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For more information, contact Crane Composites, Inc., 23525 W Eames, Channahon, IL 60410; Phone: (815) 467-8600; Fax: (815) 467-8666; Website: [www.cranefrp.com](http://www.cranefrp.com); Email: sales@cranecomposites.com.

For information about MasterSpec, contact Deltek at (800) 424-5080 or visit masterspec[.com](http://avitru.com)[http:///](NULL).

SECTION 066400 - PLASTIC PANELING

**TIPS:**

To view non-printing **Editor's Notes** that provide guidance for editing, click on MasterWorks/Single‑File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on MasterWorks/Supporting Information.

**Access Product MasterSpec Sections:**

[<Double click here to view the list of manufacturer Sections available at ProductMasterSpec.com.>](https://www.productmasterspec.com/default.aspx?orderby=manufacturer&view=)

Revise this Section by deleting and inserting text to meet Project-specific requirements.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Plastic sheet [**wall**] [**and**] [**ceiling**] paneling.

Factory-laminated plastic sheet paneling includes fiberglass reinforced plastic (FRP) panels.

Factory-laminated [**wall**] [**and**] [**ceiling**] plastic sheet paneling.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Retain first subparagraph below if plastic paneling is installed directly on wood furring.

Section 061000 "Rough Carpentry" for wood furring for installing plastic paneling.

Section 064219 "Plastic-Laminate-Faced Wood Paneling."

Section 102600 "Wall and Door Protection" for corner guards installed over plastic paneling.

* + - 1. ACTION SUBMITTALS
				1. Product Data: For each type of product.
				2. Sustainable Design Submittals:

First "Product Certificates" Subparagraph below applies to LEED 2009, MRc 5, "Regional Materials."

Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.

First "Product Certificates" Subparagraph below applies to IgCC, which requires that a minimum of 55 percent of building materials or products be extracted, harvested, manufactured, or recovered within 500 miles (800 km) of Project. See IgCC-2012, 505.2.5.

Product Certificates: For indigenous materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project, means of transportation, and cost for each indigenous material.

"Product Certificates" Subparagraph below applies to ASHRAE 189.1, which requires that a minimum of 15 percent of building materials or products be extracted, harvested, manufactured, or recovered within 500 miles (800 km) of Project. See ASHRAE 189.1-2014, 9.4.1.2.

Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project, means of transportation, and cost for each regional material.

"Product Data" Subparagraph below applies to LEED 2009 NC, CI, and CS; LEED v4; IgCC; ASHRAE 189.1; and Green Globes. Coordinate with requirements for adhesives.

Product Data: For adhesives, indicating VOC content.

"Laboratory Test Reports" Subparagraph below applies to LEED 2009 for Schools, LEED v4, IgCC, ASHRAE 189.1, and Green Globes. Coordinate with requirements for adhesives.

Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.

"Product Data" Subparagraph below applies to LEED 2009 NC, CI, and CS; LEED v4; IgCC; ASHRAE 189.1; and Green Globes. Coordinate with requirements for sealants.

Product Data: For sealants, indicating VOC content.

First "Laboratory Test Reports" Subparagraph below applies to LEED 2009 for Schools, LEED v4, IgCC, ASHRAE 189.1, and Green Globes. Coordinate with requirements for sealants.

Laboratory Test Reports: For sealants, indicating compliance with requirements for low-emitting materials.

First "Laboratory Test Reports" Subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Laboratory Test Reports: For wall materials, indicating compliance with requirements for low-emitting materials.

First "Laboratory Test Reports" Subparagraph below applies to LEED v4.

Laboratory Test Reports: For wall materials, indicating compliance with requirements for low-emitting materials.

First "Laboratory Test Reports" Subparagraph below applies to IgCC.

Laboratory Test Reports: For wall materials, indicating compliance with requirements for low-emitting materials.

"Laboratory Test Reports" Subparagraph below applies to ASHRAE 189.1.

Laboratory Test Reports: For wall materials, indicating compliance with requirements for low-emitting materials.

* + - * 1. Samples: For plastic paneling[**and trim accessories**], in manufacturer's standard sizes.
			1. QUALITY ASSURANCE
				1. Installer Qualifications: Experience completing a minimum five projects of similar size, type, and complexity. Workers employed on this Project competent in techniques required by manufacturer for installation indicated.

