

Jacques Mathivat (1932-2012)

An eminent personality in the world of engineering, Jacques Mathivat passed away November 13, 2012 at the age of 80. The engineer practiced and perfected novel building concepts that have become standard construction practices throughout the world.

On behalf of the French Association of Civil Engineering (AFGC), the Association's president, Jean-Marc Tanis, recently paid homage to Mr. Mathivat, who was president of the Association from 1989 to 1997.

Jacques Mathivat was born January 3, 1932 in Neuilly-sur-Seine (Hauts de Seine). A graduate of the Ecole Spéciale des Travaux Publics and of the Ecole Nationale Supérieure des Pétroles et Moteurs, Mr. Mathivat worked for Campenon-Bernard, first as an engineer and then as director of its structural design department (Campenon-Bernard later became a major subsidiary of the Vinci Group), before founding the structural engineering company, SECOA.

Early Days at Campenon-Bernard

Jacques Mathivat began his career in 1961 at Campenon-Bernard. His first engineering project was the Choisy-le-Roi bridge, which became the prototype of bridges built using the balanced cantilever erection process with match-cast precast segments. It also was the first bridge made using piers consisting of twin flexible walls.

This innovative design was used in constructions across France and Switzerland, such as the Chillon viaduct, and was the inspiration for the technique of resting bridge decks on piers covered with a double row of neoprene bearing pads.

It was also during this period that Campenon Bernard perfected the balanced cantilever construction method, using precast segments placed by means of a launching gantry. The Ile d'Oléron bridge, built in 1966, was the first major construction using this method.

Innovations Now Standard

Jacques Mathivat was named director of the structural design department at Campenon-Bernard in 1972. Along with the company's scientific director, Jean Muller, and technical director (and later general director), Jean Chaudesaigues, Mr. Mathivat was involved in the design and implementation of the company's engineering projects. The directing team was aided in its endeavors by then young engineers Jacques Combault, Hubert Baur, Michel Placidi, and Michel Levesque.

This structural design team went on to create several major pre-stressed concrete structures using the balanced cantilever construction process.

Mr. Mathivat directed the design of the Brotonne bridge. At the time of its construction, the Brotonne bridge held the world record in the field of concrete cable-stayed bridges with a main span of 320 meters.

During this period, Campenon-Bernard perfected the construction of concrete bridge decks by implementing a progressive process using temporary stay cables.

Mr. Mathivat was instrumental in the optimization of concrete deck cross sections which contributed to the development of the steel-concrete composite box girders consisting of concrete slabs connected to steel webs, made of stiffened steel plates, steel trusses, or corrugated steel panels.

The latter solution was patented by Campenon-Bernard and used for the first time on the Maupré Viaduct in Charolles.

When innovation was needed to take the weight off of the concrete box girders and facilitate the implementation of pre-stressed materials, Mr. Mathivat contributed to the development of new post-tensioned tendons layouts using three tendon families:

- Cantilever tendons embedded in the concrete
- Mid-span closure tendons embedded in the concrete
- Continuity tendons located in the box girder outside the concrete

The SECOA Years

In 1978, Jacques Mathivat left Campenon-Bernard to start his own structural engineering company, la Société d'Études et de Calculs en Ouvrages d'Art (SECOA). He managed the company until 1988.

Mr. Mathivat continued his research on the optimization of pre-stressed concrete decks for both the French DOT and private companies. His research led to several developments:

- Making the upper slab thinner by using transverse ribs. This solution was used in the construction of pre-stressed concrete access ramps on the Cheviré bridge.
- Making the webs lighter by using triangular concrete panels. This technique was used for the first time on the bridge over the Vecchio in 1999 in northern Corsica. This technique was once again applied in 2008, on the Abra bridge in southern Corsica.
- Extending the external pre-stressing principles to the cantilever tendons by placing them above the top slab and deviating them at piers. Several extradosed bridges like this were built in Japan before this procedure was implemented for structures in France, namely on the PS33 in Saint Michel de Maurienne and more recently on the Ravine des

Trois Bassins bridge on the Tamarins Road in La Réunion. Many bridges of this type have been built or are being built all over the world.

Distinctions and Awards

Mr. Mathivat was vice-president of the Association for Bridges and Structural Engineering (IABSE) from 1983 to 1991 and President of the l'Association Française pour la Construction (AFPC now named AFGC) from 1989 to 1997.

He also taught at the Centre des Hautes Etudes de la Construction and at l'Ecole Nationale des Ponts et Chaussées.

Mr. Mathivat was received into the Legion of Honour in 2001, and received the Albert Caquot Award in 2002.