# SECTION 07560

# LIQUID-APPLIED ROOFING AND WATERPROOFING (OVER EXISTING SUBSTRATES- EPDM)

## PART 1 GENERAL

### 1.1 DESCRIPTION

This specification is designed for the application of the AguaSeal Acquisition, LLC (AguaSeal) MonoSeal Membrane System including MonoBase Coating reinforced with Underlayment (TRU™) and MonoTop over the following existing roofing systems:

EPDM (Ethylene Propylene Diene Monomer)

Must be Mechanically fastened or fully adhered. For ballasted loose laid EPDM, contact your AguaSeal Technical Representative.

### 1.2 DESCRIPTION OF LIQUID-APPLIED ROOF SYSTEMS

The liquid-applied roofing system shall consist of a reinforced elastomeric system specifically designed for use on a roof.

### 1.3 SECTION INCLUDES

This specification incorporates the application of substrate suitable primers and the installation of the liquid-applied flexible acrylic waterproofing system over a mechanically fastened or fully adhered EPDM roofing system. This work shall include the preparation of the existing substrate, application of the primer(s), application of the new roofing and waterproofing system, the detail work flashing system, and final clean up.

### 1.4 RELATED WORK

The contractor shall review all sections of these specifications to determine items of work that will interface with the application of this roofing system. Coordination and execution of related sections shall be the responsibility of the contractor.

## 1.5 REFERENCES

1. ASTM B117 - Test Method of Salt Spray (Fog) Testing.
2. ASTM G-29 - Test Methods for Algae Resistance.
3. ASTM E-108 - Test Method for Fire Test of Roof Coverings.
4. ASTM D-1653 - Water Vapor Transmission of Materials.
5. ASTM G26 - Practice for Operating Light- and Water-Exposure Apparatus for exposure of Nonmetallic Materials.
6. ASTM D-412 - Ultimate Tensile Strength at Break.
7. ASTM D-6083 - Standard Specification for Liquid Applied Acrylic Coatings used in roofing.
8. ASTM C1549 - Standard test method for determination of solar reflectance near ambient temperature using a portable solar reflectometer
9. ASTM C1371 - Standard test method for determination of emittance of materials near room temperature using portable emissometers
10. FM 4470 - Standard for Class 1 Spread of Flame Fire, Windstorm Pressure, Windstorm Pull, Hail Damage, Resistance to Foot Traffic, and Susceptibility to Leakage Classifications

## 1.6 SUBMITTALS

1. Shop Drawings: Submit drawings showing the layout of joint reinforcing and all flashing details, including edges, closures, penetrations, etc.

2. Product Data: Provide AguaSeal' technical data for each of the products that comprise the whole roofing and waterproofing system.

3. Manufacturer’s Installation Instructions: Provide technical data and application instruction sheets from AguaSeal for the total scope of work regarding the specific project.

4. Verify field measurements and submit materials list, including quantities, to be applied to achieve specified membrane thickness.

5. Manufacturer’s Certificate: Provide Certification that each of the products to be utilized meet or exceed specified requirements.

## 1.7 QUALIFICATIONS

1. Applicator Qualifications: AguaSeal shall have sole discretion, including the right of refusal to disqualify, regarding the qualifications of the proposed applicator of any AguaSeal products specified for the project.

2. Approved Applicators will also have necessary and documented experience in the application of liquid-applied waterproofing systems on roofs of a similar size and scale as specified for the project.

3. Proof of this qualification shall be provided, if and as necessary, in written form by AguaSeal.

## 1.8 QUALITY CONTROL

1. Codes and Standards: The contractor shall be required to be familiar and acquainted with the building codes, regulations, and standards governing the specified project.

   a) There shall be no variation from these specifications unless said variation is submitted in writing and approved by the specification author and AguaSeal and/or its Technical Sales Representative.

   b) An Approved Applicator (as designated by AguaSeal) shall be on site during all applications of any AguaSeal products.