"Testing Agency" Paragraph below applies to flame-spread testing.

* + - * 1. Testing Agency: Acceptable to authorities having jurisdiction and FM Approvals.
				2. Surface-Burning Characteristics: Determined by testing identical products in accordance with ASTM E84 by a testing agency acceptable to authorities having jurisdiction.

Include first paragraph below when FM 4880 approval is required.

* + - * 1. FM 4880 approved.

Include first paragraph below when USDA approval is required.

* + - * 1. Meets USDA/FSIS requirements.

Refer to the following links for GREENGUARD GOLD certificates:

[DESIGNS](https://spot.ul.com/main-app/products/detail/5ad1e97455b0e82d946a1fd0?page_type=Products%20Catalog)

VARIETEX: [Sandstone](https://spot.ul.com/main-app/products/detail/5ad1e97455b0e82d946a1fde?page_type=Products%20Catalog); [Linen](https://spot.ul.com/main-app/products/detail/5ad1e97455b0e82d946a1fd1?page_type=Products%20Catalog); [Tile-look](https://spot.ul.com/main-app/products/detail/5ad1e97455b0e82d946a1fd2?page_type=Products%20Catalog); [Beaded](https://spot.ul.com/main-app/products/detail/5ad1e97455b0e82d946a1fcf?page_type=Products%20Catalog).

GLASBORD: [Standard](https://spot.ul.com/main-app/products/detail/5ad1e93255b0e82d946a1e66?page_type=Products%20Catalog); [Factory Mutual](https://spot.ul.com/main-app/products/detail/5ad1e93255b0e82d946a1e67?page_type=Products%20Catalog).

Include first paragraph below when UL 2818 GREENGUARD GOLD certification is required.

* + - * 1. UL 2818 GREENGUARD GOLD certified.
				2. Hazard Analysis Critical Control Point (HACCP) Certified: GLASBORD panels are suitable for use in food and beverage facilities that operate in accordance with a HACCP-based Food Safety Program.
			1. PROJECT CONDITIONS
				1. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
			2. WARRANTY

When warranties are required, verify with Owner's counsel that warranties stated in this article are not less than remedies available to Owner under prevailing local laws.

* + - * 1. Special Warranty: Manufacturer agrees to repair or replace defective panels and components that fail in materials or workmanship under normal conditions of use within specified warranty period.

Failures include, but are not limited to, the following:

Exposed fibers.

Rust.

Rot.

Corrosion.

Structural surface cracks.

Painting or refinishing required with normal pigmentation and UV degradation excepted.

See <https://www.cranecomposites.com/pdf/7580.pdf> for product warranties.

Warranty Period - Glass-Fiber-Reinforced Plastic Paneling: <**Insert number**> years from date of Substantial Completion.

Warranty Period - Factory-Laminated Glass-Fiber-Reinforced Plastic Paneling: <**Insert number**> years from date of Substantial Completion.

1. PRODUCTS

Manufacturers and products listed in this Section are neither recommended nor endorsed by the AIA or Deltek. Before selecting manufacturers and products, verify availability, suitability for intended applications, and compliance with minimum performance requirements. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

Product options commonly available from manufacturers are included in square brackets throughout the Section Text. Not every manufacturer listed can provide every option offered; verify availability with manufacturers. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

* + - 1. MANUFACTURERS
				1. Source Limitations: Obtain plastic paneling and trim accessories from single manufacturer.
			2. PLASTIC SHEET PANELING
				1. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.[**Panels will be USDA accepted for incidental food contact.**]

"DESIGNS Series" custom pattern wall panels can be supplied as Class A or Class C; 0.075 inch thickness.

Review "DESIGNS" panels at <https://www.cranecomposites.com/BP/DESIGNS.html>.

"GLASBORD Series" panels can be supplied as Class A or Class C; embossed finish, 0.09 inch thickness; smooth finish, 0.075 inch thickness; various scratch resistances and different impact ratings.

Review "GLASBORD" panels at [https://www.cranecomposites.com/bp/GLASBORD.html](https://www.cranecomposites.com/bp/glasbord.html).

