

## **Part 1 – DESCRIPTION OF WORK**

### **1.00 SUMMARY AND SCOPE**

#### **A. Section Includes:**

1. **Hamilton Laboratory Solutions, Endeavor Laboratory Bench System:**  
A modular component system for workspace and storage assemblies. Furnish all cabinets, casework, tops, supporting structures, freestanding tables, and miscellaneous items per specifications or equipment schedules. This includes delivery, placement, leveling, scribing to walls/floors, and installation of filler panels, knee space panels, and scribes as shown in the drawings.
2. **Pre-Plumbing and Pre-Wiring:**  
Where specified, provide pre-plumbed and pre-wired bench systems. Hard plumbing lines shall terminate at a single-point connection at the top of the vertical support, or as shown in drawings. Flexible hoses to fixtures are an option if specified. Pre-wired power services shall terminate at a power cord at the top of the vertical support.
3. **Utility Fittings:**  
Furnish utility service outlet fittings, electrical receptacles, and switches as listed in specifications or shown in drawings. Non-pre-plumbed/pre-wired items shall include supply tank nipples and lock nuts, furnished loose in boxes, and properly marked for delivery to the appropriate contractor.
4. **Site Cleanup:**  
Remove debris and rubbish resulting from furniture installation to an on-site container provided by others, leaving the premises clean and orderly.

#### **B. Related Divisions**

1. **Division 5 & 6:** Behind-the-Wall Blocking and Studs
2. **Division 9:** Base Molding
3. **Division 11:** Chemical Fume Hoods
4. **Division 15:** Plumbing
5. **Division 16:** Electrical Fittings and Connections

### **1.01 BASIS OF WORK**

#### **A. Standard of Construction:**

The Endeavor Laboratory Bench System is the basis for construction standards and quality for laboratory furniture.

#### **B. Compliance:**

All equipment must meet this specification. Any product differing in materials or construction requires written approval from the owner/architect at least seven (7) days prior to the quotation deadline. Procedures for alternate manufacturer approval are outlined in Section 2.00.C.

#### **C. Approved Manufacturers:**

Hamilton Laboratory Solutions is the only approved supplier of the Endeavor Laboratory Bench System.

#### **D. Clarifications:**

Participants may clarify any deviations in design, construction, or materials. Without clarifications, sealed quotations will be considered fully compliant with the specifications.

#### **E. Right to Reject:**

The owner/representative reserves the right to reject proposals and award contracts based on product value, ensuring greater integrity for the owner.

### **1.02 QUALITY ASSURANCE**

#### **A. Single source responsibility:**

Laboratory furniture system, metal casework, laboratory equipment, chemical fume hoods and accessories shall be manufactured or furnished by a single laboratory furniture manufacturer.

#### **B. Manufacturer's qualifications:**

Modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory casework and equipment, and shall meet the following minimum requirements: Five years or more experience in manufacture of laboratory casework and equipment of similar product type specified and over 50MM of manufacturing capacity.

C. Laboratory furniture systems and systems components must be UL 962 submitted, approved and listed. Products must bear the UL Mark and shall be identified to those products that were evaluated by UL and found to comply with UL's requirements. The testing standard shall include Dielectric, Grounding Impedance, Anti-tipping, Stability, Strain Relief and Strength tests.

**1.03 SUBMITTALS**

**A. Manufacturer's Data:** Submit documentation confirming casework compliance with SEFA standards as follows: SEFA 8 – Metal Casework, SEFA 10 – Adaptable Systems

**B. Shop Drawings:** Provide plans, elevations, sections, and service run spaces for mechanical and electrical systems.

**C. Samples:** Submit material samples, including top materials, fittings, and hardware, if the manufacturer is unspecified.

**D. Third-Party Testing:** Submit third-party test results verifying SEFA compliance.

**E. Detailed Drawings:** Provide 3/4" = 1'-0" scale elevations and 1/4" = 1'-0" rough-in plans showing components, tolerances, and anchor placements.

