



A. T. DESIGNS, INC.

CIVIL / STRUCTURAL ENGINEERING AND PROJECT MANAGEMENT SERVICES

July 14, 2023

Board of Directors
c/o COURT OF DELRAY CONDOMINIUM
ASSOCIATION, INC.
2220 S Ocean Blvd,
Delray Beach, FL 33483

Re: Structural Evaluation and Milestone Inspection Report
Court of Delray Condominium
Delray Beach, Florida

Dear Board Members:

A.T. Designs, Inc. was retained to conduct a comprehensive visual structural evaluation and assessment investigation of the Association's Building to identify potential structural integrity and/or deterioration issues associated with the structural elements of the Building and common area structures. The inspection was conducted in accordance with the standards established by the State of Florida, Florida Statute 553.899 (a) "Milestone Inspection", *which is the structural inspection of a building, including an inspection of load-bearing walls and the primary structural members and primary structural systems as those terms are defined in s. 627.706, by a licensed architect or engineer authorized to practice in this state for the purposes of attesting to the life safety and adequacy of the structural components of the building and, to the extent reasonably possible, determining the general structural condition of the building as it affects the safety of such building, including a determination of any necessary maintenance, repair, or replacement of any structural component of the building. The purpose of such inspection is not to determine if the condition of an existing building is in compliance with the Florida Building Code or the fire safety code.*

The findings contained in this structural evaluation report shall follow the prescribed format "milestone Inspection report guidelines" and the requirements of SB 4D/154. Multiple inspections have been conducted by this firm to observe, identify, and evaluate the present condition of the observable portions of the interior and exterior structural elements and exterior façade of the Building. In addition, where access was limited, such as individual unit exterior balconies, a minimum percentage of randomly selected balconies were investigated and evaluated to identify structural and/or deterioration issues associated with the concrete slabs, structurally supporting elements, and glazing components.



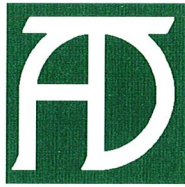
The format of this report shall meet the requirements of the State of Florida Milestone Inspection requirements under the SB 4D/154. Our findings of our investigation are as follows;

1. Background:

- a. Engagement: A.T. Designs, Inc. was hired in August 2021.
- b. Scope of work: To conduct a non-destructive, visual structural evaluation and assessment of the Association's Building and Common Area Elements in accordance with the Florida Statute 553.899 (a) Milestone Structural Inspection program.

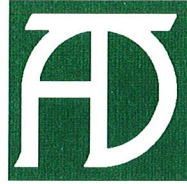
2. Project Information/Type of Construction:

- a. Date of Certification of Occupancy (CO): Approximately 1975
- b. Description of Structure(s): The Building is a twelve (12) story structure with four (4) individual condominium units per floor for a total of forty-three (43) individual units. The first floor consists of an open lobby area, elevators, meeting, storage, and equipment room. The roof level of the Building contains the elevator equipment/stairwell structure and the air conditioner condenser/chiller. A continuous parapet wall extends around the complete perimeter of the roof area. There is a porte-cochere structure which extends off the east façade of the Building, adjacent to the first floor lobby area. There are also four (4) carport structures, pool deck and pump house structure, and a continuous seawall along the west and southwest property line.
- c. Type of Construction: The Building was constructed with steel reinforced concrete vertical columns, shear walls, and horizontal slabs which comprise the main structural elements. The columns lead down to the foundation system which consists of prestressed concrete piles and reinforced concrete pile caps. At the center of the Building there is an elevator shaft and two (2) stairwells, one which extends upward from the ground floor up to the penthouse level and the other stairwell extends to roof level. The demising walls of the individual floors consist of stucco covered, in-fill reinforced masonry block. The exterior of the Building consist of in-fill masonry walls covered stucco finish. All masonry openings have hurricane compliant/impact rated fixed windows and sliding glass doors/windows. The original individual balconies have been enclosed and the exterior perimeter reinforced masonry parapet walls have hurricane compliant/impact rated fixed windows and sliding glass doors/windows. The roof system is a new built up, modified membrane, which was replaced in late 2021. A continuous perimeter parapet wall extends around the complete perimeter of the roof. The roof level condenser unit is supported by steel beams on concrete pedestals.



