



Colorado Mountain College

**ROOF REPAIR
Invitation to Bid
Number #395-08
Due: March 31, 2008
At close of business**

Deliver to:
Colorado Mountain College
Attn: Sam Skramstad, Purchasing Manager
831 Grand Avenue
Glenwood Spgs CO 81601

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TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
I	INTRODUCTION	2
II	BID SPECIFICATIONS	2-3
III	TERMS AND CONDITIONS	3-5
IV	SIGNATURE PAGE	6
V	MATERIAL SPECIFICATIONS	7-27

**COLORADO MOUNTAIN COLLEGE
INVITATION TO BID
ISSUED MARCH 5, 2008**

I. INTRODUCTION

Colorado Mountain College (CMC) is a two-year public college established in 1967, and includes three residential campuses and four commuter campuses. The Colorado Mountain College District covers all or part of six counties in north central Colorado, encompassing 12,000 square miles.

Colorado Mountain College (CMC) is requesting bids from qualified firms and/or individuals to provide replacement roofing for a schedule of roofs at various campuses of Colorado Mountain College

BID SPECIFICATIONS

Alpine Campus, Steamboat Springs, Co. **Willits Hall**. 10,000 Sq Ft Built Up Hot Modified replacement. **Hill Hall**, 20,000 Sq Ft shingled roof modification and replacement. Modification design available at site review. Square footages are approximate.

Timberline Campus, Leadville, Co. **Mountain View Hall**, shingled roof replacement approximately 12,000 sq ft. No modification required.

Spring Valley Campus, Glenwood Springs Co. **Sopris Hall**, approximately 20,000 sq ft shingle roof replacement. No modification required.

A. Desire all work to be completed by July 1, 2008. Hill Hall and Sopris Hall would be preferred to have construction finished prior to June 1, 2008. Pending insurance claim dictates Spring Valley Campus be completed by end of May.

B. All Bidders are responsible for their measurements.

C. The successful bidders are responsible for all permits and fees.

D. All contractors will provide all warranty information to the facilities department.

E. Colors of shingles shall match existing roofs.

F. Roof blue prints will be provided at the Pre-bid meetings.

Detailed Specifications are attached for both roof designs.

A mandatory pre-bid meeting is scheduled at each location as follows:

Alpine Campus, Steamboat Springs, Co. March 14, 2008. 9AM Physical Plant Building. Contact Steve Hoots 970-870-4442.

Timberline Campus, Leadville, Co. March 14, 2008, 12 PM, contact Alan Cohn. 719-486-4220.

Spring Valley Campus, Glenwood Springs, Co. March 14, 3PM, contact Joe Gugleman 970-945-7481.

Only those bidders attending the Mandatory Pre-bid meetings will have their bid considered. This is not an all or nothing Bid. Several contracts may be awarded.

II. TERMS & CONDITIONS

1. Submittal Instructions: All bids must be delivered to:

Colorado Mountain College
Attn: Sam Skramstad, Purchasing Manager
831 Grand Avenue
Glenwood Spgs CO 81602
Fax: (970)947-8324

on or before the close of business, March 31, 2008. Bids should be submitted in a sealed envelope. Confidentiality of bids submitted by fax cannot be guaranteed. Electronic bids may be submitted to sskramstad@coloradomtn.edu

2. Copies: Original bids must be submitted.
3. Withdraw Proposal: You may withdraw your bid at any time prior to the date and time set for closing.
4. Discussions/Negotiations: CMC reserves the right to conduct discussions with bidders, and to accept revisions of bidders prior to the closing date and time, and to negotiate price changes at the sole discretion of the Purchasing Manager. During this discussion period, CMC will not disclose any information regarding bid submittals. Upon the execution of a contract, the bids will become public record and contents will be disclosed upon request.
5. Award: The award shall be made to the responsible bidder whose bid is determined to be the most advantageous to CMC based on the evaluation factors described in the Invitation to Bid. Price, although a consideration, may not be the sole determining factor.
6. Proprietary Information: If you are submitting any information you consider to be proprietary, you must clearly mark it "Proprietary Information." If the Purchasing Manager concurs, this information will not be considered public information. Pricing information cannot be considered proprietary.
7. Minority/Women-Owned Businesses: No provision is made for minority nor women-owned businesses. It is, however, the policy of the CMC Purchasing Department to make a special effort to solicit and encourage minority and/or women-owned business participation for purchases or contracts.
8. Protests: Any actual or prospective bidder, offeror, contractor, or citizen who is aggrieved in connection with the solicitation or award of a contract may protest in writing to the Purchasing Manager. A protest shall be submitted within three (3) working days after the aggrieved person knows or reasonably should have known of the facts giving rise to the protest. Protest procedure time limit may be extended upon mutual agreement of the Purchasing Manager and the aggrieved party.

Protestors may file a protest on any phase of solicitation, bid, proposal, or award, including but not limited to procedure, specification, or award.

The written protest shall include, as a minimum, the following: the name and address of the protestor, appropriate identification of the procurements, a statement of the reasons for the protest and any available exhibits, evidence, or documents substantiating the protest.

