

STRUCTURAL SHEET DESIGN

Date: February 2005

PMS : 980301

Project : New Calibrator

Arcoplus Complet structural performance

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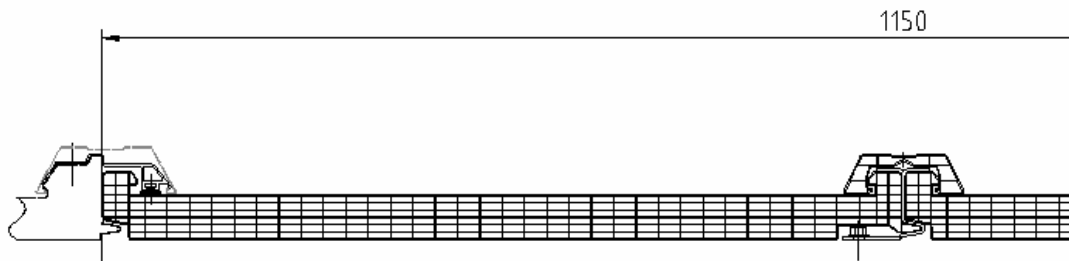
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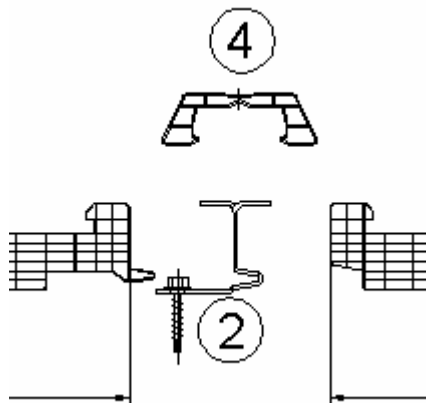
1. Panel and support description.

Arcoplus Complet is a system of one or two coupled panels:

ARCOPLUS COMPLET



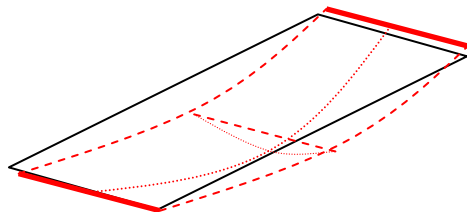
To the left, a sandwich roof panel is present. Two panels may be coupled by the PC profile shown to the right of the illustration:



The ancre (2) is used to hold the panel when a suction load is present.

