WEATHERWELD
ROOFING MADE SIMPLE

Roof Management Report

CYPRESS COLLEGE

BUILDING 7 - GYM I

Prepared For:

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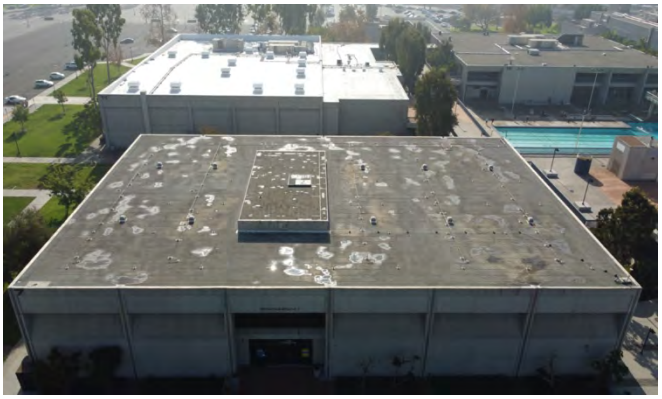
BUILDING SUMMARY



OWNER:	**NOCCCD – Cypress College**
ADDRESS:	1830 W Romneya Drive Anaheim, CA 92801
CONTACT:	Vince Marchetti
PHONE:	(714) 402-6386

ROOFTOP INSPECTION

INSPECTION DATE:	11/30/2021	**CORE SAMPLE:**	Yes
INSPECTION TYPE:	Visual	**DECK CONDITION:**	Fair
ROOF LEAK DATA:	Yes	**SOURCE:**	Owner

PROJECT:	**Cypress College**
BUILDING:	**Building 7 – Gym I**
ADDRESS:	9200 Valley View Street Cypress, CA 90630

BUILDING INFOMATION

AGE	SQ. FT.	ACCESS	SLOPE	HEIGHT
15+	21,960	Stair	¼”-12”	35’

ROOF SYSTEM	TYPE	LAYERS	ATTACHMENT	THICKNESS
DECK:	Concrete	1	-	-
INSULATION:	Styrofoam	1	-	1”
EXISTING:	Built-Up	1	Solid	4-Ply

DETAILS

PERIMETER:	Small Parapet Wall
FLASHING:	No
DRAINAGE:	Scuppers

ROOFTOP EQUIPMENT/ACCESSORIES

	TYPE	QTY.
MECHANICAL EQUIPMENT:	n/a	-
PENETRATIONS:	Vent & Pipe	Multiple
PERIMETER GUTTER:	No	-

EXISTING ROOF TYPE / RATING

DECK:	Fair
FIELD – EXISTING ROOF:	Poor
FIELD SEAMS – EXISTING ROOF:	Poor
PERIMETER – EXISTING ROOF:	Poor
PENETRATIONS – EXISTING ROOF:	Poor
WALLS – EXISTING:	Fair
SCUPPERS:	Fair
SKYLIGHTS:	N/A
COUNTER FLASHINGS:	N/A
DEBRIS ON ROOF:	No
PONDING WATER:	Yes
OTHER	N/A

BUDGET/SCOPE OF WORK

APPROXIMATE TOTAL(+/-15%)	WEATHERWELD ROOF SYSTEM	WARRANTY LENGTH
$252,540.00	R-16-30-A	40 Years

INSPECTION PHOTOS

Building 7, Gym I for Cypress College has a flat roof that appears to be the original built up roof that was installed when the building was built.

We did a core on the roof and determined the roofing assembly consists of a concrete roof deck, 1” Styrofoam insulation, 5” light weight concrete, and a solidly attached 4-ply built up roof.

INSPECTION PHOTOS

The roof on this building consists of a built-up roof. The system uses rolls of asphalt impregnated felt with a granulated surface. The product is installed using roles of hot asphalt. This is the most common roof in the industry and has been a common roofing practice for more than 100 years.

Typically, built-up roofs last between 12 and 15 years, then deteriorate. The roof is deteriorated and losing its ability to keep the building watertight. As a built-up roof ages, the sun starts degrading the field layers and the felts and the asphalt starts to degrade, and the seams separate allowing water into the building. The above photos shows that this ponding water at scupper.

INSPECTION PHOTOS

The building perimeter consists of a raised boarder that is roofed with torch down foil and terminates to edge metal. It appears the roof system is pulling away and separating from the edge metal allowing water to travel into the roof system.

The photo above shows utility piping with penetrations that tie directly into the roof system. There is ponding water that needs to be resolved by the contractor.

INSPECTION PHOTOS

This is a close-up photo of the steel supports for the utility piping that runs above the roof system. These supports and penetrations will be encapsulated during roof work to create a roof that is seamless.

Abandoned curbs should be removed or encapsulated during roof work.

INSPECTION PHOTOS

Rooftop equipment is located inside a roof top penthouse. The photo above shows the roof system terminating to counter flashing on the louver side of the penthouse. WeatherWeld should be terminated to the counter flashing on this side as well.

On all the sides of the penthouse that do not have the louvers, the walls should be encapsulated, as well as the roof of the penthouse to create a seamless roof.

INSPECTION PHOTOS

This is the edge metal of the penthouse roof. The entire penthouse will be encapsulated during roof work.

The roof drains to scuppers along the perimeter of the building. It is recommended that these scuppers be encapsulated during roof work and WeatherWeld to be applied to the outside edge of the parapet wall per spec,

ROOFTOP CONDITIONS

During the on-site inspection, the following conditions / deficiencies were noted:

GENERAL

FIELD

The roofing system consists of a mechanically attached built-up roof system. Typically, built-up roofs last between 12 and 15 years, then deteriorate. The roof is deteriorated and losing its ability to keep the building watertight. As a built-up roof ages, the sun starts degrading the field layers and the felts and the asphalt starts to degrade, and the seams separate allowing water into the building.

Repairs:

There have been multiple repairs to the roof throughout its life.

PERIMETER

The perimeter consists of a very small, roofed parapet wall/edge without a coping cap.

PENETRATIONS

The roof has pipe and vent penetrations and no equipment.

The roof has extensive piping and conduit that runs above the roof that is tied into the roof system.

It's recommended to seamlessly encapsulate the pipe supports and penetrations from the piping that tie into the roof system.

DRAINS

The building drains along the perimeter to scuppers.

It is recommended to ensure drains are clear and operational before each rain.

Ponding Water:

There is ponding water at drainage edge and throughout field that needs to be resolved by the contractor.

OVERVIEW / DISCUSSION

WHY DOES THE EXISTING ROOF LEAK?

Built up roofs are flawed from the start because the system has seams. As the roof system has aged, the membrane has deteriorated creating adhesion issues both for repairing or attachment of resurfacing systems. The roof is beyond normal repair and will need resurfacing before a new roof can be installed.

WHY IS THIS HAPPENING AND HOW BAD IS IT?

These roofs have lost performance "strength" over time and have reached a point where service and maintenance would have diminishing returns, if any at all.

FLAT BUILT-UP ROOFS

Built up roofs are constructed of 3-foot-wide rolls of asphalt coated felt. The system uses hot asphalt (sometimes modified with rubber) to seal the rolls and make them watertight. This roof type installs multiple layers of rolls on top of one another creating the built-up roof. A typical lifecycle of a built-up roof is between 12 and 15 years and the then the roof starts to lose strength. This type of roof doesn't do well with transitions or flashings because the system is limited to flat surfaces requiring repair materials like mastic to be used to adhere to metal edges or drains. Flashings and penetrations are a built-up roofs nemesis.

