Work Safely with Concrete and Cement Fatality File



Two Construction Workers Fatally Crushed when Cement Formwork Collapsed

A 53-year-old construction laborer (Victim I) and a 50-year-old concrete pump operator (Victim II) suffered fatal crushing injuries when formwork collapsed during concrete placement at a construction site. The concrete piece being constructed was an aqueduct mock-up. On the morning of the incident, the workers were pouring concrete to form the left and right buttress sections and the buttress formwork on the right side collapsed. The right buttress formwork had a retaining wall that was composed of a lower vertical face and an upper inclined face. At the time of the incident, Victim I and Victim II were working from a platform abutting the retaining wall. At around 12:30 pm when the freshly poured concrete was approximately 10 feet high, workers heard loud thudding noises as the retaining wall and the work platform collapsed. A 911 call was placed immediately and EMTs arrived at the site within minutes. Victim I was trapped underneath the formwork and pronounced dead on the scene. Victim II was also trapped underneath the formwork but rescued by other workers who used a forklift to lift the formwork to free him. Victim II died in a hospital nine days later from crushing injuries. Post incident investigations identified several discrepancies between what the formwork design specified and how the formwork was constructed. The formwork deviated from the design specifications in the type, size, and number of anchors to be installed. Pipe braces and hold-down brackets indicated on the drawings were not installed. The formwork did not have adequate capacity to resist the horizontal fluid forces and lacked any mechanism to resist the uplift force on the formwork during concrete placement. The formwork failed due to a combination of mechanisms including formwork uplift followed by wash-out of the wood base platform, vertical drop and collapse of the support wall, and shear/tension failure of the anchoring system.