INTRODUCTION

ABOUT THIS BOOK

ARE 5 Review Manual is tailored to the needs of those studying for version 5 of the Architect Registration Examination (ARE 5). Although there is no substitute for a good formal education and the broad-based experience provided by your internship with a practicing architect, this book will help direct your study efforts to help you pass the ARE 5.

ARE 5 Review Manual is organized into six divisions that correspond to the six divisions of the ARE.

- Division 1: Practice Management
- Division 2: Project Management
- Division 3: Programming & Analysis
- Division 4: Project Planning & Design
- Division 5: Project Development & Documentation
- Division 6: Construction & Evaluation

Each division of the book is divided into chapters that cover all the subject areas included in the corresponding ARE division.

Wherever practical, these subject areas are covered in the same order as they are listed in the exam specifications. To avoid repetition and make your review more efficient, however, this order is occasionally modified slightly so that related subject areas can be discussed together.
For example, according to NCARB’s specifications, the first division of the ARE, “Practice Management,” covers the following subject areas.

- Business Operations
- Finances, Risk & Development of Practice
- Practice-Wide Delivery of Services
- Practice Methodologies

Accordingly, Division 1 of this book, “Practice Management,” contains these chapters.

- Business Operations
- Financial and Risk Management
- Delivery of Services

Development of practice is more closely connected with business operations than it is with financial and risk management, so development of practice is discussed as part of the “Business Operations” chapter. Similarly, the subject area of practice methodologies is closely related to that of delivery of services, so practice methodologies are discussed in the “Delivery of Services” chapter.

Even when the order is slightly different, all the subject areas listed in the exam specifications for a division of ARE 5 are covered within the corresponding division of the book.

In the ARE, there is considerable overlap among the various divisions and what you need to study to prepare for them. One subject area might be relevant to Divisions 1 and 2, another to Divisions 2, 3, and 6, and a third to Divisions 3, 4, and 5. For this reason, ARE 5 Review Manual covers topics from all six divisions in a single volume. Where appropriate, we’ve included cross references to material in other chapters that you may want to add to your review.

Scattered throughout the book are over 150 example questions. Some of these are multiple-choice questions like the ones on the exam; others are open-ended. These are meant to help you absorb the material, and many of them are easier than the questions on your exam are likely to be.

It is a very good idea, however, to practice on questions that are similar in format and difficulty to those on the exam. Practice problems and practice exams can be found in two companion books, ARE 5 Practice Problems and ARE 5 Practice Exam, respectively. Like ARE 5 Review Manual, each of these books covers all six divisions.

THE ARCHITECT REGISTRATION EXAMINATION

The Architect Registration Examination (ARE) is a uniform test administered to candidates who wish to become licensed architects after they have served their required internships. It is given throughout the United States, the U.S. territories, Canada, England, People’s Republic of China, and United Arab Emirates. The ARE has been developed to protect the health, safety, and welfare of the public by testing a candidate’s entry-level competence to practice architecture. Its content relates as closely as possible to situations encountered in practice. It tests for the kinds of knowledge, skills, and abilities required of an entry-level architect, with particular emphasis on those services that affect public health, safety, and welfare.

In order to accomplish these objectives, the exam tests for

- knowledge in specific subject areas
- the ability to make decisions
- the ability to consolidate and use information to solve a problem
- the ability to coordinate the activities of others on the building team
The ARE also includes professional practice and project management problems, and problems that are based on particular editions of codes.

The ARE is developed by the National Council of Architectural Registration Boards (NCARB) and is administered by Prometric. Prometric serves as NCARB’s test center administration consultant and operates and maintains the test centers where the ARE is administered. Alpine Testing Solutions, Inc. serves as NCARB’s test content and candidate management consultant for the ARE.

Although the responsibility for professional licensing rests with individual states, every state board requires successful completion of the ARE to achieve licensure. One of the primary reasons for a uniform test is to facilitate reciprocity—that is, to enable an architect to more easily gain a license to practice in states other than the one in which he or she was originally licensed.

