

JOHOR BAHRU CONVENTION CENTRE

CONVENTION CENTRE PROJECT

Project Name	Johor Bahru Convention Centre
Client	Government of Johor
Main Subcontractor	Kumpulan SK Jaya Sdn Bhd
Location	Johor Bahru, Malaysia
Product	Sheet Piles and Ground Anchors
Total Tonnage	408 MT
Delivery Date	2005

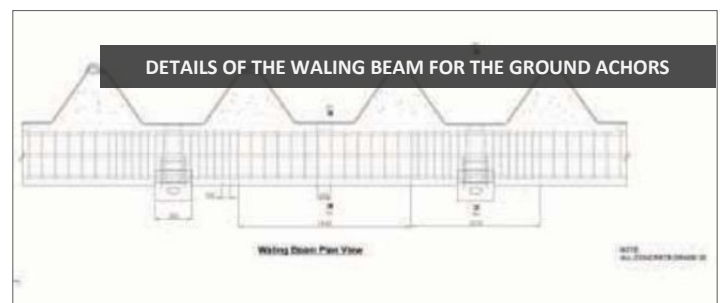
INTRODUCTION

Time was limited and the project had been given the priority by the Government of Johor. Subsequently, Kumpulan SK Jaya Sdn Bhd asked ESC to look at the best way to meet the time constraints and still work within the proposed budget.

The convention centre was to be built on the side of a hill next to the Puteri Pan Pacific Hotel. The excavation need only occur on three sides due to the nature of the site.

From the aspect of geotechnical analysis, the soil log showed existence of clayey materials ranging from firm to very stiff condition. A clay soil will only exhibit plasticity between certain limits of water content. If water content is lower than the plastic limit, the clay will be dry and crumbly. If the water content is greater than the liquid limit, the soil will behave almost like a liquid. This naturally poses a very challenging geotechnical situation for sheet

piling and ground anchorage design consideration. Furthermore the pore water pressure and consolidation process during both short and long term for clayey soil also increases the difficulty in sheet pile moment capacity and deflection checking.

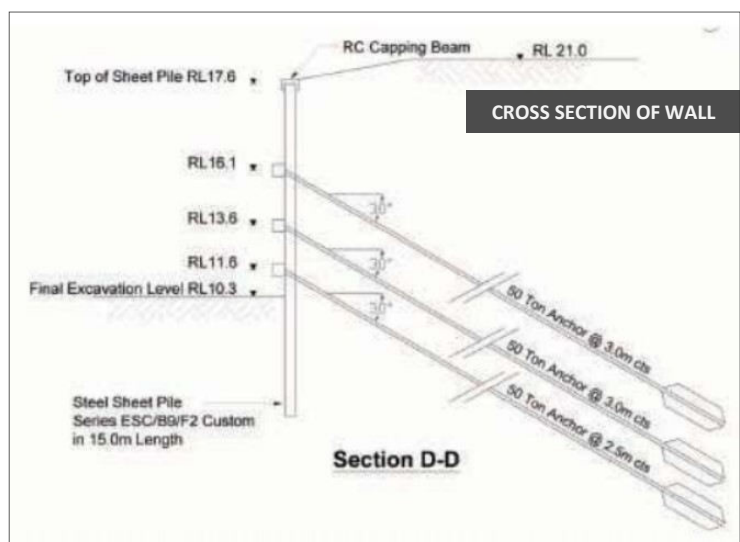


ESC SCOPE OF SUPPLY

SHEET PILES & GROUND ANCHORS

ESC suggested that the project use 15 metre sheet piles and permanent ground anchors as the best solution for the client's requirements. ESC won the selection and subsequently supplied 408 tons of ESC-B9-F2 custom sheet piles with a section modulus of $2,800\text{cm}^3/\text{m}$ along with 297 number of 400kN ground anchors. ESC also installed the sheet piles, ground anchors and carried out the necessary concrete works for the ground anchors waling beams.

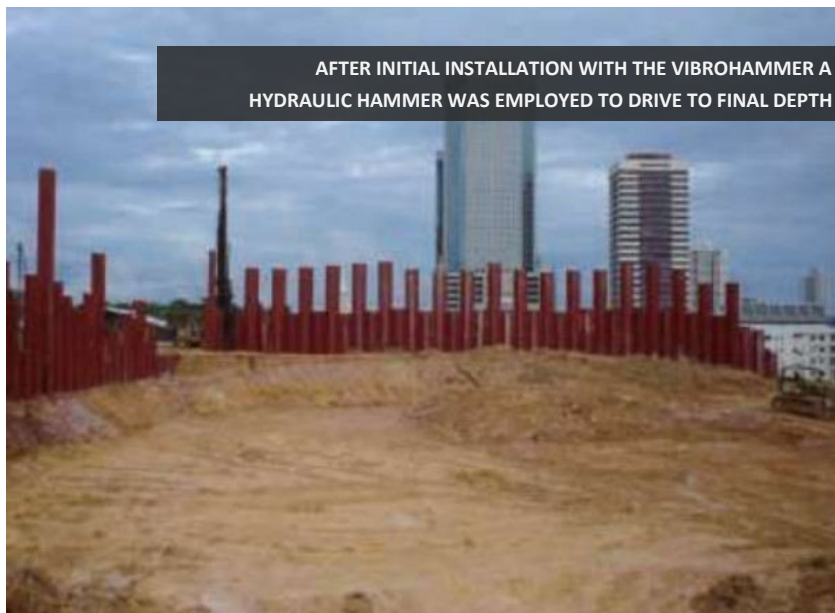
The ground anchors were incorporated into the floor slab during the basement construction and were left in place. All clutches of the sheet piles were welded after installation to provide the 100% water cut-off necessary in such parking structures.



