
SECTION 071614

ACRYLIC MODIFIED (FLEXIBLE) CEMENTITIOUS WATERPROOFING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Furnish all labor, materials, tools and equipment as necessary to perform Acrylic Latex Modified Cement Waterproofing on new and existing structures as shown on drawings and as specified in this section.
- B. Related Sections:
 - 1. See section 03300 - Cast-in-Place Concrete
 - 2. See section

1.2 REFERENCES

- A. ASTM C 109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
- B. ASTM C 348 - Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.
- C. ASTM C 321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
- D. ASTM E 96 - Standard Test Method for Water Vapor Transmission of Materials.
- E. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; U.S. Army Corps of Engineers

1.3 SUBMITTALS

- A. General:

Submit manufacturer's certification that proposed materials, details and systems as indicated and specified fully comply with manufacturer's details and specifications. If any portion of Contract Documents do not conform to manufacturer's standard recommendations, submit notification of portions of design that are at variance with manufacturer's specifications.
- B. Product Data:
 - 1. Submit manufacturer's literature and installation instructions for each product.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Company specializing in marketing or manufacturing products specified in this Section with minimum 10 years documented experience.
- B. Installer Qualifications:
 - 1. Acceptable to manufacturer with documented experience on at least 5 projects of similar nature in past 5 years and/or training provided by the product manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store in a dry area between 40°F (5°C) and 90°F (32°C). Handle and protect from freezing and direct sun light in accordance with manufacturer's instructions.
- B. 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.
- C. Take necessary precautions to keep products clean, dry and free of damage.

1.6 SYSTEM REQUIREMENTS

- A. Coordinate waterproofing installation with other trades.
- B. Provide materials and accessories in timely manner so as not to delay Work.

1.7 PROJECT CONDITIONS

- A. Maintain surfaces to be waterproofed and surrounding air temperature at not less than 40°F (5°C). Apply only when temperatures are steady or rising.
- B. Do not apply materials to frozen or frost-filled surfaces.
- C. Exercise caution when temperatures exceed 90°F (32°C).

1.8 WARRANTY

- A. Comply with provisions of Section 01700.
- B. Manufacturer's Warranty: Manufacturer shall provide standard product warranty executed by authorized company official. Term of warranty shall be 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Approved Manufacturers: AQUAFIN, Inc. 505 Blue Ball Road, #160. Elkton, MD, 21921. Phone (866) 278-2346, or (410) 392-2300, Fax (410) 392-2324; e-mail info@aquafin.net.
- B. Requests for substitutions will be considered only if submitted to the architect/engineer in writing and must include substantiation of product performance, 10 days prior to the original bid date.

2.2 MATERIALS

- A. Waterproofing Material - Acrylic Modified Cement Waterproofing: Cementitious, two-component, acrylic emulsion based, highly flexible, crack bridging waterproof membrane barrier against positive water pressure, with the following characteristics:

1. Product:	AQUAFIN-2K/M
2. Color:	Gray <i>or</i> <i>as per color chart</i>
3. Dry Component-A:	Precise blend of cementitious material
4. Liquid Component-B:	White acrylic emulsion and admixtures
5. Working Time:	Approximately 45 minutes
6. Shore A Hardness: (ASTM D-2240)	~ 85
7. VOC	0 g/L
8. Flammability: (ASTM E-108)	Class A – Spread of Flame - Passed
9. Bond/Adhesion: (ASTM C-321)	215 psi (1.5 MPa) @ 28 days
10. Tensile Strength: (ASTM C-412)	600 psi (4.1 MPa) @ 28 days @ 80 mils
11. Elongation: (%)	70 (gray); 40 (white) at 68°F (20°C)

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| 12. Static crack bridging capacity: | 1/16-inch (gray) (1.5 mm) |
| 13. Vapor Permeability: (ASTM E-96) | 1.4 perms at 3/32" (2.4 mm) thickness |
| 14. Waterproofing:(CRD C 48-92) | Withstands 200 psi = 460 feet (14 bar = 140 m) hydrostatic pressure (positive side) at 3/32" (2.4 mm) thickness. |

2.3 ACCESSORY MATERIALS

- A. Patching Compound: Pre-blended, cementitious structural waterproofing and repair mortar recommended or approved by waterproofing manufacturer for patching honeycombs, installing coves, etc.
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| 1. Product: | AQUAFIN MORTAR-LN |
| 2. Color: | Gray |
| 3. Aggregate: | Powder |
| 4. Compressive Strength: (ASTM C-109) | 6000 psi (41.3 MPa) @ 28 days |
| 5. Flexural Strength: (ASTM C-348) | 1160 psi (8.0 MPa) @ 28 days |

Specifier, please choose applicable items (B., C., D., E., F., G. or none).

