ENTRY FORM

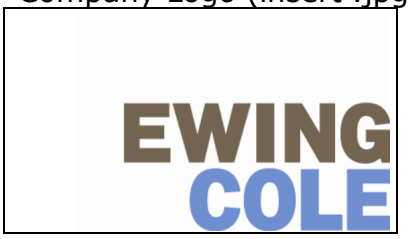
DVASE
2019 Excellence in Structural Engineering Awards Program

PROJECT CATEGORY (check one):

Buildings under $5M		Buildings Over $100M	
Buildings $5M - $15M	X	Other Structures Under $1M	
Buildings $15M - $40M		Other Structures Over $1M	
Buildings $40M - $100M		Single Family Home	

Approximate construction cost of facility submitted:	$10.1 million
Name of Project:	The Fillmore Theater at The Harrah's Casino
Location of Project:	New Orleans, Louisiana
Date construction was completed (M/Y):	02/2019
Structural Design Firm:	EwingCole
Affiliation:	**All entries must be submitted by DVASE member firms or members.**
Architect:	EwingCole
General Contractor:	Ryan Gootee General Contractors

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.

Live Nation, one of America's largest concert venue operators, is opening a chain of concert venues named after the legendary San Francisco Fillmore Theater. The most recent Fillmore Theater to open was constructed in part of the long vacant second floor of The Harrah's Casino in New Orleans after Live Nation agreed to lease the space from Caesar's Entertainment. The 2200 person concert hall opened in February, 2019. The project includes the concert hall fit out as well as the design of a two-story addition which provides a dedicated street entry to the venue and houses an elevator for service and ADA access.

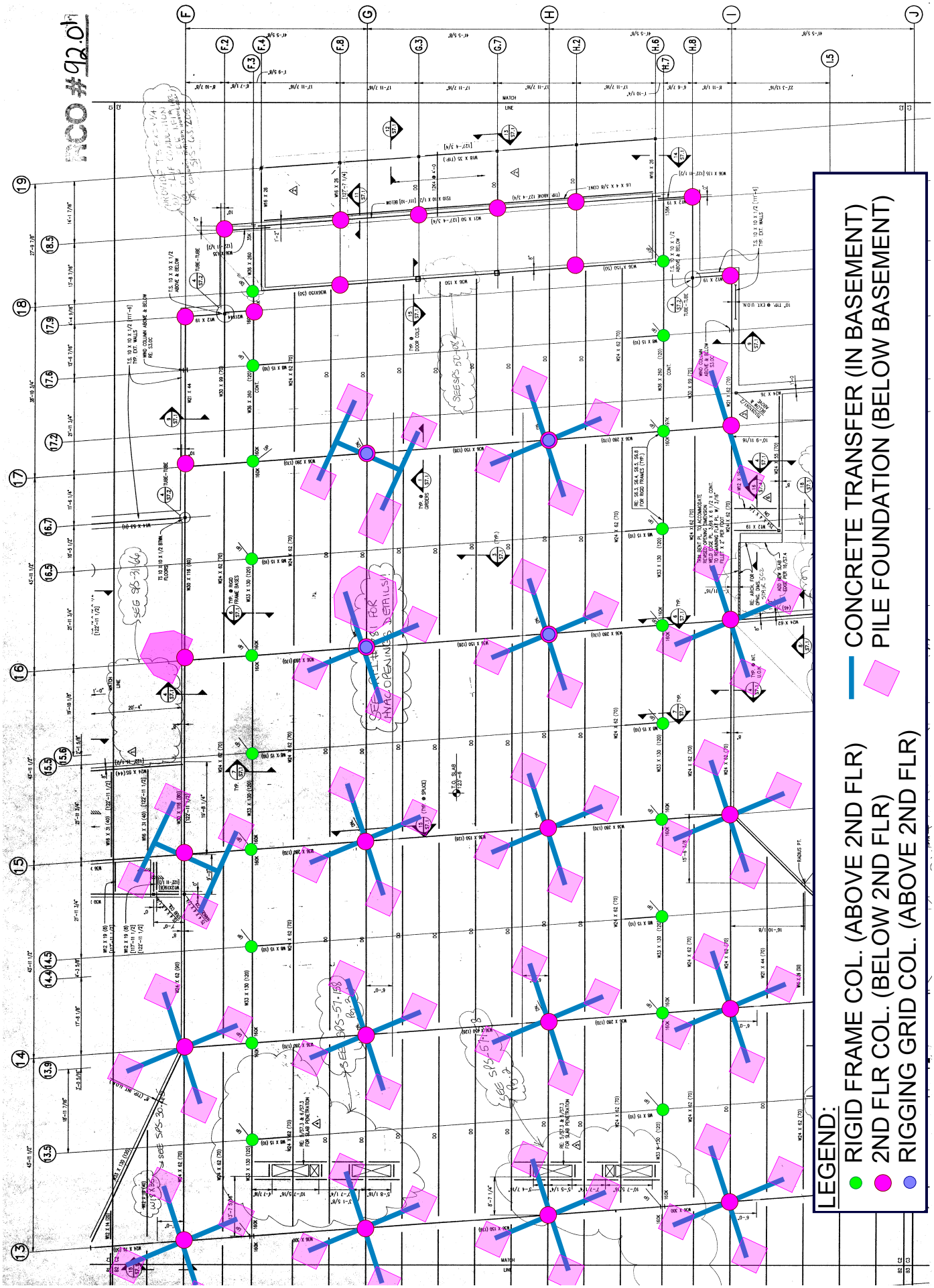
The Harrah's Casino, opened in 1999, was built on top of two levels of basement which remain from the Rivergate convention center, constructed in the 1960's. The basement levels are two-way concrete slabs spanning to concrete columns on pile foundations. The portion of Harrah's built in the 1990's is two stories high. The roof structure consists of cold-formed channel purlins which span to structural steel rigid gable roof frames that span 95 feet. The frames which resist lateral loads are stiffened with buttress-like moment frames. The second floor is concrete slab on metal deck supported by wide flange beams, girders, and columns. Transfer girders at the second floor carry the roof frame reactions to the second floor columns. The second floor columns fall nearly in the middle of the concrete basement bays. Within the basement, "X" or "H" shaped concrete transfer girders carry the steel column loads to the original pile foundations.

