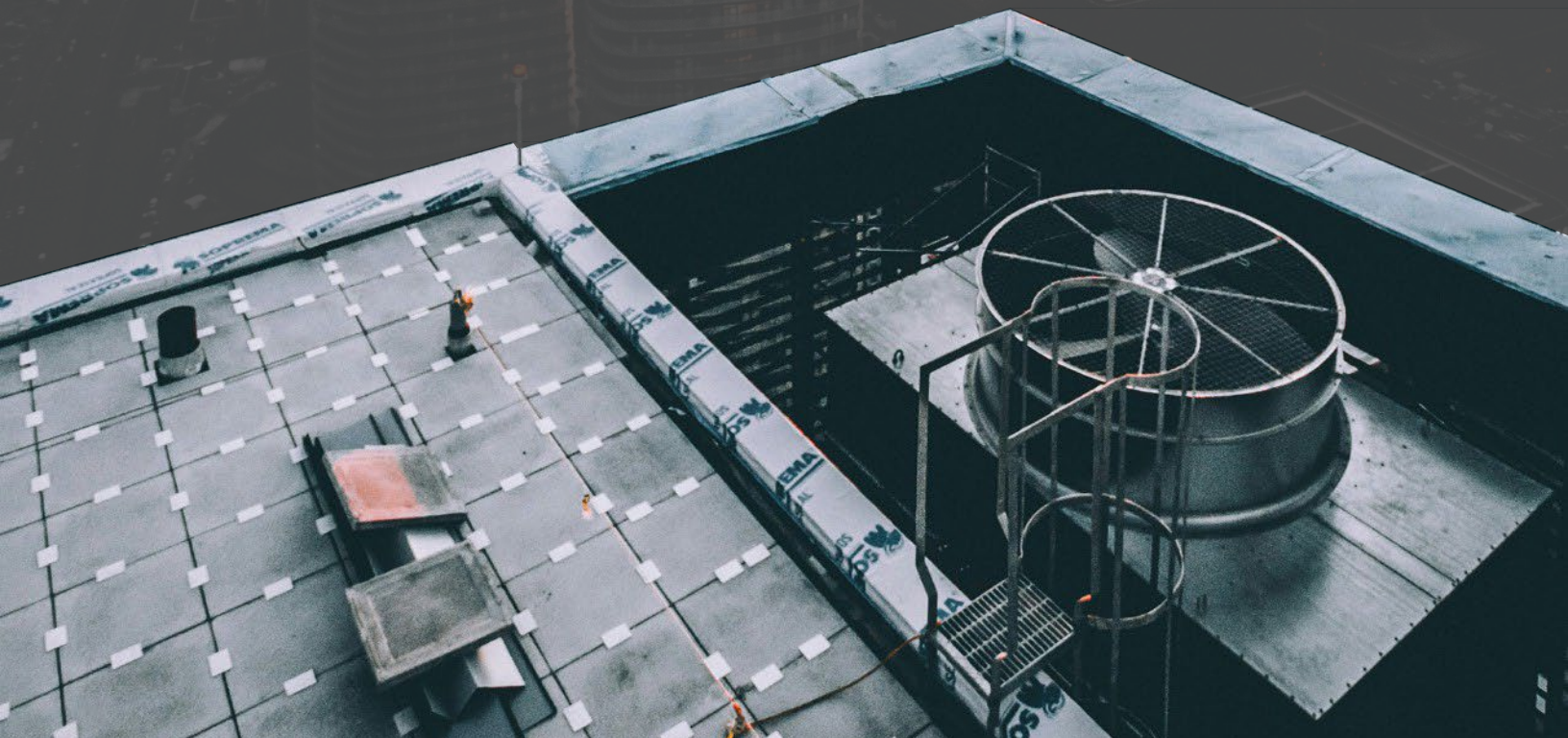


HANDBOOK

REGISTERED ROOF CONSULTANT

Application &
Exam Study Guide



iibec.org/credentials





APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Dear RRC Applicant:

To become a Registered Roof Consultant (RRC), an applicant must meet specific requirements. These requirements include verifiable levels of work experience and education, high ethical standards, and a satisfactory score on both the General Consultant Knowledge (GCK) and RRC examinations. Those who currently hold a Registered Waterproofing Consultant (RWC®) and/or Registered Exterior Wall Consultant (REWC®) designation(s) are exempt from taking the GCK exam.

The GCK exam tests knowledge common to all components of the building enclosure (roofing, waterproofing, and exterior walls). This concept was designed to produce a more efficient testing process, eliminating common information being tested for each consultant designation.

Both the GCK and the RRC exams must be passed to earn the RRC designation, with the exceptions mentioned above. If only one of these two exams is passed (the general or the technical), the candidate will be required to retake only the exam they failed. The exam that has been passed will be valid until the candidate passes the other exam and the designation is earned. Candidates who do not pass an exam will have the option to retry every four months.

There is no separate application for the GCK exam; approval of the RRC application will qualify the applicant to take the general exam. A study guide for the RRC exam is provided at the end of this application. A study guide for the GCK exam is available online or upon request at the International Institute of Building Enclosure Consultants (IIBEC).

All applicants are encouraged to use the online interactive process to complete this application. **Once the application has been submitted to IIBEC, all required information must be provided within one year or the application will expire.**

The application fee is \$375 for IIBEC members and \$475 for nonmembers. Please allow 75 days for application processing. Applications will be processed within 45 days for an additional expediting fee (\$100 for members and \$150 for nonmembers).

The fees for each computer-based exam are \$275 for IIBEC members and \$375 for nonmembers. Once registered, the candidate will be contacted by Meazure Learning to schedule an exam at one of the 1,000 conveniently located testing centers. Consult <https://www.assessments.meazurelearning.com/test-site-cities/> for testing center locations.

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 IIBEC.

Sincerely,

A handwritten signature in black ink that reads 'Alec Jeffries'.

Alec Jeffries
Vice President of Membership & Credentials



International Institute of Building Enclosure Consultants
434 Fayetteville Street, Ste. 2400 • Raleigh, NC 27601
(T) 919-859-0742 or 800-828-1902 • (F) 919-859-1328
www.iibec.org





APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

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APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

INSTRUCTIONS

The candidate for the Registered Roof Consultant (RRC) designation should have least 4 years of experience in the evaluation and design of waterproofing systems. The candidate should have a general knowledge of: roofing codes and standards; roofing materials and their inherent properties; roofing assemblies; performance analysis and design for wind, drainage, moisture, and thermal considerations; quality assurance; and in-field and laboratory testing methods.

GENERAL REQUIREMENTS

- A. The successful RRC candidate must accomplish the following:
 1. Meet certain minimum requirements regarding education, project experience, character and ethics.
 2. Have the knowledge, skills, and abilities to properly observe, evaluate, test, recommend, design, and administer roofing projects.
 3. Take and pass both the RRC and the General Consultant Knowledge Exams. If the candidate holds another IIBEC consultant designation, the candidate is exempt from taking the GCK exam.
- B. The applicant shall satisfy IIBEC that the following minimum requirements have been attained:
 1. The applicant has at least four years of roof consulting experience (as defined by the services listed on page ii) 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 separate programs directly related to the roofing, waterproofing, and/or exterior walls industries, e.g. IIBEC, BURS, AIA, CSI, or other approved technical programs awarding educational units. To be acceptable, Continuing Educational Hours (CEHs) can be no older than 10 years. There is a maximum of 16 hours accepted per program.
 3. The applicant shall have a strong moral and ethical character demonstrated by his/her experience and professionalism. The "Standards of Ethical Practice" for IIBEC are included in this application. They outline the obligations of the roof consultant to the public, the client, the employer, the profession, and the building industry. Conformity to IIBEC's Code of Ethics is expected of all credential holders.
 4. The applicant shall always be objective, unbiased, and impartial in 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 benefit or other interest, or acceptance of any contribution or benefit that could reasonably appear that such activity, employment, interest, or contribution could compromise the individual's professional judgment or prevent the individual from serving in the best interest of the client or employer.
- C. Documentation is required regarding an applicant's experience, education, professional registration, training, etc. An applicant's education and/or work experience is evaluated through 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.



APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

RENEWAL REQUIREMENTS

A. The Registered Roof Consultant must complete the following to maintain their credential:

1. Pay a renewal fee annually through the online renewal application process.
2. Complete 12 roofing, waterproofing, and/or exterior wall related CEHs. All registrants are encouraged to self-report CEHs via the online portal process.

Continuing Education Hour (CEH) requirements and renewal guidelines are available on the [IIBEC website](#). Credential holders are responsible for reviewing and complying with the current CEH Requirements & Guidelines applicable to their credential.

EXPERIENCE IS MANDATORY FOR REGISTRATION – EDUCATION ALONE WILL NOT SUFFICE.

The following assignment of points shall be implemented:

Education – High school education or equivalent is required. Ten points shall be awarded per year of successful completion of college. A maximum of 30 points may be received if a degree is not earned. A diploma or an official transcript must be furnished for all educational points submitted.

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)
Master's 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, building science, chemistry, roof consulting, or roof technology*

Professional Registration – 20 points shall be awarded to registered architects (RA) and professional engineers (PE). Persons with dual (RA and PE) or multiple (2 RAs or 2 PEs) registrations shall receive a maximum of 20 points. (include copy of license or registration with expiration date). Points may be awarded for other certifications.

Registered Architect	=	20 points
Registered Engineer	=	20 points
Registered Roof Consultant	=	10 points
Registered Waterproofing Consultant	=	10 points
Registered Roof Observer	=	5 points
Registered Exterior Wall Observer	=	5 points
Other Registrations	=	5 points

The maximum number of points for professional registrations is 20 points.



APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Project Experience – One 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 or Design Review of Contract Documents (Drawings, Specs, etc.)	30
3	Contract Administration/Project Management	30
4	Construction Observations/Quality Assurance Observations	30
5	Legal: Forensic Investigations, Depositions, Expert Testimony	30
6	Roof Moisture Surveys (Infrared, Nuclear, and/or Capacitance)	30
7	Field & Laboratory Testing: Physical/Quantitative Analyses	30
8	Research Directly Related to Roofing	30
9	Publications Related to Roofing (Articles, Books, Theses)	30
10	Lectures Presented Related to Roofing (Emphasizing Education)	20
11	Roof Contracting Projects	10
12	Professional Association Active Participation (IIBEC, CSI, ASTM, etc.)	5

** The above items refer to services rendered or tasks performed by the applicant, not by someone under the applicant's direction. The applicant's experience as a roof consultant is being evaluated, not the management ability of the applicant or the experience of the employer or subordinates. See Supplemental Sheet A for additional information regarding these items.



APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Roof consultants shall have a relatively broad base of experience. Applicant must earn points from experience in a minimum of three categories. To ensure that all applicants have well-rounded experience, each category is restricted in the number of points allowed. Points may be earned from more than one category for a single project. For example, if the applicant performed a roof condition survey and an infrared roof moisture survey, supplemented with a nuclear gauge, gave deposition for litigation, and wrote an article that was published in a magazine for a single project, four points could be earned—one each for categories 1, 5, 6, and 9.

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

Examples of computation of points:

- | | |
|-----------|---|
| Example 1 | A person with one year of college (10 points, industry-related) would require 90 points through experience (90 projects that qualify for one point each or other combination thereof). |
| Example 2 | A registered engineer (20 points) with a four-year degree (40 projects that qualify for one point each or other combination thereof). |
| 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 that qualify for one point each or other combination thereof). |
| 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 that qualify for one point each or other combination thereof). |

The “Project Register” forms are to be completed for each project an applicant claims for experience points. One blank sheet is provided. The applicant may attach additional copies as needed. Check multiple categories if applicable.

This application is intended for completion by honorable professionals. Each application will be reviewed and evaluated. False or misleading information will result in severe penalties, including denial of application.

Applicants are encouraged to submit applications through the online process.

** **

APPLICANT PLEASE NOTE: *Members and registrants of IIBEC 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. IIBEC currently has no state jurisdiction or governmental registration sanction.*

FOR MORE INFORMATION, please visit <https://iibec.org/credential-faq>.



Begin Your Journey

Earn Your IIBEC Credential

APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

This application is provided for read-only purposes.
Please use the IIBEC Portal to fill out and submit your application online.

SECTION 1: PROFILE INFORMATION

Full Name:

Last First Middle Nickname

Home Address:

Number and Street Apt. Box Road/Rural Route

City County State & Zip Code Phone Email

Birth:

Date City State Citizenship

Have you ever applied for IIBEC Registered Roof Consultant classification before? Yes No

If yes, please give date of application:

Are you a Registered Architect? Yes No

Date of first registration: State: #: Other States:

Are you a Professional Engineer? Yes No

Date of first registration: State: #: Other States:

Are you a contractor or employed by one? Yes No

Type: () General () Roofing State and license number for each:

Are you employed by or do you own a company that manufactures, distributes, or sells roofing products or materials? Yes No

Identify:

What percent of your principal income do you derive as a roof consultant? %

As a waterproofing consultant? % **As an exterior wall 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? Yes No

SECTION 2: BUSINESS INFORMATION

Employer Business Type: Other:
Consulting Architectural Engineering Contractor Manufacturer Distributor

Name of business:

Business address:

Number and Street City State Zip

Business contact:

Phone Fax

Organization: Individual Individual Proprietorship Partnership Corporation

Other [please specify]:

APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Name: _____

Date: _____

**This application is provided for READ-ONLY PURPOSES.
Please use the IIBEC Portal to fill out and submit your application online.**

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 is not required with 10 or more college coursework units). A CERTIFIED COPY OF THE TRANSCRIPT(S) should be forwarded directly to IIBEC. A copy of the diploma is also acceptable. For incomplete college or university work, indicate the number of semesters completed. Attach additional sheets as required.

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	Degree
High School						
Junior College						
College						
Other						
Other						

Record Educational Points on **Attachment Sheet 3**

APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

SECTION 4: PROFESSIONAL EMPLOYMENT HISTORY

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

SECTION 5: PROJECT EXPERIENCE

On **Attachment Sheet 2**, list projects for which project experience is claimed. A minimum of 10 projects from three separate service categories must include a project contact and telephone number. Additional project/project contact information may be requested during the application approval process. The categories listed below refer to services rendered or tasks performed by the applicant, not by someone under the direction of the applicant. The experience of the applicant as a roof consultant is being evaluated, not the applicant's management ability or the experience of the applicant's employer or subordinates. See Supplement Sheet A for additional information regarding the categories listed below.

One point shall be awarded per project or task in the following categories of experience related to roofing. Points must be earned in a minimum of three categories.

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

On **Attachment Sheet 3**, summarize your project experience, education, and professional registrations. A minimum of 100 points is required for application approval.

APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

SECTION 6: CONTINUING EDUCATIONAL HOURS EARNED

On **Attachment Sheet 4**, provide information regarding your receipt of continuing educational hours through your attendance at programs directly related to the industry. Attendance at a minimum of three roofing, waterproofing, and/or exterior walls related programs (i.e. IIBEC, AIA, BURSI, or other approved educational programs) is required, and documentation of such attendance must be provided. Programs must be technical in nature (not sales or product oriented). Online courses and programs meeting these requirements are acceptable. Documentation should be in the form of a certificate, transcript, or letter from the sponsoring organization stating the name of the course, date course was held, and number of hours awarded. A minimum of 70 credit hours is required. Continuing Educational Hours (CEHs) can be no older than 10 years.

SECTION 7: CODE OF ETHICS

The "Code of Ethics" for IIBEC (**Attachment Sheet 5**) outlines the obligations of the consultant to the public, the client, the employer, the profession, and the building industry. The Registered Roofing Consultant must promote and conform to these Standards.

