

**UGA DESIGN & CONSTRUCTION
SUPPLEMENTAL GENERAL REQUIREMENTS & STANDARDS
CHANGES FROM JANUARY 16, 2015 VERSION TO AUGUST 1, 2016 VERSION**

00 00 05 – Variance Requirement & Form

- New section added in its entirety.

00 00 05.01 – State Fire Marshal Variances

- Added new section in its entirety.
 - A. If a State Fire Marshal-issued variance is needed, the Design Professional shall write a letter on company letterhead to the Associate Vice President for Facilities Planning quoting the code(s) for which a variance is being requested, the reasoning behind the request, as well as supporting documentation of the existing conditions (drawings, photographs, narrative as applicable). The Office of University Architects for Facilities Planning (OUA) will confer with the University Fire Safety office regarding the acceptability of the request and, if found acceptable, shall send a formal request to the State Fire Marshal's office.
 - B. The Design Professional shall not directly contact the State Fire Marshal's office unless authorized by the UGA/OUA Project Manager.

00 00 06 – Design Professional Documentation Requirements & Deliverables

- 1.A.i. Edited: To request a password for a visitor username, send an e-mail inquiry to: plansrm@uga.edu

00 00 08 – Design Professional Documentation Requirements & Deliverables

- 1.D.iii. Added: As separate files for each drawing sheet/specification section.
- 1.C.viii. Font size shall be TrueType and size shall be a minimum of 12pt when printed to scale.

00 00 09 – Room & Space Numbering

- 1.C. Edited: In addition, email inventory@fmd.uga.edu and request an Excel spreadsheet of the existing room numbers related to the project.

00 00 13 – Design Learning Environments - New section added in its entirety.

00 00 14 – Contractor Insurance Special Conditions - New section added in its entirety.

00 73 01 – Sole Source/Sole Brand

- 2.E. Removed: Bicycle Racks sub-section.
- 2.G Edited: Exterior Lighting Pole (see 26 56 13)
 - i. Global Lighting Perspectives "University of Georgia Decorative Pole", part # GP33R-12/BT, overall height: 12'-0", Traditional style tapered and fluted cast aluminum base with exterior mounting plate, 14" round base cover, black textured powdercoat finish.
 - ii. Global Lighting Perspectives: 1-281-412-2944.



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- 2.N Edited: Changed legacy security and access controls section reference from 28 13 00 to 28 13 00.01
- 2.Q Added: Security and Access Controls (see section 28 13 00)
 - i. Genetec, Inc.
 - ii. Reference contract # AC-CB-0418 for a list of approved contractors

01 35 13.02 – Special Project Procedures – Roofing & Hot Work

- 1.B. Added: Hot work permits are not required for new construction or full building renovations (i.e. renovations during which the building is completely vacated and turned over to the Contractor).

01 41 26.04 – Fire Marshal Construction Inspection Requirements

- 1.C. Added: For projects managed by GSFIC, 'Authority Having Jurisdiction' shall mean the State Fire Marshal.

01 81 00 – Facility Performance Requirements

- 1.E.i.a. Edited: Design Professional shall be held accountable for meeting 10% (changed from 20% to 10%) or greater energy savings over ASHRAE 90.1 – 2010 Appendix G.

01 91 13 – General Commissioning Requirements

- 1.L. Added: The CxA shall be responsible for coordinating with the drive manufacturer/vendor controls contractor and the TAB agency to ensure that VSDs are adjusted so that harmonic frequencies are skipped.

09 00 00 – General Finishes Requirements

- 1.A.i. Added: 00 00 13 Designing Learning Environments
- 1.B. Added: Designing Learning Environments section
- 3.B. Added: Contractor shall completely remove all paint, epoxies, and other excess finish materials prior to completion of the project. Additional unused supplies to be turned over to the University shall be coordinated through the Project Manager at substantial completion.
- Note added: Recommendations based on Illuminating Engineering Society of North America Standards 90.1 2013.

09 80 00 – Acoustical Treatment

- 1.A.i. Added: 00 00 13 - Designing Learning Environments

10 28 00 – Toilet, Bath and Laundry Accessories

- 2.C. Edited: The Optiserv 76700 is typically utilized and the Optiserv Accent 76600 is for areas that require a more compact dispenser.
- 2.C.i.b.2) Edited: Product Number: 76700
- 2.C.i.b.3) Edited: Website: <http://www.wausaupaper.com/product/optiserv-76700/>
- 2.C.i.c. Edited: Size: 12-1/8" x 16-13/16" x 9-13/16"
- 2.C.i.d. Edited: Weight: 6.85 lbs
- 2.D.ii.c. Added: Hand Dryer – Rapid-drying hand dryer as approved equal to Dyson Airblade V. Product shall be surface mounted, ADA compliant, with HEPA filtration and meeting NSF P335 hygiene standards. Product shall be activated by touch-free



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capacitive sensors with automatic shutoff and shall generate 85db(A) or less when in operation.

11 52 00 – Audio-Visual Equipment section added

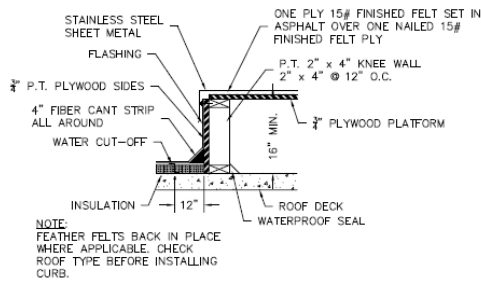
- 1.B.i. Added: Bidding of Audio-Visual Equipment and Systems: When soliciting multiple bids for audio-visual equipment and systems via statewide contract, the request for proposals and bid documents shall include written communication to vendors that the project is considered a ‘Statewide contract release’ and shall ensure the State administrative fee associated with use of the statewide contract is included in the bids.
- 2.B.iii. Added: The contrast ratio would be determined by ANSI/INFOCOMM 3M-2011 – Projected Image System Contrast Ratio. Those situations that require high resolution or have detailed visual information (e.g. Medical imaging or fine art) may require a 50:1 to 80:1 contrast ratio depending on the physical makeup of the room.

