



ASTM:C1399 TESTING OF
MACRO FIBERS 1-1/2"
AT A DOSAGE RATE OF 2.37 kg/m³ (4.0 lbs/yd³)
STORK TCT PROJECT NO. 034013
MARCH 29, 2004

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DATE: March 29, 2004

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PROJECT: CONCRETE WITH SYNTHETIC
BAXIM MACROFIBERS 1 1/2"

PROJECT NO.: 034013

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TESTING OF CONCRETE WITH SYNTHETIC FIBERS

INTRODUCTION:

This report presents the results of our laboratory testing of concrete with **Baxim Macrofibers 1-1/2"** (4.0 lb/yd³ dosage rate).

The scope of our testing work was as follows:

1. Perform laboratory concrete trial batching of concrete with the **Baxim Macrofibers 1-1/2"** according to ASTM:C1399 for the determination of the Average Residual Strength (ARS).
2. Prepare a written report outlining our test results.

SUMMARY OF TEST RESULTS:

The following is a summary of the test results:

<u>Test</u>	<u>Baxim Macrofibers 1 1/2"</u> <u>(4.0 lb/yd³)</u>
Average Residual Strength, MPa (psi)	1.01 (146)

¹The results are the average of three samples.

TEST PROCEDURES:

The testing was initiated on March 12, 2004 and subsequent dates using applicable portions of ASTM:C1399-98, "Test Method for Obtaining Average Residual-Strength for Fiber Reinforced Concrete". The concrete test mixture was derived using the procedures outlined in ASTM:C494 Sections 11-15. The mix design used is included in the Concrete Materials section of this report along with the other pertinent information. Additional ASTM procedures were also used in conjunction with this test program.

SYNTHETIC FIBER DATA:

Synthetic Fibers - **Baxim Macrofibers 1 1/2"**
Date Submitted - March 8, 2004
Application/mixing - Min. 4 minutes

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TESTING OF CONCRETE WITH SYNTHETIC FIBERS

CONCRETE MATERIALS:

Concrete Trial Mixtures

Mix Number	1
Mixture Type	Fiber
Cement Content, kg/m ³ (lbs/yd ³)	306.8 (517)
Slump, mm (in.)	50.8-76.2 (2-3)
Nominal Coarse Aggregate, mm (in.)	19.2 (3/4)
Air Content, %	n/a
Specified Minimum	
Compressive Strength, MPa (psi)	27.6 (4,000)

Materials

Cement	Type I Portland Cement (ASTM:C150)
Fine Aggregate	Shiely Aggregates Inc. (Natural Sand Meeting the Requirements of ASTM:C33 and C494)
Coarse Aggregate	Shiely Aggregates Inc. (Limestone Size Number 57 Meeting the Requirements of ASTM:C33 and C494)
Admixtures	Macro Fibers 1-1/2"

Batch Weights, m³ (yd³)

Mix Number	1
Mixture Type	Fiber
Portland Cement, kg (lbs)	306.8 (517)
Admixture:	
Macro Fibers 1-1/2", kg (lbs)	2.37 (4.0)
Fine Aggregate, kg (lbs)	810.1 (1,365)
Total Coarse Agg., kg (lbs)	1008.9 (1,700)
Water, kg (lbs)	172.1 (290)

Mix numbers 1 was used in casting of the ARS samples.

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TESTING OF CONCRETE WITH SYNTHETIC FIBERS

TEST RESULTS:

Concrete Test Data

Mix Number	1
Mixture Type	Fiber
Slump, mm (in.)	19.1 (3/4)
Air Content, (%)	5.0
Unit Weight, Kg/m ³ (lbs/ft ³)	2277.6 (142.2)
7-Day Compressive Strength, Mpa (psi)	26.82 (3,890)

All of the samples were cast into beam molds. The samples were moist cured for 6 days and tested at 7 days from casting.

Average Residual Strength – ASTM:C1399

Please see the attached data sheet.

REMARKS:

The samples were discarded at the completion of testing. If you have any questions about this report, please feel free to contact us at (651) 659-7340.

