

SECTION 07560
FLUID APPLIED ROOFING
(OVER EXISTING SUBSTRATES)
Updated – January 17, 2008

PART 1 DESCRIPTION

1.1 DESCRIPTION OF EXISTING SUBSTRATES

This specification is only intended for the application of the PremiumCoat system over the following fully adhered roof membranes; Modified Bitumen (smooth & granulated), Smooth Built Up, EPDM (Ethylene Propylene Diene Monomer), PVC (Polyvinyl Chloride), TPO (Thermoplastic Olefin), and Hypalon TM-(chlorosulfonated polyethylene) roofing systems.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes- Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 SECTION INCLUDES

1. Fluid applied flexible acrylic waterproofing system over the existing roofing system. This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.4 RELATED WORK

1. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.
5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.

6. ASTM D-412- Ultimate Tensile Strength at Break.
7. ASTM D-6083- Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549- Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371- Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470- Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.6 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc.
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.7 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him / herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.

2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.
4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the FoundationCoat & fabric components, and completed FinishCoat inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTY

1. Provide ten-year manufacturer's Material or Labor & Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:

1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
 2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
 3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.
2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst	111 lbs.	(50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117
	Fill	24.2 lbs. (10.99 kg)	
Thickness	.018 inches	(.457 mm)	per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPA)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic	ASTM D6083	Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved

(White or Cotton Finish Coat Only)

2.3 ACCESSORIES

1. Cant Strips: Approved composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (Non-Pressure Treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC
2. Moisture Breathers: Install moisture breathers as recommended by Hydro-Stop LLC Technical Personal.
3. HydroFiber: Bulking material used in conjunction with Foundation Coat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.

4. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.
5. CleanAct Primer: water based cleaner used on EPDM surface preparation.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.
4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that roof deck has a minimum slope of .25 inch / foot (2.083cm/meter)
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Please consult your Hydro-Stop LLC Technical Sales Representative for additional advice on cleaning various roofing substrates.
3. Make all necessary repairs to existing substrate. Contact Hydro-Stop Technical Representative for assistance.
4. Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 APPLICATION

1. Surface Primers- if necessary apply one of the following primers at the proper coverage rates. Contact Hydro-Stop Technical Representative to verify if a primer is required.

EPDM – Apply CleanAct Primer at the following coverage rates.

Maximum coverage = 200 ft²/ gal (4.755 m²/ liter) CleanAct should only remain on the EPDM surface 10-30 minutes followed by two power washes @ 3000 psi. (20680 kPA)

Rusted Metal – Apply to all rusted metal areas at the following coverage rates.

Maximum coverage = 200 ft²/ gal (4.755 m²/ liter)

Modified Bitumen, Smooth Built Up, PVC, TPO, and Hypalon - These roofing membranes generally do not require a primer. Please consult your Hydro-Stop Technical Representative for additional help if necessary.

All Types of Concrete – Please see Hydro-Stop LLC specification “Over Lightweight, structural, and precast concrete”

2. Foundation Coat & Fabric Components- Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 25-40 ft²/gal (.594 - .951 m²/liter) depending on substrate. FoundationCoat should only be applied with the use of approved roof brushes. Rolling and spraying of the FoundationCoat are absolutely forbidden.
 - A. Roof Perimeter- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof entire roof perimeter. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches (15.24 centimeters) in each direction.
 - B. Roof Penetrations- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6” (15.24 centimeters)
 - C. Roof Field- Using 40 in. (1.016 m) fabric and the Foundation components (as described above) seal the entire roof field. Overlap adjacent runs of fabric 4 inches (10.16 cm) minimum
3. Finish Coat Component- Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters)

dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).

4. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness.

