Design With Integrity
Sinclair Engineering Company

May 1, 2014

Dr. Gene Hanfling
Three Thousand South Association, Inc.
3000 South Ocean Boulevard
Boca Raton, FL 33432

Subject: Three Thousand South Ocean Pool Evaluation Report

Dear Dr. Hanfling:

Sinclair Engineering Company performed a visual, non-destructive inspection of the Three Thousand South Ocean pool and related items in your presence on April 2, 2014.

PROCEDURES:

1. The pool and deck area was examined to gain a general understanding of the layout, construction materials and overall conditions.

2. The pool was examined for condition and evidence of damage. Specifically, the pool shell, beam/gutter, steps, finish, gutter tiles and coping were examined.

3. The pool deck was examined for condition and evidence of damage.

4. The pool gutter was examined to determine if an out-of-level condition was present.

5. The pool equipment building and pool equipment were examined for general layout, condition and evidence of damage.

6. An area in the parking garage, adjacent to the North end of the pool and deck area, was examined for condition.

7. The retaining wall at the outer edge of the pool deck was examined for condition and evidence of damage.

8. Pool Plans produced in 1969 by Oscar A. Handle Jr, Architect, sheets S-12, S-13 and S-14, provided by you, were reviewed for content.

9. A Boundary Survey produced by Harley Greene, Professional Surveyor and Mapper, provided by you, was reviewed for general layout and location of the coastal construction control line (CCCL) relative to the pool and deck area.

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PROCEDURES (Continued):

10. A coastal permitting engineer was contacted for information pertaining to permitting requirements for a new pool.

11. A rendering of a proposed redesigned pool and deck, provided by you, was reviewed for content.

12. Pertinent information, provided by you via E-mail on April 3, 2014, was reviewed for content.

OBSERVATIONS:

1. The pool can generally be described as a 3' to 8' deep, inground, concrete pool with an "F" gutter and raised, precast coping stones.

2. You informed me that the pool was 44 years old at the time of my inspection. You further stated that the pool is a widely used amenity, has a relatively high bather load and that currently there is no way to cool the water which gets quite warm in the summer.

3. Examination of the pool shell revealed that it was in generally "good" condition, that is, there were no visible structural cracks or rust strains which, if present, would indicate corrosion of the reinforcing steel.

4. Examination of the beam/gutter revealed that it was in generally "fair" condition. Specifically, the finish on the bottom of the gutter trough was eroded away in many locations. Further, gutter drain grates had been installed, one on top of another, which presumably occurred during replacement of the pool finish. It was observed that a number of the grates were broken.

5. Examination of the steps revealed that they were in generally "good" condition, that is, there was no structural damage or unusual deterioration. There were, however, numerous chipped cap tiles at the steps.

6. Examination of the pool finish revealed that it was in generally "good" condition. That is, there was no visible spalling or discoloration.

7. Examination of the gutter tiles revealed that they were in generally "fair" condition. That is, there were no missing tiles, but there were multiple areas of eroded or missing grout.

8. Examination of the raised, precast coping stones revealed that they were in generally "fair" condition. That is, a number were loose, specifically, a coping stone at the 6' depth marker had disbonded from the pool beam and lifted. Further, an area of the coping stones adjacent to the steps in the Northeast corner of the pool were "hollow," indicating that they had disbonded from the pool beam. Additionally, there were isolated rust stains in the central portion of the raised coping, but no evidence of cracks in the coping stones in the stained areas.

OBSERVATIONS (Continued):

9. Examination of the pool gutter revealed less water flowing over the gutter weir (lip) in the Southeast corner of the pool than elsewhere.

10. Examination of the pool deck revealed that it was a sand-set brick paver system in generally "good" condition. That is, generally, the deck surfaces were uniform in color and relatively level and free of trip hazards. However, there was one area of the deck adjacent to the steps in the Northeast corner of the pool that had settled vertically downward. Deck settlement was evidenced by separation gaps between the caulking on the precast coping and the top of deck pavers.

11. Examination of the pool equipment building, located on the West side of the pool, revealed that it was generally constructed of concrete block and stucco with a flat roof. The floor level of the building was approximately 5'-6' below the level of the pool deck. The pool equipment building was generally in "good" condition, being free of visible evidence of differential settlement or structural deterioration.

12. The pool equipment building contained two spare drums of pool sanitation chemicals and maintenance equipment such as hoses and other items.

13. You informed me that you presently store 50 gallon vats of chlorine because the pool equipment building lacks the space to accommodate a salt generator system.

14. Continued examination of the pool equipment building revealed that there was a louvered vent on the East wall which emitted a substantial level of noise from the pool recirculation pump to the pool and deck area.

15. Examination of the electrical panelboard in the pool equipment building revealed that several of the wires had been installed in a poor workmanship manner. It was also noted that the panelboard cabinet was corroded.

16. Examination of the pool equipment revealed a typical assortment of chemical feeders, ORP controller (oxidation-reduction potential), chemical storage vats, valves, cartridge filters and a recirculation pump. There was also a gutter drains collector tank located on the South side exterior of the pool equipment building.

17. Close examination of the recirculation pump revealed that it was a 3 horsepower pump. The pump was fairly loud, but appeared to be functioning properly. You informed me that a new motor for the recirculation pump had been installed relatively recently prior to my inspection.

18. Examination of the pool main drain revealed that it appeared to be plumbed for direct suction.

19. Continued examination of the pool equipment revealed that a cartridge filter system was in place.

OBSERVATIONS (Continued)

20. Examination of the pool heater, located outside the West wall of the pool equipment building, revealed that it was a Jandy LRZ gas heater. You informed me that the annual expense to heat the pool is in excess of $20,000.00 (gas bill). You further stated that, due to exposure to salt air, heater replacements were relatively frequent.

21. Generally, the pool equipment was in "fair" to "good" condition and appeared to be functioning in accordance with the intended purposes.

22. You directed me to an enclosed area at the entrance to the parking garage at the North end of the pool and deck. Examination of the structural components of this area revealed deterioration of the concrete around the pass door opening and deterioration of the pass door.