The interior fit-out involved hanging a new ceiling from the cold-formed channel roof purlins. A blocking and strap bracing system was designed to reinforce the existing purlins to carry this additional load. A level of new suspended steel was designed to hang from the primary roof frames to support curtains, chandeliers and lights. These loads in combination with the new ceiling required the primary roof frames to be analyzed for 2012 IBC loading. It was discovered that the bottom flange of the frames was unbraced over the entire span, not allowing the frames to withstand the required negative bending moment. A new system of pipe and rod bracing was designed to brace the bottom flange of the frames so that they can develop the full plastic moment capacity in negative bending. The frames, including the moment frame buttresses, were analyzed assuming partial fixity at the base and at all moment connections. The analysis was iterated assuming different values for fixity to obtain a load distribution that was within the capacity of each member of the frame. In the end, several moment connections required reinforcement which was preferable to reinforcing the structural members. The second floor transfer framing was analyzed for the existing plus additional loads imposed on the rigid frames and found to be adequate. The columns below the second floor were found to be adequate. The existing deep concrete "X" and "H" transfer assemblies and existing pile foundations were also analyzed and found to be adequate in most locations. Two foundations were identified as insufficient under existing loads alone. Harrah's retained their own independent engineer to evaluate and remediate these conditions.

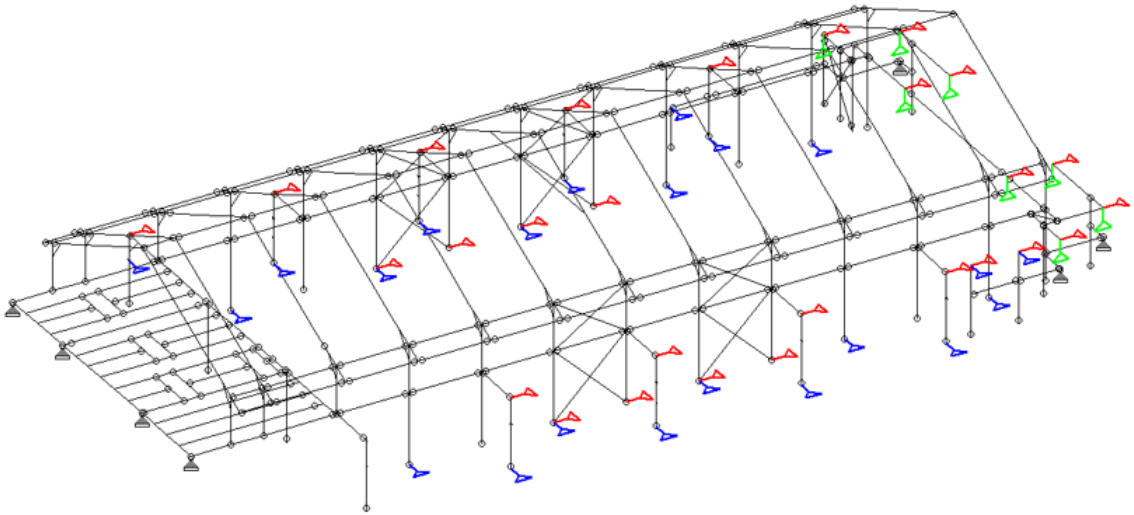
A new four column rigging grid structure was designed to post off of the second floor to hang equipment above the stage. The grid is required to support 80 kips of live load. The rigging columns are placed directly on top of existing second floor columns. The second floor columns were found to be adequate but one existing "H" shaped deep concrete transfer in the basement required reinforcement. New concrete beams were designed to connect to and share the new loads with the existing transfer.

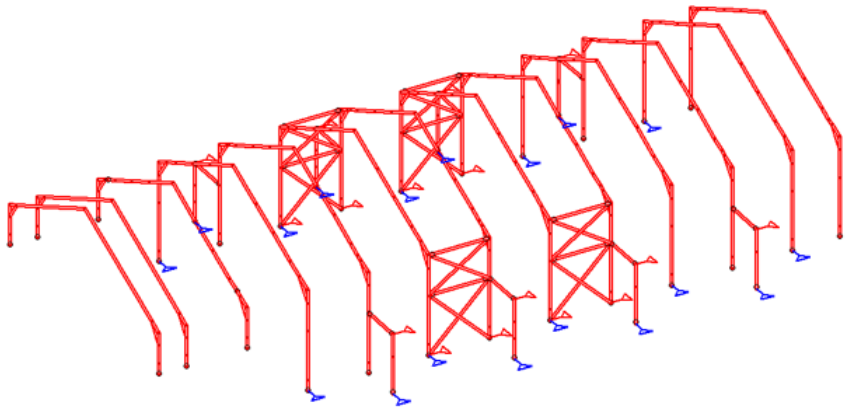
The new entry addition is located above an area where the basement extends beyond the footprint of the superstructure. The new addition columns and elevator shaft were strategically located to coordinate with existing basement structure and utilities. It was not permitted to penetrate the basement pile supported slab due to the large amount of hydrostatic pressure making new foundation installation impossible. A series of transfer girders was designed to support the addition columns as well as the suspended elevator pit. The transfers carry the loads to new pedestals and footings which bear on the basement slab directly above existing pile foundations.

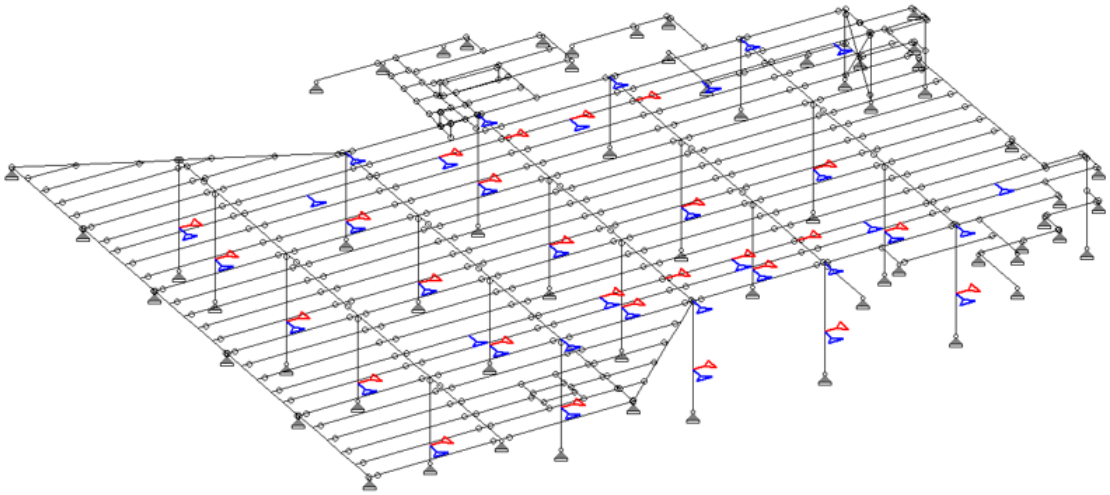
- The following 5 pages (maximum) can be used to portray your project to the awards committee through photos, renderings, sketches, plans, etc…

