

ROOFING ASSESSMENT

CHEATHAM K-8 SCHOOL
4725 W. South Mountain Ave.
Laveen, AZ 85339

TOTAL ROOF AREA:
APPROXIMATELY 71,889 SQ. FT.

PREPARED FOR:
ROBERT JACOBSON, DIRECTOR OF SUPPORT SERVICES
LAVEEN ELEMENTARY SCHOOL DISTRICT
5001 W. Dobbins Road
Laveen, AZ 85339



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EXECUTIVE SUMMARY:

Name: Cheatham K-8 School
Laveen Elementary School District

Location: 4725 W. South Mountain Ave.
Laveen, AZ 85339

Roof Size:	Foamed in Place Roofing:	23,821 SF
	Built-Up Roofing:	4,160 SF
	Standing Seam Metal:	35,118 SF
	Modular Classrooms (Foam):	7,200 SF
	Restroom building (BUR):	1,600 SF
	Total:	71,899 SF

Inspection Date: November 14, 2014

History:

The school district reports miscellaneous leaks have been observed with greater frequency, particularly after the most recent storms. A general visual survey of the roof was performed without any specific focus on any one area of the roof upon arrival. Visual survey of interior spaces was not conducted.

Recommendation:

As a result of our survey, our recommendation is to repair damage, clean and recoat foam roofed areas. At BUR we recommend applying white acrylic coating. At metal roofing and flashing re-seal perimeter and penetrations. The new cementitious coating with proper and timely inspections, repair and maintenance, should provide service to the District for ten years.

Budget:

Based on preliminary subcontractor pricing with a ten year manufacturer's warranty anticipated cost to replace roof is as follows:

Foam with Cementitious Coating:	\$ 69,000.00
Standing Seam:	\$4,000.00
BUR at Mechanical Enclosures:	\$15,000.00
BUR @ BLDG G:	\$5,600.00
Repair Foam @ Portables:	<u>\$10,800.00</u>
Sales tax & Bonds:	\$6,264.00
Total estimated Cost of Construction:	\$110,664.00

Additionally, yearly inspection and maintenance to remove leaves, debris and sports equipment from drains and roof surfaces should be budgeted and performed along with proper patching and repairs of any damage to the coatings.

CONSTRUCTION:

Visual inspection confirms the flat roof areas to be spray foam coated with a white cementitious layer. Parapet wall and mechanical curb flashings have been constructed out of the same sprayed foam and protective coating. Roofing as-builts indicate the spray foam to be R-30 thickness.

Core sampling of the roofing was not deemed necessary since the insulation appears to be good condition. Drawings do not indicate if the foam insulation is built up or applied over mechanically attached board insulation.

Roof Warranty indicates the roof system carried a 10 year warranty from the date of substantial completion, January 16, 2003. This makes the roof system out of warranty for almost 2 years. An executed copy of the warranty is attached as an exhibit. The attached warranty does not apply to the modular classroom buildings or restroom building.

Parapet walls average 42" to 72" in height at the various roof area perimeters. Coating extends up the back side of parapet walls 12-16". The uncoated CMU is painted. A metal coping was installed over the parapet and mechanically fastened to the wood nailers.

Roof top packaged air conditioners are arranged randomly at foam roof area and paired up on sloped BUR mechanical enclosures as at sloped metal roofs. All RTU's are placed on factory roof curbs and flashed with BUR or cementitious coating based on location. Penetrations are flashed with metal collars and sealed at the pipe penetration with sealant. Walk pads are not provided.

Roof slope is generally 1/4" per foot at low slope roofs. Crickets are provided at all equipment and to direct run-off to internal roof drains along the roof perimeters. Overflow is handled with scuppers through the face of the parapet walls.

OBSERVED CONDITIONS:

Overall roof was clear of leaves, debris and dirt. Some silt was observed where water ponds in depressions however the pond areas were very shallow and infrequent.

Damage from birds pecking on the foam roofing was noted at the perimeter of the Administration Roof area where roof terminates at a gravel stop. This was the only place where bird damage was observed. No pigeons or pigeon debris was noted.

