

SFB STAFF
RESPONSE TO
PUBLIC
COMMENTS
FOR ROOFING
SPECIFICATIONS

Roofing Specifications Public Comments Log				
Sr. No.	Sent	From	Topic	Action Taken
1	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Roofing General Specification	Accepted
2	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Roofing General Specification	Accepted
3	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Roofing General Specification	Accepted
4	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Modified SBS Roofing System	Accepted; Modified; Rejected
5	Public Comment Email	Bob Polcar - Roberet Polcar Architects, Inc.	Roofing General Specification	Rejected
6	Public Comment Email as Attachment	TREMCO	Generic	Rejected
7	Public Comment Email as Attachment	David Bosac - BoArch	Generic	Rejected
8	Public Comment Email as Attachment	Bob Pian - SPS Plus Architects	Roofing General Specification	Accepted; Modified
9	Public Comment Email as Attachment	Larry Lind - Architechnology	Generic	Rejected
10	Public Comment Email as Attachment	Walt Hitchcock - SOPREMA	Modified SBS Roofing System	Accepted; Modified; Rejected
11	Public Comment Email	Dave Spice - DAS Products	Spray Applied Polyurethane Foam Roofing System	Accepted; Modified; Rejected
12	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Spray Applied Polyurethane Foam Roofing System	Accepted
13	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Tpo Roofing System	Rejected
14	Public Comment Email	Dave Spice - DAS Products	High Tensile Acrylic Roof Coating System	No Action Required
15	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Cool Roof Coating System	Modified
16	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Asphalt Shingle Roofing System	Rejected
17	Public Comment Email	Dave Spice - DAS Products	Cool Roof Coating System	Rejected
18	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Repair and Recoat of SPF Cementitious Roofing System	Accepted
19	Public Comment Email as Attachment	Jerry Brown (on behalf of ARCA)	Roof Restoration	Accepted

SUBMITTED COMMENT #1

The following comments are from the ARCA committee assigned to review SFB specification documents. We believe these changes are fair and equitable for all parties and the taxpayers.

If you have any questions please contact Duane Yourko (Executive Director) Arizona Roofing Contractors Association at dyourko@azroofing.org, Jeff Starkweather (Starkweather Roofing) Chairperson jeff@startkweatherroof.com or Co-chair Jerry Brown (WRECORP) at jerry@wrecorp.com

General Roofing Performance Specification (07 30 00)

1.1.1. Strike RCI and change to IIBEC, Inc. (formally known as RCI – Roofing Consulting Institute, Inc.)

1.1.1.2 Strike RRC at end of sentence and change to RRO.

2.1.1. To be performed only by a Professional registered by the Arizona Board of Technical Registration (BTR) **or a RRC as registered with IIBEC** with not less than 5 years demonstrated commercial roofing experience. **(This issue was discussed with the BTR and ARCA committee and the BTR had no issue with a non-registrant of the BTR designing roofs.)**

2.1.2 Professional Registrant **Designer** shall carry errors and omissions insurance in the amount of \$1 million per occurrence, \$2 million aggregate, and shall submit evidence of coverage with quote.

2.1.8 Strike this section in its entirety. RoofNav is a testing protocol for FM insured buildings. Schools are not FM insured?

2.1.9 Professional Registrant **Designer** shall mark all submittals in a way that it is easily recognized as the “reviewed submittal” and shall direct the contractor to keep the “reviewed submittal” on site and accessible at all times during the duration of the project. Marking shall be substantially similar to the sample at the end of this section.

2.1.10 Strike Professional Registrant insert **Designer**

2.1.12. Strike Professional Registrant insert **Designer**

2.1.13 Strike Professional Registrant insert **Designer**

2.2.1 Strike Professional Registrant insert **Designer**

2.3.1. Strike Professional Registrant insert **Designer**

2.4.1 Strike Professional Registrant insert **Designer**

2.5.1 Strike Professional Registrant insert **Designer**

3.1.1.1 Strike Professional Registrant insert **Designer**

6.2. Strike Professional Registrant insert **Designer**

8.2. Strike Professional Registrant insert **Designer**

8.2.1 Strike Professional Registrant insert Designer

10.1. Strike Professional Registrant insert Designer

(Under section 2.1.7 you used the term “ Designer”. We agree with this term as it is more concise and appropriate and believe it should be used in lieu of Professional Registrant.)

3.1.5. Contractor shall carry liability insurance in the amount of ~~\$2~~ \$1 million per occurrence, ~~\$5~~ \$2 million aggregate, and shall submit evidence of coverage with quote.

3.1.6. Contractor shall carry umbrella liability insurance in the amount of ~~\$5~~ \$2 million

(We believe that this will allow more viable contractors to participate in the SFB projects. If the cost of the roof is greater than the stated insurance requirements then the contractor shall provide insurance coverage equal to or greater than the cost of the roofing project.)

3.1.8 Bid bonds are required on all bid / quote for projects that are ~~\$100,000~~ \$50,000 or more in construction costs.

(With more restoration and repair projects there will be more bids submitted under \$100,000. Bid bonds are free to contractors and does not cost the SFB any money. Recommend lowering the threshold to \$50k)

SFB STAFF RESPONSE

Comment:

The Comment made towards the Section 07 30 00 – Roofing General Specification is to allow a personnel who is an RRC (Registered Roof Consultant) to be qualified enough to design any roofing system. This is followed by the recommendation that the designated term “Professional Registrant” should be changed to “Designer” as it is more concise and appropriate. The term “RCI” should be changed to “IIBEC” as that is the updated name of the Organization.