SECTION 8: AFFIDAVIT REGISTRATION, AUTHORIZATION, AND RELEASE

Please complete **Attachment Sheet 6** in the presence of a notary and submit to IIBEC electronically with the application.

Name: _____

Date: _____

SECTION 4: PROFESSIONAL EMPLOYMENT HISTORY

PAGE ___ OF ___

New Update Continuation Sheet

.....
 List in chronological order, beginning with the first employer, applicant’s work history directly related to roofing. Do not include employment in nonrelated fields or employment. Add additional sheets as necessary.

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

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

SECTION 5: PROJECT EXPERIENCE**DESCRIPTION OF PROJECT CATEGORIES****1 Roof Condition Surveys, Audits, or Investigations**

This category applies to the scope of work in which an individual performs a visual condition assessment of a roof. The assessment would be performed in general accordance with the recommended procedures of IIBEC, 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 or Design Review of Contract Documents (Drawing, Specifications, etc.)

This category may include the preparation of a complete set of documents, including the bidding documents, general conditions, technical specifications, roof plans, sections, and details, as they relate specifically to roofing. On some projects, however, only the technical specification must be prepared by the individual for implementation within another design professional's contract documents. The contract documents, in any event, would be complete. Design review of construction documents, specifically related to roofing materials and systems, is acceptable.

3 Contract Administration/Project Management

This category applies to the administration of a roof construction project (reroofing, repairs, and/or new construction) and may include some or all of the following duties: review of roofing-related submittals; oversight of quality assurance personnel; administration of prebid, preconstruction and progress meetings; evaluation of applications for payment, change orders, CPRs, CCDs; and requests for information (RFIs); communication with owner with respect to work progress; provision of supplemental sketches; and other contract administration activities as defined in the CSI Manual of Practice.

4 Construction Observations/Quality Assurance Observations

This category includes observations performed by the applicant during construction for the assurance of the 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 individual 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 earned by an individual supervising a technician performing these services. Points earned in this category must be the direct on-site experience of the applicant.

5 Legal: Forensic Investigations, Depositions, and Expert Testimony

This category includes forensic investigation that 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. Only one point may be claimed for each legal case for this category; multiple points are not allowed where both deposition and court testimony are provided. Experience in this category is applicable even if the case does not go to trial.

6 Roof Moisture Surveys (Infrared Nuclear and/or Capacitance)

This category includes performance of 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 survey reports are issued.

One point is awarded for each project on which a roof moisture survey is performed, not each roof. Roof moisture surveys may be supplemented with destructive testing to confirm the nondestructive 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, or a project including surveys on seven buildings, 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.

7 Field & Laboratory Testing: Physical/Quantitative Analyses

This category refers to ASTM testing for physical, qualitative, 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 that may be performed in roof condition surveys, moisture condition surveys, or other services.

8 Research Directly Related to Roofing

This category 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.

9 Publications Related to Roofing (Articles, Books, Theses)

This category includes 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.

10 Lectures Presented Relating to Roofing (Emphasizing Education)

This category includes lectures that emphasize the educational or technical nature of the presentation. Credit shall not be awarded to lectures in which the primary purpose of the presentation was to promote one's company or abilities. 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.

11 Roof Contracting Projects

This category includes 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 service was intended. Persons receiving points for this category 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.

12 Professional Association Active Participation

This category includes active two-year participation in professional associations such as IIBEC, NRCA, SWRI, CSI, ASTM, ASCE, AIA, etc. Active participation is mandatory; merely being a card-carrying member is not sufficient. One point is awarded per association.

Name: _____

Date: _____

SECTION 5: PROJECT EXPERIENCE

PAGE ___ OF ___

(Check multiple categories per project, if applicable. See pages 7 and 8 for descriptions.)

Project Register*	1	2	3	4	5	6	7	8	9	10	11	12
Project Name:												
Project Location:												
Project Contact:												
Project Contact Telephone #:												
Project Date:**												
Project Name:												
Project Location:												
Project Contact:												
Project Contact Telephone #:												
Project Date:**												
Project Name:												
Project Location:												
Project Contact:												
Project Contact Telephone #:												
Project Date:**												
Project Name:												
Project Location:												
Project Contact:												
Project Contact Telephone #:												
Project Date:**												
Project Name:												
Project Location:												
Project Contact:												
Project Contact Telephone #:												
Project Date:**												
Total for Each Column:												

*A minimum of ten (10) projects from three (3) separate service categories **must include a project contact and telephone number.**

**Include month(s) and year(s) of each project. Additional projects and/or contact information may be requested.

Duplicate sheet as needed.

Name: _____

Date: _____

SUMMARY OF POINTS

SECTION 5: PROJECT 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 or Design Review of Contract Documents (Drawings, Specifications, etc.)	30	1		
3	Contract Administration/Project Management	30	1		
4	Construction Observations/Quality Assurance Observations	30	1		
5	Legal: Expert Testimony, Deposition, Forensic Investigations	30	1		
6	Roof Moisture Surveys (Infrared, Nuclear, and/or Capacitance)	30	1		
7	Field & Laboratory Testing: Physical/Quantitative Analysis	30	1		
8	Research Directly Related to Roofing	30	1		
9	Publications Related to Roofing (Articles, Books, Theses)	30	1		
10	Lectures Presented Related to Roofing (Emphasizing Education)	20	1		
11	Roof Contracting Projects	10	1		
12	Professional Association 2-year Active Participation (IIBEC, AIA, SCWI, ICRI, CSI, ASTM, etc.)	5	1		
Total Number of Points Claimed for Project Experience (Max = 100)					

EDUCATIONAL POINTS

Services Rendered or Task Performed	Industry-Related*	General	Total
4-Year Curriculum	40	32	
5-Year Curriculum	50	40	
Master’s Degree	10	8	
Doctorate Degree	10	8	
College (No Degree)	10 /year (Max 30)	10 /year (Max 30)	
Associate Degree	10 /year (Max 30)	10 /year (Max 30)	
Total Number of Credits Claimed for Education (Max. 50)			

**Industry-related degrees include architecture, engineering, construction, chemistry, roof consulting, or roof technology.*

PROFESSIONAL REGISTRATION POINTS

Professional Registrations	Credits	Total
Registered Architect*	20	
Registered Engineer*	20	
Registered Waterproofing Consultant	10	
Registered Exterior Wall Consultant	10	
Registered Roof Observer	5	
Registered Exterior Wall Observer	5	
Other* #: _____	5	
Total Number of Point Claimed for Registration (Max. 20)		

GRAND TOTAL NUMBER OF POINTS CLAIMED

NOTES:

1. Applicant must have points in a minimum of three categories.
2. A project register must be completed for each project. Some may include more than one service category.
3. A minimum of ten projects from three separate service categories must include a contact and 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. *Provide Copy of current license or registration certificate, which indicates current expiration date.
9. # Current license or registration must be recognized by a government agency or jurisdiction and require a minimum of a twoyear industry-related degree from an accredited institution, and successful completion of an examination.

Name: _____

Date: _____

SECTION 6: CONTINUING EDUCATIONAL HOURS EARNED

PAGE ___ OF ___

New Update Continuation Sheet

.....
 Include documentation of attendance in the form of a certificate, transcript, or letter from the sponsoring organization stating the name of the course, date course was held, and number of hours/units awarded. Acceptable programs must be technical in nature (not sales or product oriented) and industry related. To be acceptable, Continuing Educational Hours (CEHs) can be no older than 10 years. There is a maximum of 16 credit hours accepted per program. Online courses and programs meeting these requirements are acceptable.

A minimum of 70 credit hours is required.
Please list your continuing educational courses in chronological order!

Course Name	Presented by	Dates	Hours
Total #			

SECTION 7: CODE OF ETHICS**PAGE 1 OF 2****International Institute of Building Enclosure Consultants**

Adopted July 17, 2001 / Revised March 28, 2006 / Revised September 19, 2015 / Revised September 24, 2022

Introduction

The International Institute of Building Enclosure Consultants (IIBEC) is dedicated to the highest standards of professionalism, integrity, and competence. The standards contained in this Code of Ethics (Code) are statements of ethical principles by which the professional conduct and obligations of all IIBEC members and registrants shall be guided.