The ARE is administered on and graded entirely by computer. All divisions of the exam are offered six days a week at a network of Prometric test centers. The results are scored by computer, and the results are forwarded to individual state boards of architecture, which process them and notify candidates. If a candidate fails a division, he or she must wait at least 60 days before retaking that division.

First Steps

As you begin to prepare for the exam, you should first obtain current copies of the Your Guide to ARE 5.0 (ARE Guidelines) and the ARE 5.0 Test Specification from NCARB. The ARE Guidelines give instructions on how to apply, pay for, and take the ARE, and other useful information. ARE 5.0 Test Specification describes the six divisions of the exam; for each division, it gives the major subject areas and what percentage of the questions in that division will come from each subject area. You can download PDF versions at the NCARB website, ncarb.org, or you can request printed copies through the contact information provided on that website.

The NCARB website also gives current information about the exam, education requirements, training, examination procedures, and NCARB reciprocity services. It includes sample scenarios of the computer-based examination process, examples of costs associated with taking the computer-based exam, and descriptions of new question types. The PPI website is also a good source of answers to frequently asked questions about the exam (ppi2pass.com/arefaq).

To register as an examinee, you should follow the registration requirements of the board in the state, province, or territory where you want to be registered. The exact requirements vary from one jurisdiction to another, so contact your local board. Links to state boards can be found at ppi2pass.com/faqs/architecture-state-boards.

As soon as NCARB has verified your qualifications, you can begin scheduling examinations. The exams are offered on a first come, first served basis and must be scheduled at least 72 hours in advance. See the ARE Guidelines for instructions on finding a current list of testing centers. You can take the exams at any location, even outside the state in which you intend to become registered.

You can schedule any division of the ARE at any time and may take the divisions in any order. Divisions can be taken one at a time, to spread out preparation time and exam costs, or they can be taken together in any combination. However, you must pass all six divisions of the ARE within a single five-year period. This period, or “rolling clock,” begins on the date of the first division you pass. If you have not completed the ARE within five years, the divisions that you passed more than five years ago are no longer credited, and those division exams must be retaken. Your new five-year period begins on the date of the earliest division you passed within the most recent five years.

Examination Format

The ARE is organized into six divisions that test various areas of architectural knowledge and problem-solving ability.

Practice Management

80 questions, 3.5 hours
Project Management
95 questions, 4 hours

Programming & Analysis
95 questions, 4 hours

Project Planning & Design
120 questions, 5 hours

Project Development & Documentation
120 questions, 5 hours

Construction & Evaluation
95 questions, 4 hours

Past experience suggests that there is quite a bit of overlap among these divisions. Problems that seem better suited to the Project Planning & Design division may show up on the Construction & Evaluation division, for example, and problems on architectural history and building regulations might show up anywhere. That is why it is important for you to have a comprehensive strategy for studying and taking the exams.

The ARE is a computer-based exam (CBT). There are six kinds of problems on the exam: multiple-choice, check-all-that-apply, quantitative fill-in-the-blank, drag-and-place, hot spot, and case study. Each division includes between 80 and 120 questions along with one or two case studies.

Each case study is a collection of questions that includes a description of a scenario with a related set of resource documents (e.g., drawings, specifications, code resources). Case studies require you to assess multiple pieces of information and make judgments based on the context provided.

Multiple-Choice Problems
There are several types of multiple-choice problems.

One type of multiple-choice problem is based on written, graphic, or photographic information. You will need to examine the information and select the correct answer from four given options. Some problems may require calculations. A second type of multiple-choice problem describes a situation that could be encountered in actual practice. Drawings, diagrams, photographs, forms, tables, or other data may also be given. The problem requires you to select the best answer from four options.

Keep in mind that multiple-choice problems often require you to do more than just select an answer based on memory. At times it will be necessary to combine several facts, analyze data, perform a calculation, or review a drawing. You will probably not need the entire time allotted for the multiple-choice sections. If you have time for more than one pass through the problems, you can make good use of it.

