

# General Roofing Performance Specification (07 30 00)

## 1. Assessment of roofs

### 1.1. Qualified assessor

1.1.1. 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 commercial roofing experience or a Registered Roofing Consultant (RRC) by RCI, Inc. (formerly known as the Roofing Consulting Institute, Inc.).

1.1.1.1. Evidence of these requirements must be submitted as part of the assessment report.

1.1.1.2. If the RRC is being used, "bona fide employee" as defined by BTR shall not apply to the RRC.

1.1.2. Assessor 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 / proposal.

### 1.2. Assessment report

1.2.1. The assessment shall include all items indicated in Table in Part 1.2.9.

1.2.2. The assessment shall include the age of the roof, as can best be established, and all warranty information available.

1.2.2.1. The assessment shall also include an estimated life expectancy of the existing roof system(s).

1.2.3. The report shall include a roof plan, pictures, and other data to fully document and convey existing conditions.

1.2.4. The assessment report must identify deficient elements (as defined in the roofing system specifications) found on roof, including roofing accessories, curb heights, on roof electrical elements (including conduits), mechanical elements (including ductwork), flashings, valley, ridge, eave, etc.

1.2.5. The assessment report shall have the number of roof core cut(s), the location where the roof core cut(s), and document the status of the core(s), including pictures of the cores and all analysis data of the core(s).

- 1.2.6. The assessment report shall not contain any recommendations on corrective actions, only report of items / areas of failure or deficiency.
- 1.2.6.1. For the roof system being assessed, the assessment report shall specifically note any of the conditions that meet Part 2.1 of the specific roofing system specification section.
- 1.2.7. Roofing assessment reports shall include all roofing system assessment information as included in each specific roofing system section of these performance specifications.
- 1.2.8. The assessment report shall indicate any areas that are suspected of having any ponding that might potentially increase the moisture content of roofing materials and insulation in those areas.
- 1.2.9. Other items to be added to assessment reports shall be:

Criteria	Roofing
Report Requirements	
Executive Summary	X
Conclusions	X
Recommendations	X
Repair vs Replace	
Current Conditions	X
Existing As-Built Drawings	X
Schedule of Values	X
Warranties (current)	X
Preventative Maintenance	X
Systems Details	
Age	X
Manufacturer	X
Serial #	
System ID	X
Curbs	X
Parapets	X
Flashings	X
Roof Drains	X
Code Compliance	X
Citation from Jurisdiction	
Inspection Compliance	X per A.R.S. 15-342.01
AHERA Plan	Is testing anticipated
Asbestos	X

Lead	
Hazardous	X
PCB	X
Rare Earth Metals	
Disposal of Materials	
Structural Review	X
Core samples	X
Thermal Imaging/Mapping	X
Cost Estimate	X
Construction Admin	X
Affidavit of Non-Collusion	X
Pictures	X
The Trust Participation	X
Special Requirements	X
	HOA CCR's
	Historic Districts
	Region/Elevation

### 1.3. Assessment Schedule

1.3.1. The assessor is to submit a schedule for completion of the assessment within 5 business days of receiving notice to proceed on the assessment contract.

## 2. Roof design

2.1. The requirements of roofing system selection and design of the roof:

2.1.1. To be performed only by a Professional registered by the Arizona Board of Technical Registration (BTR) with not less than 5 years demonstrated commercial roofing experience.

2.1.1.1. The Professional Registrant may use a roofing consultant in compliance with BTR rules.

2.1.1.1.1. 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 roofing experience or a Registered Roofing Consultant (RRC) by RCI, Inc.

