



# ASSESSMENT OF SEISMIC FAULT RUPTURE, GROUND DEFORMATION AND SUBSIDENCE HAZARDS at the Ford-Otosan Automobile Assembly Plant Koçaeli, Turkey

## PROJECT DESCRIPTION

The August 17, 1999 earthquake in Turkey caused:

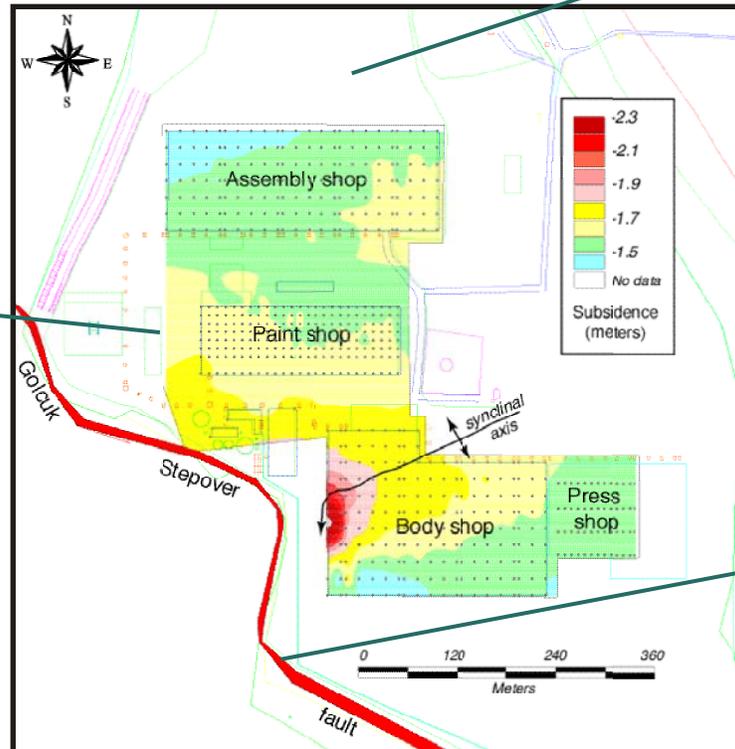
- Surface fault rupture along the southern perimeter of the Ford-Otosan Turkish Automobile Assembly Plant.
- Significant damage to Ford-Otosan's new buildings, especially to the body shop, where the columns were tilted.
- Regional subsidence of as much as 1.5 meters where the main plant buildings are located.
- Synclinal warping and secondary faulting associated with a step in the main fault, at the Golçuk stepover.
- Lateral slumping and spreading of sediments into the Marmara Sea to the north of the property.



We reviewed and mapped liquefaction features



We mapped structural deformation due to subsidence



Geologic field mapping of the fault zone and quantitative analysis of subsidence in the area of the buildings



We performed paleoseismic trenching

## SOLUTION

Earth Consultants International was asked to evaluate the probability of another similar earthquake occurring during the lifetime of the plant. Paleoseismic trenching confirmed the historic record of large earthquakes, separated in time by about 200 years. This evidence was critical to assessing short and moderate term risk. It was determined that the Ford-Otosan plant has a low probability of experiencing a similar earthquake in the next 50 to 100 years. However, it will likely experience smaller earthquakes (aftershocks) generated by the same fault system, and lower, attenuated ground motions as a result of earthquakes on other faults some distance from the site. Based on these results Ford-Otosan decided to rebuild the plant rather than moving their facility elsewhere.

