

SUBMITTAL DOCUMENTS

FOR

ROOF REPLACEMENT

OF

WeatherWeld - A Division of Liquiform Technologies Bid Package R-16-30-M-A

Prepared For:

email:
phone:

Encapsulation of the existing roof using the WeatherWeld 16-30 system and Title 24 compliant reflective roof coating.

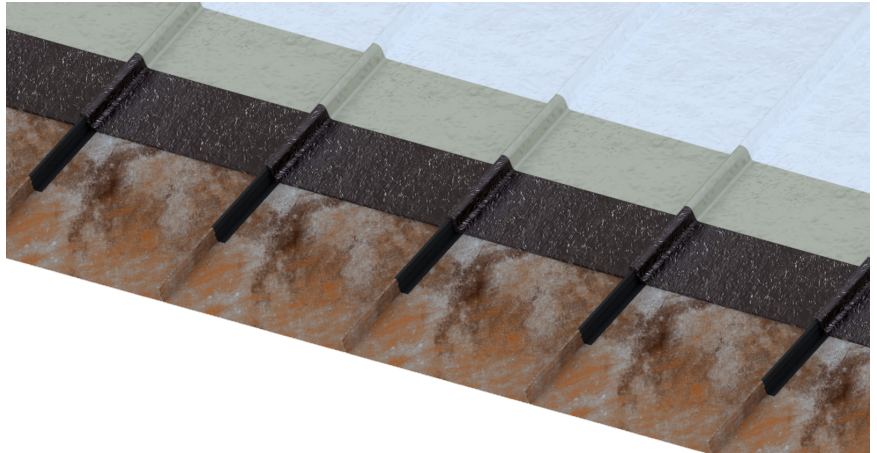
Date Prepared:

Existing Roof: Standing Seam Metal Roof

Proposed System: R-16-30-M-A

Design Considerations:

- 40 Year NDL Warranty
- UL Class A
- FM 1-90 (45 psf) Design Pressure
- Title 24 Compliant Reflective Surface Coating



*Measurements are from aerial survey and do not include roof slope or parapet walls.
This image is for reference only and not to be used for estimation purposes.*

Provided By:

WEATHERWELD™

WeatherWeld - A Division of Liquiform Technologies Inc.
9757 7th St. #803 Rancho Cucamonga, CA 91730
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info@weatherweld.com

Technical Contact: Kody Berry
Phone: (909)-477-1842
Email: kody@weatherweld.com

Design Contact: Robert Weygant
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Email: robert@weatherweld.com

Scan For More Info



Scope of Work

Overview

PROJECT LOCATION:	
WEATHERWELD SYSTEM:	R-16-30-M-A
EXISTING CONDITIONS:	Metal Deck/ Standing Seam Roof
SYSTEM OVERVIEW:	Encapsulation of the existing roof using the WeatherWeld 16-30 system and Title 24 compliant reflective roof coating.
WARRANTY:	40 Years
FIRE RATING:	UL Class A
DESIGN PRESSURE:	45 PSF (FM 1-90)
CLIMATE ZONE:	
THERMAL REQUIREMENT:	None

Materials

WEATHERWELD MEMBRANE

WeatherWeld Emulsion:	30 Gallons / 100 square feet
WeatherWeld Fiberglass:	16 Lbs. / 100 square feet
Acrylic Basecoat:	1.5 Gallons / 100 square feet
Acrylic Topcoat:	1.5 Gallons / 100 square feet
Anchor/Base Sheet:	None

INSULATION

Insulation:	None
Substrate / Cover Board:	None

ACCESSORIES

Polyurethane Sealant:	Where Applicable
Asphalt Primer:	Where Applicable
Asphalt Adhesive:	Where Applicable
Self-Adhering Membrane:	Where Applicable
Pre-Formed Flashings:	Where Applicable

Detailing Conditions

Conditions listed are common rooftop details which may or may not be present on the project.

Flat Edge Termination Flashings	Roof Drain Flashings	Rooftop Duct Encapsulation
Raised Edge Edge Flashings	Pipe Penetration Flashings	Skylight Flashings
Gutter Edge Flashings	Mechanical Equipment Curbs	Roof Hatch Flashings
Roof Transition Flashings	Sheetmetal Storm Collars	Smoke Vent Flashings
Wall Termination Flashings	Pitch Pocket Flashing	Misc. Sheetmetal Flashings
Parapet Coping Caps	Expansion / Control Joint Flashing	

General Information

1.0 PROCEDURE

- A. Repair any damage to the substrate, remove any exposed or erupted fasteners, and clean thoroughly in preparation to receive the roof system.
- B. Where seams exceed 2” in height, install cant strips at each seam.
- C. Apply Seamless roof membrane materials to provide a watertight roof assembly that meets WeatherWeld warranty requirements. Encapsulate entire roof area.
- D. Install Flashings and Accessories.
- E. Install Walkway pads (where applicable).
- F. Apply Anti-Skid Traffic Coating (where applicable).

2.0 ADMINISTRATION

- A. Refer to local laws and building code for thermal value requirements, wind uplift, and other requirements.
- B. Refer to Manufacturer installation manual, detail drawings, and specific industry guidelines for good work practice procedures.
- C. Follow all recommendations referenced in the current edition of NRCA roofing and Waterproofing Manual.
- D. Wind Uplift Rating Required: I-90
- E. Fire Rating: UL Class A

3.0 ROOF INSPECTION

- A. Provide written documentation to owner to replace wet/damaged roofing materials or decking.
- B. Installer is responsible to ensure no ponding water exists after 48 hours after precipitation.

4.0 PROTECTION OF WORK

- A. Protect all areas from material spills and overspray with appropriate masking.
- B. Protect adjacent areas from vehicle or equipment staging damage.
- C. All areas not specified for roofing material installation must be clean and free of material drips or overspray before project is considered complete.

5.0 GENERAL REQUIREMENTS AND BEST PRACTICES

- A. Ensure all surfaces are clean, compatible, dry, free from debris and sharp projections, dirt, grease, etc. before installing roofing materials.
- B. Install asphalt primer to facilitate proper adhesion at flashings, walls, and other rooftop components.
- C. Ensure roof is washed between steps to ensure adequate adhesion.
- D. Contractor is responsible to ensure no ponding water exists when the project is complete.

Substrate Preparation

1.0 GENERAL:

- A. All necessary repairs to field and flashings must be performed according to accepted roof construction best practices.
- B. Repairs include but are not limited to the removal and replacement of all wet insulation, damaged roof decking and/or structural members, and/or defective materials.
- C. Existing conditions may be identified through a moisture detection survey such as an infrared scan.

2.0 PROCEDURE:

- A. Remove down to the surface of the roof, all damaged roof flashings at curbs and parapet walls.
- B. Remove down to the surface of the roof, all existing flashings at roof drains and penetrations.
- C. Where roof repairs create inconsistencies in the roof surface, fill any low spots with like materials to create a smooth, even surface for application of new roof membranes.
- D. Verify that existing conditions meet the following requirements:
 - 1. Remove all loose dirt and foreign debris from the roof surface. Do not damage roof materials in cleaning process.
 - 2. Clean and seal all parapet walls, gutters, and coping caps, and repair any damaged metal where necessary. Seal watertight all fasteners, pipes, drains, vents, joints, and penetrations where water could enter the building envelope.
 - 3. Confirm local water run-off ordinances and restrictions prior to cleaning roof. Clean the entire roof surface by removing all dirt, algae, mold, moss, paint, oil, talc, rust, or other foreign substance. Use a bio-degradable cleaner when necessary and warm water. Scrub heavily soiled areas with a brush. Power wash roof thoroughly with an industrial surface cleaner equipped with one-piece balanced spray rotating jets for streak free close contact cleaning. Rinse with fresh water to completely remove all residuals. Allow roof to dry thoroughly before continuing.

