



- -- INDICATES 1100# BALLAST FOR AN OPEN STRUCTURE (NO SCRIM) @ 67.5MPH OR WITH SCRIM INSTALLED ON UPSTAGE WALL AND BANNER PACKAGE SCRIM INSTALLED AT 20MPH
- -- INDICATES 2500# BALLAST WITH SCRIM INSTALLED ON UPSTAGE WALL @ 40MPH (BANNER PACKAGE SCRIM REMOVED AT 20MPH)
- -- INDICATES NO BALLAST REQUIRED FOR AN OPEN STRUCTURE (NO SCRIM) @ 50MPH OR WITH SCRIM INSTALLED ON UPSTAGE WALL AND BANNER PACKAGE SCRIM INSTALLED @20MPH.

NOTES:  
1. SEE HIGH WIND ACTION PLAN ON THIS SHEET.

**GENERAL STRUCTURAL NOTES  
CODES AND REFERENCE**

1. 2009 INTERNATIONAL BUILDING CODE
2. ASCE 7-05 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
3. ASCE 37-02 DESIGN LOADS ON STRUCTURES UNDER CONSTRUCTION
4. ANSI E1.21-2006 ENTERTAINMENT TECHNOLOGY, "TEMPORARY GROUND-SUPPORTED OVERHEAD STRUCTURES USED TO COVER THE STAGE AREAS AND SUPPORT EQUIPMENT IN THE PRODUCTION OF OUTDOOR ENTERTAINMENT EVENTS"
5. ANSI E1.2-2006 ENTERTAINMENT TECHNOLOGY, "DESIGN, MANUFACTURE AND USE OF ALUMINUM TRUSSES AND TOWERS"
6. ALUMINUM DESIGN MANUAL, 2005 EDITION
7. AISC STEEL MANUAL, 13TH EDITION

**DESIGN LOADS**

1. DEAD LOAD: SELFWEIGHT OF STRUCTURE

2. ROOF RIGGING LOADS:

A. SEE BEAM LOADING CHART ON SHEET S-1  
NOTE: ROOF SKIN IS A SUN SHADE SYSTEM ONLY. IT HAS NOT BEEN DESIGNED FOR PERSONNEL ACCESS OR TO SUPPORT RAIN OR SNOW LOADS.

3. STAGE DECK LOADS:

A. LIVE LOAD: 65 PSF

4. WIND LOAD:\*\*

- A. DESIGN WIND SPEED: 67.5 MPH\* (BARE STRUCTURE - NO SCRIMS ATTACHED)
- B. DESIGN WIND SPEED: 40 MPH (WITH ONLY BACKDROP, ROOF 1 SIDEWALL SCRIM AND FRONT SCRIM ATTACHED)
- C. DESIGN WIND SPEED: 20 MPH (WITH BACKDROP, ROOF 1 SIDEWALL SCRIM, FRONT SKIRT AND BANNER SCRIMS ATTACHED\*\*)
- D. EXPOSURE C
- E. IMPORTANCE FACTOR: 1.0

5. SEISMIC LOADS DO NOT CONTROL THE DESIGN OF THIS STRUCTURE.

\*90 MPH WIND SPEED REQUIREMENT REDUCED IN ACCORDANCE WITH ASCE 37-02 DUE TO THE TEMPORARY NATURE OF STRUCTURE.

\*\* SEE UPLIFT BALLAST PLAN AND HIGH WIND ACTION PLAN THIS SHEET FOR REQUIRED BALLAST

\*\*\*BANNER KIT CONSISTS OF (X1) UPPER CENTER CROSS BANNER, (X1) LEFT AND (X1) RIGHT SIDE BANNER (3 SCRIMS TOTAL).

**CONSTRUCTION AND SAFETY**

1. ENGINEER SHALL NOT BE RESPONSIBLE FOR MEANS, METHODS, OR SEQUENCE OF CONSTRUCTION UNLESS SPECIFICALLY STATED ON THE DRAWINGS.
2. ENGINEER HAS DESIGNED THE STRUCTURES FOR THEIR FINAL AS-BUILT CONDITION. ENGINEER IS NOT RESPONSIBLE FOR TEMPORARY STABILITY OF STRUCTURES DURING ERECTION UNLESS SPECIFICALLY STATED ON THE DRAWINGS.
3. STRUCTURE HAS BEEN DESIGNED AS A TEMPORARY STRUCTURE THAT SHALL BE IN PLACE FOR LESS THAN 6 WEEKS.

