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Development of parameters of traffic sign management system in India

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Abstract- Asset management is a systematic process of maintaining, upgrading and operating assets. Road asset management is focused on bridges, traffic signs, pavement markings, culverts.
This paper focuses on the development of traffic sign asset management system. For this we have to conduct a visual night time inspection method to find the Retro-reflectivity of a sign. This survey will be conducted at regular night time intervals. This survey will be conducted at minimum vehicle distances with vehicle high beam lights. And some of traffic signs should be failed the test they should not visible to the driver. And some signs need for maintenance.
In the management study, we have to take manufacture cost of each sign and maintenance cost of the signs. For this we need to replace the some signs and maintenance should be required for some signs. And should note the latitude and longitude of the sign and create a file in the arc GIS and should plot a position of the each sign.

INTRODUCTION

Asset management is defined as "A systematic process of maintaining, upgrading and operating assets, combining engineering principles with sound business practice and economic rationale, and providing tools to facilitate a more coordinated and flexible access to preparing the decisions necessary to reach the public's expectations".

Assets of the road network as

1) Physical information such as roads and bridges.

2) Equipment and the resources.

3)Data, computer systems, methods and technology.

Requirements of asset management system: Asset management systems is generally consists of

- Include the asset inventory, information and condition measures.
- Include the values of a condition of the asset.
- Include the performance of prediction capability.
- It also ensure that data integrity, enhance data accessibility and provide data compatibility.
- Include all the relevant components in the life-cycle cost analyses.
- Enable the removal of an out dated systems and unproductive assets also.
- Reports were useful information on periodic basis, ideally in a real time.

LITERATURE REVIEW

Harris, E.A., Rasdorf et al. Describes the minimum traffic sign reflectivity standards. This paper was presented analysis of several traffic signs reflectivity maintenance methods using sign asset management. This method based on inspection and data collection process. The simulation part should be done. They should take 30 scenarios in the annual

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maintenance cost per sign and percentage of traffic signs. The simulation results should be higher cost per higher sign maintenance generally the resulted in a lower percentage of signs. For some signs using night time inspection method.

Michael J. Markow (2008) was describing the asset management practices on pavement markings. They told that the principles and asset management by pavements and bridges. They should divide the six classes of non-pavement infrastructure assets from the NCHRP synthesis topic 37-03. Traffic signals, signing, lighting, pavement markings, culverts, sidewalks are the classes of asset management. They should review some of the aspects to approaching the asset maintenance, budgeting methods, measuring the asset performance, asset service life, material usage, technology. This study indicates the basic knowledge on pavement markings, management, and site conditions service life for different materials. And for some of the processes using the reflect meter for reliability, asset management approach.

Joseph Perrin (2006) et al. Through the governmental standards board and the department of transportation are required to track their infrastructure costs and conditions through asset management practices. They should be applied to the roads and bridges, to access and inspection of the infrastructure. Culverts are critical components in asset management. This is the more important to consider the underground assets for inventory and inspection process.

Charles d.larson was done the inventory and condition assessment system project. This was designed for inventory, condition and location information for assets and it should store the information. They should use the global positioning satellites for accurate position of the asset. Asset condition (damaged or blocked). This project was done for all roadway assets within the highway boundary lanes. For this contractor and sub-contractors are collecting the data and development. This total process was made in the November 2012.they should collect finally compete inventory highway assets in three countries measuring asset conditions and state wide process for managing asset information.

Omar smadi was describing the asset management of civil infrastructure facilities and systems. And improve in practice and academics growth and development in the aged infrastructures. For this some of the agencies should adopt and develop their assets. And more academic institutions conducting education programmes. This paper focused in the civil engineering and transportation planning students. The overview of this active and engagement based learning techniques are presented.

Zongwei tao was described that the system integration for asset management. Transportation asset management is an integrated set of practices and systems. It should be a cost effective investment. And used for transportation assets. This method was difficult to complete the asset management goal. This is used for basic goals, strategies, principles and analysis m ethos. This approach should be done for business integration, system requirements, integration and local design integration and implemental integration. Each phase should carry particular integration objective and developments.