Discussion regarding the Comment:

The qualification criteria for anyone to design a roofing system can be opened up to RRC holders as upon reviewing the syllabus for the RRC certification, it is safe to say that this examination focuses on testing the knowledge and skills for a broad spectrum of roof system design, testing and construction. A snip of the syllabus is attached below for the reference.

Sections	Section/Objective 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%

Upon close scrutiny of this, it is thus established that the RRC holder is expected to have complete knowledge of codes, industry standards, various roofing assemblies and thus, the required skill to design a viable roofing system along with proper wind load and drainage system design

to waterproof the exterior envelope of the building. The requirements in Section 2.1.2 shall apply to any RRC holder to qualify as a Designer unless otherwise stated by the BTR. Attached hereby are the meeting minutes of a BTR meeting of L&R Committee held on March 12th 2019. Per their discussion, it was found that reroofing of any building can be termed as maintenance. This can be justified as maintenance due to the fact that reroofing of a building is to extend the useful life of the building.

According to the general working norms within the industry, typically the one who designs the roofing system is termed as “Roof Designer” or a “Designer” while the term “Professional Registrant” is more generic which addresses only those professionals who are Registered Architects by profession and business. Since the qualification criteria is to be opened to the RRC holders as well, then it makes more sense to change the naming convention from “Professional Registrant” to “Designer”.

The name of the organization “RCI” (Roof Consultants Institute) was rebranded to “IIBEC” (International Institute of Building Enclosure Consultants) on March 18th 2019 and thus, it seems straightforward to change the name to “IIBEC”.

Action towards the Comment:

All the recommended changes are hereby accepted after the conclusions based on the discussions above.

SUBMITTED COMMENT #2

Comment:

The Comment made towards the Section 07 30 00 – Roofing General Specification is that The RoofNav Reports should not be a part of the Roofing Spec as it is for FM Insured Buildings. Our Schools aren't FM Insured.

Discussion regarding the Comment:

A RoofNav Report is a complimentary tool from FM Approvals that provides access to the most up-to-date FM Approved roofing products and assemblies. Designed to help roofing professionals, RoofNav provides easy access to all roofing-related information from the FM Approvals - Approval Guide and related installation recommendations from relevant FM Global Property Loss Prevention Data Sheets.

(Source: fmapprovals.com)

Our schools are not registered with the FM Approvals for the RoofNav report. But just in case, if a School District does provide a RoofNav Report, then that report will have to be turned in during the BRG Application for the review of the Assessor and the Liaison. This can be reviewed when the Designer is brought on board at the Scope Confirmation Meeting.

Action towards the Comment:

The Statement will be modified to this:

“Each and every RoofNav report shall be made available for the review during the Assessment Phase by the District to the respective Liaison

and the Assessor. This shall be reviewed along with the Assessment Report in the Scope Confirmation Meeting.”

SUBMITTED COMMENT #3

Comment:

The Comment made towards the Section 07 30 00 – Roofing General Specification is that the Contractor has to carry Liability Insurance in the amount of \$1 million per occurrence and \$2 million aggregate and shall submit the evidence of coverage with quote. Contractors shall carry an umbrella liability insurance of \$2 million. Bid bonds are required on all the bid/quote for projects that are \$50,000 or more in Construction Costs.

Discussion regarding the Comment:

The existing thresholds are for the amount of \$2 million, \$5 million and \$5 million for per occurrence, aggregate and umbrella liability insurance respectively. The recommendation over here is specifically to include the Contractors on smaller jobs so that the competition can increase. The recommended thresholds have to be used for the projects that are estimated to be around less than \$1 million. For the fact that the comment is made to include more contractors eligible to perform that job, it is in best interest for the School Districts to keep the insurance level requirements as they are currently. The bid bond is currently required for all the projects over \$100,000 procured via process of publicly advertised and solicitation. For any scope less than \$50,000, the District is required to get 3 quotes for the scope of work. It is preferred to have a bid bonds only on the projects procured via hard bid process.

Action towards the Comment:

The Statement shall be modified to this:

“Contractor shall carry liability insurance in the amount of \$2 million per occurrence, \$5 million aggregate, and shall submit evidence of coverage with quote.”

“Contractor shall carry umbrella liability insurance in the amount of \$5 million.”

“Bid Bonds are required on all bid/quote for projects that are \$100,000 or more in construction costs.”

SUBMITTED COMMENT #4

Built Up Roofing Modified (075216)

~~Built-Up Modified Roofing (Modified)~~ – (07 52 16) there is a distinct difference between BUR and Modified. This title was used to move the agenda to hot asphalt applied only systems.

4.2 Strike Registered Professional and insert Designer.

8.3.1 The Modified BUR system shall meet ASTM ~~D6162 / 6163 / 6164~~ and Standard Specification test methods – ASTM D5147 and ~~ASTM D2523~~ ~~this test method is for BUR roofing and not modified roofing systems~~. Performance Criteria: Tensile ~~strength~~ and tear strength ~~along with elongation~~ are extremely important relative to the long term performance of low slope roofing systems in Arizona.

8.3.1.1 Strike this entire section as it only discusses tensile and tear strengths. Since Arizona has one of the largest thermo-shock climates in the nation the ability to expand and contract is vitally important. Therefore elongation becomes just as important as tensile and tear strengths. The listed strengths in this section only address tensile and tear and still only allows for 3 manufacturers to participate in SFB BUR projects. Since we ***do not and have not had*** any record of material failure problem with modified roofing products it only stands to reason to allow an manufacturers that produce these products under ASTM D6162 /6163 /6164 participate as long as they have a solid warranty.

