

Reed Arena

Structures III – Building Analysis
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Basic Info:

Completion: 1998, (Opening: November 22, 1998)

Construction Cost: \$36 Million

Architect: Lockwood, Andrews & Newman, Inc.

Engineering Consultant: Walter P. Moore.

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>

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

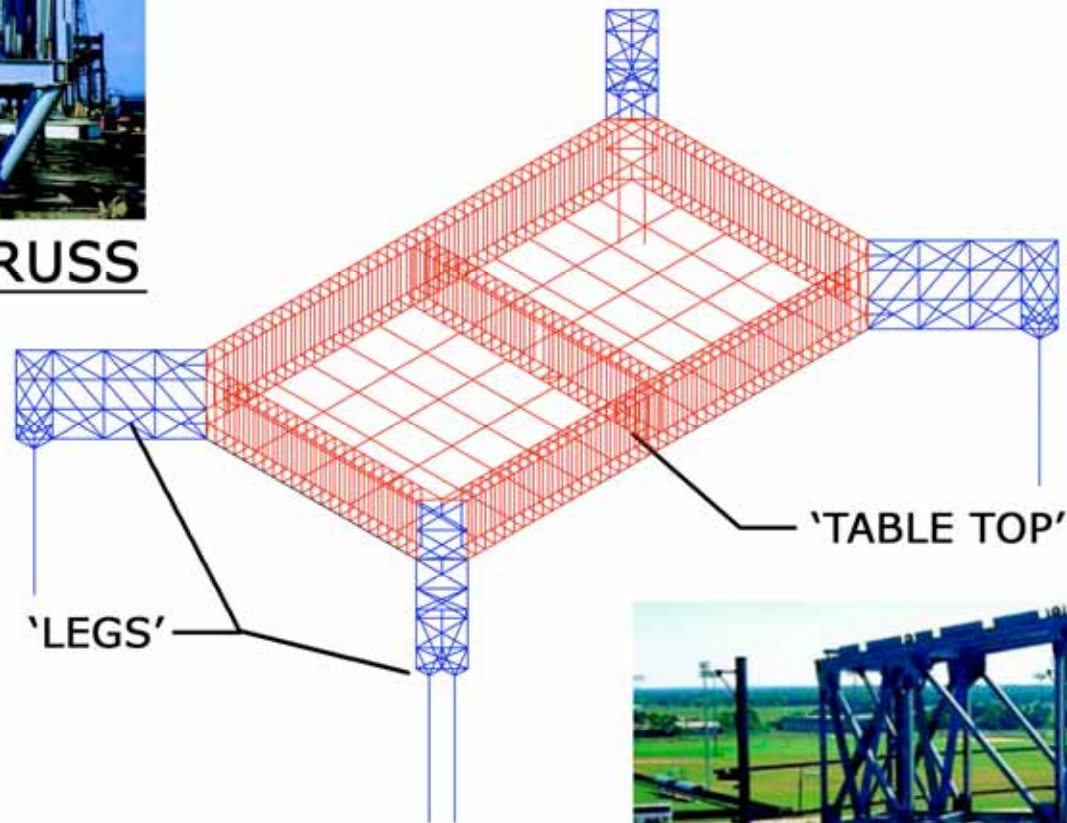
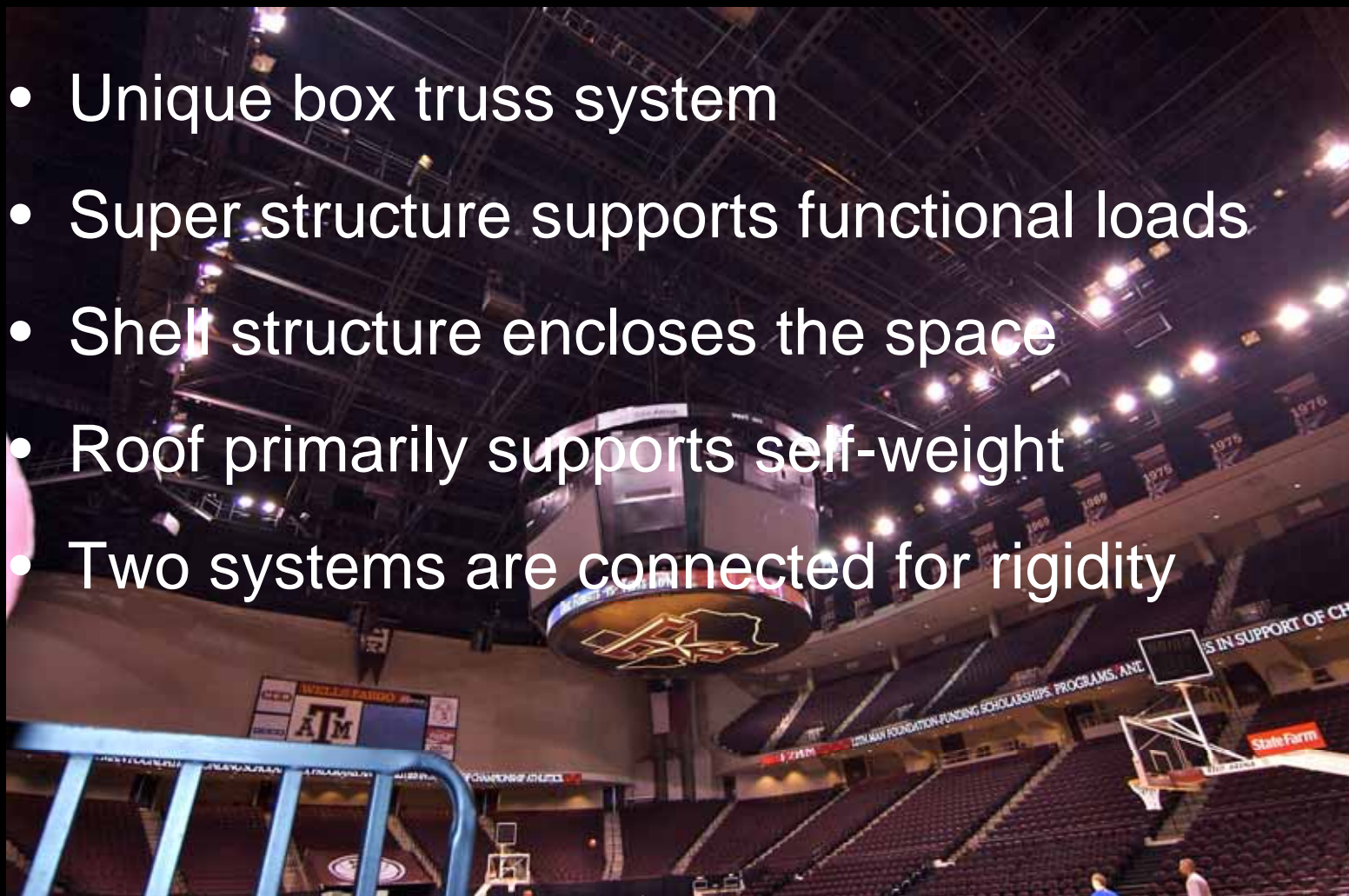


