

## Success Stories.....

### MARINE PILING – MARINA SOUTH, SINGAPORE

**Customer :** McCONNELL DOWELL (SEA) PTE LTD  
**Project :** CONSTRUCTION OF INTERNATIONAL CRUISE TERMINAL (ICT) – MARINE PILING  
**Project Date :** MARCH 2010

McConnell Dowell South East Asia Pte Ltd, in joint venture with Penta Ocean and Toa Corporation, has been awarded the Singapore International Cruise Terminal by JTC on behalf of the Singapore Tourism Board. The works include design and construction of two new berths, terminal deck, car park deck, mooring dolphins, an 800 m long current training wall, dredging for navigation passage and land reclamation, road access, services and miscellaneous ancillary works.



McConnell Dowell will take primary responsibility for the training wall installing driven piles and a 6 m wide concrete deck, as well as an interface deck of 45 m x 36 m along with the dredging and reclamation works. The challenge was to provide precise positioning and guidance information to the piling barge operator in order to ensure both vertical and raked piles would be installed to project specification. The goal was to eliminate the need for shore based surveyor, saving time and expense involved in communication and co-ordination with personnel.



HYDRONAV SERVICES was contracted to supply an integrated complete solution for the above task, which required centimeter precise positions for both vertical and raked piles. Trimble HYDROpro Construction (Pile Module) Software was chosen along with Trimble SPS461 RTK GPS Heading Receiver to provide the solution. The system was installed onboard Alkon 1 Piling Barge, it could provide precise RTK position, high-precision heading and tidal information for target pile to accurately maneuver the barge. All the locations of the 341 piles, in local datum Northing and Easting, were entered into the software along with the cut off level, raked angle, and the required orientation of each vertical and raked pile.

The system allowed piling to be conducted much faster and in all weather conditions. It also required less manpower and communication than conventional piling driving. Raked piles could be placed with the same speed as vertical piles for a saving of several hours per pile.

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