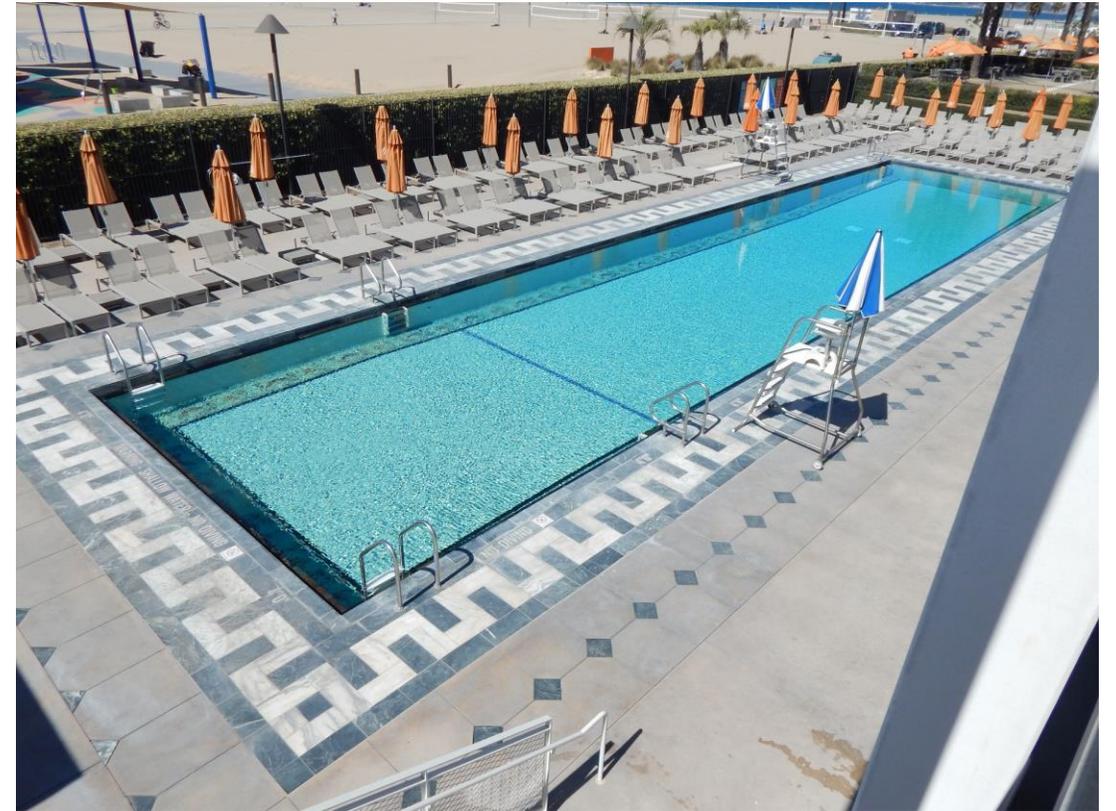


Pool – Maintenance & Repair



1938 – Source Historic Bison Archives



2018



Agenda

1. Historic Status
2. Pool Components
3. 2009 Rehabilitation
4. Current Condition
5. SOI Standards
6. Proposed Repairs



Historic Status: City of Santa Monica Historic Landmark

Designated in 1980.

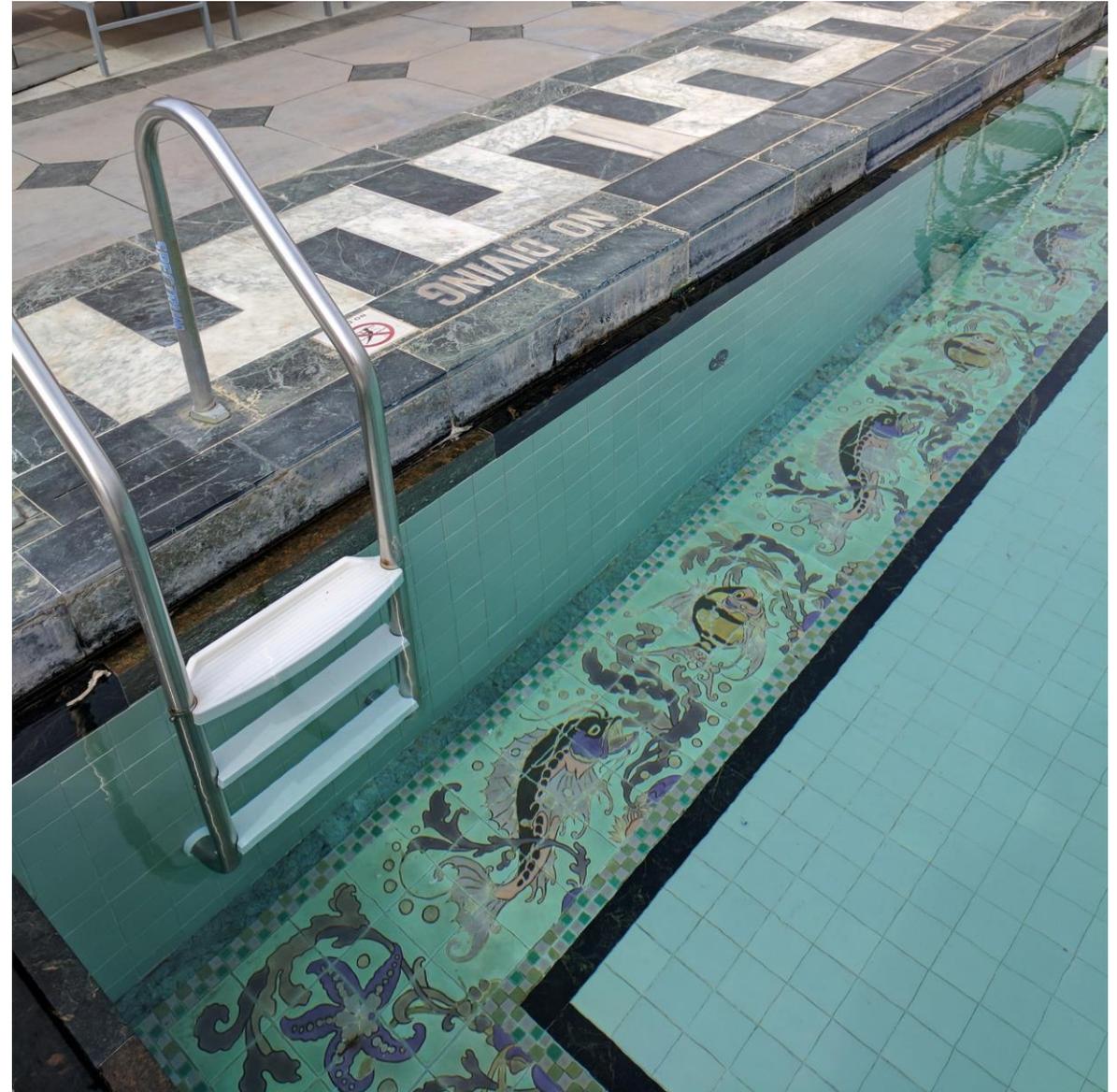
Historically Significant for

1. The last remaining elements of the Marion Davis estate. Beach front estates were part of Santa Monica's cultural, social, and architectural history in the 1920s and 1930s.
2. Identified with historic personages – Marion Davis was a renown actress of her day.
3. A representative work of master architect Julia Morgan.