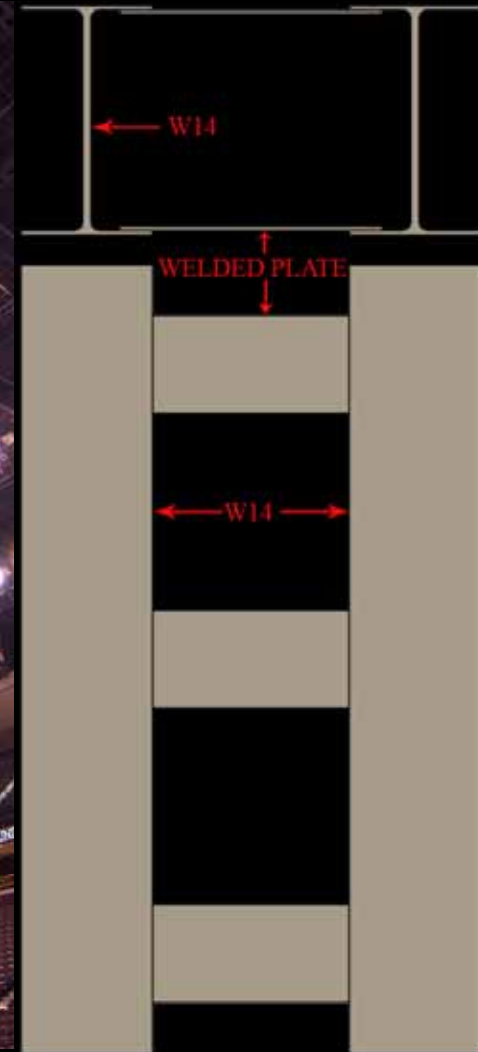
Table Top Truss

- 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



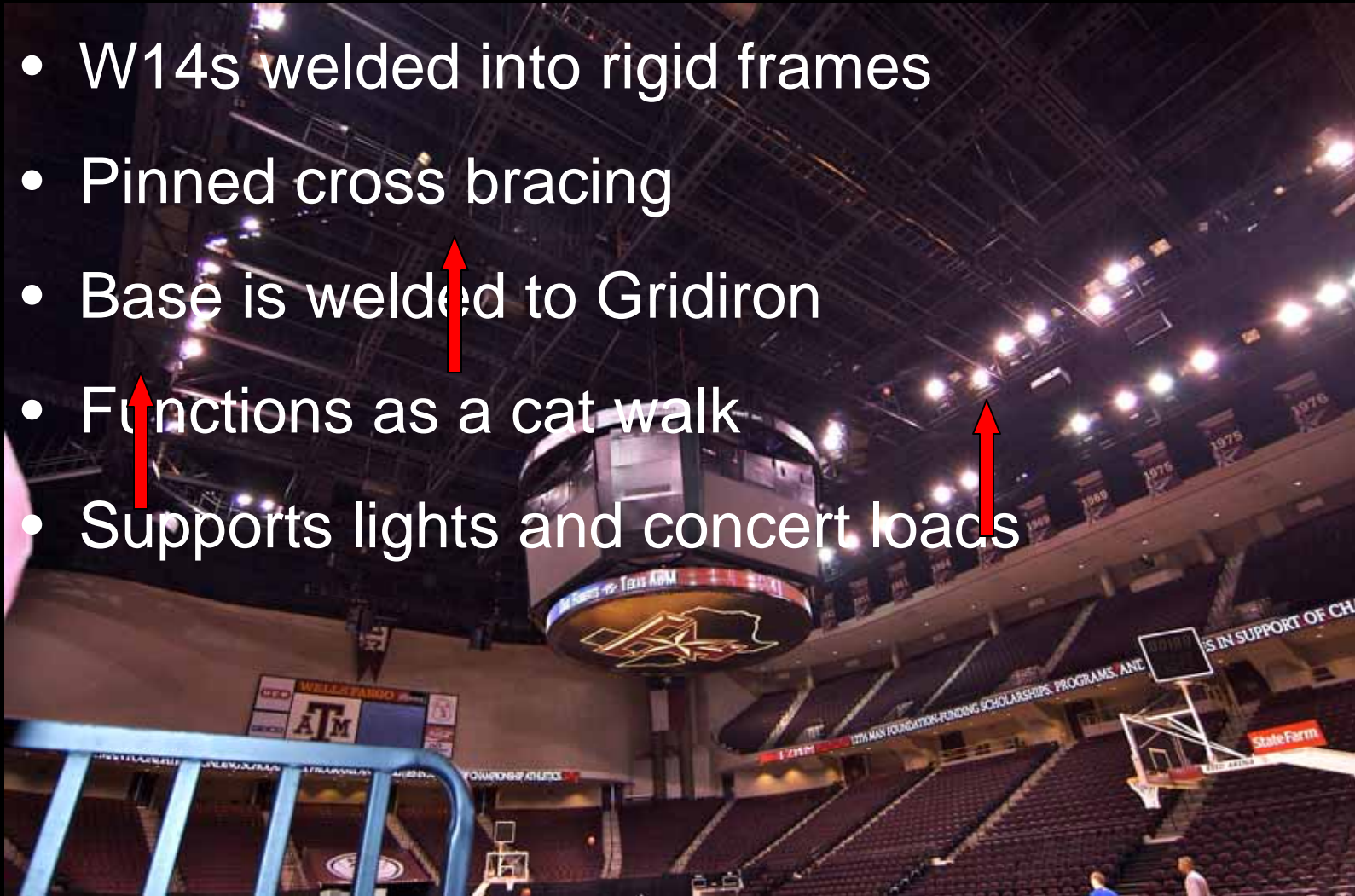
Gridiron

- W14s welded to steel plates
- Plates add 1'10" of width
- Larger lateral resistance
- Less weight
- Holds lights and rigging for concerts
- Rigid connections
- 16' x 20' Grid