As a built-up roof ages, the sun starts degrading the field layers and the felts and the asphalt starts to degrade. The biggest sign this is happening is when piles of granules start appearing around drains. Once a built-up roof has started the deterioration cycle losing strength, a long-term solution should be considered to keep the building watertight.

The roof is beyond normal repair and will need resurfacing before a new roof can be installed.

CAN THE EXISTING ROOF BE MAINTAINED?

If feasible, repairing a roof is always the first step. Most roofs within 15 years can be well served with targeted roof maintenance, and the cost is significantly lower than replacement. Roof replacement or installing a permanent solution should be considered when repair options have been exhausted, or when repairs become too overwhelming or too costly. In this case, this roof is at a point where the burden of maintenance is too high. As you can see in the photos above, the roof is starting to fail.

Loose seams, degradation of the membrane, and the number of penetrations in the roof make maintenance very challenging. The cost to perform proper maintenance would be extremely high, and it would only be a temporary solution that would require yearly maintenance.

When you add up the cost and burden of maintenance, it doesn't make financial sense to keep patching a roof repeatedly.

OVERVIEW / DISCUSSION (CONTINUED)

HOW DO I KNOW WHEN TO REPLACE MY ROOF?

Many people are talked into new roofs or ineffective coatings when their existing roof is doing its job.

Roofers are notorious for pointing to minor or simply cosmetic problems and blowing them out of proportion, scaring people into spending huge sums of money that will do them relatively little good. They will also sell ineffective and expensive repairs with unrealistic warranty lengths.

When considering replacing a roof or doing major roof work, ask yourself the question: “what is the job of the roof membrane and is it performing it?” The answer is: the job of the roof is to keep water out of the building. Is your roof doing its job? In your case, the answer is yes, with minor caveats.

WHAT ABOUT ROOF RESTORATION?

There is no such thing. Age affects roofs the same way it affects people and everything else. You can’t make something old into something new—the plasticizers will not return to their original locations, and the tensile strength lost through cycle fatigue will not return. The laws of physics always trump the laws of marketing. Cool roof coatings and “restoration” products are marketing hoaxes—they can’t penetrate the existing substrate matrix at any meaningful depth and are not thick enough to be resilient long term.

WHAT ABOUT COATINGS?

Elastomeric and silicone are another false hope. Coating a roof does nothing but cover the roof in its existing condition with a layer of paint. The paint is either acrylic or silicone based. The “guarantees” that are issued on these systems usually cover only material, not leaks. We have seen many 50-year silicone guarantees but have never seen a 20-year-old silicone roof still in service.

WHAT ABOUT SINGLE PLY?

Single ply is a product that has to be patched and repaired from the start. Typical installations with TPO and PVC last between 8 and 13 years in the Western United States. The plastic rolls are unrolled and must be seamed with a hot air welder at every seam. This creates the possibility for human error. Every seam must be physically inspected. What you are left with is a thin sheet of plastic with miles of welds and patches in a typical roof. The sun degrades synthetic materials at unpredictable rates, and this means the lifecycle of a synthetic material is hard to judge. This is the reason why most single plies had to be reformulated over and over again.

WHY DO ROOFERS AND MANUFACTURES OFFER RESTORATION AND SINGLE PLY SYSTEMS?

The roofing industry loves this scenario: install a product, and when it fails, rip it off and install a new one. They sell you material up front, sell you the repair materials when it leaks, then sell you a whole new roof again and again. This keeps roofers and manufactures in business, and the only person that loses is you, the customer.

BOTTOM LINE

DOES THE EXISTING ROOF NEED TO BE TORN OFF AND REPLACED?

NO. This building has one roof system installed and is a candidate for WeatherWeld roof reinforcement. Removal of the existing roof is not required or recommended for this building. Most roofs with only one layer installed do not require removal. A roof would have to be removed only if there was underlying deck damage, moisture, or design defect in the existing roof system. Buildings that have two roof systems installed must be removed, because building code doesn't allow more than two roofs on a building.

WHAT IS A LONG-TERM COST-EFFECTIVE SOLUTION?

A long-term solution to keep the roof watertight should have the following characteristics:

1. SEAMLESS: The existing roof leaks because it has seams. Water finds a seam and leaks into your building. The best characteristic of a roof is to have no seams. Theoretically, if a roof is seamless, there would be no place for it to leak.
2. STRONG: A roof must be strong enough to withstand thermal movement.
3. DURABLE: The seamless membrane must be resistant to rooftop traffic, debris on the roof, or rooftop equipment sitting on the roof.
4. TIME TESTED: the product must have a real track record of successful performance in real life applications, not just accelerated weathering tests in a lab. Note that most single ply and coatings have not been around for a warranty period.
5. GURANTEED: a NDL warranty that covers labor, material, and repairs, for the life of the warranty. Most warranties cover material but not labor; the fine print with warranty exclusions lets manufacturers escape liability.
6. AFFORDABLE: Add up the cost of the roof, including maintenance and replacement over 40 years. Why 40 years? Because most buildings will be here 40 years from now. When you choose roof systems that are designed to last with minimal maintenance, the lifecycle cost is lower.

The cheapest, most cost-effective way to keep a roof watertight long term, is to install a roof that is seamless, strong, and time tested, the first time.

WeatherWeld is a roof designed to withstand the elements and provide a leak free roof for generations. More than 30 years ago, WeatherWeld created a seamless roof system designed to reinforce existing roofs by combining the strongest long-lasting materials in the world. By combining asphalt and fiberglass together, the seamless membrane makes all roofs one seamless piece from the top of a parapet wall all the way to the bottom of a roof drain.

Characteristics of WeatherWeld

SEAMLESS: WeatherWeld makes your roof one seamless encapsulated membrane.
STRONG: WeatherWeld is reinforced with unbelievable amounts of long strand fiberglass, which creates a membrane that you can literally drive a truck on.
DURABLE: WeatherWeld is resistant to rooftop traffic and damage.
TIME TESTED: WeatherWeld is one of the only roofs in the world that has lasted a warranty length and is still in excellent condition; 30+ years and still doing its job.
GUARANTEED: The real warranty in a roof is in the product, so don't just buy off marketing materials. Rather, buy a product that you can see will last. WeatherWeld is thick and durable; when you see it, you'll be able to tell why it lasts so long. WeatherWeld comes with an industry leading 40-year NDL warranty that's simple: **"IF IT LEAKS, WE FIX IT."**
AFFORDABLE: The cheapest most cost-effective way for you to have a leak free roof for generations, is to buy the right roof the first time; a roof that won't require maintenance or replacement.
SAFE: using environmentally friendly materials that are water based, there is very little smell and disruption during installation. Most school and healthcare clients install WeatherWeld when buildings are occupied, with no complaints.

WHO HAS USED WEATHERWELD?

For more than 30 years, WeatherWeld has been trusted to keep buildings watertight in every industry and agency from school districts, colleges, localities, military bases, nuclear facilities, hospitals, etc.

WILL WEATHERWELD WORK FOR THIS ROOF?

Yes, WeatherWeld is the perfect solution to eliminate the roof leaks on this building.

By installing a WeatherWeld roof on this building, the facilities team will have a leak free roof that will require no maintenance for the life of the warranty.

The built-up roof can stay in place, and a new WeatherWeld roof system will be installed directly over the existing roof making the entire roof seamless from the top of the parapet wall to the bottom of the drain, eliminating the ability for the roof to leak.

