

SECTION 071418
FLUID-APPLIED WATERPROOFING DECK SYSTEM
Silcor® 900HA

PART 1 — GENERAL

1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

1.02 SUMMARY

- A. The work of this section includes, but is not limited to, the following:

1. Fluid applied waterproofing system
2. Prefabricated drainage composite
3. Protection board
4. Insulation

- B. System Description

The fluid applied membrane shall consist of the following:

Vertical Application: Vertical applications at parapet walls, upstands, etc. shall be coated with a minimum thickness of 80 mils applied in two 40 mil layers

Horizontal Application: Horizontal applications shall be coated with a minimum thickness of 80 mils applied in one 80 mil layer.

- C. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 033000 – Cast-In-Place Concrete
2. Section 042000 – Unit Masonry
3. Section 071100 – Dampproofing
4. Section 076000 – Flashing and Sheet Metal
5. Section 079200 – Joint Sealants
6. Section 079500 – Expansion Control
7. Section 334600 – Subdrainage

1.03 REFERENCE STANDARDS

- A. The following standards and publications are applicable to the extent referenced in the text. The most recent version of these standards is implied unless otherwise stated.

- B. American Society for Testing and Materials (ASTM)

C 836 Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course

- C 898 Standard Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane With Separate Wearing Course
- D 412 Standard Test Methods for Rubber Properties in Tension
- D 4541 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
- D 624 Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
- E 96 Standard Test Method for Vapor Transmission of Materials
- D 3767 Standard Practice for Rubber - Measurements of Dimensions
- D 2240 Standard Test Method for Rubber Property – Durometer Hardness

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, installation instructions, use limitations and recommendations.
- B. Shop drawings showing locations and extent of waterproofing including details for terminations and flashings, projections, penetrations, drains and treatment of substrate joints and cracks.
- C. Written documentation demonstrating installer's qualifications under the "Quality Assurance" article including reference projects of a similar scope.
- D. Samples: Submit representative samples of the following for approval:
 - 1. Fluid applied membrane
 - 2. Protection board (if applicable)
 - 3. Prefabricated drainage composite (if applicable)
 - 4. Insulation board (if applicable)
- E. Warranty: Submit a sample warranty identifying the terms and conditions stated in Section 1.7.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Waterproofing systems shall be manufactured and marketed by a firm with a minimum of 20 years' experience in the production and sales of waterproofing. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.
- B. Installer: The installer shall demonstrate qualifications to perform the work of this Section by submitting the following:
 - 1. Certification or written license from the Waterproofing Manufacturer that the Installer is a certified applicator.
 - 2. List of at least three (3) projects contracted within the past five (5) years of similar scope and complexity to this project.
 - 3. Installer must show evidence of adequate equipment and trained field personnel to successfully complete the project in a timely manner.
 - 4. Installer's credentials must be approved by both the Architect and the Waterproofing Materials Manufacturer.

- C. Materials: Fluid applied waterproofing material shall be two part 100% solids chemically crosslinked monolithic elastomer system free of bitumen. For each type of material required for the work of this section, provide primary materials that are the products of one manufacturer.
- D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of surface preparation, minimum curing period, installation procedures, special details and flashings, inspection, testing, protection and repair procedures.
- E. Inspection and Testing: All areas shall be tested by means of electronic testing or ponding to a minimum depth of 2 in. (50 mm) for a period of 24 hours and inspected an individual/firm approved by the waterproofing systems manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in the original, unopened containers with seals unbroken, labeled with the manufacturer's name, product brand name and type, date of manufacture and directions for storage and use.
- B. Store and handle materials in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
 - 1. Do not double-stack pallets of waterproofing on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
 - 2. Store drainage composite or protection board flat and off the ground. Provide cover on top and all sides.
 - 3. Protect waterproofing materials from freezing.
- B. Sequence deliveries to avoid delays, but minimize on-site storage.

1.07 PROJECT CONDITIONS

- A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.
- B. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive membrane waterproofing.
- C. Do not allow waste products (i.e. petroleum, grease, oil, solvents, vegetable or mineral oil, animal fat, acids, etc.) to come into contact with the waterproofing membrane. Any exposure to foreign materials or chemical discharges must be presented to the Membrane Manufacturer to determine the impact on the waterproofing assembly performance.
- D. Concrete Deck Surface condition:
 - 1. Ensure no excessive deflection or movement of the deck or other structural problems.
 - 2. The deck shall provide for support of the maximum anticipated dead and environmental loads and for expansion and contraction suitable for the roof system structure.
 - 3. All projections, penetrations and openings in the deck should be completed before the waterproofing application begins.
 - 4. Joints in pre-cast/pre-stressed concrete decks are to be grouted so that the top surface is level and smooth before membrane application.

- E. General contractor shall assure adequate protection and ventilation during the application of the Waterproofing assembly.

1.08 WARRANTY

- A. Fluid-Applied Waterproofing Deck System: Upon completion of the fluid-applied waterproofing deck system, the contractor must submit a written warranty for the waterproofing materials signed by the Waterproofing Manufacturer.

- B. Warranties available from the manufacturer:

Material Warranties:
 Manufacturer's standard 5-year material warranty.
 Manufacturer's standard 10-year material warranty

PART 2 - PRODUCTS

2.01 GENERAL

- A. All waterproofing materials shall be manufactured and supplied by:
 GCP Applied Technologies, 62 Whittemore Avenue, Cambridge, MA.

