



STUDY GUIDE

For the

REGISTERED EXTERIOR WALL OBSERVER (REWO®) EXAM

Prepared By
REWO Examination Development Committee

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REWO Study Guide

Table of Contents

	Page(s)
Introduction	1
References	2
Test Objectives	3
Sample Questions.....	4
Sample Exhibits	10
Answers to Sample Questions.....	13



STUDY GUIDE REWO EXAMINATION RCI, Inc.

INTRODUCTION

One early goal of RCI, Inc. was to develop a recognized and highly regarded registration program for Quality Assurance Observers. This registration program was authorized by the RCI Board of Directors in 2015. The primary beneficiaries of this program are the public, the exterior walls industry, and those who become registered.

RCI offers its REWO Program to all applicants, members and non-members. Registration is a two-part program based on an application process along with satisfactory performance on a comprehensive Internet-based examination.

This study guide outlines subjects that are addressed in the examination; however, it is not intended to be an inclusive listing of every topic. This document is strictly a guide.

The REWO exam development was completed in January 2016 in compliance with the Standard for the Accreditation of Certification Programs as published by the National Commission for Certifying Agencies (NCCA). A committee of subject matter experts followed a rigorous psychometric process in its development.

The examination is not tailored to any one particular area of observation, or to the design and construction practices unique to any geographic area. It deals primarily with exterior wall systems observations in general. It may include all phases of observation (methodology and construction) and include the following exterior wall systems: cast-in-place concrete, EIFS, masonry, precast concrete, thin stone, stucco, and wood.

In order to receive a passing score on the examination, the examinee must be thoroughly familiar with the basic methodology of Q.A.O. and have a broad knowledge of: ethics, construction documents, observer responsibilities, field observation practices, exterior wall systems, and reporting. Preparation for the exam is essential and a list of the references most frequently used in its development is provided.

The exam is offered online by Castle Worldwide, an Internet-based testing company. It consists of 75 multiple choice questions and is up to four hours in duration.

Consult <http://www.castleworldwide.com/mainsite/ibtsites> for a conveniently located testing site near you.

References*

A sample of documents/references that were used to develop the REWO Exam is as follows:

	Title	Author	Pub. Date
1	Architectural Sheet Metal Manual, 6th Edition	SMACNA	2012
2	ASTM (All Volumes Related to Exterior Walls)	ASTM	2014
3	Building Science for Building Enclosures	John F. Straube	2005
4	Construction Contract Administration Practice Guide	CSI	2011
5	CSI The Project Resource Manual: CSI Manual of Practice, 5th Edition	CSI	2004
6	Masonry Design and Detailing, 5th Edition	Christine Beall	2012
7	MasterFormat Numbers and Titles	CSI	2014
8	RCI Manual of Practice	RCI	2010
9	RCI Code of Ethics	RCI	2015
10	Sealants: The Professionals' Guide	SWRI	2013
11	SWR Institute Safety & Health Field Manual	SWR Institute	2009
12	SWR Safety Health Manual Program Guide	SWR Institute	2004

*Although many references were involved, those listed above are representative of the most frequently used in the development of the exam.

As part of the exam development process, the task force of subject matter experts systematically compiled a list of objectives that relate to the responsibilities, knowledge, and skills associated with acceptable performance within the exterior wall quality assurance observer profession. This list provided the organizational framework for the exam and is included below. The percentage of questions on the exam from each section is indicated.

Sections	Section/Objective Title	Percentage of questions from section on exam
Section 1	Construction Documents	13%
Objective 1.1	Describe the elements of construction documents	
Objective 1.2	Identify industry standards relevant to exterior wall systems	
Objective 1.3	Describe industry standard tests related to exterior wall systems	
Section 2	Observer Responsibilities	25%
Objective 2.1	Describe exterior wall observer responsibilities	
Objective 2.2	Demonstrate knowledge of ethical standards	
Objective 2.3	Demonstrate knowledge of basic measurements and calculations	
Objective 2.4	Describe basic communication skills	
Objective 2.5	Describe field observation safety practices	
Section 3	Exterior Wall Systems	22%
Objective 3.1	Describe exterior wall system materials	
Objective 3.2	Demonstrate knowledge of exterior wall system construction	
Objective 3.3	Describe exterior wall system design types	
Section 4	Field Observation Practices	23%
Objective 4.1	Describe field observation procedures during construction	
Objective 4.2	Describe field observation procedures during testing	
Section 5	Reporting	17%
Objective 5.1	Describe the elements of a field report	

REWO Sample Exam Questions

Sample questions are provided from each section of the exam and are indicative of the types of questions the examinee will encounter. Exhibits and answers have been provided at the end of the study guide. Partial credit is not given for one correct answer where two are required.

