

ADDENDUM NO.: ONE DATE: 17 July 2013

PROJECT TITLE: HORIZON GROUND AND FOURTH FLOOR UPFIT

University of South Carolina State Project No. H27-6081-AC WTS Project No. 11700/ File 7.0

WTS FILE NO.: 11700 / 7.0

WRITTEN BY: John McLean, AIA. LEED AP

J. Sanders Tate, AIA LEED AP

TO: Prospective Bidders / Plan Holders

This addendum is issued pursuant to Article 1.1.1 of the AIA General Conditions of the Contract (A201) in connection with the revision of Bidding Documents which have been previously issued.

Addenda are issued prior to execution of Contract. All instructions contained herein shall be reflected in the Contract Sum and this Addendum will be made a part of the Contract Documents, if, as, and when a Construction Contract is awarded.

This Addendum forms a part of the Contract Documents and modifies the original documents dated 17 June 2013 as noted below. Acknowledge receipt of this Addendum in this space provided on the Bid Form. Failure to do so will subject the Bidder to disqualification.

This Addendum consists of 04 pages and the following attachments:

Pre-Bid Conference Memorandum	2 pages
Pre-Bid Sign In Sheet	4 pages
Electrical RFI Responses from SSOE	. 1 page
SECTION 08710 - Finish Hardware	10 pages
SECTION 09512 - Suspended Panel and Tile Ceilings	4 pages
SECTION 09650 - Resilient Flooring	3 pages
SECTION 09680 - Carpet	2 pages
SECTION 15221 - CHÉMICAL WASTE PIPING	
SECTION 16055 - OVERCURRENT PROTECTIVE DEVICE COORDINATION	7 pages
Drawing M1.31 (for information only)	1 sheet
Drawing A2.01	1 sheet
Drawing A 2.11	1 sheet
Drawing A 2.41	
Drawing MD1.01	1 sheet
Drawing M1.01	1 sheet
Drawing M1.11	1 sheet
Drawing M1.21	1 sheet
Drawing M1.31	1 sheet
Drawing M1.41	1 sheet
Drawing M1.51	1 sheet

Drawing M5.01	1 sheet
Drawing M6.50	1 sheet
Drawing M6.51	1 sheet
Drawing M6.52	
Drawing PP7.40	
Drawing EA1.01	1 sheet
Drawing EA1.41	
Drawing EL6.00	1 shee
Drawing EP1.01	1 sheet
Drawing EP1.41	1 sheet
Drawing EP1.51	1 sheet
Drawing EP5.64	1 sheet
Drawing EP5.65	
Drawing ET3.01	1 sheet
Drawing E6.11	
Drawing E6.41	

A. NON-MANDATORY PRE-BID CONFERENCE:

1. See attached Pre-Bid Conference Memorandum and Pre-Bid Sign In sheet for items discussed at Mandatory Pre-Bid Conference held July 16, 2013 and list of attendees.

B. **GENERAL INFORMATION**

1. Walker White (mechanical subcontractor) provided a marked up drawing M1.31 that shows the under slab plumbing for the Fourth floor overlaying the existing mechanical layout that is in the ceiling of the third floor. Walker White wanted to share this information with everyone to assist in understanding the scope of above ceiling work at the third floor. This drawing is for information only and is not a part of the Contract Documents

C. <u>ADDITIONAL SITE VISITS</u>:

1. Building will be open for Site Visits by bidders on Friday, July 18, 2009 from 10:00 a.m. to 11:00 a.m. Please enter through door at Loading Dock at South Elevation.

D. REVISIONS TO THE PROJECT MANUAL:

1. USC SUPPLEMENTAL GENERAL CONDITIONS FOR CONSTRUCTION PROJECTS

Page 1 of 3, number 1:Parking shall be as described in this paragraph. The designated lay-down area will be the gravel lot to the west of the building. Only gravel lot, not paved or grassed areas will be used.

- 2. SECTION 04200 UNIT MASONRY
 - A. Article 2.8.E.1: add "e. Hohmann-Barnard"
- 3. SECTION 06402 INTERIOR ARCHITECURAL WOODWORK
 - A. Article 2.1, Paragraph A: under Fabricators add: "7. Any woodwork fabricator that has a current AWI certificate and maintains it through this project."
- 4. SECTION 08000 GLAZING:

- A. Article 2.8.A Revise heading "Manufacturer:" to read "Manufacturer must meet the fire ratings listed in Flat Glass Schedule and be listed below:"
- B. Article 2.8.A add "7. SAFTIFIRST"
- 5. SECTION 08710 FINISH HARDWARE
 - Replace Section with revised Section as attached to this addendum.
- 6. SECTION 09512 SUSPENDED PANEL AND TILE CEILING Replace Section with revised Section as attached to this addendum.
- 7. SECTION 09650 RESILIENT FLOORING
 Replace Section with revised Section as attached to this addendum
- 8. SECTION 09680 CARPET
- 9. Replace Section with revised Section as attached to this addendum
- 10. SECTION 10155- TOILET COMPARTMENTS
 - A. Article 2.1.A Manufacturers: add "8. Accurate Partitions"
- 11. SECTION 10801 TOILET AND BATH ACCESSORIES
 - A. Article 2.2.D.1 add "Saniflow is an approved equal manufacturer."

12. SECTION 12345 - METAL LABORATORY CASEWORK AND FUME HOODS

- A. Prior Approvals: Air Master Systems is an acceptable manufacturer as provided. They meet all specifications. Refer to specification section 11600.2.1.A that states: "The Naming of manufacturer(s) and designation of product is for the purpose of identifying and describing required product and not to limit competition. Other manufacturers capable of producing the same appearance and having the same quality, durability, and performance may be proposed for use on this project subject to Architect's approval, unless noted otherwise. Other approved manufacturers are responsible for all adjustments required to fit their products to the work at no additional cost. Fume hoods shall be provided with adjustable baffles as specified.
- B. Prior Approvals: Labconco is an acceptable manufacturer as provided. They meet all specifications. Refer to specification section 11600.2.1.A that states: "The Naming of manufacturer(s) and designation of product is for the purpose of identifying and describing required product and not to limit competition. Other manufacturers capable of producing the same appearance and having the same quality, durability, and performance may be proposed for use on this project subject to Architect's approval, unless noted otherwise. Other approved manufacturers are responsible for all adjustments required to fit their products to the work at no additional cost. Fume hoods shall be provided with adjustable baffles as specified.

13.SECTION 12346 – WOOD LABORATORY CASEWORK

Prior Approvals - Cabinet by Design is an acceptable manufacturer as provided. They meet all specifications. Refer to specification section 11600.2.1.A that states: "The Naming of manufacturer(s) and designation of product is for the purpose of identifying and describing required product and not to limit competition. Other manufacturers capable of producing the same appearance and having the same quality, durability, and performance may be proposed for use on this project subject to Architect's approval, unless noted otherwise. Other approved manufacturers are responsible for all adjustments required to fit their products to the work at no additional cost.

- 14.SECTION 15221 CHEMICAL WASTE PIPING
 - A. Replace Section with revised Section as attached to this addendum

- 15. SECTION 15550 GENERATOR EXHAUST
 - A. Paragraph 2.1.A: Add MetalFab as acceptable manufacturer.
- 16.SECTION 16055 OVERCURRENT PROTECTIVE DEVICE COORDINATION
 - A. Replace Section with revised Section as attached to this addendum

REVISIONS TO DRAWINGS:

1.Replace Drawings listed as attachment to this addendum with revised Drawings that are a part of this addendum.

END OF ADDENDUM

PRE-BID CONFERENCE MEMORANDUM

DATE: 17 July 2013

DATE OF MEETING: 16 July, 2013 10:00 a.m.

LOCATION OF MEETING: USC FACILITIES & PLANNING

743 Greene Street Columbia, SC

TO: File

FROM: J. Sanders Tate, AIA, LEED AP

RE: HORIZON GROUND AND FOURTH FLOORS UPFIT

University of South Carolina State Project No. H27-6081-AC WTS Project No. 11700/ File 7.0

SUBJECT: Non – Mandatory Pre-Bid Conference

ATTENDING: See attached sign-in sheet

- A. Pete Fisher of USC opened the meeting verifying that this was a non-mandatory pre-bid meeting and introduced Juaquana Brookins with USC and Sanders Tate with Watson Tate Savory. Juaquana then reviewed the requirements of the Manual For Planning and Execution of State Permanent Improvements, Part II, Chapter 6 and provided Bidders information for submitting a responsive bid:
 - 1. Bid date is Thursday, August 1 at 2:00 p.m. at USC Facilities & Planning Office Room 53 at 743 Greene Street, Columbia.. No bids received after 2:00 will be opened and Bidders are urged to arrive a few minutes early and check the clock inside the room.
 - 2. Bids shall be hand delivered or mailed. Bids shall be addressed to Michelle Adams as noted on the SE-310 Invitation for Bids included in the project manual.
 - 3. The Bid Security is 5% of the Base Bid amount and must be included with the bid. Bid Security must be submitted with the bid on the AIA A310 form included in the project manual, by electronic bid bond, or by certified cashier check.
 - 4. Modifications to bids made on the outside envelope of the bid will not be considered.
 - 5. Successful bidder will be required to provide Payment and Performance bonds on the forms provided in the project manual.
 - 6. Successful bidder will be required to provide Builder's Risk insurance as specified in the Bidding Documents.

- 7. Contractors should review AIA Instructions to Bidders and 00201-OSE Standard Supplementary Instructions to Bidders for a list of items which may cause bids to be considered non-responsive. These items include but or not limited to:
 - a. Bid delivered late
 - b. Bid Security not attached
 - c. Qualification of Bid
 - d. Subcontractors not listed
 - e. Addenda not acknowledged
- B. Juaquana Brookins and Sanders Tate with Watson Tate Savory reviewed specific bidding requirements:
 - 1. Substitution requests must be received by Watson Tate Savory no later than 6:00 p.m. on Monday, July 22, 2013, to allow substitution approvals to be issued by addenda.
 - 2. Friday, July 26, 2013 by midnight is the last day for Addenda to be issued by the Architect, except to change the date of the bid.
 - 3. Contract Time and Liquidated Damages requirements on the Bid Form were reviewed.
 - 4. Contract time for Base Bid is 270 days.
 - 5. Liquidated damages are \$500.00 per day Substantial Completion
 - 6. Subcontractors shall be listed for disciplines listed on Bid Form (Air Conditioning Installer, Electrical Installer, and Heating installer)
 - 7. The subcontractors required are to be listed individually. If the General Contractor intends to perform the listed work themselves, then list the name of the General Contractor in the space provided. All subcontractors to be properly licensed at the time of the bid. If two companies are performing the work the work "and" should be used not "or".
- C. Sanders Tate with WTS reviewed project conditions:
 - Finished locations at the building: 4 story Building Lobby, Stair @ located in NE corner of building and Elevator Lobbies at the north passenger building will be off limits to the Upfit Contractor. Floors 1,2, and 3 are off limits to the Upfit Contractor accept for access coordinated with USC.
 - 2. Larger utility elevator and Stair No. 3 at the South end of the building will be allowed to be used by the Upfit Contractor.
 - 3. No toilet facilities are provided by the Owner.
 - 4. All utility disruptions in the occupied building will need to be scheduled in advance with USC.
 - 4. At least one addendum will be issued. Bidders are responsible for getting all addenda from the USC purchasing website.
- D. Attendees were invited to visit the site after the meeting. Building will be open for an additional site visit on Friday, July 19, 2013 from 10:00 a.m. to 11:00 a.m.

Attachments: Pre-Bid Conference sign-in sheets

END OF MEMORANDUM

Columbia, South Carolina

Project Name & Number: Horizon Ground & Fourth Floors Upfit/H27-6081-AC

Pre Bid Date & Time: July 16, 2013 @ 10am

Мате	Company	Address	Phone #	Email	
	LOUELESS	1821 57478 57	746-5551	CAL @ LOVELESS	
CAL CONNER	CONTRACTING, INC	(AXCE, 5.9 29033	S18-1727 CELL	518-1727 CELL CONTAKTING . COM	
SAINDERS TATE	LUTS	P.O. BOX 8444 COLD, SC. 77202	803-799-5781	state Jactsontate savargien	15. S.
Lee Luzz	Hewdrik Cons	C) 144- Annow Rate 12 204-782-	ELL 214-782-	estimating & hardrain	the con
DAVIS BUCKEMEN	Buchunan Const. Services	PU BOY 6782	803-695-2123	doutenan E buhanan construction services, con	מים מיקס הא
7	CMI	PO. Bo, 11385 Cell 2921	Sor 199-4400	ciants. e chiNetworks.cn	Jurks.Ca
Frank Ken	Morroe Construto		1400-855 (208)	10 box 2329 Trus SC 29063 (803) 553-0041 FKerr&monroe const.com	407'
SAM WHITE	WALKER WHITE	5728 SHAKESPEARE RG Columbia S.C. 29223 803) 691-0525	603)691-0525	SWHITE @WAUCER - WHITE, COM	IE, COM
SKYLAR ASHRY	PcG	8025 CHEND FEALY (843) 971- 7156	3512-116/848)	BED@ PCGLLC. NET	
Molly Linck Nycom	NY COM/KEWAUNG (TOLUMBIA, ST. 24209)	1240B FIRST STREET SUTH 803.726-1275 COLUMBIA, ST 29209		mlinck Phycominc. Com	,

*Please make sure you list your company name as registered with LLR.

*By signing and providing your email address, you are authorizing the University of South Carolina to send you information electronically.

