NORTONSCHMIDT
Consulting Engineers

April 4, 2022

Jamie Whitehead
Azura Amphitheater
633 N 130th St,
Bonner Springs, KS 66012
816.695.5950
Jamie@newwestmusic.com

RE: STRUCTURAL EVALUATION **JOB #2021-3183**
AZURA AMPHITHEATRE
BONNER SPRINGS, KANSAS

Dear Jamie,

The purpose of this memorandum is to document the review of the roof structure for installation of the lighting and audio equipment loads for additional capacity at capacity clarity at the subject amphitheater. The following loads are only allowed when there is no other roof live load in place (work on the roof) or when there is a snow load.

I reviewed the following relevant document that were provided:
Amphitheater Rigging locations plan
Amphitheater Fabrication and Erection Drawings

The following codes were used in the qualification of the structure:
International Building Code (IBC) 2018
American Iron and Steel Institute (AISI) Manual Cold-Formed Steel Design 2013
American Society of Civil Engineers (ASCE) 7-2016
American Institute of Steel Construction (AISC) 360, 2016 Ed.

Field observations and measurements were taken of the members during previous site visits the summer of 2021 to verify sizes and dimensions. Main structure beams and column dimensions were collected to determine load capacity via calculations. Section properties for the main theater structure were calculated to determine the moment capacity of the members. Measurements were taken both center stage and SL/SR.

Connections:
Any connection of structural members using rigging material is the responsibility of others. This assessment does not consider connections that are not AISC steel connections. The loads detailed above are within the structural capacity of the primary members and the connections are considered adequate by engineering judgement.

Beam Clamp:
I evaluated a 2-ton beam clamp for use on the bottom of the primary frame flanges. A 2-ton beam clamp as shown below is acceptable to be mounted to the bottom flange of the primary members. The flanges need to be 8” wide or less and greater than ¼”.

I also determined that an 8" wide flange that is 5/16" thick can support a flange with a load rating of 3 tons (6,000lb).

Structural Load Results:

Limits per steel tab	3,000 lb (hand calculation)
Limits per 3.5" Sched 40 Pipe log	3,000 lb load (TEDDs Beam Calc)
Limits per HSS 5x5x1/4 'TUBE'	4,000 lb center load (TEDDs Beam Calc) 8,000 lb end load (TEDDs Beam Calc)
Limits on the W8x13 (I-beam)	8,000 lb center load (TEDDs Beam Calc) 16,000 lb end load (TEDDs Beam Calc)
Limits on the C10x3.5 Purlin	4,000 lb center load (TEDDs Beam Calc) 4,000 lb end load (TEDDs Beam Calc)

Main Built-Up Frames – Center Stage
- 6,000 lb point load max at any location
- 30,000 lb per frame in Center Stage Total
- 6,000 lb point loads and less to be spaced 15ft apart minimum
- 5,000 lb point loads and less to be spaced 10ft apart minimum
- 4,000 lb point loads and less to be spaced 4ft apart minimum
- 3,000 lb point loads can be adjacent to each other

Main Built Up Frames – Stage Right, Stage Left
- 6,000 lb point load max at any location
- 13,000 lb per frame total in each side, Stage Left and Stage Right
- 6,000 lb point loads and less to be spaced 10ft apart minimum
- 5,000 lb point loads and less to be spaced 5ft apart minimum
- 4,000 lb point loads and less to be at least 1ft

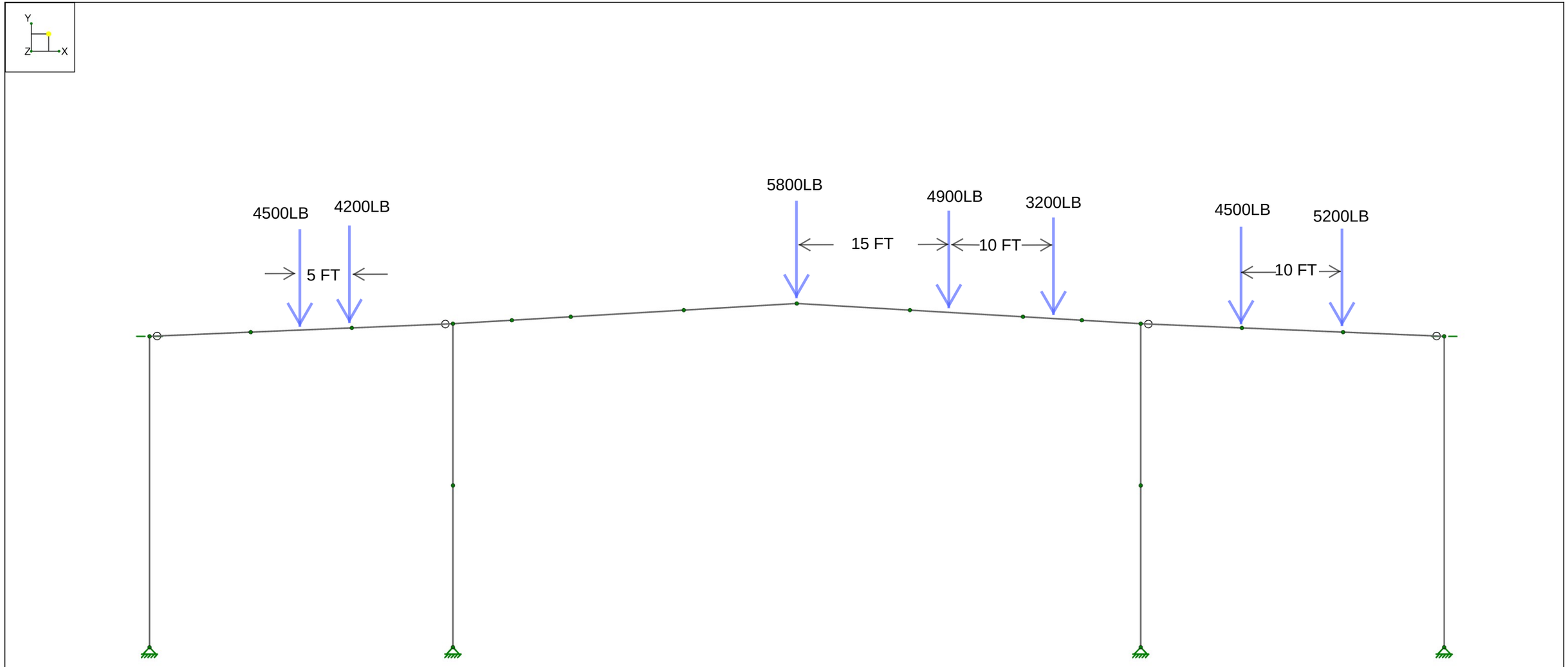
Considering the limitations and recommendations listed above, the amphitheater structure is capable of supporting the rigging loads detailed above and as shown in the referenced documents.

Should you have any questions or need additional information, please do not hesitate to call.

Emmett McClintock
Principal

ch

License #s:
4351433 (KS)



ELEVATION - PRIMARY FRAME

EXAMPLE POINT LOADS ONLY WITH REQUIRED SPACING BETWEEN LOADS

<Licensed Company>	Azura Amphitheater Frame	SK-1
emmet		Apr 05, 2022
2021-3183		Azura Theater Frame Check.r3d