



ROOF SPECIFICATION

R-16-30-M-A

**Fluid Applied Roof Encapsulation System with
Title 24 Compliant Cool Roof Coating**

For Existing Metal Panel Roofs

Project: TBD
Buildings: TBD
Location: TBD

Section 07 56 00

COLD FLUID APPLIED ROOFING

WeatherWeld – A Division of Liquiform Technologies

9757 7th St. #803 Rancho Cucamonga, CA 91730 | (888) 440-3224 | www.weatherweld.com

SECTION 07 56 00

FLUID APPLIED ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Seamless Fluid Applied Composite Roof Systems.
- B. Roof Flashings.
- C. Roof Accessories.

1.2 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim: Cap flashing and expansion joints.
- C. Section 07 71 00 - Manufactured Roof Specialties: Counter flashing, gravel stops, fascia, scuppers, gutters, and downspouts.
- D. Section 07 72 00 - Roof Accessories.
- E. Section 22 30 00 - Plumbing Equipment: Adjacent Piping Vents and Drains.
- F. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.3 REFERENCES

- A. National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.
- B. American Society of Civil Engineers (ASCE) - ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
- C. ASTM International (ASTM):
 - 1. ASTM C 728 - Standard Specification for Perlite Thermal Insulation Board.
 - 2. ASTM D 570 - Standard Test Method for Water Absorption of Plastics.
 - 3. ASTM D 1079 - Standard Terminology Relating to Roofing, Waterproofing, and Bituminous Materials.
 - 4. ASTM D 41 - Standard Specification for Asphalt Primer Used in Roofing, Damp proofing, and Waterproofing.
 - 5. ASTM D1227 - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
 - 6. ASTM D 2523 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes.

7. ASTM D 3019 - Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, and Fibered.
 8. ASTM D 3909 - Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules.
 9. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.
 10. ASTM D 4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
 11. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
 12. ASTM E 548 - Standard Guide for General Criteria Used for Evaluating Laboratory Competence.
 13. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
- D. Underwriters Laboratories (UL): ANSI/UL 790 - Standard Test Methods of Roof Coverings.
- E. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide.
- F. CRRC - Cool Roof Rating Council.
- G. California Building Standards Code - Title 24.
- H. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) - Architectural Sheet Metal Manual.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to Work in this Section.

1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide watertight roofing membrane and flashing system that does not permit the passage of water, resists uplift pressures specified in this section, and is capable of withstanding thermally induced movement and exposure to weather without failure.
- B. Energy Performance:
1. Low-Slope Roofs: Provide roofing system with Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
 2. Roof membrane finish must comply with current California Title 24 Part 6 requirements:
 - a. Minimum three (3) year aged solar reflectance: 0.55.
 - b. Minimum Thermal Emittance: 0.75.

- C. Wind Resistance: Provide roofing membrane, base flashings and component materials that comply with requirements in FMG 4450, FMG 4470, UL 580 or UL 1897 as part of a membrane roofing system.
 - 1. Wind Load Resistance: 1-90
- D. Fire-Test-Response Characteristics: Provide roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings from the applicable testing and inspecting agency.
 - 1. Exterior Fire-Test Exposure: Class A ASTM E 108 for application and roof slopes indicated.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 30 00 - Administrative Requirements.
- B. Product Data: For each product note in this section, submit printed or digital copies of manufacturers product information including the following:
 - 1. Printed affirmation of performance characteristics.
 - 2. Roofing system design.
 - 3. Application Instructions.
 - 4. Technical Data Sheets.
 - 5. Safety Data Sheets.
- C. LEED Submittals:
 - 1. Product Data for Credit SS 7.2: For roof materials, indicating that roof materials comply with Solar Reflectance Index requirement.
 - 2. Product Data for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.
- D. Warranty Documents: Provide sample copies of the Manufacturer's standard form outlining the terms and conditions of the warranty specified for the Work in this section.
- E. Shop Drawings: Provide plan, elevation, section and isometric drawings outlining waterproofing conditions at transitions, terminations, penetrations and attachments to adjacent work.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of the roofing system.
- G. Research & Evaluation Reports: For components of the roofing system.
 - 1. Include report from UL, ICC, FMG or another testing and inspecting agency acceptable to authorities having jurisdiction, stating entire system meets fire-test-response characteristics listed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installer must be authorized by roofing system manufacturer to perform all Work specified in this section and provide an executed manufacturer's warranty.
- B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for roofing system identical to that used for this project.
- C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.
- D. Source Limitations:
 - 1. Obtain roof system components from a single manufacturer.
 - 2. Secondary products required must be recommended and approved in writing by the roofing system Manufacturer.
 - 3. Upon request, submit the Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.

