Doc. Eng. Guido Rubini
Order of the Engineers of the Province of Bergamo

CLEAN ROOM CEILING PANELS TEST REPORT

Issued for:

NICOMAC EUROPE Ltd
Via Curiel, 12 - Liscate -MI-

Dated: November 11th 2016

LOAD TEST REPORT

On November 11th 2016, as per instructions given by NICOMAC EUROPE Ltd located in Liscate (MI) Via Curiel, 12, the undersigned, Doc. Eng. Guido Rubini, certified by Order of the Engineers of the Province of Bergamo no. 960, have performed a load test as described below;

The following people were present:

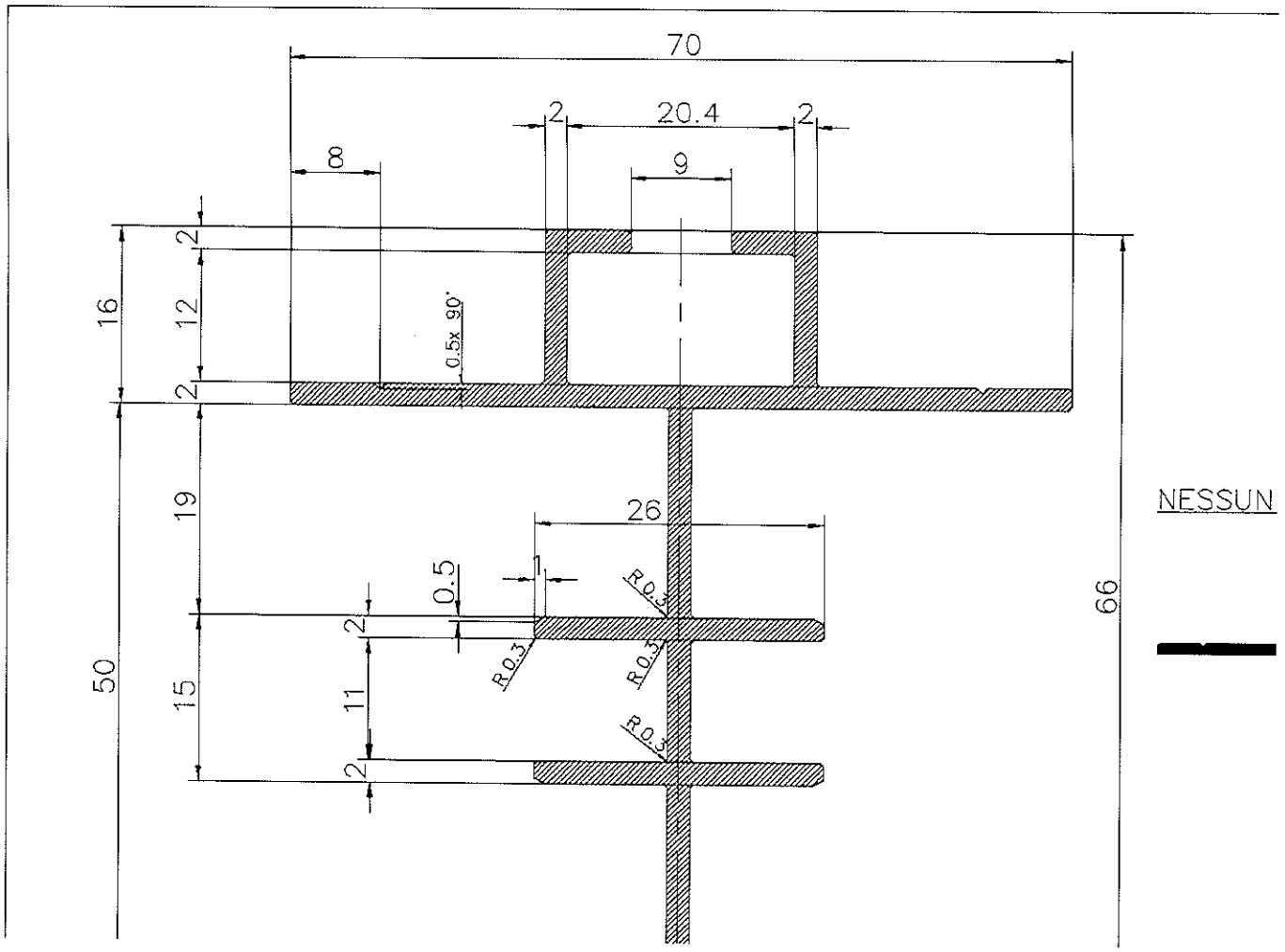
- Doc. Eng. Pietro Zanchi - Operational Director at NICOMAC
- Doc. Arch. Valentino Algieri - Draftsman at NICOMAC.
- Mr. Roberto Sironi - Cleanroom Production Director at NICOMAC

