

TEST REPORT No. 335895

Place and date of issue: Bellaria-Igea Marina - Italy, 29/08/2016

Customer: GUTTA WERKE GmbH Bau- und Heimwerkerprodukte - Bahnhofstraße 51-57 - 77746 SCHUTTERWALD - Germany

Date test requested: 09/06/2016

Order number and date: 70181, 09/06/2016

Date sample received: 09/06/2016

Test date: from 22/07/2016 to 25/07/2016

Purpose of test: uniform loading of verandas

Test site: Istituto Giordano S.p.A. - Blocco 8 - Via del Lavoro, 1 - 47814 Bellaria-Igea Marina (RN) - Italy

Sample origin: sampled and supplied by the Customer

Identification of sample received: No. 2016/1672

Sample name*

The three types of veranda forming the test sample have the following names:

- type “A”: “KIT PATIO 3 X 3 METRI” (“3 X 3 M TERRACE ROOF BUILDING KIT”);
- type “B”: “KIT PATIO 4,2 X 3 METRI” (“4,2 X 3 M TERRACE ROOF BUILDING KIT”);
- type “C”: “KIT PATIO 5,4 X 3 METRI” (“5,4 X 3 M TERRACE ROOF BUILDING KIT”).

Description of sample*

The test sample comprises 3 types of veranda having extruded-aluminium structural members and polycarbonate roof sheets.

More specifically, the various types have the following characteristics:

- type “A”: veranda, nominal plan-view dimensions 3 m × 3 m, supported at the front by 2 posts and fixed at the back to a concrete wall;
- type “B”: veranda, nominal plan-view dimensions 4,2 m × 3 m, supported at the front by 3 posts and fixed at the back to a concrete wall;
- type “C”: veranda, nominal plan-view dimensions 5,4 m × 3 m, supported at the front by 3 posts and fixed at the back to a concrete wall.

(*) according to that stated by the Customer.

Comp. AV
Revis. MI

This test report consists of 19 sheets.
This document is the English translation of the test report No. 335895 dated 29/08/2016 issued in Italian; in case of dispute the only valid version is the Italian one. Date of translation: 16/09/2016.

Sheet
1 of 19

In accordance with Customer instructions, Istituto Giordano staff assembled the various types of veranda in the laboratory, fixing them on one side to a wall of concrete blocks and underneath to industrial flooring.



Photos of the type "A" veranda



Photos of the type "B" veranda



Photos of the type "C" veranda

Test apparatus

The following equipment was used to carry out the test:

- 100 sandbags, average weight 25,0 kg;
- Mitutoyo Corporation DIGICON digital tape measure, measuring range 0-5,5 m and resolution 0,1 mm, (apparatus in-house identification code SC381);
- Delta OHM HD 2301.0 portable hydro-thermometer with HP472 AC probe for measuring temperature and relative humidity (apparatus in-house identification code SC357);
- 6 potentiometric displacement transducers for measuring displacement;
- FBM/A field data acquisition system for load testing with integrated PC for real-time acquisition, display and logging of sample displacement;

Test method

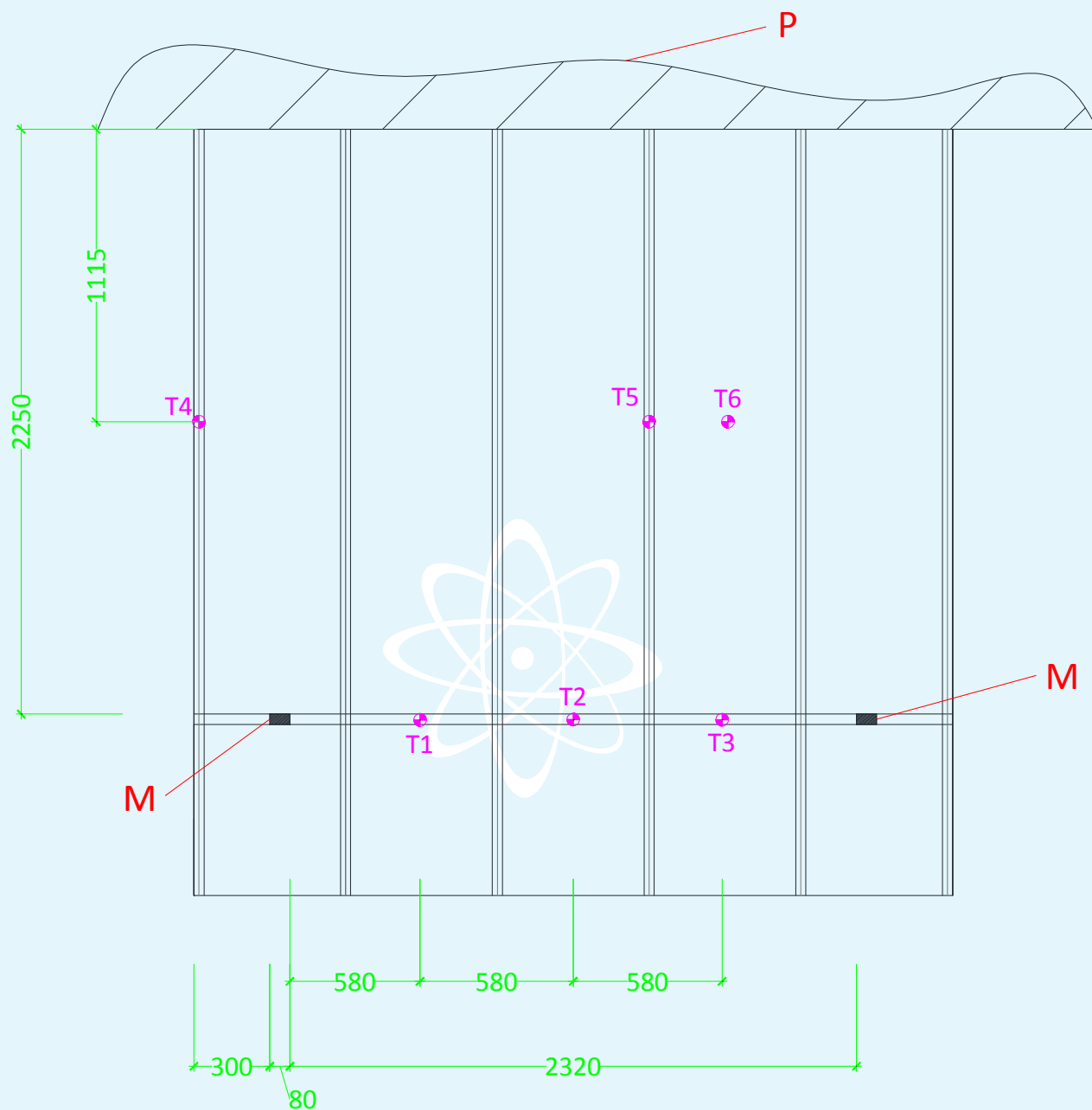
Each type of veranda undergoes a uniform distributed load test.

