



APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Dear RRC Applicant:

All those who desire to become Registered Roof Consultants (RRC) must substantiate to RCI, Inc. that certain requirements have been met. These requirements include verifiable levels of work experience and education, high ethical standards, and a satisfactory score on a written examination.

Applications must be received, along with the appropriate fee, at RCI ninety days prior to an exam. **The application fee is \$225 for RCI members and \$300 for non-members.** Applications received between sixty and eighty-nine days prior to an exam will be accepted with a late fee of \$50 for members and \$75 for non-members. Applications will not be accepted after sixty days prior to an exam.

After this completed application has been returned to RCI and approved, a registration form must be submitted for a specific location to take the exam (this form will be provided with the approval notification letter). Registration for a specific exam should be received at RCI no later than three weeks prior to that exam. **The cost of the exam is \$175 for RCI members and \$225 for non-members** and should be submitted with the registration form. An authorization letter and exam site regulations will then be sent shortly before the exam. The applicant is responsible for arranging to take this exam. A study guide is included with this application. One must have an approved application on file at RCI to be eligible to sit for any exam.

Approved applications are valid for **two** years and reapplication is required if the applicant does not earn the RRC title within that time period.

To maintain registration, a renewal fee will be charged and evidence of continuing educational hours must be provided. Registration must be renewed every year by December 31.

As an organization focused on advancing the roofing, waterproofing and exterior wall professions, we look forward to receiving your application and encourage your active involvement in RCI.

Sincerely,

A handwritten signature in black ink that reads "Micki Kamszik".

Micki Kamszik
Associate Director

RCI, Inc.
1500 Sunday Drive, Ste 204 Raleigh, NC 27607
(T) 919-859-0742 (F) 919-859-1328
www.rci-online.org

APPLICATION FOR REGISTERED ROOF CONSULTANT

TABLE OF CONTENTS

Please review the enclosed packet to verify that you have the following items:

Instructions	I-III
Sections 1 - 2	
Profile Information.....	1
Business Information	1
Sections 3 - 4	
Education.....	2
Professional History	2
Sections 5 - 9	
Personal Work Experience	3
Continuing Educational Hours	3
References	3
Standards of Ethical Practice	3
Affidavit Authorization & Release.....	3
Attachment Sheet 1 (Professional History)	4
Supplemental Sheet A (Description of Project Categories).....	5-6
Attachment Sheets 2 (Project Register).....	7-8
Attachment Sheet 3 (Summary of Points for Registration).....	9
Attachment Sheet 4 (Continuing Educational Hour Summary)	10
Attachment Sheet 5 (Reference Summary)	11
Attachment Sheet 6 (Reference Form)	12
Attachment Sheet 7 (Standards of Ethical Practice)	13
Attachment Sheet 8 (Affidavit Form).....	14
Payment Form	15
Checklist	16

INSTRUCTIONS

REGISTERED ROOF CONSULTANT APPLICATION

GENERAL REQUIREMENTS

- A. The successful RRC candidate must accomplish the following:
1. Establish that he/she has met certain minimum requirements regarding education, personal work experience, character and ethics.
 2. Take and pass a two part written examination. The examination will be offered each year at the annual national convention and at other times throughout the year as defined by RCI.
- B. The applicant shall satisfy RCI that he/she has attained and agrees to the following minimum requirements:
1. The applicant has at least 4 years of roof consulting experience and has attained a minimum of 100 points for education, professional registration and/or work experience.
 2. The applicant has secured a minimum of 70 hours of continuing education through attendance at a minimum of three (3) seminars directly related to the roofing, waterproofing, and/or exterior walls industries, e.g. RCI, BURSI, AIA, CSI, or other approved training and educational programs awarding educational units.
 3. The applicant shall have a strong moral and ethical character demonstrated by his/her references, experience and professionalism. The "Standards of Ethical Practice" for RCI are included in this application. They outline the obligations of the roof consultant to the public, the client or employer, and to the profession and the building industry. RCI will promote and conform to these "Standards."
 4. The applicant shall always be totally objective, unbiased and impartial in his/her actions relating to roof consulting.
 5. The applicant shall never have a conflict of interest or permit him/her to be placed in a position that would allow for a potential conflict of interest. Conflict of interest shall be defined as any activity or employment in which the applicant has any significant financial or other interest, or acceptance of any contribution if it would reasonably appear that such activity, employment, interest or contribution could compromise the Registered Roof Consultant's professional judgment or prevent the Registered Roof Consultant from serving in the best interest of the client or employer.
 6. The title Registered Roof Consultant, once attained, must be renewed every year. Requirements include submitting evidence of continuing educational hours in accordance with the registration renewal procedures established by RCI.

Documentation is required regarding an applicant's experience, education, professional registration, training, etc. Verification of an applicant's education and/or work experience shall be on a point system. A minimum of 100 points is required and may be obtained in one of the following ways: experience only; experience and education; experience, education, and professional registration. **EXPERIENCE IS MANDATORY FOR REGISTRATION – EDUCATION ALONE WILL NOT SUFFICE.**

C. The following assignment of points shall be implemented:

Education – High School education, or equivalent, is required. Ten (10) points shall be awarded per year of successful completion of college. A maximum of 30 points may be received if you did not earn a degree. You must furnish a transcript or diploma for all educational points.

The following maximum number of points shall apply for education:

Four year curriculum	= 40 points (industry related*)	32 points (general)
Five year curriculum	= 50 points (industry related*)	40 points (general)
Masters degree	= 10 points (industry related*)	8 points (general)
Doctorate	= 10 points (industry related*)	8 points (general)

The maximum number of points for education is 50 points.

*Architecture, engineering, construction, chemistry, roof consulting, or roof technology

Professional Registration – Twenty (20) points shall be awarded to Registered Architects (RA) and 20 points to Registered Professional Engineers (PE). Persons with dual (RA and PE) or multiple (2 RA's or 2 PE's) registrations shall receive a maximum of 20 points. (Include copy of license or registration)

Personal Work Experience – One (1) point shall be awarded per project or task in the following categories of experience related to roofing:

Category	Service Rendered or Task Performed**	Maximum No. Of points
1	Roof Condition Surveys, Audits, or Investigations	30
2	Preparation of Contract Documents (Drawings, Specs, etc)	30
3	Construction Observations/Quality Assurance Observations	30
4	Legal: Forensic Investigations, Deposition, Expert Testimony	30
5	Roof Moisture Surveys (Infrared, Nuclear, and/or Capacitance)	30
6	Laboratory Testing: Physical/Quantitative Analysis	30
7	Research Directly Related to Roofing	30
8	Publications Related to Roofing (Articles, Books, Theses)	30
9	Lectures Presented Related to Roofing (Emphasizing Education)	20
10	Roof Contracting Projects	10
11	Professional Association Active Participation (RCI, CSI, ASTM, etc.)	5

** The above items refer to services rendered or tasks performed by YOU, not by someone under your direction. Your experience as a roof consultant is being evaluated, not your management ability or the experience of your company or subordinates. See Supplement Sheet A for additional information regarding these items.

Roof consultants shall have a relatively broad base of experience. Applicant must secure points from experience in a minimum of three (3) categories. You will note that each category has a maximum number of points permitted. This is to prevent an applicant from being certified with experience in only a limited area of expertise. You may earn points from more than one category for a single project. For example, on a building on which: you performed a roof condition survey and an infrared roof moisture survey; supplemented with a nuclear gauge; gave deposition for litigation; and wrote an article which was published in a magazine – you could earn four (4) points: one for categories 1, 4, 5, and 8.