Material to be tested:

The structure under test is obtained through a ceiling panel type PPS-ST-RW-ST with dimensions mm 1200 x 3000, with prepainted steel sheet (ST) 8/10 mm thick, with rock wool insulation density 120 Kg/m3 - 50mm thick. The perimeter of the panel is made of steel profiles of commercial type (enclosure A).

Enclosure A- panel type PPS-ST-RW-ST and frame profile

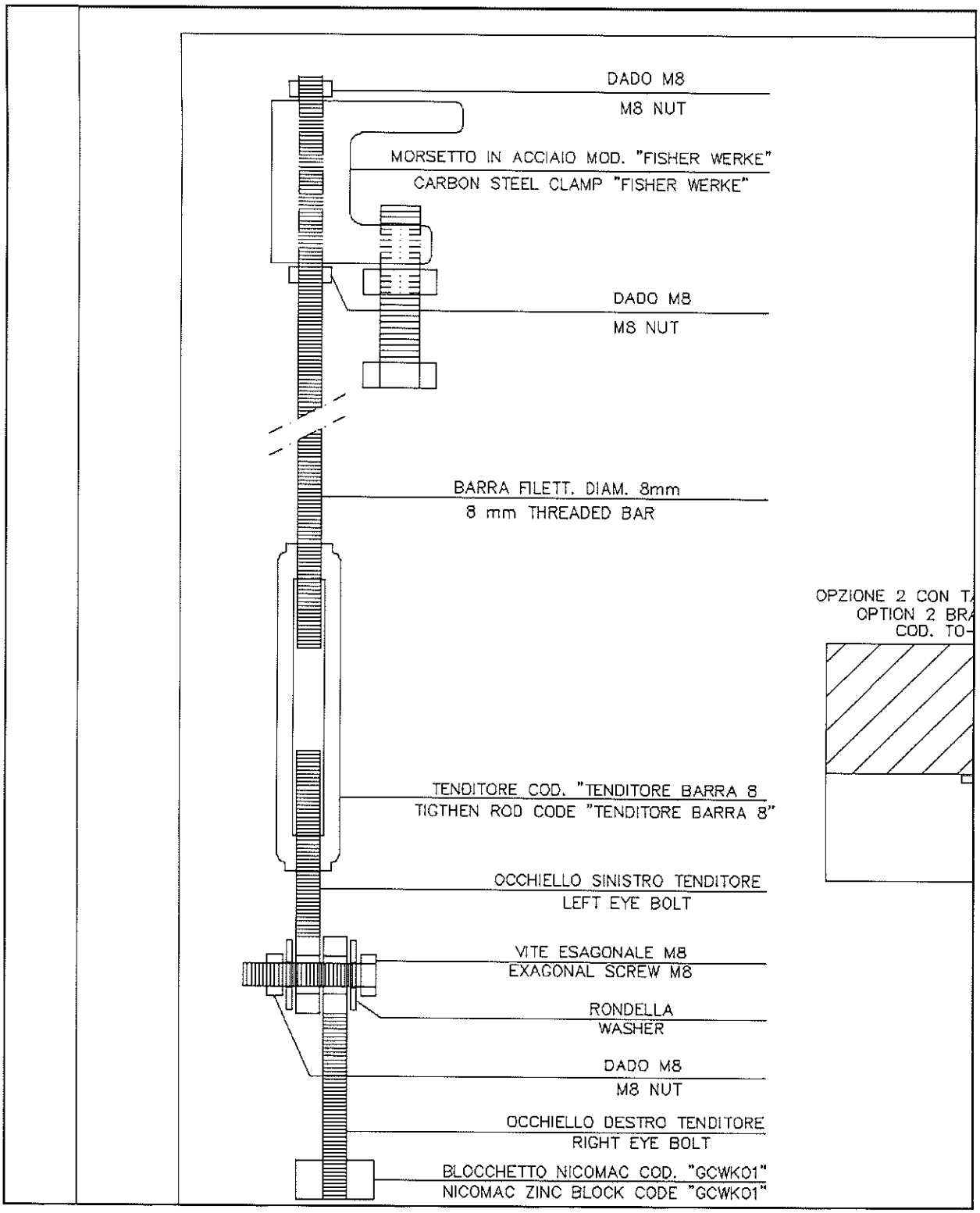
The two long sides of the panel are supported by an aluminum profile type VB10545 (enclosure B).