Numerous patches were observed in the cementitious coating where previous repairs have been made. Most patches appear as lighter coating.

Large blisters were observed at the round building element over the Administration Area and in the roof area southwest of the Multi-Purpose Room/Gymnasium. The blister area near the gym occurred in a line of almost continuous blisters the length of the roof.

The Gymnasium Building was retro-fitted with ballasted photovoltaic panels sometime after the building was opened. It appears the foam roof over the Gym was patched and re-coated with new cementitious coating prior to installing the solar panels. This area will not require recoating.

Gas piping, electrical conduits and condensate drains are supported by plastic or wood blocking. Plastic supports and piping are in good condition. Wood supports are undersized and weathered.

Prefinished metal coping is in good condition and should not need to be removed to re-roof the facility.

At the roof area north of the MPR/GYM the roof at the drains were reworked as part of an addition and the roof drain strainers were not re-installed. Strainer basket rings will need to be re-installed prior to re-coating the roof.

A new Gym and Classroom addition has been constructed on the east side of the existing MPR. The new addition is not part of the assessment.

Two modular classrooms also have foamed roofing but appear to have been installed at a later date. These roofs had some small cuts in the coating. Due to their proximity to the play grounds some rocks and balls were observed on the roof. There were also cut-outs in the EFIS parapets where parapet ladders have been mounted that need to be sealed. These buildings were not covered under the original warranty.

A small restroom building was also constructed at a later date to serve the Modular Classrooms and play grounds. This building has a built-up roof that appears to be fair condition. It would make sense to coat this roof at the same time as the other BUR roof areas.

PHOTOGRAPHS:



Holes along the gravel stop due to Wood Peckers.



Large blister with tears in the coating at Admin Roof



Blisters at south roof



Typical flashing at walls



Repaired roof drains adjacent to addition



Typical mechanical enclosures at metal roof



PV arrays at MPR Roof



Fractures in cementitious coating



Perimeter sealant voids at metal roofing



Perimeter voids at copings



Fractured blister at SW Gym roof (1 of 10)

RECOMMENDATIONS:

This roof has been in place for 12 years and is currently leaking at fractured blisters and sealant voids. The roof coating is past its warranty period and useful life. Most concerning are the numerous blisters and fractures identified during the assessment. These are susceptible to additional damage and moisture infiltration. The only remedy for the blisters is to remove the delaminated areas and patch.

The existing insulation is in good condition, slopes are adequate and uniform, and crickets appear to be unobstructed. Based on the condition of the substrate we recommend cleaning, patching and re-coating the entire foamed in place roof area with a cementitious coating capable of providing a new warranty.

Emc2 has access to the contractor's record drawings. Dead load appears to be adequate for the additional cementitious coating. Loads will be verified upon approval of the project.

The estimated cost of the retrofit is approximately \$4.00 per Square Foot for 36 mil elastomeric coating with granular coating at Foamed Roofing and \$3.50/SF for 24 mil white acrylic coating at Built-up Roofing.

Cost of Neglect:

Without the recommended roof replacement the leakage will intensify as the existing blisters continue to fracture and new blisters form. As leaking increases, consequential damage will occur to roof insulation and metal decking, resulting in a costlier roof replacement. Instead of recovering the existing roof a full tear-off may become necessary in order to inspect the metal decking for damage. Additional risk exists with damage to interior building spaces and finishes. Full tear-off is estimated to add an additional \$3.00/SF to the roof replacement.

ESTIMATED COSTS OF REPLACEMENT:

Design Services and Fees:

The architectural scope of service includes preparation of roof plans, details and specifications, construction procurements, permit management and project design coordination:

Architectural Design & Procurement:	\$ 5,670.00
Structural Engineering:	\$500.00
Total Design Fees:	\$6,170.00

Construction Administration Services and Fees:

The construction administration scope-of-services include office time for RFI's and shop drawing review, project administration, 4 site observations including travel to observe and record roof replacement:

Architectural Construction Administration Fees:	\$2,720.00
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Additional Field Observation will be performed at \$500 / Trip.

