

Jamestown Metal Products

SECTION 12345.1 - MODULAR STEEL LABORATORY CASEWORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Steel casework
 2. Table frames
 3. Work surfaces-Stainless Steel
 4. Sinks

1.02 CASEWORK DESIGN REQUIREMENTS

- A. Flush construction: Surfaces of doors, drawers and panel faces shall align with cabinet fronts without overlap of case ends, top or bottom rails. Horizontal and vertical case shell members (panels, tops rails and bottoms) shall meet in the same plane without overlap.
- B. Interior of case units: Easily cleanable, flush interior. Base cabinets, 30" and wider, with double swinging doors shall provide full access to complete interior without center vertical post.
- C. Drawers:
1. Drawer fronts: 5/8" thick, double wall construction, assembled with sound deadening honeycomb; top front corners fitted smooth.
 2. Drawer bodies: Stainless steel bottom and all sides formed into one-piece construction with all sides coved and formed top edges.
 3. Drawer suspension: Full extension accuride slides 150 lbs. load rating capacity.
 4. Provide drawer with rubber bumpers. Friction centered devices are not acceptable.
 5. Provide security panels for drawers with keyed different locks.
 6. File drawers: Provide with full extension slides for full access and operation.

- D. Case openings: Rabbed-like joints all four sides of case opening for hinged doors and two sides for sliding doors in order to provide dust resistant case.
- E. Framed glazed doors: Identical in construction, hardware and installation to solid panel doors. Design frame glazed doors to be removable for glass replacement.

1.03 CASEWORK PERFORMANCE REQUIREMENTS

- A. Structural Performance Requirements: Casework components shall withstand the following minimum loads without damage to the component or to the casework operation:
 - 1. Steel base unit load capacity: 500 lbs. per lineal foot. When leveled on four leveling feet
 - 2. Suspended units: 300 lbs. per lineal foot when sitting on uprights, performance of supporting structure is not inferred.
 - 3. Drawers in a cabinet: 150 lbs.
 - 4. Utility tables (4 legged): 300 lbs. When leveled on four leveling feet
 - 5. Hanging wall cases: 300 lbs. per lineal foot when sitting on uprights, performance of supporting structure is not inferred.
 - 6. Load capacity for shelves of base units, wall cases and tall cases: 150 lbs. evenly distributed, when leveled and sitting on four shelf clips.

PART 2 PRODUCTS

2.01 JAMESTOWN

- A. Casework and equipment manufacturer: Jamestown Metal Products, Inc., 178 Blackstone Avenue, Jamestown, New York, 14701.

2.02 CASEWORK MATERIALS

Gauges of metal used in construction of cases shall be 18 gauge, type 304 # four finish stainless steel shall meet the general requirements of the federal specification ASTM-A 240, 18 gauge mill finish cold rolled steel shall meet ASTM A 366 except as follows:

- A. Corner gussets for leveling bolts and drawer suspension, 12 gauge.
- B. Hinge reinforcements, case and drawer suspension channels, 14 gauge.
- C. Double pan door outer #18 gauge, #20 gauge inner.

All exposed seams on joints will be welded, ground and polished to an equivalent mill finish.

2.03 CASEWORK FABRICATION

- A. Base Units and Cases:
 - 1. Base units 24-3/8", 28" and 35-3/4" high base units: One piece end panels and back, design, reinforced with internal reinforcing front posts.
 - 2. 30", 36", 42", and 48" high wall and 83-1/2" high tall cases: Formed end panels with front reinforcing post channels; back shall be formed steel panel, wall case recessed 3/4" and tall case recessed 1/8" for mounting purposes.
 - 3. Posts: Front post fully closed with full height reinforcing upright. Shelf adjustment holes in front and rear posts shall be perfectly aligned for level setting, adjustable to 1/2" o.c.
 - 4. Base unit backs: Provide drawer units without backs and cupboard units with removable backs.
 - 5. Bottoms: Base units and 18", 24-1/2", 30", 36", 42", and 48" high wall cases shall have one piece bottom with front edge formed into front rail, rabbeted as required for swinging doors and drawers and flush design for sliding doors.
 - 6. Top rail for base units: Interlock with end panels, flush with front of unit. Reinforced with 14 gauge channels.
 - 7. Base for base units: 4" high x 3" deep with formed steel base and 12 Ga. die formed steel gussets at corners Provide 1/2" diameter leveling screw with integral bottom flange of minimum 0.56 sq. in. area at each corner.
 - 8. Tops of wall cases: One piece, with front edge formed into front rail.
- B. Drawers:
 - 1. Drawer fronts: 5/8" thick, double wall construction, assembled and sound deadened.
 - 2. Drawer bodies: Stainless steel bottom and sides formed into one-piece construction with bottom and sides coved and top edges formed. (No tool required for removal.)

3. Accuride Drawer Suspension: Removable full extension (3-member) ball bearing slides, 150-lbs. per pair rating.
 4. Provide drawer with rubber bumpers: Friction centering devices are not acceptable.
 5. Provide security panels: for drawers with keyed different locks (as required).
- C. Doors:
1. Solid panel doors: 3/4" thick, double wall, telescoping box steel construction with interior sound deadened, all outer corners fitted smooth. Hinges with screws to internal 14 gauge reinforcing in case and door. Hinges shall be removable; welding of hinges not acceptable. Doors shall close against rubber bumpers.
 2. Frame glazed doors: Outer head to be one piece construction. Inner head to consist of top, bottom and side framing members that are removable for installation or replacement of glass. Provide vinyl glazing retainer to receive glass. In all other respects, framed glazed door construction and quality shall match solid panel doors.
 3. Sliding doors - solid or framed glazed: Design for tilt-out removal. Doors shall ride on nylon tired sleeve bearing rollers in aluminum extended bottom hung track and shall close against rubber bumpers.
 4. Unframed sliding glass doors: Glass with edges ground set in extruded aluminum shoe with integral pull (top and bottom extruded aluminum track). Provide rubber bumpers at fully opened and closed door position.
- D. Shelves:
1. 18 Ga. Die Formed Steel, Form front and back edges down and back 1". Form ends down 3/4".
 2. Pull out shelves: (Same suspension as specified for drawers) from 18 gauge steel.
- E. Base molding: 4" high, black rubber or vinyl; inside corners mitered and outside corners wrapped
- F. Hardware:
1. Drawer and door pulls: Shall be modern design, offering a comfortable hand grip, and be securely fastened to doors and drawers. All pulls shall

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have a satin chrome finish. Two pulls shall be required on all drawers

over 24" long. Use of plastic pulls (molded or extruded), or a design not compatible for usage by the disabled shall not be acceptable.

2. Flush pulls: Shall be satin finish chrome providing a recessed finger grip. Finger holes or slots machined into doors shall not be acceptable.
3. Hinges: Shall be of .106 " thick stainless steel type, 5-knuckle, frictionless hinges, not less than 2" long with fast pin and rounded ends. Between each knuckle, a spacer of lubricant impregnated nylon to prevent metal-to-metal contact and provide permanent lubrication. Hinges to have brushed satin finish. Hinges shall be attached to both door and case with three (3) screws through each leaf. Welding of hinges to door case shall not be accepted. Doors under 36" in height shall be hung on one pair of 2" high hinges, and doors over 42" high shall be hung on 1-1/2 pair of hinges.
4. Removable Core Locks: Shall be applied to doors and drawers where specifically called for on the drawings, in the specifications or on the equipment list and shall be keyed and master-keyed as directed.
5. Friction Catches: For doors shall be nylon roller type, adjustable with strike.
6. Leveling Devices: Shall be zinc plated 1/2-13 threaded bolt type.
7. Shelf Adjustment Clips: Shall be zinc plated steel.
8. Leg Shoes: Shall be provided on all table legs, unless otherwise specified, to conceal leveling device. Shoes shall be pliable, black vinyl material. Use of a leg shoe that does not conceal leveling device shall not be acceptable.
9. Base Molding: Shall be 4" high and a pliable black vinyl material with an adhesive backing for easy application. Black vinyl corner clips shall then be secured to all exposed corners. Use of a rigid material, which does not follow contour of floor or offer water-seal and dust-proofing qualities, shall not be accepted.
10. Label Holders: Where shown or called for, shall be self adhesive type aluminum with satin finish and designed for 2-1/2" x 1-1/8" cards, unless otherwise specified.
11. Up-and-Down Bolts: When used on hinged full height storage cases, they shall have a right hand door provided with an active knob and up-and-down bolt assembly. Left hand door shall be provided with a dummy knob. Up-and-down bolts shall be concealed in the stiles of glazed doors and between pans of solid panel doors.

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12. Sink Supports: Sink supports shall be the hanger type, suspended from top front and top rear horizontal rails of sink cabinet by four (4) 1/4" dia.

rods, threaded at bottom end and offset at top to hang from two full length reinforcements welded to the front and rear top rails. Two 3/4" x 1-1/2" gauge channels shall be hung on the threaded rods to provide an adjustable sink cradle for supporting sinks. When sink capacity exceeds 3,750 cu. in., the sink supports shall be suspended from full length reinforcements welded to the two end rails. Two 1" x 2" x 10 gauge full length channels shall be hung from the four 1/4" dia. rods to provide an alternate sink cradle.

G. Tops:

1. Maple Wood Tops (ACID-Resistant): Shall be 1" thick and built up of maple strips, finger joint construction using urea resin glue and electronically cured. All tops shall have a 1/4" wide by 1/8" deep drip groove on underside and all exposed top edges and corners shall be radiused 1/4". Finish shall consist of a polymerized resin coated evenly applied to all surfaces, baked between coatings, with a final baking at 145 degrees F. The result shall be an acid, alkali and solvent resistant surface, uniformly ebony black in appearance.
2. Hard Wood Tops (Natural): Shall be 1" thick and shall be built up of maple strips, finger joint construction, in natural finish, using urea resin glue and electronically cured. All tops shall have a 1/4" wide by 1/8" deep drip groove on underside and all exposed top edges and corners shall be radiused 1/4". One coat of sealer shall be applied to all surfaces. Finish shall consist of a highly water and abrasion resistant synthetic varnish, baked between coatings, with a final baking at 130 degree F. The result shall be smooth semi-gloss surface.
3. Plastic Surfaced Tops: Plastic surfaced tops and back-splash shall be built up to a 1/16" thick plastic surface (of the color and pattern selected), attached to the sub-top with a water resistant adhesive. Substrate shall be of 40-45 lbs. medium density particleboard to make a finished top thickness of 1". All exposed edges shall be self-edge banded unless otherwise specified. Self edges shall be applied prior to the application of the top sheet and overlapped by the top sheet. All particle board edges and underside of top shall be sealed.

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4. Stainless Steel Tops: Stainless steel tops and working surfaces shall be Type 304 stainless steel unless otherwise specified. All exposed surfaces

shall be 16 gauge stainless steel reinforced on the underside by 16 gauge galvanized steel channels, so spaced as to prevent twisting, oil-canning or buckling. Exposed edges of tops shall be formed into a 1 1/4" thick channel shape. Splash rails and curbs shall be formed from the same sheet as the top or so welded thereto that they form integral parts thereof. Top edges of curbs and splash-backs shall be formed into a channel shape. Where stainless steel sinks are supplied, the sink bowl shall be so welded to the top as to form an integral part thereof. All welds shall be ground smooth and polished to a uniform satin finish over the entire top and sink assembly. Soldering of the sinks, curbs or splash rails to the top shall not be permitted. Mechanical joints or field joints, where made necessary by size, shall be a tight butt joint of the top surfaces, reinforced and held in alignment with steel reinforcements.

After fabrication and polishing, surfaces of the tops shall be given a strippable protective coating to protect the tops during shipment and installation. Underside of tops and sinks shall be coated with a sound deadener.

5. Epoxy Resin Work Surface

- a. **Material:** Chemical and abrasion resistant, durable top of one inch thick cast material of epoxy resins and inert products, cast flat, with a uniform low-sheen black surface.

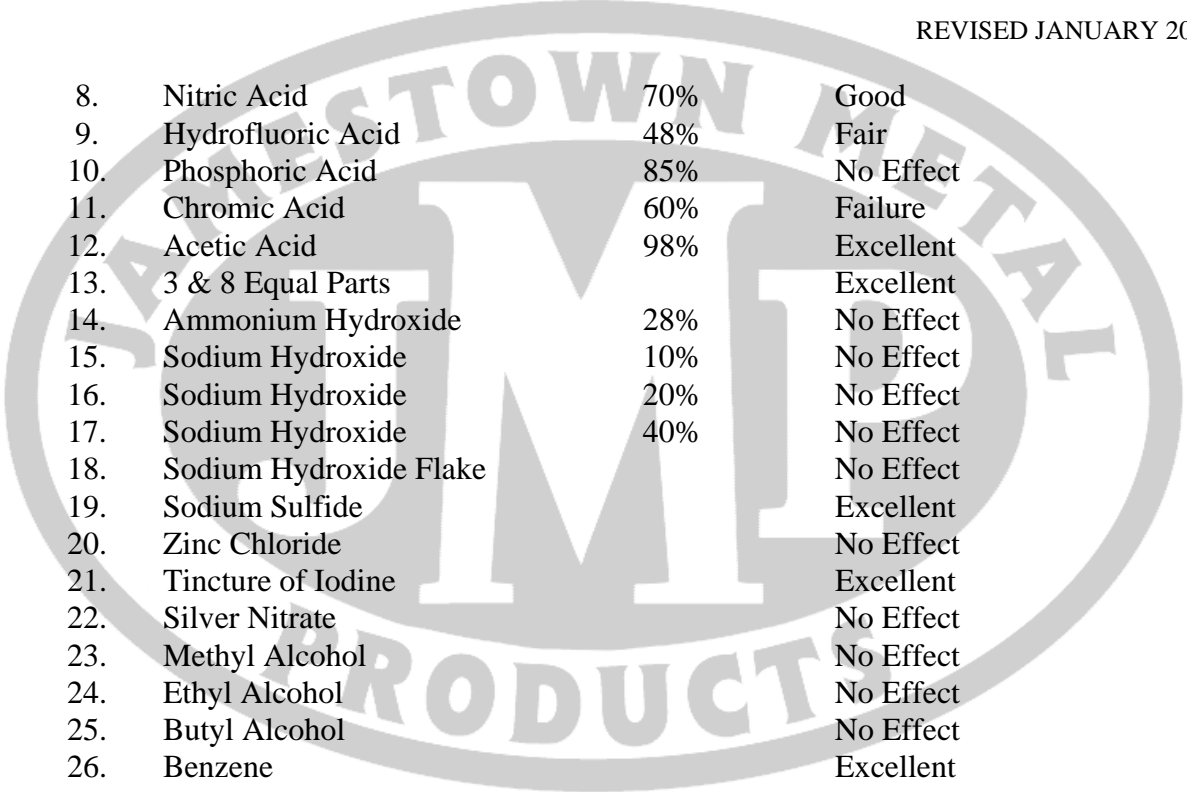
NOTE: Edit the following to meet project requirements. Maximum epoxy resin backsplash height is 4".

- b. **Backsplash curb:** Same material as top, [4] [____]" high, [integral with top, with 5/8" covered juncture to top surface] [butt jointed and cemented to top]. Provide [where indicated on drawings] [where tops abut wall surfaces] [and at reagent ledges]. Include end curb where top abuts end wall.
- c. **Reagent ledges:** Same material as top. Provide 6' high x 7-1/2" wide single faced units and 6" high x 9" wide double faced units [as shown on drawings] [as required]. Ledge face shall permit installation of service fixtures and top shall be removable for access to service utilities.

The following are work surface performance requirements which the specifier may wish to insert into Part 1 of the casework specifications.

5. Work Surface Performance Requirements
6. a. Test procedure: Apply five drops of each reagent to surface and cover with 25MM watch glass, convex side down; test volatiles using one ounce bottle stuffed with saturated cotton. After 1 hour exposure flush surface, clean, rinse and wipe dry. Evaluate after 24 hours at 73 degrees fahrenheit and 50 degrees fahrenheit at 5% relative humidity.
- b. Evaluation ratings: Change in surface finish and function shall be described by the following ratings:
1. No Effect: No detectable change in surface material.
 2. Excellent: Slight detectable change in color or gloss, but no change to the function or life of the work surface material.
 3. Good: Clearly discernible change in color or gloss, but no significant impairment of work surface function or life.
 4. Fair: Objectionable change in appearance due to surface discoloration or etch, possibly resulting in deterioration of function over an extended period.
 5. Failure: Pitting, cratering or erosion of work surface material; obvious and significant deterioration.
- c. Test Results - Epoxy Resin Work Surface:

	<u>REAGENT</u>		<u>RATING</u>
1.	Hydrochloric Acid	37%	Excellent
2.	Sulfuric Acid	33%	No Effect
3.	Sulfuric Acid	77%	No Effect
4.	Sulfuric Acid	96%	Failure
5.	Formic Acid	90%	Excellent
6.	Nitric Acid	20%	Excellent
7.	Nitric Acid	30%	Excellent



8.	Nitric Acid	70%	Good
9.	Hydrofluoric Acid	48%	Fair
10.	Phosphoric Acid	85%	No Effect
11.	Chromic Acid	60%	Failure
12.	Acetic Acid	98%	Excellent
13.	3 & 8 Equal Parts		Excellent
14.	Ammonium Hydroxide	28%	No Effect
15.	Sodium Hydroxide	10%	No Effect
16.	Sodium Hydroxide	20%	No Effect
17.	Sodium Hydroxide	40%	No Effect
18.	Sodium Hydroxide Flake		No Effect
19.	Sodium Sulfide		Excellent
20.	Zinc Chloride		No Effect
21.	Tincture of Iodine		Excellent
22.	Silver Nitrate		No Effect
23.	Methyl Alcohol		No Effect
24.	Ethyl Alcohol		No Effect
25.	Butyl Alcohol		No Effect
26.	Benzene		Excellent
27.	Xylene		No Effect
28.	Toluene		Excellent
29.	Gasoline		No Effect
30.	Dichlor Acetic Acid		Good
31.	Di Methyl Formamide		Excellent
32.	Ethyl Acetate		No Effect
33.	Amyl Acetate		Excellent
34.	Acetone		Excellent
35.	Chloroform		Excellent
36.	Carbon Tetrachloride		No Effect
37.	Phenol		Excellent
38.	Cresol		Excellent
39.	Formaldehyde		No Effect
40.	Trichlorethylene		Excellent
41.	Ethyl Ether		Excellent
42.	Furfural		Good
43.	Methylene Chloride		Excellent
44.	Mono Chlor Benzene		Good

45.	Dioxane	Excellent
46.	Methyl Ethyl Ketone	Excellent
47.	Acid Dichromate	Fair
48.	Hydrogen Peroxide	No Effect
49.	Naphthalene	Excellent

H. Sinks:

1. Stainless steel sinks shall be fabricated from Type 304 stainless steel, except where Type 316 stainless steel shall be used. All expose surfaces shall be finished in No. 4 finish. All sink surfaces (sides & bottoms) shall be full 16 gauge metal thickness unless heavier gauges are specified. Deep drawn sinks are not acceptable. All sink joints shall be continuously welded by heliarc welding process. Inside radii shall be 1". Bottoms shall be pitched to the drain indent. Sink bowl shall be welded to the top as to form an integral part thereof where sinks are built into stainless steel tops or working surfaces. Top edges of free standing sinks shall be formed into a channel formation with all joints welded and ground smooth and polished. No soldering shall be permitted in connection with sink construction. Stainless steel sinks shall be furnished with crumb cup strainers unless otherwise specified.

2.04 TABLE FRAMES

- A. Table frames: 4-1/2" high "C" channel front and back aprons, end rails and cross rails.
- B. Table drawers: Provide front and back rails; drawer unit, hardware and suspension same as specified for base unit drawers.
- C. Legs: 2" x 2" steel tube legs with welded leg bracket. Attach legs with two bolts to front and back aprons and weld to end rails. Each leg shall have a recessed leveling screw.

2.05 METAL FINISH (Painted Series)

- A. Preparation: Spray clean metal with a heated cleaner/phosphate solution, pretreat with iron phosphate spray, water rinse, and neutral final coat. Immediately dry in heated ovens, then gradually cool prior to application of finish.

B. Application: Electrostatically apply urethane powder coat of selected color and bake in controlled high temperature oven to assure a smooth, hard satin finish. Surfaces shall have a chemical resistant, high grade laboratory furniture quality finish of the following thicknesses:

1. Exterior and interior surfaces exposed to view: 1.5 mil average and 1.3 mil minimum.
2. Backs of cabinets and other surfaces not exposed to view: 1.0 mil average.

C. Chemical Resistance

1. Test procedure: Apply 10 drops (approximately 0.5 cc) of each reagent identified to the surface of the finished test panels laid flat and level on a horizontal surface. Ambient temperature: 68-72 degrees F. (20-22 degrees C.) After one hour flush away chemicals with cold water and wash surface with detergent and warm water at 150 degrees F. (65.5 degrees C.) and with alcohol to remove surface stains. Examine surface under 100 foot-candles of illumination.
2. Evaluation ratings: Change in surface finish and function shall be described by the following ratings:
 - a. Excellent: Indicates excellent to superior integrity of finish film. Includes no effect of slight change in gloss and slight discoloration.
 - b. Good: Allows change of gloss or discoloration or slight swelling while retaining integrity of finish film.
 - c. Failure: Obvious and significant deterioration, including blistering, pitting, cratering, erosion and/or loss of finish material.

1. Test Results:

<u>REAGENT</u>	<u>RATING</u>
Acetate, Amyl	Excellent
Acetate, Ethyl	Excellent
Acetic Acid, 98%	Excellent
Acetone	Excellent
Acid Dichromate, 5%	No Effect
Alcohol, Butyl	No Effect
Alcohol, Ethyl	Excellent

Alcohol, Methyl	Excellent
Ammonium Hydroxide, 28%	No Effect
Benzene	No Effect
Carbon Tetrachloride	No Effect
Chloroform	Excellent
Chromic Acid, 60%	No Effect
Cresol	Good
Dichlor Acetic Acid	Failure
Dimethylformamide	No Effect
Dioxane	Good
Ethyl Ether	No Effect
Formaldehyde, 37%	No Effect
Furfural	Fair
Gasoline	No Effect
Hydrochloric Acid, 37%	Good
Hydrochloric Acid, 48%	No Effect
Hydrofluoric Acid, 48%	Failure
Hydrogen Peroxide, 3%	No Effect
Iodine, Tincture of	Good
Methyl Ethyl Ketone	Excellent
Methylene Chloride	Excellent
Mono Chlorobenzene	Excellent
Naphthalene	No Effect
Nitric Acid, 20%	No Effect
Nitric Acid, 30%	No Effect
Nitric Acid, 70%	Good
Phenol, 90%	Good
Phosphoric Acid, 85%	No Effect
Silver Nitrate, Saturated	Good
Sodium Hydroxide, 10%	No Effect
Sodium Hydroxide, 20%	No Effect
Sodium Hydroxide, 40%	No Effect
Sodium Hydroxide, Flake	No Effect
Sodium Sulfide, Saturated	No Effect
Sulfuric Acid, 33%	No Effect
Sulfuric Acid, 77%	Good
Sulfuric Acid, 96%	Fair

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Sulfuric Acid (77%) & Nitric Acid (70%) Good

Toluene	No Effect
Trichloroethylene	No Effect
Xylene	No Effect
Zinc Chloride, Saturated	No Effect

- D. Provide independent certified test report on chemical resistance of finish.

PART 3 EXECUTION

3.01 INSTALLATION - REFER TO INSTRUCTION AND INSTALLATION MANUAL

- A. Casework installation:
1. Set casework components plumb, square, and straight with no distortion and securely anchored to building structure. Shim as required using concealed shims.
 2. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16" tolerance.
 3. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.
 4. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8" between top units.
 5. Remove and discard shipping clip and associated screws from top of shelf, (thin galvanized angle) install 4 shelf clips into integral standard and set shelf. Check for level and adjust clips as required.
- B. Work surface installation:
1. Where required due to field conditions, scribe to abutting surfaces.
 2. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure joints in field, where practicable, in the same manner as in factory, with dowels, splines, adhesive or fasteners recommended by manufacturer.
 3. Secure work surfaces to casework and equipment components with material and procedures recommended by the manufacturer.
- C. Sink installation: Sinks which were not factory installed shall be set in chemical resistant sealing compound and secured and supported per manufacturer's recommendations.

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- D. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations. Turn screws to seat flat; do not drive.

3.02 ADJUSTING

- A. Repair or remove and replace defective work, as directed by [Architect] [Owner] upon completion of installation.
- B. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly.

3.03 CLEANING

- A. Clean shop finished casework, touch up as required.
- B. Clean counter tops with diluted dishwashing liquid and water leaving tops free of all grease and streaks. Use no wax or oils.

3.04 PROTECTION OF FINISHED WORK

- A. Take protective measures to prevent exposure of casework and equipment from exposure to other construction activity.
- B. Advise contractor of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

3.05 DELIVERY, STORAGE AND HANDLING

- A. Schedule delivery of casework and equipment so that spaces are sufficiently complete that material can be installed immediately following delivery.
- B. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.
- C. Protect all work surfaces throughout construction period with 1/4" corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering "NO STANDING".