Columbia, South Carolina

Horizon Ground & Fourth Floors Upfit/H27-6081-AC July 16, 2013 @ 10am Project Name & Number:

Pre Bid Date & Time:

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Emalí	803-771-277) Jia birg Calina coustaction. 45	803-771-2777 faridy-fuzail@chineconstructi	803-223-3804 jadamsgablanchardmachiney.co	MWilliams@	ahuertha hit-ge. coin	buedmunds @	bdetarblewissistersinc, com	919,901-396 Shown@lawssyshowcson	736-2950 abunkellombkahny com
Phone #			803-505-5804	(803)576-0491	(843) 308-9400	9788-885-808	704-409-7278		
Address	no Saturn	700 Seturn Arduray Columbia, SC	3151 Chulesta Hux V. Columbia SC	136 Johns Rd Gleer SC 29650	2457 Avitnow Ave. Sie. CAMEUSTOW, SC.	Raleish, NC Surren, Sc	asso stackpart Pl. Charlotte, 11C	ChARLOHE N.C.	101 F/: WT/ME DR
Company	thing Construction	Fuzail Faridy China Construction	Blanchard Machiney W. Columbia SC	Nelwork Codvols	HIT CONTRACTING	Blankenshir Asser	Lewis Systems & Service	Lewis Systems	NHA
Name	Sing The	Fuzail Faridy	James Adams	Mark Williams	Aumony Huenth	Ben Edmunds	Grian Detar	THREW BROWN	ONIC MARKETTE MARKET

* By signing and providing your email address, you are authorizing the University of South Carolina to send you information electronically.

Columbia, South Carolina

Horizon Ground & Fourth Floors Upfit/H27-6081-AC July 16, 2013 @ 10am Project Name & Number:

Pre Bid Date & Time:

Name	Company	Address	Phone #	Email	
Kinsten Tyler	Tyler Const. Group	PO, Box 25037 Colo. 50 29224	\$03-865-1404	bids@tyler- Construction.com	
Alawiaylo	7	127 KIOWA LH.	864 272-1527	ataylor @haganconstruction gray	than grant
Thomas Soveeds	1 logan constr.	Predmont, SC 29673		+xruggs@ 1	12
MIKE Willows	EDISON FOARD	SAB ROSE CARE DR.	704-329-8000	MWILLANS @ GOLS ON FOR ARD, CON	J& 6. 632
Ponnie Pollod	Ponnie Pollod TH Grittin (Sub)	974 Berry Shoas RU Duran SC 29334	904-948 18BS	Spolloc & Odynothin.com	sia.com
Wylle stepkonur	2	1315 Platt 5pc,785 Rd	241-8188	Wythe Stephensont Q Core Construction 50,000	50,000
Fon 13 rantley	Brantley Coust 6	8300 DORCHESTER R. D. Charles S. 29418	2510255848	Christiana Boartlay Castruction. Con	
Chuck Lawcolph Zawcolph	Randolph 45m Bildes	P.O. 130x 416385 104-	911L-885	Chuck @ Fands Mibrilles, com	S. S.
GIE ESHER	7\$C	743 GEEREST.	2486-6	777-9346 Pts/4612 @ fmc, sc.edu	مره ١
Juaquana Brookins Wsc Fac	usc Facilities	143 Sreene St Columbia Sc	803. 1111. 3596	803.717.3596 porablenefine.sc.pdw	mp

*Please make sure you list your company name as registered with LLR.
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Columbia, South Carolina

Horizon Ground & Fourth Floors Upfit/H27-6081-AC July 16, 2013 @ 10am Project Name & Number:

Pre Bid Date & Time:

Email	IACHARY OUSENIAMENTING	phowellaypsconst.com	Trancedorand.			
Phone #	803.234.2311	706-085 - No 8	923-7 01 - 5898			
Address	1124 BLUFF INDUSTRIAL BLUD.	1 grenvilles	1210 Blust Road Johnnay SC 29201			
Company	UB GLIMARIN	VEARGIN POTTEN Sharley	Burtinood (210 Bucot Road ass-700-			
Name	JACH DAVIS	PEYTON HOWCH	Cherintrank Burtussel			

^{*}Please make sure you list your company name as registered with LLR.

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Addendum 1 Electrical RFI SSOE Responses

ET3.01 General Note:

- A states, "Owner to provide and pull Cat6 Cable. Build out data closet, and punch down. Electrical Contractor to provide and install all conduit, cable tray, wall penetrations, sleeves......support infrastructure." This is correct
 - Also in <u>Spec 16715 Part 1.2.C.</u> All cables and related terminations, data closet provisioning for V/D/CATV, support and grounding hardware shall be furnished, installed, wire, tested, labeled, and documented by USC University Technology Services as detailed in this document.....This is correct
- G. V/D Contractor is responsible for sleeving and sealing openings Revise "Voice/Data Cabling Installer" to "Electrical Contractor"
- K. V/D installer must take care to fasten cables... Revise "Voice/Data Cabling Installer" to "Owner"
- L. The Voice and Data Contractor shall terminate and label each new cable... Revise "Voice/Data Cabling Installer" to "Owner". Also item M, N, P, and Q shall be revised from "Voice/Data Cabling Installer" to "Owner"

Is note A and spec 16715 Part 1.2.C. a misprint? Should our trade be responsible for the complete purchase and installation of cabling system? There are many contradictions referencing our responsibility/their responsibility. Please advise. Electrical Contractor scope is limited and USC will be responsible for all items as indicated in Note A and Spec 16715 part 1.2.C.

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Hollow metal frames are specified with door frames elsewhere in Division 8.
- C. Aluminum entrance doors are specified elsewhere in Division 8.
- D. Wood doors are specified elsewhere in Division 8.
- E. Paint Division 9.
- F. Electrical Section Division 16.

1.2 DESCRIPTION OF WORK:

- A. Definition: "Finish Hardware" includes items known commercially as finish hardware which are requested for swinging, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.
- B. Extent of finish hardware required is indicated on drawings and in schedules.

1.3 QUALITY ASSURANCE:

- A. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.
- B. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of the door and door frame labels.
- C. Americans with Disabilities Act (ADA): Provide and install finish hardware in accordance with requirements of Americans with Disabilities Act (ADA). Specifically, comply with ADA sections relating to accessibility and usability.

Notification of Architect: Before installation of finish hardware, notify Architect of any Contract Document requirements that are suspected to be in noncompliance

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION WTS NO.: 11700 with ADA.

ANSI Standards for Physically Handicapped: Finish Hardware shall comply with: A American National Standard for Buildings and Facilities -- Providing Accessibility and Usability for Physically Handicapped People@ (ANSI A117.1-1986). 1986 edition, by American National Standards Institute, Inc.; New York, New York. Before installation of finish hardware, Notify Architect of any Contract Document requirements that are suspected to be in noncompliance with ANSI A117.1-1986. In addition, before installation of finish hardware, notify Architect of conflicting requirements of ADA and ANSI A117.1-1986.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturers technical product data for each item of hardware in accordance with Division-1 section "Submittals". Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.
- B. Vertical Hardware Schedule: Submit final hardware schedule in manner indicated below. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function and finish of hardware.
 - 1. Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
 - a. Type, style, function, size and finish of each hardware item.
 - b. Name and manufacturer of each item.
 - c. Fastening and other pertinent information.
 - d. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door schedule.
 - e. Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
 - f. Door and frame sizes and materials.
 - g. Keying information.
- C. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g.,hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordination review of hardware schedule.
- D. Templates: Furnish hardware templates to each fabricator of doors, frames, and other work being factory-prepared for the installation of hardware. Upon request, check shop drawings of other such others work to confirm that adequate provisions are made for proper location and installation of hardware.
- E. Wiring Diagrams: Furnish wiring diagrams, include elevation drawings and

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION WTS NO.: 11700 operation narrative.

F. Operations and Maintenance Data: After installation, representative templates, instructions sheets and installation details shall be provided to the owner when building is accepted. Include one copy of each hardware schedule, keying and wiring diagrams.

1.5 PRODUCT HANDLING:

- A. Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of hardware, is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packaged in the same container.
- C. Inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

PART 2 - PRODUCTS

2.1 SCHEDULED HARDWARE:

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in the Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following.
 - 1. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required.
 - 2. Warranty: Provide published warranties in accordance this Section .

LOCKSETS: 5 years DOOR CLOSERS: 10 years

EXIT DEVICES: 5 years

OTHER HARDWARE: One year

3. Maintenance Materials: Provide special wrenches and tools applicable to each different or special hardware component. Provide maintenance tools and accessories supplied by hardware component manufacturer to owner representative.

2.2 ACCEPTABLE MANUFACTURES:

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION

Α. Hinges: PBB Inc., Hager, McKinney

Locksets: Corbin Russwin ML2000 LWA, Sargent 8200 LNJ, Yale 8800CRR

Cylinders: INTERCHANGEABLE Exit Device: Corbin Russwin, Yale

Electronic locks: Corbin Russwin, Sargent, Yale Closers: Corbin Russwin, Norton, Sargent, Yale

Overhead stops and pivots: Rixson

Flat Goods: McKinney, Trimco, Rockwood, McKinney

Gasketing: McKinney, Pemko, Reese, Zero

Substitutions: In accordance with Instructions to Bidders.

B.

- 1. Provide closers with the following functions: Unitrol shock absorber foot, independent sweep, fast latch, hydraulic check AV@ grooved valves, accessibility by Handicapped, delay action, adjustable spring tensions. Closers must meet barrier free requirements. Closers must have twotooth engagement rack and pinion. All valves must be accessible without removing closer from the door. Cover must not have slotted cover. Cover must be secured with screw holes in cover. Provide installation and sizing instructions in cover.
- 2. Closers shall have cast aluminum alloy shell. Closer shall be surface mounted and shall project no more than 2 1/8" from the surface of the door. Closer shall be non-handed. Closers shall be mounted on side of door not seen from common area.
- Exit Devices (as scheduled) "touchbar" Provide all exposed surfaces 3. same material and finish. Exit device must have free wheeling outside trim when device is locked. Touch bar must not protrude from housing when pad is compressed.
- 4. Latchbolt shall be investment cast stainless steel pullman type with 3/4" throw. All devices to be furnished with auxiliary dead-latching mechanism. Roller strike shall be furnished.
- 5. Unless otherwise specified. Vandal resistant outside lever escutcheon trim shall be heavy duty cold forged constructed incorporating four threaded studs for through-bolting. All escutcheon trim shall be UL listed and constructed with beveled edges. Rigid levers while locked or manual type clutch mechanisms are not acceptable.
- 6. Exit Devices must be proper height and width.
- Hinges must be proper weight and size for door width and thickness. 7.

MATERIALS AND FABRICATION: 2.3

General:

Hand of Door: Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION 08710 - 4

- B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacture's standard metal alloy, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A 156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.
- C. Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- D. Furnish screws for installation, with each hardware item. Provide Phillips flathead screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

2.4 LOCK CYLINDERS AND KEYING:

- A. General: Supplier will meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- B. Comply with Owner's instructions for master keying and except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.
 - 1. Permanently inscribe each key with number or lock that identifies cylinder manufacturer key symbol, and notation "DO NOT DUPLICATE".
- C. Key Material: Provide keys of nickel silver only.
- D. Key Quantity: Furnish 2 change keys for each lock.
 - 1. Deliver permanent keys to Owner's representative.
 - 2. Factory construction key project.

2.5 HARDWARE FINISHES:

- A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door opening. In general, match items to the manufacture's standard finish for the latch and lockset or (push-pull units if no latch-lock sets) for color and texture.
- B. Provide finishes which match those established by BHMA.
- C. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION WTS NO.: 11700 standards, but in no cases less than specified for the applicable units of hardware by referenced standards.

D. Provide unless specified in schedule.
652 satin chrome plated on steel US26D
626 satin chrome plated on brass or bronze US26D
630 satin stainless steel US32D
689 satin aluminum sprayed AL

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface preparations with finishing work specified in Division 9 sections. Do not install surface-mounted items until finishes have completed on the substrate.
- C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment 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.

3.2 ADJUST AND CLEAN:

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made at no expense to the Owner.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

PART 4 SCHEDULE

HARDWARE SET 1 H006, H008, H406A, H407

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION

EACH TO HAVE:

6 BUTTS TA2714 4 2 X 4 2 652 McKINNEY

EXIT DEVICE ED5470 B M55 + L955 + M67 630 C/R 1 EXIT DEVICE ED5470 B M55 + M67 630 C/R 1 1 RIM CYL 1E72 626 **BEST** 2 CLP7500 + 2022 SNB 689 CLOSER NORTON KICK PLATE 8 X 2 LDW 0.050 630 ROCKWOOD SMOKE SEAL S77D **PEMKO** 1

ASTRAGAL BY DOOR MANUFACTURE IF NEEDED

HARDWARE SET 2

H006A, H007A, H007B, H406B, H406C

EACH TO HAVE:

6 BUTTS T4A3786 4 2 X 4 2 652 McKINNEY

2 EXIT DEVICE ED5470 B M55 W048 630 C/R

2 CLOSER CLP 7500 + SNB 689 NORTON
2 KICK PLATE 8 X 2 LDW .050 630 ROCKWOOD
1 SMOKE SEAL S77D PEMKO

ASTRAGAL BY DOOR MANUFACTURE IF NEEDED

HARDWARE SET 3 414, 416, 419, 424B

EACH TO HAVE:

BUTTS TA2714 4 2 X 4 2 652 McKINNEY ML2057 LWA 630 LC 1 LOCKSET C/R MORTISE CYL 1E74 626 BEST 1 CLOSER CLP7500 SNB 689 **NORTON** KICKPLATE 1 8 X 2 LDW.050 630 **ROCKWOOD** SMOKE SEAL S77D PEMKO

HARDWARE SET 4

008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 022A, 023A, 037A, 037B, 038, 401, 402, 403, 404, 407, 408A, 410A, 411A, 412A, 412B, 412C, 412D, 412F, 424A, 424C, 424D, 424F. 425. 426, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439

EACH TO HAVE:

3 BUTTS TA2714 4 2 X 4 2 652 McKINNEY 1 LOCKSET ML2051 LWA 630 LC C/R

1 LOCKSET ML2051 LWA 630 LC C/R 1 MORTISE CYL 1E74 626 BEST

1 WALL or FLOORSTOP 403 or 441CU 630 ROCKWOOD 3 SILENCER 608 ROCKWOOD

Note coordinate strike plate LIP with aluminum frame depth

HARDWARE SET 5

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION

004, 005, 405, 406

EACH TO HAVE:

3	BUTTS	TA2714 4 2 X 4 2 652	McKINNEY
1	PUSH PLATE	70C 4 X 16 630	ROCKWOOD
1	PULL PLATE	105 X 70C 4 X 16 630	ROCKWOOD
1	CLOSER	7500 SNB 689	NORTON
1	KICK PLATE	8 X 2 LDW .050 630	ROCKWOOD
1	WALL STOP	403 630	ROCKWOOD
3	SILENCER	608	ROCKWOOD

HARDWARE SET 6

416A

EACH TO HAVE:

3	BUTTS	TA2714 4 2 X 4 2 652	McKINNEY
1	LOCKSET	ML2051 LWA 630 LC	C/R
1	MORT CYLINDER	1E74 626	BEST
1	CLOSER	CLP7500 689	NORTON
1	KICK PLATE	8 X 2 LDW .050 630	McKINNEY
3	SILENCER	608	ROCKWOOD

HARDWARE SET 7

021E, 024, 032A, 420A, 421B

EACH TO HAVE:

	OII I O I // V L.		
6	BUTTS	TA2714 4 ½ X 4 2 652	McKINNEY
1 S	ET AUTO FLUSHBOL	TS 1942 626	ROCKWOOD
1	COORDINATOR	1672 600	ROCKWOOD
2	MOUNTING BRKTS	1601 600	ROCKWOOD
1	DUST PRF STRIKE	570 626	ROCKWOOD
1	LOCKSET	ML2051 LWA 630 LC	C/R
1	MORT CYLINDER	1E74 626	BEST
2	CLOSER	CLP 7500 689	NORTON

2 CLOSER CLP 7500 689 NORTON
2 KICK PLATE 8 X 2 LDW .050 630 ROCKWOOD

1 SMOKE SEAL S77D PEMKO

HARDWARE SET 8

006, 007A, 021B, 025, 026, 027, 029A, 030A, 031A, 415, 417, 417A, 418, 420B, 421A

EACH TO HAVE:

	O11 1 O 1 // (V L.		
6	BUTTS	TA2714 4 ½ X 4 ½ 652	McKINNEY
2	FLUSH BOLTS	555 626	ROCKWOOD
1	DUST PROOF STK	570 626	ROCKWOOD
	LOCKOET	MI 0054 LVVA 000 LO	0/5

 1
 LOCKSET
 ML2051 LWA 630 LC
 C/R

 1
 MORT CYLINDER
 1E74 626
 BEST

 1
 DOOR CLOSER
 7500 SNB 689
 NORTON

 1
 KICK PLATE
 8 X 2 LDW .050 630
 ROCKWOOD

 1
 SMOKE SEAL
 S77D
 PEMKO

HORIZON I GROUND & FOURTH UPFIT BETA RESEARCH FACILITY CONSTRUCTION

NOTE: IN FIRE LABEL OPENINGS SUBSTIUTE 1502 4 ½ X 4 ½ 652 SPRING HINGE FOR TA2714 4 ½ X 4 ½ 652 BUTTS ON INACTIVE LEAF OF PAIR.

HARDWARE SET 9

020A, 020B, 028, 032B, 416A

EACH TO HAVE:

3	BUTTS	TA2714 4 ½ X 4 2 652	McKINNEY
1	LOCKSET	ML2051 LWA 630 LC	C/R
1	MORT CYLINDER	1E74 626	BEST
1	OH STOP	9 ADJ -336 652	RIXSON
1	KICK PLATE	8 X 2 LDW .050 630	ROCKWOOD
3	SILENCER	608	ROCKWOOD

HARDWARE SET 9A

007C

EACH TO HAVE:

3	HW HINGE	T4A3786 5 X 4 ½ 652	McKINNEY
1	LOCKSET	ML2057 LWA 630 LC	C/R
1	MORT CYLINDER	1E74 626	BEST
1	SMOKE CLOSER	7204 MPO 689	NORTON
1	KICK PLATE	8 X 2 LDW .050 630	ROCKWOOD
1	SMOKE SEAL	S77D	PEMKO

NOTE: SMOKE CLOSER MUST BE CONNECTED TO FIRE ALARM SYSTEM.

HARDWARE SET 10 ST03C

EACH TO HAVE:

3	BUTTS	TA2714 4 ½ X 4 ½ 652	McKINNEY
1	EXIT DEVICE	ED5200A + L955 M54 630	C/R
1	RIM CYLINDER	1E72 626	BEST
1	CLOSER	7500 – 2022 SNB 689	NORTON
1	KICKPLATE	8 X 2LDW .050 630	ROCKWOOD
1	WALL STOP	403 626	ROCKWOOD
3	SILENCER	608	ROCKWOOD

HARDWARE SET 11

V003

ALL HARDWARE BY DOOR MANUFACTURE

HARDWARE SET 12

020C, 020D, 021A, 021F, 022B, 023B, 029B, 030B, 031B, 040, 408B, 410B, 411B, 412E, 417B, 420C, 420D, 421C, 421D, 424E

EACH TO HAVE:

3 BUTTS TA2714 4 ½ X 4 ½ 652 McKINNEY

HORIZON I GROUND & FOURTH UPFIT 08710 - 9
BETA RESEARCH FACILITY CONSTRUCTION

C/R 1 LOCKSET ML2051 LWA 630 LC 1 MORT CYLINDER 1E74 626 **BEST NORTON** 1 CLOSER CLP 7500 689 NICK PLATE SMOKE SEAL KICK PLATE 8 X 2 LDW .050 630 1 ROCKWOOD S77D **PEMKO** 1

EXISTING

ST02, ST03B, V002, H004, 001, 002, 003, 033, 033A, 034, 035A, 035B, 036, 039A, 039B, ST401, ST402, ST403, H401, H405, 413, 427, 440.

END OF SECTION 08710

SECTION 09512 - SUSPENDED PANEL AND TILE CEILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes acoustical tiles and concealed suspension systems for ceilings.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Coordination Drawings: Drawn to scale and coordinating penetrations and ceiling-mounted items. Show the following:
 - 1. Ceiling suspension assembly members.
 - 2. Method of attaching hangers to building structure.
 - 3. Size and location of initial access modules for acoustical tile.
 - 4. Ceiling-mounted items including lighting fixtures, diffusers, grilles, speakers, sprinklers, access panels, and special moldings.
- C. Samples: For each acoustical tile, for each concealed suspension system member, and for each color and texture required.
- D. Product test reports.
- E. Research/evaluation reports.
- F. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory or an NVLAP-accredited laboratory.
 - 1. Surface-Burning Characteristics: Acoustical tiles complying with ASTM E 1264 for Class A materials, when tested per ASTM E 84.
- B. Seismic Standard: Comply with the following:
 - 1. ASTM E 580.
 - 2. IBC site category "C".

1.4 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Units: Full-size units equal to 1.0 percent of quantity installed, but not fewer than 400 square feet of tile.
 - 2. Suspension System Components: Quantity of each concealed grid and exposed component equal to 1.0 percent of quantity installed, but not fewer than 400 square feet of grid.

HORIZON I GROUND & FOURTH FLOORS UPFIT
BETA RESEARCH FACILITY CONSTRUCTION

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
- B. Products: Subject to compliance with requirements, provide one of the products specified.

2.2 GENERAL

- A. Acoustical Tile Standard: Comply with ASTM E 1264.
- B. Metal Suspension System Standard: Intermediate Duty System, comply with ASTM C 635.
- C. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 - 1. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- (2.69-mm-) diameter wire.
- E. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that fit acoustical tile edge details and suspension systems indicated; formed from sheet metal of same material and finish as that used for exposed flanges of suspension system runners.
 - 1. Ceiling systems designed to meet requirements for installation in IBC site category "C".

2.3 ACOUSTICAL CEILING TILES-TYPE 1: ACT 1

- A. Ceiling Type I Products:
 - 1. Armstrong; Optima Tegular 3250 2x2
 - 2. BPB; Capaul Symphony F 1342B OVT- 1 2x2
 - 3. USG: Halcvon S/L 98223
 - 4. Equal product approved during bidding process.
- B. Color: White for acoustical tile.
- C. LR: Not less than .85.
- D. NRC: Not less than .90,Type E-400 mounting per ASTM E 795.
- E. Edge Detail: Beveled, and rabbeted.
- F. Thickness: 1 inch.

- G. Size: As indicated on Drawings.
- H. Sag Warranty: Minimum of 10 years.

2.4 METAL SUSPENSION SYSTEM

- A. Products:
 - 1. Manufacturer's standard system by ceiling manufacturer for seismic category "C".
- B. Direct-Hung Suspension System: Intermediate structural classification for seismic category "C".
- C. Wall molding shall br Donn MS 154 Shadow Molding or equivalent from tile manufacturer

2.5 ACOUSTICAL CEILING TILES – TYPE: ACT 2

- A. Ceiling Type 2 Products:
 - Basis of Design Manufacturers:
 - a. Armstrong; Clean Room Mylar 1715 with Armstrong Prelude 7300 ID Grid and 7800 Wall Molding and .55 NRC.
 - b. USG; Clean Room Clima Plus 56060 with Donn DX 24 ID Grid and M7 Wall Molding and .55 NRC.
 - c. Equal product approved during bidding process.
- B. Classification: Tile, Type IV, Mineral base with membrane-faced overlay; Form 2, water felted.
 - 1. Pattern E.
- C. Color: White.
- D. LR: Not less than .79.
- E. NRC: Not less than 0.55, Type E mounting per ASTM E 795.
- F. CAC: Not less than 0.35.
- G. Edge Detail: Square edge.
- H. Thickness: ¾ inch.
- I. Size: 2' x 2'.
- J. Mold/Mildew Inhibitor: Mildecide treatment on face and back of tile to inhibit growth of mold and mildew.
- K. Sag Warranty: Minimum of 10 years.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install acoustical tile ceilings to comply with ASTM C 636 and seismic requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook." Owner's building inspector will inspect seismic required bracing and suspension.

- B. Measure each ceiling area and establish layout of acoustical tiles to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width tiles at borders.
- C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers, use trapezes or equivalent devices.
 - Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
 - 2. Do not attach hangers to steel deck tabs or to steel roof deck.
 - 3. Do not disturb existing sprayed fire proofing material. Notify General Contractor if any fireproofing material is accidentally disturbed so repairs can be made.
- D. Install edge moldings and trim at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units. Screw attach moldings to substrate with concealed fasteners at intervals not more than 16 inches (400 mm) o.c. and not more than 3 inches (75 mm) from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet (3.2 mm in 3.66 m). Miter corners accurately and connect securely.
- E. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical tiles in coordination with suspension system and exposed moldings and trim. Place splines or suspension system flanges into kerfed edges so tile-to-tile joints are closed by double lap of material. Fit adjoining tile to form flush, tight joints. Scribe and cut tile for accurate fit at borders and around penetrations through tile. Hold tile field in compression by inserting leaf-type, spring-steel spacers between tile and moldings, spaced 12 inches (305 mm) o.c.

END OF SECTION 09512

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring and base.

1.2 SYSTEM DESCRIPTION

A. Floor Materials: Conform to applicable code for flame/fuel/smoke rating requirements of Class "A" interior finish in accordance with ASTM E84.

1.3 SUBMITTALS

A. Submit color chips from manufacturer's premium line of colors for initial selection.

PART 2 - PRODUCTS

2.1 TILE MATERIALS

- A. Manufacturers
 - Tarkett.
 - 2. Azrock.
 - 3. Armstrong.
 - 4. Equal product approved during the bidding period
- B. Vinyl Composition Tile: FS SS-T-312, Type IV Composition 1; 12 x 12 inch size; 1/8" thick, marbleized design.

2.2 BASE MATERIALS

- A. Manufacturer: Roppe 701 Series or approved equivalent.
- B. Base: FS SS-W-40; rubber, 4" high, 1/8" thick; top set coved.
- C. Base Accessories: Premolded end stops and external corners of same material, size and color as base.

2.3 ACCESSORIES

- A. Sub-floor filler: Type recommended by floor material manufacturer.
- B. Primers and Adhesives: Waterproof, type recommended by floor material manufacturer.
- C. Edge Strips: Flooring material.
- D. Sealer and Wax: Types recommended by floor material manufacturer.

2.4 COLORS

- A. Tile Flooring: Color as selected.
- B. Base: Color as selected.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify that substrate surfaces are smooth and flat with maximum variation of 3/16" in 10 ft.
- B. Verify concrete floors are dry to a maximum moisture content of 7%, and exhibit negative alkalinity, carbonization and dusting.
- C. Fill low spots and other defects with sub-floor filler
- D. Vacuum clean substrate.
- E. Apply primer to surfaces.

3.2 INSTALLATION – TILE MATERIAL

- A. Install in accordance with manufacturer=s instructions.
- B. Spread adhesive and set flooring in place. Press with heavy roller to attain full adhesion.
- C. Install tile flooring with joints and seams parallel to building lines.
- D. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar. Install edge strips where flooring terminates.
- E. Scribe flooring to appurtenances to produce tight joints.

3.3 INSTALLATION

- A. Adhere base tight to wall and floor surfaces.
- B. Fit joints tight and vertical. Miter internal corners. At external corners, V-cut back of base strip to 2/3 of its thickness and fold.

3.4 CLEANING

- A. Remove excess adhesive from surfaces without damage.
- B. Clean, seal and wax surfaces in accordance with manufacturer's instructions.