Estimated Cost of Construction:

Clean and prep existing roofing system for re-coat. Cut out blisters and delaminated coating, prep and patch. Install 36 mil thick elastomeric membrane with granular coating. Standard language manufacturer's 10 year warranty. 2 year contractor's warranty.

New 36 mil. elastomeric membrane and granular overlay:	\$69,000.00
New 24 mil white acrylic coating at BUR Mechanical Wells:	\$15,000.00
Maintain perimeter and penetration sealants at Standing Seam:	\$4,000.00
Minor repairs @ Modular Classroom Roofs:	\$10,800.00
Minor repair and acrylic coating at Restroom Bldg:	\$5,600.00
Sales tax & Bonds:	\$6,256.00
Total estimated Cost of Construction:	\$110,664.00

TOTAL ESTIMATED PROJECT COST: \$119,554.00

Sincerely,

Emc2 GROUP Architects Planners, PC

Richard J. Clutter, AIA
President

Cc: Kevin Hegarty, LESD

NON-PRORATED LIMITED ROOF WARRANTY - SPRAYED POLYURETHANE ROOF SYSTEMS

Job Number: 2600022460
Purchaser: D L WITHERS CONSTRUCTION, LC
Building: CHEATHAM ELEMENTARY SCHOOL
Location: 4725 WEST SOUTH MOUNTAIN AVENUE
 LAVEEN, AZ, 85339

Section Name: FLAT ROOF AREA
SQFT: 25,861
Warranty date: 01/16/2003
Warranty length: 10 Yrs
ER #: 10058662

I. WHAT THIS WARRANTY COVERS:
 (a) CentiMark Corporation (CENTIMARK) warrants to the Purchaser ONLY that CentiMark will repair any leaks resulting from defects in the materials or workmanship in the roof services (services) performed by CentiMark on the building noted above, for the period of time noted above from the Warranty Date. If CentiMark determines that the leaks in the roof are caused by defects in the materials or workmanship supplied by CentiMark, Purchaser's remedies and CentiMark's liability shall be limited to CentiMark's repairing of the roof. The value of CentiMark's services performed under this Warranty shall not exceed the original cost of the roofing services to the Purchaser.
 (b) Purchaser shall notify CentiMark of the need for service within twenty-four (24) hours after its discovery and shall continue this notice in writing within seven (7) calendar days thereafter. In response to this notice CentiMark will arrange to inspect the roof system and, if the leaks are the result of a defect in the materials or workmanship of CentiMark under this Warranty, CentiMark will take prompt, appropriate action to return the roof system to a watertight condition.
 (c) If the leaks are not the responsibility of CentiMark under this Warranty, CentiMark may, at the Purchaser's request, advise the Purchaser within a reasonable time of the minimum repairs that CentiMark believes are required to return the roof system to a watertight condition. If the Purchaser, at its expense, promptly has such repairs made to the roof system by or with the approval of CentiMark, this Warranty will remain in effect for the unexpired portion of its term. Failure to make these repairs in a timely and reasonable fashion will void any further obligation of CentiMark under this Warranty as to the damaged portion of the roofing system.

II. WHAT THIS WARRANTY DOES NOT COVER:
 This Warranty is not a maintenance agreement or insurance policy; therefore routine inspections and maintenance are the Purchaser's responsibility. (See reverse side of this document.) The Warranty does not obligate CentiMark to repair the roof system, or any part of the roof system, in the event of:
 (a) Damage to the roof by any acts of negligence, accidents, misuse or abuse caused by Purchaser or persons other than CentiMark, or beyond CentiMark's control, or outside the reasonable use, treatment or purpose of the roof, or damaging events or conditions, including but not limited to vandalism, malicious mischief, civil disobedience, acts of war, petroleum or other chemical attack, mold growth, attack by insects, rodents or other vermin, storage of materials or any kind on the roof, solid objects falling onto the roof, or abusive roof traffic, or damage to the roof by fire, casualty, natural phenomenon or act of God, including but not limited to lightning, gales, hail, hurricanes, tornadoes, earthquakes, sandstorms.
 (b) Damage to the roof because of failure of any material used as the base over which the roof is applied (unless provided by CentiMark) or damage to the roof because of any material, assemblies or components used in, adjacent to or in contact with the roof system which were not furnished by CentiMark.
 (c) Damage to the roof because of settlement, distortion, failure or cracking of the structure to which the roof system is attached (roof deck, walls or foundation of the building) or defects or failures of any part of the building structure, or damage to the roof because of moisture entering the roof system through walls, or any other part of the building structure.
 (d) Damage resulting from standing water (ponding), improper drainage of normal rainwater (i.e. drainage which permits substantially all water to drain from the roof within 48 hours of a measurable rainfall), and damage resulting from moisture build up due to inadequate or poor ventilation of the interior.
 (e) Damages resulting from changes in the building usage which add stresses to the roof system different than those observable at the time this Warranty was originally issued.
 (f) Alterations, additions or modifications to the roof by persons other than CentiMark or without the prior written approval of CentiMark.
 (g) Damage to the roof because of Purchaser's failure to fulfill Purchaser's obligations under this Warranty.
 (h) Loss of granulars, discoloration, cracking, crazing, or other aesthetics.