11 53 13 – Laboratory Fume Hoods

- 2.A.ii. Removed: Although, the use of air curtains are acceptable.
- 2.B.i. Edited: A sash stop shall be provided to permit a vertical opening of 18” from the counter top to top of the slotted opening located near the base of the sash.
- 2.B.ii. Edited: Sash shall be 3/16” thick laminated safety glass with an epoxy-coated aluminum sash handle.
- 2.B.iii. Edited: Sash counterbalanced system by a single weight: Chain and sprocket type.
- 2.I. Edited: Provide vacuum breaker on CW piping supply at gooseneck CW fixture inside fume hood.
- 2.L.i. Edited: Two-tube, rapid-start fluorescent light fixture of longest practicable length or equivalent LED fixture.
- 2.L.iv. Edited: Lamps: T-8 LED lamps.
- 2.L.vii. Edited: Set units so that lamps are replaceable from outside hood.
- 3.B. Replaced the roof curb for exhaust fan typical detail schematic drawing



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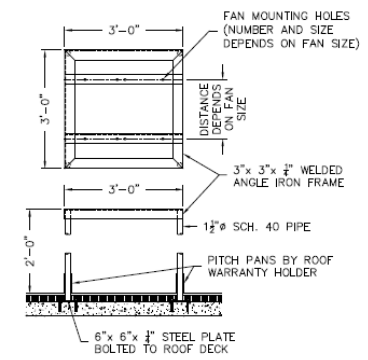


DIAMETER D, @ 3000 FPM±		
4" HPHF	350 CFM	4"ø
5" HPHF	465 CFM	5"ø
6" HPHF	575 CFM	6"ø

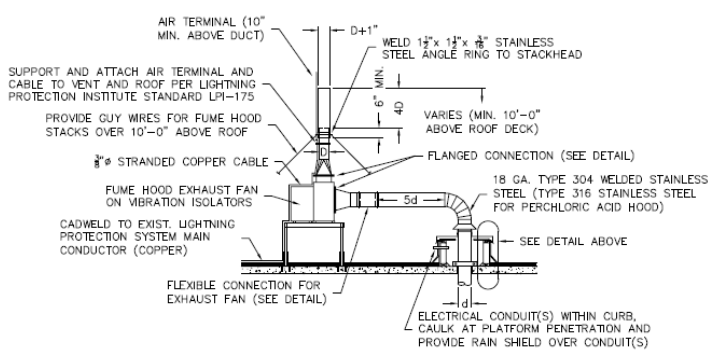
DIAMETER d, @ 1500 FPM±		
4" HPHF	350 CFM	6"ø
5" HPHF	465 CFM	7"ø
6" HPHF	575 CFM	8"ø

AIRFLOWS BASED ON 80 FPM FACE VELOCITY WITH SASH SET AT 18" VERTICAL HEIGHT.

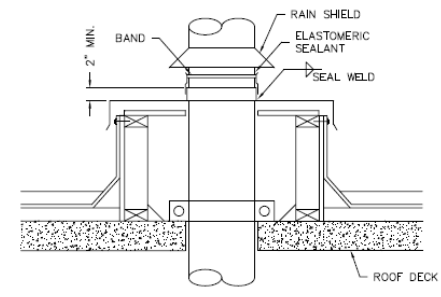
DETAIL - CURB CONSTRUCTION



DETAIL - EXHAUST FAN SUPPORT FRAME

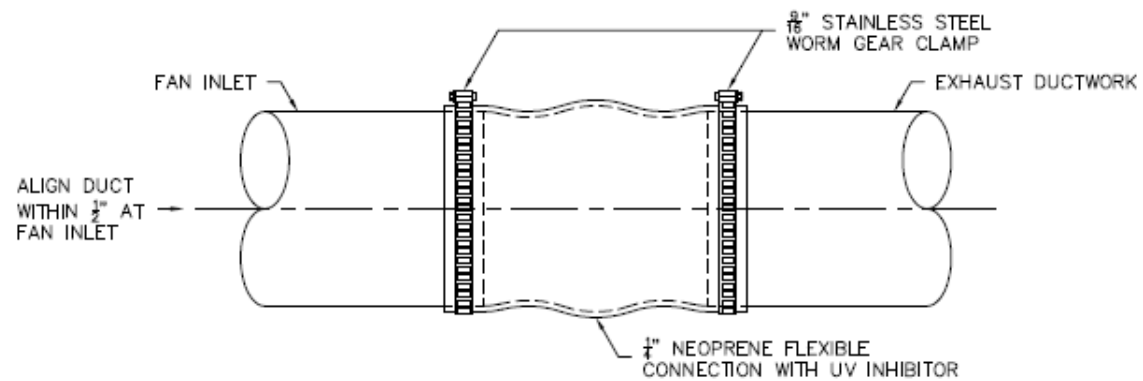


TYPICAL DETAIL - FUME HOOD EXHAUST FAN SUPPORT FRAME
SCALE: NONE



DETAIL - EXHAUST DUCT THIMBLE

- 3.B. Added: Schematic drawing for flexible connection detail – typical for all fume hood exhaust fans.



FLEXIBLE CONNECTION FOR EXHAUST FAN
SCALE: NONE

12 00 00 – General Furnishings Requirements

- 1.A.i. Added: 00 00 13 – Designing Learning Environments
- 1.K. Added: Designing Learning Environments



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- 1.K.i. Added: See section 4.4 in 00 00 13 – Designing Learning Environments for information about seat spacing.

