

**COUNTY OF TUSCOLA**

**DEPARTMENT OF BUILDINGS & GROUNDS**

125 W. Lincoln St  
Caro, Michigan 48723-1660  
(989)672-3756

**MICHAEL MILLER**  
Director

**THOMAS McLANE**  
Assistant Director

**TO: INTERESTED CONTRACTORS**  
**FROM: MIKE MILLER**  
**DATE: March 30, 2021**  
**RE: Roof Replacement**

Tuscola County will be accepting bids on the replacement of the County Annex Building roof, located at 207 E. Grant ST, Caro MI 48723. The following specifications shall be considered in your bid:

Roof system to be used is Duro-Last

1. Remove existing PVC roof membrane, palletize and return to Duro Last for recycling.
2. Completely remove existing BUR roof system down to the metal deck.
3. Inspect existing roof deck for damage and replace at a pre-determined square foot price.
4. Remove existing perimeter edge metal and down spouts.
5. Install new wood nailers to accommodate height of new tapered insulation.
6. Install a full tapered ISO insulation system to roof area. Taper system shall have a minimum R-30.
7. Install a 50 mil, prefabricated PVC roof system. Roof system shall be mechanically fastened per manufacturers specifications.
8. Flash and seal all roof penetrations per manufacturers specifications.
9. Install (6) two way breather vents.
10. Install walk pads around all RTUs and at roof access point.
11. Install (1) Ladder Anchor at roof perimeter. Owner to determine location.
12. Install new 24 gauge - kynar coated Two Piece Compression metal to roof perimeter. Perimeter metal to be supplied and warrantied by roof manufacturer.
13. Install (4) new collector boxes and down spouts. Collector boxes and down spouts to be supplied and warrantied by roof manufacturer.
14. Provide complete clean up and removal of all job related debris.
15. Repair any damaged landscaping, sidewalks or parking lot that occurred from construction work.
16. Provide a 20 year No Dollar Limit full system warranty covering material and labor for 20 years and consequential damages for 15 years.
17. Contractor is responsible for any Permits and must follow all Federal, State, and local building codes.
18. Contractor shall provide copies of liability and workers comp insurance.

**There will be a mandatory Pre-bid meeting on April 19, 2021 at 10am. Duro-last rep will be on site to answer questions. The meeting will take place at the Annex building rain or shine. If you are interested in bidding the project a company representative must attend.**

**Please do not come to the location before the Pre-bid meeting, and after the meeting please call ahead if you need to come back and view the location.**

Proposals shall be submitted to Tuscola County Buildings and Grounds at 125 W. Lincoln St. Caro, Michigan 48723, no later than 4:00 p.m. May 6, 2021. Due to Covid, submissions are accepted by email, following the same deadline at [projects@tuscolacounty.org](mailto:projects@tuscolacounty.org)

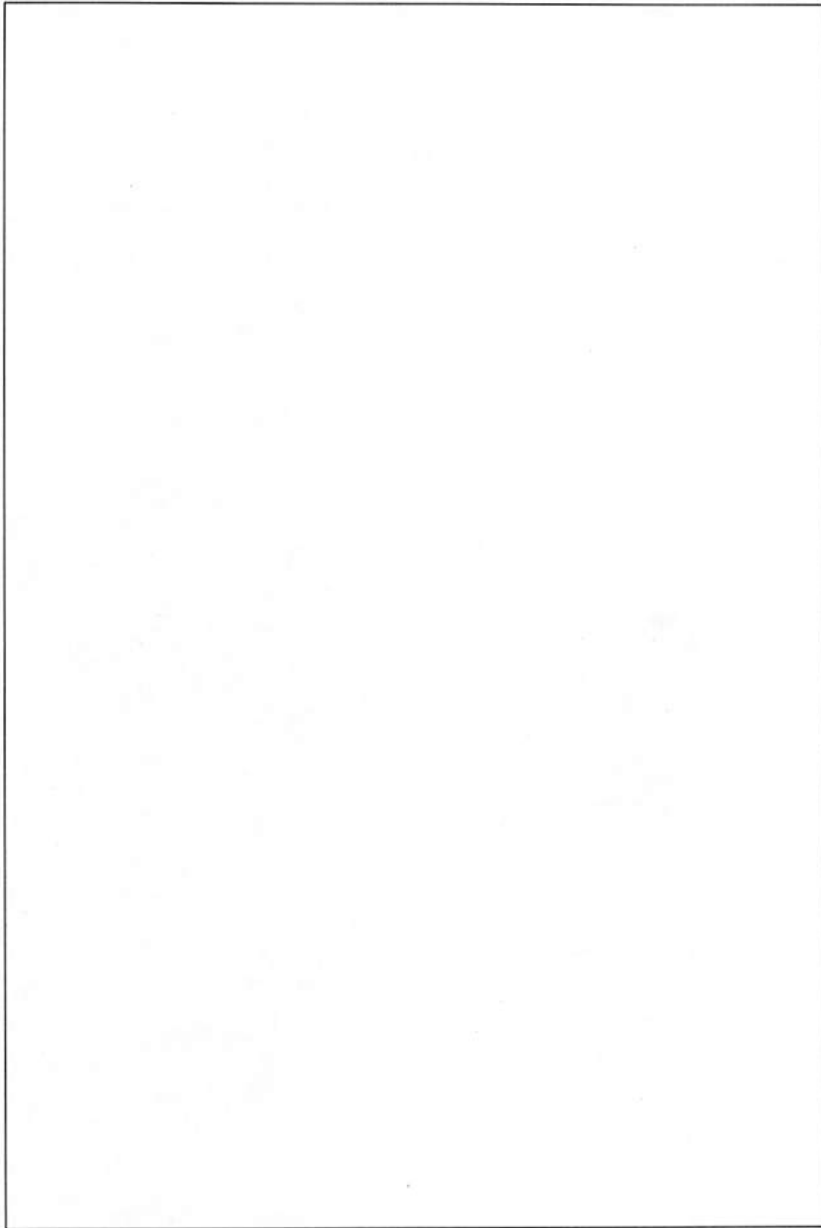
**Please call 989-672-3756 or 989-672-3716 if you have questions, please do not stop at the Annex before calling to set up an appointment.**

**Disclaimer**

Tuscola County reserves the right at its sole discretion to reject any and all proposals received without penalty and not to enter a contract as a result of this RFP. The County also reserves the right to negotiate separately with any source whatsoever in any manner necessary to attend to the best interests of the County, to waive irregularities in any proposal and to accept a proposal which best meets the needs of the County, irrespective of the bid price."