3.4 PROTECTION OF FINISHED WORK

1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

1. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07560

FLUID APPLIED ROOFING (OVER RIGID INSULATION, DENSDECK, & PLYWOOD)

Updated – May 10, 2010

PART 1 GENERAL

1.1 DESCRIPTION

1. Fluid applied flexible acrylic waterproofing system over ISO (Polyisocyanurate), EPS (Expanded Polystyrene), DensDeck or plywood (exterior grade non-treated). This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes- Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 RELATED WORK

1. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.4 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.
5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.
6. ASTM D-412- Ultimate Tensile Strength at Break.
7. ASTM D-6083- Standard Specification for Liquid Applied Acrylic Coatings used in roofing.

8. ASTM C1549- Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371- Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470- Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.5 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc.
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.6 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.7 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him/herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier
2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.

4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Prior to the application of the FoundationCoat and fabric, at the completion of the FoundationCoat and fabric, and after the FinishCoat is applied.

1.8 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50 and 90 degrees F (10 and 32 degrees C). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.9 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees C) or if rain is expected before the application has time to dry.

1.10 WARRANTY

1. Provide ten-year manufacturer's Labor and Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:
 1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
 2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
 3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.
2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst		111 lbs. (50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117
	Fill	24.2 lbs. (10.99 kg)	
Thickness		.018 inches (.457 mm)	per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPA)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%

Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic		ASTM D6083 Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved
<i>(White or Cotton Finish Coat Only)</i>		

2.3 INSULATION BOARD MATERIALS

1. Acceptable recovery boards:

Polyisocyanurate - 1.5 in. (3.81cm) minimum thickness. Max board size 4ft.x 8ft. (1.219m x 2.438m) if mechanically fastened or 4ft.x 4ft. (1.219m x 1.219m) if adhered with Factory Mutual approved roofing adhesive. Closed cell with factory laminated facer. Foam core to have rated flame spread of 25 in. (63.5cm.) or less and minimum compressive strength of 250 psi. (1724 kPA)

Expanded Polystyrene - 1.5 inches (3.81cm) minimum thickness a minimum of 1.5 lb/ft³ (24.30 kg/m³) density. Max board size is 4ft. x 8ft. (1.219m x 2.438m) mechanically fastened or 4ft x 4ft (1.219m x 1.219m) if adhered with Factory Mutual approved roofing adhesive.

Plywood - ¾ inch (1.905 cm.) minimum thickness tongue and groove exterior B&C grade. (Non-treated). Plywood is to be adhered with sub-floor adhesive and deck fasteners.

Densdeck - ¼ inch (.635 cm.) minimum thickness if used over an approved smooth existing substrate. ½ inch (1.27 cm.) thickness is the normal recommendation.

Tapered ISO or EPS - 1.5 inches (3.81cm) minimum thickness a minimum of 1.5 lb/ft³ (24.30 kg/m³) density. Max board size is 4ft x 4ft (1.219m x 1.219m) with a slope of not less than .25 inch per foot (2.083cm/meter).

2. Unacceptable recovery boards-

OSB – any type, Blue Board (Dow Co.), High Density Board, Perlite, and Treated Plywood.

2.4 ACCESSORIES

1. Adhesive: Insta-Stick, OlyBond, or FM (Factory Mutual) approved polyurethane adhesive, dispensed from pre-pressurized containers. Application guidelines should be dictated by the adhesive manufacturer.
2. Mechanical Fasteners (preferred method): Use mechanical “Screw Type” fasteners with plates. Fastener patterns as to be recommended by the board manufacturer.
3. Cant Strips: Recommended composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (non-treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC.
4. Moisture Breathers: Install moisture breathers as recommended by Hydro-Stop LLC Technical Representative.
5. Hydro-Fiber: Bulking material used in conjunction with FoundationCoat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.
6. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.

4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that roof deck has a minimum slope of .25 inch / foot (2.083cm/meter)
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 INSTALLATION - INSULATION

1. Adhere insulation to deck with Polyurethane adhesive or proper fasteners in accordance with manufacturer's installation instructions to meet a minimum uplift requirement of 1-90. Please verify the proper uplift requirements with the specifier or your local building code authority.
2. Stagger all board joints.
3. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
4. Apply no more insulation than can be covered with waterproofing on the same day.
5. Install cant strips at internal corners and metal drip edge on outside perimeter.

