



# SAINT-ASTIER

LIME, LIFELONG EXCELLENCE

## STABILIZE, REPAIR TWO VIADUCTS AND CREATE PEDESTRIAN PLANNING

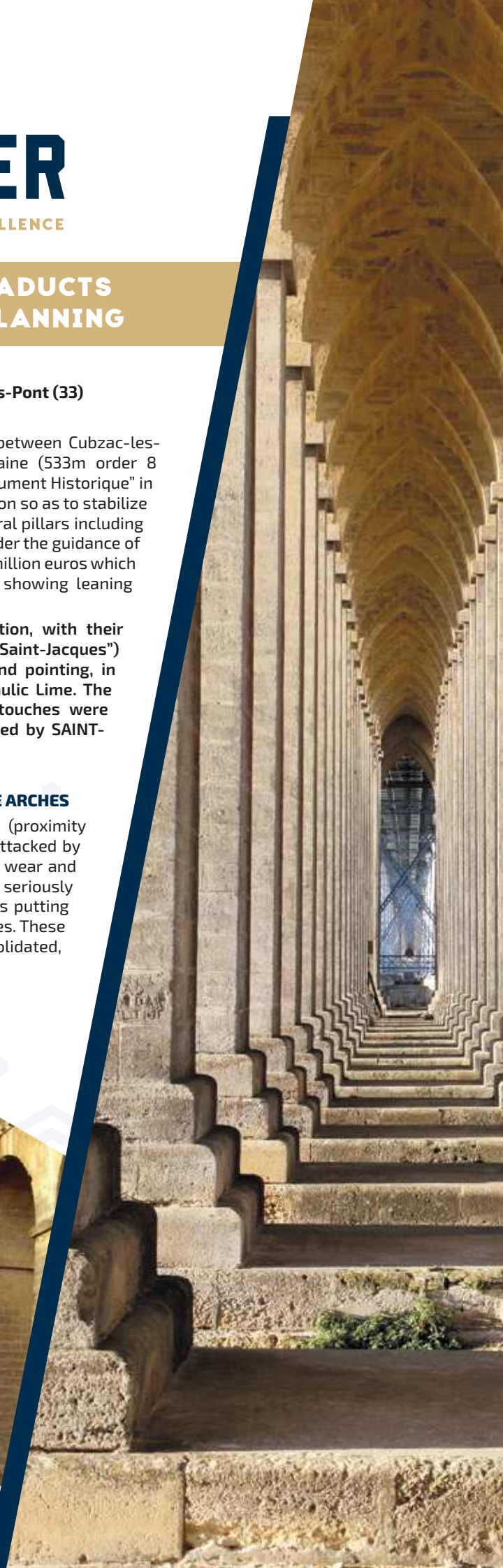
### **Restoration of the Gustave Eiffel bridge in Cubzac-les-Pont (33) Gironde, FRANCE**

The Gustave Eiffel bridge spans the Dordogne river between Cubzac-les-Ponts à Saint-Vincent-de-Paul in the French Aquitaine (533m order 8 sections). The bridge was built in 1895, classified "Monument Historique" in 2010 and closed since 2015. It has been under restoration so as to stabilize and repair the access points and to re-create the central pillars including a passage for cyclists and walkers. The project was under the guidance of the Gironde regional authorities with a budget of 26,8 million euros which also included the main right-bank pillar which was showing leaning dangerously towards the river.

A specialist contractor for Heritage and Conservation, with their skilled and qualified Guild masons ("Compagnons de Saint-Jacques") undertook this unique job of pillar consolidation and pointing, in conjunction with grouting, using only Natural Hydraulic Lime. The surface repair of the stone arches and finishing touches were harmonized with NHL Lime paints specifically created by SAINT-ASTIER for the project.

### **CLIMATIC & WEATHER EROSION REPAIRS UNDER THE ARCHES**

Regularly subject to high winds and local vortex (proximity turbulence), frequent under bridges, acidity in rains, attacked by traffic-induced CO<sub>2</sub>, the pillars had shown dangerous wear and disorders. The massive stone saw their resistance seriously weakened by the disappearance of the joints and thus putting to question the structural integrity of the arch structures. These disorders were gradually replaced, repaired and consolidated, one by one, bottom to top.







### REINFORCEMENT OF THE PILARS

Deep gravity grout injections were performed by the guildsmen to reinforce the structure using 50t of PURE NHL 5 - TRADI 100® from SAINT-ASTIER. This technique is used to fill the voids and increase the resistance and durability of the interior of a weakened structure. Unique in Europe, SAINT-ASTIER's limes from our own Limestone quarry, permit a workability and plasticity while assuring a progressive hydraulic setting and long-term consolidation which is required. Renowned for its ease-of-use, its unctuousity, its breathability and ultimately a high degree of mechanical resistance compatible with the stone masonry, the lime binders play an important role in this type of work. Mixed with carefully graded sand these pure natural lime binders also served as a base for the mortars used in the exposed joint works.

### STONE SURFACE REPAIRS AND PROTECTION

In order to restore the fine edges, angles and ashlar work of the stone elements they were all repaired with special mortars by SAINT-ASTIER. This special, ready-to-use, pure natural stone repair mortar is the perfect solution for re-constituting the resistance, form, aspect and colour for many stone substrates and natural materials. Before this phase the specialists prepared these repairs with rough stone and or cut stone for full ashlar replacements. It is also essential to harmonize not only the colour and the granularity of the stones with the repairs with a natural Limewash or Limepaint finishing light coat. This finishing with a compatible mineral coat also has a protective function which helps the natural defensive "calcin" layers of the stone substrate over time.

The accumulated and complimentary addition of all the stakeholders, masons, technical expertise and quality materials has thus durably « rejuvenated » the Gustave Eiffel bridge for the pleasure and benefit of visitors and local Girondins.

**Client/Maître d'ouvrage:** Département de la Gironde

**Architect & Advisor / Maître d'œuvre:** Architecte LEVILLAIN-Bordeaux (33)

**Contractor / Entreprise:** Les Compagnons de Saint Jacques, agence de FLOIRAC (33)

**Budget:** 26 800 000 €

**Job Area / Surface:** 11 500 m<sup>2</sup>

**Date finished / Réception du chantier:** July 2017



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