Roof System Installation

1.0 INSULATION

A. Not Applicable.

2.0 BASE SHEET

A. Not Applicable.

3.0 WEATHERWELD SEAMLESS COMPOSITE MEMBRANE

A. Coverage Rates:

1. 30 Gallons / 100 square feet of WeatherWeld Emulsion.
2. 16 Lbs. / 100 square feet of Weatherweld Fiberglass Roving.

B. Installation:

1. Encapsulate entire roof area.
2. Extend composite applications to top of outside edges of parapet walls / terminations / equipment / counter flashings / pipe penetration flashings.
3. Allow to cure for 10 days.

4.0 REFLECTIVE COATING SYSTEM

A. Coverage Rates:

1. 1.5 Gallons / 100 square feet of WeatherWeld Acrylic Base-Coat.
2. 1.5 Gallons / 100 square feet of WeatherWeld Acrylic Top-Coat (Title 24 Compliant).

B. Installation:

1. Apply reflective coating to all surfaces covered with Seamless Composite Membrane.
2. Install Basecoat and allow to cure for 2 days.
3. Install Topcoat and allow to cure for 2 days.

5.0 PROTECTION

A. Protect all areas from material spills and overspray with appropriate masking.

B. Protect adjacent areas from vehicle or equipment staging damage.

C. All areas not specified for roofing material installation must be clean and free of material drips or overspray before project is considered complete.

Flashing Considerations

1.0 GENERAL

- A. All rooftop flashings except sheetmetal counter-flashings shall be encapsulated with 250 mills DFT of WeatherWeld membrane when complete.
- B. All flashing heights must be Min. 8". Contact WeatherWeld rep for guidance on existing flashings less than the Min. flashing height requirement.
- C. Wind uplift attachment: I-90 Install flashings with attachment systems to meet wind uplift requirement.
- D. All coping and edge termination flashings must be cleat attached.
- E. Perimeter flashings must be attached by continuous cleat where applicable.
- F. All terminations will be counter flashed with sheetmetal by min. 3" including exterior walls.
- G. Sheetmetal must be min 24 Ga. Galvanized or bonderized (if match painted. Owner chooses color.) Sheetmetal coping may be Kynar coated.
- H. Existing flashings in serviceable condition may be reused.
- I. Clean flashings to bare metal.
- J. Edge flashings and scuppers must be removed and replaced with new.
- K. Un-flashed or deteriorated flashings at penetrations must have new flashing installed.
- L. Prime all flanges with asphalt primer at rate of 1 Gal per square.
- M. Install continuous strip of Self-Adhering Membrane under all perimeter flashings extending 2 inches over edge.
- N. Install continuous strip of Self-Adhering Membrane at sheetmetal flanges min. 2 inches onto flange extending min. 6 inches onto roof.
- O. Sheetmetal extension skirt is to be used where counterflashing cannot be used, or existing flashing is too tight to extend WeatherWeld applications.

2.0 BASE FLASHINGS

- A. Install cant strip adhered in adhesive.
- B. Extend base sheet adhered in adhesive extending to top of base flashing.
- C. Install new base flashing with Self adhering membrane where required.
- D. Install new sheetmetal counterflashing at existing reglet.

3.0 WALLS ABOVE BASE FLASHINGS

- A. Install 8" self-adhering membrane strip covering cracks in walls.
- B. Patch cracks in wall with polyurethane sealant.
- C. Install acrylic coating system on stucco walls above Baseflashing. Terminate installation at base of sheetmetal coping.
- D. Extend WeatherWeld application to the outside edge of wall.

4.0 PARAPET WALLS

- A. Extend WeatherWeld application to the outside edge of wall.
- B. Install new 24 Ga. sheetmetal coping cap. Cleat attached I-90 Rating.

- C. Install Self-Adhering Membrane cover over joints.
- D. Color to chosen by owner.

5.0 SKIRTED COUNTERFLASHINGS

- A. Extend WeatherWeld application to just below existing counterflashing or coping cap.
- B. Install new 24 Ga. sheetmetal skirt flashing behind the existing flashing. Flashing must extend a minimum of 3 inches below and 1 inch behind the existing counterflashing.
- C. Fasten to meet the specified wind uplift rating.
- D. Color to chosen by owner.

6.0 SHEETMETAL EDGE TERMINATION

- A. Remove existing perimeter edge metal and replace with new sheetmetal edge flashing system.
- B. Color to chosen by owner.

7.0 PIPE AND PENETRATIONS

- A. Flashed Penetrations – If in serviceable condition, reuse existing.
- B. Un-flashed Penetrations - Install new penetration flashings with sheetmetal counterflashing.
- C. Install Sheetmetal storm Collars.

8.0 ROOFTOP EQUIPMENT

- A. Install Tapered Insulation at back side of rooftop equipment to facilitate proper drainage.
- B. Extend base sheet to top of equipment curbs.
- C. Encapsulate with WeatherWeld.

9.0 BUILDING TRANSITIONS

- A. Metal expansion joint- extend WeatherWeld under roofed base flashing. Encapsulate sheetmetal above Baseflashing with WeatherWeld.

10.0 DRAINS

- A. Ensure drains function properly and are free of debris.
- B. Flush mount drains - Replace compression clamps and drain screens.
- C. Scupper drains - Remove and replace with new sheet metal scupper.
- D. Encapsulate drain bowls and flanges with WeatherWeld.

11.0 MOISTURE VENTS

- A. Install one way moisture vents every 1000 sq ft. Encapsulate flange with WeatherWeld. (Insulated roofs only)

12.0 PIPE SUPPORTS

- A. Remove existing wood blocks supporting rooftop pipes.
- B. Install Recycled rubber pipe support block with Galvanized steel strut.
- C. Dura-Block or Equal.

13.0 DESCRIPTION

- A. Remove existing roof and fiberboard, and clean in preparation to receive membrane.

- B. Install specified base sheet to the LWIC concrete deck with fasteners appropriate to the deck type. Attach in accordance with local building codes and wind uplift requirements.
- C. Apply Seamless roof membrane materials to provide a watertight roof assembly that meets WeatherWeld warranty requirements. Encapsulate entire roof area.
- D. Install Flashings and Accessories.
- E. Install Walkway pads.
- F. Apply Anti-Skid Traffic Coating (where applicable).

14.0 ADMINISTRATION

- A. Refer to local laws and building code for thermal value requirements, wind uplift, and other requirements.
- B. Refer to Manufacturer installation manual, detail drawings, and specific industry guidelines for good work practice procedures.
- C. Follow all recommendations referenced in the current edition of NRCA roofing and Waterproofing Manual.
- D. Wind Uplift Rating Required: I-90
- E. Fire Rating: UL Class A