3. Areas of Investigation:

- a. **Roof Level Structures:** The roof level structures consist of stucco covered, reinforced masonry block perimeter parapet wall. The main, two story structure contains the elevator equipment and is accessed by an exterior stair structure. The roof level stairwell access structure is constructed of stucco covered, reinforced masonry block. The cooling tower support structure consists of reinforced concrete pedestals and galvanized steel beams and is surrounded by a freestanding wall.
- b. **Stairwell Structure:** The southern internal stairwell structure runs continuously up through the Building, from the ground floor up to the access to roof level. The northern internal stairwell structure runs continuously through the Building from the ground floor to the penthouse (12th) floor of the Building. The stairwell structures consist of the cast-in-place reinforced concrete slabs and stairs and reinforced masonry block walls.
- c. **Roof Membrane System:** In October of 2021, the entire Building's roof and upper roofs were completely replaced with a new, built-up type roof system, with gravel ballast. In addition, the perimeter parapet walls were flashed and new stainless steel cap flashing was installed on top of the walls.
- d. **Exterior Façade of Building:** The exterior façade of the Building consists of reinforced concrete columns and slabs with stucco covered reinforced masonry block and reinforced concrete balcony knee walls. There are four (4) individual unit balconies per (typical) floor, each with enclosed balconies where there is a combination of both sliding glass doors and fixed glazing on the balconies. The units also contain fixed and window wall type system configurations.
- e. **Exterior Glazing:** The individual unit glazing components are located on the balcony areas and within the master, guest bedroom, kitchen and living room areas. The glazing systems consist of sliding glass doors and fixed windows on the individual unit balconies and fixed window type systems mulled together throughout the individual units. All of the current unit exterior windows and sliding glass doors have been replaced with code compliant, hurricane resistant products.
- f. **Unit Enclosed Balconies:** Randomly selected reinforced concrete balconies were inspected and they contain a perimeter parapet wall with hurricane rated windows and sliding glass doors installed atop the perimeter parapet walls. The said enclosed balconies were subjected to a visual and echo sounding investigation of the floor slab, walls, and ceiling areas.
- g. **Ground Level Columns, Beams, and Foundation Elements:** The assessable ground floor reinforced concrete columns, beams, and slabs were inspected from both the interior and exterior of the Building. Access to these elements



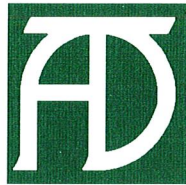
on the interior of the building was achieved through the various storage room areas and the mechanical room, which was accessed from both the interior and exterior of the Building. The investigation and assessment of the piles and pile caps was not performed as part of the investigation, but there was no visible evidence and/or sign(s) of distress related to the foundation and main supporting elements, observed during the investigation.

- h. Pool and Pool Deck: The pool and surrounding concrete pool deck is located on the first floor, on the west side of the Building. The pool deck slab was poured on grade and has been finished with a decorative topping. A review of the limited plans did not reveal if the pool and/or deck were constructed on piles and/or grade beams.
- i. Seawall: The Seawall is constructed with typical reinforced concrete panels and prestressed concrete king piles and batter piles. The reinforced concrete seawall cap appears to have had a secondary placement or capping of concrete over the original seawall cap. Information was not provide to this firm during our investigation.
- j. Cast-in-Place and Prestressed Parking Structures: The covered parking structure is made up of prestressed concrete roof panels, supported by cast-in-place, reinforced concrete columns and support beams. The parking structures are located north and south property lines and directly behind the west façade of the Building, adjacent to the pool area.

Note: ATD has previously completed a comprehensive exterior Building façade, column, slab, and stucco rehabilitation, and glazing replacement project, which included the exposure, excavation, repair, waterproofing, and re-stuccoing of the exterior vertical columns and wall surfaces, down to the top of the ground floor slab.

