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Importance of Structural Assessment before Rehabilitation Case Study: Waterfront Concrete Pier

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Synopsis: This paper discusses the structural assessment and repair of a waterfront concrete pier. This paper also discusses the responsibilities of the construction team through the investigation and repair process. The apron around the pier is an exposed concrete deck supported on steel beams and concrete caissons. The concrete apron exhibited various deteriorated conditions, including cracking and spalling. The pier owner requested a structural condition survey of the pier apron to determine the extent of the damage and to develop a repair program.

The design team proposed an investigation and repair program in accordance with various industry standards, including ACI 357, ACI 562, and ACI 364.1R. The challenge of this project was the limited budget and time allocated by the owner to perform the investigation and repair. As a result, the investigation was limited to visual observations only, and the repairs were restricted to repairing unsafe conditions only. Despite the investigation and repair construction limitations, the design team work around the needs and budgets of the owner and managed to restore the structure to a safe condition. However, the effects of insufficient evaluation of the structure before rehabilitation, had an adverse effect on the project schedule and extent of repairs performed. Also, due to the project budget limitations, the responsibilities of the design team were challenged.

Keywords: concrete repair, marine structures, waterfront structures, structural assessment, structural evaluation, responsibility.