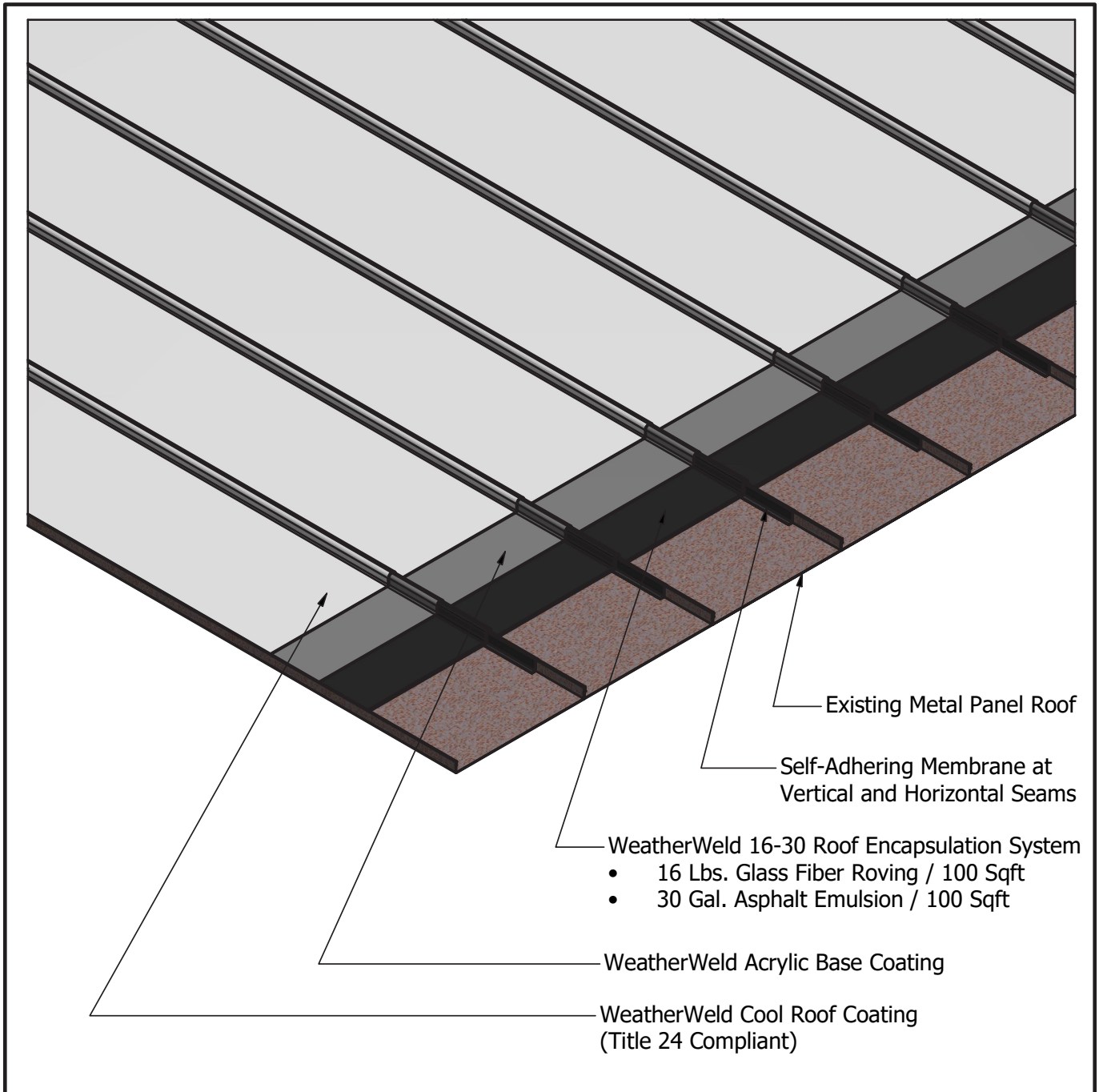
15.0 ROOF INSPECTION


- A. Provide written documentation to owner to replace wet/damaged roofing materials or decking.
- B. Installer is responsible to ensure no ponding water exists after 48 hours after precipitation.

16.0 GENERAL REQUIREMENTS AND BEST PRACTICES

- A. Ensure all surfaces are clean, compatible, dry, free from debris and sharp projections, dirt, grease, etc. before installing roofing materials.
- B. Install asphalt primer to facilitate proper adhesion at flashings, walls, and other rooftop components.
- C. Ensure roof is washed between steps to ensure adequate adhesion.
- D. Contractor is responsible to ensure no ponding water exists when the project is complete.

Detail Drawings



Specifier: R. Weygant		Detail: Standing Seam Metal Roof Encapsulation - Field Application
Approved By:		
Roof Inspection By:		Project:
Prepared For:		Buildings:
		R-16-30-M-A
9757 7th St. #803, Rancho Cucamonga, CA 91730 (888) 440-3224 www.weatherweld.com		Scale: 1 / 12
		Sheet: 1 of 1

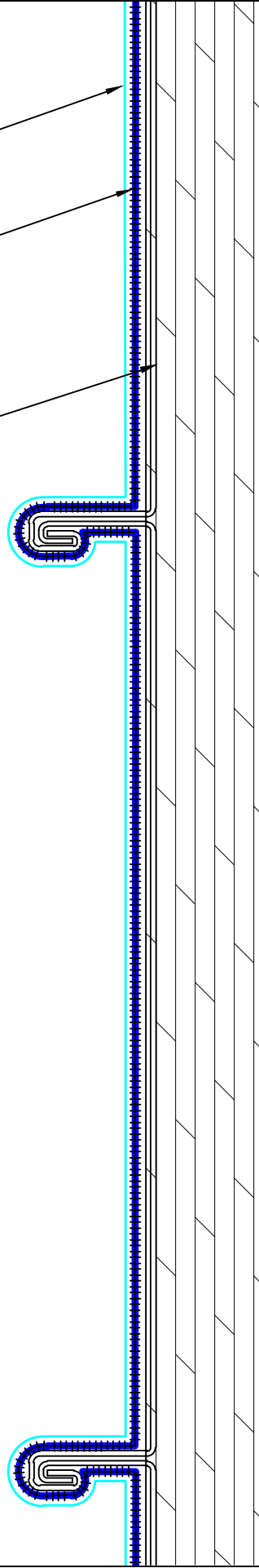
System Overview

Deck:	Standing Seam or Corrugated Metal Roof
Base Sheet:	None
Asphalt Emulsion:	30 Gal
Fiberglass Roving:	16 Lbs
Coating:	CA Title 24 Cool Roof Reflective Coating (3 Gal. / 100 Sq.Ft.)

CA TITLE 24 COOL ROOF REFLECTIVE COATING (3 GAL. / 100 SQ.FT.)

R-16-30-M-A WEATHERWELD APPLICATION
30 GAL / 100 SQ. FT. ASPHALT EMULSION
16 LBS / 100 SQ. FT. FIBERGLASS ROVING

EXISTING STANDING SEAM OR CORRUGATED METAL ROOF



SYSTEM:

R-16-30-M-A

PREPARED FOR:

WEATHERWELD
A DIVISION OF LIQUIFORM TECHNOLOGIES, INC.
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(888) 440-3224
www.weatherweld.com

DESIGNED BY:

DRAWN BY:

DATE: 11/11/20

CHECKED BY: SCALE: NTS

DRAWING TITLE:
SYSTEM OVERVIEW

System Overview

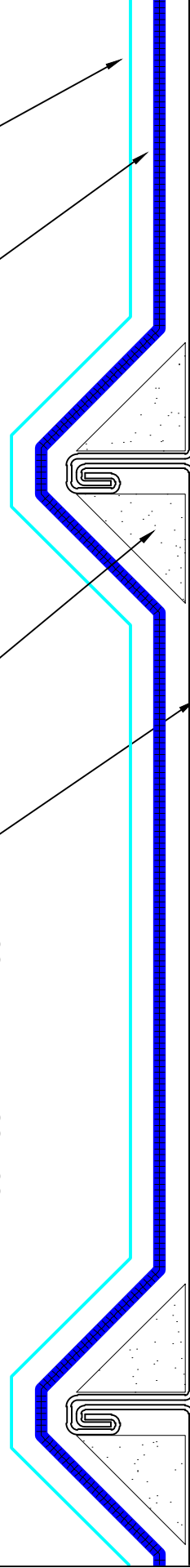
Deck:	Standing Seam or Corrugated Metal Roof
Base Sheet:	None
Asphalt Emulsion:	30 Gal
Fiberglass Roving:	16 Lbs
Coating:	CA Title 24 Cool Roof Reflective Coating (3 Gal. / 100 Sq.Ft.)

CA TITLE 24 COOL ROOF REFLECTIVE COATING (3 GAL. / 100 SQ.FT.)

R-16-30-M-A WEATHERWELD APPLICATION
30 GAL / 100 SQ. FT. ASPHALT EMULSION
16 LBS / 100 SQ. FT. FIBERGLASS ROVING

REQUIRED CANT STRIP FOR STANDING SEAM METAL ROOFS WITH SEAMS > 2" (51MM)

EXISTING STANDING SEAM OR CORRUGATED METAL ROOF



SYSTEM:

R-16-30-M-A

PREPARED FOR:

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DESIGNED BY:

DRAWN BY:

DATE: 11/11/20

CHECKED BY: SCALE: NTS

DRAWING TITLE:
SYSTEM OVERVIEW (ALT)

CA TITLE 24 COOL ROOF REFLECTIVE COATING (3 GAL. / 100 SQ.FT.)

