

GUIDE SPECIFICATION
Cold Adhesive Application

Use this specification for slopes of ¼"-2" per foot, for higher slope contact MBTechnology.

fireguard SBS System
Over
Wood Deck, Light Weight Concrete, Insulated Deck (concrete, metal or others)

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This specification is provided as a general guide for use of MBTechnology products based on typical building conditions and standard roofing practices. MBTechnology is strictly a manufacturer of roofing systems and has no experience, training or expertise in the areas of architecture/engineering or in the area of consulting with respect to matters related to such areas. MBTechnology recommends that the Owner's representative independently verify the accuracy and appropriateness of a specification provided for a specific project.

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Revised 04-01-2010
Fireguard SBS FG160CWH Series

DIVISION 7: SBS MODIFIED BITUMEN ROOFING MEMBRANE, COLD APPLIED, ROOF INSULATION & COOL ROOF COATING

1 PART 1 - GENERAL

1.01 DESCRIPTION

Delete Line Item A1-A4 If project is new construction / addition.

- A. Completely tear off existing roof, insulation and all other related items to the deck. Repair existing roofing surface for application of the specified SBS system per NRCA and manufacturer's recommendations.
 - 1. Repair existing roofing surface for application of the specified SBS system per NRCA and manufacturer's recommendations.
 - 2. Contractor shall raise mechanical equipment to maintain an 8" curb height.
 - 3. Remove repair existing drains and install new pitch pans.
 - 4. Replace all damaged, split or deteriorated plumbing support wood blocks.
- B. Install crickets where required to prevent any ponding water. Contractor is solely responsible to determine the number and location of the crickets.
- C. Provide lead flashings on breather pipe, electrical and plumbing penetrations presently without lead.
- D. Install wall and base flashings systems.
- E. Install sheet metal flashing.

Delete Line Item F if project does not require insulation over deck.

- F. Mechanically fasten a tapered rigid insulation with screws and plates. Cover the entire surface with a ½" cover board applied in adhesive.

Delete Section G If Project requires insulation over deck. Having insulation over deck eliminates the use of a base sheet. Base sheet application only applies to application directly over wood / light weight concrete.

- G. Mechanically fasten one layer of SBS modified base sheet over the wood/light weight concrete deck.
- H. Fully apply in cold adhesive one layer of smooth interply SBS membrane over the base/ protection board. Fully apply in cold adhesive one layer of granulated fire rated dual reinforced cap sheet over the interply.

For projects in California, which need to comply with Title 24 "Cool Roof Requirement", a coating needs to be applied. Contact MBTechnology for more detail and if project requires it.

- I. Coat the surface of the roofing membrane with a coating, which meets California Title 24 "Cool Roof Requirement". Rate of application shall be a minimum of 1.5 gallons/square for base and 1.5 gallons/square for top for a total of 3 gallons/square.
- J.

1.02 RELATED SECTIONS: Drawings, General Provisions, Special Provisions and Division 1 apply to the work of this section.

- A. Section [-----] - Submittals
- B. Section [-----] - Rough Carpentry

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- C. Section [-----] - Roof Decks
- D. Section 07220 - Lightweight Insulating Concrete Roof Insulation
- E. Section [-----] - Rigid Roof Insulation
- F. Section [-----] - Sheet Metal Flashing Components And Roofing Accessories
- G. Section [-----] - Sheet Metal Flashing and Trim
- H. Section [-----] - Sheet Metal Roofing Specialties
- I. Section [-----] - Temporary Roofs/Vapor Retarders*

* NOTE: A vapor retarder can be an important component in roof systems where climatic and building interior conditions require the prevention of vapor condensation within the roof assembly.

1.03 REFERENCES: References in these specifications to standards, test methods, codes etc., are implied to mean the latest edition of each such standards are adopted. The following is an abbreviated list of associations, institutions, and societies, which may be used as references throughout these specifications.

- A. American Society For Testing & Materials (ASTM):
 - 1. ASTM D 312: Asphalt Used in Roofing.
 - 2. ASTM D 412: Standard Test Methods For Rubber Properties In Tension.
 - 3. ASTM D 728: Standard Specification For Perlite Thermal Insulation Board.
 - 4. ASTM E 96: Standard for Water Transmission
 - 5. ASTM D-6162: Standard Specification for SBS Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
 - 6. ASTM D-6163: Standard Specification for SBS Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements
 - 7. ASTM C 1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - 8. ASTM D 4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
 - 9. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing and Waterproofing
 - 10. California Title 24 requirements for Cool Roof.
- B. American Wood Preservative Bureau:
 - 1. AWPB LP-2: Water Borne Preservatives (Above Ground)

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- C. Uniform Building Code Standard:
 - 1. UBC 32-4: Roof Construction And Covering, Roof Insulation.