C. Protect floors until Substantial Completion

END OF SECTION 09650

SECTION 09680 - CARPET

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes carpet and installation.
- B. Provider/Installer review and understand patterns, seaming, repeats etc. in sufficient detail for floor plans to insure all these variables are covered in bid provided.

1.2 SUBMITTALS

- A. Product Data: For each product indicated.
- B. Shop Drawings: Include the following:
 - 1. Seam locations.
 - 2. Pattern type, repeat, location, direction, and starting point.
 - 3. Pile direction.
 - 4. Insets and borders.
 - 5. Transition, and other accessory strips.
 - 6. Transition details to other flooring materials.
- C. Samples: For each for each carpet, exposed accessory and for each color and pattern required.
- D. Product Schedule: Use same room and product designations indicated for offices and corridors.
- E. Maintenance data.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- 1.4 DELIVERY, STORAGE, AND HANDLING
 - A. Comply with CRI 104, Section 5, "Storage and Handling."

1.5 PROJECT CONDITIONS

- A. General: Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."
- B. Environmental Limitations: Do not install carpet until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

- C. Do not install carpet over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet tile before installing these items.

1.6 WARRANTY

A. Carpet Warranty: Manufacturer's standard form in which manufacturer agrees to replace carpet that does not comply with requirements or that fails within 10 years from date of Substantial Completion. Warranty does not include deterioration or failure of carpet from unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.

PART 2 - PRODUCTS

2.1 CARPET

- A. Install pattern in direction to minimize seams but keep pattern consistent in a corridor or room..
 - a. Offices and other rooms called for carpet other corridors: Bentley Prince Street 4TS240620R "Tall Story"
 - b. Corridors: Bentley Prince Street 8NH300630R "New Gotham"

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with CRI 104, Section 8, "Direct Glue-Down."
- B. Maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position. Bind or seal cut edges as recommended by carpet manufacturer.
- C. Protect new flooring until Substantial Completion.

END OF SECTION 09680

SECTION 15221 - CHEMICAL-WASTE PIPING

PART 1 - GENERAL

1 🛮	RELATED DOCUMENTS			
A	Drawings and general provisions of the Contract⊡including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section □			
1[2	SUMMARY			
$A\square$	This Section includes piping and specialties for the following systems□			
	1□ Chemical-waste and vent□gravity-flow□nonpressure piping system designated "chemical waste"			
1[3	DEFINITIONS			
$A\square$	HDPE□ High-density polyethylene plastic□			
В□	PVDF□ Polyvinylidene fluoride plastic□			
14	PERFORMANCE RE□UIREMENTS			
$A\square$	Gravity-Flow Nonpressure-Piping Pressure Rating 10-foot 3-m head of water □			
1[5	SUBMITTALS			
A□	Product Data□ For chemical-waste piping materials□components□and specialties and for neutrali□ation systems□			
В□	Maintenance Data \Box For neutrali \Box ation systems and tanks to include in maintenance manuals \Box			
1[6	UALITY ASSURANCE			
A□	Source Limitations□ Obtain pipe□fittings□and oining materials for each piping system through one source from a single manufacturer□			
В□	Product Options□ Drawings indicate si□e□profiles□and dimensional requirements of chemical-waste specialties and are based on the specific system indicated□ Refer to Division 1 Section "Product Requirements□"			
С□	Piping materials shall bear label \square stamp \square or other markings of specified testing laboratory \square			
ΔΠΡΕΝΙ	DUM 1			

ADDENDUM 1
HORION I GROUND DEFOURTH FLOORS UPFIT
BETA RESEARCH FACILITY CONSTRUCTION
STATE PROJECT NO H27-6081-AC / WTS PROJECT NO 11700

$D\square$	Comply with ASME B31⅓□"Process Piping⊡				
E□	Comply with NFPA 70□				
1.7	DELIVERY STORAGE AND HANDLING				
A□	Deliver and store piping and specialties with sealing plugs in ends or with eprotection $\!$				
PART 2	- PRODUCTS				
21	MANUFACTURERS				
A□	In other Part 2 articles where subparagraph titles below introduce lists ☐the following requirements apply for product selection ☐				
	1□ Available Manufacturers□ Sublect to compliance with requirements manufacturers offering products that may be incorporated into the Work include but are not limited to the manufacturers specified□				
	a□ □urn Industries Limited□Fuseal□Orion□Enfield□R□G Sloan□FRP □Fiberglass Reinforced Plastic Pipe□Smith Fiberglass Products□Inc□				
212	PIPING MATERIALS				
A□	Refer to Part 3 "Piping Applications" Article for applications of pipe □tube □fitting □ and oining materials □				
2[3	PIPE AND FITTINGS				
$A\square$	□ Pipe□Fire Retardant and Smoke Development				
	Pipe shall be manufactured to Schedule 40 PVDF polyvinylidene fluoride pipe dimensions and tolerances in accordance with ASTM F 1412 and D 3222 Pipe to the chamically register and fire retardent material.				
	be chemically resistant and fire-retardant material ☐ 2☐ Above floor installations require that piping systems meet D 2843 ASTM E 84 25/50 for flame spread and smoke development and UL723 and UL910 for flame propagation and smoke density in environmental spaces ☐ Pipe and fitting system shall be made of PVDF polyvinylidene fluoride ☐				

В□	Fittings□ Fire-Retardant and Smoke Development		
	1 🗆	dime ASTI	gs shall be manufactured to Schedule 40 PVDF polyvinylidene fluoride pipe nsions of a chemically resistant and fire-retardant material conforming to M D 4101 Fittings to conform to applicable tolerances in ASTM F 1412 gs shall be made of PVDF polyvinylidene fluoride □
$C\square$	Pipe	□ Non-	Flame-Retardant ⊞elow and Above Floor⊡Not to be Used in Plenum Space□
	1□	tolera	shall be manufactured to Schedule 40 polypropylene pipe dimensions and ance in accordance with ASTM F 1412 ASTM D 3311 Pipe to be supplied in the lengths and manufactured with a chemically resistant polypropylene
	material conforming to ASTM D 4101□ 2□ Underground installation of pipe shall be in accordance with Practice ASTM "Standard Practice for Underground Installation of Thermoplastic Pipe for and Other Gravity-Flow Application" except aggregate si□e shall be limited inch for angular and 3/4-inch for rounded particles□ Non-flame-retardant p be used in underground applications□		
$D\square$	□oints		
	1 🗆	Pipe	and fittings are ⊚inted by either heat fusion or by using mechanical ⊡oints□
		a□ b□	Mechanical or Electrofusion Above Floor Only Pipe and fittings shall be oined by the use of a electrofushion wire seal system of mechanical seal that has a chemical resistance equal to the pipe and fittings. The mechanical oint system shall incorporate a positive mechanical system groove for axial restraint. Electrofusion Below Floor Only Pipe and fittings shall be oined by the use of the Fusion Lock heavy-gage resistance wire seal that can be rotated in the socket to desired position.
			Totated in the socket to desired position.
PART 3	- E□E	CUT	ON
31	E□CAVATION		
$A\square$	Refe	r to Di	vision 2 Section "Earthwork" for excavating trenching and backfilling □
3[2	PIPING APPLICATIONS		
A			and special fittings with pressure ratings at least equal to piping pressure be used in applications noted above in Part $2\square$
3[3	PIPING INSTALLATION		

A□	Refer to Division 15 Section "Basic Mechanical Materials and Methods" for basic piping installation □				
В□	Install piping next to equipment \square accessories \square and specialties to allow service and maintenance \square				
С□	Transition and special fittings with pressure ratings at least equal to piping pressure rating may be used \Box unless otherwise indicated \Box				
34	COINT CONSTRUCTION				
A□	Refer to Division 15 Section "Basic Mechanical Materials and Methods" for basic piping oint construction If specific oint construction is not indicated follow piping manufacturer written instructions				
315 HANGE		GER	AND SUPPORT INSTALLATION		
A□	Refer to Division 15 Section "Mechanical Vibration and Seismic Controls" for seismic restraint devices				
В□	B□ Refer to Division 15 Section "Hangers and Supports" for pipe hange devices□ Install the following□				
	1□ 2□		cal Piping□MSS Type 8 or MSS Type 42□riser clamps□ ridual□Straight□Hori⊡ontal Piping Runs□		
		a□ b□ c□	100 Feet ☐ m☐ and Less☐ MSS Type 1☐ ad☐ stable☐ steel clevis hangers☐ Longer Than 100 Feet ☐ m☐ MSS Type 43☐ ad☐ stable roller hangers☐ Longer Than 100 Feet ☐ m☐ if Indicated☐ MSS Type 49☐ spring cushion rolls☐		
	3□		iple□ Straight□ Hori⊡ontal Piping Runs 100 Feet ⊡30 m□ or Longer□ 5 Type 44□pipe rolls□ Support pipe rolls on trape□e□		
	4□		e of Vertical Piping MSS Type 52 spring hangers		
С□	Install supports according to Division 15 Section "Hangers and Supports □				
D□	Support hori⊡ontal piping and tubing within 12 inches ☐300 mm☐of each fitting and coupling☐				
EΠ	Support vertical piping and tubing at base and at each floor□				
F	Rod diameter may be reduced 1 si⊡e for double-rod hangers⊡to a minimum of 3/8 ir ☐10 mm ☐				
ADDENI	1□ 2□ 0UM 1	NPS mm	1/2 DN 15 and Smaller 30 inches 760 mm with 3/8-inch 10-mm rod 3/4 to NPS 1-1/2 DN 20 to DN 40 36 inches 910 mm with 3/8-inch 10-rod		

		3□ 4□	NPS	2 DN 50 36 inches 910 mm with 3/8-inch 10-mm rod 2-1/2 and NPS 3 DN 65 and DN 80 42 inches 1070 mm with 1/2-inch mm rod 2			
		5□ 6□	NPS	4 DN 100 48 inches 1220 mm with 5/8-inch 16-mm rod 6 DN 150 48 inches 1220 mm with 3/4-inch 19-mm rod			
	G□			oorts for vertical PVDF piping NPS 1-1/2 เDN 40 every 48 inches			
	Η□		Support piping and tubing not listed above according to MSS SP-69 a manufacturers written instructions□				
3[6 CONNECTIONS						
	A□	□ Drawings indicate general arrangement of piping and specialties□ The followi specific connection requirements□					
	В□	Install piping ad acent to equipment to allow service and maintenance □		ng ad acent to equipment to allow service and maintenance□			
	С	☐ Connect chemical-waste piping to sinks specialties accessories and equipment chemical-resistant coupling adapter or fitting as required for materials being oir					
3[7	LABELING AND IDENTIFICATION		S AND IDENTIFICATION			
	A□		ll labeling and pipe markers on equipment and piping according to requirements in ion 15 Section "Basic Mechanical Materials and Methods."				
3[8	FIEL	FIELD DUALITY CONTROL				
	$A\square$	☐ Chemical-Waste Piping Inspection☐					
		1 🗆		not enclose □cover □or put drainage and vent piping into operation until it is ected and approved by authorities having □risdiction □			
		2□	Durir inspe	ng installation notify authorities having unsdiction at least 24 hours before ection must be made Perform tests specified below in presence of prities having urisdiction			
			a□	Roughing-in Inspection Arrange for inspection of piping system before concealing after system roughing-in and before setting fixtures and equipment			
			b□	Final Inspection Arrange for final inspection by authorities having urisdiction to observe tests specified below and to ensure compliance with requirements			
		3□		spections ☐ If authorities having ☐risdiction find that piping will not pass test spection ☐make required corrections and arrange for reinspection ☐			
	שראור	4 🗆		orts□ Prepare inspection reports and have them signed by authorities having			
1 A	11 11 KII	11 IN /I 1					

		urisdiction□	
В□		nical-Waste Piping Testing□ Test systems according to procedures of authorities ig ūrisdiction or in absence of published procedure according to the following □	
	1 🗆	Test for leaks and defects in new piping systems and parts of existing systems that have been altered □ extended □ or repaired □ If testing is performed in segments □ submit separate report for each test □ complete with diagram of portion of system tested □	
	2□	Leave uncovered and unconcealed new altered extended or replaced piping until it has been tested and approved Expose work that was covered or concealed before it was tested	
	3□	Rough Plumbing Test Procedure Test piping at completion of piping roughing-in Tightly close all openings in piping system and fill with water to point of overflow but not less than 10-foot 3-m head of water From 15 minutes before test starts through completion of test water level must not drop Inspect oints for leaks	
	4 🗆	Finished Plumbing Test Procedure After plumbing fixtures and equipment have been set and their traps filled with water test connections and prove gastight and watertight Plug stack openings on roof and building drain where it leaves building and introduce air into system equal to pressure of 1-inch wg 250 Pa Use U-tube or manometer inserted in trap of fixture to measure pressure Air pressure must remain constant without introducing additional air throughout period of inspection Inspect fixture connections for gas and water leaks	
	5□	Repair leaks and defects with new materials and retest system or portion thereof until satisfactory results are obtained	
	6□	Prepare reports for tests and required corrective action □	
319	CLEANING		
A	Use procedures prescribed by authorities having ⊡risdiction or ☐if not prescribed ☐ procedures described below ☐		
	1 🗆	Purge new piping and parts of existing piping that have been altered □extended □	
	2	or repaired before using □ Clean piping by flushing with potable water □	

