

KEYSTONE

ENGINEERING & CONSULTING

November 14, 2024

Twin Towers Homeowners Association, Inc.
2020 North Atlantic Avenue
Cocoa Beach, FL 32931

Re: **State Mandated Structural Milestone Inspection**

Dear Board and Association Members,

This report is intended to meet the requirements of the Florida State mandated Phase I Structural Milestone Inspection for Twin Towers Condominium in Cocoa Beach, Florida. The report covers accessible components including load bearing walls, columns, beams, horizontal slabs, visible components and/or collateral visible aspects such as settlement cracking. No other components are left to be inspected. **Currently, we do not see any safety issues or structural capacity concerns and the buildings are safe to occupy.** Overall, the structures of the complex have been very well maintained. The next needed project (north face of the south building) is planned for 2025. At that point, all cyclic restoration will have been completed in the past 10 years by experienced contactors and engineers.

Building Construction Type – Twin Towers consists of two, six-story, conventionally constructed, oceanfront buildings built by the Corps of Engineers in 1964, for America's Space Program. The foundations, slabs and roofs are cast-in-place concrete. The exterior walls are a masonry construction with a painted stucco finish. Balcony floors are finished with a variety of finishes including paints, coatings and tile. They also have original concrete panel walls, railings and posts as fall protection. Some balconies have been enclosed with glass or other materials. The cast-in-place concrete roofs to all three buildings have been recently (November 2023 and November 2024) replaced to substrate with six inches of Solid Silicone with Aggregate, a spray system with a 30-year warranty.

History – The north balconies of the north building underwent a concrete restoration project in 2021. The southside balconies were restored in 2024. In 2015, the southside balconies of the south building were also restored. In 2024, repairs to the exterior walls to all three buildings were completed. The northside balconies of the south building were fully inspected for concrete damage in July of 2024 and are now being included in a competitive bid process to complete a comprehensive concrete restoration project in 2025. All work has been completed professionally by experienced contractors and engineers.



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Balcony Concrete Spalling – As mentioned above, the balconies, apart from the north side of the south building, have undergone a restoration project in the recent past. The north face of the south building is scheduled for construction in 2025. It is recommended to complete a follow-up full inspection of both buildings in two to three years to locate any needed cyclic concrete repairs.

After that, it is recommended to follow cyclic restoration cycles of 7 to 10 years, which will occur on any aged coastal building. These cycles should be planned for and coordinated with exterior building painting cycles. At that time, any needed concrete repairs would be completed, and the floor coatings repaired as needed and fully top coated.

Balcony Railings – The existing railings are a concrete system. They are original to the building and therefore do not meet current building codes. Overall, the railings appear to be well maintained and remain in serviceable condition. The railings of the north face of the south building are scheduled to be repaired as part of a 2025 project.

Balcony Floor Finishes – The existing balcony coatings are mostly coating systems that were installed during projects over the past 10 years. The coatings appear to be serviceable and can be repaired and recoated during future repair projects. The balcony finishes of the north face of the south building will be stripped and recoated during the planned 2025 project.

The recommended floor coating finish as considered in the budget is a high-performance acrylic high build, single color, textured (knockdown) finish, with a faux grout line finish pattern. This system provides very good protection to the balcony slab surface, while considering the ease of future structural repairs and the ability to repair the coating texture and recoat the surface with relative ease, and without the need to fully strip the floors for several future repair cycles.

Sliding Glass Doors – Some units have older or even original sliding glass doors. Any aged sliding glass doors remaining should be replaced as part of the next restoration cycle or sooner. “Coastal Quality” products are recommended and should consider corrosion resistance, coating finish performance, superior water resistance, the use of all stainless-steel hardware, concealed/sealed stainless-steel fasteners, energy efficiency and proper tint. Many of these are not achieved with a “minimum” code compliant door.

Concrete spalling has occurred under the sliding glass doors and has been repaired as needed during previous projects. Additional concrete repairs are needed under select sliding glass doors on the north face of the south building. It is intended to replace those doors as part of the 2025 restoration project.

Exterior Wall Painting – Painting cycles are recommended at 7 to 10 years. Painting should be completed as part of or immediately after any cyclic concrete restoration project. Any signs of cyclic concrete spalling and/or stucco damage to the walls and window sills should be repaired prior to painting.

