



University of Virginia's College at Wise's New Library

Macenzie Ceglar | Structural Option
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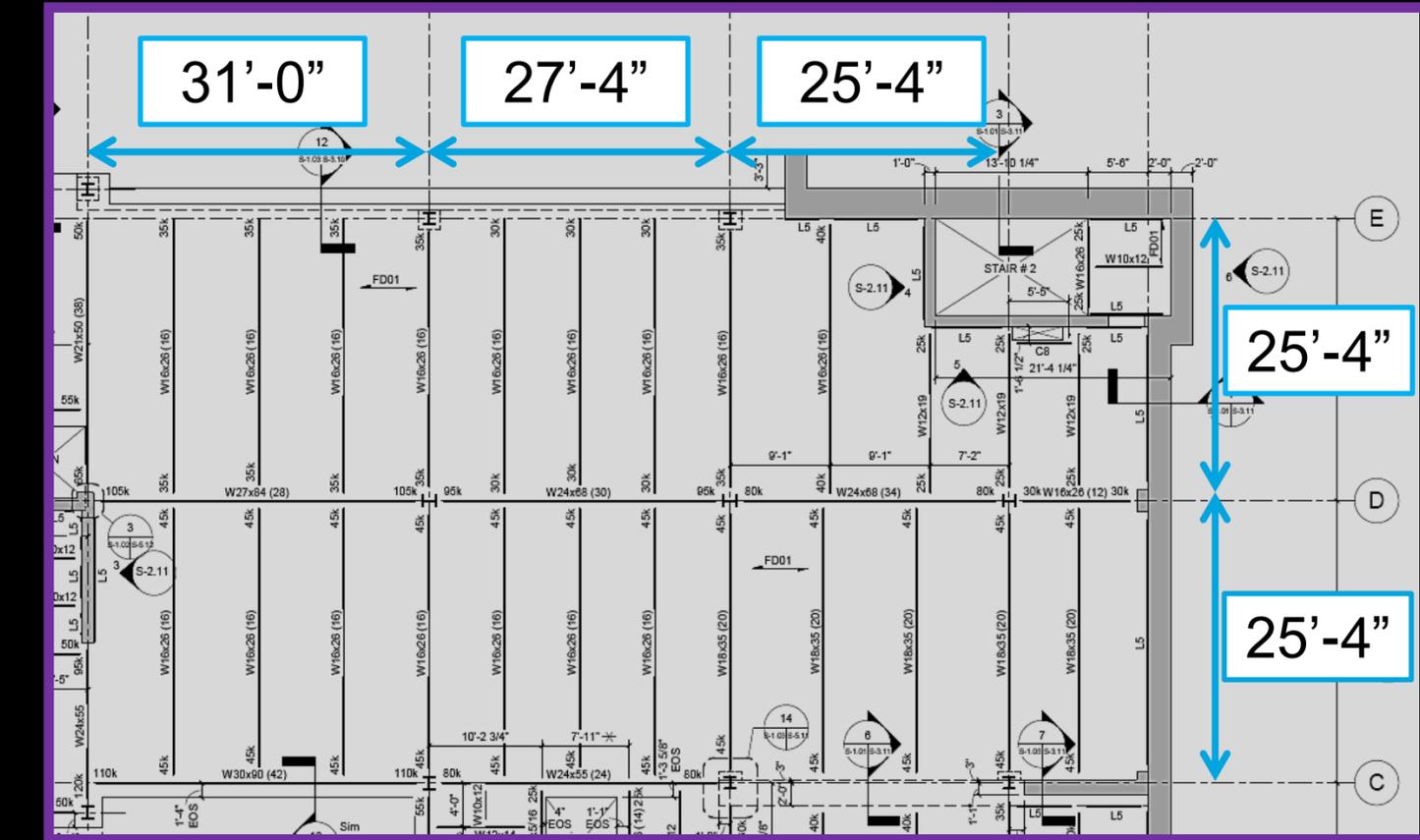


UVA's New Library

- Building Introduction
- Problem Statement & Solution
- Two-way System
- PT System
- Lateral System
- Breadth 1 – Cost and Schedule Analysis
- Breadth 2 – Drainage System Study
- Conclusions

