ADDENDUM NO. 01

February 21, 2025

CHS 2025 Classroom Renovations
520 E. Main St.,
Carmel, IN 46032

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications and the Drawings dated February 3, 2025, by Fanning Howey Associates Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 1-1 and attached Fanning/Howey Associates, Inc. Addendum No.01, dated February 20, 2025, consisting of 2 pages and 13 drawings.

A. SPECIFICATION SECTION 01 12 00 MULTIPLE CONTRACT SUMMARY

3.03 Bid Categories
A. Bid Category 1 – General Trades

Clarifications

Revise

1. Disconnect and relocate onsite existing ranges. Include reinstall of these ranges shown on Sheet A-101.

Add

3. Contact Justin Erghott with Siemens for temperature controls (317) 292-8043, email: jerghott@siemens.com.

4. Include 100 mh carpenter allowance to be used at the construction manager's discretion.

A D D E N D U M N O. 1

CHS – EMT/CNA Classroom Remodel – 224112.00
CHS Rooms C147/C149 – 224113.00
CHS – Home Economics Hoods A105 – 224114.00

Carmel Clay Schools
Carmel, Indiana

Index of Contents

Addendum No. 1, 7 Items, 2 pages
New Project Manual Sections: (Refer to Item 1 and 2 of Addendum)
CHS – EMT/CNA Classroom Remodel New Drawing Sheet: P-11B
CHS – EMT/CNA Classroom Remodel Revised Drawing Sheets: Index A, AP101, A-11B, A-11F, A-501, IF-100, AF601, MV11F, E-001, E-11B, and E-11F
CHS Rooms C147/C149 Revised Drawing Sheets: IN101

Date: February 20, 2025

FANNING/HOWEY ASSOCIATES, INC.
ARCHITECTS/ENGINEERS/CONSULTANTS

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. 1 to Drawings and Project Manual, dated February 3, 2025, for Carmel Clay Schools, 5201 E. Main Street, Carmel, Indiana 46033; as prepared by Fanning/Howey Associates, Inc., Indianapolis, Indiana. This Addendum shall hereby be and become a part of the Contract Documents the same as if originally bound thereto.

The following clarifications, amendments, additions, revisions, changes, and modifications change the original Contract Documents only in the amount and to the extent hereinafter specified in this Addendum.

Each bidder shall acknowledge receipt of this Addendum in his proposal or bid.

NOTE: Bidders are responsible for becoming familiar with every item of this Addendum. (This includes miscellaneous items at the very end of this Addendum.)

RE: ALL BIDDERS

ITEM NO. 1. PROJECT MANUAL, TABLE OF CONTENTS

A. Page 00 01 10-1, DIVISION 08: Add Section 08 12 13 – Hollow Metal Frames.

B. Page 00 01 10-2, Add Division 22: Add Sections as follows:

Division 22 – Plumbing

22 00 02	Work in Existing Buildings
22 05 00	Common Work Results for Plumbing
22 05 01	Basic Plumbing Materials and Methods
22 05 23	General-Duty Valves for Plumbing Piping
22 05 29	Hangers and Supports for Plumbing Piping and Equipment
22 07 00	Plumbing Insulation
22 11 16	Domestic Water Piping
22 13 16	Sanitary, Waste, and Vent Piping System

C. Page 00 01 10-2, Add Division 27: Add Sections as follows:

Division 27 – Communications

27 01 11	Demonstration, Training and Warranty of Communications Systems
27 05 00	Common Work Results for Communications
27 05 28	Pathways for Communications Systems
27 05 53	Identification for Communications Systems
27 15 17	Communications Copper Horizontal Cabling (Augmented Cat 6A)
27 51 17	Sound Reinforcement System

ITEM NO. 2. NEW PROJECT MANUAL SECTIONS

A. New Project Manual Sections are included with and hereby made a part of this Addendum.

08 12 13 – Hollow Metal Frames

22 00 02	Work in Existing Buildings
22 05 00	Common Work Results for Plumbing
22 05 01	Basic Plumbing Materials and Methods
22 05 23	General-Duty Valves for Plumbing Piping
22 05 29	Hangers and Supports for Plumbing Piping and Equipment

22 07 00 Plumbing Insulation
22 11 16 Domestic Water Piping
22 13 16 Sanitary, Waste, and Vent Piping System

27 01 11 Demonstration, Training and Warranty of Communications Systems
27 05 00 Common Work Results for Communications
27 05 28 Pathways for Communications Systems
27 05 53 Identification for Communications Systems
27 15 17 Communications Copper Horizontal Cabling (Augmented Cat 6A)
27 51 17 Sound Reinforcement System

ITEM NO. 3. PROJECT MANUAL, SECTION 06 20 23 – INTERIOR FINISH CARPENTRY

A. Delete 1.1, A., 2., in its entirety.

B. Delete Article 2.3 in its entirety.

ITEM NO. 4. PROJECT MANUAL, SECTION 06 41 16 – PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

A. Add 2.9, A., 9., as follows:

"9. Slope Tops: 3/4 inch plastic-laminate-faced particleboard. Provide closed ends at end of cabinet runs that do not abut a wall.
a. Provide slope tops on all tall and wall cabinets, unless a bulkhead is provided above cabinets."

CHS – EMT/CNA CLASSROOM REMODEL – 224112.00

ITEM NO. 5. NEW DRAWING SHEET

A. Drawing Sheet No. P-11B – Plumbing Plans – Unit B is included with and hereby made a part of this Addendum.

ITEM NO. 6. REVISED DRAWING SHEET

A. Drawing Sheets: Index A, AP101, A-11B, A-11F, A-501, IF-100, AF601,MV11F, E-001, E-11B, and E-11F have been revised, dated 2/20/25, and is included with and hereby made a part of this Addendum. These Drawings supersede the original documents.

CHS ROOMS C147/C149 – 224113.00

ITEM NO. 7. REVISED DRAWING SHEET

A. Drawing Sheet IN101 has been revised, dated 2/20/25, and is included with and hereby made a part of this Addendum. These Drawings supersede the original documents.

END OF ADDENDUM

SECTION 08 12 13 - HOLLOW METAL FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hollow metal frames
   2. Borrowed lites

B. Furnish materials and equipment necessary for complete installation by the following Sections:
   1. Division 04 Section “Unit Masonry”: For installing anchors in masonry construction.

C. Coordination: Refer to Division 08 Section “Glazing” to obtain glass thickness requirements. Provide properly sized stops and bead to house the specified glass according to the glass manufacturer's recommendations and as indicated.

D. Related Sections:
   1. Division 07 Section “Joint Sealants”: For caulking between metal frames and adjacent materials.
   2. Division 08 Section “Flush Wood Doors”.
   3. Division 08 Section “Door Hardware” for coordination.
   4. Division 08 Section “Glazing”.
   5. Division 09 Section Interior Painting**.**

1.2 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI A250.8.

1.3 COORDINATION

A. Coordinate installation of anchorages for standard steel frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of frame specified, including details of construction, materials, dimensions, hardware preparation, label compliance, and finishes.

B. Shop Drawings: Show elevations and details of each door frame type, wall opening construction details, weatherstripping, and finish requirements.
   1. Provide schedule of frames using same reference numbers for details and openings as those on Contract Drawings and Schedules.
   2. Show details of conduit and preparation for electrified door hardware and controls.

1.5 QUALITY ASSURANCE

A. Openings shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and Local Regulations. Where openings, in the opinion of the supplier/manufacturer, do not conform, the A/E shall be notified.

B. Smoke Control Door Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL1784 and installed in compliance with NFPA 105.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver frames cardboard wrapped or crated to provide protection during transit and job storage.
   1. Provide additional protection to prevent damage to finish of factory- finished frames.

B. Inspect frames on delivery for damage, and notify shipper and supplier if damage is found. Minor damages may be repaired provided refinished items match new work and are acceptable to A/E. Remove and replace damaged items that cannot be repaired as directed.

C. Store frames at building site under cover. Place units on minimum 4 inch high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

B. Door Size Field-Verification: Contractor/Frame Supplier shall note that the door sizes as listed on the door schedule, for new frames in existing openings, are approximate and are for bidding purposes only. The Contractor/Frame Supplier MUST field verify door size, frame preps, and other frame conditions prior to submission of Shop Drawings and fabrication of frames. It will be assumed, by the A/E, that the door size as indicated on the Shop Drawings has been field-verified by the Contractor/Frame Supplier. Frames shipped to the Project site that are incorrect size for the existing opening shall be the responsibility of the Contractor/Frame Supplier to replace at no additional cost to the Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
      a. Ceco Door Products; Div. of Assa-Abloy Group Company
      b. Steelcraft; Div. of Ingersoll-Rand
      c. Curries; Div. of Assa-Abloy Group Company
      d. Mesker Door Inc.
      e. The MPI Group, LLC
      f. Deansteel Manufacturing Company
      g. Security Metal Products.
      h. Door Components, Inc.
      i. Pioneer Industries
      j. Republic Doors and Frames.

B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for A/E's approval must be accompanied by the “Substitution Request Form” and complete technical data for evaluation. All materials for evaluation must be received by the Project Manager and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 PERFORMANCE REQUIREMENTS

A. Openings shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and Local Regulations. Where openings, in the opinion of the supplier/manufacturer, do not conform, the A/E shall be notified.

B. Smoke Control Door Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL1784 and installed in compliance with NFPA 105.

2.3 MATERIALS

A. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A1008, Drawing Steel, Type B; stretcher-leveled standard of flatness.

B. Frame Anchors: ASTM A879, Commercial Steel (CS), 40z (12G) coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel complying with ASTM A 1008A or ASTM A 1011, hot-dip galvanized according to ASTM A 153, Class B.

C. Inserts, Bolts, and Fasteners: Manufacturer's standard units, except hot dip zinc coated items to be built into exterior walls, complying with ASTM A153, Class C or D as applicable.

D. Shop Applied Paint: For steel surfaces, use rust-inhibitive enamel or paint, either air drying or baking, suitable as a base for specified finish paints.
1. Comply with ANSI A250.10 for acceptance criteria.

E. Glazing: Comply with requirements in Division 08 Section “Glazing.”

F. Mineral Fiber Insulation: ASTM C 665, Type 1 (blankets without membrane facing); consisting of fibers manufactured from slag or rock wood with a 6 to 16 pounds per cubic foot density; with maximum flame-spread and smoke-development indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

G. Corrosion-Resistant Coating: Spray-applied rubber- or asphalt-based automotive undercoating.

2.4 FRAME TYPES

A. General: Provide steel frames for doors, transoms, sidelights, borrowed lights, and other openings that comply with ANSI A250.8 and with details indicated for type and profile. Conceal fastenings, unless otherwise indicated.

B. Frames for interior door openings and borrowed lights shall be fabricated with 2 inch face at jambs, heads and mullions, unless otherwise indicated.
1. 0.053 inch thick (fka 16 gauge) steel, cold rolled, factory applied baked on primer, for Level 2 and Level 3 steel doors and wood doors.
2. 0.067 inch thick (fka 14 gauge) steel, cold rolled factory applied baked on primer, for Level 4 doors (provide at steel-framed partitions).
3. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
4. Construction: Full profile welded, unless otherwise noted.
5. Exposed Finish: Prime.

C. Full Profile Welded Frames: Frames for masonry and steel stud and drywall construction shall be mitered or butted and set-up and welded, "SUW", with welds on exposed surfaces, dressed smooth and flush. Provide a temporary spreader bar securely fastened to the bottom of each frame. Butt welded frames without back bend at head and jamb joint will not be acceptable.

2.5 FRAME ASSEMBLIES

A. Stops and Beads: Furnish minimum 0.032 inch thick (fka 20 gauge) sheet steel glazing beads with the hollow metal frames at transoms, side lights, interior glazed panels, and other locations where beads are indicated in pressed steel frames. Glazing beads for exterior frames shall be on the interior side of transoms and sidelights. Glazing beads for interior frames shall be located on the secure side of opening.

B. Mortar/Plaster Guards: Provide minimum 0.016 inch thick (fka 26 gauge) steel plaster guards or mortar boxes, welded to the frame, at back of door hardware cutouts where mortar or other materials might obstruct hardware operation.

C. Provide minimum 0.1495 inch thick (fka 9 MSG) hinge reinforcement, including all doors with continuous-type hinges.

D. Provide minimum 0.1046 inch thick (fka 12 MSG) frame head reinforcement for closers, surface, and concealed overhead stop and holders, removable mullions, flush bolts, and top latch of vertical rod exit devices.

E. Door Silencers: Drill stops and install 3 silencers on strike jambs of single swing frames and 2 silencers on heads of double swing frames.

F. Hollow metal frames requiring continuous gear hinges or pin-and-barrel hinges shall have a continuous mortar guard of foam or cardboard by the frame height, applied with construction adhesive or a minimum 0.016-inch thick (fka 26 gauge) steel, welded to frame, the full height of the door. Mortar guards shall be shop applied by frame supplier.

G. Frames installed in masonry shall be furnished with a field-or-shop applied corrosion-resistant coating the full depth of the frame.

2.6 FRAME ANCHORAGE

A. Wall, Floor, and Head Anchors
   1. Frames Set in New Masonry: Provide metal anchors of shapes and sizes required for the adjoining wall construction. Provide a minimum of 3 wall anchors per jamb. Frames over 7’-6” shall be provided with one additional anchor for each 24 inch or fraction thereof.
      a. Provide adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inches thick (fka 18 gauge), with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch in diameter (fka 7 WMG).
   2. Frames Set Against Previously Placed Masonry or Concrete: Punch each frame jamb and dimple countersink for not less than four 3/8 inch diameter flat head screws. For doors over 7’-6” high, punch for one additional anchor for each 24 inches or fraction thereof. Provide pipe sleeves with spacers welded into each jamb at each fastening location. Provide 3/8 inch diameter galvanized steel flat head screws with approved expansion anchors or toggles as required. After installing flat head screws, fill head of countersink screw with body filler, then sand flush with frame.
   3. Frames Set in Metal Stud Partitions: Provide a minimum of three 0.042 inch thick (fka 18 gauge) metallic coated "Z" shaped sheet metal jamb anchor clips welded in each jamb. For doors over 7’-6” high weld one additional anchor for each 24 inches or fraction thereof.
   4. Provide head anchors at door or window heads over 5 feet wide at minimum 3 feet o.c.
   5. Provide 0.067 inch thick (fka 14 gauge) minimum angle shaped floor clips welded to jambs and punched for two 3/8 inch diameter bolts each.
   6. Provide adjustable length clip angles as required.

2.7 FABRICATION

A. Fabricate steel door frame units to comply with ANSI A250.8 and be rigid, neat in appearance, and free from defects, warp, or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at the Project site.

B. Fabricate concealed stiffeners, reinforcement, edge channels, and moldings from either cold rolled or hot rolled steel (at fabricator's option).

C. Clearances for Non-Fire Rated Doors: Not to exceed 1/8 inch at jambs and heads, 3/32 inch between pairs of doors, and 3/4 inch at bottom.

D. Tolerances: Comply with SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

E. Exposed fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

F. Door Hardware Preparation: Factory prepare hollow-metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
   1. Prepare hollow metal units to receive mortised and concealed door hardware, including cutouts, steel reinforcing, drilling, and tapping in accordance with final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A250.6 and ANSI/BHMA A156.115 for preparation of hollow-metal work for hardware.
   2. Reinforce hollow metal units to receive nontemplated, mortised, and surface mounted hardware. Hardware installer shall drill and tap for surface applied hardware.

G. Stops and Moldings: Manufacturer’s standard, formed from minimum 0.032 inch thick (fka 20 gauge) steel sheet stops and moldings around glazed lites and louvers. Form corners of stops and moldings with butted or mitered hairline joints.
   1. Provide screw applied, removable, glazing stops on inside of glass, louvers, and other panels in frames.
   2. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.

2.8 STEEL FINISHES

A. General: Comply with recommendations in “Metal Finishes Manual" by Architectural and Metal Products Division of National Association of Architectural Metal Manufacturers (NAAMM) for applying and designating finishes.
   1. Finish standard steel frames after assembly.

B. Steel Surface Preparation: Clean surfaces to comply with SSPC-SP1, “Solvent Cleaning”; remove dirt, oil, grease, or other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel; comply with SSPC-SP 3, “Power Tool Cleaning,” or SSPC-SP 6/NACE No. 3, “Commercial Blast Cleaning”.

C. Factory Priming for Field Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment. Apply a smooth coat of even consistency to provide a uniform dry film thickness of not less than 0.7 mils.
   1. Shop Primer: Manufacturer’s standard, fast curing, lead and chromate free primer complying with ANSI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field applied finish paint system indicated; and providing a sound foundation for field applied topcoats despite prolonged exposure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of standard steel frames.
   1. Examine roughing-in for embedded and built-in anchors to verify actual locations of standard steel frame connections before frame installation.

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

3.2 PREPARATION

A. Remove welded in shipping spreaders installed at factory prior to setting frames.

B. Prior to installation and with Contractor-installed installation spreaders in place, adjust and securely brace standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
   1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
   2. Alignment: Plus or minus 1/16 inch, measured on jambs on a horizontal line parallel to plane of wall.
   3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
   4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.

C. Drill and tap frames to receive nontemplated mortised and surface-mounted door hardware.

3.3 INSTALLATION

A. General: Install steel frames and accessories according to shop drawings, manufacturer's data, and as specified.

B. Standard Steel Frames: Install standard steel frames for doors, sidelights, transoms, borrowed lights, and other openings, of size and profile indicated. Comply with ANSI A250.11 or NAAMM HMMA 840 as required by standards specified.
   1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
      a. At fire protection rated openings, install frames according to NFPA 80.
      b. Where frames are fabricated in sections due to shipping or handling limitations, field-splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
      c. Install frames with removable glazing stops located on secure side of opening.
      d. Install door silencers in frames before grouting.
      e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
      f. Check plumb, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
      g. Field-apply corrosion-resistant coating to backs of frames that are installed in masonry or concrete walls, where coating has not been shop applied. coverage rate, or in the case of automotive undercoating, to a minimum 1/8-inch thickness.
   2. Floor Anchors: Provide floor anchors for each jamb and mullions that extends to floor and secure with postinstalled expansion anchors.
      a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on shop drawings.

3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout as specified in Division 04 Section "Unit Masonry."
    a. Where grout is installed during masonry installation, frames shall be braced or fastened in such a way that will prevent the pressure of the grout from deforming the frame members. Grout shall be mixed to provide a 4 inch maximum slump consistency, hand troweled into place. Grout mixed to a thin “pumpable” consistency shall not be used.
        1) Refer to ANSI A 250.8 for additional information.
4. Installation Tolerances: Adjust standard steel door frames for squareness, alignment, twist, and plumb to the following tolerances:
    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

C. Glazing: Comply with installation requirements in Division 08 Section “Glazing” and with standard steel frame manufacturer’s written instructions.
1. Secure stops with countersunk flat or oval head machine screws spaced uniformly not more than 9 inches on center, and not more than 2 inches on center from each corner.

3.4 FIELD QUALITY CONTROL

A. Frames
1. Install plumb, level and true to line, secured in openings.
2. Install frames in accordance with accepted shop drawings, manufacturer's printed instructions.

B. Final Adjustment: Doors and hardware shall receive final adjustment as follows:
1. Door Contact with Silencers: Single doors shall strike a minimum of two silencers without binding lock or latch bolts in the strike plate.
2. Head, Strike and Hinge Jamb Margin: 1/8 inch.
3. Meeting Edge Clearance, Pairs of Doors: . 1/8 inch plus-or-minus 1/16 inch
4. Bolts and Screws: Leave tight and firmly seated.

C. Warped, bowed, or damaged work will be rejected and shall be replaced with new work.

D. Check and readjust operating hardware items immediately before final inspection.

E. Leave work in a complete and proper operating condition.

3.5 CLEANING

A. Clean grout and other bonding material off standard steel frames immediately after installation.

B. Prime Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air drying primer.

3.6 PROTECTION

A. After installation, protect frames from damage during subsequent construction activities.

END OF SECTION 08 12 13

SECTION 22 00 02 – WORK IN EXISTING BUILDINGS

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall provide the labor, materials, equipment, appliances, services and transportation, and perform the operations in connection with the construction and installation of the Work. Work shall be as herein specified and as denoted on the accompanying Drawings.

B. Section Includes:
   1. Cutting and patching of existing material.
   2. Protection of existing conditions.
   3. Demolition work
   4. Existing facility operation

C. This Contractor shall be responsible for cutting and patching of existing walls, roofs, floors, and ceilings required for the installation of new plumbing work. Openings shall be neatly drilled or cut.

D. Patching shall be performed by a workman skilled in the trade involved, and patch work shall match the existing surface and shall be finished in a manner completely acceptable to the Architect.

E. New Work in finished spaces of existing buildings shall be installed concealed unless directed by A/E to run exposed.

F. Contractor shall visit the Project and verify existing conditions prior to bidding.

G. Protect existing work, equipment, fixtures, furniture and systems from damage.

H. Contractor shall take necessary steps to protect the building and all interior finishes from damage during the installation of his work.

I. Contractor shall take necessary steps to protect any existing ceilings from damage during installation of his work. Where ceilings are removed, they shall be reinstalled in the same condition as they were prior to removal or shall be replaced at no expense to the Owner.

J. The Contractor(s) shall perform demolition work as shown on the Drawings and as specified herein or as may otherwise be required.
   1. Plumbing items to be removed shall be as indicated on Drawings.
   2. The Owner may select items of equipment and material he wishes to retain and these items shall be moved to the location he designates. Other items shall be removed from the premises.

K. The continuity of operation of existing facilities during construction of the new work shall be required. The actual length of time for an interruption shall be held to an absolute minimum. At least 48 hours in advance of an installation of new services, submit a specific plan to the A/E and the Owner detailing the nature and estimated duration of the interruption and the method of procedure. Do not proceed with an interruption of service without the Owner's authorization.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PLUMBING DEMOLITION

A. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
   1. Piping to be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.

2. Piping to be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Equipment to be Removed: Disconnect and cap services and remove equipment.
4. Equipment to be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
5. Equipment to be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

B. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

END OF SECTION 22 00 02

SECTION 22 05 00 - COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Transition fittings.
   2. Escutcheons.
   3. Plumbing demolition.
   4. Supports and anchorages.

1.2 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Transition fittings.
   2. Escutcheons.
   3. Supports and anchorages.

1.4 INFORMATIONAL/QUALITY ASSURANCE/CONTROL SUBMITTALS

A. Welding certificates.

1.5 QUALITY ASSURANCE

A. Steel Support Welding: Qualify processes and operators according to AWS D1.1, "Structural Welding Code – Steel."

B. Steel Pipe Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
   1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."
   2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.

C. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store PVC plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

D. Coordinate with the Division 26 Contractor regarding the location of all Switchboards and Switchgear. Piping shall not be run over or near any Switchboard or Switchgear. Piping foreign to the electrical installation whose malfunction would endanger the operation of the electrical system shall not be routed through the Main Electrical Room, shall not be routed through the Main Emergency Equipment Room, and shall not be routed through the Emergency Generator Room. The exception would be statutorily required fire protection piping.
   1. Piping should be avoided over any wall mounted electrical panel with a voltage of 120 volts or higher. Obtain written approval from Owners Representative before routing piping above an electrical panel.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
   1. ASME B16.21, nonmetallic, flat, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
      a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
      b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
   2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

C. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

E. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

F. Welding Filler Metals: Comply with AWS D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

G. Solvent Cements for Joining Plastic Piping:
   1. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

2.4 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.
   1. Manufacturers:
      a. Fernco
      b. Mission
   2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
   3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
   4. Aboveground Pressure Piping: Pipe fitting.

B. Plastic-to-Metal Transition and Adaptor Fittings: PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
   1. Manufacturers:
      a. Fernco
      b. Mission

2.5 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Cast-Brass Type: With set screw.
   1. In Finished Spaces: Polished chrome-plated.

C. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.
   1. Finish: Polished chrome-plated.

D. One-Piece, Stamped-Steel Type: With spring clips and chrome-plated finish.

PART 3 - EXECUTION

3.1 PLUMBING DEMOLITION

A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.
   1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material. Removed shall mean back the branch connections.
   2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
   3. Equipment to Be Removed: Disconnect and cap services and remove equipment and all associated equipment and apparatuses..
   4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
   5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping to permit valve servicing.

G. Install piping at indicated slopes.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Install piping to allow application of insulation.

K. Select system components with pressure rating equal to or greater than system operating pressure.

L. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:
   1. New Piping:
      a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
      b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
      c. Insulated Piping: One-piece, stamped-steel type with spring clips.
      d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
      e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
      f. Bare Piping at Ceiling Penetrations in Finished Spaces: One-piece or split-casting, cast-brass type with polished chrome-plated finish.
      g. Bare Piping in Equipment Rooms: One-piece, stamped-steel type with spring clips.
      h. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.

M. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with firestop materials. Refer to Division 07 Section "Penetration Firestopping" for materials.

N. Verify final equipment locations for roughing-in.

O. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
   1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
   2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Welded Joints: Construct joints according to AWS D10.12, using qualified processes and welding operators according to Part 1 "Quality Assurance" Article.

H. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.

I. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
   1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
   2. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
   3. PVC Nonpressure Piping: Join according to ASTM D 2855.

J. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

K. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

L. PE Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657.
   1. Plain-End Pipe and Fittings: Use butt fusion.
   2. Plain-End Pipe and Socket Fittings: Use socket fusion.

3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:
   1. Install unions, in piping 2 inches and smaller, adjacent to each valve and at final connection to each piece of equipment.
   2. Install flanges, in piping 2-1/2 inches and larger, adjacent to flanged valves and at final connection to each piece of equipment.
   3. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

END OF SECTION 22 05 00

SECTION 22 05 01 - BASIC PLUMBING MATERIALS AND METHODS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. The Drawings prepared for this Project are an outline to show where pipes, ducts, and apparatus must go in order to harmonize with the building and installations of the various trades. Work must be installed in accordance with the Drawings insofar as possible. Drawings shall be carefully checked during the course of bidding and construction. If discrepancies, errors, or omissions are discovered prior to or during the construction phase, notify the Engineer immediately for interpretation or correction. Take necessary measurements and be responsible for same, including clearances for equipment that is to be furnished. The Architect/Engineer shall reserve the right to make minor location changes of piping and equipment where such adjustments are deemed desirable from an appearance or operational standpoint. Such changes will be anticipated sufficiently in advance to avoid extra work or unduly delay progress on the Project.

B. The general building drawings shall be used to obtain dimensions and exact locations and as a check with other Contractors to avoid interferences with their Work. Refer to applicable Drawings on branches of the Work where other trades are involved on the Project so that added field work and job delays resulting from conflicts between crafts can be avoided. Piping or ductwork that is prefabricated before coordinating with the other trades may have to be redone at no additional cost if conflicts are encountered.

1.2 SUMMARY

A. This Section includes the following:
   1. Piping specialties
   2. Installation requirements common to piping systems and equipment specification sections
   3. Disinfecting water lines
   4. Testing and repair
   5. Provisions for later installations

B. The Contractor(s) shall provide the labor, materials, equipment, appliances, services and transportation, and perform the operations in connection with the construction and installation of the Work. Work shall be as herein specified and as denoted on the accompanying Drawings.

C. The Contractor(s) shall arrange and pay for permits and inspections required in connection with the Work. The Contractor shall apply for and pay for meters, regulators, recorders, and gauges required. The Contractor must present to the Owner through the Architect/Engineer, properly signed certificates of final inspection by the governing authorities when they become due and shall not cover up Work until approved by those authorities.

6. The Contractor(s) shall make arrangements for connection of the permanent utilities; include connection costs as part of the Work under his Contract. Verify exact requirements of the utility with regard to such service; and include in the Work costs related to same.

7. Materials or labor obviously required to fully complete the Work shall be included, even though each item necessarily involved is not specifically mentioned or shown. Such Work and materials shall be furnished and shall be of the same grade or quality as the parts actually specified and shown. Should there be a conflict between the plans and Specifications, the greater quantity and better quality shall be furnished.

8. Should an overlap of Work between the various trades become evident, the Engineer shall be notified. Such an event shall not relieve the Contractor of the responsibility for the Work called for under his branch of the Specifications until a written clarification or directive is issued concerning the matter.

9. Related Work Specified Elsewhere
   i. Firestopping is Work of this Section though fire barrier sealants (firestopping) for walls and floors are specified in Division 07 Section “Penetration Firestopping”. Contractors are responsible for proper sizing of their sleeves and core-drilled holes so that they are at least 1-1/2 inches larger in diameter than the penetrating items. Schedule 40 steel sleeves and core-drilled holes made excessively large or made and not used, will be firestopped and charged to the Contractor who was responsible.

10. Cutting of water lines, electric conduit, or similar service lines in the course of Work performed under this Section shall be immediately repaired as part of the Work of this Section.

1.3 REFERENCE

A. Standards are described by reference to various associations. These are in addition, but not limited to, to those listed in:

AGA	American Gas Association
ANSI	American National Standards Institute
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
AWWA	American Water Works Association
CISPI	Cast Iron Soil Pipe Institute
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Act
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
UL	Underwriters' Laboratories, Inc.

B. Work shall be in complete accordance with codes, rules, and ordinances, regulations of authorities, bodies, associations, and governments, having proper or legal jurisdiction. Specifically, the following requirements shall be met in their entirety.
   1. State and Local Rules, Regulations, Codes, Statutes, and Ordinances
   2. National Fire Protection Association - applicable requirements
   3. National Board of Fire Underwriters
   4. National Electric Code - applicable requirements
   5. Other Codes and Standards as specifically noted in each Section of the Specifications.
   6. Americans with Disabilities Act (ADAAG and ICC-A117.1 Applicable edition)

C. References made to codes and standards, in these Specifications or on the Drawings, shall be taken to mean the latest edition, amendment, or revision of such reference in effect as of the date indicated on the Bid Documents unless otherwise noted.

1.4 QUALITY ASSURANCE

A. Instruments used by the Contractor shall be accurately calibrated and maintained in good working condition.

B. Products and test instruments used shall be subject to approval of Architect/Engineer.

C. Products and test instruments used shall be provided by each respective Contractor.

D. Note that systems involved under this Contract heading shall be in accordance with applicable requirements listed in NFPA Standard 90A.

E. Materials used in this Contract shall be those specified herein unless proposals for the use of alternate materials have been submitted and accepted in writing, as provided hereinbefore. Materials shall be strictly first grade of their kind and shall be new and in first-class condition when installed. Damaged materials will be rejected and must be replaced by proper and acceptable materials. Materials shall be similar and in accordance with the provisions of this Specification.

F. No materials or equipment may be installed under this contract heading which do not meet the approval of the authorities having jurisdiction. Specific materials may have certain restrictions or exclusions as to their usage, including where they may not be located. Such regulations shall be adhered to where applicable. The requirements and regulations of the local and state building codes and regulations currently adopted shall be adhered to.

G. Piping systems shall be installed by workmen having skills acquired by working at the trade which is recognized as necessary for competency.

H. Pressure piping systems installed shall conform to the requirements of the State piping and welding codes where applicable.

1.5 PROJECT CONDITIONS

A. Unless otherwise stipulated under a particular heading, the following rules relative to responsibilities of the several Contractors and subcontractors will apply.
   1. Each Contractor shall install roughing-in work pertaining to his trade for connection of Work performed under other Sections of these Specifications.

B. Certain areas will be designated for the storage of materials and equipment and cooperation with the Owner in minimizing interference with existing operations will be mandatory.
   1. Where possible, store materials inside and protected from weather. Where necessary to store outside, elevate above grade and enclose with durable, waterproof wrapping.
   2. Follow manufacturer's instructions for receiving, inspecting, handling, storage, and protection of products prior to final installation

D. In general, the piping shown on the Drawings shall be considered as diagrammatic for clearness in indicating the general run and connections required, and may not be shown in its true position. The piping and ductwork and equipment may have to be offset, lowered or raised, as required, or as directed at the site in order to accommodate field conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 INSTALLATION

A. Cutting and Patching
   1. Cutting and drilling of walls, slabs, and structural members, required in conjunction with Work under this Section, shall be done under the supervision of the Architect/Engineer. Work shall be neatly done, removing no unnecessary material. Holes, openings, etc., shall be located where they will not weaken the structure. No beams, joists, etc., shall be cut without the written consent of the Architect/Engineer.
   2. Cutting of holes in masonry and concrete shall be performed with a core drill to minimize spalling, and limit damage to wall. Locations shall be accurately determined and checked, and the appropriate drill bit shall be used to minimize hole size.
   3. Sleeves or thimbles for holes as well as escutcheons and trim plates shall be provided. Installation shall permit free movement of pipe.
   4. Patching of work, where necessary, is to be done by a mechanic of the appropriate trade. Unless otherwise noted, patching for Work performed under this Section shall be immediately repaired as part of the Work of this Section.

B. Protection

1. Provide proper protection to the building during the execution of Work involved under this contract heading.
2. This protection shall include covering apparatus, building surfaces, and other materials to protect same from dirt; adequate temporary connections to protect apparatus from damage and required shielding to protect finished parts of the building. The following shall apply where applicable:
   a. Protect finished floors from chips and cutting oil by the use of metal chip receiving pans and oilproof floor covers.
   b. Protect equipment and finished surfaces from welding and cutting spatters with baffles and spatter blankets.
   c. Protect equipment and finished surfaces from paint droppings, insulation adhesive, and sizing droppings, etc., by use of drop cloths.
3. Pumps, motors, fans, and other rotating/reciprocating equipment stored for this Project shall be adequately protected with openings, bearings, etc., covered to exclude dust and moisture. Stock piled pipe, valves, fittings, etc., shall be placed on dunnage and protected from weather and from entry of foreign material.
4. During installation and until final connections are made, piping shall be protected against entry of foreign matter. Equipment connections shall be carefully sealed until the actual time of system tie-in.

C. Accessibility

1. Provide a union or flange in the piping at each screwed or welded valve, device, or item of equipment, and elsewhere as required for accessibility of repair. Each union shall be so installed as to permit the removal of item without disconnection of any piping except at the union.

3.2 DISINFECTING WATER LINES

A. Disinfect new domestic water service piping and at connections to existing piping in accordance with Local or State Board of Health Regulations. Also follow notes as listed below.

1. Before water system is turned over for use, this Contractor shall have the entire system thoroughly disinfected.
2. Disinfecting shall be by the introduction of a hypochlorite solution of calcium hypochlorite powder containing 65 percent to 70 percent free chlorine, through gravity injection or a suitable pump feeder. Flush throughout the system until approximately 50 P.P.M. is obtained at outlets, faucets, and hydrants. The solution shall stand in the system for 24 hours or more and then be flushed out of lines until not over .2 P.P.M. residual remains.
3. After disinfecting and final flushing, several samples from the various ends of lines shall be drawn and tested by the State or Local Board of Health or Health Authority or an independent laboratory approved by the Department of Health, using their own containers. Such sampling and testing shall be repeated 3 times at 24-hour intervals.
4. Disinfection shall be repeated until the findings of all 3 tests are satisfactory and approved in writing by the official health authority.
5. During the disinfecting period, warning signs shall be posted at each outlet and fixture indicating water should not be drawn or consumed.
6. Furnish Architect/Engineer and Owner with a certificate certifying disinfection was conducted in accordance with the Specifications, together with a report from health authority of the water sample analysis and approval.

3.3 TESTING AND REPAIR

A. Upon completion of each respective piping system, but prior to insulating, covering, or backfilling, each system shall be thoroughly cleaned and flushed to remove construction dirt and foreign matter.

B. Test Piping as Specified Herein

1. No piping work shall be concealed or covered until it has been inspected and approved by the project inspector, who shall be notified when the Work is ready for inspection. Work shall be completely installed and tested as required by this Contract and Ordinances of the local Municipality and shall be leaktight to the satisfaction of those making the inspection and the A/E.
2. In general, pressure tests shall be applied to piping. In no case shall piping be subject to pressure exceeding its rating. Defective work shall be promptly repaired or replaced and test shall be repeated until the particular system and component parts thereof receive approval of the A/E.
3. Provide temporary equipment for testing, including pump, blower, and gauges. Test piping system before insulation is installed and remove control devices before testing. Test each natural section of each piping system independently, but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating.
4. Repair piping system sections which fail required piping test by disassembly and reinstallation, using new materials to extent required to overcome leakage. Do not use chemicals, stopleak compounds, mastics, or other temporary repair methods.
5. Drain test water from piping systems after testing and repair work has been completed.
6. Pressure for Testing of Piping Systems shall be as follows:
   a. Domestic Hot and Cold Water Piping
      1) Piping shall be tested and results approved by Architect/Engineer prior to application of insulation.
      2) Piping system shall be capped and subjected to a static water pressure of 50 psig above operating pressure and a minimum of 125 psig, and pressure maintained for 4 hours with no leaks or loss in pressure.
      3) Test source shall be isolated before conducting pressure tests.
      4) Isolation of tested equipment.
   b. Sewer, Soil, and Waste Piping
      1) Soil and waste piping shall be plugged and subjected to not less than a 10 foot head of water. Water column shall be maintained for 2 hours with no leaks.
      2) Where subject to freezing, use air or smoke test for not less than 30 minutes and as required by code.
   c. Fire Protection Piping System (Interior)
      1) Per NFPA #13, state and local codes.
7. Accurately record and report methods of testing, times, and dates of test, witnesses to the test, and the results of the test. Test reports shall be neatly typewritten on standard 8-1/2 inch by 11 inch sheets and submitted in 5 copies to Architect/Engineer for approval within 5 days after test has been performed.

C. Damage resulting from tests shall be repaired or damaged materials replaced, to satisfaction of Architect/Engineer, and at no cost to Owner.

3.4 PROVISIONS FOR LATER INSTALLATIONS

A. Where work cannot be installed as the structure is being erected, the Contractor for such work shall provide and arrange for the building-in of boxes, sleeves, inserts, fixtures, and devices necessary to permit installation of the omitted work during later phases of construction. The Contractor shall arrange for layout, chases, holes, and other openings which must be provided in masonry, concrete, and other work.

B. The Contractor shall be responsible for becoming informed of the nature and arrangement of the materials and construction to which his work attached or passes through.

END OF SECTION 22 05 01

SECTION 22 05 23 - GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Ball valves.

1.2 ACTION SUBMITTALS

A. Product Data: For type of valve indicated.

1.3 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:
1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61/372 for valve materials for potable-water service.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Use the following precautions during storage:
1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. This Specification is based on products as manufactured by Milwaukee Valve Company. Equivalent products as manufactured by Crane Co. - Valve Division, Metraflex, Nibco Inc., Nexus, Griswold, Hammond Valve Co., Conbraco, Apollo, Viega and Watts are acceptable. For grooved end butterfly valves use Victaulic, Anvil-Gruvlok, Tyco-Grinnell Mechanical Products, or Nibco.

2.2 BALL VALVES

A. Two Piece Ball Valves 2 inches and Smaller: 600 WOG, 150 SWP, cast bronze body, ASTM B-584, B-62 or B61 teflon seats, full port, blow-out proof stem, adjustable packing gland, stainless steel ball and stem, threaded, solder ends, or press fit ends.

B. For domestic interior plumbing water piping:
1. Threaded Ends 2 inches and Smaller: Class 150, full port, bronze ASTM B 584 B61 or B-62. No forged brass containing more than 15 percent zinc, 2 piece body, Stainless steel ball and stem.
2. Soldered Ends 2 inches and Smaller: Class 150, full port, bronze ASTM B 584 B61 or B-62. No forged brass containing more than 15 percent zinc, 2 piece body, Stainless steel ball and stem.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

END OF SECTION 22 05 23

SECTION 22 05 29 - HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following hangers and supports for plumbing system piping and equipment:
   1. Steel pipe hangers and supports.
   2. Trapeze pipe hangers.
   3. Fastener systems.

1.2 PERFORMANCE REQUIREMENTS

A. Design supports for multiple pipes, including pipe stands, capable of supporting combined weight of supported systems, system contents, and test water.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Steel pipe hangers and supports.
   2. Thermal-hanger shield inserts.
   3. Pipe positioning systems.

