
PROJECT:	IT Building Roof Replacement	NO.:	01
OWNER:	York School District 1	DATE OF ISSUANCE:	1/16/2025
		ENGINEER:	REI Engineers
		REI PROJECT NO:	024CLT-101

This addendum forms a part of the Contract Documents and modifies the original Bidding Documents dated 11/13/2024 as noted below.

This addendum consists of 01 page(s), the attached revised Specification Sections 07 52 16.11 – Cold Adhesive Modified Bitumen Roofing.

CHANGES TO BIDDING REQUIREMENTS:

1. Pre-Bid Meeting Minutes: the attached Pre-Bid Meeting Minutes dated 1/8/25 are incorporated into the Contract Documents by reference.

CHANGES TO SPECIFICATIONS:

1. Section 07 52 16.11 – Cold Adhesive Modified Bitumen Roofing, replace with the attached, Revision No. 1
Section 07 52 16.11 – Cold Adhesive Modified Bitumen Roofing

QUESTIONS/CLARIFICATIONS

1. The allowances on the bid form and specification section are different. **Allowances are same on bid form and specification section.**
2. Specifications for wood fiber deck; drawings show lightweight concrete deck? **Drawings and specifications for the project correspond accordingly.**
3. There is a specification for pipe hangers but the plans show none on the roof? **Please provide pipe hangers were applicable.**
4. Do we need to install pvc pipe drain lines from the HVAC units to the gutter? **Yes, please provide drain condensate lines to nearest gutter section with appropriate pipe supports.**

ALL OTHER REQUIREMENTS AND PROVISIONS OF THE BIDDING DOCUMENTS REMAIN UNCHANGED. ACKNOWLEDGE RECEIPT OF THIS ADDENDUM ON THE BID FORM. FAILURE TO DO SO MAY BE CAUSE FOR REJECTION OF THE BID.

END OF ADDENDUM



January 16, 2025

York School District 1
Post Office Box 770
York, SC 29745

Attention: Charlie Westbrook
Director of Operations and Maintenance

Reference: Pre-Bid Meeting Minutes
IT Building Roof Replacement
Roof Replacement
REI Project No. 024CLT-101

Dear Mr. Westbrook:

A Pre-Bid Meeting was held at 9:00 AM on 1/8/2025 at the project site to discuss the details of the above referenced project. Refer to the attached sign in sheet for the attendance. The following points of interest were discussed:

1. Scott Caragher opened the meeting and a sign-in sheet was circulated.
2. A brief introduction of the project was provided.
3. Project Documents including Project Manual and Drawings sent electronically prior to the meeting. If you have not received documents, please email REI's Project Manager to request documents.

Section 00 11 13-Advertisement for Bids

4. Bids shall be received by Owner until 2:30 PM on 1/22/2025 at 1475 E. Liberty Street, York, South Carolina 29745. The bids shall be publicly opened and read.
5. Bidder attendance at this pre-bid meeting was recommended but not mandatory.

Section 00 21 13-Instructions to Bidders

6. Bid Security will be required and shall be submitted with Contractor's bid. Utilize the form contained in the project manual.
7. Performance and Payment Bonds for the Contract Amount will be required. Utilize the forms contained in the project manual.
8. Roof system manufacturer shall be listed on the bid form and the RMA Form shall be submitted with Contractor's bid.

Section 00 41 13-Bid Form

9. One manufacturer for the roof system shall be listed on the Bid Form.
10. A \$15,000.00 contingency allowance shall be contained in the Base Bid.
11. The following Quantity Allowances shall be contained in the Base Bid.
 - a. Replace 10 CF of Deteriorated Gypsum Fill.
 - b. Replace 125 BF of Deteriorated Wood Blocking.