- D. Industry Publications:
 - 1. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual
 - 2. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide (TGFU R1306).
 - 3. Factory Mutual (FM Global) - Approval Guide.
Factory Mutual Standard 4470 - Approval Standard for Class 1 Roof Covers.

- E. SMACNA: Sheet Metal and Air Conditioning Contractors National Association
Chantilly, VA

- F. CERTA: Certified Roofing Torch Applicator, Rosemont, IL

- G. OSHA: Occupational Safety and Health Administration Washington, DC

1.04 COORDINATION

Coordinate with other trades affecting or affected by work of this section.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications: Prior to award of the contract the contractor shall submit evidence of the following:
 - 1. Contractor shall provide a letter stating that they have at least 4 years experience with SBS modified bitumen membrane torch application and a list of 3 jobs over 150 squares.
 - 2. An updated letter from the primary roofing manufacturer they propose to use stating the Contractor has a valid "Certificate of Eligibility" and that application done by contractor will qualify for the warranty as required by the specification.

- B. Pre-Roofing Conference: Meet at the project site well in advance of the time schedules for roofing and other related work, and review requirements for the work and conditions which could possibly interfere with successful performance of the work, or required to coordinate with it or to protect it there after with representatives of all firms involved in the work. Require manufacturer's technical representative to participate in the conference. Date shall be determined after project has been awarded.

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- C. Final Inspection: Manufacturer's representative shall provide a comprehensive intermediate and final inspection after completion of the roof system. All application errors shall be addressed and final punch list completed.
- A. Manufacturer Qualification: Roofing manufacturer shall own and operate their own manufacturing facility for SBS Modified Bitumen roofing membrane for a minimum of 7 years. Roofing membranes supplied under a private label agreement are not acceptable. Roofing manufacturer shall submit a letter from their CPA firm confirming compliance with this requirement.
- B. Testing and agency requirements:
 - 1. Fire Testing: Material shall be tested for a minimum of Class A fire rating. The system should pass the said tests without any rock, covering or emulsions thus facilitating maintenance and eliminating excess load on the roof. All modified bituminous sheet roofing systems must bear testing agency (Underwriters Lab, Warnock Hersey etc.) on package or container indicating that materials have been produced under testing agency's classification and follow-up service.
 - 2. Contractor shall obtain all local permits for the application of the roofing system. The contractor prior to the job must obtain necessary permits.

1.06 WARRANTY

- A. Roofing Contractor: Upon completion of work, furnish a written five-year workmanship guarantee. This warranty shall cover all leaks due to defective workmanship for a period of 5 years. Manufacturer shall conduct an audit at no cost to owner within 3 years of project completion date. All deficiencies identified in the report shall be fixed and brought up to specification at no cost to the owner.

[Choose the warranty duration. Warranty duration increases by changing the smooth interply membrane to a heavier grade \(section 2.01 B2\).](#)

- B. Manufacturer: Manufacturer shall provide owner with a **10-15-20** year non-prorated Roofing System Guarantee. Warranty should cover all leaks caused by faulty workmanship or material. Warranty will be in effect on the date of substantial completion of the project.
- C. Manufacturer's Maintenance Agreement: Manufacturer shall inspect the building every three-years for duration of the warranty period. The purpose of the inspection is to prepare a report on the condition of the roof and any areas, which has not been maintained. A comprehensive report should be prepared (digital and printed format), describing the condition of the roof. The report should alert the owners to any areas that require maintenance. Manufacturer shall make repairs identified in the report and by the owner. All these repairs shall be done at no charge to the owner, even if they have not resulted in leaks. The following are some of the example of the areas, which needs to be repaired on the roof by

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the manufacturer through out the warranty period: Granule loss, loose flashing, dried out mastic or caulking, blisters, loose flashing, mud cracking. Any damage to roofing membrane due to natural disasters including but not limited to earthquake and hail damage are excluded from maintenance agreement and will be paid by owner

- D. Coating Manufacturer: Coating manufacturer shall issue a 5-year warranty against peeling, flaking and cracking. The same company supplying and warranting the roofing membrane shall supply and issue the coating warranty too.

