

June 6, 2025

ADDENDUM NO. D

TO THE CONTRACT DOCUMENTS

FOR

Colton Middle School - Administration Modernization and New Locker Room Building

FOR THE Colton Joint Unified School District 1212 Valencia Drive Colton, CA 92324

DSA Application #04-123792 FILE #36-14 RCA Project No. 1-15-111

NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original documents of DSA Approved on December 04, 2024. It is intended that all work affected by the following modifications shall conform with related provisions and general conditions of the contract of the original drawings and specifications. Modify the following items wherever appearing in any drawing or sections of the specifications. Acknowledge receipt of Addendum No. D in the space provided on the Bid Form. Failure to do so may subject the bidder to disqualification.

CHANGES TO SPECIFICATIONS

ltem No.	D.1 D.1.1	Reference Specification Section 00 01 10 – Table of Contents Replace section 00 01 10 in its entirety per attached revised section 00 01 10.
ltem No.	D.2 D.2.1	Reference Specification Section 01 23 00 – Alternates Replace section 01 23 00 in its entirety per attached revised section 01 23 00.
ltem No.	D.3 D.3.1	Reference Specification Section 07 01 50.19 – Preparation for Re-roofing Replace section 07 01 50.19 in its entirety per attached revised section 07 01 50.19.
ltem No.	D.4 D.4.1	Reference Specification Section 07 01 50.20 – Preparation for Re-roofing Delete section 07 01 50.20 in its entirety.
ltem No.	D.5 D.5.1	Reference Specification Section 07550 – Modified Bituminous Membrane Roofing Add new section 07550 in its entirety.

ATTACHMENTS

Specifications:	00 01 10, 01 23 00, 07 01 50.19, 07550
Sketches:	NA
Sheets:	NA



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SECTION 01 23 00 ALTERNATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Description of Alternates.
- B. Procedures for pricing Alternates.
- C. Documentation of changes to Contract Price and Contract Time.

1.02 RELATED REQUIREMENTS

A. Refer to Sections indicated in Alternate descriptions and as may be determined to be related to Work affected by alternate products and scope descriptions.

1.03 ALTERNATES DEFINED

A. Alternates are defined as alternate products, materials, equipment, systems, methods or major elements of construction, which may, at District's option and under terms established in the Agreement, be selected for the Work instead of the corresponding requirements of the Contract Documents.

1.04 GENERAL REQUIREMENTS FOR ALTERNATES

- A. To enable District to compare total costs where alternate materials and methods might be used, Alternates described in this Section have been established.
- B. Contract Sum included in Base Bid and as stated in executed Agreement shall include all costs for Work described in Contract Documents.
- C. Contract Sum shall include all necessary provisions for Work described in Alternates, whether or not Alternates are accepted.
- D. Bid Form or other means prescribed for submission of proposed cost of Work shall include line items for each Alternate described in this Section. No Alternates other than as described in this Section shall be submitted, except as otherwise provided in Section 01 6000 - Product Requirements for product options and substitutions.
- E. Each Alternate is identified herein by number. This identification shall be used whenever referring to Work described in Alternate and when submitting cost proposals and payment requests.
- F. Changes described in Alternates shall be incorporated into Work only when such Alternate is made a part of the Work by specific provision in the Owner-Contractor Agreement, if selected by District prior to execution of the Agreement, or by Change Order if selected subsequent to execution of Agreement.

G. Costs for Alternates shall be valid for no less than sixty (60) days from date of Agreement and District may select to any or all Alternates during that time. Once an Alternate is selected and the Contract modified to Work as described in the Alternate, changes to return to original scope of Work will be made only by Change Order in accordance with provisions of the General Conditions for changes.

1.05 ACCEPTANCE OF ALTERNATES

- A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at District's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.
- C. Products and Execution:
 - 1. If District elects to proceed on the basis of one or more of the described Alternates, Contractor shall make all modifications to Work as required to provide products complete, in place and fully functional, including all labor, equipment, services and incidental consumables necessary to apply, install and finish Work described in Alternate in accordance with requirements specified in related Sections of these Specifications.
 - 2. Installation of Alternates shall not be started until details, plans or structural calculations have been accepted and signed by the Architect, Structural Engineer when applicable, and approved by DSA.
 - 3. Cost for Alternates shall be complete and include all net increases and decreases in Contract Sum for Work described in Alternate and for all changes in related Work. No claims for additional costs to District will be honored other than as stated in cost proposal for each Alternate.

1.06 SCHEDULE OF ALTERNATES

- A. Alternate No. One Add Interim Housing (DSA #04-124403) and modernization of the existing Administration Building (part of DSA #04-123792) with associated site work:
 - 1. Base Bid Item: Locker Room Building (part of DSA #04-123792) and Pavilion (DSA #04-123039) with associated site work.
 - a. Schedule Start: Notice to Proceed plus three hundred and four (304) Calendar days.
 - b. Schedule Duration: Mobilize no earler than January 5, 2026.
 - 2. Base Bid Item: Exhibit C1 Construction Phasing Schedule, Drawing number AS-1.1 including Phases 1C-Pavilion & Locker Building and 1D-Parking area, indicated by the highlighted areas in Addendum C.
 - 3. Alternate Item: Exhibit C1 Construction Phasing Schedule, Drawing number AS-1.1 including Phases 1A-Administration Building and 1B-Interim Housing, and Base Bid 1C-Pavilion & Locker Building and 1D-Parking area, indicated by the highlighted areas in Addendum C.
 - a. Schedule Start: Notice to Proceed plus five hundred and fourteen (514) Calendar days.
 - b. Schedule Duration: Mobilize no earler than June 30, 2025.
- B. Alternate No. Two Administration Building Re-Roofing:

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- 1. Base Bid Item: Section 07 01 50.20 Roofing, Restoration, Patch, and Repair and Drawing number A1-3.0 Demo & Mod Roof Plans including partial roof repair for new penentrations.
- 2. Alternate Item: Section 07 01 50.19 Preparation for Re-Roofing and Drawing number A1-3.0 Demo & Mod Roof Plans including expanded scope of complete re-roofing.
- 3. Alternate Item: Section 06 10 00 Rough Carpentry and Drawing number S1-3.0 Roof Framing Plan including replace roof sheathing as required for re-roofing in combination with new framing.
- 4. Alternate Item: Section 07 21 00 Thermal Insulation and Drawing number A1-3.0 Demo & Mod Roof Plans including new R-30 batt insulation at underside of roof sheathing.
- 5. Alternate Item: Section 07550 Modified Bituminous Membrane Roofing and Drawing number A1-3.0 Demo & Mod Roof Plans including re-roof of the entire existing roof, applied to wood sheatihng. Including Drawing details by the Design Team based on manufacturer provided information and regulatory approvals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 07 01 50.19 **PREPARATION FOR RE-ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. ALTERNATE No. Two: Removal of existing roofing system in preparation for a new roof membrane system.
- B. Removal of existing flashing and counterflashings.
- C. Temporary roofing protection.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 Rough Carpentry: Deck surfacing.
- B. Section 07550 Modified Bituminous Membrane Roofing (section provided by vendor).
- C. Section _____ ____: Roof system.
- D. Section 07 62 00 Sheet Metal Flashing and Trim: Replacement of flashing and counterflashings.

1.03 PRICE AND PAYMENT PROCEDURES

- A. Repair Existing Roof Wood Decking:
 - 1. Basis of Measurement: By square foot.
 - 2. Basis of Payment: Includes replacing decking with new material of same thickness.

1.04 REFERENCE STANDARDS

- A. PS 1 Structural Plywood.
- B. PS 2 Performance Standard for Wood Structural Panels.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with affected mechanical and electrical work associated with roof penetrations.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Attendees:
 - a. Architect.
 - b. Contractor.
 - c. District.
 - d. Installer.
 - Roofing system manufacturer's field representative. e.
 - f. Inspection and Testing Agency Representatives.
 - Meeting Agenda: Provide agenda to participants prior to meeting in preparation for 2. discussions on the following:

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Preparation for Re-Roofing 07 01 50.19 - 1

- a. Removal and installation schedule.
- b. Necessary preparatory work.
- c. Protection before, during, and after roofing system installation.
- d. Removal of existing roofing system.
- e. Installation of new roofing system.
- f. Temporary roofing and daily terminations.
- g. Transitions and connection to and with other work.
- h. Inspections and testing of installed systems.
- 3. Attendance is mandatory at conference required in section specifying new roofing installation.
- 4. Establish at pre-bid job walk, number of layers to be removed and reconfirm at preinstallation conference.
- C. Schedule work to coincide with commencement of installation of new roofing system.

1.06 SUBMITTALS

- A. See Section 01 30 00 Administrative Requirements for submittal procedures.
- B. Product Data: Submit for each type of material.
- C. Shop Drawings: Indicate size, configuration, and installation details.
- D. Preconstruction Test Reports.
- E. Materials Removal Company Qualification Statement.
- F. Installer's Qualification Statement.
- G. Preconstruction Testing Agency Qualification Statement.
- H. Certification required for existing buildings to be re-roofed per Chapter 3 of Part 1 of Division 2 of the Public Contract Code Section 1 Section 3006(b):
 - 1. I, ______ (Name), ______ (Name of Employer), certify that I have not offered, given, or agreed to give, received, accepted, or agreed to accept, any gift, contribution, or any financial incentive whatsoever to or from any person in connection with the roof project contract. As used in this certification, "person" means any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals. Furthermore, I ______ (Name), ______ (Name of Employer), certify that I do not have, and throughout the duration of the contract, I will not have, any financial relationship in connection with the performance of this contract with any architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor that is not disclosed below.
 - 2. I _____ (Name), _____ (Name of Employer), have the following financial relationships with an architect, engineer, roofing consultant, materials manufacturer, distributor, or vendor, or other person in connection with the following roof project contract:

Name and Address of Building, Contract Date and Number

3. I certify that to the best of my knowledge, the contents of this disclosure are true, or are believed to be true.

(Signature) (E	Date)
(Print Name)	
(Print Name of Employer)	

4. Submit this certification to District, DSA, and Architect.

1.07 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning membrane roofing removal. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Materials Removal Company Qualifications: Company specializing in performing work of type specified with at least three years of documented experience.
 - 1. Comply with EPA notification regulations prior to start of roofing removal work.
 - 2. Comply with removal and disposal regulations of local authorities having jurisdiction (AHJ).
- C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.
 - 1. When same installer as new roofing system, comply with related requirements of section indicated for new roofing system.
- D. Preconstruction Testing: Conduct testing by an independent test agency, in accordance with provisions of Section 01 40 00 Quality Requirements.
 - 1. Provide required testing to locate hazardous materials, such as asbestos, by licensed agency as required for project location.
- E. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 74 19 Construction Waste Management and Disposal for packaging waste requirements.
- B. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.09 SCHEDULING

- A. Schedule work to coincide with commencement of installation of new roofing system.
- B. Remove only existing roofing materials that can be replaced with new materials as the weather will permit.

