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| Version | Date | Description of Revisions |
| 1 | August 30, 2006 | Approved final document. |
| 2 | November 13, 2009 | Modified ‘Related Section’ |
| 3 | June 6, 2012 | Addition of References and Replacement Parts sections to this page. |
| 4 | July 6, 2012 | Change tab settings in page 1-6. |
| 5 | April 7, 2016 | Phase 1 Review (AV) |
| 6 | November 30, 2016 | Updated based on Legal review (eDOCs # 6396341) AAM |
| 7 | February 14, 2017 | Removed named products and replaced them with performance specifications and standards. (CPD) (AV) |
| 8 | March 1, 2017 | Updated for reference to NSF 372. (AV) |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GENERAL

## Related Sections

### [Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

### Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

### Contractor is responsible for coordination of the Work.

### This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the section for the specific project it may be deleted.]

### [List Sections specifying installation of products supplied but not installed under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Execution requirements for ...[item]... specified under this Section.

### [List Sections specifying products installed but not supplied under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Product requirements for ...[item]... for installation under this Section.

### [List Sections specifying related requirements.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: [Optional short phrase indicating relationship].

#### Section 01750 – Disinfection and Testing of Water Retaining Structures and Process Piping

#### Section 03300 – Cast in Place Concrete

#### Section 03345 – Concrete Curing and Finishing

#### Section 07920 - Joint Sealers

#### Section 09900 – Painting and Protective Coatings

## References

### Comply with the latest edition of the following statutes codes and standards and all amendments thereto.

#### American Society for Testing and Materials International, (ASTM).

##### ASTM C109/C109M-16a, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens).

##### ASTM C321-00 (2012), Standard Test Method for Bond Strength of Chemical-Resistant Mortars.

##### ASTM C348-14, Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars.

##### ASTM C596-09e1, Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement.

#### NSF International (NSF)

##### NSF/ANSI Standard 61: Drinking Water System Components – Health Effects (for potable water applications).

##### NSF 372-2011: Drinking Water System Components – Lead Content (for potable water applications).

## Definitions

### Definition: Dry space means interior areas not used for containing water.

## Submittals

### Samples:

#### Submit two samples of chemical waterproofing (grey) on 10 mm cement board 215 mm x 280 mm in size.

### Manufacturer's instructions:

#### Submit three copies of waterproofing material manufacturer's preparation and application instructions.

### Manufacturer's Field Reports:

#### Engage material manufacturer's representative for inspection service before application to examine suitability of substrate.

#### Ensure during and after application that specified products are being used, proper number of coats are being applied and finishing procedures are being implemented.

#### Submit three copies of inspection reports by the manufacturer's representative.

## Quality Assurance

### Qualifications:

#### Membership in good standing of the [Sealant and Waterproofing Association of Ontario] and approved by membrane manufacturer.

### The Work of this Section shall be performed by an applicator having not less than five years proven experience on work of similar size and scope, and who is otherwise acceptable to the Consultant.

### Field sample:

#### Prepare sample of chemical waterproofing 1,000 mm² in location designated by the Consultant.

#### Arrange for the Consultant’s review of colour and texture before commencing the work of this Section.

#### Retain the reviewed sample as standard for judging completed work.

### Submit certification that chemical waterproofing Products are suitable for use in contact with potable water. Provide proof of compliance with NSF 61 and NSF 372 to the Consultant as applicable for potable water structures and components only.

### Pre-Installation Meeting:

#### Arrange a Site visit prior to commencement of waterproofing to review with the installer, manufacturer's technical representative and Consultant, the installation procedures to be adopted, conditions under which Work will be carried out, and inspect surfaces requiring waterproofing.

#### Review weather conditions under which work will be done, substrate conditions, preparation of existing surfaces, applicable procedures and protection of completed items of Work.

## Delivery, Storage and Handling

### Deliver materials in manufacturer's unopened containers, fully identified with brand, type, grade, class and all other qualifying information. Provide Material Safety Data Sheets for each product.

