SECTION 07560
Fluid Applied Roofing

Energy Seal Coatings

Acu-Flex:100 {silicone}

FULL FABRIC ON RIGID INSULATION

or DENSDECK, PLYWOOD

Roof Coating System

APPLICATION SPECIFICATION

*This **MASTER APPLICATION-SPEC** is a brief outline of Advanced Coating Systems, Inc.'s (ACS) Manufacturers Specifications for the above described product and is intended for use as a submittal with any bid package by one of ACS' Certified Applicators. ACS Representative and the Certified Applicator must comply with the "Application" section of all Technical Data Bulletins prior to design or bid. The "Product" and "Safety" sections located on the Technical Data Sheet and MSDS contain information pertaining to the proper usage of products as well as applicable safety precautions. These sections must be thoroughly reviewed prior to the installation of this roofing system.*

PART I - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, tools and equipment necessary for the installation of Energy Seal Coatings® including accessory items subject to the general provisions of the contract.

1.02 RELATED SECTIONS

A. See: Warranty Request Form, Warranty Example, Technical Data Sheets, & MSDS

1.03 DESCRIPTION OF WORK

A. Entire roof system to be restored.
B. Gutters to be rust-proofed and/or waterproofed (optional).
C. Mechanical equipment, vents and ductwork to be rust-proofed and/or waterproofed (optional).
D. Skylights may be sealed and/or waterproofed (optional).
E. Adjoining walls and copings to be waterproofed (optional).

1.04 QUALITY ASSURANCE

A. ACS Ten (10) Year Warranty covering material shall be issued within thirty (30) days of final payment.
B. This roofing system must be installed by an Authorized Roofing Applicator in compliance with written Application Specifications as approved by ACS Technical Services. There must be no deviations without the PRIOR WRITTEN APPROVAL of ACS Technical Services. Upon completion of the installation, an inspection will be conducted by a ACS Representative to ascertain that the roofing system has been installed according to ACS published Master Application Specifications and details applicable at the time of bid.
C. Provide written proof of required licenses, insurance and permits prior to job start-up.
D. Provide copy of Approved ACS Warranty Request Form Application, submitted by the Contractor.

1.05 SUBMITTALS

A. Samples (optional): Provide two (2) 1"x 2" (2.5cm x 5.0cm) samples of the system to be installed.
B. Installation Procedures: Submit additional and specific procedures unique to the project by addendum.
C. Product Data: Submit all product data with physical properties, requirements for preparation, limitations and application rates.

1.06 DELIVERY AND STORAGE

A. Deliver coating materials and accessories in manufacturer's original protective containers with labels intact and legible. Comply with manufacturer's published instructions for storage and handling.
B. Store materials in dry protected areas and on clean raised platforms with securely anchored weather protective covering.
C. Store flammable products away from spark or open flame.
D. Store coating materials at a minimum of 50°F (10°C) prior to use or as otherwise recommended by the manufacturer. Protect materials from freezing. Protect materials from prolonged exposure to temperatures exceeding 105°F (40.6°C).
E. Contaminated and Damaged Materials: Remove damaged or contaminated materials from site and dispose of in accordance with local, State and Federal regulations.

1.07 SITE CONDITIONS

A. EXAMINATION OF EXISTING CONDITIONS: Contractor shall examine substrate for conditions that might detrimentally affect the application of Energy Seal Coatings® and shall report all unsatisfactory conditions to ACS and will not proceed until these conditions have been corrected.
B. ALL WARRANTIES REQUIRE AN INFRARED SCAN AND THE REPLACEMENT OF ALL WET ROOFING MATERIALS, PRIOR TO SYSTEM APPLICATION.
C. Commencing work implies acceptance of existing condition, by contractor, as satisfactory to the outcome of this work.
D. Air intake vents, blowers, air conditioning units and evaporative coolers shall be disconnected or otherwise modified to prevent fumes from entering into the building or from contaminating the roof surface with condensate water or exhaust gases.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Proceed with coating work only when weather conditions comply with ACS recommendations and other current published data and MSDS information. Do not exceed temperature limitations recommended by ACS.
B. Owner may occupy the premises during the entire period of the roof retrofit. Cooperate with Owner's Representative during application operations to minimize conflict, and to facilitate continued use of the facility.
C. Coordinate scheduling with the Owner in order to relocate or protect vehicles, building occupants and building contents from damage during application operations.

