

D8 motorway Dobkovičky landslide: the case history and repair options

Petr Kycl

Czech Geological Survey, Czech Republic

The plans for a highway connecting Prague with Dresden have been debated since 1930's. The German engineers planned "Autobahn A72" already in 1938. Construction of the first 4.2 km of totally 92 km long D8 motorway began in the section 0806 Řehlovice – Ústí nad Labem nearly 50 years later in 1984. The construction of the last remaining 16.2 km in the section 0805 Lovosice – Řehlovice was launched in 2007. This section crossed České středohoří Mts. which represents geologically most complex and problematic part for the motorway, in particular due to the presence of large area of dormant and abandoned landslides know as "Prackovice landslides" intersected by the motorway.

On Friday, June 7th 2013, the works were interrupted and the motorway under construction was damaged when heavy rains triggered a landslide near village Dobkovičky (km 56.3–56.5: fig. 1).



Fig. 1: Damaged motorway D8 which was under construction at the time of landslide.

The damage was not restricted only to the motorway (fig. 1) but also affected the single-track railway Lovosice – Teplice between the stations Dobkovičky and Radejčín (fig. 2). The railway was completely destroyed in the length of 200 m, including a 6 m high embankment.



Fig. 2: Destroyed railway.



Fig. 3: Damages in the Dobkovičky quarry.

Site investigation

The site investigations of the landslide lasting for two months and carried out by the AZ Consult Company began at the end of April 2014 (fig. 4). The survey comprised 15 boreholes (of which 4 were inclinometric, 6 hydro-geological and 5 engineering geological) complemented with 2 dug holes and 7 geophysical profiles. The aims of the investigations were to determine surface of rupture (fig. 5), geotechnical properties of the soils and rocks necessary for the stability calculating, effect of the superficial and underground water and finally to create the geotechnical model of the landslide.



Fig. 4: Site investigation – borehole HV103.



Fig. 5: Surface of rupture in dug hole KS-1.

Remediation – I. phase

Finally, the remediation works started on November 18th 2014. The first phase comprised excavation of 80.000 m³ of the slid masses from the upper part of the landslide. At the same time, superficial drainage channel has been realized. When measurements confirm the landslide is stable, the II. phase can be approached.



Fig. 6: Excavation of 80.000 m³ in the upper part.



Fig. 7: Final form of landslide in the upper part.

The tender for the project of the II. phase has been actually announced. The II. phase will include deep drainage and static elements in the line above the motorway. The static elements will be probably based on the underground piles or wall segments (“T elements”). The start of the II. phase is expected for the turn 2015/16. Finally the landslide accumulation from the motorway can be excavated, and reconstruction of the asphalt surface and drainage of highway will follow. December 2016 is the actual deadline for opening of the D8 motorway.