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Structural Option

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URS Office Building  
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## STRUCTURAL TECHNICAL REPORT 3

Lateral System Analysis and  
Confirmation Design



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### **EXECUTIVE SUMMARY:**

In the structural technical report 3 a thorough analysis of the existing lateral system for the URS Office Building is performed. Lateral computations made in the first technical assignment are used as the foundation for this technical report. With greater accuracy in determining the period and building mass, the conservative estimates of previous report is trimmed and refined.

This report is organized as follows. General building description is given in the introduction and load combination used comes next. Then the existing lateral system, three braced frames and two moment frames, is described. Subsequently, the controlling loads are determined for each direction. Once the controlling loads are determined, logical load path is established. After that strength, drift, overturning, and torsion calculations are contained in the report. Conclusion is given and lastly appendices contain detailed calculations.

Three braced frames along with two moment frame resist lateral loads applied to the building. In the north-south direction wind controlled, but in the east-west direction seismic base shear is greater than that of wind. The loads are distributed by the composite floor system acting as a rigid diaphragm. Stiffness of frames are determined and as expected the braced frames resist majority of the lateral load. Large torsion was applied to the building due to asymmetrical layout of the frames and to prevent excessive rotation moment frames were employed. Although the layout of the frames is not ideal, the lateral systems for the URS Office Building is sufficient in preventing drift and overstressed members.

\*RAM Structural System is used to calculate adequacy of the frame members and spot checks were performed to confirm the RAM calculations.