23. Examination of the reinforced concrete retaining wall, along the East and South sides of the pool and deck area, revealed that is was in "good" condition. That is, there was minor surface staining at a pipe clamp. Further, there was spalling / separation of a concrete panel near the steps on the North end of the pool deck area. Close examination of the reinforcing steel in the spalled / separated area revealed that it was severely corroded.

24. Review of Pool Plans produced in 1969 by Oscar A. Handle Jr, Architect, sheets S-12, S-13 and S-14, revealed that the pool was designed as a non-piling supported pool with a depth of 3' to 8'. It was also noted that a 12' diving board had been proposed; note that no diving board was present during my inspection. The Plans indicated a concrete deck adjacent to the pool. It is unknown whether this deck was not constructed, or constructed and subsequently replaced by (the existing) sand-set brick paver deck system.

25. Continued review of sheet S-13 of the Pool Plans revealed that the gutter drains were on a collector tank only and that the main drain was on a direct suction connection to the pump.

26. Continued review of sheet S-14 of the Pool Plans revealed sections for the retaining wall located at the East and South perimeters of the pool deck. The sections indicated that the assembly was a non-piling supported, poured and formed reinforced concrete footing and wall.

27. Review of a Boundary Survey produced by Harley Greene, Professional Surveyor and Mapper, revealed that the coastal construction control line is West of the pool and deck area. That is, the pool and deck area is seaward of the coastal construction control line.

28. A discussion with Darwin Stubbs, P.E., a coastal permitting professional, regarding permitting requirements for a new pool as they relate to the coastal construction control line revealed:

    a. A Department of Environmental Protection permit would be required for pool replacement (new pool);

    b. The Department of Environmental Protection would require that no net excavation be done (no viable beach sand removed East of the coastal construction control line);

OBSERVATIONS (Continued):

c. A new pool can be no more Eastward than the existing pool;

d. The City of Boca Raton will require Site Plan Approval and may require a variance.

29. Mr. Stubbs recommended that a Site Planner produce a comprehensive Site Plan indicating the scope of the proposed new pool and deck construction / work to submit to the City of Boca Raton for Site Plan Approval and, if required, a variance. Subsequent to City approval, the Site Plan would be submitted to the Department of Environmental Protection.

30. Review of the rendering of a proposed redesigned pool and deck revealed that the new pool would have a larger footprint than the existing pool and the new deck layout would be enlarged by removal of the pool equipment building. It was noted that portions of the new pool were East of the existing pool.

CONCLUSIONS:

Based on field-observed conditions, review of Client-furnished materials and related experience, the conclusions of this evaluation are, to the best of my professional understanding and belief, as follows:

1. The overall design, appearance and layout of the pool, deck and pool equipment building are dated. Specifically, the raised precast coping and small-sized brick pavers are typical design features of the 1960's. The 8' depth of the pool results in a relatively large portion of the pool being unusable by non-swimmers and the younger population. Additionally, the pool equipment building is located such that it isolates a deck area West of same from the pool and visually occludes the ocean view from this deck area.

2. As reported in the Observations, the pool shell appears to be structurally sound and the pool finish is in generally good condition. However, the beam/gutter, gutter drain grates, gutter tile grout, cap tiles at the steps and raised precast coping stones all show signs of aging and wear and tear damage.

3. The pool deck adjacent to the steps in the Northeast corner of the pool has settled. Additionally, the Southeast corner of the pool appears to have settled unevenly relative to the remainder of the pool. This condition of induced stress on the pool shell could cause crack(s) in the pool shell over time. Soil testing is recommended to determine the condition of the soils underlying the deck and pool.

4. The pool equipment building has not visibly settled nor deteriorated, however it is located such that relatively loud equipment noise can be heard in the pool and deck area and, as reported above, it isolates a deck area West of same and visually occludes the ocean view from this deck area.

5. The electrical panelboard in the pool equipment building is to be replaced with a code-compliant unit that is installed in a good workmanship manner in accordance with the National Electrical Code and safety standards.

CONCLUSIONS (Continued):

6. As reported in the Observations, the pool equipment appears to be in fair to good condition. You indicated to me that upgrades to the pool equipment are being considered to include: a salt generator to replace liquid chemical feeders, a change from the cartridge filter system to sand filter(s) and relocation of the gas heater from outside to inside.

7. A salt water chlorination system (salt generator) combines dissolved salt and electrolysis to produce typical sanitizing agents resulting in somewhat "softened" pool water with less chlorine odor. The system, specifically the electrolytic cell, must be properly maintained and the chemistry / pH level of the pool water must also be maintained for the proper operation of the system and optimal pool water conditions. Note, under present codes, salt generators are accepted as a back-up system only to liquid chemical feeders. That is, the chemical feeders must be retained.

8. The benefit of a rapid sand filter would reduce maintenance time as the filters have an automatic backwash (cleaning) feature. Either filter system is suitable.

9. The gas heater is exposed to the elements, resulting in a diminished service life. You indicated that it was costly to operate. A properly designed and sized ground source (geothermal) heat pump should be considered as a replacement to a gas heater. Additionally, this equipment could be used to cool the pool water as needed.

10. The main drain appears to be connected directly to the recirculation pump. This is in violation of the 2010 Florida Building Code and the Virginia Graeme Baker Pool and Spa Safety Act / anti-entrapment act. As such, a properly-sized collector tank is required to bring the pool into compliance. Additionally an approved main drain (correct sump configuration, unblockable drain or two approved drains) is required.

11. The approval / permitting requirements for a new pool, as they relate to this project wherein the new pool would be East of the coastal construction control line, are as follows:

    a. A Site Plan should be produced to depict the scope of the new pool and deck project;

    b. The City of Boca Raton will require Site Plan Approval and may require a variance;

    c. A Department of Environmental Protection permit would be required for pool replacement (new pool);

    d. The Department of Environmental Protection would require that no net excavation be done (no viable beach sand removed East of the coastal construction control line);

    e. A new pool can be no more Eastward than the existing pool.

CONCLUSIONS (Continued):

12. The redesigned pool and deck (rendering only reviewed) appears to be superior in layout to the existing structures and would serve a higher and better use of the property. The proposed redesign would require modification to bring the East wall of the pool in line with the East wall of the existing pool while maintaining a 48" minimum deck width around the pool.

