

Road Safety Analysis for Nashik District Rural Road Using Different Criteria

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Abstract: We all know that the Road Accidents are major threat in all over the world. This program is designed on the basis of cost comparison of accident and PPE to provide the user such as worker and contractor also with information on establishing an effective Safety Management Program on PMGSY road construction site in Nashik district to help prevent costly work related injuries and to support Workplace safety regulations. In order to prevent costly work related injuries, project overruns and construction related illnesses on PMGSY road construction site with the resulting worker's compensation insurance claims, all employees must know importance of safety, and be properly trained and held accountable for safety. Employees must understand all known hazards presented in their work environment and be able to respond appropriately to unplanned hazards, which may arise.

Keywords—Safety Analysis, Rural Road, Road Accidents, Several Criteria, PMGSY.

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I. Introduction

In India, 15 people die and 60 are seriously injured or disabled every hour in road accidents. Every year more than 1.17 million people die in road accidents around the world. The majority of these deaths, about 70 percent occur in developing countries. Sixty-five percent of deaths involve pedestrians and 35 percent of pedestrian deaths are children. Over 10 million are crippled or injured each year. It has been estimated that at least 6 million more will die and 60 million will be injured during the next 10 years in developing countries unless urgent action is taken. Thus, there is an urgent need to improve safety of the roadway and its adjacent development. Considering this importance of improving road safety

Objectives

- 1 To study the current scenario of rural road related to accidents under PMGSY
- 2 To identify the factors affecting or responsible for accidents, prepare questionnaire and to analyse
- 3 To select the case study of rural roads and study their factors responsible for accidents.
- 4 To Study the level of safety in PMGSY

II. Study Area

Transportation is Very much important factor in our growing economy. In these Road Construction in Rural Areas plays a Vital Role and safety while working is Important. Also Quality of Work is Also Maintained While working On road Construction Site is necessary.

III. Methodology

The fundamental point of this investigation was to evaluate the dimension of security of streets and to organize them. Three distinctive multi-criteria basic leadership procedures have been utilized and analyzed. The most helpless street was chosen in like manner and the basic stretches are distinguished after point by point examination. This will decide the basic parameters in this manner to propose relief measures.

IV. Data Collection & Analysis

2.1 Case Studies-

We are selected two old roads of PMGSY in Baglan District. General Details are as given below-

Table No. 1- Detail of Case Study.

| Particulars | Road1 | Road2 |
|--------------------|----------------------|-------------------------|
| Name of Road | Kersane to Kikwari | Kersane to Kapaleshwar |
| Location | Near Kersane Village | Near Kapaleshwar Temple |
| Taluka | Baglan | Baglan |
| Year of completion | 2010-2011 | 2011-2012 |
| Length of Road | 6KM | 7KM |
| Cost of Road | 175Lakh | 191.86 Lakh |

2.2 Accident Record of Case Study-

This data has collected by local people and from police station at the place where case study has been selected in Baglan taluka, Dist. - Nashik. For this case study we have selected Two PMGSY road having same length and topography and they were complete at same time

Table No. 2-Accidents record from 2013.

| Year | Total Accidents. |
|------|------------------|
| 2013 | 24 |
| 2014 | 16 |
| 2015 | 14 |

2.3 Causes of Accidents as per Criteria -

| Road Characteristics | 2013 | 2014 | 2015 |
|----------------------------------|------|------|------|
| Sight Distance | 5 | 3 | 2 |
| Sharp curves | 4 | - | 3 |
| Severity of roadside environment | 7 | 4 | 3 |
| Shoulder Width | - | 3 | - |
| Potholes | - | - | 2 |
| Blind Turn on Road | 8 | 6 | 4 |

V. Result And Discussion

According to Analysis it is observed that the Alternative, Sight distance, sharp curve, Direct Access from house to road, Blind Turn, Shoulder width, Rutting, Pavement Edge Failure. This are very important factor as safety point of view which is obtained by RII and AHP and Fuzzy AHP method.

For case study four rural road has select. All measurement had taken according to IRC guidelines.

1 According to Accidents record from 2013 to 2015 approximately 15 accidents were happened due to Sight distance is not provided as per IRC. According to IRC sight distance for rural road is above 90 Meter. But sight distance is actually provided at selected road is for Road 1: <90M, Road 2: <90M, Road 3: <90M, which is poor as per IRC and for Road 4: =90 which is medium. According to IRC guidelines the sight distance is not provided properly so the accidents rates is increase.

2 According to Accidents record from 2013 to 2015 approximately 11 accidents were happened due to Sharp Curve is not provided as per IRC. According to IRC Sharp Curve for rural road is above 90°. But Sharp Curve is actually provided at selected road is for Road 1: <90°, Road 2: <90°, which is poor as per IRC and for Road 3: =90°, Road 4: =90° which is medium. According to IRC guidelines the Sharp Curve is not provided properly so the accidents rates is increase.

3 According to Accidents record from 2013 to 2015 approximately 15 accidents were happened due to Severity of roadside environment is not provided as per IRC. According to IRC Severity of roadside environment for rural road is below 90M. But Severity of roadside environment is actually provided at selected road is for Road 1:

>100M, Road 2: >100M, is Road 3: >100M, Road 4: >100M which is poor. According to IRC guidelines the Severity of roadside environment is not provided properly so the accidents rates is increase.

4 According to Accidents record from 2013 to 2015 approximately 8 accidents were happened due to Shoulder Width is not provided as per IRC. According to IRC Shoulder Width for rural road is 1.875 or greater than 1.875. But Shoulder Width is actually provided at selected road is for Road 1: 0.5-0.7M, Road 2: 0.5-0.6M, is Road 3: 1- 1.2M, Road 4: 1.3-1.6M which is poor. According to IRC guidelines the Shoulder Width is not provided properly so the accidents rates is increase.

5 According to Accidents record from 2013 to 2015 approximately 13 accidents were happened due to Pavement Edge Failure is not provided as per IRC. According to IRC Pavement Edge Failure for rural road is <1%. But Pavement Edge Failure is actually provided at selected road is for Road 1: 1.2%, Road 2: >2%, is Road 3: 1.2%, Road 4:

<1% which is poor. According to IRC guidelines the Pavement Edge Failure is not provided properly so the accidents rates is increase.

VI. Conclusion

From this result, we given the preferences to each alternative of each main criterion and on the basis of given priority weights we decide the different safety impact factors that affect safety assessment of PMGSY road construction site in rural areas. This study aims at to determine whether the cost of personal protective equipment (PPE) is less than the cost of an accident or not should be analysed. Data was collected from PMGSY road construction site on the basis of face to face Questionary survey. The data collected was then analysed in a proper systematic manner in Fuzzy AHP, AHP and Relative Important Index method.

In order to achieve safety assessment on PMGSY road construction site and to decide the different safety factors that affect safety assessment of PMGSY road construction site in Nashik District we use Fuzzy-AHP, AHP, and RII technique

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