



CHAPTER

SIX

PCI RESOURCES

Design Tools

APC-1-98: *Collection of Ideas on the Production of Architectural Precast Concrete*

This 84-page book discusses some of the key considerations when fabricating architectural precast concrete components. Included are production practices, raw materials and accessories, concrete requirements, reinforcement and pre-stressing, quality control, and product tolerances.

APC-2-02: *Successful Planning With Architectural Samples*

This six-page article reprint from PCI's *ASCENT* magazine, written by Architectural Director Sidney Freedman, discusses the benefits provided by mockup samples prior to beginning fabrication. Key topics include development of samples, budgeting for samples, comparing samples to production runs, mockups for production approval, and assessment of samples.

BM-20-04: *Precast, Prestressed Concrete Piles Manual, Chapter 20*

First printed as a chapter in PCI's *Bridge Design Manual* (MNL-133), it is reprinted in this form to aid designers and others with an interest in precast, prestressed concrete piles. It includes sections on pile characteristics and materials, geotechnical and structural design, pile-to-cap connections, manufacturing, transportation, and installation. Design examples are also presented.



CD-IGS-1-00: Housing CD-ROM

This business card-sized CD-ROM for PCs provides an overview of how precast concrete components can be used in the housing industry. It includes explanations of applications and case histories for single-family homes, multifamily buildings, hotels and motels, retirement centers, and assisted-living facilities.

CD-IGS-3-01: Stadiums CD-ROM

This business card-sized CD-ROM for PCs provides an overview of how precast concrete components can be used to design stadiums, arenas, and theaters. It includes explanations of design applications and case histories for a variety of community, university, and professional sports stadiums around the country.

CD-IGS-4-01: Hollow-core CD-ROM



This business card-sized CD-ROM for PCs provides an overview of how precast concrete hollow-core planks are fabricated and the advantages they offer to a variety of building projects. Connection details, field requirements, and a variety of case histories are offered.

CD-IGS-5-01: Industrial CD-ROM

This business card-sized CD-ROM for PCs provides an overview of how precast concrete components aid in the design and construction of industrial facilities. Short- and long-term advantages, along with case histories, are presented to show how the components are used with warehouse/distribution centers, manufacturing plants/assembly facilities, retail stores, food-processing plants, and high-tech lab/manufacturing operations.

CD-IGS-6-02: Parking CD-ROM

This business card-sized CD-ROM for PCs provides an overview of how precast concrete components can be used to design parking structures. Included are advantages offered by these systems, as well as how various components work together, connection details, aesthetic options, lighting and security considerations, maintenance issues, and a range of case histories.

CD-IGS-8-02: Commercial Building CD-ROM

This business card-sized CD-ROM for PCs provides an overview of how precast concrete components can be used to design commercial buildings of all types. A range of applications is presented, including office buildings, corporate campuses, financial centers, institutional and public facilities, mixed-use structures, and retail stores. Sections discussing the inherent value of architectural precast concrete wall panels and the benefits of using structural precast concrete components in these facilities is also provided. A section also covers the applications for GFRG.

DN: Designer's Notebook Series

This series of seven-page articles, originally presented in PCI's quarterly *ASCENT* magazine, provides detailed techniques for handling different aspects of architectural precast concrete components to enhance design attributes. The series includes diagrams, charts and standard applications along with the how-to text. Many of the articles also include a first-person account from an architect who reviews his firm's use of precast concrete in this context. The series includes:

DN-01-98: Designer's Notebook: Bullnoses.

DN-02-98: Designer's Notebook: Cornices.

DN-03-98: Designer's Notebook: Reveals.

DN-04-98: Designer's Notebook: Multiple Mixes/Textures.

DN-05-99: Designer's Notebook: Window Panels.

DN-06-99: Designer's Notebook: Corners & Returns.

DN-07-00: Designer's Notebook: Stone Veneer.

DN-08-00: Designer's Notebook: Clay Products.

DN-09-01: Designer's Notebook: Radiused Precast Concrete.

DN-10-01: Designer's Notebook: Sculptural Forms.