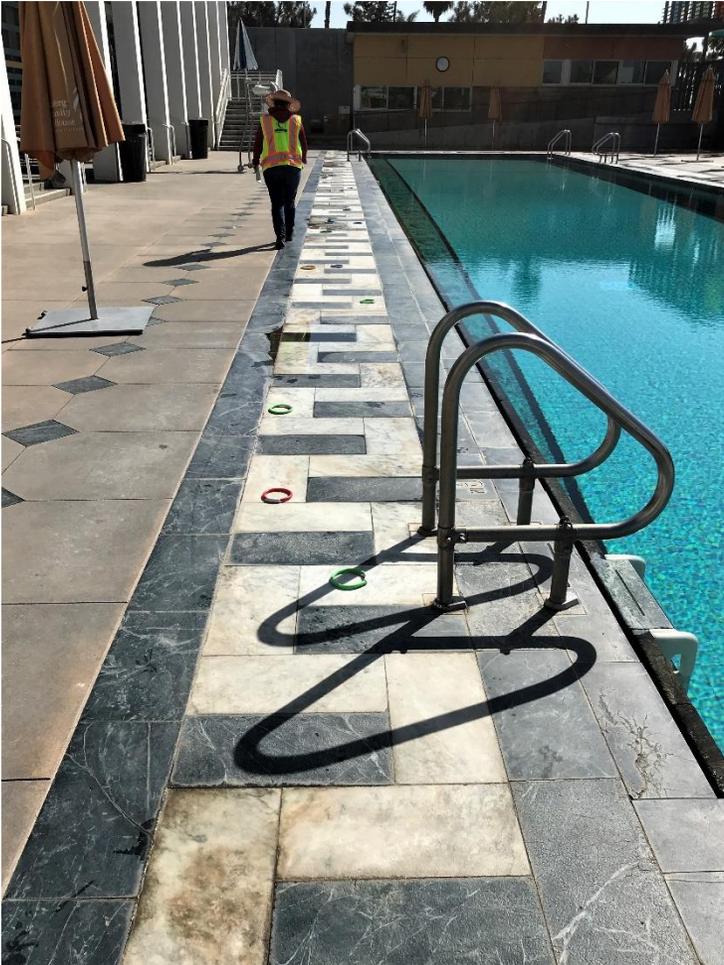
Pool Components

- Deck
 - Green Marble
 - White Marble
 - Concrete
- Gutter
 - Vertical Fascia – Green Marble
 - Skim Gutter – Green Marble
- Pool Wall
 - Monochrome Ceramic Tile
- Pool Bottom
 - Monochrome Ceramic Tile
 - Decorative Border
 - Polychrome Ceramic Tile / Fish Mural
 - Tessellated Pink & Green Mosaic Tile Borders
 - Green Marble Borders



Pool Components

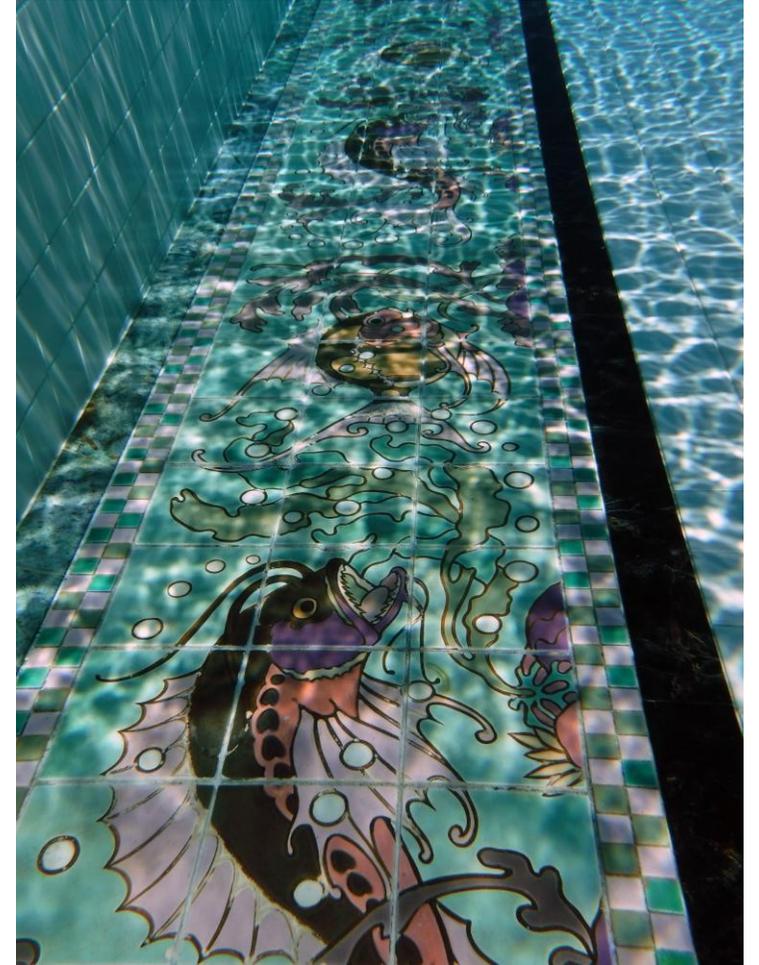
Deck



Gutter



Pool Bottom



2009 Rehabilitation

- Deck marble tile was catalogued by location and removed, salvaged and stored.
- The concrete deck substrate was demolished.
- Outside of concrete pool shell was excavated to facilitate installation of new plumbing runs and light fixtures. The soil was replaced and compacted to support the refurbished deck.
- The pool bottom mosaics were cleaned and re-grouted.
- Due to glaze spalling, all the pool wall and bottom field tiles were replaced in-kind.
- A new concrete deck slab was placed, and deck marble was re-installed, excessively deteriorated tile was replaced with new from the same quarry that supplied the original marble.
- Brass drain grates were installed in the gutters and connected to a new water circulation system.
- Marble tiles were water-honed prior to reinstallation to create a slip-resistant surface. Additionally, lettering used for the required depth markers was made from water-cut marble inlays.
- An extra set of ladders and rails were added in the shallow end to meet code requirements



