SECTION 08 8836

LAMINATED

LED MEDIA GLASS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

B. Architectural, Structural, Electrical, Mechanical and other applicable documents are considered a part of the documents insofar as they apply as if referred to in full. Contractor must review the entire set of plans and specifications.

1.2 SUMMARY

A. Section includes LED Media Glass System, panels with LED light sources fabricated integral to laminated Glass with mullions/frames pre-installed and attached to each laminated or insulated glass unit, and accessories.

1. System Design:

a. The Work of this Section shall include all engineering, labor, materials, tools, equipment, appliances and services required to manufacture, deliver, and furnish all items necessary for the proper execution and completion of the Work as shown on the Contract Documents, as specified herein, and/or as required by job conditions.

b. The extent of the LED Media Glass System is shown on the building elevations, sections, floor plans and details of the Contract Documents and includes a fully operational, structurally sound, system.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design LED Media Glass System to be self-supporting, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Rigging shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Design Loads: Weight of Glass panels and anticipated live loads.

1.4 SUBMITTALS

A. Product Data: For each system component.

B. Shop Drawings: Show fabrication and installation details for LED Media Glass,including supporting equipment. Include plans, elevations, sections, details, attachments to other work, and the following:

1. Operating clearances for serviceable components, to include:

    a. SMPS (Power Boxes) (RSP-XXXX)
    b. HDMI Controller (Display data control units provided by AMG)
    c. Data Cabinet (Rack)

2. Requirements for supporting structures and components. Verify capacity of each component to support loads.
3. Locations of equipment components, switches, and controls. Differentiate between manufacturer-installed and field-installed wiring.
4. Wiring Diagrams: For electrical/networking (power/display data) wiring.

C. Coordination / Equipment Layout Drawings:

1. Indicate locations of LED Media Glass System equipment and connections to utilities.
2. Key equipment using designations indicated on other Submittals.
3. Include plans and elevations; clearance requirements for equipment access and maintenance; details of equipment supports; and utility service characteristics.
4. Include details of seismic bracing for equipment.
5. Coordinate all work under various Sections of the Specifications to assure that no interferences occur in the rooms or areas for which such drawings have been required and that necessary clearances are provided.
6. Installation of the equipment of this Section shall not proceed until required drawings have been reviewed and approved.
7. Minimum Drawing Scale: 1/8” = 1’-0”.

D. Delegated-Design Submittal: For LED Media Glass System indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

E. Qualification Data: For qualified Installer and professional engineer.

F. Operation and Maintenance Data: For LED Media Glass System to include in operation and maintenance manuals.

G. Project Testing Schedule: Description of methodology for performance testing prior to completion.

H. Operation and Maintenance Data: For LED Media Glass System to include in maintenance manuals.

1. Provide schematic drawings that depict all wire labeling.

I. Warranty: 5 Years Glass, LEDs, Frame included; 2 years: Main materials that correspond to electrical components: Driver, PCB, Controller, Power Supply, Receiver; 1 year: General consumable cables and outlets, power plugs, etc.

1.5 CONTRACTOR RESPONSIBILITIES

A. General Contractor Responsibilities:

1. Provide a complete and working system integrated into the architecture of the building.
2. Obtain structural and electrical submittals.
3. Provide internal coordination meetings to ensure the relevant subcontractors are coordinated.
4. Provide access doors for all electrical equipment which require access for adjustment or servicing and which are in otherwise inaccessible locations. All access door locations must be approved by the architect prior to installation and be in as inconspicuous location as possible.

   For equipment located in “accessible locations” such as lay-in ceilings: Locate equipment to provide adequate service clearance for normal maintenance without removing architectural, mechanical, electrical or structural elements such as the ceiling support system, electrical fixtures, etc. “Normal maintenance” includes, but is not limited to: replacement of drivers, etc
5. Hire a glazing contractor and electrical contractor for the coordination and installation of LED Media Glass.

B. Glazing Contractor Responsibilities:

1. Final responsibility for properly coordinating and installing the LED Media Glass into the structural backup frame.
2. Coordinating all LED Media Glass glazing and structural backup frame design, fabrication, and installation with other trades.

C. Electrical Contractor Responsibilities:

1. Final responsibility for properly coordinating and installing the electrical work, including the exact location, quantity and sizes of the electrical connection(s).
2. Coordinating all of their conduit and tray routings with other trades.
3. Line and low voltage connections between panels.
4. Provide schematic drawings that depict all wire labeling.

1.6 QUALITY ASSURANCE

A. Unless accepted otherwise by the Engineer, use manufacturers and installers that employ a Quality Management System complying with the program described in ISO 9001-2000, or similar system.

