



## **Existing Structural System**





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The existing floor system in George Read Hall is composed of a Hambro composite floor system. This system uses 14" deep 50 ksi steel joists working compositely with a 2<sup>3</sup>/<sub>4</sub>" concrete slab. The joists are spaced at 4'-1<sup>1</sup>/<sub>4</sub>" on center and typically span 23'-6" with an interior span of 6'-0" for the corridor. Typical bays are shown on pages 13 and 14.

Bearing walls are 16 gauge, 50 ksi cold formed metal studs. The first floor is supported with 3-6" studs @ 16" on center. A typical bay is 26'-8" x 23'-6". Interior first floor framing consists of wide flange beams of various sizes. The first floor interior framing differs from the upper floors due to the need for more open space as required by the lounges. The second floor metal stud framing consists primarily of 3-6" studs @ 16" on center. Framing under the second floor hallway is wide flange beams, with the typical size being a W14x53. These interior hallway beams are located on each side of the 6'-0" wide hallway. The interior beams are replaced by metal stud bearing walls under the hallway in the third through fifth floor framing. The third through fifth floor framing is very similar. The third floor bearing walls consist mainly of 2-6" studs @ 16" on center. The fourth and fifth floor bearing walls are built with 1-6" stud @ 16" on center. Roof framing on George Read Hall consists of prefabricated light gauge metal trusses at a maximum of 4'-0" on center with 1<sup>1</sup>/<sub>2</sub>" 22 gauge galvanized metal deck. The roof trusses span 54'-0" with two intermediate supports located 23'-6" from each exterior wall.

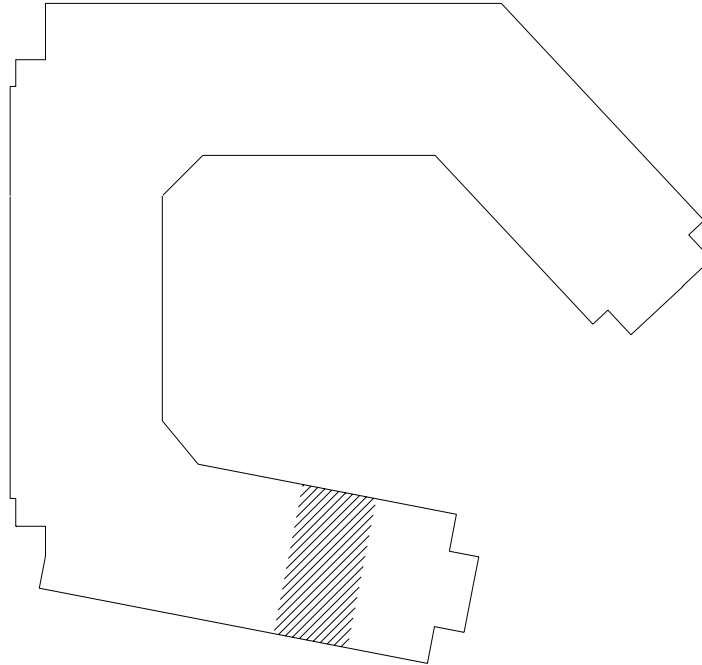
The foundation is comprised of a combination of continuous and spread footings. The continuous footings range from 3'-0" wide to 7'-0" wide and are 1'-0" deep reinforced with continuous #5 bars. Fifteen



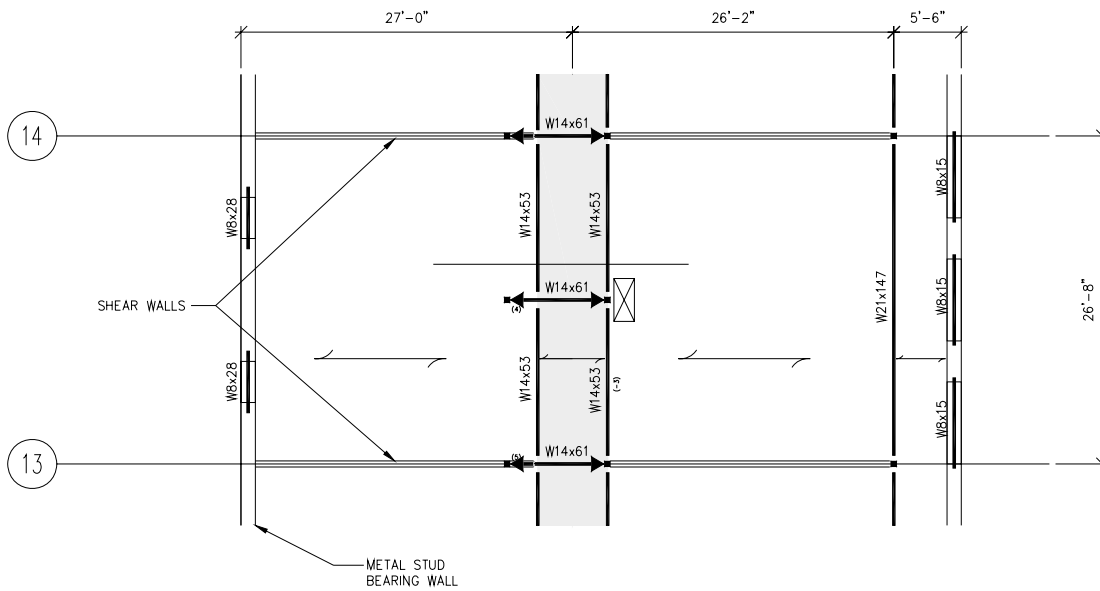
different sizes of spread footings are used ranging from 3'-0" wide x 3'-0" wide x 1'-0" deep to 10'-0" wide x 10'-0" wide x 2'-3" deep. These spread footings carry the concentrated loads from the interior columns.