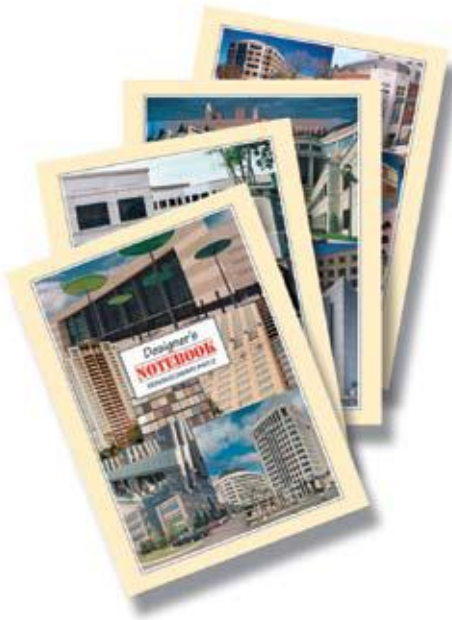
DN-11-02: Designer's Notebook: Design Economy.

DN-12-02: Designer's Notebook: Benefits & Advantages.

DN-13-03: Designer's Notebook: Specification Guidance (28 pp.).

DN-14-04: Designer's Notebook: Blast Considerations (28 pp.).

DN-15-06: Designer's Notebook: Energy Conservation (64 pp.).



GFRC-3-02: *Innovation By Design: Glass Fiber Reinforced Concrete Cladding* (16 pp.)

IBC-1-01: *Impact of the Seismic Design Provisions of the International Building Code*

This 48-page study was written by S.K. Ghosh of S.K. Ghosh Associates Inc., commissioned by the Alliance for Concrete Codes and Standards, and published by the Structures and Code Institute. It discusses the potential impact of the seismic-design provisions of the 2000 IBC that addresses concerns of design professionals, building and code officials, academics, and others.

Manuals and Books

MNL-115-68: Fundamentals of Prestressed Concrete Design

This 134-page book addresses some of the key provisions of precast concrete design, focusing on calculations, equations, and charts to acquaint engineers with the fundamental principles of designing prestressed concrete structural elements. Five key areas are covered: the properties of concrete and steel, design considerations involving flexure and shear, typical design examples, key features of guiding documents and codes, and general design considerations.

MNL-119-90: PCI Drafting Handbook, Second Edition

This manual presents a comprehensive overview of the techniques needed to effectively generate precast concrete shop drawings. It includes administration considerations, standards for drafting-room equipment and layout, drafting techniques and procedures, drawing preparation, the submittal/approval process, and other key aspects. The use of computer-aided drawing (CAD) is outlined in a separate, equal-sized section covering similar requirements. Appendixes cover terms, checklists, tolerances, and other aspects of both manual and CAD drafting.



MNL-120-04: PCI Design Handbook, Sixth Edition

This edition of the essential precast concrete manual was totally revamped and includes a CD-ROM with all guide specifications as well as a digital version of the handbook itself. The manual includes sections on applications and materials, design considerations, structural analysis, connection designs, tolerances, thermal and acoustical attributes, specifications, and other key topics. Its primary purpose is to aid in the structural design of precast concrete structures and components.

MNL-122-07: PCI Architectural Precast Concrete Manual, Third Edition

Tips and techniques for working with architectural precast concrete are outlined in this manual, which includes sections related to designing for economics, surface aesthetics, reinforcements, connections, tolerances, joints, and design considerations such as windows, energy conservation, acoustical properties, and fire resistance. Sections on designing precast concrete panels for use as cladding, loadbearing wall units, shearwalls, and formwork for cast-in-place concrete are also presented. Its primary purpose is to aid in designing architectural precast concrete structures and components.

MNL-123-88: Design and Typical Details of Connections for Precast and Prestressed Concrete (Second Edition)

This manual provides details on the variety of connections that can be used with precast concrete components to achieve an effective structural system. It presents information that will ensure proper consideration of compatibility of connection behavior with other materials and the overall structural system. Discussions include general considerations, design concepts, connection materials, design procedures and examples, typical connection details, and design aids.

MNL-124-08: *Design for Fire Resistance of Precast, Prestressed Concrete, Third Edition*

This manual provides an analytical method of evaluating the fire endurance of structures made of precast, prestressed concrete. It gathers information from many sources and presents it with example problems that illustrate the use of design aids and principles. Included are sections on the properties of steel and concrete at high temperatures, fire endurance of slabs and beams, heat-transmission requirements of ASTM E119, considerations with architectural precast concrete, and other topics.

