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Design and Analysis of Bridge Structure using Stadd Pro

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Abstract: This study represents analysis of a bridge design using the stadd pro; to check its bending movement, shear force, deflection and the analysis of a bridge deck. The deck is been analyzed with the loads which is acted on it and the materials used on it. The deflection is to be checked in the graph by their acting of S.F and B.M. The study shows the nodes in it and the analyzed of a deck.

Key words: Bridge deck, stadd ProV8i, nodes, loads, materials

INTRODUCTION

The superstructure for the 22.0 m (Fig. 1) traverse connect comprises of 6 No.s precast pre-focused on solid supports with 0.15 m thick thrown *in situ* RCC section above, divided at 1.254 m focuses (Qaqish *et al*., 2008) in the transverse heading. Two end stomachs are given with no middle of the road stomach.

The solid review received for the precast support for the thrown *in situ* section is M45. To start with organize pre-pushing is visualized in 4 days after throwing of pre-thrown supports. The second stage pre-stressing is done on the 14th day of throwing of pre-thrown braces or when the solid achieves quality of M40 whichever is later, skew angle (Dhar *et al*., 2013) on longitudinal girder (support shear, moment, torsion) and deck slab for skew bridge.

MATERIALS AND METHODS

Analysis: The examination of the super structure for sharing of B.M and S.F between different braces is done (Reich, 1995; McCormac and Brown, 2015) utilizing grillage examination and PC demonstrating is finished utilizing STAAD (Vurpillot *et al*., 1998; Juntunen, 1999). Bowing minute and shear strengths are assessed utilizing the grillage examination.

Reaming with casing and rotating while cementing described for pillar concrete. The B.M because of self weight of brace and B.M because of deck chunk weight is finished utilizing pillar examination utilizing STAAD Plane. Understanding to predict soil behavior (Rajaraman *et al*., 2015) before the construction of the bridge.

Frame of a bridge (piers and beams) are been created with the nodes and the supports are shown in Fig. 2. Bridge mesh on the deck panels are shown Fig. 3. Plates are been assigned in the frame (concrete) of a bridge are shown in Fig. 4.

RESULTS AND DISCUSSION

The analysis is been done by their piers and the loads acting on it those errors and the warnings are shown in Fig. 5 and 6.

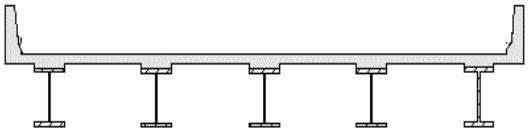

Fig. 1: Bridge (line)

