SECTION 102226 - OPERABLE PARTITIONS

PACIFIC, WARRENTON, AND SULLIVAN LIBRARIES ONLY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated, acoustical panel partitions. Provide all labor, materials, tools, equipment, and services for operable walls in accordance with provisions of contract documents.

B. Related Sections:

1. Section 055000 "Metal Fabrications" for supports that attach supporting tracks to overhead structural system.
2. Section 064023 "Interior Architectural Woodwork" for special finishes for panels and for fire-retardant-treated wood veneers.
3. Section 087100 "Door Hardware" for hardware to the extent not specified in this Section.
4. Section 092900 "Gypsum Board" for fire-rated assemblies and sound barrier construction above the ceiling at track.

1.3 DEFINITIONS

A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

B. NIC: Noise Isolation Class.

C. NRC: Noise Reduction Coefficient.

D. STC: Sound Transmission Class.

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design operable panel partitions, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Seismic Performance: Operable panel partitions shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the panels will remain in place without separation of any parts from the system when subjected to the seismic forces specified."

C. Acoustical Performance: Provide operable panel partitions tested by a qualified testing agency for the following acoustical properties according to test methods indicated:

1. Sound-Transmission Requirements: Operable panel partition assembly tested for laboratory sound-transmission loss performance according to ASTM E 90, determined by ASTM E 413, and rated for not less than the STC indicated.
2. Noise-Reduction Requirements: Operable panel partition assembly, identical to partition tested for STC, tested for sound-absorption performance according to ASTM C 423, and rated for not less than the NRC indicated.
3. Acoustical Performance Requirements: Installed operable panel partition assembly, identical to partition tested for STC, tested for NIC according to ASTM E 336, determined by ASTM E 413, and rated for 10 dB less than STC value indicated.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, numbered panel installation sequence, and attachments to other work.

1. For installed products indicated to comply with design loads, include structural analysis data for attachments, signed and sealed by the qualified professional engineer responsible for their preparation.
2. Indicate storage and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.

C. Samples for Initial Selection: For each type of exposed material, finish, covering, or facing indicated.

1. Include similar Samples of accessories involving color selection.

D. Delegated-Design Submittal: For operable panel partitions indicated to comply with performance requirements, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.

1. Design Calculations: Calculate requirements for seismic restraints.

1.6 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which suspension systems will be attached.
3. Size and location of initial access modules for acoustical tile.
4. Items penetrating finished ceiling, including the following:

   a. Lighting fixtures.
   b. HVAC ductwork, outlets, and inlets.
   c. Speakers.
   d. Sprinklers.
   e. Smoke detectors.
   f. Access panels.

B. Setting Drawings: For embedded items and cutouts required in other work**,** including support-beam, mounting-hole template.

C. Qualification Data: For qualified Installer and testing agency.

D. Seismic Qualification Certificates: For operable panel partitions**,** accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

E. Product Certificates: For each type of operable panel partition, from manufacturer.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each operable panel partition.

G. Field quality-control reports.

H. Warranty: Sample of special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For operable panel partitions to include in maintenance manuals. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

1. Panel finish facings and finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
2. Seals, hardware, track, carriers, and other operating components.

1.8 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials from the same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Panel Finish-Facing Material: Furnish full width in quantity to cover both sides of two panels when installed in total for all libraries.

1.9 QUALITY ASSURANCE

A. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions.

B. The partition STC (Sound Transmission Classification) shall be achieved per the standard test methods ASTM E90.

C. Noise isolation classifications shall be achieved per the standard test methods, ASTM E336 and ASTM E413.

D. Noise Reduction Coefficient (NRC) ratings shall be per ASTM C423.

E. Rack testing for ten (10) years, (tensional strength stress test).

F. The manufacturer shall have a quality system that is registered to the ISO 9001 standards.

G. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

H. Installer Qualifications: An employer of workers trained and approved by manufacturer.

I. Testing Agency Qualifications: Qualified according to Section 014000 "Quality Requirements" for testing indicated.

J. Preinstallation Conference: Conduct conference at Project site.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Protectively package and sequence panels in order for installation. Clearly mark packages and panels with numbering system used on Shop Drawings. Do not use permanent markings on panels.

1.11 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of operable panel partition openings by field measurements before fabrication.

1.12 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.

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

a. Faulty operation of operable panel partitions.
b. Deterioration of metals, metal finishes, and other materials beyond normal wear.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Frame: Steel sheet, manufacturer's standard, 0.0508-inch (1.3-mm) nominal minimum thickness for uncoated steel.

B. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use, corrosion resistance, and finish indicated; ASTM B 221 (ASTM B 221M) for extrusions; manufacturer's standard strengths and thicknesses for type of use.

