

AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

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**AGC CERTIFICATE OF MANAGEMENT—
BUILDING INFORMATION MODELING (CM-BIM)
CANDIDATE GUIDE
(REVISED ASSESSMENT FOR SECOND EDITION UNITS 1 AND 2 AND
FIRST EDITION 3 AND 4)
SEPTEMBER 2013**

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The CM-BIM Candidate Guide is designed to give candidates of the CM-BIM exam details and guidance regarding successful completion of the credential. Information in this document represents current policies and processes for the AGC CM-BIM credential and supersedes information included in any previously published information.

Please read the entire document including all policies, procedures and requirements to best prepare you for the exam.

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Credential Prerequisite Information

In order to achieve the Associated General Contractors of America (AGCA) Certificate of Management—Building Information Modeling (CM-BIM) designation, candidates must complete the four BIM Education Program courses and achieve a passing score or above on the CM-BIM exam. **The exam is based on the learning objectives in the BIM Education Program.**

Unit 1 - BIM 101: An Introduction to Building Information Modeling

Unit 2 - BIM Technology

Unit 3 - BIM Contract Negotiation and Risk Allocation

Unit 4 - BIM Process, Adoption and Integration

In order to qualify for successful completion of these courses, CM-BIM candidates must:

- Complete each of the four courses from start to finish prior to application for the exam;
- Receive instruction, by an individual who has been approved by AGCA as meeting the BIM Education Program Instructor Qualifications for that unit, for the full duration of each unit;
- Use the Participant's Manual as a learning aide during the class and ensure that the intended learning outcomes have been achieved;
- For each unit, completely fill out and submit the original Participant's Registration and Course Evaluation Form, found in the back each Participant's Manual to AGCA. Receipt of these forms, signed by approved instructors, is the only way for completion of these courses to be recorded in the BIM Education Program National Database, the master record for course completion.

Exam Development

AGCA formed two committees responsible for exam development. The Assessment Committee, made up of course developers and subject matter experts, developed the specifications, reviewed the final exam and set the passing score. The Assessment Committee will serve as the CM-BIM Governance Committee.

Passing Score

Candidates who take the revised assessment and receive a 91 out of a possible 125 will earn the CM-BIM designation. The passing score was determined by a statistical formula during the initial beta testing period. The exam is designed only to distinguish those who have the basic level of knowledge from those who do not. There is no evidence that someone who receives a very high score on the exam will perform significantly better on the job than someone whose score falls exactly at the passing point.

Computer-Based Testing

The CM-BIM is a computer-based exam requiring candidates to use their own laptops for testing at a licensed AGC Chapter test center. AGCA has contracted with ExamSoft Worldwide to provide the testing technology to deliver the exam and collect the credential fee.

ExamSoft ensures security through the entire testing process. During the exam the computer is completely locked down, and blocked from the Internet, all applications and functions. In addition, candidate's activities are captured, in case there is a need for post-exam audit or remediation. Access to the Internet is *only* required to download exams (pre-exam day) and to auto-upload answers (following the exam at the test center). Candidates are encouraged to have administrative rights to the laptop on exam day.

Candidates have the ability to advance through the exam, and come back to an item if needed to make adjustments.

System Requirements

ExamSoft's minimum technical requirements apply to all laptops being used to take the CM-BIM exam. In addition, laptops running the AGC exam must have the SofTest testing engine installed.

SofTest can be used on virtually any modern computer (purchased within the last three to four years). It is not possible to take secure exams through a virtual operating system such as Microsoft's Virtual Machine, Parallels or VMware, VMware Fusion or any other virtual operating system environment. Although SofTest can be installed and registered on virtual platforms, it will only be enabled for non-secure practice exams.

PC Requirements:

- CPU = 1 GHz Pentium III or Industry Equivalent
- RAM = 1 GB
- Drives = 50 MB of free space
- Operating System = English 32-bit Versions of Windows XP, 32-bit and 64-bit Versions of Windows Vista and Windows 7. SofTest may not be used in virtual operating systems.
- Software = Internet Explorer 7.0 or later
- Internet Access for SofTest Installation, Exam Download and Upload
- Screen Resolution must be 1024x768 or higher
- Administrator level account permissions

Mac Requirements

A native Mac version of SofTest may be installed and utilized. When you attempt to download SofTest, the native Mac version will appear. In order to use SofTest on your Apple Macbook or Macbook Pro natively, you must have:

- CPU = Intel processor
- RAM = 512 MB
- Drives = 50 MB or higher free disk space

- Operating System = MAC OS X 10.5.8 or any version of 10.6 (Leopard or Snow Leopard). Mac OS X 10.7 (Lion) is not yet supported. SofTest may not be used in virtual operating systems.
- Software = Internet connection for downloading/uploading exam

Security Software

If the laptop has security software such as Norton, Trendmicro, McAfee, Kaspersky, or AVG; you may have issues running SofTest exams unless you temporarily disable your security software, or manually set it so that it allows SofTest to run. If you have any questions regarding security software, please contact ExamSoft technical support.

Software/Laptop Use and Process Overview

Exam takers must install the SofTest testing engine on their laptops. No extra computers will be available on the testing premises. Exam takers will receive the following instructions:

1. Download and Register SofTest on your laptop via the Internet **before** exam day.
2. Complete Pre-Exam Checklist (below).
3. Bring your registered laptop to the exam and complete your exam (you will not need Internet access during the exam).
4. Upload your exam via the Internet immediately following completion of the exam at the test center.

Pre-Exam Checklist

1. Read the CM-BIM Candidate Guide.
2. Access the email from ExamSoft Worldwide which will provide you with your login information and instructions to download the testing software (SoftTest) to your laptop computer (you must bring this laptop to the testing center on exam day).
3. Log In – Visit www.examsoft.com/agc and login under the Exam Takers section in the upper left corner.
4. Check Equipment – Make certain your computer meets the minimum system requirements.
5. Pay the Exam Fee – On initial login, read the payment disclaimer telling you the cost of the CM-BIM Credential Fee, which includes your SofTest license and the additional conditions required to obtain one. Click on the checkbox stating that your computer meets the minimum system requirements. Choose whether to pay via PayPal or major credit card.
6. Watch the training videos for SofTest (5 minutes).
7. Install SofTest – Download and install SofTest on *the laptop you will be using on exam day*. (NO EXCEPTIONS).
8. Register SofTest – Enter your ID# and password when prompted to register.
9. Launch SofTest and Take Mock Exam – Complete the Mock Exam and upload the answer file. You will receive a confirmation email when we receive your Mock Exam answer file. **The Mock Exam password is "AGCMOCK2"**.
10. If you experience any technical issues during the Mock Exam or are not able to confirm the upload of your AGC Mock Exam answers, contact ExamSoft before taking your laptop to the CM-BIM exam.

11. Review the Exam Day Information section and bring your laptop to your testing site on exam day.
12. Arrive on your scheduled test day at the AGC test center 30 minutes before the scheduled test time with your laptop, laptop battery and power cord.

Technical Support Contact

When installing the software, candidates should contact ExamSoft technical support for assistance if needed by phone at 866-429-8889 or 954-429-8889 or by email at support@examsoft.com.

Exam Fees and Policies

Candidate exam fee: \$550 (\$100 of which includes the application and ExamSoft testing technology fees).

Course Completion Policy: Candidates must take the exam within one year of completing the last of the four BIM Education Program units.

Cancelation Policy: If an individual needs to cancel, he/she may cancel without penalty up to 48 hours before the exam date, minus \$100 (application fee and testing technology fee, both are non-refundable and non-cancelable). If an individual needs to cancel with less than 48 hours notice, then the candidate will pay the full cancellation fee of \$150. Every effort will be made by the test center to reschedule the candidate's exam date in lieu of providing an immediate refund. After the candidate takes the exam, all fees are non-refundable regardless of outcome.

Rescheduling Policy: Candidates may reschedule their exam up to 48 hours without penalty. Candidates must contact the testing center and CM-BIM Administrator.

Pass/Fail and Retake Policies: If an individual does not pass the exam on the first attempt, the candidate may re-apply to take the exam after 60 calendar days from the previous exam date and up to three times in a calendar year. When an individual re-applies, he/she must also pay the re-exam fee of \$100. Any request to take the exam more than three (3) times in a calendar year must be submitted in writing to the CM-BIM Administrator. Exceptions to the retest policy will be reviewed by the Governance Committee and will be granted only for compelling reasons.

Late Arrival Policy: Candidates will arrive 30 minutes in advance of their test session at the test center in order to sign-in and connect to the testing software. Testing will begin promptly at the time scheduled. Candidates will not be admitted to the testing room once the test center proctor begins reading the 'welcome' message.

