

Washington Elementary School District  
October, 11 2016

Mr. Mike Kramer  
Director of Facilities  
Washington Elementary School District  
1502 West Mountain View Road  
Phoenix, Arizona  
[Mike.Kramer@wesdschools.org](mailto:Mike.Kramer@wesdschools.org)



RE: Roof Assessment  
Tumbleweed Elementary School  
Campus Wide  
Phoenix, Arizona

Dear Mr. Kramer,

At your request PRM, LLC. scheduled and conducted a roof assessment on October 4, 2016 at the above referenced facility. The objective of the inspection was to assess the current roof conditions and note deficiencies that may exist and provide recommendations. Photographs and core samples were taken during the inspection to document our findings. Buildings inspected consisted of the following roof areas:

Building-A 1001 – 40,494 SF  
Building-B 1002 – 20,284 SF  
Building-C 1003 – 11,992 SF

The buildings inspected have experienced issues with leaking roofs and are systems that have reached the end of their useful life. The roof systems currently installed on the buildings inspected are described below.

Prior to the walk information was provided by the district facility staff concerning the roofing repairs and problems. The onsite manager reported that the roofs are over 20 years old and some modifications were made during the life cycle.

### **Building-A 1001**

The building inspected was constructed of CMU walls terminating with parapets with metal copings or to the underside of the concrete deck. The roof system currently installed was reported to have been installed over 20 years ago and is out of warranty. The roof system was installed directly over the existing BUR roof system. The current roof system is a 1.5-inch foam roof with a coating. Below is a detailed description of the roof system and condition.

The original roof system installed before the foam was installed was a BUR and are appropriate and typical for this type of building. The roofs drain by sheet flow to perimeter scuppers or by sheet flow to the ground. Other areas included a single ply roof at the walk in cooler area.

The parapet walls are CMU and have a painted metal coping that wraps over the masonry. The base flashing from the roof is a modified sheet that run under the coping and are now covered with foam and appear to be in poor condition. The roof also has roof top equipment located throughout the roof screened area. The equipment is supported by roof curbs and wood sleepers as required. There is

roof top conduit that is supported on the roof with blocking to support the conduit and raise it above the roof. These details appear to be in poor condition.

It is recommended that the roof systems, flashings and all sheet metal be replaced and that the existing roof be removed to the concrete deck. The recommended roof systems are a BUR with a mineral cap over a ½ inch fiber board over a minimum 2.0 inches of polyisocyanurate. A thermal coating should be installed over the mineral cap. There may be an opportunity to add additional insulation to reduce heat gain if the building interior is not insulated under the deck. This will be verified during design.

### **Building-B 1002**

The building inspected was constructed of CMU walls terminating with parapets with metal copings or to the underside of the concrete deck. The roof system currently installed was reported to have been installed over 20 years ago and is out of warranty. The roof system was installed directly over the existing BUR roof system. The current roof system is a 1.5-inch foam roof with a coating. Below is a detailed description of the roof system and condition.

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It is recommended that the roof systems, flashings and all sheet metal be replaced and that the existing roof be removed to the concrete deck. The recommended roof systems are a BUR with a mineral cap over a ½ inch fiber board over a minimum 2.0 inches of polyisocyanurate. A thermal coating should be installed over the mineral cap. There may be an opportunity to add additional insulation to reduce heat gain if the building interior is not insulated under the deck. This will be verified during design.

### **Building-C 1003**

The building inspected was constructed of CMU walls terminating with parapets with metal copings or to the underside of the concrete deck. The roof system currently installed was reported to have been installed over 20 years ago and is out of warranty. The roof system was installed directly over the existing BUR roof system. The current roof system is a 1.5-inch foam roof with a coating. Below is a detailed description of the roof system and condition.

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It is recommended that the foam roof system including perimeter coping and flashings be replaced. During the design process a proper wind uplift design must be completed to ensure proper fastener or adhesive selection and spacing. In addition, verification of structural slope must be verified to determine if the slope is in the deck or insulation.

It is recommended that the single ply roof systems also be replaced with an 80 mill single ply roof systems at the existing walk-in. Drainage and slope must be verified during the design.

### **Construction Budgets**

Roof Replacement Buildings A, B, C.....Budget \$982,395.00  
A/E Budget Buildings A, B, C.....Budget \$34,383.00  
(A/E includes CA and oversight)

The warranty for the new roof would be a 5-year contractor and 20-year manufacturer's warranty.

Note: Budgets for roof replacement are based on current market pricing and using like materials already installed including the addition of a cover board and rigid insulation over the concrete decking to provide a proper sub straight.

PRM will prepare plans and specifications for the roofing repairs or replacement and provide oversight and QA/C inspections for the installation.

It is our recommendation that a discussion regarding the contents of this report be held between the client and the report's author if there are any questions. Our desire is that the recipient of our report has a thorough and complete understanding of the findings and recommendations prior to making any determination as to what action to take.



Larry M. Lind RCI, AIA, NCARB  
Principal Architect/Roof Consultant



Building-C concrete-T structure



Building-C typical parapet



Building C lower roof



Building C typical blistering



Building C typical overview – BUR lines telegraphing through the foam



Building C typical blistering





Building C improper blister repair



Building C blistering lower roof



Building C blistering lower roof



Building C blistering



Building C – single ply failure at lower roof



Building C – single ply failure at lower roof





Building C blister puncture



Building A overview



Building A concrete-T



Building A failing caulk joint



Building A blisters



Building A overview with blisters





Building A blistering



Building A blistering



Building A blistering



Building A blistering and patching



Building A blister puncture



Building A blistering





Building A typical blistering



Building A blistering and HVAC curb



Building A blistering



Building A conduit penetration detail



Building A roof to wall detail



Building A vent detail



	
Building A structural wall plates exposed – reglet line above	Building A overview
	
Building A overview blistering	Building A parapet
	
Building A	Building A lower roof and Building-B roof beyond



	
<p>Building A broken conduit</p>	<p>Building B roof blistering</p>
	
<p>Building A blistering</p>	<p>Building A roof blistering and parapet</p>
	
<p>Building A parapet metal</p>	<p>Building A structural plates exposed/reglet</p>