ARE 5.0

Project Management

Study Guide

Brightwood
ARCHITECTURE EDUCATION

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PROJECT MANAGEMENT STUDY GUIDE 5.0

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INTRODUCTION

WELCOME

Thank you for choosing Brightwood Architecture Education for your ARE study needs. We wish you the best of luck in your pursuit of licensure.

ARE OVERVIEW

Since the State of Illinois first pioneered the practice of licensing architects in 1897, architectural licensing has been increasingly adopted as a means to protect the public health, safety, and welfare. Today, the United States and Canadian provinces require licensing for individuals practicing architecture. Licensing requirements vary by jurisdiction; however, the minimum requirements are uniform and in all cases include passing the Architect Registration Exam (ARE). This makes the ARE a required rite of passage for all those entering the profession, and you should be congratulated on undertaking this challenging endeavor.

Developed by the National Council of Architectural Registration Boards (NCARB), the ARE is the only exam by which architecture candidates can become registered in the United States or Canada. The ARE assesses candidates' knowledge, skills, and abilities in six different areas of professional practice, including a candidate's competency in decision making and knowledge of various areas of the profession. The exam also tests competence in fulfilling an architect's responsibilities and in coordinating the activities of others while working with a team of design and construction specialists. In all jurisdictions, candidates must pass the six divisions of the exam to become registered.

The ARE is designed and prepared by architects, making it a practice-based exam. It is generally not a test of academic knowledge, but rather a means to test decision-making ability as it relates to the responsibilities of the architectural profession. For example, the exam does not expect candidates to memorize specific details of the building code, but it requires them to understand a model code's general requirements, scope, and purpose and to know the architect's responsibilities related to that code. As such, there is no substitute for a well-rounded internship to help prepare for the ARE.

Exam Format

The six ARE 5.0 divisions are outlined in the table below.

ARE 5.0 DIVISIONS

Division	Items
Practice Management	80
Project Management	95
Programming & Analysis	95
Project Planning & Design	120
Project Development & Documentation	120
Construction & Evaluation	95

The exam presents multiple-choice questions, new hotspots, and drag-and-place, as well as incorporating case studies. Candidates may answer questions, skip questions, or mark questions for further review. Candidates may also move backward or forward within the exam using simple on-screen icons.

Appointment times for taking the exam are slightly longer than the actual exam time, allowing candidates to check in and out of the testing center. All ARE candidates are encouraged to review NCARB's *ARE 5.0 Guidelines*

for further detail about the exam format. These guidelines are available via free download at NCARB's website (www.ncarb.org).

EXAM PREPARATION

Overview

There is little argument that preparation is key to passing the ARE. With this in mind, Brightwood has developed a learning system for each exam division, including study guides, QBanks, and flashcards. The study guides offer a condensed course of study and will best prepare you for the exam when utilized along with the other tools in the learning system. The system is designed to provide you with the general background needed to pass the exam and to provide an indication of specific content areas that demand additional attention.

In addition to the Brightwood learning system, materials from industry-standard documents may prove useful for the various divisions.

Preparation Basics

The first step in preparation should be a review of the exam specifications and reference materials published by NCARB. The ARE 5.0 Handbook is available for download at www.ncarb.org.

Though no two people will have exactly the same ARE experience, the following are recommended best practices to adopt in your studies and should serve as a guide.

Set aside scheduled study time.

Establish a routine and adopt study strategies that reflect your strengths and mirror your approach in other successful academic pursuits. Most importantly, set aside a definite amount of study time each week, just as if you were taking a lecture course, and carefully read all of the material.

Take—and retake—quizzes.

After studying each lesson in the study guide, take the quiz found at its conclusion. The quiz questions are intended to be straightforward and objective. Answers and explanations can be found at the back of the book. If you answer a question incorrectly, see if you can determine why the correct answer is correct before reading the explanation. Retake the quiz until you answer every question correctly and understand why the correct answers are correct.

Identify areas for improvement.

