

System

Platon

*Denticulation of concrete casting joints in
balanced cantilever bridge constructions*



- *Higher safety*
- *Increased shear strength*
- *Time savings*

A good principle made better

Denticulation



Background

- Concrete casting joints normally represent a zone of weakness particularly in concrete poured on site.
- The principal objective of denticulation is to reduce the degree and effect of zones of weakness. The proportion of contact surface in the planar section is reduced and the total contact surface is considerably greater than the area of the planar section.
- Concrete casting joints will have reduced tensile strength since the bond strength in the contact surface is normally lower than the tensile strength of the concrete.
- In vertical concrete joints in the walls of balanced cantilever bridges with tension on the concrete joint near the top of the box walls and normal shear strain conditions in the mid-section of the walls, tension cracks

should normally follow the concrete joint from the top down, but not continue down too far into the shear-strain area. They should gradually turn away and follow the normal line of the diagonal direction of primary tension. This is achieved if the tensile strength of the concrete casting joint is not significantly lower than in the rest of the concrete.

The primary purpose of the denticulation is therefore to ensure that the concrete casting joint has sufficient shear capacity under fracture limit condition even though a crack has occurred in the joint filler.

- Denticulation of concrete casting joints in concrete bridge constructions is normally carried out in Norway in accordance with Norwegian Standard NS 3473

Isola, a reliable partner

Product development is a major part of our activity. Continuous development in manufacturing technology, raw materials and application techniques gives us great opportunity to improve our products to meet the necessary requirements.

Isola invented the studded membrane. For forty years, System Platon has ensured protection against a wide range of moisture problems. The design of the studs and the membrane has changed, to meet the challenges of new constructions and buildings.

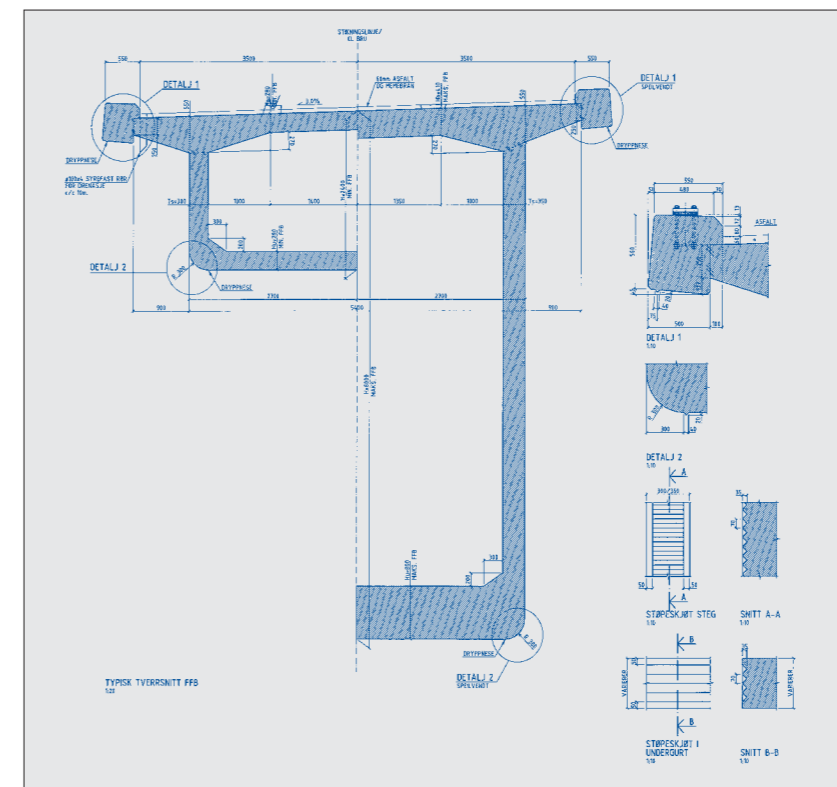
The raw material used in our products is polypropylene

and/or high density polyethylene, with good resistance against chemicals, high flexibility and weldability, and very little toxic gases if burnt.

Our quality assurance system ensures the continuous high quality standard of our products.

Platon Casting Joint

The patented denticulation sheet has improved the quality of concrete casting joints in cantilever bridges as well as the increased safety of construction workers and the decrease of total costs.



Denticulation

Improved safety



Focus on HSE

There is a constantly increasing focus on the importance of HSE (health, safety and environment) in the building industry.

The introduction of the Platon Denticulation sheet will make some activities during the construction period less hazardous.

Traditional denticulation of wooden forms will often remain in the concrete and can be hard to remove. The casting joint sheet makes the difficult manual removal of the formwork much simpler and safer.



DRYPPNESE
Ø100x4 SY
FOR DREN
c/c 10m.