2009 Rehabilitation

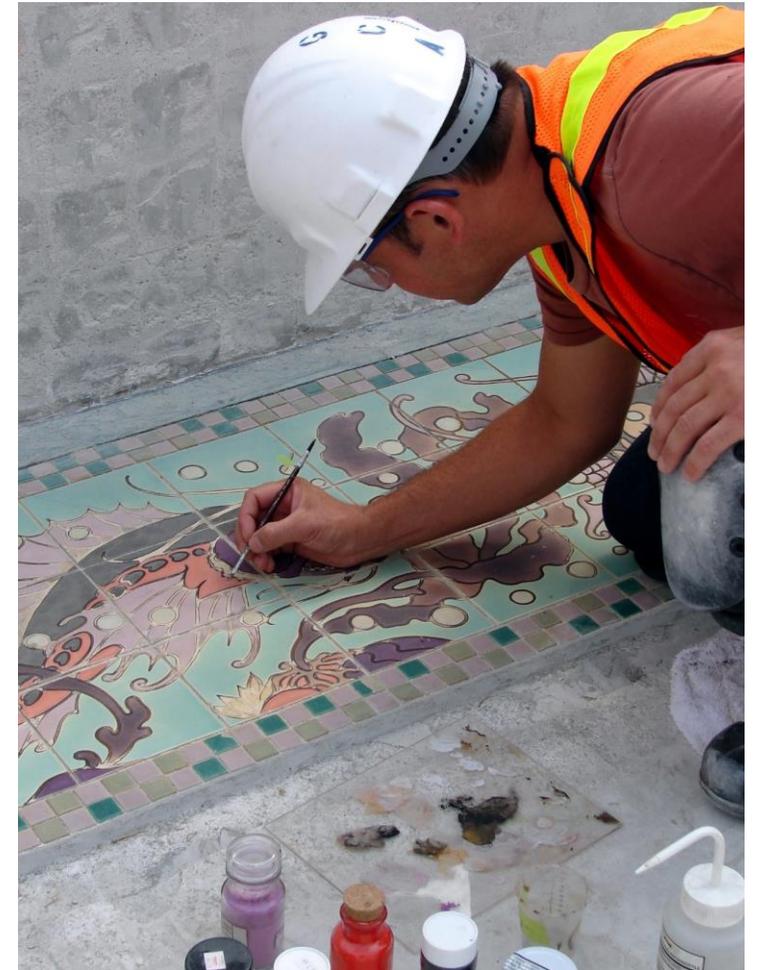
Deck Reconstruction



Mural Condition



Mural Conservation



Current Condition DECK

Marble investigation included:

- 4/17/2018 – General visual assessment (P&T w/ ACBH staff)
- 6/18/2018 – Enhanced visual assessment w/ City divers (P&T w/ ACBH staff)
- 11/20/2019 Tile by tile condition survey (P&T, KCR, & ACBH staff)

Quantities are based upon the 11/20 survey.

*Survey of green marble deck tile.
Dive rings were used to mark
deteriorated tiles to be replaced.*



Current Condition - Deck

Green Marble

Overall Fair to Poor

Exhibiting:

- Cracking
- Splitting
- Crumbling
- Minor Chipping
- Displacement
- Non-Matching Replacement Pieces

White Marble

Overall Fair to Good

Exhibiting:

- Cracking
- Splitting
- Chipping
- Staining
- Sugaring
- Non-Matching Replacement Pieces

Mortar Joints

Overall Fair to Poor

Exhibiting:

- Cracked Mortar
- Missing Mortar
- Variety of Color

Current Condition Green Deck Marble



Cracking (Some Previously Repaired)



Crumbling / Chipping



Splitting



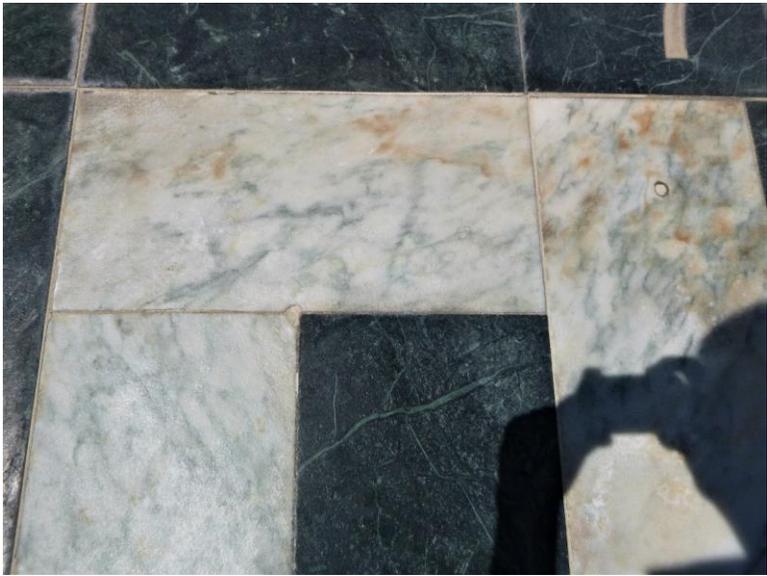
Crumbling / Chipping / Splitting

- **SPLITTING:** Fracturing of stone along naturally occurring planes of weakness – veining for the green marble.
- **CRUMBLING:** Detachment of aggregates of grains from the marble substrate. Generally limited in size.
- **CHIPPING:** Breaking off of small pieces from the edge of a piece.

Current Condition White Deck Marble



Cracking / Staining



Staining



Splitting / Chipping (Previous Repairs)



Non-Matching Replacement Marble

- **SPLITTING:** Fracturing of stone along naturally occurring planes of weakness – veining for the green marble.
- **CHIPPING:** Breaking off of small pieces from the edge of a piece.
- **SUGARING:** Granular disintegration occurring mainly in white marbles.



Green Marble Deck Paving Deterioration Quantities

Side	Total Number Tiles	Tiles w/ Cracking	Tiles w/ Splitting	Tiles w/ Chipping	Tiles w/ Crumbling	Tiles w/ Multiple Deterioration
East	259	11	71	22	38	43
North	74	1	24	5	22	15
West	253	23	68	11	49	38
South	76	8	11	2	16	10

Typical Band and Pattern Tiles are 20 x 10 inches.
Typical Gutter Cap Tiles are 20 x 7 1/2 inches.