1.07 SUBMITTALS

- A. Pursuant to the provisions of the General Provisions and Section 01300 "Submittals" the Contractor shall submit the following:
1. Product specification sheet for each roofing component within the specified system. Data should substantiate that materials comply with the specifications.
 2. Test results as outlined in Article 1.05.B above.
 3. Final warranty per Article 1.06.
 4. Samples (3" x 5") of each roofing component which is specified..
 5. Shop Drawings: Provide manufacturers standard details and approved shop drawings for the roof system specified.
 6. Installer shall provide written documentation from the manufacturer of their authorization to install the roof system, and eligibility to obtain the warranty specified in this section.
 7. As part of the submittal package, contractor shall submit a letter from the manufacturer agreeing to perform the maintenance services identified in section 1.06 C at no cost to the owner.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Roofing material shall be delivered to the job-site in new, dry, unopened containers clearly showing catalog number, product description, manufacturer's name and location. Delivered quantities should be sufficient to assure continuous work.
- B. Assure that materials are kept clean, and away from excessive heat and cold; do not remove labels or tear off protective covering until ready for application; store in an enclosed area where temperature is above 10 degrees C (50 degrees F) and below 32 degrees C (90 degrees F). Material shall not be stored directly on the ground.
- C. Do not double stack membrane. Maintain aisle space between stacks to facilitate fire suppression.

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- D. Do not overload structure with building materials.
- E. Strictly follow recommended storage instructions supplied by the manufacturer.
- F. Store roll goods on end on pallets in a clean, dry, protected area. Take care to prevent damage to roll ends or edges. Do not double stack modified bitumen products or lay them on their side. Follow manufacturers instruction for storage and handling.

2 PART 2 - PRODUCTS

2.01 ROOFING SYSTEM

- A. All components of the roofing system must be SBS modified bitumen and have been successfully manufactured in the U.S for a minimum of 10 years. All the layers (base, ply and cap) shall be supplied by the company issuing the warranty. Non-modified asphalt coated fiberglass Type II base sheet is not an acceptable substitution for the modified base sheet. APP modified membranes are not acceptable. Acceptable manufacturers, provided all requirements outlined in the specifications are met are:

- 1. MBTechnology www.mbtechnology.com

- B. Roofing Membranes: Roofing membrane components include:

Base is only required if there is no insulation over deck and system is being applied direct over wood/light weight concrete. Delete base if there is insulation over the deck..

- 1. BASE: Shall be SBS modified weighting a minimum of 40 Lbs/ Square and meeting ASTM D 4601-91, Type II. Approved membranes are:

MBTechnology layflat SBS LF40

- a) Modifier: SBS Modified
- b) Weight Minimum of 40 lbs/ 100 square feet
- c) Tensile @ Room Temp 44 lbs/in
- d) Weight 40 lbs/square

- 2. Smooth Interply & Base Flashing: Shall be a smooth surfaced membrane, which meets or exceeds the following minimum standards. Approved membranes are:

For 20 Year Warranty use the following smooth interply SF160CSA delete others .

MBTechnology superflex SBS SF160CSA

- a) Modifier: Styrene Butadiene Styrene.
- b) Dual reinforcement consisting of a layer of polyester and a layer of fiberglass mat.

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- c) Tensile strength shall be min. 210 lbs/in. MD and 180 lbs/in CMD @ 0 deg F.
- d) Tensile strength shall be min. 110 lbs/in. MD and 80 lbs/in CMD @ 73.4 deg F.
- e) Tear strength to be min. 150 lbs MD and 120 lbs CMD @ 73.4 F.
- f) Ultimate Elongation of 40% @ 73.4 deg F.
- g) Thickness: 140 mils, minimum.
- h) Bottom Surface: Sand
- i) Mass Weight: Minimum nominal weight of 110 pounds per 1 square roll.
- j) Meet and exceed requirements of ASTM D6162 Grade S.

For 10 Year Warranty use the following smooth interply layflat SBS LF60.

MBTechnology layflat SBS LF60

- a) Modifier: Styrene Butadiene Styrene.
- b) Reinforcement consisting of a layer of fiberglass mat.
- c) Tensile strength shall be min. 160 lbs/in. MD and 90-lbs/in CMD @ 0 deg F.
- d) Tensile strength shall be min. 70 lbs/in. MD and 80 lbs/in CMD @ 73.4 deg
- e) Tear strength to be min. 100 lbs MD and 70 lbs CMD @ 73.4 F.
- f) Ultimate Elongation of 10% @ 73.4 deg F.
- g) Thickness: 85 mils, minimum.
- h) Bottom Surface: Sand.
- i) Mass Weight: Minimum nominal weight of 70 pounds per square.