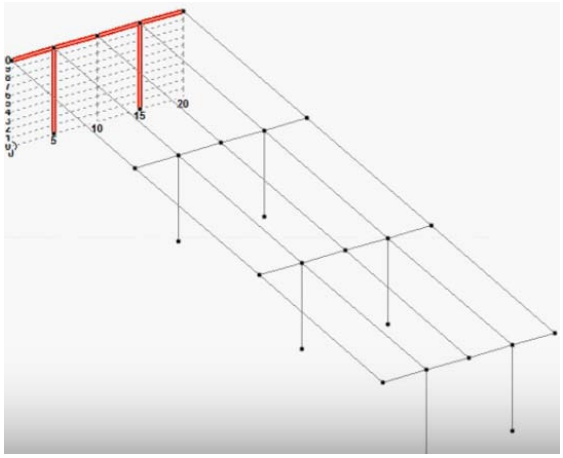

Fig. 2: Bridge deck

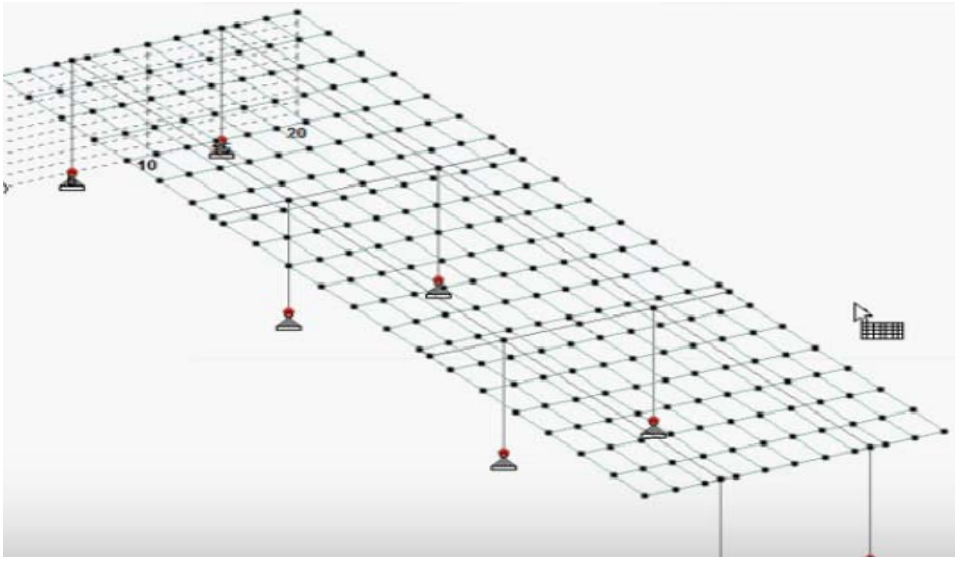

Fig. 3: Bridge deck with plate meshing and support

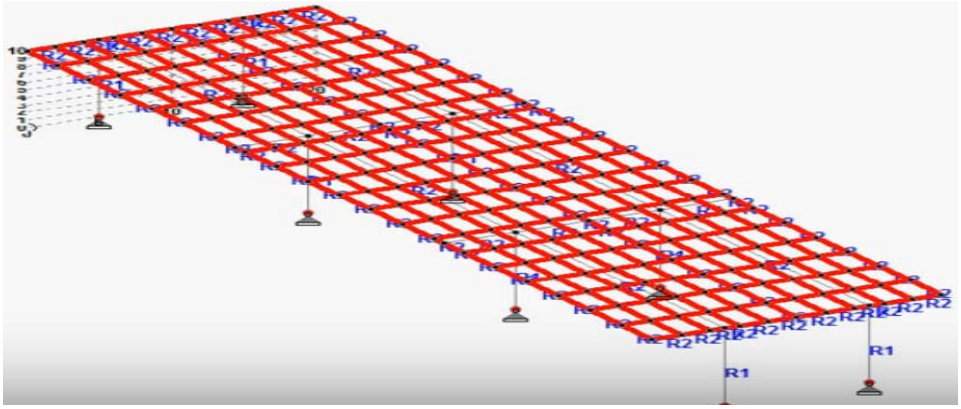

Fig. 4: Bridge deck with the material (concrete)