The finished roof will have a white "cool roof" title 24 compliant surface.

BUDGET

Budgets are based on the approximate estimate of what a licensed and WeatherWeld approved contractor will bid the project for a turnkey roof package including labor, material, warranty, and ancillary services called for in the project specifications attached below.

BUDGETS ARE ESTIMATE RANGES AND MAY VARY BY +- 15%

BUILDING	WEATHERWELD SPECIFICATION	ROOF AREA (SQ. FT.)	APPROX. ROOF COST (PER SQ. FT.)	APPROX. TOTAL ROOF COST (+/-15%)	LINE ITEM	APPROX. COST (PER LIN. FT.)	QUANTITY (LIN. FT.)	APPROX. LINE ITEM COST (+/-15%)	APPROX. ROOF COST WITH LINE ITEMS
Cypress College									
Building 7	R-16-30-A	21,960	$ 11.50	$252,540.00					$ 252,540.00
	Totals	**21,960**		**$252,540.00**					**$ 252,540.00**

APPROXIMATE PRICE PER FOOT INSTALLED FOR 40 YEAR ROOF SYSTEM

$11.50 PER FOOT

APPROXIMATE TOTAL FOR ROOFING PROJECT

$252,540.00

LIMITATIONS

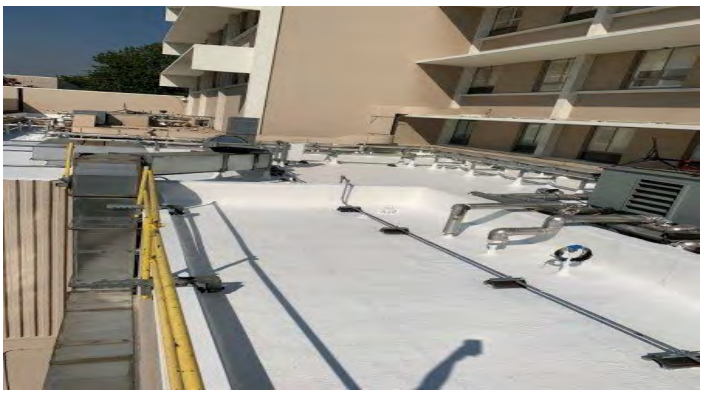
The content of this report represents the author's opinion and is based on limited observation. It should be understood that there is NO GUARANTEE OR WARRANTY, EXPRESSED OR IMPLIED, connected with this report. We cannot assume any liability for damages which may result from any conditions which this report might not disclose. This report is prepared for the CONFIDENTIAL and EXCLUSIVE use of our client. Conditions observed and noted are not inclusive of every situation, but of typical and specific conditions.

PROJECT PROFILES

University of California, Riverside
WeatherWeld R-16-30-A
Warranty 30 Year NDL

Menifee Union School District School
WeatherWeld R-16-30-M-A
Warranty 30 Year NDL

Anaheim Convention Center
WeatherWeld R-1P-16-45-A & R-16-30-A
Warranty 30 Year NDL



Pomona Valley Hospital
NCNN-1B-16-30-A
Warranty 40 Year NDL

Long Beach Main Library
WeatherWeld R-16-30-A
Warranty 20 Year NDL

State of California Water Resources Building
WeatherWeld W-R-1P-16-45-A
Warranty 20 Year NDL

SUMMARY OF WORK

SCOPE OF WORK

Cypress College – Building 7 Gym I

FIELD

1. Fill ponding water areas
2. Prepare existing roof / power wash

GENERAL - ENTIRE ROOF

1. Install WeatherWeld R-16-30-A
2. Install Title 24 Cool Roof Reflective Coating

Thank you for the opportunity to submit this report. The representative for this project is Michael Jones and he can be reached at (888) 440-3224 or on his cell phone at (951) 285-5488.

SECTION 07 56 00

FLUID APPLIED ROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Seamless Fluid Applied Composite Roofing 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.

C. Section 07 72 00 - Roof Accessories.

D. Section 22 30 00 - Plumbing Equipment.

E. 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. 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 D1227 - Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
5. ASTM D 2523 - Standard Practice for Testing Load-Strain Properties of Roofing Membranes.
6. ASTM D 3019 - Standard Specification for Lap Cement Used with Asphalt Roll Roofing, Non-Fibered, and Fibered.
7. ASTM D 3909 - Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules.
8. ASTM D 4263 - Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method.

9. ASTM D 4830 - Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
10. ASTM E 108 - Standard Test Methods for Fire Tests of Roof Coverings.
11. ASTM E 548 - Standard Guide for General Criteria Used for Evaluating Laboratory Competence.
12. ASTM E 1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

C. Underwriters Laboratories (UL): ANSI/UL 790 - Standard Test Methods of Roof Coverings.

D. Underwriters Laboratories (UL) - Roofing Systems and Materials Guide.

E. CRRC - Cool Roof Rating Council.

F. California Building Standards Code - Title 24.

G. Sheet Metal and Air Conditioning Contractors National Association, 1nc. (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 of 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. Shop Drawings: Provide plan, elevation, section and isometric drawings outlining waterproofing conditions at transitions, terminations, penetrations and attachments to adjacent work.

D. 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.

E. 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: Obtain components for roofing system approved by roofing system 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. Store liquid materials in their original, undamaged containers in a clean, dry and protected location, and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

C. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

D. Protect roofing materials from physical damage and from deterioration due to sunlight, moisture, soiling and other sources. Store in a dry location. Comply with manufacturer's written instructions for handling, storing and protecting during installation.

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.

1.11 WARRANTY

A. Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system within specified warranty period.
   1. Warranty includes roofing membrane and base flashings.
   2. Warranty Period: Forty (40) years from date of Substantial Completion.

B. Coating Warranty: Manufacturer's standard form, without monetary limitation, in which coating manufacturer agrees to repair or replace coating that fails in materials or workmanship within specified warranty period. Failure includes shrinkage, flaking, chipping and peeling during normal wear.
   1. Warranty Period: Twelve (12) years from date of Substantial Completion.

C. Project Warranty: Submit roofing installer's warranty, signed by installer, covering work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards and walkway products for the following warranty period:
   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. Subject to compliance with requirements, provide the following composite roofing membrane System: R-16-30-A.
   2. Within 72 hours of the job walk, equal systems from Ecology Roof Systems or Tremco Roofing will be considered, providing the systems meet warranty requirements, physical characteristics and do not use solvents or fire during installation.

2.2 COMPOSITE MEMBRANE SYSTEM

A. Roofing system shall comply with 2019 CBC, Chapter 15.

B. Physical Characteristics:
   1. Total weight: 1.60 pounds per square foot (0.72 kg) dry.
   2. Total thickness: 250 mils dry.
   3. Minimum Strength: 300 psi (2068 kN/m2) per ASTM D 4830.
   4. Minimum Elongation: 10% per ASTM D 4830.
   5. Minimum Puncture Resistance: 700 lb. (318 kg) per ASTM D 4830.
   6. Water Absorption: 1% max by weight per ASTM D 570.
   7. Fire Rating: UL Class “A” assembly.

2.3 COMPOSITE MEMBRANE MATERIALS

A. Base Sheet: Glass felt impregnated asphalt roll roofing surfaced with mineral granules conforming to ASTM D 3909 Class III.

1. VOC Content (Maximum): 0 g/l.

B. Base Sheet Adhesive: General purpose roof adhesive meeting or exceeding the requirements of ASTM D 3019 Type III.
   1. VOC Content (Maximum): 300 g/l.
   2. Weight per Gallon: 8.3 - 8.5 Lbs (994 - 1017 g/l).
   3. Solids Content by Volume: 70%.