Candidate Feedback: If a candidate has comments or complaints regarding the certificate program (e.g., registration procedures, exam format and content, or exam administration), he/she is encouraged to share this feedback in writing on the CM-BIM Post-Exam Survey.

Complaints and Appeals: Following completion of the exam, candidates may submit, in writing to the CM-BIM Administrator at CM-BIM@agc.org, comments on any question(s), the passing score and any technical errors. In the correspondence the following must be included:

- candidate's full contact information
- test date
- location
- specific concern

Candidates are not allowed to copy test questions before leaving the testing center and do not have to recreate the exam question in the appeal correspondence. For security purposes AGCA will not release actual test questions or answers in its reply. Reply will be provided within 20 days of email receipt. Complaints and appeals will not be accepted from candidates after 30 days of the candidate's test date. AGCA will not respond to complaints from candidates that are sent to other organizations or that are provided through the test proctor. Candidates must submit appeals or complaints, directly to the CM-BIM Administrator in writing.

Validity: The CM-BIM Certificate will be valid for five (5) years. BIM Education Program courses will be updated with frequency to reflect advancements in practice and technology. It may be necessary for those achieving the CM-BIM credential to take new course modules or review refresher course material upon release in order to keep current with these advancements and the certificate.

Applying for the CM-BIM Exam

How to Complete your Application

- Go to www.agc.org/CM-BIM and click on "Application."
- Fill in the profile fields in the top portion of the application. In the address fields, use your company address (place of employment) and enter your company name and your job title. If you are not employed by a company, use your personal contact information.
- Fill in the BIM Education Program Course Completion Information portion of the application and provide course completion dates, host organization names and instructor names. In the course completion date column, if your course was held in multiple sessions, enter the date of the last session of course completion.
- Select your preferred testing location from the list of options available to you.
- Hit "submit." You will receive a confirmation email and on-screen confirmation message upon successful submission.

Application Information and Verification of Data

- The application must be completed in one session.
- Complete the application with the first and last name you used when providing completion records to AGC of America for the BIM Education Program courses and the name you would like to appear on your CM-BIM certificate once achieved. It is very important you use the same name on test day with your exam proctor as well.
- Allow 10 business days for your application to be reviewed by AGCA and to receive your email response notification..

- Candidates who receive their 'Approval' notification will receive their email Pre-Exam Checklist to perform prior to test day. Allow 10 days to complete the Pre-Exam Checklist prior to test day.

Exam Format

Exam Format

The CM-BIM is a multiple-choice exam, derived directly from the BIM Education Program. Therefore, the CM-BIM exam is designed to measure knowledge obtained during one's participation in these courses. Each question provides four answer options with one correct option. All items on the exam will be scored with the same point value. Four hours will be given to complete the exam and total exam time is calculated in the testing software.

Specifications

The exam's approximate weighting is as follows: Unit 1 course material consists of 23% of questions on the CM-BIM exam. Unit 2 consists of 24%. Unit 3 consists of 29%. Unit 4 consists of 24%.

Pre-Exam

Scheduling

Once you receive the application 'approval' notification from AGCA, you can schedule your exam with the licensed test center that you selected on your application by contacting them directly.

Reasonable and Special Testing Accommodations Pursuant to the ADA

The CM-BIM test center proctor and administrator will make reasonable efforts to accommodate eligible candidates, who provide documented evidence of their disability or need for special arrangements, with auxiliary aids and services that do not present an undue burden to the to the CM-BIM test center proctor or administrator and do not fundamentally alter the measurement of the knowledge the assessment is intended to test. If examinees require special testing arrangements, examinees must inform the CM-BIM test center proctor of special needs in writing at least three weeks prior to the scheduled test date.

Exam Day Information

Arrival at the Testing Center:

- Provide a valid government-issued identification (with photo and signature) and signature on the sign-in sheet. Acceptable forms of identification include passport, driver's license, military ID.

- Be issued a seat number, enter the testing room and be seated at the designed seat that corresponds with the number provided. An alternate seat number can be requested if necessary.
- Plug your laptop into the power source provided and test its performance.
- Power-on your laptop and click on the SofTest icon software previously installed on your laptop.
- Click, download exam files.
- Log-in and enter your password. Follow the instructions of the proctor to launch the exam.
- Wait patiently for the exam proctor to come to your station to enter the exam password into SofTest.
- Wait quietly at the assigned seat in preparation for the exam to begin.
- Receive a welcome message from the test center proctor. Once the welcome message begins candidates will no longer be granted entry into the testing center.

