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DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION 07541

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SECTION 07541

POLYVINYL CHLORIDE (PVC) ROOFING (BUILDING 46)

PART 1 GENERAL

This section applies to Base Bid for B-46 Reroofing only.

1.1 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D 4434	(2006) Poly(Vinyl Chloride) Sheet Roofing
ASTM D 5602	Standard Test Method for Static Puncture Resistance of Roofing Membrane Specimens
ASTM D 5635	Standard Test Method for Dynamic Puncture Resistance of Roofing Membrane Specimens
ASTM D 751	(2006) Coated Fabrics
ASTM G 21	(1996; R 2002) Determining Resistance of Synthetic Polymeric Materials to Fungi

FM GLOBAL (FM)

FM P7825a	(2005) Approval Guide Fire Protection

UNDERWRITERS LABORATORIES (UL)

UL 790	(2004) Test Methods for Fire Tests of Roof Coverings

1.2 SUBMITTALS

The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Roofing System

Drawings showing arrangement of sheets, seam locations, and flashing details including waterproofing of joints where sheet metal flashings change direction. Shop drawings drawn by the manufacturer and certified by the Contractor for the specified system.

SD-03 Product Data

Installation

Manufacturer's instructions for preparing and installing the membrane, flashing, seams, insulation, nailers, and other accessories.

Protection of Finished Roofing

A protection plan showing areas to be protected, type of material used, a procedure to protect the membrane from damage until completion of work by other trades, and a description of the method of repairing the roofing.

Inspection

The inspection procedure for substrate suitability including decks, curbs and insulation installation, prior to start of the work. Inspection procedures during and after placement of the membrane, and after completion of work by other trades.

SD-07 Certificates

Materials

Certificates of compliance attesting that the materials meet specification requirements. The certificates shall list the components required for the specified rating.

Qualifications

Contractor's qualifications as specified.

1.3 GENERAL REQUIREMENTS

Polyvinyl Chloride (PVC) roofing shall be fully adhered or mechanically fastened per roofing manufacturer's requirements to the roof surfaces indicated. Roofing membrane sheet widths shall be consistent with membrane attachment methods and wind uplift requirements, and shall be as large as practical to minimize joints. Membrane shall be free of defects and foreign material. Flashing work shall be coordinated to permit continuous roof-surfacing operations. Insulation shall be applied and weatherproofed on the same day.

1.3.1 Delivery and Storage

In addition to the following the Contractor shall prior to placing any loads onto roof shall have previously submitted and received approval of a weight and load management plan. The "Weight and Load Management Plan" is part of the demolition plan submittal required per Section 02410 DEMOLITION.

Materials shall be delivered to the jobsite in the manufacturer's original unopened packages, clearly marked with the manufacturer's name, brand name, description of contents, and label for compliance with UL requirements. Time limited materials shall be used before shelf life expires. Materials other than ballast shall be stored in clean, dry areas. Storage temperatures shall be as specified by the manufacturer. A maximum of one day's supply of materials other than ballast may be stored on the roof when distributed so as not to exceed the roof live load limit. Contractor shall validate all material and equipment placement at roof with prior to

replacement of roof. See Section 02410 DEMOLITION, and requirements for weight and load management.

1.3.2 Fire Resistance

The roofing system fire resistance shall be rated Class A as determined by UL 790 or Class 1 as determined by FM P7825a. Compliance of each component of the roofing system shall be evidenced by label or by written certification from the manufacturer.

1.3.3 Wind Uplift Requirements

Wind uplift resistance of the complete roof system shall meet design intent for derived FM wind uplift rating based on basic wind speed per Table 1.0 in Section 01019 "Project Description", required for wind uplift classification.

1.3.4 Warranty

Manufacturer's standard warranty for 20 years shall be furnished. Warranty shall provide for repair or replacement of the complete roofing system, including insulation and flashings, if leaking is caused by defects in materials or workmanship.

1.3.5 Qualifications

The Contractor shall submit documentation verifying that the Contractor has a minimum of 2 years experience with PVC roofing systems and has been certified by the PVC roofing manufacturer as an approved Installer for the specified PVC roofing system.

PART 2 PRODUCTS

2.1 SOLVENTS AND SEALANTS

Adhesives, welding solvents, and sealants shall be as recommended by the membrane manufacturer.

2.2 FASTENERS

Fasteners for sheet-metal flashing shall be corrosion-resistant steel annular-ring type nails, or screws. Fasteners for anchoring the roofing membrane shall be as approved by the membrane manufacturer and identical to those used to obtain the wind uplift rating.

2.3 FLASHINGS

Flashings shall be ultra-violet resistant materials furnished by the membrane manufacturer, except as otherwise specified. Shaped flashing components shall be prefabricated. Sheared edges of metal flashings that will contact the membrane shall be turned into a tight hem. Flashings at curbs, shall cover curbs, and be stainless steel.

2.4 MEMBRANE

Membrane shall contain fibers or fabric, shall be at least 50 mils thick per ASTM D 751, and shall comply with ASTM D 4434, Type III. Membrane shall be fungi resistant as demonstrated by "non sustained growth" or discoloration after 21 days exposure as specified in ASTM G 21.

