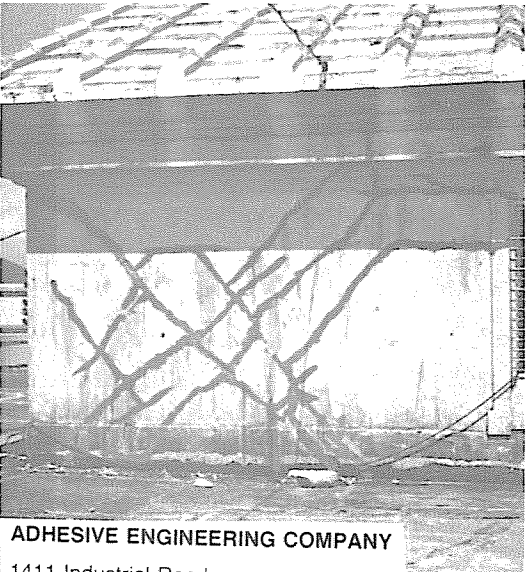




All walls of the three floors facing the courtyard were cracked, as were the perimeter columns.

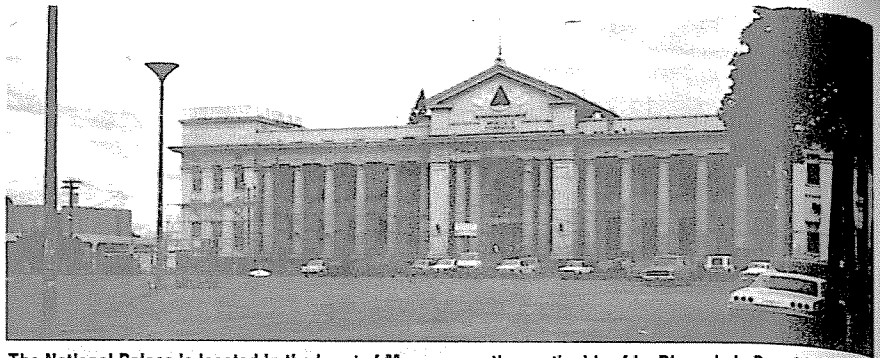


(Above) Six workmen sealed crack surfaces with a temporary seal and two technicians manned each of seven pumping machines. (Below) Repaired roof structure shows typical concrete cracking pattern.



**ADHESIVE ENGINEERING COMPANY**

1411 Industrial Road  
San Carlos, California 94070



The National Palace is located in the heart of Managua on the south side of La Plaza de la Republica. It consists of three floors and a basement.

## 30,000 Lin. Ft. of Cracks Repaired In Nicaragua's National Palace

By E. Rappacioli & M. Rivas Davies  
Pro-Con S. A., Managua, Nicaragua

In the National Palace, Managua, Nicaragua, over 30,000 lin. ft. of cracks have been repaired by the Structural Concrete Bonding Process at a savings of over 50 per cent of estimated reconstruction costs. In addition, injecting the cracks with a high strength liquid epoxy adhesive effectively restored the reinforced concrete structure to near design strength.

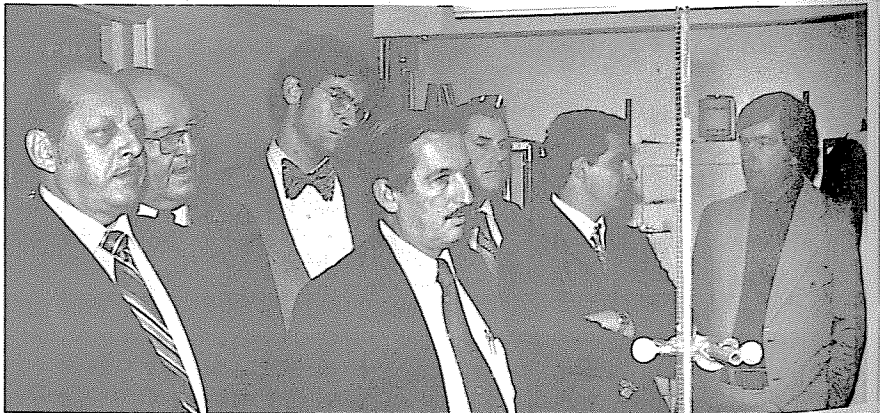
The National Palace, seat of government housing all important ministries and offices, was one of the buildings most severely damaged by the December 23, 1972 earthquake. Constructed in 1934 and occupying an entire city block (80 mt by 100 mt), it was one of the first reinforced concrete structures in the city.

Although the building remained standing after the disaster, there was not one section of it which escaped damage. Cracks 0.005 to 1/8 in. wide extended for the most part through the concrete roof, walls, floors, columns and beams.

Despite the extent of the damage, engineers of Construcciones Nacionales, the government agency in charge of public buildings, decided that the structure could be restored by epoxy injection, and awarded it the highest priority. Concrete repairs were begun immediately after Pro-Con S.A. of Managua acquired the SCB Process license for all of Central America. At the peak of restoration work, over 500 lin. ft. of cracks were being repaired daily.

About one month after crack injection began, government officials and their staffs had started to move back into the building. Two months later the building was fully occupied.

To date, Pro-Con has taken 155 individual four-inch diameter cores from injected concrete throughout the National Palace. Each core has shown full penetration of the epoxy adhesive and structural restoration of the concrete, results which have adequately satisfied the requirements of the government officials responsible for the repairs.



### Group From Nicaragua Visits AE Facilities

Last December a delegation of government officials, construction industry representatives and newsmen from Nicaragua visited the Adhesive Engineering Company plant in San Carlos.

The plant tour was made when the delegation was in San Francisco to participate in a special conference on the Managua earthquake of December 23, 1972. The conference was sponsored by the

Earthquake Engineering Research Institute with cooperation of U.S. government agencies and various industry associations.

The primary purpose of the plant visit was to observe the manufacture, quality control and testing of Concrete epoxy adhesives, which to date have played a major role in the restoration of concrete structures in Managua.