Items Prohibited from the Testing Center

- Briefcases, backpacks, large purses, or luggage—candidates can store these items in an alternative location to the testing room (e.g., hotel room, car) or in the designated area for these items in the testing center. Test center staff cannot take responsibility for holding or monitoring personal possessions.
- BIM Education Program course material, textbooks, study guides, etc. cannot, at any time, be brought to the candidate's table.
- Newspapers, note pads, or blank sheets of paper.
- Food and beverages—these items are not permitted in the testing room.

Distracting, Suspicious or Improper Behavior

If a candidate engages in behavior that is distracting or disruptive to other candidates (e.g., frequent standing and stretching), he/she will be warned that if the behavior does not stop, he/she will be asked to leave the testing room. Inappropriate behavior that is grounds for dismissal from the testing center and risk cancellation of candidate score include the following:

- Use of materials prohibited (e.g., electronic organizer, study guide)
- Use of photographic or audio recording equipment
- Attempts to access applications other than the testing software
- Recording notes on anything other than the piece of paper provided by the test proctor
- Giving assistance to, or receiving assistance from, another candidate
- Communicating in any way with other candidates
- Tampering with operation of the computer
- Failure to comply with exam instructions provided by the test center proctor

Any reports of misconduct will be reported to the CM-BIM Administrator for evaluation and further action.

Upload of Exam Answer Files on Exam Day

Immediately following completion of the exam, candidates will follow the on-screen instructions to upload answer files. If assistance is needed, the exam proctor will assist in uploading answer files.

Leaving the Testing Room upon Completion of the Exam

Candidates that have completed the exam may leave the testing room. Once the exam files have been uploaded, the candidate is no longer permitted access to the exam. Candidates who gather outside the testing room while the testing session is still in progress will be asked to leave the area.

Post Exam

Completion of CM-BIM Post-Exam Survey Form

In order to earn the CM-BIM designation and receive the certificate, candidates must complete the post-exam survey that can be accessed after the exam session. A handout will be provided to each candidate as upon leaving the testing center with instructions to access the survey.

Score Cancellation

Any candidate may elect to have his/her score canceled. If the candidate makes this decision during the administration, he/she simply should not upload their answer files after exam completion. They must sign the Score Cancellation Column of the Exam Roster in the presence of the test proctor. The candidate is not required to explain the reason for the cancellation. A request for a score cancellation also can be submitted in writing to the CM-BIM Administrator via email after the exam, but must be received within one (1) day of the exam date. Language regarding score cancellation to be used in the email includes:

I do not wish to have my examination scored. I willingly do not wish to submit my test results or receive my results to be logged in my transcript with AGC, and I understand that my score will not be reported to me or to my firm, nor will a record of my examination results be kept. I understand that I will receive no refund for my examination fees. I understand that if I want to retake the examination, I must file a new application form, and I must submit all of the supporting materials and pay the retake examination fee.

Results Notification

Candidates will receive an email from ExamSoft within 14 days of taking the exam with log-in information and instructions on how to access your score along with a diagnostic report showing your performance in each content area. This information is provided to aid in deciding whether to retake the exam and planning study efforts for future exams.

Achievement of the CM-BIM Designation

After achieving a passing score of 91/125 and completing the post-exam survey, candidates will receive a CM-BIM certificate in the mail within 30 calendar days. One copy will be provided and additional copies will be \$50 each. Candidates may use the title "CM-BIM" behind one's name immediately upon.

Privacy:

All exam results are confidential and will only be released to the candidates. Permission in writing must be obtained by the candidate to release exam results to another party.

Re-testing

If an individual does not pass the exam on the first attempt, the candidate may re-apply to take the exam after 60 calendar days from the previous exam date and up to three times in a calendar year. Please contact the CM-BIM Administrator for further instructions.

Practice Questions

Below are a few sample questions that will give candidates a better idea of what to expect on the exam.

Practice 1

The visual nature of 4D models allow construction professionals to analyze and evaluate the logic is that represented in a schedule and to reconcile

- A. available resources
- B. project square footage
- C. flow of trade crews
- D. building areas

The correct answer is A. available resources.

