LGA Bautechnik GmbH
Ein Unternehmen der LGA® - Körperschaft des öffentlichen Rechts

Metallische Werkstoffe und Betonstahl

Durch die DAP Deutsches Akkreditierungssystem Prüfwesen GmbH
akkreditiertes Prüflaboratorium DAP-PL-1524.13

Zertifiziert nach DIN EN ISO 9001/14001

Test report

Number: BBBW2 0500181-1 **Date: 02.08.2005**

Applicant: Ritter GmbH
Kaufbeurer Straße 55
D-86830 Schwabmünchen

Date of order: 25.07.2005
Order No.: 706819

Scope of order: Compressive tests "Ritter grass securing honeycomb"

Samples: 20 pcs. "Grass securing honeycomb from Ritter", colour: green
Dimensions approx. 50 x 39 x 4,5cm

Supplied on: July 4, 2005

Date of testing: July 18, 2005

The test report consists of 3 text pages and 2 attachments.
The test results refer only to the samples as submitted to the test.

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Sitz und Registergericht Nürnberg HRB 20586
Geschäftsführer: Peter Röckl, Hans-Hermann Ueffing
Steuer-Nr. 241/115/90733 Ust-IdNr. DE813835574

1. Commission

The grass securing honeycomb tiles from Ritter Company made of plastic material were subjected to compressive tests at ambient temperature to determine load-bearing capacity.
The structures were filled with special lawn substrate made by Eggers Company. Subsequent to this the lawn substrate was manually compacted.
The tests were carried out by using the universal test machine, class 1 according to DIN EN ISO 7500-1.

2. Sampling and sample preparation

The samples as supplied by the applicant contained 20 honeycomb elements with the dimension of 504 x 387 x 45 mm ; the edge length of one single honeycomb was 31.5 mm.
Sample preparation: 2 strips (lengthwise) with 5 honeycombs each. In addition to this two single honeycombs were separated.

For testing purposes the honeycombs were filled using special substrate by Eggers Company, department Boretius building materials, Hamburg Pappenbüttaler Bogen 44, with the following composition:
Fine sand 0-3
Washed sand 0-2 / Sand
Lava 0-4
Green compost 0-15
0,5 kg/m3 nitrophoska-permanent

3. Test method

The compressive properties of the honeycombs cellular structure (for samples see section 2) were determined with reference to DIN EN ISO 604. The test specimen were filled with substrate intended for grass tiles (grates), compacted manually and loaded between two plane and parallel pressure plates. (see pictures 1 to 4, attachment 1).
Subsequent to this two additional compressive load tests using the loading device (Ø 230mm) were carried out on the honeycomb tiles which were filled with substrate and compacted. (see pictures 5 and 6, attachment 1)

For multi-peak traces evaluation (force diagram) see attachment 2.

4. Test results

Test temperature 26,5° C

Test specimen and compressive load test procedure	Test Nr.	Force [kN]	Minimum compressive strength [kN/m²]	Test result
Strip of 5 honeycomb tiles, loaded, between pressure plates	1	100kN	**8115**	No breakage, honeycomb tiles showed plastic deformation ca. 2-3 mm
Strip of 5 honeycomb tiles, loaded between two pressure plates	2	100kN	**8115**	No breakage; honeycomb tiles showed plastic deformation ca. 2-3 mm
Single honeycomb tile loaded between pressure plate	3	10kN	**3880**	No breakage, honeycomb tile showed plastic deformation ca. 2-3 mm
Honeycomb element, size 50 x 39cm, loading device Ø 230mm	4	200kN	**4814**	No breakage, honeycomb tile showed plastic deformation ca. 1-2 mm
Honeycomb element, size 50 x 39cm, loading device Ø 230mm	5	200kN	**4814**	No breakage, honeycomb tile showed plastic deformation ca. 1-2 mm

The test results refer to the sample at the state of delivery.