12 46 33 – Interior Waste Receptacles

- 1.A.i. Added: 00 00 13 – Designing Learning Environments

12 56 52 – Audio Visual Furniture

- 1.A.i. Added: 00 00 13 – Designing Learning Environments
- 2.A. Added: Any variation from the lectern schedule below shall be approved in writing by the Center for Teaching and Learning.
- 2.A. Added: Change in table – For room type 45, 72, and 99 seat SCALE-UP classroom, lectern type equal to Computer Comforts ULS-2 (Modified for UGA), or modified IT-3030-SS.
- 2.B.iv. Added: Equipment racks must be approved by the Center for Teaching and Learning.
- 2.C.iv. Added: Equipment racks must be approved by the Center for Teaching and Learning
- 2.D.iv. Added: Equipment racks must be approved by the Center for Teaching and Learning.
- 2.E.iv. Added: Equipment racks must be approved by the Center for Teaching and Learning.

12 93 13 – Bicycle Racks

- Removed: Section 1.A.
- 2.A. Removed: This product has sole source approval and the acceptable manufacturer is AAA Ribbon Rack Company, Division of: Brandir International, Inc. Address and website.
- 2.A.i. Added: Timberform or approved equal
- 2.B.i. Edited: Model – Cycloops Model 2170-3 Single Inverted 'U' or approved equal.
- 2.C.i. Edited: Height: 3'-0" (nominal)
- 2.C.ii. Added: Length: 1'-3" (nominal)
- 2.C.iii. Added: Width: 3" (nominal)
- 2.D. Added: Finish/Color
- 2.E. Added: Special Features
- 2.F.i. Edited: One-piece ASTM Schedule 40 Steel Pipe (2" I.D. x 0.156 Wall) with smooth 6-inch radius mandrel bend, hot dipped galvanized per ASTM 123 after complete fabrication.
- 2.F.G.i. Edited: Embedment Mount (Preferred): Legs shall extend ten (10) inches below finish grade and shall be drilled to accept No. 4 re-bar
- 2.F.G.ii. Edited: Pedestal Mount: Shall include separate pedestal mount bases comprised of 1/4" thick mild steel plate permanently welded to two 1-1/2" I.D. Sch. 40 pipe sleeves. Decorative metal base covers shall conceal pedestal bases and the anchor hardware shall be tamper resistant.
- 3.A.i. Added: Bicycle racks shall be placed per the Placement section of Association of Pedestrian and Bicycle Professionals *Essentials of Bike Parking (2015)*. See diagram on following page.
- 3.B. Removed steps describing installation.



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- 3.B.i. Added: Install per manufacturer instructions
- 3.B.ii. Added: Installation shall be plumb and level
- 3.B.iii. Added: Take measures to prevent damage to rack during deliver, storage, and mounting.
- Added figure for minimum spacing requirements for common installation of fixtures like the inverted-U or post-and-ring racks.
- Removed bicycle rack diagram.

22 00 00 – General Plumbing Requirements

- 1.A.iii. Added: 00 00 13 – Designing Learning Environments
- 1.E.vi. Added: Isolation valves shall be provided in readily accessible locations and coordinated with other disciplines as required.
- 1.E.vii. Added: Provide balancing valves and thermometers in hot water circulation lines to assist in balancing.
- 1.E.viii. Propress fitting (or other similar mechanical joints) shall not be allowed in new facilities, but may be considered in renovations of existing facilities.
- 1.I. Added: Design for Learning Environments section

22 40 00 – Plumbing Fixtures

- 2.B.ix. Added: Water Coolers / Bottle filling Station: Wall mounted electric drinking fountain shall be complete filtered bi-level dual fountain cooler and bottle filling station, ADA compliant, no touch sensor activation on bottle filler, cooler shall have push bar activation, water filter, flexible bubblers, refrigerated unit, 8 GPH of 50F water at 90F ambient and 80F inlet water, lead free design; Equal to Elkay LZSTL8WSLK. (Single Unit: Elkay EZH2O model # LZS8WSLK)
Provide 17 gauge, chrome plated cast brass P-trap with cleanout and flexible 1/2" supply with wheel handle angle valve.
- 2.B.x. Added: Kitchen Sinks – 18 Gauge
 - a. Double Bowl - Equal to Elkay LR 3322
 - b. Single Bowl - Equal to Elkay LR 2522
 - c. Bar Sink – Equal to Elkay BCR 15
- 2.B.xi. Kitchen Faucets
 - a. Equal to Wolverine Brass
 - b. Equal to Moen
- 2.B.xii. Service Sink – 24 x 24 x 17
 - a. Equal to Stern Williams SBC-1700BP
- 2.B.xiii. Service Sink Faucet
 - a. Equal to Wolverine
 - b. Equal to T&S
 - c. Equal to Kohler
- 2.B.xiv. Laundry Sink – 23 x 21 ½ x 33 ½ Tall
 - a. Equal to Fiat FL1
 - b. Equal to Mustee
- 2.B.xv. Laundry Sink Faucet
 - a. Equal to Wolverine
 - b. Equal to T&S



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- c. Equal to Moen
- 2.B.xvi. Wall Hung Lavatory – China
 - a. Equal to Kohler K2005-0
- 2.B.xvii. Drop –In Vanity Sink / China
 - a. Equal to Kohler K2196-4-0

23 00 00 – General Mechanical Requirements (HVAC)