B. Installer Qualifications: LED Media Glass will be coordinating with General Contractor for Glazing and Electrical Contractor’s Qualification.

C. Electrical Components, Devices, and Accessories: Listed and labeled as listed in UL Class II, and marked for intended location and application or equivalent Standard (ETL, CE, NFPA70).

D. Pre-installation Conference: Conduct conference at Project site.

1.7 MAINTENANCE SERVICE AGREEMENT

A. Maintenance Service: Maintenance and repair that become available within XX years from date of Substantial Completion by the AV system integrator, or supervised onsite facility workers, or a locally contracted service provider or LED Media Glass.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings and construction contiguous with LED Media Glass System by field measurements before fabrication and indicate measurements on Shop Drawings.

1.9 WARRANTY

A. Limited Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of LED Media Glass System that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, faulty operation of LED equipment.
2. Warranty Period: Five (5), Two (2) years, and One (1) year from date of Initial Acceptance of Installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers / USA Importer / Distributor:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product and manufacturer listed as (Basis-of-Design) or comparable product by listed manufacturer:

a. GLAAM America (dba G-Glass America), Co. Ltd., North American division of GLAAM (G-Glass), S. Korea – with final fabrication and control unit assembly in the USA Compton CA west coast and AMG Sykesville MD on the east coast

b. AMG - Architectural Media Glass / USA North American Importer and Distributor for Glaam America USA.

Contact: AMG 5410-B Klee Mill Rd. Sykesville, MD 21784 Info@architecturalmediaglass.com, 443-430-2984 or www.ledmediaglass.com

2.2 LED Media Glass System

A. Laminated LED Glass (two plies of glass with an interlayer that is embedded with LEDs) or IGU LED Glass panels with mullions/frames pre-installed and attached to each laminated or insulated glass unit. Inside of the mullions is where all electrical/networking (power/display data)components are stored and hided.

1. Product: LED Media Glass System; or equal.

   a. Double-Skin, Attach, and Curtain wall Installation Methods.
   b. Material: ASTM C1172 laminated LED Glass (ESR-4136-G-Glass: the components are two plies of glass with an interlayer that is embedded with LEDs) or IGU glass panels; ANSI H35.1 Aluminum/Thermal Breaks (AT) mullions/frames pre-installed and attached to each laminated or insulated glass unit. Inside of the mullions is where all electrical/networking (power/display data) components are stored and hided.
   c. Open Area: TBD (%)
   d. Nominal Thickness of laminated G-Glass: 10.5mm
   e. Maximum Glass Panel Width and Height: 1,500mm x 3,000mm
   f. Vertical LED Pitch: 40mm
   g. Horizontal LED Pitch: 40mm
   h. NITS: TBD

B. Fabricated LED Media Glass:

1. Product: LED Media Glass System; or equal.

   a. LEDs: LEDs installed in laminated glass panels-in square profiles with a waterproof resin interlayer.

2. Properties:

Resolution: V40mm x H40mm

Description	**Value**	**Units**
Display Size:	1,000 x 1,000 x 10.5	mm
Display Size (Vertical):	1,000	mm
Display Size (Horizontal):	1,000	mm
Display Height Above Grade:	TBD	Feet
Pixel Configuration:	1-red, 1-green, 1-blue	RGB
Pixel Pitch (Vertical):	41.65	mm
Pixel Pitch (Horizontal):	41.91	mm
Resolution (Vertical):	24	Vertical Pix
Resolution (Horizontal):	24	Horizontal Pix
Color Processing:	12	Bit
LED Refresh Rate:	> 610	Hz
LEDs Life Time	> 100,000	Hours
Pixel per Square Meter:	576	Pix/sq. m
Total Pixels:	TBD	Total Pixels
Brightness:	2,700	Nits
Max. Viewing Angle (Horizontal):	140	Degrees
Max. Viewing Angle (Vertical):	140	Degrees
Blended Viewing Distance:	40	m

SMPS Input Voltage:	90 to 264	Vac
G-Glass Input Voltage:	45/5.2	Vdc/Adc
Power Consumption (with SMPS):	220	Watt/sq. m
Total Max. Power Requirement:	TBD	W
Protection Rate:	65	IP
Thermal Limitations (Storing)	-40 to 80	ºC
Thermal Limitations (Operating)	-30 to 60	ºC
Av. Weight per Unit Area:	23	kg/sq. m
Weight of Elements:	TBD	kg
Certifications/Regulations	UL/C-UL, FCC class A, ICC-ES, SGCC, IGCC, NFRC, IGDB, RoHS, EN (EU), CE (EMC), BS (HK)	

C. Assembly: LED Glass panel comes with mullions/frames pre-installed and attached to each laminated or insulated glass unit. Inside of the mullions is where we store and hide all electrical/networking (power/display data) components. Also, this is where most maintenance and repair occurs by replacing malfunctioning electrical components through access from behind each panel. Simply, pop open the mullion cover and replace the electrical components. After installation, these profile groups are connected to control units integrated into the building's structure and networked with a central server inside the building, which supplies the profiles with power and display data.

