THE JAMES COOK UNIVERSITY OF NORTH QUEENSLAND
CYCLONE STRUCTURAL TESTING STATION

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INVESTIGATION OF DIAPHRAGM ACTION OF CEILINGS

PROGRESS REPORT

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PREFACE

It should be noted that this progress report is a summary of preliminary test results obtained in what is planned to be an extensive research

[redacted]

industry to publish their findings in this manner, but stress that any conclusions drawn from these tests should be considered to be in-

SYNOPSIS

INVESTIGATION OF DIAPHRAGM ACTION OF CEILINGS
- PROGRESS REPORT 1

George R. Walker

is probably small due to difficulties of fixing and the low strength of the fixings normally employed.

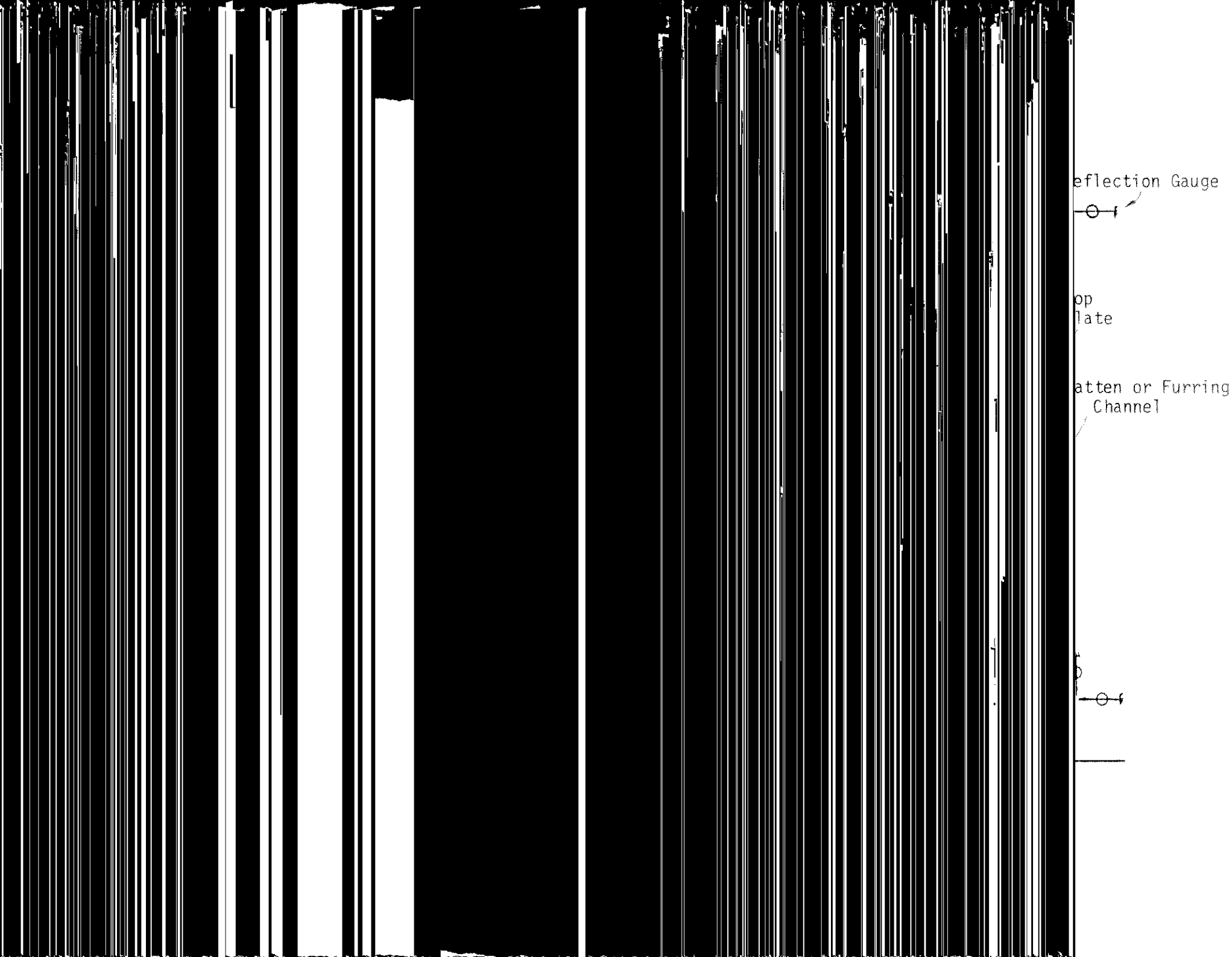
As a consequence of the lack of information, current design requirements in regard to roof bracing, where they exist, tend to be rather arbitrary

Joist

It is recognised that this is a very limited sample of the total range of ceiling systems used. Tests on other systems will be the subject of further reports.