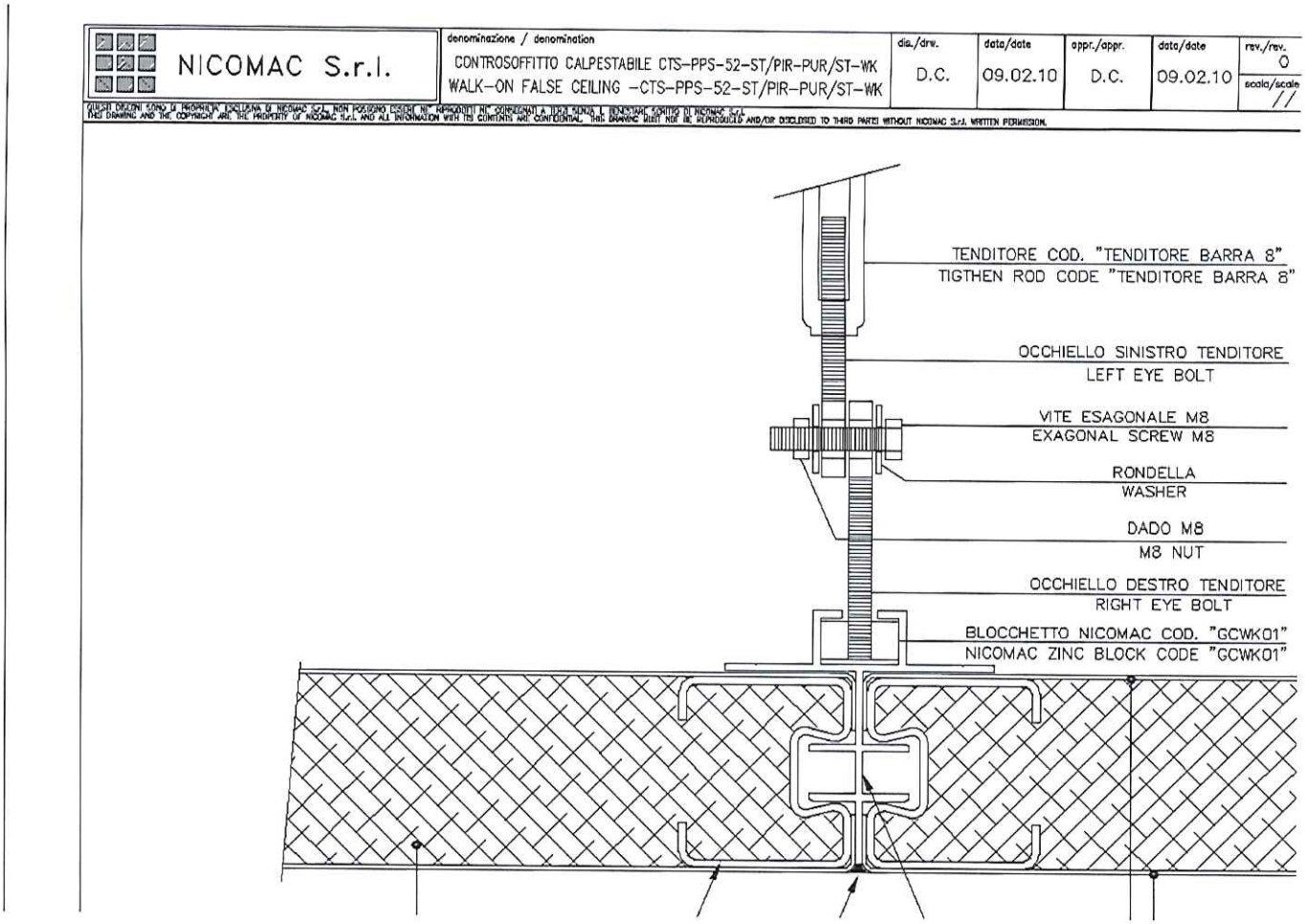
Enclosure B – detail of profile type VB10545

The test structure is completed by 6 hangers threaded rod M8 and turnbuckle (enclosure C) and is supported by steel beams. The whole assembly is described in the following drawing (enclosure D) and picture (Enclosure E).