3.4 WATERPROOFING APPLICATION

1. FoundationCoat & Fabric Components- Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 25-40 ft²/gal (.594 - .951 m²/liter) depending on substrate. FoundationCoat should only be applied with the use of approved roof brushes. Rolling and spraying of the FoundationCoat are absolutely forbidden.
 - A. Recovery Board Seams- Using 6 inch (30.48 centimeters) fabric and the Foundation components (as described above), waterproof all board seams, cracks, and non-working joints.. Center 6 inch (15.24 centimeters) fabric over all seams.

- B. Roof Perimeter- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof entire roof perimeter. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches (15.24 centimeters) in each direction.
 - C. Roof Penetrations- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6" (15.24 centimeters)
 - D. Roof Field- Using 40 in. (1.016 m) fabric and the Foundation components (as described above) seal the entire roof field. Overlap adjacent runs of fabric 4 inches (10.16 cm) minimum
3. Finish Coat Component- Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).
4. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness.

3.5 PROTECTION OF FINISHED WORK

- 1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.6 CLEANING

- 1. Clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07540

FLUID APPLIED ROOFING (OVER LIGHTWEIGHT, STRUCTURAL, AND PRECAST CONCRETE)

Updated – May 10, 2010

PART 1 GENERAL

1.1 SECTION INCLUDES

Fluid applied flexible acrylic waterproofing system over lightweight, structural, and precast concrete. This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes- Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 SUBSTRATE APPROVAL

All Hydro-Stop LLC warranted jobs over any substrate must have substrate approval prior to job start up. Hydro-Stop LLC may require an approved recovery board with roof breathers over certain concrete type decks. Please consult your local Technical Representative for assistance and approval.

1.4 RELATED WORK

The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.
5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.

6. ASTM D-412 - Ultimate Tensile Strength at Break.
7. ASTM D-6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470- Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.6 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc.
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.7 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him / herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.

2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.
4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the FoundationCoat & fabric components, and completed FinishCoat inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTY

1. Provide ten-year manufacturer's Product Warranty or a ten-year manufacturer's Labor & Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:
 1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
 2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
 3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.
2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst	111 lbs.	(50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117
	Fill	24.2 lbs. (10.99 kg)	
Thickness	.018 inches	(.457 mm)	per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPA)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic		ASTM D6083 Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved
<i>(White or Cotton Finish Coat Only)</i>		

2.3 ACCESSORIES

1. Surface Primer: Hydro-Stop BarrierGuard cementitious waterproofing sealer for concrete.
2. pH Blocking Primer: Hydro-Stop SureBond Primer acrylic primer for waterproofing and sealing concrete.
3. Cant Strips: Recommended composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (non-treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC.

4. Moisture Breathers: Install moisture breathers as recommended by Hydro-Stop LLC Technical Representative.
5. Hydro-Fiber: Bulking material used in conjunction with Foundation Coat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.
6. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.
4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that the concrete deck has a minimum slope of .25 inch / foot (2.083cm/meter).
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Please consult your Hydro-Stop LLC Technical Sales Representative for additional advice on cleaning various roofing substrates.
3. Make all necessary repairs to existing substrate. Contact Hydro-Stop Technical Representative for assistance.

4. Seal cracks and joints with sealant materials using depth to width ratio as recommended by sealant manufacturer.

3.3 APPLICATION

1. Surface Primer- Mix BarrierGuard slurry in accordance with manufacturer's instructions and apply two coats over masonry surface at a minimum coverage rate of 150 ft²/ gal (3.57 m²/ liter) per coat. Allow to dry between coats.
2. pH Blocking Primer- Apply a single coat of SureBond Primer to entire substrate at a coverage rate of 200 ft²/gal (4.76 m²/ liter).
3. Foundation Coat & Fabric Components- Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 25-40 ft²/gal (.594 - .951 m²/liter) depending on substrate. FoundationCoat should only be applied with the use of approved roof brushes. Rolling and spraying of the FoundationCoat are absolutely forbidden.
 - A. Roof Perimeter- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof entire roof perimeter. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches (15.24 centimeters) in each direction.
 - B. Roof Penetrations- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6" (15.24 centimeters)
 - C. Roof Field- Using 40 in. (1.016 m) fabric and the Foundation components (as described above) seal the entire roof field. Overlap adjacent runs of fabric 4 inches (10.16 cm) minimum.
4. Finish Coat Component- Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).
5. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness.

