State of Utah

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ADDENDUM #1

Date: 3 March 2008

To: Interested Parties

From: Jeff Reddoor, Project Manager

Reference: Southern Utah University
Multi-Purpose/Success Academy Remodel
DFCM Project No. 07035730

Subject: **Addendum No. 1**

Pages			
	Addendum	1	page
	Sargent Design Group – Questions & Clarification	3	pages
	Sheets, Specifications & Drawings	87	page
	Total	**91**	**pages**

Note: This Addendum shall be included as part of the Contract Documents. Items in this Addendum apply to all drawings and specification sections whether referenced or not involving the portion of the work added, deleted, modified, or otherwise addressed in the Addendum.

1.1 SCHEDULE CHANGES – There are no changes to the Project Schedule.

1.2 General

See attached Sargent Design Group – Questions & Clarification.
See attached Sheets, Specifications & Drawings.

End of Addendum #1

SARGENT DESIGN GROUP
ARCHITECTURE | PLANNING

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DFCM Project Number 07035730 - SUU Multipurpose Building Success Academy Renovation

Addendum 1

March 4, 2008

Questions and Clarification Items:

1) What does the "*" represent in the Hardware & Label columns of the Door Schedule? Should I assume new doors and hardware? Will the successful bidder be installing "existing frame"?
Response: See revised Door Schedule on sheet A10.10. The “existing frame” refers to the frame that is currently in the doorway and does not need to be installed by the successful bidder.
2) Opening #105....How will the frame be attached to the steel cap??
Response: See revised detail 8, sheet A10.20.
3) Opening #106....Sidelited Frame?? What size?
Response: See revised sheets A2.10 and A10.10.
4) Should I include closers and smoke seals to hardware list for all rated doors?
Response: See revised Door Schedule on sheet A10.10.
5) There are two opening #106 marked on door schedule....they appear to be the same opening. Is this correct?
Response: See revised Door Schedule on sheet A10.10.
6) #113- #120 "Use existing door". New hardware for these doors? Will the doors need to be re-installed?
Response: See revised Door Schedule on sheet A10.10 and revised hardware schedule.
7) The specs call out a mortise style lock...is this correct? What cylinder/key system do I need to match, if any?
Response: See revised Door Schedule on sheet A10.10 and revised hardware information. All new cylinders and keys to match the existing University system.
8) What size view lites should be installed in type "B" door?
Response: See revised sheet A10.10.
9) The existing hardwood floor has minimal expantion and does not move up and down.
10) In the classroom where carpet tile occurs over the existing hardwood floor there will be no carpet cove only the metal angle.
11) In the offices and faculty lounge where the existing carpet is to be replaced with new carpet tile and carpet cove with binding.
12) The SUU carpet tile to match is: Shaw, Chocolate Craving with matching base.
13) In the existing restrooms where wall tile is damaged during demolition it will be replaced with a similar tile from the manufactures standard palate.
14) In the new restroom tile only occurs on the wall with the plumbing fixtures.
15) Please reference sheet M-3 for clarification of all Roof Units, Registers, Louvers, Grilles, Diffusers and Exhaust Fan marks.

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16) Sheet A2.10 – Note M "Chemical Storage Cabinet", Does this room have cabinets or shelving in it?
Response: See revised sheet A2.10, Note M. The room referred to in the question is the Lab Storage Room. It has existing shelving that will remain. The "Chemical Storage Cabinet" referred to in Note M is a new cabinet to be located within that Lab Storage Room.

17) Specification on millwork, is the wood oak or cherry?
Response: Oak

18) Sheet A2.11. North wall of room 104 in the attic (noted as type "A") from center of room toward the east, the concrete cap on top of the masonry wall touches the bottom of the steel "I" beam and follows it to the column on the east end. Does this beam need to be wrapped with gypsum board as shown in detail 2 on A2.11?
Response: Yes

19) On the west wall of Room 106, lab storage and storage room, in the attic (noted as type "A" does the existing 2x4 wall that has 2 layers of ½" gypsum board on it, need to have additional gypsum board put on it and on what side?
Response: Where fire rated walls are indicated the assembly must be an approved 1 Hour Fire Rated Assembly. The existing 2x4 wall identified in the above question can be used, but the assembly must be either an approved 1 Hour Fire Rated Assembly or an assembly identified in the 2006 IBC.

20) Detail 4 on A2.40 calls for ½" plywood over the entire floor of the restroom 103, what happens at the door opening?
Response: See revised Detail 10, Sheet A10.20.

21) The base in Restroom 103 is called out as "Ceramic Tile" on the Finish Schedule A10.10, is the aluminum angle removed and not used?
Response: The angles will be used in Restroom 103 and the ceramic tile base will be deleted.

22) The Finish Schedule for Room 105 calls for "rubber base". Does this replace the aluminum angle?
Response: The aluminum angle will be used and the rubber base will be deleted. There is a reference in that question to Details 1 to 6 on sheet A10.10, there are no Details 1 to 6 on sheet A10.10. We think that question refered to the details on sheet A2.40. Those details will remain the as shown.

23) The door into room 103 is located where a drinking fountain and a fire hose cabinet exist. Which way is it going to move?
Response: See Notes P and Q on sheet A2.02.

24) Rooms 100, 101 and 102 call for ½" gypsum board on the common walls, if the chalk and tack boards are removed are they put back and what happens to the plugs, switches and other electrical devices?
Response: The chalk and tack boards will be stored in the storage room for future use. As required the electrical outlets, light switches and other electrical devices will be moved to the face of the new gypsum board.

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25) On the outside wall what happens to the space left between the blind valiance and window stools when the walls are removed?
Response: See detail 7, sheet A2.40.

26) What is the base in the corridor outside rooms 100, 101 and 102?
Response: The base in the corridor will be carpet base to match the existing carpet and SUU Standards.

27) When the existing metal door frame is removed will the wall still stand? Any seismic bracing?
Response: The existing wall should be braced to minimize any problems with stability while the existing metal door frame is removed and the new framed wall that takes the place of the removed existing metal door frame will support the remaining wall. Seismic bracing will not be required.

28) In the remodeled women's restrooms is all existing ceramic tile (wall & floor removed andn tye gypsum board patched and painted (walls) and new vinyl on the floor with ceramic tile base?
Response: See revised Finish Schedule on sheet A10.10.

29) Lab student work table tops – alternate tops: (a) 1 ¼" ARP High Pressure Plastic Laminate Top or (b) 1 ¼" ChemGuard Top.

30) The suspended ceiling system, lighting fixtures and all associated work to be located in the Lab Room 106 and Classroom Room 105 to be deleted from the project.

31) Repair all damaged ceiling tiles as the result of demolition and other work that occurs in Rooms 105 and 106.

32) Fire Sprinkler System Specification:
   a. See attached floor plan for location of sprinkler system.
   b. The existing building water service will be tapped in the mechanical room in the basement as identified on the attached floor plan.
   c. Thinwall piping is acceptable.
   d. The piping and heads can be exposed as needed to minimize costs.
   e. The piping will be painted.
   f. All damage to be repaired.
   g. All work to be done in accordance with NFPA 13.

33) HVAC duct work to be abandoned can be left in place to minimize demolition costs.

34) School Furnishings – the only school furnishings (desks, tables, cabinets, etc.) to be provided by the contractor are located in the Lab and Lab Storage.

Attachments:
Sheets: A2.10; A2.11; A2.40; A3.10; A10.10; and A10.20.
Specifications: Division 8: Door Specifications; and Division 15: Mechanical
Drawings: Floor Plan – Sprinkler System Location

John Colton Sargent
Architect

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Pressed steel hollow metal doors and frames.
2. Fire-rated hollow metal doors and frames.
3. Hollow metal window-walls, glazed openings, and other hollow metal frames for glass.
4. Metal louvers in hollow metal doors.
5. Rough bucks, frame reinforcing, door reinforcing, door insulation, closer reinforcements, clip angles and anchorage.
6. Factory prime paint finish.
7. Grouting of hollow metal frames with masonry mortar where not covered under other Sections.

B. Related Sections:
1. Section 04210 - Unit Masonry: Grouting of frames in masonry construction.
2. Section 08710 - Hardware: Finish hardware, weather-stripping and sound-stripping.
3. Section 08810 - Glazing: Glass and glazing.
4. Section 09900 - Painting: Finish painting.
5. Section 10210 - Metal Wall Louvers.
6. Section 08305 - Access Panels.

1.2 REFERENCES

A. ANSI A250.8-1998/SDI-100 - Recommended Specifications - Standard Steel Doors and Frames, Steel Door Institute, unless herein specified.

B. Underwriters' Laboratories Inc. (UL) UL 10C-98 – Fire Tests of Door Assemblies.

C. NFPA-80-1999 – Standard for Fire Doors and Windows.

D. NFPA-101-1997 – Life Safety Code.

E. NFPA-105 – Standard for Smoke and Draft Control Assemblies.

F. ASTM-A 366-95A – Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.

G. ASTM-A 568-95 – Specification for Steel, Sheet, Carbon, and High Strength, Low-Alloy, Hot-Rolled, and Cold-Rolled.

H. ASTM-A 569-91a – Specification for Steel, Carbon, (0.15 maximum percent), Hot-Rolled Sheet and Strip Commercial Quality.

I. ASTM-A 924-95 – General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process.

J. SDI-105-92 – Recommended Erection Instructions for Steel Frames.

K. ANSI A115.1-.18 - Specification for Door and Frame Preparation for Hardware.

L. ANSI A156.7 - Standard Template Hinge Dimensions.

1.3 SUBMITTALS

A. Shop Drawings: Submit in accordance with Section 01300. Indicate general construction, configurations, jointing methods, reinforcements, and location of hardware and cutouts for glass and louvers.

1.4 QUALITY ASSURANCE

A. Applicable Standards: Specifications and standards of SDI 100-98.

B. Wind Load Performance Requirements: Comply with wind load requirements of Uniform Building Code. Deflection shall not exceed 1/175 of span.

C. Supplier Qualification: Qualified direct distributor of products to be furnished. The distributor shall have in their regular employment an A.H.C./C.D.C. or person of equivalent experience who will be available at reasonable times to consult with the Architect, Contractor and/or Owner regarding any matters affecting the total door and frame openings.

D. Installer Qualification: Experience with installation of similar materials.

E. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E152 "Standard Methods of Fire Tests of Door Assemblies" by nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

1. Oversize Fire-Rated Door Assemblies: For door assemblies required to be fire-rated and exceeding sizes of tested assemblies, provide certificate or label from approved independent testing and inspection agency, indicating that door and frame assembly conforms to requirements of design, materials and construction as established by individual listings for tested assemblies.
2. Temperature Rise Rating: At stairwell enclosures, provide doors which have Temperature Rise Rating of 450 degrees F maximum in 30 minutes of fire exposure.

1.5 PRODUCT HANDLING

A. Deliver hollow metal doors in manufacturer's protective covering. Handle hollow metal with care to prevent damage.

B. Door Storage: Store doors in upright position, under cover. Place doors on at least 4 inch (101.6) high wood sills or on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. If corrugated wrapper on door becomes wet, or moisture appears, remove wrapping immediately. Provide 1/4 inch (6.3) space between doors to promote air circulation.

C. Frame Storage: Store frames under cover on 4 inch wood sills on floors in manner that will prevent rust and damage. Do not use non-vented plastic or canvas shelters which create humidity chamber and promote rusting. Store assembled frames in vertical position, 5 units maximum in stack. Provide 1/4 inch space between frames to promote air circulation.

1.6 SEQUENCING AND SCHEDULING

A. Deliver doors and frames to the jobsite in a timely manner so as not to delay progress of other trades.

PART 2 PRODUCTS

2.1 HOLLOW METAL

A. Acceptable Manufacturers: (providing the products supplied comply with the provisions of this specification) Curries, Ceco, Fleming.

B. Cold Rolled Steel Sheets: Commercial quality, stretcher leveled flatness, cold-rolled steel, free from scale, pitting or other surface defects, complying with ASTM A366 and A568 general requirements.

C. Galvanealed Steel Sheets: ASTM A924, A60 zinc coating. Use galvanealed steel sheets for exterior hollow metal doors, door frames and door louvers. Internal reinforcing may be manufactured of hot rolled pickled and oiled steel per ASTM-A569.

D. Minimum gauges of hollow metal are specified below. Provide heavier gauge if required by details or specific condition. Entire frame and sidelight shall be of same gauge.

1. 16 gauge: Interior door frames, and glazed opening frames.
2. 16 gauge: Labeled frames (or heavier if required by label).
3. 18 gauge: Interior doors (or heavier if required by label).
4. 14 gauge: Exterior door frames, window-wall and window frames, transom and sidelight frames.
5. 16 gauge: Exterior doors.
6. 20 gauge: Trim members.

E. Coating Materials, primer: Use manufacturer's standard rust inhibiting primer conforming to ANSI-A224.1-1990.

2.2 RELATED MATERIALS

A. Steel Reinforcing: ASTM A36.

B. Door Bumpers or Silencers: Per ANSI A156.16.

2.3 HOLLOW METAL FRAMES

A. General: Form to profiles indicated. Where necessary, alternate details will be considered provided design intent is maintained. Consider and provide for erection methods.

B. Typical Reinforcing: Provide minimum hinge reinforcement 3/16 inch by 1-1/2 inch by 10 inch. Provide similar reinforcement for hardware items as required to adequately withstand stresses, minimum 12 gauge, including channel reinforcement for door closers and closer arms, door holders and similar items. Provide reinforcement and clearances for concealed in-head door closers and for mortise locks.

C. Cover Plates: For hinge and strike plate cutouts, provide fully enclosed pressed steel cover boxes spot welded to frames behind mortises.

D. Hardware: Mortise, reinforce, drill and tap for mortise hardware, except drilling and tapping for surface door closers, door closer brackets and adjusters shall be done in field.

E. Anchorage: Provide standard and special anchorage items as required. Provide formed steel channel spreader at bottom of frames, removable without damaging frame. At masonry, provide anchors (about 2 inch by 10 inch) approximately 24 inches on center.

F. Silencers: Provide specified silencers, except where stop does not occur and at smoke gasketed openings, 3 per jamb at single door and one for each door at double doors.

G. Extensions: Reinforce transom bars or mullions as necessary to provide rigid installation. Where required (as at multiple openings) to stabilize large frames, provide frame or mullion extensions to anchor to structure above, proper size to fit within overhead construction. Provide angle clips to fasten to structure.

H. Mullions: Provide mullions, straight and without twist, of tubular design. For removable mullions provide reinforcing at frame head.

I. Clearances: Provide and be responsible for proper clearances at metal frames, including for weatherstripping, soundstripping and smoke gasketing. Glass clearance shall be thickness of glass plus clearance each side (1/8 inch minimum exterior - 1/16 inch minimum interior), adjust for installation, glass thickness to allow for glazing and sealant. Where sealed double glazing is indicated, provide rebates minimum of 3/4 inch and provide 1/4 inch clearance at glass edges. Where units fit around concrete blocks (blocks built into frames) obtain actual dimensions of blocks being used to establish minimum clearances.

J. Drip Cap: Galvanized steel field painted per 09900. Secure to frame at exterior doors

K. Stops: Set with countersunk or Jackson head screws.
   1. Hospital Stops: On all doors except lead lined doors, doors in 2-hour fire rated partitions and one hour smoke and fire rated partitions; stops shall be cut at 6 inches above floor with 45 degree miter and welded closed.

L. Labeled Frames: Construct in accordance with requirements for labeled work. Attach proper U.L. label, Warnok Hersey. "B" labeled frames shall be 1-1/2 hour construction.

M. Joinings: At frames with equal width jambs and head, neatly miter on face (except locations as at transom bars and at frames with large head members). Cope and butt stops. Weld length of entire joint, including face and flat intersections. Grind smooth, at other frames, provide same mitered joint wherever possible (at intersection of jamb-head or jamb-sill) and at other locations butt metal neatly and full weld. If tight butt joints are utilized, joints shall be neatly caulked smooth.

N. Workmanship: Fabricate so no grind marks, hollow or other out-of-plane areas are visible. At joints of intermediate members (such as mullions and transom bars), provide tight joining, neatly accomplished without holes, burned out spots, weld build up or other defacing work. Fill to close cracks and to preserve shapes. Tightly fit loose stops, to hairline joints.

O. Finish: Clean frames by degreasing process and apply thorough coating of baked-on primer, covering inside as well as outside surfaces. At galvanealed frames, coat welds and other disrupted surface with zinc-rich paint containing not less than 90 percent zinc dust by weight.

Hollow Metal Frames with electric through wire (08110)

A. Provide all hollow metal frames receiving electrified hardware with ElectroLynx™ wiring harness and concealed plug connectors on one end to accommodate up to twelve wires.

B Coordinate ElectroLynx™ connectors on end of the wiring harness to plug directly into the electrified hardware and the electric hinge.

2.4 HOLLOW METAL DOORS

A. Provide to design indicated including: Flush panel doors, flush panel with cut-out as indicated, stile and rail type, stile and rail with door louver. Use galvanealed steel at exterior doors.

B. Flush Doors: Reinforce, stiffen and sound deaden. Provide cut-outs for glass and louvers with stops as shown. Provide flush steel closure at top of exterior and interior doors and at bottom of exterior doors with drain holes in bottom closure. Provide seamless edge. Following door construction types are acceptable.

1. Exterior Doors (and Interior Reinforced Doors): 20 gauge steel stiffener reinforced vertically 6 inches o.c. full height and width, spot welded 5 inches o.c. to both face sheets. Stiffeners welded together top and bottom. Insulate with fiberglass batt insulation.
2. Composite Core Interior Doors (Typical): Polystyrene core permanently laminated to inside face sheets.
3. Door Construction: Manufacturer's standard polystyrene, polyurethane foamed in place, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.

C. Labeled Doors: Insulate as required by Underwriters Laboratories. Build in special hardware and provide astragals as indicated. At one hour and at 1-1/2 hour doors at enclosures, maximum transmitted temperature end point shall not exceed 450 degrees F above ambient at end of 30 minutes of fire exposure per U.L..

D. Seamless Vertical Edges: Construct doors with smooth flush surfaces, without visible joints or seams on exposed faces or stile edges. Interior and exterior door edge seams shall be full height wire welded and ground smooth.

E. Exterior Hollow Metal Door Louvers: Fabricate louver units of 16-gauge galvanized steel sheets with stationary, weatherproof Z-shaped blades and U-shaped frames, not less than 1-3/8 inch thick. Space louver blades not more than 1-1/2 inch o.c. Assemble units by welding. Provide insect screen on interior side of frame, consisting of 14 by 18 wire mesh in rigid, formed metal frame.

1. Interior Hollow Metal Door Louvers: Fabricate of 20-gauge cold-rolled steel sheets with stationary sightproof inverted V-shaped blades and U-shaped frames. Space louver blades not more than 3 inches o.c. Assemble units by welding.

F. Typical Reinforcement: Provide as required for hardware items. For lock reinforcement, provide manufacturer's standard reinforcement. Provide 12 gauge reinforcement for escutcheons or roses. centering clips to hold lock case in alignment. For door checks, provide 3/16 inch channel type reinforcements, 3-1/2 inch deep by 14 inches long, or as required. Hinge reinforcement minimum 7 gauge by 1-1/2 inch by 9 inch bar. Weld reinforcing to door. Reinforce doors for surface items such as surface and semi-concealed closers, brackets, surface holders and door stops. Drilling and tapping installation of these surface items shall be done in field by hardware installer.

G. Special Reinforcing: At exterior doors, reinforce inside of door on hinge side with high frequency hinge preparation. Weld to door.

H. Hardware: Mortise, reinforce, drill and tap for hardware furnished under Section 08710 - Hardware, except drilling and tapping for surface door closers, door closer brackets and adjusters shall be done in field. Obtain templates from hardware supplier.

I. Finish: Provide prime coat finish on doors. Thoroughly clean off rust, grease and other impurities. Grind welds smooth, no marks shall show. Apply metallic filler as required to fill cracks and joints and to level any weld areas or similar imperfections. Sand filler coat smooth.

Hollow Metal Doors with electric through wire (08110)

A. Provide all hollow metal doors receiving electrified hardware with ElectroLynx™ through-door wiring harness and concealed plug connectors on each end to accommodate up to twelve wires.

B Coordinate ElectroLynx™ connectors on each end of the wiring harness to plug directly into the electrified hardware and the electric hinge.

2.5 HOLLOW METAL PANELS

A. Same materials and constructed and finished in same way as specified for hollow metal doors.

2.6 FASTENINGS

A. Provide fastenings, anchors and clips as required to secure hollow metal work in place. Provide Jackson head screws, or flatter. Dimple metal work to receive screw heads. Set stops and other non-structural fastenings with #6 Jackson head self-tapping screws.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine supporting structure and conditions under which hollow metal is to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install hollow metal in accordance with reviewed shop drawings and manufacturer's printed instructions. Securely fasten and anchor work in place without twists, warps, bulges or other unsatisfactory or defacing workmanship. Set hollow metal plumb, level, square to proper elevations, true to line and eye. Set clips and other anchors with Ramset "shot" anchors or drill in anchors as approved. Units and trim shall be fastened tightly together, with neat, uniform and tight joints.

B. Placing Frames: Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces and spreaders leaving surfaces smooth and undamaged. In masonry construction, building-in of anchors and grouting of frames with mortar is specified in Section 04210 - Unit Masonry. At in-place concrete or masonry construction, set frames and secure in place using countersunk bolts and expansion shields, with bolt heads neatly filled with metallic putty, ground smooth and primed.

C. Place fire-rated frames in accordance with NFPA Standard #80.

D. Door Installation: Fit hollow metal doors accurately in their respective frames, within following clearances: Jambs and head 3/32 inch, meeting edges pair of doors 1/8 inch, sill where no threshold or carpet 1/4 inch above finished floor, sill at threshold 3/4 inch maximum above finished floor, sill at carpet 1/4 inch above carpet. Place fire-rated doors with clearances as specified in NFPA Standard #80.

3.3 ADJUSTING AND CLEANING

A. Prime Coat Touch-Up: Immediately after installation, sand smooth rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

B. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Prefinished standard and fire rated type wood doors with flush faces.
   2. Prefit and premachine pre-finished wood doors.

B. Related Sections:
   1. Section 06100 - Rough Carpentry.
   2. Section 06460 - Wood Frames.
   3. Section 08110 - Hollow Metal Doors and Frames.
   4. Section 08710 - Hardware.
   5. Section 08810 - Glazing: Glass and glazing for doors.
   6. Section 06405 - Architectural Woodwork.

1.2 REFERENCES

A. WDMA – Window and Door Manufacturers Association: IS 1-A 1997 Industry Standard for Architectural Flush Wood Doors.

B. NFPA-80 Standards for Fire Doors.

C. Uniform Building Code: UBC 7-2 1997, Fire Test of Door Assemblies.

1.3 SUBMITTALS

A. Shop Drawings and Product Data:
   1. Submit in accordance with Section 01330.
   2. Indicate general construction, jointing methods, hardware and louver locations, and locations of cut-outs for glass. Indicate thickness of veneers.

B. Samples:
   1. Submit samples of wood veneer and factory finishing in accordance with WDMA Quality Standards I.S. 1-A 1997, sections G-18 and Guide Specifications 1.03 C.

C. Certification:
   1. Submit certification that doors and frames comply with UBC 7-2 1997.

1.4 QUALITY ASSURANCE

A. Fire-Rated Wood Doors: Provide wood doors which are identical in materials and construction to units tested in door and frame assemblies in accordance NFPA 252 and which are labeled and listed for ratings indicated by ITS – Warnock Hersey, UL or other testing and inspection agency acceptable to authorities having jurisdiction.
   1. Doors: Comply with UBC 7-2 1997 where required.
   2. Provide intumescent requirements in compliance with UL-10C.

B. WDMA I.S. 1-A 1997 Quality Standard: Window and Door Manufacturers Association Quality Standards for grade of door, core, construction, finish, and other requirements.

C. Temperature Rise Rating: At stairwell enclosures, provide doors which have Temperature Rise Rating of 250 degrees F maximum in 30 minutes of fire exposure.

