

FORMLINERS MAKE PRECAST CONCRETE PRETTY AS A PICTURE!

New technology exists that allows the design professional to think completely outside the box. Photo-engraved, 3D relief formliners, and photo concrete films provide life-like images never before possible in concrete building design.

PHOTO-ENGRAVED FORMLINERS are made from an unusual design process achieved through a transfer of actual images onto a panel utilizing a computer guided milling technique. The photograph is scanned and converted into a 256-color greyscale image and then developed into an electronic file read by a special CNC milling machine. The CNC machine creates a master mould that will be used to create the photo-engraved formliner. Concrete is then poured onto the formliner and the resulting element produces an exact image of the original photograph.

The concrete panel comes to life through the play of light and shadows on the façade. The photographs are more

apparent when light is projected from the side. The movement of the sun throughout the day thus gives rise to changing image effects on the building. Exterior and interior applications of photo-engraved concrete can be accentuated with the use of artificial light sources. Photo-engraved liners have been used throughout the world on sports arenas, museums, and educational institutions.

3D CONCRETE is a new and exciting technology that allows the designer to think of concrete in more than one dimension – literally. Unlike photo-engraved concrete, 3D concrete does not rely on light and shadowing to project the image. Rather, an image is represented through geometrical contours. The



In the offset light, the image on the photo-engraved master mold can be seen. A formliner will be made from this and then cast in concrete.

development process is similar to the photo-engraved technique in that it transfers an exact image of a photograph to a CNC milling machine.

Special software is used to convert the photograph into a three-dimensional milling file. It is then transferred to a plate material on the CNC machine thereby creating a master mould. The master mould is used to create a formliner. 3D formliners can be created in any size and are only limited by the maximum dimensions of the plate material and the maximum milling area of the CNC machine.



Photo-engraved master mold being milled on a CNC machine.



Amazing detail can be realized when using photo-engraved formliners.



3D Concrete.

Applications are virtually unlimited because almost any image in standard graphic formats can be used. 3D concrete has been used in indoor and outdoor projects. It is especially suited for indoor applications where it can be more readily viewed in closer detail.

Like photo-engraved concrete, **PHOTO CONCRETE** uses a high-resolution image to create images onto concrete. In this case, surface retarder through a specialized

printer is used to print the retarder on a thin plastic sheet. Surface retarder prevents the very top of the cement matrix from completely curing thereby allowing the aggregate just beneath the fine layer of cement to show. Concrete is poured onto the sheet, stripped the next day, and pressure washed. The washing allows the image to become readily apparent on the precast panel. This is truly a remarkable process that provides a lasting image on the concrete.

Precast concrete construction provides an unrivaled value through function and aesthetics. Design professionals have discovered that designing with attractive and functional vertical concrete surfaces expands the realm of possibilities and introduces an entirely new world of architectural wonder.

*Associate Member Contributor:
Ray Clark, US Formliner*



Photo concrete. Different than photo-engraved concrete, the image appears to be printed onto the concrete.