13. The long term (44 years) exposure of the pool structure to the corrosive ocean environment typically results in chloride contamination of the concrete. Chloride contamination leads to reinforcing steel corrosion and concrete spalling. Despite the fact that there was no visible evidence of steel corrosion or concrete spalling, it has been my experience that these conditions are revealed during repairs and renovations. As such, modification of the existing pool shell and/or beam/gutter, to accommodate an expanded pool footprint or modern gutter design, is not recommended.

14. A pool contractor would provide a warranty period for new pool construction, whereas pool repair work is typically not under warranty.

15. Pool equipment purchase and installation typically includes a product warranty and/or product replacement feature under appropriate conditions.

16. The retaining wall, located East and South of the pool area, is in generally good condition, except as follows: The spalled concrete panel and corroded reinforcing steel, South of the beach access stairs, are to be repaired in accordance with accepted practices.

17. You brought to my attention an enclosed area at the entrance to the parking garage as a potential location for pool equipment. I herein conclude that:

    a. This space is sufficient in size for the existing or proposed pool equipment.

    b. The collector tank would be installed at the pool deck level and therefore would not be housed in this area.

    c. A pool equipment room or enclosure must be locked to prevent unauthorized access.

    d. This area appears to be a passageway between the pool deck and the garage and if so, it is not an appropriate location for the pool equipment.

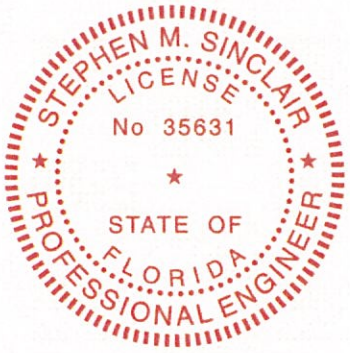
    e. The spalled concrete at the pass door requires repair and the pass door requires replacement.

CLOSURE:

The professional services and independent opinions provided are based on the standards generally accepted within my area of expertise and in accordance with industry professional and ethical guidelines applicable to structural engineering. The opinions stated herein are my own and, if necessary, I will testify in support of the conclusions contained in this report.

Thank you for selecting Sinclair Engineering for your engineering needs. Please feel free to contact this office for further information as the need arises.