Having assembled the veranda in accordance with Customer instructions, sandbags are added in steps in order to create a distributed load.

During each step, vertical displacement of the veranda under test is monitored by the six displacement transducers.

The following figures show the displacement transducer arrangement on the underside of the veranda and the loading steps.

DISPLACEMENT TRANSDUCER ARRANGEMENT ON THE UNDERSIDE OF THE TYPE "A" VERANDA



Key

Symbol	Description
P	Concrete supporting wall
M	Post
T	Displacement transducer

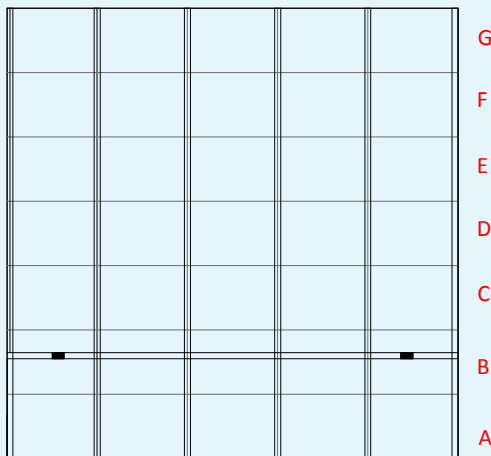
TYPE "A" VERANDA LOAD STEPS



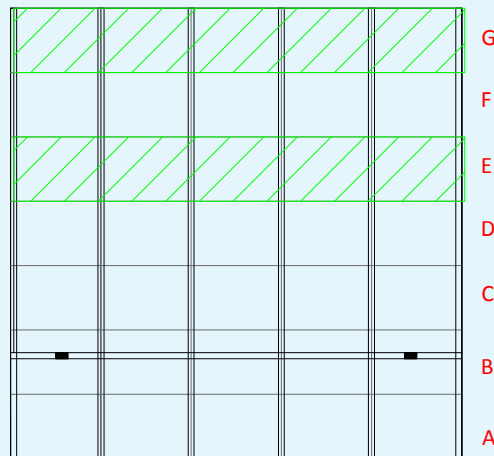
Sand beds



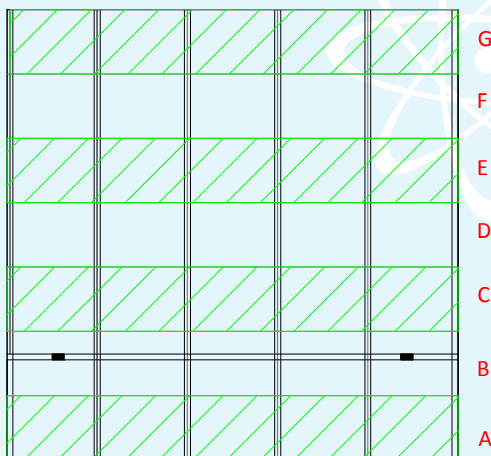
