

## PART 1: GENERAL

### 1.1 SUMMARY

#### 1.1.1 This section includes the following:

1.1.1.A NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System defined generically as general concrete preparation and application of an epoxy primer (BondTite 1101) and epoxy lining (LiquaTile 1172).

#### 1.1.2 Related sections and documents include the following:

1.1.2.A Cast-in-Place Concrete, section 03xxxx of the specifications

1.1.2.B Concrete Curing, section 03xxxx of the specifications

1.1.2.C Plan view of area(s) on Page(s) #### of the drawings

1.1.2.D Finish Schedule on Page(s) #### of the drawings

### 1.2 SUBMITTALS

1.2.1 **List of Materials:** Submit a list of materials to be used in concrete repair and lining installation for each lining system. Beside each material, indicate the material's intended use and amount estimated for the project.

1.2.2 **Lining System Product Data:** Submit manufacturer's data sheets for all system components of each lining system specified.

1.2.3 **Repair Materials Product Data:** Submit the manufacturer's data sheets for all materials to be used for concrete repair.

1.2.4 **SDS (formerly MSDS):** Submit manufacturer's Safety Data Sheets for each material used.

1.2.5 **Color Charts:** Submit manufacturer's color chart(s) for each lining system.

1.2.6 **Samples:** Provide three (3) 6"x6" samples of each lining system of the color requested by the owner or owner's representative.

1.2.7 **Maintenance Data:** Submit manufacturer's cleaning and maintenance instructions.

1.2.8 **Installation Contractor Competence:** Submit evidence indicating installation contractor's ability and experience installing each lining system.

1.2.9 **Tentative Installation Schedule:** Submit a project schedule indicating work to be completed and products to be installed on a daily basis. Format should breakout Day 1, Day 2, etc. Schedule should indicate 'Out of Service' and 'Return to Service' time and day.

### 1.3 QUALITY ASSURANCE

1.3.1 The manufacturer of the lining system(s) shall have a minimum of 10 years of experience in production, sales, and technical support of specified lining system(s) and related materials.

1.3.2 The installation contractor shall have 5 years of experience successfully applying fluid-applied lining systems similar in material, design, and extent to those indicated in this specification.

### **1.3 QUALITY ASSURANCE (Continued)**

- 1.3.3** A pre-installation conference shall be held between installation contractor, owner, and owner's representatives for review and clarification of the following: submitted Tentative Installation Schedule, quality control procedures, jobsite environment requirements during and after installation, material storage, and protection of work after installation. The jobsite shall be open for inspection during this meeting and any jobsite specific concerns addressed during this walk-through.
- 1.3.4** The installer shall keep a log of daily activities, milestones, general observations, pictures, environmental conditions, coverage rates, materials used, etc. A copy of this log shall be made available during the project and presented to the owner or owner's representative upon completion of project.
- 1.3.5** The owner or owner's representative may request a mock-up at their expense. This mock-up may serve as a standard of performance.

### **1.4 DELIVERY, STORAGE, AND HANDLING**

- 1.4.1** Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name, batch number, and directions for storage and mixing with other components.
- 1.4.2** SDS's (MSDS) for all stored materials shall be kept with the material.
- 1.4.3** Consult manufacturer's product data for specific storage requirements. Generally, do not store materials in extreme temperature conditions, under direct sunlight, or in wet or damp areas.

### **1.5 PROJECT CONDITIONS**

#### **1.5.1 Site Requirements**

- 1.5.1.A** Comply with manufacturer's product data for specific environmental condition requirements for proper installation. Generally, critical requirements include, but are not limited to, air and surface temperature, dew point during installation and cure, sunlight exposure, and surface moisture.
- 1.5.1.B** Work area shall have adequate ventilation. Avoid excessive air movement at concrete surface.
- 1.5.1.C** Avoid soot or moisture producing heat sources.
- 1.5.1.D** Finished lighting or simulated finished lighting should be available during installation.
- 1.5.1.E** Close work areas to traffic during installation and for the time required for cure as indicated on manufacturer's product data.