3.4 PROTECTION OF FINISHED WORK

1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

1. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07560

FLUID APPLIED ROOFING (Standard Commercial Metal Panels) Updated – January 23, 2008

PART 1 DESCRIPTION

1.1 DESCRIPTION OF EXISTING SUBSTRATES

This specification is only intended for the application of the PremiumCoat system over commercial metal panels. Panels are generally 3ft wide by varying lengths. This specification does not apply to any type of Standing seam metal roofs.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes- Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 SECTION INCLUDES

1. Fluid applied flexible acrylic waterproofing system over existing metal roofing system. This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.4 RELATED WORK

1. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.

5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.
6. ASTM D-412 - Ultimate Tensile Strength at Break.
7. ASTM D-6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.6 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc...
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.7 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him / herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between

- the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.
2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
 3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.
 4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the FoundationCoat & fabric components, and completed FinishCoat inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTY

1. Provide ten-year manufacturer's Labor and Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:

1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.

2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst	111 lbs.	(50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117

	Fill	24.2 lbs.	(10.99 kg)	
Thickness		.018 inches	(.457 mm)	per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPa)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic	ASTM D6083	Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved

(White or Cotton Finish Coat Only)

2.3 ACCESSORIES

1. Cant Strips: Approved composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (Non-Pressure Treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC
2. Hydro-Fiber: Bulking material used in conjunction with Foundation Coat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.

3. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.
4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that roofing panels have a minimum slope of .25 inch / foot (2.083cm/meter)
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Please consult your Hydro-Stop LLC Technical Sales Representative for additional advice on cleaning various roofing substrates.
3. Make all necessary repairs to existing substrate. Contact Hydro-Stop Technical Representative for assistance.
4. Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 APPLICATION

1. Bare Metal or Clean Rusted Metal: Remove all scale and apply StableRust Primer at a rate of 200 ft²/ gal (4.755 m²/ liter) to all rusted areas. Allow to dry. Protect from weather until dry.
2. Foundation Coat & Fabric Components- Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 40 ft²/gal (.951 m²/liter). FoundationCoat should only be applied with the use of approved roof brushes. Rolling, and spraying of the FoundationCoat are absolutely forbidden.
 - A. Roof Penetrations- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6" (15.24 centimeters)
 - B. Vertical Seams- Using 6 inch (15.24 centimeters) fabric and the Foundation components (described above) seal all vertical seams. Foundation Coat & Fabric components must be centered on the panel seams. Protect from weather until dry.
 - C. Horizontal Laps- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal all horizontal laps. Foundation Coat & Fabric components must be centered on the panel laps. Protect from weather until dry.
 - D. Exposed Mechanical Fasteners- Using either a Hydro-Cap or a 6 in. x 6 in. (15.24 x 15.24 centimeters) piece of fabric and the Foundation components (described above) seal all mechanical fasteners. Protect from weather until dry.
 - E. Parapet & Vertical Wall Junctions- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof roof/wall junctions. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches (15.24 centimeters) in each direction.
3. Finish Coat Component- Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).
4. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness over all seams, laps, fasteners, wall junctions, and penetrations. Non-fabric areas of the roof must have a minimum of 15 mils (.015 inches / .381 millimeters) total cured thickness.