By submitting a bid, the bidder is acknowledging that there will be no contractual relationship between Tuscola County and the bidder until both parties have formally approved and signed a written contract to be developed by Tuscola County legal counsel.

The County reserves the right to make an award without further discussion of any proposal submitted. Therefore, the proposal should be submitted initially on the most favorable terms which the offer can propose. There will be no best and final offer procedure. The County does reserve the right to contact an offer for clarification of its proposal."



<b>Legend</b>	Factory	—	Drawn By:	G.Seafert	Tuscola County Annex		
	Field	—	Date:	2-19-2020	Caro, MI		
	Curb	⊠	Scale:	N.T.S.	DL Trevor Wagester		
	Stack	⊙	<p><small>Duro-Last Roofing, Inc. is the supplier of the materials only. The proposed layout is based upon the information provided by the contractor and/or independent sales rep. Verification of local building codes, dimensions and quantities are the sole responsibility of the architect, installing contractor, independent sales rep, or owners representative prior to ordering</small></p>		Date	Revision	By
	Walkpad	⊞			00/00/00	-	-
					00/00/00	-	-
			00/00/00	-	-		



525 E Morley Drive  
 Saginaw, MI 48601  
 Fax: 989-758-6359  
 Phone: 800-248-0280  
[engineering@duro-last.com](mailto:engineering@duro-last.com)

Project #: 136695

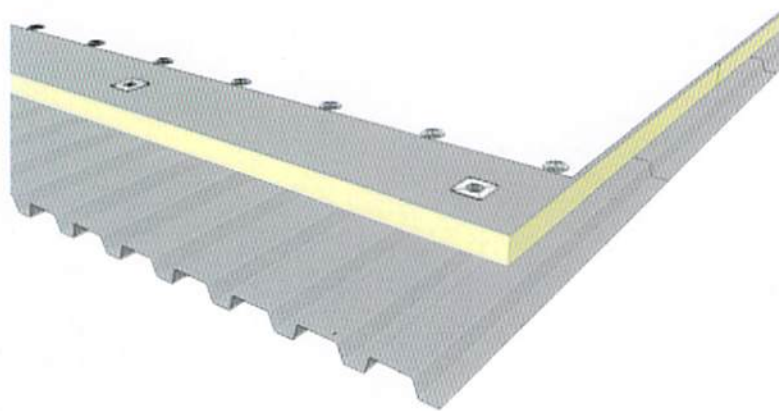
## **Tuscola County Annex**

207 E. Grant  
Caro, MI

entire roof

Prepared For: Mike Miller  
County of Tuscola

Prepared By: Trevor Wagester  
Duro-Last Roofing



### **Roof Assembly Description**

- **PVC thermoplastic membrane**  
Membrane Thickness: 50 mil  
Color: White  
Attachment: Attached with mechanical fasteners
- **Polyisocyanurate (tapered)**  
Attachment: Attached with mechanical fasteners
- **Steel Roof Deck**

## **PART 1 GENERAL**

### **1.1 SECTION INCLUDES**

- A. PVC thermoplastic membrane attached with mechanical fasteners.
- B. Polyisocyanurate (tapered), attached with mechanical fasteners.
- C. Prefabricated flashings, corners, parapets, stacks, vents, and related details.
- D. Fasteners, adhesives, and other accessories required for a complete roofing installation.
- E. Traffic Protection.

### **1.2 REFERENCES**

- A. NRCA - The NRCA Roofing and Waterproofing Manual.
- B. ASCE 7 - Minimum Design Loads For Buildings And Other Structures.
- C. UL - Roofing Materials and Systems Directory, Roofing Systems (TGFU.R10128).
- D. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
- E. ASTM D 751 - Standard Test Methods for Coated Fabrics.
- F. ASTM D 4434 - Standard Specification for Poly(Vinyl Chloride) Sheet Roofing.
- G. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
- H. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

### **1.3 SYSTEM DESCRIPTION**

- A. **General:** Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. **Material Compatibility:** Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. **Sustainability:**
  - a. Conform to NSF/ANSI Standard 347, "Sustainability Assessment for Single-Ply Roofing Membranes. Minimum certification level: Gold.
  - b. Type III product-specific Environmental Product Declaration.
  - c. Membrane is recyclable at end of use.
- D. **Physical Properties:**
  - 1. Roof product must meet the requirements of Type III PVC sheet roofing as defined by ASTM D 4434 and must meet or exceed the following physical properties.
  - 2. Thickness: 50 mil, nominal, in accordance with ASTM D 751.
  - 3. Thickness Over Scrim:  $\geq 28$  mil in accordance with ASTM D 751.
  - 4. Breaking Strengths:  $\geq 390$  lbf. (MD) and  $\geq 438$  lbf. (XMD) in accordance with ASTM D 751, Grab Method.

