division of
Facilities Construction
and Management

Roofing Design Requirements

(UPDATED February 2023)

NOTE

This document is subject to change. Therefore, before starting design work, please review the above date to ensure compliance with the current roofing design requirements.
These roofing design requirements along with the DFCM standard roofing details are to be used for all State of Utah projects.

NOTE

The DFCM Roofing Program Manager must review and approve any variance from the standards listed hereto.

General Requirements for Low-Slope Roofing

1. **No Asbestos Containing Material** (ACM) is to be used during repairs or installation of a new roofing system under any circumstances.
2. The DFCM Roofing Program Manager is to review roofing plans, specifications, and roof details before bid documents are sent for code review.
3. The DFCM Roofing Program Manager is to be included in the roofing pre-installation meeting and final roof system inspection.
4. Energy-efficient roof design using Energy Star & LEED-rated products should be used on roofs. An exception can be taken when Built-up Roofing or EPDM is justified. However, energy-efficient designs should still be considered when using these systems.
5. Determine the need for a vapor barrier based on dew point calculations and facility use. Roofs with vapor barriers must have a method of moisture drainage from within the system, or leak identification provided. No fully adhered roof systems with a vapor barrier without active moisture detection or positive drainage from within the system.
6. A note must be included in all specifications to bidders that if there are any discrepancies between or within the bidding documents, then the specification will be enforced that is more stringent as determined by the Architect or DFCM Roofing Program Manager.
7. Only Mechanically fastened or fully adhered systems are to be used. No ballasted systems will be allowed on single-ply roof systems.
8. Pre-manufactured accessories are required for all pipe flashings, inside and outside corners, and any other location pre-manufactured accessories are available as required by the manufacturer's warranty requirements.
9. Where manufacturer's standards show one or more possible approaches for compliance to the standard, provide the most stringent approach defined by the Architect or DFCM Roofing Program Manager.
10. Parapets
    - The top of all parapets is to be structurally sloped to drain back onto the roof and supported structurally by a treated wood nailer. The wood nailer must have a direct structural attachment to the parapet (no insulation between the structure and the nailer).
    - The structural parapet nailer must extend over the top of all curtain-walls and wall finishes.
    - All parapets are to be coped using edge metal only, with the membrane extending over the top of the wall and attached to the outside edge of the nailer. The edge metal must cover the entire face height of the nailer and top of wall finish (3" minimum).
    - Free-standing walls may use full coping with standing seams on the horizontal surface. No horizontal flat or lap seams allowed.
    - All metal associated with the roof must be 24-gauge minimum, color-clad, and follow SMACNA guidelines for all metalwork. All cap and edge metal must utilize a continuous clip or Reglet on the outside edge. No exposed screws on outside edge or horizontal surfaces. All other exposed screws will be gasketed, color match.
    - Exterior metal wall finishes, and curtain-wall systems must use the DFCM Parapet Edge Metal detail or equivalent, at the parapet connection. Color-matched edge metal is to be provided and installed by the metal panel contractor, and the coated heat-welded hold-down clip is to be provided by the roofing contractor.

11. Roof Termination to Vertical Surfaces

- All roof wall substrates are to be a wood or primed roof board suitable for adhering the roof wall flashings as approved by the roofing system manufacturer.
- Roof membrane to wall must terminate to structure. No insulation between termination bar and structure.
- Windows, curtain-walls, wall finishes, and doors must be at least 12" above the finished roof line. In addition, all windows, curtain-walls, wall finishes, and doors must have a two-piece counter-flashing below to facilitate access for future roof replacement without removing adjoining materials.
- All roof termination bar will be covered with appropriate color match counter flashing with gasketed screw.
- Minimum flashing height requirements are 10" for all curb-mounted mechanical equipment, skylights, wall flashings, or any other item that extends above the roof line. This is a minimum flashing height. Exposed screw attachments must be 8" minimum above the finished roof with gasketed screws. The roof membrane must extend over the top of and attaching to the inside of the curb nailer.

12. Roof Walk Pad

- No concrete walkway pads are allowed on the roof system.
- The manufacturer's walk pad should be attached when applicable to the membrane surface and a different color than the roofing membrane. Roof walk pad must leave a gap at seams and valleys i.e., 3” each side.
- Roof walk pad is required around all sides of serviceable rooftop equipment.
- A continuous walk path may be installed to provide safe access to rooftop equipment on all roofs. PVC KEE, lacquered PVC, or slopes 1/12 or steeper will require continuous walk paths to all rooftop equipment and drains.

