

ADDENDUM NO. I

DATE: June 29, 2017

TO: All Proposers

FROM: Janice McClelland, Assistant Purchasing Agent

SUBJECT: Addendum No. 1 – Hockey Netting System

BIDS TO BE OPENED: July 13, 2017, at 11:00:00 a.m.

This addendum becomes a part of the Contract Documents and modifies the original specifications as noted.

Item I. Information Shared at the Pre-Proposal Conference Held June 27, 2017

Submission Information

Proposals must include the weight per pulley, as well as the total weight of the netting.

Design Preferences

If a winch motor is to be located on the north side of the arena, the City prefers that it be located in the crow's nest.

If a winch motor is to be located on the south side of the arena, the City prefers that it be located in the corner adjacent to Section FF.

Design Requirements

The City must be able to break down the netting system frame into sections of no more than 10 feet in length.

The design must work in conjunction with flags and theatrical banners, which hang roughly 50' from the ice floor.

General Information

The City shall be responsible for changing out the dasher mullion I-bolts where the netting clips on.

Design may incorporate the City's upstage batten.

Item II. Arena Drawings

Four sets of drawings immediately follow this Addendum:

1. A structural evaluation of the roof framing over the Coliseum area was performed in 2011. The resulting 11-page report made recommendations as to rigging load tolerances. Note that the report is provided to potential proposers as a point of departure only and is not intended to obviate the need for a thorough evaluation of the present condition of the Coliseum roof framing by the awarded Contractor.
2. Drawings of east/west length of roof arches; roof framing; and beam, column, and joist schedules.
3. A dasher layout for the project site.
4. Laser measurements of the arena from floor to ceiling, measured from east to west.

END OF ADDENDUM NO. I



Structural Consultants

November 30, 2011

Mr. Dale Dunn
City of Knoxville
Knoxville Auditorium-Coliseum
PO Box 2603
Knoxville, TN 37901

Re: Roof Framing Evaluation for Rigging Loads
Knoxville Coliseum Roof Framing Evaluation and Scoreboard Relocation
Knoxville, Tennessee
CWE Project No. 2009145.00

Dear Mr. Dunn,

The purpose of this letter is to convey and summarize the results of our structural evaluation of the roof framing over the coliseum area and to provide you with updated recommendations for the safe application of rigging loads for future events.

CWE conducted an initial walk-thru observation of the coliseum on Monday, June 6, 2011 with a follow-up framing observation on Friday, June 10, 2011 from the boom lift supplied and operated by Doug Simmons, Facility Operations Manager.

During our initial walk-thru, it was noted that the cantilever concrete frames which support the steel arch section of the roof had visible cracking as seen in photos 1 and 2. The exact extent of the cracking was partially masked by the painting conducted a few years ago. These cracks appear to have been present for a relatively long period of time. Coliseum personnel were not aware of their existence, and painting contractors had not brought it to their attention. These cracks appear to be fairly tight with no evidence of recent significant movement. However, given their critical location within primary framing members that possess no redundancy, we recommend that these cracks be closely monitored. We are available to assist in the development of a system and schedule for the monitoring and recording of any movements. We recommend cracks be monitored for a minimum period of a year. Readings should be recorded on a monthly cycle, after the application of rigging loads from each significant event/show, and during each significant snow occurrence. If significant movement occurs, these cracks should be further evaluated. Alternatively, CWE can provide the monitoring of cracks on an hourly rate or negotiated basis.

During our observation, we did not find any signs of steel corrosion or any permanent deformation/damage of individual structural steel framing members or connections. The recent "black-out" painting of the steel framed portion of the roof may have masked/covered-up any mild corrosion. The focus of our observation was on the primary W24x76 steel arches, the conventional steel trusses which span between the arches, and the underside of the bulb-tee purlins spanning between the trusses. During the observation, steel member sizes and orientations

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were randomly verified with that shown on the original structural construction drawings. A significant deviation in the web member layout of the conventional steel trusses was observed and noted. Refer to the attached Intermediate Truss Profile sketch depicting the observed deviation. Our computer analysis model was adjusted accordingly, and based on our results, it is our opinion that the actual layout does not adversely affect the intended structural performance of these trusses.

As previously noted, a computer model of the steel framing system was generated to aid in the analysis of multiple scenarios for applied rigging loads and their effects on the structural system. A few screenshots of the analytical computer model have been included for your reference. During our review of the structural construction documents, we were unable to confirm the required material specification used for the design and construction of the steel portion of the roof framing system. Therefore, in our analysis model we have assumed the ultimate and yield strengths of the steel members to be 60,000 psi and 33,000 psi, respectively. This assumption was based on the wide use of material specification ASTM A7 for structural steel buildings from the late 1930's until the early 1960's. We also conducted a quick review of the critical section of the concrete frames, located in the cantilever roof beam at the face of the concrete column, supporting each side of the arches.

It is our opinion that the 4" diameter steel pin connections at each end of the steel arches are the limiting component for the entire system. Using the steel strength assumption, it appears these pins do not have significant reserve capacity beyond what is required to safely support the required load combinations of dead loads, roof live loads, wind loads, and snow loads. Therefore, we concur with the general rigging load restriction shown on the previous long used rigging guidelines (Refer to Attachment #1). This general restriction stated that suspended rigging loads from the roof structure shall not be concurrent with snow, heavy rain, or high wind events which may produce additional loads on the roof framing system.