D. SMPS (Power Box): Box with DC power distribution to LED Media Glass, with input from AC power source located within 150 feet of display.

E. HDMI Controller (LED Media Glass System control units provided by AMG): Data distribution to distribution to LED Media Glass, with HDMI input from computer source located within 150 feet of display.

F. Data Cabinet (Rack): Middle Atlantic or comparable Rack mount. Secured to floor or wall with mechanical anchor system.

G. Computer: Windows based PC with Digital Input Video Scaler (if needed)

H. Software: Media Content Controller with scheduling service. Capabilities to display standard format image and video. Included but not limited to JPG, GIF, MOV, AVI, MPG formats. Software to support standard market Video Codecs. Most **Content Management System** (**CMS**) software (window-based) can control LED Media Glass System, as long as the software can run on the operating computer. If a client hires a content management firm, who uses their own software, or already uses a content management software, it is possible to tie into LED Media Glass System

2.3 ATTACHMENT METHODS

A. General:
1. Attachment methods for LED Media Glass System shall be compatible with application, panel size, structural characteristic, scale, and your design intent.
2. Design includes LED Media Glass System and all hardware as well as engineering calculations and shop drawings.
3. Methods for attaching LED Media Glass System:

a. Double Skin: This method in attaching a backup structure to the exterior of an existing facade, then insert LED Glass panels into the backup structure. This backup structure, in addition to the forces of impact, snow, ice and wind, must be considered when sizing the hardware and substructure.

b. Attach: This method in retrofitting LED Glass panels to attach from behind existing glass.

c. Curtain wall: This method in utilizing G-Glass panels as curtainwall system built from the ground up or replace existing curtain wall panels with matching specified LED Glass panels.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for supporting members, blocking, installation tolerances, clearances, and other conditions affecting performance of stage-curtain work. Examine inserts, clips, blocking, or other supports required to be installed by others to support tracks and battens.
B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install LED Media Glass System according to System manufacturer's and System fabricator's written instructions.

3.3 WIRING

A. Electrical (Power) Wiring:

1. Install wiring as specified in Division 16 Sections for hardwired connections. Install wiring in raceways except cable and plug connections.
2. Install electrical wiring with a separate neutral for each output circuit from main dimmer and for each house and stage lighting circuit.

B. Network (Display Data) Wiring, Remote-Control and Power-Limited Circuits:

1. Comply with requirements specified in Division 16 Sections for installation of wiring. Install wiring in raceways except cable and plug connections.
2. Remote-control circuits associated with emergency lighting control shall be installed complying with Class 1 Circuit standards in NFPA 70.

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes and in terminal cabinets and equipment enclosures.

E. Support components and accessories as specified in Division 16 Sections.

3.4 **FIELD QUALITY CONTROL**

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installation, including connections.

B. Perform Tests and Inspections:

1. Schedule visual and mechanical inspections and electrical tests with at least seven days' advance notice.
2. Visual and Mechanical Tests and inspections:

   a. Inspect each fixture, outlet, module, control, and device for defects, finish failure, corrosion, physical damage, labeling by an NRTL, and nameplate.
   b. Exercise and perform operational tests on mechanical parts and operable devices according to manufacturer's written instructions.
   c. Check tightness of electrical connections with torque wrench.
   d. Verify proper protective device settings, fuse types, and ratings.
   e. Record results of tests and inspections.

3. Electrical Tests: Perform tests according to manufacturer's written Instructions.

   a. Continuity tests of circuits.
   b. Operational Tests: Comply with manufacturer's printed Project testing schedule. Record observations of LED Media Glass System performance.

4. Test Labeling: After satisfactory completion of tests and inspections, apply a label to tested components indicating test results, date, and responsible organization and individual.

C. LED Media Glass will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

Prepare a schedule of connections by number; indicate circuits, connected components, and control-channel assignments. Prepare written reports of tests and observations. Report defective materials, workmanship, and unsatisfactory test results. Include records of repairs and adjustments made.

3.5 **DEMONSTRATION**

A. Engage a factory-authorized service representative to train Employer's maintenance personnel to adjust, operate, and maintain LED Media Glass System.

B. Most **Content Management System** (**CMS**) software (window-based) can control LED Media Glass System, as long as the software can run on the operating computer. If a client hires a content management firm, who uses their own software, or already uses a content management software, it is possible to tie into LED Media Glass System controller.

END OF SECTION 08 8836

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