

ABSTRACT

Research on a plate with lateral load on semi-rigid boundary condition on the edges has been carried out by several experts in prior. In this research, the plate is calculated with the edges boundary conditions varying using difference non-dimensional rotational stiffness coefficient. Each rotational stiffness coefficient describes a condition of plates rotational stiffness. Coefficient 0.5 for the semi-rigid condition, exactly in the middle between simply and clamped support, while coefficient 0 is for simply support and coefficient 1 is for clamped support. Slab is modeled as a square, isotropic and elastic with Kirchoff's theory of plate and small deflection theory. Dynamic slab condition are solved with Modified Bolotin Method (MBM) with two transcendental equation. The lateral load are applied on the plate and moving twice every 1 second along the X cartesian axis. Based on the analysis, the difference for the deflection, bending moment and shear force in the middle of slab are shown. The greater rotational stiffness coefficient, deflection, bending moment and shear force will decrease. Deflection has decreased by 44.73%, bending moment has decreased by 42.65%, and shear force showing a decreased to 45.01%.

Keywords : Modified Bolotin Method, semi rigid, rotational stiffness coefficient, non-dimensional, isotropic, elastic, lateral load, deflection, bending moment, shear force.