

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Visual display board assemblies.
2. Floor-to-ceiling visual display assemblies.
3. Rail support systems for visual display board assemblies.
4. Modular support systems for visual display board assemblies.
5. Sliding visual display units.
6. Visual display conference units.
7. Glass markerboards.
8. Display rails.
9. Natural-slate chalkboards.

B. Related Requirements:

1. Section 097723 "Fabric-Wrapped Panels" for tackable, fabric-covered panels mounted on walls.
2. Section 101146 "Visual Display Fabrics" for visual display wall coverings intended for use with dry-erase markers.
3. Section 101200 "Display Cases" for [individually framed and enclosed, wall-mounted bulletin boards] [and for] [tackboards within display cases].

1.2 PREINSTALLATION MEETINGS

- #### A. Preinstallation Conference: Conduct conference at [Project site] <Insert location>.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, finishes, and accessories for visual display units.
2. Include electrical characteristics for motorized units.

B. Shop Drawings: For visual display units.

1. Include plans, elevations, sections, details, and attachment to other work.
2. Show locations of panel joints. [Show locations of field-assembled joints for factory-fabricated units too large to ship in one piece.]
3. Show locations and layout of special-purpose graphics.
4. Include sections of typical trim members.
5. Include wiring diagrams for power and control wiring.

C. Samples for Initial Selection: For each type of visual display unit indicated, for units with factory-applied color finishes, and as follows:

1. Samples of facings for each visual display panel type, indicating color and texture.
2. Fabric swatches of fabric facings for tackboards.
3. Actual factory-finish color samples, applied to [aluminum] [wood] substrate.
4. Include accessory Samples to verify color selected.

- D. Samples: For each type of visual display unit indicated.
1. Visual Display Panel: Not less than 8-1/2 by 11 inches (215 by 280 mm), with facing, core, and backing indicated for final Work. Include one panel for each type, color, and texture required.
 2. Trim: 6-inch- (150-mm-) long sections of each trim profile.
 3. Display Rail: 6-inch- (150-mm-) long section of each type.
 4. [Rail] [Modular] Support System: 6-inch- (150-mm-) long sections.
 5. Accessories: Full-size Sample of each type of accessory.
- E. Product Schedule: For visual display units.[Use same designations indicated on Drawings.]

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranties: For manufacturer's special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For visual display units to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-fabricated visual display units completely assembled in one piece. If dimensions exceed maximum manufactured unit size, or if unit size is impracticable to ship in one piece, provide two or more pieces with joints in locations indicated on approved Shop Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display units until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.9 WARRANTY

- A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Surfaces lose original writing and erasing qualities.
 - b. Surfaces exhibit crazing, cracking, or flaking.
 2. Warranty Period: Life of the building.

PART 2 – PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: [25] <Insert value> or less.
 - 2. Smoke-Developed Index: [50] [450] <Insert value> or less.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 VISUAL DISPLAY BOARD ASSEMBLY <Insert drawing designation>

- A. Visual Display Board Assembly: [Field] [or] [factory] fabricated.
 - 1. Assembly: [Chalkboard] [markerboard] [and] [tackboard].
 - 2. Corners: [Square] [Rounded].
 - 3. Width: [As indicated on Drawings] <Insert dimension>.
 - 4. Height: [As indicated on Drawings] <Insert dimension>.
 - 5. Mounting Method: [Direct to wall] [Rail support system] [Modular support system].
- B. Chalkboard Panel: [Porcelain-enamel] [High-pressure chalkboard laminate] [Melamine] [Painted-finish]-faced chalkboard panel on core indicated.
 - 1. Color: [Green] [Blue] [Brown] [Black] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
- C. Markerboard Panel: [Porcelain-enamel-faced] [High-pressure markerboard laminate-faced] [Melamine-faced] <Insert facing> markerboard panel on core indicated.
 - 1. Color: [White] [Beige] [Tan] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
- D. Tackboard Panel: [Natural-cork] [Plastic-impregnated-cork] [Vinyl-fabric-faced] [Polyester-fabric-faced] tackboard panel on core indicated.
 - 1. Fabric Wrapped Edge: Wrap edge of tackboard panel with fabric facing.
 - 2. Color and Pattern: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors].
- E. Aluminum Frames[and Trim]: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; [standard size and shape] [slim size and standard shape] [of size and shape indicated on Drawings] <Insert size and shape>.
 - 1. Field-Applied Trim: Manufacturer's standard, [snap-on trim with no visible screws or exposed joints] [slip-on trim] [screw-on trim with Phillips flat-head screws].
 - 2. Aluminum Finish: [Clear anodic] [Color anodic] [Manufacturer's standard baked-enamel or powder-coat] finish.
 - a. Color: [Light bronze] [Medium bronze] [Dark bronze] [Black] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors and color densities] <Insert color>.

