

## ABSTRACT

Bridge is an important infrastructure in transportation system. It is a structure carrying road across obstacles such as rivers, cliffs, seas, lakes or highways. As the population increases and so the necessary of efficient mobility, adequate transportation infrastructure and facilities are needed. To meet these needs, highway construction is still under way in various regions throughout Indonesia as part of government programs. Cibitung – Cilincing highway is one of the national strategic projects located in Bekasi, West Java. The focus of this research is to design the superstructure of a horizontally curved bridge of Ramp 2(2) as part of the interchange of Cibitung – Cilincing highway as steel box girders. The steel box girders are designed as simple and continuous beam.

The design provided herein comply with the AASHTO LRFD Bridge Design Specifications (7<sup>th</sup> Edition, 2014). The bridge superstructure is modelled in three-dimensional analysis using SAP2000 v14.2.2. The analysis results are used in the design computation. The design of the structure is carried out in various limit states those constructibility, service limit, strength limit and fatigue limit state.

The design results show that the girder dimensions needed for the simple span is larger than the continuous span. The web depth of the simple span is 2.20 m and 1.70 m for the continuous span. It is due to the larger maximum flexure and torques of the simple span. The number of shear connectors used for the continuous span is greater (4 studs per row) than the simple span (3 studs per row). A structural tee 230x72 is used for the top flange lateral bracing for both simple and continuous girder.

**Keywords:** steel box girder, horizontally curved bridge, design, AASHTO, SAP2000