

## Fully Adhered proSeal PVC Modular Roof System

### 1. GENERAL CONDITIONS

#### 1.1 Description

##### A. Scope of Work

1. To install an **proSeal** C3 - Fully Adhered Modular Roof System including **proSeal** C3 membrane, flashing, accessories and other items to comprise a complete roofing system.
2. All work is to be completed as per current published **proSeal** C3 drawings, details and specifications.

##### B. Related work

The work includes but is not necessarily limited to the installation of:

1. Protection Board/Leveling Layer (where specified/required)
2. Vapor retarder (where specified)
3. Insulation
4. Fasteners for insulation and membrane fixation
5. Roof field membrane
6. Roof flashing membrane
7. Adhesives
8. Sealants
9. Roof walkways
10. Metal flashing

#### 1.2 Quality Assurance

- A. The **proSeal** C3 - Fully Adhered Modular Roof System shall be applied only by a installer authorized by **proSeal** C3 roofing systems.
- B. The roofing installer shall furnish with their bid written documentation stating that they are a **proSeal** C3 authorized installer.
- C. The roofing installer shall employ **proSeal** C3 trained field personnel for the installation of this roof system.
- D. No deviations in the published **proSeal** C3 drawings, details and specifications are permitted without the written consent of the RPW Associates Technical Department.
- E. Upon total completion of the installation of the roof system and submittal by the installer a certification that all

work has been installed in strict accordance with the contract specifications and **proSeal** C3 drawings, details and specifications, a final site review shall be conducted by a Technical Representative.

#### 1.3 Product Delivery, Storage and Handling

- A. All materials must be free from damage during delivery, storage, handling and installation. Place all materials on pallets and fully protect from moisture as required by the manufacturer/supplier.
- B. **proSeal** C3 membrane rolls shall be stored in a horizontal position, and fully protected from the elements.
- C. Bonding adhesives shall be stored at temperatures above +40°F (+5°C).
- D. All flammable materials shall be stored in a cool, dry area away from sparks and open flames. Follow precautions as outlined by material manufacturer/supplier and the product container.
- E. Any materials that are determined by the owner's representative to be damaged are to be removed from the job site and replaced with new material.

#### 1.4 Job Conditions

- A. The **proSeal** C3 - Fully Adhered - Roof System specification is designed for use in structures designed to support lightweight roof assemblies. The adequacy of the structural support must be verified in writing by the owner or the owner's design professional, architect, or engineer and is the sole responsibility of the owner. Potential live loads, such as snow and ponding water, must be considered in the total load calculations.
- B. Some project conditions may require modifications to the standard **proSeal** C3 specification:
  1. Geographical areas in wind zone three as identified by Factory Mutual Loss Prevention

Data Sheet 1-28.

2. Where interior air pressure at the underside of the membrane is 2.6 lbs. / sqft. (.125 Kpa) or greater.
3. Specific code requirements or site situations.
- C. Take care during application and storage to prevent overloading of the deck and structure.
- D. Install only as much of the new roofing system as can be made weathertight each day. This includes all related flashing work necessary to maintain a weathertight roof system especially if the work is conducted in an outdoor unprotected area
- E. All substrates/surfaces, which are to receive new insulation, membrane, or flashing, shall be thoroughly dry and free from dust, debris, dirt and other contaminants which may adversely affect the performance of the products and or roof system. The roofing installer shall provide the necessary means to rectify the substrate/surface condition prior to the commencement of the installation of the roof system.
- F. It is the responsibility of the owner's representative and or installer to ensure the structural decks yield sufficient pull out value for the roof system being utilized.
- G. All new and temporary construction, including equipment and accessories, shall be secured in such a manner, at all times, as to preclude wind blow off or wind damage.
- H. The installer is cautioned that certain **proSeal** C3 membranes are not compatible with asphalt, coal tar pitch, oil-based materials, cements, creosote and penta-based materials. Such materials shall not come into contact with **proSeal** C3 membranes at any time. If such contact occurs, the material shall be removed and disposed of in a proper manner. The installer should consult the RPW Associates Technical Department with respect to material compatibility, precautions, and recommendations.
- I. The installer should take necessary precautions when using 1700 CONTACT solvent based adhesives around air in-takes. The smell of the adhesive could be a disturbance to the building owner and occupants. It is the roofing installer's responsibility to coordinate equipment to be turned off and on with the owner if necessary.
- J. The installer shall follow all National, State, Provincial and Local safety regulations.
- K. Installation of a **proSeal** C3 membrane over a coal tar pitch, or re-saturated roof, requires special installation precautions and techniques. Contact the RPW Associates Technical Department for such installation information.
- L. Liquid materials such as solvents and adhesives shall be stored and used away from open flames, sparks, and excessive heat.
- M. Contaminants, such as grease, fats, oils, and solvents, shall not be allowed to come into contact with certain **proSeal** C3 membranes. Contact the RPW Associates Technical Department for specific chemical compatibility.
- N. If any unusual or concealed conditions are discovered which may adversely affect the performance of the products or roof system, stop work immediately and notify the owner or the owner's representative and RPW Associates, Inc. in writing. Do not proceed with the installation of the roof system until all conditions have been rectified.
- O. Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the owner's satisfaction.
- P. All landscaped areas affected by construction activities shall be restored to their original condition or better.
- Q. All building codes and authorities having jurisdiction over this project

must be adhered to where applicable. Where there is a conflict in design with building codes, authorities and the **proSeal** C3 manual, the more stringent situation shall apply.