Minimum physical properties:

Membrane breaking strength minimum 300 lbf per ASTM D 751

Static puncture resistance: Pass ASTM D 5602

Dynamic puncture resistance: Pass ASTM D 5635

Energy Star Achievable

Color White

2.5 PREFABRICATED ACCESSORIES

Pipe seals and expansion joint covers shall be types and sizes recommended by the membrane manufacturer.

2.6 SLIP SHEET

Slip sheets between insulation and membrane shall be as recommended by the membrane manufacturer.

2.7 WALKWAYS

Walkways shall be material as recommended by the manufacturer and approved by the Contracting Officer.

2.8 ROOF COATING MATERIALS

Roof coating materials are not allowed.

PART 3 EXECUTION

3.1 ENVIRONMENTAL CONDITIONS

Membrane shall not be installed in high wind, inclement weather or when there is visible ice, frost or moisture on the deck or membrane. Unless otherwise specified by the manufacturer, membrane shall not be installed when air temperature is below 40 degrees F or within 5 degrees F of the dew point.

3.2 PREPARATION

The substrate of any bay or section of the building shall be complete and suitable for insulation and membrane installation before roofing is begun. Insulation under roofing shall comply with Section 07223 REROOFING INSULATION. Surfaces on or against which membrane is applied shall be smooth, clean, and free from oil, grease, sharp edges, standing water, and construction debris. Joints over 1/4 inch wide shall be filled with insulation material. Wood nailers shall comply with Section 06100 ROUGH CARPENTRY.

3.3 INSTALLATION

Installation shall comply with the manufacturer's approved instructions except as otherwise specified.

3.3.1 Membrane

Membrane shall not be placed directly on concrete deck or other hard surface which may damage the membrane. Unless otherwise specified by the manufacturer, the membrane shall be rolled out on the surface and allowed to relax for at least 1/2 hour when ambient temperature is 60 degrees F or higher or 2 hours when ambient temperature is below 60 degrees F prior to other installation activities. Membrane shall be overlapped a minimum of 3 inches at sides and minimum 4 inches at ends. Direction of laps shall allow water to flow over and not into the lap. Membrane joints shall be free of wrinkles and fishmouths. The entire length of joints shall be probe-tested and corrected during the day of installation. Defective areas shall be re-sealed. Wrinkles, fishmouths, or damaged areas shall be cut out and the area covered with membrane using a 3 inch seam on all sides. Repairs shall be probe-tested for continuity. Bonded areas of seams shall be a minimum 3 inches wide for bonded seams and 2 inches wide for heat-welded seams.

3.3.2 Nailing

Membrane shall be fastened to nailers in accordance with the membrane manufacturer's approved instructions. Unless otherwise specified, nails shall be staggered on 4 inch centers maximum; screws for sheet metal shall be staggered on 8 inch centers maximum; and a row of fasteners shall be at least 1/2 inch from edges of sheet metal.

3.3.3 Flashing

Roof edges, projections through the roof and changes in roof planes shall be flashed. The seam between the flashing and the membrane shall be completed before the flashing is bonded to vertical surfaces. The seam shall be sealed a minimum of 3 inches beyond the fasteners which attach the membrane to nailers. The installed flashings shall be secured at the top of the flashing a maximum of 12 inches on centers under the counterflashing or cap. Where possible, prefabricated components shall be used for pipe seals and flashing accessories.

3.3.4 Expansion Joints

Expansion joints shall be covered using Prefabricated covers or elastomeric flashing in accordance with the recommendations of the manufacturer.

3.3.5 Cutoffs and Weatherproofing

Weatherproof roof continually during demolition and reroofing. See Section 07590 when work is terminated weatherproof exposed roofing components and seal membrane to meet waterproofing requirements. Flutes in metal decking shall be sealed off along the cutoff edge. Membrane shall be pulled free or cut to expose the insulation when resuming work and cut insulation sheets used for fill-in shall be removed. Asphalt or coal-tar products shall not be used for sealing.

3.3.6 Walkways

Walkways shall be installed on a loose-laid pad of the membrane material extending at least 1 inch beyond the walkway material, and as specified by the manufacturer. Stone ballast shall not be placed below or above walkways.

3.4 PROTECTION OF FINISHED ROOFING

The roofing membrane shall be protected from damage by roof work and other trades. After completion of work by other trades, the protection shall be removed and the roof shall be inspected. Any damage shall be repaired in accordance with the recommendation of the roofing manufacturer.

3.5 INSPECTION

If non-destructive surveys by the Government indicate presence of wet insulation during the first 2 years after completion of the work, the Contractor shall take samples to verify the extent of the moisture, and shall replace wet insulation and the defective membrane.

The roofing manufacturer shall perform weekly inspections of the re-roofing operation and work being performed and to submit to the Contracting Officer a weekly report of the findings, and progress certifications stating that the roofing installation to date is or is not per specifications and submittals, and that re-roofing workmanship meets manufacturer's requirements.

The Contractor to correct deficiences noted in the Manufacturer's inspection, before roofing work proceeds.

-- End of Section --