Practice 2

Design authoring tools are primarily used in which phases of the project lifecycle?

- 1. Pre-design
- 2. Schematic
- 3. Design development
- 4. Construction documents
- 5. Bid
- 6. Construction

- A. 1, 2, 3
- B. 1, 3, 5
- C. 2, 3, 4
- D. 3, 5, 6

The correct answer is C. 2, 3, 4.

Practice 3

In parametric 3D BIM, if a window is modified in an elevation view, it also will be modified in

- A. all views, sections, elevations and schedules throughout the model
- B. the window schedule and elevation view only
- C. the window schedule only
- D. the elevation view only

The correct answer is A. all views, sections, elevations and schedules throughout the model

Practice 4

BIM is often called a disruptive practice because

- A. a large number of people are needed to implement the process
- B. it is difficult to execute
- C. the benefits of the process are difficult to quantify
- D. it dramatically affects workflow

The correct answer is D. it dramatically affects workflow.

Contact Information

AGC of America Credential Administration

CM-BIM Administrator Email: [**CM-BIM@agc.org**](mailto:CM-BIM@agc.org)

The CM-BIM administrator should be contacted regarding the overall credential, the exam questions, the application process, exam score, complaints, appeals, etc. Candidates must contact the CM-BIM Administrator directly regarding credential issues.

ExamSoft Worldwide

Several technical support options exist for candidates and exam proctors. Visit www.examsoft/AGC and click on “technical support” to familiarize yourself with the full listing. ExamSoft should be contacted only regarding the testing software and technical issues related to the testing software.

Hours of Operation: Monday- Friday from 8:30 AM to 8:30 PM, Saturday-Sunday: closed (if testing occurs outside of ExamSoft’s standard hours of operation, proctors must notify the CM-BIM Administrator in order to have the necessary technical support available through ExamSoft).

Phone: 866-429-8889 or 954-429-8889

Email: support@examsoft.com

Reference

Definitions are provided in order to establish common nomenclature when discussing the CM-BIM credential. The definition list will be updated on an ongoing basis, alongside advancements in these requirements.

Appeal/Complaint – a formal written request made for consideration of any adverse decision related to the certificate or certificate program process.

Assessment – examination used to measure learners attainment of the learning outcomes.

Application – online form to be submitted for approval to take the CM-BIM assessment.

Approval – the process in which a candidate is reviewed and approved to take sit for assessment.

BIM Education Program - refers to four instructor-led courses delivered throughout the country as part of the CM-BIM credential requirement.

Candidate – refers to an individual seeking the CM-BIM credential.

Certificate – designation awarded to the candidate for successful completion of the certificate's program prerequisites and assessments.

CM-BIM Administration Requirements – refers to a document published by AGCA that outlines specific criteria for administration of the CM-BIM credential program.

CM-BIM Administrator – refers to one or more individuals (likely an AGCA employee) designated by AGCA to act as a liaison with Chapter and Candidates regarding administration of the Credential.

Credential – refers to satisfaction of all CM-BIM requisites, including completion of the BIM Education Program and meeting or exceeding the passing score of the Exam.

Credential Program Year – refers to the 12-month period running from July 1 to June 30 in any year during which AGCA is operating the CM-BIM program.

Designation – title or trademarked label that a certificate holder is granted to use, in this case CM-BIM.

Environment – refers to the physical testing room, i.e., seating, lighting and climate control.

Exam – refers to the method used to measure the attainment of intended learning outcomes of the BIM Education Program.

ExamSoft – refers to ExamSoft Worldwide, Inc., a third-party company selected by AGCA to provide the examination technology and software to assist AGCA with administration of the credential

Exam Password – provided to Chapter proctors only (not to be viewed by candidates) in which the proctor enters into the exam software to grant each candidate access to the exam on exam day.

Exam Takers – terminology used by ExamSoft that is synonymous to "candidate."

Exam Taker ID – a candidate's email address that is used to gain access upon login to the exam software.

Item – A question on the CM-BIM exam.

Privacy – ability of individuals to control access to themselves or information about themselves and thereby reveal themselves selectively

Proctor – a disinterested third-party not related to the test-taker and not knowledgeable on the content area of the test.

Records control- process addressing which and how records are kept, by whom, for how long, and how they are disposed.

Term of validity – length of time for which the issued certificate is considered valid.