IN THE MUSEUMS OF THE VATICAN APOSTOLIC LIBRARY

INNOVATIVE SOLUTIONS REVITALIZE THE RELIGIOUS AND HISTORIC BEAUTY OF THE GALLERIES.

The galleries of the Vatican Apostolic Library were reopened to the public on January 28th 1995. The official opening was held on March 15th 1995, a very important date for Mapei.
Mapei was chosen to play an important role in the renovation of a large section of the corridor flooring leading to the twelve Sistine Halls. This 1700 square feet of floor space bears more than 15.000 visitors per day on their way to see the extraordinary collection of the Popes' books preserved there.
The restoration was made possible by Mapei, in collaboration with Floor Gres. Floor Gres is the ceramic company which is part of the Florim group located in Fioriano Modenese (Italy).
Mapei products provided the technical solution for a project that demanded modern materials and techniques while maintaining the historical ambiance.
The project was entrusted to the architect, Adalberto Dal Lago, who has worked on many important and prestigious projects using Mapei products.
The floor covering used for the restoration was Chromotech, a porcelain tile exclusively manufactured by Floor Gres.
This material is made from a mixture of powders treated with a special patented "double-loaded" technique, giving each tile a unique color and shape.

Timing

Timing was one of the primary requirements for a successful realization of the project.
The objective was to minimize the amount of time that the public would be inconvenienced by the restoration.

PHOTO 1

PHOTO 1
The old linoleum covering was in very bad conditions: notice the subsiding substrate

PHOTO 2
The demolition of the old substrate and the elimination of the linoleum covering before the installation of the new floor

PHOTO 3
Placing the polyethylene sheets : a necessary addition to separate the new screed from the existing sub-flooring

PHOTO 4
Mapping the room : notice the mesh laid over the polyethylene sheet to strengthen the sub-floorings and to diffuse the weight of the floor covering

PHOTO 2

PHOTO 3

PHOTO 5 and 6
The MAPECEM screed is pumped directly on the job-site while in a nearby area the product is being laid, thus speeding up the timing required

PHOTO 4

PHOTO 5

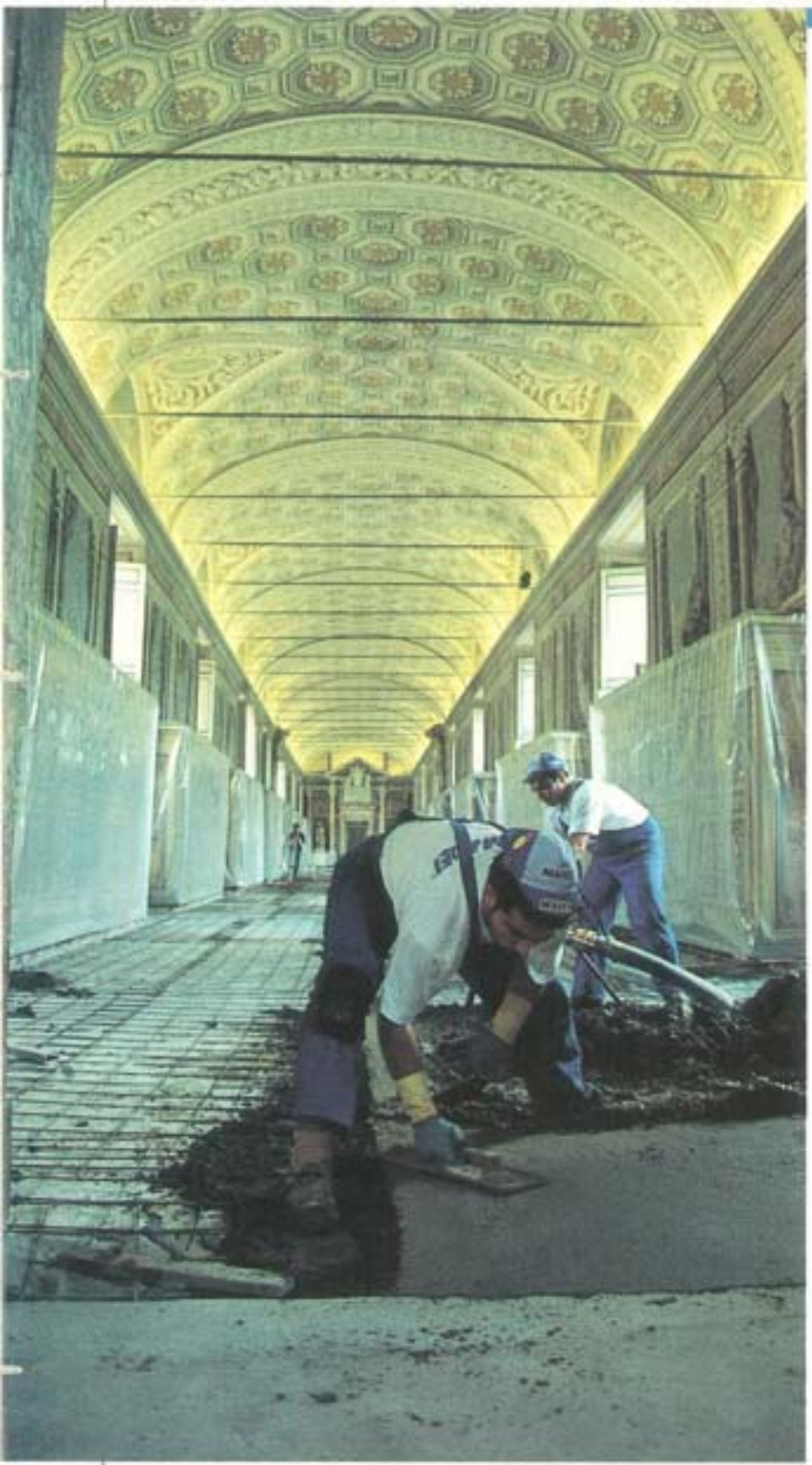
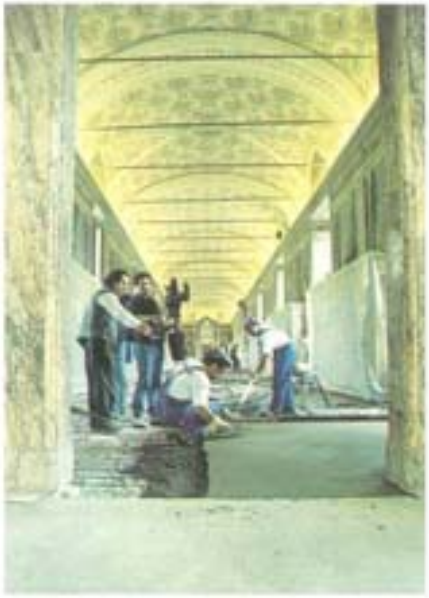