The Purchasing Manager shall provide a written determination to the protestor within three (3) working days after receiving all relevant requested information. In the event that such written response from the Purchasing Manager sustains the prior position of the College, the protestor may resubmit the protest to the Vice President of Administrative Services within three (3) working days after receipt of the written ruling by the Purchasing Manager. Both response and appeal procedure time limits may be extended upon mutual agreement.

9. Contract: The successful bidder is expected to enter into a standard contract with Colorado Mountain College.
10. Signature Block: All bids must be signed by an authorized agent of your firm. Any firm or individual submitting a signed bid shall be deemed to have read and understood all the terms, conditions, and requirements of this Invitation to Bid.
11. Indemnification: The successful bidder shall indemnify and save CMC harmless from any and all claims, demands, suits, and actions which may arise from errors or omissions caused by the bidder in conjunction with its contractual obligations including, but not limited to, obligations for the preparation of any and all documents required by CMC in conjunction therewith, and shall defend all suits, in the name of CMC when applicable, and shall pay all costs and judgments which may issue thereon.
12. Insurance: The successful bidder shall furnish the CMC Purchasing Department with a Certificate of Insurance which indicates that insurance coverage has been obtained, including professional liability, which meets the minimum requirements as are required by Colorado law for work performed by the bidder. "Colorado Mountain College" shall be named as an additional insured. The bidder shall be responsible for notifying the CMC Purchasing Department of any modification to, or cancellation of, these policies during the contractual period; including, but not limited to, any pending or paid claims against the aggregate amount of the policy.
13. Refusal: CMC reserves the right to refuse any and/or all bids, or any part thereof.
14. Illegal Aliens. By submitting a bid, the bidder certifies pursuant to C.R.S. § 8-17.5-102(1) that, at the time of bid submission, it does not knowingly employ or contract with an illegal alien and that the contractor has participated or attempted to participate in the Basic Pilot Program that is

administered by the United States Department of Homeland Security in order to verify that it does not employ any illegal aliens.

15. Limitation of Multiple-Fiscal Year Obligations. All financial obligations of Colorado Mountain College(CMC) under this contract subsequent to the fiscal year in which signed is contingent upon funds for this purpose being appropriated, budgeted, and otherwise made available by the CMC Board of Trustees. This contract shall not be deemed to create any multiple-fiscal year direct or indirect debt or other financial obligation whatsoever for purposes of Section 20(4)(b) of the State Constitution(Amendment 1).

III. SIGNATURE BLOCK

Note: Please return this page with each copy of your bid.

The undersigned, an authorized agent of his/her company, hereby certifies:

- () the receipt of _____ amendments,
- () familiarization with all terms, conditions, and specifications herein stated,
- () vendor is qualified to perform work and services as bid,
- () that the bid is valid until _____ (date).

Company Name

Authorized Signature

Mailing Address

Printed Name

City, State, Zip Code

Title

Federal Employer ID Number

Phone Number

Is Company a Corporation?

Fax Number

Web Site, if available

Email Address, if available

SECTION 07311
ASPHALT SHINGLES
Colorado Mountain College
831 Grand Avenue
Glenwood Springs Co, 81601

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Granular surfaced glass fiber mat reinforced shingle roofing.
- B. Moisture shedding underlayment, eave, valley and ridge protection.
- C. Associated metal flashings.
- D. Ridge and soffit vents.

1.02 REFERENCES

- A. ASTM B209 - Aluminum-Alloy Sheet and Plate
- B. ASTM D226 - Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
- C. ASTM D228 - Method of Testing Asphalt Roll Roofing, Cap Sheets and Shingles.
- D. ASTM D4586 - Asphalt Roof Cement, Asbestos Free.
- E. ASTM D3161 - Wind Resistance of Asphalt Shingles
- F. ASTM D3018 - Class A Asphalt Shingles Surfaced with Mineral Granules.
- G. ASTM A361 - Sheet Steel, Zinc Coated (Galvanized) by the Hot-Dip Process for Roofing and Siding.
- H. ASTM B370 - Copper Sheet and Strip for Building Construction.
- I. NRCA - Steep Roofing Manual.
- J. ARMA - Residential Asphalt Roofing Manual.
- K. UL 790 - Tests for Fire Resistance of Roof Covering Materials.
- L. UL 997 - Wind Resistance of Prepared Roof Covering Materials.

1.03 SUBMITTALS

- A. Submit under provisions of application section.
- B. Product Data: Provide data indicating material characteristics, performance criteria, and limitations.
- C. Manufacturer's Installation Instructions: Indicate preparation required and installation procedures.

1.7 PRE-INSTALLATION CONFERENCE

- A. Pre-Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing which must precede or follow roofing work (including mechanical work if any), Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities.
- C. Objectives of conference to include:

1. Review foreseeable methods and procedures related to roofing work.
2. Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
4. Review roofing system requirements (drawings, specifications and other contract documents).
5. Review required submittals both completed and yet to be completed.
6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
7. Review required inspection, testing, certifying and material usage accounting procedures.
8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
10. Review notification procedures for weather or non-working days.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure. Store rolls of felt and other sheet materials on pallets or other raised surface. Stand all roll materials on end. Cover all roll goods with a canvas tarpaulin or other breathable material (not polyethylene).
- C. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.
- D. It is the responsibility of the contractor to secure all material and equipment on the job site. If any material or equipment is stored on the roof, the contractor must make sure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the contractor will be the sole responsibility of the contractor and will be repaired or replaced at his expense.

