



“WESTERN COOL ROOF SYSTEMS”

Sustainable - Energy Efficient

FLUID APPLIED REINFORCED ROOF SYSTEM

SPECIFICATION NO. GR-2P-24-XE

RECOVER GRAVEL / ROUGH SURFACE

2 PLY POLYESTER REINFORCED MEMBRANE – 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 Western Colloid Details, Drawings and Notes
- 1.1.3 Factory Mutual (FM Global)
- 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 warranties 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

<u>No.</u>	<u>Component</u>	<u>Amount</u>	<u>Dry Weight Lb.**</u>
0	Fill coat #298 Emulsion (12 gallons or as needed)	12. Gallons	45.
1	Base Coat #298 Emulsion	6 Gallons	23.
2	Polyester Fabric	1 Ply	2.5
3	Interply Coat #298 Emulsion	6 Gallons	23.
4	Polyester Fabric (Second Ply) (in Emulsion)	1 Ply	2.5
5	Reflective Surface Coating - ElastaHyde White Acrylic	3. Gallons	21.
	Total System Dry Weight		72.0 (117.0 w/fill)
	Total System Dry Mils (approximate) (fill not included)	130 mils	
	Total System Dry Mils (approximate) - (fill included)	215 mils	

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

PART 2 - PRODUCTS

2.1 DESCRIPTION OF ROOF SYSTEMS:

2.1.1 This specified assembly is a cold process method to upgrade existing gravel roofing. The system is water based and environmentally friendly. It has very low odor. It is reinforced with tough, light weight polyester fabrics. It is intended to significantly extend the life of applicable existing roof membranes. This system eliminates or indefinitely delays the need to remove existing roof membranes which reduces land fill usage. 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. California Title 24
- b. Factory Mutual Standard 4470 Class 1
- 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 T325, 2.75 ounce soft or T272, 3.0 ounce soft, stitchbonded polyester fabric used as a reinforcing fabric in asphalt emulsion and/or acrylic coatings.

2.2.2 Seamless Walkway Coating #850 SWS: A unique, water based coating designed to protect walking areas and paths on smooth roofing systems. It is formulated with extremely tough acrylic resins and binders, to form a long lasting walking surface on smooth and coated roofs. 850 SWS contains an aggregate to form a textured non-slip surface with very high abrasion resistance.

2.2.3 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.

2.2.4 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. For application to all exposed terminations, metal joints, drain sumps and any areas needing a tough, highly flexible sealing compound. Available in white or black.

2.2.5 #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. Also known as Glas-Shield Waterproofing Compound for cold process roofing.

2.2.6 #970 A2A Bonding Primer: (Acrylic to Asphalt) is a water based, clear acrylic primer. It is formulated with premium acrylic resins that are designed to improve the adhesion of acrylic coatings to smooth asphalt products. May be required if surface of polyester fabric has been top coated with asphalt emulsion. Manufactured by Western Colloid.

2.2.7 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

3.1 PREPARATION:

3.1.1 Roof membrane shall be repaired and made sound and watertight prior to application of the fluid applied reinforced roofing membrane using one or more of the following steps. Be sure the existing membrane is properly fastened and or adhered per code requirements.

3.1.2 Remove all loose gravel, dirt, dust and foreign debris by vacuum, washing, sweeping or power blower. The entire surface shall be properly cleaned so as to receive proper attachment of the new fluid applied membrane. Areas of light dirt and dust may require only sweeping or power blowing. Areas of heavier dirt, dried mud or contamination may require washing. Use strongest cleaning method necessary to achieve best results.

3.1.3 Valleys and ponding areas shall be washed and may require priming so as to receive a positive attachment of the system. If priming is necessary to any area, use #298 Asphalt Emulsion diluted 20 to 30 percent with water as primer. Apply vigorously with brush and allow to dry.

Surfaces that are very rough or have embedded gravel require an application #298 emulsion as a fill coat. The #298 should be applied at a rate of 10 to 12 gallons per 100 sq. ft. or as needed to properly fill the existing gravel surface. Gravel surfaces that are spudded may require less fill coat. *(1/4 to 3/8 gravel requires 10 gallons of fill, 1/2 in. requires 12 gallons of fill. Larger gravel may require greater amount of fill. Maximum amount is not specific or limited in this specification. Use adequate amount for the existing surface.)*

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

3.1.4 All blisters are to be repaired using the "floating patch" (or other approved) method with asphalt flashing compound and modified cap sheet. Remove blisters with flat shovel, scraper or knife. Embed modified cap sheet in application of asphalt flashing compound. Apply pressure to smooth and achieve complete contact of sheet and flashing compound. Edges of sheet shall extend at least 6 inches beyond widest point of blister being repaired.

3.1.5 Large splits are to be repaired using asphalt flashing compound and modified cap sheet. Embed modified cap sheet in application of asphalt flashing compound. Apply pressure to smooth and achieve complete contact of sheet and flashing compound. Edges of sheet shall extend at least 6 inches beyond widest point of split being repaired. Peel & Stick modified cap or APP torch applied may also be used for repairs.

3.1.6 Repair and dress roof area as needed with special attention to penetrations, pipes, terminations and flashings.

Small splits and irregularities are to be repaired using a three course method with #800 Elastic Cement. To the area needing repair apply #800 at a rate of 5 gallons per 100 sq. ft. (approx. 1/8 in. thick). Into the wet #800 embed 1 ply of polyester fabric. Brush the fabric into the #800 to insure full saturation having no wrinkles or voids. Over the fabric apply another coat of #800 at a rate of 4 gal. per 100 sq.ft.. Allow to dry.

3.2 APPLICATION

3.2.1 Base and Wall Flashings: 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.

3.2.2 Edge Flashings: Remove and replace gravel stops and metal edge where necessary. Where gravel stop is replaced, replace with 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. Where edge flashing is left in place, cut back roofing 2 inches from rise and strip-in with polyester fabric and #800 Elastic Cement to provide for a positive attachment of the metal edge to the new membrane per Western Colloid details.

3.2.3 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 3.2.7 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.**

3.2.4 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. Three course using #800 Elastic Cement or #8000 All Weather Elastic Cement the entire drain sump area and extend 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). Allow to dry. Replace clamping ring. The roofing membrane system shall be applied overlapping onto the reinforced Elastic Cement at least 3". The drain area will also receive an application of polyester reinforced ElastaHyde per section 3.2.8.

Optional: 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.

3.2.5 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.

3.2.6 Membrane: ****Prior to application of the membrane the fill coat must be approved by the manufacturer. Do not proceed until approval has been given.**** 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. Do Not walk on the polyester during application while emulsion is still wet causing displacement of the #298 Asphalt Emulsion. Do not apply a top coat of #298 Asphalt Emulsion to the polyester. Allow membrane to cure.

3.2.6b 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).

3.2.7 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.

3.2.8 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 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.

3.2.9 Reflective Coating - ElastaHyde: After roof has been properly prepared 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 to remove any asphaltic residue that may cause lack of adhesion or "tobacco staining". Apply over the entire roof surface, a first coat of **ElastaHyde 720 ARC** elastomeric roof coating at a rate of 1½ gallons per 100 sq. ft. and allow to dry for 24 hours. Over the first coat apply a second (final) coat of **ElastaHyde 720 ARC** reflective surface coating at a rate of 1½ gallons per 100 sq. ft.. This shall be done in a "cross hatch" manner (each coat shall be at a right angle to the previous). Before application, mix well and strain if spray applying. Do not thin or dilute.

3.2.10 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.

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