SECTION 03 54 00

CAST UNDERLAYMENTS

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\*\* NOTE TO SPECIFIER \*\* Formulated Materials LLC; underlayments and waterproofing.  
This section is based on the products of Formulated Materials LLC, which is located at:3010 N.W. 149th St., Suite 100Oklahoma City, OK 73134Tel: 844-405-3676Email: [request info (Info@formulatedmaterials.co)](https://arcat.com/rfi?action=email&company=Formulated%252BMaterials%252BLLC&message=RE%253A%2520Spec%2520Question%2520(03540fml)%253A%2520&coid=52566&spec=03540fml&rep=&fax=)  
Web: <https://formulatedmaterials.com>   
 [ [Click Here](https://arcat.com/company/formulated-materials-llc-52566) ] for additional information.  
Formulated Materials, LLC comes as a developer of technologies, provider of innovative systems designed to elevate and advance the construction industry. Our system innovation is achieved through partnerships with component experts, adding the latest scientific technologies and decades of field expertise.  
Simply put, our mission is to develop systems for the construction industry that solve problems by combining the best technologies and methods under one brand with one warranty. We support our customers and stakeholders by providing hands on training, on-call technical advice, an enduring spirit of innovation and devotion to excellence.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Sound attenuation. (Treadstone) (R2) (R2) (Elite) (Elite Duo) (M2) (M3) (P1) (Sound Mat Tape)
    2. Sub floor preparation. (Treadstone) (TP1) (Technical Felt)
    3. Gypsum underlayments. (Treadstone) (FR25) (FE30) (FR30P
    4. Levelers (Treadstone) (Sitemix Leveler) (Sitemix SL) (Sitemix Ultra)
    5. Components. (Elevation) (TTP) (BES) (Pan Sealant) (FT Tape)
    6. Sheet waterproofing membrane products. (Elevation) (S60) (SM2) (S40)
    7. Seamless waterproofing membrane products (Elevation) (L1) (L-Flash) (L1 Caulk)
    8. Accessories. (Elevation) (DM1) (SP1) (T-Bar) (RSE)
    9. Floor prep. (Hydrophase) (APS) (APMB)
    10. Levelers (Hydrophase) (P150 SL) (C150 SL)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 03 30 00 - Cast-in-Place Concrete.
    2. Section 06 11 16 - Mechanically Graded Lumber.
    3. Section 07 27 19 - Plastic Sheet Air Barriers .
    4. Section 09 30 00 - Tiling.
    5. Section 09 60 00 - Flooring.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. ASTM International (ASTM):
       1. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
       2. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
       3. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
       4. ASTM C836 - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
       5. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
       6. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
       7. ASTM C1708 - Standard Test Methods for Self-leveling Mortars Containing Hydraulic Cements.
       8. ASTM E96 - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
       9. ASTM D56 - Standard Test Method for Flash Point by Tag Closed Cup Tester.
       10. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
       11. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
       12. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
       13. ASTM D751 - Standard Test Methods for Coated Fabrics.
       14. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
       15. ASTM D1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal).
       16. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
       17. ASTM D1644 - Standard Test Methods for Nonvolatile Content of Varnishes.
       18. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
       19. ASTM D2196 - Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational Viscometer.
       20. ASTM D2240 - Standard Test Method for Rubber PropertyDurometer Hardness.
       21. ASTM D2369 - Standard Test Method for Volatile Content of Coatings.
       22. ASTM D2697 - Standard Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings.
       23. ASTM D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
       24. ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
       25. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile.
       26. ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
       27. ASTM D5199 - Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.
       28. ASTM D5261 - Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
       29. ASTM D5385 - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
       30. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
       31. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
       32. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
       33. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
       34. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.
       35. ASTM G154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.
    2. British Standards Institution (EN):
       1. EN 964 - Geotextiles and Geotextile-Related Products - Determination of Thickness at Specified Pressures Part 1: Single Layers.
       2. EN 965 - Geotextiles and Geotextile-Related Products - Determination of Mass per Unit Area
       3. EN 1849 - Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastics and rubber sheets for roof waterproofing.
       4. EN 29073 - Textiles; test method for nonwovens; part 1: determination of mass per unit area (ISO 9073-1:1989),
    3. International Building Code (IBC):
       1. IBC 1607.8.1 - Loads on Handrails and Guards.
    4. South Coast Air Quality Management District (SCAQMD):
       1. SCAQMD VOC Requirements.
    5. U.S. General Services Administration (GSA):
       1. TT-S-00230-C - Sealing Compound: Elastomeric Type, Single Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures.
    6. Occupational Safety and Health Administration (OSHA):
       1. OSHA 1910.23(e)(3)(v) - Spacing of the posts in between modular guardrail system sections.
    7. Underwriters Laboratories (UL):
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data:
        1. Manufacturer's data sheets on each product to be used.
        2. Preparation instructions and recommendations.
        3. Storage and handling requirements and recommendations.
        4. Typical installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: Two representative units of each type, size, pattern, and color.
    2. Shop Drawings: Include details of materials, construction, and finish. Include relationship with adjacent construction.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.
     2. Installer Qualifications: Company specializing in performing Work of this section with minimum two years documented experience with projects of similar scope and complexity.
     3. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
       1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
       2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
       3. Retain mock-up during construction as a standard for comparison with completed work.
       4. Do not alter or remove mock-up until work is completed or removal is authorized.
  1. PRE-INSTALLATION CONFERENCE
     1. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.
  2. DELIVERY, STORAGE, AND HANDLING
     1. Store and handle in strict compliance with manufacturer's written instructions and recommendations.
     2. Protect from damage due to weather, excessive temperature, and construction operations.
  3. PROJECT CONDITIONS
     1. 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 recommended limits.
  4. WARRANTY
     1. Manufacturer's standard limited warranty unless indicated otherwise.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Formulated Materials LLC, which is located at:3010 N.W. 149th St., Suite 100Oklahoma City, OK 73134Tel: 844-405-3676Email: [request info (Info@formulatedmaterials.co)](https://arcat.com/rfi?action=email&company=Formulated%252BMaterials%252BLLC&message=RE%253A%2520Spec%2520Question%2520(03540fml)%253A%2520&coid=52566&spec=03540fml&rep=&fax=);Web: <https://formulatedmaterials.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
  1. SOUND ATTENUATION (TREADSTONE)

\*\* NOTE TO SPECIFIER \*\* Treadstone® R1 Sound Attenuating Mat is a diamond studded membrane made of a mix of UV stabilized recycled polyethylene, laminated to a polypropylene fabric. The rigid studded technology of R1 delivers superior durability and enhanced acoustic performance in the most challenging of projects.

* + 1. Product: Treadstone R1 Sound Attenuating Mat as manufactured by Formulated Materials. Loose-laid over the substrate and then covered with a uniform thickness of an approved Treadstone Underlayment Product. Mechanical Fastening is not required, providing a system profile thickness as thin as 7/8 inch (22.23 mm).
       1. A waterproof, odor barrier protecting adjacent floors from moisture and odors/
       2. Super low profile of 1/8 inch (3 mm).
       3. Underlayment depth of 3/4 inches (19 mm) reduces overall weight of assembly and reduces drying time.
       4. Compression resistance increase lifespan and acoustical performance of the floor assembly.
       5. Embedded System: Noise problems are reduced, even when floor coverings are changed or replaced.

