

**«Deep excavation supported by  
Anchored Reinforced Concrete  
Piled Retaining Wall, in Aigiptou  
Square, Alexandas Anenue,  
Athens, Greece».**

**by**

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The excavation pit was supported by reinforced concrete piles having a diameter of 800 mm and an overall length ranging between 21.0 and 23.0 m. The photo, shows a bucket drilling the hole where the bracing pile will be placed.

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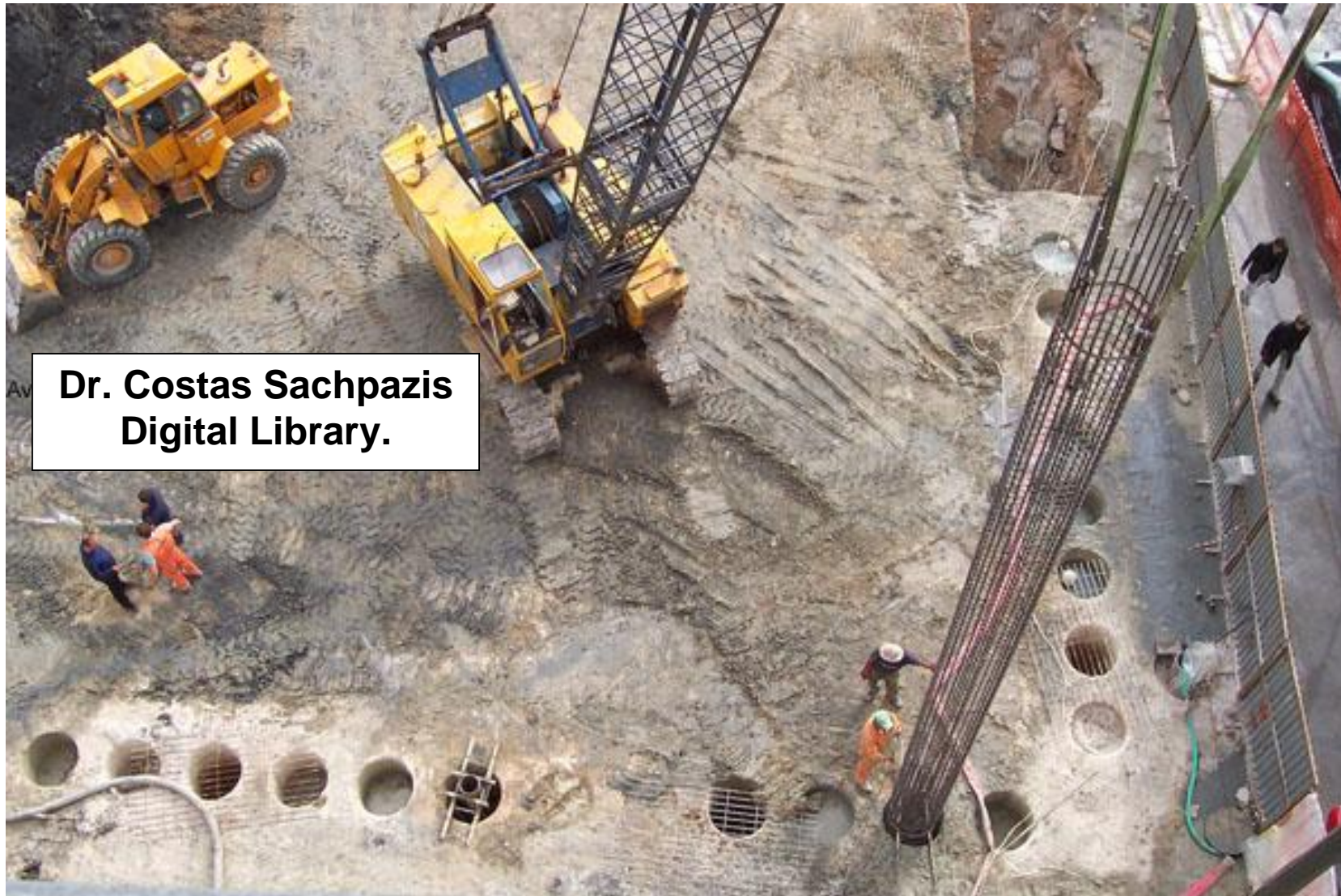
Steel reinforcement cage construction. Automated steel reinforcement cage construction facilitates the construction operation and reduces the assembly time.





View of the steel reinforcement cages. Each reinforcement cage consists of 20 rebar (20 mm in diameter) and spirals (10 mm in diameter) in a distance of 100 mm between them. As shown in the picture, the spacing of two couples of the 20 rebar is larger on the two opposite sides to make possible the drillhole for the anchors intallation through the body of the pile.





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Placement of the steel reinforcement cage. The spacing of the boreholes ranged between 1,25 and 1,55 m.





