Addendum #3

Date: May 6, 2015

Project: Baker Annex Two-Story Addition

Contract: FD-14-009

The work herein shall be considered part of the bid documents for the referenced project and carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Acknowledge receipt of addendum on the bid form as indicated.

Clarifications:

1. AN ALTERNATE #2 HAS BEEN ADDED, SEE ATTACHED ALTERNATES SPECIFICATION.

Changes to Specifications:

1. ADD attached specification 01 23 00 ALTERNATES Specification to the project manual.

2. REPLACE specification 12 32 13 MANUFACTURED WOOD VENEER FACED CASEWORK with the revised attached version.

3. ADD attached specification 06 82 00 FIBER GLASS REINFORCED PLASTIC Specification to the project manual.

4. BID FORM: Change date in Alternate #1 to “May 29, 2016”.

5. Section 04 20 00 UNIT MASONRY, Page 6, Paragraph 2.4 B. 8: CHANGE a. thru c. to read as follows: “a. Color 1: Glen Gery Desert Blend, Color 2: Endicott Manganese Ironspot Smooth, Color 3: Glen Gery PS57.

6. Section 23 06 05, “FANS”

    a. Page 23 06 05-3, Paragraph 2.1M: REMOVE the following:

        "NEMA 3R non-fused disconnect switch factory mounted and wired to the motor".

7. Section 23 09 00, “AUTOMATIC TEMPERATURE CONTROLS:

a. Page 23 09 00-6, Paragraph 2.9A,1,b: REVISE to read:

"Interface with the factory furnished controller. Controller shall be wired to sensors which shall include, but not be limited to, a discharge air temperature sensor, return air temperature sensor, exhaust air temperature sensor, global outside air temperature, coil air temperature sensors, and low limit thermostat."

Changes to Drawings:

1. Drawing M-501, "DETAILS MECHANICAL"

    a. REVISE detail title to read:

    "BELT DRIVE FUME HOOD EXHAUST FAN W/ MIXING PLENUM (BOTTOM INLET) DETAIL"

    b. REMOVE disconnect switch from FUME HOOD EXHAUST FAN DETAIL.

2. Drawing E-201, "FIRST & SECOND FLOOR PLANS NEW WORK - LIGHTING - ELECTRICAL"

    a. FIRST FLOOR PLAN – LIGHTING – ELECTRICAL

    - CONFERENCE ROOM 150: CHANGE one light fixture type "A3" to "A2".

3. Drawing E-212, "FIRST & SECOND FLOOR PLANS NEW WORK - POWER - ELECTRICAL"

    a. FIRST FLOOR PLAN – POWER – ELECTRICAL

    - STUDENT LOUNGE 151: ADD 120V power at exterior door for electric strike. Refer to attached Sketch SK-E-01.

4. Drawing PFP-201, "FIRST FLOOR PLAN NEW WORK - BELOW SLAB - PLUMBING"

    a. Changes to PLUMBING FIXTURE/EQUIPMENT SCHEDULE. Refer to the attached Sketch SK-P-01.

5. Drawing PFP-202, "FIRST FLOOR PLAN NEW WORK - ABOVE SLAB - PLUMBING"

    a. ADD services to Fume Hood. Refer to the attached Sketches SK-P-02 and SK-P-03.

General Information:

1. None at this time.

Questions and Answers:

1. **Question**: Reference Finish Schedule on A 601-Rm 151 calls for CRT-3 which is not referenced in the Room Finish Key. Also Spec Section 096813-2.1 discusses Carpet Tile F-1 which is not referenced on the plans.
   Answer: CRT-1 & CRT-2: Faculty Remix Tile by Mohawk Group, CRT-3: White Direction Tile 12BY36 by Mohawk Group.
2. **Question:** It was mentioned in the Pre-bid meeting that the contractor is responsible for relocating the existing card reader and camera mounted on the outside corner of the existing building. Can you provide the contact name and number for the owner's vendor who handles security devices and programming on the campus? Can you provide specification for the security work as well?
   Answer: Advantech, Inc. (302)674-8405.

3. **Question:** Please provide what type of countertops are to be provided at the following sections 3-4/A103 & 16-22/A401
   Answer: All work associated with toilet rooms 132 and 133 is NOT in the scope of this project.

4. **Question:** Section 123213 part 2.4.N.3.a.3 you call out marine edge countertops whereas directly above in 2.4.N.3.a you call for a flat slap. Which is required?
   Answer: Provide marine edge.

5. **Question:** Is there a specfic color or price group for the soldi surface tops? Since, for instance, Corian has 4 price groups that drastically compare in price, (up to $100/sf from their low end to high end colors)
   Answer: Provide price category "C".

6. **Question:** Will Campbell Rhea be considered an acceptable Laboratory Casework Manufacturer? See attachment.
   Answer: Yes, this is an acceptable manufacturer. Quality level must be comparable to the basis of design.

7. **Question:** Will AWI Certificates be required for the casework OR can we fabricate/install per AWI without the certificates?
   Answer: AWI Certifications are required.

8. **Question:** Sheet A-101, Rooms 232 & 234 – Please elevate or schedule the new built-in casework at key note #1 locations.
   Answer: Item #1 in Teaching Lab 232 is a (25) compartment microscope storage case, 48"x23"x84. Provide Leonard Peterson model # B-1856. Item's #1 in STR 234 are Wardrobe & Supply Case w/ File Drawers, 48"x23"x84", Leonard Peterson model #B-1488. (provide filler panels as necessary).

9. **Question:** Verify that the drench shower/eyewash unit at keynote #6 on A-101 is the responsibility of the plumber per "F-11" on PFP-201. No work is required at these units by specification section 123213.

Answer: Keynote #6 on A-101 is the same item as F-11 on PFP-201. See attached sketch SK-P-01, model # has been revised.

10. **Question:** Please identify what type of countertop is intended at details 16-20 on A401. Plastic Laminate, Solid Surface or Epoxy Resin?
    Answer: 16, 17, 18, 21, 22 Epoxy Resin and 19, 20 Solid Surface.

11. **Question:** Please identify where "P-4" gas fixtures are intended, none are currently.
    Answer: See attached sketches for information regarding gas cocks.

12. **Question:** Verify that all window sills are solid surface.
    Answer: First Floor Window Sills shall be Solid Surface. Second Floor Window Sills shall be Epoxy Resin.

13. **Question:** Please verify there are no spray booths on this project. 123213 indicates otherwise.
    Answer: No Spray Booths.

14. **Question:** Please verify that there are no countertop or toekick grilles required on this project as listed in 123213.
    Answer: Not required on this project.

15. **Question:** Please verify that 3/A-103, fixed panel face and removable access panels are only intended at the single sink counters in rooms 132 and 133. The 2-gang sink counter in 132 does not have fixed face panel or removable access, only 3 x 3 x 3/16 steel brackets.
    Answer: Correct.

16. **Question:** Are the fixed face panels and removable access panels referenced in question #8 (previous question) intended to be wood veneer to match all casework?
    Answer: Yes, they are intended to be finished with veneer to match existing, color to be approved by architect prior to fabrication.

17. **Question:** What specification section covers the 3 x 3 x 3/16 steel supports on 4/A-103?
    Answer: Fabricate steel brackets from 3x3x3/16" steel angles, welded and epoxy painted with rounded bottom leg.

18. **Question:** 123213, 2.4, Q - Please identify what edging is intended at plastic laminate counters, 3mm or laminate self-edge.
    Answer: See revised specification.

19. **Question:** Need clarification in two areas on second floor that are denoted by a 1 (new built-in casework/countertop in the keyed floor plan notes.
    - Item indicated on the west wall of the entryway into the teaching lab 232.
    - Item indicated on the west wall of the storage room 234.

Answer: Item #1 in Teaching Lab 232 is a (25) compartment microscope storage case, 48"x23"x84. Provide Leonard Peterson model # B-1856. Item's #1 in STR 234 are Wardrobe & Supply Case w/ File Drawers, 48"x23"x84", Leonard Peterson model #B-1488. (provide filler panels as necessary).

20. **Question:** Need to confirm what the wall unit is, on the north wall of the Instrument Room 231.
    Answer: This shows up in elevation 9/A401, please disregard this item.

21. **Question:** Confirm that work surface in casework section 16, 17, 18, 21, and 22 is epoxy resin.
    Answer: 16, 17, 18, 21, 22 Epoxy Resin and 19, 20 Solid Surface.

22. **Question:** Confirm that work surface in casework section 19 and 20 is either epoxy resin or solid surface.
    Answer: 16, 17, 18, 21, 22 Epoxy Resin and 19, 20 Solid Surface.

23. **Question:** Need location of lab equipment described in "Section 11 53 63 2.1 lab equipment" (safety goggle cabinet, acid/corrosive storage, flammable storage, fire blanket, and first aid kit).
    Answer: Provide one each of goggle cabinet, fire blanket and first aid kit in Teaching Lab 232 and Research Lab 233. Delete Acid/ corrosive storage and flammable storage from scope.

24. **Question:** Peg boards are called out as stainless steel or epoxy resin. Confirm with is preferable.
    Answer: Peg boards shall be epoxy resin.

25. **Question:** Need location of spray booth units from section 12 32 13, 2.7, M, Casework hardware and accessories.
    Answer: No Spray Booths.