1.9 MANUFACTURER'S INSPECTIONS

- A. When the project is in progress, the roofing system manufacturer will provide the following:
 1. Keep the Architect informed as to the progress and quality of the work as observed.
 2. Provide job site inspections a minimum of three (3) days a week.
 3. Report to the Architect in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
 4. Confirm after completion that manufacturer has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.10 PROJECT CONDITIONS

- A. Weather Condition Limitations: Do not apply roofing membrane during inclement weather or when a forty (40) percent chance of precipitation is expected.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- D. All slopes of greater than 1-1/2:12 require back-nailing to prevent slippage of the base ply sheets. Use ring or spiral shank one (1) inch cap nails at a rate of one (1) fastener per baseply modified membrane. Install four (4) additional fasteners at the upper edge of the modified bitumen sheet when strapping the plies.

1.11 SEQUENCING AND SCHEDULING

- A. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies including roof accessories, flashing, trim and joint sealers are protected against damage from effects of weather, corrosion and adjacent construction activity.
- B. Fully complete all modified bituminous membrane roofing field assembly work each day. Phased construction will not be accepted.

1.12 WARRANTY

- A. Upon completion of installation, the manufacturer will supply to the Owner with a 30 warranty for both Shingle and underlayment.
- B. Installer will submit a minimum of a [two (2)] year warranty to the membrane manufacturer with a copy directly to Owner.
- C. Membrane manufacturer will provide an annual inspection for the life of the warranty .

1.13 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Any material submitted as an equal to the specified material must include a list of three (3) projects where the proposed material has been used in a similar roofing system as that which is specified and is located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least three (3) years old and be available for inspection by the Architect, Owner or Owner's Representative.
- B. Any deficiencies in performance, warranty terms or improper submittal procedure will constitute grounds for immediate rejection of substitution.

PART 2 – PRODUCTS

- A. When a particular trade name or performance standard is specified it shall be indicative of a standard required.
- B. Provide products as manufactured by The Garland Company. Submit substitutions under provisions of Section [01600].
- C. Any item or materials submitted as a substitution to the manufacturer specified must comply in all respects as to the quality and performance of the brand name specified. The Architect/Owner shall be the sole judge as to whether or not an item submitted as a substitute

is truly equal. Should the Contractor choose to submit a substitute product, he shall assume all monetary or other risk involved, should the Architect/Owner find the substitution unacceptable.

2.01 MANUFACTURERS - ASPHALT SHINGLES

- A. Matching the existing 30 year 3 tab shingle on the roof.

2.02 ASPHALT SHINGLES

- A. Asphalt Shingles: UL Class A Rating and Wind Resistance Label, glass fiber mat base, mineral surface, color selected by Owner.

2.03 UNDERLAYMENTS

- A. Base Ply:
 - 1. HPR SA FR Base Sheet.

2.04 ACCESSORIES

- A. Nails: Standard round wire shingle type, Zinc coated steel or aluminum, 10-12 gauge, barbed or deformed shank, with heads 3/8" (9.5 mm) to 7/16" (11 mm) in diameter. Nails must be long enough to penetrate into solid wood deck at least 3/4" (19 mm) or just through plywood and oriented strand board decks.
- B. Plastic Cement: ASTM D4586 Type I or Type II.
- C. Ridge Vent: COBRA Ridge Vent as manufactured by GAF Materials Corporation.
- D. Eave Ventilation: Soffit vents (Cobra Fascia Vent or Cobra Sof-Edge Vent, if applicable).
- E. New, non-corrosive, metal step flashing, minimum 24 gauge (or equivalent) to be used as step flashing around chimneys, dormers, and side walls.
- F. New lead boots to be used around all plumbing vents.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that the rafters are dry, sound, clean and smooth, free of depressions, waves, or projections.
- C. Repair the rafters by either replacing them or scabbing on them. The city engineer will let the contractor know what to do with the rafters at the jobsite.
- D. Replace the decking with new 1/2" CDX plywood.

3.02 PREPARATION

- A. Fill knot holes and surface cracks with latex filler at areas of bonded eave protection.
- B. Broom clean deck surfaces under eave protection and underlayment.
- C. Install cricket(s) at all chimneys.

3.03 INSTALLATION - EAVE METAL AND EAVE ICE DAM PROTECTION

- A. Place eave edge metal flashings tight with fascia boards. Weather lap joints 2 inches or 51 mm and seal with roof cement. Secure flange with nails.
- B. Apply modified glass fiber rubberized asphalt eave protection in 1/4" thick 12" wide strip.

- C. Extend eave protection membrane minimum 2 feet upslope beyond the interior face of the exterior wall.

3.04 INSTALLATION – PROTECTIVE UNDERLAYMENT IN VALLEYS

- A. Install full width of modified base ply directly to deck in all valleys. Weather end laps 6 inches or 152 mm and press firmly to seal.

