SECTION 07 56 00
FLUID-APPLIED ROOFING

PART 1 - GENERAL

1.1 DESCRIPTION

A complete system of compatible materials to create a seamless, waterproof, fully adhered fluid-applied roofing system over new or existing metal roofing.

1.2 RELATED WORK

Color of weather course: Light Gray to match existing color with approval of the COR.

1.3 QUALITY CONTROL

A. Work shall be performed by installer approved in writing by roofing material manufacturer.

B. Installation shall comply with printed instructions of roofing materials manufacturer.

1.4 SUBMITTALS

A. Samples:
   1. 6 inch square cured sheet of roofing system without backing, showing color, and texture.
   2. System proposed for flashing and reinforcing.

B. Manufacturer's Certificates:
   1. Installer approval.
   2. Certificate stating that material utilized on the job will be of the same formulation as materials covered by the test report.

C. Manufacturer's Literature and Data:
   1. Roofing system materials giving physical properties, wet mil thickness in relation to dry mil thickness, and other related information.
   2. Manufacturer's printed instructions for application of roofing materials to be installed.

D. Test Reports: Test report from an independent commercial testing laboratory showing that polyurethane primer and coating materials meet the specified requirements.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in manufacturer's original factory sealed containers labeled to identify product, manufacturer and point of manufacture.

B. Observe precautions appropriate to flammable materials and "safety notes" included in roofing material manufacturer's printed instructions to installer before, during, and immediately following application of these materials.

1.6 JOB CONDITIONS

A. Work shall proceed only on dry surfaces free of water, surface condensation, rain, snow, ice, and frost.

B. Minimum application temperature is 40 degrees F and rising. Do not apply in rain or when rain is expected within 24 hours. Do not apply above 90 degrees F or below 40 degrees F or when temperatures are expected to fall below 40 degrees F within 24 hours. Do not proceed with application of materials when ambient temperature is less or greater than that recommended by the coating material manufacturer.

1.7 WARRANTY

Warranty surfaces, where elastomeric coating has been applied, against leaks and other failures, over and above normal wear and failure of substrate. Warrant that installed waterproof coating system shall be free of defects including adhesive failure, cohesive failure, weathering deficiencies and waterproofing failure, and subject to the terms of the "Warranty of Construction", FAR clause 52.246-21, except that the warranty period is ten (10) years.

1.8 SAFETY REQUIREMENTS

Keep products away from heat, sparks and flame. Do not permit use of spark-producing equipment during application of flammable products or where explosive fumes are present.

1.9 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM) Standards:

D412-06.....Vulcanized Rubber and Thermoplastic Elastomers-Tension
D750-06.....Rubber Deterioration in Carbon-Arc Weathering Apparatus
D1149-99.....Rubber Deterioration-Surface Ozone Cracking in a Chamber
E96-05.....Water Vapor Transmission of Materials

PART 2 - PRODUCTS

2.1 ROOFING MATERIALS

A. PRIMER:
A high performance, two component primer meeting the following requirements:

- Solvent resistant
- Chemical resistant
- Lead and Chromate free
- Vehicle Type: Epoxy Urethane

CURED FILM PERFORMANCE

DESCRIPTION	TEST METHOD	RESULTS
Adhesion to Steel	ASTM D4541	>500 psi
Hardness	ASTM D3363	H
Impact Resistance	ASTM D2794	160 Direct
Corrosion Resistance 1,000 hrs. Salt Fog	ASTM B117	No Under Cutting

B. ELASTOMERIC COATING:
Polyurethane weather course coating material meeting the following requirements:

PERFORMANCE REQUIREMENTS OF CURED FILM		
PHYSICAL PROPERTIES	**TEST METHOD**	**RESULTS**
Tensile Strength	ASTM D412	1,500 psi
Elongation	ASTM D412	360%
Permanent Set	ASTM D412	<10%
Tear Resistance	ASTM D1004	100 lb/in
Water Resistance	ASTM D471	<3% @ 7 days
MVT @ 30 mils	ASTM E96	2.2 English
Shore A	ASTM D2240	70 – 75
Adhesion	ASTM D903	15 pli
Weathering Resistance	ASTM D822	Slight Chalk
Thermal Shock	Alternate Heat/Cold	No Loss of Adhesion

2.2 FLASHING TAPE:
100% solids formulation of synthetic resins, thermoplastics and non-curing rubber (non butyl) with a built in primer, bonded to a woven polyester backing for maximum conformability.
- Designed not to harden under even the most rigorous conditions.
- Sag temp > 200°F.
- Designed to seal roof joints (seams) and tears, flashings, copings, skylights, gutters, etc.
- Extremely flexible, with no memory, shall conform to virtually any shape without springing back.
- Seals to itself so it can be cut and folded around an object.
- Permanently bonds to a wide range of surfaces including all metal roofs, aluminum, galvanized steel, wood, polyethylene, propylene, polystyrene, fiberglass, brick, concrete, masonry, OSB, etc.

2.3 SEALANT
One-component, permanently flexible, multi-purpose polyurethane sealant. Cures in the presence of atmospheric moisture to provide a permanently elastic bond to fasten materials, which have dissimilar coefficients of expansion. Seals dynamically moving joints, such as: Expansion and control joints, perimeter caulking, and metal roofs.