2. TESTING ARRANGEMENT

Figure 2 gives a diagrammatic view of the testing arrangement in which the


eflection Gauge
op
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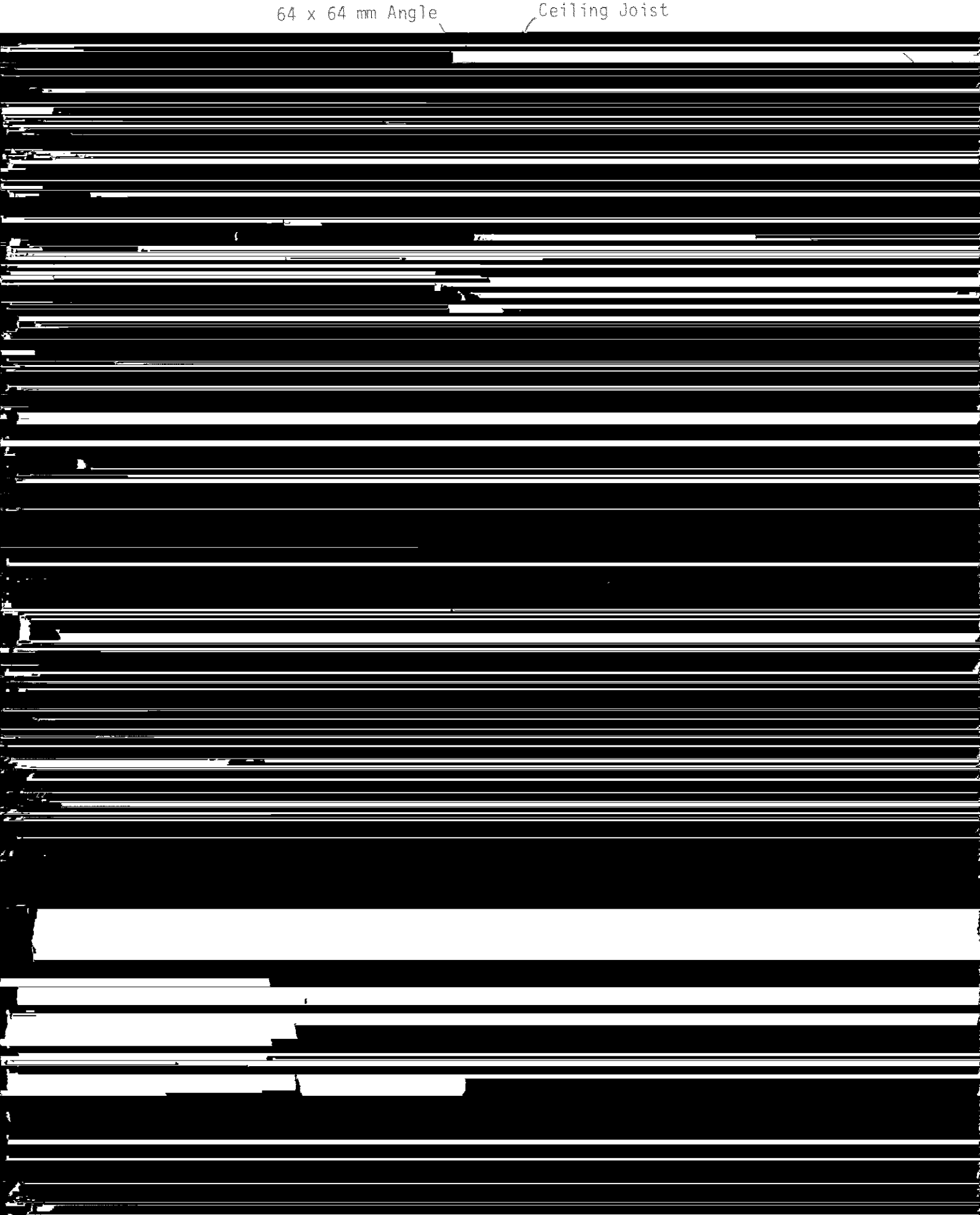
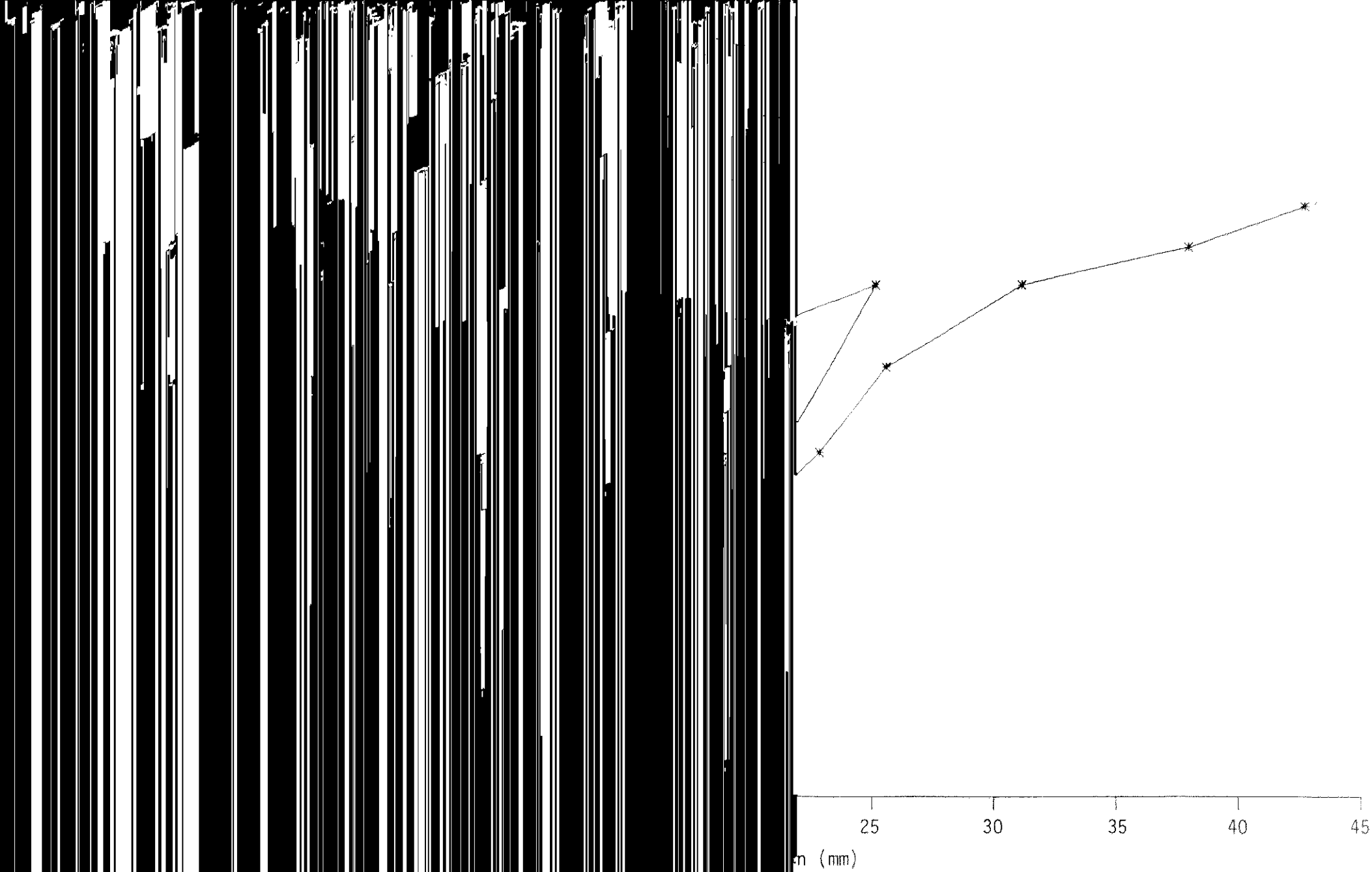
Channel