White Marble Deck Paving Deterioration Quantities

Side	Total Number Tiles	Tiles w/ Cracking	Tiles w/ Splitting	Tiles w/ Chipping	Tiles w/ Sugaring	Tiles w/ Multiple Deterioration
East	128	7	5	12	10	16
North	43	2	0	3	7	4
West	128	5	2	17	26	16
South	41	0	0	1	2	0

Typical Tiles are 20 x 10 inches.

Current Condition – Green Marble Gutter

Skim Gutter

Overall Fair

Exhibiting:

- Differential Erosion
- Chipping
- Non-Matching Epoxy Patches
- Splitting
- Crumbling
- Staining

Fascia

Overall Fair to Poor

Exhibiting:

- Cracking
- Splitting
- Staining
- Displacement

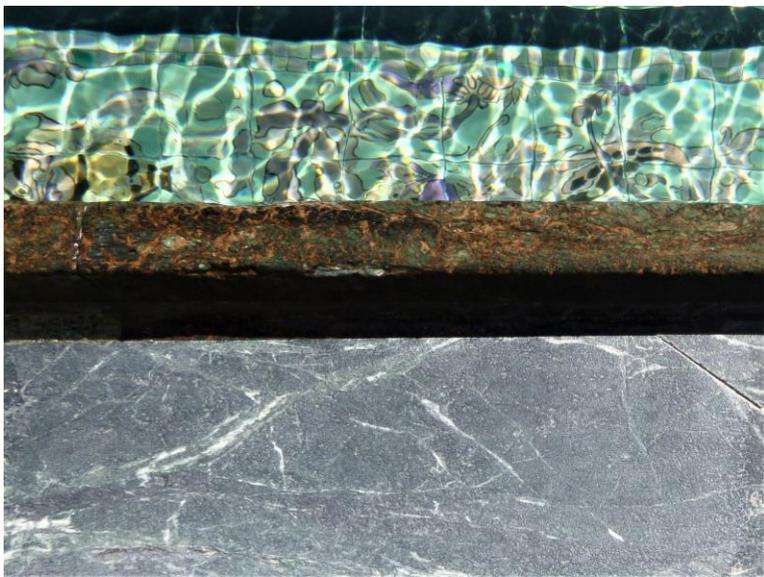
Deck Paving “Cap”

- See Deck
- Cracking
- Displacement

Mortar Joints

Overall Poor Exhibiting:

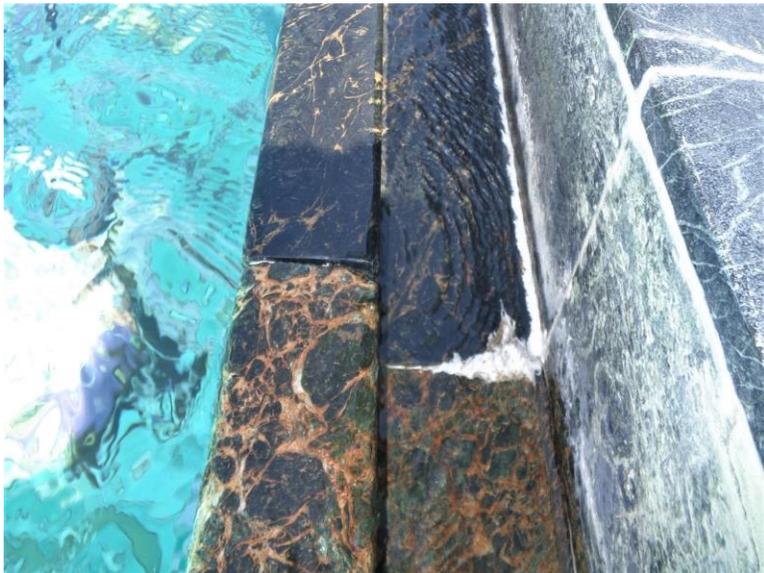
- Cracked Mortar
- Missing Mortar
- Variety of Color



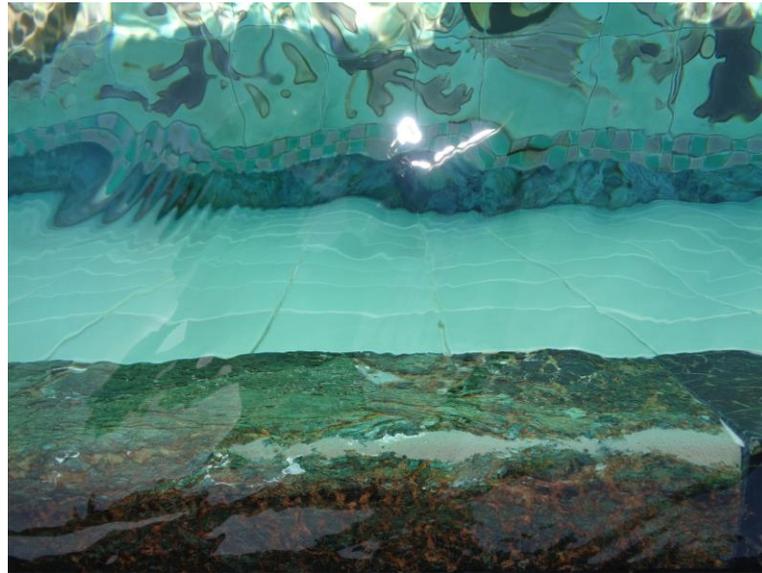
Differential Erosion / Staining



Non-Matching Repair



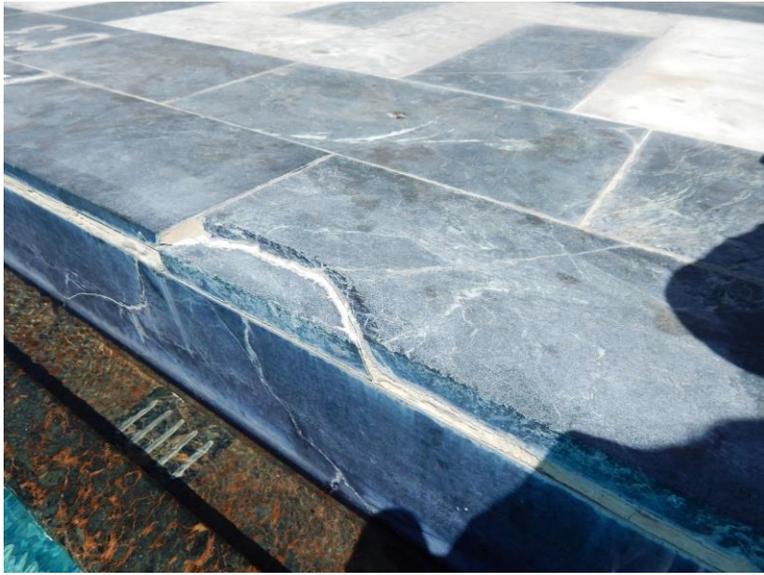
Crust / Staining



Non-Matching Repair / Differential Erosion

Current Condition Skim Gutter

- **DIFFERENTIAL EROSION:** When erosion does not occur at the same rate. For the green marble, the veins erode faster than the green body of the stone. The veins also hold rust staining more prominently than the body.



