



HALCO PRODUCTS COMPANY

100 N. Gordon Street – Elk Grove Village, IL 60007-1193

Tel: 847-956-1600 Fax: 847-956-0595

E-mail: info@halco-products.com · Website: www.Halco-Products.com

Clean Room Specification Prefabricated Modular

Part I: General

1.01 Description:

- A) Contractor to provide Prefabricated modular clean room system factory designed for easy on-site erection. System shall be in accord with ISO #14644 and all applicable codes and requirements.
- B) Modular system to include all doors, windows, supports, accessories as shown on drawings, and as specified.
- C) Manufacturer shall have at least 20 years experience in clean room design and shall submit a list of projects with contacts/names if requested.
- D) System shall be provided by **Halco Products Co. Elk Grove Village, IL 847-956-1600.**

1.02 Submittals:

- A) Submit shop drawings showing plan, elevation views with overall, and inter connection point dimensions.
- B) **Product Data:** Submit data sheets, component cuts, specific detail drawings for all components, and items pertaining to this project.
- C) **Installation Instructions:** Submit placement and configuration drawings; utility connection requirements; if any; job specific instructions and description.
- D) **Manufacturer's Certificate:** Certify that product will meet or exceed specified requirements. Provide standard testing protocol list; to ensure requirements are met and that unit is factory tested and certified prior to shipment.

1.03 Close Out Submittals:

- A) Contractor to provide close out documentation of project. Documentation shall include but not be limited to the following documentation (or as required in writing from customer):
 - 1) Final "AS BUILT" drawings.
 - 2) Installation maintenance and operation manuals for "ALL" equipment provided on project as well as room design criteria and servicing protocol.
 - 3) Start-up and validation documentation as specified for this project. Documentation shall include signed and dated Start up documents. Certified particle count forms and "Certificate" suitable for framing. Hepa CFM documentation and start up forms for EACH HEPA Module.
 - 4) Operation and Maintenance requirements and Dates.
 - 5) Start-up instructions, maintenance data, parts lists, controls, and accessories.

1.04 Qualifications:

- A) **Manufacturer:** Company specializing in manufacturing products specified in this section with minimum of 20 years experience.
- B) **Installer:** Company specializing in performing work of this section with minimum ten (10) years documented experience installing Clean rooms and pre- approved by Owner or Architect prior to bid date.



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1.05 Delivery, Storage, Handling:

- A) Product storage and handling requirements.
- B) Accept Modular Clean Room System and all required components on site in factory packaging and inspect for damage.
- C) Protect Modular Clean Room System and all components from contamination by storing in clean “Project Manager Approved” location.

1.06 Field Measurements:

- A) Verify field measurements prior to fabrication. Contractor to receive final approval from customer or Architect prior to releasing for final fabrication.

1.07 Warranty:

- A) Contractor to provide Product warranties and product “As-Built” drawings and manuals.
- B) Provide (1) one year warranty from date substantial completion or “of acceptance” or as provide in writing by client on unit and all subcomponents against defects in material and workmanship.

Part II: Products

2.01 Specialties:

A) Manufacturer:

- 1. **Halco Products Company**
- 2. _____
- 3. _____

4. **Substitutions:** Materials and systems shall be as specified on drawings or as pre-approved by architect or owner prior to bidding.

2.02 Class of Room and Usage:

- A) Modular Clean Room shall be rated at _____ **(insert rating)** and shall be designed for such use. Room shall maintain _____ **(degrees)**, _____ **(RH)**, and _____ **(static pressure)** during normal operation as outlined on the drawings.
- B) Modular Clean Room shall have _____ **(lumens)** throughout all areas and as shown on drawings.

2.03 Doors:

- A) Manufacturer shall provide all doors as shown on drawings and outlined in specifications. All doors shall include all specialties including but not limited to, butts & hinges, thresholds, seals, astragals, closers, windows in doors, and ADA lever lock hardware (or user specified hardware, keyed locks, magnetic interlocks or as specified on drawings).
- B) All doors shall be clean room compatible and allow for usage in a heavy-duty environment.



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2.04 Windows:

- A) All windows shall be minimum 3/16” tempered glass and be located and provided in accord with drawings and bill of material listings.
- B) All windows in doors to be minimum 3/16” tempered glass and optional safety glass on heavy usage applications.

2.05 Ceilings:

- A) **Grid:** All clean room ceilings shall be heavy duty clean room specific T-Grid system. Samples and submittal data shall reference class application and proper usage for grid in this project, in accord with drawings and bill of materials. No standard office grid or grid not specifically designed for clean room work shall be accepted.
- B) **Blank Panels:** All blank panels shall be clean room specific and designed for proper class rating as shown on drawings. Samples and submittal data shall reference class application and proper usage in this project. No standard or off the shelf blank ceiling tiles will be accepted.
- C) **Troffers:** All lighting fixtures shall be clean room specific and designed for proper class ratings as shown on drawings. Samples and submittals data shall reference class application and proper usage for this project. No standard or off the shelf troffers will be accepted.
- D) **HEPA Filters:** HEPA Filters shall be **Halco Brand** at least 99-97% eff @0.3 microns and be as shown on drawings and as listed in bill of materials.

2.06 Walls:

- A) All walls shall be modular factory pre-fabricated 3” thick.
- B) All walls shall be as shown on drawings and as listed on bill of materials.
- C) Post system to be 20-gauge steel painted to match walls and as shown on drawings.

2.07 HVAC System:

- A) Manufacturer shall supply complete HVAC System to maintain specified class, temperature, humidity, and pressure as specified on drawings and as listed in schedules.
- B) System shall include, but not be limited to:
 - 1) Packaged heating and cooling system as shown on drawings
 - 2) Humidification system and all piping
 - 3) Pressurization System
 - 4) All supply, return ductwork, insulation, and filters
 - 5) Supply and return grills as shown on drawings
 - 6) Structural and supports for all equipment
 - 7) All process piping
 - 8) Complete control, instrumentation system, Magnehelic read out gauges, smoke detector, and local required options.
 - 9) Start-up, test, and 1 year
 - 10) Clean-up and validation of room
- C) Spare parts to be listed and 2 sets of pre-filters to be provided.



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2.08 **Specialties:** [Pass-Thru's & Air Showers]

- A) Provide all specialties as shown on drawings and as listed in schedules.
- B) All specialties to be **Halco Products**.
- C) Specialties shall include, but not be limited to:
 - 1) Pass-Thru Modules
 - 2) Air Showers
 - 3) Gowning Room Furniture, Tables, and Benches
 - 4) Anti-Static Equipment
 - 5) Equipment, Chillers and Cooling Systems
 - 6) Communication, Paging, and Sound Equipment
 - 7) Central Vacuum Cleaner System
 - 8) Fire Protection, Horns, Sensors, Strobes & All Life Safety equipment.
 - 9) Fire Suppression Sprinklers and Piping
 - 10) Particle Monitoring Systems and Online Sensing
 - 11) Purge and Decontamination Systems.

Part III: **Execution**

3.01 **Examination:**

- A) Verify that area and surfaces are ready to receive and accept unit installation and field dimensions are as shown on drawings prior to starting installation.
- B) Verify that proper required utilities are available and in proper location and ready for use. Any deviations shall be noted prior to starting any work.
- C) Beginning of installation means installer accepts "existing conditions".

3.02 **Installation:**

- A) Install in accordance with manufacturer's instructions.
- B) Contractor to be qualified clean room contractor with 3 references submitted and approved prior to beginning construction.

3.03 **Field Quality Control:**

- A) Field inspection and testing will be performed under provisions of general conditions.
- B) Unit to be cleaned tested, and "final validation report" submitted to project manager for files and future reference.

3.04 **Construction:**

- A) Contractor to prepare a project "Gant chart" showing project schedule with milestone dates and clarify with owner prior to beginning any work.
- B) All work shall proceed with contractor's project foreman monitoring progress and advising as to schedules and revisions as required.
- C) Completion and close out to be accomplished upon completion of the project as specified in section 1.03 A & B Above.



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Materials of construction

OPTIONS

Other options available but not listed

Gypsum-Board / Board-Gypsum

The walls shall be 3" thick composite sandwich panels. The outside facing shall be 5/8" Type X Fire-shield gypsum board with a vinyl finish of light cream, white or grey bonded to a 1/8" Sound Stop Fiberboard. The inside facing shall be 5/8" Type X Fire-shield gypsum board with a vinyl finish of light cream, white or grey bonded to a 1/8" Sound Stop Fiberboard. The core shall be 2" of one pound density Polyisocyanurate laminated using a structural adhesive.

FRP / FRP

The walls shall be 3" thick composite sandwich panels. The outside facing shall be 0.090 stucco embossed FRP class C in white. The core shall be 2.8" of one pound density polystyrene laminated using a structural adhesive. The inside facing shall be .090 stucco embossed FRP class C in white.

