

HYDROGEL COMPOSITE GEL-FLEX WATERPROOFING SYSTEM

GUIDE SPECIFICATION

PART I GENERAL

1.01 SUMMARY

- A. This specification serves as a guideline and shall be adapted to suit the needs of each individual project by the architect. It is prepared in accordance with the CSI three-part section format and shall be included as a separate section under DIVISION 7 - Thermal and Moisture Protection. Improvements and other changes to the contents shall be made only with the written approval of the architect.

1.02 RELATED SECTIONS (Note to Specifier: Edit to project requirements)

- A. DIVISION 2 - Sitework [Section 02500/02870] - Paving/Site Furnishings
- B. DIVISION 3 - Concrete [Section 03300] - Roof Deck Surface/Substrate

The coordination of this section is necessary to facilitate the successful installation of the waterproofing membrane.

Cast in Place Concrete/Composite Deck

1. Strength/density:
 - minimum 2,500 psi (17,235 kPa) compressive strength.
 - minimum 115 pcf (1842 kg/m³) density
2. Finish:
 - Wood-float or wood-troweled equivalent finish. Steel troweled finish is not desirable.
3. Concrete Hydration (Cure):
 - a. Method of Cure: Water cure, wet coverings, paper sheets, plastic sheets or approved liquid curing compound (sodium silicate preferred).
 - b. Duration of Cure/Dry:
 - i. Structural Weight Concrete: recommend 14 days, minimum 7 days, prior to application of the membrane.
 - ii. Lightweight Structural Concrete: recommend 28 days, minimum 14 days, prior to application of membrane. Venting of the deck from the underside is recommended to facilitate drying.
 - iii. The above minimum cure/dry times are recommended based upon basic concrete fundamentals and experience. Depending on conditions (i.e., ambient temperature, humidity) the concrete may be dry enough to receive application of the membrane in less than the 7 day minimum recommendation. Consult Kingfield for specifics when less than the minimum is desired.
4. Form Release Agents: Contact Kingfield
5. Other substrates: Contact Kingfield

- C. DIVISION [] - Wood blocking and curbing
- D. DIVISION [] - Insulation
- E. DIVISION [] - Sheet metal flashing and counterflashing
- F. DIVISION [] - Caulking and sealants
- G. DIVISION [] - Plumbing specialties

1.03 REFERENCES

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

1.04 SYSTEM DESCRIPTION

- A. Furnish and install a completed vertical or horizontal waterproofing assembly including Hydrogel and related flashings, protection course, insulation (if required), drainage course (if required), and pavers (if required).

1.05 SUBMITTALS

- A. Submit Product Data for each type of waterproofing specified, including manufacturer's printed instructions for evaluating and preparing the substrate, technical data, and tested physical and performance properties.
- B. Project Data - Submit Shop Drawings showing locations and extent of waterproofing, including details for substrate joints and cracks, sheet flashing, penetrations, and other termination conditions.
- C. Samples – Submit representative samples of the following for approval:
 - 1. Waterproof Membrane Material.
 - 2. Protection Course Material.
 - 3. Prefabricated Drainage Mat *as required*.
 - 4. Insulation *as required*.
 - 5..Architectural paver *as required*.
- D. Installer Certificates – Submit certificates signed by manufacturer certifying that Installers comply with requirements under the "Quality Assurance" Article.

