The Loading on a Diagrid

The loads in a Diagrid structural system are continuous and uninterrupted. This is due to the fact that the Diagrid structure is redundant with a simple shape. The Diagrid has the benefits of using the both a hollow tube and a truss system. The way the elements in the Diagrid are angled allow the forces to flow naturally through the system, which allows the gravity and lateral loads to be...
transferred from the system into the ground. The vertical gravity loads travel through the diagonal members. However, without the horizontal rings the structure would buckle if only the triangular shape handled the different loads. A second degree of stiffness is adding to the system when the nodes of the triangulation are connected in a ring around the structure.

Diagrid Node

"The diagrid system offers several advantages in addition to eliminating perimeter columns. Most notably it optimizes each structural element. Typically, columns are used to provide vertical-load-carrying capacity, and diagonals or braces provide stability and resistance to large forces, such as wind and seismic loads. But Rahimian [structural engineer for the Hearst Tower] says that diagonals and braces 'want' to participate in the vertical load transfer, and the columns want to participate in the lateral load under ideal assumptions in a typical high-rise. In a diagrid system the two functions are
married, he says. ‘The columns and diagonals and bracings are all one.’”

- "Landmark Reinvented" by Brian Fortner

Floor Plates Attached to Diagrid

In this picture, notice how the floor plates seem to be randomly attached to the diagonal steel beams. As long as the floor plate is not attached to the node, then the only load that is transferred from the floor plate to the steel beam is a gravity load. Also, the Diagrid does not transfer any loads onto the floor plates.