



# AL JAZEERA PORT CONSTRUCTION

## PORT CONSTRUCTION PROJECT

<b>Project Name</b>	Al Jazeera Port
<b>Project Owner</b>	Emirate of Ras Al Khaimah
<b>General Contractor</b>	Athena SA
<b>Project Location</b>	Ras Al Khaimah , United Arab Emirates
<b>Product</b>	H Piles, Sheet Piles with Protective Coating, Tie Rods
<b>Total Tonnage</b>	2,000 MT
<b>Year</b>	2008

### INTRODUCTION

ESC's relationship with Athena SA continues to blossom with the award of more than 2,000 tons of steel sheet piles for the Al Jazeera Port in Ras Al Khaimah, UAE.

ESC looked at the design with the Contractor. ESC went through Section 4.3.4 of the document "Basis of Design" (922277-r-001, Rev B dated 16-8-07) which specifies that "a peak ground acceleration of 4 m/s<sup>2</sup> shall be considered for the lifting piers design as identified from the Global Seismic Hazard Map". It further specifies that "a horizontal seismic co-efficient (kh) of 0.2 shall be used for the sheet pile quay wall".

Data from the Global Seismic Hazard Assessment Program (GSHAP) is shown visually as broad coloured zones on the hazard map. However, for more accurate identification, data is available also as a table of numeric values for specific latitudes and longitudes. In the data table, the geographic location of the Al

Jazeera Port is assigned a peak acceleration of 0.1998g. Thus, a peak ground acceleration of 0.2g represents the recommended design value arising from GSHAP data.

The suitability of such a design value can be confirmed by a site specific assessment of seismic hazard. Such assessment identifies potential seismotectonic sources that could influence the site as:-

The Dibba Fault Zone;

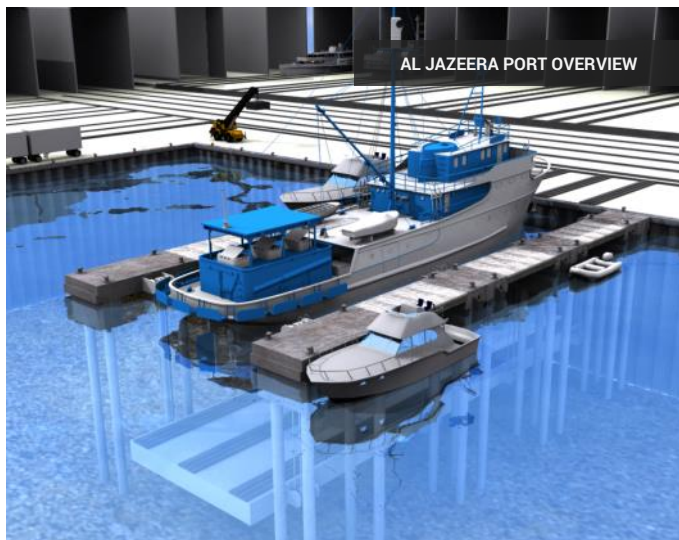
The Zendan Fault Zone; and

The Subduction Zone along the Zagros Mountains and Makran Region

From analysis of the available earthquake catalogue, it can be determined that earthquake magnitudes corresponding to 10% chance of exceedance in 50 years (rounded to the nearest 0.5) for these three zones are:-

Source	Magnitude for 10% Exceedance
Dibba Zone	6.5
Zendan Zone	7.0
Subduction Zone	7.5

For these magnitudes and the distances of the various seismotectonic sources from the site, attenuation relationships such as Sharma (1998), Ambraseys (1975) and Joyner & Boore (1981) demonstrate that the near-field Dibba Zone is the governing seismotectonic source. Further, the attenuation relationships predict that the peak ground acceleration with a 10% risk of exceedance in 50 years arising from the Dibba Fault Zone is in the range of 0.15g to 0.2g.



# ESC SCOPE OF SUPPLY

## H-PILES, SHEET PILES, TIE RODS

Thus, a peak ground acceleration of 0.2g as listed in the table of GSHAP values is supported by a site specific hazard assessment for Al Jazeera Port.

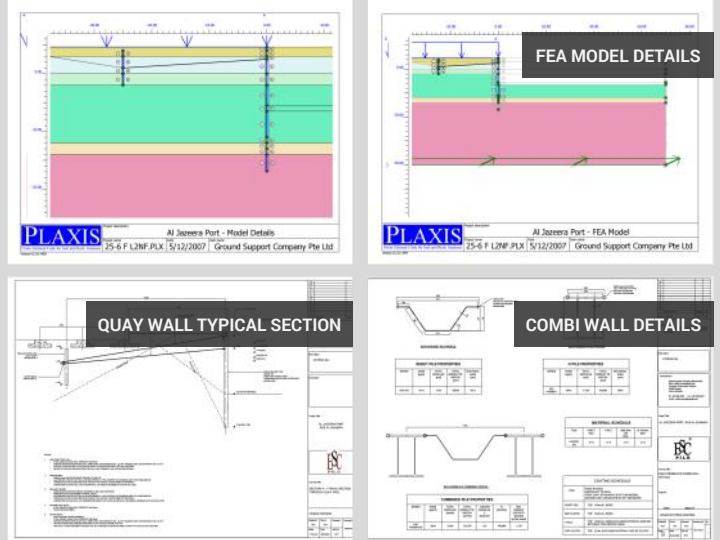
This project involved the delivery of ESC-H70/30B-2 H Piles and ESC-S10 sheet piles for the combi wall in 21.0 metre lengths. Main walls were accompanied by 10.0 metre ESC-EU25 deadman sheet piles. All piles are of Q345B steel grade and coated with 500 microns of Jotamastic 87 paint.

ESC also delivered tie rods 44.5 metres long in 72mm diameter, Grade 700, as part of the complete package for this project.

Pipe piles in 23.5 metre lengths with diameter of 900mm were also supplied in grade Q345B for the same site.

The piles were produced in China by ESC.

ESC continues to reach all corners of the world to provide customers with economic sheet piling solutions.



# PACKING & DELIVERY





# UNLOADING TO SITE

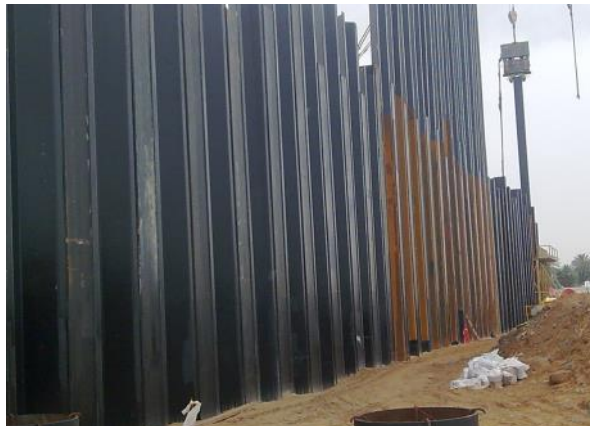


# MATERIALS ON SITE





# ON-SITE INSTALLATION



# PROJECT COMPLETION