STEP 0: UNLOADED SAMPLE



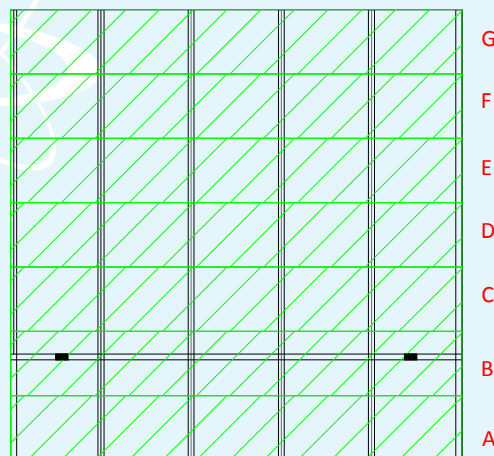
STEP 1



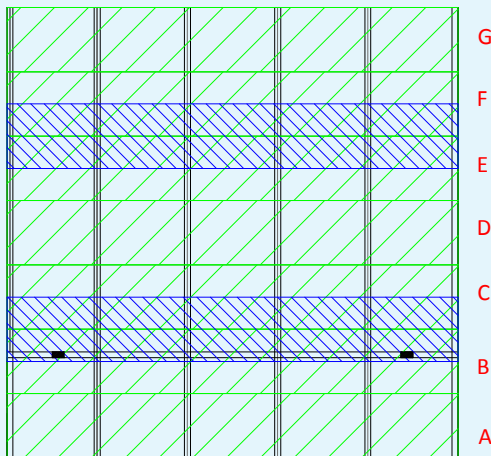
STEP 2



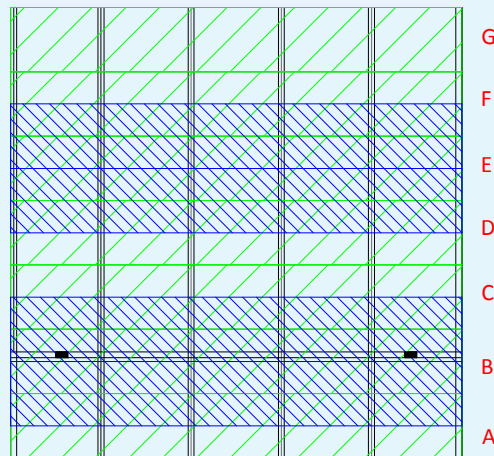
STEP 3



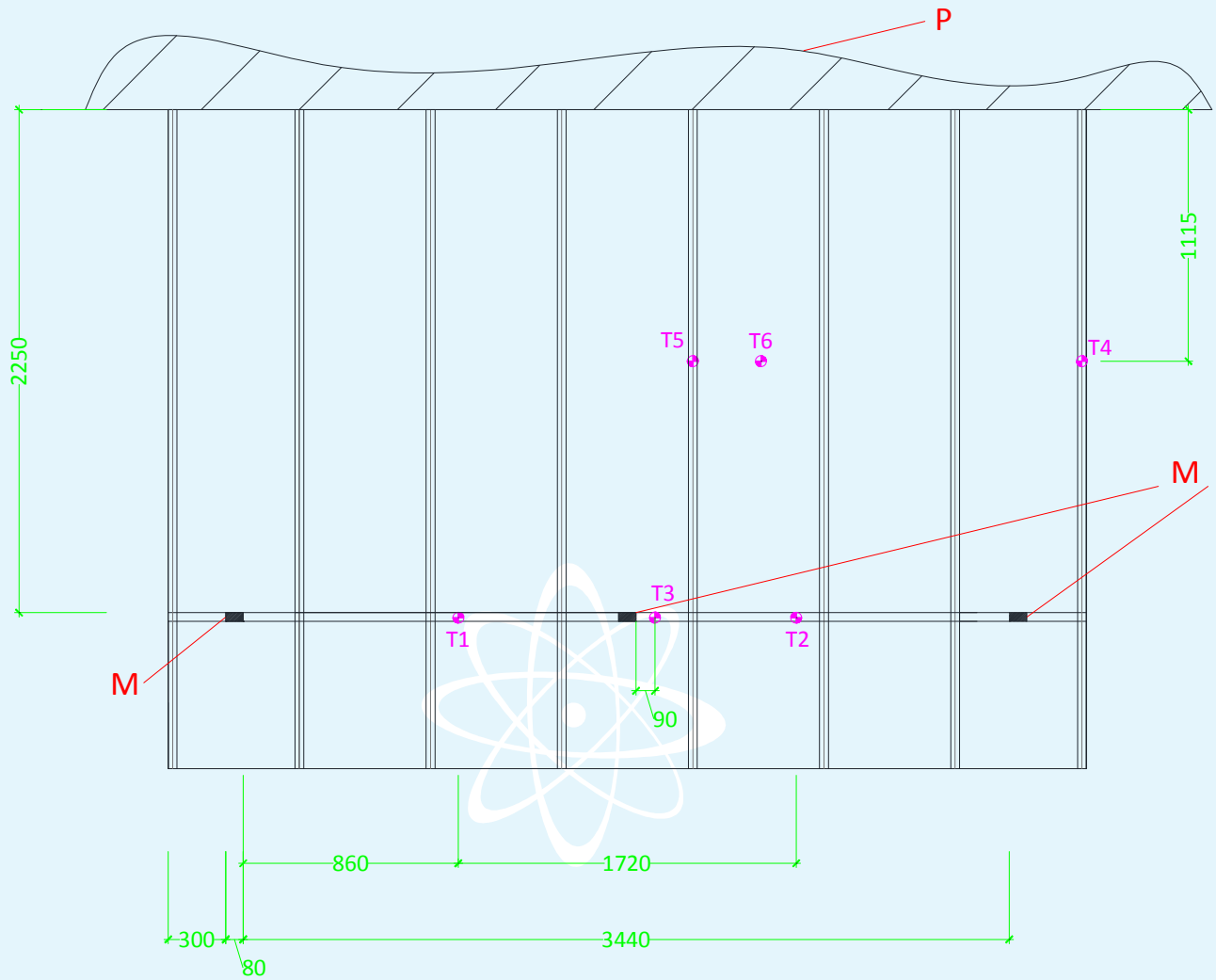
STEP 4



STEP 5



DISPLACEMENT TRANSDUCER ARRANGEMENT ON THE UNDERSIDE OF THE TYPE "B" VERANDA



Key

Symbol	Description
P	Concrete supporting wall
M	Post
T	Displacement transducer

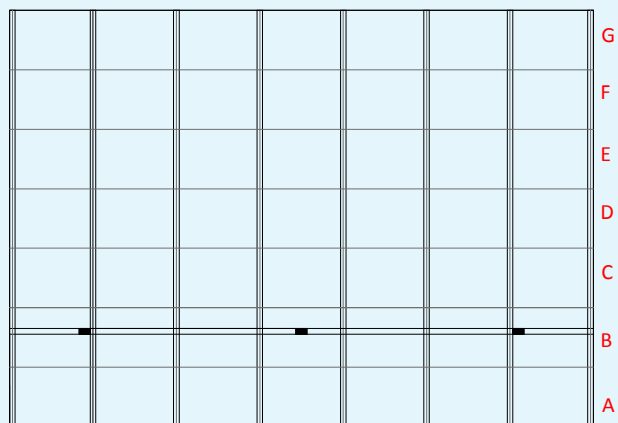
TYPE "B" VERANDA LOAD STEPS



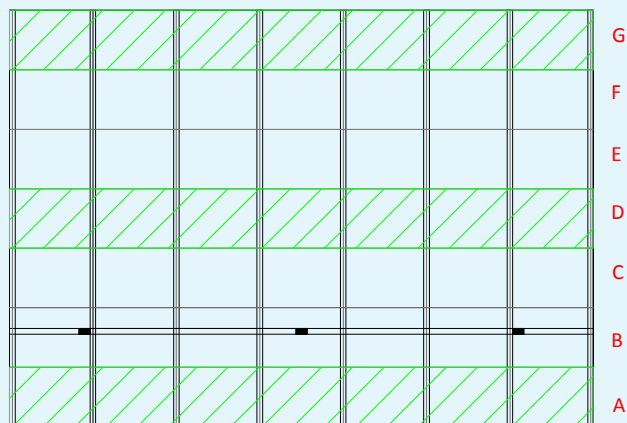
Sand bays



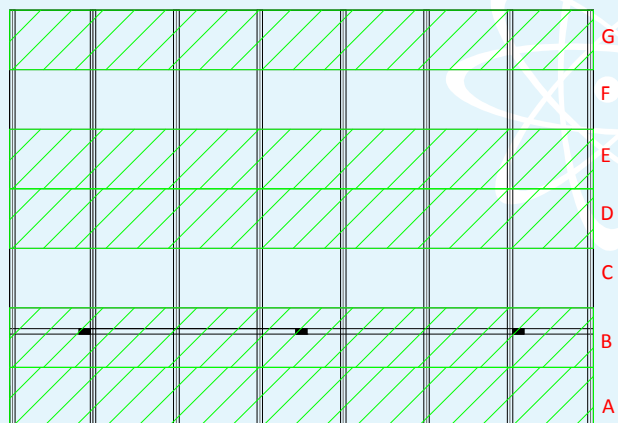
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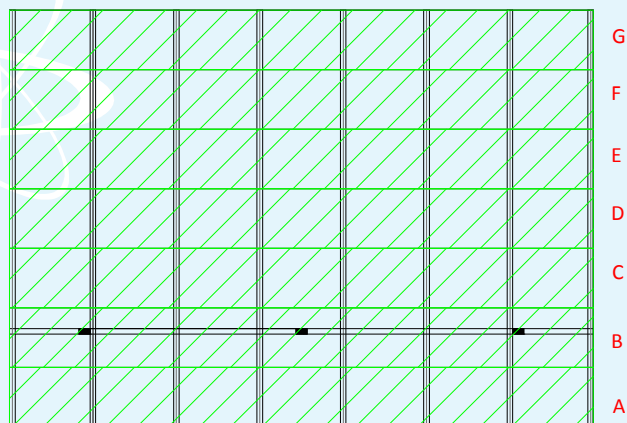
STEP 1