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
      1. Mechanical Resistance:
         1. Pressure: 315 psf (1,537.97 kg/m2). Deflection: 0.071 inches (0.18 mm).
         2. Pressure: 982 psf (4,794.54 kg/m2). Deflection: 0.0141 inches (0.36 mm).
         3. Pressure: 2994 psf (14,617.99 kg/m2). Deflection: 0.0283 inches (0.72 mm).
         4. Pressure: 5306 psf (25,906.16 kg/m2). Deflection: 0.0425 inches (1.08 mm).
         5. Pressure: 7952 psf (38,825.06 kg/m2). Deflection: 0.0567 inches (1.44 mm).
         6. Pressure: 10019 psf (48,917.04 kg/m2). Deflection: 0.0709 inches (1 .8 mm).
      2. Technical Data:
         1. Thickness: 1/8 inch (3 mm).
         2. Color: Black with white water-resistant fabric.
         3. Underlayment Depth: Minimum 0.75 (19 mm).
         4. Roll Width: 44-3/8 inches (127 mm).
         5. Roll Length: 100 ft (30.48 m).
         6. Coverage Area per Roll: 370 sq ft (34.37 sq m).
         7. Weight per Roll: 43.2 lbs. (19.6 kg).

\*\* NOTE TO SPECIFIER \*\* Treadstone™ R2 Sound Attenuating Mat is a cylindrical studded membrane made of a mix of UV stabilized recycled polyolephines, laminated to a polypropylene fabric. The rigid studded technology of R2 delivers superior durability and enhanced acoustic performance in the most challenging of projects.

* + 1. Product: Treadstone R2 Sound Attenuating Mat as manufactured by Formulated Materials. Loose-laid over the substrate and then covered with a uniform thickness of an approved Treadstone Underlayment Product. Mechanical Fastening is not required, providing a system profile thickness as thin as 7/8 inch (22 mm).
       1. In conjunction with 1 inch of Treadstone Underlayment, the installed system can reduce impact noise (IIC) up to 12 dB in wood framed assemblies. Refer to Treadstone Acoustical Design Guide for acoustical test performance or contact Formulated Materials for specific test data.
       2. Polypropylene barrier fabric.
       3. Low profile: 0.15 inches (4 mm).
       4. Excellent noise control performance with a spectrum of floor covering options.
       5. Industry leading compression resistance.
       6. Because this system is embedded, noise problems are reduced, even when floor coverings are changed or replaced.

\*\* NOTE TO SPECIFIER \*\* or specific design or data contact us at info@formulatedmaterials.com.

* + - 1. UL listed in over 110 designs.
      2. Technical Data:
         1. Fabric:

Raw Material: Polypropylene.

Weight per EN 1849-1:

2.21 oz / yd (75 gram / sq m) plus or minus 10 percent.

Thickness per EN 1849-1:

0.03 inches (0.75 mm) plus or minus 15 percent.

Width: 45 inches (1.10 m) plus or minus 2 percent.

Mean Tensile strength per EN 29073: 25.8 lbf (115 N) plus or minus 15 percent.

Elongation at max load (mean) per EN 29073/3: 90 percent.

* + - * 1. Core:

Raw material: Mix of Polyethylene and Polypropylene

Weight: 0.1 lbs per sq ft (500 grams per sq m) plus or minus 10 percent

Width: 3.54 ft (1.08 m) plus or minus 2 percent.

* + - * 1. Product:

Weight per EN 965: 0.12 lbs per sq ft (575 grams per sq m)

Thickness per EN 964-1: 0.15 inches (3.8 mm).

Adhesive Tape for Overlapping: Butyl strip.

Width of Flap:45.0 inches (1.14 m)

* + - * 1. Mechanical Resistance

Pressure: 41.8 psf (2 kPa). Time: 0.

Residual thickness: 0.15 inches (3.9 mm).

Pressure: 104.4 psf (5 kPa). Time: 0.

Residual thickness: 0.15 inches (3.8 mm).

Pressure: 104.4 psf (5 kPa). Time: 1 week.

Residual thickness: 0.15 inches (3.73 mm).

Pressure: 104.4 psf (5 kPa). Time: 1 month.

Residual thickness: 0.15 inches (3.72 mm).

Pressure: 104.4 psf (5 kPa). Time: 3 months.

Residual thickness: 0.15 inches (3.70 mm).

\*\* NOTE TO SPECIFIER \*\* Treadstone Elite is patent pending.

* + 1. Product: Treadstone Elite as manufactured by Formulated Materials. Multi-layer sound attenuation mat comprised of a monolithic, rolled polyethene and polypropylene, high compression resistance cuspated HOPE design bonded to a 95 gram non-woven polypropylene fabric. Lays flat and smooth. High compression and deflection resistance and acoustical performance
       1. Light/ flexible.
       2. Strength: 20,000 psf (957.6 kPa) for 0.04 inches (1 mm) of deflection.
       3. Twenty times stronger than monofilament sound mats
       4. Permanent moisture and odor barrier.
       5. Post-Consumer Recycled Content: 80 percent.
       6. UL Listed in 116 designs
       7. Can increase IIC values up to 12 db in wood framed construction.
       8. Technical Data:
          1. Thickness: 1/4 inch (6 mm).
          2. Color: Black with bonded Black Fabric.
          3. Underlayment Depth: Minimum 0.75 inch (19 mm)
          4. Roll Width: 46 inch (117 cm)
          5. Roll Length 105 ft (32 m)
          6. Coverage Area per Roll: 400 sq ft (37.2 sq m)
          7. Weight per Roll: 54 lbs (24.5 kg)
       9. Mechanical Resistance:
          1. Pressure: 67.4 psf (3,290.76 kg/m2). Deflection: 0.0098 inch (.25 mm)
          2. Pressure: 5,000 psf (24,412.14 kg/m2) . Deflection: 0.0197 inch (.5 mm)
          3. Pressure: 21,000 psf (102,531 kg/m2) . Deflection: 0.0394 inch (1 mm)

\*\* NOTE TO SPECIFIER \*\* Combining two new innovative technologies that provide unmatched acoustical performance and durability in a patent pending sound mat. Treadstone Elite Duo's industry leading deflection/compression innovation allows for Treadstone underlayment depths of 3/4 inch (19 mm) min. providing an overall thickness of just over 1 inch (25 mm).

* + 1. Product: Treadstone Elite Duo as manufactured by Formulated Materials. Monolithic, rolled plastic core membrane comprised of polyethene and polypropylene, in a high compression resistance cuspated HDPE design. Provides compression/deflection resistance never seen in an acoustical sound mat product. Needle punched non-woven polyester low frequency benefit.
       1. Strength: 20,000 psf (957.6 kPa) for (1 mm) of deflection.
       2. Reduced underlayment thickness allows for faster underlayment drying time. Ready for floor covering in 7 to 10 days.
       3. Post-Consumer Recycled Content: 98 percent.
       4. Provides a moisture-vapor and odor barrier.
       5. Ideal for concrete construction.
       6. UL Listed in 116 designs.
       7. Can increase IIC values 15-17 db in wood framed construction.
       8. LEED Credits; Materials and Resources: MR 3, MR 4, MR 5, MR 6; Indoor Environmental Quality IEQ 1, IEQ 2; Innovation and Design Process - IDP 1.
       9. Physical Properties:
          1. Weight: 0.164 psf (7.8 Pa)
          2. Thickness: 3/8 inch (9 mm
          3. Width: 3.75 ft (1.14).
          4. Length: 90 ft (27.4).
          5. Area per Roll: 333 sq ft (30.9 sq m)
          6. Roll Weight: 55 lbs (24.9 kg)
       10. Mechanical Resistance:
           1. Pressure: 674 psf (3,290.76 kg/sq m). Deflection: 0.0098 inch (0.25 mm).
           2. Pressure: 5,000 psf (24,412.14 sq m) Deflection: 0.0197 inch (0.5 mm).
           3. Pressure: 21,000 psf (102,531 sq m) Deflection: 0.0394 inch (1 mm).

\*\* NOTE TO SPECIFIER \*\* Treadstone® M2 Sound Attenuating Mat is a three dimensional mesh of Polypropylene ® Synthetic Monofilaments, UV stabilized, tangled, and welded where they cross laminate to the Polypropylene Barrier Fabric. With its U Shaped geometry, Treadstone® M2 delivers optimum

* + - * 1. sound control between floor levels, with long term benefits due to its excellent mechanical
        2. compression resistance.
    1. Product: Treadstone M2 Sound Attenuating Mat as manufactured by Formulated Materials. Loose-laid over the substrate and then covered with a uniform thickness of an approved Treadstone Underlayment Product. Excellent noise control performance with a spectrum of floor covering options. Mechanical Fastening is not required, providing a system profile thickness as thin as 1-1/4 inch (32 mm).
       1. In conjunction with 1 inch (25 mm) of Treadstone Underlayment.