Existing Gravity System

- Spread/Strip Footings
- Temporary Retaining Wall System
- Composite Steel Floor Framing
 - 2" 18 ga. Metal Decking
 - 4 1/2" NWC Topping
- Wide Flange Members
- Typical Bay Size: 25'-4" x 25'-4"

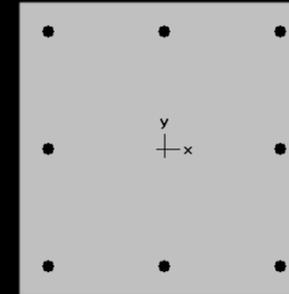


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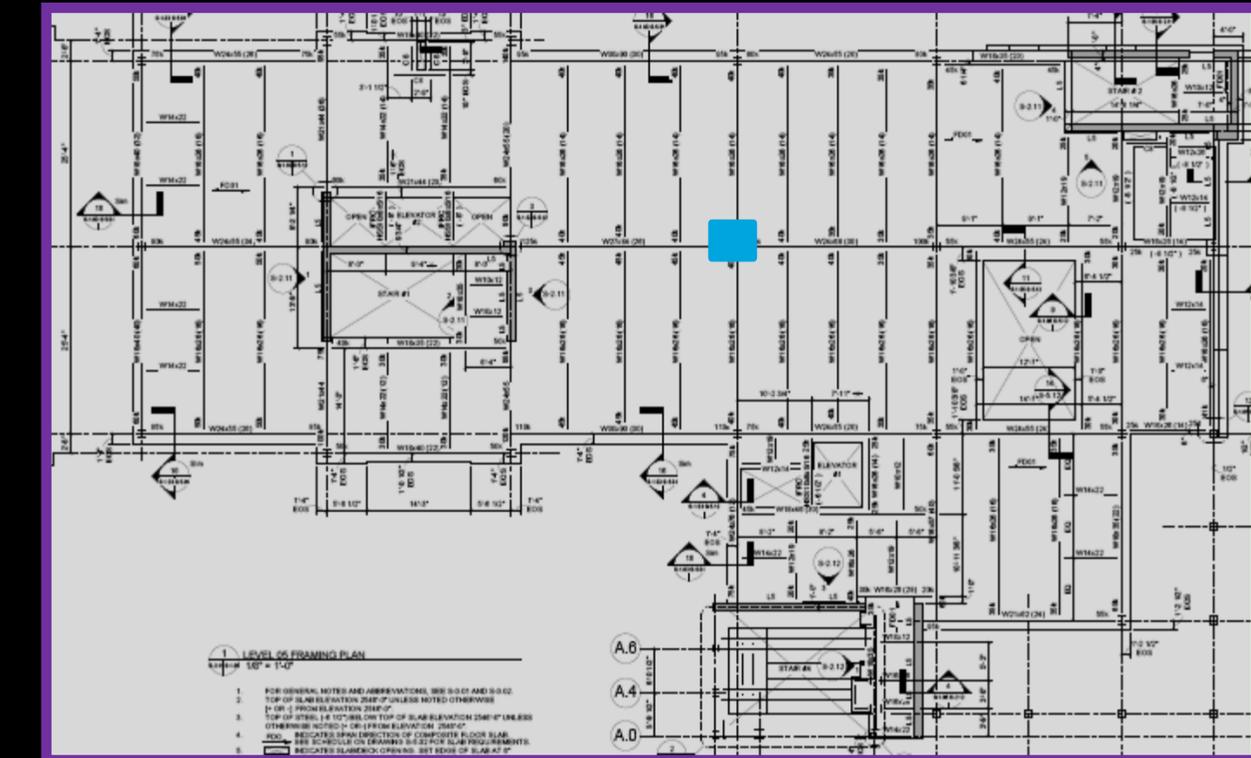
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Column Redesign

- 24" x 24"
- (8) #5 Reinforcement
- $f'_c = 4000$ psi
- Extra capacity on upper floors due to punching shear



Column	P_u (k)	$\phi P_n/P_u$
6D	803	1.5



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Cost Analysis

- Concrete System
 - No additional fire proofing required
 - Formwork ~ 70% of structure cost
 - Concrete ~ 3% of Structure cost

Item	Amount
Formwork	872,833
Structural Concrete	33,697
Finishing	42,863
Placement	51,167
Reinforcement	243,145
Total Cost	\$ 1,079,889