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Abstract

DESIGN OF EVACUATION MAPS AS A DISASTER PREPAREDNESS IN TRANGKIL

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Based on identification result can be seen that in Trangkil is high risk area to get disaster and has not had the emergency response system yet especially on evacuation system. Post-catastrophic landslides in Trangkil make a people who live there develop a division of labor Trangkil disaster response team to tackle the disaster that is going on, but the establishment of a disaster response team personnel are still not complete and it is only made incidentally. Therefore, this research aims is make design of evacuation map, to complete the disaster response team which can be used as guidance for Trangkil community if they want to evacuate themselves when disaster come to this area.

This research design is research and development (R & D) with simple design because the research stage only up to the third stage or Main Model Revision of evacuation map, which are constructed by assessment from the key persons in Trangkil area.

The research result show that the evacuation map had been developed by the research team through direct observation in the field and interviews with the key persons. Then the initial design which already had been assessed by local community leaders (for 3 people) through interviews process as improvement input of the evacuation map design

Keywords: maps, evacuation, emergency, preparedness.

A. INTRODUCTION

1. Background

The evacuation process, especially before the disaster will determine the number of victims and the amount of losses that might occur during catastrophic events. As in the Act of Indonesia number 1, year 1970 Section III Article 3 has been set on the terms of work safety is to prevent, reduce and extinguish fires, prevent and reduce the danger of explosion, as well as provide an opportunity or a way to save themselves at the time of the fire or incident occur.

This evacuation becomes very important because the evacuation process is not easy to do on a community that does not respond to the disaster. As mentioned by Gwynne et al that there are four main factors that determine the performance of the evacuation system, namely: configuration/arrangement of land that existed at the housing, factors environmental conditions, reliability of the evacuation procedures were applied, and the most important is the behavior of its inhabitants. Because of the behavior/nature of the occupants is affected by the physical condition, psikhis and sociological.

Indonesia is a country prone to disasters ranging from fires, earthquakes, bombings, floods, volcanic eruptions, landslides and so forth. The incidence of landslides also occurred in Trangkil Semarang. Wherein based on the identification of

potential risks can be seen that in Trangkil which is a disaster-prone areas do not have a disaster response system including an adequate evacuation system especially evacuation maps that can provide guidance for local residents to evacuate themselves when disaster comes. Post-landslide that occurred in Trangkil only made public Trangkil division of labor set up a disaster response team but the determination of the emergency response team personnel are still not accurate and complete, and the team there is still a very incidental. And do not have a comprehensive design-related emergency response system especially mapmaking evacuation.

2. Formulation of the problem

Based on this background, it can be formulated the problem in this research is: "How does the design of evacuation maps that can be used as a disaster response efforts in Trangkil Semarang?"

3. Research purposes

The aim of this study is to develop a map of the evacuation as disaster response efforts in Trangkil Semarang.

4. Benefits of research

This research could provide theoretical benefits that can enrich the scientific field of Occupational Health and Safety (OHS), particularly at the Semarang State University in the form of related references evacuation systems within the community, especially design of evacuation maps. Moreover, it can provide a practical contribution directly to the public in the form of Semarang Trangkil draft evacuation maps that can be used when the disaster come in that area.

5. Theoretical Overview

Evacuation is the rescue of the human soul from one room or building to another place safer in emergencies situation. In addition evacuation also be understood as an attempt to rescue the soul in the fire disaster. Evacuation facilities, consisting of:

1) Assembly point

assembly point is a safe place. Personnel who are not directly involved in dealing with emergencies immediately evacuated from the site toward a safe gathering place.

An assembly point should be clearly marked and equipped with communication devices such as: telephone and radio with an emergency control center. This meeting place should be more than one so that workers are not approaching the scene on the way to the assembly point.

2) Bells/alarm

The Minister of labor regulations No. PER. 02/Men/1983 on the installation of bells/alarms should be installed outside the building and can be heard from the main entrance and close to the indicator panel.

3) Telephone/radio communications

To simplify and accelerate the spread of disaster information can be made through the emergency phone to report a disaster and said location. Thus the reduction efforts can be immediately implemented to reduce huge losses.

4) Directions exit

- a. Directions exit should be installed in other places planned for evacuation.
- b. Evacuation Plan installed in an area easily visible.
- c. Determination driving directions exit must be easily visible, clear and bright from a distance of 20 M.
- d. The distance between the two directions exit of at least 15 M and 20 M.
- e. High signpost way out 2 meters from the floor.

5) Means of egress

Means of egress must be free of any obstacles that might interfere with the evaluation process.

The most important variables or components that can affect a positive public response during the evacuation process is the condition of the risk area and the actions taken by the local government, because local governments should publish a notice that it is the local evacuation orders and disseminate important information during the evacuation process.

B. METHODS

This study uses research and development (R & D) model is a process or steps to develop a new product or improve existing products and test the effectiveness of the model. However, this study used very simple research and development (R & D) model because the research phase only until to the third stage. This study consists of three (3) stages of the process, namely: in the first phase of the study do **basic research and information collecting** is observing sites to the drafting of a map or floor plan of evacuation and identify potential or existing resources in the community through the process of observation and interviews, then on the second stage of this research will be conducted **develop preliminary form of the model** is the development of the draft model form Trangkil evacuation maps in Semarang. While in the third phase, namely the **main model revision** form of draft obtained the repair process of assessment of local community leaders who are competent.

Data collection techniques in this study is through direct observation and interviews. Data were collected by the data collection process will be analyzed and used as input for the draft design improvements of Trangkil evacuation maps in Semarang.

C. RESULTS AND DISCUSSION

Results from this study are as follows:

1. General description

According to the research data collection through field observations note that the vast residential area approximately 216 meters long and 212 meters wide. With a total number of homes \pm 121 homes, which is comprised of several families, among others the number of households for RT 2 as much as \pm 50 families (home), as many as 48 families RT 3 and RT 5 as much as \pm 23 households. Trangkil total population in Semarang as much as \pm 497 people, consisting of women (adult) as much as \pm 121 people, male (adult) as much as \pm 121 women (children aged 0-18 years) as much as \pm 130, and men-Eighteen (children aged 0-18 years) as much as \pm 125 people. While the potential dangers of the most prominent and may occur in Trangkil Semarang were: landslides and fire because the area is quite densely populated with houses very close to each other.

2. The design of evacuation maps Trangkil Semarang.

From these conditions, the researcher's team developed a draft map of evacuation in Trangkil Semarang with the design as follows.



Description :











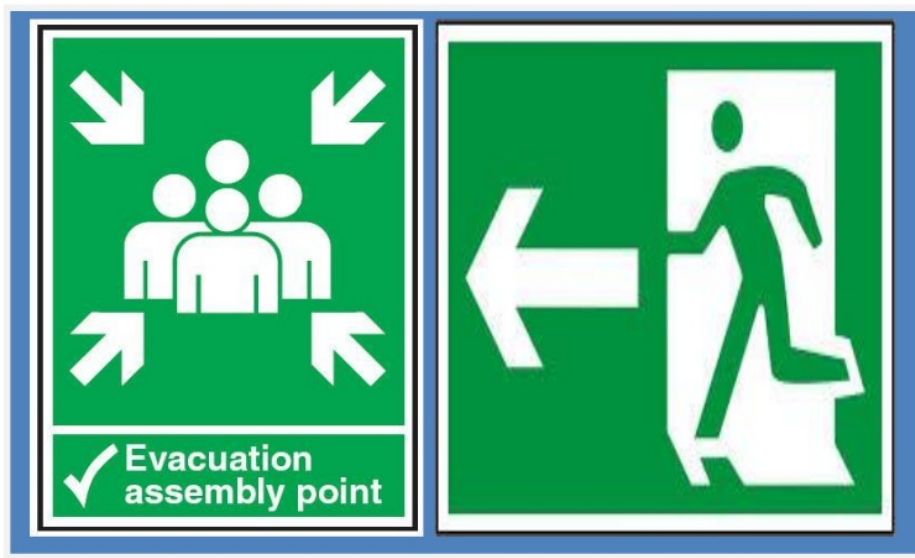
- | | | | |
|---|---------------------------|---|-------------------------|
|  | : Direction of evacuation |  | : Resiko bahaya longsor |
|  | : Signpost evacuation |  | : green area |
|  | : Assembly point |  | : Home residents |
|  | : Hazard warning center |  | : Vacant land |
|  | : Evacuation Map |  | : Mosque |

Figure 1. The design of evacuation maps Trangkil Semarang.

Equipped with an evacuation plan with design directions as follows below.



Of maps designed evacuation can be seen the number of places that have the potential to serve as an assembly point that is as much as three potential areas, with an area where each of ± 92 M2 and the time it takes towards the assembly point $\pm 1-2$ minutes. Meanwhile, if viewed from the means of evacuation is needed installing the evacuation sign, that it can be used to put the sign evacuation route directions are as many as 10 points also needed a bell/alarm disaster marks minimum of 2 bells at two locations of the hardness of at least 6 decibel.

D. CLOSING

1. Conclusion

In this study it can be concluded that the design of evacuation maps have been prepared by a team of researchers through direct observation in the field who were consulted and validated with the assessment of local community leaders (by 3 people), through interviews and the results of the assessment put as inputs to make improvement of the design in this study.

2. Recommendations

In anticipation of possible disasters that may occur in Trangkil Semarang, the advice given in this study are:

- 1) With nongovernmental immediately installing evacuation maps that have been designed, set the assembly points as many as three potential areas as shown in the map, put up 10 points mark the direction of the evacuation of the places which are recommended by maps, installing bells/alarm disaster marks minimum of 2 bells at two locations and the hardness at least 6 decibel, or by mutual agreement utilize the existing potential in the community is by utilizing the “kenthongan” as a bell/alarm in Trangkil Semarang when the appropriate alarms have not been installed yet.
- 2) With nongovernmental complement generated maps with evacuation procedures and establish an emergency response team as an operational step.

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GENERAL COMMENTS

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