**HIGH WIND ACTION PLAN FOR NO BALLAST INSTALLED**

1. THE HIGH WIND ACTION PLAN SHALL BE IN EFFECT FOR THE ENTIRETY OF THE EVENT. AN EVENT SHALL BE DEFINED AS STARTING AT THE INITIAL COMMENCEMENT OF THE STRUCTURE INSTALLATION AND ENDING ONCE THE STRUCTURE IS COMPLETELY DISMANTLED.
2. A COMPETENT RESPONSIBLE PERSON FROM THE VENUE OR RIGGING COMPANY SHALL BE PRESENT FOR THE DURATION OF THE EVENT TO IMPLEMENT THE HIGH WIND ACTION PLAN.
3. AN ANEMOMETER SHALL BE PLACED AT THE TOP OF A STRUCTURE OR AN ADJACENT STRUCTURE AT A HEIGHT EQUIVALENT TO THE HEIGHT OF THE TOWER. THE ANEMOMETER SHALL BE LOCATED WITHIN 50 YARDS OF THE STRUCTURE.
4. NOTED WINDS SPEEDS ARE 3 SECOND GUSTS IN ACCORDANCE WITH ASCE 7.
5. SEE UPLIFT BALLAST PLAN THIS SHEET FOR REQUIRED BALLAST.
6. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 15 MPH: A TEAM OF QUALIFIED PERSONNEL SHALL BE PUT ON ALERT.
7. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 20 MPH: ALL SIDEWALL SCRIM SHALL BE REMOVED FROM THE SYSTEM INCLUDING THE BANNER SCRIM CONCEALING THE SPEAKER WING WIRE ON TOP OF STAGE AND THE BANNER SCRIM ON THE SPEAKER WINGS. ALL VIDEO WALLS AND LARGE SPEAKER CLUSTERS SHALL BE LOWERED TO THE GROUND AND SECURED. LOWERING OF SCRIM OR EQUIPMENT SHALL BE DONE FROM THE GROUND BY MEANS OF REMOTELY ACTIVATED EQUIPMENT SUCH AS MOTORS OR MECHANICAL RELEASES.
8. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 50 MPH: ALL SHOW OPERATIONS SHALL CEASE AND THE IMMEDIATE AREA SHALL BE EVACUATED.
9. THE HIGH WIND ACTION PLAN SHALL BE POSTED AT A CONSPICUOUS AREA ON SITE. IT MUST BE AVAILABLE AT ALL TIMES TO VENUE OPERATORS AND CREW.

**HIGH WIND ACTION PLAN FOR 1100# BALLAST INSTALLED @ 4 LOCATIONS**

1. THE HIGH WIND ACTION PLAN SHALL BE IN EFFECT FOR THE ENTIRETY OF THE EVENT. AN EVENT SHALL BE DEFINED AS STARTING AT THE INITIAL COMMENCEMENT OF THE STRUCTURE INSTALLATION AND ENDING ONCE THE STRUCTURE IS COMPLETELY DISMANTLED.
2. A COMPETENT RESPONSIBLE PERSON FROM THE VENUE OR RIGGING COMPANY SHALL BE PRESENT FOR THE DURATION OF THE EVENT TO IMPLEMENT THE HIGH WIND ACTION PLAN.
3. AN ANEMOMETER SHALL BE PLACED AT THE TOP OF A STRUCTURE OR AN ADJACENT STRUCTURE AT A HEIGHT EQUIVALENT TO THE HEIGHT OF THE TOWER. THE ANEMOMETER SHALL BE LOCATED WITHIN 50 YARDS OF THE STRUCTURE.
4. NOTED WINDS SPEEDS ARE 3 SECOND GUSTS IN ACCORDANCE WITH ASCE 7.
5. SEE UPLIFT BALLAST PLAN THIS SHEET FOR REQUIRED BALLAST.
6. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 15 MPH: A TEAM OF QUALIFIED PERSONNEL SHALL BE PUT ON ALERT.
7. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 20 MPH: ALL SIDEWALL SCRIM SHALL BE REMOVED FROM THE SYSTEM INCLUDING THE BANNER SCRIM CONCEALING THE SPEAKER WING WIRE ON TOP OF STAGE AND THE BANNER SCRIM ON THE SPEAKER WINGS. ALL VIDEO WALLS AND LARGE SPEAKER CLUSTERS SHALL BE LOWERED TO THE GROUND AND SECURED. LOWERING OF SCRIM OR EQUIPMENT SHALL BE DONE FROM THE GROUND BY MEANS OF REMOTELY ACTIVATED EQUIPMENT SUCH AS MOTORS OR MECHANICAL RELEASES.
8. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 67.5 MPH: ALL SHOW OPERATIONS SHALL CEASE AND THE IMMEDIATE AREA SHALL BE EVACUATED.
9. THE HIGH WIND ACTION PLAN SHALL BE POSTED AT A CONSPICUOUS AREA ON SITE. IT MUST BE AVAILABLE AT ALL TIMES TO VENUE OPERATORS AND CREW.

