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SECTION 07141 – COLD FLUID-APPLIED WATERPROOFING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes but is not limited to:
 - 1. The installation of a reinforced (2-ply) cold fluid-applied rubber modified waterproofing with all the materials, labor and supervision necessary to provide a continuous below grade cold applied waterproofing system.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallaiton Conference: conduct conference at Project site.
 - 1. Review waterproofing requirements including, but not limited to, the following:
 - a. Surface preparation specified in other sections and as required by Manufacturer.
 - b. Minimum curing period.
 - c. Forecasted weather conditions.
 - d. Special details and sheet flashings.
 - e. Storage of materials.
 - f. Protection of installed waterproofing system.
 - g. Testing of waterproofing system.
 - h. Repairs

1.4 ACTION SUBMITTALS

- A. Product Data and Installation: For each type of product
 - 1. Include product data sheets, SDS, construction details, material descriptions, VOC content, and tested physical and performance properties of waterproofing.
 - 2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
 - 3. Include manufacturer's installation instructions for all products.



B. Shop Drawings:

1. Show locations and extent of waterproofing.
2. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, and other termination conditions.

C. Samples: For each product and accessory specified, including the following products:

1. Flashing sheet 8 by 8 inches (200 by 200 mm).
2. Membrane – reinforcing fabric, 8 by 8 inches (200 by 200 mm).
3. Protection course, 8 by 8 inches (200 by 200 mm).
4. Drainage panel, 4 by 4 inches (100 by 100 mm).
5. Insulation, 8 by 8 inches (200 by 200 mm).

1.5 INFORMATIONAL SUBMITTALS

A. Field quality-control reports by manufacturer.

B. Sample Warranties.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.7 FIELD CONDITIONS:

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer.

1. Do not apply waterproofing to wet substrates, substrates where standing water is present, or when temperatures are less than 0 degrees F.
2. Do not apply waterproofing in snow, rain, fog or mist, or when such weather conditions are imminent during application period.

B. Maintain adequate ventilation during application of waterproofing materials.

1.8 STORAGE OF MATERIALS

A. Shipping cartons of waterproofing material are to be stored horizontally, flat, never on end.

B. The shipping cartons are to be stored no more than five rows high on wood pallets or on a platform high enough to elevate the cartons off the ground.

C. The shipping cartons shall be kept in a cool, shaded area. Inside storage (building or trailer) is preferred.



- D. Rolls of waterproofing membrane materials are to be removed from their shipping cartons only when ready to use. Remnants (shorts) of rolls shall be returned to their cartons so that they can be used later.
- E. Store adhesive containers (pails and drums) on pallets off the ground away from construction activities.
- F. Store adhesive containers (pails and drums) away from any potential fire hazard. If adhesive containers (pails and drums) have been dented or stored outside longer than three (3) months, examine the pails to assure that a tight seal has been maintained. Dispose of any material with damage that has adversely affected the interior contents.
- G. Store all protection sheets off ground on pallets and covered with breathable canvas tarpaulins. Allow for air circulation beneath the canvas.
- H. Protection:
 - 1. For outside storage, cover rolls only with a light colored canvas tarpaulin.
 - 2. Never use polyethylene film or any other non-breathable cover material.
 - 3. For summer grade membrane rolls, use well-ventilated or air conditioned trailer with temperature range between 68 degrees F to 85 degrees F.



1.9 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace waterproofing membrane and accessories that fail in material or workmanship within specified warranty period. Removal and replacement of the overburden and insulation board is not covered in this warranty.

1. Warranty Period: XX years from date of Substantial completion.

B. Installer's Special Warranty: Specified form, signed by installer, covering Work of this Section for a warranty period of two (2) / five (5) years.

1. Warranty includes removal and reinstallation of the membrane, accessories, insulation and all overburden materials.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

B. Products: Subject to compliance with requirements, provide one of the following:

1. Single-Component, reinforced cold fluid applied rubber modified asphalt waterproofing:
 - i. Laureco Waterproofing Systems.