Sue McNeil et al. was described that the asset management and it should be generated activity in the organization, agencies and supporting organizations. The status of some this some activities divided into the level of activity. This result of survey of AASTHO member states that questions with management tools, asset valuation, and decision making tools are reported. The survey results should be there is no awareness and activity level focussed on the topic of asset management.

PROBLEM STATEMENT

Roads and highways offer the dominant mode of land transportation. They are the backbone of the economy, carrying over eighty per cent of passengers and over fifty per cent of freight in a very country, and providing essential links to large rural road networks. Roads square measure among the foremost necessary public assets in several countries. Governments is placing greater pressure on road administrations to improve the efficiency of roads and accountability for the management of community assets. In some of the countries like Canada, the United States and Australia face formal accountability and reporting requirements on how they manage their assets.

BASIC CONCEPTS OF TRAFFIC SIGN ASSET MANAGEMENT

General Principles of Traffic Signs:

Traffic signs are an essential a half of the road system, and a road with poorly maintained signs are an insufficient road.

Signs are provided to manage and guide traffic and to market road safety. They should only be used where they'll usefully serve these functions.

Signs are only effective if:

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- Signs should have visibility properties.
- Signs should have legibility properties.
- Signs should not be un understandable.
- The road users to know what they mean.
- The road users is interested to behave correctly.

Types of Traffic Signs:

The three main functions of traffic signs are to regulate warn and inform. There is a different group of signs for each function, and the signs in each group have a uniform shape to help drivers recognize them quickly.

Regulatory Signs: This signs give requests. They tell to the drivers what they should not do (prohibitory), or what they must to do (required). The greater part of them take the manifestation of a round plate, albeit two signs, the Stop sign and the Give Way sign, have different individual shapes

Size of Regulatory Signs:

The sizes of the regulatory signs should be based on the type of the roads.as per for the national highways the minimum diameter of the sign should be the 600mm and this should be also for rural roads. If any additional impact is required in national highways, rural roads the size of the diameter is 750mm.for town And urban roads the size of sign is 600mm.when signs attached to traffic signal at that areas the size of sign is 300mm.high prismatic sheet type used in the national highways. And engineering grade sheet of signs should be used in the rural and urban and towns.

Warning Signs: These caution drivers of some threat or trouble out and about ahead. The greater part of them take the type of an equilateral triangle with its summit highest.

Size and siting of Warning Signs:

The sizes of the warning signs should be based on the type of the roads.as per for the national highways the minimum diameter of the sign should be the 700mm .If any additional impact is required in national highways, rural roads the size of the diameter is 900 mm.For town And urban roads the size of sign is 600mm.when signs attached to traffic signal at that areas the size of sign is 750mm. high prismatic sheet type used in the national highways. And engineering grade sheet of signs should be used in the rural and urban and towns.

Information Signs: The majority of this signs give the drivers data to empower them to discover the route to their objective. This is a differed gathering signs; however they are all also square or rectangular appropriate as a shape.

Positioning of Signs:

- Sign siting in connection to the intersection, risk, Rotary and so on.
- Sign position in connection to the edge of the carriageway.
- General guidance on sign situating out and about.
- The signs must be clearly visible.
- No disarray about Signs which street they allude to.
- The signs don't hinder the perspective of drivers.

Position relative to the edge of the carriageway:

Signs must to be put the sign is closer than 600 mm from the outside edge of the shoulder, or carriageway, - see Figure 2.1 This should be applies to the signs situated on the movement roundabouts and islands.

Height and angle of the sign plate:

Signs must to regularly be mounted so the easier edge of the sign plate is 2,000 mm over the level of the carriageway - see Figure 2.1 This serves to demoralize vandals and Bill publications from the damaging the sign plate.

Signs must to never be mounted short of what 1000 mm over the ground level. Where two cautioning signs are to be mounted on the same post, that sign that identifies with the closest risk must to be at the top.

Temporary road signs must be on an edge which keeps the sign over the ground by no less than 300mm. the Signs raised over footways and in urban ranges must be sufficiently high to empower walkers to stroll underneath them. The more level edge of the sign spot ought to be about 2.0 meters over the surface.

