Hi Sto Ri C Mon U ME

When it was completed for the World Fair in 1900, the Grand Palais was a feat of technology for its time offering a very large glass covered area without intermediary supports. The highly decorated framework weighed 5,500 tons and took 3 years to complete (1898 to 1900). Its architects, Deglane, Louvet and Thomas were confronted with a complex order: to design a palace with monumental proportions in the historical environment of the Champs-Elysées. This palace would be used at the same time as a lounge for the Fine Arts, a show room for agricultural machinery and cars and as a track for horse shows.

The crews faced constant challenges in adapting their work to the confined work areas and found solutions to anchor the bars into non-accessible parts of masonry.

The construction consisted of a metal framework equipped with a coating of stone. The entire project has a surface area of 35,000m² on the ground, extending to a height of 40m. To site such a building on ground that was primarily unstable clay the designers chose a pile foundation. Over time, the ground water level increased due to movements of the Seine River which began to erode the pile caps. Currently, the southern part of the building has settled over 14 cm in the past century.

To stop this settlement, the Public Contracting Authority for Cultural Works began rehabilitation works underneath the existing structure, that consisted of transmitting the vertical loads from the existing masonry to slurry trench walls and jet grouted columns (2100 of them ranging from 1.0m-1.40m in diameter). To transmit these loads, the soles in masonry walls are surrounded by armed concrete blocks secured by pre-stressed DYWIDAG Bars. The bars are installed in cement grouted metal sheaths to ensure proper corrosion protection. The slurry trench walls consist of nine 500m² panels each 0.82m thick with a height between 15-19m.

EIFFEL and DSI France performed the complete installation of the pre-stressing system (installation and grouting) with all the difficulties that such a
Each rivet used in the steel work was forged the same way it was originally done in 1899.

ABOUT BENTLEY
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