Projects with multiple buildings or locations with identical construction and service rendered shall receive a maximum of five (5) points per category, regardless of the number of buildings involved. If separate reports, specifications, etc. are provided for each building on a “stand-alone” project basis, each building then qualifies for points.

Examples of Computation of Points

Example 1: A person with 1 year of college (10 points, industry related) would require 90 points through experience (90 projects at 1 point each).

Example 2: A registered engineer (20 points) with a four-year degree (40 points, industry related) would require 40 points through experience (40 projects at 1 point each).

Example 3: A person with a four-year degree (40 points, industry related) and a one-year master’s degree (10 points, industry related) would require 50 points through experience (50 projects at 1 point each).

Example 4: A person with a high school diploma (0 points) and 40 projects as a roof contractor (10 points maximum) would require 90 points from the other categories of experience (90 projects at 1 point each).

The “PROJECT REGISTER” forms are to be completed for each project an applicant claims for experience points. Two blank sheets are provided. The applicant may attach additional copies as needed. Check multiple categories if applicable.

This is an application that is intended for completion by honorable professionals. Each application will be reviewed and evaluated. References will be checked as well. False or misleading information will result in severe penalties, including revocation of registration.

For your own protection, make a copy of your completed application before sending it to RCI.

* * * *

APPLICANT PLEASE NOTE: The Engineer’s and Architect’s Professional Registration Boards of some states include the roof consulting profession under the jurisdiction of the Professional Registration Statutes. You are responsible to meet those requirements. RCI currently has no state jurisdiction or governmental registration sanction.



APPLICATION FOR REGISTERED ROOF CONSULTANT

RCI, Inc.
1500 Sunday Dr Ste 204
Raleigh, NC 27607
(800) 828-1902 or (919) 859-0742
Fax (919) 859-1328

Date _____

Type or Print Legibly Using Black Ink Pen

SECTION 1: PROFILE INFORMATION					
Full Name	Last	First	Middle		
Home Address	Number and Street	Apt.	Box	Road/Rural Route	
	City	Country	State	Zip	E-mail
Birth	Date	City	State	Citizenship	
Have you ever applied for RCI Registered Roof Consultant classification before? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please give date of application:					
Are you a Registered Architect? <input type="checkbox"/> Yes <input type="checkbox"/> No Date of first registration: State: #: Other States:					
Are you a Registered Engineer? <input type="checkbox"/> Yes <input type="checkbox"/> No Date of first registration: State: #: Other States:					
Are you a Contractor or employed by one? <input type="checkbox"/> Yes <input type="checkbox"/> No Type: <input type="checkbox"/> General <input type="checkbox"/> Roofing State and license number for each:					
Are you employed by or own a company that manufactures, distributes, or sells roofing products or materials? <input type="checkbox"/> Yes <input type="checkbox"/> No Identify:					
What percent of your principal income do you derive as a roof consultant: %					
Do you have any conflict of interest (see page I, paragraph B-5 for definition), or do you work for, own, or have interest in any company having such conflicts? <input type="checkbox"/> Yes <input type="checkbox"/> No					
SECTION 2: BUSINESS INFORMATION					
Firm employed by: <input type="checkbox"/> Consulting <input type="checkbox"/> Architectural <input type="checkbox"/> Engineering <input type="checkbox"/> Contractor <input type="checkbox"/> Manufacturer <input type="checkbox"/> Distributor					
Name of business:					
Business street address:		City:	State:	Zip:	Telephone:
Organization: <input type="checkbox"/> Individual <input type="checkbox"/> Individual Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation <input type="checkbox"/> Other [please specify]:					

Name _____

Date _____

SECTION 3: EDUCATION

State in chronological order the name and location of each high or preparatory school, college, university or technical school attended (a high school diploma not required with 10 or more college coursework units). Also list graduate work, evening school, correspondence school, research work, apprenticeship program, etc. For college or university attendance, ask the institution to forward a CERTIFIED COPY OF YOUR TRANSCRIPT(S) to RCI. For incomplete college or university work, indicate the number of semesters completed. Attach additional sheets as required; place name in upper right margin.

CIRCLE LAST YEAR COMPLETED: Grade School: 1 2 3 4 5 6 7 8 High School: 9 10 11 12 College: 1 2 3 4 5 6 7 8

School	Name and Address of Institution	Dates Attended Mo/Yr to Mo/Yr	Did you Graduate?	Semesters Completed	Major/Technical Course	Degree
High School						
Junior College						
College						
Other						
Other						

SECTION 4: PROFESSIONAL HISTORY AND EMPLOYMENT

On Attachment Sheet 1, provide information regarding your personal work history, background, and experience directly related to roofing. Do not include employment in non-related fields or employment.

SECTION 5: PERSONAL WORK EXPERIENCE

On Attachment Sheet 2 (“PROJECT REGISTER”) list projects for which you claim personal work experience. A minimum of ten (10) projects from three (3) separate service categories must include a project contact and telephone number. You may be asked to provide additional project contact information during the application approval process. The items below refer to services rendered or tasks performed by you, not by someone under your direction. Your experience as a roof consultant is being evaluated, not your management ability or the experience of your company or of your subordinates. See Supplement Sheet A for additional information regarding the categories listed below.

One (1) point shall be awarded per project or task in the following categories of experience related to roofing. You must earn points in a minimum of three (3) categories.

Category	Service Rendered or Task Performed	Maximum Number of Points
1.....	Roof Condition Surveys, Audits or Investigations.....	30
2.....	Preparations of Contract Documents (Drawings, Specifications, etc.).....	30
3.....	Construction Observations/Quality Assurance Observations.....	30
4.....	Legal: Forensic Investigations, Deposition, Expert Testimony.....	30
5.....	Roof Moisture Surveys (Infrared, Nuclear, and/or Capacitance).....	30
6.....	Laboratory Testing: Physical/Quantitative Analysis.....	30
7.....	Research Directly Related to Roofing.....	30
8.....	Publications Related to Roofing (Articles, Books, Thesis).....	30
9.....	Lectures Presented Related to Roofing (Emphasizing Education).....	20
10.....	Roof Contracting Projects.....	10
11.....	Professional Association Active Participation (RCI, CSI, ASTM, etc.).....	05

On Attachment Sheet 3 you are to summarize your personal work experience, education and professional registration. A minimum of 100 points is required for registration.

SECTION 6: CONTINUING EDUCATIONAL HOURS EARNED

On Attachment Sheet 4, provide information regarding your receipt of continuing educational hours through your attendance at seminars, training courses, etc. directly related to the industry. You are required to have attended a minimum of three (3) roofing, waterproofing and/or exterior walls related seminars (i.e. RCI, AIA, BURSI, or other approved training and education programs) and shall have documentation of such attendance. Documentation should be in the form of a certificate or letter from the sponsoring organization stating the name of the course, date course was held, and number of hours awarded. Minimum of 70 credit hours required.

SECTION 7: REFERENCES

On Attachment Sheet 5, give names and addresses of five references. **Three** must know you professionally and be a Registered Architect, Registered Engineer, or Registered Roof Consultant. References may **not** be a relative of yours, a present employer, or fellow employee from your current firm. Each reference listed must have direct personal knowledge of your character, ethics and professional competence. Return this summary sheet to RCI. **Make five copies** of Attachment Sheet 6 and complete the top portion of the REFERENCE FORM for each reference listed. Please mail these forms directly to the individuals you have selected.

