



Existing Structure

Floor System

Levels ground through three consist of a two-way mild reinforced concrete slab. Slab thickness is 9" with typical 9'x9'x4" drop panels around the columns. The bottom reinforcement in the concrete slab consists of #5 bars at 12" o.c. each way, while the top of slab reinforcement varies in reinforcing bars.

Framing plans are typical for the hotel guest room floors 4-11. The existing structural floor system is a two-way post-tensioned reinforced concrete flat plate. Thickness of the slab is 7-1/2" while the concrete is specified to reach a compressive strength of 4000 psi. Reinforcing the bottom of the slab is a mat of #4 bars 30" o.c. in each direction. The top reinforcement has various sizes of bars placed in each direction. Typical forces applied on tendons are 295^K in the East-West direction while 24^{K/ft} in the North-South direction. On the interior of the system, tensioning of tendons was achieved, by two pour strips 4'-0" that were left unpoured so anchors could be set. Strips were then poured at a later time.

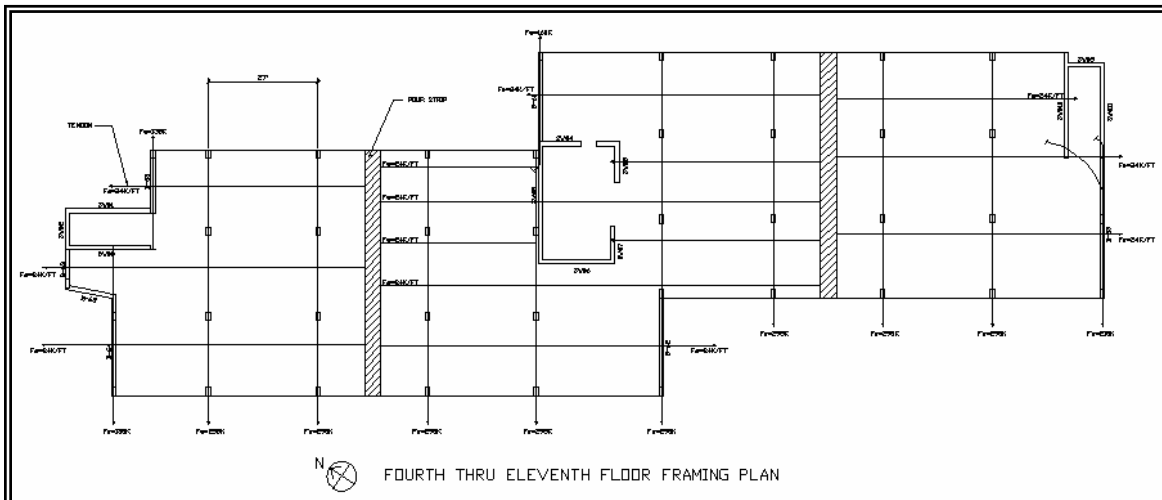


Figure 1: Typical structural floor plan

Columns

Rectangular reinforced concrete columns carry gravity loads from the floor systems in the building. Columns are typically spaced 27'-0" o.c. and vary in sizes seen

in Table 1 below. Compressive strengths specified for columns located on floors 4-11 are 4000 psi, while the remaining lower floors are specified for 5600 psi.

Table 1: Rectangular column sizes

14x14	12x12
14x26	18x18
14x76	18x26
16x16	26x14
16x28	

Lateral System

Twelve reinforced concrete shear walls comprise the lateral load resistance system. Eleven of which span the building height and are located in three locations: 3 walls around two stairwells located near either edge of the north and south sides, and 5 walls are located around an elevator core in the center of the building. The twelfth shear wall is located on the North side of the building and only spans vertically from foundation to the second floor. Shear walls are 1’-0” thick and are specified to reach a 28-day compressive strength of 4000 psi. Figure 2 shows the 11 shear wall locations on a typical floor plan.

