

## ***Interactive comment on “Evaluating the Efficiency of Subsurface Drainages for Li-Shan Landslide in Taiwan” by Der-Guey Lin et al.***

### **Anonymous Referee #2**

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#### General Comments:

An interesting case study that highlights the role of drainage systems to reduce pressure heads within a landslide area is presented in the paper. The manuscript is clear and the scientific quality is generally good, although some parts lose strictness and need to be strengthened and improved. The structure of the paper can be improved, since a literature review on the specific topic (stabilization of large landslides with deep drainage interventions) lacks in the current version of the manuscript and must be added. Probably, the initial part of the manuscript (that is the general description of the landslide and the drainage works; sections 1 and 2) is too detailed and can be shortened, thus leaving space to the state-of-the-art discussion. In some parts the text is prolix, while the authors should better highlight the specific contribution of their scientific work.

C1

#### Specific comments:

- A specific section on the subsurface hydraulics of the slope before intervention (from where the authors have started in their study) is needed, so that pre-intervention field measurements, monitoring stations, soil hydraulic parameters, along with the results of pre-intervention seepage analyses should be reported in detail. This part could be really helpful to clarify the role of drainage in the slope hydraulics.
- The authors should better clarify the choice of assigning in their seepage analysis a "free seepage surface boundary condition" to the horizontal drainages, instead of a zero pressure head boundary condition. The current explanation of the choice is unclear.
- How were the soil strength parameters reported in Table 2 chosen? This point requires a discussion from the authors.
- Vertical scale in Figure 15 is not adequate. The authors should enlarge the scale of y-axis, so that the trend can be better appreciated. In particular, it seems that in Fig. 15a the simulation is not capable of catching the effect of cumulated rainfall, as observed in reality.
- Table 4: it is unclear why  $F_s$  values increase during the rainfall history. This is not possible, since the effect of drainage should be a lower reduction of  $F_s$  respect to the pre-intervention situation, but not an increment.  $F_s$  could eventually increase in the long-term due to the effect of a drainage, but not during a rainfall event. A comment from the authors on this point is required. Also, vertical scale in Fig. 20 should be enlarged to appreciate the trends.
- Related to the previous point, it is unclear why groundwater level in Fig. 21 lowers as respect to the initial groundwater level during a rainfall history.

#### Technical comment:

- section 3 is completely repeated in section 4. Please remove section 3.

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