1. GENERAL

1.1 SECTION INCLUDES

.1 All requirements of the contract documents form an integral part of the work specified herein; in particular refer to the general conditions and Division 1 of the specifications.

.2 Solid Phenolic Wall Panel System to be manufactured by Trespa North America Ltd. and fabricated/distributed by:

Thermal Systems KWC Ltd.
2780 - 24 Avenue N.E.
Calgary, AB T1Y 6V7

Telephone: (403) 250-5507
Facsimile: (403) 250-6891
sales@thermalsystems.ca

.3 The cladding panels and installation system includes the following components:

.1 Solid phenolic wall cladding, fascia and horizontal soffit panels with installation systems. Panel installation systems include, but are not limited to: phenolic panels, panel fasteners, rail anchors, aluminum sub-frame, joint closure, and certain aluminum perimeter closure pieces as required for a complete drained and back ventilated rain screen system.

.2 Interior panel system work that basically matches the colour and/or design intent of the exterior panel system.

RELATED SECTIONS

.1 Division 07 – Insulation

.2 Division 07 – Air/Vapor Barrier Exterior Sheathing Membrane

.3 Division 07 – Mineral Wool Insulation

.4 Division 08 – Curtain Wall

.5 Division 09 – Interior Wall Finishes

REFERENCE STANDARDS

.1 ASTM International (ASTM):
- .1 ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.
- .2 ASTM D 635 – Standard Test Method for Small Scale Burning.
- .3 ASTM D 1929 – Standard Test Method for Ignition Temperature.
- .4 ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
- .5 ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
- .6 ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- .7 ASTM E 119 – Standard Test Method for Fire Rated or Fire Resistive Construction.
- .8 ASTM E 330 – Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors Under the Influence of Wind Loads.

.2 European Standards (EN):
- .1 EN 438-2 – Decorative High Pressure Laminate (HPL) Sheets Based on Thermosetting Resins – Determination of Properties.
- .2 EN 12524 – Building Materials and Products, Hygrothermal Properties, Tabulated Design Values.

.3 International Organization for Standardization (ISO):
- .1 ISO 105 A02-93 - Tests for Color Fastness -- Part A02: Grey scale for assessing change in color.
- .2 ISO 178 – Determination of Flexural Properties.
- .3 ISO 527-3 – Determination of Tensile Properties.
- .4 ISO 846 – Evaluation of the Action of Organisms.

.4 National Fire Protection Association (NFPA):
- .1 NFPA 268 – Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
- .2 NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components

PREINSTALLATION MEETING

.1 Convene minimum one week before starting work on this section.

SUBMITTALS

.1 Submit under provisions of Section 01300.

.2 Product Data: Manufacturer's data sheets on each product to be used, including:
- .1 Preparation instructions and recommendations.
- .2 Storage and handling requirements and recommendations.
- .3 Installation methods.

.3 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.

.4 Code Compliance: Documents showing product compliance with local building code shall be submitted prior to the bid. These documents shall include, but not be limited to, appropriate Evaluation Reports and/or test reports supporting the use of the product. Alternate materials must be approved by the architect of record prior to the bid date.

.5 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.

.6 Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns. Please note that samples are only representative for color and pattern and not for thickness or edge finish. Metallic colors may also show a slight fluctuation in appearance do to the metal flake orientation from batch to batch.

.7 Verification Samples: For each finish product specified, two samples a minimum of 3.5 inches by 3.5 inches (89 mm by 89 mm) representing actual product, color, and patterns. Sample edges may vary from field panel edges.

.8 Operation and Maintenance Data: Submit operation, maintenance, and cleaning information for products covered under this section.

QUALIFICATIONS

.1 Manufacturer Qualifications: All primary panel products specified in this section will be supplied by a single manufacturer with a minimum of 10-years experience.

.2 Installer Qualifications: All products listed in this section are to be installed by a recognized installer with a minimum of 5-years experience.