\*\* NOTE TO SPECIFIER \*\* Refer to Treadstone® Acoustical Design Guide for acoustical test performance or contact Formulated Materials for specific test data.

* + - * 1. The installed system can reduce impact noise (IIC):

Wood Framed Assemblies: Up to 10 dB

Concrete Assemblies: Up to 20 dB

* + - 1. Polypropylene barrier fabric.
      2. Flexible and resilient, while maintaining compression resistance.
      3. Embedded System: Noise problems are reduced, even when floor coverings are changed or replaced.

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
      1. Technical Data:
         1. Thickness: 1/4 inch (6 mm). Low profile.
         2. Color: Black with white water-resistant fabric
         3. Underlayment Depth: Minimum 1.5 inch (32 mm)
         4. Roll Width: 55 (140 cm)
         5. Roll Length: 115 ft (35 m)
         6. Coverage Area per Roll: 526 sq ft (48.9 sq m)
         7. Weight per Roll: 41.5 lbs. (18.8 kg)
      2. Mechanical Resistance:
         1. Pressure: 160 psf (781.91 kg/sq m). Deflection: 0.0156 inch (.395 mm).
         2. Pressure: 688 psf (3,359.11 kg/ sq m). Deflection: 0.0622 inch (1.58 mm).
         3. Pressure: 1536 psf (7,499.41 kg/ sq m). Deflection: 0.0124 inch (3.16 mm).
         4. Pressure: 2218 psf (10,829.22 kg/ sq m). Deflection: 0.0155 inch (3.95 mm).

\*\* NOTE TO SPECIFIER \*\* Treadstone® M3 Sound Attenuating Mat is a three dimensional mesh of Polypropylene Synthetic Monofilaments, UV stabilized, tangled, and welded where they cross laminate to the Polypropylene Barrier Fabric. With its "cuspated" geometry, Treadstone® M3 delivers the highest level of sound control between floor levels, with long term benefits due to its excellent mechanical compression resistance.

* + 1. Product: Treadstone M3 Sound Attenuating Mat as manufactured by Formulated Materials. Loose-laid over the substrate and then covered with a uniform thickness of an approved Treadstone Underlayment Product. Excellent noise control performance with a spectrum of floor covering options. Mechanical Fastening is not required, providing a system profile thickness as thin as 1 7/8 inches (47.6 mm).
       1. In conjunction with 1.5 inch (32 mm) of Treadstone Underlayment.

\*\* NOTE TO SPECIFIER \*\* Refer to Treadstone® Acoustical Design Guide for acoustical test performance or contact Formulated Materials for specific test data.

* + - * 1. The installed system can reduce impact noise (IIC):

Wood Framed Assemblies: Up to 16 dB

Concrete Assemblies: Up to 20 dB

* + - 1. Polypropylene barrier fabric.
      2. Flexible and resilient, while maintaining compression resistance.
      3. Embedded System: Noise problems are reduced, even when floor coverings are changed or replaced.

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
      1. Technical Data:
         1. Thickness: 3/8 inch (9 mm). Low profile.
         2. Color: Black with white water-resistant fabric
         3. Underlayment Depth: Minimum 1.5 inch (32 mm)
         4. Roll Width: 55 (140 cm)
         5. Roll Length: 115 ft (35 m)
         6. Coverage Area per Roll: 526 sq ft (48.9 sq m)
         7. Weight per Roll: 41.5 lbs. (18.8 kg)
      2. Mechanical Resistance:
         1. Pressure: 193 psf (942.31 kg/ sq m). Deflection: 0.0197 inch (0.5 mm).
         2. Pressure: 396 psf (1933.44 kg/ sq m). Deflection: 0.0394 inch (1 mm).
         3. Pressure: 827 psf (4037.77 kg/ sq m). Deflection: 0.0787 inch (2 mm).
         4. Pressure: 1512 psf (7382.23 kg/ sq m). Deflection: 0.1181 inch (3 mm).
    1. Product: Treadstone P1 Perimeter Isolation as manufactured by Formulated Materials. A polyethylene foam strip to reduce impact vibration transfer by isolating Treadstone Underlayment and finished floor covering from walls and subfloor. Allows easy transition from wall to wall, providing minimal seams or overlap. Adhesive backing for easier installation.
       1. Raw Material: Polyethylene.
       2. Color: White.
       3. Thickness: 0.125 inches (3 mm).
       4. Roll Width: 3 inches 76 mm().
       5. Roll Length: 225 ft (68.6 ft).
       6. Gross Weight: 1.5 lbs (0.68 kg).
    2. Product: Treadstone Sound Mat Tape as manufactured by Formulated Materials. Poly Hot-Melt tape to seal joints between seams of Treadstone Sound Mat products and join Treadstone Acoustical Mats to Treadstone Perimeter Isolation Strips at perimeter walls and plumbing or other floor penetrations. Provides adhesion and waterproof seal to sound mats and perimeter isolation strips. Used to repair tears in fabric of Treadstone Acoustical Mats.
       1. Raw Material: Poly / Hot Melt.
       2. Color: White with Blue Lettering
       3. Roll Width: 3 inches (76 mm)
       4. Roll Length: 1000 ft (305 m)
       5. Peel Adhesion per AFERA 5001: 2.284 lbs per inch (4 N per cm)
       6. Elongation per AFERA 5004: 160 percent
       7. Shelf Life: 6 months.
  1. SUB FLOOR PREPARATION (TREADSTONE)

\*\* NOTE TO SPECIFIER \*\* Treadstone® TP1 is recommended for sealing Treadstone® Underlayments.

* + 1. Product: Treadstone TP1 as manufactured by Formulated Materials. A Low VOC acrylic primer suitable for priming wood substrates prior to installing Treadstone fire-rated underlayments and self-levelers. Dries quickly and prepares surface, allowing poured underlayments to positively bond with subfloor while controlling moisture absorption of substrate, controlling cracking and decoupling. Not approved for exterior applications.
       1. Application: Roller or 5 gallon (18.9 Liters) sprayer.
       2. Low VOC Formula. Non-reactive and non-toxic.
       3. Low odor formula.
       4. Approved for use with all Treadstone Underlayments and self-levelers
       5. Approved for sealing Treadstone Underlayments and self-levelers
       6. Physical State: Liquid.
       7. Color: White.
       8. Agent: Latex.
       9. Vehicle: Liquid.
       10. Weight per Gallon: 8.5 lbs (3.85 kg)

\*\* NOTE TO SPECIFIER \*\* coverage may vary depending on dilution,

* + - 1. condition of substrate, and environmental conditions.
      2. Typical Coverage: 300 sq ft per gal. (27.87 sq m)
    1. Product: Treadstone Technical Felt as manufactured by Formulated Materials. A reinforced, durable, leak-proof, vapor retarding membrane that speeds preparation of subfloors that would otherwise require extensive mechanical preparation or repair before installation of poured underlayments and self-levelers. Technical Felt's double layer polypropylene construction provides protection for the existing subfloor from moisture and eliminates many underlayment adhesion issues due to the presence of absorbed oils and solvents in the subfloor. Technical Felt also provides floor protection for cured underlayments and finished floor goods.
       1. Physical Properties:
          1. Raw Material: Polypropylene.
          2. Color: Gray.
          3. Weight per EN 1849-2: 4.42 oz per sq yd (149.9 grams per sq m). Plus or minus 12 percent.
          4. Tensile Strength per EN 12311-2: 486 lbs per ft (723.2 kg per m). Plus or minus 15 percent.
          5. Tensile Strength CMD per EN 12311-2: 322 lbs per ft (479.2 kg per m). Plus or minus 15 percent.
          6. Elongation per EN 12311-2: 18 percent. Plus or minus 15 percent.
          7. Elongation CMD per EN 12311-2: 15 percent. Plus or minus 15 percent.
          8. Tear Strength per EN 12310-2: 74 lbs (329 N). Plus or minus 20 percent
          9. Tear Strength CMD per EN 12310-2: 83 lbs (369 N). Plus or minus 20 percent.
          10. Vapor Permeability per EN 1931 / EN 12572: 590.5 inches (15 m). Plus or minus 20 percent.
          11. Water Penetration: W3
  1. GYPSUM UNDERLAYMENTS (TREADSTONE)

\*\* NOTE TO SPECIFIER \*\* Treadstone® FR25's proprietary formulation brings an innovation to fire-resistive cementitious underlayments. FR25 maintains the desired fire-resistive, non-shrinking, fast cure properties associated with gypsum underlayments, while adding the long desired cementitious properties of high flow, high strength, and abrasion resistance thus providing a new innovative solution elevating the fire-resistive multifamily construction industry.