- c. Replace 160 SF of Deteriorated Plywood.
- 12. 3 unit prices shall be provided and utilized to determine the applicable quantity allowances.
- 13. Schedule of Completion:
 - a. The construction duration (including any alternates accepted) for this project shall be 60 calendar days before Liquid Damages shall be incurred of \$500.00 per calendar day.
 - b. Time is of the essence. Contractor shall commence work on this project within thirty (30) days following receipt of an Executed Agreement between Owner and Contractor.
 - c. Date of commencement will be established in a Notice to Proceed issued to Contractor.
- 14. Provide all bid enclosures listed on the Bid Form including the following:
 - a. Bid Bond
 - b. Roof Manufacturer's Acknowledgement Form

Section 01 11 00-Summary of Work

- 15. A brief outline of the scope of work was reviewed.
 - a. Low Slope Roof Replacement – Roof Areas A:
 - i. Remove and dispose of the roof system including flashings and sheet metal down to the poured gypsum deck.
 - ii. Provide Base sheet mechanically attached to roof deck.
 - iii. Provide 2" Roof Insulation adhered in foam adhesive.
 - iv. Provide Tapered Insulation System adhered in foam adhesive.
 - v. Provide Cover Board adhered in foam adhesive.
 - vi. Provide a two-ply modified bitumen roof membrane along with flashings and accessories.
 - vii. Replace sheet metal flashings and trim.
 - viii. Provide a complete, watertight, 20-year warrantable roof assembly.
- 16. No Asbestos Containing Roofing Materials (ACRM) have been detected in test samples of roof areas included in Contract.

Section 01 14 00-Work Restrictions

- 17. Works hours shall generally be performed during normal business hours. Should the Contractor elect to work on Saturday or Sunday, notification to the Owner and Engineer at least 48 hours in advance shall be required.

Section 01 40 00-Quality Requirements

- 18. A full-time, on-site superintendent employed by the Contractor is required for the project.

Section 01 77 00-Closeout Procedures

- 19. A two-year contractor's warranty, asbestos free warranty and a twenty-year roofing manufacturer's warranty shall be required.
- 20. Contractor shall submit all closeout documents within thirty (30) days from Punch List.

Technical Specifications/Contract Drawings

- 21. Review as necessary.

Miscellaneous

22. Staging and Material storage areas are as follows:

- a. Staging and material storage areas shall be determined at the Pre-Construction Meeting.
- b. Access to the roof shall be via a Contractor provided extension ladder that shall be taken down every night and secured.
- c. The Contractor will provide a portable toilet facility and handwashing station, as required.

23. Bidders wishing to make additional site visits shall contact Owner/REI to coordinate an appointment for additional visits. Please allow 24 hours of advance notice to schedule the site visit. Bidders shall provide an extension ladder for access to the roof. Bidders must check in at the office immediately upon arrival to the facility.

24. All bidding or specification related questions are to be directed to REI Engineers in writing (email) by 5:00 PM on 1/17/2025 in an effort to keep addenda from being issued after 1/20/2025.

Please contact our office if you have any questions or corrections regarding these minutes.

Sincerely,

REI Engineers



Scott Caragher
Project Manager

Enc: Pre-Bid Meeting Sign-in Sheet

cc: Attendees

01/08/2024

PRE-BID MEETING SIGN-IN
OWNER: York School District 1
PROJECT: 024CLT-101 IT Building Roof Replacement

Name	Company	Phone No.	Email
Scott Caragher	REI Engineers	980-267-8124	scaragher@reiengineers.com
Rich Britt	REI Engineers	704-215-3019	rbritt@reiengineers.com
Rodney Honeycutt	REI Engineers	704-221-3487	rhoneycutt@reiengineers.com
Charlie Westbrook	YSD1	803-325-4715	cwestbrook@york.k12.sc.us
Terry Land	Land Roofing Co	803-968-7200	Land roofing company@gmail.com
Kenneth Fennell	C.E. Bourne & Co, Inc.	864-377-0743	kenneth@cebournecom
Mark Waldron	Southern Roofing	803-364-4000	mark@southernroofing.com
Holden Kurth	AAR	336-727-4534	PL@AARAC.COM
John Austin	JRS	704-776-0380	john@johnsonsroofinginc.com
Mike Benkosz	Dawco	704-309-1608	mike@dawcoroofing.com
Luke NHITE	INTERSTATE	704-430-8239	LN@INTERSTATEROOFINGCO.COM
Justin George	Beacon	803-439-7844	Justin.george@beacon-roofing.com
Victor Knard	Rike Roofing	980-432-2144	Victor@rikerroofing.com
Keri's Jolly	Escola Roofing	704-604-1024	Kjolly@escoleroofing.com
Brandt Strait	Tecta America	803-431-1061	bstrait@tectamerica.com
Joey Tillman	Owens Roofing	336-707-2051	joey@owensroofinginc.com
MATT WALKER	NATIONS ROOF	980-420-4799	MWALKER@NATIONSROOF.COM