SECTION 8: STANDARDS OF ETHICAL PRACTICE

The “Standards of Ethical Practice” for RCI (Attachment Sheet 7) outline the obligations of the roof consultant to the public, the client, the employer, the profession, and the building industry. The Registered Roof Consultant must promote and conform to these Standards.

SECTION 9: AFFIDAVIT CERTIFICATION, AUTORIZATION AND RELEASE

Please complete Attachment Sheet 8 in the presence of a notary and submit to RCI with your application.

SECTION 4: PROFESSIONAL HISTORY

Name _____

Date _____

New

Update

Continuation Sheet

List in order, beginning with the first employer, your work history directly related to roofing. Do not include employment in non-related fields or employment. Add additional sheets as necessary.

DATE From To*	(1) Company Name (2) Address (3) City, State, Zip (4) Title/Position	Description of Experience (Briefly in space provided)
	(1) (2) (3) (4)	
	(1) (2) (3) (4)	
	(1) (2) (3) (4)	
	(1) (2) (3) (4)	

*Type "Present" in this column to indicate your current employer.

Description of Service Categories

1. Roof Condition Surveys, Audits or Investigations

This applies to the scope of work in which a consultant visually assesses the condition of a roof. This would be performed in general accordance with the recommended procedures of RCI, BURSI and/or other organizations in which the condition of the roof is observed, identified and documented. Reporting could be through a standard checklist format or through a narrative type report. The report may include, but is not required to include, photographs and/or video documentation. A drawing will generally be prepared to present the layout of the roof penetrations and findings.

2. Preparation of Contract Documents (Drawing, Specifications, etc.)

This may be a complete set of documents including the bidding documents, general conditions, technical specifications, roof plans, sections and details. On some projects, however, only the technical specification must be prepared by the consultant for implementation within another design professional's contract documents. The contract documents, in any event, would be complete.

3. Construction Observations/Quality Assurance Observations

The scope of work under this task would be your personal observations during the construction for the assurance of quality of another's work. In most cases, the person who performs these services would be under the direction or control of a superior, preferably an experienced roof consultant. In some cases, the roof consultant may provide these services directly. Written documentation is required for this scope of work in the form of narrative reports or checklist reports. The applicant should be aware that points can't be gained by a consultant for a technician under his control who performs these services. Points gained in this item must be the direct on-site experience of the applicant.

4. Legal: Forensic Investigations, Deposition, and Expert Testimony

Experience gained through the legal arena is applicable even if the case does not go to trial. The forensic investigation may include site observations, field tests, laboratory tests and analysis, video and photographic documentation, and other procedures implemented in a standard investigation of a project that may go to litigation. The project may or may not include depositions, and may or may not include expert testimony. You may only receive one point for each legal case; multiple points are not allowed where both deposition and court testimony are provided.

5. Roof Moisture Surveys (Infrared Nuclear and/or Capacitance)

One point shall be awarded for each project in which the applicant performs an infrared, nuclear, and/or capacitance survey. Multiple points are not awarded for each individual project even if all three techniques are utilized unless each technique is reported completely independent of other techniques, e.g. separate surveys are issued.

One point is awarded for each project on which a roof moisture survey is performed, not each roof. Roof Moisture Surveys should be supplemented with destructive testing to confirm the non-destructive test. This shall not be mandatory in cases where a warranty would be violated or the client decides that a destructive test should not be performed.

Roof Moisture Surveys shall be presented in a written report including information regarding the procedures utilized, the findings, and conclusions from the observations. Recommendations may be presented but are not mandatory. A drawing generally accompanies the report. Photographic and video documentation may or may not be presented, depending upon the project. One point shall be awarded for each project, even though several roofs may be involved in the project. For example, on a building with seven additions involving seven different roof levels and seven different constructions, only one point shall be awarded if a single report is presented. If separate reports are presented for separate buildings or different services and these are stand-alone reports, then multiple points may be claimed.

Description of Service Categories (Continued)

6. Laboratory Testing: Physical/Quantitative Analysis

This item refers to ASTM testing for physical and/or quantitative analysis of roof materials. This could include test cut analysis, material testing, forensic testing, and other procedures utilizing scientific methods, and procedures. Gravimetric testing of roof core samples is not considered laboratory testing, but a supplement required in roof condition surveys and/or moisture condition surveys, etc.

7. Research Directly Related to Roofing

This would generally relate to research performed on roofing projects in which new technology is developed or utilized. Research, referred to herein, does not refer to procedures customarily implemented or used by roof consultants. This relates or refers to new innovative thinking. Written documentation must accompany this research to be valid and it must be substantiated by a second party.

8. Publications Related to Roofing (Articles, Books, Theses)

These include articles, books, theses, etc. related to roofing that have been published-- not those in revision or in draft form. The publishing may not be in an in-house or interagency type publication. These publications also shall not be solely directed to marketing, or the promotion of one's experience or ability. The intention of the publications earning credit in this item must have a fundamental basis that is educational or newsworthy.

9. Lectures Presented Relating to Roofing (Emphasizing Education)

Lectures receiving points under this item shall not be solely of a marketing nature. Credit shall not be awarded to lectures in which the primary purpose of the presentation was to promote one's company or abilities. Lectures that earn points must emphasize the educational nature of the presentation. That is not to say that a marketing lecture cannot present educational information, but the primary purpose must not be to only promote one's company or self.

10. Roof Contracting Projects

Points shall be awarded for projects in which the applicant was directly in a position of management or supervision. Merely being on a project site, such as running a kettle or gluing seams, does not constitute the kind of experience for which this item was intended. Persons receiving points for this task must have been in a position of responsible authority and management control. The same criteria regarding multiple building locations, etc., pertinent to other categories apply here as well.

11. Professional Association Active Participation

Credit shall be awarded for active participation in professional associations such as RCI, Inc., The Construction Specification Institute, The American Society of Testing and Materials, The American Society of Civil Engineering, The American Institute of Architecture, etc. Active participation is mandatory; merely being a card-carrying member is not sufficient.

Name _____ Date _____

SECTION 5: PERSONAL WORK EXPERIENCE

CATEGORIES

(Check multiple categories per project, if applicable – see pages 5 and 6 for descriptions)

PROJECT REGISTER*		1	2	3	4	5	6	7	8	9	10	11
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											

A minimum of ten (10) projects from 3 separate service categories must include a project contact and telephone number. Additional contact information may be requested.

*Duplicate sheet as needed

Name _____ Date _____

SECTION 5: PERSONAL WORK EXPERIENCE

CATEGORIES

(Check multiple categories per project, if applicable – see pages 5 and 6 for descriptions)

PROJECT REGISTER*		1	2	3	4	5	6	7	8	9	10	11
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											
#	Project Name: _____ Project Location: _____ Project Contact: _____ Telephone: _____ Project Date _____											

A minimum of ten (10) projects from 3 separate service categories must include a project contact and telephone number. Additional contact information may be requested.