C. Asphalt Emulsion: WeatherWeld Asphalt Emulsion meeting or exceeding the requirements of ASTM D1227.
   1. VOC Content (Maximum): 0 g/L.
   2. Weight: 8.5 – 9.1 Lbs./Gal. (1018 - 1089 g/l).
   3. Solids Content by Volume: 49-53%.

D. Fiberglass Reinforcement (Type E): Multi-end continuous fiberglass roving designed for spray operations.

E. Surfacing:
   1. Acrylic Surfacing: CA Title 24 Cool Roof Reflective Coating as supplied by the manufacturer of the membrane system.
      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 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.

B. 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.

C. 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).

D. Metal Flashing Sheet: Metal flashing sheet as specified in Division 07 Section "Sheet Metal Flashing and Trim."

2.5 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. Cant Strips: ASTM C 728 perlite insulation board.

D. Wood Nailer Strips: Comply with requirements in Division 06 Section “Miscellaneous Carpentry."

E. Tapered Edge Strips: ASTM C 728 perlite insulation board.

F. Substrate Joint Tape: 6 inch (152mm) or 8 inch (203mm) wide, coated, glass-fiber joint tape.

2.6 WALKWAYS

A. Walkway Pads: Mineral-granule-surfaced, reinforced asphaltic composition, slip-resisting pads, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 1/2 in (13mm). thick, minimum.
   1. Pad Size: 36 inches by 60 inches (914mm x 1524mm) minimum.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that the existing roof system is not a PVC membrane. This system is not approved for installation over an existing PVC roof system.

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:
   1. Verify that 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. Verify that roof openings and penetrations are adequately installed, and that roof drains are securely clamped in place.
   3. Verify that cants, blocking, curbs and nailers are securely anchored and installed in accordance with manufacturers requirements.
   4. Verify that all drains and scuppers are free of ruptures and sealed on all four sides on the exterior face of walls.
   5. Verify that surface plane flatness and fastening of roof deck complies with manufacturers requirements.

6. Verify that concrete curing compounds and any chemicals that may impair adhesion of roofing components have been removed.
7. Verify that substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method in accordance with ASTM D 4263.
8. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. 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.

B. Clean substrate of dust, debris, moisture and other substances detrimental to roofing installation in accordance with the roofing system manufacturer's written instructions.

C. Remove or correct all sharp projections which may interfere with the integrity of the membrane.

D. 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.

E. Protect adjacent materials and lower paving, prior to starting work, in accordance with roofing system manufacturer’s instructions.

3.3 ROOFING MEMBRANE INSTALLATION - GENERAL

A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/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 so materials that will not be permanently exposed are not subject to moisture or left uncovered at the end of a 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: Prevent roofing cement from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.4 FLASHING INSTALLATION

A. Refer to the manufacturer's application manual for flashing of specific details.

B. Materials used in these steps are in addition to the main fiberglass composite application.

C. All flashings must have a minimum 500 mils of fiberglass composite upon completion of the installation.

D. Expansion and Control Joints: Any joint in the structure intended to allow for movement must be divorced from the seamless reinforcement composite. Install an 18 inch (457mm). wide dry slip sheet consisting of inverted (mineral-side down) cap sheet, laid dry over the joint and extending 36 inches (914mm) at each end. Over the slip sheet, solidly adhere a 36 inches (914mm) polyester ply in 4 gallons per 100 square feet (1.63 L/m^2) of emulsion and reinforce with 500 mils of seamless composite.

E. Base Flashings and Cant Strips: Minimum 3 inch (76mm) cant strips must be installed at base flashings, walls and curbs. Set cant in adhesive or nail every 24 inches (610mm) on center. Miter cants at ends to provide a smooth transition.

F. Corners: 20 feet (6096mm) from each inside or outside structural building corner, install a 12 inch (305mm) strip of cap sheet, laid mineral side down, dry into the base flashing half up the wall, half on the roof, to provide a slip sheet for building movement between the roof deck and vertical wall. Over the slip sheet, install an 18 inch (457mm) strip of polyester half up the vertical and half on the roof, solidly adhered in 6 gal. per 100 square feet (1.63 L/m^2) of emulsion.

G. Pipe Penetrations: All penetrations must be flashed with a minimum 24 gauge galvanized sheet metal storm collars attached approximately 1 inch (25mm) above the top of the flashing boot, secured with a draw band and approved sealant.

H. Roof Drains and Scuppers:
   1. Install 500 mils of fiberglass composite completely into the drain and seal to the bowl.
   2. Ensure that all field applications adhere to the sides of the drain bowl.
   3. After system is dry, reinstall compression ring.
   4. Wall scuppers shall be treated so that field layers of composite extend 2 inches (51mm) beyond the field applications, to adhere a minimum of 2 inches (51mm) to the metal of the inside of the scupper.
   5. Plastic drains are not suitable for attachment of seamless reinforcement composite materials and are not acceptable for use in conjunction with work specified in this section.

I. Edge Flashing:
   1. Install 24 gauge galvanized steel sheet drip edge flashing with rise sufficient in width and height to tightly lay over the metal edge. Metal must be wide enough to cover any outside gap in the fascia and allow a 4 inch (102mm) flange onto the roof deck. Lap ends a minimum of 4 inches (102mm) with sealant and fasteners.

2. Stagger field attachment on 6 inch (152mm) centers. Adhere a continuous strip of self-adhering membrane to the metal flange approximately 2 inches (51mm) from the edge and 6 inches (152mm) onto the existing roof surface.
3. Reinforce with 500 mils of seamless composite. Extend field application of composite to the outside edge of the metal flashing.
4. Ensure that composite is flush with the edge such that water does not pond.

J. Crickets: Where indicated in the contract drawings, tapered insulation crickets must be installed to eliminate ponding water.

K. Parapet Walls:
1. Apply 250 mils composite application up and over parapet walls, extending down the outside edge of the wall a minimum of 1 inch (13 mm).
2. Cover parapet wall tops with 250 mils of seamless composite prior to installation of the coping.
3. Install a minimum 24 gauge metal coping cap with continuous cleat attached on the outside of the wall to meet FM 1-90 wind uplift requirements.
4. Sheet metal joints must be field-soldered or have cover plates solidly installed in sealant and anchored to meet FM 1-90 wind uplift requirements.

L. Concrete Masonry Unit Parapets: Apply 250 mils of seamless composite to the outside edges of concrete walls such that the seamless composite seals a minimum of 3 inches (76mm) to the CMU and forms a solid continuous seal to the top of the wall.

M. Pipe Supports:
1. All pipes 2 inches (51mm) in diameter or less must be supported with polymer pipe supports at no greater than 8 feet (2438mm) on center.
2. Install in accordance with support manufacturer guidelines for spacing requirements. Traffic pad cushions must be installed under pipe supports. Fasteners must not penetrate the roofing membrane.
3. All pipes over 2 inches (51mm) in diameter must be supported in movable pipe hangers or other approved support system.

3.5 SEAMLESS COMPOSITE REINFORCEMENT 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. No water or other material may be added to the emulsion to thin or extend pot life.

C. Fiberglass must be disbursed from the applicator in varying intertwined lengths, up to 24 inches (610mm).

D. Thoroughly mix fiberglass and emulsion prior to application on roof deck.

E. Any loose strands must be brushed by hand, removed or filled-in with emulsion to create a solid surface.

F. Upon completion, no area may be less than 250 mils dry film thickness (DFT).

G. Areas such as base flashings and penetrations, where application exceeds 500 mils wet, must be brushed by hand to prevent surface crazing.

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 on a calibrated moisture meter.

B. Apply Title 24 roof coating 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 WALKWAY INSTALLATION

A. Walkway Pads:
   1. Install walkway pads using units of size indicated on contract drawings.
   2. Where not expressly specified, install manufacturer's recommended size for the location and anticipated traffic volume.
   3. Install walkway pads with a cold adhesive compatible with the membrane specified

3.8 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to architect.

B. Notify architect or owner 48 hours in advance of date and time of inspection.

C. Repair or replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at contractor's expense, will be performed to determine compliance of repaired or replaced work with specified requirements.

3.9 PROTECTING AND CLEANING

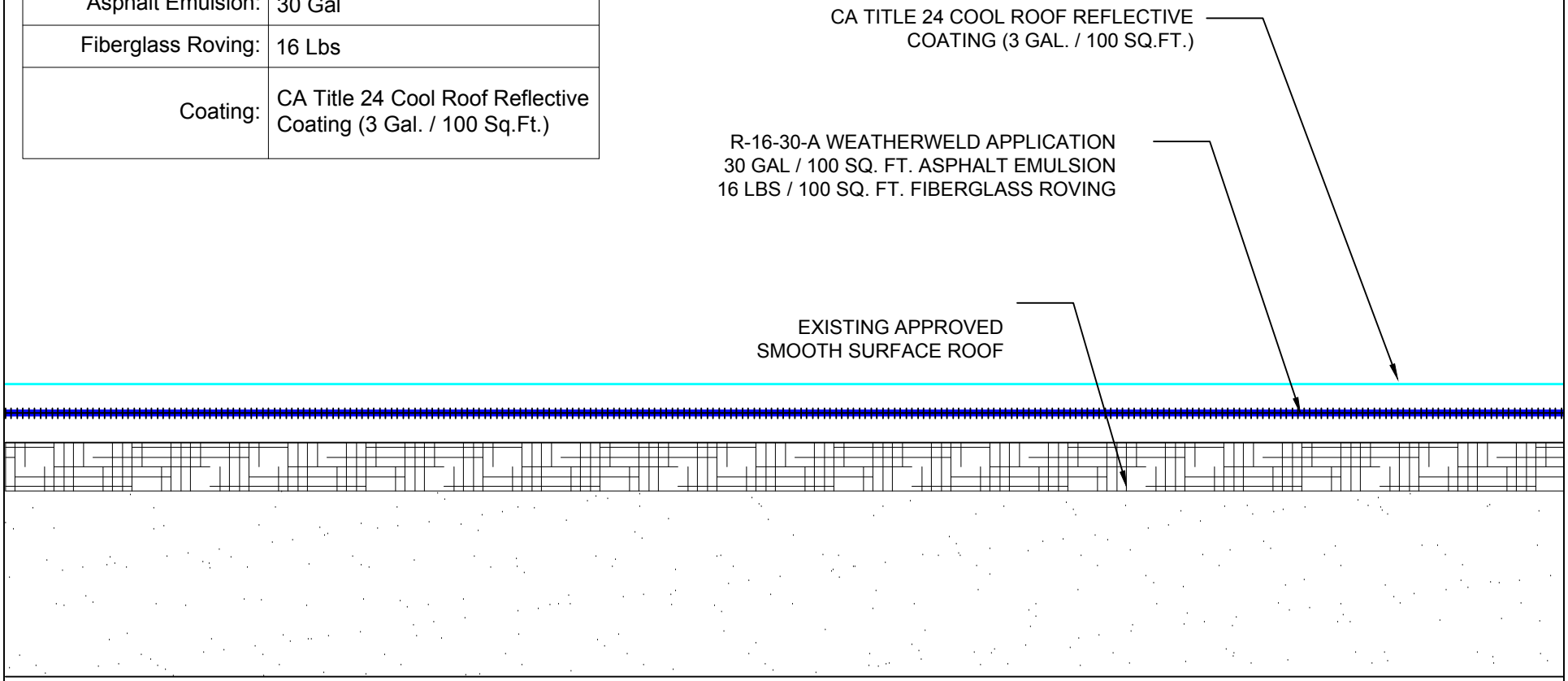
A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roof for deterioration and damage. Where any defects or damage are identified describe their nature and extent in a written report, with copies to architect and owner.

B. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION

System Overview

Deck:	Approved Smooth Surface 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.)



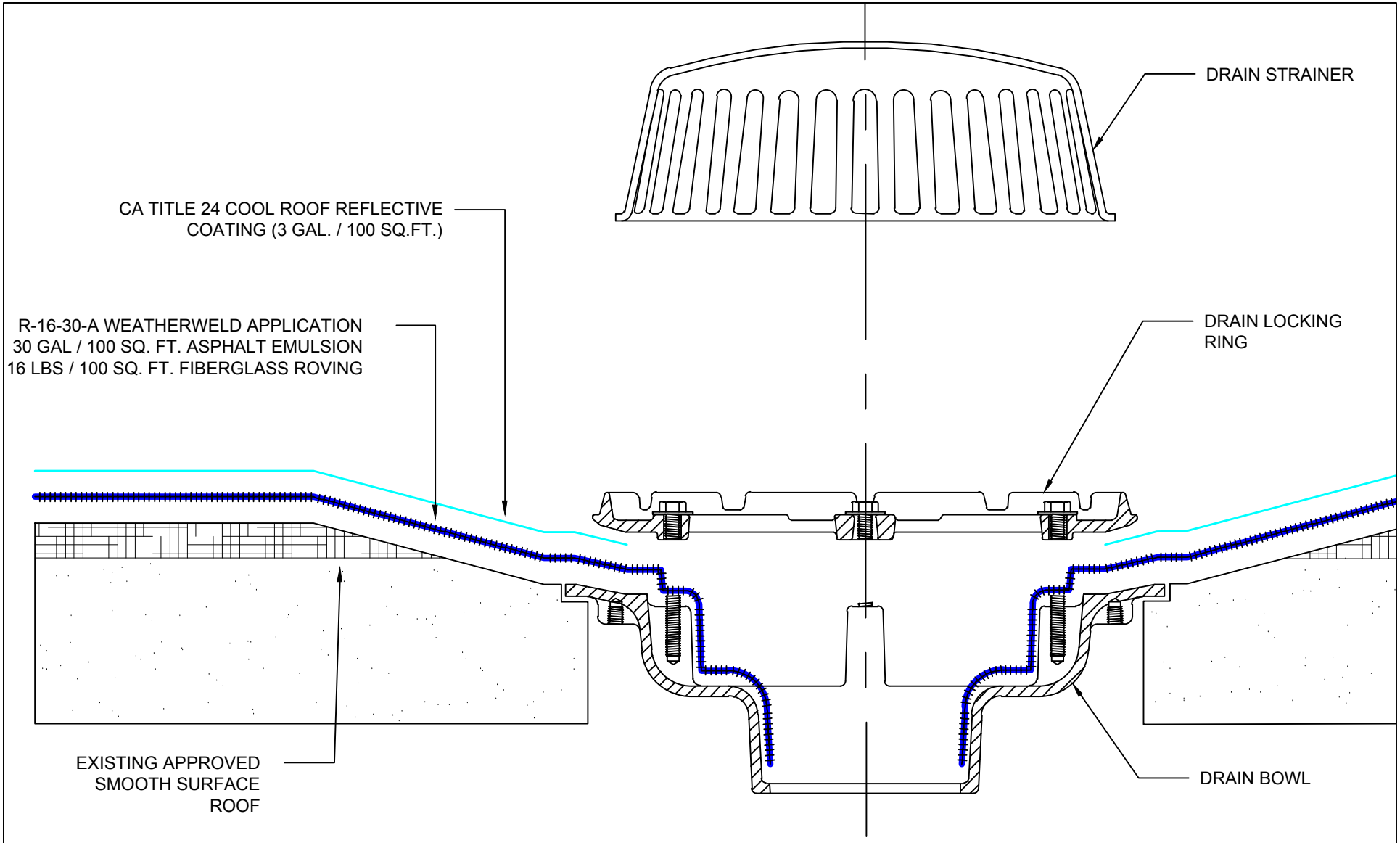
SYSTEM:

R-16-30-A

WEATHERWELD
A DIVISION OF LIQUIFORM TECHNOLOGIES, INC.
9757 7th Street
Suite 803
Rancho Cucamonga, CA 91730-5297
(888) 440-3224
www.weatherweld.com

PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
SYSTEM OVERVIEW				11/11/20	NTS



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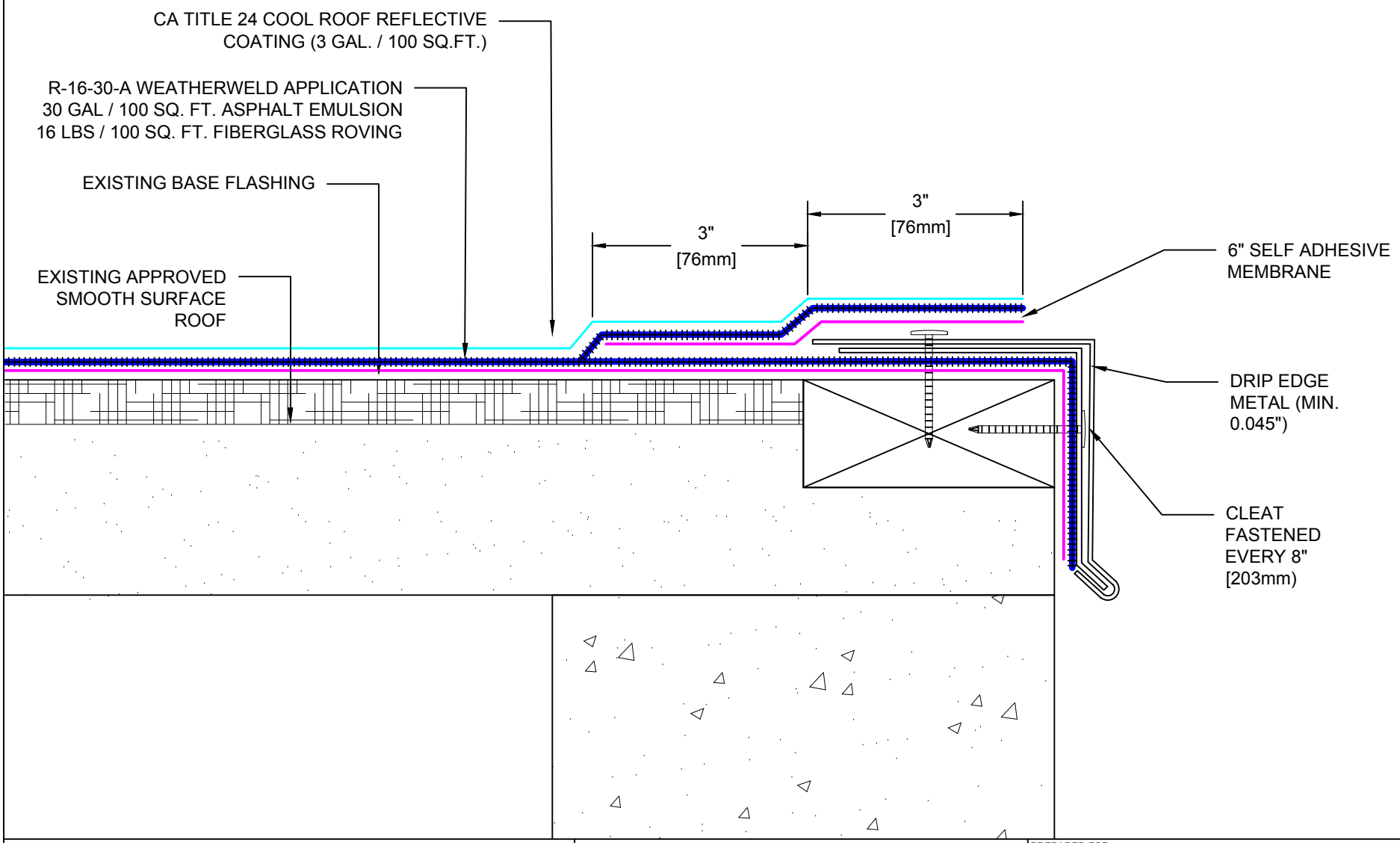
PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
DRAIN DETAIL				11/11/20	NTS



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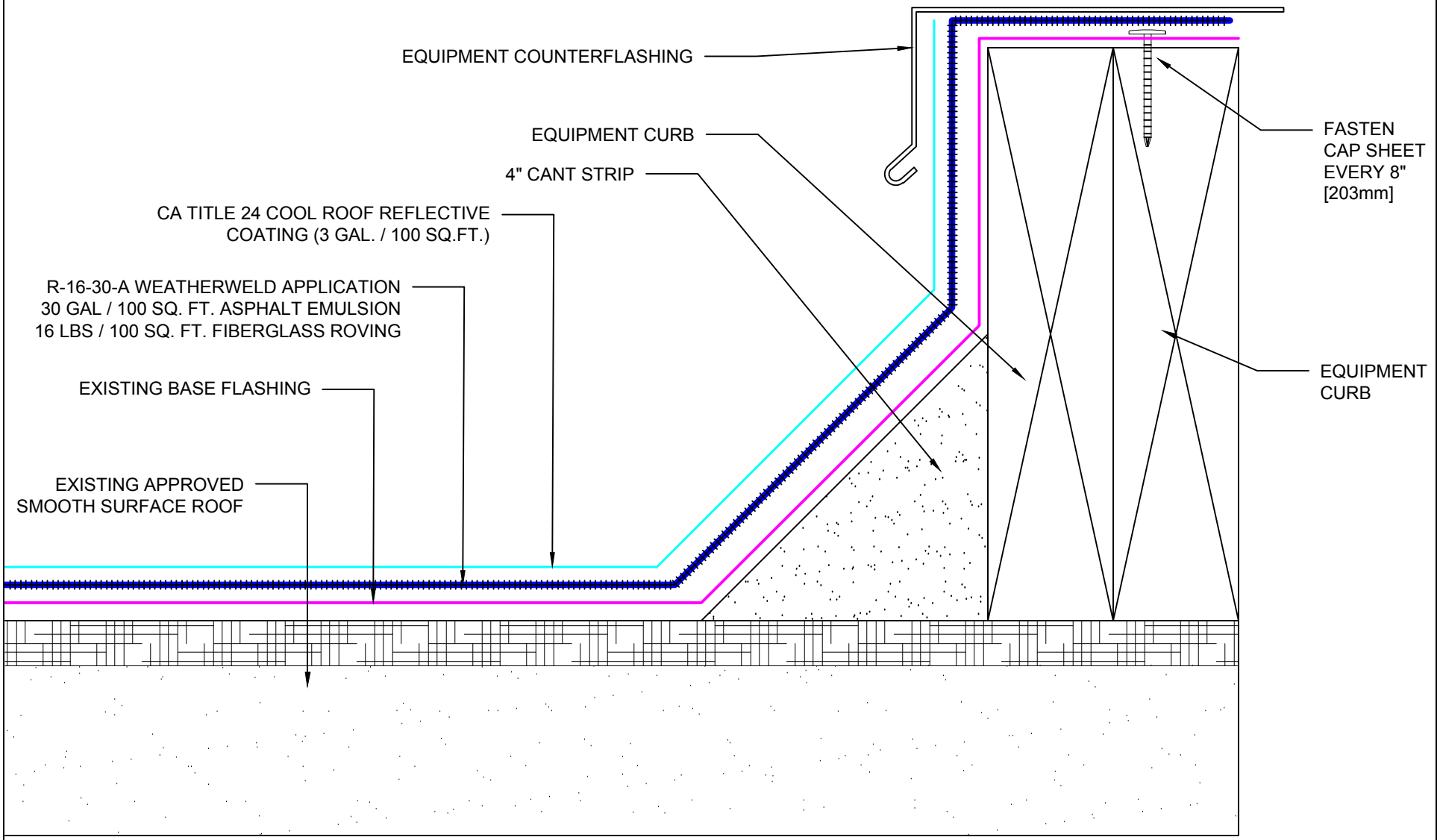
PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
EDGE FLASHING				11/11/20	NTS



