

## Development of Inspection and Investigation Techniques to Prepare Debris Flow in Urban Areas

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### Abstract

Due to the urban development, various facilities are located in mountainous areas near the city, and the damage to the occurrence of the debris flow is increasing in the urban area. However, quantitative inspection and investigation techniques are not sufficient for preparing debris flow in the urban area around the world.

Therefore, in this study, we developed the debris flow inspection and investigation techniques, which are suitable for urban characteristics, regarding the soil hazard prevention and restoration in urban area.

First, the inspection and investigation system is divided into the daily occurrence and the occurrence of the soil hazard event, and the inspection / investigation flow chart were developed based on the kind of inspection and correspondence required for each situation.

The types of inspections applied in this study were determined as daily inspection, regular inspections, special emergency inspection, damage emergency inspection and In-depth safety inspection. The management agency, term of inspection, objects to be inspected, and contents of inspection work were presented according to type of each inspection.

The daily inspection routinely checks for signs of collapse and conditions of facilities in urban areas which show vulnerability for soil hazard and that are conducted from the management agency. In the case of regular inspection, an expert for soil hazards regularly conducts detailed visual surveys on mountainous areas, steep slopes, prevention facilities and adjacent facilities in vulnerable areas. On the other hand, it was decided that the emergency inspection is carried out in the event of the occurrence of vulnerable element or soil hazards.

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