"VARIETEX Series" panels can be supplied as Class A or Class C; sandstone, linen, or tile-look finish, 0.09 inch thickness; beaded finishes, 0.075 inch thickness.

Review "VARIETEX" panels at <https://www.cranecomposites.com/bp/varietex.html>.

Crane Composites, Inc. also manufactures "Kemlite FRP," "Kemlite Sanigrid II," "Sequentia," and "Engineered Solutions" products.

Retain "Basis-of-Design Product" Subparagraph and list of manufacturers below to require a specific product or a comparable product from manufacturers listed.

Basis-of-Design Product: Subject to compliance with requirements, provide Crane Composites, Inc.; [**DESIGNS**] [**GLASBORD**] [**VARIETEX**] Series or comparable product by one of the following:

Glasteel.

Marlite.

Newcourt, Inc.

Nudo Products, Inc.

Parkland Plastics, Inc.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Products with flame-spread index of 25 or less are readily available and are usually designated Class A. Most other products have flame-spread index of 200 or less and are designated Class C.

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: [**25**] [**200**] <**Insert value**> or less.

Smoke-Developed Index: 450 or less.

Verify availability with manufacturers before retaining a thickness in "Nominal Thickness" Subparagraph below. 3/32 inch is slightly greater than 0.09 inch (2.3 mm).

Nominal Thickness: Not less than [**0.037 inch (0.9 mm)**] [**0.05 inch (1.3 mm)**] [**0.06 inch (1.5 mm)**] [**0.075 inch (1.9 mm)**] [**0.09 inch (2.3 mm)**] [**0.10 inch (2.5 mm)**] [**0.12 inch (3.0 mm)**].

Retain "Wall Panel Size Subparagraph below for products required for wall applications and edit to suit Project requirements.

Wall Panel Size: [**4 by 8 ft. (1.2 by 2.4 m)**] [**4 by 9 ft. (1.2 by 2.7 m)**] [**4 by 10 ft. (1.2 by 3 m)**] [**4 by 12 ft. (1.2 by 3.7 m)**] [**As indicated on Drawings**].

Retain "Ceiling Panel Size," "Ceiling Components," and "Ceiling Grid and Clip Color" subparagraphs below for GLASBORD FXE, FX, CGI, and PSIF products required for ceiling applications and edit to suit Project requirements.

Ceiling Panel Size: [**23-3/4 by 47-3/4 inches (0.6 by 1.2 m)**] [**23-3/4 by 23-3/4 inches (0.6 by 0.6 m)**] [**As indicated on Drawings**].

Ceiling Components:

Wall Angles: 12 ft. (4 m) length fastened directly to the wall with Kemlite nylon drive rivets.

Hanger Wire: Provided by others, manufacturer's standard; secured with stainless steel anchors.

Main Runners: 12'-1/2" (3.7 m), notched on 24-1/4" (0.6 m) centers.

Cross Tee: 48-1/2", 24-1/4", and 24-1/2" (1.2 m, 0.62 m, and 0.62 m) lengths, prenotched ends.

Connector Clip: Joins main runners.

Holddown Clips: Use clip model C-24 with ceiling panels 9/32 inch (7.1 mm) thick and less; use clip model C-25 with ceiling panels 9/32 to 1/2 inch (7.1 mm to 12.7 mm).

Wall Anchor Model C-20: Secures main runner and cross tees to wall angle.

Ceiling Grid and Clip Color: Manufacturer's standard white.

Retain first "Surface Finish" Paragraph below for selecting surface finishes for DESIGNS Series Fiberglass Reinforced Plastic (FRP) panel types.

Surface Finish: Smooth.

Retain first "Surface Finish" Paragraph below for selecting surface finishes for GLASBORD Series Fiberglass Reinforced Plastic (FRP) panel types.

Surface Finish: [**Embossed pebble texture**] [**Smooth**] [**As selected by Architect from manufacturer's full range**].

Retain "Surface Finish" Paragraph below for selecting surface finishes for VARIETEX Series Fiberglass Reinforced Plastic (FRP) panel types.

