

REF-A21

STEEL BASEPLATE CONNECTION TO CONCRETE

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|---------------------|--|
| PROJECT | Fully automated racking warehouse operated by storage/retrieval cranes |
| LOCATION | Italy |
| CLIENT | SACMA S.p.A |
| DESIGNER | SACMA Internal Design Bureau |
| INSTALLATION | 2024 |



Application → Rack upright base plates fastening

Design std. → EN 1992-4 (post-installed anchors)

Hardware → Hilti HIT RE 500 V4+8.8 class steel threaded rods

Software → PROFIS Engineering (anchor to concrete)

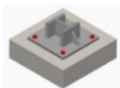
Services → N.A

CHALLENGES

- Deformability of the fixture
- Heavy uplift due to wind action
- Class C2 seismic resistance of anchors
- Anchors with CE Mark or equivalent (ETA)
- Internationally reputed and certified supplier

HILTI TOTAL SOLUTION

- ✓ CBFEM software
- ✓ Most optimized solution
- ✓ Anchors with ETA
- ✓ Designed and approved product


LOAD/ CONDITIONS
Seismic/Cracked Concrete
PROJECT HIGHLIGHT

Design optimization

APPLICATION AND REQUIREMENT



Application Details: Load combination

The fastenings had to be post-installed into a reinforced concrete slab, with no counter splitting or supplementary reinforcement. The most severe loading condition was due to wind action:

Type-A connection: uplift = 310 kN, shear = 28 kN, moment = 7 kNm

Type-B connection: uplift = 415 kN, shear = 42 kN, moment = 10 kNm.

Design Optimization

The main challenge in the design process was to find a verified solution in terms of baseplate deformability and load conditions. In this case, the wind load was more critical than the seismic condition. It was necessary to identify a solution that would guarantee the performance requirements and at the same time be certified (seismic ETA C2 certification).

APPROACH TOWARDS SOLUTION



Profis Engineering – Anchoring specification

Thanks to Profis engineering, the customer was able to identify the best performing and at the same time most optimised solution. Using the CBFM method, he modelled and calculated the plate with appropriate stiffeners and then identified the best anchoring solution with HIT RE 500 V4 chemical anchor.

Post-installed anchors and other tools

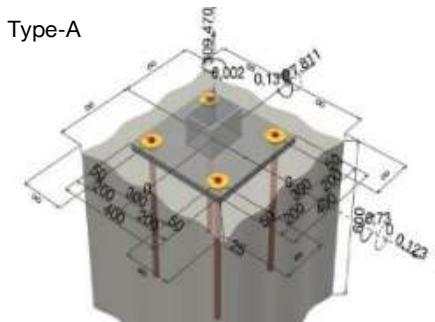
- Post-installed chemical anchors **Hilti HIT RE 500 V4 M24 8.8 threaded rods** were used.

THE FINAL OUTCOME



Finished job site

Type-A



Type-B

