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Section 12350 - Laboratory Casework and Fixtures

Part 1 - General

1.01 Description of Work:

- A. Extent of laboratory casework and fixtures as shown on drawings.
- B. Work includes the fabrication, finishing, and installation of new wood laboratory casework components consisting of: base cabinets, wall cabinets, storage cabinets, cabinets tops, lab type sinks, cabinet understructures for fume hoods, chase wall (not shown on drawings), and other casework units as indicated on the drawings.
- C. Piped utility service fixtures shall be supplied (loose) by the Casework Subcontractor. Installation of service fixtures and connection to piped utilities is the responsibility of the General Contractor.
- D. Waste lines and traps are to be furnished and installed by the General Contractor. All sinks by the Casework Subcontractor are listed herein. These sinks are provided with a tailpiece. The General Contractor is to furnish and install all piping and fittings downstream from tailpiece.
- E. All electrical devices, wiring, electrical raceway products and ground connections are provided and installed by General Contractor. Providing cutouts in laboratory casework for the installation of electrical devices is the responsibility of the Casework Subcontractor.
- F. Rubber base molding is the responsibility of the General Contractor.
- G. In-wall blocking and supports for wall hung casework are the responsibility of the General Contractor. The Contractor is to coordinate the locations of in-wall blocking using the shop drawings provided by the Casework Subcontractor.

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1.02 Quality Assurance:

- A. **Single Source Responsibility:** Provide laboratory casework with tops, sinks, and service fixtures, manufactured or furnished by a single laboratory casework company for single responsibility.
- B. Model numbers listed on the drawings and/or equipment schedule are those of Hall Casework Systems of Bainbridge, Georgia. These numbers are provided for convenience in identifying sizes and general characteristics of the casework units. The use of these numbers is not intended to preclude the use of any acceptable manufacturer's product which complies with these specifications.
- C. **Chemical and Physical Resistance of Finish:** Submit an independent testing laboratory report certifying that the exterior finish of laboratory casework is capable of withstanding following tests, with no change, of slight change of gloss, slight discoloration, of slight temporary softening of film with no loss of adhesion and no loss of film protection.
 - 1. **Acids:** Not less than 5 drops (0.25 cc) applied to finish surface, covered with watch glass concave side down for 60 minutes, then washed and dried.
 - 37 % Hydrochloric Acid
 - 20 % Hydrochloric Acid
 - 10 % Hydrochloric Acid
 - 70 % Sulfuric Acid
 - 25 % Sulfuric Acid
 - 30 % Nitric Acid
 - 10 % Nitric Acid
 - 75 % Phosphoric Acid
 - 25 % Phosphoric Acid
 - 98 % Acetic Acid
 - 50 % Acetic Acid

- 2. **Solvent:** Not less than 5 drops (0.25 cc) applied to finish surface,

covered with watch glass concave side down for 60 minutes, then washed and dried.

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Ethyl Alcohol
Butyl Alcohol
Methyl Alcohol
Ethyl Acetate
Ethyl Ether
Methyl Ethyl Ketone
Toluene
Acetone
Benzene
Carbon Tetrachloride
37 % Formaldehyde
Gasoline
Naphtha
Kerosene
Xylene
Glycerin
Furfural

3. Base and Salts: Not less than 5 drops (0.25 cc) applied to finish surface, covered with watch glass convex side down for 60 minutes, then washed and dried.

40 % Sodium Hydroxide
10 % Sodium Hydroxide
28 % Ammonium Hydroxide
40 % Potassium Hydroxide
10 % Potassium Hydroxide
Saturated Zinc Chloride
Saturated Sodium Chloride
Saturated Sodium Sulfide
Saturated Sodium Carbonate

4. Moisture Resistance: No visible effect when finish surface exposed to the following:

- a. Hot water temperature of 190 degrees F (91 degrees C) to 205 degrees F (96 degrees C), trickled down surface at 45 degree angle for 5 minutes.

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b. Constant Moisture using a 2" x 3" x 1" cellulose sponge, soaked with water, in contact with surface for 100 hours.

5. **Cold Crack:** No effect when subjected to 10 cycles of temperature change for 20 degrees F (14 degrees C) for 60 minutes to 125 degrees F (95.5 degrees C) for 60 minutes.