III. OBLIGATIONS OF THE PURCHASER UNDER THIS WARRANTY:
 It is the obligation of the Purchaser to fulfill its duties and attend to its responsibilities both as stated under this Warranty and as follows. The failure of Purchaser to perform any of its obligations under this Warranty shall terminate any liability of CentiMark for any warranty obligations of any nature whatsoever.
 (a) Purchaser shall pay all invoices issued by CentiMark for installation, materials and services, in full and when due, and shall not offset any claims that the Purchaser may allege against CentiMark against any amounts due on CentiMark's invoices. If Purchaser fails to pay all outstanding invoices in full and when due, and/or claims any offset against any invoices, then Purchaser shall not be entitled to any warranty protection or services.

(b) Purchaser shall follow the maintenance program set forth on the reverse side of this Warranty.
 (c) Purchaser shall obtain prior written authorization from CentiMark to make alterations or repairs to or through the roof installed by CentiMark, or to place upon, or attach to the roof, objects such as, but not limited to, structures, fixtures, relocation of roof mounted louvers, HVAC units, curb boxes, pipe penetrations, ventilators, or utilities.
 (e) Purchaser shall not change the use of the building and/or the facilities contained within the building in such a manner which would be detrimental to and/or cause a deterioration of the roof system.

IV. EXCLUSIVITY OF WARRANTY AND LIMITATION OF REMEDIES:
 (a) CENTIMARK EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER IMPLIED WARRANTY. THIS EXPRESS LIMITED WARRANTY CONTAINS THE SOLE AND EXCLUSIVE WARRANTY AND REMEDY OF PURCHASER AGAINST CENTIMARK. THERE IS NO EXPRESS WARRANTY OTHER THAN THAT STATED IN THIS WARRANTY.

(b) This Warranty does not cover, and in no case shall CentiMark be liable for, any special, incidental or consequential damages based on breach of warranty, breach of contract, negligence, strict liability, tort or any other legal theory. Such excluded damages include, but are not limited to, loss of profits, savings or revenue, cost of substitute equipment, facilities or services, business interruption, the claims of third parties including customers, and the cost of repairing and/or replacing other property when the roof services do not perform as warranted, and any and all other incidental or consequential damages. Incidental and consequential damages shall not be recoverable even if the remedies or actions provided herein are determined to have failed of their essential purposes.

(c) Purchaser assumes all risk in connection with the existence, growth or presence of any mold, mildew, fungi, microbe, spore, mycotoxin or other similar microbial condition in, through or around the roof, roofing system, or building at any time. This Warranty does not apply to, and in no event shall CentiMark be liable for, any claim, bodily injury, loss, cost, expense or damage arising out of or relating to, in whole or in part, the existence of, growth or presence of any mold, mildew, fungi, microbe, spore, mycotoxin or similar microbial condition in, through or around the roof, roofing system or building at any time.

V. TIME LIMIT FOR BRINGING SUIT:
 ANY ACTION BY PURCHASER TO ENFORCE ANY CLAIMS AGAINST CENTIMARK MUST BE COMMENCED WITHIN ONE (1) YEAR FROM THE DATE THAT A DEFECT IN MATERIALS OR WORKMANSHIP, OR OTHER BREACH OR ANY OTHER CLAIM IS DISCOVERED OR REASONABLY SHOULD HAVE BEEN DISCOVERED.

