KEYSTONE
ENGINEERING &
CONSULTING, INC.

Opus 21 Condominium

2965 South Highway A1A Hwy A1A
Melbourne Beach, Florida 32951

Structural Condition Survey Report

Prepared By

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Florida Registered
Professional Engineer #50068

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LICENSE
No. 50068
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

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October 18, 2024

KEYSTONE
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Opus 21 Condominium
Condition Survey Report

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October 18, 2024

Opus 21 Homeowners Association, Inc.
2965 S Highway A1A
Melbourne Beach, FL 32951

Re: Structural Milestone Building Inspection

EXECUTIVE SUMMARY

Keystone Engineering was contracted to provide a structural engineering inspection of the Opus 21 Condominium. The inspection was primarily to evaluate the structural condition of the structures, determine estimated structural repairs needed, and consider measures to better protect the structures from the corrosive effects of the coastal exposure. The inspection was completed by the undersigned structural engineer with trained assistants.

Building Description: Opus 21 Condominium consists of four, three-story, oceanfront buildings. There are a total of 20 units in the complex. Two buildings have four townhouses each and two buildings have six each. Each unit has individual, ground-floor access and most have balconies on the east and west elevations.

Architectural and structural plans were not available, but the association was incorporated in 1978, suggesting the buildings are 46 years old. The buildings appear to be wood construction, including the walls with a painted stucco finish. It appears to be supported by structural load bearing columns and beams. The balconies are all wood, as well as the balcony fall protection railings.

Summary of Findings: Opus 21 has typical structural issues we would expect to see on 46-year-old oceanfront, wood buildings. This is primarily in the form of water intrusion related damage to the wood balcony decking and supports, as well as the railing pickets. **At this time, we do not see any safety issues or structural capacity concerns.** We do see areas with needed structural repairs. This is in the form of minor cracking on the wood columns and beams that support the wood structures. We also see conditions that could be improved to minimize and reduce future structural damage, including improvements to the railings, the floor coatings, and the sliding glass doors, as well as replacing most fasteners with stainless steel.

Major Project Issues:

1. Balconies

The balconies are experiencing a minimal amount of wood staining and damage due fastener corrosion and water intrusion. The water intrusion can be attributed to

breaches in the protective finishes and missing or corroded deck and railing fasteners. Damage, such as splitting, is evident on the columns and beams that support the wood structures. Balcony floor repairs may also affect shutters and sliding glass doors.

Possible hidden conditions for wood damage may exist on the walls behind shutters and light fixtures, as well as under "patches" done by others.

There is visible splitting on numerous floor and railing boards, including support posts. The cracks formed will also greatly increase the ingress of water and chlorides into the boards and cause the splitting and water damage to grow exponentially.

2. Balcony Floor Finishes

The balcony floor finish is the first line of defense against the corrosive elements of the water and salt air. The balconies have a poor to fair coating system and one unit has tile on its east and west balconies. *Tile provides little to no protection and allows the balcony surface to remain wet and exposed to saltwater nearly continuously.*

Possible solutions include stripping all existing coatings and tile and installing an improved coating system over the wood decking. Alternates could be provided to replace the balconies with synthetic (Trexx) material or prefabricated aluminum.

3. Railings

The existing railing system is a wooden picket system. Because of the corrosion staining, it is evident that stainless steel fasteners were not used.

Alternates could be provided to replace the railings with synthetic (Trexx) material or prefabricated aluminum. New, properly installed railings and an improved protective floor coating system will greatly reduce future damage.

4. Shutters

The current shutter installations are various styles to include accordion, roll down and panels. They may have to be removed for both concrete and wood deck work. They also do not have proper drainage shims that allow water to exit from the balcony.

One aspect of the shutter to consider is its existing condition and the changes to the building codes since it was originally installed. It should first be determined by the shutter vendor whether a shutter can be simply removed and reinstalled, needs refurbishment to be reinstalled or must be replaced due to deterioration or building code changes. All reinstalled/replaced shutters need to include proper drainage shims, and stainless-steel fasteners set in predrilled holes filled with sealant.

