

SPECIAL SPECIFICATION

13036S

CLEANROOM WALL SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. This Section provides the requirements necessary to fabricate, furnish, and erect a complete cleanroom wall assembly within the areas indicated. The extent of this work is indicated on the plans by wall type designations. Work shall include but is not limited to the following cleanroom wall systems:

1. 2" Framed Wall System including window modules and glazing.
2. ¼" Framed Wall System including window modules, glazing, and return grilles.

1.02 RELATED WORK

A. This Section shall be used in conjunction with the following other specifications and related Contract Documents to establish the total requirements for the referenced cleanroom wall system:

B. Requirements of the following Project Specification Sections apply to this section:

1. Section 01110S – Clean Construction Protocol
2. Section 01111S – Cleanroom Construction And Cleaning Procedures
3. Section 01112S – Cleanroom Certification And Acceptance
4. Section 13015S – Cleanroom Access Flooring
5. Section 13063S – Cleanroom Ceiling System

- C. CAUTION! Use of this Section without including all of the above-listed items will result in omission of basic requirements.
- D. In the event of conflict regarding requirements for the referenced cleanroom wall systems between this Section and any other section, the provisions of this Section shall govern.

1.03 REFERENCES/DEFINITIONS

A. Cleanroom Wall Systems Description

1. 2" Framed Wall System: Type K

- a. Metal framing system, including all items such as clips, anchors, screws, attachments, and supports, etc., which will provide a completely de-mountable, non-progressive, load bearing assembly for cleanroom walls.
- b. Cleanroom wall panel material, as hereinafter specified, including paint, coating, or finish as called for, attached to the above framing system.
- c. Provide all reinforcing, bracing, blocking, trim finishing strips, and non-outgassing type gasketing necessary to maintain the structural and air sealing requirements of the assembly.
- d. Window panels with glazing as scheduled.
- e. Return Grilles without dampers

2. ¼" Framed Wall System : Type L

- a. Metal framing system, including all items such as clips, anchors, screws, attachments, and supports, etc., which will provide a completely de-mountable, non-progressive, load bearing assembly for cleanroom walls.
- b. Cleanroom wall panel material, as hereinafter specified, including paint, coating, or finish as called for, attached to the above framing system.
- c. Provide all reinforcing, bracing, blocking, trim finishing strips, and non-outgassing type gasketing necessary to maintain the structural and air sealing requirements of the assembly.
- d. Window panels with glazing as scheduled.
- e. Return Grilles without dampers

- B. Wall and glazing components provided shall be by a single manufacturer as an integrated system.

1.04 SUBMITTALS

- A. Submittals shall be provided in accordance with Section 01300, Submittals, and the requirements of this Section.
- B. Manufacturer's Data: Submit manufacturer's literature, specifications, and installation instructions for each cleanroom wall component proposed for use, including certification and other data as may be required to show compliance with the Specifications.
- C. Submit design calculation for clean wall framing system to the Engineer for review prior to fabrication and erection.
- D. Samples:
 - 1. Submit three samples of wall systems component with specified finish, gasketing and connectors, or other components as necessary to illustrate a completed wall assembly.
 - 2. Submit three sets of samples for each finish and color required. Submit sample finishes on aluminum having the specified alloy, temper, finish coating treatment, and thickness of metal required for the work. Provide 12-inch-square sections. Samples will be reviewed for color and finish only. Compliance with all other requirements is the exclusive responsibility of the Contractor.
 - 3. Submit at least three options for equipment bulkheading utilizing the ¼" framed wall system, and 1.88" honeycomb framed wall system.
- E. Shop Drawings - General: Submit complete shop drawings and erection diagrams. Shop drawings shall give all pertinent information of construction method proposed, including connections, together with all required dimensions for the proper fitting for the connection with other work and materials, together with all special conditions as may be required to complete installation. Show full elevations of all walls, indicating component dimensions, wall penetrations, joint locations, and intended closures at joints.
- F. Installer's License Certificate: copy of certificate of license issued to system installer by manufacturer.
- G. Maintenance Manual: Submit three copies of an assembled and bound maintenance manual describing the materials, devices, and procedures to be followed in cleaning and

maintaining the cleanroom wall system. Include manufacturer's brochures describing the actual materials used in the work including metal alloys, finishes, sealants, gaskets, and all other major components, as well as methods of disassembly and re-assembly.

1.05 WARRANTY

- A. Cleanroom Wall Components: Submit three copies of written guarantee agreeing to repair or replace wall components which appear to have failed in general durability or any other form of apparent deterioration (excluding inherent qualities and limitations clearly specified in the manufacturer's data which was submitted).
- B. Guarantee shall be for a period of 5 years and shall begin following Date of Substantial Completion of project.
- C. Prior to starting work, submit sample copy of guarantee to be provided. Upon completion and acceptance of the work required by this Section, submit an executed copy of the guarantee.
- D. Complete installation shall be guaranteed jointly and severally on a single document by the materials manufacturer and installer against defects of materials and workmanship as defined on the guarantee.