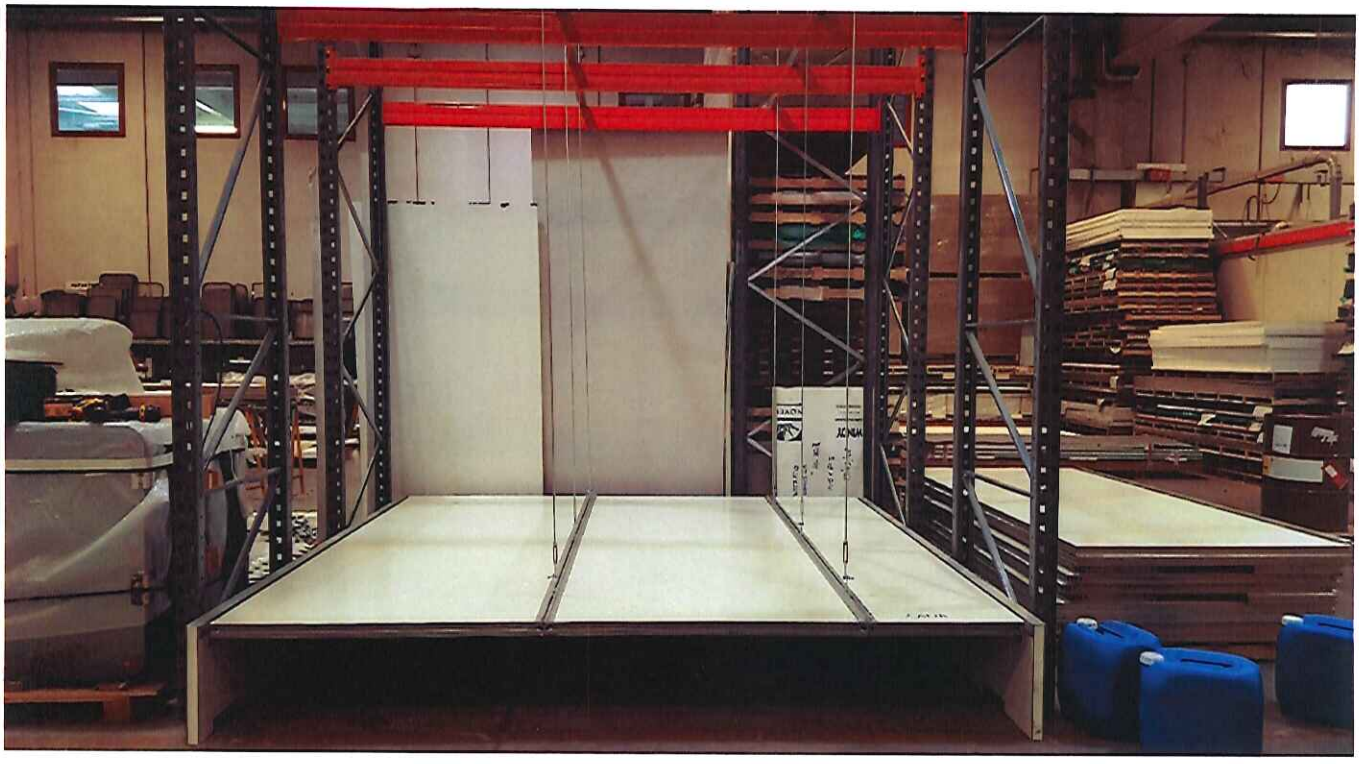
To better represent the operating conditions of the panel subjected to load test, two panels have been placed side by side laterally. The inner side of these panels is joint to the same VB10545 profiles supported by hangers as described above while externally are supported by a pillar of the size of 3000x500mm.