## **PART 2 – PRODUCTS**

### **2.00 MANUFACTURERS**

#### **A. Design and Quality Standards:**

The design, materials, construction, and finish of the laboratory furniture specified establish the minimum acceptable quality standard for flexible laboratory casework. Hamilton Laboratory Solutions, located at 1 Pickroy Road, Jasper, GA 30143, serves as the basis for this specification. All equipment must be produced by a single manufacturer at one U.S. location to ensure consistent shipping and single-source responsibility. Quotations from manufacturers other than Hamilton Laboratory Solutions must include:

1. A list of engineering and manufacturing personnel
2. Proof of financial capacity to fulfill the contract
3. A list of at least ten (10) comparable installations completed within the last five (5) years

#### **B. Warranty:**

The selected manufacturer must provide a one-year warranty starting from the date of acceptance or occupancy (whichever comes first), guaranteeing all products are free from defects in material and workmanship. The purchaser must notify the manufacturer's representative immediately if any defects are identified, allowing the manufacturer an opportunity to inspect the goods. Products should not be returned until written shipping instructions are received from the manufacturer.

#### **C. Alternate Manufacturers:**

Manufacturers not listed in Section 2.00.A must submit samples in accordance with Section 1.03.B of the specifications. Proposals from alternate manufacturers are only invited if they meet the minimum design and performance requirements set by SEFA 8 – Metal Casework, SEFA 10 – Adaptable Systems, and UL 962 standards. A notarized letter stating full compliance, signed by an independent testing laboratory recognized by ASTM E 548, must be included with alternate proposals.

#### **D. Sample Compliance:**

The samples from the selected manufacturer will be impounded by the architect or owner to ensure that all materials delivered to the job site conform to the approved samples.

#### **E. UL Certification:**

A copy of the UL (Underwriters Laboratories) certification must be included with any alternate proposal, confirming full compliance with UL 962 testing and approvals.

## **2.01 MATERIALS**

### **A. General Requirements:**

This specification provides for a high-quality, adjustable, and movable casework system designed for laboratory environments. Major structural components shall be made from prime-grade, cold-rolled steel.

### **B. Sheet Steel:**

Cold-rolled sheet steel shall be prime grade, roller-leveled, and treated to be free of scale, ragged edges, deep scratches, or any other defects. All steel gauges shall conform to U.S. standards.

### **C. Plumbing Fixtures, Hoses, & Quick Connects:**

The upright frame structure shall house a maximum of three plumbing services.

1. Pre-plumbed needle valves – chromed brass straight pattern instrumentation needle with serrated hose end.
2. Plumbing lines for non-burning gases and vacuum – 3/8"OD polyethylene tubing shall terminate at a single point connection at the top of the upright.
3. Plumbing lines for burning gas – 3/8" OD braided stainless steel line.
4. Option: Union fitting or quick disconnects. Services cannot be intermixed. Additional 60" length poly coiled service line is available for non-burning gas which can be field trimmed for length and additional 48" length braided stainless steel service line is available for burning gas.
5. All service valves and optional quick connects shall be media keyed and color coded.

### **E. Electrical & Data Fittings:**

Electrical outlets shall be 20 amp, 120V, single-circuit, 3-wire duplex design, integrated into the horizontal or vertical assemblies as shown in the drawings. Outlets shall be pre-wired with a cord and twist-lock plug, long enough to reach an overhead service panel. Power variations include standard horizontal raceway in the uprights or a combination of each for both Data and Electrical. Connections to the facility by others.

## **2.02 CONSTRUCTION**

### **Endeavor Modular Table System Design Requirements**

#### **A. Modular free standing laboratory workstation system – Square Frames:**

1. These frames provide structural support for tables, shelves, worksurface table frames, and for all utility lines (data, electrical, services).
2. Modular units must be adaptable for wall-mounted, peninsula, or island configurations.
3. Rear frames may be supported by tables or anchored to the wall.
4. Frames should allow for easy removal of work surfaces.
5. The bench system must come pre-wired and pre-plumbed, with integrated cabling plug-ins and service lines. Quick-connect options available.
6. Heavy-duty leveling casters are required.
7. Welded framework with slotted uprights supports work surfaces, overhead shelving, and cabinetry, integrating with mobile under-counter cabinets.
8. The bench system and system components must be UL 962 submitted, approved and listed. anti-tipping requirements. Products must bear the UL Label. The testing standard shall include Dielectric, Grounding Impedance, Anti-tipping, Stability, Strain Relief and Strength tests.
9. Work surfaces and shelves must be adjustable in 2" increments, transitioning from sitting to standing height.

