



Micropiling Works at SKYVIEWS

Contractor:	NSCC International
Location:	Dubai, UAE
Completion time:	September 2017 – March 2018
Equipment:	Micropiles (see below) Anchors (see below) Hütte HBR 202 E drill rig Obermann VS 110-E pump

Project Overview

NSCC International was approached to propose a solution (Design and Build) for the foundation strip under the metro traveller in the vicinity of Burj Khalifa Metro station to extend the foundation of the Skyviews towers. The main challenge faced were site constraints as the strip is 52 m long and 3 m wide under the metro traveller (with only 5.5 m head room) and merely a few meters from the main Burj Khalifa Metro station. The existing ground level is +2.85 DMD while the excavation level is 2.15 DMD, hence excavation is 5 m.

Scope of Works and Site Constraints

The scope of works consisted of design and build a shoring structure measuring 52 m length and 3 m width with a total depth of 5 m in addition to 21 groups of main piles. Due to the site constraints there was no possibility of using heavy equipment for the construction. Moreover, as the site was near the metro and under the traveller it was prohibited to continuously use diesel powered equipment.

Design Approach and Proposed Solution

NSCC International was responsible for the design, procurement and installation of the shoring system consisting of micropiles, two layers of anchors to support the 5 m deep excavation and main foundation piles. The design approach had to take into consideration the limited workable options for the use of material and equipment on site. As a solution, the self-drilled option was chosen for the shoring micropiles, anchors and main micropiles. Moreover, a drilling rig type Hütte HBR 202 E was used, manufactured by German drill rig manufacturer Hütte Bohrtechnik GmbH, electrically driven without the use of diesel.

Project Details

The purpose of the micropiles is to support the loads from the metro traveller which will be relocated from its existing location.

The scope of works included:

- Shoring using 220 nos. of self-drilled micropiles (size 103/52 from Ischebeck Titan)
- Capping beam with two layers of anchors done by self-drilled micropiles (size 52/26 from Ischebeck titan) and water beam
- Excavation of 5.5 m
- 21 groups of self-drilled main micropiles (total 168 piles) (size 103/43mm)

Materials for Micro-piles & Anchors

Work Performed	Size of Ischebeck Titan Hollow Bars	No. of Micropiles / Anchors	Length of Anchor / Micropile (m)	Ultimate Capacity of Ischebeck Titan Hollow Bars (kN)
Micropiles Shoring	103/51	229	12	3660
Anchors – First Layer	52/26	30	18.5	925
Anchors – Second Layer	52/26	30	17	925
Main Micropiles A	103/43	40	15	4155
Main Micropiles B	103/43	128	12	4155

