

# DESIGN AND ANALYSIS OF PATH OVER BRIDGE BY USING STAAD PRO

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**Abstract:-** In this project, discuss with the design and analysis of path over bridge by using STAAD pro. Path over bridge is also called as foot over bridge. This project is mainly for designing the purpose of path over bridge where the traffic exceeds more than 1000 vehicles, for the elimination of accident between pedestrian and motor vehicles. As an approximately traffic per hourly more than 1000 vehicles, in front of Jayam college of Engineering and Technology where students, employees and peoples cross the highway.

**Key Words:** path over bridge structure, STADD pro.

## 1. INTRODUCTION

A path over bridge (also called a **pedestrian bridge, pedestrian overpass, or pedestrian overcrossing**) is a bridge designed for pedestrians and in some cases cyclists, animal traffic, and horse riders, instead of vehicular traffic. Footbridges complement the landscape and can be used decoratively to visually link two distinct areas or to signal a transaction.

In many developed countries, footbridges are both functional and can be beautiful works of art and sculpture. For poor rural communities in the developing world, a footbridge may be a community's only access to medical clinics, schools and markets, which would otherwise be unreachable when rivers are too high to cross. Simple suspension bridge designs have been developed to be sustainable and easily constructible in such rural areas using only local materials and labor.

An enclosed footbridge between two buildings is sometimes known as a skyway. Bridges providing for both pedestrians and cyclists are often referred to as green bridges and form an important part of sustainable transport movement towards more sustainable cities.

Footbridges are often situated to allow pedestrians to cross water or railways in areas where there are no nearby roads to necessitate a road bridge. They are also located across roads to let pedestrians cross safely without slowing down the traffic. The latter is a type of pedestrian separation structure, examples of which are particularly found near schools, to help prevent children running in front of moving cars. Small footbridges can also be used for a technical effect in ornamental gardens.



Fig: 1 Path over bridge

## 1.1 OBJECTIVES:

- Analysis and design of path over bridge by using STAAD pro
- To understand the effects of different load condition.
- To cross a highway.

## 2. DIMENSIONS OF PATH OVER BRIDGE:

Span of the section = 16m

G .L to base of the truss height = 5m

Truss planks height = 3m

Width of the bridge deck = 2.5m

Modeling:

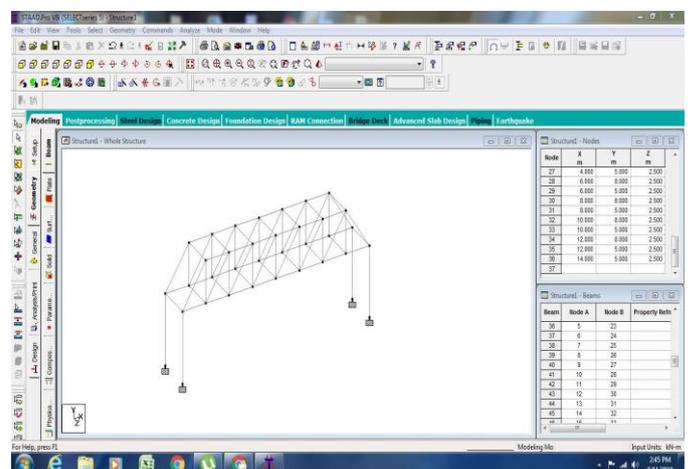


Fig: 2 Geometry of path over bridge

### 3. Load calculation:

Live load =  $-4\text{kN/m}$

Dead load =  $-1\text{kN/m}$

### 4. structural analysis :

Node reactions for 16m span path over bridge model with different load condition.