As a starting point for our rigging load evaluation, we used information provided by a rigging contractor commonly used by the facility and Attachment #1. Based on multiple trial analyses using different rigging load configurations, we have provided updated guidelines for the safe application of rigging loads. Please refer to the Arch Loading Profiles noted for a depiction of these guidelines.

- A single suspended load of up to 2500lb applied directly to the arch at one small truss location.
 - "Arch Loading Profile - A".
- Four or five suspended loads of no more than 1500lb applied directly to the arch at every fourth small truss location.
 - "Arch Loading Profile - B" OR
 - "Arch Loading Profile - C".
- Multiple suspended loads of no more than 800lb applied directly to the arch at every other small truss location.
 - "Arch Loading Profile - D"

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- Multiple suspended loads of no more than 400lb applied directly to the arch at every small truss location.
 - "Arch Loading Profile - E"

For the typical roof trusses, a maximum single load of 500 lb may be applied at any panel point. Do not hang loads greater than 6" away from panel points that would produce bending in the bottom chords. Refer to Roof Truss Loading Profile - F attached.

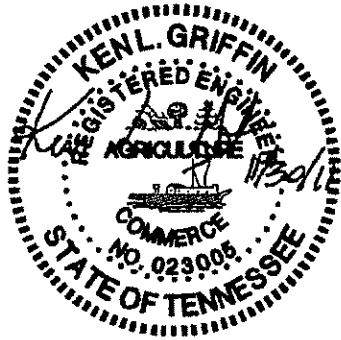
We are available for any discussion regarding these findings.

Sincerely,
CARPENTER WRIGHT ENGINEERS, P.L.L.C.



Michael R. Radcliffe, P.E.

Ken L. Griffin, P.E.
Principal



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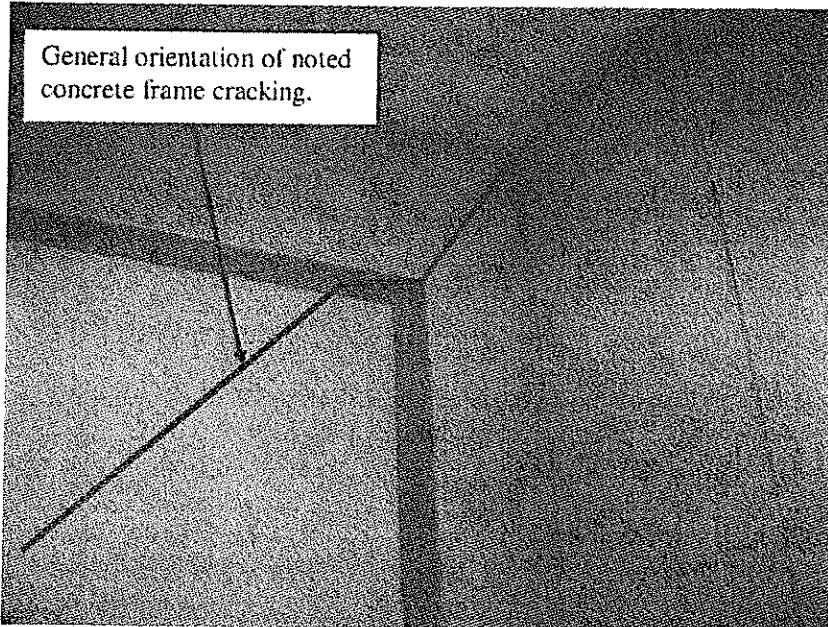


Photo 1 – Sample Sketch of Concrete Frame Cracking at Fixed end of Cantilever
(actual cracks have been painted over and are not visible in this photo)