- F. Factory-Applied Wood Trim: [Red oak] [Walnut] [Manufacturer's standard species] <Insert species>, not less than 1/2 inch (13 mm) thick; [standard size and shape] [of size and shape indicated on Drawings] <Insert size and shape> with [opaque] [transparent] finish.
- G. Field-Applied Wood Trim: Comply with requirements specified in [Section 062023 "Interior Finish Carpentry."] [Section 064023 "Interior Architectural Woodwork."]
- H. Vinyl Trim: [Dark brown] [Black] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors].
- I. Joints: Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, [balanced around center of board, as acceptable to Owner] [as indicated on approved Shop Drawings].
- J. Combination Assemblies: Provide [manufacturer's standard exposed trim] [H-trim] [hidden spline] between abutting sections of visual display panels.
- K. Chalktray: Manufacturer's standard; continuous.
 - 1. Box Type: Extruded aluminum with slanted front, grooved tray, and cast-aluminum end closures.
 - 2. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.
- L. Display Rail: Manufacturer's standard, extruded-aluminum display rail with [plastic-impregnated-cork] <Insert material> insert, end stops, [and continuous paper holder,]designed to hold accessories.
 - 1. Size: [1 inch (25 mm)] [2 inches (50 mm)] [3 inches (75 mm)] high by [full length of visual display unit] [length indicated on Drawings].
 - 2. Map Hooks: [Two] <Insert number> map hooks for every [48 (1200)] <Insert dimension> inches (mm) of display rail or fraction thereof.
 - 3. Map Hooks and Clips: [Two] <Insert number> map hooks with flexible metal clips for every [48 (1200)] <Insert dimension> inches (mm) of display rail or fraction thereof.
 - 4. Flag Holder: [One] <Insert number> for each room.
 - 5. Tackboard Insert Color: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
 - 6. Aluminum Color: Match finish of visual display assembly trim.
- M. Paper Holder Display Rail: Extruded aluminum; designed to hold paper by clamping action.
- N. Special-Purpose Graphics: Fuse or paint [semivisible writing guidelines] [penmanship lines] [music staff lines] [grid, 1 inch (25 mm) square] [rectangular graph coordinates] [polar graph coordinates] [horizontal lines, 2 inches (50 mm) o.c.] [USA map] [world map] [soccer field] [football field] [basketball court] <Insert description of special-purpose graphics> graphic onto surface of visual display unit[, in locations indicated].

2.3 FLOOR-TO-CEILING VISUAL DISPLAY ASSEMBLIES

- A. Floor-to-Ceiling Markerboard Panel Assemblies: Consisting of markerboard panels with [porcelain-enamel] [high-pressure markerboard laminate] facing on core indicated; fabricated for floor-to-ceiling assemblies.

1. Color: [White] [Beige] [Tan] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
- B. Floor-to-Ceiling Tackboard Panel Assemblies: Consisting of tackboard panels with [natural-cork] [plastic-impregnated-cork] [vinyl-fabric] [polyester-fabric] facing on core indicated; fabricated for floor-to-ceiling assemblies.
 1. Edge Treatments:
 - a. Panel-Joint Edges: [Wrapped with fabric] [Concealed by fabric-covered trim].
 - b. Top-of-Wall Edges: [Wrapped with fabric] [Concealed by fabric-covered trim].
 - c. Bottom-of-Wall Edges: [Wrapped with fabric] [Concealed by fabric-covered trim].
 - d. Corners: [Wrapped with fabric] [Concealed by fabric-covered trim].
 2. Color: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
- C. Width: [Full width of wall] [As indicated on Drawings] <Insert dimension>.
- D. Height: [Full height of wall] [Full height of wall above base] [As indicated on Drawings] <Insert dimension>.
- E. Joint Accessories: Manufacturer's standard, [exposed color-matched trim] [fabric-covered trim] [concealed aluminum or steel spline] at butt joints.

