

Duttawan Wilaiwong 2011: Analysis of Deflection of A Three Span Continuous Prestressed Concrete Bridge With Variable Cross Section. Master of Engineering (Civil Engineering), Major Field: Civil Engineering, Department of Civil Engineering. Thesis Advisor: Associate Professor Somphothi Vivithkeyoonvong, Ph.D. 164 pages.

This research is to develop a computer program to analyze deflections of a three span continuous prestressed concrete bridge with variable cross section according to stages of construction. At the first stage, the bridge characteristic is a balanced cantilever beam. The next stage when one end of the beam rested on abutment and the bridge behaves as an overhanging beam. The last stage when closing the gap between the two overhanging beams at the center of middle span and the bridge behaves as a three span continuous beam. The bridges at the balance cantilever beam and overhanging beam stages are the determinate structures. While the bridge at the continuous beam stage is an indeterminate structure. Deflections of the bridge in each stage analyzed by using the direct stiffness method. These deflections are caused by dead load , live load , superimposed dead load , creep and shrinkage of concrete , prestressed force and losses of prestressed forces due to friction , anchorage take-up , and relaxation. The results of this computer program will show deflection behaviors of prestressed concrete bridge at every stage. The deflections at stage of construction will be used to adjust the bridge configuration during construction period. While the deflection of three span continuous bridge will be used to check workability of the bridge.

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