#### **B. Double-sided Rear Frame Support Structure (SQUARE):**

Supports heavy equipment, instruments, and samples. Tested to SEFA 10 standards, capable of holding up to 2000 pounds in the shared frame version

1. The rear frame support structure shall be 84" in height, available in nominal lengths of 36", 42", 48", 60", 72", and 96" and shall allow the mounting of a Worksurface Support Frame on both sides.
2. Rear frame support structures shall consist of two (2) 6" x 2" square shaped tube vertical members connected with a horizontal framing assembly that incorporates an upper horizontal cross rail. The upper cross rail shall provide a utility trough the full length of the table. The optional lower cross rail shall support integral double sided electrical and central plumbing raceway. The raceway may be specified with plumbing, electrical & data as required.
3. In addition to the horizontal framing structure, the 2" vertical members shall be able to accommodate up to three plumbing services each and a duplex electrical receptacle located below the worksurface.
4. Each vertical member shall include non-marring 3/8" diameter, levelers.
5. Rear frame support structures in widths of 60" wide and over shall have a center support to accommodate split shelving OR shall have no center support to accommodate full length shelving.
6. The vertical members shall have shelf/accessory slots punched on 1" increments starting at 55" above AFF to top of upright.

**C. Single-sided Rear Frame Support Structure (SQUARE):**

Supports heavy equipment, instruments, and samples. Tested to SEFA 10 standards, capable of holding up to 1000 pounds in single rear frame system.

1. The rear frame support structure shall be 84" in height and available in nominal lengths of 36", 42", 48", 60", 72", and 96", and shall allow the mounting of a Worksurface Support Frame on one side.
2. Rear frame support structures shall consist of two (2) 2" square tube full height vertical members, connected with a horizontal framing assembly that incorporates an upper horizontal cross rail. The upper cross rail shall provide a utility trough the full length of the table. The optional lower cross rail shall provide an integral two channel electrical raceway. The raceway may be specified with electrical & data as required.
3. The vertical members shall be able to accommodate up to three services each and a duplex electrical receptacle or data outlet.
4. Vertical members shall include non-marring, 3/8" diameter, levelers.
5. Rear frame support structures in widths of 60" wide and over shall have a center support to accommodate split shelving OR shall have no center support to accommodate full length shelving.
6. The vertical members shall have shelf/accessory slots punched on 1" increments on the front starting at 55" above AFF to top of upright.

**D. 6" Single-sided Rear Frame Support Structure (SQUARE):**

Supports heavy equipment, instruments, and samples. Tested to SEFA 10 standards, capable of holding up to 2000 pounds in the shared frame version.

1. The rear frame support structure shall be 84" in height and available in nominal lengths of 36", 42", 48", 60", 72", and 96", and shall allow the mounting of a Worksurface Support Frame on one side.
2. Rear frame support structures shall consist of two (2) 6" x 2" square shaped formed vertical members connected with a horizontal framing assembly that incorporates an upper cross rail. The upper cross rail shall provide a utility trough the full length of the table. An optional lower cross rail shall support integral double sided electrical and central plumbing raceway and center support for split shelving. The raceway may be specified with plumbing, electrical & data as required. The raceway can be single or double sided.
3. The vertical members shall be able to accommodate up to three services each and a duplex electrical receptacle or data outlet.
4. Vertical members shall include two (2) non-marring, 3/8" diameter, levelers each.
5. Rear frame support structures in widths of 60" wide and over shall have a center support to accommodate split shelving OR shall have no center support to accommodate full length shelving.
6. The vertical members shall have shelf/accessory slots punched on 1" increments on the front and back starting at 55" above AFF to top of upright.

