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From one shore to the other: Baume & Merpent's Egyptian bridges

D'une rive à l'autre... Les ponts égyptiens de Baume & Merpent

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From one shore to the other: Baume & Marpent's Egyptian bridges

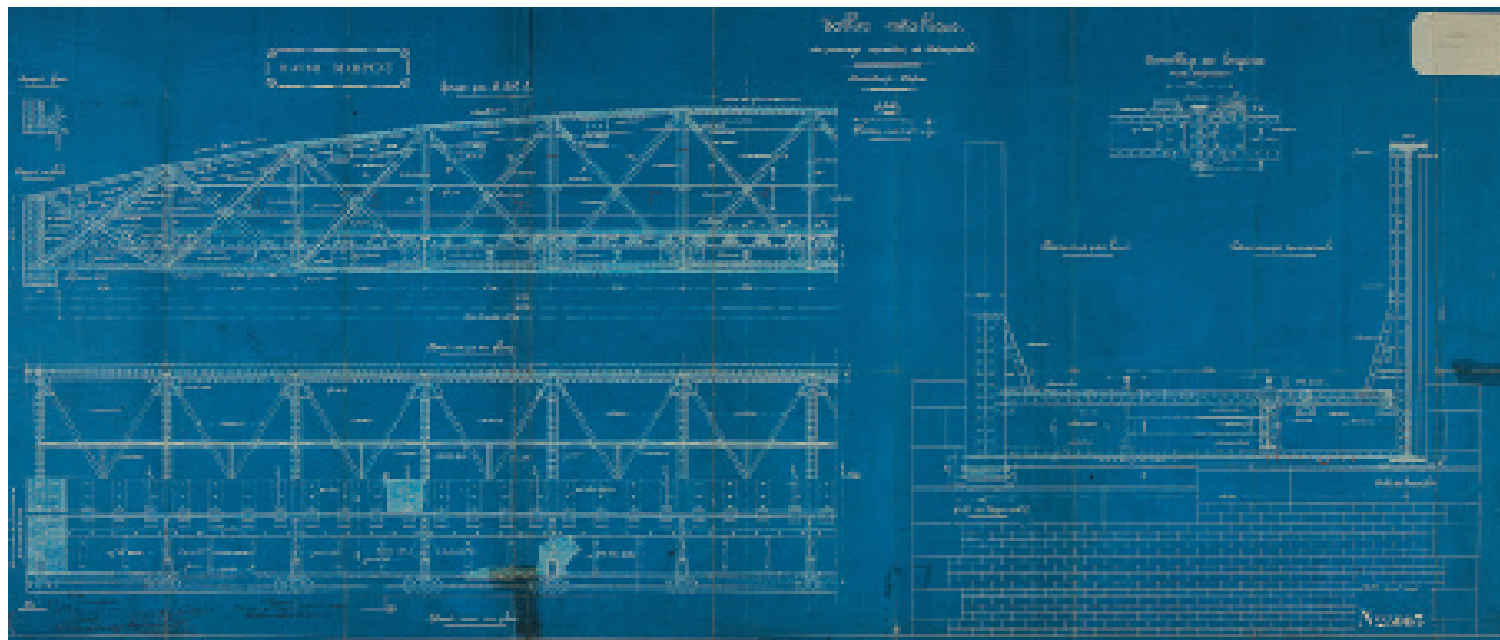
Isabelle Sirjacobs

The company Baume & Marpent (1853-1956) is known worldwide for its bridges. From China (the Yellow River bridges, 1906), to Brazil (bridge over the Uruguay River, 1910), via Europe (the Simplon railway bridges in Italy, between 1883 and 1885), the production of bridges of all types (fixed, mobile, or suspension bridges, and draw-bridges), and of all tonnages, is undeniably a specialty of the Belgian firm. The company's rise coincided with the invention of efficient steel-production methods in the 19th century, decisive for metal construction and the creation of structures. Baume & Marpent's plants in Belgium (La Louvière) and France (Marpent) shaped laminated, molded, cast, or forged steel structures weighing several thousand tons, before exporting them to the four corners of the world.

