

TEST REPORT



REPORT NUMBER

250911.1

DATE OF ISSUE

13th March 2015

Client

GCL Products Ltd
Unit 2C Callywhite Lane Ind Est
Callywhite Lane
Dronfield
S18 2XR

Customer order N°

Cash Sale

Testing of

Plastic X Grid floor system to ultimate failure
In accordance with client specification.



LLOYDS BRITISH TESTING LTD, UNIT 1 KINGS HILL BUSINESS PARK, DARLASTON ROAD, WEDNESBURY WS10 7SH

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1.0 Test Objective

To carry out compressive load application through to failure as per client specification. Tests applied via various sized footprints and loads applied based upon preliminary pilot test.

2.0 Name of Test House.

Lloyds British Testing Ltd
Unit 1 Kings Hill Business Park
Darlaston Road
Wednesbury
WS10 7SH

3.0 Accreditation Reference

ISO 9001: 2008

4.0 Date of Test

13th March 2015

5.0 Witness Details

No witness in attendance

6.0 Description of items tested.

330mm x330mm modular floor system.

7.0 Test Type

Compressive load study to ascertain failure loads and modes based upon pilot testing. Load calculations based upon pilot test and load foot print of 165mm. All loads applied there after based upon the pilot findings. All test loads applied until failure.



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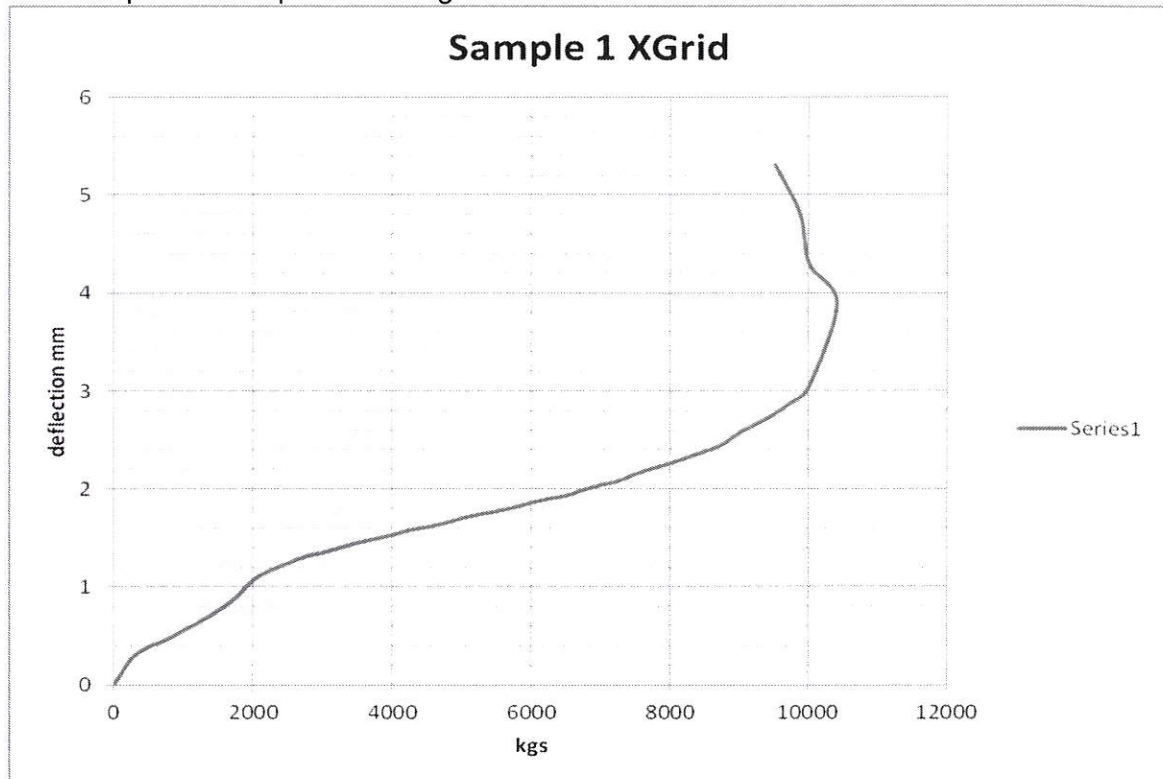
8.0 Equipment and Calibration