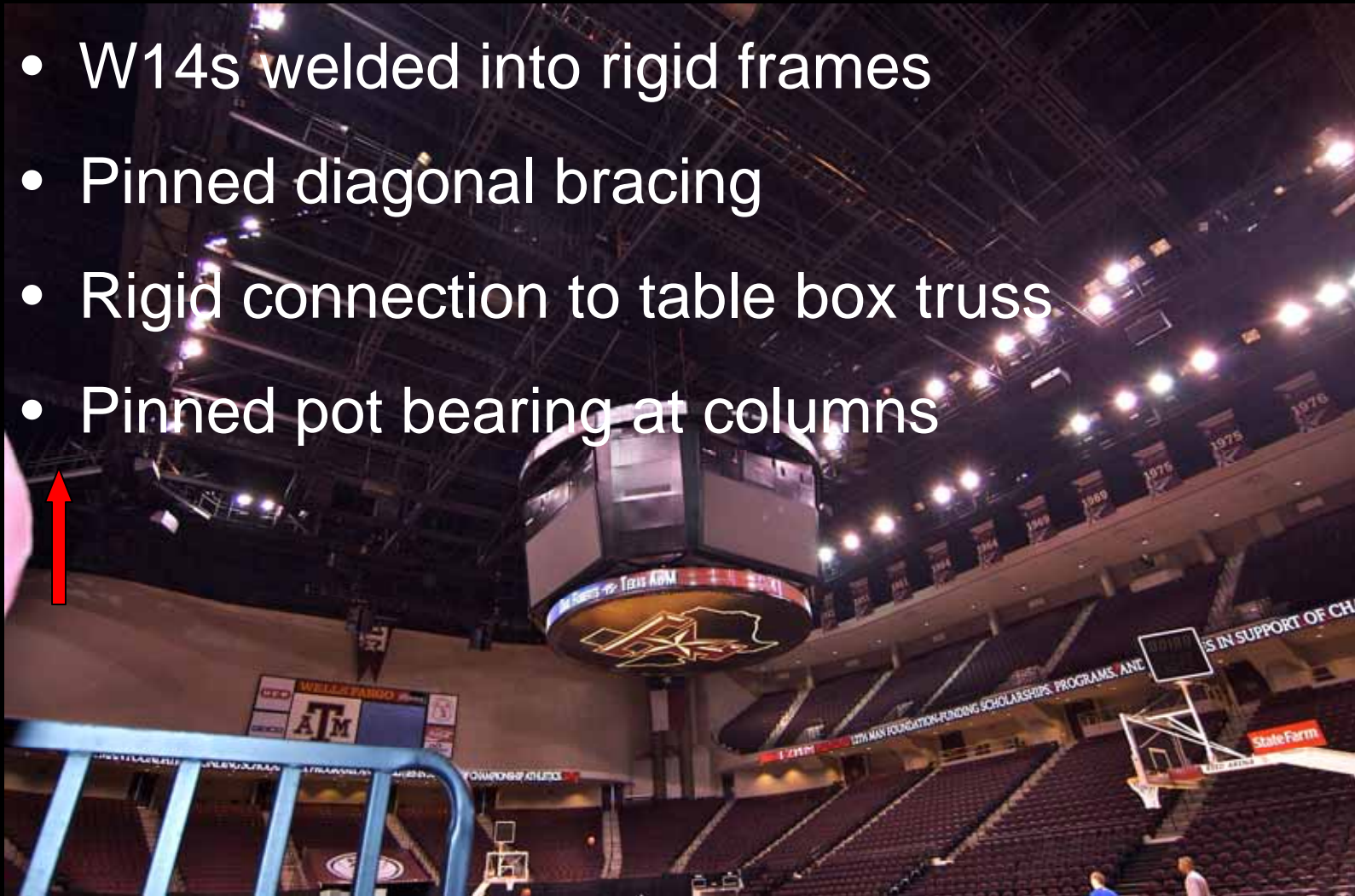
Cat Walk Box Truss

- 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



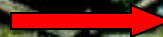
Stiffening Plate



Welded W14



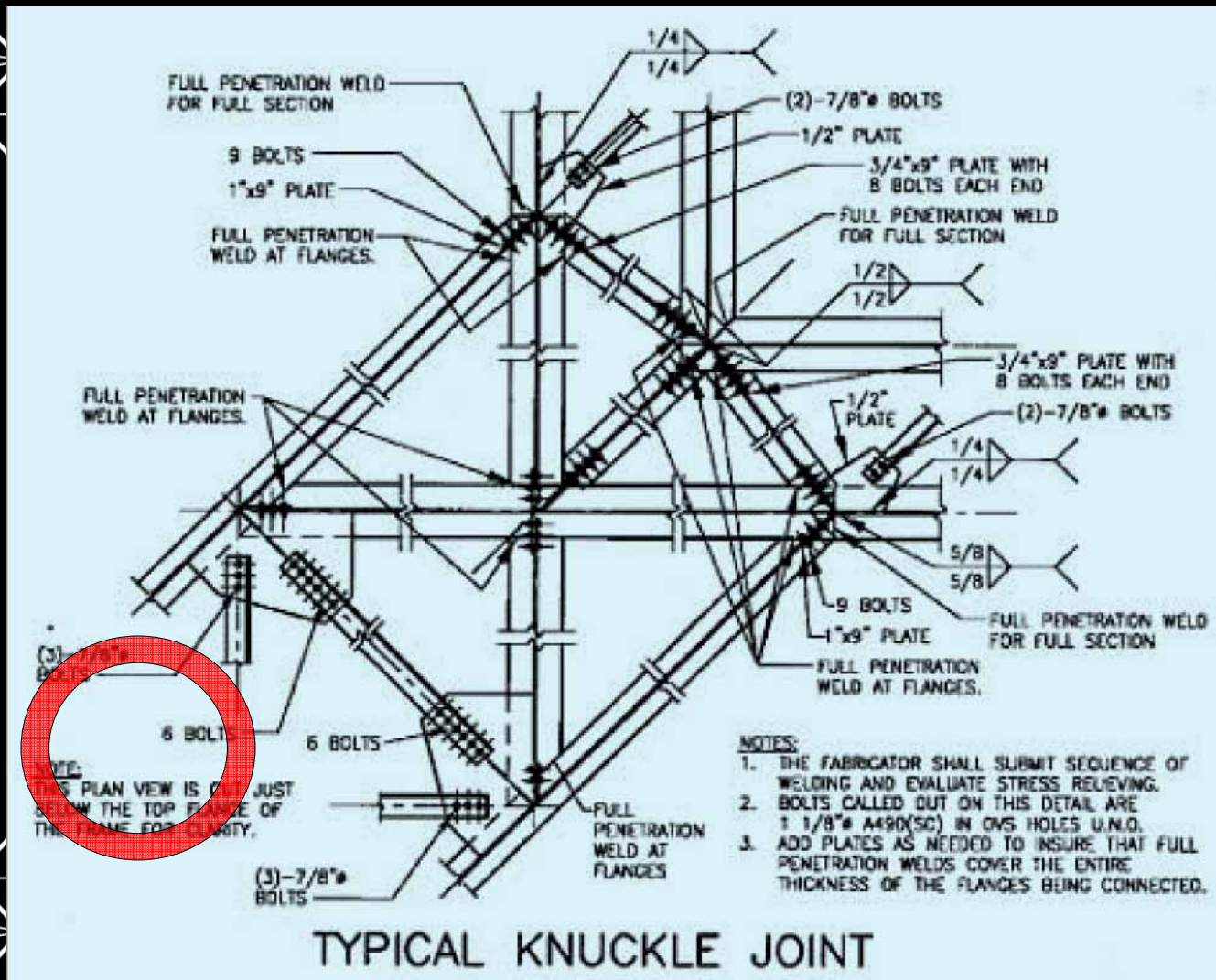
4'-0" diam.
Base Plate



10" diam Pipes

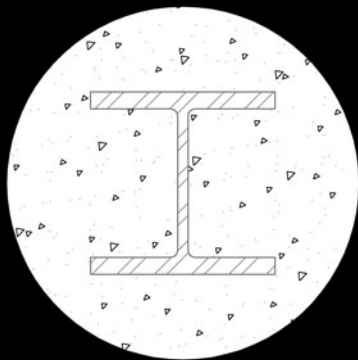


Knuckle Joint



