SECTION 123553 – Evolution – Column Based Workstation System

PART 1: DESCRIPTION OF WORK

1.00 SUMMARY AND SCOPE

A. Section Includes:

1. Kewaunee Scientific Corporation's, **EVOLUTION Column Based Workstation System**, a modular component system used to create work space and storage assemblies. Furnish all cabinets and casework, including tops, supporting structures, free standing tables and miscellaneous items equipment as listed in these specifications, or equipment schedules, including delivery to the building, setting in place, leveling, scribing to walls and floors as required.

2. Pre-plumbing and pre-wiring **EVOLUTION Workstations** where called for in these specifications, equipment schedules or shown on drawings. Services shall be plumbed using flexible hoses and shall terminate at a single point connection above the top of the vertical support member as specified or as shown on drawings. Pre-wired power service shall terminate at a power cord at the top of the vertical support member as specified, or as shown on drawings.

3. Utility service outlet accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings as mounted on the laboratory furniture, not specified as pre-plumbed or pre-wired, shall be furnished only. The above-defined items shall be furnished with supply tank nipples and lock nuts, loose in boxes and properly marked. These plumbing and electrical fittings will be packaged separately and properly marked for delivery to the appropriate contractor.

4. Furnishing and delivering, packed in boxes for installation by the mechanical contractor, all laboratory sinks, cup sinks or drains, drain troughs, overflows and sink outlets with integral tailpieces, which occur above the floor, and where these items are part of the equipment or listed in the specifications, equipment schedules or shown on the drawings. Integral tailpieces when required shall be in accordance with the manufacturer's standards. All tailpieces shall be furnished less the couplings required to connect them to the drain piping system.

5. Furnishing service strip supports where specified, and setting in place service tunnels, service turrets, supporting structures and reagent racks of the type shown on the details.

6. Removal of all debris, dirt and rubbish accumulated as a result of the installation of the laboratory furniture to an onsite container provided by others, leaving the premises clean and orderly.

B. Related Divisions:

1. Divisions 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

C. Related Publications:
   1. SEFA 3 – Scientific Equipment and Furniture Association
   2. SEFA 8 – Scientific Equipment and Furniture Association
   3. NFPA 30 – National Fire Protection Association
   4. NFPA-45 – National Fire Protection Association
   5. UL – Underwriters Laboratories
   6. ASTM D522 – Bending Test

1.01 BASIS OF WORK

A. It is the intent of this specification to use **Evolution Column Based Workstation System** as the standard of construction for modular system furniture. The construction standards of this product line shall provide the basis for quality and function.

B. Supply all equipment in accordance with this specification. The offering of a product differing in materials and construction from this specification requires written approval from the owner/architect. This approval must be obtained seven (7) days before the quotation deadline. Procedures for obtaining approval for an alternate manufacturer are defined in section 2.00.C in this specification.

C. General Contractors should secure a list of approved laboratory furniture manufacturers from the architect as a protection against non-conformance to these specifications.

D. Participants in the quotation process have the option of clarifying deviations to the specified design, construction, or materials. Without such clarifications, sealed quotations to the owner or owner representative will be construed as being in total conformance to the requirements of the specification.

E. The owner/owner representative reserves the right to reject qualified or alternate proposals and to award based on product value where such action assures the owner greater integrity of product.

1.02 QUALITY ASSURANCE

A. The modular component system furniture contractor shall also provide work tops and casework **all manufactured or shipped from the same geographic location** to assure proper quality assurances, staging, shipment and single source responsibility.

B. General Performance: Provide certification that furniture shall meet the performance requirements described in SEFA 8 and SEFA 10.

1.03 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's data and installation instructions for each type of system and casework. Provide data indicating compliance with SEFA 8 and SEFA 10.

B. Samples:
Samples from non-specified manufacturers will be required and reviewed per specification. Samples shall be delivered, at no cost to the architect or owner to a destination set forth by the architect or owner. This must be done seven (7) days before quotation deadline as a condition of approval of each bidder. Samples shall be full size, production type samples. Miniature, or "Show Room" type samples are not acceptable. Furnish the following:
   1. Complete table structure with shelves and accessories, mobile cabinet and required hardware.
   2. One sample of all top materials shown or called for, of sufficient size to perform finish requirement tests.