01/08/2024

PRE-BID MEETING SIGN-IN
OWNER: York School District 1
PROJECT: 024CLT-101 IT Building Roof Replacement

NAME	CO.	PHONE	EMAIL
TANNER CARTER	PALMETTO STATE	864-745-1354	tanner@psroof.com
SHEA Smart	PALMETTO Roofing Specialists	864-610-2176	shea@prs-carolina.com
Kenneth Fennell	C.B. Bourne & Co. Inc.	864-372-0643	Kenneth@cebournec.com
KEY GIBBS	ALLCON OF GVL	828-246-2524	jgibbs@allconroofing.com
Brian Russell	Highland Roofing	919-628-6433	Brusse11@highlandroofingcompany.com
MATT GRECO	SOPREMA	704-918-6232	Mgreco@suprema.us
Joe Breeson	Weatherguard	704-959-8290	Joe@weatherguardinc.com

SECTION 07 52 16.11

REVISION NO. 1 - COLD ADHESIVE MODIFIED BITUMEN ROOFING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provide a cold adhesive applied modified bituminous membrane system consisting of two plies of asphalt elastomeric membrane reinforced with polyester and/or fiberglass mat.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 1 Specification Sections and the following Specification Sections apply to this Section:

1. Section 06 10 00 - Rough Carpentry
2. Section 07 01 50 - Preparation for Reroofing
3. Section 07 22 16 - Roof Insulation
4. Section 07 62 00 - Sheet Metal Flashing and Trim

1.3 REFERENCE STANDARDS

- A. ASTM D41/D41M - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing; 2011 (Reapproved 2023).
- B. ASTM D1668/D1668M - Standard Specification for Glass Fabrics (Woven and Treated) for Roofing and Waterproofing; 1997a (Reapproved 2021).
- C. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2018).
- D. ASTM D5147/D5147M - Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material; 2018.
- E. ASTM D6163/D6163M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements; 2021.
- F. ASTM D6164/D6164M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2021.
- G. ASTM D6222/D6222M - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements; 2016 (Reapproved 2023).
- H. ASTM D6509 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Base Sheet Materials Using Glass Fiber Reinforcements; 2009.

- I. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2020a.
- J. FM 4470 - Examination Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction; 2022.
- K. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.
- L. UL 790 - Standard for Standard Test Methods for Fire Tests of Roof Coverings; Current Edition, Including All Revisions.
- M. UL 1897 - Uplift Tests for Roof-Covering Systems; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.4 PERFORMANCE REQUIREMENTS

- A. Install roofing system to meet UL 790 Class A/ASTM E108 Class A Fire Rating.
- B. Wind Uplift Strength: Provide an approved roof assembly tested in accordance with FM 4470, UL 580 or UL 1897 to resist the minimum required wind uplift strength specified in the Contract Drawings.
 - 1. Zone 1': Interior of Roof: - 37 psf
 - 2. Zone 1: Field of Roof: - 63 psf
 - 3. Zone 2: Perimeter of Roof: - 83 psf
 - 4. Zone 3: Corner of Roof: - 113 psf

1.5 SUBMITTALS

- A. Product Data: Manufacturer's Product Data Sheets for materials specified certifying material complies with specified requirements.
- B. Manufacturer's Instructions: Latest edition of the Manufacturer's current material specifications and installation instructions.
- C. Roof System Assembly Letter: Letter from roof system manufacturer listing roof assembly components along with their method of attachment and acceptance of the specified roof system warranty terms. Assembly letter should match the submitted test report documentation and specified assembly.
- D. Test Reports: Submit documentation of approved, tested roof system to meet the specified requirements for the following:
 - 1. Wind uplift pressures
 - 2. UL Fire Resistance Rating

