

System Optimization Lift Shaft Structure in Addition of Passenger Elevator Integrated Service Office Building (KPLT) FT UNY

by Slamet Widodo, Widarto, Darmono, Faqih Ma'arif

ABSTRACT

This study aims to design the construction of steel structure elevator in the building of FT UNY Integrated Service Office (KPLT). Planning a construction must meet strong requirements, sturdy, comfortable, safe, economical, and aesthetic. This research uses the method of structural analysis. Loading in structure consists of dead load, live load, and earthquake load. In earthquake loading of SNI 1726: 2012 the structure uses equivalent static earthquake load and spectral response. The work load due to elevator movement is considered a centralized load due to the weighted-to-weight style of elevator capacity itself which is contained in the elevator and pit elevator machine catalogs. Structural analysis of load combinations is obtained by maximal reaction of axial, shear, and moment. In the design of steel structures using WF profile based on SNI 1729: 2015. Based on the result of construction planning of steel structure elevator can be concluded: (1) Dimension of beam using IWF steel profile 300 x 150 x 6,5 x 9 BJ-41, while column dimension using HWF profile 300 x 300 x 10 x 15 BJ-41; (2) connection beam using bolts: 6D22; Quality: A325; Thickness of connection plate: 20 mm; whereas the base plate column connection using bolts: 4D22; Quality: A325; Thickness of connection plate: 20 mm; base plate size: 400 x 400; (3) Type of passenger elevator using Hyundai type YZER with capacity 2100 Lbs or 953 kg, has a speed of 60 m / min; (4) The total cost budget plan which includes VAT for the elevator construction is Rp. 880,350,231.37; (5) Effective elevator construction placement is located inside the building. As for the construction planning of concrete lift can be concluded: (1) For the foundation use dimension 1.7 m x 1.7 m x 0.6 m with 25D-100 reinforcement. For K1 columns using the dimensions 300 mm x 300 mm the dengantulangan used is 12D16. While on the beam B1 with size 250mm x 350mm using reinforcement 9D16. While on beam B2 with size of 200mm x 300mm using reinforcement 9D-16; (2) Type of passenger elevator using Hyundai type YZER with capacity 2100 Lbs or 953 kg, has a speed of 60 m / min; (3) The total cost budget plan which includes VAT for the elevator construction is Rp. 886.372.156,00.

Kata Kunci: Construction of elevators, concrete structures, WF steel profiles, earthquakes