* Duplicate sheet as needed

Name _____ Date _____

SECTION 5: SUMMARY OF POINTS FOR REGISTRATION

PERSONAL WORK EXPERIENCE POINTS

Category	Services Rendered or Task Performed	Max. # of points	Points/Project	Number of Projects	Total Points
1.	Roof Condition Surveys, Audits, or Investigations	30	1		
2.	Preparation of Contract Documents (Drawings, Specifications, etc.)	30	1		
3.	Construction Observations/Quality Assurance Observations	30	1		
4.	Legal: Expert Testimony, Deposition, Forensic Investigations	30	1		
5.	Roof Moisture Surveys (Infrared, Nuclear, and/or Capacitance)	30	1		
6.	Laboratory Testing: Physical/Quantitative Analysis	30	1		
7.	Research Directly Related to Roofing	30	1		
8.	Publications Related to Roofing (Articles, Books, Theses)	30	1		
9.	Lectures Presented Related to Roofing (Emphasizing Education)	20	1		
10.	Roof Contracting Projects	10	1		
11.	Professional Association Active Participation (RCI, CSI, ASTM, etc.)	05	1		
TOTAL Number of Points Claimed for Personal Work Experience (Max = 100)					

EDUCATIONAL POINTS

Four Year Curriculum	40	10/Yr.		
Five Year Curriculum	50	10/Yr.		
Masters Degree	10			
Doctorate	10			
Total Number of Points Claimed for Education (Max. 50)				

PROFESSIONAL REGISTRATION POINTS

Registered Architect	20	20		
Registered Engineer	20	20		
Total Number of Points Claimed for Registration (Max. 20)				
GRAND TOTAL NUMBER OF POINTS CLAIMED				

NOTES:

1. Applicant must have points in a minimum of 3 categories.
2. A project register must be completed for each project. Some may include more than one service category.
3. A minimum of 10 projects from 3 separate service categories must include a contact & phone number.
4. Refer to Page III for point limitations placed on multiple building projects.
5. Maximum number of points for education is 50.
6. Official transcript or diploma must accompany application to substantiate all education points.
7. Maximum number of points for professional registration is 20.
8. Copy of current license or registration certificate must accompany application.

SECTION 6: CONTINUING EDUCATIONAL HOURS EARNED

Name _____

Date _____

- New
- Update
- Continuation

Course Name	Presented By	Dates	Hours
		Total #	

Please include documentation of attendance. Should be in the form of a certificate or letter from the sponsoring organization stating the name of the course, date course was held and number of hours/units awarded. **Minimum of 70 credit hours required.**

SECTION 7: REFERENCE SUMMARY

Name _____

Date _____

- () New
- () Update
- () Continuation

Name & Company	Address/City, State, Zip	Telephone and Position/Title

Note: Please complete the top portion of the reference form (Attachment Sheet 6) for each person listed above. Mail directly to each reference, whom will then mail the form directly back to RCI.

REFERENCE FORM

Date _____

Dear _____:

An application for Registered Roof Consultant has been filed with RCI, Inc. by

_____ of _____, _____.
(applicant) (company) (city/state)

Will you kindly give the information requested below, if known, and make any comments that may be of value to RCI in evaluating the applicant's qualifications.

Information secured from references is for the confidential use of the organization and the source and character of the information will not be divulged, except in special cases when required by law.

Both the applicant and RCI, Inc. will appreciate your cooperation in promptly furnishing the information requested.

GENERAL INFORMATION

1. Applicant's present position _____
2. Number of years known _____
3. Applicant's moral character, professional ethics and personal reputation are _____
4. How long has the applicant been engaged in active roof consulting work? _____
5. In your opinion is the applicant competent as a roof consultant? _____

Remarks:

Signed _____
 Name (Print) _____
 Title _____
 Company _____
 City/State _____
 Date _____
 Are you related to the applicant? _____
 If yes, how related _____
 Are you a legally registered engineer? _____
 Are you a legally registered architect? _____
 Are you a Registered Roof Consultant? _____

If, for some reason, you do not desire to serve as a reference for the applicant, please return this form to us with a comment to that effect.

REFERENCE: Please return form to:

RCI, Inc.
1500 Sunday Drive Ste 204
Raleigh, NC 27607
800/828-1902 or 919/859-0742 FAX 919/859-1328

CODE OF ETHICS
RCI, Incorporated
The Institute of Roofing, Waterproofing, & Building Envelope Professionals

Adopted July 17, 2001
Revised March 28, 2006

Introduction: The standards contained in this Code of Ethics are statements of ethical principles having broad applicability to members and registrants of RCI, Incorporated (RCI). However, the enumeration of particular duties and the proscription of certain conduct do not negate the existence of other obligations logically flowing from such principles. Conduct deemed unethical may be construed to include lesser offenses, such as aiding and abetting.

Members and registrants of RCI should also recognize that their profession and their practice may be governed by various laws and regulations regarding professional registration and the conduct of trade. It is their responsibility, therefore, to be familiar with those laws and regulations and to conduct themselves accordingly.

General Obligations: Members and registrants shall maintain and further their knowledge of the science and profession of roofing, waterproofing, and the building envelope, and shall maintain the highest possible standard of professional judgment and conduct.

Obligation to the Public: Members and registrants should uphold the letter and spirit of the ethical standards governing their professional affairs and should consider the full impact of their actions on the community at large.

Thus, a member or registrant shall:

- I. Engage only in accurate, appropriate and truthful promotion of his/her practice;
- II. Be respectful of the rights of others in obtaining professional work or employment; and
- III. Make only accurate, truthful and appropriate statements or claims about his/her professional qualifications, experiences or performance.

Obligations to the Client: Members and registrants shall conduct themselves in a fashion, which brings credit to themselves, their employers and their profession. In addition to upholding the behavioral standards described above, a member or registrant:

- I. Shall preserve the confidence of his/her client or employer and serve each in a professional and competent manner.
- II. Shall exercise unprejudiced and unbiased judgment and conduct when performing all professional services;
- III. Shall practice only in his/her area of competence;
- IV. Shall decline any activity or employment, avoid any significant financial or other interest, and decline any contribution if it would reasonably appear that such activity, employment, interest, or contribution could compromise his or her professional judgment or conduct, or prevent him/her from serving the best interest of his/her client or employer, without making full disclosure to the client and obtaining the client's consent thereto;
- V. Shall neither offer nor make any payment or gift to any public official, private client or industry representative with the intent of influencing that person's judgment or decision in connection with an existing or prospective project in which the member/registrant is interested; and
- VI. May contribute his services or anything of value to those endeavors which the member deems worthy. Further, a member or registrant has the right to participate in the political process and to contribute time and money to political campaigns.

Obligations to the Profession and Building Industry: Members and registrants shall:

- I. Recognize the value and contributions of others engaged in the design and construction process, and refrain from making false statements about the work of others, and shall not maliciously injure or attempt to injure the prospects, practice, or employment position of others; and
- II. Encourage professional education and research, as well as the development and dissemination of information relating to the design and construction of roofing, waterproofing, and building envelope systems.

Further, the following practices are not in themselves unethical, unprofessional, or contrary to any policy of RCI, and RCI members and registrants are free to decide for themselves whether to engage in any of these practices:

- I. Submitting competitive bids or price quotations, including in circumstances where price is the sole or principle consideration in the selection of a consultant;
- II. Providing discounts; or
- III. Providing free services.