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A tremie pipe was used for concreting each pile.





In front view, the pile heads are shown and in the back the reinforcement of the pile cap.





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Details of the pile cap. The section without concrete will be concreted later for connecting the pile cap with the concrete slab.





Aspect of the first excavation phase.

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Full view of the excavation process. The first excavation level is about -3,5 m b.g.l..





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Inclined drilling at an angle of 15 degrees for the installation of an anchor.



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Preparation of the anchors. Three to five anchor tendons were used based on the appropriate tensile strength according to calculations of the project.





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Pumping of grout into the inclined borehole, using a rubber pipe of 25 mm diameter.





Placement of an anchor. Two parts of the anchor are illustrated in the figure. The far part (in the depth of the inclined drillhole) that must be fixed / cemented and the front one that must not.





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Prestressing of an anchor. Installations of stress dial gauges.





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Prestressing of an anchor in progress.





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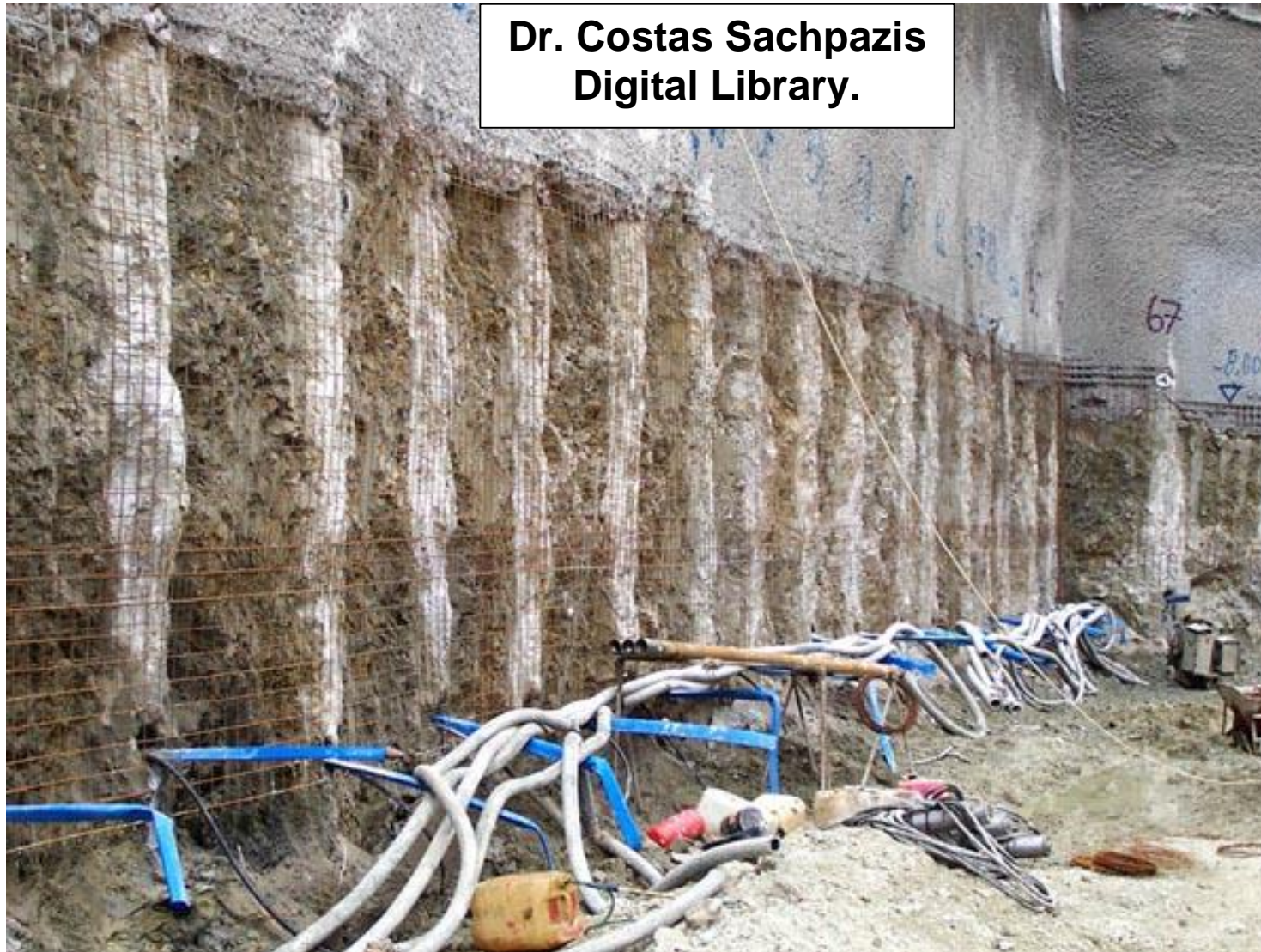
Installation of a steel mesh in the space area between the anchored piles.



