LIFE FLOOR®

3-PART SPECIFICATION SECTION 096113

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LIFE FLOOR®

PART 1: GENERAL

1.1 Summary

A. SECTION INCLUDES

1. Life Floor® EVA-PE copolymer tile wet area surfacing system meets the certification requirements of NSF/ANSI/CAN Standard 50-26 and is listed to comply with the NSF/ANSI/CAN Standard 50-26.

2. To earn certification, Life Floor® safety surfaces have been third-party tested to demonstrate safety and durability. Additionally, compliance with the NSF/ANSI/CAN Standard 50-26 and the specific requirements of these specifications seeks the goal of improving operational excellence and risk mitigation.

B. RELATED SPECIFICATIONS FOR AQUATICS

1. Provide in accordance with Section 13 1155 LIFE FLOOR® SAFETY SURFACING

C. COMPLETE BUILD SCENARIO OVERVIEW

1. Provide in accordance with Section 13 1110.1.03. B - DEFINITIONS: COMPLETE BUILD SCENARIO.

2. General:

a. Provide the preparation of all shop drawings, submittals, as-built drawings, operations and maintenance manuals, contractor and installer certifications, manufacturer certifications, and substantial completion documents must be carried out and provided by the contractor or their delegated engineer(s) and/or specifiers.

b. Provide compliance with all construction contract documents' requirements from the specifier, as well as the Life Floor® manufacturer's instructions, recommendations, and requirements.

c. Provide a Life Floor® manufacturer's certification of approved installation for the Life Floor® safety surface system.

D. RELATED WORK PROVIDED BY ARCHITECT/OWNER

1. Provide in accordance with the architect's documents, for the following design and engineering-related services:

a. Designs for slip-resistant impervious substrate decking with all required deck drains, deck waterproofing, deck joints designs, and compaction and density testing before the placement of the substrate decking.

b. Landscape architecture is inclusive of appropriate selections for decking, deck drainage, deck drainage grates, deck expansion joints, and selection of appropriate finish materials at and within (with selected colors and textures) the pool, smooth slip-resistant, textured impervious finishes and surfaces, and with its perimeter edges finishes and textures.

2. Owner Responsibilities:

a. As a prime responsibility, the owner controls the safe operation, the training of all lifeguards, operational practices, wet-play operations and use, and safety personnel, maintains and supervises all attractions and assemblies, provides all related safety signage, and maintains all assemblies, components, equipment, and materials to continue and preserve their impervious and non-slip conditions named in the Sections described in 1.1.B.

b. Therefore, the owner must ensure that the spaces are monitored, overseen, and supervised to maintain verified record-keeping. Additionally, the owners' necessary operations must also include the following:

1) If specifier defines, any excluded professional services must be provided by the architect, the architect's other design consultants, or the owners' other design consultants;

2) Provide in accordance with Section 13 1110 AQUATIC GENERAL for additional requirements.

1.2 General Description of Work Requirements

A. PERFORMANCE CRITERIA FOR SAFETY SURFACING REQUIREMENTS

1. Provide, as listed below, the minimum requirements to achieve certification in accordance with the NSF/ANSI/CAN Standard 50-26 listing for safety surfacing.

2. The specified Life Floor® has been tested and certified as meeting all of the following performance standards.

3. Additionally, the specifier has deemed that the safety surface must be impervious with chemical resistance to meet or exceed applicable building codes and the contract documents.

a. The specified Life Floor®, being a certified safety surface, is a feature that engages bathers, guests, and patrons while keeping them safer than traditional materials such as concrete or ceramic tile.

B. SLIP RESISTANCE

1. The specifier requires that all certified surfaces must be slip-resistant to reduce slip-and-fall injuries. The minimum performance criterion requires a minimum 40 British Pendulum Number (BPN) and P4 on the Australian Standard.

2. The specified Life Floor® product exceeds this criterion by testing to achieve a 65 BPN and a P5 rating.

C. CUSHIONING

1. The specifier requires that all certified surfaces must be cushioned to absorb inevitable falls. Criteria requires a Head Injury Criterion (HIC) value of 750 or lower and a Gmax of 200 or lower, with a 0.2-meter minimum fall height.

2. The specified Life Floor® exceeds this criterion with a 74 HIC.

D. IMPERMEABILITY

1. Certified surfaces are impermeable and do not absorb substances.

2. Sunscreen, fertilizer run-off, liquids, and hazardous substances should not absorb into surfaces.

3. The specified Life Floor® is certified to this criterion with 99.7% impermeability.

E. CLEANABILITY

1. Certified surfaces must be easily cleanable and hygienic.

2. Criteria require surfaces to show a 99.9% bacteria reduction after sanitization in accordance with the Model Aquatic Health Code (MAHC).

