



AGC CERTIFICATE OF MANAGEMENT—
LEAN CONSTRUCTION (CM-LEAN)
CANDIDATE GUIDE
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The CM-Lean Candidate Guide is designed to give candidates of the CM-Lean exam details and guidance regarding successful completion of the credential. Information in this document represents current policies and processes for the AGC CM-Lean 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—Lean Construction (CM–Lean) designation, candidates must satisfy requirements for either Lean Construction Education Program 1st Edition (LCEP 1.0) or Lean Construction Education Program 2nd Edition (LCEP 2.0). **The exam is based on the learning objectives in the Lean Construction Education Program.**

LCEP 1.0 requires a completion of seven courses and achieve a passing score or above on the CM–Lean exam.	LCEP 2.0 requires a completion of five units and achieve a passing score or above on the CM–Lean exam.
Unit 1 Variation in Production Systems	Unit 1 Introduction to Lean Construction
Unit 2 Pull in Production	Unit 2 Process and Production Basics
Unit 3 Lean Work Structuring	Unit 3 Project Production Systems
Unit 4 The Last Planner® System	Unit 4 Lean Thinking in Field Production, Last Planner® System
Unit 5 Lean Supply Chain and Assembly	Unit 5 Lean Thinking Outside of Field Production
Unit 6 Lean Design and Pre–Construction	
Unit 7 Problem–solving Principles and Tools	

In order to qualify for successful completion of these courses, CM–Lean candidates must:

- Complete each of the seven courses for LCEP 1.0 or five units for LCEP 2.0 from start to finish prior to application for the exam.
- Receive instruction, by an individual who has been approved by AGCA as meeting the Lean Construction 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.
- Attendance of the courses must be received from course sponsors.

EXAM DEVELOPMENT

AGCA formed a committee responsible for exam development. The Assessment Committee, comprised 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–Lean Governance Committee.

PASSING SCORE

Candidates who take the exam and receive a score of at least 105 out of a possible 150 will earn the CM–Lean 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–Lean is a computer–based exam requiring candidates to use their own laptops for testing. AGCA has contracted with ExamSoft Worldwide to provide the testing technology to deliver the exam and collect the credential fee. ExamSoft virtual test proctoring solution, [ExamMonitor will be used for all virtual exams](#). The student begins by logging in through ExamID, verifying their identity through our two–step authentication process that precludes exam–taker impersonation.

Once the exam begins, ExamMonitor remote proctoring captures a continuous audio and video recording of the exam–taker using both webcam and screen capture. This recording creates a complete digital record of all the exam–taker’s actions from the first moment of the exam through the very end, giving exam administrators a full picture of the exam.

No Wi–Fi connection is required during the exam. The recording is captured locally on the exam–taker’s device. Wi–Fi is only necessary to start the exam and to upload the final recording once the exam has been completed. This eliminates Wi–Fi connectivity issues as a possible point of failure in the remote proctoring process.

For in–seat exams ExamSoft ensures security through the entire testing process. During the exam the computer is completely locked down and blocked from the Internet, as well as 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. When you take the exam, you know an answer has been selected when the bubble next to the number turns solid blue. There is also a missing answer reminder when you exit the exam.

System Requirements

ExamSoft's minimum technical requirements apply to all laptops being used to take the CM-Lean exam. In addition, laptops running the AGC exam must have the Exemplify testing engine installed. Exam taker laptops must meet minimum requirements, <https://examsoft.com/resources/exemplify-minimum-system-requirements>.

Security Software

If the laptop has security software such as Norton, Trendmicro, McAfee, Kaspersky, or AVG; you may have issues running Exemplify exams unless you temporarily disable your security software or manually set it so that it allows Exemplify 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 Exemplify testing engine on their laptops.

1. Download and Register Exemplify on your laptop via the Internet **before** exam day.
2. Complete Pre-Exam Checklist provided in your approval email.
3. 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.