* + 1. Product: Treadstone FR25 as manufactured by Formulated Materials. Approved for use over concrete, precast, wood, and Treadstone Sound Attenuating Mats; thickness limitations apply. Mixed onsite with locally sourced sand and water, providing a dense monolithic, smooth, lightweight underlayment ready to receive a wide variety of floor coverings.
       1. Mixing: Onsite with locally sourced aggregates reducing carbon footprint.
       2. Fast setting. Light Trade Traffic: 4 hours. Normal Trade Traffic: 24 hours.
       3. Little to no surface prep. Prime with Treadstone TP1 Primer/sealer and pour.
       4. Provides enhanced Sound Attenuation (STC and IIC) between floors.
       5. Installation: Technically trained Network of Licensed Dealers.
       6. Physical Properties:
          1. Color: Grey
          2. Physical State: Powder
          3. Flow: High Flow, Self-Leveling Properties
          4. Water Per Bag: 4.5 to 6.5 US Gal., Resistive assemblies listed in 116 designs
          5. Sand Per Bag: 1.4 to 2.1 cu. ft. of Washed Mason or Concrete Sand meeting Formulated Materials minimum gradation criteria
          6. Mix Designs per ASTM C472M having yielding compressive strengths from 2000 to 3200 psi.
          7. Weight: 7.2 lbs per sq ft.
          8. Dry Density: 110 to 120 lbs per cu ft.

\*\* NOTE TO SPECIFIER \*\* Contact Manufacturer for greater depth recommendations.

* + - * 1. Thickness: 3/8 to 3 inches () in a single pour.
        2. Surface Burning Characteristics: ASTM E84.

Flame Spread: 0. Fuel Contribution: 0. Smoke Density: 0

* + - * 1. Fire Resistive Assemblies: Refer to UL Fire Resistive Directory, listed in over 90 designs

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
        2. Storage: 6 months.

\*\* NOTE TO SPECIFIER \*\* Treadstone® FR30's proprietary formulation brings an innovation to fire-resistive cementitious underlayments. FR30 maintains the desired fire-resistive, non-shrinking, fast cure properties associated with gypsum underlayments, while adding the long desired cementitious properties of high flow, high strength, and abrasion resistance thus providing FormulatedMaterials.com a new innovative solution elevating the fire-resistive multifamily construction industry. When additional strength is required, FR30 is the ideal underlayment.

* + 1. Product: Treadstone FR30 as manufactured by Formulated Materials. Approved for use over concrete, precast, wood, and Treadstone Sound Attenuating Mats; thickness limitations apply. Mixed onsite with locally sourced sand and water, providing a monolithic, smooth, lightweight underlayment ready to receive a wide variety of floor coverings.
       1. Mixed onsite with locally sourced aggregates reducing carbon footprint
       2. Fast setting. Light Trade Traffic: 1 hour. Normal Trade Traffic: 24 hours.
       3. Little to no surface prep. Prime with Treadstone TP1 Primer/sealer and pour.
       4. Provides enhanced Sound Attenuation (STC and IIC) between floors.
       5. Installation: Technically trained Network of Licensed Dealers.
       6. Physical Properties:
          1. Color: Grey
          2. Physical State: Powder
          3. Flow: High Flow, Self-Leveling Properties
          4. Water Per Bag: 4.5 to 6.5 US Gal., Resistive assemblies listed in 116 designs
          5. Sand Per Bag: 1.4 to 2.1 cu. ft. of Washed Mason or Concrete Sand meeting Formulated Materials minimum gradation criteria
          6. Mix Designs per ASTM C472M having yielding compressive strengths from 2500 to 3800 psi.
          7. Weight: 7.2 lbs per sq ft.
          8. Dry Density: 11 0 to 120 lbs. per cu ft

\*\* NOTE TO SPECIFIER \*\* Contact Manufacturer for greater depth recommendations.

* + - * 1. Thickness: 3/8 to 3 inches () in a single pour.
        2. Surface Burning Characteristics: ASTM E84.

Flame Spread: 0. Fuel Contribution: 0. Smoke Density: 0

* + - * 1. Fire Resistive Assemblies: Refer to UL Fire Resistive Directory, listed in over 90 designs.

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
        2. Storage: 6 months.

\*\* NOTE TO SPECIFIER \*\* Treadstone® FR30P's proprietary formulation provides an efficient, effective solution to projects requiring pre-pours between interior walls, and underneath tubs, shower enclosures, and other covered areas where the decking is exposed. Requiring no sand, FR30P gels quickly after pouring, the slower flow and increased viscosity provide additional protection from leaks, FR30P maintains the required fire-resistive properties.

* + 1. Product: Treadstone FR30P as manufactured by Formulated Materials. Approved for pre-pour applications in multifamily or hospitality applications.
       1. Pre-Pour Applications Only.
       2. Mixed onsite with no aggregate, reducing carbon footprint.
       3. Leak protection for floors below.
       4. Uses no sand and eliminates silica dust.
       5. Requires little to no surface prep; prime with recommended primer and pour.
       6. Enhanced Sound Attenuation (STC and IIC) between floors.
       7. Installation: Technically trained Network of Licensed Dealers.
       8. Physical Properties:
          1. Color: Grey.
          2. Physical State: Powder.
          3. Flow: Slow Flow, Self-Leveling Properties.
          4. Water Per Bag: 4 to 5 US Gal.
          5. Mix Designs per ASTM C472M having yielding compressive strengths from 2000 to 3200 psi.
          6. Weight: 7.2 lbs per sq ft.
          7. Dry Density: 110 to 120 lbs. per cu ft

\*\* NOTE TO SPECIFIER \*\* Contact Manufacturer for greater depth recommendations.

* + - * 1. Thickness: Up to 1.5 inches (38 mm) in a single pour.
        2. Surface Burning Characteristics: ASTM E84.