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

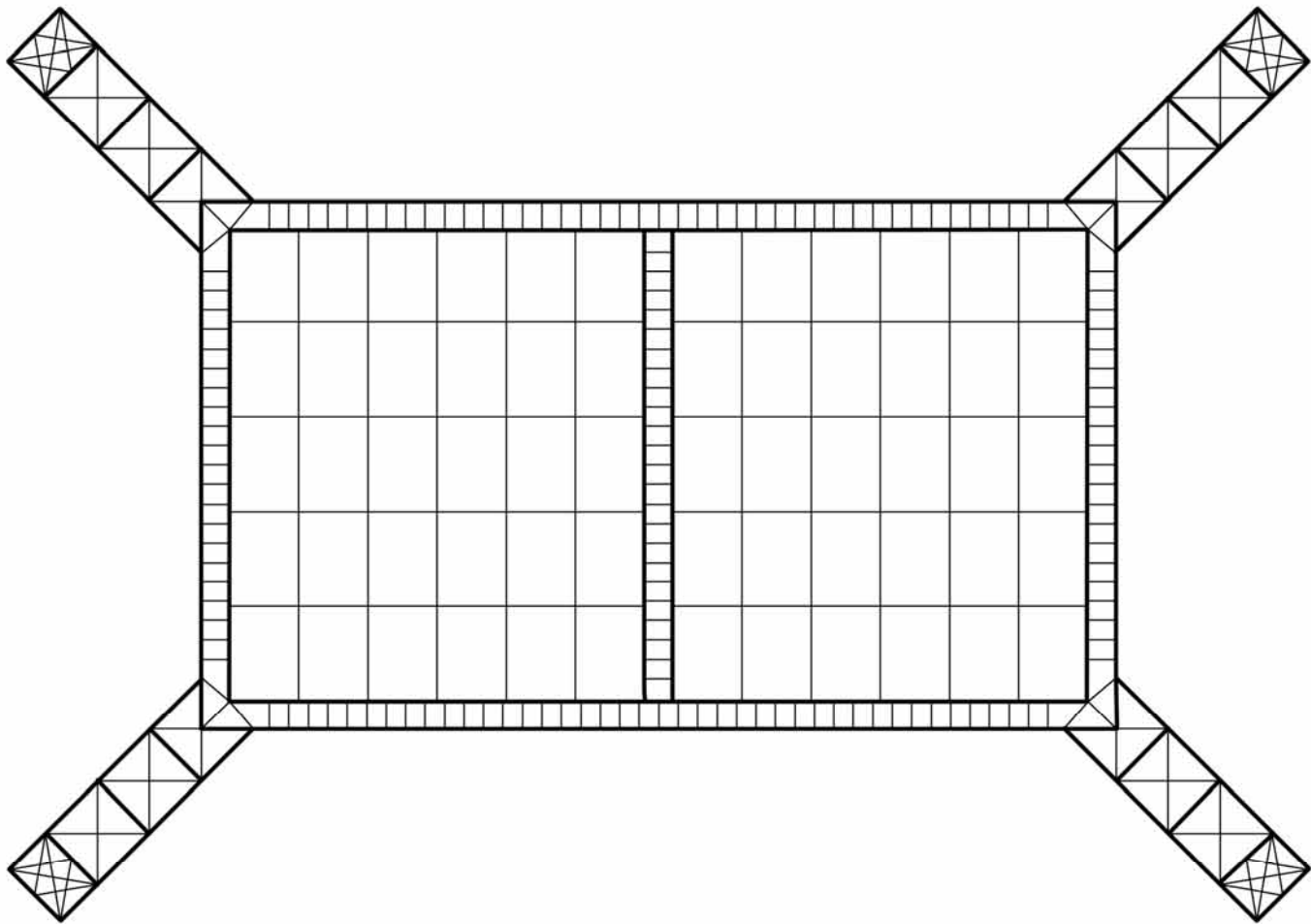
Guided Pot Bearing



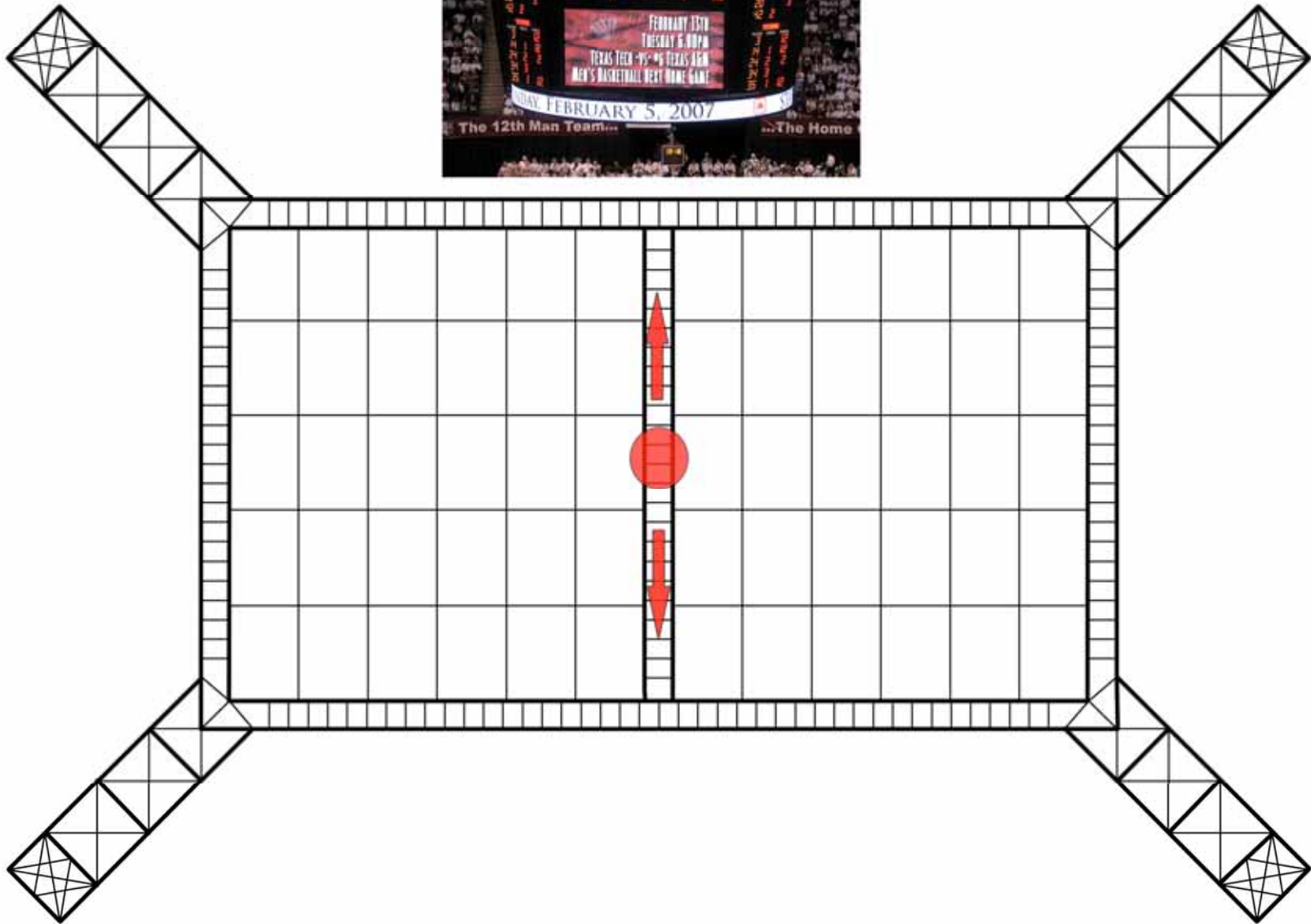
Columns

- 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

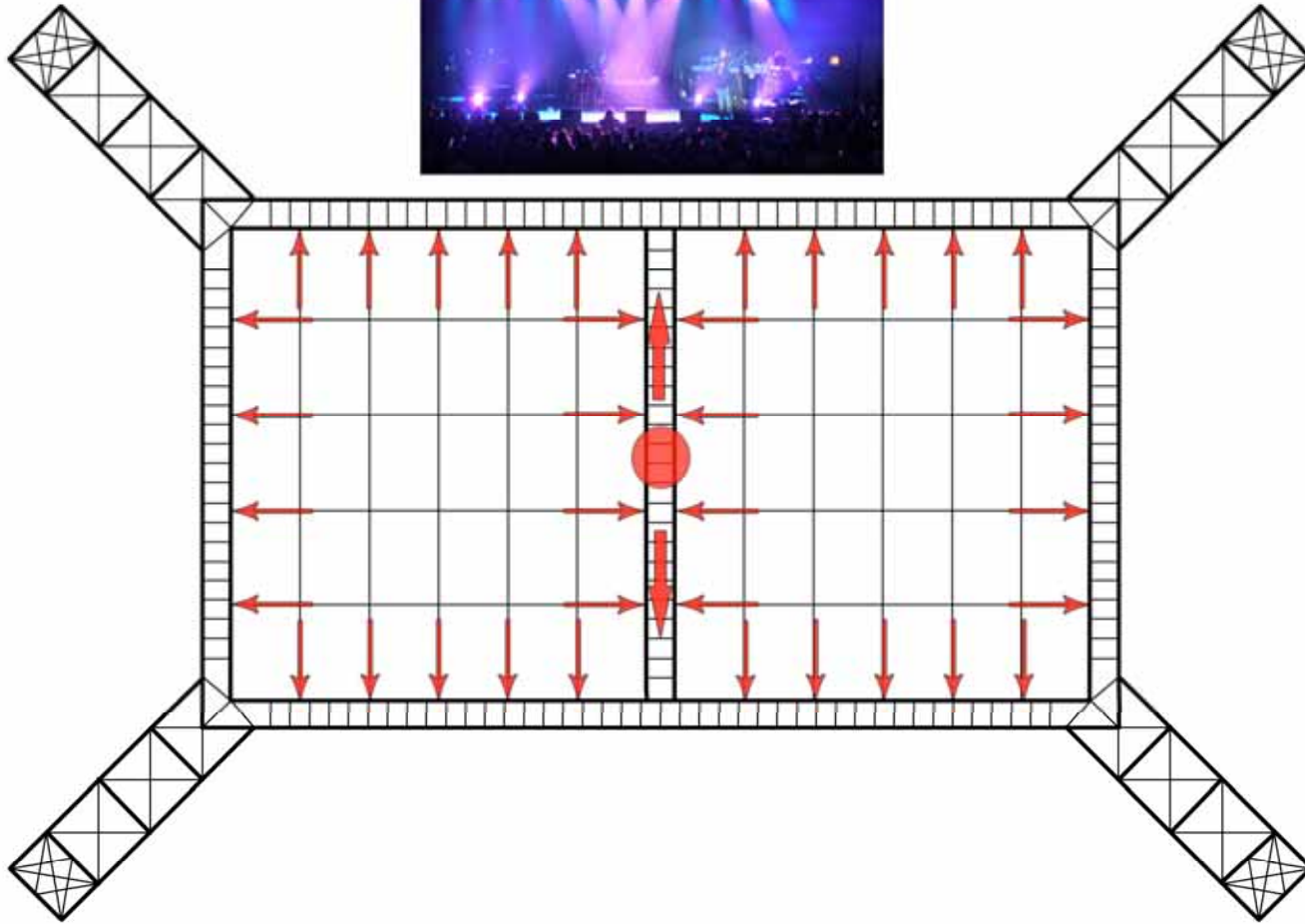




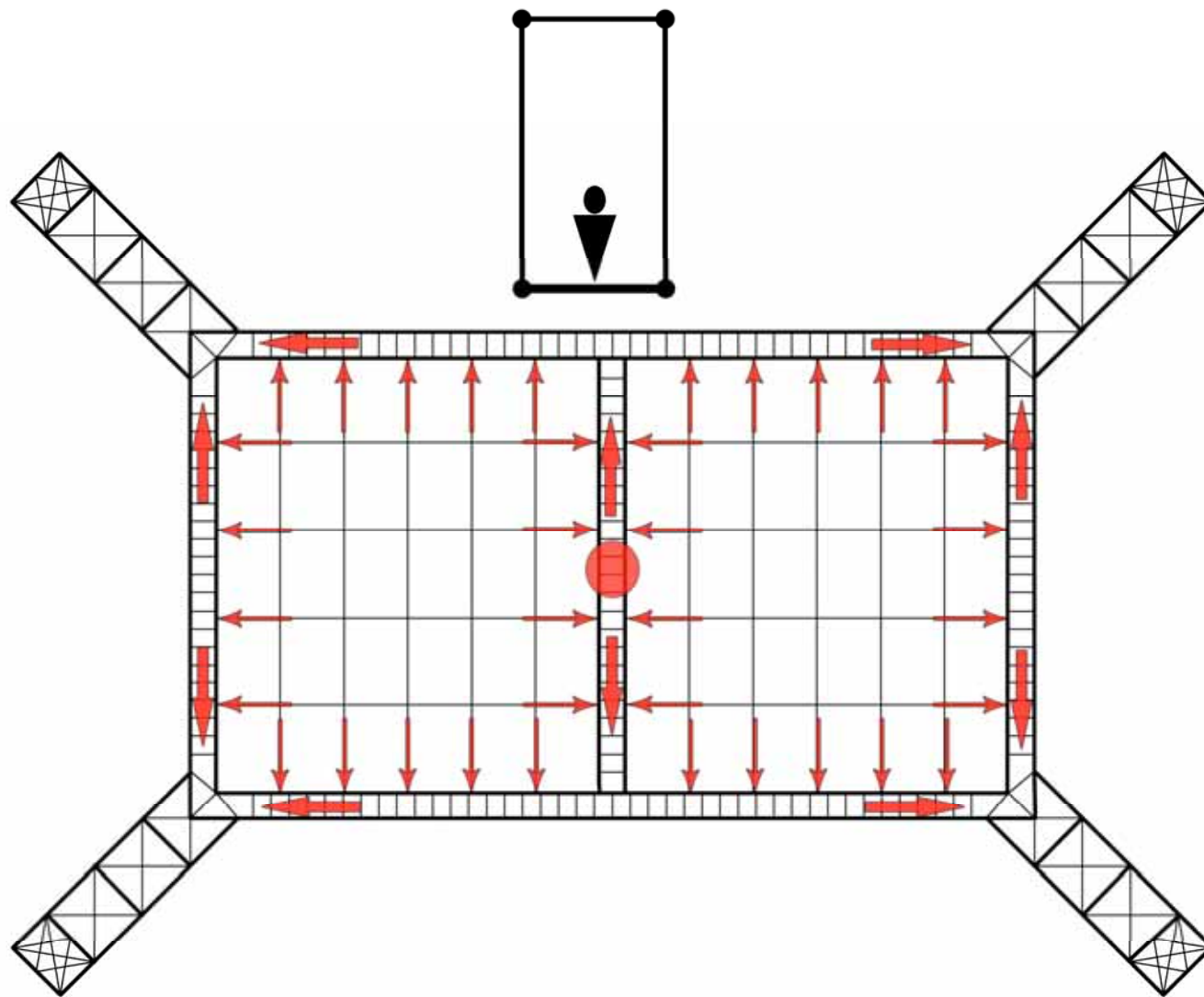
PLAN



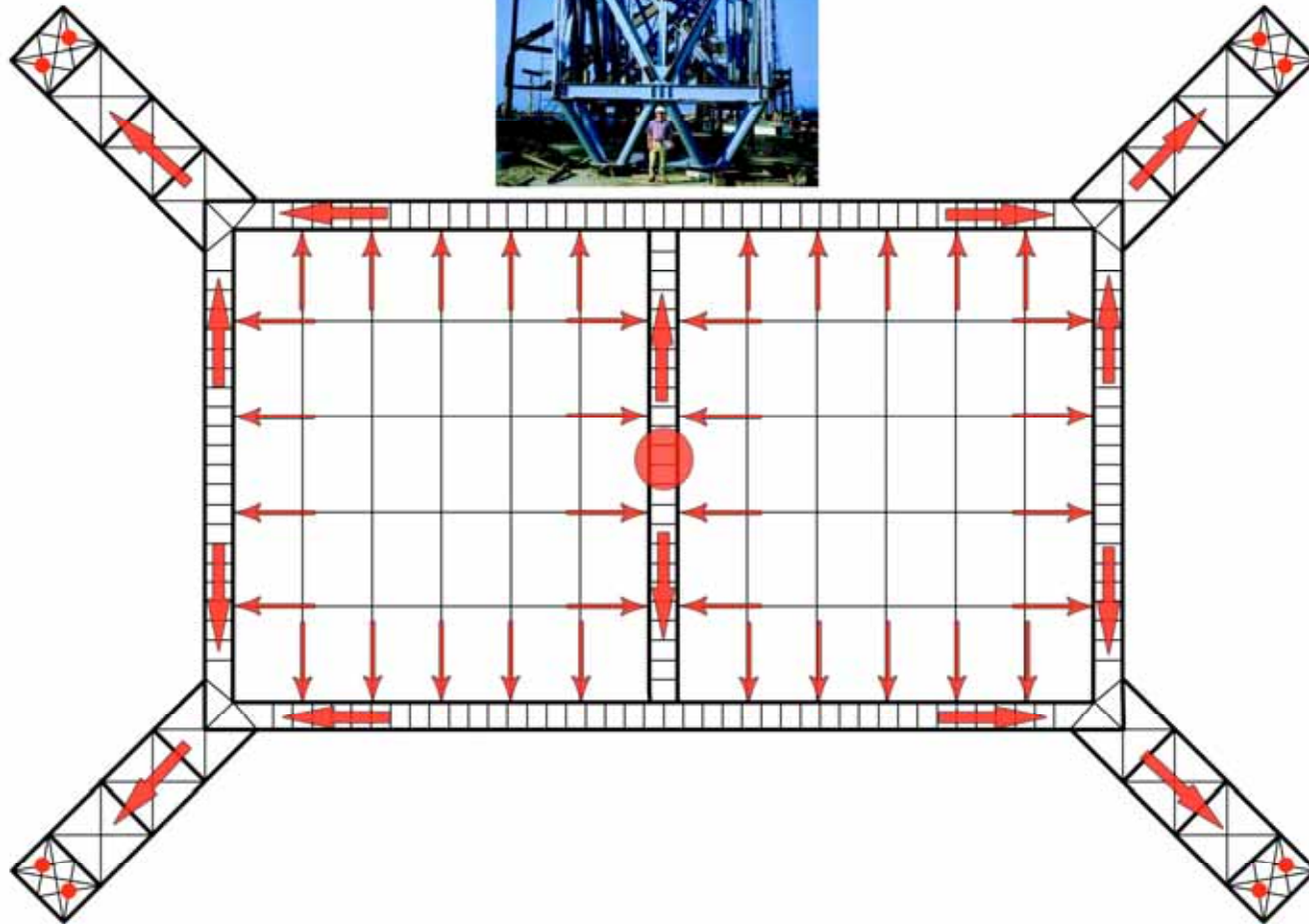
