THE BUILDING OF THE ISLAMIC CENTER IN ROME HAS BEEN AN IMPORTANT CULTURAL EVENT BESIDES BEING AN ARCHITECTURAL TRIUMPH.

THE MOSQUE OF PORTOGHESI

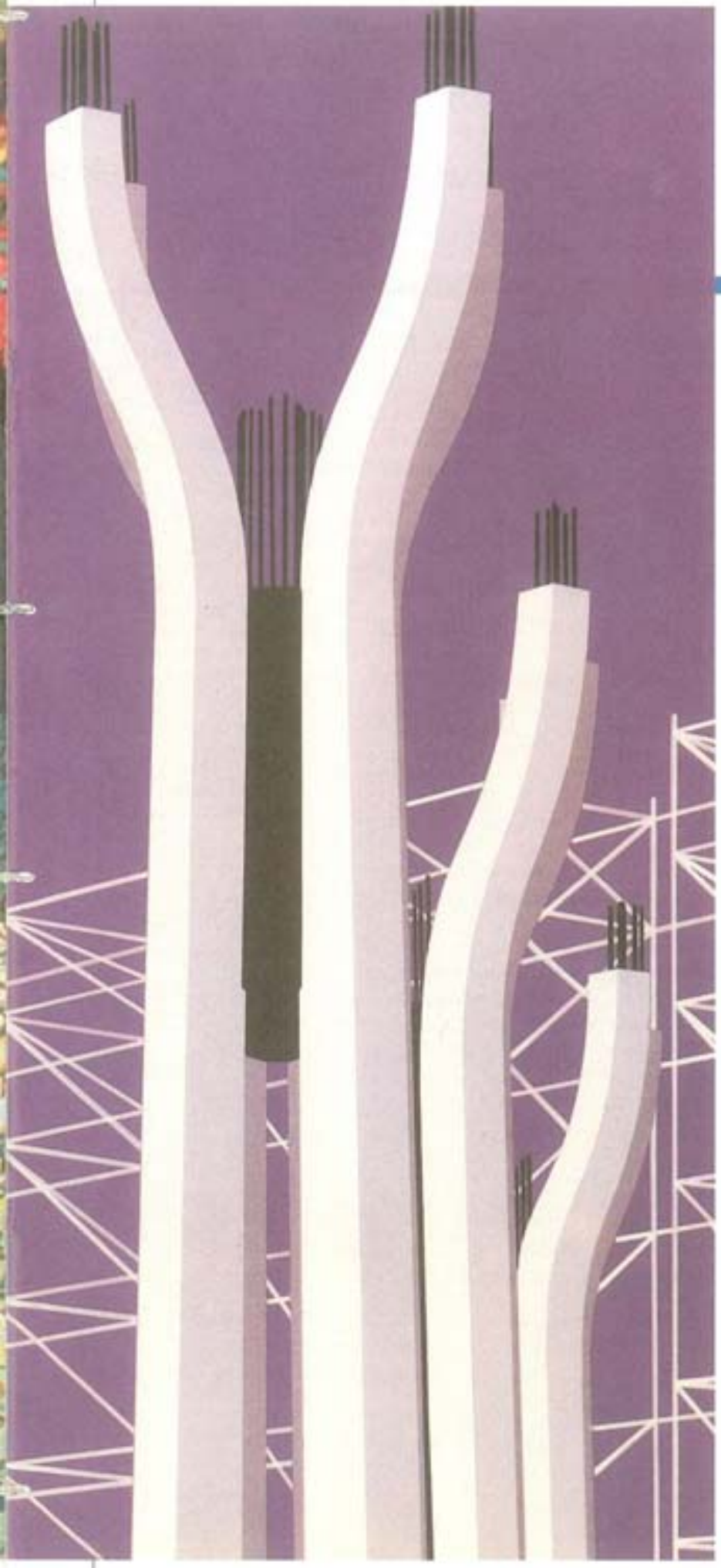
by Renato Soffi

The Blue Mosque is the most famous, but this new Mosque is destined to dim the beauty of the former one. The first stone was layed at the foot of Monte Antenne in Rome the 11th of December 1984, and in the end, 8 years were needed to complete the building. The time was required to overcome bureaucratic issues and to set up the sophisticated architectural solutions which allowed completion of the four impressive pillars and the astonishing domes.

Extraordinary Execution

The structure of the Mosque relies on the complexity and wealth of materials employed. Advanced and special technologies have been developed in order to carry out the plan.

It is a fusion of two projects; one designed by the architect Paolo Portoghesi together with the engineer Vittorio Gigliotti, and the second designed by the architect Sami Mousawi.
To adapt to the value and prominence of the work, the task was to go beyond usual standards. Besides the employment of very specific material, many tests and quality control models were required.
The importance of the building made it advisable to build as if it was placed in a seismic area.
Therefore the edifice is divided into three principal sub-systems.
The Mosque consists of a superstructure (from the domes to the traffic floor), a geometric connection substructure (from traffic floor to the pillars' head), and the pillars-foundation ground set.