SFB STAFF RESPONSE

Comment:

The comment made towards the Section 07 52 16 – BUR Modified is that the title of the specification should be changed from “Built-Up Roofing (Modified)” to “Modified Roofing”. The term “Registered Professional” should be changed to “Designer”. Adding ASTM codes D6162, 6163 and 6164 as ASTM D5147 is for a BUR system. Elongation is a criteria equally important as Tensile Strength and Tear Strength.

Discussion regarding the Comment:

The Built-Up Roofing (BUR) system is a generic type of roofing system consisting of multilayer fiberglass or organic felts. Modified Roofing system, as the name goes, is termed due to the fact that the base and cap sheets are modified by adding other materials to elevate the quality of the product in various aspects. Modified Roofing System can be divided in 2 basic types i.e. 1. APP – Atactic Poly Propylene and 2. SBS – Styrene Butadiene Styrene. SFB has preferred SBS membrane type over the APP membrane due to proven fact that the APP membrane is a modified membrane derived from plastic and thus, has a property to turn brittle over certain duration of time in exposed sunlight and heat. SBS membrane is a modified product derived from Rubber and thus, it has enough elongation property to support the extreme temperature variations that happen in our State. Thus, it is more appropriate to consider the name of “Modified SBS Membrane Roofing System” in lieu of the proposed “Modified Roofing”. Per earlier discussions, it is more appropriate to use the term “Designer” in place of “Professional Registrant”. Per the research regarding ASTM codes, it is more appropriate to use the ASTM D6162/6163/6164 in the specifications as it covers the modified SBS roofing systems with the

liberty of using either Polyester or Glass Fiber or a combination of scrim. To discuss the possibility of including the Elongation Percentages as a requirement in addition to the tear and tensile strengths, the Staff tried conducting enough market research for the availability of products but couldn't reach a satisfactory conclusion and thus fears that including such a criteria without enough data would again cause manufacturers to stay out of the eligibility for bidding on the projects. Thus, it is not advisable to move forward with any Elongation Percentage as a criteria right now but it is a potential candidate for consideration in future once the Staff will have enough data to back the inclusion in the Performance Specifications.

Action towards the Comment:

The Title for this shall be modified to this:

“Modified SBS Roofing System”

The Statement shall be modified to this:

“For existing BUR with tapered insulation that does not contain excessive moisture, the Designer has the option to remove the existing roofing to the insulation or to the deck, if the existing tapered insulation is in good condition, dry and has properly been attached to the deck to meet wind uplift requirements it may remain and does not have to be removed. These decisions will be taken in the Scope Confirmation Meeting.”

The Statement 8.3.1.1. shall remain unchanged.

SUBMITTED COMMENT #5

To the School Facilities Board,

I am writing as an industry professional, an architect registered in the State of Arizona, regarding the SFB's editing and reposting for comments of the "Proposed Performance Specifications" for roof design guidelines and materials specifications.

I choose not to get into specifics on the particular material sections, although generally my comment is it appears each section has been lessened in quality from the specifications put together and agreed to by representatives from the industry. It also appears there is much in the way of personal editorializing in these specs, especially at the ends of the sections on PVC and various roof coatings. Those comments are personal opinions, not representative of general industry experience, and shouldn't be contained in this type of document.

My main concern with the spec rewrite is in regards to the "Roofing Performance Specification", the section which attempts to guide the designer and the design process. There are many questionable elements to this section, I will point out only a few.

The SFB is a state agency and it would seem that by publishing this type of directive manual it is assuming liability normally delegated to design professionals. I would suggest, at a minimum, this document be reviewed by a state attorney, the Arizona Board of Technical Registration and the local office of the American Institute of Architects to insure requirements of professional practice, state laws, and professional contracts would not be violated.

Some of my observations:

Qualifications of the assessor.....1.2.6 "The assessment report shall always contain all the recommendations to correct all the deficiencies in the roofing system along with the complete scope of work.....1.1.1 the assessment report/design can be prepared by "a professional registered by the Arizona Board of Technical Registration, with not less than 5 years of experience, or a Registered Roof Observer". An RRO is (from the RCI website) a "roofing quality assurance observer who monitors the construction process to assure that roofing projects stay in compliance with approved construction drawings". In the original spec document, the one previously posted for public comment and then approved by the board, the assessment was to be done by the professional, or a Registered Roof Consultant RRC. Again, from the RCI website...an RRC is an "independent roof expert with industry-side knowledge of materials performance and design requirements...an RRC is knowledgeable of every facet of the roof construction process and services as the building owner's councilor for matters pertaining to both existing and new construction". An RRC receives training and would be qualified to do the job of assessment the SFB is looking for. The RRO is who you would hire to do the construction inspection and should not be doing roof assessment with recommendations. Why would the SFB change the requirement from RRC to RRO?

1.2.6 ...The assessment report.....there is total confusion as to the scope of the assessment; does it include the design, the structural evaluation, structural design analysis, the HCM testing? This document implies even the design is done in the assessment report including the “complete scope of work” which just needs to be reviewed and agreed to by the registrant (architect) at a meeting. Later, in section 10. Demolition, the requirement is for HCM testing and structural design to be included in the design package. A design professional cannot take liability for this work (structural, HCM, etc) when it was completed under someone else’s direction.