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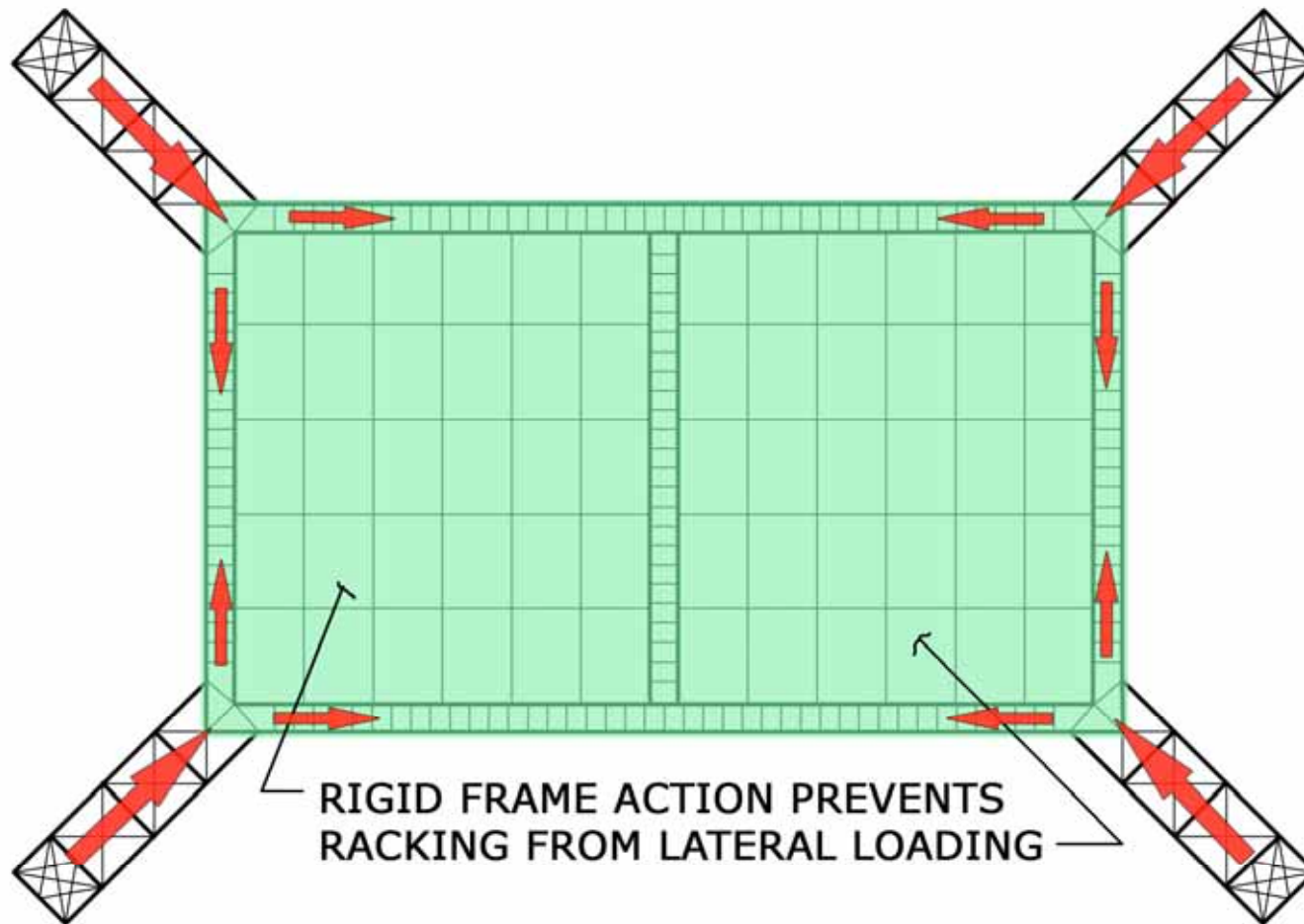
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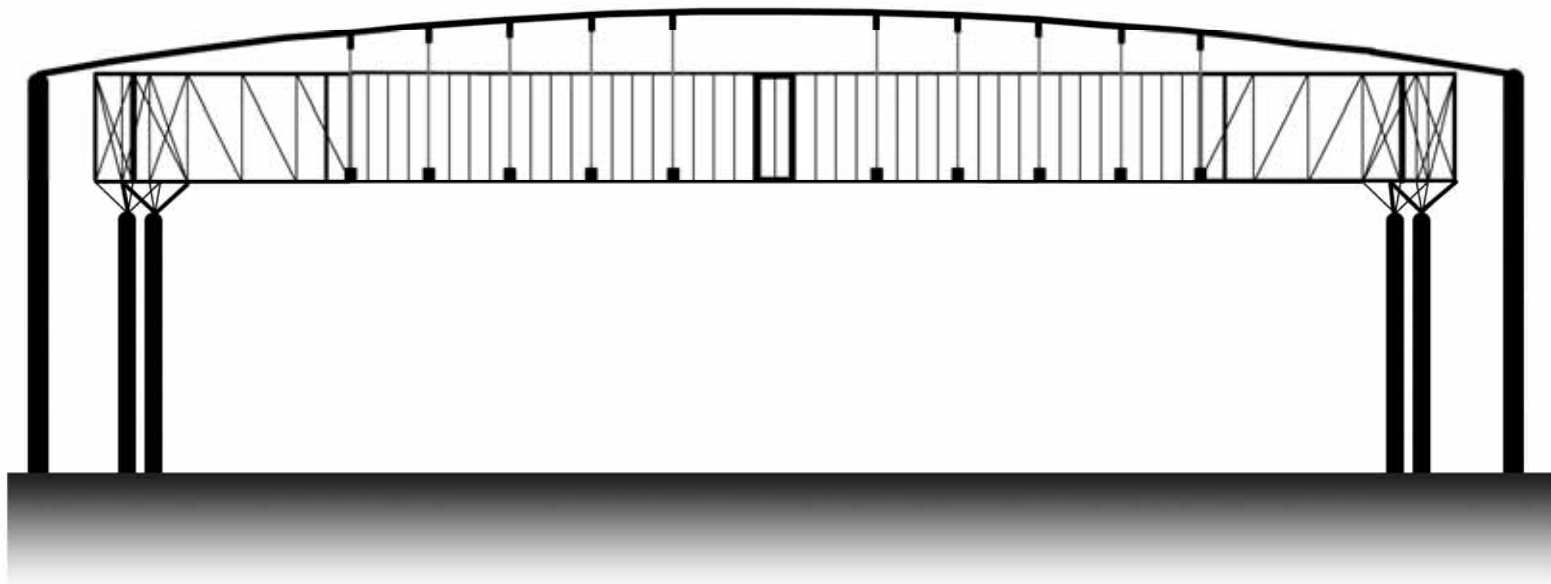
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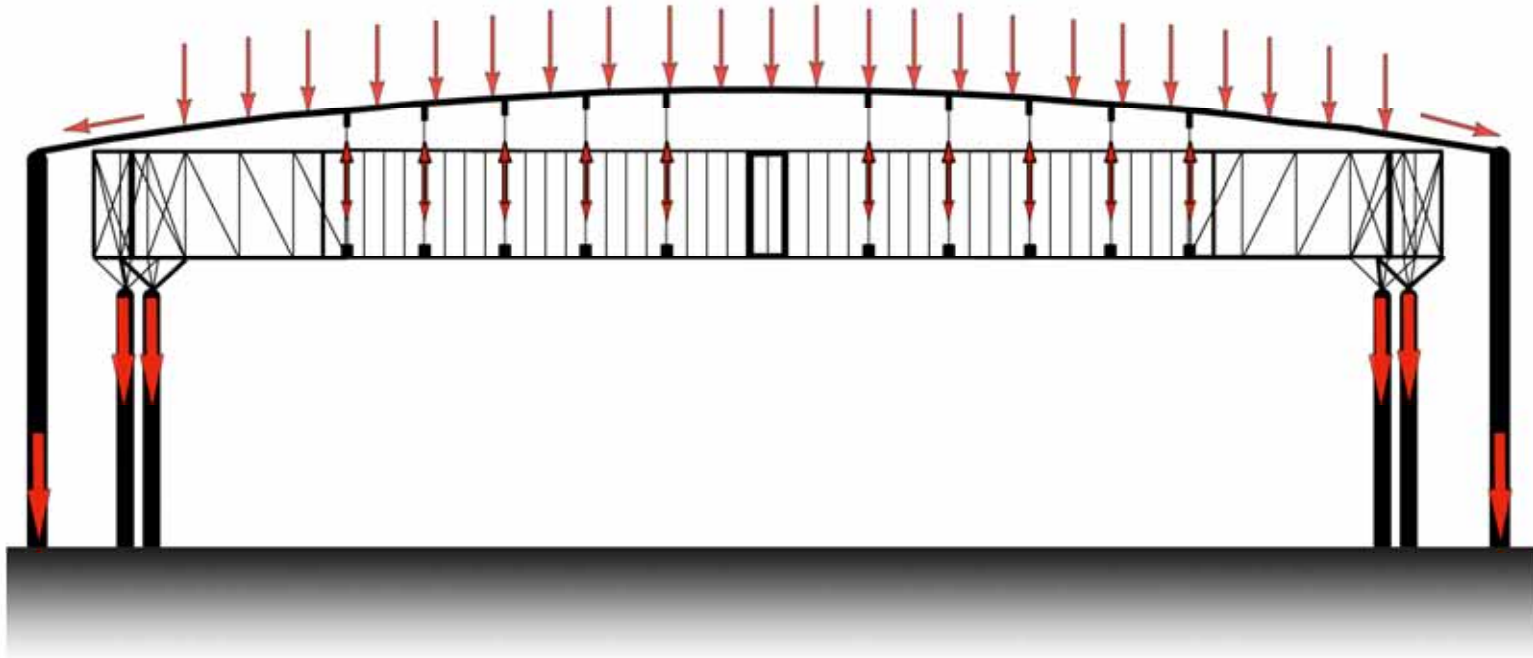
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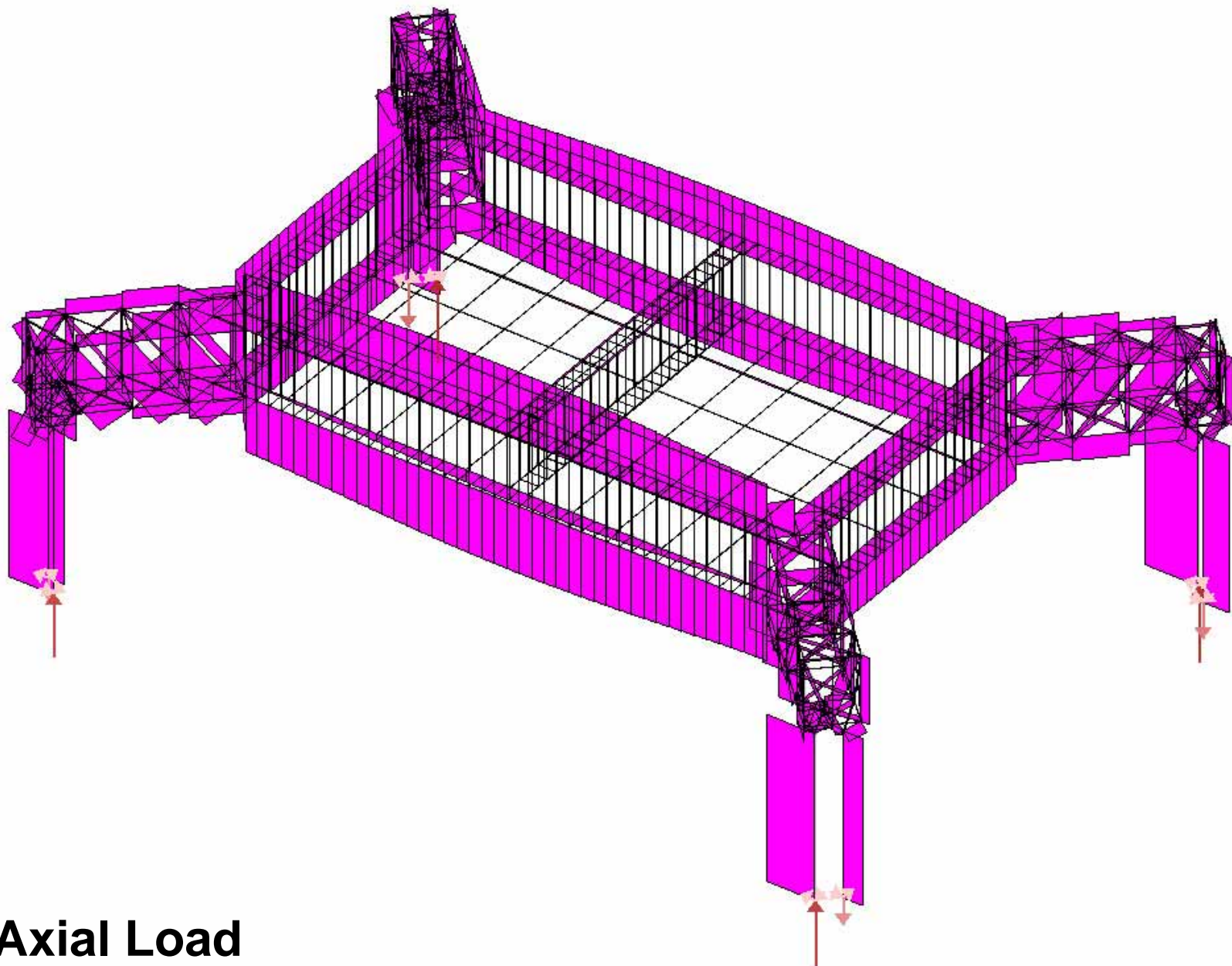