5. Sliding Glass Doors

The sliding glass doors appear to be various ages and styles. A few have corroded fasteners, which can allow saltwater intrusion. An aged door, and/or a door in poor condition may be a candidate for replacement with a new code compliant model. *Sliding glass doors are an individual owner item. However, it is recommended to consider replacing any aged or original sliding glass door as part of the restoration project. Properly specified and installed, new sliding glass doors, appropriate for an oceanfront exposure and performance, will provide better protection for the structure and also better performance for water resistance, storms, wind driven rain, high pressure differentials during tropical storms and thermal/energy considerations.*

For sliding glass door replacements, it is advisable to have the doors and installation provided by the restoration contractor, and not a 3rd party subcontractor. This is due to the fact that the most appropriate time to install a new slider is during the project (not before or after) especially if there are concrete repairs needed under the doors. It is best to install the doors before final floor coatings and sealants are installed. Doors installed after the project; many times damage the new floor finishes. Also, doors installed during the project will be inspected by the engineering team to ensure the installation meets the manufacturer's requirements.

6. Exterior Painting and Waterproofing

A restoration bid process could also consider the full exterior painting and waterproofing of the building either as part of the restoration project, or as a separate project immediately after the restoration is complete. Ideally, as restoration becomes cyclical, the painting and restoration cycles are coordinated for convenience. We recommend painting the exterior walls on a 7 to 10-year cycle. Several actions would be cost efficient to include in the full building painting phase including window sill repairs, stucco repairs and replacement of perimeter window and shutter sealants, and other items.

Summary

We recommend that all maintenance issues such as loose railing pickets and improper or missing railing attachments be completed as soon as possible. Considerations for the floor coatings repair or replacement should happen concurrently with the repairs.

Sincerely,

Tomas Ponce MSCE, P.E.
FL # 50068
Keystone Engineering & Consulting, Inc.

KEYSTONE
ENGINEERING &
CONSULTING, INC.

October 18, 2024

Opus 21 Homeowners Association, Inc.
2965 S Highway A1A
Melbourne Beach, FL 32951

Re: Structural Milestone Building Inspection

WRITTEN REPORT

Dear Board and Association Members:

Keystone Engineering was contracted to perform a structural inspection of the exteriors of the four buildings that comprise Opus 21Condominium. Within this report you will find a description of our inspection process, our findings, and recommendations, as well as options for improvements. Once this document is reviewed, Keystone can meet with the Association and provide more depth of information and facilitate a dialogue of the specific project issues and options.

Structural Milestone Inspection

The report includes an extensive visual and acoustical inspection to document areas of structural distress and prescribe pragmatic protective measures. **This report meets the requirements of the Florida State mandated Phase II Structural Milestone Inspection.**

Opus 21 has typical structural issues we would expect to see on 46-year-old oceanfront wood buildings. This is primarily in the form of water intrusion related damage to the wood balcony decking and supports, as well as the railing pickets. **At this time, we do not see any safety issues or structural capacity concerns.** We do see areas with needed structural repairs. This is in the form of minor splitting on stucco surfaces and wood columns and beams that support the wood structures. We also see conditions that could be improved to minimize and reduce future structural damage, including improvements to the railings, the floor coatings, and the sliding glass doors, as well as replacing most fasteners with stainless steel.

Facility Description

Opus 21 Condominium consists of four, three-story, oceanfront buildings. There are a total of 20 units in the complex. Two buildings have four townhouses each and two buildings have six each. Each unit has individual, ground-floor access and most have balconies on the east and west elevations.

Architectural and structural plans were not available, but the association was incorporated in 1978, suggesting the buildings are 46 years old. The buildings appear to be wood construction, including the walls with a painted stucco finish. It appears to be supported by structural load bearing columns and beams. The balconies are all wood, as well as the balcony fall protection railings.

Investigation Methodology

The inspection process was completed on a visual, acoustical, and hands-on basis by the undersigned Florida Registered Professional Engineer and trained assistants.