Construction Documents

1. As defined by the *RCI Manual of Practice*, which two elements are included in the contract documents? (Choose two.)
 - A. general conditions
 - B. building permits
 - C. specifications
 - D. inspection reports

2. Which documents include qualitative requirements for products, materials, and workmanship?
 - A. drawings
 - B. submittals
 - C. shop drawings
 - D. specifications

3. Which CSI division section includes specifications applicable to the installation of manufactured stone veneer over metal lath?
 - A. Division 3
 - B. Division 4
 - C. Division 7
 - D. Division 8

4. Refer to Exhibit #1.
 - . Which type of sealant failure is shown in the exhibit?
 - A. adhesive
 - B. cohesive
 - C. elastic
 - D. plastic

Observer Responsibilities

5. The installer of an exterior wall system on a large out-of-town project rotates crews at irregular intervals to help limit overtime charges.

According to the *RCI Manual of Practice*, which statement is correct in this scenario?

- A. Crew changes do not need to be documented, as installer personnel and costs are not within the scope of the REWO.
- B. Crew changes should be documented, identifying the installer's supervisory personnel on the project during each site visit.
- C. Crew changes should be recorded on the installer's pay application, and reviewed by the REWO for approval prior to submitting for payment.
- D. Overtime charges should be recorded on the installer's pay application, and reviewed by the REWO for approval prior to submitting for payment.

6. You are asked to provide a statement of qualification for an upcoming project which requires you to have an REWO credential. Although your application for the registration exam has been accepted, you have not yet successfully completed the exam.

According to the RCI Code of Ethics, which statement is true?

- A. You may list REWO under your qualifications.
- B. You may not list REWO under your qualifications, unless you add a qualifier that the credential is pending.
- C. You may not list REWO under your qualifications.
- D. You may not list REWO under your qualifications, unless you add a qualifier that someone else in your firm has the credential.

7. An REWO is on-site to document the quantity of air barrier applied that day. Workers complete work on the 4th, 5th, and 6th floors on the east elevation during the site visit. Wall segments for each floor measure 60 feet [18.3 meters] long by 10 feet [3.0 meters] tall. Each of the six window openings on the 4th floor measure 4 feet [1.2 meters] by 6 feet [1.8 meters]. Each of the four window openings on the 5th floor measure 8 feet [2.4 meters] by 6 feet [1.8 meters]. The 6th floor does not have any windows.

Approximately how many square feet [square meters] of air barrier was applied on the east elevation?

- A. 864 square feet [80 square meters]
- B. 1464 square feet [134 square meters]
- C. 1656 square feet [154 square meters]
- D. 1800 square feet [167 square meters]

8. During installation of the EIFS, the subcontractor encounters a field condition that varies from the contract documents and approved shop drawings. The subcontractor brings the field condition to the attention of the REWO.

What should the REWO recommend that the subcontractor do?

- A. Call the general contractor and verbally agree on a solution.
 - B. Issue a Request for Information (RFI).
 - C. Contact the EIFS manufacturer and obtain recommendations.
 - D. Perform the work based on the subcontractor's previous experience.
9. An REWO is performing QA observation of an exterior Portland cement plaster (stucco) wall installation from a scaffold.

According to the *Sealant, Waterproofing, and Restoration Institute Safety and Health Manual*, which personal protective equipment (PPE) should the REWO wear in addition to a hard hat?

- A. ear protection
- B. eye protection
- C. hand protection
- D. torso protection

Exterior Wall Systems

10. Which two materials are a Type 1 vapor retarder? (Choose two.)

- A. spun bond polyolefin building wrap
- B. 6 mil polyethylene sheet
- C. fiberglass-faced gypsum sheathing
- D. vinyl wall covering

11. Refer to Exhibit #2.

Which type of wall system is shown in the exhibit?