- 2.1.1.1.2. The inclusion of a roofing consultant will not recognize an increase in compensation under Additional Services.
      - 2.1.1.1.3. If the RRC is being used, “bona fide employee” as defined by BTR shall not apply to the RRC.
- 2.1.2. Professional Registrant 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.
- 2.1.3. The design phase shall include the roofing system selection and all information required to complete the project.
  - 2.1.3.1. The design shall include the area of the roof in square feet to assist in the preparation of an estimate of the cost of construction.
- 2.1.4. The design documents shall have a roof plan that identifies all elements of the roof and details consistent with best practices as determined by recognized industry standards and guidelines, as well as BTR requirements.
- 2.1.5. The design phase shall include identification of any and all potential hazardous-containing materials, such as, but not limited, to asbestos and lead. Testing of these materials shall be included in the design to confirm characteristics of all hazardous materials.
- 2.1.6. The design phase shall include any thermal imaging and other required testing as necessary to execute the design.
- 2.1.7. Professional Registrant shall receive from the roofing material manufacturer the wind uplift design based on the Professional Registrant’s wind pressure analysis.
- 2.1.8. Technical requirements for coverboard or substrate board may be waived if the entire roof assembly has a RoofNav Report and is deemed acceptable by the Professional Registrant.
- 2.1.9. Professional Registrant 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. Manufacturers' representation shall be mandatory at all pre-bid meeting(s).

2.1.11. Professional Registrant shall verify that all specified manufacturers will issue an "Intent to Warrant" the project as designed.

2.1.12. ASTM and UL standards and specifications shall be used.

2.1.13. The Professional Registrant shall determine substantial equivalency of submissions for prior approval and substitutions.

## 2.2. Construction administration

2.2.1. The Professional Registrant must perform construction administration to ensure construction is in compliance with the design intent of the drawings and specifications, which will require at least a weekly site visit to ensure conformance of material installation with the design intent of the plans.

## 2.3. Quality assurance / quality control

2.3.1. Quality assurance and quality control to be performed by a qualified independent third party, and may be the party that initially assessed the roof. This will require separate regular visits as appropriate to the complexity and progress of the work and are in addition to those provided by the Professional Registrant and product manufacturer, but no less than once per week. The inspection reports must be in accordance with other requirements and provisions of these specifications, including the system sections.

## 2.4. Manufacturer responsibilities

2.4.1. The product manufacturer shall provide inspections during construction which shall occur as appropriate to the complexity and progress of the work and are in addition to those provided by the Professional Registrant and quality assurance/quality control site visits to assure an installation that will be issued a warranty, but no less than once per week. The inspection reports must be in accordance with other

requirements and provisions of these specifications, including the system sections.

## 2.5. Design schedule

2.5.1. Professional Registrant to submit schedule of completion within 5 business days of receiving notice to proceed on the design contract.

## 3. Roof construction

3.1.1. Roof to be constructed per plans and specifications by a qualified licensed Arizona contractor who must comply with all Arizona Registrar of Contractors regulations, building regulations, rules, laws, codes, and ordinances.

3.1.1.1. The Professional Registrant may take into consideration for eligibility the Registrar of Contractors (ROC) record that includes open / discipline / resolved / bankruptcy actions in the last two (2) years in any combination, as reported by the ROC.

3.1.2. The contract documents and reviewed submittals shall be on site and accessible at all times.

3.1.3. The contractor shall provide full time quality control personnel during the entire construction of the roof.

3.1.4. Contractor shall submit a manufacturer's "Intent to Warrant" at the time of the request for prior approval or substitution.

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

3.1.6. Contractor shall carry umbrella liability insurance in the amount of \$5 million per occurrence, and shall submit evidence of coverage with quote.

3.1.7. Contractor shall carry performance and payments bonds for all projects that are \$100,000 or more in construction costs.

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

- 3.1.9. The contractor shall submit a schedule of completion within 5 business days of receiving notice to proceed on the construction contract.
4. These specifications shall be used for all SFB funded roofing projects and are recommended for District funded projects. The applicable specification sections shall be determined as follows:
  - 4.1. The general roofing specification section (07 30 00) applies to all roofing systems.
    - 4.1.1. The specific roofing system along with the general roofing section shall apply to construction of a new roofing system.
  - 4.2. The assessment and demolition sections will apply to the specific system being removed / repaired / assessed, which may be the same as the new roofing system being installed.
  - 4.3. The specific system sections shall apply to the specific system being installed, which may be the same as the existing system.
5. All vendors are responsible to comply with all regulations, rules, laws, codes, and ordinances while performing any aspect of the project.
6. Repair or replacement of a roof
  - 6.1. Generally, when possible a roof shall be repaired to sustain the useful life of the roof with compatible materials for the existing roofing material.
  - 6.2. The Professional Registrant shall determine and provide written justification for replacement in lieu of repair.
  - 6.3. The design documents shall detail any and all actions, provisions, and requirements for completely sealing the roof to prevent water intrusion.
  - 6.4. Refer to the specific roofing system section for what conditions constitute failure of the roofing system.
    - 6.4.1. If the roof meets the conditions to repair / restore / rejuvenate then the roof shall be repaired / restored / rejuvenated as specified in the Systems Section of these specifications.
  - 6.5. If the underlayment has failed on the roofing system, the system shall be deemed as a failed system and shall be replaced.

