



Galvanized steel reinforcement in concrete products and structures can provide a range of benefits. In aggressive environments, the need for increased concrete cover can be avoided. When lighter thinner concrete designs are required, galvanized steel reinforcement will protect against carbonation when concrete cover has been reduced.

Photo: Javier Callejas Sevilla

Designed by Beckmann - N'Thepe et Associes Architects, the Zac Seguin Housing Project is located in the West of Paris, close to the River Seine. It is connected to the new Billancourt park in front of the island of Billancourt and is an excellent example of modern architecture, which integrates the surrounding landscape. The building's façades are characterized by colored mosaic claddings and pre-cast white concrete planter-style balconies. The mosaic claddings recall the colors of the surrounding landscape while the planters integrate vegetation in the project.



*Galvanized reinforcements exposed during the construction process*

## Challenges

One of the challenges of the project was to avoid corrosion and rust spots on the building's white surface finish. Having all the finishing (slabs nosing, pillars and building cornices) made with white concrete and, in particular, all balconies being made with planter-style parapets increased the need for reliable protection.

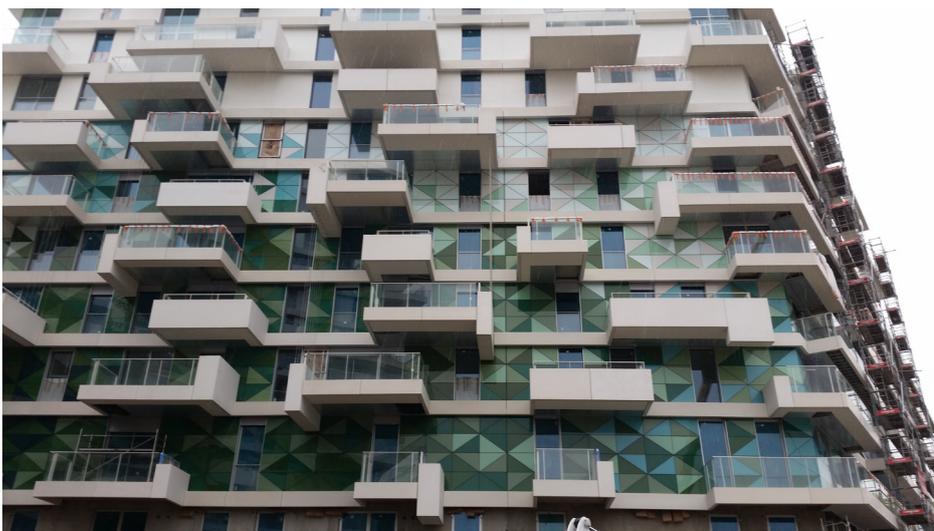
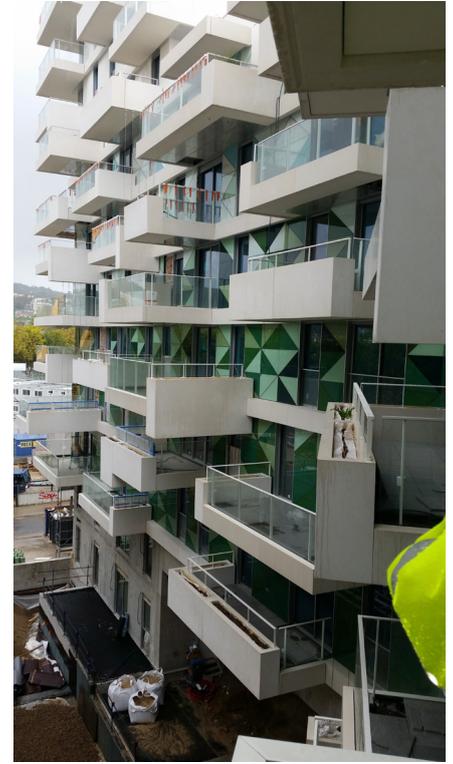
Surface finishes are extremely vulnerable, particularly in recent years with the rise of more extreme weather events. This particular design of balcony is more fragile and vulnerable because of the watering operations required for the plants.

The solution to prevent the concrete finish deteriorating, spalling and rusting did not lie in protecting the finish but in protecting the steel reinforcement within the concrete.

### Galvanized pre-cast white concrete planter-style balconies

Beckmann – N'Thepe et Associes Architects used galvanized steel reinforcement to ensure that the surface finishes of the white pre-cast concrete elements did not suffer from rust stains that would almost certainly have resulted from corrosion of unprotected steel reinforcement within such a thin structure.

In line with provisions in the French national appendix to Eurocode 2, which allows reductions in the concrete cover when galvanized reinforcement is used, the architects were able to reduce the concrete cover of the balconies to minimum thickness possible so as to provide these elements with an improved thin design.



*"We chose galvanized reinforcement to improve the durability of the project, especially of the pre-cast white concrete planter-style balconies. Since these are receptacles of wet soils, even if they are waterproof, they are more fragile because concrete is porous. Galvanizing has helped prevent certain disorders such as rust or deterioration of steels in the long term."*

*- Françoise N'Thépe*