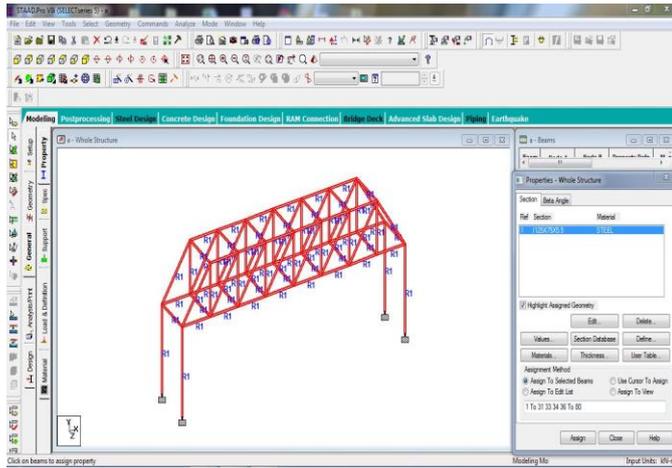


Fig 3: Property selection

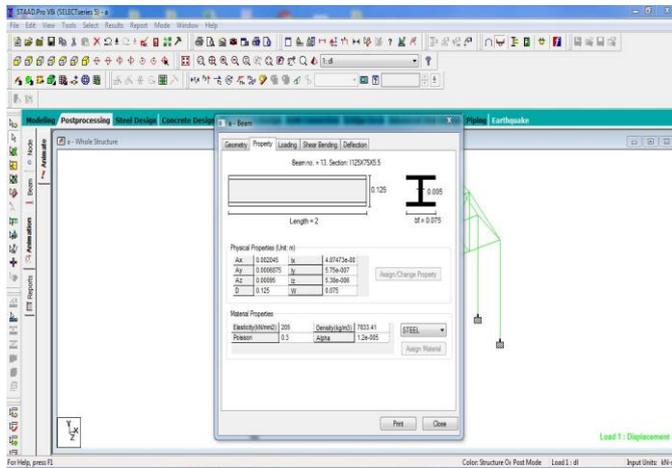


Fig: 4 section property of the beam

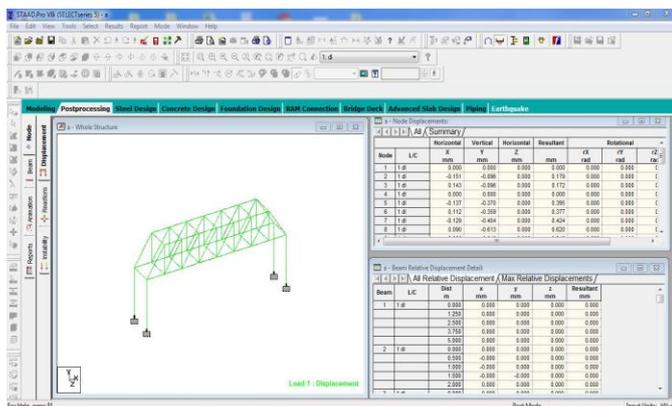


Fig: 5 dead load acting on the member

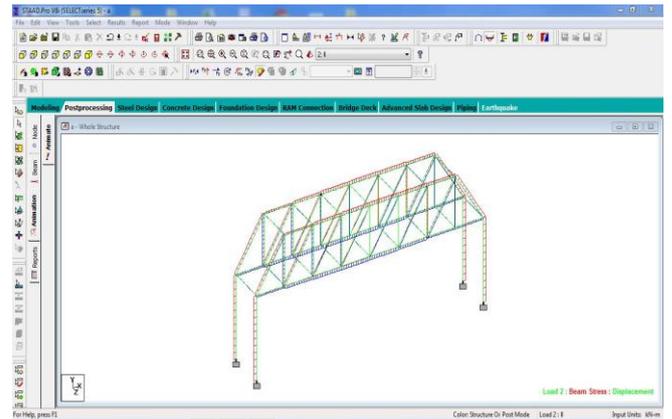


Fig 6 live load stress acting on the member

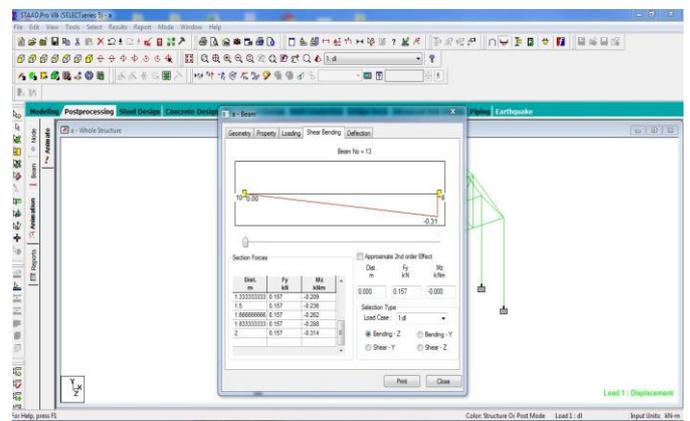


Fig: 7 resultant shear forces on beam

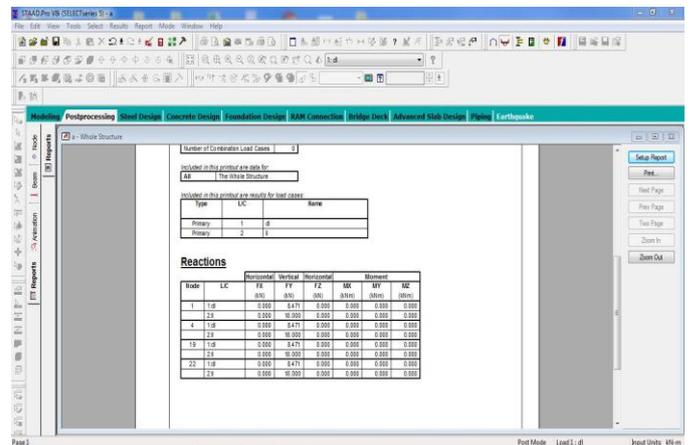


Fig: 8 Reaction force

### 5. Conclusion:

With pedestrian travel over Jayam College of Engineering And Technology being as dangerous because it is, the group feels that the simplest attainable manner in making certain safe travel over this route is by constructing a brand new bridge. Additionally to serving to pedestrians safely cross the street road, the structure ought to be of associate innovative style. With a overall span of 16m and a height of the footer of 9m. Utilizing steel and concrete for the most important style members, erection of the structure

would proceed quickly because of the flexibility of most of the most parts being prefab off of the work site. Utilizing this style technique would greatly minimize the results that the development of the bridge for pedestrian usage.

#### REFERENCES

- [1] American Association of State Highway and Transportation Officials. AASHTO LRFD Movable Highway Bridge Design Specifications: 2008 Interim Revisions. Washington, DC: American Association of State Highway and Transportation Officials, 2008.
- [2] American Institute of Steel Construction. Steel Construction Manual. 13th Edition. Chicago: AISC, 2007.
- [3] Chen, W.F. and E.M. Lui. Handbook of Structural Engineering. 2 nd Edition. New York: CRC Press, 200
- [4] Chen, W.F. and Lian Duan. Bridge Engineering Handbook. New York: CRC Press, 1999. [5] Computers and Structures, Inc. CSI Analysis Reference Manual. Berkeley. CSI, 2008. [6] Crossroads". Ivy Tech Community College – Fort Wayne. 2009

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