**1.5 Warranties**

**A. proSeal C3 Warranties**

RPW Associates, Inc. offers several roofing warranties to the owner as outlined below. All warranties are for a period of 10

**1. Material Warranty**

The **proSeal** C3 Material Warranty protects the building owner against leaks in the roof systems, which are results of membrane material defects. This warranty provides for supply only (in sufficient quantity) to replace the defective membrane material.

**2. PRODUCTS**

**2.1 General**

**A.** The **proSeal** C3 - Fully Adhered Modular Roof System components are to be produced or supplied by the **proSeal** C3. These components are identified in the attached specification, drawings and details.

**B.** Components to be used that are other than those supplied or produced for the **proSeal** C3 Roofing System may be accepted based on product chemical compatibility and published performance data. The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the designer for acceptability for use with **proSeal** C3 products. All components not supplied or produced by the **proSeal** C3 may affect the **proSeal** C3 warranty and, as such, must be considered on a project-by-project basis and must be approved in writing by the RPW Associates Technical Department.

**2.2 proSeal C3 Roofing Membrane**

**A. proSeal C3 roof membranes**

**1. proSeal** C3 - polyester reinforced membrane. Minimum thickness is 40 mil (1.1mm). Color white / grey.

**2. proSeal** C3 membrane shall conform to ASTM D4434.85 Standard. Classification: Type III.

**3. proSeal** C3 membrane shall conform to CAN/CGSB37.54-95 Standard for Polyvinyl Chloride Sheet roofing. Classification: Type 4, Class B.

**4. proSeal** C3 membrane when manufactured shall conform to or exceed the physical properties noted in the **proSeal** C3 Product Data Sheets.

**2.3 Related Materials Supplied by RPW Associates, Inc roofing systems**

The following products are supplied by RPW Associates, Inc may be incorporated in specifications as required or detailed on the drawings:

**A.** ProVap 6 - polyethylene sheet 6 mil nominal thickness with anti-oxidants, used as a vapor retarder.

**B.** ProTape - pressure sensitive isobutyl tape used for sealing terminations, vapor retarder, air and condensation seals.

**C.** 1700 CONTACT – solvent-based adhesive used for adhering **proSeal** C3 membrane to approved substrates.

**D.** 4500 LATEX – water-based adhesive used for adhering **proSeal** C3 membrane to approved horizontal (field) substrates. Cannot be used on slopes greater than 2:12.

**E.** ProFlex - one part co-polymer caulking used as a termination sealant.

**F.** ProClad - PVC, 26 gauge galvanized (G-90) sheet metal used where the **proSeal** C3 membranes are to be welded directly to the metal flashing. Color white / Light Grey.

**G.** ProFastener #14 - self-tapping, corrosion-resistant fasteners, modified buttress thread, FMRC

- approved for use in steel and wood decks. Corrosion resistance ASTM D-4470.
- H.** ProNails - FMRC approved for use in concrete decks (concrete decks require predrilled holes).
- I.** ProDisc - 20 gauge 2" (50 mm) round diameter plate used for anchoring around penetrations such as roof drains, pitch pans, stacks, etc., galvalume coated, meets FMRC 4470 standard.
- J.** ProPlate - 26 gauge galvalume 3" (75 mm) metal plate used for mechanically attaching insulation to structural deck, meets FMRC 4470 standard.
- K.** ProBar J - extruded aluminum bar, center punched 8" (200 mm) O.C., used as a termination bar on vertical surfaces.
- L.** proBar II - extruded 10' PVC termination bar center punched 6" o.c. to be used on perimeter terminations as either a drip edge of reversed for a sealant edge.
- M.** ProStrip - 18 gauge galvanized (G-90) steel bar, center punched 12" (300 mm) O.C., used as a termination bar behind siding and as a fixation bar on a vertical surface (e.g. parapets, walls, etc.).
- N.** ProStack - 60 mil (1.5mm) prefabricated PVC vent stacks flashing. Fits pipe sizes 1" to 6" (25 mm to 100 mm).
- O.** **proSeal** C3 Walkway - polyester reinforced, non-slip embossed PVC walkway. Thickness 55 mil (1.4 mm). Color Red/Red. Or Grey/Grey
- P.** ProDrain - PVC coated, spun aluminum drain complete with a cast strainer for use in new construction. Sizes 3" (75 mm), 4" (100 mm) and 6" (150 mm).

