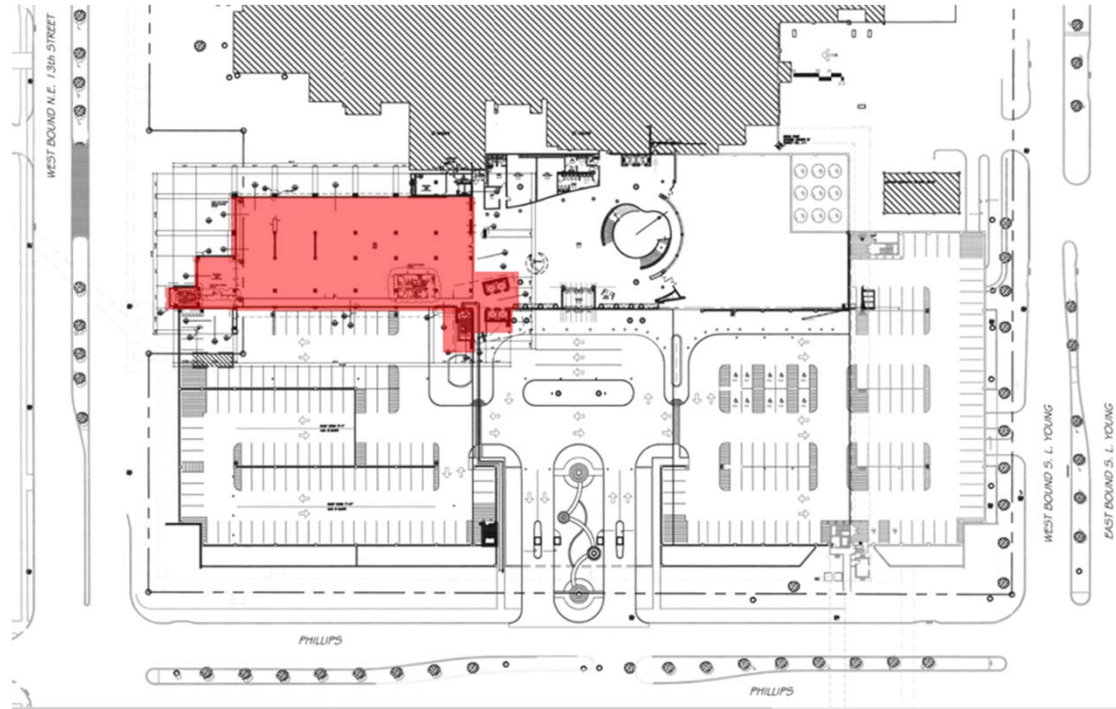


Oklahoma University Children's Medical Office Building



Jonathan Ebersole Structural Option

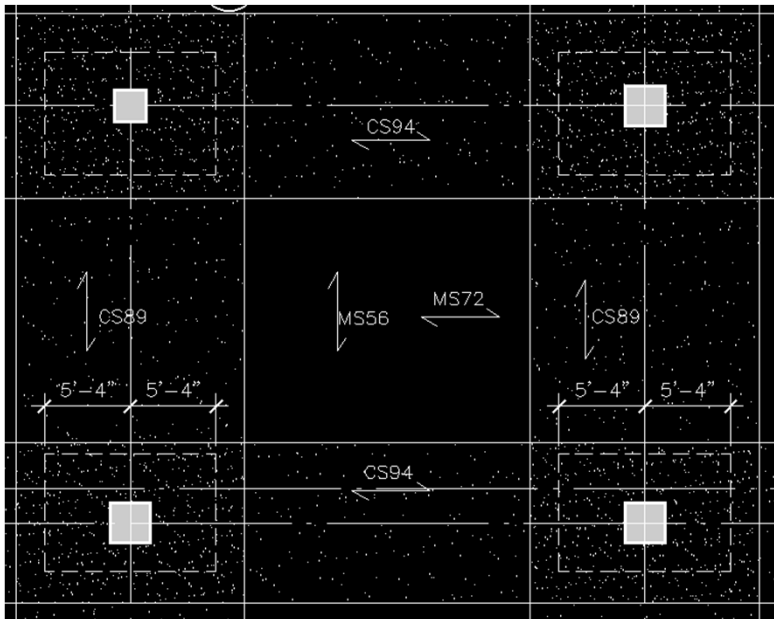
General Description



- Located on 1200 N. Children's Avenue Oklahoma City, Oklahoma
- Occupancy: Office
- Building Size: 320,000 gsf
- Building Height: 172 feet
- Total Stories: 12
- Building Cost: \$59,760,000