END OF SECTION

SECTION 16055 - OVERCURRENT PROTECTIVE DEVICE COORDINATION

PART 1 - GENERAL

11	RELATED DOCUMENTS
A	Drawings and general provisions of the Contract⊡including General and Supplementary Conditions and Division 1 Specification Sections ☐ apply to this Section ☐
1[2	SUMMARY
A	This Section includes computer-based □fault-current and overcurrent protective device coordination studies □ Protective devices shall be set based on results of the protective device coordination study □
	1 ☐ Coordination of series-rated devices is permitted where indicated on Drawings ☐
	Contractor shall coordinate with Owner to update existing overcurrent coordination study to include addition of □ a□ New Main circuit breaker b□ New circuit breakers in switchboard DS-1 and EDS-1 c□ New Generator and new associated Generator breakers d□ New busway plug-in units on 2000A busway riser□ e□ New MCC-PB8 and EMCC-PB8 motor contribution□
	3□ Coordinate with Owner to obtain and update existing electronic file and provide repots and submittals as required in this specification □
1[3	SUBMITTALS
$A\square$	Product Data ☐ For computer software program to be used for studies ☐
В□	Product Certificates□ For coordination-study and fault-current-study computer software programs□certifying compliance with IEEE 399□
C	□ualification Data□ For coordination-study specialist□
D□	Other Action Submittals The following submittals shall be made after the approval process for system protective devices has been completed Submittals may be in digital form if license is available for Owner use
	 1□ Coordination-study input data including completed computer program input data sheets □ 2□ Study and Equipment Evaluation Reports □ 3□ Coordination-Study Report □

14	UALITY ASSURANCE
A□	Studies shall use computer programs that are distributed nationally and are in wide use \square Software algorithms shall comply with requirements of standards and guides specified in this Section \square Manual calculations are not acceptable \square
В□	Coordination-Study Specialist □ualifications□ An entity experienced in the application of computer software used for studies□having performed successful studies of similar magnitude on electrical distribution systems using similar devices□
	1□ Professional engineer□licensed in the state where Proæct is located□shall be responsible for the study□All elements of the study shall be performed under the direct supervision and control of engineer□
С□	Comply with IEEE 242 for short-circuit currents and coordination time intervals□
$D\square$	Comply with IEEE 399 for general study procedures □
PART 2	- PRODUCTS
21	COMPUTER SOFTWARE DEVELOPERS
A□	Available Computer Software Developers Subject to compliance with requirements companies offering computer software programs that may be used in the Work include but are not limited to the following
В□	Computer Software Developers \square Sub \blacksquare ct to compliance with requirements \square provide products by one of the following \square
С□	Basis-of-Design Product□ Sublect to compliance with requirements□ provide the product indicated on Drawings or a comparable product by one of the following□
	1□ EDSA Micro Corporation□ 2□ ESA Inc□ 3□ SKM Systems Analysis□Inc□
2[2	COMPUTER SOFTWARE PROGRAM RE UIREMENTS
$A\square$	Comply with IEEE 399□
В□	Analytical features of fault-current-study computer software program shall include "mandatory" "very desirable" and "desirable" features as listed in IEEE 399□
С□	Computer software program shall be capable of plotting and diagramming time-current-characteristic curves as part of its output□ Computer software program shall report device settings and ratings of all overcurrent protective devices and shall demonstrate selective coordination by computer-generated time-current coordination plots□
	1□ Optional Features□

		a□ b□ c□ d□	Arcing faults Simultaneous faults Explicit negative sequence Mutual coupling in rero sequence
PART 3	- E 🗆 E	ECUTI	ON
31	E□Al	MINAT	TION
A□	distri	bution	rolect overcurrent protective device submittals for compliance with electrical system coordination requirements and other conditions affecting ce□ Devices to be coordinated are indicated on Drawings□
	1 🗆	been	eed with coordination study only after relevant equipment submittals have assembled. Overcurrent protective devices that have not been submitted approved prior to coordination study may not be used in study.
3 2	POW	/ER S`	YSTEM DATA
$A\square$	Gath	er and	tabulate the following input data to support coordination study
	1	Secti equip diagr recor Impe Elect	uct Data for overcurrent protective devices specified in other Division 16 ons and involved in overcurrent protective device coordination studies Use oment designation tags that are consistent with electrical distribution system ams overcurrent protective device submittals input and output data and mmended device settings dance of utility service entrance rical Distribution System Diagram In hard-copy and electronic-copy ats showing the following
	4□		Circuit-breaker and fuse-current ratings and types Relays and associated power and current transformer ratings and ratios Transformer kilovolt amperes primary and secondary voltages connection type impedance and Ratios Generator kilovolt amperes in voltage and source impedance Cables Indicate conduit material insulation and length Motor horsepower and code letter designation according to NEMA MG 1 sheets to supplement electrical distribution system diagram crossenced with tag numbers on diagram showing the following Special load considerations including starting inrush currents and frequent starting and stopping
		b□ c□	Transformer characteristics including primary protective device magnetic inrush current and overload capability Motor full-load current locked rotor current service factor starting time type of start and thermal-damage curve

		d Generator thermal-damage curve
		e□ Ratings□types□and settings of utility companys overcurrent protective devices□
		f□ Special overcurrent protective device settings or types stipulated by utility company□
		g□ Time-current-characteristic curves of devices indicated to be coordinated□ h□ Manufacturer□frame si□e□interrupting rating in amperes rms symmetrical□ ampere or current sensor rating□long-time adଢstment range□short-time
		ad@stment range □and instantaneous ad@stment range for circuit breakers □ i□ Manufacturer and type □ ampere-tap ad@stment range □ time-delay ad@stment range □instantaneous attachment ad@stment range □and current transformer ratio for overcurrent relays □
		☐ Panelboards switchboards motor-control center ampacity and interrupting rating in amperes rms symmetrical ☐
3[3	FAU	LT-CURRENT STUDY
A	circu shall	ulate the maximum available short-circuit current in amperes rms symmetrical at it-breaker positions of the electrical power distribution system. The calculation be for a current immediately after initiation and for a three-phase bolted short it at each of the following.
	1□ 2□ 3□ 4□	Switchgear and switchboard bus□ Busway plugs at each floor□ Motor-control center□ Distribution panelboard□
	5□	Branch circuit panelboard□
В□	elect	y electrical distribution system from normal and alternate power sources throughout rical distribution system for Proēct□ Include studies of system-switching gurations and alternate operations that could result in maximum fault conditions□
С□	Calc curre	ulate momentary and interrupting duties on the basis of maximum available fault ent $\!$
D□		ulations to verify interrupting ratings of overcurrent protective devices shall comply IEEE 141 ☐ IEEE 241 and IEEE 242 ☐
	1 🗆	Transformers□
		a ANSI C57 12 10 D b ANSI C57 12 12 D c ANSI C57 12 140 D d IEEE C57 12 100 D e IEEE C57 196 D
	2□ 3□ 4□	Medium-Voltage Circuit Breakers□ IEEE C37เ010□ Low-Voltage Circuit Breakers□ IEEE 1015 and IEEE C37เ201□ Low-Voltage Fuses□ IEEE C37เ46□

EΠ	Study Report□	
	Show calculated □/R ratios and equipment interrupting rating □1/2-cycle□faul currents on electrical distribution system diagram□ Show interrupting □5-cycle□and time-delayed currents □6 cycles and above□or medium- and high-voltage breakers as needed to set relays and assess the sensitivity of overcurrent relays□	n
F	Equipment Evaluation Report□	
	For 600-V overcurrent protective devices ensure that interrupting ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current multiplication factors listed in the standards to 1/2-cycle symmetrical fault current Verify adequacy of phase conductors at maximum three-phase bolted fault currents verify adequacy of equipment grounding conductors and grounding electrode conductors at maximum ground-fault currents Ensure that short-circuit withstand ratings are equal to or higher than calculated 1/2-cycle symmetrical fault current	y :□ It g it
34	COORDINATION STUDY	
A□	Perform coordination study using approved computer software program□ Prepare a written report using results of fault-current study□Comply with IEEE 399□	а
	 Calculate the maximum and minimum 1/2-cycle short-circuit currents □ Calculate the maximum and minimum interrupting duty ⑤ cycles to 2 seconds short-circuit currents □ Calculate the maximum and minimum ground-fault currents □ 	; 🗆
В□	Comply with IEEE 141□IEEE 241□and IEEE 242 recommendations for fault currents and time intervals□	s
С□	Transformer Primary Overcurrent Protective Devices□	
	1□ Device shall not operate in response to the following□	
	 a□ Inrush current when first energi □ed□ b□ Self-cooled□ full-load current or forced-air-cooled□ full-load current whichever is specified for that transformer□ c□ Permissible transformer overloads according to IEEE C57 □96 if required by unusual loading or emergency conditions□ 	
	Device settings shall protect transformers according to IEEE C57 ☐ 2 ☐ 00 ☐ for faul currents ☐	lt
$D\square$	Motors served by voltages more than 600 V shall be protected according to IEEE 620]
E	Conductor Protection Protect cables against damage from fault currents according to ICEA P-32-382 □CEA P-45-482 □ and conductor melting curves in IEEE 242 □ Demonstrate that equipment withstands the maximum short-circuit current for a time equivalent to the tripping time of the primary relay protection or total clearing time of the fuse □ To determine	e e

				ulation⊡use curves from cable manufacture si⊑e and short-circuit current□	ers or from listed
F□		dination-St lination stu	•	Prepare a written report indicating the follo	owing results of
	1 🗆	Tabular F	ormat of Settin	ngs Selected for Overcurrent Protective De	evices
		b□ Relapick c□ Circ sett d□ Fus	kup values□ cuit-breaker sei ings□ e-current ratinç	nsformer ratios□and tap□time-dial□and nsor rating□and long-time□short-time□and g and type□ -pickup and time-delay settings□	
	2	devices to time sepa company schemes	o achieve sele aration exists b s upstream de	Prepared to determine settings of overcurective coordination Graphically illustrate setween devices installed in series includivices Prepare separate sets of curves feency periods where the power source is lemation	e that adequate ing power utility or the switching
		b Volt c Thre d No e Cab f Train	ee-phase and s damage⊡meltir ble damage cur nsformer inrusl		sformer□
G□	Comp	oleted data	a sheets for set	tting of overcurrent protective devices	
3 5	ARC	FLASH H	A□ARD		
A	warni			na⊡ard in accordance with IEEE 1584 and pards□panelboards□motor_starters□MCC	
			END	O OF SECTION 16055	
		RE NO 🗆	EVISION DATE	SUB□ECT	
		NO	DATE	SUBLECT	

HORION I GROUND DEFOURTH FLOORS UPFIT BETA RESEARCH FACILITY CONSTRUCTION STATE PROJECT NO 11700

FOR INFORMATION ONLY—

PROVIDE BY WALKER-WHITE TO INDICATE

WHERE PLUMBING LINES FROM FOURTH FLOOR WOULD

OCCUR AT THIRD FLOOP CEILING.

THIRD FLOOR PLAN - PLUMBING CEILING INTERFERENCE

REF BACK TO P1.31

GENERAL NOTE:

ALL EQUIPMENT AND PIPING SHALL BE
INSTALLED PER SEISMIC CATEGORY 'C';
2009 IBC; AS DESIGNED BY A LICENSED S.C
P.E. INCLUDING BRACING DWGS, DETAILS
AND ANCHOR BOLT CALCULATIONS.

NOTE

- 1 REBALANCE AIRFLOWS FOR ALL EXISTING DEVICES ON THIS FLOOR.
- 2 OFFSET DUCTWORK AS REQUIRED TO INSTALL DUCTWORK WITH EXISTING CONDITIONS & NEW RATED WALLS, ETC.
- 3 PATCH & REPAIR WALL PANEL AS REQUIRED TO INSTALL NEW DUCTWORK, PROVIDE 16 GA SHEET METAL FLASHING & SEAL PENETRATION WATER TIGHT.
- 4 REMOVE 10"x10" TRANSFER & PATCH WALL.
- 5 PROVIDE MANUAL SHUTOFF CONTROL OUTSIDE OF ROOM ADJACENT TO DOOR, SWITCH SHALL BE BREAK-GLASS TYPE AND BE LABELED: "VENTILATION SYSTEM EMERGENCY SHUTOFF". WHEN ACTIVITY EF SERVING ROOM SHALL STOP AND VV SERVING ROOM SHALL CLOSE.



STATE PROJECT NO.: H27-6081-AC

HORIZON I GROUND & FOURTH FLOORS UPFIT

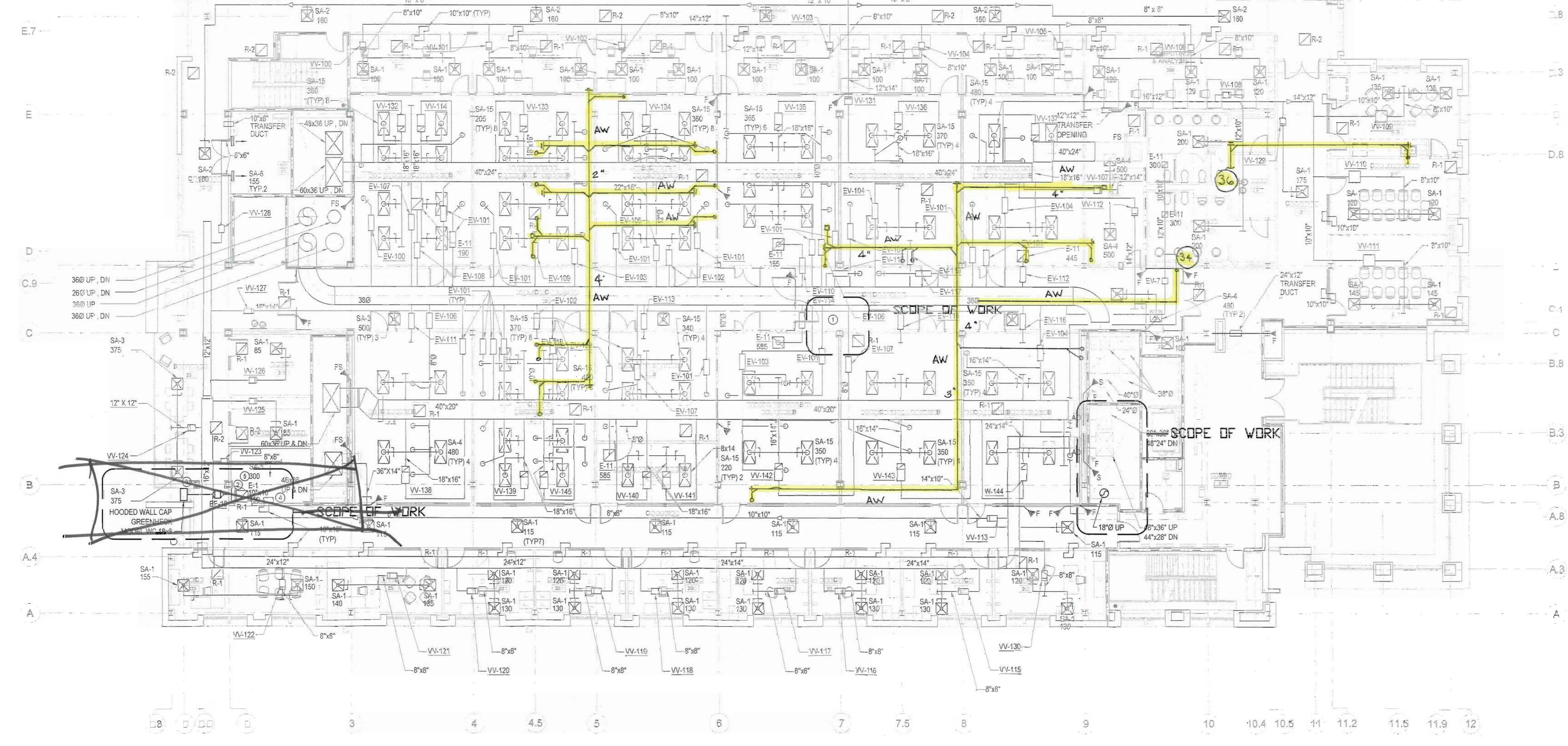
University of South Carolina 541 Main Street Columbia, South Carolina

REV.	DATE	DESCRIPTION	•
			_

LEGEND

2 HOUR RATED WALL

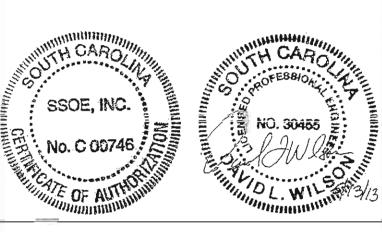
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JOR M

THIRD FLOOR PLAN-HVAC

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



ATSON TATE SAVORY

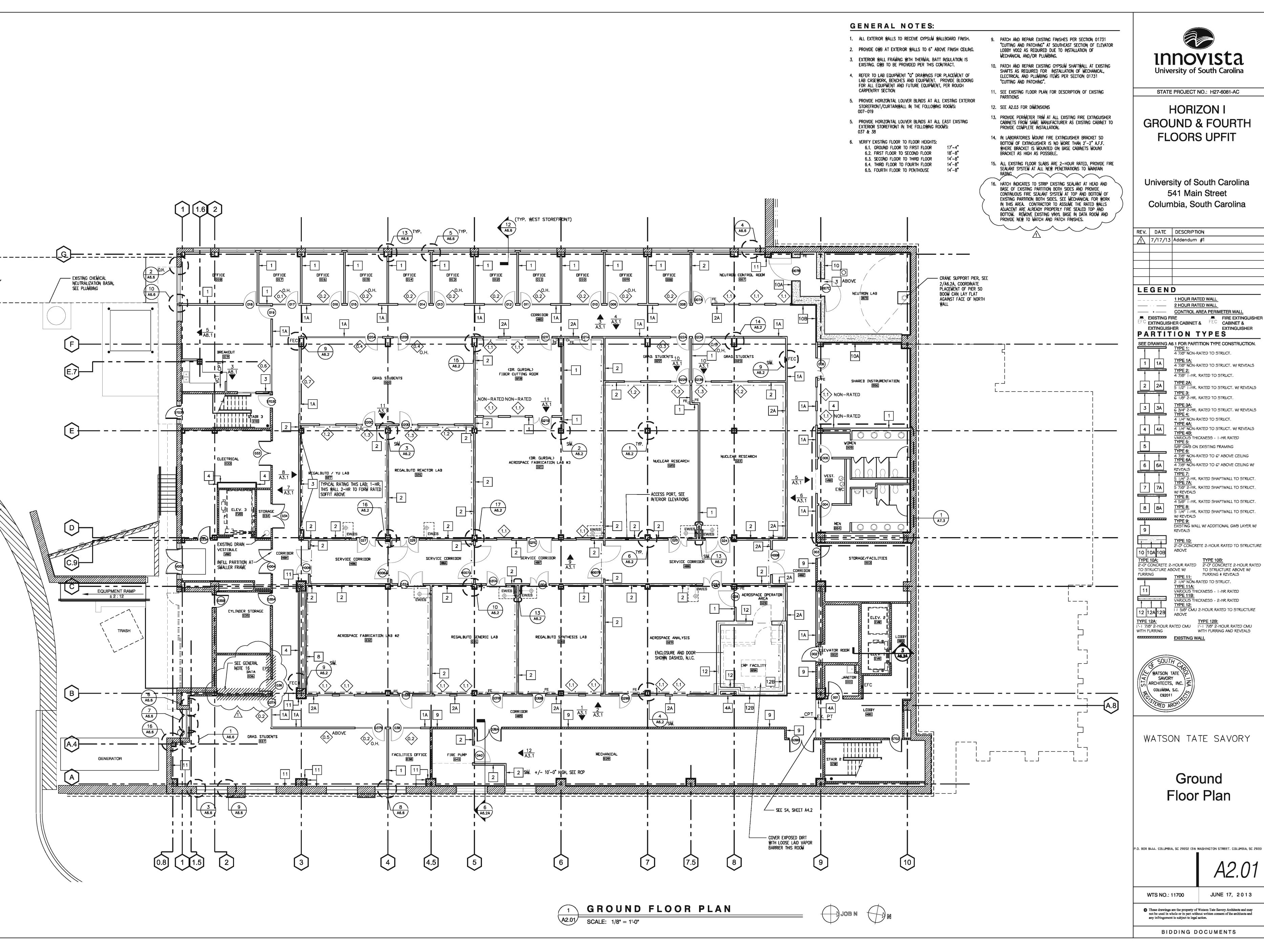
Thrid Floor HVAC Plan

P.O. BOX 8644. GSILMBIA SC 29202 ISIG WASHINGTON STREET, COLUMBIA, SC 29201

M.1.31

WTS NO.: 11700 JUNE 17, 2013

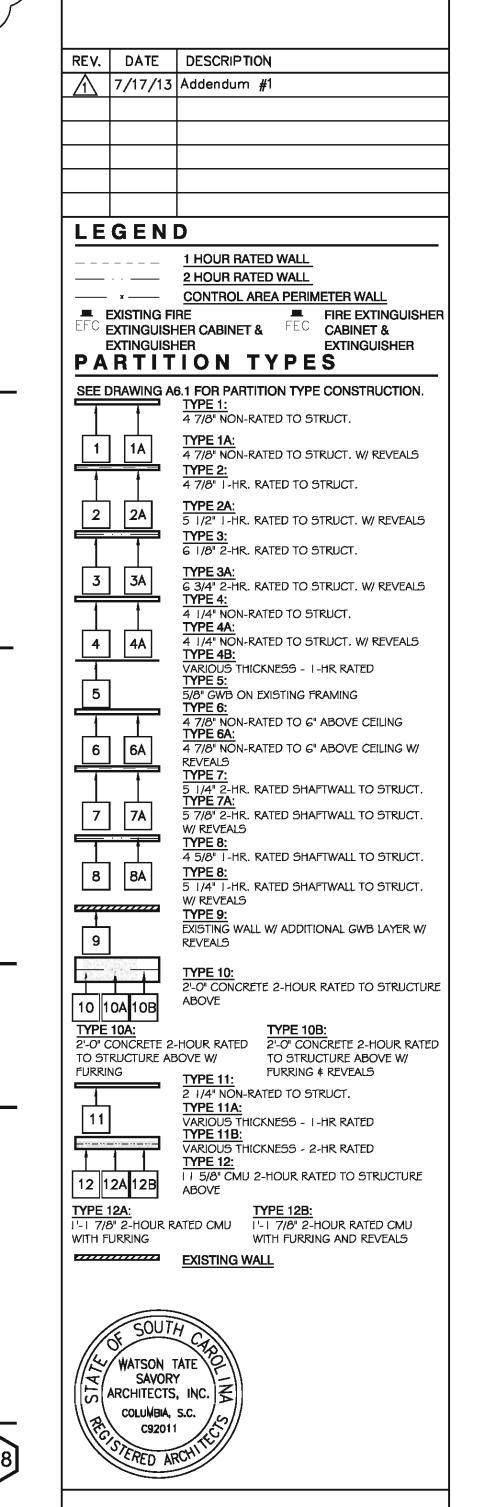
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HORIZON I **GROUND & FOURTH FLOORS UPFIT**

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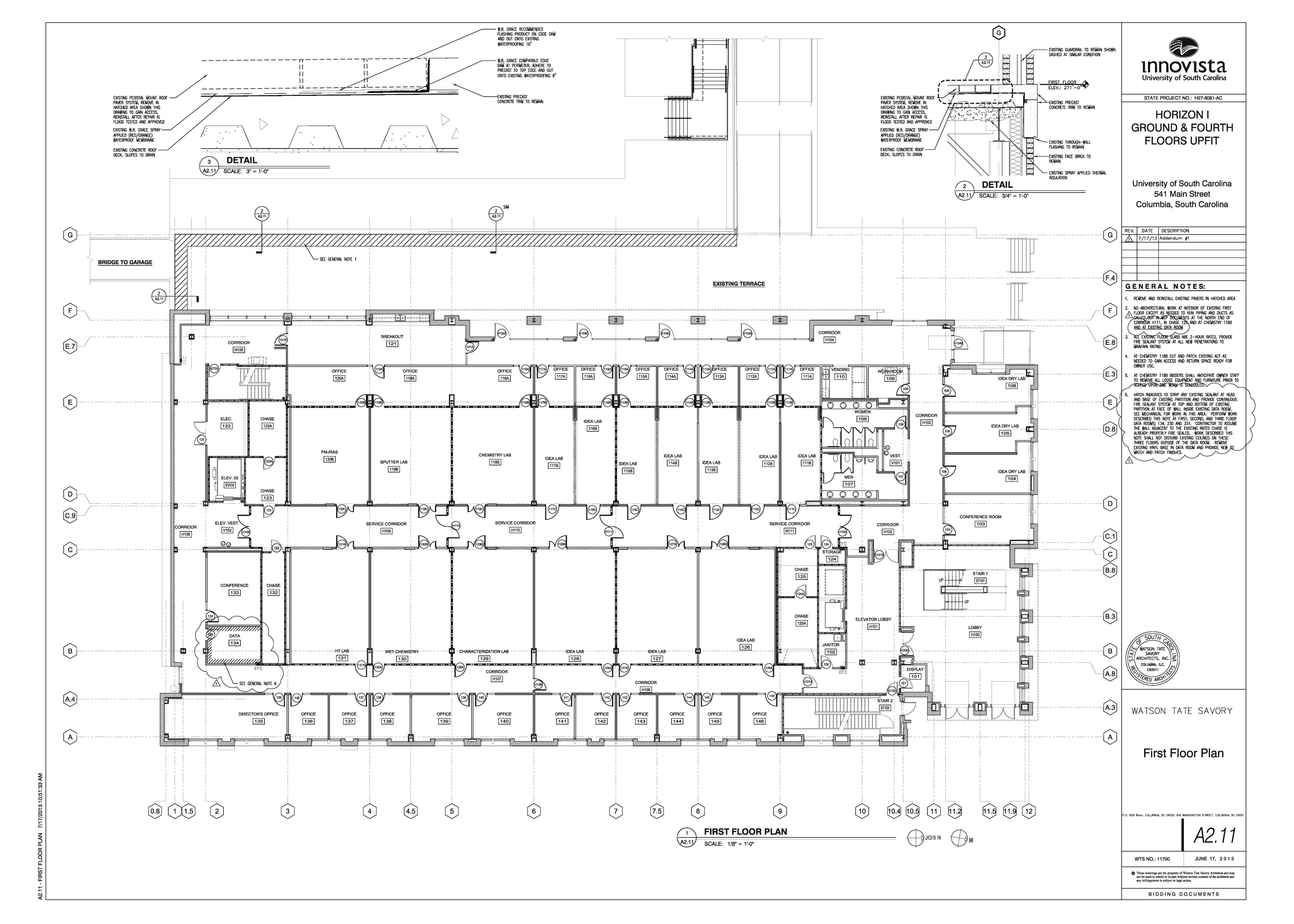
WATSON TATE SAVORY