1.8 PRE-INSTALLATION CONFERENCE

- A. Prior to commencement of Work, conduct a conference at project site. Comply with the requirements of Section 01 31 00 - Project Management and Coordination. Review and affirm methods and procedures related to the work specified in this section, including but not limited to the following:
 - 1. Meet with owner, architect, owner's insurer if applicable, testing and inspecting agency representative, roofing installer, roofing system manufacturer's representative, deck installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 2. Review methods and procedures related to roofing installation, including the manufacturer's written instructions.
 - 3. Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
 - 5. Review structural loading limitations of roof deck during and after roofing.
 - 6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs and condition of other construction that will affect roofing system.
 - 7. Review governing regulations and requirements for insurance and certificates, if applicable.
 - 8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in original containers, with seals unbroken, and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storage. For bulk-delivered materials, identify manufacturer's name and product designation with delivery receipts and material manifests.
- B. Protect roofing materials from physical damage and from deterioration due to sunlight, moisture, soiling and other sources. Comply with manufacturer's written instructions for handling, storing and protecting during installation.
- C. Store liquid materials in their original, undamaged containers in a clean, dry, and protected location, between 50 degrees F to 80 degrees F (10 degrees to 26.7 degrees C). Ensure jobsite storage is located in a shaded and well-ventilated area, away from open flame or welding sparks. Indoor Storage is recommended.
- D. Do not stockpile materials on roof without first obtaining acceptance from the Architect.
- E. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside Manufacturer's absolute limits.
- C. Minimum temperature for application of WeatherWeld Emulsion and WeatherWeld Acrylic Coating is 50 degrees F (10 degrees C) and rising.
- D. Product application must not be performed when rain or other ambient moisture conditions such as fog or heavy dew are possible within a 72-hours of completion. Roof surface must be a minimum of 6 degrees F (3 C) above the dew point and rising.
- E. Safety Data Sheets (SDS) must be on location during the transportation, storage, and application of materials.
- F. Schedule and phase work such that new roofing materials are not subject to construction traffic. Protect new roof sections and inspect for damage upon completion.

- G. When applying materials with spray equipment, take precautions to prevent over spray and/or solvents from damaging or defacing surrounding walls, building surfaces, vehicles, or other property.
- H. The surface on which the roof system is applied shall be clean, smooth, dry, and free of projections or contaminants that could prevent proper application of or be incompatible with the new installation. Correct all sharp edges, foreign materials, oil, and grease.
- I. Take precautions to ensure that materials do not freeze.
- J. Protect completed roof sections from foot traffic for a period of at least 48 hours at 75 degrees F (24 degrees C) and 50 percent relative humidity or until fully cured.

1.11 WARRANTY

- A. No Dollar Limit (NDL) Warranty: Provide Manufacturer's written and signed No Dollar Limit (NDL) warranty document, affirming coverage in the event of a leak in the roofing membrane or base flashings applied within the scope of work outlined in this section.
 - 1. Warranty Period: Forty (40) years from date of Substantial Completion.
 - 2. Coating Warranty: Twelve (12) years from date of Substantial Completion.
- B. Project Warranty: Submit roofing installer's signed and executed warranty document affirming coverage of all work of this Section, including but not limited to insulation, cover board, fasteners, base sheet, roofing membrane, base flashings, and walkway products.
 - 1. Warranty Period: Two (2) years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Liquiform Technologies Inc – WeatherWeld.
 - 1. Within 72 hours of the initial site visit, equivalent systems from The Garland Company or Tremco Roofing may be considered, providing the systems meet warranty requirements, physical characteristics and do not use solvents or fire during installation.
- B. Acceptable Manufacturers:
 - 1. Liquiform Technologies Inc – WeatherWeld.
 - 2. _____.
 - 3. _____.

