A GRANITE-PAVED GATEWAY TO THE ROCKIES

The 50.000 square meter Denver International Airport, designed by Fentress-Bradburn and Associates, architects, is a truly spectacular architectural achievement. Above the Great Hall of the terminal a modular tensile roof structure soars forty meters high in 34 white peaks made of special translucent teflon-coated fabric. Below stretches a gleaming polished granite floor that reflects the colors of the Rocky Mountains in the distance.

"Talking" triangles

The architects and airport officials payed particular attention to the flooring, which required a material resistant to the large volume of traffic, yet one which was easy to clean. A triangle motif, whose concave and convex sides recall the curves of the roof, was chosen to draw passengers' attention and guide them gently to their destination. The points of the triangles serve to direct traffic. At the ticket counter area, for example, the triangles point inward toward the counters, whereas at the baggage claim they point outward toward the building's exterior.

A granite mosaic

The granite portion of the terminal floor was paved with five types of granite supplied by Tecnomaiera of Turin: Prairie Black from Zimbabwe, Indian Red Multicolor from India, Prairie Mountain from Texas, Sardo Beige from Sardinia, and Bianco Aurora from Spain. A total of 35,300 square meters of granite were shipped to Denver.

"The legs of each triangle," explained Francis Cox, of Marble Technics of New York, Tecnomaiera Distributor for the United States, "are 1.2 meters. Each piece is 9 mm thick." To make sure that the shades of the stone were in harmony with the Rocky Mountain context of the airport, the architects arranged a test. Before installation, the flooring was set up outside the building to check the changing effects of the light on the stone.

