

Greg Beste, AIA, NCARB

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August 2, 2019

Board Members
Mr. CJ Cuppia
Coastal Resort Association Management
Harbor Island, SC

RE: Building Envelope Study for Building M
Harbor Island Beach House and Ocean Villas HPR
Saint Helena Island, SC

Dear Board Members & Mr. Cuppia:

1) Introduction

On behalf of the Board members, Greg Beste, Architect was requested by Mr. JC Cuppia to perform a building envelope study to review the building envelope components such as siding, trim, windows, doors, flashing, roofing, walkways and associated transitions with these materials. More specifically to investigate, including potential destructive testing, of the walkway to building transitions and slope of walkways. The flashing and anchorage to building will also be investigated.

2) Purpose

The purpose of this investigation is to determine: 1) the condition of the building envelope materials and components; 2) determine if any materials are damaged or deteriorated to a point that replacement is imminent; 3) document the materials or components for potential life-cycle replacement and 4) look specifically at the walkways and the deck/wall transition detail.

3) Scope of this Investigation

The scope of our investigation was to inspect the exterior of the building and the associated materials, components and details of the building envelope. To complete this investigation, Greg Beste was made several site visits to investigate and photographically document the conditions observed. These site inspections occurred over several days during the months of June and July of 2019. A visual inspection was performed, with field notes and photographs

taken building envelope. My findings and conclusions were based on the on-site investigation of the building envelope.

This investigation is based solely on the visual observations of the buildings with no destruction testing performed. The conclusions in this report are therefore representative of our review of the existing conditions coupled with our professional experience and construction knowledge.

4) Background Information

The property is a single 3-story free-standing buildings with six units on each floor or a total of 18 units in the building built approximately mid-1980's. The building has, on the southwest facing facade, two exterior open-air stair towers near each end and open-air walkways on each floor providing access to each unit. The building has lap siding of either wood material or cementitious fiber board composite siding (recently installed as part of a renovation program) similar or equal to "Hardiplank". Fenestration is aluminum window frames from original construction with double insulated glazing. The end units on the side facades have "box-style" bay window units with custom "corner glass" units.

The stair towers are constructed of wood framing and have wooden railings, solid timber treads and wood framed joists and decking at each landing. The walkways are of similar construction with wood framed joists and decking with a reported waterproofing membrane on the decking covered with a "outdoor" carpeting. The soffits are wood framed and plywood panels.

5) Documents Referenced or Reviewed

Construction documents were not available or did not exist for the building and were not available at the time of the on-site inspections.

6) On-Site Inspection

A. At the various site inspections in June and July, Mr. Greg Beste, Architect was generally unaccompanied during the site inspection except on the occasion that Mr. Cuppia was present.

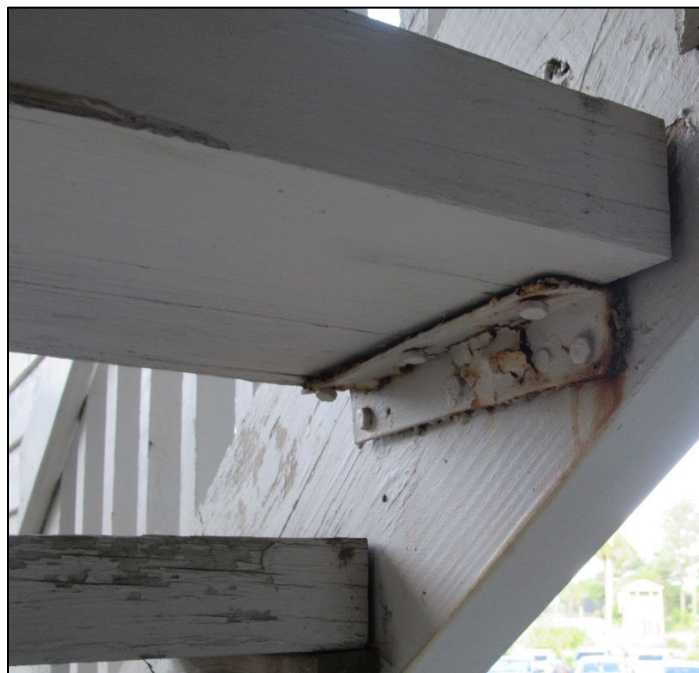
B. Building Components

- a. **Tread at Stair towers.** The treads are solid timber with open risers and are supported originally by steel angles or with replacement supports consisting of extensively mitered 2x4 treated lumber. The steel angles appear to be present on approximately 50% of the treads with the remaining treads using the mitered 2x4 material. The steel angles are severely corroded in many locations and have severe corrosion present at the fasteners. Some fasteners are completely corroded away and ***may present a safety hazard for the support of the tread.*** A number of the 2x4 mitered supports have corroded fasteners also and have split

the mitered support piece due to numerous fasteners used within close proximity to each other. This again ***may present a safety hazard for the support of the tread.***



Corroded steel tread bracket



Corroded steel tread bracket



Mitered 2x4 tread bracket



Mitered 2x4 tread bracket

RECOMMENDATION: All steel angle tread supports should be at a minimum of double-dipped galvanized steel angles. Go over the metal with a wire brush to remove any oxidation. Wipe the galvanized surface down with white vinegar. The vinegar is a mild acid which acts to etch the galvanized coating so the paint will stick. Prime the surface with a primer made for metal. Apply two topcoats of paint on top of the primer. Fasteners shall be minimum #8 stainless steel wood screws.

All mitered wood supports shall be inspected and those with corroded fasteners or split/cracked wood shall be replaced with the new steel angle as noted above.