3. The specified Life Floor® is certified to this criterion, including the joints between tiles.

F. UV RESISTANCE

1. Certified surfaces remain slip-resistant, cushioned, and retain contrasting colors after exposure to 750 hours of UV without showing signs of erosion.

2. The specified Life Floor® exceeds this criterion with over 7,000 hours of UV 11 exposure without showing signs of erosion.

G. CHEMICAL RESISTANCE

1. Certified surfaces remain slip-resistant, cushioned, and retain contrasting colors after exposure to chemical shock periods without showing signs of erosion.

2. The specified Life Floor® is certified to this criterion.

1.3 Referenced Standards

A. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM):

1. ASTM E648-03 is for “Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source – Passed

2. ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment: Critical Fall Height 1’ or More.

3. Toxic Characteristic Leaching Procedure (TCLP) (RCRA) by Method 30106. NSF/ANSI/CAN Standard 50-26 Interactive Water Play Venue Surfacing Systems and Pool Perimeter Finishes - Certified

4. ASTM C423-23: “Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.” The specimen mounting was performed according to ASTM E795-23: “Standard Practices for Mounting Test Specimens During Sound Absorption Tests.”: SAA = 0.06, NRC = 0.05.

B. AS 4586 – REQUIRED COMPLIANCE:

1. AS HB198:2014 Pendulum With TRL (55) Soft Rubber Slider Flooring Slip Resistance Test: Ripple Pattern Dry 119, Wet 66

2. 2013 slip resistance classification of new pedestrian surface materials, Appendix C – Wet-Barefoot Inclining Platform Test:

3. Critical angle: 31°, Classification C.

C. INTERNATIONAL MARITIME ORGANIZATION (IMO):

1. IMO Res. MSC.307(88) – (2010 FTP Code) Annex 1 Part 2 and Part 5 - Certified for Fire Safety Rating.

a. IMO Certification is a fire safety rating for flooring, which approves its use for both indoor and outdoor applications on cruise ships.

b. Life Floor® is IMO Res. MSC.307(88) - (2010 FTP Code) Annex 1 Part 2 and Part 5 certified. The specified Life Floor® tiles are compliant for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorized by contracting governments to issue the relevant certificates, licenses, permits, etc.

D. TECHNISCHER ÜBERWACHUNGSVEREIN (TÜV):

1. DIN EN 13451-1:2016-12 for slip-resistance - Certified

E. INTERNATIONAL BOARD OF CREDENTIALING AND CONTINUING EDUCATION STANDARDS (IBCCES):

1. Life Floor® meets one or more Areas of Autism Competency, and can be used at Certified Autism Centers worldwide as a Certified Autism Resource.

F. AMERICANS WITH DISABILITIES ACT (ADA):

1. ASTM F1951: Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment - Compliant

2. Compliance and adherence to ADA standards to ensure that individuals with disabilities have equal access and opportunities in various aspects of public Life, specifically at aquatic facilities.

a. The specified Life Floor® NSF/ANSI/CAN 50 Section 26 safety surfacing targets improved accessibility.

b. Facilities with the specified Life Floor® are known to accommodate better typical risky, imaginative, inclusive, and multi-generational play and, in accordance with the manufacturer's requirements, increase the safety for typical activities.

c. Life Floor® transition strips are ADA-compliant and allow existing facilities to install Life Floor® while maintaining an inclusive and inviting venue accessible to wheelchair riders.

1.4 Definitions

A. ALL:

1. Provide in accordance with Section 13 1110 AQUATIC GENERAL for additional requirements.

1.5 System Description

A. PERFORMANCE REQUIREMENTS:

1. Provide a single-layer EVA-PE copolymer tile wet area surfacing system that has been designed, manufactured, and installed to meet the following criteria:

2. Shock Attenuation (ASTM F1292) – 3/8" (10 mm) meets 1' (31 cm) critical fall height; 7/8" (22 mm) meets 4' (1.22 m) critical fall height; 1'-1/4" (38 cm) meets 6' (1.83 m) critical fall height.

3. Gmax - Less than 200.

4. Head Injury Criteria (HIC) - Less than 1000.

5. Flammability (ASTM E648) – Class 1.

6. Toxic Characteristic Leaching Procedure (TCLP) (RCRA) by Method 3010 – Pass.

7. NSF/ANSI/CAN certified to Standard 50-26 Interactive Water Play Venue Surfacing Systems and Pool Perimeter Finishes (latter omits impact absorption as a criterion).

B. CERTIFICATION OF PRODUCTS:

1. Each product and its systems requirements must pass specific performance measures for slip-resistance, impact absorption, chemical resistance, cleanability, UV resistance, impermeability as described above, and achieve compliance with NSF/ANSI/CAN Standard 50-26.