Reinforcing for the spread footings are either #5 bars or #6 bars. The footings were designed using a soil bearing capacity of 4000 pounds per square foot (psf). Basement walls are 1'-4" thick with #4@12 both ways in both faces. The basement floor of George Read Hall is a 5" thick slab on grade with 6 x 6 - W1.4 x W1.4 welded wire mesh. Slab control joints are located so that there is a maximum of 40 feet in length along any one side with a maximum uninterrupted concrete area of 1200 square feet.

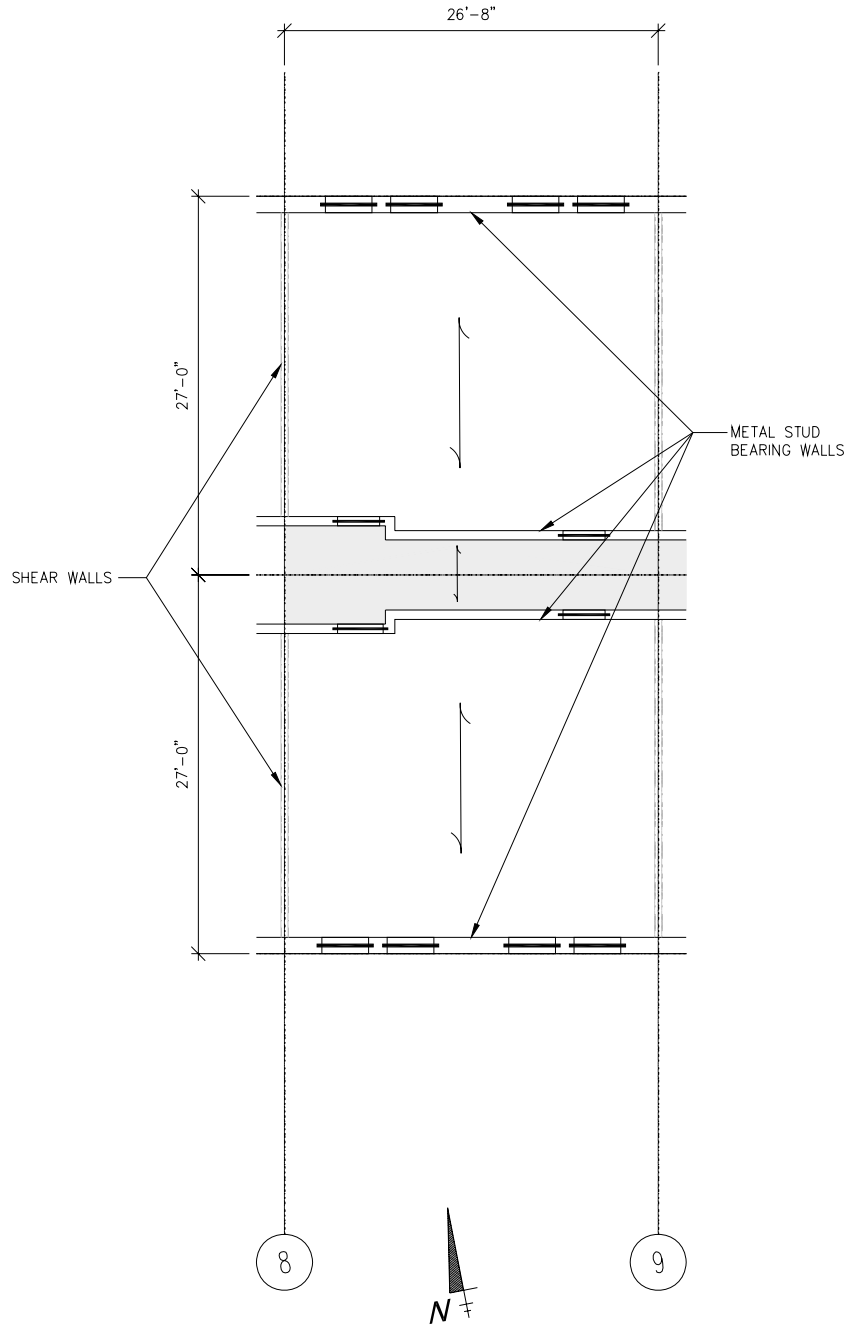
The lateral force resisting system of George Read Hall is X-braced shear walls. The shear walls are located along typical bay lines. First floor shear walls consist of X-bracing using 2-4<sup>1/2</sup>" metal straps. The second and third floor shear walls are X-braced walls of 2-4" metal straps. Fourth and fifth floor shear walls are 2-3" X-braced metal straps. The building footprint is shown on the following page, with the typical bay area represented by the hatching. The shaded area on the typical bay diagrams shows where the live load is 100 psf as required by code. The complete floor plans and building section can be seen in the appendix.



**Figure 1: Building Footprint**



**Figure 2: Typical Bay with Interior Beams**



**Figure 3: Typical Bay with Interior Bearing Walls**