2.1.13...the design professional cannot “sign, seal and stamp the Performance Specifications”. This would result in the design professional sealing work that was done by someone else, not under their direct supervision. This is a violation of the State Board of Technical Registration and would result in the design professional being fined, censured or losing their license.

2.1.13 “Any modification in the Performance Specification is always a subject of discussion with the SFB Staff on a project-by-project basis.” This sentence completely negates the requirements of the specifications and basically leaves it all up to the SFB Staff, on a “project-by-project basis”.

2.2 Construction administration....”provide construction administration services in compliance with AIA-B101.” This is the first mention of an AIA contract. Will the SFB be using AIA contracts and if so who will be designated as the “Owner” in the contract, the district, the SFB? Most of the AIA-B101 applies to other aspects of the design and construction process, who will be editing those sections to remove the design responsibilities from the architect and put it on the assessor? Will the district be editing the contracts or will the SFB?

9. International Energy Conservation Code.....sec 9.1.1...who would typically be the AHJ (authority having jurisdiction) as most of the SFB projects are not submitted for plan review?

10.2 HCM testing/removal/oversight....these are issues where a firm policy had not been established by the SFB. 10.2 and 10.2.1 are in conflict with one another. Typically HCM testing/removal/oversight is not included in the design professional’s package because they don’t have training, certificates, or insurance to cover HCM. This is generally done by the owner.

There are other items in this document which need to be addressed but I don’t want to take up too much with this email. Thank you for your consideration.

Respectfully,
Bob Polcar
Robert Polcar Architects, Inc.
(602) 363-4096

SFB STAFF RESPONSE

Comment:

The Comment made towards the Section 07 30 00 – Roofing General Specification is that the RRC should be the required qualification for the Assessments in lieu of the proposed RRO. The Designer will not seal, sign and stamp the Performance Specifications because that is a work done by somebody else and it is not in compliance with the BTR regulations. Any modifications in the Performance Specifications will always be a matter of discussion between SFB Staff and the Designer is questionable on a project by project basis because that completely negates the Specifications and will leave it all up to the SFB Staff. The Designer shall perform Construction Administration Services in compliance with AIA-B101 will raise concerns/doubts regarding the terminologies in that document and that the contracts will have to be rewritten. There is a doubt regarding who would be the Authority Having Jurisdiction (AHJ) as the design documents for SFB projects are typically not submitted for Plan review. There is a doubt regarding the topics covered in 10.2 and 10.2.1 as they are contradicting themselves due to the fact that they have to be put inside the Design Documents which are prepared by the Designer who is typically not trained, certified, or licensed to cover HCM.

Discussion regarding the Comment:

Per the earlier discussion, the RRO should be qualified to conduct assessment and RRC should be qualified for doing the Design. Coming to the second point, the intent of the Performance Specifications is for the Designer community to adopt them as they were involved in the preparation of these last year. The goal of hiring a Design Professional is that they assume complete liability of the work that they will be

conducting and if the specifications are not going to be fully adopted by them then it can cause issues in future regarding the liability if anything goes wrong. To protect this issue, The Designer has full freedom to express their concerns regarding the observations and conclusions in the Assessment Report and/or to provide any recommendations in the Scope Confirmation Meeting to change the specification for that specific project if they believe that they need to be changed. So the Designer will have all the opportunity to express their concerns regarding the scope and specifications at the beginning of the Design Phase. This further also implies to the concern that the discussion will leave it all up to the SFB Staff. In response to that, the SFB Staff will drive the conversation based on the findings inside the Assessment Report but can pursue collaborative effort with the Designer to develop the scope of work and the specifications because the statutory responsibility for the SFB Staff is to correct the deficiency and as a capital management agency, the core value is to maintain the grant funding with equity and the responsibility to be a fiduciary of taxpayer's monies. The terminologies in the AIA-B101 are to be considered only for reference as the goal is to outline the expectations for the work to be covered under Construction Administration services undertaken by any Designer. There is no need to rewrite the contracts. The Designer is responsible to verify the local codes, wind ratings and other laws that will be applicable in a specific project in order to comply with them if deemed necessary. This will be a matter of discussion between the Designer and the SFB Staff. A third party testing agency will conduct the HCM testing for the spots covered in the scope of work for that project. For the Owner's convenience, these will be attached along with the Design Documents prepared by the Designer and thus, they won't be responsible for those findings. The Architect won't be held liable for any work that will be done by the HCM Testing Firm as it is not their

work so that should not be the case. The Architect is going to be responsible for whatever that they sign and seal i.e. the design drawings and specifications.

Action towards the Comment:

There will be no changes recommended for this Public Comment but the SFB highly appreciates the initiative to write such a lengthy and detailed response.

SUBMITTED COMMENT #6

Comment:

This comment focuses on just recommending a thorough third party study to make sure if the Performance Specifications are in order.

Discussion regarding the Comment:

At this time, the SFB is not looking into considering any third party firm to conduct a study. If we decide to do it in future, then we would surely reconsider your proposal.

Action towards the Comment:

There will not be any changes to the Performance Specifications but we certainly appreciate your initiative.

SUBMITTED COMMENT #7

Comment:

This Public Comment has focused mainly on the fact that for the Designers, these Performance Specifications are or were meant to be the minimum standards and thus, they should be able to adhere to their in-house or manufacturer specifications that they have for their other projects. It also expressed the concern that the current performance specifications do not cover the necessary sections related to Quality Assurance, Certifications of Workers, Delivery Storage and Handling, Environmental Conditions, ASTM Standards and Execution referring to Surface Preparation, Application, Safety, and Field Quality Control.