2. Manufacturer's Technical Sales Representative (TSR): AguaSeal TSR shall be on-site as deemed necessary during the application process. At the Building Owner's specific request, the TSR shall, following each site visit, provide a written inspection report. To be in compliance with Warranty requirements, the TSR is required by AguaSeal to approve the application.

3. The application of this coating system must be in accordance with AguaSeal's estimated application rate for required dry film thickness, published application instructions and Material Safety Data Sheets.

4. The specified roofing system must be installed by AguaSeal authorized roofing applicator in compliance with drawings and specifications as provided by AguaSeal.

5. There must be no deviations made from AguaSeal specification or AguaSeal's approved shop drawings without the PRIOR WRITTEN APPROVAL of an officer of AguaSeal Acquisition, LLC.

6. The solar reflectance of this roofing product may decrease over time due to environmental defacement such as dirt, biological growth, ponded water, etc. The roof should be monitored at regular intervals and maintained or cleaned when necessary to assure the maximum solar reflectance.

## 1.9 DELIVERY, STORAGE, AND HANDLING

1. Deliver materials to site in manufacturer's unopened and undamaged containers bearing the following information:

    1. Name of manufacturer
    2. Name of contents and products code
    3. Net volume of contents
    4. Lot or batch number
    5. Storage temperature limits
    6. Shelf life expiration date
    7. Mixing instructions and proportions of content
    8. Safety information and instructions

2. Store materials in accordance with AguaSeal' instructions. **It is essential that product be protected from the elements to preserve its integrity.** Contact the AguaSeal Technical Sales Representative for guidance.

3. Store materials at temperatures between 40 and 90 degrees F (4-32 degrees C). Keep out of direct sunlight.

4. Support stored material containers on pallets or otherwise off potentially wet ground as necessary.

5. Handle materials in accordance with manufacturer's recommendations.

## 1.10 ENVIRONMENTAL REQUIREMENTS

1. The MonoSeal System should only be applied if no rain is expected before the application has had time to dry and if ambient temperatures are 40F (4.5C) or above.

## 1.11 WARRANTY

MonoTop finish coating will always (excluding Metal Roofs) be applied over a MonoBase and Underlayment (TRU™), to build system millage to Warranty requirements.

The application rates vary with the warranty selected. The total system dry thickness will also vary based on the base coating used and the warranty selected. See section 3.3 for application and minimum dry thickness amounts.

1. Provide applicable timeframe AguaSeal material only or labor and material warranty (see Application, below).

2. The Contractor shall be responsible for an initial three years of labor warranty with AguaSeal being responsible for material only or both labor and material, subject to the specific agreement, from year four forward.

3. Manufacturer is responsible for the labor portion of the warranty from year three forward.

4. To qualify for any Agua-Seal Warranties the system must comply with the following dry mil thickness. See section 3.3 for details.

| | | |
|---|---|---|
| MonoSeal System | 10 Year | 40 mils dry minimum |
| | 20 Year | 52 mils dry minimum |

## 1.12 PROJECT CONDITIONS

A. Acceptable Substrates: Acceptable substrates for the AguaSeal MonoBase and MonoTop System shall be the following: Fully adhered or mechanically fastened EPDM or other substrates approved by AguaSeal.

B. The roofing contractor should conduct a roof scan on flat and low slope roofs of all types prior to commencement of any AguaSeal work, in order to comply with AguaSeal Warranty requirement

C. Substrate: After existing roofing systems are cleaned and repaired by system installer, as required, but prior to starting membrane system installation work, complete all substrate corrective actions required, including but not limited to; removal and replacement of deteriorated flashing, roof decking, removal and

replacement of wet insulation. Substrate shall be smooth, dry, and free of debris.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

1. AguaSeal Acquisition, LLC
   7269 Cross Park Drive, North Charleston, SC 29418
   Phone: (843) 614-9663 www.aguaseal.com

### 2.2 MEMBRANE COMPOUND MATERIAL

1. Waterproofing Material:

   a) MonoBase and MonoTop, namely a water-based, Underlayment reinforced, highly flexible acrylic coating system which is liquid-applied in three successive stages, creating one continuous and seamless watertight membrane, with a 40 mils minimum, dry, cured total system thickness;

      1.1 The AguaSeal MonoBase and MonoTop System comprises:

         I. MonoBase: a blend of highly flexible, water based, 100% pure, acrylic polymer, resin coatings.

         II. Underlayment: Tietex Roofing Underlayment (TRU™), non-woven polyester, stitch-bonded, 272 weave, heat-set fabric

         III. MonoTop: an ultra-violet light resistant blend of highly flexible, water based, 100% pure, acrylic polymer, resin coatings.

2. Underlayment (TRU™): This material shall be non-woven 100% polyester, stitch bonded, heat –set fabric, as specified by the Architect/Engineer;

   a) 272: Weight: Minimum (2.73oz), Target (3.04oz), Maximum (3.34oz)
   b) 272: Tensile Strength: MD: 67 lbs., CD: 59 lbs. per ASTM D5034
   c) 272: Elongation @ Break: MD: 25%, CD: 79% per ASTM D5034
   d) 272: Ball Burst: 109 lbs. per ASTM D3787

e) 272: Trapezoid: MD: 22 lbs., CD: 21 lbs. per ASTM D5587
f) 272: Thickness: 0.018 inches per ASTM D1777

## 2.3 CURED MEMBRANE CHARACTERISTICS

| PROPERTY | TEST | RESULT |
|---|---|---|
| Elongation | ASTM-D638 | >300% Elastomeric |
| | ASTM-D2370 | >220% @ Break |
| Tensile Strength (cured) | ASTM-D412 | >2000 PSI (12,789 kPA) |
| | ASTM-D2370 | >210 PSI |
| Density | | 12.1 lb./gal |
| Volume Solids | ASTM-D2697 | > or = 50% |
| Weight Solids | ASTM-D1644 | > or = 65% |
| Viscosity | ASTM D562 | 129 Krebs @ 77°F |
| Algae Resistance | ASTM-G29 | No Growth Supported |
| Moisture Vapor | ASTM-D1653 | 3 perms |
| Tear Resisantace | ASTM-624 | 81 (Lbf/in) |
| Fire Rating | ASTM-E108 | Class A |
| VOC (calculated) | | < 72 g/L |
| Susceptibility to Leakage | FM-4470 | |
| Windstorm Pressure | FM-4470 | |
| Severe Hail Test | FM-4470 | No Separation or Rupture 1 SH |
| Resistance to Foot Traffic | FM-4470 | No Sign of Tearing or Cracking |
| Liquid Applied Acrylic | ASTM-D6083 | Approved |
| Weathering | ASTM-G26 | No effect after 3,000 hours |
| Salt Spray Test | ASTM-B117 | No effect |
| Fire Rating | ASTM-E108 | Class A |
| Low Temperature Flexibility (-15°F) | ASTM-D522 | Pass |
| Liquid Applied Acrylic | ASTM-D6083 | Approved |
| Solar Reflectance | ASTM-C1549 | > or = 0.79 |
| Thermal Emittance | ASTM-C1371 | > or = 0.90 |

## 2.4 ACCESSORIES

1. **RoofBond Primer**: Water-based cleaning agent utilized for deep cleaning and priming an existing rubber, typically, EPDM, surface for the installation of the MonoBase/MonoTop System.

2. **Panel Seal Metal Primer**: A water-based surfactant-free primer used, where necessary, to encapsulate existing rust, stabilize and protect metal surfaces. Applied to rusted metal prior to application of MonoSeal System.

3. **Cant-Strips**: AguaSeal approved cant strip systems are EPS (Expanded Polystyrene), ISO (Polyisocyanurate) and non-pressure treated lumber. Cant strips should be installed at internal corners, around curbs, and at any 90-degree angles, all as recommended by the Technical Sales Representative.

4. **Moisture Breathers/One Way Vents**: Moisture breathers, otherwise known as 'One Way Vents' shall be installed on every roofing remediation project as recommended by the Technical Sales Representatives.

5. **Retrofit Internal Drains**: Optional unless specified by AguaSeal Technical Representative. Retrofit roof drains are designed to replace existing drains in reroofing applications. Installed from the roof surface, retrofit drains are engineered to be installed without removing the existing plumbing or fixture while providing a watertight connection to the roof system and the existing plumbing.

6. **AguaBase BG (Below Grade)**: AguaBase BG is made into a trowel grade acrylic, cementitious, moderately flexible, and elastomeric bulking material by increasing the Portland #1 Cement content in the AguaBase mix process. It is used in conjunction with MonoBase and/or MonoTop (as specified by the Technical Sales Representative) to fill cracks, voids, or low depressions on various substrates, to repair existing delaminated roofing and to provide a harder, more durable and ponding water tolerant surface around roof drains and scuppers.

7. **MonoBase Butter Grade**: A viscous water acrylic elastomeric based material used to fill cracks, voids, or low depressions on various substrates.

8. **AguaGrip**: AguaGrip is a low viscosity primer adhesive providing excellent adhesion to virtually all roof substrates. It can be used to seal chalky residue substrates, to re-adhere loose granules on a cap sheet, to encapsulate difficult to remove dust and dirt. AguaGrip makes an excellent bleed-blocker and aid system for leveling surfaces such as old built-up, granulated modified bitumen and other, ballasted roofing substrates, making them ready for application of any of the AguaSeal Roofing Systems. In addition to the above-mentioned substrates, AguaGrip can be used effectively to seal virtually all surfaces, including asphalt, concrete, asbestos, cement roofing, plastisol coated metal and other pre-coated surfaces.

9. **AguaPath**: a hardwearing, flexible and durable water-based, non-slip coating for protection of walkways and pedestrian areas on various roofing substrates. Contact the AguaSeal Technical Representative for suitability of purpose subject to substrate.

# PART 3 EXECUTION

## 3.1 EXAMINATION

1. Ensure the substrate surfaces are clean and dry, free of loose particles, cracks, pits, projections, or otherwise anything that may prevent adhesion or the successful application of the waterproofing system.

2. Ensure any penetrations through the substrate to be treated are securely installed.

3. Ensure that substrate areas are adequately supported and firmly fastened in place.

4. Ensure the roof substrate has a minimum slope of 0.25" per foot.

5. Ensure the roof substrate is free of any ponding water depressions. In the case of such depressions AguaBase BG Trowel Grade or MonoBase Butter Grade may be used to level out the substrate. Allow to dry before any further product application.

6. Ensure all attached parapet/vertical walls are properly treated with the AguaSeal Base and MonoTop System.

## 3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive waterproofing.

2. Remove lightning protection.

3. Remove any excess debris from the roof such as leaves, areas of dirt accumulation, used HVAC containers etc.

4. Clean and prepare surfaces to receive waterproofing treatment by removing all loose and flaking particles, grease and any growing organic materials by power wash and a stiff bristle push broom. Extreme care should be taken not to inject water into the substrate during washing. In some cases, additional drying time may be required after the cleaning process. Please consult your AguaSeal Technical Sales Representative for additional advice on cleaning various roofing substrates.

5. Following power washing, ensure that any remaining loosely adhering residue of previous coatings is removed to facilitate good adhesion.