1.5 PRODUCT HANDLING

A. Plastic wrap and protect wood doors during transit, storage and handling to prevent damage, soiling or deterioration. Follow the Care and Installation guidelines as described in WDMA I.S. 1-A 1997.

1.6 GUARANTY/WARRANTY

A. Guarantee: Provide manufacturer's guarantee for all wood doors. Guarantee period: Lifetime of original installation. Doors exhibiting defects in materials or workmanship including warp and delamination within guarantee period shall be replaced (including hanging and finishing) with new doors. These terms shall be part of the manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Graham Manufacturing

B. Eggers Industries

C. Algoma Hardwoods

2.2 MATERIALS

A. Door Construction:
   1. Non-Fire Rated Doors: Thickness: 1-3/4 inches, interior flush wood, bonded, solid core conforming to WDMA I.S. 1-A 1997 and the following;
      a. Core: bonded particle core (PC) conforming to WDMA I.S. 1-A 1997.
      b. Door construction shall conform to WDMA I.S. 1-A 1997 Premium Grade requirements.
      c. Stiles: Hardwood to match face veneer over structural composite lumber (SCL), glued to core.
      d. Rails: Mill option hardwood or SCL. Top and bottom: 2 inches.
      e. Facing: Wood veneer as specified.
   2. Fire Rated Doors: Thickness: 1-3/4 inches, interior flush wood, bonded, solid core conforming to WDMA I.S. 1-A 1997 and the following;
      a. Core: bonded mineral core (FD) conforming to WDMA I.S. 1-A 1997.
      b. Door construction shall conform to WDMA I.S. 1-A 1997 Premium Grade requirements.
      c. Stiles: Hardwood to match face veneer over mineral composite, glued to core.
      d. Rails: Mineral composite as required by fire door authorities. Top and bottom: as required by manufacturer's fire door authorities.
      e. Facing: Wood veneer as specified.

B. WOOD VENEER
   1. Door face veneers shall meet HPVA "A" grade quality standards conforming to WDMA I.S. 1-A for transparent or semi-transparent finish. Minimum face veneer thickness shall be 1/50" at 12% moisture content after finish sanding.
   2. Species: Red Oak. *(specify)*
   3. Face Cut: Plain Sliced / Rotary / Rift Cut / Quarter Sliced / Flat Cut. *(specify)*
   4. Face Assembly: Book Match / Slip Match / Random Match. *(specify)*
   5. Face Symmetry: Running Match / Balanced Match / Center Balanced Match. *(specify)*

C. ADHESIVES
   1. Adhesives: Face to core adhesives shall be Type I or Type II as appropriate for location in building. Adhesives must be classified Type I or Type II per WDMA TM-6 "Adhesive Bond Test Method", or PUR adhesive. Type I adhesives shall be used for doors in exterior applications, Type II adhesives shall be used for doors in interior applications.

D. CORE
   1. Non-rated and 20 minute doors: Solid particleboard.
   2. Fire-rated doors: Non-combustible mineral core containing no asbestos.

2.3 FACTORY FINISHING

1. Comply with referenced WDMA Section G-15, “Factory Finishing.”.
2. Pre-finish wood doors at factory.
3. Transparent Finish: Match finish indicated in WDMA Section G-17: WDMA System #6.

2.4 ACCESSORIES

A. Vision Frames:
   1. Non-rated doors: Flush wood frames, hardwood to match facing.
   2. 20 minute fire rated doors: Provide manufacturer's tested metal clip or comparable system with wood stop appearance.
   3. Fire-rated doors: ITS – Warnock Hersey or UL approved glazing system.
   4. Glass: Refer to Section 08810 for glass types.

2.5 FABRICATION

A. Fabricate wood doors in accordance with requirements of WDMA I.S. 1-A 1997 Quality Standards.

B. Fabricate fire rated doors in accordance with requirements of ITS – Warnock Hersey or Underwriters' Laboratories, with metal label on each door including UL-10C.

C. Fabricate doors with WDMA Quality Standards hardware blocking options as follows:
   1. Provide HB-1 – head and HB-2 – sill rails and HB-4 – lockblock on all doors.
   2. Provide HB-6 only when exit devices are specified for door.
   3. Provide HB-8 for pivots or when floor bolts are specified under Section 08710 – Finish Hardware.

D. Provide doors with minimum ¼ inch thick edge strips, of wood species to match face veneers except as required for fire rating.

E. Make cut-outs and provide stops for glass and louvers. Install metal door louvers. Seal cut-outs prior to installation of moldings.
   1. For full light doors: Provide cut out from flush wood door, with vertical grain direction.

F. Bevel lock and hinge edges of single acting doors 3 degrees or 1/8 inch in 2 inches. Radius strike edge of double acting swing doors as required by pivot hinge manufacturer.

G. Prepare doors to receive hardware. Refer to Section 08710 - Hardware and NFPA 80 for hardware requirements including UL-10C.
   1. Prefit and bevel to net opening size less approximately 1/4 inch in width on single swing doors 3/16 inch in width for paired doors. Provide 1/4 inch clearance above finished floor, unless otherwise indicated on drawings. Provide 1/8 inch clearance at top of door.
   2. Slightly ease vertical edges.

H. Fire Rated Pair of Doors; greater than 20 minute: Supply overlapping astragals or metal edge sets only as required by NFPA 80 1999 or by door manufacturer’s fire door authorities. If an astragal is required, to comply with fire rated labeling requirements for pairs of fire rated doors, provide door manufacturer's standard tested astragal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine installed door frames before hanging doors.

B. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

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

3.2 INSTALLATION

A. Handle doors in accordance with recommendations of WDMA I.S. 1-A, “Care and Installation at Job Site.”

B. Condition doors to average temperature and humidity in area of installation for not less than 48 hours prior to installation. Store doors per recommendations of WDMA I.S. 1-A, “Care and Installation at Job Site.”

C. Install in neat and workmanlike manner, free from hammer or tool marks, open joints or slivers.

D. Set plumb, level, square and true. Install work after building humidity is at acceptable level.

E. Remove and replace all doors found to be warped, twisted, bowed, or otherwise damaged. Do not install doors which cannot be properly fitted to frames.

F. Adjust prefinished doors and hardware and other moving or operating parts to function smoothly and correctly.

G. If doors are to be field finished, the process must follow the WDMA I.S. 1-A, “Care and Handling at Job Site” instructions for field applied finishes.

H. Ensure that smoke gaskets are in-place before prefinished door installation.

3.3 CLEANING AND PROTECTION

A. Clean prefinished doors and hardware.

B. At clear finished doors, do not partially cover door surfaces with paper, cardboard, or any other opaque covering that will create uneven aging of wood veneer.

C. Protect doors as directed under Section 01700.

D. Refinish or replace finished doors damaged during installation.

END OF SECTION

PART 1: GENERAL

1.01 SECTION INCLUDES

A. Finish hardware for doors as specified and as listed in "Hardware Groups: and required by actual conditions.

1. Include screws, special screws, bolts, special bolts, expansion shields and other devices for proper application of hardware.

B. Related Sections:

1. Section 06101: Carpentry
2. Section 08110, Section 08120 and Section 08211- Certain hardware items installed with doors.
3. Division 16: Electrical

1.02 GENERAL REQUIREMENTS

A. Provide items, articles, material, operations and methods listed, mentioned or scheduled herein or on drawings, in quantities as required to complete project. Provide hardware that functions properly. Prior to furnishing hardware, advise Architect of items that will not operate properly, are improper for conditions, or will not remain permanently anchored.

1.03 SUBMITTALS

A. Hardware Schedule: Submit 5 copies of hardware schedule in vertical format as illustrated by the Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Schedules which do not comply will be returned for correction before checking.

B. Hardware schedule shall clearly indicate architect's hardware group and manufacturer of each item proposed.

C. The schedule shall be reviewed prior to submission by a certified Architectural Hardware Consultant (AHC), who shall affix his or her seal attesting to the completeness and correctness of the schedule:

1 Provide two (2) copies of illustrations from manufacturer's catalogs and data in brochure form.
2 Check specified hardware for suitability and adaptability to details and surrounding conditions. Indicate unsuitable or incompatible items and proposed substitutions in hardware schedule.
3 Provide listing of manufacturer's template numbers for each item of hardware in hardware schedule.
4 Furnish other Contractors and Subcontractors concerned with copies of final approved hardware schedule. Submit necessary templates and schedules as soon as possible to hollow metal, wood door and aluminum door fabricators in accordance with schedule they require for fabrication..
5 Samples: Lever design or finish sample: Provide 3 samples if requested by architect.

D. Installation Instructions: Provide manufacturer's written installation and adjustment instructions for finish hardware. Send installation instructions to site with hardware.

E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.

F. Contract Closeout Submittals: Comply with Section 01700 including specific requirements indicated below:

1 Operating and maintenance manuals: Submit 3 sets containing the following:

a. Complete information in care, maintenance and adjustment, and data on repair and replacement parts and information on preservation of finishes.
b. Catalog pages for each product.
c. Name, address and phone number of local representative for each manufacturer.
d. Parts list for each product.
e. Copy of final approved hardware schedule, edited to reflect "As Installed".
f. Copy of final keying schedule.
g. As installed "Wiring Diagrams" for each opening connected to power, both low voltage and 110 volts.
h. One complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.
i. One dogging key for each exit device.

G. On additions and renovations to existing facilities, contractor shall meet with owner to determine specific owner requirements regarding keying, special applications, brands, etc. and advise Architect if any revisions to the specification are required. Any changes to the specification must be in writing. Verbal authorization is not considered as valid.

1.04 QUALITY ASSURANCE

A. Manufacturer: Obtain each type of hardware (i.e. latch, and locks, hinges, closers, etc.) from single manufacturer, although several may be indicated as offering products complying with requirements. Where hardware may be furnished by more than one supplier, provide hardware to match the preponderance of building hardware.

B. Supplier: Recognized architectural finish hardware supplier, with warehousing facilities within 100 miles of the jobsite, who has been providing hardware for a period of not less than 3 years. The supplier shall be, or employ, a certified Architectural Hardware Consultant (AHC). The hardware schedule shall be prepared and signed by a certified Architectural Hardware Consultant (AHC).

C. Installer: Firm with 3 years experience in installation of similar hardware to that required for this project, including specific

D. Regulatory Label Requirements: Provide nationally recognized testing agency label or stamp on hardware for labeled openings. Where UL requirements conflict with drawings or specifications, hardware conforming to UL requirements shall be provided. Conflicts and proposed substitutions shall be clearly indicated in hardware schedule.

E. Pre-Installation Conference: Prior to the installation of hardware, manufacturer's representatives for locks, closers and exit devices shall arrange and hold a jobsite meeting to instruct the installing contractor's personnel on the proper installation of their respective products. A letter of compliance, indicating when this meeting is held and who is in attendance, shall be sent to the Architect and Owner.

1.05 DELIVERY, STORANGE AND HANDLING

A. Deliver hardware to jobsite in manufacturer's original packaging, marked to correspond with approved hardware schedule. Do not deliver hardware until suitable locked storage space is available. Check hardware against reviewed hardware schedule. Store hardware to protect against loss, theft or damage.

B. Deliver hardware required to be installed during fabrication of hollow metal, aluminum, wood or stainless steel doors prepaid to manufacturer.

1.06 WARRANTY

A. Guarantee workmanship and material provided against defective manufacture. Repair or replace defective workmanship and material appearing within a period of one year after Substantial Completion.

B. Provide ten year warranty on door closer body against defects in material and workmanship from date of occupancy of Project.

C. Replace shortages and incorrect items with correct material at no additional cost to Owner.

PART 2: PRODUCTS

2.01 HINGES

A. Acceptable Manufacturers and Types:

McKinney
T4A3786
TA2714
TA2314
T4A3786
T4A3386

B. Non-removable pins (NRP):

a. Provide NRP (non-removable pins) at outswing lockable doors.

C. Size:

a.	2-1/4” thick doors	5” X 5”
b.	1-3/4” thick doors	4-1/2” X 4-1/2”
c.	1-3/8” thick doors	3-1/2” X 3-1/2”

D. Quantity:

a. 2 hinges per leaf for openings through 60 inches high.
b. 1 additional hinge per leaf for each additional 30 inches in height or fraction thereof.
c. 4 hinges for Dutch doors up to 90 inches in height.

E. Drill 5/32 inch hole and use No. 12, 1-1/4 inch steel, threaded to the head, wood screws for hinges on wood doors.;

2.02 LOCKSETS- MORTISE

A. Acceptable manufacturers and Series:

Sargent	Yale	Corbin/ Russwin
8200	8800	ML2000

B. Provide lock functions specified in Hardware Groups, with the following provisions:
   a. Locks shall meet the requirements of ANSI/BHMA A156.13-2005, operational Grade 1 and Security Grade 1.
   b. Backset: 2-3/4”
   c. Strikes: Provide wrought boxes and strikes with proper lip length to protect trim but not to project more than 1/8” beyond trim, frame or inactive leaf. Where required, provide open back strike and protect with astragal to allow practical and secure operation.
   d. All locks and latches must be BHMA certified.

2.03 EXIT DEVICES

A. Acceptable manufacturers and Series:

Sargent	Yale	Corbin/ Russwin
80 Series	7000 Series	ED5000 Series

B. Provide exit device series and functions as specified in Hardware Groups.

C. All exit devices shall be UL listed for panic. Exit devices for labeled doors shall be listed as “Fire Exit Hardware”.

D. Where lever trim is specified, provide lever design to match lock levers.

E. Provide cylinders for key locking mullions and exit devices with locking trim.

F. Provide keyed removable mullions as specified in the Hardware Groups.

G. All exit devices must be BHMA certified.

2.04 KEYING

A. Acceptable manufacturers and Series:

Match owner’s existing master key system.

B. Master key or Grand master key cylinders and key in groups, unless otherwise specified. Factory masterkey with manufacturer retaining permanent keying records.

C. Provide 6 masterkeys for each masterkey set. Provide 3 change keys for each lock. Provide 2 control keys for core removal. Stamp keys “DO NOT DUPLICATE”.

D. Submit proposed keying schedule to Architect. If requested, meet with Owner and Architect to review keying schedule.

2.05 DOOR TRIM

A. Acceptable manufacturers and Series:

McKinney Rockwood Trimco

PO53	70C	1001-3
DP503	110 X 70C	1010-3
OP810	BF15747	1737
KP50	K1050	KO050

B. Pulls: Where required, mount back to back with push bars.

C. Kick and Armor Plates: Minimum of .050" thick, beveled 4 edges.

D. At single and pairs of doors provide kick and armor plates 2" less door width (2" LDW).

E. Provide kick plates at a height of 10" unless otherwise specified.

2.06 DOOR CLOSERS

A. Acceptable manufacturers and Series:

Norton	Sargent	Yale	Corbin Russwin
7500/PR7500	351/351-P10	4400/PR4400	DC8000

B. Provide non-sized closers, adjustable to meet maximum opening force requirements of ADA.

C. Provide drop plates, brackets or adaptors for arms and as required to suit details.

D. Install closers on room side of corridor doors, inside of exterior doors and stair side of stairway doors.

E. Provide back check for door closers.

F. Provide hold open arms where specified.

G. Provide closers as specified in Hardware Groups and, in addition, provide closers for labeled doors whether or not specifically noted in Hardware Groups.

H. Provide closers meeting the requirements of UBC7-2, 1997 and UL 10C positive pressure tests.

2.07 STOPS AND HOLDERS

A. Acceptable manufacturers and Series:

McKinney	Trimco	Rockwood
WS01	1270WX	406
WS02	1270WV	409
FS01	1211	443
FS29	1214	481
FS30	1214H	481H

B. Provide wall stops as applicable for each door leaf, except where floor stops are specified in Hardware Groups, or where conditions require the use of an overhead stop.

C. Provide an appropriate carpet rise for floor stops, as needed.

2.08 FASTENERS

A. Use only manufacturer supplied fasteners to anchor, attach or otherwise install all pieces of hardware.

B. Install all door closers and exit devices with machine screws, whether or not self-tapping (self drilling) fasteners are offered by the manufacturer. Provide sex bolts (SNB) at fire rated wood doors unless proper blocking is provided by the door manufacturer.

C. Use phillips head at all exposed screws. Aluminum screws are not acceptable to attach or install any hardware.

D. Provide self-tapping (self-drilling) screws for attachment of sweeps and stop applied weatherstrip only.

E. Replace all fasteners that have damaged heads due to inappropriate installation methods.

2.09 FINISHES AND MATERIALS

A. Hinges:
   a. Exterior- BHMA 630 (US32D)
   b. Interior- BHMA 652 (US26D)

B. Continuous Hinges
   a. BHMA 628 (US28)

C. Flush Bolts
   a. BHMA 626 (US26D)

D. Exit Devices
   a. BHMA 630 (US32D)

E. Locks and Latches
   a. BHMA 626 (US26D)

F. Pulls, Push Plates, Push Bars
   a. BHMA 630 (US32D)

G. Coordinators
   a. BHMA 600 (USP)

H. Kick Plates, Armor Plates and Edge Guards
   a. BHMA 630 (US32D)

I. Overhead Stops and Holders
   a. Exterior- BHMA 630 (US32D)
   b. Interior- BHMA 652 (US26D)

J. Surface Mounted Door Closers

a. BHMA 689 (Painted Aluminum)

K. Latch Protectors
   a. BHMA 630 (US32D)

L. Miscellaneous Hardware
   a. BHMA 626 (US26D)

PART 3: EXECUTION

3.01 EXAMINATION

A. Examine doors, frames and related items for conditions that would prevent the proper application of finish hardware. Do no proceed until defects are corrected.

3.02 INSTALLATION

A. Install finish hardware in accordance with reviewed hardware schedule and manufacturer's printed instructions. Prefit hardware before finish is applied: remove and reinstall after finish is completed. Install hardware so that parts operate smoothly, close tightly and do not rattle.

B. Installation of hardware shall comply with NFPA 80 and NFPA 101.

C. Set units level, plumb and true to line and location. Adjust and reinforce attachment to substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant, forming tight seal between threshold and surface to which set. Securely and permanently anchor thresholds using countersunk, non-ferrous screws to match color of thresholds. Provide stainless steel screws at aluminum thresholds.

3.03 FIELD QUALITY CONTROL

A. At completion of project, a qualified Architectural Hardware Consultant (AHC) as certified by the Door and Hardware Institute shall inspect hardware installation. After this inspection, a letter shall be sent to Architect reporting on conditions, verifying that hardware has been properly installed and adjusted. Any deficiencies noted shall be corrected prior to final payment.

3.04 ADJUSTING AND CLEANING

A. At final completion, hardware shall be left clean and free from disfigurement. Make final adjustment to door closers and other items of hardware. Where hardware is found defective, repair, replace or otherwise correct as directed.

B. Adjust door closers to meet opening force requirements of Uniform Federal Accessibility Standards.

C. Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of space or area, return to work during week prior to acceptance of occupancy and make final check

and adjustment of hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware.

D. Instruct Owner's personnel in proper adjustment and maintenance of door hardware and hardware finishes.

E. Clean adjacent surfaces soiled by hardware installation.

3.05 PROTECTION

A. Provide for proper protection of items of hardware until Owner accepts Project as complete.

3.06 HARDWARE GROUPS:

SET #01

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Office Lock	8205 LNP LC	26D	SA
1 Mortise Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

SET #02

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Passage Latch	8215 LNP	26D	SA
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

SET #03

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Push Plate	P053	US32D	MC
1 Door Pull	DP503	US32D	MC
1 Closer	7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

SET #04

3 Hinges	TA2714 4 1/2 X 4 1/2 NRP	26D	MC
1 Exit Device	43 8504 Less Pull/ Less Cylinder	32D	SA
1 Rim Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Door Pull	VR02	US32D	MC
1 Closer	PR7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

SET #05

3 Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1 Communicating Door Lock	8226 LNP LC	26D	SA
2 Mortise Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1 Closer	PR7500	689	NO
1 Kickplate	KP50 10" X 2" LDW	US32D	MC
1 Wall Stop	WS01 (Convex)	US32D	MC
3 Door Silencers	S1M		MC

END OF SECTION

Hardware Sets

SET #01

3	Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1	Office Lock	8205 LNP LC	26D	SA
1	Mortise Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1	Wall Stop	WS01 (Convex)	US32D	MC
3	Door Silencers	S1M		MC

SET #02

3	Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1	Passage Latch	8215 LNP	26D	SA
1	Wall Stop	WS01 (Convex)	US32D	MC
3	Door Silencers	S1M		MC

SET #03

3	Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1	Passage Latch	8215 LNP	26D	SA
1	Closer	7500	689	NO
1	Kickplate	KP50 10" X 2" LDW	US32D	MC
1	Wall Stop	WS01 (Convex)	US32D	MC
1	Smoke Seals	MCKS88D (Head & Jamb)		MC
1	Hot Smoke Seals	MCKHSS2000 (As Required)		MC

SET #04

3	Hinges	TA2714 4 1/2 X 4 1/2 NRP	26D	MC
1	Exit Device	12 43 8813 ETP Less Cylinder	32D	SA
1	Rim Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1	Closer	PR7500	689	NO
1	Kickplate	KP50 10" X 2" LDW	US32D	MC
1	Wall Stop	WS01 (Convex)	US32D	MC
1	Smoke Seals	MCKS88D (Head & Jamb)		MC
1	Hot Smoke Seals	MCKHSS2000 (As Required)		MC

SET #05

1	Closer	7500 (As Required)	689	NO
1	Smoke Seals	MCKS88D (Head & Jamb)(As Required)		MC
1	Hot Smoke Seals	MCKHSS2000 (As Required)		MC

Note: Replace or re-label doors and frames to comply with requirements for 20 Minute doors.

SET #06

3	Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1	Storeroom Lock	8204 LNP LC	26D	SA
1	Cylinder	(MATCH OWNER'S STANDARD)	US26D	----
1	Wall Stop	WS01 (Convex)	US32D	MC
3	Door Silencers	S1M		MC

SET #07

3	Hinges	TA2714 4 1/2 X 4 1/2	26D	MC
1	Privacy Latch	8265 LNP	26D	SA
1	Closer	7500	689	NO
1	Kickplate	KP50 10" X 2" LDW	US32D	MC

1	Wall Stop	WS01 (Convex)	US32D	MC
1	Smoke Seals	MCKS88D (Head & Jamb)		MC
1	Hot Smoke Seals	MCKHSS2000 (As Required)		MC

DIVISION 15

MECHANICAL

END OF TABLE OF CONTENTS

SECTION 15025

DUCT TESTING, ADJUSTING, AND BALANCING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Test, balance, and adjust air duct systems as described in Contract Documents.

B. Related Sections
   1. Division 15 -
      a. Completing installation and start-up of mechanical systems, and changing sheaves, belts, and dampers as required for correct balance.
      b. Assisting Balancing Agency in testing and balancing of mechanical system.

1.2 SYSTEM DESCRIPTION

A. Performance Requirements
   1. Perform testing and balancing in complete accordance with Associated Air Balance Council Standards for Field Measurement & Instructions, Form P1266, Volume I. Record test data on AABC standard forms or facsimile.
   2. Noise level shall not exceed PNC 35 in Chapel or Cultural Center when all mechanical equipment is operating.

1.3 SUBMITTALS

A. Quality Assurance / Control
   1. Four copies of complete test data for evaluation and approval.
   2. Test And Balance Report -
      a. Complete with logs, data, and records as required herein. Print logs, data, and records on white bond paper bound together in report form.
      b. Certified accurate and complete by Balancing Agency's certified test and balance engineer.
      c. Contain following general data in format selected by Balancing Agency.
         1) Project Number
         2) Project Title
         3) Project Location
         4) Project Architect and Mechanical Engineer
         5) Test and Balance Agency and Certified Engineer
         6) Contractor and mechanical sub-contractor
         7) Dates tests were performed
         8) Certification Document
         9) Report Forms similar to AABC Standard format.
      d. Report shall include following -
         1) Preface suggesting abnormalities and problems encountered
         2) Instrumentation List including type, model, manufacturer, serial

number, and calibration dates.

3) System Identification reporting location of VAV boxes, zones, supply, return, and exhaust openings.