Compressive 200 tonne machine
 Certificate T8134, Calibration date 19.03.2013
 Validity of certification 12 months
 Calibrated in accordance with ISO 7500-1:2004 (E) part 1

9.0 Test Data

Pilot test: The sample chosen had the lower 4 raised nodes removed as the sample was to be tested on a steel platen.
 Sample 1: 330mm x 330mm individual sample, load applied at geometric centre.
 Foot print size: 165mm
 Area of load head 0.0213m²
 Ultimate load achieved 10410kg

Load displacement pilot test: Figure 1



Calculated ultimate load kg/m² = 488732kg/m² (488 tonne/m²)
 Permanent deformation recorded post load 1.69mm



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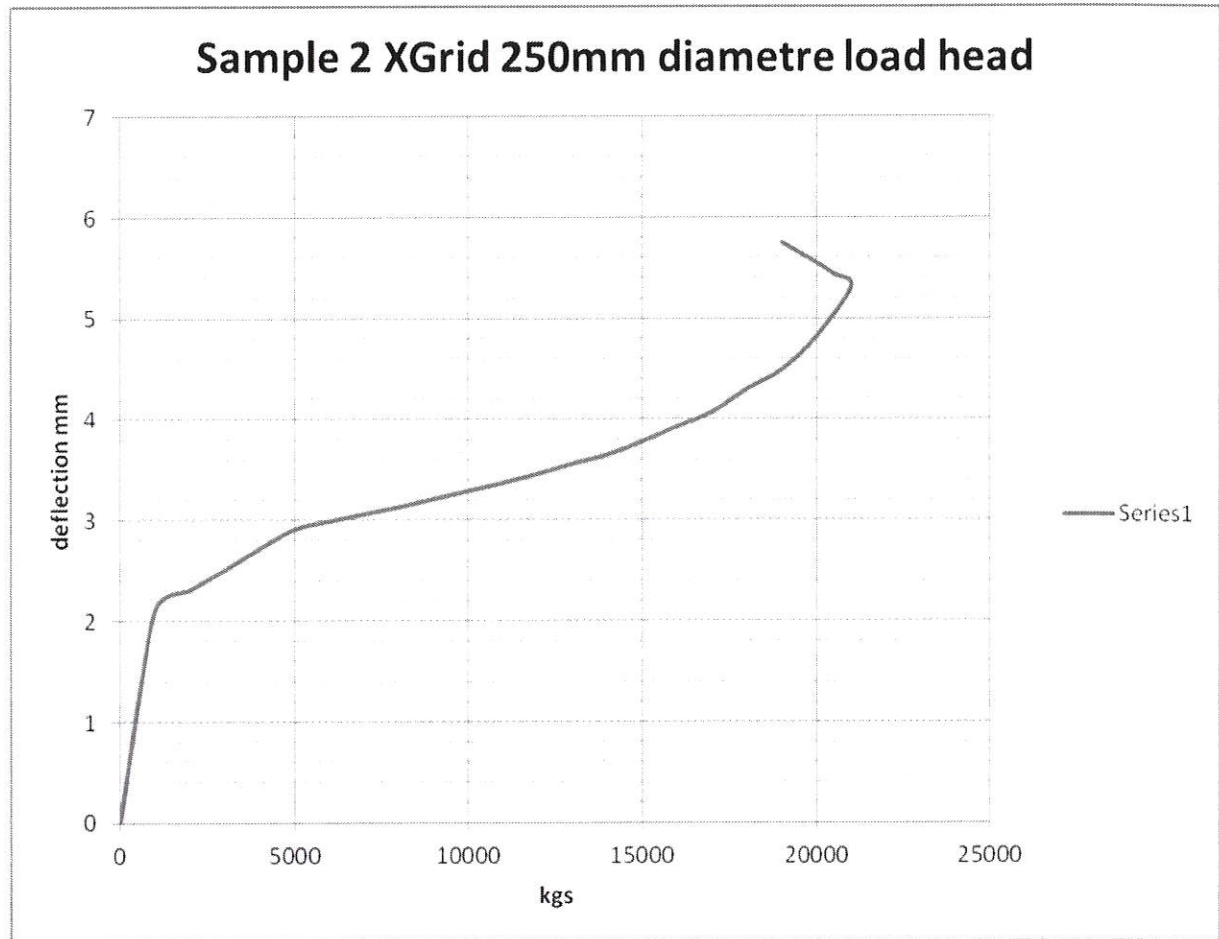


