Beam Design
Beams run horizontally between the columns right underneath the floor. Their main purpose is to hold up the floor, but beams are also important for holding the building together. They are designed to handle bending moments, in addition tension forces, compression forces, and shear forces caused by all of the forces that act on the building.

When a beam is exposed to a moment, it bends slightly, putting the top of the beam in compression (pushing together) and the bottom of the beam in tension (pulling apart). The concrete of the beam handles compression perfectly well, but it needs steel reinforcement to handle the tension forces. The graph below shows the moment acting on a specific beam at each point along its length. In designing the reinforcement for the beam, we needed to make sure that the beam would be able to handle everything it needed to.

Column Design
Columns handle mainly axial compression loads, but also may encounter axial tension and bending moments.
Axial compression is resisted mainly by concrete, tension is resisted by the steel reinforcement, and moments are resisted by both.
The curves at right show the capacity of the three column types to resist axial force and moment simultaneously, and the plotted points represent calculated values of axial force and moment for different loading scenarios.