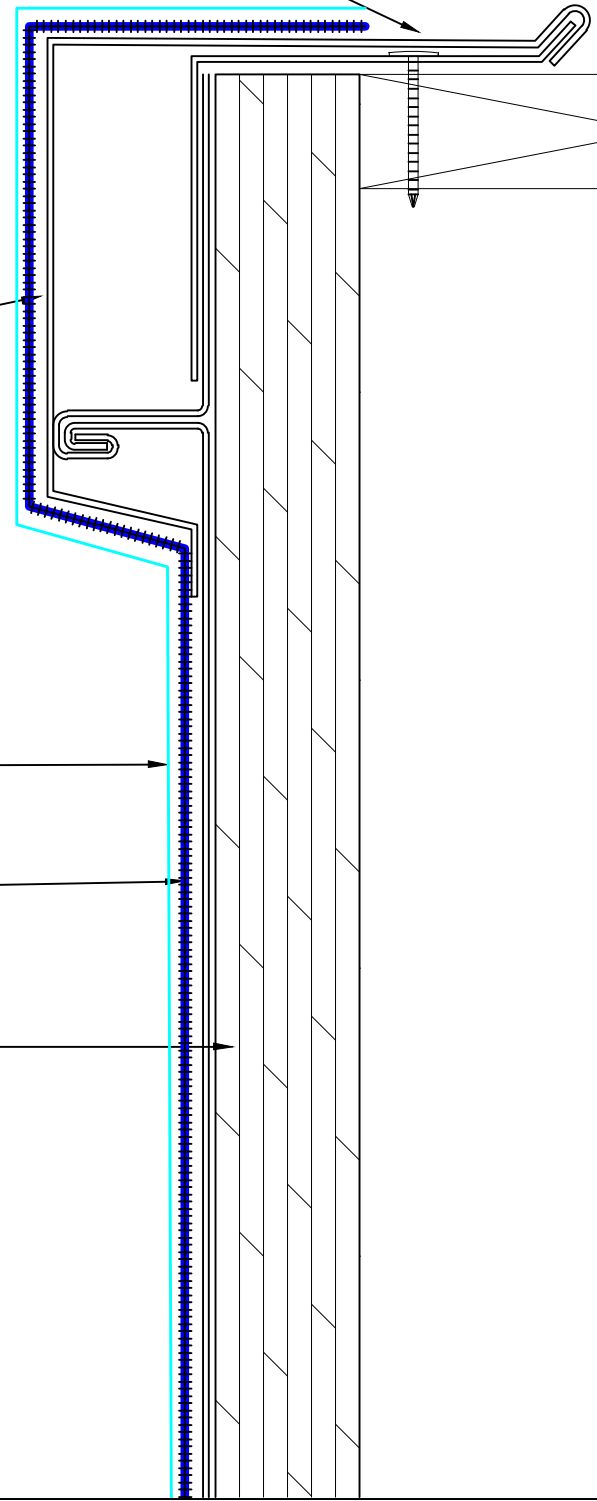
R-16-30-M-A WEATHERWELD APPLICATION 30 GAL / 100 SQ. FT. ASPHALT EMULSION 16 LBS / 100 SQ. FT. FIBERGLASS ROVING

EXISTING STANDING SEAM OR CORRUGATED METAL ROOF

DRIP EDGE METAL PER SMACNA RECOMMENDATIONS

APPLY MEMBRANE A MINIMUM OF 2" (50mm) DOWN VERTICAL WALL

CLEAT FASTENED EVERY 8" [203mm]



SYSTEM:

R-16-30-M-A

PREPARED FOR:

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DRAWING TITLE:

EDGE FLASHING

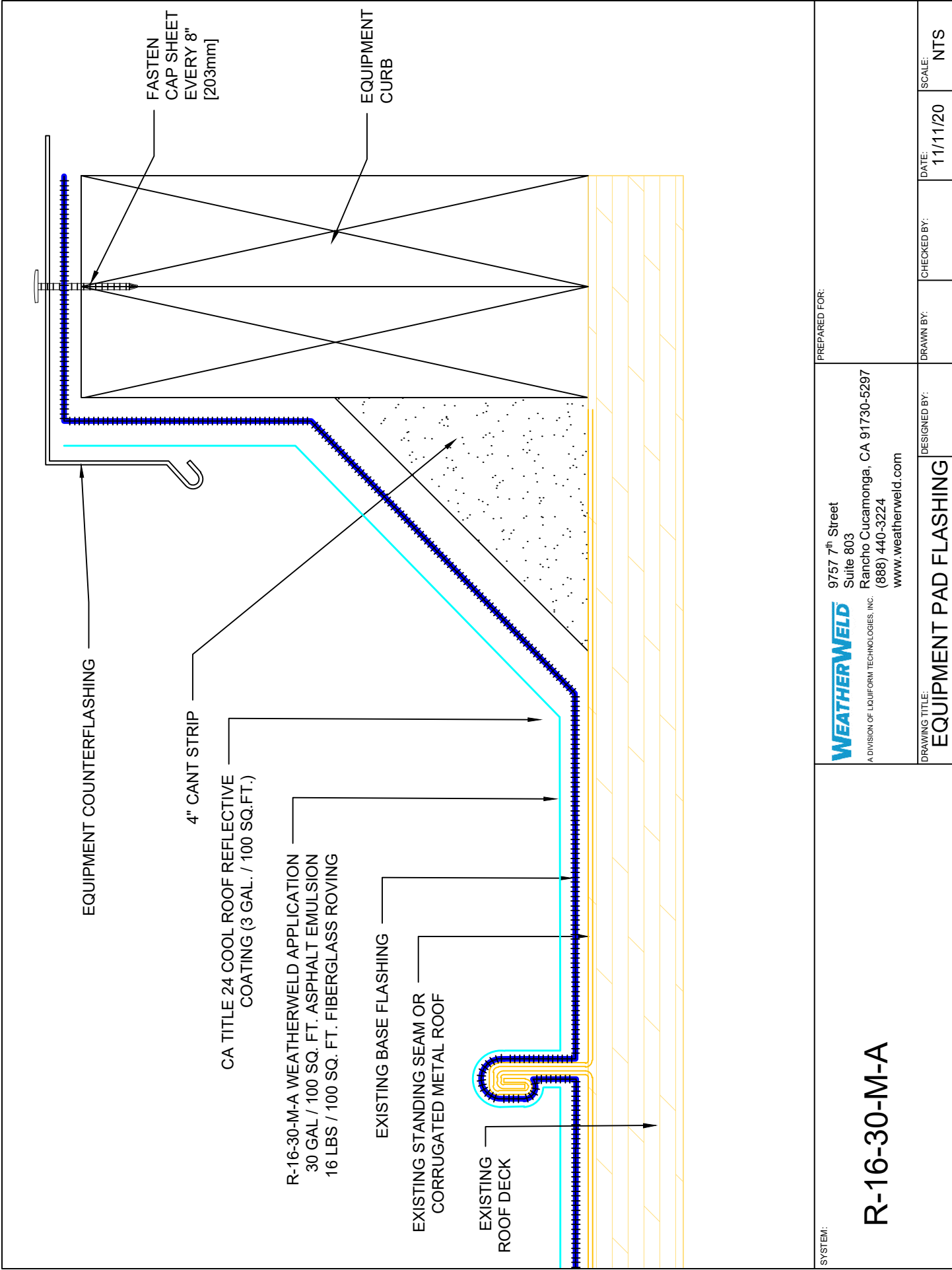
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DATE: 11/11/20

SCALE: NTS



SYSTEM:

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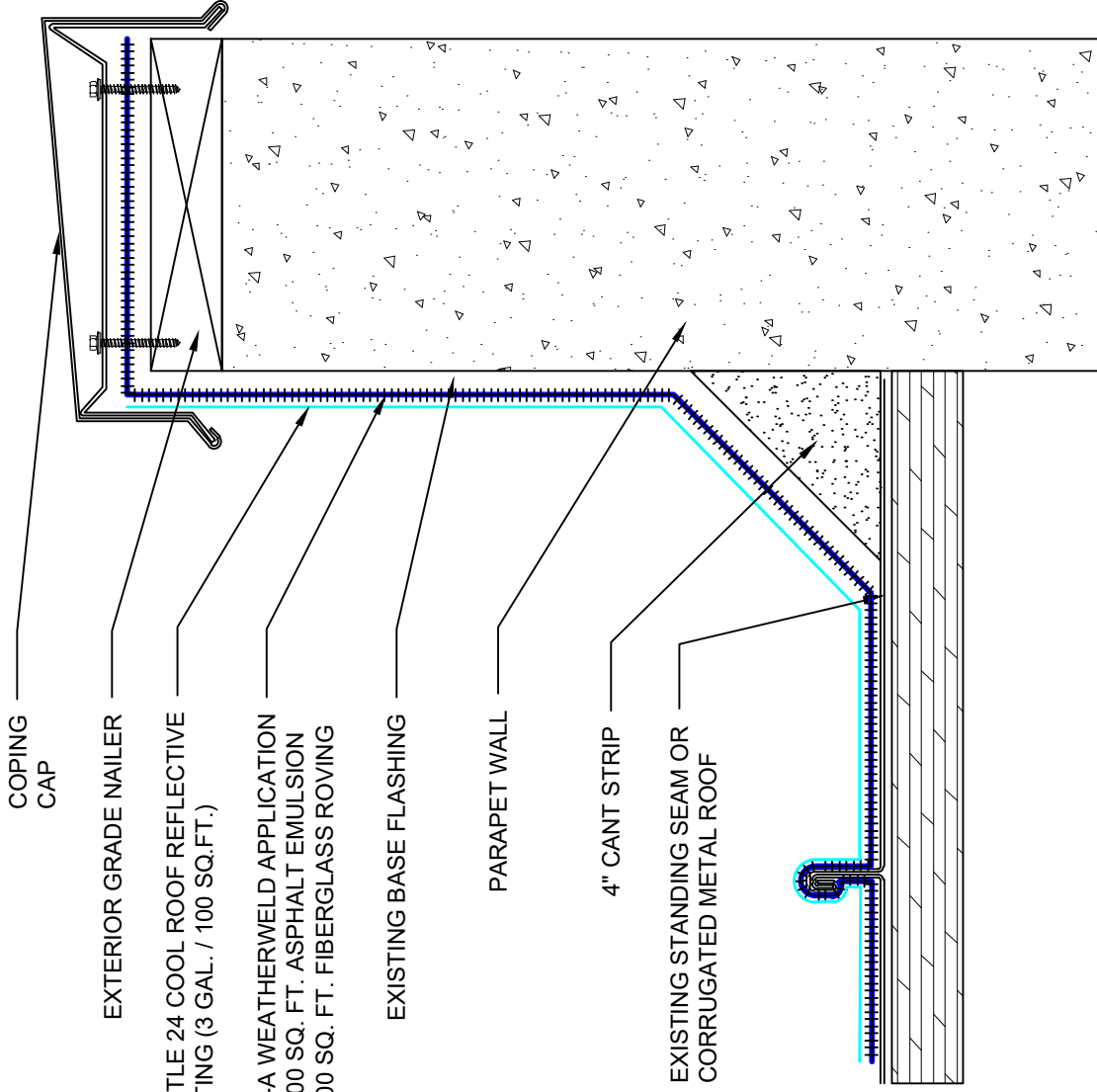
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CHECKED BY:

DATE: 11/11/20

SCALE: NTS

DRAWING TITLE: EQUIPMENT PAD FLASHING



COPING
CAP

EXTERIOR GRADE NAILER

CA TITLE 24 COOL ROOF REFLECTIVE
COATING (3 GAL. / 100 SQ.FT.)

R-16-30-M-A WEATHERWELD APPLICATION
30 GAL / 100 SQ. FT. ASPHALT EMULSION
16 LBS / 100 SQ. FT. FIBERGLASS ROVING

EXISTING BASE FLASHING

PARAPET WALL

4" CANT STRIP

EXISTING STANDING SEAM OR
CORRUGATED METAL ROOF

SYSTEM:

R-16-30-M-A

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PREPARED FOR:

DRAWING TITLE:

PARAPET WALL FLASHING

DESIGNED BY:

CHECKED BY:

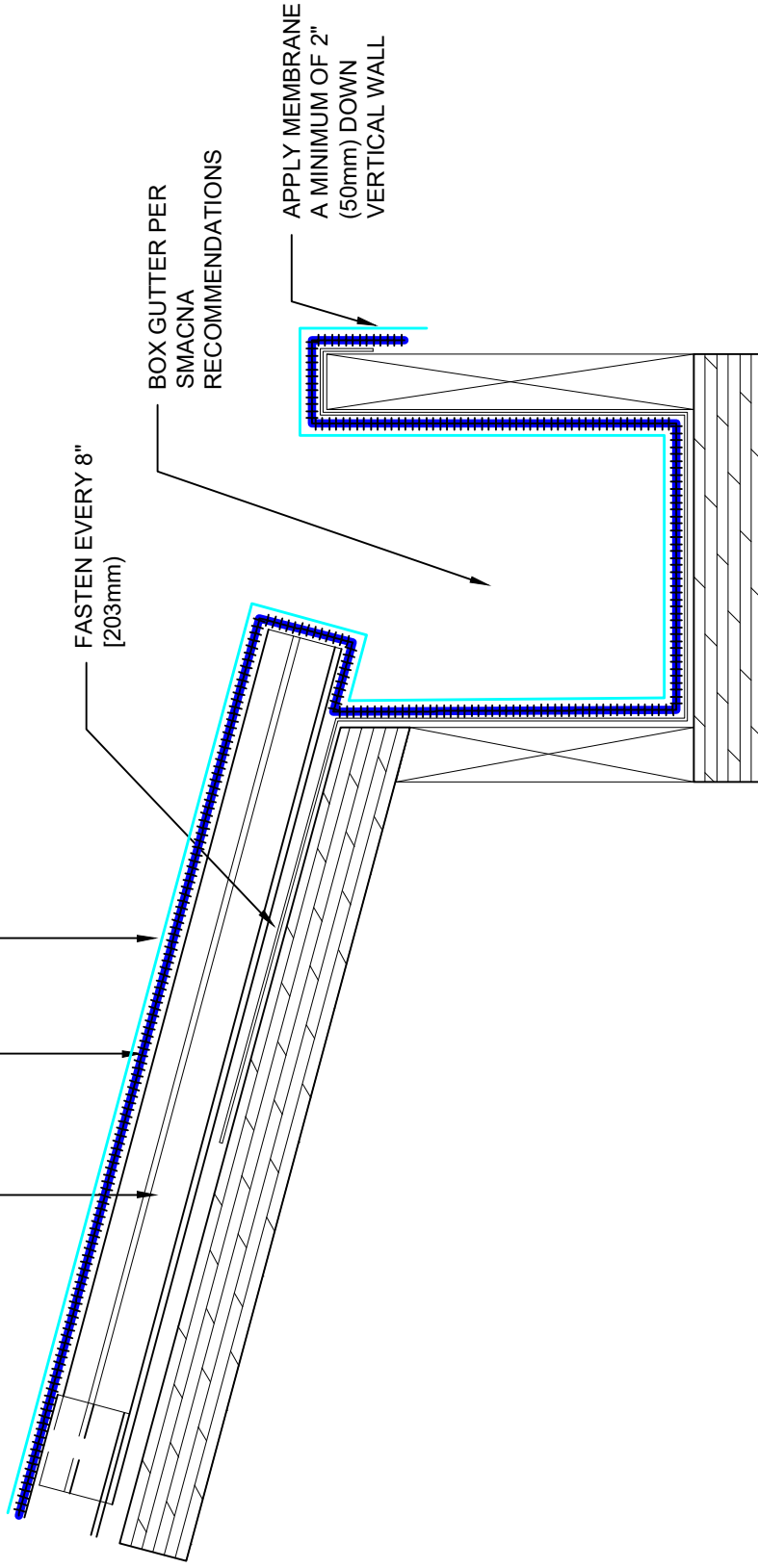
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SCALE: NTS

CA TITLE 24 COOL ROOF REFLECTIVE
COATING (3 GAL. / 100 SQ.FT.)

