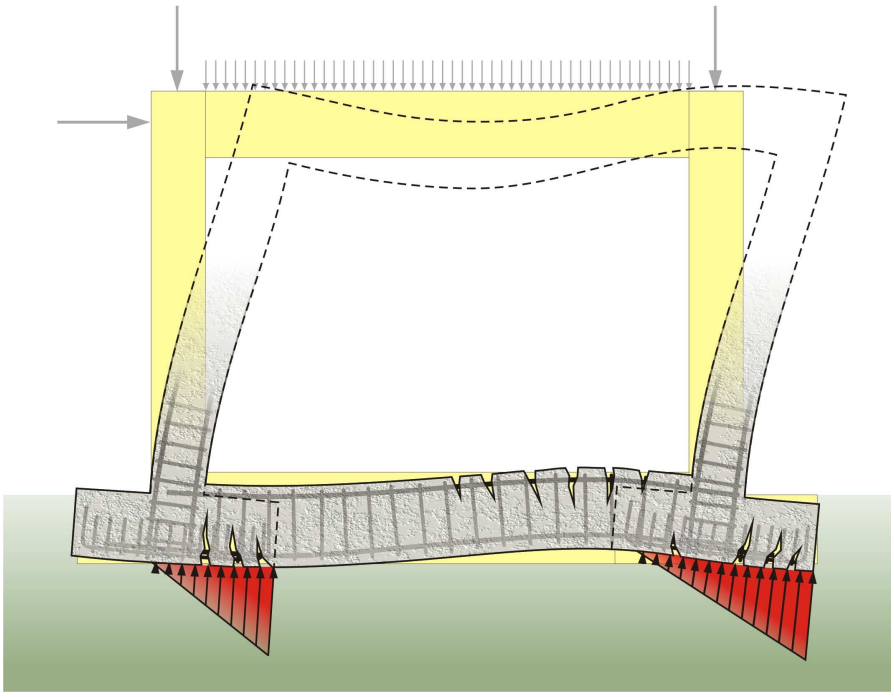
When no seismic forces are applied, the soil stresses have an almost orthogonal form and the spread footings together with the connecting beam are roughly deformed.

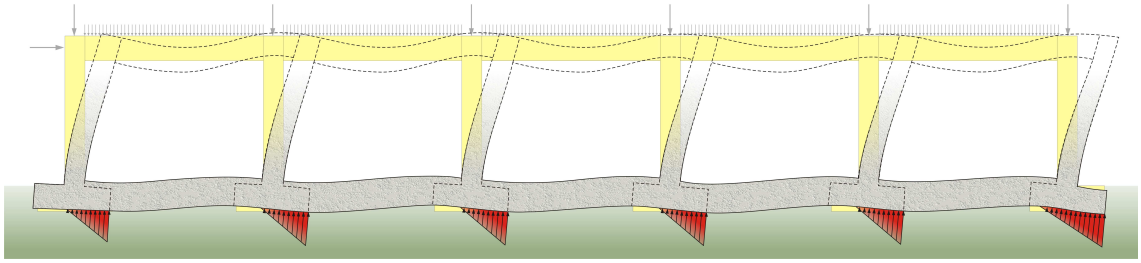


Frame's behavior when the earthquake forces are applied to the +x direction

In the duration of an earthquake, both spread footings work in a satisfactory level. The one is over-stressed thus creating larger soil pressures while at the same time, the other one is relieved. When the earthquake shifts direction, the stress conditions reverse. The connecting beam is subjected to large and continuously changing deformation and stresses.