The quizzes allow you the opportunity to pinpoint areas where you need improvement. Reread and take note of the sections that cover these areas and seek additional information from other sources. Use the question-and-answer handbook and online test bank as a final tune-up for the exam.

Take the final exam.

A final exam designed to simulate the ARE follows the last lesson of each study guide. Answers and explanations can be found on the pages following the exam. As with the lesson quizzes, retake the final exam until you answer every question correctly and understand why the correct answers are correct.

Use the flashcards.

If you've purchased the flashcards, go through them once and set aside any terms you know at first glance. Carry the rest with you throughout the day, reviewing them on the train, over lunch, or before bed. Remove cards as you

become familiar with their terms until you know all the terms. Review all the cards a final time before taking the exam.

Supplementary Study Materials

In addition to the Brightwood learning system, materials from industry-standard sources may prove useful in your studies. Candidates should consult the list of exam references in the NCARB guidelines for the council's recommendations and pay particular attention to the following publications, which are essential to successfully completing this exam:

International Code Council (ICC)
International Building Code

National Fire Protection Association
Life Safety Code (NFPA 101)

Test-Taking Advice

Preparation for the exam should include a review of successful test-taking procedures—especially for those who have been out of the classroom for some time. Following is advice to aid in your success.

Pace yourself.

Each division allows candidates at least one minute per question. You should be able to comfortably read and reread each question and fully understand what is being asked before answering. Each vignette allows candidates ample time to complete a solution within the time allotted.

Read carefully.

Begin each question by reading it carefully and fully reviewing the choices, eliminating those that are obviously incorrect. Interpret language literally, and keep an eye out for negatively worded questions.

Guess.

All unanswered questions are considered incorrect, so answer every question. If you are unsure of the correct answer, select your best guess or mark the question for later review. If you continue to be unsure of the answer after returning the question a second time, it is usually best to stick with your first guess.

Review difficult questions.

The exam allows candidates to review and change answers within the time limit. Use this feature to mark troubling questions for review upon completing the rest of the exam.

Choose the best answer.

Many candidates fall victim to questions seeking the "best" answer. In these cases, it may appear at first glance as though several choices are correct. Remember the importance of reviewing the question carefully and interpreting the language literally. Consider the following example.

1. Which of these cities is located on the east coast of the United States?
   - **A.** Boston
   - **B.** Philadelphia
   - **C.** Washington, D.C.
   - **D.** Atlanta

At first glance, it may appear that all of the cities could be correct answers. However, if you interpret the question literally, you'll identify the critical phrase as "on the east coast." Although each of the cities listed is arguably an "eastern" city, only Boston sits on the Atlantic coast. All the other choices are located in the eastern part of the country but are not coastal cities.

ABOUT BRIGHTWOOD

Thank you for choosing Brightwood Architecture Education as your source for ARE preparation materials. Brightwood brings its experience and history to the world of architectural education, pairing unparalleled resources with acknowledged experts in ARE content areas to bring you the very best in licensure study materials.

Only Brightwood Architecture offers a complete catalog of individual products and integrated learning systems to help you pass all six divisions of the ARE. Brightwood's ARE materials include study guides, QBanks, and flashcards. Products may be purchased individually or in division-specific learning systems to suit your needs. These systems are designed to help you better focus on essential information for each division, provide flexibility in how you study, and save you money.

To order, please visit
www.brightwoodarchitecture.com
or call 877.523.8208.

LESSON ONE 1

THE ARCHITECTURAL DESIGN TEAM

STRUCTURING THE ARCHITECTURAL DESIGN TEAM

As a general introduction to the topic of Project Management, this brief lesson begins the discussion by looking at how design teams can be structured, coordination issues involved in working with consultants, and issues to consider when assembling a team to work on a sustainable design project. The architect can act as the sole provider of design services if the architect's firm has experienced and qualified in-house staff who can provide the necessary engineering and other specialty services that are required on a project. However, most architects typically form alliances with other firms to provide these services.

