REF A03 — SUPER-TALL SKYSCRAPER, KUALA LUMPUR

PROJECT	THE EXCHANGE 106 – 454 m TALL LUXURY MIXED USE TOWER
LOCATION	District TRX, Kuala Lumpur, Malaysia
CLIENT	Mulia Property Development
ENGINEER	Louie International, Miyamoto International
IMPLEMENTATION	2019

Applications — **Slab to wall (End Anchorage connection)**

Design — **Hilti method**

Hardware — **HIT-RE 500, Hilti drilling tools and drill-bits**

Software — **PROFIS Engineering**

Services — **Hilti trainings for job sites, On-site testings**

CHALLENGES

- Faster and easier connection of slabs to wall
- Cost-effective solutions required since 100s of slabs were to be connected
- Verification of existing members for fire exposure

HILTI TOTAL SOLUTION

- ✓ Dowels were skipped and post-installed rebars used
- ✓ Optimized design specifications using Hilti method for lesser embedments
- ✓ Fire testing report provided by Hilti as well as on-site pull-out testing

LOAD / CONDITIONS: **Static / Fire design verifications**

PROJECT HIGHLIGHT **100 floor slabs had to be structurally connected to the core-walls using post-installed rebars**

PROBLEM STATEMENT AND OBJECTIVES

Lift core walls are usually constructed using formwork technologies that reduce complications and speed up the work toward completion.

The objective for the construction team was to have **easier and faster structural connections of all the floor slabs to the lift core-walls** of the building using post-installed rebars.

Thus, the **need for cast-in dowels projecting out from the core walls was averted** to make construction more efficient and faster.

Since more than **100 floor slabs had to be structurally connected to the core-walls** using post-installed rebars, **design optimization of embedment depth was crucial** for the design and construction team to save on cost.

DESIGN APPROACH

Embedment depth of post-installed rebars was optimized using the **Hilti Method to take advantage of the higher bond strength** than the value limited by EC2-1-1

Hilti's **PROFIS Engineering software was used for optimized design** and documentation of calculations.

Existing member cross-section verifications were carried out, including for fire exposure. The mortar selected (Hilti's HIT-RE 500) needed a **third-party fire testing report as per the specifications and this was provided by Hilti for compliance.**

SOLUTION AND FINAL OUTCOME

Software: PROFIS Engineering was used for design productivity by the designer.

Hardware: HIT-RE 500, Hilti drilling tools and drill-bits.

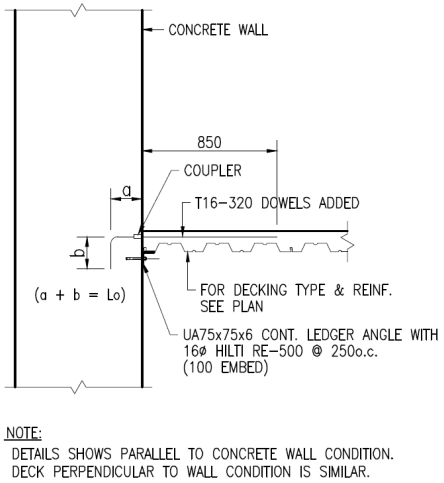
Services: On-site testing as adjunct for the customer to validate quality of post-installed rebar installation. Also third-party fire testing reports.

Benefits: cost saving on embedment depth, easy and fast installation.

Training: Hilti also delivered training sessions for installation at jobsites.

Application: Slabs to core-wall connection

Optimized design specifications



Installation & Testing for Fire