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GROUP REF. : B2
PREF. SUBJECT : PS1
QUESTION N° : 1.9

1. Background

A new overhead transmission line (OHL) required constructing to ensure a stable power supply, but it was difficult for the transmission line route to completely avoid large landslide zones. Therefore, landslide countermeasures in terms of design and construction were considered, taking into account the long-term risk of OHL.

2. Procedure for taking countermeasures

Countermeasures for landslide are decided by below steps:

STEP1: Investigation of landslide area

There are a lot of landslide block in the area. So desk study and site investigation are performed to make the scale and the activity of each one clear. For example, bending of trees, a crack of road and retaining wall show the features of landslide in site investigation.

STEP2: Evaluation of the risk in each site

The risk on stable of each tower site is related to landslide activity. The more active a landslide block is, the higher the risk is in such area. Each site is evaluated from STEP1's result as follows.

- ✓ Non-active: there is no features of landslide.
- ✓ Low risk: landslide can be active with low probability (e.g. small collapsed terrains are found).
- ✓ Medium risk: landslide can be active with high probability (e.g. sharp landslide scarps, springwater, swamp are found).
- ✓ High risk: landslide is active (e.g. large crack on rocks, displacement of a road are found).

STEP3: Selection of the countermeasures for landslide

The relation between evaluation result and countermeasure is shown as follows:

- ✓ Non active: there is no need for measures.
- ✓ Low risk: reinforcement of foundation in consideration with earth pressure is performed. This is because the foundation can get earth pressure when the landslide proceeds. It is considered in design of foundation. And it gets tougher design than normal one which is not considered for the effect of earth pressure.
- ✓ Medium risk: preventive piles for landslide are installed in addition to the countermeasure in case of low risk. This is because just reinforcing foundations are not enough to deal with landslides. Piles work is performed together with foundation work.
- ✓ High risk: avoid tower construction.

3. Conclusion

The route of OHL are evaluated and appropriate measures for landslide are selected in consideration with the investigation result. Although the OHL has been under construction for more than 10 years, no landslide impacts have been observed, and these assessments suggest that the long-term risk has been reduced.