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"WESTERN COOL ROOF SYSTEMS"

Sustainable - Energy Efficient

FLUID APPLIED REINFORCED ROOF SYSTEM

SPECIFICATION NO. NDFR-2P-XE

NEW / NAILABLE DECK

BASE / 2 PLY POLYESTER REINFORCED – EMBEDDED ACRYLIC SURFACE

PART 1 - GENERAL

1.1 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The latest publication of this specification shall be enforced. Refer to the latest publication of this specification via the manufacturer's web site or by contacting the manufacturer.

1.1.1 American Society for Testing and Materials Publication (ASTM)
1.1.2 Underwriters Laboratories Inc. (U.L.)
1.1.3 Western Colloid Details, Drawings and Notes
1.1.4 ENERGY STAR® guidelines for energy efficiency (Roof Coatings)
1.1.5 CRRC – Cool Roof Rating Council
1.1.6 California Building Standards Code - Title 24
1.1.7 LEED (USGBC)

1.2 QUALITY CONTROL

1.2.1 Pre-Roofing Conference: Prior to starting the application of the roofing system, there will be a pre-roofing conference with the owner's representative to assure a clear understanding of the specifications. The conference shall be attended by the Contractor(s) and the Membrane Manufacturer's representative.

1.2.2 Warranty: The contractor shall warrant for 2 years, from the date of completion, that the roofing system is free of defective materials and workmanship. Repairs that become necessary because of defective materials and/or workmanship while this roofing is under warranty shall be performed by the contractor. The contractor is responsible for inspection of the installed system 1 to 6 months prior to 2 years from the date of completion. Contractor shall report any deficiencies to the manufacturer and make any repairs necessary. Any additional warrantees shall be provided by the contractor to the owner.

1.2.3 Manufacturer shall certify that materials submitted have been used in like application and that they have been actively engaged in the manufacture of these materials for a minimum period of 20 years prior to submittals, as required. The manufacturer shall certify that the contractor is authorized and approved for the application of their materials.

1.3 SUBMITTALS:

1.3.1 Descriptive literature: Submit manufacturer's application instructions and technical data sheets or catalog cuts on materials.

1.4 DELIVERY, STORAGE AND HANDLING:

1.4.1 Storage: Prior to and during project, protect all materials from inclement weather conditions. Keep lids tightly closed on all containers when not in use. Locate materials temporarily stored on the roof in approved areas and distribute the load to stay within the live load limits of the roof construction.

1.4.2 Handling: Select and operate materials handling equipment so as not to damage existing construction and applied roofing. Handle roll materials in a manner to prevent damage to edges and ends.

1.5 ENVIRONMENTAL CONDITIONS: This Fluid Applied Reinforced Roof System is water based and should be applied when weather conditions permit proper application and drying. Application will not be permitted during inclement weather (wet, rain, snow, freeze). The temperature during application shall be a minimum of 55 degrees Fahrenheit (F) and rising. Do not attempt application when rain, inclement weather or temperatures below 40 degrees F are expected within 48 hours after application. The system should not be applied if there is ice or frost on the roof surface/deck. The preparation and repair portion of the system that does not include water based materials may be applied immediately prior to inclement weather if necessary.

1.6. PROTECTION OF PROPERTY:

1.6.1 Protective Coverings: Contractor shall take proper precautions to protect owners property against damage and overspray. The use of shield boards, maskings and protective coverings shall be used as necessary. Western Colloid is not responsible for damages caused by the overspray of any of its products.

SYSTEM COMPONENTS AND WEIGHTS

No.	Component	Amount	Dry Weight Lb.**
1	Atlas FR-50 Coated Glass Fiber Sheet (or 2 x FR-10)	1 Ply	20.
2	25LB. SBS Modified Glass Base Sheet	1 Ply	25.
3	Base Coat #298 Emulsion	6 Gallons	23.
4	Polyester Fabric	1 Ply	2.5
5	Interply Coat #298 Emulsion	6 Gallons	23.
6	Polyester Fabric	1 Ply	2.5
7	Surface / Reflective Coating - ElastaHyde White Acrylic	3 Gallons	21.
	Total System Dry Weight		117.0
	Total System Dry Mils (approximate)	210	

