

## Special Requirements for Low Slope Roofing Membranes

### Part 1 - General

#### 1.1 Summary

- A. The provisions of this Section shall govern the installation of low-slope flexible membrane roofing in coordination with the roofing specifications.
- B. This section includes special provisions for state roofing membranes.
- C. This section includes the coordination with owner's Roof Consultants and Roof Inspector.

#### 1.2 Owner's Roofing Inspection

- A. The Owner will have a full-time Observer/inspector on site while the roof is being applied. The contractor shall coordinate the roofing installation to provide 24 hours notice of roofing operations to the Roof Observer. The contractor shall allow the Roof Observer access to the work.
- B. Installation of roofing materials shall not be started without the Roof Observer having a copy of the A/E approved shop drawings showing the ASTM's or other standards of the roofing materials.
- C. The Roof Observer will check all materials and application procedures and prepare a daily written report.
- D. A copy of the daily report shall be given to the contractor, A/E, and the owner.
- E. Roof Observer/Inspector's Scope of Work:
  - (1) The Observer/Inspector shall monitor the work for compliance with the contract documents
  - (2) The Observer/Inspector shall continuously monitor and observe the work at the point of application during installation of the roof.
  - (3) The Observer/Inspector shall immediately report any deficiencies or deviations to the Architect and Owner. A written report shall follow an oral report within two business days.
  - (4) The Observer/Inspector may recommend suspension of work or rejection of non-complying work to the A/E and Owner.
  - (5) The Inspector shall not:
    - a. Authorize deviations from the contract documents
    - b. Enter the area of responsibility of the Contractor's superintendent.
    - c. Issue orders on any aspect of construction means, methods, techniques, sequences, procedures, or safety in connection with the work

#### 1.3 Pre-Roofing Conference

- A. A pre-roofing conference is required and shall held before ordering roofing materials.
- B. Representatives of the owner, Roof Observer/inspector, architect, general contractor, roofing contractor, deck contractor, mechanical contractor, and roofing manufacturer shall attend.
- C. Review of the plans, specifications, flashing details, work scheduling, and workmanship standards is required. Problems and discrepancies shall be resolved.
- D. A written record of proceedings shall be prepared and made part of the job record.

## 1.4 Guarantee

- A. Provide the following roofing contractor's guarantee on the General Contractor Guarantee form:

"The roofing contractor shall guarantee materials and workmanship associated with the roofing, flashings, and sheet metal work incidental to the work required under the roofing subcontract, against defect due to faulty materials or workmanship for a period of two (2) years from the date of final completion of the entire project. It is understood and agreed by all parties hereto that the responsibility of the roofing contractor under this guarantee form or any contract document, shall be in accordance with the roofing contractor's limited guarantee."

- B. Provide the following Owners Agreement on the Contractor Guarantee form:

"The undersigned named Owner for the Commonwealth, agrees, from the date of final completion of the entire project, to maintain the roof in accordance with the manufacturer's written requirements and also agrees to avoid damage to the roof surface by any parties under his control working or walking on the roof. The Owner recognizes his responsibility to inspect the roof semiannually."

- C. Contractor's Guarantee for New Construction (in no case shall the guarantee be less than as specified below, see membrane specification for additional warranty requirements, if any)

- a. The (General) Contractor shall furnish, as a minimum, a manufacturer's 20-year total system material and labor warranty / guarantee with no monetary limitations (NDL no dollar limit) from the date of Final Completion of the entire project.
- b. The contractor shall provide a workmanship warranty agreeing to maintain the entire roof system(s) in a completely watertight condition at no cost to the Owner for two (2) years from date of final completion of the entire project. Sheet metal flashing incidental to the roofing shall be covered under the manufacturer's warranty.

- D. Contractor's Guarantee for Reroofing (in no case shall the guarantee be less than as specified below, see membrane specification for additional warranty requirements, if any)

- a. The (General) Contractor shall furnish, as a minimum, a manufacturer's 20-year total system material and labor warranty / guarantee with no monetary limitations (NDL no dollar limit). From the date of Final Completion of the project.
- b. The contractor shall provide a workmanship warranty agreeing to maintain the entire roof system(s) in a completely watertight condition at no cost to the Owner for two (2) years from date of final completion. Sheet metal flashing incidental to the roofing shall be covered under the manufacturer's warranty.

## 1.5 Materials Certification

- A. The materials shall be labeled with ASTM certification numbers or other specified product certifications or the Contractor shall give to the A/E the roofing manufacturer's

certification that the roofing materials being furnished comply with specified ASTM and approved standards.

- B. The owner's full-time roof inspector shall verify the materials received are as specified and in accordance with A/E approved shop drawings before roofing materials may be installed.

#### 1.6 Roofing Manufacturer's Inspections

- A. The roofing manufacturer's representative shall inspect the roofing installation procedures at the start of the roofing membrane installation and inspect the completed installation

#### 1.7 Wind Uplift and Edge Securement

- A. Low slope membrane roofs, except gutters, shall be designed and installed for wind resistance in accordance with ANSI/SPRI ES-1.

#### 1.8 Approved Applicator

- A. Roofing and base flashing applicator shall be approved by the materials manufacturer.

#### 1.9 Roof Protection

- A. Before moving equipment or materials over a roof, the Owner, General Contractor, roofing contractor, and any of their agents must protect the roof from damage during and following roofing work.
- B. Movement of equipment and materials without roof protection shall be cause for the Owner, General Contractor, roofing contractor or A/E to stop work until protection is provided and any damage is corrected.
- C. The Owner's roofing inspector shall record all such violations.