6. Make any repairs required to the existing substrate. In areas where the existing roofing system is not fully adhered:

   a) Remove any non-adhering roofing.
   b) Where necessary install deemed approved recovery board to bring the repair area level with the existing roofing.
   c) Prime the repair area with a thin coat of MonoBase, AguaBase BG slurry or AguaBase Trowel Grade as recommended by the Technical Sales Representative.
   d) Apply AguaBase BG Slurry or AguaBase BG Trowel Grade to the repair area as recommended by the Technical Sales Representative. Embed the AguaSeal Underlayment (TRU™) into the slurry.
   e) Apply another thin layer of MonoBase, AguaBase BG slurry or AguaBase Trowel Grade (per Technical Sales Rep) and trowel smooth.

7. Do not apply any AguaSeal treatment to any surfaces deemed unacceptable to the Technical Sales Representative.

## 3.3 APPLICATION

1. Surface Primers - As necessary, apply the following primer/cleaner at the proper coverage rates. Contact AguaSeal Technical Sales Representative to verify if a primer is required.

   a) EPDM - Apply RoofBond Primer at a coverage rate of 200 square feet per gallon. It may be necessary to only apply RoofBond Primer to one section of the roof at a time to ensure proper activation time. RoofBond Primer should remain on the EPDM surface for no more than 10-30 minutes, followed by two power washes @ 1,500 psi.

2. MonoBase Application w/ Underlayment (TRU™)

   MonoBase - To attain warranty standard coverage, apply MonoBase at a coverage rate of 2.5 gallons per 100 square feet (averaging 1.5 gallons per 100 square feet below underlayment and 1.00 gallons per 100 square feet on top of underlayment. This provides a combined total dry thickness including Underlayment (TRU™) of 24-26mls.

   4. Apply project specific size Underlayment (TRU™), laid into the wet MonoBase coating and immediately saturate top of Underlayment (TRU™) with an additional coat of MonoBase.

Care should be given to ensure that adjacent runs of Underlayment (TRU™) are overlapped a minimum of 4 inches.

MonoBase coats should only be applied with the use of approved roof brushes. Rolling and spraying of the MonoBase coats is not permitted and will nullify the issue of an AguaSeal warranty.

b. Roof Perimeter - Using MonoBase and project specific sized Underlayment (TRU™) (normally 12” wide) waterproof the entire roof perimeter. Continue the treatment up vertical surfaces and onto deck a minimum of 6 inches in each direction.

c. Roof Penetrations - Using MonoBase and project specific sized Underlayment (TRU™) (normally 12”) seal around the base of the penetration, extending at least 6 inches onto the vertical and 6 inches onto the base ensuring watertight integrity. Cut flashing to accommodate the shape of the penetration. Both the top and bottom of neoprene pipe boots shall be flashed in similar fashion.

d. Roof Drains - Remove drain rings and using Base and project specific sized Underlayment (TRU™) and the seal the roof drains, extending into the bowl of the drain.

AguaSeal recommends modifying the existing internal drain with the addition of a retrofit drain assembly. Should retrofit drains be installed, the process should take place after the roof is cleaned and before the MonoBase system is applied.

e. Scuppers - Using MonoBase and project specific sized Underlayment (TRU™), waterproof and seal scuppers by extending the chosen system beyond the existing roofing system into and through the scupper.

f. Wall flashings and Coping caps - using MonoBase and project specific size Underlayment (TRU™) seal any seams and fasteners penetrating through wall flashings and coping caps.

g. Gutters - Trowel or brush apply suitable AguaSeal sealant (in accordance with the AguaSeal Technical Representatives recommendation) to the interior or exterior gutter. Gutter shall be completely clean and dry before application.

h. Skylights - Curb skylights shall be treated in the same fashion as

curb flashings. The entire perimeter shall be flashed with MonoBase and a minimum 6 inches width of Underlayment (TRU™). All exposed skylight fasteners shall be encapsulated with Base and AguaCaps as necessary. Do not bridge fasteners. DO NOT COAT THE ENTIRE SURFACE OF SKYLIGHTS.

i. Field of Roof - using MonoBase and 40" Underlayment (TRU™), seal the entire field of the roof. Overlap adjacent runs of Underlayment (TRU™) by a minimum 4".