- 1.A.iii. Added: Design Learning Environments
- 1.C.xviii. Added: In general, electrical equipment shall not be attached using a screw/bolt attachment through the equipment casing. When conditions do require attachment, attachment shall be made utilizing a stud type bonding fastener with perforated base adhered to the equipment casing with a compatible high strength structural adhesive.
- 1.C.xx. Added: Sequences shall be provided and shown on the drawings for all packaged equipment, even if the controls are integral (not provided by building automation specialist or BAS vendor). The documents shall clearly indicate what devices are provided by equipment vendor and what is provided by BAS vendor.
- 1.C.xxi. Packaged equipment provided with integral controls shall be provided with factory installed ALC controls when possible. If Automated Logic Corporation (ALC) controls are not provided at the factory, then a building automation and control network (BACnet) interface shall be provided. The equipment manufacturer shall provide as a minimum the following, as a part of the shop drawing submittal process:
 1. Specified project specific BACnet I/O point list for the unit with point names and addresses as shown on the drawings.
 2. Specified project specific sequence of operation for each unit.
 3. Specified project specific control wiring diagram for unit.
- 1.C.xxii. The Design Professional shall review all equipment. For equipment that requires interfacing with BAS, the Design Professional shall review equipment submittals with UGA BAS Contractor.
- 1.D.vii. Added: All mechanical equipment shown to be located in an attic/penthouse mechanical area shall be coordinated with existing structure. Mechanical area accessibility shall be coordinated to provide the capability to remove and replace mechanical equipment. Accessibility shall be indicated on drawings and shall be sufficient to allow removal of largest component of the mechanical equipment installed in the space. Coordination with other trades shall ensure that clear and safe paths to equipment are provided.
- 1.D.viii. Added: Grease ducts shall be designed to minimize horizontal runs. Horizontal runs shall not exceed 10 feet, and shall be sloped in accordance with the governing codes. Each kitchen exhaust hood shall be provided with a single dedicated exhaust fan. Kitchens shall be provided with dedicated, mechanically cooled make-up air systems.
- 1.D.ix. Added: When heat trace is specified, an indicator light shall be provided. The heat trace shall be indicated on the BAS graphics.
- 1.D.x. Added: Frost-free spigots shall be installed at cooling towers and at air-cooled chillers/condensing units to allow for field cleaning.
- 1.E. Added: Design for Classrooms

23 05 14 – Variable Frequency Drive



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- 1.A.i. Added: 01 19 13 - General Commissioning Requirements
- 2.Q. Added: The VFD manufacturer shall provide a CFM or GPM output to BAS vendor.
- 3.B. Added: The CxA shall be responsible for coordinating with the drive manufacturer/vendor controls contractor and the TAB agency to ensure that VFDs are adjusted so that harmonic frequencies are skipped.

23 05 23 – General-Duty Valves for HVAC Piping

- 2.F. Added: Vibration isolators for piping shall be braided stainless steel type rated for no less than 150 psi. Victaulic flexible grooved couplings (no less than three in series) may be provided in the place of the braided stainless steel isolator.
- 2.G. Added: Manual balancing valves shall be calibrated, multi-turn type with hand-wheel and numeric indicator displaying number of turns in increments of tenths, and shall be Tour & Anderson STAD or equal.

23 05 93 – Testing, Adjusting, & Balancing (TAB) for HVAC

- 3.B. Removed: List of Acceptable TAB firms.

23 09 23 – Building Automation & Temperature Control Systems (BAS)

- 1.E. Removed: Pressure input shall be provided by the controls contractor for all VFD driven fans and pumps. Exception: this is not required for all dedicated fans serving fume hoods.
- 1.F. Removed: Install filter gauges across all filter banks.
- 1.F. Added: Provide differential pressure sensors across all filter banks on AHUs and elsewhere, where indicated. These shall have an analog output connected to the BAS. Filter status shall be displayed on AHU graphic. Display shall indicate ‘as tabbed’ filter ‘clean’ DP and filter clean-out, as specified – shown as ‘dirty’ DP and actual DP in inches WG. Display shall change to “CLEAN FILTER” when ‘filter dirty’ set=point is reached. Transmitter shall be equal to Dwyer Photohelic gauge if there is no BAS and, with Owner’s prior approval, Magnahelic if no power is available.
- 1.K. Added: Humidity sensors for HVAC applications shall be equal to Vaisala, model HMD60/70 (or HMD50 with INTERCAP replaceable sensors), HMW82/83 or HMT120/130 to suit the application, and output required. Sensor to be interchangeable in the field and calibration-free. Accuracy is $\pm 3\%$ RH from 0 and 90% RH. Sensor to have a stability of a $\pm 2\%$ RH over a two year period. Transmitter shall operate over a humidity range of 0 – 100%. Sensors shall be warranted for 2 years from date of installation and shall be NIST-certified/traceable calibration. Wall-mounted devices shall have replaceable sensor kits. Where dewpoint sensing is called for, the transmitters shall be equal to Vaisala HMW110B1VA1NN for wall-mounted and HMD 102B1VA1NN for duct-mounted; 2% accuracy, 3-point NIST-certified/traceable calibration; on-site calibration using HM70 hand-held meter or PC connection. Output parameters to be selectable with a PC connection.
- 1.Q.g. Added: Graphic screens shall include a complete system schematic layout showing real-time values and set-points for all points. For VAV systems, the airside shall show AHU serving the system, air terminals, duct static-pressure sensor location(s) with an active link to floor plan(s) showing actual installed locations, etc. For water side, the graphic shall show control valves and pump status. The graphic screen shall show design goal for monitored points and set-point and the real-time current temperature,



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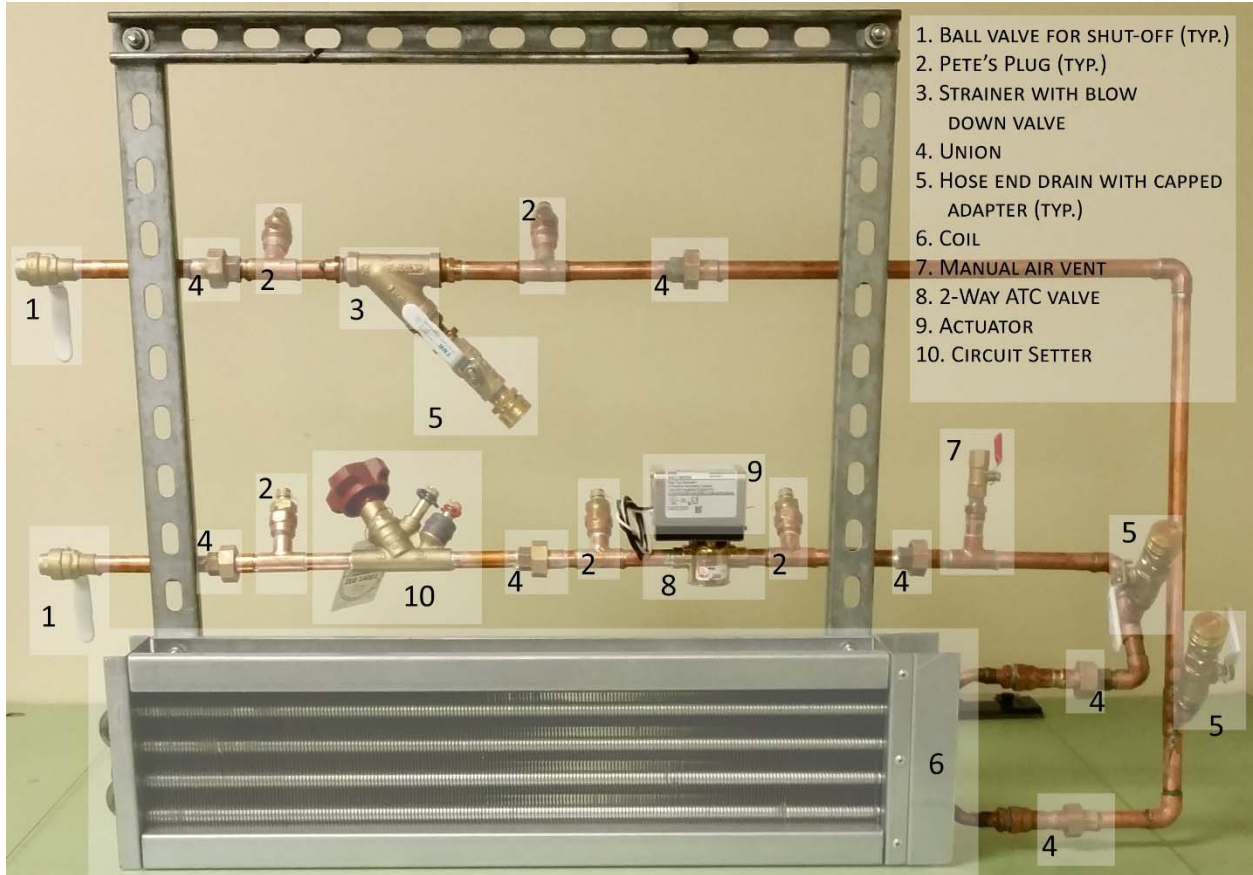
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humidity, static pressure, flow rate, etc., as well as status of all fans associated with the system; to include, real-time air flow rate, with maximum and minimum cfm set-points (as specified). All air flows shall be shown in an air balance schedule on the graphic screen, as well as the space static pressure for the system or, depending on the amount of information on the graphic screen, accessible via an active link. The air balance schedule shall show the actual net positive or negative air flow in the summary. The graphic shall show all control air flow damper positions and re-heat, hot water valves, or electric heat control, as a percentage open or closed.

- 1.Q.i.i. Added: Piping schematics shall be two-dimensional to clearly identify service (CHW Supply, CHW Return, CW Supply, CW Return, MP Stream, Pumped Condensate, Make-up, etc.). Display shall use bold colors (rather than shades).
- 1.Q.s. Added: As-built mechanical drawings linked to the graphics.
- 2.A.i. Edited: The Construction Manager shall contract with Automated Logic Georgia as a direct sub-contractor.
- 2.H. Added: The Design Professional shall identify the correct locations of differential pressure sensors based on pipe calculation and shall, if necessary, require the contractor to relocate the sensors to a better location based on TAB results.
- 3.A. Added: For all equipment with which the controls contractor will be interfacing, the controls contractor shall be responsible for reviewing the equipment submittals to ensure that the equipment is being supplied with appropriate accommodations to interface with the BAS as specified.

23 20 00 – HVAC Piping & Pumps

- 1.E. Added: See mockup 1.F. this section
- 1.F. Added: Fan Coil Unit & Terminal Unit Coil Piping Mockup
MOCKUP FOR GENERAL REFERENCE ONLY



23 21 13 – Hydronic Piping

- 3.A. Added: Welding:

- All welding for above ground piping shall be done in accordance with ASME B31.9 (latest edition), Code for Building Services Piping. All welding done below ground shall be done in accordance with ASME 31.1 (latest addition), code for Power Piping.
- All welding procedures, welder qualification, quality, and testing shall conform to the requirements of ANSI B31.1, Code for Pressure Piping; and to the ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications. The Contractor shall be responsible for the procedures, quality and visual testing of all welding performed by him and his employees.
- The WPQs shall be performed under the witness of an independent agency. The witness shall be a representative of an independent testing agency, Authorized Inspector, or consultant, any of which must be approved by the National Certified Pipe Welding Bureau. The qualifying test segment must be a 2 inch nominal pipe size with wall thickness within range of the WPS. Tests position shall be "6G" per ASME Section IX.
- Welding procedures, and all welder qualifications (WPQs and Evidence of Continuity) shall be maintained on the jobsite.



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- v. A third party testing firm shall perform Ultrasonic testing of 100% of the full penetration welds for all underground piping and any above ground welds that the owner chooses. Fillet welds shall be tested using a dye penetrant. Contractor shall be responsible for all labor, material and travel expenses involved in the re-inspection and retesting of any welds found to be unacceptable.
- 3.E. Removed: Description for welding of pipe
- 3F. Removed: A third party testing firm shall perform Ultrasonic testing of 100% of the full penetration welds for all underground piping. Fillet welds shall be tested using a dye penetrant. Contractor shall be responsible for all labor, material and travel expenses involved in the re-inspection and retesting of any welds found to be unacceptable.
- 3.F. Added: Flange bolts shall be torqued as recommended by the gasket manufacturer.

23 22 13 – Steam & Condensate Heating Piping

- 3.A. Added: Steam Piping
 - i. Above ground steam piping and condensate piping shall be installed to slope in the direction of flow.
 - ii. All welding procedures, welder qualification, quality, and testing shall conform to the requirements of ANSI B31.1, Code for Pressure Piping; and to the ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications. The Contractor shall be responsible for the procedures, quality and visual testing of all welding performed by him and his employees.
 - iii. The WPQs shall be performed under the witness of an independent agency. The witness shall be a representative of an independent testing agency, Authorized Inspector, or consultant, any of which must be approved by the National Certified Pipe Welding Bureau. The qualifying test segment must be a 2 inch nominal pipe size with wall thickness within range of the WPS. Tests position shall be “6G” per ASME Section IX.
 - iv. All welding shall be done in accordance with ASME B31.1, Code for Power Piping.
 - v. Welding procedures, and all welder qualifications (WPQs and Evidence of Continuity) shall be maintained on the jobsite.
 - vi. The Contractor shall pressure test the steam and condensate piping. A third party testing firm shall be hired by the owner to perform Ultrasonic testing of 100% of the underground full penetration welds and any above ground welds that the owner chooses. Fillet welds shall be tested using a dye penetrant. Contractor shall be responsible for all labor, material, and travel expenses involved in the re-inspection and retesting of any welds found to be unacceptable.
- 3.B.v. Removed: The Contractor shall pressure test the steam and condensate piping. A third party testing firm shall be hired by the owner to perform Ultrasonic testing of 100% of the full penetration welds. Fillet welds shall be tested using a dye penetrant. Contractor shall be responsible for all labor, material, and travel expenses involved in the re-inspection and retesting of any welds found to be unacceptable.
- 3.B.vii. Added: Provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape manufactured specially for warning and identification of buried utility.



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23 22 16 – Steam & Condensate Heating Piping Specialties

- 2.A. Added: Steam system components requiring access (PRVs, unions, valves, etc.) shall be insulated with removable customized jackets. Features shall include
 - i. High temperature insulation blanket capable of withstanding 1000 degrees F. If installed in below ground vaults, then the insulation blanket shall be aerogel.
 - ii. PTFE jacketing.
 - iii. Kevlar threads.
 - iv. Double-row stitching with minimum 4-6 stiches per inch.
 - v. The surface temperature shall not exceed 120 degrees F, for 100 psi steam.
 - vi. Mating seams shall include 2” flap secured with hook and loop fastening material, and straps with buckles.
- 2.B. Added: Basis of Design shall be Thermaxx.

23 25 00 – HVAC Water Treatment

- 1.B.i. Edited: Chem Aqua
- 1.B.ii. Edited: Contact person is John Mayfield, ph. (404) 558-9695
E-mail: jmayfiel@nch.com.
- 1.B.iii. Edited: Chem Aqua shall be employed by the Contractor on all new and renovated condenser water, chilled and heating hot water plant to review design, preparation, cleaning, flushing and start-up.
- 2.A.i. Added: The controllers shall be provided with a BACNET card and shall interface with the DDC.
- 2.A.viii. Added: Provide electronic level indicating wands.

23 31 13 – Metal Ducts

- 1.C. Edited: At the contractor’s option longitudinal joints on supply air ductwork downstream of VAV terminals and return air do not need to be sealed however the leakage class specified shall be achieved.
- 1.D. Edited: All supply air ducts upstream of VAV terminals shall be leak tested as well as all the return air ductwork located outside the building insulated vapor/water barrier envelope.
- 1.D. Added: Ductwork downstream of VAV terminals and return air ductwork located outside the building insulated vapor/water barrier envelope shall be tested at the discretion of the CxA and/or the Project Manager. All HVAC ductwork located in high humidity areas, where condensation could occur, shall be leak tested.
- 1.D.i. Edited: FMD Projects only – Additional duct section(s) to be tested, if required, shall be selected by the Engineering Job Captain.
- 1.H. Added: Flexible ductwork shall be factory-fabricated Class-1 type rated for a minimum 10” positive and 2” negative operating pressure and 5000 fpm velocity. Flexible ductwork shall be insulated type, R = 6 minimum and shall be listed under UL181. Vapor barrier shall be metalized film with reinforcement, 0.05 perm per ASTM E96 Procedure A. Inner film shall be CPE or PE with corrosion-resistant helix. Flexible ductwork shall be equal to Flexmaster 1m, Thermaflex MKE (4-12” ID); MKC (14” and above). Flexible ducts downstream of terminal units shall be max



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5 ft. long, installed free of kinks, and connected at terminations equal to Flexmaster “Quick Release – LS Series” stainless steel clamps.

- 1.M. Added: Low-pressure spin-in fittings with dampers shall be furnished at round duct run-outs in diffusers, grilles, and registers where shown on the drawings. Fittings shall be spin-in type (stick-on type is NOT acceptable), complete with damper, 3/8” square one-piece damper shaft, nylon shaft bushings at exterior duct wall penetrations, 2” stand-off bracket, locking quadrant, and factory-sealed longitudinal seams. Barrel leakage to be less than 1 cfm at 4” sp. Basis of design is Flexmaster FLD-B03 with sealed seams, or equal.