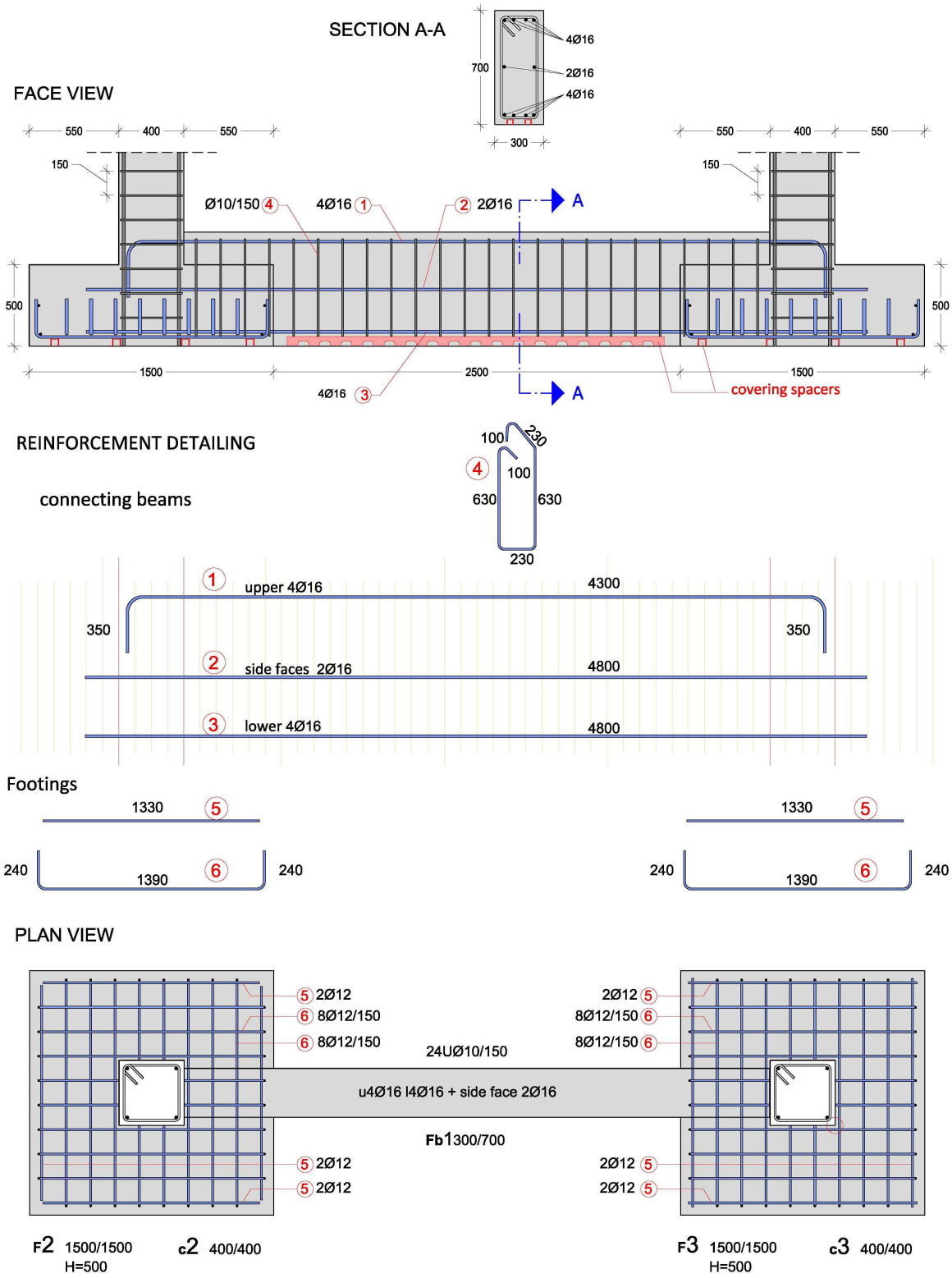
Notes:

1. *In a multi-column frame with spread footings and connecting beams, the behavior of the former, in a seismic event, is satisfactory. The boundary spread footings are over-stressed (or slightly under-stressed depended upon the earthquake's direction). <project: foundation125>*



2. *The earthquake causes reverse stresses in every part of a connecting beam thus applying almost the same flexure at the upper and the lower fiber.*

The following figures show the plain view, the elevations and the detailing of the two-column frame foundation reinforcement of the example:



Foundation reinforcement of a two-column frame <project: foundation121>