Typical Properties:

Sag or Slump	Nil
Skin-Over Time at 77°F, 50% RH	2.5 hours
Cure Time at 77°F, 50% RH	3/16 inch per 24 hours
Durometer Hardness, Shore A	25-30
Ultimate Tensile Strength	120 psi
Elongation	>700%
Application Temperature	40°F to 110°F
Service Temperature	-40°F to 200°F

PART 3 - EXECUTION

3.1 PROJECT CONDITIONS

A. Weather Conditions: Do not apply work of this Section if temperature of surfaces to receive coating or ambient temperature are below 40 degrees F or above 90 degrees F. Do not install materials when water or dampness in any form is present on the substrate, if materials are wet, or if rain is imminent.

B. Install suitable impervious type masking to preclude staining of surfaces to remain exposed wherever elastomeric waterproofing abuts or laps on to other finish surfaces, and provide additional protection as necessary to supplement masking; cover entire area of building subject to damage or staining.

3.2 PREPARATION OF SURFACE

A. Surfaces to receive fluid-applied roofing system shall be in sound condition and free of projections, depressions, grease, oil, asphalt, tar, paint, wax, dust or other debris that will prevent proper application of roofing.

B. Installer shall report adverse roof deck conditions of any type in writing to the COR. Commencement of work constitutes acceptance of roof surfaces by installer as satisfactory for application of the fluid-applied roofing system.

C. Tighten all loose fasteners and replace stripped fasteners with oversized version of the same fastener, i.e. aluminum, galvanized, or stainless must remain as designed by the manufacturer.

D. Metal surfaces having loose scale or rust must be cleaned and primed with metal primer prior to elastomeric coating application as job conditions dictate.

E. Remove dirt and foreign material detrimental to adhesion or application of roofing. Use Tri-Sodium Phosphate diluted 20:1 with water. On heavy dirt or grease, apply full strength. Broom-scrub the cleaning solution on the existing substrate to loosen oxidation and dirt and pressure wash with a minimum 1,500 psi water blaster. If algae is growing on the surface, cleaning must include bleach in the washing of the substrate. It is very important to remove all soap and/or bleach residue used to clean roof. Rinse well and allow to dry.

F. Detail horizontal metal seams with flashing tape.

G. For vertical metal seams, use gun-grade sealant when there is a tight and ordinary joint that will be efficiently filled with the gun. Apply urethane sealant into vertical joints and smooth out lumps or imperfections in the application while still wet and allow to thoroughly cure.

H. Apply urethane sealant around fasteners and strike or tool into place to achieve a smooth transition and allow to thoroughly cure.

I. Inside and outside corners, etc. can be flashed using sealant.

J. Clean and seal watertight all drains, gutters, parapet walls and caps. Repair any damaged metal. Caulk and seal watertight all screws, seams, joints, voids, protrusions and any areas where water could enter through the roof.

K. Allow roof and other prepared surfaces to dry completely before proceeding with elastomeric coating application.

L. Broom-clean surfaces to remove all dust, dirt, loose aggregate, and other foreign particles.

3.3 APPLICATION

A. Install fluid-applied roofing system with tools and equipment approved by roofing material manufacturer. Wet film thickness of roofing materials shall be as recommended by roofing material manufacturer to obtain the specified dry film thickness. Check wet film thickness frequently by use of a wet mil thickness gauge. Control application of fluid-applied material by maintaining careful balance at all times between material consumption and area covered.

B. Priming: Immediately after substrate has been thoroughly cleaned and ready for application of the roof, prime all concrete surfaces to receive fluid-applied roofing system at a rate of 300 to 400 square feet per gallon.

C. Roofing:
   1. Weather Course: Apply fluid-applied roofing system at a minimum rate of 1.25 gallon per 100 square feet (80 sf/gal) to prepared roof surfaces to yield an average thickness of 15 dry mils.
   2. The minimum total dry mil thickness of the total system coating shall be 15 mils.

3.4 PROTECTION AND CLEAN UP

A. Protect adjacent construction from disfiguration by run, spillage or overspray, and repair work defaced in this manner.

B. Remove smears of elastomeric material from other work. Remove foreign matters from finished coating surfaces.

C. Promptly remove primer or coating material from adjacent surfaces with MEK, Toluene or Xylene. Leave work area in broom clean condition.

D. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

E. Remove tools, equipment and surplus materials and clear roof area of debris on completion of work.

3.7 FIELD QUALITY CONTROL

A. Verify coating wet-film mil thickness with gauges as work progresses. Verify the applied thickness before the material attains final set, by use of a mil-thickness gauge as the work progresses. Immediately apply additional coating to produce required thickness where readings indicate a thickness less than that specified.

B. Retain empty product containers during course of work to aid in determining whether completed coating system complies with manufacturers average thickness requirements.

C. Verify proper dry condition of substrate using method recommended by coating system manufacturer. Perform adhesion checks prior to general application of coating system using field adhesion test method recommended by manufacturer.

- - - E N D - - -