ENGINEERING SPECIFICATION

SOUNDSCAPE™
FIBERGLASS SOUND WALL SYSTEM

SECTION 32 35 16

SOUND BARRIERS

SOUNDSCAPE™ FIBERGLASS SOUND WALL SYSTEM

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This specification is for an exterior, panelized fiberglass reinforced plastic sound wall system in either a reflective or absorptive configuration.

1.2 REFERENCES

A. The publications listed below (latest revision applicable) form a part of this specification to the extent referenced herein. The publications are referred to within the text by the designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) Test Methods and Standards:

ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

ASTM C423 – Standard Test Method of Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

ASTM E413 - Classification for Rating Sound Insulation

ASTM D638 - Tensile Properties of Plastics

ASTM D790 - Flexural Properties of Unreinforced and Reinforced Plastics

ASTM D2344 - Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short Beam Method

ASTM D696 - Coefficient of Linear Thermal Expansion for Plastics

ASTM E84 - Surface Burning Characteristics of Building Materials

ASTM D695 – Compressive Properties of Rigid Plastics

ASTM D2583 – Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor

ASTM D256 – Determining the Izod Pendulum Impact Resistance of Plastics

ASTM D792 – Density and Specific Gravity of Plastics by Displacement

ASTM D570 – Water Absorption of Plastics

ASTM B117 – Operating Salt Spray (Fog) Apparatus

ASTM D1735 – Water Fog Testing of Organic Coatings

ASTM D4213 – Measuring Degree of Chalk Rating of Exterior Paint Films

INTERNATIONAL CODE COUNCIL, INC.
The International Building Code, 2024

1.3 SUBMITTALS

A. When required by the contract, the CONTRACTOR shall furnish shop drawings of the sound wall system clearly showing plans and elevations of the sound wall system including installation details.

B. The CONTRACTOR shall submit the manufacturer's published product data including product data sheets, installation instructions, and typical assembly details.

C. The CONTRACTOR may be requested to submit sample pieces of each item specified herein for acceptance by the ENGINEER as to quality and color. Sample pieces shall be manufactured by the method to be used in the WORK.

1.4 QUALITY ASSURANCE

A. All items to be provided under this Section shall be furnished only by manufacturers having a minimum of ten (10) years' experience in the design and manufacture of similar products and systems. Additionally, if requested, a record of at least five (5) previous, separate, similar successful installations in the last five (5) years shall be provided.

B. Manufacturer shall offer a 3-year limited warranty on all FRP products against defects in materials and workmanship.

C. Manufacturer shall be certified to the ISO 9001-2015 standard.

1.5 PRODUCT DELIVERY AND STORAGE

A. Delivery of Materials: Manufactured materials shall be delivered in original, unbroken pallets, packages, containers, or bundles bearing the label of the manufacturer.

B. Storage of Products: Store products in the manufacturer's original packaging until needed. All materials shall be carefully handled to prevent them from abrasion, cracking, chipping, twisting, other deformations, and other types of damage.

PART 2 - PRODUCTS

2.1 MANUFACTURER:

A. Sound Wall system to be Soundscape™ as manufactured by

Fibergrate Composite Structures Inc.
1234 Johnson Rd, Suite 366
Allen, Texas 75013 USA
(800) 527-4043 Phone (972) 250-1530 Fax

Website: www.fibergrate.com
E-mail: info@fibergrate.com

2.3 SYSTEM REQUIREMENTS – REFLECTIVE SOUND WALL

A. The reflective Soundscape sound wall panel, as tested by an independent laboratory, is to have a minimum STC (Sound Transmission Coefficient) of 31 when tested per ASTM E90 and classified per ASTM E413.

B. Structural Performance – The reflective Soundscape sound wall panel shall be capable of resisting a 35 psf (1.67 kPa) uniformly distributed load with a minimum safety factor of 2.5 and a span/deflection (L/D) ratio of 120 or greater when installed on a span of 12’-0” (3.65 m).

2.4 SYSTEM REQUIREMENTS – ABSORPTIVE SOUND WALL

A. The absorptive Soundscape sound wall panel, as tested by an independent laboratory, is to have a minimum STC (Sound Transmission Coefficient) of 30 when tested per ASTM E90 and classified per ASTM E413.