1. Frame Reinforcement: Manufacturer's standard steel or aluminum.

2.2 OPERABLE ACOUSTICAL PANELS

A. Operable Acoustical Panels: Operable acoustical panel partition system, including panels, seals, finish facing, suspension system, operators, and accessories.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings, Paired Operable Partitions Top Supported, Series 642 by Hufcor, or comparable product by one of the following:

a. Hufcor.
b. KWIK-WALL Company.
c. Modernfold, Inc.; a DORMA Group Company.
d. Panelfold Inc.

B. Panel Operation: Manually operated, paired panels.

C. Panel Construction: Provide top reinforcement as required to support panel from suspension components and provide reinforcement for hardware attachment. Fabricate panels with tight hairline joints and concealed fasteners. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.

D. Dimensions: Fabricate operable acoustical panel partitions to form an assembled system of dimensions indicated and verified by field measurements.

1. Panel Width: Equal widths, as indicated.

E. STC: Not less than 52.

F. NRC: Not less than 0.65.

G. Panel Weight: 8 lb/sq. ft. (40 kg/sq. m) to 12 lb/sq. ft. (59 kg/sq. m) maximum.

H. Panel Thickness: Not less than 4 inches (102 mm).

I. Frames shall be of 16 gauge (1.42 mm) painted steel with integral factory applied aluminum vertical edge and face protection.

J. Panel Closure: Manufacturer's standard.

1. Vertical sound seals shall be of tongue and groove configuration, ensure panel-to-panel alignment and prevent sound leaks between panels.

K. Horizontal top seals shall be retractable, provide 1-inch (25 mm) nominal operating clearance, and exert upward force when extended. All panels, including pass door panels and lever closure panels must have retractable top and bottom seals.

L. Horizontal bottom seals shall be retractable, provide up to 2 inches (51 mm) nominal operating clearance, and exert downward force when fully extended.

M. Horizontal trim shall be of aluminum.

N. Hardware: Manufacturer's standard as required to operate operable panel partition and accessories; with decorative, protective finish.

1. Hinges: Manufacturer's standard, low profile hinges shall be of steel and project no more than ¼ inch (6 mm) beyond panel face. Each pair of panels to have a minimum of three (3) hinges.

2.3 SEALS

A. General: Provide types of seals indicated that produce operable panel partitions complying with acoustical performance requirements and the following:

1. Manufacturer's standard seals.
2. Seals made from materials and in profiles that minimize sound leakage.
3. Seals fitting tight at contact surfaces and sealing continuously between adjacent panels and between operable panel partition perimeter and adjacent surfaces, when operable panel partition is extended and closed.

B. Vertical Seals: Deep-nesting, interlocking astragals mounted on each edge of panel, with tongue and groove configuration.

C. Horizontal Top Seals:

1. PVC-faced, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on track when extended.

D. Horizontal Bottom Seals: PVC-faced, mechanical, retractable, constant-force-contact seal exerting uniform constant pressure on floor when extended, ensuring horizontal and vertical sealing and resisting panel movement.
1. Automatically Operated for Acoustical Panels: Extension and retraction of bottom seal automatically operated by movement of partition, with operating range not less than 2 inches (50 mm) between retracted seal and floor finish.

2.4 FINISH FACING

A. General: Provide finish facings for panels that comply with indicated fire-test-response characteristics and that are factory applied to operable panel partitions with appropriate backing, using mildew-resistant nonstaining adhesive as recommended by facing manufacturer's written instructions.

1. Apply one-piece, seamless facings free of air bubbles, wrinkles, blisters, and other defects, with invisible seams complying with Shop Drawings for location, and with no gaps or overlaps. Horizontal seams are not permitted. Tightly secure and conceal raw and selvage edges of facing for finished appearance.
2. Where facings with directional, repeating, or matching grain are indicated, mark facing top and attach facing in same direction.
3. Match facing pattern 72 inches (1830 mm) above finished floor.
4. Color/Pattern: As selected by Architect from manufacturer's full range.

B. Vinyl-Coated Fabric Wall Covering: Manufacturer's standard, mildew-resistant, washable, vinyl-coated fabric wall covering with woven backing; complying with CFFA-W-101-D for type indicated; Class A.

1. Total Weight: Not less than 15 oz. per linear yard (465 g/m).
2. Antimicrobial Treatment: Additives capable of inhibiting growth of bacteria, fungi, and yeasts.
3. Color: To be selected from manufacturer’s standard color selection.

C. Paint: Manufacturer's standard factory-painted finish.

1. Color: As selected by Architect.

D. Cap-Trimmed Edges: Protective perimeter-edge trim with tight hairline joints concealing edges of panel and finish facing, finished as follows:

1. Steel, Painted: Finished with manufacturer's standard, as selected by Architect from manufacturer's full range.
2. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of

alloy and temper required to comply with performance requirements; and with manufacturer's standard color anodic finish.