## 7. Roof Slope Use

7.1. Each specific roofing system will be defined as to what slope of roof the system can be installed on. For these specifications, the roof slope use will be defined as the following:

7.1.1. A “Low Slope” roof will be any roof that has a pitch of 2:12 or less.

7.1.2. A “Transitional Slope” roof will have a roof pitch greater than 2:12, but less than 3:12.

7.1.3. A “High Slope” roof will have a roof pitch of 3:12 or greater.

## 8. Structural Review

8.1. The SFB requires any work on a roof to be reviewed by an Arizona Registered Structural Engineer.

8.2. The Professional Registrant’s structural analysis shall be completed to ensure that the entire roof is structurally stable and secure to continue its life after the roofing project is completed.

8.2.1. If structural deficiencies are discovered, the Professional Registrant shall design and engineer all reinforcement to the roof structure to ensure compliance with Part 8.2 above. This work shall be seen as a change in scope in the project’s design.

8.3. The minimum required information for the structural analysis shall include:

8.3.1. Site visit with photos.

8.3.2. Review of current as-built conditions of the roof structure.

8.3.3. Weight verification of existing weight(s) to new system weight(s).

8.3.4. Structural analysis of existing structure showing that the new work does not overstress existing structure.

8.3.5. Structural design recommendation(s) if the existing structure is overstressed by the new work.

8.3.6. Sealed structural analysis report with all the above minimum information.

9. International Energy Conservation Code (IECC) requirements for new roof installation.

- 9.1. All new roof installations require compliance with the minimum R / CI values found in the IECC, even if the new roof is being applied to an existing structure.
  - 9.1.1. If the existing insulation installed on the roof deck is in a condition that will be acceptable to remain, the insulation may remain and not be replaced if the AHJ allows through adoption of the International Existing Building Code (IEBC) or some other ordinance / interpretation.
- 9.2. All insulation installed under the roofing material or decking must comply with the applicable building codes.
  - 9.2.1. The SFB requires insulation above the roof deck in all steel construction.
    - 9.2.1.1. For other roof deck materials, the SFB preference is that all insulation be installed above the roof deck whenever possible.
  - 9.2.2. Thickness and R-value of all insulation shall be in accordance with the IECC.
10. Demolition requirements to be included in the design documents.
  - 10.1. Professional Registrant to include hazardous containing materials (HCM) identification for all roof work included in scope of work.
  - 10.2. When hazardous containing materials (HCM) have been identified, HCM testing / removal / oversight shall be included in the design documentation.
    - 10.2.1. HCM oversight must be completed by an independent third party and contracted by the District.
  - 10.3. Roof components
    - 10.3.1. If existing ductwork or conduit exists on the roof, the design information must delineate the scope of work on the existing ductwork or conduit.
      - 10.3.1.1. If existing ductwork or conduit is to remain, the contractor must take precautions not to damage any of the existing ductwork, conduit, and wires in any way during the demolition of the existing roofing materials. Any damage to components that are intended to remain shall be the responsibility of the contractor.

- 10.3.2. If the new roofing work requires curb heights to be increased, this height and detail(s) must be designated in the design documents.
- 10.3.3. The design documents shall note all other existing roofing components specifying whether they need to be modified including ductwork, conduits, and wires.
- 10.3.4. The design documents shall detail how decking replacement is to be completed.
  - 10.3.4.1. The design documents shall provide an allowance for a limited amount of deck replacement. For anything greater than the area of deck replacement included in the allowance, provide a per unit cost for materials and installation.
  - 10.3.4.2. The design documents shall define “unforeseen” as something that could not be seen or otherwise anticipated.

