



## **Trimble Technology Helps Build**

### **World's Longest Transoceanic Bridge in China**

**SUNNYVALE, Calif., Aug. 11, 2004** -- Trimble (NASDAQ:TRMB) announced today that its positioning technologies--Global Positioning System (GPS), digital auto levels and software--are being used to help construct the world's longest transoceanic bridge in China.

As one of the fastest growing countries, China has attracted the world's attention for its phenomenal rate of economic development and modernization efforts. Infrastructure projects especially in the areas of transportation, telecommunications, water conservation, energy and environmental protection are a national priority.

The Zhejiang Province, located on the eastern coast of China is the site of RMB \$14 billion (US \$1.7 billion) construction project--The Hangzhou Bay Transoceanic Bridge. The contractor, China Railway Bridge Bureau Group Co. Ltd., is using Trimble 5700 GPS systems, Trimble DiNi 12 digital levels and Trimble Geomatics Office™ software. According to the China Railway Bridge Bureau Company, the Trimble equipment helps improve efficiency and reduce costs; provides high accuracy and very close tolerances; is easy to operate and rugged enough to use in any harsh environment.

While conventional optical systems could be used for control near the coast as well as to position piles at a distance, the project requires precise positioning for the 9-25 km (5.6-15.5 miles) bridge span off the coast. Conventional survey systems would either reduce the accuracy or require extra control stations, which would demand more work as well as increase the potential for error accumulation. By using the Trimble 5700 RTK GPS systems with a reference station for differential corrections, accuracy is improved at greater distances enhancing the contractor's productivity.

To date, approximately 50 Trimble 5700 RTK systems have been set up at sites where the bridge will span the Bay of Hangzhou. Three Trimble 5700 CORS GPS systems are used as reference stations to broadcast the differential corrections required for precise measurements of the project. Additional 5700 systems are located on barges in order to provide millimeter accuracy for the real-time positioning of piles and pre-fabricated sections of the bridge; this is accomplished by moving sections of the bridge on barges for precision placement using GPS for position and orientation. The Trimble 5700 RTK systems are also used for measuring the coastal topographic details as well as hydrographic surveys of the seabed. Using Trimble equipment across the entire construction site enables all surveying, mapping and construction activities to share a common geodetic reference system.

Since the China Railway Bridge Co. has been using Trimble equipment, the construction project has progressed quickly, with significant improvement in the offshore positioning accuracy and complete positioning process. With the GPS reference stations covering the entire construction area, overall project accuracy is enhanced and working efficiency is improved.

When completed in 2008, the Hangzhou Bay Transoceanic Bridge will significantly shorten land distance between Shanghai and Ningbo by over 120 km (74.5 miles) and is expected to promote economic development in the province. The bridge will span across the Hangzhou Bay on the East China Sea, crossing the Qiantang River at the Yangtze River Delta. The Delta area is said to be one of the world's most complicated sea environments, with one of the three highest tides on Earth, typhoons and challenging soil contents.

With an overall length of 36 km (22 miles), the six-lane bridge includes 32 km (20 miles) over the sea. The main span of the new bridge uses the 'stayed-cable' design. When completed, it is estimated that the bridge will carry 45,000 cars per day in its first year of operation.

#### **About the China Railway Bridge Bureau Group Co. Ltd.**

Established in 1953, the China Railway Bridge Bureau Group Co. Ltd. includes 12 subsidiaries, 7 branches and about 10 offices in other countries. With assets over RMB\$ 4.82 billion (US \$578 million), the group includes 5,812 professional personnel. The company has gained many awards as well as the ISO 9001 quality certification. The Group has constructed numerous projects including the first bridge over the Yangtze River: the Wuhan Yangtze River Bridge and the Shantou Bay Bridge.

#### **About Trimble's Geomatics and Engineering Business**

Trimble, a world leader in GPS, construction lasers, robotic total stations and machine control solutions, is creating a broad range of innovative solutions that will change the way construction work is done. The Geomatics and Engineering Business of Trimble is focusing on the development of technology and solutions in the core areas of

surveying, construction and infrastructure. From concept to completion, Trimble's integrated systems streamline jobs and improve productivity.

**About Trimble**

Trimble is a leading innovator of Global Positioning System (GPS) technology. In addition to providing advanced GPS components, Trimble augments GPS with other positioning technologies as well as wireless communications and software to create complete customer solutions. Trimble's worldwide presence and unique capabilities position the Company for growth in emerging applications including surveying, automobile navigation, machine guidance, asset tracking, wireless platforms, and telecommunications infrastructure. Founded in 1978 and headquartered in Sunnyvale, Calif., Trimble has more than 2,000 employees in more than 20 countries worldwide.

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