2.5 SUSPENSION SYSTEMS

A. Suspension Tracks: Steel or aluminum with adjustable steel hanger rods for overhead support, designed for type of operation, size, and weight of operable panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch (2.54 mm) between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.

1. Panel Guide: Aluminum; finished with factory-applied, decorative, protective finish.
2. Head Closure Trim: As required for acoustical performance.

B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.

1. Multidirectional Carriers: Capable of negotiating 90-degree L, T, and X intersections without track switches.

C. Track Intersections, Switches, and Accessories: As required for type of operation, storage, track configuration, and layout indicated for operable panel partitions, and compatible with partition assembly specified. Fabricate track intersections and switches from steel or aluminum.

D. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.

2.6 ACCESSORIES

A. Pass Doors: Fabricated to comply with recommendations in ICC/ANSI A117.1 and the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines. Swinging door built into and matching panel materials, construction, acoustical qualities, finish, and thickness, complete with frames and operating hardware. Hinges finished to match other exposed hardware.

1. Single Pass Door: 36 by 84 inches (914 by 2134 mm), with the following:

a. Door Seals: Mechanically operated floor seal on panels containing pass doors.
b. Panic exit device.
c. Concealed door closer.
d. Exit Sign: Recessed, self-illuminated.
e. Latchset: Passage set.

B. Pocket Doors: Doors for pocket where panels will be stacked when not in use. Swinging doors built in pocket area matching panel materials, construction, acoustical qualities, finish, and thickness, complete with frames and operating hardware. Hinges finished to match other exposed hardware.

2.7 OPERATION

A. Panels shall be manually moved from the storage area, positioned in the opening, and seals set.

B. Retractable Horizontal Seals.

1. Retractable horizontal seals shall be activated by a removable quick-set operating handle located approximately 42 inches (1067 mm) from the floor in the panel edge.
2. All retractable seals in each hinged panel group shall be operated simultaneously.
3. Seal activation requires a 190 degree turn of the removable handle.

C. Final partition closure to be by lever closure panel with expanding jamb which compensates for minor wall irregularities and provides a minimum of 250 lbs. (113.4 kg) seal force against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45 inches (1143 mm) from the floor in the panel face and be accessed from either side of the panel. The jamb is equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4-6 inches (102-152 mm) by turning the removable operating handle.

D. Stack/Store Panels:

1. Retract seals with removable operating handle and move to storage area. Panels may be stored at either or both ends of the track or in a pocket.

2.8 ACOUSTICAL PERFORMANCE

A. Acoustical performance shall be tested at a laboratory accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) and in accordance with ASTM E90 Test Standards. Standard panel construction shall have obtained an STC rating of 52.

1. Complete, unaltered written test report is to be made available upon request.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine flooring, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable panel partitions.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Comply with ASTM E 557 except as otherwise required by operable panel partition manufacturer's written installation instructions.

B. The complete installation of the operable wall system shall be by an authorized factory-trained Installer and be in strict accordance with the approved shop drawings and manufacturer's standard printed specifications, instructions, and recommendations.

C. Install operable panel partitions and accessories after other finishing operations, including painting, have been completed.

D. Install panels from marked packages in numbered sequence indicated on Shop Drawings.

E. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.

F. Broken, cracked, deformed, or unmatched gasketing or gasketing with gaps at butted ends is not acceptable.

3.3 ADJUSTING

A. Adjust operable panel partitions to operate smoothly, without warping or binding. Lubricate hardware and other moving parts.

B. Adjust pass doors to operate smoothly and easily, without binding or warping. Check and readjust operating hardware. Confirm that latches and locks engage accurately and securely without forcing or binding.

3.4 FIELD QUALITY CONTROL

A. Light-Leakage Test: Illuminate one side of partition installation and observe vertical joints and top and bottom seals for voids; adjust partitions for acceptable fit.

B. NIC Testing: Engage a qualified testing agency to perform tests and inspections.

C. Testing Methodology: Perform testing of installed operable panel partition for noise isolation according to ASTM E 336, determined by ASTM E 413, and rated for not less than NIC indicated. Adjust and fit partitions to comply with NIC test method requirements.

D. Testing Extent: Testing agency shall randomly select one operable panel partition installation(s) for testing.

E. Repair or replace operable panel partitions that do not comply with requirements.

F. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of repaired, replaced, or additional work with specified requirements.

G. Prepare test and inspection reports.

3.5 CLEANING

A. Clean soiled surfaces of operable panel partitions and track to remove dust, loose fibers, fingerprints, adhesives, and other foreign materials according to manufacturer's written instructions.

B. Cartoning and other installation shall be removed to onsite waste collection area, as called out under Section 017419 “construction Waste Management and Disposal”.

3.6 DEMONSTRATION AND TRAINING

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable panel partitions.

B. Operating handle and Owner’s manuals shall be provided to Owner’s representative.

END OF SECTION 102226