3.05 INSTALLATION - PROTECTIVE UNDERLAYMENT TO ROOF DECK

- A. Place one ply of modified underlayment over area not protected by eave or valley protection, with edges lapped a minimum of 2 inches or 51 mm over itself and eave protection, and have ends lapped a minimum of 4 inches or 102 mm over itself. Stagger end laps of each consecutive layer a minimum of 3 feet. In valleys, run modified minimum 6 inches or 152 mm over valley protection. Nail in place per manufacturer's requirements.
- B. At all vent pipes, install a 2 square foot piece of Modified Base Ply underlayment over underlayment.
- C. At all vertical walls, install Modified Base Ply so that it extends at least 6 inches or 152 mm up the vertical wall and 12 inches or 305 mm onto the horizontal roof over the underlayment).
- D. At all chimneys, install Modified Base Ply around entire chimney extending up all vertical surfaces at least 6 inches or 152 mm and 12 inches or 305 mm onto the horizontal roof over underlayment.

3.06 INSTALLATION OF RAKE METAL

- A. Place rake edge metal flashings over eave ice dam and protective underlayment and tight with rake boards. Weather lap joints 2 inches or 50 mm and seal with roof cement. Secure flange with nails. All sheet metal will be per painted kynar galvanized.

3.07 INSTALLATION - VALLEY PROTECTION

- A. Run the first and only the first course of shingles from the higher sloped roof surface across the valley a minimum of 12 inches or 305 mm. Then extend all shingles from the lower sloped roof surface across the valley and nail not closer than 6 inches or 152 mm from the center of the valley. Trim all subsequent courses of shingles from the higher slope roof surface
2 inches or 51 mm from the valley center line to achieve a closed cut valley.

3.08 INSTALLATION - ASPHALT SHINGLES

- A. Install shingles in accordance with manufacturer's instructions.
- B. Install 4 or 6 nails per shingle, as recommended by local building codes.
- C. Install Hip and Ridge shingles per manufacturer's instructions.

3.09 INSTALLATION OF RIDGE VENT

- A. Cut a 2 inch or 51 mm slot along ridge, 1 inch or 25 mm on each side. Leave an uncut closed sheathing area of 6 inch or 152 mm at each end of the ridge. Cut through sheathing only, avoiding roof trusses. On houses with a ridge board, cut 3½ inch or 89 mm slot, 1¾ inch or 44 mm on each side.

- B. Uncoil Ridge Vent along the entire length of ridge, covering the uncut 6 inch or 152 mm sheathing areas on both ends. Shorter lengths can be joined by caulking and butting the ends.
- C. Install ridge shingles directly over Ridge Vent. Use roofing nails of sufficient length to penetrate a minimum of ¾ inch or 19 mm into wood boards or just through plywood or oriented strand board decking, on centers recommended by the shingle manufacturer. Do not drive nails home; leave a ¾ inch or 19 mm nominal step between the ridge shingles and the roof shingles.

3.10 INSTALLATION OF SOFFIT VENTS

- A. Uniformly install sufficient eave vents to equal or exceed ridge vent area, per the manufacturer's recommendations.

LOW SLOPE ROOF AREA

PART 4 PRODUCTS

4.1 ACCEPTABLE MANUFACTURERS

- A. When a particular trade name or performance standard is specified it shall be indicative of a standard required.
- B. Provide products as manufactured by The Garland Company. Submit substitutions under provisions of Section [01600].
- C. Any item or materials submitted as a substitution to the manufacturer specified must comply in all respects as to the quality and performance of the brand name specified. The Architect/Owner shall be the sole judge as to whether or not an item submitted as a substitute is truly equal. Should the Contractor choose to submit a substitute product, he shall assume all monetary or other risk involved, should the Architect/Owner find the substitution unacceptable.

4.2 DESCRIPTION

- A. Modified bituminous roofing work including but not limited to:
 1. Minimum two (2) plies of approved HPR SA FR Base sheet.
 2. Base Flashing Ply will be one ply of eighty (80) mil HPR SA FR Base sheet covered by an additional layer of StressPly SA FR Mineral Modified Membrane
 3. Modified Membrane: STRESSPLY SA FR MINERAL; 135 mil SBS (Styrene-Butadiene-Styrene) rubber mineral surfaced modified roofing membrane reinforced with a dual fiberglass scrim and fire retardent characteristics.

4.3 BITUMINOUS MATERIALS

- A. Asphalt Primer: V.O.C. compliant, ASTM D41.
- B. Asphalt Roofing Mastic: V.O.C. compliant, ASTM D2822, Type II.
- C. HPR Self-Adhering Modified Adhesive: V.O.C. compliant.