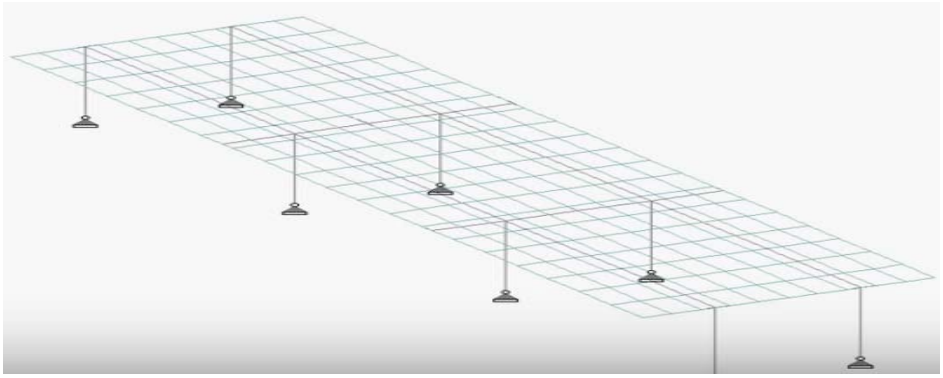

Fig. 5: Bridge deck with loads

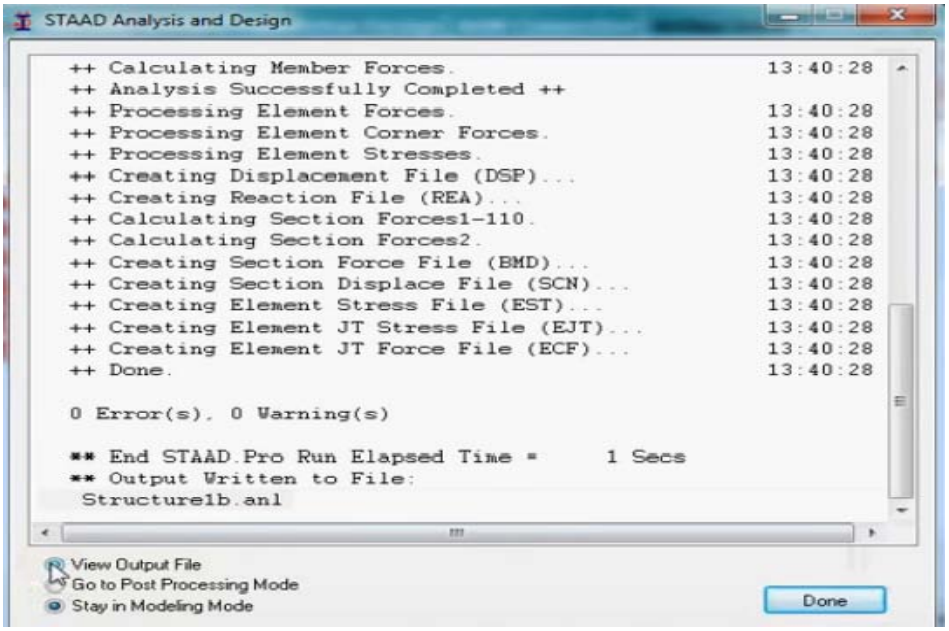

Fig. 6: Bridge deck report analysis

CONCLUSION

This study shows the design of a bridge deck with the corresponding dimensions and the loads and the shear force and bending movements are been checked and analyzed. By changing its material as the concrete and the loads vehicle loads acting on it.

REFERENCES

Dhar, A., M. Mazumder and M.C.S. Karmakar, 2013. Effect of skew angle on longitudinal girder (support shear, moment, torsion) and deck slab of an IRC skew bridge. Indian ConCreTe J., 2013: 46-52.

Juntunen, D.A., 1999. Studof michigan's continuous span variable depth T-Beam bridges. Michigan Department of Transportation, Genesee County, Michigan.https://www.michigan.gov/documents/mdot_c&t_r-1374_67459_7.pdf

McCormac, J.C. and R.H. Brown, 2015. Design of Reinforced Concrete. 10th Edn., John Wiley & Sons, Hoboken, New Jersey, ISBN:978-1-118-87910-8, Pages: 653.

Qaqish, M., E. Fadda and E. Akawwi, 2008. Design of T-beam bridge by finite element method and AASHTO specification. KMITL. Sci. J., 8: 24-34.

Rajaraman, J., K. Thiruvenkatasamy and S.N. Rao, 2015. Understanding to predict soil behavior. Intl. J. geomate: Geotech. Constr. Mater. Environ., 9: 1491-1495.

Reich, Y., 1995. Measuring the value of knowledge. Intl. J. Hum. Comput. Stud., 42: 3-30.

Vurpillot, S., G. Krueger, D. Benouaich, D. Clement and D. Inaudi, 1998. Vertical deflection of a pre-stressed concrete bridge obtained using deformation sensors and inclinometer measurements. Struct. J., 95: 518-526.