PEIKKO

WHITE PAPER

PEIKKO BALCONY CONNECTIONS

PROPER CONNECTIONS FOR SUCCESSFUL PLANNING AND INSTALLATION

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Proper connection between the building and the balcony is essential for the **stability** of the structure, the **energy efficiency** of the building, and a **healthy and comfortable** living environment.

STABILITY

The balcony and the connection must withstand different kinds of loads, from the weight of the element itself to loads from standard use of the balcony, including influence from different indoor/outdoor temperatures. Therefore, the connection must be of high quality from the material point of view and be appropriately designed.

ENERGY EFFICIENCY

A good, insulated connection between the external balcony and the internal structures reduces the thermal bridges and increases the energy efficiency, which has a direct, positive influence on the costs of heating and cooling a building.

HEALTH & COMFORT

Insufficient thermal insulation decreases the surface temperature of the internal structures, which could lead to decreasing comfort and different mold formations in cold and wet corners.

Just as there are different types of buildings, there are also different types of balconies. Balconies that are supported on walls or column elements are fixed to the building frame in a different way than cantilever balconies, which require proper support from the floor slab. Selecting the balcony type can also be influenced by the size of the land plot, the style and appearance of the building, and the position of the balconies. Supported balconies form a stack of balconies on top of each other, while cantilever balconies can be positioned freely on the facade of the building.

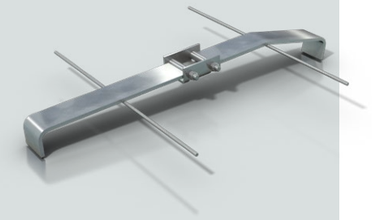
Which Peikko product is suitable for each type of balcony? The rule of thumb is that the Balcony Slab Connectors PS and SLADEX® are only suitable for precast construction, while the EBEA® Balcony Connector also works for cantilevers that are cast on site. In addition, EBEA® is suitable for use in canopies and walkway balconies in apartment buildings.

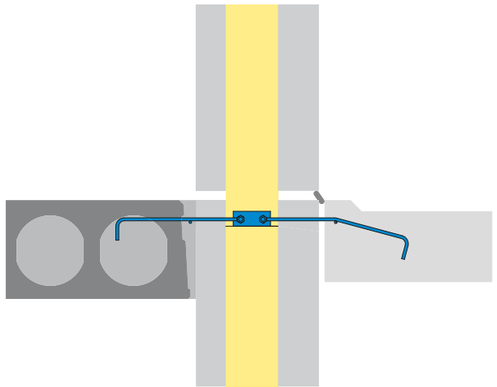
PS BALCONY SLAB CONNECTOR

The PS Balcony Slab Connector transfers horizontal loads from supported balconies to the building.

It connects supported balcony slabs to the building, while enabling vertical movements of up to 20 mm. The hinge part is installed to the balcony slabs, and the anchor part is cast into the building's floor slabs. After installation of the balcony slab on site, the parts are connected. The PS Balcony Slab Connector is available in several sizes.

At a construction site, every day and hour of work costs money. **The advantage of the PS Balcony Slab Connector can be seen in the schedule flexibility.** If the frame needs to be erected as quickly and be as moisture-proof as possible, the balconies can be installed after erection.

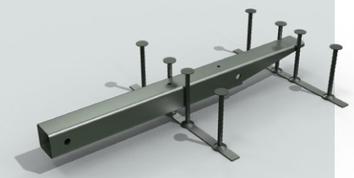


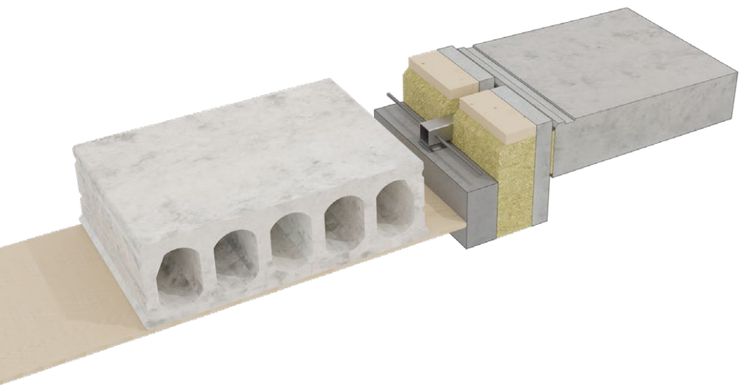


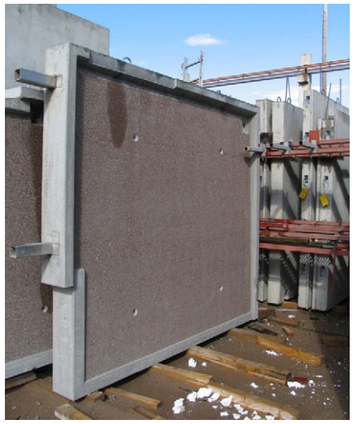
SLADEX® BALCONY SLAB CONNECTOR

The SLADEX® Balcony Slab Connector is used to create an efficient connection between the precast balcony slab and the load-bearing structure without compromising the thermal insulation on the sandwich wall panels or the building envelope. **SLADEX® reduces the need for additional reinforcement as the reinforcing is done with ready-calculated headed studs.** SLADEX can transfer only shear forces, therefore it is suitable for loggia balconies or other supported balconies where bending moments are not present in connection.

The SLADEX® Balcony Slab Connector transfers vertical force from precast balcony slabs during the erection and final stages. Once cast in the load-bearing concrete structure, it also transfers horizontal and tensile forces.



