Geophysical Research Abstracts
Vol. 17, EGU2015-2119, 2015
EGU General Assembly 2015

Study Of The Risks Arising From Natural Disasters And Hazards On Urban And Intercity Motorways By Using Failure Mode Effect Analysis (FMEA) Methods

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Highways, Located in the city and intercity locations are generally prone to many kind of natural disaster risks. Natural hazards and disasters that may occur firstly from highway project making to construction and operation stages and later during the implementation of highway maintenance and repair stages have to be taken into consideration. And assessment of risks that may occur against adverse situations is very important in terms of project design, construction, operation maintenance and repair costs. Making hazard and natural disaster risk analysis is largely depending on the definition of the likelihood of the probable hazards on the highways. However, assets at risk , and the impacts of the events must be examined and to be rated in their own. With the realization of these activities, intended improvements against natural hazards and disasters will be made with the utilization of Failure Mode Effects Analysis (FMEA) method and their effects will be analyzed with further works. FMEA, is a useful method to identify the failure mode and effects depending on the type of failure rate effects priorities and finding the most optimum economic and effective solution. Although relevant measures being taken for the identified risks by this analysis method , it may also provide some information for some public institutions about the nature of these risks when required. Thus, the necessary measures will have been taken in advance in the city and intercity highways. Many hazards and natural disasters are taken into account in risk assessments. The most important of these dangers can be listed as follows;

• Natural disasters
1. Meteorological based natural disasters (floods, severe storms, tropical storms, winter storms, avalanches, etc.).
2. Geological based natural disasters (earthquakes, tsunamis, landslides, subsidence, sinkholes, etc)
• Human originated disasters
1. Transport accidents (traffic accidents), originating from the road surface defects (icing, signaling caused malfunctions and risks), fire or explosion etc.-
In this study, with FMEA method, risk analysis of the urban and intercity motorways against natural disasters and hazards have been performed and found solutions were brought against these risks.
Keywords: Failure Modes Effects Analysis (FMEA), Pareto Analyses (PA), Highways, Risk Management.