1.06 QUALITY ASSURANCE

- A. Refer to Section 1.03 SUBMITTALS. Include items A., B., C. & D.
- B. Installer Qualifications: Installer must be licensed, certified in writing and approved by membrane manufacturer Kingfield for the installation of the Hydrogel Waterproofing System.
- C. Membrane Manufacturer shall have available an in-house technical staff to assist the contractor, when necessary, in application of the products and final inspection of the assembly.
- D. Pre-Installation Conference(s): At least one pre-installation conference shall be held at the job site with the appropriate parties to discuss project conditions as they relate to the installation of the waterproofing system.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. All of the materials on site shall be a specified product.
- B. All components of the waterproofing system shall be provided by the same manufacturer.
- C. Deliver materials to site in manufacturer's original, unopened containers and packaging.
- D. Each product and component shall have name, size, manufacturing date, and manufacturer's name and location.
- E. Store materials in a clean area in accordance with manufacturer's instructions.
- F. Protect materials during handling and application to prevent damage or contamination.
- G. Discontinue application during rain and resume work after the area is acceptably dry and ready for application.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Product not intended for uses subject to abuse or permanent exposure to the elements.
- B. Ambient temperature shall be within manufacturer's specifications. (Greater than +0°F/- 18°C.)
- C. Product not intended for prolonged UV exposure. Subsequent topping materials must be applied within 30 days of application of the membrane.

1.09 WARRANTY

A. Various warranties are available differing in terms and conditions. Contact Kingfield for exact warranty terms and conditions to meet the specific project requirements.*

B. Warranties available from the manufacturer: ***(Edit to project requirements)****

1. Material Warranties; excludes labor.

Duration: 2-, 5-, 10-, 15-, 20- year

2. Performance Warranty; includes labor and material.

Duration: 5-, 10-, 15-, 20- year

****Contact Kingfield for exact warranty terms and conditions.***

PART 2 PRODUCTS

2.01 POLY-RUBBER GEL

A. Poly-Rubber Gel: Spray Applied Waterproofing shall be a single component, polymer modified, waterproofing system comprised of poly-rubber gel and ancillary products as manufactured by Kingfield Construction Products, (kingfieldcp.com). No substitutions permitted.

B. Poly-rubber gel waterproofing systems shall have the following performance properties:

- 1. Self-adhering and completely bonded to the entire surface of the substrate with no voids or discontinuity.

2. Resistant to chemical attack.
3. Not affected by wet/dry cycling.
4. Contains less than 1 per cent volatile organic compounds (VOC).
5. Non-toxic and non-flammable.
6. Monolithic.
7. Single component gel material.

C. The poly-rubber gel waterproofing system's components shall have the following physical properties:

Hydrogel:

PROPERTY	RESULTS	TEST	METHOD
Solids Content	99%	ASTM	D1353
Resistance to Decay	0% moisture permeation and weight change	ASTM	E-154-88
Hardness*	80	ASTM	C836-89
Puncture Resistance*	160 lbf	ASTM	D-4833
Flash Point	>228°C	ASTM	D56
Tensile Strength	190 ± 0.11 lbf	ASTM	D-412-98
Elongation%	394%	ASTM	D-412-98
Hydrostatic Pressure Resistance*	169 ± 3 lbs/in ²	ASTM	D-751
Adhesion to Concrete	Rating of 1 (Excellent)	ASTM	D-412-98
Crack Bridging Flexibility	No cracks	ASTM	C-836-89
Moisture Permeability	.000 perms	ASTM	E-96-80
Peel Resistance	1.01 lbf/in	ASTM	D1876-08

*Classification based on composite system with reinforced HDPE GFG20X sheet

2.02 HDPE SHEET

A. HDPE Sheet: 31 mil reinforced Protection Sheet/Vapor Retarder with geo-composite backing.

B. The poly-rubber gel waterproofing systems components shall have the following physical properties:

GFG20X Sheet:

PROPERTY	RESULTS	TEST METHOD
Peel Adhesion to Concrete	8 lbs /in.	ASTM D 903
Tensile Strength	136 lbf /in.	ASTM D 882
Elongation	MD 789.1 / TD 857.1	ASTM D 882
Vapor Barrier Classification	Class A	ASTM D 1745
Life Expectancy	Indefinite	ASTM E 154
Chemical Resistance	Unaffected	ASTM E 154
Radon Transmission Rate	0.062	ASTM D 1434
Water Vapor Permeation	0.007 Grain/Hr. Ft.2 in. Hg.	ASTM E 96
Dart Impact Strength	11.48 lbs.	ASTM D 1709

2.03 ACCESSORIES

A. Concrete Repair Materials: Materials approved by manufacturer.

B. Seaming Tape: Durobond, 35 mil elastomeric polymer adhesive seaming tape or suitable alternate approved by manufacturer.