Check-All-That-Apply Problems
In this variation of a multiple-choice problem, six options are given, and you must choose all the correct options. The problem tells how many of the options are correct, from two to four. You must choose all the correct options to receive credit; partial credit is not given.

Fill-in-the-Blank Problems
In this type of problem, you must fill a blank with a number that you have derived from a table or a calculation.

Hot Spot Problems
Hot spot problems are used to assess visual judgment, evaluation, or prediction. Hot spot problems include the information needed to make a determination, along with an image (e.g., diagram, floor plan).
and instructions on how to interact with the image. The problems will indicate that you should place a single target, also known as a hot spot icon, on the base image in the correct location or general area. On the exam, you will place the target on the image by moving the computer cursor to the correct location on the image and clicking on it. You will see crosshairs to help you position the point of click. You will be able to click on an alternate spot if you think your first choice is not correct. Your choice is not registered until you exit the problem. You can click anywhere within an acceptable area range and still be scored as correct.

**Drag-and-Place Problems**

Another ARE 5 problem type is drag-and-place. Whereas hot spot problems involve placing just one target on the base image, drag-and-place problems involve placing two to six design elements on the base image. Drag-and-place problems are used to assess visual judgment or evaluation with multiple pieces of information. The problem statement describes what information is to be used to make the determination, and provides instructions on how to interact with the image or graphic item.

A drag-and-place problem, for example, may require you to drag and place design elements such as walls or beams onto the base image. On the exam, you will use the computer cursor to place the elements on the image by clicking and holding elements and dragging and releasing the elements on the correct location on the image. Depending on the question, you may use an element more than once or not at all. This type of question also provides an acceptable area range for placing the elements. The range may be small for questions about a detail or large for something like a site plan.

**Case Study Problems**

Each division exam includes one to two case studies. Case studies are performance item types comprising a scenario, a set of related resource documents (for example, code resources, drawings, and specifications), and a set of case study-specific problems. During the exam, you will be able to click on browser-like tabs at the top of the computer screen and flip back and forth between the case study scenario and resource documents. The case studies will test your ability to examine and use multiple pieces of information to make decisions about scenarios that could be encountered in the practice of architecture.

Case study problems may be multiple-choice, check-all-that-apply, fill-in-the-blank, hot spot, or drag-and-place.

**STUDY GUIDELINES**

After many years of higher education, you probably have a good idea of the study method that works best for you. The trick is figuring out how to apply that to the ARE. Unlike many college courses, there is not a single textbook or set of class notes from which all the exam problems will be derived. The exams are very broad and draw problems from multiple areas of knowledge.

The first challenge, then, is figuring out what to study. The ARE is never quite the same exam twice. The field of knowledge tested is always the same, but the specific problems asked are drawn randomly from a large pool, and the problems will differ from one candidate to the next. For example, one division may contain many code-related problems for one candidate and only a few for the next. This makes preparing for the ARE a challenge.

Your method of studying for the ARE should be based on both the content and form of the exam as well as on your school and work experience. Because the exam covers such a broad range of content, it cannot possibly include every detail of practice. Rather, it tends to focus on what is considered entry-level knowledge and on knowledge that is important for the protection of the public's health, safety, and welfare. Other types of problems are asked, too, but these two kinds of knowledge should be the focus of your review schedule.

Your work experience should also help you determine what areas to study the most. If, for example, you have been working with construction documents for several years, you will probably need less review in that area than in others you have not had much experience with.
The ARE 5 Review Manual and its companion books are structured to help you focus on the topics that are more likely to be included in the exam in one form or another. Some subjects may seem familiar or may be easy to recall from memory, and others may seem completely foreign; the latter are the ones to give particular attention to. It may be wise to study additional sources on these subjects, take review seminars, or get special help from someone who is knowledgeable in the topic.

A typical candidate might spend about forty hours preparing for and taking each division exam. Some will need to study more, some less. Forty hours is about one week of studying eight hours a day, or two weeks of four hours a day, or a month of two hours a day, along with reasonable breaks and time to attend to other responsibilities. As you probably work full time and have other family and personal obligations, it is important to develop a realistic schedule and do your best to stick to it. The ARE is not the kind of exam you can cram for the night before. Also, since the fees are high and retaking a test is expensive, you will want to do your best and pass in as few tries as possible. If you allow enough time to study and you go into each exam well prepared, you will be better able to relax and concentrate on the problems.