Name _____

Date _____

AFFIDAVIT REGISTRATION AUTHORIZATION AND RELEASE (to be notarized)

State (Province) of _____

County of _____

_____, being first duly sworn, deposes and says:

(Applicant's Name)

I, the Applicant named above, have read the contents hereof, and to the best of my knowledge and belief the statements contained in this application are true in substance and effect and are made in good faith. I hereby subscribe to and agree to conform to the Standards of Ethical Practice for RCI, Inc. I shall endeavor never to place myself in a conflict of interest or permit myself to be placed in a position that would allow for a potential conflict of interest. Conflict of interest shall be defined as any activity or employment having any significant financial or other interest, or acceptance of any contribution if it would reasonably appear that such activity, employment, interest or contribution could compromise my professional and objective judgment as a roof consultant or prevent me from serving the best interest of my client.

I also hereby authorize any individual, company or institution with whom I have been associated to furnish RCI, Inc. with any information concerning my qualifications for Registered Roof Consultant which they have on record or otherwise, and do hereby release the individual, company or organization and all individuals connected therewith from all liability for any damage whatsoever incurred by me as a result of their furnishing such information.

Subscribed and sworn to before me this _____ day of _____, 20____

(Signature of Applicant)

(SEAL)
My Commission expires _____

(Signature of Notary Public)



Application for Registered Roof Consultant Payment Form

Enclosed is a check in the amount of: \$225.00 member fee \$300.00 non-member fee

Please accept a late fee: \$50.00 member fee \$75.00 non-member

Charge my VISA MasterCard American Express for:

\$225.00 member fee \$300.00 non-member fee

\$50.00 late member fee \$75.00 late non-member fee

Name _____ Telephone _____

Account Number _____ Expiration Date _____

3- or 4-Digit Verification Value Code _____

Signature _____ Date _____

Please return the completed application along with payment in US dollars to:

RCI, Inc.
1500 Sunday Drive Ste 204
Raleigh, NC 27607
(T) 919-859-0742 (F) 919-859-1328

CHECKLIST TO ACCOMPANY REGISTERED ROOF CONSULTANT APPLICATION

Applicant's Name _____ Social Security Number _____ Date _____

A check or initial in the block at the right indicates that you have completed that requirement of the application.

1. Application fee enclosed (\$225.00 members/\$300.00 nonmembers).....
2. Completed Sections 1 and 2 of the application.....
3. Section 3 of the application:
 - a. High School Diploma enclosed.....
 - b. College transcript(s) have been requested.....
4. Section 4 of application:
 - a. All dates are listed.....
 - b. All employers' names and addresses are listed.....
 - c. Brief description of experience under each employer is listed.....
5. Section 5 of application - Attachment Sheet 2:
 - a. Each project for which I claim experience is registered on Attachment Sheet 2.....
 - b. At least 10 contact names and phone numbers are listed from 3 separate categories.....
 - c. All names, locations and dates of projects are listed.....
 - d. All projects registered represent my experience (not someone under my direction).....
 - e. All projects claimed truly reflect worthy experience under the appropriate heading.....
6. Section 5 of application - Attachment Sheet 3:
 - a. All points claimed are summarized by category.....
 - b. Education points are substantiated by a transcript or copy of my diploma (enclosed).....
 - c. I have attained points in a minimum of 3 categories.....
 - d. Points claimed for professional registration are substantiated by a copy of my Registration Certificate or License (enclosed).....
7. Section 6 of application - Attachment Sheet 4:
 - a. All course names, sponsoring organization, dates and credit hours claimed are listed.....
 - b. I have attended a minimum of 3 industry related seminars (70 hours)
8. Section 7 of application:
 - a. Listed on Attachment Sheet 5 are five references, three of whom are a Registered Architect, Professional Engineer or Registered Roof Consultant.....
 - b. None of the references are a relative, a present employer or fellow employee from current firm.....
 - c. Made copies of Attachment Sheet 6 for EACH reference. Completed top part only for each.....
 - d. Reference forms mailed directly to each reference.....
9. Section 8 of application: Attachment Sheet 7
 - a. I have read and agree to abide by the Standards of Ethical Practice for RCI, Inc. (Attachment Sheet 7).....
10. Section 9 of application: Attachment Sheet 8
 - a. Affidavit has been executed and notarized

When complete and all spaces are checked, sign below, enclose this checklist, and mail the completed application form unfolded in a large envelope to RCI. Allow 90 days for processing. **MAKE A COPY OF YOUR COMPLETED APPLICATION BEFORE SENDING TO RCI** for your own protection.

This is to certify that I have completed the application as required by the association, have checked all details and entries, and herewith submit said application for registration. I understand that registration is contingent upon meeting the requirements of RCI and successful completion of the required examinations.

Signature of Applicant



STUDY GUIDE

REGISTERED ROOF CONSULTANT EXAM

Prepared By

RRC Examination Development Committee

RCI, Inc
1500 Sunday Drive, Suite 204
Raleigh, NC 27607
800-828-1902 919-859-0742
FAX 919-859-1328

RRC® STUDY GUIDE

TABLE OF CONTENTS

INTRODUCTION.....	1
REFERENCES.....	2
TEST OBJECTIVES.....	5
SAMPLE QUESTIONS	7
SAMPLE EXHIBITS.....	15
SAMPLE QUESTIONS ANSWERS.....	18



STUDY GUIDE
RRC® EXAMINATION
RCI, Inc.
Revised January, 2009

INTRODUCTION

One early goal of RCI was to develop a nationally recognized registration program. The Registered Roof Consultant (RRC) Program has been in existence since 1987, has gained recognition by many organizations, and has been established as a minimum standard of practice by some. RCI is working toward national recognition of its registration program and hopes to achieve this goal in the future. The primary beneficiaries of this program are the public, the roofing industry, and those individuals who become registered.

Registration is a two-part program based on verifiable minimum levels of education, ethics, experience, and satisfactory performance on a comprehensive written examination.

The application for registration allows RCI to verify certain aspects of education and roofing experience. The written examination confirms these qualifications by testing one's knowledge of roofing and the ability to use this knowledge in practical applications.

This study guide outlines subjects that are addressed in the written examination; however, it is not intended to be an inclusive listing of every topic addressed on the test. This document is strictly a guide. References used in the development of this exam are provided.

Please understand that the examination is not tailored to any one particular area of roof consulting or to the design and construction practices unique to any geographic area. It deals with roof consulting in general as indicated by the references listed on the next page. It may include all phases of roof consulting (evaluation, design, testing and construction), both steep and low slope roofing, and all systems (e.g., shingle, tile, slate, built-up, single ply, metal and spray applied systems).

In order to receive a passing score on the examination, you must be thoroughly familiar with a broad spectrum of principles related to roof system design, testing and construction. This spectrum of knowledge includes roof system design parameters, specification development, project management, project administration, life cycle costing, roof assets management, conflict resolution, contracts and contract documents, construction materials, non-destructive testing, and report preparation. Education and experience in these areas are extremely important. However, practical application under the guidance of a qualified mentor may be even more important because it reinforces formal education and training and provides a sound foundation over a broad spectrum. It pulls everything together. The weakness most often identified with exam failure is a narrow focus in the industry.

The Registered Roof Consultant examination is offered several times each year. The dates and locations can be obtained from RCI or from the RCI website (rci-online.org).

The examination is 5½ hours in length and will be delivered in two parts, each 2¾ hours long.

Each part of the examination carries equal weight and a passing score must be attained for the total exam. If a passing score is not achieved, the entire exam must be retaken.

