

FOR RELEASE IN THURSDAY MORNING NEWSPAPERS, OCTOBER 25, 1934

MOSAIC CEILINGS IN NEW DEPARTMENT OF JUSTICE
BECOME WALLS OF SUBSISTENCE HOMES

By

John J. Earley

On the occasion of the Preview of the Earley Mosaic Ceilings in the New Department of Justice Building, Washington, D. C., October 24, 1934, held under the Auspices of the Washington, D. C. Chapter of the American Institute of Architects.

The mosaic ceilings of this new Department of Justice Building are made of reinforced architectural concrete. The beautifully colored design which you see was cast into these concrete slabs, as an integral part of the slabs themselves and is composed exclusively of carefully selected particles of white quartz and of equally hard colored ceramics and vitreous enamels. The sand which was used in this composition is crushed from the same materials and carefully graded to exact size to eliminate every particle of dust. No pigment is used; nothing but colored aggregates, colored sand, and the purest of white Portland cement.

Mosaics made with architectural concrete differ from mosaics of the conventional type principally because the particles of colored stone which occupy the surface and form the design are not placed by hand, bit by bit, but are made to flow into place as a plastic material is placed in a mold. Upon this is based not only the facility but the economy of mosaics made with architectural concrete.

The architects of this building, Messrs. Zantzinger, Borie and Medary, of Philadelphia, required that these mosaic ceilings, which are really the decorated surfaces of structural ceilings, should be integral with the structural elements themselves. Because they are outdoor ceilings and exposed to all the inclemencies of weather, the architects feared that an applied finish, such as conventional mosaic ceilings would be, could not be relied upon to remain permanently attached to the structure.

This requirement presented a serious difficulty, but in the end it proved to be a fortunate condition because it brought about in the solution of the problem a radical departure from common practice and established a new method in architectural concrete which promises to go far in producing new and astonishing results.

The economy of concrete in the structural uses with which we are familiar is based upon its plasticity, which permits all necessary work to be done upon it while it is soft. This property presupposes the use of molds or forms into which the soft material is poured and retained until it becomes hard.

When these molds or forms have served their purpose they are removed. Because they have no part in the finished structure, they are an economic waste and therefore an expensive burden on ordinary concrete construction which becomes an even greater burden in the case of architectural concrete where surface appearance demands finely finished molds. Had it not been for the handicap imposed on concrete by costly "forming", the natural economy of its plasticity would long ago have made concrete dominant in the field of architectural masonry.

By precasting the mosaic ceilings of this building in our studio and then using the precast slabs as the forms against which the concrete floor above the ceiling was poured, we have been able to eliminate this large item of forming expense. In fact, we have reversed the entire process of ceiling construction. Instead of setting up ceiling forms into which the floor construction would be poured

and then affixing to this the mosaic particles, we began at the other end of the operation.

We first, at our studio, put the mosaic particles of the ceiling design into their proper places, in molds and placed two inches of concrete over this mosaic surface, and then swung these precast slabs from the steel girders of this building. This enabled us to use the precast slabs as forms - just as you see them - and the concrete for the floor above was poured into place without the usual cost of ceiling forms.

To make these mosaic ceilings, plaster forms were first made with minute ridges about an eighth of an inch high to mark the lines between the various colors as they appeared on the mosaic design made by our artists and approved by the architects.

For each of these colors there was carefully prepared a mixture of properly colored stone and sand, with white cement and water. Each of these colors was therefore represented, on the palette of our craftsmen, by a plastic concrete that was easily put into place on the lower surface of the mold behind the tiny barrier which kept it separate from the adjoining colors. Over all this, we put the reinforcing wires and the form was then filled to a depth of two inches with concrete made of crushed quartz and quartz sand.

Because it was important that the concrete should fill even the tiniest and sharpest crevice in the mold, the mixture was made highly plastic. Therefore, surplus water had to be removed before the concrete was allowed to set.

Thereupon the cast was allowed to harden for twelve hours. Then it was taken out of the mold and its face scraped with wire brushes to remove the surface cement and expose the aggregates. The surface was then given a bath with weak muriatic acid to reveal the full brilliance of the coloring just as you see it now. The casts were then cured for fourteen days in a curing chamber which maintained an exact humidity and left them with a hard flint-like surface and a crushing strength of about 6,000 pounds to the square inch.

These mosaic ceilings as you see them in place, mark the end of a long period of intensive development of architectural concrete and the beginning of a new period of great promise. Their development began fifteen years ago with the concrete retaining walls of Meridian Hill Park here in Washington, in which our studio attempted for the first time to solve the problem of improving the appearance of cast concrete by exposing the pebble aggregates. That development has continued during the ensuing years with the experience gained in such monumental constructions as Lorado Taft's Fountain of Time at Chicago, a replica of the Parthenon at Nashville, a group of churches headed by the Shrine of the Sacred Heart in Washington, the Louisiana State University at Baton Rouge and the Bahai Temple at Chicago.

In that period the mosaic character of architectural concrete has been slowly perfected by a gradual improvement of the technique for controlling the particles of stone which make up the surface. The research work which was necessary to solve the particular problem presented by each of these projects in turn, made it possible to perfect

this control of the surface colors by bringing these stone particles more closely together, by minimizing the interference with their color by the cement which holds the particles together, and by enabling us to adhere more closely to the exacting demands of mosaic designs. Equally important has been the progress which has been made by our studio in collaboration with a ceramic engineer in producing a hitherto unusual purity of color in domestic ceramics and vitreous enamels. The vivid blue which we have used so lavishly in the background of these mosaics, is a ceramic color made with pure and fadeless cobalt; the reds, yellows and blacks are permanent vitreous enamels which the elements cannot injure. Nature too has contributed to this spectrum of colors at our command with beautiful quartzes, too hard for architectural use, but which, when crushed, have added new richness to the mosaic group of materials. Not the least of these are the white and crystal quartzes of Virginia and North Carolina which were first used in the precast slabs of the Bahai Temple.

It has been the happy experience of our studio to find that throughout this work, economy and quality have gone together step by step. Each year has added new improvements in appearance and with each improvement has come a greater economy. The precast panels which comprise at the same time the architectural finish and the forming for the structural concrete are the technical contributions to architectural concrete made by the mosaic ceilings in the new home of the Department of Justice. They promise to be the initial step

in another period of development of the beauty, the strength, and the economy of precast panels which will make them a new architectural material for buildings of all types, as well as an economic method of forming structural concrete which will comply with exacting architectural requirements for appearance.

Our studio did not stop with this development when we completed these ceilings for the Department of Justice. In keeping with the spirit of the times and, we believe, in cooperation with the Administration's plan to improve the housing conditions of the Nation, we have applied these precast panels to the solution of the small house problem. In the suburbs of Washington, we are building a modest home in which precast panels of reinforced architectural concrete with exposed aggregates are used as walls. These panels represent the same high artistic beauty, the same permanence, and the same freshness of color and design that we believe distinguish the mosaic ceilings in this monumental building.

It is a great satisfaction to us that the work which was done in these gorgeously colored mosaic ceilings has helped to perfect a technique which should now make it possible to put enduring beauty into the walls of the humblest subsistence homestead.

#