MNL-126-98: *Manual for the Design of Hollow-Core Slabs, Second Edition*

This manual covers the primary design requirements for hollow-core floor and roof systems. It serves as a guideline for architects and engineers for the use and application of the products. Included are sections on hollow-core slab systems, designing slabs, diaphragm designs, connections, creating fire-resistant assemblies, and enhancing acoustical properties.

MNL-127-99: *Erectors' Manual: Standards and Guidelines for the Erection of Precast Concrete Products*

This manual provides standards that help ensure proper erection of precast, prestressed concrete products. The manual's goal is to establish a level of quality that will be recognized and respected by the construction industry. The book includes sections on preconstruction planning, practices and procedures, equipment, safety, tolerances, and quality control. Appendixes provide supplemental detail on drawings, welding, repairs, and other considerations.

MNL-128-01: *Recommended Practices for Glass Fiber Reinforced Concrete Panels, Fourth Edition*

This manual presents key considerations for designing, manufacturing, and installing GFRC panels and other components. It lays out project responsibilities and details materials, physical properties, design, tolerances, manufacturing requirements, quality control, delivery needs, and installation aspects.

MNL-129-98: *Precast, Prestressed Concrete Parking Structures: Recommended Practice for Design and Construction*

All aspects of designing parking structures using a variety of precast concrete components are outlined in this manual. It includes discussions of façade treatments, functionality, cost considerations, durability aspects, drainage, structural design, connections, production needs, and erection considerations. An appendix details maintenance needs (a more extensive version of this is available as MNL-136-04: *Maintenance Manual for Precast Concrete Parking Structures*).



MNL-130-91: *Manual for Quality Control for Plants and Production of Glass Fiber-Reinforced Concrete Products*

This manual serves as a guideline for manufacturing GFRC, which requires a greater degree of craftsmanship than other precast concrete construction products. The book focuses on quality-control requirements and discusses overall philosophy, product control, plant facilities, and materials.

MNL-135-00: *Tolerance Manual for Precast and Prestressed Concrete Construction*

This manual provides a working reference for the dimensional control of precast concrete products and construction, covering both plant-cast or site-cast as well as precast and precast, prestressed concrete. It covers all aspects of tolerances for production, erection, and interfacing, as well as feasibility, visual, economics, legal, and contractual considerations.

MNL-136-04: *Maintenance Manual for Precast Concrete Parking Structures*

This manual outlines key considerations for maintaining precast concrete parking structures to maximize their use while minimizing their care requirements. The book features photos of key areas for concern and provides timelines and check-lists for inspecting and maintaining each aspect on a recommended schedule.

MNL-138-08: *PCI Connections Manual for Precast and Prestressed Concrete Construction*

This manual provides detailed diagrams and explanations of the various types of connections necessary to create interfaces among precast concrete components as well as with other materials. Included are sections on various types of connection materials and discussions of foundation designs, connections for beams, columns, double tees, spandrels, and other components. Calculations and examples of each are shown.



Architectural Precast Concrete Color and Texture Selection Guide, Second Edition, PCI, 2003

This loose-leaf binder provides large, four-color photos of a large variety of precast concrete finish textures and colors. Numbered color plates, two per page, provide architects with a detailed look at nearly 500 options for aggregates and finishes. Included are examples of acid etching, retarders, and various levels of sandblasting.

Visions Taking Shape: Celebrating 50 Years of the Precast/Prestressed Concrete Industry

This hardcover book provides a history of the precast concrete industry in America as well as an overview of how PCI came to be formed. It also includes a review of the 50 Best Precast Concrete Structures in America, as picked by an industry panel of judges, as well as a look at what future decades hold for the precast concrete industry.

Continuing Education



CD-IGS-2-01: Career Opportunities CD-ROM

This business card-sized CD-ROM for PCs outlines the range of job opportunities in the precast concrete industry that exist for those with engineering backgrounds. Designed primarily for use in university classes, it provides an overview of the industry and how engineering students can use their capabilities.

Producers & Erectors



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