Part 1 of the examination consists of one hundred and nine multiple choice questions and will involve questions on the following topics: ethics, roof condition surveys, audits or investigations, communication, testing, codes and standards, materials, construction documents, bid phase and construction phase. Part 2 includes fifty six design questions. Some problems may involve mathematical computations which require familiarity with basic algebra, geometry and trigonometry. Charts or tables needed for the solution of problems will be provided in the examination booklet.

Although not required, the following RCI education programs may be useful for anyone pursuing this designation: Roof Technology and Science I and II, Professional Roof Consulting, Advanced Thermal & Moisture, and Wind & Drainage.

Questions for the RRC Exam have been prepared based on the following documents:

	<i>Title</i>	<i>Author</i>	<i>Pub. Date</i>
1.	Residential Asphalt Roofing Manual	ARMA	1989
2.	Rooftop Quality Assurance Manual	RCI	2006
3.	Concrete and Clay Roof Tile Design Criteria Installation Manual Moderate Climate Regions	RTI/WSRCA	Jan.2002
4.	The Slate Book	Stearns/Stearns & Meyer	1998
5.	Metal Roofing Design Guide	MBMA	2000
6.	RCI Roofing Technology 1 and 2	RCI	2006
7.	RCI Manual of Practice Vol. 3	RCI	2003
8.	American Society for Testing and Materials; Section 4, Vol. 4.04, Roofing, Waterproofing, and Bituminous Materials	ASTM	2005
9.	National Roofing Contractors Association; Commercial Low Slope Materials Roofing Guide, (two volumes)	NRCA	February 2001-2002
10.	The NRCA Roofing and Waterproofing Manual, Fifth Edition	NRCA	2001
11.	FM Global; (FMLPD) 2000 Edition; Loss Prevention Data Sheets 1-7, 1-28, 1-28R, 1-29, 1-29R, 1-49 and 1-52	FMLPD	2000
12.	FMRC - Factory Mutual Research Corporation, Approval Guide & Roof Coverings	FMRC	2005
13.	(IBC) International Building Code, Chapter 15, Roof Coverings	IBC	2003

14.	(UL) - Underwriters Laboratory, Roofing Materials and Systems Annual Directory	UL	2005
15.	(SMACNA) - Sheet Metal and Air Conditioning Contractor's National Association, Inc. Architectural Sheet Metal Manual, Sixth Edition	SMACNA	2003
16.	(CERTA) - Certified Torch Welding Applicator Program, Safety in Torch Welded Roofing	CERTA	1996
17.	(SPRI) - Flexible Membrane Roofing, A Professional's Guide to Specifications; Seventh Edition	SPRI	2003
18.	OSHA, CFR 1910 and 1926	OSHA	April 3, 2006 update
19.	Canadian Roofing Contractors Association: Roofing Specifications (1997) and Canadian Roofing Reference Manual (Parts 1 to 4) (1999)	CRCA	1997
20.	www.cedarbureau.org	Cedar Shake and Shingle Bureau	Nov. 2004
21.	Revere Copper and Common Sense	Revere Copper Products Inc	2005
22.	http://www.copper.org	Copper Development Association	accessed site in 2008
24.	Manual of Low-slope Roof Systems, 4th Edition	Fricklas & Griffin	2006
26.	Code of Ethics (RCI)	RCI	Mar 28, 2006
27.	Rooftop Safety for Consultants and Building Owners (RCI)	RCI	2006
28.	Roof Coatings Manufacturer's Association (Web site)	RCMA	accessed site in 2008
29.	Canadian Institute of Treated Wood (www.citw.org)	CITW	accessed site in 2008
30.	SPRI.org	SPRI	accessed site in 2008
31.	ASCE-7-05	ASCE-7-05	2006
32.	IECC		2006
33.	Advanced Thermal and Moisture Manual	RCI	accessed in 2008
34.	Project Resource Manual CSI Manual of Practice	CSI	2005
35.	CSC	CSC	accessed in 2008
36.	Roof Drainage (RCIF)	RCIF	2003
37.	Wind Pressures on Low Slope Roofs	RCIF	2005

38.	NRCA Architectural Metal Roofing Manual	NRCA	2006
39.	NRCA Green Roof Systems Manual	NRCA	2007
40.	ASHRAE 90.1	ASHRAE	2007
41.	Math Calculations		
42.	Industry Knowledge/Experience		
43.	NRCA Metal Panel and SPF Roof Systems	NRCA	2008
44.	Professional Roof Consulting	RCI	2007
45.	NRCA Perimeter Details (tested in accordance with ANSI/SPRI ES-1)	NRCA	accessed in 2008
46.	Wind and Drainage Manual	RCI	accessed in 2008
47.	National Building Code of Canada	National Building Code of Canada	2005

As part of the exam revision process, the committee of subject matter experts systematically compiled a list of objectives that relate to the responsibilities, knowledge, and skills associated with acceptable performance within the roof consulting profession. This list provided the organizational framework for the exam and is attached 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	Ethics	1.8
Objective 1.1	Given a scenario, demonstrate knowledge of ethical conduct.	
Section 2	Roof Condition Surveys, Audits, or Investigations	14.5
Objective 2.1	Demonstrate knowledge of life cycle cost analysis	
Objective 2.2	Demonstrate ability to evaluate existing roof assemblies and related conditions	
Objective 2.3	Given a scenario, determine the potential risks related to existing design or construction	
Objective 2.4	Given a scenario, demonstrate knowledge of failure mechanisms of various roof systems and components	
Objective 2.5	Describe suitability of existing roof assembly	
Objective 2.6	Describe how environmental conditions deteriorate roofing materials	
Section 3	Communication	5.5
Objective 3.1	Given a scenario, demonstrate knowledge of roles and responsibilities	
Objective 3.2	Demonstrate the ability to prepare written communications	
Objective 3.3	Given a scenario, describe how to interact professionally with the client and other members of the project team	
Section 4	Testing	7.3
Objective 4.1	Describe proper sampling techniques	
Objective 4.2	Describe investigative procedures to analyze a roof assembly	
Objective 4.3	Demonstrate knowledge of industry standard test procedures	
Objective 4.4	Given a scenario, accurately interpret test data including anomalies	
Section 5	Design	34
Objective 5.1	Demonstrate knowledge of roofing systems and assemblies	
Objective 5.2	Given a scenario, demonstrate knowledge of thermal calculations	
Objective 5.3	Describe roof assembly design considerations	
Objective 5.4	Given a scenario, demonstrate knowledge of ventilation calculations	
Objective 5.5	Given a scenario, demonstrate the ability to perform wind uplift calculations	

Objective 5.6	Given a scenario, determine drainage requirements	
Objective 5.7	Describe how to prepare construction drawings	
Objective 5.8	Demonstrate knowledge of air barriers/vapor retarders	
Section 6	Codes and Standards	4.8
Objective 6.1	Identify building codes, industry standards and manufacturers' requirements	
Section 7	Materials	14.5
Objective 7.1	Identify fundamental properties of various material components	
Objective 7.2	Demonstrate knowledge of material interactions	
Section 8	Construction Documents	7.3
Objective 8.1	Demonstrate knowledge of contract documents	
Objective 8.2	Describe information to request from the client	
Section 9	Bid Phase	2.4
Objective 9.1	Demonstrate knowledge of bidding procedures	
Section 10	Construction Phase	7.9
Objective 10.1	Demonstrate knowledge of construction administration	
Objective 10.2	Demonstrate knowledge of roof top quality assurance procedures	
Objective 10.3	Demonstrate knowledge of post construction procedures	

SAMPLE QUESTIONS

Sample questions are provided from each section of the exam and are indicative of the types of questions you will encounter. Answers have been provided at the end of the study guide.

