1. **- GENERAL**
   1. Definition
      1. Polymer Architectural Composites: Expanded Rigid Polyvinyl Chloride (PVC) Architectural Millwork.
   2. References
      1. ASTM (American Society for Testing and Materials)
   3. Submittals
      1. Product Data:
         1. Manufacturers Literature
         2. Material Safety Data Sheets
      2. Shop Drawings
         1. Running Trim: Dimensioned cross sections.
         2. Entablatures: Dimensioned cross section composite drawings.
         3. Wall Panels, Brackets, Louvers, Vents, Shutters, Door/Window Pediments and surrounds, columns, architectural details: Elevation and section drawings with dimensions and assembly notes.
         4. Balustrade Systems: Elevation and section drawings with dimensions and hidden aluminum structural support, and field installation notes.
      3. Quality Control Submittals:
         1. Test Reports:
            1. Test Data from an approved independent testing laboratory establishing compliance with specification requirements. Testing to include the following data:
            2. PROPERTY

Physical Density

Water Absorption

* + - * 1. MECHANICAL

Tensile Strength

Tensile Modulus

Nail Hold

Screw Hold

Staple Hold

Gardner Impact

Charpy Impact (@ 23°C)

* + - * 1. THERMAL

Coefficient of Linear Expansion

Burning Rate

Flame Spread Index

Heat Deflection Temp 264 PSI

Oil Canning (@ 140°F)

* 1. Quality Assurance
     1. Manufacturers’ Qualifications
        1. Obtain Polymer Architectural Composites from a manufacturer who will, upon request, send a qualified technical representative to the project site for the purpose of advising the installer of procedures and precautions for materials used.
        2. Obtain Polymer Architectural Composites from a manufacturer who will certify the materials have been tested and proven satisfactory for the intended use.
        3. Obtain Polymer Architectural Composites from a manufacturer with five years verifiable and successful experience producing material for projects of similar size and scope.
        4. Polymer Architectural Composites material must be homogenous throughout the entire profile and free of voids through the entire profile. The edges of the material shall be straight and square with a specific gravity of .55 grams/cm3. Top and bottom surfaces of cut stock shall be flat with no convex or concave deviation.
  2. Delivery, Storage and Handling
     1. Deliver Polymer Architectural Composites in packaging/crating required to minimize damage in transit.
     2. Store Polymer Architectural Composites on a flat and level surface. Handle materials to prevent damage to product edges and corners. Store materials in a protective covering to prevent jobsite dirt and residue from collecting on materials.
  3. Sequencing and Scheduling
     1. Coordinate the delivery and installation of Polymer Architectural Composites with work specified in other sections.
     2. Do not proceed with the installation of Polymer Architectural Composites until conditions are acceptable.
  4. Warranty
     1. The Polymer Architectural Composites manufacturer and installing contractor shall jointly warrant the polymer architectural products to be free from defects in material and workmanship for five (5) years from the date of installation.
     2. The warranty shall be based on installation methods in accordance with the manufacturer’s recommendations and instructions.

1. **- PRODUCTS**
   1. Manufacturers
      1. Acceptable Manufacturer: Wood Tectonics, 534 Brookshire Road, Greer, SC 29651 (864) 879-7651
      2. Any other manufacturer seeking approval must submit acceptable test data, product literature, and certificates (per Section 1.03) at least fourteen days prior to originally scheduled bid date.
      3. Characteristics