Discussion regarding the Comment:

The intention for introducing the Performance Specifications was never to restrict any manufacturers or any of their products but at the same time, setting a high threshold for performance of the roofing systems driven by quality of the materials and the workmanship for the installation.

While this Designer indicates the use of the Manufacturer's product specifications as a basis of Design, we recommend the Designer community to focus on preparing performance based specifications for every type of roofing system which are not proprietary. Just for the additional clarification, these performance specifications are meant to be a minimum standard to be met or exceeded by the Contractors bidding on the projects and not for the Designers to go above and beyond them.

All the aspects of project discussed above are to be designed by the Designer based on the project requirements and as each project is different, these conditions cannot be specified as a part of the general roofing performance specifications.

Action towards the Comment:

There will not be any changes to the Performance Specifications but we certainly appreciate your initiative.

SUBMITTED COMMENT #8

Comment:

The Comment made towards the Section 07 30 00 – Roofing General Specification is that both RRO and RRC holders should be qualified to conduct the assessments on the roofs. The comment recommended the Scope Confirmation Meeting to be either telephonic conference or similar. Additionally, the recommendation is to add the term “architect” after the Registered Professional for being able to do the Design of the roofing systems. The required roofing design experience for the Designer should be changed to “Commercial” from “Non-Residential”. The term “RCI” needs to be changed to “IIBEC”. The required “wind uplift calculations” should be changed to “wind uplift requirements”. All the vendors should be complying with not “all” but “known” regulations, rules, laws, codes, and ordinances while performing any aspect of the project.

Discussion regarding the Comment:

The intent of including the RRO holders to be able to conduct the Assessments was to make the RRO a minimum qualification. The RRC certification is an advanced qualification which involves the Designing of those roofing systems as well per the discussions conducted above. Thus, it was inferred that the RRC holders would be able to do the Assessments as well. But just from a clarification standpoint, it is definitely worth it to specify out loud that both RRO and RRC holders should be able to conduct the Assessments for the Roofing Systems. The comment to include and specify a telephonic conference or a similar communication system for the Scope Confirmation Meetings are not worth mentioning in the General Specifications as it is always a matter of discussion between the District, The SFB Staff, the Assessor, and the Designer to determine the mode of communication for that meeting per everyone’s convenience. The term “architect” doesn’t

serve the intent of including the RRC holders in the Design Phase and thus, it is not required to be added in that statement but that statement can definitely be modified to specify that the Designer can be either a Registered Professional with the BTR or an RRC holder with the IIBEC. The intent of putting the required designing experience as “Non-Residential” in lieu of “Commercial” experience was to include the “Industrial” and any other related experience for the consideration. Thus, it seems logical enough to incorporate those industrial or any other related experiences for the consideration of qualifying as a Designer for the job. Per the discussions in the earlier comments, the term “RCI” needs to be changed to “IIBEC”. The Designer does need to demonstrate the wind uplift requirements but not the actual calculations behind them and thus, it is agreed to change the term “requirement” from the “calculations”. The intent to incorporate the expectation of compliance with all the required regulations, rules, codes, laws and ordinances is to make sure that the expectation is set for that level of professionalism in every regard. Changing the word “all” to “known” would definitely make it a lot more ambiguous as to what is known and what is not. As a Cabinet Level Agency for the State of Arizona, SFB takes pride in all of our projects and we expect compliance in every regard from all the professional vendors and contractors who are involved in those projects. Thus, it won’t be a good move to change the word from “all” to “known”.

Action towards the Comment:

The Statements shall be modified to this:

“A qualified assessor is an individual that is a Professional registered by the Arizona Board of Technical Registration (BTR) with not less than 5 years demonstrated non-residential roofing experience or a Registered

Roofing Consultant (RRC) or a Registered Roofing Observer (RRO) by RCI, Inc. (formerly known as the Roofing Consulting Institute, Inc.).”

“If the RRC or RRO is being used, “bona fide employee” as defined by BTR shall not apply to them.”

“There shall be a Scope Confirmation Meeting coordinated between the Assessor, the Designer chosen for the project, the District and the SFB Staff for defining the scope of work, the type of roofing system either for repair, re-coat or replacement and to make sure that the Designer agrees with the scope of project and the SFB’s Performance Specification for that specific system. Schedule and estimate for the project shall be defined in this meeting based on the scope of work.”

“To be performed only by a Registered Professional registered by the Arizona Board of Technical Registration (BTR) or a Registered Roofing Consultant (RRC) with the International Institute of Building Enclosure Consultants (IIBEC) with not less than 5 years demonstrated non-residential roofing experience.”

“A roofing consultant must be an individual that is a Professional registered by the Arizona Board of Technical Registration (BTR) with not less than 5 years demonstrated commercial non-residential roofing experience or a Registered Roofing Consultant (RRC) by International Institute of Building Enclosure Consultants (IIBEC).”

“The Designer shall include their wind uplift requirements in their Design Documents to be included in the IFB. The Manufacturer of the chosen Contractor has to demonstrate that their product meets or exceeds the threshold.”

“All vendors are responsible to comply with all regulations, rules, laws, codes, and ordinances while performing any aspect of the project.”

SUBMITTED COMMENT #9

Comment:

This comment seems to be way more subjective than necessary and doesn't focus on giving specific recommendations to the Performance Specifications.

Discussion regarding the Comment:

No discussion required.

