1 PART 1 - GENERAL

1.1 SECTION INCLUDES

1.1.1 Design, labor, products, equipment and services necessary for large format interior/exterior Sintered Ceramic Facade System (SCFS) work, in accordance with the Contract Documents.

1.2 SYSTEM DESCRIPTION

1.2.1 Work of this section to be designed by a Professional Engineer registered in state/province of location of project.
1.2.2 Design, fabricate and erect work to satisfy the requirements of this section.
1.2.3 Design system based on rainscreen principle.
1.2.4 Structural & Thermal Movements: Accommodate movement of building structure and movement caused by thermal expansion and contraction of system component parts without causing bowing, buckling, cracking, oil canning, failure of joint seals, excessive stress on fasteners or any other detrimental effects.
1.2.5 Dead Loads: Support self-weight of system components.
1.2.6 Panel Removal: Design system to allow removal of any individual panel.
1.2.7 Design panel joint system in conformance with Ceramitex® SCFS; any components behind the panel system should not be visible.
1.2.8 Panel joint system to be free of extruded trim returning on the face of the SCFS.
1.2.9 All outside panel corners to be reinforced, mitred and chamfered where detailed.

1.3 QUALITY ASSURANCE

1.3.1 Installer Qualification: Trained and approved by the manufacturer, and having the necessary experience, staff, and training to install manufacturer's products. Manufacturer's willingness to sell its products to installers does not in itself confer qualification on installer. Provide letter of certification from manufacturer stating that installer is a certified applicator of its products, and is familiar with proper procedures and installation requirements recommended by the manufacturer. Installer shall have proven experience with exterior facade systems for a minimum of ten (10) years and to have completed at least ten (10) major wall facade projects.
1.3.2 Pre-Installation Meeting: Two weeks prior to commencing work of this section, arrange for the manufacturer's qualified installer to visit the site and review preparatory and installation procedures to be followed, conditions under which the work will be done, and inspect the surfaces to receive the work of this section. Consultant is responsible for scheduling the date and time of the meeting.
1.3.3 Manufacturer’s Site Inspection: The manufacturer’s qualified installer will inspect the site weekly, providing inspection reports and photographs, to verify that the work of this section is correctly installed.
1.3.4 Source Limitations: Obtain each type of product from a single manufacturer.
1.3.5 Panel Lines and Angles: sharp and true.

1.4 PERFORMANCE REQUIREMENTS

1.4.1 LEED ISO 14021:1999
1.4.2 ASTM C1026-10 Measuring Resistance to Freeze-Thaw Cycling
1.4.3 ASTM E695-2003 (R2009) Standard Test Method of Measuring Relative Resistance of Wall Construction to Impact Loading
1.4.4 BS EN 14019-2004 Curtain Walling—Impact resistance—Performance requirements standards specification
1.4.5 CAN/ULC S102.2-10 Standard Method of Test for Surface Burning Characteristics
1.4.6 CAN/ULC S114-05 Standard Method of Test for Determination of Non-combustibility in Building Materials
1.4.7 NFPA 285 Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies
1.4.8 CAN/ULC S134-92 Standard Method of Fire Test of Exterior Wall Assemblies
1.4.9 ASTM C794 Adhesion-in-Peel of Elastomeric Structural Silicone
1.4.10 AAMA 508-07 Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems: Pressure Equalized Behaviour and Water Penetration Resistance
1.4.11 ASTM E1233 Structural Performance by Cyclic Static Air Pressure Differential
1.4.12 ASTM E283-04(2012) (TAS 202-94) Rate of Air Leakage Under Specified Pressure Difference Across the Specimen
1.4.13 ASTM E331-00(2009) (TAS 202-94) Water Penetration by Uniform Static Air Pressure Difference
1.4.14 ASTM E330/E330M-14 (TAS 202-94) Structural Performance by Uniform Static Air Pressure Difference
1.4.15 ASTM E1886-13a (TAS 203-94) Performance by Missile(s) and Exposed to Cyclic Pressure Differentials
1.4.16 ASTM E84-16a Standard Test Method for Surface Burning Characteristics of Materials.
1.4.17 Florida Product Approval FL26341-R3
1.4.18 Miami-Dade County, Florida NOA No. 23-0901.2, exp. September 6th, 2028
1.4.19 OTCR - Office of Technical Certification & Research (NYC Dept of Buildings) – Approved
1.4.20 ICC-ES Evaluated, ESR-4169

1.5 SUBMITTALS

1.5.1 Submit samples in accordance with section [01 33 23]
- 1.5.1.1 [(6”-24”)] [150mm-600mm] long of support framing, trims and corners.
- 1.5.1.2 [(6” or 12”)] [150mm or 300mm] x [(6” or 12”)] [150mm or 300mm] samples of each color selected by Consultant
- 1.5.1.3 [(6” or 12”)] [150mm or 300mm] x [(6” or 12”)] [150mm or 300mm] mounted samples of four equal sized panels showing four-way joint.
- 1.5.1.4 Identify samples with project number, date and name of contractor.