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**E. Endeavor Four Leg Adjustable Table Frame (SQUARE):**

1. The Endeavor four leg table shall consist of a worksurface support frame as described above in A.1. Nominal lengths are 42", 48", 60", 72" and 96". Two additional leg members shall be bolted to the rear attachment collars to provide a four leg self-supporting table frame., adjustable in height from 29" to 36" AFF including 1" work surface.
2. Front and rear leg members shall be 11 gauge steel, 2" square and 1.75" square inner telescoping leg capable of vertical adjustment in 2" increments
3. Legs shall include non-marring, 3/8" diameter, levelers.
4. Supports heavy equipment, instruments, and samples. Tested to SEFA 10 standards, capable of holding up to 1000 pounds.

**D. Reference Standards:**

All casework, worksurfaces, and service fixtures must comply with SEFA (Scientific Equipment and Furniture Association) standards. Independent, third-party testing validating compliance may be requested.

1. SEFA 1.2 – Laboratory Fume Hoods
2. SEFA 2.3 – Installation of Scientific Laboratory Furniture
3. SEFA 3 – Work Surfaces
4. SEFA 7 – Laboratory and Hospital Fixtures
5. SEFA 8 – Laboratory Furniture
6. SEFA 10 – Adaptable Systems

**E. Worksurface Table Frames**

1. **General Requirements:**
  - a. Fabricated from 11-gauge cold-rolled steel, support legs use 2" square tubing with 1.75" inner telescoping leg of 11-gauge steel.
  - b. Finish: Chemical-resistant urethane powder paint (SEFA 8 approved).
2. **Nominal Dimensions:**
  - a. Width: [36"] [42"] [48"] [60"] [72"] [96"]
  - b. Depth: [24"] or [30"]
  - c. Adjustable Height: [28" to 36" AFF] in two inch increments (including 1" thick top)
3. **Load Testing:**
  - a. Tables must support 570 lbs. per linear foot, up to a maximum of 3470 lbs., with a deflection of no more than 0.125" at the front center rail under full load.



#### **F. Rear Frame Support Structure**

- 1. General Requirements:**
  - a. Vertical uprights allow for plumbing, electrical, and data cabling.
  - b. Uprights are 11-gauge, 2" square tubular steel; rear frame uprights are 2"x4" formed steel with removable side covers.
  - c. Rear slots removed to prevent tipping (UL 962 anti-tip compliant).
  - d. Side and rear leg braces are 11-gauge steel, mechanically secured to table legs.
- 2. Nominal Dimensions:**
  - a. Width: [36"] [42"] [48"] [60"] [72"] [96"]
  - b. Height: [87"]

#### **G. Shared Frame Support Structure**

- 1. General Requirements:**
  - a. Similar to rear frames but allows for shared use.
  - b. Single uprights support 11-gauge 2"x6" steel frames with removable side covers.
  - c. Passes UL 962 anti-tip tests.
- 2. Nominal Dimensions:**
  - a. Width: [36"] [42"] [48"] [60"] [72"] [96"]

#### **H. Ceiling Manifold System**

- 1. General Requirements:**
  - a. Integrates into standard T-grid ceiling systems.
  - b. Provides mounting for electrical outlets, data outlets, and quick-connect service fixtures.
    - i. Panels shall be 16 gauge powder coated steel, with cutouts to accept devices and fittings, installed, wired, and piped in the field, as specified and shown on