4.4 SHEET MATERIALS

- A. Base Plies:
 - 1. HPR SA FR Base Sheet.
- B. Base Flashing Ply:
 - 1. 80 mil SBS HPR SA FR Base Sheet with with woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D5147:

Properties (Finished Membrane):

Tensile Strength (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 65 lbf/in	CMD 45 lbf/in
Tear Strength (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 105 lbf	CMD 75 lbf
Elongation at Maximum Tensile (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 3.5%	CMD 3.5%

- C. Modified Flashing Ply:

STRESSPLY SA FR MINERAL

- 1. STRESSPLY SA FR MINERAL; ASTM D5147, Type III Grade G

Tensile Strength (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 230 lbf/in	CMD 230 lbf/in
50 mm/min. @ 23 ± 3°C	MD 40.25 kN/m	CMD 40.25 kNm
Tear Strength (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 550 lbf	CMD 550 lbf
50 mm/min. @ 23 ± 3°C	MD 2446 N	CMD 2446 N
Elongation at Maximum Tensile (ASTM D5147)		
2 in./min. @ 73.4 ± 3.6°F	MD 6.0%	CMD 6.0%
50 mm/min. @ 23 ± 3°C		

Low Temperature Flexibility (ASTM D5147): Passes 5°F (-15°C)

4.5 RELATED MATERIALS

- A. Roof Insulation Fasteners: In accordance with Section 07220.
- B. Base Sheet: ASTM D4601, Type II; as recommended and furnished by the modified membrane manufacturer.
- C. Nails and Fasteners: Non-ferrous metal or galvanized steel, except that hard copper nails shall be used with copper; aluminum or stainless steel nails shall be used with aluminum; and stainless steel nails shall be used with stainless steel. Fasteners shall be self-clinching type of penetrating type as recommended by the manufacturer of the deck material. Nails and fasteners shall be flush-driven through flat metal discs of not less than one (1) inch diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.

- D. Metal Discs: Flat discs or caps of zinc-coated sheet metal not lighter than twenty eight (28) gauge and not less than one (1) inch in diameter. Form discs to prevent dishing. Bell or cup shaped caps are not acceptable.

PART 5 EXECUTION

5.1 EXAMINATION

- A. Verify that deck surfaces and project conditions are ready to receive work of this section.
- B. Verify that deck is supported and secured to structural members.
- C. Verify that deck is clean and smooth, free of depressions, projections or ripples,
- D. Verify that adjacent roof members do not vary more than [1/4] inch in height.
- E. Verify that deck surfaces are dry [and free of snow or ice]. [Verify that metal deck flutes are clean and dry.]
- F. Confirm that moisture content does not exceed [twelve (12)] percent by moisture meter tests.
- G. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that [wood cant strips] [wood nailing strips] [and reglets] are set in place.

5.2 PREPARATION – WOOD DECK

- A. Verify that wood decking is flat and has tight joints.
- B. Seal plywood joints with tape.
- C. Fill knot holes with latex filler.

5.3 GENERAL INSTALLATION REQUIREMENTS

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the modified bituminous roofing system.
- D. Coordinate installation of roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation with two (2) plies of #15 organic roofing felt set in roofing cement and with joints and edges sealed with roofing cement. Remove cut-offs immediately before resuming work.
- E. Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

- F. Apply roofing materials as specified by manufacturer's instructions.
 - 1. Keep roofing materials dry before and during application.
 - 2. Do not permit phased construction.
 - 3. Complete application of roofing plies, modified sheet and flashing in a continuous operation.
 - 4. Begin and apply only as much roofing in one day as can be completed that same day.
- G. Cut-Offs (Waterstops): At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering of two (2) plies of #15 organic roofing felt set in roofing cement with joints and edges sealed.

3.4 BASE PLY INSTALLATION

- A. Fiberglass Plies: Install two (2) HPR SA Base Sheets shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
- B. Lap ply sheet ends eight (8) inches. Stagger end laps twelve (12) inches minimum.
- C. Extend plies two (2) inches beyond top edges of cants at wall and roof projections and equipment bases.
- D. Install base flashing ply to all perimeter and projection details.

3.5 MODIFIED MEMBRANE INSTALLATION

- A. The modified membrane shall then be solidly adhered to the base layers.
- B. Starting at the low point, unroll the StressPly SA FR Mineral in the desired position. Fold the membrane back onto itself, remove the split back release film from the exposed side and gradually push the membrane into place. Apply even pressure along the entire length of the membrane from center to outer edges to avoid air pockets or wrinkles. Care should be taken to eliminate air entrapment under the membrane.
- C. Repeat for the other side. After the rolls are in place, apply uniform pressure to the entire roll area using a long handle weighted roller.
- D. Install subsequent rolls of modified membrane across the roof as above with a minimum of four (4) inch side laps and eight (8) inch end laps. Stagger the end laps. Apply the modified membrane in the same direction as the previous layers but stagger the laps so they do not coincide with the laps of the base layers.
- E. Where a lap is to be made to the granular surface, vigorously brush loose granules from the surface to be mated and carefully apply HPR SA Modified Adhesive to the granular surface. And allow 5-10 minutes to flash. Join the two surfaces and using a small metal roller or other suitable roller, firmly press into place. Roll edges firmly to ensure positive adhesion.
- F. Extend membrane two (2) inches beyond top edge of all cants as shown on the drawings.

5.6 FLASHING MEMBRANE APPLICATION

- A. Seal all 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.

- B. Prepare all walls, penetrations, expansion joints [and where shown on the drawings] to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
- C. Use the modified membrane as the flashing membrane and will be adhered to an underlying base flashing. Nail off at a minimum of eight (8) inches o.c. from the finished roof at all vertical surfaces.
- D. Solidly adhere the entire sheet of flashing membrane to the substrate.
- E. Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and fiberglass mesh.
- F. Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work [as specified in other sections].
- G. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work [as specified in other sections].