The results of the inspection 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. For example, in order to repair and/or protect the balcony floors, a common project item, railings, shutters and floor finishes will be affected and therefore must be considered as part of the repair process.

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.

Structural Damage General Discussion

From a cost perspective, the structural repairs alone are significant. However, additional costs need to be considered, and strategically avoided as best possible, including the many collateral building components and aspects of a restoration project. The engineering costs, access to the building via scaffolding/staging, building permits, storage, equipment, and manpower mobilization all add to the actual costs of accomplishing a restoration project. Additionally, floor finishes, railings, glass doors and shutters can be impacted during a restoration project, including the removal, reinstallation and/or replacement of these elements. The removal of these items to complete repairs may require the owner to upgrade to newer models that are compliant with current building codes.

In severe cases of damage occurring under and due to the door/window assemblies, they may need to be removed and a temporary barricade installed to accomplish the structural repairs. This type of repair can also affect the interior flooring and finishes of the unit. Lastly, a restoration project causes a disruption to the quality of living at the facility, loss of use and rental income. Noise, vibration, dust and limited balcony access and view can all be expected.

Because of these direct structural issues, collateral and lifestyle issues and substantial costs, a restoration project should be given due consideration to

implement the most cost-effective use of skilled labor, proper materials, and methods along with technology to extend the time between repair projects and reduce the magnitude of the damage in the future. Poorly executed restoration projects, with improper repairs and inadequate consideration for future protection will inevitably cost the Association significantly more in terms of dollars, inconvenience, and time.

General Industry Methodology

There are several basic aspects to building restoration that must be understood and accepted to allow for the findings and recommendations to be discussed productively. The following represents some basic industry positions that dictate the consultants thought process:

Contractor Selection-Building restoration is a small, specialized, yet mature industry. While the work must be performed by a licensed general contractor under the supervision of an experienced professional engineer, not all general contractors are experienced in building restoration of an existing occupied building. There is a relatively short, but high-quality list of local, qualified restoration contractors. Restoration contractors generally perform best in their local region.

Repair Methods-Restoration methods and materials are well established over the last 30 years, and the procedures and repairs followed have proven to be both reliable and durable. There are no magic, short cuts or permanent solutions. By utilizing experienced restoration contractors, you will avoid having an unexperienced team “practice” on your building. These are structural repairs that left unchecked can eventually affect the building viability and habitability.

Cyclic Nature- Repaired areas should be semi-permanent repairs (repairs will have an extended life if protective measures are implemented and maintained), as the water and chlorides have been removed in that area, and future damage will occur in other areas where water and chlorides remain. A recommended repair cycle is 7 to 10 years to coordinate with painting cycles. A cycle of this period will keep damage manageable.

Project Timing-Project timing will be dictated by the decision-making process and contractor availability. However, the lowest cost project is one that is done today, as a single-phase project. Unnecessarily delaying a project or doing it in multiple phases will increase the project costs due to increased corrosion damage and rate, inflation of costs, and mobilization costs. Financing is available to allow for payments over time, while getting the work done in a single, lower cost, lower impact project.

Balcony Floor Finishes-Exposed balcony floor finishes should be a protective coating system that is aesthetically pleasing and easy to repair and renew during

future repair cycles. **Tile is an improper choice for exposed balconies. Tile and other non-waterproof surfaces are an improper choice for exposed balconies, as they do not provide protection from water, keeps the surface wetter, created drainage issues at the sliders, hides damage longer and makes repair more difficult.**

Railing Systems- Properly installed "surface mounted" railings can eliminate the water intrusion at the rail post and greatly reduce the wood damage, if they are installed properly with stainless steel fasteners and sealed.

Sliding Glass Doors and Windows-The choice of sliding glass doors and windows for a coastal application must be given proper consideration. "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. Lastly, proper installation is a must, for any door quality level.