1.06 QUALITY ASSURANCE

- A. Cleanroom wall system installer shall be trained and approved by the separate system component manufacturers and shall be experienced in the installation of cleanroom wall systems.
- B. Cleanroom wall system installer shall be responsible for coordination of the work of the Sections stated in 1.2, Related Work, above.

1.07 QUALIFICATIONS OF CLEANROOM WALL MANUFACTURER

- A. Any firm providing this scope of work shall have been in business a minimum of 5 years, specializing in cleanroom wall systems work for class 10 and cleaner and it must have:

1. Successfully completed a minimum of 3 similar projects during this time. A list shall be provided showing projects similar in size, complexity, and cleanliness classification to this project that the firm has completed. This list shall include the project name, description of mechanical system, range of services provided, and the name and phone number of the design consultant and the Owner who were responsible for final acceptance of the cleanroom.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Wall system panels shall be delivered with an approved protective coating and packaged to prevent transit and construction dust from contaminating surfaces. Stripping of packaging and coatings shall be done outside the cleanroom area.
- B. Deliver materials in their original unopened packages.
- C. Exercise extreme care in handling partition components to prevent damage.
- D. Store materials within the building in space designated by the Construction Manager/Owner.
- E. Store materials in such manner as to prevent damage or intrusion of foreign matter. Conspicuously mark "rejected" on materials which have been damaged and remove from the jobsite.

PART 2 - PRODUCTS

2.01 FRAMED CLEANROOM WALL SYSTEM – Type K

- A. Wall Panel and Framing:
 - 1. Plascore
 - 2. LSI
 - 3. Webb Core, Inc.
 - 4. Portafab
 - 5. DAW

2.02 COMPONENTS

- A. Framed Cleanroom Wall System Components: two inch (nominal thickness) wall system with aluminum honeycomb core and aluminum face finished on both sides. Wall hardware includes all deflection headtrack, floortrack, corner details, and appurtenances. The non-load bearing, 48 inch on center repetitive wall panel shall be completely de-mountable, non-progressive, with framing studs. Single wall segments shall originate at finish floor and terminate at ceiling.

1. Construction:

- a. Headtrack: Painted extruded aluminum, predrilled for connection to the ceiling grid at 12 inch on center minimum. Headtrack to provide vibration isolation between cleanroom wall panel and ceiling system, allow 1/2 inch minimum vertical movement, 2 inch wide maximum.
- b. Aluminum Honeycomb Wall Panel: Nominal 48 inches wide by scheduled ceiling height by 1/4 inch or 2 inch thick, aluminum skins over aluminum honeycomb core continuously bonded.
- c. Floortrack: Painted extruded aluminum, predrilled for connection to cleanroom floor at 18 inch on center minimum.
- d. Panel Post: Painted extruded aluminum battens installed on both sides of the post. Mounting block hardware on bottom of post to be T-bolted, into the floortrack, on both sides at every connection. Plastic covers continuous over fasteners on the battens.
- e. Miscellaneous Components: Corners, door frames, bulkhead frames, glazing frames shall be painted aluminum sizes compatible with the panel thickness.

2. Finish:

- a. Aluminum Headtrack and Floortrack. Finish and color as selected by Owner.
- b. Aluminum Glazing and Joint Battens. Finish and color as selected by Owner.
- c. Aluminum Corner Posts and Exposed Wall Surface Components. Finish and color as selected by Owner.
- d. 2 inch Aluminum Honeycomb Wall Panel. Roll coat epoxy paint finish. Standard color as selected by Owner.

3. Wall System Doors and Frames: refer to Section 13038S.

2.03 1/4" LINER WALL SYSTEM – Type L

A. Wall Panel:

1. Plascore
2. LSI

3. Webb Core, Inc.

4. Portafab

5. DAW

2.04 COMPONENTS

A. Liner Panel Cleanroom Wall System Components: quarter inch (nominal thickness) wall system with aluminum honeycomb core and aluminum face finished on both sides. Wall hardware includes all offset j-trim, vertical battens, corner details and appurtenances. The non-load bearing, 48 inch on center repetitive wall panel shall be completely demountable, non-progressive, with vertical battens. Single wall segments shall originate at finish floor and terminate at ceiling.

1. Construction:

- a. Offset J-trim: Painted extruded aluminum, connection to the existing wall located at cleanroom ceiling at 12 inch on center minimum. Hardware provided by installer.
- b. Aluminum Honeycomb Wall Panel: Nominal 48 inches wide by scheduled ceiling height by .25 inches thick, aluminum skins over aluminum honeycomb core continuously bonded.
- c. Vertical batten: Painted extruded aluminum batten. Battens should be connected to wall every 12 inch on center minimum. Hardware provided by installer.
- d. Miscellaneous Components: Inside/outside corners are to be painted extruded aluminum sizes compatible with the panel thickness.

