

CHAPTER V

CONCLUSION

For the superstructure design, the purlin that is used here is steel C125x150x150x2 with length of 3.7 meter. Between the purlin lengths, a sag rod of diameter 12.7 mm is used to prevent purlin from sagging. The truss uses steel 2Lx90x90x7. The connection uses 2 bolts to connect each member on truss. The anchors use 4 anchors to connect steel truss and concrete ring balk. The beam is 500x500 mm² with a length of 5.5 meter. The concrete strength is $f_c' = 30$ MPa and steel $f_y = 400$ MPa. The concrete cover is 40 mm. The reinforcement at support for top is 4D25, middle is 2D25, bottom 3D25, and confinement D13-10. The reinforcement span for top is 3D25, middle is 2D25, bottom is 3D25, and confinement is D13-200. With hook use 135° and length of 78 mm. The tie beam will use reinforced concrete 350x350 mm². The concrete cover is 40 mm. The concrete strength is $f_c' = 30$ MPa and steel $f_y = 400$ MPa. The reinforcement at support for top is 6D19, bottom is 6D19, and confinement is D10-75. The reinforcement span for top is 3D19, bottom is 3D19, and confinement is D10-100. The hook length is 75 mm using 135° bending. The column will use 650x650 mm² with $f_c' = 30$ MPa and $f_y = 400$ MPa. The concrete cover is 40 mm. The longitudinal is 16D25, the confinement at support is 2.5D13-100, and confinement at span is 2.5D13-150. The hook will use a cross tie where one part is bent 90° and the other bent 135°. The longitudinal reinforcement is continuation of column rebar 16D25, the confinement is 1.5D13-100, the development length is 340 mm, and the hook length is 300 mm. The slab uses 3000x3000 mm², with $f_c' = 30$ Mpa and $f_y = 400$ MPa. The thickness is 1.5 cm. The reinforcement for short span is D10-250, long span is D13-200, short support is D13-150, and long support is D13-150. The stairs and landing slab slab will use reinforced concrete with $f_c' = 25$ MPa and $f_y = 370$ MPa. The dimension of stairs optrede is 0.2 m, antrede is 0.25 m, stair width is 3.5 m, stair length is 2.25 m, stair slope is 38.66°, the total number of stairs is 20, and the thickness of stairs is 0.15 meter. The dimension of landing slab width is 1.7 m and thickness are 300 mm. The reinforcement at stairs support for main is D13-250 and for shrinkage is D8-150. The reinforcement at stair span for main is D13-100 and for shrinkage is D8-150. The reinforcement for landing slab at support is D16-350 and at span is D8-100.

For the substructure, the depth of foundation that is chosen for this design is 16 meters where no liquefaction occurs. At this depth the foundation can bear load until

2662.33 kN and at the moment 15161.23 kNm. The pile cap dimension is 2.45 x 2.95 m² with pile diameter 0.65 m. The number of required piles to withstand lateral load is 4 piles. The efficiency of pile group and settlement is found to be safe. The reinforcement for Pile cap at top short span is D13-150, at bottom short span is D22-150, at Top long span is D13-200, and at bottom long span is D22-200. The reinforcement for pile longitudinal is 18D22 and spiral D13-75. The bar needs to be cut and overlapped for every 5 turns.

In the planning process of Cost and Time Management in a building, every work process that has been carried out both from the Super structure and the Sub structure has different stages. These stages start from cost and time.

The initial preparation was carried out on Cost and Time Management by compiling the WBS so that the work items to be worked out could be identified. After the process of compiling the WBS, it's followed by calculating the volume for each work item and looking for the unit price of work or AHSP using the coefficient and volume values.

The results of the Unit Cost Price Analysis Calculations obtained the unit price for the job. The total cost of this construction is Rp41,224,131,730.39, with the total worker that is required in this project are 60 workers. The next plan is to make the duration of the work for each job to be done and get the duration of the work up to 1080 Days. From the known area of building 10030.3 m², it can be estimated that the price per m² is Rp4,109,959.99.

With all workers and builders in calculating the duration of the work. The S curve is the final plan in the preparation of cost and time management. The work can be carried out according to the time that has been prepared, it's all hoped that the work on this construction will follow the schedule that has been arranged so that there is no waste of construction costs.

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