2.4 RAIL SUPPORT SYSTEM FOR VISUAL DISPLAY BOARD ASSEMBLIES

- A. Support Rails: Horizontal, wall-mounted, extruded-aluminum rails designed to receive hanger clip and to support visual display boards; and capable of gripping and suspending paper directly from rail.
 1. Finish: [Clear anodic] [Color anodic] [Manufacturer's standard baked enamel or powder coat].
 2. Color and Gloss: [Light bronze] [Medium bronze] [Dark bronze] [Black] [As indicated by manufacturer's designations] [As selected by Owner from manufacturer's full range] <Insert color and gloss>.
- B. Hanger Clips: Extruded aluminum with finish to match rails; designed to support independent visual display board assemblies by engaging support rail and top trim of board.
- C. Visual Display Board Assemblies: Fabricated from not less than 3/8-inch- (9.5-mm-) thick, kraft-paper honeycomb core; designed to be rigid and to resist warpage, and with aluminum trim designed to engage hanger clips.

2.5 MODULAR SUPPORT SYSTEM FOR VISUAL DISPLAY BOARD ASSEMBLIES

- A. Standards: 72-inch- (1830-mm-) long, extruded-aluminum slotted standards designed for supporting visual display boards on panel clips. Space slots at not less than [4 (100)] <Insert dimension> inches (mm) o.c.
 1. Finish: [Clear anodic] [Color anodic] [Manufacturer's standard baked enamel or powder coat].

2. Color and Gloss: [Light bronze] [Medium bronze] [Dark bronze] [Black] [As indicated by manufacturer's designations] [As selected by Owner from manufacturer's full range] <Insert color and gloss>.
- B. Panel Clips: Extruded aluminum or steel with finish to match standards.

2.6 SLIDING VISUAL DISPLAY UNITS

- A. Horizontal-Sliding Visual Display Units: Factory-fabricated units consisting of extruded-aluminum tubular frame, fixed rear visual display panel, aluminum-framed horizontal-sliding visual display panels, and extruded-aluminum fascia that conceals overhead sliding track; designed for recessed mounting. Provide panels that operate smoothly without vibration or chatter.
1. Two-Track Units: Fabricate unit with fixed rear panel covering entire rear surface. Provide two sliding panels, each equal to not less than one-half of overall length of unit.
 2. Three-Track Units: Fabricate unit with fixed rear panel covering entire rear surface. Provide three sliding panels, each equal to not less than [one-third] [one-half] of overall length of unit.
 3. Four-Track Units: Fabricate unit with fixed rear panel centered in and covering not less than one-half of rear surface, and fixed front panel on each side of unit equal to not less than one-quarter of overall length of unit. Provide four sliding panels, each equal to not less than one-quarter of overall length of unit.
 - a. Swinging Doors: Fabricated from same construction as sliding panels and supported on full-height continuous hinges. Provide visual display panel on both faces of each door.
 4. Hardware: Manufacturer's standard, extruded-aluminum overhead track and channel-shaped bottom guides; with two nylon ball-bearing carriers and two nylon rollers for each sliding panel.
 5. Overall Width: As indicated on Drawings.
 6. Overall Height: As indicated on Drawings.
- B. Vertical-Sliding Visual Display Units: Factory-fabricated units consisting of extruded-aluminum tubular frame, fixed rear visual display panel, and aluminum-framed vertical-sliding panels; [motor operated;]designed for recessed mounting. Provide panels that operate smoothly without vibration or chatter.
1. Type: Tubular frame on [four sides] [top and two sides, with sides extending to floor; with kick panel to conceal sliding panels]. Design unit to support panels independently of wall.
 2. Two-Track Units: Fabricate unit with fixed rear panel covering entire rear surface. Provide two sliding panels, each equal to not less than one-half of overall height of unit.
 3. Three-Track Units: Fabricate unit with fixed rear panel covering entire rear surface. Provide three sliding panels, each equal to not less than one-half of overall height of unit.
 4. Four-Track Units: Fabricate unit with fixed rear panel centered in and covering not less than one-half of rear surface. Provide four sliding panels, each equal to not less than one-half of overall height of unit.
 5. Hardware: Manufacturer's standard, neoprene ball-bearing end rollers, four on each side of each sliding panel. Counterbalance each sliding panel with counterweights supported by steel aircraft cable over ball-bearing sheaves; with removable cover plate for