13. Roof Top Mechanical

- Gypsum or HD polyiso coverboard is required on all roofs with mechanical equipment or requires high traffic (mechanical penthouse). Written approval to remove the coverboard must be attained from the DFCM Roofing Program Manager.
- All mechanical equipment must be set on a level structural roof curb or equipment stand attached to the roof deck. No equipment should be installed over roof material or insulation. **No Sleepers.**
- All ducted curb-mounted rooftop equipment must be on manufactured curbs. All gaps between the curb and duct must be filled with insulation equivalent to roof insulation.
- Vibration isolated equipment curbs must have 12" below the isolation bracket to the top of the roof to allow roofing termination bar and counter-flashing with no screw below 8".
- Equipment stands are required for all equipment that requires bolting through a horizontal plane. i.e., condensers, chillers, side ducted exhaust fans, side ducted RTU, evaporative coolers, and non-ducted units. All stands will provide 18" minimum space below to provide access to service the roof. **No sleepers.**
- Refrigerant lines must use the DFCM line set enclosure detail. No pitch pockets or flashings allowed.
- The cantilevered roof equipment detail will be used for any unit that is curb mounted with structurally attached stands to support the overhang. **No feet resting on the finished roof.**
- All piping must be routed through the building interior with individual penetrations at each

piece of equipment. Any penetrations causing piping to span across the roof will be reworked.

- Eliminate conflict between roof penetrations. Roof penetrations must be a minimum of 18" away from any other roof penetration, i.e., drains, pipes, curbs, and walls. Minimize penetrations as much as possible. Stacking flashings is prohibited.
- Roof water hydrant must be provided for HVAC and roof maintenance. 200'diameter service area.

14. Roof Drainage

- All drain bowls are to receive cast iron covers. Plastic drain bowl covers are not allowed.
- All drain sumps are to be constructed out of manufactured taper insulation panels. Hand-cut taper sumps are not allowed. Drain sumps are to be 8 times wider than the drain pipe minimum. Drain sumps must not exceed 12 times the pipe diameter.
- Roof drains elevated above the roof deck must be supported with a treated wood nailer or some structural element that will prevent drain movement and not shrink.
- Secondary roof drains are to be positioned on the roof (upslope) so that water will drain to the primary, they should not be installed at the same elevation as the primary.
- Primary and secondary drains must be a minimum of 2' apart, and 6' maximum.
- All roof sections require secondary drainage or scupper, no matter the size of the roof or the structural loading potential. i.e., canopies, vestibules, stepped side building.
- All roof to roof secondary scuppers will have coverboard and walk pad installed below the scupper drip.

15. Roof Mounted Cameras, Antennas, and Dishes

- All roof-mounted cameras, antennas, or dishes will be mounted to a post structurally mounted to the deck 18" from any walls or roof penetrations.
- **No skid-mounted equipment.**
- Electrical weather head must be provided near post for wire access. Wires must not rest on roof.
- No mounts on top of the parapet.
- A parapet must be 24" tall to allow for inside parapet mounting 8" above finished roof minimum. Swingout mounts are recommended.

16. Roof Access

- Provide reasonable access to all roof levels for maintenance personnel.
- Reasonable access is considered roof hatches, permanently mounted ladders, or door access.
- Portable ladder access is only regarded as reasonable on single-story roof levels 15' or less with 12" or less parapet height.
- A positive tie off point must be visible from the ground to secure the portable ladder. The portable ladder access point must allow ladder to be positioned on flat solid ground.
- A warranty sign is required at all roof access points. (pg. 11)

New Construction

1. A roof slope of 1/4 per foot" minimum is required on all roof systems. The slope must be built into the structure of new buildings. Flat structures must have a written explanation for design to receive written approval from the DFCM Roofing Program Manager prior to code review.
2. Crickets must be installed behind all curbs that obstruct drainage. Cricket angles & slopes are to be constructed to maintain positive slope/drainage throughout the valley. Roof slopes & crickets are designed to eliminate all ponding water on the roof.
3. Review the specific roofing systems for system requirements - see the appropriate section below.
4. Designers must verify the compatibility of flat roofing systems and air barrier tie-ins as applicable.
5. Fall protection for maintenance personnel must be considered in the design. Parapets should be built at the appropriate height, or anchor points should be included. Roof hatch guards must be installed on all roof hatches with self-closing gates. All roof davits (anchor points) should be hot-dipped galvanized, with the galvanizing hole below the roof surface. All serviceable access points on the roof must be 10' minimum from the roofs edge.
6. Special consideration should be made during the design of the roofing system to account for feasibility & cost savings for future reroofing projects - i.e., roof-to-wall material transitions & flashings. All windows, curtain-walls, wall finishes, and doors must have a two-piece counter-flashing below to facilitate access for future roof replacement.
7. When feasible, HVAC equipment design should be to keep said equipment off the roof. Life cycle cost analysis should be conducted to justify when said equipment is installed on the roof. Said analysis should incorporate roof temperatures and reduced equipment life cycles from being exposed to the elements.