64 x 64 mm Angle
Ceiling Joist



Curve - Test 1

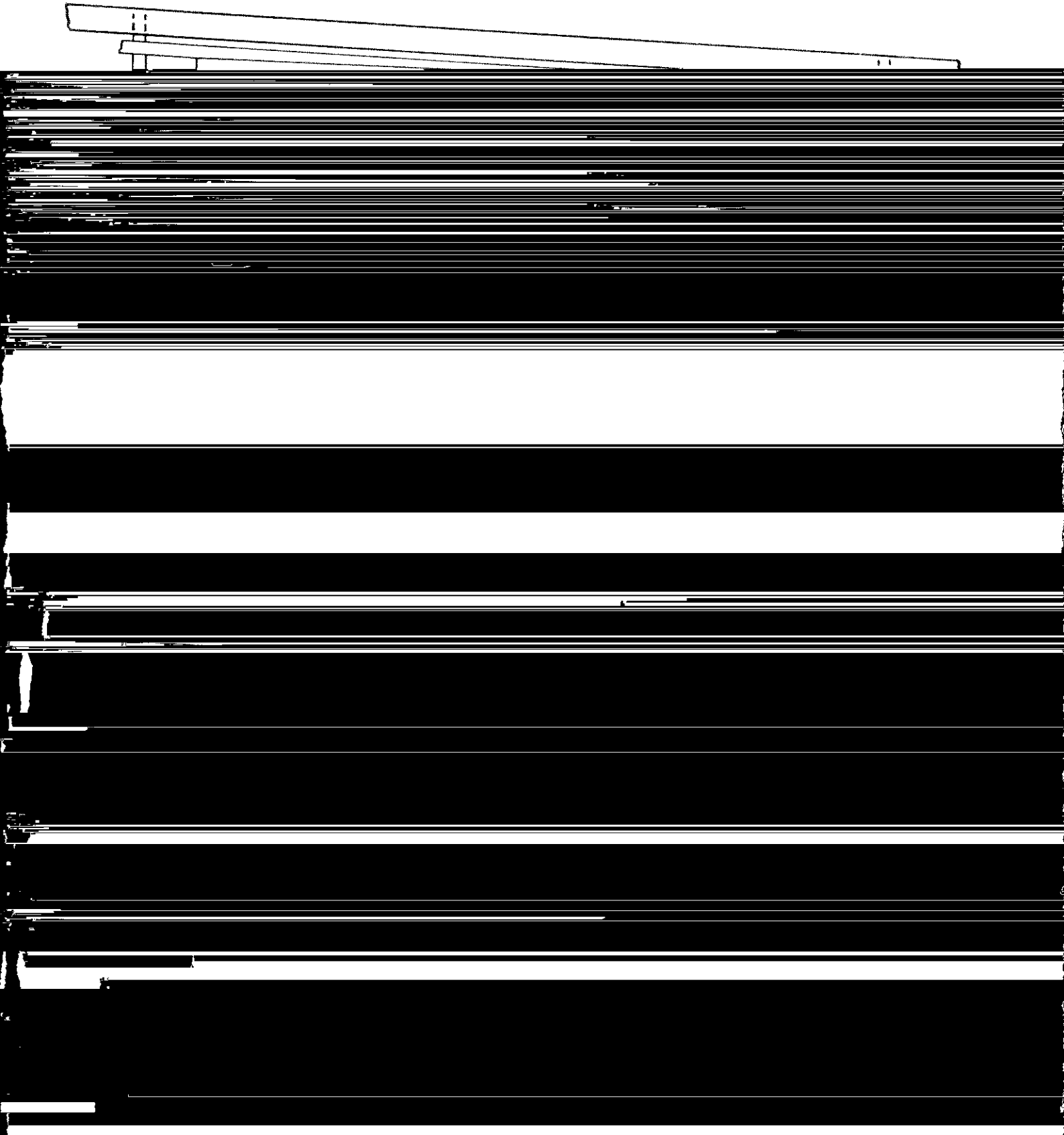


Figure 7 indicates the form of the deformed panel just prior to failure. Rotation of each of the panels relative to each other had occurred and rotation of the overall cladding system had occurred due to a relatively large displacement (approximately 25 mm) of the [illegible]