B. The absorptive Soundscape sound wall panel, as tested by an independent laboratory, is to have a minimum NRC (Noise Reduction Coefficient) of 1.0 when tested to ASTM C423

C. Structural Performance – The absorptive Soundscape sound wall panel shall be capable of resisting a 35 psf (1.67 kPa) uniformly distributed load with a minimum safety factor of 2.5 and a span/deflection (L/D) ratio of 120 or greater when installed on a span of 11’-6”” (3.51 m).

2.5 MATERIALS

A. The Soundscape sound wall panels shall be manufactured by the pultrusion process. The wound wall shall be composed of fiberglass reinforcement and resin in qualities, quantities, properties, arrangements and dimensions as necessary to meet the design requirements and dimensions specified in the Contract Documents.

B. Fiberglass reinforcement shall be a combination of continuous roving, continuous strand mat, and surfacing veil in sufficient quantities as needed by the application and/or physical properties required. The minimum glass reinforcement content by weight is to be 60%.

C. Resin shall be ISOFR, fire retardant polyester with chemical formulation necessary to provide corrosion resistance, strength and other physical properties as required.

D. All finished surfaces of FRP items and fabrications shall be smooth, resin-rich, free of voids and without dry spots, cracks, crazes or unreinforced areas. All glass fibers shall be well covered with resin to protect against their exposure due to wear or weathering.

E. All pultruded structural shapes shall be further protected from ultraviolet (UV) attack with 1) integral UV inhibitors in the resin and 2) a synthetic surfacing veil to help produce a rich resin surface

F. The Soundscape sound wall panels shall be integrally pigmented dark grey, with the minimum physical properties listed below:

Property	ASTM Method	Value	Units
Short Beam Shear (Transverse)	D2344	4,500 (31)	psi (MPa)
Shear Modulus (Transverse)	N/A	4.5×10^5 (3.1)	psi (GPa)
Tensile Strength (LW)	D638	45 (310)	ksi (MPa)
Flexural Strength (LW)	D790	44 (303)	ksi (MPa)
Compressive Strength	D695	34 (234)	ksi (MPa)
Barcol Hardness	D2583	58	--
Izod Impact Test (LW)	D256	30 (1.6)	ft-lbs/in (J/mm)
Density	D792	0.062 – 0.070 (1.71 – 1.93)	lb/in^3 (g/cm^3)
Water Absorption (24 hours)	D570	0.03	%
Coefficient of Thermal Expansion (LW)	D696	8.0×10^{-6} (1.4×10^{-6})	in/in/°F (cm/cm/°C)
Flame Spread	E-84	<25	--

2.6 SOUNDWALL FINISH

A. Soundwall planks shall be coated with a graffiti resistant high build (3 to 5 mils DFT) Aliphatic Polyurethane with excellent resistance to corrosion and weathering. Finish shall exhibit the following minimum properties:

Property	Value
Graffiti Resistance	Graffiti markings (acrylic, epoxy, alkyd paints as well as shoe polish, sharpie marker and crayon) easily removed by appropriate solvent
ASTM B117 Salt Fog	No blistering (4000 hrs)
ASTM D1735 Water Fog	No blistering (8600 hours)
ASTM D4213 Scrub Resistance	0.0027 microliter erosion rate after 100 cycles with medium abrasive scrub

B. Finish color(s) shall be chosen from manufacturer's array of standard colors

PART 3 - EXECUTION

3.1 INSPECTION

A. Shop inspection is authorized as required by the Owner and shall be at Owner's expense. The fabricator shall give ample notice to Contractor prior to the beginning of any fabrication work so that inspection may be provided. The planks shall be free from visual defects such as foreign inclusions, delamination, blisters, resin burns, air bubbles and pits. The surface shall have a smooth finish.

3.2 INSTALLATION

A. Contractor shall install soundwall planks in accordance with manufacturer’s assembly drawings.

B. Field cut and drill fiberglass reinforced plastic products with carbide or diamond tipped bits and blades. Seal cut or drilled surfaces in accordance with manufacturer's instructions. Follow manufacturer's instructions when cutting or drilling fiberglass products or using resin products; provide adequate ventilation

END OF SECTION