1.6 QUALITY ASSURANCE

- A. Contractor Qualifications:

1. Approved by the roof membrane manufacturer and have the experience of 5 similar roof projects. Provide verification of similar experience to the Engineer upon request.
- B. Manufacturer Qualifications:
 1. Producing modified bitumen products in the United States for a minimum of 10 years.
 2. Maintained a consistent composition for a minimum of five years without a change in the basic product design or SBS modified bitumen blend (e.g. no substantive changes in product composition, polymer specification, asphalt or filler formulation).
- C. Inspect the base ply and reinforcing/stripping ply application by the Contractor and Manufacturer's technical representative. Repair and prepare to meet the Manufacturer's requirements prior to installing the surface ply.
- D. Do not exceed exposure limits of the base ply for longer than the manufacturer's maximum requirement. Base ply exposed longer than the maximum requirement is subject to rejection or additional remedial requirements prior to application of the surface ply.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Delivery. Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store materials out of direct exposure to the elements on pallets at least 4 inches above ground level at location acceptable to the Owner.
 1. Storage trailers are acceptable provided they are equipped with a lock and located at a site location acceptable to the Owner.
 2. Utilize tarps that cover materials to prevent moisture contamination. Remove or slit factory shrouds and/or visqueen; do not use these materials as tarps.
 3. Install vapor retarders under material storage areas located on the ground.
 4. Store roll goods on end on a clean flat surface.
 5. Remove damaged or deteriorated materials from the job site.
- C. Handling. Handle material in such manner as to preclude damage and contamination with moisture or foreign matter.

1.8 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Do not apply roofing during precipitation. Do not start roofing operations in the event there is a probability of precipitation during applications.
 2. Do not apply the membrane or flashings at or below the dew point temperature.

3. When conditions are damp and where adjacent roof areas have moisture or dew, dry surfaces to prevent tracking water over the membrane substrates.
 4. At ambient temperatures of 40°F and below, including wind chill, take precautions to ensure adhesives and other materials maintain the minimum acceptable temperature at the point of roofing application as recommended by the membrane manufacturer.
- B. Protection:
1. Protect against staining and mechanical damage of adjacent surfaces and work areas during application. Staining, mechanical damage, or discoloration of the membrane is cause for rejection.
 2. Protect materials being installed and storage of materials against wind related damage.

1.9 WARRANTY

- A. Manufacturer's Guarantee: Manufacturer's standard form, non-pro-rated, without monetary limitation or deductibles, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks or breaches in the primary roof membrane causing moisture to enter the substrate below (even if visible leaks are not observed inside the facility).
1. Warranty Period: 20 years from date of Substantial Completion
 2. Warranty to remain in effect for wind speeds up to 72 mph.
 3. Warranty to include materials specified in this section and those specified in other sections as follows:
 - a. 07 22 16 - Roof Insulation
 4. Warranties requiring the Owner's signature are not acceptable.
- B. Contractor's Warranty:
1. Two Year Warranty: Manufacturer's Representative and Contractor's Representative will attend post construction field inspection no earlier than one month prior to the expiration date of the Contractor's Warranty. Submit a written report within seven (7) days of the site visit to the Engineer listing observations, conditions and recommended repairs or remedial action.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with requirements herein, provide roof system from a single source by one of the following manufacturers:
1. Derbigum
 2. Johns Manville (JM)