Respectfully submitted,



May 1, 2014
Stephen M. Sinclair, P.E.
FL Lic. No. 35631

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EXHIBIT 1. OVERALL VIEW OF POOL AND DECK LOOKING SOUTHEAST

EXHIBIT 2. OVERALL VIEW OF POOL AND DECK LOOKING NORTHWEST

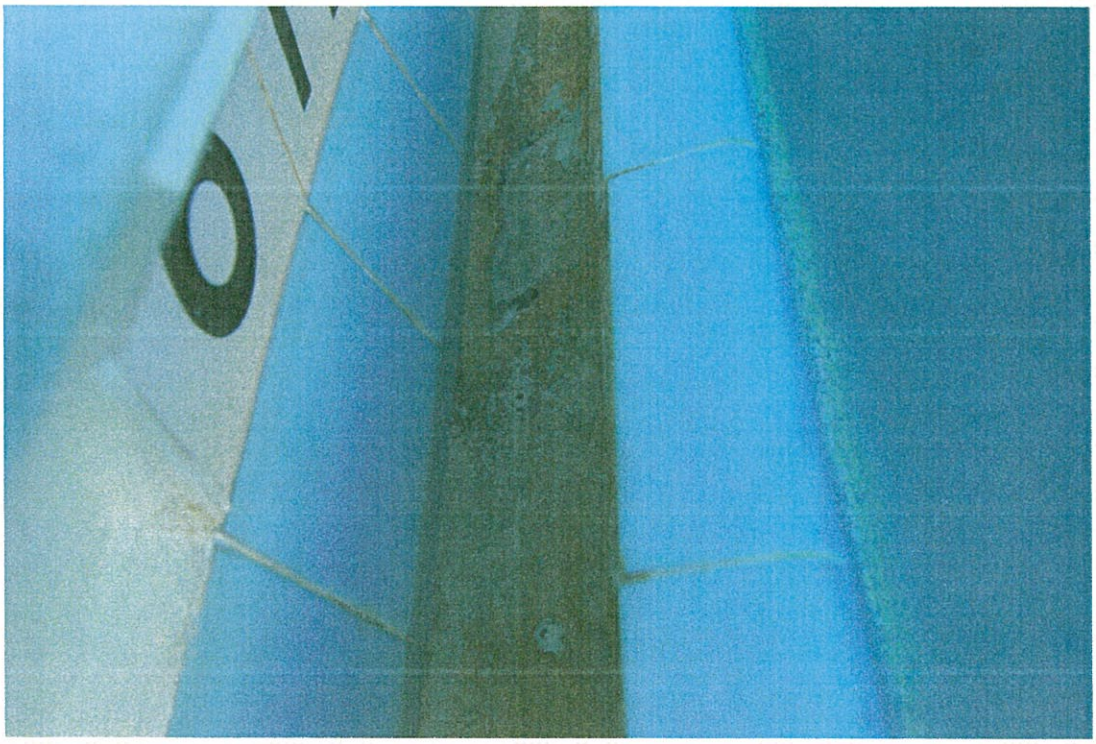

EXHIBIT 3. VIEW OF ERODED BEAM TROUGH FINISH

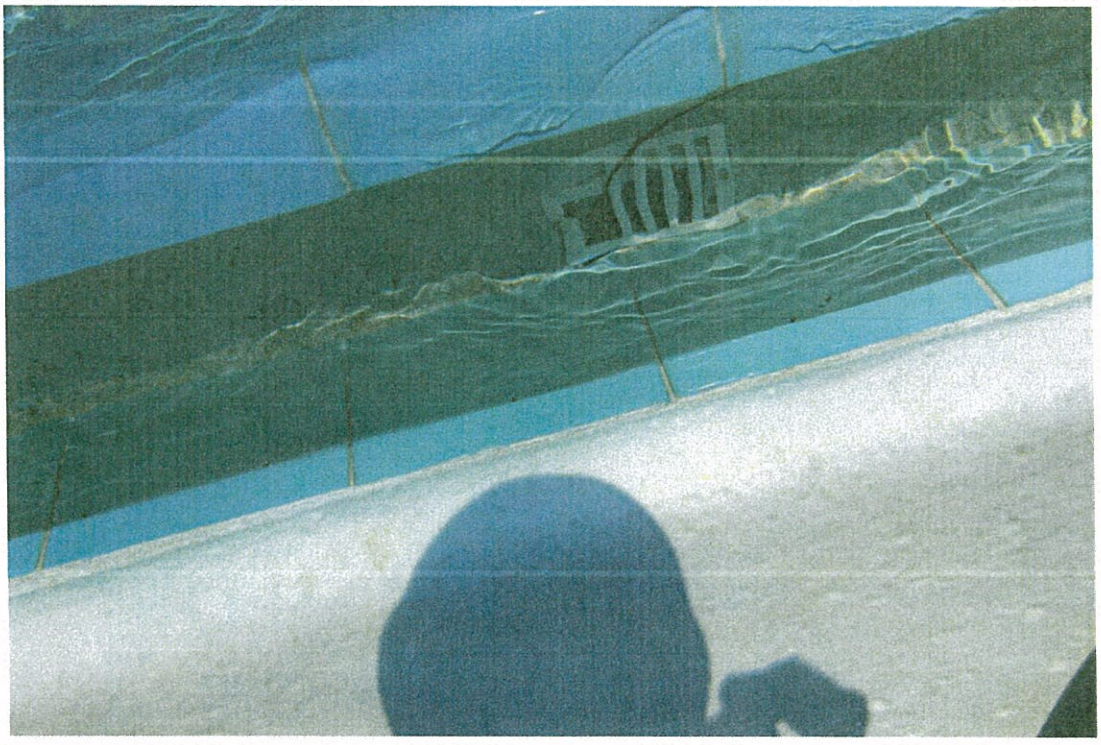

EXHIBIT 4. VIEW OF MULTI-LAYERED AND BROKEN GUTTER DRAIN GRATES

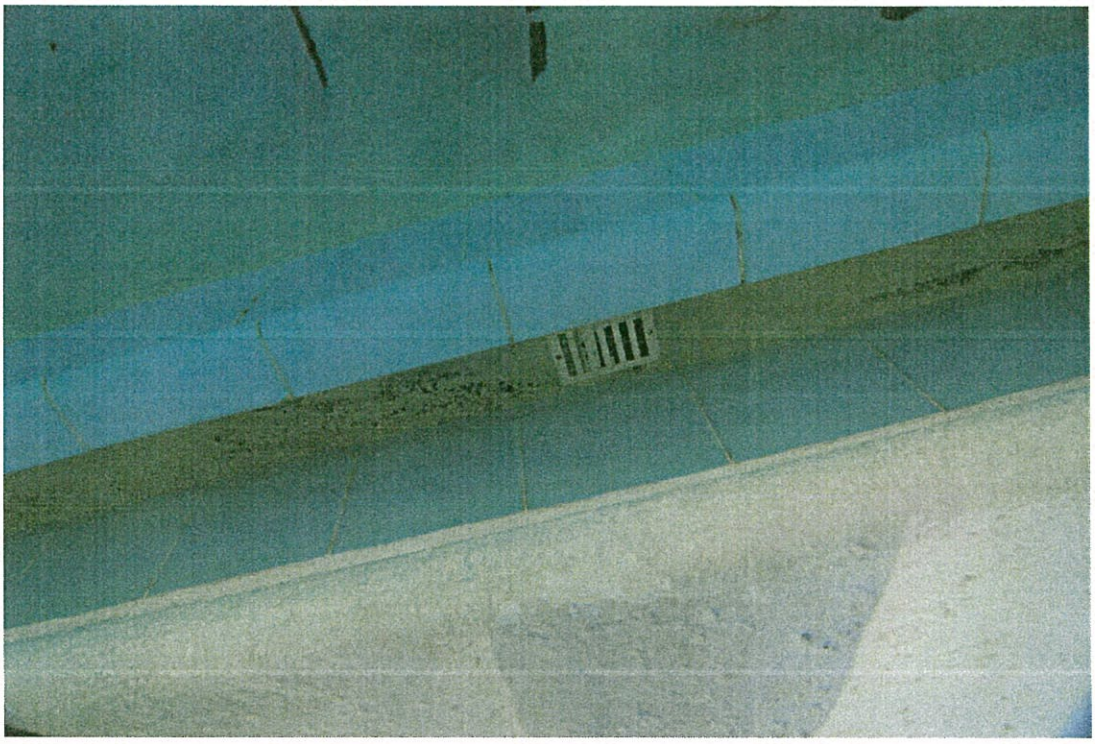

EXHIBIT 5. VIEW OF ERODED GUTTER TILE GROUT

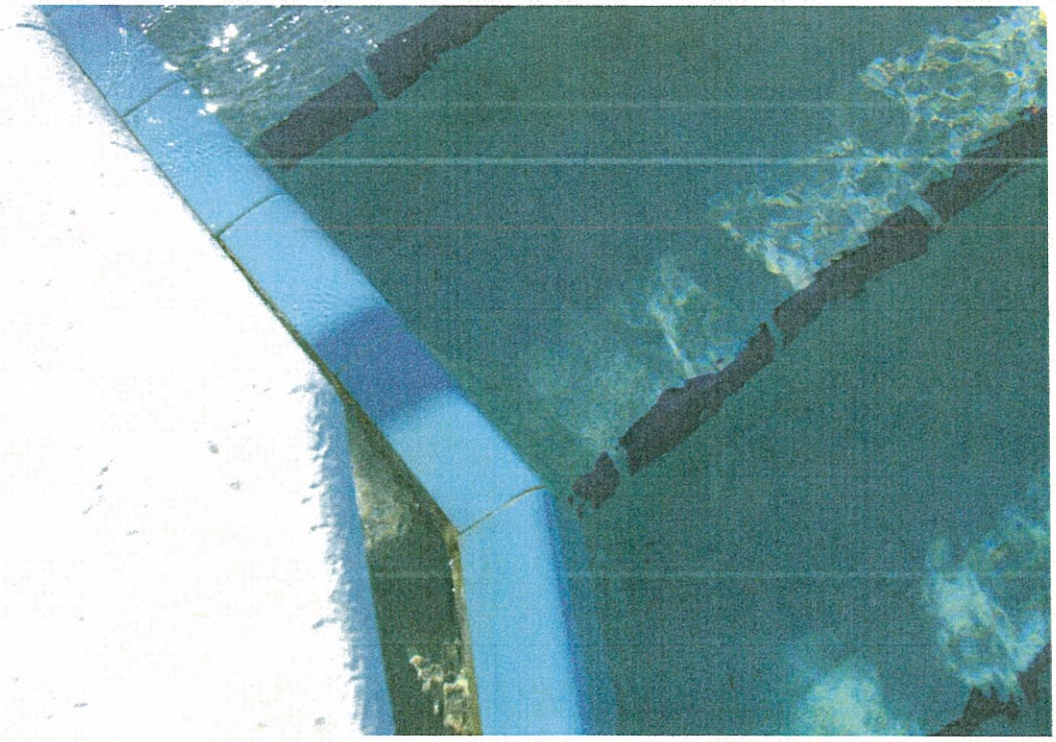

EXHIBIT 6. VIEW OF CHIPPED CAP TILE AT STEPS

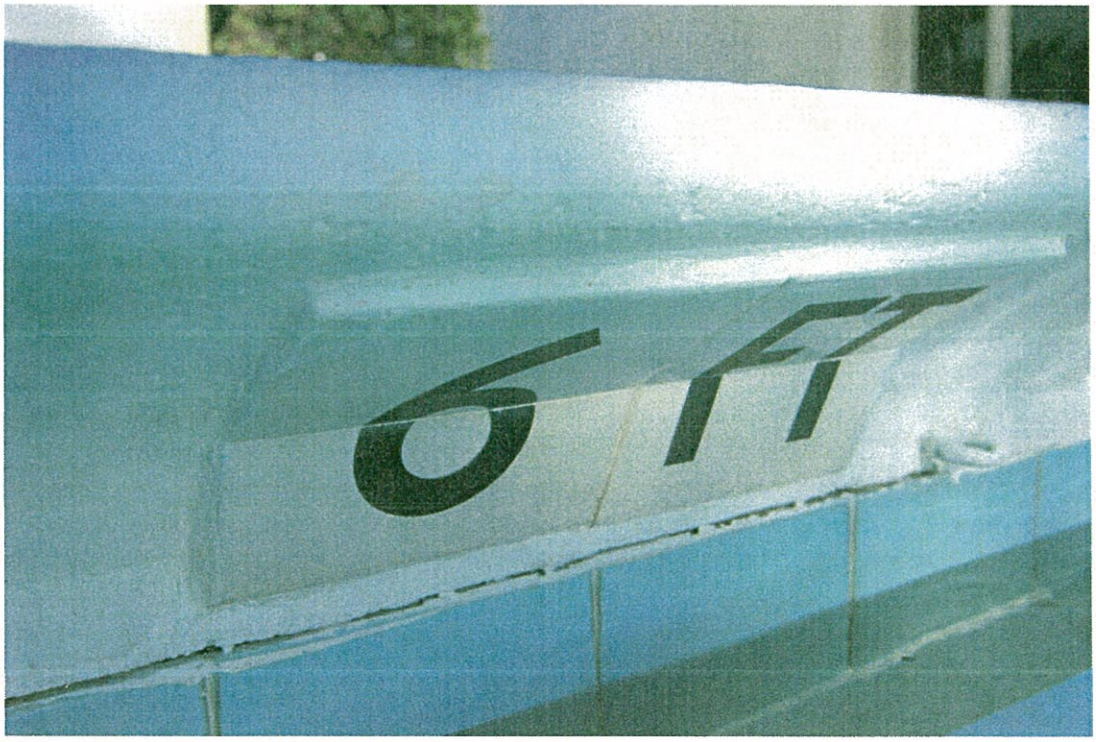

EXHIBIT 7. VIEW OF DISBONDED COPING STONE

EXHIBIT 8. VIEW OF REPAIRED DISBONDED COPING STONE

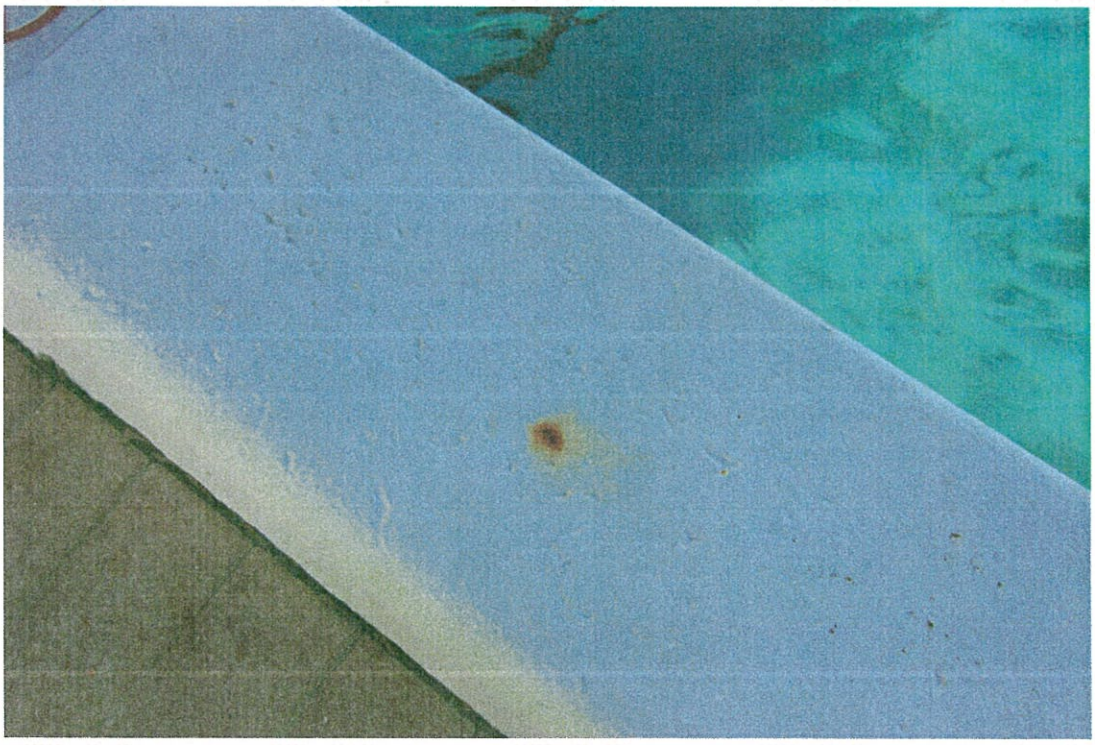