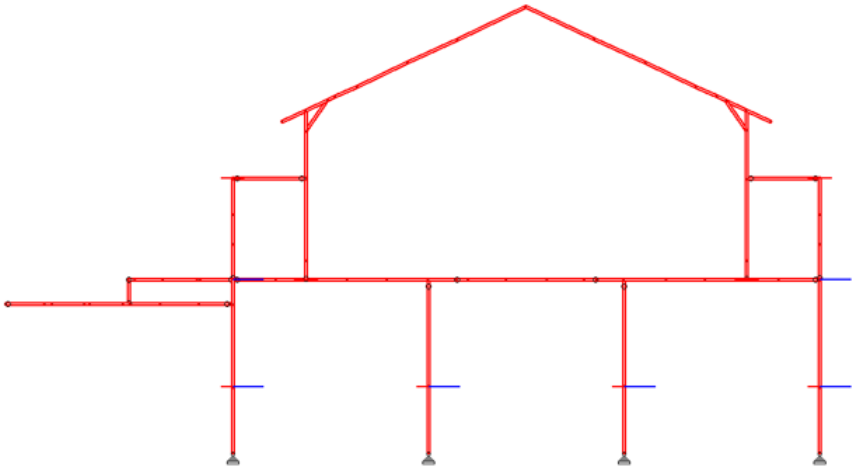


PARTIAL SECOND FLOOR FRAMING PLAN W/ BASEMENT UNDERLAY

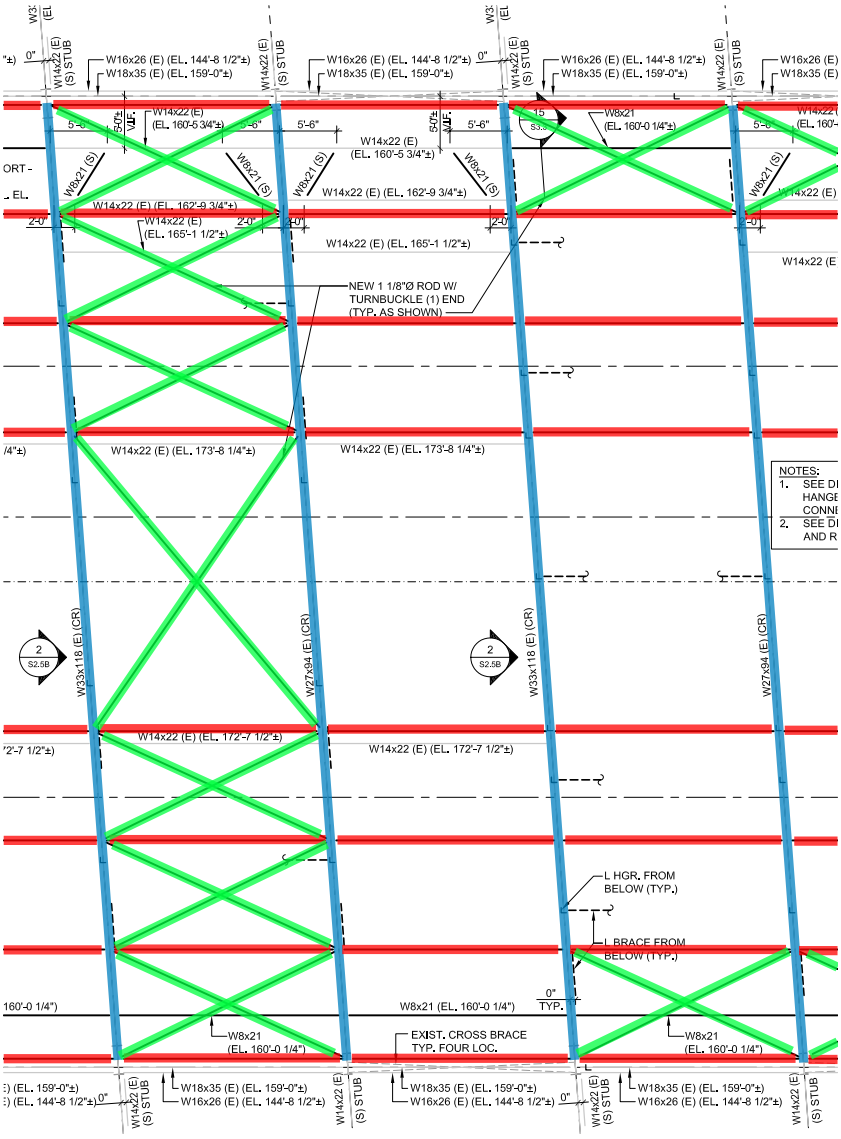






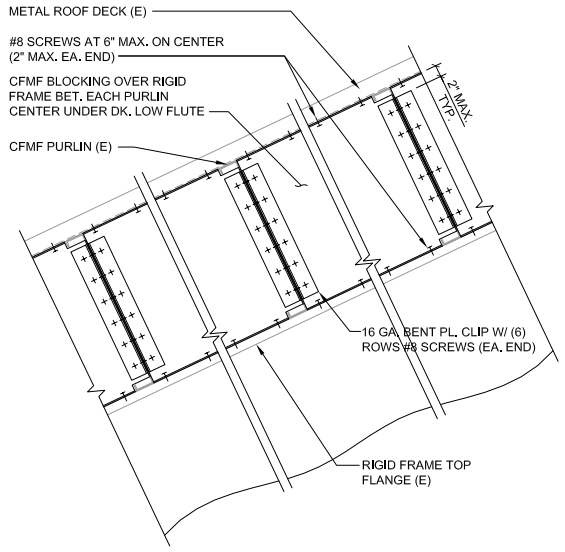