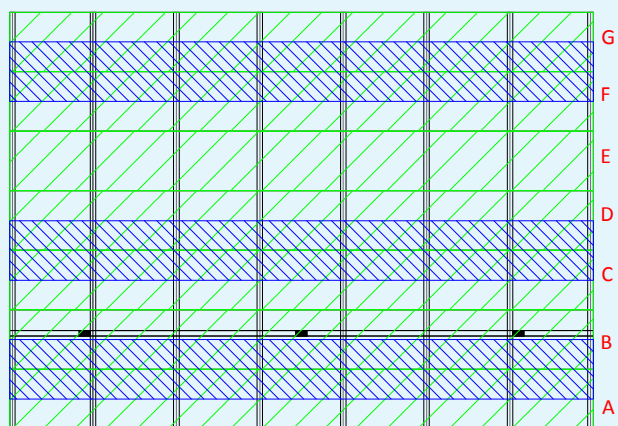
STEP 2



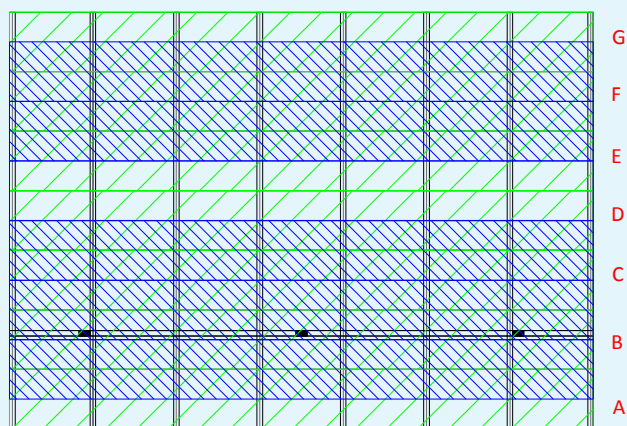
STEP 3



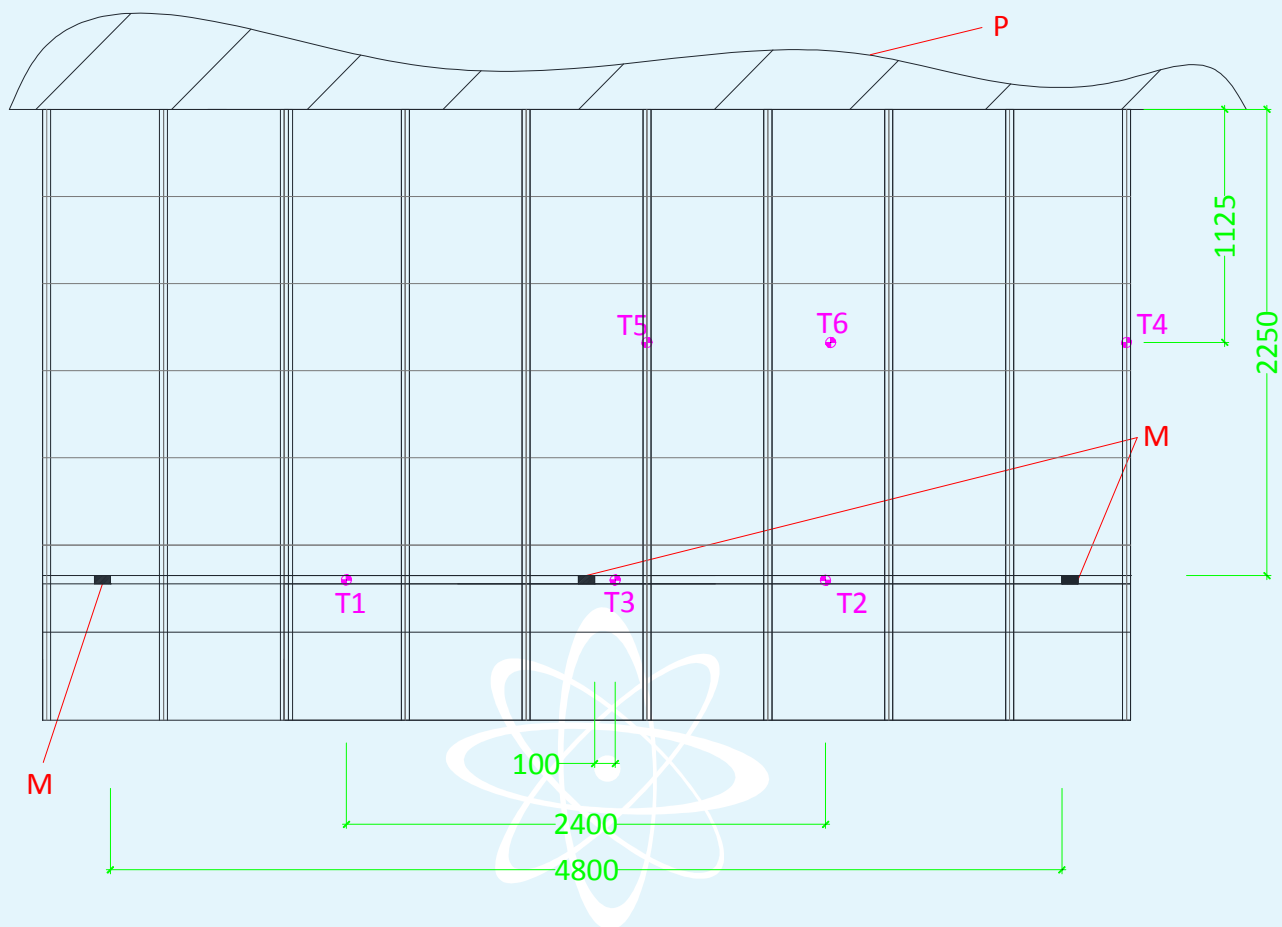
STEP 4



STEP 5



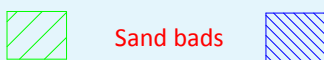
DISPLACEMENT TRANSDUCER ARRANGEMENT ON THE UNDERSIDE OF THE TYPE "C" VERANDA



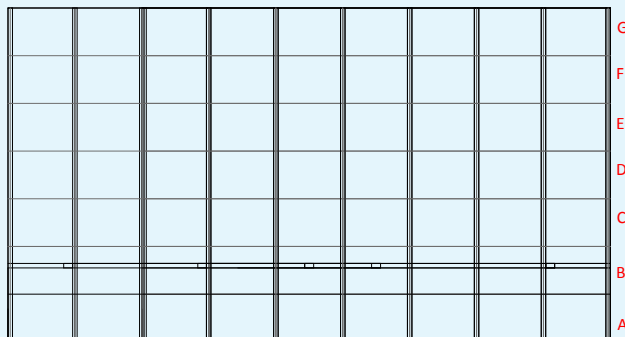
Key

Symbol	Description
P	Concrete supporting wall
M	Post
T	Displacement transducer

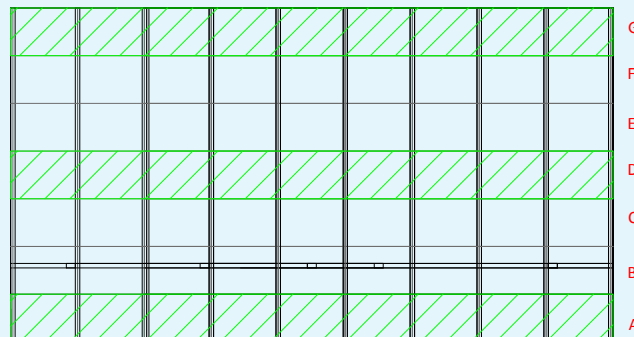
TYPE "C" VERANDA LOAD STEPS



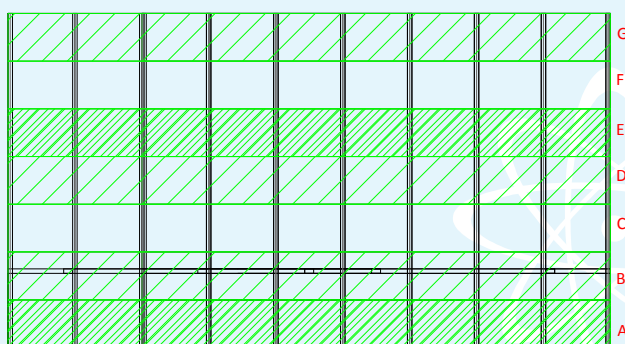