** weight approximate (per 100 sq. ft.)

PART 2 - PRODUCTS

2.1 DESCRIPTION OF ROOF SYSTEM:

2.1.1 Sustainable, Energy Efficient: This specified assembly is a cold process method to install a new roofing membrane. The system is water based and environmentally friendly. It has very low odor. It is reinforced with tough, light weight polyester fabrics. The system is surfaced with a highly reflective elastomeric

coating. This type of reflective surface has proven to significantly reduce temperatures and save energy on many types of commercial structures.
This specified assembly meets the following criteria:

a. U.L. Class A
b. California Title 24
c. LEED (USGBC)
d. Energy Star

2.2 MATERIALS: Shall conform to the respective specifications and to the requirements herein.

2.2.1 Polyester Fabric: Shall be Western Colloid's 2.75 - 3.0 ounce firm, stitchbonded polyester fabric used as a reinforcing fabric in asphalt emulsion.

2.2.2 Atlas FR-10 or FR-50 Coated Glass Sheet: Manufactured of fire-retardant, coated-glass fiber mats to enhance overall fire performance. Manufactured by Atlas Roofing Corporation.

2.2.3 SBS Fiber Glass Base Sheet: Shall be minimum 25 lb., SBS asphalt coated, G-2 type base sheet conforming to ASTM D 4601-95.

2.2.4 SBS Modified Bitumen Cap Sheet: Shall be minimum 4mm., granule surfaced, SBS modified with fiberglass and or polyester reinforcement(s).

2.2.5 Asphalt Flashing Compound: Asbestos free, cut back roof mastic reinforced with non asbestos fibers. ASTM D 4586-86 Type 1.

2.2.6 Modified Asphalt Flashing Compound: Asbestos free, cut back roof mastic reinforced with non asbestos fibers. Modified to form a permanently rubberized compound.

2.2.7 All Weather Elastic Cement #8000 : A solvent-based, white sealant. #8000 is designed for use on various roof membranes and surfaces, including asphalt BUR, modified bitumen, metal and single ply roofs. (Including EPDM, PVC, TPO and Hypalon). Used where wet conditions are present during repair and also to set metal flanges and sheets where water based sealant is not practical. #8000 may be used in place of #800 Elastic Cement when a more immediate resistance to water is required.

2.2.8 Elastic Cement #800: Elastomeric Flashing & Sealing Compound: A water base, highly concentrated acrylic resinous plastic emulsion with inert mineral pigments and fillers as manufactured by Western Colloid S.C., Inc.. For application to all exposed terminations, metal joints and any areas needing a tough, highly flexible sealing compound. Available in white or black.

2.2.9 #298 Asphalt Emulsion: A premium clay stabilized asphalt emulsion ASTM D 1227 Type III as manufactured by Western Colloid S.C., Inc.. Produced in a continuous colloid mill process without any added surfactants or additives.

2.2.10 #970 A2A Bonding Primer: (Acrylic to Asphalt) #970 AXP is a clear acrylic primer designed to improve adhesion of acrylic coatings to smooth BUR, emulsion and non-granulated modified bitumen. Not required for granulated surfaces or fabric exposed surfaces. Manufactured by Western Colloid.

2.2.11 ElastaHyde #720 ARC: Meets and exceeds ASTM D6083/6083M-18 for 100% acrylic roof coating. A premium, elastomeric acrylic, white reflective coating. ElastaHyde is manufactured from premium resins, pigments and components producing an acrylic coating of the highest quality. ElastaHyde is a durable coating that will resist rigorous weather conditions while protecting roof surfaces and contributing to substantial energy savings. ElastaHyde #720 ARC meets the requirements of a "Cool Roof" and is listed by the "Cool Roof Rating Council" (CRRC). As an ENERGY STAR® Partner, Western Colloid has determined that ElastaHyde #720 ARC meets the ENERGY STAR® guidelines for energy efficiency (white, Platinum Gray and California Tan only). Manufactured by Western Colloid. (ElastaHyde can be produced in colors) (For application to smooth asphalt, emulsion or non-granulated modified bitumen surfaces use #970 A2A Primer prior to base coat.)