6. **Adhesion and Flexibility:** No peeling or cracking or exposure of metal when metal is bent 180 degrees over a 1/2" diameter mandrel.

7. **Adhesion:** Ninety or more squares of the test sample shall remain coated after the scratch adhesion test.

8. **Hardness:** The finish shall have a hardness of 4-H using the pencil hardness test.

1.03 Submittals:

- A. **Product Data:** Submit manufacturer's data and installation instructions for each type of laboratory casework unit, fixtures, and accessories.
- B. **Samples:** Submit 6 x 6 samples of each type of specified finishes, including all top materials. Samples will be reviewed by Architect for color, texture, and pattern only. Compliance with other specified requirements is exclusive responsibility of Casework Subcontractor.
- C. **Shop Drawings:** Submit (8 sets) of shop drawings for laboratory casework showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fixtures. Show details and location of anchorages and fittings to floors, walls, and base. Include layout of units with relation to surrounding walls, doors, windows, and other building components. Coordinate shop drawings with other work involved. Indicate all in-wall blocking and rough-in requirements for coordination with other trades.

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1.04 Definitions

- A. **Broom Clean:** A condition in an interior area in which surface debris has been removed by dry methods.
- B. **Service Fittings and Fixtures:** Service fittings include gas, air, vacuum, and special gas petcocks and turrets; lab type hot and cold water faucets, vacuum breakers; deck mounted eye- washers; laboratory sinks, and cup sinks.
- C. **Casework Subcontractor:** Manufacture, dealer, distributor, or agents who provide laboratory casework and equipment.
- D. **General Contractor:** The Contractor responsible for the construction of the building and all associated systems.
- E. **Rough-In Point:** Individual or common supply of mechanical, electrical, and heating, ventilating and air conditioning (HVAC) through wall, floor, or ceiling, generally located within the utility umbilical, equipment chase, or service space behind cabinets.
- F. **Related Equipment:** Items not generally manufactured by Casework Subcontractor but furnished and installed as part of Casework Subcontractor's contract.

1.05 Project Conditions:

- A. **Site Access:** The General Contractor shall provide access for vehicle delivery to tailgate delivery area. The receiving area in the building and corridors needed for casework and equipment shall be kept clear (by General Contractor) of materials of other trades to make reasonable access to elevators and distribution areas possible.
- B. **Building Finish:** Upon delivery of casework to the job site, it must be possible to allow complete distribution and commencement of physical installation in the rooms where the casework is designated to be installed.

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In order to ensure an orderly installation and to avoid damage to finished casework, the following list of building conditions shall be completed by the General Contractor prior to installation of casework and fixtures. Installation of steel framing for reagent assemblies may proceed prior to completion of items listed below at the mutual discretion of the General Contractor and the Casework Subcontractor. The General Contractor, Architect, and Casework Subcontractor shall conduct a joint review of the site prior to installation to confirm that the following requirements are met.

1. Floors shall be level to within the tolerances specified (in building specifications) to provide an even surface for installation of furniture and equipment. Final floor finish shall be completed prior to casework installation.
2. Wall systems shall be completely installed and plumb for installation of wall cabinets. All blocking and supports for wall cabinets shall be installed (by General Contractor). Wall systems shall be complete including final painting.
3. The ceiling system shall be in place including suspension grid and ceiling panels except at fume hoods and utility umbilical drops at island benches.
4. Branch electrical circuits, including grounding conductors, shall be in place.
5. HVAC grilles, call systems, and sprinkler heads shall be installed.
6. Overhead electrical fixtures shall be installed and connected. Provide adequate lighting for installation of casework.
7. Overhead mechanical lines shall be tested for leaks before finished casework is installed in any area.
8. Where mechanical, electrical, and HVAC service lines will be behind or under casework, service access or stubs shall have been installed at the appropriate rough-in point.

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9. Service lines for water, gas, vacuum, and special gases shall be flushed clean of dirt and chips, capped and tested for leaks prior to connection of service fittings.
 10. Environmental Conditions. The building shall be closed to the weather. Exterior envelope including roofing, wall systems, exterior glazing, paneling and doors shall be installed to protect casework from the elements and to provide security for casework delivered to the job site. Corridors shall be closed by either permanent or temporary methods.
 11. No standing water shall be evident on the floor. Water producing operations such as masonry, terrazzo, and plaster shall be completed and cured prior to casework installation.
 12. Rooms in which laboratory casework is to be installed shall be broom cleaned.
 13. During cold weather provide temporary or permanent heat to maintain ambient room temperatures in a range of 55 degrees to 68 degrees F (13 degrees to 20 degrees C) as recommended by the Casework Subcontractor.
 14. Power Requirements: The General Contractor shall provide temporary power to rooms which receive casework installation.
- C. Maintain final design temperature and humidity in areas where casework is installed.
- D. Fit casework to actual construction. Field verify all dimensions.

1.06 Delivery, Storage, and Handling

- A. Casework Subcontractor will deliver wood laboratory casework only after wet operations in building are completed. The General Contractor is required to schedule activities in such a manner that

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the condition of the building does not delay the delivery and installation of casework by Casework Subcontractor.

- B. It is the responsibility of the Casework Subcontractor for the unloading of all deliveries to jobsite.
- C. Wood laboratory casework shall be stored only in a ventilated place, protected from the weather, with relative humidity therein of 50% or less at 70 degrees F.
- D. The General Contractor and Casework Subcontractor shall protect the finished surfaces from soiling and damage during the handling and installation. Keep covered with polyethylene film or other protective covering.
- E. In the case of high value items, such as service fittings, that may be shipped to the job site on larger projects and used over the course of several months installation, a secure, locked storage area shall be provided by the General Contractor to the Casework Subcontractor for use to safeguard this equipment at the job site prior to distribution to the proper trades for installation.
- F. Laboratory casework and counters are not to be used as workbenches or work platforms for any portion of the work by any trade. Furniture and casework, as installed, is considered to be finished equipment and shall be protected from all trades.
- G. Mechanical and Electrical Trades. Where access is required through items of laboratory casework, it shall be the mechanical or electrical contractors' responsibility to remove said access panels, drawers, etc., where they occur, make their connections and replace such access panels, drawers, etc. at their own expense.
- H. Painting and Other Finishing Trades. At no time shall the installed work surface be used by tradesmen as a workbench, scaffolding, etc. It is the responsibility of the General Contractor to perform

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minor wall touch-up around casework. It is the responsibility of the Casework Subcontractor caulk between casework and wall junctions. The General Contractor shall protect installed laboratory casework and equipment, especially the laboratory work surface, from debris, paint and damage in the course of the construction sequence.

1.07 Warranty

- A. Provide written warranty signed by the manufacturer guaranteeing to correct failures in products which occur within the warranty period indicated below, without reducing or otherwise limiting any other rights to correction which the owner may have under the contract documents. Correction may include repair or replacement. Correct failures which occur within the following warranty period(s) after final completion: If within any guarantee period repairs or changes are required due to product being defective or inferior, or not in accordance with the terms of the contract, the Casework Subcontractor upon written notice from the owner, and without expense to the owner, proceed within (24) twenty-four hours to place in satisfactory condition in every particular all of such guaranteed work, correct all defects therein, and make good all damages to the structure or site or equipment or contents thereof disturbed in fulfilling any such guaranteed work.
 - 1. Warranty - All components: 2 years

Part 2 - Products

2.01 Acceptable Casework Subcontractors/Manufacturers:

- A. Provide products by one of the following manufacturer's:
 - 1. Collegedale Casework, Inc.
 - 2. Fisher-Hamilton Scientific, Inc.
 - 3. Hall Casework Systems
 - 4. Kewanuee Scientific

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2.02 Wood Laboratory Casework:

- A. **Definitions:** The following definitions apply to wood laboratory casework units:
1. Exposed portions of casework include surface visible when doors and drawers are closed. Bottoms of cases more than 2'-0" above finished floor shall be considered as exposed. Visible shelves and members in open cases or behind glass doors shall be considered as exposed portions.
 2. Semi-exposed portions of casework includes those members behind opaque doors, such as shelves, divisions, interior faces of ends, case back, drawer sides, backs, and bottoms, and back face of doors. Tops of cases 6' - 6" or more above floor shall be considered semi-exposed .
 3. Concealed portions of casework include sleepers, web frames and surfaces not usually visible after installation.
- B. **Woods:** All woods shall be air-dried, then kiln-dried by the laboratory casework manufacturer to a moisture content of 5 % to 6 %. Temper kiln-dried lumber to a moisture content of 6 % to 8 % before use. Maintain moisture content throughout production. Woods shall be free of knots and imperfections. Manufacturer shall supply evidence certifying kiln-drying of wood.
- C. **Exposed Materials:** Do not use exposed faces of lighter than average color joined with exposed faces of darker than average color. Do not use two adjacent faces which are dissimilar in grain, figure, and natural markings.
1. Solid lumber: Clear, dry, premium grade FAS Appalachian red oak, free from defects and selected for compatible grain and color.
 2. Plywood Face Veneer: Same species as exposed solid lumber, clear, selected for grain and color compatible with exposed solid lumber, no defects. Provide solid crossbandings without voids. Edgeband exposed edges with solid wood of same species as face

