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Immingham Ports

Case Study

Overview

Immingham Agri-Bulk Shed is a 130 x 45m portal frame structure with associated external works, to store and handle agricultural bulk products at ABP Port of Immingham. The structure comprises a concrete slab and 6m high perimeter and dividing retaining walls to facilitate the large storage volumes required.

The site is a former coal storage yard for the port and lies adjacent to where the River Humber meets the North Sea. JNP were commissioned by CR Reynolds as part of a design and build team to provide structural, civils and geo-environmental design services on the project. The overall Client is Associated British Ports.

Design Services Provided

- Principal Designer role.
- 6m high perimeter and bay dividing RC retaining walls.
- RC foundation to support the steel frame structure, canopy and retaining walls.
- Weighbridge slabs/foundations.
- All reinforced concrete detailing works.
- Below-ground drainage including large attenuation and separator tanks.
- External works, heavy duty pavement design inc. concrete aprons, external levels.
- Pile mat design.
- Site layout coordination.

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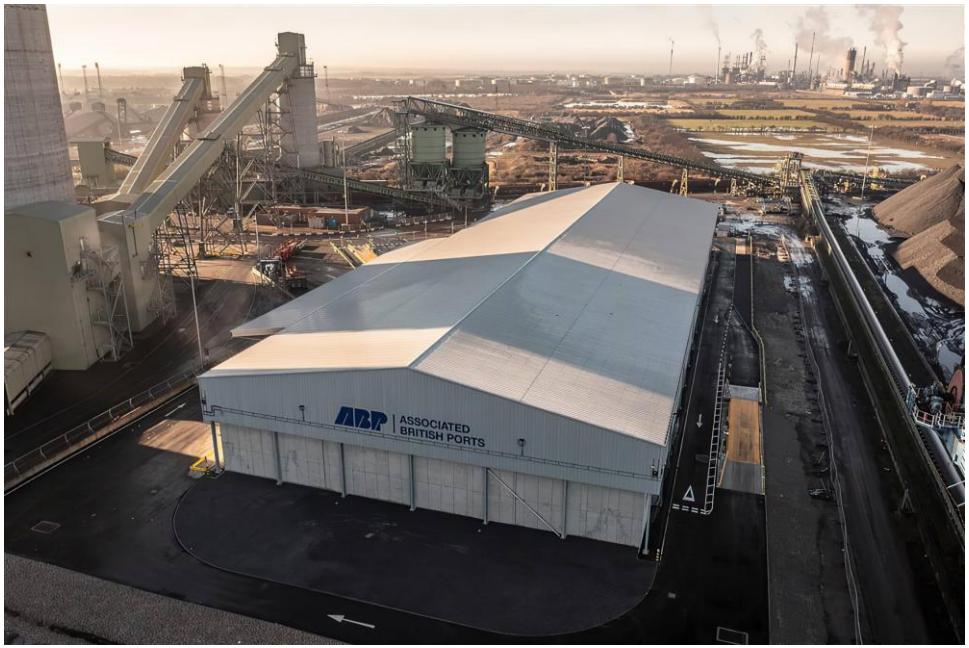
Project Solutions

The foundation design utilised cost-efficient and innovative CMC piling to address settlement challenges while maintaining the programme timeline, which would not have been achievable with traditional piling methods. The retaining wall and foundation were designed monolithically, ensuring the steel frame could sit directly on the wall foundations. Joints were minimised to prevent dust and grain hazards during use.

Building levels and external drainage were set to mitigate flood risk, resist variable groundwater, and manage surface water effectively. To address contamination, gas protection measures and appropriate capping materials were recommended.

Service coordination involved collaborating with third parties to align new and existing utilities, ensuring uninterrupted service and avoiding clashes. Additionally, value engineering solutions were developed to reduce costs, meet budget constraints, and maintain the project's viability.



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Project Challenges

- High perimeter retaining walls
- Minimise movement joints
- Poor ground conditions
- Flood risk / variable groundwater levels
- Site contamination due to previous use
- Coordination between existing / proposed services and drainage
- Extremely tight timescales and budget requirements

Project Solutions

- Cost-efficient CMC piling to address settlement and maintain programme timelines.
- Designed monolithic walls and foundations with minimal joints to prevent dust and grain hazards.
- Set building levels and drainage to mitigate flood risks and manage groundwater.
- Recommended gas protection and capping materials to address contamination.
- Aligned new and existing utilities to maintain services and avoid clashes.
- Proposed cost-saving measures to meet budget and ensure project viability.

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Summary

JNP Group worked collaboratively from the tender stage to project delivery, providing a fully coordinated design and addressing complex engineering challenges. The team contributed significantly to CR Reynolds' proposal, which was well-received by ABP.

We delivered comprehensive design solutions, including foundations and external works, and implemented innovative strategies to address poor ground conditions, flood risk, and site contamination.

This project highlights JNP Group's expertise in delivering cost-effective, efficient solutions for complex infrastructure challenges while adhering to strict budgets and schedules.