PART 0 DESIGN STANDARDS

0.01 GENERAL DESIGN GUIDELINES

A. Roofing systems preferred by DPS, in order of preference:

1. Built-up
2. Fully adhered EPDM

B. Fully detail the roofing system. Details shall be custom designed to address the specific conditions present on the building, including corners, changes in direction and differences in adjacent roof elevations. Manufacturer's standard details shall not be assumed to be adequate for the needs of DPS. Although details need to be acceptable to the manufacturer, details may be different than the manufacturer's standard details.

C. Roof assembly shall be designed to meet UL Class A for combustible or noncombustible deck types.

D. Roof assembly shall be designed to meet FM I-90 wind uplift rating.

E. Roof system general design requirements, roof deck numbering: Refer to standard Section 07240.

F. Roof system drainage: Refer to standard Section 07240.

G. Where included in the scope of services, the A/E shall provide daily construction observation reports to the DPS Project Manager.

H. Base flashing details that are terminated to surfaces of walls shall be detailed using a termination bar with notation that the termination bar shall be installed the same day the roof membrane and flashing is installed. This will allow the construction to remain absolutely watertight while waiting for roof related sheet metal work to commence. Base flashing details that are covered with metal caps shall have the flashing run up and over the top of the curb or parapet wall on a daily basis. At parapets, membrane shall overlap the exterior face of the wall a minimum of 2" below the bottom nailer.

I. At base-flashing details where the roof deck/roof framing is not supported by the higher wall, a wall expansion joint detail shall be used. This shall be achieved using a wood curb of continuous elevation, with 8" minimum height above high point of adjacent insulation elevation, including any crickets/saddles that intersect the perimeter in question. Wall expansion joint detail shall be sealed using a single-ply membrane drape and sheet metal cover, as directed in section 07620.

J. Equipment support systems

1. Major rooftop equipment shall be mounted to curbs that are flashed in to the roof system. Roof curbs shall be specified in appropriate specification sections.
2. Where possible, mount minor rooftop equipment and rooftop conduits on precast concrete ballast pavers that rest on EPDM system walkpads.
3. Gas lines shall be supported using an alternate method specified under the mechanical sections, and the method shall be approved by DPS.
4. Coordinate minimum heights and clearances with applicable codes.

K. Exhaust all other options prior to approving or designing a pitch pan.

L. Lay out all roof penetrations and shall provide clear documentation of the acceptable minimum separation between penerations, considering flashing requirements.

M. Permanent walkways are required around the perimeters of major rooftop mechanical equipment (exhaust fans excepted) and between major rooftop equipment and roof access points.

PART 1 GENERAL

1.01 QUALITY ASSURANCE

A. Qualifications of Trade Contractor

B. Qualifications of Installers

C. Supervisor Qualifications

1.02 WARRANTY

A. The Contractor shall warrant all materials and workmanship for a period of two years from the date of acceptance of the completed work by DPS. The Contractor shall make good any defects in materials or workmanship that may develop during the two-year period by repairing or replacing such defects at his own expense without cost to DPS.

B. The Contractor shall perform all warranty work within 10 days of notification that a defect has been discovered. Unless specifically approved in writing by the DPS Project Manager, the Owner may undertake repairs at Contractor's cost if Contractor fails to repair/replace defective materials or workmanship within 10 days of notification.

C. Membrane Manufacturer's 10 year, total installed cost, labor and material, total roof system warranty shall be provided. The total system warranty shall include the following:

1. Roof membrane
2. Roof membrane adhesion
3. Roof membrane flashings
4. Roof insulation
5. Roof insulation attachment
6. Roof system fasteners, termination bars, pre-manufactured metalwork, and other miscellaneous accessories supplied by the membrane manufacturer
7. Warranty shall cover defects in materials and workmanship. Warranty shall not include any buy-out clauses and shall not be prorated.
8. The warranty shall be underwritten by the Membrane Manufacturer.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Products manufactured or accepted by:

1. Firestone Building Products
2. Carlisle SynTec Systems
3. Versico, Inc.
4. Gen Flex Roofing Systems
5. Johns Manville Roofing Systems Group

2.02 PRODUCTS SUPPLIED BY ROOF MEMBRANE MANUFACTURER

A. Ethylene Propylene Diene Monomer/Terpolymer (EPDM) Roofing Membrane

1. Nominal 60-mil, non-reinforced, black, EPDM sheet membrane, ASTM D 4637 - 96 Type I
2. Flashing membranes
   a) Cured EPDM

b) Uncured EPDM
c) Self-adhering semi-cured EPDM
d) Self-adhering uncured EPDM
e) Reinforced 45 mil EPDM

