

Division 7
Thermal & Moisture Protection

Section 07530

Single Ply Membrane Roofing
PART I - GENERAL

1.01 SCOPE

Furnish and install the Custom Seal Roofing System in accordance with the detail drawings, instructions, material descriptions, and other information-stated herein.

1.02 LIMITATIONS

1. **The Performance of the Custom Seal Roofing System, and Custom Seal Dealer/Contractor shall be monitored by an independent third party. The PBSRG (Performance Based Studies Research Group) of Arizona State University shall take the non-biased performance information and put the information in a database. The database will be used to identify the performance level of the Custom Seal, Inc. roofing system and the Custom Seal Dealer/Contractor in two main areas: the quality of the material and skill of installation. This performance information shall be made public and posted on the Internet for all to access.**
2. The Custom Seal Roofing System and its applicability to any given installation shall be verified to be in compliance with all conditions stated herein.
3. The Custom Seal Roofing shall be installed by, an authorized performance based Custom Seal Dealer/Contractor.
4. The Custom Seal Roofing System shall be inspected for warranty consideration by an authorized representative per current Custom Seal, Inc. inspection policies.
5. In no instance shall the Custom Seal Roofing System be exposed to a direct steam source.
6. Custom Seal, Inc., shall not be responsible for damage which may occur as a result of change of recurrence rate or location of dew point within a roof deck subassembly or building.
7. All Components of the installed Custom Seal Roofing System shall be products of Custom Seal, Inc. or shall be approved in writing as acceptable by the membrane manufacturer. Deviation from this condition may invalidate warranty coverage or consideration for such coverage.
8. In no instance shall Custom Seal, Inc. be responsible for determining the ability of the roof structure to survive and withstand the weight added by the aggregate ballast used for ballasted installations, or non ballasted. In no instance shall Custom Seal, Inc. be responsible for either direct or consequential damages which may result from installation of a ballasted, or non ballasted Custom Seal Roofing System on a roof deck which is structurally inadequate.

1.03 SYSTEM DESCRIPTION

1. The Custom Seal Roofing system consists of the Custom Seal membrane, fasteners, prefabricated corner, parapet, stack and vent sections, and other related, Custom Seal approved products necessary for the proper and warrantable installation of the Custom Seal Roofing System.
2. The system is a single-ply mechanically attached system design utilizing 1.2 mm (48 mil) & 1.5 mm (60 mil) nominal thickness prefabricated (PVC) roofing membrane, 75" x 100' roll good form (PVC) roofing membrane, or a combination thereof.

1.04 SUBMITTALS AND PRELIMINARY TESTS

A. ROOF LAYOUT AND DESIGN

The authorized Custom Seal Dealer/Contractor shall submit shop drawing for ordering, manufacturing and final inspection of the Custom Seal Roofing System.

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- B.** Drawings shall include roof outline, roof dimensions, roof penetrations, insulation type and thickness, piece layout, parapet size and location and all other information which may affect the suitability and installation of the project.
- C.** In the case of roof cover installation over an existing roof, the authorized Custom Seal Dealer/Contractor or other representative duly appointed by Custom Seal, Inc., shall conduct an inspection of the proposed job site, shall note damaged areas to be repaired before installation of the Custom Seal Roofing System.

2.01 MATERIALS

All materials used in the installation of the Custom Seal Roofing System shall be products of Custom Seal, Inc., or approved products as defined and described in the specification. Other materials shall be approved in writing by Custom Seal, Inc. prior to their use with the Custom Seal Roofing System.

A. MEMBRANE

The membrane material shall be a non-woven polyester fabric coated on both sides with a blend of PVC and phthalate esters (plasticizers) and shall exhibit the following minimum physical properties:

<u>PHYSICAL PROPERTIES</u>			
<u>PROPERTY</u>	<u>TEST METHOD</u>	<u>ASTM D-4434</u>	<u>TYPICAL VALUES</u>
Thickness, Inches (Min)	AS7M D-751	0.045 inches	0.048 inches
Tear Strength, (lbs)	ASTM D 751	200 x 45 lbs	400 x 90 lbs
Tensile Strength (psi)	ASTM D-751	35 x 200 psi	50.8 x 290 psi
Breaking Strength (%)	ASTM D-3045	80	95
Emmagua (langleys)	ASTM D-838	---	3,000,000 langleys
Elongation (%)	ASTM D-3045	80	95
With Fabric (%)	ASTM D-751	15	27
Linear Dimensional Change (%)	ASTM D-1204	0.5 max.	0.1%
Low Temperature Resistance, degrees F	ASTM D-2136	-40	-40
Hydrostatic Resistance psi (min.)	ASTM D-751		500
Ozone Resistance	AS7M D-1149		No Cracks

Moisture Transmission	ASTM E-96 (WVT)		0 151gr./hr//
Microbial Attack	ASTM G-21		0% growth
Accelerated Weather Test	ASTM D-2565	Pass	Pass
	ASTM D-G-53	Pass	Pass
Water Absorption (%)	ASTM D-570	3.0 max.	Pass

B. FASTENERS .

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1. All fasteners shall be corrosion resistant coated and comply with Factory Mutual Standard 4470.
2. Insulation fasteners shall be suitable for the insulation used.
3. All screw type fasteners shall be a minimum #14 shank diameter.
4. No hex head fasteners (only allowed on termination bar).

C. APPROVED FASTENERS

Custom Seal Fasteners
TruFast Fasteners
SFS Fasteners

NOTE: Custom Seal, Inc. requires a pullout test to be conducted on the following types of decks and the results submitted to Custom Seal, Inc. Technical Department prior to project bid. Gypsum, Tectum, Lightweight Concrete and Concrete Plank Deck 1334N (300 lbs).

D. STRESS DISTRIBUTION PLATES

Stress distribution plates shall be formed from a minimum of 24 gauge zinc. Each plate shall have a .250 inch diameter hole at its center through which the metal screw is inserted and then secured into the deck. Stress distribution plates shall be furnished by the membrane manufacturer. For maximum wind uplift resistance, the stress distribution plate should be installed with the edge 1/4 inch from edge of weld.

E. BREATHER VENTS

Custom Seal breather vents with attached skirt shall be installed at the density of one per 1000 square feet of roof area and at a minimum of one per roof. Breather vents shall not in any instance be attached by means of mechanical fasteners to the field membrane and shall not be used on non-heated porches or carport roof installations. On re-roof installations, the old roof cover materials and insulation shall be removed to leave a 2 1/2 inch diameter hole to the depth of the vapor barrier, if present, or to the depth of the deck. A small amount of crushed insulation or fiberglass shall be left in the hole prior to attachment of the breather vent. On freezer roof installations, only the Custom Seal membrane shall be cut to accommodate the breather vents shall be furnished by the membrane manufacturer.

D. CAULK

Caulk shall be MAMECO Vulkem 116 as provided by Custom Seal, Inc.

1. Substrate surfaces shall be clean and dry prior to the application of caulking materials. Painted metal and masonry surfaces shall be lightly abraded with a wire brush to provide a surface adequate for adhesion.
2. A minimum 3/8 inch diameter continuous bead of caulk shall be applied behind the membrane and above all materials utilized in each instance of roof membrane termination including drip edge, gravel stop, termination bar, roof flashing on parapet walls, tie-ins, drains, metal count roof curb counter-flashing, roof penetrations, and in all other cases where water seal may be improved by its use.
3. Caulk shall not be used by itself, in any instance to provide mechanical attachment of Custom Seal Roofing System components to existing elements of the roof structure.
4. Caulk shall be furnished by the membrane manufacturer.

E. WATER STOP

Water stop shall be a pre-cured, extruded sealant for use in place of caulk in any instance where caulk is used between the membrane fabric and the substrate on roof terminations. Water stop shall be furnished by the membrane manufacturer.

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F. REINFORCED PIPE BOOTS

Pre-fabricated pipe boots and bands may be used for all circular roof penetrations. A stainless steel band clamp, as furnished by Custom Seal, Inc., shall be tightened around the top portion of the stack, excess stack material above the clamp shall be trimmed away, and the area between the pipe and circular penetration sealed with Custom Seal caulk. The skirt of the pre-fabricated stack flashing shall then be heat-welded to the Custom Seal Roof membrane. Pipe boots and bands shall be furnished by the membrane manufacturer.

G. OTHER RELATED MATERIALS

The following items are to be incorporated into the Custom Seal Roofing System. NOTE: Prolonged exposure of adhesives and sealants to temperatures greater than 80 Degrees F will reduce their shelf life. Normal shelf life is approximately 9 months from date of manufacturing.

- | | |
|---------------------------------------|---|
| 1. Custom Seal, Inc. Half Sheets | 7. Custom Seal, Inc. Flashing (reinforced) |
| 2. Custom Seal, Inc. Walk Pads | 8. Custom Seal, Inc. Inside/Outside Corners |
| 3. Custom Seal, Inc. Pitch Pan Sealer | 9. Custom Seal, Inc. Metal Anchor Bar |
| 4. Custom Seal, Inc. Termination Bar | 10. Custom Seal, Inc. Separator Sheet |
| 5. Insulation | 11. Wood Blocking/Nailers |
| 6. Roof Drains | |

2.02 TOOL REQUIREMENTS

The authorized Custom Seal Dealer-Contractor shall have the following tools, which are necessary for efficient and proper installation of the Custom Seal Roofing System.

1. Hand Welders with a spare heating element. (optional: Automatic,Welder)
2. Silicone Roller
3. Extension Cords - cord length of 100', #12/3 wire w/ground
4. Variable speed/reversible screw gun.
5. P-3 Screwdriver Tips for Screws.

6. Hammer Drill with Depth Gauge.
7. Measuring Tapes (100' and 25'), Chalk Line, Markers/
Lumber Crayon, Utility Knives w/retractable blades.
8. Metal Snips, Rack Saw, Keyhole Saw, Hammers, Scissors.
9. Vice Clamps, Nail Aprons, Caulk Gun, Screw Drivers.
10. Cleaning Fluid and Rags, Pry Bar.
11. 2" Flat Chisels (two needed)
12. Special tools necessary for tightening stainless steel
band clamps as supplied by Custom Seal, Inc.
13. Ladders
14. Tack Claw
15. Equipment necessary to raise materials to the rooftop.

3.01 EXECUTION

A. DELIVERY

The complete Custom Seal Roofing System and related materials shall be delivered to the job site in original packaging and with shipping labels intact. Containers shall be labeled with manufacturers/supplier's name, product name, and identification. The shipment shall be checked for damages and/or shortages. Damaged materials and/or shortages shall be noted on the freight bill by the freight agent. Concealed damage shall be reported to the freight agent immediately. Materials damaged in shipping, handling, or storage shall not be used.

B. STORAGE

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All components of the Custom Seal Roofing System shall be stored flat on dunnage and protected against inclement weather to ensure dryness at time of application.

C. HANDLING

Adequate personnel and equipment shall be available to safely lift and place the Custom Seal Roofing System onto the rooftop. Folded or rolled pre-fabricated sections of membrane fabric shall be placed on the roof near load-bearing members and in a manner convenient to final placement.

D. SURFACE PREPARATION

The roof deck shall be clean, smooth, free of fins, sharp edges, and loose and foreign material. Damaged areas and other factors affecting the installation of the Custom Seal Roofing System shall be repaired prior to the installation of the membrane.

1. Wood Decks shall be clean and smooth and shall have no joints or cracks greater than 1/4 inch in width. Deteriorated wood nailers, roof curbs, and bad insulation shall be replaced.
2. Steel Decks shall be covered with an approved insulation, which shall be attached with Custom Seal fasteners as shown in detail drawing #47.
3. Concrete Decks shall be clean and smooth. Insulation, if any, shall be attached with Custom Seal fasteners as shown in detail drawing #43-#46.
4. Pea gravel or crushed stone ballasted built-up roofs.

All existing loose gravel or crushed stone must be leveled to ensure insulation lays flat. An approved minimum thickness insulation board or Custom Seal, Inc. underlayment must then be used. Insulation must be mechanically attached fastened to the deck with approved fasteners and plates using approved pattern details.

E. INSULATION

- beneath
insulation products
manufacturer and tested in
1. Custom Seal, Inc. has certain requirements on insulation type, manufacturer, thickness, density and facer for polyisocyanurate insulation. Only insulation listed below are to be used the Custom Seal, Inc. mechanically attached system. All polyisocyanurate are to have a nominal 32kg/m³ density, as certified by the insulation manufacturer and tested in accordance with ASTM D-1622.
 - a) Apache - Pyrox Millox; AC Foam; AC Foam II
 - b) C/S Foam & C/S Recovery; Atlas - HyTherm; Top R II; Star AP;
 - c) Firestone - ISO 95;
 - d) NRG - E"NRG"Y II
 - e) R Max - MultiMax; MultiMax II
 2. All insulation must be independently attached to the approved substrate using approved fasteners and insulation plates. Fasten all insulation per detail drawings. All fasteners must pass the requirements established by Factory Mutual 4470 for corrosion resistance.
 3. On steel deck, provide at least the minimum thickness required by the insulation manufacturer to span the flutes of the deck.
 4. On all constructions, 1.3 cm (1/2") thick high density wood fiber board is acceptable, with the exception of steel deck (new construction/tear off)

F. SEPARATOR SHEET

1. Custom Seal, Inc. allows the following separator sheets to be used on all decks accept with a steel deck on new construction and on a steel deck where a tear/off is involved.
2. Custom Seal, Inc. - Custom Seal Polyester Underlayment
 - a) Tenneco - Amocor PB6 Plus
3. All Custom Seal Membranes may be installed directly over E.P.D.M. roofing.
4. All Custom Seal Membranes may be installed directly over plywood without a slip sheet as long as any ("H") Clips are covered with duct tape, and any nails are flush with the deck.

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- b) Poly America - Visqueen
- c) C/S Recovery Board
- d) All Man. - E.P.D.M.

G. TEMPORARY TERMINATIONS

Temporary terminations shall be installed before the cease of work each day.

3.02 CLEAN-UP

After the Custom Seal Roofing System has been installed, the authorized Custom Seal Dealer/Contractor shall remove all foreign matter, rubbish, and scrap material from the roof.