In Egypt, Baume & Marpent worked on the creation of numerous structures that contributed to the company's worldwide reputation. Between 1894 and 1952, the company supplied 158 bridges to that country, including its emblematic achievement, the famous Imbaba Bridge (1912-1924). In fact, seven of the large bridges over the

Nile were the work of the Belgian firm. In Egypt, it also distinguished itself by supplying rolling stock (freight and passenger cars and chassis) and metallic frames for various buildings (hangars, reservoirs, pylons, trestles, etc.). The company thus stood out from other Belgian concerns, introduced to the Egyptian market essentially through rolling stock.⁹⁵ In 1892, Baume & Marpent received its first Egyptian orders and built the bridges of Sahel Boula, Demerdash, Farkha, and Diffrah. These bridges formed part of a program to modernize Egypt's structures, initiated by a governmental agency. This authority began a series of consolidation works on existing structures due to the increased weight of trains, and invested in the construction of new bridges spanning the country's many waterways and canals. The program was a boon to European steel construction companies, especially those from Wallonia. They swarmed to Egypt, in a climate of fierce competition.

Baume & Marpent continued to receive commissions into the 1900s, expanding far and wide on Egyptian territory. In 1909, it began the Koshesha Bridge, whose piers and



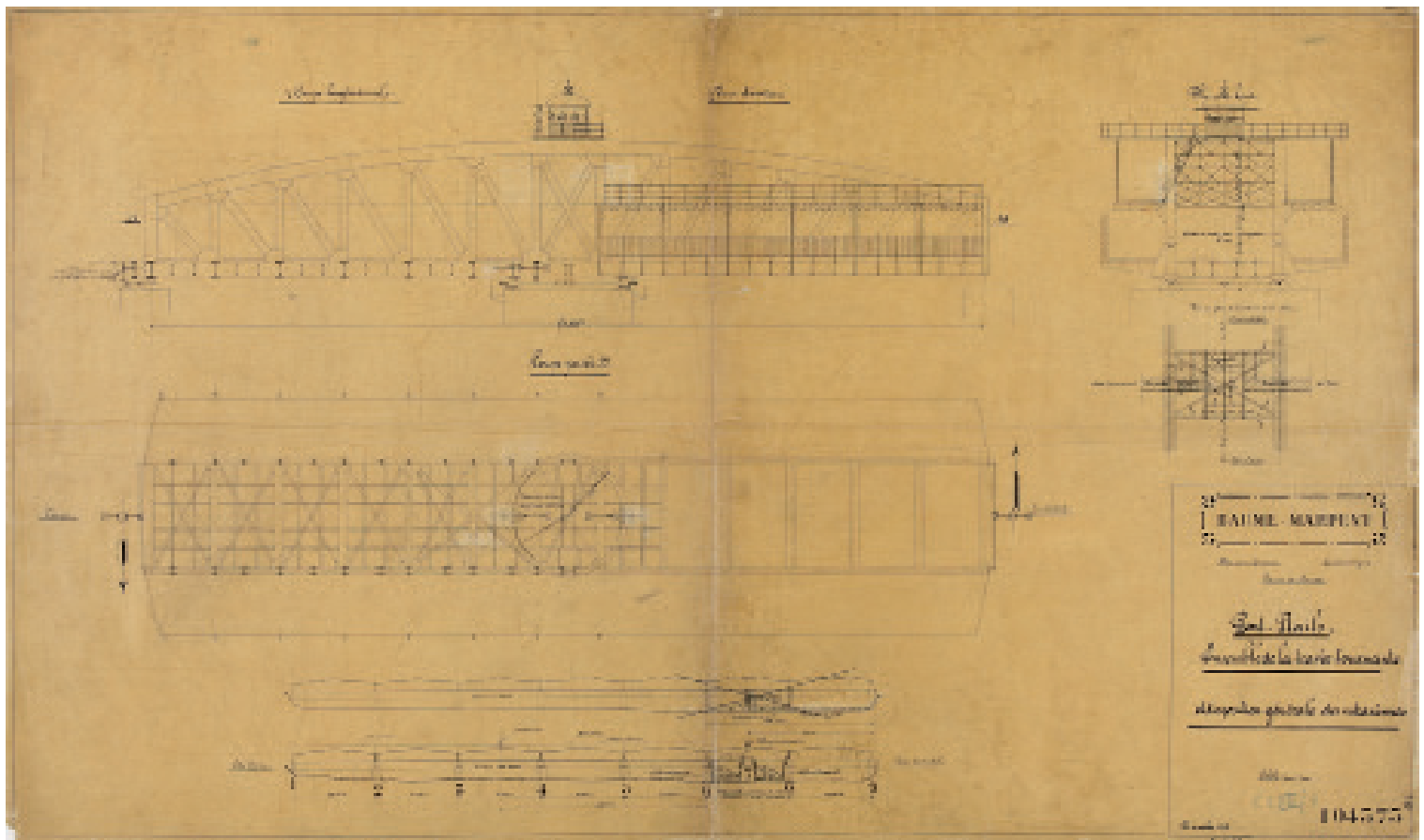
Imbaba Bridge, Cairo (1912-1924):
View from the Nile banks