- A. mass
- B. barrier
- C. composite
- D. cavity

12. Refer to Exhibit #3.

Which type of wall system is shown in the exhibit?

- A. fiber cement
- B. wood
- C. vinyl
- D. composite

13. Refer to Exhibit #4.

Which type of wall is shown in the exhibit?

- A. barrier
- B. drainage
- C. mass
- D. rainscreen

14. Refer to Exhibit #5.

During the course of a site visit, an REWO observes that sealant has been applied to the brick ties, as shown in the exhibit, which penetrate through the metal sheathing behind a brick veneer masonry wall.

Before the bricks are laid, which two actions should the REWO take? (Choose two.)

- A. Verify that the correct ties have been installed by calling the brick tie manufacturer.
- B. Review the approved product submittals and specifications to confirm that the sealant material requirements are met.
- C. Arrange for a pull test with the sealant manufacturer to ensure that the sealant adheres to the ties and sheathing.
- D. Review the architectural drawings for the brick tie and sealant installation requirements.

Field Observation Practices

15. An REWO must be knowledgeable about which two areas? (Choose two.)

- A. building codes
- B. ASCE-07
- C. bidding instructions
- D. safety requirements

16. The REWO is onsite during a delivery of fluid-applied waterproofing.
- How should the REWO expect the materials to be delivered to the construction site?
- A. loose and on pallets
 - B. in unopened containers and packages
 - C. with the shipping label and purchase order
 - D. in boxes covered with waterproof tarps
17. A project that has a \$1000-a-day penalty clause is delayed due to inclement weather.
- In accordance with the *RCI Manual of Practice*, what is the contractor allowed to do?
- A. Request an extension of the project completion date.
 - B. Stop construction until a new completion date is established.
 - C. Void warranties on the work completed.
 - D. Void the delay penalty in the contract.
18. What are two responsibilities of the REWO? (Choose two.)
- A. Tracking production rates against milestones in a project schedule.
 - B. Directing the contractor to remove work that is not in conformance with the project documents.
 - C. Confirming material conformance with the project documents.
 - D. Ensuring the site is safe for the work being done.
19. A delivery of concrete block for a single wythe wall is delivered to the job site. The REWO questions whether the block was manufactured with the specified water repellant. The contractor performs water droplet testing on six blocks and all fail.
- In accordance with the National Concrete Masonry Association, which additional test should be performed?
- A. a full-scale mock-up test
 - B. an onsite spray bar test
 - C. an onsite RILEM tube test
 - D. a laboratory test

Reporting

20. What must a field report do?
- A.* It must report on the means and methods of construction.
 - B.* It must be objective and factual.
 - C.* It must document production rates of the contractor's employees.
 - D.* It must list all addenda, change orders, and payment requisitions.
21. What are two reasons why the REWO reports on the number of workers? (Choose two.)
- A.* to ensure that qualified individuals are completing the work according to the contract
 - B.* to identify who might be responsible for deficiencies related to a day's work
 - C.* to assist in administering the contract
 - D.* to confirm that the staffing requirements of the contract are being met

22. Refer to Exhibit #6

During a site visit, the REWO observes the condition shown in the exhibit at a recently completed EIFS wall installation.

What should the REWO include in the field report?

- A.* EIFS application occurred during wet weather conditions and did not cure properly.
- B.* EIFS will need to be removed and replaced due to deterioration.
- C.* The EIFS lamina is damaged near the downspout.
- D.* Mold has grown on the EIFS due to moisture content of sheathing behind EIFS.