4) Record following for each piece of air handling equipment -
   a) Manufacturer, model number, and serial number
   b) Design and manufacturer rated data
   c) Actual CFM
   d) Suction and discharge static pressure of each fan
   e) Outside-air and return-air total CFM
   f) Actual operating current, voltage, and brake horsepower of each fan motor
   g) Final RPM of each motor
   h) Fan and motor sheave manufacturer, model, size, number of grooves and center distance
   i) Belt size and quantity
   j) Static-pressure controls final operating set points

3. Bind approved copy of report in Operations And Maintenance Manual for Division 15.

1.4 QUALITY ASSURANCE

A. Qualifications
   1. Work of this Section shall be performed by independent Air Testing And Balance Agency specializing in testing and balancing of heating, ventilating, and cooling systems to balance, adjust, and test air moving equipment, air distribution, and exhaust systems.
   2. Agency shall provide proof of having successfully completed at least five years of specialized experience in air and hydronic system balancing. Work by this Agency shall be done under direct supervision of qualified heating and ventilating engineer employed by Agency.
   3. Agency shall be approved in writing by Architect.
   4. Neither Architect's engineering consultant or anyone performing work on this Project under Division 15 shall be permitted to do this work.

1.5 SCHEDULING

A. Award test and balance subcontract to Agency upon receipt of Notice To Proceed to allow Agency to schedule this work in cooperation with other Sections involved and to comply with completion date.

B. During construction, Agency shall inspect installation of pipe systems, sheet metal work, temperature controls, and other component parts of mechanical systems. Perform inspections as follows
   1. One inspection when 60 percent of duct work is installed.
   2. One inspection when 90 percent of equipment is installed.

C. Do not begin air testing and balancing until
   1. After completion of air cooling, heating, and exhaust systems including installation of specialties, devices, and new filters.
   2. Proper function of control system components including electrical interlocks, damper sequences, air and water reset, and fire and freeze stats has been verified.
   3. Automatic temperature controls have been calibrated and set for design

operating conditions.

4. Verification of proper thermostat calibration and setting of control components such as static pressure controllers and other devices that may need set points changed during process of balancing system.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 **PREPARATION**

A. Heating, ventilating, and cooling systems and equipment shall be in full operation and continue in operation during each working day of testing and balancing.

3.3 FIELD QUALITY CONTROL

A. Site Tests
   1. If requested, conduct tests in presence of Architect.
   2. Instruments used by Agency shall be accurately calibrated and maintained in good working order.
   3. Air Testing And Balancing Procedure -
      a. Perform tests at high and low speeds of multi-speed systems and single speed systems. Perform following testing and balancing functions in accordance with Associated Air Balance Council National Standards -
         1) Fan Speeds - Test and adjust fan RPM to achieve design CFM requirements.
         2) Current and Voltage - Measure and record motor current and voltage.
         3) Pitot-tube Traverse - Perform Pitot-tube traverse of main supply and return ducts to obtain total CFM.
         4) Outside Air - Test and adjust system minimum outside air by Pitot-tube traverse.
         5) Static Pressure - Test and record system static pressures, including suction and discharge static pressure of each fan.
         6) Air Temperature - Take wet and dry bulb air temperatures on entering and leaving side of each cooling coil. Dry bulb temperatures shall be taken on entering and leaving side of each heating unit.
         7) Main Ducts - Adjust main ducts to within design CFM requirements and traverse for total CFM quantities.
         8) Branch Ducts - Adjust branch ducts to within design CFM requirements. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.
         9) Tolerances - Test and balance each diffuser, grille, and register to within 10 percent of design requirements.
         10) Identification - Identify the location and area of each grille, diffuser, and register. Record on air outlet data sheets.
         11) Description - Record size, type, and manufacturer of each diffuser, grille, and register on air outlet data sheets.
         12) Drafts - Adjust diffusers, grilles, and registers to minimize

drafts.

b. Permanently mark outside air, supply air, and return air damper positions after balancing has been completed.

4. Smoke testing, or some other approved means, may be required to determine leak locations if air balance report indicates that any system's CFM total is less than 10 percent of design CFM. Prior to test, verify that system's duct joints have been sealed as specified and that air moving device in question is supplying required design system air flow. Architect will approve test method required. If smoke test is selected, use following procedure. Provide necessary precautions to protect those performing or observing test from being exposed to smoke.
   a. Use zinc chloride smoke candles, titanium tetrachloride ampules or sticks, or other devices acceptable to Architect to generate smoke.
   b. Close openings in duct except for one opening at farthest end of duct run.
   c. Circulate smoke at pressurized condition of 1/2 inch minimum water gauge static pressure.
   d. Report findings to Architect in writing.

B. Final Inspection And Adjustments
   1. System shall be balanced and reports submitted to Architect before prefinal inspection.
   2. Balancing Agency shall be represented at final inspection meeting by qualified testing personnel with balancing equipment and two copies of air balancing test report.
      a. Architect will choose and direct spot balancing of one zone. Differences between the spot balance and test report will be justification for requiring repeat of testing and balancing for entire building. If recheck testing demonstrates measured flow deviation of 10 percent or more from recorded information on report, report will be rejected and new inspection and report will be made and resubmitted.
      b. Perform re-balancing in presence of Architect and subject to its approval.
      c. If re-balancing is required, submit revised air test and balance reports to Architect before Substantial Completion.
      d. Spot balance and rebalance shall be performed at no additional cost to Owner.
   3. Where furnace supplied to job site provides over 5 percent more air than schedule requirements, rooms supplied by that furnace shall have their supply air quantities increased by ratio of actual total air quantity supplied to minimum air quantity required by furnace schedule.

END OF SECTION

SECTION 15051

GENERAL MECHANICAL REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. General requirements and procedures for mechanical systems.
   2. Responsibility for proper operation of electrically powered equipment furnished under this Division.
   3. Interface with Testing And Balancing Agency.
   4. Furnish and install sealants relating to installation of systems installed under this Division.
   5. Furnish and install Firestop Penetration Systems for mechanical system penetrations as described in Contract Documents.

B. Products Supplied But Not Installed Under This Section
   1. Sleeves, inserts, supports, and equipment for mechanical systems installed by other trades.

C. Related Sections
   1. Division 02 -
      a. Piped utilities
      b. Exterior concrete pads and bases for mechanical equipment
   2. Division 05 - Quality and requirements for welding
   3. Division 07 -
      a. Quality of Penetration Firestop Systems to be used on Project and submittal requirements
      b. Quality of sealants used at building exterior
   4. Division 09 -
      a. Quality of acoustical sealants
      b. Painting of mechanical items requiring field painting.
   5. Division 13 -
      a. Air balance and final adjustment
   6. Division 16 -
      a. Raceway and conduit, unless specified otherwise, line voltage wiring, outlets, and disconnect switches

1.2 SUBMITTALS

A. Product Data
   1. Manufacturer's catalog data for each manufactured item.
      a. Provide section in submittal for each type of item of equipment. Include Manufacturer's catalog data of each manufactured item and enough information to show compliance with Contract Document requirements. Literature shall show capacities and size of equipment used and be marked indicating each specific item with applicable data underlined.
      b. Include name, address, and phone number of each supplier.

B. Shop Drawings
   1. Schematic control diagrams for each separate fan system, heating system, control panel, etc. Each diagram shall show locations of all control and operational components and devices. Mark correct operating settings for each control device on these diagrams.
   2. Diagram for electrical control system showing wiring of related electrical control

items such as firestats, fuses, interlocks, electrical switches, and relays. Include drawings showing electrical power requirements and connection locations.

3. Drawing of each temperature control panel identifying components in panels and their function.

C. Closeout

1. Operation And Maintenance Manual Data -

a. Modify and add to requirements of Section 01700 as follows -

1) At beginning of MECHANICAL section of Operations And Maintenance Manual, provide master index showing items included.

2) Provide name, address, and phone number of Architect, Architect's Mechanical Engineer, General Contractor, and Mechanical, Plumbing, Sheet Metal, Refrigeration, and Temperature Control subcontractors.

3) Provide operating instructions to include -

a) General description of each plumbing and mechanical system.

b) Step by step procedure to follow in putting each piece of mechanical equipment into operation.

c) Provide diagrams for electrical control system showing wiring of items such as smoke detectors, fuses, interlocks, electrical switches, and relays.

4) Identify maintenance instructions by using same equipment identification used in Contract Drawings. Maintenance instructions shall include -

a) List of mechanical equipment used indicating name, model, serial number, and name plate data of each item together with number and name associated with each system item.

b) Manufacturer's maintenance instructions for each piece of mechanical equipment installed in Project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, operation instructions of equipment, and maintenance and lubrication instructions.

c) Summary list of mechanical equipment requiring lubrication showing name of equipment, location, and type and frequency of lubrication.

d) Manual for control systems..

5) Include copies of approved shop drawings and copies of warranties required in individual Sections of Division 15.

1.3 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies.

1. Perform work in accordance with applicable provisions of local Plumbing Code, Gas Ordinances, and adoptions thereof. Provide materials and labor necessary to comply with rules, regulations, and ordinances.

2. In case of differences between building codes, state laws, local ordinances, utility company regulations, and Contract Documents, the most stringent shall govern. Promptly notify Architect in writing of such differences.

B. Identification

1. Motor and equipment name plates as well as applicable UL and AGA labels shall be in place when Project is turned over to Owner.

2. Materials shall bear Manufacturer's name and trade name. Equipment and materials of same general type shall be of same make throughout work to provide uniform appearance, operation, and maintenance.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Storage
   1. In addition to requirements specified in Division 01, stored material shall be readily accessible for inspection by Architect until installed.
   2. Store items subject to moisture damage, such as controls, in dry, heated spaces.

B. Handling
   1. Protect bearings during installation. Thoroughly grease steel shafts to prevent corrosion.

1.5 WARRANTIES

A. Guarantee heating, cooling, and plumbing systems to be free from noise in operation that may develop from failure to construct system in accordance with Contract Documents.

B. Provide certificates of warranty for each piece of equipment made out in favor of Owner. Clearly record 'start-up' date of each piece of equipment on certificate.

1.5 SYSTEM START-UP

A. Off-Season Start-up
   1. If Substantial Completion inspection occurs during heating season, schedule spring start-up of cooling systems. If inspection occurs during cooling season, schedule autumn start-up for heating systems.
   2. Notify Owner seven days minimum before scheduled start-up.
   3. Time will be allowed to completely service, test, check, and off-season start systems. During allowed time, train Owner's representatives in operation and maintenance of system.
   4. At end of off-season start-up, furnish Owner with letter confirming that above work has been satisfactorily completed.

B. Preparations that are to be completed prior to start up and operation include, but are not limited to following
   1. Dry out electric motors and other equipment to develop and properly maintain constant insulation resistance.
   2. Make adjustments to insure that -
      a. Equipment alignments and clearances are adjusted to allowable tolerances.
      b. Nuts and bolts and other types of anchors and fasteners are properly and securely fastened.
      c. Packed, gasketed, and other types of joints are properly made up and are tight and free from leakage.
      d. Miscellaneous alignings, tightenings, and adjustings are completed so systems are tight and free from leakage and equipment performs as intended.
   3. Motors and accessories are completely operable.
   4. Inspect and test electrical circuitry, connections, and voltages to be properly connected and free from shorts.
   5. Adjust drives for proper alignment and tension.
   6. Make certain filters in equipment for moving air are new and of specified type.
   7. Properly lubricate and run-in bearings in accordance with Manufacturer's directions and recommendations.

1.6 OWNER'S INSTRUCTIONS

A. Instruct building maintenance personnel in operation and maintenance of mechanical systems utilizing Operation And Maintenance Manual when so doing.

1. Minimum Instruction Periods -
   a. Mechanical - Four hours
   b. Temperature Control - Two hours

2. Instruction periods shall occur after Substantial Completion inspection when systems are properly working and before final payment is made. None of these instructional periods shall overlap another.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Site Inspection
   1. Examine premises to understand conditions which may affect performance of work of this Division before submitting proposals for this work. Examine adjoining work on which mechanical work is dependent for efficiency and report work which requires correction.
   2. No subsequent allowance for time or money will be considered for any consequence related to failure to examine site conditions.

B. Drawings
   1. Plumbing and Mechanical Drawings show general arrangement of piping, ductwork, equipment, etc. Follow as closely as actual building construction and work of other trades will permit.
   2. Consider Architectural and Structural Drawings part of this work insofar as these drawings furnish information relating to design and construction of building. These drawings take precedence over Plumbing and Mechanical Drawings.
   3. Because of small scale of Drawings, it is not possible to indicate all offsets, fittings, and accessories which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves, and accessories required to meet conditions.

C. Ensure that items to be furnished fit space available. Make necessary field measurements to ascertain space requirements including those for connections and furnish and install equipment of size and shape so final installation shall suit true intent and meaning of Contract Documents. If approval is received by Addendum or Change Order to use other than originally specified items, be responsible for specified capacities and for ensuring that items to be furnished will fit space available.

3.3 PREPARATION

A. Check that slots and openings provided under other Divisions through floors, walls, ceilings, and roofs are properly located. Perform cutting and patching caused by neglecting to coordinate with Divisions providing slots and openings at no additional cost to Owner.

B. Changes Due To Equipment Selection
   1. Where equipment specified or otherwise approved requires different arrangement or connections from that shown in Contract Documents, submit drawings, if requested by Architect, showing proposed installations.
   2. If proposed changes are approved, install equipment to operate properly and in harmony with intent of Contract Documents. Make incidental changes in piping, ductwork, supports, installation, wiring, heaters, panelboards, and as otherwise

necessary.

3. Provide any additional motors, valves, controllers, fittings, and other additional equipment required for proper operation of the system resulting from selection of equipment, including all required changes in affected trades.
4. Be responsible for the proper location of roughing-in and connections provided under other Divisions.

3.4 INSTALLATION

A. Interface With Other Work
   1. Electrical - Furnish exact location of electrical connections and complete information on motor controls to installer of electrical system.
   2. Testing And Balancing -
      a. Put mechanical systems into full operation and continue their operation during each working day of testing and balancing.
      b. Make changes in pulleys, belts, fan speeds, and dampers or add dampers as required for correct balance as recommended by appropriate Sections of Division 13 and at no additional cost to Owner.

B. Cut carefully to minimize necessity for repairs to previously installed or existing work. Do not cut beams, columns, or trusses.

C. Locating Equipment
   1. Arrange pipes, ducts, and equipment to permit ready access to valves, cocks, unions, traps, filters, starters, motors, control components, and to clear openings of doors and access panels.
   2. Adjust locations of pipes, ducts, switches, panels, equipment, and fixtures to accommodate work to interferences anticipated and encountered.
   3. Install mechanical work to permit removal of equipment and parts of equipment requiring periodic replacement or maintenance without damage to or interference with other parts of equipment or structure.
   4. Determine exact route and location of each pipe and duct prior to fabrication.
      a. Right-Of-Way -
         1) Lines which pitch shall have right-of-way over those which do not pitch. For example, steam, steam condensate, and plumbing drains shall normally have right-of-way.
         2) Lines whose elevations cannot be changed shall have right-of-way over lines whose elevations can be changed.
      b. Offsets, Transitions, and Changes in Direction -
         1) Make offsets, transitions, and changes in direction in pipes and ducts as required to maintain proper head room and pitch of sloping lines whether or not indicated on Drawings.
         2) Furnish and install all traps, air vents, sanitary vents, and devices as required to effect these offsets, transitions, and changes in direction.

D. Penetration Firestops - Install Penetration Firestop System appropriate for penetration at mechanical system penetrations through walls, ceilings, roofs, and top plates of walls.

E. Sealants
   1. Seal openings through building exterior caused by penetrations of elements of mechanical systems.
   2. Furnish and install acoustical sealant to seal penetrations through acoustically insulated walls and ceilings.

3.3 REPAIR / RESTORATION

A. Each Section of this Division shall bear expense of cutting, patching, repairing, and replacing of work of other Sections required because of its fault, error, tardiness, or because of damage done by it.
   1. Patch and repair walls, floors, ceilings, and roofs with materials of same quality and appearance as adjacent surfaces unless otherwise shown.
   2. Surface finishes shall exactly match existing finishes of same materials.

B. Cutting, patching, repairing, and replacing pavements, sidewalks, roads, and curbs to permit installation of work of this Division is responsibility of Section installing work.

3.4 CLEANING

A. Clean exposed piping, ductwork, equipment, and fixtures. Remove stickers from fixtures and adjust flush valves.

B. No more than one week before Final Inspection, flush out bearings and clean other lubricated surfaces with flushing oil. Provide best quality and grade of lubricant specified by Equipment Manufacturer.

C. Replace filters in equipment for moving air with new filters of specified type no more than one week before Final Inspection.

3.5 PROTECTION

A. Do not operate pieces of equipment used for moving supply air without proper air filters installed properly in system.

B. After start-up, continue necessary lubrication and be responsible for damage to bearings while equipment is being operated up to Substantial Completion.

END OF SECTION

SECTION 15075

MECHANICAL IDENTIFICATION

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install identification of equipment and piping as described in Contract Documents.

PART 2 PRODUCTS

2.1 LABELS

A. Equipment Identification - Black formica, with white reveal when engraved. Lettering to be 3/16 inch high minimum.

2.2 PAINT

A. One Coat Primer -
   1. 6-2 Quick Drying Latex Primer Sealer over fabric covers.
   2. 6-205 Metal Primer under dark color paint
   3. 6-6 Metal Primer under light color paint.

B. Finish Coats - Two coats 53 Line Acrylic Enamel.

C. Quality Standard - Color selections are shown are from Pittsburgh Paint & Glass (PPG), Pittsburgh, PA (800) 441-9695

D. Other Approved Manufacturers
   1. Paint of equal quality and similar colors from following Manufacturers may be submitted for Architect's approval before use. Maintain specified colors, shades, and contrasts.
      a. Benjamin Moore, Montvale, NJ (888) 236-6667 or (201) 573-9600
      b. ICI Dulux, Cleveland, OH (800) 984-5444 or (216) 984-5444
      c. Sherwin Williams, Cleveland, OH (800) 321-8194 or (216) 566-2000

PART 3 EXECUTION

3.1 APPLICATION

A. Labels
   1. Identify following items with specified labels fastened to equipment with screws -
      a. Thermostats and control panels in mechanical rooms
      b. Roof Top AC Units
      c. Exhaust Fans
   2. Labels shall contain following data engraved -
      a. Equipment mark noted on Drawings (ie, AC-1)
      b. Area served (ie, ChemLab)

B. Painting
   1. Only painted legends, directional arrows, and color bands are acceptable.
   2. Locate identifying legends, directional arrows, and color bands at following

points on exposed piping of each piping system -

a. Adjacent to each item of equipment.
b. At point of entry and exit where piping goes through wall.
c. On each riser and junction.
d. Every 25 feet on long continuous lines.
e. Stenciled symbols shall be one inch high and black.

3.2 SCHEDULES

A. Schedule of Abbreviations for Pipe Stencils and Equipment Identification and Background Colors for Pipe Identification

1. Apply stenciled symbols as follows -

Pipe Type	Symbol
Potable Hot Water	HW
Potable Cold Water	CW

2. Apply stenciled symbols and continuous painting as follows -

Pipe Type	Pipe Color	Symbol
Gas	Yellow	GAS

END OF SECTION

SECTION 15081

DUCT INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install thermal wrap duct insulation as described in Contract Documents.

B. Related Work
   1. Section 15812 - Steel Ductwork
   2. Section 15820 - Acoustic duct liner

PART 2 PRODUCTS

2.1 MATERIALS

A. Thermal Wrap Duct Insulation
   1. 1-1/2 inch thick fiberglass with factory-laminated, reinforced aluminum foil scrim kraft facing and density of one lb/ per cu ft.
   2. Thermal Conductivity - 0.27 BTU in/HR SF deg F at 75 deg F maximum.
   3. Approved Types And Manufacturers -
      a. Type 100 standard duct insulation by Certainteed St Gobain, Valley Forge, PA
      b. Microlite FSK by Johns-Manville, Denver, CO
      c. Duct Wrap FSK by Knauf Fiber Glass, Shelbyville, IN
      d. Alley Wrap FSK by Manson Insulation Inc, Brossard, BC, Canada
      e. FRK by Owens-Corning, Toledo, OH

PART 3 EXECUTION

3.1 INSTALLATION

A. Thermal Wrap Duct Insulation
   1. Install insulation as follows -
      a. On air ducts outside building insulation envelope.
      b. On other air ducts where indicated on Drawings.
   2. Wrap insulation tightly on duct work with circumferential joints butted and longitudinal joints overlapped minimum 2 inches.
      a. Do not compress insulation except in areas of structural interference. Minimum thickness at corners shall be one inch thick.
      b. Remove insulation from lap prior to stapling.
      c. Staple seams at approximately 16 inches on center with outward clenching staples.
      d. Seal seams with foil vapor barrier tape or vapor barrier mastic. Seal penetrations of facing to provide vapor tight system.

B. Insulate outside of ceiling diffuser drops and duct silencers same as ductwork.

END OF SECTION

SECTION 15083

POTABLE WATER PIPE INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install insulation on hot and cold water lines, fittings, valves, and accessories as described in Contract Documents.

B. Related Sections
   1. Section 15141 - Potable Water Piping Systems

PART 2 PRODUCTS

2.1 MATERIALS

A. Above Grade
   1. Insulation For Piping -
      a. Snap-on glass fiber or melamine foam pipe insulation, or heavy density pipe insulation with factory vapor jacket
      b. Insulation Thickness -

Service Water Temperature Deg F	Pipe Sizes in inches Up to 1-1/4	1-1/2 to 2	Over 2
170 - 180	1	1-1/2	2
140 - 160	1/2	1	1-1/2
45 - 130	1/2	1/2	1

      c. Quality Standards - Techlite SSL by Accessible Products or Fiberglas ASJ by Owens-Corning.
      d. Approved Manufacturers -
         1) Accessible Products
         2) Childers Products
         3) Knauf
         4) Manson
         5) Owens-Corning
         6) Johns-Manville
   2. Fitting, Valve, And Accessory Covers -
      a. PVC
      b. Quality Standard - Techlite SSL-ASJ by Accessible Products
      c. Approved Manufacturers -
         1) Accessible Products
         2) Knauf
         3) Speedline
         4) Zeston by Johns-Manville

2.2 MANUFACTURERS

A. Accessible Products Inc, Tempe, AZ
B. Childers Products Co, Eastlake, OH (440) 953-5200
C. Johns-Manville, Denver, CO
D. Speedline,

PART 3 EXECUTION

3.1 APPLICATION

A. Above Grade Piping

1. Apply insulation to clean, dry piping with joints tightly butted.
2. Install insulation in manner to facilitate removal for repairs. Place sections or blocks so least possible damage to insulation will result from inspection or repairs of piping or equipment.
3. Piping up to 1-1/4 Inch Diameter - Adhere 'factory applied vapor barrier jacket lap' smoothly and securely at longitudinal laps with white vapor barrier adhesive. Adhere 3 inch wide self-sealing butt joint strips over end joints.
4. Piping 1-1/2 Inch Diameter And Larger -
   a. Use broken-joint construction in application of two-layer covering.
   b. Fill cracks and depressions with insulating cement mixed to thick plastic paste. Apply by hand in several layers to make up total specified thickness. Final layer shall have smooth uniform finish before application of covering.
   c. Apply one heavy brush coat of sizing such as Foster Sealfast 30-36 or Arabol lagging adhesive to canvas prior to painting.
5. Fittings, Valves, And Accessories -
   a. Do not apply insulation over flanged joints or victaulic couplings until piping has been brought up to operating temperature and flange bolts have been fully tightened. Insulate valves so wheel, stem, and packing nut are exposed.
   b. Insulate with same type and thickness of insulation as pipe, with ends of insulation tucked snugly into throat of fitting and edges adjacent to pipe insulation tufted and tucked in.
   c. In Piping Up To 1-1/4 Diameter - Cover insulation with one piece fitting cover secured by stapling or taping ends to adjacent pipe covering.
      1) Alternate Method - Insulate fittings, valves, and accessories with one inch of insulating cement and vapor seal with two 1/8 inch wet coats of vapor barrier mastic reinforced with glass fabric extending 2 inches onto adjacent insulation.
   d. For Piping 1-1/2 inches To 2 Inches - Insulate with hydraulic setting insulating cement or equal, to thickness equal to adjoining pipe insulation. Apply final coat of fitting mastic over insulating cement.
   e. For Piping 2-1/2 inches and larger - Insulate with segments of molded insulation securely wired in place and coated with skim coat of insulating cement. Apply fitting mastic, fitting tape and finish with final coat of fitting mastic.
   f. Except where pre-formed, pre-finished covers are used, finish fittings regardless of pipe size with 4 oz canvas coated with vapor barrier adhesive.
6. Pipe Hangers -
   a. Do not allow pipes to come in contact with hangers.
   b. Provide 16 ga by 6 inch long galvanized shields at each pipe hanger to protect pipe insulation from crushing by clevis hanger.
7. Protect insulation wherever leak from valve stem or other source might drip on insulated surface, with aluminum cover or shield rolled up at edges and sufficiently large in area and of shape that dripping will not splash on surrounding insulation.