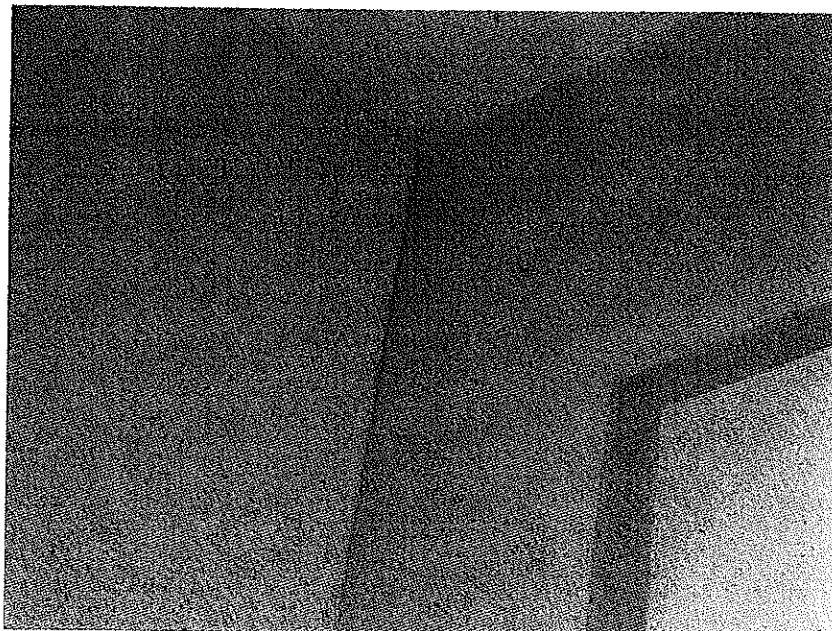
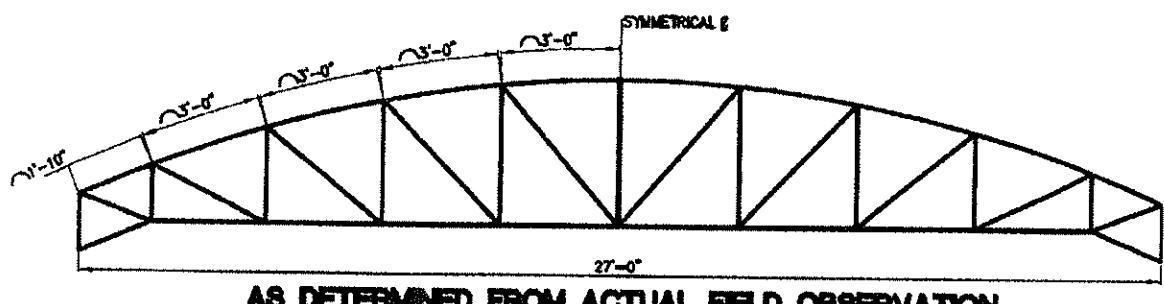
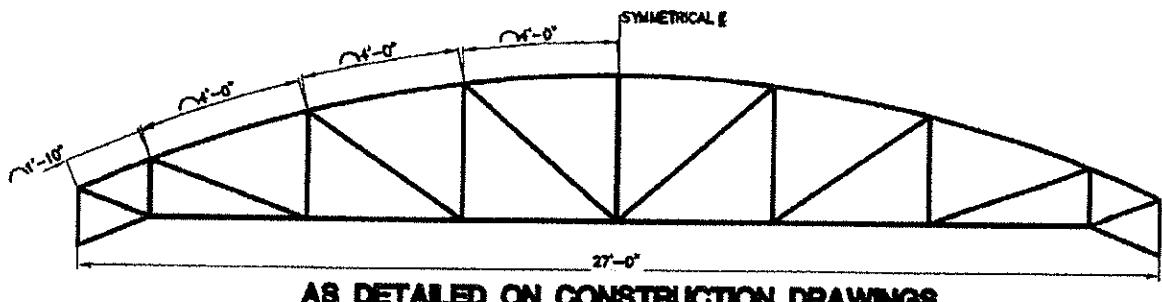
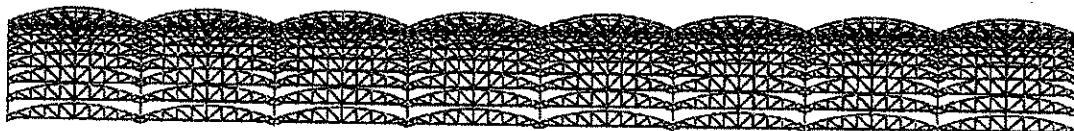


Photo 2 – Sample of Concrete Frame Cracking at Fixed end of Cantilever

INTERMEDIATE TRUSS PROFILE



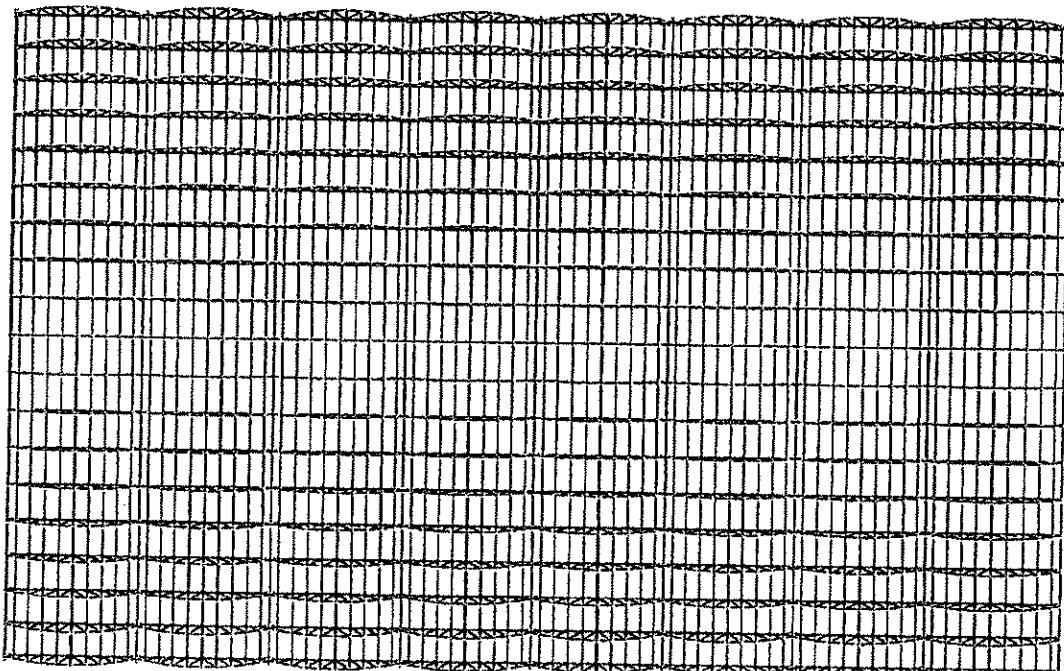
SCREENSHOTS OF ANALYTICAL COMPUTER MODEL



