

SECTION 123553 - LABORATORY CASEWORK AND OTHER FURNISHINGS**GENERAL**

1.1 SUMMARY

- A. Provide the work of this Section in accordance with requirements of the Contract Documents.
- B. Completely coordinate with work of other trades.
- C. Section Includes:
 - 1. Laboratory Casework and Casework Systems:
 - a. Laboratory Casework Systems
 - b. Metal Laboratory Casework.
 - c. Cabinet Hardware.
 - 2. Metal Fabrications and Finish Requirements.
 - 3. Worksurfaces and Miscellaneous Tables
 - a. Laboratory Work Surfaces.
 - b. Welding Tables
 - 4. Shelving and Support Systems
 - a. Post-Supported Shelving
 - 5. Miscellaneous Furnishings
 - a. Bin Storage Units
- D. Delegated Design: Engage a qualified professional engineer licensed in the state of Missouri, experienced in the design of casework and furnishings restraints to meet the specific performance requirements.

1.2 REFERENCES

- A. References and Quality Assurance
 - 1. Work shall conform to the recommended practices of the Scientific Equipment and Furniture Association (SEFA), current version, except as superseded by this specification:
 - a. SEFA 2 - Installation.
 - b. SEFA 3 - Work Surfaces.
 - c. SEFA 7 - Fixtures.
 - d. SEFA 8-M – Laboratory Grade Metal Casework.
 - 2. Architectural Woodwork Standard (AWS), 2nd edition, published by the Architectural Woodwork Institute.
 - a. Wood, decorative laminate, and solid phenolic casework, and epoxy resin and solid phenolic resin worksurfaces shall comply with the AWS, second edition, for grades of casework, construction, finishes, and other requirements.
 - b. Provide AWI-QCP labels indicating that the casework and shelving, including installation, comply with the requirements of grades specified.

-
- c. This project had been registered as AWI-QCP project number [insert number here].
 - d. The Contractor, upon award of work, shall register the work under this section with the AWI Quality Certification Program (QCP).
3. American National Standards Institute:
- a. ANSI A208.1 – Particleboard, current edition.
 - b. ANSI A208.2 – Medium Density Fiberboard (MDF) for Interior Applications, current edition.
 - c. ANSI/HVPA HP-1 – American National Standard for Hardwood and Decorative Plywood, with the Hardwood Veneer Plywood Association, current edition.
 - d. ANSI/BHMA A156.9 Cabinet Hardware Standards, Grade 1.
 - e. ANSI/NEMA LD 3 High-Pressure Decorative Laminates.

B. Performance Requirements

- 1. Cabinets may be manufacturer's standard height and depth, provided such standard is not more or less than 1/2 inch [13mm] of the height and depth indicated on the Drawings, unless noted otherwise in this Section.
- 2. System Structural Performance:
 - a. Laboratory casework and support framing system shall withstand the effects of the following loads and stresses without permanent deformation, excessive deflection, or binding of drawers and doors:
 - 1) Casework, doors, drawers, work surfaces and shelving shall be in compliance with SEFA requirements for the respective casework material.
 - b. Work Surfaces: In addition to SEFA test requirements, work surface spans without continuous base cabinet support shall support 50 lb/sf [244kg/m²]; deflection shall be limited to 1/180 of the length of the span, not to exceed 1/4 inch [6.35mm].
 - c. Shelving: In addition to SEFA test requirements:
 - 1) Shelf spans without continuous support shall support 50 lb/sf [244kg/m²].
 - a) Deflection shall be limited to 1/144 of the length of the span, not to exceed 1/4 inches [6.35mm].
 - d. Seismic Anchor: Provide seismic anchor for freestanding. Seismic anchors may be floor or wall attachments, but shall not attach to adjacent casework or work surfaces. Seismic anchors shall be accessible without removal of laboratory casework, furnishings, or equipment. Anchor attachment shall not void UL listing.
 - e. Suspended and laser shelving systems:
 - 1) Satisfy lateral loading requirements identified in Division 1 or on Structural Drawings.
 - 2) Design to support framing and live load requirement identified for casework above.

1.3 ACTION SUBMITTALS

A. Product Data:

- 1. Submit materials list, including catalogue data, of materials, equipment, and products for work in this section.

B. Shop Drawings:

1. Shop fabrication and installation drawings, including plans, elevations, sections, details and schedules.
2. Show relationship to adjoining materials and construction.
3. Indicate fasteners to secure removable panels and components.
4. Submit wood, decorative laminate, and solid phenolic casework shop drawings after accepted by WI MCP reviewer.
5. Indicate surface grain directions on wood casework.

C. Samples: Accompanying Materials List, submit four (4) samples of each of following items for Architect's approval:

1. Laboratory Work Surfaces: 4 inches x 4 inches [100mm by 100mm] sample of each type specified.
2. Painted Surfaces: 3 inches x 5 inches [75mm by 125mm] sample of each available standard color, or specified color if identified in Finish Schedule, as is applicable.
3. Hardware: Submit samples of each hardware item that will be visible at exposed surfaces when the job is complete.

D. Informational Submittals:

1. Structural:
 - a. Submit detailed anchorage and attachment drawings and calculations to show compliance with seismic restraint requirements.
 - b. Engineering design shall be performed and sealed by registered Engineer, licensed to practice structural engineering in the state of the project location.
2. Load Tests: Provide on request, load test results certified by an independent testing laboratory for cabinet box, drawers, doors, suspensions slides, and unit shelving as identified in SEFA 8.
3. Wood products and painted metal finish:
 - a. Provide letter from a third-party testing agency, verifying independent chemical resistance test results.
 - 1) Provide documentation that specified substrates for wood and laminate casework and tops, sink cabinets, and tops with sinks have been purchased and used in the fabrication of those components.
4. Certificates:
 - a. Certify that factory tests specified for mechanical service fixtures have been performed and that products or systems meet or exceed specified requirements.
 - b. As a condition of acceptance, submit certification stating that equipment is complete and ready for intended function.
5. Statement of Installer Qualifications.

E. Contract Closeout Information

1. Operations/Maintenance Manuals: Accompanying certification, submit for Architect's review and Owner's use, including:
 - a. Complete operating and maintenance manuals that describe proper operating

-
- procedures.
 - b. Maintenance and replacement schedules.
 - c. Components parts list.
 - d. Nearest factory representative for components and service.

1.4 QUALITY ASSURANCE

- A. General: Work shall be in accordance with the Grade or the Grades specified of the referenced architectural woodwork standards for applicable products.
- B. Manufacturer Qualifications:
 - 1. Work in this section shall be performed by a company having a minimum of eight years documented experience manufacturing the respective products specified herein, and an established organization and production facilities including all tools, equipment and special machinery necessary for the fabrication and installation of the type of equipment required, with skilled personnel, factory trained workmen and an experienced engineering department. Each shall have the demonstrated knowledge, ability and the proven capability to produce the specified equipment of the required quality and the proven capacity to complete an installation of this size and type within the required time limits. Upon request, manufacturers shall produce evidence of financial stability and bonding capacity required to perform on this project.
 - 2. Casework manufacturer must have at least one project in the past 12 months where the value of the laboratory casework was within 20 percent of the cost of the laboratory casework for this project.
- C. Installer Qualifications: Casework installers shall be approved in writing by the casework manufacturer for the installation of specified products.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Contractor shall schedule the delivery of casework and furnishings when spaces are sufficiently complete so materials can be installed immediately following delivery.
- B. Protection: Use all means necessary to protect work of this section before, during and after installation including installed work and materials of other trades.