**3-Part Specification**  
Division 07 54 19 - Polyvinyl-Chloride Roofing

5. Elongation at Break:  $\geq 31\%$  (MD) and  $\geq 31\%$  (XMD) in accordance with ASTM D 751, Grab Method.
6. Heat Aging in accordance with ASTM D 3045: 176 °F for 56 days. No sign of cracking, chipping or crazing. (In accordance with ASTM D 4434).
7. Factory Seam Strength:  $\geq 417$  lbf. in accordance with ASTM D 751, Grab Method.
8. Tearing Strength:  $\geq 132$  lbf. (MD) and  $\geq 163$  lbf. (XMD) in accordance with ASTM D 751, Procedure B.
9. Low Temperature Bend (Flexibility): Pass at -40 °F in accordance with ASTM D 2136.
10. Accelerated Weathering: No cracking, checking, crazing, erosion or chalking after 5,000 hours in accordance with ASTM G 154.
11. Linear Dimensional Change:  $< 0.5\%$  in accordance with ASTM D 1204 at  $176 \pm 2$  °F for 6 hours.
12. Water Absorption:  $< 1.7\%$  in accordance with ASTM D 570 at 158 °F for 166 hours.
13. Static Puncture Resistance:  $\geq 56$  lbs. in accordance with ASTM D 5602.
14. Dynamic Puncture Resistance:  $\geq 14.7$  ft-lbf. in accordance with ASTM D 5635.

**E. Cool Roof Rating Council (CRRC):**

1. Membrane must be listed on CRRC website.
  - a. Initial Solar Reflectance:  $\geq 88\%$
  - b. Initial Thermal Emittance:  $\geq 87\%$
  - c. Initial Solar Reflective Index (SRI):  $\geq 111$
  - d. 3-Year Aged Solar Reflectance:  $\geq 68\%$
  - e. 3-Year Aged Thermal Emittance:  $\geq 84\%$
  - f. 3-Year Aged Solar Reflective Index (SRI):  $\geq 82$

**F. Insulation**

1. Provide overall thermal resistance for roofing system as follows:
  - a. Average R-value: 30.
2. Tapered Insulation Slope: 1/4 inch per foot.
3. Configuration as indicated on the Drawings.

**1.4 SUBMITTALS**

- A. Submit under provisions of Section 01300.
- B. Data sheets on each product to be used, including:
  1. Preparation instructions and recommendations.
  2. Storage and handling requirements and recommendations.

3. Installation methods.
4. Maintenance requirements.
- C. Sustainability Documentation:
  - a. NSF/ANSI Standard 347 Certificate.
  - b. Type III product-specific Environmental Product Declaration.
- D. Shop Drawings: Indicate insulation pattern, overall membrane layout, field seam locations, joint or termination detail conditions, and location of fasteners.
- E. Verification Samples: For each product specified, two samples, representing actual product, color, and finish.
  1. 4 inch by 6 inch sample of roofing membrane, of color specified.
  2. 4 inch by 6 inch sample of walkway pad.
    1. Termination bar, fascia bar with cover, drip edge and gravel stop if to be used.
    2. Each fastener type to be used for installing membrane, insulation/recover board, termination bar and edge details.
- F. Installer Certification: Certification from the roofing system manufacturer that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
- G. Manufacturer's warranties.

## 1.5 QUALITY ASSURANCE

- A. Perform work in accordance with manufacturer's installation instructions.
- B. Manufacturer Qualifications: A manufacturer specializing in the production of PVC membranes systems and utilizing a Quality Control Manual during the production of the membrane roofing system that has been approved by and is inspected by Underwriters Laboratories.
- C. Installer Qualifications: Company specializing in installation of roofing systems similar to those specified in this project and approved by the roofing system manufacturer.
- D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.
- E. There shall be no deviations from the roof membrane manufacturer's specifications or the approved shop drawings without the prior written approval of the manufacturer.

## 1.6 REGULATORY REQUIREMENTS

- A. Conform to applicable code for roof assembly wind uplift and fire hazard requirements.
- B. Fire Exposure: Provide membrane roofing materials with the following fire-test-response characteristics. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
  1. Exterior Fire-Test Exposure:
    - a. Class A; ASTM E 108, for application and roof slopes indicated.

2. **Fire-Resistance Ratings:** Comply with ASTM E 119 for fire-resistance-rated roof assemblies of which roofing system is a part.
  3. **Conform to applicable code for roof assembly fire hazard requirements.**
- C. **Conform to IECC (International Energy Conservation Code) and IGCC (International Green Construction Code) cool roof requirements.**
- D. **Wind Uplift:**
1. **Roofing System Design:** Provide a roofing system designed to resist uplift pressures calculated according to the current edition of the ASCE-7 Specification *Minimum Design Loads for Buildings And Other Structures*.

### 1.7 PRE-INSTALLATION MEETING

- A. **Convene meeting not less than one week before starting work of this section.**
- B. **Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following.**
1. **Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.**
  2. **Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.**
  3. **Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.**
  4. **Review structural loading limitations of roof deck during and after roofing.**
  5. **Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.**
  6. **Review governing regulations and requirements for insurance and certificates if applicable.**
  7. **Review temporary protection requirements for roofing system during and after installation.**
  8. **Review roof observation and repair procedures after roofing installation.**

### 1.8 DELIVERY, STORAGE AND HANDLING

- A. **Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.**
- B. **Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.**
- C. **Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.**
- D. **Store roof materials and place equipment in a manner to avoid permanent deflection of deck.**
- E. **Store and dispose of solvent-based materials, and materials used with solvent-based materials, in**



accordance with requirements of local authorities having jurisdiction.

