

PROJECT SHEET

PORT OF BALBOA, PANAMA

PORT EXPANSION PROJECT, PHASE 4 - LAND RECLAMATION FOR CONTAINER TERMINALS

INTRODUCTION

The plans to expand the Panama Canal represent one of the most important infrastructure improvements of the 21st century. Since its opening in 1913 the Canal has provided the shortest and most economically viable shipping route from Pacific to Atlantic seaports. With the ever-increasing size of modern-day vessels, it was inevitable that the Canal would need to be widened and deepened. The expansion of the Canal has made the extension of the Port of Balboa at the mouth of the canal on the Pacific Ocean a necessity. The Phase 4 projects included Marine Works and Civil Works to improve two existing berths and to build a completely new berth capable of handling not only Post Panamax but also Super Post Panamax ships.

PROJECT CHARACTERISTICS

In 2007 a contract for the improvement behind berths 16 and 17 at the container port of Balboa was awarded to Boskalis by Panama Ports Company SA, a member of the Hutchison Port Holding Group of Hong Kong, to be completed in a 15 month timeframe. Soon after, other contracts to build a completely new berth followed. The contract required dredging, reclamation and improvement of water and land areas. At Berth 18, in addition, drilling and blasting rock was necessary.



FEATURES

Client	Panama Ports Company (part of Hutchinson Group)
Location	Balboa, Panama
Period	May 2007 - August 2010
Performed by	Consortium Intercoastal Marine Inc. / Coastal and Inland Marine Services, Inc., a subsidiary of Boskalis



- A** Location map
- B** February 2008: BHD Cornelius removing overburden, TSHD Stuyvesant reclaiming, vibro rotation just started.
- C** May 2008: BHD Cornelius and grab dredger Elisa removing sediment in new basin (background), vibro flotation, vibro compaction and reclamation ongoing (foreground)
- D** May 2008: removal of the burden completed, reclamation 60%, vibro flotation and vibro compaction in progress. First 'fill platforms' handed over to client for further construction



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UNIQUE ASPECTS

Phase 4 berth expansion and improvements entailed a variety of types of works which required the use of at least 20 different pieces of equipment in a rather small space. Congestion was unavoidable. On a day-to-day basis, the logistics of working in such a confined area demanded a high level of communication amongst the consortium partners. With the professionalism of Boskalis' crews added to Rockfall's drilling and blasting skills and the expertise of the Panamanian partner Intercoastal Marine Inc., a solid team made it possible to achieve good results.

PROJECT SPECIFICATIONS

As part of the improvement programme, a piled deck link structure at the rear of the existing berths was constructed. At the new berth, a piled quay deck structure, the deck furniture, a 440-m rock dike and a road platform were built as well as dredging for the navigation and berth box. At the new berth, drilling and blasting were also required. Because of some risk of earthquake activity, vibroflotation and vibrocompaction of the reclaimed area were conducted to prevent soil liquefaction and increase stability during potential seismic events.

EQUIPMENT

For the dredging works, Boskalis deployed the backhoe dredger (BHD) Cornelius and intermittently the trailing suction hopper dredger (TSHD) Stuyvesant, the TSHD Flevo as well as the TSHD Puerto Mexico for reclamation activities.

During the works for the new berth, the grab dredger Elisa was added to the fleet. The TSHD Stuyvesant sailed to the borrow area, almost 120 km south of Panama, with a cycle time of 14 to 16 hours bringing in sand and taking out mud. To accomplish this capital dredging and land reclamation project, some 2.8 million m³ mud and soft clay were dredged, 1.5 million m³ of unsuitable material were disposed of and 525,000 m³ sound rock was drilled, blasted and dredged. 3.4 million m³ sand were reclaimed, and 152,000 m² were subject to surface compaction, and 168,000 m² were subject to vibroflotation. Bauer AG was in charge of the vibroflotation of the top 12 m going to a relative density of 65 percent and Retraneg is executing the vibrocompaction with conventional rollers of the top 1.20 m, in layers of 30 cm, to a relative density of 95 percent.

INFRASTRUCTURE IMPROVEMENT

The Balboa container port extension is an integral part of the upgrading of the Panama Canal, a necessary result of the expansion of world trade and the increasing size of ships. Working in a consortium with Intercoastal Marine Inc., who were charged with the civil works, Boskalis was the lead partner for the dredging, employing its subsidiary Rockfall to conduct the extensive and essential drilling and blasting of rock.

Despite working in a very tight space, with multiple pieces of equipment, the job proceeds on time and is scheduled to be completed in early 2010.



E



G



F

- E** March 2009: MW1 complete, dredging MW3 ongoing
- F** August 2009: MW just built and already completely occupied. MW3 in progress
- G** November 2008: All units squeezing for space. TSHD Stuyvesant reclaiming, BHD Cornelius and grab dredger Elisa removing blasted rock, mSeacow 152 (Rockfall)blasting

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