.3 Mock-Up: Provide a mock-up for evaluation of the product and application workmanship by request of consultant.

QUALITY ASSURANCE

.1 Manufacturer Qualifications: All primary panel products specified in this section will be supplied by a single manufacturer with a minimum of ten years experience.
  .1 Products covered under the Work listed in this section are to be manufactured in an ISO 9001 certified facility.

.2 Installer Qualifications: All products listed in this section are to be installed by a single installer trained and approved by the manufacture or representative.

.3 Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.4 Mock-Up: Provide a mock-up for evaluation of the product and application workmanship.
  .1 Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.

.5 Pre-installation Meetings: Conduct pre-installation conference to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements.

DELIVERY, STORAGE, AND HANDLING

.1 Delivery:
  .1 During transportation, use stable, flat pallets that are at least the same dimension as the sheets.
  .2 Materials shall be packaged to minimize or eliminate the possibility of damage during shipping. Items such as wooden side boards, wooden lid, and spacers or protective sheeting between panels shall be used to protect the panels from surface and/or edge damage.

.2 Storage:
  .1 Store products in an enclosed area protected from direct sunlight, moisture and heat. Maintain a consistent temperature and humidity.
  .2 Store products in manufacturer's unopened packaging until ready for installation.
  .3 Stack panels using protective dividers to avoid damage to decorative surface.
  .4 For horizontal storage, store sheets on pallets of equal or greater size as the sheets with a protective layer between the pallet and sheet and on top of the uppermost sheet.
  .5 Do not store sheets, or fabricated panels vertically.

.3 Handling:
  .1 Remove protective film within 24 hours of the panels being removed from the pallet.
  .2 When moving sheets, lift evenly to avoid dragging panels across each other and scratching the decorative surface.
  .3 Remove all labels and stickers immediately after installation.

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 absolute limits.

.2 Field Measurements: Verify actual measurements/openings by field measurements performed by the

installer prior to release for fabrication. Recorded measurements to be indicated on shop drawings based on field measurements provided by the installer. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

WARRANTY

.1 At our substantial completion, provide Manufacturer's limited ten (10) year warranty covering defects in materials. Warranty only available when material installed by an installation contractor trained and approved by the manufacturer's representative.

2 PRODUCTS

MANUFACTURERS

.1 Trespa (Meteon) Rain Screen System by Trespa International. www.trespa.com

.2 Acceptable Fabricators Include:

.1 Thermal Systems KWC Ltd.
2780 – 24th Avenue NE
Calgary, AB T1Y 6V7
Phone: 403-250-5507
Fax: 403-250-6891
www.thermalsystems.ca
sales@thermalsystems.ca

.3 Substitutions: Wood veneers NOT permitted.

.4 Items of the same function and performance which have received prior approval from the architect shall be allowed for this project. Approval shall be based on documentation submitted showing the adequacy of the proposed material to meet the performance requirements of this specification.

WALL PANELS

.1 Solid Phenolic Wall Panels: Trespa Meteon by Trespa International as represented by Trespa North America, LTD.

1. Material: Solid panel manufactured using a combination of high pressure and temperature to create a flat panel created from thermosetting resins, homogenously reinforced with wood-based fibers and an integrated decorative surface or printed décor.
2. Color on Primary Face: _____ color with black reverse.
3. Color on Primary Face: _____ color with white reverse.
4. Color on Primary and Reverse Faces: _____ color on primary face and _____ color on reverse face.
5. Color: As selected by the Architect from manufacturer's standard color palette.
6. Finish: Satin sheen.
7. Finish: Gloss.
8. Finish: Rock.
9. Panel Core: Fire retardant (FR) black core.
10. Panel Thickness: 5/16 inch (8 mm).
11. Panel Thickness: 3/8 inch (10 mm).
12. Panel Thickness: 1/2 inch (13 mm).
13. Panel Thickness: As indicated on the Drawings.
14. Physical Properties:
    1. Modulus of Elasticity: 1,300,000 psi (9000 N/mm^2) minimum, ISO 178.
    2. Tensile Strength: 10,100 psi (70 N/mm^2) minimum, ISO 527-2.
    3. Flexural Strength: 14,500psi (120 N/mm^2) minimum, ISO 178.
    4. Thermal Conductivity: 2.1 $BTU/inch/ft^2.hr.°F$, EN 12524.