Under the IIBEC Bylaws, all IIBEC members and registrants are required to comply with the Code of Ethics and to report any observed violations. Adherence to this Code must be above reproach and beyond the influence of competing interests. Even the appearance of a conflict of interest shall be avoided.

The standards contained in this Code of Ethics are statements of ethical principles having broad applicability to members and registrants of IIBEC.

Members and registrants of IIBEC shall recognize that their profession and their practice may be governed by various laws (federal, state, provincial, local, or otherwise) 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.

Standard of Care Statement

This Code is not intended to define the Standard of Care a member or registrant is required to meet and shall not be used as a reference or part of a civil action against a member or registrant.

General Obligations

Members and registrants shall maintain and further their knowledge of the profession in which they practice and shall maintain the utmost standard of professional judgment and conduct. Members and registrants shall conduct themselves and their practice honestly and impartially, serving with integrity the organization (IIBEC), other members, their clients, employers, and the public.

IIBEC does not tolerate harassment, discrimination, racism, violence, retaliation, and other disrespectful or inappropriate behavior. Members and registrants shall conduct themselves with integrity, in a professional manner and treat everyone with respect and dignity,

including those with differences including but not limited to gender, gender identity, race, color, age, disability, sexual orientation, ethnic origin, veteran status, religion, or other legally protected characteristics.

IIBEC members and registrants are committed to diversity and inclusion and shall value and embrace diversity in the profession and participation in IIBEC programs and activities.

Fundamental Canons

Members and registrants of IIBEC, in the performance of their duties, shall:

- 1 Hold paramount the safety, health, and welfare of the public.
- 2 Conduct themselves in a professional and respectful manner and recognize the contributions of the project team engaged in consulting, design, and construction.
- 3 Value, and treat with respect and dignity all individuals, regardless of gender, gender identity, race, color, age, disability, sexual orientation, ethnic origin, veteran status, religion, or other legally protected characteristics.

Rules of Practice**1 Safety, Health, and Welfare of Public Responsibilities:**

- a Adhere to applicable laws and regulations.
- b When necessary, rely on the advice of other competent and qualified persons as to the intent and meaning of such applicable laws and regulations.
- c Be honest in conduct, and promote effective use of resources through transparent, and impartial service with fidelity to the public, employers, associates, and clients;
- d Approve and/or issue only those documents that they prepare or review and that are determined to be safe for public health and welfare, in conformity with accepted industry standards and applicable laws;
- e Neither offer to nor make payments or gifts to public officials, private clients, or industry representatives with the intent of influencing

SECTION 7: CODE OF ETHICS

PAGE 2 OF 2

that person's judgment or decision in connection with an existing or prospective project in which the member/registrant is interested.

- f Do not mislead about the results that can be achieved through the use of the members' or registrants' services or products, nor shall the members or registrants state that they can achieve results by means that violate applicable laws;
- g If a member's or registrant's judgment is overruled under circumstances that, in the opinion and best professional judgment of the member or registrant, may endanger life may cause substantial damage to property, or is not compliant with applicable laws and regulations, the member or registrant shall:
 - i Advise an employer and/or client about the decision,
 - ii Refuse to consent to the decision, and
 - iii Notify the appropriate Authority Having Jurisdiction charged with the enforcement of the applicable laws or regulations.

2 Professional Responsibility:

- a Be respectful and considerate to others in obtaining work and employment, and while participating in IIBEC events;
- b Exercise unprejudiced and unbiased judgment and conduct when performing services;
- c Make accurate, truthful, and appropriate statements or claims about their qualifications, experiences, or performance;
- d Perform services in areas of professional and personal competence;
- e Undertake assignments only when qualified by education and experience in the specific technical fields involved;
- f Further knowledge of technical and non-technical capabilities including, but not limited to, the science, principles, and ethics of the profession and community;
- g Evaluate and decline activity or employment, financial or other interest, and refuse contribution if it reasonably appears that such involvement could compromise judgment and the best interests of the clients or employers. Provide full disclosure to the client or employer and obtain consent thereto;
- h Restrict the use of their names or firms nor associate in business ventures with persons

or firms that they have reason to believe are engaged in fraudulent or dishonest business or professional practices.

- i Similar to statement c. above Engage only in accurate, appropriate, and truthful promotion of their practice;
- j Be objective and truthful in reports, statements, testimony, and on social media;
- k Maintain client and employer confidentiality when applicable;
- l Comply with obligations relating to confidential information and applicable data privacy laws in relation to its use, processing, and storage of professional and personal data;
- m 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;
- n Develop and disseminate accurate information related to consultation, design, and construction of building enclosure systems.
- o Do not accept compensation – financial or otherwise – from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed.
- p Members and registrants having substantial information leading to a reasonable belief that another member or registrant has committed a violation of this Code that raises a serious question as to the honesty, trustworthiness, or fitness of the other member or registrant are encouraged to initiate a complaint with the IIBEC Ethics Committee and/or applicable Authority Having Jurisdiction.

Enforcement and Amendment

- 1 Enforcement of the Code of Ethics is administered through the IIBEC Ethics Committee, appointed by the IIBEC Board of Directors, and the Board of Directors as set forth in the IIBEC Ethics Administrative Procedures.
- 2 The IIBEC Code of Ethics may be amended by the IIBEC Board of Directors upon a two-thirds vote of the Board.

For more information, please visit [IIBEC.org/membership/code-of-ethics/](https://iibec.org/membership/code-of-ethics/).

Name: _____

Date: _____

SECTION 8:

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 the International Institute of Building Enclosure Consultants (IIBEC). 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 benefit 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 IIBEC with any information concerning my qualifications for Registered Roof Consultant that 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)

CHECKLIST TO ACCOMPANY

APPLICATION FOR REGISTERED ROOF CONSULTANT (RRC®)

Attachment Sheet 8

Name: _____

Date: _____

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

- 1 Application fee enclosed (\$375.00 members/\$475.00 nonmembers)
- 2 Completed Sections 1 and 2 of the application
- 3 Section 3 of application:
 - a. High school or college diploma submitted
 - b. College transcript(s) have been submitted, if applicable.....
- 4 Section 4 of application – Attachment Sheet 1:
 - 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 experience is included on Attachment Sheet 3.....
 - b. At least 10 contact names and phone numbers are listed from three 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.....
 - c. Points have been attained in a minimum of three categories
 - d. Points claimed for professional registration are substantiated by a copy of my registration certificate or license
- 7 Section 6 of application – Attachment Sheet 4:
 - a. All course names, sponsoring organization, dates, documentation, and credit hours claimed are listed
 - b. I have attended a minimum of three separate industry related programs (70 hours)
- 8 Section 7 of application – Attachment Sheet 5:
 - a. I have read and agree to abide by the Standards of Ethical Practice (Code of Ethics) for IIBEC.....
- 9 Section 8: of application – Attachment Sheet 6:
 - a. Affidavit has been executed and notarized
- 10 Once an application has been submitted to IIBEC the time limit to provide all outstanding information is one year.....

Online applications submittal preferred. Allow 75 days for processing.

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

Signature of Applicant

Date

Exam Study Guide

Prepared By RRC Examination Development Subcommittee



iibec.org/credentials





STUDY GUIDE FOR REGISTERED ROOF CONSULTANT (RRC®) EXAM

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STUDY GUIDE FOR RRC® EXAM

INTRODUCTION

The Registered Roof Consultant (RRC®) Program has been in existence since 1987. The demand for the RRC® title by private clients and public agencies continues to grow rapidly as the industry recognizes the value of the RRC's quantified skill-set. The primary beneficiaries of this program are the public, the roofing industry, and those individuals who become registered.