3. Siplast
4. Soprema, Inc.

2.2 MEMBRANE MATERIALS

A. Roof Membrane (Cold Adhesive):

1. A dimensionally stable roof membrane assembly consisting of 2 plies of a prefabricated, reinforced, homogeneous modified asphalt membrane secured to a prepared substrate with cold adhesive.
 - a. Both reinforcement mats impregnated and coated each side with a high-quality modified bitumen blend of Styrene-Butadiene-Styrene (SBS) or Atactic Polypropylene (APP).
 - b. Pass ASTM D 5849, Resistance to Cyclic Joint Displacement at 14°F. Passing results show no signs of membrane cracking or interply delamination after 500 cycles as manufactured and 200 cycles after heat conditioning according to ASTM D5147/D5147M.
2. Base Ply Membrane: Glass fiber and/or polyester reinforced ply sheet manufactured for cold adhesive application, meeting or exceeding requirements of ASTM D6163/D6163M or ASTM D6164/D6164M, Type I or II, Grade S. and ; or ASTM D6509/D6509M.
 - a. Derbigum Derbibase Ultra
 - b. JM Dynalastic 180 S
 - c. Siplast Paradiene 20
 - d. Soprema Elastophene Sanded
3. Surface Ply Membrane: Glass fiber and/or polyester reinforced ply sheet manufactured for cold-adhesive application, meeting or exceeding requirements of ASTM D6163/D6163M, ASTM D6164/D6164M or ASTM D6222/D6222M, Type I or II, Grade G. Granule color white.
 - a. Derbigum Derbicolor P-FR
 - b. JM Dynaglas FR
 - c. Siplast Paradiene 30 FR
 - d. Soprema Elastophene LS FR GR

B. Flashings: Consist of a minimum of two plies.

1. Reinforcing/Stripping Ply:
 - a. Derbigum: Same as Base Ply
 - b. JM Dynalastic 180 S

- c. Siplast Paradiene 20
 - d. Soprema Elastophene 180 Sanded
- 2. Flashing/Target Ply:
 - a. Derbigum: Same as Surface Ply
 - b. JM Dynaflex
 - c. Siplast Paradiene 40 FR or Siplast Parafor 30
 - d. Soprema Sopralene 180 FR GR
- C. Fluid Applied Flashing: Membrane manufacturer's PMMA based resin with polyester fleece flashing system.
 - 1. Derbigum Derbiflash
 - 2. JM SeamFree PMMA Liquid Membrane
 - 3. Siplast Parapro
 - 4. Soprema Alsan RS

2.3 RELATED MATERIALS

- A. Cold Adhesive: Membrane manufacturer's standard low-VOC adhesive, specifically used for adhering membrane plies. Adhesive accepted by membrane manufacturer for inclusion in warrantable system.
 - 1. Derbigum Permastic
 - 2. JM MBR Cold Application Adhesive
 - 3. Siplast PA 311 R
 - 4. Soprema Colply Membrane Adhesive
- B. Asphalt primer: ASTM D41/D41M and be approved for intended use by membrane manufacturer.
- C. Flashing Cement: An asphalt cutback mastic, reinforced with non-asbestos fibers, enhanced slump resistance, used for vertical flashing applications conforming to ASTM D4586/D4586M Type II requirements.
 - 1. Derbigum Perflash
 - 2. JM MBR Flashing Cement
 - 3. Siplast PA 828
 - 4. Soprema Colply Flashing Cement

- D. Solvent Free Adhesive: A single component, solvent-free modified asphalt adhesive designed for application of the specified roof membrane in areas below the fluid applied flashing.
- E. Utility Roof Cement: An asphalt cutback general utility mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges and temporary seals conforming to ASTM D4586/D4586M Type II requirements.
- F. Sealant: An SBS polymer modified asphaltic flashing cement in a 10.4-ounce cartridge conforming to ASTM D4586/D4586M requirements approved by the roofing membrane manufacturer for use in conjunction with the roofing membrane materials.
- G. Ceramic granules: Color scheme matching the granule surfacing of the cap sheet comparable to No. 11 granules.
- H. Reinforcing Fabric: Woven fiberglass fabric treated with asphalt primer conforming to ASTM D1668/D1668M and approved by roof system manufacturer for intended use.
- I. Walk Pad Material: Prefabricated (by the membrane manufacturer), puncture resistant polyester core reinforced, polymer modified bitumen sheet material topped with a ceramic granule wearing surface.

2.4 FASTENERS

- A. Base Flashing Fasteners (Wood): Galvanized ring shank nail with 1 inch diameter cap, minimum 1 inch length and approved by the membrane manufacturer for inclusion in warranty:
- B. Base Flashing Fasteners (Concrete/Masonry): 1/4-inch diameter metal-based expansion anchor for use in concrete or masonry substrates with length to penetrate substrate a minimum of 1-1/2 inch.
- C. Termination Bar: 1/8-inch by 1-inch aluminum or stainless-steel flat bar with pre-drilled oversized or slotted holes 6 inches on center.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Conduct a pre-job conference including the Owner, Engineer, Contractor, and the membrane manufacturer's representative prior to the application of the roofing.
- B. Verify work penetrating the roof deck or work affecting the roofing has been properly completed.
- C. Inspect insulation system substrate prior to application of membrane. Commencement of work signifies acceptance of substrate. Correct defects in work resulting from accepted substrates at no additional expense to the Owner.