## **I. Adjustable Shelving**

### **1. General Requirements for Shelves:**

- a. Adjustable Shelves for tables shall be supported by 11 gauge brackets which mount to the slots in the rear frame support structure. They shall be adjustable in height on 1" increments.
- b. Wall Standards for wall mounted shelving shall utilize a 1" x 2" square "C" channel with single slots or 1" x 4.3" "C" channel with double slots. The slot pattern shall allow for 1" height adjustment.
- c. MAX shelving includes standard, inverted, and extended shelf brackets along with optional retaining rods and laser cut shelf lips. Shelf depths in 12", 18", and 24" options tested to loadbearing of 180-, 130-, 100-lbs. respectively.
  - i. Shelf Supports: Fabricated from powder-coated cold-rolled steel.
    1. Specifier's Option: Available in #304 stainless steel with #4 finish.
  - ii. Shelf Platforms: Fabricated from powder-coated cold-rolled steel.
    1. Specifier's Option: Available in #304 stainless steel with #4 finish.
  - iii. Shelf Brackets: Fabricated from 11-gauge powder-coated cold-rolled steel.
    1. Specifier's Option: Available in #304 stainless steel with #4 finish.
  - iv. Adjustability: Shelves are vertically adjustable in 1" increments.
  - v. Mounting: Can be mounted to wall frames, wall standards, or rear frames.
  - vi. Bracket Design: Standard shelf brackets extend above the shelf surface for side containment. Inverted shelves include end lips.
  - vii. Load Capacity: 40 pounds per linear foot, up to 200 lbs. per unit.
  - viii. Nominal Dimensions:
    1. Widths: [21"] [24"] [30"] [36"] [42"] [48"] [60"]
    2. Depths: [12"] [18"] [24"]
  - ix. Optional Extended Design: An optional extended shelf design provides a 3" overhang behind the vertical support.
  - x. Inverted Shelves: Available in 18" and 24" depths.
    1. Specifier's Option: Optional 3" overhang behind the vertical support.
  - xi. Reversible Shelf Retainer Lips: Fabricated from powder-coated cold-rolled steel. Repositioning requires simple hand tools.
    1. Specifier's Option: Available in #304 stainless steel with #4 finish.
  - xii. Lower and Middle Shelves: Fitted with a removable 18-gauge steel retainer serving as a backstop.
  - xiii. Upper Shelf: Fitted with a removable 18-gauge steel backstop retainer. Optional front retainer rod (0.375" diameter) positioned 1.25" above the shelf.

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**J. Work Surfaces:**

**1. Work Surfaces:**

Counter tops shall be as indicated on the drawings or as indicated by model number, and all clips, screws and parts for fastening top to table frame shall be included. Epoxy resin, phenolic resin, and stainless steel.

**a. Nominal Dimensions:**

- i. Widths: [36"] [42"] [48"] [60"] [72"] [96"]
- ii. Depths: [30"] [36"] [42"]

**b. Work Surface Types (Specifier's Option):**

- i. Phenolic resin – 1" thick
- ii. Epoxy resin – 1" thick
- Stainless steel – 1" thick

**K. Mobile Base Cabinets & Suspended Cabinets**

**1. General Requirements:**

Design, performance, materials, fabrication, and hardware must comply with steel casework specifications by Hamilton Laboratory Solutions.

**2. Cabinets with Casters:**

- a. Built without toe spaces. The base is reinforced to support 4" high swivel-locking casters, rated for at least 250 lbs. each.
- b. Cabinets must be finished on all four sides and the top, as these surfaces are visible. Or countertop can be added to top.
- c. The entire cabinet must be reinforced to prevent twisting and achieve industry-standard heights of 24" or 32".
- d. Available in inset or flush overlay designs, where the cabinet body is fully concealed.

**3. Drawer Safety:**

- a. Units with drawers must feature an anti-tipping mechanism, including an interlock, allowing only one drawer in a vertical stack to open at a time.

**L. Bulletin Boards:**

**1. General requirements:**

Bulletin boards are a dyed linoleum material framed in either powder painted steel or #304 stainless steel. Bulletin boards shall be both acoustical and tack able. Refer to drawing details. For fabric selection, provide color samples for owners review.

**2. Nominal dimensions:**

- a. Widths: : [36"] [42"] [48"] [60"] [72"] [96"]
- b. Heights: [20"] [18"] [16"] [14"] (from top of work surface to horizontal raceway)

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### **M. Modesty Panels**

**1. General requirements:**

Steel (painted or optional stainless steel) shall mount directly to rear frame. Modesty panel will mount with a simple clamp mechanism with simple hand tool.

