MODIFICATION OF THE STATE UNIVERSITY OF MAKASSAR FMIPA BUILDING’S USING STEEL WITH SPECIAL CONCENTRIC BRACED FRAME SYSTEM

Student Name: Heri Istiono
NRP: 3112 105 035
Department: Teknik Sipil, FTSP-ITS
Supervisors: Endah Wahyuni, ST. MSc. PhD
Ir. Isdarmamu, MSc

ABSTRACT

FMIPA building’s consisting of 12 floors that has a function as a lecturing at the State University of Makassar. Originally FMIPA building’s designed using reinforced concrete structures. The building must be able to withstand earthquake effect and to accomplish construction requirements. The structure design originally was concrete structure with moment resisting frame (MRF) method in structure analysis. In this final project, it will be designed using a steel structure with special concentric braced frame (SCBF). SCBF has the advantage not only as axial force bearer, but also as lateral force bearer caused by earthquake effect. Additionally SCBF is suitable for building constructed in areas of high seismic zones.

This design does a modification from the reinforced concrete design to be a special concentric braced frame system with steel grade BJ 37. The purpose of relocating the building which was originally located in Makasar to Padang is to design a strong structure building which accomplishes all the safety requirements of the construction based on the existing legislation namely calculation Procedure for Steel Structure for Buildings (SNI 03-1729-2002) and Earthquake effect Planning Procedures for Building and Non-Building Structures(SNI 1726-2012).
This final project produces steel building structure design that includes designing of floor and roof plate, Stairs with the main beam WF 200.100.4,5.7, the roof beam uses WF 450.200.9.14, the floor main beam uses WF 500.200.11.19, column uses kingcross profile wrapped by concrete and the foundation used is pile foundation in which 50 cm diameter.

**Keyword**: Steel, Special concentrically braced frame, Earthquake,