Having new glass doors or panels installed over existing damage is becoming a common issue. Most door installers are either not going to recognize these issues, or purposely overlook them to not delay the installation. Buildings should have an inspection performed by an experienced individual before new glass is installed, either at the opening or perimeter of the balcony**. It is preferred to incorporate needed or desired sliding glass door replacements as part of the restoration project and under the umbrella of the chosen restoration contractor**.

Many times, damage occurs under a sliding glass door due to long term, chronic water intrusion at the door track. This damage can encroach on the interior space and affect interior finishes during the repairs. **Sliding Glass Doors are typically owned by the individual unit owner and not the Association, which can complicate the project activities. Cooperation is needed between the unit owners and the Association to handle necessary sliding glass door removal and reinstallation/replacement as necessary to complete the project scope of work.** For sliding glass doors, subcontractors are generally NOT viable as the sliding glass door work is generally completed during the restoration work, making it difficult to interject a 3rd party subcontractor. Having the restoration contractor handle the sliding glass door installation also provides for installation inspections by the engineering team during the project.

Drainage- Shutter systems, screen enclosures, floor finishes and sliding glass door installations should all be designed so water readily drains off the balcony.

Shutters-When installing shutters, the area of installation should be inspected in advance to ensure no repairs are needed that would necessitate the future

removal and reinstallation of the shutter. The shutter should be installed to the proper building code and with stainless steel fasteners and appropriate drainage shims. **Shutters are typically owned by the individual unit owner and not the Association, which can complicate the project activities. Cooperation is needed between the unit owners and the Association to handle necessary shutter removal and reinstallation/replacement as necessary to complete the project scope of work using a qualified shutter subcontractor.** For shutters, subcontractors are viable as the shutter work can be completed before and after the restoration work.

Water Intrusion-Sliding glass doors, floor finishes, railings, shutters, and fasteners should all be designed and installed such that water intrusion is minimized.

Project Considerations-Project considerations are primarily safety, asset preservation and aesthetics. It is up to the Association to decide on what level of asset preservation and aesthetics they wish to employ. The engineer can only make recommendations and explain consequences of the decisions. Safety is the only area where the engineer has to insist on a solution. **The Association can decide to adopt all, some, or none of the engineer's recommendations.**

Comprehensive Solution-A long-term comprehensive solution provided is the most effective at minimizing future restoration cycles and providing the most aesthetic result. It is the lowest cost over time, and considers proactive protective measures and maintainable coating finishes, and overall protection of the structure from the elements. **This is the highest reasonable level of consideration.**

Decision-Making-Not everyone wants the same level of building maintenance, aesthetic considerations or maintenance budget funding. Everyone will have their individual opinion of what is appropriate or acceptable. That is one of the challenges of providing consultation to a condominium, as we cannot provide any solution that will please all parties. Each of you has the discretion to agree or disagree with our recommendations.

Florida State Mandated Structural Inspection- Recently, the State of Florida has adopted a statute in reaction to the Champlain Towers South building collapse. This statute has several requirements you should become familiar with. One of the requirements is a "structural milestone inspection" which should be covered by this report. There are other requirements, such as the Structural Inspection Reserve Study (SIRS), which requires the structural milestone inspection and many other items. Structural repairs and other maintenance aspects, including funding reserves, are being required, and no longer optional. We feel this is going to create a significant backlog and bottleneck of structural restoration work over the next several years.

Major Project Considerations for Opus 21

Major Project Issues:

The balconies are experiencing a minimal amount of wood staining and damage due fastener corrosion and water intrusion. The water intrusion can be attributed to breaches in the protective finishes and missing or corroded deck and railing fasteners. Damage, such as cracking, is evident on the columns and beams that support the wood structures. Balcony floor repairs may also affect shutters and sliding glass doors.

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Alternates could be provided to replace the railings with synthetic (Trexx) material or prefabricated aluminum. New, properly installed railings and an improved protective floor coating system will greatly reduce future damage.

