



INSIGHT

WHERE HIDDEN RISKS MEET STRATEGIC OVERSIGHT

MARINE INFRASTRUCTURE · OWNER'S ENGINEER INSIGHT

Topic

Owner's engineering
Marine and coastal risk

Sector

Ports, terminals, jetties, coastal

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Related Services

Owner's engineer
Marine geotechnical interpretation
Condition assessment of marine structures
Construction methodology review
Independent design review

Related Case Study

Brighton Palace Pier Boat Deck Replacement, UK

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Summary

Marine projects concentrate risk where it is hardest to see. The ground is under water, the loads come from waves, berthing ships and corrosion, and the construction depends on weather windows and marine plant. Most of the expensive surprises on a port or jetty project sit in the gaps between design, procurement and construction.

An owner's engineer exists to watch those gaps on the owner's behalf.

Where the Risks Hide

Seabed investigation is expensive, so it is often sparse. Boreholes are widely spaced, and the ground between them is interpolated. Weak rock, such as chalk or weathered limestone, can behave very differently depending on how the piles are installed. Scour, corrosion and fatigue govern the design life but may only appear in the specification as a single line.

On the contract side, risk sits in interfaces: between the designer and the contractor, between temporary and permanent works, between marine and landside packages. Each party can be competent and the project can still fail at the joint.

A Construction-Led Example

On the Brighton Palace Pier boat deck replacement, GTL designed, supplied and installed 24 bearing piles beneath an operating Victorian pier. The piles are 406.4 mm diameter, 20 mm wall circular hollow sections with compression loads of up to 1,300 kN, embedded in weak Upper Chalk beneath thin seabed gravels.

The design was led by construction method. A structural working platform was built beneath the deck, 10 m above the seabed and 5 m below the deck, so that the piles could be installed without marine plant and without closing the pier. Pile sections were lowered through a purpose-designed piling gate, rotated into the chalk, drilled out and grouted to give a reliable rock socket that does not depend on driving resistance. Lateral behaviour was analysed with Oasys ALP, because the unsupported length through water and the stiffness of the chalk control the bending in each pile.

That is the kind of judgement an owner needs on its side of the table: whether the installation method suits the ground, whether the design accounts for it, and whether the programme is realistic.

What Strategic Oversight Covers

- **Ground model:** review of the marine investigation, and specification of additional investigation where the risk justifies it.
- **Design basis:** design life, corrosion, scour, berthing and environmental loads stated and agreed before design starts.
- **Method:** installation method reviewed against the ground and the design assumptions.
- **Interfaces:** temporary and permanent works, and marine and landside packages, coordinated under one responsibility.
- **Verification:** load testing, inspection and as-built records specified and witnessed.

Ageing Assets

Many piers, jetties and wharves are reaching the end of their design life. Condition assessment, structural and geotechnical appraisal, and refurbishment designed to keep the asset in use

while works proceed are often worth more than replacement.

Key point. On marine projects the hidden risks are rarely unknown. They are known to someone, recorded somewhere, and not acted on. Strategic oversight makes sure they are.