Action towards the Comment:

No action required. SFB Staff appreciates the time and effort behind this Public Comment.

SUBMITTED COMMENT

#10

Comment:

This comment is made towards the SBS Modified Roofing System for the concern that the simple addition process of individual tear and tensile strengths of base and cap sheets for calculating the combined tear and tensile strength of the entire roofing system is not accurate. It also expresses the concern that the elongation and puncture resistance has to be taken into consideration for performance based specifications for the SBS Modified Roofing Systems in addition to the existing thresholds for the tear and tensile strengths. The recommendation is to keep minimum thresholds for individual sheets and not the cumulative strengths of the entire roofing assembly. The specifications should be based on verifiable 3rd party testing methods. The recommendation is to base the specifications of ASTM D6162, D6163 and D6164 for including the Polyester, Glass Fiber and the combination of these 2 scrim materials for the base and cap sheets. Cold Applied and Self Adhered Systems should be preferred in lieu of the Hot Asphalt Application.

Discussion regarding the Comment:

The first comment towards direct addition process of individual tear and tensile strengths of base and cap sheets for calculating the combined tear and tensile strength of the entire roofing system is the most accurate we have as of for now and we haven't been able to research a better or a more credible method which can be based on the entire roofing assembly by taking into consideration the adhesives used between the base and cap sheets. Therefore, until then we will keep using this method for the performance specifications. In addition to this, the consideration of elongation and puncture resistance cannot be taken as they are based on the overall holistic roofing assembly and not individual cap and base sheets. Thus, they also will be considered in

future if the Staff is successful in finding a credible method of quantifying the tear, tensile strengths of the entire roofing assembly. This would also require extensive market research due to the fact that if the roofing manufacturers are not testing their products based on those methods then we might be putting out several of those manufacturers and their respective products out of the qualification criteria for the roofing projects. The recommendation for considering the ASTM D6162, D6163 and D6164 testing methods for including the cap and base sheets with either polyester, fiberglass or both the scrim materials is absolutely a suggestion worth adopting because upon market research, it was found that most of the manufacturers test their products to these tests and this eventually allows the bidding Contractor full liberty to be innovative in creating their roofing systems based on their unique approach to the project. This will hopefully create a fair bidding contest among them. SFB Staff doesn't see value in recommending one application method over the other or singling out an application method as inferior or superior in the Performance Specifications as each project is different and the requirements are different. These decisions are to be taken in the Scope Confirmation Meeting with full confidence of the Designer, SFB Staff and the District.

Action towards the Comment:

The Statement shall be modified to this:

“Multi-Ply SBS Modified Roofing System with a minimum 2 and maximum of 3 plies, where the combination of the plies meets or exceeds 850 lbf. / in. of Tear Strength and 500 lbf. / in. of Tensile Strength, in both machine direction (MD) and cross machine direction (XD) when tested per ASTM D5147 at 73.4 +/- 3.6 Degrees Fahrenheit.

All the plies may contain any combination of the following scrim reinforcements:

1. Polyester Scrim Reinforcement – ASTM D6164
2. Glass Fiber Scrim Reinforcement – ASTM D6163
3. Combination of Polyester and Glass Fiber Reinforcement – ASTM D6162”

“The determination of hot asphalt, cold adhesive or self-adhered membrane systems is a subject of discussion between the Designer, the SFB Staff and the District in the Scope Confirmation Meeting.”

SUBMITTED COMMENT

#11

The comment made in 3.3.1 that the minimum roof slope for new construction is 1/2" per foot should be verified. The same goes for the comment in 3.3.2 that the roof slope should be 3/8" per foot. Spray Applied Polyurethane Foam Roof Systems require the same minimum slope required by Code as do Single Ply or BUR roof systems.

9.1.2 requires that a 1/2" Thermal Barrier Board be installed over steel roof deck before polyiso insulation boards are installed and then covered SPF roof insulation. This item is not required when the SPF or Roof Coatings Manufacturer can show that the composite roof system of polyiso insulation board direct to steel roof deck with SPF and Protective Coating has passed Class A Exterior and Class I Interior Fire Tests.

SFB STAFF RESPONSE

Comment:

The comment made towards the 07 57 13 - Spray Applied Polyurethane Foam Roofing System is that the minimum slope of $\frac{1}{2}$ " per foot and $\frac{3}{8}$ " per foot for new construction and for new roofing on an existing building respectively should be verified. Spray Applied Polyurethane Foam Roofing System requires the same minimum slope by code as the Single Ply or BUR systems. The comment also focuses on the requirement of $\frac{1}{2}$ " thermal barrier board installation over the steel roof deck before polyiso insulation board are installed and then covered with the SPF roofing. This requirement is not mandatory when the Manufacturer is able to demonstrate that the composite roof system has passed Class A Exterior and Class I Interior Fire Tests.

Discussion regarding the Comment:

The above comment is towards the required minimum slopes for the SPF roofing system for the new construction and a new roofing system on an existing buildings. The reason for increasing the slope than the required $\frac{1}{4}$ " per foot is due to the fact that the foam roofing systems are more prone to drainage problems than the Single Ply or BUR systems due to their rough and uneven surface. We have encountered various instances where the lack of proper grade has led to drainage problems on a foam roof. Thus, as a matter of best practices, we recommend these slopes. Now, these slopes can be a matter of discussion in the Scope Confirmation Meeting to change them if necessary due to a specific concern in a project. The term "optional" has been overlooked in the Performance Specification and thus, there is an ambiguity in the comprehension. The statement can be changed in order to make it even more specific and explicit enough to negate any confusion.