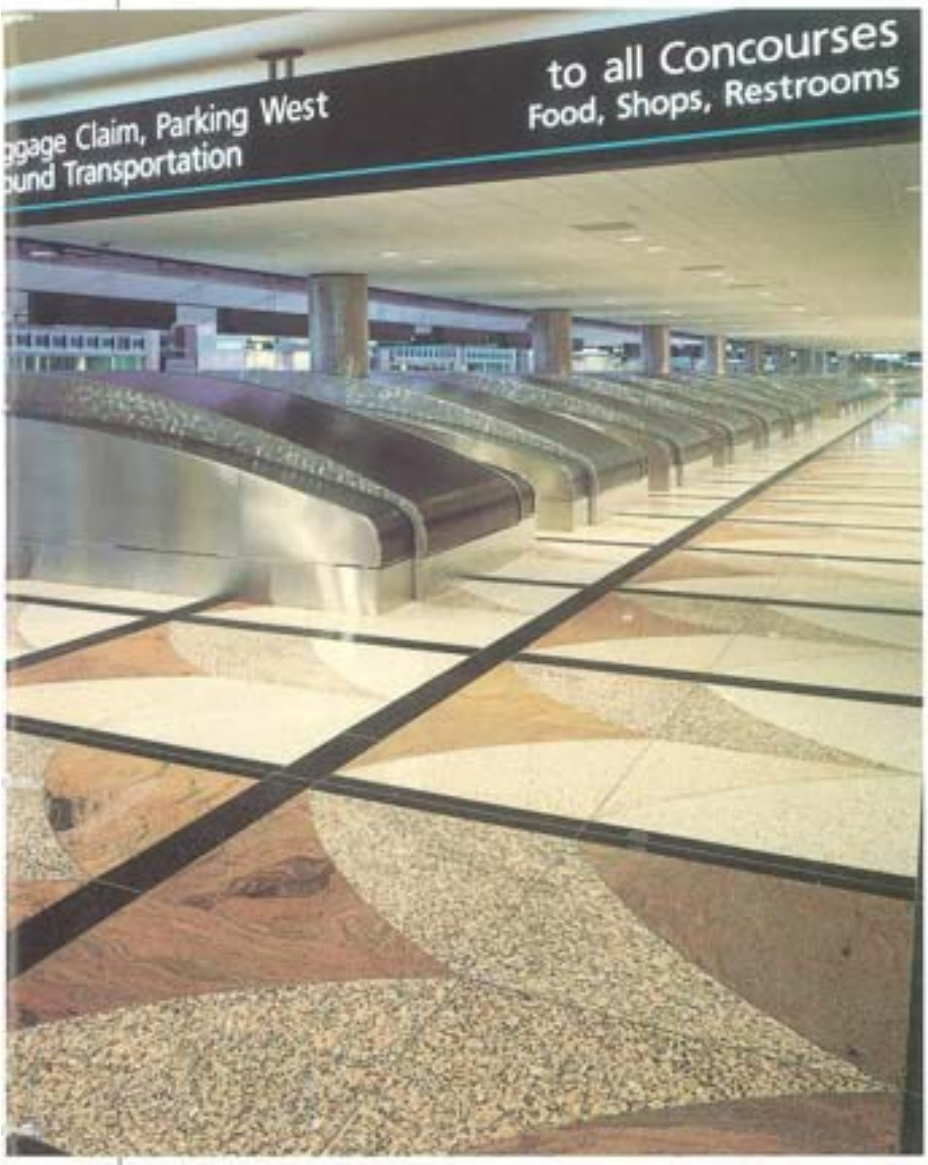
The thinner the better

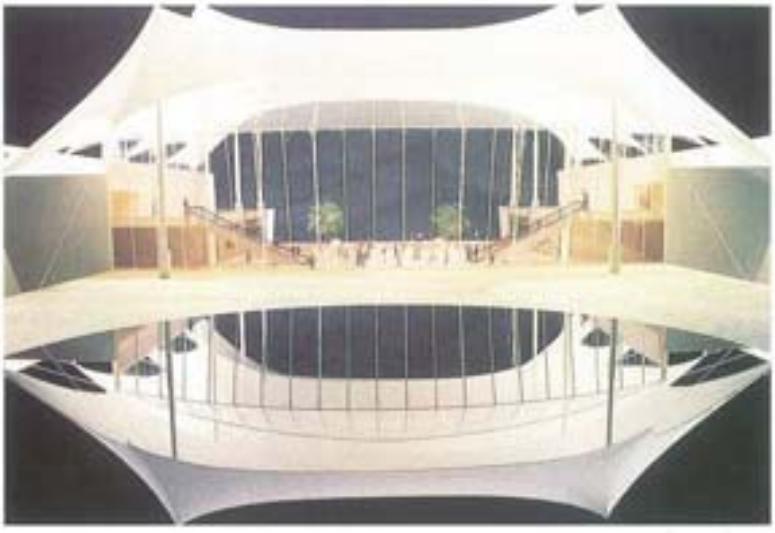
The perfect harmony between the granite and the Colorado landscape convinced both the architects and city officials of the rightness of the choice. Granite had in fact been originally chosen for the project, but terazzo was substituted in the initial planning stage because of cost considerations.
However, the thin (9mm) Tecnomaiera granite proved to be within budget after all. After being reinforced with epoxy resins to reduce porosity, the stone pieces were bonded to fibreglass netting. The reinforcement is very important, especially

In the photo above, the interior of the Great Hall with its precious marble floors installed with Mapei products. A job well (and quickly) done for a success that may be "exported" worldwide

At right, the projects striking central feature, the tensile roof structure with its 34 peaks, forty meters high. It allows light to flood in, yet functions as an insulating element for heating and cooling, and filters the noise of the aircraft outside

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"





at the delicate tips of the triangles forming the design. Two types of Colorado marble, Gold Vein Select and Colorado Yule (fabricated by the Colorado Yule Marble Company of Glenwood Springs, Colorado) were used in the areas around the terminal's elevators, where the walls rise to a height of 12 meters on each of its four floors. The Gold Vein Select features golden spider veining, while the Colorado Yule is veined with gold and grey, reflecting the colors of the surrounding landscape."The polished granite wall panels," explained Todd Robertson of Colorado Yule, "measure 1.2 x 1.8 m x 2 cm and were fabricated by New Mexico Travertine of Belen, New Mexico. The panels were installed by All State Stone Systems of New York."

Speed and precision

Installing such an intricate design, formed of a grid of four concave and four convex triangles, required great care and precision.
The pieces were set by Heuler Tile of Wauwatosa, Wisconsin. The setting material used was MAPECEM, a special hydraulic binder for preparing fast-drying (24 hours) screeds without shrinkage. To improve resistance and bonding, Mapei's KERALASTIC (called PLANICRETE W in the USA and Canada) was used, a two-component polyurethane adhesive.

Mapecem

*Keralastic/Planicrete W**

Ultracolor

** in North America*

Left page,the purposely realized thin slabs (9 mm) required a laying system with suitable products, capable of drying up quickly and of rapidly developing a perfect adhesion

Above, a detail of the floor

"MAPECEM was chosen," explained Craig Hamilton, technical assistance director of Mapei Corp (USA) "because MAPECEM screeds set in a very short time. KERALASTIC/PLANICRETE W was used because of its compatibility with MAPECEM and because it guaranteed strong bonding to the Tecnomaiera pieces." During the installation, a quality control consultant from CT Geotek of Denver conducted several tests in various locations to check the outcome of this setting method.
Because of the Mapei Rapid Setting System, ten installers working on the job, assisted by five technicians, were able to set 370 square meters of granite a day.

The right grout for the job

Grouting the thin granite triangles with their sharp points was a challenge. Tecnomaiera's special lash clip, shaped like a boat anchor, was a great help in setting the thin stone. ULTRACOLOR grout was used because it dries rapidly, has high compressive strength and is completely free of efflorescences.

A floor well-travelled

The flooring's enormous success made everyone happy: budgetary considerations were respected because of the reduced cost of transporting the thin granite, and the project was completed quickly and safely.
The architects were also pleased to have won the international competition for the 464,500 square meter airport in Seoul, Korea. The preliminary designs call for granite floors, and all the concerns which took part in the Denver Aiport project have shown strong interest in exporting their success to the Far East.

We thank Stone World and L'Arca magazines from which this article was adapted.

TECHNICAL DATA

PROJECT: Denver International Airport, Denver, Colorado (U.S.A.)

YEAR OF CONSTRUCTION: 1993/94

DESIGNERS: Architects C. W.Fentress, J.H.Bradburn and Associates, Denver, Colorado

TILE-SETTERS: Heuler Tile of Wauwatosa, Wisconsin

FABRICATION OF GRANITE: Tecnomaiera of Turin (Italy)

MATERIALS: 35,300 square meters of granite