Flame Spread: 0. Fuel Contribution: 0. Smoke Density: 0

* + - * 1. Fire Resistive Assemblies:

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
        2. Storage: 6 months.
  1. LEVELERS (TREADSTONE)

\*\* NOTE TO SPECIFIER \*\* Treadstone® Sitemix Leveler is a uniquely designed polymer modified pourable underlayment that is mixed onsite with locally sourced sand. The proprietary high cement, high polymer formulation maximizes hardness, flow, and durability while maintaining the robust, low prep, non-shrinking properties of gypsum-based underlayments, and eliminates the "soft, chalky" characteristics associated with gypsum products.  
Recommended for use over 9/16 inch () corrugated metal deck construction and radiant heating systems, minimum 3/4 inch () required over the top of radiant tubing. Ideal for deep fills, smoothing out of level, old, or damaged concrete substrates

* + 1. Product: Treadstone Sitemix Leveler as manufactured by Formulated Materials. Approved for use over concrete, wood, corrugated steel deck, and Treadstone Sound Attenuating Mats; thickness limitations apply. Blended onsite Sitemix Leveler is an economical choice for fast paced projects. Its dense durable surface stands up to trade traffic during the construction process.
       1. Mixed onsite with locally sourced aggregates, reducing carbon footprint and cost
       2. Little to no surface prep, prime with recommended primer, and pour
       3. Fast setting, light trade traffic in 1 hour, normal trade traffic in 24 hrs.
       4. Dense, smooth surface meeting the toughest of floor covering tolerances
       5. Requires little to no surface prep; prime with recommended primer and pour.
       6. Enhanced Sound Attenuation (STC and IIC) between floors.
       7. Installation: Technically trained Network of Licensed Dealers.
       8. Physical Properties:
          1. Color: Grey
          2. Physical State: Powder
          3. Flow: High Flow, Self-Leveling Properties
          4. Water Per Bag: 4.5 to 6.5 US Gal., Resistive assemblies listed in 116 designs
          5. Sand Per Bag: 0.8 to 1.4 cu. ft. of Washed Mason or Concrete Sand meeting Formulated Materials minimum gradation criteria
          6. Mix Designs per ASTM C472M having yielding compressive strengths from 3000 to 4500 psi.
          7. Dry Density: 115 to 125 lbs per cu ft.

\*\* NOTE TO SPECIFIER \*\* Contact Manufacturer for greater depth recommendations.

* + - * 1. Thickness: 3/8 to 1-1/2 inches (9 to 38 mm) in a single pour. Thinner applications depend on aggregate size and site conditions
        2. Surface Burning Characteristics: ASTM E84.

Flame Spread: 0. Fuel Contribution: 0. Smoke Density: 0

* + - * 1. Fire Resistive Assemblies: Refer to UL Fire Resistive Directory,

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.
        2. Storage: 6 months.

\*\* NOTE TO SPECIFIER \*\* Treadstone™ Sitemix SL is a unique proprietary formulation technology delivering an aggregate free self-leveling underlayment. Being aggregate free, Sitemix SL provides a lightweight, low-density, high flow leveling underlayment. Meeting load restrictions make Sitemix SL an economical and ideal solution. Sitemix SL achieves a smooth, flat, monolithic surface meeting/exceeding the toughest floor covering requirements. Performance characteristics allow for minimal to no surface prep, simply clean, prime, and pour. Sitemix SL is the ultimate in underlayment performance.

* + 1. Product: Treadstone Sitemix SL as manufactured by Formulated Materials. Approved for use over fully cured or existing concrete, wood, or other clean structurally sound substrates meeting L/360 deflection criteria.
       1. Engineered blended cement, containing polymer modified Portland cement.
       2. Fast setting, light trade traffic 4 hours, normal traffic 24 hours
       3. Requires little to no surface prep: clean substrate, prime using approved primer, pour
       4. Ideal for smoothing out of level, old, or damaged concrete substrates
       5. Dense, smooth, abrasion and crack resistant surface
       6. Installed by a technically trained Network of Licensed Dealers
       7. Physical Properties:
          1. Color: Grey.
          2. Physical State: Powder.
          3. Flow: Self Leveling.
          4. Water Per Bag: 3 to 4 US Gal.
          5. Compressive Strengths per ASTM C472: Up to 4500 psi.
          6. Dry Density: 90 to 100 lbs. per cu ft.

\*\* NOTE TO SPECIFIER \*\* Contact Manufacturer for greater depth recommendations.

* + - * 1. Thickness: 1/8 to 1 inch (3 to 25) in a single pour.
        2. Yield: 46 sq ft \*4.27 sq m) at 1/4 inch (6 mm) depth.

\*\* NOTE TO SPECIFIER \*\* For specific design or data contact us at technical@formulatedmaterials.com.

* + - * 1. UL listed in over 116 designs.

\*\* NOTE TO SPECIFIER \*\* Teadstone® Sitemix Ultra is a technologically advanced polymer modified hydraulic cement formulation providing increased early strength to withstand construction traffic. Due to its innovative technology, Sitemix Ultra can be installed where there is a possibility for water saturation prior to the building being fully enclosed. Sitemix Ultra provides the ultimate dense smooth surface ready to tackle the toughest floor covering challenges. Ideal for smoothing out of level, old, or damaged concrete substrates

* + 1. Product: Treadstone Sitemix Ultra as manufactured by Formulated Materials. Approved for use fully cured or existing concrete, wood, or other clean structurally sound substrates meeting U360 deflection criteria.
       1. Fast setting, light trade within hours.
       2. Factory proportioned ingredients mixed on-site by automated batch controlled proportioning equipment
       3. Low-prep formulation; bead blasting not required for pedestrian traffic use
       4. Dense, smooth, abrasion and crack resistant surface.
       5. No hand troweling required.
       6. Physical Properties:
          1. Color: Gray.
          2. Physical State: Powder.
          3. Flow: Self-Leveling.
          4. Water per Bag: 3.5 to 4.5 US Gal.
          5. Sand per Bag: 0.80 to 1.40 cu ft of approved washed mason or concrete sand
          6. Compressive Strength: ASTM C109, air cure 28 days - up to 5,000 psi
          7. Density: 110 to 125 lbs/cu ft.
          8. Recommended Thickness: 3/8 to 2 inch (9 to 51 mm) in a single pour.
  1. COMPONENTS (ELEVATION)
     1. Product: Elevation TTP T-Bar Termination Pocket as manufactured by Formulated Materials.
        1. A component of the Elevation ONE Waterproofing System
        2. Heavy gauge aluminum with welded Seams.
        3. Installed at exterior corners, channels incidental water that may enter the pocket away from the building fascia. Ensures that moisture flows away from the building.
        4. Installed using no sealant to complete corner details.
        5. Warranty: Material Defects: 5 years.
        6. Warranty: 10 years when used as a component of the Elevation ONE Waterproofing System.
        7. Physical Properties:
           1. Material: Aluminum
           2. Color: Natural (paintable)
           3. Width: Flat: 5-7/8 inch (15 cm). Corner: 9-3/4 inch (24.7 cm)
           4. Height: Flat: 8-5/8 inch (22 cm), Corner: 9-3/4 inch (24.7 cm)
           5. Pocket Dimensions: Flat: 1-1/2 inch (3.8 cm). Corner: 3 inch (7.6 cm)

\*\* NOTE TO SPECIFIER \*\* Elevation Balcony Embed System (BES) is designed to deliver a fast, reliable, worry-free solution for the waterproofing of balcony rail post embedded plates. Currently there is no industry accepted standard method for waterproofing these intrusions, which must be bolted directly to the balcony deck, often through the waterproofing membrane itself. This intrusion occurs where exposure to the elements is the greatest, creating tremendous risk and liability. Historically, waterproofing this potential key point of failure has relied on wide variety of products and techniques not originally designed for the application where success leans heavily on the skill, or lack thereof, of the installer.

* + 1. Product: Elevation BES Balcony Embed System as manufactured by Formulated Materials. A seamless, foolproof waterproofing system for balconies and breezeways.
       1. Embedded Pan is installed surrounding the embedded steal rail plates. The cavity created is filled with 1/2 inch (13 mm) of Elevation Pan encapsulating the mounting plates and fastening bolts. The Sealant conforms to contours of plate and fasteners, permanently bonding to the embedded plate and wood decking.
       2. Physical Properties:
          1. Color: Cream
          2. Width: 12 inches (30.5 cm).
          3. Height: 1/2 inches (1.27 cm).
          4. Cavity Width: 5-1/2 inch (14 cm).
          5. Cavity Height: 1/2 inch (1.27 cm).

\*\* NOTE TO SPECIFIER \*\* Elevation™ Pan Sealant is a single component, liquid applied, coal tar free, urethane/polyurea roofing and waterproofing sealant designed for vertical and horizontal surfaces. Being joint free and seamless makes Pan Sealant ideal for the Elevation™ Balcony Embed System. Can be applied from 30 to 90 mils thick in one application while supplying simultaneous curing throughout. Elevation™ pan sealant is capable of correcting negative slope, filling pond areas and creating moderate positive slope to drain.