1.6 Project Meetings

A. GENERAL REQUIREMENTS:

1. Attend project coordination meetings and pre-installation meetings, which are specified and requested by the architect, owner's representative, specifier, or engineer.

1.7 Submittals

A. GENERAL:

1. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section. All submittals must be directly from the safety surface materials manufacturer.

B. PROVIDED CONTRACTOR CERTIFICATIONS:

1. Provide in full compliance and accordance with the contract construction documents.

2. Provide manufacturer certifications, 3rd-party testing, and delegated engineers. The contractor must:

a. Provide the substrate surface, which must be specifically in accordance with the guidelines of the International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) of CSP-1, and also similar to a steel trowel type surface texture.

1) Provide payment and responsibility for the costs (fees, travel, etc.) relating to all 3rd party testing engineers, specialty delegated engineers (s), Life Floor® manufacturers' certificates of installation certifying that the Life Floor® system was installed in compliance with all Life Floor® manufacturer's correct and latest guidance, intent, operating manuals and procedures, recommendations, requirements, and safety labeling and signage;

b. After each delegated engineer's approval and the manufacturer's approval, submit their written approvals and certificates to the owner and specifier.

C. PRODUCT DATA:

1. Submit the manufacturer's product data and installation instructions, recommendations, and requirements.

2. The substrate's Concrete Surface Profile (CSP) must be in strict conformity with the Life Floor®'s requirements.

a. Life Floor® requires a substrate with a steel trowel finish similar to the International Concrete Repair Institute's CSP-1.

3. All submittals must reference the steel trowel finish attaining the equivalency of CSP-1.

D. VERIFICATION SAMPLES:

1. Submit one 24" x 24" (61 cm x 61 cm) full-size sample for texture and thickness verification.

2. Color verification to come in standard manufacturer sample packets, texture and thickness subject to inventory.

1.8 Quality Assurance

A. GENERAL:

1. Qualifications:

a. Employ and utilize only a Life Floor® Certified Installer with experience in projects of similar scope, complexity, accompanied by written certifications from Life Floor®.

B. PROCEDURES:

1. Submit the following:

a. Certificate of qualifications of the Certified Installers.

1) Use a Certified Installer with experience in projects of Life Floor® approved scope and complexity.

b. Closeout Submittals: Submit the following:

1) Warranty documents specified herein.

2) Operations and maintenance documentation from Life Floor®.

C. PRE-INSTALLATION LIFE FLOOR® SAFETY SURFACING PROJECT MEETING

1. Provide in accordance with Section 13 1110 AQUATIC GENERAL

2. At least 35 days before starting the concrete substrate (which will be in direct contact with the Life Floor® safety surfacing system), the contractor must conduct a pre-installation conference on-site or via video call to review the proposed mix designs, the substrate's CSP and Steel Trowel textures, the storage of the Life Floor® materials, and discuss the required methods and procedures to achieve the reinforced Concrete substrate.

D. QUALIFIED PERSONNEL

1. Manufacturer: A company specializing in manufacturing the products specified, with a minimum of ten years of documented experience

E. MATERIALS AND REGULATIONS

1. Use of materials and equipment:

a. Use only approved materials and equipment.

b. The manufacturer's maintenance and installation instructions (with warranty documents).

c. Affirm that materials and equipment are not damaged or impaired by on-site storage from delivery until installation.

1.9 Delivery, Storage, and Handling

A. GENERAL:

1. Comply with the Division 1 Product Requirement Section.

B. DELIVERY:

1. Deliver materials in Life Floor®'s original, unopened, undamaged containers with identification labels intact.

C. STORAGE AND PROTECTION:

1. Store all tile materials and adhesive securely and protected from exposure to harmful environmental conditions and at a minimum temperature of 60° F (15° C) and a maximum temperature of 90° F (32° C).

1.10 Project/Site Conditions

A. ENVIRONMENTAL REQUIREMENTS:

1. Provide and install in strict accordance with the Life Floor® safety surfacing system's published information, recommendations, and requirements. Perform installation when the ambient temperature is between 60°F (15°C) minimum and 90°F (32°C) recommended maximum. Contact Life Floor® for installations outside of listed range.

2. Do not install during rain events.

1.11 Warranty

A. PROJECT WARRANTY:

1. Provide in accordance with the conditions of the contract for project warranty provisions.

B. LIFE FLOOR®'S MANUFACTURER'S WARRANTY:

1. Submit, for owner's acceptance, Life Floor®'s standard warranty document executed by an authorized company official.

2. Manufacturer's warranty is in addition to, and not a limitation of, other rights the owner may have under contract documents.

C. FOR NON-SUBMERGED APPLICATIONS:

1. Provide the sloped substrate drainage, which is critical to the longevity of the Life Floor® safety surfacing system.

2. Critical:

a. Inadequate drainage will cause premature breakdown of the system in affected areas and void the warranty.

