

Design of tunnel construction in landslide prone areas

When road structures, such as tunnels, are constructed in a landslide location, initial misrecognition of the size can cause damage to them, resulting in costly expense to mitigate landslide movement, or even being forced to abandon them. This study investigated through major manuals regarding tunnel route designing, to find out that in the current system appropriate recognition of landslide sizes is very important in the primary investigation stage of the process. This is because, if once route locations are determined in the stage, their changes are hard to make due to political and financial reasons. Misrecognition, mainly caused by those poor qualities of maps to identify landslides, can be reduced by utilizing detailed topographic information from airborne LiDAR data together with field survey in the stage, although the technology still costs.

In some locations, tunnels are designed to go through under landslides. This study also provided five numerical models employing parameters of relative tunnel locations to a landslide, and geological and topographical conditions, to suggest a safe distance of tunnels from landslides in various locations.

Keywords: Tunnel route setting, Landslide size, Safe interval distance, Airborne LiDAR, Numerical model