* + 1. Product: Elevation Pan Sealant as manufactured by Formulated Materials. Bitumen free and light blue in color, allowing pinholes in the surface to be exposed and treated unlike other sealants.
       1. Standards Compliance:
          1. ASTM C836.
          2. ASTM E96: 0.05 US Perms.
          3. SCAQMD VOC Requirements.
       2. Seamless; no breakdown or penetration of seams.
       3. Excellent adhesion.
       4. Compatible with Rubberized Asphalt Sheet Membranes.
       5. Non-Gassing.
       6. Fast Curing.
       7. Highly Flexible over extreme temperatures.
       8. No Odor.
       9. Resistant to Bacterial Growth.
       10. Fills Ponds and Low Areas.
       11. Physical Properties:
           1. Hardness per ASTM D2240: 25 plus or minus 5 Shore A.
           2. Tear Resistance, Die C, per ASTM D624: 50 plus or minus 10 pli (21 plus or minus 3.5 kNm).
           3. Tensile Strength, ASTM D412: 300 plus or minus 50 psi (3.45 plus or minus 0.3 MPa).
           4. Ultimate Elongation, ASTM D412: 650 plus or minus 50 percent.
           5. Specific Gravity: 1.12.
           6. Total Solids by Weight, ASTM D236: 95 plus or minus 2 percent.
           7. Total Solids by Volume, ASTM D2697: 94 plus or minus 2 percent.
           8. Viscosity, at 80 degrees F (27 degrees C): 4500 plus or minus 2000 cps.
           9. Service Temperature: Minus 25 to 200 degrees F (Minus 31.7 to 93.3 degrees C).

\*\* NOTE TO SPECIFIER \*\* Elevation™ FT Tape is a pressure sensitive tape recommended for use during flood testing of installed Elevation™ Waterproofing Systems. The tape is manufactured with a nominal 2 mil aluminum foil backing and a high-performance rubber adhesive. The adhesive provides an instant, durable waterproof bond in adverse weather conditions and conforms to irregular surfaces for a superior seal. The tape is easily pierced after flood testing is completed using a putty knife, reducing the risk of damage to the waterproofing system. Elevation TM FT Tape is recommended for use as part of both the Elevation TM Seamless Waterproofing System as well as the S60 Sheet Waterproofing system.

* + 1. Product: Elevation FT Tape as manufactured by Formulated Materials.
       1. Raw Material: Aluminum/Rubber.
       2. Color: Silver.
       3. Roll Width: 2.5 inches (63 mm).
       4. Roll Length: 150 ft (45 m).
       5. Backing Thickness: 2 mils (0.05 mm).
       6. Total Thickness: 3.5 mils (0.09 mm).
       7. Tensile Strength: 3.5 mils (0.09 mm).
       8. Elongation: 3 percent.
       9. Adhesion to Steel and Aluminum: 90 oz per in (25 N per 25 mm)
  1. SHEET WATERPROOFING MEMBRANE PRODUCTS (ELEVATION)
     1. Product: Elevation S60 Sheet Waterproofing Membrane as manufactured by Formulated Materials. For use with Elevation ONE Waterproofing System.
        1. Facer: A woven synthetic coated on both sides increasing tear and abrasion resistance.
           1. UV Resistance: 120 day.
           2. Marked every 3 inches (76 mm) to ensure proper overlap is maintained during installation providing a visual reference for quality control.
           3. Rubberized Asphalt Coating: Self-sealing and highly adhesive. Protected by a split release liner.
           4. Warranty: Product: 5 year. Elevation ONE Waterproofing System: 10 years.
        2. Physical Properties:
           1. Width: 35.875 to 36.125 inches (91.1 - 91.75 cm).
           2. Length: 67-67.5 ft (20.4 - 20.5 m).
           3. Weight per roll: 64 lbs (29 kg).
           4. Product weight per ASTM D5261: 1613 grams per sq m.
           5. Bitumen weight per ASTM D5261: 1461 grams per sq m.
           6. Thickness per ASTM D1970: Greater than 60 mils.
           7. Tensile Strength per ASTM D412 C: Greater than 2,430 psi.
           8. Elongation per ASTM D412 C: 600 percent.
           9. Puncture Resistance per ASTM E154: Greater than 235 lbf.
           10. Water Absorption per ASTM D570: Less than 0.1 percent.
           11. Low Temperature Flexibility per ASTM D1970: Pass. Minus 20 degrees F.
           12. Moisture Vapor Permeation per ASTM E96: Less than 0.13 perms.
           13. Cracking Cycle per ASTM C836: No Cracking.
           14. Lap Adhesion per ASTM D903: Less than or equal to 9.0 lbs per inch width.
           15. Hydrostatic Head per ASTM D5385: Pass. 231 ft.

\*\* NOTE TO SPECIFIER \*\* For use with Elevation ONE Waterproofing System. Approved for use with Elevation S60 Sheet Waterproofing Membrane.

* + 1. Product: Elevation SM2 Technical Sealant as manufactured by Formulated Materials. A multi-purpose, gun-grade sealant. Combines the best properties of silicone and polyurethane. Used to seal seams, terminations, and edges of membranes, providing an additional line of defense against the intrusion of liquid water below the waterproofing system. Bonds and cures in the presence of liquid water and will tolerate water immersion immediately after application allowing it to be applied in wet weather and on damp substrates. Allows for flood testing of balcony immediately after completing the balcony waterproofing system installation.
       1. Physical Properties:
          1. Gun Grade: Non-Sagging.
          2. Specific Gravity: 1 .48 to 1 .58 grams per cu m.
          3. Weight per Gallon: 12.7 lbs (5.7 kg).
          4. Total Solids: 99 percent.
          5. VOC Content: 30 grams per L maximum.
          6. Tack Free Time: 60 minutes. Plus or minus 10 minutes.
          7. Elongation at Break: Greater than 200 percent.
          8. Hardness, Shore A: 40 to 50.
          9. Shrinkage: None visible after 14 days.
          10. UV Stability: 6 months.
          11. Tensile Strength: Greater than 150 psi.
          12. Corrosive Properties: Non-corrosive.

\*\* NOTE TO SPECIFIER \*\* S40 Advanced is ideal for thru wall and surface mounted applications. Flexible and adheres over a wide temperature range. Meets and exceeds highest industry standards for waterproofing performance. High tack proprietary adhesive provides superior adhesion

* + 1. Product: Elevation S40 Advanced as manufactured by Formulated Materials. a 40-mil thick composite waterproof membrane with a proprietary non-asphaltic adhesive, laminated to a polyethylene/polypropylene top scrim providing advanced tear and abrasion resistance.
       1. Features:
          1. Asphalt Free.
          2. Recycled Content: 45 percent.
          3. Adheres to Common Construction Materials: Exterior gypsum board, CMU, concrete, stone, wood, and metal.
          4. UV Resistance: 120 days.
          5. High tack proprietary adhesive provides superior adhesion.
  1. SEAMLESS WATERPROOFING MEMBRANE PRODUCTS (ELEVATION)
     1. Product: Elevation L1 Seamless Waterproofing Membrane as manufactured by Formulated Materials. A primerless, low modulus, fast, water curable, high-performance interior or exterior elastic waterproofing membrane adhesive and coating for balconies, deck coatings, roofing, and waterproofing under Flexi-Ply, below grade, exposed and concealed applications. A long lasting, weather tight seal to a variety of common building substrates.
        1. Seamless; no breakdown or penetration of seams.
        2. Economical; Labor Saving.
        3. Excellent adhesion.
        4. Primerless.
        5. Non-Gassing.
        6. Fast Curing.
        7. Highly Flexible over extreme temperatures.
        8. No Odor.
        9. Resists Dirt.
        10. No Mixing.
        11. Meets ASTM C836 and ASTM E96 criteria.
        12. Meets SCAQMD VOC requirements.
        13. Standards Compliance:
            1. ASTM C920, Type S, Grade S, Class 25, use T and M.
            2. Federal Specification TT-S-00230-C Type I, Class A.
            3. Corps of Engineers CRD-C-541, Type I, Class A.
            4. Canadian Standards Board CAN 19, 13-M82.
        14. Physical Properties:
            1. Color: Limestone Grey.
            2. Hardness Shore A, ASTM C661: 30 plus or minus 5 Shore A.
            3. Tear Resistance, Die C, ASTM D1002: 150 plus or minus 10 psi (21 plus or minus 3.5 kNm).
            4. Elongation at Break, ASTM D412: 300-400 percent plus or minus 50 psi.
            5. Ultimate Elongation, ASTM D412: 700 plus or minus 50 percent.
            6. Specific Gravity: 1.60 (13.113.5 lbs/gal.) depending on color.
            7. Total Solids by Weight, ASTM D236: 100 percent.
            8. Total Solids by Volume, ASTM D2697: 100 percent.
            9. Viscosity, at 80 degrees F (27 degrees C): 40,00 cps Brookfield RVFTF spindle 4 RPM, 73 degrees F.
            10. Service Temperature: Minus 25 to 200 degrees F (Minus 31. 7 to 93.3 degrees).
            11. Meets ASTM C836 criteria.
            12. Meets ASTM E96 criteria.