**HIGH WIND ACTION PLAN FOR 2500# BALLAST INSTALLED @ 4 LOCATIONS**

1. THE HIGH WIND ACTION PLAN SHALL BE IN EFFECT FOR THE ENTIRETY OF THE EVENT. AN EVENT SHALL BE DEFINED AS STARTING AT THE INITIAL COMMENCEMENT OF THE STRUCTURE INSTALLATION AND ENDING ONCE THE STRUCTURE IS COMPLETELY DISMANTLED.
2. A COMPETENT RESPONSIBLE PERSON FROM THE VENUE OR RIGGING COMPANY SHALL BE PRESENT FOR THE DURATION OF THE EVENT TO IMPLEMENT THE HIGH WIND ACTION PLAN.
3. AN ANEMOMETER SHALL BE PLACED AT THE TOP OF A STRUCTURE OR AN ADJACENT STRUCTURE AT A HEIGHT EQUIVALENT TO THE HEIGHT OF THE TOWER. THE ANEMOMETER SHALL BE LOCATED WITHIN 50 YARDS OF THE STRUCTURE.
4. NOTED WINDS SPEEDS ARE 3 SECOND GUSTS IN ACCORDANCE WITH ASCE 7.
5. SEE UPLIFT BALLAST PLAN THIS SHEET FOR REQUIRED BALLAST.
6. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 15 MPH: A TEAM OF QUALIFIED PERSONNEL SHALL BE PUT ON ALERT.
7. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 20 MPH: ALL BANNER SCRIM SHALL BE REMOVED FROM THE SYSTEM INCLUDING THE BANNER SCRIM CONCEALING THE SPEAKER WING WIRE ON TOP OF STAGE AND THE BANNER SCRIM ON THE SPEAKER WINGS.
8. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 40 MPH: ALL THE REMAINING SIDEWALL SCRIM SHALL BE REMOVED FROM THE SYSTEM. ALL VIDEO WALLS AND LARGE SPEAKER CLUSTERS SHALL BE LOWERED TO THE GROUND AND SECURED. LOWERING OF SCRIM OR EQUIPMENT SHALL BE DONE FROM THE GROUND BY MEANS OF REMOTELY ACTIVATED EQUIPMENT SUCH AS MOTORS OR MECHANICAL RELEASES.
9. WHEN WIND SPEEDS ARE EXPECTED TO EXCEED 67.5 MPH: ALL SHOW OPERATIONS SHALL CEASE AND THE IMMEDIATE AREA SHALL BE EVACUATED.
10. THE HIGH WIND ACTION PLAN SHALL BE POSTED AT A CONSPICUOUS AREA ON SITE. IT MUST BE AVAILABLE AT ALL TIMES TO VENUE OPERATORS AND CREW.

**RIGGING**

1. BRIDLES SHALL NOT BE USED UNLESS SPECIFICALLY NOTED BY THE ENGINEER OF RECORD.
2. DO NOT EXCEED THE ALLOWABLE RIGGING LOADS SHOWN ON SHEET S-1 WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.