1.10 FIELD CONDITIONS

- A. Existing Roofing System: Coated foamed roofing.
- B. Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.

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- C. Maintain continuous temporary protection prior to and during installation of new roofing system.
- D. Provide notice at least three days before starting activities that will affect normal building operations.
- E. Verify that occupants have been evacuated from building areas when work on structurally impaired roof decking is scheduled to begin.
- F. District will occupy building areas directly below re-roofing area.
 - 1. Provide District with at least 48 hours written notice of roofing activities that may affect their operations and to allow them to prepare for upcoming activities as necessary.
 - 2. Do not disrupt District's operations or activities.
 - 3. Maintain access of District's personnel to corridors, existing walkways, and adjacent buildings.

1.11 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 COMPONENTS

- A. See the following sections for additional information on components relating to this work:
 - 1. Replacement and removal of existing roofing system in preparation for entire new roofing system, refer to Section 07550.
 - 2. Remove existing flashing and counterflashings in preparation for replacement of these materials as part of this work, see Section 07 62 00 for material requirements.

2.02 SYSTEM DESCRIPTION

A. Indicated Roof Areas: Remove existing roofing, perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, insulation, vapor retarder.

2.03 MATERIALS

- A. Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.
- B. Temporary Roofing Protection Materials:
 - 1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.
 - 2. Plastic Sheeting: Provide polyethylene sheets; use weights to retain sheeting in position.
 - 3. OSB Sheathing: Oriented strand board (OSB) wood structural panel; PS 2.
 - a. Grade: Sheathing.
 - b. Bond Classification: Exposure 1 OSB.
 - c. Edges: Square.
 - 4. Plywood Sheathing: PS 1, Grade C-C, Exterior.

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- C. Roofing Recover Materials:
 - 1. Contractor's responsibility to select appropriate materials for roofing re-cover as determined necessary for this work.

2.04 ACCESSORIES

- A. Fasteners: Type and size as required and compatible with existing and new roofing system to resist local wind uplift.
- B. Sheathing Paper: Red rosin paper type, at least 3 lb/100 sq ft.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing site conditions.
- B. Verify that existing roof surface has been cleared of materials being removed from existing roofing system and ready for next phase of work as required.
- C. Document existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by re-roofing operations.
 - 1. Submit before work begins.
 - 2. Use high-resolution digital photographs or video tape supplemented by written commentary for preparing reports.

3.02 PREPARATION

- A. Sweep roof surface clean of loose matter.
- B. Remove loose refuse and dispose of properly off-site.
 - 1. Free Fall Maximum: 8 feet, provide enclosed chutes for higher fall.
 - 2. Do not use District's disposal system.

3.03 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials as the weather will permit.
- B. Remove metal counter flashings.
- C. Remove roofing membrane, perimeter base flashings, flashings around roof protrusions, pitch pans and pockets and insulation vents.
- D. Cut and lay flat any membrane blisters.
- E. Remove damaged insulation and fasteners, cant strips, and blocking.
- F. Remove vapor retarder, sheathing paper, and underlay.
- G. Repair existing wood deck surface to provide smooth working surface for new roof system.
 - 1. Allocate 10 percent of the roof deck area to repair/replace with the base bid.

3.04 INSTALLATION

A. Coordinate scope of this work with requirements for installation of new roofing system, refer to Section 07550 for additional requirements.

3.05 FIELD QUALITY CONTROL

A. Independent agency inspection and testing will be provided under provisions of Section 01 40 00.

3.06 PROTECTION

- A. Provide temporary protective sheeting over uncovered deck surfaces.
- B. Turn sheeting up and over parapets and curbing. Retain sheeting in position with weights.
- C. Provide for surface drainage from sheeting to existing drainage facilities.
- D. Do not permit traffic over unprotected or repaired deck surface.
- E. Install recover board over exposed deck surface.

3.07 SCHEDULES

- A. Entire Roofing Area: Remove existing roofing gravel, perimeter flashings, base flashings, counter flashings, vent stack flashings, roofing membrane, insulation, and vapor retarder.
- B. Remove roof mounted mechanical equipment and electrical equipment.

END OF SECTION

SECTION 07550 MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. ALTERNATE No. Two Administration Building Re-Roofing,
- B. Cold Applied 2-Ply Asphalt Roofing
- C. Accessories.
- D. Edge Treatment and Roof Penetration Flashings.