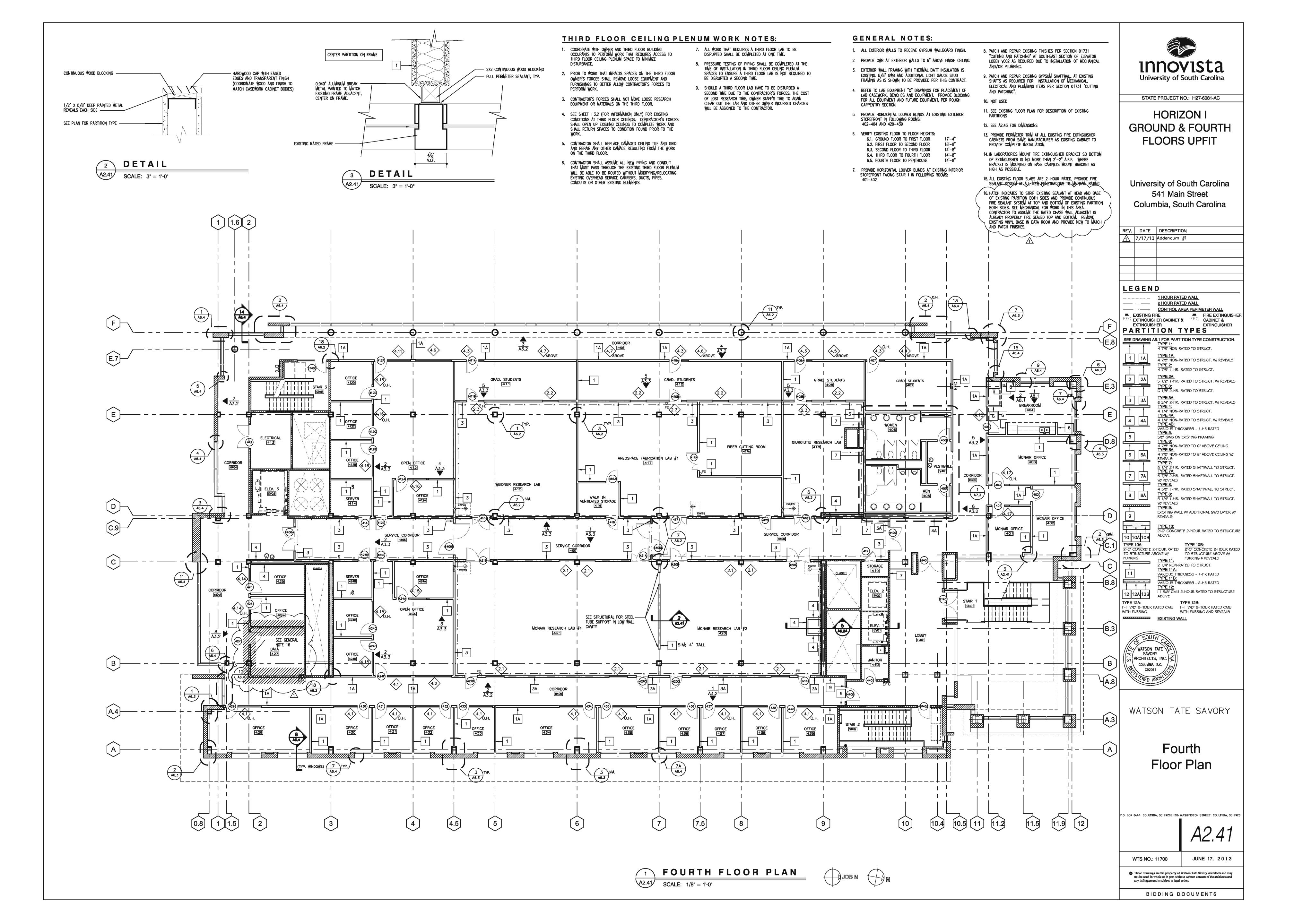
Ground Floor Plan

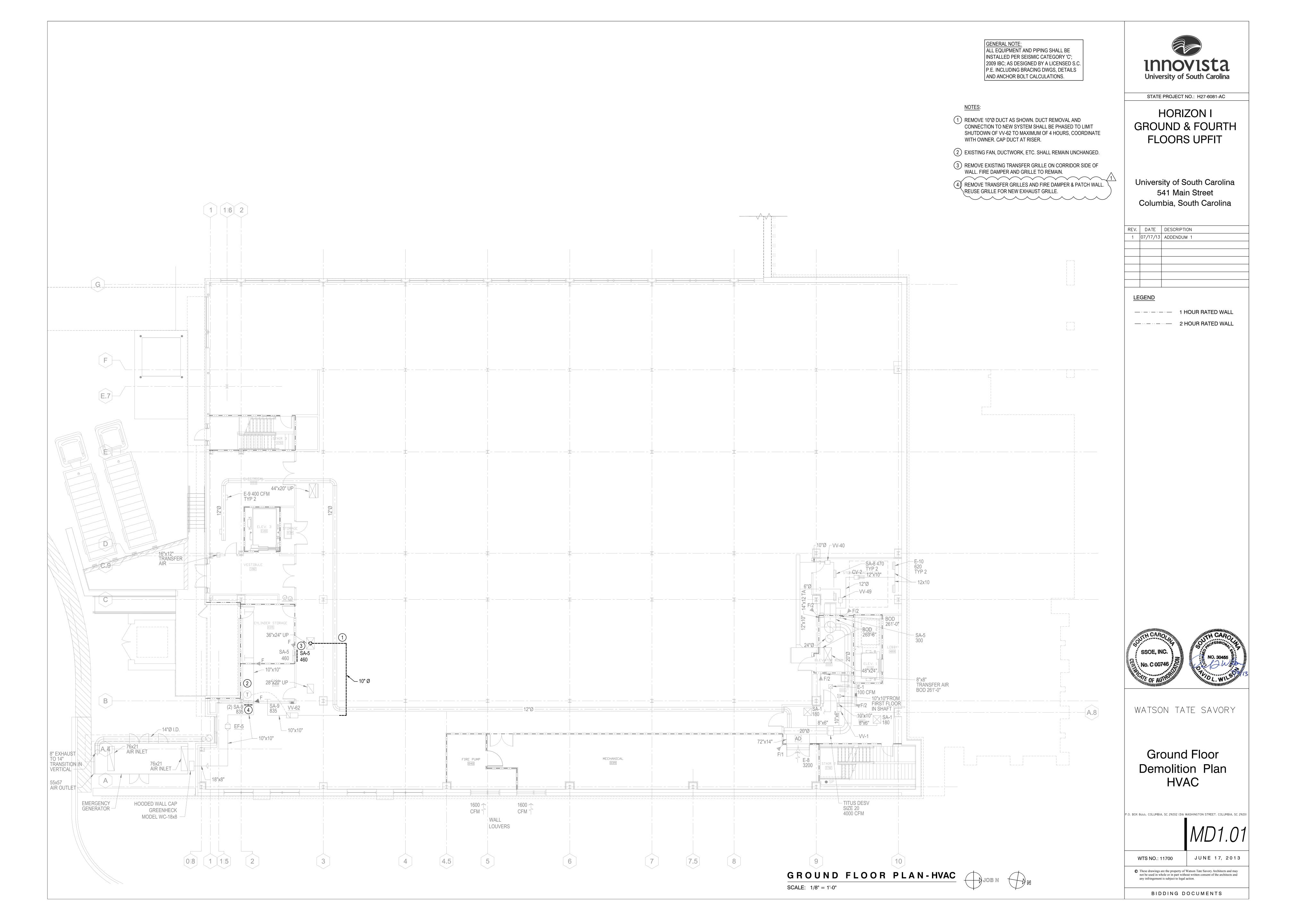
JUNE 17, 2013

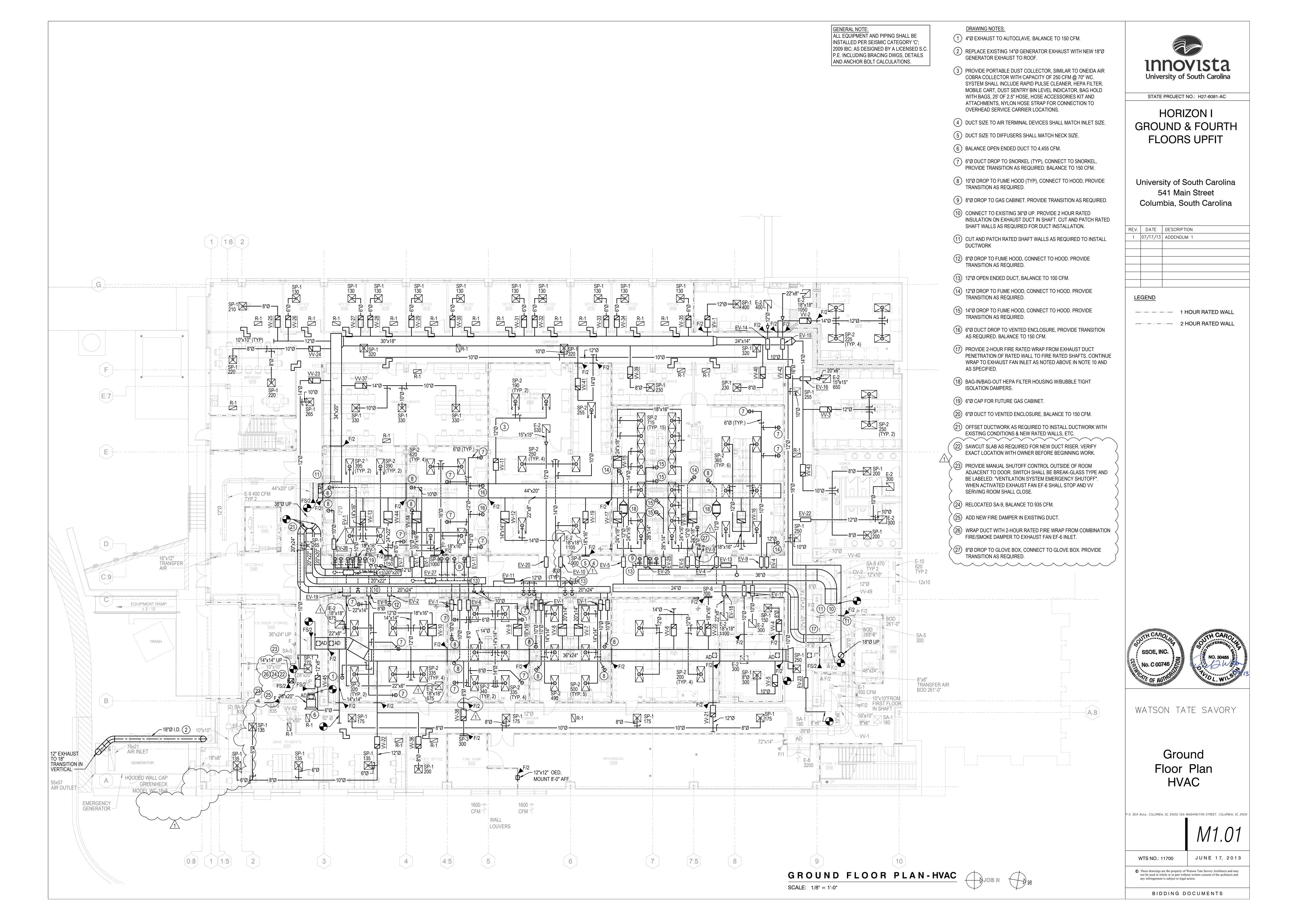
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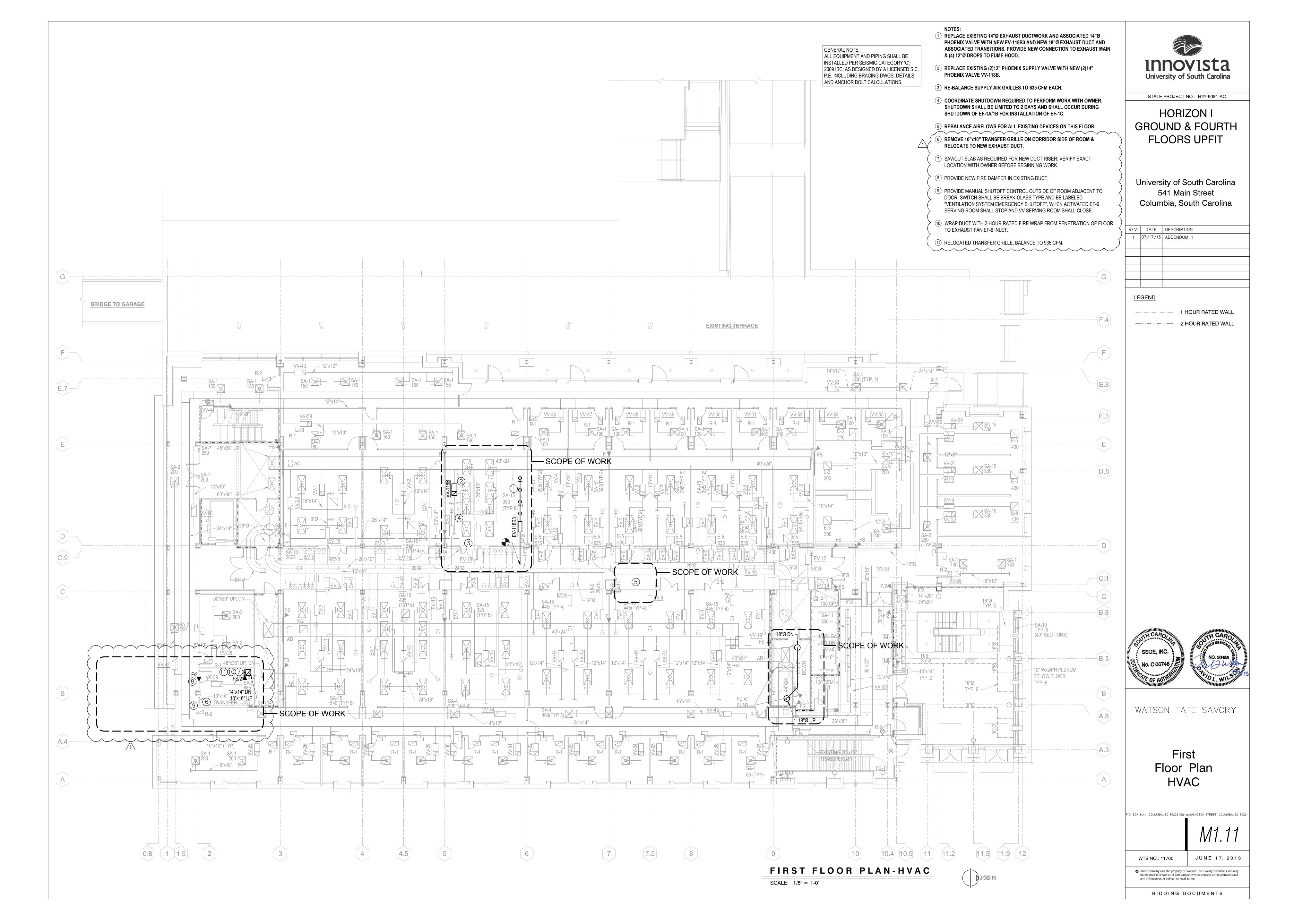
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GENERAL NOTE:
ALL EQUIPMENT AND PIPING SHALL BE INSTALLED PER SEISMIC CATEGORY 'C'; 2009 IBC; AS DESIGNED BY A LICENSED S.C. P.E. INCLUDING BRACING DWGS, DETAILS AND ANCHOR BOLT CALCULATIONS.