\*\* NOTE TO SPECIFIER \*\* Elevation™ L Flash is recommend for use as part of the Elevation™ Seamless Waterproofing System as well as with the Elevation™DM1 Drain Mat (please refer to our DM1 Technical Data Sheet for recommendations).

* + 1. Product: Elevation L-Flash Waterproofing Reinforcing Flashing Tape as manufactured by Formulated Materials. For changes of plane in the structure and joints of the Elevation Seamless Waterproofing System. Ideal for the most difficult of conditions. The fabric face on the top side of L Flash provides reinforcement for the Elevation Seamless Waterproof Membrane.
       1. Physical Properties:
          1. Raw Material: Polyolefin / Polypropylene
          2. Color: Grey.
          3. Roll Width: 4 and 8 inch (102 and 203 mm).
          4. Roll Length: 75 ft (22.86 m)
          5. Tensile Strength - ASTM D751:

Machine Direction (Force): 130 lbs

Cross Direction (Force): 124 lbs

* + - * 1. Trapezoidal Tear Strength - ASTM D4533-91:

Machine Direction (Force): 46 lbs

Cross Direction (Force): 44 lbs

* + - * 1. Mullen Burst - ASTM D751-95: 180 psi
        2. UV Exposure (2000 hours) - ASTM G154-98: 90 percent.
        3. Permeability:

MVTR - ASTM E96 - B: Less than 0.075 Perms1

TAPPl-460: Greater than 5000 Sec per 1000 cc

* + 1. Product: Elevation L1 Caulk as manufactured by Formulated Materials. A high performance interior or exterior joint sealant for use in both moving and nonmoving joint applications. Provides a long lasting weather tight seal to a variety of building substrates and may be applied to clean damp surfaces without risk of gassing or bubbling.
       1. Seamless; no breakdown or penetration of seams.
       2. Non-Gassing, fast curing, highly flexible over extreme temperatures, no odor, dirt resistant, and no mixing.
       3. Standards Compliances:
          1. ASTM C836 criteria.
          2. ASTM C920, Type S, NS, Grade NS, Class 25, use NT, T, M, G, A, and O.
          3. ASTM E96 criteria.
          4. Federal Specification TT-S-00230-C Type II, Class A.
          5. Corps of Engineers CRD-C-541.
          6. Canadian Standards Board CAN 19, 13-M82.
          7. LEED 2.2 for New Construction and Major Renovations: Low Emitting Materials (Section 4.1) 1 Point.
          8. NAHB Model Green Home Building Guidelines: 5 Global Impact Points.
          9. SCAQMD VOC Requirements.
          10. VOC Content: less than 25 grams / Liter ASTM D2369 EPA Method 24. Tested at 240 degrees F (115 degrees C).
       4. Color: Limestone Grey.
  1. ACCESSORIES (ELEVATION)

\*\* NOTE TO SPECIFIER \*\* Elevation TM DM1 Balcony Drainage Mat is a low profile drainage mat designed to create a sub-concrete drainage plane to quickly and efficiently remove water from the balcony. At just 1 /8" (3.5mm) total thickness, DM1 does not require modifications to the framing or T-bar dimension.

* + 1. Product: Elevation DM1 Balcony Drain Mat as manufactured by Formulated Materials.
       1. A cylindrical studded membrane made with UV Stabilized polyolefin bonded to a polypropylene filter fabric. Once installed, creates a continuous sheet of polyolefin plastic covering entire surface of the balcony, providing an additional layer of water protection and a physical protective barrier to help protect and prevent damage to the waterproofing membrane beneath.
       2. Physical Properties:
          1. Fabric Properties:

Raw Material: Polypropylene.

Fabric Color: White.

Weight per ASTM D5261: 2.18 oz per sq yard (73.9 grams per sq m).

Puncture Strength per ASTM D4833: 70 Ibs (.31 kN).

AOS per ASTM D4751: 270 to 325 us sieve (0.052 mm).

Flow Rate per ASTM D4491: 21.26 gal per min per sq ft (14.44 Liter per sec per sq m).

* + - * 1. Core Properties:

Raw Material: Mix of Polyethylene and Polypropylene.

Thickness per ASTM D5199: 26 mils.

Weight per EN 965: 0.12 lbs per sq ft (500 grams per sq m).

Compression Resistance per ASTM D1621: Less than 10,000 psf (480 kPa).

* + - * 1. Composite Material Properties:

Weight per EN 965: 0.12 lbs per sq ft (575 grams per sq m).

Thickness per EN-964-1: 0.14 inches (3.5 mm).

\*\* NOTE TO SPECIFIER \*\* Elevation™ SP1 Hi-Tack Primer is a water-based, pressure sensitive primer intended for use with various types of self-adhesive membranes including modified bitumen and TPO. SP1 is suitable for application to concrete, plywood and polyisocyanurate roofing insulation. VOC compliant in all North America.

* + 1. Product: Elevation SP1 Primer as manufactured by Formulated Materials. A strong, elastic, low Tg polymer resin and special additives in a water vehicle. SP1 exhibits permanent surface tack.
       1. Viscosity per ASTM D2196: 500 cps.
       2. Solids by Weight per ASTM D1644: 45 percent.
       3. Solids by Volume per ASTM D2697: 44 percent.
       4. Weight Per Gallon per ASTM D1147: 8.5 lbs.
       5. Flash Point per ASTM D56: NA
       6. VOC per EPA 24: Less than 5 grams per Liter.
       7. Color: White. Dries clear.

\*\* NOTE TO SPECIFIER \*\* Elevation® T-Bar is a premium quality, 6063 aluminum alloy T-Bar approved for use with all Elevation® Waterproofing systems. The product is manufactured to our specifications resulting in greater strength and consistency of dimension, gauge and finish when compared to many regionally available products.

* + 1. Product: Elevation T-Bar as manufactured by Formulated Materials. Properly installed, the T-Bar provides a pour stop for the wear layer on a waterproofed balcony and maintains a weep system to ensure proper removal of moisture trapped beneath the wear layer.
       1. Wider nailer flange eases installation.
       2. Consistent dimensions assure proper wear layer pour depth.
       3. Physical Properties:
          1. Raw Material: 6063-T5 Aluminum.
          2. Color: Silver.
          3. Finish: Milled or Anodized.
          4. Height: 3-7/8 inches (98 mm).
          5. Flange: 3 inches (76 mm).
          6. Thickness: 0.058 inches (1.47 mm).
          7. Tensile Strength: 17 ksi minimum.

\*\* NOTE TO SPECIFIER \*\* Elevation® RSE is specifically designed for use with the Elevation® Balcony Embed System.