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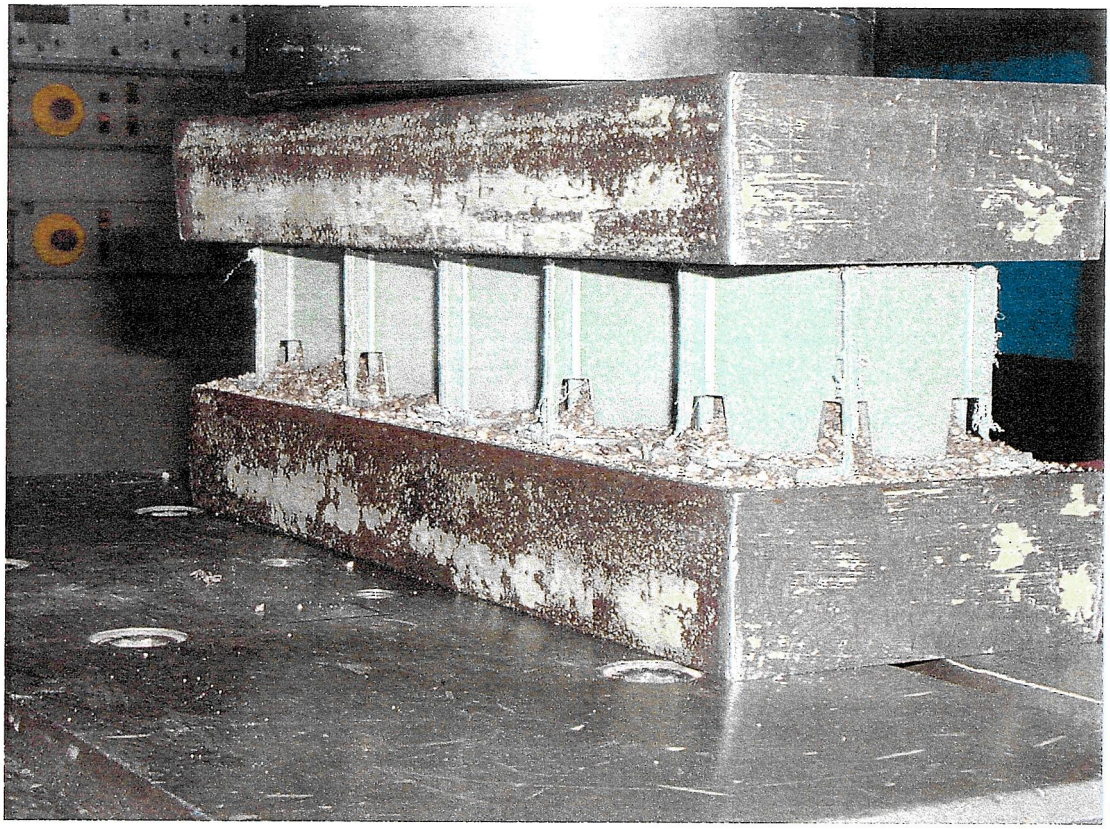
Test engineer:

Dipl.-Ing. (FH) Stradtner
Techn. Oberamtsrat
Fachzentrumsleiter / Head of Competence Centre

Dipl.-Ing. (FH) Pichl

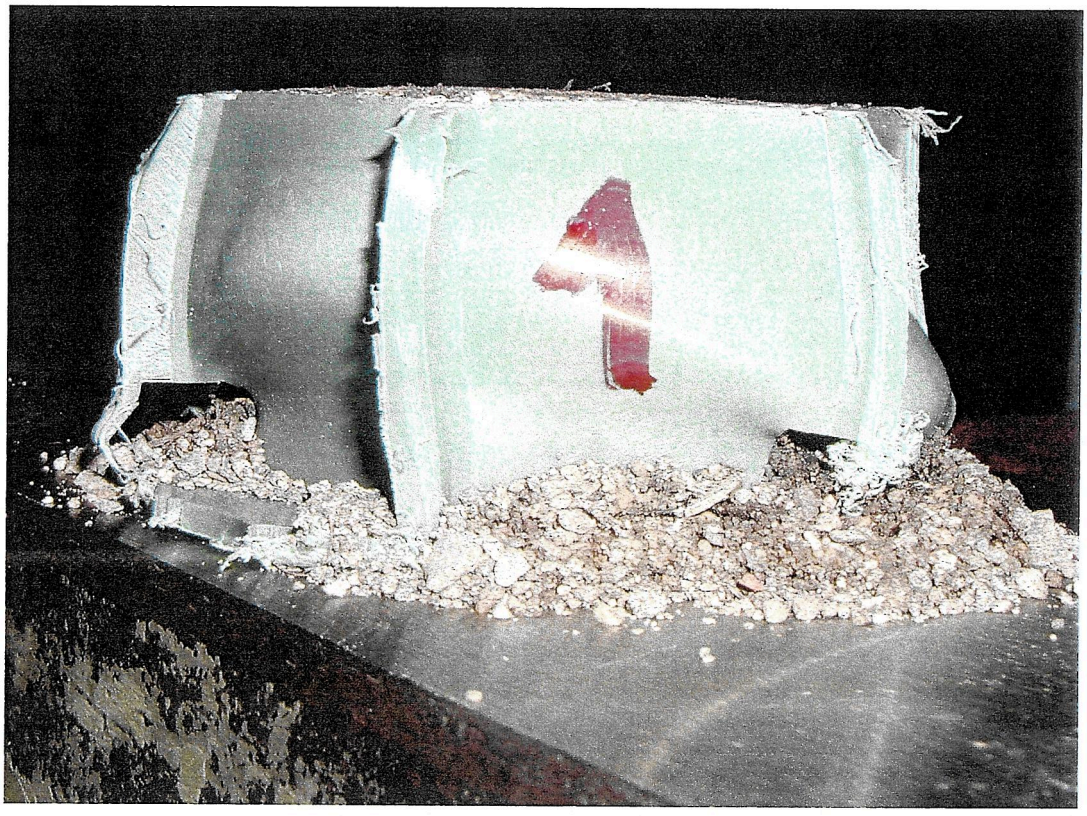
Picture 1 (loading the test specimen in the test machine)