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veneer. Rotary cut face plies shall not be acceptable. Particle board core shall not be acceptable.

D. Semi-Exposed Materials:

1. Solid lumber: Dry, sound, selected to eliminate appearance defects. Any species of hardwood, of similar color and grain to exposed portions.
2. Plywood: Dry, sound, selected to eliminate appearance defects. Oak, birch, or maple plywood acceptable at these areas.

E. Concealed Members:

1. Solid lumber or Plywood: Any species, with no defects affecting strength or utility.
2. Particle board not acceptable.
3. Hardboard: ANSI A135.4 Class 1, tempered

F. Glass for Glazed Doors:

1. Provide 1/4" thick tempered glass only. At all locations.

G. Transparent Finish:

1. General: Provide complete factory finish to comply with chemical and physical resistance requirements. After installation, touch up or refinish damaged portions equal to original factory finish.
2. Preparation: Sand exposed and semi-exposed components, using matching and hand methods. Machine marks, cross sanding, tool marks or other surface blemishes are not acceptable.
3. Exposed Portions Sand finished after each surface treatment. Apply as follows:
 - a. Stain, hand wiped, match sample provided by Architect.
 - b. (2) Sealer coats. Sand between each application.
 - c. Multiple coats of highly chemical resistant finish, heat dried and sanded between each coat to produce a smooth, satin luster free of imperfections.

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4. Semi-exposed Portions: Apply (2) sealer coats and multiple coats clear, water repellent finish to provide a smooth, washable surface.
5. Concealed Portions: One heavy coat of water repellent finish.

H. Base Cabinets

1. End panels, dividers, and bottom shelves shall be 3/4" thick plywood.
2. Cabinet frames shall be 3/4" thick mortise and tenon construction. Styles shall be a minimum of 2" and rails 1 3/4". No doweled or pocket screw frames acceptable.
3. Cabinets backs shall be 1/4" thick minimum plywood. No hardboard backs acceptable.
4. Provide base cabinets units with full-width, adjustable shelves, 3/4" thick 7 ply plywood, with 3/4" x 3/4" hardwood nosing.
5. Provide pressure treated toe space at all base cabinets and floor mounted units, with front, rear, and side members.
6. Provide removable panels allowing access to plumbing chase at all sink and cupboard units, but design to protect the interiors from dust of vermin.
7. Drawer Boxes: Provide 1/2" thick, 11 ply, plywood drawer sides with 1/4" thick plywood bottom dadoed into drawer sides. Back rail to be 3/4" thick, 7 ply plywood.
8. Drawer Front: Provide 3/4" thick, 7 ply min., plywood drawer front with hardwood edging.
9. Drawer Suspension: All drawers shall utilize a suspension consisting of mechanical slides.
10. Access panels: Provide 1/2" thick plywood panels at all access locations. Provide (4) removable stainless steel screws with finish washers at panels.
11. Chase Walls: Chase walls to be constructed using 1 x 6 uprights with 3" diameter access holes drilled for plumbing and electrical. Bottom plate to be 2" x 6" pressure treated pine. Chase wall at island locations to be covered with 1/2" thick oak plywood with 3/4" solid lumber end caps. See elevations for location of removable access panels.

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I. Full Height Cases:

1. Design and construct for full enclosure to assure dust proofing of the case interior. Construction for full height cases to follow base cabinet guidelines.

L. Scribe Strips:

1. Provide 1/4" thick solid hardwood trim strips at all locations where base and wall cabinets adjoin side walls.

2.03 Accessories:

- A. Provide manufacturer's standard, satin finish on all hardware unless noted otherwise below.
- B. Hinges: Provide one pair for doors less than 4' high and 1-1/2 pair for doors over 4' high. Provide fully concealed self-closing 170 degree opening hinge at all casework. Blum 91A6550 or equal.

Suggested hinge: 5 Knuckle Institutional Hinge (Plated-Chrome) with Hospital style corners - 2 3/4" tall.
- C. Pulls: For all drawers and swinging doors provide wire pull mounted with two screws fastened from back. Provide two pulls for drawers over 24" wide. Use of pull design not compatible with the Americans with Disabilities Act (ADA) will not be acceptable. Satin chrome finish.
- D. Drawer Guides: For all drawers provide (2) self-closing epoxy coated drawer slides. 3/4 extension drawer runners with a min. of 100 lbs. load capacity. Blumatic 230M series or equal.
- E. Drawer and cupboard locks: Provide one lock per door and drawer at all locations. Provide lock cores with removable cylinders for any combination of locking system. Each classroom is to be keyed the same with each room having a different key number. Provide (5) master key and keying schedule upon completion of casework installation. Timberline Lock series 210 with 235 cores. Black finish.

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- F. Adjustable Shelf Standards in Wood Casework: Provide KV 255 epoxy coated shelf standard recessed into cabinet body.
Option: 5 mm diameter line boring on 32mm centers
- G. Shelf Supports: Provide KV 256 epoxy coated shelf supports. (4) per shelf.
Option: Twin pin clear clips with shelf retainage clips.
- H. Exposed fasteners: All exposed fasteners to be stainless steel flat head Phillips head screws with stainless steel counter sunk finishing washers.

2.04 Fabrication:

- A. Fabricate laboratory furniture to dimensions, profiles, and details shown on the drawings.
- B. Assemble units in the shop is as large of components as practicable to minimize field jointing.
- C. Install hardware after final finishing is complete. Adjust and align hardware so that moving parts operate freely and contact points meet. Allow for final field adjustment after installation.

2.05 Tops:

- A. **Cast Epoxy Resin:** Factory molded tops of modified epoxy resin formulation, uniform mixture throughout full thickness. Color to be chosen from 5 standard colors. Finish to be polished (not flat or matte finish).
 - 1. Tops, Box Curbs, Splash Rim: Provide smooth, clean, exposed tops and edges, in uniform plane free of defects. All backsplashes to be integral (except at column cut outs, etc., where integral splash would not be possible). All exposed edges to be radiused to 1/8" unless noted otherwise on drawings. Top lengths and widths as shown on drawings. Tops shall have factory cutouts for all specified service fixtures.

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2. Top thickness: Maintain 1" thickness with tolerance not exceeding plus or minus 1/32". Provide front and end overhang of 1" over base cabinets, formed with continuous drip groove on under surface 1/2" from edge.
3. Provide molded-in drain grooves in cast epoxy resin tops at laboratory sinks. Drain grooves to be min. 3/8" deep, 1/2" wide, spaced 2 1/2" apart. Extend grooves to length corresponding to base cabinet width below sink on one side only. Architect will determine which side of each sink to receive grooves during shop drawing review.
4. Marine edges: At all sinks where noted on drawings, provide 3/4" thick tops with integral 1/4" marine edge.
5. Physical Properties: Flexural strength - 15,000 pi; compressive strength - 35,000 psi; hardness, Rockwell M -100; water absorption in 24 hours - 0.02 %; heat distortion point- 400 degrees F (204 degrees C); highly resistant to thermal shock.
6. Chemical Resistance: Spot test of following reagents in standard laboratory concentrations, in contact with finished top for 24 hours; top shall be entirely unaffected or show only slight dulling of finish:
 - Glacial acetic acid
 - Hydrochloric acid
 - Nitric acid
 - Phosphoric acid
 - Sulfuric acid
 - Chromic acid
 - Ammonium hydroxide
 - Calcium hypochlorite
 - Sodium hydroxide
 - Acetone
 - Amyl acetate
 - Aqua regia
 - Benzene
 - Butyl alcohol
 - Ethyl acetate
 - Ethyl alcohol
 - Ethyl ether

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Formaldehyde
Hydrogen peroxide
Methyl alcohol
Methyl ethyl ketone
Kerosene
Phenol
Silver nitrate
Trichloroethylene
Xylene
Zinc chloride

7. Workmanship: Cast surface very smooth using polished molds, with factory cutouts for sinks and drip grooves. Plain butt type joints assembled with epoxy adhesive and pre-fitted, concealed metal spline.

2.06 Sinks and Cup Sinks:

- A. **Sinks:** Shall be located as indicated on drawings:
1. Sizes: As indicated in sink schedule.
 2. Outlets: 1 1/2" diameter, 6" minimum length, fabricated of same material as sink. Provide strainers at all outlets.
 3. Overflows: For each sink, except cup sinks, provide overflow of standard beehive or open top design and with separate strainer. Height 2" less than sink depth. Provide in same material as sink.
- B. **Cast Epoxy Resin Sinks:** Non glare black, molded in one piece with surfaces smooth, corners coved and bottom sloped to outlet. Minimum physical properties and chemical resistance as specified herein for cast epoxy resin tops. Thickness, 1/2" minimum. Sink counter cutout shall overlap interior dimensions of sink by 1/2" on all four sides.

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2.07 Mechanical Service Fixtures:

- A. Products of the following manufactures is acceptable:
 - 1. Water Saver Faucet Company.

- B. Model numbers listed below are those of Water Saver Faucet Company. These numbers are provided for convenience in identifying the characteristics and requirements of the service fixtures. The use of these numbers is not intended to preclude the use of any acceptable manufacturer's product which is deemed to be equal by the architect.

- C. **Service Fixtures:** Provide units complete with washers, locknuts, unions, and nipples for positive mounting to supporting laboratory units. Include wall and deck flanges, escutcheons, handle extension rods and remote valves. Factory assemble and individually test all assemblies. Fabricate units to withstand test pressure of 100 psig.

- D. **Material:** Fabricate service fixtures from cast or forged red brass containing a minimum of 85 % copper.

- E. **Finish:**
 - 1. For all mechanical service fixtures other than those inside a fume hood, exposed surfaces including fittings and escutcheons to have a bright chrome plated finish.

 - 2. For fixtures inside fume hoods, coat with " Labkote " acid and solvent resistant baked-on plastic coating. Color to match fixture code as indicated below.

- F. **Service Outlets Identification:** Provide colored plastic index discs with embossed identification letters at each service fixture handle or knob. Secure discs to fixture handles. At Special Gas outlets, provide 1 extra Carbon Dioxide disc for each Special Gas outlet. Color code discs as follows:

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<u>Service</u>	<u>Color</u>	<u>Code</u>	<u>Letter Color</u>
Air	Orange	Air	Black
Gas	Blue	Gas	White
Vacuum	Yellow	Vac	Black
Hot Water	Red	HW	White
Cold Water	Green	CW	White
Carbon Dioxide	Light Blue	CO2	Black
Special Gas	Light Grey	SG	Black

- G. **Ground Key Type Hose Cocks:** Water Saver Catalog number L60; tapered core and handle of one piece forged brass with removable serrated outlet.
- H. **Water Valves or Faucets:** Provide units with renewable barrel locked in valve body. Barrel shall contain all wearing parts, with renewable discs.
- I. Hand of Fixtures: Furnish right-hand fixtures unless noted otherwise.
- J. **Vacuum Breakers:** Provide vacuum breakers on all water fixtures (hot or cold). Gooseneck fixtures and hose bib fixtures shall have atmospheric type vacuum breakers.
- K. Service Fixture Schedule:
 - 1. Ground Key Outlets: Use for Air (A), Gas (G), or Vacuum (V) service as noted on drawings or as follows. Alpha-numeric designations are for drawing symbols followed by unit description with Water Saver Faucet Co. model designation for mounting or special features.
 - A-1, G-1, V-1: Deck mounted round turret base with single ground key cock valve with removable straight serrated hose end. L-60 1131 WSA.
 - A- 4, G-4,V-4: Deck mounted round turret base with four ground key cock valves with removable straight serrated hose ends. L-60 134 WSA. Outlets at 90 degree to each other in a 360 degree pattern.

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A- 7, G-7,V-7: Panel mounted flange with single ground key cock valve and removable serrated hose end. L-60-158

WSA.

2. Hot and Cold Water Mixing Outlets: Use for mixing of hot and cold water (HCW) as noted on drawings or as follows. Numbers are for drawing symbols, followed by unit description. Alpha-numeric designations are for drawing symbols followed by unit description with Water Saver Faucet Co. model designation.