STEP 0: UNLOADED SAMPLE



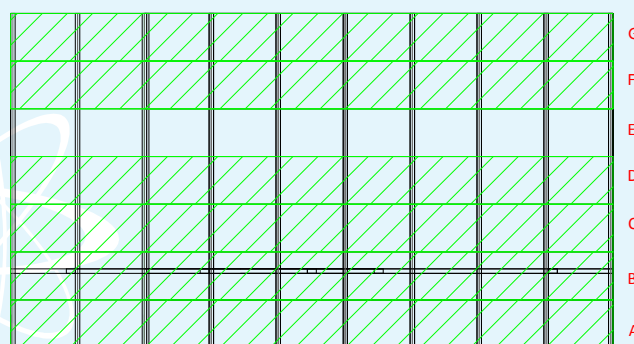
STEP 1



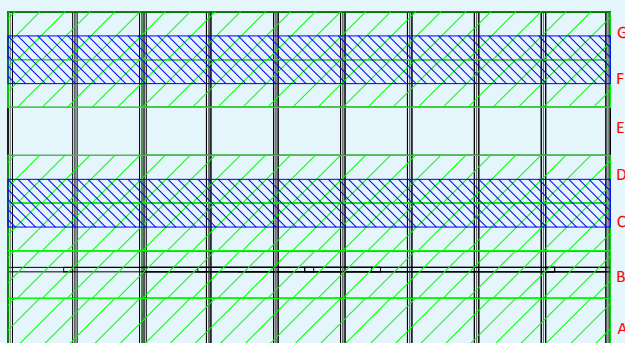
STEP 2



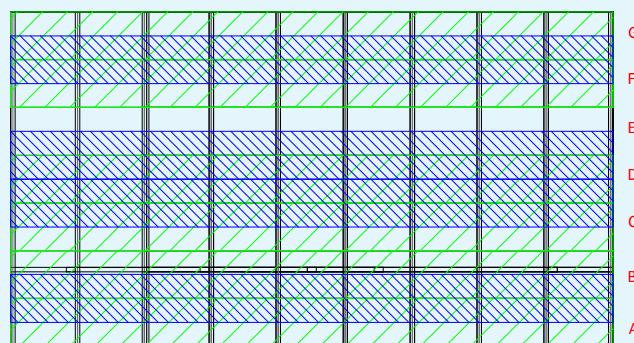
STEP 3



STEP 4



STEP 5



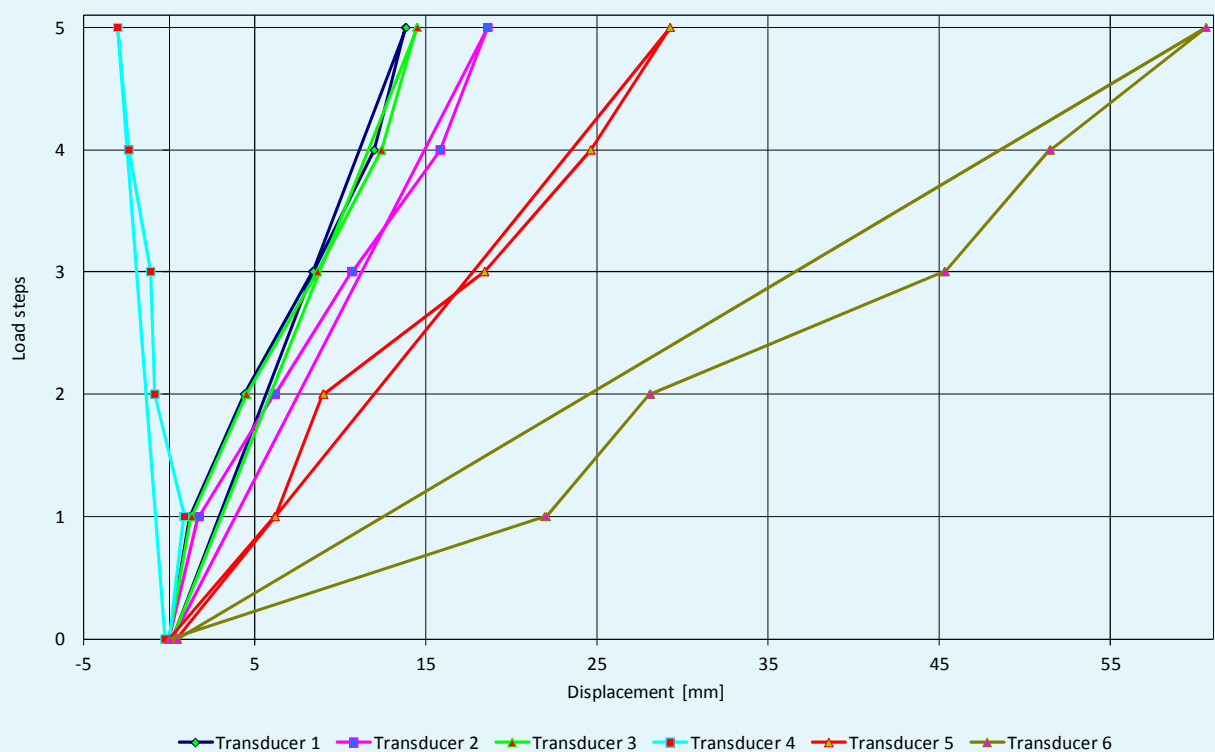
Test results

TYPE "A" VERANDA

Veranda area	9,0 m ²
Maximum load achieved	152,8 kg/m ²

Time [h:min]	Load step	Sandbags [No.]	Displacement					
			T1 [mm]	T2 [mm]	T3 [mm]	T4 [mm]	T5 [mm]	T6 [mm]
15:00	0	0	0,00	0,00	0,00	0,00	0,00	0,00
15:05	1	10	1,22	1,73	1,31	0,89	6,18	21,96
15:10			1,25	1,75	1,35	0,93	6,21	22,05
15:20	2	20	4,39	6,15	4,53	-0,80	8,98	28,05
15:25			4,41	6,19	4,55	-0,82	9,02	28,12
15:30	3	35	8,41	10,69	8,68	-1,04	18,43	45,30
15:35			8,43	10,73	8,71	-1,04	18,44	45,35
15:40	4	45	12,00	15,85	12,44	-2,30	24,62	51,45
15:45			12,02	15,86	12,44	-2,32	24,65	51,48
16:00	5	55	13,81	18,59	14,46	-3,00	29,25	60,56
16:30			13,85	18,64	14,50	-3,00	29,27	60,57
17:00	0	0	0,18	0,22	0,20	-0,22	0,45	0,52
17:30			0,16*	0,20*	0,18*	-0,20*	0,41*	0,50*

(*) permanent set.