## 11. New system installation requirements

- 11.1. The installing contractor must be certified / approved by manufacturer of the system being installed and must have a minimum of five (5) years of experience installing a similar system.
  - 11.1.1. Certification(s) for all potential roofing systems (including prior approvals) shall be included in the bid / quote documents that are submitted. This section shall also apply if substitutions are being made after the award of any roofing project.
- 11.2. The roofing system shall be designed and installed to provide sustained performance for a minimum of 20 years.
  - 11.2.1. The manufacturer shall submit an “Intent to Warrant” document and that document shall be included in the bid / quote submission.
- 11.3. Overlay of a new roofing system on top of an existing system requires SFB staff’s prior written approval.
- 11.4. All roof mounted equipment and accessories have to meet the roofing manufacturer’s requirements for clearance, heights, etc. If existing roof mounted equipment does not meet those requirements, it must be modified to be compliant with the roofing manufacturer’s requirements.

12. Manufacturers shall not be cited in the specifications, and shall not limit any substantially equivalent manufactured product complying with the characteristics of the performance specification.
13. Warranty
  - 13.1. All roofs shall have at least a 20-year, no dollar limit (NDL), labor and material manufacturer product warranty. Manufacturer agrees to repair or replace components of the roofing system that fail in materials or workmanship within specified warranty period.
    - 13.1.1. The roofing material manufacturer shall certify that the installation is compliant with all manufacturer requirements upon issuance of the warranty.
  - 13.2. The installing contractor shall provide a minimum 2-year materials and labor warranty for the complete installation compliant with the State of Arizona Registrar of Contractors.
14. Discrepancies in the Documents
  - 14.1. Prioritization for resolving discrepancies in the contract documents are resolved as follows:
    1. Specifications
    2. Dimensions
    3. Notations
    4. Drawings
  - 14.2. In the event of discrepancies within the specifications, the most stringent requirement shall apply.
15. Substantial Completion
  - 15.1.1. The Professional Registrant shall issue a Substantial Completion Form to establish the start date of the warranty period. This form may be the American Institute of Architects (AIA) form, or another equal form that is approved by the SFB staff.

## 16. Closeout Documents

16.1. The closeout documents must be submitted in an electronic (".pdf" format) with one bound hard copy to the District and the SFB and shall include at least the following:

16.1.1. A complete set of "as-built" documents describing location of all installed items and elements.

16.1.1.1. The contractor shall track all modifications to the original design and record those modifications in the record drawings for the project. The contractor shall provide those record drawings that include a complete and accurate description of work done that deviates from the requirements of the contract documents and the exact locations of all concealed work to the Professional Registrant at project completion. The Professional Registrant will then create as-built drawings from those record drawings.

16.1.1.2. The as-built drawings shall be provided in the form of hard copy and an electronic "pdf" format to the District and the SFB as part of the close out documentation.

16.1.2. The warranty signed by manufacturer with the start date of the warranty.

16.1.3. The written field records of all inspections, testing, construction administration and quality assurance / quality control site visits conducted during the installation of the system.

## 17. Preventative Maintenance Criteria

17.1. In order to maintain the roofing system, refer to the roofing task sheets on the SFB website at: <https://sfb.az.gov/sfb-programs/preventive-maintenance/preventive-forms>

17.1.1. Follow all manufacturer recommended preventative maintenance in the O & M manual.

17.1.2. Each inspection must document noticed deficiencies.

17.1.3. The roof shall have all debris cleared at each inspection.

17.1.4. Any requirements found in the system section of these specification.

Sample of Submittal Review Mark (as referenced in Part 2.1.7 above)

<b>Firm Name</b> <b>Address, City &amp; State</b>	
<b>SHOP DRAWING / SUBMITTAL REVIEW</b>	
<input type="checkbox"/> FURNISH AS SUBMITTED	
<input type="checkbox"/> FURNISH AS CORRECTED	
<input type="checkbox"/> REVISE & RESUBMIT	
<input type="checkbox"/> REJECTED, FURNISH AS SPECIFIED	
<p>Corrections or comments made on the shop drawings or submittal during this review does not relive the contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions, coordinating that work with that work performed by other trades, and performing that work in a safe and satisfactory manner. Work is to conform to all local, state, national codes and standards, and laws.</p>	
<b>Reviewed By:</b>	<b>Date:</b>