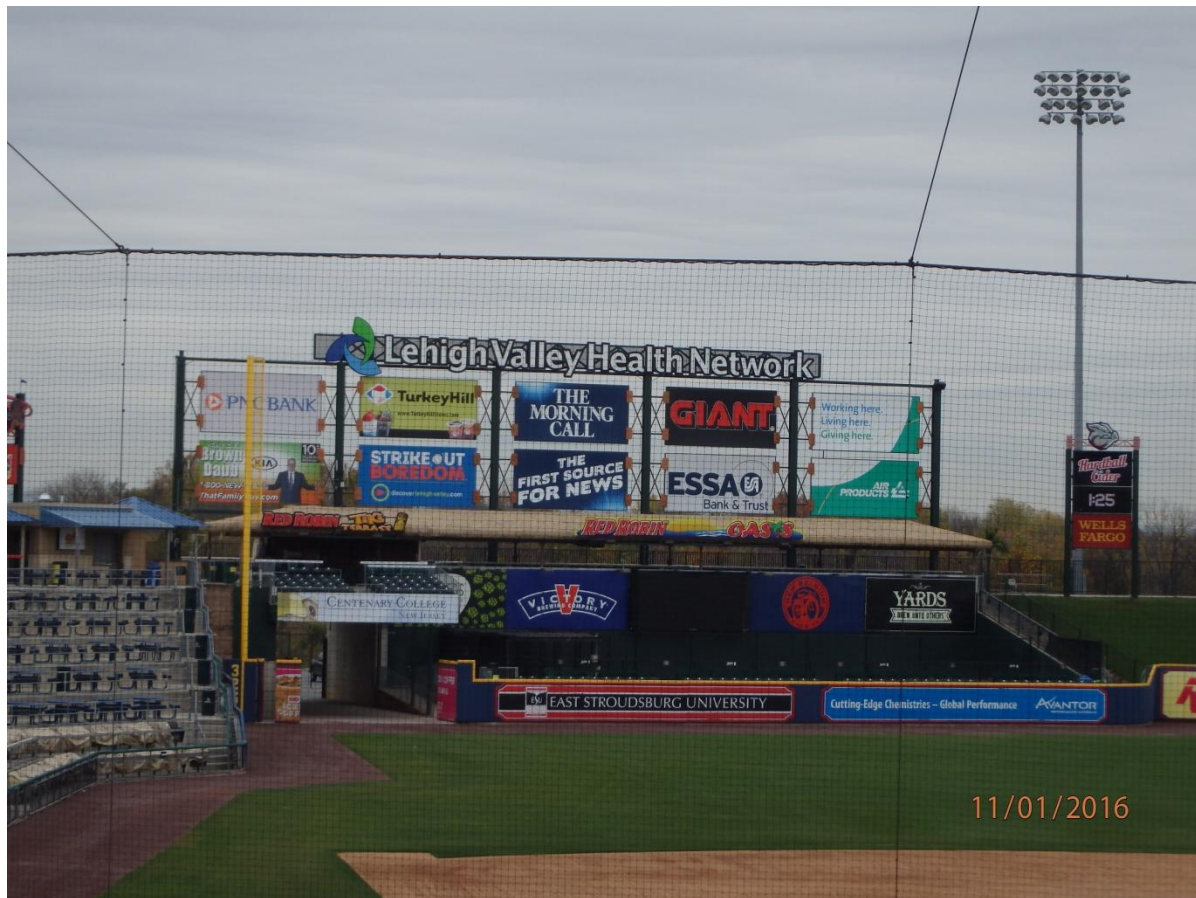
Include the significant aspects of the project and their relationship to the judging criteria.

The Lehigh Valley Iron Pigs Video Display project involved renovations to an existing advertisement billboard at the minor league baseball team complex at Coca-Cola Park in Allentown, Pennsylvania. Originally constructed in 2008, the stadium's left field advertisement structure is 55 feet tall and is located over a field access tunnel and bullpen. The existing structure is comprised of six cantilevering W14x99 steel wide flange columns spaced 26'-6" on center.