4. Investigation/Evaluation Methodologies Employed:

- a. Visual, Non-Destructive Assessment: This technique includes conducting a thorough visual inspection of the accessible structural element(s) and noting and/or photographing any observable condition(s) such as cracking, spalling, deterioration, oxidation, etc.
- b. Acoustical and/or Echo Sounding: This technique includes the tapping of surfaces and/or substrate areas with a hammer, chain dragging, acoustical device, etc. to determine if the resonation of sound is altered as a result of hidden abnormality and/or condition, such as delamination and/or spalling, within the lattice of the substrate material.
- c. Destructive Testing: This technique includes the partial and/or demolition of the subject area to determine if the material in question has sustained damage and/or degradation of the internal components, such as the oxidation of steel reinforcement with concrete lattice and/or structure.



d. Other Testing Methodologies: (Not employed as part of our Structural Assessment)

- i. X-Ray or Ground Penetrating (GPR) Imaging:
- ii. Thermal Imaging (Thermography):
- iii. Capacitance (Potential) Testing:
- iv. Half-cell Potential
- v. Nuclear Moisture Testing:
- vi. Structural Load Testing:

5. Observations/Findings:

a. Roof Level Structures:

- i. Perimeter Parapet Walls and Support Structures: There was little evidence of structural degradation and/or integrity issues associated with these elements. The only observed condition was minor isolated stucco cracking and isolated areas of stucco delamination. There are also instances of observable blistered paint, which is most likely a result of elevated moisture within the parapet wall structures.
- ii. Elevator and Stairwell Structure(s): There is presently no observable evidence of structural degradation and/or integrity issues with these. The only observed condition was isolated, non-structural cracking and delamination of the applied stucco finishes.
- iii. Cooling Tower Support Structures: There were isolated areas where the concrete pedestals supporting the steel beams showed some signs of cracking and deterioration. The galvanized steel I-beams showed signs of minor degradation and oxidation of the anchors. These identified conditions will need to be addressed and repaired.

b. Interior Stairwell Structures: The stairwells contained only isolated conditions of staining, cracking, and minor areas of deterioration of the applied stucco finishes. The observed cracking is mostly located along the slab-block intersections and cast-in-place columns-block intersections. The observed cracking is most likely a result of the original design and the column placement, resulting in the deflection of the intermediate slabs, manifesting itself in the formation of cracks between existing slabs and columns and masonry in-fill walls.

c. Exterior Façade of Building: The painted stucco façade of the Building contained limited observable areas of cracking and deterioration. Because the exterior façade of the Building was not directly accessed as part of our investigation, areas of delamination were not precisely identified. There was visual evidence of surface cracking and stucco delamination generally



focused along the slab edges and the vertical columns and in-fill masonry walls.

- i. A.T. Designs worked with the Association to implement a comprehensive restoration and rehabilitation of the exterior façade stucco finishes along the cast-in-place slabs and columns and the adjacent masonry infill walls. The formation of cracking and delamination of the applied stucco in those areas resulted in the infiltration of moisture. These areas were stripped, sealed and waterproofed and re-stuccoed. To the best of our knowledge and belief, the repaired areas remain watertight.
 - ii. Exterior Glazing: The visual assessment of the exterior hurricane rated fixed windows and sliding glass doors remain in generally good condition. The only issue we did observe was the applied sealants are weathered at isolated locations and are in need of removal and replacement to ensure the integrity of the sealants.
- d. Unit Balconies: The unit balconies, which location on the typical floor configuration, are located directly off of the living room have been inspected as part of this investigation to identify areas of deterioration and structural integrity issues. During our inspection, there were only isolated areas of deterioration that need to be addressed and repaired. The degradation of the enclosed balcony areas is generally isolated to the floor/ceiling slabs, with only isolated, minor restoration repairs to the reinforced concrete columns and/or kneewalls. The intersection of the cast-in-place column and the Building's masonry in-fill exterior wall (now encompassed into the interior of the enclosed balconies) has experienced widespread cracking and delamination of the applied stucco finishes.