## 1.9 WARRANTY

- A. **Contractor's Warranty:** The contractor shall warrant the roof application with respect to workmanship and proper application for two (2) years from the effective date of the warranty issued by the manufacturer.
- B. **Manufacturer's Warranty:** Must provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices throughout the life of the warranty. In addition the warranty must meet the following criteria:
  - 1. **Warranty Period:** 20 years from date issued by the manufacturer.
  - 2. **First 15 years:**
    - a. Must provide for completion of repairs, replacement of membrane or total replacement of the roofing system at the then-current material and labor prices.
    - b. No exclusions for incidental or consequential damages.
  - 3. **Last 5 years:**
    - a. Excludes incidental and consequential damages.
  - 4. Must provide positive drainage.
  - 5. No exclusion for damage caused by biological growth.
  - 6. Issued direct from and serviced by the roof membrane manufacturer.
  - 7. Transferable for the full term of the warranty.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. All roofing system components to be provided or approved by roof system manufacturer.
- B. **Acceptable Manufacturers:**
  - 1. Duro-Last, Inc.
  - 2. Fiber Tite
  - 3. Sarnafil

### 2.2 ROOFING SYSTEM COMPONENTS

- A. **Roofing Membrane:** PVC thermoplastic membrane conforming to ASTM D 4434, type III, fabric-reinforced, PVC. Membrane properties as follows:
  - 1. **Thickness:**
    - a. 50 mil.
  - 2. **Exposed Face Color:**
    - a. White.
- B. Minimum NSF 347 Gold certified.
- C. **Accessory Materials:** Provide accessory materials supplied by or approved for use by roof system

manufacturer

1. **Sheet Flashing:** Manufacturer's standard reinforced PVC sheet flashing.
2. **Factory Prefabricated Flashings:** manufactured using Manufacturer's standard reinforced PVC membrane.
  - a. Stack Flashings.
  - b. Curb Flashings.
  - c. Inside and Outside Corners.
3. **Sealants and Adhesives:** Compatible with roofing system and supplied by roof system manufacturer.
  - a. Caulk.
  - b. Strip Mastic.
4. **Slip Sheet:** Compatible with roofing system and supplied by roof system manufacturer.
5. **Fasteners and Plates:** Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane and insulation to substrate. Supplied by roof system manufacturer.
  - a. #14 Heavy Duty Fasteners.
  - b. Steel Membrane Plates.
  - c. 3 inch Metal Plates.
6. **PV Anchors**
7. **Termination and Edge Details:** Supplied by roof system manufacturer.
  - a. Termination Bar.
  - b. Universal 2-Piece Edge Metal System.
  - c. AllTerm™.
8. **Vinyl Coated Metal:** 24 gauge, hot-dipped galvanized, grade 90 metal with a minimum of 17 mil of PVC roofing membrane laminated to one side.
9. **Two-Way Roof Vents:** Supplied by roof system manufacturer. Install a minimum of 1 vent for each 1,000 ft<sup>2</sup> (93 m<sup>2</sup>) of roof area.

**D. Walkways:**

1. Provide non-skid, maintenance-free walkway pads in areas of heavy foot traffic and around mechanical equipment.
  - a. Walkway Pad.

## **2.3 ROOF INSULATION**

**A. General:**

1. Provide preformed roof insulation boards that comply with requirements and referenced standards, as selected from manufacturer's standard sizes.
2. Provide preformed saddles, crickets, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

**B. Polyisocyanurate Board Insulation:** Complying with ASTM C 1289, Type II, felt or glass-fiber

mat facer on both major surfaces. Material as supplied by roof system manufacturer.

1. Polyisocyanurate (tapered).

## 2.4 ROOF INSULATION ACCESSORIES

- A. General: Provide roof insulation accessories approved by the roof membrane manufacturer and as recommended by insulation manufacturer for the intended use.
- B. Fasteners: Provide factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening insulation and/or insulation cover boards in conformance to specified design requirements.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that the surfaces and site conditions are ready to receive work.
- B. Verify that the deck is supported and secured.
- C. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers or gutters.
- D. Verify that the deck surfaces are dry and free of standing water, ice or snow.
- E. Verify that all roof openings or penetrations through the roof are solidly set.
- F. If substrate preparation is the responsibility of another contractor, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Surfaces shall be clean, smooth, free of fins, sharp edges, loose and foreign material, oil, grease, and bitumen.

### 3.3 INSTALLATION

- A. Install insulation in accordance with the roof manufacturer's requirements.
- B. Insulation: Polyisocyanurate (tapered).
  1. Install insulation in accordance with the roof manufacturer's requirements.
  2. Insulation shall be adequately supported to sustain normal foot traffic without damage.
  3. Where field trimmed, insulation shall be fitted tightly around roof protrusions with no gaps greater than ¼ inch.
  4. Tapered insulation boards shall be installed in accordance with the insulation manufacture's shop drawings.
  5. No more insulation shall be applied than can be covered with the roof membrane by the end of the day or the onset of inclement weather.
  6. If more than one layer of insulation is used, all joints between subsequent layers shall be

offset by at least 6 inches.

7. **Mechanical Attachment:** Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet applicable design requirements.
    - a. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed must be replaced or corrected.
  8. Mechanically attach Polyisocyanurate (tapered) insulation boards in parallel courses with end joints staggered 50% and adjacent boards butted together with no gaps greater than ¼ inch.
- C. **Roof Membrane:** 50 mil, PVC thermoplastic membrane.
1. Use only fasteners, stress plates and fastening patterns accepted for use by the roof manufacturer. Fastening patterns must meet the applicable design requirements.
  2. Install fasteners in accordance with the roof manufacturer's requirements. Fasteners that are improperly installed shall be replaced or corrected.
  3. Mechanically fasten membrane to the structural deck utilizing fasteners and fastening patterns that in accordance with the roof manufacturer's requirements.
  4. Cut membrane to fit neatly around all penetrations and roof projections.
  5. Unroll roofing membrane and positioned with a minimum 6 inch overlap.
- D. **Seaming:**
1. Weld overlapping sheets together using hot air. Minimum weld width is 1-1/2 inches.
  2. Check field welded seams for continuity and integrity and repair all imperfections by the end of each work day.
- E. **Membrane Termination/Securement:** All membrane terminations shall be completed in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
  2. Provide securement at any angle change where the slope or combined slopes exceeds two inches in one horizontal foot.
- F. **Flashings:** Complete all flashings and terminations as indicated on the drawings and in accordance with the membrane manufacturer's requirements.
1. Provide securement at all membrane terminations at the perimeter of each roof level, roof section, curb flashing, skylight, expansion joint, interior wall, penthouse, and other similar condition.
    - a. Do not apply flashing over existing thru-wall flashings or weep holes.
    - b. Secure flashing on a vertical surface before the seam between the flashing and the main roof sheet is completed.
    - c. Extend flashing membrane a minimum of 6 inches (152 mm) onto the main roof sheet beyond the mechanical securement.
    - d. Use care to ensure that the flashing does not bridge locations where there is a change in direction (e.g. where the parapet meets the roof deck).
  2. **Penetrations:**
    - a. Flash all pipes, supports, soil stacks, cold vents, and other penetrations passing through