TYPE "A" VERANDA



Photos of veranda showing displacement transducer arrangement on the underside



Photos of veranda showing sandbag distribution during load steps 2 and 3

TYPE "A" VERANDA



Photos of veranda showing sandbag distribution during maximum load step 5



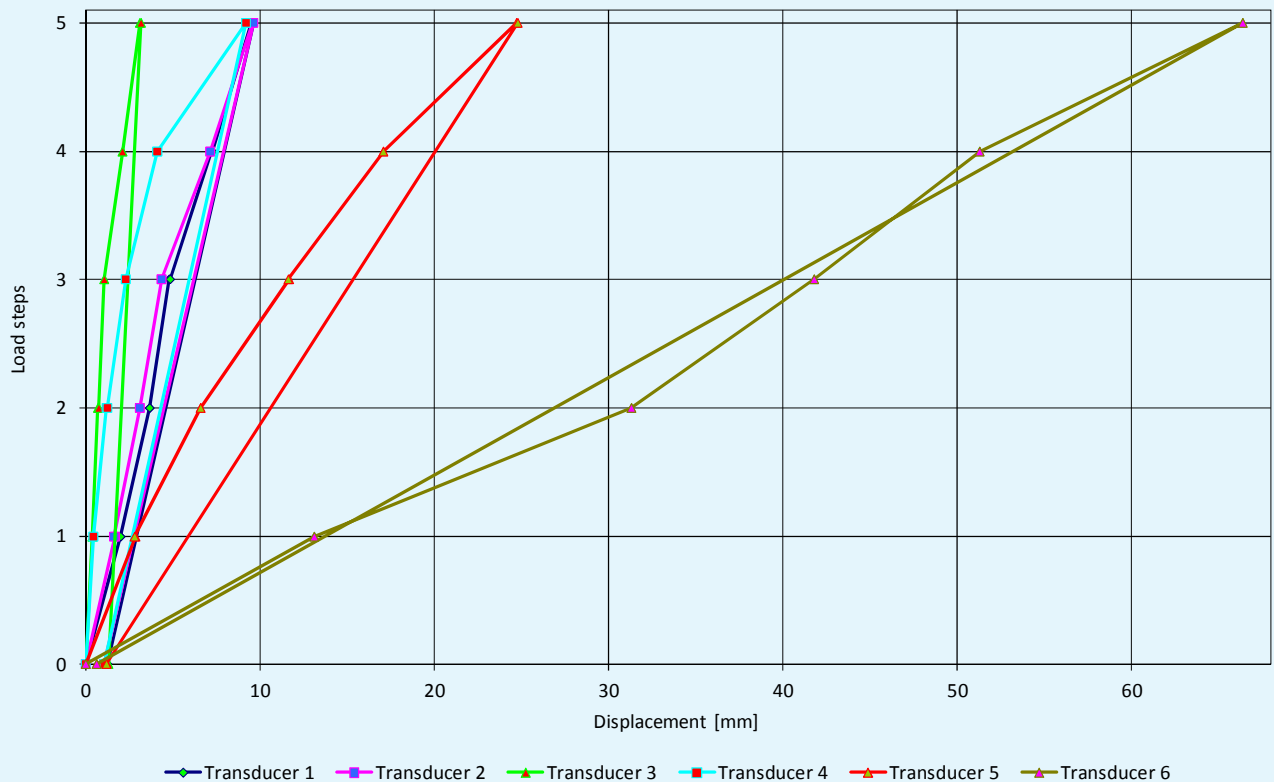
Photos of veranda showing polycarbonate sheets during maximum load step 5

TYPE "B" VERANDA

Veranda area	12,6 m ²
Maximum load achieved	166,6 kg/m ²

Time [h:min]	Load step	Sandbags [No.]	Displacement					
			T1 [mm]	T2 [mm]	T3 [mm]	T4 [mm]	T5 [mm]	T6 [mm]
14:55	0	0	0,00	0,00	0,00	0,00	0,00	0,00
15:15	1	21	2,03	1,67	0,39	0,43	2,85	13,10
15:21			2,03	1,66	0,39	0,43	2,83	13,10
15:35	2	35	3,71	3,12	0,73	1,23	6,61	31,30
15:49			3,71	3,12	0,75	1,24	6,61	31,32
15:55	3	49	4,83	4,35	1,07	2,34	11,67	41,77
16:05			4,84	4,34	1,09	2,34	11,66	41,79
16:25	4	70	7,21	7,16	2,11	4,10	17,11	51,30
16:30			7,26	7,19	2,16	4,12	17,12	51,31
16:40	5	84	9,55	9,59	3,13	9,19	24,74	66,40
17:10			9,63	9,65	3,16	9,20	24,80	66,40
17:30	0	0	1,25	1,05	1,32	1,08	1,23	0,67
18:00			1,25*	1,05*	1,32*	1,08*	1,21*	0,63*

(*) permanent set.



