SECTION 07 56 00
FLUID-APPLIED ROOFING

SPEC WRITER NOTE: Delete between //---// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs. This fluid applied system is intended for use over concrete roof decks. When consideration is given to applying the system over substrates other than concrete, consult the manufacturer. Specifically, do not apply over cellular glass block insulation, or asphalt impregnated insulation materials. Avoid applying synthetic rubber roofing over areas of high humidity. When synthetic rubber roofing is to be applied over lightweight concrete fill, have Designer obtain and detail special requirements.

PART 1 - GENERAL

1.1 DESCRIPTION

Fluid applied roofing system consisting of a fluid application of multiple layers of neoprene and hypalon.

SPEC WRITER NOTE: Delete following paragraph when color is not selected in Section 09 06 00, SCHEDULE FOR FINISHES.

//1.2 RELATED WORK

Color of weather course: Section 09 06 00, SCHEDULE FOR FINISHES. //

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. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Samples:
   1. 150 mm (6 inch) square cured sheet of roofing system without backing, showing color, and texture.
   2. System proposed for flashing and reinforcing.

C. 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.

D. 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.

E. Test Reports: Test report from an independent commercial testing laboratory showing that neoprene and hypalon materials meet 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. Do not proceed when temperature of surfaces to receive roofing and flashing, is lower than 5°C (40 degrees F).
C. Complete work on roof deck and install penetrations and projections through roof deck before roofing and flashing work as this section is applied.

1.7 WARRANTY
Roofing system is subject to terms to "Warranty of Construction", FAR clause 52.246-21, except that warranty period is extended to two years.

1.8 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
PART 2 - PRODUCTS

SPEC WRITER NOTE: Make material requirements agree with applicable requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 ROOFING MATERIALS

A. Neoprene-Based Prime and Base Courses: A polychloroprene base with added resins, curing agents, pigments and solvents, which contains no oils or volatile plasticizers.

B. Elastic Base Sheet: A cured, non-staining, polychloroprene (neoprene) base with inorganic filament reinforcement and added resin, curing agents, pigments, and solvents.

C. Neoprene Based Fibered Sealer: A 100 percent polychloroprene (neoprene) base with inorganic filament reinforcement and added resin, curing agents, pigments, and solvents.

D. Hypalon Based Weather Course: A 100 percent chlorosulfonated polyethylene base with added curing agents, pigments, and solvents which contain no oils or volatile plasticizers. Color of weather course shall be //as specified in Section 09 06 00, SCHEDULE FOR FINISHES. //white pigmented with Rutile type titanium dioxide.//

E. Neoprene and Hypalon roofing materials shall meet the following requirements:
<table>
<thead>
<tr>
<th>Property</th>
<th>Base Course</th>
<th>Weather Course</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength</td>
<td>1600 pounds per square inch</td>
<td>500 minimum</td>
<td>ASTM D412</td>
</tr>
<tr>
<td>Elongation at 75 Degrees F</td>
<td>400 percent minimum</td>
<td>400 minimum</td>
<td>ASTM D412</td>
</tr>
<tr>
<td>Set at Break</td>
<td>30-50 percent minimum</td>
<td>5-50</td>
<td>ASTM D412</td>
</tr>
<tr>
<td>Ozone Resistance 50 percent</td>
<td>No Visible Cracking</td>
<td>No Visible Cracking</td>
<td>ASTM D1149</td>
</tr>
<tr>
<td>Elongation (1 week at approx. 2 parts per million ozone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerated Weathering (After 100 hours in Weatherometer)</td>
<td>No Visible Change</td>
<td></td>
<td>ASTM D750</td>
</tr>
<tr>
<td>Water Vapor Permeability</td>
<td>0.30 perm</td>
<td>0.20 perm</td>
<td>ASTM E96, Method B</td>
</tr>
</tbody>
</table>

2.2 CAULKING COMPOUND

A non-staining, cold setting, flexible sealant having a polychloroprene or chlorosulfonated polyethylene base with added plasticizers, curing agents, pigments and which contains no volatile oils or other ingredients that will stain applied hypalon roofing.