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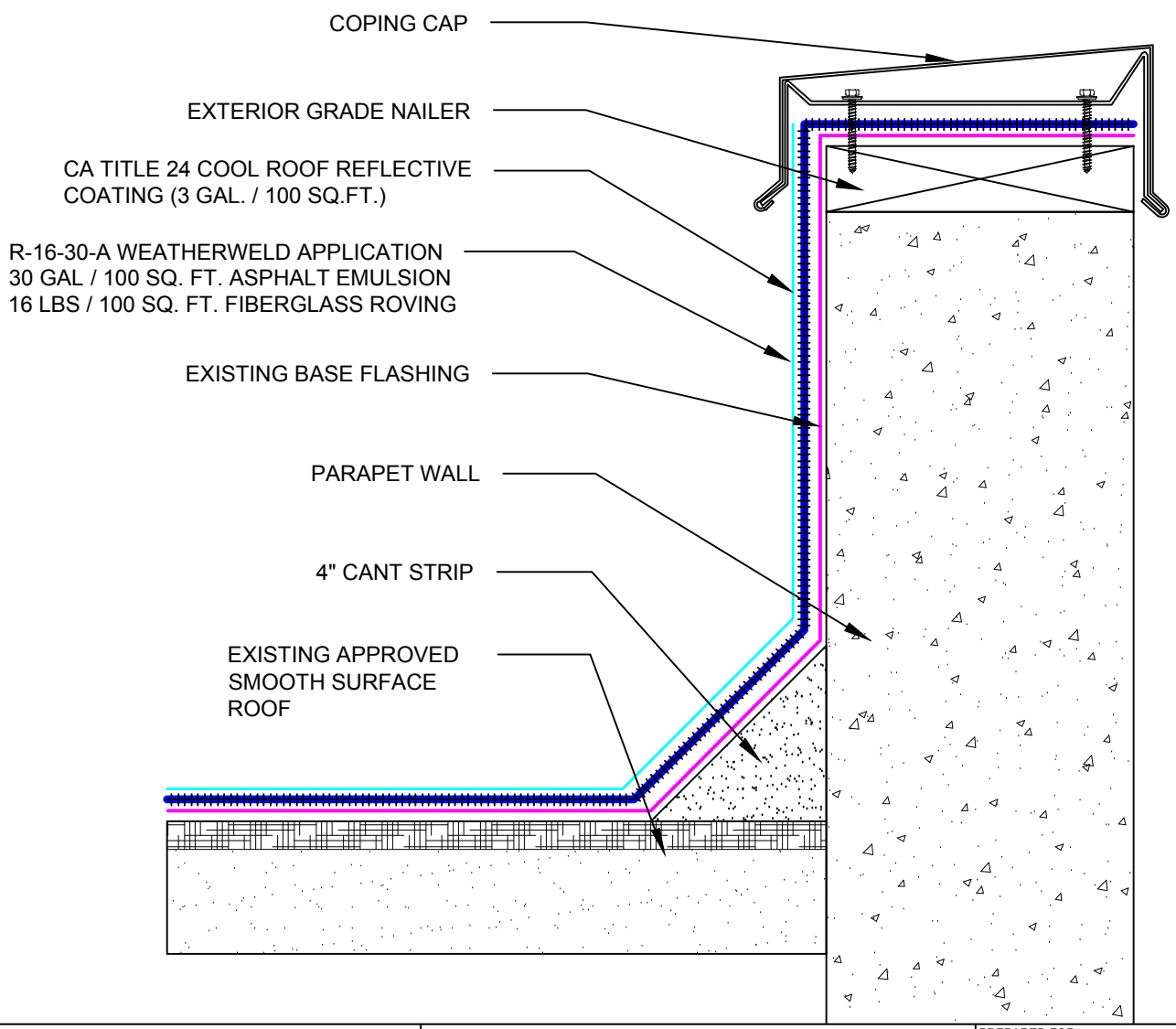
PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
EQUIPMENT PAD FLASHING				11/11/20	NTS