2.2 WATERPROOFING MATERIALS

A. Cold Fluid-Applied Waterproofing: Comply with ASTM C 836.

B. Primer: NA.



- C. Adhesive: Specially formulated Asphalt modified with compatible rubbers using long fibers and clean aliphatic solvent.
1. Compatible rubbers are combinations of Neoprene, Butyl and/or N.B.R.
 2. Solid Content 55% min.
 3. Holding power 150 lbs. plus per sq. ft. at 90 degree pull on gypsum deck.
 4. Meets or exceeds ASTM D-2823, Type 1 and Federal Specification SS-A-694D.
 5. Using ASTM Test Method D-1004-70, Tensile Strength and Adhesive shall be 1070 p.s.i. average; using Tear Die C, 77 lbs. per inch average of sheets and adhesive.
- D. Sheet Flashing and Reinforcing Sheet: 50-mil-(1.3-mm-) minimum, proprietary chloroprene rubber.
1. Specially formulated Asphalt modified with Chloroprene Rubber (Neoprene*) plus appropriate fillers, curing agents and plasticizer.
 2. Thickness of Laureco Sheet is 50 mils. plus or minus 5%.
 3. Tensile strength of Laureco Sheet = 75 lbf/in. Min. (ASTM D 146-90, section 13) and (ASTM E 154-99, section 9). Two Ply Laureco System > 180 lbf/in.
 4. Puncture resistance of Laureco Sheet = 215 lbs. (ASTM E 154-99, section 10).
 5. Two Ply Laureco System > 450 lbs.
 6. Ductility of Modified Asphalt for use on Laureco Sheet: (ASTM D-113-69) at 39.2°F. using 1cm. per min. pull-10% to 12.5% plus, at 75°F. using 5 cm. per min. pull = 100% to 125% plus.
 7. Softening point of modified asphalt used on Laureco Sheet: (ASTM D 36-70 using distilled water) = 160° degree F. min.
 8. Penetration of Modified Asphalt used on Laureco Sheet: (ASTM D 5-73) = 30 max. at 77°F using 3 oz. seamless metal container.
 9. Ductility of Sheet: 1.360 degree bend on 1" O.D. bar at 39.2°F. at 5cm. per min. flex. minimum. mesh or polyester fabric.
- E. Performance Criteria for Sheet and Adhesive:
1. Water Permeability-Inverted cup @ 75° degrees F. 25 day duration (ASTM. E96-95 Procedure BW) using Laureco Sheet and Laureco Adhesive in System form 0.05grams/hr./sq. ft.
 2. Weather test on Laureco Sheet and Laureco Adhesive in System form (ASTM Test Method D 529-73, Daily Cycle B) 25 days. Hardness range of 60 plus or minus 5 pt. variation of a range of 0-99 Shore A hardness and no further changes after 10 cycles- Materials stable with no cracking or crazing. Cycles continued for 25 days.
 3. Pull Test: Using 1" thick concrete slab and Laureco system (2 plies Sheet and Adhesive) pull at rate of 2 inches per minimum. Results = 26.39 lbs. plus p.s.i. or 3800 lbs. plus per minimum. (slabs all broke under pull test-1" thick were used to accommodate machine) See No. 7, Tensile Strength.
 4. Waterhead Test: Results incomplete as 210 foot limit of machine was reached at end of 28 days with no leakage. (Pictures available showing test set up which incorporated a construction joint).
 5. Mullen Burst Test: (Membrane Sheets and Adhesive) shall attain 160 p.s.i. minimum.



- F. Protection Course: Semi-rigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between 2 asphalt-saturated fibrous liners and nominal thickness 1/4 inch minimum

2.3 MOLDED-SHEET DRAINAGE PANELS

- A. Molded-Sheet Drainage Panel: Comply with Division 2 Section "Subdrainage."

PART 3 -EXECUTION

3.1 SURFACE PREPARATION

- A. Clean and prepare substrate according to manufacturer's written recommendations. Provide clean, dust-free, and dry substrate for waterproofing application.
 - 1. Verify that substrate is visibly dry and free of excessive moisture.
- B. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- C. Remove fins, ridges, and other projections and fill honeycomb, aggregate pockets, and other voids.
- D. Prepare vertical and horizontal surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, and sleeves according to ASTM C 898 and manufacturer's written instructions.
 - 1. Apply a double thickness of waterproofing and embed a joint reinforcing strip in preparation coat when recommended by waterproofing manufacturer.
- E. Prepare, treat, rout, and fill joints and cracks in substrate according to ASTM C 898 and waterproofing manufacturer's written instructions. Remove dust and dirt from joints and cracks complying with ASTM D 4258 before coating surfaces.
- F. Repair damaged or spalling substrates for roughness with repair mortar patches or one component cementitious parge coatings rated for vertical and overhead use that have high early strengths and are resistant to freeze thaw. Provide a finish suitable for waterproofing installation; broom finish minimum.
- G. Install sheet flashing and bond to deck and wall substrates where indicated or required according to waterproofing manufacturer's written instructions.
 - 1. Extend sheet flashings onto perpendicular surfaces and other work penetrating substrate according to ASTM C 898.
- H. Surface Preparation:
 - 1. Remove or grout projections higher than 1/16 inch. i.e., fins.
 - 2. Grout all tie-wire holes.



3. Grout all honeycombs and voids larger than a U.S. 25 cent coin and deeper than 1/4 inch.
4. Remove all latices, spatters, dirt, etc., by scraping surfaces to be waterproofed. Do not grind.
5. Scrape off knife-like edges of exterior corners and grout to a continuous smooth surface all exterior and interior corners. Good wood float finish is preferred; good wood screed is acceptable.
6. Remove all dirt and debris. Use A.C.I. 515, 1R-79, Chapter 3, and A.C.I. 301-72 (revised 1975), Chapters 9, 10, 11 (11,8,2 Finished Surfaces) as reference information guide. Water cure only if surface cannot be waterproofed immediately. Propane weed burners or hot air torches may be carefully used to surface dry. Surface dry only.

