PART 1 GENERAL

1.1 SECTION INCLUDES

A. Phenolic Material: **HPL Panels**.
   1. Manufacturer: Lamitech, https://www.lamitech.co/.

B. Facade system: **HPL Panel Facade system**.
   1. Fabricator: ES Metals, https://es-metals.com/projects/.

C. Exterior phenolic wall panel for cladding system and accessories as required for a rainscreen system.
   1. Exterior facade panels.
      a. Aluminum subframing.
      b. Clips, trims, anchors and additional accessories.
   2. Horizontal soffits.
      a. Aluminum subframing.
      b. Clips, trims, anchors and additional accessories.

1.2 RELATED SECTIONS

A. The following items of related work, as specified in other sections and divisions, are not included.
   1. Division 05.
      a. Cold-Formed Metal Framing Sections.
      b. Any metal fabrication, additional subframing, or Z girts to accommodate exterior insulation.
   2. Division 06.
      a. Rough Carpentry & Sheathing and Mechanically Graded Lumber Sections.
   3. Division 07.
      a. Thermal Protection, Insulation and Safing Sections.
      b. Joint Sealers Sections.
      c. Air Barriers and Weather Barriers Sections.
      d. Sheet Metal Flashing and Trim Sections.
   4. Division 08.
      a. Aluminum Windows, Glass and Glazing Sections.
      b. Aluminum Framed Storefronts and Aluminum Curtain Walls Sections.
   5. Division 09.
      a. Gypsum Board Sections.

1.3 REFERENCES

A. ASTM International (ASTM):
   1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM D54200-04 – Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)

B. European Standards (EN):
   1. EN 438-2: 2016 - Decorative High-Pressure Laminate (HPL) Sheets Based on

Thermosetting Resins - Determination of Properties.

2. EN 438-6: 2016 – Classification and specification for Exterior-grade compact laminates of thickness 2 mm and greater.
3. EN 13501-1 – Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.
4. EN 13772 – Furniture – Assessment of surface gloss.

C. International Organization for Standardization (ISO):
1. ISO 178 – Plastics – Determination of flexural properties
2. ISO 1183-1 – Plastics – Methods for determining the density of non-cellular plastics – Part 1: Immersion method, liquid pykonometer method and titration method

D. National Fire Protection Association (NFPA):
1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

1.4 SUBMITTALS

A. General: Submit under conditions of the Contract and provisions of Division 01.

B. Product Data: Manufacturer's information on each product to be used, including:
1. Preparation instruction and recommendations.
2. Storage and handling requirements and recommendations
3. Cleaning & Maintenance guidelines
4. Installation methods for panels and attachment system

C. Shop Drawings: Submit plan, section, elevation and perspective drawings necessary to describe and convey the layout, profiles and product components, including edge conditions, panel joints, fixture location, anchorage, accessories, finish colors, patterns and textures.

D. Engineering Calculations: Submit engineering calculations as required by the local building code, showing that the installed panels and attachments system meets the wind load requirements for the project.

E. Samples: Submit selection and verification samples for finishes, colors and textures.
1. Selection Samples: Manufacturer's color charts or chips illustrating full range of colors, finishes and patterns available. Please note that samples are only representative of color and pattern and not for thickness or edge finish. Metallic colors may also show a slight variation in appearance due to the metal flake orientation from batch production
2. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns. Sample edges may vary from field panel edges

F. HPL Material Sustainable Design Submittals:
   1. Greenguard Gold Submittals
   2. FSC Chain of Custody Certification
   3. Health Product Declaration (HDP)
   4. Environmental Product Declaration (EPD)
   5. Life Cycle Analysis (LCA)
   6. LEED Rating System Requirements

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Primary HPL exterior phenolic wall panel products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years' experience. Products covered under the Work listed in this section are to be manufactured in an ISO 9001 certified facility.

B. Installer Qualifications: All products listed in this section are to be installed by an installing firm who can prove 3 years in business and exemplary workmanship. The installation firm must have evidence of installing rainscreen wall panel systems and is suitable for the execution of the work.