- Q.** Flashing Membrane
  - 1.** **proSeal** C3 polyester reinforced membrane. Minimum thickness is 45 mil (1.1 mm). Used for fully adhered flashing membrane. Color white/grey.
- R.** **proSeal** C3 Detail - non-reinforced PVC membrane, used to detail inside and outside corner flashing. Thickness 60 mil (1.5 mm). Color white.

**2.4 Related Materials (supplied by others)**

- A.** Wood blocking
  - 1.** Wood blocking shall be #2 quality or better and be treated for fire and rot resistance (wolmanized or osmose treated). **proSeal** C3 membrane maybe directly adhered to wolmanized or osmose treated lumber.
  - 2.** Wood blocking shall conform to Factory Mutual's Loss Prevention Data Sheet 1-49
  - 3.** Wood shall have maximum moisture content of 19% by weight on a dry weight basis.
- B.** Plywood
  - 1.** When bonding directly to plywood, a minimum standard 1/2" (50mm) smooth surfaced, exterior grade plywood, good one side, non-pressure treated, with exterior grade glue shall be used.
  - 2.** Plywood shall have maximum moisture content of 19% by weight on a dry weight basis.
- C.** Vapor retarders (other than ProVap)
  - 1.** Vapor retarders for use in a **proSeal** C3 - Fully Adhered - Roof System shall meet identified code and/or insurance requirements i.e. UL, ULC, FM, ASTM, CGSB standards.
  - 2.** Vapor retarders are to be approved in writing by the vapor retarder manufacturer for their intended use.
  - 3.** Vapor retarders are to be compatible with insulation and other accessories.
  - 4.** The RPW Associates Technical Department shall review for acceptance all non-ProVap vapor retarders.

- D. Insulation**
1. Where specified or required, insulation shall be installed over the structural deck or as a separation layer over the existing substrate and/or to obtain the desired thermal value.
  2. Insulation for use in a **proSeal** C3 Fully Adhered - Roof System shall meet identified code and/or insurance requirements i.e. UL, ULC, FM, ASTM, CGSB standards.
  3. Insulations are to be approved in writing by the insulation manufacturer for their intended use and for use with **proSeal** C3 materials.
  4. Insulation shall be compatible with **proSeal** C3 Roofing System membrane.
  5. The RPW Associates Technical Department shall review for acceptance all non approved insulations.
  6. The following insulation board is acceptable below **proSeal** C3 membrane in a **proSeal** C3 Fully Adhered Modular Roof System. For insulations not specified contact the RPW Associates Technical Department.
    - a) Polyisocyanurate insulation with non-asphaltic fiberglass facers, meeting the requirements of UL, ULC, FM, ASTM, CGSB standards and have a minimum compressive strength of 18 p.s.i. (125 kpa).
  7. The **proSeal** C3 Systems Warranties require specific insulation products to be incorporated into the roof composition. Please contact the RPW Associates Technical Department for the specific requirements.
  8. The insulation shall have a minimum "R" ("RSI") value of \_\_\_\_\_ based on the jurisdictional authority i.e. ASTM, CGSB, NRCA, NRC standard.
  9. The insulation manufacturer shall send its technical recommendations for the use of its product in the **proSeal** C3 - Fully Adhered Modular Roof System to the owner and a copy to the RPW Associates Technical Department with its specific warranty conditions.

**E. Miscellaneous fasteners and anchors**

All fasteners shall be the same types as the metal being secured. In general, all fasteners, anchors, screws, and straps shall be of zinc or cadmium plated steel, galvanized, or

stainless steel. All fasteners and anchors shall have a minimum embedment of 1" (25mm) and shall be approved for such use by the fastener manufacturer. All fasteners shall meet Factory Mutual Standard 4470 for corrosion resistance.

**3. EXECUTION**

**3.1 General**

The Roofing installer shall coordinate the installation of the roof system to ensure that each area is left in a weathertight condition at the end of each work period.

**3.2 Deck Conditions/Preparation**

The following general conditions apply to the structural deck that is to receive a **proSeal** C3 - Fully Adhered Modular Roof System.

- A. The roof deck must be structurally sound to provide support for the **proSeal** C3 - Fully Adhered Modular Roof System and other anticipated loads.
- B. The specifier and/or the roofing installer shall determine the condition of the existing roof deck. Areas with deteriorated decking or showing loss of structural integrity shall be repaired and or replaced prior to installing the new roof system.
- C. The roof deck shall be installed to the structural framing as per the applicable building codes and/or Factory Mutual's requirements to resist all anticipated wind loading for the geographical area.
- D. The roofing installer shall load the roof in such a manner as to eliminate the risk of deck overload due to point loading of materials and equipment.
- E. The installer shall consult the RPW Associates Technical Department when the deck substrate is exposed to excessively high humidity levels and/or a corrosive environment is present. These conditions may require specific details and or installation requirements.

- F. The following structural decks are acceptable substrates to install the **proSeal** C3 - Fully Adhered Modular Roof System when an

acceptable insulation and / or an appropriate leveling layer is incorporated in the design.

