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Features of Slope Disasters on Roads by the Heavy Rainfall in Chugoku and Northern Kyushu Area in July 2009

Ken-ichi Asai[1*], Hiroyuki Hayashi[2], Yasuhito Sasaki[3]

[1]Public Works Research Institute, [2]Public Works Research Institute, [3]Public Works Research Institute

We collected 90 cases of the slope disasters on national and prefectural roads by the Heavy Rainfall in Chugoku and Northern Kyushu Area in July 2009, and examined the characteristics of these slope disasters.

More than 50% of disasters are surface collapse at cut slope, about 20% are the collapse of the embankment and road shoulder. On the other hand, the natural slope surface failure is about 15% less. And most of debris flows occurred locally around Hofu city.

The geology of the disaster area is mainly consisted of granites, schist, and Tertiary sedimentary rocks, and both of these are remarkably weathered. Many cases of the collapse occurred in "non-Valley" slope such as the cut slope on the ridge, and the relatively few cases occurred in the valley. Some cases of the collapse of embankment and road shoulder is influenced by the concentration of the water flowing on the road.

Slope disasters occurred not only in the heavy rainfall area, but only in a few rainfall area. Many disasters are caused by weathering over time of cut slope, surface water on the road, watershed change by land development around the road, and cut in small valley by the new or widening road. These causes are not focused on previous patrols and inspections. And also there are many cases that a small valley remains still above the cut slope and no countermeasures against soil flow.

These disasters reveal the problem that the present countermeasures have been mainly protecting slopes but have not been specifically cut off sources of surface water. Disaster risk and road maintainance costs can reduce in the future, implementing measures against surface water, for example, to disperse surface water.

Keywords: slope, disaster, heavy rainfall