#### **1.5.2 Concrete Condition**

##### **1.5.2.A New Concrete**

- 1.5.2.A.1** New concrete shall be wet cured in accordance with ACI-308.
- 1.5.2.A.2** New concrete shall have a light steel trowel finish. Hard trowel or broom finish is not required and not recommended.
- 1.5.2.A.3** New concrete surfaces on or below grade shall have a vapor barrier.
- 1.5.2.A.4** New concrete shall be tested for moisture vapor transmission. Comply with moisture vapor transmission requirements in manufacturer's product data.

## **1.5 PROJECT CONDITIONS (Continued)**

### **1.5.2 Concrete Condition (Continued)**

#### **1.5.2.B Existing Concrete**

**1.5.2.B.1** Existing concrete's surface shall be evaluated to determine its suitability to receive a fluid-applied lining system.

**1.5.2.B.2** Existing concrete shall be tested for moisture vapor transmission. Comply with moisture vapor transmission requirements in manufacturer's product data.

**1.5.2.B.3** Existing concrete's structural integrity shall be evaluated to determine its suitability to receive a fluid-applied lining system.

## **1.6 SAFETY**

**1.6.1** Non-critical personnel shall be restricted from immediate area of installation.

**1.6.2** Consult equipment manufacturer's literature for personal protective equipment required and proper operating procedures.

**1.6.3** Consult material manufacturer's product data sheets and SDS's for proper procedures and personal protective equipment required.

**1.6.4** Comply with all facility/jobsite, local, state, and federal safety regulations.

## **1.7 WARRANTY**

**1.7.1** Applicator shall warranty installed products against faulty workmanship for a period of one (1) year from substantial completion of the project.

**1.7.2** Manufacturer shall guarantee to the buyer that materials are free from defects and comply with published specifications.

## **PART 2: PRODUCTS**

### **2.1 NSF/ANSI STANDARD 61 & 372 AQUATIC ENVIRONMENT LINING SYSTEM**

**2.1.1** Manufacturer: Wolverine Coatings Corporation, Roebuck, SC  
[www.wolverinecoatings.com](http://www.wolverinecoatings.com), (864) 342-9292.

#### **2.1.2 Concrete Repair Materials**

**2.1.2.A** Small Surface Repair: TrowelEase 1181 Epoxy Block Filler

**2.1.2.B** Semi-Rigid Joint and Crack Filler (Horizontal): IntegraFlex 1921

**2.1.2.C** Semi-Rigid Joint and Crack Filler (Vertical): IntegraFlex 1922

#### **2.1.3 System Materials**

**2.1.3.A** Primer: BondTite 1101

**2.1.3.B** Topcoat(s): LiquaTile 1172

## PART 3: EXECUTION

### 3.1 SUMMARY

- 3.1.1** The intent of this specification is to provide directions and guidance to insure proper and complete installation of the fluid-applied lining system(s) as specified. It is also the intent of this specification to provide basic information on surface preparation and application of the products indicated. It is not intended to be an exhaustive guide to include all work and material necessary for completion of the project. An incidental item of material, labor, or detail required for proper execution or completion of the work and omitted from this specification, but obviously required by governing codes, local regulations, trade practices, operational functions, and good workmanship shall be provided as part of the contract work, even though not specifically detailed or mentioned in this section. Consult the manufacturer for more detailed preparation and application procedures.
- 3.1.2** It is assumed all persons installing Lining systems such as these have necessary background, technical knowledge and equipment to perform said tasks in a satisfactory manner and in accordance with the latest editions of SSPC "Good Painting Practices," and/or NACE "Recommended Practices" (NACE Standard RP0892-92).
- 3.1.3** Communicate to the owner or owner's representative conditions which may materially affect the quality and/or performance of the fluid-applied lining system before and during installation. Proceeding without notification will be considered acceptance of responsibility by the installer for performance under the terms of this specification.