1.5.2 Shop Drawings: Bearing seal and signature of the Professional Engineer who is registered in the state/province of location of project, and who is responsible for the engineering design of work of this section. Clearly indicate finish, type and thicknesses of system components, size, spacing and location of support framing, sub-girts, connections, types and locations of fastenings. Indicate provisions for structural and thermal movement between panel system and adjacent materials.

1.6 MAINTENANCE DATA

1.6.1 Provide maintenance data for panel finishes and cleaning procedures for incorporation into manual specified in section [01 78 23 16].

1.7 PRODUCT DELIVERY, HANDLING AND STORAGE

1.7.1 Store sintered ceramic panels and installation system materials in a dry location; handle in a manner to prevent chipping or breakage. The sintered ceramic panels should be stored in an upright position. Panels stored in their vertical position should be on their long side. This side must be protected by means of wooden crating, cardboard or polystyrene.

1.8 MOCK-UP

1.8.1 Submit mock-up in accordance with section [01 43 39]
1.8.2 Erect mock-up of the Ceramitex® SCFS approximately [____] long x [____] high in location directed by Consultant.
1.8.3 Mock-up of the Ceramitex® SCFS shall include all components of the wall system and if approved by Consultant may be incorporated into finished work.
1.8.4 Notify 72 hours before installation of mock-up for inspection by Consultant. Do not proceed with panel system work until mock-up has been approved.
*Note: Above section to be deleted if a mock-up is not required.

1.9 COORDINATION

1.9.1 Coordinate with installers of wall mounted items, equipment, mechanical, and electrical work so that installation will not subvert the integrity of the cladding system.
1.9.2 Panel penetrations must be pre-approved by manufacturer before on-site work can commence.
1.9.3 Coordinate interface, transition, lapping, flashings and compatibility of membranes with other trades.

1.10 WARRANTY

1.10.1 For product finish, warranty from the manufacturer against staining, color fades or product deterioration shall be for a period of ten (10) years from date of substantial completion.
Please Note: No warranty against scratch/scuffing when polished finishes are selected.
1.10.2 For work in this section, warranty by manufacturer and installer against defects or deficiencies in materials or workmanship shall be for a period of one (1) year from date of substantial completion.

2 PART 2 – PRODUCTS

2.1 MANUFACTURER

2.1.1 Specified Products: Work of this section is based on the Ceramitex® SCFS, to meet this system's function, design, performance, and construction process, complying with requirements set forth in this section and subject to the consultant's acceptance.

2.1.2 All requests for equivalency to be submitted for review no later than 10 days before tender closing. No alternates will be reviewed post tender.

2.1.3 For additional information on the Ceramitex® SCFS please contact Ontario Panelization at david@ontariopanelizaion.com, telephone 519-659-8900

2.2 MATERIALS

Sintered Ceramic Slab:

[1/4" (6 mm+) thick Fiber Mesh Reinforced Sintered Ceramic Slab]

*Note: Standard thickness is ¼" (6mm). Other thicknesses are available. Consult representative for recommended sheet size and thickness based on application.

* For questions or concerns, please contact David Waugh at Ontario Panelization: david@ontariopanelization.com, telephone 519-659-8900

2.2.1 Reinforced fiberglass back layer, complete with resin and fiber mat, conforming to manufacturer's recommendations.

2.2.2 Maximum Dimensional Sizes: ~ 5 ft. (1500 mm) x ~10.5 ft. (3200 mm),
~4.5 ft. (1440mm) x ~10.5 ft. (3200 mm)

2.2.3 Sintered Ceramic Slab Color #: Tile #1[_____], Tile #2[_____], Tile #3[_____],

Unity® Attachment Technology:

2.2.4 A Concealed Mechanically Fastened Aluminum Framing System as manufactured by Elemex™ Inc. that can support a variety of veneer finishes. ACM (PE and FR) and Plate adjacent to Ceramitex® will seamlessly integrate and finish at the same plane.

2.2.5 Aluminum Infill Treatment: Alumitex® FR-Core infill strip;
.1 Color: [To match Extrusions]

2.2.6 Compression Gaskets: Continuous extruded EPDM of 80 Durometer A hardness. Insert Gasket to integrate with the Elemex® Proprietary Unity® Attachment Technology.

2.2.7 Aluminum Treatment:
There are two types of coatings used on the aluminum extrusions:
1) *Standard black:* two-stage anodized (electrochemical process) method;
2) *Standard white:* mill finished extrusions are treated with a chromate conversion process (i.e. Alodine). The extrusions are then masked at structural silicone contact locations. This is followed by a PVdF coating (polyvinylidene fluoride) in standard white.
Additional colors/finishes are available upon request.