The following steps may provide a useful structure for an exam study program.

Step 1: Start early. You cannot review for a test like the ARE by starting two weeks before the date.

Step 2: Start by reviewing the ARE Guidelines and the ARE 5.0 Test Specification.

Step 3: Go through the ARE 5 Review Manual quickly to get a feeling for the scope of the chapters and how the major topics are organized.

Step 4: Based on your review in Step 3 and on a realistic appraisal of your strong and weak areas, set priorities for study and determine which topics need more study time.

Step 5: Divide review subjects into manageable units and organize them into a sequence of study. It is generally best to start with the less familiar subjects. Based on the exam date and plans for beginning study, assign a time limit to each study unit. Your knowledge of a subject should determine the time devoted to it. You may want to devote an entire week to earthquake design if it is an unfamiliar subject, and only one day to timber design if it is a familiar one. In setting up a schedule, be realistic about other life commitments as well as your personal ability to concentrate on studying over extended periods of time.

Step 6: Begin studying, and stick with the schedule. Of course, this requires self-discipline. The job should be easier if you have started early and if you are following a realistic schedule that allows time for recreation and personal commitments.

Step 7: Stop studying new material a day or two before the exam. By this time, no amount of additional cramming will help. At the very least, spend the evening before the exam relaxing, and get plenty of sleep that night. On the morning of the exam, a light review of some of the areas you’ve already studied can be helpful.

There are many schools of thought on the best order for taking the divisions. One factor to consider is the 60-day waiting period before you can retake a particular division. It is never fun to predict what you might fail, but if you know that a specific division might give you trouble, consider taking that exam near the beginning. You might be pleasantly surprised when you receive your results, but if not, as you work through the rest of the exams, the clock will be ticking and you can schedule the retest as soon as 60 days in the future.

On the other hand, don’t tackle all your weakest subjects first. Make one of your early exams one that you feel fairly confident about. It is nice to get off on the right foot with a PASS.

Here are some additional study tips.

• Learn concepts first, and then details later. For example, it is much better to understand the basic ideas and theories of waterproofing than it is to attempt to memorize all the specific waterproofing methods and their details. Once the concept is clear, the details are much easier to learn and to apply during the exam.
• Use the ARE 5 Review Manual's index to focus on particular subjects in which you feel weak or subjects that can apply to more than one division.

• Brush up on architectural history before taking any of the divisions. Know major buildings and their architects, particularly structures that are representative of an architect’s philosophy (for example, Le Corbusier and the Villa Savoye) or that represent “firsts” or “turning points.” These have a way of turning up in any of the divisions.

• Try to schedule your exams so that you will have enough time on exam day to get yourself ready, eat, and review a little. If you will have a long drive to the testing center, try to avoid having to drive during rush hour. Alternatively, plan to spend the night before in a hotel near the testing center.

• If you are planning to take more than one division at a time, do not overstudy any one portion of the exam. It is generally better to review the concepts than to try to become an overnight expert in one area. For example, you may need to know general facts about built-up sections (plate girders), but you will not need to know how to complete a detailed design of a built-up section.

• Even though you may have a good grasp of the information and knowledge in a particular subject area, be prepared to address problems on the material in a variety of forms and from different points of view. For example, you may have studied and know definitions of terms in a subject area, but you will also need to be able to apply that knowledge when a problem uses a term as part of a more complex situation.

• Solve as many sample problems as possible, including those in ARE 5 Practice Problems, ARE 5 Practice Exam, and any other books that are available.

• Take advantage of the community of intern architects going through this experience with you. Some local AIA chapters offer ARE preparation courses, or they may be able to help you organize a study group with other interns in your area. Visit website forums to discuss the exam with others who have taken it or are preparing to take it. Even though the particular problems on the ARE are different for each candidate, it is a good idea to get a feeling for the subject areas that previous candidates have found particularly troublesome.

