ii. Abstract.
ABSTRACT

Title: Affections study to the surroundings of an urban tunnel
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The consequences associated with excavations and tunnel constructions must be evaluated not only for elements of the structure, but also for those around the job site. The movements induced on the ground due to the excavation activities, result on stresses on the job site that eventually could be transferred to the near structures, so the structure under construction would exhibit damages not only on its own structural and architectonic elements, but also on the near buildings.

The case study of the present investigation fits perfectly in this context, where the excavation jobs could be a risk for the buildings near to the job site. This project is part of the expansion of the second metro lane of TMB in the city of Badalona (State of Barcelona) between the current station in Pep Ventura and the future station of Badalona Center. The expansion of the second lane is defined as the construction of a fake tunnel composed of a space formed by walls in an urbane surrounding, with a span of 3 meters between the facade of the building and the wall.

The development of the present document wants to take advantage of the high levels of auscultation related with the control of movements of walls and the facade of buildings to show the possible damages to the surroundings of the longitudinal route of the expansion divided in three sections for study.

The expected movements of the walls have been analyzed and compared to the values obtained from the auscultation on the inclinometers near to the walls located in the points of interest. In the same way, the data of the expected and obtained movements from the installed instrumentation on the facade of the buildings under investigation (Leveling Nail and Prism) have been related with the estimated and predicted damages from the models.

In general words, it can be concluded that the expected movements were always inferior to the measured ones in the different times of exploration, reason why no related cause-effect situation was found between the possible damages in the buildings and the excavation activities for the tunnel.