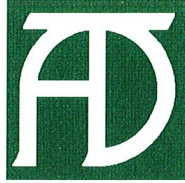
Note: ATD completed a comprehensive restoration and rehabilitation project which encompassed the individual balconies at which time, all identifiable concrete spalling and deterioration were addressed and repaired as part of that project.

- e. First Floor Columns and Beams: The interior and exterior reinforced concrete first floor columns were visually inspected in an attempt to identify areas of degradation and/or spalling. Access to the interior columns was through the ground floor storage, maintenance, and equipment rooms. There were no areas of deterioration of the said reinforced concrete column elements observed during our investigation.

Note: ATD completed a comprehensive restoration and rehabilitation project which encompassed the reinforced concrete slabs and columns at which time, all identifiable concrete spalling and deterioration were addressed and repaired as part of that project.



- f. Foundation: The below grade portion of the reinforced concrete columns and pile cap foundations were not investigated as part of this structural evaluation. A.T. Designs, Inc., previously investigated, repaired and waterproofed the stand alone, exterior columns, which contained areas of identifiable delaminated stucco.
 - i. There is concern that the conditions of differential settlement and underpinning identified along the perimeter of the pool deck, between the pool deck and seawall, and around the ground floor slab of the Building. The observed differential settlement has resulted in the loss of soil from around the ground floor slab of the Building, but no other conditions were observed which has negatively impacted the Building's foundation elements.
 - g. The Ground Floor Glazing: The ground floor, hurricane rated storefront type glazing was inspected and there were no identified issues noted.
 - h. The Seawall: The seawall cap displayed signs of structural deterioration and oxidation, specifically the west facing façade of the cap was cracked and oxidation was bleeding out along portions of the cracks. The investigation from the water revealed widespread spalling and cracking along the top and bottom sides of the seawall cap. The prestressed batter and king piles have experienced widespread deterioration, resulting in cracked and/or displaced concrete along the upper portion of the batter and king piles (adjacent to the intersection with the seawall cap). The king piles also displayed signs of deterioration, with less displacement of concrete elements. Some seawall panels had begun to crack and the observed conditions indicate the migration of soil from behind the seawall, under the precast concrete panels. The termination of the seawall along the southernmost façade of the seawall and the adjacent property to the north will be critical when the remedial repairs are implemented.
 - i. The parking structures have experienced isolated deterioration of both the prestressed roof panels and the reinforced concrete support structures. There also minor typical degradation of the intersection of the prestressed panels at the termination of the reinforced concrete supporting members.
6. Conclusion and Recommendation(s):
- a. The inspection and evaluation of the reinforced and prestressed concrete structural elements of the Court of Delray Condominium Building revealed multiple areas of isolated spalling, deterioration, and degradation. The identified areas of deterioration and spalling are as follows;
 - i. The reinforced concrete pedestals which supported the roof top steel beams have sustained minor oxidation and spalling. These conditions



need to be addressed and repaired to restore the long-term structural integrity of the support members.