END OF SECTION

SECTION 15101

GENERAL PIPING REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. General piping material requirements and installation procedures applicable to all piping systems.

B. Related Sections
   1. Section 15051 - General Mechanical Requirements

PART 2 PRODUCTS

2.1 COMPONENTS

A. Pipe And Pipe Fittings - Use Only domestic (U.S.) made pipe and pipe fittings on Project. Weld-O-Let and Screw-O-Let fittings are acceptable.

B. Sleeves - Standard weight galvanized iron pipe, Schedule 40 PVC, or 14 ga galvanized sheet metal two sizes larger than bare pipe or insulation on insulated pipe.

2.2 MANUFACTURED UNITS

A. Valves - Valves of same type shall be of same manufacturer.

B. Pipe Hangers
   1. Adjustable, malleable iron clevis type, swivel loop type, or swivel split ring type of a diameter adequate to support pipe size.
   2. Approved Manufacturers -
      a. Globe Strut by Globe Pipe Hanger
      b. B-Line
      c. Grinnell
      d. Michigan Hanger
      e. Superstrut

C. Di-Electric Unions
   1. Suitable for at least 175 PSIG WP at 250 deg F.
   2. Approved Manufacturers -
      a. EPCO
      b. Victaulic
      c. Watts Regulator

2.2 MANUFACTURERS

A. B-Line Systems, Highland, IL
B. EPCO Products Inc, Fort Wayne, IN
C. Globe Pipe Hanger Products Inc, Cleveland, OH
D. Grinnell Corp, Exeter, NH
E. Michigan Hanger Company, Niles, OH
F. Superstrut by Thomas & Betts, Memphis, TN
G. Victaulic Company of America, Easton, PA

H. Watts Regulator Co, North Andover, MA

PART 3 EXECUTION

3.1 INSTALLATION

A. Interface With Other Work

1. Furnish sleeves, inserts, supports, and equipment that are to be installed by others in sufficient time to be incorporated into construction as work proceeds. Locate these items and see they are properly installed.

B. Furnish and install complete system of piping, valved as indicated or as necessary to completely control entire apparatus.

1. Pipe drawings are diagrammatic and indicate general location and connections. Piping may have to be offset, lowered, or raised as required or directed at site. This does not relieve this Division from responsibility for proper erection of systems of piping in every respect.
2. Arrange piping to not interfere with removal of other equipment, ducts, or devices, or block access to doors, windows, or access openings.
   a. Arrange so as to facilitate removal of tube bundles.
   b. Provide accessible flanges or ground joint unions, as applicable for type of piping specified, at connections to equipment and on bypasses.
      1) Make connections of dissimilar metals with di-electric unions.
      2) Install valves and unions ahead of traps and strainers. Provide unions on both sides of traps.
   c. Do not use reducing bushings, street elbows, bull head tees, close nipples, or running couplings.
3. Do not install piping in shear walls.

C. Properly support piping and make adequate provisions for expansion, contraction, slope, and anchorage.

1. Cut piping accurately for fabrication to measurements established at site. Remove burr and cutting slag from pipes.
2. Work piping into place without springing or forcing. Make piping connections to pumps and other equipment without strain at piping connection. Remove bolts in flanged connections or disconnect piping to demonstrate that piping has been so connected, if requested.
3. Make changes in direction with proper fittings.
4. Suspend piping from roof trusses or clamp to vertical walls using Unistrut and clamps. Do not hang pipe from other pipe, equipment, or ductwork. Laying of piping on any building element is not allowed.
5. Supports For Horizontal Piping -
   a. Support metal piping at 96 inches on center maximum for pipe 1-1/4 inches or larger and 72 inches on center maximum for pipe 1-1/8 inch or less.
   b. Support thermoplastic pipe at 48 inches on center maximum.
   c. Provide support at each elbow. Install additional support as required.
6. Supports for Vertical Piping -
   a. Place riser clamps at each floor or ceiling level.
   b. Securely support clamps by structural members which in turn are supported directly from building structure.
   c. Provide clamps as necessary to brace pipe to wall.
7. Insulate hangers for copper pipe from piping by means of at least two layers of Scotch 33 plastic tape.
8. Expansion of Thermoplastic Pipe -
   a. Provide for expansion in every 30 feet of straight run.
   b. Provide 12 inch offset below roof line in each vent line penetrating roof.

D. Provide sleeves around pipes passing through masonry walls. Do not place sleeves around soil, waste, or vent lines passing through concrete slabs on grade. Seal sleeves with specified sealants.

E. Provide spring clamp plates (escutcheons) where pipes run through walls, floors, or ceilings and are exposed in finished locations of building. Plates shall be chrome plated heavy brass of plain pattern and shall be set tight on pipe and to building surface.

3.2 FIELD QUALITY CONTROL

A. Site Tests
   1. Perform tests on mechanical piping systems. Furnish devices required for testing purposes.
   2. Replace material or workmanship proven defective with sound material at no additional cost to Owner. Repeat tests on new material, if requested.

3.3 CLEANING

A. Remove dirt, grease, and other foreign matter from each length of piping before installation.
   1. After each section of piping used for movement of water is installed, flush with clean water, except where specified otherwise.
   2. Arrange temporary flushing connections for each section of piping and arrange for flushing total piping system.
   3. Provide temporary cross connections and water supply for flushing and drainage and remove after completion of work.

3.4 PROTECTION

A. Cap or plug open ends of pipes and equipment to keep dirt and other foreign materials out of system. Do not use plugs of rags, wool, cotton waste, or similar materials.

END OF SECTION

SECTION 15141

POTABLE WATER PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Perform excavating and backfilling required by work of this Section.
   2. Furnish and install potable water piping complete with necessary valves, connections, and accessories inside building and connect with outside utility lines 5 feet from building perimeter as described in Contract Documents.

B. Related Sections
   1. Division 02 -
      a. Criteria for performance of excavation and backfill
      b. Potable water piping from 5 feet from building perimeter to main
   2. Section 15051 - General Mechanical Requirements
   3. Section 15083 - Potable Water Piping Insulation
   4. Section 15101 - General Piping Requirements

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM B 88-96, 'Standard Specification for Seamless Copper Water Tube'

1.3 SUBMITTALS

A. Quality Assurance / Control - Written report of sterilization test

PART 2 PRODUCTS

2.1 COMPONENTS

A. Pipe
   1. Above-Grade - Copper meeting requirements of ASTM B 88, Type L.
   2. Below-Grade - Copper meeting requirements of ASTM B 88, Type K. 3/4 inch minimum under slabs.

B. Fittings - Wrought copper

C. Connections
   1. Above-Grade - Sweat copper type with 95/5 or 96/4 Tin-Antimony solder, Bridgit solder, or Silvabrite 100 solder. Use only lead-free solder.
   2. Below Grade -
      a. Copper -
         1) Brazed using following type rods -
            a) Copper to Copper Connections -
               (1) AWS Classification BCuP-4 Copper Phosphorus (6percent silver).
               (2) AWS Classification BCuP-5 Copper Phosphorus (15 percent silver).
            b) Copper to Brass or Copper to Steel Connections - AWS Classification BAg-5 Silver (45 percent silver).
            c) Do not use rods containing Cadmium.

2) Brazing Flux -
a) Approved Manufacturers -
(1) Stay-Silv white brazing flux by J W Harris
(2) High quality silver solder flux by Handy & Harmon
3) Joints under slabs acceptable only if allowed by local codes.

D. Ball Valves
1. Use ball valves exclusively unless otherwise specified. Ball valves shall be by single manufacturer from approved list below. Valves shall be two piece, full port for 150 PSI SWP.
3. Quality Standard - Nibco T585 or S585, *S595*
4. Approved Manufacturers -
a. ConBraCo 'Apollo'
b. Hammond
c. Honeywell-Braukmann
d. Jenkins
e. Milwaukee
f. Nibco
g. Stockham
h. Watts

E. Stop And Waste Valves
1. Approved Manufacturers And Models -
a. Mueller - Mark II Oriseal stop and waste valve H10288
b. Mueller - Buffalo screw type curb box H-10350 complete with lid and H-10349 enlarged base

F. Combination Pressure Reducing Valve / Strainer
1. Integral stainless steel strainer, or separate 'Y' strainer installed upstream of pressure reducing valve.
2. Built-in thermal expansion bypass check valve.
3. Quality Standard - Watts U5B
4. Approved Manufacturers -
a. Cash Valve
b. Cla-Val - Hi Capacity
c. Con Braco - 36C
d. Honeywell-Braukmann
e. Spence - Hi Capacity
f. Watts
g. Wilkins

2.2 MANUFACTURERS

A. Cash Valve, Cullman, AL
B. Cla-Val Company, Costa Mesa, CA
C. ConBraco Industries Inc, Matthews, NC
D. Hammond Valve, Prairie Du Sac, WI
E. Handy & Harmon Products Div, Fairfield, CT
F. J W Harris Co Inc, Cincinnati, OH
G. Honeywell-Braukmann,
H. Jenkins Valves Inc, Bolingbrook, IL
I. Milwaukee Valve Co, Milwaukee, WI
J. Mueller Co, Decatur, IL
K. Nibco Inc, Elkhart, IN
L. Spence Engineering Co, Walden, NY
M. Stockham Valves, Birmingham, AL
N. Watts Regulator Co, Andover, MA

O. Wilkins Operation, Paso Robles, CA

PART 3 EXECUTION

3.1 INSTALLATION

A. Below Grade
   1. Install piping under slabs without joints where possible.
   2. Insulate water piping buried within building perimeter.
   3. Bury water piping 6 inches minimum below bottom of slab and encase in 2 inches minimum of sand.

B. Locate cold water lines a minimum of 6 inches from hot water line.

3.2 FIELD QUALITY CONTROL

A. Site Tests - Before pipes are covered, test systems in presence of Architect at 125 psi hydrostatic pressure for 4 hours and show no leaks. Disconnect equipment not suitable for 125 psig pressure from piping system during test period.

3.3 CLEANING

A. Sterilize potable water system with solution containing 200 parts per million minimum of available chlorine and maintaining pH of 7.5 minimum. Introduce chlorinating materials into system in manner approved by Architect. Allow sterilization solution to remain for 24 hours and open and close valves and faucets several times during that time.

B. After sterilization, flush solution from system with clean water until residual chlorine content is less than 0.2 parts per million.

C. Water system will not be accepted until negative bacteriological test is made on water taken from system. Repeat dosing as necessary until such negative test is accomplished.

END OF SECTION

SECTION 15150

SANITARY WASTE AND VENT PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install soil, waste, and vent piping systems within building and connect to existing system as shown.

B. Related Sections
   1. Division 07 -
      a. Furnishing and installing of roof jacks and pipe flashing at roof
      b. Quality of firestopping material
   2. Section 15051 - General Mechanical Requirements
   3. Section 15101 - General Piping Requirements

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 74-98, 'Standard Specification for Cast Iron Soil Pipe and Fittings'
   2. ASTM C 564-97, 'Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings'
   3. ASTM D 2235-96a, 'Standard Specification for Solvent Cement for ABS Plastic Pipe and Fittings'
   4. ASTM F 628-97a, 'Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings with a Cellular Core'

PART 2 PRODUCTS

2.1 COMPONENTS

A. Above Grade Piping And Vent Lines
   1. Approved Type -
      a. ABS Schedule 40 cellular core plastic pipe meeting requirements of ASTM F 628 joined with pipe cement meeting requirements of ASTM 2235.

C. Fittings - ABS Schedule 40 cellular core plastic pipe fittings meeting requirements of ASTM F 628 joined with pipe cement meeting requirements of ASTM 2235.

PART 3 EXECUTION

3.1 INSTALLATION

A. Thermoplastic Pipe And Fittings
   1. General - Piping and joints shall be clean and installed according to Manufacturer's recommendations. Break down contaminated joints, clean seats and gaskets and reinstall.
   2. Above Grade - Locate pipe hangers every 4 feet on center maximum and at elbows.

C. Install piping so cleanouts may be installed as follows
   1. Where shown on Drawings and near bottom of each stack and riser.

2. At every 135 degrees of accumulative change in direction for horizontal lines.
3. Every 100 feet of horizontal run.
4. Extend piping to accessible surface. Do not install piping so cleanouts must be installed in carpeted floors. In such locations, configure piping so wall type cleanouts may be used.

D. Each fixture and appliance discharging water into sanitary sewer or building sewer lines shall have seal trap in connection with complete venting system so gasses pass freely to atmosphere with no pressure or syphon condition on water seal.

E. Vent entire waste system to atmosphere. Join lines together in fewest practicable number before projecting above roof. Set back vent lines so they will not pierce roof near edge or valley. Vent line terminations shall be
1. 6 inches minimum above roof and 12 inches minimum from any vertical surface.
2. Same size as vent pipe.
3. In areas where minimum design temperature is below 0 deg F or where frost or snow closure may be possible -
   a. Vent line terminations shall be same size as vent pipe, except no smaller than 2 inches in diameter.
   b. Vents shall terminate 10 inches minimum above roof or higher if required by local codes.

F. Furnish and install firestopping at penetrations of fire-rated structures as required under Sections 07840 and 15051.

3.2 FIELD QUALITY CONTROL

A. Site Tests
1. Conduct tests for leaks and defective work. Notify Architect prior to testing.

END OF SECTION

SECTION 15181

CONDENSATE DRAIN PIPING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install condensate drain piping as described in Contract Documents.

B. Related Sections
   1. Section 15051 - General Mechanical Requirements
   2. Section 15101 - General Piping Requirements

PART 2 PRODUCTS

2.1 MATERIALS

A. Condensate Drains
   1. Type M copper tubing for condensate drains from all cooling coils and other condensate producing equipment or coils.
   2. 3 inch deep seal, vented water trap adjacent to cooling coil connection.

PART 3 EXECUTION

3.1 INSTALLATION

A. Condensate Drains
   1. Support piping and protect from damage.

END OF SECTION

SECTION 15196

NATURAL GAS PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install gas piping and fittings within building and from building to meter including connection to meter as described in Contract Documents.

B. Related Sections
   1. Division 09 - Painting of exterior piping
   2. Section 15051 - General Mechanical Requirements
   3. Section 15101 - General Piping Requirements

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 53-98, 'Standard Specification for Pipe, Steel and Hot-Dipped, Zinc-Coated, Welded and Seamless'
   2. ASTM A 234-97, 'Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperature Service'

1.3 QUALITY ASSURANCE

A. Qualifications
   1. Welders shall be certified and bear evidence of certification 30 days before commencing work on project. If there is doubt as to proficiency of welder, Owner's Representative may require welder to take another test. This shall be done at no cost to Owner. Certification shall be by Pittsburgh Testing Laboratories or other approved authority.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Not used.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Above-Ground Pipe And Fittings - Black carbon steel, butt welded, Schedule 40 pipe meeting requirements of ASTM A 53. Welded forged steel fittings meeting requirements of ASTM A 234 or standard weight malleable iron screwed.

2.2 MANUFACTURED UNITS

A. Valves
   1. 125 psi bronze body ball valve, UL listed
   2. Approved Models And Manufacturers -
      a. Apollo Series 80-100 by ConBraCo
      b. FIG-30-A by Jenkins Valves
      c. Model T-204 by Jomar International
      d. 3410 by McDonald Valves & Fittings

e. BCI-100T (with tee handle) by Milwaukee Valve
f. 'Red Cap' gas ball valve by PGL Corp
g. Model B-6000-UL by Watts Regulator

B. Cocks
1. Gauge Cocks - Conbraco #41-560 bronze gauge cock.
2. Lubricated Balancing Cocks -
a. Square head type suitable for 175 psig wog at 150 deg F.
b. Wrench handle for each valve.
c. 2 inches And Smaller -
1) Cast iron body with screwed connections.
2) Approved Manufacturers And Models -
a) Powell - 2200
b) Walworth - 1796
d. 2-1/2 to 5 inches -
1) Cast iron body with flanged connections.
2) Approved Manufacturers And Models -
a) Powell - 2201
b) Walworth - 1797F
e. 6 inches And Larger -
1) Cast iron body with flanged connections.
2) Approved Manufacturers And Models -
a) Powell - 2201
b) Walworth - 1718F

C. Lab Table Top Valves
1. Deck Mounted Turret.
a. Turret w/Two ball valves.
b. Chrome plated brass with removable ten serration hose end for each valve.
c. Forged brass lever handles to have colored index disc.
d. To have a 4"x3/8" IPS mounting shank W/Locknut and washer
e. Approved Manufacturers And Models -
1) L4200FH-132A-WSA by WaterSaver
2) Approved equal by others

2.3 MANUFACTURERS

A. ConBraCo Industries, Inc, Matthews, NC
B. Jenkins Valves Inc, Bolingbrook, IL
C. Jomar International, Madison Heights, MI
D. KOSO by Pacific Seismic Products Inc, Lancaster, CA
E. McDonald Valves & Fittings Inc, Oklahoma City, OK
F. Milwaukee Valve Co, Milwaukee, WI
G. Powell Valves, Cincinnati, OH
H. 'Red Cap' gas ball valve by PGL Corp,
I. Walworth Company, Houston, TX
J. Watts Regulator Co, North Andover, MA

PART 3 EXECUTION

3.1 INSTALLATION

A. Steel pipe installed through air plenums, in walls, and pipes 2-1/2 inches and larger shall have welded fittings and joints. Other steel pipe may have screwed or welded fittings.

B. On lines serving gas-fired equipment, install gas cocks adjacent to equipment outside of

equipment cabinet and easily accessible.

D. Install 6 inch long minimum dirt leg, with pipe cap, on vertical gas drop serving each gas-fired equipment unit.

E. Use fittings for changes of direction in pipe and for branch runouts.

3.2 FIELD QUALITY CONTROL

A. Site Tests - Before pipes are buried or concealed from view, test systems in Architect's presence at 60 psig for 4 hours and show no drop in pressure.

END OF SECTION

SECTION 15410

PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install plumbing fixtures as described in Contract Documents.

B. Related Sections
   1. Section 15051 - General Mechanical Requirements
   2. Section 15141 - Potable Water Piping Systems

PART 2 PRODUCTS

2.1 GENERAL

A. Interior exposed pipe, valves, and fixture trim, including trim behind custom casework doors, shall be chrome plated.

B. Do not use flexible water piping.

C. Flow Control Fittings - Vandal proof type and fit faucet spout of fixture used. Flow shall be controlled as required by local codes.

2.2 MANUFACTURED UNITS

A. Water Closets -
   1. Maximum water usage of 1.6 gallons per flush.
   2. Flush Valve, floor mounted, floor outlet, elongated bowl, vitreous china ADA accessible fixture and installation.
      a. 18 inch maximum rim height.
      b. Approved Manufacturers -
         1) American Standard - Madera 2205.100
         2) Briggs - Carlton 7792
         3) Eljer - Preserver III-4215
   3. Seats -
      a. Provide split front type with check hinge.
      b. Approved Manufacturers And Models for Standard And Handicap Accessible Fixtures -
         1) Bemis - 1655-C
         2) Beneke Corporation - Series 527 - CH
         3) Church - No. 9500-C
         4) Kohler - K-4666-C
         5) Olsonite - 95CC
         6) Sperzel - 50EWCH
   4. Flush Valve - Sensor Operated
      a. Low flow, 1.6 gallons per flush maximum
      b. Approved Manufacturers And Models -
         1) Sloan - RESS-U1.5
         2) Zurn - AR 6000-XL

B. Urinals - Waterless Type

1. Standard Fixture -
    a. Approved Manufacturers -
        1) Falcon - F-1000
2. Handicap Fixture -
    a. Approved Manufacturers -
        1) Falcon - F-1000
3. Carrier / Support -
    a. Approved Manufacturers -
        1) Josam
        2) J. R. Smith
        3) Wade
        4) Zurn

C. Standard Lavatories and hand wash sinks.
1. Self Supporting Fixtures -
    a. Size - 20 by 18 inches
    b. Approved Manufacturers -
        1) American Standard - New Lucern
        2) Crane - Norwich
        3) Eljer - Delwyn
        4) Kohler - Greenwich
    c. Carrier / Support -
        1) Approved Manufacturers -
            a) Ancon
            b) Josam
            c) J. R. Smith
            d) Wade
            e) Zurn
2. Fittings:

    a. Faucet and Drain:
        1) Battery-operated automatic faucet.
        2) Provide flow control fitting on each spout in place of aerator.
        3) Accessories:
            a) Cast brass spout.
            b) 4-inch cover plate.
            c) Mechanical mixing valve.
            d) Solenoid valve.
            e) Control module and transformer.
            f) Hermetically sealed electronics.
            g) Inlet checks and strainer.
        4) Approved Products:
            a) Chicago: 680-4 Galileo with 327A strainer.
            b) Sloan: EBF-650 with ETF-460A strainer.
            c) Symmons: S-6080-G with grid strainer.
            d) Zurn: Z6913-G with grid strainer.
    b. Supply pipes with stops -
        1. Provide stuffing box and chrome plating.
        2. Approved Manufacturers-
            a) Brass Craft -
            b) Eastman -
    c. Trap -
        1. 17 ga tube 'P' trap, chrome plated
        2. Approved Manufacturers -
            a) Dearborn
            b) Keeney Manufacturing
            c) Sanitary Dash

3. Safety Covers -
   a. Provide protection on water supply pipes and on trap.
   b. Approved Manufacturers And Models -
      1) Trapwrap by Brocar Products Inc
      2) Pro Wrap by McGuire Products
      3) Handy-Shield by Plumberex Specialty Products
      4) Handi Lav-Guard by TrueBro

D. Lab work station Sink
   1. Fixture -
      a. Undermount, 18 ga stainless steel with satin finish.
      b. Size - 13 by 16 inches
      c. Approved Products -
      1) Elkay - ELU1316
      2) Just -
   2. Fittings -
      a. Supply -
         1) Provide removeable ten serration hose end in place of aerator.
         2) Approved Products -
         a) WaterSaver L611VB-180
         b) Approved equal by others
      b. Supply with Stops -
         1) Provide stuffing box and chrome plating.
         2) Approved Products -
         a) Brass Craft - TCR 1912 A-CP
         b) Zurn - Z8804 LR-PC
      c. Waste -
         1) Approved Products -
            a) Eljer - 803-0570
            b) Elkay - LK-18 C P
            c) Just - J-35-FS
            d) Kohler - K-8807
            e) Zurn - Z-8739
      d. Trap -
         1) 17 ga tube 'P' trap, chrome plated
         2) Approved Manufactuers -
            a) Dearborn
            b) Keeney Manufacturing
            c) Zurn Traps & Supplies

J. Floor Drains
   1. FD-1 -
      a. Approved types with deep seal trap and chrome plated strainer.
      b. Approved Manufacturers And Models -
         1) Ancon - FD-100-C-A with MS-950-H trap
         2) Josam - 30000Z-5A with 88152 trap
         3) J. R. Smith - 2010-A with 7222 trap
         4) Wade - 1100 with 2450-T trap
         5) Zurn - 415 with Z 1000 trap

K. Cleanouts
   1. Furnish wall cleanouts with chrome wall cover and screw.
   2. Finished Wall -
      a. Approved Manufacturers And Models -
         1) Ancon - CO-460-RD
         2) Josam - 58790
         3) J. R. Smith - 4530
         4) Wade - W8460R
         5) Zurn - Z-1446

L. Acid Neutralization System
   1. Furnish and install Under Sink Cartridge at each laboratory sink.
      a. PHIX Cartridge System by Greenturtle.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install fixtures including traps and accessories with accessible stop or control valve in each hot and cold water branch supply line.

B. Mounting
   1. Urinals -
      a. Standard - 20 inches from floor to bottom lip.
      b. Handicap Accessible - 17 inches from floor to bottom lip.
      c. Install urinals using carriers.
   2. Self Supporting Lavatories - Install using carriers.

C. Make fixture floor connections with approved brand of cast iron floor flange, soldered or calked securely to waste pipe. Make joints between fixtures and floor flanges tight with approved fixture setting compound or gaskets. Calk between fixtures and wall and floor with white butyl rubber non-absorbent sealant. Point edges.

3.2 CLEANING

A. Polish chrome finish at completion of Project.

END OF SECTION

SECTION 15731

PACKAGED AIR CONDITIONERS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install packaged air conditioning units as described in Contract Documents.

B. Related Sections
   1. Section 15051 - General Mechanical Requirements

1.2 SYSTEM DESCRIPTION

A. Performance Requirements
   1. SEER rating as defined by ARI shall be not less than 10.0 for units 5 tons and smaller.
   2. EER rating as defined by ARI shall be not less than 9.5 for units larger than 5 tons.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements
   1. Air-Cooled Condensing Unit Section shall be UL approved and rated according to ARI Standards.
   2. Air delivery of units certified in accordance with standard test code for centrifugal fans adopted by AMCA.
   3. Furnace sections shall be AGA approved.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Ship units with lifting angles and fully charged with refrigerant R-22.

1.5 WARRANTY

A. 5 year warranty on compressors.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Air Conditioning Units
   1. Units shall be completely factory assembled and tested. Units shall include following components and features -
      a. Condenser coils
      b. Condenser fans and motors
      c. Interconnected wiring
      d. Prewired control panel
      e. Filter section
      f. Factory installed 100 percent modulating economizer cycle including motorized dampers and controls
      g. Corrosion resistant all-weather cabinet
   2. Air-Cooled Condensing Unit Section -
      a. Unit shall contain a strainer-dryer.
      b. Furnish unit with time delay or cycle protection to prevent short cycling.

c. Condenser Coil - 1/2 inch outside diameter copper tube with aluminum fins.
d. Compressor -
1) Hermetic or semi-hermetic type mounted on vibration isolators.
2) Equip with crankcase heater.
e. Condenser Fan - Axial flow type propeller fan.
f. Refrigerant Coils - Constructed of copper tubes with mechanically bonded aluminum plate fins.
g. Refrigerant lines shall have -
1) Flexible connections
2) Suction and liquid line service valves
3) Charging valves
4) Receiver valve

3. Furnace Section -
a. Aluminized or chromized heat exchanger.
b. Built-in draft diverter.
c. Gas shut-off valve.
d. High limit switches.
e. Fan switch safety pilot and control transformer.
f. Automatic electric ignition.

4. Fan Section -
a. Centrifugal Fan - One or more.
1) Double inlet.
2) Double width forward curved Class I.
3) Constructed and tested in accordance with AMCA requirements.
b. Furnish with flexible connections with weather protection on supply and return air take-offs.

5. Controls - Low ambient and dual pressure. Pre-wired.
6. Cabinets - Galvanized, weather-proof, and coated inside and outside with corrosion-resistant paint.
7. Quality Standard - Lennox - GCS16, 20
8. Acceptable Manufacturers -
a. Carrier Corp, Syracuse, NY (800) 227-7437 or (315) 432-6000 www.carrier-commercial.com
b. Lennox Industries, Dallas, TX (972) 497-5000 www.lennox.com
c. Trane Co, La Crosse, WI (608) 787-2000 www.trane.com

2.2 ACCESSORIES

A. Vibration Isolators - Spring type

PART 3 EXECUTION

3.1 INSTALLATION

A. Install units on vibration isolators.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service - Equipment Manufacturer to provide start-up service.

END OF SECTION

SECTION 15801

GENERAL DUCT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. General procedures and requirements for ductwork.
   2. Repair leaks in ductwork, as identified by smoke test, at no additional cost to Owner.

B. Related Sections
   1. Division 09 - Quality of acoustic sealant
   2. Division 13 - Air test and balance and smoke testing of ductwork
   2. Section 15051 - General Mechanical Requirements

1.2 SUBMITTALS

A. Samples - Sealer and gauze proposed for sealing ductwork.

B. Quality Assurance / Control
   1. Manufacturer's installation manuals providing detailed instructions on assembly, joint sealing, and system pressure testing for leaks.
   2. Specification data on sealer and gauze proposed for sealing ductwork.

1.3 QUALITY ASSURANCE

A. Requirements - Construction details not specifically called out in this Section shall conform to applicable requirements of SMACNA HVAC Duct Construction Standards.

PART 2 PRODUCTS

A. Finishes Where Applicable - Colors as selected by Architect.

B. Duct Hangers
   1. One inch by 22 ga galvanized steel straps or steel rods as shown on Drawings, and spaced not more than 96 inches apart. Do not use wire hangers.
   2. Attaching screws at trusses shall be 2 inch No. 10 round head wood screws. Nails not allowed.

PART 3 EXECUTION

3.1 INSTALLATION

A. During installation, protect open ends of ducts by covering with plastic sheet tied in place to prevent entrance of debris and dirt.

B. Make necessary allowances and provisions in installation of sheet metal ducts for structural conditions of building. Revisions in layout and configuration may be allowed, with prior written approval of Architect. Maintain required airflows in suggesting revisions.

C. Hangers And Supports
   1. Install pair of hangers close to each transverse joint and elsewhere as required by spacing indicated in table on Drawings.

2. Install upper ends of hanger securely to floor or roof construction above by method shown on Drawings.
3. Attach strap hangers to ducts with cadmium-plated screws. Use of pop rivets or other means will not be accepted.

3.2 CLEANING

A. Clean interior of duct system before final completion.

END OF SECTION

SECTION 15812

LOW-PRESSURE STEEL DUCTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install above-grade low-pressure steel ducts and related items as described in Contract Documents.

B. Products Installed But Not Furnished Under This Section
   1. Duct smoke detectors

C. Related Sections
   1. Division 13 - Smoke testing
   2. Section 15081 - Thermal Insulation for ducts, plemum chambers, and casings
   3. Section 15801 - General Duct Requirements
   4. Section 15915 - Temperature control damper actuators and actuator linkages
   6. Division 16 - Furnishing of duct smoke detectors

1.2 REFERENCES

A. American Society For Testing And Materials
   1. ASTM A 653-98, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'

PART 2 PRODUCTS

2.1 COMPONENTS

A. Sheet Metal
   1. Fabricate ducts, plenum chambers and casings of zinc-coated, lock-forming quality steel sheets meeting requirements of ASTM A 653, with G 60 coating.

B. Ducts
   1. Round Duct -
      a. Spiral Seam - 28 ga minimum for ducts up to and including 14 inches in diameter.
      b. Longitudinal Seam -
         1) 28 ga minimum for ducts up to and including 8 inches in diameter.
         2) 26 ga minimum for ducts over 8 inches and up to 14 inches in diameter.

C. Duct Sealer For Interior Ducts
   1. Approved Models And Manufacturers -
      a. Duct Butter or Butter Tak by Cain Manufacturing Co Inc, Pelham, AL (800) 554-0342 or (205) 663-2200 www.cainmfg.com
      b. DP 1010 by Design Polymerics, Fountain Valley, CA (800) 641-0808 or (714) 432-0600 www.designpoly.com
      c. Stretch Coat by DSC,
      d. S2 by Duro Dyne, Farmingdale, NY (800) 899-3876 or (516) 249-9000 www.durodyne.com
      e. Versa Grip 102 by Hardcast Inc, Wylie, TX (800) 527-7092 or (972) 442-6545 www.hardcast.com

f. 44-41 by Mon-Eco Industries Inc, East Brunswick, NJ (800) 899-6326 or (908) 257-7942
h. Airseal #11 by Polymer Adhesive Sealant Systems Inc, Irving, TX (888) 721-7325
i. Water Base Duct Sealer by United McGill Corp, Columbus, OH (800) 624-5535 or (614) 836-9981 www.unitedmcgillcorp.com

2.2 FABRICATION

A. Ducts
1. Straight and smooth on inside with joints neatly finished.
2. Ducts shall be large enough to accommodate inside acoustic duct liner. Dimensions shown on Drawings are net clear inside dimensions after duct liner has been installed.
3. Duct panels through 48 inch dimension having acoustic duct liner need not be crossbroken or beaded. Crossbreak unlined ducts, duct panels larger than 48 inch vertical and horizontal sheet metal barriers, duct offsets, and elbows, or bead 12 inches on center.
a. Apply cross-breaking to sheet metal between standing seams or reinforcing angles.
b. Center of cross-break shall be of required height to assure surfaces being rigid.
4. Duct drops to diffusers shall be round, square, or rectangular to accommodate diffuser neck. Drops shall be same gauge as branch duct.
a. Seal all joints air tight.
b. Round drops shall be externally insulated.
c. Square and rectangular drops shall be internally lined.

PART 3 EXECUTION

3.1 INSTALLATION

A. Interface With Other Work - Reseal transverse joint duct leaks and seal longitudinal duct joint leaks discovered during air test and balance procedures specified in Section 13352, at no additional cost to Owner.

B. Install internal ends of slip joints in direction of flow. Seal transverse and longitudinal joints air tight using specified duct sealer. Cover horizontal and longitudinal joints on exterior ducts with two layers of specified tape installed with specified adhesive.

B. Securely anchor ducts and plenums to building structure with specified duct hangers attached with screws. Do not hang more than one duct from a duct hanger. Brace and install ducts so they shall be free of vibration under all conditions of operation.

C. Ducts shall not bear on top of structural members.

D. Paint ductwork visible through registers, grilles, and diffusers flat black.

E. Properly flash where ducts protrude above roof.

F. Under no conditions will pipes, rods, or wires be allowed to penetrate ducts.

END OF SECTION

SECTION 15815

NON-METAL DUCTS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install supply air branch duct runouts to diffusers as described in Contract Documents.

B. Related Sections
   1. Section 15801 - General Duct Requirements

PART 2 PRODUCTS

2.1 COMPONENTS

A. Ducts
   1. Formable, flexible, circular duct which shall retain its cross-section, shape, rigidity, and shall not restrict air flow after bending.
      a. Liner - Heavy coated fiberglass cloth fabric
      b. Helix - Corrosion resistant galvanized steel
      c. Insulation - Nominal 1-1/2 inches, 3/4 lb/cu ft density fiberglass insulation with air-tight, polyethylene or polyester core, sheathed in seamless vapor barrier jacket factory installed over flexible assembly.
   2. Assembly, including insulation and vapor barrier, shall meet Class I requirement of NFPA 90A-1989 and be UL 181 rated, with flame spread of 25 or less and smoke developed rating of 50 or under.
   3. Approved Model And Manufacturer -
      a. Type 4m Insulated by Flexmaster USA Inc, Houston, TX (713) 462-7694

B. Cinch Bands - Nylon, 3/8 inch removable and reusable type.

2.2 FABRICATION

A. Liner shall be mechanically locked to helix during helix forming process.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install duct in fully extended condition free of sags and kinks, using 72 inch maximum lengths.

B. Make duct connections by coating exterior of duct collar for 3 inches with duct sealer and securing duct in place over sheet metal collar with specified cinch bands.

END OF SECTION

SECTION 15820

DUCT ACCESSORIES

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install duct accessories in specified ductwork as described in Contract Documents.

B. Related Sections
   1. Section 15801 - General Duct Requirements
   2. Section 15915 - Temperature control damper actuators and actuator linkages

1.2 REFERENCES

A. American Society for Testing and Materials
   1. ASTM A 653-98, 'Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process'
   2. ASTM C 665-98, 'Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing'
   3. ASTM C 1071-98, 'Standard Specification for Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material)'

PART 2 PRODUCTS

2.1 COMPONENTS

A. Acoustical Duct Liner
   1. One inch thick, 1-1/2 lb density fiberglass conforming to requirements of ASTM C 1071. Liner will not support microbial growth when tested in accordance with ASTM C 665.
   2. Approved Products And Manufacturers -
      a. Ultralite or ToughGard by CertainTeed
      b. Duct Liner E-M by Knauf Fiber Glass
      c. Akousti-Liner by Manson Insulation
      d. Aeroflex Plus by Owens Corning
      e. Linacoustic by Johns-Manville
   3. Adhesive -
      a. Approved Water Base Manufacturers And Types -
         1) Cain - Hydrotak
         2) Design Polymerics - DP2501 or DP2502 (CMCL-2501)
         3) Duro Dyne - WSA
         3) Hardcast - IA-901
         4) Kingco - 10-568
         5) Miracle - PF-101
         6) Mon-Eco - 22-67
         7) Polymer Adhesive - Glasstack #35
         8) Techno Adhesive - 133
         9) United McGill - Uni-tack

   4. Fasteners -
      a. Adhesively secured fasteners not allowed.

b. Approved Manufacturers -
1) AGM Industries Inc - 'DynaPoint' Series RP-9 pin
2) Cain
3) Duro Dyne
4) Omark dished head 'Insul-Pins'
5) Gripnails may be used if each nail is installed by 'Grip Nail Air Hammer' or by 'Automatic Fastener Equipment' in accordance with Manufacturer's recommendations.

B. Flexible Equipment Connections
1. 30 oz closely woven UL approved glass fabric, double coated with neoprene.
2. Fire retardant, waterproof, air-tight, resistant to acids and grease, and withstand constant temperatures of 250 deg F.
3. Approved Manufacturers And Models -
a. Cain - N-100
b. Duro Dyne - MFN
c. Elgen - ZLN
d. Ventfabrics - Ventglas
e. Ductmate - ProFlex

C. Duct Access Doors
1. Factory built insulated access door with hinges and sash locks. Construction shall be galvanized sheet metal, 24 ga minimum.
2. Fire and smoke damper access doors shall have a minimum clear opening 12 inches square or as shown on Drawings to easily service fire damper.
3. Approved Manufacturers And Models -
a. AirBalance - Fire/Seal FSA 100
b. Cesco - HAD-10
c. Elgen - Model 85 A
d. Flexmaster - Spin Door
e. Kees Inc - ADH-D
f. Nailor - 085H-01
g. Pottorff - 60-HAD
h. Ruskin - ADH-24

D. Dampers And Damper Accessories
1. Locking Quadrant Damper Regulators -
a. Approved Manufacturers -
1) Duro Dyne - KS-38
2) Ventfabrics - Ventline 555
3) Young - No. 1
2. Concealed Ceiling Damper Regulators -
a. Approved Manufacturers -
1) Cain
2) Duro Dyne
3) Metco Inc
4) Ventfabrics - 666 Ventlok
5) Young - 301
3. Volume Dampers -
a. Factory-manufactured 16 ga galvanized steel, single blade and opposed blade type with 3/8 inch axles and end bearings. Blade width 8 inches maximum. Blades shall have 1/8 inch clearance all around.
1) Damper shall operate within acoustical duct liner.
2) Provide channel spacer equal to thickness of duct liner.
b. Dampers above removable ceiling and in Mechanical Rooms shall have locking quadrant on bottom or side of duct. Otherwise, furnish with concealed ceiling damper regulator and cover plate.

c. Approved Manufacturers And Models -
1) American Warming - VC-2-AA
2) Arrow - OBDAF-207
3) C & S - AC40
4) Cesco - CDS
5) Daniel - CD-OB
6) Greenheck - VCD-20
7) Pottorff - CD-42
8) Ruskin - MD-35
9) UTEMP - CD-OB

4. Motorized Air Dampers -
a. Low leakage type. AMCA certified.
b. Damper Blades -
1) Steel or aluminum airfoil type with mechanically locked blade seals, 8 inch blade width maximum measured perpendicular to axis of damper.
2) Jamb seals shall be flexible metal compression type.
3) Opposed or single blade type.
c. Make provision for damper actuators and actuator linkages to be mounted external of air flow.
d. Approved Manufacturers And Models -
1) Air Balance - AC 526
2) American Warming - AC526
3) Arrow - AFD-20
4) C & S - AC50
5) Cesco - SCDS and SDI
6) Honeywell - D-643
7) Pottorff - CD-52
8) Ruskin - CD-60

5. Backdraft Dampers -
a. Backdraft blades shall be nonmetallic neoprene coated fiberglass type.
b. Stop shall be galvanized steel screen or expanded metal, 1/2 inch mesh.
c. Frame shall be galvanized steel or extruded aluminum alloy.
d. Approved Manufacturers And Models -
1) American Warming - BD-15
2) C & S - BD30
3) Cesco - FBD 101
4) Daniel - FBD-H/V
5) Pottorff - 50FBD
6) Ruskin - NMS2
7) UTEMP - BFEA

E. Air Turns
1. Single thickness vanes. Double thickness vanes not acceptable.
2. 4-1/2 inch wide vane rail. Junior vane rail not acceptable.
3. Single curved blades or vanes, with one inch trailing edge, arranged to permit air to make abrupt turns without appreciable turbulence.
4. Quiet and free from vibration under operating conditions.

G. Branch Tap for Flexible Ductwork
1. Factory-manufactured rectangular-to-round 45 degree leading tap fabricated of 24 ga zinc-coated lock-forming quality steel sheets meeting requirements of ASTM A 653, with G-90 coating.
2. One inch wide mounting flange with die formed corner clips, pre-punched mounting holes, and adhesive coated gasket.
3. Manual Volume Damper -
a. Single blade, 22 ga minimum
b. 3/8 inch minimum square rod with brass damper bearings at each end.

c. Heavy duty locking quadrant on 1-1/2 inch high stand-off mounting bracket attached to side of round duct.

4. Approved Models And Manufacturers -
   a. HETD-L by Daniel
   b. STO by Flexmaster
   c. HET by Sheet Metal Connectors
   d. Team Mechanical

2.2 MANUFACTURERS

A. AGM Industries, Brockton, MA (800) 225-9990
B. Air Balance Inc, Holland, OH (419) 865-5000 www.air-balance.com
C. Air Filter Inc, (800) 875-3442 www.afinc.com
D. American Warming & Ventilating, Holland, OH (419) 865-5000 www.american-warming.com
E. Arrow United Industries, Wyalusing, PA (717) 746-1888 www.arrowunited.com
F. Cain Manufacturing Company Inc, Pelham, AL (800) 554-0342 or (205) 663-2200 www.cainmfg.com
G. C & S Air Products, Montebello, CA (213) 889-6769
H. CertainTeed Corp, Valley Forge, PA (800) 233-8990 or (610) 341-7739 www.certainteed.com
I. Cesco Products, Minneapolis, MN (888) 422-3726 www.cescoproducts.com
J. Daniel Manufacturing, Ogden, UT (801) 622-5924
K. Design Polymerics, Fountain Valley, CA (800) 641-0808 or (714) 432-0600 www.designpoly.com
L. Ductmate Industries Inc, East Monongahela, PA (800) 245-3188 or (412) 258-0500 www.ductmate.com
M. Duro Dyne, Farmingdale, NY (800) 899-3876 or (516) 249-9000 www.durodyne.com
N. Dwyer Instruments Inc, Michigan City, IN (800) 872-9141 or (219) 879-8000 www.dwyer-inst.com
O. American Elgen,
P. Flexmaster USA Inc, Houston, TX (713) 462-7694 www.flexmasterusa.com
Q. Greenheck Corp, Schofield, WI (715) 359-6171 www.greenheck.com
R. Gripnail Corp, East Providence, RI (800) 474-7624 or (401) 431-1791 www.gripnail.com
S. Hardcast Inc, Wylie, TX (800) 527-7092 or (972) 442-6545 www.hardcast.com
T. Honeywell Inc, Minneapolis, MN (800) 328-5111 or (612) 952-2000 www.honeywell.com
U. Industrial Acoustics Co, Bronx, NY (718) 931-8000 www.industrialacoustics.com
V. Johns-Manville, Denver, CO (800) 654-3103 or (303) 978-2000 www.jm.com
W. Kees Inc, Elkhart Lake, WI (920) 876-3391 www.kees.com
X. Kingco - King Adhesive Corp, St Louis, MO (800) 233-8171 or (314) 772-9953
y. Knauf Fiber Glass, Shelbyville, IN (800) 825-4434 or (317) 398-4434 www.knauffiberglass.com
A. Manson Insulation Inc, Brossard, BC Canada (800) 626-7661 or (450) 659-9101
AA. Metco Inc, Salt Lake City, UT (801) 467-1572
AB. Miracle Sealants + Abrasives Co, Irwindale, CA (800) 350-1901 or (626) 814-8988 www.miraclesealants.com
AC. Mon-Eco Industries Inc, East Brunswick, NJ (800) 899-6326 or (908) 257-7942
AD. Nailor Industries Inc, Houston, TX (281) 590-1172 www.nailor.com
AE. Omark Industries,
AF. Owens Corning, Toledo OH (800) 438-7465 or (419) 248-8000 www.owenscorning.com
AG. Polymer Adhesive Sealant Systems Inc, Irving, TX (888) 721-7325
AH. Pottorff Company Inc, Montebello, CA (213) 728-0004
AI. Ruskin Manufacturing, Kansas City, MO (816) 761-7476 www.ruskin.com
AJ. Sheet Metal Connectors Inc, Minneapolis, MN (612) 572-1100 www.smconnectors.com
AK. Team Mechanical, Kaysville, UT (801) 355-9374
AL. Techno Adhesive
AM. Titus, Richardson, TX (972) 699-1030 www.titus-hvac.com

AN. United McGill Corp, Columbus, OH (800) 624-5535 or (614) 836-9981 www.unitedmcgillcorp.com
AO. Utemp Inc, Salt Lake City, UT (801) 978-9265
AP. Ventfabrics Inc, Chicago, IL (800) 621-1207 or (773) 775-4477 www.ventfabrics.com
AQ. Young Regulator Co, Cleveland, OH (216) 663-5646 www.youngregulator.com

2.3 FABRICATION

A. Duct Liner
1. Install mat finish surface on air stream side. Secure insulation to cleaned sheet metal duct with continuous 100 percent coat of adhesive and with 3/4 inch long mechanical fasteners 12 inches on center maximum unless detailed otherwise on Drawings. Pin all duct liner.
2. Accurately cut liner and thoroughly coat ends with adhesive. Butt joints tightly. Top and bottom sections of insulation shall overlap sides. If liner is all one piece, folded corners shall be tight against metal. Ends shall butt tightly together.
3. Coat longitudinal and transverse edges of liner with adhesive.

B. Air Turns
1. Permanently install vanes arranged to permit air to make abrupt turn without appreciable turbulence, in 90 degree elbows of above ground supply and return ductwork.
2. Quiet and free from vibration when system is in operation.

PART 3 EXECUTION

3.1 INSTALLATION

A. Duct Liner
1. Furnish and install acoustic lining in following types of ducts -
   a. Supply air
   b. Return air
   c. Mixed air
   d. Transfer air
   e. Relief air
   f. Exhaust air
   g. Elbows, fittings, and diffuser drops greater than 12 inches in length.

B. Flexible Connections
1. Install flexible inlet and outlet duct connections to each air moving device, fan, a/c unit, etc.

C. Access Doors In Ducts
1. Install at each manual outside air damper and at each motorized damper. Locate doors within 6 inches of installed dampers.
2. Install within 6 inches of fire dampers and in Mechanical Room if possible.

D. Dampers And Damper Accessories
1. Install concealed ceiling damper regulators.
   a. Paint cover plates to match ceiling tile.
   b. Do not install damper regulators for dampers located directly above removable ceilings or in Mechanical Rooms.
2. Provide each take-off with an adjustable volume damper to balance that branch.
   a. Anchor dampers securely to duct.
   b. Install dampers in main ducts within insulation.
   c. Dampers in branch ducts shall fit against sheet metal walls, bottom and top of

duct, and be securely fastened. Cut duct liner to allow damper to fit against sheet metal.

d. Where concealed ceiling damper regulators are installed, provide cover plate.

3. Install motorized dampers.

END OF SECTION

SECTION 15826

FIRE AND SMOKE DAMPERS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install fire and smoke dampers described in Contract Documents.

B. Related Sections
   1. Section 15051 - General Duct Requirements

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies
   1. Dampers shall conform to NFPA and SMACNA requirements and bear UL label.
   2. Dampers shall be approved by fire authorities having jurisdiction where so required.
   3. Wall and floor fire dampers shall conform to UL 555 'Fire Damper Test Standard'
   4. Ceiling fire dampers shall conform to UL 555C 'Ceiling Damper Test Standard'
   5. Smoke Dampers shall conform to UL 555S 'Leakage Rated Damper Test Standard'
   6. Combination fire / smoke dampers shall conform to UL 555 'Fire Damper Test Standard' and to UL 555S 'Leakage Rated Damper Test Standard'

1.3 MAINTENANCE

A. Extra Materials - Leave six fusible links of each rating type used on Project with Owner.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Fire Dampers
   1. Walls And Floors (Type 1) -
      a. Type 'B', blades out of airstream
      b. Include integral sleeve
      c. 165 deg F link unless otherwise indicated on Drawings
      b. Approved Manufacturers And Models -
         1) Air Balance - Model 119BLX
         2) Greenheck - Model FD150XB
         3) Pottorff - Model VFD-10 ISB, D-ISB
         4) Ruskin - Model IBD20B
         5) Safe-Air - Model 150B Sleeved
         6) Equals by Cesco or Prefco as approved by Architect before bidding. See Section 01600.
   2. Ceilings (Type 2) -
      a. Radiation type ceiling fire damper with 165 deg F link unless otherwise indicated on Drawings.
      b. Approved Manufacturers And Models -
         1) Air Balance - Model 229
         2) Cesco - Model CRD-A
         3) Greenheck - Model CRD-60B
         4) Pottorff - Model CFD-20
         5) Ruskin - Model CFD-LDS Series

6) Safe-Air - Thermo / Guard Model 410
7) Ultra Safe - Model 253A

B. Smoke Dampers (Type 3)
1. Rated Class II 350 deg F minimum.
2. Power open-fail close non-stall type motorized damper operating at 115 V and drawings 0.2 AMP maximum.
3. Damper shall close -
   a. On signal from smoke detectors
   b. On power failure
4. Frame and blades shall be 16 ga minimum steel.
5. Blade seals shall be mechanically locked into blade edge. Clip-on and adhesive type seals are not acceptable.
6. Jamb seals shall be flexible metal compression type.
7. Serviceable from access doors located on either side of damper.
8. Mount damper actuator and actuator linkage external of air flow.
9. Approved Manufacturers And Models -
   a. Air Balance - Model S2350
   b. Cesco - Model SD
   c. Greenheck - Model SMD22
   d. Pottorff - SD-142
   e. Ruskin - Model SD36
   f. Safe-Air - Model 620
   g. Equal by Prefco as approved by Architect before bidding. See Section 01600.

C. Standard Combination Fire / Smoke Dampers (Type 4)
1. 1-1/2 hour rated and Class II 250 deg F leakage rated minimum.
2. Power-open, fail-close non-stall type motorized damper operating at 115 V and drawing 0.2 AMP maximum.
3. Damper actuator / assembly shall be controlled closure type. Instantaneous closure type is not acceptable.
4. Damper shall close -
   a. On signal from smoke detectors
   b. On power failure
   c. When temperatures at damper exceed 165 deg F
5. Frame shall be 16 ga minimum steel with 22 ga minimum steel blades.
6. Blade seals shall be mechanically locked into blade edge. Clip-on and adhesive type seals are not acceptable.
7. Jamb seals shall be flexible metal compression type.
8. Serviceable from access doors located on either side of damper.
9. Mount damper actuator and actuator linkage external of air flow.
10. Approved Manufacturers And Models -
    a. Air Balance - Model FS2250A
    b. CESCO - Model FSD
    c. Greenheck - Model FSD23
    d. Pottorff - Model 142
    e. Ruskin - Model FSD36
    f. Safe-Air - Model 771
    g. Equal by Prefco as approved by Architect before bidding. See Section 01600.

D. Corridor Combination Fire / Smoke Dampers (Type 5)
1. One hour rated and Class II 250 deg F leakage rated minimum for protection of tunnel type corridor ceilings with horizontal walls.
2. Power-open, fail-close non-stall type motorized damper operating at 115 V and drawing 0.2 AMP maximum.
3. Damper actuator / assembly shall be controlled closure type. Instantaneous closure type is not acceptable.

4. Damper shall close -
   a. On signal from smoke detectors
   b. On power Failure
   c. When temperatures at damper exceed 165 deg F
5. Frame shall be 16 ga minimum steel with 22 ga minimum steel blades.
6. Blade seals shall be mechanically locked into blade edge. Clip-on and adhesive type seals are not acceptable.
7. Jamb seals shall be flexible metal compression type.
8. Serviceable from access doors located on either side of damper.
9. Mount damper actuator and actuator linkage external of air flow.
10. Approved Manufacturers And Models -
    a. Air Balance - Model FS2C250
    b. CESCO - Model FSDC
    c. Greenheck - Model FSD23C
    d. Ruskin - Model FSD36C
    e. Pottorff - FSD-172
    f. Prefco - 5020

2.2 MANUFACTURERS

A. Air Balance Inc, Holland, OH (419) 865-5000 www.air-balance.com
B. Cesco Products, Minneapolis, MN (888) 412-3726 www.cescoproducts.com
C. Greenheck Corp, Schofield, WI (715) 359-6171 www.greenheck.com
D. Pottorff, Montebello, CA (213) 728-0004
F. Ruskin Manufacturing, Kansas City, MO (816) 761-7476 www.ruskin.com

PART 3 EXECUTION

3.1 INSTALLATION

A. Install fire dampers in accordance with Contract Documents, local Code requirements, and SMACNA Fire Damper Guide.
B. Install access door, sleeve with sleeve support angles, and fire-resistive materials, with fire damper, as shown in SMACNA Guide.

C. Install fire and smoke dampers as follows
   1. Install fire dampers in ducts where ducts penetrate fire rated walls and floors. Install at registers, grilles, and diffusers penetrating fire rated assemblies.
   2. Install smoke dampers in ducts where ducts penetrate smoke barriers.
   3. Install standard combination fire / smoke dampers in ducts where ducts penetrate fire rated smoke barriers.
   4. Install corridor combination fire / smoke dampers in ducts where ducts penetrate fire rated corridor ceilings.

D. Install smoke dampers within 24 inches of smoke barrier.

END OF SECTION

SECTION 15836

EXHAUST FANS

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install exhaust fans as described in Contract Documents.

B. Related Sections
   1. Section 15051 - General Mechanical Requirements
   2. Division 16 - Control device and electrical connection

1.2 QUALITY ASSURANCES

A. Requirements of Regulatory Agencies - Bear AMCA seal and UL label.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Ceiling Mounted Exhaust Fans -
   1. Acoustically insulated housings. Sound level rating of 4.6 sones maximum for fan RPM and CFM listed on Drawings.
   2. Include chatterproof integral back-draft damper with no metal to metal contact.
   3. True centrifugal wheels.
   4. Entire fan, motor, and wheel assembly shall be easily removable without disturbing housing.
   5. Suitably ground motors and mount on rubber-in shear vibration isolators.
   6. Provide wall or roof cap, as required.
   7. Quality Standards - Greenheck SP or Penn Zephyr
   8. Approved Manufacturers -
      a. Acme
      b. Breidert
      c. Broan
      d. Carnes
      e. Cook-Gemini
      f. Greenheck
      g. Pace
      h. Penn

B. Roof Mounted Exhaust Fans
   1. Direct drive or have adjustable pitch V-belt as noted on Drawings.
   2. Wheels shall be backward curved and housing shall be removable or hinged aluminum.
   3. Isolate motor with vibration dampeners.
   4. Provide quiet type back-draft dampers.
   5. Quality Standards - Acme Centri-Master or Greenheck G, GB
   6. Approved Manufacturers -
      a. Acme
      b. Breidert
      c. Carnes
      d. Cook

e. Greenheck
f. Jenn-Air

2.2 ACCESSORIES

A. Curbs for Roof-Mounted Exhaust Fans
1. Insulated, pre-fabricated metal roof curb for roof configuration shown on Drawings.
2. Approved Manufacturers -
a. Standard Curbs -
1) Breidert
2) Carnes
3) Cook
4) Greenheck
5) Jenn-Air
6) Utemp
b. Sound Attenuating Curbs -
1) Acme
2) Carnes
3) Breidert
4) Greenheck
5) Jenn-Air

2.3 MANUFACTURERS

A. Acme Engineering & Manufacturing Corp, Muskogee, OK (918) 682-7791 www.acmefan.com
B. Breidert Air Products, Jacksonville, FL (504) 731-4721 www.breidert.com
C. Broan Manufacturing Co Inc, Hartford, WI (800) 558-1711 www.broan.com
D. Carnes Co, Verona, MI (608) 845-6411 www.carnes.com
E. Greenheck Corp, Schofield, WI (715) 359-6171 www.greenheck.com
F. Jenn-Air Co, Cleveland, TN (800) 688-1100
G. Loren Cook Co, Springfield, MO (417) 869-6474 www.lorencook.com
H. Pace, Portland, OR (503) 659-5880
I. Penn Ventilation Co, Philadelphia, PA (215) 464-8900 www.pennvent.com
J. Utemp Inc, Salt Lake City, UT (801) 978-9265

PART 3 EXECUTION

3.1 INSTALLATION

A. Anchor fan units securely to structure or to curb.

END OF SECTION

SECTION 15851

DIFFUSERS, REGISTERS, AND GRILLES

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install diffusers, registers, and grilles connected to ductwork as described in Contract Documents
   2. Quality of grilles installed in metal doors

B. Related Sections
   1. Section 15051 - General Mechanical Requirements

1.2 MAINTENANCE

A. Extra Materials - Leave tool for removing core of each different type of grille for building custodian.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Ceiling Return And Transfer Grilles
   1. Finish - Off-white baked enamel
   2. 1/2 inch spacing.
   3. Approved Manufacturers And Models -
      a. Carnes - RSLA
      b. J & J - S90H
      c. Krueger - S85H
      d. Metal*Aire - SRH
      e. Nailor - 6155H
      f. Price - 535
      g. Titus - 355RL or 355 SL
      h. Tuttle & Bailey - T70D

C. Exhaust Grilles
   1. Finish - Baked enamel. Match soffit color.
   2. Aluminum with aluminum mesh insect screen
   3. Approved Manufacturers And Models -
      a. Carnes - RAAA
      b. J & J - ALS95H
      c. Krueger - S585H
      d. Metal*Aire - RHE
      e. Nailor - 5155-IS
      f. Price - 635
      g. Titus - 355FL
      h. Tuttle & Bailey - A70D-5

G. Ceiling Diffusers
   1. Finish - Off-white baked enamel
   2. Approved Manufacturers And Models -

a. Carnes - SKSA
b. J & J - R-1400
c. Krueger - SH
d. Metal*Aire - 5500S
e. Nailor - 65OOB
f. Price - SMD-6
g. Titus - TDC-6
h. Tuttle & Bailey - MS

2.2 MANUFACTURERS

A. Carnes Co, Verona, MI (608) 845-6411 www.carnes.com
B. J & J Register, El Paso, TX (915) 852-9111
C. Krueger Air System Components, Richardson, TX (972) 918-8269 www.krueger-hvac.com
D. Metal*Aire - Metal Industries Inc, Clearwater, FL (813) 441-2651 www.metalaire.com
E. Nailor Industries Inc, Houston, TX (281) 590-1172 www.nailor.com
F. Price Industries Inc, Suwanee, GA (800) 835-5081 www.price-hvac.com
G. Titus, Richardson, TX (972) 699-1030 www.titus-hvac.com
H. Tuttle & Bailey, Holland, MI (800) 748-0392 www.hartandcooley.com

PART 3 EXECUTION

3.1 INSTALLATION

A. Anchor securely into openings. Secure frames to ductwork by using four sheet metal screws, one per side. Level floor registers and anchor securely into floor.

END OF SECTION

SECTION 15915

ELECTRIC AND ELECTRONIC CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To
   1. Furnish and install automatic temperature control system as described in Contract Documents.
   2. Furnish and install conductors and make connections to control devices and equipment.
   3. Furnish and install exposed raceway and conduit in Mechanical Rooms.
   4. Assist in air test and balance procedure.

B. Related Sections
   1. Division 13 - Air test and balance
   2. Section 15051 - General Mechanical Requirements
   3. Section 15820 - Furnishing and installing of temperature control dampers
   4. Division 16 -
      a. Furnishing and installing of raceway, conduit, and junction boxes, including pull wires, for temperature control system except as noted above.
      b. Power wiring to magnetic starters, disconnect switches, and motors.
      c. Motor starters and disconnect switches, unless integral with packaged equipment.

1.2 SYSTEM DESCRIPTION

A. Performance Criteria - Install line and low voltage electrical wiring, raceway, conduit, and boxes in accordance with Division 16 of these Specifications.

1.3 SUBMITTALS

A. Closeout
   1. Project Record Documents - Provide two copies of record ATC diagrams

PART 2 PRODUCTS

2.1 GENERAL

A. System controls shall be single manufacturer's products.

2.2 COMPONENTS

A. Provide full stand alone Lon Works compatible electronic controls to each new Roof Top unit.

   1. Thermostats to be low voltage type with automatic change over, 7 day programable with a minimum of 2 starts and stops per day.

C. Safety Controls
   1. Duct Smoke Detectors in Main Return Air Duct -
      a. Ionization smoke detector mounted in systems with airflow greater than 2000 CFM. Detectors to operate on 120 VAC.

b. Approved Models And Manufacturers -
   1) Series 2650-450 ionization type, duct mounted smoke detector, by Robertshaw
   2) MS Series ionization type duct mounted smoke detector by Air Products Controls Ltd
   3) Model DH100 ACDCP duct mounted smoke detector by System Sensor
   4) Model 0550 duct smoke detector by Maple Chase Co

PART 3 EXECUTION

3.1 INSTALLATION

A. Interface With Other Work
   1. Calibrate room thermostats as required during air test and balance.
   2. Instruct air test and balance personnel in proper use and setting of control system components.

B. Run wiring in conduit. No exceptions.

C. Safety Controls
   1. Interlock main return air duct smoke detectors to keep heating, cooling, and system fan from operating when detector is energized. Interlock smoke detector for combination fire / smoke dampers so fire / smoke damper closes on detection of smoke.
   2. Interlock gas valves with cooling compressors and supply air fan.
   3. Gas valves shall obtain their electrical control power from same circuit as supply fan motor.
   4. Check high limit thermostats furnished with heating equipment for correct operation. Gas valves shall close when duct temperature exceeds high limit setting. Perform this work immediately after wiring burner controls.
   5. Wire bonnet thermostatic switches to dissipate all heat in combustion chambers.
   7. Gas burner safety controls furnished with furnace units shall be incorporated in control circuits for all modes of operation.

D. Mount damper actuators and actuator linkages external of air flow.

E. Sequence of Control
   1. All Systems -
      a. Programmable thermostat shall control unoccupied and occupied status of fan system based on adjustable seven day program and remote room sensor/push button. Fan shall run continuously in occupied mode and cycle in unoccupied mode.
      b. Adjustable heating and cooling set points shall control space temperature by activating either heating or cooling equipment. Programmable thermostat provides automatic change over between heating and cooling.
      c. Remote Room Sensor provides optional override of thermostat program by allowing three hour timed override of thermostat program at any time by pushing selected point on remote room sensor cover. This shall activate thermostat to occupied mode and system shall control to occupied set point.
      d. Roof top unit's economizer shall provide ambient air for cooling when out door conditions are favorable, economizer damper shall modulate to a minimum OSA position during occupied periods when the refrigeration compressor is in operation.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service - Calibrate, adjust, and set controls for proper operation, operate systems, and be prepared to prove operation of any part of control system. This work is to be completed before pre-substantial completion inspection.

3.3 ADJUSTING

A. Program minimum of one day's operation into thermostat's memory function.

END OF SECTION

Southern Utah University M.P. Building Remodel
Cedar City, Utah

Opening List

Opening	Hdw Set	Opening Label	Door Type	Frame Type
100	06	None	WD	EXISTING
101	01	None	WD	EXISTING
102	01	None	WD	EXISTING
103	02	None	WD	EXISTING
104	06	None	WD	HM
105	03	20 Min.	WD	HM
106	04	20 Min.	WD	HM
107	04	20 Min.	WD	HM
108	04	20 Min.	WD	HM
109	04	20 Min.	WD	HM
110	04	20 Min.	WD	HM
111	03	20 Min.	WD	HM
112	07	20 Min.	WD	HM
113	05	90 Min.	EXISTING	EXISTING
114	05	20 Min.	EXISTING	EXISTING
115	05	20 Min.	EXISTING	EXISTING
116	05	20 Min.	EXISTING	EXISTING
117	05	20 Min.	EXISTING	EXISTING
118	05	20 Min.	EXISTING	EXISTING
119	05	20 Min.	EXISTING	EXISTING
120	05	20 Min.	EXISTING	EXISTING

Southern Utah University M.P. Building Remodel
Cedar City, Utah

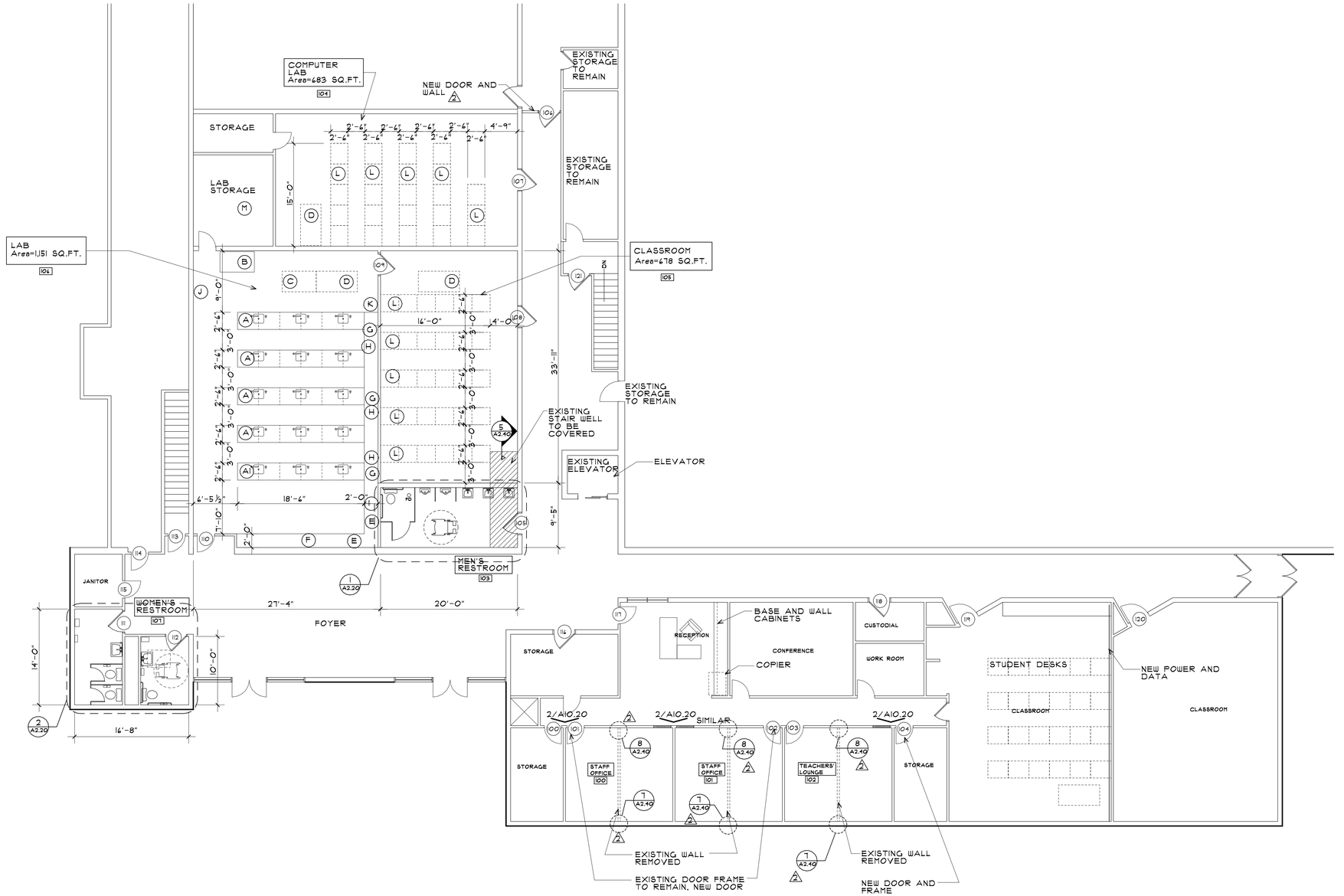
Manufacturer List

Code	Name
MC	McKinney
NO	Norton
SA	Sargent

Southern Utah University M.P. Building Remodel
Cedar City, Utah

Finish List

Code	Description
26D	Satin Chrome
32D	Satin Stainless Steel
689	Aluminum Painted
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull



FLOOR PLAN

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

NORTH

KEY NOTES

KEY NOTE MARK

A STUDENT LAB TABLES 6' STUDENT SINGLE-FACE SCIENCE LAB SERVICE CENTER WITH 3 SINKS, 6 MULTISERVICE FIXTURES, 3 GFI PROTECTED AC DUPLEX RECEPTACLES, SIX ROD SOCKETS, SIX GAS NOZZLES, SIX BOOK COMPARTMENTS AND FOUR DRAWERS AT EACH CABINET. ALL DRAWS AND DOORS LOCK. UNIT CONSTRUCTED OF SOLID OAK. OAK AND HARDWOOD VENEERS WITH 1" BLACK CHEMICAL RESISTANT EPOXY RESIN TOP.

A1 ADA STUDENT LAB TABLE SAME AS ABOVE BUT ONE SECTION OF TABLE TO MEET ADA REQUIREMENTS FOR ACCESSIBILITY.

B FUME HOOD PROVIDE FUME HOOD SIMILAR TO HAMILTON LABORITORY SAFEAIRE II FUME HOOD. MEET THE UL 1805 STANDARD HOOD TO BE 36" DEEP BY 48" WIDE FLOOR MOUNTED. CONNECT TO EXHAUST SYSTEM. PROVIDE WATER, GAS, AIR AND POWER.

C TEACHER DEMONSTRATION TABLE - 60"WX30"DX36"H, WITH SINK AND DRAWERS, WITH ONE MULTISERVICE FIXTURE, GFI PROTECTED AC DUPLEX RECEPTACLE. TOP IS 1" BLACK CHEMICAL RESISTANT EPOXY RESIN TOP. ALL DRAWERS LOCKABLE.

D TEACHER'S DESK

E STORAGE CABINETS - WALL STORAGE CASE WITH HINGED OAK DOORS. CONSTRUCTION TO BE SOLID OAK, OAK AND HARDWOOD VEERS. WIDTH VARIES DEPTH 22 INCHES AND 84 INCHES IN HEIGHT. FIVE INTERIOR SHELVES WITH FOUR ADJUSTABLE. DOORS TO BE LOCKABLE. NUMBER OF UNITS DETERMINED BY OVERALL WIDTH OF CABINETS NEEDED.

F DISPLAY CABINETS - WALL STORAGE CASE WITH GLASS DOORS. CONSTRUCTION TO BE SOLID OAK, OAK AND HARDWOOD VENEERS. WIDTH VARIES. DEPTH 22 INCHES AND 84 INCHES IN HEIGHT. FIVE INTERIOR SHELVES WITH FOUR ADJUSTABLE. DOORS LOCKABLE. NUMBER AND WIDTH OF INDIVIDUAL UNITS BASED ON OVERALL LENGTH OF SPACE.