**3-Part Specification**  
Division 07 54 19 - Polyvinyl-Chloride Roofing

the roofing membrane as indicated on the Drawings and in accordance with the membrane manufacturer's requirements.

- b. Utilize custom prefabricated flashings supplied by the membrane manufacturer.
  - c. Existing Flashings: Remove when necessary to allow new flashing to terminate directly to the penetration.
3. Pipe Clusters and Unusual Shapes:
- a. Clusters of pipes or other penetrations which cannot be sealed with prefabricated membrane flashings shall be sealed by surrounding them with a prefabricated vinyl-coated metal pitch pan and sealant supplied by the membrane manufacturer.
  - b. Vinyl-coated metal pitch pans shall be installed, flashed and filled with sealant in accordance with the membrane manufacturer's requirements.
  - c. Pitch pans shall not be used where prefabricated or field fabricated flashings are possible.
- G. Roof Drains:
1. Coordinate installation of roof drains and vents specified in Section 15146 - Plumbing Specialties.
  2. Remove existing flashing and asphalt at existing drains in preparation for sealant and membrane.
  3. Provide a smooth clean surface on the mating surface between the clamping ring and the drain base.
- H. Edge Details:
1. Provide edge details as indicated on the Drawings. Install in accordance with the membrane manufacturer's requirements.
  2. Join individual sections in accordance with the membrane manufacturer's requirements.
  3. Coordinate installation of metal flashing and counter flashing specified in Section 07620.
  4. Manufactured Roof Specialties: Coordinate installation of copings, counter flashing systems, gutters, downspouts, and roof expansion assemblies specified in Section 07710.
- I. Walkways:
1. Install walkways in accordance with the membrane manufacturer's requirements.
  2. Provide walkways where indicated on the Drawings.
  3. Install walkway pads at roof hatches, access doors, rooftop ladders and all other traffic concentration points regardless of traffic frequency. Provided in areas receiving regular traffic to service rooftop units or where a passageway over the surface is required.
  4. Do not install walkways over flashings or field seams until manufacturer's warranty inspection has been completed.
- J. Water cut-offs:
1. Provide water cut-offs on a daily basis at the completion of work and at the onset of inclement weather.
  2. Provide water cut-offs to ensure that water does not flow beneath the completed sections of the new roofing system.
  3. Remove water cut-offs prior to the resumption of work.
  4. The integrity of the water cut-off is the sole responsibility of the roofing contractor.