C. Mock-Up: Provide a mock-up for evaluation of the product and application workmanship.
   1. Scope and finish are to be described by Architect on architectural drawings.
   2. Do not proceed with remaining work until workmanship, color, and finish are approved by Architect.

D. Pre-installation Meetings: Conduct a pre-installation meeting of the contractor and installer to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Delivery:
   1. Deliver products in fabricator or manufacturer's unopened, undamaged containers with identification labels intact.
   2. During transportation, use stable pallets that are at least the same dimension as the sheets pack.
   3. Materials shall be packaged to minimize or eliminate the possibility of damage during shipping. Items such as wooden side boards, wooden lids, and spacers or protective sheeting between panels shall be used to protect the panels from surface and/or edge damage.
   4. Moving panels that are stacked on pallets should be done with a forklift or a crane. Exercise care in unloading, storing and installing panels to prevent bending, warping, twisting, and surface damage.

B. Storage:
   1. Store products in an enclosed area protected from direct sunlight, moisture and heat. Maintain consistent temperature and humidity.
   2. Store products in fabricator or manufacturer's unopened crates until ready for installation.
   3. Do not store sheets, or fabricated panels vertically.

C. Handling:
   1. When moving sheets, lift evenly to avoid dragging panels across each other and scratching the decorative surface.
   2. Remove all labels and stickers immediately after installation.

1.7 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Field Measurements: Verify actual measurements/openings by field measurements performed by the installer prior to release for fabrication.

1.8 WARRANTY

A. Manufacturer Warranty: At project closeout, provide Manufacturer's limited **[__ years]** warranty covering defects in HPL materials from date of shipment to façade fabricator. Warranty is only available when material is fabricated and installed by companies trained by the Manufacturer or Manufacturer's representative.

B. Fabricator Warranty: After completion of the project and payment, submit façade system Fabricator's limited **[__ years]** warranty executed by authorized company official.

PART 2 PRODUCTS

2.1 PHENOLIC MATERIAL DESCRIPTION

A. Basis of Design: Solid Phenolic/High-Pressure Laminate (HPL) manufactured by Lamitech SAS, km 13 via Mamonal, Cartagena, Colombia.

B. Product: **HPL Panels** manufactured by Lamitech SAS as represented by **ES Metals**.
   1. Thermo-stable architectural panel, that is used as wall cladding in ventilated facades. It comes in a wide range of colors and designs, and variety of sizes and thicknesses, ensuring excellent appearance for a long period of time. It is ideal for facades that require efficient indoor temperature control, acoustics management, energy savings and easy maintenance.
   2. Solid phenolic impregnated kraft paper wall panels with no voids, air spacers, or foamed insulation in the core material.
   3. Panel Core: Type FR fire retardant **[Black Core] [Brown Core]**.
   4. Panel Size: **[4' × 8' (1.22m × 2.44m)] [4' x 10' (1.22m × 3.06m)] [5' x 12' (1.52m × 3.66m)].** Not all sizes are available for all available finish.

5. Panel Thickness: **[0.24" (6mm)] [0.31" (8mm)] [0.39" (10mm)] [0.47" (12mm)].** Not all thicknesses are compatible with all façade system options.
6. Panel Type.
   a. **[Single Sided Finish] [Double Sided Finish].**
   b. **[Gloss] [Mate] [Super Mate].**
7. Panel Color: To be selected by the Architect from fabricator's standard palette. Please consult with your sales representative.
   a. **[Digital Print Available].**