• Try to relax as much as possible during study periods and during the exam itself. Worrying is counterproductive. If you have worked diligently in school, have obtained a wide range of experience during internship, and have started exam review early, then you will be in the best possible position to pass the ARE.

TAKING THE EXAM
What to Bring
Bring multiple forms of photo ID, including a government-issued photo ID, to the test site. It is neither necessary nor permitted to bring any reference materials or scratch paper into the test site. Pencils and scratch paper are provided by Prometrics and must be returned when leaving the exam room. Earplugs are also provided. Leave all your books and notes in the car. Most testing centers have lockers for your keys, small personal belongings, and cell phone. Do not bring a calculator into the test site. A calculator built into the testing software will be available in all divisions.

Arriving at the Testing Center
Allow plenty of time to get to the exam site to avoid transportation problems such as getting lost or stuck in traffic jams. If you can, arrive a little early, and take a little time in the parking lot to review one last time the formulas and other things you have decided to memorize. Then relax, take a few deep breaths, and walk to the exam site.

Once at the exam site, you will check in with the attendant, who will verify your identification. After you check in, you will be shown to your testing station.

When the exam begins, you will have an opportunity to click through a tutorial that explains how the computer program works. You will probably want to read through it for your first exam, but after that
initial exam, you will know how the software works and you won’t need the tutorial. Take a deep breath, organize your paper and pencils, and take advantage of the opportunity to dump all the facts floating around in your brain onto your scratch paper—write down as much as you can. This includes formulas, ratios (“if \( x \) increases, \( y \) decreases”), and so on—anything that you are trying desperately not to forget. If you can get all the things you’ve crammed at the last minute onto that paper, you will be able to think a little more clearly about the problems on the screen.

**Exam Tips**

Here are some tips for taking the exam.

- Go through the entire exam in one somewhat swift pass, answering the problems that you are sure about and marking the others so you can return to them later. If a problem requires calculations, skip it for now unless it is very simple. Then, go back to the beginning and work your way through the exam again, taking a little more time to read each problem and think through the answer.
- Another benefit of initially going through the entire exam is that occasionally there is information in one problem that may help you answer another problem somewhere else.
- If you are very unsure of a problem, pick your best guess, mark it, and move on. You will probably have time at the end of the test to go back and recheck these answers. But, remember, your first response is usually the best.
- Always answer all the problems. An unanswered problem is counted wrong, so even if you are just guessing, it is better to choose an answer and have a chance of being correct than to skip the problem and be certain of getting it wrong. When faced with four options, the old SAT strategy of eliminating the options that are definitely wrong and making your best guess among the two or three that remain applies to the ARE, too.
- Some problems may seem too simple. Although a few very easy and obvious problems are included on the ARE, more often the simplicity should serve as a red flag to warn you to reevaluate the problem. Look for an exception to a rule or for special circumstances that make the obvious, easy response incorrect.
- Watch out for absolute words in a problem, such as “always,” “never,” and “completely.” These are often a clue that some little exception exists, turning what reads like a true statement into a false one or vice versa.
- Occasionally there may be a defective problem. This does not happen very often, but if it does, make the best choice possible under the circumstances. Flawed problems are usually discovered, and either they are not counted on the test or any one of the correct answers is credited.

**AFTER THE EXAM**

When you have clicked the button to end the test, the computer may prompt you to provide some demographic information about yourself, your education, and your experience. Then gather your belongings and turn in your scratch paper and materials—you must leave them with the proctor. For test security reasons, you cannot remove anything from the site.

If you should encounter any problems during the exam or have any concerns, be sure to report them to the test site administrator and to NCARB as soon as possible. If you wait longer than 15 days after your test, NCARB will not respond to your complaint. You must report your complaint immediately and directly to NCARB and copy your state registration board for any hope of assistance.

Then, it is all over but the wait for your results via email. How long it takes to get your scores will vary with the efficiency of your state registration board, which reviews the scores from NCARB before passing along the results. A wait of at least four weeks is typical.