Enclosure C – detail of hanger rod between the structure used for the test and the building roof structure



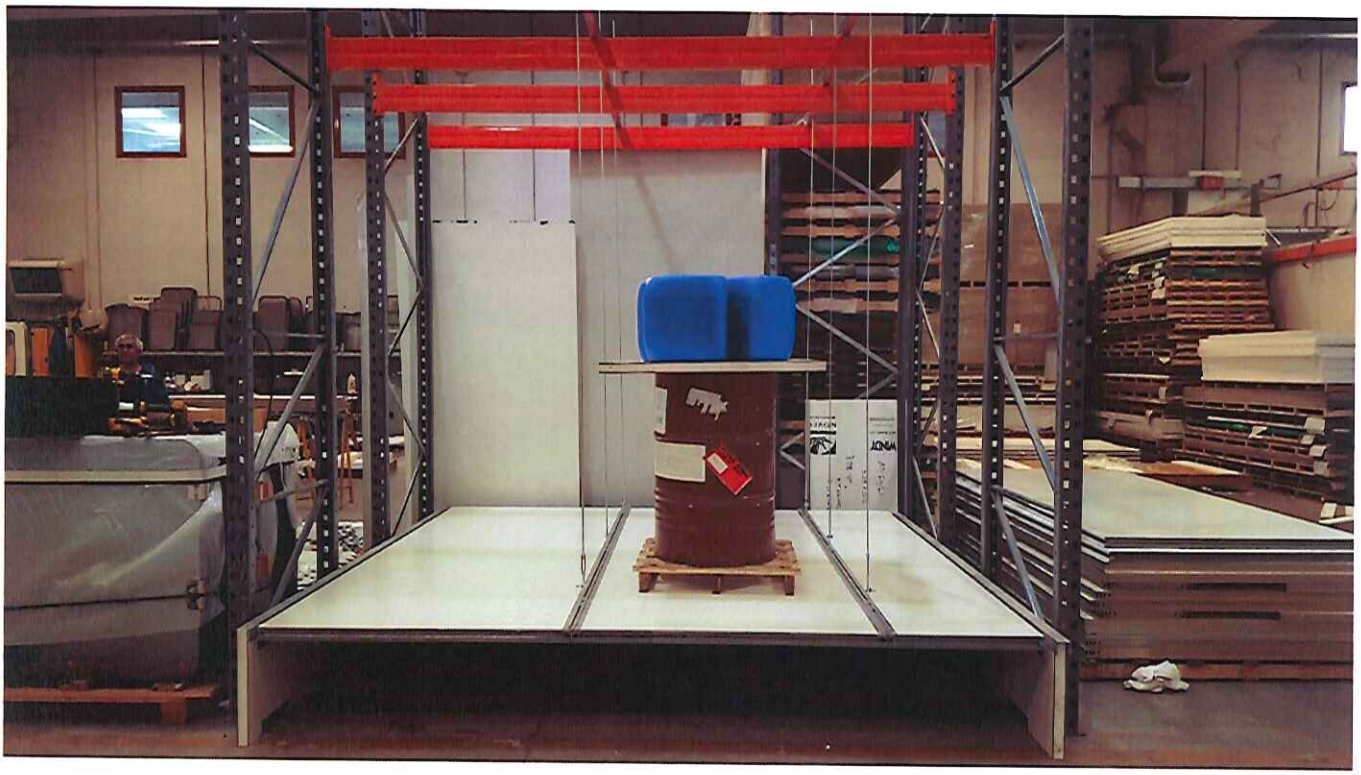
Enclosure D – detail of the assembled ceiling panels



Enclosure E – Picture of the assembled ceiling and structure used for the test

Test execution:

Nicomac Europe ltd. has built the test structure described above. The ceiling to be tested, as shown in enclosure F, was loaded with a tank full of water of a weight of 239 kg and three cans of glue of a weight of 30 kg each (enclosure F bis). Therefore the total load was 329 kg.



Enclosure F – picture of the ceiling under load

Enclosure F bis – picture of the load

The load of 329Kg was left in place for about 15 minutes. During the test, two people steeped on the panel for a short time, so that the total weight was increased to more than 490 kg (Enclosure G).

Enclosure G – maximum load

Test results: after the completion of test structure tested did not show any cracks, deformities or structural stress.

Final Considerations:

The load applied to the structure under the test is more than twice what warranted by Nicomac Europe, **which corresponds to 160 kg applied on a single square meter of assembled ceiling** and, for a short period, the load was increased even more without showing any signs of sagging and / or deformation It can be concluded that the structure under test was able to withstand a load of 160 kg and placed in the single square meter even in the most unfavorable position without suffering visible damages.

Test Technical Director: Doc. Eng. Guido Rubini

People present during the tests:
Doc. Eng. Pietro Zanchi
Doc. Arch. Valentino Algieri
Mr. Roberto Sironi

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