Cracking & Displacement of Fascia & Deck Cap



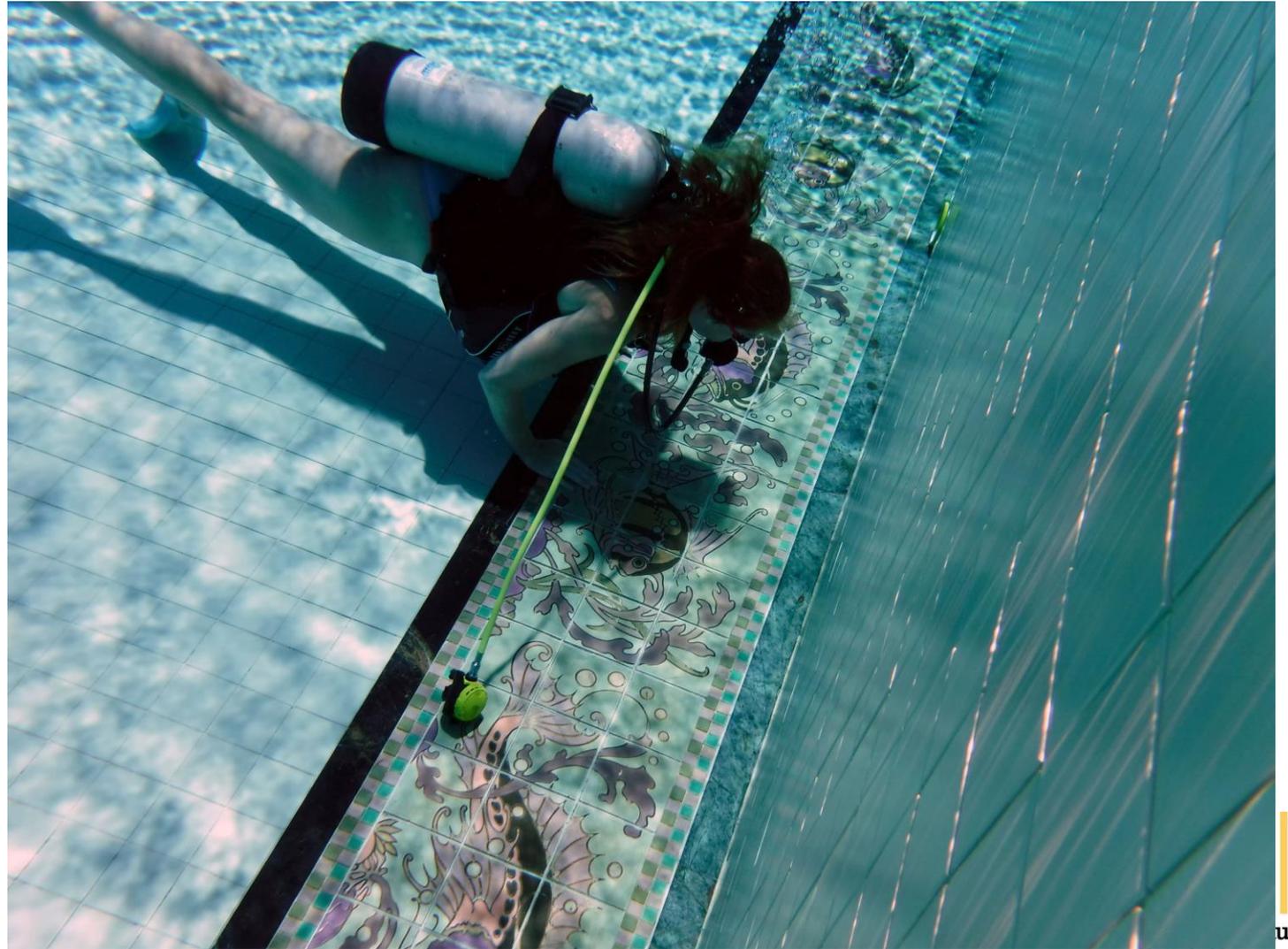
Cracking of Fascia & Deck Cap

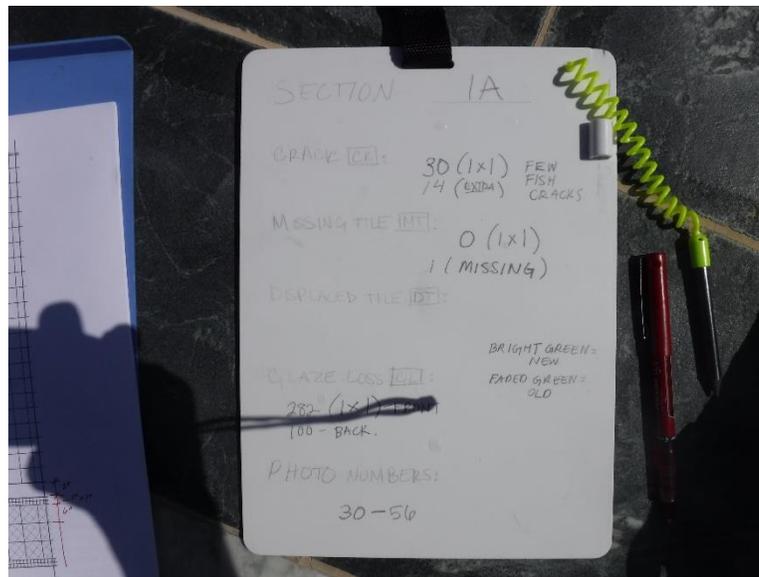
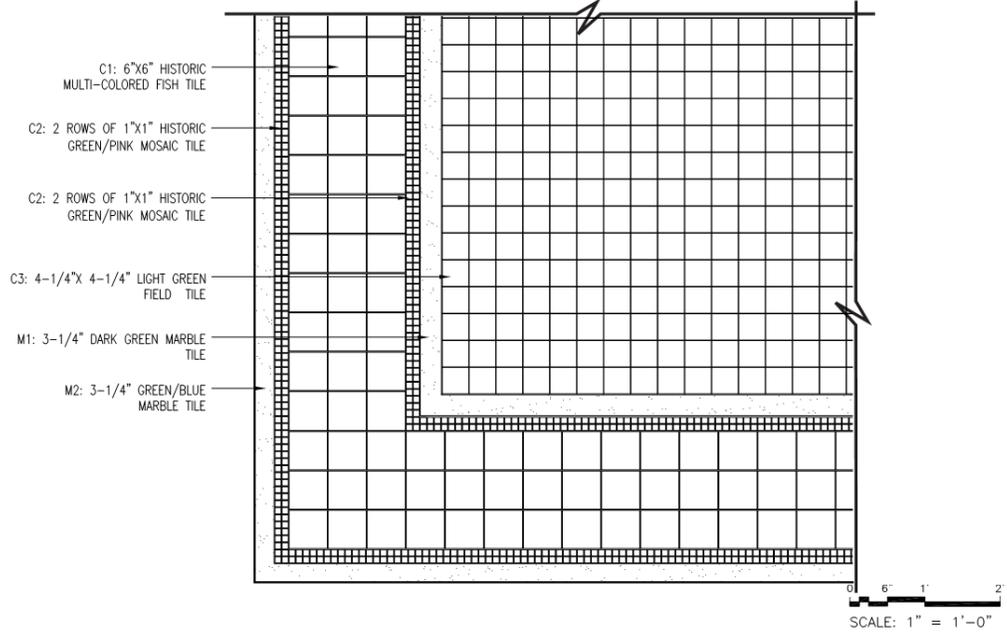
Current Condition Fascia & Cap

