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MECHANISM OF DAMAGE TO SHIWEI BRIDGE CAUSED BY 1999 CHI-CHI EARTHQUAKE

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The Shiwei Bridge in Taiwan was extensively investigated in order to determine the reasons for its failure during the 1999 Chi-Chi Earthquake. Our field investigation revealed no evidence of horizontal displacement in any of the bridge's piers, although the foundations of the piers were rotated. Two possible scenarios for the failure of the girders are proposed: 1) when the foundations rotated, the distance between the piers became greater than the length of the girder, causing the girders to fall; or 2) the direction of the seismic motion was perpendicular to the axis of the bridge, causing the girders to rotate and fall.

Key Words: Chi-Chi Earthquake, failure of structure, concrete pier, earthquake damage, pier deformation

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