



# Building the Canal of the 21<sup>st</sup> Century

by Maribel Pros

**The Panama Canal revolutionized sea transport from the outset: it linked the Atlantic and Pacific Oceans for the first time, permitting significant time-savings, as ships no longer had to go around South America and face the rough waters of Cape Horn. With a set of new locks it is currently being expanded to meet the needs of modern ship traffic. Leica Geosystems is supplying surveying instruments to the project awardee at one of the greatest civil engineering works ever undertaken.**

The current Panama Canal design dates from 1904 and allows the passage of ships 267 m (875 ft) long with a beam of 28 m (92 ft). The appearance of ships known as Post Panamax, which surpass all these measurements, rendered it small. This is why its expansion, by construction of a new set of locks, became necessary some time ago.

## **Double the Passage Capacity**

Giving the canal a third set of locks is one of the greatest civil engineering works ever undertaken. With it, the Panama Canal Authority (ACP) – a local

organization that administers the water route since it was handed over by the United States in the year 2000 – aims to double its passage capacity, currently calculated at 5% of world trade.

The new locks, one set in the Atlantic and another in the Pacific, will have three levels, 427 m (1,400 ft) long by 55 m (180 ft) wide and 18.3 m (60 ft) deep, with reutilization basins that will almost halve the water used, since the whole system is supplied by rain from the canal basin. The work will also require building three dams. The contracting companies have been commissioned to design the system for a service life of at least another one hundred years.

Expansion work began on August 25, 2009, following signing of the award agreement and having obtained the best technical and economic rating by the Panama Canal Authority.

## **Big Challenges Require Best Resources and Instruments**

The Grupo Unidos por el Canal (GUPC) consortium, the awardee of the great canal expansion project, is led by the prestigious Spanish building company Sacyr Vallehermoso, the Italian Impregilo concern,

Jan de Nul from Belgium, and Constructora Urbana from Panama. Knowing that successfully rising to great technological challenges requires allies of the highest technical, technological, and professional capacity, GUPC chose Leica Geosystems products and solutions to supply the surveying instrumentation necessary to carry out the project within deadline and budget. These were: Leica Viva GS15 and Leica Viva GS10 GPS receivers, Leica TCRM1203+ R400 and Leica TC1203+ Total Stations, as well as Leica NA2 levels. Moreover, Leica RoadRunner Civil Engineering software guarantees proper data flow and management.

GUPC fully realizes that big challenges can only be tackled by working with the best resources and instruments. Works of great difficulty, such as the one in progress in Panama, require highly qualified teams and technicians that can address any challenge, anywhere in the world.

***“The local personnel have adapted quickly to the Leica Geosystems equipment, particularly because it is so extraordinarily easy to handle.”***

*Jorge Barangé, Head of Topography of Sacyr Vallehermoso*

### **Completion in Time for the Centennial**

After an estimated 1,883 days of very intense work at the highest level of technical and human demand, the project should be completed by the end of 2014, coinciding with the Centennial of the official opening of the Canal. The project, valued at more than 3,200 million US Dollars (2,360 million Euro), will generate direct employment for almost 6,000 people and indirect employment for about 15,000. ■

*About the author:*

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## **GUPC Consortium (Grupo Unidos por el Canal)**

is made up of:

- Sacyr Vallehermoso (Spain)
- Impregilo (Italy)
- Jan de Nul (Belgium)
- Constructora Urbana (Panama)

## **Project Dates**

Expansion started on August 25, 2009  
Scheduled completion by end of 2014

## **Surveying Instruments**

<b>Total Stations:</b>	Leica TCRM 1203+ R400 Leica TC1203+
<b>GPS Receivers:</b>	Leica Viva GS15 Leica Viva GS10
<b>Levels:</b>	Leica NA2
<b>Software:</b>	Leica RoadRunner