Test data continued:

Based upon the pilot test applied if the load head/foot print is increased to a 250mm diameter: load area 0.0491m²

Calculated ultimate load 23961kgs (23.96 tonnes)

Loads applied at 1000kgs increments



During test application it was noted at 15000kgs that the test load displacement relationship showed minor signs of compressive yield, each load increment was held for a 30second period and displacement values monitored for progressive increase. Ultimate failure recorded at 21000kgs.

The initial displacement of around 2mm at 1000kgs was due to the four raised nodes effectively creating a clear opening. Displacement there after once the 330mm² section had seated positively showed linear relationship to load displacement.

The results of ultimate failure now equated to a 428 tonne/m² calculated value.

This shows a decrease from the initial pilot test of 60 tonne/m².

Permanent deformation recorded post load 3.16mm.



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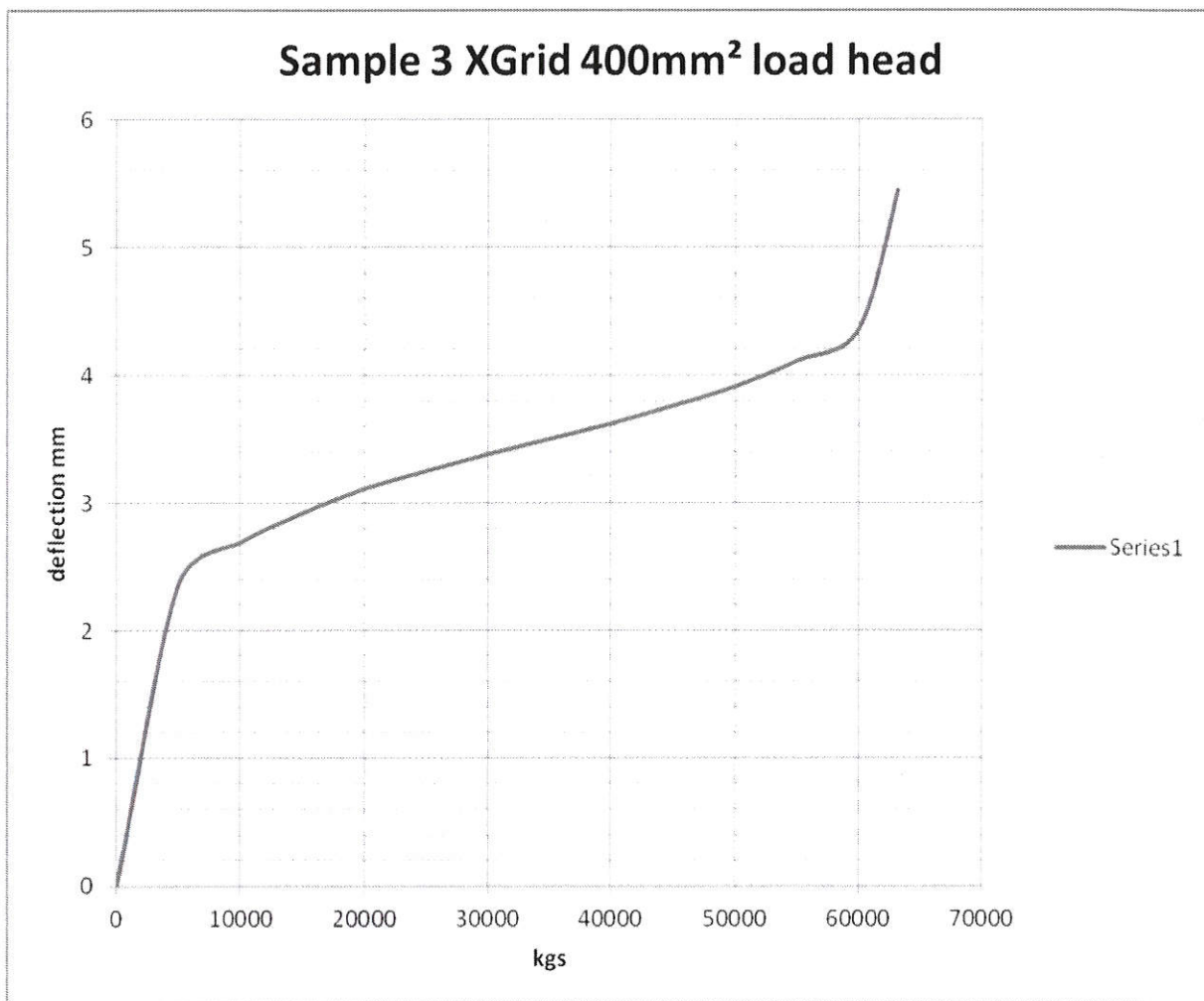
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Sample 3: Load applied upon a 400mm x 400mm load head/footprint.
 Sample size applied 660mm x 660mm XGrid configuration, load applied at geometric centre of sample 2 x 2 configuration.
 With the calculated value of test sample 2 ultimate failure; 428tonne/m² an incremental load value of 5000kgs through to an estimated 73.28 tonne was adopted.
 The load was monitored throughout test at each incremental value.