1. Steel Deck
  - a) The roof deck shall be a minimum 22 Ga. and shall conform and be installed to Factory Mutual's Loss Prevention Data Sheet 1-28 and/or manufacturer's and/or local building code requirement.
  - b) All rusted or deteriorated decking shall be treated with rust-inhibiting paint, and sections that have rusted through shall be completely removed and replaced.
2. Wood Deck
  - a) The roof deck shall be minimum nominal 2" (50 mm) and shall conform to Factory Mutual's requirements for Class I impregnated decks. Deck shall conform and be installed according to Factory Mutual and/or local building code requirements.
  - b) All rotted and deteriorated wood shall be completely removed and replaced.
3. Plywood Deck
  - a) The roof deck shall be minimum nominal 5/8" (59 mm) and shall conform to Factory Mutual's requirements for Class I impregnated decks. Deck shall conform and be installed according to Factory Mutual and/or local building code requirements.
  - b) All rotted and deteriorated wood shall be completely removed and replaced.
4. Precast and Prestressed Concrete Deck

The roof deck shall be a minimum of 3000 p.s.i., cured and dry to industry standards. The surface shall be smooth, level and free from debris, dust and moisture or frost. Sharp ridges or other projections above the surface shall be removed before roofing over precast, prestressed concrete decks. All joints shall be grouted. Differentials in deck elevation of more than 1/4" (6.4 mm) must be corrected by applying a lightweight fill over the entire deck, or a grout applied over the joints and feathered out to create a smooth transition. Deck shall conform and be installed according to manufacturer's and/or local building code requirements.

**3.3 Wood Blocking Installation**

- A. Install continuous wood blocking at the

perimeter of the entire roof and around roof projections and penetrations as specified and shown on the detail drawings.

- B. Blocking shall be anchored to resist a minimum force of 175 pounds per lineal foot (2.5 kn/m) in any direction. Fastener spacing shall be a maximum of 2 ft. (600 mm) on center. Fasteners shall be installed within 6" (150 mm) of each end. Spacing and fastener embedment shall conform to Factory Mutual Loss Prevention Data Sheet 1-49.
- C. Thickness shall be as required to match substrate or insulation height.
- D. Any existing woodwork that is to be reused shall be firmly anchored in place and shall resist a minimum force of 175 pounds per lineal foot (2.5 kn/m) in any direction and free from rot. Only woodwork designated to be reused in detail drawings shall be left in place, and all other woodwork shall be removed.

**3.4 Vapor Retarder Installation (where specified)**

- A. Interior and/or exterior climatic conditions (ambient temperature, relative humidity, and internal air pressure) may warrant the use of a vapor retarder/air barrier in the building construction. It is the responsibility of the design professional, based on geographical location and the intended use of the building, to determine if a vapor retarder/air barrier is required. Also, the design professional shall determine the type and location of the required vapor retarder/air barrier.
- B. The **proSeal** C3 recommends the use of a vapor retarder to protect the integrity of the insulation and when the interior relative humidity is 45% or greater and/or the outside mean average January temperature is below 40°F (5°C). The **proSeal** C3 may require the use of a vapor retarder to protect the integrity of the roofing system in System Warranty applications and/or special situations such as freezers and high humidity environments. Contact the RPW Associates Technical Department for

further information.

**C.** A vapor retarder may also perform as an air barrier within the building envelope. RPW Associates, Inc. recommends that strong consideration should be given to the installation of an air barrier for buildings subject to high internal air pressures such as air plane hangers or structures with sufficient openings in the wall area directly below the structural roof deck to adjust the wind uplift pressures. Contact the RPW Associates Technical Department for further information.

**D.** Installation of ProVap 10 polyethylene vapor retarders.

Install the vapor retarder to the approved substrate (i.e. deck, insulation or existing roof surface) loose laid and parallel to the roof deck (where applicable). Overlap the joints in the vapor retarder a minimum of 6" (150 mm). Install ProTape in all side laps, end laps, terminations and penetrations and seal to ensure the continuity of the vapor retarder within the roof system. Consult the RPW Associates Technical Department for specific tie-in requirements to other building vapor retarders.

**E.** Installation of manufactured vapor retarder other than ProVap.

Install the vapor retarder as per the manufacturer's current published specifications to ensure the continuity of the vapor retarder within the roof system. The vapor retarder may be loose laid over the approved substrate. Asphalt and bituminous-based products must not come in contact with the **proSeal** C3 membranes. Consult the RPW Associates Technical Department for specific detailing requirements.

**3.5 Insulation Installation**

**A.** Insulation shall be installed according to the insulation manufacturer's current published specifications for use with a fully adhered roof system.

**B.** Insulation shall be laid over an acceptable substrate (deck, vapor retarder or existing roof membrane), parallel to the deck (where applicable). Install insulation in parallel courses, butted together in moderate contact without gaps and staggered end joints. Provide full support at ends. When multiple layers of insulation are specified the subsequent layers shall be installed with joints offset from the underlying layer.