3. A minimum substrate must slope toward deck drains or to the "well-drained edge of deck landscape" at a minimum substrate deck slope of 2% with a maximum substrate deck slope of 4%.

D. FOR UNDERWATER SUBMERGED APPLICATIONS:

1. Proper water filtration turnover and water chemistry must be in accordance with local health department guidelines, recommendations, and requirements are required in addition to the chemistry requirements found below in the Life Floor® warranty.

E. EXPRESS LIMITED WARRANTY

1. Life Floor® warrants all 7/8" (22 mm) and 3/8" (10 mm) thick Life Floor® tiles to be free of defects in workmanship or materials for a term of five (5) years from the date of delivery of the products (the "Warranty Period").

2. Life Floor® warrants all 3/16" (5 mm) thick Life Floor® tile orders for a term of two (2) years from the date of delivery of the products (the "Warranty Period").

3. Life Floor® requires Certified Installers to warrant all installation services they provide to be free of defects in workmanship and adhesion for a term of at least one (1) year from the date of completion of the installation of the products (the "Warranty Period").

a. If an installation warranty occurs during the Warranty Period, it will be the responsibility of the Certified Installer to repair or replace the tiles.

b. Life Floor® does not warrant installation services.

4. Limitations to the warranty period include areas of extreme traffic and extreme chemical exposure.

a. Extreme traffic is defined by areas with annual traffic of 250,000 users or greater. Destruction by mechanical cleaners and/or pressure washers is not covered under warranty.

b. Extreme chemical exposure includes copper-based algaecide and is also defined as water chemistry used on the product with more than 28 days cumulative time in 365 days outside of the "ideal" set in ANSI/APSP/ICC-11 2019 Water Quality Standards.

c. Life Floor® warrants all products in areas of extreme traffic and extreme chemical exposure for a term of two (2) years from the date of delivery of the products when installed by a certified installation partner for a minimum of one (1) year from the date of delivery of the products.

5. Color variation is normal due to our proprietary manufacturing process.

6. The texture of the tiles is directional and, unless otherwise specified, is installed with a randomized texture direction.

a. This will result in the appearance of directional shading as the light source will reflect off the texture differently.

b. This and other color changes that do not affect functionality are not considered a manufacturing defect and are not covered by the warranty.

7. Prior to installation, all tiles must be inspected to ensure the colors do not deviate significantly (e.g., a Delta E (DE) of 2.0 or greater).

8. Life Floor® warrants overrun or discontinued products for a period up to one (1) year. If overruns are included on an installation with standard product, everything defaults to the five (5) year warranty.

a. The end-user/owner/purchaser must notify Life Floor® in writing within thirty (30) days of the discovery of a defect causing the products to be non-compliant with this express warranty.

b. Any such notice must be received during the Warranty Period in order to be valid.

9. When Life Floor®, after testing or performing an on-site audit which may include, but is not limited to evaluating 1) chemical logs 2) chemical records 3) maintenance practices, demonstrates that there is a defect causing the materials and products to be non-compliant with this express warranty during the Warranty Period, Life Floor®'s sole responsibility under this express warranty shall be either to repair or replace, at Life Floor®'s option and expense, any such defective product.

a. The Life Floor® express warranty herein set forth is expressly conditioned upon the proper maintenance, care, and use of the products in accordance with the manufacturer's information, instructions, recommendations, and requirements.

b. Improper maintenance, care, and/or use of the products will invalidate the warranty, including failure to follow the written Life Floor® recommended cleaning process.

10. Provide in accordance with the Life Floor® Owner's Manual for further limitations on use.

1.12 Provide Extra Materials for Attic Stock

A. LIFE FLOOR® TILES:

1. Provide the following spare and extra Life Floor® tiles must be provided as attic stock.:

a. For each color and geometric shape, the following attic stock must be provided to the owner:

1) For each color and geometric shape, and minimum of: 3% of total tiles delivered/installed

2) For each color and geometric shape, and maximum of: 10% of total tiles delivered/installed

3) For additional attic stock requested beyond the above standard range, the request must be submitted to Life Floor® at time of order placement to ensure adequate production.

PART 2: PRODUCTS

2.1 Life Floor® Safety Surfacing System

A. EVA-PE COPOLYMER TILE WET AREA LIFE FLOOR®

1. Safety surfacing system, including the following:

a. Life Floor®:

1) Material: Life Floor® is a factory-molded surface composed of EVAtrax™, an ethyl vinyl acetate copolymer.