3.2 WATERPROOFING APPLICATION

A. Apply waterproofing according to ASTM C 898 and manufacturer's written instructions.

B. Horizontal Installation Methods:

1. Apply all horizontal single or multiple plies of waterproofing sheets in a cap sheet pattern with 4 inch wide seal and end laps, plus or minus 1 inch. Install multiple plies with no lap over-lap of previous ply using a side lap to side lap pattern, sealing all laps firmly. Embed sheets in tack to almost dry adhesive. Adhesive top coat should be used to embed specified insulation or asphalt/felt protection board. Seal all laps of overlapped pattern of asphalt/felt protection board when installed over single ply waterproofing system. Use a butt joint pattern to install asphalt/felt protection board for all multiple ply waterproofing systems. Omit top coat of adhesive on waterproofing sheet used as a protection course. Provide membrane tie-ins as necessary to accommodate transitions and laps as required throughout the specifics of the installation.

C. Vertical Installation Methods:

1. Hang all waterproofing sheets in a wallpaper pattern using 5 to 5-1/2 foot lifts with 4 inch side and end laps. Sheets must be imbedded into thin, even coats of adhesive, allowing immediate sheet placement. Each lift length of sheet must cover installed flashing and preceding sheet terminations plus 2 inches each for multiple tie-offs on footer. Seal all laps and terminations firmly with adhesive. Final ply of waterproofing sheet must receive a top coat of adhesive for immediate placement of polystyrene bead board of specified insulations, i.e., Styrofoam, polyisocyanurates urethanes) foamglas, etc., without the use of nails. Provide membrane tie-ins as necessary to accommodate transitions and laps as required throughout the specifics of the installation.

D. Install protection course with butted joints over nominally cured membrane before starting subsequent construction operations.



3.3 MOLDED-SHEET DRAINAGE PANEL INSTALLATION

- A. Place and secure molded-sheet drainage panels to substrate according to manufacturer's written instructions. Protect installed molded-sheet drainage panels during subsequent construction.

3.4 FIELD QUALITY CONTROL

- A. Owner, (Optional unless required by manufacturer for warranty issuance) shall engage a full time site representative qualified by waterproofing system manufacturer to inspect substrate conditions, surface preparation, and application of the waterproofing system, furnish daily reports.
- B. Owner, (Optional unless required by manufacturer for warranty issuance) shall engage qualified testing agency to observe flood tests and to identify, determine, and report leaks.
- C. Flood Testing: Flood test each area for leaks, according to recommendations in ASTM D5957 as modified per the manufacturer after completing installation, but before overlaying construction is placed. Install temporary containment assemblies, and flood with potable water.
 - 1. After flood testing, repair leaks, repeat flood tests, and make further repairs until system installation is watertight.
- D. Correct deficiencies in or remove waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair flashing.
 - 1. After flood tests, repair leaks and make further repairs until system installation is watertight.

3.5 CURING, PROTECTING, AND CLEANING

- A. Cure waterproofing according to manufacturer's written recommendations, taking care to prevent contamination and damage during application stages and curing.
 - 1. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.
- D. Protection Methods:
 - 1. Laureco Waterproofing Sheet Systems should be protected either by an additional ply waterproofing sheet (protection against concrete pours), polystyrene bead board (1 lb. density, 1 inch x 2 feet x 4 feet panels embedded in wet adhesive) on vertical work, and, 1/8 or 1/4 inch asphalt/felt protection board on horizontal work. Fire protection for crawl space areas, exterior of tunnels, etc., can be obtained by broadcasting dry cement into and adhesive top coat applied to waterproofing sheet protection course. Use of waterproofing sheet as a protection course is required for the Laureco V-2 Specification. This ply is also used to adhere to underside of the concrete wear surfaces and concrete protection courses by means of the heat generated during the hydration of concrete; particularly applicable in seismic areas. Laureco Waterproofing Systems do not deteriorate from temporary exposure to



weather. (up to six months for the standard 2-ply system). Immediate backfill or coverage of flashing, etc., is not required. Coverage of wall installations with the polystyrene bead board is recommended for job site protection during hot weather. Horizontal applications may be used for foot and some vehicular traffic before the installation of the top coat of adhesive and protection board. Good housekeeping is necessary to keep damaging debris off membrane only. Flood testing and inspection are necessary before the application of adhesive top coat and asphalt/felt protection board (A.C.I. 515 1R-79, Chapter 4.42). Severe scuffs and tears must be repaired with 1 or 2 plies of waterproofing sheet patches to extend 4 inches, all sides, past damaged areas and embedded in adhesive firmly. Second ply of patch repair must extend 6 inches, all sides past damaged areas.

END OF SECTION 007141