**2. Nominal dimensions:**

- a. Widths: [36"] [42"] [48"] [60"] [72"] [96"]
- b. Heights: [19"] mounts directly below the worksurface

### **N. Tasklights**

- 1. Task lights shall be a custom 24VDC, Tunable White LED.
- 2. Task lights shall be controlled via basic On/Off Toggle Switch.
  - a. Specifier's Option -Task lights shall be controlled via Push-button, Rotary Dial Switch.
    - i. The Rotary Dial Switch shall control Task Light On/Off, Color Temperature Tuning and Brightness Dimming.
- 3. Task light minimum performance levels shall be as follows: with 40 foot candle room lighting at the work surfaces, the task light shall increase the work surface illumination to 80/100 foot candles.
- 4. **Nominal dimensions:**
  - a. Widths: [30"] [36"] [42"] [48"]

## **2.03 FINISH AND PERFORMANCE REQUIREMENTS**

### **A. Steel Paint System Finish and Performance Specification**

- 1. Steel Paint System Finish:
  - a. After welding, all component parts shall undergo a pre-paint treatment to ensure excellent adhesion and corrosion prevention. The steel shall be cleaned physically and chemically using an alkaline cleaner, followed by a spray treatment with a metallic phosphate solution to create a fine crystalline phosphate layer. This layer enhances both the bonding of the finish and protection against humidity and corrosive chemicals.
  - b. The treated steel shall be dried and coated with an environmentally friendly, chemical- and corrosion-resistant electrostatically applied powder coat. All components must be individually painted to ensure complete coverage. The coating shall be cured by baking at elevated temperatures to maximize corrosion and wear resistance.
  - c. The finish system, in standard colors, must meet the performance test requirements outlined below.

**B. Performance Test Results**

**1. Chemical Spot Tests:**

- a. **Procedure:** Non-volatile chemicals are tested by applying 5 drops of each reagent to the surface, covered with a 1-1/4" watch glass. Volatile chemicals are tested using a cotton ball saturated with reagent and covered with an inverted 2-ounce bottle to reduce evaporation. Tests are conducted at 77° ±3° F, ensuring the surface remains wet for one hour. After testing, the surface is rinsed, scrubbed, dried, and evaluated after 16-24 hours
- b. **Evaluation:** The surface is evaluated based on the following rating system:
  - i. Level 0: No detectable change.
  - ii. Level 1: Slight change in color or gloss.
  - iii. Level 2: Slight surface etching or severe staining.
  - iv. Level 3: Pitting, cratering, swelling, or erosion of the coating with significant deterioration.
  - v. No more than three (3) Level 3 conditions are acceptable.

**C. Test Reagents:**

Test No.	Chemical Reagent	Test Method
1	Acetate, Amyl	A
2	Acetate, Ethyl	A
3	Acetic Acid, 98%	B
4	Acetone	A
5	Acid Dichromate, 5%	B
6	Alcohol, Butyl	A
7	Alcohol, Ethyl	A
8	Alcohol, Methyl	A
9	Ammonium Hydroxide, 28%	B
10	Benzene	A
11	Carbon Tetrachloride	A
12	Chloroform	A
13	Chromic Acid, 60%	B
14	Cresol	A
15	Dichlor Acetic Acid	A
16	Dimethylformamide	A
17	Dioxane	A
18	Ethyl Ether	A
19	Formaldehyde, 37%	A
20	Formic Acid, 90%	B