23 36 01 – VAV Terminal Units

- 2. Products sub-section added

23 52 00 – Heating Boilers

- 2.B.i. Added: Manufacturer provided boiler controls shall not be allowed.
- 3.D. Added: The consultant shall verify that there is sufficient volume in the heating hot water system to avoid short-cycling. The consultant shall verify minimum required volume with all listed manufacturers.

23 64 16.13 – Air-Cooled Water Chillers

- 2.A.iv. Added Daikin to the list of acceptable manufacturers.

23 65 00 – Cooling Towers

- 2.K. Added: Below grade sumps will not be allowed.
- 3.G. Added: Provide heat tracing for the make-up water piping.

23 73 00 – Indoor Central-Station Air Handling Units

- 1.C. Edited: Select most efficient fan for the application by comparing life cycle costs of alternatives considered; submit details with shop drawings submittals; specify highest efficiency motor available (NEMA Premium); consider fan performance over full range of anticipated operation and submit curves at the design development stage.
- 1.C.i. Edited: **OUA Projects only** – Fan wall systems are preferred. The Design Professional shall specify this as the basis of design and shall discuss options with the Project Manager during the design phase to determine most suitable (lowest life-cycle cost, including electrical service costs) system for specific project. If a fan wall system is selected it shall follow the Product requirements below.
- 1.C.ii. Edited: **FMD Projects only** -- Fan wall systems are required. Refer to Product requirements below.
- 2.A.i. Edited: Select cooling coils for 400 fpm max face velocity and entering water 1F above the design chilled water supply temperature.
- 2.A.vi.e. Added: Filters: Rating systems for air filters shall be ASHRAE Standard 52.2-2007 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
- 2.A.vi.f. Added: The cost of filters shall be carefully considered during the design and selection of the filters. Filters shall be scheduled on the drawings. Dust holding capacity shall be included in selection criteria.
- 2.A.vi.g. Added: Layout shall ensure adequate ease of access to space is provided.



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- 2.A.vi.h. Added: Filter and holding frame combination shall ensure that air does not by-pass the filter media.

23 81 29 – Variable Refrigerant Flow (VRF) HVAC Systems

- 2.B.iii. Added: Ducted systems shall be provided with manufacturer supplied filter rack.
- 2.B.iv. Added: piping shall be brazed. Mechanical joints may be considered on a case-by-case basis.
- 3.B. Added: Technicians working on VRF shall be certified and shall maintain current VRF installation certifications on site at all times. All refrigeration piping shall be hard drawn, type X, and shall be selected to handle the operation pressure.
- 3.C. Added: The refrigeration piping shall be purged with nitrogen, vacuum tested and pressure tested in accordance with the manufacturer’s recommendations. The system shall be pressured tested for a period no less than 24 hours.
- 3.D. Added: A qualified owner’s appointed representative shall witness purging, vacuum testing, and pressure testing.
- 3.E. Added: The VRF system shall not be used to cool the building during construction. The contractor shall provide temporary cooling if necessary.
- 3.F. Added: Brazing Qualifications:
 - i. All brazing procedures, brazer qualification, quality, and testing shall conform to the requirements of ANSI B31.1; and to the ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications. The Contractor shall be responsible for the procedures, quality and visual testing of all brazing performed by him and his employees.
- 3.G. Added: The BPs shall be performed under the witness of an independent agency. The witness shall be a representative of an independent testing agency, Authorized Inspector, or consultant, any of which must be a Certified Welding Inspector (CWI) and/or approved by the National Certified Pipe Welding Bureau. The qualifying test segment must be a minimum 3-inch diameter pipe with the range of wall thicknesses and material types qualified as applicable for each project and within range of the BPS. Tests position shall be all positions defined in QB-120 to QB-124 of ASME Section IX.
- 3.H. Added: All brazing shall be done in accordance with ASME B31.1.
- 3.I. Added: Brazing procedures, and all brazer qualifications (BPs and Evidence of Continuity) shall be maintained on the jobsite.
- 3.J. Added: All technicians who will be performing brazing operations shall be certified in accordance with American Welding Society standards. All welding certifications and procedures shall be maintained on site.

26 00 00 – General Electrical Requirements

- 1.A.iii. Added: 00 00 13 – Designing Learning Environments.
- 1.C.i. Added: Designing for Learning Environments section.

26 51 00 – Interior Lighting

- 1.A.i. Added: 00 00 13 – Designing Learning Environments.
- 1.K. Added: Classroom Lighting section

26 56 00 – Exterior Lighting



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- 1.D.viii.a. Standard CCT changed from 4000K to 3000K
- 1.E.v.d. Standard CCT changed from 4000K to 3000K

26 56 13 – Lighting Poles and Standards

- 2.E1.d.A.i Added: The UGA sole brand approval for this product
- 2.E1.d.B. Added: Global Lighting Perspectives GP33R-12/BT, 12'-0" overall height, traditional styled cast aluminum base, extruded fluted shaft, black textured powdercoat finish, ½ x18" double nut washer anchor bolts.

27 00 00 – General Communications Requirements

- 1.A.ii. Added: 00 00 13 – Designing Learning Environments.

27 15 00 – Communications Horizontal Cabling

- 1.A.vi. Added: 27 41 00 – General Audio-Visual System Requirements

27 41 00 – General Audio-Visual System Requirements

- 1.A.i. Added: 00 00 13 – Designing Learning Environments.
- 1.A.ii. Added: 11 52 00 – Audio-Visual Equipment
- 1.A.iv. 12 56 52 – Audio-Visual Furniture
- 1.A.v. Added: 12 56 52 – Audio-Visual Equipment
- 2. Products section added in its entirety.