* + 1. Product: Elevation RSE Railing Embed Support as manufactured by Formulated Materials. A steel stanchion using two pieces of 1/4 inch steel welded to a 1-1/2 inch steel post for use with Elevation Balcony and Breezeway Waterproofing Systems. A mounting plate for railing systems to weld to once the finished concrete is installed.
       1. Due to the offset top plate and post, you lose less square footage of the balcony.
       2. Primer coating withstands the elements.
       3. Once waterproofing and concrete installation is complete, weld railing to RSE for a secure railing system.
       4. Physical Properties:
          1. Standards Compliance: IBC 1607.8.1andOSHA 1910.23(e)(3)(v)for minimum force requirements.
          2. Raw Material: Primed steel, Thickness: 0.25 inches (6 mm). 1-1/2 inch (32 mm) steel tube.
          3. Color: Light Grey.
          4. Width: Bottom Plate: 4.5 x 4.5 inches (). Top Plate: 3 x 3 inch Offset.
          5. Weight: 2.5 lbs.
  1. FLOOR PREP (HYDROPHASE)
     1. Product: HydroPhase APS Advanced Primer and Sealer as manufactured by Formulated Materials. an environmentally friendly copolymer acrylic with low odor and low VOC that significantly enhances bond strengths to substrate when correctly applied.
        1. Penetrates deeply into substrate
        2. Use over freshly placed concrete, gypsum, wood, and adhesive residues
        3. Tolerant of high pH.
        4. Fast drying.
        5. Quick Drying, ready for HydroPhase C150 SL, finished floor covering and many coatings in 60 minutes or less
        6. Low VOC Water-based, non-toxic
        7. Standards Compliance:
           1. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings
           2. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
           3. ASTM C309 - Standard Specification for Liquid Membrane-Film Forming
           4. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
           5. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes
        8. Physical Properties:
           1. Physical State: Liquid.
           2. Color: Milky White. Clear when dry.
           3. Percentage Solids: 23 percent.
           4. VOCs: Less than 1 gram per Liter.
           5. Dry Time: 30 to 60 min per coat.
           6. Recommended Ambient Temperature: 45 to 100 degrees F (7 to 38 degrees C).
           7. Recommended Substrate Temperature: Min 40 degrees F (6 degrees C).
           8. Total Coverage: 400 to 600 sq ft per gallon.
           9. Shelf Life: 12 Months Unopened.
           10. Storage Requirements: 50 to 90 degrees F (9 to 35 degrees C).
     2. Product: HydroPhase APMB Advanced Primer and Moisture Barrier as manufactured by Formulated Materials. A Nanotechnology Reactive Polymer. One-step primer and moisture barrier with superior performance, rapid installation, and permanent moisture control.
        1. Use in up to 100 percent relative humidity.
        2. Use in up to 14 pH.
        3. Use where up to 25 lbs MVER.
        4. Quick Drying, ready for HydroPhase C150 SL, finished floor covering and many coatings in 60 minutes or less.
        5. Standards Compliance:
           1. ASTM F3010 - Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings
           2. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete
           3. ASTM C309 - Standard Specification for Liquid Membrane-Film Forming
           4. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials
           5. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes
        6. Physical Properties:
           1. Physical State: Liquid.
           2. Color: Milky White. Clear when dry.
           3. Percentage Solids: 27 percent.
           4. VOCs: 0 grams per Liter.
           5. Dry Time: 30 to 60 min per coat.
           6. Recommended Ambient Temperature: 45 to 100 degrees F (7 to 38 degrees C).
           7. Recommended Substrate Temperature: Min 40 degrees F (6 degrees C).
           8. Total Coverage: 400 to 600 sq ft per gallon.
           9. Shelf Life: 12 Months Unopened.
           10. Storage Requirements: 50 to 90 degrees F (9 to 35 degrees C).
  2. LEVELERS (HYDROPHASE

\*\* NOTE TO SPECIFIER \*\* HydroPhase™ P150 SL - Proprietary phased hydration hydraulic cement technology developed to provide superior surface smoothness for the most durable, robust leveling systems on the market.

* + 1. Product: HydroPhase P150 SL Self-Leveling Cement as manufactured by Formulated Materials. Zero shrinkage. Clean, prime, and pour. Mix and apply using manufacturer-approved, locally sourced sand. An engineered multi-component blended cement, containing polymer modified hydraulic cements.
       1. Fast setting. Light trade traffic in 4 hours. Normal traffic in 24 hours.
       2. Recommended thickness 1/8 to 1-1/2 inch (3 to 38 mm) in a single lift.
       3. Requires no mechanical surface prep: clean substrate, prime, and pour.
       4. Ideal for smoothing out of level, old, or damaged concrete substrates.
       5. Dense, smooth, and abrasion and crack resistant surface.
       6. Standards Compliance:
          1. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
          2. ASTM F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
          3. ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
          4. ASTM C1708 Standard Test Methods for Self-leveling Mortars Containing Hydraulic Cements.
       7. Physical Properties:
          1. Physical State: Dry Powder.
          2. Color: Gray.
          3. Flammability: Flame Spread 0; Fuel Contribution 0; Smoke Development 0.
          4. Mixing Ratio: One 50 lbs of Powder to 4.75 - 5.5 quarts of water.
          5. Yield: 28 to 29 sq ft at 1/4 inch (6 mm) depth.
          6. Dry Density 110 lb./cu. ft.
          7. Compressive Strength per ASTM C109.

24 Hour Compressive: Greater than 2000 psi.

7 Day Compressive: Greater than 4000 psi.

28 Day Compressive: Greater than 5000 psi.

* + - * 1. Recommended Thickness: 1/16 to 1-1/2 inch in a single lift.

\*\* NOTE TO SPECIFIER \*\* HydroPhase™ C150 SL - Proprietary phased hydration hydraulic cement technology developed to provide superior surface smoothness for the most durable, robust leveling systems on the market.

* + 1. Product: HydroPhase C150 SL as manufactured by Formulated Materials. A multi-component blended cement, containing polymer modified hydraulic cements. Zero shrinkage. Clean, prime, and pour. Mixed and applied using manufacturer-approved, locally sourced sand.
       1. Fast setting. Light trade traffic in 4 hours. Normal traffic in 24 hours.
       2. Recommended thickness 1/8 to 1-1/2 inch (3 to 38 mm) in a single lift.
       3. Requires no mechanical surface prep: clean substrate, prime, and pour.
       4. Ideal for smoothing out of level, old, or damaged concrete substrates.
       5. Dense, smooth, and abrasion and crack resistant surface.
       6. Standards Compliance:
          1. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
          2. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
          3. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
          4. ASTM C1708 - Standard Test Methods for Self-leveling Mortars Containing Hydraulic Cements.
       7. Physical Properties:
          1. Physical State: Dry Powder.
          2. Color: Gray.
          3. Flammability: Flame Spread 0; Fuel Contribution 0; Smoke Development 0.
          4. Mixing Ratio: 50 lbs of powder, 50 lbs of sand, to 9.5 - 11 quarts of water.
          5. Yield: 46 to 48 sq ft at 1/4 inch (6 mm) depth.
          6. Dry Density 110 lb./cu. ft.
          7. Compressive Strength per ASTM C109

24 Hour Compressive: Greater than 2000 psi

7 Day Compressive: Greater than 4000 psi

28 Day Compressive: Greater than 5000 psi

* + - * 1. Recommended Thickness: 1/16 to 1-1/2 inch in a single lift

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly constructed and prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions, approved submittals, and in proper relationship with adjacent construction.
   4. FIELD QUALITY CONTROL
      1. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

\*\* NOTE TO SPECIFIER \*\* Include if manufacturer provides field quality control with onsite personnel for instruction or supervision of product installation, application, erection, or construction. Delete if not required.

* + 1. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.
  1. CLEANING AND PROTECTION
     1. Clean products in accordance with the manufacturers recommendations.
     2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION