Roofs

August 8, 2019
Roof insulation

Insulation wind baffle
2" minimum space

Continuous ridge ventilation

Water protection membrane

Attic ventilation

Continuous soffit vent

Gypsum board with vapor semi-permeable (latex) paint

Consider increasing depth of insulation by using deeper trusses or oversized (longer) trusses

Vinyl or aluminum siding

Caulking or sealant

Rigid insulation
(taped or sealed joints)

Gypsum board with permeable (latex) paint

Unfaced cavity insulation,
cellulose or low-density spray-applied foam
40% to 50% of vented area

50% to 60% of vented area
Outside

Roof sheathing

Condensation and frost accumulating on underside of roof sheathing

Attic

Attic insulation

Dewpoint

Inside
Outside

Roof sheathing
Condensation and frost accumulating on underside of roof sheathing

Roof sheathing and top of attic insulation are radiation-coupled

Attic
Condensation and frost accumulating on top of attic insulation

Inside
Attic insulation
Shingles

Roofing paper

Minimum R-50 rigid insulation in two or more layers with horizontal and vertical joints staggered

Nail base for shingles (plywood or OSB) screwed through rigid insulation to wood decking or timber rafters

Air barrier membrane

Wood decking

Timber rafter or exposed joist
Shingles

Roofing paper

Roof Sheathing

Air impermeable insulation (aka spray polyurethane foam)
Roof Sheathing

Air permeable insulation (fiberglass batts, netted blown cellulose, netted blown fiberglass, spray applied fiberglass)

Shingles

Roofing paper

Roof Sheathing

Rigid Insulation

Air controllayer (air barrier)
Air permeable insulation
(fiberglass batts, netted blown cellulose, netted blown fiberglass, spray applied fiberglass)

Air impermeable insulation
(aka spray polyurethane foam)

Roof Sheathing

Roofing paper

Shingles
Metal cap
18" wide membrane strip under parapet folded down over exterior OSB
Coping wedge
OSB
Rubber roofing membrane
OSB sheathing
Scupper
Two layers OSB
High density spray foam insulation
Polymer modified (PM) or traditional cement stucco
Metal lath
Building paper bond break over drainage plane
Gypsum board with semi-permeable (latex) paint
Cavity insulation
Sealant, adhesive or gasket at top plate
Caulking or sealant
Cavity insulation
Solar radiation warms cladding

Warm air is trapped by overhang

Cladding warms air
Minimum R-50 rigid insulation in two or more layers with horizontal and vertical joints staggered.
Step 4

Ensure ventilation is provided at all crickets and around all unit skylights.

Install 2x3 or 2x4 wood battons on the flat. Attach battons to the roof rafters. Leave gaps between the ends of the battons to allow for lateral air movement as well as vertical air movement.

Extend battons onto the fascia to provide a vent opening at the bottom of the roof.

Vent space should be connect at the top with a ridge vent, or vented at vertical wall.
Blocking to maintain ventilation space

Ventilation mesh