

# **DESIGN OF CIVIL ENGINEERING LABORATORY BUILDING STRUCTURE UNIVERSITY OF SILIWANGI**

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## **ABSTRACT**

Higher Education is one of the educational institutions that aims to improve the quality of human resources. especially with the development of an increasingly modern era, so expertise and ability are needed to be able to follow it. This lecture building planning needs to pay attention to two main aspects, namely accuracy and comfort. These two aspects are very important in order to influence building design decisions by looking at the interests or learning needs.

The lecture building structure is planned to use a system of building frame structures with special structural walls that refer to SNI 2847: 2013 and SNI 1726: 2012. Structural modeling and analysis using the help of software 2013 Extended Three Dimensional Of Building System (ETABS) and AutoCad 2017. The loads analyzed include gravity loads consisting of dead loads, live loads, wind loads, and dynamic earthquake load spectrum response analysis. The roof structure uses steel material with BJ-37 quality with  $f_u = \text{Mpa}$ ,  $f_y = 240 \text{ Mpa}$ . Concrete quality  $f'_c = 33.2 \text{ MPa}$ , concrete quality for plates  $f'_c = 24.9 \text{ MPa}$ , quality steel reinforcement  $f_y = 400 \text{ MPa}$ .

The structural elements analyzed and planned include the steel roof truss, plates, beams, columns, corewalls, and bored pile foundations. The results of the analysis and planning of the structure of the lecture building obtained a roof frame using profile I WF 400.150.8.13 with A-325 bolt connection, 100mm thick plates with D10-150 reinforcement, 600mm x 450mm main beam with D19 base reinforcement and D10 stirrup reinforcement, K1 column 600mmx600mm with 16 D22 principal reinforcement and D10 stirrup reinforcement, 250mm thick corewall with D22-250 main reinforcement with D19-100 stirrup reinforcement, borepile foundation under 600mm diameter column depth 20 m with 10 D22 base reinforcement and borepile foundation under 600mm diameter corewall thickness 20 m with principal reinforcement 10 D22.

**Key word: Structure, Roof Truss, Corewall.**

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