Pre-Exam Checklist

1. Read the CM-Lean Candidate Guide.
2. Access the email from ExamSoft Worldwide, which will provide you with your login information and instructions to download the testing software (Exemplify) to your laptop computer (you must bring this laptop to the testing center on exam day).
3. Log In - Visit www.examsoft.com/lean and login under the Exam Takers section in the upper left corner. If it asks for sponsor name upon log-in use "AGC".
4. Check Equipment - Make certain your computer meets the minimum system requirements.
5. Pay the Exam Fee - On initial login, read the payment disclaimer informing you of the cost of the CM-Lean Credential Fee, which includes your Exemplify 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 Exemplify (5 minutes).
7. Install Exemplify - Download and install Exemplify on *the laptop you will be using on exam day*. (NO EXCEPTIONS).
8. Register Exemplify - Enter your ID# and password when prompted to register.
9. Launch Exemplify 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.

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 using your laptop to take the CM–Lean exam.

11. For virtual exams make sure you have a quiet room with no interruptions. You should have nothing on your desk space including paper (a notes section is in the software) or cell phones. You must remain at your desk space for the entirety of the exam.

For in–seat exams 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. A microphone and camera are **REQUIRED** in order to take the exam.

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. A live chat support is also available at www.examsoft.com.

EXAM FEES AND POLICIES

Candidate Exam Fee: \$575

Exam Time frame: Exam takers will have six months to take their exam from their approval date.

Course Completion Policy: Candidates should apply to take the exam within one year of completing the last of the seven LCEP 1.0 units or the five LCEP 2.0 units.

Cancelation Policy: Once a candidate applies for the exam all fees are non–refundable regardless of outcome.

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 10 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–Lean Administrator. Exceptions to the retest policy will be reviewed by the Governance Committee and will be granted only for unique circumstances.

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–Lean Post–Exam Survey.

Complaints and Appeals: Following completion of the exam, candidates may submit, in writing to the CM–Lean Administrator at CM-Lean@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
- specific concern

Candidates are not allowed to copy test questions for ANY reason 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. A reply will be provided to the candidate 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–Lean Administrator in writing.

Validity: The CM–Lean Certificate will be valid for three (3) years. Prior to the three–year anniversary, the CM–Lean holder must submit thirty (30) hours of Lean Construction–related continuing education (CE) hours.

CM–Lean holders will receive an updated digital badge, and their credential will be valid for an additional three (3) years. Click to learn more about the [CM–Lean renewal process](#).

APPLYING FOR THE CM-LEAN EXAM

How to Complete your Application

- Go to www.agc.org/CM-Lean and click on “CM–Lean Application” button on the right side of the screen.
- 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 **Lean Construction 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 Lean Construction Education Program courses and the name you would like to appear on your CM–Lean certificate once achieved.
- 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.

EXAM FORMAT

The CM–Lean is a 150 multiple–choice exam, derived directly from the Lean Construction Education Program. Therefore, the CM–Lean 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 LCEP 1.0 and LCEP 2.0 exam contains 150 questions with the following number of questions from each unit:

Questions Per Unit	LCEP 1.0	LCEP 2.0
Unit 1	19	24
Unit 2	19	24
Unit 3	18	25
Unit 4	27	41
Unit 5	27	36
Unit 6	12	
Unit 7	28	

Reasonable and Special Testing Accommodations Pursuant to the ADA

AGC of America 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. These accommodations must not present an undue burden to the CM–Lean test center and not fundamentally alter the measurement of the knowledge the exam is intended to test. If candidates require special testing arrangements, candidates must inform the CM–Lean Administrator and test center proctor of special needs in writing when an application is submitted.

