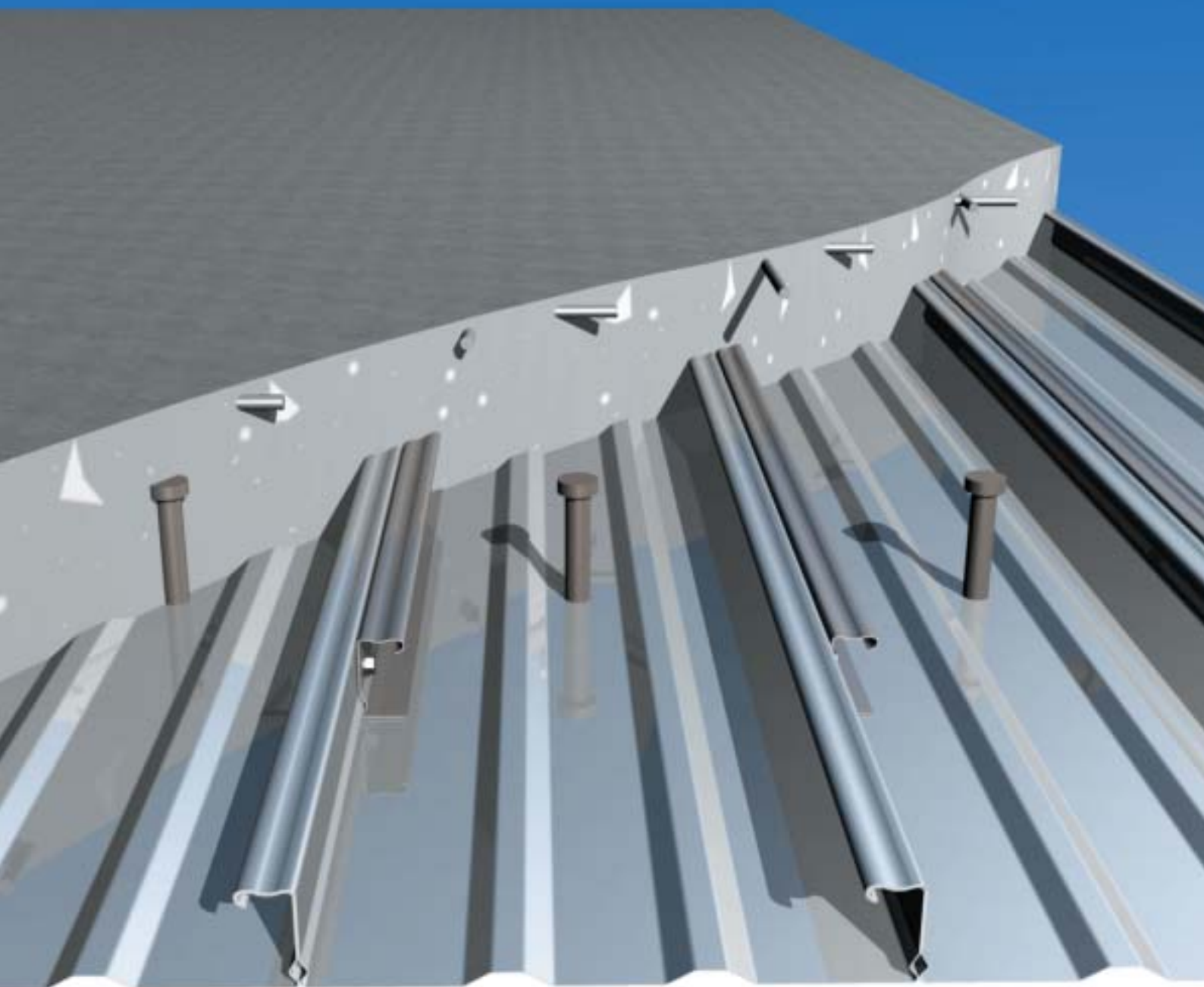


# Stramit Condeck HP<sup>®</sup> composite decking

TESTING PROGRAM



**Stramit** 

# Testing Program

Design data for **Stramit Condeck HP**<sup>®</sup> composite decking are based on thorough testing of performance in formwork, composite and fire design modes.

Full-scale and pilot tests are carried out by such recognised authorities as

- CSIRO Division of Building, Construction and Engineering
- Centre for Advanced Structural Engineering, University of Sydney
- Centre for Construction Technology & Research, University of Western Sydney

In addition, Stramit carries out in-house testing at its own R&D facilities. Although full-scale testing is expensive and time-consuming, it is essential to correlate theoretical design methods with real-world environments.