**STRUCTURAL STEEL**

1. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE ON THE DRAWINGS:
- A. ROLLED WIDE FLANGE SHAPES: ASTM A992, FY = 50 KSI
  - B. MISC PLATE, BAR, ANGLES AND CHANNELS: ASTM A36, FY = 36 KSI
  - C. PIPE SHAPES: ASTM A53, TYPE E OR S, GRADE B, FY = 35 KSI
  - D. HSS RECTANGULAR TUBE: ASTM A500 GR B, FY = 46 KSI
  - E. HSS ROUND TUBE: ASTM A500 GR B, FY = 42KSI
  - F. BOLTS OR SCAFFOLD CONNECTION PINS: SAE J429 GRADE 5 BOLTS (FY=92 KSI) UNLESS NOTED OTHERWISE
  2. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY LATEST EDITION.
  3. FIELD CONNECTIONS SHALL BE BOLTED OR CONNECTED WITH APPROVED SCAFFOLD CONNECTORS.

**ALUMINUM**

1. ALUMINUM SHALL CONFORM TO THE FOLLOWING UNLESS NOTED OTHERWISE ON THE DRAWINGS:
- A. MEMBER ALLOY: 6061-T6 UNLESS NOTED OTHERWISE
  - B. MEMBER ALLOY FOR STAGE ROOF BEAM EXTRUSIONS: 6063-T5
  - C. MEMBER ALLOY FOR STAGE DECK EXTRUSIONS: 6063-T6
  - D. WELD FILLER ALLOW: 4043 (MIN)
  2. ALL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO THE ALUMINUM ASSOCIATION ALUMINUM DESIGN MANUAL, 2005 EDITION.
  3. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY LATEST EDITION.
  4. FIELD CONNECTIONS SHALL BE BOLTED UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.

**WIRE ROPE AND RIGGING ACCESSORIES**

1. WIRE ROPE 3/8" OR LESS IN DIAMETER: 7X19 GAC, MEETING FEDERAL SPEC. RR-W-410E
2. WIRE ROPE 7/16" OR GREATER IN DIAMETER: 6X19 IWRC, MEETING FEDERAL SPEC. RR-W-410D, TYPE 1 CLASS 2
3. SHACKLES: GALVANIZED, SCREW PIN ANCHOR TYPE, ASTM A153
4. TURNBUCKLES: GALVANIZED, ASTM F-1145
5. FORGED WIRE ROPE CLIPS: GALVANIZED, MEETING FEDERAL SPEC. FF-C-450 TYPE I CLASS 1
6. WIRE ROPE THIMBLES: GALVANIZED, MEETING FEDERAL SPEC. FF-T-276B TYPE II
7. WIRE ROPE THIMBLES: GALVANIZED, MEETING FEDERAL SPEC. FF-T-276B TYPE II
8. RATCHET STRAPS:
  - a. RATCHET STRAPS SHALL BE INSTALLED PER THE MANUFACTURER'S WRITTEN INSTRUCTIONS TO DEVELOP THE RATED WORKING LOAD OF THE STRAP.
  - b. RATCHET STRAPS WITH OPEN ENDED HOOKED CONNECTION SHALL HAVE A POSITIVE CONNECTION TO THE ATTACHMENT POINT. EXAMPLE: USE A 5/8" SHACKLE BETWEEN THE BARS OF A J-HOOK.

**FOUNDATIONS**

1. PER CLIENT'S REQUEST, THE FOUNDATION DESIGN AND GENERAL FOUNDATION NOTES BASED ON THE ASSUMPTION OF FAVORABLE SOIL CONDITIONS. ALL FOUNDATION ASSEMBLIES SHALL BEAR ON LEVEL (WITHIN 1 IN 12) GROUND

**INSPECTIONS**

1. ALL TRUSS UNITS, SCAFFOLD AND/OR OTHER RIGGING EQUIPMENT SHALL BE VISUALLY INSPECTED PRIOR TO ERECTION. DAMAGED OR CORRODED EQUIPMENT SHALL NOT BE USED. FIELD MODIFICATIONS SHALL BE APPROVED BY THE ENGINEER OF RECORD PRIOR TO INSTALLATION.

**GENERAL STRUCTURE NOTES  
APEX STAGES  
APEX STAGE 24' X 20'  
PITTSBURG, KS**

DATE: 8/23/2013  
DRAWN BY: STH  
PROJECT NUMBER:  
13.501.51  
FILE NAME:  
2420AL12PG5SD.DWG