2) The specifier, with collaboration from Life Floor®, must determine the specified Life Floor® products based on the type of attraction to best select the required tile(s) thickness.

a) Depending on ASTM F1292 requirements for critical fall height 6' (1.83 m), select tile thickness from the optional increased thicknesses 1'-1/4" (38 cm).

b) Specify project requirements below and coordinate with the specifier's contract documents.

3) Shape Thickness and Weight:

a) Square:

i. 3/16" (5 mm): 0.7 lb (0.32 kg)

ii. 3/8" (10 mm): 1.18 lb (0.54 kg)

iii. 7/8" (22 mm): 2.94 lb (1.33 kg)

b) Triangle:

i. 3/16" (5 mm): 0.34 lb (0.15 kg)

ii. 3/8" (10 mm): 0.57 lb (0.26 kg)

iii. 7/8" (22 mm): 1.40 lb (0.64 kg)

c) Rectangle:

i. 3/16" (5 mm): 0.34 lb (0.15 kg)

ii. 3/8" (10 mm): 0.62 lb (0.28 kg)

iii. 7/8" (22 mm): 1.52 lb (0.69 kg)

d) Hexagon:

i. 3/16” (5 mm): 0.42 lb (0.19 kg)

ii. 3/8” (10 mm): 0.7 lb (0.32 kg)

iii. 7/8” (22 mm): 1.72 lb (0.78 kg)

e) Plank:

i. 3/16” (5 mm): 0.35 lb (0.16 kg)

ii. 3/8” (10 mm): 0.63 lb (0.29 kg)

iii. 7/8” (22 mm): 1.53 lb (0.69 kg)

f) Transition Strip: 0.22 lb (0.10 kg)

4) Color:

a) Life Floor® Patterns: [Slate] [Ripple]

b) Life Floor® Colors: [Aqua] [Aviator] [Blossom] [Bluebird] [Boulevard] [Breeze] [Evergreen] [Flamingo] [Foghorn] [Gobi] [Goldfish] [Heron] [Hibiscus] [Iceberg] [Iris] [Ivory] [Kestrel] [Lilypad] [Limelight] [Lobster] [Mango] [Mojave] [Ocean] [Olive] [Onyx] [Pistachio] [Platypus] [Pomegranate] [Porcelain] [River Rock] [Sandbar] [Sandstone] [Seafoam] [Sepia] [Submariner] [Sunshine] [Terra Cotta] [Tiger] [Tiki] [Turquoise]

B. CERTIFIED SAFETY SURFACE MUST BE NSF/ANSI/CAN 50-26 LISTED

1. An NSF/ANSI/CAN Standard 50-26 approval and listing are required.

2. Material: EVA-PE copolymer tile wet area surfacing system is a factory-molded surface composed of EVAtrax™, an ethyl vinyl acetate copolymer.

3. Note that the type of attraction determines the required tile thickness.

a. Depending on ASTM F1292 requirements for critical fall height 6’, select tile thickness from the optional thicknesses 1 ¼”.

b. Provide in accordance with the drawings for the specified thickness.

1) Weight:

a) 3/8-inch standard = 2 pounds [0.9kg]

b) 7/8 inch = 4.4 pounds [2kg]

c. Color and Patterns: Provide in accordance with the contract documents.

C. BASIS OF DESIGN:

1. Life Floor, 2010 E Hennepin Ave, Building 8, Suite 206, Minneapolis, MN 55413 United States, Phone: (612) 567-2813. E-mail: solutions@lifefloor.com; Website: www.lifefloor.com.

2.2 Product Substitutions

A. SUBSTITUTIONS:

1. No substitutions are permitted.

PART 3: EXECUTION

3.1 Manufacturer's Installation Requirements

A. MANUFACTURER'S INSTRUCTIONS, RECOMMENDATIONS, AND REQUIREMENTS.

1. Provide compliance with all manufacturer's instructions, recommendations, and requirements.

3.2 Examination

A. SITE VERIFICATION OF CONDITIONS:

1. Verify that substrate conditions are suitable for the installation of the EVA-PE copolymer wet area surfacing system.

2. Proper concrete substrate drainage is critical to the longevity of the Life Floor® safety surfacing system. Inadequate drainage will likely cause premature breakdown of the system in affected areas and void the warranty.

3. Do not proceed with installation until unsuitable conditions are corrected.

B. ACCEPTABLE VARIANCE:

1. EVA-PE copolymer wet surfacing system tiles have an acceptable variance.

a. Acceptable variance for thickness in tiles is plus or minus .020" (0.5 mm).

b. Acceptable variance in length is +/- 0.0625" (1.59 mm).

c. Tiles may expand or contract due to differences between installation versus current ambient temperatures. Expansion and contraction rates are 1/32" per 10° F (0.8 mm per 12° C). An approximate maximum is a gap of 1/8" (3 mm) at the temperature difference extreme of installation temperatures versus operational temperatures.