### 3.2 EXECUTION – NSF/ANSI STANDARD 61 & 372 AQUATIC ENVIRONMENT LINING SYSTEM

#### 3.2.1 Examination – NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System

**3.2.1.A Pre-Installation Conference:** Examine substrates, areas, and conditions for compliance with installation requirements for the fluid-applied lining system as indicated in Section 1.3 Quality Assurance and Section 1.5 Site Conditions. Formulate a procedure for repairing any questionable areas.

**3.2.1.B Pre-Existing Conditions:** The following are known conditions requiring repair specifically included in the scope of work.

**3.2.1.B.1.1** Bug holes

**3.2.1.B.1.2** Form marks

**3.2.1.B.1.3** Spalls (Pock marks, divots, gouges, surface cracks)

**3.2.1.B.1.4** Penetrations

**3.2.1.C Hidden Conditions:** Conditions not stated here or uncovered during the installation process shall be brought to the attention of owner or owner's representative. Extent of remedy of the condition shall be the owner's prerogative.

#### 3.2.2 Preparation – NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System

##### 3.2.2.A General

**3.2.2.A.1** Consult Section 1.5.2. Concrete Condition for basic requirements for the concrete.

**3.2.2.A.2** New and existing concrete shall be free of oil, grease, curing compounds, loose particles, and all contaminants which could inhibit bonding and/or lining performance.

**3.2.2.A.3** Concrete shall be prepared as indicated in the manufacturer's literature. In general, the concrete should be structurally sound, clean, porous, and textured to the satisfaction of the installation contractor for proper bonding and material performance.

## **3.2 EXECUTION – NSF/ANSI STANDARD 61 & 372 AQUATIC ENVIRONMENT LINING SYSTEM (Continued)**

### **3.2.2 Preparation – NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System (Continued)**

#### **3.2.2.A General (Continued)**

**3.2.2.A.4** Concrete surfaces shall be prepared through high pressure water blasting, abrasive blasting, and/or diamond grinding to achieve minimum surface profiles:

| System Thickness  | Surface Profile |
|-------------------|-----------------|
| 10-30 Mil System  | CSP 3-5         |
| 40-60 Mil System  | CSP 4-5         |
| 80-125 Mil System | CSP5-6          |

### **3.2.3 Application – NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System**

#### **3.2.3.A Repair Materials**

##### **3.2.3.A.1 Non-moving Joints**

**3.2.3.A.1.1** Fill non-moving joints with IntegraFlex 1921 or 1922 epoxy joint filler.

##### **3.2.3.A.2 Moving Joints**

**3.2.3.A.2.1** Normal Joints – Apply IntegraFlex 1921 or 1922 epoxy joint filler.

**3.2.3.A.2.2** Expansion/Isolation Joints – Install closed-cell backer rod to a depth half the joint width. Apply IntegraFlex 1921 or 1922 epoxy joint filler.

**3.2.3.A.2.3** Deteriorated Horizontal Joints – Cut straight edges ½" deep on either side of the deteriorated joint. Remove concrete between cuts to ½" depth. Resurface joints with TrowelEase 1160 or 1162 polymer mortar surfacer. Re-cut expansion joint ensuring the joint is cut completely through. Apply IntegraFlex 1921 or 1922 epoxy joint filler. Mortar may require an additional coat to seal surface. Contact Wolverine Coatings Corporation for recommendations to repair vertical joints.

##### **3.2.3.A.3 Cracks**

**3.2.3.A.3.1.** Widen cracks with a 'V' wheel on a side grinder to minimum 3 times the width of the crack. Apply IntegraFlex 1921 or 1922 joint filler.