Roof Replacement

1. Evaluate the feasibility of using existing insulation, sheet metal, and other existing roof system components if they are in like new condition and will not have an adverse effect on the new roof system.
2. The existing roof membrane must be removed.
3. The existing slope must be evaluated, and tapered insulation added to improve drainage as conditions allow.
4. The roof diaphragm must be evaluated by a structural engineer to determine whether the diaphragm needs to be upgraded to meet current seismic requirements as required by the current State building code.
5. When new roofing systems increase the roof load on a building, then the roof deck structure should be evaluated by a structural engineer to determine the existing dead and live load capacity as required by the current State building code.
6. Manufactured plastic or rubber support blocks, with roofing walk pad tab welded underneath, for all above-roof horizontal pipes. **No sleepers.** Paint all exposed non-galvanized piping for weather protection.
7. Existing rooftop equipment should be evaluated and abandoned/obsolete rooftop equipment & associated penetrations removed - i.e., line sets & curbs.
8. Reroofing projects may receive a lower duration warranty where life cycle costs show is most cost-effective, the buildings end of life is known, or the DFCM Roofing Program Manager approves it.

Insulation Requirements

1. All insulation in the roofing system must be covered under the appropriate DFCM manufacturer warranty for low-slope roofing.
2. All insulation incorporated into the roofing system must be approved and documented as a UL-rated assembly that meets the code requirements of the building the roofing system is installed.
3. Long Term Thermal Resistance should meet the current code, the requirements of the building, and DFCM design standards. R-30 minimum for all roofs. R-15 average minimum at drain sumps.
4. Insulation should always be installed in a minimum of two layers with joints staggered one-foot minimum in both directions. The only exception is when all that is required is a cover board. In such instances, the cover board's end joints should also be staggered.
5. All insulation stored on the project site should be elevated off the roof deck & covered with a weather-tight barrier to protect from UV and moisture on all sides. The factory wrap is not an acceptable cover material. Any wet or moisture-damaged insulation is to be removed from the job site.
6. Expanded polystyrene (EPS) insulation, used in a roofing system must be a minimum of 1.25lb per square foot density and must be compatible with the surrounding roofing products.

Overburden On Flat Roofing Systems - Green, Plaza Decks, Solar Equipment

1. Agencies requesting solar equipment, roof gardens, decorative rock, or any other decorative overburden on the roof surface must sign an MOU (Memorandum of Understanding) with DFCM. The agency will be responsible for all/any costs associated with the installation, maintenance, repair, or removal of said overburden for the roof's life. Agencies will be responsible for the stated cost whether or not DFCM holds an MOU.
2. Roofs to receive any of the aforementioned overburdens are not to be installed on roof areas not designed to receive said overburden - structurally or architecturally.
3. New roofing systems that will receive said overburden are to be designed with the maximum life expectancy/warranty possible with a successful 15-year minimum past roofing system history.
4. Said overburden will not void the roofing manufacturer's warranty.
5. All equipment, i.e., solar panels, must be on a structural mounted stand with a minimum of 18" above the finished roofing system. In addition, equipment must be spaced to allow reasonable access to inspect and repair the roof as needed.
6. Overburden systems are to be designed to withstand building areas' wind loads.
7. In instances where overburden will eliminate the visibility of the roofing system, those sections of roofs are to receive a moisture test(s) before the installation of said overburden.
8. Redundancy is recommended in design details for flashings/weak points in the roofing system.

Low Slope Manufacturer Requirements

1. The manufacturer must be listed in NRCA's low-slope roofing materials guide.
2. The manufacturer must have a 10-year successful history as a roofing manufacturer.
3. The system must have a five-year successful history minimum with that product.
4. Manufacturers must show documented proof of how they plan to meet warranty obligations. Must be provided in the contractor's submittal package.
5. Manufacturers must agree to and be willing to sign the appropriate State of Utah (DFCM) Manufactures Warranty for a low-slope roof system. The DFCM warranty, not the manufactures standard warranty, will be required at project completion. By signing the State of Utah warranty, manufacturers agree to relinquish any of the terms or conditions listed in their standard warranty conditions.
6. The manufacturer must have a certified installer/contractor program. This program must include continuing education for the contractor.
7. The contractor must submit a pre-installation notice signed by an authorized manufacturer representative before starting any work. Including confirmation that the membrane and all accessories being used meet the specification requirements. Also, to include confirmation that the scope of work is in accordance with published technical data as per the manufacturer. Further, it confirms that a warranty has been requested and will be issued on the DFCM manufacturer warranty form at the completion of roofing. This document must be included in the contractor's submittal package.
8. The manufacturer will provide, at no additional cost to the owner, a startup meeting, progress inspections, and a final warranty inspection at project completion by a full-time technical representative. Manufacturer-required inspections should be listed in the submittals. The project architect will schedule all inspections.
9. Any portion of the specification that does not meet manufacturer requirements will be installed per manufacturer requirements at no additional cost to the owner. Any portion of the specification that exceeds the minimum manufacturer requirements will be installed according to specifications, not the manufacturer's minimum requirements.
10. The manufacturer must have a history of meeting Warranty obligations.
11. Manufacturers must release all inspection reports concerning warranted roof systems to the contractor to submit to the project architect.