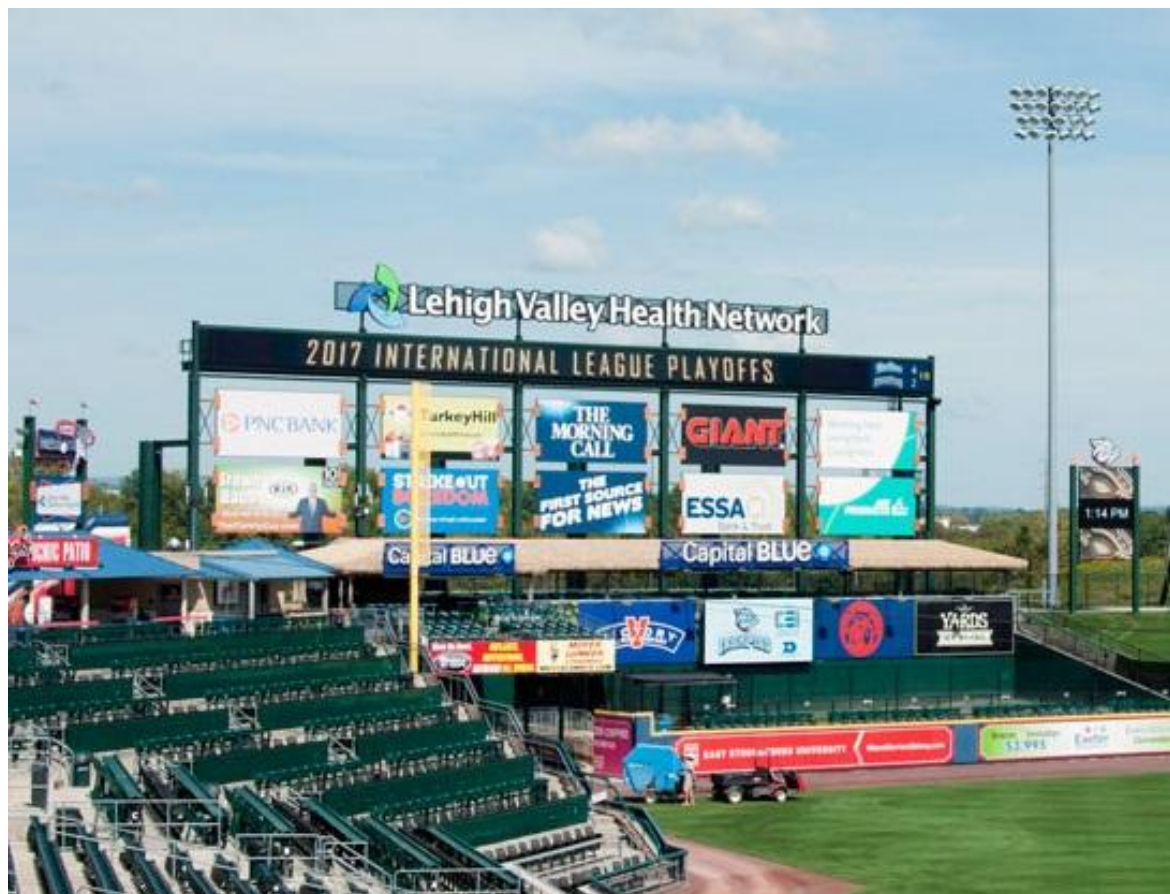
The structural scope of this project involved the design of modifications to the existing ad board structure to add a 5 foot tall by 133 foot long video display to the top of the existing structure. A new catwalk was also designed cantilevering from the back of the ad board structure to provide access to the video board for maintenance personnel. The main challenge for this project consisted of strengthening and retrofitting the existing structure to accommodate the increased wind and access platform loads. A 3D model of the structure was created in RISA to perform the analysis on the existing structure. As anticipated, it was quickly determined that the original structure was inadequate to support the increased wind load moments applied to the six wide flange column cantilevers. The base moment problem on the columns was exasperated by copes made to the flanges on the wide flange columns at the base plates in order to accommodate the existing anchor bolt spacing. Many steel column reinforcing schemes were evaluated. However the biggest challenge always revolved around the base moment and how to upgrade the connection of the columns and strengthen the existing foundations. Bracing behind the existing structure became the next logical solution. However, bracing options were limited due to the access required behind the ad board structure for field maintenance personnel. A solution to bracing was agreed upon to install six 42 inch diameter steel pipe columns behind the existing structure. The new pipe columns are cantilevered from new caisson foundations and attached to the back of the existing structure with struts to brace the existing wide flange columns. The new reinforcing pipe columns are supported on five foot diameter by 32 foot deep concrete caissons. A caisson support system was designed due to the close proximity of the new reinforcing columns to existing retaining walls and building columns in the area. Casings were used around the concrete caissons to help provide temporary soil support during excavation and construction.