STORK TWIN CITY TESTING CORPORATION



John D. Lee, P.E.
Senior Staff Engineer
Construction Materials Department
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ASTM:C1399 Testing of Fiber Reinforced Beams
Macro Fibers 1-1/2"
4.0 lbs/yd³ Dosage Rate
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Standard Values

Sample Number	Sample Width, in.	Sample Depth, in.	Test Span, in.	Load at Deflection, lbs.				ARS, psi
				0.02 in.	0.03 in.	0.04 in.	0.05 in.	
1A	4.00	4.05	12.00	601.8	652.9	719.2	743.4	124
1B	4.00	4.05	12.00	956.9	991.8	1017.1	1023.8	182
1C	4.00	4.00	12.00	674.5	721.4	716.5	720.1	133
Average	4.00	4.03	12.00	744.4	788.7	817.6	829.1	146

Metric Values

Sample Number	Sample Width, mm	Sample Depth, mm	Test Span, mm	Load at Deflection, N				ARS, MPa
				0.51 mm	0.76 mm	1.02 mm	1.27 mm	
1A	101.6	102.9	304.8	2676.9	2904.2	3199.1	3306.8	0.86
1B	101.6	102.9	304.8	4256.5	4411.7	4524.3	4554.1	1.26
1C	101.6	101.6	304.8	3000.3	3208.9	3187.1	3203.1	0.92
Average	101.6	102.4	304.8	3311.2	3508.3	3636.8	3688.0	1.01

Stork TCT Project No: 034013
Date Cast: 3/12/04
Date Tested: 3/18/04
Date Reported: 3/29/04
Fiber Type: **Macro Fibers 1-1/2"**
Fiber Dosage Rate: 4.0 lbs/yd³
Concrete Strength: 3890 psi
Concrete Slump: 3/4 inches
Concrete Air Content: 5.0%
Concrete Unit Weight: 142.2 lbs/ft³

Witnessed By:



John D. Lee, P.E.
Senior Staff Engineer
Construction Materials Department
MN Reg No. 25406

Post Crack Deflection vs. Post Crack Load (ASTM:C1399)

Macro Fibers 1-1/2", Sample 1A (4.0 lb/yd")

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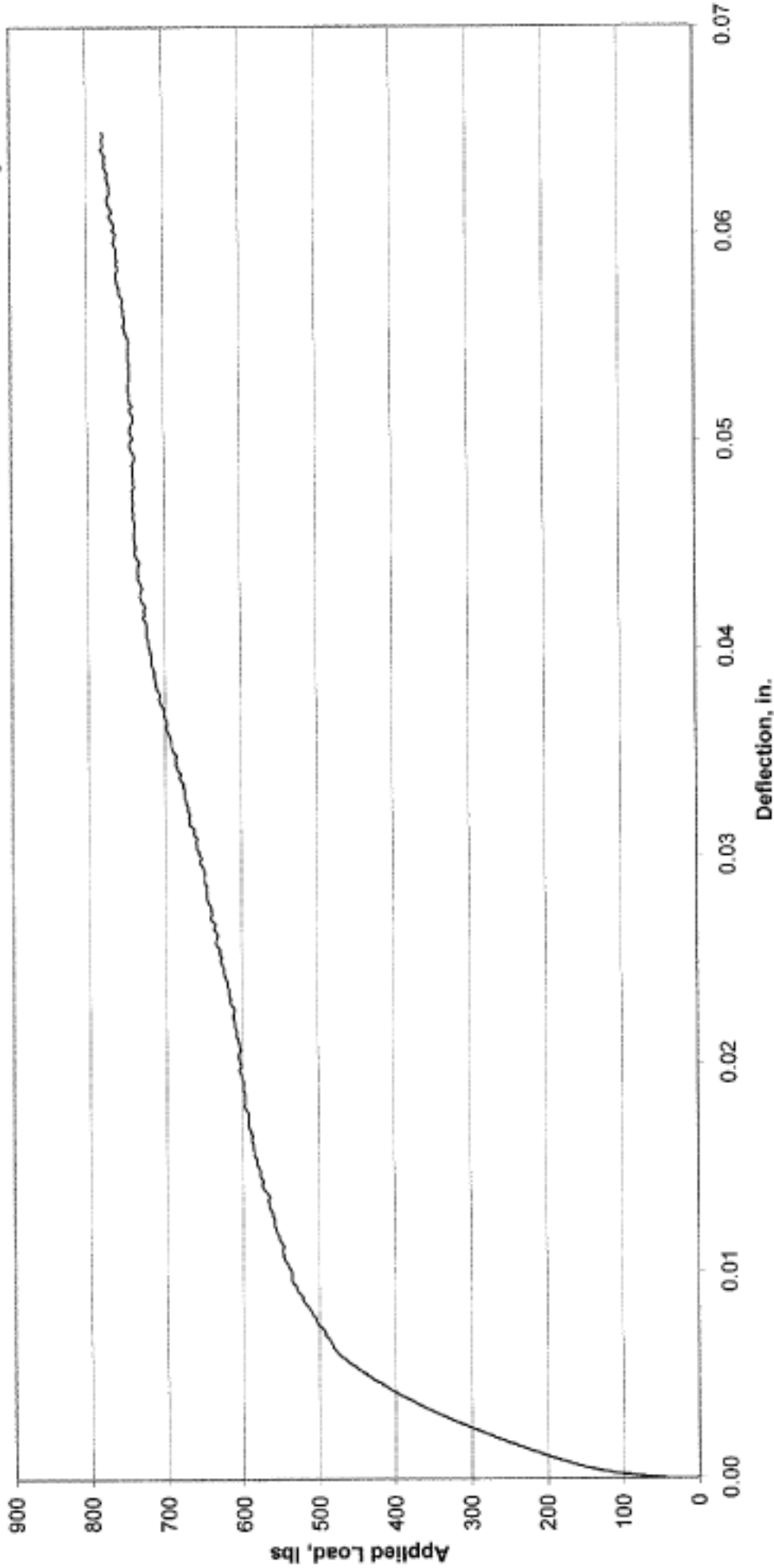
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Post Crack Deflection vs. Post Crack Load (ASTM:C1399)