PVC – (Polyvinyl Chloride) & KEE – (Ketone Ethylene Ester) Roof Systems

Membrane PVC *(*Polyvinyl Chloride) Roof Systems

- The membrane must be Energy Star & LEED Rated.
- Only sheets with stable or low-migrating plasticizers will be acceptable.
- 10-year minimum performance history on the membrane. Minor formulation changes are acceptable as long as the membrane has a successful history.
- The membrane must be manufactured with a low-wicking scrim.
- Only balanced sheets will be acceptable. Scrim must be near the center of the membrane with no less than 30-26 mils polymer above the scrim.
- Thickness: 60 mils (57mil minimum) polymer thickness, not overall thickness minimum. The polymer should be measured between the scrim. Variances from this will only be allowed by approval from DFCM Roofing Program Manager and on a performance-type basis.

- Must meet or exceed ASTM D 4434 for linear dimensional change and heat aging.
- Must meet or exceed ASTM D 5635 for dynamic impact resistance.
- Must meet or exceed ASTM D 2136 for low-temperature flexibility.
- Membrane rolls/sheets are not to be wider than eight feet on a mechanically fastened system.

KEE Section

- Must meet or exceed ASTM D 6754-02
- Must meet or exceed ASTM D 751
- Must meet or exceed ASTM D 2136
- Must meet or exceed ASTM D 5602
- Must be Energy Star & LEED Rated
- 10-year performance history on the membrane. Minor formulation changes are acceptable as long as the membrane has a successful history.
- The membrane must be manufactured with a non-wicking scrim.
- Only balanced sheets are acceptable. The scrim must be near the center of the sheet w/ a minimum of 18 mils polymer above the scrim.
- The membrane should be a minimum of 50 (47 mil minimum) mils thickness, not an overall thickness minimum. The polymer should be measured between the scrim. Variances to this will only be allowed by approval from the DFCM Roofing Program Manager & on a performance-type basis per project
- Sheets shall be no wider than eight feet and no longer than 100 feet on a mechanically fastened system.

TPO (Thermoplastic Olefin) Roof Systems

- Must meet or exceed ASTM D 6878-03
- 10-year minimum performance history on the membrane.
- The membrane must be manufactured with a low-wicking scrim.
- Only balanced sheets will be acceptable. Scrim must be in the center of the membrane with no less than 26 mils polymer above the scrim.
- 60 mil (57mil minimum) polymer thickness, not overall thickness minimum.
- Resistance to xenon-arc weathering (ASTM G 155) must be tested and pass a minimum of 17,640 kJ/m2 or 14,000 hours at an irradiance of 0.35 W/m2
- Must meet or exceed ASTM D 4434 for linear dimensional change and heat aging.
- Must meet or exceed ASTM D 5635 for dynamic impact resistance.
- Must meet or exceed ASTM D 2136 for low-temperature flexibility.
- The membrane must be Energy Star & LEED Rated.
- Membrane rolls/sheets are not to be wider than eight feet on a mechanically fastened system.

EPDM (Ethylene Propylene Diene Monomer) Roof Systems

- Must meet or exceed ASTM D 4637
- 20-year minimum performance history on the membrane.

- Only balanced sheets will be acceptable. Scrim must be in the center of the membrane with no less than 20 mils polymer above the scrim.
- 60 mil (57mil minimum) polymer thickness, not overall thickness.
- Heat Aging (ASTM D 573) must be tested and pass 28 days @ 240 f. with less than 1%-dimensional change.
- Resistance to xenon-arc weathering (ASTM G 155) must be tested and pass a minimum of 17,640 kJ/m2 or 14,000 hours at an irradiance of 0.35 W/m2
- Must meet or exceed ASTM D 2137 for low-temperature flexibility must be tested using the dynamic impact test.
- Membrane rolls/sheets are not to be wider than eight feet on a mechanically fastened system.