RIGID FRAME AND SECOND FLOOR ANALYSIS MODEL

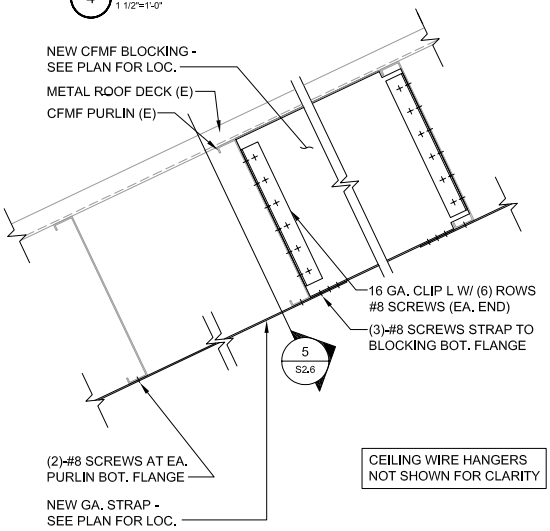


PARTIAL RIGID FRAME REINFORCING PLAN

EXIST. RIGID FRAME NEW PIPE NEW ROD

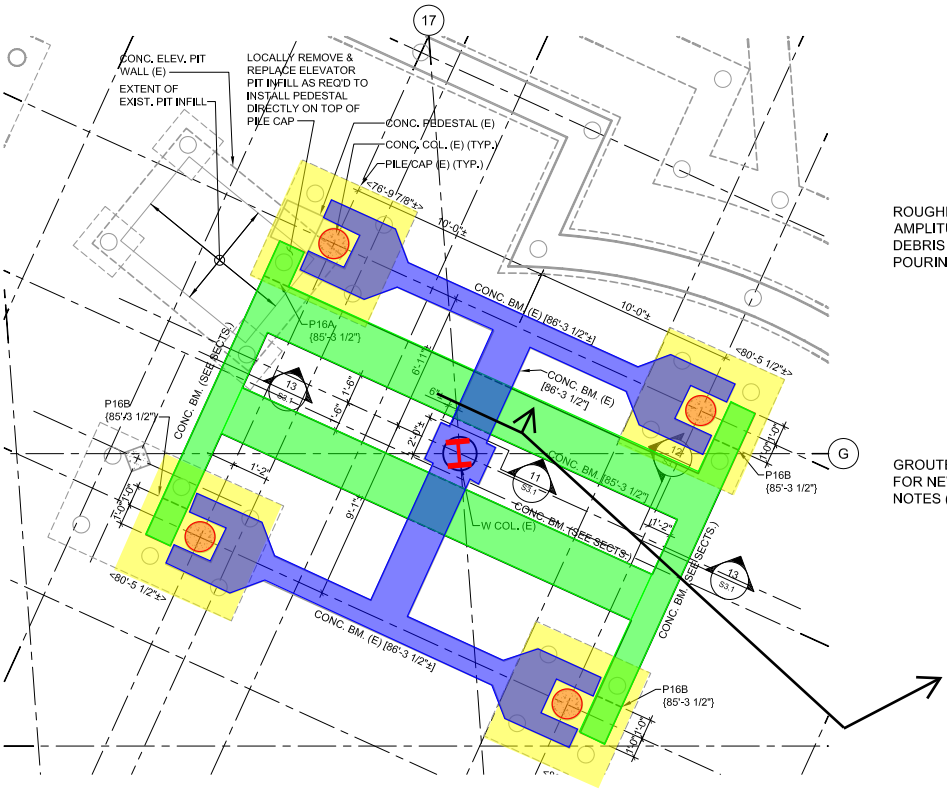


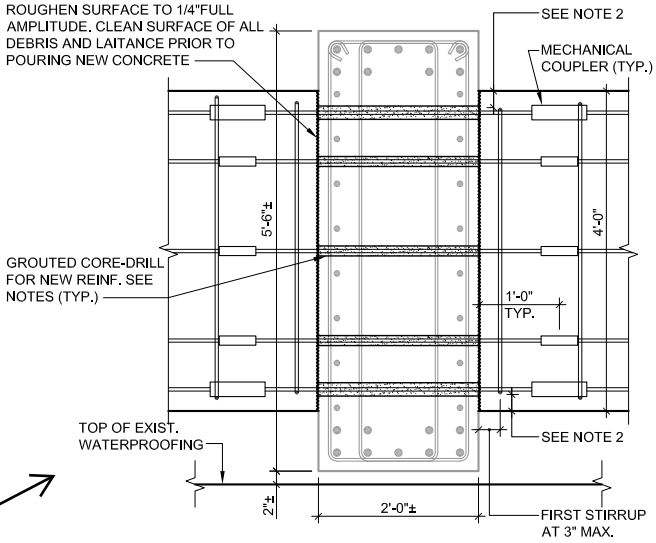
4 SECTION: PURLIN SYSTEM ANCHORAGE AT RIGID FRAME (FULL LENGTH FRAMES 13 THROUGH 18 INCLUSIVE)
1 1/2"=1'-0"