2.02 MATERIALS

- A. Fluid Applied Waterproofing Membranes: Silcor® 900HA fluid applied membranes by GCP Applied Technologies; a two part, fast and self-curing, 100% solids chemically crosslinked monolithic elastomer. Silcor® 900HA fluid applied membranes meet or exceed the performance requirements of ASTM C 836 and other ASTM standards as shown in the following table.
- B. Waterproofing Membrane Physical Properties:

PHYSICAL PROPERTIES FOR Silcor® 900HA FLUID APPLIED MEMBRANES:

Physical Properties Silcor 900HA	Typical Value	Test Method
Resistance to hydrostatic head over post formed crack head	>230 ft	ASTM D5385
Tensile strength	1450 psi	ASTM D412
Elongation	450%	ASTM D412
Tear strength	> 228 lb/in	ASTM D624 C
Adhesion to concrete	> 300 psi or concrete failure ¹	ASTM D4541
Shore Hardness	75 A	ASTM D2240
Low temperature crack bridging	Pass	ASTM C836
Abrasion resistance (Taber Wear Index)	186 mg ²	
Setting time ³	30 min. tack free; 2-3 hrs foot	Internal

trafficable

Footnote:

1. Tested on prepared, primed, and sand cast concrete.
2. H18/1000 cycles/1000g
3. At 73F

NOTE TO SPECIFIER: The following are product selection guidelines for Protection of the membrane and or Hydroduct Drainage Composites if required by the specifier

C. Protection Board:

1. Asphalt Hardboard - A premolded semi-rigid protection board consisting of bitumen, mineral core and reinforcement, (0.125 in.) (3 mm) thick hardboard on horizontal surfaces.
2. Prefabricated Drainage Composite (Edit to project requirements):

Hydroduct® 660 Drainage Composite by GCP Applied Technologies for horizontal surfaces.
Hydroduct 220 Drainage Composite by GCP Applied Technologies for all vertical surfaces.
Drainage composite shall be designed to promote positive drainage while serving as a protection course.

D. Insulation (Edit to project requirements): An extruded polystyrene rigid board insulation meeting the following requirements:

1. Minimum compressive strength, ASTM D1621, 40 or 60 psi (variance by product type).
2. Maximum water absorption by volume per ASTM C272, 0.1%
3. Insulation shall have an R-value of 5.0 F.ft².h/Btu/in. (0.88 K.m²/W) of thickness when teste at 75°F (23.9°C) mean temperature in accordance with ASTM C518.
4. Product shall be free of CFCs.

E. Coating and Surfacing:

1. Two-component aliphatic urethane based coating suitable for use to both bond and/or seal aggregate, as follows: Silcor® Top Coat 70.

PART 3 — EXECUTION

3.01 EXAMINATION

- A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 PREPARATION OF SUBSTRATES

- A. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt,

- loose stone and debris. Use repair materials and methods that are acceptable to manufacturer of the fluid applied waterproofing.
- B. Cast-In-Place Concrete Substrates:
 - 1. Poured in-place concrete must be monolithic, smooth, and free of unapproved curing compounds, form release agents and other surface contaminants.
 - 2. The surface must be cured for a minimum of 28-days and have an International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) of 2-5 with a moisture content of 5% or less.
 - 3. Fill form tie rod holes with concrete and finish flush with surrounding surface.
 - 3. Repair bugholes over 0.5 in. (13 mm) in length and 0.25 in. (6 mm) deep and finish flush with surrounding surface.
 - 4. Remove scaling to sound, unaffected concrete and repair exposed area.
 - 5. Grind irregular construction joints to suitable flush surface.
 - C. Pre-cast Concrete Decks: All pre-cast units shall be mechanically fixed to minimize the potential for differential movement and all joints shall be grouted.
 - D. Masonry Substrates: Apply waterproofing over concrete block and brick with smooth trowel-cut mortar joints or parge coat.
 - E. Substrate Cleaning:
 - A. Thoroughly sweep the substrate that is to receive the waterproofing membrane.
 - B. Substrate must also be blown using oil free air to remove any remaining loose debris.
 - C. A final check to determine if the substrate is sufficiently clean is to apply a test patch of the system and check its adhesion.

3.03 INSTALLATION

- A. Apply primer at rate recommended by manufacturer.
- B. Detailing: All details (including inside corners, outside corners, pipe penetrations, drains, cracks, construction joints, etc.) should be treated before application of the field of the membrane according to manufacturer's drawings and written application instructions.
- C. Vertical Application:
 - 1. Apply 2 coats at a minimum thickness of 40 mils (1.0 mm) over all vertical areas to be waterproofed. Perform wet film thickness tests as work progresses to confirm thickness.
- D. Horizontal Application:
 - 1. Apply at a minimum thickness of 80 mils (2.0 mm) over all horizontal areas to be waterproofed. Perform wet film thickness tests as work progresses to confirm thickness.

3.04 WATER TEST/LEAK DETECTION

- A. All areas of the deck must be water tested by means of electronic testing or ponding to a minimum depth of 2 in. (50 mm) for a period of 24-hours to confirm the integrity of the membrane.
- B. Allow the membrane to cure for a minimum period of 24 hours before starting water tests.

- C. Before flood testing, be sure the structure will withstand the dead load of the water.
- D. For well-sloped decks, segment the flood test to avoid deep water near drains.
- E. Mark any leaks and repair according to manufacturers repair procedures when the membrane is dry.

3.05 CLEANING AND PROTECTION

- A. Remove any masking materials after installation. Clean any stains on materials that would be exposed in the completed work.
- B. Install any protection, drainage and insulation courses according to the manufacturer's instructions.

3.06 JOB COMPLETION

- A. Contractor and a Representative of the Membrane Manufacturer shall inspect the waterproofing assembly and notify the Architect of any defects.
- B. Clean up all debris and equipment.

END OF SECTION

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

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