1.2 SCOPE OF WORK

- 1. Remove existing roofing system down to decking and dispose of properly.
- 2. Inspect decking/nailers and replace all rotted or damaged areas with like kind.
- 3. Remove any abandoned equipment.
- 4. Nail Type II rosin paper over wood decking.
- 5. Install Stressbase 80 modified ply sheet over base sheet in Weatherking adhesive at 2.5 gallons per square.
- 6. Install Stressply Plus FR Mineral over base sheet in Weatherking adhesive at 2.5 gallons per square.
- 7. Once the system is sufficiently cured, install Pyramic LO at 2.0 gallons per square over entire roof.
- 8. Replace all roof jacks with new metal as indicated in specifications.
- 9. Install new rubber sleepers for all conduit.

1.3 REFERENCES

- A. ASTM E 108 Standard Test Methods for Fire Test of Roof Coverings
- B. Factory Mutual Research (FM): Roof Assembly Classifications.
- C. National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.
- D. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) Architectural Sheet Metal Manual.
- E. Underwriters Laboratories, Inc. (UL): Fire Hazard Classifications.
- F. Warnock Hersey (WH): Fire Hazard Classifications.
- G. ANSI-SPRI ES-1 Wind Design Standard for Edge Systems used with Low Slope Roofing Systems.

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- H. ASCE 7, Minimum Design Loads for Buildings and Other Structures
- I. UL Fire Resistance Directory.
- J. FM Approvals Roof Coverings and/or RoofNav assembly database.
- K. CBC California Building Code.
- L. California Title 24 Energy Efficient Standards.
- 1.4 DESIGN / PERFORMANCE REQUIREMENTS
 - A. Perform work in accordance with all federal, state and local codes.
 - B. Exterior Fire Test Exposure: Roof system shall achieve a WH Class rating for roof slopes indicated on the Drawings as follows:
 - 1. Warnock Hersey Class A Rating.
 - C. Design Requirements:
 - 1. Uniform Wind Uplift Load Capacity
 - a. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria.
 - 1) Design Code: ASCE 7, Method 2 for Components and Cladding.
 - 2. Wind loads are listed on Structural Drawing sheet S0-1.1 under Project Design Criteria.
 - D. Energy Star: Roof System shall comply with the initial and aged reflectivity required by the U.S. Federal Government's Energy Star program.
 - Roof system shall meet the reflectivity and emissivity criteria –according to Part 11, Title 24 CCR - 2022 California Green Building Standards Code (CalGreen) and Part 6, Title 24 CCR - 2022 California Energy Code.
 - F. Roof System membranes containing recycled or bio-based materials shall be third party certified through UL Environment.
 - G. Roof system shall have been tested in compliance with the following codes and test requirements:
 - 1. Cool Roof Rating Council:
 - a. CRRC Directory CRRC
 - 2. International Code Council Evaluation Service (ICC-ES):
 - a. Membrane Systems
 - 1) ESR-3460

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation instructions.
- B. Design Pressure Calculations: Submit design pressure calculations for the roof area in accordance with ASCE 7 and local Building Code requirements. Include a roof system attachment analysis report, certifying the system's compliance with applicable wind load requirements before Work begins. Report shall be by a Professional Engineer who has

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provided roof system attachment analysis for not less than 5 consecutive years.

- C. Manufacturer's Certificates: Provide to certify products meet or exceed specified requirements.
- D. Manufactures Inspections: Provide letter from corporate officer of manufacture stating intent to provide inspections (3) per week, during project as outlined in section 3.8 "Field Quality Control".
- E. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147. Testing must be performed at 77 deg. F. Tests at 0 deg. F will not be considered.
- F. Manufacturer's Fire Compliance Certificate: Certify that the roof system furnished is approved by Warnock Hersey (WH) or approved third party testing facility in accordance with ASTM E108, Class A for external fire and meets local or nationally recognized building codes.
- G. Manufacturer's Certificates: Provide letter from manufacturer stating contractor is approved to install manufactures system and receive warranty.
- H. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic inspection and maintenance of all completed roofing work. Provide product warranty executed by the manufacturer. Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.6 QUALITY ASSURANCE

- A. Contractor to review all roofing detail conditions prior to bid. Submittal of bid per contract documents shall be guaranteed that roofing will be installed and warranted as listed by the Alternate and approved by DSA. Any detail revisions initiated by the regulatory agency (DSA), Design Team, roofing contractor, or manufacturer will be implemented at Contractor's cost.
 - 1. Include compensation allowances for revisions by the Design team.
 - 2. Compensation for the revisions by the Design Team to DSA for approval are considered the same as substitutions. See Section 01 60 00 Product Requirements, Article 2.01 Paragraph A.4.
- B. Perform Work in accordance with NRCA Roofing and Waterproofing Manual.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified with documented ISO 9001 certification and minimum of twelve years of documented experience and must not have been in Chapter 11 bankruptcy during the last five years.
- D. Installer Qualifications: Company specializing in performing Work of this section with minimum five years documented experience and a certified Pre-Approved Garland Contractor.
- E. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress.
- F. Product Certification: Provide manufacturer's certification that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof

system specified herein.

G. Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer. Upon request of the Architect or Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.7 PRE-INSTALLATION MEETINGS

- A. Convene minimum two weeks prior to commencing Work of this section.
- B. Review installation procedures and coordination required with related Work.
- C. Inspect and make notes of job conditions prior to installation:
 - 1. Record minutes of the conference and provide copies to all parties present.
 - 2. Identify all outstanding issues in writing designating the responsible party for follow-up action and the timetable for completion.
 - 3. Installation of roofing system shall not begin until all outstanding issues are resolved to the satisfaction of the Architect.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store all roofing materials in a dry place, on pallets or raised platforms, out of direct exposure to the elements until time of application. Store materials at least 4 inches above ground level and covered with "breathable" tarpaulins.
- C. Stored in accordance with the instructions of the manufacturer prior to their application or installation. Store roll goods on end on a clean flat surface except store KEE-Stone FB 60 rolls flat on a clean flat surface. No wet or damaged materials will be used in the application.
- D. Store at room temperature wherever possible, until immediately prior to installing the roll. During winter, store materials in a heated location with a 50 degree F (10 degree C) minimum temperature, removed only as needed for immediate use. Keep materials away from open flame or welding sparks.
- E. Avoid stockpiling of materials on roofs without first obtaining acceptance from the Architect/Engineer.
- F. Adhesive storage shall be between the range of above 50 degree F (10 degree C) and below 80 degree F (27 degree C). Area of storage shall be constructed for flammable storage.

1.9 COORDINATION

A. Coordinate Work with installing associated metal flashings as work of this section proceeds.

1.10 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

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1.11 WARRANTY

- Α. Upon completion of the work, provide the Manufacturer's written and signed NDL Warranty, warranting that, if a leak develops in the roof during the term of this warranty, due either to defective material or defective workmanship by the installing contractor, the manufacturer shall provide the Owner, at the Manufacturer's expense, with the labor and material necessary to return the defective area to a watertight condition.
 - 1. Warranty Period:
 - 30 years from date of acceptance. a.
- Installer is to guarantee all work against defects in materials and workmanship for a period Β. indicated following final acceptance of the Work. 1.
 - Warranty Period:
 - a. 5 years from date of acceptance.

PART 2 PRODUCTS

- MANUFACTURERS 2.1
 - Α. Acceptable Manufacturer: Garland Company, Inc. (The); 3800 E. 91st St., Cleveland, OH 44105. ASD. Toll Free: 800-321-9336. Phone: 216-641-7500. Fax: 216-641-0633. Web Site: www.garlandco.com or equal.
- 2.2 COLD APPLIED 2-PLY ROOF SYSTEM
 - Base (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: Α. StressBase 80 Plus: 1.
 - Modified Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: Β. StressPly Plus FR Mineral: 1.
 - C. Interply Adhesive: (1 and 2) Weatherking Plus WC: 1.
 - Flashing Base Ply: One ply bonded to the prepared substrate with Interply Adhesive: D. StressBase 80 Plus: 1.
 - E. Flashing Cap (Ply) Sheet: One ply bonded to the prepared substrate with Interply Adhesive: StressPly Plus FR Mineral: 1.
 - F. Flashing Ply Adhesive:
 - 1. Weatherking Flashing Adhesive:
 - G. Surfacing: Requires 30 day wait before applying.
 - Surface Coatings:
 - a. Pyramic LO:
- ACCESSORIES: 2.3

1.

- Roof Insulation: See Section 07 21 00 Thermal Insulation, for batt insulation installed under Α. the roof sheathing between the framing.
- 2.4 EDGE TREATMENT AND ROOF PENETRATION FLASHINGS
 - Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture Α. and air to escape but not enter the roof system as recommended and furnished by the

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membrane manufacturer.

- B. Liquid Flashing Tuff-Flash: An asphaltic-polyurethane, low odor, liquid flashing material designed for specialized details unable to be waterproofed with typical modified membrane flashings.
 - 1. Tensile Strength, ASTM D 412: 400 psi
 - 2. Elongation, ASTM D 412: 300%
 - 3. Density @77 deg. F 8.5 lb/gal typical
- C. Fabricated Flashings:
 - 1. Fabricated flashings and trim shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- D. Manufactured Roof Specialties:
 - 1. Manufactured roof specialties shall conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing Manual" as applicable.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Inspect and approve the deck condition, slopes and fastener backing if applicable, parapet walls, expansion joints, roof drains, stack vents, vent outlets, nailers and surfaces and elements.
- C. Verify that work penetrating the roof deck, or which may otherwise affect the roofing, has been properly completed.
- D. If substrate preparation and other conditions are the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. General: Clean surfaces thoroughly prior to installation.
 - 1. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
 - 2. Fill substrate surface voids that are greater than 1/4 inch wide with an acceptable fill material.
 - 3. Roof surface to receive roofing system shall be smooth, clean, free from loose gravel, dirt and debris, dry and structurally sound.
 - 4. Wherever necessary, all surfaces to receive roofing materials shall be power broom and vacuumed to remove debris and loose matter prior to starting work.
 - 5. Do not apply roofing during inclement weather. Do not apply roofing membrane to damp, frozen, dirty, or dusty surfaces.
 - 6. Fasteners and plates for fastening components mechanically to the substrate shall provide a minimum pull-out capacity of 300 lbs. (136 k) per fastener. Base or ply sheets attached with cap nails require a minimum pullout capacity of 40 lb. per nail.
 - 7. Prime decks where required, in accordance with requirements and recommendations of the primer and deck manufacturer.
- B. Wood Deck:

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- 1. Dimensional wood deck shall be minimum 1 inch (25 mm) thick, knotholes and cracks larger than 1/4 inch shall be covered with sheet metal. All boards shall be appropriately nailed and have adequate end bearing to the centers of beams/rafters. Lumber shall be kiln dried.
- 2. Plywood shall be a minimum 15/32 inch (11.9 mm) thick and conform to the standards and installation requirements of the American Plywood Association (APA).
- 3. If no roof insulation is specified, provide a suitable dry sheathing paper, followed by an approved base sheet nailed appropriately for the specified roof system, with 1 inch (25 mm) diameter caps and annular nails unless otherwise required by the applicable Code or Approval agency.
- 4. Insulation is to be mechanically attached in accordance with the insulation manufacturer's recommendations unless otherwise required by the applicable Code.
- 5. In all retrofit roof applications, it is required that deck be inspected for defects. Any defects are to be corrected per the deck manufacturer's recommendations and standards of the APA/Engineered Wood Association prior to new roof application.
- 6. Light metal wall ties or other structural metal exposed on top of the wood deck shall be covered with one ply of a heavy roofing sheet, such as HPR Glasbase Base Sheet, extending 2 inches to 6 inches (51 mm to 152 mm) beyond the metal in all directions. Nail in place before applying the base ply.

3.3 INSTALLATION - GENERAL

- A. Install modified bitumen membranes and flashings in accordance with manufacturer's instructions and with the recommendations provided by the National Roofing Contractors Association's Roofing & Waterproofing Manual, the Asphalt Roofing Manufacturers Association, and applicable codes.
- B. General: Avoid installation of modified bitumen membranes at temperatures lower than 40-45 degrees F. When work at such temperatures unavoidable use the following precautions:
 - 1. Take extra care during cold weather installation and when ambient temperatures are affected by wind or humidity, to ensure adequate bonding is achieved between the surfaces to be joined. Use extra care at material seam welds and where adhesion of the applied product to the appropriately prepared substrate as the substrate can be affected by such temperature constraints as well.
 - 2. Unrolling of cold materials, under low ambient conditions must be avoided to prevent the likelihood of unnecessary stress cracking. Rolls must be at least 40 degrees F at the time of application. If the membrane roll becomes stiff or difficult to install, it must be replaced with roll from a heated storage area.
- C. Commence installation of the roofing system at the lowest point of the roof (or roof area), working up the slope toward the highest point. Lap sheets shingle fashion so as to constantly shed water
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank 1 inch cap nails, or screws and plates at a rate of 1 fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and 4 feet o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install 4 additional fasteners at the upper edge of the membrane when strapping the plies.

3.4 INSTALLATION COLD APPLIED ROOF SYSTEM

A. Base Ply: Cut base ply sheets into 18 foot lengths and allow plies to relax before installing.

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Install base sheet in Interply Adhesive: applied at the rate required by the manufacturer. Shingle base sheets uniformly to achieve one ply throughout over the prepared substrate. Shingle in proper direction to shed water on each large area of roofing.

- 1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
- 2. Solidly bond to the substrate and adjacent ply with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
- 3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Use care to eliminate air entrapment under the membrane.
- 4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
- 5. Extend plies 2 inches beyond top edges of cants at wall and projection bases.
- 6. Install base flashing ply to all perimeter and projection details.
- 7. Allow the one ply of base sheet to cure at least 30 minutes before installing the modified membrane. However, the modified membrane must be installed the same day as the base plies.
- B. Modified Cap Ply(s): Cut cap ply sheets into 18 foot lengths and allow plies to relax before installing. Install in interplay adhesive applied at the rate required by the manufacturer. Shingle sheets uniformly over the prepared substrate to achieve the number of plys specified. Shingle in proper direction to shed water on each large area of roofing.
 - 1. Lap ply sheet ends 8 inches. Stagger end laps 12 inches minimum.
 - 2. Solidly bond to the base layers with specified cold adhesive at the rate of 2 to 2-1/2 gallons per 100 square feet.
 - 3. Roll must push a puddle of adhesive in front of it with adhesive slightly visible at all side laps. Care should be taken to eliminate air entrapment under the membrane.
 - 4. Install subsequent rolls of modified across the roof as above with a minimum of 4 inch side laps and 8 inch staggered end laps. Lay modified membrane in the same direction as the underlayers but the laps shall not coincide with the laps of the base layers.
 - 5. Allow cold adhesive to set for 5 to 10 minutes before installing the top layer of modified membrane.
 - 6. Extend membrane 2 inches beyond top edge of all cants in full moppings of the cold adhesive as shown on the Drawings.
- C. Fibrous Cant Strips: Provide non-combustible perlite or glass fiber cant strips at all wall/curb detail treatments where angle changes are greater than 45 degrees. Cant may be set in approved cold adhesives, hot asphalt or mechanically attached with approved plates and fasteners.
- D. Wood Blocking, Nailers and Cant Strips:
 - 1. Provide nailers at all roof perimeters and penetrations for fastening membrane flashings and sheet metal components.
 - 2. Wood nailers should match the height of any insulation, providing a smooth and even transition between flashing and insulation areas.
 - 3. Nailer lengths should be spaced with a minimum 1/8 inch gap for expansion and contraction between each length or change of direction.
 - 4. Nailers and flashings should be fastened in accordance with Factory Mutual "Loss Prevention Data Sheet 1- 49, Perimeter Flashing" and be designed to be capable of resisting a minimum force of 200 lbs/lineal foot in any direction.
- E. Metal Work: Provide metal flashings, counter flashings, parapet coping caps and thru-wall flashings as specified. Install in accordance with the SMACNA "Architectural Sheet Metal

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Manual" or the NRCA Roofing Waterproofing manual.