3.4 PROTECTION OF FINISHED WORK

1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

1. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07560
FLUID APPLIED ROOFING
(Commercial Standing Seam Metal Panels)
Updated – January 23, 2008

PART 1 DESCRIPTION

1.1 DESCRIPTION

This specification is only intended for the application of the PremiumCoat system over commercial standing seam metal panels. Panels are generally 2ft. wide by varying lengths.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes - Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 SECTION INCLUDES

1. Fluid applied flexible acrylic waterproofing system over existing metal roofing system. This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.4 RELATED WORK

1. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.
5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.

6. ASTM D-412 - Ultimate Tensile Strength at Break.
7. ASTM D-6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.6 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc...
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.7 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him / herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.

2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.
4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the Foundation Coat & fabric components, and completed Finish Coat inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTY

1. Provide ten-year manufacturer's Labor and Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:

1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
 2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
 3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.
2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst	111 lbs.	(50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117
	Fill	24.2 lbs. (10.99 kg)	
Thickness	.018 inches	(.457 mm)	per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPa)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic	ASTM D6083	Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved

(White or Cotton Finish Coat Only)

2.3 ACCESSORIES

1. Cant Strips: Approved composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (Non-Pressure Treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC
2. Hydro-Fiber: Bulking material used in conjunction with Foundation Coat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.
3. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.
4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that roofing panels have a minimum slope of .25 inch / foot (2.083cm/meter)
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Please consult your Hydro-Stop LLC Technical Sales Representative for additional advice on cleaning various roofing substrates.
3. Make all necessary repairs to existing substrate. Contact Hydro-Stop Technical Representative for assistance.
4. Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 APPLICATION

1. Bare Metal or Clean Rusted Metal: Remove all scale and apply StableRust Primer at a rate of 200 ft²/ gal (4.755 m²/ liter) to all rusted areas. Allow to dry. Protect from weather until dry.
2. Foundation Coat & Fabric Components- Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet

FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 40 ft²/gal (.951 m²/liter). FoundationCoat should only be applied with the use of approved roof brushes. Rolling, and spraying of the FoundationCoat are absolutely forbidden.

- A. Roof Penetrations- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6" (15.24 centimeters)
 - B. Vertical Seams- In general Vertical seams do not need to be addressed with fabric.
 - C. Horizontal Laps- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal all horizontal laps. Foundation Coat & Fabric components must be centered on the panel laps. Protect from weather until dry.
 - D. Exposed Mechanical Fasteners- Using either a Hydro-Cap or a 6 in. x 6 in. (15.24 x 15.24 centimeters) piece of fabric and the Foundation components (described above) seal all mechanical fasteners. Protect from weather until dry.
 - E. Parapet & Vertical Wall Junctions- Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof roof/wall junctions. Continue waterproofing up vertical surfaces and onto deck a minimum of 6 inches (15.24 centimeters) in each direction.
3. Finish Coat Component- Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).
 4. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness over all seams, laps, fasteners, wall junctions, and penetrations. Non-fabric areas of the roof must have a minimum of 15 mils (.015 inches / .381 millimeters) total cured thickness.

3.4 PROTECTION OF FINISHED WORK

1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

1. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION

SECTION 07560

FLUID APPLIED ROOFING (Historic Standing Seam Metal Roofs) Updated – January 23, 2008

PART 1 DESCRIPTION

1.1 DESCRIPTION OF APPLICABLE SUBSTRATES

This specification is only intended for the application of the PremiumCoat system to an historic standing seam metal roof (also known as terne metal). These roofs were generally made with copper, lead, tin-coated iron, and terne-coated steel. This specification does not apply to any type of commercial standing seam, “R” Panel, or 5v metal roofs.

1.2 DESCRIPTION OF FLUID APPLIED ROOFING SYSTEM

The fluid applied roofing system must consist of a reinforced elastomeric system specifically designed for use on a roof. The system must have been approved by FMRC (Factory Mutual Research Corporation) according to Standard 4470 for Class 1 Roof Constructions which includes- Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.3 SECTION INCLUDES

1. Fluid applied flexible acrylic waterproofing system over existing metal roofing system. This work shall include the preparation of the roof deck, application of the roof system, flashing system, and clean up.

1.4 RELATED WORK

1. The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.

5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus (Xenon Arc Type) for Exposure of Nonmetallic Materials.
6. ASTM D-412 - Ultimate Tensile Strength at Break.
7. ASTM D-6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications.

1.6 SUBMITTALS

1. Shop Drawings: Submit a scaled drawing showing the layout of joint reinforcing and all flashing details.
2. Product Data: Provide manufacturer's technical literature on products that make up the roofing system. This shall include, but is not limited to, coatings, reinforcing fabrics, flashing materials, roof drains, fasteners, etc...
3. Manufacturer's Installation Instructions: Submit all data sheets available from the manufacturer on the installation of the roofing system applicable to the work.
4. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.7 QUALIFICATIONS

1. Applicator Qualifications: The applicator of the roofing material specified herein shall be an approved applicator (designated by Hydro-Stop LLC). Proof of this qualification shall be provided in written form from the manufacturer of the roofing system.

1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall make him / herself thoroughly familiar with all codes, regulations, and standards governing the specified work. Any contradiction between

the manufacturer's requirements and these specifications shall be brought to the attention of the manufacturer and the specifier.

2. Deviations: There shall not be any deviations from these specifications unless the deviation is submitted in writing to the specifier. The request for deviation must have a letter from the roofing manufacturer's technical department approving the details of the deviation.
3. An Approved Applicator (as designated by Hydro-Stop LLC) shall be on site during all applications of any Hydro-Stop products.
4. Manufacturer's Technical Representative: An employee of the roofing material manufacturer shall be on site at least once every 7-calendar days during the work specified herein. Upon request the technical representative shall provide a written inspection report, during each site visit and submit the reports to the owner/owner's representative. The manufacturer's representative must approve the application process at specific stages before the contractor may continue including: Pre-Bid Inspection, Start-Up Inspection, at the completion of the FoundationCoat & fabric components, and completed FinishCoat inspection.

1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:
 1. Name of manufacturer.
 2. Name of contents and products code.
 3. Net volume of contents.
 4. Lot or batch number.
 5. VOC content
 6. Storage temperature limits.
 7. Shelf life expiration date.
 8. Mixing instructions and proportions of contents.
 9. Safety information and instructions.
2. Store and protect materials from damage and weather in accordance with manufacturer's instructions.
3. Store materials at temperatures between 50-90 degrees F (10.0-32.2 degrees Celsius). Keep out of direct sunlight.
4. Support stored material containers on pallets and cover with tarpaulin tied to bottom of pallets.

1.10 ENVIRONMENTAL REQUIREMENTS

1. Do not apply if ambient temperatures are expected to fall below 40 degrees F (4.5 degrees Celsius) or if rain is expected before the application has time to cure.

1.11 WARRANTY

1. Provide ten-year manufacturer's Labor and Material warranty.

PART 2 PRODUCTS

2.1 MANUFACTURER

- | | | |
|----------------------------|------------|--------------------|
| 1. Hydro-Stop, LLC | Toll Free: | (800) 739-5566 |
| 1465 Pipefitter Street | Phone: | (843) 745-9600 |
| North Charleston, SC 29405 | Fax: | (843) 745-9602 |
| | Web: | www.hydro-stop.com |

2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material: PremiumCoat three-stage, fabric reinforced, flexible acrylic coating, fluid applied in successive stages to form one continuous, seamless, watertight membrane; 40 mil (.04 inches / 1.016 millimeters) minimum cured total system thickness; comprised of the following:

1. Foundation and Saturation Coats: PremiumCoat FoundationCoat (highly flexible water based 100% pure acrylic polymer resin coatings).
2. Fabric: Hydro-Stop polyester, non-woven, stitch-bonded, and heat-set fabric.
3. Finish Coat: PremiumCoat FinishCoat (ultraviolet light resistant, blend of highly flexible water based 100% pure acrylic polymer resin coating); color as selected from manufacturer's standard colors.