**C.** Insulation shall be a minimum of 4' x 4' (1.2 m x 1.2 m) in size.

**D.** Insulation shall be attached to the approved substrate by the following methods:

**1.** Mechanical Attachment.

**a)** Fasteners and insulation plates shall meet Factory Mutual Standard 4470 for corrosion and wind uplift resistance.

**b)** Insulation shall be mechanically attached to an approved substrate as per Factory Mutual Approval Guide (latest addition), the insulation manufacturer and **proSeal** C3. The minimum fastening rates in the field is 1 fastener per 2 ft.2 (1 per m<sup>2</sup>). Fastening rates increase in the perimeter zone and in the corner zone, by 50% and 75% respectively compared to the field fastening rates.

**c)** The placement of the fastener and plates shall be as per Factory Mutual, insulation manufacturer and **proSeal** C3 fastening patterns.

**d)** The fasteners shall be installed using tools with a depth locator as recommended by the fastener manufacturer. Fasteners must penetrate the structural deck as per Factory Mutual, fastener manufacturer and the **proSeal** C3.

**e)** Structural decks other than 5/8" (59 mm) plywood, 2" (50 mm) wood, 22 gauge steel, precast, prestressed or poured concrete decks consult the RPW Associates Technical Department.

Note:

**1)** *Fasteners shall penetrate the underside of a steel deck a minimum of 1/2" (13 mm).*

**2)** *Fasteners shall penetrate the underside of a plywood deck a minimum of 1/2" (13 mm).*

**3)** *Fasteners shall penetrate wood deck a minimum of 1" (25 mm).*

**4)** *Fasteners shall penetrate poured structural, precast and prestressed concrete decks a minimum of 1" (25 mm).*

**5)** *Consult the RPW Associates Technical Department for fastener penetration depths on all other structural decks.*

**2.** Adhesive Attachment.

**a)** Insulation attached with adhesive shall be installed according to Factory Mutual, insulation manufacturer's, adhesive manufacturers and deck manufacturer's current printed specifications.

- b) Consult the RPW Associates Technical Department for project specific requirements when adhesive attachment method is to be utilized.
- E. Insulation shall be neatly cut to fit around penetrations and projections without gaps.
- F. Install tapered insulation in accordance with the insulation manufacturer's shop drawings.
- G. Install tapered insulation around drains to create a drain sump.
- H. Do not install more insulation than can be covered with **proSeal** C3 membrane by the end of the work period or onset of inclement weather.

**3.6 proSeal C3 Membrane Installation**

A. The surface of the insulation or substrate shall be inspected prior to installation of the **proSeal** C3 field membrane. The substrate shall be swept clean, dry, and smooth with no excessive surface roughness and contamination. All fasteners (where applicable) shall be properly seated and flush. Any damaged, broken, contaminated or delaminated insulation boards are to be removed and replaced.

**B. 1700 CONTACT Adhesive Application**

1. Over the properly installed and prepared substrate surface, 1700 CONTACT adhesive shall be applied using approved solvent resistant paint rollers. The adhesive shall be applied at a rate of approximately 1.5 gal/100 sqft (0.75 L/m<sup>2</sup>) depending upon the surface of the substrate. The adhesive shall be applied in smooth, even coatings with no globs, puddles, or similar irregularities. Only an area that can be covered completely in the same day's operations shall be coated with adhesive. The adhesive on the substrate surface shall be allowed to dry completely prior to installing the membrane.

Notes:

- a) Drying time increases with cooler temperatures and high humidity conditions (allow the adhesive to dry a minimum of 1 hour and a maximum of 3 hours).
  - b) The installer shall calculate the amount of adhesive used per square, and shall count the number of pails of adhesive used per area per day to verify that they are conforming to the specified adhesive rate.
2. When the 1700 CONTACT adhesive on the substrate is dry unroll the **proSeal** C3 field

membrane and draw tight without folds or wrinkles. After positioning the **proSeal** C3 field membrane, ½ of the sheets length shall be pulled back and the underside shall be evenly coated with 1700 CONTACT adhesive at a rate of .50 gal/100 sqft (0.25 L/m<sup>2</sup>). While 1700 CONTACT adhesive is tacky (produces strings when touched with a dry finger), the coated membrane shall be rolled carefully onto the previously coated substrate to avoid wrinkles. Do not allow adhesive on the underside of the **proSeal** C3 membrane to dry completely. Ambient temperature, humidity, and personnel will determine the amount of membrane that can be coated with adhesive before applying to substrate. No 1700 CONTACT adhesive shall be applied in lap areas that are to be hot-air welded or adjacent sheets. The remaining non-adhered field sheet shall be pulled back and the procedure shall be repeated.

3. The adhered membrane sheet shall be pressed firmly into place with a weighted foam-covered lawn roller, rolling in two directions to promote 100% adhesion.

4. All sheets shall be applied in the same manner, lapping all sheets as required by welding techniques. Adjacent sheets shall be overlapped 3" (75 mm) and hot-air welded. All sheets shall be applied in the same manner, lapping all sheets as required by welding techniques

**C. 4500 LATEX Adhesive Application**

1. 4500 LATEX should not to be used on slopes greater than 2:12.