EXHIBIT 9. VIEW OF RUST STAIN ON COPING STONE

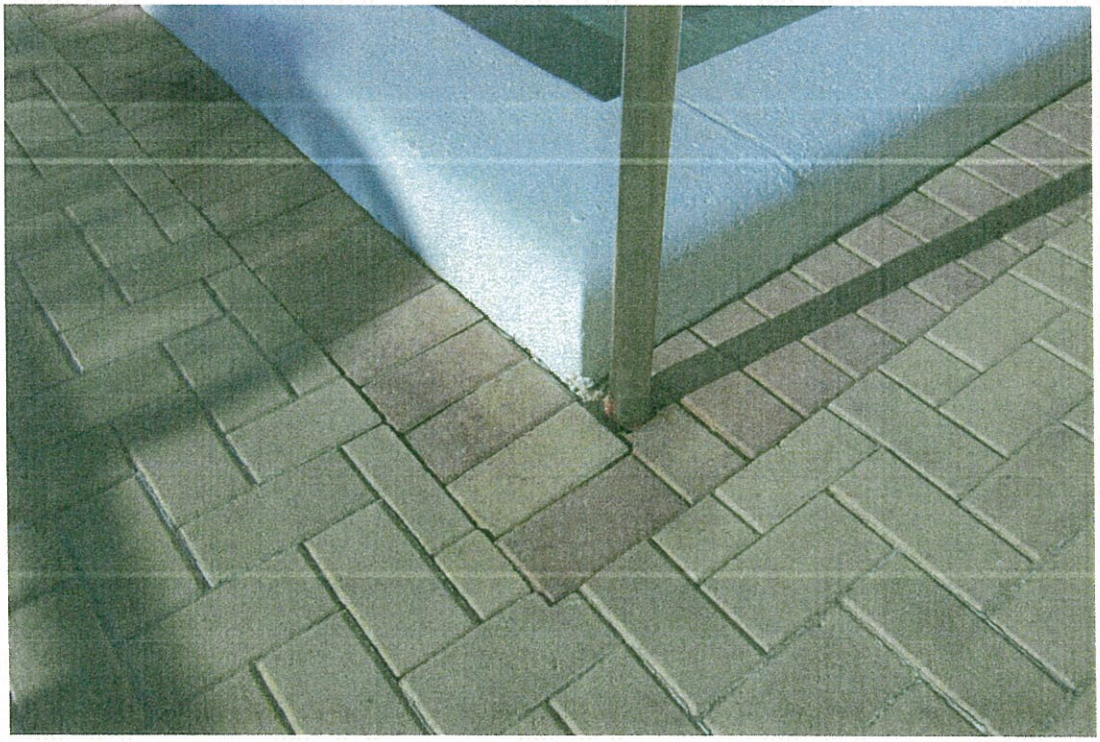

EXHIBIT 10. VIEW OF POOL DECK SETTLEMENT ADJACENT TO STEPS, NORTHEAST CORNER OF POOL

EXHIBIT 11. VIEW OF POOL, DECK AND POOL EQUIPMENT BUILDING LOOKING SOUTH

EXHIBIT 12. VIEW OF INTERIOR OF POOL EQUIPMENT BUILDING

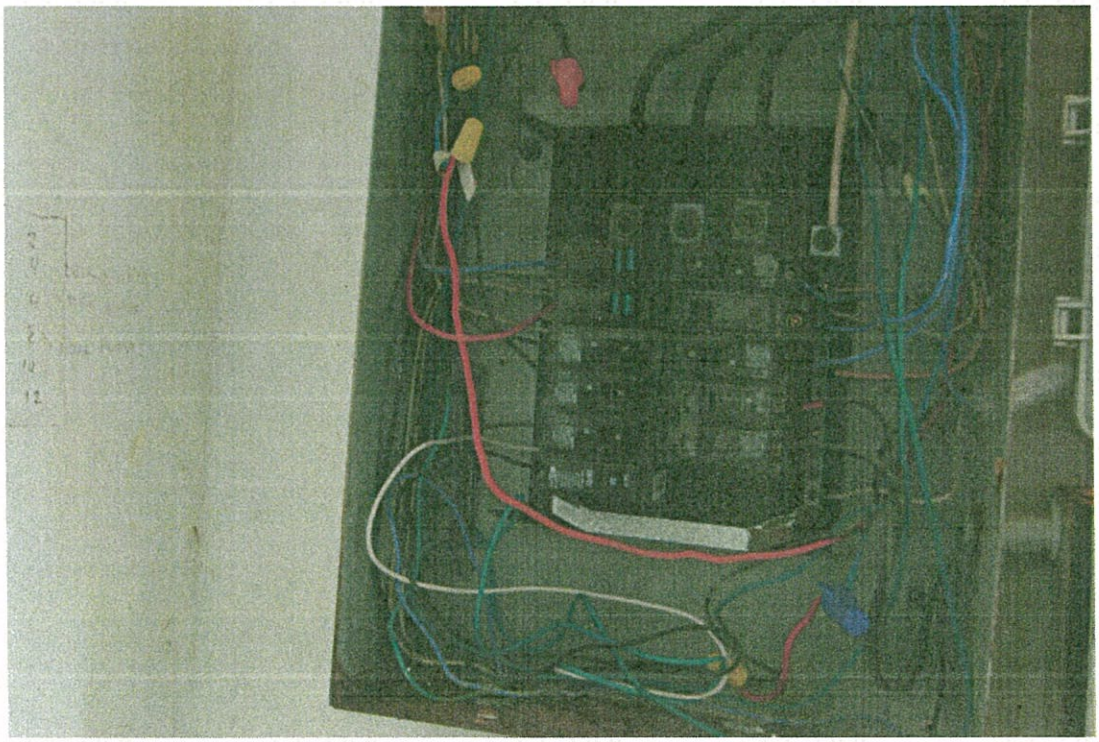

EXHIBIT 13. VIEW OF ELECTRICAL PANELBOARD IN POOL EQUIPMENT BUILDING