Registration is a two-part program. The comprehensive application allows IIBEC to verify certain aspects of education, ethics and roofing experience. The online 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 computer-based examination; however, it is not intended to be an inclusive listing of every topic addressed on the test. This document is strictly a guide. A sample of references used in the development of this exam is provided.

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, the candidate must be thoroughly familiar with a broad spectrum of principles related to roof system design, testing and construction. 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 RRC® exam is offered by Meazure Learning, a computer-based testing company, which has

over 1,000 conveniently located testing centers. Consult www.assessments.meazurelearning.com/test-site-cities/ for testing center locations. Approved applicants will be sent exam registration forms. Upon receipt, candidate information will be conveyed to Meazure and they will then contact the candidate to schedule a testing session.

The examination is up to four hours in length and consists of 60 multiple-choice questions that will test knowledge in the following roofing areas: codes and standards, materials and properties, assemblies, analysis and design, and evaluation and testing. Some problems may involve mathematical computations that require familiarity with basic algebra, geometry, and trigonometry. Reference materials, charts, and/or tables needed for the solution of problems will be provided online within the exam.

To earn the RRC® designation, both the General Knowledge Consultant (GCK) and Registered Roof Consultant exams must be taken and passed. There is no separate application for the general exam; approval of the RRC® application will qualify the candidate to take the GCK Exam. If only one of these two exams is passed, the candidate is required to retake only the exam he or she failed. The exam that has been passed will be valid until the candidate passes the other exam and the designation is earned. Candidates who do not initially pass an exam will have the option to retry every four months. Once an applicant has passed the GCK Exam, it will not need to be retaken for other IIBEC consultant designations (Registered Waterproofing Consultant and Registered Exterior Wall Consultant).

Approved applications have a two-year shelf life; and once the application has expired, reapplication will be required.

Although not required, IIBEC offers education programs that may be useful for anyone pursuing this designation: [Recommended Courses for the RRC](#). These courses are available through the IIBEC storefront, [LearnUpon](#).

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

STUDY GUIDE FOR RRC® EXAM

REFERENCES

	Title	Author	Pub. Date
1	ANSI/SPRI FX-1: Standard Field Test Procedure for Determining the Withdrawal Resistance of Roofing Fasteners	ANSI/SPRI	August 11, 2011
2	ASCE 7-10: Minimum Design Loads for Buildings and Other Structures	ASCE	2010
3	FM Global Property Loss Prevention Data Sheets	Factory Mutual Insurance Company	2012
4	International Building Code 2009	International Code Council	February 2009
5	<i>The NRCA Roofing Manual: "Metal Panel and SPF Roof Systems"</i>	NRCA	2012
6	<i>The NRCA Roofing Manual: "Membrane Roof Systems"</i>	NRCA	2011
7	RCIF Publication No. 02.03, <i>Roof Drainage</i>	Patterson/Mehta/Wagner	2003
8	<i>Roof Systems Thermal & Moisture</i>	RCI (now IIBEC)	2011
9	<i>Roof Technology & Science I</i>	RCI (now IIBEC)	2014
10	<i>Roof Technology & Science II</i>	RCI (now IIBEC)	2014
11	<i>Architectural Sheet Metal Manual</i>	SMACNA	January 2012
12	<i>Wind Uplift Pressures on Low-slope Roofs</i>	Stephen Patterson and Madan Mehta	2013

**The references listed above are only some of the many that were used in the development of this exam. This is meant to serve as a guide to illustrate the types of references used; this is not a recommendation or suggestion to purchase all of the publications listed. The most useful tool in preparation for the exam is the following list of skills, knowledge and responsibilities identified by the task force as those associated with acceptable performance within the roof consulting profession. It is recommended that the applicant review this list as it relates to one's experience/skill set and then prepare accordingly with the courses and/or publications that may be helpful to the individual.*

STUDY GUIDE FOR RRC® EXAM

As part of the exam revision process, the committee of subject matter experts systematically compiled a list of domains 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 included below. The percentage of questions on the exam from each section is indicated.

Sections	Section/Domain Title	Percentage of questions from section on exam
SECTION 1	CODES AND STANDARDS	8.5%
Objective 1.1	Identify application of fire codes for roof design.	
Objective 1.2	Identify industry standards that apply to roof design.	
Objective 1.3	Describe application of building codes and standards that apply to roof design.	
SECTION 2	MATERIALS AND PROPERTIES	16.5%
Objective 2.1	Describe roofing component characteristics.	
SECTION 3	ASSEMBLIES	20%
Objective 3.1	Describe characteristics of steep-slope assemblies.	
Objective 3.2	Describe characteristics of low-slope assemblies.	
Objective 3.3	Describe characteristics of flashings and details.	
SECTION 4	ANALYSIS AND DESIGN	30%
Objective 4.1	Demonstrate knowledge of wind design.	
Objective 4.2	Demonstrate knowledge of drainage design.	
Objective 4.3	Demonstrate knowledge of moisture control systems.	
Objective 4.4	Demonstrate knowledge of thermal system design.	
SECTION 5	EVALUATION AND TESTING	25%
Objective 5.1	Describe quality-assurance practices.	
Objective 5.2	Describe field and laboratory testing practices.	
Objective 5.3	Demonstrate knowledge of moisture surveys.	
Objective 5.4	Demonstrate knowledge of visual roof condition. assessments.	
Objective 5.5	Describe roof failure modes and mechanisms.	
	TOTAL PERCENTAGE	100%

RRC® SAMPLE EXAM QUESTIONS

Sample questions are provided from each section of the exam and are indicative of the types of questions you 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.

CODES AND STANDARDS

1. You are asked to prepare specifications for a new 100,000-square foot [9,290-square-meters] warehouse in Kansas City, Missouri. The building will have a structural steel frame and a corrugated metal roof deck. The client has indicated they plan to be insured by FM Global and will need a Class 1-rated roof assembly. The client has also requested that the roof assembly consist of a modified bitumen roof covering with a minimum *R*-value of 20 [*RSI* = 3.52] installed over the roof deck.

Which two standards should be referenced in the performance standards of the roof specification to address the fire rating of the assembly? (Choose two.)

- A. FM 1-28
 - B. FM 1-52
 - C. FM 4450
 - D. FM 4470
2. You are calculating the uplift for an edge metal attachment.
- Which standards organization would you use for your design?
- A. SMACNA
 - B. ASTM
 - C. ANSI/SPRI
 - D. NRCA
3. Which two components of a roof assembly are administered by requirements in ASHRAE Standard 90.1? (Choose two.)
- A. Insulation
 - B. Ballast
 - C. Air barrier
 - D. Metal deck

MATERIALS AND PROPERTIES

4. For a gravel-surfaced built-up roof membrane, the aggregate surfacing provides which two primary functions? (Choose two.)
- A. Splitting resistance
 - B. Impact resistance
 - C. UV resistance
 - D. Water resistance
5. A tile roof is to be installed on a building located in a hot/humid climate with a plywood roof deck installed at a slope of 3 units vertical in 12 units horizontal, and the dimension of the S-shaped tile is 18 inches [450 mm] long and 18 inches [450 mm] wide with an installed weight of 10 psf [479 Pa].

According to the Tile Roof Institute, what is the recommended attachment method?

- A. One steel nail with 5/16-inch [8-mm] diameter head of length to penetrate 1/2 inch [13mm] into the deck or batten.
 - B. Two copper nails with 3/8-inch [9-mm] diameter head of length to penetrate 3/4 inch [19 mm] into or through the thickness of the deck or batten.
 - C. One hot-dipped galvanized screw with 5/16-inch [8-mm] diameter head of length to penetrate 3/4 inch [19 mm] into or through the thickness of the deck or batten.
 - D. Medium-sized patty of mortar composed of Type I Portland cement, cleaned/sieved sand, and potable water.
6. What are two purposes of gypsum cover boards? (Choose two.)
- A. To prevent crushing of roof insulation
 - B. To improve water resistance
 - C. To improve fire resistance
 - D. To reduce the number of fasteners required for attachment

RRC® SAMPLE EXAM QUESTIONS

7. The coating for a spray-applied polyurethane foam roof contains 69 percent solids at the time of application.

For average 15-mil [0.38-mm] dry film thickness, what is the wet mil thickness required for a single-coat application measured to the nearest mil [0.03 mm]?

- A. 10 mils [0.25 mm]
- B. 18 mils [0.46 mm]
- C. 22 mils [0.56 mm]
- D. 25 mils [0.64 mm]

ASSEMBLIES

8. A standing-seam metal roof has thermal movement caused by changes in temperature. When designing for expansion and contraction, the consultant elects to affix the panels at the ridge.

At which location should the panels be affixed?

- A. At the eave
- B. At the hip
- C. At the lap joints
- D. At the valley

9. What are two ways that ANSI/SPRI/FM 4435/ES-1 is used in the design of perimeter edge systems? (Choose two.)

- A. To determine vertical and horizontal loads on sheet metal and wood nailers
- B. To determine the type of fasteners used to attach metal edge systems
- C. To prescribe the field test procedures for metal edge systems
- D. To prescribe the laboratory testing procedure for metal edge systems

10. A client asks you to investigate a SPF roof system that has developed numerous blisters. Core samples reveal larger, elongated cells between two of the lifts.

What caused the blisters?

- A. Tree-bark foam texture on the lower lift
- B. Off-ratio foam on the upper lift
- C. Ultraviolet degraded foam of the lower lift
- D. Popcorn foam texture on the upper lift

11. As part of a factory expansion, additional plumbing vents are being provided in the existing conventional built-up roofing system.

Which two features should be included in the flashing detail at these penetrations? (Choose two.)

- A. Cant strip
- B. Metal flashing
- C. Wood curb
- D. Membrane stripping sheet

12. You are designing a sump for a roof drain on a low-sloped roof.

According to NRCA guidelines, how wide should the sump be?

- A. Ten times the thickness of the insulation
- B. The drain bowl size plus 24 inches [610 mm]
- C. 36 inches [914 mm] minimum
- D. 48 inches [1219 mm] minimum

RRC® SAMPLE EXAM QUESTIONS

ANALYSIS AND DESIGN

13. Refer to Exhibit #1

A building is located on open terrain with scattered obstructions. The distance from the ground surface adjacent to the building to the roof eave varies from 54 feet [16.5 m] to 58 feet [17.7 m].

In accordance with ASCE 7-10, what is the Velocity Pressure Exposure Coefficient for this roof as shown in the exhibit?

- A. 1.106
- B. 1.114
- C. 0.834
- D. 0.842

14. A client asks you to calculate the design wind pressure for a roof on a building that meets enclosure classification requirements for both an open and partially enclosed building.

According to ASCE 7-10, which statement is true?

- A. The building should be classified as an open building.
- B. The building should be classified as an enclosed building.
- C. The building should be classified as a partially enclosed building.
- D. The building classification is not required when calculating design wind pressures.

15. Refer to Exhibit #2

You are designing the drainage for a new house, and the owner wants to have half-round gutters that are to be installed level with two downspouts. The roof has a slope of 6:12 and is located in an area where the rainfall intensity is 5.7 inches [146 mm] per hour.

Referring to the exhibit, what is the minimum diameter gutter size to be used assuming the downspouts are adequate to drain the roof?

- A. 5 inches [127 mm]
- B. 6 inches [152 mm]
- C. 7 inches [178 mm]
- D. 8 inches [203 mm]

16. Refer to Exhibit #3

You are designing the replacement for the upper roof section on a commercial building. The existing scuppers are only 4 inches [102 mm] wide and often become clogged with debris. For the building shown on the exhibit, the head of water at the scupper is 1 inch [25.4 mm] and a rainfall intensity of 2.75 inches [69.9 mm] per hour.

What is the minimum scupper length for the scupper on roof section C?

- A. 7 inches [178 mm]
- B. 8 inches [203 mm]
- C. 9 inches [229 mm]
- D. 10 inches [254 mm]

17. You are asked to perform a peer review on a low-slope roof system for a new indoor pool facility.

The roof assembly contains the following:

- metal deck
- 1/2 inch [13 mm] gypsum
- 6 mil polyethylene vapor retarder
- 2 inches [50 mm] polyisocyanurate (two layers, staggered)
- 1/2 inch [13 mm] wood fiber cover board
- 4-ply BUR

The system is to be mechanically fastened to the deck through the polyisocyanurate.

Which two concerns should you bring to the attention of the architect? (Choose two.)

- A. A hygrothermal analysis should be completed of the roof assembly.
- B. No vapor barrier should be installed.
- C. Consider using a different vapor barrier type.
- D. A mechanically fastened membrane would be less prone to thermal bridging.

RRC® SAMPLE EXAM QUESTIONS

18. Refer to Exhibit #4

Referring to the exhibit, what is the temperature between the layers of polyisocyanurate insulation to the nearest whole degree?

- A. 49 degrees F [9.4 degrees C]
- B. 51 degrees F [10.6 degrees C]
- C. 53 degrees F [11.7 degrees C]
- D. 55 degrees F [12.8 degrees C]

19. Your client owns a 20,000 square foot [1,860 square meters] light-industrial warehouse near San Jose, California, which was constructed five years ago. The client is planning to re-coat the existing roof and is concerned about whether this project will need to meet the state's coolroof requirements in regard to solar reflectance.

Which consideration will affect the design of this project?

- A. The color of the existing roof
- B. The U-value of the existing roof assembly
- C. The coating rating by the Cool Roof Rating Council
- D. The height of the existing building

EVALUATION AND TESTING

20. According to RCI (now IIBEC)'s Rooftop Quality Assurance manual, during the installation of a multi-ply asphalt built-up roof.

Which two statements describe quality control guidelines? (Choose two.)

- A. Bitumen is within the recommended equiviscous temperature (EVT) range at the point of felt application.
- B. Roofing plies are installed so sidelaps and endlaps are not bucking water.
- C. Insulation is loosely attached to the substrate or underlying insulation with specified securement.
- D. Substrate is 90 percent dry, clean, reasonably smooth, and suitably prepared to receive insulation and/or membrane.

21. When testing for withdrawal resistance of fasteners, which two conditions would suggest the need for additional pull tests to be performed? (Choose two.)

- A. Steel decking has multiple changes in orientation
- B. Pullout values vary significantly
- C. Water infiltration has occurred
- D. Roof slope changes direction

22. You are asked to investigate possible moisture damage in an existing roofing system; however, the building owner is concerned about cutting or damaging the roof during the fieldtest procedure.

Which two nondestructive techniques should be used? (Choose two.)

- A. Capacitance meter
- B. Core sampling
- C. Electrical resistance probe
- D. Infrared thermography

23. Your client has a series of warehouses at a single facility. You are asked to recommend a single, noninvasive, moisture survey technique to be used on all the roofs. All buildings are single-story, high-bay structures with metal decking. Some buildings feature through-fastened metal panel roofs with fiberglass batt insulation; some feature PVC roofs with foil-faced isocyanurate board insulation. The survey will be conducted during a planned week-long vacation shutdown when you will have complete access to the facility.

Which moisture survey technique should you recommend?

- A. Electrical impedance
- B. Infrared
- C. Capacitance
- D. Electric field vector mapping

RRC® SAMPLE EXAM QUESTIONS

24. During a visual assessment survey of a conventional built-up roofing membrane with peagravel surfacing, the asphalt flood coat of the roofing membrane has areas of displaced gravel.

What does this mean?

- A. The roofing membrane is nearing the end of its service life.
- B. The roofing membrane is experiencing differential movement.
- C. The roofing membrane is experiencing creep.
- D. The roofing membrane is experiencing wind scour.

25. The construction of an existing, original roof on a 12-year-old warehouse located in Duluth, MN, consists of:

- Modified bitumen cap sheet, torch-applied
- Modified bitumen base sheet adhered with asphalt bitumen
- ½-inch [12.5-mm] wood fiberboard adhered with asphalt bitumen
- 2 inches [75 mm] polyisocyanurate insulation mechanically fastened to the roof deck
- Sloped steel deck

The building was originally used for heated dry goods handling and storage but was converted a year ago to a facility for temporary storage of finished pulp products, which is a high humidity activity. Dripping from the roof deck at the interior roof drain openings was observed during the late winter and spring. The roof has not leaked during the summer. Visual examination of the roof did not reveal any apparent damage or excessive deterioration of the roof membrane or the membrane flashings at the rooftop penetrations.

What is the probable cause of the reported dripping at the roof drain openings?

- A. Water penetrating at undetected flaws in the membrane seams
- B. Snow blowing in at the mechanical units during the winter
- C. Condensation accumulation within the roof assembly
- D. Water seeping through the aging membrane

EXHIBIT #1

Velocity Pressure Exposure Coefficients, K_b and K_z

Table 28.3-1

Height above ground level, z		Exposure		
		B	C	D
ft	(m)			
0-15	(0-4.6)	0.70	0.85	1.03
20	(6.1)	0.70	0.90	1.08
25	(7.6)	0.70	0.94	1.12
30	(9.1)	0.70	0.98	1.16
40	(12.2)	0.76	1.04	1.22
50	(15.2)	0.81	1.09	1.27
60	(18)	0.85	1.13	1.31

Notes:

1. The velocity pressure exposure coefficient K_z may be determined from the following formula:

For $15 \text{ ft.} \leq z \leq z_g$

$$K_z = 2.01 (z/z_g)^{2/\alpha}$$

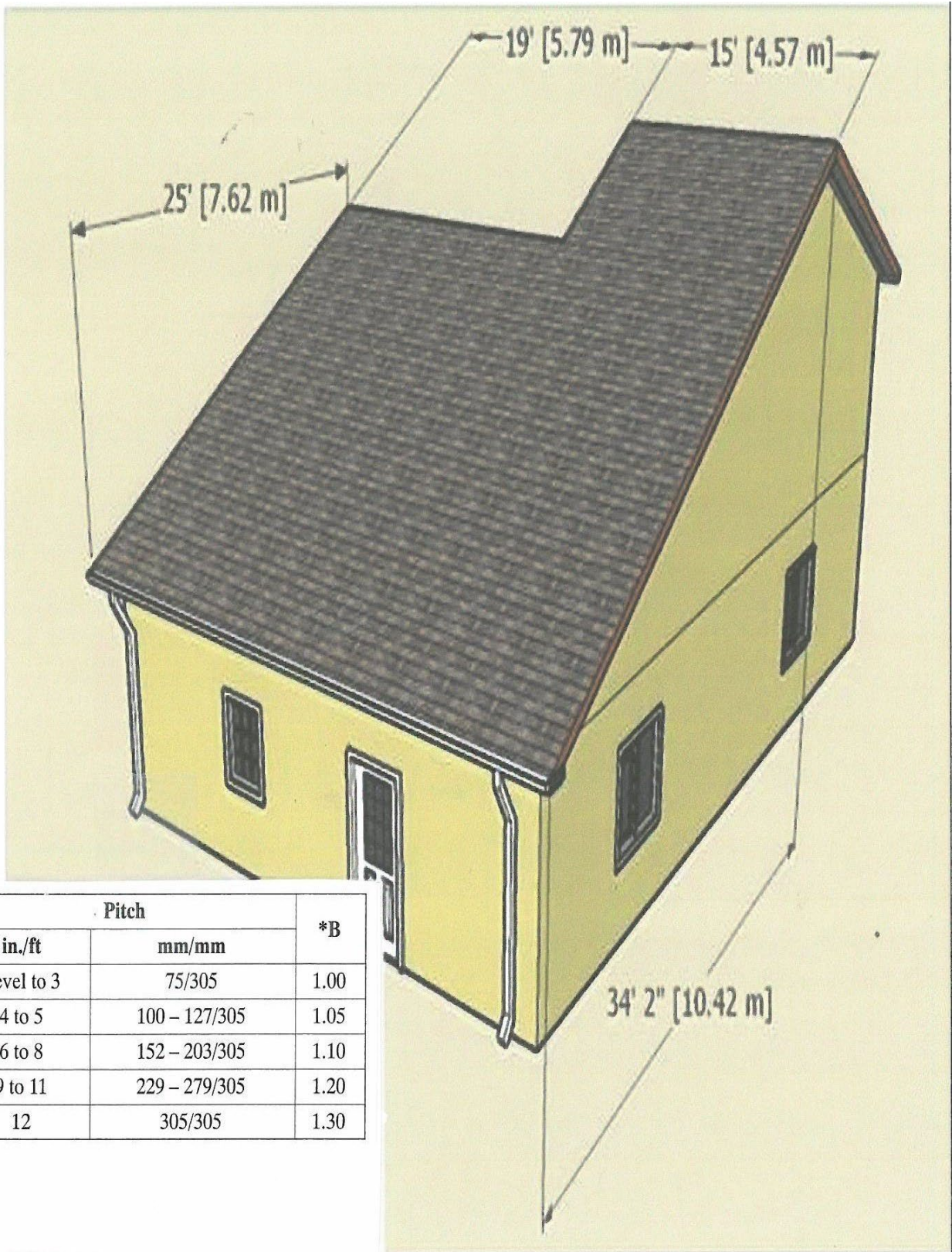
For $z < 15 \text{ ft.}$

$$K_z = 2.01 (15/z_g)^{2/\alpha}$$

Note: z shall not be taken less than 30 feet in exposure B.

2. α and z_g are tabulated in Table 26.9-1.
3. Linear interpolation for intermediate values of height z is acceptable.
4. Exposure categories are defined in Section 26.7.

EXHIBIT #2 (Page 1 of 2)



Pitch		*B
in./ft	mm/mm	
Level to 3	75/305	1.00
4 to 5	100 – 127/305	1.05
6 to 8	152 – 203/305	1.10
9 to 11	229 – 279/305	1.20
12	305/305	1.30

EXHIBIT #2 (Page 2 of 2)

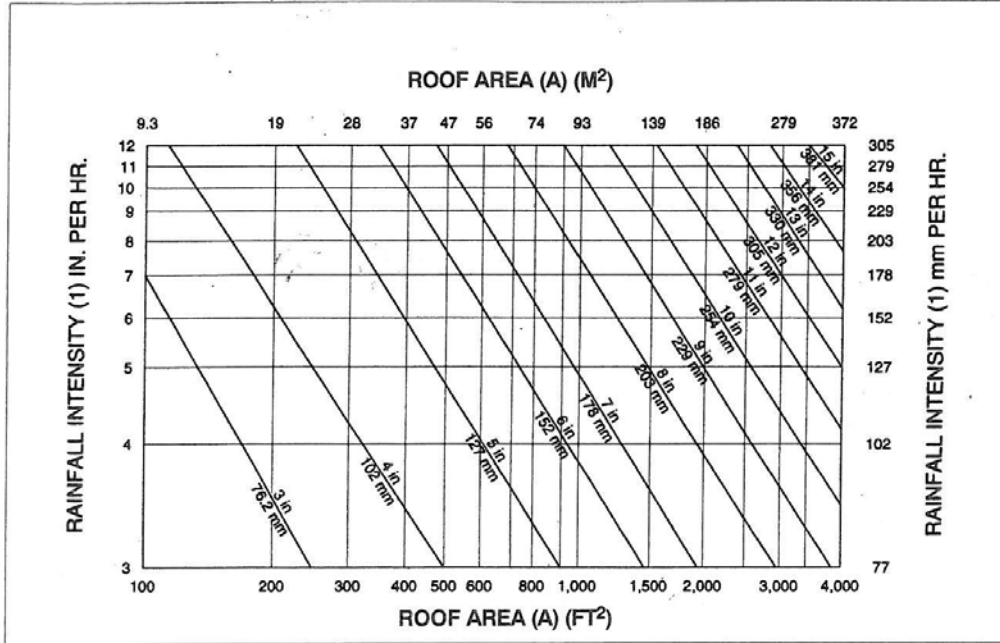


CHART 1-2 HALF ROUND GUTTER SELECTION WIDTH REQUIRED FOR GIVEN ROOF AREAS AND RAINFALL INTENSITIES

Diameters of Gutter		C.S. Area		Level		Level		½ in. per ft. Slope (3.2 mm/0.3 m)				¼ in. per ft. Slope (6.4 mm/0.3 m)			
in.	mm	in. ²	mm ²	ft. ²	m ²	gpm	l/s	ft ²	m ²	gpm	l/s	ft ²	m ²	gpm	l/s
3	75	3.5	2258	680	63	7	0.44	960	89	10	0.63	1360	126	14	0.88
4	100	6.3	4064	1440	134	15	0.95	2040	190	21	1.33	2880	268	30	2.08
5	127	9.8	6321	2500	232	26	1.64	3520	327	37	2.33	5000	465	52	3.28
6	152	14.1	9095	3840	357	40	2.52	5440	505	57	3.60	7680	713	80	5.05
7	178	19.2	12390	5520	513	57	3.60	7800	725	81	5.11	11040	1030	115	7.26
8	203	25.1	16190	7960	739	83	5.24	11200	1040	116	7.32	14400	1338	165	10.4
10	254	39.1	25220	14400	1338	150	9.47	20400	1895	212	13.4	28800	2676	299	18.9

**Table 1-4 Sloped Roof Gutters
Maximum Roof Area for Gutters**

EXHIBIT #3

$$Q = 3.0(L - 0.2H)(H)^{1.5}$$

where:
 Q = drainage capacity of scupper (gpm)
 L = length of scupper (in.)
 H = head of water in the scupper (in.)

$$q = 0.01039(A)I$$

where:
 q = amount of water entering the scupper
 A = roof area drained by the scupper (ft²)
 I = rainfall intensity (in./h)

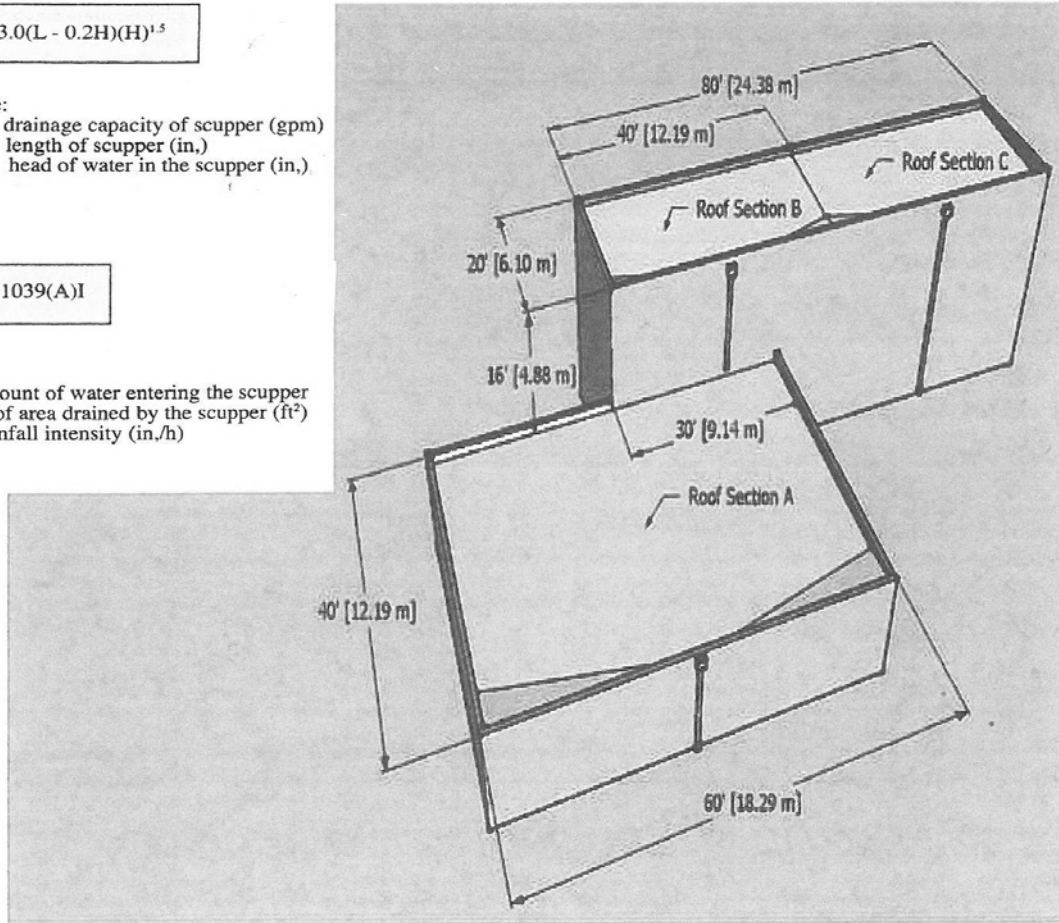
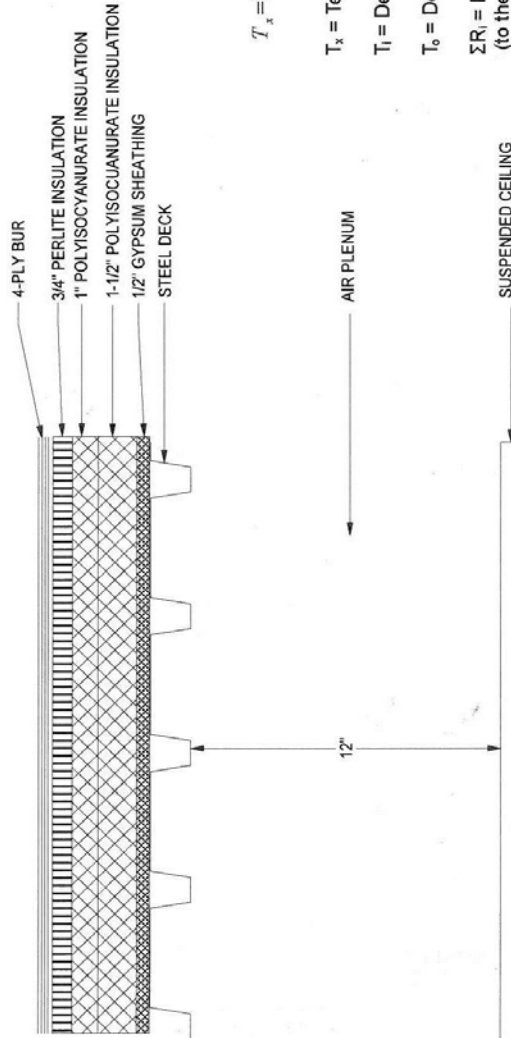


EXHIBIT #4

WINTER CONDITIONS

OUTSIDE TEMPERATURE = 31 DEG. F



R-VALUES

OUTSIDE AIR	0.17
BUR	0.33
3/4" PERLITE	2.08
1" ISO	5.6
1.5" ISO	8.4
1/2" GYPSUM	0.56
STEEL DECK	--
INSIDE AIR FILM	0.61

$$T_x = T_i - \left[\frac{\sum R_j}{\sum R} \right] (T_i - T_o)$$

T_x = Temperature at location x

T_i = Design inside (interior side) temperature (F)

T_o = Design outside (exterior side) temperature (F)

ΣR_i = R-value (F-ft.2-h/Btu) of construction below (to the interior side) of location "x"

ΣR = R-value (F-ft.2-h/Btu) of the overall roof construction

INSIDE TEMPERATURE = 70 DEG. F

RRC® SAMPLE EXAM 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 IIBEC, including courses on the national and regional levels. IIBEC provides [Recommended Courses](#) for pursuing the RRC designation. These courses are available through the IIBEC education storefront, [LearnUpon](#).

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



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