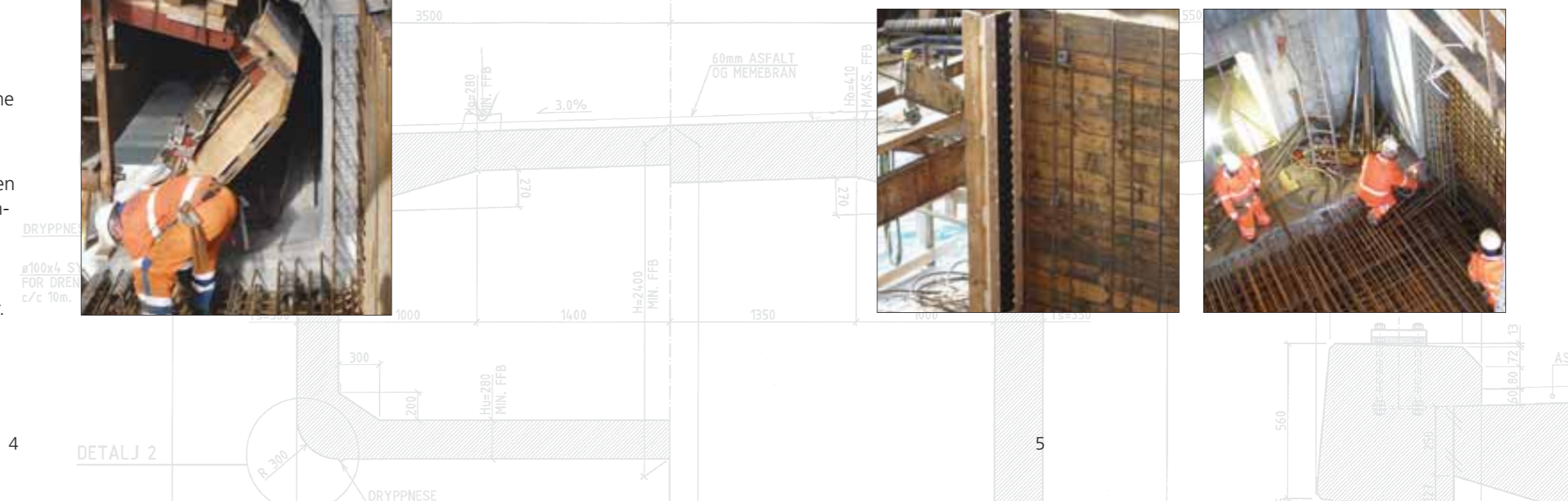
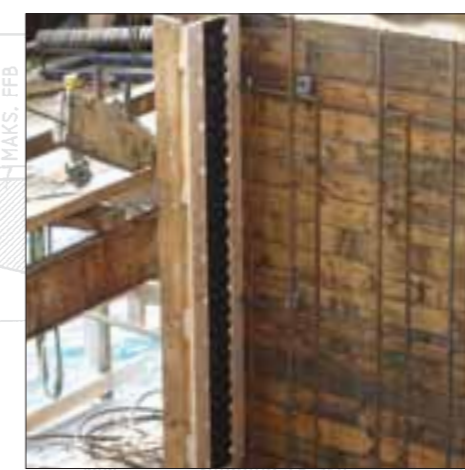
Labour saving

Traditional fabrication techniques for denticulation in concrete casting joints have often resulted in a high number of man hours, both for form making and formwork removal.

By using Platon Denticulation sheet, the reduction of man hours can be substantial, often up to 60-70%.

Even the installation of the formwork and the denticulation is easier, faster and "cleaner". Prefabrication and a rapid fixing method of the denticulation element are essential. Removing of the formwork after curing of the concrete is another important time saving aspect.

The product is supplied in widths from 125 mm to 505 mm, with 2 to 9 number of stud rows. (The standard length of each element is 0.9 m.), so that the product generally may be placed straight into the formwork.



High repeatability accuracy



Traditionally the denticulation element has been depended on the persons making the form and the pieces used in the denticulation.

Variation of design and shape is unavoidable and may lead to a denticulation that is not to specification.

With the patented Platon Denticulation sheet, the forms are identical in all joints and necessary precision and repeatability maintained.

The specification is met each time.



Installation details



The Platon product fixed on the prefabricated form.



After removal of the formwork.



A simple and quick installation of the sheet at the form.



The sidewall of the box in a balanced cantilever bridge, clearly show the denticulation between the reinforcement bars.



In small manholes in the bridge deck, it's an improvement to have denticulations, made in a simple and neat way.

Other area of use

- Casting joints in all types of concrete constructions where strength, safety and cost are critical factors
- Large buildings and civil engineering works
- Tunnel entrances and elements, and underground structures
- Concrete silos and storage installations, e.g. for oil and gas
- Precast elements
- Dams

Technical Data

Membrane material	high density polyethylene
Colour	black
Denticulation depth	23 mm
Membrane thickness	1 mm
Fire rating	B2
Recyclable	



SOME REFERENCES



2002 - 2003

Sundøy bridge

Reinertsen Anlegg & NCC

2002 - 2003

Tjønnøy bridge

Selmer Skanska and Christie
& Opsahl

2004 - 2005

Eiksund bridge

Reinertsen Anlegg

2004 - 2005

Drammen bridge

Skanska

2004 - 2007

Huftarøy - Hundvåkøy

Reinertsen Anlegg

2005 - 2006

Imarsund - Litjsund

Billfinger-Berger

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