3. Sample of all mechanical service fittings, locks, door pulls, hinges, and interior hardware.

C. Shop Drawings:
Submit shop drawings for furniture assemblies showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fittings.
1. Coordinate shop drawings with other work involved.
2. Provide roughing-in drawings for mechanical and electrical services when required.

PART 2 – PRODUCTS

2.00 MANUFACTURERS

A. The basis of this specification is a modular component system manufactured according to the standards used by **Kewaunee Scientific Corporation**, 2700 Front Street, Statesville, North Carolina. The specified design is EVOLUTION. All laboratory equipment covered by the specification shall be the product of one manufacturer and be fabricated at one geographic location in the United States to assure shipping continuity and single-source responsibility. All quotations from a manufacturer other than Kewaunee Scientific Corporation shall contain a review of the following capabilities:
3. List of engineering and manufacturing personnel
4. Proof of financial ability to fulfill the contract
5. List of a minimum of ten (10) installations over the last five (5) years of comparable scope
6. Proof of project management and installation capabilities

B. The selected manufacturer must warrant for a period of one-year starting (date of acceptance or occupancy, whichever comes first) that all products sold under the contract referenced above shall be free from defects in material and workmanship. Purchaser shall notify the manufacturer's representative immediately of any defective product. The manufacturer shall have a reasonable opportunity to inspect the goods. The purchaser shall return no product until receipt by purchaser of written shipping instructions from the manufacturer.

C. All manufacturers other than those mentioned in section 2.00.A. must submit samples made in accordance with this specification Section 1.03.B.

D. The above samples of the successful manufacturer will be impounded by the architect or owner to insure that material delivered to jobsite conforms in every respect to the samples submitted.

2.01 MATERIALS

A. General Requirements:
It is the intent of this specification to provide a high quality adjustable and moveable casework system designed for the laboratory environment. Major structural components are made from high quality cold rolled steel.

B. Sheet Steel:
Cold rolled sheet steel shall be prime grade; roller leveled, and shall be treated at the mill to be free of scale, ragged edges, deep scratches or other injurious effects. All gauges shall be U.S. Standard.

C. Glass:
Glass used for framed sliding and swinging doors shall be 1/8" float glass. Glass used for unframed sliding doors, shall be 1/4" float glass.

D. Plumbing Fixtures, Hoses & Quick Connects:
Fixtures shall be ball or needle valves as manufactured by Watersaver Faucet Company, pre-plumbed to a reinforced PVC hose with 3/8" male quick-connect fittings, hose to be of a

length as required to easily reach an overhead service panel/carrier. For flammable gasses, a braided stainless steel hose shall be used.

E. Electrical Fittings:
Electrical outlets shall be 20 amp 120V single circuit 3-wire duplex design integrated into the horizontal and/or vertical assemblies as shown on drawings. Outlets shall be pre-wired with a cord and plug, cord to be of adequate length to easily reach an overhead service panel/carrier. Data outlets where shown on drawings shall be RJ45 Duplex style, wired in the field by others.

2.02 CONSTRUCTION

A. Evolution Column Based Workstations:
The Evolution Column Based Workstation shall be comprised of two Column Assemblies, a Worksurface Frame, and a Worksurface. Workstations shall be available in lengths from 24" to 96" in 6" increments, in three depths: 24", 30", and 36" and in three heights: 36", 54, and 84".

1. Column Assembly:
   a. Column assemblies shall be 1-3/4" wide, 9" or 12" deep, and 36", 54" or 84" high. They shall consist of two extruded aluminum uprights fastened to a 2"x3" steel tubular foot by means of an 11-gauge steel gusset, bead welded to the foot for maximum structural strength.

   b. Column assemblies shall include non-conductive floor levelers that provide a minimum of 3/4" of vertical adjustment. Single-sided column assemblies shall include two (2) levelers, double-sided column assemblies shall include three (3).

   c. Each side of the column assembly shall have two (2) vertical slots that run from the base of column to the top of the column to accommodate worksurface brackets, shelf brackets, and other column mounted accessories. The vertical slots shall be continuous to provide infinite height adjustment of worksurface and other column mounted accessories.

2. Worksurface Support Frame:
   The worksurface support frame shall consist of two (2) Support Brackets, a Modesty Panel at the rear, and an Apron Rail at the front. 30" and 36" deep worksurface support frames shall also include a Support Rail at the rear hanging for suspended cabinets.

   a. The Support Brackets, Apron Rail, and Support Rail shall be fabricated of 12-gauge powder coated steel.

   b. The Modesty Panel shall be fabricated of 16-gauge powder coated steel.

   c. All members of the worksurface support frame shall be assembled with threaded fasteners.

   d. The worksurface support frame shall be fastened to the column assemblies using threaded fasteners.

3. Worksurface:
   Worksurfaces shall be available in lengths and depths to match the workstations, and in four (4) materials: standard and ESD laminate, phenolic resin, and Kemresin. Worksurfaces shall be pre-drilled and fitted with 1/4-20 metal inserts to allow the worksurface to be fastened to the support brackets, modesty panel, and front apron rail.

   a. High Pressure Laminate:
      Standard and ESD laminated worksurfaces shall be 1-1/16" thick, consisting of a

5/64" plastic laminate sheet applied to both sides of a pressed particle board core of not less than 42 lb density. Laminate worksurfaces shall have a full 180-degree wrapped front edge for end user comfort.

b. Kemresin (epoxy resin):
Kemresin molded epoxy resin tops shall be molded from a modified epoxy resin that has been especially compounded and cured to provide the optimum physical and chemical resistance properties required of a heavy-duty laboratory table top. Tops shall be a uniform mixture throughout their full thickness, and shall not depend upon a surface coating that is readily removed by chemical and/or physical abuse. Tops shall be Black, Grey, Slate, or Putty in color. Tops shall be 1" thick, chamfered and with drip grooves on front edges. Ends and back edges shall be finished square.

c. Phenolic Resin:
Phenolic Resin tops shall be available in colors from manufacturer's standard offering. Tops shall be 1" thick, composed of a cellulose fiber reinforced phenolic resin core with a highly cross linked polyurethane copolymer surface. Tops shall be chamfered on front edges. Ends and back edges shall be finished square.

B. Adjustable Shelving:
Adjustable Shelf Assemblies for Evolution workstations shall consist a steel shelf and two (2) steel shelf brackets. They shall be available in lengths to match workstation lengths and in depths of 12", 15", 18", and 24". Center mounted shelves shall be available in additional depths of 30" and 36". Shelf assemblies shall be fastened to the vertical slots on the column assemblies to provide infinite height adjustment and support 200 lbs. evenly distributed.

1. Shelves:
Shelves shall be formed of 14-gauge powder coated steel, formed down 1" then returned back and up into a channel formation. They shall be available with a 1" high steel lip on either front or back edges, both edges, or without.

2. Shelf Brackets:
Shelf brackets shall be formed of 12-gauge powder coated steel and be available in either bookend or under mount styles. 12" and 15" under mount shelf brackets will allow shelves to be mounted either flat or at an incline.

C. Overhead Service Panel

1. Overhead service panels shall provide a means to mount and connect, electrical, data, and service fitting in a standard overhead ceiling grid.

2. Panels shall be 12 gauge powder coated steel, with cutouts to accept devices and fittings, installed, wired, and piped in the field, as specified and shown on the drawings.

D. Casework:
Casework for the Evolution Column Based Workstation system shall include floor mounted, suspended, and mobile cabinet styles.
Cabinet shall be:

SELECT ONE FROM THE FOLLOWING: (Refer to the Kewaunee Scientific Master Specifications for complete specification information for each casework option):

1. Steel Casework (Research Collection)
Drawer and Door Style: (pick one)

Inset – Square Edge
Drawers and doors, when closed, shall be recessed to create an overall flush face with

1/8" reveals. The outer drawer and door head shall have a channel formation on all four sides to eliminate sharp raw edges of steel. The top front corners of the door shall be welded and ground smooth.

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----- or -----

Inset – Contour
Drawers and doors, shall have a full width, integral contour radiused pull along the top edge, and when closed, shall be recessed to create an overall flush face with 1/8" reveals. The outer drawer and door head shall have a channel formation on all four sides to eliminate sharp raw edges of steel. The top front corners of the door shall be welded and ground smooth.

----- or -----

Overlay – Square Edge
Drawer and door, when closed, shall rest against face of cabinet shell, creating a 3/4" overlay front with 1/8" reveal. The outer drawer and door head shall have a channel formation on all four sides to eliminate sharp raw edges of steel. The top front corners of the door shall be welded and ground smooth. Cabinet shall be available with 5-knuckle, semi-concealed or concealed hinges and optional pulls.

----- or -----

Overlay – Wood on Steel
Drawer head and door, when closed, shall rest against face of cabinet shell, creating a 3/4" overlay front with 1/8" reveal. The door and drawer head shall be 3/4" thick, square edged, composition core, hardwood veneer plywood with 1/8" hardwood edging. The exposed grain for doors and drawer fronts shall run vertical and be matched to the door or drawer front above or below it. Drawer heads shall be grooved on backside to interlock with channel formation in drawer body. Cabinet shall be available with 5-knuckle, semi-concealed or concealed hinges and optional pulls.

The hardwood species shall be: (chose one)
Red Oak
or
Maple

Overlay – Wood on Steel shall be full overlay construction, with doors and drawer fronts overlapping the cabinet face frame. The doors and drawer fronts shall be 3/4" thick, square edged with a satin finished recessed aluminum pull. A 5-knuckle stainless steel hinge shall be used for swinging doors, along with a positive door latching mechanism to prevent rebounding. Roller catches are not acceptable. The drawer shall have a one piece body and a 150 lb. self-closing drawer guide.

----- or -----

Overlay – Bevel Edge
Drawer head and door shall have a 45° beveled top edge and shall rest against face of cabinet shell, when closed, creating a 3/4" overlay front with 1/8" reveal. The outer door and drawer head shall have a channel formation on all four sides to eliminate sharp raw edges of steel and the top front corners shall be welded and ground smooth. Cabinet shall be available with 5-knuckle, semi-concealed or concealed hinges and optional pulls.

2. Wood Casework (Signature Series):
Drawer and Door Style: (pick one)

Style-1 – Red Oak or White Maple
Style-1 conventional radius lip construction shall be a semi-overlay construction with radiused edge door and drawer fronts routed to partially overlap the cabinet face frame. Grain shall be horizontal on drawer fronts and vertical on doors. A variety of pull options shall be available.The hinge shall be 5-knuckle stainless steel. The drawer shall use a dovetail birch plywood construction with a full-extension ball bearing slide.

----- or -----

Style-3 – Red Oak Only
Style-3 construction shall be a full overlay construction with 3/4" thick, radiused edge door and drawer fronts overlapping the cabinet face. The drawer fronts shall be solid hardwood. Pulls shall be created by a full length lipped horizontal shape routed into the door and drawer front. Grain shall be horizontal on drawer fronts and vertical on doors. The hinge shall be 5-knuckle stainless steel. The drawer shall use a dovetail birch plywood construction with a full-extension ball bearing slide.

----- or -----

Style-5 – Red Oak or White Maple
Style-5 full overlay style shall be a full overlay construction with minimal reveal. The 3/4" square edged door and drawer fronts shall overlap the cabinet face frame creating nominal 1/8" reveals between doors and drawers and at cabinet ends. Grain shall be vertical on drawer fronts and doors and shall match across the face of the cabinet. A variety of pull options shall be available. The hinge is 5 knuckle stainless steel. The drawer shall use a dovetail birch plywood construction with a full-extension ball bearing slide.

2.03 Finish and Performance Requirements

A. Steel Paint System Finish and Performance Specification:

1. Steel Paint System Finish:
   After the component parts have been completely welded together and before finishing, they shall be given a pre-paint treatment to provide excellent adhesion of the finish system to the steel and to aid in the prevention of corrosion. Physical and chemical cleaning of the steel shall be accomplished by washing with an alkaline cleaner, followed by a spray treatment with a complex metallic phosphate solution to provide a uniform fine grained crystalline phosphate surface that shall provide both an excellent bond for the finish and enhance the protection provided by the finish against humidity and corrosive chemicals.

   After the phosphate treatment, the steel shall be dried and all steel surfaces shall be coated with a chemical and corrosion-resistant, environmentally friendly, electrostatically applied powder coat finish. All components shall be individually painted, insuring that no area be vulnerable to corrosion due to lack of paint coverage. The coating shall then be cured by baking at elevated temperatures to provide maximum properties of corrosion and wear resistance.

   The completed finish system in standard colors shall meet the performance test requirements specified under PERFORMANCE TEST RESULTS.

   Performance Test Results (Chemical Spot Tests):

   a. Testing Procedure:
      Chemical spot tests for non-volatile chemicals shall be made by applying 5 drops of each reagent to the surface to be tested and covering with a 1-1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2-ounce wide mouth bottle to retard evaporation. All spot tests shall be conducted in such a manner that the test surface is kept wet throughout the entire test period, and at a temperature of 77° ±3° F. For both methods, leave the reagents on the panel for a period of one hour. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried. Volatile solvent test areas shall be cleaned with a cotton swab soaked in the solvent used on the test area. Immediately prior to evaluation, 16 to 24 hours after the reagents are removed, the test surface shall be scrubbed with a damp paper towel and dried with paper towels.

   a. Test Evaluation:
      Evaluation shall be based on the following rating system.

      Level 0 – No detectable change.
      Level 1 – Slight change in color or gloss.
      Level 2 – Slight surface etching or severe staining.
      Level 3 – Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.

      After testing, panel shall show no more than three (3) Level 3 conditions.

   b. Test Reagents

Test No.	Chemical Reagent	Test Method
1.	Acetate, Amyl	Cotton ball & bottle
2.	Acetate, Ethyl	Cotton ball & bottle
3.	Acetic Acid, 98%	Watch glass
4.	Acetone	Cotton ball & bottle

5.	Acid Dichromate, 5%	Watch glass
6.	Alcohol, Butyl	Cotton ball & bottle
7.	Alcohol, Ethyl	Cotton ball & bottle
8.	Alcohol, Methyl	Cotton ball & bottle
9.	Ammonium Hydroxide, 28%	Watch glass
10.	Benzene	Cotton ball & bottle
11.	Carbon Tetrachloride	Cotton ball & bottle
12.	Chloroform	Cotton ball & bottle
13.	Chromic Acid, 60%	Watch glass
14.	Cresol	Cotton ball & bottle
15.	Dichlor Acetic Acid	Cotton ball & bottle
16.	Dimethylformanide	Cotton ball & bottle
17.	Dioxane	Cotton ball & bottle
18.	Ethyl Ether	Cotton ball & bottle
19.	Formaldehyde, 37%	Cotton ball & bottle
20.	Formic Acid, 90%	Watch glass
21.	Furfural	Cotton ball & bottle
22.	Gasoline	Cotton ball & bottle
23.	Hydrochloric Acid, 37%	Watch glass
24.	Hydrofluoric Acid, 48%	Watch glass
25.	Hydrogen Peroxide, 3%	Watch glass
26.	Iodine, Tincture of	Watch glass
27.	Methyl Ethyl Ketone	Cotton ball & bottle
28.	Methylene Cloride	Cotton ball & bottle
29.	Mono Chlorobenzene	Cotton ball & bottle
30.	Naphthalene	Cotton ball & bottle
31.	Nitric Acid, 20%	Watch glass
32.	Nitric Acid, 30%	Watch glass
33.	Nitric Acid, 70%	Watch glass
34.	Phenol, 90%	Cotton ball & bottle
35.	Phosphoric Acid, 85%	Watch glass
36.	Silver Nitrate, Saturated	Watch glass
37.	Sodium Hydroxide, 10%	Watch glass
38.	Sodium Hydroxide, 20%	Watch glass
39.	Sodium Hydroxide, 40%	Watch glass
40.	Sodium Hydroxide, Flake	Watch glass
41.	Sodium Sulfide, Saturated	Watch glass
42.	Sulfuric Acid, 33%	Watch glass
43.	Sulfuric Acid, 77%	Watch glass
44.	Sulfuric Acid, 96%	Watch glass
45.	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass
46.	Toluene	Cotton ball & bottle
47.	Trichloroethylene	Cotton ball & bottle
48.	Xylene	Cotton ball & bottle
49.	Zinc Chloride, Saturated	Watch glass

* Where concentrations are indicated, percentages are by weight.

c. Performance Test Results (Heat Resistance):
Hot water (190° F - 205° F) shall be allowed to trickle (with a steady stream at a rate not less than 6 ounces per minute) on the finished surface, which shall be set at an angle of 45° from horizontal, for a period of five minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water treatment.

d. Performance Test Results (Impact Resistance):
A one-pound ball (approximately 2" diameter) shall be dropped from a distance of 12 inches onto the finished surface of steel panel supported underneath by a solid surface. There shall be no evidence of cracks or checks in the finish due to impact

upon close eye-ball examination.

e. Performance Test Results (Bending Test):
An 18 gauge steel strip, finished as specified, when bent 180^{o} over a 1/2" diameter mandrel, shall show no peeling or flaking off of the finish.

f. Performance Test Results (Adhesion):
Ninety or more squares of the test sample shall remain coated after the scratch adhesion test. Two sets of eleven parallel lines 1/16" apart shall be cut with a razor blade to intersect at right angle thus forming a grid of 100 squares. The cuts shall be made just deep enough to go through the coating, but not into the substrate. They shall then be brushed lightly with a soft brush. Examine under 100 foot-candles of illumination. Note: This test is based on ASTM D2197-68, "Standard Method of Test for Adhesion of Organic Coatings".

g. Performance Test Results (Hardness):
The test sample shall have a hardness of 4-H using the pencil hardness test. Pencils, regardless of their brand are valued in this way: 8-H is the hardest, and next in order of diminishing hardness are 7-H, 6-H, 5-H, 4-H, 3-H, 2-H, F, HB, B (soft), 2-B, 3-B, 4-B, 5-B (which is the softest).

The pencils shall be sharpened on emery paper to a wide sharp edge. Pencils of increasing hardness shall be pushed across the paint film in a chisel-like manner until one is found that will cut or scratch the film. The pencil used before that one, that is, the hardest pencil that will not rupture the film, is then used to express or designate the hardness.

2.04 SINKS, CUPSINKS, AND DRAIN TROUGHS

A. SINKS:
(Choose one or more from SINKS, CUPSINKS, and DRAIN specification)
1. Molded Epoxy Resin Sinks (Kemresin)
2. Stainless Steel Sinks

B. CUPSINKS
(Choose one or more from SINKS, CUPSINKS, and DRAIN specifications)
1. Molded Epoxy Resin Cupsinks (Kemresin)
2. Polyethylene Cupsinks:

C. DRAIN TROUGHS
(Import information from SINKS, CUPSINKS, and DRAIN specifications)

2.05 FITTINGS

A. Materials (Choose one or more and import information from SERVICE FITTINGS AND ACCESSORIES spec):
   1. Chrome-plated red brass
   2. Epoxy Coated brass

B. Construction (Choose one or more and import information from SERVICE FITTINGS AND ACCESSORIES spec):
   1. Valves:
      a. Water
      b. Steam
      c. Distilled Water
      d. Ground key dry service
      e. Needle valve dry service
      b. Outlets
      c. Goosenecks
      d. Aerator outlets
      e. Tank nipples
      f. Sink outlets
      g. Electrical Fittings
      h. Miscellaneous
      i. Crumb cup strainers
      j. Vacuum breakers

i.

C. Performance (Choose one or more and import information from SERVICE FITTINGS AND ACCESSORIES spec):
   1. Laboratory ball valves
      a. Needle point cocks
      b. Vacuum valve
      c. Water (H&C) valve
      b. Steam valve

PART 3 - EXECUTION - LABORATORY CASEWORK AND RELATED PRODUCTS

3.00 SITE EXAMINATION

A. The owner and/or his representative shall assure all building conditions conducive to the installation of a finished goods product; all critical dimensions and conditions previously checked have been adhered to by other contractors (general, mechanical, electrical, etc.) to assure a quality installation.

3.01 INSTALLATION

A. Preparation:
Prior to beginning installation of casework, check and verify that no irregularities exist that would affect quality of execution of work specified.

B. Coordination:
Coordinate the work of the Section with the schedule and other requirements of other work being prepared in the area at the same time both with regard to mechanical and electrical connections to and in the fume hoods and the general construction work.

C. Performance:
1. Casework:
    a. Set casework components plumb, square, and straight with no distortion and securely anchor to building structure. Shim as required using concealed shims.
    b. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16" tolerance.
    c. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.
    d. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8" between top units.

2. Worksurfaces:
    a. Where required due to field conditions, scribe to abutting surfaces.
    b. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure the joints in the field, where practical, in the same manner as in the factory.
    c. Secure worksurfaces to casework and equipment components with materials and procedures recommended by the manufacturer.

D. Adjust and Clean:
1. Repair or remove and replace defective work, as directed by owner and/or his representative upon completion of installation.
2. Adjust doors, drawers and other moving or operating parts to function smoothly.
3. Clean shop finished casework; touch up as required.
4. Clean worksurfaces and leave them free of all grease and streaks.
5. Casework to be left broom clean and orderly.

E. Protection:
1. Provide reasonable protective measures to prevent casework and equipment from being exposed to other construction activity.
2. Advise owner and/or his representative of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.