During test application it was noted at approximately 55000kgs that the test load displacement relationship showed minor signs of compressive yield, each load increment was held for a 30second period and displacement values monitored for progressive increase.

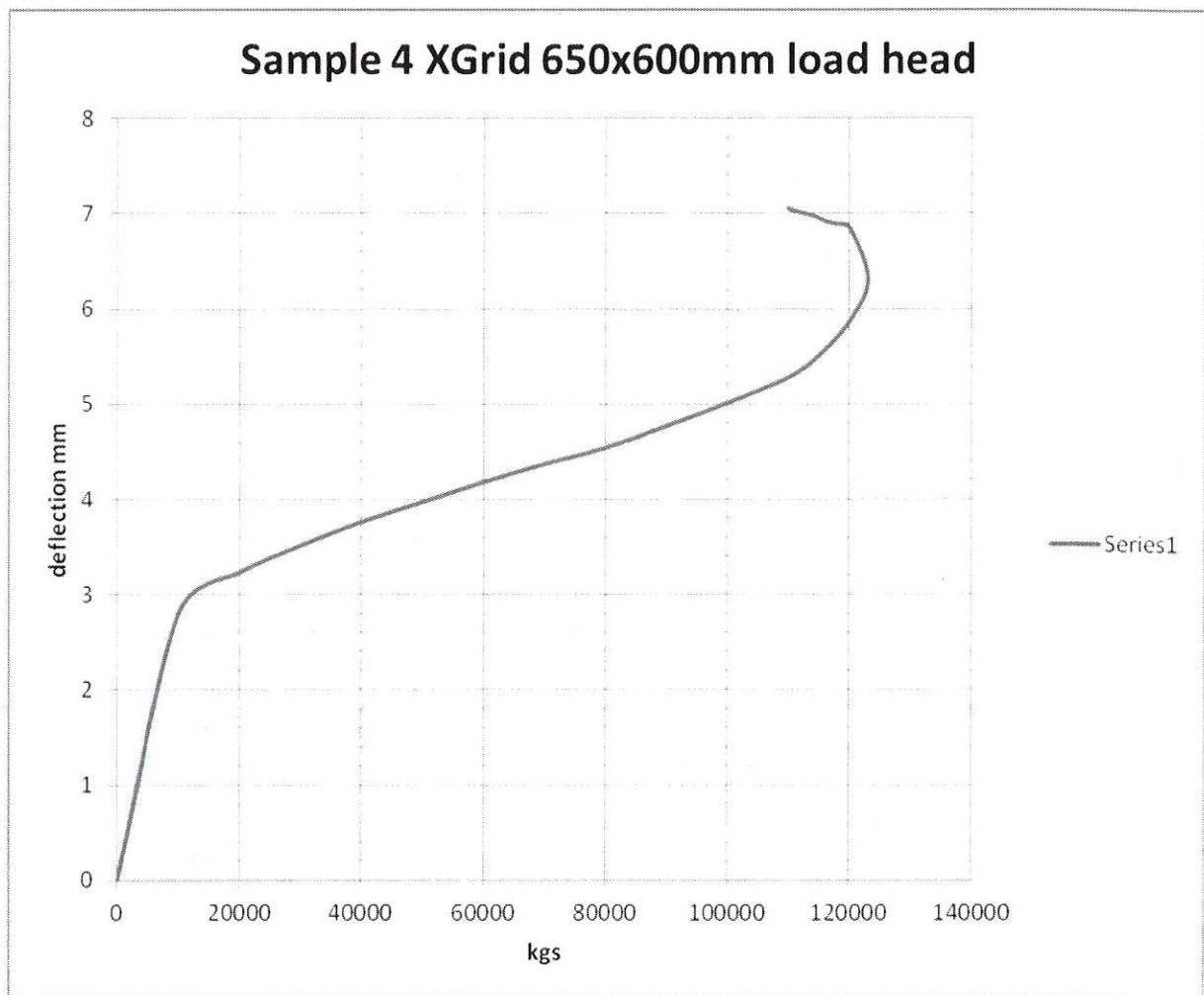
Ultimate failure recorded at 63150kgs.

The results of ultimate failure now equated to a 394 tonne/m² calculated value.

This shows a decrease from the initial pilot test of 94tonne/m².



Sample 4: Load applied upon a 600mm x 650mm load head/footprint.
 Sample size applied 660mm x 990mm XGrid configuration, load applied at geometric centre of sample 2 x 3 configuration.
 With the calculated value of test sample 3 ultimate failure; 394tonne/m² an incremental load value of 10000kgs through to an estimated 153.66 tonne was adopted.
 The load was monitored throughout test at each incremental value.



During test application it was noted at approximately 80000kgs to 90000kgs that the test load displacement relationship showed minor signs of compressive yield, each load increment was held for a 30second period and displacement values monitored for progressive increase.

Ultimate failure recorded at 123000kgs.

The results of ultimate failure now equated to a 315 tonne/m² calculated value.

This shows a decrease from the initial pilot test of 173tonne/m².



Based upon the testing of the various samples and load head variants and calculated Load/m² extension from the pilot test, a hypothesis is that the calculated extension of load based upon a small load area cannot be assumed correct.

There was no consistent relationship between the samples and various loaded areas to achieved ultimate loads.

Over the four configurations applied, a 35.46% reduction of ultimate load/m² was recorded based upon the 1st pilot test and the last load application. Effects of the decrease will incur effects due to the load head moving towards the edge of the submitted sample and configuration.

All samples chosen from submitted batch by client.
No client in attendance.

