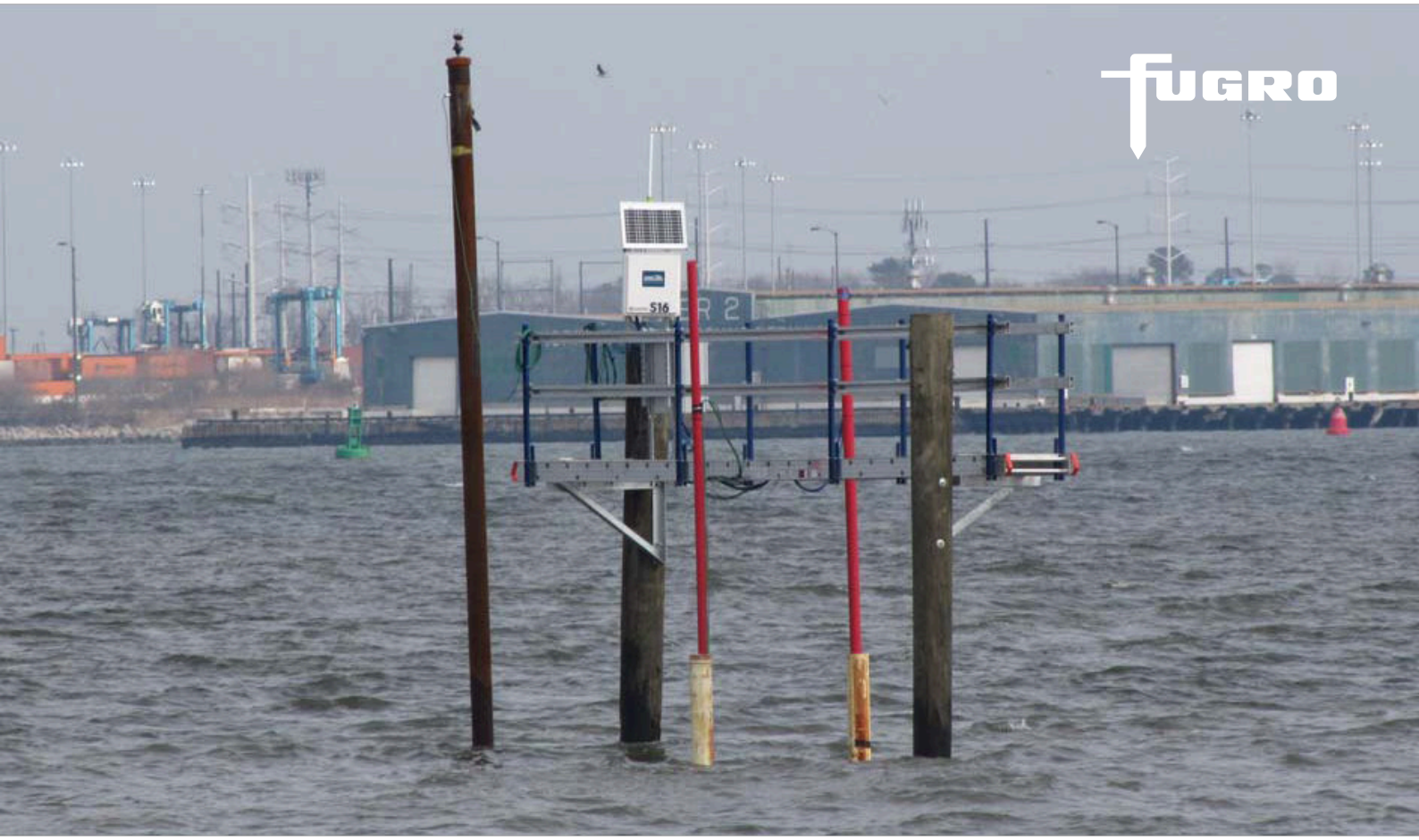


FUGRO
LAND RECLAMATION USA

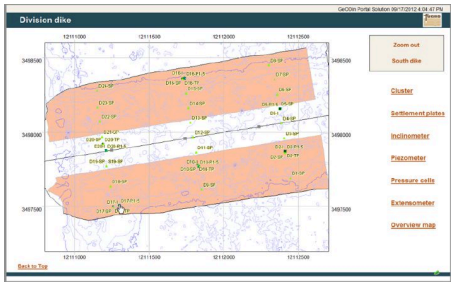
Fugro installed an automatic geomonitoring system for the largest port expansion project in the United States. GeoDin was used during land reclamation to monitor sub-surface underground changes, compare long term dike performance to modelled values & hence provide geoconsulting on the placement of fill material.

CRANEY ISLAND

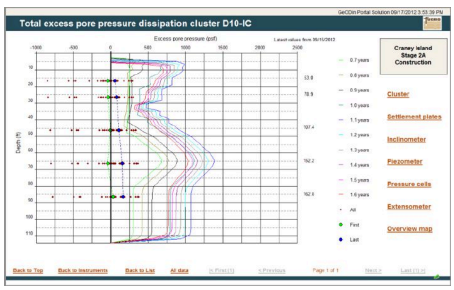
A study on the need for additional container terminal capacity at the Port of Virginia determined that the best option could be achieved through land reclamation at Craney Island. Fugro was the lead geotechnical engineer for the Craney Island Dredge Material Management Area (CIDMMA) Eastward Expansion project. Fugro Atlantic carried out very detailed site investigations in order to construct a 20 year model, before sensors were installed that were to provide up-to-date information on geo-stability. Fugro Germany provided GeoDin data management software.