- ii. Delamination and deterioration of the intersection of the structural column and the wall on the enclosed balcony areas and at various locations throughout the exterior façade of the Building. These intersections will need to be exposed, addressed, and repaired to ensure the long-term integrity of these elements.
 - iii. The isolated areas of spalling and deterioration identified in the Building and the cover parking structures of this structural assessment report need to be addressed and repaired.
 - iv. The glazing sealants, although they may not actually be considered a structural element, need to be removed and replaced with new high grade urethane sealants to insure the long-term performance of the said glazing elements.
 - v. The seawall showed significant spalling and deterioration of the reinforced and prestressed concrete elements, inclusive of the cap, batter and king piles, and concrete panels. The top of the seawall cap contains some minor cracking and oxidation staining. The seawall cap also contains significant horizontal cracking on the outside face, which appears to be a result of an overlay over the original seawall cap. The vertical structural support elements (king and batter piles) showed significant signs of deterioration, damaged, and displaced concrete along the piles intersection with the cap, severely impacting the structural capacity for these elements to resist lateral forces. The concrete panels showed some signs of cracking but the observed areas erosion from areas behind the seawall is indicative of significant soil migration from under the precast panels. The degradation of this important structural element is in need of repair and replacement to restore the structural integrity and long-term performance.
 - vi. The isolated areas of parking structures show signs of spalling and deterioration of the prestressed and cast-in-place reinforced concrete elements, which need to be addressed and repaired.
- b. All identified areas of concrete deterioration needs to be addressed and repaired in accordance American Concrete Institute (ACI) and International Concrete Repair Institute (ICRI) standards, to restore the structural integrity to the damaged reinforced and/or prestressed concrete element.
 - c. The widespread differential settlement observed with the area around the ground floor of the building, the asphalt parking areas, and pool and pool deck have all experienced significant and measurable erosion and underpinning of the aforementioned elements. The long-term migration of soil



from behind the seawall has contributed to the significant and observable void areas under the pool deck, around the base of the Building, and severe degradation of the asphalt parking areas.

7. Certification:

I hereby certify that the conditions identified during this milestone structural inspection and evaluation are true and have been observed and evaluated as to their existence, extent, and severity. Based upon the conditions observed, I hereby certify, to the best of my knowledge, belief, and engineering certainties, the identified elements which comprise the Court of Delray Condominium Building and structural elements are sound, without any identifiable signs of substantial structural deterioration to any of the Building's structural components, only isolated conditions as outlined in this report.

The sole purpose of this investigation of the structural elements of the Association's Buildings and/or structures is to identify conditions of damage and distress, in conformance with accepted engineering and industry standards. The findings contained herein, are for identification and evaluation purposes only and the repair of those identified conditions and/or elements is the sole responsibility of the Association.

A.T. Designs, Inc. reserves the right to revise or update any of the information, observations, conclusions, and/or recommendations as conditions change and/or additional information becomes available. The information contained in this document may not be relied upon, used by, or referenced by, any third party without written consent of A.T. Designs, Inc.

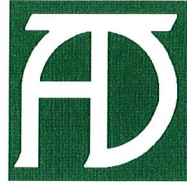
Respectfully submitted,
A.T. Designs, Inc.

Timothy S. Marshall, PE
Florida Reg. No. 41992

Enclosure(s)

cc File

A. T. DESIGNS, INC.



**EXEMPLARY
PHOTOGRAPHS
OF
OBSERVED CONDITIONS**



Photo 1: Northeast Facade of Building.



Photo 2: Northwest Facade of Building.



Photo 3: Southwest Facade of Building.



Photo 4: Southeast Facade of Building.

Photo 5: Photograph of the Porte Cochere at the East Lobby Entrance of the Building.



Photo 6: Photograph of the Typical Parking Structures located along the North, West, and South Portions of the Property.

Photo 7: Close-up Photograph of the Typical Parking Structures which are comprised on Prestressed Concrete Roof Panels Supported by Concrete Support Structures.



Photo 8: Photograph of the Typical Concrete Spall/Deterioration on the Undersided of a Prestressed Concrete Roof Panel.



Photo 9: Photograph of a Typical Concrete Spall/Deterioration on the Underside of the Edge, Along the Intersection of the Prestressed Concrete Roof Panels.

Photo 10: Photograph of a Concrete Spall/Deterioration on the side of the Concrete Supporting Structure.



Photo 11: Photograph of the Typical Cracking of the Concrete Pool Deck.



Photo 12: Photograph of the loss of Soil from Under the North Edge of the Concrete Pool Deck.

Photo 13: Photograph of the Placement of a concrete Step and Blocks to Cover the loss of Soil from Under the North Edge of the Concrete Pool Deck.





Photo 14: Previous Work Performed to SE Facade.