2. Dimensional variances are measured at 70° F (21° C) because the tiles naturally contract and expand with extreme temperatures. If tiles are found to be outside variance, contact the Manufacturer directly.

3.3 Site Preparation

A. INSTALLATION OF SUBSTRATE:

1. The substrate must be an approved reinforced concrete material with the specified slopes, dry, structurally sound, and dimensionally specified stable substrate Concrete Surface Profile (CSP) texture, which is a steel trowel finish similar to the ICRI's CSP-1 installation and finishing.

a. Caution:

1) Substrate surface variations will be telegraphed through to the Life Floor® surface.

2) Sloped drainage is mission-critical to the longevity of the Life Floor® safety surfacing system. Sub-standard drainage may cause premature breakdown of the Life Floor® system in affected areas, voiding the Life Floor® manufacturer's warranty.

2. Approved substrates include: concrete, stainless steel, aluminum, plastic, properly engineered HDPE, ceramic tile, fiberglass, resin, and most wood (caveat: verify species and grade).

a. Exception: Unapproved substrates include: sand, asphalt, grass, drywall, gravel, pavers, and brick. Confirm type of metal with Life Floor® prior to specification.

3. Concrete substrate, not intended for permanent water submersion, must conform to ACI 318 standards, be dry, fully cured (28 days), and have a minimum compressive strength greater than 3,000 psi for residential installations.

a. Exceptions:

1) Concrete substrate, that is specifically intended for permanent water submersion, must conform to ACI 350 standards, be dry, fully cured (28 days), and have a minimum compressive strength greater than 4,000 psi for commercial installations.

2) Submerged concrete substrate must be coated with a cementitious waterproofing, in accordance with:

a) Section 13 1113 SWIMMING POOLS (CONCRETE), or

b) Section 13 1116 INTERACTIVE WATER FEATURES

3) Inform Life Floor® and specifier to gain written approval for any substrate that is not listed below prior to specification.

B. PREPARATION OF CONCRETE SUBSTRATE

1. General

a. Any discrepancies between these specifications and the Life Floor® manufacturer's instructions must be immediately brought to specifier's or engineer's attention for written resolution.

b. Provide in accordance with these specifications for field quality control requirements.

c. Cut and trim plumbing pipes entering the basin(s) flush with walls and floor surfaces (allowing for the thickness of the new finishes' execution).

d. Remove the internal blanking disk or pressure plugs after the construction of the basin, but before the interior finish work is installed.

1) Before removing the blanking disc or pressure plugs, verify that the specified pressure test was in place in accordance with these specifications' requirements.

e. Water-flush plumbing pipes enter the basin(s) with chlorinated water before acid-washing the pool(s). Remove chlorinated water before proceeding.

f. Repair all “weeping” or lesion areas within the pool basin before applying Life Floor®.

g. Water “weepers” or voids around penetrations in the basin structure or wet deck must be sealed with authorized hydraulic, non-shrink cement for at least 7 days before cleaning and acid-washing the substrate or wet deck structure.

h. Before applying the cementitious waterproofing and after a minimum of 28-day curing: dewater, clean, acid-wash, pH-neutralize, thoroughly water rinse, perform required water jetting of the entire IWF or decking’s substrate surfaces, and ensure compliance with the Life Floor® manufacturers’ instructions and these specifications.

1) Thoroughly high-pressure water jetting the IWFs or decking surfaces using a Turbo-Tip (or similar) nozzle with a minimum water spray of 5,000 psi [34.48 mPa]. Provide in accordance with the section below for specific Concrete Surface Profile (CSP) requirements.

a) Provide in accordance with ICRI Guideline #310.2R-2013 and include a slick trowel finish on the substrate, equivalent to the CSP-1 smooth texture.

i. Wash the entire basin interior with a mixture of 25 percent muriatic acid and 75 percent water.

1) Afterward, using a mixture of sodium bicarbonate mixed with potable water creates a mild base solution that reacts with the presence of acidic pH (muriatic acid, a form of hydrochloric acid) to neutralize the concrete substrate surfaces by hand brushing to remove acid residues, foreign matter, and related debris.

2) Finally, the application of the sodium bicarbonate (baking soda) and water solution, by generously drenching/soaking with potable water onto the concrete substrate, while mechanically scraping/scrubbing the concrete substrate as needed to prepare the substrate surfaces for Life Floor®.

2. IWF & Deck Life Floor® Safety Surface System Finishes:

a. Follow and observe the tile manufacturer’s instructions, recommendations, requirements, and specifier’s or engineer's contract documents.

b. Surfaces must be adequately prepared and suitable for installation in accordance with the Life Floor® manufacturer’s guidelines. In addition, all of the substrate’s floor and deck slopes must be verified and adjusted as required before providing the Life Floor® manufacturer’s guidelines and their related adhesives.