- B. Crack and joint sealing tape: Elastomeric, tear resistant, breathable waterproofing tape.
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| 1. Product: | AQUAFIN JOINT SEALING TAPE-2000 |
| 2. Thickness: | approx. 14 mils (0.35 mm) |
| 3. Width: | 4.75" (120 mm) or 8" (200 mm) |
| 4. Elongation: | 60% |
| 5. Tear Strength: | 725 psi (5.0 MPa) |
- C. Expansion joint sealing tape: Elastomeric, tear resistant, breathable waterproofing tape.
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| 1. Product: | AQUAFIN JOINT SEALING TAPE-2000-S |
| 2. Thickness: | approx. 16 mils (0.4 mm) |
| 3. Width: | 4.75" (120 mm) or 8" (200 mm) |
| 4. Elongation: | 600% |
| 5. Tear resistance: | 2,175 psi (15.0 MPa) |
- D. Sealing Gasket for PVC pipe and other penetrations: Elastomeric, tear resistant, breathable waterproofing sealing gasket.
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| 1. Product: | AQUAFIN-GASKET 18/18 |
| 2. Thickness: | approx. 1/64" (0.4 mm) |
| 3. Color: | White |
| 4. Size: | approx. 18" x 18" (45 cm x 45 cm) |
- E. One-component Waterproofing Material for negative side water pressure in combination with two-component Waterproofing Material with the following characteristics:
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| 1. Product: | AQUAFIN-1K |
| 2. Color: | Gray |
| 3. Aggregate: | Powder |
| 4. Compressive Strength: (ASTM C-109) | 3300 psi (22.8 MPa) @ 28 days |
| 5. Flexural Strength: (ASTM C-348) | 725 psi (5 MPa) @ 28 days |
| 6. Bond/Adhesion: (ASTM C-321) | 220 psi (1.5 MPa) @ 28 days |
| 7. Vapor Permeability: (US Perms) | 8 (ASTM E-96) (control = 10) |
- F. Protective Clear Sealer: V.O.C. compliant, ready-to-use 100% acrylic liquid applied over two-component Waterproofing Material, protecting it from environmental influences.
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| 1. Product: | AQUAFIN-CS/250 |
| 2. Color: | Milky |
| 3. Aggregate: | Liquid |

4. Solids Content:	25%
5. VOC Content:	70 g/L
6. Bond/Adhesion:	Cohesive film failure
7. Abrasion Resistance: (ASTM D-658-44)	225 to 350 g/mil on glass

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine all construction substrates and conditions under which waterproofing materials are to be installed. Do not proceed with the waterproofing application until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Substrate preparation:
 1. Remove oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings by high-pressure water blasting (>3000 psi), wet or dry sand blasting, or other mechanical means to produce surfaces suitable for application of waterproofing.
 2. Follow manufacturer's instructions to clean and prepare surfaces and seal cracks and joints.
 3. Voids in concrete substrates: 1/4-inch (6 mm) diameter and larger, pre-treat with patching compound. Less than 1/4-inch (6 mm) diameter can be filled with a scratch coat of one-component waterproofing material.
- C. Rinse surfaces to be waterproofed (excluding drywall or similar) with clean water to saturated surface dry (SSD) condition, with no standing water on horizontal surfaces.

3.3 INSTALLATION

- A. Mix two-component waterproofing material in proportions recommended by manufacturer.

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Specifier: choose applicable articles depending on type of project

- B. Cavity fill, honeycombs & formtie holes:
 - a. Fill voids at cleaned and prepared faulty construction joints, cracks, formtie holes, etc. with patching compound in mortar consistency flush to surface.
 - b. Laminate patching compound in 2 to 3 layers as per manufacturer's instructions for larger spalled or honeycombed areas.
- C. Taping horizontal and vertical construction joints and cracks (positive side waterproofing only):

Install joint and crack sealing tape, embedded in waterproofing material as follows:

 1. Apply two-component waterproofing material by brush in a six to seven inch (15 – 18 cm) wide strip coat centered over all joints, cracks, penetrations and changes of plane to be taped.
 2. While this coat is still wet, unroll joint sealing tape into the coating and apply a coat of two-component waterproofing material over the tape, smoothing out wrinkles and fish mouths.
- D. Sealing around PVC pipe penetrations:
 1. Abrade (sand) PVC pipes and degrease with isopropanol or acetone.
 2. Place sealing gasket over pipe and mark size of penetration, then cut out necessary opening (penetration).
 2. Apply one prime coat two-component waterproofing material over concrete and exposed PVC pipe.

