COMMUNITY COLLEGE OF ALLEGHENY COUNTY
PURCHASING DEPARTMENT
800 ALLEGHENY AVENUE, PITTSBURGH, PA 15233

ADDENDUM 2
BID PROPOSAL NO. 1148
BIOLOGY LAB RENOVATIONS – BOYCE CAMPUS
GENERAL, ELECTRICAL, HVAC, AND PLUMBING
MAY 7, 2026

The following additional information is hereby made a part of this bid:
****

The bid due date has been moved to Friday, May 15, 2026, at 2:00 p.m.

See the accompanying spreadsheet with various questions and answers. Spaces in white are for questions that are still being researched. Answers to those will follow in the near future.

See also attachments:

- A501 Casework Details
- Boyce Room Locations
- Boyce Biology Lab Potential Staging Areas
- Section 064023 Interior Architecture Woodwork Specifications
- Section 221300 Faculty Sanitary and Vent Piping

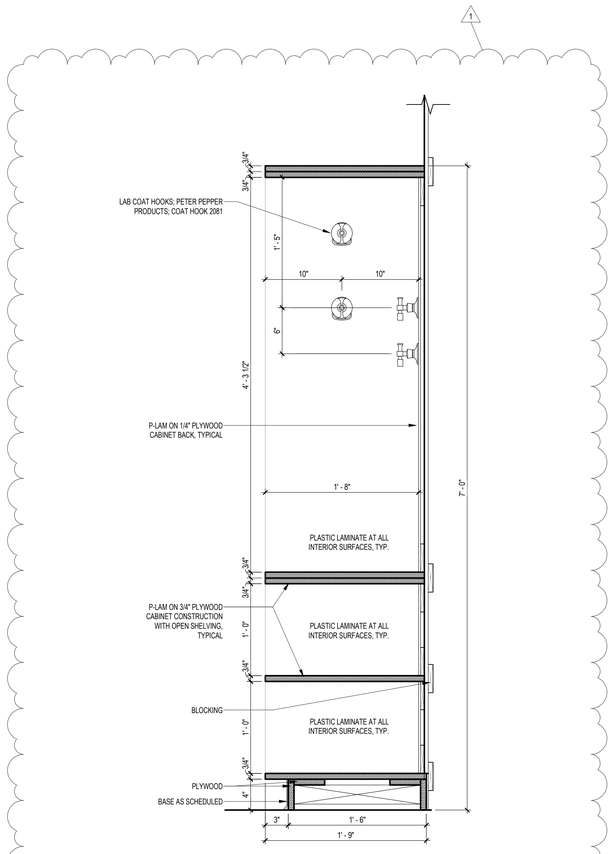
End of Addendum 2

****

Sign addendum and return to the College with your response.

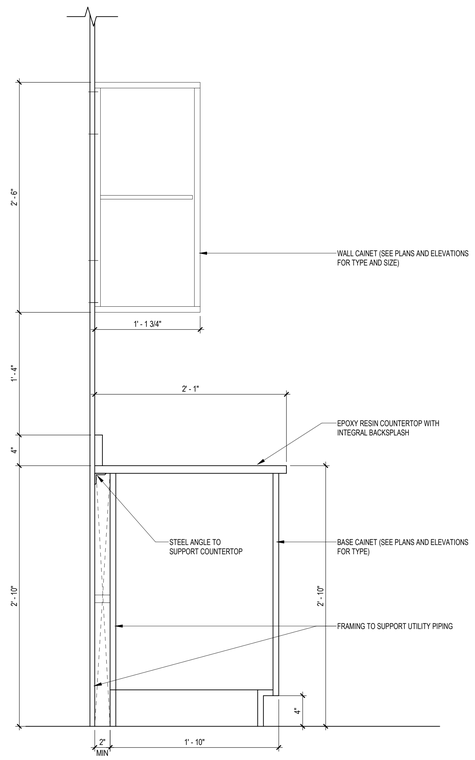
_____ _____

Company Name Bidder's Signature



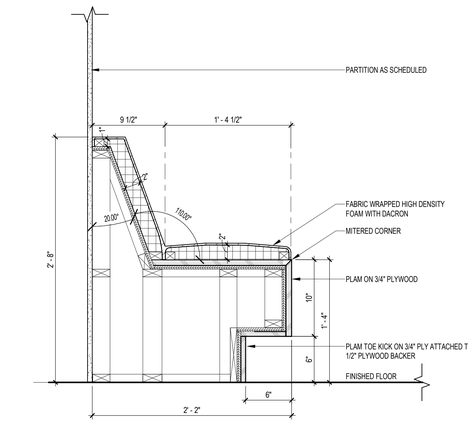
6 LAB CUBBY CABINET

1 1/2" = 1'-0"



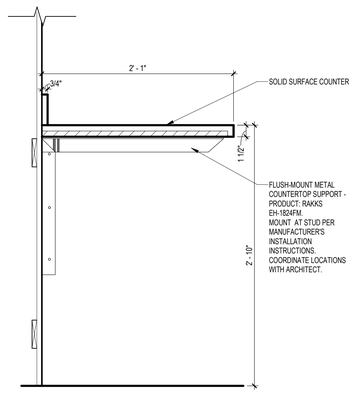
5 TYPICAL WALL AND BASE CABINET

1 1/2" = 1'-0"



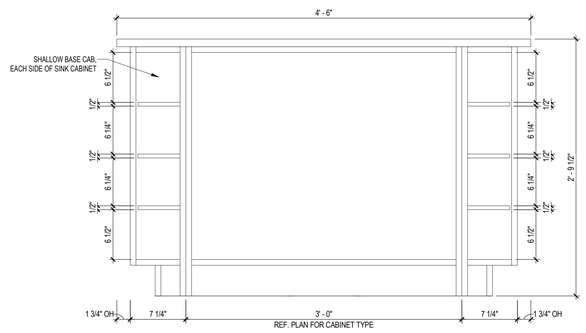
4 BUILT IN BENCH DETAIL

1 1/2" = 1'-0"



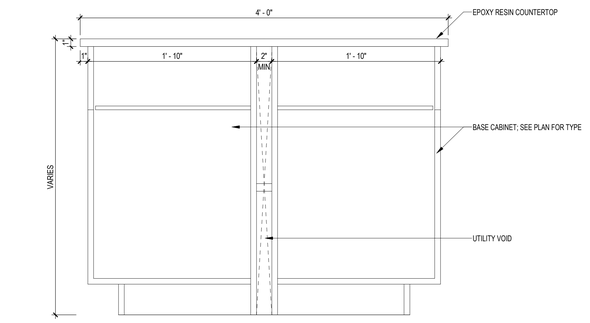
3 COUNTERTOP SUPPORT BRACKET

1 1/2" = 1'-0"



2 STUDENT LAB BENCH DETAIL

1 1/2" = 1'-0"



1 TYPICAL PENNINSULA CABINETS

1 1/2" = 1'-0"

AE WORKS
418 BEAVER STREET
SEWICKLEY, PA 15143
PH: 412.287.7333
www.aeworks.com

CLIENT:
COMMUNITY COLLEGE OF ALLEGHENY COUNTY

595 Beatty Rd
Monroeville, PA 15146

SUBMISSION:
BID DOCUMENTS

NO	DATE	REVISION
1	5/5/2026	Addendum 2

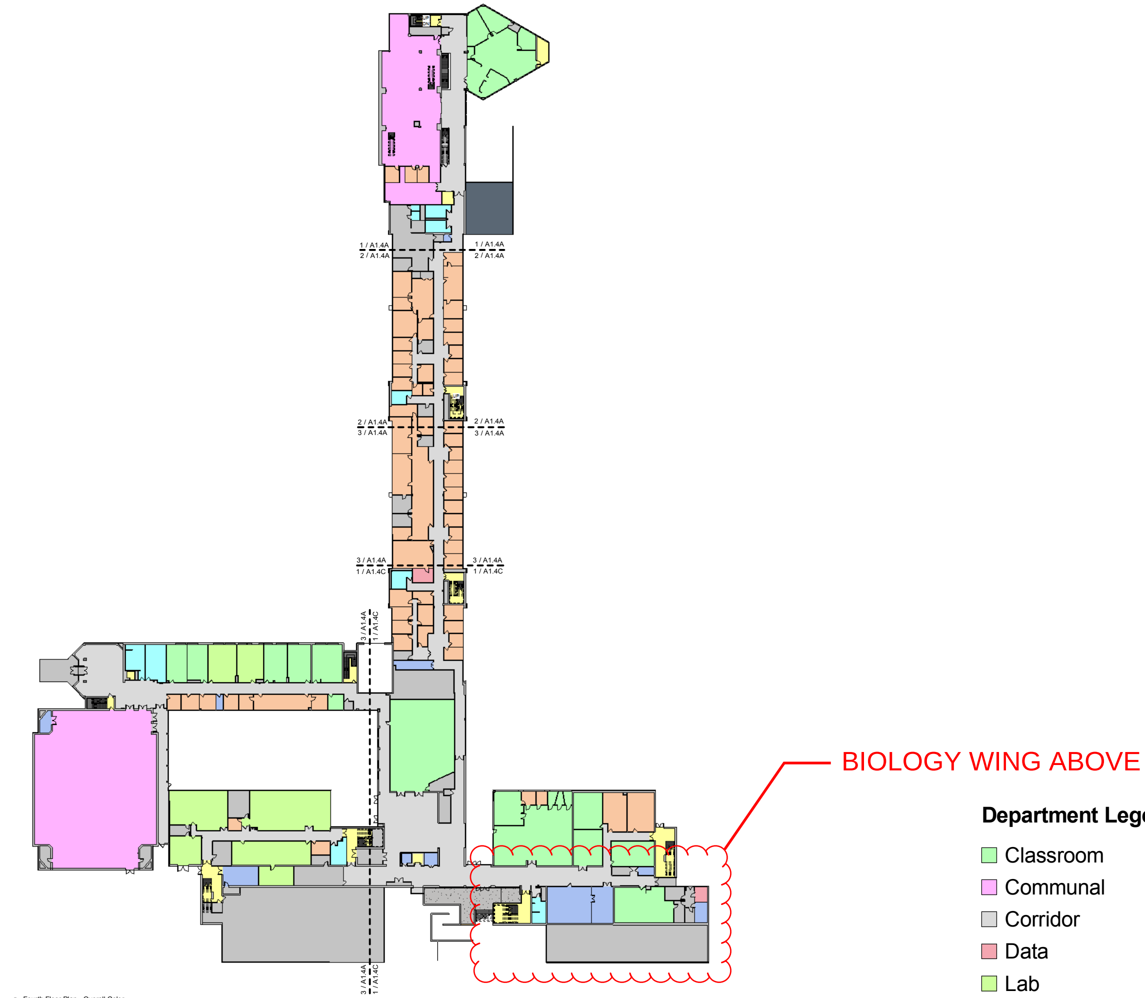
PROFESSIONAL:

PROJECT NAME:
BIOLOGY LAB RENOVATIONS
BOYCE CAMPUS

595 Beatty Rd,
Monroeville, PA 15146

DRAWING TITLE:
CASEWORK DETAILS

DRAWN BY: AD
CHECKED BY: FS
PROJ. NO: CCAC-006
DATE: 04.14.2026
DRAWING NO: **A501**



Fourth Floor Plan - Overall Color
1" = 30'-0"

Department Legend

- Classroom
- Communal
- Corridor
- Data
- Lab
- Maintenance
- Office
- Restroom
- Vertical Circulation
- Calculating...

cadnetics
measure | draft | model | visualize
400 FOSTER PLAZA
SUITE 102
PITTSBURGH, PA 15220
P:412.642.2701
F:412.642.2703

Architects/Engineers/Consultants

CCAC Boyce Campus

Professional Stamp

Revisions

Project Information

Sheet Issue Date
06/20/18

Current Revision Date

Project Number
18098

Sheet Information

Fourth Floor Plan - Color

A2.4

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Drawn By: Author Checked By: Checker

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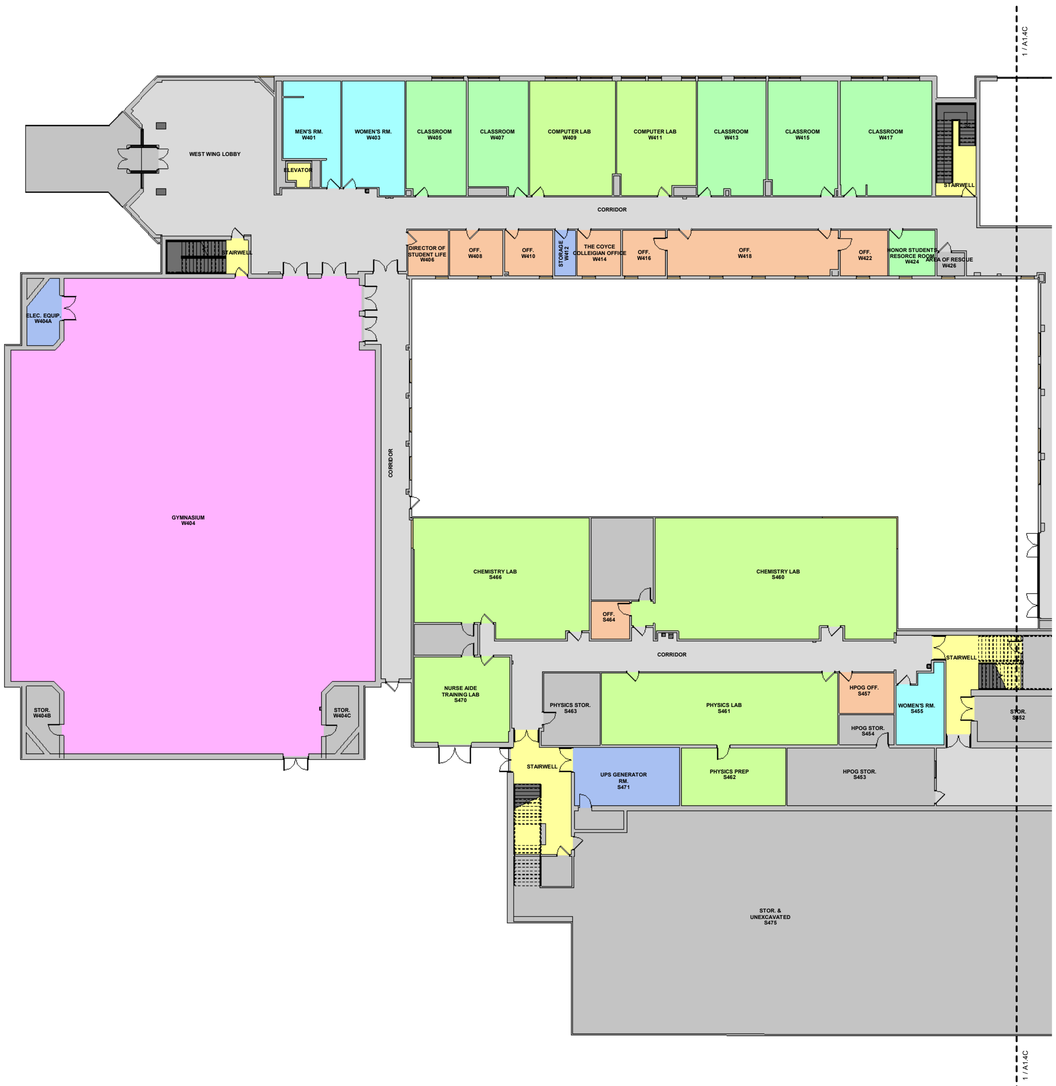

1 Fourth Floor Enlarged Plan - 4D Color

Department Legend

- Classroom
- Communal
- Corridor
- Lab
- Maintenance
- Office
- Restroom
- Vertical Circulation
- Calculating...

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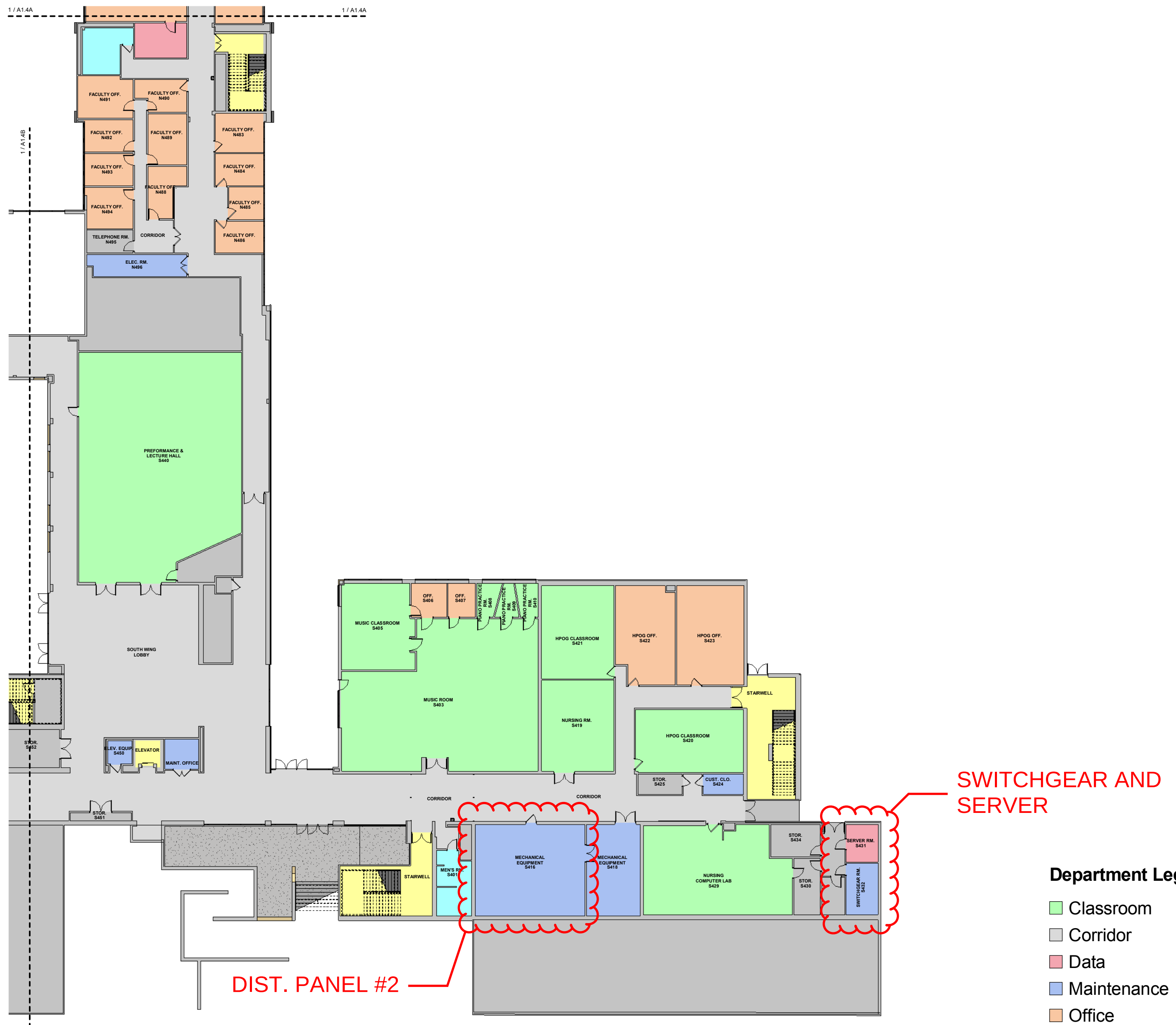
Fourth Floor Plan - Enlarged Color Plans

18098

06/28/18

A2.4B



1 Fourth Floor Enlarged Plan - 4E Color
1" = 10'-0"

Department Legend

- Classroom
- Corridor
- Data
- Maintenance
- Office
- Restroom
- Vertical Circulation
- Calculating...

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Sheet Issue Date 06/28/18

Project Number 18098

Fourth Floor Plan - Enlarged Color Plans

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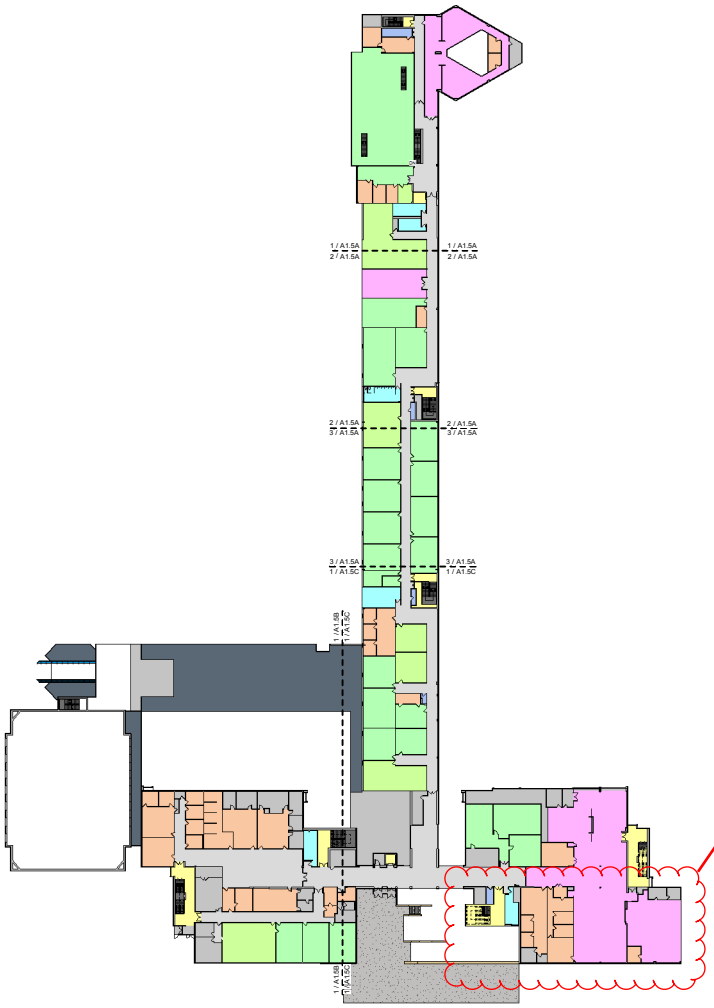

Fifth Floor Plan

Department Legend

- Classroom
- Communal
- Corridor
- Lab
- Maintenance
- Office
- Restroom
- Vertical Circulation
- Calculating...

CCAC Boyce Campus

Fifth Floor Plan - Color

A2.5

1 Fifth Floor Enlarged Plan - 5D Color

Department Legend

- Classroom
- Corridor
- Lab
- Office
- Restroom
- Vertical Circulation
- Calculating...

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Revisions

Project Information
Sheet Issue Date: 06/28/18
Current Revision Date:
Project Number: 18098

Sheet Information
Fifth Floor Plan - Enlarged Color Plans

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Department Legend

- Classroom
- Communal
- Corridor
- Lab
- Maintenance
- Office
- Restroom
- Vertical Circulation
- Calculating...

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Revisions

Project Information

06/28/18

18098

Sheet Information

Fifth Floor Plan - Enlarged Color Plans

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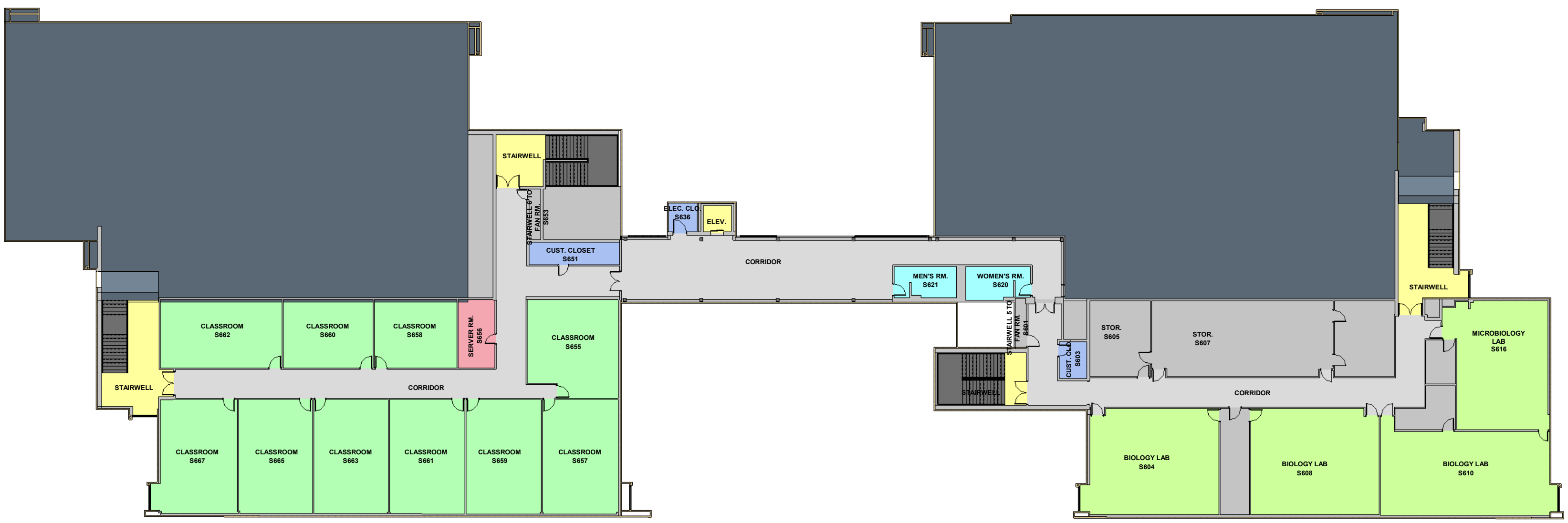

1 Sixth Floor Plan - Color

Department Legend

- Classroom
- Corridor
- Data
- Lab
- Maintenance
- Restroom
- Vertical Circulation
- Calculating...

cadnetics

Drawn By: Author Checked By: Checker

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CCAC Boyce Campus

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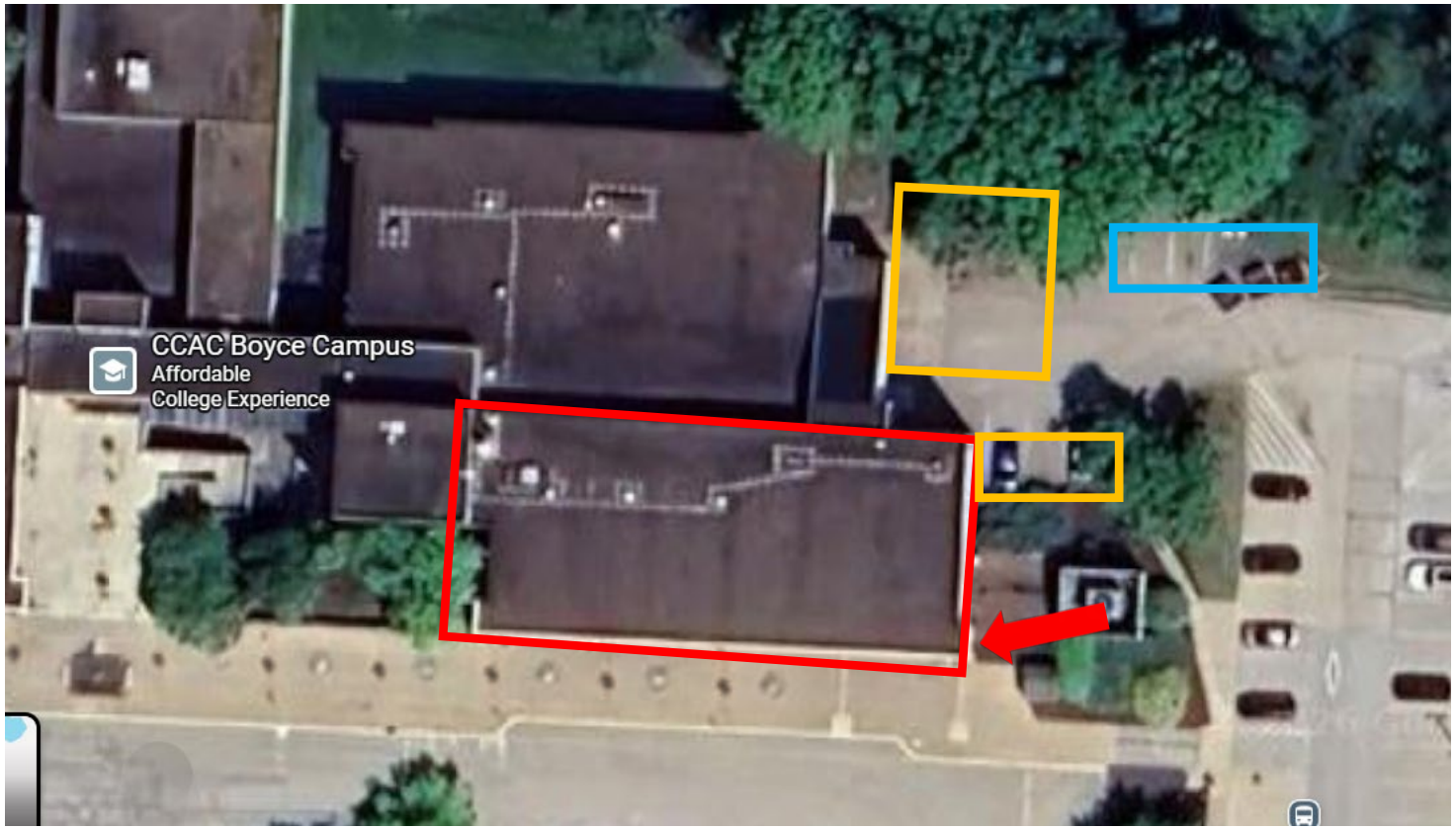
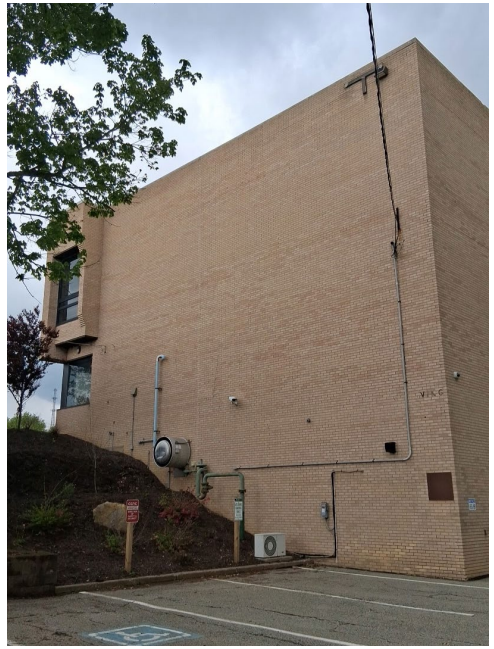
Sixth Floor Plan - Color

A2.6

CCAC
Boyce Biology Lab Project





Location of Project

Location for Staging (Tentative)

Location for Dumpsters Tentative)

Only Window Potential Access

NK 5-4-26

SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

1. GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Plastic-laminate casework.
   2. Plastic laminate bench with fabric.
   3. Shop finishing of interior woodwork.

B. Related Sections include the following:
   1. Section 06 1053 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.

1.2 PREINSTALLATION MEETING

A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.3 DEFINITIONS

A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 ACTION SUBMITTALS

A. Product Data: For solid surfacing material, bonding adhesive, fire-retardant-treated materials, hardware and accessories.
   1. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
   1. Casework Shop Drawings:
      a. Show details full size.
      b. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
   2. Countertop Shop Drawings:
      a. Include plans, sections, details, and attachments to other work. Detail fabrication and installation, including field joints and seam layouts.
      b. Show locations and sizes of cutouts and holes for items installed in countertops and metal wall panels.

C. Samples: 6 inches square of the following materials.
   1. Plastic laminates.

1.5 INFORMATIONAL SUBMITTALS

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

B. Qualification Data: For Installer and fabricator.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

B. Installer Qualifications: Installer to be fabricator of products or to be acceptable to the fabricator.

C. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this Section.

D. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

E. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver woodwork until painting and similar operations that could damage woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Project Conditions" Article.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install woodwork 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.

B. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
   1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed and indicate measurements on Shop Drawings.
   2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating woodwork without field measurements. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

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

2. PRODUCTS

2.1 MATERIALS

A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.

B. Wood Products: Comply with the following:

1. Hardwood Plywood:
   a. Comply with HPVA HP-1.
   b. Core: Combination core veneer core with MDF crossbands. Flat, smooth substrate free of core voids, warp, or telegraphing defects.

2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1. Maple Veneer Plywood.

C. Thermoset Decorative Panels: Medium-density fiberboard finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
   1. Provide PVC or polyester edge banding complying with LMA EDG-1 on components with exposed or semiexposed edges.

D. High-Pressure Decorative Laminates (designated on drawings**)**:
   1. High-Pressure Decorative Laminates: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
   2. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative and solid metal laminates by one of the following:
      a. Formica Corporation.
      b. Lab Designs.
      c. Wilsonart International; Div. of Premark International, Inc.
   3. Color and Texture: As selected by Architect from manufacturers full range; refer to Finish Schedule on Drawings.

2.2 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this Article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified.
   1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
   3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Comply with performance requirements of AWPA C20 (lumber) and AWPA C27 (plywood). Use the following treatment type:
   1. Interior Type A: Low-hygroscopic formulation.
   2. Kiln-dry materials before and after treatment to levels required for untreated materials.

2.3 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.

B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

C. Bench Fabric wrapped high density foam with Dacron. Color: Refer to Finish Schedule on Drawings

D. Panel Clips: Aluminum Z-clips panel hanger clips equal to Monarch MF375.
   1. Material: 6063-T6 aluminum.
   2. Lift Off: 3/8 inch.
   3. Projection: 1/4 inch.
   4. Width: 2 inch.

E. Adhesives, General: Do not use adhesives that contain urea formaldehyde.
   1. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement.
      a. Adhesive for Bonding Edges: Hot-melt adhesive.
   2. VOC Limits for Installation Adhesives and Glues: Use installation adhesives that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. Wood Glues: 30 g/L.
      b. Contact Adhesive: 250 g/L.

2.4 FABRICATION, GENERAL

A. Interior Woodwork Grade: Unless otherwise indicated, provide Premium-grade interior woodwork complying with referenced quality standard.

B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.

C. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
   1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4 Inch Thick or Less: 1/16 inch.
   2. Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.

D. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

E. Install glass to comply with applicable requirements in Division 08 Section "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

F. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
   1. Seal edges of openings in countertops.

2.5 PLASTIC-LAMINATE

A. Grade: Premium.

B. AWI Type of Cabinet Construction: Flush overlay unless otherwise indicated.

C. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate complying with the following requirements:
   1. Horizontal Surfaces Other Than Tops: Grade HGS.
   2. Vertical Surfaces: Grade VGS.
   3. Edges: PVC T-mold matching laminate in color, pattern, and finish; 3mm.

D. Materials for Semiexposed Surfaces:
   1. Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
      a. Edges of Plastic-Laminate Shelves: PVC T-mold matching laminate in color, pattern, and finish; 3mm.
   2. Drawer Sides and Backs: Solid-hardwood lumber or thermoset decorative panels.
   3. Drawer Bottoms: Hardwood plywood or thermoset decorative panels.

E. Concealed Backs of Panels with Exposed Plastic Laminate Surfaces: High-pressure decorative laminate, Grade BKL.

2.6 SOLID SURFACING COUNTERTOPS

A. Solid Surface Material: Homogeneous-filled plastic resin complying with ISFA 2-01.
   1. Type: Provide Standard type or Veneer type made from material complying with requirements for Standard type, as indicated unless Special Purpose type is indicated.
   2. Colors and Patterns: As selected by Architect from manufacturer’s full range

B. Plywood: Hardwood plywood complying with HPVA HP-1 with combination core. Flat, smooth substrate free of core voids, warp, or telegraphing defects.

C. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."

D. Countertops: 3/4-inch thick, solid surface material with front edge built up with same material.

E. Backsplashes: 3/4-inch thick, solid surface material.

F. Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

2.7 SHOP FINISHING

A. Grade: Provide finishes of same grades as items to be finished.

B. Shop Priming: Shop apply the prime coat including backpriming for items specified to be field finished. Refer to Division 09 painting Sections for material and application requirements.

C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural woodwork, as applicable to each unit of work.
   1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to back of paneling and to end-grain surfaces. Concealed surfaces of plastic-laminate-clad woodwork do not require backpriming when surfaced with plastic laminate, backing paper, or thermoset decorative panels.

3. EXECUTION

3.1 PREPARATION

A. Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.

B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.

C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8 inch in 96 inches.

D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

E. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation.

F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood blocking, or hanging strips.

G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
   1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
   2. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
   3. Secure backsplashes to tops with concealed metal brackets at 16 inches o.c. and to walls with adhesive.
   4. Seal space between backsplash and wall with sealant specified in Division 07 Section "Joint Sealants."

H. Metal Wall Panels:
   1. Locate and place decorative formed metal items level and plumb and in alignment with adjacent construction. Perform cutting, drilling, and fitting required to install decorative formed metal in shop; field cutting is not allowed.
      a. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
   2. Use concealed anchorages where possible.

3. Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joint fillers as indicated.

I. Glazing:
1. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
2. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
3. Install setting blocks in channels, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer.
4. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
5. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
6. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

3.3 ADJUSTING AND CLEANING

A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.

B. Clean, lubricate, and adjust hardware.

C. Clean woodwork on exposed and semiexposed surfaces.

END OF SECTION 064023 - INTERIOR ARCHITECTURAL WOODWORK

SECTION 221300 - FACILITY SANITARY AND VENT PIPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section includes acid (chemical) waste and vent piping serving laboratory sinks, equipment, and all necessary accessories as designated in this section.

B. Work under this section includes modification, removal, and replacement of existing acid waste/vent piping systems serving laboratory sinks, including reconnection to existing systems.

C. Non-acid sanitary waste systems are specified in Section 221316.

D. A complete listing of common acronyms and abbreviations are included in Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

E. Systems shall be designated for corrosive laboratory waste including acids, reagents, and chemical discharge.

1.2 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Where conflicts occur these specifications and the VHA standard will govern.

B. American Society of Mechanical Engineers (ASME):

A13.1-2007	Identification of Piping Systems
A112.36.2M-1991	Cleanouts
A112.6.3-2019	Floor and Trench Drains
B1.20.1-2013	Pipe Threads, General Purpose (Inch)
B16.1-2015	Gray Iron Pipe Flanges and Flanged Fittings Classes 25, 125, and 250
B16.4-2016	Grey Iron Threaded Fittings Classes 125 and 250
B16.39-2014	Malleable Iron Threaded Pipe Unions Classes 150, 250, and 300
B18.2.1-2012	Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)

C. American Society of Sanitary Engineers (ASSE):

1001-2017	Performance Requirements for Atmospheric Type Vacuum Breakers
1018-2001	Performance Requirements for Trap Seal Primer Valves – Potable Water Supplied
1044-2015	Performance Requirements for Trap Seal Primer Devices – Drainage Types and Electronic Design Types
1079-2012	Performance Requirements for Dielectric Pipe Unions

D. American Society for Testing and Materials (ASTM):

A53/A53M-2018	Standard Specification for Pipe, Steel, Black And Hot-Dipped, Zinc-coated, Welded and Seamless
B32-2008(R2014)	Standard Specification for Solder Metal
B43-2015	Standard Specification for Seamless Red Brass Pipe, Standard Sizes
F1412	Standard specification for Polyolefin (Polypropylene) Drainage Systems for chemical waste
F1673	Joining of Polyolefin Piping System.
F402-2018	Standard Practice for Safe Handling of Solvent Cements, Primers, and Cleaners Used for Joining Thermoplastic Pipe and Fittings
F477-2014	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
F1545-2015e1	Standard Specification for Plastic-Lined Ferrous Metal Pipe, Fittings, and Flanges

E. International Code Council (ICC):

IPC-2018	International Plumbing Code

F. Manufacturers Standardization Society (MSS):

G. National Fire Protection Association (NFPA):

70-2020	National Electrical Code (NEC)

H. Underwriters' Laboratories, Inc. (UL):

508-99 (R2013)	Standard For Industrial Control Equipment

1.3 SUBMITTALS

A. Submittals, including number of required copies, shall be submitted in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES.

B. Information and material submitted under this section shall be marked “SUBMITTED UNDER SECTION 22 13 00, FACILITY SANITARY AND VENT PIPING”, with applicable paragraph identification.

C. Manufacturer's Literature and Data including: Full item description and optional features and accessories. Include dimensions, weights, materials, applications, standard compliance, model numbers, size, and capacity.

1. Piping (including acid waste and vent piping material)
2. Floor Drains.
3. Cleanouts.
4. Penetration Sleeves.
5. Pipe Fittings.
6. Traps.

D. Detailed shop drawing of clamping device and extensions when required in connection with the waterproofing membrane or the floor drain.

E. Complete operating and maintenance manuals including wiring diagrams, technical data sheets, information for ordering replaceable parts, and troubleshooting guide:

1. Include complete list indicating all components of the systems.
2. Include complete diagrams of the internal wiring for each item of equipment.
3. Diagrams shall have their terminals identified to facilitate installation, operation and maintenance.

F. Completed System Readiness Checklist provided by the CXA and completed by the Contractor, signed by a qualified technician and dated on the date of completion, in accordance with the requirements of Section 22 08 00, COMMISSIONING OF PLUMBING SYSTEMS.

1.4 QUALITY ASSURANCE

A. A. Bio-Based Materials: For products designated by the USDA's bio-based Bio-Preferred Program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specifications section. For more information regarding the product categories covered by the Bio-Preferred Program, visit http://www.biopreferred.gov.

1.5 AS-BUILT DOCUMENTATION

A. Comply with requirements in Paragraph "AS-BUILT DOCUMENTATION" of Section 22 05 11, COMMON WORK RESULTS FOR PLUMBING.

PART 2 - PRODUCTS

2.1 ACID WASTE AND VENT PIPING SYSTEM

A. GENERAL:

Provide a complete acid waste and vent piping system for laboratory applications. System shall be specifically manufactured for chemical drainage service.

B. ACCEPTABLE MATERIALS:

1. POLYPROPYLENE (PP) :

a) Pipe fittings shall be chemical-resistant polypropylene, flame retardant, schedule 40 or 80.
b) System shall conform to ASTM F1412 or manufacturer's proprietary engineered system.
c) Rated for continuous service temperatures up to 180 degrees F minimum.

2. POLYVINYLIDENE FLUORIDE (PVDF) :

a) Provide where higher temperature or aggressive chemical resistance is required.
b) Rated for temperatures up to 280 degrees F.

C. JOINTS :

1. Polypropylene piping shall be joined by heat fusion (butt fusion or electrofusion).
2. Fusion shall be performed using manufacturer-approved equipment and procedures.
3. Solvent cement joints are not permitted.

D. FITTINGS :

1. Fittings shall be of same material and manufacturer as piping system.
2. Use drainage pattern fittings with long sweep bends.

E. PROHIBITED MATERIALS :

1. Cast iron, copper, brass, steel, and standard PVC piping shall be NOT be used.
2. No mixing of materials within the acid waste system.

F. TRANSITIONS :

1. Transition to Sanitary system shall occur only after neutralization where required by code.
2. Provide compatible transition fittings approved by manufacturer.

G. IDENTIFICATION :

1. Identify piping per ASME A13.1 as “ACID WASTE”

2.2 CLEANOUTS

A. Cleanouts for acid waste systems shall be constructed of polypropylene or material compatible with the acid waste piping system.

B. Provide threaded or bolted access fittings rated for chemical service.

C. Cast iron cleanouts shall not be used in acid waste systems.

2.3 FLOOR DRAINS

A. Drains receiving acid waste shall be constructed of chemical-resistant materials.

B. Acceptable Materials :

a) Polypropylene (PP) floor drains and funnel drains with integral trap.
b) PVDF drains where required for high temperature or aggressive chemicals.

C. Acid-resistant coated cast iron drains shall only be used where indirect waste is confirmed to be non-corrosive.

D. Funnel drains for laboratory sinks and equipment shall be polypropylene with removable strainer and integral trap.

E. Drains shall be compatible with acid waste piping system and provided by same manufacturer where possible.

2.4 TRAPS

A. Traps for acid waste systems shall be polypropylene or PVDF.

B. Metal traps are not permitted.

C. Traps shall be integral or fusion-welded to system where possible.

2.5 PENETRATION SLEEVES

A. Sleeves and penetration fittings shall be compatible with acid waste piping system.

B. Provide polypropylene or lined sleeves where piping passes through slabs.

C. Metal sleeves in contact with acid piping shall be isolated to prevent corrosion.

PART 3 - EXECUTION

3.1 PIPE INSTALLATION

A. Install acid waste piping in accordance with manufacturer’s written instructions.

B. Provide expansion compensation for thermal movement..

C. Provide continuous slope per IPC.

D. Install piping free of stress, with proper alignment and support spacing per manufacturer requirements.

E. Protect piping from UV exposure where required.

F. DO NOT install acid waste piping using standard DWV installation practices.

3.2 TESTS

A. Test acid waste piping in accordance with manufacturer’s recommendations.

B. Hydrostatic testing may be limited based on material: follow manufacturer limits.

C. Inspect all fusion joints for proper weld integrity.

D. Verify system is leak-free prior to operation.

3.3 DEMONSTRATION AND TRAINING

A. Provide services of manufacturer’s technical representative for 4 hours to instruct each facility personnel responsible in operation and maintenance of the system.

END OF SECTION 221300