5. Structural Performance (ASTM E330):
    1. Panels shall be designed to withstand the Design Wind Load based upon the local building code, but in no case less than 15 pounds per square foot (psf). Wind load testing shall be done in accordance with this standard to obtain the following results:
    2. Normal to the plane of the wall, the maximum panel deflection shall not exceed L/175
    3. Normal to the plane of the wall between supports, deflection of the aluminum sub-framing members shall not exceed L/175 or 3/4 inch, whichever is less
        (a) At 1-1/2 times design pressure, permanent deflection of framing members shall not exceed L/100 of span length and components shall not experience failure or gross permanent distortion.
    4. If system tests are not available, mock ups shall be constructed and tests performed under the direction of an independent third party laboratory which show compliance to the minimum standards listed above.

15. Fire Performance:
    1. Flame Spread: Class A, ASTM E 84.
    2. Smoke Development: Less than 450, ASTM E 84.
    3. Ignition Temperature: Greater than 650 degree F (350 degree C) above ambient, ASTM D1929.
    4. Burning Classification: CC1 or CC2, ASTM D635.
    5. When required for compliance with local building codes, the wall cladding assembly shall show no degradation of the rating of Fire Resistant Assemblies, ASTM E119.
    6. When required for compliance with local building codes, the wall cladding assembly shall meet the performance requirements for Multi Story construction, NFPA 285.
    7. When required for compliance with local building codes, the wall cladding assembly shall not ignite when exposed to a radiant heat energy source, NFPA 268.
16. Finish Performance: Electron Beam Cure resin in conformance with the following general requirements:
    1. Color: As selected by the architect/engineer from manufacturer's standard colors or a custom color to be matched by the panel supplier.
    2. Humidity Resistance: No formation of blisters when subjected to condensing water fog at 100% relative humidity and 100 degree F (38 degree C) for 3000 hours, ASTM D 2247.
    3. Salt Spray Resistance: Corrosion creepage from scribe line (1/16 inch (1.6 mm) max.) and minimum blister rating of 8 within the test specimen field, ASTM B117.
    4. Weather Exposure: Accelerated – 3000 hours in Atlas Type Weatherometer using cycle of 90 minutes light and 30 minutes diminished light and demineralized water with a maximum color change of 5 Delta E units from the original color according to ASTM D-2244, with the exception of Uni-Colors A12.3.7 / A18.3.5 / A04.1.7, which will not deviate more than 10 Delta E units from original color according ASTM D-2244.
    5. Color Stability: The decorative surface comply with, classification, 4 - 5 measured with the grey scale according to ISO 105 A02-93 according to test method EN 438-2:29.
    6. Microbial Characteristics: Will not support micro-organic growth (ISO 846).

2. Mounting System:
    1. TS110 – Exposed fastening on fixed depth aluminum sub-framing.
    2. TS120 - Exposed fastening on variable depth aluminum sub-framing.
    3. TS210 – Concealed fastening over fixed depth aluminum sub-framing.
    4. TS220 - Concealed fastening over variable depth aluminum sub-framing.
    5. TS110-285 - Exposed fastening on fixed depth aluminum sub-framing tested and meeting the performance requirements of NFPA 285.
    6. TS120-285 - Exposed fastening on variable depth aluminum sub-framing tested and meeting the performance requirements of NFPA 285.
    7. TS210-285 - Concealed fastening over fixed depth aluminum sub-framing tested and meeting the performance requirements of NFPA 285.
    8. TS220-285 - Concealed fastening over variable depth aluminum sub-framing tested and meeting the performance requirements of NFPA 285.

