SECTION 084510 – TRANSLUCENT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including general and supplementary conditions in Division 1 Specification sections, applied to this section.

1.2 SUMMARY

A. This section includes furnishing and installation of translucent assembly in gymnasiums.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 5, Section "Structural Steel Framing."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide design, fabrication, and erection of the canopy roof structure as required to make a complete and watertight installation. System to be produced, fabricated, and installed to withstand normal thermal movement, when loading, and impact loading (where applicable) without failure including loss of, or glass breakage, or glazing breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; and deterioration of glazing materials; and other defects in construction.

B. Translucent panels shall consist of 2-3/4" thick factory prefabricated sandwich panels and system, windows, louvers, etc., factory assembled into a single unit (including installation).

1.4 SUBMITTALS

A. General: Submit the following according to conditions of contract and Division 1 Specification sections.

B. Product Data for material.

C. Shop drawings including:

1. Layout and installation details, including relationship to adjacent work.
2. Detailed elevations and sections.
3. Anchors and reinforcement.
4. Glazing details.

D. Structural calculations by structural engineer licensed in the State of Maryland.

E. Samples: The manufacturer shall submit samples of each type of glazing and finish as requested.

F. Test reports to be furnished by sandwich panel system manufacturer in accordance with Division 1, Submittals. The manufacturer shall submit certified test reports made by an independent testing organization for each type and class of panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if current and indicative of products used on this project. Test reports required are:

1. Flame Spread and Smoke Development (ASTM E-84)
2. Burn Extent (ASTM D-635)
3. Color Difference (ASTM D-2244)
4. Impact Strength (Free Falling Ball Method)

5. Tensile Bond Strength (ASTM C-297) after aging by ASTM D1037.
6. Shear Bond Strength (ASTM D-1002) after 5 aging conditions.
7. Insulation "U" Factor (by NFRC-100); ASTM C-236, E-1432, and C-1199).
8. Daylight Autonomy.

1.5 QUALITY ASSURANCE

A. Single-Source Responsibility: Obtain glazing and panel structure from one source. Manufacturer shall have demonstrated knowledge in applications of exterior skylight systems over the last five (5) years.

B. Manufacturer's and Erector's Qualifications

12. Quality control inspections and testing conducted at least once each year, shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with "Acceptable Criteria for Sandwich Panels" as regulated by the ICBO-BS or equivalent.
3. Materials and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten (10) consecutive years and which can show evidence of these materials being satisfactorily used on at least six (6) projects of similar size, scope and type within such a period. At least three (3) of the projects shall have been in successful use for ten (10) years or longer.
4. Erection shall be by an installer which has been in the business of erecting specified materials for at least five (5) consecutive years; and can show evidence of satisfactory completion of projects of similar size, scope and type.

C. Performance Requirements: The manufacturer shall be responsible for the configuration and fabrication of the complete skylight panel system.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Protect all materials to comply with manufacturer's directions and as needed to prevent damage to glazing materials and skylight finishes from condensation, temperature changes, direct exposure to sun, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with glazing when ambient substrate temperature conditions are outside the limits permitted by manufacturer.

B. Field Measurements: Check layout by accurate field measurements before fabrication. Show recorded measurements on shop drawings. Complete fabrication schedule with construction progress to avoid delay of the work.

1. Where necessary proceed with fabrication without field measurements and coordinate fabrication tolerances to ensure proper fit.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering exterior translucent covers which may be incorporated in the work include the following:

1. Kalwall Corporation
2. Major Industries

2.2 TRANSLUCENT FACING

A. Translucent faces shall be manufactured from glass fiber reinforced thermostat resins by insulated panel unit

system fabricator specially for architectural use. Thermoplastic faces are not acceptable.

B. Weatherability:

1. The full thickness of the exterior face shall not change color more than 3.0 Hunter or CIE Units (DELTA E by ASTM D-2244) after five (5) years outdoor South Florida weathering at 7 degrees facing south, determined by the average of at least three (3) white samples without a protective film or coating to ensure maximum long term color stability.

2. The exterior face shall have a permanent glass erosion barrier to provide maximum long term resistance to reinforcing fiber exposure and shall be warranted against same for 25 years. (Note: For white, crystal, and Kal-Tint). Plastic film overlays are not acceptable.