3. MonoTop Application

10-year Warranty Requirements: Brush, spray or roller apply MonoTop at a total coverage rate of 1.5 gallons per 100 square feet. To achieve this milage, AguaSeal recommends two coats applied at .75 gallons per 100 square feet per coat. Allow coats to dry between application.
**Total system dry thickness = 40 mils minimum.**

20-year Warranty Requirements: Brush, spray or roller apply MonoTop at a coverage rate of 3 gallons per 100 square feet. To achieve this milage, AguaSeal recommends three coats applied at 1 gallon per 100 square feet per coat. Allow coats to dry between applications.

**Total system dry thickness = 52 mils minimum.**

OPTIONAL: 20-year warranties may require that the first coat of MonoTop be an alternate color relative to the final MonoTop coats, i.e.; 2 coats of Light Gray/Linen color followed by 2 coats of White or other final color selection.

## 3.4 PROTECTION OF FINISHED WORK

1. Monitor the finished system for 7 days, sweeping any ponding water from the roof surface off allow for full cure.

2. Verify final film thickness as specified. If specified dry film thickness has not been achieved, application of additional coating will be required.

3. Visually inspect critical areas of the roof including roof seams and penetrations and touch up with additional MonoSeal coatings to insure complete and adequate coverage.

4. Protect completed membrane from damage by work of other trades. Schedule

sequence of work so that traffic over new membrane is minimized. Institute required procedures for protection of completed membrane during installation of work from other trades throughout remainder of construction period. Do not allow traffic of any type on unprotected membrane.

5. At completion of construction activities of other trades, touch-up and restore damaged or defaced coated surfaces, if and where needed. Correct damage by cleaning, repairing, replacing, and/or recoating to make acceptable to the specifier and/or AguaSeal. Leave in an undamaged condition.

### 3.5 INSPECTION INFORMATION

A. Inspect Preliminary Work / Flashing Details for problem areas (e.g., gaps, cracks, fish mouths, air pockets, etc.) to ensure that work is complete and satisfactory.

## PART 4 ANNUAL MAINTENANCE PROGRAM

The following are the recommendations for maintaining an AguaSeal MonoSeal Roof System. If you have any questions, please contact our corporate office at 843-614-9663 or your Technical Sales Representative.

1. AguaSeal recommends that the roof area be inspected at least once per quarter.
2. During the annual maintenance program, remove all debris from the roof surface, including any vegetation, dirt, loose nails and screws, unused equipment, etc.
3. Inspect the entire roof surface for any ponding water areas. If ponding is occurring then contact AguaSeal Corporate or your Technical Sales Representative who will recommend an approved AguaSeal applicator to remove and correct the problem area.
4. Inspect the roof surface for any punctures especially around exhaust vents and HVAC units. Should any punctures be found then contact AguaSeal Corporate or your Technical Sales Representative who will recommend an approved AguaSeal applicator for repair work.
5. Keep all gutters free of debris. Make sure that the downspouts are draining properly by water testing them.
6. Trim back any overhanging tree branches.
7. Check all caulking and sealants on flashings and copings. Scrape and remove any caulking that is weather cracked and damaged. Clean the area thoroughly using a wire brush if necessary. Reapply polyurethane caulking such as Vulkem, NP-1, or equivalent.
8. Check the mortar on chimneys and parapet walls, both in between the brick and

on top. If it is damaged or deteriorating, have it tuck-pointed. Any mason can perform this work.

9. An AguaSeal Roof may be cleaned once a year (not required) to remove surface debris build-up for improved reflectivity and cool roof benefits. Use a soft bristle wash brush and a mild detergent to remove build-up. Rinse thoroughly to remove detergents. DO NOT POWERWASH.

**END**