SPECIFICATIONS FOR CASEWORK REPAIRS: SOUTH HIGH SCHOOL

WORCESTER PUBLIC SCHOOLS – DEPT. OF FACILITIES MGMT.

BID #: 8310-W5

1. INTENT

1.1 It is the intent of this specification to provide guidance for the replacement of water damaged casework at South High School, located in Worcester, MA. The casework under this scope of work was damaged by a water leak, with the damaged items having been previously removed by the Owner and all environmental concerns mitigated. Under this scope of work, the Owner seeks to replace the items in-kind, restoring the original design layout as closely as possible.

1.2 The work shall be completed by June 30, 2025. Work hours for this contract shall be between the hours of 3:00 pm – 11:00 pm (second shift), Monday through Friday, and/or Saturday 7:00 am – 3:00 pm (first shift).

1.3 A Pre-bid walk-through will be held on **Thursday, November 7, 2024, 2:30 pm, at South High School**, located at 170 Apricot St. All bidders are encouraged to attend.

2. REFERENCED DOCUMENTS

2.1 See attached technical specifications, "*Section 12 30 00 Casework"* and *"Section 12 35 53 Laboratory Casework"* for applicable reference standards.

2.2 Drawing set *"South High Water Damage Replacement Project"* shall be used as reference and basis of design for shop drawing production.

3. PRODUCT, MANUFACTURER/INSTALLER QUALIFICATION REQUIREMENTS

3.1 See attached technical specifications, "*Section 12 30 00 Casework"* and *"Section 12 35 53 Laboratory Casework"* for applicable product data and installer requirements.

4. MATERIALS

4.1 See attached technical specifications, "*Section 12 30 00 Casework"* and *"Section 12 35 53 Laboratory Casework"* for applicable product material requirements and minimum acceptable standards.

5. WARRANTY

5.1 Contractor/vendor warranties and guarantees to Owner that all work will be in accordance with manufacturers specifications and will not be defective. All work under this scope shall be fully guaranteed by the contractor for a period of 2 years from the date of final acceptance unless otherwise stipulated in writing by the Owner. During this 2-year period, any defects discovered by the Owner shall be addressed by the Contractor in a satisfactory manner, at no cost to the Owner.

5.2 The Owner may conduct independent inspections, at its own expense, of the Work at any time prior to the completion of the guarantee period.

TECHNICAL SPECIFICATIONS FOR

CASEWORK REPAIRS: SOUTH HIGH SCHOOL

WORCESTER PUBLIC SCHOOLS – DEPT. OF FACILITIES MGMT.

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Section 12 30 00
CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies all work and materials for classroom casework of types and sizes shown on the Drawings, as specified herein. The types of work of this section includes, but is not limited to:

1. Plastic laminate clad base and wall cabinets including filler panels and other accessories as needed for a complete and proper installation.
2. Plastic laminate countertops and splashes, for all casework provided under this Section 12 30 00.
    a. Provide back and side splashes at countertops abutting wall construction and return to edge of countertop at all conditions.
    b. Provide side splashes where countertops abut tall cabinets.
    c. Provide PVC edge banding at all plastic laminate countertops unless otherwise indicated.
3. Pencil grilles.

B. Make all cutouts within casework items as required to accommodate sinks, piping, conduit, and other mechanical and electrical work, from templates provided by the respective mechanical and electrical trades.

C. Furnish and provide all materials and services as may be additional or separately described under other Sections of this Specification.

1. No attempt is made in this Section to list all elements of casework required on this project or to describe how each element will be installed. It is the responsibility of the Construction Manager to determine for itself the scope and nature of the work required for a complete installation from the information provided herein and in the Drawings.

D. Remove all debris, dirt and rubbish accumulated as a result of this installation, and leave the premises clean and ready for use. This shall include cleaning equipment interiors, exteriors, and worktops.

E. Alternates: Special attention is called to the fact that it shall be the responsibility of the Construction Manager, Trade Contractors and all subcontractors to thoroughly examine all the alternates and evaluate for themselves as to whether or not these alternates in any way affect their respective section. In the event that the Construction Manager, Trade Contractor or subcontractor feels that any alternate(s) do reflect a cost difference, additional or a deduction in his bid proposal, then he shall so stipulate this sum and/or sums under the proper alternate(s) as provided for the bid proposals. Failure to do so will in no way relieve the hereinbefore stated Construction Manager, Trade Contractor or subcontractors of their responsibilities regardless of what alternate(s) is selected. No extra cost will be charged to the Owner. Refer to Section 01 23 00 - Alternates for the list and description of Alternates.

1.2 RELATED WORK

A. Section 01 43 39 - MOCKUPS: Requirements for typical classroom mock-up assembly requiring work of this Section.

B. Section 01 60 00 - PRODUCT REQUIREMENTS: Listing of VOC requirements for adhesives, cleaning/maintenance materials, paints, coatings, and sealants.

C. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT: Procedural and administrative requirements for construction and demolition recycling.

D. Section 01 81 13 - SUSTAINABLE DESIGN REPORTING: Special administrative and procedure requirements related to the Owner's *LEED v4, LEED for Building Design and Construction*, *LEED BD+C: Schools* rating system certificate goals of energy conservation and efficiency, indoor air quality, and natural resource efficiency.

E. Section 01 81 19 – INDOOR AIR QUALITY REQUIREMENTS.

F. Section 06 10 00 – ROUGH CARPENTRY: In wall wood blocking supporting casework installation.

G. Section 06 40 00 - ARCHITECTURAL WOODWORK: Custom millwork and related countertops

H. Section 07 92 00 – JOINT SEALANTS: Sealant.

I. Section 09 65 13 - RESILIENT BASE AND ACCESSORIES: Vinyl base installed in toe space.

J. Section 12 35 53 – LABORATORY CASEWORK: Manufactured laboratory casework, epoxy resin tops.

K. Division 22 - PLUMBING:

1. Connections to all plumbing work furnished under this Section.

L. Division 23 - HEATING, VENTILATING, AND AIR CONDITIONING: Return air ductwork and finned tube radiation.

M. Division 26 - ELECTRICAL: All electrical work related to items in this Section

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - References. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASTM C 209 - Test Methods for Cellulosic Fiber Insulating Board.
2. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
3. ASTM D 523 - Standard Specification for Specular Gloss.
4. ASTM D 1037 - Test Methods of Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

5. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
6. AWI (Architectural Woodwork Institute) Architectural Woodwork Standards.
7. APA Grades and Specifications.
8. National Lumber Grades Authority, American Lumber Standards, and Grading Rules and Standards of the various lumber associations whose species are being used, with grade-marks for same.
9. U.S. Department of Commerce Simplified Practice Recommendation R-16, for sizes and use classifications of lumber; and Product Standard (PS):
    a. PS-1 - Construction and Industrial Plywood Standard.
    b. PS-20 - American Softwood Lumber Standard.

1.4 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
2. Materials schedule: A complete schedule of casework components, coordinated with the Contract Drawings.
3. Shop Drawings in sufficient detail to show fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.
4. Selection samples:
    a. Plastic laminate chips for initial color selection by Architect.
    b. Chain of PVC edging materials.
    c. Sealant material: Manufacturer's standard strips of sealant, in all available colors, for selections by the Architect.
    d. Provide additional samples as requested by Architect for initial selection of material colors and finishes.
5. Verification samples:
    a. Complete sample base cabinet unit, 24 inches wide, with countertop and at least one door with specified hardware including lock, and one drawer with specified hardware and slide. Sample shall show full construction of all joints in casework and sample joint in worktop. Reviewed and accepted sample will be used for the purpose for establishing a quality control standard, and may not be incorporated into the work.
    b. Sample of each type of hardware in specified finish.
6. Test data on chemical resistance of plastic laminate.
7. Certificates: Wood products lacking acceptable documentation for the following will be rejected and their removal required.
8. LEED Submittal Requirements:
    a. Submit completed LEEDv4 Materials Reporting for applicable material requirements as required in Section 01 81 13 – SUSTAINABLE DESIGN REQUIREMENTS. Submit all required backup documentation.
    b. The work of this Section includes responding to Architect or Contractor requests for additional information or product data and may be required

following initial Green Building Certification Institute (GBCI) review of LEED Application.

c. Product substitution requests are subject to additional LEED submittal requirements including, but not limited to, Environmental Product Declarations (EPD), Health Product Declarations (HPD), and General Emissions Testing. See Section 01 25 13 – PRODUCT SUBSTITUTION PROCEDURES.

d. Include submittal documentation requirements for IEQ Credit 2 Low Emitting Materials, On-Site Wet-Applied Products (paints, coatings, sealants and adhesives), to provide both CDPH Standard Method v1.1 – 2010 emissions compliance and VOC compliance in accordance with SCAQMD Rule 1113 – June 3, 2011 (paints and coatings), and/or SCQMD Rule 1168 – July 1, 2005 (adhesives and sealants). Products tested/certified under the following programs will meet the emissions requirement: FloorScore; SCS Indoor Advantage Gold; UL Greenguard Gold.

e. Include submittal documentation requirements for IEQ Credit 2 Low Emitting Materials; Composite Wood and Batt Insulation Products to demonstrate compliance with California Air Resources Board (CARB) ATCM for ultra-low emitting formaldehyde (ULEF) resins or no-added formaldehyde (NAF) resins.

f. Include submittal documentation requirements for MR Credit 3 Building Product Disclosure and Optimization – Sourcing of Raw Materials for recycled content.

g. Include submittal documentation requirements for MR Credit 3 Building Product Disclosure and Optimization – Sourcing of Raw Materials for certified wood.

1.5 QUALITY ASSURANCE

A. Certifications:

1. All wood products furnished under this Specification Section shall be “FSC Certified” according to the rules of the Forest Stewardship Council (FSC).

a. FSC Certification includes the following certification bodies of forests and forest products:

1) SCS Global Services.
2) SmartWood.
3) SGS Qualifor.
4) Soil Association.

B. Joinery: All joinery work performed under this Section shall be of Premium Quality Grade, as defined in the current edition, of the AWI (Architectural Woodwork Institute) Architectural Woodwork Standards.

1. Heat resistance: Hot water (190 degrees-205 degrees) shall be allowed to trickle onto the surface, which shall be set at an angle of 45 degrees from horizontal for a period of 5 minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water.

2. Moisture resistance: A cellulose sponge (2 inches by 3 inches by 1 inch) shall be soaked with water and place on the surface of the finish for a period of 100

hours. The sponge shall be maintained in a wet condition throughout duration of tests. At the end of the test, the surface shall be dried and upon examination, shall show no blushing or whitening of the finish.

3. Impact resistance: A one pound steel ball (approximately 2 inches in diameter) shall be dropped for a distance of one foot onto the finished surface of a 1/4" thick plywood panel supported underneath by solid surface. There shall be no evidence of cracks or checks in the finish due to impact upon close examination.

1.6 FIELD MEASUREMENTS

A. Field dimensions: The casework vendor is responsible for details and dimensions not controlled by Project conditions and shall show on his shop drawings all required field measurements beyond his control.

1. The Construction Manager shall acknowledge the casework vendor's need for accurate field dimensions prior to custom fabrication.
2. The Construction Manager and the casework vendor's shall cooperate to establish and maintain these field dimensions.
3. The casework vendor shall verify confirm all dimensions at the Project site relative to casework, all, and bring any significant discrepancies to the attention of the Architect prior to casework fabrication.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

1.8 PRODUCT HANDLING

A. Delivery and Storage: Deliver materials under protective cover and store within dry enclosed space.

B. Protection: Use all means necessary to protect materials of this Section during transition, before, during, and after installation and to protect installed work and materials of all other trades.

1. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes.
2. Do not deliver casework to site until all concrete, masonry work is dry. Do not begin installation until veneer plaster has fully cured and is dry.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect, at no change in Contract Sum.

1.9 WARRANTY

A. Provide manufacturer's two year warranty against all defects in material or workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Specified manufacturer: To establish a standard of quality, design and function desired, Drawings and specifications have been based on Case Systems production line modular casework. Moderate and reasonable variations of manufacturer or products of other manufacturers will be considered, upon Architect's approval.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Casework:
    a. Case Systems, Midland, MI.
    b. LSI Corporation of America, Minneapolis, MN.
    c. TMI Systems Design Corporation, Dickinson, ND
2. Plastic laminate countertops:
    a. Formica Corp., Cincinnati, OH.
    b. Pioneer Plastics Corp. (Pionite), Auburn ME.
    c. Nevamar Corp., Odenton MD.
    d. Ralph Wilson Plastics Co. (Wilsonart), Temple TX.
    e. Aborite Corporation, Quebec Canada.

2.2 CASEWORK MATERIALS

A. Wood materials:

1. General Requirements: In general, all materials shall be the best of their respective kinds for the purpose intended and all methods used in construction shall conform to best practices including any specialized materials required.
    a. Woods Used: All woods shall be carefully and thoroughly air-dried, then kiln dried by the laboratory equipment manufacturer in his own humidity controlled kilns to a moisture content of 4-1/2%. All kiln dried lumber shall then be tempered to a moisture content of 6% before use. This moisture content shall be maintained throughout production.
2. Sustainable Forest Certification: All wood shall be "Chain-of-Custody" certified as FSC Certified.

B. Cabinetry case body, and countertops without sinks: Mattformed three layer medium density wood particle panel (PB), graded M2 per ANSI A 208.1 with a minimum density of 48 pounds per cubic foot or equivalent hardwood plugged plywood complying with PS 51-71.

1. "FSC": Provide board which is comprised of 75 percent FSC certified wood equal to the following;
    a. Collins Pine Company (distributed through Panel Source International, Tacoma WA.), product: "FSC Certified Particleboard"
2. Thicknesses:
    a. 3/4 inch thick at cases.

b. 1 1/8 inch thick at counters without sinks.

C. Casework end panels which extend to floor, and all countertops with sinks and similar wet conditions: Moisture resistant medium density fiberboard (MDF) conforming to ANSI A208.2 product class MD, fabricated from 100 percent pre-consumer recycled fiber, using formaldehyde free polyurethane/synthetic resin such as methyl diisocyanate (MDI) or (pMDI), having a minimum density of 44 pounds per cubic foot.

1. Acceptable products include the following or approved equal:
   a. SierrePine Inc., Moncure, NC, product “Medex”.
2. Thicknesses:
   a. Typical: 3/4 inch thick panels, except as otherwise indicated.

D. Drawers and doors: Minimum 3/4 inch thick particleboard.

1. Thicknesses:
   a. 3/4 inch thick panels, except as otherwise indicated or specified.
   b. Doors over 36 inches tall: provide 1-1/4 inch thick panels.

E. Plastic laminate: General purpose, conforming to NEMA LD3.1 -1991 Grade GP48, nominal 0.048 inch thickness, in a low non-directional texture in color and price group selected by the Architect.

1. Manufacturers and laminate colors/patterns: As indicated on Drawings or as otherwise selected by Architect.

F. Edge banding: PVC applied utilizing hot melt adhesive and radiused by automatic trimmers. Edging shall be in color selected by the Architect.

G. Adhesives: Zero VOC, PVA adhesive with no added urea formahldehyde, mechanically applied.

H. Plastic laminate for casework, doors and drawers interior and exterior surfaces: GP28 vertical surface grade high-pressure laminate. Color as selected from casework manufacturer's full range of available colors.

1. Plastic laminate, unfinished balancing (backer) sheet, conforming to NEMA LD3-1985 undecorated laminate, Grade BK20, 0.020 inch nominal thickness.

2.3 CASEWORK CONSTRUCTION, GENERAL

A. All exposed edges including toe kick shall be edge banded. No exposed edges will be permitted.

B. Cabinet box style shall be reveal overlay construction.

C. All panels shall be manufactured with balanced construction.

D. Fixed interior components including shelves, dividers, and compartments shall be full ¾ inch thick and attached with concealed interlocking mechanical fasteners.

E. Cabinet body front edge shall be manufacturer’s standard 0.020 inch thick PVC.

F. Mounting stretchers are ¾ inch thick structural components fastened to end panels and back by mechanical fasteners, and are concealed by the cabinet back.

G. When the rear of a cabinet is exposed, a separate finished ¾ inch thick decorative laminate back panel shall be required.

H. Backs of cabinets shall be ½ inch thick and surfaced on both sides for balanced construction and fully captured on both sides and bottom.

H. Shelf clips: Transparent plastic clips for plastic laminate shelves, equal to Hafele model No. 282.27.402 or approved equal.

I. An upper ¾ inch thick stretcher shall be located behind the back panel and attached between the end panels with mechanical fasteners. Attach to the full sub-top capturing back panel.

2.4 BASE CABINET CONSTRUCTION:

A. All base cabinets, except sink cabinets, shall have a solid ¾ inch thick sub-top of core material as specified and fastened between the ends with interlocking mechanical fasteners.

B. Sink cabinets with a split removable back panel shall have a formed metal front brace, and steel corner gussets shall be utilized to support and securely fasten top in all four corners. Front brace shall be concealed and powder coated black.

C. Provide separate ladder style base, scribed to floor and walls prior to cabinet installation.

D. Individual bases shall be constructed of pressure treated plywood factory applied to base and tall cabinets and shall support and carry the load of the end panels, and the cabinet bottom, directly to the floor. The base shall be let in from the sides and back of the cabinet to allow cabinets to be installed tightly together and tight against a wall, also to conceal the top edge of applied vinyl base molding (not supplied by casework manufacturer). There shall be a front to back center support for all bases over 30 inches wide.

2.5 TALL CABINETS:

A. All tall cabinets shall be provided with an intermediate fixed shelf to maintain internal dimensional stability under heavy loading conditions as well as an intermediate ¾ inch thick stretcher located behind the back panel and be secured between the cabinet ends with mechanical fasteners. The stretcher shall be secured to the shelf through the back with #8 by 2 inch plated flat head screws.

B. Individual bases shall be constructed of pressure treated plywood factory applied to base and tall cabinets and shall support and carry the load of the end panels, and the cabinet bottom, directly to the floor. The base shall be let in from the sides and back of the cabinet to allow cabinets to be installed tightly together and tight against a wall, also to conceal the top edge of applied vinyl base molding (not supplied by casework manufacturer). There shall be a front to back center support for all bases over 30 inches wide.

2.6 WALL CABINETS:

A. All wall cabinet bottoms shall be 1-inch thick core as specified, mechanically fastened between end panels and secured to the bottom back stretcher. A lower ¾ inch thick stretcher shall be located behind the back panel and attached between the end panels with mechanical fasteners. The stretcher is also secured through the back and into the cabinet bottom.

B. All wall cabinet exterior bottoms shall match exterior surface of cabinets.

C. Tall and wall cabinet top edges shall be finished with 0.020 inch PVC.

2.7 DRAWER FRONTS AND SOLID DOORS:

A. Door and drawer front edge shall be manufacturer's standard: 3mm PVC.

2.8 DRAWERS:

A. Drawer sides and backs: Dovetail construction, 1/2 inch thick solid hardwood of specified species.

B. Laminated drawer fronts: High density laminate over 3/4 inch specified core material. Drawer fronts shall be applied to separate drawer body component sub-front.

C. Drawer box shall be the maximum height that allows for proper operation of drawer and hardware

D. Bottom: Nominal 1/2 inch with stiffeners, (1) at 24 inches, (2) at 36 inches and (3) at 48 inches MDF board with laminate face, inset into all four sides of drawer box and sealed with hot melt glue process around entire drawer bottom perimeter.

1. Reinforce drawer bottoms as required with intermediate spreaders.

E. Door and removable drawer front: ¾ inch particleboard core with GP28 vertical surface grade high-pressure laminate, 3mm PVC banding.

F. Finish: Provide drawer boxes with manufacturer's standard clear finish.

2.9 DOORS:

A. Solid Doors shall be ¾ inch thick or 1 inch thick core as specified herein.

2.10 SHELVES:

A. Adjustable:

1. Adjustable shelves in closed cabinets shall be ¾ inch thick except 1 inch for shelves over 30 inches wide and open cabinets.
2. Adjustable shelf shall be set back 15mm from front or 23mm when locks are used.

B. Fixed:

1. Fixed shelves shall be shall be ¾ inch thick except 1 inch for shelves over 30 inches wide and open cabinets.

2.11 PLASTIC LAMINATED COUNTERTOPS

A. Basis of Design (Specified Manufacturer): To establish a standard of quality, design and function desired, Drawings and specifications have been based on Ralph Wilson Plastics Co. (Wilsonart), Temple TX.

B. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Ralph Wilson Plastics Co. (Wilsonart), Temple TX.
2. Formica Corp., Cincinnati, OH.
3. Laminart, Elk Grove Village, IL.
4. Pioneer Plastics Corp. (Pionite), Auburn ME.
5. Nevamar Corp., Odenton MD.
6. Aborite Corporation, Quebec Canada.

C. Plastic laminate, general purpose, conforming to NEMA LD3.1 -1991 Grade GP50, nominal 0.050 inch thickness, in a low non-directional texture in color price group selected by the Architect.

1. Manufacturers and laminate colors/patterns: As indicated on Drawings or as otherwise selected by Architect.

D. Counter front edge shall be manufacturer’s standard 3 mm PVC, color as selected by Architect.

E. Adhesive for installation of plastic laminate: Rigid bond polyvinyl acetate (PVA) type only. Contact cements are only permitted at countertops with sinks or similar “wet condition” areas.

2.12 GRILLES

A. Acceptable Manufacturers and products: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Metalaire, Clearwater, FL, product: "Series 2000 Linear Bar Grilles".
2. Airflex Industrial Corp, Farmingdale, NY, product: "#2004 Bar Grilles".
3. Register & Grille Mfg. Co., Inc, Brooklyn, NY, product: "#EP25SE10 Flange Grille".
4. Dayus Register & Grille, Windsor ON, Canada, product: "DABL" Bar Linear Grilles.

B. Construction: Extruded aluminum face bars in ½" centers parallel to the long dimension; 0 degree deflection; 1-inch nominal frame border with countersunk face screw mounting holes; stainless steel square drive screw fasteners. Provide aligning pins to join multiple sections together for continuous appearance.

2.13 HARDWARE

A. Hinges:

1. Heavy-duty five (5) knuckle hinges of all-metal construction, permitting 165 degree swing; accommodate door thicknesses specified. Fully adjustable for clockwise, counter-clockwise, toe in and out door alignment.
2. Base plates for maintaining 1/8" reveals between door/drawers within the same cabinet, and between doors of adjoining cabinets.
3. One pair of hinges per door to 48 inch height. One and one-half pair of hinges per door over 48 inches in height.
4. Hinge mounting: Flathead screws so applied to door and cabinet as to withstand a weight load of 150 pounds minimum.

B. Pulls: Offset type staple-shape wire pull, 4 inches long, 3/8 inch diameter, clear anodized aluminum with brushed finish, with one-inch finger clearance.

C. Drawer slides:
1. For extra heavy loads including file drawers: Full extension type, 200 pounds per pair minimum rated capacity, steel ball bearing rollers, drawer hold in feature.
a. Acceptable slides: Accuride Nº. 3640A or approved equal.
b. Finish: clear lacquered zinc.
2. For heavy loads: Full extension type, 150 pounds per pair minimum rated capacity (for drawers over 30 inches, provide 175 pounds rated capacity), steel ball bearing rollers, drawer hold in feature.
a. Acceptable slides, include the following, or approved equal:
1) For drawers up to 24 inches wide:
a) Accuride Nº. 4032.
b) Knape and Vogt Nº. 8500.
c) Häfele Nº. 4034.
2) For drawers over 24 inches and up to 30 inches wide:
a) Accuride Nº. 4032.
b) Knape and Vogt Nº. 8500.
c) Häfele Nº. No equal.
3) For drawers over 30 inches wide:
a) Accuride Nº. 4437.
b) Knape and Vogt Nº. 8520.
c) Häfele Nº. No equal.
b. Finish: Clear lacquered zinc.
3. For desk and casework drawers: Full extension type, 100 pounds per pair minimum rated capacity, steel ball bearing rollers, lever disconnect, drawer hold in detent feature.
a. Acceptable slides, include the following, or approved equal:
1) Accuride Nº. 7432.
2) Knape and Vogt Nº. 8400.
3) Häfele Nº. 3832.
b. Finish: Clear lacquered zinc.

D. Catches:

1. Base and wall cabinets: Spring-tension nylon roller catch with steel strike plate; one catch for each door required at double doors without locks.
2. Tall cases: One pair of heavy-duty spring tension rubber roller catches for each door; positive catch and lower type latch installed on left hand door.

E. Locks: Heavy duty, cylinder-type lock with disc tumblers. Positive tumbler operations shall be accomplished by cam action without the aid of springs.

1. Locations: All drawers and hinged doors on casework
2. Keying: All casework locks keyed alike within each room; Masterkey all casework in Project. No two rooms shall be keyed alike unless otherwise directed by Owner's Representative. Provide 4 keys for each room, and 6 masterkeys (total).
   a. The lock system shall guarantee security which restricts the duplicating of keys to registered locksmiths.
3. Strike plates: Finish 26D.

F. Shelf Clips: Transparent plastic clips for plastic laminate shelves, equal to Hafele model No. 282.47.402, seismic rated.

G. Number Plates: None Required.

H. Label holders: Manufacturer's standard in specified finish.

I. Leveling Devices:

1. Provide leveling devices at all open frame tables adaptable to table legs.
2. Device construction: 1/2 inch diameter bolt threaded through a 1/2 inch tee nut securely screwed to bottom of leg, or to 1-5/8 inch U-shaped 12 gauge metal bracket with leveling bolts mounted at the four bottom corners of a base cabinet.
3. Bolts: cadmium plated steel with a hexagonal head to provide bearing against a 12 gauge flat steel floor plate, installed so as to be accessible for adjustment through cupboard bottoms and drawer openings when installed on base cabinets.

J. Tote Trays: Molded one-piece high-impact polystyrene plastic with all top edges turned down. Trays shall be furnished with label holders and in the sizes specified. Trays shall be as manufactured by Fabri-Form of Indiana, or equal.

1. Size: 16 inches wide by 12 inches deep by 3 inches high, refer to Drawings for quantities.

K. Install hardware uniformly and precisely after final finishing is complete. Set hinges snug and flat in mortises for leaf concealment. Turn screws to flat seat. Adjust and align hardware so that moving parts operate freely and contact points meet accurately. Allow for final field adjustment after installation.

L. Grilles:

1. Construction: Extruded aluminum face bars on ½ inch centers parallel to the long dimension; 0 degree deflection; 1 inch nominal frame border with countersunk face screw mounting holes; stainless steel square drive screw

fasteners. Provide aligning pins to join multiple sections together for continuous appearance.

2. Acceptable Manufacturers and products: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:
   a. Metalaire, Clearwater, FL, product: "Series 2000 Linear Bar Grilles".
   b. Airflex Industrial Corp, Farmingdale, NY, product: "#2004 Bar Grilles".
   c. Register & Grille Mfg. Co., Inc., Brooklyn, NY, product: "#EP25SE10 Flange Grille".
   d. Dayus Register & Grille, Windsor ON, Canada, product: "DABL" Bar Linear Grilles.

M. Hardware Finish: Satin finish stainless steel US32D, unless otherwise noted.

2.14 FABRICATION OF PLASTIC LAMINATE CLAD ITEMS

A. Except as otherwise specified hereunder, fabricate plastic laminate clad items in strict accordance with the details on the Drawings, the approved shop drawings, and workmanship standards set forth in the current AWI Quality Standards, Custom Grade.

B. Shop fabricate all plastic laminate clad items. Adhere plastic laminate to particle board backing sheets by cold-press-method. Use of contact cements are not permitted, except at wet areas. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Apply laminate backing sheet to reverse side of tops.

C. Fit corners and joints hairline. Make all joints and miters tight, secure with concealed fasteners.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Erect casework straight, level and plumb and securely anchor in place. Scribe and closely fit to adjacent work. Cut and fit work around pipes, ducts, etc.

B. Casework shall be installed plumb, level, true and straight without distortions
   1. Use concealed shims as required
   2. Work shall be installed to a tolerance of 1/8 inch in 8 feet for plumb and levelness, including tops.
   3. There shall be no variations in flushness of adjoining surfaces.
   4. Supplemental reinforcing such as steel angles or other framing, blocking or supports shall be fully concealed.

C. Secure casework to anchors or built-in blocking or blocking directly attached to substrates.
   1. Secure casework to grounds, furring, stripping and blocking as required with countersunk, concealed fasteners performing a complete installation.

D. Install countertops and sinks in accordance with manufacturers' instructions; set plumb, square and true, securely anchored to cabinet framing or supporting legs as appropriate

E. Install all items complete and adjust all moving parts to operate properly.

F. Leave surface clean and free from defects at time of final acceptance.

3.2 TOLERANCES

A. Maximum variation from true position 1/16 inch with a maximum of 1/32 inch offset from true alignment with adjoining surfaces intended to be flush.

3.3 ADJUSTING

A. To whatever extent work was not completed at shop or prior to installation of casework, perform and complete the specified finishing of casework.

B. Repair damaged and defective casework where possible eliminating defects functionally and visually.

1. Where not possible to repair damaged or defective work, replace with matching new work.
2. Adjust joinery for uniform appearance.

C. Adjust doors and drawers for smooth and balanced movement, lubricate hardware for use.

3.4 CLEANING

A. Clean Up: Remove all cartons, debris, sawdust, scraps, etc., and leave spaces clean and all casework ready for Owner's use. Vacuum inside of all cabinets, drawers and shelves.

3.5 PROTECTION

A. Protect all casework with heavy cardboard or similar material until direct by Construction Manager to remove the same.

End of Section

Section 12 35 53
LABORATORY CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies all work and materials for casework of types and sizes shown on the Drawings, as specified herein. The types of work of this section includes, but is not limited to:

1. Plastic laminate clad laboratory casework, including wall and base cabinets.
2. Mobile teacher and student desks.
3. Shelving systems including metal supports.
4. Science area plumbing and gas fixtures and fittings including overflows, plugs, strainers and tailpieces that occur above the floor and required for mounting in the equipment. shall be furnished and installed under Section 22 00 00 - PLUMBING, except for pre-plumbed casework and laboratory equipment.
5. Electrical service fixtures, including nipples, required for mounting in or on equipment shall be furnished and installed under Division 26 - ELECTRICAL.
6. Install access panels where required for mechanical and electrical work.
7. Casework manufacturer is responsible for all plumbing cutouts except as otherwise indicated herein.
8. Pencil grilles.

B. Make all cutouts within casework items to accommodate sinks, piping, conduit, and other mechanical and electrical work, from templates provided by the respective mechanical and electrical trades.

C. Furnish and provide all materials and services as may be additional or separately described under other Sections of this Specification.

1. No attempt is made in this Section to list all elements of casework required on this project or to describe how each element will be installed. It is the responsibility of the Contractor to determine for itself the scope and nature of the work required for a complete installation from the information provided herein and in the Drawings.

D. Remove all debris, dirt and rubbish accumulated as a result of this installation, and leave the premises clean and ready for use. This shall include cleaning equipment interiors, exteriors, and worktops.

E. Alternates: Special attention is called to the fact that it shall be the responsibility of the Construction Manager, Trade Contractors and all subcontractors to thoroughly examine all the alternates and evaluate for themselves as to whether or not these alternates in any way affect their respective section. In the event that the Construction Manager, Trade Contractor or subcontractor feels that any alternate(s) do reflect a cost difference, additional or a deduction in his bid proposal, then he shall so stipulate this sum and/or sums under the proper alternate(s) as provided for the bid proposals. Failure to do so will in no way relieve the hereinbefore stated Construction Manager, Trade Contractor or subcontractors of their responsibilities regardless of what alternate(s) is selected. No extra cost will

be charged to the Owner. Refer to Section 01 23 00 - ALTERNATES for the list and description of Alternates.

1.2 RELATED REQUIREMENTS

A. Section 01 60 00 - PRODUCT REQUIREMENTS: Listing of VOC requirements for adhesives, cleaning/maintenance materials, paints, coatings, and sealants.

B. Section 01 74 19 - CONSTRUCTION WASTE MANAGEMENT: Procedural and administrative requirements for construction and demolition recycling.

C. Section 01 81 13 - SUSTAINABLE DESIGN REPORTING: Special administrative and procedure requirements related to the Owner's *LEED v4, LEED for Building Design and Construction*, *LEED BD+C: Schools* rating system certificate goals of energy conservation and efficiency, indoor air quality, and natural resource efficiency.

D. Section 01 81 19 – INDOOR AIR QUALITY REQUIREMENTS.

E. Section 06 10 00 - ROUGH CARPENTRY: Wood blocking

F. Section 06 40 00 - ARCHITECTURAL WOODWORK.

G. Section 09 29 00 - GYPSUM BOARD. Gypsum board surfaces adjacent to wall and base cabinets and backsplashes.

H. Section 09 65 13 - RESILIENT BASE AND ACCESSORIES. Resilient base occurring at kick toe areas of casework.

I. Section 12 36 53 – LABORATORY COUNTERTOPS. Resin countertops installed over casework specified in this Section.

J. Division 22 - PLUMBING. Plumbing occurring in casework.

K. Division 26 - ELECTRICAL: Wiring, fixtures and lighting occurring in casework.

1.3 REFERENCES

A. Comply with applicable requirements of the following standards and those others referenced in this Section, under the provisions of Section 01 42 00 - References. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASTM C 209 - Test Methods for Cellulosic Fiber Insulating Board.
2. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
3. ASTM D 523 - Standard Specification for Specular Gloss.
4. ASTM D 1037 - Test Methods of Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
5. ASTM E 84 - Test Method for Surface Burning Characteristics of Building Materials.
6. AWI (Architectural Woodwork Institute) Architectural Woodwork Standards.
7. APA Grades and Specifications.
8. FSC (Forest Stewardship Council): "FSC Certification Program"

9. National Lumber Grades Authority, American Lumber Standards, and Grading Rules and Standards of the various lumber associations whose species are being used, with grade-marks for same.
10. U.S. Department of Commerce Simplified Practice Recommendation R-16, for sizes and use classifications of lumber; and Product Standard (PS):
    a. PS-1 - Construction and Industrial Plywood Standard.
    b. PS-20 - American Softwood Lumber Standard.

1.4 SUBMITTALS

A. Submit the following under provisions of Section 01 33 00 - SUBMITTAL PROCEDURES:
1. Literature: Manufacturer's product data sheets, specifications, performance data, physical properties and installation instructions.
    a. Submit test data on chemical resistance of epoxy resin tops
2. Certificates: Wood products lacking acceptable documentation for the following will be rejected and their removal required.
3. Materials schedule: A complete schedule of casework components, coordinated with the Contract Drawings.
4. Manufacturer’s instructions for resin tops: Manufacturer’s installation instructions indicating special procedures, and perimeter conditions requiring special attention.
5. Shop Drawings in sufficient detail to show required blocking, fabrication, installation, anchorage, and interface of the work of this Section with the work of adjacent trades.
6. Selection samples:
    a. Sample card indicating Manufacturer's full range of wood veneer stains, colors of laminate, edging or other surfacing material, available for selection by Architect.
    b. Provide additional samples as requested by Architect for initial selection of colors and finishes.
7. Verification samples:
    a. Complete sample base cabinet unit of each type specified, 24 inches wide, with countertop and at least one door with specified hardware including lock, and one drawer with specified hardware and slide. Sample shall show full construction of all joints in casework and sample joint in worktop. Reviewed and accepted sample will be used for the purpose for establishing a quality control standard, and may not be incorporated into the work.
    b. Sample of each type of hardware in specified finish.
8. LEED Submittal Requirements:
    a. Submit completed LEEDv4 Materials Reporting for applicable material requirements as required in Section 01 81 13 – SUSTAINABLE DESIGN REQUIREMENTS. Submit all required backup documentation.
    b. The work of this Section includes responding to Architect or Contractor requests for additional information or product data and may be required

following initial Green Building Certification Institute (GBCI) review of LEED Application.

c. Product substitution requests are subject to additional LEED submittal requirements including, but not limited to, Environmental Product Declarations (EPD), Health Product Declarations (HPD), and General Emissions Testing. See Section 01 25 13 – PRODUCT SUBSTITUTION PROCEDURES.

d. Include submittal documentation requirements for IEQ Credit 2 Low Emitting Materials, On-Site Wet-Applied Products (paints, coatings, sealants and adhesives), to provide both CDPH Standard Method v1.1 – 2010 emissions compliance and VOC compliance in accordance with SCAQMD Rule 1113 – June 3, 2011 (paints and coatings), and/or SCQMD Rule 1168 – July 1, 2005 (adhesives and sealants). Products tested/certified under the following programs will meet the emissions requirement: FloorScore; SCS Indoor Advantage Gold; UL Greenguard Gold.

e. Include submittal documentation requirements for IEQ Credit 2 Low Emitting Materials; Composite Wood and Batt Insulation Products to demonstrate compliance with California Air Resources Board (CARB) ATCM for ultra-low emitting formaldehyde (ULEF) resins or no-added formaldehyde (NAF) resins.

f. Include submittal documentation requirements for MR Credit 3 Building Product Disclosure and Optimization – Sourcing of Raw Materials for recycled content.

g. Include submittal documentation requirements for MR Credit 3 Building Product Disclosure and Optimization – Sourcing of Raw Materials for certified wood.

1.5 QUALITY ASSURANCE

A. Certifications:

1. All wood products furnished under this Specification Section shall be “FSC Certified” according to the rules of the Forest Stewardship Council (FSC).

a. FSC Certification includes the following certification bodies of forests and forest products:

1) SCS Global Services.
2) SmartWood.
3) SGS Qualifor.
4) Soil Association.

B. Joinery: All joinery work performed under this Section shall be of Premium Quality Grade, as defined in the current edition, of the AWI (Architectural Woodwork Institute) Architectural Woodwork Standards.

C. Cabinet Finishes:

1. Performance Tests: Chemical spot test shall be make by applying 10 drops of each reagent to the surface at 77 degrees F. and covered with an upright wide mouth bottle, 2 oz. capacity, to regard evaporation. Spot tests of volatile solvents marked with an * shall be tested as follows: A one inch diameter ball of cotton shall be saturated with the solvent and placed on the surface to be

tested and covered with an inverted wide mouth bottle, 2 oz. capacity, to regard evaporation and keep the surface wet with solvent for duration of tests. All reagents shall remain on the surface for a period of one hour. At the end of the test, bottles are removed, excess solvents swabbed with cotton ball, and entire test surface rinsed thoroughly, dried carefully and examined. There shall be no effect other than slight discoloration, change of gloss, or temporary slight softening of the film.

a. Reagents Used:

Hydrochloric Acid, 37%	Methyl Alcohol*
Sulfuric Acid, 55%	Ethyl Alcohol*
Nitric Acid, 30%	Ethyl Acetate*
Acetic Acid, Glacial	Acetone*
Phosphoric Acid, 75%	Methyl Ethyl Ketone*
Ammonium Hydroxide, 28%	Benzene*
Sodium Hydroxide, 10%	Toluene*
Gasoline*	Chloroform*
Naptha*	Carbon Tetrachloride*

2. Heat resistance: Hot water (190 degrees-205 degrees) shall be allowed to trickle onto the surface, which shall be set at an angle of 45 degrees from horizontal for a period of 5 minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water.
3. Moisture resistance: A cellulose sponge (2 inches by 3 inches by 1 inch) shall be soaked with water and place on the surface of the finish for a period of 100 hours. The sponge shall be maintained in a wet condition throughout duration of tests. At the end of the test, the surface shall be dried and upon examination, shall show no blushing or whitening of the finish.
4. Impact resistance: A one pound steel ball (approximately 2 inches in diameter) shall be dropped for a distance of one foot onto the finished surface of a ¼ inch thick plywood panel supported underneath by solid surface. There shall be no evidence of cracks or checks in the finish due to impact upon close examination.

1.6 FIELD MEASUREMENTS

A. Field dimensions: The casework vendor is responsible for details and dimensions not controlled by Project conditions and shall show on his shop drawings all required field measurements beyond his control.

1. The Contractor shall acknowledge the casework vendor’s need for accurate field dimensions prior to custom fabrication.
2. The Contractor and the casework vendor’s shall cooperate to establish and maintain these field dimensions.
3. The casework vendor shall verify confirm all dimensions at the Project site relative to casework, all, and bring any significant discrepancies to the attention of the Architect prior to casework fabrication.
4. The casework vendor shall provide all necessary closures/fillers, and extended stiles, face frames tops, sides, bottoms as required to interface with existing building’s curved geometry.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with the respective trades responsible for installing interfacing work, and ensure that the work performed hereunder is acceptable to such trades for the installation of their work.

1.8 PRODUCT HANDLING

A. Delivery and Storage: Deliver materials under protective cover and store within dry enclosed space.

B. Protection: Use all means necessary to protect materials of this Section during transition, before, during, and after installation and to protect installed work and materials of all other trades.

1. Store under cover in a ventilated building not exposed to extreme temperature and humidity changes.
2. Do not deliver casework to site until all concrete, masonry work is dry. Do not begin installation until veneer plaster has fully cured and is dry.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect, at no change in Contract Sum.

1.9 WARRANTY

A. Provide manufacturer's two year warranty against all defects in material or workmanship.

PART 2 - PRODUCTS

2.1 MANUFACTURERS/PRODUCTS

A. Acceptable Manufacturers: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Kewaunee Scientific Corporation, Statesville, NC.
2. LSI Corporation of America, Minneapolis, MN
3. CIF Lab Solutions, Vaughan, Ontario, Canada.
4. Case Systems, Midland, MI.

2.2 MATERIALS, GENERAL

A. General Requirements: In general, all materials shall be the best of their respective kinds for the purpose intended and all methods used in construction shall conform to the best practices of the Scientific Laboratory Equipment Industry, including any specialized materials required.

1. Sustainable Forest Certification: All wood shall be "Chain-of-Custody" certified as FSC Certified.

B. Plastic laminate for casework:

1. Chemical resistant laminate: Wilsonart International, Temple, TX, product "Chemsurf" Type 390-60 laminate or equal conforming to the following*:*

a. Flame spread: 30 (ASTM E85, tested bonded to FR particle board).
b. Smoke Developed: *135 (ASTM E84, tested bonded to FR particle board).*
c. Stain resistance: *(Reagents 1 through 15): No effect.*
d. Scratch resistance: 4.5 Newtons.
e. Chemical and Stain Resistant to acids, solvents, bases, reagents, and stains. Provide documented list, which shall include, but is not limited to*:*
   1) Nitric Acid (all concentrations)
   2) Glacial Aceric Acid (99% concentrated)
   3) Hydrochloric Acid (all concentrations)
   4) Phosphoric Acid (all concentrations)
   5) Formic Acid (all concentrations)
   6) Carbon Tetrachloride
   7) Carbon Disulfide
   8) Acetone
   9) Formaldehyde
   10) Methanol
   11) Ethyl Acetate
   12) Chloroform
   13) Phenol (all concentrations)
   14) EDTA
   15) Xylene
   16) Dopxame
   17) Sodium Hydroxide (all concentrations)
   18) Sodium Sulfide 15%
   19) Ammonium Hydrocxide (all concentrations)
   20) Zinc Chloride (all concentrations)
   21) Sodium Chromate
   22) Iodine
   23) All standard scientific stains and indicators

2. Core: Grade 1-M-2 minimum, 48 lb. density.
3. Backing sheet: White thermofused melamine except high-pressure cabinet liner to be used to balance a plastic laminate surfaced panel.
4. Hardboard: Wood fibers and resin binders formed under heat and pressure.
5. Glue: Laminating; Type II water resistant; assembly; Type III water resistant.
6. Edgebanding: Apply edgebanding with hot melt adhesive. PVC thickness for cabinet body edges to be .5 mm.

C. Sealant, for joints between countertops and dissimilar materials: Joint Sealer Type ‘SM’ as specified in Section 07 92 00 - JOINT SEALANTS.

2.3 GRILLES

A. Acceptable Manufacturers and products: Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include the following, or approved equal:

1. Metalaire, Clearwater, FL, product: "Series 2000 Linear Bar Grilles".
2. Airflex Industrial Corp, Farmingdale, NY, product: "#2004 Bar Grilles".
3. Register & Grille Mfg. Co., Inc, Brooklyn, NY, product: "#EP25SE10 Flange Grille".
4. Dayus Register & Grille, Windsor ON, Canada, product: "DABL" Bar Linear Grilles.

B. Construction: Extruded aluminum face bars in ½" centers parallel to the long dimension; 0 degree deflection; 1-inch nominal frame border with countersunk face screw mounting holes; stainless steel square drive screw fasteners. Provide aligning pins to join multiple sections together for continuous appearance.

2.4 HARDWARE

A. Provide finish hardware units as indicated, in satin finish stainless steel US32D.

B. Hinges: Hinges shall be the five (5) knuckle institutional, offset type for all swinging doors. Hinges shall be 2-1/2 inches long, one (1) pair for doors under 4 ft. in height and 1-1/2 pair on doors over 4 ft. in height. Hinges are mounted with flathead screws, so applied to door and cabinet to withstand a weight load of 150 lbs. minimum. All hinges shall be satin finish stainless steel.

C. Locks: Equal to National Lock “Remove-A-Core” 5-disc tumbler, heavy duty cylinder type. Exposed lock noses shall be dull nickel (satin) plated and stamped with identifying numbers. Locks shall have capacity for 225 primary key changes. Master key one level with the potential of 40 different, non-interchangeable master key groups

1. Provide three keys for each lock.
2. Provide locks where indicated on Drawings. Coordinate keying requirements with Architect.
3. Strike plates finish 26D.

D. Drawer slides:

1. For extra heavy loads including file drawers: Full extension type, 200 pounds per pair minimum rated capacity, steel ball bearing rollers, drawer hold in feature.
   a. Acceptable slides: Accuride Nº. 3640A or approved equal.
   b. Finish: clear lacquered zinc.
2. For heavy loads: Full extension type, 150 pounds per pair minimum rated capacity (for drawers over 30 inches, provide 175 pounds rated capacity), steel ball bearing rollers, drawer hold in feature.
   a. Acceptable slides, include the following, or approved equal:
      1) For drawers up to 24 inches wide:
         a) Accuride Nº. 4032.
         b) Knape and Vogt Nº. 8500.
         c) Häfele Nº. 4034.
      2) For drawers over 24 inches and up to 30 inches wide:
         a) Accuride Nº. 4032.
         b) Knape and Vogt Nº. 8500.

c) Häfele Nº. No equal.

3) For drawers over 30 inches wide:

a) Accuride Nº. 4437.

b) Knape and Vogt Nº. 8520.

c) Häfele Nº. No equal.

b. Finish: Clear lacquered zinc.

3. For desk and casework drawers: Full extension type, 100 pounds per pair minimum rated capacity, steel ball bearing rollers, lever disconnect, drawer hold in detent feature.

a. Acceptable slides, include the following, or approved equal:

1) Accuride Nº. 3832A

2) Knape and Vogt Nº. 8400.

3) Häfele Nº. 3832.

b. Finish: Clear lacquered zinc.

E. Roller Catches: Roller catches shall be used on swinging doors. Catches shall have a spring loaded polyethylene roller and provided with a steel strike plate. Double doors without locks shall have catch on each door. Full height cases shall have latching devices located on the structurally fixed center shelf. Left hand door shall have a positive catch and left hand door shall have the lower type catch.

F. Elbow Catches: Elbow catches and strike plates shall be used on left hand doors of double door cases where locks are used, and are to be steel, cadmium plated.

G. Shelf Clips: Transparent plastic clips for plastic laminate shelves, equal to Hafele model No. 282.47.402.

H. Support Rods, Upright Rod Assemblies and Rod Sockets: Upright rods, cross rods and ring support rods, where specified, shall be anodized Duralumin (1/2 inch or 3/4 inch dia., as required). Rod sockets shall be chrome plated brass, secured through table tops with lock nut and spring washer. Rod clamps shall be heavy duty, designed to securely hold rod assembly in any position. Use of wood rod assemblies will not be acceptable.

I. Leg Shoes: Leg Shoes shall be provided on all table legs, unless otherwise specified, to conceal leveling device. Shoes shall be 2-1/2 inch high and a pliable, black vinyl material. Use of a leg shoe which does not conceal leveling device will not be acceptable.

J. Casters: Lockable type.

1. Capacity: Stainless steel 300 pound per caster:

2. Locations: Moveable student tables.

3. Construction:

a. Wheel housing: Stamped stainless steel bracket, stainless steel stem and stainless steel swivel with a seal and grease fitting.

b. Wheel treads: Black polyolefin.

1) Caster wheel diameter: As selected by the Architect from manufacturer’s standard sizes.

K. Number Plates: None Required.

L. Leveling Devices: Leveling devices shall be furnished only where shown or specifically called for, and shall be adaptable to table legs or the bottom corners of base cabinets. Device shall consist of a ½ inch dia. bolt threaded through a ½ inch tee nut which is securely screwed to bottom of leg, or to 1-5/8 inch U-shaped 12 gauge metal bracket with leveling bolts mounted at the four bottom corners of a base cabinet. Bolts shall be cadmium plated steel with a hexagonal head to provide bearing against a 12 gauge flat steel floor plate. Bolts shall be accessible for adjustment through cupboard bottoms and drawer openings when installed on base cabinets.

M. Floor Glides: Provide for open-leg and pedestal tables, shall be a non-marring material at least 1-1/2 inch dia. to prevent indenting composition flooring and shall have at least a 5/8 inch height adjustment. Use of metal buttons will not be acceptable.

N. Base Moldings: Provided under Section 09 65 13 - RESILIENT BASE AND ACCESSORIES.

O. Auxillary Support Struts: Support struts shall consist of two 16 gauge channel uprights fastened top and bottom by two adjustable "U" shaped spreaders, each 1/8 by 1-1/2 inch by length required. Struts shall be furnished to support drain troughs or other abnormal loads. When specified, struts can be furnished with hangers to support mechanical service piping and drainlines.

P. Safety screens at Mobile teacher demonstration tables.

2.5 CASEWORK FABRICATION

A. Base units:

1. Cabinet ends: 3/4 inch thick particleboard (for both exposed and concealed ends) with banding on front edges. Bore interior faces, as appropriate, for security panels, rails, and four rows of shelf support holes. Ends to be balanced panel construction.
2. Backer panel: Full depth, 3/4 inch particleboard, banded front edge, and balanced surfaces, doweled to both end panels. None on sink.
3. Intermediate rails: All drawer units 36 inches or wider come standard with one intermediate front rail to act as a spacer between end panels.
4. Toe base: Veneer core plywood in 8 foot lengths. Construct on job-site separate from base unit.
5. Bottoms: 3/4 inch thick particleboard, set flush and joined to cabinet end panels with glued 8mm dowels and metal fasteners. Front edge to be banded. Suspended unit bottoms to be 1 inch thick. Balanced surfaces.
    a. Removable bottoms are not acceptable.
6. Backs: 3/16 inch thick fused melamine hardboard; suspended units have 3/4 inch thick melamine particleboard panel, doweled into ends, balanced surfaces:
    a. Cupboard units: One-piece, captured at subtop and bottom.
    b. Drawer units:

1) One piece or two-piece behind drawers on units.

c. Sink units: Half-height, one-piece hardboard, rabbetted into rear rail for easy removal from inside of cabinet.

7. Vertical dividers in combination cabinets: 1-1/2 inch thick particle board panel (frames not permitted) glued and screwed in place, top and bottom with edgebanding on front edge.

8. Shelves: 3/4 inch thermofused melamine clad particleboard to match interior, PVC banded front edge to match interior color, adjustable on 32mm centers

9. Drawers:

a. Drawer sides and backs: Dovetail construction, 1/2 inch thick solid hardwood of specified species.

b. Laminated drawer fronts: High density laminate over 3/4 inch specified core material. Drawer fronts shall be applied to separate drawer body component sub-front.

c. Drawer bottoms (plastic laminated millwork): 1/4 inch thick plywood panel with plastic laminate, housed and glued into front, sides and back.

d. Underside of drawer to receive continuous hot melt glue at joint between bottom and back/sides/front for sealing and rigidity.

e. Reinforce drawer bottoms as required with intermediate spreaders.

f. Drawer box shall be the maximum height that allows for proper operation of drawer and hardware

10. Bottom: Nominal 1/2 inch with stiffeners, (1) at 24 inches, (2) at 36 inches and (3) at 48 inches white coated MDF board, inset into all four sides of drawer box and sealed with hot melt glue process around entire drawer bottom perimeter.

11. Door and removable drawer front: ¾ inch particleboard core with GP28 vertical surface grade high-pressure laminate, 3mm PVC banding.

12. Fillers, kneespace panels, scribes, etc.: Shall be of the same material and finish as adjacent exposed surfaces, ¾ inch thick particleboard.

13. Pullboards: 1 inch thick particleboard with balanced laminated faces. Writing surface color to be Antique White. Front to be constructed the same as a drawer front as specified for cabinet face exterior.

14. Suspension to be 3/4 extension, open roller, 75 lb. dynamic load, with hold open feature and epoxy coated.

15. Knee space table frame: 3/4 inch particleboard; 3/4 inch hardwood if drawer cutouts are included.

16. At standalone sandwich end panels, provide full width pvc edge banding.

B. Wall, upper and tall cases:

1. Shall be manufactured with appropriate materials and joinery methods as specified for base units except as noted below.

2. Tops: 3/4 inch thick, particleboard with banding on front edge.

3. Bottoms:

a. Wall and upper case: 3/4 inch thick, particleboard with banding on front edge.

b. Tall case: 3/4 inch thick, 7-ply veneer core plywood with banding on front edge. Bottom plywood kick rail 3-3/4 inch high joined to cabinet sides.

4. Backs: 1/4 inch hardboard, thermofused melamine interior, captured in top, bottom and side panels; mounting cleat at top.
5. Shelves: (Fixed shelves are 3/4 inch thick particleboard): 3/4 inch thick, thermofused melamine clad particleboard to match interior, PVC banded on front edge to match interior color, adjustable on 32mm centers.
6. Solid door construction: 3/4 inch thick particleboard core with 3mm PVC banding on all four edges, balanced construction. For sliding doors, nylon roller suspension riding in overhead steel track with bottom retainer strip.
7. Framed glass doors: 3/4 inch particleboard routed to accept extruded vinyl glass retainer; laminate clad and edgebanded with 3mm PVC; capture 7/32 inch tempered glass both sides in extruded vinyl molding. For sliding doors, nylon roller suspension riding in overhead steel track with bottom retainer strip.
8. Unframed sliding glass doors: 7/32 inch tempered glass with edges ground, set in extruded aluminum shoe with integral pulls, nylon wheel assemblies and top and bottom extruded aluminum track. Provide rubber bumpers at fully opened and closed door position

PART 3 - EXECUTION

3.1 INSTALLATION - CABINETS

A. Install all casework plumb, level, true and straight with no distortions. Cabinets at right angles to each other shall be erected at 90 degrees to each other unless otherwise indicated. Shim as required, using concealed shims. Where cabinets abut other finished work, scribe and apply filler strips, filler panels and fascias for accurate fit with fasteners concealed where practical and flush with cabinets alongside.

B. Base Cabinets: Set cabinets straight, plumb and level. Adjust sub-tops within 1/16 inch of a single plane. Fasten each individual cabinet to wall, with stainless steel or chrome finished oval head screws with grommets spaced 24 inches o.c. Bolt continuous cabinets together. Secure individual cabinets with not less than two fasteners into floor, where they do not adjoin other cabinets.

1. Where required, assemble units into one integral unit with joints flush, tight, and uniform.. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

C. Wall Cabinets: Securely fasten to solid supporting material, not plaster, lath, or wall board. Anchor, adjust, and align wall cabinets as specified for base cabinets.

1. Reinforcement of stud walls to support wall-mounted cabinets 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 wrap or bind. Lubricate operating hardware as recommended by manufacturer.

3.2 TOLERANCES

A. Maximum variation from true position 1/16 inch with a maximum of 1/32 inch offset from true alignment with adjoining surfaces intended to be flush.

3.3 ADJUSTING

A. To whatever extent work was not completed at shop or prior to installation of casework, perform and complete the specified finishing of casework.

B. Repair damaged and defective casework where possible eliminating defects functionally and visually.

1. Where not possible to repair damaged or defective work, replace with matching new work.
2. Adjust joinery for uniform appearance.

C. Adjust doors and drawers for smooth and balanced movement, lubricate hardware for use.

3.4 CLEANING

A. Clean Up: Remove all cartons, debris, sawdust, scraps, etc., and leave spaces clean and all casework ready for Owner's use. Vacuum inside of all cabinets, drawers and shelves.

3.5 PROTECTION

A. Protect all casework with heavy cardboard or similar material until direct by Construction Manager to remove the same.

End of Section