Exhibit #1



Exhibit #2

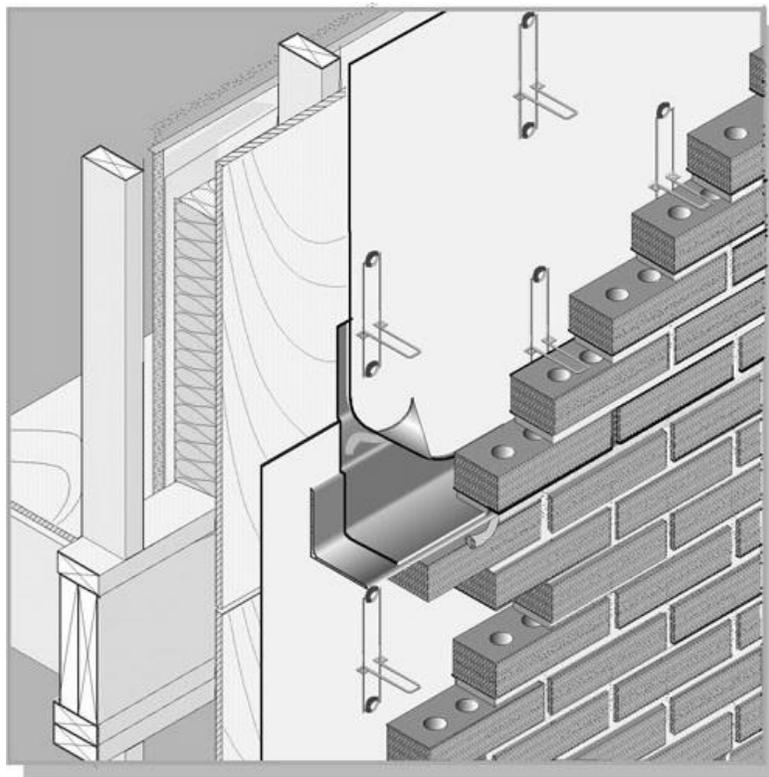


Exhibit #3



Exhibit #4



Exhibit #5

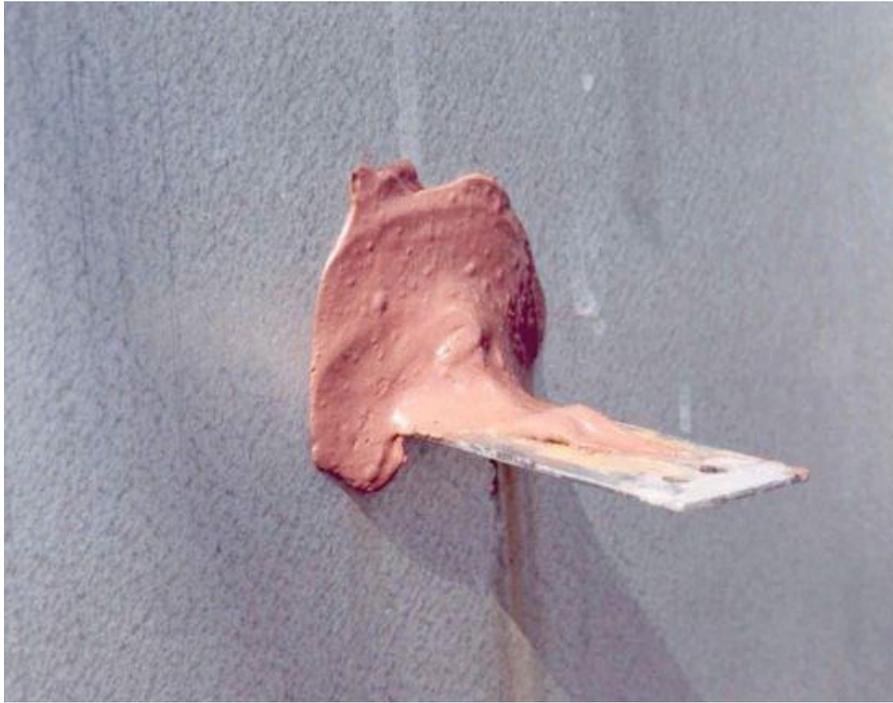


Exhibit #6



Note your answers. Review the appropriate document(s) in those areas to better understand the rationale behind the indicated correct answer.

The following courses provided by RCI are highly recommended for those pursuing the REWO designation: Building Observer Quality Assurance and Exterior Walls Quality Assurance (available late-2016).

1. A and C
2. D
3. B
4. A
5. B
6. C
7. B
8. B
9. B
10. B and D
11. D
12. C
13. C
14. B and D
15. A and D
16. B
17. A
18. A and C
19. D
20. B
21. C and D
22. C