- access to counterweights. Provide rubber bumpers at top and bottom for each sliding panel.
6. Motorized Operation: Provide not less than one motor with gearhead reducers for each sliding panel, mounted above visual display unit and connected to sliding panels with steel aircraft cable. Provide removable cover plate for access to motor. Equip motors with limit switches to automatically stop motor at each end of travel.
 - a. Electric Motors: UL approved or recognized, totally enclosed, complying with NEMA MG 1, with thermal-overload protection; 1/15 hp, single phase, [110] [220] V, 60 Hz.
 - b. Control Station: Three-position, [maintained] [momentary] contact, switch-operated control station with open, close, and off functions; with NEMA ICS 6, Type 1 enclosure. Provide [one] <Insert number> control station(s) for each sliding panel unit.
 - c. Key Switch: Provide supplementary key switch for each control station. Furnish two keys for each control station, keyed alike.
 7. Overall Width: As indicated on Drawings.
 8. Overall Height: As indicated on Drawings.
- C. Panels and Accessories:
1. Sliding Markerboard Panel: [Porcelain-enamel] [High-pressure markerboard laminate]-faced markerboard panel on kraft-paper honeycomb core designed to be rigid and to resist warpage, not less than [3/8 (9.5)] <Insert dimension> inch (mm) thick.
 - a. Color: [White] [Beige] [Tan] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
 2. Sliding Tackboard Panel: [Natural-cork] [Plastic-impregnated-cork] [Vinyl-fabric-faced] [Polyester-fabric-faced] tackboard panel on kraft-paper honeycomb core designed to be rigid and to resist warpage, not less than [3/8 (9.5)] <Insert dimension> inch (mm) thick.
 - a. Color and Pattern: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors].
 3. Fixed Rear Markerboard Panel: [Porcelain-enamel] [High-pressure markerboard laminate]-faced markerboard panel on core indicated.
 - a. Color: [White] [Beige] [Tan] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
 4. Fixed Rear Tackboard Panel: [Natural-cork] [Plastic-impregnated-cork] [Vinyl-fabric-faced] [Polyester-fabric-faced] tackboard panel on core indicated.
 - a. Color and Pattern: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors].
 5. Kick Panel: Manufacturer's standard [fabric-covered cork] [low-pressure laminate].
 - a. Color and Pattern: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors].

6. Accessories: [locks] [and] [easel pad clamps].
7. Display Rail: Manufacturer's standard, extruded-aluminum display rail with [plastic-impregnated-cork] <Insert material> insert, end stops, [and continuous paper holder,] designed to hold accessories.
 - a. Size: [1 inch (25 mm)] [2 inches (50 mm)] [3 inches (75 mm)] high by full length of visual display unit.
 - b. Map Hooks: [Two] <Insert number> map hooks for every [48 (1200)] <Insert dimension> inches (mm) of display rail or fraction thereof.
 - c. Flag Holder: [One] <Insert number> for each sliding visual display unit.
 - d. Tackboard Insert Color: [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
8. Aluminum Trim: [Factory applied] [Field applied]; in [manufacturer's standard] <Insert description> size and profile; with [clear anodic] <Insert description> finish.

2.7 VISUAL DISPLAY CONFERENCE UNITS

- A. Visual Display Conference Units: Factory-fabricated units consisting of hinged-door wood cabinet with perimeter face frame, sides, and back; not less than 3-inch (75-mm) interior depth and designed for surface wall mounting. Fabricate inside of cabinet and cabinet doors with fixed visual display units.
 1. Wood Cabinets: Fabricated from solid wood with integral, solid-wood marker tray. Fabricate hinged door panels with solid-wood frame and wood-veneer exterior surface.
 - a. Species and Finish: [Red oak] [Walnut] [Mahogany] <Insert species> with [natural lacquered] [oiled] [stained] finish.
 2. Plastic-Laminate Cabinets: Cabinet and hinged door panels fabricated from manufacturer's standard wood panels finished with high-pressure decorative laminate; with integral marker tray.
 - a. Color: As selected by Owner from full range of industry colors] <Insert color>.
 3. Cabinet Corners: [Square] [Rounded].
 4. Hardware: Manufacturer's standard, full-height continuous hinges[, wire door pulls,] and door bumpers.
 5. Fixed Rear Panel: Manufacturer's standard [porcelain-enamel] [high-pressure markerboard laminate] [glass] markerboard panel.
 - a. Color: [White] [Beige] [Tan] [As indicated by referencing manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.
 6. Inside Surface of Doors: Same as fixed rear panel.
 7. Inside Surface of Doors: Tackboard panel consisting of [natural-cork] [plastic-impregnated-cork] [vinyl-fabric] [polyester-fabric] facing on manufacturer's standard core.
 - a. Color: [As indicated by referencing manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.

8. Projection Screen: Manufacturer's standard, pull-down, matte, white projection screen, not less than 8 inches (200 mm) smaller in each direction than overall cabinet size, and mounted above rear visual display panel.
9. Fluorescent Light: Manufacturer's standard, not less than 24 inches (610 mm) long, and mounted above rear visual display panel.
10. Width: [48 inches (1219 mm)] [As indicated on Drawings] <Insert dimension>.
11. Height: [36 inches (914 mm)] [48 inches (1219 mm)] [72 inches (1829 mm)] [As indicated on Drawings] <Insert dimension>.
12. Accessories: [Cylinder lock] [and] [flip-chart pad clamp].

2.8 GLASS MARKERBOARDS

- A. Glass Markerboards: Fabricated of [6-mm tempered] [or] [6-mm tempered-laminated] [low-iron] [ultra-thin] glass[with steel backing for use with magnets].
 1. Edge Treatment: Smooth polished edge with [rounded] [eased] corners.
 2. Frame: Aluminum trim in profile indicated.
 3. Surface: [Glossy] [Matte].
 4. Color: [White] [Gray] [Translucent] [Clear] [Black] [Red] [Blue] <Insert color>.
- B. Mounting: Round, stainless steel standoffs, holding glass approximately [1 (25)] <Insert dimension> inch (mm) from wall surface; mounted [through holes in] [in notches in standoffs at top and bottom edges of] markerboard.
- C. Mounting: Concealed, Z-shaped brackets.
- D. Mounting: Manufacturer's standard adhesive or adhesive-foam tape mounting.
- E. Graphics: Provide screen-printed graphics as indicated.
- F. Marker Tray: [Glass] [Aluminum], attached with [stainless steel clips] [magnet].
- G. Size: [18 by 24 (457 by 610)] [24 by 36 (610 by 914)] [36 by 48 (914 by 1219)] [48 by 96 (1219 by 2438)] <Insert dimensions> inches (mm).

2.9 DISPLAY RAILS

- A. Aluminum Display Rail: Manufacturer's standard, extruded-aluminum display rail with [plastic-impregnated-cork] <Insert material> tackable insert, [and continuous paper holder,]designed to hold accessories.
- B. Paper Holder Display Rail: Extruded aluminum; designed to hold paper by clamping action.
 1. Aluminum Finish: [Clear anodic] <Insert description> finish.
- C. Wood Display Rail: Manufacturer's standard wood display rail with [plastic-impregnated-cork] <Insert material> insert.
 1. Finish: [Natural oak] <Insert finish>.
- D. Tackable Insert Color: [Tan] [Gray] [As indicated by manufacturer's designations] [As selected by Owner from full range of industry colors] <Insert color>.

- E. Size: [1 inch (25 mm)] [2 inches (50 mm)] [3 inches (75 mm)] high by length indicated on Drawings.
- F. End Stops: [Aluminum] [Not required].
- G. Accessories:
 - 1. [Metal] [Plastic] Map Hooks: Include [two] <Insert number> map hooks per [room] [20 (6)] <Insert dimension> feet (m)[of installed display rail].
 - 2. Roller Brackets: Include [two] <Insert number> roller brackets per [room] [20 (6)] <Insert dimension> feet (m)[of installed display rail].
 - 3. Flag Holders: Include [one] <Insert number> flag holder per [room] [20 (6)] <Insert dimension> feet (m)[of installed display rail].