Photo 15: Previous Work Performed to SE Facade.



Photo 16: Previous Work to the Exterior Facade.

Photo 17: Photograph of the Two Story Rooftop Structure and Metal Stair/Landing Structure.

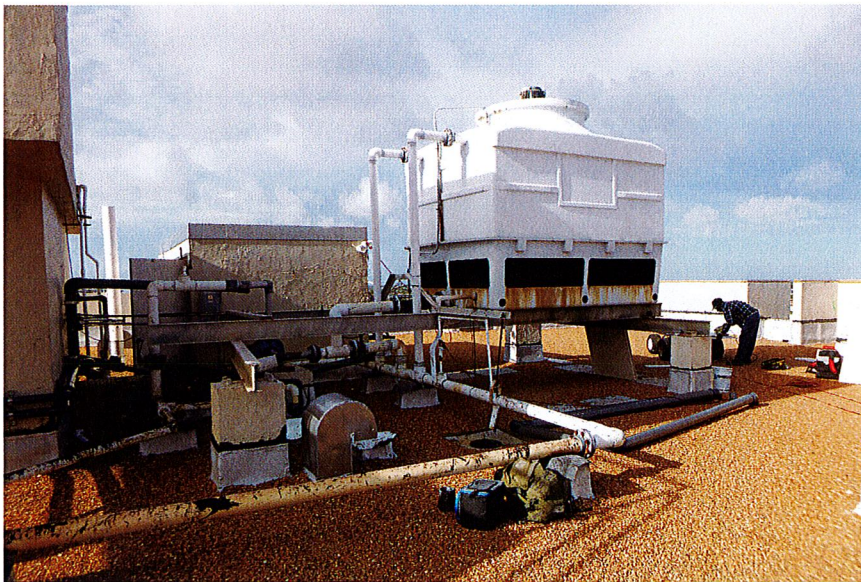
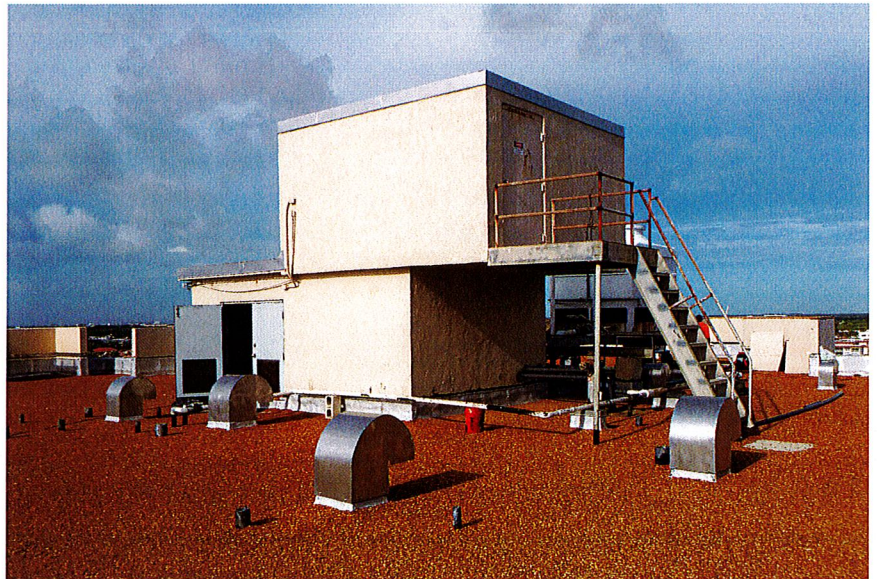


Photo 18: Photograph of the Cooling Tower Steel I-Beam Support and Concrete Pedestals.

Photo 19: Close-Up Photograph of the Cooling Tower Steel I-Beam Support and Concrete Pedestals.



Photo 20: Photograph of the Staining
of an Upper Level of the Stairwell
Walls as a Result of Moisture
Infiltration.



Photo 21: Photograph of the Staining
of the Ground Floor of the Stairwell
Walls as a Result of Moisture
Infiltration.

