



KEYSTONE
ENGINEERING &
CONSULTING, INC.

Four Seasons Condominium

3799 S Banana River Blvd
Cocoa Beach, FL 32931

Low Slope Main Roofs Condition Survey Report Buildings #8, 9 & 10 plus garages

Prepared By
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September 12, 2023



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Four Seasons Condominiums- Bldgs #8,9, & 10 plus garages A thru H
3799 S. Banana River Blvd
Cocoa Beach, FL 32931

Re: Roof Condition Survey Report

Dear Board and Association Members:

Keystone Engineering was contracted to perform an inspection of the main roofs on Buildings #8, 9 and 10 plus the garages. The inspection was completed in June 2023. The inspections were done on a visual and hands on method, with minor destructive analysis of the roof systems as required.

Facility Description

The Four Seasons Condominiums- Bldgs 8, 9 and 10 consist of three separate, 5-story, multi-family buildings, and (8) garages located on the shore of the Banana River. Each rectangular building has a main low slope roof footprint of approximately 11,000 square feet and is surrounded on four sides by shingle mansard roofs.

Investigation Methodology

The inspection process was completed on a visual, and hands-on basis by the undersigned Florida Registered Professional Engineer and trained assistants. Generally, the inspection is completed visually to locate areas of apparent distress, sources of water intrusion, rotted or water-stained materials and specific situations that create vulnerabilities. Minor destructive analysis was also performed to determine the roof assemblies and roof deck type.

The results of the inspections and evaluation will generate an anticipated and recommended scope of work. It must be considered and understood that many work items identified are interrelated and therefore not easily or cost-effectively addressed separately. It should also be well understood that portions of the work anticipated are estimated quantities, while other items are fixed quantities. As such, the estimated project budget includes both unit cost and fixed cost items.

It should also be clear that the estimates provided are for budgetary purposes only. Actual bids will need to be solicited for cost purposes. Also, there is a high

likelihood for additional damage and hidden conditions to be found during the work that will increase the units of work and the project budget. Proper contingency estimates need to be considered and factored into the project budget estimate.

Existing Roofs

Flat Roofs- All flat roofs consist of a spray polyurethane foam (SPF) roof system topped with a silicon coating with a granulated finish. The SPF roofs are installed over an existing modified asphalt roof system over plywood roof decking on wood frame construction. The SPF roof system was installed approximately 20-years ago. All roofs have positive slope for drainage to the roof perimeters on all four sides of the roof. Gutters are installed at the bottom of the front mansard roofs only, located above the walkways. Access to the roofs on all three condominiums is via an aluminum roof hatch.

There are numerous roof repair patches over the roof surface on all buildings using a liquid applied silicone roof coating. These repairs appear to be for minor cracking or holes in the roof coating and/or roof surface. In addition, there are numerous coating repairs and extensive caulking along the roof perimeters, where the aluminum drip edge and the roof systems meet—indicative of past separation of the roof system from the edge metal causing potential water infiltration. The edge repairs mostly used caulking, which is only a temporary solution and future maintenance item. Future edge repairs should be considered for a permanent solution. The existing edge metal is a thin gauge aluminum which has been fastened on the front face with screws. These exposed fasteners typically leak eventually due to the deterioration of the rubber washers, and expansion/ contraction of the metal. It is recommended during the next re-roof to replace the edge metal with an .040 pre-painted aluminum drip edge on a continuous cleat, which would eliminate exposed fasteners and provide a stronger edge securement. There are no active leaks reported at this time.

Despite their age and numerous liquid roof patches the SPF roof system on all buildings are still in fair condition. With minor repairs and a new silicone roof coating, the life of these roofs can be extended for an additional 10 years. If extending the life of the low-slope roofs is not an option, then budgets can be provided for replacement of the low-slope roofs.

Mechanical Condenser Stands – Each building has six equipment stands with five condensers per stand, for a total of 30 units per building. There are numerous issues that need to be addressed concerning most condensers on the buildings. Many hurricane clips are rusted out and need to be replaced. If hurricane clips cannot be installed due to the air-conditioner frames being rusted out, they need to have cable straps installed over them to secured them to the mechanical stands. Foam insulation around copper lines are deteriorated and need to be replaced. Anti-vibration pads under some units are missing or

deteriorated. The aluminum “goosenecks”, where the refrigeration lines go through the roof, need to be properly sealed at the opening where the lines go in to ensure they are watertight. There are also a few electrical conduits that need to be sealed with caulk where they have gaps allowing water to get inside.

Mansard Shingle Roofs- Each building has steep-sloped shingle mansard roofs on all four sides of the building that tie-in to the flat foam roofs. They are approximately 600 linear feet in length and 5’ high, for a total area of approximately 3,000 square feet each. The shingles appear aged and at the end of their serviceable life and should be scheduled for replacement. There are also numerous areas where shingles have been replaced due to storm winds blowing them off. Due to their 5-story height these mansard roofs can only be accessed using a manlift or scaffolding.