EXHIBIT 14. VIEW OF GAS HEATER, WEST SIDE OF POOL EQUIPMENT BUILDING

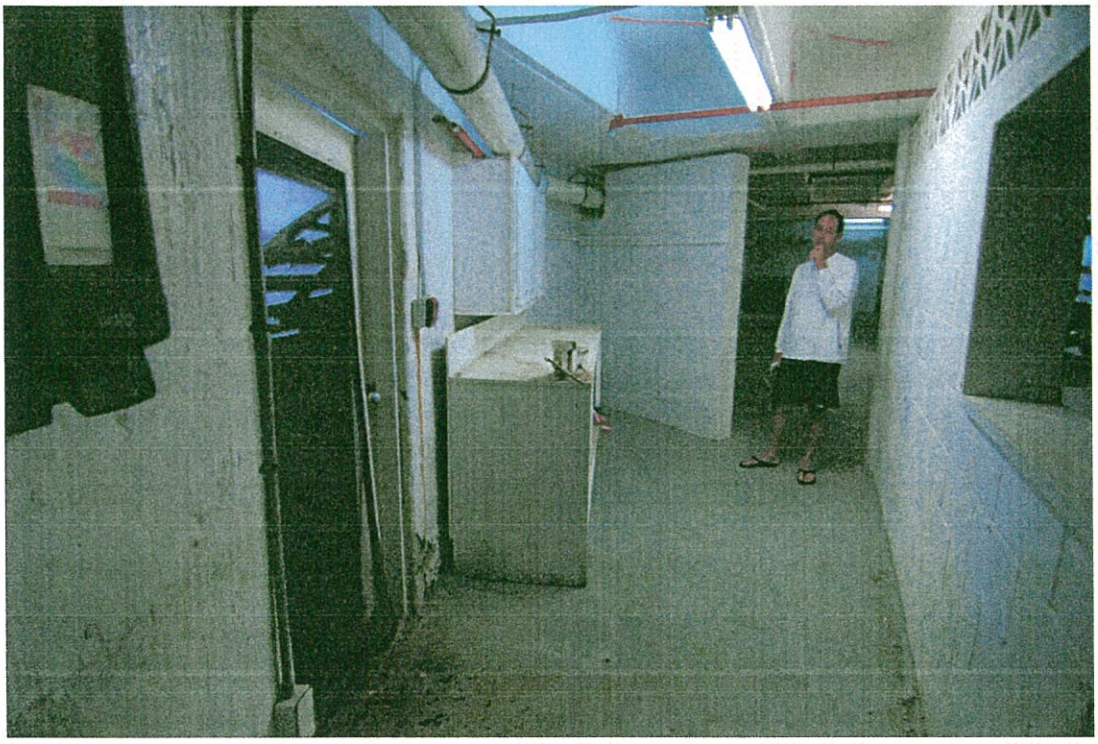

EXHIBIT 15. VIEW OF ENCLOSED AREA AT ENTRANCE TO PARKING GARAGE ADJACENT TO NORTH END OF POOL AND DECK

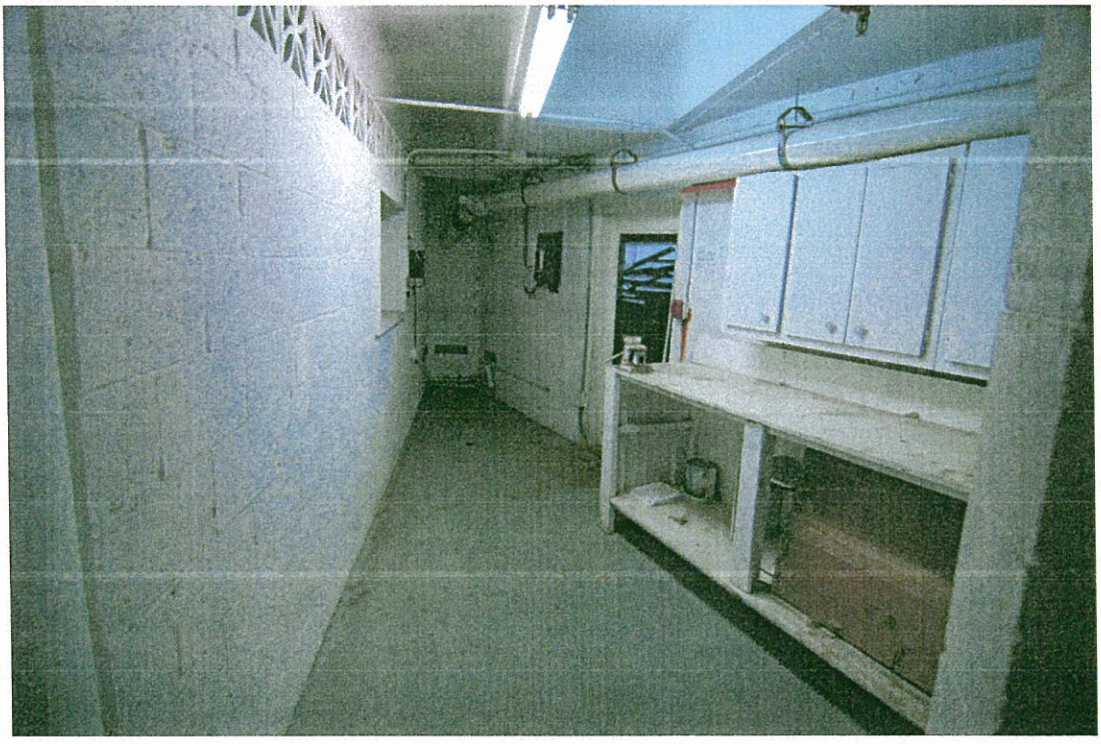

EXHIBIT 16. ALTERNATE VIEW OF ENCLOSED AREA AT ENTRANCE TO PARKING GARAGE ADJACENT TO NORTH END OF POOL AND DECK

EXHIBIT 17. VIEW OF DETERIORATED PASS DOOR AND SPALLED CONCRETE, ENCLOSED AREA AT ENTRANCE TO PARKING GARAGE

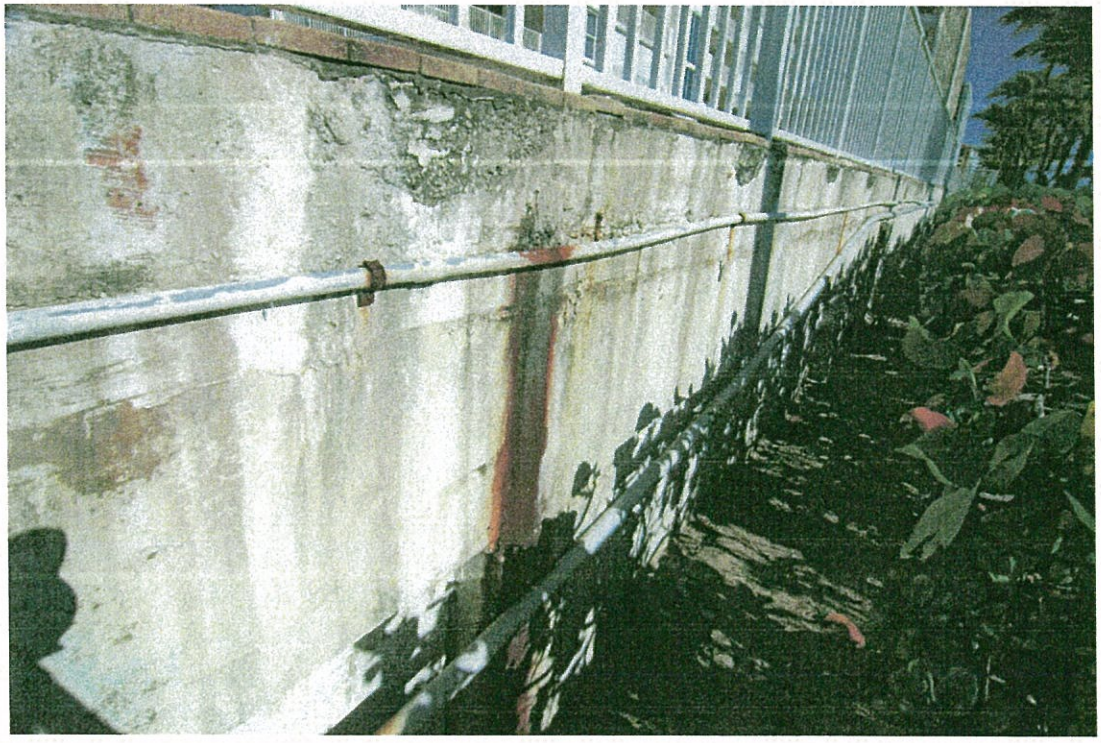

EXHIBIT 18. VIEW OF RUST STAINS ON RETAINING WALL, EAST SIDE OF POOL AND DECK

EXHIBIT 19. CLOSE-UP OF RUST STAIN FROM PIPE CLAMP ON RETAINING WALL, REFERENCE EXHIBIT 18

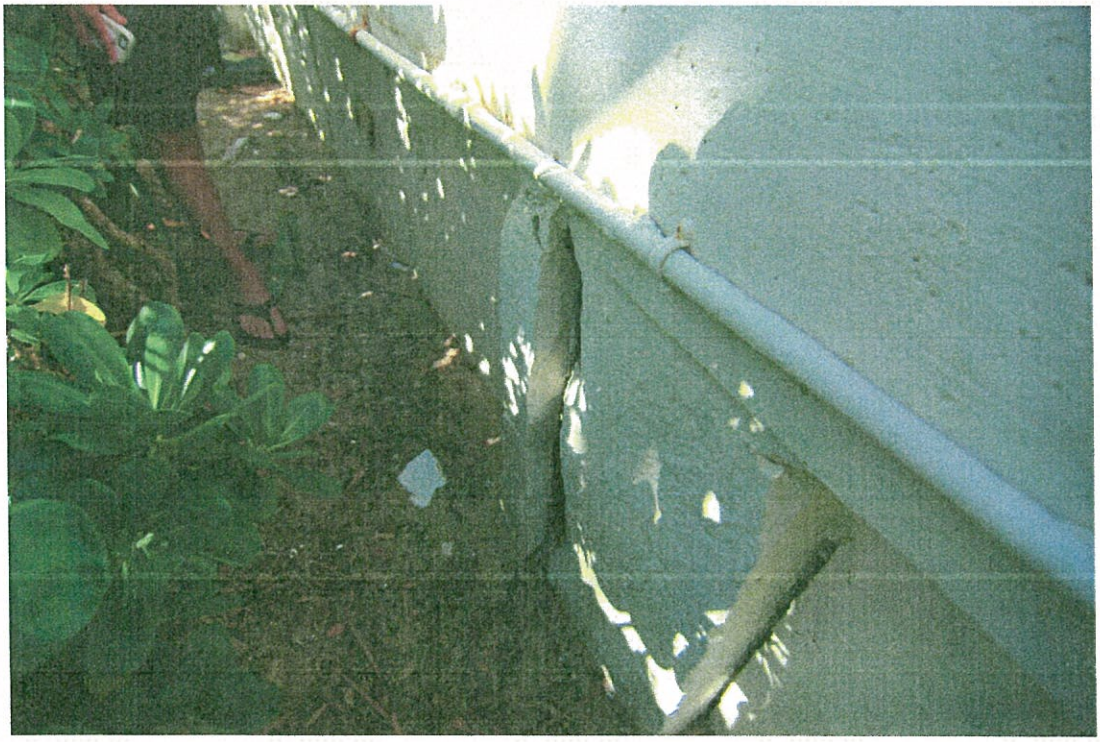

EXHIBIT 20. VIEW OF SPALLED CONCRETE ON RETAINING WALL, SOUTH OF BEACH ACCESS STEPS FROM POOL DECK