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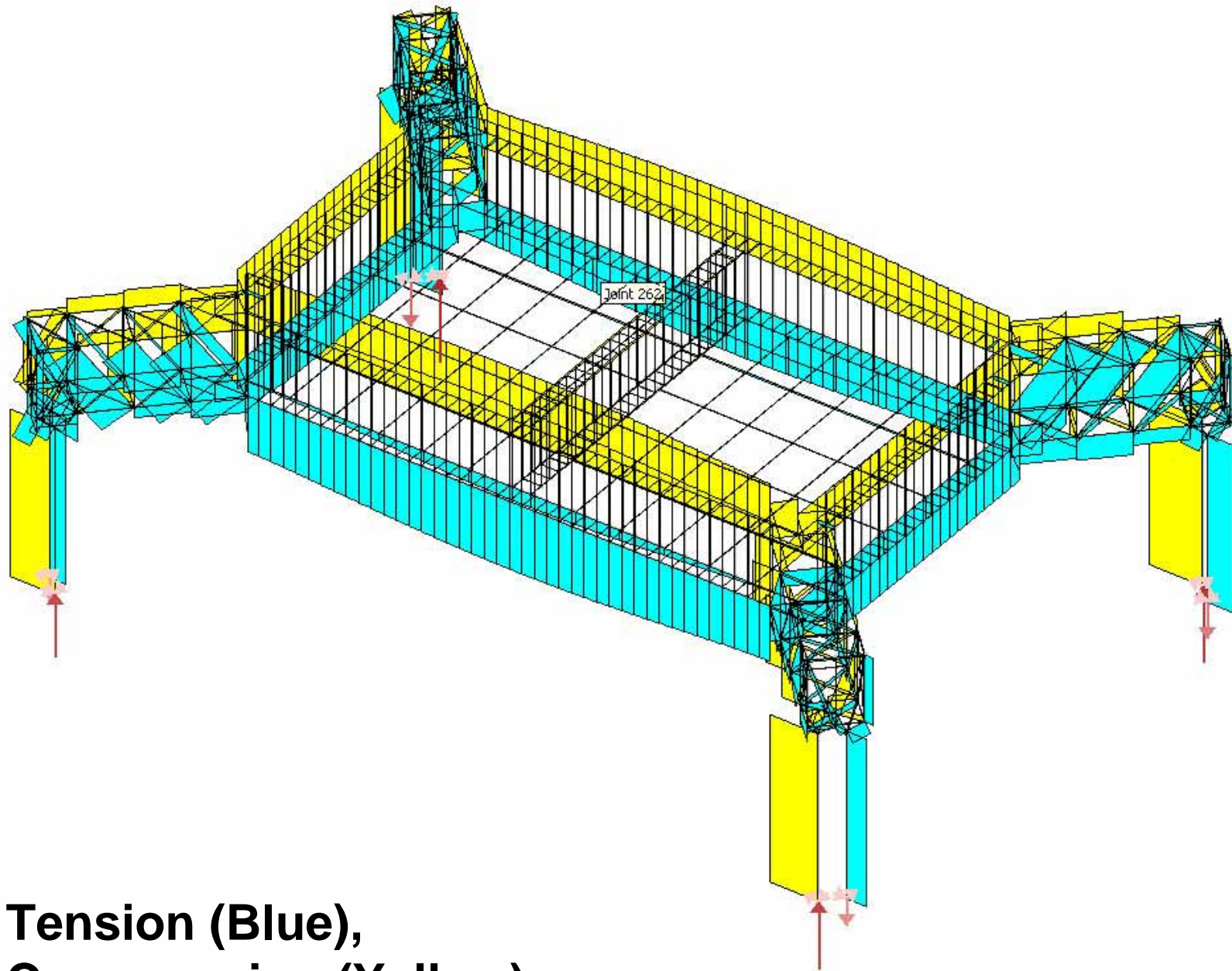
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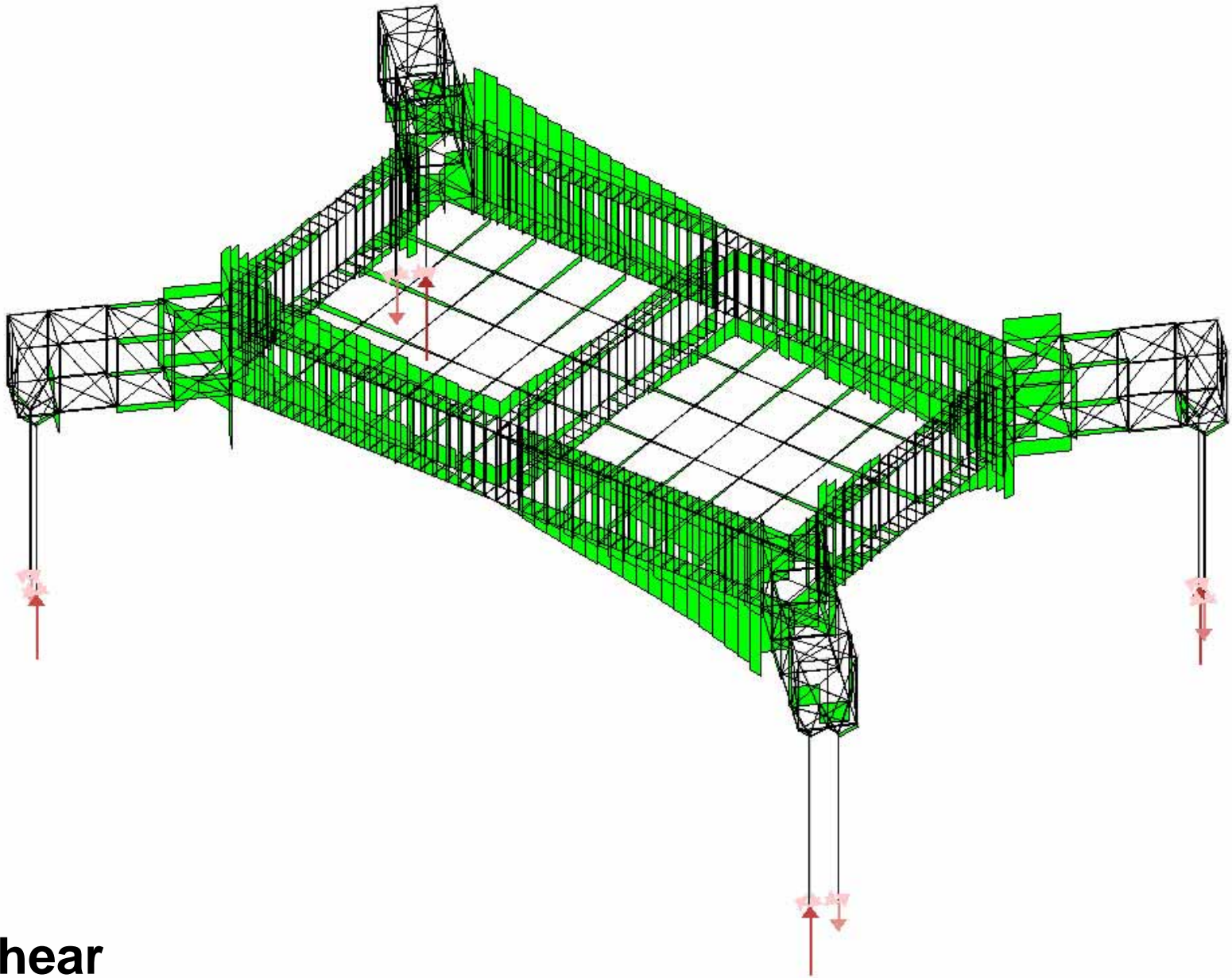
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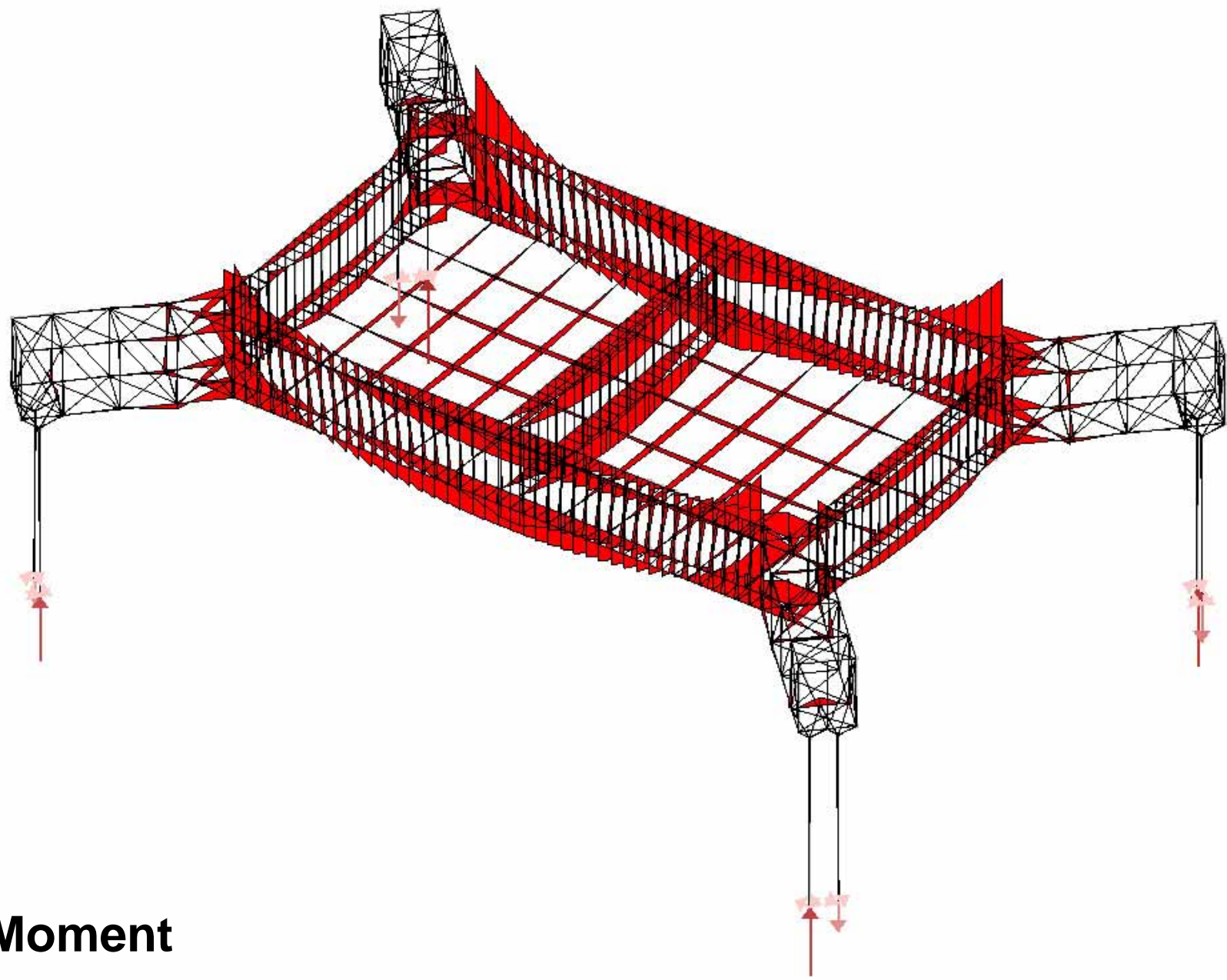
Axial Load