PHOTO 6



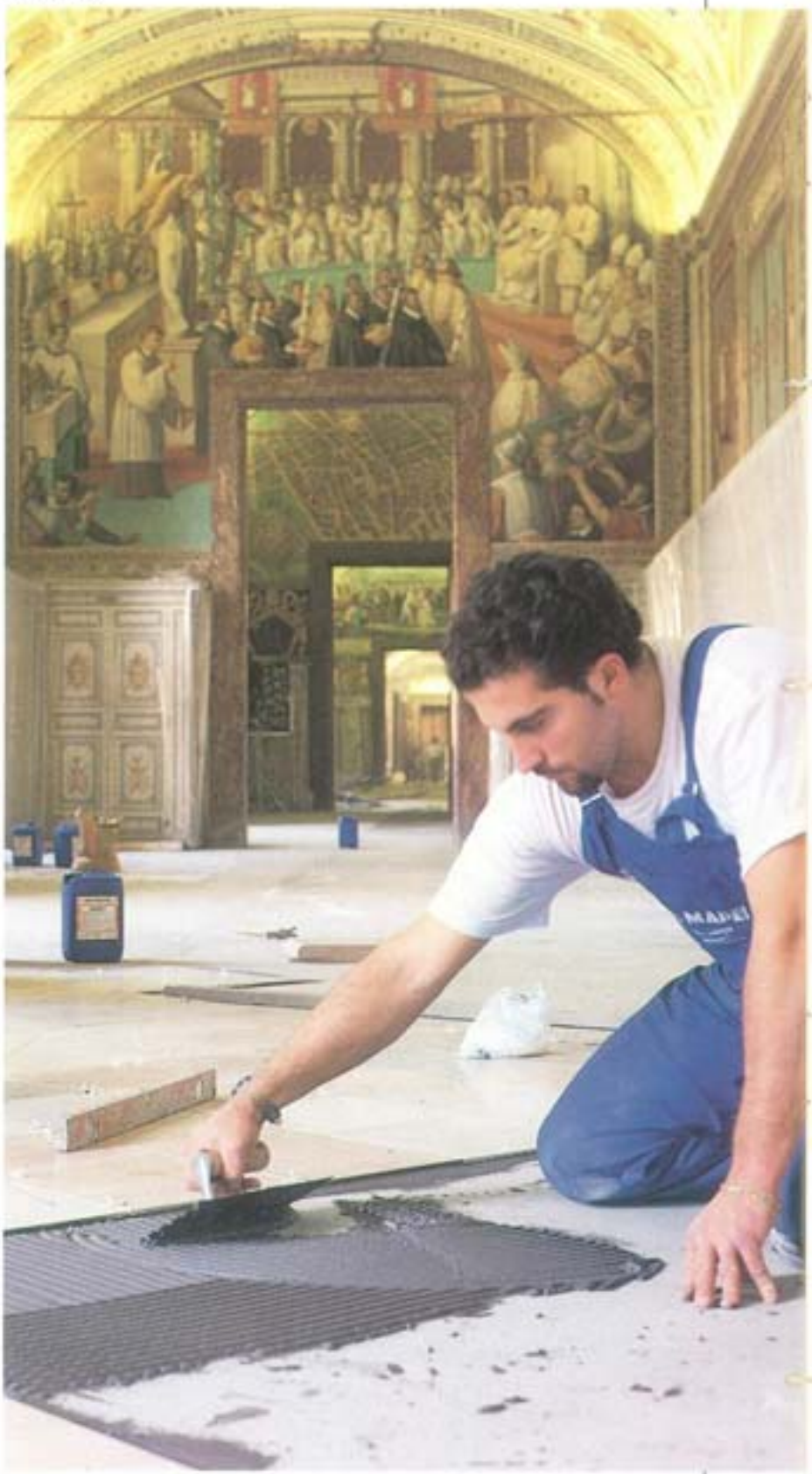
In the end, only forty days were needed to complete this restoration, an astonishing feat that would have impressed skilled workers of centuries past.