3.2 PREPARATION

- A. Sweep or vacuum surfaces prior to commencement of roofing.
- B. Coordinate closure of air intakes prior to application of primer and cold adhesives.

- C. Unroll membranes and allow to relax in accordance with membrane manufacturer's recommendations or a minimum of thirty minutes, whichever is greater.
- D. Where walls, curbs, expansion joints, etc. present an unacceptable substrate for flashing and where flashings substrates are combustible, fasten a layer of non-combustible cover board to provide a suitable substrate for flashing.

3.3 APPLICATION

A. General:

1. Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements.
2. Complete base ply application following base sheet/insulation system application as a continuous operation on the same work day.
3. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is required. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, etc.), and exercise care in ensuring that the finished application is acceptable to the Owner. Excessive footprints or impressions in the surface ply are grounds for rejection thereby requiring membrane replacement.
4. Priming:
 - a. Prime metal flanges, concrete and masonry surfaces with a uniform coating of asphalt primer.
 - b. Provide coverage of primer to ensure surfaces are dark brown to black with minimum application rate of 1 to 1-1/4 gallons.
 - c. Allow primer to dry prior to application of asphalt/adhesive.
5. Inspect membrane and flashing application each day. Repair deficiencies daily prior to beginning or resuming other work.
 - a. Cut open and remove membrane deficiencies as necessary.
 - b. Make repairs to extend from lap to lap.

B. Roof Membrane:

1. Apply membrane in accordance with the manufacturer's instructions and the following requirements.
2. Apply layers of roofing free of wrinkles, creases or fishmouths.
3. Exert sufficient pressure by use of roller or broom on the roll during application to ensure prevention of air pockets.
4. Stagger the lap seams between the base ply layer and the surface ply layer.
5. Apply layers of roofing perpendicular to the slope of the deck with laps shingled to prevent back water laps or strap as required by roof membrane manufacturer

due to slope.

6. Back nail as required by roof membrane manufacturer due to roof slope.
7. Bond the base ply to the prepared substrate, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps following sheet application. Stagger end laps a minimum of 3 feet.
8. Bond the surface ply to the base ply, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Stagger end laps of the surface ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps following sheet application. Stagger side laps of the surface ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the surface ply a minimum 3 feet from end laps in the underlying base ply.
9. Follow membrane manufacturer's recommendations if hot air welding of laps is required.

C. Cold Adhesive:

1. Apply in accordance with membrane manufacturer's published instructions.
2. Apply with 3/8-inch notched soft rubber squeegee.
3. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids.
4. Utilize an application rate of 2 to 2 1/2 gal/sq over irregular or porous substrates. Utilize an application rate of 1 1/2 to 2 gal/sq for interply applications. Double the adhesive application rate at the end laps of granule surfaced sheets. Vary application rates based on conditions present.
5. Inspect and change squeegee blades daily. Replace squeegee blades more frequently as the notches are worn down less than 3/8 inch.
6. Apply cold adhesives between ambient temperatures of approximately 40°F to 100°F.
7. Minimize foot traffic in areas where adhesive has been installed.
8. In the areas surrounding details that are to receive fluid applied flashings, apply membrane plies in a coating of the specified solvent free adhesive in lieu of the solvent based adhesive a minimum 8 inches from the base of the penetration or curb.

D. Water cut-off: At end of day's work, or when precipitation is imminent, construct a water cut-off at open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Remove cut-offs prior to the resumption of roofing.