** Refer to current Technical bulletins for complete product data and proper application methods.
** Refer to MSDS for proper handling procedures.

PART 3 - EXECUTION NAILABLE DECK

3.1 PREPARATION:

3.1.1 The deck is to have all nails securely fastened and all joints of decking shall have gaps of no more than 1/4 in.. If gaps exceed 1/4 in. they are to be caulked with #800 Elastic Cement acrylic caulk and allowed to cure. The surface shall be clean and free from any dust and debris.

3.1.2 Over the properly prepared nailable deck, install the FR-50 glass sheet and tack in place.
Note: Two layers of Atlas FR-10 glass sheets may be used in place of one Atlas FR-50 sheet.

Over the FR-50 (or 2 x FR-10) install the SBS Modified base sheet. The base sheet shall be lapped 2" on sides and 6" on ends. It shall be nailed on 9" centers through the laps and on 18" centers along lines 12" distant from each edge. Be sure the base sheet is properly fastened per code requirements.

3.1.3 Valley and ponding areas shall receive an extra ply of polyester set in #298 Asphalt Emulsion prior to the application of the membrane.

3.2 APPLICATION

3.2.1 General Flashing Details: After the application of the base sheets and prior to the application of the membrane, install base, wall, and curb flashings using Modified Bitumen Cap Sheet per Western States RCA or modified bitumen manufacturer's details.

3.2.2 Base and Wall Flashings: Over the modified wall flashing and prior to the application of the membrane, install the base and wall flashings. First install the base flashing over the cant strip using one ply of 6" (or wider if needed) Polyester Fabric set into a coat of 5 gallons per 100 sq.ft. of #298 Asphalt Emulsion achieving full embedment, terminating at least 2" above the cant and extending onto the deck at least 2". Next install the wall flashing using one full ply of Polyester Fabric set into a coat of 5 gallons per 100 sq.ft. of #298 Asphalt Emulsion achieving full embedment and continuing up the wall to terminate as necessary under counter flashing, reglet or wall cap flashing per Western Colloid details. Wall flashing shall extend out onto the deck at least 3" beyond the termination of the base flashing.

3.2.3 Edge Flashings: Install new gravel stops and metal edge where necessary. Use low or no rise metal edge. Metal edge shall be nailed at 4" O.C.. Strip-in the metal with polyester fabric and #800 Elastic Cement making sure to cover all nails. Leave at least 2" of metal bare at edge to insure positive attachment and seal of polyester fabric in emulsion.

3.2.4 Vent and Pipe Flashings: If flange is removed and replaced or new flange is installed, set flange of metal "jack" in a bed of #8000 All Weather Elastic Cement and attach with nails. Strip-in the metal with polyester fabric and #800 Elastic Cement making sure to cover all nails. See section 3.2.8 for sealing of the cone and pipe after installation of the membrane. The new membrane shall terminate at base of the cone. **Do Not use #800 Elastic Cement to set the flange of a new flashing. Use only #8000 under the flange.**

3.2.5 Roof Drains (clamping type): Prior to the application of the roofing membrane, remove clamping ring and clean as necessary. Clean all existing build-up of mastics and repair compounds from around the drain and sump. Embed modified cap sheet in application of modified asphalt flashing compound into the drain bowl and extending a minimum of 18" from center of drain onto the deck (or as necessary to extend beyond drain sump). Apply pressure to smooth and achieve complete contact of cap sheet and modified asphalt flashing compound. Replace clamping ring. The roofing membrane system shall be applied overlapping onto the modified cap sheet at least 3". The drain area will also receive an application of polyester reinforced ElastaHyde per section 3.2.8.

3.2.6 Misc. Flashings: Where sign anchors, equipment supports or other projections penetrate the roof membrane, seal with #800 Elastic Cement creating a "cone" shaped seal. Where large voids must be bridged use 1 ply of polyester fabric in the #800. Misc. flashings to be of #800 Elastic Cement and Polyester Fabric and to be constructed in a manner acceptable to the membrane manufacturer as necessary to meet the needs of each flashing detail.

Refer to Western Colloid detail drawings and notes for additional details and application information.