3. Life Floor® manufacturer’s instructions, recommendations, and requirements must be followed without exception and specifically include the following:

a. Since all concrete containing Xypex Admix forms a relatively smooth surface, and the resulting crystalline formation fills the concrete pores, which reduces the substrate’s structural concrete’s suction characteristics, it is mandatory to methodically and thoroughly perform high-pressure water jetting and then provide a suitable bonding and waterproofing cementitious coating for proper bonding of Life Floor® adhesive for the Life Floor® systems.

1) Thoroughly utilize and employ high-pressure water jetting on the IWFs surfaces using a Turbo-Tip (or similar) nozzle with a minimum water spray of 5,000 psi [34.48 mPa].

a) Provide in accordance with the Life Floor® manufacturer's instructions, recommendations, and requirements, and the specifier's contract documents within the section below for specific Concrete Surface Profile (CSP) requirements.

b) The contractor must achieve a Concrete Surface Profile (CSP) of CSP 1 required for the Life Floor® materials and products, such as BaseCrete waterproofing, and then required adhesives used to install the Life Floor® materials and products.

c) Provide in accordance with ICRI Guideline #310.2R-2013.

2) Scrub basin surfaces with the neutralizing agent to verify that acid residues are removed.

3) The substrate's BaseCrete Installer (hired and paid by the contractor) must review each crack repair and validate its condition before commencing installation. The installer (hired and paid by the contractor) must review each crack repair and validate its condition before commencing work on the final substrate preparations of each IWF and the decking designated for the Life Floor® installation.

a) The contractor must contact the specifier and the Life Floor® manufacturer with related questions and guidance before proceeding.

b. Confirm, verify, and coordinate with the Life Floor® Certified Installer and respective Life Floor® manufacturers' representatives that there are no bonding and material conflicts or physical incompatibility between using the specified waterproofing and the Life Floor® system's adhesion.

c. Visually check and verify the IWF and the applicable decking to determine the substrate's adequacy, surfaces, and CSP-1 steel trowel finish in a manner that leaves the surfaces porous enough and smooth enough to ensure that the Life Floor® can achieve a good mechanical bond to the substrate.

1) When voids or dimensional surface irregularities are discovered, or any areas are found that require more than 0.375-inch [10 mm] of such areas must be filled with multiple coats of the manufacturer-approved scratch-coat, preceded by manufacturer-approved surface treatment(s), acid washing, and mandatory, secondary-neutralization as specified by the finishes-manufacturer.

a) Employ and follow the Lifer Floor® manufacturer's applied thickness and installation requirements in a manner that leaves the surfaces smooth and textured sufficiently to ensure that the Life Floor® can achieve a good mechanical bond to the smooth, slope concrete substrate.

iv. Critical: The BaseCrete waterproofing type material must be specifically approved by the Life Floor® manufacturer without exception.

b) After the application of BaseCrete, the contractor must re-verify that the Concrete Surface Profile (CSP) of CSP 1 with a steel trowel substrate finish, and a maximum of CSP 1 exists.

d. Basis of Design for Waterproof BaseCrete Flexible Waterproof system by BaseCrete Technologies, LLC, 6148 Clark Center Ave., Sarasota, Florida 34238; 941-312-5142; www.BaseCreteusa.com.

1) After the application of BaseCrete, the contractor must re-verify that the Concrete Surface Profile (CSP) of CSP 1 exists.

4. The concrete substrate must be free of any substance or condition that may reduce or prevent the adhesive bond to the substrate. This includes, but is not limited to, concrete sealers, curing agents, dirt, wax, tar, paint, and loose toppings. When the substrate surface contains these substances, they must be mechanically removed. The use of solvents (with the exception of acetone), adhesive removers, or acid etching is not allowed.

a. Life Floor® tiles should only be bonded to approved surfaces.

1) Provide in accordance with the Life Floor® manufacturer's appropriate adhesive guidelines.

b. Measure and report the pH of any concrete slab before installing Life Floor®. The pH of the slab must be within the suggested range of the adhesive (contact adhesive manufacturer for exact range). If the pH is not within the suggested range, do not install the Life Floor® until it complies with the manufacturer's adhesive requirements.

1) Failure to comply with these standards will likely result in an unsatisfactory bond, which is a contractor deficiency and error, causing a potential complete removal and a new re-installation, after corrections are implemented, at the contractor's expense.

5. Concrete surface prep: Remove protrusions, bumps, and ridges by grinding or chipping. Repair, fill & level cracks, holes, depressions, rough or chipped areas of substrate. Water penetrating the concrete will cause the tiles to peel from the substrate and create bubbles in the flooring voiding the warranty.