5.7 APPLICATION OF SURFACING

- A. Mineral Surfaced Membrane System.
 - 1. Apply the Mineral Lap Coating to the side and end laps and hand broadcast minerals into any areas that show the black compound to achieve a monolithic appearance. Any areas of improper adherence of minerals will be treated as described above.

5.8 FIELD QUALITY CONTROL

- A. Perform field inspection and [and testing] as required [under provisions of Section 01410].
- B. Correct defects or irregularities discovered during field inspection.
- C. Require attendance of roofing [and insulation] materials manufacturers' representatives at site during installation of the roofing system.

5.9 CLEANING

- A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B. In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.
- C. Repair or replace defaced or disfigured finishes caused by work of this section.

5.10 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.

- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. The roofing system manufacturer reserves the right to request a thermo graphic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermo graphic scan shall be provided by the [Roofing] Contractor.
- D. If core cuts verify the presence of damp or wet materials, the [Roofing] Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. Notify the District upon completion of corrections.
- G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

END OF SECTION

SECTION 07550

MODIFIED BITUMINOUS MEMBRANE ROOFING

Colorado Mountain College

831 Grand Ave

Glenwood Springs Co, 81601

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Modified bituminous membrane roofing over prepared substrate.

1.2 RELATED SECTIONS

- A. - Preparation for Re roofing.
- C. - Roof and Deck Insulation.
- D. - Flashing and Sheet Metal.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM D1079-01, Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
 - 2. ASTM D1863-93, Specification for Mineral Aggregate Used as a Protective Coating for Roofing.
 - 3. ASTM D2178-97a, Specification for Asphalt Glass Felt Used as a Protective Coating for Roofing.
 - 4. ASTM D2822-91, Specification for Asphalt Roof Cement.
 - 5. ASTM D2824-02, Specification for Aluminum-Pigmented Asphalt Roof Coating.
 - 6. ASTM D4601-98, Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
 - 7. ASTM D5147-01a, Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
 - 8. ASTM D6162-0a, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
 - 9. ASTM D6163-00, Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
 - 10. ASTM E108-00, Test Methods for Fire Test of Roof Coverings.
- B. National Roofing Contractors Association (NRCA):
 - 1. Roofing and Waterproofing Manual.
- C. Underwriters Laboratories, Inc. (UL):
 - 1. Fire Hazard Classifications.
- D. Warnock Hersey (WH):
 - 1. Fire Hazard Classifications.

1.4 SYSTEM DESCRIPTION

- A. It is the intent of this specification to install a long-term, quality roof system that meets or exceeds all current NRCA guidelines as stated in the most recent edition of the NRCA Roofing and Waterproofing Manual. Please discuss any concerns with owner and Roofing System Manufacturer.

1.5 SUBMITTALS

- A. Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B. Samples: Submit two (2) samples of each product specified.
- C. Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- D. Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A] for external fire and meets local or nationally recognized building codes.

- E. Manufacturer's Certificate: Certify that the roof system is adhered properly to meet or exceed the requirements of FM [1-90].
- F. Manufacturer's Certificate: Certify that the roof system furnished [is approved by] [is accepted by] Factory Mutual Approval Standard 4470.
- G. Manufacturer's Certificate: Certify 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.
- H. Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- I. Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.
- J. Submit a copy of an unexecuted manufacturer's warranty for review.
- K. Submit a sample of roofing aggregate for review.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 12 years documented experience and have ISO 9001 certification.
- B. Installer: Company specializing in modified bituminous roofing installation with a minimum 5 years experience and certified by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work and at any time roofing work is in progress. Maintain proper supervision of workmen. Maintain a copy of the specifications in the possession of the Supervisor/Foremen and on the roof at all times.
- D. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner has the right to hire a qualified contractor and backcharge the original contractor.
- E. Insurance Certification: 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.

1.7 PRE-INSTALLATION CONFERENCE

- A. Pre-Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B. Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing which must precede or follow roofing work including mechanical work if any, Architect, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including where applicable Owner's insurers, testing agencies and governing authorities.

- C. Objectives of conference to include:
1. Review foreseeable methods and procedures related to roofing work.
 2. Tour representative areas of roofing substrates decks, inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
 3. Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 4. Review roofing system requirements drawings, specifications and other contract documents.
 5. Review required submittals both completed and yet to be completed.
 6. Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 7. Review required inspection, testing, certifying and material usage accounting procedures.
 8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing if not mandatory requirement.
 9. Record discussion of conference including decisions and agreements or disagreements reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
 10. Review notification procedures for weather or non-working days.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to ensure no possibility of significant moisture exposure. Store rolls of felt and other sheet materials on pallets or other raised surface. Stand all roll materials on end. Cover roll goods with a canvas tarpaulin or other breathable material not polyethylene.
- C. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.
- D. It is the responsibility of the contractor to secure all material and equipment on the job site. If any material or equipment is stored on the roof, the contractor must make sure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the contractor will be the sole responsibility of the contractor and will be repaired or replaced at his expense.