Side View of Computer Model

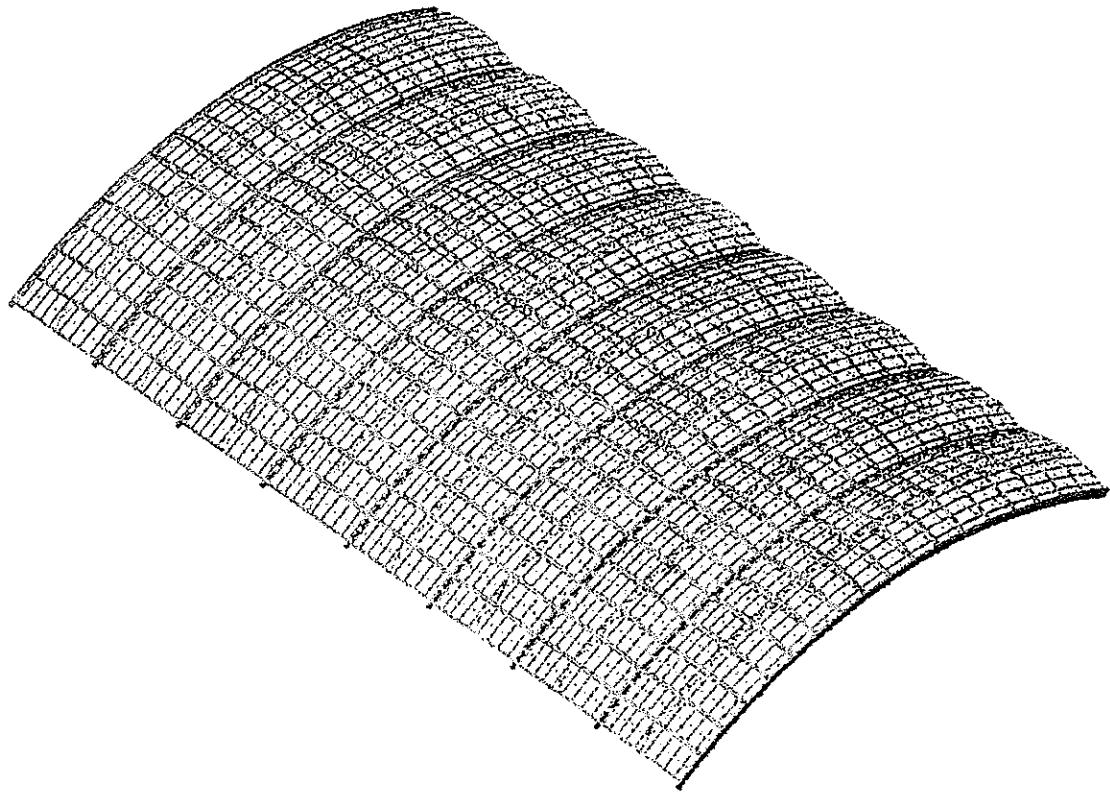


End View of Computer Model

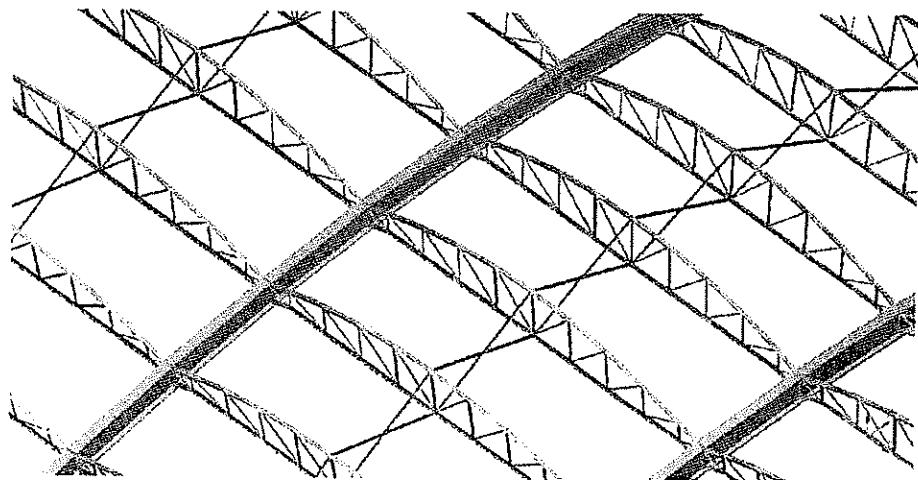


Top View of Computer Model

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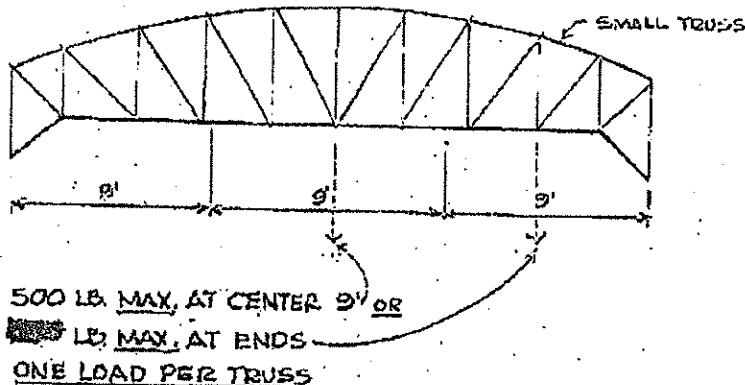
Rendered Isometric View of Eight Bay Model



Rendered Isometric View Close-Up of Eight Bay Model
(Roof Deck & 'Bulb-T Purlins Not Shown for Clarity)

ATTACHMENT #1
PREVIOUS RIGGING GUIDELINES

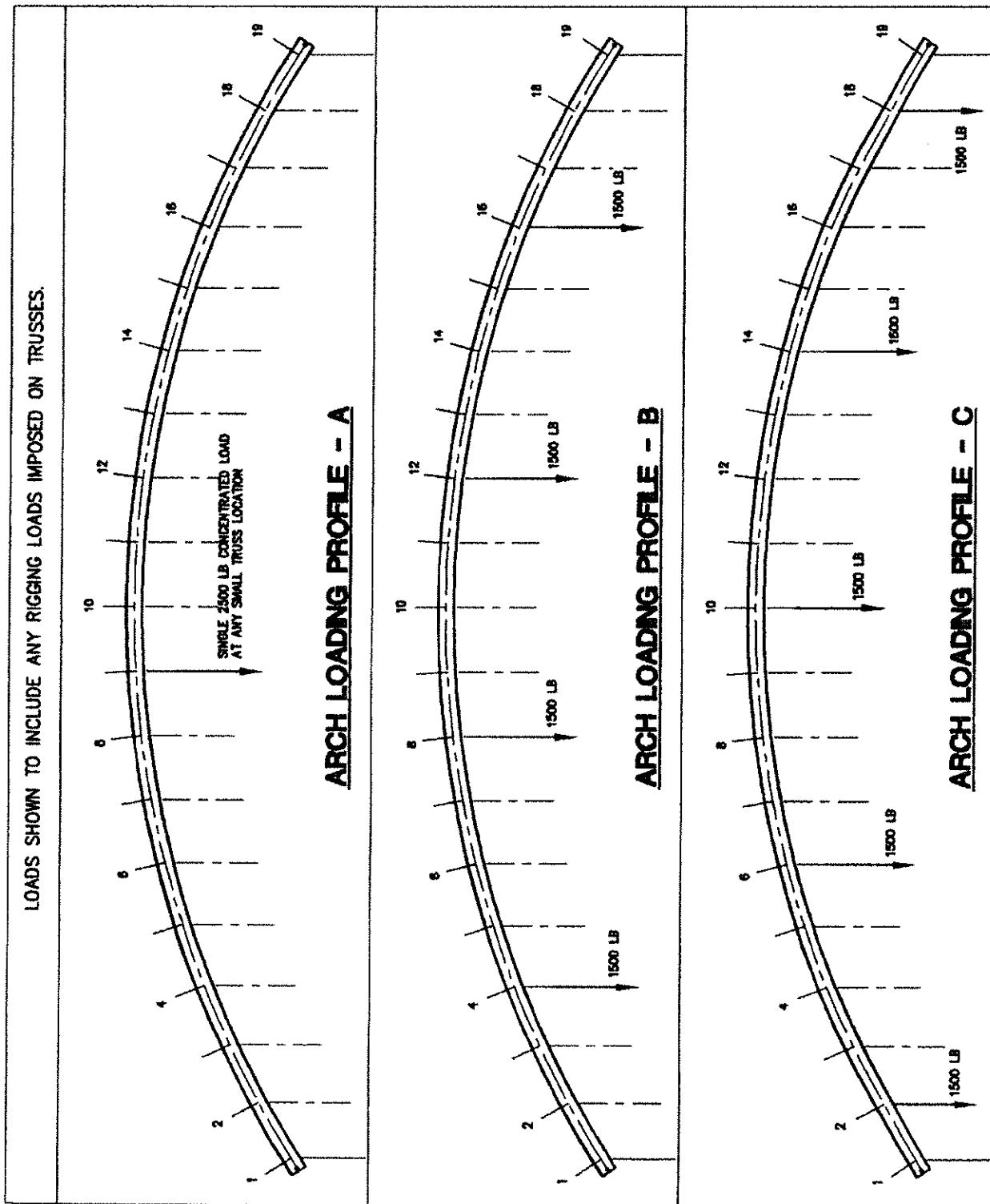
1500 LB. MAX. EACH LOAD
AT LEAST 8' BETWEEN LOADS
(1500 LB. INCLUDES LOADS FROM TRUSSES)