Surface Finish: [**Beaded**] [**Gel Coat Smooth**] [**Linen**] [**Sandstone**] [**Smooth Image**] [**As selected by Architect from manufacturer's full range**].

Scratch Resistance, ASTM D2583, Barcol Hardness: [**30**] [**35**] [**40**] [**45**] [**50**] [**55**] [**60**] <**Insert hardness**>.

Impact Strength, ASTM D5420: [**3.3 in-lb (0.18 J)**] [**4.0 in-lb (0.21 J)**] [**5.0 in-lb (0.27 J)**] [**6.0 in-lb (0.32 J)**] [**6.3 in-lb (0.34 J)**] [**11.0 in-lb (0.58 J)**] [**45.0 in-lb (5.1 J)**] <**Insert value**>, showing no visible damage on finish side.

Retain "Color (Pattern)" Paragraph below for selecting color finishes for DESIGNS Series Fiberglass Reinforced Plastic (FRP) panel types. Special colors can be custom matched and manufactured. Custom designs, logos, or images can be transformed into a durable, cleanable, and easy-to-install FRP wall panel. When required, select DESIGNS CUSTOM option below.

Color (Pattern): [**001BRB Baton Rouge Bamboo**] [**018SA Sierra Ash**] [**002CC Carolina Cherry**] [**009MM Maryland Maple**] [**008WW Washington Wood**] [**622SRP Chestnut Cherry**] [**003TT Tennessee Timber**] [**010C Camel Canvas**] [**007C Coastal Canvas**] [**012C Colonial Canvas**] [**009C Cactus Canvas**] [**008C Corn Silk Canvas**] [**011C Chrome Canvas**] [**005TZ True Terrazzo**] [**006MM Maui Marble**] [**004SS Scattered Stone**] [**007SS Sculptured Stone**] [**024S Greystone**] [**023PBS Piri Blue Stripe**] [**025BM Brushed Metal**] [**013CH Caramel Crosshatch**] [**30W Sabine**] [**31W Pike**] [**32W Sequoia**] [**33W Arapaho**] [**34W Payette**] [**35W Ocala**] [**36W Sawtooth**] [**50HC Shelby**] [**51HC Dwight**] [**52HC Davey**] [**53HC Guss**] [**54HC Essex**] [**55 HC Waukon**] [**56HC Conrad**] [**57HC Colby**] [**70RC Ginza**] [**71RC d’Oro**] [**72RC Avenues**] [**73RC Garment]** [**74RC Oxford**] [**75RC Palermo**] [**76RC Gracia**] [**77RC Champs**] [**90CW Burlington**] [**91CW LaSalle**] [**92CW Staten**] [**93CW Skyway**] [**94CW Union**] [**95CW Colfax**] [**96CW Westpark**] [**97CW Sumner**] [**98CW Franklin**] [**99CW Mover**] [**01PW Signals**] [**02PW Reflect**] [**03PW Line**] [**04PW Cell**] [**05PW Stream**] [**06PW Beam**] [**07PW Social**] [**08PW Link**] [**09PW Currents**] [**10PW Wave**] [**11PW Connect**] [**12PW Footprint**] [**DESIGNS CUSTOM**] [**As selected by Architect from manufacturer's full range**].

Retain first "Color" Paragraph below for selecting color finishes for GLASBORD Series Fiberglass Reinforced Plastic (FRP) panel types. Consult Crane Composites, Inc. for availability of custom colors. "GLASBORD CGI" is only available in 85 White. 1201 Black is only available with "GLASBORD Class C FTSTF."

Color: [**48 Pearl Gray**] [**66 Silver**] [**70 Soft Beige**] [**83 Colonial White**] [**84 Ivory**] [**85 White**] [**1201 Black**] [**As selected by Architect from manufacturer’s full range**].

Retain "Color" Paragraph below for selecting color finishes for VARIETEX Series Fiberglass Reinforced Plastic (FRP) panel types. Special colors can be custom matched and manufactured provided there is a minimum square footage order of 12,000 sq. ft. (1,116 sq. m). Allow four to six weeks lead time. BEADED (FTBB) is available only in 1130 Cotton White. GEL-COAT (MXGCJ) and GEL-COAT TILE LOOK (SMXGJ) are available only in 488 White Wash and 866 Parchment.

Color: [**1130 Cotton White**] [**1294 Sugarloaf Sand**] [**1277 Clear Water**] [**1281 Shelter Cove Gray**] [**636 Morning Mist Gray**] [**1276 Graphite Vik**] [**1282 South Beach Ivory**] [**866 Almond Breeze**] [**8044 Pepper Dust**] [**8043 Sand Dune**] [**809 Fawn Brown**] [**1295 Mauna Red**] [**VARIETEX Custom**] [**As selected by Architect from manufacturer's full range**].

* + - * 1. Unreinforced Polypropylene Paneling: Solid polypropylene panels made from no less than 80 percent recycled material.[**Panels will be USDA accepted for incidental food contact.**]

Retain "Manufacturers" Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by the following:

Parkland Plastics, Inc.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 200 or less.

Smoke-Developed Index: 450 or less.

Nominal Thickness: Not less than [**0.06 inch (1.5 mm)**] [**0.09 inch (2.3 mm)**].

Surface Finish: [**Smooth**] [**Molded pebble texture**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

Color: [**White**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

* + - * 1. Unreinforced PVC Paneling: Solid polyvinyl chloride panels.[**Panels will be USDA accepted for incidental food contact.**]

Retain "Manufacturers" Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by the following:

Acoustic Ceiling Products, LLC.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 or less.

Nominal Thickness: Not less than 0.03 inch (0.75 mm).

Surface Finish: [**Smooth**] [**Molded pebble texture**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

Color: [**White**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

* + - * 1. Biobased Plastic Paneling: Solid paneling made from biobased modified polyactide resin with flame retardant and integral color.

Retain "Manufacturers" Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by the following:

Alpar Architectural Products, LLC.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 or less.

Nominal Thickness: Not less than 0.04 inch (1.0 mm).

Surface Finish: Suede texture.

Color: [**White**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

* + - 1. FACTORY-LAMINATED PLASTIC SHEET PANELING
				1. Factory-Laminated Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319, laminated to [**plywood**] [**oriented strand board**] [**fire-retardant particleboard**] [**gypsum board**] [**high-impact gypsum board**] [**water-resistant gypsum board**].[**Panels will be USDA accepted for incidental food contact.**]

Retain "Basis-of-Design Product" Subparagraph and list of manufacturers below to require a specific product or a comparable product from manufacturers listed.

Basis-of-Design Product: Subject to compliance with requirements, provide Crane Composites, Inc.; GLASBORD Wall Panel (FX Class A, PIF Class C) or comparable product by one of the following:

Arcoplast Inc.

Citadel Architectural Products, Inc.

Glasteel.

Newcourt, Inc.

Nudo Products, Inc.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Products with flame-spread index of 25 or less are readily available and are usually designated Class A. Most other products have flame-spread index of 200 or less and are designated Class C.

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: [**25**] [**200**] <**Insert value**> or less.

Smoke-Developed Index: 450 or less.

Verify availability with manufacturers before retaining a thickness in "Glass-Fiber-Reinforced Plastic Panel Nominal Thickness" Subparagraph below. 3/32 inch is slightly greater than 0.09 inch (2.3 mm).

Glass-Fiber-Reinforced Plastic Panel Nominal Thickness: Not less than 0.075 inch (1.9 mm).

Surface Finish: Smooth.

Color (Pattern): [**001BRB Baton Rouge Bamboo**] [**018SA Sierra Ash**] [**002CC Carolina Cherry**] [**009MM Maryland Maple**] [**008WW Washington Wood**] [**622SRP Chestnut Cherry**] [**003TT Tennessee Timber**] [**010C Camel Canvas**] [**007C Coastal Canvas**] [**012C Colonial Canvas**] [**009C Cactus Canvas**] [**008C Corn Silk Canvas**] [**011C Chrome Canvas**] [**005TZ True Terrazzo**] [**006MM Maui Marble**] [**004SS Scattered Stone**] [**007SS Sculptured Stone**] [**024S Greystone**] [**023PBS Piri Blue Stripe**] [**025BM Brushed Metal**] [**013CH Caramel Crosshatch**] [**30W Sabine**] [**31W Pike**] [**32W Sequoia**] [**33W Arapaho**] [**34W Payette**] [**35W Ocala**] [**36W Sawtooth**] [**50HC Shelby**] [**51HC Dwight**] [**52HC Davey**] [**53HC Guss**] [**54HC Essex**] [**55 HC Waukon**] [**56HC Conrad**] [**57HC Colby**] [**70RC Ginza**] [**71RC d’Oro**] [**72RC Avenues]** [**73RC Garment**] [**74RC Oxford**] [**75RC Palermo**] [**76RC Gracia**] [**77RC Champs**] [**90CW Burlington**] [**91CW LaSalle**] [**92CW Staten**] [**93CW Skyway**] [**94CW Union**] [**95CW Colfax**] [**96CW Westpark**] [**97CW Sumner**] [**98CW Franklin**] [**99CW Mover**] [**01PW Signals**] [**02PW Reflect**] [**03PW Line**] [**04PW Cell**] [**05PW Stream**] [**06PW Beam**] [**07PW Social**] [**08PW Link**] [**09PW Currents**] [**10PW Wave**] [**11PW Connect**] [**12PW Footprint**] [**DESIGNS CUSTOM**] [**As indicated by manufacturer's designations**] [**As selected by Architect from manufacturer's full range**].

Plywood: DOC PS 1, Exterior B-C, [**1/4 inch (6.4 mm)**] [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] [**5/8 inch (15.9 mm)**] [**3/4 inch (19.1 mm)**] thick.

Oriented Strand Board: DOC PS 2, Exposure 1, [**1/4 inch (6.4 mm)**] [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] [**3/4 inch (19.1 mm)**] thick.

Particleboard described in "Fire-Retardant Particleboard" Subparagraph below contains urea formaldehyde.

Fire-Retardant Particleboard: Product complying with ANSI A208.1, Grade M-S, except for modulus of rupture; with flame-spread index of 25 or less in accordance with ASTM E84; and [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] thick.

Gypsum Board: ASTM C1396/C1396M, [**Regular, 1/2 inch (12.7 mm)**] [**Type X, 5/8 inch (15.9 mm)**].

"High-Impact Gypsum Board" Subparagraph below specifies National Gypsum's "High-Impact Brand Wallboard" gypsum board.

High-Impact Gypsum Board: ASTM C1396/C1396M, 5/8 inch (15.9 mm), with Type X core, and [**0.010-inch (0.254-mm)**] [**0.020-inch (0.508-mm)**] [**0.030-inch (0.762-mm)**] [**0.081-inch (2.057-mm)**] plastic film laminated to back side for greater resistance to penetration (impact resistance).

Water-Resistant Gypsum Board: ASTM C1396/C1396M or ASTM C1178/C1178M, 5/8 inch (15.9 mm), Type X, with water-resistant core and surfaces.

* + - * 1. Factory-Laminated PVC Paneling: Solid polyvinyl chloride sheet, laminated to [**plywood**] [**oriented strand board**] [**fire-retardant particleboard**] [**gypsum board**] [**high-impact gypsum board**] [**water-resistant gypsum board**].[**Panels are USDA accepted for incidental food contact.**]

Retain "Manufacturers" Subparagraph and list of manufacturers below to require products from manufacturers listed or a comparable product from other manufacturers.

Manufacturers: Subject to compliance with requirements, provide products by the following:

Newcourt, Inc.

<**Insert manufacturer's name**>.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.6.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 16.5 mcg/cu. m or 13.5 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Wall materials will comply with the requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Surface-Burning Characteristics: As follows when tested by a qualified testing agency in accordance with ASTM E84. Identify products with appropriate markings of applicable testing agency.

Flame-Spread Index: 25 or less.

Smoke-Developed Index: 450 or less.

Nominal Thickness: Not less than 0.015 inch (0.38 mm).

Surface Finish: [**Smooth**] [**Molded pebble texture**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

Color: [**White**] [**As indicated by manufacturer's designations**] [**Match Architect's sample**] [**As selected by Architect from manufacturer's full range**].

Plywood: DOC PS 1, Exterior B-C, [**1/4 inch (6.4 mm)**] [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] [**5/8 inch (15.9 mm)**] [**3/4 inch (19.1 mm)**] thick.

Oriented Strand Board: DOC PS 2, Exposure 1, [**1/4 inch (6.4 mm)**] [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] [**3/4 inch (19.1 mm)**] thick.

Particleboard described in "Fire-Retardant Particleboard" Subparagraph below contains urea formaldehyde.

Fire-Retardant Particleboard: Product complying with ANSI A208.1, Grade M-S, except for modulus of rupture; with flame-spread index of 25 or less in accordance with ASTM E84; and [**3/8 inch (9.5 mm)**] [**1/2 inch (12.7 mm)**] thick.

Gypsum Board: ASTM C1396/C1396M, [**Regular, 1/2 inch (12.7 mm)**] [**Type X, 5/8 inch (15.9 mm)**].

"High-Impact Gypsum Board" Subparagraph below specifies National Gypsum's "High-Impact Brand Wallboard" gypsum board.

High-Impact Gypsum Board: ASTM C1396/C1396M, 5/8 inch (15.9 mm), with Type X core, and [**0.010-inch (0.254-mm)**] [**0.020-inch (0.508-mm)**] [**0.030-inch (0.762-mm)**] [**0.081-inch (2.057-mm)**] plastic film laminated to back side for greater resistance to penetration (impact resistance).

Water-Resistant Gypsum Board: ASTM C1396/C1396M or ASTM C1178/C1178M, 5/8 inch (15.9 mm), Type X, with water-resistant core and surfaces.

* + - 1. ACCESSORIES

Retain third option in "Trim Accessories" Paragraph below if paneling is installed with trim. One-piece trim is available only for plastic sheet paneling and factory-laminated sheet paneling with 3/8-inch- (9.5-mm-) thick backing. Delete "outside corners" option if using corner guards specified in Section 102600 "Wall and Door Protection" instead of using outside corner trim.

* + - * 1. Trim Accessories: Manufacturer's standard [**extruded polypropylene**] [**PVC**] [**one-piece**] [**rubber**] [**two-piece, snap-on**] [**vinyl extrusions**] designed to retain and cover edges of panels. Provide division bars, inside corners,[**outside corners,**] and caps as needed to conceal edges.

Color: [**Match panels**] [**As indicated by manufacturer's product designations**] [**As selected by Architect from manufacturer's full product range**].

* + - * 1. Moldings: [**Polished aluminum**] [**PVC pattern-matched to panel**] [**As indicated by manufacturer's product designations**] [**As selected by Architect from manufacturer's full product range**].
				2. Exposed Fasteners: Nylon drive rivets recommended by panel manufacturer.
				3. Concealed Mounting Splines: Continuous, H-shaped aluminum extrusions designed to fit into grooves routed in edges of factory-laminated panels and to be fastened to substrate.
				4. Adhesive: As recommended by plastic paneling manufacturer.

First subparagraph below applies to LEED 2009 NC, CI, and CS; LEED v4; IgCC; ASHRAE 189.1; and Green Globes. VOC content limit is that for gypsum board and panel adhesives.

Adhesives will have a VOC content of [**50**] <**Insert value**> g/L or less.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.1.

Adhesive will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Adhesive will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Adhesive will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Adhesive will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Subparagraph below applies to Green Globes.

Adhesive will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." The building concentration of formaldehyde will not exceed half of the indoor recommended exposure limit or 33 mcg/cu. m and that of acetaldehyde will not exceed 9 mcg/cu. m.

Manufacturers recommend the use of sealant with trim accessories in high-moisture or wet areas. Sealant can also be used with factory-laminated panels without trim in areas where moisture and wetting are not a concern.

* + - * 1. Sealant: [**Mildew-resistant, single-component, neutral-curing silicone**] [**Mildew-resistant, single-component, neutral-curing or acid-curing silicone**] [**Latex**] sealant recommended by plastic paneling manufacturer and complying with requirements in Section 079200 "Joint Sealants."

First subparagraph below applies to LEED 2009 NC, CI, and CS; LEED v4; IgCC; ASHRAE 189.1; and Green Globes.

Sealant will have a VOC content of 250 g/L or less.

First subparagraph below applies to LEED 2009 for Schools, IEQc 4.1.