C. Product Performance:
1. Panel flatness: less than 2.0 mm/m when tested in accordance with EN438-2 test 9.
2. Straightness of edges: Less than 1.0 mm/m when tested in accordance with EN438-2 test 7.
3. Impact resistance: Less than 8.0 indentation diameter when tested in accordance with EN438-2 test 21 and a large diameter ball dropped at 1800mm of height.
4. Modulus of elasticity: Higher than 98.2 MPa when tested in accordance with EN-ISO178.
5. Flexural strength: Higher than 150 MPa when tested in accordance with EN-ISO178.
6. Tensile strength: Higher than 70 MPa when tested in accordance with EN-ISO527-2.
7. Density: Higher than 1.40 g/cm3 when tested in accordance with ISO1183.
8. Screw retention: Higher than 3000 N when tested in accordance with ISO13894-1.
9. Resistance to artificial weathering: 4-5 in contrast and 4 or higher in appearance when tested in accordance with EN438-2 test 28 and ISO4892-3.
10. Thermal conductivity: 0.33 W/mk when tested in accordance with EN12524.

2.2 FAÇADE SYSTEM

A. Visible Fixing

1. ES Metals Exposed Fastening Systems
   i. Exposed fastening system installed on Aluminum 6063-T6 "J", "Hats", or selected shape by ES Metal.
   ii. Self-drilling, stainless steel fasteners, **[Unfinished] [Color chosen from fabricator palette]**
      1. Countersunk screws must not be used.
      2. Fasteners to be at 40mm min from edge of plank.
   iii. Panel thickness **[6mm] [8mm] [10mm]**.
   iv. Min. 30mm posterior free air cavity. Min. 20mm upper/lower gap.
   v. 6-8mm dilation joints.

B. Concealed Fixing

1. ES Metals Concealed Fixing Systems with Rails
    i. Concealed fixing system installed on Aluminum 6063-T6 “J”, “Hats”, or selected shape by ES Metal.
    ii. Fixed and adjustable panel support clips with ESM-284 rails made from 6005-T5 aluminum
        1. Self-Drilling, stainless steel fasteners, unfinished.
    iii. Panel thickness **[10mm] [12mm]**.
    iv. Min. 30mm posterior free air cavity. Min. 20mm upper/lower gap.
    v. 6-8mm dilation joints.
2. ES Metals Concealed Fixing Systems with Adhesives
    i. Concealed fixing system installed on Aluminum 6063-T6 “T”, “L”, or selected shape by ES Metal.
    ii. Panel fixed with structural adhesive
    iii. Panel thickness **[6mm] [8mm] [10mm]**.
    iv. Min. 30mm posterior free air cavity. Min. 20mm upper/lower gap.
    v. 6-8mm dilation joints.
3. ES Metals Siding System
    i. Concealed fixing system installed on Aluminum 6063-T6 “J”, “Hats”, or selected shape by ES Metal.
    ii. Siding Clip made from 6063-T6 aluminum; mill finish.
        1. Self-Drilling, stainless steel fasteners, unfinished.
        2. Top plank to be secured using self-drilling exposed fasteners.
        3. For Top Plank: Self-drilling, stainless steel fastener, **[Color chosen from fabricator palette]**
    iii. Tongue and Groove Plank fabrication.
    iv. Standard Plank Sizes:
        1. Height **[7-3/4in]**
        2. Length **[8ft] [10ft]**
    v. Panel thickness **[8mm]**.

vi. **[Horizontal] [vertical]** Plank Orientation.

vii. **[Aligned] [Staggered]** Plank Placement.

viii. Min. 30mm posterior free air cavity. Min. 20mm upper/lower gap.

ix. 6-8mm dilation joints.

A. Sub Structure:

1. Sub-structure designed to withstand structural loading due to wind load and the dead load of the panel, painted only as required by fabricator to conceal behind the open joinery of the attachment system.

2. Extrusions, trims, battens, including corner closures, joint closures and vent screens, formed members, sheet, and plate shall conform to the recommendations of the manufacturer.

B. Fasteners (Exposed): Fasteners are non-corrosive stainless steel. Where required, they shall be colored to match panels. Fastener colors to be selected from fabricator palette, when applicable.

C. Fasteners (Concealed): Fasteners are non-corrosive stainless steel. Fastener color and finish is mil.

D. Accessories:

1. Extruded aluminum trim includes outside corners, and other finish trim profiles.
2. Available in mill, or **[Black] [Bronze] [Silver] [White]** from fabricator standard color palette.