Technical choices for floor preparation and installation

The original flooring consisted of linoleum which protected a floor of grit, seminato veneziano (a traditional Venetian flooring) and cement frequently patched and worn thin by high traffic. After careful study, the decision was made to completely demolish the existing floors and old substrate to a thickness of between 4 and 15 cm (1.58 and 5.90 inches).
The antique cabinets which line the perimeter of the Galleries were not removed during the renovation due to time constraints.
These cabinets contain precious gifts that the Popes received from all around the world.
After protecting these cabinets, the demolition and removal of the old floor and substrate commenced.

PHOTO 7

PHOTO 8



A polyethylene sheet was placed and fitted to separate the sub-flooring from the tile installation surface to allow proper hydration of the MAPECEM and to protect against dampness.
A mesh was then laid over the polyethylene to strengthen the sub-floorings and to diffuse the weight of the floor covering. MAPECEM, a special hydraulic binder for rapid drying screeds, was pumped to create a highly-resistant substrate. MAPECEM's fast-drying and setting qualities made it possible for several crews to work simultaneously: one team pouring and leveling, while another team installed the tile after just 4-5 hours.
GRANIRAPID adhesive, the two-component, fast-setting and drying adhesive system used for laying ceramic, natural stone, artificial stone and aggregate was used to install the tiles. In addition to its excellent bonding characteristics which also makes it suitable for non-absorbent surfaces, GRANIRAPID readied the Sistine's corridor for Vatican visitors in just three hours from laying. At the same time GRANIRAPID also helps resist aging particularly in this extremely high-load installation.
The tiles, which varied in both size and color, were placed at a distance of 3mm and the joints were subsequently filled with Manhattan gray ULTRACOLOR grout. ULTRACOLOR is a rapid-setting and hardening, shrink-free mixture suitable for use in joints from 2 to 25 mm.
This material can be used between ceramic tile, glass mosaic "cotto toscano", porcelain tile, natural stone and aggregates.

PHOTO 9

PHOTO 10

PHOTO 11

PHOTO 12

PHOTO 7 and 8
Installing the tiles with GRANIRAPID ; the floor can be installed after only a few hours from screeding and is ready for traffic after only 4 hours

PHOTO 9 and 10
Filling the joints with ULTRACOLOR. Cleaning can already be executed within 3-4 hours after the application of GRANIRAPID

PHOTO 11 and 12
Finishing the work by filling the expansion joints with MAPEFLEX PU21

PHOTO 13
Setting the Papal seal required very special care because of its fragility

ULTRACOLOR is free from the formation of efflorescence on the surface and can be ready for traffic within 3-4 hours after application.
The width of the remodeling made it necessary to install elastic joints in order to absorb the respective movements between tiles and substrate.
The joints were filled with an elastic compound with high abrasion resistant properties, MAPEFLEX PU21.
MAPEFLEX PU21 is a two-component, self-leveling sealant with the same Manhattan gray color of ULTRACOLOR.