C. Flashing and reinforcement: Duroflex, 60 mil thermoset, uncured neoprene rubber or suitable alternate approved by manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine all surfaces to receive the waterproofing assembly to verify it is acceptable and proper for the application of the membrane. Refer to Kingfield Application Guidelines manual.

1. Verify that concrete has cured and aged for minimum three days after pour or stripping of forms.
2. Verify that substrate is visibly dry and free of ponded water.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean, dust free, and dry substrate for waterproofing application.

B. Surfaces must be clean, relatively smooth and free of standing water.

C. Patch all holes and voids and smooth out any surface misalignments.

D. Remove and patch all concrete form ties.

E. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from substrate.

F. Mask adjoining surfaces not receiving waterproofing to prevent overspray affecting other construction.

3.03 APPLICATION HORIZONTAL AND VERTICAL

A. Detailing/Flashing

1. Prepare detailing and flashing in accordance with the manufacturer's standard guideline details.
2. Complete all detailing and flashing before installing the membrane over the field of the substrate.

B. Membrane Application

1. Apply the polymer rubber gel membrane at a rate to provide a continuous, monolithic coat of 80-90 mil minimum.

C. Protection Layer Application:

1. Embed GFG20X sheet into the membrane while the membrane is still warm.
2. Overlap adjoining sheet edges a minimum of 2" to ensure complete coverage.
3. Tape all seams with Durobond tape ensuring a continuously adhered seam.

4. The completed membrane/protection assembly must be protected from damage resultant from follow on trades and environmental exposure.

3.04 DRAINAGE COURSE / INSULATION / PAVER PLACEMENT

A. General

1. Contractor shall examine the deck area to be covered with subsequent topping materials in order to ensure that all deck areas have received the membrane, the membrane is free of damage, it is properly protected, and all flashing has been properly installed, before placing the insulation.
2. The drainage course (if required), insulation (if required), and other subsequent topping materials shall be installed as each section is completed.

B. Prefabricated Drainage Course Placement (if required)

1. Install drainage course on horizontal and vertical surfaces in accordance with the manufacturer's recommendations.
2. Layout and position drainage course and allow to lay flat. Cut and fit drainage course to perimeter and penetrations.
3. Bond all geotextile overlap edges to adjacent drainage course geotextile with an acceptable adhesive to insure geotextile integrity.
4. Place subsequent topping materials as soon as possible.

C. Insulation Placement (if required)

Loose lay (horizontal applications) in a staggered manner and tightly butt together all insulation boards. The maximum acceptable opening between insulation boards is 3/8" (9.5 mm). Insulation shall be installed within 3/4" (19 mm) of all projections, penetrations, etc. When multi-layer insulation applications are involved the bottom layer of insulation shall be the thickest layer and shall be a minimum of 2" thick (50.8 mm). All layers shall be installed unadhered to each other and all joints staggered in relation to underlying layers.

For vertical, multi-layer applications, second layer of insulation board shall be spot adhered to the protection layer with appropriate adhesive.

D. Architectural Finish Paver Placement (if required)

1. Install architectural finish pavers on tabs or pedestals in accordance with manufacturer's recommendations and architectural layout.

3.05 WATER TEST

A. If feasible, it is strongly recommended that the deck area or portions thereof be water tested by means of electronic testing or ponding water to a minimum depth of 2" (50.8 mm) for a period of 48 hours to check the integrity of the membrane installation.

B. VERIFY that the structure can support the dead load weight of a water test before testing.

C. If leaks should occur, the water must be drained completely and the membrane installation repaired.

3.06 JOB COMPLETION

A. Contractor and a representative of the membrane manufacturer shall inspect the waterproofing assembly and notify the contractor of any defects. All defects must be corrected.

B. Clean up all debris and equipment.

END OF SECTION