ASTM

Property Units Value Method

1. Physical Density g/cm3 0.55 0792

2. Water Absorption % 0.15 0570

3. Tensile Strength psi 2256 0638

4. Tensile Modulus psi 144.000 0638

5. Flexural Strength psi 3329 0790

6. Flexural Modulus psi 144.219 0790

7. Nail Hold Lbf/in of penetration 35 01761

8. Screw Hold Lbf/in of penetration 680 01761

9. Staple Hold Lbf/in of penetration 180 01761

10. Gardner impact in/lbs 103 D4228

11. Charpy Impact (@23°C) ft/lbs 4.5 D256

12. Coefficient of Linear Expansion in/in°F 3.2 x 105 D696

13. Burning Rate in/min No burn when flame removed

14. Flame Spread Index -- 25 E84

15. Heat Deflection Temp 264 psi °F 150 D648

16. Oil Canning (@ 140°F) °F No distortion D3679

* 1. Accessories
     1. Fasteners
        1. Screws: Standard non-corrosive wood or decking screws with a coarse thread. Stainless steel or hot-dipped galvanized recommended.
        2. Nails: Standard non-corrosive nails in smooth, screw, or spiral type in stainless steel or hot-dipped galvanized. Use nails designed for wood trim (thinner shank, blunt point, full round head). 2” length recommended for ¾” thick polymer architectural products, 2 ½” length recommended for 1” thick products.
        3. Staples, small brads, and wire nails should not be used.
     2. Bonding:
        1. Polymer to Polymer: Polymer millwork PVC cement which is slow curing and deep penetrating, such as provided by Wood Tectonics. Polymer adhesive must be non-toxic and non-flammable.
        2. Polymer to various substrates: Urethane adhesive systems selected for special substrate combination. Edge gluing polymer to substrate requires no surface preparation (surfaces must be clean). For an adequate bond, surface preparation is required when face gluing polymer to substrate.
  2. Fabrication
     1. Fabricate polymer millwork to profiles, shapes, and configurations detailed on approved shop drawings using manufacturer’s standard processes. Polymer adhesive used in manufacturing to be medium body, slow drying, non-toxic and non-flammable. Fasteners to be stainless steel.
     2. Tolerances as stated on Manufacturer’s approved shop drawings.
     3. Finished surfaces to have a smooth finish suitable for priming.

1. **- EXECUTION**
   1. Installation, Fasteners, Finishing and Storage
      1. Thermal expansion and contraction. Allowance for linear thermal expansion and contraction: Allow 1/8” for lengths up to 12’ and 3/16” for lengths up to 18’. Note: Care must be taken not to use Polymer Architectural Composites in areas that exceed the service temperature of 140°F, otherwise the polymer material will soften and change dimensionally.
      2. Fill expansion joints with a good quality polyurethane caulk/sealant (or combination polyurethane acrylic caulk).
      3. Joints should be staggered on cornice runs, both for aesthetic reasons and the integrity of the overall cornice assembly.
      4. Use of a two-part catalyzed adhesive caulk is recommended in butt joints where a visible joint is not acceptable. Materials such as the TrimWelderTM products supplied by Wood Tectonics will form a chemical bond with both surfaces and can be sanded flush. These adhesive caulks must be used such that sufficient material is in contact with both surfaces in order to form a strong bond.
      5. When surface laminating large areas of polymer to polymer, manufacturer’s surface preparation of material to be laminated is required. Manufacturer’s preparation is not required for gluing field joinery of polymer millwork. Use slow curing, deep penetrating polymer cement (such as provided by Wood Tectonics) at all joints where possible. This glue has a working time of 10 minutes and will be fully cured in 24 hours. Surfaces to be glued should be smooth, clean and in complete contact with each other (standard PVC cements generally produce an inferior glue joint).
      6. Location of fasteners shall be at least ½” from edge to help prevent cracking (large fasteners may require pre-drilling), and no more than 2" from the end of each board. Apply trim to a solid substrate and locate fasteners no further apart than 16” centers. When fastening polymer architectural products it is best to start at one end working toward the opposite end or at the middle working toward the ends to avoid stress that can cause trim to become wavy. For soffit/ceiling installations, use 3/4" thick polymer material for 16” - 24” spans, 1/2” thick shall be fastened on no greater than 12” centers. Polymer millwork shall not be fastened on greater than 24” centers.
      7. When using polymer Lamellos, position them at the center or toward the back of the thickness being joined. Gluing polymer Lamellos near the finished surface can cause deformation to the finished polymer millwork face caused by the glue softening the surface.
      8. Finishing: No surface preparation is required prior to painting. Material should be clean and dry. Use a high quality, 100% acrylic latex paint with a light reflective value of 55 or higher. Follow paint manufacturer's recommendations. Although the paint will quickly dry to touch, allow up to two weeks for the paint to fully cure and provide proper adhesion.
      9. Storage at jobsite: no special precautions required except during the winter. For ease of handling, polymer material should be stored in a warm environment prior to being applied outside in temperatures below 32°F.