Sealant will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to LEED v4.

Sealant will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

First subparagraph below applies to IgCC.

Sealant will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Formaldehyde emissions will not exceed 9 mcg/cu. m or 7 ppb, whichever is less.

First subparagraph below applies to ASHRAE 189.1.

Sealant will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

Subparagraph below applies to Green Globes.

Sealant will comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." The building concentration of formaldehyde will not exceed half of the indoor recommended exposure limit, or 33 mcg/cu. m, and that of acetaldehyde will not exceed 9 mcg/cu. m.

* + - * 1. Color Caulk: Color Sil by Color Rite, 100 percent silicone-based colored caulk, available in sanded and linen/satin finish.

Color: [**Cotton White**] [**Sugarloaf Sand**] [**Clear Water]** [**Shelter Cove Gray**] [**Morning Mist Gray**] [**Graphite Vik**] [**South Beach Ivory**] [**Almond Breeze**] [**Pepper Dust**] [**Sand Dune**] [**Fawn Brown**] [**Mauna Red**] [**White**] [**Colonial White**] [**Beige**] [**Pearl Gray**] [**Ivory**] [**Silver**] [**Black**] [**White Wash**] [**Light Gray**] [**Latte**] [**As indicated by manufacturer's product designations**] [**As selected by Architect from manufacturer's full product range**].

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

Corners: Plumb and straight.

Surfaces: Smooth, sound, and uniform.

Nails or Screw Fasteners: Countersunk.

Joints and Cracks: Filled flush and smooth with adjoining surfaces.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. PREPARATION

Retain any or all of first three paragraphs below for adhesive application; first two are primarily for renovation work.

* + - * 1. Remove wallpaper, vinyl wall covering, loose or soluble paint, and other materials that might interfere with adhesive bond.
				2. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.
				3. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.

Retain first paragraph below when installing FRP ceiling panels.

* + - * 1. Ensure that all HVAC, electrical, plumbing, and similar work above the ceiling level has been completed.

Manufacturers' recommendations for conditioning vary.

* + - * 1. Condition panels by unpacking and placing in installation space before installation in accordance with manufacturer's written recommendations.
				2. Lay out paneling before installing. Locate panel joints [**where indicated**] [**to provide equal panels at ends of walls not less than half the width of full panels**] [**so that trimmed panels at corners are not less than 12 inches (300 mm) wide**].

Mark plumb lines on substrate at [**trim accessory**] [**panel joint**] locations for accurate installation.

Locate [**trim accessories**] [**panel joints**] to allow clearance at panel edges in accordance with manufacturer's written instructions.

* + - 1. INSTALLATION
				1. Install plastic paneling in accordance with manufacturer's written instructions.

Do all cutting with carbide-tipped saw blades or drill bits, or cut with snips.

Install panels plumb, level, square, flat, and in proper alignment.

Install panels to be water resistant and washable.

Install panels with manufacturer's recommended gap for panel field and corner joints.

Retain one of first two paragraphs below to suit installation method required for substrate.

* + - * 1. Install panels in a full spread of adhesive.
				2. Install panels with fasteners. Layout fastener locations and mark on face of panels so that fasteners are accurately aligned.

Drill oversized fastener holes in panels, 1/8 inch (3.2 mm) greater in diameter than fasteners, and center fasteners in holes.

Apply sealant to fastener holes before installing fasteners.

Retain first paragraph below in addition to one of last two paragraphs above if required for factory-laminated panels.

* + - * 1. Install factory-laminated panels using concealed mounting splines in panel joints.
				2. Install trim accessories with adhesive and nails or staples. Do not fasten through panels.

Retain first paragraph below if using sealant with trim accessories. Manufacturers recommend the use of sealant in high-moisture or wet areas.

* + - * 1. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.

Usually, retain first paragraph below whether using or not using trim accessories. Delete if not applicable.

* + - * 1. Maintain uniform space between panels and wall fixtures. Fill space with sealant.

Retain first paragraph below if installing panels without trim accessories.

* + - * 1. Maintain uniform space between adjacent panels and between panels and floors, ceilings, and fixtures. Fill space with sealant.
				2. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 066400