Macro Fibers 1-1/2", Sample 1B (4.0 lb/yd³)

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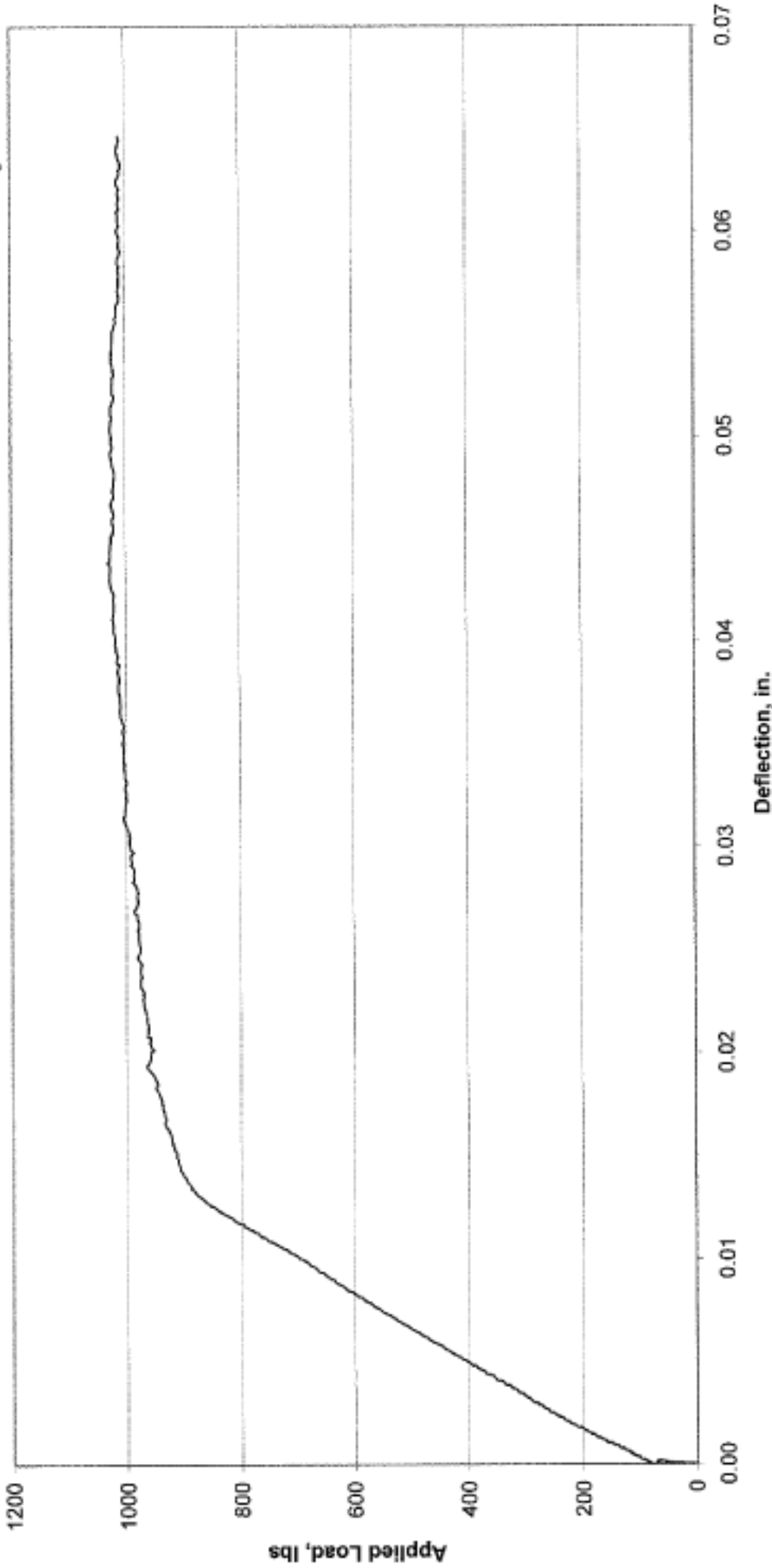
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ISO/IEC 17025 (ISO 9002 Compliant)
Non Destructive 1479-03
Mechanical 1479-01