Existing Framing



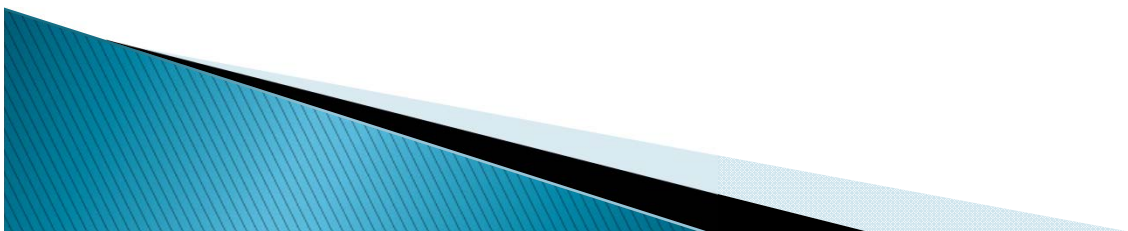
- Reinforced Concrete
- Span: 26 ft. x 32 ft.
- Two way slab action
 - Typical thickness: 10 in.
- Exterior beams
- Drop panels
 - Typical thickness: 4 in.
- Uses shear wall to resist lateral forces



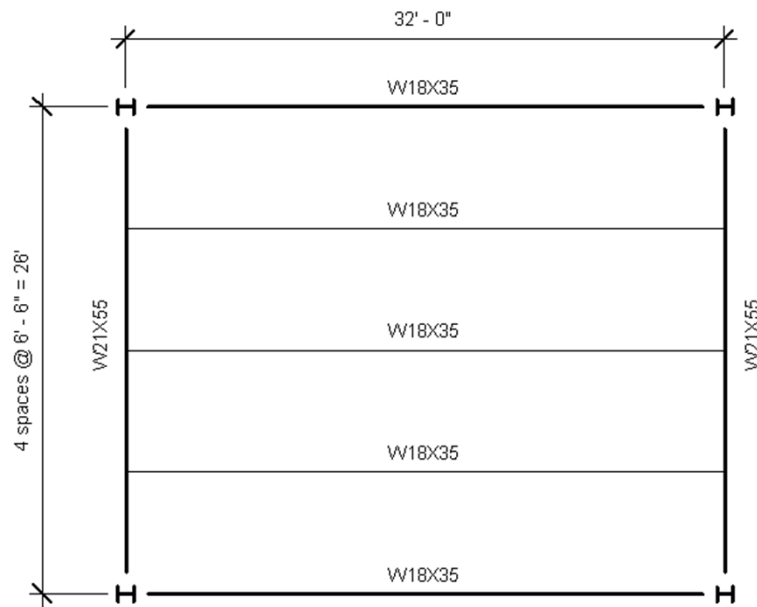
Spot Checks

| Steel | Interior Negative Moment | Interior Positive Moment |
|--------------------------|--------------------------|--------------------------|
| Required A_s (sq. in.) | 9.22 | 3.07 |
| Provided Steel | # 6 @ 6 in. o.c. | # 6 @ 12 in. o.c. |
| As Provided (sq. in.) | 12.32 | 7.48 |

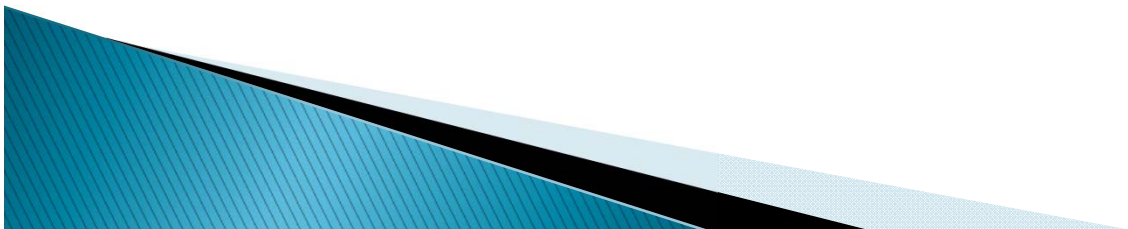
| | P_u (kip) | ϕP_o (kip) | M_u (k-ft) | ϕM_n (k-ft) |
|-----------------|-------------|------------------|--------------|-------------------|
| Interior Column | 2458 | 2937 | | |
| Exterior Column | 1932 | 3283 | 728 | 1061 |