Imbaba Bridge, Cairo (1912-1924):
Plan, section, and elevation of the
swinging span, 1912

abutments were sunk with compressed air. This construction was very quickly recognized as a technological feat and became part of the company's self-promotion, displayed in its production catalogues.

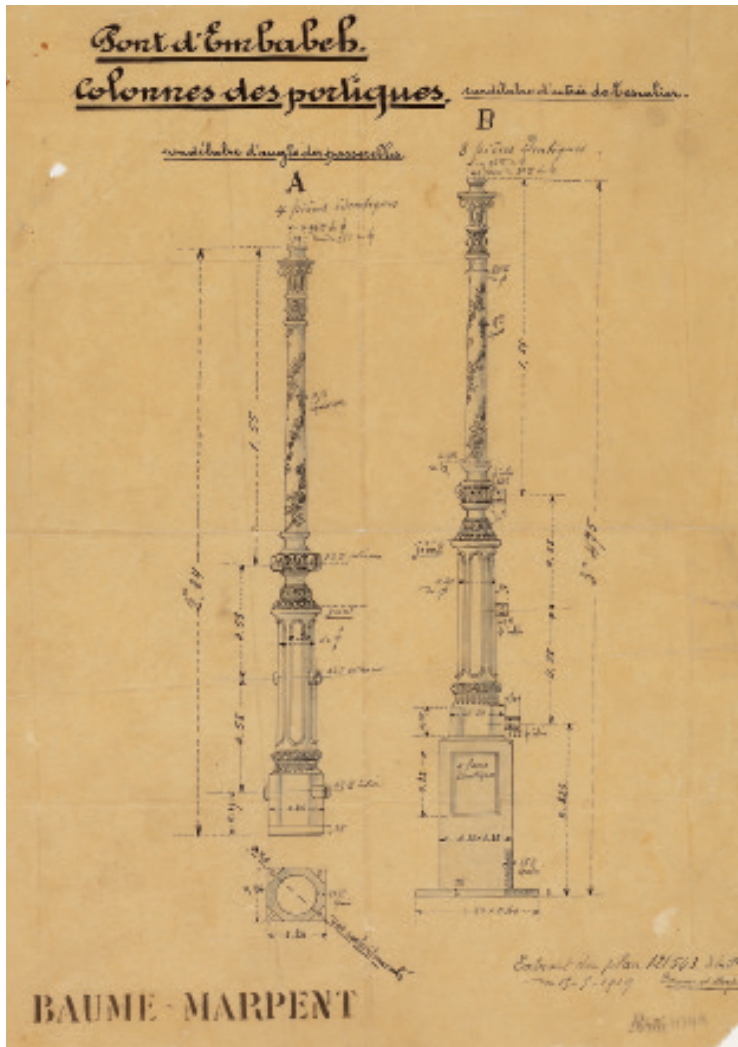
The Mansoura Bridge, built between 1911 and 1913, also contributed to Baume & Merpent's reputation in Egypt. At the time, with a length of 300m, this swing bridge was the longest one the company had built.⁹⁶ Nevertheless, that record was soon broken by the Imbaba Bridge, on which construction began simultaneously.