9. Other installation systems - Include test documentation showing compliance with the performance criteria set forth in the specification and in accordance with the local building code.

3. Aluminum Sub Structure: Aluminum sub-structure designed to withstand structural loading due to wind load and the dead load of the panel, painted as required to conceal behind the open joinery of the attachment system.
   1. Extrusions, including corner closures, joint closures and vent screens, formed members, sheet, and plate shall conform with the recommendations of the manufacturer.

4. Extruded Aluminum Trim: Color as specified in the finish schedule.

5. Fasteners (Concealed/Exposed): Fasteners shall be non-corrosive and as recommended by panel manufacturer. Exposed fasteners shall be colored to match panels where required by the architect.

6. Panel Corner Profile:
   1. Dimensions: 143.70 inches by 11.81 inches by 11.81 inches (3650 by 300 by 300 mm) with a 5/16 inch (8 mm) thick by 3/4 inch (19 mm) radius.
   2. Dimensions: 143.70 inches by 11.81 inches by 11.81 inches (3650 by 300 by 300 mm) with a 3/8 inch (10 mm) thick by 3/4 inch (19 mm) radius.

FABRICATION

.1 Panels: Solid phenolic impregnated kraft paper wall panels with no voids, air spaces or foamed insulation in the core material. Accessory items in accordance with manufacturer's recommendations and approved submittals

.2 Panel Weight: 8 mm (2.4 lb/ft^2), 10 mm (3 lb/ ft^2), 13 mm (3.8 lb/ ft^2).

.3 Panel Bow: ≤ 2 mm / m (≤ 0.079 inch/39.38 inches).

.4 Panel Dimensions: Field fabrication shall be allowed where necessary, but shall be kept to an absolute minimum. All fabrication shall be done under controlled shop conditions when possible.

.5 Appearance: Panel lines, breaks, and angles shall be sharp, true, and surfaces free from warp and buckle

ACCESSORIES

.1 Fasteners (concealed/exposed) – Fasteners shall be manufacturer's standard, non-corrosive type to suit application. Exposed fasteners shall be colored to match panels where required by the architect.

.1 Subgirts: 1.2 mm minimum, 2275 galvanized steel

.2 Secondary Framing - Aluminum sub-structure designed to withstand structural loading due to wind load and the dead load of the panel painted as required to conceal behind the open joinery of the attachment system.

.3 Extrusions, formed members, sheet, and plate shall conform with the recommendations of the manufacturer.

.4 Extruded Aluminum Trim - (Black in color)

FABRICATION TOLERANCES

.1 Panel lines, breaks, and angles: Sharp and true. No warp or buckle.

.2 Panel Bow: Maximum 0.8% of panel dimension in width and length measured over any 1828 mm panel dimension.

.*3* Panel Length and Width: 1 mm +/- maximum.

.*4* Panel diagonal: 3 mm +/- maximum

3 EXECUTION

EXAMINATION

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

.2 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.

.3 Confirm exterior sheathing is plumb and level, with no deflection greater than 1/4 inch (6 mm) in 20 feet (6096 mm).

.4 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.

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.

INSTALLATION

.1 Install solid phenolic wall panels and sub-frame system in accordance with manufacturer's instructions.

.2 Install solid phenolic wall panels plumb and level and accurately spaced in accordance with manufacturer’s recommendations and approved submittals and drawings.

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

.4 Fasten solid phenolic wall panels with fasteners approved for use with supporting substrate.

.5 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.

.6 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.

.7 Install corner profiles and trim with fasteners appropriate for use with adjoining construction as indicated on the Contract Drawings and as recommended by manufacturer.

ADJUSTING AND CLEANING

.1 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.

.2 Adjust final panel installation so that all joints are true and even throughout the installation. Panels out of plane shall be adjusted with the surrounding panels to minimize any imperfection.

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

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

END OF SECTION