

ADDENDUM



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ADDENDUM NO.: 2
PROJECT NAME: ORIOLE PARK ELEMENTARY SCHOOL ANNEX/RENOVATION
PROJECT NO.: 05720
CONTRACT NO.: C1559
DATE OF ISSUE: May 29, 2014

NOTICE OF CHANGES, MODIFICATIONS, OR CLARIFICATIONS TO CONTRACT DOCUMENTS

The following changes, modifications, or clarifications are hereby incorporated and made an integral part of the Contract Documents. Unless clearly expressed otherwise by this Addendum, all terms and conditions defined in the original Contract Documents shall continue in full force and effect and shall have the same meaning in this Addendum.

ITEM NO. 1: REVISIONS TO BOOK 3:

1. **ADD** Specification 12 35 53 'Wood Laboratory Casework' to Specifications.
2. **ADD** Specification 03 36 00 'Integrally Colored Concrete' to Specifications.

ITEM NO. 2: REVISIONS TO DRAWINGS:

1. Sheet A110 – **REVISE** plan to identify the extent of Solid Surface at corridor 277. Solid Surface will only be the length of the wall between the double doors at Library 272. Refer to ASK-01.
2. All A400 Sheets – Architectural Renovation Scope of Work Keynotes – **REVISE** Keynote 9.03 to read "NOT USED"
3. Sheet A400 – **REVISE** Architectural Renovation Scope of Work Keynote 9.14 to read "PROVIDE NEW LATH AND PLASTER CEILING, ALIGNED WITH ADJACENT EXISTING PLASTER CEILING."

List of Attachments and Drawings:

(Available at Springer Blueprint Service's online plan room: <http://www.springerblueprint.com/public.php>.)

1. This Addendum includes the following attached Documents and Specification Sections:
 - a. Specification 12 35 53 'Wood Laboratory Casework'
 - b. Specification 03 36 00 'Integrally Colored Concrete'
2. This Addendum includes the following attached Sheets:
 - a. ASK-01 dated 05/27/14

END OF ADDENDUM NO. 2

SECTION 12 35 53

WOOD LABORATORY CASEWORK

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes wood laboratory casework as indicated on Drawings and as specified.

1.2 DEFINITIONS

- A. Exposed Portions of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches above floor, and visible surfaces in open cabinets or behind glass doors.
 - 1. Ends of cabinets, including those installed directly against walls or other cabinets, shall be considered exposed.
 - 2. Ends of cabinets indicated to be installed directly against and completely concealed by walls or other cabinets after installation shall not be considered exposed.
- B. Semi-exposed Portions of Casework: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches or more above floor are defined as semi-exposed.
- C. Concealed portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.
- D. LEED Submittals:
 - 1. LEED Credit EQ 4: Submit product data proving that all composite wood and agrafiber products meets the testing and product requirements of the California Department of Health Services *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers* including 2004 addenda.
 - 2. LEED Credit EQ 4: Submit product data proving that all adhesives meet the testing and product requirements of the California Department of Health Services *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers* including 2004 addenda.
 - 3. LEED Credit MR 7: Submit certificates of chain-of-custody signed by manufacturers certifying that products specified to be made from certified wood were made from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria." Include evidence that mill is certified for chain-of-custody by an FSC-accredited certification body.

1.3 SUBMITTALS

- A. Product Data: Submit printed data identifying items to be provided.

- B. Shop Drawings: Submit complete layout drawings. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Indicate locations of blocking and other supports required for installing casework.
 - 2. Indicate locations and types of service fittings, together with associated service supply connection required.
 - 3. Include details of utility spaces showing supports for conduits and piping.
 - 4. Include details of exposed conduits, where required for service fittings.
 - 5. Show adjacent walls, doors, windows, other building components, and other laboratory equipment. Indicate clearances from above items.
 - 6. Include coordinated dimensions for laboratory equipment specified in other Sections.
- C. Samples: 6 inch square samples for each type of finish, including top material.
- D. Samples for Verification: Architect may request the following:
 - 1. One full-size, finished base cabinet complete with hardware, doors, and drawers, but without countertop.
 - 2. One service fitting specified, complete with specified finish.
- E. Product Test Reports: Based on tests performed by a qualified independent testing agency, indicate compliance of laboratory casework finishes and countertops with requirements specified for chemical and physical resistance.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain laboratory casework, including tops, sinks, service fittings, and accessories, through one source from a single manufacturer.
- B. Product Designations: Drawings indicate sizes, configurations, and finish material of casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes, similar door and drawer configurations, same finish material, and complying with the Specifications may be considered.
- C. Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, Furnish units that are listed and labeled as complying with the requirements of NFPA 30 for design, construction, and capacity of storage cabinets by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. If casework must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions" Article below.
- B. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install laboratory casework until HVAC system is operating and will maintain temperature and relative humidity at occupancy levels through remainder of construction period.

1.7 COORDINATION

- A. Coordinate layout and installation of metal framing and reinforcement in gypsum board assemblies for support of wood laboratory casework.

1.8 EXTRA MATERIALS

- A. Furnish complete touchup kit for each type and finish of laboratory casework installed. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, Furnish products by one of the following:
 - 1. Wood Laboratory Casework:
 - a. Collegedale Casework, Inc.
 - b. Fisher Hamilton Scientific, Inc.
 - c. Kewaunee Scientific Corp.; Laboratory Division.
 - d. Leonard Peterson and Co., Inc.
 - e. Mohon International, Inc.; Campbell Rhea.
 - f. Sheldon Lab Systems.
 - 2. Epoxy Tops, Sinks and Troughs:
 - a. Durcon Company, Inc. (The).
 - b. Laboratory Tops, Inc.

2.2 MATERIALS

- A. LEED Requirements:
 - 1. Solid wood and wood veneer and plies: Obtain from forests certified by an FCS-accredited certification body to comply with FSC 1.2 "Principles and Criteria."
 - 2. Provide product that meet the testing and product requirements of the California Department of Health Services *Standard Practice for The Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers*, including 2004 addenda.
- B. Exposed Materials: Comply with the following:

1. Exposed Wood: Do not use 2 adjacent exposed faces that are noticeably dissimilar in color, grain, figure, or natural character markings.
 - a. Wood Species: Red oak, plain sliced.
 2. Solid Wood: Clear hardwood lumber matching selected species, free of defects, selected for compatible grain and color and kiln dried to 7 percent moisture content.
 3. Plywood: Hardwood plywood of species indicated, selected for compatible color and grain. HPVA HP-1, Grade A faces at least 1/50 inch thick and Grade J crossbands. Edgeband exposed edges with minimum 1/8 inch thick, solid-wood edging of the same species as face veneer.
- C. Semi-exposed Materials: Comply with the following:
1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects and kiln dried to 7 percent moisture content. Any hardwood species similar in color and grain to exposed portions.
 2. Plywood: Hardwood plywood of any species similar in color and grain to exposed portions. HPVA HP-1, Grade C faces and Grade J crossbands. Semi-exposed backs of plywood with exposed faces shall be the same species as faces.
 3. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3, Grade GP-28.
 4. Melamine-Faced Particleboard: Medium-density particleboard complying with ANSI A208.1, Grade M-2, (no Urea Formaldehyde) with decorative surface of thermally fused, melamine-impregnated web complying with ALA 1992.
- D. Concealed Materials: Comply with the following:
1. Solid Wood or Plywood: Any hardwood or softwood species, with no defects affecting strength or utility. Hardwood and softwood lumber kiln dried to 7 and 12 percent moisture content, respectively. Concealed backs of plywood with exposed or semi-exposed faces shall be the same species as faces.
 2. Particleboard: ANSI A208.1, Grade M-2.
 3. Medium-Density Fiberboard: ANSI A208.2.
 4. Hardboard: AHA A135.4, Class 1 Tempered.
- E. Acid Storage-Cabinet Lining: 1/4 inch thick, polypropylene, epoxy, or phenolic-composite lining material.
- F. Clear Laminated Safety Glass for Doors: ASTM C 1172, Kind LT; Kind FT, Condition A, Type I, Class I, Quality q3 lites with clear, polyvinyl butyral interlayer.
- 2.3 DESIGN, COLOR, AND FINISH
- A. Design: Provide wood laboratory casework of flush overlay design.
- B. Colors and Finishes: Comply with the following requirements for colors and finishes of wood laboratory casework:
1. Colors and Finishes: Architect's selections from casework manufacturer's full range of colors and finishes.

2.4 FABRICATION

A. Construction: Provide wood laboratory casework of the following minimum construction:

1. Bottoms and ends of cabinets, and tops of wall cabinets: 3/4 inch plywood.
2. Tops of wall cabinets: 1 inch plywood.
3. Shelves: 1 inch plywood.
4. Top frames of base cabinets: Full frame (4 sides) 3/4 inch by 2 inch solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
5. Intermediate divider rail of base cabinets: 3/4 inch by 2 inch solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
6. Backs of cabinets: 1/4 inch hardboard removable back.
7. Drawer fronts: 1/2 inch plywood or solid hardwood.
8. Drawer sides and backs: 1/2 inch solid wood or 7/16 inch plywood, with glued joints.
9. Drawer bottoms: 1/4 inch hardboard glued and dadoed into front, back, and sides of drawers. Furnish PVC interior surface.
10. Doors 48 inches or less in height: 3/4 inch thick with solid hardwood stiles and rails, particleboard or medium-density fiberboard cores, and hardwood face veneers and crossbands.
11. Stiles and rails of glazed doors: 1-1/16 inch by 3 inch solid hardwood with mortise and tenon or doweled connections, glued and screwed.

B. Table Construction: Provide tables of the following minimum construction:

1. Leg Assemblies: Adjustable height table frames of 11 gauge cold rolled steel tubing.
2. Work surface support frame: 11 gauge cold rolled steel tubing.
3. Cabinet support channels: 14 gauge cold rolled steel. Weld members.
4. End caps: Flame-resistant ABS plastic, color matched.
5. Finish: Chemical-resistant powder coat paint finish in manufacturer's standard color.

C. Leg Shoes: Vinyl or rubber, black, open-bottom type.

D. Utility-Space Framing: Manufacturer's standard steel framing units consisting of 2 cold-rolled C-channel uprights, not less than 1-5/8 inches square by 0.10 inch thick, connected together at the top and bottom by U-shaped brackets made from 1-1/4 inch by 1/4 inch flat bars. Framing units may be made by welding C-channel material specified for uprights into rectangular frames instead of using U-shaped brackets.

E. Base Molding: Extruded vinyl or rubber, black, 4 inches high. Furnish on fronts and exposed sides of floor-mounted casework.

F. Filler Strips: Provide to close space between cabinets and walls, ceilings, and indicated equipment. Fabricate from the same material and with the same finish as cabinets.

2.5 WOOD FINISH

A. Preparation: Machine sand lumber and plywood for casework construction before assembling. Sand edges of doors and drawer fronts and molded shapes with profile-edge sander. Hand sand casework after assembling for uniform smoothness at least equivalent to that produced by 220 grit sanding and without machine marks, cross sanding, or other surface blemishes.

- B. Staining: Remove fibers and dust with compressed air or tack cloth. Apply wash-coat sealer and stain to exposed and semi-exposed surfaces for a uniform finish matching approved color samples.
- C. Chemical-Resistant Finish: Apply manufacturer's standard 2 coat, chemical-resistant, baked, clear finish consisting of a thermosetting catalyzed sealer and a thermosetting catalyzed conversion varnish. Hand sand and wipe clean between applying sealer and topcoat. Topcoat may be omitted on fully concealed surfaces.
- D. Chemical and Physical Resistance of Finish System: Wood laboratory casework with finish system complying with the following requirements for chemical and physical resistance:
 - 1. Chemical-resistance: Capable of withstanding application of not less than 5 drops of the following reagents applied to finish surface; covered with a watch glass for 60 minutes, rinsed, and dried; with no permanent change in gloss, color, film hardness, adhesion, or film protection.
 - a. Acetic acid (98 percent).
 - b. Hydrochloric acid (37 percent).
 - c. Nitric acid (10 percent).
 - d. Phosphoric acid (75 percent).
 - e. Sulfuric acid (25 percent).
 - f. Acetone.
 - g. Benzene.
 - h. Carbon tetrachloride.
 - i. Ethyl acetate.
 - j. Ethyl alcohol.
 - k. Ethyl ether.
 - l. Formaldehyde (37 percent).
 - m. Methyl ethyl ketone.
 - n. Toluene.
 - o. Xylene.
 - p. Ammonium hydroxide (28 percent).
 - q. Potassium hydroxide (40 percent).
 - r. Sodium carbonate (saturated).
 - s. Sodium chloride (saturated).
 - t. Sodium hydroxide (25 percent)
 - 2. Moisture-resistance: No visible effect when exposed to the following:
 - a. Hot water at a temperature of 190 deg F to 205 deg F, trickled down the surface at a 45 degree angle for 5 minutes.
 - b. Constant moisture using a 2 inch by 3 inch by 1 inch cellulose sponge, soaked with water, in contact with surface for 100 hours.

2.6 METAL FINISH

- A. Preparation: Spray clean metal with phosphate solution, pre-treat with iron phosphate spray, water rinse, and neutral final seal. Immediately dry in heated ovens, gradually cooled, prior to application of finish.

- B. Application: Electrostatically apply urethane powder coat bake. Surfaces shall have a chemical resistant finish of the following thicknesses:
 - 1. Exterior and interior surfaces exposed to view: 1.5 mil average and 1.2 mil minimum.
 - 2. Backs of cabinets and other surfaces not exposed to view: 1.0 mil average.

2.7 CASEWORK HARDWARE

- A. Manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.
- B. Hinges: Stainless-steel, 5-knuckle hinges complying with BHMA 156.9, Grade 1, with antifriction bearings and rounded tips. Furnish 2 for doors less than 48 inches high and 3 for doors more than 48 inches high.
- C. Pulls: Solid aluminum, fastened from back with 2 screws. Provide 2 pulls for drawers more than 24 inches wide. For sliding doors: stainless-steel or chrome-plated recessed flush pulls.
- D. Door Catches: Nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches high.
- E. Drawer Guides: Metal-channel, full extension, self-closing drawer guides, designed to prevent rebound when drawers are closed, with nylon-tired, ball-bearing rollers, and complying with BHMA A156.9, Type B05091.
- F. Label Holders: Stainless steel, sized to receive standard label cards approximately 1 inch by 2 inches, attached with screws or brads.
 - 1. On all drawers and one holder per pair of doors.
- G. Drawer and Cupboard Locks: Cylindrical type, 5 pin tumbler and cam, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1.
 - 1. Furnish minimum of 2 keys per lock and 6 master keys.
 - 2. Provide locks on all drawers and doors.
- H. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door units.
- I. Adjustable Shelf Supports: Mortise-type steel standards and steel shelf rests, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04071 and B04091.

2.8 TOPS AND SINKS

- A. Furnish smooth, clean exposed tops and edges in uniform plane free of defects. Make exposed edges and corners uniformly beveled. Furnish front and end overhang of 1 inch over base cabinets, formed with continuous drip groove on underside 1/2 inch from edge.
- B. Sinks: Furnish sizes indicated or manufacturer's closest standard size of equal or greater volume, as approved by Architect.

1. Outlets: 1-1/2 inch NPS (DN40) outlets with strainers and tailpieces a minimum of 6 inches long, of the same material as sink, or as otherwise approved by Architect.
 2. Overflows: For each sink, except cup sinks, provide overflow of standard beehive or open-top design and with separate strainer. Height 2 inches less than sink depth. Furnish in the same material as sink.
- C. Tops, Sinks: Factory molded of modified epoxy-resin formulation, uniform mixture throughout full thickness with smooth, non-specular finish.
1. Physical Properties: Comply with the following minimum requirements:
 - a. Flexural strength: 15,000 psi.
 - b. Compressive strength: 30,000 psi.
 - c. Hardness (Rockwell M): 100.
 - d. Water absorption (24 hours): 0.02 percent (maximum).
 - e. Heat distortion point: 350 deg F.
 - f. Thermal-shock resistance: Highly resistant.
 2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, test procedure 3.9.5:
 - a. Acetone: Moderate effect.
 - b. Acetic acid (98 percent): No effect.
 - c. Hydrochloric acid (37 percent): No effect.
 - d. Nitric acid (70 percent): No effect.
 - e. Phosphoric acid (85 percent): No effect.
 - f. Sulfuric acid (33 percent): No effect.
 - g. Benzene: No effect.
 - h. Butyl alcohol: No effect.
 - i. Carbon tetrachloride: No effect.
 - j. Ethyl acetate: No effect.
 - k. Ethyl ether: No effect.
 - l. Formaldehyde: No effect.
 - m. Phenol (85 percent): No effect.
 - n. Xylene: No effect.
 - o. Ammonium hydroxide (28 percent): No effect.
 - p. Sodium hydroxide (50 percent): Moderate effect.
 - q. Zinc chloride: No effect.
 3. Colors: Furnish products that result in colors complying with the following requirements:
 - a. Color: Black.
 4. Top Fabrication: Cast surfaces very smooth, with factory cutouts for sinks. Fabricate plain butt-type joints assembled with epoxy adhesive and pre-fitted, concealed metal splines.
 - a. Top Configuration: Square edge and integral square edge backsplash.
 - b. Top Thickness: 1 inch.