Action towards the Comment:

The Statement for the roofing slope remains unchanged. The Statement is mistakenly termed 9.1.2 which has to be renamed to 8.1.2 and further, it can be changed as follows:

“Rigid Insulation Board is optional for use over various types of roof decks. A minimum ½" thermal barrier board shall be installed over steel decks and a minimum ¼" thermal barrier board over combustible decks before installing rigid insulation board. This is not required when the Manufacturer can demonstrate that the composite roof system has passed the Class A Exterior and Class I Interior Fire Tests.

SUBMITTED COMMENT

#12

Comment:

The comment made towards the 07 57 13 - Spray Applied Polyurethane Foam Roofing System is that the % of Volume Solids should be changed to 50-60% in lieu of the existing >50%. It furthermore recommends that the initial elongation and initial tensile strength have to be changed to 225-275% and 225-275 psi in lieu of the existing >340% and >350 psi. In addition to this, it recommends removing the performance rating for Final % Elongation, Tear Resistance and Adhesion. The additional material to be installed on top of the completed single lock roof system should consist of an additional 12 mils DFT instead of the existing 8 mils DFT of coating.

Discussion regarding the Comment:

The above comment is towards the required % of Volume Solids, Initial Elongation and Initial Tensile Strength. For the % of Volume Solids, the recommended range of 50-60% seems redundant and does not add any value to the existing >50% threshold. Excluding the spectrum above 60% does not add any value to the performance specifications and thus, this recommendation will not be included in the specification as we believe that the current threshold is appropriate. After conducting the market research and some analysis on the material properties, it was found that the initial elongation and initial tensile strength are definitely more than what is required for a quality roof with a stable warranty and it was definitely limiting the competition. But we do not want to confine it to a range and thus, SFB Staff has agreed upon establishing the thresholds at >250% and >250 psi for initial elongation and initial tensile strength respectively. It was also found that the recommendation to deduct the final % elongation, tear resistance and adhesion is valid as they do not relate to the property for a quality roofing system and thus, it is agreed to deduct those out of the

specification. For the double lock granule system, 8 mils DFT per 100 SQFT is less than a gallon of product applied which will eventually make the granules not bind properly with each other as the product applied would not be sufficient from a quantity standpoint. Thus, it is agreed to change the DFT to 12 mils from 8 mils.

Action towards the Comment:

The Statement can be changed as follows:

“High tensile acrylic roof coating shall be internally plasticized to provide a permanently flexible waterproof coating that is fire classified by Underwriters Laboratories or a recognized fire testing agency to comply with UL 790 or ASTM E-108 Class A or Class B as required. The high tensile acrylic coating shall meet all the requirements of ASTM D6083 and comply with the following physical performance property requirements:

Volume Solids >50%	ASTM D2697
Initial Elongation 250% minimum	ASTM D2370
Initial Tensile Strength 250 psi minimum	ASTM D2370
Solar Reflective Index (Initial) >100	ASTM E1980
Solar Reflective Index (3 Year) >85	ASTM E1980”

“Roof top areas at egress points, walkways and around roof top equipment to be serviced shall receive a double lock granule system. The additional material to be installed on top of the completed single lock SPF roof system shall consist of an additional 12 dry mils of coating with 35 lbs. per 100 square feet of # 11 granules broadcast into the wet coating. Once the coating has cured, any loose granules shall be

removed and two additional applications of coating installed to fully encapsulate the second layer of granules. The encapsulation coats shall result in 20 dry-mil thickness of coating over the second layer of granules.”

SUBMITTED COMMENT

#13

Comment:

This comment made towards 07 54 23 – TPO Roofing System is that the High Density Wood Fiber should not be an acceptable type of the Coverboard as it will break down over the time.

Discussion regarding the Comment:

This comment is made towards the High Density Wood Fiber that it should not be an acceptable type of coverboard for this roofing system. While the SFB Staff understands that this is a valid concern, we do not want to exclude those manufacturers and their respective products which are complying to the rest of the specification from a performance and a valid warranty standpoint. Thus, we intend to leave it in the specification for any of those manufacturers who still can comply with our performance specification for this roofing system.

Action towards the Comment:

No action required. SFB Staff appreciates the time and effort behind this Public Comment.

SUBMITTED COMMENT

#14

Comment:

This comment is made towards 07 56 30 – High Tensile Acrylic Roof Coating for the fact that they have been successfully installed throughout the United States since the mid 1990's. This roof coating has performed as a leak free and tear resistant roof coating in Arizona on numerous schools, colleges, universities, municipalities and private industry buildings. It has been installed on Arizona Schools K-12 roofs since 2002.

Discussion regarding the Comment:

This comment is made towards is generic and subjective. It doesn't require any changes. No discussions required further.

Action towards the Comment:

No action required. SFB Staff appreciates the time and effort behind this Public Comment.

SUBMITTED COMMENT

#15

Comment:

This comment is made towards 07 56 10 – Cool Roof Coating for trimming out all the references to the Modified Bitumen Roof Systems.

Discussion regarding the Comment:

This comment is made towards recommending to trim out all the references to Modified Bitumen Roof Systems as they can be applied to all the Single Ply and BUR Systems is valid and can be accepted. Cool Roof Coatings can be applied to all the newly applied Modified SBS roof systems with the exception of the Spray Applied Polyurethane Foam roofs, TPO and PVC Roof Systems as the Performance Specifications for them will require the Initial and Aged (3 years) Solar Reflective Index (SRI) in order to be considered as a Cool Roof. This coating should be applicable to all the above-mentioned roof systems when they are reaching a point from the age and deterioration standpoint, in order to extend their useful life if deemed necessary.