**3-Part Specification**  
**Division 07 54 19 - Polyvinyl-Chloride Roofing**

5. Any membrane contaminated by the cut-off material shall be cleaned or removed.

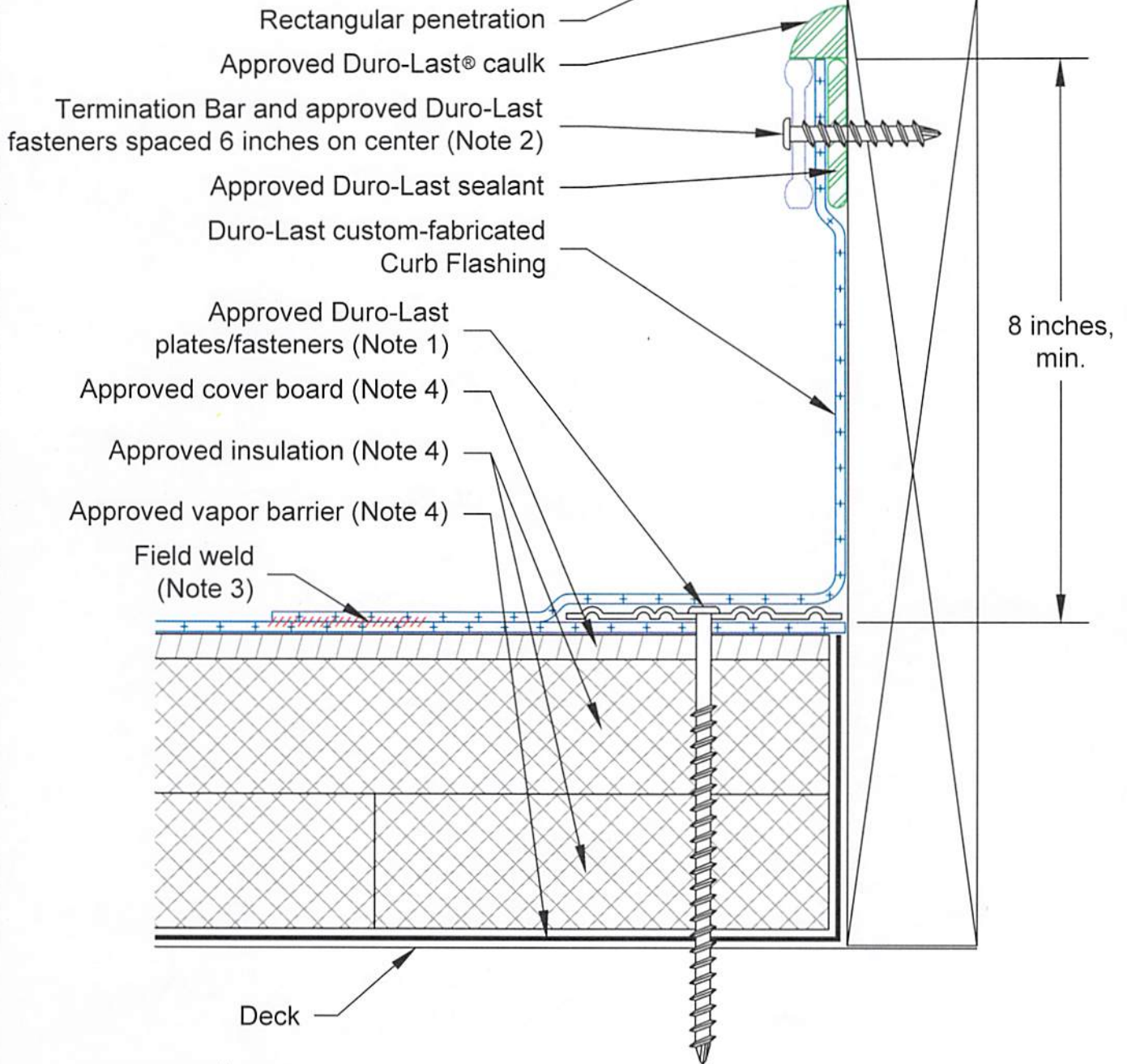
**3.4 FIELD QUALITY CONTROL**

- A. The membrane manufacturer's representative shall provide a comprehensive final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.

**3.5 PROTECTION**

- A. Protect installed roofing products from construction operations until completion of project.
- B. Where traffic is anticipated over completed roofing membrane, protect from damage using durable materials that are compatible with membrane.
- C. Repair or replace damaged products after work is completed.

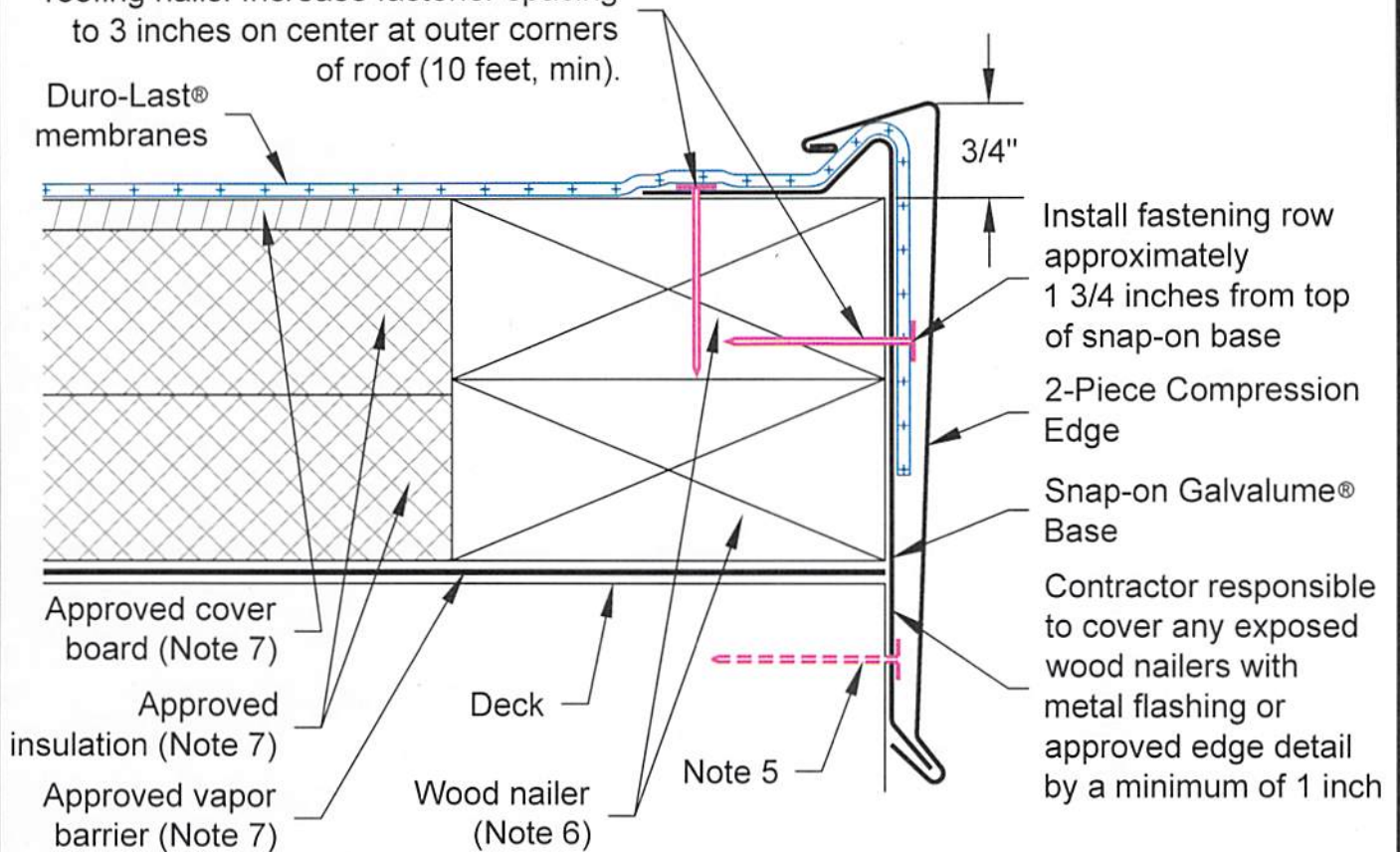
**END OF SECTION**



- Note 1: Deck membrane shall be fastened around perimeter of roof penetration as per respective zone the roof access hatch is located within (field, perimeter, corner).
- Note 2: Termination Bar shall have an approved Duro-Last fastener within 1 inch of each corner.
- Note 3: All field welds shall be a minimum of 1-1/2 inches wide.
- Note 4: Refer to specifications for vapor barrier, insulation and cover board requirements.