Cap membrane is the same for 10-15 –20 year warranty.

- 3. Cap Membrane : Shall meet or exceed ASTM D 6162 Grade G. It shall be a dual reinforced fire rated SBS membrane suitable for cold adhesive application. Cap membranes reinforced with a single layer of polyester or fiberglass mat are not acceptable. Cap membranes reinforced with polyester mat with fiberglass strands are not acceptable. The cap membrane shall meet the following specifications:

MBTechnology fireguard SBS FG160CWH

- a) Modifier: Styrene Butadiene Styrene.
- b) Reinforcement: Dual reinforcement consisting of a layer of polyester and a layer of fiberglass mat.
- c) Tensile strength shall be min. 210 lbs/in. MD and 110 CMD @ 0 deg F.
- d) Tensile strength shall be min. 120 lbs/in. MD and 80 CMD @ 73.4 deg F
- e) Tear strength to be min. 168 lbs MD and 130 lbs CMD @ 73.4 F.
- f) Testing shall be in accordance with ASTM D 5147 at 0 degrees F.
- g) Thickness: 165 mils, minimum.
- h) Bottom Surface: Burn off backer film.
- i) Mass Weight: Minimum nominal weight of 110 pounds per square.

Flashing membrane is the same for 10-15 –20 year warranty.

- 4. Flashing: Shall meet or exceed ASTM D 6162 Grade G. It shall be a dual reinforced fire rated SBS membrane suitable for torch application. Cap membranes

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reinforced with a single layer of polyester or fiberglass mat are not acceptable. Cap membranes reinforced with polyester mat with fiberglass strands are not acceptable. The cap membrane shall meet the following specifications:

MBTechnology fireguard fastorch SBS FGFT160CWH

- a) Modifier: Styrene Butadiene Styrene.
 - b) Reinforcement: Dual reinforcement consisting of a layer of polyester and a layer of fiberglass mat.
 - c) Tensile strength shall be min. 180 lbs/in. MD and 150 CMD @ 0 deg F.
 - d) Tear strength to be min. 180 lbs MD and 130 lbs CMD @ 73.4 F.
 - e) Testing shall be in accordance with ASTM D 5147 at 0 degrees F.
 - f) Thickness: 165 mils, minimum.
 - g) Bottom Surface: Burn off backer film.
 - h) Mass Weight: Minimum nominal weight of 116 pounds per 1 square roll.
5. Backer layer for flashing: Shall be a self adhesive smooth surface SBS modified bitumen membrane which is air impermeable and meets the following minimum requirements. This membrane shall be incorporated at all flashing assembly prior to torch applying the smooth base and top surfacing flashing system.

MBTechnology SA65S

- a. Modifier: Styrene Butadiene Styrene.
- b. Reinforcement: Non-woven Fiberglass mat.
- c. Top surfacing smooth,
- d. Minimum weight of 30 lbs/square.
- e. Meeting ASTM D 1970-01

2.02 ROOFING ACCESSORIES:

- 1. Fasteners: Nailing patterns & type of fasteners (including screws & plates) on all insulation & membranes shall comply with Factory Mutual guidelines (FM I-90) requirements and roof membrane manufacturers written recommendations.
- 2. Cants: Perlite cant and tapered edge strips: ASMT C728-91, Asphalt impregnated perlite. Cants shall be preformed to 45-degree angle with a 4" vertical leg, and 4" horizontal leg, unless noted otherwise.
- 3. Insulation: Provide preformed tapered roofing insulation boards where indicated for sloping to drain. Fabricate with taper to provide ¼" per foot slope, unless otherwise indicated in drawing. Provide preformed saddles,

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crickets, tapered edge strips where indicated for sloping to drain. Insulation shall be tapered polyisocyanurate achieving a minimum of R30 insulation value covered with ½" dens-deck insulation to withstand flute span on metal deck.

Insulation shall meet and exceed the requirements of ASTM C 1280.