The cladding consisted of two 2700 x 1200 x 10 mm recessed 'Gyprock'

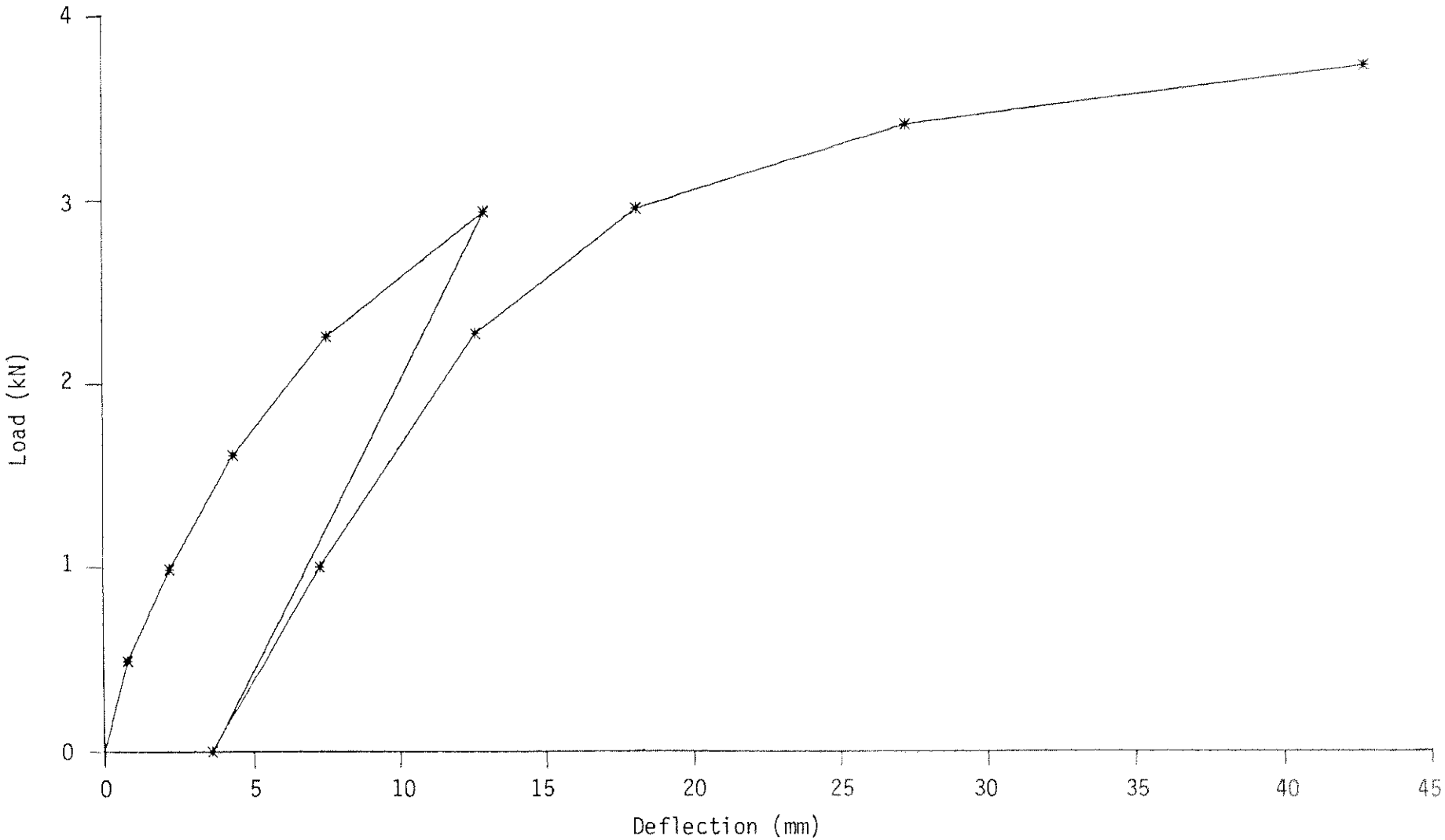


Figure 8 Load-Deflection Curve - Test 2

3.3 Plaster Board on Furring Channels

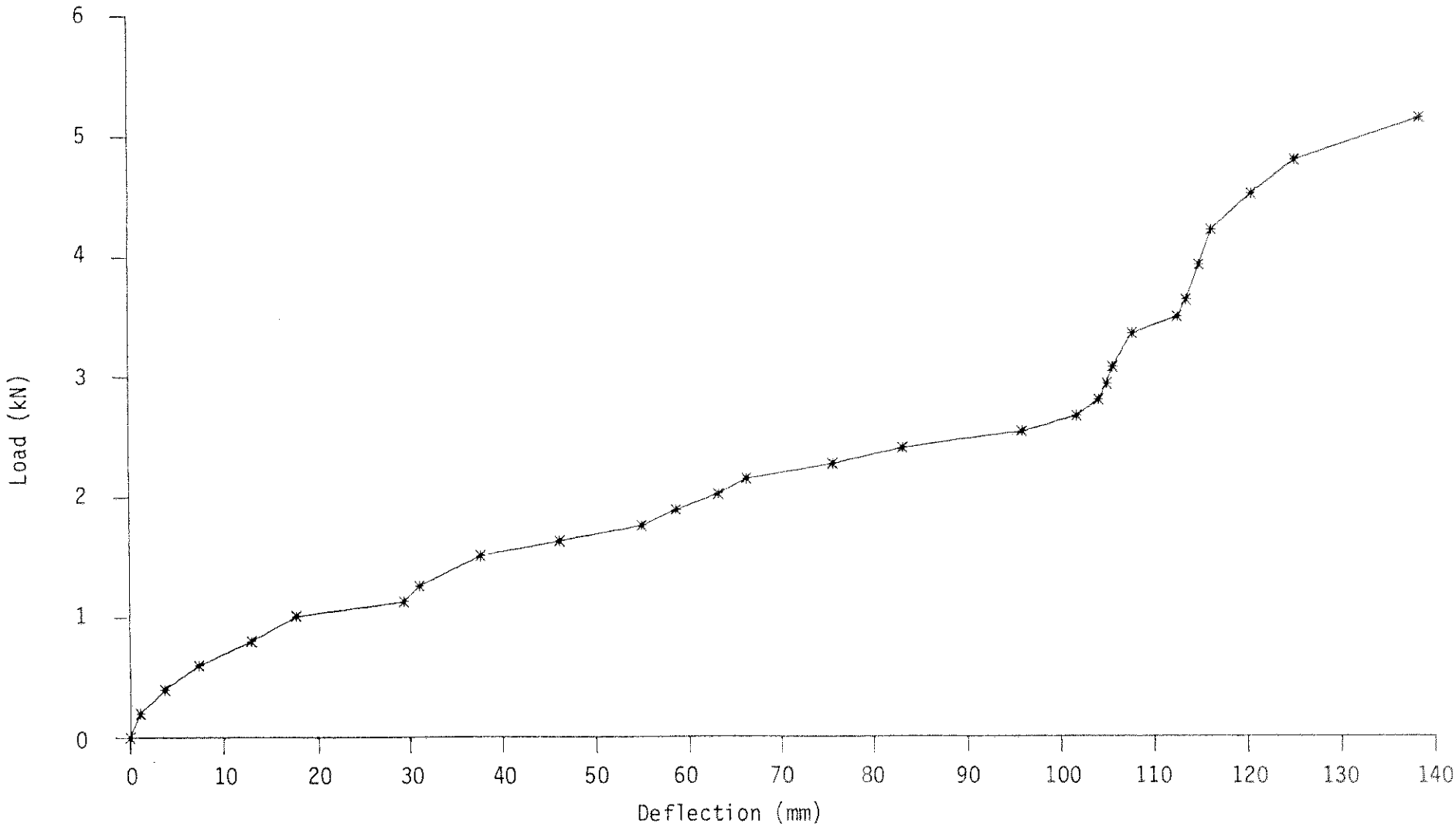


Figure 10 Load-Deflection Curve - Test 3