2. Reinforcing Fabric: This material shall be non-woven 100% polyester, stitch bonded, heat set fabric with the following characteristics:

Weight:	3 oz / per square yard (106.31 grams / square meter)		
Tensile Strength	Warp	74 lbs. (33.60 kg)	per ASTM D 5034
	Fill	45 lbs. (20.43 kg)	
Elongation @ Break	Warp	21.3%	per ASTM D 5034
	Fill	51.3%	
Ball Burst	111 lbs.	(50.39 kg)	per ASTM D 3787
Trapezoid	Warp	13.5 lbs. (6.13 kg)	per ASTM D 117
	Fill	24.2 lbs. (10.99 kg)	

Thickness .018 inches (.457 mm) per ASTM D-1777

3. Cured Membrane Characteristics:

<u>PROPERTY</u>	<u>TEST</u>	<u>RESULT</u>
Elongation	ASTM D638	>300% elastomeric
Tensile Strength (cured)	ASTM D412	>2000 PSI (13,789 kPA)
Density:		12.1 lb/gal
Volume Solids:		> or = 53 %
Weight Solids:		> or = 66%
Algae Resistance	ASTM G29	No Growth Supported
Moisture Vapor	ASTM E96	3 Perms
Weathering	ASTM G26	No effect after 3,000 hours.
Salt Spray Test	ASTM B117	No effect.
Fire Rating	ASTM E108	Class A
VOC (calculated):		< 72 g/L
Susceptibility to Leakage	FM 4470	No signs of water leakage.
Windstorm Pressure	FM 4470	Meets Class 1- 90
Windstorm Pull	FM 4470	Class 1-225 on Polyisocyanurate
“	“	Class 1-270 on Expanded Polystyrene
“	“	Class 1-375 on Lightweight Concrete
“	“	Class 1-735 on Structural Concrete
Severe Hail Test	FM 4470	No separation or rupture 1-SH
Resistance to Foot Traffic	FM 4470	No sign of tearing or cracking.
Liquid Applied Acrylic	ASTM D6083	Approved
Solar Reflectance	ASTM C1549	> or = 0.90
Thermal Emittance	ASTM C1371	> or = 0.79
OTC (Ozone Transport Commission)		Compliant
California Title 24		Compliant
CRRC (Cool Roof Rating Council)		Approved
Energy Star (Dept. of Energy)		Approved
<i>(White or Cotton Finish Coat Only)</i>		

2.3 ACCESSORIES

1. Cant Strips: Approved composition materials are EPS (Expanded Polystyrene), ISO (Polyisocyanurate), and wood (Non-Pressure Treated). Cant strips are to be installed at all internal corners, around curbs, and at all 90 degree angles specified by Hydro-Stop LLC
2. Hydro-Fiber: Bulking material used in conjunction with Foundation Coat or BarrierGuard slurry (as specified by Hydro-Stop Technical Representative) to fill cracks, voids, or low depressions on various substrates.

3. StableRust Primer: water based surfactant-free primer used in direct metal applications to stabilize and protect metal surfaces.

PART 3 EXECUTION

3.1 EXAMINATION

1. Verify substrate surfaces are durable, free of frozen matter, dampness, loose particles, cracks, pits, projections, or foreign matter detrimental to adhesion or application of waterproofing system.
2. Verify that substrate surfaces are smooth and not detrimental to full contact bond of waterproofing materials.
3. Verify items that penetrate surfaces to receive waterproofing are securely installed.
4. Verify that substrate areas are adequately supported and firmly fastened in place.
5. Verify that roofing panels have a minimum slope of .25 inch / foot (2.083cm/meter)
6. Verify that roof does not have ponding water areas.
7. Verify that all attached vertical walls are properly waterproofed.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.
2. As a minimum, clean and prepare surfaces to receive waterproofing by removing all loose and flaking particles, grease and laitance with the use of a stiff bristle push broom and or washing. Power-washing at 3000 psi is recommend on most metal substrates; however occasionally there will be a substrate that will need mechanical preparation such as wire brushing. Please contact you Hydro-Stop Technical Representative for recommendation.