2.2 COMPOSITE MEMBRANE SYSTEM

- A. General:
 - 1. Roofing system must comply with 2007 CBC, Chapter 15.

2. Subject to compliance with requirements, provide the specified membrane configuration, applied over existing low slope roofs.
- B. Basis of Design: R-16-30-M-A, by WeatherWeld. Composite roof applied over approved existing low slope roofing with CA Title 24 compliant cool roof surface coating.
1. Physical Properties:
 - a. Total Weight: 1.5 pounds per square foot (0.68 kg) dry.
 - b. Nominal Thickness: 250 mil Dry Film Thickness (DFT).
 - c. Minimum Strength: 600 psi (4136 kN/m²) per ASTM D 2370.
 - d. Minimum Elongation: 10% per ASTM D 4830.
 - e. Minimum Puncture Resistance: 700 lb. (318 kg) per ASTM D 4830.
 - f. Water Absorption: 1% max by weight per ASTM D 570.
 - g. Fire Rating: UL Class "A" assembly.
 2. Membrane Configuration:
 - a. Fiberglass Roving: 16 Lbs per 100 square feet.
 - b. Asphalt Emulsion: 30 gallons per 100 square feet.
 - c. Acrylic Base Coating: 1.5 Gallons per 100 square feet.
 - d. Reflective Acrylic Top Coating: 1.5 Gallons per 100 square feet.

2.3 COMPOSITE MEMBRANE MATERIALS

- A. Asphalt Emulsion: WeatherWeld Asphalt Emulsion meeting or exceeding the requirements of ASTM D1227. WW471145, by WeatherWeld.
 1. VOC Content (Maximum): 0 g/l.
 2. Wet Weight: 8.7 Lbs./Gal. (1041 g/l).
 3. Dry Weight: 4.35 Lbs./Gal. (521 g/l).
 4. Solids Content by Volume: 49-53%.
- B. Fiberglass Reinforcement (Type E): Multi-end continuous fiberglass roving designed for spray operations. WWFG100, by WeatherWeld.
 1. Yield: 207 yd/lb.
 2. Tex: 2400 g/km.
 3. Spool Weight: 41.9 LB (19kg).
- C. Acrylic Basecoat: WW473049, by WeatherWeld.
 1. Solids Content by Volume: >45-50%.
 2. VOC Content (maximum): 400 g/l.
 3. Weight: 7.7 - 8.7 lbs./Gal. (922 – 1041 g/l).
- D. Reflective Acrylic Topcoat: CA Title 24 Cool Roof Reflective Coating as supplied by the manufacturer of the membrane system. WW472049, by WeatherWeld.
 1. Solids Content by Volume: >45-50%.
 2. VOC Content (maximum): 400 g/l.
 3. Weight: 7.7 - 8.7 lbs./Gal. (922 – 1041 g/l).
 4. Solar Reflectance:

- a. Initial: 0.83.
- b. 3 Year Aging: 0.75.
- 5. Thermal Emittance:
 - a. Initial: 0.88.
 - b. 3 Year Aging: 0.92.
- 6. Solar Reflectance Index (SRI):
 - a. Initial: 104.
 - b. 3 Year Aging: 93.

2.4 SHEET MATERIALS

- A. Self-Adhering Membrane: SBS-modified membrane sheet with adhesive backing. WW474049, by WeatherWeld.
 - 1. Elongation: 85%.
 - 2. Thickness: 75 mils.
 - 3. Weight: 3 oz/ sq. yd.
 - 4. Roll Width: 36 inches.

2.5 ADHESIVES AND SEALANTS

- A. Insulation Adhesive: Two-component, low-rise polyurethane foam adhesive designed to secure insulation to roof decks; Oly-Bond 500, manufactured by OMG.
- B. Flashing Cement: Trowel grade SBS-modified flashing cement made from heavy-bodied asphalt reinforced with organic fibers.
 - 1. VOC Content (Maximum): 290 g/l.
 - 2. Weight per Gallon: 8.25 – 9.25 Lbs (988 – 1107 g/l).
- C. Polyurethane Sealant: Moisture-cured, single-component, polyurethane-based, non-sag elastomeric sealant. Meets ASTM C920, Type S, Grade NS, Class 35; Sikaflex-1A, manufactured by Sika.