##### **3.2.3.A.4 Small Surface Imperfections**

**3.2.3.A.4.1** Repair with TrowelEase 1181 epoxy block filler.

##### **3.2.3.A.5 Large Surface Imperfections**

**3.2.3.A.5.1** Consult Wolverine Coatings Corporation Technical Service.

##### **3.2.3.A.6 Chimes, Penetrations, and Equipment Attachments**

**3.2.3.A.6.1** All penetrations should be adequately filled, sealed, smoothed, and contoured with IntegraFlex 1921 or IntegraFlex 1922 to promote monolithic coating application of LiquaTile 1172.

**3.2.3.A.6.2** Ease all sharp angles at walls, penetrations, equipment, etc. with IntegraFlex 1922 (2" Inside Radius Cove Trowel is preferred).

## **3.2 EXECUTION – NSF/ANSI STANDARD 61 & 372 AQUATIC ENVIRONMENT LINING SYSTEM (Continued)**

### **3.2.3 Application – NSF/ANSI Standard 61 & 372 Aquatic Environment Lining System (Continued)**

#### **3.2.3.B Primer**

**3.2.3.B.1** Evenly apply 8-12 mils of BondTite 1101 (133-200 square feet per gallon) to produce neat finish with well-defined boundaries and straight edges. Extremely porous surfaces may require additional Primer (or coats) to reduce outgassing of subsequent coats.

#### **3.2.3.C Topcoat**

**3.2.3.C.1** Evenly apply two (2) 9 mil coats of LiquaTile 1172 (178 square feet per gallon) per coat to produce neat finish with well-defined boundaries and straight edges. Follow Good Painting Practices to ensure no contamination between coats.

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#### **SAFETY**

For your safety, all required personal protection equipment should be used when operating machinery or handling chemicals. Concrete dust is a source of silica particles and other hazardous materials that can cause silicosis and other illnesses. Proper safety equipment and methods are the responsibility of the installation company, general contractor, and/or facility owner.

#### **WARRANTY**

Wolverine Coatings Corporation warrants its products to be free from defects in material and workmanship. Wolverine Coatings Corporation's sole obligation and Buyer's exclusive remedy in connection with the products shall be limited, at Wolverine Coatings option, to either replacement of products not conforming to this Warranty or credit to the Buyer's account in the invoiced amount of the nonconforming products. Any claim under this warranty must be made by the Buyer to Wolverine Coatings in writing within five (5) days of Buyer's discovery of the claimed defect, but in no event later than the expiration of the applicable shelf life, or one year from the ship date, whichever is earlier. Buyer's failure to notify Wolverine Coatings of such nonconformance as required herein shall bar Buyer from recovery under this warranty.

Wolverine Coatings makes no other warranties about the product. No other warranties, whether expressed, implied, or statutory, such as warranties of merchantability or fitness for a particular purpose, shall apply.

Any recommendation or suggestion relating to the use of the products made by Wolverine Coatings, whether in its technical literature, or in response to specific inquiry or otherwise, is based on data believed to be reliable; however, the products and information are intended for use by Buyers having requisite skill and know-how in the industry, and therefore it is for the Buyer to satisfy itself of the suitability of the products for its own particular use and it shall be deemed that Buyer has done so, at its sole discretion and risk. Variation in environment, changes in procedure of use, or extrapolation of data may cause unsatisfactory results.

#### **LIMITATION OF LIABILITY**

Wolverine Coatings Corporation's liability on any claims based upon Wolverine Coatings Corporation's negligence or strict liability, for any loss or damage arising out of, connected with, or resulting from the use of the products, shall in no case exceed the purchase price allocable to the products or parts thereof which give rise to the claim. In no event shall Wolverine Coatings Corporation be liable for consequential or incidental damages.

#### **LITERATURE REVISION - Rev. 190701**

Published literature is subject to change without notice. Wolverine Coatings Corporation is constantly engaged in the testing of existing formulations, the development of new innovative technologies, and the evaluation of the latest practices. The latest literature should always be consulted at [www.wolverinecoatings.com](http://www.wolverinecoatings.com).



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