Results compiled as per client instructions for review

Report reviewed by: Mr R. G. McFarlane On behalf of Lloyds British Testing Ltd

.....Manager

Test Conducted on behalf of

GCL Products Ltd
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Callywhite Lane
Dronfield
S18 2XR



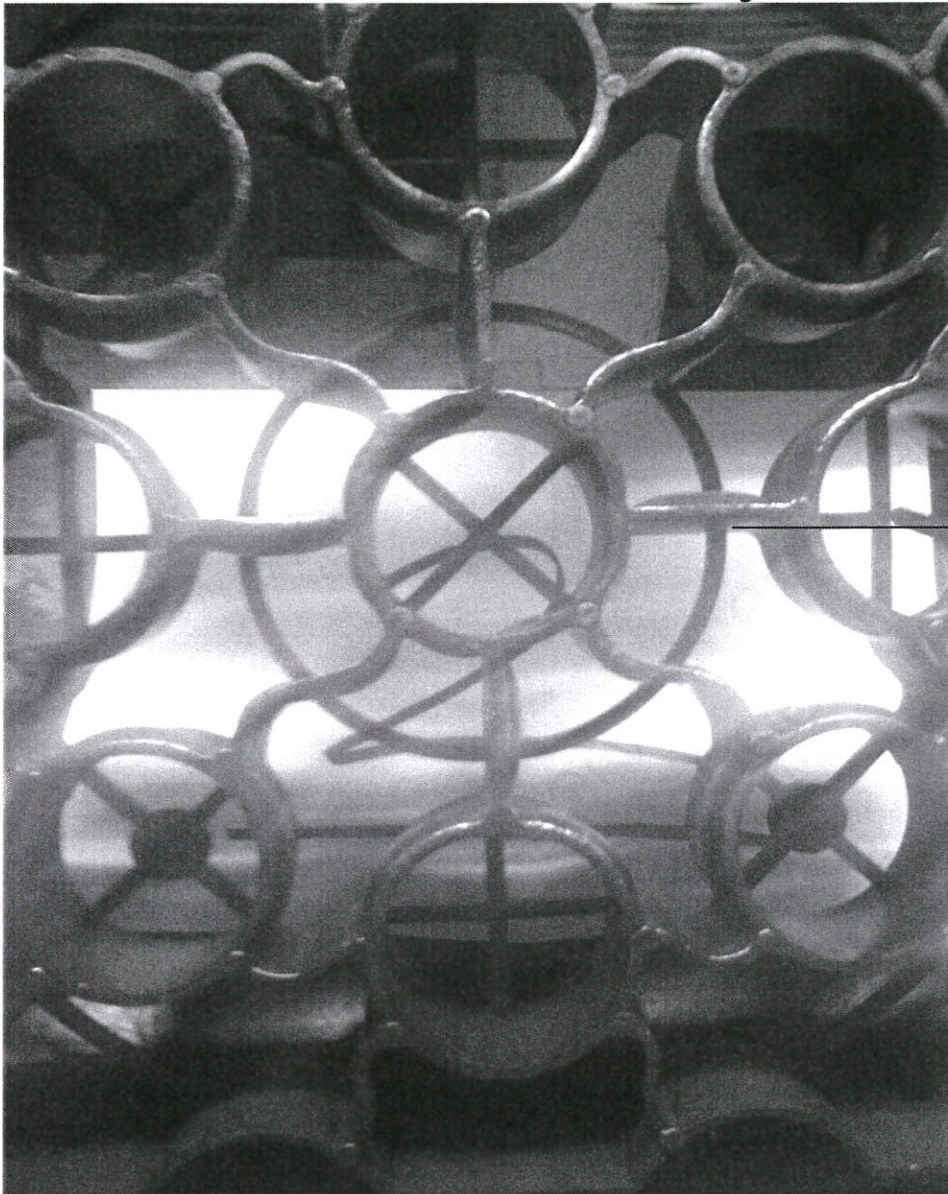
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Post load
deformation