Care should be taken not to inject water into the substrate during washing. In some cases additional drying time may be required after the cleaning process. Please consult your Hydro-Stop LLC Technical Sales Representative for additional advice on cleaning various roofing substrates.

3. Make all necessary repairs to existing substrate. Contact Hydro-Stop Technical Representative for assistance.
4. Do not apply waterproofing to surfaces unacceptable to manufacturer.

3.3 APPLICATION

1. **Bare Metal or Clean Rusted Metal:** Remove all scale and apply StableRust Primer at a rate of 200 ft²/ gal (4.755 m²/ liter) to the entire roof surface. Allow to dry. Protect from weather until dry.
2. **Foundation Coat & Fabric Components-** Consist of one coat of FoundationCoat applied to the substrate, Hydro-Stop PremiumCoat Fabric (sizes vary) laid into the wet FoundationCoat, and finally a second coat of FoundationCoat saturating the fabric from above. Care should be given to ensure that adjacent runs of fabric are overlapped a minimum of 4 inches (10.16 cm). Foundation Coats are applied at a total rate of 40 ft²/gal (.951 m²/liter). FoundationCoat should only be applied with the use of approved roof brushes. Rolling, and spraying of the FoundationCoat are absolutely forbidden.
 - A. **Roof Penetrations-** Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above) seal items projecting through waterproofing material watertight. Waterproof up penetrations a minimum of 6" (15.24 centimeters)
 - B. **Valleys and Peaks-** Using 12, 16 or 24 inch (30.48, 40.6, or 61.0 centimeters) fabric and the Foundation components (described above) seal all valleys and peaks. Foundation Coat & Fabric components must be centered in the valleys or on the peaks overlapping adjoining fabrics. Protect from weather until dry.
 - C. **Vertical Seams-** Using 6 inch (15.24 centimeters) fabric and the Foundation components (described above) seal all vertical seams. Foundation Coat & Fabric components must be centered on the panel seams. Protect from weather until dry.
 - D. **Vertical Pans-** Using 16 or 24 inch (40.6 or 61.0 centimeters) fabric and the Foundation components (described above) seal all vertical pans. Foundation Coat & Fabric components must be centered in the vertical pans overlapping both adjoining 6" fabrics used on the vertical seams. Protect from weather until dry. *(Note: most historic standing seam metal roofs have standing seams that are centered on 17" (43.2 cm) or 25" (63.5 cm). For seams centered on 17" (43.2 cm) use 16" (40.6 cm) fabric, and for 25" (63.5 cm) seams use 24" (61 cm) fabric.)*
 - E. **Parapet & Vertical Wall Junctions-** Using 12 inch (30.48 centimeters) fabric and the Foundation components (described above), waterproof roof/wall junctions. Continue waterproofing up vertical surfaces and onto the roof surface a minimum of 6 inches (15.24 centimeters) in each direction.
3. **Finish Coat Component-** Apply 2 coats of FinishCoat at a combined total rate of 70 ft²/gal (1.664 m²/liter) over entire roof area. Minimum milage requirements are 11.5 mils (.0115 inches / .292 millimeters) wet and 6.1 mils (.0061 inches / .155 millimeters) dry per coat. Allow to dry between coats. Total Finish Coat dry thickness should be a minimum of 12.2 mils (.0122 inches / .31 millimeters).

4. Completed PremiumCoat System- System must be installed to a minimum 40 mil (.04 inches / 1.016 millimeters) total cured thickness over all seams, laps, fasteners, wall junctions, and penetrations. Non-fabric areas of the roof must have a minimum of 15 mils (.015 inches / .381 millimeters) total cured thickness.

3.4 PROTECTION OF FINISHED WORK

1. Monitor finished system for 7 day, sweeping off birdbaths to allow for full cure.

3.5 CLEANING

1. Immediately clean unscheduled surfaces receiving waterproofing in accordance with manufacturer's instructions.

END OF SECTION