Built-up Roof (BUR.) Systems

- Type III (3) asphalt should be used at a minimum. Type IV (4) asphalt should be used if the slope is greater than W.
- Low-fuming asphalt should be used.
- Cold process BUR is acceptable and preferred on sites where the smell is a concern.
- A minimum of type VI (6) fiberglass felts, and a 4-ply system should be used. Phased construction, as defined in the current edition's NRCA manual, is not allowed.
- Minimum #4 lbs. lead is required for all drains, and any other location lead is used for flashing material.
- Surfacing should be an Energy Star-rated SBS modified FR cap sheet with granules where possible; otherwise, aggregate should meet requirements of ASTM D 1863, 3/8" or 9mm nominal.
- No EPS or Extruded insulation will be allowed in any BUR system.
- No asbestos-containing material (ACM) is to be used, i.e., mastics, coatings, paints, etc...

Protected Membrane Roofing (PMR.) System

- The roof membrane must meet or exceed CSGB 37.50-M89
- The roof membrane should be placed directly over an acceptable substrate, as identified by the manufacturer.
- Design should prohibit the entrapment of water within the roof assembly.
- 15-year minimum performance history without formulation changes on the membrane.
- Contractors must have a successful track record of installing PMR systems for a minimum of 5 years and be approved by the membrane manufacturer. Foreman must have a minimum of 5 years successful track record of installing PMR systems.
- The membrane must contain a filler that can provide resistance against fertilizers (ASTM D- 896), acids (ASTM D 896-94), and building washes (ASTM D-896).
- The roof membrane should be monolithic, with no seams, installed at 215 mils - fabric reinforced. Uncured neoprene detailing is required at all critical roof areas per the manufacturer's recommendations.
- The roof membrane must be 100% solids, with no solvents.
- The roofing membrane must withstand a moist environment for a prolonged period, & it shall have a successful performance history in a damp environment.

- Insulations must be highly resistant to moisture and physical damage, extruded polystyrene only.
- The membrane must not be used as a traffic surface and must be protected from sunlight & traffic.
- Protected roof membrane assembly should meet & conform to local wind design guidelines/codes and receive a manufacturer system warranty for wind performance, thermal insulation performance (80% of the original value), and overburden removal & replacement.
- Insulation design should be capable of in-place reuse or recycled in future roof iterations.
- All components, including expansion joints, shall be warranted by the same PMR manufacturer.
- A 20-year minimum warranty is required. As the availability of warranty durations increases, AE's should perform a life cycle cost analysis to select the duration with the best life cycle cost. PMR systems are to have the maximum warranty duration specified available as dictated by life cycle costs.
- The roofing membrane shall be tested by electronic conductive testing to ensure water tightness before the application of overburden.

Vegetated Roof Assemblies:

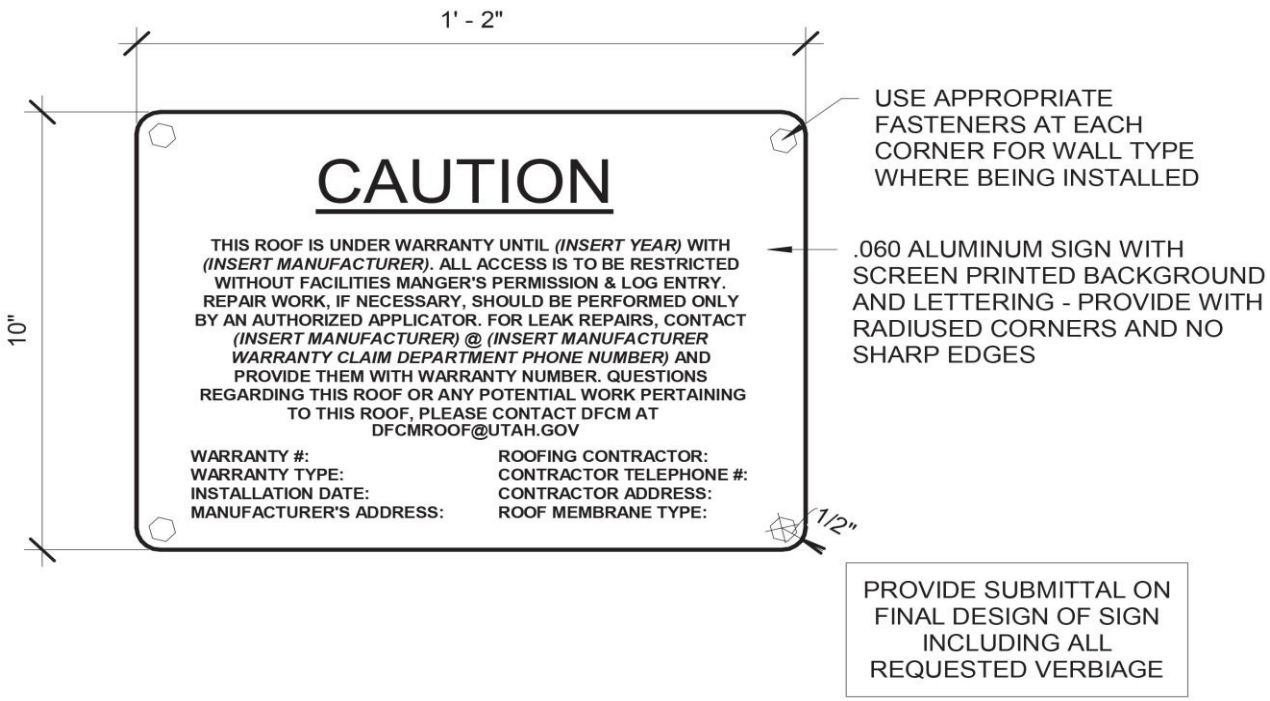
- Vegetated roof assemblies must be constructed using Protected Roof Membrane design requirements, eliminating potential damage from landscaping operations.
- The roofing membrane must be fully bonded to the permanent substrate and seamless.
- The roofing membrane must withstand a moist environment for a prolonged period. The roofing membrane should have a minimum 15-year successful performance track record in buried, wet environments.
- Depending on the type of vegetated roof, the assembly should have an overburden consisting of a protection course, root barrier, drain layer, insulation, moisture retention layer, reservoir layer, filter fabric layer, and engineered soil-based growth medium with plantings. Compatibility of all components of the vegetated roof assembly should be supplied and warranted by a single source manufacturer.
- A minimum 40 psi compressive strength Extruded Polystyrene insulation should be used within the assembly.
- The manufacturer must have a minimum of 10 vegetated roof projects performing successfully for a minimum of 10 years.

Other System Requirements

- The DFCM Roofing Program Manager is to review and approve any hybrid, non-typical roofing or assembly not listed in these guidelines.

Warranties and History Records

1. The minimum Manufacturer Warranty period for DFCM is 30-years. Designers must calculate and provide the life cycle cost difference between the 20-year, 25-year and 30-year systems to the DFCM Roofing Program Manager for written approval to reduce warranty length. The designer specifies the most cost-effective system based on the lowest yearly life cycle costs.
2. Require a 99-m.p.h. minimum wind speed rider with all manufacturers' warranties in low wind areas, and 110-m.p.h. minimum wind speed in known high wind areas. Refer to local wind speed maps for other wind speed design requirements. Please note that a 1-90 or a 1A-90 rating does not provide the necessary wind speed requirements.
3. Manufacturer's warranty provided on the appropriate duration (20-25-30-year) DFCM manufacturer roofing warranty form.
4. The minimum Contractor workmanship Warranty period is five (5) years on the DFCM Contractor Warranty form.
5. A DFCM Single Ply Roofing History record is required on all roofing systems (Contractor's responsibility).
6. Designers are to require the most current version of the warranties & forms available published on the DFCM website - https://dfcm.utah.gov/construction-management/roofing-program/
7. Warranty Sign - Contractor to provide & install a metal sign with vinyl lettering containing the following information and a similar format for all roofs:



These signs are to be installed next to all roof access points inside a building as permittable, preferably next to the roof hatch ladder. Signs are to have rounded corners and with no sharp protrusions or edges. Signs should be a minimum thickness of 20 gauge or greater and no larger than a 10" X 14" landscape setting. Exterior mounted signs are to be engraved, dark bronze anodized aluminum.

General Requirements for Steep Slope Roofing

With the vast array of steep slope products available, designers should carefully select a roofing system that will provide longevity and performance, considering the building's environmental factors in selecting a roofing system. Therefore, the following items are to be required unless the DFCM Roofing Program Manager gives prior written approval:

1. **No Asbestos Containing Material** (ACM) is to be used during repairs or installation of a new roofing system under any circumstances.
2. Any product used in steep slope roofing should have a proven history and be recognized by the NRCA.
3. All eves are to overhang the wall a minimum of 16".
4. Wood-framed crickets filled with insulation should be installed on the up-slope side of all curbs, units, chimneys, etc.
5. The project designer is to verify that proper attic air intake & exhaust ventilation is specified to comply with roofing manufacturer requirements and State building codes.
6. Full Ice and water shield (IWS) dry-in with a felt or synthetic slip sheet between IWS and roof material is recommended for all roofs. End laps must offset by 6'.
7. All roof slopes 6/12 and below require a full IWS dry-in with a felt or synthetic slip sheet. Roof slopes 7/12 or above may have a felt or synthetic dry-in with a minimum of 18" side laps & 12" end laps. Roof slopes 9/12 and higher may have a felt or synthetic dry-in with a minimum of 3" side laps & 12" end laps. End laps must offset by 6'. IWS must extend 6' past the inside of the warm wall on the roof deck.
8. A minimum of a #30 ASTM felt may be used as an underlayment or slip sheet per item #7 above. Synthetic underlayment may also be used provided it is an acceptable substitute for the roofing manufacturer. The slip sheet underlayment is to cover IWS underlayment on all steep slope roofing systems.
9. Valleys and gutters should be designed so ice dams will not be created. Designs should not allow moisture to pond on the roof or drainage system. All designs are to have a clear drainage channel off of the roof, i.e., no dead valleys.
10. A minimum of a 10-15-year leak-free manufacturer warranty is required on all steep slope roof systems
11. Internal rain gutters are not allowed without written approval from the DFCM Roofing Program Manager.
12. All rain gutters, downspouts, and internal drainage systems require a high-quality heat cable that is thermostatically controlled. All fasteners for heat cables shall be concealed within the roof system.
13. Three-tab shingles are not allowed. Laminated architectural shingles to be used that provide a 10-year 130 mph wind warranty. The nailing surface must be fully laminated and 1" minimum width. 6 nails per shingle.
14. Only concealed fasteners will be acceptable in metal roofing. No exposed fasteners will be allowed.
15. Roofing systems with a history of snow sliding off the roof must have an appropriate snow retention system to protect the building occupants and pedestrian traffic around the building.
16. All material and details should meet the requirements of ASTM, NRCA, SMACNA, UL, and FM.

17. The minimum Contractor workmanship Warranty period is five (5) years on the DFCM contractor Warranty form.
18. A DFCM roofing history record is required on all roofing systems.
19. All application procedures should comply at a minimum with the NRCA's standards & requirements unless written specifications from a manufacturer's specific product requirements contradict NRCA's standards. In such instances, written permission must be obtained from the DFCM Roofing Program Manager.

New Construction

1. All penetrations must be a minimum of 36" away from the valley's center.
2. Crickets are to be installed behind (upslope side) all curbs, units, chimneys, etc., to eliminate the possibility of ponding water.
3. Attic insulation baffles must be installed to prevent the obstruction of soffit intake vents caused by attic insulation.
4. Project designers are to verify that proper attic air intake & exhaust ventilation is specified to comply with roofing manufacturer requirements and local & national State building codes.
5. Roof design should consider project location, wind speeds, ice damming, rainfall, and building contents when designing a new structure/roofing system.

Roof Replacements

1. The existing roofing must be removed from the deck to comply with IBC Code 1512.2 before the new roof is installed. Ice and water shield exception, no others.
2. A structural engineer should evaluate the roof diaphragm to determine whether the diaphragm needs to be upgraded to meet current seismic requirements.
3. A structural engineer should evaluate the roof deck structure to determine the existing dead and live load capacity.

