REF A01 RESIDENTIAL SKYSCRAPER IN MUMBAI, INDIA – NATHANI HEIGHTS

PROJECT	AN ICONIC SKYSCRAPER- 262m TALL
LOCATION	Downtown Mumbai, India
CLIENT	Nathani Group, India
ENGINEER	Thornton Tomasetti
IMPLEMENTATION	2020

Applications Slab strengthening & Column Jacketing

Design EOTA TR 069, EC2-1-1 & Hilti method

Hardware HIT-RE 500

Software PROFIS Engineering (Concrete-to-Concrete)

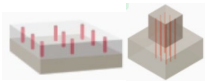
Services Trainings to the design team, On-Site Testings

CHALLENGES

- Addition of floors during construction
- Change of functionality of floor slabs
- Cost-effective solutions
- Code-compliant design
- Design efficiency and documentation

HILTI TOTAL SOLUTION

- ✓ Column jacketing using post-installed rebars as per Eurocode and EOTA TR 069
- ✓ Concrete overlay using Hilti method of design
- ✓ Lesser embedment depth
- ✓ Design documentation from using PROFIS Engineering



LOAD / CONDITIONS: Static / Less embedment depth

PROJECT HIGHLIGHT Addition of new floors during construction and strengthening of columns and slabs

PROBLEM STATEMENT AND OBJECTIVES

The requirement of adding additional floors to the existing skyscraper occurred after permission to **increase the Floor Space Index (FSI)** by the local government authority for further development.

Also, the client decided to change the functionality of certain floors in the lower levels to cater to **increased loads due to vehicle parking/movement usage.**

Hence the objective was to have an optimized design of post-installed rebars for the cross-section enhancement of existing columns **(jacketing application)**, shear friction overlay of existing slabs **(slab thickening application**), and easy installation of the same within the time constraints

DESIGN APPROACH

Regular and dynamic meetings were conducted with the Engineering & Design team of the skyscraper to understand and emphasize **compliant design methods, Hilti qualified products** for design and site requirements and documentation.

Gaps in design approaches and calculations were spotted and, together with the design team
current practices and methodology were used to find code compliant solutions.
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SOLUTION AND FINAL OUTCOME

Consideration of the **correct value of sustained load factor** calculated as per EOTA TR 069 and relevant product ETA (Hilti's **HIT-RE 500** has a higher value of the factor), helped the design team to arrive at efficient and optimized embedment depths

Simply supported connections – Hilti method was used to take advantage of increased bond strength

Column strengthening – EOTA TR 069 design method

was used for anchorage of longitudinal rebars

Slab/Column strengthening – EC2-1-1 design method was used for shear-friction overlay application

Application: Column Jacketing

Application: Slab strengthening

Installation specification