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One aspect of the shutter to consider is its existing condition and the changes to the building codes since it was originally installed. It should first be determined by the shutter vendor whether a shutter can be simply removed and reinstalled, needs refurbishment to be reinstalled or must be replaced due to deterioration or building code changes. All reinstalled/replaced shutters need to include proper drainage shims, and stainless-steel fasteners set in predrilled holes filled with sealant.

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Summary

We recommend that all maintenance issues such as loose railing pickets and improper or missing railing attachments be completed as soon as possible. Considerations for the floor coatings repair or replacement should happen concurrently with the repairs.

Recommendations Summary for a Restoration Project

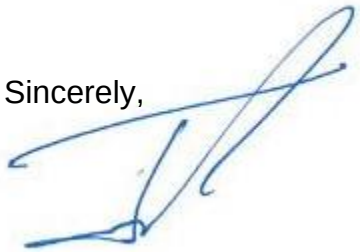
- **Discuss the budgets presented, for any questions. Keystone will participate in the discussion.**
- **Once decisions are made, put the project out for competitive sealed bids among the local restoration contractors. All practical options could be bid for comparison.**
- **Consider accelerating a comprehensive balcony restoration project as recommended.**
- **Consider a comprehensive project to reduce future cyclic structural damage.**

Conclusion

Once the information in this report is reviewed, discussed, and understood, the Association can reach conclusions as to the planning and timing of the recommended repair work. Keystone Engineering can provide valuable input and services towards this discussion and decision-making process. Keystone can also provide the necessary services for a project budget, the subsequent solicitation of bids for the work from qualified contractors as well as the oversight of the construction phase to ensure the work is properly executed, including control of the budget, quality of work, contractor payments and warranties.

It is our intention to assist and guide you to complete a quality and cost-effective project that will both enhance the value of your building, lower future maintenance costs and provide extended service life. We look forward to meeting and discussing the project further to assist with the ongoing decision process.

Sincerely,



Tomas Ponce MSCE, P.E.
FL # 50068
Keystone Engineering & Consulting, Inc.