Ethics

1. You send a box of golf balls to the director of construction of an organization that outsources roof consulting services.

According to the RCI Code of Ethics, under which two of these circumstances would this be unethical? (Choose two.)

- A. if you paid for the outing with personal funds
- B. if your spouse worked for the same company as the director of construction
- C. if the recipient worked for a public entity and such gifts were prohibited by law
- D. if you were attempting to influence that person's judgment in connection with an existing or prospective project for which your firm was seeking an assignment

Roof Condition Surveys, Audits, or Investigations

2. The reflectivity of the roof surfacing is important to the life-cycle cost of the roof assembly.

Which surfacing has the highest initial reflectivity?

- A. white coatings
- B. asphalt emulsion
- C. aluminum coating
- D. white mineral granules

3. Which two deficiencies should a consultant inspect for on a gravel built-up roof membrane system? (Choose two.)

- A. holes
- B. pipes
- C. wind scour
- D. surface crazing

4. While investigating a roof, you observe large icicles forming at the eave of a sloped shingled roof system. The roof is covered with a large quantity of snow.

Which two should you do immediately? (Choose two.)

- A. Check the conditions in the attic space.
- B. Check to determine adhesion between shingles.
- C. Assess the surface condition of the shingles on all sides of the building.
- D. Advise the owner to have traffic areas directly below the icicles barricaded and have the icicles removed.

5. According to the *Manual of Low-Slope Roof Systems, 4th Edition*, what is the most reliable method for judging roof component reliability?

- A. controlled laboratory tests
- B. roof consultant advisory panels
- C. long term field service performance
- D. interpolation of material performance in other applications

6. One of the challenges of completing a corporate roof review is describing the suitability of the existing roof assembly. The RRC is conducting a roof survey of a metal standing seam hydrokinetic roof system. It is a light gauge metal with a high gloss finish with no stiffening ribs in the pan.

Which statement should be included in the report?

- A. The contractor should have made certain that the rolling mill was well-tuned during installation.
- B. Oil canning is a frequent phenomenon; there are inherent risks as the oil canning could result in a leak.
- C. The metal pans should have been greater in width, heavier in gauge, finished with a flat texture with stiffening ribs.
- D. Oil canning is likely due to the gauge, finish and profile of the panel's pan. The client should be aware of the visual effects which can be exacerbated by varying light conditions.

7. You are asked to investigate a situation where the roof membrane has pulled away from the parapet walls. The building is located in Boston, MA. The roof consists of a stone-ballasted EPDM membrane, foam plastic insulation, and a steel roof deck.

What is the likely cause?

- A. Shrinkage of the EPDM membrane has occurred due to loss of processing oils.
- B. The adhesive used to glue the EPDM base flashings to the parapet walls has failed.
- C. A hydrocarbon based solvent has attacked the exposed material, while the roofing under the stone ballast was protected.
- D. Contamination from a local airport has penetrated the exposed EPDM membrane flashings and caused swelling of the EPDM.

Communication

8. A reroof project has been undertaken using the *RCI Manual of Practice* documents under which the owner has roles and responsibilities.

Which statement describes the owner?

- A. The owner is the prime consultant's design team lead.
- B. The owner is the person(s) who has title of the building.
- C. The owner is the person(s) who is responsible for certifying payment for the work.
- D. The owner is the entity with whom the contractor has entered into a contractual agreement.

9. According to RCI's *Rooftop Quality Assurance Manual*, daily reports should address which two items? (Choose two.)

- A. visitors
- B. weather conditions
- C. equipment requirements
- D. payment request reviews

10. The owner has requested the services of an RRO to observe and report on the progress of a new roof installation.

According to the *RCI Rooftop Quality Assurance Manual*, when should the reports be distributed to the general contractor, roof contractor, consultant, and owner?

- A. 3 days
- B. 7 days
- C. same day
- D. with close out documents

Testing

11. You are using the ASTM D 3617 – 07, "Standard Practice for Sampling and Analysis of Built-Up Roof System during Application" on a project.

Unless otherwise specified, how many samples should be taken?

- A. Take at least one specimen for each separate roof.
 - B. Take at least one specimen for each separate roof, plus one for each 4,300 sq. ft. (400 sq. m).
 - C. Take at least one specimen for each separate roof, plus one for each 10,000 sq. ft. (929 sq. m).
 - D. Take at least one specimen for each separate roof, plus two for each 10,000 sq. ft. (929 sq. m).
12. You are asked to investigate roof leaks at the lower roof area of a large supermarket in Los Angeles covered by an exposed PVC membrane. A roofer has already been on site to perform repairs and reported that 115 individual patches were applied to the membrane all over the lower roof surface. However, the building staff had only reported leakage near the junction with the higher roof.

When investigating the leaks, which initial course of action is appropriate?

- A. Have the roofer cut open some patches to demonstrate the types of faults the roofer found. Then perform a flood test on the upper roof to confirm that the leaks are eliminated.
 - B. Perform a detailed visual review of the membrane and have the roofer patch any further defects found. Then wait for the next rain to determine the success of the repairs.
 - C. Conduct a roof moisture survey, core cuts, and a visual survey at the lower roof area, and compare the results with the patch locations. Inspect the details at the high/low roof junction.
 - D. Perform a flood test on the lower roof to a depth of 6 inches (150 mm) to confirm that the leaks are eliminated, and then use electronic field vector mapping to locate and repair any remaining faults.
13. The UL 1256 "Fire Test of Roof Deck Constructions" measures which fire performance characteristic of the roof assembly?
- A. fire penetration and structural integrity
 - B. flame spread below the roof deck within defined time limits
 - C. fire spread on the top surface of the roof assembly under high wind conditions
 - D. flame spread on the top surface of the roof assembly within defined time limits

14. You have taken a test cut of an existing BUR where a blister has formed. The asphalt in the blister is on the lower ply and has a cratered surface.

What could be the cause for this condition?

- A. Water was present during application.
- B. There is a depression in the substrate.
- C. The asphalt was cold during application.
- D. The insulation cover board was wood fiber.

Design

15. Specific to the application of sprayed in place polyurethane foam roofing, what is the minimum dry-film thickness (DFT) range for the entire coating system?

- A. 0.008" to 0.015" (0.20 mm to 0.38 mm)
- B. 0.010" to 0.018" (0.25 mm to 0.46 mm)
- C. 0.010" to 0.020" (0.25 mm to 0.51mm)
- D. 0.020" to 0.040" (0.51 mm to 1.02 mm)

16. Refer to Exhibit #1.

A conventional roof assembly includes a vapor retarder/temporary roof installed over insulation and a steel deck. You are provided with:

The sum of the R values ($\sum R_{vr}$) below the underside of the vapor retarder

The Inside Design Temperature (T_i)

The Outside Design Temperature (T_o)

The Design Dew Point temperature (which you are to assume is the temperature at the underside of the vapor retarder/temporary roof)

Assume that the temperature at the underside of the vapor retarder is equal to the Design Dew Point temperature.