2.6 SHEET METAL, FLASHING AND TRIM

- A. Metal Flashing Sheet: 24 Ga. Galvanized sheet metal flashing as specified in Division 07 Section "Sheet Metal Flashing and Trim."
- B. Flashing Boot: 24 Ga. Galvanized sheetmetal pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- C. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- D. Pitch Pans: Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints must be welded or soldered to remain watertight.
- E. Fabricated Flashings: As specified in Section 07 62 00.

1. Fabricated flashings and trim must conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the CDA Copper Development Association "Copper in Architecture - Handbook" as applicable.
- F. Manufactured Roof Specialties: Manufactured copings, fascia, gravel stops, control joints, expansion joints, joint covers and related flashings and trim are specified in Section 07 71 00.
 1. Manufactured roof specialties must conform to the detail requirements of SMACNA "Architectural Sheet Metal Manual" and/or the NRCA "Roofing and Waterproofing Manual" as applicable.
- G. Fasteners: Factory-coated steel fasteners and metal meeting corrosion-resistance provisions in FMG 4470, designed for fastening roofing membrane components to substrate, tested by manufacturer for required pullout strength and acceptable to roofing system manufacturer.

2.7 ACCESSORIES

- A. General: Roofing accessories recommended by manufacturer for intended use and compatible with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate and acceptable to roofing system manufacturer.
- C. Substrate Joint Tape: 6 inch (152mm) or 8 inch (203mm) wide, coated, glass-fiber joint tape.
- D. Anti-Skid Granules: Granules specifically designed for anti-skid purposes and compatible with all coatings specified in this section.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Compatibility, verify all materials including existing roof are compatible.
 1. Verify existing roof systems are NOT coated with silicone type coatings.
- B. Examine substrates, work areas and field conditions, for compliance with the following requirements and other conditions which may affect the performance of roofing system. Verify the following conditions:
 1. Surfaces are clean, rigid, dry, smooth, and free from cracks, holes, blisters, debris and sharp changes in elevation greater than 1/4 inch (6mm).
 2. The deck is free of depressions, waves or projections and properly sloped to drains, valleys, eaves, scuppers, or gutters.
 3. Roof openings and penetrations are adequately installed, and roof drains are securely clamped in place.

4. Cant strips, blocking, curbs and nailers are securely anchored and installed in accordance with manufacturers requirements.
 5. Drains and scuppers are free of ruptures and sealed on all four sides on the exterior face of walls.
 6. Surface plane flatness and fastening of roof deck complies with manufacturers requirements.
 7. Concrete curing compounds and any chemicals that may impair adhesion of roofing components have been removed.
 8. Existing roof assemblies are dry, confirmed by conducting infrared thermal scans.
 9. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method in accordance with ASTM D 4263.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory conditions before proceeding.

3.2 PREPARATION

- A. Do not begin installation until substrates have been properly prepared.
- B. Prior to application, clean surface with water. Where wash water must be reclaimed due to contamination concentrations, roof water collection design of the building or local ordinances. Conform to local requirements for disposal of wash water.
- C. Clean substrate of dust, debris, moisture and other substances detrimental to roofing installation in accordance with the roofing system manufacturer's written instructions.
- D. Remove or correct all sharp projections which may interfere with the integrity of the membrane.
- E. Protect roof drains and edges during construction to prevent materials from entering roof drains and conductors or migrating onto surfaces of adjacent construction. Remove roof drain plugs when no work is taking place or when rain is forecast.
- F. Protect adjacent materials and lower paving, prior to starting work, in accordance with roofing system Manufacturer's instructions.
- G. Roof Surface Preparation:
 1. Vacuum loose gravel from existing roofs.
 2. Remove existing perimeter edge flashings.