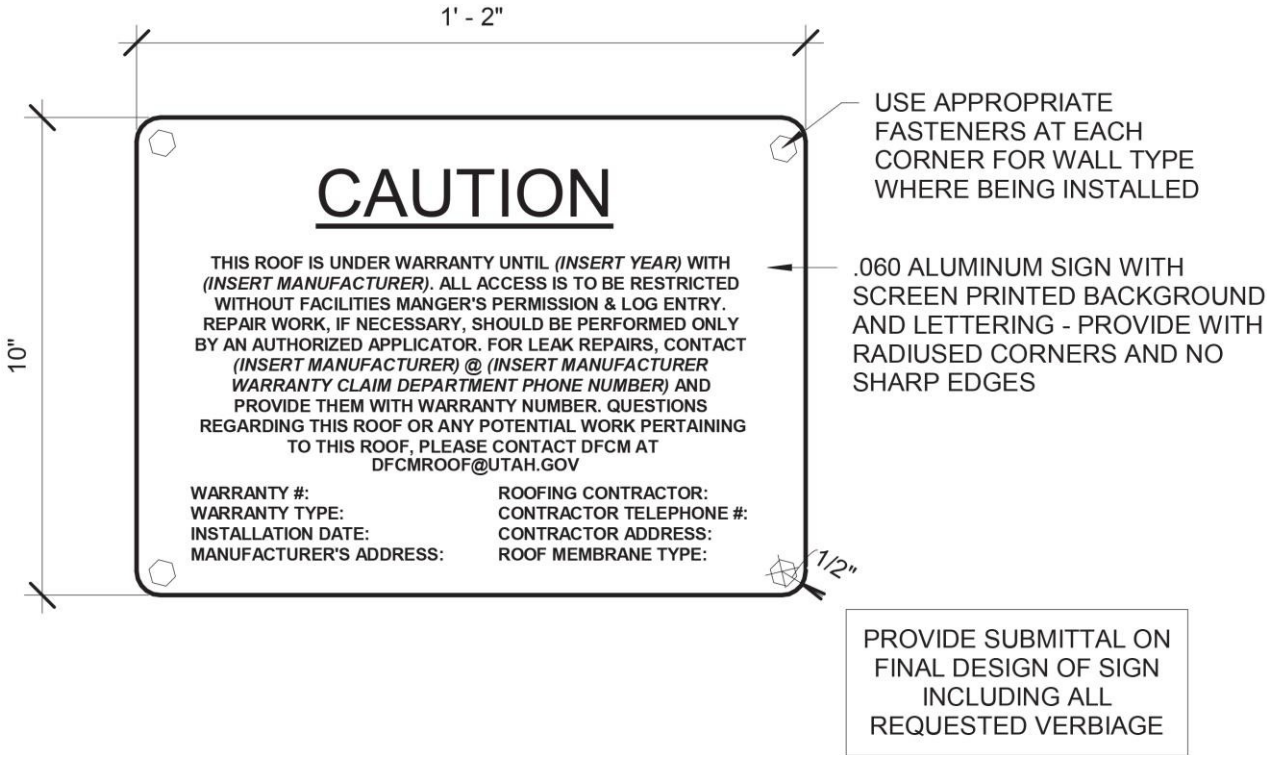
Manufacturer Requirements

1. Manufacturers must be listed in NRCA's steep slope roofing materials guide.
2. Manufacturers must have a successful 10-year history as roofing product manufacturers.
3. Manufacturers must show five (5) years of successful use.
4. Manufacturers must show documented proof of how they plan to meet warranty obligations.
5. The manufacturer must have a certified installer/contractor program. This program must include continuing education for the contractor.
6. The contractor must submit a pre-installation notice signed by an authorized manufacturer representative before starting any work. Including confirmation that the material and all accessories being used meet the specification requirements. Also, to include confirmation that the scope of work is in accordance with published technical data as per the manufacturer. Further, it confirms that a warranty has been requested and will be issued on the DFCM manufacturer warranty form at the completion of roofing. This document must be included in the contractor's submittal package.
7. The manufacturer will provide, at no additional cost to the owner, a startup meeting, progress inspections, and a final warranty inspection at project completion by a full-time technical representative. Manufacturer-required inspections should be listed in the submittals. The project architect will schedule all inspections.

8. Any portion of the specification that does not meet manufacturer requirements will be installed per manufacturer requirements at no additional cost to the owner. Any portion of the specification that exceeds the minimum manufacturer requirements will be installed according to specifications, not the manufacturer's minimum requirements.
9. The manufacturer must have a history of meeting Warranty obligations.
10. Manufacturers must release all inspection reports concerning warranted roof systems to the contractor to submit to the project architect.

Warranties

1. The minimum Contractor Workmanship Warranty period is five (5) years on the DFCM Contractor Warranty form.
2. Manufactures warranty to be issued from the manufacturer.
3. A DFCM Steep Slope Roofing History record is required on all roofing systems (Contractor's responsibility).
4. Designers are to require the most current version of the warranties & forms available published on the DFCM website - https://dfcm.utah.gov/construction-management/roofing-program/
5. Warranty Sign - Contractor to provide & install a metal sign with vinyl lettering containing the following information and a similar format for all roofs:



These signs are to be installed next to all roof access points inside a building as permittable, preferably next to the roof hatch ladder. Signs are to have rounded corners and with no sharp protrusions or edges. Signs should be a minimum thickness of 20 gauge or greater and no larger than a 10" X 14" landscape setting. Exterior mounted signs are to be engraved, dark bronze anodized aluminum.

Contractor Requirements for Low Slope and Steep Slope

1. A contractor must have Five (5) years of experience as a roofing contractor.
2. A contractor must have Five (5) years of experience with the specified or comparable product.
3. A contractor must be a Manufacturer certified installer of the roofing system to be installed.
4. A contractor must document continuing education for the foreman who will oversee the roofing system's work daily. A minimum of 12 hours per year is required.
5. The on-site foreman must clearly communicate with the building owner/occupants.
6. A contractor will provide a 24-hour emergency phone number to the project manager and agency contact person.
7. A contractor must be legally licensed to perform roofing work in the State of Utah and carry liability insurance as required by State of Utah law.
8. A contractor must be willing to sign and agree to the DFCM 5-year contractor roofing warranty terms.