

 **Miscellaneous****Reference Details:**

Owner Ministry of Culture, France +++
Contractor Groupement Solétanche Bachy - Spie SCGPM - Spie Fondations-Smet Boring, France +++
architects Alain-Charles Perrot and Jean-Loup Roubert, France +++
Engineering SETEC, France

DSI Services Supply, post-tensioning and grouting of 500 DYWIDAG Anchors of prestressed DYWIDAG 36D and approximately 1,500 m of bar 36D.

**DYWIDAG Bars to restore the French inheritance****Upgrading of the Grand Palais, Paris, France**

Built in 1897 to replace the "Palais de l'Industrie", the "Grand Palais" like the "Petit Palais" and the bridge Alexandre III, belongs to a major program set up for the "Exposition Universelle 1900" in Paris. 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-Élysées. 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 construction consisted of a metal framework equipped with a coating of stone. The entire project has a surface area of 35,000 m² on the ground, extending to a height of 40 m. 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, that generated an erosion

of the pile heads. As of today, the southern part of the building sank 10 cm.

To stop this settlement, the Ministry of Culture 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. To transmit these loads, the soles in masonry walls are surrounded by armed concrete blocks secured by prestressed DYWIDAG Bars. The bars are installed in cement grouted metal sheaths to ensure proper corrosion protection.

DSI France performed the complete installation of the prestressing system (installation and grouting) with all the difficulties that such a complex building site presents. 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. DSI's experience in the field, combined with a close relationship with the customer, made it possible to conclude its work on this complex building site on time while maintaining an exceptional level of quality.