R-16-30-M-A WEATHERWELD APPLICATION
30 GAL / 100 SQ. FT. ASPHALT EMULSION
16 LBS / 100 SQ. FT. FIBERGLASS ROVING

EXISTING STANDING SEAM OR
CORRUGATED METAL ROOF



SYSTEM:

R-16-30-M-A

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PREPARED FOR:

DRAWING TITLE:

BOX GUTTER

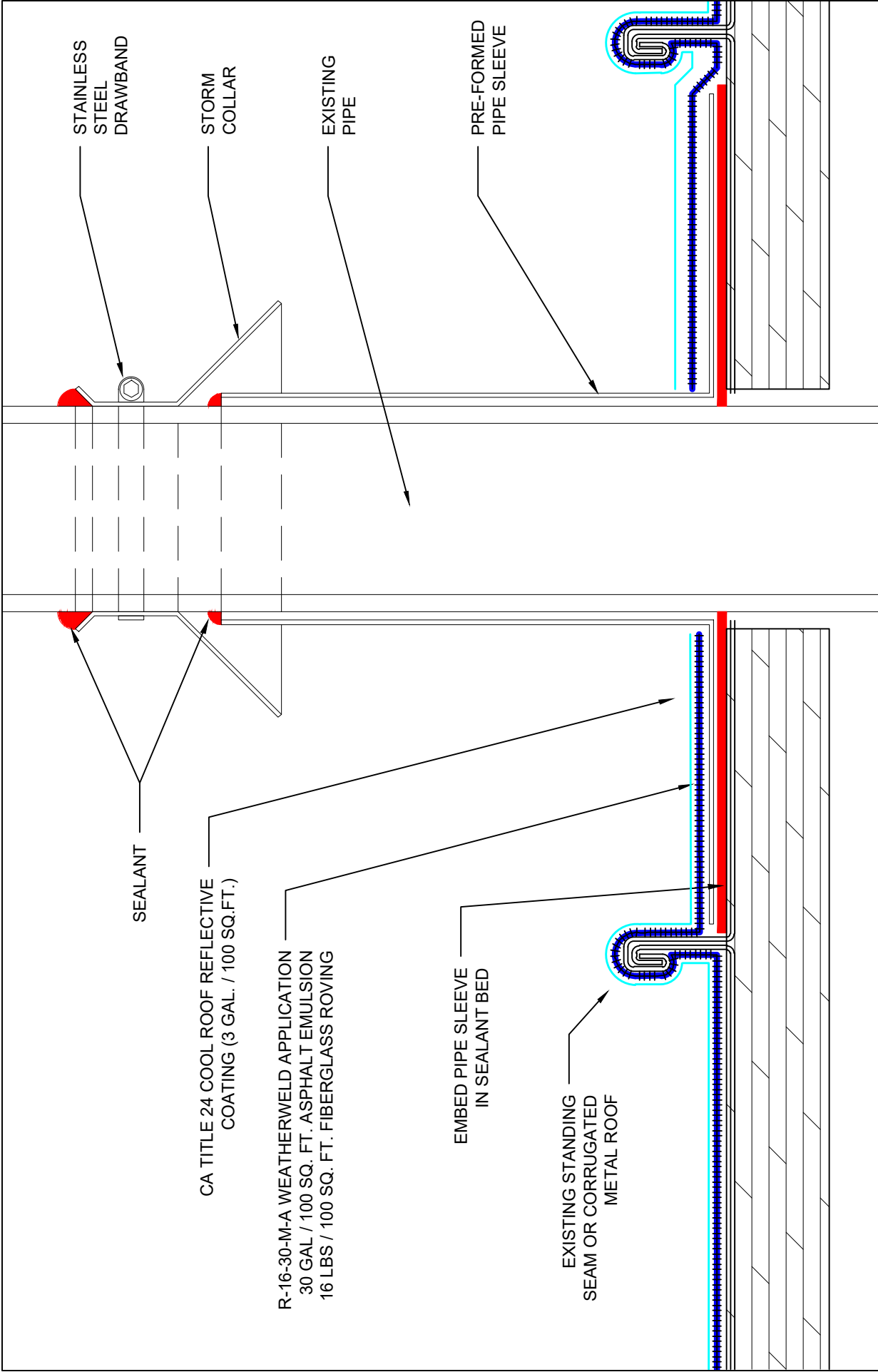
DESIGNED BY:

DRAWN BY:

CHECKED BY:

DATE:
11/11/20

SCALE:
NTS



SYSTEM:	<p>PREPARED FOR:</p> <p>WEATHERWELD 9757 7th Street Suite 803 Rancho Cucamonga, CA 91730-5297 (888) 440-3224 www.weatherweld.com</p>			DATE:	11/11/20	SCALE:	NTS
	DRAWING TITLE: PIPE FLASHING		DESIGNED BY:	CHECKED BY:	DRAWN BY:		
<p>R-16-30-M-A</p>							

Technical Data Sheets



WW473049 - Cool Roof Reflective Coating is a multi-purpose, acrylic, elastomeric coating for use over a variety of substrates including asphalt and metal roofing. It has unique “bleed blocking” properties which make it particularly suited for coating over asphalt surfaces, and exceeds several ASTM D6083 requirements for tensile strength, elongation, wet adhesion and weatherability.

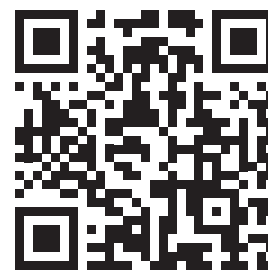
PERFORMANCE

CERTIFICATIONS

PROPERTY	VALUE
Appearance:	Liquid
Color:	White
Solar Reflectance (Initial / Aged):	0.83 / 0.75 per ASTM C 1549
Thermal Emittance	0.88 / 0.92 per ASTM C 1371
SRI	104 / 93 as Calculated
Initial Tensile Strength:	270 psi per ASTM D 6083
Initial Elongation:	260% per ASTM D 6083
Tear Resistance:	100 lbf / in per ASTM D 6083
1000-hr Accelerated Weathering:	No Cracking or Checking per ASTM D 6083
Elongation After Accelerated Weathering:	220% per ASTM D 6083
Permeance:	12 Perms per ASTM D 6083
Water Swelling:	15% per ASTM D 6083
Fungi Resistance:	No Growth per ASTM D 6083
Solids (Volume / Weight):	52% / 66% per ASTM D 6083
Viscosity:	110 ± 10 KU per ASTM D 6083



MORE INFO



Packaging:

- 1 Gallon Cans
- 55 Gallon Drums
- 250 Gallon Totes

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Coverage:

1.5 gallons per 100 square feet.

Surface Preparation:

Surface must be clean, dry and in good condition. Remove all debris, loose gravel, and dirt from the roof by brooming or vacuuming and power-wash the entire roof.

Application:

Apply WeatherWeld acrylic top coating to WeatherWeld WW472049 Base Coat at a rate of 1.5 gallons per 100 square feet.

Cleanup:

Clean wet coating from hands and tools with soap and water.

Warnings:

Use appropriate gloves and other protective clothing when handling this product. EMPLOYERS should obtain a copy of the Material Safety Data Sheet (MSDS) from your supplier or directly from WeatherWeld at the toll free number or website below.