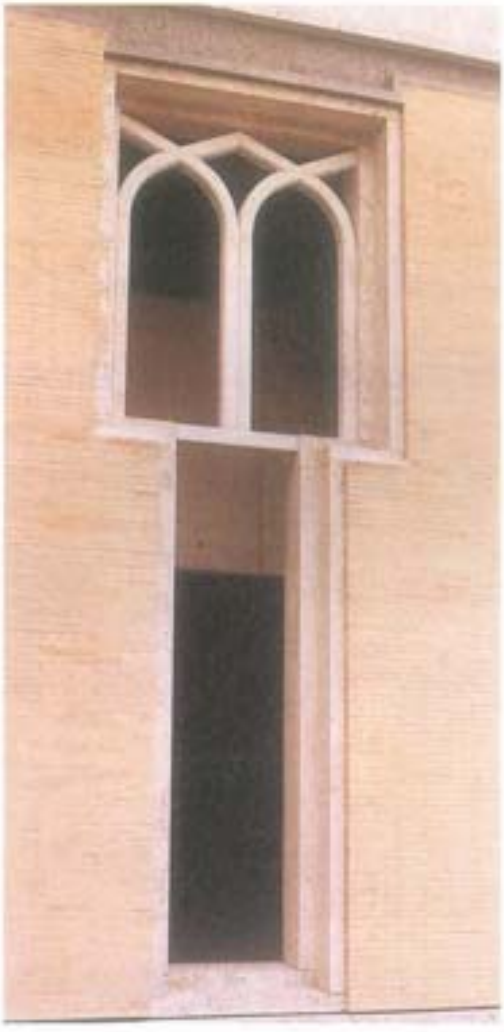


The Dome and The Biflexed Pillars

The most dramatic part of the Mosque are the domes, supported by 32 biflexed pillars and by Mirab walls.
The large central cupola, built on a ring-like girder, measures 11.40 m radius and it is surrounded by 16 perimeter domes and 4 semi-domes. The structure is supported by pillars with four stalks which form the capital.

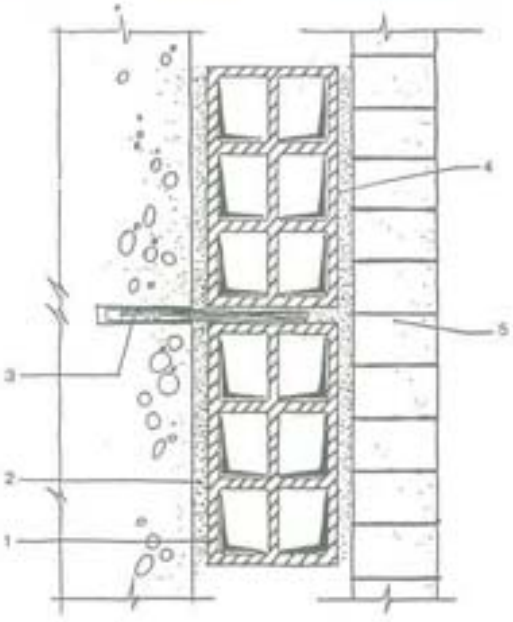
Quality and Durability of the Concrete

The basic structure of the Mosque was made using a "warm white" concrete, obtained from mixing two differently colored Tevere sands. Special care was devoted to the durability of concrete, insured by setting, laying, curing and galvanizing the reinforcements.
A further important precaution was to subject prefabricated elements to accelerated curing. A special fiberglass reinforced concrete forms the women's gallery while the central dome is constructed of light-weight concrete which allows for a 25% reduction in weight.



Roman Curtain

As far as the finishing was concerned, the exterior walls have been built with the Roman Curtain technique. This consists of handmade bricks and regular connection joints with a thickness of approximately 1 mm. This latter is a special technique recovering the one architect Borromini used in Rome during the 17th Century. Besides the architectural and aesthetical suggestion, derived from curtains attached directly to continuous concrete walls, the project granted stability in case of seismic movement. Such needs made it necessary to adopt a unique constructive system (as shown in the drawing above).



