ANALYSIS OF COLUMNS'S FORM ON THE PERFORMANCE OF NAT 2 BALI HOTEL BUILDING STRUCTURE

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ABSTRACT

Column is the vertical pressure rod of the structural frame that bears the burden of the beam. In column planning, there are many variation forms that can be applied such as square columns which used frequently. However, the circular columns utilization is also increasing because of its aesthetics. This research was conducted to determine the comparison of building structures that using square columns and circular columns on the 7-story building of the Nat 2 Bali Hotel building. Building planning calculations use square columns, circular columns, and rectangular columns with similar concrete cross-sectional areas and reinforcement area. Then do a comparison towards the internal forces in the column, the lateral drift, column eccentricity, and the amount of reinforcement needed. The analysis results show that the maximum axial forces are 6777,69 kN for square column, 6780,76 kN for circular column, and 6820,13 kN for rectangular column. Shear force 2-2 for square column building structure is larger than circular and rectangular column with a quarrel of 2,49% to the circular column and 24,86% to the rectangular column. Shear force 3-3 for rectangular column building structure is larger than circular and square column with a quarrel of 19,30% to the circular column and 17,70% to the square column. Moment 2-2 for rectangular column building structure is larger than circular and square column with a quarrel of 21,86% to the circular column and 19,91% to the square column. Moment 3-3 for square column building structure is larger than circular and rectangular column with a quarrel of 12,17% to the circular column and 29,32% to the rectangular column The maximum of x-direction lateral drift is occurred on circular column with a quarrel of 2,28% to the square column and 16,25% to the rectangular column. In the other hand, the maximum of y-direction lateral drift is occurred on rectangular column with a quarrel of 17,76% to the square column and 15,35% to the circular column. The eccentricity value of x-direction in all columns is 1,75m while the maximum eccentricity value of y-direction is 3,24m. The amount of reinforcement bars used for a square column, circular column, rectangular column is 16 pieces of D25 for K1 and 20 pieces of D25 for K2.

Keywords: column, the internal force, lateral drift, column eccentricity, the reinforcement needed.