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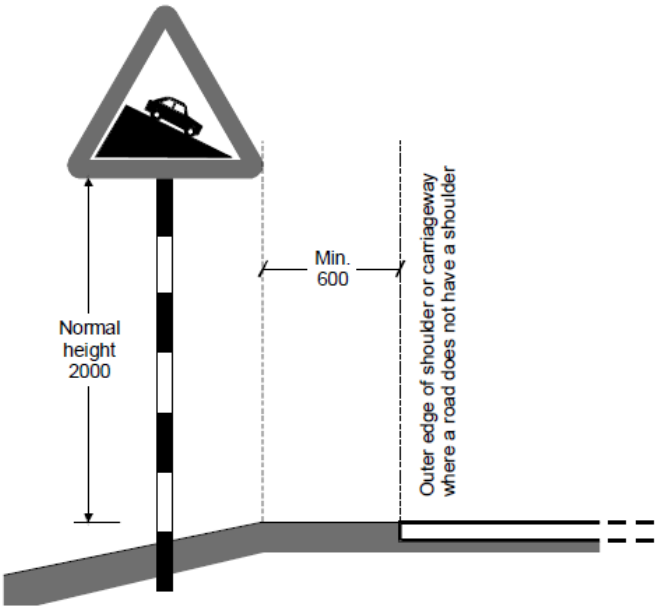

Height of sign plate source from traffic signal manual

Maintenance of Signs:
All traffic signs ought to be assessed at customary and regular interims step by step. And for reflectance purpose inspected at night timings. Signs must be renewed as necessary. Signs turn into a more modest sum powerful when characters of signs colouring devalue, as well as when overcast or ruined or relocated as an aftereffect of or decimation. Harmed or grimy signs diminish way clients. Continuous inspection of the signs should be made to ensure their early repair or replacement when necessary, and after night inspections should be made of reflectorized signs. Regular cleaning of all the signs is essential.

Maintenance rules:
The way to great upkeep is fitting recordkeeping and normal investigation. A stock of signs and other way gear is useful. What's more a portrayal of the thing and its area.it can 10 conveniently incorporate establishment and review dates and other repair subtle elements. The stock number ought to be painted on the cover of the sign plate.

- Signs that are disappeared or placed in the wrong area.
- Signs are laid in the incorrect way or are broken.
- Signs are protected by trees.
- sign posts that are detached in their establishments
- Sign plates are detached.
- Corrosion of the sign plates and posts.
- Accident or other harm.
- flaking or blurred the sign confronts and painted surfaces
- poorly reflecting the sign confronts

Cleaning:
Signs must to be prepared at any rate twice in a year. Necessity ought to be given to low-mounted signs. Decrease some of long grass, shrubberies or tree extensions which conceal the sign face. Utilization of the water and a gentle cleanser to wash the sign and take cautious note to begin to expose what's underneath. Wash the sign in clean water to uproot all hints of cleanser. Street tar might be cleaned off with petrol or white soul, yet be mindful so as not to break down by the paint, and flush well subsequently.

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Repairs:
Minor repairs and repainting is the possible on a location. Repainting must to do just be carried out in a dry Weather and after legitimate arrangement of the surface. Don't matter paint to reflective sheeting, in light of the fact that this will make it non-reflective.

Assessment of Effectiveness of Signs:
As a major aspect of the support program in the area and recurrence of accidents must to be rerecord. From this registers it might be built where mischances out and about system most regularly happen. Often the most cost effective ways of developing the safety on a section of road is to develop traffic signing. Accident sites they should be looked at in more detail to found whether improved signing or road marking would develop safety and decrease accidents.

Conclusions

The goal of analysing the asset management of traffic signs. Can minimize sign asset costs while maintaining a high level of safety on local and state roads. These observations are compared with the AASHTO specifications and there is a minor percentage of error, so these values are reliable for the further analysis of the study. In my study around 75% of the signs are visibility and legibility properties are according to the standards.

- Some of the regulatory signs need to be changed because the reflectivity of signs is less and maintenance should be required for 3 signs.
- Some of The informatory signs should be re replaced because the directions of the signs not visible from a certain distance.
- Parking signs should be visible from the all the distances and angles.
- Manufacture cost and maintenance cost for all the signs is estimated.
- These costs should be changed year by year and this should be based on the population, traffic volume and market prices.

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