3 SECTION AT EACH CEILING HANGER LINE
1 1/2"=1'-0"

CFMF PURLIN REINFORCEMENT

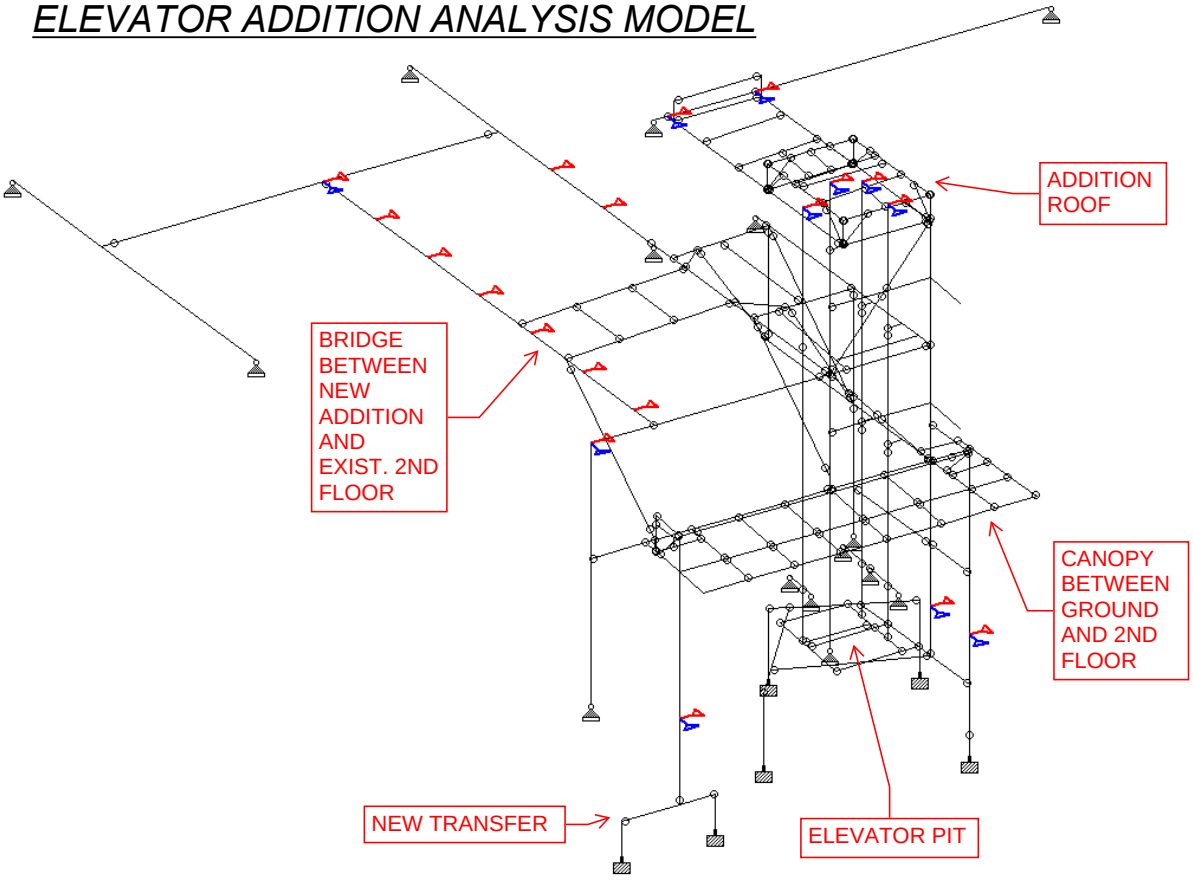


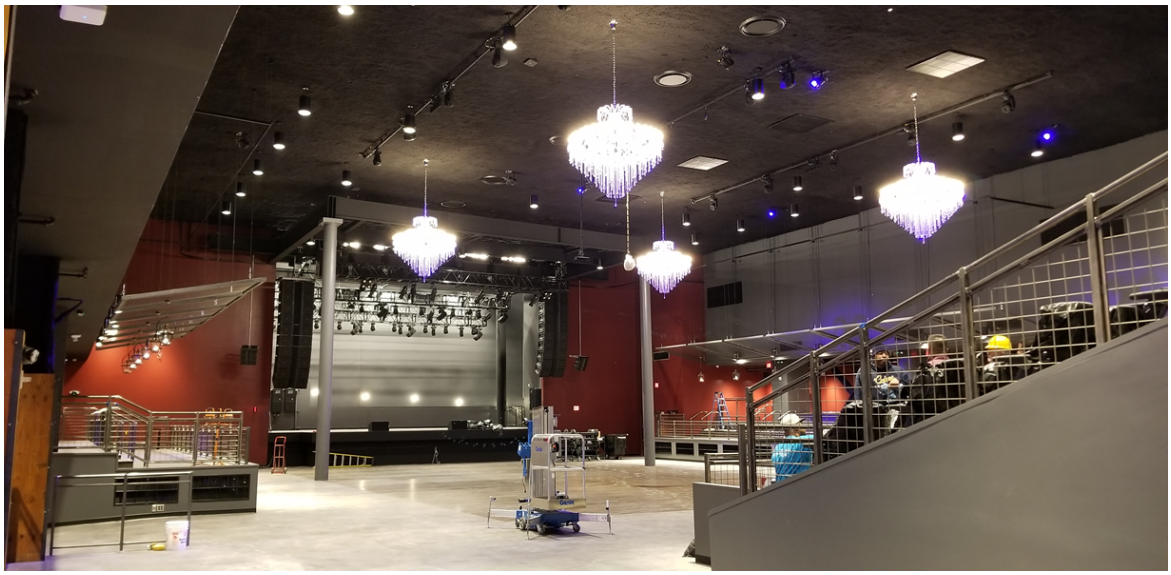


Concrete Transfer Beam Reinforcement Plan

- Exist. Foundation
- Exist. Conc. Transfer
- Transfer Reinforcement
- Exist. Conc. Column
- Exist. Supported Column

ELEVATOR ADDITION ANALYSIS MODEL





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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