The Imbaba Bridge (Cairo), built between 1912 and 1924, constitutes *de facto* a feat of engineering in the first half of the 20th century. The 490-meter span on the Nile replaced the older structure built in 1892 by



Imbaba Bridge, Cairo (1912-1924):
Elevations of the lampposts for the stairway
and entrance to the footbridges, 1919

Imbaba Bridge, Cairo (1912-1924):
Manufacturing the swing span in the
Baume & Marpent assembly shop in
Haine-Saint-Pierre, Belgium

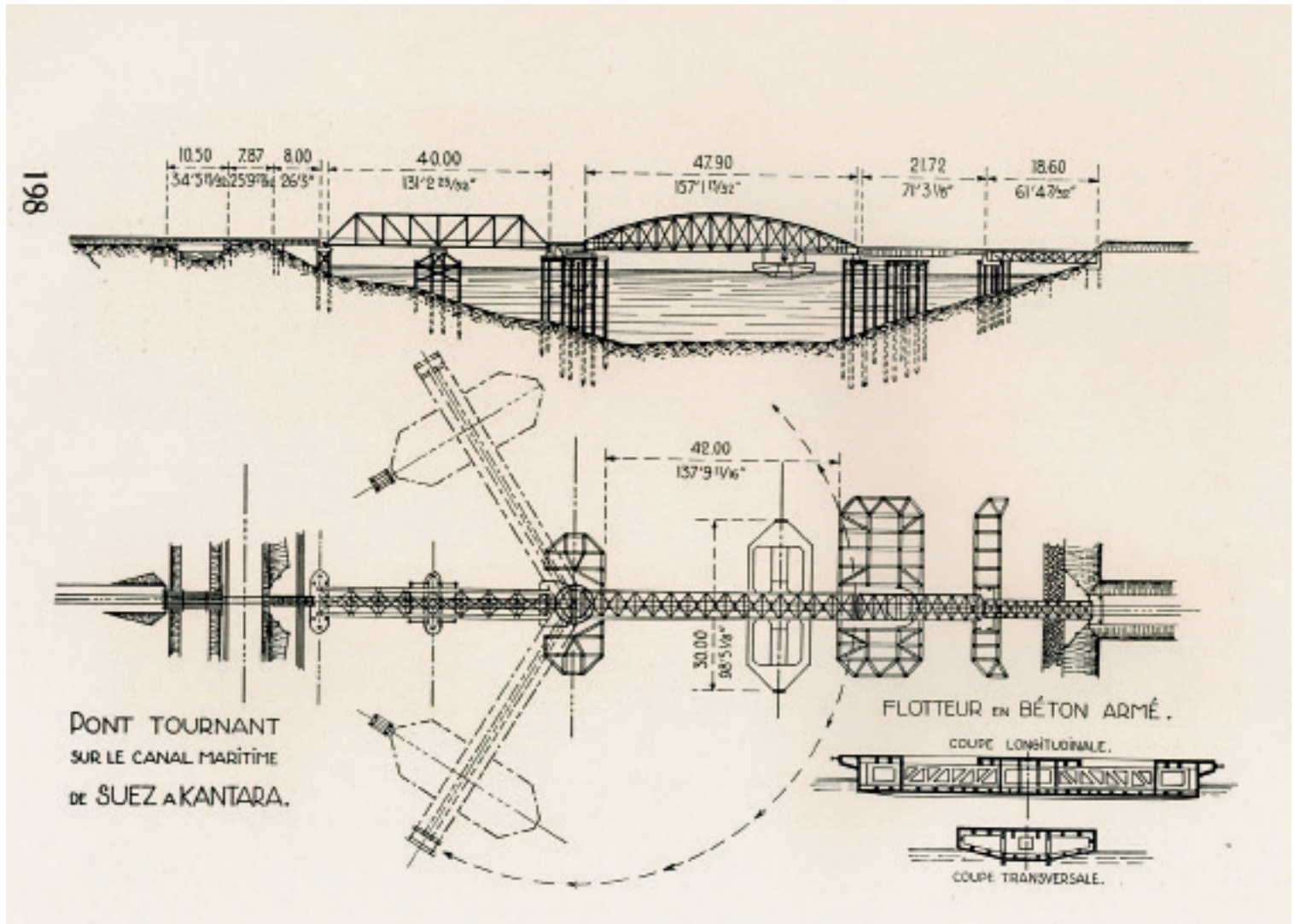


After Imbaba, orders flowed in regularly, especially during the 1930s. All types of bridges (Strauss system swing bridges, suspension bridges, wing bridges, railway bridges, overpasses, etc.) proliferated in Egypt. To cite several: Bahr el Aama (1900), Zagazig (1930), Kafr-el-Badamas (1935), Kantara on the Suez Canal (from 1917), Nag-Hammadi (1936), Samannud, Kafr el-Zayat (1937), Khandak-el-Sharki (1946), Deirout (1951), Sawagha (1951), etc. These bridges, most of which spanned the Nile or major canals, were designed, built, and erected by Baume & Marpent in association with Egyptian engineers and construction workers.⁹⁸

the French company Daydé & Pillé. Its 1500-ton swing span (for a total of 10,000 tons) permits river navigation, and includes a two-track railway line, and two paved roads bordered by sidewalks. The challenge of the Imbaba scheme was also in digging the foundations for the steel caissons protecting pilings and abutments, again done using compressed air. Sealing the company's global reputation, the Imbaba Bridge was proudly printed on company catalogues and postcards, and scale models were made.⁹⁷

The famous Egyptian engineer and mathematician Farid Boulad Bey (1872-1947), director of the technical office of the Bridges and Works Service,⁹⁹ collaborated on many of these projects. Responsible for checking calculations, he had assisted with the construction of both Imbaba bridges, the one by Daydé & Pillé in 1892 and then the one by Baume & Marpent in 1912. Baume & Marpent worked actively with the Egyptian technical services, advising them on new procedures in the area of civil engineering.¹⁰⁰

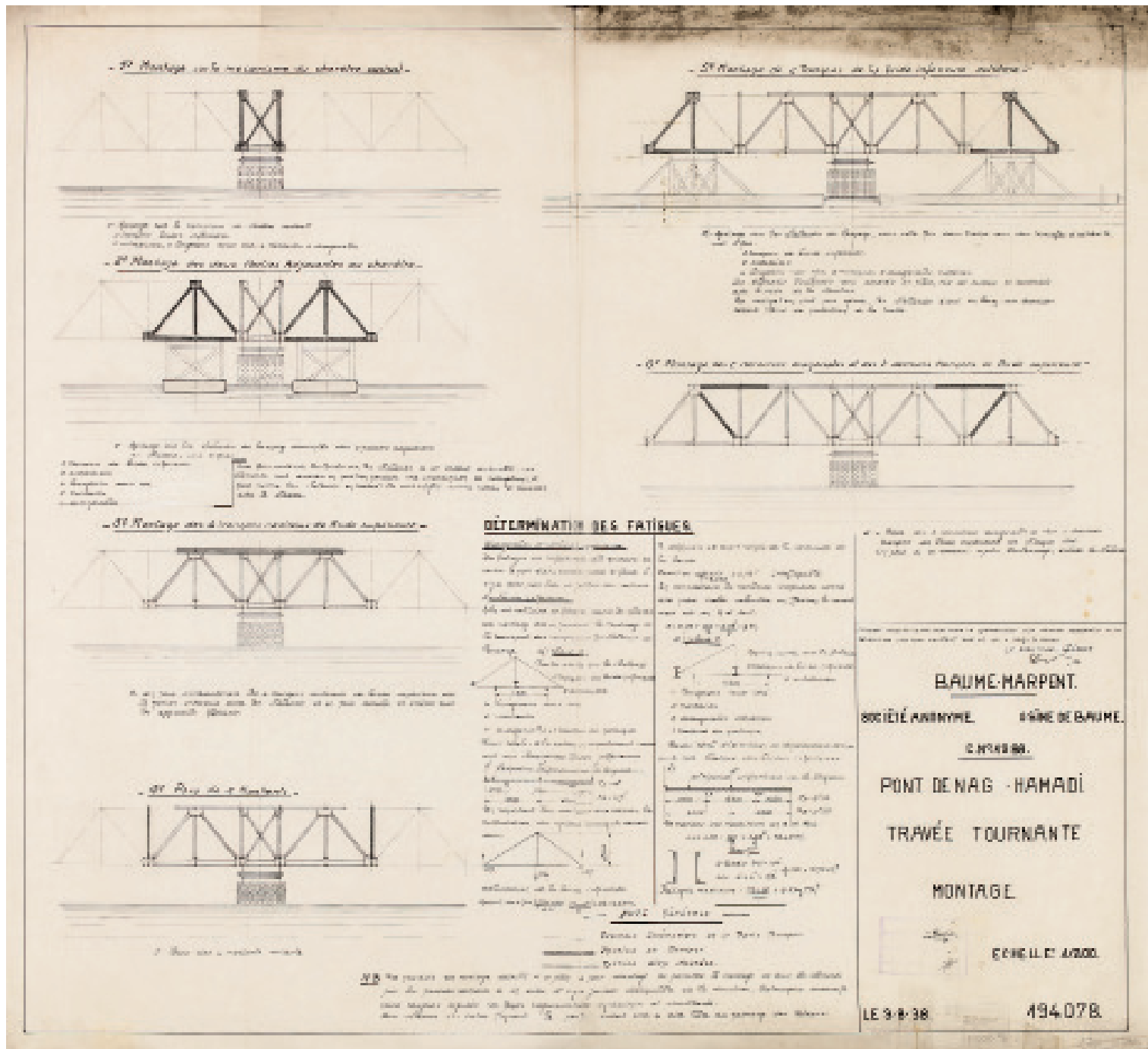
Kantara swing bridge on the Suez Canal
(1938): Plan and elevation



Likewise, Baume & Marpent organized collaborations with other Belgian contractors, like Léon Rolin & Cie on the construction of the Kantara Bridge. The structure was commissioned by the Compagnie Universelle du Canal Maritime de Suez, and provided the railway link between Egypt, Palestine, and Syria. With a span of 163m, this bridge included two mobile sections allowing ships to pass. However, it was destroyed shortly after its erection.

In January 1940, the famous French trade monthly on the applications of steel, *L'Ossature métallique*, reported on the Baume & Marpent railway bridge at Nag-Hammadi, describing every aspect of the construction in great detail. An impressive amount of steel was used for the project: 2,000 tons of rolled steel, 44 tons of steel beams, 50 tons of cast or forged steel and various other metals for the mechanisms, as well as 500 tons of rolled steel for the foundation caissons.¹⁰¹

Nag-Hammadi swing bridge (1938):
Assembly plan for the swing span



Kafr el-Zayat Bridge, Rosetta Branch of the Nile (1938): Balustrade details

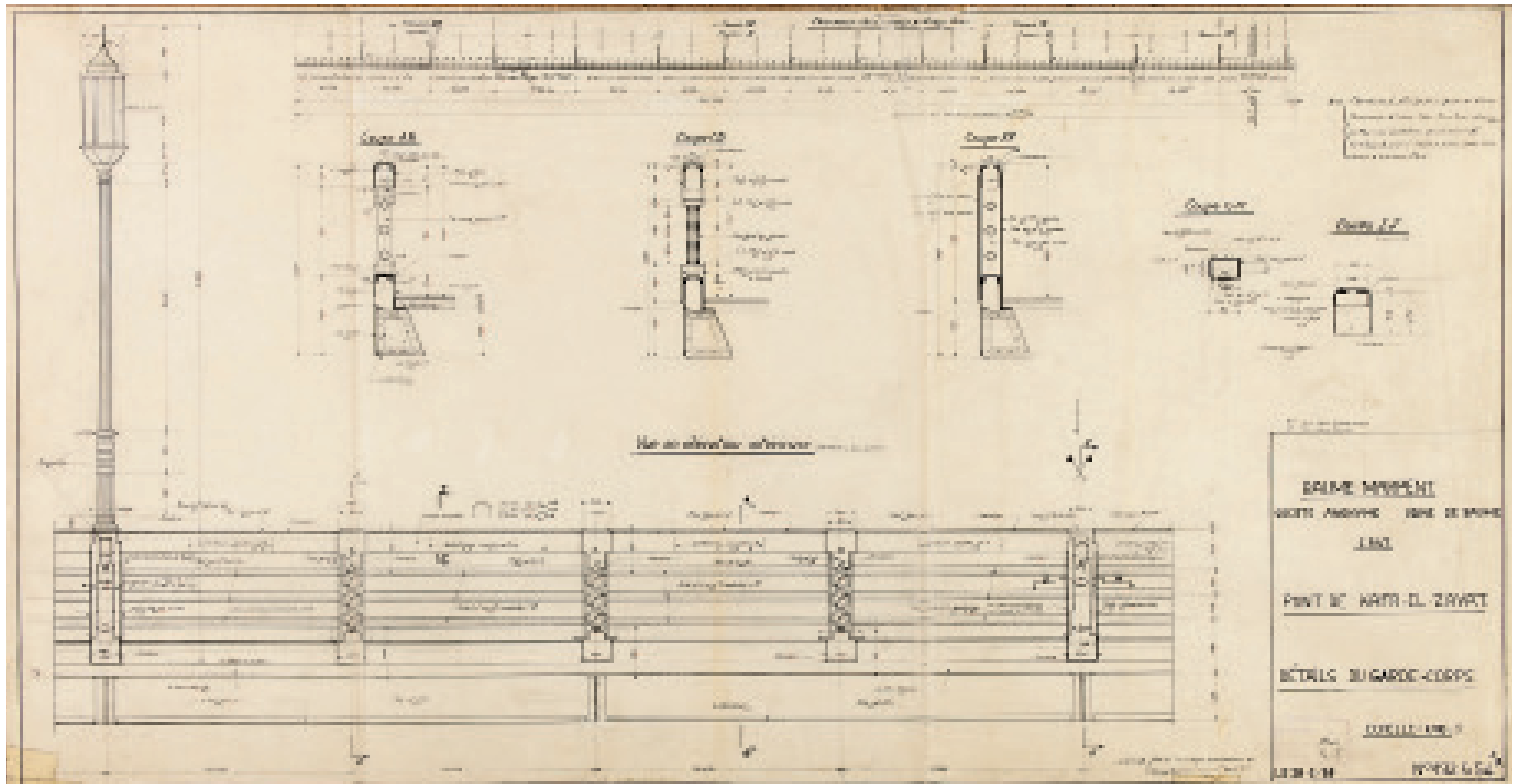
The 500-meter Kafr el-Zayat highway bridge over the Nile was completed in 1940. It was another technical feat, because the deck under the roadway rested on three main girders connected to each other by a system of trusses ensuring equal load distribution on each girder. High strength steel was used in order to lighten the parts subject to the greatest stress.¹⁰²

