



CHAPTER III

EXPERIMENTAL INVESTIGATION

The objective of this experiment is to find the deflections and bending moments at various points of the plate and compare the results with the proposed solution.

The properties of the plate are :

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Material	Steel
Size	346.4 mm on each side
Thickness	5.55 mm
Young's Modulus	200.4 GN/m ²
Poisson's Ratio	0.3

The six corners of the plate were supported by steel balls rested on the columns. Dial gages were fixed under the lower part of the plate. Before fixing the strain gage (biaxial 90° crossed), the surface of the plate was finished by the sand paper and the acetone. The strain gages were fixed on both side of the plate. Coating agent (C-1(A), Kyowa) had been coated after the bonded gages dried completely in order to protect gages from moisture. Then lead wires were connected to a static strain indicator (type SM-60D, Kyowa) and a switching - balancing box (Model SS-24 R) for reading the value of the strain in 24 points at the same time by turning the channel selection. The equipments used in the experimentation are shown in Fig. 2 and Fig. 3.

In experiment of uniformly loaded case, a hexagonal plywood formwork was supported by four columns with ~~small~~ clearance provided between the sides of the plate. The formwork was lined with a plastic bag and filled with water to various depths to provided a uniformly distributed load on the plate. The water level was measured by a steel rule mounted on the formwork.

For the case of a concentrated load at center, the tray and the standard weight were used.

Before recording the deflections and strains in x and y directions, their zero-shift and hysteresis errors were minimized by loading, up to the maximum load and unloading for four cycles. The values of the deflection from the dial gages and strains in x and y directions from the strain gages were recorded until the maximum deflection reached about $\frac{1}{3}$ of the plate thickness.