- b. **Walkway/Stair Guardrails.** The guardrails consist of nominal 2x2 pickets with vertical supports of nominal 4x4 posts with a nominal 3x3 on an angle top rail. The fasteners in the majority of the pickets, especially at the base have corroded and have split the 2x2 picket. The bottom rail which is a nominal 2x4 also has many corroded fasteners, splitting of the wood at the fastener locations extending to the end of the piece and has excessive gaps at the vertical support from movement

due to moisture and shrinkage. The top rail has the same issues as the bottom rail. These corroded fastener conditions and split wood ***may present a safety condition*** which would not provide the code requirement to withstand a concentrated 200 lb. force anywhere along the top of the rail.



Guardrail deterioration



Guardrail deterioration



Upper rail of guardrail deterioration



Lower rail of guardrail deterioration



Top rail of guardrail deterioration

RECOMMENDATION: Complete replacement of the guardrails should be considered in the next 2-3 years to an alternate material and design such as aluminum which would not have the corrosion and deterioration of the various components in the salt air environment present at the site.

- c. **Stairway Handrails:** The handrails in the stair towers are solid nominal 2x6 components with corroded fasteners in many locations. These handrails also have many split ends due to excessive fastener placements. The handrails also do not provide the code required continued clearance of 1.5" between the handrail and any vertical surface, such as the supporting walls.



Handrail connection, deterioration



Handrail connection

RECOMMENDATION: Complete replacement of the stairway handrails in the next 2-3 years due to deterioration and corrosion of the fasteners with an alternate material such as an aluminum handrail which would be code complaint in design and a more sustainable material for the salt air environment at the site.

- d. **Wood trim:** Various locations throughout the building exterior, especially on the lower level, numerous locations of rotted or extensive deteriorated wood trim pieces were observed.



Wood trim deterioration



Siding and trim deterioration

RECOMMENDATION: Routine maintenance program begin a periodic replacement of the wood trim pieces beginning with the most deteriorated pieces first.

- e. **Balconies.** The balconies were in generally good condition with the same issues on some of the guardrails as on the walkways.



Typical Balcony

RECOMMENDATION: If front walkway guardrails are replaced with an alternate material, the balcony guardrails should be replaced at the same time. Until then, a routine maintenance program should begin a periodic replacement of the wood components beginning with the most deteriorated pieces first.

- f. **Walkways.** The front walkways on each floor (and rear balconies) having a carpet and a reported water-resistant membrane over a plywood decking. The deterioration of the decking was observed on the end face of the decking at the walkway edge, especially noted at the stairway tread locations. Delamination and deterioration of the inner layers of the plywood decking was observed. On the 3rd floor walkway excessive ripples were noted in the carpeting and water-resistant membrane indicating failure of the protection barrier installed. Note also several areas of the soffit were deteriorated.



Typical walkway condition



Typical walkway condition



Third floor walkway condition



Tear in Third floor walkway carpeting exposing rippled water-resistant membrane



Deteriorated and delaminating walkway decking



Decking condition at one of the rear balconies



Underside of deteriorating decking as viewed from level below



Wall/walkway transition with no continuous flashing up the wall

Wall and decking transition had numerous areas of poor or limited continuous flashing observed.

RECOMMENDATION: Complete removal of the carpeting and complete removal of the water-resistant barrier. Removal of the deteriorated and delaminating plywood decking. Install minimum of 5/8" KDAT (Kiln Dried after Treatment) exterior grade treated plywood decking. Use "Hydrostop Traffic Coat Decking Coating" with a "Textured" finish for non-slip applications. Use with

“PremiumCoat System” for extendable 5-year warranty by GAF, the manufacturer when applied by an approved applicator at all plywood decking locations. Prep surface as required by manufacturer. Coordination with the wall/decking detail shall be required and in strict compliance with manufacturer’s installation requirements. Provide minimum of 8” up the wall at deck/wall transitions with “Hydrostop” materials.

- g. Pilings.** A number of foundation pilings were observed to have corroded strapping and fasteners. Several main framing members along the front façade appear to “miss” the main bearing point of the piling and had supplemental framing added to provide bearing and structural load transfer to the pilings.



Misaligned framing at piling and corroded strapping.



Corroded/missing strapping at piling

RECOMMENDATION: As part of the routine maintenance program, straps should be reinstalled to all pilings where corrosion is observed on existing strapping. Use stainless steel fasteners and double-dipped galvanized straps. The front façade pilings should be checked immediately and then annually for supplemental support components and fasteners to ensure no changes have occurred. If corrosion or deterioration of the wood supplemental framing is observed, this should be replaced immediately.

- h. **Siding.** The exterior siding that is still wood material and has not been replaced recently by the use of cementitious fiber board siding (equal to “Hardiplank”) should be monitored and replaced in the next 2-5 years depending on the condition of the siding and its location or exposure to the weather elements.



Typical siding condition

- i. **Windows.** The aluminum framed windows are original and have exceeded their life expectancy as a building component. It has been reported that several windows have either been replaced or are in need of immediate replacement.



Typical “box bay” window with corner glass



Typical window unit

RECOMMENDATION: Develop a plan and select a replacement window manufacturer and unit specification and complete replacement on an as needed basis with the understanding that all windows in the building should be replaced with the next 3-5 years or sooner. This also includes any sliding glass doors.

7) Limitations

Our professional analysis and opinions contained within this report are based upon, and therefore limited to, the information available to us at this time and the scope of our investigation as described herein. We reserve the right to amend this report if and when previously unknown or unseen conditions are discovered or additional information becomes available to us.

Following your review of this report, please contact me with any questions, comments and/or directives you may have. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory R. Beste", with a long horizontal flourish extending to the right.

Gregory R. Beste AIA, NCARB
Architect
SC License number 3306