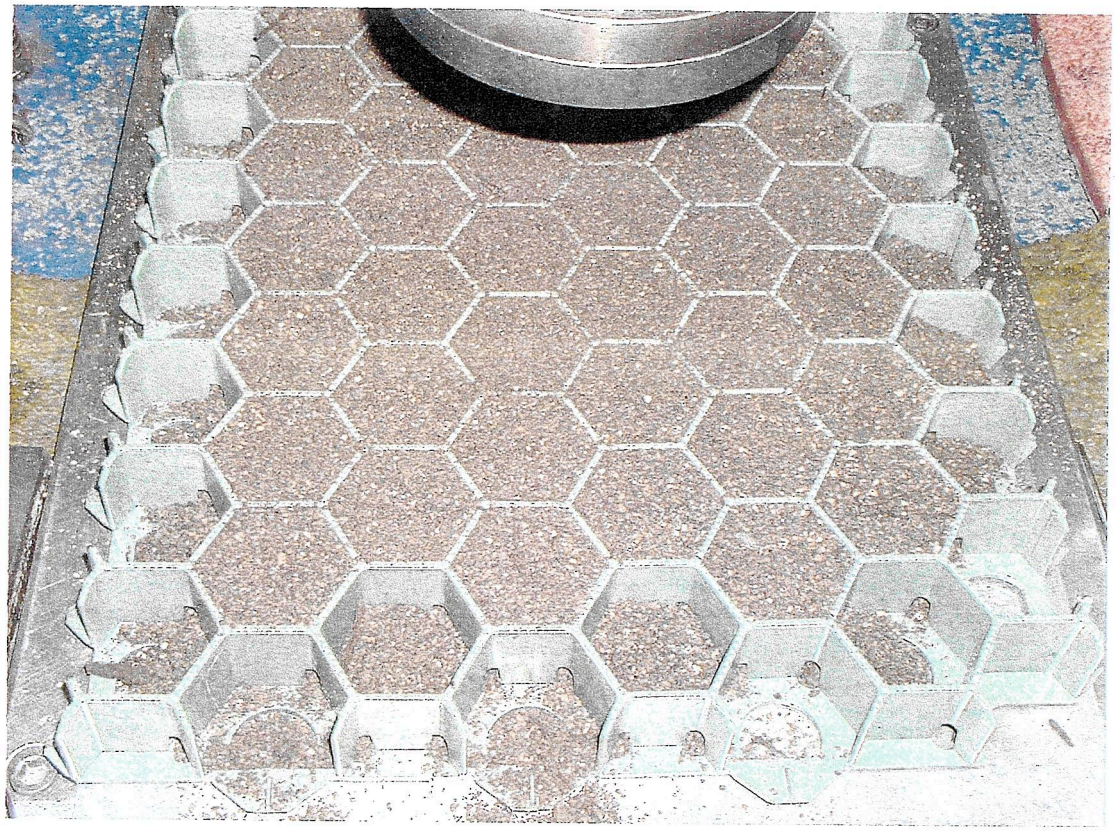
Picture 2 (loading the test specimen in the test machine)

Picture 3 (Samples after the test)

Picture 4 (Samples after the test)



Picture 5 (Filling the complete honeycomb structure sheet)



Picture 6 (loading the complete honeycomb structure sheet)