

070000 - THERMAL AND MOISTURE PROTECTION

I. DESIGN:

- A. All roof designs to comply with National Roofing Contractors Association (NRCA) guidelines.
- B. A metal coping system is preferred over a stone or pre-cast coping system. The BDCD Project Manager must specifically approve use of a stone or pre-cast coping.
- C. Exterior soffit should be constructed of anodized aluminum panels; Hardie Board; Dura Rock; Cement Board; or metal lathe with plaster. Gypsum board (drywall) and Green Board are not acceptable at exterior soffits.
- D. Asbestos containing materials are not to be specified for roofing, insulation, fire stopping, fireproofing or any other materials on the project.
- E. Adequate attic stocks for each type of sealant used must be required in specifications.
- F. Pitch pockets should be avoided to the extent possible and should not be used where pipe columns penetrate the roofing system. An alternate method such as typical vent flashing should be used at pipe columns. All pitch pockets shall be fabricated from stainless steel or cooper, be half-filled with non-shrink grout and a pourable sealer and shall comply with National Roofing Contractors Association (NRCA) recommendations.
- G. Roof drain design must be coordinated with roof ballast specifications to ensure that ballast does not clog the drains. Specify screens at roof drains, as required.
- H. The use of internal gutter systems shall be avoided.
- I. All roofs will be designed with a fall protection system as required by OSHA regulations and VMC Ch3 Sec304.11 governing Fall Protection.
- J. Snow guards shall be shown at appropriate locations (at least over doors) on the roof plan for all sloped roofs and shall be mechanically fastened (no adhesives).
- K. The BDCD Project Manager must specifically approve use of skylights on the project.
All skylights shall have a screen that complies with 29 code of Federal Regulations 1910.23(a)(4) which reads “*Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides*” or become constructed with material and manner that meets the OSHA requirements to withstand an accidental fall of person on the skylight.

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- L. All roof access hatches shall be protected as required by 29 CFR 1910.23(a) *“Every hatchway and chute floor opening shall be guarded...”*. All roof hatches shall have comprehensive all sided hatch safety rail with self-closing spring tension gate coverage at opening.



- M. Roof access hatches shall have a safety cotter pin equipped with a device that secures the pin in place, however, during an emergency exit the pin can be removed with minimal effort for a safe exit from the inside.
- N. Plans and specifications shall include language requiring the contractor to completely seal all return air plenum AND obtain independent third party certification that the return air plenum envelope is appropriately sealed.
- O. All roof access is to be secured. All roofs to be provided with access ladders or stairs. Refer to Division 050000 for preferred access ladder specification.
- P. Plans and specifications shall identify a continuous vapor barrier at the exterior envelope, including at either the roofline or at the ceiling line of the top floor. An interior and exterior vapor barrier should be specified and detailed for the entire building envelope. The thermal envelope must be completely sealed to the exterior including attic and plenum spaces, as appropriate.
- Q. The design documents shall provide for a “hard” flashing detail (metal flashing or equivalent) at all joints, with adequate allowance for flashing height, between the roofing and vertical building elements, such as clerestories, walls etc.
- R. High reflectivity roofing should be provided on flat roofs and at sloped roofs where aesthetics are not adversely impacted. Intent is to minimize the heat island effect per Green Building protocol.
- S. Roofing systems shall carry a minimum 20-year warranty. Roofing installation shall carry a minimum of two-year installation warranty.
- T. Pavers shall be provided on flat roofs, for access and maintenance of roof top mechanical equipment to help minimize accidental or incidental membrane damage. Concrete pavers shall be used only as recommended by the manufacturer. Compatible "membrane pavers" are acceptable.
- U. The roofing details shall include umbrella or continuous flashing details with minimum height of 18” at all non-curb mounted equipment to avoid blocking equipment air flow.
- U. All roof top equipment to be set on curbs with a minimum height of 18” and never placed directly on roof.

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- V. Refer to the DIT Guideline Appendix B for additional information on required roof vaults and roof curbs.
- W. Roof expansion joints to be provided per NRCA guidelines.
- X. All low slope roof designs to incorporate positive drainage to roof drains/roof scuppers via sloping the structural framing or roof deck, designing a tapered insulation system, or a combination of both.
- X. Where Lightning Protection is installed, provide UL Certification letter as well as record drawings.
- Y. All roof areas are required to have access for personnel to perform maintenance duties (inspection and repair).



II. PRODUCTS

- A. Built-Up Roofing System
Johns Manville, Firestone, Soprema, Garland or GAF built-up 3 or 4 ply systems or **Approved Equal (must be approved by FMD)** with a minimum 20-year warranty.
- B. Modified Bitumen Roofing System
Johns Manville, Firestone, GAF, Siplast, Soprema, Garland or **Approved Equal (must be approved by FMD)** with a minimum 20-year warranty.
- C. Single Ply Roofing System/IRMA System
 1. EPDM is preferred on flat roofs.
 2. Rubber membranes may be acceptable, on an as project basis. The rubber membranes need to be reinforced and be installed by a fully adhered application. Non-reinforced EPDM membranes are not acceptable. The minimum acceptable systems for rubber membranes, EPDM, is Goodyear, Firestone, Carlisle, and Johns Manville 60 mil systems or Approved Equal, with a minimum 20-year warranty. PVC and CPE systems are not recommended.
 3. TPO Roofing are not allowed due to seam and membrane failures as a result of intense weather application. If a special circumstance, written approval is required from FMD thru the Building Design and Construction Division Project Manager on project by project basis.
 4. Ballasted single ply systems are not recommended because of poor maintenance and performance history.
 5. Fully adhered single ply systems are preferred.
- D. Shingles-Architectural shingles with lifetime (if applicable) warranty preferred, a minimum 20-year warranty is required.