2.2.8 Sintered Ceramic Slab Adhesive:

.1 Dow Corning 983 Structural Silicone: Project requires a batch specific modified ASTM C794 Adhesion-in-Peel of Elastomeric Joint Sealants Test Report with Dow Corning Adhesion Performance Warranty Report.

Related Products:

2.2.9 Supporting Framing: Enviroclip™ by Elemex®: Load bearing, thermal break clip, manufactured from [Z-275] galvanized steel with a bonded thermal retardant membrane. Adjustable angles, Z-bars and channel subgirts: manufactured from [Z-275] galvanized steel and shall be designed to accommodate expansion and contraction, dynamic movements and design load requirements.

2.2.10 Air/Vapor Barrier: Use approved material as required by local building code.

2.2.11 Semi-rigid, Rigid, Sprayed Insulation:

.1 Use approved insulation material conforming to local building codes.

.2 Thickness: [_____]

.3 Acceptable Material:

.1 [_____]

2.2.12 Trims and Closures: Inside corners, outside corners, control joints, wall fixtures and termination trims. Painted steel.

2.3 FABRICATION

2.3.1 Co-ordinate and verify job site dimensions affecting work of this section. Ensure suitability of adjacent building components in relation to work of this section.

2.3.2 Sintered Ceramic Slabs to be fabricated with a multi-axis wet bridge saw to ensure cutting accuracy and smooth edge quality. Fabricate slabs square to difference of diagonal measurements of not more than 0.2%. Note: Scoring & cracking the slab using the dry rail tile scorer method, creating, rough edges, will not be accepted.

For questions or concerns, please contact David Waugh at Ontario Panelization: david@ontariopanelization.com, telephone 519-659-8900

2.3.3 Where noted on architectural drawings, fabricate exterior corner panels in a continuous mitred and chamfer method. Use the Elemex® Proprietary Unity® Attachment Technology to maintain the panel's design integrity.

2.3.4 Where noted on architectural drawings, fabricate window sill, jamb and header conditions in a continuous mitred with chamfer details.

2.3.5 Panels to be factory fabricated in a controlled environment.

2.3.6 Fabricate work to profiles and sizes as indicated on the architectural drawings and confirmed site dimensions, as defined in this section's scope of work; complete with trims, flashings and filler components as required to interface with work of other sections. Make provisions for thermal and structural movements.

2.3.7 The location and sizes of all penetrations to be provided by all trades to the manufacturer prior to shop drawings for architect's approval. Any additional required penetrations after first submittals will be an expense to that trade. Exterior penetrations greater than 12" x 12" (300mm x 300mm) to be reinforced to details as indicated or to the manufacturer's standard.

3 PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Examine work of other sections upon which work of this section depends.
3.1.2 Report any unsatisfactory conditions to consultant in writing. Do not start work until unsatisfactory conditions are rectified.

3.2 INSTALLATION – GENERAL

3.2.1 Install supporting framing required to support work of this section.
3.2.2 Install work in accordance with manufacturer's written instructions, plumb with intersecting parts joined together to provide accurately fitted joints with adjoining surfaces in true planes. Attach components in manner not restricting movement.
3.2.3 Apply isolation coating/tape to concealed surfaces of dissimilar metals and metals in direct contact with concrete or masonry.
3.2.4 Installer Qualification: Trained and approved by the manufacturer as per 1.3.1.

3.3 INSTALLATION

3.3.1 Complete Installation: Provide mounting hardware compatible with the Ceramitex® SCFS, manufacturer's standard profiles, joint closures and perimeter trim as required for a complete installation.
3.3.2 When thermal break is required and/or desired, attach thermal clip to the given substrate with the appropriate fasteners as per type of the substrate. Confirm spacing and type of fastener with local Engineers to determine the appropriate attachment method.
3.3.3 Mechanically fasten sub-girts to thermal clip; following manufacturer's installation guidelines.
3.3.4 Align Ceramitex® panels end-to-end to provide accurate fit with adjacent panels. Ensure adjacent panels are parallel and straight at joints.

3.4 INSTALLATION TOLERANCES

3.4.1 Variation in Line Over Entire Area: For positions shown in plan and continuous lines, do not exceed 1:500 or 15 mm, whichever is less.
3.4.2 Variation in Plumb Over Entire Area: Vertical lines, external corners and other vertical conspicuous lines, do not exceed 1:500.

3.4.3 Variation in Level, Panel to Panel: Horizontal bands, horizontal grooves, and other horizontal conspicuous lines, do not exceed 1:500.

3.4.4 Variation in Panel Joint Width: Do not exceed 3 mm.

3.4.5 Variation in Plane Between Adjacent Panels (Lipping or Step-in-Face): Do not exceed 1 mm difference between planes of adjacent panels.

3.4.6 Jog in Alignment of Edge of Adjacent Panels: Do not exceed 1 mm.

3.5 CLEAN-UP

3.5.1 Clean exposed panel surfaces in accordance with manufacturer's instructions.

END OF SECTION