WINDOWS AND GLAZING

OPTIONS

Other options available but not listed

PICTURE WINDOW

Picture windows shall be nominal 3' 8" wide X 3' high. They shall be installed 42" off the floor, glazed with insulated tempered and insulated glass, and shall be an integral part of the wall panel. The window shall be non-opening, and the entire window frame shall be painted in accordance with AAMA Specification 603.8.

HORIZONTAL SLIDING WINDOW

Horizontal sliding windows shall be a nominal 3' wide x 4' high. They shall be installed 42" off the floor, glazed with insulated tempered glass. The window shall be an integral part of the wall panel. One side shall be stationary; the other half shall slide to the side. The window shall have an integral locking mechanism with cam latch. The entire window frame shall be painted in accordance with AAMA Specification 603.8.



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SINGLE HUNG WINDOW

Single hung windows shall be a nominal 3'8" wide x 3' high. They shall be installed 42" off the floor, glazed with 1/2 insulated tempered glass, and shall be a composite part of the wall panel. The top half shall be stationary, the bottom half shall slide up, and they shall include an integral locking mechanism with a cam latch and keeper. The entire window frame shall be painted in accordance with AAMA Specification 603.8.

DOORS AND GLAZING

OPTIONS

Other options available but not listed

20 GAUGE HOLLOW STEEL FLUSH DOOR W/ CLOSER

The door(s) shall be 36" w X 84" h X 1 3/4" thick and shall be constructed of 20-gauge hot dipped galvanized steel, mill treated for proper paint adherence. The door shall have top and bottom channel of 16-gauge steel projection welded to door skins on no less than 2" centers. The top channel is to be flush while the bottom channel is to be inverted. The hinge preparations are to be 9-gauge steel reinforcements projection welded to the door skins in six places each. Hinge preparation is to be cut through the doors and provided with reversible filler plates to allow building site handling. Standard hinge preparation is to be 4-1/2" regular weight .134" hinge, conforming to ANSI A1567, three preparations. The door frame shall be 16-gauge single "rabbit" commercial quality steel. The frame shall be pre-mortised for application of matching hinges and striker set of the door. The door shall be supplied with all necessary hardware as to meet local and state code requirements.

20 GAUGE HOLLOW STEEL WITH TEMPERED GLASS W / CLOSER

The door(s) shall be 36" w X 84" h X 1 3/4" thick and shall be constructed of 20-gauge hot dipped galvanized steel, mill treated for proper paint adherence. The door shall have top and bottom channel of 16-gauge steel projection welded to door skins on no less than 2" centers. The top channel is to be flush while the bottom channel is to be inverted. The hinge preparations are to be 9-gauge steel reinforcements projection welded to the door skins in six places each. Hinge preparation is to be cut through the doors and provided with reversible filler plates to allow building site handling. Standard hinge preparation is to be 4-1/2" regular weight .134" hinge, conforming to ANSI A1567, three preparations. The door frame shall be 16-gauge single "rabbit" commercial quality steel. The frame shall be pre-mortised for application of matching hinges and striker set of the door. The door shall be supplied with all necessary hardware as to meet local and state code requirements. The door shall be



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fabricated as to include 1/8" tempered safety glass in the upper half. The window shall measure approximately 22" w X 36" h.

20 GAUGE HOLLOW STEEL DOUBLE DOORS WITH 1/2 GLASS

The door(s) shall be 72" w X 84" h X 1 3/4" thick and shall be constructed of 20-gauge hot dipped galvanized steel, mill treated for proper paint adherence. The door shall have top and bottom channel of 16-gauge steel projection welded to door skins on no less than 2" centers. The top channel is to be flush while the bottom channel is to be inverted. The hinge preparations are to be 9-gauge steel reinforcements projection welded to the door skins in six places each. Hinge preparation is to be cut through the doors and provided with reversible filler plates to allow building site handling. Standard hinge preparation is to be 4-1/2" regular weight .134" hinge, conforming to ANSI A1567, three preparations. The door frame shall be 16-gauge single "rabbit" commercial quality steel. The frame shall be pre-mortised for application of matching hinges and striker set of the door. The door shall be supplied with all necessary hardware as to meet local and state code requirements. The door shall be fabricated as to include 1/8" tempered safety glass in the upper half. The windows shall measure approximately 22" w X 36" h.

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Sincerely,
C. Brian Hale
President