Manual

Precast Prestressed Concrete Parking Structures: Recommended Practice for Design and Construction

MNL-129-15

Third Edition

Precast Prestressed Concrete

PARKING STRUCTURES:

Recommended Practice for Design and Construction

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On the cover: Cook County Juvenile Center Parking Garage, Chicago, IL
Photo: William Kildow Photography

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1.0 INTRODUCTION

1.1 General

Parking structures are essential components of the built environment. These structures have evolved from utilitarian, non-descript, box-like structures to multi-purpose, architecturally pleasing buildings that complement the facility served. Owners have realized that accommodations for parking often represent the first and last impression that the public experiences. The quality of parking can be a pivotal factor in determining the level of customer, resident, guest, or employee satisfaction. Surface parking is often remote, undesirable, or not possible, resulting in a need for multi-level parking. In such instances, creating an attractive, functional, and durable parking structure is a critical objective of the design and construction program.

Figure 1-1. Surf Style Retail Store and Parking Structure - Tampa, FL (photo courtesy of Finfrock Industries)

Precast, prestressed concrete has inherent characteristics that can make it the optimum structural material and framing system for parking structures. The intent of this manual is to describe features that make it a desirable choice and to serve as a guide for architects, engineers, contractors, and owners involved in the design, construction, and maintenance of parking structures.

This manual consists of eight chapters. Chapter 1 provides an overview of the content of the manual and highlights many of the beneficial features of precast, prestressed concrete. Chapter 1 also includes photographs that illustrate the flexibility and architectural design possibilities available with precast, prestressed concrete. Chapters 2, 3, and 4 contain general information relating to functional design, durability, and sustainability. Chapters 5 through 8 discuss matters relating to structural design, production, and erection. These four chapters provide more in-depth technical information intended primarily for designers, producers, and contractors.

Information, details, and diagrams presented herein are intended as general reference material only. In no case should the material presented be considered as a substitute for the experience and engineering judgment of a design professional or producer.

Project specific criteria or regional practices should be considered and may result in alternative design approaches or solutions. PCI-certified producers are expected to produce a higher quality product than a producer that is not certified. Consult-