This has triggered to include the thresholds for the SRI values in the TPO and PVC Specifications and the Staff has determined that they should be established at 90 and 80 for the Initial and Aged (3 years) respectively in order to be qualified as the Cool Roofs which have an eligibility threshold of 78.

Action towards the Comment:

Staff will clarify everywhere that the Cool Roof is applicable on newly installed Modified SBS roofs while they can be applied on any aging roofs like Modified SBS, Spray Foam Polyurethane, TPO and PVC roofing systems if required to extend the useful life of the roofing system and the building.

Staff will also include the Solar Reflective Index (SRI) thresholds of 90 and 80 in the TPO and PVC roofing systems.

Staff appreciates ARCA's comments on improving the Performance Specifications in order to make them Non-Proprietary and still be able to install high quality roof systems in order to correct the deficiency and extend the useful life of the buildings.

SUBMITTED COMMENT

#16

Comment:

This comment is made towards 07 31 13 – Asphalt Shingle Roofing for adding a minimum fastening pattern of 6 fasteners per shingle as described by the shingle manufacturer.

Discussion regarding the Comment:

This comment is made towards recommending a minimum fastening pattern of 6 fasteners per shingle as described by the shingle manufacturer. This sounds as if it would direct the fastening of shingle in a specific way which might not be the only way adopted by different manufacturers. Thus, Staff fears that if we allow this, we might be keeping several manufacturers out of the bidding process just because of this fastening pattern which we do not want to get into.

Action towards the Comment:

No action required. SFB Staff appreciates the time and effort behind this Public Comment.

SUBMITTED COMMENT

#17

Comment:

This comment is made towards 07 56 10 – Cool Roof Coating for including the missing word “New” in front of the Modified Bitumen Roof Systems as they should be specifically applied over newly installed Modified SBS Roof Systems.

Discussion regarding the Comment:

This comment made towards recommending adding the missing word “New” is not valid per the discussions above as they can be applied over both newly installed and aged Modified SBS Roof Systems.

Action towards the Comment:

No Action required. Staff appreciates the time and effort in writing this Public Comment.

SUBMITTED COMMENT

#18

Comment:

This comment is made towards 07 56 50 – Repair and Recoat of SPF Cementitious Roofing System that the eligibility for a failure of an existing SPF Cementitious Roofing System is that the Cementitious Traffic Topping should cracked down to roof coating, or become a chalky / powder topping should be deleted as it is normal. A list of five (5) projects in Arizona where the proposed coating has been installed should have the mentioning of over the cementitious topping. A letter from the SPF Cementitious Roof Coating Manufacturer stating that the Roofing Contractor is an authorized applicator of the roof coating system should be trimmed out. Strike out all the mentioning of the High Tensile Acrylic Coatings as acrylic cannot be installed over the cementitious topping.

Discussion regarding the Comment:

This comment made towards 07 56 50 – Repair and Recoat of SPF Cementitious Roofing System that the eligibility for a failure of an existing SPF Cementitious Roofing System is that the Cementitious Traffic Topping should cracked down to roof coating, or become a chalky / powder topping should be deleted has to accepted as the Staff agrees that it is a normal occurrence. A list of five (5) projects in Arizona where the proposed coating has been installed should have the mentioning of over the cementitious topping is appropriate to avoid the confusion. A letter from the SPF Cementitious Roof Coating Manufacturer stating that the Roofing Contractor is an authorized applicator of the roof coating system should be trimmed out because the cementitious topping is prepared on the site and there won't be any manufacturer authorization for it. Staff agrees that all the high tensile acrylic mentioning should be trimmed out as acrylic coatings are to be used over the SPF cementitious roof systems. This also triggers

the fact that the initial tensile strength and the initial elongation of >350 psi and >340% should be changed back to >250 psi and >250% respectively. These changes will be adopted based on the discussions above in the SPF Polyurethane Foam Roof Systems.

Action towards the Comment:

It should be noted that all the above discussed changes shall be incorporated in the revised specification for this system.

SUBMITTED COMMENT

#19

Comment:

This comment is made towards 07 56 60 – Roof Restoration for striking out the term rejuvenation. The comment also focuses on mentioning the term “except for APP Smooth” in case of the roof restoration for the “Smooth Surface Built Up Roof”. The coating system to be applied over a smooth surface or a granulated cap sheet Built Up Roof shall incorporate the mentioning of “a minimum” of one ply of polyester fabric. The expected End of Life (EOL) for roof restorations should be 20 years instead of 10 years if properly maintained and inspected regularly.

Discussion regarding the Comment:

This comment made towards striking out the term rejuvenation makes sense and Staff agrees to it. The comment of adding the term “except for APP Smooth” is accurate and Staff does agree to it as it is only valid for the Modified SBS Roofing Systems. The mentioning of “a minimum” of one ply of polyester fabric should be incorporated for the coating system to be applied over a smooth surface or a granulated cap sheet Built Up Roof. The Staff agrees to the comment that the expected End of Life (EOL) for roof restorations should be 20 years instead of 10 years if properly maintained and inspected regularly.

Action towards the Comment:

All the recommended actions shall be incorporated in the revised specification for this system. Staff appreciates the time and effort in writing this Public Comment.