21	Furfural	A
22	Gasoline	A
23	Hydrochloric Acid, 37%	B
24	Hydrochloric Acid, 48%	B
25	Hydrogen Peroxide, 3%	B
26	Iodine, Tincture of	B
27	Methyl Ethyl Ketone	A
28	Methylene Chloride	A
29	Mono Chlorobenzene	A
30	Naphthalene	A
31	Nitric Acid, 20%	B
32	Nitric Acid, 30%	B
33	Nitric Acid, 70%	B
34	Phenol, 90%	A
35	Phosphoric Acid, 85%	B
36	Silver Nitrate, Saturated	B
37	Sodium Hydroxide, 10%	B
38	Sodium Hydroxide, 20%	B
39	Sodium Hydroxide, 40%	B
40	Sodium Hydroxide, Flake	B
41	Sodium Hydroxide, Saturated	B
42	Sulfuric Acid, 33%	B
43	Sulfuric Acid, 77%	B
44	Sulfuric Acid, 96%	B
45	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	B
46	Toluene	A
47	Trichloroethylene	A
48	Xylene	A
49	Zinc Chloride, Saturated	B

**D. Heat Resistance:**

Hot water (190° F - 205° F) is allowed to flow over the finished surface for five minutes. After cooling and drying, the surface must show no visible effect.

**E. Impact Resistance:**

A 1-pound ball dropped from 12 inches onto the surface should result in no cracks or checks in the finish when examined closely.

**F. Bending Test:**

An 18-gauge steel strip, finished as specified, bent 180° over a 1/2" diameter mandrel, must show no peeling or flaking of the finish.

**G. Adhesion:**

Using the scratch adhesion test (ASTM D2197 68), 90 or more squares of the test grid must remain coated. A grid of 100 squares is cut into the coating, and the surface is brushed lightly before examination under 100 foot-candles of illumination.

**H. Hardness:**

The finish must have a hardness rating of 4H based on the pencil hardness test. Pencils of increasing hardness are pushed across the surface until one scratches the film. The hardest pencil that does not rupture the film is used to determine the hardness.

## **PART 3 – EXECUTION**

### **3.00 SITE EXAMINATION**

The owner and/or representative must ensure that all building conditions necessary for the installation of finished goods are met. All critical dimensions and conditions previously checked by other contractors (general, mechanical, electrical, etc.) must be adhered to, ensuring a quality installation.

#### **A. Delivery, Storage, and Handling:**

1. Schedule delivery to ensure immediate installation in sufficiently prepared spaces.
2. Protect finished surfaces from damage during handling and installation.

#### **B. Project Conditions:**

Equipment delivery/installation may proceed when the following conditions are met:

1. Windows and doors are installed, and the building is secure and weather-tight.
2. Ceiling, overhead ductwork, and lighting are installed.
3. All painting is complete, and flooring is installed.

### **3.01 INSTALLATION**

#### **A. Preparation:**

Before beginning casework installation, verify that no irregularities exist that could affect the quality of the work specified.

#### **B. Coordination:**

Coordinate installation with other ongoing work, particularly mechanical and electrical connections, and general construction in the area, including those involving fume hoods.

#### **C. Performance:**

1. **Casework:**
  - a. Set casework plumb, square, and straight with no distortion. Securely anchor to the building structure, using concealed shims as needed.
  - b. Bolt continuous cabinets together, ensuring joints are flush, tight, uniform, and aligned within a 1/16" tolerance.
  - c. Secure wall cabinets to solid supporting materials (not plaster, lath, or gypsum board).
  - d. Ensure the top edges of surfaces are in one plane. Flush joints between top units must not exceed 1/8".



**2. Worksurfaces:**

- a. Where necessary due to field conditions, scribe surfaces to abutting walls or materials.
- b. Only factory-prepared field joints, as specified in approved shop drawings, are permitted. Secure joints in the field following the same procedures used in the factory.
- c. Secure worksurfaces to casework and equipment using manufacturer-recommended materials and procedures.

**D. Adjust and Clean:**

1. Repair or replace defective work as directed by the owner and/or representative after installation is completed.
2. Adjust all doors, drawers, and other moving parts to ensure smooth operation.
3. Clean shop-finished casework and touch up as necessary.
4. Clean worksurfaces, leaving them free of grease and streaks.
5. Ensure the casework is left broom-clean and in an orderly state.

**E. Protection:**

1. Implement protective measures to prevent casework and equipment from being damaged by ongoing construction activity.
2. Advise the owner and/or representative of necessary procedures and precautions to protect the installed laboratory casework and fixtures from damage by other trades.