#### 1.10 Pre-Final Inspection Survey

Unless a written waiver has been approved by the Director of BCOM the following provisions shall be provided by the contractor:

- A. The A/E shall notify the Owner, Contractor, and roofing contractor (in writing) that he has inspected the roof(s) and finds it (them) sufficiently complete to permit a roofing survey. In no case shall the survey be made earlier than forty days before the substantial completion inspection.
- B. An independent roof survey inspection service or laboratory shall survey the roof(s). The service shall use infrared, nuclear moisture detection, impedance survey or electronic leak detection methods. Roof probes or cuts shall not void the Contractor's two year guarantee and the manufacturer's warranty/guarantee.
- C. The roofing contractor shall cooperate and assist the inspection service by making and repairing any required cores, test cuts, or probes in such a way that Manufacturer's and Contractor's warranty/guarantees are not voided.
- D. Copies of all survey reports shall be delivered to the Owner, BCOM, A/E, Contractor, and roofing contractor.
- E. The Owner shall pay for the service unless the survey shows roofing deficiencies caused by improper materials, poor workmanship, or Contractor negligence. In that case the Contractor, at his expense, shall repair or replace the roof(s) and provide additional surveys until the roofing work complies with the contract documents. All corrective work shall be completed before the final inspection. Acceptance of the

roofing system shall be contingent on a roofing survey report that indicates the presence of no detrimental amount of moisture; for example, moisture that would cause a significant lowering of the thermal resistance of the roof; separation of the roofing plies; blisters; etc.. Insulation or roofing materials determined in the roof survey to have detrimental amounts of moisture by the Consultant and any materials covering the insulation shall be replaced by the Contractor at no cost to the Owner.

- F. In any case where the roofing survey reports insulation that has lost more than 20% of its dry thermal resistance (R-value) the (wet) insulation and any materials covering the insulation shall be replaced by the Contractor at no cost to the Owner.

#### 1.11 Final Inspection

The following items must be given to the Owner's representative at the Final Inspection:

- A. A copy of the (general) contractor's and roofing contractor's two-year guarantee.
- B. A copy of the roofing manufacturer's standard warranty/guarantee.
- C. The Contractor shall assist the A/E in preparing the appropriate copies of the History of Roofing Installation, Sample Form A; Roof Information Worksheet -Built-Up Roofing, Sample Form B; or Roof Information Worksheet - Single Membrane Roofing, Sample Form E. The A/E shall obtain forms from the DGS Forms Webpage and complete all applicable items.

#### 1.12 One Year Inspection

Representatives of the Owner (and the A/E), the Contractor, the roofing subcontractor, and the membrane manufacturer shall inspect the roof(s) between nine months and one year before the closing of the General Contractors one year guarantee.

#### 1.13 Two Year Inspection.

The Owner shall also have the roof inspected at least three months before the two year guarantee expires and notify the Contractor in writing of any defects noted. The Owner shall require that any defects be corrected at least 30 days prior to expiration of the guarantee.

### Part 2 Products (Not Used) See Roof Membrane Specifications

### Part 3 Execution

#### 3.1 Roof Slope

- A. All roofs shall slope 1/4" per foot, minimum, to drains on all new roofs, unless otherwise specified.
- B. Dead level valleys are unacceptable. Cricket valleys shall slope a minimum of 1/8" per foot unless otherwise specified.

#### 3.2 Insulation

Unless otherwise required to comply with a Manufacturers roofing system, insulation installation shall be as follows:

- A. Meet C or R value as specified elsewhere.
- B. Provide a minimum 2 layers, if thickness permits
- C. Provide staggered joints between layers of the insulation.

- D. Fasten the insulation as required elsewhere in the specifications. If no requirements are listed mechanically fasten the first layer to metal deck. Cold applied adhesives and/or low rise foam products are acceptable for the attachment of the first layer to concrete decks, and for attachment of the individual insulation layers to each other contingent upon meeting FM I-90 wind uplift rating and the specified roofing material manufacturer's warranty.
- E, Compatible Insulation: The contractor shall assure the type of insulation is entirely compatible with contiguous, specified roofing materials.

### 3.3 Rooftop Equipment

- A. Provide clearance for easy re-roofing.
- B. Comply with NRCA Manual recommendations for minimum height of equipment above the roof membrane when equipment is supported above the roof membrane.
- C. Provide prefabricated walks to and around equipment that requires servicing. Walks must not block roof drainage.

### 3.4 Vegetative Roofs if specified elsewhere shall meet the following minimum requirements:

Vegetative roof shall be installed per requirements in FM Data Sheet 1-35 criteria except as indicated in the building code. Wind load design criteria shall be in accordance with ASCE 7 instead of 1-35 criteria.

- A. Non-vegetated border zones shall be provided:
  - 1. Shall be per FM 1-35 requirements at Perimeters and corners
  - 2. Shall be a minimum 1.5' wide at penetrations
  - 3. Shall be a minimum 3' wide at machine rooms, penthouses, and wa
  - 4. Shall be a minimum 3' wide to partition the roof area, not exceeding 15,625 square feet and 125' in length. See building code for additional requirements.
- B. Parapet walls.
  - 1. Shall be a minimum of 6" above ballast or pavers for roofs below 150' in height.
  - 2. Shall be a minimum of 30" in height for roofs 150' or above in height and shall have a 3' wide non-vegetative zone.
- C. Grade level roofs
  - 1. Shall have special load requirements
  - 2. Shall have a 3' vegetation free break.