



## TGIK.R9734 Roofing Systems, Uplift Resistance

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### Roofing Systems, Uplift Resistance

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#### KELLY CO-2001 INC

325 THOMASTON AVE  
WATERBURY, CT 06702 USA

R9734

#### SINGLE PLY MEMBRANE SYSTEMS

Roof membrane and substrate component options for the following UL Classified uplift resistance ratings are restricted to any Kelly Co-2001 Inc. UL fire Classified (TGFU) roof assembly combinations as summarized below:

A. SBS and APP modified bitumen membranes, and their appropriate UL Classified adhesives and mastics, including Henry "#902" adhesive.

B. Thermal-set Roof Membranes: "EPDM" and "C-EPDM", and their appropriate Kelly Co-2001 Inc. UL Classified adhesives and mastics, including bonding adhesives "8101" and "2001 Bonding Adhesive"; splicing cements "8102" and "2001 Splicing Cement"; sealants "8103" and "2110 Paste Sealant".

C. Thermoplastic Roof Membranes: CPA, TPA and TPO, and their appropriate UL Classified adhesives and mastics.

For Roofing Systems utilizing Kelly Co-2001 Inc. "Equalizer Valves" (not UL Classified) and perimeter and penetration "Air Seals", interior securement of the membrane is optional, with one or more of the following roof application techniques being appropriate, for the specific building needs.

A. **Totally Adhered:** Kelly Co-2001 Inc. roof membrane is totally adhered to loose gypsum boards, or attached insulation or coverboards.

B. **Ballasted:** Kelly Co-2001 Inc. roof membrane is ballasted with pavers, gravel, or gravel and earth - green roof assembly.

C. **Loose Laid and Wind Uplift Vented:** The roof substrate is air sealed, and the Kelly Co-2001 Inc. roof membrane is loose laid over the field of the roof, and air seal terminated at all perimeters and penetrations.

D. **Mechanically Fastened:** The Kelly Co-2001 Inc. roof membrane is mechanically fastened to the roof deck, using one of the following options:

1. Inseam washers or bars, covered over with field membrane, in the overlap of field seams.
2. External penetrating membrane attachment: Using mechanical fasteners with a series of washers or bars, penetrating through the roof assembly to the roof deck, and patched over with appropriate membrane.
3. Non-penetrating under membrane attachment with 7 in. by 7 in. flex pads, 12 in. by 12 in. plate bonds, or continuous strips of 7 in. reinforced waterproofing membrane, mechanically fastened to the roof deck, onto which the Kelly Co-2001 Inc. membrane is attached, from the underside.

An "Equalizer Valve", where specified, a proprietary product of Kelly Co-2001 Inc. consists of a 6 in. (min) diam aluminum vent pipe and cap, with a polystyrene insulated sleeve providing a 4 in. (min) diam opening, covered with a 45-mil EPDM circular membrane flap, which allows free movement of air and water vapor to exit the roof assembly, but restricts air flow into the roof assembly. A 6 in. diam hole is cut in the roof assembly waterproofing membrane, insulation, and cover boards, to the air sealed deck or substrate. The "Equalizer Valves" are adhered to the waterproofing membrane, and flashed with the appropriate membrane adhesives and mastics.

"Equalizer Valves" are placed in wind uplift vortex intensity areas of the roof for the specific building size, shape, and geographic terrain requirements. On low-sloped flat roofs, two valves shall be used in every corner, and one valve every 50 ft. or less around the perimeter edge.

#### 1. Uplift Resistance: 90 psf.

**Deck:** — Steel, min 22 MSG. New construction or reroofing over an existing UL Fire Classified roof assembly.

**Air Seal:** — Kelly Co-2001 Inc. 4-mil min thick reinforced polyethylene air barrier (not UL Classified) with end and lap seams overlapped min 6 in., and sealed with 2 in. wide pressure sensitive tape. The poly air barrier must be of sufficient size to wrap over the top of the insulation or cover board, a min of 6 in., around the entire perimeter and at penetrations, to be air sealed to the waterproofing membrane.

**Insulation:** — Any UL Fire Classified polyisocyanurate and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Fasteners:** — No. 14 self-drilling screws, (not UL Classified) with 4 in. diam galvanized Olympic plate (not UL Classified). A total of eleven fasteners per 4 ft by 8 ft. sheet, positioned in three rows located at the centerline and 6 in. from each edge.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants for the insulation and cover boards chosen.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

## 2. Uplift Resistance: 60 psf.

**Deck:** — Steel, min 22 MSG. New construction or reroofing over an existing UL Fire Classified roof assembly.

**Air Seal:** — Kelly Co-2001 Inc. 4-mil min thick polyethylene air barrier (not UL Classified) with end and lap seams overlapped min 6 in., and sealed with 2 in. wide pressure sensitive tape. The poly air barrier must be of sufficient size to wrap over the top of the insulation and cover board, a min of 6 in., around the entire perimeter and at penetrations, to be air sealed to the waterproofing membrane.

**Insulation:** — Any UL Fire Classified polyisocyanurate insulation and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Barrier Board:** — Oriented Strand Board (OSB), 7/16 in. thick min APA rated Sheathing 32/16.

**Fasteners:** — No. 14 self-drilling screws (not UL Classified) (without plates). A total of eight fasteners per 4 ft by 8 ft. sheet positioned in three rows located at the centerline and 6 in. from each edge.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants for the insulation and cover board chosen.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

## 3. Uplift Resistance: 105 psf.

**Deck:** — Steel, min 22 MSG. New construction or reroofing over an existing UL Fire Classified roof assembly.

**Air Seal:** — Kelly Co-2001 Inc. 4-mil min thick reinforced polyethylene air barrier (not UL Classified) with end and lap seams overlapped min 6 in., and sealed with 2 in. wide pressure sensitive tape. The poly air barrier must be of sufficient size to wrap over the top of the insulation, a min of 6 in., around the entire perimeter and at penetrations, to be air sealed to the waterproofing membrane.

**Insulation (Optional):** — Any UL Fire Classified polyisocyanurate and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Barrier Board:** — Oriented Strand Board (OSB), 7/16 in. thick min APA rated Sheathing 32/16.

**Fasteners:** — No. 14 self-drilling screws (not UL Classified) with 2 in. diam galvanized steel washers. A total of ten fasteners per 4 by 8 ft. sheet positioned in three rows located at the centerline and 6 in. from each edge.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

## 4. Uplift Resistance: 130 psf.

**Deck:** — Steel, min 22 MSG.

**Air Seal:** — Consists of an existing UL Classified BUR, with strips of 18 in. wide min 4 mil polyethylene, or strips of Kelly Co-2001 Inc. waterproofing membrane, adhered to the BUR at the entire perimeter with the appropriate adhesive or sealant. Air barrier should be bonded so as to permit wrapping over the top of the barrier board, a min of 6 in.

**Insulation (Optional):** — Any UL Fire Classified polyisocyanurate and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Barrier Board:** — Oriented Strand Board (OSB), 7/16 in. thick min APA rated sheathing 32/16.

**Fasteners:** — No. 12 self-drilling screws (not UL Classified) with 2 in. diam galvanized steel washers. A total of ten fasteners per 4 by 8 ft. sheet positioned in three rows located at the centerline and 6 in. from each edge.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

## 5. Uplift Resistance: 75 psf.

**Deck:** — Min 15/32 in. plywood or 7/16 in. APA rated sheathing 32/16.

**Air Seal:** — : Consists of sealing all joints in plywood with Kelly Co-2001 Inc. Bonding Adhesive No. "8101" and 2 in. wide plastic tape. At the perimeter a wood nailer is set in a 3/8 in. bead of Kelly Co-2001 Inc. EPDM Paste Sealant No. "8103", and nailed to edge of deck with #6 common nails, spaced 16 in. OC when insulation is used.

**Insulation:** — Any UL Fire Classified polyisocyanurate and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

## 6. Uplift Resistance: 150 psf.

**Deck:** — Concrete (pre-cast, panel, poured-in-place, lightweight concrete (LWC) cellular, vermiculite, perlite or gypsum). New construction or reroofing over an existing UL Classified roof assembly.

**Perimeter Air Seal:** — Consists of strips of 18 in. wide min 4 mil reinforced polyethylene, or strips of Kelly Co-2001 Inc. roof membrane, adhered to the concrete deck at the entire perimeter, with the appropriate adhesive or sealant. Air seal should be bonded so as to permit wrapping over the top of any insulation or barrier board, a min of 6 in.

**Deck Air Seal:** — Any joints or holes through the roof deck are sealed with 2001 Co. field membrane strips, LWC, or spray foam.

**Insulation (Optional):** — Any UL Fire Classified existing roof assembly or any UL Fire Classified polyisocyanurate and/or 1/2 in. thick gypsum wallboard, with selected waterproofing membrane.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 7. Uplift Resistance: 225 psf.

**Deck:** — Steel, min No. 22 MSG, side-lap and butt seams sealed with two component spray-applied foamed plastic.

**Insulation:** — Two component spray applied foamed plastic min 1 in. thick sprayed over 2001 Reinforced Fiberglass Mesh (not UL Classified) stretched across steel deck.

**Slip Sheet (Optional):** — Glass mat, paper or board type product loose laid or mechanically fastened.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are air sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to air seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 8. Uplift Resistance: 75 psf.

**Deck:** — Steel, min No 22 MSG. New Construction or reroofing over existing UL Fire Classified roof assembly.

**Barrier Board:** — Loose laid or mechanically fastened 1/2 in. thick min gypsum board or 1/4 in. thick min G-P Gypsum DensDeck®, or an existing UL Classified roof assembly.

**Insulation:** — Two component spray-applied foamed plastic insulation formed in two or more layers, min 1/2 in. thick each, with 2001 Reinforced Fiberglass Mesh (not UL Classified) laid over first layer.

**Fastener:** — Spaced in a 3 ft. by 3 ft. OC grid consisting of 1/4-13 steel screws with 3 in. min diam No. 22 GSG steel plates secured through center of 12 by 12 by 1/8 in. hardboard bond plates.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 9. Uplift Resistance: 75 psf.

**Deck:** — Steel, min No. 22 MSG.

**Existing Roof System:** — Insulated or non-insulated asphalt built-up or modified bitumen membrane with smooth, granule or gravel surface (swept clean).

**Insulation:** — Two component spray-applied foamed plastic insulation formed in two or more layers, min 1/2 in. thick each, with 2001 Reinforced Fiberglass Mesh (not UL Classified) laid over first layer.

**Fasteners:** — Spaced in a 3 by 3 ft OC grid consisting of 1/2-13 steel screws with 3 in. min diam No. 22 GSG steel plates secured through center of 12 by 12 by 1/8 in. hardboard bond plates.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 10. Uplift Resistance: 105 psf.

**Deck:** — Steel, min No. 22 MSG.

**Existing Roof System:** — Insulated or non-insulated asphalt built-up or modified bitumen membrane with smooth, granule or gravel surface (swept clean).

**Insulation:** — Two component spray-applied foamed plastic insulation formed in two or more layers, min 1/2 in. thick each, with 2001

Reinforcing Mesh laid over first layer.

**Fasteners:** — Rows spaced 3 ft. OC. Each row consists of 1/4-13 steel screws, spaced 3 ft OC, with 4 in. min diam No. 22 GSG steel plates. Every other fastener also secured through center of 12 by 12 by 1/8 in. hardboard bond plates.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame compression bar, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 11. Uplift Resistance: 120 psf.

**Deck:** — Min 15/32 in. APA rated plywood sheathing, 32/16.

**Insulation:** — Two component spray-applied foamed plastic insulation formed in two or more layers, min 1/2 in. thick each, with 2001 Reinforced Fiberglass Mesh (not UL Classified) laid over first layer

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 12. Uplift Resistance: 45 psf.

**Deck:** — Min 15/32 in. APA rated plywood sheathing, 32/16.

**Existing Roof System:** — Insulated or non-insulated asphalt built-up or modified bitumen membrane with smooth, granule or gravel surface (swept clean).

**Insulation:** — Two component spray-applied foamed plastic min 1 in. thick.

**Fasteners:** — Spaced in a 4 by 4 ft OC grid consisting of 1/4-13 steel screws with 3 in. min diam No. 22 GSG steel plates secured through center of 12 by 12 by 1/8 in. hardboard bond plates. In addition, a 1/4-13 steel screw with 3 in. min diam No. 22 GSG steel plate is located at the center of each 4 by 4 ft grid.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 13. Uplift Resistance: 195 psf.

**Deck:** — Min 7/16 in. APA rated sheathing, 32/16 (plywood, oriented strand board or wafer board). The 4 ft. wide sheathing is positioned with its longitudinal sides parallel to and centered over wood joists, spaced 2 ft. OC. Butt joints of adjacent sheets are to be staggered.

**Fasteners:** — Consists of 1/4-13 steel screws with 3 in. min diam No. 22 GSG steel plates located in a row at the longitudinal seams of plywood sheets beginning 4 in. from each staggered butt seam and 20 in. OC in between plate and screw to hold adjacent sheets. Another row of fasteners located at the longitudinal center line of each sheet 4 in. from each butt edge and 22 in. OC between.

**Adhesive:** — Kelly Co-2001 Inc. petroleum based exterior wood deck adhesive (not UL Classified) is used to adhere deck to joists and to seal all deck joints.

**Insulation (Optional):** — Any UL Fire Classified insulation, loose laid, mechanically fastened, or adhered.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to seal to the insulation and membrane, respectively.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, and 3 in. min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer

wind-generated vacuums to the air sealed substrate.

#### 14. Uplift Resistance: 225 psf.

**Deck:** — Concrete, gypsum, poured-in-place, pre-cast panels, and lightweight insulating concrete.

**Deck Coating (Optional):** — Any UL Fire Classified coating, Kelly Co-2001 Inc. concrete primer, and polyester reinforced SBS modified bitumen membrane, torch-applied, hot-mopped, or cold mastic-applied to the top surface or an existing UL Classified membrane or spray foam assembly, applied to the roof deck.

**Insulation (Optional):** — Any UL Fire Classified Kelly Co-2001 Inc. separator mats or slip sheets, or rigid roof insulation, any thickness, adhered, mechanically attached, or loose laid and weighted in place with 1/2 in. (min) thick gypsum sheeting.

**Air Seal:** — Consists of 18 in. (min) wide strips of waterproofing field membrane, adhered or mechanically terminated to the roof deck, in a bead of air seal caulking or tape, with a continuous series of Kelly Co-2001 Inc. termination bar around the perimeter and penetrations, to stop lateral air infiltration into the roof assembly. The air seal strips are extended up through the roof assembly, and are attached to the underside of the field membrane.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 15. Uplift Resistance: 150 psf.

**Deck:** — Min 15/32 in. APA rated plywood or 7/16 in. APA rated OSB sheathing 32/16.

**Air Seal:** — Consists of sealing all the deck joints with a bead of Kelly Co-2001 Inc. EPDM paste sealant No. "8103". "H" Clips are used on open plywood butt-joints between joists. The "H" clips are spaced on-center between joists.

**Insulation (Optional):** — Any UL Fire Classified rigid insulation, any thickness, existing roof assembly or 2001 separator or mats or slip sheets.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane, with specified adhesives and sealants.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums to the air sealed substrate.

#### 16. Uplift Resistance: 225 psf.

**Deck:** — Steel, min No. 22 MSG, side-lap and butt seams sealed with two component spray-applied foamed plastic.

**Deck Air Seal:** — Slow-rise adhesive two-component spray-applied foamed plastic, sprayed over side-laps and into butt seams on roof deck, and under nailers, curbs, and through-roof penetrations.

**Insulation:** — 2 in. (min) thick one-pound density expanded or extruded polystyrene, or 1.5 in. (min) isocyanurate insulation boards, embedded in a layer of 2001 Co. slow-rise adhesive foam during the curing process.

**Slip Sheets and Cover Boards (Optional):** — Glass mat, spun-bound polyester, or nylon mat, poly-films, gypsum, or fiber board, or additional layer of two-component spray-applied foamed plastic.

**Membrane:** — Any UL Fire Classified Kelly Co-2001 Inc. waterproofing membrane. With specified adhesives and sealants.

**Membrane Air Seal:** — The perimeter and penetrations are sealed with a mechanically fastened, picture frame of Kelly Co-2001 Inc. termination bars, consisting of a 2001 butyl rubber gasket (not UL Classified) with a nom 5/8 in. by 3/4 in. cross section and termination bars consisting of 1/2 in. wide, 6 ft. long extruded aluminum bars, with pre-punched holes 7 in. on center. The gasket is centered on the underside of the membrane on the substrate. A termination bar is fastened over the membrane to the deck with 1/4-13 steel screws, to air seal the insulation and membrane, to the roof deck.

Optional air seal termination consists of 6 in. strips of APA rated wood sheathing, 7/16 in. min, fastened 12 in. on center, using 3 in min No. 22 GSG steel plates and #14 roof screws, instead of termination bars.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves", placed in the wind uplift vortex intensity zones of the roof, to transfer wind-generated vacuums into the air sealed substrate, for added wind protection and moisture venting.

#### 17. Uplift Resistance: 285 psf.

**Deck:** — Structural Concrete (poured in-place or pre-cast)

**Deck Air Seal:** — Perimeter roof deck to vertical wall joints, through-roof-deck penetrations and deck joints are air sealed with reinforced EPDM, TPO or PVC membranes (**See list under Membrane**) fully adhered to the roof deck and flashed on to the perimeter and through deck penetrations.

**Vapor Barrier (Optional):** — One or more layers of fully adhered UL Fire Classified Kelly Co-2001 Inc. Membranes.

**Insulation (Optional):** — Any UL Classified rigid roof insulation, any thickness, tapered or flat stock, adhered, fully adhered, mechanically fastened or loose laid and weighted in place with a Cover Board (Weighted Cover Board).

**Cover Board:** — Minimum 1/2" inch minimum thick National Gypsum "PermaBase" or USG "Durock Exterior" cement boards. Also could be minimum 1/2" inch thick gypsum boards consisting of G-P Gypsum "DensDeck", USG "SECUROCK Glass Mat Board", or Certain Teed Gypsum "GlasRoc".

**Membrane:** — is Loose Laid or totally adhered to the Cover Board (Weighted Cover Board) with one of the following in **Series One** - 2001 TPA, 2001 TPA-FB, Kelly TPO, 2001 TPO, TPO-K, TPO-K FR, TPO-K Plus 1 fully adhered with 2001 Bonding Adhesive or TPO Bonding Adhesive. Laps are adhered with 2001 Splicing Cement and edges are sealed with 2110 Paste Sealant.

Any of the following in the **Series Two**-Kelly CPA (PVC) or 2001 CPA (PVC) fully adhered with Sarnacol 2121, 2170 or V949 adhesive at 1-3/4 to 2-1/4 gal/gal sq. ft. Any of the following in **Series Three**- Standard EPDM, Premium Whaleskin/81 (black) or (white), C-EPDM (black), C-EPDM Type 1 (black), C-EPDM-C, C-EPDM-C, Type 1, C-EPDM-C Type 2, C-EPDM-C Type Reinforced adhered with Bonding Adhesive #8101, 2001 Bonding Adhesive, Rubber to Rubber Splicing Cement #8102 (black) or (clear), 2001 Splicing Cement, EPDM Paste Sealant #8103 (black) or (white), 210 Paste Sealant. Any of the following in **Series Four**- membranes (modified bitumen) M3.8MFR, M4.5CMFR, M4PMFR, M4GMFR, T4GMFR, T4.5CMFR hot-mopped or torched.

**Membrane Air Seal Attachment:** — The roof membrane is directly terminated (secured) to the concrete deck with 2001 Co. air seal termination techniques using butyl gum tape and termination bars or structural "C" Channels fastened with concrete fasteners 6-in oc at

perimeters and all roof through penetrations.

**Perimeter and Penetrations:** — Finish Flashed onto the air sealed field of the roof membrane using Kelly Co.-2001 Inc. Flashing techniques.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves™", are installed around the building perimeter in the wind uplift vortex intensity zones of the roof according to the Kelly Co.-2001 Inc. equalizer valve placement diagram. A 6-1/2 inch diameter hole is cut-out of the roof assembly down to the concrete deck under Equalizer Valves™ to transfer Wind Uplift pressure load through the roof assembly to the structural concrete deck.

#### 18. Uplift Resistance: 285 psf.

**Deck:** — Structural Concrete (poured in-place or pre-cast)

**Deck Air Seals:** — Perimeter roof deck to vertical wall joints, through-roof-deck penetrations and deck joints are air sealed with reinforced EPDM, TPO or PVC or Modified Bitumen membranes (**See list under Membrane**) fully adhered to the roof deck and flashed on to the perimeter and through deck penetrations.

**Existing Roof Permeation:** — The existing roof systems are permeated by cutting through the membranes 2-ft o.c., by drilling a 1/2 - inch diameter hole every 2 sq. ft. to allow water vapor to migrate out roof systems and up into the new Kelly Co., 2001 Inc. Self Drying Wind Vented, Re-roof System.

**Gravel Mat (Optional):** — Loose laid gravel mat (not UL Classified) and covered with the Cover Board.

**Insulation (Optional):** — Any UL Classified rigid roof insulation, any thickness, tapered or flat stock, adhered, fully adhered, mechanically fastened or loose laid and weighted in place with a Cover Board (Weighted Cover Board).

**Cover Board:** — Minimum 1/2" inch thick National Gypsum "PermaBase" or USG "Durock Exterior" cement boards. Also could be minimum 1/2" inch thick gypsum boards consisting of G-P Gypsum "DensDeck", USG "SECUROCK Glass Mat Board", or Certain Teed Gypsum "GlasRoc".

**Membrane:** — is Loose Laid or totally adhered to the Cover Board (Weighted Cover Board) with one of the following in **Series One** - 2001 TPA, 2001 TPA-FB, Kelly TPO, 2001 TPO, TPO-K, TPO-K FR, TPO-K Plus 1 fully adhered with 2001 Bonding Adhesive or TPO Bonding Adhesive. Laps are adhered with 2001 Splicing Cement and edges are sealed with 2110 Paste Sealant.

**Series Two**-Kelly CPA (PVC) or 2001 CPA (PVC) fully adhered with Sarnacol 2121, 2170 or V949 adhesive at 1-3/4 to 2-1/4 gal/gal sq ft.

Any of the following in **Series Three**- Standard EPDM, Premium Whaleskin/81 (black) or (white), C-EPDM (black), C-EPDM Type 1 (black), C-EPDM-C, C-EPDM-C, Type 1, C-EPDM-C Type 2, C-EPDM-C Type Reinforced adhered with Bonding Adhesive #8101, 2001 Bonding Adhesive, Rubber to Rubber Splicing Cement #8102 (black) or (clear), 2001 Splicing Cement, EPDM Paste Sealant #8103 (black) or (white), 210 Paste Sealant. Any of the following in **Series Four**- membranes (modified bitumen) M3.8MFR, M4.5CMFR, M4PMFR, M4GMFR, T4GMFR, T4.5CMFR hot-mopped or torched.

**Membrane Air Seal Attachment:** — The roof membrane is directly terminated (secured) to the concrete deck with air seal termination techniques using butyl gum tape and termination bars or structural "C" Channels fastened with concrete fasteners 6-in oc at perimeters and all roof through penetrations.

**Perimeter and Penetrations:** — Finish Flashed onto the air sealed field of the roof membrane using Kelly Co.-2001 Inc. Flashing techniques.

**Pressure Relief Valve:** — Kelly Co-2001 Inc. "Equalizer Valves™", are installed around the building perimeter in the wind uplift vortex intensity zones of the roof according to the Kelly Co.-2001 Inc. equalizer valve placement diagram. A 6-1/2 inch diameter hole is cut-out of the roof assembly down to the concrete deck under Equalizer Valves™ to transfer Wind Uplift pressure load through the roof assembly to the structural concrete deck and to exhaust water vapor out of the existing wet roofs.

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