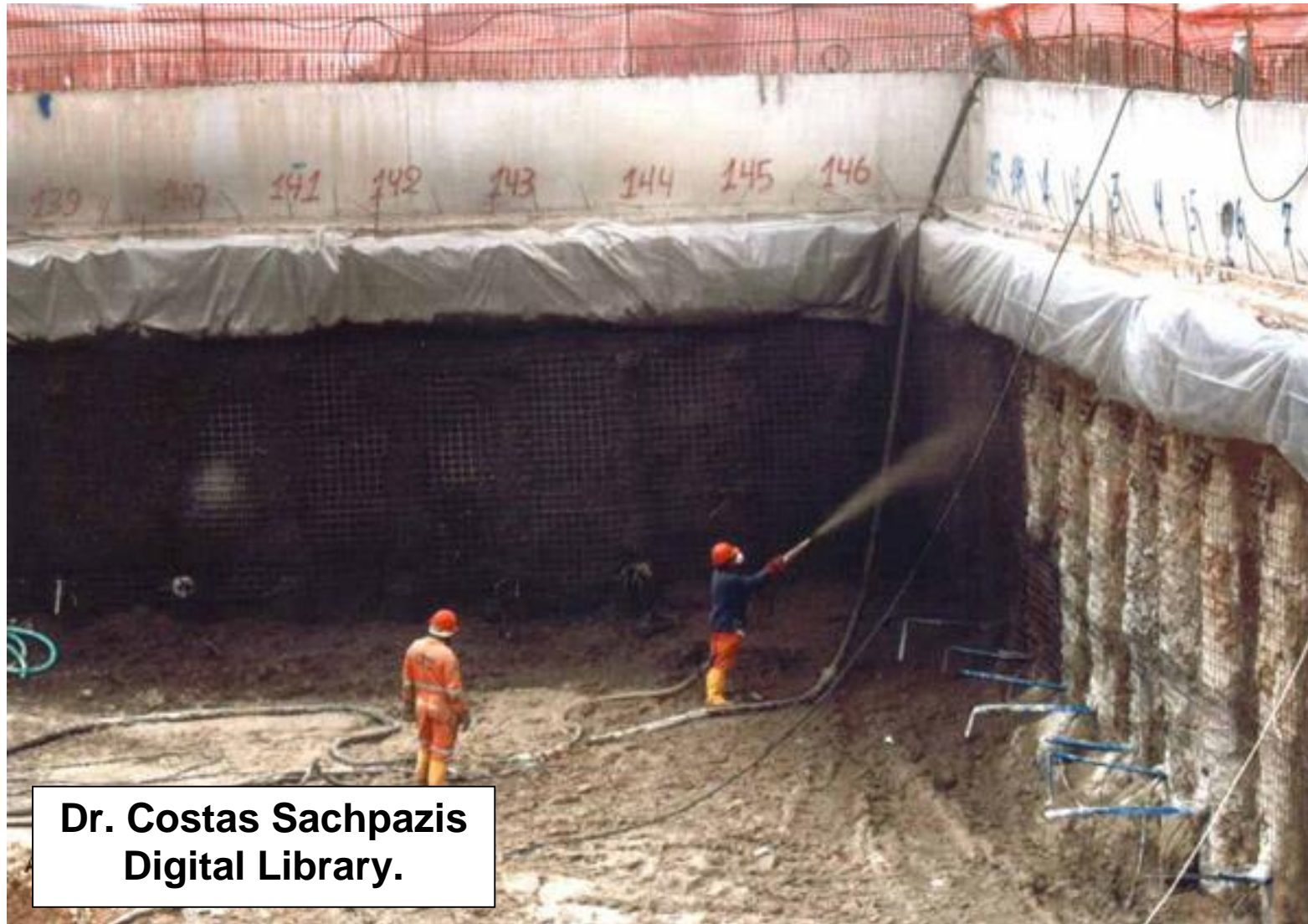


View of installed steel mesh ready for gunite / shotcrete jet grouting.





View of installed steel mesh ready for gunite / shotcrete jet grouting and anchors ready for prestressing.



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View of execution / operation of gunite / shotcrete jet grouting.



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Another view of execution / operation of gunite / shotcrete jet grouting.

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Another view of the excavation process at the first excavation level about -3,5 m b.g.l..



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View of the excavation and construction process at deeper levels.

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Another view of the excavation and construction process at deeper levels.



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Another view of the excavation and construction process at deeper levels.

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View of the excavation layers, consisting of steel reinforcement mesh, shotcrete/gunite, geotextile and geomembranes.



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View of the excavation and construction process at final level.

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View of the excavation and construction process at final level.



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View of the excavation and construction process at final level.

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