

# BUILDING RESPONSE TO TUNNELLING

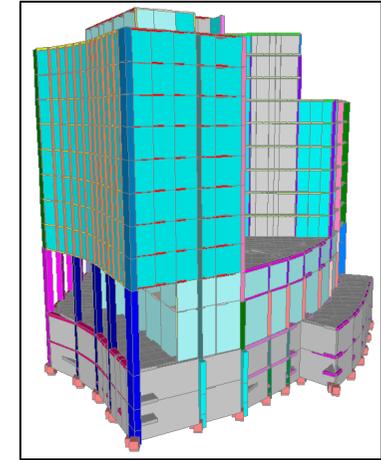
Owner: M4

Client: ASTALDI

Country: ITALY

Period: 2016

TECON SOW: *Building response analyses for the Underground Line4.*



## **Work description**

During the design phase of new Milan Metro Line 4 all buildings crossing the line route were analyzed in order to prevent damages while tunneling.

Building damage due to excavation-induced ground movement is evaluated using a damage criterion based on the average state of strain in the distorting portion of the structure, and by considering the effect of building shear stiffness on the distortions imposed by the ground settlement profile.

For those buildings that after a first-level analysis were considered critical (with a damage class  $\geq 2$  following Boscardin and Cording Criteria), a more refined analysis is required in order to analyze their exact behavior while tunneling, and, in case, to avoid serious damages with preventive actions.

## **Tecon services**

Second Level Analysis based on three dimensional FEM analyses of several buildings subject to TBM settlement fields.