2.3 FABRICATION

A. Fabricate wall panels and accessory items in accordance with manufacturer's tolerance and performance recommendations.

B. Fabricate wall panels to the size, configuration and layout as shown on approved shop drawing submittals.

C. Form panel lines, breaks and angles to be sharp and true, with surfaces that are free from warp or buckle.

D. Where final dimensions cannot be established by field measurements, provide allowance for field adjustment as recommended by the fabricator. Field fabrication shall be allowed where necessary but kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible.

E. Panels shall be marked to coordinate with the approved shop drawings.

F. Panels using materials with a grain or directionality shall be fabricated to run in the same direction when installed unless otherwise specified or illustrated on approved shop drawings.

G. Fasteners in profile shall accommodate thermal expansion/contraction of metal and not interfere with panel application.

H. Fasteners (Concealed): Fasteners are non-corrosive stainless steel. Fastener color and finish is mil.

I. Attachment system does not include:
   a. Flashings and trims.
   b. Framing or Furring.
   c. Insulation.
   d. Wood blocking, furring.
   e. Sheathing and gypsum drywall.
   f. Sealant and primers.
   g. Flashings.

PART 3 EXECUTION

2.4 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's and fabricator's product data, including product technical bulletins, product catalog installation instructions and project specific instructions for installation.

2.5 EXAMINATION

B. Do not begin installation until substrates have been properly prepared.

C. Surfaces to receive panels shall be even, smooth, dry, and free from defects detrimental to the installation of the panel system. Notify Contractor in writing of conditions detrimental to proper and timely completion of the work.

D. Confirm load bearing wall surface is plumb and level, with no deviations greater than 1/4 inch (6 mm) in 20 feet (6096 mm).

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Install panel system plumb and level and accurately spaced in accordance with manufacturer's recommendations and approved submittals and shop drawings.

B. Install façade system over a plumb, flat, true and dry substrate in accordance with ASTM E330.

C. Install exterior high pressure compact laminate planks plumb and level and accurately spaced from the adjoining panel in accordance with manufacturer's recommendations and approved submittals and drawings.

D. Anchor panels or planks and sub-framing securely per engineering recommendations and in accordance with approved shop drawings to allow for necessary movement and structural support.

E. Do not install panels or component parts which are observed to be defective or damaged including, but not limited to: warped, bowed, abraded, scratched, and broken members.

F. Fasten exterior high pressure compact laminate panels or planks with fasteners approved for use with supporting substrate.

G. Install profiles and trim with fasteners appropriate for use with adjoining construction as indicated on the shop drawings and as recommended by manufacturer.

H. Do not cut or trim component parts during installation in a manner that would damage the finish, decrease the strength, or result in visual imperfection or a failure in performance. Return component parts with require alteration to the shop for re-fabrication or replacement.

I. Panels with grain or directionality are to be installed in same direction, unless otherwise noted on the approved shop drawings.

J. Accessory Items: Install accessory items with fastening method appropriate for use with adjoining construction as indicated on drawings and as recommended by the Fabricator or Manufacturer.

3.4 ADJUSTING AND CLEANING

A. Remove masking or panel protection as soon as possible after installation. Any masking intentionally left in place after panel installation on an elevation, shall become the responsibility of the General Contractor to remove.

B. Adjust final installation so that all joints are true and even. Panels or planks out of plane shall be adjusted with the surrounding planks to minimize any imperfection.

C. Repair panels or planks with minor damage. Remove and replace panels or planks damaged beyond repair as a direct result of the installation. After installation, repair and replacement shall become the responsibility of the General Contractor.

D. Clean finished surfaces as recommended by fabricator. After installation cleaning, cleaning during construction shall become the responsibility of the General Contractor.

3.5 PROTECTION

A. Protect installed products and finish surfaces from damage during construction.

END OF SECTION