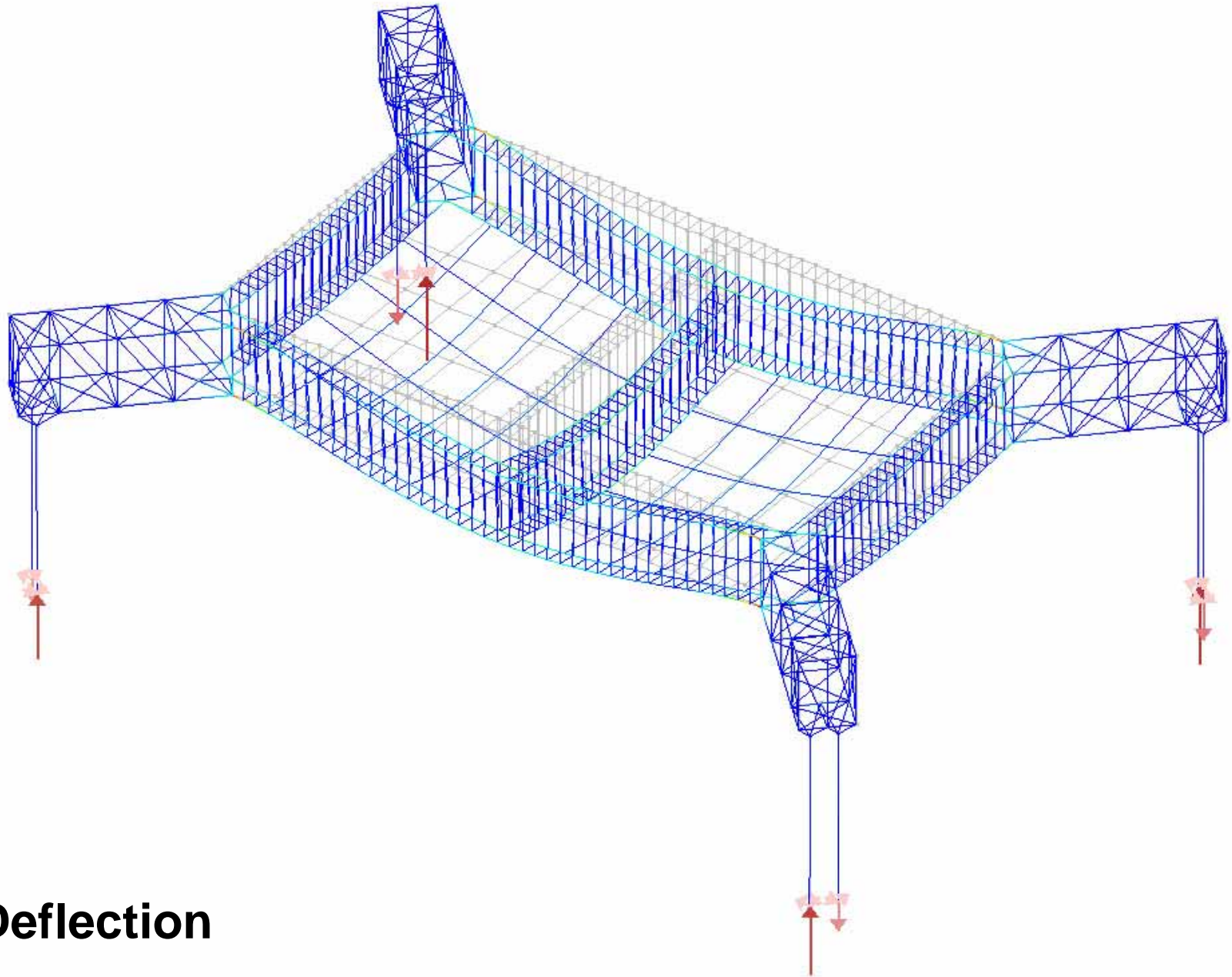
**Tension (Blue),
Compression (Yellow)**