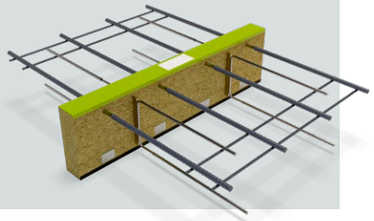


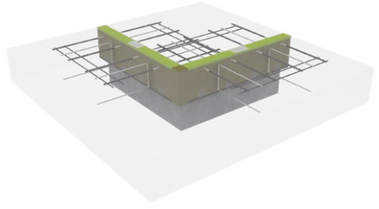


EBEA® BALCONY CONNECTOR

The EBEA® Balcony Connector is a load-bearing, insulated connection element for concrete structures that **minimizes the thermal bridges in cantilever balconies** and other applications such as walls and slabs.

It can be used in cast-in-situ connections or in half precast solutions and offers an optimal solution for transferring all transverse forces, horizontal forces, and moments reliably to the loadbearing slab.





DESIGN PHASE

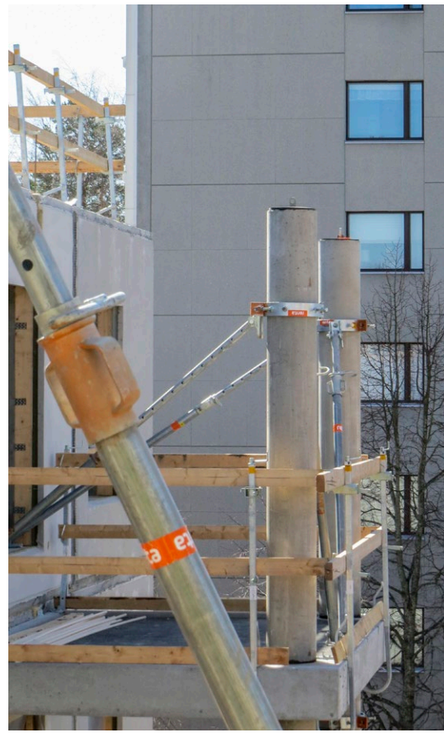
Before dimensioning the reinforcements, the designer must determine the size of the balcony slab, the loads applied to the slab, and the internal forces acting at the connection between the balcony slab and floor slab. Reinforcements are placed so that they are not in the way of other components or parts of the building. Peikko Technical Support team will guide you in choosing the right product and capacity.

The designer must correctly determine the different kinds of loads from other building parts that are attached to and carried by the balcony, for example, all kinds of fences, concrete, or glass parapets, and whether the building has partition walls or masonry facades that the balcony should support. Furthermore, possible snow loads must be determined for the balcony roof elements. Defining the loads is important as the capacities of balcony connections are determined based on them. For precast balconies, it is recommended to design the reinforcements so that there is enough space for the lifting items.

CONSIDERATIONS ON SITE

Supported precast balconies can be assembled either simultaneously with the building frame with SLADEX® or PS Balcony Slab Connectors or, if necessary, afterwards in the case of PS. SLADEX® Balcony Slab Connectors are assembled to recesses left into load bearing slabs/structures, while the PS Balcony Slab part is cast in the precast factory, the load-bearing part at the construction site, and the connection is finalized by fixing the bolt connections.

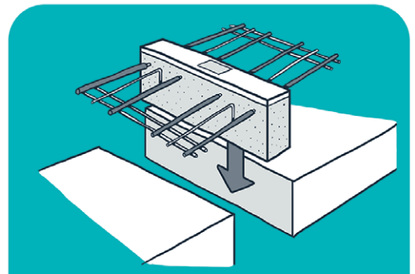
EBEA® balcony reinforcements require temporary supports during the installation phase. The balcony must be installed on supports, and the pre-camber must be applied during installation. The pre-camber is determined by the structural designer with support from Peikko Technical Support. Once the concrete has gained enough strength, the temporary supports can be removed, and the balcony is ready to be loaded. The concrete must be properly filled around the whole insulation and compression elements of EBEA®.



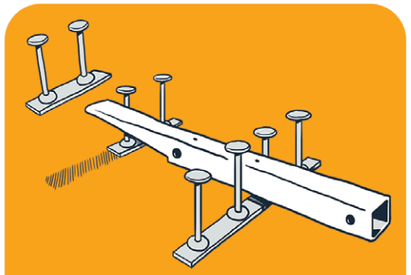
BALCONY CONNECTION MATRIX

The matrix below briefly explains which Peikko Balcony connection is suitable for which slab and balcony type.

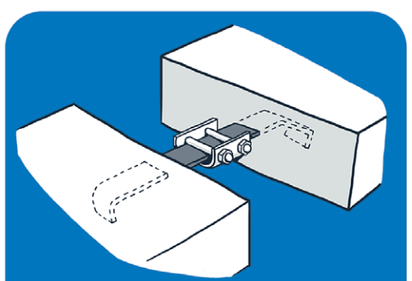
FRAME SLAB	BALCONY TYPE: Precast Cantilever	Precast Supported	Cast-In-Situ Cantilever	Cast-In-Situ Supported
Cast-In-Situ	EBEA®	EBEA® SLADEX®	EBEA®	EBEA®
Hollow-Core		PS (wall) SLADEX® (columns)		PS (wall) SLADEX® (columns)
Filigree	EBEA®	All options work	EBEA®	EBEA®
Precast Massive Slab	EBEA®	SLADEX®	EBEA®	EBEA®



EBEA®
Balcony Connector



SLADEX®
Balcony Slab Connector



PS
Balcony Slab Connector

Read more about Balcony Connections: www.peikko.com

A faster, safer, and more efficient way to design and build

Peikko is a leading global supplier of slim floor structures, wind energy applications and connection technology for precast and cast-in-situ. Peikko's innovative solutions offer a faster, safer, and more efficient way to design and build.

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