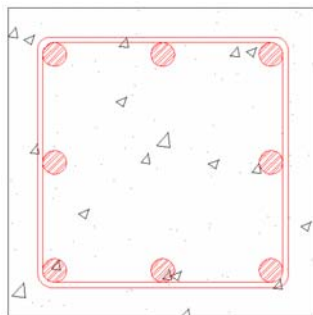
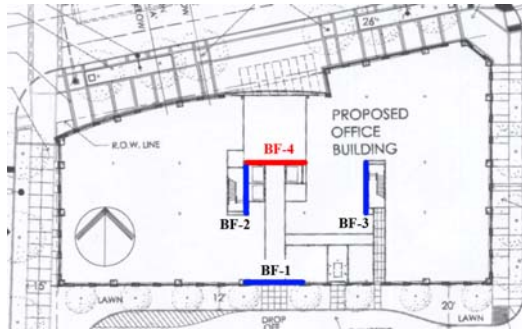


Executive Summary

Steel frame structure clad with masonry, the 5 story 100,000 SF URS Office Building is a multiuse structure containing mercantile area on the ground floor and office space from floor 2 through 5. Completed construction within a year this 7 million dollar project located in Columbus, Ohio leads as a prototype building in the developing Arena District.

Structural steel composes beams, columns, girders, and bracing members. Composite floor system is in use utilizing shear studs and spread footings with grade beams are the foundation system. Lateral system consists of 3 braced frames and 2 moment frames. Moment frames were used due to architectural constraints. Also due to asymmetric layout of lateral system, effects of torsion were sizeable.

Contained in this document is the redesign of lateral system in steel and concrete. Primary considerations are reducing the impact torsion has on the structure, cost, and schedule. First proposed change is rearranging the current lateral system. By adding an additional braced frame, BF-4, the eccentricity is reduced and moment frames are eliminated.



Second solution proposed is to construct the building in concrete and using shearwalls as the new lateral system. For this solution complete redesign of the structure is necessary. Applied loads will be recalculated, gravity members will be sized, and finally shearwalls will be designed.

Due to the original schedule and costs being unavailable, construction breadth focused on creating schedules for the original steel project and comparing it to the new concrete alternative. Cost, time, and constructability are the primary concerns for this study.

Mechanical breadth consists of evaluating and verifying the minimum outside air requirement, reducing equipment size and saving on energy cost by reducing building volume. Using post-tensioned concrete slab reduces floor depth significantly so smaller fan will be considered if viable.

After all the analysis, steel is recommended over the concrete alternative. Steel erection is very quick and cost difference of \$150,000 gives advantage to steel. Also the existing building is the testament to the steel structure's integrity.