REVISED: 02/23/2017	ROOF PENETRATION DETAIL FOR MECHANICALLY FASTENED SYSTEMS
PREVIOUS: 01/01/2009	RECTANGULAR PENETRATION
SCALE: NONE	NEW CONSTRUCTION OR RE-ROOF

Fasten 6-inches on center with 1 1/4-inch roofing nails. Increase fastener spacing to 3 inches on center at outer corners of roof (10 feet, min).



**Note 1: This detail is limited to membrane thicknesses of 60 mils or less.**

Note 2: This detail may also be used on parapet walls.

Note 3: The use of this detail is not to exceed a 2-inch per 12-inch slope.

Note 4: Allow for 1/8-inch expansion gap between 10-foot lengths of snap-on base. Overlap snap-on covers by 2 inches between 10-foot lengths.

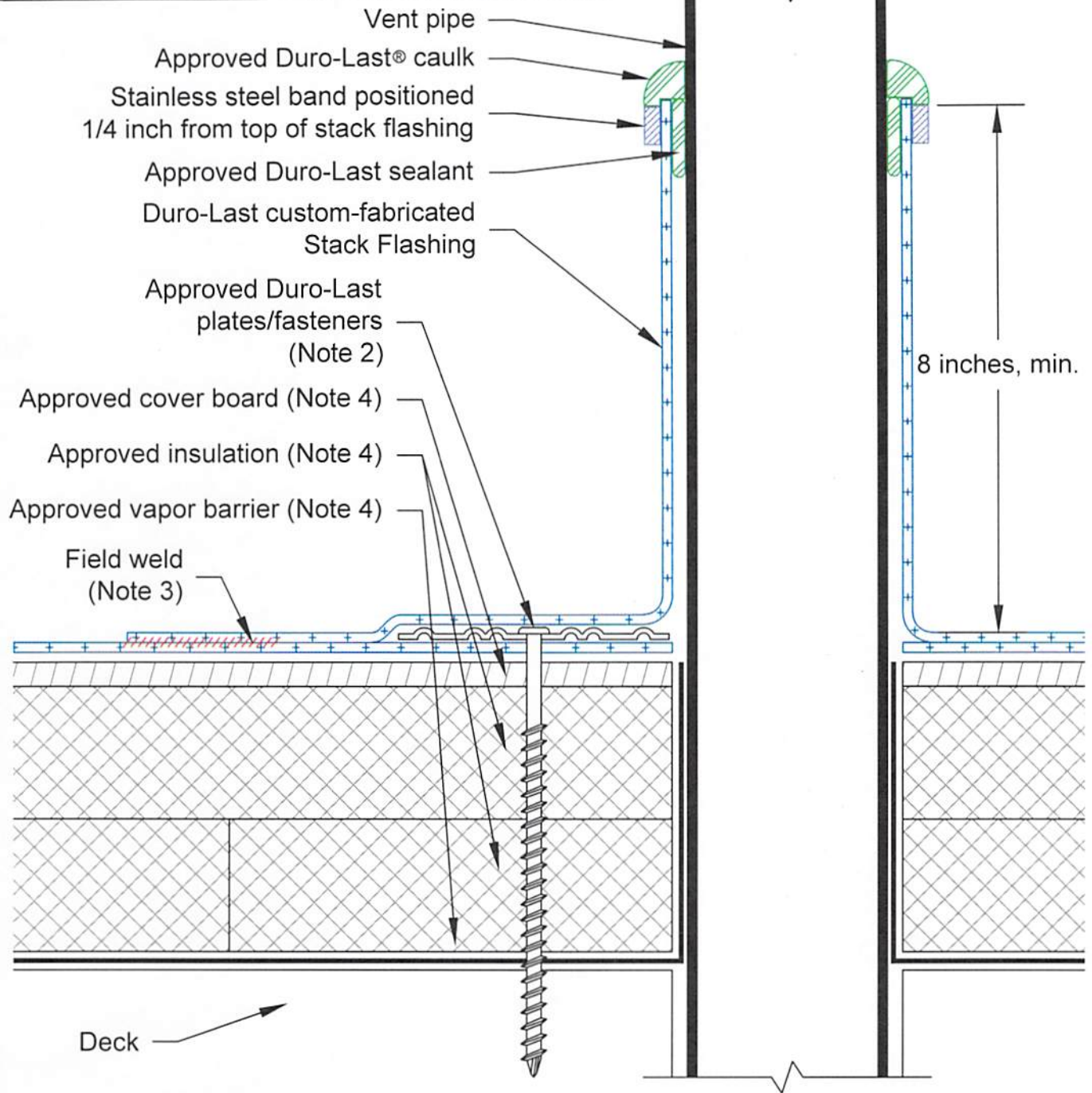
Note 5: When installing this detail with a 6-inch or greater vertical surface, an additional fastening row must be located approximately 1 1/8 inches from bottom of snap-on base.

Note 6: Wood nailers must withstand a minimum force of 180 pounds per lineal foot (per building code). Any pull values greater than 270 pounds will allow for a fastener spacing of 18 inches on center. Pull values less than 270 pounds will require additional fasteners. **The installing contractor is responsible for meeting building codes.**

Note 7: Refer to specifications for vapor barrier, insulation and cover board requirements.