27 41 00 – Audio-Visual Control System

- 1.A.i. Added: 00 00 13 – Designing Learning Environments.
- 1.A.iv. Added: 11 52 00 – Audio-Visual Equipment
- 1.A.v. Added: Projection Screens
- 1.A.vi. 12 56 52 – Audio-Visual Furniture



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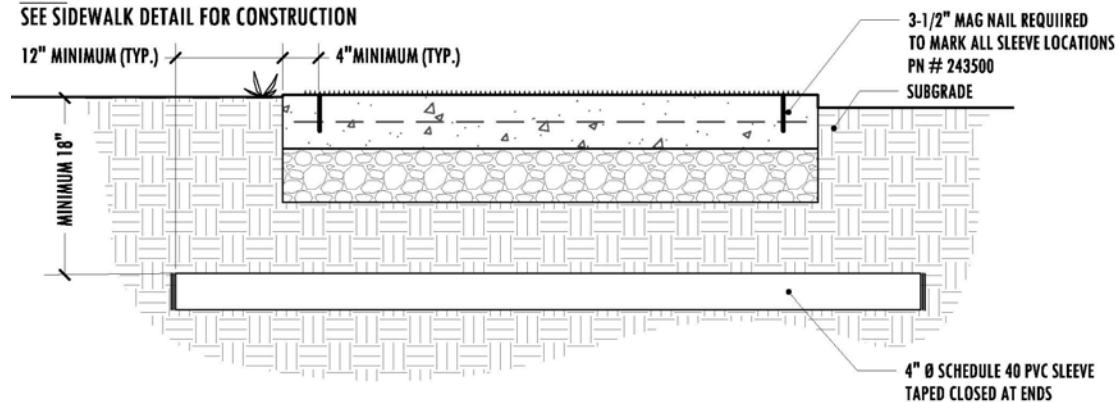
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32 84 00 – Planting Irrigation

- 2.A.v. Edited: Piping changed from PVC Class 200 PSI to PVC Schedule 40.
- 2.B.v. Removed: Stub up sleeve pipe (12) inches above ground surface and cap. Paint cap with fluorescent orange paint for easy identification.
- 2.B.v. Added: All sleeves shall be marked with – 3-1/2” mag nail. Nail shall be placed 4” from edge of pavement on both sides as per the following detail (detail added).

NOTE:

SEE SIDEWALK DETAIL FOR CONSTRUCTION



- 2.B.vi. Added: All sleeves shall be taped shut prior to final installation.
- 3.A.iv. Edited: Piping changed from PVC Class 200 PSI to PVC Schedule 40.
- 3.A.v. Edited: Piping changed from PVC Class 200 PSI to PVC Schedule 40.

32 91 00 – Planting Preparation

- 2.E.i. Added: All landscape fabric and erosion control netting must be biodegradable in nature.
- 3.D. Added Bed Preparation for Meadow and Seeded Areas sub-section.

32 91 13.16 – Mulching

- 2.C. Edited: Each delivery must contain only double-ground shredded hardwood bark that is clean, double-ground, uniform particle size (no piece shall be any longer than 3” and not wider than 1/2”), free of foreign matter, and aged for a minimum of six months.
- 2.D.i. Added: Placement of Crushed Slate, Gravel Paving Materials section.

32 92 00 – Turf & Grasses

- 3.B.vi. Added: For parking lot islands, sod shall not be installed in any parking lot island in such a way that the sod width is narrower than 10 feet.

32 93 00 – Plants

- 1.E. Added: Due to the difficulty and time required to maintain extensive planting beds in accordance with UGA Standards, random plant mixtures consisting of assorted perennials, grasses, and flowering bulbs will not be permitted except in meadow type areas. Plantings in typical plant beds shall occur as distinct masses of individual species so that they are easily recognizable for appropriate maintenance by campus personnel. Atypical or special installations shall be reviewed on a case by case basis for design and plant selection (e.g. rooftop gardens).
- 1.F. Added: Site Triangles in Parking Lots: Plantings shall be designed so as not to obstruct site triangles for vehicles at campus street and driveway intersections. For parking lot islands, no



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proposed shrub shall exceed 30" height at maturity. Additionally, sod shall not be installed in any parking lot island in such a way that the sod width is narrower than 10 feet.

- 2.B. Added: Double Leaders in Trees: Unless specified as multi-stem trees, shade trees shall not be supplied with co-dominant stems. Only shade trees with single dominant leaders will be deemed acceptable for planting. Co-dominant stems occurring within the lower half of the crown do not meet minimum quality requirements for acceptable tree specimens.

Good quality



Poor quality



32 94 13 – Landscape Edging

- 2.A. Edited: Steel bed edging will not be permitted along any planting beds within the University of Georgia Campus. Contractors shall provide a spaded trench bed edge unless a paved mowing strip or other approved hardscape edge is included in the design.
- 3.A. Added: Straight runs and 90 degree angles are not permitted in the design of planting bed edges unless a paved mowing strip or other approved hardscape type edge is included in the design or as allowed by variance on a case by case basis. Otherwise, trenched bed edges shall be free-flowing and easy to maintain.

33 60 00 – Hydronic and Steam Energy Utilities

- 2.A. Added: Vaults shall be cast-in-place, reinforced concrete construction and shall be water-proofed (top, bottom and sides) with a sheet membrane system that bonds to the concrete.
- 2.B. Added: Pipe penetrations shall be sleeved and the space between the piping outer jacket and the sleeve shall be sealed with link-seal, and the void filled with non-shrinking grout.
- 2.C. Added: Vaults shall be provided with sump pumps.
 - ii. Chilled water vault sumps shall be electric.
 - iii. Steam vault sumps shall be steam-powered.
- 3.B. Added: Vaults sump pumps shall be piped to the nearest storm manhole.