New column splices were designed and welded to the top of the existing W14x99 columns to increase the overall height of the ad board structure to support the video display and catwalk. The catwalk framing was welded to the new column extensions and cantilevers 5 feet to provide a wide access area behind the video screens for maintenance. The cantilever loads are easily supported by the existing columns after being reinforced by the new pipe column braces. A ladder and multiple platforms were designed to wrap around one of the new pipe columns behind the bullpen to access the catwalk.

During the construction phase, multiple challenges were overcome to meet the tight schedule of finishing the project before the season opener. Additional offset steel column extensions were used to fit the existing sponsor sign over the video display.



Left field ad board prior to display project.



Left field ad board with display added.



11/01/2016

Ad board typical column flange cope at base plate attachment to concrete pier.



11/01/2016

Ad board typical column base plate strap attachment to concrete pier.



Drilled caisson reinforcing for new pipe shore.



Bolts and caisson reinforcing for new pipe shore.



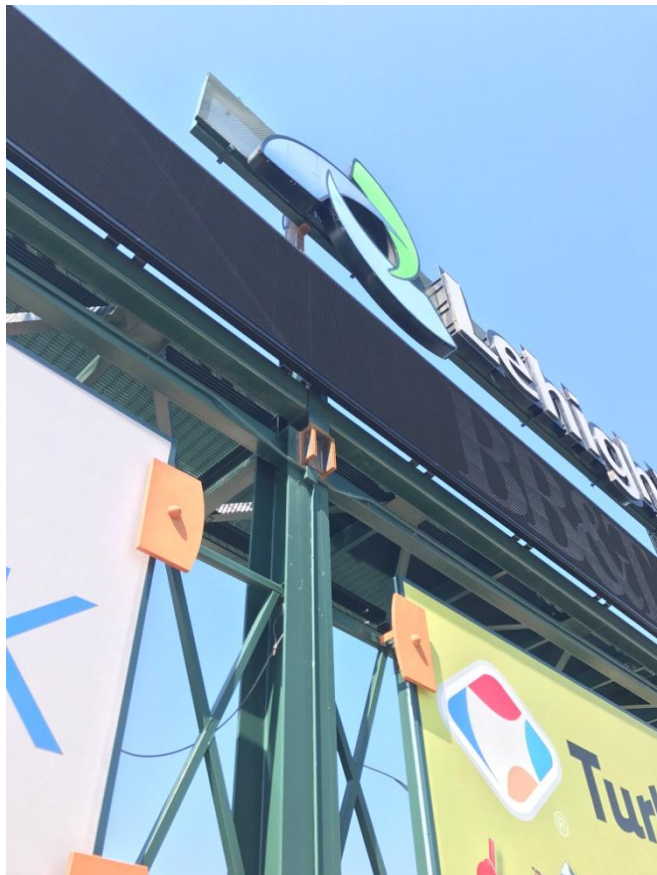
Typical pipe shoring post installed to brace existing ad board column.



New service platform Steel cantilevered from existing ad board columns.



New Service platform.



Attachment of new display and stadium sponsor sign support from existing columns.

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

Submitted by:

Print name: Paul Constantini	Signature: 	Date: 03/29/19
Submitting Firm:	Michael A. Beach & Associates	
Mailing address:	200 Birchfield Drive Suite 205 Mount Laurel, NJ 08054	
Telephone: 856-273-1909	Fax: 856-273-1480	Email: paulc@mabeachassoc.com