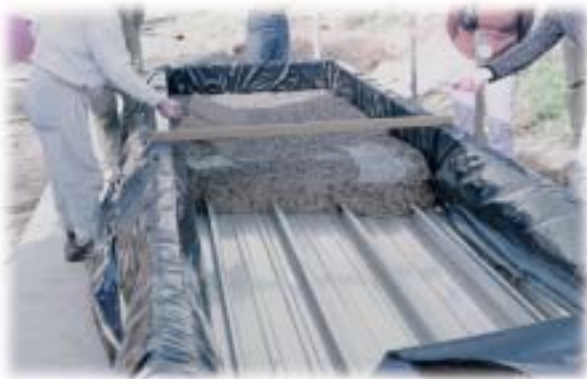
Data from the testing program outlined in this document form the basis of Stramit's technical literature.

## Formwork Mode

### BARE STEEL TESTS

Centre for Advanced Structural Engineering,  
University of Sydney

Strength tests were carried out on bare **Stramit Condeck HP**<sup>®</sup> composite decking of 0.75mm and 1.00mm base metal thicknesses. The tests assessed end shear (and end bearing) capacities, pure moment capacities, and bearing and moment capacities at intermediate supports for continuous spans.



### WET CONCRETE TESTS

Centre for Advanced Structural Engineering,  
University of Sydney

A load test was carried out on **Stramit Condeck HP**<sup>®</sup> composite decking (1.00mm base metal thickness) to evaluate the strength of the decking when used as formwork with continuous unpropped spans of 3 metres. The test was carried out in accordance with the requirements of BS 5950 to evaluate strength with regard to critical load conditions for mid-span bending and local effects at supports for continuous spans.

### STRAMIT CONDECK HP PLUS<sup>™</sup> ACCESSORY TESTS

Centre for Advanced Structural Engineering,  
University of Sydney

The **Stramit Condeck HP Plus**<sup>™</sup> single-thickness end span accessory extends unpropped spans in formwork mode. Strength tests were carried out to establish the increase in performance of **Stramit Condeck HP**<sup>®</sup> decking in conjunction with the **Stramit Condeck HP Plus**<sup>™</sup> end span accessory.





# Composite Mode

## COMPOSITE SLAB TESTS

Centre for Advanced Structural Engineering,  
University of Sydney

Strength tests were carried out on composite slabs constructed of normal strength concrete reinforced with **Stramit Condeck HP**<sup>®</sup> decking of 0.75mm and 1.00mm base metal thicknesses. The tests assessed flexural (moment) capacities, shear bond (longitudinal slip) capacities and vertical shear capacities of the composite slabs.



## SLIP BLOCK TESTS

Centre for Advanced Structural Engineering,  
University of Sydney

Centre for Construction Technology & Research,  
University of Western Sydney

Slip block tests were carried out on composite slab samples constructed with **Stramit Condeck HP**<sup>®</sup> decking of 0.75mm and 1.00mm base metal thicknesses. The tests assessed the strength of the shear connection between the **Stramit Condeck HP**<sup>®</sup> steel sheeting and composite concrete slabs for a range of concrete strengths.

## SHEAR STUD TESTS

Centre for Construction Technology & Research,  
University of Western Sydney

These tests established that **Stramit Condeck HP**<sup>®</sup> decking has no detrimental effect on the performance of shear connectors in a composite slab, compared with a solid slab. Beam and push-out tests were carried out on pairs of 19mm diameter welded studs fixed through **Stramit Condeck HP**<sup>®</sup> decking laid perpendicular to the longitudinal axis of the steel beam in arrangements not permitted by AS 2327. The shear forces versus slip relationships were representative of shear connectors in a solid slab.



## DEFLECTION CONTROL TESTS

Centre for Construction Technology & Research,  
University of Western Sydney

Slab deflection and slip-block tests were carried out on 200mm thick composite slabs constructed with **Stramit Condeck HP**<sup>®</sup> decking and a range of concrete strengths. The tests assessed moment and shear bond capacities under serviceability loads.

# Fire Mode

## FIRE RESISTANCE TEST CSIRO Division of Building, Construction and Engineering

Fire resistance tests were carried out on a 120mm thick composite slab constructed with **Stramit Condeck HP**® decking and normal weight concrete. The slab was supported by brickwork at one end and by an insulated beam 1000mm from the other. The slab was additionally reinforced with F818 mesh raised to give 20mm top cover over the beam and rested on the ribs at mid-span and end supports. The system was exposed to a fire from below for the duration of the test.



## FIRE DESIGN PROCEDURE Building Research Association of New Zealand

Data gathered from the CSIRO fire resistance tests and from pilot tests carried out by Stramit R&D were used in the creation of the new **Stramit Condeck HP**® composite decking fire design procedure. The procedure, which permits major reductions in or elimination of fire emergency reinforcement, has been confirmed and endorsed by BRANZ.