The early 1950s were marked by setbacks that impeded Baume & Merpent's works in Egypt and everywhere else. The company had suffered numerous losses, which led it gradually to a cessation of its business in 1956, at least in central Belgium, its cradle. Political and economic upheaval in Egypt also increased the difficulties of the company, which had to stop works after completing the Ferdan Bridge, built between 1950 and 1954. Work on the structure was disrupted by a shortage of steel, incurring penalties for the constructor.¹⁰³ In December 1953, the

losses on this project were estimated at 17,000,000 Belgian Francs.¹⁰⁴ Nevertheless, once it was finished, with its two mobile sections, each 110 meters long, it was considered the world's largest swing bridge. It was destroyed in the Six-Day War in 1967.

After the temporary stoppage of Baume & Merpent's works in Egypt in 1954, a new construction campaign was launched by the company, and again it won some contracts. However, the swing bridge at Damanhur, among others, announced the end of the Egyptian adventure for the Belgian company in terms of bridges.

In 1956, Baume & Merpent went out of business.¹⁰⁵ Although its longevity was not exceptional, the company stands out from its competitors due to the diversification of its products and their global spread. Its numerous actions in Egypt contributed to its reputation. Today, Baume & Merpent's Egyptian bridges still attest to the



One span of Kosheshah Bridge for the Egyptian State Railways, north of Beni Suef (1909), in the Baume & Marpent shop in Haine-Saint-Pierre, Belgium

Bahr Moes Bridge, Zagazig (c. 1930):
The deck laid on steel pilings



company's know-how. In Belgium, in addition to the archives preserved by the Écomusée of Bois-du-Luc, the Morlanwelz street where Baume & Marpent had established one of its divisions, called *Rue du Pont du Nil* [Nile Bridge Street], is a reminder of the aura the company had acquired with its famous Imbaba Bridge.