Post Crack Deflection vs. Post Crack Load (ASTM:C1399)

Macro Fibers 1-1/2", Sample 1C (4.0 lb/yd³)

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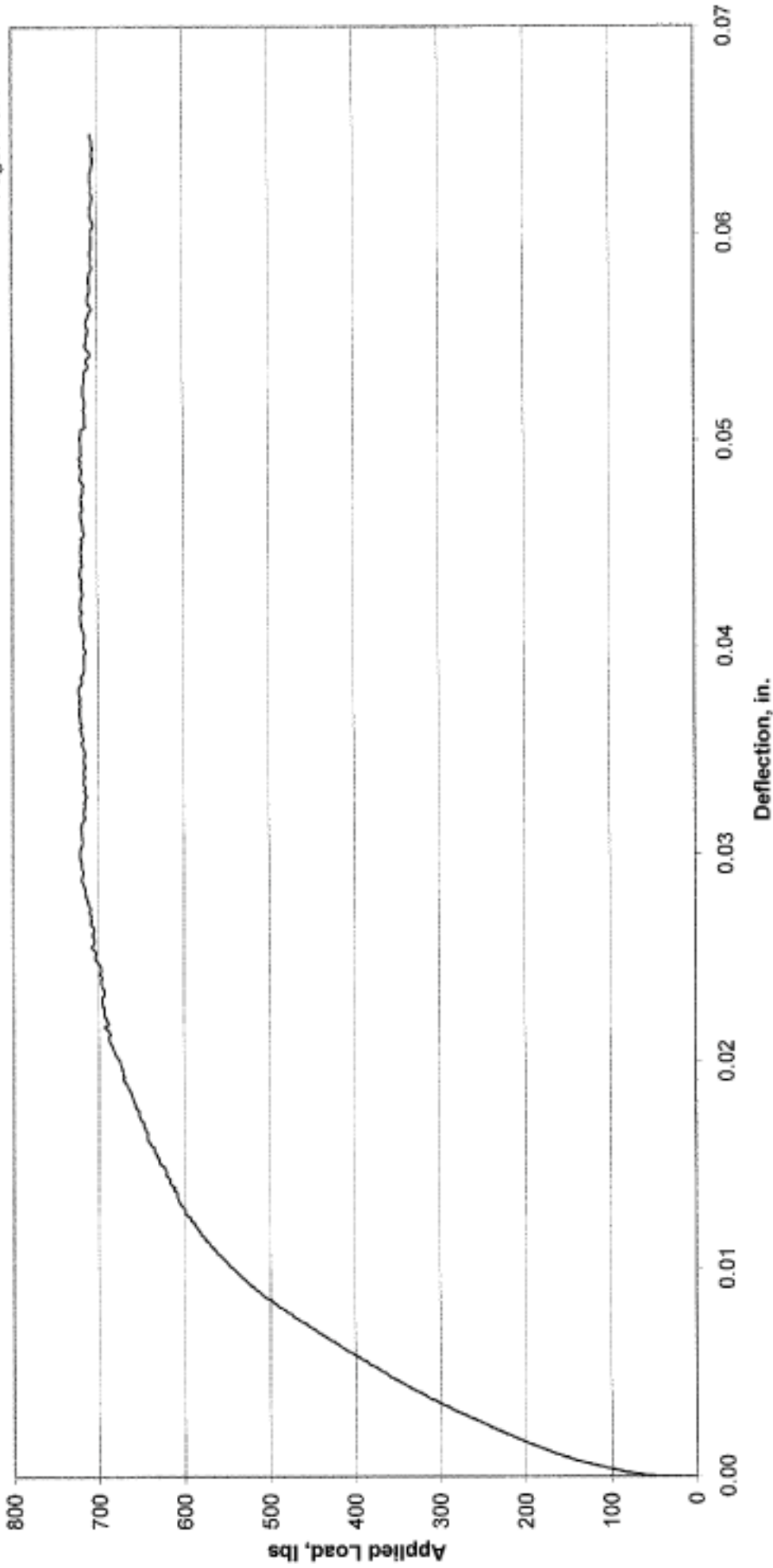
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