HCW-2: Deck mounted laboratory mixing faucet with 8" swing vacuum breaker gooseneck with aerator, wrist blade handles. L225-TWI-SG8-VB-55.

HCW-3: Deck mounted laboratory mixing faucet with 8" swing vacuum breaker gooseneck with aerator, wrist blade handles and floor mounted foot operated self-closing mixing valve. L2225-TWI-SG8-VB-55 with L3001. Note: Piping between foot valve and deck mounted fitting and associated installation labor is the responsibility of the General Contractor.

3. Eye Wash & Deluge hose: Use for deck mounted eye washes (EW) as noted on drawings or as follows. Alpha-numeric designations are for drawing symbols followed by unit description with Water Saver Faucet Co. model designation.

EW-1: Deck mounted dual purpose eye wash/drench hose unit with two gentle spray outlet heads angled at 45 degrees, self-closing squeeze valve with locking clip and deck mounted flange with handle guide. Provide 8" long high pressure hose and shank for mounting eyewash through casework. EW-1022

Part 3 - Execution

3.01 Casework Installation:

- A. Install plumb, level, true and aligned with no distortions. Shim, using concealed shims. Where laboratory casework abuts other finished work, scribe and apply filler strips for accurate fit with fasteners concealed. Fit

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scribe strips to irregularities of adjacent surfaces. Maximum gap openings shall be 0.025”.

- B. **Base Cabinets:** Set cabinets straight, plumb, and level. Adjust sub-tops within 1/16” of a single plane. Bolt continuous cabinets together. Fasten continuous cabinets to floor at top space with fasteners spaced 48” o.c. Secure individual cabinets with not less than two fasteners into floor, where they do not adjoin other cabinets. Assemble units into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16”.
- C. **Wall cabinets and Shelves:** Fasten to solid supporting material, not plater, lath, or wallboard. Anchor, adjust, and align wall cabinets as specified herein for base cabinets. Reinforcement of stud walls to support wall-mounted cabinets and shelves will be done during wall erection by trade involved, but responsibility for accurate location and sizing of reinforcement is part of this work.
- D. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.02 Installation of Tops:

A. **General:**

1. **Field Jointing:** Make in same manner as factory joining using dowels, splines, adhesives, and fasteners recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.

B. **Cast Epoxy Resin Tops:**

1. **Fastening:** secure to cabinets with silicone adhesive applied at each corner and along perimeter edges at not more than 48” o.c. Adhesive rather than epoxy cement is to allow for future disassembly and relocation.

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2. Workmanship: Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints in tops units using clamping devices.
3. Tolerances: Provide joint widths not more than 1/16" wide at any location, filled and flush with abutting edges. Horizontal alignment of top surface of all joints for their entire length shall be within 1/32". Front edges of all abutting pieces shall align.
4. Surface finish: After installation, dress joints smooth, remove any surface scratches, clean and polish entire surface.
5. Verify field dimensions and squareness of adjacent walls prior to installation.

3.03 Installation of Sinks:

- A. Underside installation: Use manufacturer's recommended adjustable support system for table type and cabinet type installations. Set top of sink unit pressed to countertop, set in manufacturer's recommended chemical resistant sealing compound to produce a tight and fully leakproof joint. Adjust sink and support to prevent movement. Remove excess sealing compound once sink is set.
- B. Semi-Flush Installation: Use stainless steel sink frame, complete with clamping lugs and pads. Before setting, apply a full coat of manufacturer's recommended sealant under rim lip and along top. Omit sink frame if sink is fabricated with an integral rim seal.

3.04 Installation of Accessories:

- A. Procedure. It shall be the responsibility of the Casework Subcontractor to remove his own packaging debris and other waste resulting from installation to the General Contractors common disposal area on site.

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3.06 Cleaning and Protection:

- A. Repair or remove and replace defective work as directed by the Architect upon completion of installation.
- B. Clean shop-finished surfaces, touch up and remove or refinish damaged or soiled areas, as acceptable to Architect. Clean and polish all epoxy resin countertops with “ CounterTop Magic “ or equal.
- C. Protection: Protect materials and installed laboratory casework and fixtures from damage by work of other trades.

End of Section 12350