Warranty:

Notwithstanding its usage as a component in a No Dollar Limit (NDL) guaranteed roof system, we, the manufacturer, warrant only that this product is free of defects for a period of twelve (12) months from date of original purchase. Many factors may affect the final results obtained from this product, including but not limited to: weather, workmanship, application equipment and prior condition of the application substrate. Proof of purchase is required.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FOR A PARTICULAR PURPOSE. MANUFACTURER SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE. THIS LIMITED WARRANTY PROVIDES THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT IN THE PRODUCT.

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WW472049 - WeatherWeld acrylic basecoat is a water-carried, acrylic elastomeric coating designed to facilitate proper adhesion of WeatherWeld Title 24 compliant Cool Roof Coating to WeatherWeld emulsion. WW472049 provides superior protection against ponding water and eliminates the need for costly replacement.

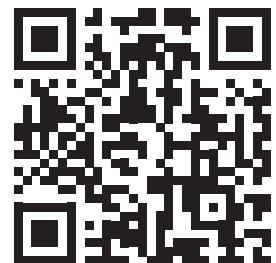
PERFORMANCE

CERTIFICATIONS

Property	Value
Appearance:	Liquid
Color:	Buff
Wet Adhesion – Asphalt Emulsion:	5.2 pli per ASTM D 6083
Solids (Volume / Weight):	54% / 67.7% per ASTM D 6083
Viscosity:	110 ± 10 KU per ASTM D 6083
Drying Time:	4-8 hours depending on temperature and humidity.
VOC Content:	< 50 g/l



MORE INFO



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- 5 Gallon Pails
- 55 Gallon Drums
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Coverage:

1.5 gallons per 100 square feet.

Surface Preparation:

Surface must be clean, dry and in good condition. Remove all debris, loose gravel, and dirt from the roof by brooming or vacuuming and power-wash the entire roof.

Application:

Apply WeatherWeld acrylic basecoat to finished WeatherWeld roof applications at a rate of 1.5 gallons per 100 square feet.

Cleanup:

Clean wet coating from hands and tools with soap and water.

Warnings:

Use appropriate gloves and other protective clothing when handling this product. EMPLOYERS should obtain a copy of the Material Safety Data Sheet (MSDS) from your supplier or directly from WeatherWeld at the toll free number or website below.

Warranty:

We, the manufacturer, warrant only that this product is free of defects, since many factors which affect the results obtained from this product - such as weather, workmanship, equipment utilized and prior condition of the substrate - are all beyond our control. We will replace at no charge any product proved to be defective within 12 months of purchase, provided it has been applied in accordance with our written directions for uses we recommended as suitable for this product. Proof of purchase must be provided.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FOR A PARTICULAR PURPOSE. MANUFACTURER SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE. THIS LIMITED WARRANTY PROVIDES THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT IN THE PRODUCT.

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Coverage:

30 to 45 gallons per 100 square feet depending on application.

Surface Preparation:

Surface must be clean, dry and in good condition. Remove all debris, loose gravel, and dirt from the roof by brooming or vacuuming and power-wash the entire roof.

Application:

Emulsion is spray applied using the WeatherWeld 3D Roof Printer. Emulsion is simultaneously applied with glass fibers to provide a seamless reinforced roof membrane.

Cleanup:

Clean wet coating from hands and tools with soap and water. If dry, clean tools with kerosene, paint thinner or mineral spirits.

Warnings:

Use appropriate gloves and other protective clothing when handling this product. EMPLOYERS should obtain a copy of the Material Safety Data Sheet (MSDS) from your supplier or directly from WeatherWeld at the toll free number or website below.

Warranty:

We, the manufacturer, warrant only that this product is free of defects, since many factors which affect the results obtained from this product - such as weather, workmanship, equipment utilized and prior condition of the substrate - are all beyond our control. We will replace at no charge any product proved to be defective within 12 months of purchase, provided it has been applied in accordance with our written directions for uses we recommended as suitable for this product. Proof of purchase must be provided.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FOR A PARTICULAR PURPOSE. MANUFACTURER SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE. THIS LIMITED WARRANTY PROVIDES THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT IN THE PRODUCT.

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Coverage:

Coverage dependent on Roll size.

Surface Preparation:

Surface must be clean, dry and in good condition. Remove all debris, loose gravel, and dirt from the roof by brooming or vacuuming and power-wash the entire roof.

Application:**Cleanup:**

Clean with soap and water. If dry, clean tools with kerosene, paint thinner or mineral spirits.

Warnings:

Use appropriate gloves and other protective clothing when handling this product. EMPLOYERS should obtain a copy of the Material Safety Data Sheet (MSDS) from your supplier or directly from WeatherWeld at the toll free number or website below.

Warranty:

Notwithstanding its usage as a component in a No Dollar Limit (NDL) guaranteed roof system, we, the manufacturer, warrant only that this product is free of defects for a period of twelve (12) months from date of original purchase. Many factors may affect the final results obtained from this product, including but not limited to: weather, workmanship, application equipment and prior condition of the application substrate. Proof of purchase is required.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FOR A PARTICULAR PURPOSE. MANUFACTURER SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE. THIS LIMITED WARRANTY PROVIDES THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT IN THE PRODUCT.

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WW33333 - Base Sheet is a heavy duty asphalt coated sheet manufactured to meet the requirements of ASTM D 4601, Type II and Fed. Spec. SS-R-602B, Type III. A heavyweight non-woven fiberglass mat makes it particularly suitable for use in fire retardant assemblies. Applied with cold asphalt cement. Unlike saturated felt or lightweight fiberglass ply sheet, WW33333 - Base Sheet is coated with asphalt on both sides and reacts with the solvents in cold cement to provide excellent adhesion without decrease in tensile strength. It has lay lines appropriate for normal roofing side laps. The surface of the sheet is lightly sprinkled with sand to prevent sticking.

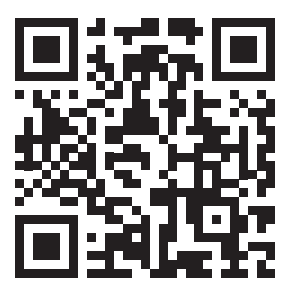
PERFORMANCE

CERTIFICATIONS

PROPERTY	VALUE
Appearance:	Fabric
Color:	Black
Flash Point:	500F
Maximum VOC:	0 g/l Calculated
Maximum VOS:	0 lbs/gal
Tensile Strength:	MD 75 lbf/in, CD 60 lbf/in per ASTM D 4601



MORE INFO



Packaging:
36 in. X 72 ft. Rolls

Coverage:

Approximately 190 square feet per roll.

Surface Preparation:

All surfaces to be receive base sheet must be clean, dry, smooth and flat, and must be free of oil, grease, rust, scale, loose paint, dirt, and all foreign matter that may interfere with installation. Remove and replace loose or erupted fasteners which may pucture the base sheet.

Application:

Application details as specified for each particular roof system or project are to be followed, as they may vary. Prior to application, cut the rolls into lengths suitable for installation and lay flat to eliminate curl. Unless otherwise specified, the base ply is laid with 2" side laps and 4" end laps and nailed, spot-adhered or fully adhered with cold application cement or hot asphalt. Subsequently, plies are completely adhered, cold or hot method.

Cleanup:

Asphalt can be removed by use of mineral spirits, paint remover or kerosene. Use caution when handling solvents.

Warnings:

This product contains detectable amounts of chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm. Employers should obtain a copy of the Material Safety Data Sheet (MSDS) from your supplier or directly from WeatherWeld at the toll free number or website below.

Warranty:

Notwithstanding its usage as a component in a No Dollar Limit (NDL) guaranteed roof system, we, the manufacturer, warrant only that this product is free of defects for a period of twelve (12) months from date of original purchase. Many factors may affect the final results obtained from this product, including but not limited to: weather, workmanship, application equipment and prior condition of the application substrate. Proof of purchase is required.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FOR A PARTICULAR PURPOSE. MANUFACTURER SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE. THIS LIMITED WARRANTY PROVIDES THE PURCHASER'S EXCLUSIVE REMEDY FOR ANY DEFECT IN THE PRODUCT.