VI. MISCELLANEOUS:
 (a) If at any time CentiMark does not enforce any of the terms, conditions or limitations stated in this Warranty, CentiMark shall not have waived the benefit of said term, condition or limitation and can enforce it at any time. This Warranty is extended only to the original Purchaser identified herein and is not transferable. It is not intended nor shall it be construed to create rights in any third party.
 (b) This Warranty is issued at the Corporate offices of CentiMark Corporation in Canonsburg, Pennsylvania and accordingly is governed by Pennsylvania law. Jurisdiction and venue of any dispute arising under or pursuant to the terms of this Warranty shall be vested in courts sitting in Washington County, Pennsylvania.
 (c) This Warranty Agreement is understood to be the complete and exclusive warranty agreement between the Purchaser and CentiMark, superseding all prior agreements, whether oral or written, and all other communications between the parties relating to the subject matter of this Warranty. Any additional or contradictory Warranty terms or conditions stated in Purchaser's purchase order/acceptance documents or other written communication shall not be valid or binding upon CentiMark under any circumstances unless specifically adopted and approved by written response from CentiMark; the failure of CentiMark to respond shall be deemed a denial of any such additional terms or conditions. No representative of CentiMark has the authority to make any representations or promises about the Warranty or the performance of our services that differ from this written Warranty. Changes to this Warranty may only be made by a CentiMark Corporate Officer.



Timothy M. Dunlap - President and Chief Operating Officer (COO)



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NON-PRORATED LIMITED ROOF WARRANTY - MAINTENANCE PROGRAM

In order to continue the coverage of this Warranty, the following Maintenance Program must be implemented by the Purchaser.

There are a number of items not covered by this Warranty that are the responsibility of the Purchaser. In order to ensure that your CentiMark roof system will continue to perform, you must examine and maintain these items on a regular basis:

1. Maintain a file for your records on this roof. Include this Warranty, invoices, and subsequent logs of all inspections performed and repairs made to the roof.
2. Inspect your roof at least semiannually. This is best done in the spring and in the fall. It is also a good idea to examine the roof for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc.

When checking the roof:

1. Remove any debris, such as leaves, small branches, dirt, rocks, etc. that have accumulated.
2. Clean gutters, downspouts, drains and the surrounding areas to avoid clogging. Make certain they allow water to flow off the roof.
3. Examine the areas that abut the roof such as masonry, counterflashing, caulking, mortar joints and any loose stone or coping.
4. All metal curbs and pipes, counterflashing and other similar maintenance items must be kept watertight at all times. Examine all metal flashings and valleys for rust and damage.
5. Examine the edges of the roof and all rooftop equipment such as air conditioners, evaporative coolers, antennas, etc.
6. Check the building exterior for settlement or movement.
7. Examine protective coatings for cracked, flaked or blistered areas.

Protecting your investment:

1. If ponding occurs, either implement a system or supplement your existing system with drains or other drainage mechanisms.
2. Do not permit petroleum products, such as oil, gasoline or solvents, or kitchen, manufacturing and other industrial wastes and grease, or any other liquids containing petroleum products or derivatives, on the roof system. These products could adversely affect the roof system.
3. Avoid unnecessary rooftop traffic. Approved walk pads should be installed in areas that require regular foot traffic for maintenance.
4. Before installing rooftop devices in or through the roof, such as air conditioning units, vents, etc., or before erecting an addition to your building, contact your CentiMark representative for coordination of the installation with the CentiMark roof system.
5. Do not use any unapproved materials to repair damage to the roof system. Such products may adversely affect the system. If temporary emergency repairs are necessary immediately, approved materials are any good grade of asphalt cement. CentiMark must be immediately notified if such action is taken.
6. Remember that CentiMark must perform all repairs to the CentiMark roof system or approve in advance any repairs made by another contractor to the CentiMark roof system.
7. If you experience a roof leak, call your CentiMark representative.

_____ **CENTI**MARK _____