EXAM DAY INFORMATION

Virtual Exams How It Works

1. Exam–taker identification is verified through ExamID at login, and students begin their assessments.
2. ExamMonitor captures audio and video footage of the exam taker as they navigate through the assessment—even within a secure testing environment with Wi–Fi disabled.
3. Once the exam is complete, the proctoring files are uploaded alongside the exam answer files and stored within ExamSoft.
4. Assessment recordings are then reviewed for any abnormalities using an artificial–intelligence system that analyzes student activity, gaze, background noise, and more.
5. Faculty and administration then receive a proctoring report for each questionable incident that highlights anomalies and provides educators with the ability to review the video recordings in question.

Camera and Microphone Rights

ExamID and ExamMonitor will require camera and microphone permissions in order to correctly proctor your exam. If you do not have these permissions enabled correctly, you could receive an error saying, "Device access denied", be unable to start your exam, or be asked for a resume code.

Items Prohibited

- You should have a quiet place free from distractions and other people.
- Lean Construction Education Program course material, textbooks, study guides, smart phones and tablets etc. cannot, at any time, be brought to the candidate's table.
- Newspapers, note pads or blank sheets of paper.
- 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– the notes tool inside the software should be used.
- Giving assistance to, or receiving assistance from, another candidate.
- Communicating in any way with others.
- Tampering with operation of the computer.

Upload of Exam Answer Files on Exam Day

Once your exam is complete, Exemplify will automatically upload your answer file along with the video recording to be proctored. Please note that it may take up to thirty minutes for your video recording to be uploaded. Keep your computer connected to the internet with Exemplify until you verify that the upload is complete.

If for some reason your computer is turned off before the upload is complete, it will automatically resume when your computer is turned on and connected to the internet.

POST EXAM

Completion of CM–Lean Post–Exam Survey Form

In order to earn the CM–Lean designation and receive the certificate, candidates must complete the post–exam survey that can be accessed after the exam session. A link to the survey will be provided to each candidate when they receive their exam score release email.

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 their score along with a diagnostic report showing their performance in each of the seven units for LCEP 1.0 or five units for LCEP 2.0. This information is provided to aid in deciding whether to retake the exam and planning study efforts for future exams.

Achievement of the CM–Lean Designation

After achieving a passing score and completing the post–exam survey, candidates will receive a CM–Lean certificate and digital badge through email within 30 calendar days. Candidates may use the title “CM–Lean” behind one’s name immediately upon notification of earning the CM–Lean credential.

Privacy

All exam results are confidential and will only be released to the candidates and the testing center. 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 within 10 calendar days from the previous exam date and up to three times in a calendar year. Contact the CM-Lean Administrator for further instructions.

CONTACT INFORMATION

AGC of America Credential Administration

CM-Lean Administrator Email: CM-Lean@agc.org

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

ExamSoft Worldwide

Several technical support options exist for candidates and exam proctors. Visit www.examssoft.com/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: 7:30 AM to 8:30 PM Eastern Time, Saturday–Sunday: Closed (if testing occurs outside of ExamSoft’s standard hours of operation, proctors must notify the CM-Lean Administrator in order to have the necessary technical support available through ExamSoft).

Phone: 866–429–8889 or 954–429–8889

Email: support@examssoft.com

REFERENCE

Definitions are provided in order to establish common nomenclature when discussing the CM-Lean 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-Lean assessment.

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

Lean Construction Education Program 1st Edition (LCEP 1.0) – refers to seven instructor-led courses delivered throughout the country as part of the CM-Lean credential requirement.

Lean Construction Education Program 2nd Edition (LCEP 2.0) – refers to five instructor-led units delivered throughout the country as part of the CM-Lean credential requirement.

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

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

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

CM-Lean 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-Lean requisites, including completion of the Lean Construction Education Program and meeting or exceeding the passing score of the Exam.

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

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 Lean Construction 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.

ExamMonitor A.I.-driven remote proctoring solution that digitally observes exam-takers with video and audio monitoring throughout the entire exam. It replaces in-person proctoring and provides confidence in the integrity of all your exams.

Exam Password – provided to candidates in the approval email.

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-Lean exam.

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

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.