Acceptable manufacturers are:

- a. R – Max
 - b. Johns Manville
 - c. Atlas
 - d. Or approved equal.
4. Protection Board shall be ½" Dens Deck by Georgia Pacific, no substitution allowed. .
 5. Pitch pans, Expansion Joints, Metal Flashings: Shall be in full compliance with NRCA and SMACNA approved application standards.
 6. Pitch Pan Filler: Shall consist of a two component, cold applied urethane compound as approved by roofing membrane manufacturer.
 7. Caulking Sealant: Comply with Federal Spec number TTS 0023c. And should consist of a single component, high performance, elastomeric compound as manufactured by or similar and equal to the following:
 8. Mastic: Elastomeric mastics, adhesives, and caulking products are required over standard grade adhesive and mastics. , All mastics must conform to ASTM D4586 Elastomeric Mastic -Pros-choice 1010 by Gibson Homan or approved equal.
 9. Traffic Pad: Shall be manufactured with recycled tire with a minimum thickness of 1/2" and supplied by same company issuing the roofing warranty. Approved walk pads are MBTechnology's WT-3x4 or approved equal. Use Chemlink M1 adhesive or equal to adhere the walk pad to roof surfacing.
 10. Insulation Adhesive shall be Olybond 500 adhesive manufactured by Olympic Fasteners.
 11. Asphalt Primer: ASTM D 41, Leak Buster Matrix 307 Premium Asphalt Primer, by BMCA or equal.
 12. Cold Adhesive shall be a blend of special adhesive asphalts and safe, high-flash, quick drying solvents that meets or exceeds ASTM D 4479, Type II requirements. Approved adhesives are IAC 7MBT by MBTechnology or equal.
DELETE ITEM 12 IF PROJECT DOES NOT REQUIRE A COATING TO MEET CALIFORNIA TITLE 24 REQUIREMENTS FOR COOL ROOF.
 13. Protective Coating: Coating shall be a two-part co-polymer elastomeric coating, white in color and meeting California Title 24 requirement for Cool Roof. The coating shall have current listing with the Cool Roof Rating Council (CRRC) with CRRC label. Approved coatings are CO24 Base and CO24 Top by MBTechnology or approved equal

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14. Liquid reinforced flashing system: MBT-Flash Single-component, elastomeric asphalt emulsion with polyester reinforcing fleece fabric fully embedded into the resin to form roof system flashings.
 - a. Reinforcement: woven polyester reinforcement.
 - b. Surfacing: Second coat of MBT-Flash and mineral granules to match adjacent SBS-modified bitumen cap sheet.

3 PART 3 - EXECUTION

3.01 EXISTING / GENERAL CONDITIONS

- A. Contractor shall verify that surfaces are smooth, dry, sound, and free from any conditions effecting proper roofing applications. Prior to starting work, owner shall be advised of conditions needing correction. Work will not be started until other trade work required ahead of membrane application is completed. Contractor is responsible for all carpentry work such as wood nailers, wood curbs, wood expansion or contracting members, wood cants and similar items necessary for the completion of the work according to these specifications.

Line item 1-3 only applies to re-roof application, delete if this is a new construction.

Removal of existing roof

1. The existing roofing membrane(s) and insulation shall be removed to the existing deck and shall include but not be limited to, all wall flashings, edge flashings, and all other items incorporated there in.
2. Remove only as much roofing as can be replaced with a completely new roofing system and made watertight the same day. Phase roofing application is not allowed.
3. All debris shall immediately be removed from the roof surface and deposited into trucks or containers through an enclosed trash chute. Removal of existing roofing materials should be performed in conjunction with the installation of the new roofing system. All exposed areas must immediately be covered and made watertight. No overnight stockpiling of debris on the roof shall be permitted.
4. Contractor shall clean all roof surfaces and is responsible for keeping the building and surrounding area neat and orderly.
5. Trash container or trucks shall be removed from the premises when they are full.
6. Clean the roof deck surfaces of all loose materials and other impediments detrimental to the application of the new roofing materials.

3.02 PROTECTION

- A. Prior to any job shut-down, all seams laid in the preceding time period shall be checked for water tightness. Required precautions should be taken to leave the

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job in watertight condition. If moisture is present at any location contractor at no expense to the owner or manufacturer will replace all wet material.

- B. All finished work of other trades that is damaged in the execution of work under this section shall be replaced or restored at the expense of the trade who caused the damage.
- C. Ground storage and work shall be confined to the areas designated by the Owner as agreed upon at the pre-bid conference. Do not travel across landscaped areas without the Owner's approval.

3.03 SURFACE PREPARATION

- A. Prior to installing the roofing material, remove from deck all debris, nails, sharp objects, dirt, moisture, petrochemical materials or projections that could in any way damage the systems. Surface shall be prepared such that there is positive and workable drainage. Areas of the roof with ponding water should be corrected and the slope adjusted accordingly so as to prevent future standing water.