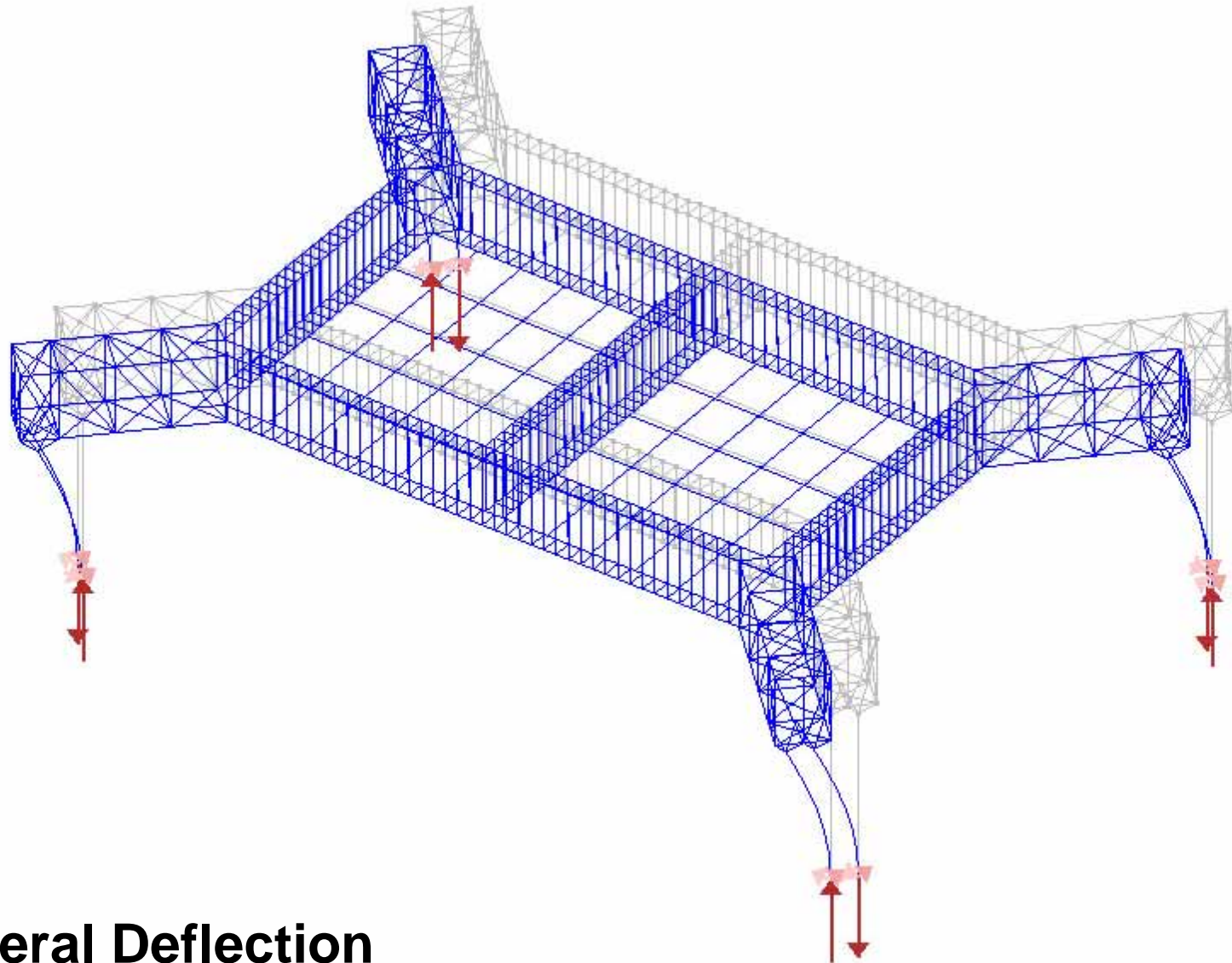
Shear



Moment



Deflection



Lateral Deflection

References

- Koidin, Michelle, "Crew Resurrect A&M arena: October Collapse delays coliseum's debut until 1998," Dallas Morning News. April 13, 1996.
- Carter, Al, "Workers injured at A&M: Roof Collapse could stall arena opening," Dallas Morning News. October 31, 1995.
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