### Store and protect materials in a dry enclosed area.

## Site Conditions

### Verify that concrete surfaces and ambient temperatures are not lower than 5 degrees Celsius for a period of 48 hours, before, during and after installation of chemical waterproofing.

### Do not apply materials to frozen or frost-filled surfaces.

### Exercise caution when temperatures exceed 90 deg F (32 deg C). It may be necessary to apply waterproofing during times when the sun is not at its strongest (i.e. early morning, evening or night).

## Sequencing and Scheduling

### Apply waterproofing after leakage tests of structures have been completed.

## Warranty

### Submit a two year warranty for the Work of this Section against defects in workmanship and materials. This warranty shall commence upon Total Performance of the Work.

## Measurement for Payment

*[Choose one of the following payment language provisions that best suits the individual project.*

*If this Section is not specifically referenced by an item in the Bid Form, please use the following language:*

### The work of this Section will not be measured separately for payment. All costs associated with the work of this Section shall be included in the Contract Price.

*OR If this Section is specifically referenced in the Bid Form, use the following language and identify the relevant item in the Bid Form:*

### All costs associated with the work of this Section shall be included in the price(s) for Item No(s). \_\_\_ in the Bid Form.

*If the work of this Section is to be measured and paid for by several different methods, please amend the standard wording given above to reflect the different methods of measurement and payment.*]

# PRODUCTS

## Materials

### Waterproofing system:

#### *[Consultant to provide performance specifications and standards]*

### Waterproofing:

#### Shall have a 7-day compressive strengthen of 25 MPa.

#### *[EN 1504-3:2005, Consultant to replace with suitable North American/Canadian Standard]*

#### Water permeability must be less than [6.6 x 10-12 K, cm/sec]

#### Water vapor transmission must be between [0.68 ng·s−1·m−2·Pa−1]

#### The bond strength shall be a minimum of [0.8 MPa]

### Mortar:

#### Shall have a 7-day compressive strength of 45 MPa.

#### The bond strength shall be a minimum of [2.0 MPa]

#### *[EN 1504-3:2005, Consultant to replace with suitable North American/Canadian Standard]*

### Plugging severe leaks:

#### *[Consultant to provide performance specifications and standards]*

### Water: Potable – NSF 61 certified, NSF 372 certified.

## Mixing

### Mix materials in proportions recommended by manufacturer.

### Slurry consistency: Use separate containers for measuring dry materials by volume. Add water to materials and mix thoroughly.

### Ratio of water to powder: As recommended by waterproofing material manufacturer. Prepare only as much slurry mixture as can be applied within [20] [30] minutes. Stir mixture frequently. Do not add more water when mixture starts to thicken.

### Mortar consistency: Measure waterproofing and mortar material and mix thoroughly. Add water to mixture and work to medium stiff consistency. Prepare only as much mortar as can be applied within [10] [15] minutes. Use water to powder ratio recommended by waterproofing manufacturer.

# EXECUTION

## Examination

### Quality of concrete substrate: Clean, free of structural defects, with wood-float type finish and sharply formed expansion joints.

### Verify the following substrate conditions before application of capillary/crystalline waterproofing:

#### That substrate condition is satisfactory and in accordance with manufacturer's instructions.

#### That concrete surfaces have open pores and wood float finish on horizontal surfaces.

#### That concrete surfaces are free of voids, spalled areas, loose aggregate and sharp protrusions, and with no coarse aggregate visible.

#### That curing compounds or surface hardeners incompatible with waterproofing have not been used on concrete.

## Preparation

### Protect adjacent surfaces not designated to receive waterproofing.

### Prepare concrete surfaces to achieve open capillary (fine sandpaper) texture by one of following methods:

#### Acid etching - washing with solution of muriatic acid and rinsing with water.

#### Wet sandblasting.

#### High pressure water blasting.

#### Shot blasting.

#### Contractor shall be responsible for handling all waste products from the cleaning process in an environmentally sound manner and as approved by the Consultant.

#### Contractor shall develop and comply with all health and safety procedures related to such items of Work in confined spaces and other areas as applicable.

### Thoroughly clean surfaces prior to application using an industrial type vacuum cleaner and rinse with water.

### Rout out honeycombing, cold joints, faulty construction joints and cracks greater than 0.25 mm to a minimum of 20 mm to 25 mm to the satisfaction of the Consultant. Rout out joints to 38 x 19 mm profile.

#### Clean reglets and recesses at construction and expansion joints.

#### Apply slurry coating of waterproofing at the rate of 1.08 kg/m².

#### Apply mortar to form a level surface with adjacent surface where sealant is required rake back mortar for depth equal to 1/2 width of joint.

#### [On existing surfaces provide slurry levelling coat.]

### Dampen concrete structures to receive slurry application prior to commencement of waterproofing.

### Rinse surfaces to be waterproofed several times so that the concrete is thoroughly saturated. Surfaces shall be moist but not wet when waterproofing system is applied. Remove any surface water on horizontal surfaces.

## Application - General

### Comply with the manufacturer's requirements regarding surface and ambient temperatures before, during and after application.

### Apply waterproofing system in accordance with the manufacturer's printed instructions and in manner to ensure treated surfaces are waterproof.

### Do not apply waterproofing to frozen or frosted surfaces or during snow or rain.

### Fill form tie holes with waterproofing mortar after application of slurry coat of waterproofing.

### Fill construction joint reglets with waterproofing mortar or slurry coat.

### Grout in inserts and other penetrations with waterproofing mortar.

### [Continue waterproofing at junction of existing and new Work 600 mm over existing.]

### Provide air circulation for setting of waterproofing application in enclosed areas.

### Moisture cure treated surfaces by fog spraying for minimum period of two Days after initial set.

### For surfaces to receive coating neutralize treated surfaces with a 15-20 percent solution of muriatic acid. Rinse surfaces with water.

### Rinse treated surfaces with a chlorine and water solution. *[Consultant to provide details on concentration of chlorine solution and whether disinfection procedures as described in Section 01750 – Disinfection and Testing of Water Retaining Structures and Process Piping is required or not]*

### Coordinate backfilling of treated surfaces to occur within 24 hours after application of waterproofing.

### Repair waterproofing on surfaces damaged during construction.

## Application - Vertical Concrete Surfaces

### Install coves at horizontal and vertical junctions and on inside corners with waterproofing mortar.

### Apply two slurry coats of waterproofing with stiff masonry brush or with approved spray equipment within one hour, total build-up 1.3 kg/m² or as recommended by manufacturer for specific conditions.

#### While first coat is still green, trowel apply a 3:1 sand/cement mortar with a rubber float over first coat. Make surface smooth and dense, free from trowel marks. Apply second coat.

## Application - Horizontal Concrete Surfaces

### Dry sprinkle waterproofing on concrete surfaces prior to initial set at the rate of 1.3 kg/m². Power trowel or wood float surface to uniform coverage and specified finish.

### Apply slurry coat of waterproofing to concrete surfaces at the rate of 1.3 kg/m². Apply second slurry coat of waterproofing to green first coat prior to initial set at the rate of 1.3 kg/m².

## Schedule of Application

### Interior walls and slabs between dry spaces and spaces containing water [and liquids]: Apply waterproofing on wet side. Extend 1,000 mm horizontally and vertically beyond extent of dry spaces.

### Interior walls and slabs between spaces containing non-potable water and potable water: Apply waterproofing on non-potable water side. Extend 1,000 mm horizontally and vertically beyond extent of space with potable water.

### In addition to items 3.6.1 and 3.6.2, apply waterproofing in all additional locations as shown on Contract Drawings and Details.

## Protection

### Protect freshly treated surfaces from rain for a minimum of 24 hours.

### Do not expose treated surfaces to liquid media for minimum period of one week.

**END OF SECTION**