26. **Question:** Confirm if window sills are solid work surface or epoxy resin to match countertops.
    Answer: First Floor Window Sills shall be Solid Surface. Second Floor Window Sills shall be Epoxy Resin.

27. **Question:** Confirm location of ADA safety station WM-D1001 listed in specs.
    Answer: This is located by Keynote #6 on A-101, it's the same item as F-11 on PFP-201. See attached sketch SK-P-01, model # has been revised.

28. **Question:** Confirm location of Laboratory accessories (burette rods, upright rod assembly, Greenlaw assembly, and lattice assembly). Section 12 32 13, 2.8.
    Answer: These accessories have been deleted.

29. **Question:** Please provide a model number for scheduled vacuum pump F-15.
    Answer: See attached sketch SK-P-01.

30. **Question:** There is one fume hood required. The elevation indicates (2) possible services and a cup sink or two. The plumbing drawings do not indicate any services to the fume hood. Are there any utility services required in the fume hood?
    Answer: Plumbing drawings have been modified via the attached sketches. Also, see Section 12 32 12 Manufactured Wood-Veneer Faced Casework for additional fume hood information.

31. **Question:** The specs for the fume hood call for (6) utility services and cold water with a cupsink. Please verify utility & water services required for the fume hood.
    Answer: Plumbing drawings have been modified via the attached sketches. Also, see Section 12 32 13 Manufactured Wood-Veneer Faced Casework for additional fume hood information.

32. **Question:** Spec 07 53 23, Materials 2.3, item A1, states pleece back (Fleeceback I think is what is meant). Is fleeceback required or will standard 060 adhered EPDM be alright?
    Answer: Spec should read 'Thickness: 60 mils with Fleece Backing.

33. **Question:** Existing metal roof manufacturer and color information know?
    Answer: Provide basis of design product “Centria Architectural Systems SDP 175.” Color to be as selected by architect from manufacturer’s full range.

34. **Question:** Please clarify who will be providing the lab gas turrets. They appear on the casework floor plans, however, I could not find specifications in the Lab Casework or Plumbing Specs.
    Answer: Turrets to be by Chicago Faucets, 980-VR909CAGSAM, Deck Mounted Single Ball Valves Turret with Single Ball Valve and Check.

35. **Question:** We have an issue with types A2 & A3 Master Satellite the amount of master and satellite must be the same. Please advise.
    Answer: See attached Electrical sketch.

Attachments:

012300 ALTERNATES
068200 GLASS FIBER REINFORCED PLASTIC
122413 ROLLER WINDOW SHADES
123213 MANUFACTURED WOOD VENEER FACED CASEWORK
SK-A-02
SK-A-03
SK-A-04
SK-E-01
SK-P-01
SK-P-02
SK-P-03

END

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.

2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. (1) ONE: EXTEND SUBSTANTIAL COMPLETION DATE.

1. Alternate: Extend substantial completion date to May 29, 2016.

B. Alternate No. (2) TWO: GANG TOILET RENOVATIONS (Women's 132 & Men's 133).

1. BASE BID: Provide no cost for Gang Toilet renovations

2. ALTERNATE: Provide cost for Gang Toilet (Women's 132 & Men's 133) renovations as shown on drawings.

END OF SECTION 01 23 00

SECTION 06 82 00 - GLASS FIBER REINFORCED PLASTIC

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes furnishing all materials, labor, equipment, and related services necessary to supply and install architectural glass fiber reinforced plastic fabrications as indicated in the contract documents, and in compliance with applicable codes.

1.02 RELATED SECTIONS

A. Section 06 10 00 Rough Carpentry - for connection attachment to structural wood framing.
B. Section 05 12 00 Structural Steel - for connection attachment to structural steel framing.

1.03 REFERENCES

A. ASTM International (ASTM)
   1. D790 - Standard Test Methods of Flexural Properties of Unreinforced and Reinforced Plastics
   2. D638 - Standard Test Method For Tensile Properties of Plastics
   3. D256 - Standard Test Methods For Determining the Izod Pendulum Impact Resistance of Plastics.
   4. D570 - Standard Test Method For Water Absorption of Plastics
   5. D2583 - Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
   6. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials

1.04 SUBMITTALS

A. Product Data: Submit product data sheets for each specified product.
B. Samples: Submit representative samples of the color and texture of FRP material selected by the Architect or Designer.
C. Shop Drawings: Submit drawings for approval showing plans, sections, details, joint treatment, reinforcing, support, fastening devices and the relation of the FRP parts to the surrounding construction.

1.05 QUALITY ASSURANCE

A. All architectural FRP parts to be provided by the same manufacturer using the same source of materials for the project.

B. Manufacturer Qualifications: Manufacturer shall have successfully supplied FRP fabrications for other projects similar in scope and complexity for the work of this Contract.
C. Installer Qualifications: Installer shall have successfully installed FRP fabrications for other projects similar in scope and complexity for the work of this Contract.
D. Substrates and framing to accept FRP parts shall be installed straight and true within 1/8 in. in 8 linear ft. and shall be free of obstructions and interference that prohibit the correct alignment and attachment of the FRP fabrications and parts.
E. Where the work schedule permits, confirm dimensions and site conditions prior to manufacturing FRP parts specified in this section. Any deviations from the design conditions or dimensions to be provided to the manufacturer for inclusion in the shop drawings

1.06 DELIVERY, STORAGE AND HANDLING

A. Handle and transport FRP parts to avoid damage. Place non-staining resilient spacers between parts and support parts during shipment.
B. Parts shall be kept clean and dry and stored protected on firm, level and smooth surfaces to prevent distortion, warping, and other physical damage in accordance with the manufacturer's recommendations.
C. Place stored panels so part identification labels are clearly visible.
D. The Installing contractor is responsible for damage to the FRP parts after delivery.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Formglas Products Ltd.
B. GRG Technologies

2.02 GLASS FIBER REINFORCED PLASTIC (FRP) FABRICATIONS

A. Fabrications: Molded FRP parts shall have a Class 1 (or A) fire rating with a Flame Spread Index : ≤25; Smoke Development Index: ≤450, when tested in accordance to ASTM E84 Standard (See 1.03 References).
B. Gelcoat: The FRP parts shall have an ISO/NPG ultra violet stabilized polyester gelcoat with a minimum thickness of 15-20 mil.
C. Back up Laminate: Glass reinforcement shall consist of a glass fiber polyester composite with 25-30% glass content.
D. Part Thickness: FRP parts to have a nominal shell thickness of 3/16" with increased thickness where core materials are encapsulated to provide added strength and straightness, as required.
E. All reveals, setbacks or returns to have a 3º draft minimum.
F. All outside corners to have a 1/8" minimum radius
G. Identification: All FRP parts to have labels affixed to the back individually indentifying them with the same part numbers used on the shop drawings.

2.03 FINISH

A. The FRP parts Color and Finish are to match the approved sample(s) as detailed in the contract documents.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Site Conditions: Verify the conditions for compliance with the manufacturer's requirements including installation tolerances and other conditions affecting the installation and performance of the FRP parts. Any unsatisfactory conditions to be corrected prior to installation.
B. Field Dimensions: Field dimensions to be verified including those not shown on the drawings. Any discrepancies between design and field dimensions shall be brought to the attention of the Architect with resolutions to the discrepancies to be mutually agreed upon by all parties involved. Details of any required changes must be incorporated into the manufacturer's shop drawings prior to commencing the manufacture of the FRP parts
C. Design Dimensions: Where field measurements can not be made without delaying the Work, the installing contractor is to confirm with the Architect to proceed with fabricating the FRP parts to the design dimensions with construction coordinated to ensure the actual site dimensions correspond with the design dimensions.

3.02 PREPARATION

A. Substrate: Substrates to accept FRP parts, provided by others, shall be installed straight and true within 1/8 in. in 8 ft., secure, and shall be free of obstructions and interference that prohibits correct attachment of FRP parts.
B. Structural framing members and bearing surfaces, provided by others, shall be true and level, of the proper size, spacing and design for the intended use and shall be sufficient to properly support the installed FRP parts.
C. Report discrepancies between design dimensions and field dimensions which could adversely affect the installation of the FRP parts. Do not proceed with the installation until discrepancies are corrected or installation requirements modified and approved.

3.03 INSTALLATION

A. Install in accordance with the manufacturer's instructions, contract documents and shop drawings.
B. The Installing contractor to provide all support brackets, connection hardware, adhesives, and other accessories required for the proper installation of the FRP fabrications in accordance to the manufacturer's requirements and applicable building codes.

C. Position FRP parts carefully into place plumb, level and aligned with adjacent parts, shimmed where necessary.
D. Anchors and fasteners to be type 304 stainless steel where exposed; hot dip galvanized steel where unexposed.
E. Provide temporary supports or bracing as required to maintain position, stability and alignment of parts until permanently secured.
F. Installing contractor to repair and patch holes or defects to match the original work.
G. Provide joint spacing between parts as detailed in the approved drawings for expansion and the application of joint treatment materials.

3.04 JOINT PROTECTION:

A. Caulk joints with a low modulus exterior elastomeric sealant recommended by the manufacturer. Color of caulk to be selected by the Architect. (If joint treatment follows under a separate section of this contract, this does not apply).

3.05 CLEANING AND PROTECTION

A. Perform cleaning procedures, if necessary, according to FRP manufacturer's written instructions. Take precautions to prevent damage to FRP surfaces and staining of adjacent materials.

END OF SECTION

SECTION 12 24 13 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Manually operated roller shades with single rollers.
2. Roller shade fabrics.

1.3 SUBMITTALS, GENERAL

A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations, all dimensions and clearances for each shade installation.

1. Include typical elevation layout showing separation between shade units and meeting edges at corners with sections and details at head and sill between blind units and corners.

2. Provide verified in field details showing all types of shade installation conditions.

3. Components and conditions not fully dimensioned or detailed in manufacturers product data indicating relationship to adjoining construction.

4. Manufactures specification instructions and details specific to components and conditions not fully dimensioned or detailed in manufactures product data.

5. Provide data for all components required for installation.

C. Samples for Initial Selection: For each type and color of shadeband material.

1. Include Samples of accessories involving color selection.

2. Actual color samples of manufactures full range – no color copies will be accepted.

D. Samples for Verification: For each type of roller shade.

1. Shadeband Material: Not less than 10 inches square. Mark inside face of material if applicable.
2. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
3. Installation Accessories: Full-size unit, not less than 10 inches long.

1.5 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of shadeband material, signed by product manufacturer.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roller shades to include in maintenance manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 WARRANTY

A. Manufacturer's Warranty - Provide manufacturer's warranty including coverage of at least following components:

1. Corrosion of all metal parts.

2. Sagging, creasing, or breaking of slats.

3. Sagging, creasing or ripping of shadeband material.

4. Smoothly performing mechanism without slippage or jams.

5. Finish of all components matching in color, uniform, and against fading or discoloration.

6. Defects in materials and installation workmanship.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; Manual FlexShade Systems or comparable product by one of the following:

1. Hunter Douglas Contract.
2. MechoShade Systems, Inc.
3. OEM Shades Inc.
4. Shade Techniques, LLC.
5. Silent Gliss USA, Inc.

B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated; with chain retainer.

1. Bead Chains: Manufacturer's standard.

a. Limit Stops: Provide upper and lower ball stops.

C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.

1. Roller Drive-End Location: Right or left side as require per shade layout.
2. Direction of Shadeband Roll: Regular, from back of roller.

3. Shadeband-to-Roller Attachment: Manufacturer's standard method- no double-side tape will be accepted. Provide adequate brackets on multiple sash windows to hold roller pin ends no more than 1/8 inch apart over centerline of mullion.

D. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade, not to exceed manufactures recommendation that is operated by one roller drive-end assembly.

E. Shadebands:

1. Shadeband Material: Light-filtering fabric similar to “Sheer-weave Series” fabric by Draper Inc.

F. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.

a. Type: Enclosed in sealed pocket of shadeband material.

G. Fabrication:

1. Cut shades perfectly square and true and mount on rollers using suitable fasteners. Provide all material used in shade manufacture new, commercially perfect and of first quality. Provide material in one piece.

2. Provide one finished length of each single hung shade after hemming 14 inches longer than portion of sash covered by shade. Provide finished shade width to cover adequately, but not more than 1/4 inch of barrel exposed at each end of roller.

a. Where necessary, increase diameter of roller from 1-1/4 inches to correspond with size of shade.

b. Provide hems of proper width for slat, double turn hems, and sew with straight stitch. Neatly backstitch all hems at the ends.

c. Hem at top and bottom of shade.

3. Fabrication Tolerances:

a. Size shades to fit openings head to sill (allowing for 6 to 10 inches in additional length) and between mullions, unless otherwise indicated on Drawings.

b. Provide single sets of shades no greater in width than distance between 2 mullions at openings up to 15 ft. wide.

c. Provide minimum clearances for appropriate operation of shades.

H. Installation Accessories:

1. Front Fascia: Aluminum extrusion that conceals front and underside of roller and operating mechanism and attaches to roller endcaps without exposed fasteners.

a. Shape: L-shaped.

b. Height: Manufacturer's standard height required to conceal roller and shadeband when shade is fully open.
c. Provide full range of manufactures colors.

2. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.

a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open.
b. Provide full range of manufactures colors.

3. Endcap Covers: To cover exposed endcaps.

4. Bottom (Sill) Channel or Angle: With light seals and designed to eliminate light gaps at bottoms of shades when shades are closed.

5. Installation Accessories Color and Finish: As selected from manufacturer's full range.

2.3 SHADEBAND MATERIALS

A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

B. Light-Filtering Fabric (Same Color Both Sides): Woven fabric, stain and fade resistant.

1. Source: Roller-shade manufacturer.
2. Type: Woven polyester and PVC-coated polyester.
3. Weave: Basketweave.
4. Color: As selected by Architect from manufacturer's full range.
5. Basis-of-Design Product: Subject to compliance with requirements, provide the following Draper Inc. product or comparable product:

a. Light-Filtering Fabric (Same Color Both Sides) Openness Factor 3 percent: SheerWeave Series PW4400.

1) Thickness: 0.037 inches.
2) Weight: 20.7 oz./sq. yd.
3) Locations: East-, west- and south-facing windows with clear view.

2.4 ROLLER-SHADE FABRICATION

A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.

B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:

1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch.

Length equal to head-to-sill dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.

2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.

C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible.

D. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque labels with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 ROLLER-SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.

1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

2. Hang shades at window to fit opening properly and operate smoothly and efficiently. Hang each shade perfectly level and with spring tension of roller properly adjusted. Locate tips of adjoining shades no further than 3/8 inch apart when two or more are mounted back to back.

3. Install each shade on brackets securely fastened to ceiling or wall as shown on Drawings. Furnish and install new brackets and other hardware required for proper installation of shades.

B. Prior to installation of roller-shade units, coordinate installation locations and method of installation with window manufacturer, do not secure roller-shade units to window frame.

3.3 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

3.6 SCHEDULE

A. Provide Roller Window Shades at “SF1” window types.

END OF SECTION 12 24 13

SECTION 12 32 13 - MANUFACTURED WOOD-VENEER-FACED CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes manufactured wood-veneer-faced cabinets of stock design.

B. Section Includes

1. Wood-veneer faced casework - overlay door design, including (but not limited to):

   a. Wall, base and tall cabinets
   b. Tops for all base units
   c. Counter top assemblies
   d. Solid surface window sills
   e. Safety station units
   f. Fume Hood

2. Accessory items, including:

   a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
   b. Cutouts for sinks, faucets, fittings, and other plumbing and electrical fixtures, electrical and mechanical runs and connections and similar items.
   c. Epoxy resin countertops and sinks, drains and tail pieces
   d. Materials and devices necessary to make solid connections to existing structure

C. Products Furnished but not Installed Under this Section

1. Mechanical components, electrical components, plumbing components and similar items included with specified casework items; refer to "Sequencing and Scheduling".

1.3 DEFINITIONS

A. Definitions in the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" apply to the work of this Section.

B. MDF: Medium-density fiberboard.

C. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

1.4 COORDINATION

A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Casework.
2. Hinges.
3. Pulls.
4. Door catches.
5. Drawer and hinged door locks.
6. Adjustable shelf supports.
7. Wardrobe rod.
8. Coat hooks.
9. Fume Hood units
10. Emergency Eyewash units

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.

1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.
2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).
3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

C. Samples:

1. Casework Units: Without cost to Owner, submit samples, as requested, to demonstrate Contractor's ability to furnish required casework.

2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors, texture and wood tones.

D. Mock-Ups: Submit following units for comparison with items installed as part of casework installation. Mock-up units must be submitted prior to or with casework submittal. Casework submittals and shop drawings will not be approved without mock-up units.

1. One full-size base cabinet unit complete with hardware, doors, and drawers; without finish top.
2. One full-size wall-mounted cabinet unit complete with hardware, doors, and adjustable shelves.
3. Hinged door samples.
4. One glass door.
5. One full-size sink unit with accessories.
6. Samples of mechanical and electrical service fittings with specified finish as requested by Architect.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

1. Joint Tolerances 400C-T-1.
2. Finishness Test 400C-T-2.

C. Sample Warranty: For special warranty.

D. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner's contact and telephone number for each project, demonstrating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

1.7 MAINTENANCE MATERIAL SUBMITTALS

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

1.8 QUALITY ASSURANCE

A. Manufacturer: Minimum 5-years' experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.

B. Installer: Minimum 5 completed casework installations of similar size and requirements to that specified.

C. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation of units required for this Project and a certified participant in AWI's Quality Certification Program.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.

B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWI's, "Architectural Woodwork Standards."

B. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.

C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.11 SEQUENCING AND SCHEDULING

A. Coordinate the layout and installation of casework with all Prime Contractors. See Section 01010 for each Contractor’s coordination responsibilities.

B. Refer to the casework model numbers for the plumbing and electrical fittings and fixtures that are shown to be part of the casework. Deliver these fittings and fixtures to the contractor assigned to their installation in Section 01010. Obtain a signed receipt for their delivery.

C. Provide all holes / cut outs in the casework for all Contractors on the Project. Coordinate with the work on the E, P, & HVAC drawings and associated specifications.

1.12 MAINTENANCE

A. Extra Materials: Furnish complete touchup kit for each type and color of wood laboratory casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.

1.13 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Delamination of components or other failures of glue bond.
b. Warping of components.
c. Failure of operating hardware.
d. Deterioration of finishes.

2. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.
3. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide “Century Line” by Leonard Peterson and Co., Inc. Auburn, AL or comparable product by one of the following:

1. Kewaunee Scientific Corporation.
2. Sheldon Laboratory Systems.

C. Source Limitations: Obtain wood-veneer-faced casework with tops, sinks, special equipment, and service fixtures from same casework supplier to establish single responsibility for all casework components.

2.2 CASEWORK, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.

1. Grade: Premium
2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.

B. Regional Materials: Casework shall be manufactured within 500 miles of Project site.

C. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured wood-veneer-faced casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations,

of same finish materials, and complying with the Specifications may be considered. See Section 01 60 00 "Product Requirements."

D. Product Designations: Drawings indicate configurations of manufactured wood-veneer-faced casework by referencing designations of Casework Design Series numbering system in Appendix A of the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

2.3 WOOD-VENEER-FACED CABINETS

A. Design:

1. Lipped overlay with radiused wood edges.

B. Wood Species: Red Oak.

C. Face Veneer Cut: Grade A-2 or better Plain sliced.

D. Veneer Matching:

1. Provide veneers for each cabinet from a single flitch, book and running, book and balance matched.

a. Provide continuous matching of adjacent drawer fronts within each cabinet.

E. Grain Direction:

1. Vertical on doors, horizontal on drawer fronts.
2. Lengthwise on face frame members.
3. Vertical on end panels.
4. Side to side on bottoms and tops of units.
5. Vertical on knee-space panels.
6. Horizontal on aprons.

F. Exposed Materials:

1. Plywood:

a. Oak Plywood: Oak Maple, Grade A-2 or better, rotary cut, book matched, cross-banded, with solid hardwood core.

1) 1/4 inch: Minimum 3-ply.
2) 3/4 inch: Minimum 7-ply.

b. Other Hardwood Plywood: Sound grade; cross-banded, with solid hardwood core.

1) 1/4 inch: Minimum 3-ply.
2) 3/4 inch: Minimum 7-ply.

2. Solid Wood: Clear hardwood lumber of species indicated and selected for grain and color compatible with exposed plywood.

G. Semiexposed Materials:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.

2. Plywood: Hardwood plywood of same species as exposed wood. Provide backs of same species as faces.

3. Provide solid wood or hardwood plywood for semiexposed surfaces unless otherwise indicated.

4. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.

H. Hardboard: Full tempered 2 sides, consisting of steam-exploded wood fibers, highly compressed into hard, dense 1/4-inch thick homogeneous sheet using natural resins and other added binders; providing following physical properties:

1. Modulus of Rupture: 5,000 PSI
2. Density: 56 PCF
3. Internal Bond: 100.0 PSI

I. Particleboard: Industrial grade meeting or exceeding CS 236-66 and ASTM D1037 with following physical properties:

1. Density: 47 PCF (+10 percent)
2. Interior Bond: 60 PSI
3. Modulus of Elasticity: 400,000 PSI
4. Modulus of Rupture: 2,400 PSI
5. Screw Holding Power - Face: 225 lbs.
6. Screw Holding Power - Edge: 200 lbs

2.4 MATERIALS

A. Low-Emitting Materials: Fabricate manufactured wood casework, including countertops, with adhesives and composite wood products containing no urea formaldehyde.

B. Low-Emitting Materials: Adhesives and composite wood products shall comply with 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."

C. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.

D. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated

E. Softwood Plywood: U.S. Department of Commerce (DOC) PS 1.

F. Particleboard: ANSI A208.1, Grade M-2

G. MDF: ANSI A208.2, Grade 130

H. Hardboard: ANSI A135.4, Class 1 Tempered.

I. Edgebanding: Minimum 1/8-inch- thick, solid wood of same species as face veneer

1. Select wood edgebanding for grain and color compatible with face veneers.
2. Colors: As selected by Architect from manufacturer's full range.

J. Glass for Glazed Doors: Clear tempered glass complying with ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality-Q3; not less than 5.0 mm thick.

K. Epoxy Resin Countertop: Factory-molded modified epoxy-resin formulation with smooth, non-specular finish, edge as per details.

1. Physical Properties:

a. Flexural Strength: Not less than 10,000 psi.
b. Modulus of Elasticity: Not less than 2,000,000 psi.
c. Hardness (Rockwell M): Not less than 100.
d. Water Absorption (24 Hours): Not more than 0.02 percent.
e. Heat Distortion Point: Not less than 260 deg F.

2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:

a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).

3. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and pre-fitted, concealed metal splines.

a. Countertop Configuration: Molded into solid, flat, min.1 inch thick,

1) Drip groove
2) Back splash
3) Marine edge
4) Rounded edges and corners- refer to details

b. Countertop Configuration: As indicated.
c. Countertop Construction: Uniform throughout full thickness.

4. Color: Black

L. Countertop High Pressure Plastic Laminate: High pressure plastic laminate, 0.048 inch thick, meeting NEMA LD3-1991 GP50 standards, as detailed. Color and texture as selected by Architect from Manufacturer’s full range of textures, patterns and colors selected from each manufacturer listed below:
1. Pionite.
2. Formica

3. Wilsonart.
4. Nevamar.
5. Backing Sheet: Heavy gauge neutral colored backing sheet for balanced construction.

M. Solid Surface window sills and aprons:
1. Solid-Surfacing Material Thickness: ½-inch.
2. Fabrication: Fabricate stools and aprons in one piece, unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
3. Adhesives: Adhesives shall not contain urea formaldehyde.
4. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. Hanex Solid Surfaces
   b. Corian
   c. Formica Corporation.
   d. Wilsonart International
5. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.5 FABRICATION

A. Base Cabinet Construction:

1. Exposed ends, 3/4" thick maple plywood with 3/4" thick x 1-1/4" deep maple facer. Unexposed ends, 18mm birch, maple or aspen plywood with 3/4" thick x 1-1/4" deep maple facer. Interior of sides machined for frame(s) and bottom, and bored for shelf support clips when required.
2. Top frames, 1" thick rectangular made of 4 pieces with center rail added on sections over 24" in length. No part of cabinet frame to be less than 1-3/4" in width. Frames assembled with tongue and grooved joints or dowelled joints, with joints being glued together. Frames made of (4) individual pieces without glued corner joinery is unacceptable. Ends of frames tenoned or fitted with dowels for blind assembly of joints glued and reinforced with screws to cabinet walls.
3. Bottoms, ¾" thick plywood with ¾" thick x ¾" deep Maple facer. Ends of bottoms tenoned or fitted with dowels for blind assembly with glue and reinforced with screws to cabinet walls. Depending upon cabinet style bottoms shall be grooved or bored to receive partitions.
4. Intermediate frames, (to be provided between all drawers or drawers and cupboards), ¾" thick rectangular made of 4 pieces with center rail added on sections over 24" in length for added frame rigidity and to receive grooves for vertical partitions.No part of cabinet frames to be less than 1-3/4" in width.
5. Partitions, 3/4" thick plywood with 3/4" thick x 3/4 " deep oak facer.Partitions to be machined for frames and/or bored for shelf clips.Top and bottom ends of partitions to be tenoned or provided with dowels for assembly with glue and reinforced with screws into cabinet frames or bottoms.
6. Backs, 1/4" thick secured to or into cabinet ends, frames and/or partitions. Cupboard backs shall be removable without the use of tools. Exposed finished backs on mobile, free standing or island units 3/4" thick faced on exposed edges with solid oak 3/4" wide x 3/8" thick. Units up to 8' long requiring finished backs shall be provided with one piece backs and shipped assembled to cabinets.

7. Shelves, 3/4" thick plywood faced with 3/4" thick x 1/8” deep maple banding on exposed edge(s). Shelves shall mount on double pinned nylon shelf clips, adjustable on 1-1/4" centers, fitting into bored holes in cabinet ends or partitions.
8. Drawer heads (fronts), 13/16" thick, one piece, solid maple secured to 1/2" thick solid hardwood (beech, birch, maple or oak) or 11-ply undirectional birch plywood drawer sides and backs. Fronts secured to sides with interlocking lap or dovetail joints and back fully grooved or dovetailed to sides. Joints glued and pinned. 1/4" bottoms shall be fully grooved into drawer fronts, sides and backs and secured with glue. Drawer heads over 8" in height may be furnished in 5-ply 13/16" thick lumber core plywood with sliced maple faces or made of solid lumber of less than 3 pieces. Drawers to operate in fully boxed or framed compartments providing top, bottom, and side guiding of drawer. Operation of drawers to meet performance of this specification, See Section 1.03.
9. Security panels, 1/4” thick tempered hardboard fully grooved into cabinet frames. Security panels to be provided between all drawers or drawers and cupboards whether or not they are provided with I locks.
10. Doors, 13/16" thick 5-ply hardwood framed cross banded one-piece particle board cores having hardwood cross bandings, and with maple veneered faces. Paired cabinet doors to have matched grain pattern. Doors shall be furnished with hinges, pulls, and catches as described under Hardware. Operation of doors to meet Performance Standards of this specification. See Section 1.03
11. Base cabinets to have recessed toe space 4” high x 2-1/2” deep. Toe board made of 3/4” thick water resistant plywood or solid hardwood. After installation exposed faces of casework and toe spaces to receive base molding with stainless steel corners

B. Wall and Tall Cabinet Construction:

1. Exposed ends for units 48" or less in height shall be 3/4" thick maple plywood with 3/4" thick x 1-1/4” deep maple facer. Exposed ends of units over 48" high shall be 1" thick maple plywood with 1" thick x 1-1/4” deep maple facer. Unexposed ends for units 48" or less in height shall be 18mm thick birch plywood with 3/4" thick x 1-1/4” deep maple facer. Unexposed ends for units over 48" high shall be 3/4" thick with 1" thick x 1-1/4” deep maple facer. Interior of sides machined to receive top and bottom, and bored for shelf support clips.
2. Tops, 3/4" thick hardwood plywood furnished with maple header rail minimum 3/4" thick x 2-1/2" high. Header rail and top tenoned or provided with dowels for blind assembly with glue and reinforced with screws to cabinet walls.
3. Bottoms for hanging wall cases and counter mounted cases 1" thick hardwood plywood with 1" thick x 3/4" deep maple facer. Floor mounted cases furnished with 3/4" thick plywood bottoms with 3/4" thick x 3/4" deep maple facer. Ends of bottoms to be tenoned or provided with dowels for blind assembly with glue and reinforced with screws to cabinet walls.
4. Shelves, for hanging wall cases and counter mounted cases, 3/4" thick plywood faced with 3/4" thick x 1/8” deep maple banding on exposed edge(s). Shelves for tall cases, 1” thick plywood faced with 1” thick x 1/8” deep maple banding on exposed edge(s). Shelves mount on double pinned nylon shelf clips adjustable on 1-1/4” centers fitting into bored holes in cabinet ends or partitions. Performance of shelves to meet standards listed in section 1.03.
5. Backs, 1/4" thick secured into unit ends, top, and bottom. Backs provided with 3/4" thick x 4" high batten strips behind case backs for reinforcement and through which hardware shall be attached, for securing cases to walls. Exposed backs on Island Units shall be 3/4" thick faced on exposed edges with solid maple 3/4" wide x 3/8” thick.

6. Tall storage cases to be provided with 4" high maple plywood toe rail set flush with face of case to provide added safety from tipping. Toe rail shall be reinforced for rigidity.
7. Hinged panel doors, minimum 13/16" thick up to 48" high and 1" thick over 48" high, 5-ply, hardwood framed, having one-piece particle board cores with hardwood cross bandings and with oak veneered faces. Paired case doors shall have matched grain pattern. Doors up to 48" high shall have (1) pair of hinges and (1) catch. Doors over 48" high shall have (1-1/2) pair of hinges and (2) catches as described under Hardware.
8. Hinged glazed doors, minimum 13/16" thick up to 48" high and 1-1/16" thick over 48" high. Glazed doors shall have mitered corners made of solid hardwood with rails and styles tenoned, grooved and glued together with all joints reinforced with dowels. Doors over 65" high furnished with center rail. Minimum width of all rail styles shall be 2-1/2". Doors up to 48" high shall have (1) pair of hinges and (1) catch. Doors over 48" high shall have (1-1/2) pair of hinges and (2) catches. Glass shall be 1/8" double strength and set with wood molding.

C. Table Frame and Apron Construction:

1. Table frames and aprons made of solid hardwood. Unless otherwise indicated, exposed aprons minimum 3/4" thick x 4-3/4" high solid oak grooved for acceptance of cross rails and corner blocks and further grooved and drilled for attachment of top fasteners.
2. Reinforcing cross rails shall be solid hardwood, screwed and glued into front and back rails.
3. Table rail corner blocks, for attachment of legs, 13 gauge formed plated steel grooved and screwed into aprons.
4. Table legs, solid maple, minimum 2-1/4" square and furnished with 3/8" leg bolt for attachment to corner block having head conforming to leg rounding. Bolt secured behind corner block with lock washer and nut. Legs shall be provided with leg shoes.
5. Leg stretchers, where required, shall be not less than 1" x 3" mortised and tenoned into legs and secured with bolts. Cross stretchers shall be of similar size, tenoned into stretchers and secured with bolts.
6. Leg panels shall be a minimum of 1-1/4" thick. Panels shall be provided with solid cores having solid hardwood edge bands at top, bottom and exposed face. Exposed face veneers shall be plain sliced maple.

D. Cabinet, Case and Table Features:

1. Exposed edges and corners of cabinets, case walls, case bottoms, toe spaces, case tops, table aprons, table legs, table stretchers, finished backs, etc., shall be rounded minimum 3/16".
2. Joints between unfinished cabinet or case ends shall be chamfered, providing a neat V-joint when placed against cabinets that are joined together.
3. Fillers or scribes to be mounted flush with face of cabinet walls or ends. Fillers and scribes to be chamfered same as cabinet walls providing neat V-joint when placed against cabinet faces or walls.
4. Exposed or semi-exposed screw heads attaching panels or fillers shall be set flush with panel or cabinet surfaces.
5. Before shipment cabinet assemblies shall be assembled as complete items at factory, inspected for conformance to details, uniformity in workmanship, color and overall appearance. Units shall be marked for location and re-assembly on job site.

E. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.

2.6 FINISH

A. Wood Finishes: Varnish providing tough, hard properties to withstand most severe conditions and staining agents imparting clean, translucent appearance to wood substrate and enhance and improve natural graining in face without suggestion of masking or hiding. Finished film provides mellow, smooth texture.

1. Surface Preparation: All surfaces thoroughly sanded with fine abrasive not coarser than 3/0 Garnet finishing paper, achieving absolute cleanliness before finishing coat application. All wood flour and abrasive particles removed with dry compressed air and all areas wiped with tack rag.
2. Sealing: Synthetic resin based sealer applied to all surfaces of drawer, cabinet doors, exposed surface and other small sections where complete sealing of edges necessary to prevent moisture absorption. Remainder of cabinet sprayed with sealer after application to specific surfaces. Sealer air-dried within 20 minutes to permit light scuff sanding with 5/0 Garnet finishing paper and subsequently thoroughly dusted.
3. Stain: Pigmented stain consisting of non-fading and non-bleeding colors, ground in suitable vehicle, permitting blending in proportions required to produce color selected by Architect from manufacturer's full range of standard and custom colors.
4. Top Coat: Varnish consisting of moisture of chlorinated polymers and co-polymers suitably compounded with oil modified alkyd resin and other resinous plasticizers in solution of aromatic and oxygenated solvents. Produces cured film gloss with range of 40-50 measured by 60-degree glossmeter. Rubbed effect accomplished by inorganic flatting agent and acid catalyst added prior to spraying to convert film to cured state. Thorough sanding of previous coating provided to promote inter-coat adhesion with careful dusting to remove all powdered finish and abrasive prior to final coating.
5. Chemical Resistance Properties –Oak Wood Veneer Casework

    a. Spot Test to Evaporation

        1) Boiling Water No effect
        2) Ethyl Alcohol No effect
        3) Isopropyl Alcohol No effect
        4) Methyl Alcohol No Effect
        5) Xylol No effect
        6) Toluol No effect
        7) Naptha No effect
        8) Gasoline No effect
        9) Methyl Ethyl Ketone No effect
        10) Acetone No effect
        11) Chloroform No effect
        12) Formaldehyde No effect
        13) Ink No effect

    b. Spot Test for One Hour

        1) 25 percent Sulfuric Acid No effect

2) 70 percent Sulfuric Acid Film destroyed
3) 20 percent Hydrochloric Acid (5 min.) No effect
4) 37 percent Hydrochloric Acid Very slight ring & stain
5) 50 percent Nitric Acid Film destroyed
6) 10 percent Sodium Hydroxide No effect
7) 29 percent Ammonia No effect
8) Iodine Slight stain
9) Lipstick No effect
10) CrayonNo effect
11) Catsup No effect
12) Butter No effect
13) Oleo No effect
14) Mustard No effect
15) Grape Juice No effect
16) Coke or Pepsi Cola No effect
17) Vinegar No effect
18) Milk No effect

c. Adhesion and Toughness: Attempts to separate various finish layers from each other and from wood with razor blade or sharp knife are extremely difficult or results in no separation of various layers.

2.7 CASEWORK HARDWARE AND ACCESSORIES

A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish mirror polished-finish powder-coated, commercial-quality, heavy-duty hardware.

1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard, except where hardware is through bolted from back side.

B. Butt Hinges: Wrap-around type, 5-knuckle pin, heavy-duty institutional type with rounded ends, finished in either brushed chrome or black as directed by Architect and concealing hinge screws when door closed.

1. Lipped Construction: 2-1/2-inches high x 0.072-inch thick.
2. 2 hinges provided on doors less than 48 inches high; 3 hinges provided on doors 48 inches high and higher.

C. Pulls: Solid aluminum wire pulls, fastened from back with two screws. Provide two pulls for drawers more than 24 inches wide.

D. Door Catches: Zinc-plated Powder-coated, nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide two catches on doors more than 48 inches high.

E. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1.

1. Provide a minimum of two keys per lock and six master keys.
2. Provide locks on all doors and drawers.

F. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.

G. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04102 and B04112.

H. Fume Hood Unit Airfoil Bypass BMC laboratory #600 series– size as noted on drawings: in addition items noted below:

a. Provide with ADA base unit.
b. Fluorescent light fixture with bulbs, accessed from outside of air chamber.
c. Stainless steel bottom sill
d. Stainless steel sash interior
e. Louvered front panel.
f. Dished, epoxy resin countertop.
g. 2 gas - provide cover plates for services not requires.
h. 1 cold water gooseneck
i. 1 cold water spigot, serrated tip
j. 2 duplex, AC receptacles
k. 1-3” x 6” oval cupsink, epoxy resin
l. 1 switch only for blower unit
m. Ceiling Enclosure, BMC Laboratory B-1700-AA Series, size as shown on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 CASEWORK INSTALLATION

A. Grade: Install cabinets to comply with same grade as item to be installed.

B. Install casework level, plumb, and true; shim as required, using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

C. Utility-Space Framing: Secure to floor with two fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.

D. Base Cabinets: Adjust top rails and subtops 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 not more than 24 inches o.c. Fasten 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 installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than 2 fasteners per side.

E. Wall Cabinets: 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.

F. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

G. 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.

H. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

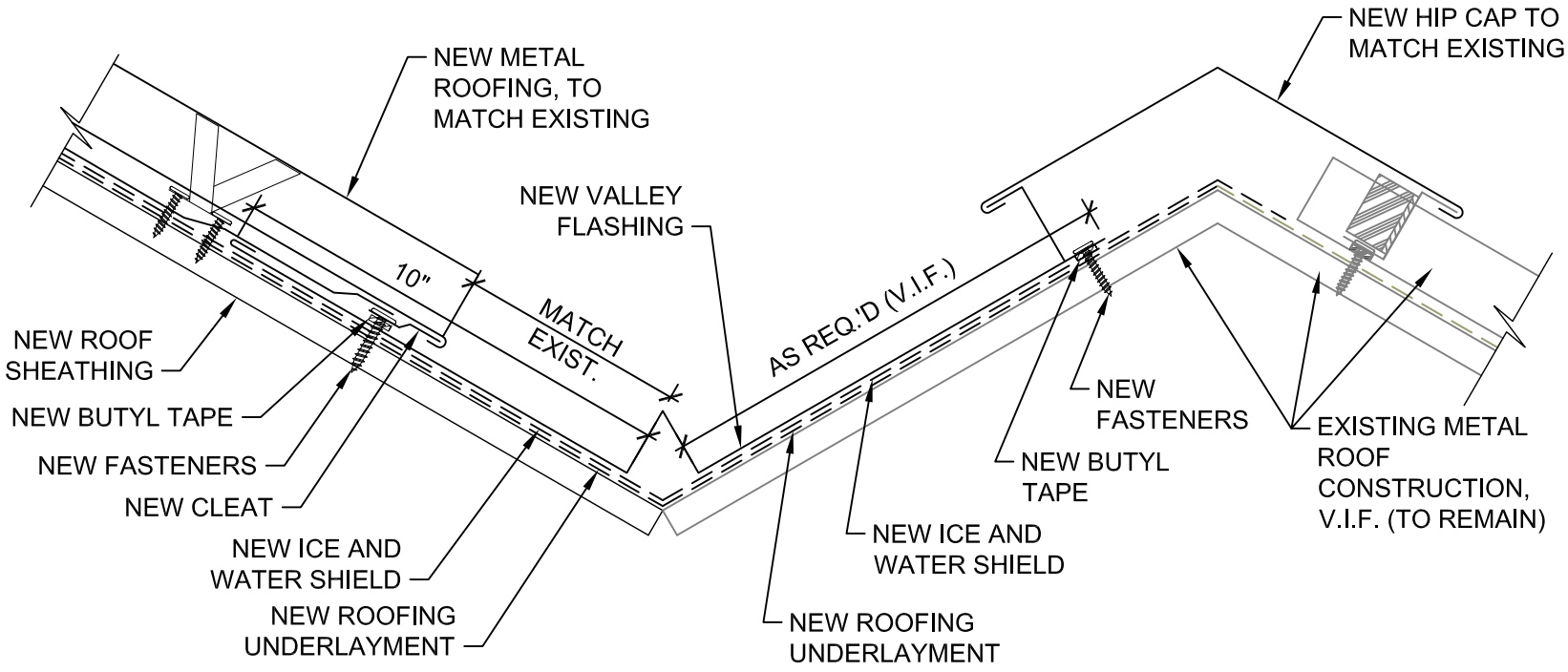
3.3 CLEANING

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. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION 12 32 13



11
A-201

DETAIL - VALLEY FLASHING AT HIP

3" = 1'-0"

REFERENCED SHEET: 11/A-201

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DELAWARE STATE UNIVERSITY, DOVER, DE 19901

DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD

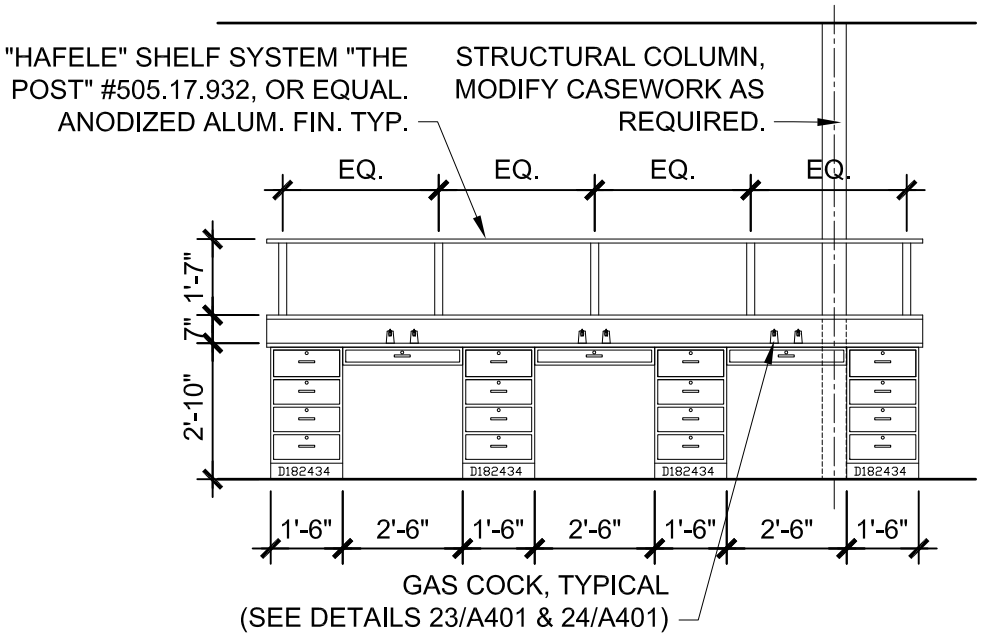
DETAIL - VALLEY FLASHING AT HIP

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	MJS

Supplemental Type
SK-A-02

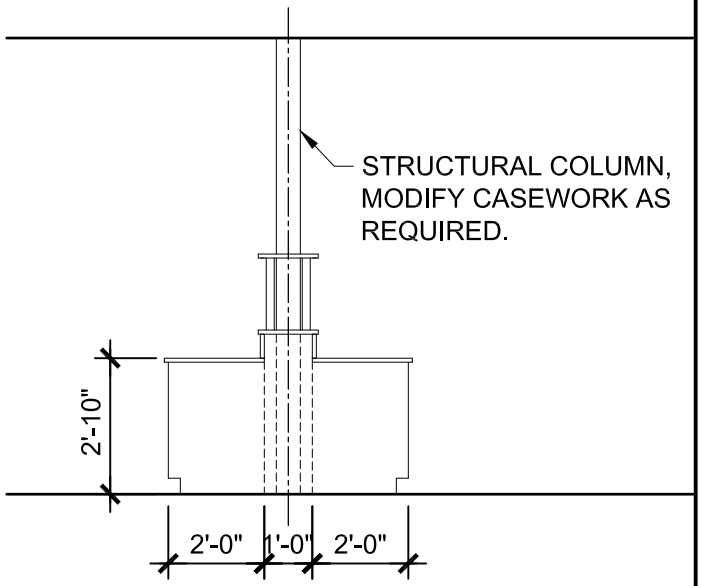
Copyright: Tetra Tech

Bar Measures 1 inch



4 / A-401 **CASEWORK ELEV.**

1/4" = 1'-0"



5 / A-401 **CASEWORK ELEV.**

1/4" = 1'-0"

REFERENCED SHEET: A-401

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DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD

CASEWORK ELEVATIONS

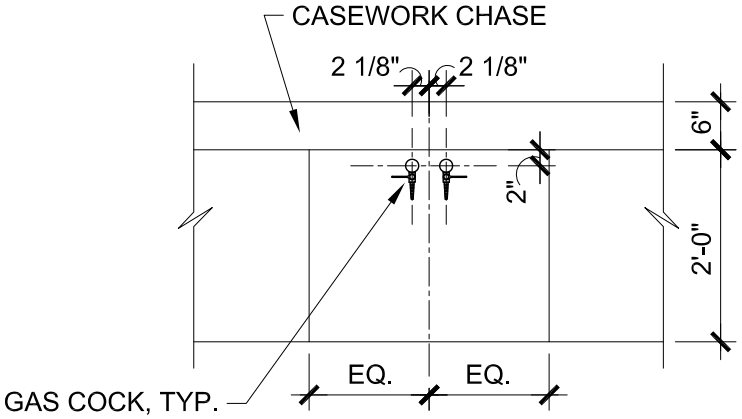
Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	MJS

Supplemental Type

SK-A-03

Copyright: Tetra Tech

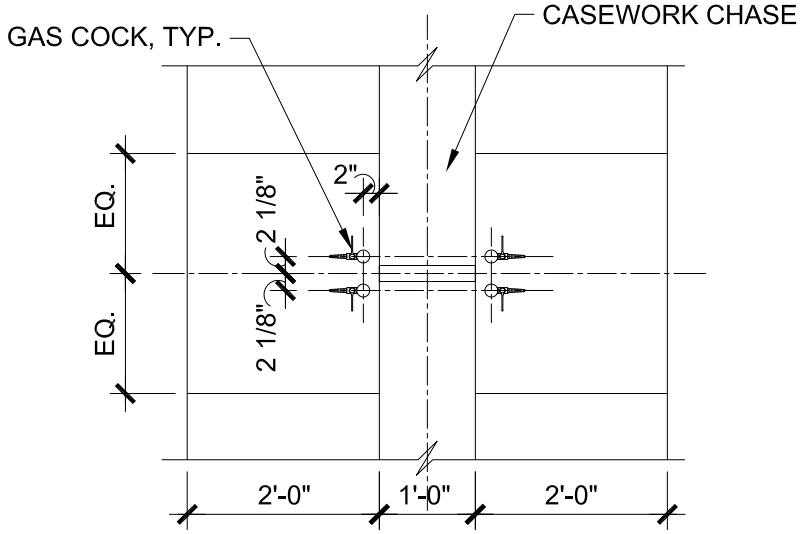
Bar Measures 1 inch



COORDINATE ALL FAUCETS, GAS COCKS, ELECTRICAL AND DATA TYPES AND LOCATIONS WITH REQUIRED CONTRACTORS. ALL DIMENSIONS SHOWN ARE APPROXIMATE. COORDINATE FINAL LOCATIONS PRIOR TO DRILLING.

23 A-401 TYPICAL LAB COUNTERTOP

3/4" = 1'-0"



COORDINATE ALL FAUCETS, GAS COCKS, ELECTRICAL AND DATA TYPES AND LOCATIONS WITH REQUIRED CONTRACTORS. ALL DIMENSIONS SHOWN ARE APPROXIMATE. COORDINATE FINAL LOCATIONS PRIOR TO DRILLING.

24 A-401 TYPICAL LAB COUNTERTOP AT ISLAND

3/4" = 1'-0"

REFERENCED SHEET: A-401

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DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD

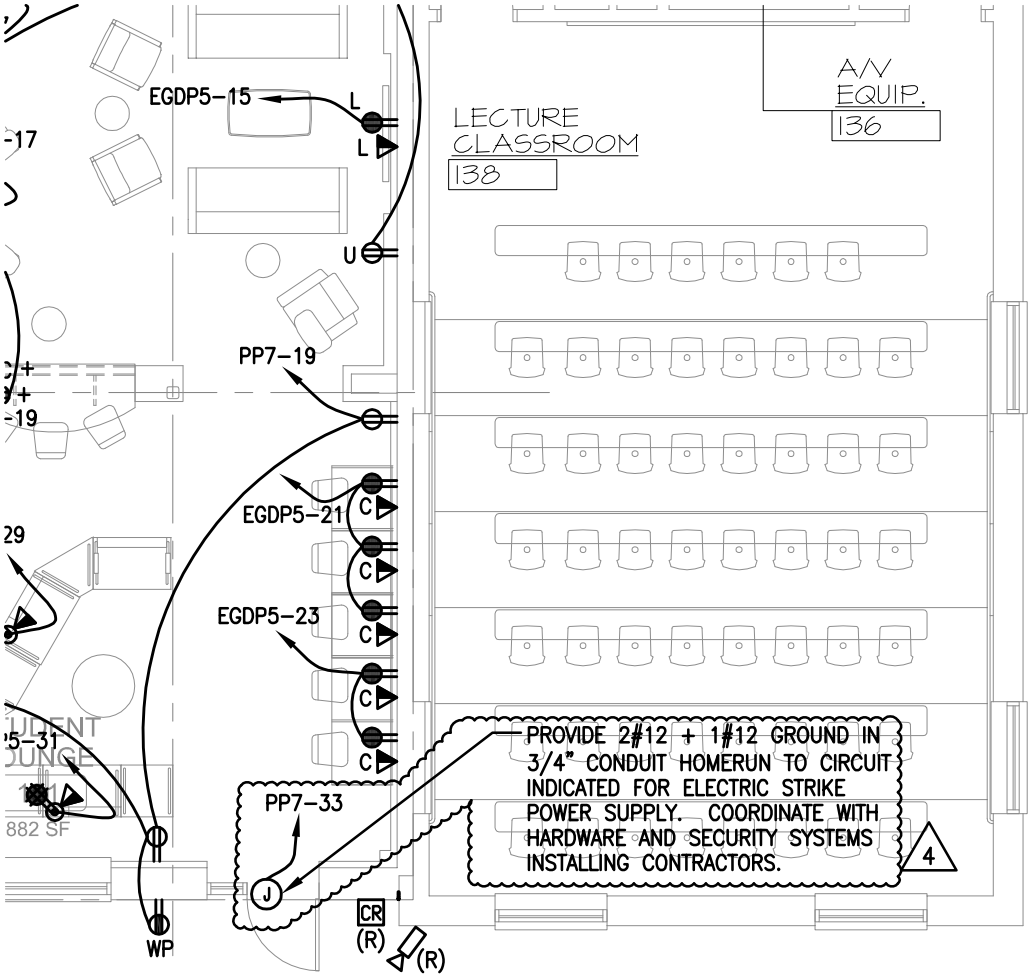
DETAILS - TYPICAL COUNTERTOP

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	MJS

Supplemental Type
SK-A-04

Copyright: Tetra Tech

Bar Measures 1 inch



1
E-202

FIRST FLOOR PLAN - POWER - ELECTRICAL

SCALE: 1/8"=1'-0"

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DELAWARE STATE UNIVERSITY, DOVER, DE 19901

DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD

FIRST & SECOND FLOOR PLANS
NEW WORK - POWER - ELECTRICAL

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	SAJ
Supplemental Type	SK-E-01

Copyright: Tetra Tech

Bar Measures 1 inch

PLUMBING FIXTURE / EQUIPMENT SCHEDULE

ITEM	DESCRIPTION	CW	HW	SOIL WASTE	TRAP	SETTING HEIGHT	GAS	STORM	COMP. AIR	VACUUM	SPECIFICATIONS/REMARKS
4 F-4	GAS TURRETS	–	–	–	–	–	1/2"	–	–	–	GAS TURRETS PROVIDED BY G.C. P.C. SHALL INSTALL TURRETS, PROVIDE ALL PIPING, ROUGH IN AND FINAL CONNECTIONS. CO–ORDINATE LOCATIONS WITH GENERAL CONTRACTOR.
4 F-10	MIXING VALVE	1" INLET	1" INLET 1/2" OUTLET	–	–	–	–	–	–	–	WATER SAVER AP3800 THERMOSTATIC MIXING VALVE (ANSI Z358.1 CERTIFIED.), 25 GPM @ 10 PSI PRESSURE DROP RATED. SET VALVE @ 85°F. UNIT TO BE PROVIDED IN CONJUNCTION WITH EMERGENCY SHOWER/EYEWASH.
F-11	SAFETY SHOWER/ EYEWASH	–	1" TEPID	2"	–	–	–	–	–	–	WATER SAVER SSBF2150 RECESSED SAFETY SHOWER AND EYE/FACE WASH STATION. INSTALLATION IN ACCORDANCE WITH MANUFACTURER AND "ADA" REQUIREMENTS. INSTALL MIXING VALVE ABOVE CEILING FOR TEMPERATURE CONTROL. MIXING VALVE SHALL MEET ANSI 2358.1 REQUIREMENTS.
4 F-15	VACUUM PUMP	–	–	–	–	–	–	–	–	1/2"	VACCU BRAND ROTARY VANE PUMP MODEL RE–9, 1/2 HP 115V MOTOR. PROVIDE 698007 SEPARATOR AND FLEXIBLE CONNECTOR. MAXIMUM PUMPING SPEED 50/60 HZ CFM 5.2/6.0, ULTIMATE PARTIAL PRESSURE WITHOUT GAS BALLAST TORR 7.5*10⁻² ULTIMATE TOTAL PRESSURE WITHOUT GAS BALLAST TORR 7.5*10 ⁻²,ULTIMATE TOTAL PRESSURE WITH GAS BALLAST TORR 4.5*10 , OIL¹CAPACITY MIN./MAX QUARTS 0.42/1.78, RATED MOTOR POWER HP0.50, MAXIMUM PERMISSIBLE RANGE OF SUPPLY VOLTAGE 120V~+5%/–10%60HZ, RATED CURRENT DURING OPERATION AT: 120V~60HZ A 2.7/2.8. PROVIDE OPERATING CONTROLS.
4 F-20	FUME HOOD UNIT	(2X) 1/2"	–	1 1/2"	1 1/4" ----- 1 1/2"	–	(2X) 3/4"	–	(2X) 3/4"	(2X) 3/4"	FUME HOOD UNIT WITH (2) GAS, (2) AIR AND (2) VACUUM OUTLETS/INLET. CUP SINK WITH CW SPIGOT AND CW GOOSENECK FAUCET. UNIT PROVIDED BY OTHERS. PC TO ROUGH IN UTILITIES AND MAKE FINAL CONNECTIONS. PROVIDE CUP SINK WITH P–TRAP.

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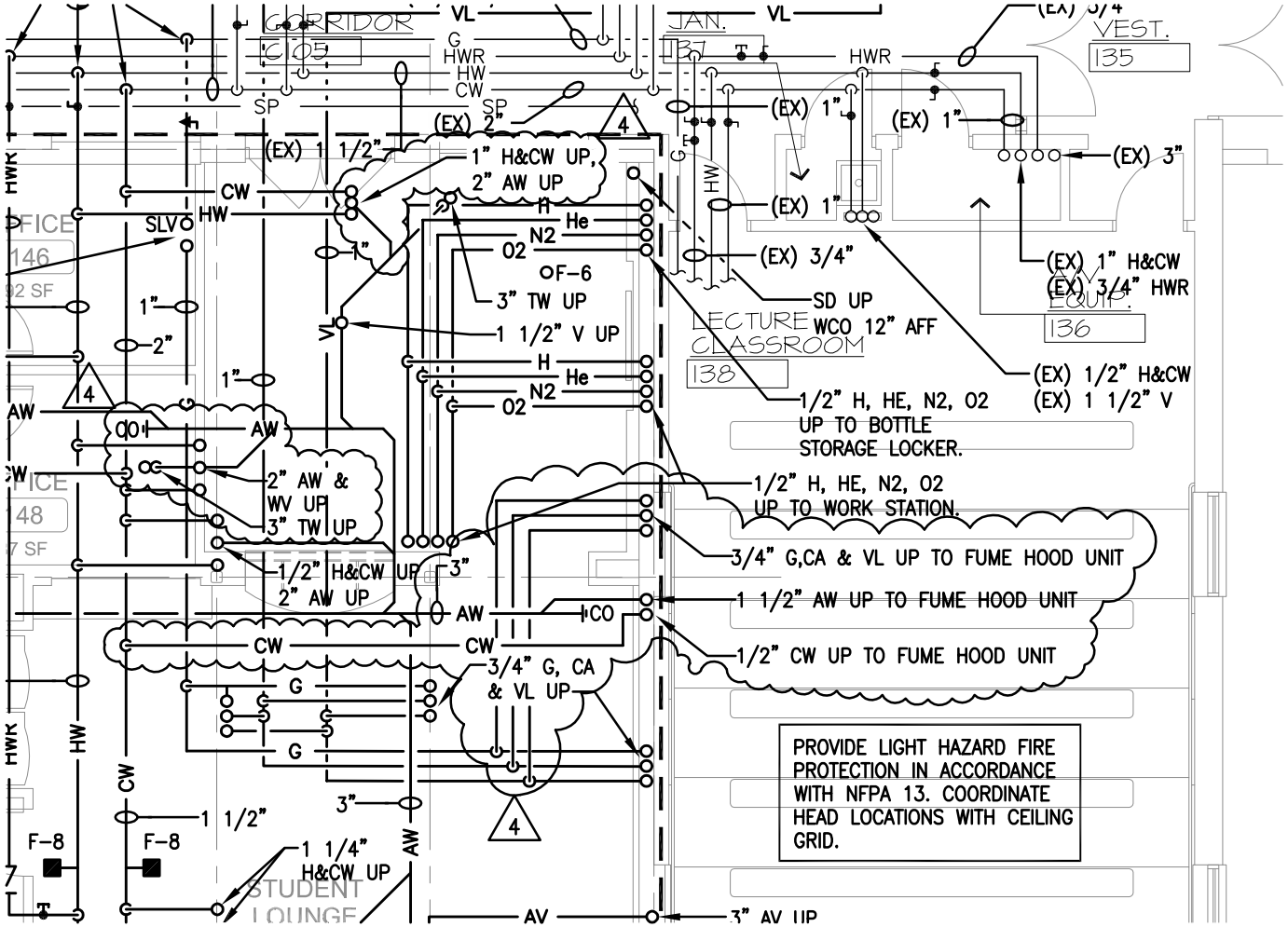
DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD

FIRST FLOOR PLAN - NEW WORK
BELOW SLAB
PLUMBING & FIRE PROTECTION

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	CBH
Supplemental Type	SK-P-01

Copyright: Tetra Tech

Bar Measures 1 inch



1
PFP-202

FIRST FLOOR PLAN - ABOVE SLAB - PLUMBING

SCALE: 1/8"=1'-0"

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DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD
FIRST & SECOND FLOOR PLANS - NEW WORK
ABOVE SLAB
PLUMBING

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	CBH
Supplemental Type	SK-P-02

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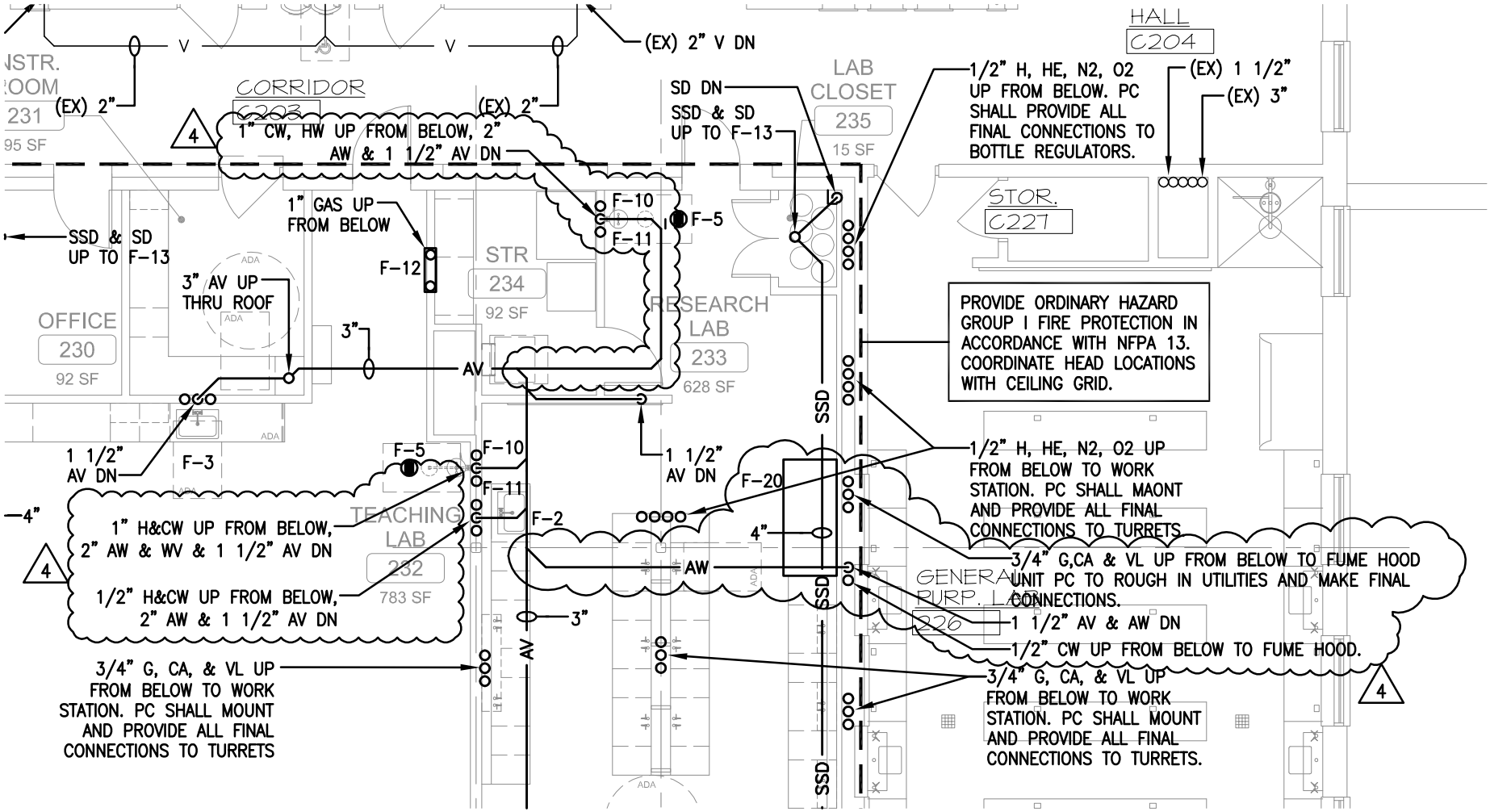
Bar Measures 1 inch



1 PFP-202 SECOND FLOOR PLAN - ABOVE SLAB - PLUMBING

SCALE: 1/8"=1'-0"

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DSU PROJECT #FD-14-009
BAKER ANNEX 2 STORY ADDITION/COURTYARD
FIRST & SECOND FLOOR PLANS - NEW WORK
ABOVE SLAB
PLUMBING

Project No.:	200-98424-14001
Date:	05-04-2015
Designed By:	CBH
Supplemental Type	SK-P-03

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Bar Measures 1 inch