Photographs

View of west elevation

View of west elevation

View of Building A east elevation

View of Building B east elevation

View of Building C east elevation

View of Building D east elevation

View of staining caused by corrosion of non-stainless-steel fasteners

View of staining caused by corrosion of non-stainless-steel fasteners

View of stucco crack in west elevation column

View of stucco cracks near sliding glass door

View of stucco crack near balcony sliding glass door

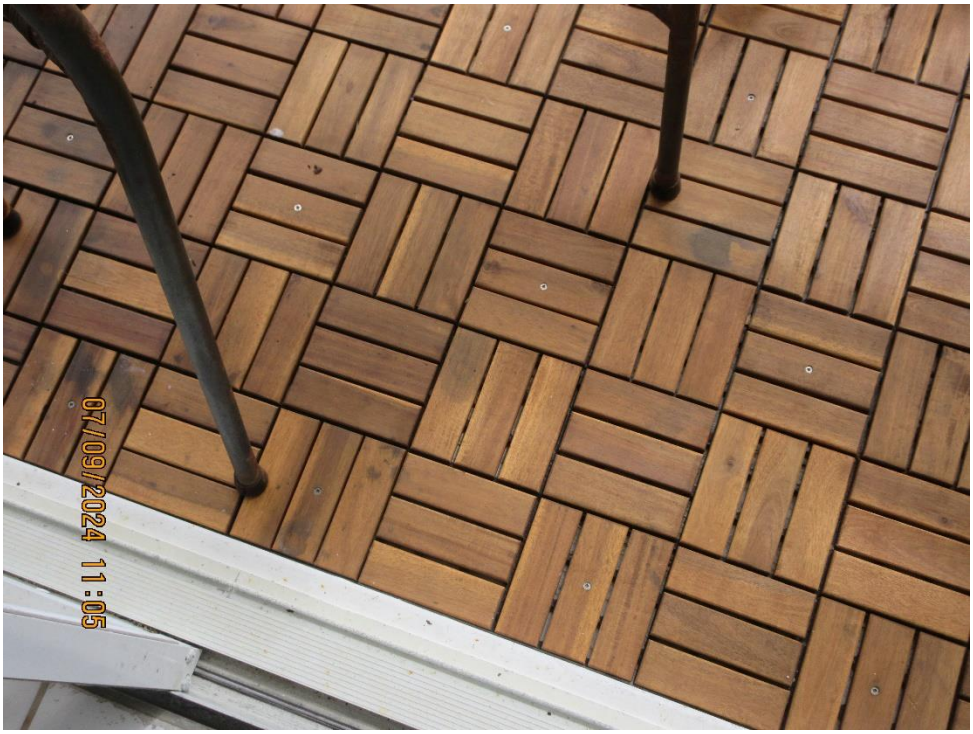
View of stucco crack near unit entryway

View of stucco crack near sliding glass door

View of stucco crack at light fixture

View of stucco crack above unit entryway

View of stucco crack at unit entryway



View of flooring installed over the original balcony structure

View of tile installed over the original balcony structure. Note crack in tile

View of corroded hurricane straps

View of corroded hurricane straps

View of corroded hurricane strap and fasteners

View of corroded hurricane strap and deck fasteners

View of corroded deck fasteners

View of corroded fasteners

View of corroding sliding glass door fasteners

View of corroding sliding glass door fasteners

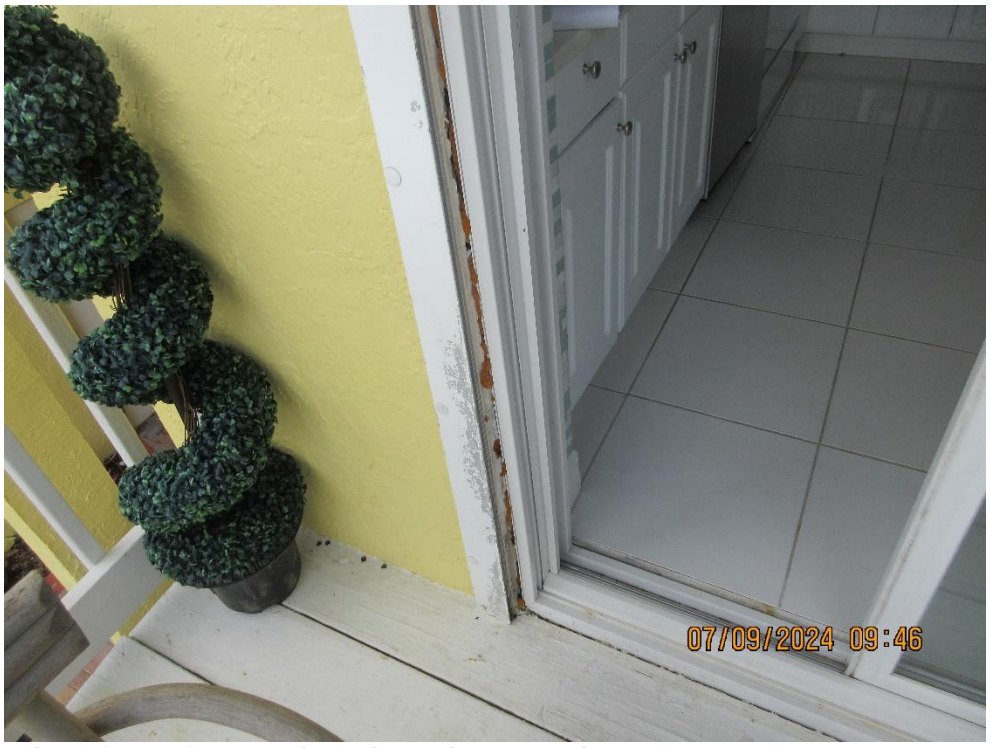
View of corroded railing fasteners

View of corroded railing fasteners

View of corroding sliding glass door track

View of corroding sliding glass door track

View of missing shutter box cover and Styrofoam sealant



View of Styrofoam sealant along shutter track

View of loose/missing railing picket

View of loose railing picket.

View of splitting wood column

View of deteriorated ceiling board