In a typical alliance, the architect has the prime contract with the owner and then subcontracts services to other professional firms that act as the architect's consultants for a project. Consultants can include structural, mechanical, electrical, plumbing, civil, or acoustical engineers; landscape design firms; kitchen design consultants; information technology/communications firms; and soil and construction testing services firms.

Architects may also create joint ventures with other firms, creating a single project-based entity with other architecture, engineering, or construction firms that have specific areas of expertise or geographical experience. An architect would typically form a joint venture with a construction firm as part of a design/build delivery method, and would then act as a vendor rather than as an owner's agent. Acting as a vendor would then require the architect to act on behalf of the joint venture and its best interests rather than for the owner.

An architect may also act as one of several independent design and engineering firms hired by an owner. In this situation, an owner would typically have some level of project and construction management capabilities to handle and coordinate the different contracts.

CONSTRUCTION DOCUMENTS OF CONSULTANTS

General Coordination

A coordinated and detailed response to code requirements from the entire design team is essential to the success of a project. Lesson 6 will go into more detail regarding the architect's relationship with consultants. Some of the general guidelines are noted here, however.

Initially, architects should verify that each member of the project team is working from the same set of code requirements. Consultants should inform the architect about significant aspects of their work that are required by code. Although codes generally allow several responses to requirements, they occasionally require specific design features. Consequently, architects must know which design elements may change and which may not.

Architects are responsible to notify their consultants of design decisions that have code implications.

Although architects can check for internal consistency and for apparent compliance with standards, consultants are primarily responsible for quality control of their own work.

Architects should review consultants' construction documents with the construction process in mind. The sequence of construction and workability of the scheme throughout the construction process must be considered. Major building elements must fit into place at the appropriate time and without disrupting other ongoing activities.

Architects' consultants must be involved in scheduling to enable major items to be available when needed. Contractors are often selected too late to order long-lead-time equipment in a timely manner. One solution is for the owner, on the advice of the architect and consultants, to order equipment directly. When a contractor is subsequently selected, purchase orders are assigned from owner to contractor. Upon delivery, the items are received and installed in the same way as if the contractor had been involved from the beginning.

Consultants must also be aware of overall construction schedules and, within these schedules, pertinent installation periods. If a new chiller or cooling tower is required before summer, or a new boiler or heating plant before winter, engineering designs must allow equipment to be built and installed in time. Or, if construction must occur during winter months, structural engineers may want to avoid the use of reinforced masonry, which requires special measures to protect mortar from freezing.

THE SUSTAINABLE PROJECT DESIGN TEAM

Is a sustainable design organized and implemented differently than a conventional design?

Design Team

What kind of design team is necessary for a sustainable project?

The scope of sustainable design invites an expanded team approach, which may include the following:

- Architects or engineers (structural, MEP) with energy modeling experience

- A landscape architect with a specialty in native plant material
- A commissioning expert (if LEED employed)
- An engineer/architect with building modeling experience

The design team for a sustainably designed project tends to have a larger pool of talent than a typical architectural project. Because the buildings will be more holistic, the sustainable design team will have additional consultants that bring a broader range of experience and innovation to the project. Wetlands, scientists, energy efficient lighting consultants, native plant experts, or commissioning engineers are examples of the additional talent that may be added to sustainable design project.

As with any architectural design, there is a hierarchy of design goals:

- *Initial imperatives* such as budget, timing, image, and program necessities
- *Subjective goals* such as a functionality improved and more pleasing work environment, pleasing color schemes, and landscaping that complements the architecture
- *Specific goals* such as more open space, more natural light, less water usage, and adjacency to public transportation

And with the inclusion of sustainability, there may be additional goals:

- *Initiatives that are specific to sustainability* such as fewer toxins brought into the space, daylighting in all spaces with people occupancies, less overall energy consumed, less water usage, adjacency to public transportation, and improved indoor air quality
- Desire to exceed existing standards such as ASHRAE, USGBC, or American Planning Association (APA)

SUMMARY

The integration of the design team typically relies on the architect's ability to coordinate and manage the resources at hand. As challenging as the task may be, it is ultimately one of the most important steps towards the realization of a successful project.