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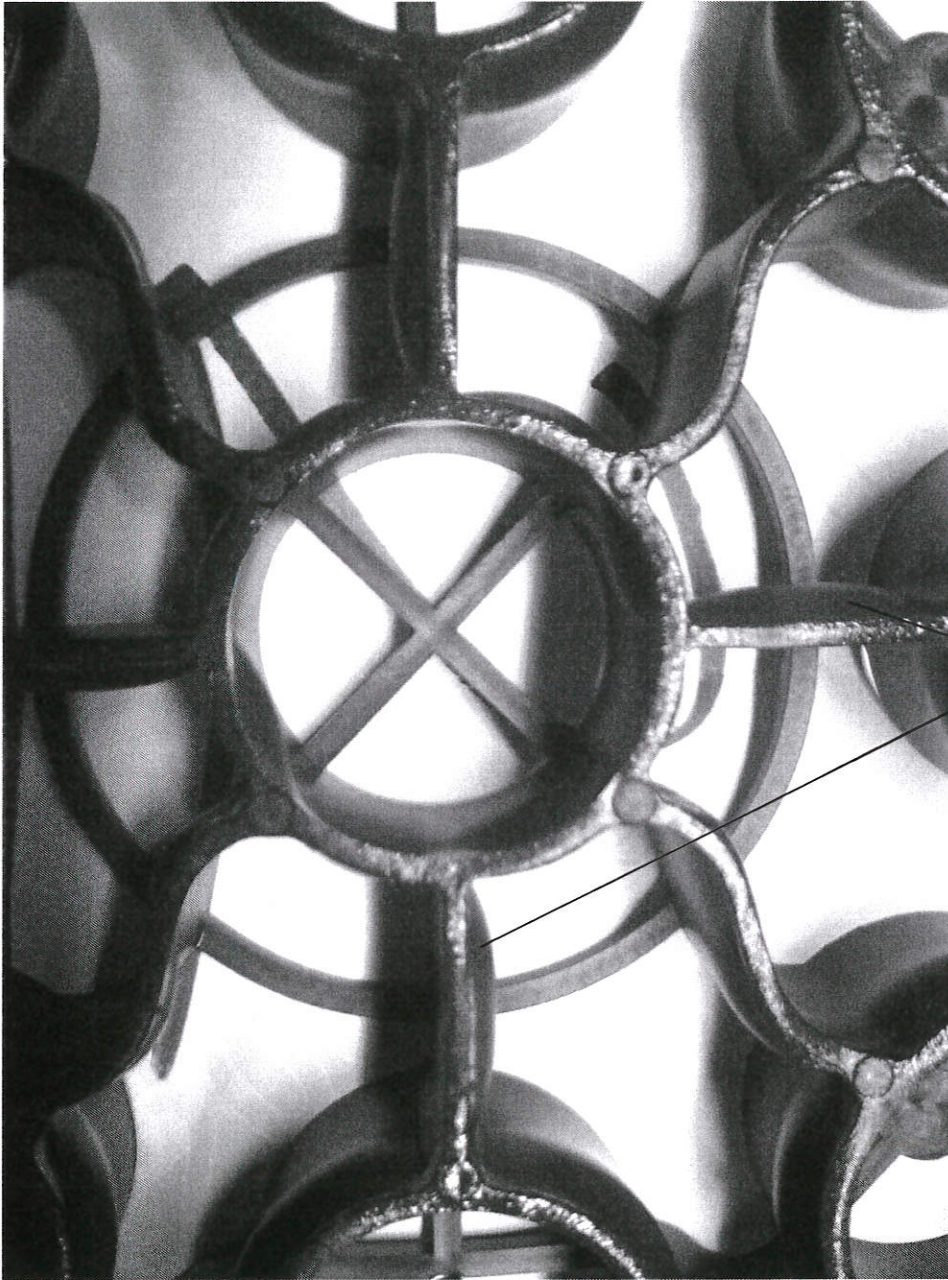
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Post load deformation



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