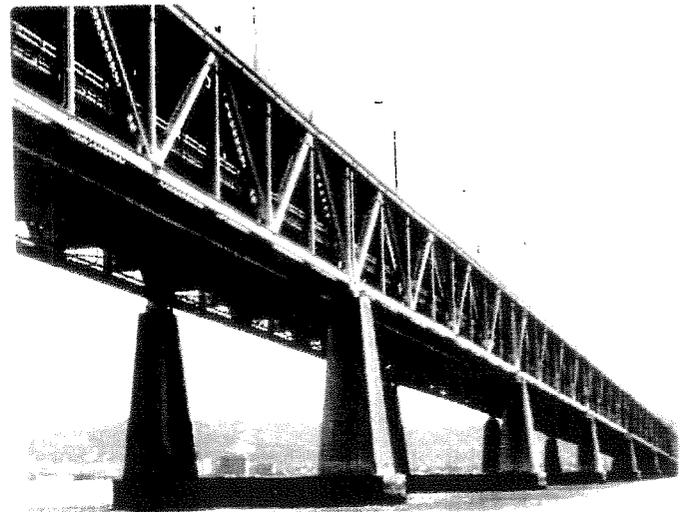
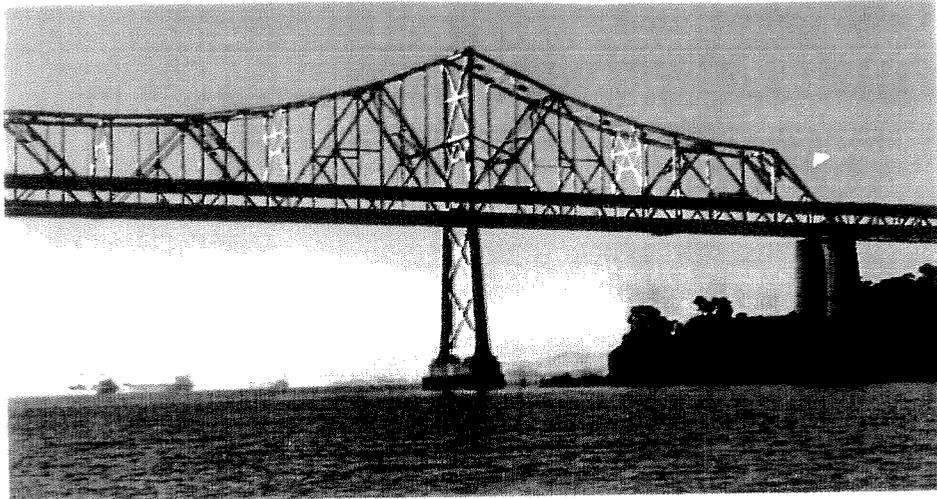


SEISMIC RETROFIT CONCEPTS FOR THE BAY BRIDGE FILE COPY

by

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erection of the cantilever superstructure was complete and prestressing forces were applied to eye-bars, the ducts were filled with concrete.

The connection of the superstructure to top of the Pier E-1 pylon can be considered to act as a "pin" connection.

3.4.12. Seismic Behavior and Retrofit Concepts for Pier E1

As indicated earlier, Pier E1 is responsible for the longitudinal restraining of the entire segment of the bridge from Pier YB3 to Pier E4. This segment has a length of 3010 feet. As a result, very large horizontal forces can develop at the top of Pier E1.

Figure 3.5 shows estimated forces at the top of Pier E1 for the most serious case of DRAIN-2D studies. The capacity analysis of Pier E1 indicated that the existing Pier E1 cannot tolerate the applied seismic loads and will rock. Since this pier is one of the most important piers of the entire bridge and the stability and integrity of the cantilever truss depend on this pier, it is desirable to ensure that Pier E1 remains almost elastic during the maximum credible earthquake, or sustains very minor structural damage. Since Pier E1 is located on the rock of Yerba Buena Island, strengthening of the pier and using it as the restraining pier in longitudinal direction of the cantilever truss appears to be an efficient retrofit solution.

Considering the existing reinforcement of Pier E1, the preliminary studies indicated that the pier need to be jacketed to increase its strength, to protect the aged surface concrete and to add new rebars to compensate for the possibly corroded rebars within the existing pier. Also, to prevent rocking of the pier about its base or damaging the foundations, it is necessary to enlarge the foundation of this pier by jacketing it. In addition, these conceptual studies indicate that most likely it will be necessary to tie the jacketed pier down to the rock of