B. Factory formed EPDM pipe flashing boots
C. Seam cleaner
D. Seam primer
E. Seam tape
F. Substrate adhesive
G. Splicing adhesive
H. Lap sealant
I. Water cutoff sealant
J. Pitch pan materials
1. Prefabricated, self-adhering, EPDM pitch pockets are not approved.
2. Pourable sealant: Two-component polyurethane sealant
3. Primer: Polyurethane primer
4. Grout: Quick set, non-shrink, cementitious grout
5. Sheet metal: See Section 07620
K. System fasteners
1. Screws
2. Friction fit fasteners
3. Metal batten strips
4. Termination bars
5. Individual locking metal plates
L. Batten strips
M. Termination bars
N. Walkpads

2.03 PRODUCTS SUPPLIED BY OTHER MANUFACTURERS

A. Roof insulation: See Section 07240.
B. Hot asphalt or sprayed polyurethane foam sealant for temporary water cutoff
C. Sealant for exposed joints at termination bars and roof related sheet metal
D. Precast concrete ballast pavers

PART 3 EXECUTION

3.01 PRE-ROOFING CONFERENCE

A. Prior to the start of roof installation, an on-site pre-roofing meeting will be held with the A/E, Contractor, all necessary Trade Contractors, Crew Foremen, Roof Membrane Manufacturer, the DPS Project Manager, and DPS Maintenance in attendance.

B. The purpose of the meeting will be to assist in coordination and scheduling; discuss access, review technical aspects (drawings, specifications, and submittals), and quality control issues.

3.02 PREPARATION

A. To the greatest extent possible, roofing work should not commence until drains, curbs, blocking, nailers, penetrations, and related construction are completed.

B. Do not proceed with the installation when surface temperatures are less than 40° F.

C. Notification of unacceptable conditions

1. Trade Contractor shall notify General Contractor, A/E or DPS Project Manager of conditions which are unsuitable for roofing application.
2. Commencement of work shall be evidence of Contractor's acceptance of existing conditions.

3.03 APPLICATION/INSTALLATION

A. See Section 07240 for roof insulation and drainage standards.

B. Ensure that fasteners do not penetrate conduit or other miscellaneous items located on the underside of the roof deck.

C. Do not apply roofing materials when water in any form (i.e. rain, dew, ice, frost, snow, etc.) is present.

D. Certain combinations of temperature and humidity may cause condensation on the surface of solvent-based products. If this condition occurs, do not mate the surfaces. When the ambient air conditions no longer cause condensation, apply additional material and proceed.

F. All surfaces to receive membrane or flashing must be free of physical contact with any bituminous surfaces.

E. When placing the membrane, ensure factory and field fabricated seams do not intersect drain sumps. Seams through drain sumps will not be approved.

F. Cuts and punctures shall be repaired the same day they are discovered.

G. All flashings shall be 8" minimum in height above the field membrane.

H. Uncured EPDM flashing usage shall be limited to scuppers, pitch pans, vent pipes and other unusually shaped penetrations. Otherwise, cured EPDM or self-adhering, semi-cured EPDM shall be used.

I. Pre-manufactured, self-adhering EPDM pipe boots shall be used in lieu of field wrapping of pipes.

J. Pitch pans

1. Pitch pans shall be avoided where possible.
2. Pitch pans shall have a minimum depth of 4", a minimum flange width of 4", and a minimum clearance of 2" from penetrations on all sides.
3. Prime pitch pan interior and penetration with polyurethane primer.
4. Fill lower portion of pitch pan with grout and allow top to dry.
5. Fill top 2" with pourable sealer.
6. Pourable sealer shall be compeltely protected by a watertight sheet metal cover..

K. Position walkpads so that they do not cross drainage valleys. Cut or space out pads if necessary to avoid interference with drainage.

L. Temporary water cutoffs are to be constructed at the end of each working day to protect the insulation, roofing, building, and building interior from damage due to wind, snow, and rain.

1. Temporary water cutoffs are to be constructed with hot asphalt or sprayed polyurethane foam adhesive unless otherwise specifically approved by the A/E.
2. All temporary water cutoffs and contaminated membrane shall be removed at the commencement of work the next working day.

END OF SECTION 07553