Irrespective of building code requirements and based on the formula provided in the exhibit, which formula will accurately determine the total needed for the entire assembly ($\sum R_m$) to prevent condensation underneath the vapor during the winter?

- A. $\sum R_m = - [(\sum R_{vr}) \times (T_i - T_o)] \div (T_{vr} - T_i)$
- B. $\sum R_m = - [(\sum R_{vr}) \div [(T_i - T_o) \div (T_{vr} - T_i)]]$
- C. $\sum R_m = [(\sum R_{vr}) \div [(T_{vr} - T_o) \times (T_i - T_o)]]$
- D. $\sum R_m = [(\sum R_{vr}) \div [(T_{vr} - T_o) \div (T_i - T_o)]]$

17. According to the NRCA/CRCA, a properly installed base flashing for a BUR should be installed to what minimum height above the finished roof surface?

- A. 6 inches (152 mm)
- B. 8 inches (200 mm)
- C. 10 inches (254 mm)
- D. 12 inches (610 mm)

18. Refer to Exhibit #2.

A roof replacement project is being designed for a rectangular agricultural building ($I = 0.87$) with numerous window and door openings (partially enclosed). The roof has an eave height of 70 feet (21 m) and the location is a relatively open terrain of a rural area with a basic wind speed of 90 mph (145 kph). Assume wind directionality factor of 1.0.

According to the RCIF *Wind Pressures on Low Slope Roofs*, and based on the velocity pressure equation, as shown in the exhibit, what is the design pressure in the field of the roof?

- A. -32.72
- B. -39.75
- C. -41.16
- D. -47.31

19. Refer to Exhibit #3.

You have been asked to size a gutter for a contractor who only has 24 gauge galvanized steel available.

Referring to the exhibit, what is the maximum width of unformed metal stock that can be used to form a rectangular gutter based on the table given?

- A. 15 inches (380 mm)
- B. 20 inches (510 mm)
- C. 25 inches (640 mm)
- D. 35 inches (890 mm)

20. Which type of drawing is used to convey the design intent for a vent stack in a built-up roof construction?

- A. detail
- B. section
- C. diagram
- D. perspective

21. Which statement is correct about vapor retarders?
- A. Vapor retarders are most effective when placed at the warm side of the assembly.
 - B. Vapor retarders are primarily intended to reduce the rate of air flow through a roof assembly.
 - C. A typical pattern of roof fasteners that puncture a vapor retarder can reduce its effectiveness by over 40%.
 - D. Sealing of laps in a vapor retarder helps reduce vapor transmission only when there is a separate air barrier present.

Codes and Standards

22. You are designing a roof replacement on a Factory Mutual Global insured building.
- Which FM Global Loss Prevention Data Sheet should you consult for perimeter metal flashing attachments?
- A. FM 1-18
 - B. FM 1-49
 - C. FM 1-54
 - D. FM 1-52

Materials

23. Which two functions does bitumen (asphalt, coal tar, or cold adhesive) serve in built-up roof membrane systems? (Choose two.)
- A. adhesion
 - B. peel strength
 - C. UV protection
 - D. weatherproofing
24. Extruded polystyrene insulation may have chemical incompatibility with which types of roof covering?
- A. thermoset
 - B. thermoplastic
 - C. metal roof panels
 - D. modified bitumen

Construction Documents

25. During discussions between the consultant and the owner, the consultant is to prepare a complete set of construction documents on a reroof project using an architectural-type contract. The documentation is to be quite specific regarding materials, application procedures, and cost.

Which type of contract should be used?

- A. unit price contract
- B. cost-plus fee contract
- C. combined bid contract
- D. stipulated (fixed) sum contract

Construction Phase

26. During a roof replacement project, it is discovered that one layer of 2.5 inch (64 mm) insulation is required on 500 square feet (46.5 square meters) of roof to fill in where the roof decks are at different levels.

If the contractor indicates that there will be no impact on the contract sum and time, which form should be issued?

- A. addendum
- B. change order
- C. change directive
- D. supplemental instruction

27. Which two should be documented in the quality assurance observer's field reports? (Choose two.)

- A. safety
- B. approval
- C. deviations
- D. deficiencies

28. A project is complete and the owner wants to make final acceptance (payment). A lien waiver is required by the contract documents.

Which statement concerning lien waivers is correct?

- A. A lien waiver is a document from a subcontractor stating that the payment was received from the general contractor.
- B. A lien waver is a security interest to protect the subcontractor from a general contractor by placing a lien on a property.
- C. Since the subcontractor does not have a contract with the owner, the subcontractor has the right to lien the project with a lien waiver.
- D. A lien waiver must be received by the owners project manager within in a statutory period (# of days) from the receipt of the contractor's final invoice.

Exhibit #1.

$$T_{vr} = T_i - [(\sum R_{vr} + \sum R_m) \times (T_i - T_o)]$$

$\sum R_m$ = Minimum sum of the total R of all roof assembly components

$\sum R_{vr}$ = Sum of R values between the warm side of the assembly and underside of the vapor retarder/temporary roof

T_i = Design Temperature inside the building

T_o = Design Temperature outside the building

T_{vr} = Temperature at the underside of the Vapor Retarder/Temporary Roof

Exhibit #2.

Velocity pressure equation

$$q_z = 0.00256(K_z)(K_{zt})(K_d)(V)(V)(I)$$

Wind Uplift pressure equation

$$p = qh[(GC_p) - (GC_{pi})]$$

Velocity Pressure Coefficient Table

Mean Roof Height ft (m)	A	B	C	D
0-15 (0-4.6)	0.68	0.70	0.85	1.03
20 (6.1)	0.68	0.70	0.90	1.08
25 (7.6)	0.68	0.70	0.94	1.12
30 (9.1)	0.68	0.70	0.98	1.16
40 (12.2)	0.68	0.76	1.04	1.22
50 (15.2)	0.68	0.81	1.09	1.27
60 (18.0)	0.68	0.85	1.13	1.31
70 (21.3)	0.68	0.89	1.17	1.34
80 (24.4)	0.68	0.93	1.21	1.38
90 (27.4)	0.68	0.96	1.24	1.40
100 (30.5)	0.68	0.99	1.26	1.43

External Pressure Coefficient Table

Mean Roof Height \leq 60ft (18.3 m)

field -1.0
perimeter -1.8
corner -2.8

Mean Roof Height $>$ 60ft (18.3 m)

field -1.4
perimeter -2.3
corner -3.2

Internal Pressure Coefficients Table

open buildings 0.00
Partially enclosed buildings 0.55
enclosed buildings 0.18

Exhibit #3.

Girth		Galvanized Steel		Copper		Aluminum		Stainless Steel	
in.	mm	gauge	mm	oz.	mm	in.	mm	gauge	mm
up to 15	up to 380	26	0.5512	16	0.55	0.032	0.812	28	0.396
16-20	410-510	24	0.7010	16	0.55	0.040	1.016	26	0.477
21-25	530-640	22	0.8534	20	0.69	0.051	1.295	24	0.635
26-30	660-760	20	1.006	24	0.82	0.063	1.295	22	0.795
31-35	790-890	18	1.311	24	0.82			20	0.952
Over 35	Over 890	16	1.613					18	1.270

Table 1 -5 Recommended Minimum Gauges For Gutter

NOTE: Girth refers to the width of the unformed metal stock.

SAMPLE QUESTIONS ANSWERS

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

Take advantage of the programs provided by RCI, including courses on the national and regional levels.

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