TYPE "B" VERANDA



Photos of veranda showing displacement transducer arrangement on the underside

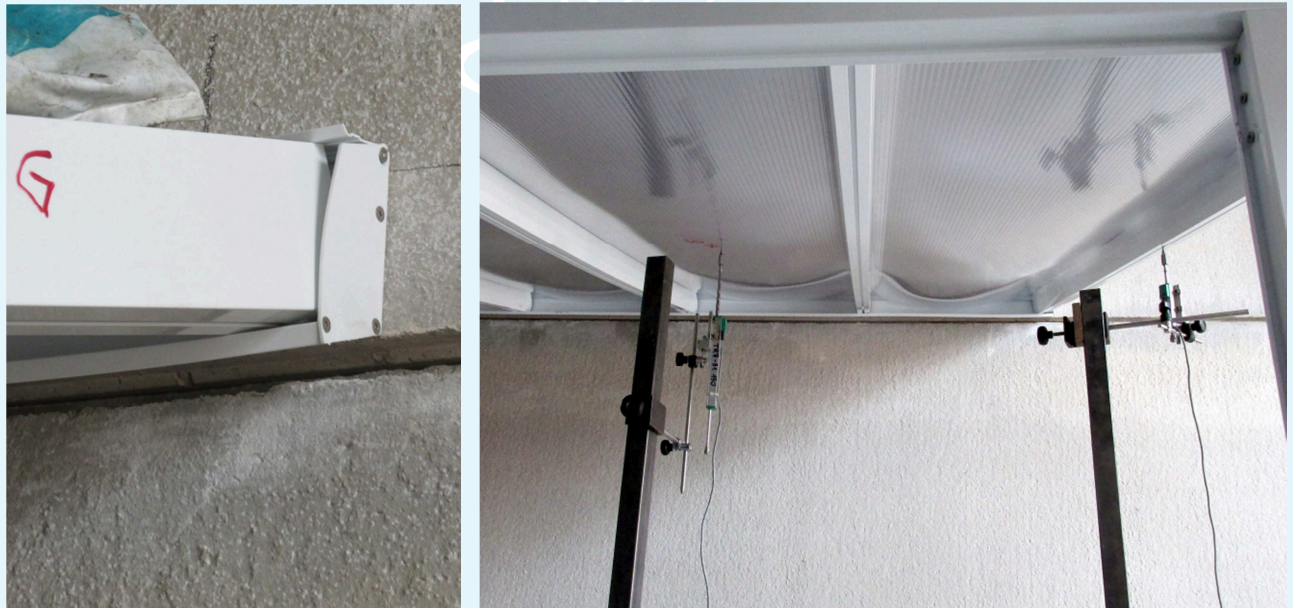


Photo of veranda showing sandbag distribution during load step 1

TYPE "B" VERANDA



Photos of veranda showing sandbag distribution during maximum load step 5



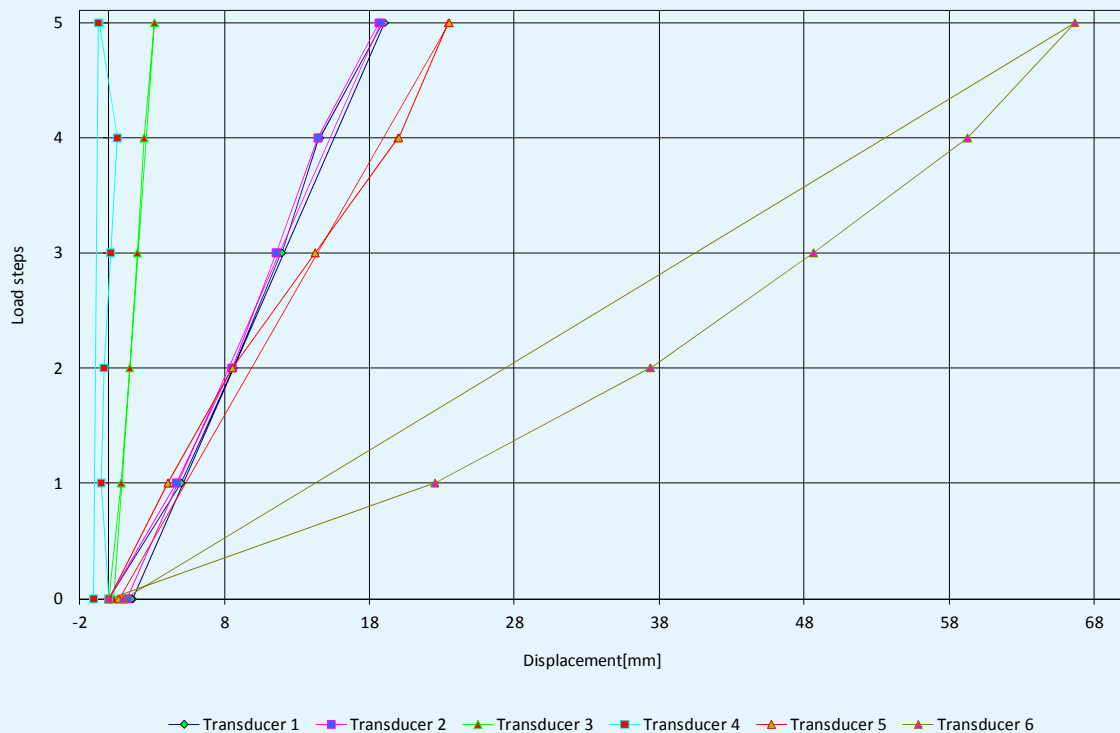
Photos of veranda showing end section and polycarbonate sheets during maximum load step 5

TYPE "C" VERANDA

Veranda area	16,2 m ²
Maximum load achieved	152,8 kg/m ²

Time [h:min]	Load step	Sandbags [No.]	Displacement					
			T1 [mm]	T2 [mm]	T3 [mm]	T4 [mm]	T5 [mm]	T6 [mm]
14:50	0	0	0,00	0,00	0,00	0,00	0,00	0,00
15:10	1	27	5,00	4,67	0,88	-0,48	4,09	22,52
15:15			5,02	4,70	0,88	-0,48	4,11	22,55
15:25	2	45	8,60	8,51	1,50	-0,32	8,58	37,38
15:30			8,61	8,55	1,50	-0,32	8,58	37,42
15:40	3	63	11,90	11,55	2,00	0,15	14,28	48,65
15:45			11,94	11,58	2,01	0,15	14,29	48,65
15:55	4	81	14,53	14,47	2,48	0,62	19,99	59,24
16:00			14,57	14,49	2,48	0,62	20,01	59,24
16:10	5	99	18,93	18,67	3,17	-0,63	23,44	66,65
16:40			19,07	18,77	3,19	-0,70	23,49	66,67
17:00	0	0	1,68	1,30	0,37	-1,00	0,73	1,05
17:30			1,63*	1,30*	0,37*	-1,00*	0,71*	0,99*

(*) permanent set.



TYPE "C" VERANDA



Photos of veranda showing displacement transducer arrangement on the underside



Photos of veranda showing sandbag distribution during load steps 1 and 2

TYPE "C" VERANDA



Photo of veranda showing sandbag distribution during load step 3



Photos of veranda showing sandbag distribution during maximum load step 5

TYPE "C" VERANDA



Photos of veranda showing end sections during maximum load step 5



Photo of veranda showing polycarbonate sheets during maximum load step 5

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