- **DIFFERENTIAL EROSION:** When erosion does not occur at the same rate. For the green marble, the veins erode faster than the green body of the stone. The veins also hold rust staining more prominently than the body.

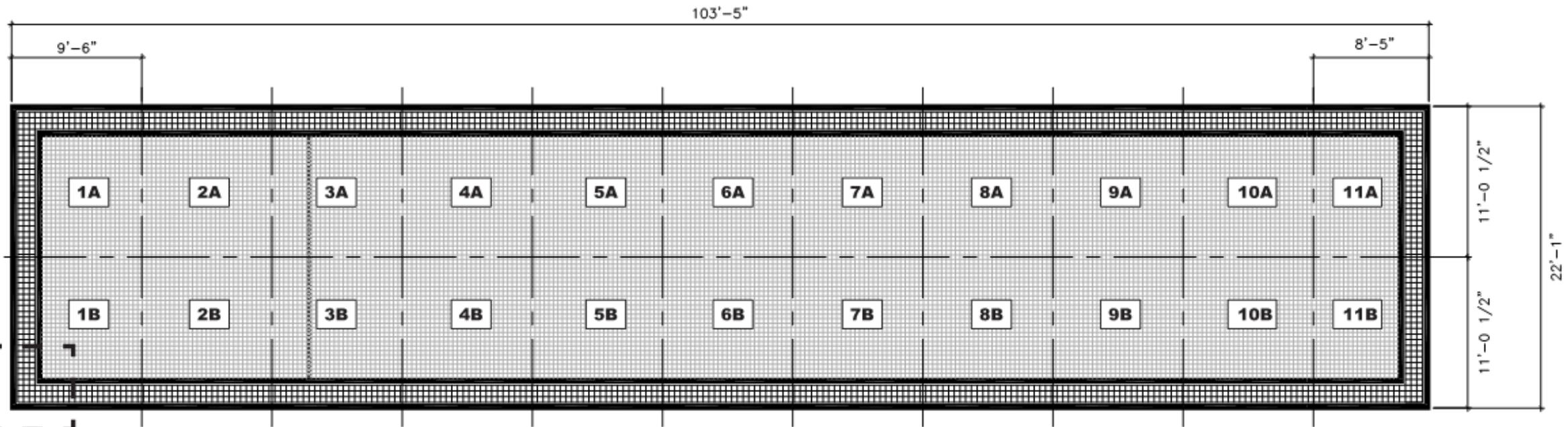
Current Condition Pool Bottom

Condition is based upon a visual assessment by City of Santa Monica divers, guided & coordinated by Page & Turnbull.





A grid was used to record deterioration observed by the divers. Information was reported from divers to staff on the deck, who recorded data on a grease board. (right)



Current Condition

Pool Bottom – Decorative Border

Polychrome Ceramic Tile / Fish Mural

Overall Fair - Exhibiting:

- Chipping & Spalling of Polychrome Glaze
- Fading of Prior Repairs
- Cracking

Tessellated Pink & Green Mosaic Tile

Overall Poor Exhibiting:

- Full or Partial Glaze Loss (at original tiles)
- Non-matching Replacement Tiles
- Missing Tiles
- Delaminated Tiles
- Rust Staining

Green Marble Tile

Overall Good Exhibiting:

- Minor Cracking
- Rust Staining (like skim gutter)

Current Condition

Pool Bottom – “Field” Tile

Light Green 4x4-inch Tile

Overall Good - Exhibiting:

- Minor Rust Staining

Purple Depth-Line Tile

Overall Good - Exhibiting:

- No Notable Deterioration

Mortar Joints (Border & Field Tile)

Overall Poor Exhibiting:

- Cracking
- Missing Mortar
- Variety of Color
- Rust Staining

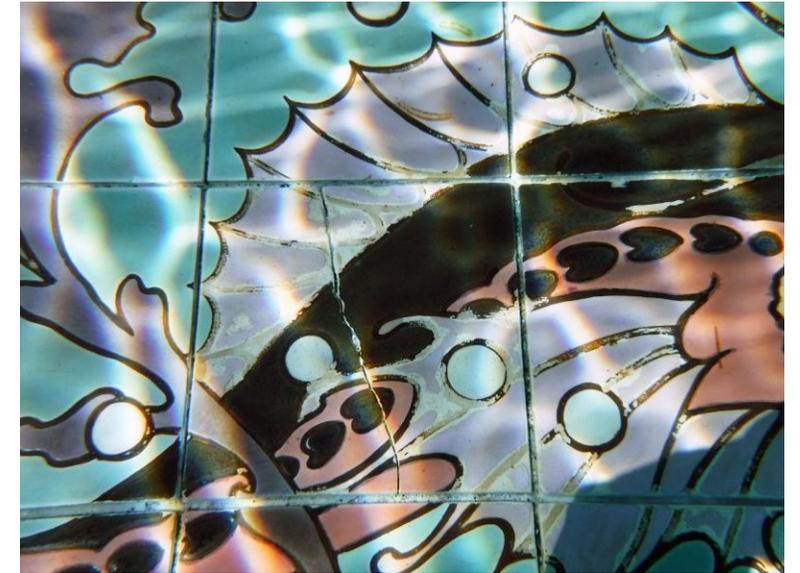
Current Condition - Polychrome Ceramic Tile / Fish Mural