1.4 INFORMATIONAL/QUALITY ASSURANCE/CONTROL SUBMITTALS

A. Welding certificates.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design: Anvil International, Inc., Portsmouth, New Hampshire. Subject to compliance with requirements, provide either the product named or a comparable product by one of the other manufacturers specified.
   1. Manufacturers:
      a. Copper B-Line, Inc., Highland, Illinois
      b. Erico International Corp., Salon, Ohio
      c. PHD Manufacturing, Columbiana, Ohio
      d. Gripple (for aircraft cable), Batavia, Illinois
      e. Amber Booth, Houston, Texas
      f. Holdrite (for drainage piping restrains)
      g. Globe Pipe Hanger Products, Inc.

B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for Architect/Engineer's approval must be accompanied by the "Substitution Request Form" and complete technical data for evaluation. All materials for evaluation must be received by the Project Manager and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 PIPE HANGERS AND SUPPORTS

A. Beam Clamps: Anvil C-Clamp with retaining clip, Fig. #87 for 3/8 inch to 3/4 inch diameter rod.

B. Beam Clamps: Anvil forged steel beam clamp with upper nut, Fig. #228 for 5/8 inch to 7/8 inch diameter rod.

C. Beam Clamps: Anvil Fig. #227 for 3/8 inch and 1/2 inch diameter rod (attachment to top members of angle iron trusses or to top flanges of I-Beams).

D. Hanger Rod: Carbon steel material of size/diameter required, threaded one end, both ends, and/or continuous thread. Provide threaded swivel connections to maintain the threaded rod in a vertical position. Bending threaded rod is not acceptable.

E. Trapeze Type Hangers: Use structural angle, channel, beams, unistrut or equivalent support and/or framing. Provide proper attachment for service listed below.

F. Pipe Attachment: Anvil split pipe ring Fig. #108 and turnbuckle adjuster Fig. #114 (for pipe size 3/8 inch to 8 inch, noninsulated).

G. Pipe Attachment for Hot and Cold Service: Anvil adjustable clevis Fig. #260 for 1/2 inch to 30 inches noninsulated, stationary pipe lines. Size Clevis for outer insulation diameter. Provide with galvanized insulation shield Fig. #167.

H. Pipe Attachment for Independent Support of Hot Service: Anvil Fig. #181, (2-1/2 inch to 20 inch pipe insulated) adjustable steel yoke pipe roll.

I. Trapeze supported for hot and cold service 2 inch to 12 inch insulated Anvil Fig. #175 pipe roll. Roller sized for insulated diameter.

J. Copper tubing 1/2 inch to 2 inch: When attached directly to copper piping or tubing, hangers shall be equipped with permanently attached factory liner of high compression factor, chemically treated to resist moisture, abrasion, heat, cold, and vermin. Liner shall be felt or equally approvable material, or hangers shall be equal to copper plated Anvil Fig. # CT-99. Lined or plated hangers not required when hanger is oversized to cover an insulated line.

K. Pipe Attachment: Anvil adjustable clevis for storm sanitary and vent Fig. #260, for 4 inch to 24 inch pipe. Size for insulation as required. Provide galvanized insulation shield Fig. #167.

L. Pipe Attachment: Anvil adjustable clevis for insulated, steel hot pipe, Fig. #300, for 3/4 inch to 2 inch pipe size.

M. Pipe Attachment: Anvil riser clamp Fig. #261 (for either insulated or bare steel pipe, cast iron or conduit) or Fig. #261c (for glass, copper, brass and/or aluminum pipe), for 3/4 inch to 20 inches and 3/4 inch to 6 inches respectively

PART 3 - EXECUTION

3.1 PIPE INSTALLATION

A. Pipe attachments shall be located adjacent to fittings at each offset or change in direction, at ends of branches over 5 feet long, at riser pipes, and along piping where necessary to prevent sags, bends, or vibration. Piping risers shall be supported at each floor level.

B. No pipe will be hung from another pipe or pipes.

C. Hanger rod must hang perpendicular before and after pipe covering or insulation is applied.
   1. Support piping from rolled steel beams or channels from any point on either top or bottom flanges.
   2. Support piping from open web steel joists from hangers connected to either top or bottom chords within 3 inches of center of chord panel points (intersection of diagonal or vertical chord with top or bottom chord). Joist reinforcement will be required if hangers are not installed at panel points. Refer to structural details.
   3. In addition to maximum spacing of hangers or supports specified below, the number and spacing of hangers and supports shall be such as to equally distribute loads to all structural members in the system.

4. Connections to structural members shall be clamping devices which do not damage or deform structural elements. Welding to or drilling holes in structural members is not permitted unless specifically approved by Architect.
5. Hanger rods cannot be bent.

D. The maximum horizontal spacing between hangers or supports, measured along the piping for steel pipe, shall be as follows:

Pipe Size	Rod Diameter	Maximum Spacing*
Up to 1-1/4 inch	3/8 inch	8 feet
1-1/2 inch and 2 inch	3/8 inch	9 feet
2-1/2 inch and 3 inch	1/2 inch	10 feet
4 inch and 5 inch	5/8 inch	12 feet
6 inch	3/4 inch	12 feet
8 inch	7/8 inch	12 feet

*Provide hangers on all sides of valves, strainers, elbows, tees, check valves, etc.

E. The maximum spacing between hangers or supports, measured along the piping for plastic DWV pipe, shall be 4 feet on center and, at end of branches change in direction and trap arms, 3 feet or greater.

F. The maximum horizontal hanger space for water CPVC distribution piping shall not exceed 3 feet

G. The maximum horizontal spacing between hangers or supports, measured along the piping for copper tubing, shall be as follows:

Nom. Tubing Size	Rod Diameter	Maximum Spacing
Up to 1 inch	3/8 inch	5 feet
1-1/4 inch and 1-1/2 inch	3/8 inch	8 feet
2 inch	3/8 inch	8 feet
2-1/2 inch	1/2 inch	9 feet
3 inch and 4 inch	1/2 inch	10 feet
6 inch	1/2 inch	12 feet

H. Where vertical support locations are not indicated on the Drawings, support cast iron soil pipe, steel, and copper pipe at every floor. Use friction clamps anchored to building construction with not less than two-point bearing.

I. Where several pipes occur at the same elevation, trapeze type hangers may be used. For parallel runs, use unistrut or equivalent capped pipe and approved supports and/or framing. The following general rules shall be followed for attachment:
1. Uninsulated steel piping, use clamps. For copper tubing, the clamps shall be copper plated or lined.
2. Insulated piping 2 inches and smaller, use 18 gauge galvanized steel shield over the insulation in 180 degree segments, minimum 12 inches long with clamp.
3. Insulated piping 2-1/2 inches and larger, use pipe covering protection saddle with roller supports.
4. Cold water piping 2-1/2 inches and larger, use hard block nonconducting type saddles in 90 degree segments and minimum 12 inches long.
5. In tunnels, and where piping is racked on multiple hangers supported with the use of prefabricated structural support channels, the piping attachments shall be as specified for trapeze hangers.
6. Trapezing is not allowed for 8 inch diameter and larger pipes. These pipes must be supported individually.
7. The load on the end of any trapeze shall not be greater than 600 pounds when supported from steel open web joists and 1000 pounds when supported from rolled beams.

J. Hangers for pipe shall be of a compatible material or coating. Where pipe insulation is continuous through hangers, insulation blocks shall be of compressed insulation material of the same thickness as the specified covering and will be equal to or larger in size than the metal insulation protector saddle specified to be installed. Hangers will be isolated from dissimilar metal unless they are of a compatible material.

K. Continuous threaded rod may be used wherever possible. No chain, wire, or perforated strap shall be used. Threaded rod may not be bent. Threaded swivel connections shall be utilized for attachment to sloping structure.

L. Hanger rod shall not be supported from the second floor or the roof deck.

M. Clamp connection on sloped structure shall be provided with swivels so threaded pad will hang vertically.

END OF SECTION 22 05 29

SECTION 22 07 00 - PLUMBING INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Insulation Materials for Piping and Equipment:
      a. Provide the labor, materials, equipment, appliances, services and transportation, and perform operations in connection with the construction and installation of the Work. Work shall be as herein specified and as denoted on the accompanying Drawings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any).

B. Shop Drawings:
   1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
   2. Detail attachment and covering of heat tracing inside insulation.
   3. Detail insulation application at elbows, fittings, flanges, valves, and specialties for each type of insulation.
   4. Detail application of field-applied jackets.

1.3 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Insulation and related materials shall have fire-test-response characteristics indicated, as determined by testing identical products per ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing and inspecting agency.
   1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.

B. Insulation shall meet the latest requirements of ASHRAE 90.1.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.5 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application and equipment Installer for equipment insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

1.6 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required, after installing and testing heat tracing. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Insulating and covering materials have been selected on the basis of mechanical strength, sound transmission characteristic, durability under adverse conditions, vapor impermeability, and appearance, in addition to thermal insulating value. Materials of lesser performance than specified or materials of less thickness than specified, will be ordered removed and replaced with acceptable materials.

B. The use of wheat paste, in lieu of lagging adhesives specified, is absolutely forbidden. Vapor barriers on cold surfaces and piping must be continuous through sleeves, hangers, supports, etc. Stapling of vapor barrier jackets shall be permitted only if staples are sealed with an approved vapor barrier mastic or vapor barrier tape. Maintain the vapor barrier seal throughout each system. No clips or other attachments shall be used that require the perforation or puncturing of any duct or plenum panel. The Insulating Contractor is hereby notified that any duct or panel found punctured or penetrated by clips, screws, or any other device for holding insulating materials, even though penetration is not complete, shall be removed and replaced with new duct or panel at his expense.

C. Protection of Insulation: In general, it is intended that insulation located in areas subject to damage such as mechanical equipment rooms, combined traffic and pipe tunnels or crawl space, and the like, shall be of a dense material to eliminate the possibility of physical damage. Piping insulation installed below 10 feet above finish floor in unfinished spaces shall be protected with an aluminum jacket or PVC pipe cover.

D. Vapor Barriers - General: Vapor barrier facings shall have a maximum flame spread rating of 25 and smoke developed rating not exceeding 50.

E. Flame Spread and Smoke Ratings: Components of the insulation for piping, including coverings, mastics, and adhesives shall have a flame spread rating of not over 25 and the smoke development rating of not over 50. Rating shall be established by tests conducted in accordance with ASTM E84 - Surface Burning characteristics of building materials, NFPA 255 - Surface burning characteristics of building materials, and UL 723 - Surface burning characteristics of building materials.

F. Jacketing: It is imperative that the jacketing used throughout the systems shall have the flame spread ratings and smoke development ratings herein specified as a maximum limit. Where canvas is required to be used as jacketing, the Contractor must include the cost in his bid for finishing with suitable mastics, finishing coats, etc., as required to provide fire resistance.

2.2 PIPE INSULATION

A. This Specification is based on products as manufactured by Johns-Manville. Equivalent products as manufactured by Knauf Fiberglass, Nomaco, CertainTeed, and Owens-Corning Fiberglas Corp are acceptable. The following are acceptable manufacturers for elastomeric foam insulation - Rubatex Corp., Armstrong and IMCOA.

B. Type A; Glass Fiber: Johns-Manville Micro-Lock meeting ASTM C547; Class 1, rigid molded, nonflammable.
   1. “K” Value: 0.23 at 75 deg F.
   2. Maximum Services Temperature: 850 deg F.
   3. Vapor Retarder Jacket: AP-T PLUS White kraft paper reinforced with glass fiber yarn and bonded to aluminum foil, secure with self sealing longitudinal laps and butt strips or AP jacket with outward clinch expanding staples or vapor barrier mastic as needed.

C. Type B; Hydrous Calcium Silicate: Johns-Manville Thermo-12/Blue ASTM C553; Type 1; rigid molded pipe; asbestos-free coded throughout material thickness and maintained throughout temperature range.
   1. “K” Value: 0.40 at 300 deg F.

2. Maximum Service Temperature: 1200 deg F.
3. Compressive Strength (block): Minimum of 160 psi to produce 5 percent compression at 1-1/2 inch thickness.
4. Tie Wire: 16 gauge stainless steel with twisted ends on maximum 12 inch centers.

D. Type C; Elastomeric Foam: Rubatex R-180-FS/R-1800-FS meeting ASTM C534; flexible, cellular elastomeric, molded or sheet. Equivalent products as manufactured by Armacell LLC are also acceptable.
1. “K” Value: 0.23 at 75 deg F.
2. Maximum Service Temperature: 220 deg F.
3. Maximum Flame Spread: 25.
4. Maximum Smoke Developed: 50 (3/4 inch thick and below)
100 (above 3/4 inch thick)
5. Connection: Waterproof vapor retarder adhesive as needed; Rubatex R-373 Adhesive.
6. UV-Protection: Outdoor protective coating; Rubatex 374 Coating. Equivalent products as manufactured by Armacell LLC are also acceptable.
7. Insulated piping exposed outdoors shall be covered with a 0.016-inch aluminum jacket with each end and all seams sealed to protect from moisture and Ultra-violet exposure.

E. Type D; Cellular Glass: ASTM C552; "k" value of 0.35 at 75 degrees F; 8.0 lb/cu ft density.

F. Field Applied Jackets:
1. Indoor, exposed applications and mechanical equipment Rooms. PVC Plastic: Johns-Manville Zeston 2000. One piece molded type fitting covers and jacketing material, gloss white.
a. Connections: Tacks; pressure sensitive color matching vinyl tape.
2. Indoor concealed application canvas jacket: UL listed fabric, 6 oz/sq yd, plain weave cotton treated with dilute fire retardant lagging adhesive.
3. Exterior Applications Aluminum Jacket: 0.016-inch thick sheet, (smooth) finish, with longitudinal slip joints and 2 inch laps, die shaped fitting covers with factory attached protective liner.
4. Buried Piping: Provide factory prefabricated pre-insulated assembly with inner polyurethane foam insulation. Outer surface faced with PVC jacket.
5.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.
1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Surface Preparation: Clean and prepare surfaces to be insulated. Before insulating, apply a corrosion coating to insulated surfaces as follows:
1. Stainless Steel: Coat 300 series stainless steel with an epoxy primer 5 mils thick and an epoxy finish 5 mils thick if operating in a temperature range between 140 and 300 deg F. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.
2. Carbon Steel: Coat carbon steel operating at a service temperature between 32 and 300 deg F with an epoxy coating. Consult coating manufacturer for appropriate coating materials and application methods for operating temperature range.

C. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that applies to insulation.

D. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment and piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment and pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
   1. Install insulation continuously through hangers and around anchor attachments.
   2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
   3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
   4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:
   1. Draw jacket tight and smooth.
   2. Cover circumferential joints with 3-inch wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
   3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.
      a. For below ambient services, apply vapor-barrier mastic over staples.
   4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
   5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above ambient services, do not install insulation to the following:
1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Manholes.
5. Handholes.
6. Cleanouts.

3.4 PENETRATIONS

A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.
1. Comply with requirements in Division 07 Section "Penetration Firestopping" firestopping and fire-resistive joint sealers.

C. Insulation Installation at Floor Penetrations:
1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Division 07 Section "Penetration Firestopping."

3.5 GENERAL PIPE INSULATION INSTALLATION

A. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:
1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity, unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive. Fill joints, seams, voids, and irregular surfaces with insulating cement finished to a smooth, hard, and uniform contour that is uniform with adjoining pipe insulation.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts. Fill joints, seams, and irregular surfaces with insulating cement.

5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement. Insulate strainers so strainer basket flange or plug can be easily removed and replaced without damaging the insulation and jacket. Provide a removable reusable insulation cover. For below ambient services, provide a design that maintains vapor barrier.
6. Insulate flanges and unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below ambient services and a breather mastic for above ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. For services not specified to receive a field-applied jacket except for flexible elastomeric and polyolefin, install fitted PVC cover over elbows, tees, strainers, valves, flanges, and unions. Terminate ends with PVC end caps. Tape PVC covers to adjoining insulation facing using PVC tape.
9. Stencil or label the outside insulation jacket of each union with the word "UNION." Match size and color of pipe labels.

3.6 CELLULAR-GLASS INSULATION INSTALLATION

A. Insulation Installation on Straight Pipes and Tubes:
1. Secure each layer of insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above ambient services, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below ambient services, do not staple longitudinal tabs but secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Fittings and Elbows:
1. Install preformed sections of same material as straight segments of pipe insulation when available. Secure according to manufacturer's written instructions.
2. When preformed sections of insulation are not available, install mitered sections of cellular-glass insulation. Secure insulation materials with wire or bands.

C. Insulation Installation on Valves and Pipe Specialties:
1. Install preformed sections of cellular-glass insulation to valve body.
2. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
3. Install insulation to flanges as specified for flange insulation application.

3.7 FLEXIBLE ELASTOMERIC INSULATION INSTALLATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:
1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:
   1. Install mitered sections of pipe insulation.
   2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

D. Insulation Installation on Valves and Pipe Specialties:
   1. Install preformed valve covers manufactured of same material as pipe insulation when available.
   2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
   3. Install insulation to flanges as specified for flange insulation application.
   4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.8 PIPING INSULATION, GENERAL

A. Items Not Insulated: Unless otherwise indicated, do not install insulation of the following:
   1. Drainage piping located in crawl spaces.
   2. Underground piping.
   3. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

B. Insulation shall extend through all hangers and shall not be interrupted by any clamps.

3.9 PIPING INSULATION SCHEDULE

Piping Service	Type	Pipe Size	Type "A" Insulation Thickness	Type "C" Insulation Thickness
Domestic Hot Water Supply (Above Ground)	A or C	All	1"	1"
Domestic Hot Water Recirculating (Above Ground)	A or C	All	1"	1"

Notes:
1. Vapor barrier is not required for elastomeric foam insulation.
2. Vapor barrier and waterproof adhesive are required for Type A glass fiber piping insulation.

END OF SECTION 22 07 00

SECTION 22 11 16 - DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes domestic water piping inside the building.

1.2 PERFORMANCE REQUIREMENTS

A. Provide components and installation capable of producing domestic water piping systems with 125 psig, unless otherwise indicated.

1.3 ACTION SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings and water meters, if provided by the Contractor.

1.4 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9," for potable domestic water piping and components.

PART 2 - PRODUCTS

2.1 DOMESTIC WATER (COLD WATER, HOT WATER)

A. Piping shall be copper tube complying with ANSI/ASTM B88, Type “L” (above floor) and Type “K” (below floor). Fittings shall be wrought copper, solder-joints conforming to ANSI B16.22 or mechanical press-fit.

B. Victaulic, Anvil-Gruvlok, or Tyco-Grinnell Mechanical Products grooved copper connection may be used for -30 deg F to 230 deg F water service. Coupling shall be Victaulic Style 606, Anvil-Gruvlok Figure No. 7400, or Tyco-Grinnell Mechanical Products No. 772, with Type "E" EPDM gasket. Coupling housing shall be ductile iron conforming to ASTM A536. Fittings 2 through 4 inches shall be wrought copper conforming to ASTM B75, alloy C12200. Fittings 5 and 6 inches shall be cast bronze conforming to ASTM B584-87 copper alloy CDA 844 (81-3-7-9). Hanger spacing shall conform to ANSI B31.9. Hanger selection shall conform to MSS-SP-69.

C. Piping fittings for pipe sizes 1/2 inch through 4 inch shall be Type “L” (above floor) and Type “K” (below floor) copper tube complying with ANSI/ASTM B88. Fittings shall be as described in subparagraph below:
   1. Fittings for pipe sizes 4 inch and smaller shall be Type “L” (above floor) and Type “K” (below floor). Piping and fittings shall be joined by a crimping process.

D. Per the Owner’s request, there shall be no exceptions or substitutions for the methods and materials described in this Article.

PART 3 - EXECUTION

3.1 PIPE AND FITTING APPLICATIONS

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.

B. Flanges may be used on aboveground piping, unless otherwise indicated.

C. Grooved joints may be used on aboveground grooved-end piping.

D. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

3.2 VALVE APPLICATIONS

A. Shut Off Duty: Use bronze ball valves. For 2 inch and smaller. Use flanged and ball valves with flanged ends for piping 2-1/2 inches and larger.

B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball valves.

3.3 PIPING INSTALLATION

A. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Install domestic water piping level without pitch and plumb.

3.4 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

C. Grooved Joints: Assemble joints with grooved-end-pipe or grooved-end-tube coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.

3.5 HANGER AND SUPPORT INSTALLATION – REFER TO SPECIFICATION SECTION 220529 "HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT"

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Connect domestic water piping to water-service piping with shutoff valve, and extend and connect to the following:
   1. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code. Refer to Division 22 Section "Plumbing Fixtures."

3.7 FIELD QUALITY CONTROL

A. Inspect domestic water piping as follows:
   1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
   2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
      a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
      b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
   3. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

B. Test domestic water piping as follows:
1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.8 ADJUSTING

A. Perform the following adjustments before operation:
1. Open shutoff valves to fully open position.
2. Remove plugs used during testing of piping and plugs used for temporary sealing of piping during installation.
3. Remove and clean strainer screens. Close drain valves and replace drain plugs.
4. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
5. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.9 CLEANING

A. Clean and disinfect potable domestic water piping as follows:
1. Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:
a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
b. Fill and isolate system according to either of the following:
1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.
c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

B. Prepare and submit reports of purging and disinfecting activities.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 22 11 16

SECTION 22 13 16 – SANITARY, WASTE, AND VENT PIPING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following for soil, waste, and vent piping inside the building:
   1. Pipe, tube, and fittings.
   2. Adapter fittings.

1.2 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:
   1. Soil, Waste, and Vent Piping: 10-foot head of water.

1.3 ACTION SUBMITTALS

A. Product Data: For pipe, tube, fittings, couplings, floor drains, and trench drains.

B. Shop Drawings:
   1. Design Calculations: Signed and sealed by a qualified professional engineer for selecting seismic restraints.

1.4 INFORMATIONAL/QUALITY ASSURANCE/CONTROL SUBMITTALS

B. Field quality-control inspection and test reports.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. All cast iron soil piping and fittings shall comply with ASTM A 888 (or A 74) and be marked with the collective trademark of the Cast Iron Soil Pipe Institute (CISPI) and be listed by NSF International.

C. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping; "NSF-drain" for plastic drain piping; "NSF-tubular" for plastic continuous waste piping; and "NSF-sewer" for plastic sewer piping.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Acceptable Manufacturers
   1. Adapter Fittings: Fernco
   2. Pipe Tube and Fittings: Tyler, Charlotte, AB&I

2.2 ADAPTER FITTINGS

A. Adaptor fittings shall be used where changing from one type of material to another such as: "DWV" to cast iron soil pipe shall be with an approved brass adapter ferrule and caulk "DWV" into cast iron hub. Leaded joint against "DWV" copper is not permitted. Cast iron soil pipe to vitrified tile connection shall be made using ABS "Fernco Donut" gasket.

2.3 SANITARY, WASTE, AND VENT PIPING

A. Aboveground Piping:
   1. Pipe size 1-1/2 inches through 15 inches: Hubless cast iron soil pipe, service weight; hubless cast iron soil pipe fittings, hubless joints, ASTM A-74; CISPI 301. All cast iron soil pipe and fittings shall bear the collective mark of the cast iron soil pipe institute. Copper D.W.V., ASTM B306 piping and fittings is also acceptable.
   2. Hubless cast iron soil pipe shall be joined using “Heavy Weight” couplings torqued to 80 inch/lbs meeting the requirements of ASTM by Clamp-All, Mission or Husky. Couplings shall be constructed of type 304 stainless steel with 305 Stainless Steel worm drive screws; 4 bands 4 inch and below, 6 bands 5 inch and above. The gasket material shall be neoprene and conform to ASTM C-564.
   3. Heavy Duty couplings as described above may be provided by the pipe manufacturer for fitting locations only. All straight runs of pipe must be joined.

B. Underground Piping:
   1. Pipe size 2 inches through 15 inches: Cast iron hub and spigot soil pipe service weight; Cast iron hub and spigot soil pip fittings, ASTM A-74; CISPI 301; compression gasket joints, ASTM C564-70, or lead and oakum joints are acceptable. All cast iron soil pipe and fittings shall bear the collective mark of the cast iron soil pipe institute.
   2. An option shall be Schedule 40 PVC with solvent joints per ASTM per D2665/D2564. Installation shall be per ASTM D2321. Cast Iron shall be provided for Kitchens and other areas subject to high temperature waste water conditions.

PART 3 - EXECUTION

3.1 EXCAVATION

A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

3.2 INSTALLATION

B. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other Division 22 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

3.4 PIPING INSTALLATION

B. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

C. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

D. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

E. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

F. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:
   1. Building Sanitary Drain: 1/4 inch per foot downward in direction of flow for piping 2 inches and smaller; 1/8 inch per foot downward in direction of flow for piping 3 inches and larger.
   2. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

G. Install underground soil and waste drainage piping according to ASTM D 2321.

H. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.5 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

C. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

D. Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

E. PVC Nonpressure Piping Joints Below Underground Slab: Join piping according to ASTM D 2665.

3.6 HANGER AND SUPPORT INSTALLATION

B. Pipe hangers and supports are specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment." Install the following:
   1. Vertical Piping: MSS Type 8 or Type 42, clamps.
   2. Install individual, straight, horizontal piping runs according to the following:
      a. MSS Type 1, adjustable, steel clevis hangers.
   3. Support stacks at each floor with two-piece risers clamps.

C. Install supports according to Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:
   1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
   2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.

3. Plumbing Specialties: Connect drainage and vent piping in sizes indicated, but not smaller than required by plumbing code.

3.8 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
   1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
   2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
   1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
   2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
   3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping, except outside leaders, on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
   4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
   5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
   6. Prepare reports for tests and required corrective action.

3.9 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

3.10 PROTECTION

A. Underground Slab PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

END OF SECTION 22 13 16

SECTION 27 01 11 – DEMONSTRATION, TRAINING, AND WARRANTY OF COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.
   3. Demonstration and training videos.
   4. Warranties.

B. Related Sections include the following:
   1. Division 01 General Requirements
   2. Division 27 Communication for specific requirements for demonstration and training for products in those Sections.
   3. Division 27 Operation Manuals of Communication Systems
   4. Division 28 Electronic Safety and Security for demonstration and training for products in those Sections.

C. Length of instruction time will be measured by actual time spent performing demonstration and training at required location. No payment will be made for time spent assembling educational materials, setting up, travel, or cleaning up.

1.3 SUBMITTALS

A. Instruction Program: Submit two (2) copies of the proposed training outline. Include length of instruction time, and instructors' name(s) and certifications. Include the objective of each training session.

B. Attendance Record: For each training session submit list of participants and length of instruction time.
   1. Include the lists with the Operation and Maintenance Manuals.

C. Evaluations: Provide evaluations sheets for the attendees to complete at the end of each session.

D. Demonstration and Training electronic files: Submit two (2) copies within seven (7) days of end of each training session.
   1. Identification: On each copy, provide an label with the following information:
      a. Name of Project.
      b. Name of Architect/Engineer/Consultant.
      c. Name of Contractor.
      d. Date training was recorded.
   2. At the completion of the training, submit one (1) hard copy training manual and one manual in digital format (USB drive or DVD, verify with owner) to the Construction Manager or Architect/Engineer for approval. If approved these manuals will be turned over to the Owner.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.
   1. Identification: On each copy, provide an applied label with the following information:
      a. Name of Project.
      b. Name of A/E.
      c. Name of Construction Manager.
      d. Name of Contractor.
      e. Date of video recording.
   2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
   3. At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
   1. Inspect and discuss locations and other facilities required for instruction.
   2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
   3. Review required content of instruction.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect/Engineer.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
   1. Equipment, including projection screens.

2. Sound reinforcement system.
3. Video projectors.
4. Etc.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
   1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
      a. System, subsystem, and equipment descriptions.
      b. Operating standards.
      c. Equipment function.
      d. Operating characteristics.
   2. Documentation: Review the following items in detail:
      a. Operating manuals.
      b. Maintenance manuals.
      c. Project Record Documents.
      d. Identification systems.
      e. Warranties and bonds.
      f. Maintenance service agreements and similar continuing commitments.
   3. Emergencies: Include the following, as applicable:
      a. Instructions on meaning of warnings, trouble indications, and error messages.
      b. Shutdown instructions for each type of emergency.
      c. Operating instructions for conditions outside of normal operating limits.
      d. Sequences for electric or electronic systems.
      e. Special operating instructions and procedures.
   4. Operations: Include the following, as applicable:
      a. Startup procedures.
      b. Equipment or system break-in procedures.
      c. Routine and normal operating instructions.
      d. Safety procedures.
      e. Normal shutdown instructions.
      f. Operating procedures for emergencies.
      g. Operating procedures for system, subsystem, or equipment failure.
      h. Required sequences for electric or electronic systems.
      i. Special operating instructions and procedures.
   5. Troubleshooting: Include the following:
      a. Diagnostic instructions.
      b. Test and inspection procedures.
   6. Maintenance: Include the following:
      a. Inspection procedures.
      b. Types of cleaning agents to be used and methods of cleaning.
      c. List of cleaning agents and methods of cleaning detrimental to product.
      d. Procedures for routine cleaning
      e. Procedures for preventive maintenance.
      f. Procedures for routine maintenance.
      g. Instruction on use of special tools.
   7. Repairs: Include the following:
      a. Diagnosis instructions.
      b. Repair instructions.
      c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
      d. Instructions for identifying parts and components.
      e. Review of spare parts needed for operation and maintenance.

2.2 WARRANTY

A. Submit all warranties for each product, equipment as outlined and specified in the following section. Warranty shall include labor, materials, travel time, etc.

Section	Name and Number	2 year	3 year	5 year	20 year
270526	Grounding and Bonding for Communications Systems	yes	-	-	-
270528	Pathways for Communications Systems	yes	-	-	-
271100	Communications Equipment Room Fittings	-	-	yes	-
271313	Communications Copper Backbone Cabling	-	-	-	yes
271323	Communications Fiber Optical Backbone Cabling	-	-	-	yes
271333	Communications Coaxial Backbone Cabling	-	-	-	Yes
271511	Conductors and Cables For Intercom, Public Address and Mass Notification Systems	-	yes	-	-
271517	Communications Copper Horizontal Cabling (Augmented Category 6 Cable)	-	-	-	yes
271533	Communications Coaxial Horizontal Cabling	yes	-	-	-
271553	Miscellaneous Communications Cabling	-	-	-	yes
274101	Professional Audio Sound Reinforcement	See spec section			
274112	Communication A/V Mounts	-	-	yes	-
274133	Integrated A/V Equipment (Video Projectors)	yes	-	-	-
275125	IP Based Intercommunications and Program Systems	yes	-	-	-
275315	Synchronous Wireless Clock Systems	yes	-	-	-
280523	Conductors and Cables for Electronic Safety and Security	-	-	-	yes
281310	Access Control	yes	-	-	-

2.3 ADJUSTING, TESTING, DEMONSTRATION, AND TRAINING

A. Provide adjusting, testing, demonstration, and training of the systems as specified in the following sections.

Section	Name and Number	Testing	Demo	Training	Hours
271100	Communications Equipment Room Fittings	yes	yes	yes	2
271313	Communications Copper Backbone Cabling	yes	-	-	2
271323	Communications Fiber Optical Backbone Cabling	yes	-	-	2
271333	Communications Coaxial Backbone Cabling	yes	-	-	2

271511	Communications Paging Horizontal Cable	yes	-	-	4
271517	Communications Copper Horizontal Cabling (Augmented Category 6 Cable)	yes	-	-	4
271533	Communications Coaxial Horizontal Cabling	yes	-	-	2
271553	Miscellaneous Communications Cabling	yes	-	-	2
274112	Communications Audio-Video Mounts	Yes	-	-	2
274133	Integrated A/V Equipment (Video Projectors)	yes	yes	yes	4
274101	Professional Audio Sound Reinforcement	yes	yes	yes	4
275125	IP Based Intercommunications and Program Systems	yes	yes	yes	16
275315	Synchronous Wireless Clock Systems	-	-	yes	2
281310	Access Control	yes	yes	yes	16

2.4 FACTORY START UP AND SITE VISITS

A. The system manufacturers shall be on site for system start up as specified in the following sections.

Section	Name and Number	Site visits			
274101	Professional Audio Sound Reinforcement	yes			
274133	Integrated A/V Equipment (Video Projectors)	yes			
281310	Access Control	yes			

2.5 TRAINING

A. Provide training clock hours as stated above.

B. Trainer must be certified by the manufacturer.

C. Provide a copy of a sign off sheet (signed by District staff) for the completed training with the close out documents.

2.6 CERTIFICATION

A. Provide a certification stating that the Communications and Security Work has been performed by qualified/trained installers and that the installation meets all codes, rules, regulations, and laws of the city and the state where the project is located etc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Architect/Engineer will furnish the designer to describe basis of system design, operational requirements, criteria, and regulatory requirements.
   2. Owner will furnish an instructor to describe Owner's operational philosophy.
   3. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner through Construction Manager, with at least seven (7) days' advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a written performance-based test.

E. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEOS

A. General: Record demonstration and training videos. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Format: Provide high-quality DVD.

C. Recording: Camera shall be mounted on a tripod during recording unless otherwise necessary to show area of demonstration and training. Display continuous running time.

D. Narration: Describe scenes on video by audio narration by microphone while recording or as necessary dubbing audio narration off-site after video is recorded. Include description of items being viewed.

E. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video opposite the corresponding narration segment.

F. Instruction and Training:

1. The instruction process must include real or simulated situations for hands on training.
2. Training program must be coordinated with Owner to establish goals, specific concerns, review program issues and analyze staff strengths and training logistics.
3. The training instructor must make recommendations concerning the optimum training program to address each level of needs from basic to advanced, to system administrator.
4. All training must be supported not only by the manufacturer's documentations, but by clear and concise training guides and customized for each customer for each system specified.
5. A complete user's guide must be provided for each staff member attending training and one complete electronic file of this guide.
6. Training is based on 3 levels:
   a. Level 1: Teachers/staff.
   b. Level 2: Administrators/media personnel.
   c. Level 3: Technical staff.
7. Training procedure must be done for all levels for voice, video, data and must be submitted with shop drawing submittal for Owner's approval.

G. System Setup and Programming
1. Provide part of your shop drawing submittal a complete system setup as directed by Owner. Any changes that are needed for the first 2 years must be included in your bid. (Maximum reprogramming setup is 4 separate times).

END OF SECTION 27 01 11

SECTION 27 05 00 - COMMON WORK RESULTS FOR COMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. When equipment furnished for or by the Owner as indicated on the Drawings or specified, this Contractor shall make all connections to Owner furnished equipment. The Contractor shall verify exact requirements and locations before installation.

B. Support from bar joists shall be allowed only at panel points in top or bottom chords.
   1. Loading shall not exceed 5 lbs./S.F. or 100 lbs. per panel point applied at the panel point.
   2. If support must occur between panel points, then threaded rods shall be dropped from both panel points, an adequate angle attached to both, and then the support attached to the angle as required.
   3. Supports shall not be attached to or through steel roof decks.
   4. Supports shall not be attached to the ceiling grid.
   5. PE rated attachments are required for safe overhead suspensions in main auditorium, as noted Division 27 41 01 and TA series drawings for AV systems.

C. Related Work Specified Elsewhere:
   1. Division 07 Penetration Fire Stopping and Fire-Resistive Joint Sealants.
   2. Division 26 Electrical
   3. Division 28 Electronic Safety and Security

D. The contractor shall seal ALL conduit sleeves above the ceiling after all the cabling are installed and tested with an approved sealant.

E. The cabling contractor shall seal inside the box at the conduit connection after all the cabling are installed and tested with an approved sealant.

F. The Contractor shall inspect existing conditions and take field measurements necessary for his Work, and shall be responsible for the accurate location and size of openings, recesses, slots, ferrules, and the like.

G. The Contractor shall be required to cooperate with "Other Trades" at the site and with other Contractors in the coordination of his Work to avoid interferences with installations by other trades and Contractors.

H. Deviations from the Drawings, to avoid interferences, shall be considered a "Job Condition" and no additional compensation will be considered applicable. In the event that such interferences occur in course of the Work, due to an error, omission, or oversight by the Contractor, no additional compensation shall be allowed. Interferences which may occur during the course of construction shall be brought to the immediate attention of the Architect/Engineer, and the Architect/Engineer decision, confirmed in writing, shall be final.

I. Related sections includes the following:
   1. Division 01 General Requirements.
   2. Division 26 Electrical
   3. Division 27 Communications
   4. Division 28 Electronic Safety and Security

1.3 REFERENCES

A. Work shall be in accordance with codes, rules, ordinances, regulations of authorities, bodies, associations, and governments, having proper and legal jurisdiction. Specifically, the following requirements shall be met in their entirety.
   1. State and Local Rules, Regulations, Codes, Statutes and Ordinances
   2. National Fire Protection Association - applicable requirements
   3. National Board of Fire Protection
   4. National Electric Code - applicable requirements
   5. Other Codes and Standards as specifically noted in each Section of the Specifications

B. Electrical equipment shall be Underwriter's approved; also, shall meet requirements established by N.F.P.A., N.E.M.A., and A.N.S.I. and as specified hereinafter.

C. Abbreviation used in these Specifications:
   N.E.C. - National Electric Code - Latest Edition adopted by the National Fire Protection Association
   N.E.M.A. - National Electrical Manufacturers Association
   I.P.C.E.A.- Insulated Power Cable Engineers Association
   A.N.S.I. - American National Standards Institute, Inc.
   F.C.C. - Federal Communications Commission
   N.A.B. - National Association of Broadcasters
   N.A.E.B. - National Association of Educational Broadcasters
   I.T.L. - Independent Testing Laboratories
   E.T.L. - Electrical Testing Laboratories
   U.L. - Underwriters Laboratories
   B.I.C.S.I. - Building Industry Consulting Service International
   I.E.E.E. - The Institute of Electrical and Electronics Engineers, Inc.
   T.I.A. - Telecommunications Industry Association
   E.I.A. - Electronic Industries Association
   R.C.D.D. - Registered Communication Distribution Designer
   N.I.C.E.T - National Institute of Certification in Engineering Technologies
   AVIXA - Audiovisual and Integrated Experience Association, (formerly Inforcom)

1.4 SUBMITTALS

A. Provide shop drawing submittals and illustrations in accordance with requirements of Division 01 Submittal Procedures unless otherwise noted.

B. Provide shop drawings for each section separately as follows:
   1. Provide one electronic file submittal for each section.(do not mix sections together)
   2. Provide an index with a complete material list in the Specification sequence.
   3. Each Specification Section shall have its own material list.
   4. Provide product cut sheet for each specified item in sequence.
   5. Each manufacturer's product cut sheet shall be identified/marked or highlighted.

C. Provide wiring diagrams and system layout drawings showing all devices, equipment, home runs, software presets, labeling, dB loss, etc. for each of the following systems (one electronic copy):
   1. Local area cabling infrastructure (showing labeling, routing, etc.)
   2. Network electronics
   3. Sound and intercom systems
   4. Specialty sound systems
   5. Performance sound systems and local audio systems
   6. Video surveillance systems
   7. Media management systems
   8. Remote origination carts.

D. Partial shop drawings from one section WILL NOT BE ACCEPTABLE.

E. Submittals will be returned unchecked if they do not follow the outlines above.

F. Any Shop drawing submittals that are not required will be returned unchecked.

1.5 QUALITY ASSURANCE

A. The cabling system components and equipment shall be listed by Underwriters Laboratories, Inc., and the components shall bear the UL label. The system shall be installed in accordance with requirements set by National Electric Code.

B. Installing Contractor shall have five years experience in cable installations.

C. Contractor shall submit a list of Jobs performed (minimum of five) in the past five years, equal to one specified herein. Also the contractor shall arrange a site visit of any job(s) selected by Architect/Engineer. The list shall include the following:
   1. Job location, and date when it was completed.
   2. Contact person at each job location.
   3. Brief description of each job.

D. Contractor shall employ on their staff or have a contract with a Registered Communications Distribution Designer (RCDD) registered with the Building Industries Consulting Services International (BICSI).

E. Contractor shall submit the name, registration number, and seal of the RCDD on the contractors' staff as part of their shop drawing submittals.

F. The RCDD shall certify the final installation in writing and provide written verification that they have inspected the completed installation and that the installation meets the terms and conditions of this bid, design requirements of the BICSI TDMM (Latest edition), and all TIA/EIA, NFPA, NEC, and all local codes and specifications related to this work this letter shall be provided with the closeout paperwork.

G. All design documents, submittals, Project Record Drawings, test results, third party testing and other documentation provided by the Communications Contractor shall bear the name, registration number, and seal of the RCDD responsible for this Project.

H. Cabling systems installation shall be provided by the Contractor's own work forces. Any subcontractor agreements for any portion of the work specified herein must meet with approval of the A/E and Owner. It is the intent of the contract to have one Contractor provides sole responsibility for material, labor and service for the systems.

I. Contractors shall have staffed office (secretary, project manager, technicians, etc.) within (100) miles of the project and provide a service response time of a maximum of (2) hours from time of notification of major system failure.

J. The Audio Video Cabling Contractor shall have on staff a video technician/Engineer. The Video Cabling System shall be tested and certified under the direct supervision of the video engineer to meet all FCC requirements for leakage including, but not limited to, amplifiers, taps, couplers, splitters, connectors, and cabling.

K. The Data Contractor and wireless systems shall have network certification in the manufacturer's equipment he/she is installing and shall be an authorized resellerr with factory trained staff on the system provided, and the contractor shall be certified to service and support the type of system with the specified requirements.

L. The Voice Contractor shall be an authorized telephone reseller with factory training staff on the system provided. Contractor shall be certified to service and support the type of system with the specified requirements.

M. The Sound System Contractor shall have on-staff, qualified system engineers, certified with CTS-D and CTS-I AVIXA certifications and shall be trained and certified for the software and control systems specified.
   1. The sound system engineer shall own and be trained with calibrated test and measurement microphone with quality standards listed as ANSI Type 1 or Type II minimum, and as detailed in Division 27 41 01 Specifications.
   2. The sound system contractor shall work with the A/E design team for Commissioning the professional sound system(s) with a dedicated “Quiet Day” during the installation and scheduled in advance with the Prime Contractor for the project.
   3. See Division 27 41 01 for additional requirements for performance sound systems, AV submittals, and testing requirements to be included.

1.6 TECHNOLOGY ABBREVIATIONS

A. Cable Pathway
   1. Shafts, conduits, surface mounted raceway, boxes, sleeves, floor boxes, cable tray, and floor penetrations that provide routing space for communications cabling.

B. Equipment Rooms (ER)
   1. An Equipment Room (ER) is a special-purpose room that provides space and maintains a suitable operating environment for communications and/or computer equipment.
   2. An Equipment Room (ER) may contain terminations, interconnections, and cross-connects for telecommunications distribution cables as well as other low voltage equipment such as fire alarm panels, video-audio distribution, security, and other building signaling and communication systems.

C. Main Cross-Connect (MC)
   1. The Main Cross-Connect (MC) is typically located with the Equipment Room (ER) and is the main cross-connect and interconnection point for first level backbone.

D. Telecommunications Rooms (TR)
   1. A Telecommunications Room is a space used to make connections from the first level backbone cabling from the MC to the horizontal cabling. TR’s contain telecommunications equipment, control equipment, cable terminations, and cross connect wiring.

E. Entrance Facility (EF)
   1. An Entrance Facility (EF) is a space within a building for both public and private network service cables to be terminated, protected and spliced to an indoor rated cable. This space may be in the MC or ER.

1.7 PRECEDENCE

A. Contractors shall review both Drawings and Schedules of Communications Systems for any discrepancy.

B. If there is a discrepancy in the number of rooms and quantities between the Drawings and the Schedules, the Contractor shall include the higher of the two quantities.

C. If the products specified are no longer available, Contractor shall provide replacement products that meet or exceed performance specifications of the original specified model at no cost to the Project.

D. If the Contractor bids products that do not meet or exceed the performance specifications or the original specified model, the Contractor shall provide products that meet the performance specifications as approved by the Architect/Engineer at no cost to the project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXPLANATION AND PRECEDENCE OF DRAWINGS

A. For purposes of clarity and legibility, the Telecommunication "T" and “TA” drawings are essentially diagrammatic and, although size and location of equipment are closely drawn to scale whenever possible, Contractor shall make use of the data in all of the Contract Documents and shall verify this information at the building site. See the Suggested Schedules for “TA” drawings for conduit and coordination needs with Div 26 scope of work.

B. The Drawings indicate required size and points of termination of wiring and other related items and may suggest proper routes for such items to conform to structure, avoid obstructions and preserve clearances. It is not intended that Drawings indicate every necessary offset or minor device. It shall be the Work of the Contractor to install each item in a manner to conform to structure, avoid obstructions, preserve headroom, and keep opening and passageways clear.

C. It is intended that apparatus be located in coordination with architectural elements, and shall be installed at exact height and location stipulated.

D. Contractor shall fully inform himself regarding peculiarities and limitations of the spaces available for the installation of work and materials provided under his Contract.

E. Contractor shall carefully examine existing conditions, existing wiring, existing conduit, and other materials on the premises and compare the documents with the existing conditions. Variances and necessary changes shall be adjusted by appropriate modifications.

F. Contractor shall carefully examine the Division 26 drawings for pathway, sleeves, etc.

3.2 PERMITS, FEES, REGULATIONS, INSPECTIONS

A. Contractor shall arrange and pay for permits, fees, and inspections required in connection with his work for this project, from local, county, state and public agencies, and shall obtain permits from railroad, state highway and utility companies.

B. Work shall be inspected by approved local and state inspection bureaus, Electrical Inspection Agency, and/or authority, and local utilities.

C. Upon completion of the Work, the Contractor shall furnish to the Architect/Engineer, a certification of inspection and approval from said Bureau or Agency before final payment on contract will be allowed.

D. Contractor shall verify the right of way with all local and state agencies.

3.3 HOISTS, RIGGING, TRANSPORTATION, AND SCAFFOLDING

A. Contractor shall provide scaffolding, staging, cribbing, tackle, hoists, and rigging necessary for placing of his materials and equipment in their proper places in the Project.

B. Contractor shall pay costs for transportation of materials and equipment to the job site and shall include such costs in his proposal.

C. Scaffolding and hoisting equipment shall comply with requirements of pertinent Federal, State, and Local Laws and Codes.

3.4 PROTECTION

A. In addition to other requirements of the Contract, the Contractor shall provide various types of protection as follows:
   1. Protect finished floors during installation, etc.
   2. Protect equipment, finished surfaces from paint droppings, insulation adhesive, and sizing droppings by use of drop cloths.
   3. Protect countertops during cutting for grommets.
   4. Protect video projectors, televisions, DVD, television studio, switches, sound system, clocks, access control, IP cameras, etc. from dirt.

B. Contractor shall be responsible for the protection of finished work from other trades from damage or defacement by his operations and shall remedy such damage at his own expense.

3.5 CUTTING AND PATCHING

A. Contractor shall do his own cutting and patching of building materials and piping, as required for the installation of his Work, but no structural members shall be cut without the approval of the Architect and such cutting shall be done in a manner directed by the Architect.

B. Patching of and repair of damage to Work in place shall be done in a neat and workmanlike manner, meeting with the approval of the Architect. Contractor whose operations require cutting of work in place, or who causes damage which entails repairs of such work, shall employ mechanics of the particular trade whose work must be cut or which is damaged, and shall pay the costs of such patching or repair.

3.6 SLEEVES

A. The contractor shall examine the technology and electrical drawings for sleeve locations, and shall verify the locations.

B. The contractor shall be responsible for any additional sleeves and cores should they be required.

C. NO change order shall be issued to provide sleeves in addition to those provided under the electrical contract.

3.7 FINAL COMPLETION

A. Communication installation shall be cleaned prior to Substantial Completion of the Work.

B. Retouch or repaint factory painted prime and finish coats, where scratched or damaged. Whenever retouching will not be satisfactory, the Architect/Engineer may require complete repainting until the desired appearance is obtained.

C. Contractor shall clean equipment; restore damaged materials; remove grease, oil, chemical, paint spots, and stains; and generally leave the Work in A-1 condition.

D. Contractor and his subcontractors, on completion of his Work, shall remove tools, equipment, surplus materials, and rubbish pertaining to his operations, and pay costs for such removal and disposal from the site.

E. See Division 27 41 01 for final Commissioning/Quiet Day requirements.

3.8 GUARANTEE AND WARRANTY

A. Contractor shall submit written certificates, warranting that each item of equipment furnished complies with the requirements of the Drawings and Specifications.

3.9 SUPERVISION AND COOPERATION

A. Work by the Contractor under this Division shall include the services of an experienced superintendent, who shall be constantly in charge of the Work, together with the qualified journeymen, helpers, and laborers required to properly unload, install, connect, adjust, start, operate, and test the Work involved, including related equipment and materials furnished under other contracts or by the Owner.

3.10 UNIVERSAL SERVICE FUND (E-Rate)

A. It is the district's intention to apply for subsidized funding for this project through the Universal Service Fund. Please address your company's position regarding the USF. It is anticipated that the selected vendor will be in compliance and acceptance with the USF guidelines and that the vendor will, as required under the USF, be billing the USF directly for its portion of the payment for all telecommunications services.

3.11 COLOR CHART

A. All voice and data cables and connectors to have the following colors:

Description Item	Jack	Cable	**Patch Cables**	I.D.	Notes
Telephone	Ivory	Ivory	Ivory	T	4 Pair Cable
Data/Computer	Blue	Blue	Blue	C	4 Pair Cable
Wireless Access point	Green	Green	Green	WAP	4 Pair Cable
Composite Video	Yellow	Black	Black	V	Coax Cable
AV Control Cable	Gray	Gray	Gray	L	4 Pair Cable
Video Projector	-	Gray	Gray	VP	4 Pair Cable
Audio – Right	Red	-		AR	4 Pair Cable/RCA
Audio – Left	White	-		AL	4 Pair Cable/RCA
Composite Video	Yellow	-		CV	4 Pair Cable/RCA
Fiber – Multi-mode	Black	Aqua	Aqua	FO	6/12/24/36
Fiber – Single-mode	Ivory	Yellow	Yellow	FO	6/12
Sound System	-	Green		SS	Multi-conductors
Intercom	-	White		IS	Multi-Conductors

CCTV – IP	White	White	White	CCTV	4 pair cable
Coax	-	Black/White	Black	CTV	RG-59
VGA	-	Black/White	Black/Gray	VGA	14 conductor
HDMI	Black	Red	Red or Black	HDMI	4 Pair cable or HDMI cable

3.12 COMMUNICATIONS SYSTEMS DEMOLITION

A. Cabling Contractor shall remove the following:
   1. All 4 pair UTP cabling
   2. All multi-pair UTP cabling.
   3. All coax cabling
   4. All fiber optic cabling
   5. All connectors, patch panels, etc.
   6. All cover plates, jacks, etc.
   7. All cabinets/racks, etc.
   8. All sound system equipment
   9. All sound system cabling
   10. All clock systems

B. Coordinate demolition and removal of communication equipment with the Owner.

3.13 MATERIAL LIST

A. Contractors shall provide with their bids or 24 hours after bid complete materials list on THEIR LETTER HEAD showing manufacturers name, catalog numbers, description, and quantities for each item in each system, per section number as follows:
   1. Manufacturers Name.
   2. Manufacturer's catalog number.
   3. Quantities.
   4. Bonds.
   5. Training.
   6. Project managements.
   7. Shop drawings.
   8. Close out.
   9. Warranties.
   10. Allowance.
   11. Calibrated microphone model used for audio testing.

B. The lowest responsible bidders shall provide unit pricing for all materials as described in Part "A" above, within 24 hours with NO exceptions.

C. If a subcontractor is utilized for any portion of the work, all contact information, references, material list, and any other information shall be provided per the specified contract bid requirements.

D. If the above requirements are NOT provided, then the contractor is considered a nonresponsive bidder subject to disqualification.

END OF SECTION 27 05 00

SECTION 27 05 28 - PATHWAYS FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes, but is not limited to the pathways for communications systems:
   1. Cable supports
   2. Sleeves
   3. Cable ties
   4. Inner duct.
   5. Warning tape

B. Related Sections includes the following:
   1. Division 01 General Requirements
   2. Division 26 Electrical – Wire Mesh Basket Tray
   3. Division 27 Communications
   4. Division 28 Electronic Safety and Security

1.3 DESCRIPTION OF WORK

A. Provide supports, cable ties, conduits, sleeves etc and all related equipment for the pathways for communications cabling as described herein and shown on the drawings.

1.4 QUALITY ASSURANCE

A. Materials shall be new, complete with manufacturer's guarantee or warranty, and shall be approved by the Underwriters' Laboratories, Inc.

B. Materials shall also comply with applicable standards of the National Electrical Manufacturers' Association, Insulated Power Cable Engineers Association, National Safety Code, and the American Institute of Electrical Engineers.

C. Work shall be executed in a workmanlike manner and shall present a neat mechanical appearance when completed. Methods and techniques of installation shall be subject to the approval of the Architect.

D. Materials of the same type or class shall be the product of the same manufacturer.

1.5 PROJECT CONDITIONS

A. Contractor shall be responsible for the accurate location of their Work and for informing themselves of the nature and arrangement of the materials, equipment, and construction to which their Work attaches or passes through.

B. In general, work shall be concealed in walls in conduit and above ceilings in wire management system, conduit in chases, in equipment rooms, and the like, insofar as is practical; so that such work will not interfere with the proper coordinated installation work of other trades or Contractors.

C. In general, wiring, and conduit shall be installed parallel (or at right angles) to the building walls, and at such heights as not to obstruct portions of windows, doorways, stairways, pipe space, tunnel, or passageway, and properly concealed to not interfere with the proper coordinated

installation of other trades or Contractors. Where interferences develop in the field, the Work shall be offset or routed as required to clear such interferences. Consult Electrical Technology Drawings, Contractors, and other details before installing work.

D. Contractor shall procure definite locations and connections before rough-in or installation. The contractor shall then lay out the Work and be responsible for determining proper elevations, obliquity, acclivity, measurements, and locations required for the installation.

1.6 WARRANTY

A. Provide warranty as specified in the section titled "Demonstration, Training and Warranty of Communications Systems.

1.7 TRAINING

A. Provide training as specified in the section titled "Demonstration, Training and Warranty of Communications Systems.

PART 2 - PRODUCTS

2.1 CABLE SUPPORTS

A. Provide adjustable cable support that meets UL, NEC and TIA/EIA requirements for structured cabling systems.

B. Provide wide base cable support that meets UL, NEC, and TIA/EIA requirements for structured cabling system.

C. The cable support system shall provide support for various types of low voltage cables such as Category 3, 5E, 6 and 6A UTP cables in addition to fiber optic cable, innerduct, multi-pair backbone cables, coaxial cables, intercom, security and sound system cables.

D. The support system shall attach to the building structural elements or be wall mounted.

E. The supports shall be made of fire retardant, low smoke emission products, which meet UL 2034 requirements for air plenum spaces.

F. The support products shall have a minimum of a 1 inch wide platform for the cable to rest.

G. Individual supports shall be installed at intervals not greater than 60 inches.

H. Cable sag between supports shall not exceed 12 inches. Sagging cables shall not touch the ceiling grid or tiles.

I. Cable supports shall be installed a minimum of 6 inches above lay-in ceiling system.

J. Minimum clearances from sources of EMI and RFI must be adhered to as specified in TIA/EIA-568B, TIA/EIA-569 and the latest version of the BICSI TDMM.

K. Approved Manufacturers:
1. Caddy adjustable cable support #CAT HP Series.
2. Thirty 5 Industries; #CAT35.
3. Rapidtrak System by CPI;
4. Panduit: J-PRO Cable Support System.

2.2 SLEEVES

A. Provide a minimum of two (2) four (4) inch sleeves between floors with plastic bushings at each end.

B. Provide four (4) four (4) inch sleeves from the corridor cable tray to the TR/MC/ER cable tray with plastic bushings at each end.

C. Provide a minimum of three (3) four (4) inch sleeves (unless otherwise noted) in the corridor between cable trays when the cable tray passes thru a wall separations with doors with plastic bushings at each end.

D. Provide a minimum of one (1) two (2) inch sleeve with plastic bushing at each end from the corridor cable tray to each room, install sleeve above the door.

E. Fire stop all sleeves.

2.3 CABLE TIES

A. Provide plenum rated cable ties for cables installed above ceilings.

B. Cable ties shall meet UL 94V-O.

C. Color shall be maroon.

D. Provide one bag of 100 cable ties to the owner.

E. Approved Manufacturers:
1. Panduit PLT1M-C7024 (series) 4-inch
2. Panduit PLT2S-C7024 (series) 8-inch
3. Panduit PLT3S-C7024 (series) 12-inch
4. Hubbell MCCMV9-10
5. Leviton 4310X-XX series

2.4 CABLE HOOK AND LOOP FASTENERS

A. Provide cable hook and loop fasteners to secure cable bundle to communication equipment cabinet and racks.

B. Hook and loop fasteners may be used above ceilings if they are plenum rated.

C. UL listed.

D. Color shall be maroon.

E. Provide one bag of 100 units to the owner.

F. Approved Manufacturers:
1. Panduit, TTS – Series
2. Hubbell MCCMV9BS10
3. Leviton 4310X-XX series

2.5 INNDERDUCT (INDOOR)

A. Provide 1.0 inch I.D. plenum rated corrugated innerduct above ceiling for all non-armored fiber.

B. Innerduct shall be UL listed.

C. Approved Manufacturer:
   1. Endot-Endocor/PL – plenum.
   2. Carlon
   3. Pyramid Industries
   4. Eastern

2.6 INNERDUCT (OUTDOOR)

A. Provide 1.0 inch I.D. non-plenum polyethylene-type, ribbed inside tube, innerduct in site conduits as shown on the drawing.

B. Innerduct shall be UL listed.

C. Approved Manufacturer:
   1. Enduct Ribbed (for outside applications)
   2. Carlon
   3. Pyramid Industries
   4. Eastern

2.7 UNDERGROUND WARNING TAPE

A. Description: Permanent, bright-colored, continuous-printed polyethylene tape.
   1. Not less than 6 inches wide by 4 mils thick.
   2. Compounded for permanent direct-burial service
   3. Print legend shall indicate type of underground lines.

PART 3 - EXECUTION

3.1 SITE PREPARATION

A. Contractor shall do excavating of materials encountered, including backfilling necessary for the installation of underground wiring and equipment in his Contract. Provide and maintain bracing, shoring, or sheathing necessary to support the walls of excavations.

B. Trenches shall be opened in straight lines and bottomed out at least 4 inches below conduit or ducts. Exterior trenches shall have a minimum depth of 36 inches which shall be maintained between top of largest conduit or duct and finish grade.

C. Where roots of live trees are encountered in excavations, they shall be carefully protected during construction. Contractor shall cut or remove interfering trees, remove stumps, and rocks in the line of the excavation; however, approval of the Architect shall be obtained before a tree is removed or cut. Shrubbery in line of excavation shall be removed with a ball of dirt and replaced at completion of installation.

D. Where excavation is necessary in existing pavements, Contractors for whose work the excavation is required shall pay fees and costs of opening street or pavement and costs of filling and repaving in accordance with requirements of and to the satisfaction of the Municipality, Utility, or other Owners of such paving.

E. Where existing sidewalks, drives, and roadways must be cut, they shall be cut in straight lines, and shall present a neat appearance when re-laid and shall match existing work. At such locations the backfill medium shall be concrete from the bottom of the finished surface to the bottom of the trench except as may be otherwise approved by the Architect/Engineer.

F. Where excavation is necessary in an existing lawn, carefully remove and restore sod. After backfilling trench, replace sod or apply top dressing of black dirt and seed to match existing lawn. Care shall be exercised during the work to see that no unnecessary damage is done to lawns in the storing of dirt or other construction material. Should unnecessary damage occur, in

the opinion of the Architect, the Contractor shall be required to recondition lawns at his own expense.

G. In addition, the Contractor shall provide and maintain warning barricades, flags, and warning lights, and shall conduct his work so as to create a minimum amount of inconvenience to others, traffic, construction, and the like. Temporary suspension of work does not relieve the Contractor of responsibility for the above requirements.

H. Remove and legally dispose of debris, rubbish, and excavation spoils resulting from the Work.

I. This Contractor shall “after one year” return to the jobsite and fill all trenches that have settled.

3.2 INSTALLATION

A. Materials installed under this Division of Work shall be supported from the building structure, independent of other pipe, duct, equipment, ceiling grid, etc.

B. Cabling shall be supported by cable supports that meet BICSI, EIA, TIA requirements. These include J-Hooks, cable tray, basket tray or conduit. Cables shall not lie on or be supported directly on the building structural steel, tops of masonry walls, ceiling grid, ceiling supports, mechanical piping etc.

C. Cable supports shall be independently supported from wires, rods or be independently secured to structure using approved anchors. In above ceiling applications these wires or rods shall be visually distinguishable, independent of the ceiling grid supports and be affixed at both ends to minimize movement.

D. Cables in exposed ceiling areas such as auditorium, gymnasium, mechanical rooms, boiler rooms, chiller rooms, art rooms, classrooms, locker rooms, corridors, etc. shall be installed in conduit from the device to the nearest accessible lay-in ceiling or the nearest telecommunication room. Refer to the Division 26 drawings for conduit being provided. The contractor shall coordinate the conduit routing with the Division 26 contractor to minimize the cable distances.

E. Sound system cables in exposed ceiling areas, such as the auditorium, gymnasium, student dining, locker rooms etc. shall be installed in conduit from the device to the area sound system cabinet. Refer to the Division 26 drawings for conduit being provided. The contractor shall coordinate the conduit routing with the Division 26 contractor to minimize the cable distances.

F. Install underground warning tape 12 inches above the conduit in the trench.

G. Install jacks, fitting, and connectors in properly selected outlet boxes and junction boxes.

H. Cover and protect equipment, materials, enclosures, boxes, cabinets, racks, before and after to prevent the entrance of grit, dirt, and foreign matter. The contractor shall clean all equipment and racks or cabinets prior to final acceptance.

I. Outdoor minimum separations from possible EMI exceeding 5KVA shall be 24 inches for power in nonmetallic pathways and 12 inches for power in grounded metal pathways.(Per table 3.1 in BISCI TDMM)

END OF SECTION 27 05 28

SECTION 27 05 53 - IDENTIFICATION FOR COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the identifications for communications systems:
   1. Self laminating labels
   2. Equipment cabinet labels

B. Related Sections includes the following:
   1. Division 01 General Requirements
   2. Division 27 Communications
   3. Division 28 Electronic Safety and Security

1.3 DESCRIPTION OF WORK

A. Provide identifications for communications and security systems as described herein and shown on the drawings.

1.4 SUBMITTALS

A. Comply with requirements of the submittal section of the Specifications.

1.5 QUALITY ASSURANCE

A. Materials shall be new, complete with manufacturer's guarantee or warranty, and shall be approved by the Underwriters' Laboratories, Inc.

B. Materials shall also comply with applicable standards of the National Electrical Manufacturers' Association, Insulated Power Cable Engineers Association, National Safety Code, and the American Institute of Electrical Engineers.

C. Work shall be executed in a workmanlike manner and shall present a neat mechanical appearance when completed. Methods and techniques of installation shall be subject to the approval of the Architect.

D. Materials of the same type or class shall be the product of one manufacturer.

E. Provide labeling per ANSI/EIA/TIA-606 requirement and in accordance with the Owner and Technology Consultant.

1.6 PROJECT CONDITIONS

A. Contractor shall be responsible for the accurate location of his Work and for informing himself of the nature and arrangement of the materials, equipment, and construction to which his Work attaches or passes through.

B. In general, label communication cables, equipment, cabinets, patch cord, data jacks, video jacks, cover plate, telecommunication rooms, MC/ER's video equipment, telephone system, etc.

PART 2 - PRODUCTS

2.1 SELF-LAMINATING LABELS

A. Provide self-laminating labels to meet TIA/EIA-606-A.

B. Labeling shall be per Class 2 and/or Class 3 requirements.

C. Approved Manufacturers:
1. Panduit S050X150VATY
2. Brady M21-1500-427
3. HellermannTyton TAG5L-105

2.2 EQUIPMENT CABINETS/RACKS IDENTIFICATION LABELS

A. Provide engraved, laminated acrylic label.

B. Secure to equipment with screws.

C. Label shall be white letters on a black background.

D. Minimum letter height shall be 1/2-inch.

PART 3 - EXECUTION

3.1 IDENTIFICATION

A. Equipment Identification:
1. Provide nameplates on equipment such as Telecommunication Rooms (TR), Main Cross Connect/Equipment Room (MC/ER), patch panels, CPU, and the like.
2. Lettering shall include name of equipment, the specific unit number, and other instructions that are applicable.
3. Nameplates shall be laminated phenolic with a black surface and white core. Use 1/16 inch thick material for plates up to 2 inches by 4 inches. For larger sizes use 1/8 inch thick material. Lettering of names should correspond to nomenclature specified for apparatus, corresponding with the Drawings, details, schedules, charts, wiring diagrams, and operating instructions, as approved by the Architect/Engineer.
4. Lettering shall be condensed Gothic. The space between lines shall be equal to the width of the letters. Use 1/4 inch minimum height letters which occupy four to the inch. Increase letter size to 3/4 inch on largest plates.
5. Attached directly to the apparatus in a manner approved by the Architect/Engineer.

B. Labeling
1. Label each cable (voice, video and data), video outlet, telephone and data jack at each patch panel and jack outlet clearly, neatly, and completely, including "Spares." Labels shall not be subject to moisture or fading, shall be self-adhesive and must be typewritten. Type room label above patch panel port location to allow end user ease in identification of patch panel locations. Patch panels shall be labeled with a large 1/2-inch letter to designate patch panel I.D. (A-Z). This letter will correspond to the faceplate labeling at the station faceplate. (Example: TR-B1.1 A22 where the closet “TR-B1.1” and the patch panel port “A22” number are both identified)
2. Use the following format to identify plate/connectors:
a. Individual jack designations shall begin at the main entry point of a room or space, and continue in a clockwise rotation. The following labeling codes shall be used:
1) C – communication
2) V – video
3) L - video control
4) A - audio (left-white, right-red)
5) I – input

6) O – output
7) AI - audio input, AL – audio left, AR – audio right
8) AO - audio output
9) VI - video input
10) VO - video output
11) VP – video projector
12) IWB – Interactive white board
13) FO – fiber optic
14) F – coax cable
15) S – security
16) DC – door contact
17) PT – power transfer
18) MD – motion detectors
19) REQ – required for exit
20) SS – sound system
21) WAP – wireless access points
22) CAM - camera

3. Labeling scheme shall be submitted with the system submittal drawings and approved prior to termination of devices. Contractor shall submit a detailed drawing or sample plate with connectors installed to depict the intended labeling scheme.
4. Label shall be applied within 6 inches from end of each of the cables.
5. Cabling at the patch panels shall be terminated in numerical order so as to provide a logical pattern that will provide the end user the greatest ease in system administration.
6. For fiber cabling, labels shall be applied at the patch panels in the space that is provided. Label shall include the room and location where fiber is routed to or from.
7. Labels shall be clean and level.
8. Final labels should reflect the Owner's room designation scheme, which may not match the construction drawing numbers. The final room number scheme shall be confirmed with the Architect/Engineer prior to labeling the faceplate and patch panels. If the final room numbers are not available at the time of cable installation, architectural numbers shall be permitted for cable labeling only. If architectural numbers are used, a cross reference sheet shall be submitted in a spreadsheet format. This may require that the Contractor shall have to re-label the patch panels to match the final room numbers.
9. Refer to drawing for patch panel and faceplate labeling detail.
10. Provide blue dot with the IP address for all WAP's, Cameras, Video projectors etc, mount the label on the grid below the device.

C. Other Items
1. Provide identification as required in other subsections of these Specifications and as denoted on the Drawings.

D. It shall be the responsibility of the Cabling Contractor to clearly and logically label all terminal blocks, cables, and equipment (with length and room number).

E. Labels shall be clearly typed and shall appear at all cable ends within 6 inches of the jack or patch panel termination on the outer jacket, on the faceplate of the station jacks, and on the patch panels. All patch cables shall be numbered 1 through X within 1/2 inch of each termination. Station runs shall be labeled indicating the room number of the station and its MC/ER and TR termination point as well as a unique identifier. (Handwritten labeling is not allowed.)

F. Telephone device labeling: All telephones shall be labeled after the programming per the owners' requirements, verify labeling with owner.

G. Security door controller labeling: The door controller shall be labeled with the electrical circuit number and patch panel/TR location.

H. Video coax cable shall be tagged with a distance at the MC/ER and TR end as well as a regular identifier. Backbone cables will be identified with an identifier that identifies where each cable end is terminated.

I. Provide labeling for the following items with room name and room number:
   1. Video projector and video projector remote
   2. Television and television remote
   3. Set Top Boxes
   4. Document Camera
   5. Classroom sound system and microphones
   6. Wireless keyboard and mouse
   7. Interactive whiteboards
   8. Interactive tablets
   9. Mobile carts
   10. Telephones
   11. Cameras
   12. Security devices
   13. Miscellaneous equipment, etc.

END OF SECTION 27 05 53

SECTION 27 15 17 - COMMUNICATIONS COPPER HORIZONTAL CABLING (Augmented Category 6 Cable)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes, but is not limited to the following:
1. Local area network
2. Horizontal cabling
3. Patch panels compatible with the structured cabling system
4. Patch cords compatible with the structured cabling system
5. Modular jacks
6. Termination of all horizontal cabling
7. Testing of all horizontal cabling

B. Related section includes the following:
1. Division 01 – All Sections
2. Division 26 - Electrical
3. Division 27 – Communications Sections

1.3 DESCRIPTION OF WORK

A. Provide labor, material, equipment, terminations, and accessories necessary for a complete and operational communications copper horizontal cabling system as indicated on the Drawings and specified herein. The contractor shall furnish the equipment, accessories and necessary material as described herein.

B. All Wireless Access Point locations will receive two (2) white plenum Cat6A cables per device. All other data, camera, vape detectors and any other locations will receive Cat6 with the quantity marked on the print with colors indicated below.

TELECOMMUNICATIONS COLOR LEGEND				
SYSTEM	TERMINATION (RJ45)	CABLE	PATCH CABLE (PATCH PANEL)	PATCH CABLE (STATION)
DATA	BLUE	BLUE	BLUE	BLACK
WIRELESS	WHITE	WHITE	WHITE	WHITE
CAMERA	PURPLE	PURPLE	PURPLE	PURPLE
ACCESS	YELLOW	YELLOW	YELLOW	YELLOW
HVAC	RED	RED	RED	RED

C. Provide communications copper horizontal cabling from each communication jack to each TR/MC/ER as described here and as shown on the drawings.

D. The maximum allowable horizontal cable length is 295 feet. This maximum allowable length does not include an allowance for the length of 16 feet to the workstation equipment or in the horizontal cross-connect.

E. The modular computer/data eight-position jack shall match the color scheme of EIA-568 B as follows:

1. Pair 1: Pin 4 - Blue; Pin 5 - White-Blue
2. Pair 2: Pin 1 - White-Orange; Pin 2 – Orange
3. Pair 3: Pin 3 - White-Green; Pin 6 – Green
4. Pair 4: Pin 7 - White-Brown; Pin 8 – Brown

F. Contractor shall coordinate the extension of the electrical service from the electrical junction box located in the room to each communications cabinets/rack with the Site Electrical Contractor.

1.4 QUALITY ASSURANCE

A. Communications cabling system components and equipment shall be listed by Underwriters Laboratories, Inc. for Computer use, and the components shall bear the UL label.

B. The system shall be installed in accordance with requirements set by ANSI/NFPA-70 National Electric Code.

C. All equipment shall comply with the latest ANSI-J-STD-607 grounding and bonding standards.

D. All equipment and installation practices shall comply with latest BICSI (TDMM) standards.

E. All equipment shall comply with the latest ANSI/TIA/EIA-568, 569, 60, 607, and 862 standards, as applicable.

F. Cables shall be installed in accordance with ANSI/EIA/TIA and BISCI standards.

G. Provide labeling per ANSI/EIA/TIA-606 requirement and in accordance with the Owner and the Technology Consultant.

H. All cabling shall be tested in accordance with the ANSI/TIA/EIA-568-B2 standards with the required testing equipment.

I. See section – "Common Work Results for Communications".

1.5 CERTIFICATION

A. Cabling Contractor shall provide the services of a component manufacturer and provide equipment listed by Underwriters Laboratories, Inc. The Contractor shall issue a equipment certification stating that the equipment and connected wiring and devices which form the specified system, together with installation have a 20-year Application Assurance and 20-year Extended Product Warranty on Registered Installation, and are in compliance with the requirements established by TIA/EIA 568, 569, and BICSI Standards. Also this Contractor shall submit with his/her bid a letter from the manufacturer indicating that his/her installation will be certified for a 20-year Application Assurance and 20-year Extended Product Warranty on Registered System Installation.
   1. See Manufacturer Material List for approved manufacturers with part numbers.

1.6 SUBMITTALS / RECORD DRAWINGS / MAINTENANCE MANUALS

A. Shop Drawings
   1. Provide complete and comprehensive shop drawings with labeling to the Architect/Engineer for approval.
   2. Drawings shall be provided in AutoCAD Release 2002 format or higher.

B. See front end submittals section for more information.

C. See Common Work Results For Communications section 270500 for more submittal requirements.

D. Provide record drawings and maintenance manual, per section – "Operation and Maintenance of Communications Systems".

E. Contractor shall include the following with their submittal:
   1. Manufacturer's Certificate stating each testing device used on the project and shall contain the most current revision of software.
   2. Manufacturer's Certificate stating that each testing device used on the project has been calibrated within the last 12 months.

1.7 WARRANTY

A. Components, parts, and assemblies supplied by the Communications Contractor/manufacturer shall be guaranteed against defects in materials and workmanship for a period as specified in section – Demonstration, Training, and Warranty of Communications Systems, commencing upon system start-up. Warranty services shall be provided by an installer certified by the equipment manufacturer during normal working hours. The manufacturer's statement of warranty shall be included in the submittals.

1.8 CHANNEL WARRANTY FOR HORIZONTAL CABLING SYSTEM

A. The channel ACR performance warranty: 19 dB at 100 MHz.

B. The link ACR performance warranty: 22 dB at 100 MHz.

C. Application systems supports: 10 Gig at 500 MHz.

1.9 TRAINING

A. Provide training as specified in the section titled "Demonstration, Training, and Warranty of Communications Systems.

PART 2 - PRODUCTS

2.1 VOICE AND DATA CABLE AND COMPONENT PRODUCTS

A. Contractors must provide a system where the component and cable manufacture have formed a partnership to create a complete channel solution. This solution shall be warranted by the component manufacturer.

B. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.2 VOICE AND DATA JACKS

A. Provide a flush mounted modular data jack RJ-45 to fit in a one or two gang 3-1/2 inch deep box and/or to fit in the surface mounted raceway or floor boxes as shown on the Drawings and as specified herein.

B. Data jacks shall be 8-position configurations and shall meet all the transmission performance of the specified cable.

C. The data jacks shall be UL listed and must meet TIA/EIA 568B.2-AD10 requirements.

D. The data jacks to be wired to TIA/EIA 568B .2-AD10 color scheme.

E. Modular data jacks shall be mounted in modular wall plates for one, two, three, four, five, and/or six modular opening.

F. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.3 MODULAR COVER PLATES (TWO GANG)

A. Provide decorative modular cover plates with number of modular data jack as shown on the drawing and (minimum one each) as specified in this section.

B. Provide modular mounting frames for all jacks in the exposed surface raceway only (Panduit CFG4 Series).

C. Provide floor cover plate to match receptacle cover plates (verify with site electrical contractor).

D. Wall jacks shall be mounted on a stainless steel plate (Panduit KWP6P or equal).

E. Cover plate shall be adjustable either in field or by factory (1/4 inch minimum).

F. Provide blanks for wall and floor boxes.

G. Cover plate:
1. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

H. Wall adapter:
1. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

I. Surface boxes:
1. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.4 STAINLESS STEEL COVER PLATES

A. Provide stainless steel cover plates to fit the modular jacks as shown on the Drawings.

B. Stainless steel cover plate shall be double gang.

C. Provide stainless steel cover plates in all areas.

D. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.5 COPPER PATCH PANELS

A. Provide 24 port RJ45 patch panels for termination of all UTP cable with 24-RJ45 jacks.

B. Provide 48 port RJ45 patch panels for termination of all UTP cables with front and back cable management with 48-RJ45 jacks.

C. Patch panels shall meet or exceed all transmission performance for augmented category 6 as outlined in TIA/EIA-568B.2-10. .

D. Each RJ45 jacks shall be terminated with 4 pair of UTP wire and shall be wired to meet TIA/EIA 568B color scheme.

E. Provide three (3) extra wire management for data switches in each rack/cabinet.

F. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.6 PATCH CORDS

A. Provide patch cords with modular RJ45 at each end. UL listed, 3 foot (1m), 5 foot (1.5m), 7 foot (2.1m), 10 foot (3m), and 15 foot (4.6m) long.

B. Patch cord manufacturer must match connector/patch panel manufacturer.

C. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

D. Patch cable quantity
1. Furnish one blue patch cord for each data jack (within patch panel) with 20% spare; provide 50% three (3) foot patch cables, 50% five (5) foot patch cables.
2. Furnish one green patch cord for each wireless access point jack (within patch panel) with 20% spare cables; provide 50% three (3) foot patch cables, 50% five (5) foot patch cables.
3. Provide one fifteen (15) foot green station patch cable at the Wireless Access point location plus 20% spare.

2.7 COMPUTER/DATA CABLE (AUGMENTED CATEGORY 6)

A. The computer/data cable shall be four unshielded twisted pair (UTP), 23 AWG, solid bare copper.

B. The insulated conductors shall be twisted in pairs and shall be insulated with FEP material, and all 4 insulated pairs shall be laid into an insulated plastic jacket.

C. UL listed CMP with transmission characteristics that meet or exceed those of FCC-68/ TIA /EIT, 568A-5 and TIA /EIT TSB-95 performance and NEMA low loss, extended frequency, jacket shall be sequentially marked at 2 foot intervals and must be plenum rated. UL listed 1459 and 1863.

D. Pair twisting shall be maintained to meet the cable performance, but maximum cable, untwisting allows is one half (1/2) inch.

E. Cable shall meet ANSI/TIA/EIA-658-B2-AD10 transmission performance specifications for 4 pair UTP augmented category 6 cabling.

F. Design bandwidth - 500 MHZ, cable bandwidth - 500+ MHZ, standard data rate 10 Gig.

G. Color Code = Pair #1 - White/Blue and Blue
Pair #2 - White/Orange and Orange
Pair #3 - White/Green and Green
Pair #4 - White/Brown and Brown

H. Cable Electrical Specifications
1. Maximum operating voltage: 300V RMS
2. Nominal capacitance at 1 Khz: 15 PF/FT
3. Nominal velocity of propagation: 72 percent plenum
4. Nominal capacitance unbalance: PF/100M – 25.00 PF/M
5. Maximum capacitance unbalance: PF/100M – 66.00 PF/M

I. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.

2.8 WIRELESS ACCESS POINTS LOCATIONS

A. Cable Connection
1. Provide two ports UL listed surface mount box to terminate the RJ45 jack and cable.
a. See Manufacturers List Section 27 15 17TM for approved manufacturers and part numbers.
2. Provide 5 foot patch cord and/or as required.
3. Patch the wireless access point to the data jack in the box above the ceiling.
4. Provide one 4 inch square box with cover plate as shown for CEILING mounted devices.
5. Mount the biscuit in a 4 square junction box with cover plate and mounting hardware to attach to the ceiling grid, box to be mounted with face up.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide communications copper horizontal cabling, connectors, jacks, cover plate, blank inserts, patch panels, cords, etc., as specified here and as shown on the drawings.

B. Cabling at patch panels shall be terminated in numerical order, so as to provide a logical pattern that will provide the end user the greatest ease in the system administration.

C. See labeling details for more information.

3.2 UNSHIELDED TWISTED PAIR CABLE (UTP)

A. Provide the following additional UTP runs:
   1. Provide one (1) 4-pair UTP to the telephone headend equipment and also to the telephone back-up power supply in same room.
   2. Provide two (2) 4-pair UTP to each file server from MC/ER.
   3. Provide 20 additional 4-pair UTP cables, jacks, labeling, testing, etc (180 feet each) to the nearest telecommunications rooms. (Install as directed by the Architect/Engineer.)

B. Maximum pulling force shall be as recommended by the manufacturers and the maximum bending radius shall be (10) times the cable diameter.

C. Outdoor computer/data cable shall be used in all floor box locations where concrete is slab on grade.

D. Terminate the data jacks per the manufacturer's recommendations and ensure the termination bar is positioned as close as possible to the cable jacket edge.

3.3 CABLE PULLING

A. Cable rollers shall be used when pulling cable. Cable pulleys must be used when pulling cable around bends and corners of wireways. Pulleys shall have a minimum diameter of 6 inches.

B. Contractor shall use basket grips wherever possible and exercise care while pulling cable as not to exceed the maximum allowable pulling tension of the cable.

C. Cable rollers used for pulling cable in cable tray shall be mounted close to wireway supports and shall be placed at the beginning of the run and spaced every 25 feet along the run.

D. Provide 3 foot service loop at each jack.

E. Provide 25 foot service loop in each TR and MC/ER.

F. Support service loop above ceiling properly.

3.4 LABELING AND MARKING

A. See Drawings for Technology Schedules for more information.

B. Contractor shall install labels as follows:
   1. One label at each end of each cable at the end of the cable sheath, after stripping.
   2. One label on the outside of each face plate in the space provided.
   3. Label as shown on drawings.
   4. All markings shall be carefully done so as to present a neat, professional appearance.
   5. Cross connect color coded shall be as follows:
      a. Green - circuits from the central office/RBOC/Telco
      b. Purple - circuits from the switch ports

c. Yellow - circuits from the auxiliary cabinet
d. Blue - wiring from the work station information outlets
e. White - house pairs from riser cable between the equipment room and satellite closets.
f. Orange - wiring originating from electronic equipment
g. Grey - Tie cables between satellite closets.

3.5 CABLE SEPARATION FROM POWER WIRING

A. Between the cabling system and any fluorescent, neon, incandescent, or high intensity discharge lamp fixtures, the minimum distance shall be 5 inches.

B. Cable may be installed closer to lighting and convenience outlet power cable (single phase, 120V, 20A maximum), in metal cable channels for limited distances if the following guidelines are observed:
1. Coincident (parallel) runs of no more than 15 feet are permissible if a 1 inch separation between the power cable and the cabling system cable is maintained by separators or suitable retention hardware. If necessary, the separation may be less than 1 inch for a run of up to 6 inches if no contact between the cabling system cable and the power cable occur.
2. Coincident runs of no more than 30 feet are permissible if a 2 inch separation is maintained. The separation may be less than 2 inches for a run of up to 12 inches, if no contact occurs between the cabling system cable and the power cable.

3.6 WIRING COLOR SCHEME

Wire Pair	Color	8-Position T568A	8-Position T568B
1 Tip	White - Blue	5	5
1 Ring	Blue	4	4
2 Tip	White - Orange	3	1
2 Ring	Orange	6	2
3 Tip	White - Green	1	3
3 Ring	Green	2	6
4 Tip	White - Brown	7	7
4 Ring	Brown	8	8

3.7 TESTING

A. The Cabling Contractor shall be responsible for testing each horizontal cable run, patch panel, and patch cables to verify the performance of the channel warranty for the horizontal cabling system as defined in TIA/EIA TSB-67.

B. The contractor shall configure the tester for the cable and connectors used in the installation.

C. The contractor shall calibrate the tested to the newest software.

D. The contractor shall use the same tester(s) from the same manufacturer for the entire project(s).

E. All test reports shall look the same and all test reports shall be done with the same manufacture tester to assure all test results have the same appearance.

F. The contractor shall turn in all tests, partial or quick tests shall NOT be accepted, all test results shall be in an electronic format and shall be accessible with a cable test management software available free from the tester manufacture when submitted with the close out documents.

G. System and Wiring Testing, Checking, and Reports:
   1. Cabling Contractor shall provide necessary technical personnel and testing instruments as required to perform complete testing of all systems installed by Contractor and coordinate this testing activity with the Architect/Engineer and Owner's representative.
   2. All wiring, terminations, equipment, etc. shall be checked and tested by qualified field representative or equipment vendor. A report shall be submitted to Architect/Engineer and Commissioning Agent by vendor representative and/or Contractor indicating results of such final check-out and testing processes. Final payment will not be approved until such report is submitted and any "failure" results are corrected.
   3. Cabling Contractor shall conduct such other tests and make necessary adjustments of equipment and installation infrastructure required by Architect/Engineer and/or Commissioning Agent, as requested or necessary to verify performance requirements. Submit all data gathering information taken during such tests to Architect/Engineer and Commissioning Agent.
   4. Cabling Contractor must input the specified cable parameters, manufacturers' name and number in the tester. (Test results will not be accepted with generic cable type.)
   5. Reporting to be done in compliance with standards and schedules published by authority and agencies defined in the Specifications.

H. Cable test results shall be stored and presented to the architect/engineers in an electronic format for approval, and cable tester records designations shall match the associated cable labels and associated patch panel label designations.

I. Submit one complete cable test results in electronic format and 1 complete set of paper format in a 3-ring binder.

3.8 MAIN CROSS CONNECT/EQUIPMENT ROOM

A. See section – "Communications Equipment Room Fittings" for more information.

B. The cables shall be terminated on RJ45 copper patch panels with modular inserts for jacks.

END OF SECTION 27 15 17

SECTION 27 51 17 - SOUND REINFORCEMENT SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section includes, but is not limited to:
   1. Channel receiver/amplifier
   2. Infrared receivers
   3. Speakers
   4. Miscellaneous items such as cables, brackets, connectors, etc.

B. Related sections include the following:
   1. Division 01, General Requirements
   2. Division 27, Communications Sections.

1.3 QUALITY ASSURANCE

A. The Sound Reinforcement Contractor shall have a minimum of 5 years experience in the installation of these systems.

1.4 CODE

A. Must meet Federal Communications standards. (Commission Part 15)

B. Must meet National Fire Protection Association standards.

C. Must meet National Electrical Code. (NFPA 70)

D. Must be UL listed.

E. Americans with Disabilities Act.

F. Latest edition of the Telecommunications Distribution Methods Manual (TDMM).

1.5 WARRANTY

A. Components, parts, and assemblies shall be warranted against defects in materials and workmanship for a period as specified in Specification Section 270111 – Demonstration, Training and Warranty for Communications Systems.

B. All repairs shall be completed by a Factory-Trained Certified Service Technician.

C. Battery warranty shall be two (2) years from the Date of Substantial Completion.

1.6 SUBMITTALS

A. Provide product data for the following:
   1. System receivers/amplifiers
   2. Receiver/sensors
   3. Speakers
   4. Cabling

5. See Specification Section 270500 - Common Work Results For Communications for additional submittal requirements.

1.7 OWNER TRAINING

A. Provide training as specified in Specification Section 270111 – Demonstration, Training and Warranty of Communications Systems.

1.8 APPROVED MANUFACTURERS

A. RDL EZ-MAXA20 Audio Mixer

1.9 RECORD DRAWINGS / OPERATION AND MAINTENANCE MANUAL

A. Provide record drawings and operation and maintenance manuals, as described in Specification Section 270100 – Operation and Maintenance of Communications Systems and Section 270500 - Common Work Results for Communications Systems.

B. Record the serial number and location of each amplifier on the Equipment Spreadsheet. Include with the Operation and Maintenance Manuals.

PART 2 - PRODUCTS

2.1 Provide sound reinforcement system with the following requirements:

A. Overall System Specifications:
1. Carrier frequencies (IR): 2.06/2.54 MHz Switchable
2. Frequency stability: +/-3%
3. Maximum deviation: +/- 50KHz
4. Dynamic range: > 73 dB
5. Signal-to-Noise ration: > 73 dB
6. Frequency response: 40 Hz – 20 KHz
7. Emergency page priority.

B. IR Ceiling Mounted Sensor
1. Carrier frequencies: 2.06-2.8 MHz
2. Receiver sensitivity: 6µV for 60 dB
3. Image and spurious rejection: >40 dB
4. Reception selectivity: 40 kHz
5. Power: From the amplifier
6. Range: Minimum 60 ft., 360 degrees.
7. Coverage: 1000 s/f minimum

C. Amplifier/Receiver
1. Power output (THD = 10%): Minimum 30 watts total
2. Total harmonic distortion: < 1%
3. Power supply (UL listed): 19-25 VDC, Maximum 3.4 Amps
4. Sound Control: Equalizer or Tone Control
5. Auxiliary Audio Inputs: Minimum of three
6. IR Sensor Inputs (2): F-Connector
7. Speaker Output Jacks: Connectors for 2 or 4 speaker setup
8. Assistive Listening Output: One

D. Controls
1. Power: Switch with LED indicator
2. Equalization: Equalizer or tone control
3. Speaker on/off switches
4. Auxiliary input volume controls

5. FM/auxiliary output controls
6. Assistive Listening Output control

E. Recessed Ceiling Speakers (see drawings for quantities in each location)
1. Description: 8 inch round, coaxial
2. Magnetic weight and type: 10 oz, ceramic
3. Frequency response: 100 Hz – 14 KHz nominal
4. Impedance: 8Ω
5. Power handling: 25 W minimum
6. Provide speaker enclosure to meet UL2043 plenum rating.
7. Provide lay in ceiling metal tile bridge.
8. Provide perforated painted white metal grille.

2.2 SOUND REINFORCEMENT SYSTEM CABLING

A. All sound reinforcement system cables shall be plenum rated.

B. Cables shall be provided as part of the sound reinforcement system package.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Provide sound reinforcement sound systems as shown on the drawings.

B. The sound reinforcement system shall be installed by a factory authorized contractor in accordance with the manufacturer's installation instructions.

C. Speakers shall be located per manufacturer’s recommendations. Generally, in two speaker and four speaker locations the listening area will be divided into sections, halves or quarters, and the speakers shall be installed in the middle of each section.

D. The sound reinforcement system shall be connected to the video display devices in each room with patch cords provided by this contractor.

E. Tap the speakers as recommended by the manufacturer.

F. Provide surface raceways, boxes, conduits, fittings, patch cords, speaker supports, and brackets, unless shown to be provided by others.

G. This Contractor shall be responsible for cutting ceiling tiles to install the sound reinforcement system speakers. Coordinate with the ceiling contractor.

H. Provide the quantity of external sensors required and locate them per the manufacturer’s recommendation for complete coverage of the space.

I. Sound reinforcement system cables shall be supported by cable supports provided by this contractor. Supports shall meet BICSI, EIA, TIA requirements. Refer to Specification Section 270528 – Pathways for Communications Systems for cable support requirements. Cables are not to be supported at or on the building structural steel, ceiling grid, ceiling supports, mechanical piping or other installations.

J. Provide labeling per ANSI/EIA/TIA-606 requirement and Specification Section 270553 – Identification for Communications Systems.

3.2 SYSTEM PERFORMANCE

A. Installation shall comply with manufacturer’s specifications.

B. The system shall be tuned and adjusted for optimum vocal clarity.

END OF SECTION 27 51 17

ARCHITECTURAL/SITE ABBREVIATIONS

ABBREVIATIONS USED ON THE CONTRACT DOCUMENTS, INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED BELOW

@	AT
AC	AIR CONDITIONING
ACT	ACOUSTICAL CEILING TILE
AD	AREA DRAIN
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFP	ACCORDION FOLDING PARTITION
AGG	AGGREGATE
ALT	ALTERNATIVE
AL	ALUMINUM
AP	ACCESS PANEL
APROX	APPROXIMATE
AR	ACID RESISTANT
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AV	AUDIO-VISUAL
AWG	AMERICAN WIRE GUAGE
AWT	ACCOUSTICAL WALL TREATMENT
L	ANGLE
&	AND
BIT	BITUMINOUS
BLDG	BUILDING
BLKG	BLOCKING
BM	BENCH MARK / BEAM
B.O.	BOTTOM OF
BOS	BOTTOM OF STEEL
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BUR	BUILT-UP ROOF
CAB	CABINET
CAR	CARPET
CAT	CATALOG
CB	CHALKBOARD / CATCH BASIN
CFM	CUBIC FEET PER MINUTE
CH	CABINET HEATER
CI	CAST IRON
CJ	CONTROL JOINT
CL	CENTERLINE
CLR	CLEAR
CLG	CEILING
CMP	CORRUGATED METAL PIPE
CMT	CERAMIC MOSAIC TILE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMP	COMPACTED
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUOUS/CONTINUE
CONTR	CONTRACTOR
CORR	CORRUGATED
CT	CERAMIC TILE
C TO C	CENTER TO CENTER
CSK	COUNTER SINK
CU FT/CF	CUBIC FEET
CU IN/CI	CUBIC INCH
CU YD/CY	CUBIC YARD
CUSP	CUSPIDOR
CW	COLD WATER
CWF	CEMENTITIOUS WOOD FIBER
d	PENNY (NAILS, ETC.)
D	DEPTH/DEEP
°	DEGREE
DC	DISPLAY CASE
DEPT	DEPT
DET	DETAIL
DF	DRINKING FOUNTAIN
DIA/ Ø	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DL	DEAD LOAD
DWG	DRAWING
DS	DOWNSPOUT
DWC	DRINKING WATER COOLER
E	EAST
EA	EACH
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
ENGR	ENGINEER
EP	ELECTRICAL PANELBOARD
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EFS (or DEFS)	DIRECT APPLIED EXTERIOR FINISH SYSTEM
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
EXTN	EXTENSION
FD	FLOOR DRAIN
FHC	FIRE HOSE CABINET
FIN	FINISH
FIN FL	FINISH FLOOR
FLR	FLOOR
FDN	FOUNDATION
FSR	FLEXIBLE SHEET ROOFING
FSSK	FLOOR SERVICE SINK
FT	FEET
FTG	FOOTING
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
GA	GAUGE
GALV	GALVANIZED(D)
GB	GRAB BAR
GFCMU	GROUND FACE CONCRETE MASONRY UNIT
GFRGU	GLASS FIBER REINFORCED GYPSUM UNIT
GL	GLASS
GWB	GYPSUM WALLBOARD
H	HEIGHT/HIGH
HB	HOSE BIB
HDWE	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HPT	HIGH POINT
HS	HIGH STRENGTH
HTG	HEATING
HVAC	HEATING/VENTILATING/AIR CONDITIONING
HW	HOT WATER
HWY	HIGHWAY
ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE(D), (ING)
INFO	INFORMATION
INSUL	INSULATION
INTR	INTERIOR
INV	INVERT
JS	JOIST SUBSTITUTE
JST	JOIST
JT	JOINT
KIT	KITCHEN
L	LENGTH
LAM	LAMINATE(D)
LAV	LAVATORY
LBI#	POUND
LKR	LOCKER
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LVR	LOUVER
LW	LONG WAY

M	METER
MAS	MASONRY
MAT	MATERIAL
MAX	MAXIMUM
MB	MARKER BOARD
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MOP HOLDER
MIN	MINIMUM
MISC	MISCELLANEOUS
MM	MILLIMETER
MO	MASONRY OPENING
MTL	METAL
N	NORTH
NIC	NOT IN CONTRACT
NO#	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OPP	OPPOSITE
O.H.	OPPOSITE HAND
O TO O	OUT TO OUT
OW	OPERABLE WALL
OZ	OUNCE
P	PAINT
PA	PUBLIC ADDRESS
PERF	PERFORATED
PLAS	PLASTIC
PL	PLASTIC LAMINATE
PLBG	PLUMBING
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PS	PROJECTION SCREEN
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSS	PENCIL SHARPENER SUPPORT
PT	PORCELAIN TILA
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RISER
RA	RETURN AIR
RAD/R	RADIUS
RB	RESILIENT BASE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCING
REQ'D	REQUIRED
REV	REVISION(S)
RM	ROOM
R.O.	ROUGH OPENING
ROW	RIGHT-OF-WAY
S	SOUTH
SA	SUPPLY AIR
SAN	SANITARY
SCHED	SCHEDULE
SD	STORM DRAIN / SMOKE DETECTOR
SECT	SECTION
SEW	SEWER
SGFT	STRUCTURAL GLAZED FACING TILE
SHT	SHEET
SIM	SIMILAR
SP	SPACE
SPEC(S)	SPECIFICATION(S)
SPKR	SPEAKER
SQ	SQUARE
SQ FT/SF	SQUARE FEET
SQ IN/SI	SQUARE INCHES
SQ YD/SY	SQUARE YARDS
SS	STAINLESS STEEL
ST	STORM/STREET
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SW	SHORT WAY / SIDEWALK
SYMM	SYMMETRY(ICAL)
SYNTH	SYNTHETIC
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TA	TOILET ACCESSORY(IES)
TB	TACKBOARD
TC	TOP OF CURB
TEL	TELEPHONE
TERR	TERRAZZO
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TV	TELEVISION
TYP	TYPICAL
TWS	TACKABLE WALL SURFACE
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
UR	URINAL
VCT	VINYL COMPOSITE TILE
VCGWB	VINYL COVERED GYPSUM WALLBOARD
VERT	VERTICAL
VFWC	VINYL FABRIC WALLCOVERING
VIF	VERIFY IN FIELD
VIT	VITREOUS
VOL	VOLUME
VR	VAPOR RETARDER
VRB	VENTED RESILIENT BASE
VS	VENT STACK
VT	VINYL STACK
W	WEST / WIDE / WIDTH
W/	WITH
W/O	WITHOUT
WA	WARDROBE ACCESSORIES
WB	WOOD BASE
WC	WATER CLOSET / WIND COLUMN
WD	WOOD
WH	WATER HEATER
WP	WORKING POINT
WSSK	WALL SERVICE SINK
WWF	WELDED WIRE FABRIC
YD	YARD / YARD DRAIN

MATERIAL SYMBOLS LEGEND

MATERIAL SYMBOLS USED ON THE CONTRACT DOCUMENTS, INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED BELOW

- ASPHALT
- EARTH
- GRAVEL, STONE, OR DRAINAGE FILL
- SAND, GROUT, PLASTER, GWB, OR PLAN VIEW OF SIDEWALK
- CONCRETE
- TERRAZZO
- CUT STONE
- MARBLE
- SLATE
- FACE BRICK (PLAN)
- GLAZED BRICK
- CONCRETE MASONRY UNIT (PLAN)
- CONCRETE MASONRY UNIT (SECTION)
- CONCRETE MASONRY UNIT (SOLID, IN SECTION)
- SPRAY-ON INSULATION OR FIRE PROTECTION
- WIRE FENCE OR PARTITION
- METAL ROOF DECK
- LAMINATED WOOD BEAM (SMALL SCALE, SECTION)
- BATT INSULATION
- RIGID INSULATION
- ROUGH WOOD
- FINISH WOOD
- WOOD OTHER THAN NOMINAL
- PLYWOOD
- GYPSUM WALLBOARD (LARGE SCALE)
- STUD WALL (PLAN) - DIMENSIONS TAKEN TO FINISH FACE OF WALL - SEE WALL TYPES
- SOLID PANEL FOLDING PARTITION OR OPERABLE WALL
- FABRIC ACCORDION FOLDING PARTITION
- ACOUSTICAL TILE CEILING
- EXTERIROR INSULATION FINISH SYSTEM

DRAWING SYMBOLS LEGEND

DRAWING SYMBOLS USED ON THE CONTRACT DOCUMENTS, INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED BELOW

- SIM / 1A / A-400 — CALLOUT
- 1t — EQUIPMENT TAG
- X1 — CEILING TAG
- ? — KEY NOTE TAG
- XXXX — DOOR TAG
- X / X / AX.XX / X / X — EXTERIOR ELEVATION
- X Ref / X Ref / AX.XX / X Ref / X Ref — INTERIOR ELEVATION
- X — GRID HEAD
- Name / EL. XXX'-XX" — LEVEL LINE
- 1 — REVISION TAG
- A — ROOF TYPE TAG
- SIM / 1A / A-300 — BUILDING/WALL SECTION
- SIM / 1A / A-300 — DETAIL SECTION
- SLOPE 1/12 — ROOF SLOPE TAG
- X / X### / X / X### — MATCHLINE VIEW REFERENCE
- W##X — WALL TAG
- 1t — STOREFRONT TAG
- XX — WINDOW TAG
- ROOM TAG
- 811 — EXISTING CONTOUR
- 811 — NEW CONTOUR
- TB#1 — TEST BORING & NO.
- 811.9 — EXISTING POINT ELEVATION
- 811.9 — NEW POINT ELEVATION
- STORM SEWER INLETS

SHEET INDEX

CHS - EMT / CNA CLASSROOM REMODEL

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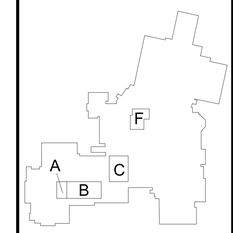


KEY PLAN

100% CONSTRUCTION DOCUMENTS

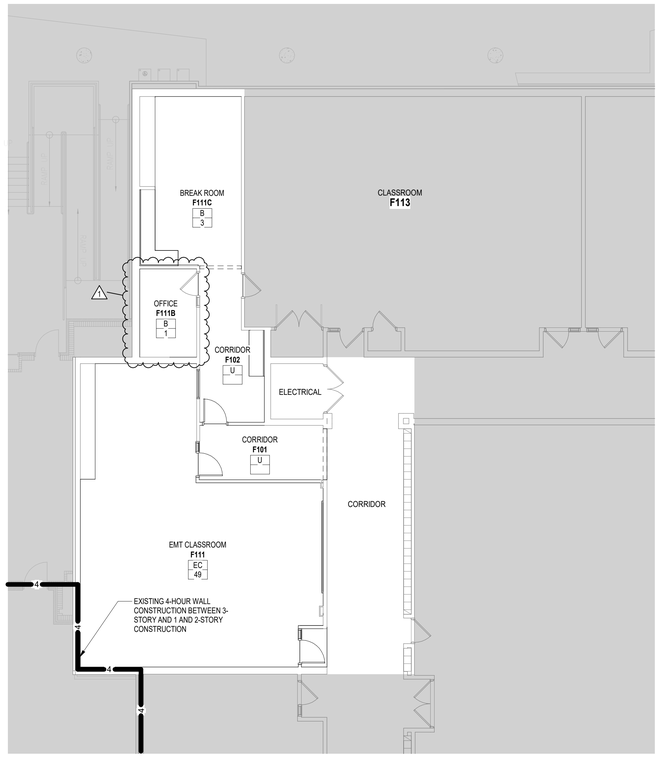
PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

PROJECT NUMBER: 224112.00
PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

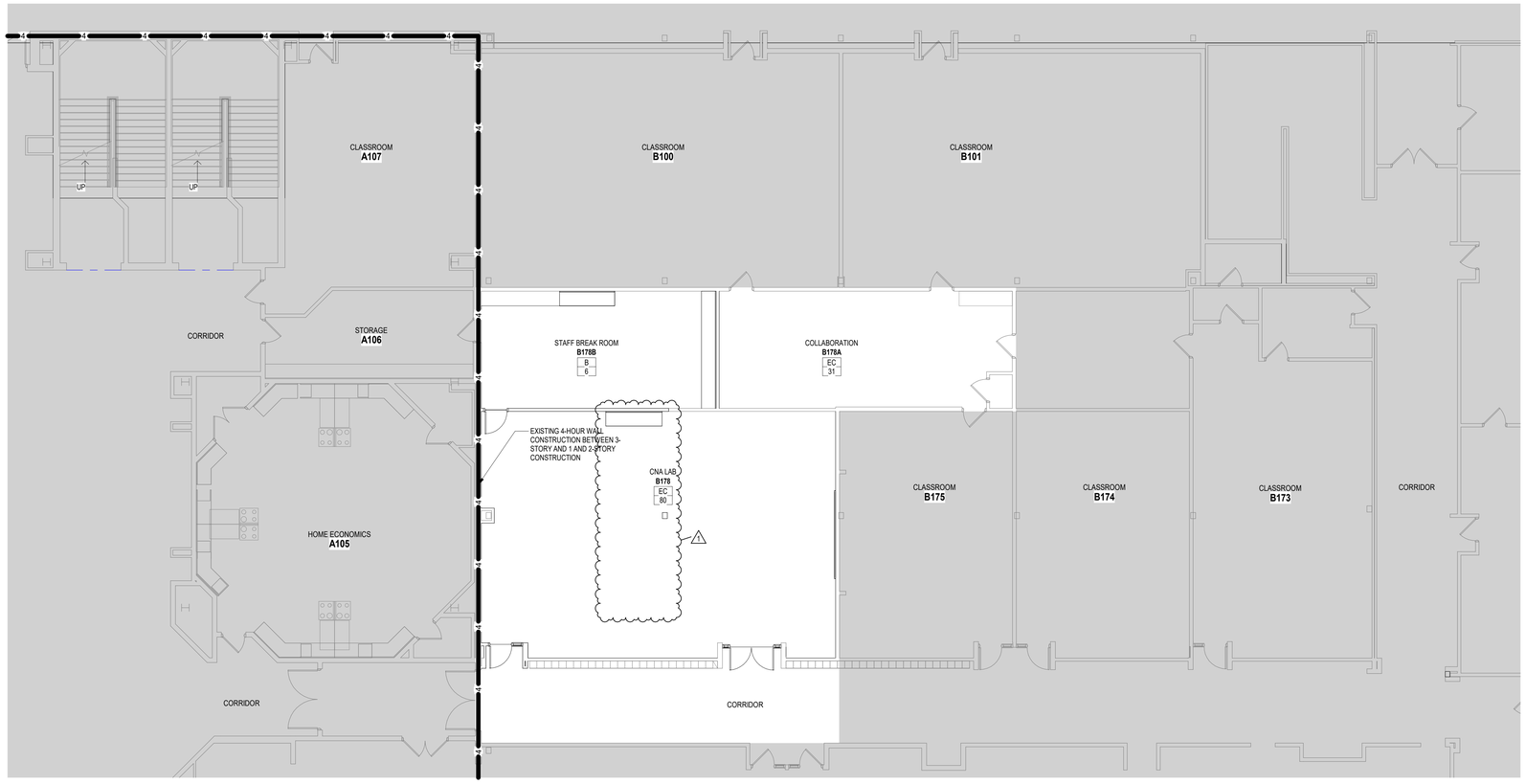
ABBREVIATIONS & INDEX

INDEX A



2 FIRST FLOOR FIRE & LIFE SAFETY PLAN - UNIT F

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



1 FIRST FLOOR FIRE & LIFE SAFETY PLAN - UNIT B

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

BUILDING CODE INFORMATION

1. BUILDING DESCRIPTION: EXISTING HIGH SCHOOL - RENOVATION TO EXISTING.

2. APPLICABLE CODE:
2012 INTERNATIONAL BUILDING CODE - INDIANA BUILDING CODE, 2014 EDITION (675 IAC 13-2.6)
2012 INTERNATIONAL FIRE CODE - INDIANA FIRE CODE, 2014 EDITION (675 IAC 22-2)
2012 INTERNATIONAL MECHANICAL CODE - INDIANA MECHANICAL CODE, 2014 EDITION (675 IAC 18-1.6)
2012 INTERNATIONAL PLUMBING CODE - INDIANA PLUMBING CODE, 2012 EDITION (675 IAC 16-1.4)
2012 INTERNATIONAL ELECTRICAL CODE - INDIANA ELECTRICAL CODE, 2009 EDITION [NFPA 70-2008] (675 IAC 17-1.8)
INDIANA ENERGY CONSERVATION CODE 2010 [ASHRAE 90.1, 2007 AMENDED] (672 IAC 19-4)
2010 ADA STANDARDS FOR ACCESSIBLE DESIGN

3. BUILDING AREA AND HEIGHT

A. OCCUPANCY/USE GROUP: E, EDUCATION NON SEPARATED
A1, AUDITORIUM (EXISTING)
A2, CAFETERIA / COMMONS (EXISTING)
A3, GYMNASIUM (EXISTING)
B, ADMINISTRATION (EXISTING)
USES (302.1)

B. CONSTRUCTION TYPE: II B (601)

C. AREA LIMITATION: UNLIMITED
1. ACTUAL AREA:
EXISTING BUILDING: 1,123,552 SF

4. USE AND OCCUPANCY CLASSIFICATION INDIANA BUILDING CODE CHAPTER 3:
E - EDUCATION, B - BUSINESS, A2/A3 - ASSEMBLY, A4 - ASSEMBLY

INCIDENTAL USE AREAS INDIANA BUILDING CODE SECTION AND TABLE 508.2

SMOKE PARTITION & AUTO SPRINKLER SYSTEM

ACCESSORY USE AREAS INDIANA BUILDING CODE SECTION 508.3.1.

ACCESSORY OCCUPANCIES ARE THOSE OCCUPANCIES SUBSIDIARY TO THE MAIN OCCUPANCY OF THE BUILDING OR PORTION THEREOF, AGGREGATE ACCESSORY OCCUPANCIES SHALL NOT OCCUPY MORE THAN 10% OF THE AREA OF THE STORY IN TABLE 503 WITHOUT HEIGHT AND AREA INCREASES IN ACCORDANCE WITH SECTIONS 504 AND 506 FOR SUCH ACCESSORY OCCUPANCIES (2012 INTERNATIONAL BUILDING CODE)

AREA LIMITATION INDIANA BUILDING CODE SECTION 503

5. TYPE OF CONSTRUCTION INDIANA BUILDING CODE CHAPTER 6 (SEE TABLE)

TYPE II B

6. FIRE RESISTANCE RATED CONSTRUCTION INDIANA BUILDING CODE CHAPTER 7:

REFER TO THE CODE PLANS FOR MAXIMUM AREAS OF EXTERIOR OPENINGS BASED ON THE FIRE SEPARATION DISTANCES.

PENETRATIONS THROUGH FIRE-RESISTANCE-RATED ASSEMBLIES SHALL BE PROVIDED WITH FIRESTOPPING PER PROJECT MANUAL.

CEILING AND FLOOR OPENINGS THROUGH NON-FIRE-RESISTANCE-RATED ASSEMBLIES SHALL BE PROVIDED WITH FIREBLOCKING PER PROJECT MANUAL.

7. INTERIOR FINISHES TO COMPLY WITH INDIANA BUILDING CODE CHAPTER 8

8. FIRE PROTECTION SYSTEMS INDIANA BUILDING CODE CHAPTER 9:

THE ENTIRE BUILDING IS PROTECTED WITH AN AUTOMATIC SPRINKLER SYSTEM, EXCEPT FOR THE EXISTING AUDITORIUM, WHICH IS SEPARATED BY 2 HOUR FIRE BARRIERS.

9. MEANS OF EGRESS INDIANA BUILDING CODE CHAPTER 10:

THE MEANS OF EGRESS REQUIREMENTS SHALL BE DETERMINED BY THE ACTUAL OR COMPUTED NUMBER OF OCCUPANTS WHICHEVER IS THE LARGEST NUMBER. REFER TO THE CODE PLANS FOR ROOM OCCUPANT LOADS. AREAS OR ROOMS WITH 50 OR MORE OCCUPANTS SHALL BE PROVIDED WITH TWO OR MORE MEANS OF EGRESS; 500 OR MORE OCCUPANTS SHALL BE PROVIDED WITH THREE OR MORE MEANS OF EGRESS; AND 1000 OR MORE OCCUPANTS SHALL BE PROVIDED WITH FOUR OR MORE MEANS OF EGRESS.

XXXX — ROOM NAME
XXXX — ROOM NUMBER
E — OCCUPANCY CLASSIFICATION - REFER TO KEY
45 — CALCULATED MAXIMUM OCCUPANT LOAD

CODE PLAN LEGEND

FIRE WALLS — TO EXTEND 30 INCHES ABOVE THE ROOF OR EXTEND TO THE BOTTOM OF A NON-COMBUSTIBLE ROOF DECK

4 — 4 — INDICATES 4 HOUR FIRE-RESISTANT RATED FIRE WALL WITH 3 HOUR RATED OPENING PROTECTIVES, SECTION 706

BUILDING — INDICATES AREA NOT IN PROJECT (EXISTING)

ROOM LEGEND - FIRST FLOOR

ROOM NO.	ROOM NAME	AREA (SF)
B178	CNA LAB	1,586 SF
B178A	COLLABORATION	616 SF
B178B	STAFF BREAK ROOM	511 SF
F101	CORRIDOR	114 SF
F102	CORRIDOR	144 SF
F111	EMT CLASSROOM	978 SF
F111B	OFFICE	86 SF
F111C	BREAK ROOM	292 SF

OCCUPANCY CLASSIFICATION - KEY

Class Abbreviation	Classification	Area Per Occupant	Occupancy Gross or Net
AC	AC - Accessory Storage Areas, Mechanical Equipment Rooms	300 SF	Gross
B	B - Business Areas	100 SF	Gross
EC	EC - Educational - Classroom Areas	20 SF	Net
U	U - Unoccupied - Corridors	0 SF	Gross

CHS - EMT / CNA CLASSROOM REMODEL

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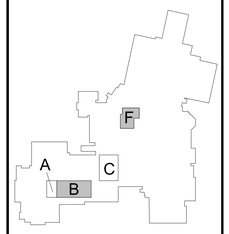

KEY PLAN

100% CONSTRUCTION DOCUMENTS

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: DSR

PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

FIRST FLOOR CODE PLAN

AP101

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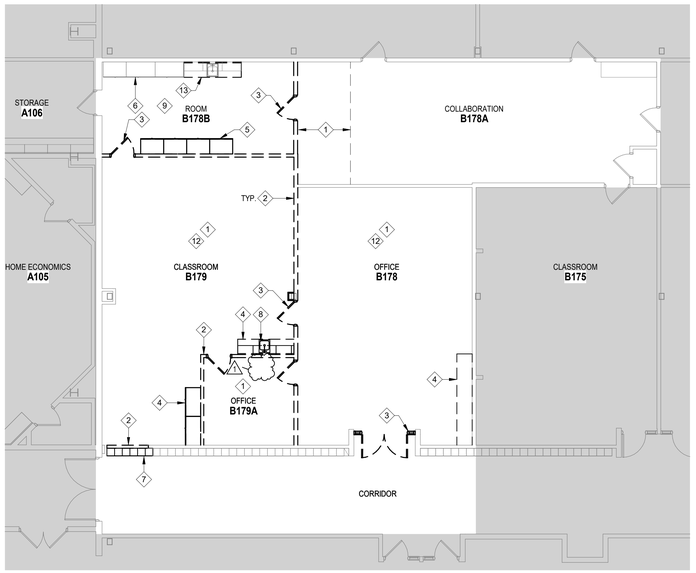
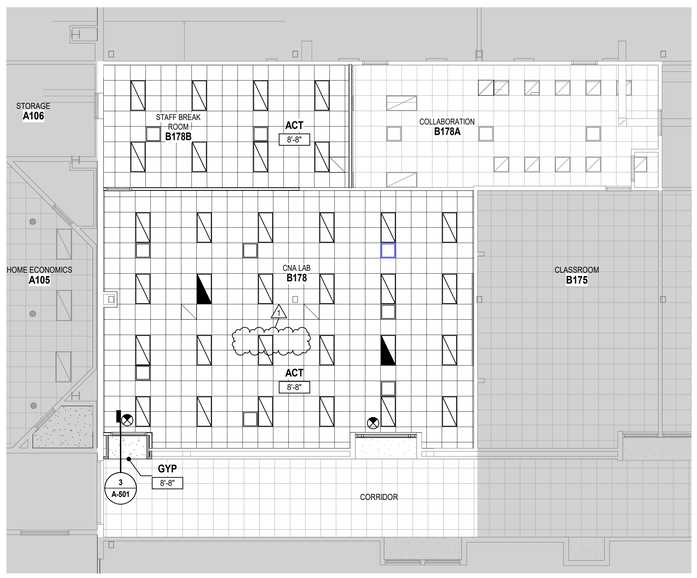
3 FIRST FLOOR CEILING DEMOLITION PLAN - UNIT B

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



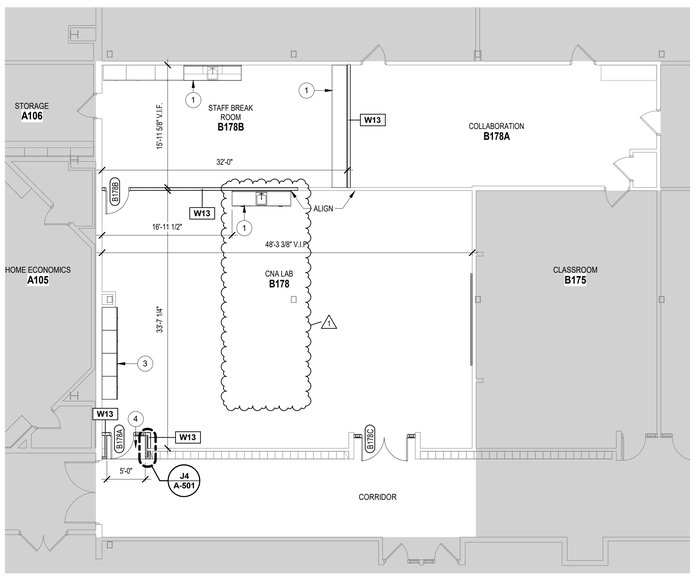
1 FIRST FLOOR DEMOLITION PLAN - UNIT B

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



4 FIRST FLOOR REFLECTED CEILING PLAN - UNIT B

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



2 FIRST FLOOR ARCHITECTURAL PLAN - UNIT B

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

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ARCHITECTURAL PLAN NOTES (CONT.) (X)

NO.	DESCRIPTION
4	REDUCE THICKNESS OR GRIND DOWN EXISTING TERRAZZO OR CONCRETE SUBSTRATE TO PROVIDE FLUSH CONDITION ADJACENT TO EXISTING TERRAZZO AREAS. MAINTAIN MINIMUM THICKNESS OF NEW TERRAZZO PRODUCTS AS RECOMMENDED BY MANUFACTURER.

REFLECTED CEILING PLAN NOTES

A. PROVIDE REVEAL DRYWALL TRIM AT ALL LOCATIONS WHERE GYPSUM WALL BOARD (GWB) ABUTS A DISSIMILAR MATERIAL. TYPICAL UNLESS NOTED OTHERWISE.
B. BULKHEAD FRAMING SHALL BE ATTACHED TO STRUCTURAL SUPPORTS AND NOT TO THE ROOF DECK

REFLECTED CEILING NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

NO.	DESCRIPTION

REFLECTED CEILING PLAN LEGEND

- 10'-4" — INDICATES ELEVATION HEIGHT
- XX'-XX" — INDICATES CEILING HEIGHT
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- MECHANICAL DIFFUSER - REFER TO MECHANICAL DRAWINGS
- MECHANICAL RETURN AIR GRILLE - REFER TO MECHANICAL DRAWINGS
- MECHANICAL UNIT HEATER - REFER TO MECHANICAL DRAWINGS
- CEILING MOUNTED EXIT LIGHT
- CJ — CONTROL JOINT IN GYPSUM BOARD CEILING OR BULKHEAD
- ACOUSTICAL CEILING TILE (ACT)
- ACOUSTICAL CEILING TILE (ACT)
- GYPSUM WALL BOARD BULKHEAD / CEILING EXTERIOR FINISH SYSTEM (E.F.S.) EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.)

ARCHITECTURAL DEMOLITION GENERAL NOTES

A. DEMOLITION IS TO FOLLOW ESTABLISHED CONSTRUCTION SEQUENCE. CONTRACTOR IS TO VERIFY THEIR WORK IN THE FIELD WITH THE DEMOLITION DRAWINGS, NEW CONSTRUCTION DRAWINGS, AND THE EXISTING IN-FIELD CONDITIONS. REPORT DISCREPANCIES TO THE ARCHITECT.
B. "FLOORING" DENOTES FLOOR COVERING MATERIALS INCLUDING BACKINGS, ADHESIVES, BASES, DOWN TO BUT EXCLUSIVE OF FLOOR SLABS AND STRUCTURAL MATERIALS, UNLESS NOTED OTHERWISE.
C. "CEILING" DENOTES CEILING MATERIALS INCLUDING SUSPENSION SYSTEMS ADHESIVE RESIDUES, MOLDINGS, UP TO BUT EXCLUSIVE OF STRUCTURAL MATERIALS.
D. WALLS TO BE REMOVED SHALL BE REMOVED TO A POINT 2" (MIN.) BELOW THE EXISTING FLOOR SLAB (UNLESS SETTING ON SLAB). PATCH WITH NEW CONCRETE TO BE FLUSH WITH THE EXISTING FLOOR SLAB.
E. WHEN OPENINGS ARE CUT INTO AN EXISTING WALL, THE OPENING SHALL BE A MINIMUM OF 1'-4" LONGER THAN THE FINISHED OPENING REQUIRED TO ALLOW FOR 8" (MIN) OF NEW CMU TOOTHED-IN AT EDGES.
F. AFTER THE DEMOLITION OF MATERIALS, THE RESULTING EXPOSED SURFACE SHALL BE SMOOTH AND FLUSH WITH EXISTING CONDITIONS.
G. MECHANICAL AND ELECTRICAL ITEMS THAT ARE CAPPED AND ABANDONED SHALL BE LOCATED BEHIND FINAL FINISH SYSTEMS.
H. COORDINATE THIS WORK WITH DEMOLITION WORK ON PLUMBING, MECHANICAL, AND ELECTRICAL.
I. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR SUPPORT TO PREVENT MOVEMENT OR SETTLEMENT OF EXISTING STRUCTURES.
J. CONTRACTOR TO FIELD VERIFY PORTIONS OR SECTIONS OF EXISTING WALLS TO BE FILLED IN AND SALVAGE NECESSARY MATERIAL.
K. MATERIALS OF DEMOLITION SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE DIRECTED BY OWNER.
L. OWNER TO REMOVE EXISTING FURNITURE AND MISCELLANEOUS ITEMS NOT SHOWN AND NOT TO BE DEMOLISHED. CONTRACTOR TO NOTIFY OWNER IN ADVANCE WHEN ITEMS NEED TO BE REMOVED. CONTRACTOR IS RESPONSIBLE FOR OTHER ITEMS TO BE REMOVED.
M. ITEMS TO BE PATCHED: REMOVE ALL LOOSE OR DAMAGED MATERIAL, REFINISH TO LIKE NEW CONDITION, OR IF CONDITION WARRANTS REPLACE IN ENTIRETY.
N. THE OWNER SHALL RESERVE RIGHT TO CLAIM ANY MATERIALS THAT ARE BEING DEMOLISHED PRIOR TO THE CONTRACTOR DISPOSING OF THEM OFF SITE.
O. "TURNED OVER TO THE OWNER" DENOTES: 1) TAG AND IDENTIFY ITEMS. 2) STORE IN AN ORDERLY FASHION IN A LOCATION DESIGNATED BY THE OWNER.
P. ITEMS MADE OBSOLETE TO ACCOMODATE NEW CONSTRUCTION OR RENOVATION SHALL BE REMOVED.
Q. ITEMS TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY.
R. AFTER REMOVAL OF ITEMS, THE EXISTING WALL SURFACES (IF EXPOSED) SHALL BE REPAIRED/PATCHED AS REQUIRED TO RECEIVE NEW FINISHES.

DEMOLITION PLAN NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

NO.	DESCRIPTION
1	REMOVE EXISTING CARPET, WALL BASE AND TRANSITIONS. REMOVE ADHESIVES DOWN TO EXISTING SLAB. PREPARE SURFACE TO RECEIVE NEW FINISHES.
2	REMOVE PORTION OF EXISTING WALL IN ITS ENTIRETY. PREPARE ADJACENT SURFACES FOR NEW CONSTRUCTION.
3	REMOVE EXISTING DOOR, FRAME AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY. PREPARE OPENING AND ADJACENT SURFACES FOR NEW WORK.
4	REMOVE EXISTING CASEWORK, SHELVING AND / OR MILWORK ITEMS, ALONG WITH ALL RELATED ACCESSORIES. PATCH AND REPAIR ADJACENT WALL AND FLOOR SURFACES AND PREPARE FOR NEW FINISHES.
5	REMOVE EXISTING CASEWORK, SALVAGE AND RELOCATE AS SHOWN ON NEW CONSTRUCTION PLANS.
6	EXISTING CASEWORK TO REMAIN. PROTECT FROM DAMAGE DURING CONSTRUCTION.
7	REMOVE EXISTING LOCKERS AND CONCRETE / MASONRY BASE IN THEIR ENTIRETY INCLUDING TERRAZZO BASE. PREPARE FOR NEW FINISHES.
8	REMOVE EXISTING PLUMBING FIXTURE IN ITS ENTIRETY. EXISTING WASTE AND WATER ROUGH-INS TO REMAIN. PREPARE EXISTING ROUGH-INS FOR CONNECTION TO NEW.
9	REMOVE EXISTING VINYL TILE FLOORING, WALL BASE AND TRANSITIONS. REMOVE ADHESIVES DOWN TO EXISTING SLAB. PREPARE SURFACE TO RECEIVE NEW FINISHES.
10	REMOVE PORTION OF EXISTING ACOUSTICAL CEILING SYSTEM IN ITS ENTIRETY. MODIFY AND PROVIDE NEW GRID AS REQUIRED TO ACOMMODATE NEW CONSTRUCTION. ALL LIGHT FIXTURES, DIFFUSERS, DEVICES, ETC. SHALL BE SALVAGED AND RELOCATED. SEE MECHANICAL AND ELECTRICAL FOR ADDITIONAL INFORMATION.
11	REMOVE EXISTING ACOUSTICAL CEILING SYSTEM IN ITS ENTIRETY INCLUDING ALL LIGHT FIXTURES. ALL DIFFUSERS, DEVICES, ETC. SHALL BE SALVAGED AND RELOCATED. SEE MECHANICAL AND ELECTRICAL FOR ADDITIONAL INFORMATION.
12	REMOVE EXISTING VINYL WALLCOVERING IN ITS ENTIRETY. PREPARE WALL WITH LEVEL-5 FINISH FOR NEW FINISHES.
13	REMOVE EXISTING COUNTERTOP IN ITS ENTIRETY. EXISTING CASEWORK TO REMAIN. PREPARE TO RECEIVE NEW COUNTERTOP. REMOVE AND REINSTALL EXISTING SINK IN SAME LOCATION.
14	REMOVE WOOD FRAMED WINDOW UNIT IN ITS ENTIRETY. PREPARE OPENING FOR NEW WORK.

ARCHITECTURAL PLAN GENERAL NOTES

A. ALL CMU WALLS THAT DO NOT LAY OUT IN FULL OR HALF LENGTHS SHOULD BE BALANCED SO AS NOT TO HAVE ANY PIECES LESS THAN 4" IN SIZE EXPOSED TO VIEW.
B. WHERE DISSIMILAR FLOOR MATERIALS MEET, THEY SHALL DO SO UNDER THE CENTERLINE OF THE DOOR, UNLESS NOTED OTHERWISE.
C. THE BASE FLOOR ELEVATION INDICATED FOR THE PROJECT IS 100'-0". REFER TO SITE PLAN FOR CORRELATION TO USGS DATUM.
D. ALL INTERIOR MASONRY WALLS THAT RUN TO UNDERSIDE OF DECK ABOVE SHALL HAVE A 2" JOINT (U.N.O.) AT THE DECK TO BE FILLED WITH FIRE STOPPING AT RATED WALLS PER PROJECT MANUAL , AND MINERAL WOOL AT THE NON-RATED WALLS, TO ALLOW FOR DEFLECTION.
E. FOR TYPICAL COMMON JOINT DETAILS AND CONSTRUCTION MOVEMENT JOINT DETAILS REFER TO DETAILS ON SHEET A-501.
F. ALL DIMENSIONS ON FLOOR PLANS ARE TO FINISH FACE OF CMU, CONCRETE, BRICK OR FINISH FACE OF GWB AT METAL STUD WALLS, UNLESS NOTED OTHERWISE.
G. HINGE SIDE DOOR JAMB AT WALLS WILL TYPICALLY BE LOCATED 4" MINIMUM FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
H. ALL EXPOSED CONCRETE MASONRY UNITS (CMU) CORNERS ARE TO BE BULLNOSE, EXCEPT AT WINDOW JAMBS, BULKHEADS, WINDOW AND DOOR HEADS.
I. SEE REFLECTED CEILING PLANS FOR BULKHEAD LOCATIONS AND DETAIL REFERENCES.
J. REFER TO ROOM FINISH SCHEDULE OR PLAN AND EQUIPMENT PLANS FOR LOCATION AND EXTENT OF FINISH FLOOR MATERIALS.
K. PROVIDE WOOD BLOCKING AS REQUIRED. WITHIN METAL STUD WALLS FOR WALL MOUNTED ITEMS.
L. REFER TO MASTER/CODE PLANS FOR CODE INFORMATION AND FIRE RATED WALL LOCATIONS.

ARCHITECTURAL PLAN NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

—— W### INDICATES WALL TYPE. REFER TO DRAWING A-501 FOR WALL THICKNESS, HEIGHT AND COMPOSITION.

NO.	DESCRIPTION
1	PLASTIC LAMINATE CASEWORK. SEE EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
2	PLASTIC LAMINATE / SOLID SURFACE COUNTER. SEE EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
3	RELOCATED CASEWORK. PROVIDE IN-WALL BLOCKING AS REQUIRED.

VERIFICATION NOTE

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SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

CHS - EMT / CNA CLASSROOM REMODEL

520 EAST MAIN STREET
CARMEL, IN 46032

CARMEL CLAY SCHOOLS

5201 EAST MAIN STREET
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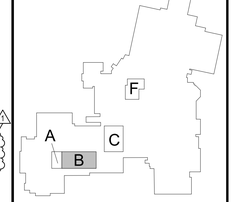
317-844-9961

ARCHITECT

FANNING HOWEY

317.848.0966 WWW.FHAI.COM

350 E NEW YORK ST SUITE 300, INDIANAPOLIS, IN 46204



KEY PLAN

100% CONSTRUCTION DOCUMENTS

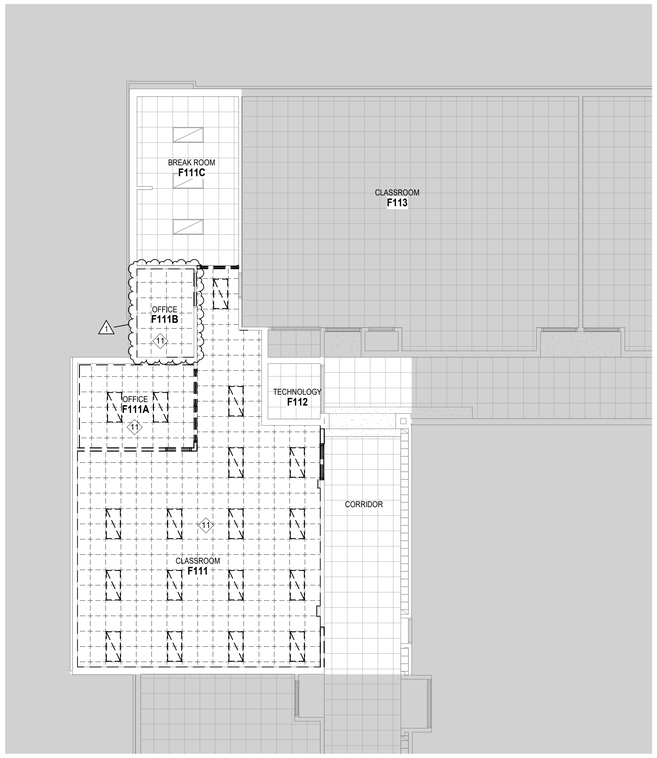
PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: DSR
PROJECT NUMBER: 224112.00
PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

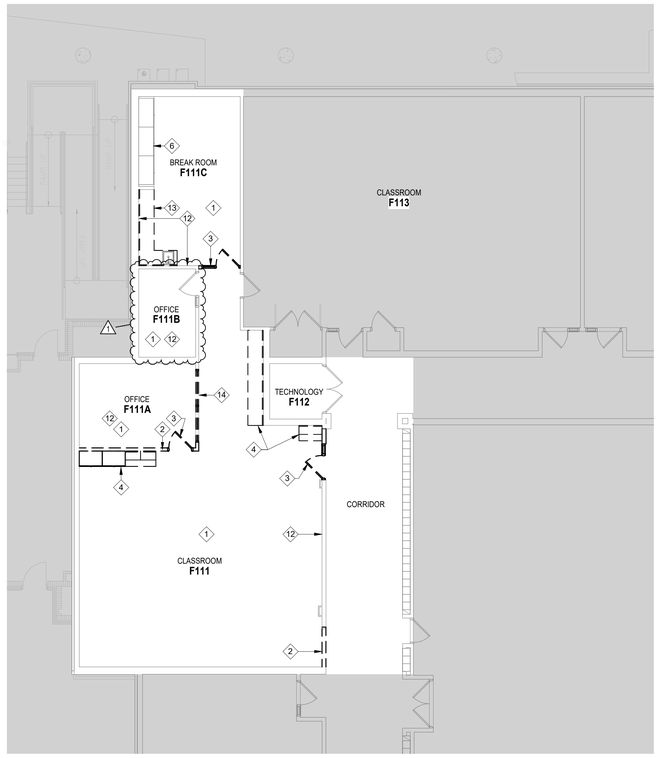
FIRST FLOOR ARCHITECTURE PLAN - UNIT B

A-11B



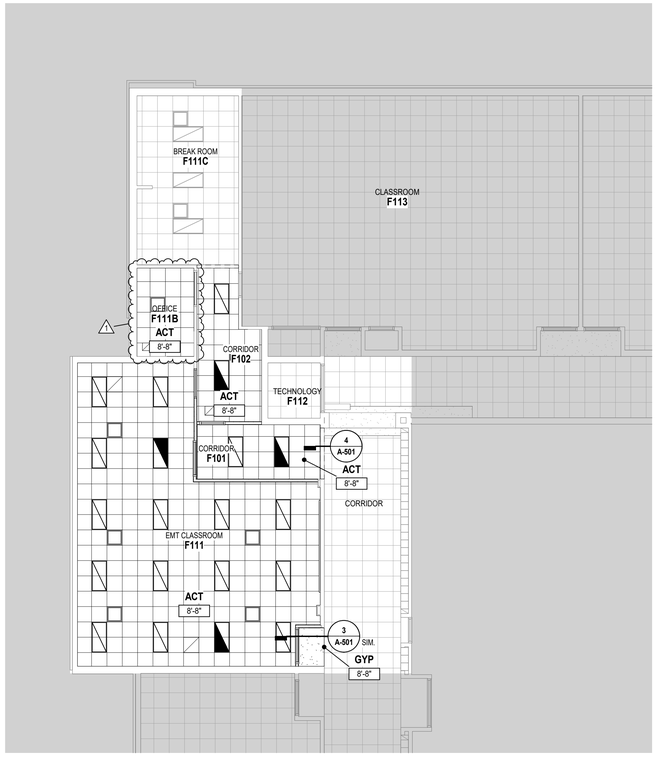
3 FIRST FLOOR REFLECTED CEILING DEMOLITION PLAN - UNIT F

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



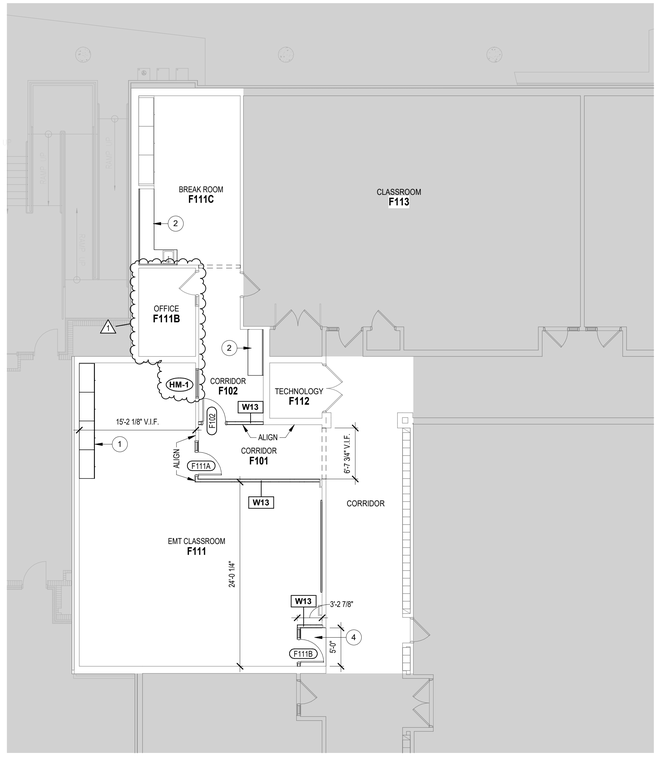
1 FIRST FLOOR DEMOLITION PLAN - UNIT F

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



4 FIRST FLOOR REFLECTED CEILING PLAN - UNIT F

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



2 FIRST FLOOR ARCHITECTURAL PLAN - UNIT F

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

ARCHITECTURAL PLAN NOTES (CONT.) (X)

NO.	DESCRIPTION
4	REDUCE THICKNESS OR GRIND DOWN EXISTING TERRAZZO OR CONCRETE SUBSTRATE TO PROVIDE FLUSH CONDITION ADJACENT TO EXISTING TERRAZZO AREAS. MAINTAIN MINIMUM THICKNESS OF NEW TERRAZZO PRODUCTS AS RECOMMENDED BY MANUFACTURER.

REFLECTED CEILING PLAN NOTES

A. PROVIDE REVEAL DRYWALL TRIM AT ALL LOCATIONS WHERE GYPSUM WALL BOARD (GWB) ABUTS A DISSIMILAR MATERIAL. TYPICAL UNLESS NOTED OTHERWISE.
B. BULKHEAD FRAMING SHALL BE ATTACHED TO STRUCTURAL SUPPORTS AND NOT TO THE ROOF DECK

REFLECTED CEILING NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

NO.	DESCRIPTION

REFLECTED CEILING PLAN LEGEND

- 10'-4" — INDICATES ELEVATION HEIGHT
- XX'-XX" — INDICATES CEILING HEIGHT
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- LIGHT FIXTURE - REFER TO ELECTRICAL DRAWINGS
- MECHANICAL DIFFUSER - REFER TO MECHANICAL DRAWINGS
- MECHANICAL RETURN AIR GRILLE - REFER TO MECHANICAL DRAWINGS
- MECHANICAL UNIT HEATER - REFER TO MECHANICAL DRAWINGS
- CEILING MOUNTED EXIT LIGHT
- CJ — CONTROL JOINT IN GYPSUM BOARD CEILING OR BULKHEAD
- ACOUSTICAL CEILING TILE (ACT)
- ACOUSTICAL CEILING TILE (ACT)
- GYPSUM WALL BOARD BULKHEAD / CEILING EXTERIOR FINISH SYSTEM (E.F.S.) EXTERIOR INSULATION FINISH SYSTEM (E.I.F.S.)

ARCHITECTURAL DEMOLITION GENERAL NOTES

A. DEMOLITION IS TO FOLLOW ESTABLISHED CONSTRUCTION SEQUENCE. CONTRACTOR IS TO VERIFY THEIR WORK IN THE FIELD WITH THE DEMOLITION DRAWINGS, NEW CONSTRUCTION DRAWINGS, AND THE EXISTING IN-FIELD CONDITIONS. REPORT DISCREPANCIES TO THE ARCHITECT.
B. "FLOORING" DENOTES FLOOR COVERING MATERIALS INCLUDING BACKINGS, ADHESIVES, BASES, DOWN TO BUT EXCLUSIVE OF FLOOR SLABS AND STRUCTURAL MATERIALS, UNLESS NOTED OTHERWISE.
C. "CEILING" DENOTES CEILING MATERIALS INCLUDING SUSPENSION SYSTEMS ADHESIVE RESIDUES, MOLDINGS, UP TO BUT EXCLUSIVE OF STRUCTURAL MATERIALS.
D. WALLS TO BE REMOVED SHALL BE REMOVED TO A POINT 2" (MIN.) BELOW THE EXISTING FLOOR SLAB (UNLESS SETTING ON SLAB). PATCH WITH NEW CONCRETE TO BE FLUSH WITH THE EXISTING FLOOR SLAB.
E. WHEN OPENINGS ARE CUT INTO AN EXISTING WALL, THE OPENING SHALL BE A MINIMUM OF 1'-4" LONGER THAN THE FINISHED OPENING REQUIRED TO ALLOW FOR 8" (MIN) OF NEW CMU TOOTHED-IN AT EDGES.
F. AFTER THE DEMOLITION OF MATERIALS, THE RESULTING EXPOSED SURFACE SHALL BE SMOOTH AND FLUSH WITH EXISTING CONDITIONS.
G. MECHANICAL AND ELECTRICAL ITEMS THAT ARE CAPPED AND ABANDONED SHALL BE LOCATED BEHIND FINAL FINISH SYSTEMS.
H. COORDINATE THIS WORK WITH DEMOLITION WORK ON PLUMBING, MECHANICAL, AND ELECTRICAL.
I. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR SUPPORT TO PREVENT MOVEMENT OR SETTLEMENT OF EXISTING STRUCTURES.
J. CONTRACTOR TO FIELD VERIFY PORTIONS OR SECTIONS OF EXISTING WALLS TO BE FILLED IN AND SALVAGE NECESSARY MATERIAL.
K. MATERIALS OF DEMOLITION SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE DIRECTED BY OWNER.
L. OWNER TO REMOVE EXISTING FURNITURE AND MISCELLANEOUS ITEMS NOT SHOWN AND NOT TO BE DEMOLISHED. CONTRACTOR TO NOTIFY OWNER IN ADVANCE WHEN ITEMS NEED TO BE REMOVED. CONTRACTOR IS RESPONSIBLE FOR OTHER ITEMS TO BE REMOVED.
M. ITEMS TO BE PATCHED: REMOVE ALL LOOSE OR DAMAGED MATERIAL. REFINISH TO LIKE NEW CONDITION, OR IF CONDITION WARRANTS REPLACE IN ENTIRETY.
N. THE OWNER SHALL RESERVE RIGHT TO CLAIM ANY MATERIALS THAT ARE BEING DEMOLISHED PRIOR TO THE CONTRACTOR DISPOSING OF THEM OFF SITE.
O. "TURNED OVER TO THE OWNER" DENOTES: 1) TAG AND IDENTIFY ITEMS. 2) STORE IN AN ORDERLY FASHION IN A LOCATION DESIGNATED BY THE OWNER.
P. ITEMS MADE OBSOLETE TO ACCOMODATE NEW CONSTRUCTION OR RENOVATION SHALL BE REMOVED.
Q. ITEMS TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY.
R. AFTER REMOVAL OF ITEMS, THE EXISTING WALL SURFACES (IF EXPOSED) SHALL BE REPAIRED/PATCHED AS REQUIRED TO RECEIVE NEW FINISHES.

DEMOLITION PLAN NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

NO.	DESCRIPTION
1	REMOVE EXISTING CARPET, WALL BASE AND TRANSITIONS. REMOVE ADHESIVES DOWN TO EXISTING SLAB. PREPARE SURFACE TO RECEIVE NEW FINISHES.
2	REMOVE PORTION OF EXISTING WALL IN ITS ENTIRETY. PREPARE ADJACENT SURFACES FOR NEW CONSTRUCTION.
3	REMOVE EXISTING DOOR, FRAME AND ALL ASSOCIATED HARDWARE IN ITS ENTIRETY. PREPARE OPENING AND ADJACENT SURFACES FOR NEW WORK.
4	REMOVE EXISTING CASEWORK, SHELVING AND / OR MILWORK ITEMS, ALONG WITH ALL RELATED ACCESSORIES. PATCH AND REPAIR ADJACENT WALL AND FLOOR SURFACES AND PREPARE FOR NEW FINISHES.
5	REMOVE EXISTING CASEWORK, SALVAGE AND RELOCATE AS SHOWN ON NEW CONSTRUCTION PLANS.
6	EXISTING CASEWORK TO REMAIN. PROTECT FROM DAMAGE DURING CONSTRUCTION.
7	REMOVE EXISTING LOCKERS AND CONCRETE / MASONRY BASE IN THEIR ENTIRETY INCLUDING TERRAZZO BASE. PREPARE FOR NEW FINISHES.
8	REMOVE EXISTING PLUMBING FIXTURE IN ITS ENTIRETY. EXISTING WASTE AND WATER ROUGH-INS TO REMAIN. PREPARE EXISTING ROUGH-INS FOR CONNECTION TO NEW.
9	REMOVE EXISTING VINYL TILE FLOORING, WALL BASE AND TRANSITIONS. REMOVE ADHESIVES DOWN TO EXISTING SLAB. PREPARE SURFACE TO RECEIVE NEW FINISHES.
10	REMOVE PORTION OF EXISTING ACOUSTICAL CEILING SYSTEM IN ITS ENTIRETY. MODIFY AND PROVIDE NEW GRID AS REQUIRED TO ACOMMODATE NEW CONSTRUCTION. ALL LIGHT FIXTURES, DIFFUSERS, DEVICES, ETC. SHALL BE SALVAGED AND RELOCATED. SEE MECHANICAL AND ELECTRICAL FOR ADDITIONAL INFORMATION.
11	REMOVE EXISTING ACOUSTICAL CEILING SYSTEM IN ITS ENTIRETY INCLUDING ALL LIGHT FIXTURES. ALL DIFFUSERS, DEVICES, ETC. SHALL BE SALVAGED AND RELOCATED. SEE MECHANICAL AND ELECTRICAL FOR ADDITIONAL INFORMATION.
12	REMOVE EXISTING VINYL WALLCOVERING IN ITS ENTIRETY. PREPARE WALL WITH LEVEL 5 FINISH FOR NEW FINISHES.
13	REMOVE EXISTING COUNTERTOP IN ITS ENTIRETY. EXISTING CASEWORK TO REMAIN. PREPARE TO RECEIVE NEW COUNTERTOP. REMOVE AND REINSTALL EXISTING SINK IN SAME LOCATION.
14	REMOVE WOOD FRAMED WINDOW UNIT IN ITS ENTIRETY. PREPARE OPENING FOR NEW WORK.

ARCHITECTURAL PLAN GENERAL NOTES

A. ALL CMU WALLS THAT DO NOT LAY OUT IN FULL OR HALF LENGTHS SHOULD BE BALANCED SO AS NOT TO HAVE ANY PIECES LESS THAN 4" IN SIZE EXPOSED TO VIEW.
B. WHERE DISSIMILAR FLOOR MATERIALS MEET, THEY SHALL DO SO UNDER THE CENTERLINE OF THE DOOR, UNLESS NOTED OTHERWISE.
C. THE BASE FLOOR ELEVATION INDICATED FOR THE PROJECT IS 100'-0". REFER TO SITE PLAN FOR CORRELATION TO USGS DATUM.
D. ALL INTERIOR MASONRY WALLS THAT RUN TO UNDERSIDE OF DECK ABOVE SHALL HAVE A 2" JOINT (U.N.O.) AT THE DECK TO BE FILLED WITH FIRE STOPPING AT RATED WALLS PER PROJECT MANUAL, AND MINERAL WOOL AT THE NON-RATED WALLS, TO ALLOW FOR DEFLECTION.
E. FOR TYPICAL COMMON JOINT DETAILS AND CONSTRUCTION MOVEMENT JOINT DETAILS REFER TO DETAILS ON SHEET A-501.
F. ALL DIMENSIONS ON FLOOR PLANS ARE TO FINISH FACE OF CMU, CONCRETE, BRICK OR FINISH FACE OF GWB AT METAL STUD WALLS, UNLESS NOTED OTHERWISE.
G. HINGE SIDE DOOR JAMB AT WALLS WILL TYPICALLY BE LOCATED 4" MINIMUM FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
H. ALL EXPOSED CONCRETE MASONRY UNITS (CMU) CORNERS ARE TO BE BULLNOSE, EXCEPT AT WINDOW JAMBS, BULKHEADS, WINDOW AND DOOR HEADS.
I. SEE REFLECTED CEILING PLANS FOR BULKHEAD LOCATIONS AND DETAIL REFERENCES.
J. REFER TO ROOM FINISH SCHEDULE OR PLAN AND EQUIPMENT PLANS FOR LOCATION AND EXTENT OF FINISH FLOOR MATERIALS.
K. PROVIDE WOOD BLOCKING AS REQUIRED. WITHIN METAL STUD WALLS FOR WALL MOUNTED ITEMS.
L. REFER TO MASTER/CODE PLANS FOR CODE INFORMATION AND FIRE RATED WALL LOCATIONS.

ARCHITECTURAL PLAN NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

—— W### INDICATES WALL TYPE. REFER TO DRAWING A-501 FOR WALL THICKNESS, HEIGHT AND COMPOSITION.

NO.	DESCRIPTION
1	PLASTIC LAMINATE CASEWORK. SEE EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
2	PLASTIC LAMINATE / SOLID SURFACE COUNTER. SEE EQUIPMENT PLANS FOR ADDITIONAL INFORMATION.
3	RELOCATED CASEWORK. PROVIDE IN-WALL BLOCKING AS REQUIRED.

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SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

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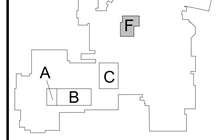

KEY PLAN

N

100% CONSTRUCTION DOCUMENTS

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: DSR
PROJECT NUMBER: 224112.00
PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

FIRST FLOOR ARCHITECTURE PLAN - UNIT F

A-11F

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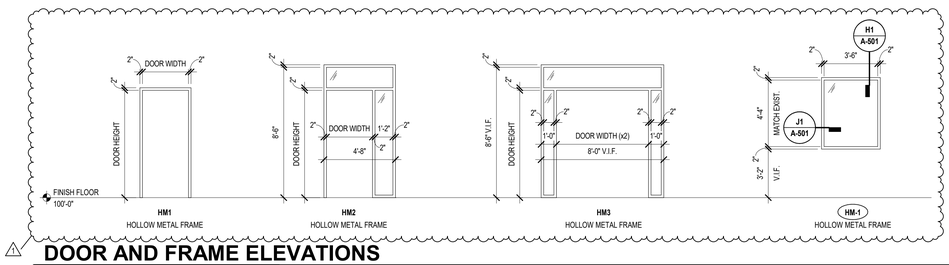
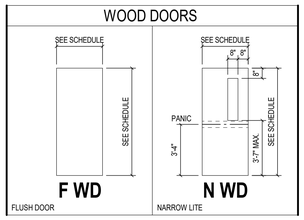


DOOR AND FRAME ELEVATIONS



DOOR AND FRAME SCHEDULE

DOOR NUMBER	DOORS: DOOR SIZE (WxH)	DOORS: DOOR TYPE	FRAME: FRAME MATERIAL	FRAME: FRAME ELEVATION	FRAME: JAMB DEPTH	FRAME: DETAILS: HEAD	FRAME: DETAILS: JAMB	FRAME: DETAILS: SILL	FIRE RATING	HARDWARE: SET NO.	HARDWARE: KEYSIDE ROOM	STC RATING	REMARKS	DOOR NUMBER
B178A	3'-0" x 7'-2"	N WD	HM	HM2	5 3/4"	H1	J4			4.0				B178A
B178B	3'-0" x 7'-2"	F WD	HM	HM1	5 3/4"	H2	J2			1.0	B178			B178B
B178C	PR 3'-0" x 7'-2"	N WD	HM	HM3	5 3/4"	H3	J3			3.0			2	B178C
F102	3'-0" x 7'-2"	N WD	HM	HM1	5 3/4"	H2	J2			1.0	F102			F102
F111A	3'-0" x 7'-2"	N WD	HM	HM2	5 3/4"	H1	J1			4.0	F101			F111A
F111B	3'-0" x 7'-2"	N WD	HM	HM2	5 3/4"	H1	J1			4.0				F111B

DOOR SCHEDULE REMARKS

GENERAL DOOR / HARDWARE REMARKS (APPLIES TO ALL DOORS UNLESS NOTED OTHERWISE)

1.1 DOOR SIZES AS SHOWN ON DOOR AND FRAME SCHEDULE ARE NOMINAL. APPROVED SHOP DRAWINGS MUST BE DISTRIBUTED BETWEEN TRADES TO COORDINATE AND VERIFY ACTUAL DOOR AND FRAME SIZES.

1.2 DOOR THICKNESS SHALL BE 1-3/4" UNLESS NOTED OTHERWISE.

1.3 (HM) HOLLOW METAL DOORS AND FRAMES SHALL BE AS SPECIFIED IN DIVISION 08.

1.4 (WD) WOOD DOORS SHALL BE AS SPECIFIED IN DIVISION 08 SECTION "FLUSH WOOD DOORS".

1.5 TYPE AND THICKNESS OF GLAZING FOR DOORS AND FRAMES SHALL BE SPECIFIED IN DIVISION 08 SECTION "GLAZING", UNLESS NOTED OTHERWISE.

1.6 CONTRACTOR SHALL PROVIDE SHIMS FOR WALL MOUNTED WALL STOP / HOLDERS WHERE THE TRIM (PULL, LEVER OR KNOBS) EXTEND BEYOND THE ENGAGED DEPTH OF WALL HOLDER.

1.7 CLOSERS SHALL BE THE LAST HARDWARE ITEM INSTALLED. INSTALLING CONTRACTOR SHALL VERIFY MAXIMUM DEGREE OF DOOR SWING THAT FIELD CONDITIONS WILL ALLOW AND INSTALL CLOSERS ACCORDINGLY, REGARDLESS OF SWING SHOWN ON DRAWINGS.

1.8 CONTRACTOR SHALL COORDINATE ALL KEYING WITH OWNER.

DOOR SCHEDULE REMARKS (SEE SCHEDULE)

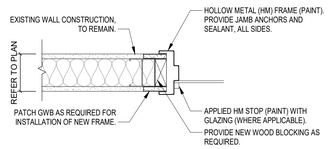
2 PROVIDE NEW DOOR AND FRAME IN EXISTING WALL OPENING. FIELD VERIFY OPENING DIMENSIONS.

LEGEND:

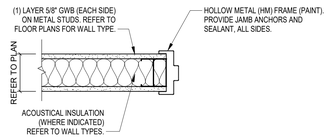
GENERAL
- ETR - EXISTING TO REMAIN
- EXT - EXTERIOR
- GL - GLASS
- OH - OVERHEAD
- PR - PAIR
- SIM - SIMILAR

DOOR MATERIAL
- HM - STEEL DOOR
- FWD - FLUSH WOOD DOORS

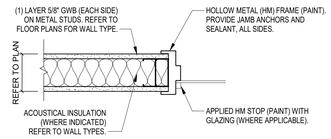
FRAME MATERIAL
- HM - HOLLOW METAL FRAME
- AL - ALUMINUM FRAME
- CW - CURTAIN WALL
- SS - STAINLESS STEEL



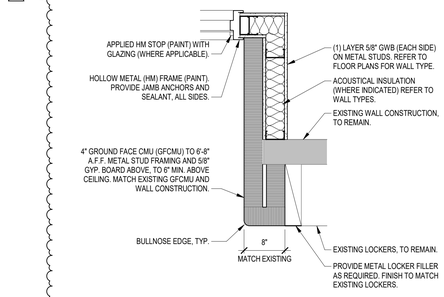
J3 JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



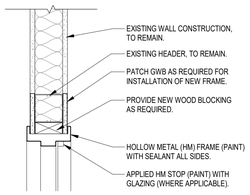
J2 JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



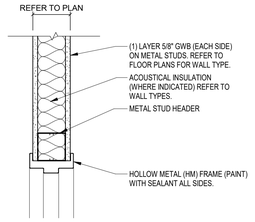
J1 JAMB DETAIL
SCALE: 1 1/2" = 1'-0"



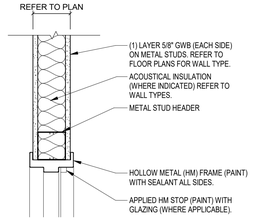
J4 JAMB DETAIL
SCALE: 1" = 1'-0"



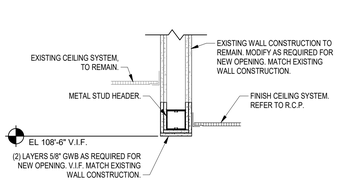
H3 HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



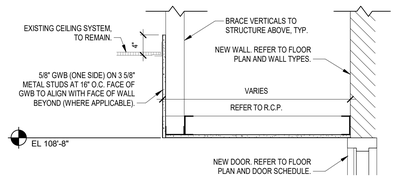
H2 HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



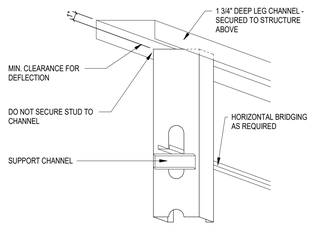
H1 HEAD DETAIL
SCALE: 1 1/2" = 1'-0"



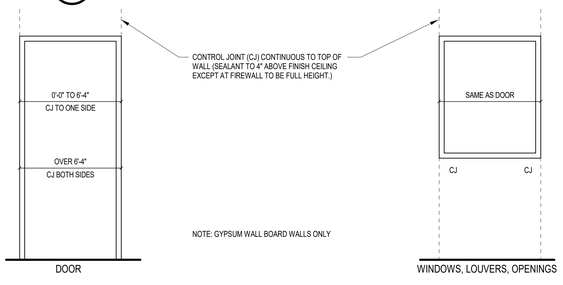
4 BULKHEAD DETAIL
SCALE: 1" = 1'-0"



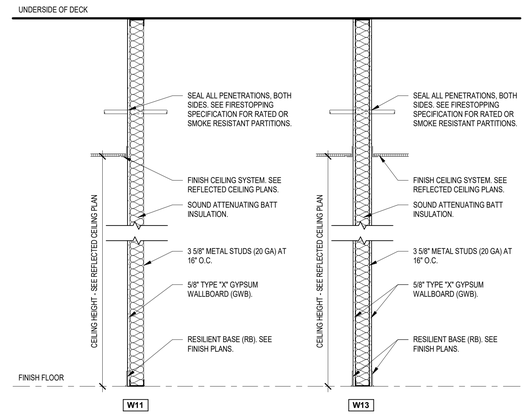
3 BULKHEAD DETAIL
SCALE: 1" = 1'-0"



2 METAL STUDS
SCALE: 1 1/2" = 1'-0"



1 TYPICAL PLACEMENT OF CONTROL JOINTS IN GYPSUM WALLBOARD AT OPENINGS
SCALE: 1 1/2" = 1'-0"



WALL TYPES

CHS - EMT / CNA CLASSROOM REMODEL

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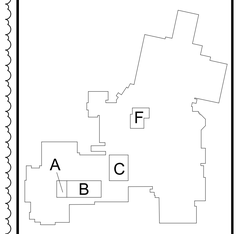

KEY PLAN

100% CONSTRUCTION DOCUMENTS

PAULA A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: DSR
PROJECT NUMBER: 224112.00
PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

DETAILS

A-501

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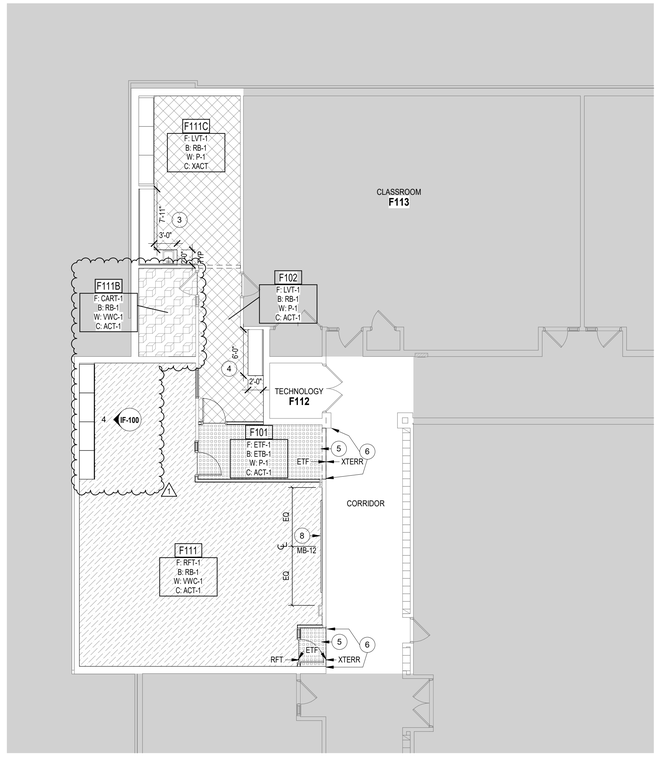
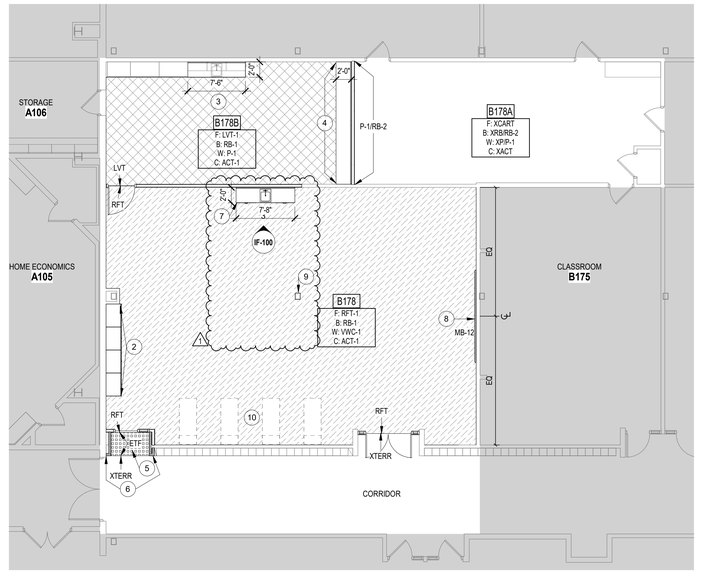
ROOM LEGEND.

ROOM NO.	ROOM NAME
B178	CNA LAB
B178A	COLLABORATION
B178B	STAFF BREAK ROOM
F101	CORRIDOR
F102	CORRIDOR
F114	SLP CLASSROOM
F111B	OFFICE
F111C	BREAK ROOM



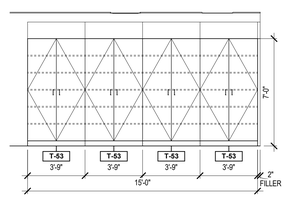
2 FIRST FLOOR FINISH/EQUIPMENT PLAN - UNIT F

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



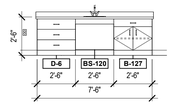
1 FIRST FLOOR FINISH/EQUIPMENT PLAN - UNIT B

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



4 CASEWORK ELEVATION - F111 WEST

SCALE: 1/4" = 1'-0"



3 CASEWORK ELEVATION - B178 NORTH

SCALE: 1/4" = 1'-0"

CASEWORK SCHEDULE

TYPE	MARK	SIZE D	SIZE W	SIZE H	DESCRIPTION
D	6	2'-0"	2'-6"	2'-6"	DRAWER UNIT WITH THREE EQUAL DRAWERS. 5-1/2 INCHES DEEP WORK
T	53	2'-0"	3'-9"	7'-0"	TALL UNIT WITH FIVE ADJUSTABLE SHELVES AND TWO HINGED DOORS AND A SLOPED TOP.
BS	120	2'-0"	2'-6"	2'-6"	ADULT SEAT SINK BASE UNIT WITH A REMOVABLE ACCESS PANEL. REFER TO DETAIL FOR MORE INFORMATION.
B	127	2'-0"	2'-6"	2'-6"	BASE UNIT WITH ONE DRAWER, ONE ADJUSTABLE SHELF AND TWO HINGED DOORS.

GENERAL FINISH NOTES

A. FIXED CASEWORK AND TACKBOARDS SHALL REMAIN IN PLACE (UNO). NEW WALL FINISHES SHALL BE INSTALLED AROUND THESE ITEMS.
B. SEALANT SHALL BE APPLIED AT ALL MATERIAL TRANSITIONS, BACKSPLASHES, AND DOOR FRAMES. ALL LOCATIONS WHERE NEW FINISH ABUTS A DISSIMILAR MATERIAL.
C. REMOVE AND REINSTALL EXISTING DEVICE FACEPLATES, SWITCH FACEPLATES, TECHNOLOGY FACEPLATES, AND CLOCKS.
D. EXISTING ITEMS TO REMAIN AND NEW FINISHES APPLIED AROUND INCLUDE BUT NOT LIMITED TO THERMOSTATS, AND FIRE EXTINGUISHER CABINETS (UNO).
E. RESILIENT TRANSITION STRIP BETWEEN NEW FLOOR FINISH AND EXISTING FLOOR FINISH.
F. PROVIDE NEW RESILIENT TRANSITION STRIPS AT EXPOSED EDGE OF NEW FLOOR FINISH TO EXISTING FLOOR FINISH.
G. PAINT ALL SIDES (VERT. AND HORZ.) OF BULKHEAD/SOFFIT COLOR INDICATED (UNO).
H. PATCH AND REPAIR ALL HOLES AND IMPERFECTIONS, TO RECEIVE NEW FINISHES.
1 ALL NEW HOLLOW METAL DOOR FRAMES TO RECIEVE P-4 REFER TO LIST OF FINISHES FOR MORE INFORMATION

EQUIPMENT GENERAL NOTES

A. ALL COUNTERTOPS TO HAVE CONTINUOUS 4" HIGH BACKSPLASHES AND ENDSPLASHES UNLESS NOTED OTHERWISE.
B. DASHED LINES INDICATE OVERHEAD ITEMS (INCLUDED IN CONSTRUCTION CONTRACTS).
C. (TB) INDICATES 4' HIGH TACK BOARD LENGTH AS INDICATED. REFER TO MOUNTING HEIGHT DRAWING.
D. (XTB) INDICATES EXISTING TACK BOARDS TO REMAIN.
E. PROVIDE FILLER STRIPS BETWEEN CASEWORK UNITS AND WALL OR BETWEEN ANY UNIT AS REQUIRED. EXTEND COUNTER TO FACE OF WALL OR ADJACENT TALL CABINET.
F. ALL CASEWORK DOORS AND DRAWERS SHALL BE LOCKABLE.
G. ALL EXPOSED ENDS AND BACKS OF CASEWORK SHALL BE FINISHED.
H. CASEWORK INSTALLER SHALL CUT CASEWORK AS REQUIRED FOR PLUMBING/ELECTRICAL LINES.
I. CASEWORK INSTALLER SHALL CAULK BETWEEN COUNTERS, BACKSPLASHES, AND WALLS.
J. ALL WALL-MOUNTED CASEWORK SHALL BE MOUNTED WITH THE TOP AT 7'-0" AFF UNLESS OTHERWISE NOTED.
K. REFER TO LIST OF FINISHES FOR COLOR SELECTIONS.

CASEWORK GENERAL NOTES

A. ALL CASEWORK UNIT DESIGNATIONS ON DRAWINGS ARE BASED ON TMI SYSTEMS DESIGN CORPORATION, INC., UNLESS NOTED OTHERWISE.
B. ALL CABINETS SHALL RECEIVE A 4" VINYL WALL BASE AT ALL EXPOSED SIDES, UNLESS NOTED OTHERWISE.
C. ALL FILLER PANELS SHALL BE FURNISHED AND INSTALLED BY CASEWORK MFR. AS REQUIRED TO PROVIDE CLOSED FINISHED SYSTEM. WHERE CASEWORK IS ADJACENT TO A WALL OR OTHER OBSTRUCTION AND NO FILLER PANEL IS SHOWN ON DRAWINGS, A 2"-3" WIDE FILLER PANEL SHALL BE PROVIDED TO ALLOW FOR FULL DOOR SWING AND DRAWER EXTENSIONS.
D. WHERE ELEVATIONS ARE INDICATED TO BE OPPOSITE HAND, CONTRACTOR IS RESPONSIBLE FOR REVIEW OF DRAWINGS TO CONFIRM LOCATIONS OF COLUMN ENCLOSURES, ADJACENT WINDOWS, AND OTHER CONDITIONS WHICH MAY BE DIFFERENT IN EACH ROOM.
E. REFER TO M.E.P. SERIES DRAWINGS FOR RELATED WORK.
F. ALL CASEWORK SHALL HAVE LOCKS, UNLESS NOTED OTHERWISE.
G. ALL BASE AND WARDROBE CABINETS SHALL BE 24" DEEP, UNLESS NOTED OTHERWISE. UPPER CABINETS SHALL BE 12" DEEP, UNLESS NOTED OTHERWISE.
H. ALL CASEWORK SHELVING SHALL BE ADJUSTABLE.
I. ALL CASEWORK COUNTERTOPS SHALL HAVE 4" BACK AND SIDESPLASH. SEAL ALL JOINTS BETWEEN COUNTERTOP AND SPLASH AND SPLASH-TO-WALL JOINTS.
J. ALL COUNTERTOPS WITH ENDS ABUTTING A WALL SURFACE OR TALL CABINET SHALL RECEIVE A 4" ENDSPLASH AT THAT LOCATION.
K. ALL CASEWORK BASE AND WALL TYPE UNITS WITH SHELF SUPPORT SPACING GREATER THAN 30" OR 36" SHALL HAVE AN ADDITIONAL SUPPORT PLACED AT CENTER OF SHELVES.
L. 16"+/- WIDE FILE DRAWER STORAGE PEDESTAL SHALL ACCOMMODATE (1) ROW FRONT TO BACK LETTER SIZE FILES.
M. 42" +/- WIDE LATERAL FILE DRAWER STORAGE SHALL ACCOMMODATE (3) ROW FRONT TO BACK LETTER SIZE FILES.

EQUIPMENT/FINISH KEY NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

No.	Description
2	RELOCATED EXISTING CASEWORK
3	PROVIDE NEW COUNTERTOP WITH 4" H BACKSPLASH, PL-2. EXISTING CASEWORK TO REMAIN. EXISTING SINK TO BE REINSTALLED AT EXISTING LOCATION.
4	PROVIDE NEW WORKSURFACE AS SHOWN ON PLAN, 30"H, PL-2. PROVIDE UNDER COUNTER SUPPORTS AS NEEDED. GROMMETS TO ALIGN WITH OUTLETS LOCATED UNDER WORKSURFACE AS NEEDED.
5	PROVIDE ETF-1 AND 8"H ETB-1 TO MATCH EXISTING CLASSROOM ENTRIES. ETF TO BE FLUSH WITH EXISTING, VERIFY BASE HEIGHT IN FIELD. CONCEAL SIGNS OF CONSTRUCTION. REFER TO LIST OF FINISHES FOR FINISH INFORMATION.
6	PAINT WALLS P-4 TO MATCH EXISTING CORRIDOR PAINT. REFER TO LIST OF FINISHES FOR MORE INFORMATION.
7	PROVIDE NEW COUNTERTOP WITH 4" H BACKSPLASH, PL-2.
8	REINSTALL EXISTING WALL MOUNTED PROJECTION SCREEN.
9	PAINT ALL SIDES OF COLUMN P-1. INSTALL RB-1 ON ALL SIDES OF COLUMN.
10	HALF-TONE DASHED LINES INDICATE EXISTING FURNITURE TO BE RELOCATED.

FLOOR PATTERN LEGEND

CART-1
LVT-1
RFT-1
ETF-1

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

CHS - EMT / CNA CLASSROOM REMODEL

520 EAST MAIN STREET
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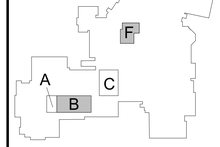


KEY PLAN

100% CONSTRUCTION DOCUMENTS

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: HRS

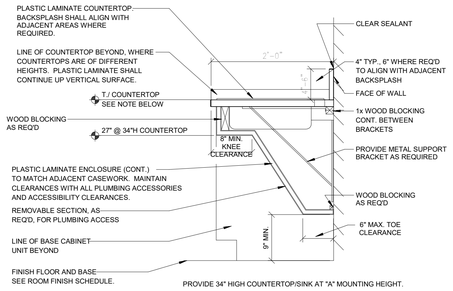
PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

FIRST FLOOR FINISH/EQUIPMENT PLAN

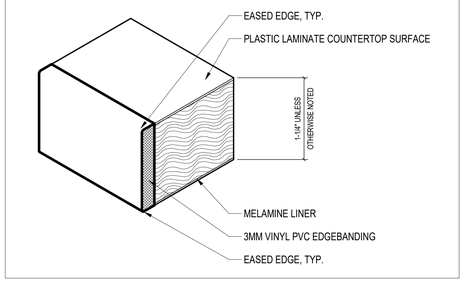
IF-100



PROVIDE 34" HIGH COUNTERTOP/SINK AT "A" MOUNTING HEIGHT.

ADA SINK

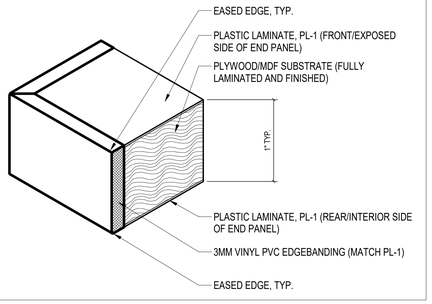
* DETAIL NOT TO SCALE



3MM PVC COUNTERTOP EDGE - TYP.

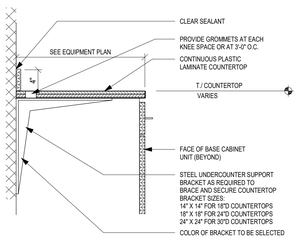
* NOT TO SCALE
* TYPICAL AT ALL COUNTERTOP EDGES UNLESS OTHERWISE NOTED

NOTE:
- DETAIL REFERS TO SECTION VIEW OF END PANEL CONSTRUCTION
- WIDTH AND LENGTH OF END PANELS VARIES.
- REFER TO EQUIPMENT PLANS, CASEWORK SCHEDULE, AND CASEWORK ELEVATIONS FOR LOCATIONS OF ALL END PANELS AND PROVIDE CORRECT SIZE OF END PANELS AS REQUIRED.

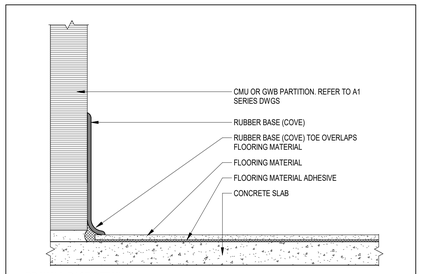


PLASTIC LAMINATE END PANEL DETAIL

* NOT TO SCALE
* REFER TO EQUIPMENT PLANS AND CASEWORK ELEVATIONS FOR LOCATIONS (MEDIA CENTER STACK SHELVING-TYP.)



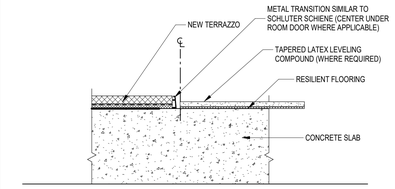
WORKSURFACE SUPPORT DETAIL



RB WALL BASE DETAIL

- SCALE: 6" = 1'-0"
- REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION

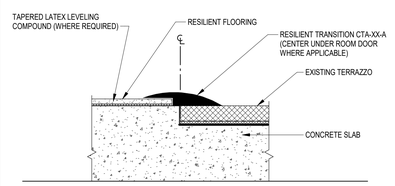
NOTE:
- REFER TO NTMA FOR ALL ADDITIONAL TERRAZZO GUIDELINE DETAILS AND TRANSITION RECOMMENDATIONS TO ADJACENT FLOORING MATERIALS.
- REUSE EXISTING METAL TRANSITIONS IN EXISTING TERRAZZO WHENEVER POSSIBLE.



FLOOR TRANSITION DETAIL ETF to RESILIENT

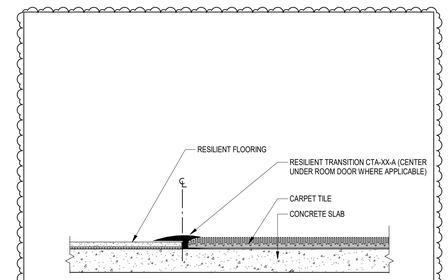
- SCALE: NTS
- REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION

NOTE:
- REFER TO NTMA FOR ALL ADDITIONAL TERRAZZO GUIDELINE DETAILS AND TRANSITION RECOMMENDATIONS TO ADJACENT FLOORING MATERIALS.
- REUSE EXISTING METAL TRANSITIONS IN EXISTING TERRAZZO WHENEVER POSSIBLE.



FLOOR TRANSITION DETAIL XTERR to RESILIENT FLOORING

- SCALE: NTS
- REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION



FLOOR TRANSITION DETAIL CART to RESILIENT FLOORING

- SCALE: NTS
- REFER TO PROJECT MANUAL FOR ADDITIONAL INFORMATION

LIST OF FINISHES

FLOOR MATERIALS

CARPET TILE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
CART-1	MANNINGTON TARKETT	TO BE SELECTED

- INSTALLATION METHOD TO BE ASHLAR.

EPOXY TERRAZZO FLOORING

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
ETF-1 (GRAY)	REFER TO SPECIFICATION	35% DEMARCO BLUE #2, 35% DEMARCO BLUE #1 10% DEMARCO BLUE #0, 5% MISSOURI BOTTICINO #2 5% MISSOURI BOTTICINO #1, 5% MISSOURI BOTTICINO #0 5% OXBLOOD #0 MATRIX: TERROXY - DAUPHIN GRAY 13B-2T

- REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- COORDINATE COLOR SELECTION/VERIFICATION WITH ARCHITECT.
- MANUFACTURER TO SUBMIT ACTUAL PRODUCT SAMPLES AFTER SELECTION OF ALL ETF COLORS FOR VERIFICATION AND APPROVAL.

LUXURY VINYL TILE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
LVT-1	MANNINGTON TARKETT	TO BE SELECTED

- INSTALLATION METHOD TO BE ASHLAR.

RUBBER FLOOR TILE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
RFT-1	MANNINGTON TARKETT NORA	TO BE SELECTED

- INSTALLATION METHOD TO BE ASHLAR.

BASE MATERIALS

EPOXY TERRAZZO BASE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
ETB-1	REFER TO SPECIFICATIONS	MATCH ETF-1 / 6"H V.I.F

RESILIENT BASE 4"H COVE BASE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
RB-1	JOHNSONITE ROPPE	63 BURNT UMBER
RB-2	JOHNSONITE ROPPE	MATCH EXISTING

WALL FINISHES

PAINT

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
P-1 (FIELD)	BENJAMIN MOORE	CLOUD COVER BM855
P-2 (CEILINGS)	SHERWIN WILLIAMS	PURE WHITE SW7005
P-3 (DOORS/FRS, EXIST)	MATCH EXISTING	MATCH EXISTING
P-4 (DOORFRAMES)	MATCH EXISTING	MATCH EXISTING

VINYL WALLCOVERING

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
VWC-1	KOROSEAL MDC	TO BE SELECTED / TYPE II WALLCOVERING

CEILING FINISHES

ACOUSTICAL CEILING TILE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
ACT-1	ARMSTRONG / FINE FISSURED HIGH NRC 1754	WHITE / 2' X 2'

GYPSUM WALLBOARD CEILING AND BULKHEADS

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION

GWB - REFER TO REFLECTED CEILING PLANS AND PROJECT MANUAL FOR TYPE AND HEIGHT.
GWBB - REFER TO REFLECTED CEILING PLANS AND PROJECT MANUAL FOR BULKHEAD TYPE AND HEIGHT.

EQUIPMENT MATERIALS

HP PLASTIC LAMINATE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
PL-1 (CNA)	WILSONART FORMICA NEVAMAR	STANDARD, TO BE SELECTED
PL-2 (COUNTERTOPS)	WILSONART FORMICA NEVAMAR	STANDARD, TO BE SELECTED
PL-3 (EMT)	WILSONART FORMICA NEVAMAR	STANDARD, TO BE SELECTED

MISCELLANEOUS MATERIALS

KICKPLATES

STAINLESS STEEL

MISCELLANEOUS FINISHES

INTERIOR WOOD DOORS/ INTERIOR WOOD TRIM

- STAIN ALL WOOD DOORS, WOOD TRIM, ETC. TO MATCH EXISTING.
- WOOD SPECIES TO BE PLAIN SLICED RED OAK.
- PROVIDE WOOD STAIN SAMPLES FOR VERIFICATION.

RESILIENT MOLDING ACCESSORIES

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
RMA-1	JOHNSONITE	MATCH RB-1

MATERIAL & FINISH GENERAL NOTES

GENERAL
A. REFER TO FINISH PLAN DRAWINGS AND DETAILS (AI SERIES) FOR MATERIALS, PATTERNS AND COLORS.

FLOORING
A. CENTER FLOORING TILE AND PATTERN IN ROOM UNLESS OTHERWISE INDICATED ON FINISH PLANS.
B. ALIGN EDGE OF FINISHED FLOOR MATERIAL WITH EDGE OF WALL OR CASEWORK.
C. FLOOR FINISH MATERIAL TRANSITIONS SHALL OCCUR UNDER THE CENTER OF THE DOOR UNLESS OTHERWISE INDICATED, WHERE THE FLOORING MATERIAL CHANGES FROM ROOM TO ROOM.
D. EXTEND FLOOR MATERIAL AND PATTERN UNDER ALL OPEN TO THE FLOOR CASEWORK AND FURNITURE.
E. COORDINATE CONTROL JOINTS IN CONCRETE SLAB WITH STRUCTURAL DRAWINGS AND FINISH FLOORING INSTALLER.
F. AT BUILDING EXPANSION JOINTS (IF APPLICABLE) PROVIDE PREFABRICATED MOVEMENT PROFILE SYSTEM IN MORTAR BED. PROVIDE SCHLUTER DILEX-EDP OR APPROVED EQUAL. TYPICAL AT ALL LOCATIONS.

WALL BASE
A. RUBBER BASE (RB-1) TO BE INSTALLED AT ALL RESILIENT TILE, CART, AND RFT LOCATIONS UNLESS OTHERWISE INDICATED. ALL RB BASE TO BE COVED.
B. PROVIDE PREFORMED BASE TO MATCH 1"RADIUS AT ALL LOCATIONS WHERE BASE COVERS MASONRY BULLNOSE. REFER TO FINISH SCHEDULE FOR BASE MATERIAL TYPE. TYPICAL AT ALL LOCATIONS. AT RB LOCATIONS PROVIDE PREFORMED OUTSIDE CORNERS, AND USE MANUFACTURER'S RECOMMENDED ADHESIVE (CONTACT CEMENT) FOR PROPER ADHESION WITH NO GAPS.

PAINT & STAIN
A. PAINT ALL WALLS UNLESS OTHERWISE INDICATED ON FINISH PLANS.
B. PAINT ONCE MOCK-UP CLASSROOM TO RECEIVE ARCHITECT'S APPROVAL PRIOR TO ORDERING PAINT FOR THE ENTIRE BUILDING.

PAINT TYPE GENERAL NOTES

A. UNDER SECTION 099123 - INTERIOR PAINTING, PAINT EXPOSED PIPES, DUCTWORK, BREACHING, CONDUIT, INSULATED PIPES, CONDUIT HANGERS, SUPPORTS, BRACING, ETC., WHICH OCCURS IN SPACES DESIGNATED TO BE PAINTED IN PART OR WHOLE.
B. PAINTING AND FINISHING OF EXTERIOR SURFACES AS DESIGNATED. DETAILS SHALL BE UNDER THE WORK SECTION 0991113 - EXTERIOR PAINTING.
C. ALL GYPSUM BOARD WALLS SHALL BE PAINTED WITH INTERIOR PAINT TYPE #9.22 (SEMI-GLOSS) UNLESS OTHERWISE INDICATED.
D. ALL GYPSUM BOARD CEILINGS AND SOFFITS SHALL BE PAINTED WITH PAINT TYPE #9.21 (FLAT) UNLESS OTHERWISE INDICATED.
E. PAINT ALL NON-INTEGRALLY COLORED CMU WALLS WITH INTERIOR PAINT TYPE #4.14 (SEMI-GLOSS), UNLESS OTHERWISE INDICATED.
F. IN THE FOLLOWING ROOMS PAINT WITH PAINT CODE #4.224 (EPOXY-SEMI-GLOSS). REFER TO SECTION 099600 - HIGH PERFORMANCE COATINGS. **[B178B]**
G. IN THE FOLLOWING ROOMS PAINT WITH PAINT CODE #9.211 (EPOXY-SEMI-GLOSS). REFER TO SECTION 099600 - HIGH PERFORMANCE COATINGS. **[F11C, F101, F102, B178A, B178A]**
H. ALL FERROUS METAL (EXCLUDING STRUCTURE) SHALL BE PAINTED INTERIOR PAINT TYPE #5.12.
I. ALL GALVANIZED METAL (EXCLUDING STRUCTURE) SHALL BE PAINTED INTERIOR PAINT TYPE #5.32.
J. ALL EXPOSED STEEL (FERROUS) STRUCTURE SHALL BE PAINTED INTERIOR PAINT TYPE #5.11.
K. ALL EXPOSED GALVANIZED-METAL STRUCTURE SHALL BE PAINTED INTERIOR PAINT TYPE #5.31.
L. ALL WALLS ARE TO RECEIVE AN EGGSHELL FINISH AND ALL CEILINGS/BULKHEADS ARE TO RECEIVE A FLAT FINISH.

PAINT COLOR GENERAL NOTES

A. ALL INTERIOR WALLS SHALL BE PAINTED P-1, UNLESS OTHERWISE INDICATED ON FINISH PLANS OR INTERIOR ELEVATIONS.
B. PAINT ALL GWB SOFFITS P-2 UNLESS OTHERWISE NOTED ON FINISH PLANS OR INTERIOR ELEVATIONS.
C. PAINT ALL SIDES (HORIZ. AND VERT.) OF SOFFIT INDICATED COLOR, UNLESS OTHERWISE NOTED.
D. PAINT ALL PAINTED EXPOSED CEILINGS AND GYPSUM BOARD CEILINGS P-2 UNLESS OTHERWISE NOTED ON FINISH PLANS, CEILING PLANS, OR INTERIOR ELEVATIONS.
E. ALL EXPOSED INTERIOR STEEL COLUMNS SHALL BE PAINTED TO MATCH ADJACENT WALL COLOR, UNLESS OTHERWISE INDICATED ON INTERIOR ELEVATIONS OR FINISH PLANS.
F. STAIN ALL NEW WOOD TRIM/ RAILS/ DOORS/ ETC. TO MATCH EXISTING.

EQUIPMENT MATERIAL/FINISH GEN. NOTES

A. COLOR SELECTION OF ALL FINISHES FOR INTERIOR ARCHITECTURAL WOODWORK/CUSTOM CASEWORK ITEMS ARE NOTED ON CASEWORK ELEVATIONS AND DETAIL DRAWINGS.

B. EDUCATION CASEWORK FINISHES ARE AS FOLLOWS (UNLESS OTHERWISE NOTED):
- HIGH PRESSURE PLASTIC LAMINATE COUNTERTOPS AND WORKSURFACES ARE TO BE PL-2, UNLESS OTHERWISE NOTED.
- HIGH PRESSURE PLASTIC LAMINATE CABINETS/VERTICAL SURFACES ARE TO BE PL-1, UNLESS OTHERWISE NOTED.
- INTERIOR MELAMINE TO BE WHITE.
- OPEN CASEWORK AND CASEWORK WITH GLASS DOORS TO HAVE LAMINATE INTERIOR TO MATCH EXTERIOR.
- 3MM AND 1MM PVC EDGES ON COUNTERTOPS AND WORKSURFACES ARE TO MATCH PL-2. COLOR SELECTION TO BE DETERMINED.
- 3MM AND 1MM PVC EDGES ON CASEWORK ARE TO MATCH PL-1. COLOR SELECTION TO BE DETERMINED.
- HANDLES TO BE BRUSHED CHROME.
- HINGES TO BE BRUSHED CHROME.
- GROMMETS COLOR SELECTION TO BE DETERMINED.

CHS - EMT / CNA CLASSROOM REMODEL

520 EAST MAIN STREET
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ARCHITECT

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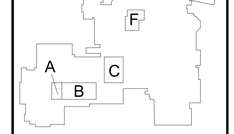
350 E NEW YORK ST SUITE 300, INDIANAPOLIS, IN 46204



KEY PLAN

100% CONSTRUCTION DOCUMENTS

PAUL A. MILLER REGISTERED No. AR10800161 STATE OF INDIANA ARCHITECT

DRAWN BY: HRS

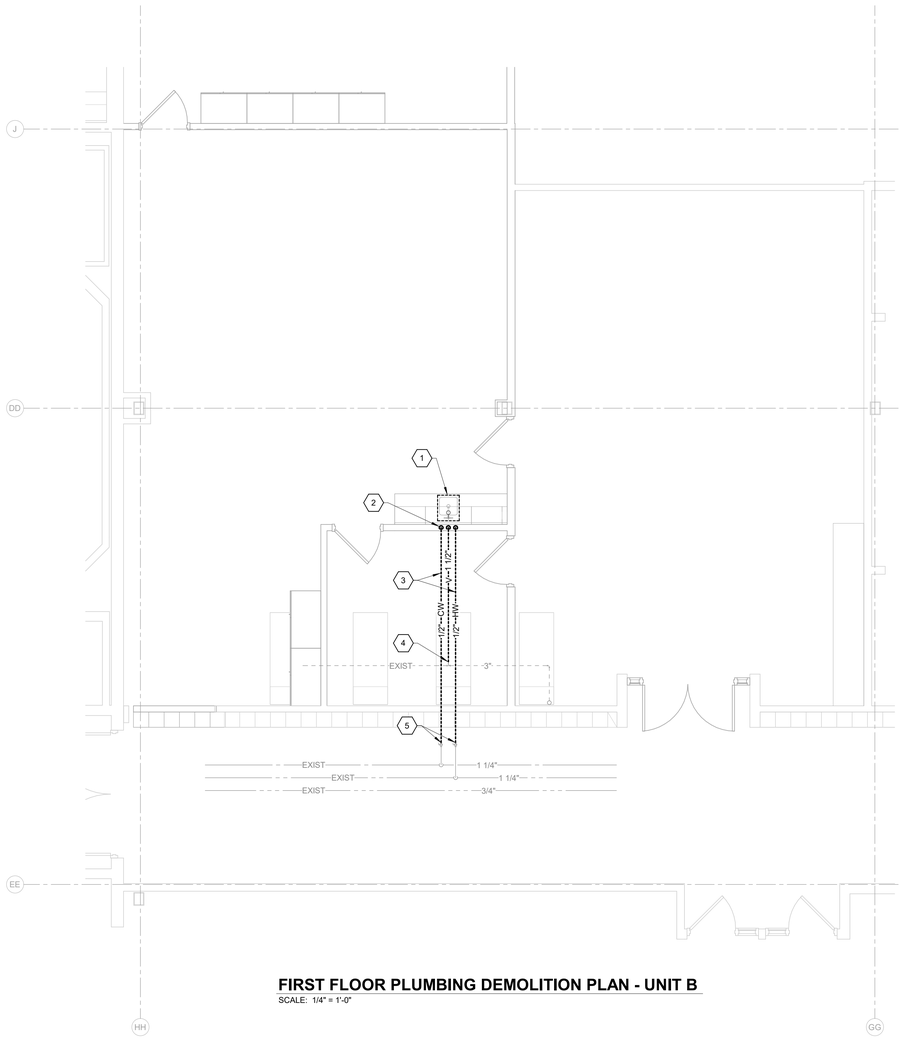
PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

LIST OF FINISHES & TRANSITIONS

AF601

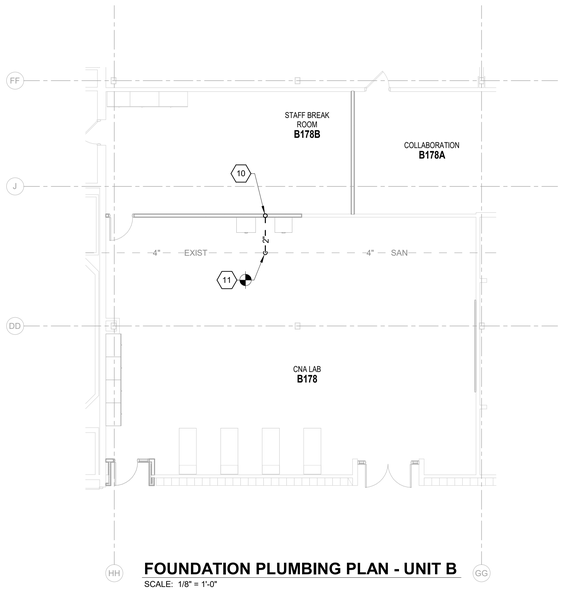


FIRST FLOOR PLUMBING DEMOLITION PLAN - UNIT B

SCALE: 1/4" = 1'-0"

FIRST FLOOR PLUMBING PLAN - UNIT B

SCALE: 1/4" = 1'-0"



FOUNDATION PLUMBING PLAN - UNIT B

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

GENERAL CONSTRUCTION NOTE

CONTRACTOR SHALL PROVIDE CUTTING AND PATCHING OF EXISTING CONCRETE SLAB AS REQUIRED TO ACCOMMODATE INSTALLATION OF UNDERSLAB PIPING SYSTEMS. PATCH CONCRETE SLAB TO MATCH EXISTING FINISHES.

GENERAL CONSTRUCTION NOTE

CONTRACTOR SHALL BE RESPONSIBLE FOR CEILING REMOVAL AND REPLACEMENT AS REQUIRED THROUGHOUT EXISTING AREAS TO ACCOMMODATE NEW PIPING INSTALLATIONS.

PLUMBING PLAN NOTES

1 REMOVE SINK AND ASSOCIATED FAUCET COMPLETE. TURN OVER TO OWNER.

2 REMOVE WATER AND VENT PIPING COMPLETE. REMOVE WASTE DOWN TO BELOW SLAB AND CAP. PATCH CONCRETE SLAB TO MATCH EXISTING FINISHES. REMOVE WATER AND VENT PIPING UP TO ABOVE CEILING.

3 REMOVE PIPING COMPLETE.

4 REMOVE VENT PIPING BACK TO THIS POINT AND CAP.

5 REMOVE HOT AND COLD WATER PIPING BACK TO SHUTOFF VALVES AND CAP.

6 CONNECT 1 1/2" VENT TO EXISTING VENT RISER AT THIS LOCATION. FIELD VERIFY EXISTING VENT RISER LOCATION.

7 CONNECT 3/4" HOT AND COLD WATER TO EXISTING WATER MAINS AT THIS LOCATION. FIELD VERIFY EXISTING WATER MAIN LOCATIONS.

8 3/4" HOT AND COLD WATER DOWN. EXTEND TO FIXTURE AND MAKE FINAL CONNECTIONS AS REQUIRED. 2" WASTE DOWN TO BELOW SLAB, 1 1/2" VENT UP TO ABOVE CEILING.

9 PROVIDE NEW DROP-IN STAINLESS STEEL SINK EQUAL TO ELKAY LRAD1918-8 (8" DEEP BOWL). PROVIDE FAUCET EQUAL TO CHICAGO MODEL 201-AGN8AE2805FAB WITH MODEL E35JKABCP 1.5 GPM AERATOR. PROVIDE SUPPLY RISERS, SUPPLY STOPS AND ESCUTCHEONS. PROVIDE SINK TAILPIECE, P-TRAP ASSEMBLY, WASTE ARM AND ESCUTCHEON.

10 2" WASTE FROM ABOVE.

11 CONNECT 2" WASTE TO EXISTING WASTE MAIN AT THIS LOCATION. CUT CONCRETE SLAB TO ACCOMMODATE NEW INSTALLATION AND PATCH TO MATCH EXISTING FINISHES.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

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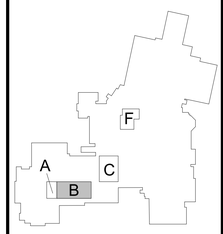

KEY PLAN

100% CONSTRUCTION DOCUMENTS

MARK Z. HOOF REGISTERED No. PE 12000001 STATE OF INDIANA PROFESSIONAL ENGINEER

DRAWN BY: JE

PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02-20-2025

PLUMBING PLANS - UNIT B

P-11B

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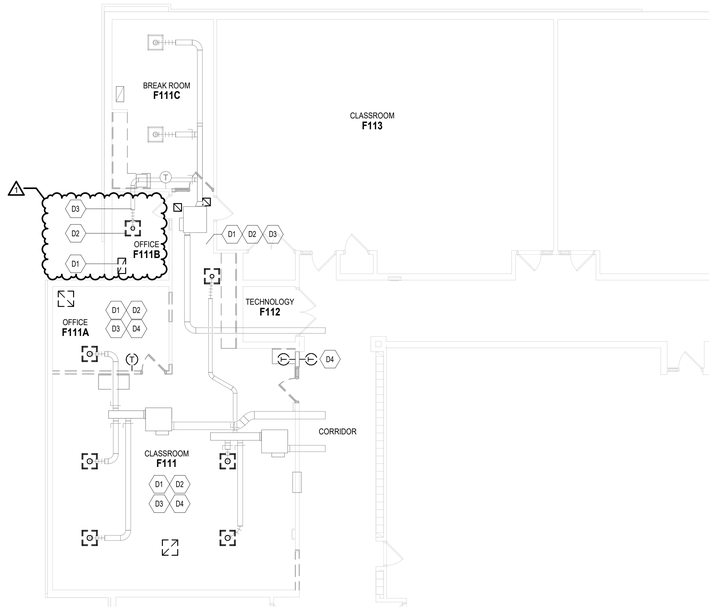
DIFFUSER, REGISTER, AND GRILLE SCHEDULE

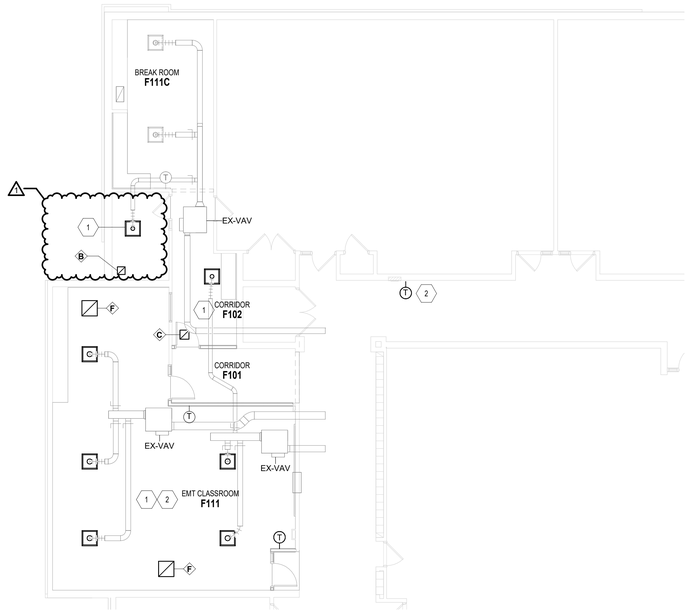
MARK	TYPE	EXAMPLE MANUFACTUER MODEL NO.	NECK SIZE	OVERALL SIZE L"xW"	MAX CORE/ NECK VEL (FPM)	MAX. CFM	MAX. NOISE CRITERIA	FRAME/ MOUNTING	REMARKS
B	RETURN/AIR TRANSFER GRILLE	TITUS 355-FL	10"x10"	12"x12"	500	300	20	REFER TO REFLECTED CEILING PLAN	PROVIDE ALUMINUM SURFACE MOUNT BORDER FOR DUCTED INSTALLATIONS.
C	RETURN/AIR TRANSFER GRILLE	TITUS 355-FL	12"x12"	14"x14"	500	425	20	REFER TO REFLECTED CEILING PLAN	PROVIDE ALUMINUM SURFACE MOUNT BORDER FOR DUCTED INSTALLATIONS.
F	RETURN/AIR TRANSFER GRILLE	TITUS 355-FL	22"x22"	24"x24"	500	1250	20	REFER TO REFLECTED CEILING PLAN	PROVIDE ALUMINUM SURFACE MOUNT BORDER FOR DUCTED INSTALLATIONS.

ROOM LEGEND

ROOM NO.	OWNER ROOM NO.	ROOM NAME	AREA (SF)
F101		CORRIDOR	114 SF
F102		CORRIDOR	144 SF
F111		EMT CLASSROOM	978 SF
F111C		BREAK ROOM	292 SF



1 FIRST FLOOR DEMOLITION PLAN - UNIT F
NOT TO SCALE



2 FIRST FLOOR VENTILATION PLAN - UNIT F
SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION PLAN GENERAL NOTES

A. THE DIVISION 23 CONTRACTOR SHALL VISIT THE PROJECT AND DETERMINE THE EXACT EXTENT OF THE DEMOLITION WORK REQUIRED BEFORE BIDDING THE PROJECT.
B. WHERE BUILDING SURFACES ARE DAMAGED BY THE REMOVAL OF OLD WORK, SAME SHALL BE PATCHED TO MATCH THE ADJACENT SURFACES BY THIS CONTRACTOR.
C. EXISTING OPENINGS WHICH ARE TO BE REUSED SHALL NOT BE REMOVED AND SHALL BE MODIFIED OR ENLARGED AS NEED BE TO SUIT THE NEW SYSTEMS. PROVIDE ALL REQUIRED CUTTING AND PATCHING TO MATCH ADJACENT SURFACES.
D. IF ASBESTOS IS PRESENT CONTACT THE CONSTRUCTION MANAGER, IT WILL BE REMOVED OR RENDERED HARMLESS UNDER SEPERATE CONTRACT BY THE OWNER.
E. THE OWNER SHALL HAVE THE RIGHT TO CLAIM ANY MATERIALS THAT ARE BEING DEMOLISHED PRIOR TO THE CONTRACTOR DISPOSING OF THEM OFF SITE. CONTRACTOR IS REQUIRED TO VERIFY THAT THE OWNER DOES NOT WANT TO CLAIM AN ITEM BEFORE DISPOSING THEM OFF SITE.
F. ALL FLOOR, WALL AND ROOF CUTTING WORK TO BE DONE BY DIVISION 23-HVAC CONTRACTOR UNLESS OTHERWISE NOTED. PATCH ALL FLOOR, WALL AND ROOF OPENINGS THAT ARE NOT REUSED TO MATCH ADJACENT CONSTRUCTION.
G. DIVISION 23 CONTRACTOR IS RESPONSIBLE TO REMOVE EXISTING CEILINGS TO DO WORK ABOVE THE CEILINGS AND REINSTALL THOSE CEILINGS AFTER COMPLETION OF WORK. IF ANY CEILING PADS OR GRIDS ARE DAMAGED, THIS CONTRACTOR SHALL REPLACE WITH NEW TO MATCH EXISTING.

MECHANICAL PLAN GENERAL NOTES

A. ALL DUCTWORK, PIPING AND VALVES SHALL BE CONCEALED ABOVE THE CEILING AND WITHIN WALLS, UNLESS OTHERWISE NOTED.
B. REFER TO THE SPECIFICATIONS FOR REQUIREMENTS RELATED TO EQUIPMENT QUALITY, CONSTRUCTION AND FINISH OF MATERIALS.
C. ARRANGE DUCTWORK, PIPING, ETC. TO ALLOW FOR EASY ACCESS TO COILS, VALVES, DAMPERS AND CONTROLS. KEEP AREAS ADJACENT TO ACCESS PANELS FREE AND CLEAR OF ANY OBSTRUCTIONS.
D. SEAL DUCT PENETRATIONS THROUGH THE FLOOR AND/OR WALLS IN ACCORDANCE WITH MECHANICAL CODE AND SMACNA REQUIREMENTS. SEAL DUCT PENETRATIONS THROUGH FIRE RATED FLOORS AND/OR WALLS WITH A MATERIAL HAVING SAME FIRE RATING AS THE WALL AND/OR FLOOR.
E. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR HIS RESPECTIVE WORK FOR REPAIRING AND PATCHING TO MATCH EXISTING SURFACES, SIDEWALKS, STREETS, FLOORS, WALLS, ROOFS, CEILING AND PAVEMENT.
F. ALL RECTANGULAR SHEET METAL DUCT SIZES SHOWN ARE INSIDE FREE AREA DIMENSIONS. ALL ROUND DUCT SIZES SHOWN ARE INSIDE DIAMETERS.
G. PROVIDE BALANCING DAMPER AT EACH DUCT BRANCH, SERVING DIFFUSER, GRILLE AND REGISTER.
H. INSTALL WALL THERMOSTATS, TEMPERATURE SENSORS, HUMIDISTATS, ETC. 44" ABOVE THE FINISH FLOOR IN ACCORDANCE WITH ADA REQUIREMENTS.
I. COORDINATE ALL REQUIRED WALL, ROOF AND FLOOR OPENINGS (BOTH DIMENSIONS AND LOCATIONS) WITH ALL OTHER TRADES.
J. COORDINATE MECHANICAL SYSTEM INSTALLATION WITH STRUCTURE, PLUMBING, FIRE PROTECTION, TECHNOLOGY SYSTEMS, ELECTRICAL SYSTEMS AND LIGHTING LAYOUT.
K. PROVIDE ALL NECESSARY TRANSITIONS TO EQUIPMENT FROM SIZES SHOWN ON PLAN.
L. COORDINATE DIFFUSER AND GRILLE LOCATIONS WITH ARCHITECTURAL REFLECTED CEILING PLANS AND EQUIPMENT PLANS. DIFFUSERS/GRILLES TO BE CENTERED IN CEILING PADS.
M. MAIN SUPPLY AIR DUCTWORK TO BE MEDIUM PRESSURE RATED PER SMACNA REQUIREMENTS FROM AIR HANDLING UNITS TO TERMINAL UNITS. DUCTWORK BRANCHES FROM TERMINAL UNITS TO AIR DEVICES SHALL BE LOW PRESSURE RATED PER SMACNA REQUIREMENTS.
N. VAV BOXES SHALL BE INSTALLED SUCH THAT NO PIPING, DUCTWORK, HANGERS, FIRE PROTECTION, ETC, SHALL BE INSULATED WITHIN 36" OF THE CONTROL PANEL. THE UNIT SHALL NOT BE INSULATED DIRECTLY ABOVE LIGHT FIXTURE OR CEILING TILE WITH SPEAKER, OCCUPANCY SENSOR, FIRE SPRINKLER, ETC.
O. ALL VAV TERMINAL UNITS, MSCU, BCU, FIRE DAMPERS, SMOKE DAMPER, AND INLINE EXHAUST FANS SHALL BE INSTALLED WITHIN TWO FEET OF THE CEILING FOR MAINTENANCE ACCESS.

MECHANICAL PLAN NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

NO.	DESCRIPTION
1	CLEAN AND PREPARE EXISTING SUPPLY DIFFUSERS FOR NEW CEILING GRID MOUNTING. PROVIDE NEW FLEX DUCTWORK IF NEEDED. MAKE ADJUSTMENTS AS NECESSARY.
2	RELOCATE EXISTING TEMPERATURE SENSOR TO NEW LOCATION INDICATED. MAINTAIN CONNECTION TO THE SENSOR'S RESPECTIVE EXISTING VAV BOX. PROVIDE ADDITIONAL CONTROL WIRING AS NECESSARY FOR COMPLETE AND FULLY FUNCTIONAL OPERATION. INTEGRATE INTO EXISTING SIEMENS BAS GRAPHICS AND SEQUENCE OF OPERATIONS.
D1	DEMO AND REPLACE RETURN GRILLES WITH NEW. REFER TO VENTILATION PLAN.
D2	REMOVE AND PREPARE EXISTING SUPPLY DIFFUSERS FOR NEW CEILING GRID. REFER TO VENTILATION PLAN.
D3	EXISTING MECHANICAL EQUIPMENT AND DUCTWORK TO REMAIN IN PLACE. MAKE ADJUSTMENTS AS NECESSARY.
D4	EXISTING TEMPERATURE SENSOR TO BE REMOVED AND RELOCATED. REFER TO VENTILATION PLAN.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

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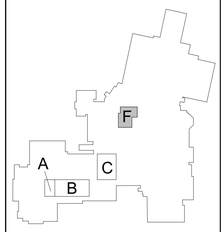

KEY PLAN

100% CONSTRUCTION DOCUMENTS

MARK Z. HOFF REGISTERED No. PE 12200301 STATE OF INDIANA PROFESSIONAL ENGINEER

DRAWN BY: JJS

PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02.03.2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02.20.2025

FIRST FLOOR MECHANICAL PLAN - UNIT F

MV11F

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ELECTRICAL ABBREVIATIONS

ABBREVIATIONS USED ON THE CONTRACT DOCUMENTS, INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED BELOW

#	NUMBER
(N)P/N/W	NUMBER OF POLES, NUMBER OF WIRES
AFC	ABOVE FINISHED COUNTERTOP
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AR	AS REQUIRED
AWG	AMERICAN WIRE GAUGE
A/V	AUDIO VISUAL
C	CONDUIT (GENERIC TERM FOR RACEWAY, PROVIDE AS SPECIFIED)
Cd	CANDELA
CLG	CEILING MOUNTED
DC	DIRECT CURRENT
DED	DEDICATED DEVICE ON INDIVIDUAL BRANCH CIRCUIT
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
EBJ	EQUIPMENT BONDING JUMPER ON LOAD SIDE OF AN OVER-CURRENT DEVICE
EC	ELECTRICAL CONTRACTOR
EM	WIRED ON EMERGENCY CIRCUIT
EOL	END OF LINE
ETR	EXISTING TO REMAIN
EX	EXISTING
F	FLUSH
F@	FUSED AT
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FRE	FIBERGLASS REINFORCED EPOXY CONDUIT
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS AND GROUND FAULT TRIP ADJUSTMENTS TO BE PROVIDED ON A CIRCUIT BREAKER
MBJ	MAIN BONDING JUMPER
MCB	MAIN CIRCUIT BREAKER
MH	MOUNTING HEIGHT (ON PLAN), ALL MOUNTING HEIGHTS FOR DEVICE BOXES ARE FROM FINISHED FLOOR TO BOTTOM OF BOX, UNO. VERIFY OUTLET LOCATIONS WITH OTHER TRADES BEFORE ROUGH-IN
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTG	MOUNTING
N	GROUNDED CIRCUIT CONDUCTOR (NEUTRAL)
+N	INDICATES MOUNTING HEIGHT (N) TO BOTTOM OF DEVICE FROM FINISH FLOOR, UNO
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFS	NONFUSIBLE SWITCH
NIC	NOT IN CONTRACT
NM	NONMETALLIC SHEATHED CABLE
NO	NORMALLY OPEN
NRTL	NATIONALLY RECOGNIZED TESTING LAB
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVER-CURRENT PROTECTIVE DEVICE
PA	PUBLIC ADDRESS SYSTEM
PB	PULL BOX
PR	PAIR
S	SURFACE
SBJ	SYSTEM BONDING JUMPER
SIG	SIGNAL
SN	SOLID NEUTRAL
SP	SPARE
SPL	SPLICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SSBJ	SUPPLY-SIDE BONDING JUMPER
STP	SHIELDED TWISTED PAIR
STL	CARBON STEEL
SUSP	SUSPENDED
SW	SWITCH
TEL/DATA	TELEPHONE/DATA
TEL	TELEPHONE
TERM	TERMINAL(S)
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TTB	TELEPHONE TERMINATION BOARD
UNO	UNLESS NOTED OTHERWISE
VIF	VERIFY IN FIELD
WH	WATTHOUR
WM	WALL MOUNTED
XFMR	TRANSFORMER

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION	MH
(M) V	OCCUPANCY SENSOR - CEILING MOUNTED, ULTRASONIC AND INFRARED SENSOR FOR CORRIDOR & HALLWAY APPLICATIONS, 95'x15' (MIN.) RECTANGULAR SHAPED COVERAGE PATTERN. PROVIDE WITH RELAY OPTION. "V" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS.	CLG
(CT) V	OCCUPANCY SENSOR - CEILING MOUNTED, DUAL TECHNOLOGY, 360 DEGREE PATTERN, 2000 S.F. COVERAGE. PROVIDE WITH RELAY OPTION. "V" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS.	CLG
S_T	OCCUPANCY SENSOR - WALL SWITCH TYPE, DUAL TECHNOLOGY WITH MANUAL OVERRIDE SWITCH	44"
$\$_K$	KEY-OPERATED SWITCH, NUMBER INDICATES NUMBER OF POLES, 277V; 20A, FLUSH UNO	44"
$\$_3$	SWITCH, NUMBER INDICATES NUMBER OF POLES, 277V, 20A, FLUSH UNO	44"
$\$_a$	SINGLE POLE SWITCH, 277V, 20A, FLUSH UNO TYPICAL, SUBSCRIPT a, b, c INDICATES WHICH LUMINAIRE THAT WILL BE CONTROLLED VIA SWITCH LEG	44"
$\$_D$	WALL BOX DIMMER 277V, 1200 WATT MINIMUM, FLUSH, UNO. PROVIDE WATTAGE SIZE TO EXCEED CIRCUIT LOAD	44"
	DOWNLIGHT LUMINAIRE, APPROXIMATE SIZE INDICATED	-
	DOWNLIGHT LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	-
	CEILING MOUNTED EXIT SIGN, SHADED PORTION(S) INDICATES SINGLE OR DOUBLE FACE	CLG
	RECESSED LUMINAIRE, APPROXIMATE SIZE INDICATED. ("NL", INDICATES NIGHT LIGHT FIXTURES)	CLG
	RECESSED LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	CLG

POWER SYMBOLS

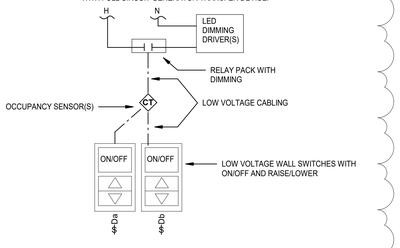
SYMBOL	DESCRIPTION	MOUNTING HEIGHT TO BOTTOM
	CONDUIT CONCEALED ABOVE CEILING OR IN WALL	
	CONDUIT CONCEALED IN OR BELOW FLOOR, OR UNDER GROUND	
X 1AL1-1	20 AMP, 125 VOLT, NEMA 5-20R DUPLEX RECEPTACLE WITH COMMON COVER PLATE MOUNTED VERTICALLY +16" TO BOTTOM. LETTER(S) IN FRONT INDICATES LOAD TYPE, SEE BELOW. SINGLE LINE INDICATES HORIZONTAL MOUNTING, DOUBLE LINE INDICATE QUAD, DARK CENTER INDICATES ABOVE COUNTERTOP MOUNTING (44") NEMA 5-20R, UNO. CIRCUIT NUMBER (e.g. "1AL1-1") ADJACENT TO THE SYMBOL ON PLANS INDICATES PANELBOARD/CIRCUIT NUMBER SERVING RECEPTACLE, UNO.	
	B RECEPTACLE WITH 20 AMP SINGLE POLE SWITCH IN 2 GANG BOX AND COMMON COVER PLATE	
	C CASEWORK, COORDINATE WITH ARCHITECTURAL	
	CO COPY MACHINE	
	CM COFFEE MAKER	
	E RED RECEPTACLE AND STAINLESS COVER PLATE, CONNECT TO BACKUP POWER	
	GF GROUND FAULT CIRCUIT INTERRUPTING TYPE	
	I ISOLATED GROUND	
	M MONITOR - 60" AFF	
	MW MICROWAVE	
	R REFRIGERATOR - 48" AFF	
	TL TWIST LOCK	
	TR TAMPER RESISTANT	
	U DUPLEX RECEPTACLE WITH (2) USB PORTS	
	UR UNDER COUNTER REFRIGERATOR	
	V VENDING MACHINE, FEED FROM 30 mA GFCI BREAKER IN PANELBOARD.	
	VP WALL MOUNTED VIDEO PROJECTOR, 96" AFF UNO	
	WB WHITEBOARD	
	WC ELECTRIC WATER COOLER. FEED FROM 5 mA GFCI BREAKER IN PANELBOARD.	
	WF WASHFOUNTAIN/LAVATORY. CONNECT TO NEAREST THROUGH FEED GFCI RECEPTACLE.	
	WM WASHING MACHINE. FEED FROM 30 mA GFCI BREAKER IN PANELBOARD.	
	WP WEATHER RESISTANT GFCI WITH IN-USE TYPE WEATHERPROOF COVER HINGED AT TOP	
	X EXPLOSION PROOF	
	20 AMP DUPLEX RECEPTACLE FLUSH CEILING MOUNTED , NEMA 5-20R	CLG
	SURFACE CIRCUIT BREAKER PANELBOARD, SEE ONE LINE DIAGRAM	-
	FLUSH MOUNTED CIRCUIT BREAKER PANELBOARD, SEE ONE LINE DIAGRAM	-
J J 3->	JUNCTION BOX, PIGTAIL INDICATED FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT	-
F	20 AMP DUPLEX RECEPTACLE IN FLUSH FLOOR MOUNTED BOX,NEMA 5-20R. USE A CAST BOX AT GRADE LEVEL, USE A STAMPED STEEL BOX FOR UPPER FLOORS. REFER TO SPECIFICATIONS FOR REQUIREMENTS.	-
	SINGLE CHANNEL MULTIOUTLET SURFACE RACEWAY PRE-WIRED ASSEMBLY WITH SINGLE RECEPTACLES. QUANTITY PER SPEC.	-

FIRE ALARM SYMBOLS

SYMBOL	DESCRIPTION	MH
F F	AUDIBLE AND VISIBLE NOTIFICATION APPLIANCE (HORN/STROBE), CEILING MOUNTED, EXTRA LINE INDICATES WALL MOUNTING AT 80" AFF	CLG
V V	VISIBLE NOTIFICATION APPLIANCE (STROBE), CEILING MOUNTED, EXTRA LINE INDICATES WALL MOUNTING AT 80" AFF	CLG

LIGHTING SEQUENCE OF OPERATIONS - CLASSROOM:

1. SYSTEM SHALL BE SET UP SUCH THAT LIGHTING IS MANUALLY SWITCHED ON AND AUTOMATICALLY SWITCHED OFF BY VACANCY SENSOR AFTER 15 MINUTES OF ROOM VACANCY.
2. Da - CONTROLS TEACHING WALL FIXTURES.
3. Db - CONTROLS REST OF ROOM FIXTURES.
4. ONCE LIGHTING IS SWITCHED ON, LIGHTS MAY BE DIMMED THROUGH RAISE/LOWER BUTTONS ON WALL SWITCH.
5. EMERGENCY FIXTURES SHALL OPERATE AS DESCRIBED ABOVE DURING NORMAL OPERATIONS. IN EMERGENCY SCENARIO OR WHEN FIRE ALARM IS TRIGGERED, FIXTURES WILL COME ON AT 100% OUTPUT. THIS CAN BE ACHIEVED WITH FULL CIRCUIT GENERATOR TRANSFER DEVICE.



2 LIGHTING CONTROLS - CLASSROOM
SCALE: 1/8" = 1'-0"

1

TELECOMMUNICATIONS SYS.

SYMBOL	DESCRIPTION	SCOPE OF WORK	OUTLET INFORMATION	MOUNTING HEIGHT	NOTES
	TELECOMMUNICATIONS OUTLET				PROVIDE SINGLE REDUCER
	TELECOMMUNICATIONS COUNTERTOP OUTLET				PROVIDE SINGLE REDUCER
	TELECOMMUNICATIONS AUDIO / VIDEO OUTLET				- -
W	WIRELESS ACCESS POINT OUTLET (CEILING MOUNTED)				REFER TO PROJECTOR PAN DETAIL IN ROOMS WITH PROJECTOR PANS
	TELECOMMUNICATIONS CABINET				- -
	TELECOMMUNICATIONS RACK				- -

SOUND SYSTEMS

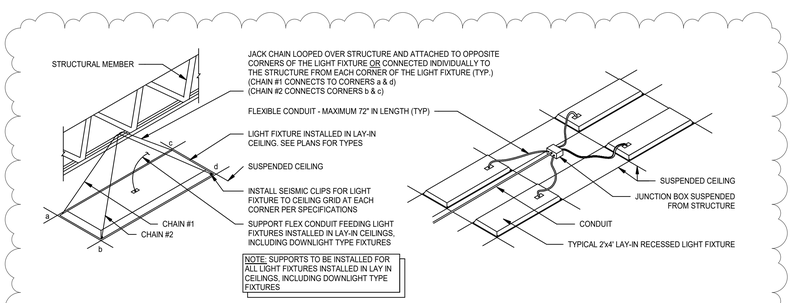
SYMBOL	DESCRIPTION	NOTES
S	SOUND REINFORCEMENT SPEAKER (CEILING MOUNTED)	- -

VIDEO SYSTEMS

SYMBOL	DESCRIPTION	NOTES
VP	CEILING-MOUNT PROJECTOR	

LUMINAIRE SCHEDULE

PLAN TYPE	MANUFACTURER/CATALOG	MOUNTING	LAMPS NO.	LAMPS WATTS	LAMPS TYPE	LAMPS LUMENS	APPLIED VOLTAGE	DESCRIPTION	VA LOAD
LD61	HALO HC6 SERIES LITHONIA LDN6 SERIES PRESCOLITE LF6LED SERIES H.E. WILLIAMS 6CR SERIES	RECESSED	1	22 W	LED	1500 lm	277 V	6-INCH ROUND APERTURE OPEN REFLECTOR LED DOWNLIGHT, MEDIUM DISTRIBUTION, WHITE SPECULAR FINISH, WHITE FLANGE, SELF-FLANGED, 0-10VDC DIMMING, 4000K, MVOLT DRIVER, BAR HANGER ACCESSORY.	19 VA
LV2	LITHONIA BLT SERIES METALUX CRUZE SERIES COLUMBIA LCAT SERIES H.E. WILLIAMS LT-24 SERIES	RECESSED	1	35 W	LED	4000 lm	277 V	2 BY 4-FOOT VOLUMETRIC TROFFER, SMOOTH CURVED RIBBED DIFFUSER, 10% DIMMING, 4000K, 80+ CRI, MVOLT DRIVER.	35 VA
LV2X	LITHONIA BLT SERIES METALUX CRUZE SERIES COLUMBIA LCAT SERIES H.E. WILLIAMS LT-24 SERIES	RECESSED	1	35 W	LED	4000 lm	277 V	2 BY 4-FOOT VOLUMETRIC TROFFER, SMOOTH CURVED RIBBED DIFFUSER, 10% DIMMING, 4000K, 80+ CRI, MVOLT DRIVER, WITH EMERGENCY TRANSFER DEVICE.	35 VA
XC	SURE-LITES CX SERIES CHLORIDE 55 LINE SERIES LITHONIA SIGNATURE SERIES DUAL-LITE SEMPRA SERIES OR A/E APPROVED EQUAL	SURFACE CEILING	1	3 W	RED LED	0 lm	277 V	CAST ALUMINUM AC ONLY EXIT SIGN, SINGLE FACE, DIRECTIONAL ARROWS INDICATED, WHITE HOUSING. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.	3 VA



1 RECESSED LIGHT FIXTURE SUPPORT
SCALE: 1" = 1'-0"

1

ELECTRICAL GENERAL NOTES

1. THE TERM "PROVIDE" INDICATES CONTRACTOR SHALL FURNISH AND INSTALL ITEMS AND CONNECT AS REQUIRED TO OBTAIN A COMPLETE AND OPERABLE SYSTEM.
2. COORDINATE DEVICE LOCATIONS WITH ARCHITECTURAL PLANS, CASEWORK, WINDOWS, WALL FINISHES, EQUIPMENT, AND OTHER TRADES PRIOR TO ROUGH IN. DEVICES ARE INTENDED TO BE ACCESSIBLE. DO NOT INSTALL BEHIND CASEWORK, DOORS OR EQUIPMENT UNLESS INDICATED ON PLANS. NOTIFY ARCHITECT IN WRITING OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
3. WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ALL LOCAL, STATE AND NATIONAL CODES INCLUDING, BUT NOT LIMITED TO NFPA 70 (NATIONAL ELECTRIC CODE), NFPA 72, NFPA 101, INTERNATIONAL BUILDING CODE, ETC.
4. CONFLICTS BETWEEN THE APPLICABLE CODES, STANDARDS, AND THE PLANS AND SPECIFICATIONS SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH WORK.
5. CONTRACTOR SHALL FOLLOW SEISMIC RESTRANT AND DESIGN REQUIREMENTS CONTAINED IN LATEST ADOPTED STATE AND INTERNATIONAL BUILDING CODES WITH ALL AMENDMENTS AS ADOPTED.
6. ADDITIONAL ELECTRICAL REQUIREMENTS MAY BE SHOWN ON PLANS FROM OTHER DISCIPLINES IN THIS SET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF THE PROJECT REQUIREMENTS.
7. WHERE CONFLICTS ARE FOUND BETWEEN DRAWINGS, DETAILS, OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. NOTIFY ARCHITECT OF DISCREPANCY IN WRITING.
8. INITIATING WORK CONSTITUTES CONTRACTOR ACCEPTANCE OF THE EXISTING CONDITIONS ASSOCIATED WITH THE WORK IN QUESTION.
9. CONTRACTOR SHALL CONTACT UTILITIES AND VERIFY UTILITY REQUIREMENTS PRIOR TO COMMENCING CONSTRUCTION. CONFLICTS BETWEEN UTILITY REQUIREMENTS AND THE PLANS OR SPECIFICATIONS SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH WORK. CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH THE UTILITY COMPANY TO REVIEW REQUIREMENTS. INCOMING SERVICE CONDUITS AND SUBSTRUCTURES SHALL BE INSTALLED PER UTILITY COMPANY STANDARDS.
10. THESE DRAWINGS AND SPECIFICATIONS DO NOT INDICATE METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND IS RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFE PRACTICES.
11. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE, AND CONDUIT, ETC. THE EXACT LOCATIONS AND ARRANGEMENT OF PARTS SHALL BE DETERMINED AS THE WORK PROGRESSES. ITEMS NOT INDICATED ON DRAWINGS REASONABLY INFERRED TO BELONG TO THE WORK DESCRIBED SHALL BE FURNISHED AND INSTALLED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
12. WORK SHALL BE COORDINATED WITH EXISTING CONDITIONS, NEW CONSTRUCTION, OWNER'S VENDORS, OTHER TRADES, AND THEIR DOCUMENTS. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING HIS BID. CONTRACTOR SHALL CONTACT OWNER FOR AN APPOINTMENT TO VISIT THE SITE.
13. AN INSULATED GROUND CONDUCTOR SIZED PER NEC SHALL BE PROVIDED WITH EACH FEEDER AND BRANCH CIRCUIT.
14. PROVIDE A DEDICATED NEUTRAL FOR EACH LINE TO NEUTRAL CIRCUIT. MULTI-WIRE BRANCH CIRCUITS ARE NOT PERMITTED UNLESS SPECIFICALLY INDICATED ON PLANS.
15. MINIMUM WIRE SIZE IS #12 AWG. SEE SPECIFICATIONS FOR MINIMUM CONDUIT SIZE.
16. CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE ABOVE CEILINGS, INSIDE WALLS, OR UNDER FLOOR SLAB WHERE SHOWN ON DRAWINGS. IN AREAS WITH NO CEILING, RUN EXPOSED CONDUIT AS HIGH AS POSSIBLE AND PARALLEL TO NEARBY SURFACES OR EXISTING RACEWAYS. CONDUIT SHALL NOT BE INSTALLED IN FLOOR SLAB UNLESS SPECIFICALLY INDICATED ON PLANS AND WHERE APPROVED BY STRUCTURAL ENGINEER. DO NOT INSTALL MC CABLE IN EXPOSED LOCATIONS.
17. CONTRACTOR SHALL PROVIDE RIGID METAL SLEEVES TO FACILITATE PATHWAYS THROUGH FULL HEIGHT WALLS FOR ELECTRICAL AND TELECOMMUNICATION WIRING.
18. PROVIDE TEMPORARY OR PERMANENT END CAPS FOR STUBBED CONDUITS. PROVIDE INSULATED THROAT BUSHINGS FOR CONDUITS INTENDED TO REMAIN OPEN ENDED.
19. MOUNTING HEIGHTS FOR WALL MOUNTED DEVICES INDICATED ABOVE FINISHED FLOOR ARE TO BOTTOM OF DEVICE UNO. MOUNTING HEIGHTS TO CEILING SUSPENDED DEVICES ARE TO BOTTOM OF DEVICE UNO.
20. PROVIDE SOUND INSULATING PUTTY AROUND DEVICES INSTALLED ON OPPOSITE SIDES OF A WALL IN THE SAME VERTICAL CHANNEL. IF DEVICES ARE LOCATED AT LEAST 8" HORIZONTALLY APART NO SOUND INSULATING PUTTY IS REQUIRED.
21. COORDINATE CEILING MOUNTED DEVICES WITH MECHANICAL AND ARCHITECTURAL REFLECTED CEILING PLANS. NOTIFY ARCHITECT IN WRITING OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
22. JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL. LABEL EACH BOX IN AREA OF WORK WITH A PERMANENT MARKER OR IN ACCORDANCE WITH SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
23. ELECTRICAL PANELS INCLUDING BUT NOT LIMITED TO FIRE ALARM CONTROL PANELS, LIGHTING CONTROL PANELS, POWER DISTRIBUTION WILL HAVE A MAX DEVICE HEIGHT OF 72" AFF.
24. PROVIDE GROUNDING TYPE EXPANSION FITTINGS OR OTHER APPROVED METHODS TO ALLOW FOR EXPANSION, CONTRACTION, AND DEFLECTION WHERE CONDUITS CROSS BUILDING EXPANSION JOINTS.
25. PROVIDE SEPARATE RACEWAY FOR EMERGENCY SYSTEM WIRING PER NEC ARTICLE 700. MINIMUM WIRE SIZE #10AWG.
26. ALL CONDUITS SHALL INCLUDE AN INSULATED GROUND WIRE, SIZED PER N.E.C.
27. **MASONRY LOAD-BEARING WALLS AND MASONRY SHEAR WALLS**: DO NOT PENETRATE CMU WALLS INDICATED AS BEARING WALLS AND SHEAR WALLS ON STRUCTURAL DRAWINGS UNLESS NOTED OTHERWISE ON PLAN. DO NOT CORE THROUGH CMU BOND BEAMS OR LINTELS. DO NOT CUT ANY VERTICAL REINFORCING IN CMU WALLS. OBTAIN PRIOR APPROVAL FROM ENGINEER BEFORE PENETRATING ANY OF THE STRUCTURAL ELEMENTS LISTED ABOVE.
28. **CONCRETE BEARING WALLS AND BEAMS:** DO NOT PENETRATE CONCRETE WALLS INDICATED AS BEARING WALLS AND SHEAR WALLS ON STRUCTURAL DRAWINGS UNLESS NOTED OTHERWISE ON PLAN. DO NOT CORE THROUGH CONCRETE BEAMS , GIRDERS, OR COLUMNS. DO NOT CUT ANY VERTICAL REINFORCING IN CONCRETE WALLS. OBTAIN PRIOR APPROVAL FROM STRUCTURAL ENGINEER BEFORE PENETRATING ANY OF THE STRUCTURAL ELEMENTS LISTED ABOVE.
29. **STEEL FRAMING:** DO NOT CUT OR CORE THROUGH ANY STRUCTURAL STEEL BEAMS, GIRDERS, OR COLUMNS UNLESS NOTED OTHERWISE ON PLAN. NOTIFY ENGINEER OF POTENTIAL CONFLICTS BETWEEN FRAMING AND ELECTRICAL WORK.
30. **CONCRETE FLOOR SYSTEMS (APPLIES TO CONCRETE BLDG. OR STEEL WITH CONCRETE DECK, MASONRY W/ CONC. FLOOR):** DO NOT CUT HOLES OR CORE THROUGH CONCRETE FLOOR SLAB UNLESS NOTED OTHERWISE ON PLAN OR IN TYPICAL STRUCTURAL DETAILS. PENETRATIONS THROUGH EXISTING SLABS SHALL BE X-RAYED PRIOR TO CORING HOLES. NO EXISTING REINFORCEMENT SHALL BE CUT WITHOUT PERMISSION OF THE STRUCTURAL ENGINEER. PENETRATIONS THROUGH EXISTING BEAMS AND COLUMNS IS NOT PERMITTED.

TECHNOLOGY GENERAL NOTES

1. THE COMMUNICATIONS CABLING CONTRACTOR(S) IS/ARE RESPONSIBLE FOR ANY ADDITIONAL CONDUIT SLEEVES, OUTLET/JUNCTION BOXES, SURFACE RACEWAY, CABLE TRAY, DOUBLE GANG SQUARE PLASTER MUD RINGS, ETC.
2. THE COMMUNICATIONS CABLING CONTRACTOR(S) IS/ARE RESPONSIBLE FOR EXTENDING THE ELECTRICAL SERVICE FROM THE ELECTRICAL JUNCTION BOX IN THE SPACE TO ALL THE COMMUNICATIONS RACKS/CABINETS.
3. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR REPLACING/REPAIRING DAMAGED CEILING GRID/TILE AS A RESULT OF THEIR INSTALLATION.
4. THE CONTRACTOR SHALL VERIFY THE SURFACE RACEWAY LOCATIONS, ROUTING, OPENINGS, ETC. WITH THE BUILDING ELECTRICAL CONTRACTOR. PROVIDE PROPER COVER PLATES FOR THE DEVICES AS REQUIRED.
5. THE COMMUNICATIONS CABLING CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF THE VIDEO PROJECTOR WITH THE AUDIO/VIDEO EQUIPMENT CONTRACTOR AND ELECTRICAL CONTRACTOR.
6. COORDINATE WITH PAUL BOHALL OF CARMEL CLAY SCHOOLS TO IDENTIFY ANY EXISTING NETWORK DROPS OR BACKBONE CABLES THAT NEED TO REMAIN ACTIVE DURING CONSTRUCTION.

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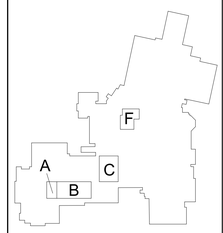

KEY PLAN

100% CONSTRUCTION DOCUMENTS

DRAWN BY: ISD
PROJECT NUMBER: 224112.00
PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	Addendum #1	02/20/2025

ELECTRICAL SYMBOLS & ABBREVIATIONS

E-001

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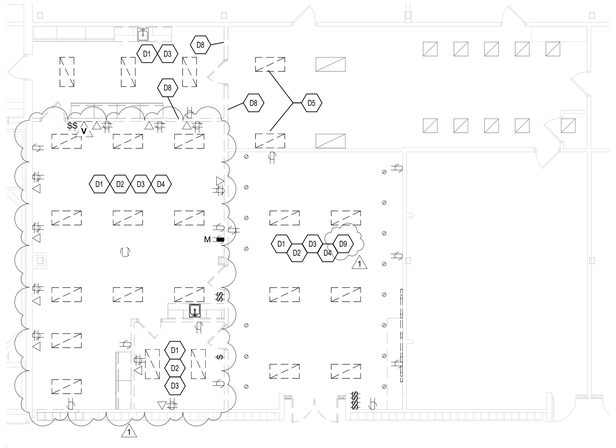
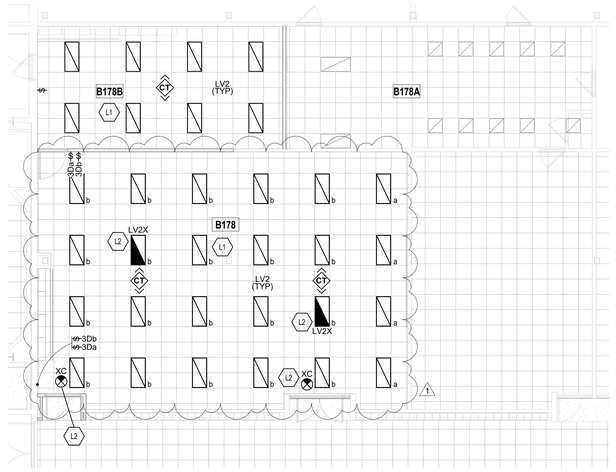


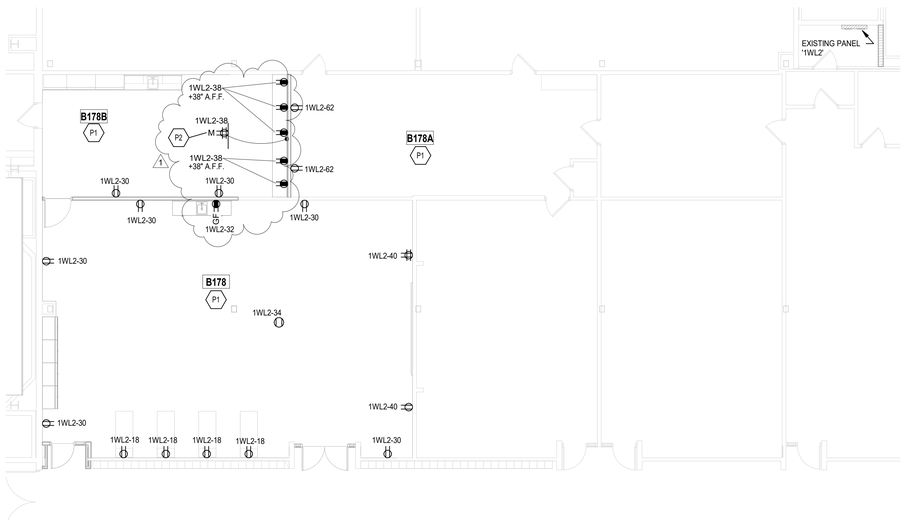
FIRST FLOOR DEMOLITION PLAN - UNIT B

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



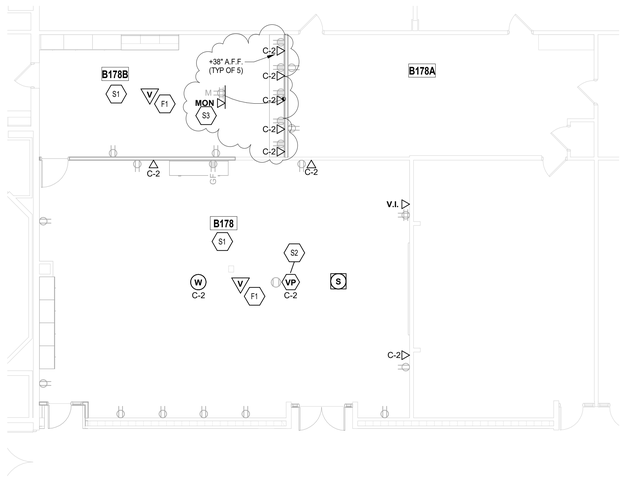
FIRST FLOOR LIGHTING PLAN - UNIT B

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



FIRST FLOOR POWER PLAN - UNIT B

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



FIRST FLOOR SYSTEMS PLAN - UNIT B

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

ROOM LEGEND

ROOM NO.	ROOM NAME	AREA (SF)
B178	CNA LAB	1586 SF
B178A	COLLABORATION	616 SF
B178B	STAFF BREAK ROOM	511 SF

DEMOLITION PLAN GENERAL NOTES

1. REFER TO ELECTRICAL SPECIFICANTS SECTION 260005 "ELECTRICAL DEMOLITION" FOR ADDITIONAL REQUIREMENTS THAT APPLY TO THIS DRAWINGS SHEET.
2. ALL EQUIPMENT AND CONDUIT SHOWN ON DEMOLITION PLANS IS EXISTING AND SHALL REMAIN IN SERVICE UNLESS NOTED OTHERWISE.

LIGHTING PLAN GENERAL NOTES

1. GENERATOR TRANSFER DEVICE TO TAKE FIXTURE TO 100% IN EMERGENCY CONDITION.
2. FINAL CONNECTION TO RECESSED LUMINAIRES SHALL BE WITH FLEXIBLE METALLIC CONDUIT, MC CABLE OR MANUFACTURED WIRING SYSTEM.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATION OF LUMINAIRES. COORDINATE LOCATION OF LUMINAIRES, LOUDSPEAKERS, DIFFUSERS, GRILLES, AND OTHER CEILING INSTALLED ELEMENTS WITH THEIR RESPECTIVE INSTALLERS.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND ROOM FINISH SCHEDULE TO DETERMINE PROPER TYPE OF LUMINAIRE TRIM REQUIRED FOR CEILING TYPE PRIOR TO ORDERING LUMINAIRES. PROVIDE LUMINAIRES COMPATIBLE WITH CEILING TYPE.
5. RECESSED LUMINAIRE IN GRID CEILING SYSTEMS SHALL BE PROVIDED WITH SEISMIC CLIPS OR PROVIDE ATTACHMENT TO CEILING GRID SYSTEM AND SUPPORTED PER PROJECT MANUAL AND DETAIL **"1/E-601"**.
6. LUMINAIRE TYPE IS SHOWN ONLY ONCE, AS "TYP." IN EVERY ROOM. PROVIDE SAME TYPE OF LUMINAIRE THROUGH-OUT SAME ROOM UNLESS OTHERWISE INDICATED.
7. PROVIDE NO. 10 AWG, MINIMUM, CONDUCTORS FOR EXIT SIGNS AND SECURITY LIGHT CIRCUITS.

POWER PLAN GENERAL NOTES

1. PROVIDE REVISED TYPED PANELBOARD DIRECTORIES FOR EACH PANELBOARD ADDED OR MODIFIED DURING CONSTRUCTION. FIELD VERIFY EXISTING CIRCUIT INFORMATION WITH OWNER'S ASSISTANCE TO ENSURE FINAL DIRECTORY IS ACCURATE. UNUSED SPARE BREAKERS SHALL BE IN THE OFF POSITION.
2. VIDEO PROJECTOR RECEPTACLE TO BE MOUNTED ABOVE WALL MOUNTED PROJECTOR BRACKET, 90° A.F.F. UNO.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS. SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.
4. LABEL EACH RECEPTACLE WITH THE PANEL NAME AND CIRCUIT NUMBER ON THE FACE OF EACH COVER PLATE WITH A TYPED LAMINATED LABEL.
5. PROVIDE "GFCI PROTECTED" LABEL ON COVER PLATE FOR ANY GFCI PROTECTED DEVICE.
6. CONTRACTOR SHALL INCREASE CIRCUIT CONDUCTOR SIZE TO COMPENSATE FOR VOLTAGE DROP DUE TO EXCESSIVE CIRCUIT LENGTHS. IN NO CASE SHALL VOLTAGE DROP EXCEED NFPA 70 (N.E.C.) REQUIREMENTS.
7. REFER TO MECHANICAL PLANS FOR LOCATION OF MECHANICAL EQUIPMENT. LOCATE DISCONNECT SWITCHES PER NEC.
8. REFER TO "CONTROL SCHEMATICS" MECHANICAL DRAWINGS FOR ADDITIONAL CONTROL WIRING AND CONTROL CONNECTIONS.
9. ALL DEVICES, EQUIPMENT, FIXTURES, AND THE LIKE, SHALL BE BONDED WITH A PROPERLY SIZED EQUIPMENT GROUNDING CONDUCTOR. MAINTAIN MECHANICAL/ELECTRICAL BONDS OF METALLIC RACEWAY SYSTEM.

FIRE ALARM PLAN GENERAL NOTES

1. PROVIDE NEW FIRE ALARM NOTIFICATION DEVICES COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.

TECHNOLOGY PLAN GENERAL NOTES

1. DEVICES SHALL BE INSTALLED AT LOCATIONS SHOWN ON DRAWINGS. LOCATIONS OF DEVICES SHALL BE COORDINATED WITH OTHER ELECTRICAL DEVICES/ CASEWORK/ ARCHITECTURAL FEATURES AND OTHER TRADES PRIOR TO ROUGH-IN. IF RELOCATION OF DEVICES IS REQUIRED DUE TO LACK OF COORDINATION BETWEEN ELECTRICAL DRAWINGS AND OTHER TRADES, ANY ASSOCIATED COSTS SHALL BE RESPONSIBILITY OF ELECTRICAL CONTRACTOR.

ELECTRICAL PLAN NOTES

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

SHEET KEYNOTES	
D1	REMOVE ALL EXISTING LIGHTING, CONTROLS, AND CONTROLS WIRING IN THIS AREA. TURN OVER LIGHT FIXTURES TO OWNER. TIE BACK EXISTING CIRCUITS FOR REUSE.
D2	REMOVE ALL EXISTING ELECTRICAL DEVICES IN THIS AREA. TIE BACK EXISTING CIRCUITS FOR REUSE.
D3	REMOVE ALL EXISTING DATA JACKS IN THIS SPACE. REMOVE CABLING BACK TO IDF COMPLETE.
D4	REMOVE EXISTING FIRE ALARM NOTIFICATION DEVICES IN THIS AREA. TIE BACK EXISTING CIRCUIT FOR REUSE.
D5	REMOVE LIGHT FIXTURES IN LOCATION OF NEW WALL. REMOVE WIRING BACK TO EXISTING TO REMAIN. ALL OTHER LIGHT FIXTURES IN THIS SPACE TO REMAIN.
D8	REMOVE ALL EXISTING ELECTRICAL DEVICES LOCATED IN WALL THAT IS TO BE DEMOLISHED. REMOVE ALL CONDUIT AND WIRING BACK TO EXISTING TO REMAIN. RECONFIGURE EXISTING CIRCUITS AS NECESSARY TO FACILITATE REMOVAL OF WALL.
D9	REMOVE EXISTING VIDEO PROJECTOR IN THIS ROOM AND TURN OVER TO OWNER.
F1	CONNECT NEW FIRE ALARM NOTIFICATION DEVICE TO EXISTING CIRCUIT SERVING THIS AREA. EXTEND EXISTING CIRCUIT AS NECESSARY.
L1	CONNECT NEW LIGHT FIXTURES TO EXISTING CIRCUIT TIED BACK DURING DEMOLITION.
L2	CONNECT NEW EMERGENCY LIGHT FIXTURE TO NEAREST EXISTING EMERGENCY LIGHTING CIRCUIT. EXTEND EXISTING CIRCUIT AS NECESSARY.
P1	CONNECT NEW RECEPTACLES IN THIS SPACE TO INDICATED CIRCUIT. UPDATE PANELBOARD DIRECTORY.
P2	CONFIRM RECEPTACLE MOUNTING HEIGHT WITH OWNER PRIOR TO ROUGH-IN.
S1	CONNECT NEW DATA DEVICES IN THIS SPACE TO NEAREST IDF WITH CAT 6 CABLING.
S2	VIDEO PROJECTOR PROVIDED BY OWNER.
S3	CONFIRM DATA JACK MOUNTING HEIGHT WITH OWNER PRIOR TO ROUGH-IN.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

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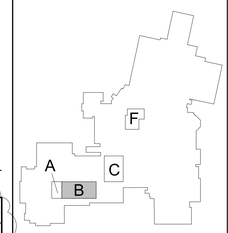

KEY PLAN

100% CONSTRUCTION DOCUMENTS

BRIAN W. BUTLER REGISTERED No. PE10800026 STATE OF PROFESSIONAL ENGINEER

DRAWN BY: ISD

PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	Addendum #1	02/20/2025

FIRST FLOOR ELECTRICAL PLANS - UNIT B

E-11B

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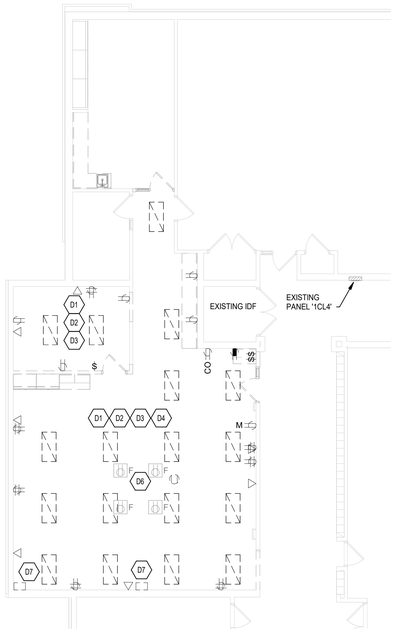
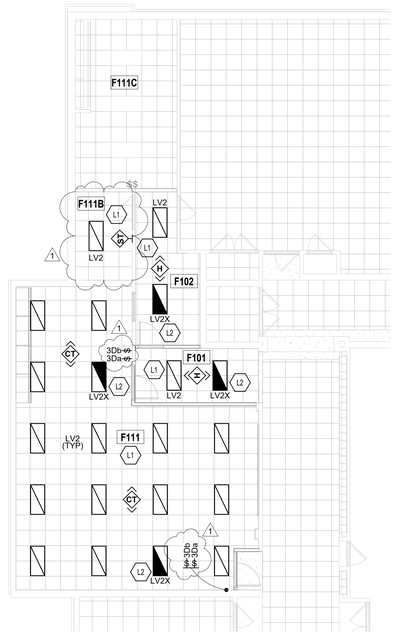


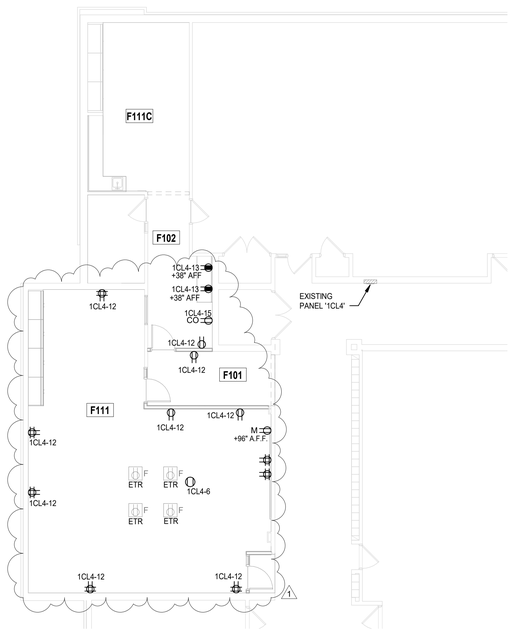
FIRST FLOOR DEMOLITION PLAN - UNIT F

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



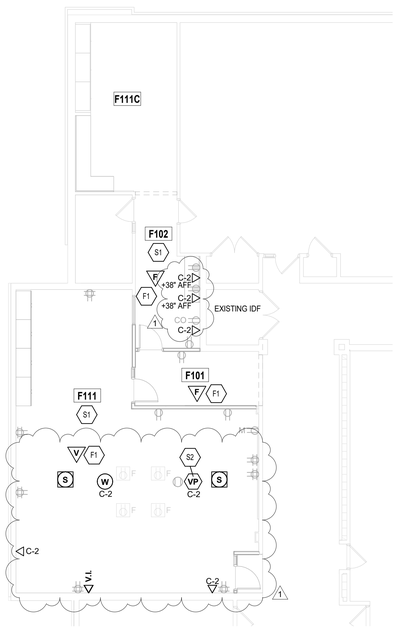
FIRST FLOOR LIGHTING PLAN - UNIT F

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



FIRST FLOOR POWER PLAN - UNIT F

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



FIRST FLOOR SYSTEMS PLAN - UNIT F

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

ROOM LEGEND

ROOM NO.	ROOM NAME	AREA (SF)
F101	CORRIDOR	114 SF
F102	CORRIDOR	144 SF
F111	EMT CLASSROOM	978 SF
F111B	OFFICE	86 SF
F111C	BREAK ROOM	292 SF

DEMOLITION PLAN GENERAL NOTES

1. REFER TO ELECTRICAL SPECIFICANTS SECTION 260005 "ELECTRICAL DEMOLITION" FOR ADDITIONAL REQUIREMENTS THAT APPLY TO THIS DRAWINGS SHEET.
2. ALL EQUIPMENT AND CONDUIT SHOWN ON DEMOLITION PLANS IS EXISTING AND SHALL REMAIN IN SERVICE UNLESS NOTED OTHERWISE.

LIGHTING PLAN GENERAL NOTES

1. GENERATOR TRANSFER DEVICE TO TAKE FIXTURE TO 100% IN EMERGENCY CONDITION.
2. FINAL CONNECTION TO RECESSED LUMINAIRES SHALL BE WITH FLEXIBLE METALLIC CONDUIT, MC CABLE OR MANUFACTURED WIRING SYSTEM.
3. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR LOCATION OF LUMINAIRES. COORDINATE LOCATION OF LUMINAIRES, LOUDSPEAKERS, DIFFUSERS, GRILLES, AND OTHER CEILING INSTALLED ELEMENTS WITH THEIR RESPECTIVE INSTALLERS.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN AND ROOM FINISH SCHEDULE TO DETERMINE PROPER TYPE OF LUMINAIRE TRIM REQUIRED FOR CEILING TYPE PRIOR TO ORDERING LUMINAIRES. PROVIDE LUMINAIRES COMPATIBLE WITH CEILING TYPE.
5. RECESSED LUMINAIRE IN GRID CEILING SYSTEMS SHALL BE PROVIDED WITH SEISMIC CLIPS OR PROVIDE ATTACHMENT TO CEILING GRID SYSTEM AND SUPPORTED PER PROJECT MANUAL AND DETAIL **"1/E-601"**.
6. LUMINAIRE TYPE IS SHOWN ONLY ONCE, AS "TYP." IN EVERY ROOM. PROVIDE SAME TYPE OF LUMINAIRE THROUGH-OUT SAME ROOM UNLESS OTHERWISE INDICATED.
7. PROVIDE NO. 10 AWG, MINIMUM, CONDUCTORS FOR EXIT SIGNS AND SECURITY LIGHT CIRCUITS.

POWER PLAN GENERAL NOTES

1. PROVIDE REVISED TYPED PANELBOARD DIRECTORIES FOR EACH PANELBOARD ADDED OR MODIFIED DURING CONSTRUCTION. FIELD VERIFY EXISTING CIRCUIT INFORMATION WITH OWNER'S ASSISTANCE TO ENSURE FINAL DIRECTORY IS ACCURATE. UNUSED SPARE BREAKERS SHALL BE IN THE OFF POSITION.
2. VIDEO PROJECTOR RECEPTACLE TO BE MOUNTED ABOVE WALL MOUNTED PROJECTOR BRACKET, 96" A.F.F. UNO.
3. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS. SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.
4. LABEL EACH RECEPTACLE WITH THE PANEL NAME AND CIRCUIT NUMBER ON THE FACE OF EACH COVER PLATE WITH A TYPED LAMINATED LABEL.
5. PROVIDE "GFCI PROTECTED" LABEL ON COVER PLATE FOR ANY GFCI PROTECTED DEVICE.
6. CONTRACTOR SHALL INCREASE CIRCUIT CONDUCTOR SIZE TO COMPENSATE FOR VOLTAGE DROP DUE TO EXCESSIVE CIRCUIT LENGTHS. IN NO CASE SHALL VOLTAGE DROP EXCEED NFPA 70 (N.E.C.) REQUIREMENTS.
7. REFER TO MECHANICAL PLANS FOR LOCATION OF MECHANICAL EQUIPMENT. LOCATE DISCONNECT SWITCHES PER NEC.
8. REFER TO "CONTROL SCHEMATICS" MECHANICAL DRAWINGS FOR ADDITIONAL CONTROL WIRING AND CONTROL CONNECTIONS.
9. ALL DEVICES, EQUIPMENT, FIXTURES, AND THE LIKE, SHALL BE BONDED WITH A PROPERLY SIZED EQUIPMENT GROUNDING CONDUCTOR. MAINTAIN MECHANICAL/ELECTRICAL BONDS OF METALLIC RACEWAY SYSTEM.

FIRE ALARM PLAN GENERAL NOTES

1. PROVIDE NEW FIRE ALARM NOTIFICATION DEVICES COMPATIBLE WITH EXISTING FIRE ALARM SYSTEM.

TECHNOLOGY PLAN GENERAL NOTES

1. DEVICES SHALL BE INSTALLED AT LOCATIONS SHOWN ON DRAWINGS. LOCATIONS OF DEVICES SHALL BE COORDINATED WITH OTHER ELECTRICAL DEVICES/ CASEWORK/ ARCHITECTURAL FEATURES AND OTHER TRADES PRIOR TO ROUGH-IN. IF RELOCATION OF DEVICES IS REQUIRED DUE TO LACK OF COORDINATION BETWEEN ELECTRICAL DRAWINGS AND OTHER TRADES, ANY ASSOCIATED COSTS SHALL BE RESPONSIBILITY OF ELECTRICAL CONTRACTOR.

ELECTRICAL PLAN NOTES

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

SHEET KEYNOTES	
D1	REMOVE ALL EXISTING LIGHTING, CONTROLS, AND CONTROLS WIRING IN THIS AREA. TURN OVER LIGHT FIXTURES TO OWNER. TIE BACK EXISTING CIRCUITS FOR REUSE.
D2	REMOVE ALL EXISTING ELECTRICAL DEVICES IN THIS AREA. TIE BACK EXISTING CIRCUITS FOR REUSE.
D3	REMOVE ALL EXISTING DATA JACKS IN THIS SPACE. REMOVE CABLING BACK TO IDF COMPLETE.
D4	REMOVE EXISTING FIRE ALARM NOTIFICATION DEVICES IN THIS AREA. TIE BACK EXISTING CIRCUIT FOR REUSE.
D6	EXISTING FLOOR BOXES IN THIS SPACE TO REMAIN.
D7	REMOVE EXISTING RACEWAY AT THIS LOCATION. INTERCEPT EXISTING WIRING ABOVE CEILING AND RECONNECT TO EXISTING CIRCUIT. REMOVE DATA CABLING BACK TO IDF COMPLETE.
F1	CONNECT NEW FIRE ALARM NOTIFICATION DEVICE TO EXISTING CIRCUIT SERVING THIS AREA. EXTEND EXISTING CIRCUIT AS NECESSARY.
L1	CONNECT NEW LIGHT FIXTURES TO EXISTING CIRCUIT TIED BACK DURING DEMOLITION.
L2	CONNECT NEW EMERGENCY LIGHT FIXTURE TO NEAREST EXISTING EMERGENCY LIGHTING CIRCUIT. EXTEND EXISTING CIRCUIT AS NECESSARY.
S1	CONNECT NEW DATA DEVICES IN THIS SPACE TO NEAREST IDF WITH CAT 6 CABLING.
S2	VIDEO PROJECTOR PROVIDED BY OWNER.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

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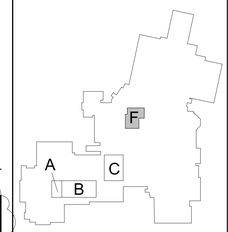

KEY PLAN

100% CONSTRUCTION DOCUMENTS

DRAWN BY: ISD

PROJECT NUMBER: 224112.00

PROJECT ISSUE DATE: 02/03/2025

REV. NO.	DESCRIPTION	DATE
1	Addendum #1	02/20/2025

FIRST FLOOR ELECTRICAL PLANS - UNIT F

E-11F

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LIST OF FINISHES

FLOOR MATERIALS

CARPET TILE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
CART-1	MANNINGTON TARKETT	TO BE DETERMINED

- ALL CARPET BACKING TO HAVE A MOISTURE RESISTANT BARRIER.
- CART-1 INSTALLATION TO BE NONDIRECTIONAL.
- SUBMIT INSTALLATION DRAWINGS INDICATING LAYOUT OF CARPET TILE PRIOR TO INSTALLATION FOR APPROVAL.

BASE MATERIALS

RESILIENT BASE — COVE BASE

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
RB-1	JOHNSONITE ROPPE	MATCH EXISTING (NAVY) MATCH JOHNSONITE

WALL FINISHES

PAINT

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
P-1 P-2 (DOORFRAMES)	BENJAMIN MOORE MATCH BUILDING STANDARD	CLOUD COVER 8M855 MATCH BUILDING STANDARD

PLASTIC LAMINATE

PAINT

MATERIAL ABBREVIATION	MATERIAL/MANUFACTURER	COLOR SELECTION
PL-1 (CABINETS)	FORMICA WILSONART NEVMAR	TBD
PL-2 (COUNTERTOP)	FORMICA WILSONART NEVMAR	TBD

MATERIAL & FINISH GENERAL NOTES

GENERAL
A. REFER TO IN101 FOR MATERIALS, PATTERNS AND COLORS.
B. REFER TO IN101 FOR LIST OF FINISHES.

FLOORING
A. CENTER FLOORING TILE AND PATTERN IN ROOM UNLESS OTHERWISE INDICATED ON FINISH PLANS.
B. ALIGN EDGE OF FINISHED FLOOR MATERIAL WITH EDGE OF WALL OR CASEWORK.
C. FLOOR FINISH MATERIAL TRANSITIONS SHALL OCCUR UNDER THE CENTER OF THE DOOR UNLESS OTHERWISE INDICATED, WHERE THE FLOORING MATERIAL CHANGES FROM ROOM TO ROOM.
D. EXTEND FLOOR MATERIAL AND PATTERN UNDER ALL OPEN TO THE FLOOR CASEWORK AND FURNITURE.
E. COORDINATE CONTROL JOINTS IN CONCRETE SLAB WITH STRUCTURAL DRAWINGS AND FINISH FLOORING INSTALLER.
F. AT BUILDING EXPANSION JOINTS (IF APPLICABLE) PROVIDE PRE-FABRICATED MOVEMENT PROFILE SYSTEM IN MORTAR BED. PROVIDE SCHLUTER DILEX-EDP OR APPROVED EQUAL. TYPICAL AT ALL LOCATIONS.

CARPET TILE
A. ALL CARPET TILE INSTALLATION TO BE NONDIRECTIONAL FOR ALL SPECIFIED TYPES/COLORS.

WALL BASE
A. RUBBER BASE (RB-1) TO BE INSTALLED AT ALL RESILIENT TILE AND CART LOCATIONS UNLESS OTHERWISE INDICATED. ALL RB BASE TO BE COVED.
B. PROVIDE PREFORMED BASE TO MATCH 1"RADIUS AT ALL LOCATIONS WHERE BASE COVERS MASONRY BULLNOSE. REFER TO FINISH SCHEDULE FOR BASE MATERIAL TYPE. TYPICAL AT ALL LOCATIONS. AT RB LOCATIONS PROVIDE PREFORMED OUTSIDE CORNERS, AND USE MANUFACTURER'S RECOMMENDED ADHESIVE (CONTACT CEMENT) FOR PROPER ADHESION WITH NO GAPS.

PAINT & STAIN
A. ONLY PAINT WALLS AS INDICATED ON FINISH PLANS.
B. PAINT ONCE MOCK-UP CLASSROOM TO RECEIVE ARCHITECT'S APPROVAL PRIOR TO ORDERING PAINT FOR THE ENTIRE BUILDING.

PAINT TYPE GENERAL NOTES

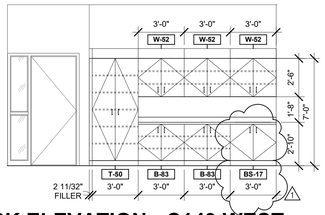
A. UNDER SECTION 099123 - INTERIOR PAINTING, PAINT EXPOSED PIPES, DUCTWORK, BREACHING, CONDUIT, INSULATED PIPES, CONDUIT HANGERS, SUPPORTS, BRACING, ETC., WHICH OCCURS IN SPACES DESIGNATED TO BE PAINTED IN PART OR WHOLE.
B. ALL GYPSUM BOARD WALLS SHALL BE PAINTED WITH INTERIOR PAINT TYPE #9.22 (EGGSHELL) UNLESS OTHERWISE INDICATED.
C. ALL GYPSUM BOARD CEILINGS AND SOFFITS SHALL BE PAINTED WITH PAINT TYPE #9.21 (FLAT) UNLESS OTHERWISE INDICATED.
D. IN THE FOLLOWING ROOMS PAINT WITH PAINT CODE #4.224 (EPOXY-SEMI-GLOSS). REFER TO SECTION 099600 - HIGH PERFORMANCE COATINGS. **[C147, C149]**
E. IN THE FOLLOWING ROOMS PAINT WITH PAINT CODE #9.211 (EPOXY-SEMI-GLOSS). REFER TO SECTION 099600 - HIGH PERFORMANCE COATINGS. **[C147, C149]**
F. ALL WALLS ARE TO RECEIVE AN EGGSHELL FINISH AND ALL CEILINGS/BULKHEADS ARE TO RECEIVE A FLAT FINISH.

PAINT COLOR GENERAL NOTES

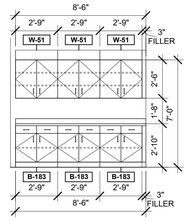
A. INTERIOR WALLS SHALL BE PAINTED P-1 AS INDICATED ON PLANS.

CASEWORK SCHEDULE

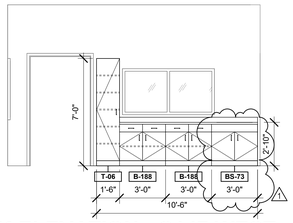
TYPE	MARK	SIZE D	SIZE W	SIZE H	DESCRIPTION
		<varies>		3'-0"	
B	83	2'-0"	3'-0"	2'-10"	BASE UNIT WITH TWO ADJUSTABLE SHELVES AND TWO HINGED DOORS.
B	183	2'-0"	2'-9"	2'-10"	BASE UNIT WITH TWO DRAWERS, ONE ADJUSTABLE SHELF AND TWO HINGED DOORS.
B	188	2'-0"	3'-0"	2'-10"	BASE UNIT WITH TWO DRAWERS, ONE ADJUSTABLE SHELF AND TWO HINGED DOORS.
BS	17	2'-0"	3'-0"	2'-10"	SINK BASE UNIT WITH TWO HINGED DOORS.
BS	73	2'-0"	3'-0"	2'-10"	SINK BASE UNIT WITH TWO HINGED DOORS AND ONE FALSE DRAWER PANEL.
T	06	2'-0"	1'-6"	7'-0"	TALL UNIT WITH FIVE ADJUSTABLE SHELVES AND ONE HINGED DOOR.
T	50	2'-0"	3'-0"	7'-0"	TALL UNIT WITH FIVE ADJUSTABLE SHELVES AND TWO HINGED DOORS.
W	51	1'-2"	2'-9"	2'-6"	WALL UNIT WITH ONE ADJUSTABLE SHELF AND TWO HINGED DOORS.
W	52	1'-2"	3'-0"	2'-6"	WALL UNIT WITH ONE ADJUSTABLE SHELF AND TWO HINGED DOORS.



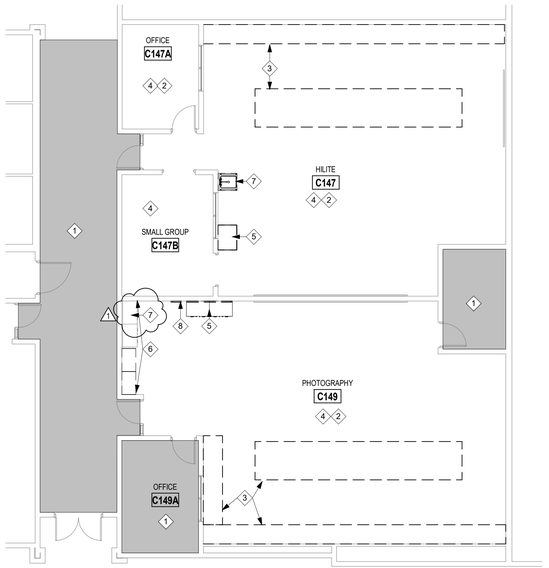
5 CASEWORK ELEVATION - C149 WEST
SCALE: 1/4" = 1'-0"



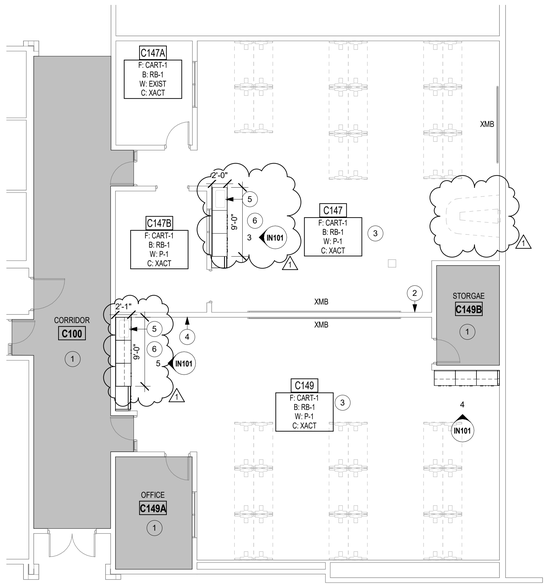
4 CASEWORK ELEVATION - C149 NORTH
SCALE: 1/4" = 1'-0"



3 CASEWORK ELEVATION - C147 WEST
SCALE: 1/4" = 1'-0"



2 FIRST FLOOR DEMOLITION PLAN - UNIT C
SCALE: 1/8" = 1'-0"



1 FIRST FLOOR FINISH PLAN - UNIT C
SCALE: 1/8" = 1'-0"

ROOM LEGEND

ROOM NO.	ROOM NAME
C100	CORRIDOR
C147	HILITE
C147A	OFFICE
C147B	SMALL GROUP
C149	PHOTOGRAPHY
C149A	OFFICE
C149B	STORGAE

ARCHITECTURAL DEMOLITION GENERAL NOTES

A. DEMOLITION IS TO FOLLOW ESTABLISHED CONSTRUCTION SEQUENCE. CONTRACTOR IS TO VERIFY THEIR WORK IN THE FIELD WITH THE DEMOLITION DRAWINGS, NEW CONSTRUCTION DRAWINGS, AND THE EXISTING IN-FIELD CONDITIONS. REPORT DISCREPANCIES TO THE ARCHITECT.
B. "FLOORING" DENOTES FLOOR COVERING MATERIALS INCLUDING BACKINGS, ADHESIVES, BASES, DOWN TO BUT EXCLUSIVE OF FLOOR SLABS AND STRUCTURAL MATERIALS, UNLESS NOTED OTHERWISE.
C. "CEILING" DENOTES CEILING MATERIALS INCLUDING SUSPENSION SYSTEMS ADHESIVE RESIDUES, MOLDINGS, UP TO BUT EXCLUSIVE OF STRUCTURAL MATERIALS.
D. WALLS TO BE REMOVED SHALL BE REMOVED TO A POINT 2" (MIN.) BELOW THE EXISTING FLOOR SLAB (UNLESS SETTING ON SLAB). PATCH WITH NEW CONCRETE TO BE FLUSH WITH THE EXISTING FLOOR SLAB.
E. WHEN OPENINGS ARE CUT INTO AN EXISTING WALL, THE OPENING SHALL BE A MINIMUM OF 1'-4" LONGER THAN THE FINISHED OPENING REQUIRED TO ALLOW FOR 8" (MIN) OF NEW CMU TOOTHED-IN AT EDGES.
F. AFTER THE DEMOLITION OF MATERIALS, THE RESULTING EXPOSED SURFACE SHALL BE SMOOTH AND FLUSH WITH EXISTING CONDITIONS.
G. MECHANICAL AND ELECTRICAL ITEMS THAT ARE CAPPED AND ABANDONED SHALL BE LOCATED BEHIND FINAL FINISH SYSTEMS.
H. COORDINATE THIS WORK WITH DEMOLITION WORK ON SITE, STRUCTURAL, PLUMBING, MECHANICAL, AND ELECTRICAL.
I. PROVIDE INTERIOR AND EXTERIOR SHORING, BRACING, OR SUPPORT TO PREVENT MOVEMENT OR SETTLEMENT OF EXISTING STRUCTURES.
J. CONTRACTOR TO FIELD VERIFY PORTIONS OR SECTIONS OF EXISTING WALLS TO BE FILLED IN AND SALVAGE NECESSARY MATERIAL.
K. MATERIALS OF DEMOLITION SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE DIRECTED BY OWNER.
L. OWNER TO REMOVE EXISTING FURNITURE AND MISCELLANEOUS ITEMS NOT SHOWN AND NOT TO BE DEMOLISHED. CONTRACTOR TO NOTIFY OWNER IN ADVANCE WHEN ITEMS NEED TO BE REMOVED. CONTRACTOR IS RESPONSIBLE FOR OTHER ITEMS TO BE REMOVED.
M. ITEMS TO BE PATCHED. REMOVE ALL LOOSE OR DAMAGED MATERIAL. REFINISH TO LIKE NEW CONDITION, OR IF CONDITION WARRANTS REPLACE IN ENTIRETY.
N. THE OWNER SHALL RESERVE RIGHT TO CLAIM ANY MATERIALS THAT ARE BEING DEMOLISHED PRIOR TO THE CONTRACTOR DISPOSING OF THEM OFF SITE.
O. TURNED OVER TO THE OWNER" DENOTES: 1) TAG AND IDENTIFY ITEMS- 2) STORE IN AN ORDERLY FASHION IN A LOCATION DESIGNATED BY THE OWNER.
P. ITEMS MADE OBSOLETE TO ACCOMODATE NEW CONSTRUCTION OR RENOVATION SHALL BE REMOVED.
Q. ITEMS TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY.
R. AFTER REMOVAL OF ITEMS, THE EXISTING WALL SURFACES (IF EXPOSED) SHALL BE REPAIRED/PATCHED AS REQUIRED TO RECEIVE NEW FINISHES.

DEMOLITION PLAN NOTES (1)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

1 NO WORK IN THIS AREA.
2 REMOVE EXISTING VINYL WALLCOVERING AND ADHESIVES IN ITS ENTIRETY. PREP LEVEL 5 SURFACE TO RECEIVE NEW PAINT. REFER TO FINISH PLANS FOR MORE INFORMATION.
3 REMOVE EXISTING BUILT-IN DESKS IN ITS ENTIRETY. PATCH AND REPAIR ADJACENT WALL AND FLOOR SURFACES AND PREP FOR NEW FINISHES.
4 REMOVE EXISTING CARPET TILE AND BASE IN ITS ENTIRETY. REMOVE ADHESIVES DOWN TO EXISTING SLAB AND PREP SURFACES TO RECEIVE NEW FINISHES.
5 REMOVE EXISTING CASEWORK AND ASSOCIATED ACCESSORIES. PREP SURFACES TO RECEIVE NEW FINISH.
6 REMOVE EXISTING CASEWORK AND ASSOCIATED ACCESSORIES. REMOVE AND SALVAGE EXISTING SINK, TO BE REINSTALLED IN EXISTING LOCATION. PREP SURFACES TO RECEIVE NEW SINK.
7 REMOVE EXISTING PLUMBING FIXTURE IN ITS ENTIRETY. EXISTING WASTE AND WATER ROUGH-INS TO REMAIN. PREPARE EXISTING ROUGH-INS FOR CONNECTION TO NEW.
8 REMOVE EXISTING TACKBOARD. PREP WALL SURFACE TO RECEIVE NEW FINISHES.

GENERAL FINISH NOTES

A. FIXED CASEWORK AND TACKBOARDS SHALL REMAIN IN PLACE (UNO). NEW WALL FINISHES SHALL BE INSTALLED AROUND THESE ITEMS.
B. SEALANT SHALL BE APPLIED AT ALL MATERIAL TRANSITIONS, BACKSPLASHES, AND DOOR FRAMES. ALL LOCATIONS WHERE NEW FINISH ABUTS A DISSIMILAR MATERIAL.
C. REMOVE AND REINSTALL EXISTING DEVICE FACEPLATES, SWITCH FACEPLATES, TECHNOLOGY FACEPLATES, AND CLOCKS.
D. EXISTING ITEMS TO REMAIN AND NEW FINISHES APPLIED AROUND INCLUDE BUT NOT LIMITED TO THERMOSTATS, AND FIRE EXTINGUISHER CABINETS (UNO).
E. RESILIENT TRANSITION STRIP BETWEEN NEW FLOOR FINISH AND EXISTING FLOOR FINISH.
F. PROVIDE NEW RESILIENT TRANSITION STRIPS AT EXPOSED EDGE OF NEW FLOOR FINISH TO EXISTING FLOOR FINISH.
G. PAINT ALL SIDES (VERT. AND HORZ.) OF BULKHEAD/SOFFIT COLOR INDICATED (UNO).
H. EXISTING INTERIOR DOOR FRAMES ARE TO REMAIN. DO NOT PAINT.
I. PAINT ALL NEW INTERIOR DOOR FRAMES TO MATCH EXISTING DOOR FRAME COLOR. PAINT ON ALL FACES (PAINT CODE #5.12).
J. PATCH AND REPAIR ALL HOLES AND IMPERFECTIONS, TO RECEIVE NEW FINISHES.

FLOOR PATTERN/FINISH KEY NOTES (X)

(ALL NOTES MAY NOT BE INDICATED ON THIS SHEET)

1 NO WORK IN THIS AREA.
2 EXISTING AV RACK TO REMAIN. PROTECT DURING CONSTRUCTION.
3 FURNITURE SHOWN IN HALF-TONE DASHED LINES ARE NOT INCLUDED IN THE CONSTRUCTION PACKAGE.
4 OWNER PROVIDED WALL MOUNT GREEN SCREEN
5 PROVIDE NEW DROP-IN STAINLESS STEEL SINK EQUAL TO ELKAY LRAD191188. PROVIDE REAR DRAIN OUTLET WHERE NECESSARY. PROVIDE FAUCET EQUAL TO CHICAGO MODEL 201-AGN8AE2805FAB WITH MODEL E35JKABCP 1.5 GPM AERATOR. EXTEND HOT AND COLD WATER SUPPLIES FROM FAUCET TO EXISTING WATER ROUGH-INS AND MAKE FINAL CONNECTIONS AS REQUIRED. RECVIDE SUPPLY RISERS, SUPPLY STOPS AND ESCUTCHEONS. EXTEND 1 1/2" WASTE FROM SINK THRU P-TRAP ASSEMBLY TO EXISTING WASTE ROUGH-IN AND MAKE FINAL CONNECTION AS REQUIRED.
6 PROVIDE NEW COUNTERTOP AS SHOWN. FINISH TO BE PL-2.

VERIFICATION NOTE

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CLEARANCES AND ALL EXISTING FIELD CONDITIONS BEFORE STARTING CONSTRUCTION. COMMENCEMENT OF WORK CONSTITUTES ACCEPTANCE OF CONDITIONS.

SHOULD DIFFERENT CONDITIONS BE ENCOUNTERED, CONTACT THE ARCHITECT BEFORE PROCEEDING WITH WORK.

CHS ROOMS C147/C149

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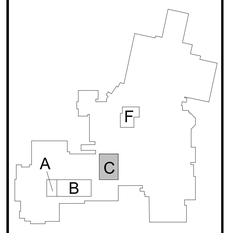

KEY PLAN

100% CONSTRUCTION DOCUMENTS

PAUL A. MILLER REGISTERED No. AR10900161 STATE OF INDIANA ARCHITECT

DRAWN BY: HRS

PROJECT NUMBER: 224113.00

PROJECT ISSUE DATE: 02.03.2025

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	02/20/2025

UNIT C DEMOLITION & FINISH PLANS

IN101