Reed Arena

Structures III – Building Analysis
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Basic Info:

Construction Cost: $36 Million
Contractor: Hunt (Huber, Hunt and Nichols, Inc)
Capacity: 12,500

Home of the Texas A&M Men’s and Women’s Basketball Teams
**Construction History:**
- Sub Contractors- Irwin Steel Erectors and Anthony Crane Rental are the center of a collapse of the structure while under construction.
- 250 tons of box beam, fell 80 feet to the ground.
- Lawsuit Filed
  Greater than $6,000,000 awarded by a jury.

**Unique Design:**
- "Table Top" Box Truss
- Composite columns: Concrete with W14 steel sections
- Petrified Palm Trees found underneath the site.
- Underground Spring.
- Truss system supports both the catwalk and equipment rigging
**Financial History:**

“The arena is named for Houston veterinarian Dr. Chester J. Reed, a 1947 graduate of A&M, and his wife, Billie Jean. In 1986, the Reeds contributed 265 acres of undeveloped land west of Houston to the university, forming the nucleus of assets used to fund the facility” [http://www.aggieathletics.com/facilities.php?FID=11](http://www.aggieathletics.com/facilities.php?FID=11)

**Actual Funding:**

$35.8 Million from Texas A&M General Use Fund. (Paid by Student Fees)
+ $1 Million from the donated land.

= $36.6 Million

-Texas Higher Education Coordinating Board controversy.
TABLE TOP TRUSS

'LEGS'

'TABLE TOP'
Table Top Truss

- Unique box truss system
- Super structure supports functional loads
- Shell structure encloses the space
- Roof primarily supports self-weight
- Two systems are connected for rigidity
Gridiron

- W14s welded to steel plates
- Plates add 1’-0” of width
- Larger lateral resistance
- Less weight
- Holds lights and rigging for concerts
- Rigid connections
- 16’ x 20’ Grid
Cat Walk Box Truss

- W14s welded into rigid frames
- Pinned cross bracing
- Base is welded to Gridiron
- Functions as a cat walk
- Supports lights and concert loads
Leg Truss

- W14s welded into rigid frames
- Pinned diagonal bracing
- Rigid connection to table box truss
- Pinned pot bearing at columns
Leg Truss

- Gusset Plate
- Cross Bracing
- Stiffening Plate
- Welded W14
- 4'-0" diam. Base Plate
- 10" diam Pipes
Knuckle Joint

TYPICAL KNUCKLE JOINT

NOTES:
1. THE FABRICATOR SHALL SUBMIT SEQUENCE OF WELDING AND EVALUATE STRESS RELIEVING.
2. BOLTS CALLED OUT ON THIS DETAIL ARE 1 1/8" A490(SC) IN OVS HOLES U.N.O.
3. ADD PLATES AS NEEDED TO ENSURE THAT FULL PENETRATION WELDS COVER THE ENTIRE THICKNESS OF THE FLANGES BEING CONNECTED.
Columns

• Composite of W section and concrete
• Concrete provides fire protection and extra bearing capacity
• 5’-0” at cap to resist shear and tapers to 4’-0” to limit material
• Pot bearings between cap and column

Composite Column

Guided Pot Bearing
Columns

- Columns connect to belled and under-reamed piers
- Under-reaming spreads the columns load and resists uplift from clay soil
- Steel base plate is covered with concrete cover.
- Soil berm from pouring is left until expansion is needed
RIGID FRAME ACTION PREVENTS RACKING FROM LATERAL LOADING

PLAN
Axial Load
Tension (Blue),
Compression (Yellow)
Deflection
Lateral Deflection
References


- http://en.wikipedia.org/wiki/Reed_Arena


Griffis, Lawrence G., “Table Top Truss Supports Arena Roof”