- F. Termination Bar: Provide a metal termination bar or approved top edge securement at the terminus of all flashing sheets at walls and curbs. Fasten the bar a minimum of 8 inches (203 mm) o/c to achieve constant compression. Provide suitable, sealant at the top edge if required.
- G. Flashing Base Ply: Install flashing sheets by the same application method used for the base ply.
 - 1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
 - 2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
 - 3. Adhere to the underlying base ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
 - 4. Solidly adhere the entire flashing ply to the substrate. Secure the tops of all flashings that are not run up and over curb through termination bar fastened at 6 inches (152 mm) O.C. and sealed at top.
 - 5. Seal all vertical laps of flashing ply with a three-course application of trowel-grade mastic and fiberglass mesh.
 - 6. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
 - 7. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work.
 - 8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.
- H. Flashing Cap Ply:
 - 1. Seal curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
 - 2. Prepare all walls, penetrations, expansion joints and where shown on the Drawings to be flashed with required primer at the rate of 100 square feet per gallon. Allow primer to dry tack free.
 - 3. Adhere to the underlying base flashing ply with specified flashing ply adhesive unless otherwise specified. Nail off at a minimum of 8 inches (203 mm) o.c. from the finished roof at all vertical surfaces.
 - 4. Coordinate counter flashing, cap flashings, expansion joints and similar work with modified bitumen roofing work as specified.
 - 5. Coordinate roof accessories, miscellaneous sheet metal accessory items with the roofing system work.
 - 6. All stripping shall be installed prior to flashing cap sheet installation.
 - 7. Heat and scrape granules when welding or adhering at cut areas and seams to granular surfaces at all flashings.
 - 8. Secure the top edge of the flashing sheet using a termination bar only when the wall surface above is waterproofed, or nailed 4 inches on center and covered with an acceptable counter flashing.
- I. Surface Coatings: Apply roof coatings in strict conformance with the manufacturer's recommended procedures.

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- J. Roof Walkways: Provide walkways in areas indicated on the Drawings.
 - If not indicated on Drawings; provide for 36 inch wide walking paths from the nearest point of normal roof access to all roof mounted HVAC and electrical equipment. Walking path shall include all four sides of HVAC equipment and front access of electrical switches or panels.

3.5 INSTALLATION EDGE TREATMENT AND ROOF PENETRATION FLASHING

- A. Surface Mounted Counterflashing:
 - 1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches (609 mm). Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
 - 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 - 3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to field of the roof.
 - 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 - 5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall. Alternatively use caulk to replace the butyl tape.
 - 6. Secure counterflashing set on butyl tape above flashing at 8 inches (203 mm) o.c. and caulk top of counterflashing.
- B. Reglet Mounted Counterflashing:
 - 1. Minimum flashing height is 8 inches (203 mm) above finished roof height. Maximum flashing height is 24 inches. Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
 - 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 - 3. Install base flashing ply covering wall set in bitumen with 6 inches (152 mm) on to field of the roof.
 - 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 - 5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall. Alternatively use caulk to replace the butyl tape.
 - 6. Cut reglet in masonry one joint above flashing.
 - 7. Secure reglet counterflashing with expansion fasteners and caulk reglet opening.
- C. Curb Detail/Air Handling Station:
 - 1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical at a rate of 100 square feet per gallon and allow to dry.
 - 2. Set cant in bitumen. Run all field plies over cant a minimum of 2 inches (50 mm).
 - 3. Install base flashing ply covering curb set in bitumen with 6 inches (152 mm) on to field of the roof.
 - 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, 9 inches (228 mm) on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 - 5. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
 - 6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- D. Exhaust Fan:
 - 1. Minimum curb height is 8 inches (203 mm) above finished roof height. Prime vertical at a rate of 100 square feet per gallon and allow to dry.

- 2. Set cant in bitumen. Run all plies over cant a minimum of 2 inches (50 mm).
- 3. Install base flashing ply covering curb with 6 inches (152 mm) on to field of the roof.
- 4. Install a second ply of modified flashing ply installed over the base flashing ply, 9 inches (228 mm) on to field of the roof. Attach top of membrane to top of wood curb and nail at 8 inches (203 mm) o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
- 5. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.
- E. Plumbing Stack:
 - 1. Minimum stack height is 12 inches (609 mm).
 - 2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
 - 3. Prime flange of new sleeve. Install properly sized sleeves set in 1/4 inch (6 mm) bed of roof cement.
 - 4. Install base flashing ply in bitumen.
 - 5. Install membrane in bitumen.
 - 6. Caulk the intersection of the membrane with elastomeric sealant.
 - 7. Turn sleeve a minimum of 1 inch (25 mm) down inside of stack.