3.3 ROOFING MEMBRANE INSTALLATION - GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA and NRCA.
- B. Commence installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Cooperate with testing and inspecting agencies engaged or required to perform services during roofing system installation.
- D. Coordinate installation to ensure that materials that will not be permanently exposed are protected from moisture and covered at the end of each workday.
 - 1. Provide tie-offs at the end of each day's work to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement with joints and edges sealed.
 - 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 - 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- E. Substrate Joint Penetrations: Where exceeding 1/4 inch in width (6mm), tape joints to inhibit roofing cement from penetrating substrate, entering building, or damaging roofing system components or adjacent building construction.

3.4 FLASHING INSTALLATION

- A. General:
 - 1. Refer to the manufacturer's application manual for flashing of specific details.
 - 2. All flashings must have a minimum 536 mil of fiberglass composite upon completion of the installation.
 - 3. Fabricated flashings and trim must conform to the requirements found in the current SMACNA "Architectural Sheet Metal Manual".
 - 4. Manufactured Roof Specialties: Manufactured copings, fascia, control joints, and related flashings and trim must conform to the requirements found in the SMACNA "Architectural Sheet Metal Manual" and/or the National Roofing Contractors Association "Roofing and Waterproofing Manual".
 - 5. Any joint in the structure intended to allow for movement must be divorced from the seamless reinforcement composite.
 - a. Install an 18 inch (457mm) wide slip sheet consisting of inverted (mineral-side down) cap sheet, laid dry over the joint and extending 36 inches (914mm) at each end.
 - b. Over the slip sheet, solidly adhere a 36 inch (914mm) polyester ply in 4 gallons per 100 square feet (1.63 L/m²) of emulsion and reinforce with 536 mil of seamless composite.
- B. Metal Drip Edges:
 - 1. Inspect nailers for proper attachment and configuration.

2. Run one ply of self-adhering membrane 2 inches (51mm) over the edge. Assure coverage of all wood nailers.
 3. Install continuous cleat and fasten at 6 inches (152 mm) o.c.
 4. Install new metal edge, securing to cleat and set in bed of roof cement. Fasten flange to wood nailers every 3 inches (76 mm) o.c. staggered.
 5. Apply primer to metal edges at a rate of 100 square feet per gallon and allow to dry.
 6. Adhere a continuous strip of self-adhering membrane to the metal flange 2 inches (51mm) from the edge and extending 6 inches (152mm) onto the existing roof surface.
 7. Coordinate placement to ensure membrane laps do not coincide with metal laps.
 8. Reinforce with 500 mil of seamless composite. Extend field application of composite to the outside edge of the metal flashing.
 9. Apply composite flush with the edge to ensure that water does not pond.
- C. Roof Edge with Gutter:
1. Inspect nailers for proper attachment and configuration.
 2. Install one ply of self-adhering membrane 2 inches (50mm) over the edge. Assure coverage of all wood nailers.
 3. Install gutter and strapping.
 4. Install continuous cleat and fasten at 6 inches (152 mm) o.c.
 5. Install new metal edge, securing to cleat and set in bed of roof cement. Fasten flange to wood nailers every 3 inches (76 mm) o.c. staggered.
 6. Apply primer to metal edges at a rate of 100 square feet per gallon and allow to dry.
 7. Adhere a continuous strip of self-adhering membrane to the metal flange 2 inches (51mm) from the edge and extending 6 inches (152mm) onto the existing roof surface.
 8. Coordinate placement to ensure membrane laps do not coincide with metal laps.
 9. Reinforce with 500 mil of seamless composite. Extend field application of composite to the outside edge of the metal flashing.
 10. Apply composite flush with the edge to ensure that water does not pond.
- D. Pipe Penetrations: All pipe penetrations must be flashed with a minimum 24 gauge galvanized sheet metal storm collars installed approximately 1 inch (25mm) above the top of the flashing boot and secured with a draw band with approved sealant.
- E. Pitch Pockets:
1. Place the pitch pocket over the penetration and prime all flanges.
 2. Apply strips of self-adhering membrane around all sides of pitch pocket, extending 6 inches (152 mm) onto the field of the roof.
 3. Fill pitch pocket halfway with non-shrink grout.

