

## **Short Paper by Infrassure**

### **Verifying design criteria during construction works**

#### Type of Insurance:

CAR – Extended Maintenance Period  
Design Exclusion LEG 2

#### Description of Damage:

Landslide damaged motorway and embankment during extended maintenance period

#### Claimed amount:

EUR 1 200 000

#### Description of Incident and Loss Prevention Measures initiated:

The construction of a motorway in South East Europe included tunnels, bridges and comprehensive work on slopes. An embankment had to be cut into a hillside with a slope above the motorway being safeguarded with soil anchors and then stabilised with wire netting a stone layer and spray concrete. After 22 months of operation a landslide occurred along approx. 30 meters. Ground material was spilled onto the motorway and damaged side rails. The road had to be cleared, crash barriers renewed and the slope reinstated on a different design which meant considerable increased costs.

### **Background**

Soil investigation was carried out by an external design institute prior to the construction works. Probe holes were drilled before designing the project, samples taken – in hindsight insufficient and not fully representative.- and tested in the soil laboratory, the subsequent soil report formed the basis for the design for the motorway construction.

No drilling was done in the area affected by the later hang slide and locally complicated layer structures were not noticed in detail The design was carried out - of course not on site -before tendering and awarding the contract.

Works were carried out as designed; deviations from the assumptions of the soil report were observed but considered as normal. Due to insufficient local soil information anchors were too short (within the slip circle) and therefore ineffective. Moreover, the anchoring of the slope soil was calculated on that samples was only sufficient for an inclination of 1:1.334 but in reality and following the soil conditions actually encountered the inclination was 1:1.15. Minor slides during construction in the area affected went unnoticed; the need to reconsider the design parameter was not seen by the contractor nor the principal's survey engineers or soil mechanics.

The loss occurred during the maintenance period of 24 months, shortly before its expiry and after a period of strong rainfall which was considered “in no way unusual”. Property cover had already been taken out when handing over the road and taking it into use, but it clearly excluded any design related losses. However, rainfall was not considered to be the root cause. Therefore, following the opinion of the loss adjuster the insured resorted to the EAR policy

### Coverage

The wording contained a design exclusion of “all costs due to defects of materials or workmanship and/or stemming from errors in design, plans and specifications”. which corresponds to LEG2. In respect of the extended maintenance it would cover any loss “arising from a cause occurring on the construction site during the construction period”.



Situation shortly after the landslide occurred



During reconstruction, note third party property above

### **Claims handling and settlement**

As the design had been carried out before the insurance period and not on site insurers considered this loss at first as not covered.

The loss adjuster commented that “soil conditions actually encountered did not comply with the assumptions in the earth stress analytical analysis and therefore the embankment collapsed”(sic). He concluded that the proximate cause was a combination of faulty original design with the failure on site to take notice of the difference between actual soil conditions and those anticipated and not to change the design and construction accordingly.

The loss was claimed under the extended maintenance extension of the CAR policy.

An independent legal opinion based on UK law. came to the same conclusion in so far as not questioning and reconsidering the design (which only in hindsight was considered inadequate) was an omission resp. negligence which constituted the root cause of the hang slide and that this omission had occurred on site and during the insurance period.

It also concluded that this failure to question the original design overruled the design exclusion.

Following the recommendation of lawyers the claim was settled on a commercial basis with 450.000 Euro.

### **Conclusion / lesson to be learnt**

Design exclusion may not prove watertight as any design-related loss may be arbitrarily ascribed to an omission on site and during the insurance period to verify underlying design assumptions. In order to maintain a valid design exclusion, underwriters may wish to get further underwriting info on the quality of underlying investigations, design aspects and ongoing review of its adequacy during construction works.

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