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Self-Supporting Structures for the Restoration of Balconies

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Eberhard Müssig, born 1948. He graduated in 1971 from the Technical College in Munich following an apprenticeship in metal-working. He has been owner and managing director of the company of Wilhelm Müssig GmbH since 1972.

It was usual many years ago that balconies were planned by the architect on an individual basis and - depending on the requirements - were always built by craftsmen as a unique construction.

Now it is appropriate to systematize such solutions for recurring building jobs of known applications.

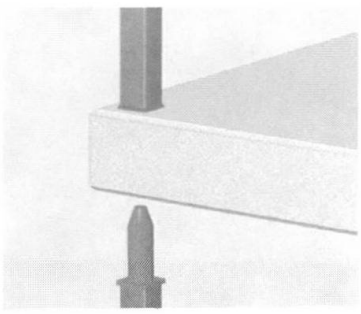
Planning, production and assembly shall be speeded up and simplified by this, and the quality thereby improved.

In extreme cases, all components are identical and need only the predicted basic conditions of the building structure. In this case, the difference is then only in the addition and the color applied. The predictions of stability can, as a rule in such cases, be made by a static analysis of the structure type.

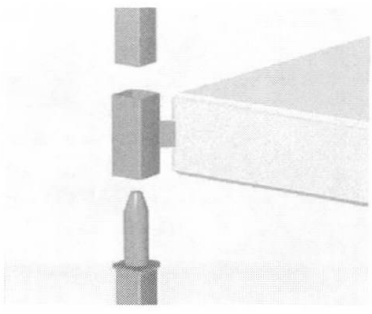
This is the development we had in recent years in the field of prefabricated balconies.

During the course of the many discussions with planning architects and the considerations made by the author in many areas of resolved building-problem definitions, the author has come to the conclusion that just about every specification is one requirement too many and he is therefore of the opinion that a liberation is needed from the rigid framework of general specifications.
It is for this reason that he is pursuing a course in a different direction. It is not the product that is being brought into a system, but rather the types of connections and the operating processes that shall be systematized.

Two examples for this are given here:

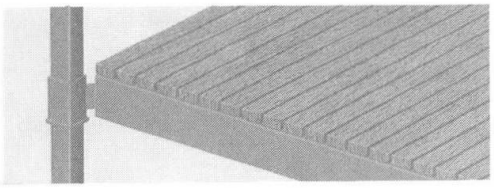


Projecting insertion socket

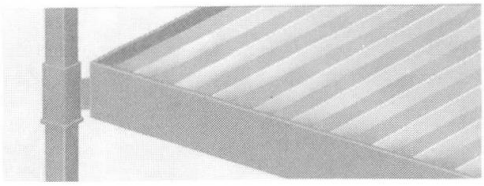


Flush insertion socket

Here two examples in the designs available for balcony floor surfaces:



Balcony floor surface, Type 2:
Frame with wooden planks (spruce), steam-pressure impregnated.
Projecting insertion socket



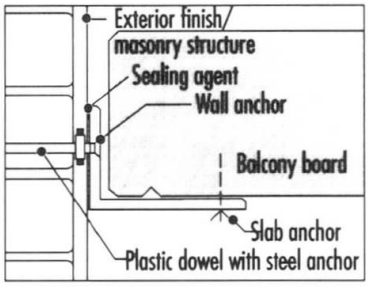
Balcony floor surface, Type 4:
Frame with trapezoidal-corrugated sheet surface for screed-concrete placed at the building site. Projecting insertion socket

The basic conditions for the structural supports are defined by the insertion connections. The choice of cross-section can be defined according to the planner's wishes or in compliance with requirements for the demonstration of weight-carrying sureness. Slenderness and optimum use of materials are endeavored at all times.

To this end, a static analysis report that is easy to read shall be prepared end so as not to incur any disadvantages in comparison with a type design analysis for the time required to obtain approval. The advantages of an up-to-date static report are the freedom in the dimensions possible, as well as the general applicability of the report.

Mounting fixtures are required on the wall as a rule, since even the smallest fluctuations render these objectively useless for free-standing, stable balconies arranged above one another. The wall mount is always an individual adaptation of its entity: From the masonry structure in Hamburg to the timber-framework construction in Stuttgart. Yet even this adaptation can be included in the operating processes in the system. As such, a CAD program has been developed in recent years which includes the known types of wall structures that can be combined with those approved fastening techniques available as well as the static and dynamic forces calculated for these.

Example of a side mounting on the building:



A straightforward mounting to the side of the building is possible according to the static analysis - depending on the locally prevailing conditions.

As well as the protection against falls, the railings also constitute a part of the balcony that determines the optical outward appearance to a great extent. The author is convinced that a railing system has to be of modular construction, that is to say, the handrails, the posts and the panel elements shall be chosen as desired from a large selection available, and that these can be combined at will.

A balcony system must be of sufficient openness so that the architect's designs can be joined using existing system components without any difficulties. For the author, a system product means that it can be fabricated and mounted to meet the customer's requirements without any intervention to modify systematized operating processes. By permanent criticism at the source of Müssig products, the author hopes to bring about a continued increase in the diversity of the system, and hence to allow greater freedom in planning.

Exemplary are the constructions from the French engineer Gustave Eiffel, as to how few standardized construction components are needed, these being namely rivet and rod, to cover the spectrum of construction tasks from the bridge to the dome to the famous tower, that have been resolved in the interim.