G WALL STORAGE CABINETS - OAK DOOR WALL CABINET WIDTH VARIES. DEPTH 12 INCHES AND HEIGHT 30 INCHES. TO BE MOUNTED AT HEIGHT TO MATCH FULL HEIGHT STORAGE CABINETS. TWO ADJUSTABLE SHELVES.

H BASE STORAGE CABINETS - (2) DOOR OAK BASE CABINET. WIDTH VARIES. DEPTH 22 INCHES AND HEIGHT TO MATCH STUDENT SCIENCE LAB SERVICE CENTER. ONE ADJUSTABLE SHELF. LOCKABLE DOORS.

I SAFETY STATION - EMERGENCY STATION. 48" WIDE AND 22" DEEP. HEIGHT TO MATCH STORAGE CABINETS. STATION TO INCLUDE: EMERGENCY SHOWER HEAD, FIRE BLANKETS, SPILL KITS, FIRST AID KITS AND FIRE EXTINGUISHER.

J EYE WASH STATION - WALL MOUNTED GRAVITY FLOW, 16 GALLON EYE WASH UNIT.

K MASTER SHUT OFF SWITCHES FOR WATER, GAS AND POWER TO STUDENT STATIONS.

L STUDENT DESKS PROVIDED BY SUCCESS ACADEMY

M CHEMICAL STORAGE CABINET. 2 SANDUSKY LEE FLAMMABLE LIQUIDS SAFETY CABINET, 30 GALLON CAPACITY, MEET NFPA CODE 30 AND OSHA STANDARDS.

GENERAL NOTES:

PROVIDE DATA CONNECTIONS AT EACH GROUP OF 6 STUDENTS.

INFORMATION PRESENT IN KEY NOTES PROVIDED AS GUIDE IN THE SUBMITTING OF PROPOSED FURNITURE, FIXTURES AND EQUIPMENT. ALTERNATES FOR FURNITURE, FIXTURES AND EQUIPMENT LISTED ABOVE WILL BE ACCEPTED UPON APPROVAL.

ALL FURNITURE, FIXTURES AND EQUIPMENT TO BE INSTALLED PER MANUFACTURER'S GUIDELINES AND AS REQUIRED TO COMPLY WITH WARRANTEE REQUIREMENTS.

ALL WORK TO BE DONE IN ACCORDANCE WITH SUU FACILITIES MANAGEMENT STANDARDS.

ALL NEW WALL CONSTRUCTION TO BE 20 GUAGE STEEL STUDS.

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Project: SUCCESS ACADEMY MULTI-PURPOSE BUILDING REMODEL

Sheet Title: FLOOR PLAN

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1 03.04.08 ADDENDUM 1

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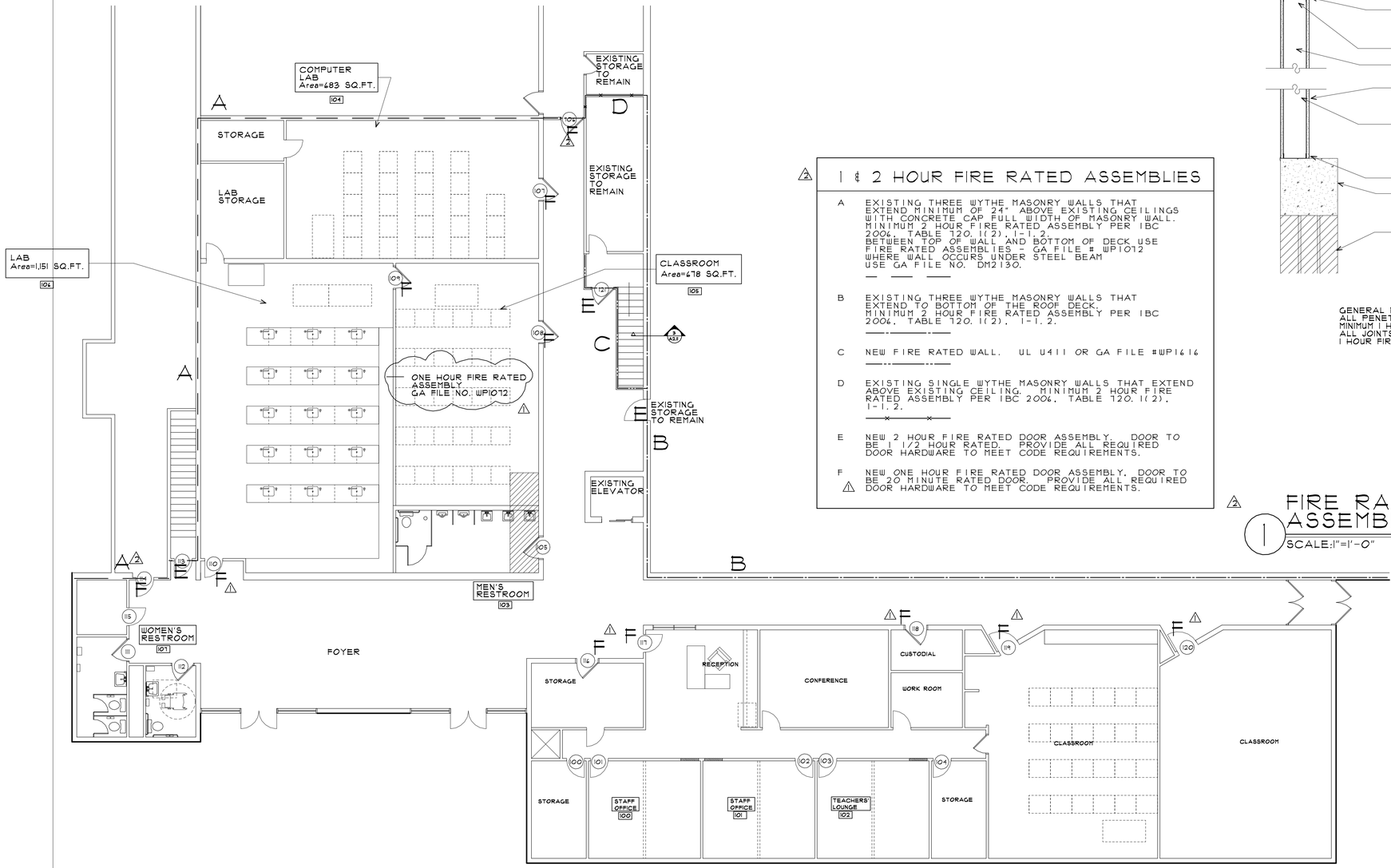


⚠2 1 & 2 HOUR FIRE RATED ASSEMBLIES

A EXISTING THREE WYTHE MASONRY WALLS THAT EXTEND MINIMUM OF 24" ABOVE EXISTING CEILINGS WITH CONCRETE CAP FULL WIDTH OF MASONRY WALL. MINIMUM 2 HOUR FIRE RATED ASSEMBLY PER IBC 2006, TABLE 720.1(2), 1-1.2. BETWEEN TOP OF WALL AND BOTTOM OF DECK USE FIRE RATED ASSEMBLIES - GA FILE # WP1012 WHERE WALL OCCURS UNDER STEEL BEAM USE GA FILE NO. DM2130.

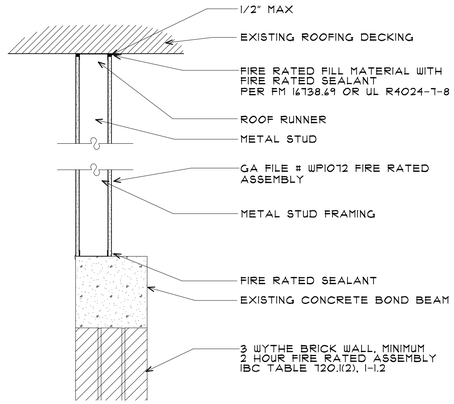
B EXISTING THREE WYTHE MASONRY WALLS THAT EXTEND TO BOTTOM OF THE ROOF DECK. MINIMUM 2 HOUR FIRE RATED ASSEMBLY PER IBC 2006, TABLE 720.1(2), 1-1.2.

C NEW FIRE RATED WALL. UL U411 OR GA FILE #WP1616

D EXISTING SINGLE WYTHE MASONRY WALLS THAT EXTEND ABOVE EXISTING CEILING. MINIMUM 2 HOUR FIRE RATED ASSEMBLY PER IBC 2006, TABLE 720.1(2), 1-1.2.

E NEW 2 HOUR FIRE RATED DOOR ASSEMBLY. DOOR TO BE 1 1/2 HOUR RATED. PROVIDE ALL REQUIRED DOOR HARDWARE TO MEET CODE REQUIREMENTS.

F NEW ONE HOUR FIRE RATED DOOR ASSEMBLY. DOOR TO BE 20 MINUTE RATED DOOR. PROVIDE ALL REQUIRED ⚠1 DOOR HARDWARE TO MEET CODE REQUIREMENTS.

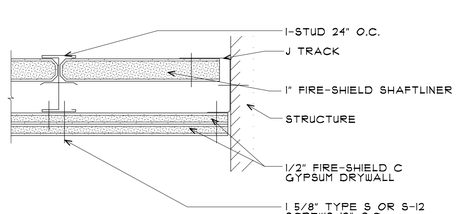


GENERAL NOTES:
ALL PENETRATIONS TO BE TREATED WITH MINIMUM 1 HOUR FIRE RATED SEALANTS.
ALL JOINTS TO BE TREATED WITH MINIMUM 1 HOUR FIRE RATED SEALANTS.

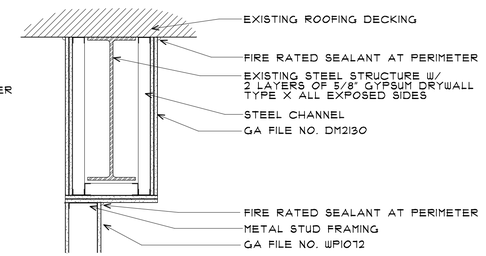
⚠2 1 FIRE RATED ASSEMBLY
SCALE: 1"=1'-0"

FLOOR PLAN - FIRE RATED ASSEMBLIES
SCALE: 1/8"=1'-0"

NORTH



⚠2 3 FIRE RATED ASSEMBLY STAIR CEILING
NOT TO SCALE



GENERAL NOTES:
ALL PENETRATIONS TO BE TREATED WITH MINIMUM 1 HOUR FIRE RATED SEALANTS.
ALL JOINTS TO BE TREATED WITH MINIMUM 1 HOUR FIRE RATED SEALANTS.

⚠2 2 FIRE RATED ASSEMBLY
SCALE: 1"=1'-0"

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Project: SUCCESS ACADEMY MULTI-PURPOSE BUILDING REMODEL

Sheet Title:
FLOOR PLAN FIRE RATED ASSEMBLIES

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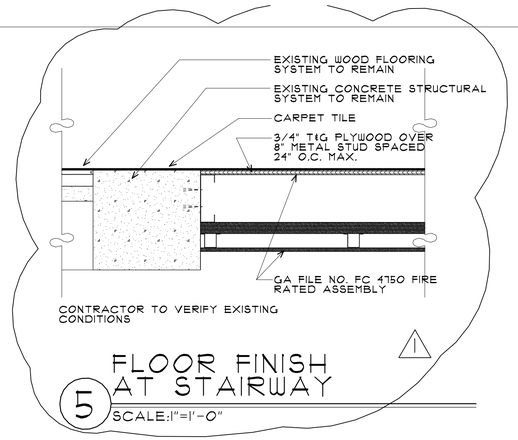
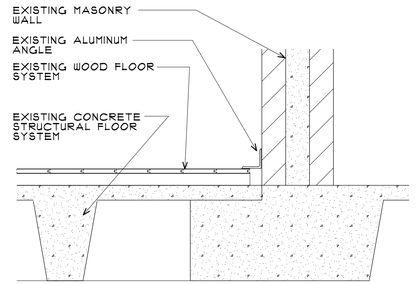


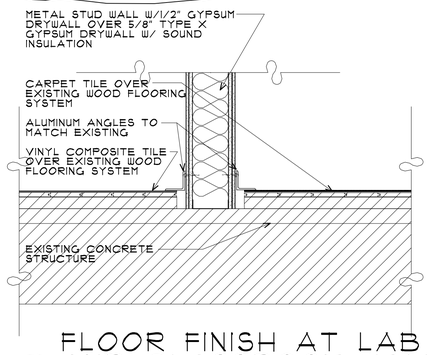
5 FLOOR FINISH AT STAIRWAY

SCALE: 1"=1'-0"



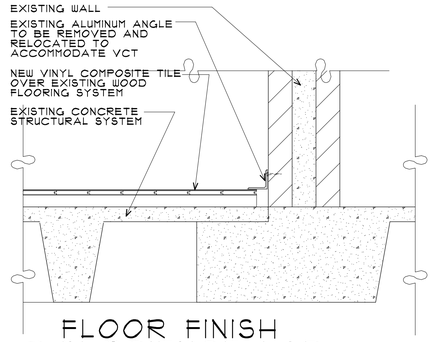
1 EXISTING FLOOR/WALL IN CLASSROOM

SCALE: 1"=1'-0"



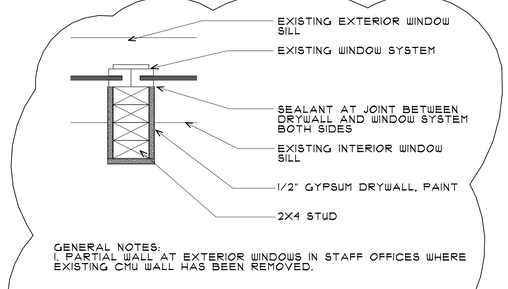
6 FLOOR FINISH AT LAB AND CLASSROOM WALL

SCALE: 1"=1'-0"



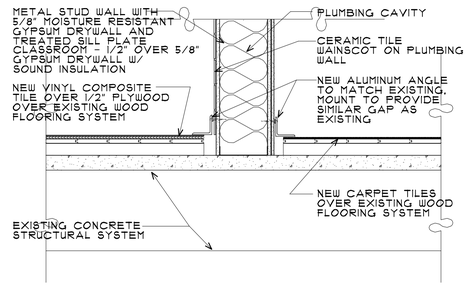
2 FLOOR FINISH IN SCIENCE LAB

SCALE: 1"=1'-0"



7 NEW WALL AT EXISTING EXTERIOR WINDOW

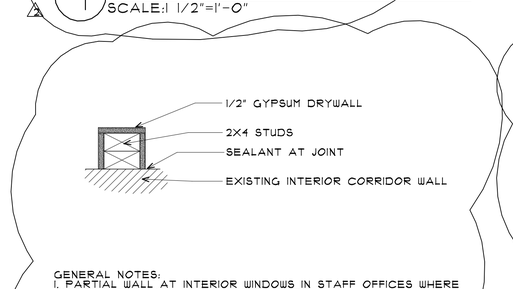
SCALE: 1 1/2"=1'-0"



GENERAL NOTES:
1/2" PLYWOOD PLACED TO SPAN OVER THE EXISTING STAIR WELL AND WOOD FLOORING.

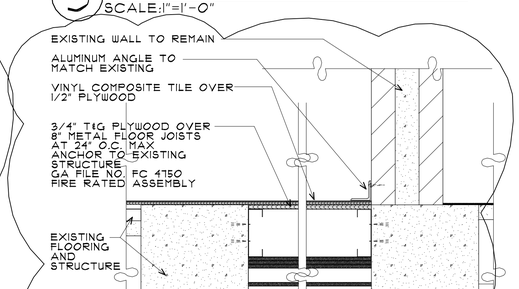
3 FLOOR FINISH IN MEN'S RESTROOM

SCALE: 1"=1'-0"



8 NEW WALL AT EXISTING INTERIOR WINDOW

SCALE: 1 1/2"=1'-0"



4 FLOOR FINISH IN MEN'S RESTROOM

SCALE: 1"=1'-0"

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Project:
SUCCESS ACADEMY
MULTI-PURPOSE BUILDING REMODEL

Sheet Title:
DETAILS

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2 03/04/08 ADDENDUM 1

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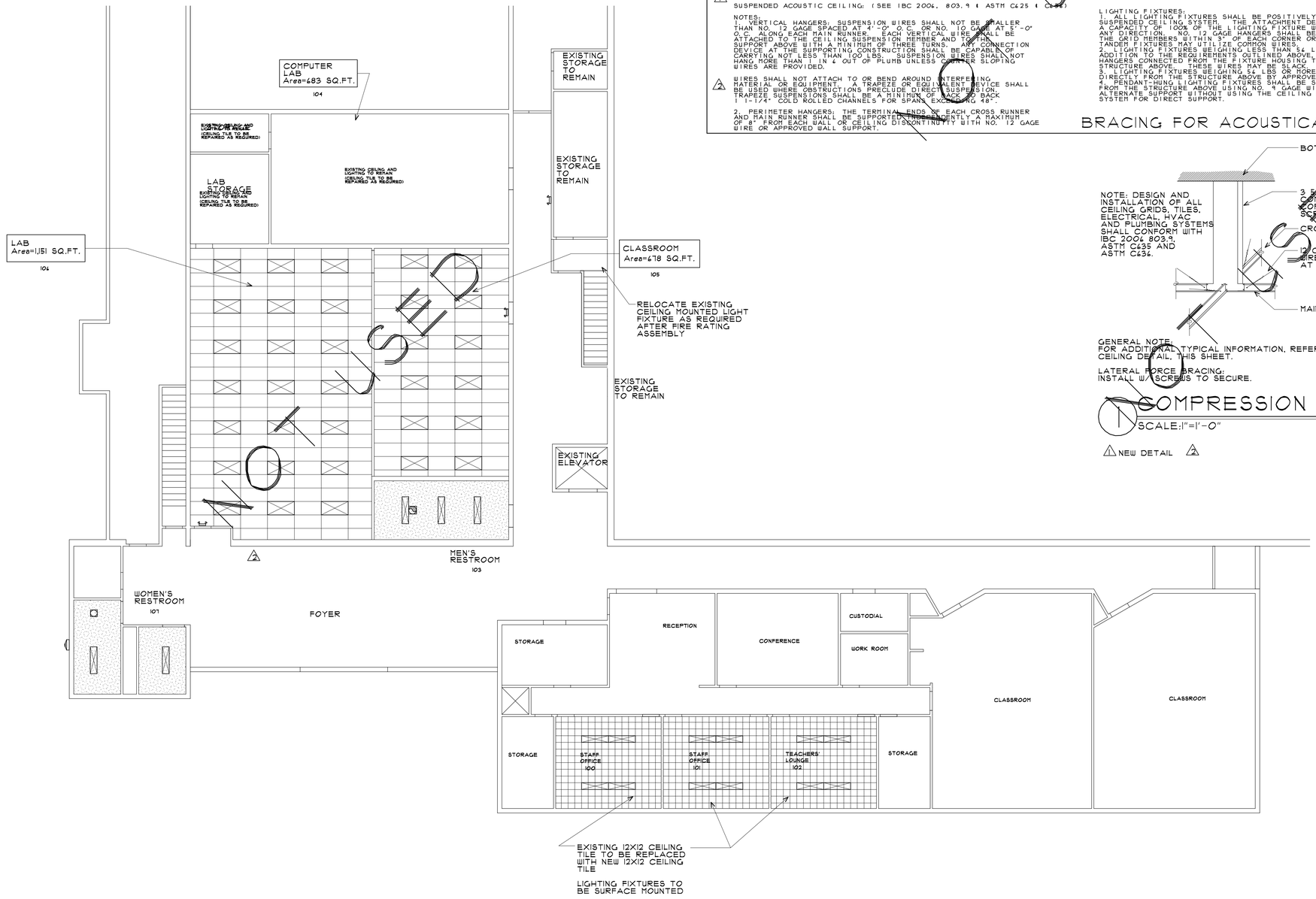
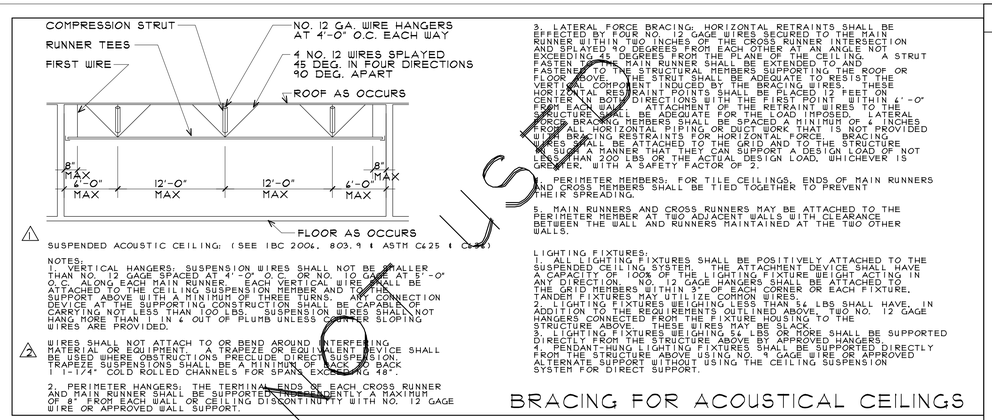


REFLECTED CEILING PLAN

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



SUSPENDED ACOUSTIC CEILING: (SEE IBC 2006, 803.9 & ASTM C425 & C636)

NOTES:

1. VERTICAL HANGERS: SUSPENSION WIRES SHALL NOT BE SMALLER THAN NO. 12 GAGE SPACED AT 4'-0" O.C. OR NO. 10 GAGE AT 5'-0" O.C. ALONG EACH MAIN RUNNER. EACH VERTICAL WIRE SHALL BE ATTACHED TO THE CEILING SUSPENSION MEMBER AND TO THE SUPPORT ABOVE WITH A MINIMUM OF THREE TURNS. ANY CONNECTION DEVICE AT THE SUPPORTING CONSTRUCTION SHALL BE CAPABLE OF CARRYING NOT LESS THAN 100 LBS. SUSPENSION WIRES SHALL NOT HANG MORE THAN 2" IN 4' OUT OF PLUMB UNLESS CRIMPED SLOPING WIRES ARE PROVIDED.

2. WIRES SHALL NOT ATTACH TO OR BEND AROUND INTERFERING MATERIAL OR EQUIPMENT. A TRAPEZE OR EQUIVALENT DEVICE SHALL BE USED WHERE OBSTRUCTIONS PRECLUDE DIRECT SUSPENSION. TRAPEZE SUSPENSIONS SHALL BE A MINIMUM OF BACK TO BACK 1 1-1/4" COLD ROLLED CHANNELS FOR SPANS EXCEEDING 48".

2. PERIMETER HANGERS: THE TERMINAL ENDS OF EACH CROSS RUNNER AND MAIN RUNNER SHALL BE SUPPORTED INDEPENDENTLY A MAXIMUM OF 8" FROM EACH WALL OR CEILING DISCONTINUITY WITH NO. 12 GAGE WIRE OR APPROVED WALL SUPPORT.

3. LATERAL FORCE BRACING: HORIZONTAL RETRAINTS SHALL BE EFFECTED BY FOUR NO. 12 GAGE WIRES SECURED TO THE MAIN RUNNER WITHIN TWO INCHES OF THE CROSS RUNNER INTERSECTION AND SPLAYED 90 DEGREES FROM EACH OTHER AT AN ANGLE NOT EXCEEDING 45 DEGREES FROM THE PLANE OF THE CEILING. A STRUT FASTEN TO THE MAIN RUNNER SHALL BE EXTENDED TO AND FASTENED TO THE STRUCTURAL MEMBERS SUPPORTING THE ROOF OR FLOOR ABOVE. THE STRUT SHALL BE ADEQUATE TO RESIST THE VERTICAL COMPONENT INDUCED BY THE BRACING WIRES. THESE HORIZONTAL RESTRAINT POINTS SHALL BE PLACED 12 FEET ON CENTER IN BOTH DIRECTIONS WITH THE FIRST POINT WITHIN 6'-0" FROM EACH WALL. ATTACHMENT OF THE RETRAINT WIRES TO THE STRUCTURE SHALL BE ADEQUATE FOR THE LOAD IMPOSED. LATERAL FORCE BRACING MEMBERS SHALL BE SPACED A MINIMUM OF 6 INCHES FROM ALL HORIZONTAL PIPING OR DUCT WORK THAT IS NOT PROVIDED WITH BRACING RESTRAINTS FOR HORIZONTAL FORCE. BRACING WIRES SHALL BE ATTACHED TO THE GRID AND TO THE STRUCTURE IN SUCH A MANNER THAT THEY CAN SUPPORT A DESIGN LOAD OF NOT LESS THAN 200 LBS OR THE ACTUAL DESIGN LOAD, WHICHEVER IS GREATER, WITH A SAFETY FACTOR OF 2.