1.Hollow brick
*2.KERABOND + ISOLASTIC**
3.Insert of stainless steel
4.Binder Roman brick. A special mortar with a tear resistance of 10 Kg/mq
5.KERABOND + ISOLASTIC allows good bonding between the curtain wall and the bricks: the good flexibility of this system is able to absorb either the movements of the structure or the possible vibrations caused by earthquakes*

**(KERALASTIC SYSTEM in North America)*

The Choice of the Adhesive

The bricks of the facade have been laid with KERABOND adhesive modified with ISOLASTIC liquid (KERALASTIC system in North America).
On the basis of core boring proofs and thaw-freeze cycles, such bonding proved to be elastic and suitable to absorb movement from brick and temperature changes. Following the directions of the architect Paolo Portoghesi, the admixture has been combined with KERABOND

On the right professor Paolo Portoghesi whose interview is published on the next page. Below engineer Luciano Palozzi, jobsite supervisor

white and KERABOND grey powder.
This choice is not only due to the need of bonding the brick but to achieve the proper coloring of the joints to match the old mortars.
The same system is employed for bonding the brick to the floor screed.

The technical data sheets for the products mentioned in this article are contained in Mapei binder No. 1 "Setting Materials for Ceramic Tile and Natural Stone"

TECHNICAL DATA

PROJECT: Mosque and Islamic Cultural Centre in Rome, Italy

DESIGNERS: Prof. Paolo Portoghesi, Eng. Vittorio Gigliotti and Arch. Sami Mousawi

CONSTRUCTION SUPERVISOR: Prof. Paolo Portoghesi and Eng. Vittorio Gigliotti

JOBSITE SUPERVISOR: Eng. Luciano Palozzi

TECHNICAL SUPERVISOR: Eng. Giorgio Flumeri

CONTRACTOR: Eng. Fortunato Federici - Rome

STRUCTURAL PARTS:
- Prof. Eng. Emanuele Filiberto Radogna: advice and coordination of the projects' reinforced concrete, prefab parts and cast-in-place concrete
- Prof. Renato Turriziani: preparation and cast design of the concrete with white and normal cement
- S.G.S., geotechnics center of Dott. Eng. Carlo Cassinis: foundations and materials test
- Studio Tecnico C.F.R., Eng. Alessandro Ressa, Eng. Pasquale Cocomello, Arch. Gian Luigi Tocchini Valentini: execution of the projects reinforced concrete, prefab parts and cast-in-place concrete

INTERVIEW WITH PAOLO PORTOGHESI

To what extent was the importance of the finishing materials, especially the exterior ones in your project for the Mosque of Rome?
One of the main tasks in projecting the Mosque was to build a lasting edifice that was going to require little effort for its maintenance. The purchaser required the building to endure at least 1000 years. Therefore the choice of the materials had to be very careful. Several technical devices were set in the structures.
And what was more important was that the external cement had to be protected from the atmosphere through the use of nosings suitable to shelter the tree-shaped large pillars surrounding the Mosque. These latter consist of four prefabricated elements held together by a subsequent concrete cast. Obtaining such a pollution-resistant building was achieved by pulling back the pillars in comparison to the roof, which is composed of travertine, a material highly resistant to atmospheric agents.

The Roman Curtain has ancient origins. From a technical standpoint, how did you succeed in achieving an antique look with the required modern quality and durability?
The Roman Curtain (the ancient opus testaceum) was originally built with cut tiles, which used to be smoothed to obtain leveled surfaces eliminating the irregular shapes caused by baking the clay in an oven.
This system, which was widely used in the past, was revived during the Renaissance. The characteristic of this finishing is that the joints between the bricks measure less than one millimeter. To rebuild this ancient technology we consulted the specifications of Borromini's works.
Through modern means we created the conditions to attain the same tile performances, which in our case was obtained by slicing a brick. Afterwards we faced the problem of forming thin joints while achieving a stable link between the brick covering and the wall surface behind. We solved it using Mapei adhesives, high ageing-resistant material, able to produce the thin joint required in the project.

Were the exterior and interior runs an important detail of the project? Which materials were employed and what was their aestethic and technical task?
The exterior and the interior runs are certainly one of the fundamental elements of the project, which in the first place aims to become a "running architecture".
Being a part of town, the building is marked by the same characteristics of the religious constructions (in particular the persian ones), which are never isolated but always connected to rooms where teaching and law exercise were practiced.
This shows the deep tie between culture and religion, a typical mark of Islamic civilizations.
Being a "running architecture" the visitors are continuously stimulated by sight variations, optical effects accomplished by using different colors at the same time.
The result is created by matching textures, color shades and harmonic shapes that follow the visiting public along the whole route, or routes, of the building.

As the construction supervisor you paid attention to the installation of the finishing materials. How was your relationship with the installers?
Together with engineer Vittorio Gigliotti I played the role of construction supervisor strictly checking the installation through incessant visits to the construction site. This allowed me to have the fascinating experience of observing skilled labor forces at work. It has been very interesting to see the installers build the opus testaceum wall covering; gaining each day more and more experience.
As a mater of fact if you walk around the building you can notice which ones are the parts erected at the beginning.
They still show little defects in comparison with the recent sections, which are the result of the self-confidence and experience of the workers.
This might represent a significant note, since the Mosque of Rome was, as every work of art, a training place where the workers themselves learned something they will not forget in the future.