3.04 WORKMANSHIP

- A. Contractors must be thoroughly skilled in the application of specified materials; with all workmanship done in such a manner as to fulfill the requirements of drawings and specifications. Any specific directions furnished by manufacturer, and as published in the manufacturer's manual for modified bitumen roofing systems, regarding the application of roofing materials shall be strictly followed. All deviations from the manufacturer's published instructions shall be secured in writing on the manufacturer's letterhead approved by the "Manager of Technical Services".
- B. Prior to applying membranes the contractor and his foreman shall review the specifications and the manufacturer's technical manual with the manufacturer's technical representative to make certain all aspects of membrane application is understood. Application will proceed in strict accordance with specifications and detailed drawings and instructions in said technical manual. No verbal/oral deviation will be accepted unless authorized on company's letterhead signed by the company's " Manager of Technical Services ". .
- C. Maintain constant supervision by a competent foreman.
- D. Contractor must supervise installation of and be responsible for seeing that roof mechanical, electrical equipment, roof drains and other works are properly flashed. Make roof and flashing repairs as necessary; advise the Architect / owner in writing of all potential leaks as may be caused by other trades.

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- E. Install only as much roofing material as can be completed and covered with a cap membrane in one day. No section of the roof should be left exposed and unfinished. Phase roofing is not accepted.
- F. Do not roll roofing equipment or stack materials on completed new roofing surfaces, without the adequate protection of a ½" plywood sheets.
- G. Do not apply any roofing materials before sunrise, or at anytime when there are indications of moisture, (rain, mist, dew, frost or snow).
- H. Insure that no heavy objects remain in one place on the portions of the new roofing membrane where the membrane has not yet set or the adhesive has not fully bonded the layers. .
- I. Insure that all fish mouths are cut and patched (do not attempt to walk down the fish mouths). Objects causing separation between reinforcing plies must be removed.
- J. Every attempt shall be made to install flashings at openings, projections, and walls adjoining new roofing during all work periods. If circumstances do not allow this, these areas shall be made watertight at the end of each day or work period.
- K. Aesthetic Considerations: An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, and apply the specified materials including granules, and exercise care in ensuring that the finished application is acceptable to the Owner.

Delete Section 3.06 if there is no insulation on the deck.

3.05 INSULATION APPLICATION

- A. Shall be applied in strict conformance with insulation manufacturer's specification and comply with NRCA and RIC- TIMA recommendations.

Mechanically fasten the tapered polyisocyanurate board over the metal deck / Light Weight Concrete / Wood Deck with 16 fasteners per board per FM –I90 pattern (1.2 meter x 2.43 meter board (4 x 8 foot board). Fasteners shall be of sufficient length to penetrate the board and the metal deck and comply with FM I90 requirement. Use only fasteners with a minimum 3-inch (76 mm) stress plate when mechanically attaching insulation. Do not attach insulation with nails. Adhere the pre primed cover board over the polyisocyanurate insulation in adhesive.

For areas over structural concrete apply the insulation in Instastik adhesive to the deck. Follow the adhesive manufacturers' requirement for deck preparation and application procedure.

- B. Install insulation boards with staggered board joints in one direction (unless taping joint).

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- C. Install insulation boards snug. Gaps between board joints shall not exceed 1/4 inch (6 mm). All gaps in excess of 1/4 inch (6 mm) shall be filled with like insulation material.
- D. Wood nailers shall be 3-1/2 inches (89 mm) minimum width or 1 inch (25 mm) wider than metal flange. They shall be of equal thickness as the insulation with a minimum 1-inch (25 mm) thickness. All nailers shall be securely fastened to the deck.
- E. Cant strips shall be installed at the intersection of the roof and all walls, parapets, curbs, or transitions approaching 90 degrees, to be flashed. They shall be approximately 4 inches (102 mm) in horizontal and 4 inches (102 mm) in vertical dimension. The face of the cant shall have an incline of not more than 45 degrees with the roof.
- F. Do not install any more insulation than will be completely waterproofed each day.

3.06 COLD ADHESIVE

Delete line item A if there insulation over deck. Section 3.07 A only applies if the membrane is being directly applied over wood / light weight concrete.

A. **Modified SBS Base Sheet:**

On decks with slopes of ¼"-2" per foot, base sheet must be applied in shingle fashion starting at the low point of the roof proceeding upwards, with all end laps staggered. Base sheet shall be lapped 2" on the sides and 4" at the ends. On decks with slopes greater than above in addition to the above requirements the end lap, shall also be staggered no less than 3 feet apart. Sheets will be nailed 12" from the edge, 18" apart. Turn up 2" above cant strip at all vertical surface.