Soffits- All mansard roofs have vented vinyl soffits located under them, and are in fair to poor condition depending on the location. The mansard/ soffit trim metal located at the walkways is rusting and in need of replacement. There are a couple of areas where sections of soffit have blown out due to high winds that need to be replaced.

Garages (A thru H)- There are eight (8) one-story garages located throughout the condominium complex, which vary in size from 4,500 to 7,000 square feet. All garage roofs are flat with surrounding shingle mansard roofs. Construction is plywood sheathing over wood framing. Garages “A” and “E” have been re-roofed in the recent past with TPO single-ply roof membrane on the low-slope roof areas and new shingles on the mansards. The six remaining garages are modified bitumen roofing, approximately 20 years old, and are showing signs of deterioration and age. These roofs should be scheduled for re-roofing in the near future. It was noted during the inspection that many of the garages pond water along the roof perimeters due to low areas in the plywood. These areas should be addressed during the next re-roof to see if this condition can be remedied.

The shingle mansards are also showing signs of age, with some shingles falling off and others cracked. The shingles should be replaced at the same time as the flat roofs.

Recommendations

Low-Slope Roofs: Buildings 8, 9 & 10 spray polyurethane foam roofs are still in fair shape, but due to their 20+ year age we are recommending two options. The first option is to perform minor repairs, as needed, and coat the entire roof with a new layer of silicone roof coating with a 10-year manufacturer’s warranty. The second option is to remove the existing spray foam roofs and underlying modified roofs down to the plywood decking and replace with either new spray polyurethane foam roofs, modified bitumen roofing systems or TPO/PVC single-

ply roofing systems. If option #2 roof replacement is chosen it will require replacing all mechanical stands with new code compliant stands, which includes the cost of all new hard copper lines, insulation, disconnects, hurricane clips, etc. A complete roof replacement will also require installing a self-adhered waterproof underlayment over all plywood decking prior to installing a new roof. Estimated budgets for each system are listed below.

Shingle Mansard Roofs: All shingle mansard roofs on Buildings 8, 9 & 10 are at the end of their usable life cycle and need to be replaced. Re-roofing of these mansards will also include replacing the drip edge along the main roof perimeters, metal trim along the bottom edge of the mansards, gutters and soffits. Any deteriorated wood sheathing will also be removed and replaced during this project.

***Please note that if the shingle mansards are re-roofed and the foam roofs are only coated, that the roof perimeter metal will need to be replaced at that time. That will require the roof perimeters to be cut back 2-3' on all four sides, new edge metal installed, and the areas re-foamed and tied-in to the existing foam roofs.*

Garages: Garages A and E were recently re-roofed with TPO single-ply roofs are not in need of any work. Garages B, C, D, F G and H are nearing the end of their lifecycle and should be scheduled for replacement of both the low-slope and shingle mansard roofs. The extensive ponding conditions caused by low areas along the roof perimeters need to be corrected at that time. Since these are garages and not living areas, these roofs could be replaced over several years to spread out the costs.

Budget Estimates

Please note that these are budget estimates based on past projects, and that actual bids will need to be solicited for proper budgeting.

Bldg 8, 9 & 10 Roofs (approx. 11,000 square foot each):

Option #1: Minor foam repairs and Silicone Roof Coating	<u>\$5.00 to \$6.00/ square foot</u> \$55,000 to \$66,000 per building
Option #1: Shingle Mansard Re-roof with edge repairs (Price includes manlift)	<u>\$25.00 to \$28.00/ square foot</u> \$75,000 to \$84,000 per building
Option #1: Vinyl Soffit Replacement	\$15,000 per building
Option #1 TOTAL.....	\$145,000 – \$165,000 per building

Option #2: Full Roof Removal to Plywood Decking	
a) Spray Polyurethane Foam Option	<u>\$10.00 to \$12.00/ square foot</u> \$110,000 to \$132,000 per building
b) TPO Single-Ply Option	<u>\$23.00 to \$28.00/ square foot</u> \$253,000 to \$308,000 per building
c) Modified Bitumen Option	<u>\$32.00 to \$34.00/ square foot</u> \$352,000 to \$374,000 per building
Option #2: Shingle Mansard Re-roof (Price includes manlift)	<u>\$17.00 to \$20.00/ square foot</u> \$51,000 to \$60,000 per building
Option #2: Vinyl Soffit Replacement	\$15,000 per building
Option #2 TOTALS:	
a) Spray Foam/ Shingle Mansard	\$176,000 to \$207,000 per bldg
b) TPO single-ply/ Shingle Mansard	\$319,000 to \$383,000 per bldg
c) ModBit/ Shingle Mansard	\$418,000 to \$449,000 per bldg.
Mechanical Stands (30 ac condensers on 6 stands)	\$75,000 each building

Sincerely,

James E. Emory, PE, SI
 Florida Special Inspector and Professional Engineer #60965
 President