C. NEW CONCRETE SUBSTRATES REQUIRED FINISH/TEXTURE

1. Provide the substrate and its Concrete Surface Profile (CSP) in accordance with the Life Floor® manufacturer's instructions, recommendations, and requirements, and comply with the following:

a. Where a troweled finish is specified, finish the surface first with power floats, where applicable; then with power trowels, and finally with hand trowels.

b. A power trowel shall do the first troweling after power floating and shall produce a smooth surface which is relatively free from defects, but which may still contain some trowel marks.

c. Additional troweling shall be done when a ringing sound is produced as the trowel is moved over the surface.

1) A steel troweled BaseCrete finish, equivalent to a CSP-1 finish, must be provided. The surface shall be thoroughly consolidated by the hand troweling operations.

d. The finished surface shall be free from any trowel marks, uniform in texture and appearance, and must be provided to the required manufacturer's tolerances.

D. CONCRETE SUBSTRATE MUST BE SLOPED

1. Provide a minimum of 2% slope to a maximum of 4% slope in accordance with the contract documents, towards the deck drains to allow for code requirements and the specifier's specified drainage in the contract documents.

2. Provide in accordance with the local building code and the contract documents for sloping requirements for the project's application.

E. RECESSING SLABS

1. When providing and accommodating the 3/8" tile depth, the contractor must provide a 1/4" recess for concrete and vertical obstructions in order to eliminate the need for ADA-compliant transition strips.

2. From the recessed concrete, provide a 1/4" raise for fixtures and drains so they will sit flush with the top of the Life Floor surface.

a. Providing these elevations will assist in avoiding raised drains/floor jets that require "in-field" adjustments by the contractor.

1) It is a mandatory contractor requirement to grind concrete down around each fitting or fixture to achieve the flush conditions around drains, fittings, or wet-play items and the Life Floor® materials as needed.

a) The contractor must achieve a smooth transition between Life Floor® tiles and deck drains, gutters, fittings, etc.

F. TOLERANCES

1. Planeness:

a. Critical: When a straight-edge tool (measuring in length 3 m or 9.84 ft, to the nearest foot) is placed on the substrate surface at any position, no part of the substrate surface shall be more than 1/8" (3 mm) below the straight-edge tool.

2. Smoothness:

a. Critical: When a straight-edge tool (measuring 150 mm or 6" long) is placed on the substrate surface at any position, no part of the surface shall be more than 1/32" (1 mm) below the straight-edge.

3.4 Installation

A. PROVIDE:

1. The contractor must subcontract only with a Life Floor® Certified Installer, which is mandatory for quality assurance and to secure the Life Floor® labor warranty that is available through said Certified Installer and available only when a Certified Life Floor® Installer is used for the installation.

2. Life Floor® Certified Installers are required to provide a minimum of one (1) year labor warranty.

3. An example of the contractor's labor warranty deficiency is when Life Floor® tiles release or become unbonded from the substrate post-installation.

B. Critical: the contractor's labor warranty for installation is not covered by Life Floor®'s five (5) year material warranty.

1. A list of current Certified Installers can be found on Life Floor®'s website at www.lifefloor.com/installation.

3.5 Testing, Starting, and Commissioning of Systems

A. GENERAL

1. Provide in accordance with:

a. Section 13 1110 AQUATIC GENERAL.

b. Section 13 1113 SWIMMING POOLS (CONCRETE)

c. Section 13 1116 INTERACTIVE WATER FEATURES

d. Section 13 1155 LIFE FLOOR® SAFETY SURFACING SYSTEMS.

2. Do not fill the WET DECK PLAY AND THE IWF BASIN FLOOR until the structural curing times and 28-day strengths of the basins and the items listed below have been achieved. These filling procedures apply to:

a. IWF structural basin.

b. IWF Reservoir and Surge Tanks.

c. Life Floor® Tile adhesive and grouting products.

d. Contraction and expansion joint assemblies, fillers, and materials.

e. Similar products.

3. The IWF's and reservoir tanks filling, start-up, and water chemistry implementation must follow the book's written procedures in "POOL SURFACES - PROBLEMS AND SOLUTIONS," 7th Edition by Techlines, Inc. and Randy Dukes.

B. CLEAN-UP AND PROTECTION

a. After Section 13 1155 has been completed, clean up work areas and remove equipment, excess materials, and debris.

b. Protect pool(s) from damage until the substantial completion date.

c. Provide all extra Life Floor® tiles to the owner.

d. Remove and replace equipment, finishes, and materials chipped, cracked, abraded, improperly adhered, otherwise damaged, or deemed unacceptable by the engineer or architect.

END OF SECTION

NSF International

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RECOGNIZES

Lifefloor

Minneapolis, MN

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Theresa Bellish

May 30, 2019
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