B. **Smooth Ply & Cap Membrane Application:** Apply roofing in accordance with roofing system manufacturer's specification and the following requirements. Apply the ply and cap sheet in cold adhesive allowing 3.5" side and 6" on end laps. End laps shall be staggered with a minimum spacing of 3". Apply to produce a 1/8" -1/4" outflow of adhesive at all seams. Areas with less than 1/8" outflow will be checked with a trowel and resealed. Turn up 2" above can strip at all vertical surfaces. All layers shall be 100% adhered to each other and to the protection board or base. Areas of partial or loose adhesion shall be redone at contractor's sole cost and expense.

The roofing membrane components shall immediately be applied after application of base sheet and/or insulation as a continuous operation.

- 1. Priming: All metal flanges (all jacks, edge metal, and lead drain flashings) and concrete and masonry surfaces shall be primed with an asphalt primer meeting ASTM D 41.

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2. Membrane Adhesive Application: roller, squeegee or spray unit can be used for application of the membranes. Application shall be done in a smooth, even, continuous layer without breaks or voids. Pour the adhesive on the substrate and spread, using a serrated edged squeegee, applied at the rate of 1-1/2 gal per square (6 L/sm).
3. Fill all voids between the penetration and flashing collar with approved caulking.
4. Apply the adhesive so that the substrate is coated in a pattern slightly larger than the first sheet being applied.
5. End laps and selvage laps of the membrane being lapped shall be coated with adhesive so that a visible bead of adhesive appears. Roll all laps with a steel roller to ensure proper adhesion. Alternately, the end laps and side laps may be hot air welded. The hot-air welding method will provide a watertight lap immediately and may be preferable when inclement weather is threatening.
6. Allow 5 to 15 minutes for solvents to evaporate from the adhesive (i.e. tack time or open time) before embedding any sheets into newly applied adhesive. Tack times may vary based on ambient conditions.
7. All rolls (both ply and cap) shall never be put down in full-length rolls (33 lineal feet). They should be cut to the following lengths.

Slopes of	¼" up to 1 ½"	17-foot max
Slopes of	1 ½" to 2"	11-foot max

8. All material must be cut to specified lengths then relaxed or heated until the material lies completely flat before installation. (i.e. no wrinkles, buckles or rigid end strips)
9. Matching granules may be broadcast into the modified bitumen bleed out at seams while hot to enhance the finished appearance of the membrane.
10. All end laps shall be staggered a minimum of 18 inches (457 mm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of membrane shall be installed over the end laps. End laps, flashing sheets and other seams formed over granule surfaces require pre-heating of the top surface of the underlying granule surface membrane to a point where the granules just begin to sink into, and the modified bitumen compound comes up through the granules to ensure proper seam construction and adhesion.
11. All laps shall be parallel or perpendicular to the slope of the roof such that the flow of water is not against the lap.

3.07 BASE FLASHINGS

- A. Install all base flashings of roof wall junctures, projections and expansion point curbing per manufacturers specification. Backer sheet for flashing shall be a minimum of one layer of self-adhering smooth-surfaced polymer-modified bitumen sheet, smooth heat welded membrane covered with top surfacing. Base

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flashing cap sheet shall be applied via heat welding. Cold adhesive application of flashing is not allowed due to possibility of slippage.

- B. Base flashing shall be fused in place so that it extends a minimum 6" onto surface of roof and a minimum of 4" above termination of roofing membrane on wall. When flashing has to be installed over a porous surface, apply asphalt primer at a rate of 1.9 - 2.8 liter / 10 sqm (1/2 to 3/4 gal. per 100 sq. ft) and allow to dry.
- C. Apply pressure to the flashing membrane to obtain maximum contact to surface to which it is applied. There shall be no voids under the base flashing membrane. It is imperative that complete attachment be obtained to the roof surface, roofing membrane over cant, and the wall. A small bead of bitumen should be squeezed out at the edges.
- D. Subsequent strips of base flashing shall be fused in place in the same fashion, overlapping preceding strip by 4". Overlap shall be interply fused to preceding strip. Pressure shall be applied to surfaces to ensure adhesion.
- E. The flashing must not remain open at the end of the workday.
- F. The contractor shall thoroughly inspect the completed flashing system at the end of each day's work.
- G. Mechanically fasten top edge base flashings with approved fasteners 4"-6" on center per manufacturer's specifications.
- H. Install metal counter flashing as required.