Missing / Spalled Glaze

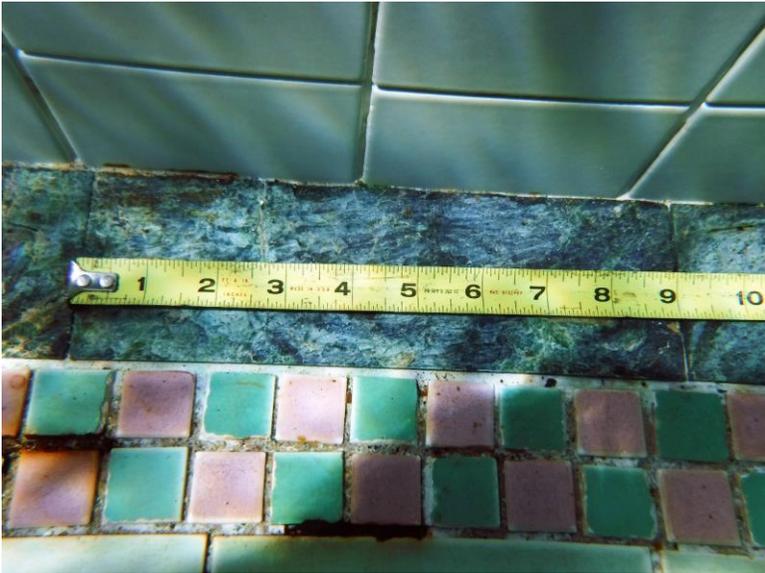


Cracked Tile & Fading Colors

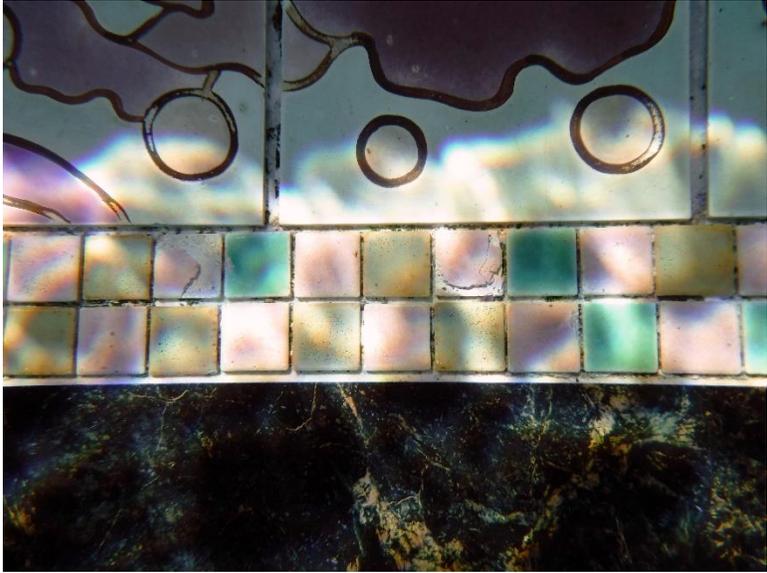


Cracked Tile (38 Tile out of 1,380)

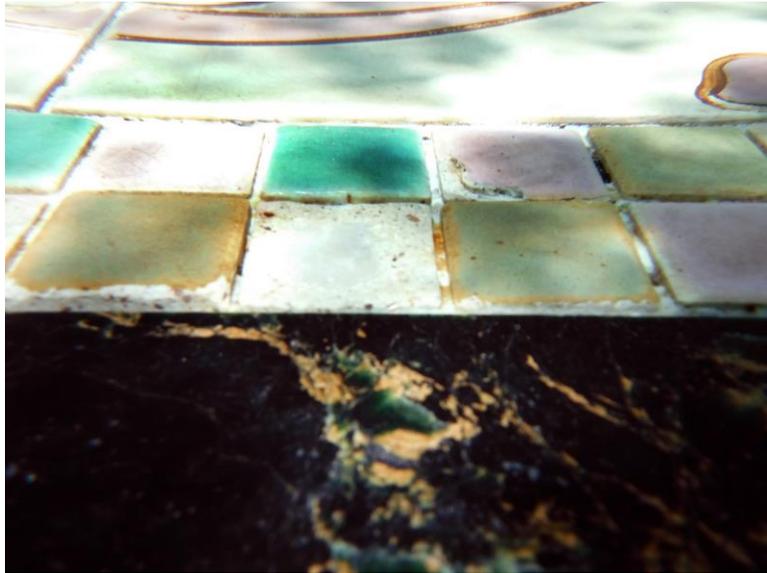
Current Condition – Tessellated Pink & Green Mosaic Tile



Glaze Loss at Edges & Rust Staining



Glaze Loss (2,933 Tile out of 10,300)