1.9 MANUFACTURER'S INSPECTIONS

- A. When the project is in progress, the roofing system manufacturer will provide the following:
 1. Keep the Owner informed as to the progress and quality of the work as observed.
 2. Provide job site inspections a minimum of three days a week.
 3. Report to the Owner in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
4. Confirm after completion that manufacturer has observed no applications procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.10 PROJECT CONDITIONS

- A. Proceed with roofing work only when existing and forecasted weather conditions will permit unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.

1.11 SEQUENCING AND SCHEDULING

- A. Sequence installation of modified bituminous sheet roofing with related units of work specified in other sections to ensure that roof assemblies including roof accessories, flashing, trim and joint sealers are protected against damage from effects of weather, corrosion and adjacent construction activity.
- B. Fully complete all modified bituminous membrane roofing field assembly work each day. Phased construction will not be accepted.

1.12 WARRANTY

- A. Upon completion of installation, and acceptance by the Owner and the manufacturer will supply to the Owner a 30 water tight warranty
- B. Installer will submit a minimum of a three (3) year warranty to the membrane manufacturer with a copy directly to Owner.
- C. Membrane manufacturer will provide an annual inspection for the life of the warranty at no additional cost to owner.

1.13 PRODUCT OPTIONS AND SUBSTITUTIONS

- A. Any material submitted as an equal to the specified material must include a list of three (3) projects where the proposed material has been used in a similar roofing system as that which is specified and is located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least three (3) years old and be available for inspection by the Owner or Owner's Representative.
- B. Any deficiencies in performance, warranty terms or improper submittal procedure will constitute grounds for immediate rejection of substitution.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. When a particular trade name or performance standard is specified it shall be indicative of a standard required.
- B. Provide products as manufactured by The Garland Company. Submit substitutions under provisions of Specification.

- C. Any item or materials submitted as a substitution to the manufacturer specified must comply in all respects as to the quality and performance of the brand name specified. The Owner shall be the sole judge as to whether or not an item submitted as a substitute is truly equal. Should the Contractor choose to submit a substitute product, he shall assume all monetary or other risk involved, should the Owner find the substitution unacceptable.

2.2 DESCRIPTION

A. Modified bituminous roofing work including but not limited to:

1. Minimum two (2) plies of ASTM D2178, Type VI glass fiber roofing felt bonded to prepared substrate with hot bitumen.
2. Hot Bitumen: ASTM D312, Type III steep asphalt having the following characteristics:
 - a. Softening Point 185°F - 205°F
 - b. Flash Point 500°F
 - c. Penetration @ 77°F 15-35 units
 - d. Ductility @ 77°F 2.5 cm
3. Base Flashing Ply: One (1) ply of 40 mil SBS base flashing ply covered by an additional layer of modified bitumen membrane and set in bitumen.
4. Modified Membrane: STRESSPLY EUV; 115 mil SBS, SIS, and ES (Styrene-Butadiene-Styrene, Styrene-Isoprene-Styrene and Ethylene-Styrene) rubber modified membrane incorporating post consumer recycled rubber and reinforced with a super strong fiberglass and polyester composite scrim.
5. Surfacing: Flood coat of hot bitumen and ASTM D1863 roofing aggregate consisting of pea gravel.

2.3 BITUMINOUS MATERIALS

- A. Asphalt Primer: V.O.C. compliant, ASTM D41.
- B. Asphalt Roofing Mastic: V.O.C. compliant, ASTM D2822, Type II.

2.4 SHEET MATERIALS

- A. Felt Plies:
 1. Fiberglass Felts: ASTM D2178, Type IV
- B. Base Flashing Ply:
 1. 40 mil SBS modified membrane with woven fiberglass scrim reinforcement with the following minimum performance requirements according to ASTM D5147:

C. Modified cap sheet:

STRESSPLY EUV MINERAL; ASTM D-6162, Type III Grade S

Tensile Strength (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F (50 mm/min. @ 23 ± 3°C) kNm	MD 700 lbf/in MD 122.5 kN/m	CMD 750 lbf/in CMD 131.25
Tear Strength (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F 50 mm/min. @ 23 ± 3°C	MD 1300 lbf MD 5783 N	CMD 1400 lbf CMD 6227 N
Elongation at Maximum Tensile (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F 50 mm/min. @ 23 ± 3°C	MD 6%	CMD 6%
Low Temperature Flexibility (ASTM D-5147)	Passes -30°F (-34°C)	

D. Modified flashing ply:

STRESSPLY EUV MINERAL; ASTM D-6162, Type III Grade G

Tensile Strength (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F 50 mm/min. @ 23 ± 3°C kNm	MD 700 lbf/in MD 122.5 kN/m	CMD 750 lbf/in CMD 131.25
Tear Strength (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F 50 mm/min. @ 23 ± 3°C	MD 1300 lbf MD 5783 N	CMD 1400 lbf CMD 6227 N
Elongation at Maximum Tensile (ASTM D-5147) 2 in/min. @ 73.4 ± 3.6°F 50 mm/min. @ 23 ± 3°C	MD 6.0%	CMD 6.0%
Low Temperature Flexibility (ASTM D-5147)	Passes -30°F (-34°C)	
Reflectivity (DNS Method)	55%	