4. PERIMETER MEMBERS: FOR TILE CEILINGS, ENDS OF MAIN RUNNERS AND CROSS MEMBERS SHALL BE TIED TOGETHER TO PREVENT THEIR SPREADING.

5. MAIN RUNNERS AND CROSS RUNNERS MAY BE ATTACHED TO THE PERIMETER MEMBER AT TWO ADJACENT WALLS WITH CLEARANCE BETWEEN THE WALL AND RUNNERS MAINTAINED AT THE TWO OTHER WALLS.

LIGHTING FIXTURES:

1. ALL LIGHTING FIXTURES SHALL BE POSITIVELY ATTACHED TO THE SUSPENDED CEILING SYSTEM. THE ATTACHMENT DEVICE SHALL HAVE A CAPACITY OF 100% OF THE LIGHTING FIXTURE WEIGHT ACTING IN ANY DIRECTION. NO. 12 GAGE HANGERS SHALL BE ATTACHED TO THE GRID MEMBERS WITHIN 3" OF EACH CORNER OR EACH FIXTURE. TANDEM FIXTURES MAY UTILIZE COMMON WIRES.
2. INDIVIDUAL FIXTURES BEIGHING LESS THAN 56 LBS SHALL HAVE, IN ADDITION TO THE REQUIREMENTS OUTLINED ABOVE, TWO NO. 12 GAGE HANGERS CONNECTED FROM THE FIXTURE HOUSING TO THE STRUCTURE ABOVE. THESE WIRES MAY BE SLACK.
3. LIGHTING FIXTURES WEIGHING 56 LBS OR MORE SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE BY APPROVED HANGERS.
4. PENDANT-HUNG LIGHTING FIXTURES SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE ABOVE USING NO. 9 GAGE WIRE OR APPROVED ALTERNATE SUPPORT WITHOUT USING THE CEILING SUSPENSION SYSTEM FOR DIRECT SUPPORT.

NOT USED

BRACING FOR ACOUSTICAL CEILINGS

GENERAL NOTE:
FOR ADDITIONAL TYPICAL INFORMATION, REFER TO SUSPENDED CEILING DETAIL, THIS SHEET.

LATERAL FORCE BRACING:
INSTALL W/ SCREWS TO SECURE.

COMPRESSION STRUT

SCALE: 1"=1'-0"

1 NEW DETAIL 2

ELECTRICAL LEGEND

- 2X4 FLUORESCENT LIGHT FIXTURE
- 1X4 FLUORESCENT LIGHTING FIXTURE
- CAN LIGHT
- EMERGENCY LIGHTING
- EXHAUST FAN
- EXHAUST FAN THROUGH THE WALL
- 2X4 GRID SYSTEM
- GYPSUM DRYWALL HARD LID SYSTEM
- 12"X12" CEILING TILES, TO MATCH EXISTING

GENERAL NOTES:

CONTRCTOR TO VERIFY EXISTING CONDITIONS.

SEE SHEET E2.2 FOR ACTUAL LIGHTING FIXTURES.

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Project:
SUCCESS ACADEMY
MULTI-PURPOSE BUILDING REMODEL

Sheet Title:
REFLECTED CEILING PLAN

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ROOM FINISH SCHEDULE

NO.	ROOM NAME	FLOOR	BASE	WALL FINISHES				CEILING		REMARKS
				NORTH	EAST	SOUTH	WEST	MAT'L	HEIGHT	
100	STAFF OFFICE	C	RUB	P	P	P	P	ACT	EXISTING	REPLACE EXISTING 12X12 CEILING TILE
101	STAFF OFFICE	C	RUB	P	P	P	P	ACT	EXISTING	REPLACE EXISTING 12X12 CEILING TILE
102	TEACHERS' LOUNGE	C	RUB	P	P	P	P	ACT	EXISTING	REPLACE EXISTING 12X12 CEILING TILE
103	MEN'S RESTROOM	VCT	AA	P	P	P	P	GB	8'-0"	CT WAINSCOT AT 48" BEHIND FIXTURES
104	COMPUTER ROOM	NA	NA	P	P	P	P	NA	NA	REPAIR CEILING TILE AS NEEDED
105	CLASSROOM	C	AA	P	P	P	P	ACT	8'-4"	-
106	LAB	VCT	AA	P	P	P	P	ACT	8'-4"	-
107	WOMEN'S RESTROOM	VCT	CT	P	P	P	P	GB	8'-0"	CT WAINSCOT AT 48" BEHIND FIXTURES

GENERAL NOTES:

1. EXISTING HALL WAY - REMOVE EXISTING PANELING AND REPLACE WITH GLUE ON 1 2" GYPSUM DRYWALL TO MATCH DOORWAY REPAIR FROM DEMOLITION. FINISH AND PAINT.
2. COMMON WALL IN NEW STAFF OFFICES TO RECEIVE GLUE ON 1/2" GYPSUM DRYWALL. FINISH AND PAINT.
3. ALL WORK TO BE PERFORMED PER SUU STANDARDS.

ABBREVIATIONS
ACT - ACOUSTICAL TILE
RUB - RUBBER BASE 4"
CT - CERAMIC TILE
VCT - VINYL COMPOSITION TILE
GB - GYPSUM WALLBOARD
P - PAINT
C - CARPET
AA - ALUMINUM ANGLE

DOOR SCHEDULE

NO.	WIDTH	HEIGHT	THICK.	DOOR MAT'L	DOOR TYPE	DOOR GLASS	FRAME MAT'L	FRAME TYPE	DETAILS JAMB	DETAILS HEAD	DETAILS SILL	HARD-WARE	LABEL	REMARKS
100	EXISTING DOOR			WOOD	A	-	N/A	N/A				6	-	REUSE EXISTING DOOR AND FRAME
101	EXISTING DOOR			WOOD	A	-	N/A	N/A				1	-	REUSE EXISTING DOOR AND FRAME
102	EXISTING DOOR			WOOD	A	-	N/A	N.A				1	-	REUSE EXISTING DOOR AND FRAME
103	EXISTING DOOR			WOOD	A	-	N/A	N/A				2	-	REUSE EXISTING DOOR AND FRAME
104	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A	3/A10.20	415/A10.20	13/A10.20	6	-	
105	3'-0"	7'-0"	1-3/4	WOOD	A	-	N/A	N/A	8/A10.20	9/A10.20	10/A10.20	3	20 MIN	
106	3'-0"	7'-0"	1-3/4	WOOD	B	-	HM	A	15/A10.20	16/A10.20	13/A10.20	4	20 MIN	
107	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A				4	20 MIN	
108	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A				4	20 MIN	
109	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A	14/A10.20	15/A10.20	13/A10.20	4	20 MIN	
110	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A				4	20 MIN	
111	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A				3	20 MIN	
112	3'-0"	7'-0"	1-3/4	WOOD	A	-	HM	A				7	20 MIN	
113	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	90 MIN	
114	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
115	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
116	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
117	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
118	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
119	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	
120	MATCH EXISTING	DR SIZE		WOOD	A	-	HM	A				5	20 MIN	

GENERAL NOTES:

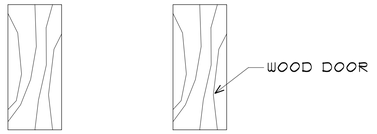
ALL FRAMES TO BE PAINTED TO MATCH EXISTING COLOR.

ALL DOORS TO BE STAINED TO MATCH EXISTING.

EXISTING DOORS 113 THROUGH 120 TO BE REUSED WHEN EXISTING DOOR HAS 1 HOUR FIRE RATING.

ABBREVIATIONS:
HW - HARDWARE, SEE SPEC
HM - HOLLOW METAL
TEMP - TEMPERED GLASS
STL - STEEL

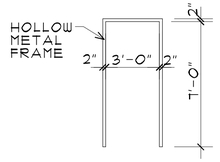
DOOR TYPE



A
INTERIOR
WOOD

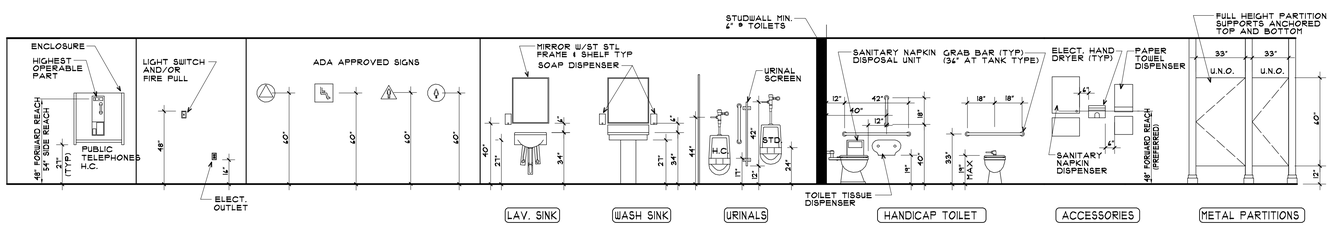
B
INTERIOR
WOOD

FRAME TYPE



A
INTERIOR
HOLLOW METAL

⚠ REVISED



NOTE:
IF ENCLOSURES ARE USED AND PROTRUDE OUT FROM THE WALL THE MAX. PROJECTION SHALL BE 19" AND CANNOT REDUCE THE MIN. REQUIRED CLEAR WIDTH OF THE ACCESSABLE PATH.

SIGNS TO BE CENTERED ON DOORS AND BE DISTINCTLY DIFFERENT THAN DOORS IN COLOR AND CONTRAST

INSULATE ALL EXPOSED HOT WATER AND DRAIN LINES

NOTES:
1. CONTRACTOR TO PROVIDE BLOCKING/BACKING FOR ALL ACCESSORIES. BLOCKING AT GRAB BARS TO WITHSTAND A 250 LB./FT. LOAD.
2. DRINKING FOUNTAINS, TOILETS & URINALS ARE TO BE MOUNTED AS PER MANUFACTURERS RECOMMENDATIONS FOR STANDARD UNITS UNLESS THEY ARE DESIGNATED TO BE FOR HANDICAPPED USE. H.C. ACCESSABLE UNITS TO BE MOUNTED AS SHOWN ABOVE.

ADA ACCESSIBLE MOUNTING HEIGHTS

NOT TO SCALE

⚠ REVISED

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Project:
SUCCESS ACADEMY
MULTI-PURPOSE BUILDING REMODEL

Sheet Title:
SCHEDULES
DOOR AND FINISH
DOOR TYPES AND DETAILS

Revisions:
⚠ 12.17.07 CODE REVIEW

PROJECT NUMBER:	07478
DATE:	07.11.07
DRAWN BY:	J.C.S.
CHECKED BY:	J.C.S.
APPROVED BY:	J.C.S.

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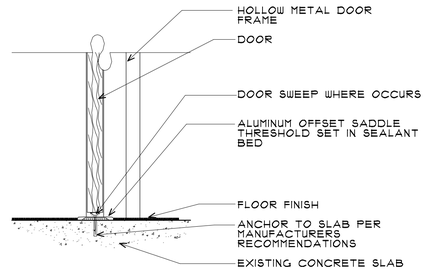
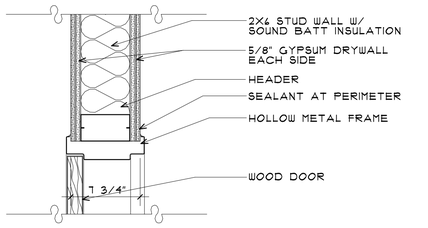
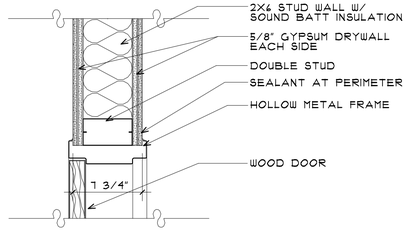


GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

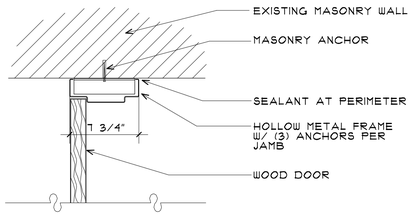
13 DOOR SILL AT EXISTING WALL
SCALE: 1 1/2"=1'-0"



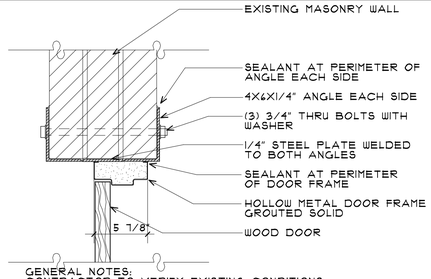
14 DOOR HEAD AT NEW WALL
SCALE: 1 1/2"=1'-0"



15 DOOR JAMB AT NEW WALL
SCALE: 1 1/2"=1'-0"

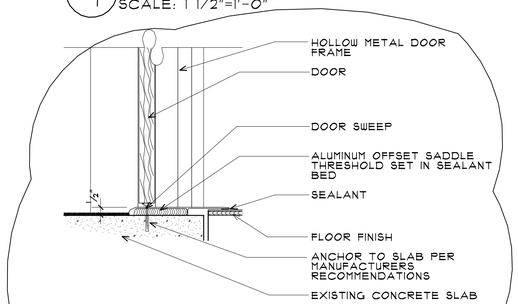


16 DOOR JAMB
SCALE: 1 1/2"=1'-0"



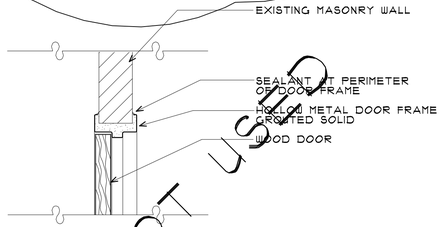
GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.
CONTRACTOR TO PROVIDE REQUIRED BRACING AS NEEDED.

9 DOOR JAMB AT EXISTING WALL
SCALE: 1 1/2"=1'-0"



GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

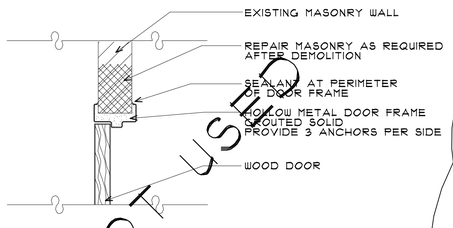
10 DOOR SILL AT EXISTING WALL
SCALE: 1 1/2"=1'-0" 2



NOT USED

GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.
CONTRACTOR TO PROVIDE REQUIRED BRACING AS NEEDED.

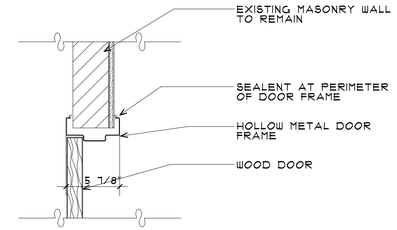
11 DOOR HEAD AT EXISTING WALL
SCALE: 1 1/2"=1'-0"



NOT USED

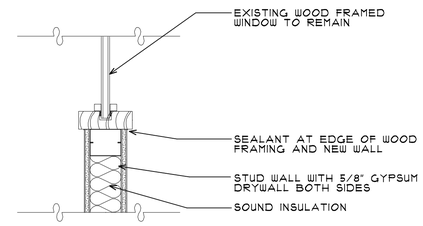
GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.
CONTRACTOR TO PROVIDE REQUIRED BRACING AS NEEDED.

12 DOOR JAMB AT EXISTING WALL
SCALE: 1 1/2"=1'-0"



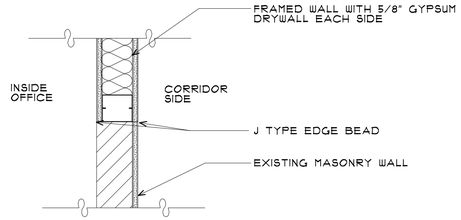
GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

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



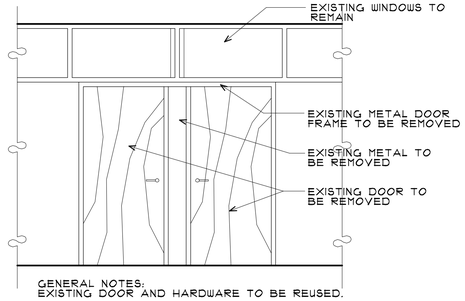
GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

6 WALL DETAIL AT WINDOW
SCALE: 1 1/2"=1'-0"



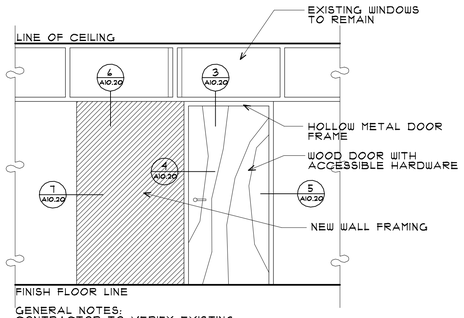
GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

7 WALL DETAIL AT EXISTING WALL
SCALE: 1 1/2"=1'-0"



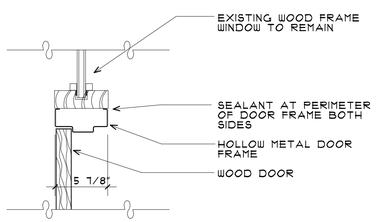
GENERAL NOTES:
EXISTING DOOR AND HARDWARE TO BE REUSED.

1 EXISTING DOOR ELEVATION
NOT TO SCALE

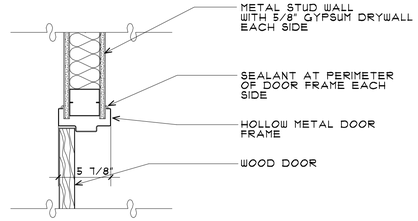


GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.

2 DOOR ELEVATION
NOT TO SCALE

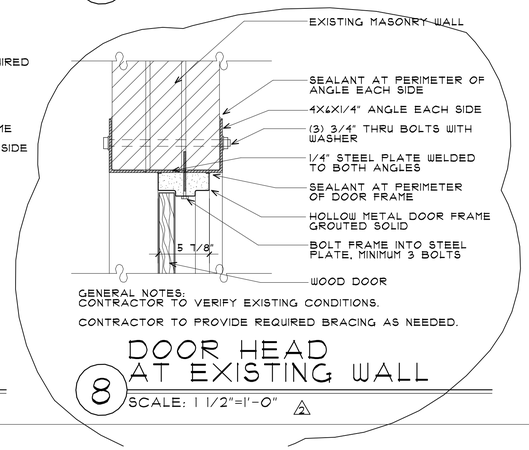


3 DOOR DETAIL - HEAD
SCALE: 1 1/2"=1'-0"



GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS. NEW FRAMED WALL TO MATCH WIDTH OF EXISTING WALL.

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



GENERAL NOTES:
CONTRACTOR TO VERIFY EXISTING CONDITIONS.
CONTRACTOR TO PROVIDE REQUIRED BRACING AS NEEDED.

8 DOOR HEAD AT EXISTING WALL
SCALE: 1 1/2"=1'-0" 2

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Project:
SUCCESS ACADEMY
MULTI-PURPOSE BUILDING REMODEL

Sheet Title:
DETAILS

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2 03.04.08 ADDENDUM 1

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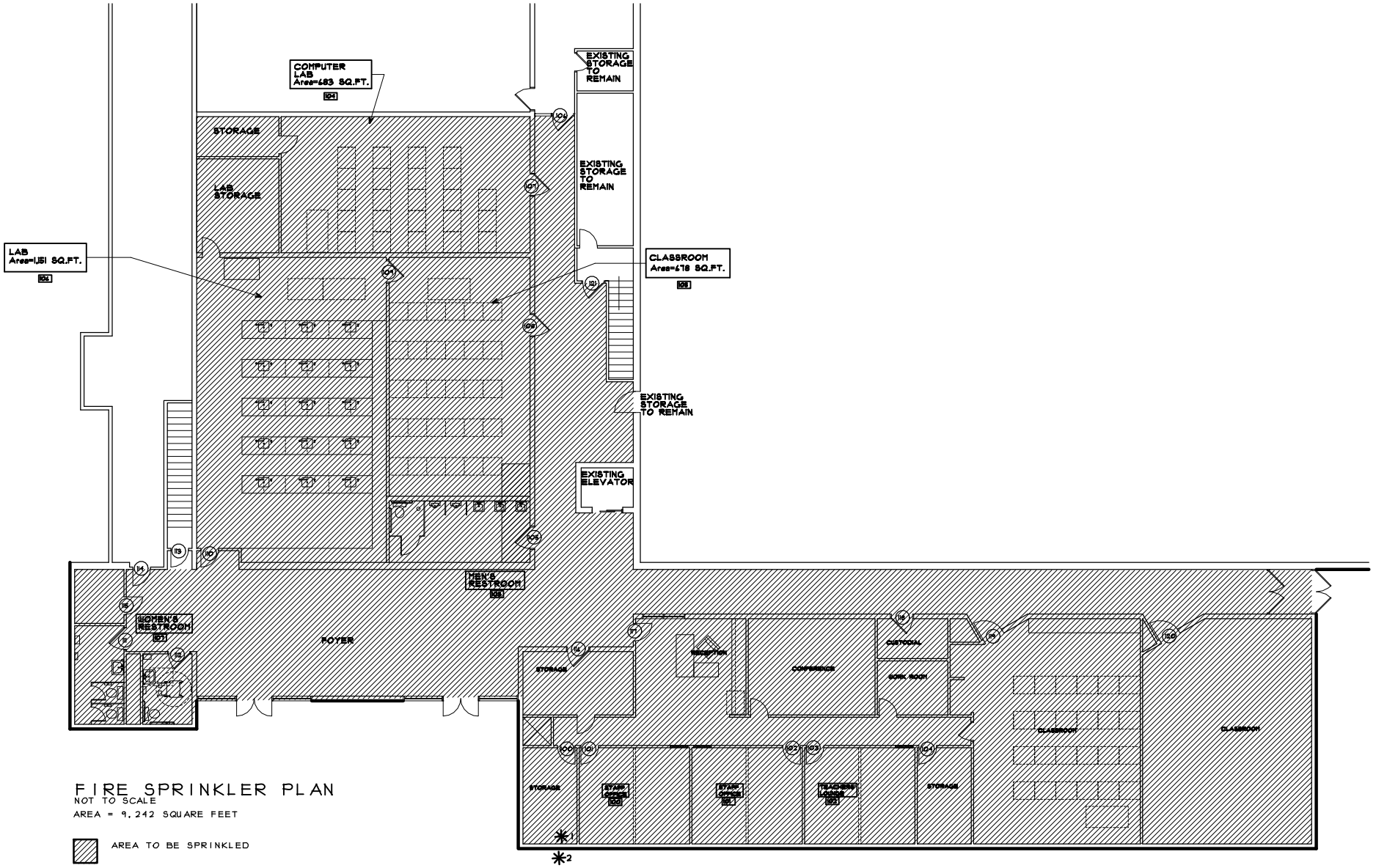

FIRE SPRINKLER PLAN

NOT TO SCALE

AREA = 9,242 SQUARE FEET

AREA TO BE SPRINKLED

*1 PROPOSED FIRE RISER LOCATION
WATER ENTERS BUILDING DIRECTLY
BELOW IN LOWER LEVEL OF BUILDING

*2 PROPOSED FIRE DEPARTMENT CONNECTION