2.10 MARKERBOARD PANELS

- A. Porcelain-Enamel Markerboard Panels: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction, consisting of moisture-barrier backing, core material, and porcelain-enamel face sheet with [high] [low]-gloss finish. Laminate panels under heat and pressure with manufacturer's standard, flexible waterproof adhesive.
 - 1. Face Sheet Thickness: [0.021 inch (0.53 mm)] [0.013 inch (0.33 mm)] uncoated base metal thickness.
 - 2. Manufacturer's Standard Core: Minimum 1/4 inch (6 mm) thick, with manufacturer's standard moisture-barrier backing.
 - 3. Hardboard Core: 1/4 inch (6 mm) thick; with [0.005-inch- (0.127-mm-) thick, aluminum foil] [0.015-inch- (0.38-mm-) thick, aluminum sheet] [0.013-inch- (0.33-mm-) thick, galvanized-steel sheet] backing.
 - 4. Particleboard Core: [3/8 inch (9.5 mm)] [1/2 inch (13 mm)] thick; with [0.005-inch- (0.127-mm-) thick, aluminum foil] [0.015-inch- (0.38-mm-) thick, aluminum sheet] [0.013-inch- (0.33-mm-) thick, galvanized-steel sheet] backing.
 - 5. Fiberboard Core: [3/8 inch (9.5 mm)] [1/2 inch (13 mm)] thick; with [0.001-inch- (0.025-mm-) thick, aluminum foil] [0.015-inch- (0.38-mm-) thick, aluminum sheet] [0.013-inch- (0.33-mm-) thick, galvanized-steel sheet] backing.
 - 6. MDF Core: 7/16 inch (11 mm) thick; with manufacturer's standard moisture-barrier backing.
 - 7. Laminating Adhesive: Manufacturer's standard moisture-resistant thermoplastic type.
- B. High-Pressure Markerboard Laminate Panels: Factory-laminated markerboard panel of three-ply construction, consisting of backing, fiberboard core material, and high-pressure markerboard laminate writing surface.
- C. Melamine Markerboard Panels: Fabricated from 1/4-inch- (6-mm-) thick, sealed and primed hardboard panels permanently bonded with thermally fused, melamine-impregnated decorative paper writing surface.

2.11 TACKBOARD PANELS

- A. Tackboard Panels:
 - 1. Facing: [1/16-inch- (1.6-mm-) thick,] [1/8-inch- (3-mm-) thick,] [1/4-inch- (6-mm-) thick,] [natural cork] [plastic-impregnated cork].
 - 2. Facing: [Vinyl] [Polyester] fabric.

3. Facing: [Vinyl] [Polyester] fabric factory laminated to [1/16-inch- (1.6-mm-)] [1/8-inch- (3-mm-)] [1/4-inch- (6-mm-)] thick, cork sheet.
4. Facing: Recycled rubber, 0.44 inch (11 mm) thick; with [tan] [red] [green] [grey] [blue] color flecks.
5. Core: Manufacturer's standard.
6. Core: [3/8-inch- (9.5-mm-)] [7/16-inch- (11-mm-)] thick fiberboard.
7. Core: 1/4-inch- (6-mm-) thick [hardboard] [or] [particleboard].

2.12 MATERIALS

- A. Porcelain-Enamel Face Sheet: PEI-1002, with face sheet manufacturer's standard two- or three-coat process.
- B. High-Pressure Decorative Laminate: NEMA LD 3.
- C. High-Pressure Markerboard Laminate: Complying with physical testing requirements of NEMA LD 3.
- D. High-Pressure Chalkboard Laminate: Complying with physical testing requirements of NEMA LD 3.
- E. Natural-Cork Sheet: Seamless, single-layer, compressed fine-grain cork sheet; bulletin board quality; face sanded for natural finish; with surface-burning characteristics indicated].
- F. Plastic-Impregnated-Cork Sheet: Seamless, homogeneous, self-sealing sheet consisting of granulated cork, linseed oil, resin binders, and dry pigments that are mixed and calendared onto fabric backing; with washable vinyl finish and integral color throughout; with surface-burning characteristics indicated].
- G. Vinyl Fabric: Mildew resistant, washable, complying with ASTM F 793/F 793M, Type II, [burlap weave] <Insert texture or pattern>; weighing not less than 13 oz./sq. yd. (440 g/sq. m); with surface-burning characteristics indicated.
- H. Polyester Fabric: Nondirectional weave, 100 percent polyester; weighing not less than 15 oz./sq. (.)yd. (508 g/sq. m); with surface-burning characteristics indicated.
- I. Hardboard: ANSI A135.4, tempered.
- J. Particleboard: ANSI A208.1, Grade M-1.
- K. MDF: ANSI A208.2, Grade 130.
- L. Fiberboard: ASTM C 208 cellulosic fiber insulating board.
- M. Clear Tempered Glass: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality Q3, with exposed edges seamed before tempering.
- N. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.
- O. Adhesives for Field Application: Mildew-resistant, nonstaining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by visual display unit manufacturer.