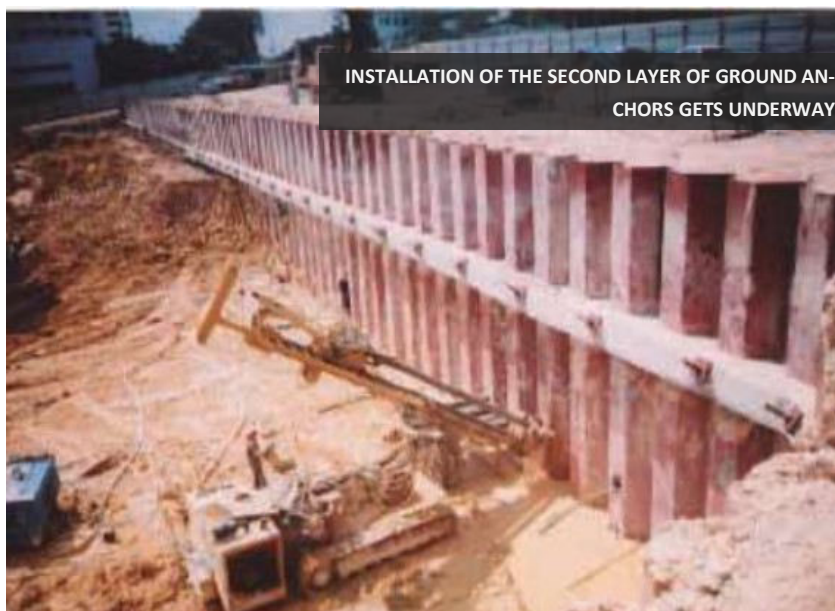
ON-SITE INSTALLATION



SHEET PILES WERE PITCHED AND DRIVEN TO REFUSAL USING A STANDARD VIBROHAMMER

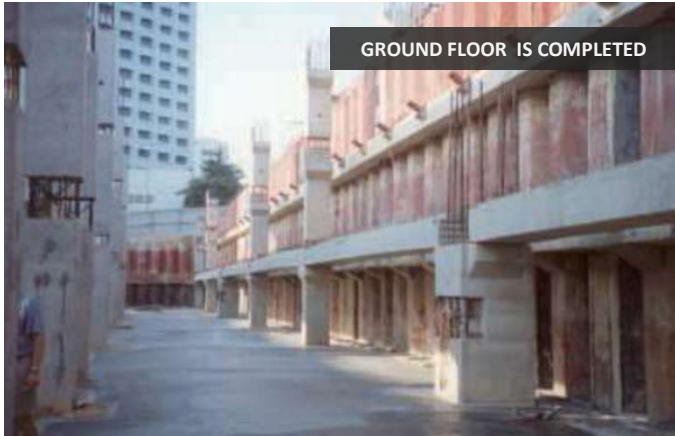


AFTER INITIAL INSTALLATION WITH THE VIBROHAMMER A HYDRAULIC HAMMER WAS EMPLOYED TO DRIVE TO FINAL DEPTH



INSTALLATION OF THE SECOND LAYER OF GROUND ANCHORS GETS UNDERWAY

PROJECT COMPLETION



GROUND FLOOR IS COMPLETED



COMPLETED WALL READY FOR USE



PHOTO AFTER 5 YEARS OF USE

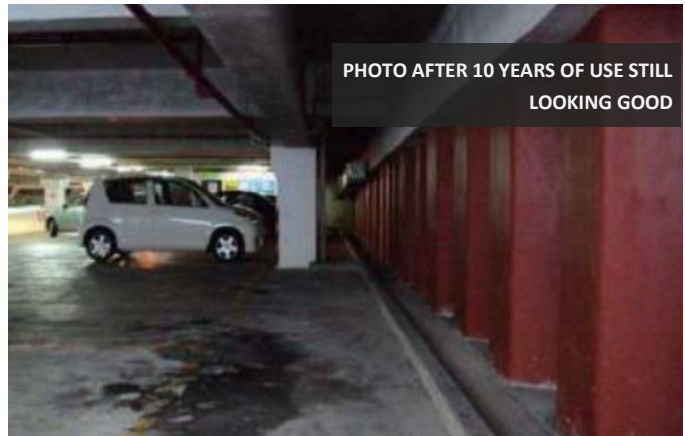


PHOTO AFTER 10 YEARS OF USE STILL LOOKING GOOD



THE JOHOR CONVENTION CENTRE AFTER COMPLETION IN 2005