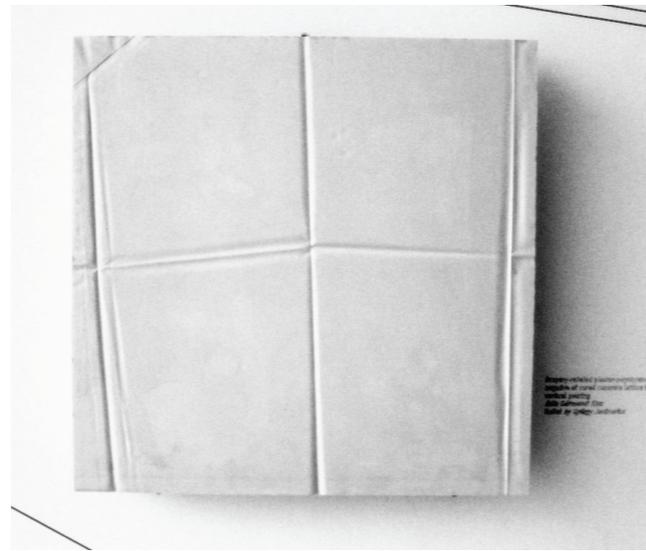




pillar with shelf fixed when dry



one-side relief piece exhibited at the Architecture Biennale in Venice in 2004, created by György Jovanovics sculptor



1989 a long-span (13 m) storage floor was built in the loft if the Hungarian National Museum without disturbing the exhibitions below



the construction works in a natural way



freezing

the procedure

Gypsum concrete constructions are special, thin reinforced concrete constructions, frozen in a built-in gypsum shuttering. The exact size of the concrete cross-sections, the stabilisation of the shuttering plates, and the exact place of the reinforcement are ensured by built-in plastic elements, holding and positioning the iron and gypsum elements as well. The steel panels stitched into the plastic elements, and so forming

the reinforcement of the construction are built together with the prefabricated simple and double (1 cm thick) gypsum shuttering elements, shaping the actual surface structure, casted with fluid concrete. Thanks to its water absorption, the gypsum shuttering structure quickly absorbs the water that is not necessary for the fastening. This way the pressure from the fluid concrete ceases very fast, the concrete is compressed, and the gypsum structure automatically after-cares the earth-moist material. Vertical constructions are built with 2,5 cm load-bearing reinforced concrete sheet, between 1,2 cm thick gypsum shuttering elements on the sides, adding up for 5 cm total thickness; while horizontal constructions are elaborated with 2,5 cm reinforced concrete sheet and 1,2 cm thick gypsum shuttering plate on one side, in total 4 cm thick. The prefabricated 60x60 cm shuttering plates can be built together both in vertical and horizontal directions.

good and bad quality gypsum frozen



special areas of use

The thin surface structure of gypsum concrete constructions functions as facing or suspended ceiling at the same time, as the built-in gypsum shuttering forms a ready surface. The most typical feature of the constructions is their slenderness, and that is what makes them the only suitable solution in a number of special situations. Its behaviour and design is similar to the folding of a sheet of paper. Building in lofts

is possible without any modification of the roof structure, as the gypsum structures are able to avoid the beams. Fortification of the foundations can also be avoided, as the structures are so light that they do not mean an extra weight for the building. The freedom of architectural design enables to use the building space more effectively. The method is also suitable for the construction of special, light-weight stair structures, as well as special shells and cupolas. These shells and cupolas do not press the walls horizontally, only vertically, due to the reinforcement of the constructions. The method is especially practical in case of protected cultural heritage buildings, due to its flexibility, variability and load-bearing capacities.



load bearing, fire resistance, acoustics

The construction can form walls, floors, stairs, or furniture. Its thinness and high load-bearing capacity provide for its use in various special fields. They can be well adapted for the construction of load bearing structures with high fire resistance, high load-bearing quality (10 KN/m²), bridging over long distances (10m), so that the

work processes going on under the structures are not disturbed. The constructions are made more solid, stable and bearing more weight by iteration or increasing the density of the shuttering plates. In case of longer spans, a "box structure" can be adapted. Higher fire resistance can be achieved by increasing the surface, elaborating constructions of two or more layers, and the gaps between the layers can be used as air-duct, or filled with mechanical fixtures or insulations. This means that the construction can be protected against fire with itself, increasing its thickness by 5 cm altogether, and there is no need for special fire protection coating.

Due to its light-weight structure, the construction has good acoustic characteristics. Higher acoustic needs can be satisfied through the doubling of the construction.



energy consciousness, ergonomics, ecology and economy

The two-shell design of the construction makes it possible to operate the two layers independently from each other. One of them is the inner space-separating and load-bearing surface, and the other one is its protection coating. As we are talking about two very thin layers (5 cm), the layer between them can be increased up to 20-30 cm, thus heat insulation requirements can be easily met. Because of the

independence of the two layers, bridges of heat-conduction do not develop. The stabilisation of the windows and distances – that is usually problematic because of the thick insulations – makes no problem either, as the window can be easily inserted into the plane of the insulation. Due to the weight of the thin construction (surface weight of the gypsum concrete plates is 80 kg/m²), its heat inertia is much more suitable than that of other light-weight structure technologies. Gypsum is a natural material, providing an ergonomic surface for people. At the same time, in case of appropriate painting, it ensures the regulation of the air humidity of the inner space, as it is able to absorb and transmit moisture. Material consumption of the construction is around one fourth of that of traditional constructions (10 cm instead of 40 cm wall thickness), so the technology is saving a significant amount of energy and materials.





elaboration of special gypsum structures with polystyrene at the Architecture Biennale in Venice, 2004



reconstruction of the cross vaults in the Royal Palace of Visegrad, 1998

summer cottage in Velenca, Hungary, 1988

study storage at the loft of the Hungarian National Museum, 1985



Row houses in Dunaújváros, Hungary, 1980

Dome Lapidarium Museum in Pécs, Hungary, 1991



loft apartment with 3 floors in the Buda Castle area, showing the baroque couple roof, 1990

stairs of a single family residence in Etyek, Hungary, 2009

Gipszbeton

Gypsumconcrete
structure

Gipsz-Lak Architectural Studio Ltd.
www.gipszbeton.com
gipszlak@gipszlak.hu
 1014 Bp. Táncsics M. u. 5.
 T:+362147181 F:+364570868 M:+36208234148