3.08 FLASHINGS

- A. Install all base flashings of roof wall junctures, projections and expansion joints per manufacturers' specification. Special care shall be taken to generously preheat the surface to which the flashing is being applied prior to heating the bottom of flashing membranes. Manufacturer's detailed flashing drawing's and application procedures shall be observed and strictly followed.

3.09 SEALANT

- A. All edges of flashing exposed at gravel stops, waste stacks, pitch pans, vent stacks, etc., to be caulked with a smooth continuous bead of approved sealant.

3.10 INSPECTION OF COMPLETED SYSTEM

- A. All cap membrane shall be carefully inspected by the Architect / owner for construction damage and imperfect heat fusion. Any holes or tears shall be patched with the appropriate cap membrane. The patch must extend at least 4"

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in all directions from the edges of the tear or puncture. The final inspection of the roofing system shall be done prior to application of the coating. Any deficiency identified shall be repaired prior to applying the coating.

3.11 DEFICIENCY ADJUSTMENTS

- A. Deficiencies identified by the Architect / owner during the final inspection shall be corrected within five (5) working days. The warranty will not be issued until the deficiencies are corrected.

3.12 CLEANING AND REPAIRING

- A. The contractor shall be held fully responsible for cleaning, repairing, touch up or replacing (when directed) items or areas which have been soiled, discolored or damaged by the work of this section. Precaution shall be taken against splashing any material on to adjacent areas. The contractor shall immediately remove any trace of such splashes or spills.

3.13 WALKWAYS

- A. Construct walkways prior to the application of coating by adhering it with approved adhesive. Install walkways per architectural drawing. If no drawings are provided then install walkway around the perimeter of all rooftop equipment, at all door and stair landings and pathway between both.
- B. Walkway sections shall be no longer than 3'x4' with a 2" inches minimum gap between each section to allow for drainage.

[For projects in California, which need to comply with Title 24 "Cool Roof Requirement", a coating needs to be applied. Contact MBTechnology for more detail and if project requires it.](#)

3.14 COATING APPLICATION:

- A. Power wash surface (use pressure of 800 to 1200 psi). Scrub areas with build-up of dirt, grease, and other foreign matter with solution of tri-sodium phosphate (TSP) and water rinse thoroughly. New granulated cap sheet can be coated within 21 days of original installation or longer as required by either SBS roofing manufacturer or coating manufacturer. Surface must be dry.
- B. Surface and air temperatures must be a minimum of 60°F and rising. DO NOT apply if heavy dew or rain is expected within 24-48 hours. Apply on a clear, sunny day in morning hours with a 3/4" nap exterior paint roller or professional airless sprayer. First, apply one coat over all seams and joints. Allow to cure to one hour or until dry, apply two (2) uniform coats over entire surface, avoiding excessive rolling. Two full coats are needed for all applications. Apply second coat perpendicular to first coat back rolling where necessary. Allow an additional 1-2 coat where standing water exists

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3.15 DEBRIS DISPOSAL

- A. The contractor shall make his own arrangements for disposal of debris and waste material. All disposals will be done off site and at the contractor's expense. The owner assumes no responsibility for the disposal of any roofing material. Debris from project will be removed daily, and at no time allowed to block any thoroughfare. Premises shall be cleaned to the satisfaction of Architect / owner.

[For projects in California, which need to comply with Title 24 "Cool Roof Requirement", a coating needs to be applied. Contact MBTechnology for more detail and if project requires it.](#)

3.16 FINAL INSPECTION PRIOR TO COATING:

- A. All cap membrane shall be carefully inspected by the Architect / owner for construction damage and imperfect adhesion. Any holes or tears shall be patched with the appropriate cap membrane. The patch must extend at least 4" in all directions from the edges of the tear or puncture. The final inspection of the roofing system shall be done prior to application of the coating. Any deficiency identified shall be repaired prior to applying the coating.

3.17 FIRE WATCH:

- A. Fire watch shall be provided continuously during and for at least 2 hour after the last torch on the roof is extinguished. At least two 2-1/2 gallon containers of water and two 4A60BC extinguishers shall be available during the fire watch. When work is interrupted, or at the end of a section of roofing, and at end of each day's work, areas which had been subjected to torch applications shall be surveyed with an infra-red sensing device. Hot spots shall be cooled and re-surveyed. If a hot spot persists, the roof shall be cut open and any smoldering shall be extinguished before the foreman leaves the site.

END OF DIVISION

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