Photo 22: Photograph of the Staining
of an Upper Level of the Stairwell
Walls as a Result of Moisture
Infiltration.



Photo 22: Photograph of the Seawall which is Located along the Entire West and Partial Southwest Property Line/Intracostal.



Photo 22: Photograph of the Seawall which Consist of Reinforced Concrete Panels, Prestressed King and Batter Piles, and a Reinforced Concrete Cap that Appears to have been Overlayed with a Secondary Pour.

Photo 23: Close-Up Photograph of the Seawall Cap and the Continuous Crack along the Apparent Concrete Overlay.



Photo 24: Photograph of the Cracking, Spalling, and Deterioation of the Reinforced and Prestressed Seawall Components.



Photo 25: Close-Up Photograph of the Cracking, Spalling, and Deterioation of the Reinforced and Prestressed Seawall Components.

Photo 26: Photograph of a Complete Thru Crack of the Prestressed King Pile and Severe Oxidation of the Panel Tie-Back.



Photo 27: Photograph of a Complete Thru Crack of the Prestressed King Pile.



Photo 27: Photograph of a Significant Horizontal Crack in the Concrete Panel.

Photo 28: Photograph of the Cracking and Spalling of the Top of The Prestressed Concrete Batter Pile, Immediately underneath the Seawall Cap.



Photo 29: Close-Up Photograph of the Severe Cracking, Deterioration, and Deformation of the Prestressed Concrete Seawall Components.



Photo 30: Close-Up Photograph of the Severe Cracking, Deterioration, and Deformation of the Prestressed Concrete Seawall Components.

Photo 31: Photograph of the Cracking and Spalling of the Top of The Prestressed Concrete Batter Pile, Immediately underneath the Seawall Cap.





Photo 32: Deterioration of the Seawall Cap.



Photo 33: Deterioration of the Seawall Cap.

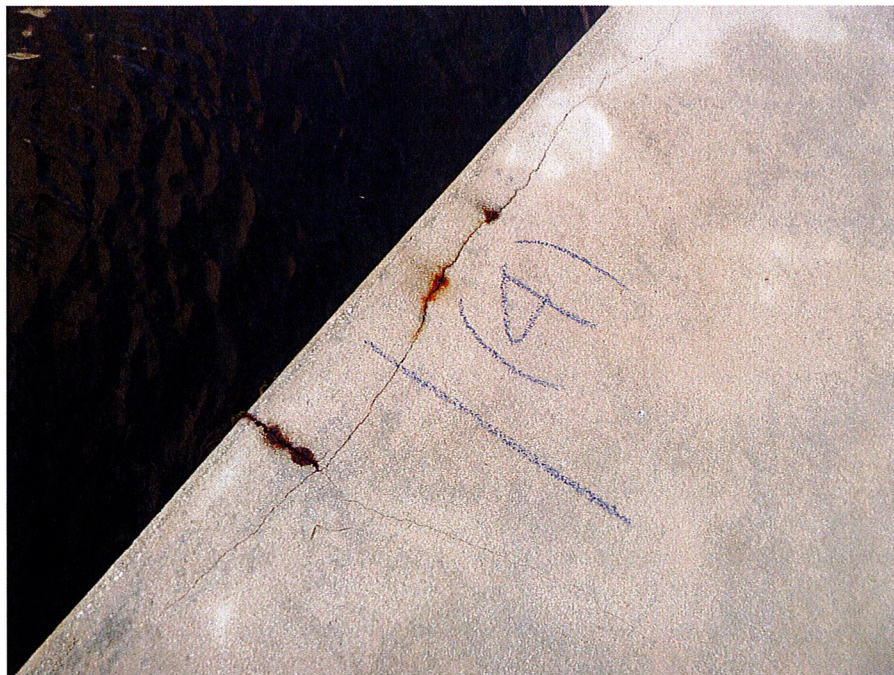


Photo 34: Deterioration of the Seawall Cap.