

Executive Summary

This technical assignment includes a detailed analysis of the current lateral force resisting system of the 17 story Renaissance Schaumburg Hotel and Convention Center in Schaumburg, IL.

The first part of the technical paper discusses lateral load development and application. The shear wall system used is then analyzed with both a simplified approach and a computer model. The shear walls in the RSHCC resist a portion of the total shear per floor based off of their relative stiffness; the longer walls being in the critical direction are also the longest and thickest of the shear walls used on site.

Story drifts were also calculated for the entire building and resulted in ~ 3" displacement of the top shear wall to the ground. Though this value is small (corresponding to drift limit of $L/700$) it is within a reasonable drift given the analysis methods.

Shear wall "1", the east-most shear wall was spot checked for shear and flexural reinforcement as well as for overturning. This element was designed to resist the required shear based on the shear forces derived from ETABS, and passed the check while using the same reinforcement as specified in the drawings. After inspection of overturning moment it was found to be counter acted by the building and wall self-weight so that no tension needed to be countered by a foundation system.

This report is limited to analysis based on the most current design documents made available for the Renaissance Schaumburg Hotel and Convention Center by the lead structural engineer and architecture firm. Its function is to provide a detailed description and analysis of the lateral system currently in use. Simplified sketches have been included to further explain system layouts and details. Please see the appendix for other figures. This report will further detail the analysis of lateral force resisting shear walls constructed as part of the design of the Renaissance Schaumburg Hotel and Convention Center.