- P. Primer/Sealer: Mildew-resistant primer/sealer complying with requirements in [Section 099123 "Interior Painting"] <Insert Section number and title> and recommended in writing by visual display unit manufacturer for intended substrate.

2.13 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM/NOMMA 500 for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.14 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A32/A34, Class II, 0.010 mm or thicker.
- C. Baked-Enamel or Powder-Coat Finish: AAMA 2603, except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motorized, sliding visual display units.
- C. Examine walls and partitions for proper preparation and backing for visual display units.
- D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances, such as dirt, mold, and mildew, that could impair the performance of and affect the smooth, finished surfaces of visual display boards.

- C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display units and wall surfaces.
- D. Prime wall surfaces indicated to receive [visual display units] [direct-applied, floor-to-ceiling visual display assemblies] and as recommended in writing by primer/sealer manufacturer and visual display unit manufacturer.
- E. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.
- B. Field-Assembled Visual Display Board Assemblies: Coordinate field-assembled units with grounds, trim, and accessories indicated. Join parts with a neat, precision fit.
 - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
 - 2. Where size of visual display board assemblies or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Owner from manufacturer's standard structural support accessories to suit conditions indicated.
- C. Factory-Fabricated Visual Display Board Assemblies: Adhere to wall surfaces with adhesive gobs at 16 inches (400 mm) o.c., horizontally and vertically.
- D. Factory-Fabricated Visual Display Board Assemblies: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display board assemblies with fasteners at not more than 16 inches (400 mm) o.c. Secure tops and bottoms of boards to walls.
- E. Visual Display Board Assembly Mounting Heights: Install visual display units at mounting heights indicated on Drawings.
- F. Display Rails: Install rails at mounting heights indicated on Drawings. Attach to wall surface with fasteners at not more than 16 inches (400 mm) o.c.
- G. Floor-to-Ceiling Markerboard Panels: Attach panels to wall surface with [egg-size] <Insert coverage> adhesive gobs at 16 inches (400 mm) o.c., horizontally and vertically.
 - 1. Join adjacent panels with concealed steel splines for smooth alignment.
 - 2. Join adjacent panels with exposed, H-shaped aluminum trim painted to match wall panel.
- H. Floor-to-Ceiling Tackboard Panels: Attach panels to wall surface with [egg-size] <Insert coverage> adhesive gobs at 16 inches (400 mm) o.c., horizontally and vertically.
 - 1. Install wrapped-edge panels with butt joints between adjacent wall panels.
 - 2. Join adjacent panels with exposed, H-shaped aluminum trim covered with same fabric as wall panels.

- I. Rail Support System: Install horizontal support rail at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Attach to wall with fasteners at 12 inches (300 mm) o.c.
 - 1. Mounting Height: [72 (1829)] <Insert dimension> inches (mm) above finished floor to top of rail.
 - 2. Hang visual display units on rail support system.
- J. Modular Support System: Install adjustable standards at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Install standards at 48 inches (1200 mm) o.c., vertically aligned and plumb, and attached to wall with fasteners at 12 inches (300 mm) o.c.
 - 1. Mounting Height: [12 (305)] <Insert dimension> inches (mm) above finished floor to bottom of standard.
 - 2. Install single-slotted standard at each end of each run of standards and double-slotted standards at intermediate locations.
 - 3. Provide locking screw at top corner of visual display board at each standard.
 - 4. Hang visual display units on modular support system.
- K. Sliding Visual Display Units: Install units at mounting heights indicated. Attach to wall framing with fasteners at not more than 16 inches (400 mm) o.c.
 - 1. Adjust panels to operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- L. Visual Display Conference Units: Install units at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Attach to wall surface with [fasteners through back of cabinet] [concealed brackets screwed to wall] [concealed wood cleats screwed to wall].
 - 1. Mounting Height: [72 (1829)] <Insert dimension> inches (mm) above finished floor to top of cabinet.

3.4 CLEANING AND PROTECTION

- A. Clean visual display units in accordance with manufacturer's written instructions. Attach one removable cleaning instructions label to visual display unit in each room.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.
- C. Cover and protect visual display units after installation and cleaning.

3.5 DEMONSTRATION

- A. [Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motorized, sliding visual display units.

END OF SECTION