REVISED: 08/24/2017	EDGE DETAIL FOR MECHANICALLY FASTENED SYSTEMS
PREVIOUS: 01/01/2009	UNIVERSAL 2-PIECE COMPRESSION EDGE
SCALE: NONE	NEW CONSTRUCTION OR RE-ROOF





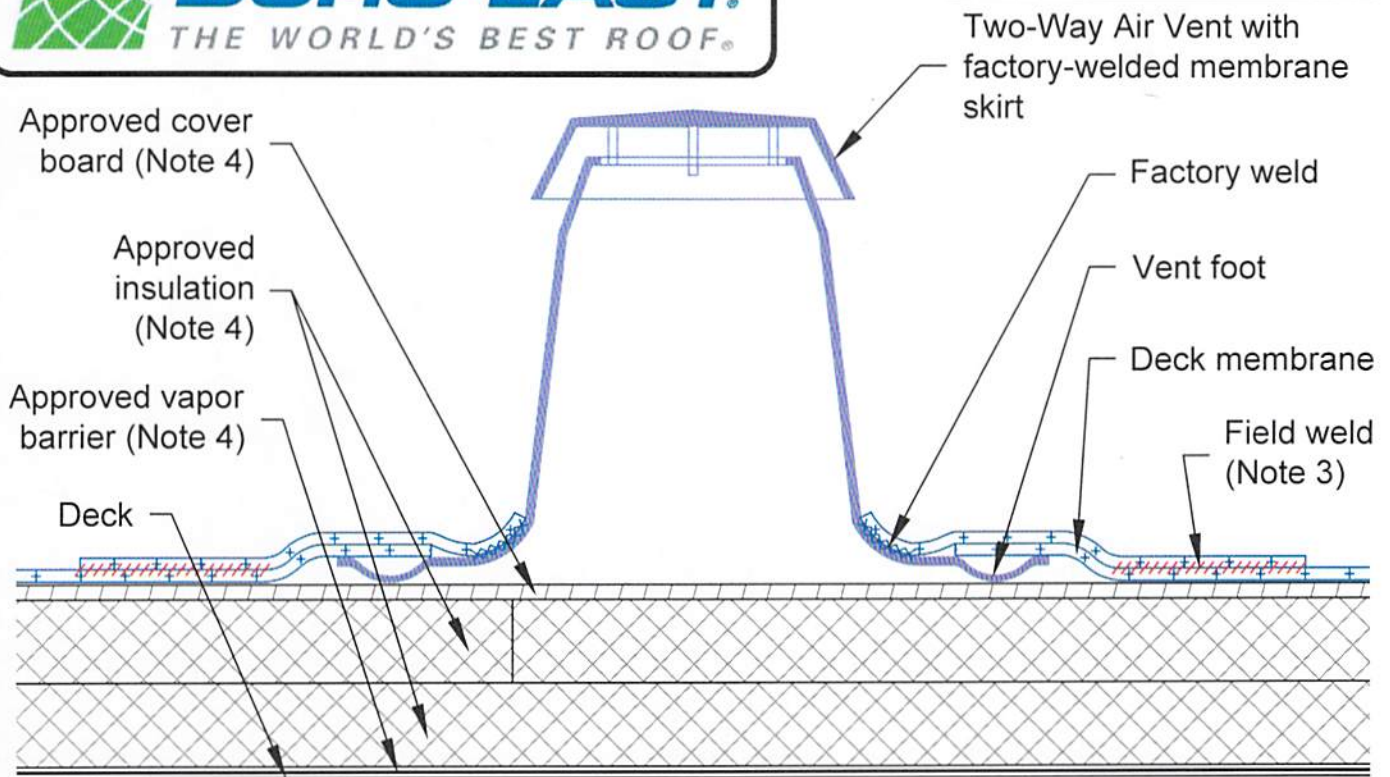
Note 1: Lead flashings must be removed prior to installing Duro-Last Stack Flashings.

Note 2: Deck membrane shall be fastened around the perimeter of the Duro-Last Stack Flashing as per the respective zone the Duro-Last Stack Flashing is located within (field, perimeter, corner), no less than one fastener per flashing.

Note 3: All field welds shall be a minimum of 1-1/2 inches wide.

Note 4: Refer to specifications for vapor barrier, insulation and cover board requirements.

REVISED: 02/02/2017	ROOF PENETRATION DETAIL FOR MECHANICALLY FASTENED SYSTEMS
PREVIOUS: 01/01/2009	ROUND PENETRATION
SCALE: NONE	NEW CONSTRUCTION OR RE-ROOF



### INSTRUCTIONS

1. Install Two-Way Air Vents (vents) between fastener rows and at high points of roof area. Vents must not be installed within 7 feet of the building edge. Never install vents in low, or drainage areas.
  - a. A minimum of one vent must be installed for every 1,000 square feet of roof area, or portion thereof, but with a minimum of two vents per roof area.
  - b. Vent Placement
    - i. Corners - Vents must first be installed within 8 to 10 feet of the outer corners. Install vents at opposite corners whenever possible.
    - ii. Remaining Roof Area - Starting at 8 to 10 feet from the building edge, evenly distribute the remaining vents throughout the remaining roof area. (Smaller roof areas may not have additional vents.)
2. Cut a 7-inch diameter hole and a 2-inch slit in deck membrane. Rotate vent to allow feet to slide underneath deck membrane at slit (see drawing above). Do not fasten vent to roof deck.

Note 1: **Vents must NOT be used on refrigerated buildings, freezer buildings or adhered roofing systems.**

Note 2: Vents are not required on open-air structures (e.g. carports) or roofing systems with overburden (e.g. ballast, paver, vegetation, etc.).

Note 3: All field welds shall be a minimum of 1-1/2 inches wide.

Note 4: Refer to specifications for vapor barrier, insulation and cover board requirements.

REVISED: 01/16/2019	VENT DETAIL FOR MECHANICALLY FASTENED SYSTEMS
PREVIOUS: 02/02/2017	TWO-WAY AIR VENT
SCALE: NONE	NEW CONSTRUCTION OR RE-ROOF