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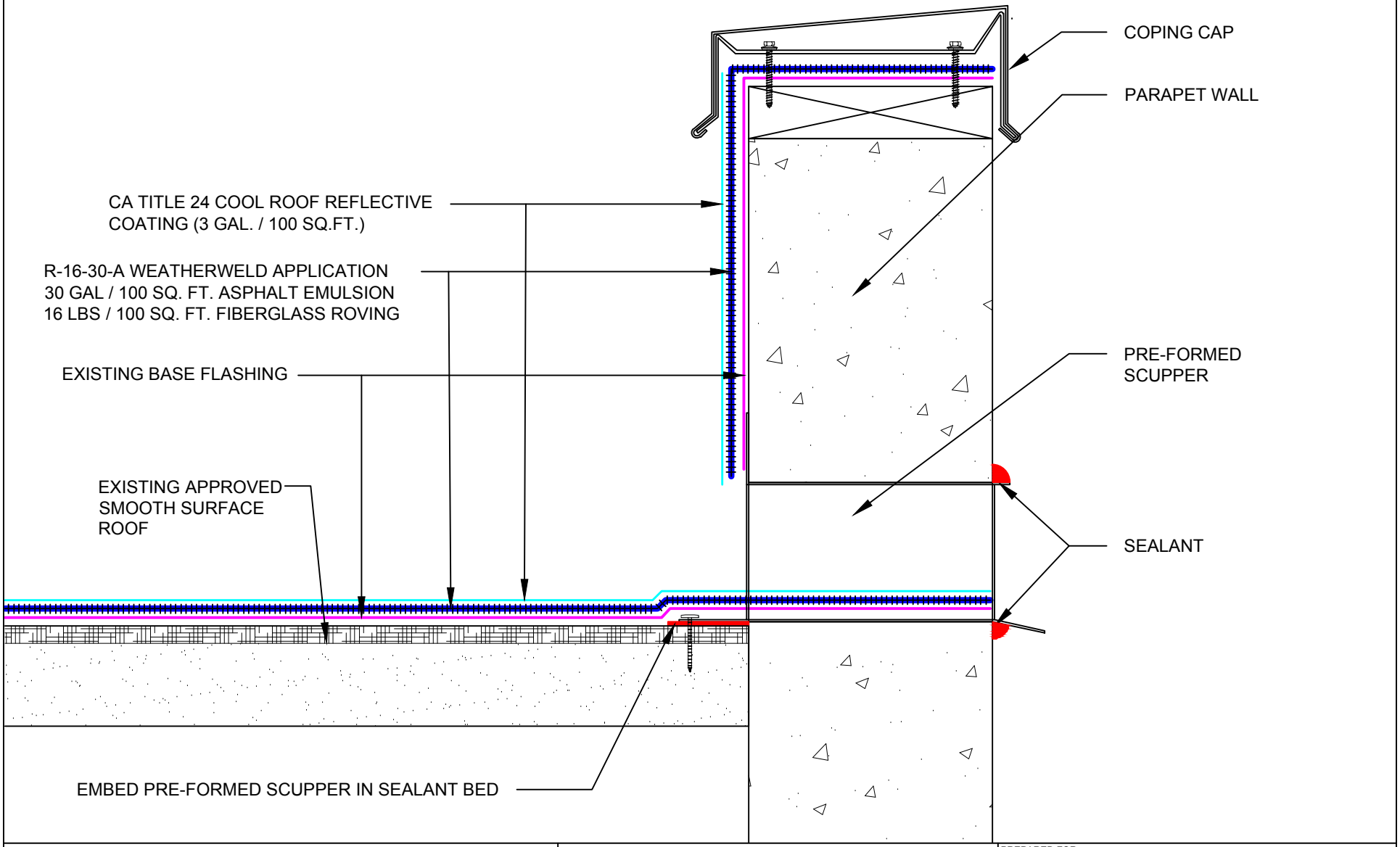
PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
PARAPET WALL FLASHING				11/11/20	NTS



SYSTEM:

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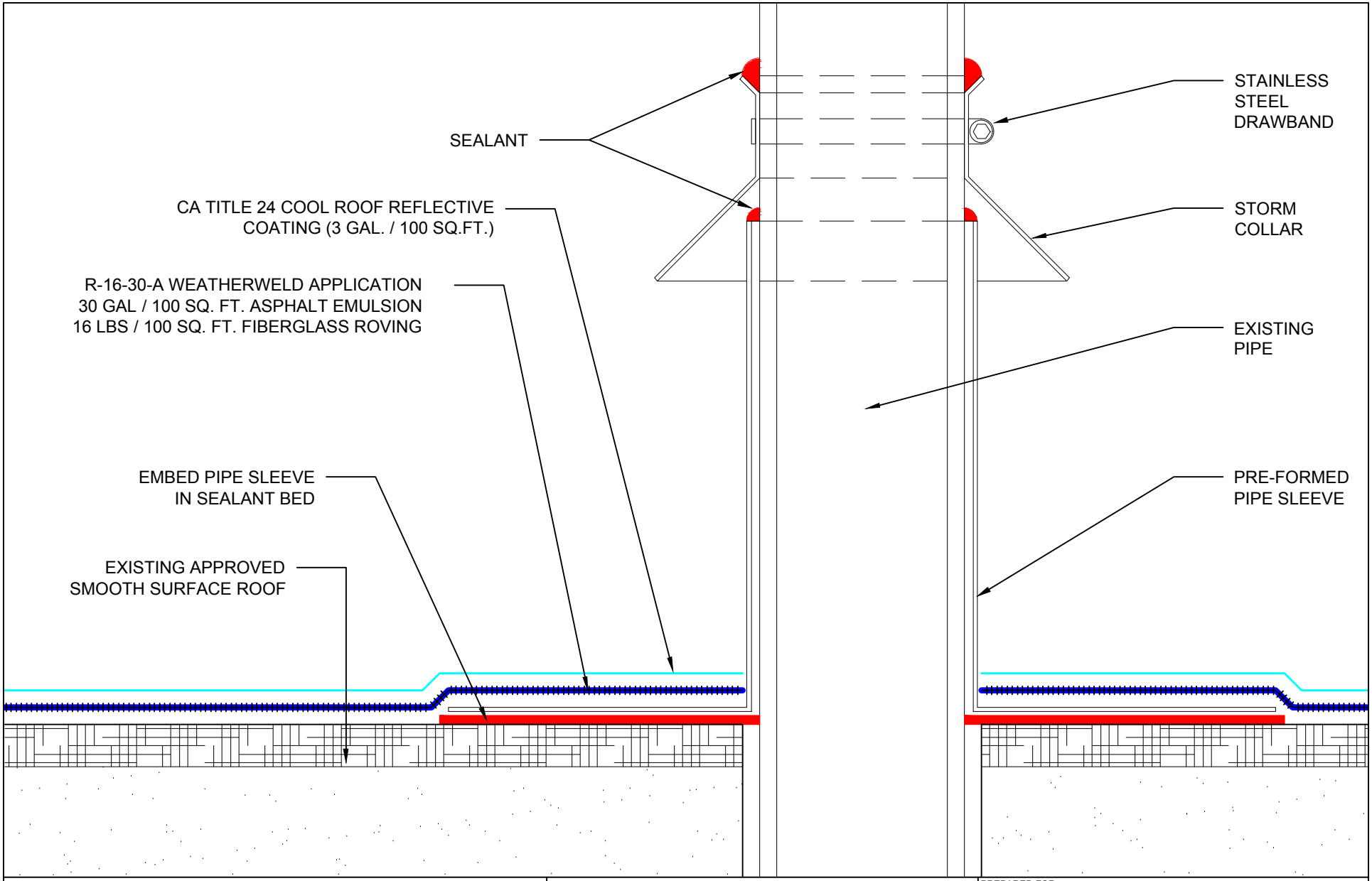
PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
SCUPPER FLASHING				11/11/20	NTS



SYSTEM:

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www.weatherweld.com

PREPARED FOR:

DRAWING TITLE:	DESIGNED BY:	DRAWN BY:	CHECKED BY:	DATE:	SCALE:
PIPE FLASHING				11/11/20	NTS

WEATHERWELD
Div. Liquiform Technologies Inc.

40-YEAR NDL LEAK-FREE WARRANTY

COMPLETION DATE: Date **ISSUE DATE:** 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, existing roof (if any), 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) Failure, movement, settling or defects in the underlying roof structure or roof covering (if any).
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 expressively 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 your 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.

REGISTRATION

PROJECT NAME: _____

SPECIFICATION: _____

AREA DESCRIPTION: _____

_____

_____

AREA EXCLUDED: _____

_____

_____

DECK TYPE: _____

BUILDING USE: _____

ARCHITECT: _____

ADDRESS: _____

PHONE: _____ EMAIL: _____

CONTRACTOR: _____

ADDRESS: _____

PHONE: _____ EMAIL: _____

SIGNATURE: _____ DATE: _____

OWNER: _____

ADDRESS: _____

PHONE: _____ EMAIL: _____

SIGNATURE: _____ DATE: _____

LIQUIFORM TECHNOLOGIES INC (WEATHERWELD)

ADDRESS: 9757 7th Street #803, Rancho Cucamonga CA 91730

PHONE: (888) 440-3224 EMAIL: tech@weatherweld.com

SIGNATURE: _____ DATE: _____