REF-A10 STEEL CONNECTION TO CONCRETE FOR BALASTRADE APPLICATION

PROJECT	Kai Tak Sport Park Balustrade; Steel and metal division
LOCATION	Hong Kong
CLIENT	Kai Tak Sports Park Ltd.
DESIGNER	Arup
INSTALLATION	2023

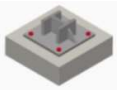
Application	**Baseplate for balustrade**
Design std.	**ETAG 001 Annex C**
Hardware	**HUS4-SK**
Software	**PROFIS Engineering (anchor to concrete)**
Services	**Demonstration, training at jobsite**

CHALLENGES

- Less edge distance
- Steel and metal application
- Safety of balustrade
- Head of anchors not to be exposed outside of baseplate
- Aesthetic appearance

HILTI TOTAL SOLUTION

- ✓ Premium product
- ✓ Post-installed Concrete screw anchors
- ✓ Countersunk head
- ✓ Design and approved product for required loading



LOAD/ CONDITIONS **Static / Head of anchor at same level of baseplate**

PROJECT HIGHLIGHT **Understanding and fulfilling the requirement with possible designs**

APPLICATION AND REQUIREMENT

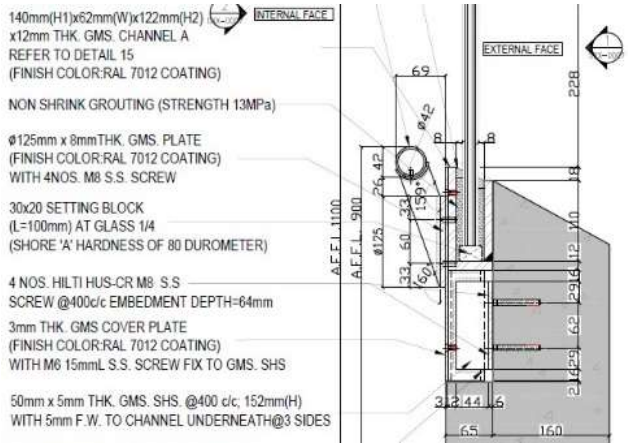
Application Details: Baseplate for balustrade

A world-class sports infrastructure that replaces the former Kai Tak Airport, featuring a 50,000-seat main stadium with a retractable roof, a 10,000-seat indoor arena, a 5,000-seat public sports ground, and a variety of community facilities. The balustrade was one of key applications in steel and metal area. Steel profiles are connected to concrete through baseplates.

Limited edge distance

Balustrade is commonly installed close to the edge of concrete, edge distance is one of the critical factors affecting anchor selection and performance. Chemical anchor was the solution that is least affected by edge distance, but not a preferred anchor proposal for steel and metal connections.

APPROACH TOWARDS SOLUTION



Safety, aesthetic appearance of balustrade

There are also safety concern relating to balustrade. In Hong Kong, most balustrade design requires an aesthetic finish. The stud or thread rod exposed at anchor points are dangerous as citizens may step on it accidentally. Hence, the requirement was given for a mechanical anchor solution with countersunk head. Post-installed mechanical screw anchors with countersunk head was the suitable solution.

Post-installed anchors and other tools

- Post-installed mechanical anchors- **Hilti HUS4-CR** of **M8x64mm** were used.
- Stainless steel screw anchors to satisfy the requirement of aesthetic appearance and durability

THE FINAL OUTCOME

Ongoing anchor installation and finished baseplate connection