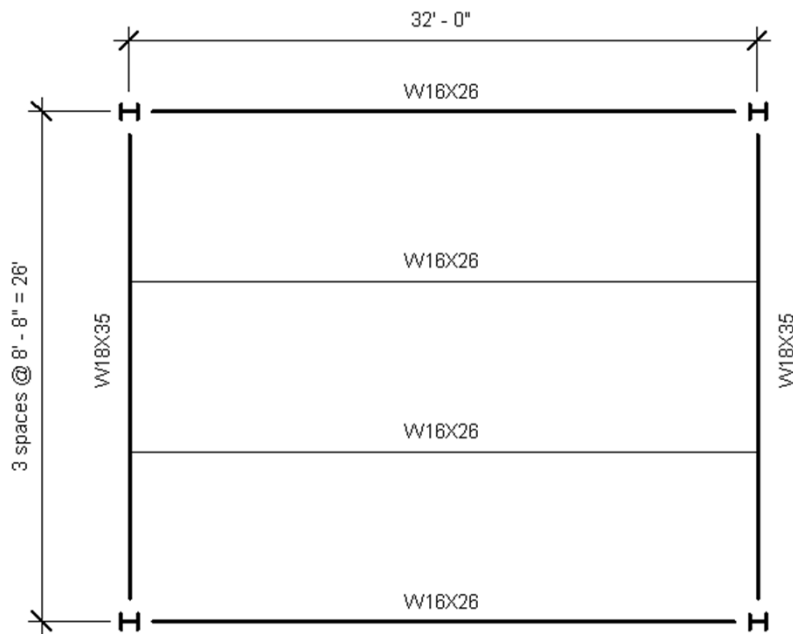
Alternate System 1: Non-Composite Steel



- Decking: 1.5 VLR 22 guage with 3 ¼ topping
 - 2 hour fire rating
- Use shear walls and moment frames for lateral system
- Must use fire proofing on steel
- Viable to use
 - Most expensive
 - Lightest Construction

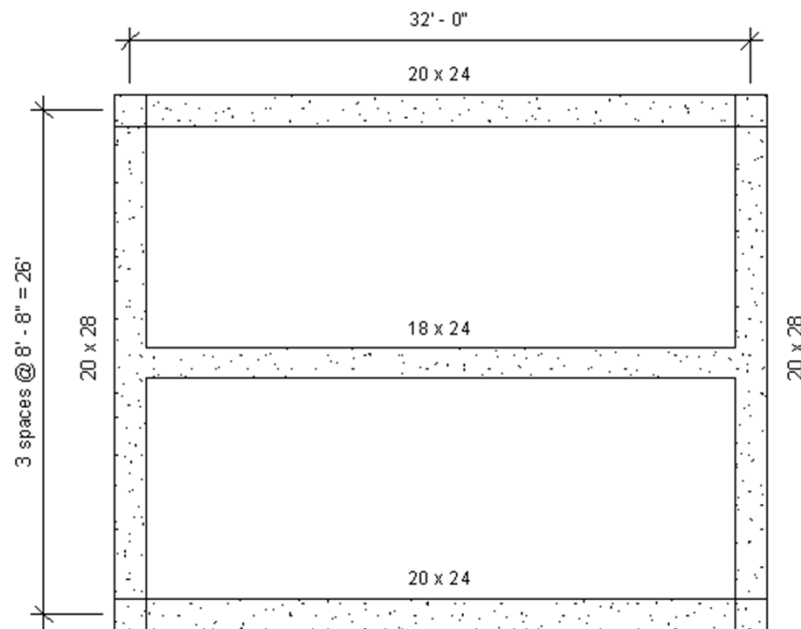


Alternate System 2: Composite Steel



- Decking: 2VLI 20 gauge deck with 4 ½" NW topping
 - 2 hour fire rating
- Shear studs
 - W16x26: 12 studs per beam
 - W18x35: 26 studs per girder
- Use moment frames and shear walls for lateral system
- Must use fire proofing on steel
- Still viable to use
 - Second least expensive
 - Second lightest construction

One Way Slab with Beams



- Slab Thickness: 6"
- Use Moment frames and shear walls for lateral system
- Don't need to fire proof
- Still Viable to use
 - Least expensive
 - Heaviest



System Comparison

| Alt. System | Cost per s.q. f.t. | Weight psf | Potential for Further Investigation |
|-----------------------|--------------------|------------|-------------------------------------|
| Non-Composite Steel | \$33.30 | 46.38 | No |
| Composite Steel | \$22.60 | 70 | Yes |
| One Way Slab w/ Beams | \$21.60 | 101 | Yes |
| Two Way Slab | \$19.50 | 130 | |