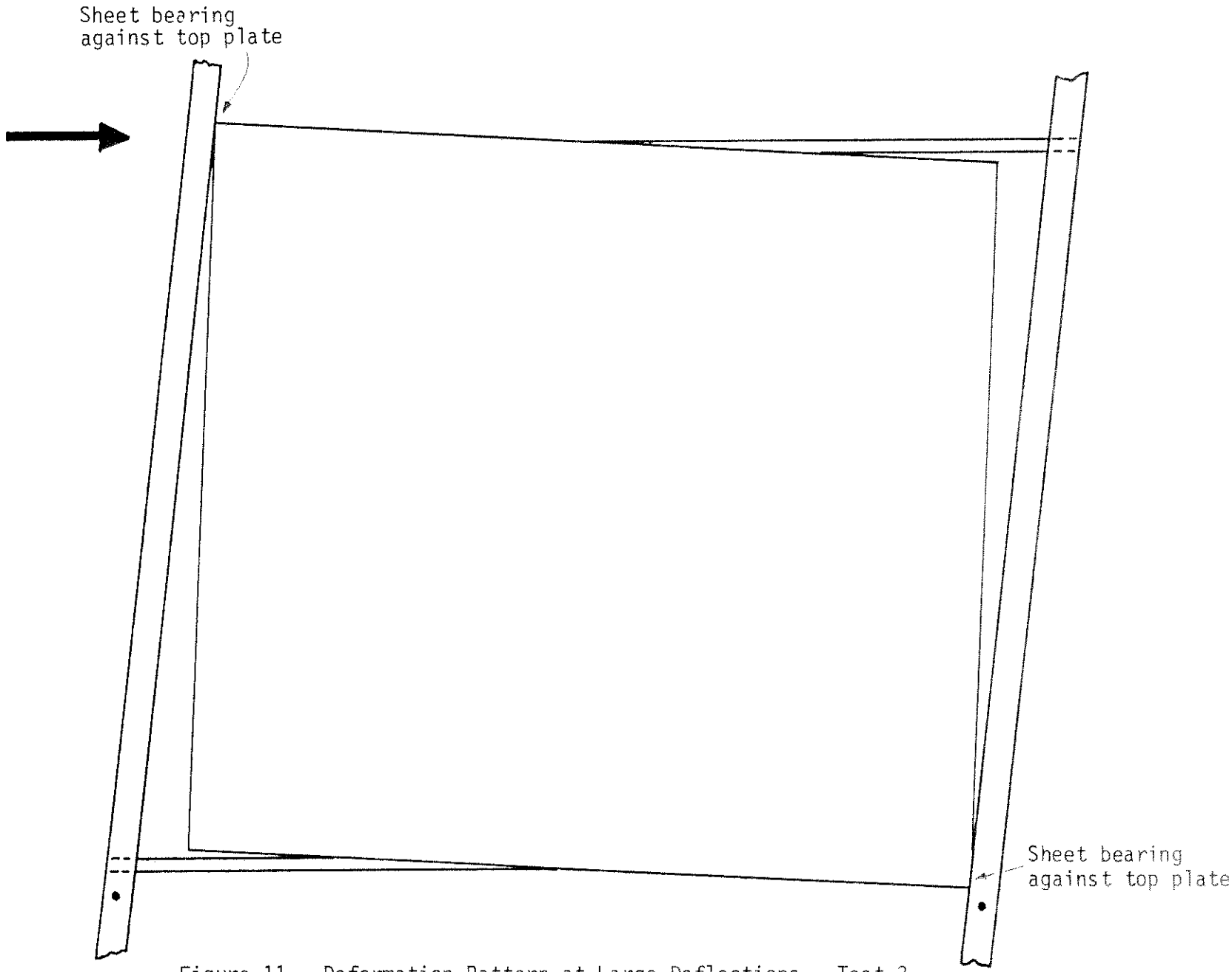


Figure 11. Deformation Pattern at Large Deflections - Test 3

As in the previous plaster board test the entire cladding rotated as a complete unit with the cemented joint between the sheets retaining its integrity.

2. For 2700 x 1200 x 10 mm recessed 'Gyprock' plasterboard sheets fixed

housing construction.

The exercise of attempting to interpret the results has also indicated shortcomings in our current appreciation of the mechanics of the diaphragm