E. Flashings:

1. Install concurrently with the membrane installation.

2. Prior to installing flashings over plywood substrates, install a layer of rosin paper and base sheet. Secure to plywood with specified fasteners at 6 inches on center staggered.
 3. Prior to torch application along cant strips, provide self-adhered flashing ply in accordance with the below requirements.
 4. Base flashing consists of a reinforcing ply and flashing ply.
 - a. Lap reinforcing ply a minimum of 3 inches at side laps, extend a minimum of 4 inches onto the base ply from the base of the cant and extend a minimum of 3 inches up the vertical termination above the toe of the cant or as noted in the detail drawings.
 - b. Lap flashing ply a minimum of 3 inches at side laps, extend a minimum of 6 inches from the toe of the cant onto the surface ply and extend a minimum of 3 inches up the vertical termination above the toe of the cant or as noted in the detail drawings.
 - c. Stagger side laps in the reinforcing ply and flashing ply.
 - d. Cut off the end of the roll and be apply reinforcing ply and flashing ply vertically, always working to a selvage edge.
 5. Mechanically terminate base flashing a minimum of 8 inches above the finished roof surface.
 - a. Wood Substrate: Mechanically terminate base flashings using specified fasteners 6 inches on center.
 - b. Concrete/Masonry Substrate: Mechanically terminate base flashing 6 inches on center using specified fasteners and termination bar.
 - c. Gypsum Sheathing Substrate over Metal Stud Wall: Mechanically terminate using specified fasteners and termination bar into each metal stud.
 6. Seal top of base flashings and termination fasteners with 3-course of roof cement and reinforcing fabric after termination.
 7. Terminate base flashing at roof edges by extending the base flashing at least two inches beyond the edge of the roof and mechanically attaching a termination bar vertically with appropriate fasteners six inches on center. Provide a continuous bead of sealant along outside edge of termination bar.
 8. Seal off sheet metal incorporated into the roofing system with stripping ply.
 - a. Adhere in roof cement and fit tight to the edge of the sheet metal.
 - b. Extend four inches beyond sheet metal onto roof membrane.
 - c. Install prior to application of surface ply.
 9. Provide sealant installed to fill void between edge of sheet metal and surface ply edge (i.e. at metal edge, pipe penetrations, etc.) properly tooled to ensure
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adhesion and slope to shed water. Broadcast granules into properly installed sealant.

F. Fluid Applied Flashing:

1. Adhere base ply in solvent free adhesive below areas to receive fluid applied flashing.
2. Using masking tape, mask the perimeter of the area to receive the flashing system. Apply resin primer to substrates requiring additional preparation and allow primer to set.
3. Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.
4. Refer to manufacturer's installation instructions for application rates and additional installation information.
5. Broadcast granules into horizontal surface of fluid to match adjacent surface ply.

G. Walk Pad Material:

1. Apply walk pad material to a clean, dry surface.
2. Prior to application, cut walk pad material into maximum 5 foot lengths and allow to relax until flat. Use a straight edge or chalk line to ensure straight square cuts. Do not cut the walk pad material directly on the roof surface.
3. Position walk pad material so as to leave minimum 2 inch gaps between panels to allow for proper drainage.
4. Adhere walk pad panels to surface ply with roof cement applied to the back of the panels in spots approximately 5 inches square. Use a notched trowel to keep the cement 3/8-inch thick.
5. Walk-in each panel to ensure contact with the membrane surface.
6. Provide walk pads where indicated in Contract Drawings and at the following locations:
 - a. Around roof hatches.
 - b. At base and top of fixed wall access ladders.
 - c. Around HVAC units.
 - d. At door access to roof areas.

- H. Ponding Water: The ponding of water on the roof surface after installation of the roofing system is not acceptable and is grounds for rejection of the roof. Ponding is herein defined as precipitation remaining in a four-square foot area or larger, 1/4 inch or deeper for a period of 24 hours from the termination of precipitation. Do not install surface ply until verification of proper drainage has been determined. Provide modifications to roof system to ensure proper drainage including but not limited to reinstallation of roof system, installation of additional tapered insulation and/or installation of additional base plies.

3.4 CLEANING

- A. Remove debris and excess material from the roof area. Pick-up loose fasteners and sheet metal scraps.
- B. Clean off/remove excess adhesive, sealant, stains and residue on the membrane and flashing surfaces.

END OF SECTION