DO NOT SUSPEND LOADS FROM ROOF DURING SNOW, RAIN OR HIGH WIND

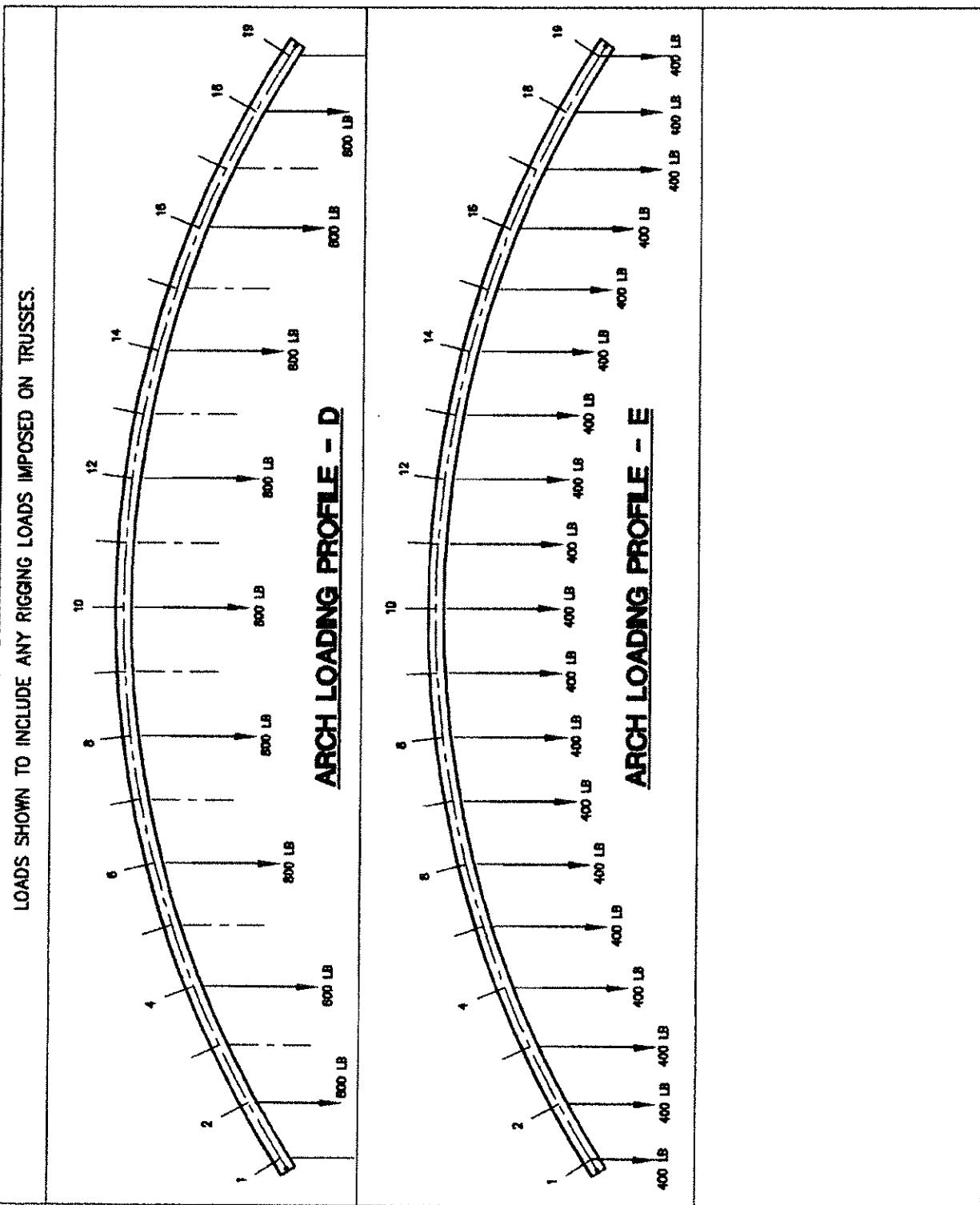
PROJECT Knoxville Civic Coliseum NO. 2008145.00
COMPUTED BY MRR DATE 11/30/11 CHECKED BY DATE
SUBJECT Allowable Steel Arch Loading Profiles SHT 9 OF 11