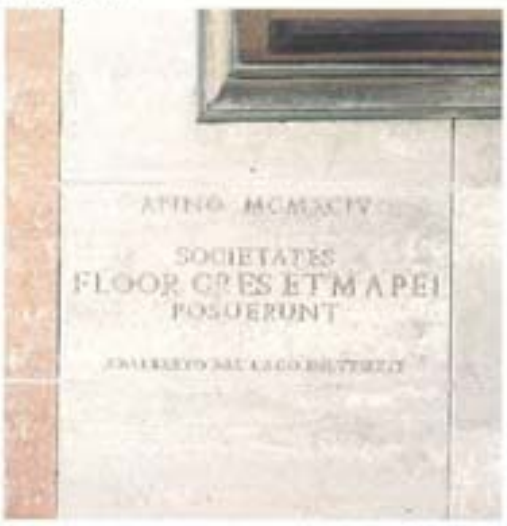
Historical profile of the halls

The rooms which were restored were those on the right and left of the Sistine Hall in the gallery on the west side of the Belvedere Courtyard built by Pope Pius IV in 1565.
The rooms were the following: the First and the Second Paoline Room designed by Pope Paul V in 1611, the Alexandrine Room designed by Pope Alexander VIII in 1690, the Clementine Gallery designed by Pope Clement XII in 1732.
Toward the Sistine Hall the rooms restored were the First and Second Sistine Hall designed by Pope Sistus V, the Gallery of Urban VIII, and the Sacred

PHOTO 13

PHOTO 14

PHOTO 15



Museum designed by Pope Benedict XIV in 1756.
These rooms were built to hold and preserve the precious manuscripts and the numerous collections of books gathered by various Popes over the centuries.
At present, these valuable collections have been transferred to more suitable places for their conservation.
However the rooms remain an integral part of any visitor's tour of the Vatican Museum.
The artistic and religious creations of these rooms are that of a 16th century designer, Domenico Fontana. The

PHOTO 14
A general view of the Halls. Only 40 days were needed from the beginning of the work to complete the restoration

PHOTO 15
The slab in the picture was inserted in the new floor in memory of this important job

challenges faced by the restoration were not only structural and decorative, but it was essential to maintain the original appearance and designs of its creator.
According to the architect, Dal Lago, "Modern design means exactly this: to interpret the past, in the light of the scientific and technological innovations of one's own time, whilst respecting the aesthetics and symbols of its originator."
Mapei proudly helped restore The Sistine Chapel so that the entire world may enjoy this unique treasure in its original splendor for generations to come.

Congratulations! Mapei's project, the "Vatican Library (Sistine Galleries)" in Rome, has been chosen to receive a Special Award of Merit in the Tile Promotion Board's Spectrum International competition for ceramic tile design, during "Coverings" exibition - Orlando, USA (23-26 April)

The technical data sheets for the products mentioned in this article are contained in Mapei binder No. 1 "Ceramic Tiles Adhesives"

The monograph "Gallerie della Biblioteca Apostolica Vaticana. Restoration of the floor in the architectural space of the XVI century", available in 4 languages, was published as soon as the restoration of the floor was completed. A 14' entertaining video was as well shot with, as a main character, a worried Michelangelo, at first afraid of the intervention of the "moderns" then satisfied once he has seen the final result.

TECHNICAL DATA

PROJECT : Galleries of the Vatican Apostolic Library

YEAR OF FORMER INTERVENTION : (linoleum installation) the fifties

YEAR OF ACTUAL INTERVENTION : December '94 - January '95

SURFACE : 1700 sq.m.

DESIGNER : arch. Adalberto Dal Lago - staff : arch. Gabriele Bonifacio, arch. Laura Cesari

CONSTRUCTION SUPERVISOR : Eng. Pier Carlo Cuscianna

TILE-SETTER : Edil Pav by Sandro Sigismondi

MASTER MASONS : Achille Fratarcanselli, Marco Chiarlitti, Massimo Rotondi, Mauro Rotondi, Sergio Nardozzi

AGGREGATE SUPPLIER : Marcorelli Gian Luca Edilizia

FLOORING : thin porcelain tiles "Chromtech" by Floor Gres

INSTALLATION PRODUCTS :
MAPECEM screed
GRANIRAPID adhesive
ULTRACOLOR grout
MAPEFLEX PU21 elastic joint