3.2.7 MEMBRANE: Over the properly prepared surface, apply a coat of #298 Asphalt Emulsion at a rate of 6 gallons per 100 sq.ft.. Immediately following and starting at the low edge of the roof, embed a 1/2 width of polyester felt continuing up the roof with full width sheets. Over the first ply of polyester felt apply a second coat of #298 Asphalt Emulsion at the rate of 6 gallons per 100 sq.ft.. Immediately following and starting at the low edge of the roof, embed a full width second ply of polyester felt. Lightly broom each ply of polyester felt to achieve full saturation having no wrinkles or voids. Polyester shall terminate 2 inches above cant. Avoid walking on the polyester during application, causing displacement of the #298 Asphalt Emulsion. Do not apply a top coat of #298 Asphalt Emulsion over the polyester fabric. Allow to cure.

3.2.7b Membrane: If excess emulsion or a top coat of emulsion is applied to the surface of the polyester fabric it is necessary to apply an application of #970 A2A primer to insure adhesion of the ElastaHyde. Wash roof surface to remove any asphaltic residue that may cause lack of adhesion or “tobacco staining”. Apply the #970 A2A primer at a rate of ½ gallon per 100 sq. ft. and allow to thoroughly dry. (If polyester fabric is left properly exposed this step may be eliminated).

3.2.8 Pipe Flashings & Penetrations – Surface Treatment: After the application of the membrane and before the reflective coating, apply #800 Elastic Cement and Polyester Fabric in a three course method to all pipe flashings, cones, exposed metal joints and flanges. Also apply #800 Elastic Cement to all corners at curbs and skylight flashings or any area that has been previously repaired with roofing mastic.

3.2.9 Drains & Special Areas of Ponding: Areas around drains and scuppers shall receive an extra ply of polyester fabric set in the ElastaHyde acrylic coating. In addition valleys, waterways and any locations where water ponds for more than 48 hours shall receive an extra ply of polyester fabric set in the ElastaHyde acrylic coating. The extra ply is to extend 12 inches beyond the ponding area or as needed to extend beyond the drain sump. To this area set 1 ply of polyester into a 3 gallon per 100 sq. ft. application of ElastaHyde acrylic coating and broom lightly to achieve full saturation having no wrinkles or voids. This application shall be applied after the roof membrane and prior to the final coatings of ElastaHyde.

3.2.10 Reflective Coating - ElastaHyde: After roof has cured apply reflective coating. To prevent damage to the membrane, the reflective coating should be applied early in the day prior to the heating and softening of the emulsion surface. If surface becomes soft and sticks to equipment or feet, discontinue application. Wash roof surface of any asphaltic residue that may cause lack of adhesion or “tobacco staining”. Apply over the entire roof surface, ElastaHyde elastomeric reflective roof coating at a rate of 3 gallons per 100 sq. ft. to achieve a dry thickness of 25 mils (average) after cure. The reflective coating shall be applied in a two coat application. This shall be done in a "cross hatch" manner (the second coat shall be at a right angle to the first). Each coat shall be ½ of the total application rate. Before application, mix well and strain if spray applying. Do not thin or dilute.

3.2.11 Seamless Walkway Coating: Where protection of surface coating and/or non slip surface is desired, apply #850 SWS Seamless Walkway Coating. Using short nap or smooth roller, apply to the properly prepared surface at the rate of 2 gallons per 100 sq. ft.. After first coat has dried (at least 24 hrs.) apply a second coat and the rate of 2 gallons per 100 sq. Ft.. It may be desirable to apply at a right angle to the first application to achieve a more desirable surface pattern. In all areas where increased resistance to puncture and membrane damage may be required such as roof doors and hatches and equipment service doors add an additional application of #850 SWS with a ply of polyester fabric. Apply the reinforcing layer of polyester fabric into a 2 gallon coat of #850 SWS and broom well to embed fabric. Allow to dry at least 24 hours. Apply the reinforced layer prior to the application of the 2 finished coats of #850 SWS described above.

3.2.12 Cleanup: Each day, remove from the job site, debris, scraps, containers and any rubbish resulting from the installation of the roofing system.