Carpenter
Wright
Engineers
CWE
Structural Consultants



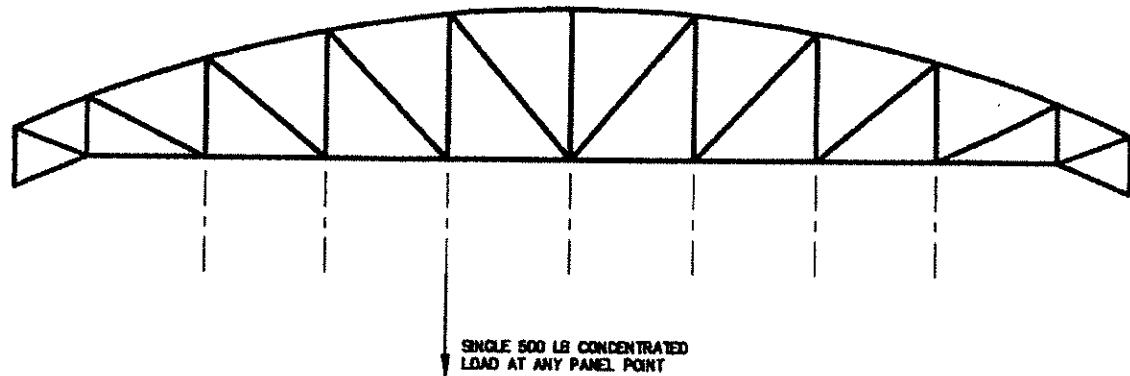
PROJECT Knoxville Civic Coliseum NO. 2009145.00
COMPUTED BY MRR DATE 11/30/11 CHECKED BY DATE
SUBJECT Allowable Steel Arch Loading Profiles SHT 10 OF 11

Carpenter C
Wright W
Engineers E
Structural Consultants



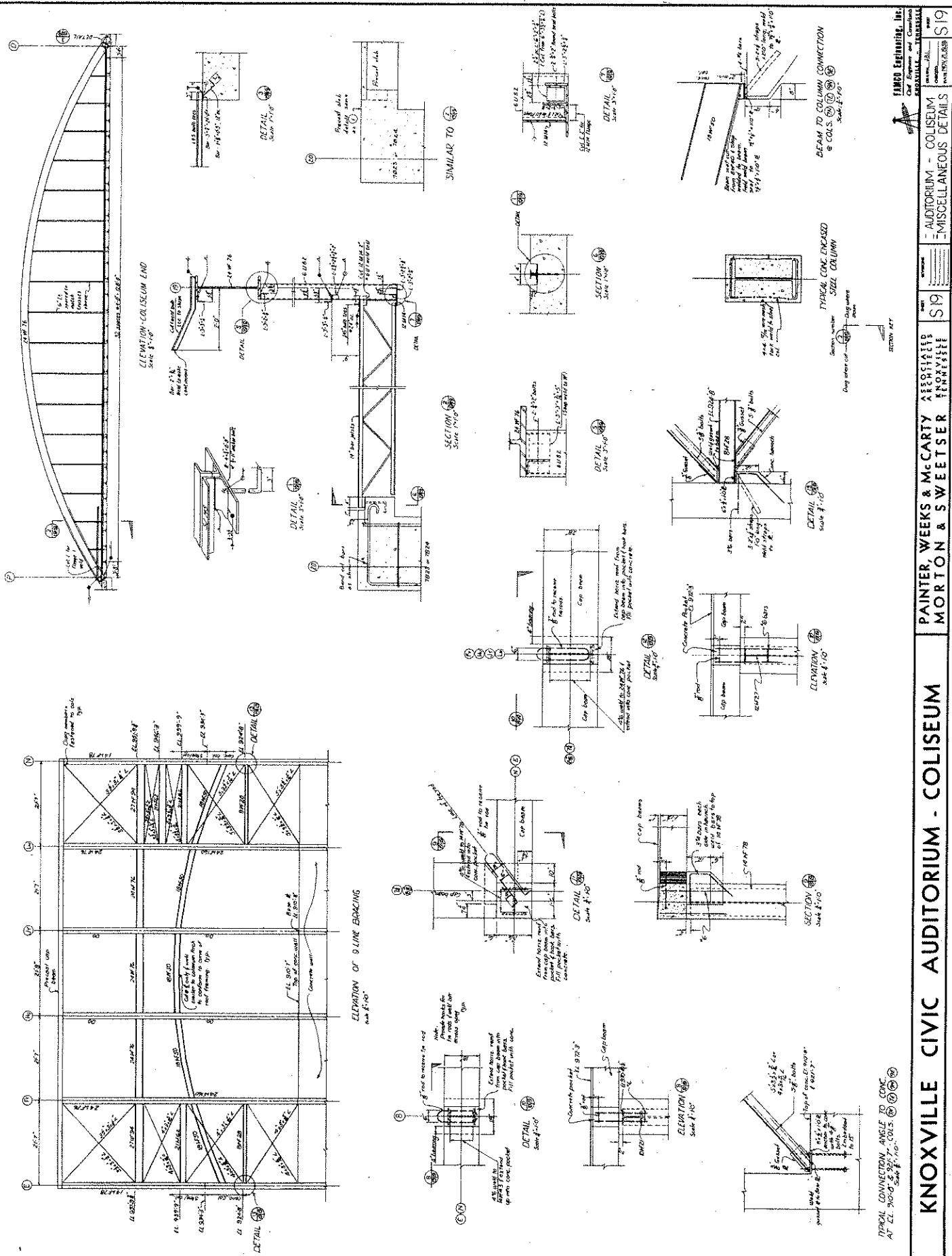
PROJECT Knoxville Civic Coliseum NO. 2009145.00
COMPUTED BY MRR DATE 11/30/11 CHECKED BY DATE
SUBJECT Allowable Roof Truss Loading Profile SHT 11 OF 11

Carpenter C
Wright W
Engineers E
Structural Consultants



ROOF TRUSS LOADING PROFILE - F

DO NOT APPLY CONCENTRATED LOADS BETWEEN PANEL POINTS THAT WILL PRODUCE BENDING OF TRUSS CHORDS.



KNOXVILLE CIVIC AUDITORIUM - COLISEUM

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PAINTER, WEEKS & McCARTY ASSOCIATES
MORTON & SWEETSER KNOXVILLE

INTER, WEEKS & McCARTY
BIRTON & SWEETSER

S20

ROOF PLAN		INTER, WEEKS & McCARTY ASSOCIATES		ROOF FRAMING	
SECTION	VIEW	SECTION	VIEW	SECTION	VIEW
22'-0"	22'-0"	37'-0"	27'-0"	42'-0"	22'-0"
55'-0"					
(1)	(2)	(3)	(4)	(5)	(6)
(7)	(8)	(9)	(10)	(11)	(12)

The logo for PAI MUSEUM, featuring the words "PAI" and "MUSEUM" stacked vertically on the right side, and "M" and "PAI" stacked vertically on the left side.

The diagram shows a rectangular auditorium layout. Section A-A' is a vertical cross-section on the left, indicating a height of 21'0". Section B-B' is a horizontal cross-section at the bottom, showing a width of 21'0" and a depth of 22'0". The auditorium is divided into several sections labeled ① through ⑦. A dashed line labeled "SECTION C-C'" runs diagonally across the auditorium. A small circle labeled "SECTION D-D'" is located near the bottom left corner. The text "SECTION A-A'" is written vertically along the left edge of section A-A', and "SECTION B-B'" is written horizontally below section B-B'.

KNOXVILLE CIVIC AUDITORIUM - COLISEUM

Painter, Weeks & McCARTY
MORTON & SWEETSER

Associated Architects
Knoxville, Tennessee

Hanco Engineering, Inc.
Civil Engineers and Consulting
Architects - TRAILER
www.hanco.com
info@hanco.com

Schedule

Beam Schedule

Comments

Notes

Comments

ESTATE SCHEDULE

THE JOURNAL OF CLIMATE VOL. 14, NO. 10, OCTOBER 2001

No.	Name	Age	Sex	Physical Condition		Performance		Milk Production		Health Status		Comments
				Weight (kg)	Height (cm)	Score	Score	Yield (kg)	Quality (%)	Score	Score	
1	White Cow	3	F	500	120	10	10	100	3.5	10	10	Excellent condition, high yield, good quality.
2	Black Bull	5	M	650	140	10	10	150	3.8	10	10	Good condition, high yield, good quality.
3	Red Cow	2	F	480	115	8	8	90	3.2	8	8	Good condition, moderate yield, good quality.
4	White Bull	4	M	680	145	10	10	160	3.7	10	10	Good condition, high yield, good quality.
5	Black Cow	3	F	520	125	10	10	110	3.4	10	10	Good condition, moderate yield, good quality.
6	Red Bull	2	M	600	135	8	8	100	3.3	8	8	Good condition, moderate yield, good quality.
7	White Cow	4	F	550	130	10	10	130	3.6	10	10	Good condition, high yield, good quality.
8	Black Bull	3	M	630	142	10	10	140	3.9	10	10	Good condition, high yield, good quality.
9	Red Cow	2	F	490	118	8	8	95	3.1	8	8	Good condition, moderate yield, good quality.
10	White Bull	3	M	660	143	10	10	155	3.8	10	10	Good condition, high yield, good quality.
11	Black Cow	2	F	510	122	8	8	105	3.3	8	8	Good condition, moderate yield, good quality.
12	Red Bull	1	M	580	132	8	8	98	3.2	8	8	Good condition, moderate yield, good quality.
13	White Cow	5	F	570	135	10	10	145	3.7	10	10	Good condition, high yield, good quality.
14	Black Bull	4	M	670	144	10	10	165	3.9	10	10	Good condition, high yield, good quality.
15	Red Cow	3	F	530	128	10	10	115	3.5	10	10	Good condition, moderate yield, good quality.
16	White Bull	2	M	610	138	8	8	102	3.4	8	8	Good condition, moderate yield, good quality.
17	Black Cow	1	F	470	112	8	8	85	3.0	8	8	Good condition, low yield, good quality.
18	Red Bull	0	M	560	131	8	8	92	3.1	8	8	Good condition, low yield, good quality.

This technical drawing shows a cross-section of a bridge pier. The pier has a rectangular base with dimensions of 10' x 12'. Above the base, there is a vertical column with a thickness of 12" at the bottom and 8" at the top. A horizontal beam connects the top of the base and the column. Reinforcement bars are indicated by wavy lines, with labels such as '2 No. 10' and '2 No. 12' for the main vertical bars. A circular callout provides a magnified view of the reinforcement detail near the base. The drawing is labeled 'SECTION Side view'.

SECTION THRU COLONNADE

SECTION 25

State Engineering Co.

Civil Engineers and Constructors
KNOXVILLE - TENNESSEE

KNOXVILLE CIVIC AUDITORIUM - COURSE