5. Sink Fabrication: Molded in one piece with surfaces smooth, corners coved, and bottom sloped to outlet; 1/2 inch minimum thickness.
 - a. Bond epoxy sinks installed in epoxy tops to tops and finish to produce an integral unit with invisible joint line.

D. Cup Sinks: Epoxy, 3 inch by 6 inch nominal size.

2.9 ACCESSORIES

EQUIPMENT LIST		
CONTRACTOR PROVIDED & INSTALLED		
ITEM	SIZE	QTY
Lab Coat Hooks	48"W x 5"D x 4"H	1
Goggle Sanitizer	24-1/2"W x 9-1/2"D x 32"H	1
Emergency Cabinet	48-1/4"W x 18"D x 30-11/16"H	1
Blackout Shades (See 12 24 13)	Coordinate with Plans	2
Under 12 Sink & Counter	See Plans/Details	1
Demonstration Table	48"W x 36"D x 34"H	1
Eyewash Station	30-3/16"W x 11-1/2"D x 7-1/2"H	1
Projection Screen (See 11 52 13)	64"W	1
Marker Board & (2) Tack Boards	192"W x 48"D	1

- A. Mobile Cart: Steel construction with gray finish. Four rubber wheeled castors. Line trays with corrosion resistant liners.
- B. Emergency Eye Wash/Shower Combination: Barrier free station with stay-open shower valve and eye/face wash with stainless steel bowl; stay-open ball valve supply with tempered water mixing valve.
- C. Safety Goggle Control Center: Steel storage cabinet designed to hold 35 pairs of chemical splash goggles. Provide germicidal UV light with automatic timer to sanitize goggles. Safety interlock switch turns off UV light when door is open. Furnish 35 goggles.
- D. Emergency Center: Provide emergency center for chemical reagents designed to consolidate reagent neutralizers, hand-held spray, first aid, and fire control equipment into one centrally located facility. Provide wall cabinet with sliding doors having ADA compliant recessed pulls above three storage compartments with center compartment with hinged door and adjustable shelves. Provide double door sink cabinet base with hot and cold water gooseneck mixing faucet and molded resin sink. Provide epoxy resin top. Provide fire extinguisher with hanger, two one-gallon plastic bottles for acid and caustic neutralizers, first aid kit, fire blanket with container and hanger and galvanized sand pail. Provide emergency signage on the unit.
- E. Reagent Racks: Single- or double-faced units, fabricated to suit type and composition of top.
- F. Upright Rod Assembly and Metal Crossbar: Aluminum or stainless steel. Two vertical rods and 1 horizontal crossbar, 3/4 inch diameter and 36 inches long, unless otherwise indicated; 2 flush

socket receptacles and 2 crossbar clamps. Taper ends of vertical rods to fit receptacles; all other rod ends are rounded.

- G. Pegboards: Stainless steel pegboard with removable polypropylene pegs and stainless steel troughs with drain outlets.

2.10 SOLVENT STORAGE CABINETS

- A. Top, bottom and sides: 18 gauge steel, double wall construction with 1-1/2 inch air space, removable access and back panels; all joints welded. Set bottom of door two inches above bottom of cabinet to create 2 inch deep well to contain spillage of liquids.
- B. Hardware:
 - 1. 3 point latching device and lock.
 - 2. Full length piano hinge.
 - 3. Door operation: Manual.
- C. Upper and lower arrester vents: Factory Mutual approved vents located so that they can be plugged both internally and externally to assure isolation of stored fluid, but can be opened for ventilation.
- D. Cabinet grounding attachment: Screw at base of cabinet for firm attachment of grounding wire.
 - 1. Mark with Factory Mutual approval and storage capacity.
 - 2. Warning signs: Label cabinet: "FLAMMABLE - KEEP FIRE AWAY".

2.11 WATER AND LABORATORY GAS SERVICE FITTINGS

- A. Service Fittings: Comply with SEFA 7, "Laboratory and Hospital Fixtures Recommended Practices." Fittings complete with washers, locknuts, nipples, and other installation accessories. Include wall and deck flanges, escutcheons, handle extension rods, and similar items.
- B. Material and Finish: Cast or forged red brass, unless otherwise indicated.
 - 1. Finish exposed surfaces, including fittings, escutcheons, and trim, with a polished chrome plating.
- C. Water Service Fittings:
 - 1. Water service faucets and valves shall have renewable unit containing all working parts subject to wear, including replaceable stainless steel seat. Unit shall have serrations for position locking into valve body.
 - 2. Gooseneck spout with separate vacuum breakers: Brass forgings integral with gooseneck, with renewable seat and special design valve member for fine flow control, chrome-plated brass exposed elevated vacuum breaker assembly according to Chicago Building Code.
 - 3. Goosenecks shall have separate 3/8 inch IPS coupling securely brazed to gooseneck; full thread for attachment of anti-splash outlet fittings, serrated tips and filter pumps.
- D. Air, Gas and Vacuum Systems Fittings:

1. Needle valves: Small pattern needle valve, straightway type with stainless steel replaceable floating cone and brass seat (non-renewable). Ten serrated end is integral with valve body.
 2. Ground key cocks: Straightway ground key cocks, individually ground and lapped and tested at 100 psi air under water. Cocks shall have single arm long easy grip handle with screw-on type index. Ten serrated end is integral with valve body.
- E. Turrets for gas, air, vacuum, steam or water fixtures: Cylinder-type design with brass shanks, locknuts and washers.
- F. Handles: 3- or 4-arm, forged-brass handles for valves.
1. For ground-key cocks, lever-type handles.
- G. Service-Outlet Identification: Color-coded plastic discs, with embossed identification, secured to each service-fitting handle to be virtually tamperproof.

2.12 ELECTRICAL SERVICE FITTINGS

- A. Service Fittings, General: UL-labeled units complying with Division 26 Sections, complete with metal housings, receptacles, terminals, switches, pilot lights, device plates, and accessories and gaskets required for mounting on casework.
- B. Receptacles: Hospital Grade, 2 pole, 3 wire grounding devices rated at 15 A, 125 V, ac.
1. GFCI Receptacles: Ground-fault circuit interrupter duplex receptacles where indicated and when located in units containing water supplies or sinks.
- C. Switches: Single-pole, double-pole, or 3-way switches, as required; rated 120 V to 277 V, ac; and in amperage capacities to suit units served.
- D. Recessed-Type Fittings: Galvanized steel boxes.
- E. Cover Plates: Satin finish, Type 302 or 304, stainless-steel cover plates with formed, beveled edges.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcement, and other conditions affecting performance of wood laboratory casework installation.
1. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 CASEWORK INSTALLATION

- A. Install plumb, level, and true; shim as required, using concealed shims. Where laboratory casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Utility-Space Framing: Secure to floor with 2 fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.
- C. Base Cabinets: Set cabinets straight, plumb, and level. Adjust tops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
 - 1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than 2 fasteners.
- D. Wall Cabinets: Hang cabinets straight, plumb, and level. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.
- E. Install hardware uniformly and precisely. Set hinges snug and flat in mortises, unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- F. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 INSTALLATION OF TOPS

- A. Field Jointing: Where possible, make in the same manner as shop jointing using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project site processing of top and edge surfaces is not required. Locate field joints where shown on approved Shop Drawings.
- B. Fastenings: Except for epoxy tops, use concealed clamping devices for field joints located within 6 inches front, at back edges, and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
 - 1. Secure epoxy tops to cabinets with epoxy cement, applied at each corner and along perimeter edges of not more than 48 inches o.c.
- C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection. Furnish flush hairline joints in tops using clamping devices.
 - 1. Where necessary to penetrate tops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to top in chemical resistance, hardness, and appearance.

- D. Furnish required holes and cutouts for service fittings.
- E. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- F. Furnish scribe moldings for closures at junctures of top, curb, and splash, with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.

3.4 INSTALLATION OF SINKS

- A. Set top edge of sink unit in sink and top manufacturers' recommended chemical-resistant sealing compound and firmly secure to produce a tight and fully leak-proof joint. Adjust sink and securely support to prevent movement.

3.5 INSTALLATION OF ACCESSORIES

- A. Install accessories according to approved Shop Drawings and manufacturer's written instructions.
- B. Install faucet elevated vacuum breakers 7 foot-6 inches above finished floor level in accordance with code.

3.6 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: 6 mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION

SECTION 03 36 00

INTEGRALLY COLORED CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to Work of this Section.
- B. Section Includes:
 - 1. Integrally colored concrete.
 - 2. Curing of integrally colored concrete.
- C. Related Sections:
 - 1. Division 3 Section "Cast-In-Place Concrete" for general applications of concrete and coordination of sample submittal and color selection.
 - 2. Division 7 Section "Joint Sealants" for colored sealant for joints.

1.2 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. ACI 301 "Specification for Structural Concrete for Buildings."
 - 2. ACI 302 IR "Recommended Practice for Concrete Floor and Slab Construction."
 - 3. ACI 303.1 "Standard Specification for Cast-In-Place Architectural Concrete."
 - 4. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing of Concrete."
 - 5. ACI 305R "Recommended Practice for Hot Weather Concreting."
 - 6. ACI 306R "Recommended Practice for Cold Weather Concreting."
- B. American Society for Testing and Materials (ASTM):
 - 1. ASTM C309 "Liquid Membrane-Forming Compounds for Curing Concrete."
 - 2. ASTM C494 "Standard Specification for Chemical Admixtures for Concrete."
 - 3. ASTM C979 "Standard Specification for Pigments for Integrally Colored Concrete."
- C. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M194 "Chemical Admixtures."

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's complete technical data sheets for the following:
 - 1. Colored admixture.
 - 2. Curing compound.
- B. Design Mixes: For each type of integrally colored concrete.
- C. Samples for Initial Selection: Manufacturer's color charts showing full range of colors available.
- D. Qualification Data: For firms indicated in "Quality Assurance" Article, including list of completed projects.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with 10-years experience in the production of specified products.
- B. Installer Qualifications: An installer with 5 years experience with work of similar scope and quality.
- C. Comply with the requirements of ACI 301.
- D. Obtain each specified material from same source and maintain high degree of consistency in workmanship throughout Project.
- E. Notification of manufacturer's authorized representative shall be given at least 1-week before start of Work.
- F. See job mock-up sheet/spec.
- G. Integrally Colored Concrete [Mockups] [Field Samples]:
 - 1. Provide under provisions of Division 1
 - 2. At location on Project selected by [Architect] place and finish 3 feet by 3 feet area.
 - 3. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (or not less than 1/3 the capacity of the mixing drum on the ready-mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations.
 - 4. Construct mockup using processes and techniques intended for use on permanent work, including curing procedures. Include samples of control, construction, and expansion joints in sample panels. Mockup shall be produced by the individual workers who will perform the work for the Project.
 - 5. Retain samples of cements, sands, aggregates and color additives used in mockup for comparison with materials used in remaining work.
 - 6. Accepted mockup provides visual standard for work of Section.

7. Mockup shall remain through completion of work for use as a quality standard for finished work.
8. Remove mockup when directed.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Colored Admixture: Comply with manufacturer's instructions. Deliver colored admixtures in original, unopened packaging. Store in dry conditions.

1.6 PROJECT CONDITIONS

- A. Integrally Colored Concrete Environmental Requirements:
 1. Schedule placement to minimize exposure to wind and hot sun before curing materials are applied.
 2. Avoid placing concrete if rain, snow, or frost is forecast within 24-hours. Protect fresh concrete from moisture and freezing.
 3. Comply with professional practices described in ACI 305R and ACI 306R.
- B. Schedule delivery of concrete to provide consistent mix times from batching until discharge. Mix times shall meet manufacturer's written recommendations.

1.7 PRE-JOB CONFERENCE

- A. One week prior to placement of integrally colored concrete a meeting will be held to discuss the Project and application materials.
- B. It is suggested that the Architect, General Contractor, Construction Manager, Subcontractor, Ready-Mix Concrete Representative, and a Manufacturer's Representative be present.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. L. M. SCOFIELD COMPANY, Douglasville, Georgia and Los Angeles, California (800) 800-9900 or the appropriate local contact: Eastern Division – 201-672-9050; Western Division – 323-720-3055; Central Division Office – 630-377-5959.
- B. Or AOR approved equal meeting specification section 03 36 00.

2.2 MATERIALS

- A. Colored Admixture for Integrally Colored Concrete: CHROMIX P[®] Admixture and CHROMIX ML[®]; L. M. SCOFIELD COMPANY.
 - 1. Admixture shall be a colored, water-reducing, admixture containing no calcium chloride with coloring agents that are limeproof and ultra-violet resistant.
 - 2. Colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194.
- B. Curing Compound for Integrally Colored Concrete: Curing compound shall comply with ASTM C309 and be of same manufacturer as colored admixture, for use with integrally colored concrete.
 - 1. Exterior Integrally Colored Concrete: LITHOCHROME[®] COLORWAX; L. M. SCOFIELD COMPANY. Use to cure exterior flatwork that will be allowed to cure naturally with only occasional maintenance.
 - 2. Interior Integrally Colored Concrete: COLORCURE[®] (Pigmented) or CEMENTONE[®] (Clear); L. M. SCOFIELD COMPANY. Use to cure interior flatwork that will receive regular maintenance.
- C. SUBSTITUTIONS: The use of products other than those specified will be considered providing that the Contractor requests its use in writing within 14-days prior to bid date. This request shall be accompanied by the following:
 - 1. A certificate of compliance from material manufacturer stating that proposed products meet or exceed requirements of this Section, including standards ACI 303.1, ASTM C979, ASTM C494 and AASHTO M194.
 - 2. Documented proof that proposed materials have a 10-year proven record of performance, confirmed by at least 5 local projects that [Architect] [Landscape Architect] [Engineer] can examine.

2.3 COLORS

- A. Concrete Color[s]:
 - 1. Cement: Color shall be gray

2. Sand: Color shall be locally available natural sand.
3. Aggregate: Concrete producer's standard aggregate complying with specifications.
4. Colored Admixture: As selected by Architect from Scofield Color Chart A-312.

2.4 CONCRETE MIX DESIGN

- A. Minimum Cement Content: 5 sacks per cubic yard of concrete.
- B. Slump of concrete shall be consistent throughout Project at 4-inches or less. At no time shall slump exceed 5-inches.
- C. Do not add calcium chloride to mix as it causes mottling and surface discoloration.
- D. Supplemental admixtures shall not be used unless approved by manufacturer.
- E. Do not add water to the mix in the field.
- F. Add colored admixture to concrete mix according to manufacturer's written instructions.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install concrete according to requirements of Division 3 Section "Cast-In-Place Concrete."
- B. Do not add water to concrete mix in the field.
- C. Surfaces shall be finished uniformly with the following finish:
 1. Trowel: Precautions should be taken to ensure that the surface is uniformly troweled so that it will not be slippery. Do not over-trowel or burnish the surface.

3.2 CURING

- A. Integrally Colored Concrete: Apply curing compound for integrally colored concrete according to manufacturer's instructions using manufacturer's recommended application techniques. Apply curing compound at consistent time for each pour to maintain close color consistency.
- B. Curing compound shall be same color as the colored concrete and supplied by same manufacturer of the colored admixture.

- C. Precautions shall be taken in hot weather to prevent plastic cracking resulting from excessively rapid drying at surface as described in CIP 5 *Plastic Shrinkage Cracking* published by the National Ready Mixed Concrete Association.
- D. Do not cover concrete with plastic sheeting.

3.3 TOLERANCES

- A. Minor variations in appearance of integrally colored concrete, which are similar to natural variations in color and appearance of uncolored concrete, are acceptable.

3.4 APPLICATORS

- A. For a list of qualified contractors, contact your local Scofield representative or the appropriate Division Office: Eastern Division – 201-672-9050; Western Division – 323-720-3055; Central Division Office – 630-377-5959.

END OF SECTION