Shutters – There are several units with shutters at the sliding glass doors. The shutters, much like the sliding glass doors, are typically the individual unit owner property and responsibility. The shutters can also many times become part of the restoration project. In some cases, the shutters need to be removed to access the concrete spalling damage, or to apply the new floor coatings. Other issues common with shutters are the inappropriate use of non-stainless fasteners, and directly mounting the tracks to the floor surface which blocks drainage, damages the coatings, and contributes to concrete spalling.

The use of non-stainless fasteners creates several problems, including, allowing saltwater intrusion at the penetration, rust staining on the building, potential failure of the fasteners in a tropical storm, and breaking off in the concrete during removal. The latter issue creates excessive costs during a restoration project as all broken fasteners need to be excavated from the concrete.

Tracks installed directly to the floor coating surface blocks water drainage. This issue can exist for shutter tracks in front of the sliding glass doors (preventing water from draining off the thresholds) and on the balcony edge (preventing water from draining off the slab edge as intended). Shutters should be elevated by mounting or drainage shims (1/4 inch).

Some shutters may need to be removed as needed for concrete repairs. Shutter elements attached to the floors will likely need to be removed for balcony floor coating efforts, to ensure a full topcoat application. It is possible to consider compromising for the balcony floor coating repair option, to coat around the shutter tracks without removal. Shutter removals need to consider in advance the age and condition of the shutter, and if it is a candidate for reinstallation, or will require replacement with a newer, code compliant version.

It is recommended to remove shutters from the balconies on an as-needed basis to perform needed concrete repairs and apply floor coatings. All shutters with non-stainless fasteners should be removed and reinstalled with stainless steel fasteners. All shutters without drainage shims should be removed and reinstalled with proper provisions for drainage.

Repairs - Any future cyclic repair project should be completed by a contractor with proven experience in structural concrete restoration on occupied coastal buildings, under the supervision of an experienced professional engineer. The repairs should be completed to ICRI (International Concrete Repair Institute) standards including ICRI No. 310.1R-2008 "Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion." Anything short of this standard will result in

repeat failures of the repairs in the near term. Following these procedures will result in long-term structural repairs.

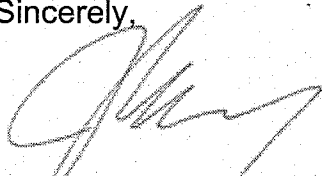
The concrete removal and excavation process will necessitate the localized removal of the floor finishes, stucco and paint, railings, and in some cases, shutters and sliding glass doors. These items will need to be factored into the project scope of work and budget considerations. In some cases, these items can be removed/reinstalled/repaired to complete the concrete repairs. In other cases, it may be more appropriate to remove the item and replace with new. This decision can be based on the age and condition of the item, the budget available, the motivation for maintenance considerations over time, and the tolerance for aesthetic imperfections.

Recommendations Summary for a Restoration Project

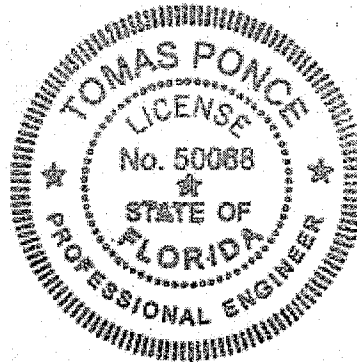
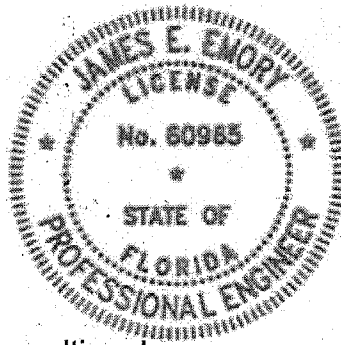
- Complete the Comprehensive restoration of the north face of the south building in 2025, as planned.
- Discuss the recommendations, scope of work and budgets presented, for any questions. Keystone will participate in the discussion.
- Consider a cyclic restoration as needed in the Keystone future comprehensive report.

Please do not hesitate to contact me if any additional information is required.

Sincerely,



James E. Emory, P.E., S.I.
FL # 60965
Keystone Engineering & Consulting, Inc.
President and Principal Engineer



This item has been digitally signed and sealed by [Tomas Ponce PE, FL # 0050068], on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



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