3.6 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles and other debris resulting from these operations.
- B. Remove asphalt markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.

3.7 PROTECTION

- A. Provide traffic ways, erect barriers, fences, guards, rails, enclosures, chutes and the like to protect personnel, roofs and structures, vehicles and utilities.
- B. Protect exposed surfaces of finished walls with tarps to prevent damage.
- C. Plywood for traffic ways required for material movement over existing roofs shall be not less than 5/8 inch (16 mm) thick.
- D. In addition to the plywood listed above, an underlayment of minimum 1/2 inch (13 mm) recover board is required on new roofing.
- E. Special permission shall be obtained from the Manufacturer before any traffic shall be permitted over new roofing.

3.8 FIELD QUALITY CONTROL

- A. Inspection: Provide manufacturer's field observations at intervals of at least (3) days per week.
 - 1. Warranty shall be issued upon manufacturer's acceptance of the installation.
 - 2. Field observations shall be performed by a Sales Representative employed full-time by the manufacturer and whose primary job description is to assist, inspect and approve membrane installations for the manufacturer.
 - 3. Provide observation reports from the Sales Representative indicating procedures followed, weather conditions and any discrepancies found during inspection.

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4. Provide a final report from the Sales Representative, certifying that the roofing system has been satisfactorily installed according to the project specifications, approved details and good general roofing practice.

3.9 SCHEDULES

- A. Base (Ply) Sheet:
 - 1. StressBase 80 Plus: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in
 - 2) 50mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50mm/min@ -17.78 +/- 2 deg. C MD 4 % XD 4 %
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -40 deg. F (-40 deg. C)
- B. Modified Cap (Ply) Sheet:
 - 1. StressPly Plus FR Mineral: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified roofing membrane reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade G
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 325 lbf/in XD 325 lbf/in
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
 - b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
 - c. Elongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 8% XD 8%
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
 - d. Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)
- C. Interply Adhesive:
 - 1. Weatherking Plus WC: Rubberized, polymer modified cold process asphalt roofing bitumen V.O.C. compliant ASTM D 3019. Performance Requirements:
 - a. Non-Volatile Content ASTM D 4479 78%
 - b. Density ASTM D1475 9.0 lbs./gal.
 - c. Viscosity Stormer ASTM D562 900-1100 grams
 - d. Flash Point ASTM D 93 100 deg. F min. (37 deg. C)
 - e. Slope: up to 2:12
 - f. V.O.C. ASTM D 3960 Less than 250 g/l
 - g. Flash Point ASTM D 93 105 deg. F
 - h. Slope maximum 1:12
- D. Flashing Base Ply:
 - 1. Stress Base 80 Plus: 80 mil SBS (Styrene-Butadiene-Styrene) rubber modified roofing base sheet reinforced with a fiberglass scrim, performance requirements according to ASTM D 5147.
 - a. Tensile Strength, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 100 lbf/in XD 100 lbf/in

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- 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 17.5 kN/m XD 17.5 kN/m
- b. Tear Strength, ASTM D 5147
 - 1) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 110 lbf XD 100 lbf
 - 2) 50 mm/min. @ 23 +/- 2 deg. C MD 489 N XD 444 N
- c. Élongation at Maximum Tensile, ASTM D 5147
 - 1) 2 in/min. @ 0 +/- 3.6 deg. F MD 4 % XD 4 %
 - 2) 50 mm/min. @ -17.78 +/- 2 deg. C MD 4 % XD 4 %
- d. Low Temperature Flexibility, ASTM D 5147
 - 1) Passes -40 deg. F (-40 deg. C)
- E. Flashing Ply Adhesive:
 - 1. Weatherking Flashing Adhesive: Brush grade flashing adhesive.
 - a. Non-Volatile Content ASTM D 4479 70 min.
 - b. Density ASTM D 1475 8.6 lbs./gal. (1kg/l)
 - c. Flash Point ASTM D 93 100 deg. F (37 deg. C)
- F. Surfacing:
 - 1. Flashing Cap (Ply) Sheet:
 - a. StressPly Plus FR Mineral: 155 mil SBS (Styrene-Butadiene-Styrene) mineral surfaced, rubber modified roofing membrane reinforced with a fiberglass and polyester composite scrim. ASTM D 6162, Type III Grade G
 - 1) Tensile Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 310 lbf/in XD 310 lbf/in
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 54.25 kN/m XD 54.25 kN/m
 - 2) Tear Strength, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 500 lbf XD 500 lbf
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 2224 N XD 2224 N
 - 3) Elongation at Maximum Tensile, ASTM D 5147
 - a) 2 in/min. @ 73.4 +/- 3.6 deg. F MD 8% XD 8%
 - b) 50 mm/min. @ 23 +/- 2 deg. C MD 8% XD 8%
 - 4) Low Temperature Flexibility, ASTM D 5147, Passes -30 deg. F (-34 deg. C)
 - 2. Surface Coatings:
 - a. Surfacing:
 - 1) Pyramic LO: White elastomeric roof coating, Energy Star approved acrylic roof coating:
 - a) Weight/Gallon 12 lbs./gal. (1.44 g/cm3)
 - b) Non-Volatile % (ASTM D 1644) 66 min
 - c) Reflectance 81%

END OF SECTION