2.3 REINFORCING TAPE

A. Unwoven glass matter with nominal 18 mil film bonded with neoprene; or a 15 mil neoprene impregnated inorganic felt; or an untreated woven glass fiber tape, plain weave, weight 200 g/m² (six ounces per square yard), thread count 42 by 32.

B. In lieu of reinforcing tape, loose glass fibers embedded in liquid neoprene may be used as the reinforcing medium.

2.4 SOLVENT

For use in job site preparation of neoprene primer, for clean up and other related work, use a commercial grade xylene (xylol) or commercial grade toluene (toluol).

2.5 UNDERLAYMENT

A. Level coat and underlayment materials shall be as recommended by manufacturer of roofing materials.
B. Level coat and underlayment materials will be required only when their use is necessary to provide a suitable base for application of the roofing materials.

PART 3 – EXECUTION

3.1 PREPARATION OF SURFACE

A. Surfaces to receive roofing and flashing 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. Allow concrete surfaces to cure a minimum of 28 days and clean free of any waterproofing agents, form release agents, and curing agents that might act as bond breakers. Proceed only when maximum moisture content of the substrate as measured with a moisture meter is 16 percent.

C. Installer shall report adverse roof deck conditions of any type in writing to the Contractor with copy to Resident Engineer. Commencement of work constitutes acceptance of roof surfaces by installer as satisfactory for application of roofing and flashing.

3.2 CLEANING

Broom-clean surfaces to remove all dust, dirt, loose aggregate, and other foreign particles. Remove excessive alkaline efflorescence on concrete by flushing with 10 percent muriatic acid solution, rinsed, and dried.

3.3 APPLICATION

A. Install roofing 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. Joint Treatment: Treat hairline cracks or other openings up to 2 mm (1/16 inch) in width with a brush coat of neoprene base fibered sealer. Openings larger than 2 mm (1/16 inch) but less than 6 mm (1/4 inch) fill and treat with a reinforcing tape as specified. Cracks 6 mm (1/4 inch) and over treat as specified for expansion joints.

C. Expansion Joints: Extend elastic base sheet used as expansion joint material a minimum of eight inches from edge of expansion joint.
horizontally on to the deck. Apply a slight loop or ridge to elastic base sheet which is centered over expansion joint.

D. Vent Pipes and Stacks: Apply elastic base sheet around projections through roof deck and extend it four inches horizontally and vertically around the projection; or use a premolded neoprene unit.

E. Drains: Cut elastic base sheet to fit around drains and extend the same sheet horizontally on deck a minimum of 1500 mm (6 inches) from edge of all drains. Clamp rings or strainers shall not be attached until 48 hours after entire roofing application is complete.

F. Priming: Immediately after substrate has been thoroughly cleaned and ready for application of the roof, prime all concrete surfaces to receive roofing and flashing with neoprene or chlorinated rubber based primer.

G. Roofing:
1. Base Course: Over roof surfaces, including elastic base sheet, apply neoprene-based base course at a rate that will insure a total dry mil thickness of neoprene materials of at least 14 mils. Install material in number of applications as recommended by the manufacturer and allow to dry a minimum of 72 hours.
2. Weather Course: Apply hypalon based weather course at a rate and in the number of coats as recommended by the manufacturer to insure a total dry mil thickness of hypalon materials of at least six mils.
3. The minimum total dry mil thickness of the combined neoprene and hypalon materials shall be 20 mils.

3.4 PROTECTION AND CLEAN UP

A. Keep completed roofing system free of non essential traffic and unrelated work until at least 48 hours after completion of roofing application.
B. Provide temporary support, such as insulation board, for materials and equipment stored on roof during application.
C. Protect adjacent construction from disfiguration by run, spillage or overspray, and repair work defaced in this manner.
D. Remove tools, equipment and surplus materials and clear roof area of debris on completion of work.

3.5 REPAIRS

Repair damage to roofing and flashing before work is complete. Patch breaks in surface with neoprene-based base course and hypalon-base
weather course application to insure a continuous waterproof membrane complying with these specifications.

- - - E N D - - -