A Study On Behaviour Of Girder Bridge Under Class AA Loading And Class 70R Loading

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Abstract - *The bridge is a structure providing a passage over an obstacle may be for a road, a railway and pipeline. This study is aimed to understand the behaviour of girder bridge with two lanes of different span. ANSYS software is used as a tool for the analysis of performance including total deformation, bending moment, shear stress under static and dynamic load.*

Key Words: T- Beam Bridge, Longitudinal girder, Fatigue analysis , ANSYS

1.INTRODUCTION

Bridges are the most common major structure encountered in highway engineering and the most varied in design. Bridges range from timber deck on stringers that are supported at each end to very complex designs. Span lengths can vary from 6m(20 feet) to hundreds of meters(feet). The obstacle to be crossed may be a river, a road, railway or a valley. Structural engineering work consists of designing new structures and repairing or rehabilitating existing ones.

2.LITERATURE REVIEW

Anil kumar H B and S Suresh Chandra

In this study the analysis of a single span two lane T-beam bridge is carried out by varying the span of 8m, 12m, 16m, 20m,24m, 28m and number of longitudinal girders using software SAP 2000. In order to obtain maximum bending moment and shear force, the bridge models are subjected to the IRC class AA Tracked and IRC 70R loading system and concluded that with the increase in the span shear force, bending moment and deflection in the girder increases and also the models subjected to the IRC Class AA Tracked vehicle gives higher values of shear force and bending moment in comparison to those subjected to the IRC Class70 R loading.

Punil Kumar M P, Shilpa B S

In this paper they have studied the behavior of box girder bridges with respect to support reaction shear force, bending moment, torsion and axial force under standard IRC Class AA loading. They have analysed the box girder models by finite element method. The performance of bridge was studied application of dynamic loads.PSC Box girder bridge was analysed both statically and dynamically.

Y.YaduPriya,T.Sujatha

In this paper, analysis is carried out using IRC codal provisions, in the field of bridge engineering. The enhancement of pre-stressed concrete bridge decks have been used since it has more ability to carry live loads. It observed that the shear force and bending moment in the girder increases with the increase in the span.

Mahantesh.S.Kamatagi, Prof. M. Manjunath

In this paper they have studied about the analysis and design of longitudinal girder of the T-beam bridge. In this case analysis is done using SAP 2000 software. In this paper they have designed of T-beam longitudinal girder design by both working stress method and limit state method and result obtained are compared with methods. T-beam bridge of 20 m span are designed for class AA vehicle.

Ms. Patil M.B. et al

In this paper they made an efforts will make to carry out to checking analysis of girder by using SAP2000 software. It has found that composite bridge has maximum strength in comparison to other bridges. This paper compared the design of various girders for steel and concrete by using various software for various girder design.

Abrar Ahmed, Prof. R.B. Lokhande

This study is to identify the suitable section for bridges of different spans. The Prestressed concrete sections have been considered in this case as the spans designed are more than 25 metres for which the Reinforced concrete sections are uneconomical. The aim and objective of the work is to analyse and design the sections for different Indian Road Congress, IRC vehicles. It is found that the IRC 70R vehicle producing maximum effect on the sections.

Balamurugan M, HemalathaN

This bridge is a structure providing a passage over an obstacle may be for a road, a railway and pipeline etc., T beam bridges are one of the principle type of cast in place concrete decks. It consists of concrete deck slab monolithically cast over the longitudinal girders. Generally bridge structures are subjected to two types of loads i.e. static and dynamic loads. However in the design of structures they are designed based only upon the static

loads. The drawback of neglecting the dynamic loads in design stage will affect the structure particularly during the seismic loading conditions.

Praful N K, BalasoHanumant

In this paper they have studied about the analytical study of simple span T-beam bridge was analysed by using I.R.C. loadings as a one dimensional structure using rational methods. The same T-beam bridge as was analysed as a three dimensional structure using finite element plate for the deck slab and beam elements for the main beam using software STAAD ProV8i, three different span of 16m, 20m and 24m was analysed. Both FEM and 1D models where subjected to I.R.C. Loadings to produce maximum bending moment, Shear force and similarly deflection in structure was analysis.

3. CONCLUSION

An attempt was made to understand the behavior of girder bridges under the two type of loading namely static and dynamic. This study also brings out the basic behavior of T-bridge spanning with two lanes of different span.

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