3. While this coat is still wet, immediately place and firmly press sealing gasket into the coating and cover it with a top coat of two-component waterproofing material, after prime coat has set-up and sufficiently hardened.

E. Positive Side Waterproofing:

Apply two-component waterproofing material in quantities and number of coats as per manufacturer's specifications and recommendations:

1. Apply at 60 mils or 1/16" (1.5 mm) total thickness for all standard applications (i.e. foot traffic, balconies (non-tiled), etc.) and waterproofing up to 13 ft (4.0 m) water head.
2. Apply at 80 - 90 mils (2.0 - 2.4 mm) total thickness for applications exposed to hydrostatic pressure (>13 ft (>4.0 m) water head), under tiles, plaza decks, etc.

F. Surface Finish:

Specifier: specify desired surface finish.

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1. Surface finish shall be standard (regular) two-component waterproofing material finish.
2. Surface finish shall be "fine" by applying a top coating of 10 – 20 mils special fine powder mix of two-component waterproofing material.
3. Surface finish shall be "smooth" by applying a top coating of 10 – 20 mils special smooth powder mix of two-component waterproofing material.

G. Alternative I: Negative Side Waterproofing:

Follow manufacturer's specifications and instructions for below grade structures (i.e. water and waste water tanks, swimming pools and gutters, basement and retaining walls) where infiltration from ground water is expected:

1. Apply 1st (base) coat one-component waterproofing material at 60 mils (1.6 mm) thickness
2. After 24 hrs waiting period, apply 2nd (top) coat two-component waterproofing material at 60 mils (1.6 mils) as soon as base coat has reached initial set.

H. Alternative II: Horizontal surfaces with protective clear acrylic sealer:

- a. 1 coat application: 200 – 300 sq.ft./gal (4.9 – 7.4 m²/L.
- b. 2 coat application: 350 – 450 sq.ft./gal (8.6 – 11.0 m²/L.

H. Application considerations:

1. Apply, using stainless steel trowel, tampico brush, short nap roller, or appropriate compressed-air spray equipment.
2. Apply only when surface and ambient temperatures are 40°F (5°C) and rising. At high temperatures (i.e. 86°F (30°C) and above) protect application from direct sun and wind to prevent premature surface drying and shrinkage cracks. Apply material in two coats minimum.
3. Application thickness should not exceed 1/8-inch (120 mils (3 mm)).
4. If needed, such as in zones posed to movement or cracking, plaza decks, etc., the waterproofing material can be additionally reinforced with a reinforcing mesh (supplied by waterproofing manufacturer), embedded between two waterproofing layers.
5. Do not bridge cracks greater than 1/16-inch (1.5 mm).
6. Bridge dynamic cracks or joints with elastomeric joint sealing tape, as supplied by waterproofing manufacturer.
7. Do not overcoat waterproofing material with solvent-based materials.

8. Where a uniform color is desired (i.e. balconies, walkways, etc.), application of an elastomeric paint or water based acrylic stain is recommended.
9. Prime and protect alkali sensitive metals such as copper, aluminum, galvanized or zinc treated metal first with a primer, before over-coating with waterproofing material. Follow manufacturer's recommendations for primer material.

3.4 CURING

- A. Follow manufacturer's general instructions for curing and hardening of waterproofing material. Do not use water for curing. Waterproofing material is self-curing.
- B. Protect surfaces from rain, frost and premature dehydration.

3.5 TESTING OF WATER INCLUDING STRUCTURES

- A. Following application and completion of related work, as required, but well prior to completion of entire project, fill tanks to capacity and allow to stand not less than 3 days. Fill larger structures at a uniform rate not greater than 6.5 feet (2 m) in 24 hours. The temperature of the fill water shall be plus or minus 10 degrees F of the ambient air and/or the tank structure at the time of filling. Extreme caution is urged if the temperature is greater than 10 degree F. Should leakage occur after this period, drain tanks to perform repairs. Notify Owner prior to draining tanks.

3.6 ACCEPTANCE

- A. Remove left over materials and any foreign material resulting from the work from the site.
- B. Clean adjacent surfaces and materials.

END OF SECTION

Project: (03/10)