PART 2 - PRODUCTS

2.01 COATING SYSTEM COMPONENTS

A. Approved Manufacturer
   1. Energy Seal Coatings® by ACS
   2. Approved Equal
   3. See Product Data Sheet for specific details.
B. Silicone: (Acu-Flex:100™)
   1. **Acu-Flex:100**™ is a single component, moisture cure, high solids silicone roof coating.

PHYSICAL PROPERTY	TYPICAL VALUE
Tensile Strength	432 psi min.
Elongation	216%
Viscosity	8,000 – 14,000 cps
Solar Reflectance	0.87
Thermal Emittance	0.89
SRI (solar reflective index)	110

2.02 ACCESSORY MATERIALS AVAILABLE

A. **Acu-Wash**™:
A pre-treatment water-soluble detergent surfactant recommended for cleaning surfaces which are to be coated with Energy Seal Coatings® products.

B. **Acu-Base Coat** ™:
A single component acrylic coating designed as a base coat/ primer for multiple roof surfaces.

C. **Acu-Fabric**™:
A stitch-bonded polyester fabric that comes in varying widths used in conjunction with Acu-Flex:100™ to create a fully adhered fabric reinforced waterproof system for seams, flashing and other roof penetrations.

1. **ISO** (Polyisocyanurate) – 1.5" (3.81cm) minimum thickness. Max board size 4ft. x 8ft. (1.21m x 2.43m) of mechanically fastened or 4ft. x 4ft. (2.21m x 1.21m) if adhered with Factory Mutual approved roofing adhesive. Boards must be close cell with factory laminated facer.
2. **Expanded Polystyrene** – 1.5" (3.81cm) minimum thickness, a minimum of 1.5 lb/ft^3 density. Max board size 4ft. x 8ft. (1.21m x 2.43m) if mechanically fastened or 4ft. x 4ft. (1.21m x 1.21m) if adhered with Factory Mutual approved roofing adhesive.
3. **Plywood** – ¾" (1.90cm) minimum thickness tongue and groove exterior B&C grade, non-treated. Plywood is to be adhered with sub-floor adhesive and deck fasteners. Secure as per manufacturers recommendation.
4. **Densdeck** – ½" (1.27cm) thickness is the normal recommendation. Secure as per manufacturers recommendation.
5. **Tapered ISO** (polyisocyanurate) or **EPS** (expanded polystyrene) can be used to provide positive drainage of water – 1.5" (3.81cm) minimum thickness. Max board size is 4ft. x 4ft. (1.21m x 1.21m) with a slope of not less than ¼" (2.08cm) per foot (30cm).

D. Roof Breather Vent:
Passive, wind driven, breather vent with no moving parts installed in roof system to dissipate water vapor from beneath roof membrane. See manufacturers recommendation for installation.

E. Mechanical Fasteners – Use mechanical fasteners with plates. Fastener size and patter layout to be recommended by board manufacturer.

F. Cant Strips – Recommended composite materials are EPS (expanded polystyrene), ISO (polyisocyanurate), wood (non-treated). Cant Strips are to be installed at all internal corners, around curbs and at all solid wall 90° angles on the roof

G. Unacceptable Board Materials:
OSB (any type), Blue Board (Dow Co.), High Density, Perlite and treated plywood.

PART 3 - EXECUTION

3.01 PREPARATION FOR COATING

A. Adhesion test:

1. **Prior to commencing this specification, an ADHESION TEST PATCH must be applied and evaluated after the roof has been properly cleaned.**

B. Surface condition:

1. Verify that roof surface is smooth, clean and properly prepared to receive insulation board materials.
2. Verify all roof penetrations are properly installed, secured and sealed.
3. Confirm the roof does not have ponding water. Roof deck should have a minimum slope of ¼" (.63cm) per 1' (30.5cm).
4. Make sure all vertical and parapet walls are properly waterproofed.

C. Priming:

1. Manually apply Acu-Base Coat™ using a 4 mil Roller Guage™ with a 3/16" (4.7mm) short nap 18" (45cm) roller, to all surfaces which will receive the Energy Seal Coatings® System. Contact ACS for application recommendations.
2. Spray application Acu-Base Coat™:

Surface	*Primer*	*Coverage*
Full Fabric	Acu-Base Coat™	30 sq.ft. /gal 2.8m^2 /3.7 liters

3. Surface age and porosity will have a direct effect on application rates. Contractor is responsible to make sure surface is properly primed prior to the application of the Energy Seal Coatings® System.

D. Drains:

1. Remove the existing clamping ring and clean the bowl and ring. Remove existing roofing material from the drain to provide a clean substrate.
2. Repair the substrate around drain to provide a smooth transition to the roof drain from the ISO or EPS boards.
3. Use a brush to apply Acu-Flex:100™ liberally in and around the drain bowl. While the Acu-Flex:100™ is still wet, embed strips of 6" wide Acu-Fabric™, from the inside of the drain bowl to the roof deck, making sure the Acu-Fabric™ is smooth and flat, no voids, puckers or wrinkles. Apply an additional layer of Acu-Flex:100™ as necessary to totally encapsulate the reinforcing fabric and feather out on to the insulation board.
4. Replace clamping ring and leaf guard.

E. Insulation board installation:

1. Install insulation boards to roof deck with polyurethane adhesive or mechanical fasteners, in accordance with board manufacturer's installation instructions, to meet a minimum wind uplift requirement of Class 1-90. Verify the proper wind uplift requirements with your local building code.
2. Stagger all board joints as recommended by manufacturer.
3. Lay insulation boards with edges touching but not forcibly touching. Cut insulation to fit neatly to perimeter blocking and around penetrations

through roof deck.

4. Do not apply more insulation board than can be sealed and waterproofed on the same day.
5. Install cant strips on internal corners, around curbs and at all solid wall 90° angles on the roof.

3.02 Seam Detailing System:

A. General:
1. Do not apply coating when moisture is present on the substrate (or under substrate) or if rain is expected before coating system properly cures.
2. Each coat shall be allowed to dry before proceeding with subsequent applications.
3. All seam detailing and coating shall be coated within recommended time period. If application is delayed beyond that time, consult ACS for recommendations.
4. No traffic shall be permitted on the finish coat for a minimum of 3 days. Damage to the surface by other trades shall not be the responsibility of the roofing contractor.

B. Acu-Flex:100™ and Acu-Fabric™ Seam Detailing System:
1. Insulation board seam detailing:

   Using 6" (15.25cm) Acu-Fabric™ and Acu-Flex:100™ (as described above) seal and waterproof all insulation board seams, cracks and non-working joints. Center the 6" (15.25cm) Acu-Fabric™ on the all seams.
2. Roof perimeter:

   Using 12" (30.4cm) Acu-Fabric™ and Acu-Flex:100™ (as described above) seal and waterproof the entire roof perimeter. Center the Acu-Fabric™ so that 6 inches (15.2cm) extend up the vertical surface and 6 inches (15.2cm) on to the roof surface.
3. Roof penetrations:

   Using 12" (30.4cm) Acu-Fabric™ and Acu-Flex:100™ (as described above) seal all items extending through the insulation board, assuring they are completely waterproof. Center the Acu-Fabric™ so that 6 inches (15.2cm) extend up the vertical surface and 6 inches (15.2cm) on to the roof surface.
4. Field of roof:

   Using 44" (1.1m) Acu-Fabric™ and Acu-Flex:100™ seal the entire field of the roof. Apply Acu-Flex:100™ to the insulation board; while the Acu-Flex:100™ is still wet apply the Acu-Fabric™ onto the wet Acu-Flex:100™. Care should be taken to make sure the Acu-Fabric™ is laid flat with no puckers, wrinkles or folds. Apply a second coat of Acu-Flex:100™ on top of the Acu-Fabric™ at a rate of 150 sq.ft. per gallon (232m^2 /liter). Application of the Acu-Flex:100™ is to be made with a short nap roller or an acceptable deck brush. Work the Acu-Flex:100™ into the Acu-Fabric™ so there are no bubbles under the Acu-Fabric™. DO NOT SPRAY APPLY THE ACU-FLEX:100™.

   Overlap adjacent runs by 4 inches (15.25cm) at a minimum.

Allow Acu-Base Coat™ to dry thoroughly before proceeding with the application of Acu-Flex:100. If not, blistering may occur in the Acu-Flex:100 caused by entrapped water within the Acu-Base Coat. Drying time will be dependent on the temperature and humidity at the jobsite.

3.03 COATING SYSTEM

A. General:
1. Do not apply coating when moisture is present on the substrate (or under substrate) or if rain is expected before coating properly cures.
2. Wind barriers shall be used if wind conditions could affect the quality of the material being applied.
3. Acu-Flex:100™ must cover all intended surfaces completely. An extra pass of Acu-Flex:100™ may be required at all edges, penetrations, and vertical surfaces such as parapet walls.
4. **Base and finish coats of Acu-Flex:100™ must be contrasting colors.**
5. All coating and primers shall be coated within recommended time period. If application is delayed beyond that time, consult ACS for primer recommendations.
6. No traffic shall be permitted on the coated roof surface for a minimum of 3 days. Damage to the surface by other trades shall not be the responsibility of the roofing contractor.

B. Manual Application of Acu-Flex:100™ as both a base & finish coat:
1. Apply Acu-Flex:100™ {gray} as a basecoat; pour 1-gallon (3.8 liter) of Acu-Flex:100™ {gray} onto roof in a narrow pass for approximately 10 feet (3m) long and spread approximately 10 feet (3m) wide using a 12 mil Wooster Roller Guage™ with a 3/16" (4.7mm) short nap 18" (45cm) roller. The minimum application rate of 1 gal/100 sq.ft. (3.8 liter/ 9.29 m^2) per coat.
2. Repeat steps "B.1" above using Acu-Flex:100™ {white} as the finish coat. **Apply finish coat perpendicular to the basecoat.**

Application rates of the basecoat and the final coat must be checked periodically to assure proper coating thickness. This shall be done using a wet film gauge, checking film thickness every 500 sq.ft. (46m^2) during application. Wet film thickness should be no less than 13 mils per coat.

C. Spray Application of Acu-Flex:100™ as both a base & finish coat:
1. Spray basecoat of Acu-Flex:100™ {gray} at minimum rate of 1 gal/100 sq.ft. (3.8 liter/ 9.29 m^2). Each pass shall overlap the previous pass to insure complete coverage. Contractor needs to figure losses due to surface texture, increasing estimated material requirements, if needed.
2. Spray finish coat of Acu-Flex:100™ {white} **perpendicular to the basecoat** at a minimum rate of 1 gal/100 sq.ft. (3.8 liter/ 9.29 m^2). Each pass

shall overlap the previous pass to insure complete coverage.

3. Pay special attention to overspray, which can texture or discolor adjoining finished sections or surfaces not intended to receive coating.

Application rates of the basecoat and the final coat must be checked periodically to assure proper coating thickness. This shall be done using a wet film gauge, checking film thickness every 500 sq.ft. (46m^2) during application. Wet film thickness should be no less than 13 mils per coat.

Contactor should estimate coating requirements based on actual experience and they need to figure losses due to applicator proficiency, surface texture, wind, waste, and other factors. Additional material over and above the original estimate may be required.

NOTE: The recommended gallons for minimum mil thickness is a guideline and should be verified by the contractor to ensure that the minimum mil thickness is applied to the roof surface.

3.04 PONDING WATER

1. As defined by the National Roofing Contractors Association (NRCA), ponding water is water "that remains on a roof surface longer than 48 hours after the termination of the most recent rain event."
2. Ponding water on a roof could indicate early roof failure. Every effort must be made to eliminate roof ponds through the use of drains, scuppers or some other mechanical means.

3.05 INSTALLATION OF WALKWAYS

B. In high-traffic areas and around mechanical equipment, walkways should be installed to protect the coating system from damage or apply an additional layer of the Acu-Flex:100™ at a rate of 1.5 gallons/100 sq.ft. (5.6 liter/ 9.29 m^2). Broadcast 3M Granules or approved aggregate into the wet coating, to establish a trafficable surface.

3.06 FIELD QUALITY CONTROL

A. Contractor is to maintain Job Progress Report / Daily Log of work completed as required to assure installation is in accordance with manufacturer requirements. Log is to include progress photo's.

B. Contractor is providing on-the-job inspections, technical assistance and material application guidance as it may be necessary to complete the Energy Seal Coatings® System application in accordance with ACS warranty requirements.

3.07. JOB COMPLETION

A. Inspect completed roofing system and correct all defects to meet the specification and/or warranty requirements.
   1. Transparent or Thin Areas: If areas appear to be undercoated, recoating may be needed to ensure final thickness to meet the ACS specifications.
   2. Delamination: Verify that all coated areas appear to be fully adhered to the substrate. A visual inspection looking for typical signs of poor adhesion such as flaking, blistering, peeling, etc. should be made. Re-priming and recoating will be required if such areas are apparent.
   3. Pin Holing: Certain job or site conditions may result in pin holing or out gassing during curing of the coating. Again, a visual inspection looking for typical signs of out gassing such as excessive pockmarks, pinholes, etc. should be done. Recoating will be required if such areas are apparent.
   4. Blisters under Acu-Flex:100: may represent a localized loss of adhesion and the lifting of roof coating film from the underlying surface. The most common cause is water or moisture vapor migrating through from below or above the roof surface. Surface blisters in coating can sometimes be caused by the actual moisture in the liquid coating at the time of application. Blisters can form when the coating dries so rapidly some of the water can't evaporate completely before the coating surface cures. Blisters can also form from moisture trapped in the substrate. Blisters must be removed using a shop knife. Apply Acu-Caulk:SM™ with a putty knife and feather smooth onto the surrounding Acu-Flex:100™. Once dry, top coated with Acu-Flex:100™.
   5. HVAC Equipment: HVAC equipment must be properly plumbed so as to eliminate condensation runoff onto the roof.

B. Clean up all debris, excess materials, and equipment and remove from site.

C. Restrict construction traffic and equipment movement on the completed roofing system to only essential personnel. Provide appropriate protection against traffic and construction activities on completed roofs. Damage to the roof by other trades shall not be the responsibility of the ACS Coating Applicator.

End of Section

CAUTION: Do not apply within two hours of sunset, rain, fog or if surface temperatures are below 50°F or above 140°F (10°C-60°C). Energy Seal Coatings® must be completely dry before exposing to water or foot traffic. Keep Energy Seal Coatings® containers covered when not in use. Dispose of all containers in accordance with state and local environmental regulations. Keep away from children. If ingested, DO NOT induce vomiting, call Physician immediately, see product MSDS for more information.

Our suggested installation specifications are based on information from laboratory and field testing which we believe to be reliable and correct; however, accuracy and completeness of said tests are not guaranteed and not to be construed as a warranty, either expressed or implied. Since the use of the material is beyond manufacturer's control, buyer assumes all risk whatsoever as to their use or results obtained. We guarantee our products to conform to Advanced Coating Systems, Inc. quality control. Advanced Coating Systems, Inc. warrants only the standard quality of material. Manufacturer's sole responsibility shall be to replace that portion of the product of this manufacturer which proved to be defective.