DATA HANDLING

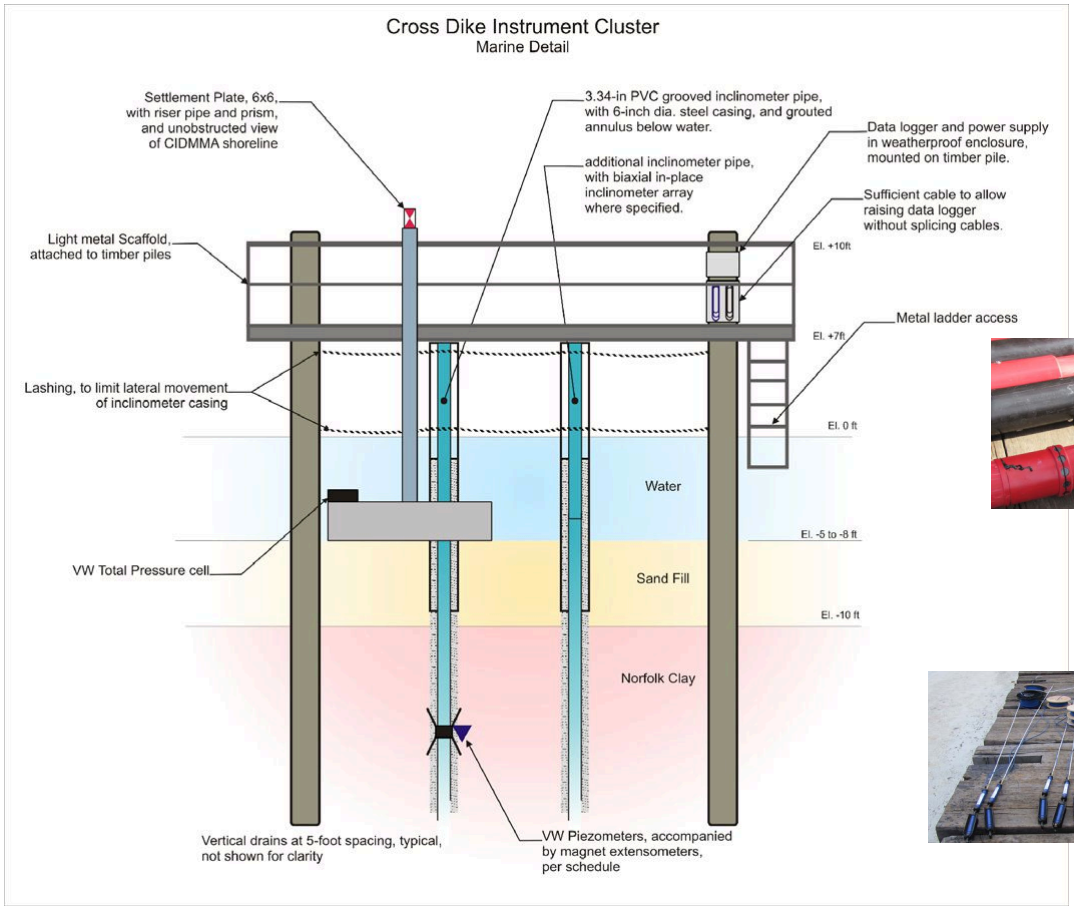
After installation and positioning of piezometers, chain inclinometers and magnetic extensometer tubes from a barge, base line measurements were carried out and data loggers connected. Data transfer of sensor files in various formats took place via modem to a FTP server. Processing is done using MATLAB and the results automatically imported to the GeoDin database; all data is archived. Automatic messaging by SMS and email combined with alarm report generation enable progress to be monitored and trends analysed using directly measured & derived parameters.



GeoDin Portal website



Settlement rate trends



CUSTOMISATION

GeoDin was customised for the Craney Island project by designing the database for a wide range of sensors. This flexible configuration allows new sensors and sensor types to be added in the future. Data types were defined with formulae to use directly measured parameters in calculations based upon the sensor manufacturers recommendations and calibration values (total settlement, pore water pressure, total earth pressure and lateral deformation). Derived parameters were continually compared to modelled values in order to predict settlement rates and offer guidance regarding the placement of fill material (total excess pore pressure dissipation, effective stress, undrained shear strength).

TECHNICAL DETAILS

The recommended system requirements are PCs with Windows operating system from Windows 10 (64-bit) with 4 GB RAM and a display resolution of 1920 x 1080 px. GeoDin may also be run from a Windows Server 2016 or higher as well as Citrix. Previous Windows operating systems and RAM configurations may work, but these are not supported. When working with client/server databases the appropriate database drivers must also be installed.

GeoDin can be used as a stand-alone program or integrated in a multi-user network. Integrated contextual help is provided in English and German.

GeoDin is designed, programmed and distributed exclusively by Fugro. Visit **info.geodin.com** or **geodin.com** for further information.

© FUGRO 01 2024