2.5 SURFACINGS

1. Modified Mineral Cap Sheet

2.6 RELATED MATERIALS

A. Roof Insulation: In accordance with Section 07220.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that deck surfaces and project conditions are ready to receive work of this section.
- B. Verify that deck is supported and secured to structural members.
- C. Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped to drains.
- D. Verify that adjacent roof members do not vary more than 1/4 inch in height.**
- E. Verify that deck surfaces are dry and free of snow or ice.
- F. Confirm that moisture content does not exceed twelve (12) percent by moisture meter tests.
- G. Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that [wood cant strips] [wood nailing strips] [and reglets] are set in place.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C. Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the modified bituminous roofing system.
- D. Coordinate installation of roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation with two (2) plies of #15 organic roofing felt set in full moppings of bitumen and with joints and edges sealed with roofing cement. Remove cut-offs immediately before resuming work.
- E. Asphalt Bitumen Heating: Heat and apply bitumen in accordance with the Equiviscous Temperature (EVT) Method as recommended by National Roofing Contractors Association (NRCA). Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT (plus 5°F at point of application) more than one (1) hour prior to time of application. Determine flash point, finished blowing temperature, EVT, and fire-safe handling temperature of bitumen either from information by manufacturer or by suitable test. Do not exceed recommended temperature limits during bitumen heating. Do not heat to a temperature higher than twenty five degrees (25°) below flash point. Discard bitumen that has been held at temperature exceeding Finishing Blowing Temperature (FBT) for more than three (3) hours. Keep kettle lid closed except when adding bitumen.
- F. Bitumen Mopping Rate:

1. **Interply Mopping:** Apply bitumen at the rate of approximately twenty five (25) lb. of bitumen per roof square.
 2. **Modified Membrane Mopping:** Apply bitumen at the rate of approximately thirty (30) lb. of bitumen per roof square.
 3. **Flood Coat:** Apply bitumen at the rate of approximately sixty (60) to seventy (70) lb. of bitumen per square (plus or minus twenty five (25) percent on a total job average basis).
- G. **Substrate Joint Penetrations:** Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- H. **Apply roofing materials as specified by manufacturer's instructions.**
1. Keep roofing materials dry before and during application.
 2. Do not permit phased construction.
 3. Complete application of roofing plies, modified sheet and flashing in a continuous operation.
 4. Begin and apply only as much roofing in one day as can be completed that same day.
- I. **Cut-Offs Waterstops:** At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering of two (2) plies of #15 organic roofing felt set in full moppings of bitumen with joints and edges sealed.

3.5 FELT PLY INSTALLATION

- A. **Fiberglass Plies:** Install two (2) fiberglass ply sheets in twenty five (25) lbs. per square of bitumen shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof.
- B. Lap ply sheet ends eight (8) inches. Stagger end laps twelve (12) inches minimum.
- C. Lightly broom in fiberglass plies to assure complete adhesion.
- D. Extend plies two (2) inches beyond top edges of cants at wall and roof projections and equipment bases.
- E. Install base flashing ply to all perimeter and projection details.

3.6 MODIFIED MEMBRANE APPLICATION

- A. Solidly bond the modified membrane to the base layers with specified asphalt at the rate of twenty five (25) to thirty (30) lbs. per 100 square feet.
- B. The modified membrane roll must push a puddle of asphalt in front of it with asphalt slightly visible at all side laps. Exercise care during application to eliminate air entrapment under the membrane.
- C. Apply pressure to all seams to ensure that the laps are solidly bonded to substrate.
- D. Install subsequent rolls of modified membrane across the roof as above with a minimum of four (4) inch side laps and eight (8) inch end laps. Stagger the end laps. Apply the modified membrane in the same direction as the previous layers but stagger the laps so they do not coincide with the laps of the base layers.
- E. Apply asphalt no more than five (5) feet ahead of each roll being embedded.

- F. Extend membrane two (2) inches beyond top edge of all cants in full moppings of the specified asphalt.

3.7 FLASHING MEMBRANE INSTALLATION

- A. Seal all 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.
- B. Prepare all walls, penetrations, expansion joints to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
- C. Use the modified membrane as the flashing membrane. Adhere to the underlying base flashing ply with specified asphalt unless otherwise noted in these specifications. Nail off at a minimum of eight (8) inches o.c. from the finished roof at all vertical surfaces.
- D. Solidly adhere the entire sheet of flashing membrane to the substrate.
- E. Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and fiberglass mesh.
- F. Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work [as specified in other sections].
- G. Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work [as specified in other sections].

3.8 APPLICATION OF SURFACING

- A. Mineral Cap Sheet

3.9 FIELD QUALITY CONTROL

- A. Perform field inspection and [and testing] as required [under provisions of Section 01410].
- B. Correct defects or irregularities discovered during field inspection.
- C. Require attendance of roofing [and insulation] materials manufacturers' representatives at site during installation of the roofing system.

3.10 CLEANING

- A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B. In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.
- C. Repair or replace defaced or disfigured finishes caused by work of this section.

3.11 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the Roofing Contractor.
- D. If core cuts verify the presence of damp or wet materials, the Roofing Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. Notify the Owner upon completion of corrections.
- G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

END OF SECTION