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Warranty



40-YEAR NDL LEAK-FREE WARRANTY

COMPLETION DATE: _____

ISSUE DATE: _____

WARRANTY: Subject to warranty registration, payment in-full and installation in accordance with current printed installation specifications, Liquiform Technologies Inc., (WEATHERWELD) warranties to the original purchaser that the WEATHERWELD Seamless Reinforced Roof System (System) will be able to withstand ordinary wear of the natural elements in a leak-free condition for the period of forty (40) years, except for the exclusions, limitations and exceptions set forth in this Warranty. Upon proper notice, WEATHERWELD will diagnose and make repairs to the WEATHERWELD System at WEATHERWELD expense under the terms of this Warranty, as required to stop reported roof leakage found to be caused by defects in the WEATHERWELD System.

UNAPPROVED ALTERATIONS OR ADDITIONS: No contractor, distributor, consultant or any other person has authority to assume responsibility, liability or changes to WEATHERWELD specifications and/or agreements. WEATHERWELD shall not be responsible or liable for any change and/or amendment to the specifications and/or Warranty in regard to the project referenced herein, unless said change or amendment is approved in writing by WEATHERWELD.

EXCLUSIONS/RESPONSIBILITIES: The WEATHERWELD Seamless Reinforced Roof System is designed to keep areas to which the WEATHERWELD System materials are applied in a leak-free condition. The System is not intended to take the place of any other building element such as, but not limited to, the underlying roof deck, roof insulation, vapor retarder, drains, expansion joints, flashings, vents, skylights, roof-mounted equipment, reflective coatings, or any areas not covered with WEATHERWELD System materials. This warranty shall not be applicable if, in the sole judgment of WEATHERWELD, any of the following occurrences shall be the cause of the reported claim of WEATHERWELD System roof leakage:

- a) Natural disasters, earthquakes, lightning, hurricane force winds, hail, flood, environmental fallout, acts of vandalism or war.
- b) Acts of negligence, misuse, accidents, falling objects, damage from roof top traffic or storage on the roof.
- c) Damage caused by failure to conduct, or to have conducted, periodic maintenance inspections and roof clean-up as outlined in the NRCA or RIEI maintenance manuals for Owners. Reflective surface coatings are not required to be re-coated under this Warranty.
- d) Changes, alterations or repairs made to the System and not authorized by WEATHERWELD shall cause the area affected by the work to be excluded until authorized repairs meeting WEATHERWELD standards are completed.
- e) Changes in aesthetics, visual appearance or reflective coatings. Maintenance of coatings is not a part of, nor required, under this Warranty.
- f) With the exception of natural rain water, accumulation of foreign materials or chemicals of any type including animal, plant, human, manufacturing or atmospheric.
- g) Malfunction or breakdown of the base roofing structure.
- h) Obstructed or inadequate roof drainage.
- i) Waterproof defects in adjoining areas, walls, windows, roof-mounted equipment, ducts or other penetrations in the System extending above the flashings height of the WEATHERWELD System.

Both the examination and inspection of the WEATHERWELD System installation, plans and/or specifications by a WEATHERWELD employee, designated representative or Contractor, before or after the completion of the installation of the WEATHERWELD System, shall not constitute approval or waiver of the exclusions and conditions set forth in this Warranty, without written notice of such approval or waiver. No waiver by WEATHERWELD of any limitation, term or condition of this Warranty made as part of a warranty claim, shall operate as a waiver of any other limitation, term or condition applicable to this Warranty, on any other future claim, whether of similar or different nature. Owner agrees to provide, at Owner's expense, access to any areas requested in writing by WEATHERWELD and deemed to be relevant to the diagnosis and/or repair of the reported leak. Areas include, but are not limited to, building interior, exterior, adjoining areas and areas under roof-mounted equipment or other overburden.

NOTICE OF CLAIM: In the event leakage is discovered, the Owner shall notify WEATHERWELD within ten (10) days of the discovery via receipt-acknowledged email, writing or fax at the contact's location listed below. Any claim to which notification is not made in a timely manner, without excuse, or to which access to the roof to diagnose the cause of the leakage is not provided, shall be deemed waived. Notification shall contain information of the location and severity of the leakage, access to the leak area and the personnel to contact. Notice to the Contractor, distributor or any other person does not substitute for notice to WEATHERWELD. Address written correspondence to: Liquiform Technologies Inc., 9757 7th St. #803, Rancho Cucamonga, CA 91730. Phone (888) 440-3224

SERVICE: Upon proper notification, WEATHERWELD shall schedule a diagnosis inspection of the leakage, prepare a written report of findings and commence repair of the defects that are WEATHERWELD's responsibility under this Warranty in a timely manner, weather and schedules permitting. Should the cause of the leakage be able to be corrected during the initial service call, the Owner agrees that WEATHERWELD is hereby granted permission to make such corrections, provided there is no cost to the Owner. Should leakage documented by WEATHERWELD be caused from items that are the upkeep responsibility of the Owner under this Warranty, the Owner agrees to have repairs made to such items in a timely manner, and before requesting any additional service work made by WEATHERWELD on the leakage claim. Should WEATHERWELD repeat the process without stopping the WEATHERWELD responsible leakage, WEATHERWELD shall retain a knowledgeable outside consultant at WEATHERWELD expense to help locate the source of the leakage. WEATHERWELD and the Owner agree to complete the respective repairs made in the Consultant's report. The Owner agrees that WEATHERWELD shall have exclusive control over the diagnosis and repair to any WEATHERWELD System component found to be WEATHERWELD responsibility under this Warranty.

LIMITATIONS OF LIABILITY: This Warranty is expressly in lieu of any other guarantees and/or warranties, expressed or implied, including any implied warranty of merchantability, or fitness for a particular purpose, and any other obligation or liability on the part of WEATHERWELD whether the claim against WEATHERWELD is based upon strict liability, negligence, breach of warranty, or any other theory or cause of action. This limited Warranty contains all of the provisions of our remedies from WEATHERWELD. In no event shall WEATHERWELD be liable for consequential or incidental damages of any kind, including damages to the building or its contents. This Warranty does not cover the cost of removal and/or replacement of any other building component, roof-mounted equipment, overburden or item excluded from Warranty coverage listed above. WEATHERWELD shall be discharged of all further obligations upon the occurrence of any of the following: (a) expiration of this warranty without written renewal or transfer, (b) damage to the System from causes listed in "EXCLUSIONS/RESPONSIBILITIES" or (c) failure to comply with any other sections of this Warranty. Unresolved Warranty claims shall be settled by binding arbitration in the State of California (as exclusive venue), administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on any award rendered by the arbitrator(s) may be entered in any court having jurisdiction thereof.

Specification

R-16-30-M-A

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

For Existing Metal Panel Roofs

**Section 07 56 00
COLD FLUID APPLIED
ROOFING**

**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 test-

ing 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. Material 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. CA Title 24 Cool Roof Reflective Coating: 3 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. Cool Roof Reflective Acrylic Coating:

1. Basecoat: WW473049, by WeatherWeld.

- a. Solids Content by Volume: >45-50%.
 - b. VOC Content (maximum): 400 g/l.
 - c. Weight: 7.7 - 8.7 lbs./Gal. (922 – 1041 g/l).
2. Topcoat: CA Title 24 Cool Roof Reflective Coating as supplied by the manufacturer of the membrane system. WW472049, by WeatherWeld.
- a. Solids Content by Volume: >45-50%.
 - b. VOC Content (maximum): 400 g/l.
 - c. Weight: 7.7 - 8.7 lbs./Gal. (922 – 1041 g/l).
 - d. Solar Reflectance:
 - 1) Initial: 0.53.
 - 2) 3 Year Aging: 0.42.
 - e. Thermal Emittance:
 - 1) Initial: 0.50.
 - 2) 3 Year Aging: 0.56.
 - f. Solar Reflectance Index (SRI):
 - 1) Initial: 48.
 - 2) 3 Year Aging: 33.

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 elastomer-

ic 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 SMAC-

NA "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 draw-band, 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 Manufacturer's 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