2. Over the properly installed and prepared substrate (contact the RPW Associates Technical Department for approved substrates), position the **proSeal** C3 field membrane with approximately 15 feet of the sheet unrolled to ensure correct alignment. Apply 4500 LATEX adhesive in front of the aligned **proSeal** C3 field membrane. The adhesive shall be poured onto the substrate and spread out using ¼" x ½" notched trowels. The adhesive shall be applied at a rate of approximately 1 gal / 150 sq ft, depending upon the surface of the substrate. The adhesive shall be applied in smooth, even coatings with no globs, puddles, or similar irregularities. Only an area that can be covered completely in the same day's operations shall be coated with adhesive. The formation of film on the surface of the adhesive shall not be allowed to occur.

Note:



- a) The installer shall calculate the amount of adhesive used per square, and shall count the number of pails of adhesive used per area per day to verify that they are conforming to the specified adhesive rate.
- b) Do not install 4500 LATEX adhesive when the temperature during the application and curing time (24 to 48 hours) will be at or below freezing.
- 3. While adhesive is still wet carefully unroll the **proSeal** C3 field membrane into the adhesive without folds or wrinkles. The adhesive shall be continually applied and the membrane rolled out until the entire roll has been set in adhesive. The remaining 15 feet of the non-adhered field sheet shall be pulled back and the procedure shall be repeated.
- 4. The adhered membrane sheet shall be pressed firmly into place with a weighted foam-covered lawn roller, rolling in two directions to promote 100% adhesion.
- 5. All sheets shall be applied in the same manner, lapping all sheets as required by welding techniques. Adjacent sheets shall be overlapped 3" (75 mm) and hot-air welded. No 4500 LATEX adhesive shall be applied in lap areas that are to be hot-air welded.

**3.7 Welding of Seams**

**A. General.**

- 1. Seam areas are to be dry, clean and free of dirt, debris and adhesives.
- 2. **proSeal** C3 membrane seams are to be thermally fused (hot-air welded).
- 3. Lap membrane seam joints 3" (75 mm).
- 4. Welding equipment shall be designed and manufactured for the purpose of thermally fusing PVC membranes. Consult the RPW Associates Technical Department for manufacturers of welding equipment.
- 5. Prior to commencement of welding process, determine correct temperature setting and welding speed of equipment using test samples.

**B. Hand Welding:**

Perform hand welding in the following stages.

- 1. Warm up hot-air welding equipment as recommended by the equipment manufacturer.
- 2. All mechanics that intend to use the equipment shall have successfully completed a course of instruction provided by the Technical Representative prior to welding.
- 3. Position **proSeal** C3 membrane in place with specified seam joint overlaps.
- 4. Pre-weld back edges, with narrow continuous weld approximately .5" (12 mm) wide to prevent heat loss during the final welding stage. The pre-weld shall be positioned, from the outside edge, the distance of the width of the nozzle used for the welding application.
- 5. Finally weld the outside edge with a continuous seam of approximately 0.5" to 1" (12 mm to 25 mm.) width. Insert the nozzle into the seam at a 45-degree angle. When the membrane begins to flow and the proper welding temperature is reached, position the hand roller perpendicular to the nozzle and press adequately to achieve a continuous homogeneous weld. Move the hot-air welder and roller in smooth continuous motion along the seam. Welding seam ranges from 1 ft. to 2 ft. (0.30 m to 0.60 m) per minute. For straight laps use a 1 1/2" (40 mm) wide nozzle. For corners and compound connections use a 3/4" (20 mm) wide nozzle. Remove residue collected at nozzle with steel wire brush prior to start of new seam.

**C. Automatic (Machine) Welding:**

Perform automatic welding in the following stages.

- 1. Warm up hot-air welding equipment as recommended by the equipment manufacturer.
- 2. All mechanics that intend to use the equipment shall have successfully completed a course of instruction provided by the Technical Representative prior to welding.
- 3. Position **proSeal** C3 membrane in place with specified seam joint overlaps.
- 4. Perform machine welding as per welding-machine instructions. Continuously guide and supervise welding-machine during entire welding process. Remove membrane residue collected at nozzle with steel wire brush at least every 100 ft. (30.5 m) and prior to the start of a new seam. Welding speed

ranges from 8 ft. to 10 ft. (2.40 m to 3.00 m) per minute. Local codes for electrical supply, grounding, over-current protection and other related items are to be observed. Typically automatic welding machines require 218 to 230 volts at 30 to 40 amps. The use of a portable generator (minimum output of 6500W) or direct wiring are the recommended power supplies.

**D. Quality control of seams.**

1. Visual evidence of proper welding is minor smoke development during the welding process, shiny membrane surface and an uninterrupted bead of thermally fused material from the underside of the top membrane
2. The roofing installer shall physically check all completed hot-air welded seams after cooling for continuity of weld using a flat #3 screwdriver. Any voids or deficiencies in the membrane seaming are to be repaired by the end of the work period. Apply an additional layer of membrane extending 3" (75 mm), in all directions, beyond the area to be repaired and hot-air weld using the hand welding procedures.
3. On-site physical evaluation of hot-air welded seams shall be made daily by the roofing installer at various seam locations or as directed by the owner's representative or a Technical Representative. 2" (50 mm) wide cross-sectional samples shall be taken three times a day (minimum) through completed seams. Correct welds display failure from shearing of the membrane prior to separation of the weld. The installer, at no extra charge to the owner, shall patch each test cut. All field hot-air welded seams shall be left exposed until reviewed and accepted by a Technical Representative. Any voids or deficiencies in the membrane seaming are to be repaired by the end of the work period. Apply an additional layer of membrane extending 3" (75 mm), in all directions, beyond the area to be repaired and hot-air weld using the appropriate (hand or automatic) welding procedures.

**3.8 Mechanical Fixation Installation**

- A. Install ProStrip at all transitional changes between the field (horizontal) and flashing (vertical) surfaces (e.g. perimeters, walls, curbs, etc.).
- B. Position the ProStrip approximately 1"

(25 mm) from the flashing surface on the field surface.

- C. Mechanically fasten the Pro-Strip 12" (300 mm) O.C., with approved fasteners, penetrating into the structural/deck substrate the appropriate depth.

Note:

1. Fasteners shall penetrate the underside of a steel deck a minimum of ½" (13 mm).
2. Fasteners shall penetrate the underside of a plywood deck a minimum of ½" (13 mm).
3. Fasteners shall penetrate wood deck a minimum of 1" (25 mm).
4. Fasteners shall penetrate poured structural, precast and prestressed concrete decks a minimum of 1" (25 mm).
5. Consult the RPW Associates Technical Department for fastener penetration depths on all other structural decks.
- D. Install ProDisc at all penetrations (e.g. drains, vent pipes, etc.) on the roof surface spaced a maximum of 6" (150 mm) O.C. with a minimum of 4 fasteners per penetration.
- E. Position the ProDisc approximately 1" (25mm) from the edge of the flange (if applicable), penetration on the horizontal (field) membrane.
- F. Mechanically fasten the ProDisc with approved fasteners, penetrating into the structural substrate the appropriate depth.

**3.9 proSeal C3 Membrane Flashing Installation**

- A. **proSeal** C3 flashing membrane shall be installed concurrently with the roof membrane as the job progresses. No temporary flashing shall be allowed without the prior written approval of the owner's representative and/or the RPW Associates Technical Department. All areas where water enters the new roof system shall be inspected and the effected area shall be removed and replaced at no expense to the owner. **proSeal** C3 membrane flashing shall be installed on compatible, dry, smooth, and solvent resistant surfaces.
- B. **proSeal** C3 flashing shall extend a minimum of 8" (200 mm) above the field (horizontal) surface level unless previously accepted by the owner's representative and the RPW Associates Technical Department.

C. Over the properly installed and prepared substrate surface, 1700 PVC CONTACT (for PVC) adhesive shall be applied using approved solvent-resistant paint rollers. The adhesive shall be applied at a rate of approximately 1.5 gal/100 sqft (.75 L/m<sup>2</sup>) depending upon the surface of the substrate. The adhesive shall be applied in smooth, even coatings with no globs, puddles, or similar irregularities. Only an area that can be covered completely in the same day's operations shall be coated with adhesive. The adhesive on the substrate surface shall be allowed to dry completely prior to installing the membrane. Refer to Pro adhesive product data sheet for adhesive application rates on approved substrates.

Notes:

1. Drying time increases with cooler temperatures and high humidity conditions allow the adhesive to dry (minimum of 1 hour and a maximum of 3 hours).
2. using approved solvent resistant paint rollers.

D. On a dry surface, the **proSeal** C3 flashing membrane is cut to a workable length, approximately 6 ft. (1.83 m), and the underside shall be evenly coated with 1700 CONTACT (for PVC) at a rate of .5 gal/100 sqft. (.25 L/m<sup>2</sup>). While Pro adhesive is tacky (produces strings when touched with a dry finger), the coated membrane shall be rolled carefully onto the previously coated substrate to avoid wrinkles. Do not allow adhesive on the underside of the **proSeal** C3 membrane to dry completely. Ambient temperature, humidity, and personnel will determine the amount of membrane that can be coated with adhesive before applying to substrate. No 1700 CONTACT (for PVC) adhesive shall be applied in lap areas that are to be hot-air welded to flashing or adjacent sheets. All sheets shall be applied in the same manner, lapping all sheets as required by welding techniques. Adjacent sheets shall be overlapped a minimum of 3" (75 mm) and hot- air welded.

E. The **proSeal** C3 adhered flashing membrane sheet shall be pressed firmly into place with a hand roller.

F. **proSeal** C3 flashing shall extend 5" (125 mm) onto the field roofing membrane and shall extend 2½" (63 mm) beyond the edge of the ProDisc. The **proSeal** C3 field and flashing membrane shall be hot-air welded together to form a monolithic membrane.