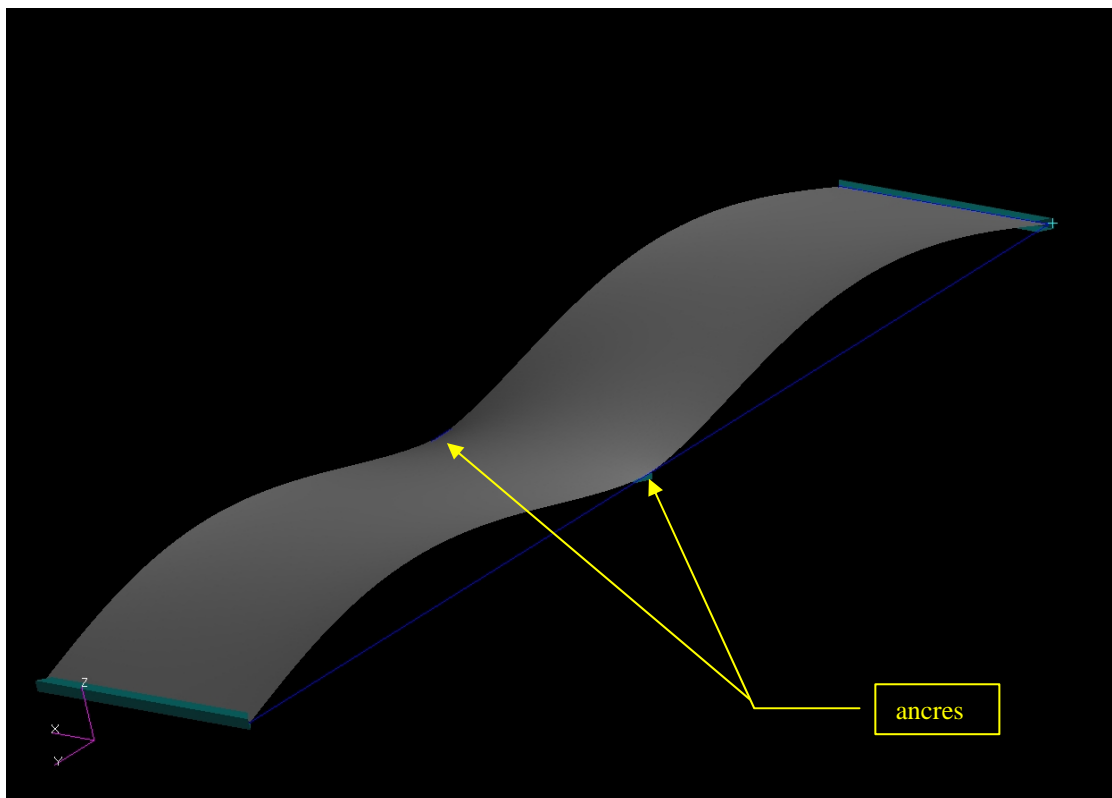
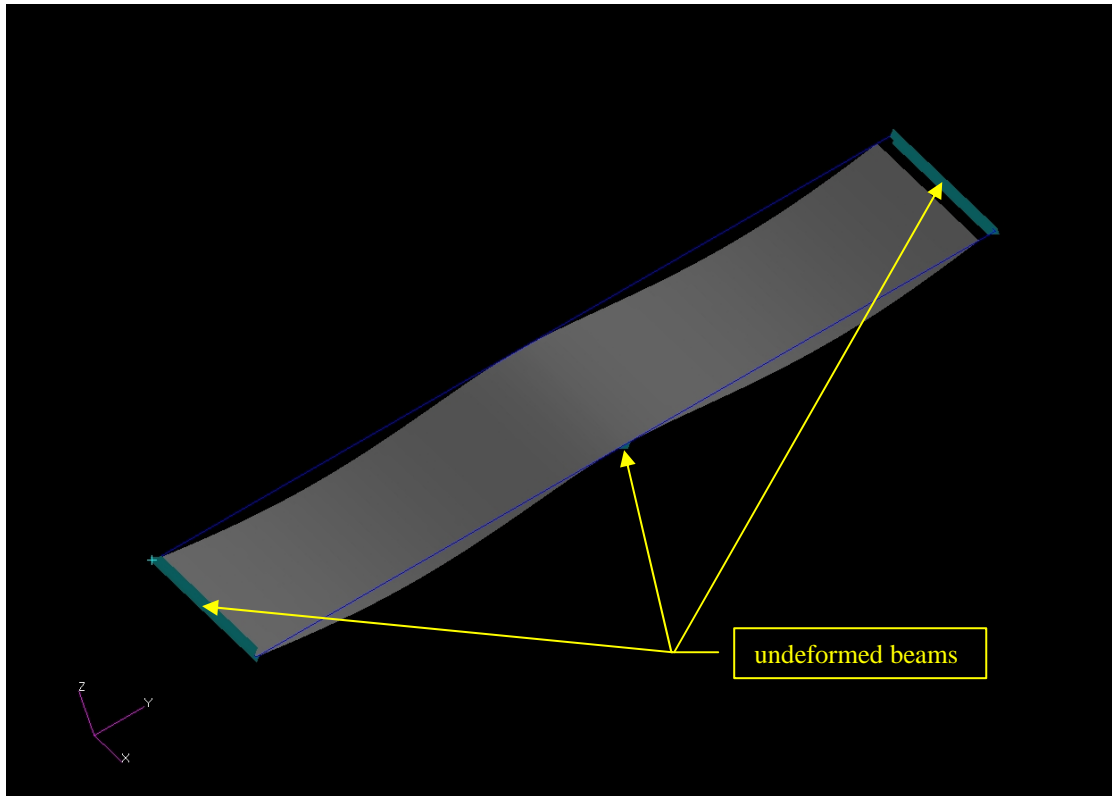
In the new Calibrator version two support systems are analysed:

- a one section panel, supported at its ends by a regular profile:



- a multi section panel, multi supports, by ancrs (suction load) and beams (pressure loads), see next page for illustration.

With the pre-series Calibrator (Mathcad format) these support cases can be analysed. The Arcoplus Complet panel was measured in parallel and perpendicular rigidity in the usual way.