PART 2 - PRODUCTS

2.1 LABORATORY CASEWORK GENERAL REQUIREMENTS

- A. Casework Performance
 - 1. General: Laboratory Casework shall be in compliance with SEFA guidelines, current edition.
 - 2. Wood, Decorative Laminate, and Solid Phenolic Products:
 - a. Casework Grade: Premium Grade for Laboratory Casework.
 - 1) Panel products shall comply with SEFA Base Cabinet Submersion Test.

-
3. Modifications: In addition to satisfying the specified grade, products shall incorporate the identified modified design and fabrication requirements, characteristics, and features specified herein.

B. Casework Systems

1. Table-Based Laboratory Workstations

- a. Description:
 - 1) Self-supporting movable laboratory workstation table system. Modular system shall consist of tubular steel framing components to create support structures for table laboratory benches.
 - 2) Frames structures shall support worksurfaces and shelving, and support distribution for piped services, power distribution, lighting, and communications cabling, as indicated on Drawings.
- b. Acceptable Manufacturers:
 - 1) Manufacturers:
 - a) Refer to Laboratory Casework Manufacturers specified with Laboratory Casework elsewhere in this Section.
 - 2) Substitutions:
 - a) Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
 - b) Alternative manufacturers may be accepted as long as basic system requirements are satisfied.
 - c) Alternate manufacturer's product data and description must be submitted to the Architect for approval during the Bid Period.
 - d) Systems proposed after the Bid Date will not be considered.
- c. Base Product: Lista ARLINK 7000, with the identified requirements, characteristics, and features specified herein.
- d. Performance:
 - 1) Loading Capacity:
 - a) Table Frames: 100 lbs/lf [149kg/m]; 1000 lbs [363kg] maximum.
 - b) Shelves: 180 lbs [82kg] each.
 - 2) Compliance: UL 962 Standard for Household and Commercial Furnishings.
- e. Dimensions:
 - 1) Table Frame Width: Refer to specification cut sheets
 - 2) Table Frame Depth: Refer to specification cut sheets
 - 3) Table Frame Tube:
 - a) Single Sided: 2 inch [50mm] diameter.
 - 4) Table Legs:
 - a) Outer Tube: 2 inch [50mm] outside diameter.
 - b) Inner Telescoping Tube: 1-3/4 inch [44mm].
 - 5) Adjustable Shelf Depth: Refer to specification cut sheets
 - 6) Shelf Depth: Refer to specification cut sheets
- f. Materials: Cold rolled steel as specified for metal casework.
 - 1) Cross Rail Thickness: 11 gauge [3.0mm].
 - 2) Table Frame, single-sided: 11 gauge [3.0mm] tubular steel.

-
- 3) Table Legs, Outer Tube: 12 gauge [2.7mm].
 - 4) Table Leg, Inner Telescoping Tube: 11 gauge [3.0mm].
 - 5) Worksurface Frame: 11 gauge [3.0mm].
- g. Characteristics/Features:
- 1) Table Frames:
 - a) Height Adjustable:
 - (1) Maximum low position: 30 inches [762mm].
 - (2) Minimum high position: 36 inches [914mm].
 - (3) Adjustable in 1 inch [25mm] increments.
 - b) Tube Frame:
 - (1) Single Sided: Tubular steel.
 - c) Tubular Legs:
 - (1) Outer Tube: 2 inches [50mm] outside diameter, 12 gauge [2.7mm].
 - (2) Inner Telescoping Tube: 1-3/4 inches [44mm], 11 gauge [3.0mm].
 - (3) Provide leveling device for each leg.
 - 2) Worksurface Frame:
 - a) Brake formed cold rolled steel.
 - b) Provide fittings to attach frame to legs.
 - c) Fasten to rear support frame with 3/8 inch [10mm] bolts.
 - d) Provide hanger rails when suspended casework is specified.
 - 3) Worksurface: Refer to Drawings and worksurface specifications in this Section.
 - 4) Adjustable Shelves:
 - a) Material: Painted Metal:
 - b) Refer to shelving specifications elsewhere in this Section.
 - c) Adjustable in 1 inch [25mm] increments.
 - 5) Electrical:
 - a) General:
 - (1) Electric receptacles, wiring and devices shall be in compliance with the 2017 National Electrical Code.
 - b) Power Cord: SJ 12/3 cord.
 - (1) Plug: NEMA L5-20P.
 - c) Data Cable:
 - (1) Terminate cable with male cable end connector.
 - d) Extruded Aluminum Electrical Raceway:
 - (1) Provide one raceway length for each frame side.
 - (2) All raceway shall be pre-wired for power.
 - (3) 48 inches [1524mm] long and less: Provide two NEMA 5-20R duplex receptacles, white, and one white RJ45 duplex female data connector.
 - (4) Greater than 48 inches [1524mm] long: Provide three NEMA 5-20R duplex receptacles, white, and one white RJ45 duplex

-
- female data connector.
 - e) Electrical Receptacles:
 - (1) NEMA 5-20R, duplex receptacle, white with white cover plate.
 - (2) Provide GFI type when located within 6 feet [1.8m] of a sink.
 - (3) Locate in lower portion of rear support frame where indicated on Drawings.
 - f) Task Lighting: Refer to specifications in this Section.
 - 6) Suspended Base and Wall Cabinets:
 - a) Refer to metal casework specifications elsewhere in this Section.
 - b) Suspended cabinets shall be supported by rails attached near the front and rear of the cabinets. Cabinets shall be removable and relocatable to any position between system legs.
 - c) Wall Cases: provide hanger rails attached to casework frames, vertically adjustable at 1 inch [25mm] increments. Installation and removal shall be capable without tools.
 - 7) Suspended Computer Holder: Suspend from system with compatible hanging rails.

C. Casework Materials

1. Painted Metal Casework Products

- a. Cold rolled sheet steel:
 - 1) Recycled Steel Content: A minimum of 20 percent of the steel used in the fabrication of laboratory cabinets and modular laboratory systems, if specified, shall consist of the sum of post-consumer recycled content plus one-half of the pre-consumer content, based on the cost of the total value of materials.
 - 2) Fabricators Scrap: Fabricators shall provide documentation that manufacturing fall-off is recycled to respective steel mills and neither enters the solid waste system nor becomes a product of landfill space.
 - 3) Prime grade, roller leveled, and treated at the mill to be free of scale, ragged edges, deep scratches or other injurious effects.
 - 4) Thickness: 18 gauge [1.3mm], except as follows:
 - a) Solid door interior panels: 20 gauge [1.0mm].
 - b) Drawer fronts: 20 gauge [1.0mm].
 - c) Scribe strips: 20 gauge [1.0mm].
 - d) Filler panels: 20 gauge [1.0mm].
 - e) Enclosures: 20 gauge [1.0mm].
 - f) Drawer bodies: 20 gauge [1.0mm].
 - g) Shelves: 20 gauge [1.0mm].
 - h) Security panels: 20 gauge [1.0mm].
 - i) Sloping tops: 20 gauge [1.0mm].
 - j) Top front rails: 16 gauge [1.6mm].
 - k) Top rear gussets: 16 gauge [1.6mm].
 - l) Intermediate horizontal rails: 16 gauge [1.6mm].
 - m) Table legs and frames: 16 gauge [1.6mm].
 - n) Leg rails and stretchers: 16 gauge [1.6mm].
 - o) Drawer suspensions: 14 gauge [1.9mm].
 - p) Door and case hinge reinforcements: 14 gauge [1.9mm].
 - q) Front corner reinforcements: 14 gauge [1.9mm].
 - r) Table leg corner brackets: 12 gauge [2.8mm].

-
- s) Gussets for leveling screws: 12 gauge [2.8mm].
 - 5) Metal Casework Finish Requirements: Refer to Painted Metal Finish Performance Requirements elsewhere in this Section
2. Hardware:
- a. Finished Cabinet Hardware: As specified elsewhere in this Section.
 - b. Metal Parts: Metal parts, table legs, post legs, counter supports, etc., shall be furniture steel, fabricated by welding, then degreased, cleaned, treated and painted to match casework finish and color.
- D. Cabinet Features, General:
- 1. Drawer and Door Pull Orientation:
 - a. Doors: Vertical.
 - b. Drawers: Horizontal.
 - 2. Drawer and Door Pull Orientation: Horizontal.
 - 3. Finished Side Panels:
 - a. Each unit shall be complete, with finished, edgebanded side panels, so that units can be relocated at any subsequent time without requiring field application of finished ends or other such parts.
 - b. All side panels should be fabricated as exposed surfaces.
 - 4. Cabinet Toe Kicks:
 - a. Tall storage cabinets: Toe space to height and depth to match base units.
 - 5. Suspended Cabinets:
 - a. Description: Provide as detailed on Laboratory Furnishing drawings.
 - b. Location: Where indicated on the Drawings.
 - c. Construction: Suspended casework units shall be the same as floor mounted cabinets with the following exceptions:
 - 1) Finish back and side panels on all cases as exposed surface.
 - 2) Omit sub-base and provide casework with finished 1 inch [25mm] bottom panels.
 - 3) Provide fixings and fastenings necessary for its attachment to the supporting structure.
 - 4) Cabinet and suspending frame shall allow locating at any point between supports.
 - 5) Top reinforcement(s) to prevent cabinet top deflection.

2.2 METAL LABORATORY CASEWORK AND TABLES

- A. Description: metal laboratory casework and tables with the identified requirements, characteristics, and features specified herein.
- 1. Painted Metal Casework:
 - a. Casework Style: Full Flush Overlay.
 - 1) Provide applied panels in areas such as sink cabinets and knee spaces with apron panels to provide a full flush overlay appearance.

-
- 2) Apron panels shall align with plane of adjacent doors and drawers for full flush overlay appearance.

b. Door/Drawer Head Material, Painted Metal Casework:

- 1) Painted Metal.

B. Acceptable Manufacturers:

1. Manufacturers:

- a. Lista International/ Stanley Black&Decker
- b. FormaSpace
- c. Benchpro
- d. Steel Sentry

2. Substitutions: Not permitted.

C. Dimensions:

1. Drawer Depth: 18 inches [460mm], minimum, front to back.
2. Door and Drawer Heads: 3/4 inch [19mm] overall thickness.
3. Drawer Head Width in Apron Panels, maximum: 24 inches [610mm].
4. Toe Space Rail: 3 inch [75mm] deep and 4 inch [100mm] high.
5. Legs: Not less than 2 inch x 2 inch x 16 gauge [50mm by 50mm by 1.6mm] square tubular steel sections.
6. Leg Rails, Spreader Rails: Not less than 1-1/4 inch x 2-1/2 inch x 16 gauge [32mm by 63mm by 1.6mm] steel sections, reinforced as necessary for leg attachment.
7. Aprons and Rails:
 - a. Typical: 1-1/2 inch x 2 inch x 16 gauge [38mm by 50mm by 1.6mm] channel steel sections.
 - b. Drawer Locations: 1-1/2 inch x 4-1/2 inch x 16 gauge [38mm by 115mm by 1.6mm] channel steel sections, typical.

D. Materials:

1. Cabinet Bodies: Cabinet bodies shall be of the following materials.
 - a. Painted Metal.

E. Construction:

1. General:
 - a. All units shall have a cleanable smooth interior. Front and rear posts, reinforcing members or channel uprights shall be enclosed full heights on all cabinet openings.
 - b. Exterior corners: Spot and arc welded with gussets at exterior corners. All face joints shall be arc welded and ground smooth to provide a continuous flat plane.
 - c. Units less than 49 inches [1245mm] tall: Provide internal reinforcing and rear posts for end panels and cabinet backs.
 - d. Units 49 inches [1245mm] tall and greater: Provide formed end panels with front and rear reinforcing posts. Back shall be formed steel panel, recessed 3/4 inch [19mm] for mounting purposes.
 - e. Posts: Front post fully closed with full height reinforcing upright to facilitate cleaning.

-
- 1) The front edge shall be formed to provide a strike for doors and drawers, and shall be pre-drilled for intermediate rails and hinge screws.
 - f. Intermediate Vertical Uprights: Furnished to enclose cabinets when used in a unit in combination with a half width bank of drawers; however, to allow storage of large or bulky objects, no upright of any type shall be used at the center of double door cupboard units.
 - g. End Uprights: Formed into not less than a channel formation at top, bottom, back and front.
 - h. Exposed fasteners:
 - 1) Not allowed without prior approval of the Architect.
 - 2) If allowed, exposed fasteners in BSL-3, ABSL-3, BSL-3Ag, BSL-4 or ABSL-4 shall be Type 304 or 316 stainless steel, or protected with epoxy paint or sealant.
2. Doors and Drawer Heads:
- a. General:
 - 1) Two-piece sheet steel assembly consisting of an inner pan formed as an extension of the drawer body, an outer pan having a channel formation on all four sides welded and ground to eliminate exposure of sharp raw edges, and the interior space filled with a non-organic sound deadening material at the time of assembly.
 - a) Welds shall be ground smooth.
 - b) Painted inside and out prior to assembly.
 - b. Drawer Heads:
 - 1) Thickness to match doors.
 - 2) Widths of drawer front in aprons shall be lesser of the width of the apron or 24 inches [610mm]; for longer aprons, provide false fronts on either side of drawer front when flush overlay is specified.
 - c. Doors:
 - 1) Readily removable and hinges easily replaceable.
 - 2) Hinges shall be applied to the case and door with screws. Welding of hinges to either case or door is not acceptable.
3. Drawer Construction:
- a. Drawer bodies shall be made in one-piece construction including the bottom, two sides, back and inner front. Front and back faces should be spot welded to sides or center section.
 - b. Fully coved at interior bottom on all four sides for easy cleaning.
 - c. Full-height sides.
 - d. 1/2 inch [13mm] side clearance to frame opening.
 - e. Drawers shall be easily removable in the field without the use of special tools.
 - f. Drawers shall be sized on a modular basis for interchange to satisfy varying storage requirements.
4. Wall and Tall Case Tops: One-piece, with front edge formed into front rail.
5. Cabinet Back, Concealed:
- a. Cabinet back shall consist of a top and bottom rail, channel formed for maximum strength and welded to back and top flange of end uprights, with space between left open for access to plumbing lines.

-
6. Cabinet Bottom: Case bottom and bottom rail shall be formed of one piece of metal except in corner units and shall have both sides and back formed up or down and shall be rabbeted in front for drawers and swinging doors.
 7. Toe Bases, Kicks, and Sleepers:
 - a. Toe Space Rail:
 - 1) Provide formed steel base with corner gussets. Whenever the base is omitted for units to be set on building bases or separate metal bases, the toe space rail shall extend back 4-1/2 inches [115mm].
 - 2) Provide 3/8 inch [10mm] diameter leveling screw with integral bottom flange of minimum 0.56 square inches [3.6cm²] area at each corner, accessible through openings in toe space.
 8. Shelves:
 - a. Full depth, turned down 1 inch [25mm] on four sides, and returned under front and back 1 inch [25mm], nominal.
 - b. Shelves over 36 inches [915mm] in length shall be additionally reinforced by a flanged channel shaped member electro-welded to underside of shelf.
 - c. Shelves shall be adjustable.
 - d. Shelf adjustment posts shall be perfectly aligned for level setting, with holes for shelf adjustment at 1/2 inch [13mm] on center.
 - e. Pull-Out Shelves: Mount on a pull-out slide.
 9. Legs, Casework and Table:
 - a. Each leg shall have a recessed leveling screw and a leg shoe.
 - b. Leg rails: Provide where required for structural support.
 10. Apron:
 - a. Reinforced as necessary for leg attachment.
 - b. Apron drawers:
 - 1) Where indicated on the Laboratory Furnishing drawings, provide support rails; drawer unit, hardware and suspension as specified for base unit drawers.
 11. Metal-Framed Laboratory Tables:
 - a. Legs:
 - 1) Provide welded leg brackets.
 - 2) Table legs shall be telescoping to allow vertical height adjustment of work surface from 30 inches to 36 inches [760mm to 915mm] above finished floor.
 - 3) Leveling Glide and Leg Shoe: Each leg, other than those fitted with casters, shall have a recessed leveling screw and a leg shoe.
 - 4) Casters: Where indicated on Laboratory Furnishing drawings or specifications, as specified under Cabinet Hardware.
 - b. Rails:
 - 1) Leg rails and spreader rail: Reinforced as necessary for leg attachment.
 - 2) Aprons and Rails: Reinforced as necessary for leg attachment.
 - 3) Table Drawers: Where indicated on the drawings, provide front and back rails; drawer unit, hardware and suspension same as specified for casework

base unit drawers.

- c. Work Surface: Refer to Laboratory Furnishing drawings for laboratory work surface materials, described in the Laboratory Work Surfaces section of this specification.
 - 1) Vibration absorbing isolation: Provide a continuous wide bead of clear sealant to the top of all supporting rails. Allow complete cure before attachment of the work surface.
- d. Electrical receptacles: Where indicated on the Laboratory Electrical drawings provide cutouts for electrical receptacles as work of this Section.
 - 1) [19mm].

2.3 CABINET HARDWARE

A. General:

- 1. Special metal cabinets, such as corrosives storage, flammable liquid and solvent storage, rock storage, map storage, museum storage, and radioisotope storage, may be provided with the manufacturer's standard hardware, unless noted otherwise in these Specifications.
- 2. Exception: All door and drawer pulls shall match, regardless of type of casework.

B. Hinges, Concealed Hinges for Flush Overlay Doors:

- 1. Description:
 - a. Three-way adjustable clip-on institutional quality hinge with built in catch.
 - 1) With door in closed position, hinge site line shall be concealed.
 - 2) Back mounted.
 - 3) Roller catch is not required when hinge has built-in catch.

C. Shelving Pilaster Standards:

- 1. Description; Pilaster shelving support to be mounted inside cabinets.
 - a. Provide surface mounted pilasters for metal casework.
 - b. Shelf hardware shall support loading in accordance with Part 1.
 - c. Tested and in compliance with ANSI/BHMA A156.9 Grade 1.
- 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Knape & Vogt Manufacturing Co.
 - 2) Bainbridge Manufacturing, Inc.
 - 3) The Engineered Products Company (EpcO).
 - 4) Richelieu.
 - 5) Rockford Process Control, Inc.
 - 6) Sugatsune America, Inc
 - b. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section..
- 3. Base Product: Knape and Vogt 255 Pilasters and 256R Shelving Support, or equivalent, with the identified requirements, characteristics, and features specified herein.
- 4. Dimensions, Pilasters: 5/8 inches wide x 3/16 inches deep x 23 gauge [16mm wide by

-
- 4.75mm deep by 0.68mm].
 5. Materials: High strength steel with zinc finish.
 6. Features/Characteristics:
 - a. Pilasters:
 - 1) Pre-drilled or pre-punched mounting holes.

D. Ball Bearing Drawer Slides:

1. Description:
 - a. Satisfy ANSI/BHMA Grade 1HD requirements.
 - b. Full extension.
2. Acceptable Manufacturers:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Accuride.
 - 2) Knape & Vogt.
 - 3) Fulterer USA.
 - b. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
3. Typical Performance Requirements:
 - a. Drawers:
 - 1) Satisfy SEFA requirements, minimum.
 - 2) Load rating/pair:
 - a) Typical: 150 lbs [68kg] static test; 75 lbs [34kg] cycle test.
 - b) File Drawers 24 inches [610mm] wide and less than 30 inches [762mm] in width: 150 lbs [68kg].
 - c) File Drawers 30 inches [762mm], or greater, in width: 200 lbs [90.7kg].
 - b. Pull-out Shelf Slide, Typical:
 - 1) Basis of Design: Accuride 322 with the identified requirements, characteristics, and features specified herein.
 - 2) Load Rating/pair: 100 lb [45kg].
 - c. Keyboard Tray Basis of Design: Accuride CBERGO-TRAY300, full extension with the identified requirements, characteristics, and features specified herein.
 - 1) ANSI/BHMA Grade 1.
 - 2) Full extension.
 - 3) 29.5 inches [749mm] wide.
 - 4) Concealed slides.
 - 5) Adjustable keyboard platform.
 - 6) Height adjustable mounting brackets.
 - 7) Removable mouse pad.
 - 8) Black finish.
4. Materials (Base Metal):
 - a. Clear, zinc-coated steel.
 - b. Keyboard Trays, if indicated: Black, zinc-coated steel.

E. Locks:

1. Description:
 - a. Provide locks at other locations as indicated on the drawings.
 - b. ANSI/BHMA Grade 1.
2. Acceptable Manufacturers:
 - a. Manufacturers, Swinging Doors and Drawers:
 - 1) Olympus Lock, Inc.
 - 2) National Cabinet Lock.
 - 3) Illinois Lock Company.
 - b. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section..
3. Materials: Satin nickel or satin chrome finish.
4. Features/Characteristics:
 - a. Five (5) or eight (8) tumbler locks are acceptable.
 - b. Locks shall have be provided with removable cores and stamped with identifying numbers.
 - c. Keys: Stamped brass keys available from manufacturer or locksmith and supplied in the following quantities, unless otherwise specified:
 - 1) Two (2) keys for each different lock.
 - 2) Three (3) keys for each group keyed alike locks.
 - 3) Two (2) keys for each master key system.
 - d. Keying:
 - 1) To be coordinated with owner

F. Monitor Arm:

1. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Humanscale.
 - b. Substitutions: Other manufacturers desiring approval to comply with summary and general conditions and requirements section.
2. Base Product: Humanscale Model M2 with arm and mounting plate with the identified requirements, characteristics, and features specified herein.
3. Materials:
 - a. Aluminum arm and components.
 - b. Finish: Polished aluminum with white accents.
4. Features/Characteristics:
 - a. Arm shall incorporate a mechanical spring.
 - b. Load Rating: S monitor weight of up to 20 lb [9kg].
 - c. Vertical Adjustment: 10 inches [255mm], minimum.
 - d. Arm Extension: 20 inches [510mm], minimum, from mounting post.
 - e. Monitor Tilt: up or down 180 degrees.
 - f. Monitor Rotation: Mount and arms shall rotate up to 270 degrees.
 - g. Concealed wire management routing.

-
- h. Mounting Plate: VESA 75mm or 100mm mounting pattern.
 - i. Mounting plate shall fasten to work surface.

G. Padlockable Cam Lock:

- 1. Description: Cam lock for use with padlock as locking device for doors or drawers.
- 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Olympus Lock, Inc.
 - 2) Northeast Lock Corporation.
 - b. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section..
- 3. Base Product: Olympic Lock DCP500 Padlockable Cam Lock with the identified requirements, characteristics, and features specified herein.
- 4. Finish: Polished chrome (US26).
- 5. Features/Characteristics:
 - a. Provide integrated finger pull.
 - b. Provide anti-rotation plate.
 - c. Provide padlock bumper plate.
 - d. Padlock not included.

H. Roller Catch:

- 1. Description:
 - a. Adjustable, spring-loaded dual polyethylene roller with a steel strike plate.
 - b. Double doors without locks: Provide a catch on each door.
 - c. Tall cabinets: Locate catch on the upper and lower part of each door.
 - d. Cabinets equipped with locks: Right hand door shall have a roller catch; left hand door shall have a positive catch.
- 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Richelieu.
 - 2) The Engineered Products Company (Epc).
3) Amerock.
 - 4) Ives.
 - 5) Or equal.
- 3. Base Product: Richelieu Roller Latch 55262G with 5526B2G plate.
- 4. Material: Zinc.

I. Elbow Latch:

- 1. Description: Heavy-duty, adjustable, spring-type elbow latch and strike plate.
 - a. Provide on left hand doors of double door cases where locks are provided.
 - b. Provide at fixed shelf for inactive leaf in tall cabinets.
- 2. Acceptable Manufacturers:
 - a. Richelieu.
 - b. The Engineered Products Company (Epc).

-
- c. Or equal.
 - 3. Base Product: Richelieu Heavy-Duty Elbow Latch BP55401_0.
 - 4. Material: Brass or nickel finish.
- J. Slide Bolts:
- 1. Description: Spring sliding bolt with an angle strike to secure inactive door on cabinets over 72 inches [1830mm] in height.
 - 2. Acceptable Manufacturers:
 - a. Richelieu.
 - b. Or equal.
 - 3. Base Product: Richelieu Spring Sliding Bolt 1010_180.
 - 4. Dimensions: 3 inches [75mm] long, nominal.
- K. Levelers:
- 1. Description: Plastic or steel levelers consisting of sockets, levelers, screws, and panel clips.
 - a. Load Rating: 330 lb [150kg], minimum capacity.
 - b. Quantity: four per cabinet, minimum.
 - 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Häfele America Co.
 - 2) Camar, distributed by Peter Meier Inc.
 - 3) Hettich America LLP.
 - 4) Richelieu Hardware.
 - b. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
 - 3. Base Product: Häfele 637.45.326 Base Cabinet Leveler, 028mm.
 - 4. Features/Characteristics:
 - a. Service Access: Levelers shall be accessible through a hole in bottom of cabinet. Provide plastic cap for each leveler hole.
 - b. Provide plastic glide/bottom.
 - c. Provide panel clip or other hardware for attachment of toe kick.
- L. Casters:
- 1. Description:
 - a. Self-lubricating precision swivel casters with locking brakes.
 - b. Location: Where indicated on Laboratory Furnishing drawings or specifications.
 - c. Load Rating: 200 lb [90kg], minimum, each.
 - 2. Dimensions:
 - a. Wheel Diameter and Load Height:
 - b. Tables: 4 inch [100mm] diameter. Load Height: 5 inches [125mm].
 - c. Cabinets: 3 inch [75mm]. Load Height: 4-3/8 inches [110mm].
 - 3. Materials:

-
- a. Tread Material, Typical: Urethane or polyurethane, non-marking.
 - b. Tread Material, vivarium (animal facility), glasswash, BSL- and/or ABSL-3 locations: High temperature phenolic, nylon, or synthetic rubber designed to be autoclaved; non-marking.
 - c. Caster Housing: Heavy gauge cold rolled steel with bright zinc plating.
 - d. Caster Housing: Heavy gauge cold rolled steel with epoxy powder coating.
 - e. Caster Housing: Type 304 stainless steel.
4. Features/Characteristics:
- a. Tables: Stem mount.
 - b. Cabinets: Plate mount.
- M. Pulls:
1. Description:
- a. Type:
 - 1) Rectangular box style.
 - a) Length: 4 inches [100mm] center to center of screw holes.
 - b. Material and Finish:
 - 1) Extruded aluminum with US28 clear anodized finish.
 - c. Features/Characteristics:
 - 1) Attach with machine screws. Two (2) pulls shall be furnished on drawers wider than 28 inches [710mm].
 - 2) Back mounted.
- N. Drawer Stops:
1. Description: Integral stops or drawer bumpers on each side of drawer body to prevent drawer head impact with cabinet body.
- O. Cabinet Door Bumper Pads:
1. Description:
- a. Non-staining, non-marring, clear polyurethane pads with pressure-sensitive, adhesive backing for sound and vibration dampening, preventing direct contact between door and cabinet. Pad should have raised tip in middle of pad.
 - b. Location:
 - 1) Doors 36 inches [915mm] and less in height: At top and bottom corners along pull edge.
 - 2) Doors greater than 36 inches [915mm] in height: At top and bottom corners and at an intermediate location along pull edge.
 - 3) Drawers: At center of each side.
- P. Chain Door Stop:
1. Description:
- a. Provide chain door stops for any tall cabinet door, which will strike an obstruction when opened between 90° and 135°.
 - b. Provide #30 zinc-plated steel sash chains; cut to length to allow door to open 1-1/2

-
- inches [40mm] from obstruction.
 - c. Provide zinc chromate wire screw eyes. Open eye as required to attach chain. Through-bolting not allowed.

Q. Glides:

- 1. Description: Non-marring glide for movable tables, and mobile base cabinets, unless otherwise indicated.
- 2. Diameter:
 - a. Cabinets: 1 inch [25mm] diameter, minimum.
 - b. Tables: 1-1/2 inch [38mm] diameter, minimum; 150 lb [68kg] capacity, minimum.
- 3. Vertical Adjustment: 5/8 inch [16mm], minimum.

R. Leveling devices: Provide leveling bolt at each table leg (tables without casters).

- 1. Bolt Diameter: 3/8 inch [10mm], minimum.
- 2. Nylon Pad: 2 inches [51mm] diameter.

S. Leg shoes: Provide on all legs and table legs to conceal leveling devices, except for tables with casters. Use of a leg shoe which does not conceal leveling device is not acceptable.

- 1. Dimensions: 4 inches [102mm] high.
- 2. Material: black rubber or pliable black vinyl material.

T. Corner Base Guards:

- 1. Dimensions: 4 inches [100mm] high.
- 2. Materials: Type 304 stainless steel corner guards with No. 4 finish.

2.4 AND FINISH REQUIREMENTS

A. Description:

- 1. Metal fabrications specified in this Section include, but are not limited to, pipe drop enclosures, radioisotope storage cabinets, shelving support systems, metal-framed laboratory tables, metal-framed balance tables, cylinder racks, and other miscellaneous brake-formed and shop fabricated components and trim, such as required for overhead service carriers.

B. Materials:

- 1. Cold rolled sheet steel:
 - a. Recycled Steel Content: Post-consumer recycled content plus one-half of the pre-consumer content shall be 20 percent, minimum, of the cost of the total value of materials.
 - b. Prime grade, roller leveled, and treated at the mill to be free of scale, ragged edges, deep scratches or other injurious effects.
- 2. Finish Requirements:
 - a. Description:
 - 1) Finish Type: Dry powder coating.

-
- 2) Performance Requirements: Meet or exceed SEFA 8 M Cabinet Surface Finish requirements.
 - 3) Operator Protection:
 - a) Convenient and easily mastered through robotic application plus manual detailing.
 - b) Process shall be contained and have no solvent odor and be performed in an air conditioned room.
 - 4) Overspray:
 - a) Overspray shall be captured and re-sprayed.
 - b) 99 percent efficiency in coating usage, reducing waste generated.
 - c) A closed collection system shall be used for overspray that is not reused.
 - d) Powder overspray shall not escape the facility and shall be collected in bulk, eliminating the need for daily replacement/disposal of filter media.
 - 5) VOC Emissions:
 - a) Sprayed and baked with a near zero (0.29 lbs/gal [34.75g/l], maximum) VOC (Volatile Organic Compounds) emissions.
 - b) Comply with the GS (Green Seal Standard) 11 allowable emissions.
 - 6) Offgassing:
 - a) Finish shall be firm and stable after final cure.
 - b) No further emissions or "Offgasing/Decomposition" vapors shall occur at room temperature.
- b. Metal Casework Color: Selected by the Architect from manufacturer's full color line.

2.5 LABORATORY WORK SURFACES

A. Epoxy Resin:

- 1. Countertop Grade: Laboratory Work Surface with the identified requirements, characteristics, and features specified herein.
- 2. Acceptable Manufacturers:
 - a. Manufacturers:
 - 1) Durcon Inc.
 - 2) American Epoxy Scientific LLC.
 - 3) Kewaunee Scientific Corporation.
 - b. Substitutions: Not permitted
- 3. Performance:
 - a. Worksurface Fabrication and Installation: Premium Grade Laboratory Work Surface.
 - b. Worksurface characteristics and performance shall be in compliance with SEFA 3, current edition.
- 4. Dimensions (thickness):
 - a. Typical work surface: 1 inch [25mm].
 - b. Curbs and Splashes:
 - 1) Curbs and Splashes: 1 inch [25mm] thick.

-
- 2) Curbs and Splashes: 3/4 [19mm] thick.
 - 3) Height: 4 inches [100mm], unless noted otherwise on Laboratory Furnishing Drawings.
 - a) Backsplashes supporting pipe drop enclosures shall be 5 inches [127mm] high or as indicated on the Drawings.
5. Material Properties:
- a. Recycled Content: Provide a minimum of 10 percent post-consumer glass content.
 - b. Heat resistance tests:
 - 1) High temperature test:
 - a) Heat a porcelain crucible to a dull red color, place on the test material, and allow to cool to ambient temperature.
 - b) Result: No observable surface deformation.
 - 2) Flame test:
 - a) Overturn a 3/8 inch [10mm] Bunsen burner, adjusted to a quiet flame, with a 1-1/2 inch [38mm] inner cone, on the test material, and allow to stay for 5 minutes.
 - b) Result: no observable surface deformation.
 - c. Physical properties:

Compressive strength	ASTM D695	216mPa 31,400 PSI
Tensile strength	ASTM D638	55mPa 8,000 PSI
Flexural strength	ASTM D790	81mPa 11,700 PSI
Rockwell hardness "M"	ASTM D785	122
Specific density	ASTM D792	1960kg/m ³ 122.4 PSF
Water absorption	ASTM D570	0.01%
Fire Resistance	ASTM D635	ATB (sec)=0
Heat deflection @ 264 psi (1.82 MPa)	ASTM D648	172 degC 342 degF
 - d. Color:
 - 1) Black. (Black Onyx as supplied by Durcon Inc. or similar).
 - 2) Color sample shall be submitted for approved by Architect.
6. Features:
- a. Finish all edges exposed to view.
 - b. Drip Edge:
 - 1) Provide under all work surface exposed edges, unless noted otherwise on the Laboratory Furnishing Drawings.
 - 2) Where the top overhangs 1 inch [25mm]: 1/2 inch [13mm] from the edge.
 - c. Edge profile: All exposed upper edges and corners: 1/4 inch [6mm] radius, or 1/8 inch [3mm] bevel.
 - d. Curbs and Splashes: Bonded to the surface of the top to form a square joint.
 - e. Provide all holes and cutouts as required for built-in equipment and mechanical and electrical service fixtures. Verify size of opening with actual size of equipment to be used prior to making openings. Form inside corners to a radius of not less than 1/8 inch [3mm]. After sawing, rout and file cutouts to ensure smooth, crack-free edges. Seal exposed edges after cutting with a waterproofing material recommended by the manufacturer.
7. Laminate Type: Static Dissipative High-Pressure Decorative Laminate:

-
- a. Characteristics:
 - 1) Static dissipative laminate work surface and electrical grounding system installed to minimize the risk of static electricity damage to sensitive devices.
 - 2) NEMA LD3, current edition, General Purpose Grade HGS with static dissipative and physical property requirements identified herein.
 - b. Acceptable Manufacturers:
 - a) Manufacturers: Wilsonart
 - b) Nevamar Decorative Surfaces
 - c) Pionite Decorative Surfaces.
 - 2) Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
 - c. Base Product: Wilsonart Static Dissipative Laminate.
 - 1) Color:
 - a) "North Sea" 090-60
 - d. Material Properties:
 - 1) Thickness: 0.059 inch [1.5mm].
 - 2) Chemical Resistance: Resistant to common solvents such as Acetone, 111-Trichloroethylene, Solder flux, Isopropyl alcohol, and Naphtha.
 - 3) Electrical performance:
 - a) Point to point resistance (per EOS/ESD-S4.1):
 - (1) 20 percent to 10 percent RH: 10^8 to 10^9 ohms.
 - b) Point to ground resistance (per EOS/ESD-S4.1):
 - (1) 20 percent to 10 percent RH: 10^8 to 10^9 ohms.
 - c) Volume resistance (measured face to back at 72 degF [22.2 degC], 100V with a LCD Megohmmeter, item No. 19770, NFPA Electrodes (2.5 inch [63mm] diameter, 5 pounds [2.27kg]):
 - (1) 30 percent to 10 percent RH: 10^8 to 10^9 ohms.
 - d) Static Decay (FTMS 101C, Method 4046 test):
 - (1) 10 percent RH: 0.02 sec.
 - 4) Wear Resistance: 1000 cycles (NEMA LD3, current edition).
 - 5) Finish: Standard HPL Finish (60 Matte).
 - e. Flush mount insert grounding system:
 - 1) Provide work surface with effective electrical grounding to ensure the safe dissipation of static electricity to ground.
 - 2) Coordinate with Division 26.
 - 3) Connection to the work surface laminate shall be flush with the surface. Projecting connectors and exposed terminals will not be accepted. Components shall include:
 - a) Flat socket cap screw to secure brass insert.
 - b) Knurled brass insert to provide electrical connection.
 - c) Flat washer to provide flat surface for securing ring terminal.
 - d) Ring terminal to connect wire to flush mount insert.
 - e) Nut to fasten flush mount insert together.
 - f) Any other components and accessories for a complete functioning system.

-
- 4) Personnel grounding system:
 - a) Provide dual banana jack terminals, 10 feet [3m] of 22 gauge [0.65mm] wire.
 - b) Provide 2 banana plug connections in front of work surface grounded to the flush mount insert system.
 - 5) Bonding to core: ANSI A161.2-1979 (R1987).
8. Performance:
- a. Worksurface Fabrication and Installation: Premium Grade Laboratory Work Surface.
 - b. Sustainability:
 - 1) UL 2818 GREENGUARD Gold Certified.
 - 2) SCS Certified Indoor Air Quality Advantage™ Gold Certified.
 - 3) SCS Chain of Custody Certified for FSC® Mix, FSC Controlled Wood.
 - 4) SCS Recycled Content Certified.
 - c. Surface Burning Characteristics: Interior Finish Classification: Fire-Rated Laminate: Class A according to NFPA 101. Flame spread less than 25 and Smoke Developed less than 450.
9. Dimensions:
- a. Core Material Thickness: 1-1/8 inch [29mm].
10. Materials:
- a. Core Material:
 - 1) Typical: M2 Particleboard (NAUF: No Added Urea formaldehyde) with the following attributes:
 - a) 3-ply, FSC Certified, 100 percent pre-consumer recycled wood fiber particleboard with no urea formaldehyde added during the manufacturing process.
 - b) California Air Resources Board (CARB) Compliance: Composite wood products in this section must incorporate a label that clearly identifies compliance with the Airborne Toxic Control Measure (ATCM) Title 17, California Code of Regulations 93120.
 - c) Formaldehyde Emissions: 0.00 to 0.01 ppm.
 - d) Reference Standards: Average density of 689 to 721kg/m³ 43 to 45 PCF meeting or exceeding ANSI Standard A208.1 M2 PB Standard specifications, current edition.
 - e) Moisture Content: less than 8 percent.
 - f) Binder: Urea formaldehyde-free adhesive system.
 - g) Formaldehyde Emissions: 0.00 to 0.01 ppm.
 - h) Flame spread: ASTM E84 Class 3 or C.
 - 2) Thickness:
 - a) Work surface: 1 inch [25mm].
 - b) Curbs and splashes: 3/4 inch [19mm].
 - 3) Curbs and Splashes:
 - a) Height: 4 inches [100mm], unless noted otherwise on Laboratory Furnishing Drawings.
 - b) Job site assembled.
 - 4) Edging: Edge tops with 3mm PVC edge banding set in hot melt adhesive.

-
- b. Grommets:
 - 1) Acceptable Manufacturers:
 - a) Manufacturers:
 - (1) Doug Mockett & Company, Inc.
 - (2) Häfele America Inc.
 - b) Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
 - 2) Base Product: Doug Mockett and Co., Inc. Model No. TG-3.
 - 3) Description:
 - a) Provide 2-3/8 inch [60mm] outside diameter plastic grommets, complete with removable slotted plastic cover.
 - b) Color to be selected by Architect.
 - c) Refer to plans for location.
11. Fabrication:
- a. Drip Grooves: Provide under all work surface exposed edges, unless noted otherwise on the Laboratory Furnishing Drawings.
 - b. Provide all holes and cutouts as required for built-in equipment and mechanical and electrical service fixtures. Verify size of opening with actual size of equipment to be used prior to making openings. Form inside corners to a radius of not less than 1/8 inch [3mm]. After sawing, rout and file cutouts to ensure smooth, crack-free edges. Seal exposed edges after cutting with a waterproofing material recommended by the manufacturer.
 - c. Sinks: Cutouts for top-mounted sinks shall be routed and sanded to form smooth edged openings.

B. Solid Lumber Core:

- 1. Description: Butcher block work surfaces, with the identified requirements, characteristics, and features specified herein.
- 2. Material: Edge grain, hard maple strips, 1-3/4 inches [45mm] wide, with edge grain exposed, glued with water-resistant resin under heavy pressure side to side and end to end.
- 3. Thickness: 1-1/2 inch [38mm].
- 4. Construction/Fabrication:
 - a. Round top edges and corners and sand smooth.
 - b. Finish:
 - 1) Two coats of boiled linseed oil well rubbed into all surfaces.

2.6 WELDING TABLE

- A. Description: Welding table with removable steel grating top. Table accommodates welding for MIG and TIG.
- B. Base Model: Pucel, Pro Welding Bench PWB-6036-GRAY. 36"wide X 60"deep X 42"high, adjustable height bench with pull out tray. 12 gauge steel with 10 gauge steel legs.
 - 1. Acceptable Manufacturers:

-
- a. Pucel
 - b. Little Giant
 - c. Durham
2. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.

2.7 POST-SUPPORTED SHELVING

- A. Description: Post-supported shelving, posts, components and accessories.
- B. Acceptable Manufacturers:
- 1. Manufacturers:
 - a. InterMetro Industries Corporation.
 - b. Eagle Group.
 - c. Nexel Industries Inc.
 - 2. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section..
 - 3. Base Product, Wire Shelving: Metro Super-Erecta shelf system, floor-mounted post-supported, with the identified requirements, characteristics, and features specified herein.
 - a. Materials:
 - 1) Wire Shelves and Posts:
 - a) Stainless steel.
 - b) Chrome-plated steel with protective lacquer coat.
 - c) Open Wire.
 - d) Drop Mat Style with 1 inch [25mm] high open wire ledges all sides.
 - e) Solid stainless steel shelves and posts:
 - (1) 18 gauge [1.3mm] Type 304 stainless steel with epoxy-coated cast corners.
 - (2) Shelves shall have raised 'ship's' edge.
 - 2) Split Sleeves:
 - a) Typical: Plastic.
 - 3) Leveling Bolts:
 - a) Zinc.
 - 4. Dimensions:
 - a. Post Height: 74 inches [1880mm], nominal, unless noted otherwise on the Drawings.
 - b. Shelf Length and Width: Refer to Drawings.
 - 5. Construction/Features:
 - a. Provide four shelves per unit, unless indicated otherwise on the Drawings.
 - b. Accessories:
 - 1) Shelf Ledges:

-
- a) 1 inch [25mm] high stainless steel wire, sized to match shelf.
 - 2) Casters:
 - a) Provide two swivel and two swivel brake casters per unit.
 - b) Diameter: 5 inches [125mm].
 - c) Typical:
 - (1) Caster Material: Plated steel.
 - (2) Tread Material: High modulus rubber.

2.8 TASK LIGHT FIXTURES

- A. Description: LED fixture for undershelf or undercabinet mounting. Provide task lights at locations indicated on the drawings.
- B. Acceptable Manufacturers:
 - 1. Manufacturers:
 - a. Light Corp.
 - 2. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section..
- C. Basis for Design: Light Corp. Reed Premier Linear LED, standard output, with the identified requirements, characteristics, and features specified herein.
 - 1. Dimensions (nominal):
 - a. Thickness: 1/2 inch [13mm].
 - b. Width: 2 inches [51mm].
 - c. Length: Fixture length should match the length of the shelf or cabinet as closely as possible without exceeding.
- D. Materials:
 - 1. Housing: Clear anodized aluminum with diffuse plastic lens.
 - 2. Finish: Silver aluminum with white end caps.
- E. Construction/Features:
 - 1. Power Supply: White 15W power supply and white cord with NEMA 5-15P plug.
 - 2. Light Source: 3500K LEDs, CRI 84.
 - 3. Mounting: Magnetic. Fixture shall be provided with magnetic back plate to stick to underside of metal shelving.
 - 4. Controls:
 - a. Single touch on/off switch with touch-and-hold 100% to 15% continuous dimming pad.
 - b. Control shall have last state memory.
 - c. Light shall have automatic turn off after 10 hours (\pm 15 minutes).
 - 5. Occupancy Sensor: Sensor shall shut off light after 30 minutes of inactivity.
 - 6. Labels: Fixture shall be U.L. - or ETL- listed and bear an IBEW label.

2.9 BIN STORAGE UNITS

- A. Description: Wall mounted bin storage unit.
- B. Basis of Design: Quantum Storage Systems
 - 1. Substitutions: Other manufacturers desiring approval to comply with the summary and general conditions and requirements section.
- C. Dimensions and Colors:
 - 1. 36"W x 61"H with 14 $\frac{3}{4}$ " x 8 $\frac{1}{4}$ " x 7" bins – 28 bins total, color Blue
 - 2. 36"W x 61"H with 10 $\frac{7}{8}$ " x 5 $\frac{1}{2}$ " x 5" bins – 60 bins total, color black
 - 3. 36"W x 61"H with 7 $\frac{3}{8}$ " x 4 $\frac{1}{8}$ " x 3" bins – 120 bins total, color yellow

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Prior to installation of the work of this Section, carefully inspect the installed work specified in other Sections and verify that all such work is complete to the point where this installation may properly commence.
- B. Verify that all work may be installed in complete accordance with the original design, reviewed submittals, and the manufacturer's recommendations.
- C. Verify adequacy and proper location of any required backing or support framing.
- D. Verify that mechanical, electrical, plumbing and other building components affecting work in this Section are in place and ready.

3.2 PREPARATION

- A. Project Conditions: Casework and furnishings shall not be delivered and installed prior to completion of the followings items:
 - 1. Windows and doors shall be installed and the building shall be weather-tight.
 - 2. Finished ceilings, if specified, overhead ductwork, piping, electrical, and lighting work shall be installed.
 - 3. Painting shall be complete.
 - 4. Flooring shall be installed, except when an integral base as specified to be installed over the casework toe kick.
 - 5. Interior building temperature shall be maintained between 65 degrees F and 80 degrees F [18.3degC and 26.7degC], and ambient relative humidity shall be maintained between 25 percent and 55 percent prior to delivery, and during and after installation. Frequent and/or excessive changes in temperature and/or humidity levels during casework installation, or once casework is installed, must be avoided to prevent damage to materials.
- B. Delivery:

-
1. Product shall be stored in a clean storage area.
 2. Delivery of laboratory casework shall be made only when the area of operation is enclosed, all plaster and concrete work is dry, and the area broom clean.

C. Discrepancy: In the event of discrepancy, immediately notify the Architect.

3.3 INSTALLATION

- A. Installation of items specified in this Section shall be performed by installers experienced in the installation of the respective item as determined by the respective manufacturer.
- B. Coordinate work with any Owner furnished and/or installed components indicated on drawings.
- C. Any fixed cabinet, casework system panel, or system structural component shall require the use of a tool for removal. Any component designed to be removable for installation, service or maintenance shall be secured and require mechanical attachment.
1. Mechanical fasteners for removable components shall be indicated on shop drawings.
 2. Exceptions: Items that do not require tools for removal include:
 - a. Drawers.
 - b. Adjustable shelves.
 - c. Curtains.
 - d. Threaded caps and covers.
- D. Casework:
1. Set casework items square, plumb, and level. Shim as required, using concealed shims. All items shall be securely anchored.
 2. Where required, assemble units into one integral unit with joints flush, tight, and uniform.
 3. Provide matching filler pieces where casework abuts walls or columns, or should be closed off.
 - a. All wood, Decorative Laminate, solid phenolic and polypropylene work abutting other building components shall be properly scribed.
 4. Mechanical fasteners used at exposed and semi-exposed surfaces, excluding installation attachment screws and those securing cabinets end to end, shall be countersunk.
 5. Cutouts for equipment, mechanical, electrical or plumbing services shall be made by the casework manufacturer or casework installer.
 6. Install hardware uniformly and precisely. Set hinges snug and flat in mortises. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly and correctly, and so that doors and drawers operate without warp or bind and contact points meet accurately.
 7. Secure base cabinets to service struts and ledging, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches [610mm] on center. Bolt adjacent floor mounted cabinets together with joints flush, tight, and uniform.
 8. Floor mounted casework shall receive top set or integral base as specified under Division 09 and on the Finishes drawings.
 9. Suspended Casework, Wall Cabinets, and Shelving:
 - a. Fasten suspended and wall cabinets to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through the back, near top, at not less than 24 inches [610mm] on center.
 - b. Securely fasten to solid supporting material; not plaster, lath, or wallboard. Anchor,

adjust, and align suspended casework, wall cabinets, and shelving supports as specified for base cabinets.

- c. Blocking and backing in cavity wall construction for suspended casework, wall cabinets, and shelving shall be as specified under Division 09, and shall be installed under the scope of work of other Sections. General Contractor shall coordinate the location of in-wall blocking and backing using the shop drawings provided under this Section. Verify that all required backing and reinforcement necessary to support wall-mounted units is in place, secure, and accurately located.

E. Laboratory Tops:

- 1. Scribe tops as necessary for close and accurate fit.
- 2. Field Joints: Factory-prepared and identical to factory joints, locate only where indicated on approved Shop Drawings. Field processing of top and edge surfaces is not acceptable, except as described by manufacturer in approved Submittal Data. Provide full length, one-piece tops and backsplashes wherever possible, and keep field joints to an absolute minimum.
- 3. Abut top and edge surface in one true plane, with internal supports placed to prevent any deflection. Joints in top units shall be flush and the narrowest for the respective materials of construction.
- 4. Epoxy Resin: Cement joint in accordance with the manufacturers' specifications.
- 5. Decorative Laminate: Seal unfinished edges and cutouts in Decorative Laminate work surfaces with heavy coat of polyurethane varnish.

F. Tolerances: Casework shall not exceed the following tolerances:

- 1. Variation of Bottoms of Wall Cabinets from Level: 1/8 inch in 10 ft [3mm in 3m].
- 2. Variation of Cabinet Faces from a True Plane: 1/8 inch in 10 ft [3mm in 3m].
- 3. Variation of Adjacent Surfaces from a True Plane: 1/32 inch [0.8mm].
- 4. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch [1.5mm].
- 5. Variation of Work Surfaces from Level: 1/16 inch in 10 ft [1.5mm in 3m].

G. Miscellaneous Furnishings and Accessories:

- 1. Install in accordance with manufacturer's instructions.
- 2. Securely fasten wall mounted adjustable shelving supports, stainless steel shelves, drying racks, etc. to partition framing, wood blocking, or reinforcements in partitions.
- 3. Install shelf standards plumb and at heights to align shelf brackets for level shelves. Install shelving level and straight, closely fitted to other work where indicated.
- 4. Tighten screws to seal flat; do not drive.

H. Repair or remove and replace defective work as approved by the Architect at no additional cost to the Owner.

- 1. Where approved by Architect, touch-up finishes applied to damaged surfaces shall have a VOC content of no more than 250 g/L in accord with SCAQMD Rule #1168.

I. Adjustable Laboratory Furniture System:

- 1. Support system locations shall be established from approved shop drawings so that mechanical and electrical work can be installed without interfering with installation.
- 2. Installation of support system shall be coordinated with the trades to maintain the integrity of the installed system.
- 3. Support system assemblies, ancillary components and accessories shall be installed with

the supervision of the manufacturer's authorized representative and according to manufacturer's recommendations.

3.4 ADJUSTING

- A. Before completion of installation, the installer shall adjust all moving and operating parts to function smoothly and correctly.
- B. All nicks, chips, and scratches in the finish shall be filled and retouched. Damaged items that cannot be repaired shall be replaced.
- C. Replacement: Any damaged work shall be replaced, repaired and restored to original condition to the approval of the Architect at no additional cost or inconvenience to the Owner.

3.5 CLEANING

- A. Clean finished units, remove any pencil and ink marks, touch up as required, and remove and refinish damaged or soiled areas.
- B. Clean counter tops with diluted dishwashing liquid and water leaving tops free of all grease and streaks. Use no wax or oils.

3.6 PROTECTION

- A. Cover work surfaces with 1/4 inch [6mm] corrugated cardboard, secured in place, after installation for protection against scratching, soiling, and deterioration during remainder of construction period. Remove protection prior to final cleaning.
- B. Standing or staging work on protected or unprotected work surfaces is not allowed.

END OF SECTION