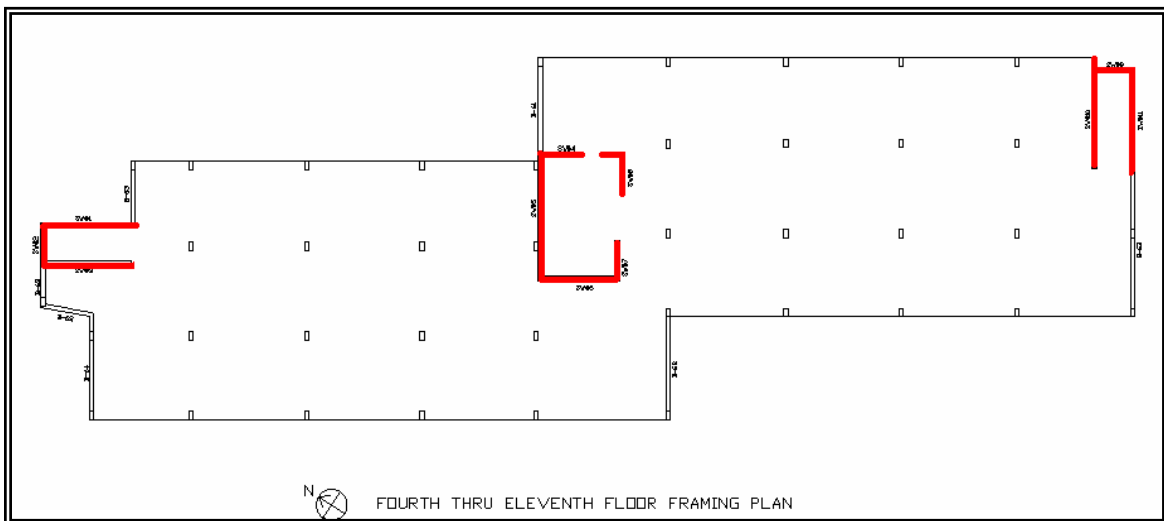


Figure 2: Shear walls on a typical floor plan

Adjacent Structure

The double-heighten ballroom, adjacent assembly room, pool area, and main entrance spaces are all enclosed by a structural steel system. For recognizable purposes this area of the building is being called the “adjacent structure”, though the structure is fully integrated into the building with no building expansion joints. Area of the “adjacent structure” is outlined in red in Figure 3. This structure will remain constant for thesis study. The pool area on the second floor is framed by epoxy-coated reinforced concrete beams and slab.

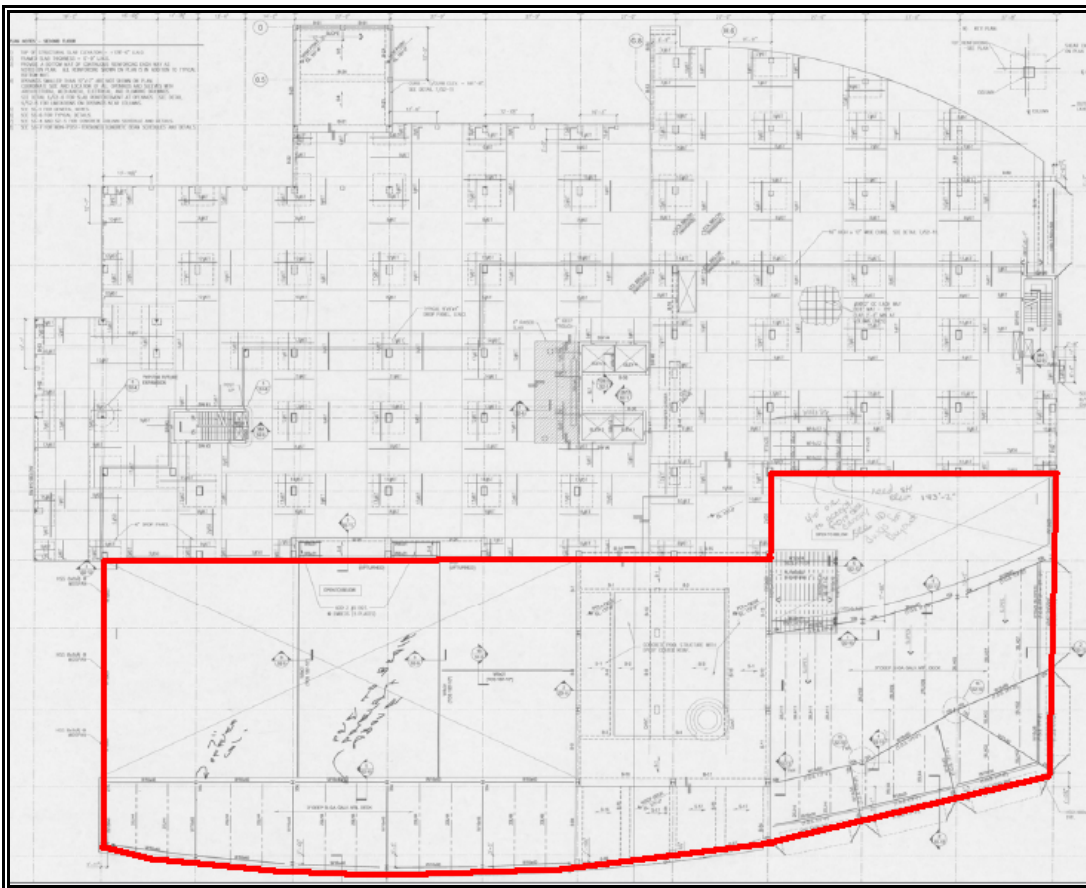


Figure 3: 2nd Floor plan with highlighted “Adjacent Structure”