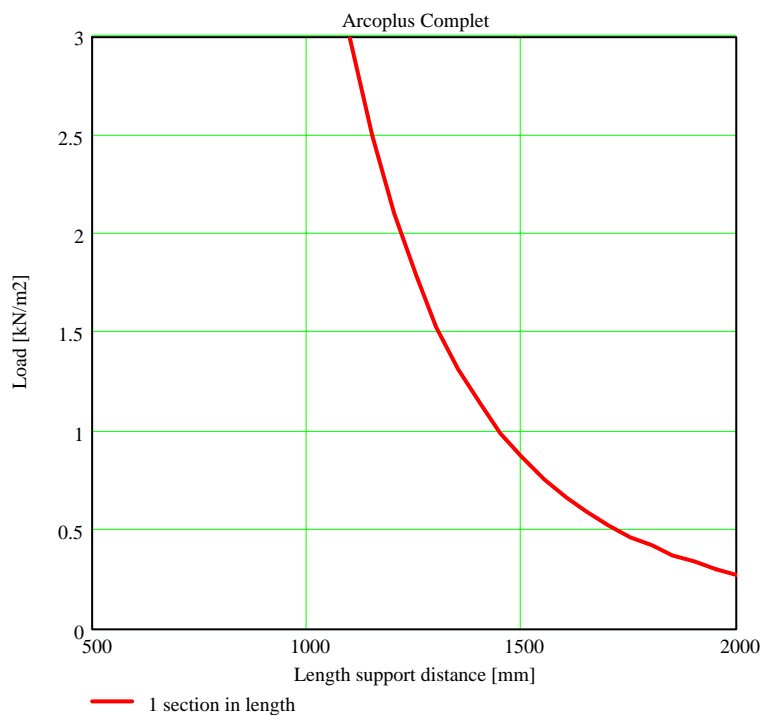


2. Performances of the one section support.

The following conditions were used for the analysis:

- a maximum perpendicular pop-out displacement of 10 mm is used, to prevent damage to the connecting PC profile ('4' on page 2).
- in parallel direction pop-out is 25 mm. This should be the minimum overlap for the end profiles.
- maximum displacement is limited to 65 mm.
- no safety factor reduction is applied (safety factor = 1).
- the maximum load on the ancrès is assumed 1000 [N] or 100 kg.

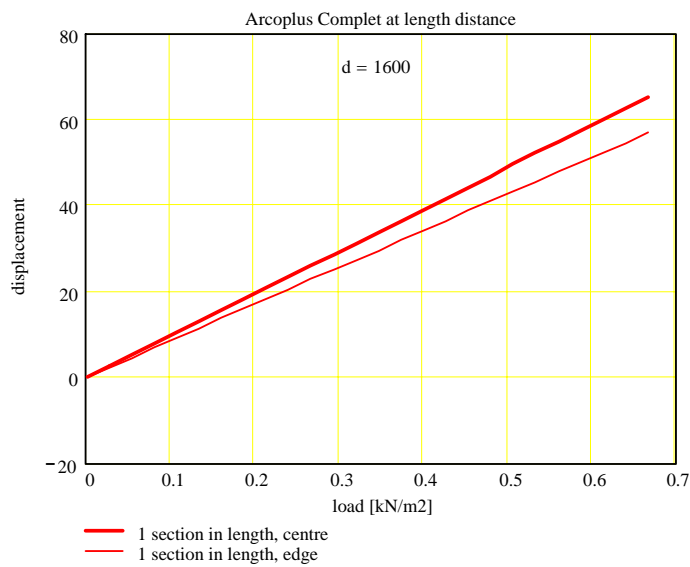
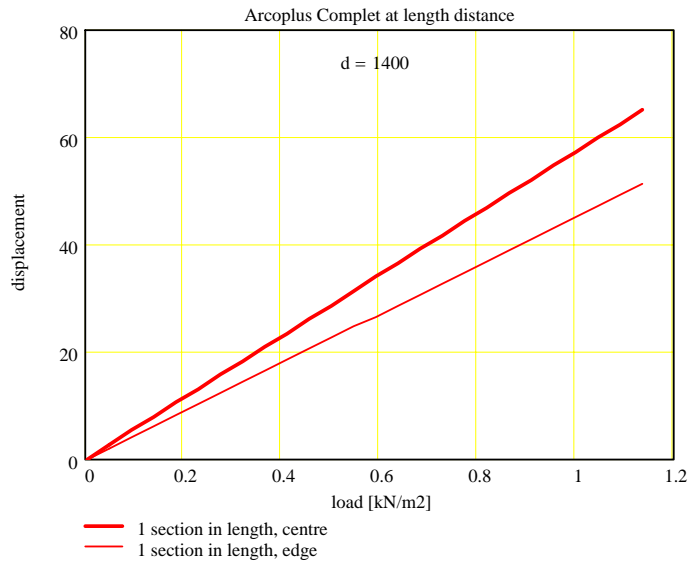
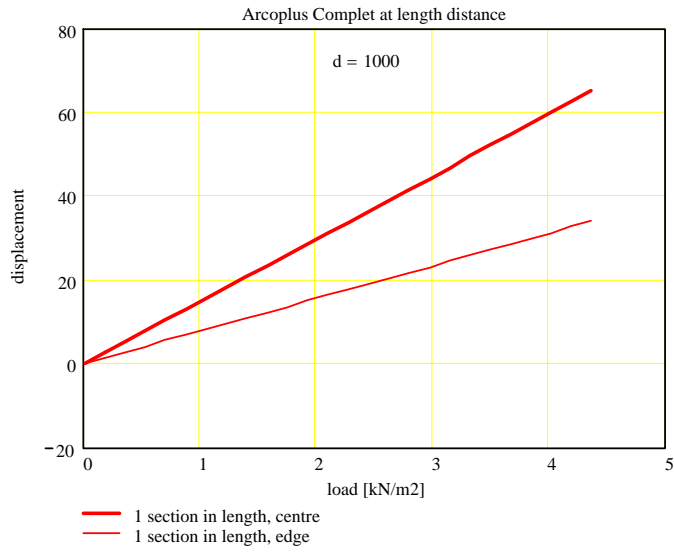
For this conditions, the maximum load as function of support length is:



Given the top – bottom symmetry in the panel design, and this support system, maximum loads in pressure and suction are equal.

For a 1 [kN/m²] load the maximum support length is 1400 mm.

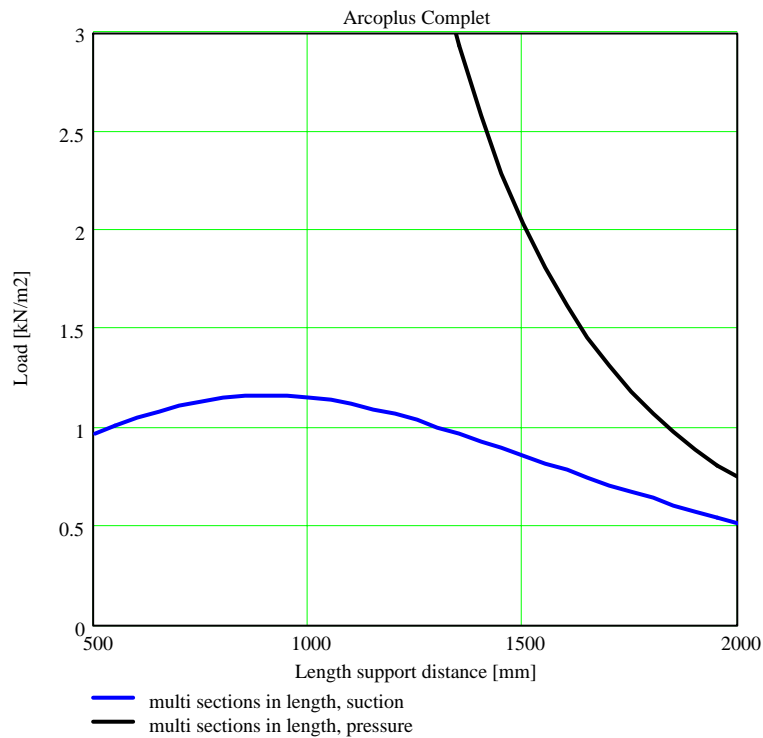
On the next pages, displacement-load curves are shown for various choices in support length.



3. Performances of the multi section support.

In addition to the conditions mentioned on page 4, the number of supports is assumed to be 4 (or 3 sections).

The maximum load is now:



- The differences in pressure and suction load is caused by the additional beam support in pressure.

- The lower suction load at short support distance is caused by the pop-out condition, where in plane shift of each section is added to the next!

. *For a 1 [kN/m²] suction load the maximum support length is 1300 mm.*

On the next pages, displacement-load curves are shown for various choices in support length.

