

Chapter 6

Partial Collapse of Parking Garage at the Tropicana Hotel in Atlantic City

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In 2003, a major collapse occurred during the construction of a parking garage at the Tropicana Hotel in Atlantic City, New Jersey. It resulted in four fatalities, dozens of injured workers, and significant delays to the construction project. This chapter describes the engineering investigation that was conducted, the findings of the investigation, and recommendations to avoid future failures of similar structures.

6.1 Introduction

The structure being constructed was a ten-story, 2400-car parking garage located over a four-story retail complex. Figure 6.1 shows the overall plan and the location of the collapse.

6.1.1 Description of the Structure

A proprietary structural system for the slabs and beams, called the Filigree Beam and Slab System, was selected early in the design phase. The key feature of this system was that the formwork for the slabs and beams consisted of precast planks and shallow precast “tubs”, both of which would become composite with the cast-in-place concrete. This avoided the expense of removing formwork and provided a more efficient structural design. The precast planks for the slabs were typically 2 ¼ inches (5.7 cm) thick. The precast tubs for the beams were typically 8 feet (243.8 cm) wide and 16 inches (40.6 cm) high. Figure 6.2 shows the typical construction along an interior beam line for this system.

6.1.2 Project Organization

The project organization, shown in Figure 6.3, played a role in the collapse.

Initially, the project organization was similar to many design-bid-build projects. The owner hired a design team who prepared a design that met the owner’s objectives.