4. Encapsulate entire pitch pocket with 500 mil of seamless composite.
 5. Caulk joint between roof system and pitch pocket with roof cement.
 6. Place a water shedding bonnet over the top of the pitch pocket, clamp the top with a drawband, and apply sealant.
- F. Pipe Supports: Install supports in accordance with Manufacturers' guidelines. Traffic pads must be installed under pipe supports and fasteners must not penetrate the roofing membrane.
1. All pipes 2 inches (51mm) in diameter or less may be supported with polymer pipe supports spaced no greater than 8 feet (2438mm) on center.
 2. All pipes over 2 inches (51mm) in diameter must be supported with movable pipe hangers or other support system approved by the roofing system Manufacturer.

3.5 FIELD MEMBRANE INSTALLATION

- A. Apply one layer of the composite roofing at the following ratio:
1. Asphalt Emulsion (undiluted): 30 gal. per 100 square feet (12.2 l/m²).
 2. Fiberglass Reinforcement: 16 lb. per 100 square feet (0.78 Kg/m²).
- B. In accordance with the roofing system manufacturer's flashing details, apply seamless composite to the entire roof surface, terminating at the following locations:
1. Tops of base flashings and curbs
 2. Outside edges of perimeter metal flashings.
 3. Outside edges of walls.
 4. Insides of drain bowls.
- C. No water or other material may be added to the emulsion to thin or extend pot life.
- D. Fiberglass must be disbursed from the applicator in varying intertwined lengths, up to 24 inches (610mm).
- E. Thoroughly mix fiberglass and emulsion prior to application on roof deck.
- F. Any loose strands must be brushed by hand, removed or filled-in with emulsion to create a solid surface.
- G. Upon completion, no area may be less than 330 mil dry film thickness (DFT).
- H. Areas such as base flashings and penetrations, where application exceeds 500 mils wet, must be brushed by hand to prevent surface crazing.
1. Where required due to phasing or weather conditions, composite roofing may be applied in two passes of half the recommended wet mil thickness.

3.6 REFLECTIVE COATING INSTALLATION

- A. Prior to reflective coating application, wash the roof surface with water. Do not commence application until the system has thoroughly dried, as registered by a reading of zero with a calibrated moisture meter.
- B. Apply specified roof coating to the entire roof surface at a minimum of 1 1/2 gal. per 100 square feet (0.6 L/m²) in each of two passes to total 3 gallons per 100 square feet. (1.2 L/m²). Back rolling is recommended to ensure even coverage throughout.

3.7 FINAL ROOF INSPECTION

- A. At completion of roofing installation and associated Work, schedule a conference to include the Architect, Contractor, roof membrane installer, installers of associated work, roofing system Manufacturers' representative and others directly concerned with performance of roofing system.
- B. Perform a site walk of roof surface, inspecting perimeter edges and flashings. Identify all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Should roof core testing verify the presence of damp or wet materials, it is the responsibility of the installer to replace the damaged areas at their expense.
- D. Repair or replacement of defective work found during inspection is required to produce an installation that is free of damage and deterioration at time of Substantial Completion and is required to execute the Manufacturer's warranty.
- E. Notify Architect upon completion of corrections.
- F. Upon a successful final inspection, contractor will provide an executed copy of the Manufacturer's warranty and written acceptance of the installation.

3.8 PROTECTION

- A. Prior to allowing any traffic on newly installed roof membrane, authorization in writing must be obtained from the roof system Manufacturer.
- B. Provide traffic ways, and erect barriers, fences, guards, rails, enclosures, chutes and other measures to protect personnel, roofs and structures, vehicles and utilities.
- C. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roof for deterioration and damage. Where any defects or damage are identified describe their nature and extent in a written report, with copies to architect and owner.
- D. Protect exposed surfaces of finished walls with tarps to prevent damage.
- E. Plywood required for material movement and traffic over existing roofs must be a nominal 5/8 inch (16 mm) thick or greater.

3.9 CLEANING

- A. Clean-up and remove daily from the site all wrappings, empty containers, paper, loose particles, and other debris resulting from these operations.
- B. Remove coating markings from finished surfaces.
- C. Repair or replace defaced or disfigured finishes caused by Work of this section.
- D. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION