

Part 1 General

1.1 RELATED SECTIONS

Section 06 10 00 – Rough Carpentry

Section 09 65 00 – Resilient Flooring

Section 11 53 00 – Laboratory Equipment

Division 23 - Mechanical

Division 25 – PLC Controls

Division 26 – Electrical

Division 27 – Communication Systems

1.2 REFERENCES

- .1 References:
 - .1 American Society for Testing and Materials (ASTM): A167-94 Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
 - 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 D552 - Bending Test

1.3 DESCRIPTION

- .1 Section includes:
 - .1 Metal casework and shelving as detailed on drawings and as specified including all related components and accessories required to form integral units and a complete installation.
 - .2 Provide all labour, materials, tools and equipment and services for all metal casework and shelving components as indicated and as required, and all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for sound, secure and complete installation.
 - .3 Laboratory Furniture - Furnish all cabinets and casework, including tops, ledges, supporting structures. Include delivery to the building, set in place, level, and scribe to walls and floors as required. Furnish and install all filler panels, knee space panels and scribes as shown on drawings.

1.4 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00
 - .2 Indicate all dimensions, details of construction, and accessory items.
 - .3 Indicate wall reinforcement and appropriate fastening and method of installation.
 - .4 Submit shop drawings for furniture assemblies showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fittings.
 - .5 Coordinate shop drawings with other work involved.
 - .6 Provide roughing-in drawings for mechanical and electrical services when required.

- .2 Product Data
 - .1 Submit catalog and model numbers for all components.
 - .2 Submit addresses and telephone numbers of nearest stocking/service parts locations.

- .3 Samples
 - .1 Submit samples in accordance with Section 01 33 00.
 - .2 Submit 300 x 300 mm samples of each type of fabric, finish, and colour as requested by Contract Administrator.
 - .3 Samples from non-specified manufacturers will be required and reviewed per specification. Samples shall be delivered, at no cost to the Contract Administrator to a destination set forth by the Contract Administrator. This must be done seven (7) days before quotation deadline as a condition of approval of each contractor. Samples shall be full size, production type samples. Miniature, or "Show Room" type samples are not acceptable. Furnish the following:
 - .1 One 18" combination (1) drawer and (1) cupboard base unit showing complete construction details, including (1) shelf.
 - .2 One 36" acid storage base cabinet typical of specified elevations.
 - .3 One sample of all top materials shown or called for, of sufficient size to perform finish requirement tests.
 - .4 Sample of all mechanical service fittings, locks, door pulls, hinges, and interior hardware.

- .4 Project Close-Out Data
 - .1 Provide manufacturer's product specifications and maintenance data including maintenance procedures and materials for incorporation into Maintenance Manual in accordance with Section 01 78 00.
 - .2 Provide final drawings, room-by-room, of all products installed under this specification.
 - .3 Provide address and phone number of nearest service organization.

1.5 QUALITY ASSURANCE

- .1 The steel laboratory furniture contractor shall also provide worktops and fume hoods all manufactured or shipped from the same geographic location to assure proper staging, shipment and single source responsibility.
 - .1 General Performance: Provide certification that furniture shall meet the performance requirements described in SEFA 8.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver all components to site in manufacturer's clearly identified containers. Packaging to contain manufacturer's name, product name and identification number and other related information.
- .2 Materials must be available for review as required by the Contract Administrator.

1.7 SITE CONDITIONS

- .1 Existing Conditions
 - .1 Assure that walls scheduled to receive attachment of system components are adequately reinforced to accept installation of this work.
 - .2 Assure that wall, floor, and ceiling work is finished.
- .2 Storage and Protection
 - .1 Store packaged materials in original containers or wrapping with manufacture's labels intact.
 - .2 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
 - .3 Provide temporary protection as required, and repair all damage to such work at no additional cost to Owner.
- .3 Waste Management and Disposal.
 - .1 Comply with requirements of Workplace Hazardous Materials Information (WHMIS) regarding use, handling and disposal of hazardous systems.

1.8 SEQUENCING

- .1 Sequence this work to allow work by other divisions.
- .2 Coordinate this work with other operations in same area to avoid conflicts.

1.9 MAINTENANCE

- .1 Comply with requirements of Section 01 78 00.

Part 2 Products

2.1 MANUFACTURERS

- .1 Acceptable Products
 - .1 Metal Casework and Shelving System (Above Work Surface)
 - 1. The Contractor shall supply, deliver and install metal laboratory casework, and shelving and related components by VWR International Inc. in accordance with the requirements hereinafter specified and the Material List.
 - .2 All cabinet bodies and interiors to be painted with Light Neutral No. 61. All door and drawer fronts to be painted with Wineberry No. 96. All shelving, support columns and related components including the supports to be painted with Light Neutral No. 61.
 - .3 The Contract Administrator will retain the above samples of the successful manufacturer or owner to insure that material delivered to jobsite conforms in every respect to the samples submitted.

2.2 MATERIALS

- .1 General:
 - .1 All components and assemblies shall be manufactured of heavy duty, furniture grade aluminum extrusion and cold rolled steel, free of surface blemishes and must be stretcher leveled flat.
 - .2 All parts are to be accurately blanked and formed on precision presses and dies.
 - .3 Minimum tolerance gauges and fixtures shall be provided to assure uniformity of parts and assemblies from production run to production run.
- .2 Components:
 - .1 Each standard column assembly and accessory item shall be an integrated part of the overall installation assembly.
 - .2 All major components shall relate to one another within the completed shelving system.
 - .3 Shelving system shall consist of connectable sections forming a continuous shelving system.
- .3 Complete Shelf Assembly:
 - .1 Complete shelf assembly includes two standard column assemblies, with mounting brackets, a minimum of one shelf, support brackets and hardware.
 - .2 Shelving is available with or without safety lips, with or without integral wire management troughs.
 - .3 Shelving must have the ability to tilt 15 degrees using the same bracket.
 - .4 Standard complete shelving units shall be specified in one of two (2) widths: 48" or 72" centerline to centerline of column; (outside dimension of single 48" unit

actually 49 ¾” and single 72” unit actually 73 ¾”). Standard shelves available in depths of 12” or 18”.

- .4 Standard column assembly:
 - .1 All standard column assemblies approximately 48” high x 1 3/4 wide x 8” deep. The columns shall be structurally manufactured of 11-gauge steel and extruded aluminum.
 - .2 Worksurface mounted columns are to be mounted in such a manner as to conceal the attachment point with no visible hardware on top of the worksurface.
 - .3 Wall mounted column to be single extruded aluminum rail of same design as standard column assemblies.
 - .4 All columns shall be powder coated with high chemical resistant epoxy powder that meets or exceeds SEFA standards.
 - .5 Back and sides of slotted column support will accommodate shelving bracket for shelf support and a variety of accessories.
 - .6 Columns shall have a hollow core capable of acting as a utility chase for electrical, plumbing, data communications or other lab utilities.
 - .7 Column shall have integral “T” channel allowing infinite positioning along column support of shelving, power, data, lighting, overhead storage and accessories.
 - .8 Panel inserts in column shall be fabricated of 20 gauge cold rolled steel and shall be powder coated with high quality chemical resistant epoxy powder.
 - .9 Columns shall have the capacity to attach column extensions capable of extending to and through the ceiling and to act as a vertical utility chase. Extension shall come standard with a ceiling trim piece.
 - .10 Columns shall have a concealed access port at the base of the column to facilitate the passage of utilities upward into the column as dictated by customer needs.
 - .11 Column assemblies shall support shelving, storage and accessories on either and/or both sides.
- .5 Shelving Support Brackets:
 - .1 Shelving support brackets shall be powder coated with a high quality chemical resistant epoxy powder.
 - .2 Support brackets will be fabricated of 12-gauge steel.
 - .3 Support brackets shall accommodate both single-sided and double-sided shelving arrangements and must have the ability to tilt 15 degrees.
 - .4 Support brackets shall have the ability to mount with flanges facing downward or upward (acting as side rails).
- .6 Standard Shelf with Lip or without Lip:
 - .1 All standard shelves shall be powder coated with high quality chemical resistant epoxy powder and fabricated of 16-gauge steel.
 - .2 Standard shelves are available in two (2) standard lengths (nominally) 48” and 72” and two (2) depths: 12” or 18”.
 - .3 Shelves shall have a load capacity of 200 pounds.
 - .4 All shelves shall be approximately 1 3/16 high with a 7/16” high lip. Standard widths are: 46 3/16 (48”) and 70 3/16 (72”) OR as noted

- .5 Shelf is hung with two (2) support brackets with connections to the front or back of the column as the user's needs dictate. Shelf may be inclined 15 degrees.
- .6 Shelf may be mounted with lip at forward position or at rear position as user's needs dictate.
- .7 Standard Shelf with Wire Management Trough:
 - .1 Shelving with integral wire management shall have three (3) grommet holes, one (1) at the center and one (1) at each end, on the rear surface of the shelf, allowing wiring and cabling to pass-thru and lay in a wire management trough located under shelf and directly beneath grommet holes.
 - .2 Wire management trough shall be constructed of steel and welded onto shelf, running the entire length of the shelf at the rear.
- .8 Overhead Storage:
 - .1 Overhead shelving units shall be manufactured of steel and shall attach to and be supported by column uprights. Shelving lengths shall be sufficient to match the span of the column uprights.
- .9 Column Mounted Electrical:
 - .1 An optional 24" long electrical panel, made of 20 gauge metal with high quality chemical resistant powder coat paint, shall be insertable into the column upright and include a 15-amp duplex (two outlets) with an on/off switch, built-in circuit breaker and a 9' long power cord with molded 3-prong grounded plug.
- .10 Column Voice/Data Insert:
 - .1 An optional 24" long voice/data panel, made of 20 gauge metal with high quality chemical resistant powder coat paint, shall be insertable into the column upright and include two (2) RJ45 CAT 5 data jack connectors and two (2) RJ11 CAT 5 phone modem jacks.
 - .2 Wiring/cabling to be provided by others.

Part 3 Execution

3.1 INSTALLERS

- .1 Use only manufacturer authorized installers for Work of this Section.
- .2 Acceptable Installers
 - .1 VWR International, 2360 Argenta Road, Mississauga, Ontario
Contact: Rick Stephenson – Direct Sales Representative VWR International,
Mississauga, Ontario L5N 5Z7 Phone: (905) 928-2801.

3.2 INSTALLATION

- .1 Structural Performance Requirements
 - .1 The Atlas Shelving system shall be designed for heavy duty laboratory usage. When the shelving is completely assembled and properly attached to a work surface or wall, it shall support the following loads:
 - .1 A 6ft shelving assembly shall carry a load of 200 lb with a maximum total deflection of 1/8".
 - .2 A 6ft upper storage cabinet and its mounting hardware shall carry a load of 400lb.
 - .2 Furnish and deliver all utility service outlet accessory fittings, electrical receptacles and switches identified on drawings as mounted on the laboratory furniture. All plumbing and electrical fittings, not preinstalled in equipment, will be packaged separately and properly marked for delivery to the appropriate contractor.

Furnish and deliver, 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. All tailpieces shall be furnished less the couplings required to connect them to the drain piping system.
 - .3 Furnish service strip supports where specified, and setting in place service tunnels, service turrets, supporting structures and reagent racks of the type shown on the drawings.
 - .4 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 broom clean and orderly.
- .2 Metal paint system finish and performance requirements
 - .1 Metal Paint System Finish
 - .1 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 metal and to aid in the prevention of corrosion.
 - .2 Physical and chemical cleaning of the metal shall be accomplished by washing with 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 and enhance the protection provided by the finish against humidity and corrosive chemicals.
 - .3 After the phosphate treatment, the metal shall be dried and all metal surfaces shall be coated with a corrosion-resistant finish. Baking at elevated temperatures to provide maximum properties of corrosion and wear resistance shall cure the coating.
- .3 Performance Test Ratings
 - .1 The completed finish system in standard powder coat colors shall meet the performance test requirements specified under SEFA 8-1998, Laboratory

Furniture Casework, Shelving and Tables, Sections 8.1, 8.2, 8.3, 8.4 and 8.5
(Scientific Equipment & Furniture Association).

- .4 Performance Test Results (Bending test)
 - .1 An 18 gauge metal strip, finished as specified, when bent 180 deg over a 1/2" diameter mandrel, shall show no peeling or flaking off of the finish.
- .5 Performance Test Results (Adhesion)
 - .1 Ninety or more squares of the test sample shall remain coated after the scratch adhesion test.
 - .2 Two sets of eleven parallel lines 1/16" apart shall be cut with a razor blade to intersect at right angles 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 using 100-foot candles of illumination.
- .6 Note: This test is based on ASTM D2197-68, "Standard Method of Test for Adhesion of Organic Coatings."
- .7 Performance Test Results (Hardness)
 - .1 The test sample shall have a hardness of 2-H using the pencil hardness test.
 - .2 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).
 - .3 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.

3.3 FIELD QUALITY CONTROL

- .1 Adjust components to assure proper alignment and operation.
- .2 Repair, if acceptable, or replace all damaged or improperly operating items.
- .3 Atlas Shelving locations shall be established from approved shop drawings so that mechanical and electrical work can be installed without interfering with installation.
- .4 Installation of shelving shall be coordinated with the trades to maintain the integrity of the installed system.
- .5 Shelving and accessories shall be installed with the supervision of the manufacturer's authorized representative and according to manufacturer's recommendations.
- .6 Sequence this work to allow work by other divisions.
- .7 Coordinate this work with other operations in same area to avoid conflicts.

3.4 CLEANING

- .1 Immediately after installation and adjustment; clean all surfaces to remove all marks, soil and foreign matter.
- .2 Just prior to Substantial Completion, recheck all components and perform all required additional cleaning.
- .3 Clean shelving and touch-up as required; remove or refinish damaged or soiled areas (if any) to acceptable standards.
- .4 Repair or replace defective work as directed, upon completion of installation.
- .5 Protection: Advise contractor of procedures and precautions for protection of installed shelving and accessories from damage by work of other trades.

3.5 DRAWINGS

- .1 Manufactured Metal Casework and Shelving Components:
 - .1 Refer to drawing A2 Large Scale Floor Plan and Interior Elevations for drawings indicating manufactured casework components required.

END OF SECTION