CHAPTER IV

THEORETICAL AND EXPERIMENTAL RESULTS

The results of the deflections and bending moments obtained by means of the proposed approximate solution (eqs. (24), (25) and (26) for Case 1, and eqs (45), (52), (53) and (54) for Case 2), and experimental results are compared. Fig. 5 through Fig. 8 show the theoretical results of deflections and bending moments for Case 1, and Fig. 9 through Fig. 12 for Case 2, both presented in dimensionless forms.

The comparisons of the results of the deflections between the theoretical and experimental values for Case 1 and shown in Figs. 13 and 14, and in Figs. 19 and 20 for Case 2. The results are in satisfactory agreement.

The comparisons of the results of the bending moments between theory and experiments are shown in Fig. 15 through Fig. 18 for Case 1 and Fig. 21 through Fig. 24 for Case 2. In Case 1, the values obtained from experiments are higher than those from theory, especially when the load is heavy. In Case 2, the values obtained from experiments are scattered at some points; however, the values are also higher than those from theory except the portion which is near the center.

The reasons for the differences in theoretical and experimental results are probably due to the approximated boundary conditions, eqs. (7) and (8), and the form of the deflection function selected.

The approximate boundary condition results of bending moments and effective transverse shear forces are presented in dimensionless form. The results of bending moment are shown in Fig. 25 for Case 1, and in Fig. 26 for Case 2. Fig. 26 and Fig. 27 show the results of effective transverse shear forces for Case 1 and Case 2 respectively.