

Executive Summary



This report consists of a detailed description of the structural system and a structural analysis of a typical bay and braced frame in the William W. Wilkins Professional Building.

The Wilkins building is a 6 story medical office building located in Columbus, Ohio. It is essentially an addition to the Grant Riverside hospital across the street. These buildings are connected by a pedestrian bridge from the third floor. Enclosed by brick veneer, precast concrete and spandrel glass panels the exterior is non-load bearing.

The structural system for the Wilkins building begins with caissons drilled 25'-2", on average, to rest on soil with a bearing value of 16,000psf. On each caisson is a pier. Framing into the piers are grade beams. The ground slab is 4" concrete reinforced with 6x6-W1.4xW1.4 welded wire fabric (WWF) sitting on 6" porous fill. Floors 2-6 consist of a 3 1/2" concrete slab on 2" 18 gage composite steel deck welded to the support steel. These slabs are reinforced with 6x6-W2.1xW2.1 WWF. Floor framing generally consists of a W16x31 beam connected compositely to the floor slab. Beams frame into a W24x55 girder. Columns are ASTM 992 Grade 50 rolled W12 steel shapes.

The lateral system consists of V-bracing. Lateral bracing is located on the North and South faces of the building in the West end bay. Additionally there are two braced frames spanning North-South and one spanning East-West in the stairwell, elevator shaft area.

A spot check was performed on a typical floor and roof bay. For the most part the results of these checks showed that the building was somewhat over designed. In addition to floor bays a check was made on a braced frame resisting North-South lateral loads. I found from my lateral analysis that seismic was going to control in the North-South direction. At this time I do not have the actual seismic loads calculated. My lateral analysis resulted in far higher forces in bracing members than the original design accounted for. These differences could be for several reasons which will be discussed in detail later in the report.