C. Appearance:

1. The faces shall be uniform in color to prevent splotchy appearance. Faces shall be completely free of ridges and wrinkles which prevent proper surface contact in bonding to the aluminum grid core. Clusters of air bubbles/pinholes which collect moisture and dirt are not acceptable.

2. Exterior face sheets shall be (smooth) .045" thick and crystal in color. Interior face sheets shall be .045" thick and crystal in color. Faces shall not vary more than +/-10% in thickness.

D. Strength: The exterior face sheet shall be uniform in strength and repel an impact equal to (60) ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 6.37 lb. free-falling ball, and be resistant to penetration by pencil point or other small, sharp objects.

2.3 (NON-COMBUSTIBLE) GRID CORE

A. Thermally broken grid core to meet values listed in 2.5A.

2.4 ADHESIVE

A. The laminate adhesive shall be heat and pressure type engineered for structural sandwich panel use. Adhesive shall pass testing requirements specified by the International conference of Building Officials "Acceptance Criteria for Sandwich Panel Adhesive". Minimum strength shall be:

1. 750 PSI tensile strength by ASTM C-297 after two (2) exposures to six (6) cycles each of the aging conditions prescribed by ASTM D-1037.

2. Shear strength average of five (5) exposure by ASTM D-1002:

a. 50% Relative Humidity at 73 degrees F: 540 PSI
b. Accelerated Aging by ASTM D-1183: 700 PSI
c. 182 degrees F: 60 PSI
d. Full Cycle Soak: 715 PSI
e. 500 Hour Oxygen Bomb: 1400 PSI

2.5 PANEL CONSTRUCTION

A. Panels shall have a thickness of 2-3/4" with a "U" factor of .023 thermally broken, light transmission of 30%, and shading coefficient of .33.

B. Translucent panels shall be a true sandwich panel of flat fiberglass sheets bonded to a grid core of mechanically

interlocking thermally broken I-beams and shall be laminated under a controlled process of heat and pressure.

C. Translucent panel units shall be pre-assembled and sealed at the factory. Panel units should be shipped to the job site in rugged shipping units and shall be ready for erection as units (except for removable components) by Contractor. Field assembly of major components will not be allowed.

D. Grid pattern shall be 24" x 12" nominal and be symmetrical about the horizontal center line of each panel.

E. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge. In order to ensure bonding strength, white spots at intersections of muntins and mullions shall not exceed 4 for each 40 square feet of panel, nor shall they be more than 3/64" in width.

2.6 BATTENS AND PERIMETER CLOSURE SYSTEM

A. Extruded 6063-T6 and 6063-T5 aluminum screw clamp-tite screw type closure system.

B. All battens and perimeter closures to be supplied with 300 series stainless steel screws (excluding final fasteners to the building).

C. All exposed aluminum to be architectural corrosion resistant finish class 1 clear anodized finish complying with AAMA 606.1 or AAMA 608.1.

2.7 FLEXIBLE SEALING TAPE

A. Sealing tape shall be manufacturer's standard pre-applied to closure system at the factory under controlled conditions.

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Comply with manufacturers instructions to prepare substrate to receive skylight system.

3.2 INSTALLATION

A. The skylight shall be completely erected and glazed by the manufacturer authorized installer.

B. All aluminum that comes in contact with dissimilar metal shall receive a protective coating or isolator to prevent electrolytic action.

C. Coordinate with other work by furnishing shop drawings, inserts, and similar items at the appropriate times for proper sequence of construction without delays. Installer must verify dimensions of the supporting structure and other elements which proceed the skylight work before fabrication of the required components, if openings are not ready for measuring it is the responsibility of the General Contractor to hold architectural, structural, and shop drawings dimensions and verify same in writing to skylight contractor to avoid delay in fabrication and installation of panels.

3.3 CLEAN UP

A. Glazing panels shall be cleaned as they are installed and left in scratch-free condition inside and out with all laboring removed.

3.4 FINAL CLEANING AND PROTECTION

A. Subsequent to installation of skylights, clean glazing, framing members, and accessories. No abrasive material shall be used in cleaning of panel surfaces.

END OF SECTION 084510