G. **proSeal** C3 flashing membranes shall be fully adhered to solvent-resistant substrates. All interior and exterior corners and miters shall be cut and hot-air welded into place as per **proSeal** C3 details and procedures. No bituminous elements shall be in contact with the **proSeal** C3 roof membrane.

H. **proSeal** C3 flashing membrane shall be terminated according to **proSeal** C3 recommended details. All fixation bars (ProBar, ProStrip and ProBar J) shall be fastened a minimum of 12" (300 mm) O.C.. Install ProTape and ProFlex caulking as detailed.

**3.10 Roof Walkway Installation**

A. General:

Walkways shall be provided for regular maintenance of rooftop equipment and for roof areas subject to foot traffic. Walkways shall consist of **proSeal** C3 Walkway, precast concrete pavers or other approved surface. Contact the RPW Associates Technical Department for project specific recommendations.

Installations of **proSeal** C3 Roof walkway

1. Chalk lines on the **proSeal** C3 field membrane to indicate where the walkway is to be located.
2. The **proSeal** C3 field membrane shall be clean, dry and free of all debris.
3. Apply 1700 CONTACT adhesive to the **proSeal** C3 field membrane, at a rate of .67 gal/100 sqft (1.3 L/m<sup>2</sup>), in the area where the walkways are to be installed, to a width 6" (150 mm) less than the width of the **proSeal** C3 Walkway and allow to dry (minimum of 1 hour and a maximum of 3 hours).
4. Apply 1700 CONTACT adhesive to the backside of the **proSeal** C3 Walkway, at a rate of .5 gal/100 sqft (1 L/m<sup>2</sup>), Do not apply adhesive within 3" (75 mm) of the edge of the **proSeal** C3 Walkway and allow to dry until the adhesive is tacky (producing strings when touched by a dry finger).
5. The adhesive shall be applied in smooth, even coatings with no globs, puddles, or similar irregularities.
6. Place the **proSeal** C3 Walkway in position, such that the adhesive on the **proSeal** C3 field membrane and the **proSeal** C3 Walkway come in contact, and roll frequently in two directions with a weighted, foam-covered lawn roller.
7. Thermally fuse the edges of the **proSeal** C3 Walkway to the **proSeal** C3 field membrane, and check all seams with a #3 rounded screwdriver.

**3.11 ProClad Metal Edge Flashing Installation**

- A. ProClad metal flashing shall be installed concurrently with the roof membrane as the installation progresses.
- B. All fabrication practices and installation procedures shall conform to the applicable requirements of the following, unless otherwise specified and/or detailed:
  - C. ProClad metal flashing shall be mechanically anchored into wood blocking with approved fasteners. Two rows of fasteners shall be installed 4 "(100 mm) O.C. and staggered. The fasteners shall penetrate the wood blocking a minimum of 1" (25 mm).
  - D. Hot-air weld **proSeal** C3 flashing membrane, 4" (100 mm) wide by the width of the flange, over the joint in the ProClad metal.
  - E. Hot-air weld **proSeal** C3 flashing membrane, a minimum of 4" (100mm) from the outside edge of the ProClad metal flashing, onto the **proSeal** C3 field membrane.
  - F. Check all seams with a #3 rounded screwdriver.

**3.12 Metal Flashing Installation (other than ProClad)**

- A. All fabrication practices and installation procedures shall conform to the applicable requirements of the following, unless otherwise specified and/or detailed:
  1. Sheet Metal and Air Conditioning National Association Inc. (SMACNA – latest edition)
  2. Factory Mutual Loss Prevention Data Sheet 1-49 (or latest edition)
  3. National Roofing Installers Association (NRCA – latest edition)
  4. Canadian Roofing Installers Association (CRCA – latest edition)
- B. Metal, other than ProClad metal, is not covered under the **proSeal** C3 warranty.

**3.13 Completion**

- A. Upon completion the installer shall clean up and remove from the job site all rubbish, debris and surplus materials.
- B. The owner, owner's representative and roofing installer shall review the completed work and document all deficiencies. Upon inspection of the completed roof system by the RPW Associates, Technical Representative, the installer shall promptly correct all documented deficiencies and noncompliances with **proSeal** C3 current published specifications and details.
- C. All **proSeal** C3 warranties (refer to Section 1.7) shall have been submitted and approved prior to the commencement of the project. All approved **proSeal** C3 warranties will be issued upon total completion of the project and in compliance with the **proSeal** C3 current published specifications and details.

**3.14 Maintenance**

Maximization of the anticipated life cycle of a roofing system is dependent upon the successful implementation of an appropriate maintenance program. The **proSeal** C3 Roof System requires the building owner to implement an inspection and maintenance program. Please refer to the warranty package, which includes a suggested inspection and maintenance program. Contact the RPW Associates Technical Department for project specific recommendations.