

**MINIMUM ROOFING STANDARDS – 2017-03-28**  
**FOR INFORMATIONAL PURPOSES ONLY**

- A. Wind Uplift Performance: Roofing system shall be identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist wind uplift pressure calculated in accordance with ASCE 7. Roof should be designed to withstand **sustained winds of 90 miles per hour** per CBC wind speeds. *(Have the Architect check the wind speeds in the area per wind map from CBC and specify the wind accordingly.)*
1. Field-of-Roof Uplift Pressure: **XX** lbf/sq. ft. *(typically provided by Roofing manufacturer or Structural Engineer)*
  2. Perimeter Uplift Pressure: **XX** lbf/sq. ft. *(typically provided by Roofing manufacturer or Structural Engineer)*
  3. Corner Uplift Pressure: **XX** lbf/sq. ft. *(typically provided by Roofing manufacturer or Structural Engineer)*
- B. SUBMITTALS FROM CONTRACTOR
1. Submit shop drawings of all fabricated items for review prior to their fabrication and installation. Items requiring reviewed shop drawings include any item not detailed in the Contractor's scope of work, or any proposed changes.
    - a. Base flashings, cants, and membrane terminations.
    - b. Tapered insulation, including slopes.
    - c. Crickets, saddles, and tapered edge strips, including slopes.
    - d. Insulation fastening/adhering patterns.
  2. Submit a letter from the primary roofing materials manufacturer stating that the Roofing Contractor is a certified applicator of the roofing material submitted.
  3. Submit manufacturer's product specifications, installation instructions and general recommendations for each principal roofing system product required.
  4. Submit material manufacturer product data and MSDS sheets for each product to be used.
  5. Submit copy of letter from primary roofing manufacturer stating acceptance of any proposed products not manufactured or supplied by them, for use in their guaranteed roof assembly, including insulation products, etc.
  6. Submit FM Global 1-90 system including FM global 1-28 fastening patterns *(or alternate standards for adhering)* and evidence of ASTM-E108 Class A exterior fire rating and Class 1 internal rating for 90 mph sustained wind rating for proposed

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roof systems as well as all applicable membrane layout, special requirements or instructions, etc.

7. Written approval by the insulation manufacturer (as applicable) for use and performance of the product in the proposed system
8. Submit sample of manufacturer's 20 Year full system non-prorated guarantee.
9. Submit State data confirming Contractor has been licensed under same company name for no less than 10 years.
10. Submit letter from primary roofing manufacturer stating acceptance of the specification and project conditions, if manufacturer representative is not able to attend pre-roofing conference.
11. Guarantees
  - a. Contractor's Guarantee:
    - 1) The Contractor shall guarantee the installation of roofing and flashing to be watertight for a period of two (2) years from the date of substantial completion of the project. The Contractor shall make all repairs during this period to maintain the roof watertight and in conformance with these specifications without additional cost to the Owner. The Owner has the right, in the case of emergency at any time during this period and without invalidating this guarantee, to make any temporary repairs that are required in order to protect the building and the contents of the building from damage due to the roof leaking. Owner must use proper materials and repair techniques so that no further damage to the membrane occurs. New work will not compromise or jeopardize existing roof contractor's guarantee.
  - b. Manufacturer's Guarantee:
    - 1) Before work is accepted and before final payment can be made, furnish to the Owner a written guarantee for twenty (20) years covering system components including but not limited to: membrane, flashing, insulation, fasteners/adhesive (membrane and insulation), all products supplied by the manufacturer. Guarantee shall cover any and all repairs required to keep the roof including the field and flashing

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watertight for a period of twenty (20) years beginning at the time of the building Owner's acceptance of the final product.

- 2) The guarantee shall be executed by the material manufacturer to cover any and all costs for repairs necessary to stop leaks, which occur resultant of, but not limited to, the following causes:
  - a) Deterioration of the manufacturers roofing membrane or flashing system resulting from ordinary wear and tear by the elements.
  - b) Workmanship on the part of the approved Roofing Contractor in application of the manufacturer's roofing membrane or flashing system.
- 3) If, 4 hours after notification of roof leakage the Contractor has not responded, the Owner shall have the right, without invalidating this guarantee and at the expense of the Contractor, to make any emergency temporary repairs that are required in order to protect the building and its contents from damage due to roof leakage.
- 4) In addition to the guarantee, the Contractor shall furnish to the Owner the manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration additional policies, temporary repairs and leak call procedures.

**C. QUALITY ASSURANCE**

1. Installer Qualifications: Qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive the specified manufacturer's guarantee.
  - a. Manufacturer Qualifications: Qualified manufacturer that has **UL listing** for roofing system identical to that used for this Project.
  - b. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
  - c. Test Reports:
    - 1) Roof drain and leader test or submit plumber's verification.

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- 2) Core cut (if requested).
- 3) Roof deck fastener pullout test (if applicable).
- d. Source Limitations: Obtain all components from the single source roofing manufacturer guaranteeing the roofing system. All products used in the system must be labeled by the single source roofing manufacturer issuing the guarantee.
- e. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  - 1) Exterior Fire-Test Exposure: Class A ASTM E 108, for application and roof slopes indicated.
  - 2) Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

D. REGULATORY REQUIREMENTS *(Alternate standards can be used in consultation with the Architect/Roofing Consultant but cannot be changed after bid)*

1. FM Global – Comply with FM 1-90 Approval, including increased securement at corners and perimeters to comply with FM Global Loss Prevention Data Sheet 1-28 Wind Design.
2. ASTM E108 - Class A external Fire Rated Assembly.
3. Class 1 internal fire rating.
4. 90 mph sustained wind rating.
5. Title 24 compliance
6. Cool roof compliance in accordance with Cal Green

E. FIELD QUALITY CONTROL

1. The Contractor shall be responsible for insuring positive drainage around all curbs, roof openings and crickets to roof drains or scuppers.

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2. **Water Test:** *(This needs to be done on each project and a copy of the report uploaded in CAFM)*
- a. A 48-hr. water test of all completed roof systems, including low-slope and metal roofing, as well as adjacent building components, shall be coordinated with the Architect *(if hired on the project)*, Roofing Consultant and conducted by the Contractor in the presence of Architect's representative. The water test shall include the following procedures:
- 1) At the direction of the Architect or Roofing Consultant, apply simulated rain over all roof areas for at least 15 minutes per area, or as otherwise directed.
  - 2) In addition to the simulated rain, direct water to all walls, windows, units, penetrations, etc. that occur adjacent to, or within each roof area, using a continuous, unforced hose stream.
  - 3) Plug all roof drains in each drainage area and allow each to be filled to a depth of 3-4 inches measured at the drain areas. Allow to stand for a minimum of 48 hours.
  - 4) Upon completion of water test, unplug primary drains only and insure that water flows freely without restriction. Verify that no water comes through overflow drain outlets (to insure that pipes are not cross-connected). Then unplug overflow drains and run hose stream directly into overflow drains to insure that water flows freely without restriction through overflow lines.
  - 5) Perform any necessary corrections to defects noted during or after the water test procedures. Perform additional testing as necessary to further define sources of any noted leakage.
  - 6) Contractor shall provide and/or arrange for all necessary equipment, supplies, water, etc. as needed to perform these tests. This may include a water truck with fire hose, if necessary.
  - 7) Water test shall be performed after completion of asphalt paving, and must be completed and verified prior to filing for substantial completion.

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- b. A final audit punch list shall be made by the Architect (*if applicable*), Roofing Consultant and Roofing Manufacturer upon notice by the Contractor that roofing is complete. The roofing and related work must be 100% complete or additional inspections will be back charged.