2. Finish:

- a. Aluminum J-trim. Finish and color to match wall panels.
- b. Joint Battens. Finish and color to match wall panels.
- c. Aluminum inside/outside corners posts. Finish and color to match wall panels.
- d. .25 inch aluminum honeycomb wall panel: roll epoxy paint finish. Standard color as selected by Owner.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The nature of the completed facility demands special attention to maintaining an overall cleanliness in the project area. Methods of construction, which minimize the generation of contaminants, are essential if major cleanup problems are to be avoided. The installation of the cleanroom wall system involves the major exposure of surface area within the cleanroom and, therefore, represents a potential for surface contamination unless careful attention is paid to the manner in which the erection and placement is handled.
- B. Vendor must provide one full-time quality assurance supervisor who shall direct installation of all wall components to ensure quality of final installation. All installation methods shall be in accordance with the latest recommendations of the component manufacturer and in conformance with this Specification and submittal drawings. Framing and finish members shall be accurately aligned in accordance with the Drawings and securely anchored. Position framing vertically, spaced as required. Locate framing adjacent to door frames, openings, door pockets, partition intersections, and corners. Lock wall panels securely in place, flush with adjacent panels.
- C. Partition components shall assemble into a rigid structure with tight straight-line joints. Completed installation shall be free of exposed bolts, nuts, rivets, and fasteners within the cleanroom area and shall interface with all mechanical and electrical work in a clearly preplanned and craftsman-like installation.
- D. Inspect all building areas prior to installation where support system will be installed for any job condition that will alter the layout or details shown on the Drawings. Coordinate installation with other trades to avoid conflict with ductwork, piping, etc.

3.02 CONDITIONS OF SURFACES

- A. Examine substrates and adjoining construction and conditions under which work is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.03 ERECTION

- A. Verify dimensions of supporting structure by field measurements so that cleanroom wall will be accurately designed, fabricated, and fitted to the structure.
- B. Coordinate cleanroom wall work with the work of related sections and provide items to be placed during the installation of other work at the proper time to avoid delays in the work. Place such items, including inserts and anchors, accurately in relation to the final location of the cleanroom wall system components using locking-type devices at all connections.
- C. Erect all component parts of the cleanroom wall in accordance with the manufacturer's written instructions and recommendations.
- D. Erection Tolerances:
 - 1. All component parts within the following tolerances - Variations From Plumb or Angle Shown: 1/8-inch maximum variation in height or 10-foot run. noncumulative.
 - 2. Offsets in End-to-End or Edge-to-Edge Alignment of Consecutive Members:
 - 3. 1 / 16-inch maximum offset in any alignment.
- E. Cutting and Trimming of Component Parts:
 - 1. Cut and trim component parts of the cleanroom wall during erection only with the approval of the manufacturer or fabricator and in accordance with his recommendations. Restore finish completely to protect material and remove all evidence of cutting and trimming. All cutting and trimming to be done outside the cleanroom area.
 - 2. Field cutting shall conform to fire safety requirements specified in Section 05120, Structural Steel.
- F. Do not erect members which are observed to be warped, bowed, deformed, or otherwise damaged or defaced to such extent as to impair strength or appearance. Remove and replace members damaged in the process of erection.
- G. Set units level, plumb, and true to line with uniform joints. Support and secure in place by bolting to clip angles and similar supports anchored to supporting structure.
- H. Paint concealed contact surfaces of dissimilar materials with a heavy coating of isolation paint or provide other separations as per manufacturer's recommendations.

3.04 CLEANING

- A. Provide cleaning methods required for each component part as recommended by the respective manufacturers.
- B. Cleaning methods shall be carefully selected, applied, and maintained so that finishes will not become uneven or otherwise impaired.
- C. The nature of the project requires special attention to minimizing potential contamination of the fully developed cleanroom environment. All construction dust and contaminants left on surfaces or in recesses that will be exposed to cleanroom air will have the effect of unduly loading up the filter system. Daily cleanup and vacuuming of the work area is essential to an ongoing control of contaminants, especially as the cleanroom fitup progresses.
- D. All materials, including framing, finish wall panels, and trim shall be wiped clean with an approved type cleaner prior to, during, and after installation for cleanroom contamination control.

3.05 PROTECTION

- A. Protect the cleanroom wall system throughout the construction period in a clean and properly protected condition so that it will be without any indication of use or damage at the time of substantial completion.
- B. Protect the work during shipment, storage, erection, and construction so as to avoid development of non-uniformity of appearance or other deleterious effects in the work.
- C. Remove protection when requested by Engineer for inspection of finishes and replace any damaged material.
- D. Remove protection when no longer required.

END OF SECTION