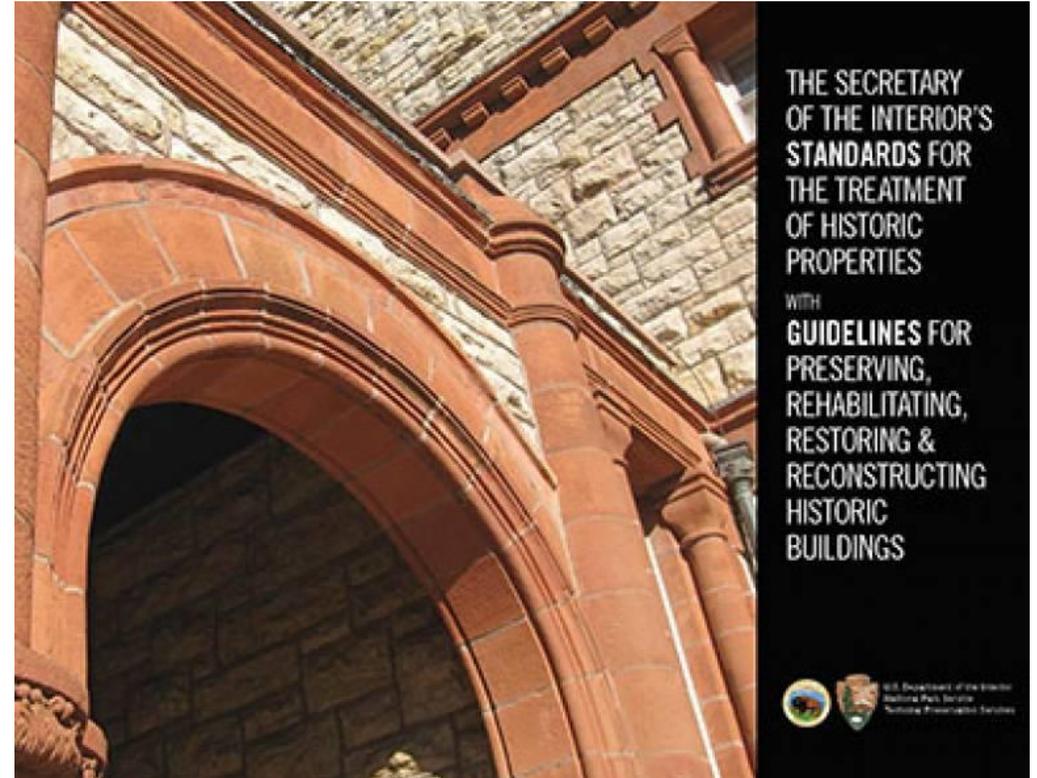


Glaze Loss / Non-Matching Tile

Secretary of the Interior's Standards for the Treatment of Historic Properties

Standards for Preservation

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. **Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.**
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.



Annenberg Community
Beach House
AT SANTA MONICA STATE BEACH

Summary of Proposed Pool & Deck Tile Repair:

- In-kind replacement most heavily damaged white and green marble deck tile and green marble gutter fascia
- Purchase and store additional marble tile for future phase of in-kind replacement
- In-kind replacement of 1" x 1" mosaic tile at pool bottom
- Repair of hand-painted fish tiles at pool bottom
- Clean all pool and deck tile with a mild chemical cleaner. Spot clean rust stains with poultice.
- Re-grout all joints.
- Seal marble surfaces.



Proposed Repairs - Deck

Replace Deteriorated Deck Marble in 2 Phases





In the Pittsford Valley marble quarry, looking down on the concrete struts—huge protective braces which ease the burden of the flaring walls. For further description of this opening, see page 9.

VERMONT MARBLE • GENERAL SECTION

GEOLOGY OF MARBLE

ALL marbles (in actual use) belong to the general class of limestones, as distinguished from other classes of rocks, but not all limestones can be used as marble. All true marbles are more or less metamorphosed, that is, they have been recrystallized and are on that account more dense and compact and substantial than are limestones that have not undergone such change. (Only occasional very compact, fine grained unmetamorphosed limestones, sufficiently dense to take a polish, can be used as marble.) In the least metamorphosed varieties fossils and other primary features are likely to be preserved. In the true metamorphic marbles such primary structures are usually obscure or are wholly destroyed.

There are many kinds of marble. The chief chemical varieties recognized are calcite marbles, dolomite marbles and serpentinous marbles, but in all of these there are additional variations in color and texture and structural detail which give great range or difference of appearance and architectural or decorative effect.

The calcite marbles are almost pure lime carbonate rocks, the dolomite marbles carry a high percentage of magnesium carbonate and the serpentinous marbles carry abundant silicates crystallized with the carbonates.

The Vermont marbles belong to the calcite variety and are thoroughly metamorphosed. They are typical marbles in every respect.

The blue, gray and black colors in marble are generally due to the presence of carbonaceous material and minute amounts of other dark constituents, and the brighter colors, such as green, red and brown, are chiefly due to iron in some form, or to silicates containing iron and other metals.

The difference in texture is in large part dependent on the degree of metamorphism; and the other structural features are generally due to the amount and kind of deformation that the rock has undergone during its folding and the rest of its mountain history.

The original limestone deposit was formed ages ago as a series of beds beneath the sea, produced in all probability by lime-secreting animals. Subsequently they were raised above the sea and became a part of the continent, and, in the course of time, through pressure and mountain folding with heat and some deep-seated igneous influence besides, these beds were transformed into their present crystalline condition.

Stream erosion and glaciation have removed the uppermost portion of the arches of the great folds belonging to the original mountains, so that the deposits now worked are remnants of the continuous beds that once existed here. These beds now constitute one of the most important marble deposits of the world.

CHEMICAL COMPOSITION

A CHEMICAL analysis of Danby Vermont marble, a typical variety, and the one most generally used for exterior purposes, shows the following results:

Carbonate of Lime	98.67
Carbonate of Magnesium	0.52
Sulphate of Lime	Trace
Silica	0.65
Alumina and Oxide of Iron	0.20
	100.04

Marble from same quarries as original.

Pages from 1920s Vermont Marble Catalog.



Annenberg Community
Beach House
AT SANTA MONICA STATE BEACH

Same marble used as replacement at the Neptune Pool and Hearst Gymnasium UC Berkeley*



* Pools also designed by Julia Morgan and funded by the Hearst Family.

Proposed Repairs

Deck

- Cut tile to size on-site to match existing marble paver dimensions.
- Abrasively clean new tile to match texture/wear of existing tile.
- New grout at all replaced marble pavers.
- Re-set loose existing marble pavers.
- Clean to remove rust staining soiling.
- Apply Miracle Sealants Company “Miracle 511 Seal and Enhance” to all deck marble pavers.

Select in-pool marble repair including: Dark green marble tile (pool bottom inner border), light blue/green marble tile (pool bottom outer border), L-shaped dark green ‘scum’ gutter, and marble ladder.

- Carefully remove deteriorated mortar patches at L-shaped ‘scum’ gutter. Large patches to be repaired using marble Dutchman methods; smaller patches to be filled with patching material approved for use with marble, and to have integral color that is close to the color of the marble.
- Infill marble cracks with grout.
- Remove rust stains using chemical methods.

Proposed Repairs – Pool Bottom

Select ceramic pool tile restoration, repair, and replacement including: Multi-colored, decorative 6” x 6” fish tile (original), green/pink 1” x 1” mosaic tiles (original), light green field tiles (not original).

- 1”x1” tessellated mosaic tiles: Full replacement (approximately 11,000 tiles).
- Fill cracks at ceramic tiles.
- In-paint glaze losses to all 6”x6” fish tile (approximately 1,400 tiles) using Edison Aquepoxy 250.
- New grout at tile joints through-out.
- Rust exploration/treatment: Contractor to carefully remove tiles at areas of heavy rusting to observe any corroded metal. Review condition with architect as some corroded metal should be replaced with stainless steel. Remove ferrous metal and apply rust inhibiting primer at areas of heavy rust. Remove rust stains using chemical methods.
- General cleaning of all pool tile.