1 REBALANCE AIRFLOWS FOR ALL EXISTING DEVICES ON

2 PROVIDE FIRE DAMPER IN EXISTING DUCT.

3 SAWCUT SLAB AS REQUIRED FOR NEW DUCT RISER. VERIFY EXACT LOCATION WITH OWNER BEFORE BEGINNING WORK.

(4) PROVIDE MANUAL SHUTOFF CONTROL OUTSIDE OF ROOM ADJACENT TO DOOR. SWITCH SHALL BE BREAK-GLASS TYPE AND BE LABELED: "VENTILATION SYSTEM EMERGENCY SHUTOFF". WHEN ACTIVATED EF-6 SERVING ROOM SHALL STOP AND VV SERVING ROOM SHALL CLOSE.

5 WRAP DUCT WITH 2-HOUR RATED FIRE WRAP FROM PENETRATION OF FLOOR TO EXHAUST FAN EF-6 INLET.



HORIZON I **GROUND & FOURTH**

FLOORS UPFIT

STATE PROJECT NO.: H27-6081-AC

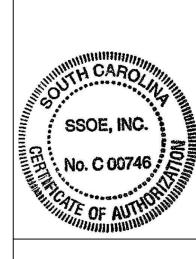
University of South Carolina 541 Main Street

Columbia, South Carolina

REV. DATE DESCRIPTION 1 07/17/13 ADDENDUM 1

— · — · — · — · — 1 HOUR RATED WALL

—··-··— 2 HOUR RATED WALL



WATSON TATE SAVORY

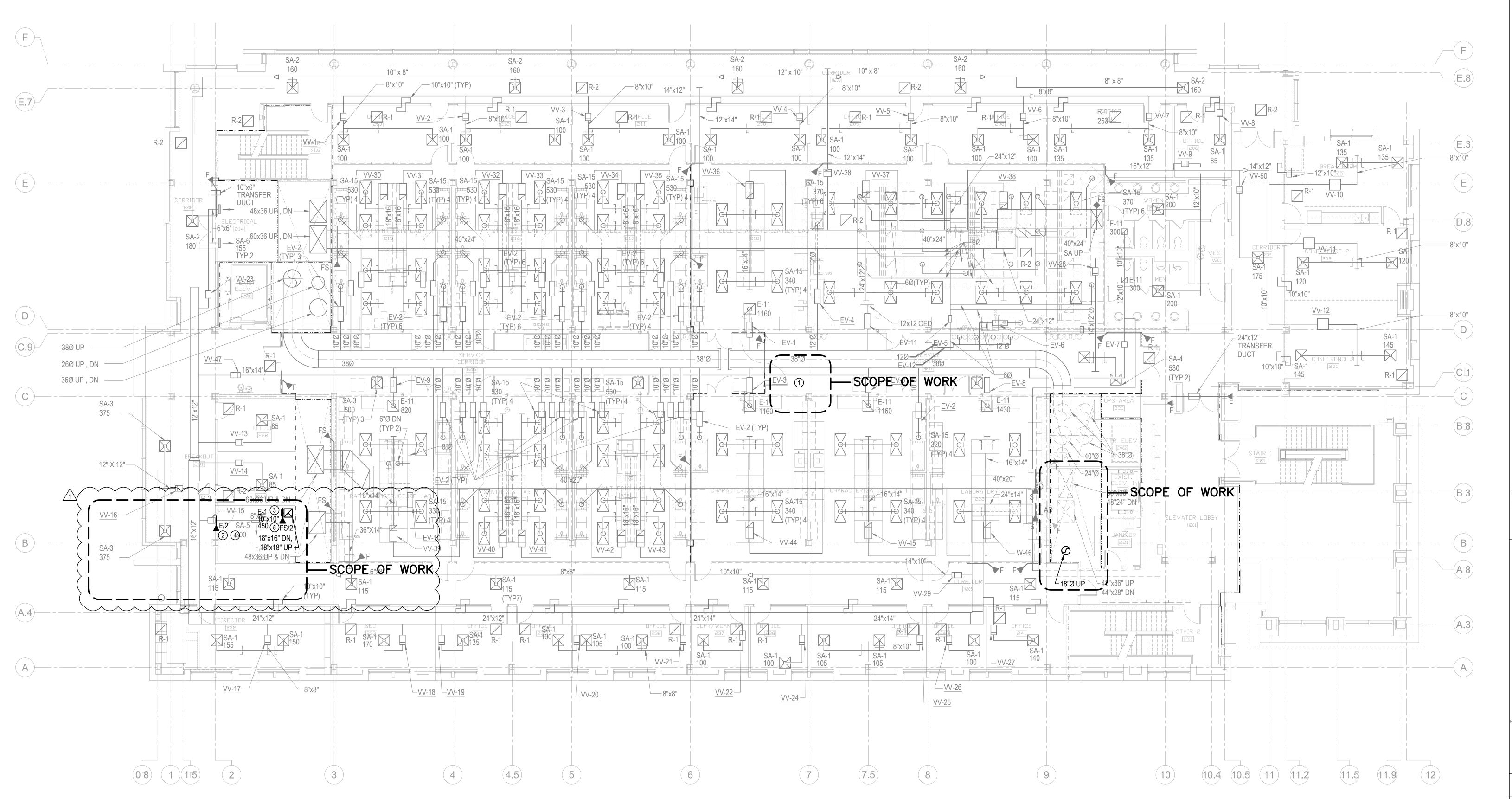
Second Floor **HVAC Plan**

P.O. BOX 8444. COLUMBIA, SC 29202 1316 WASHINGTON STREET. COLUMBIA, SC 29201

WTS NO.: 11700 JUNE 17, 2013

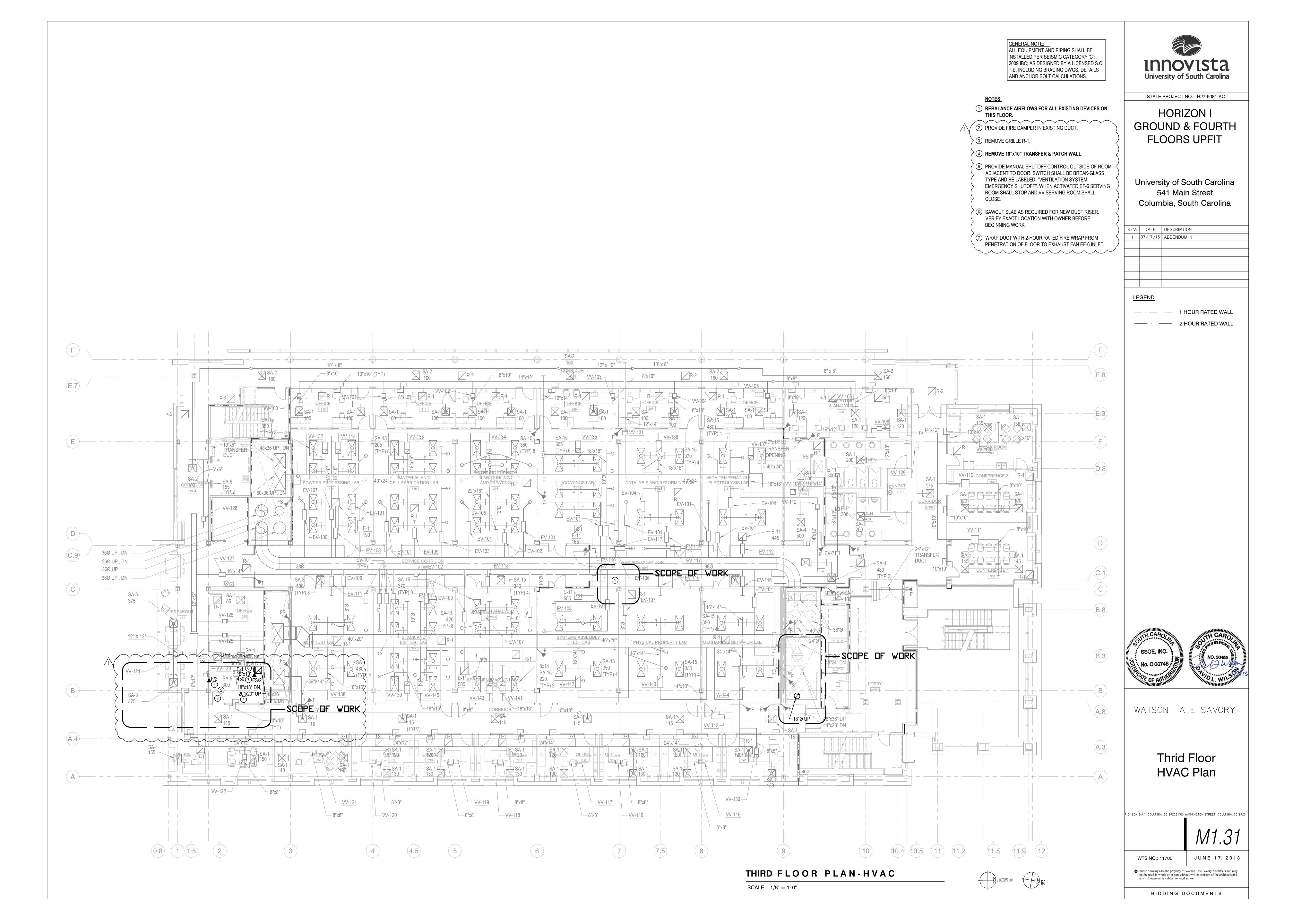
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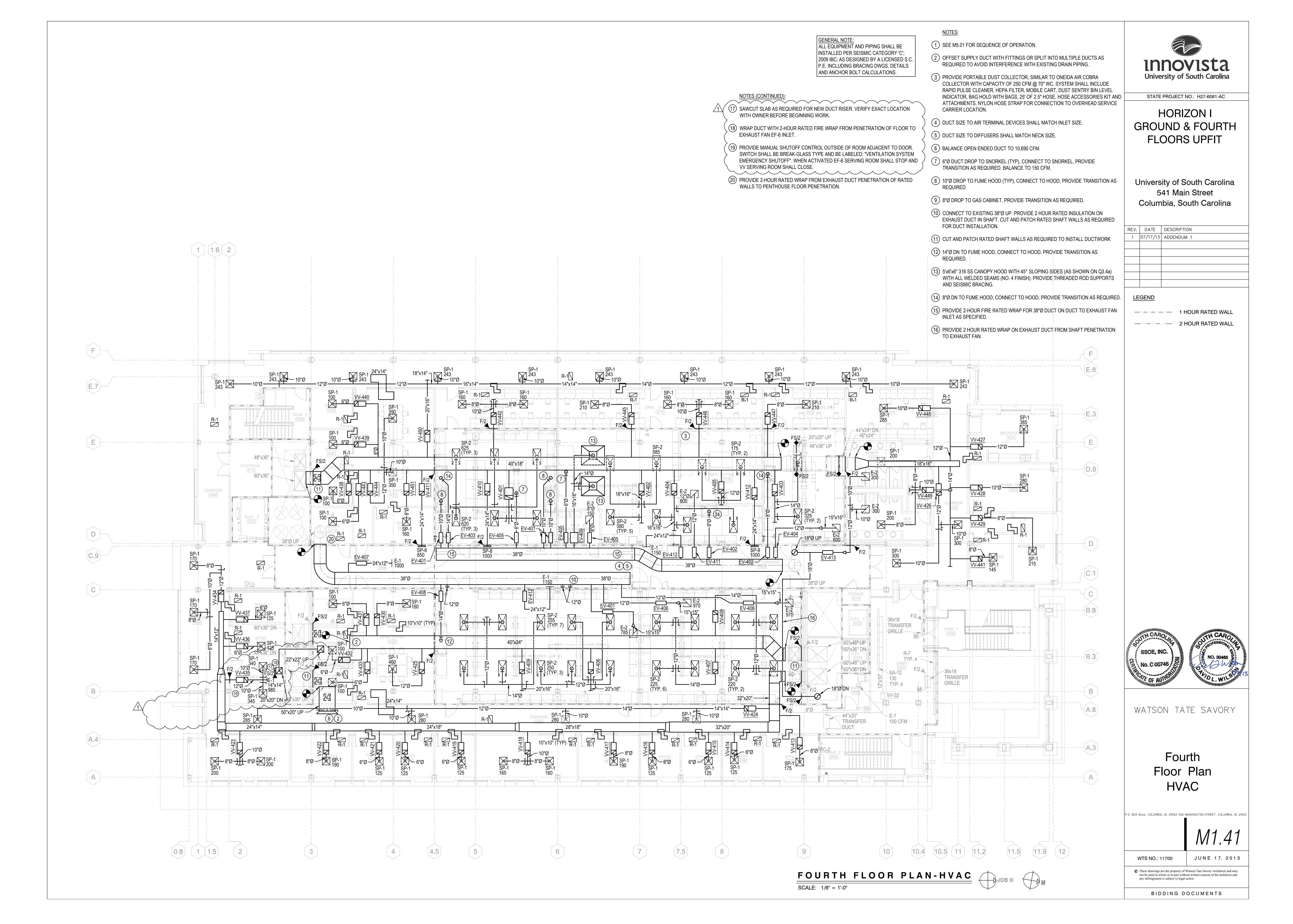
BIDDING DOCUMENTS

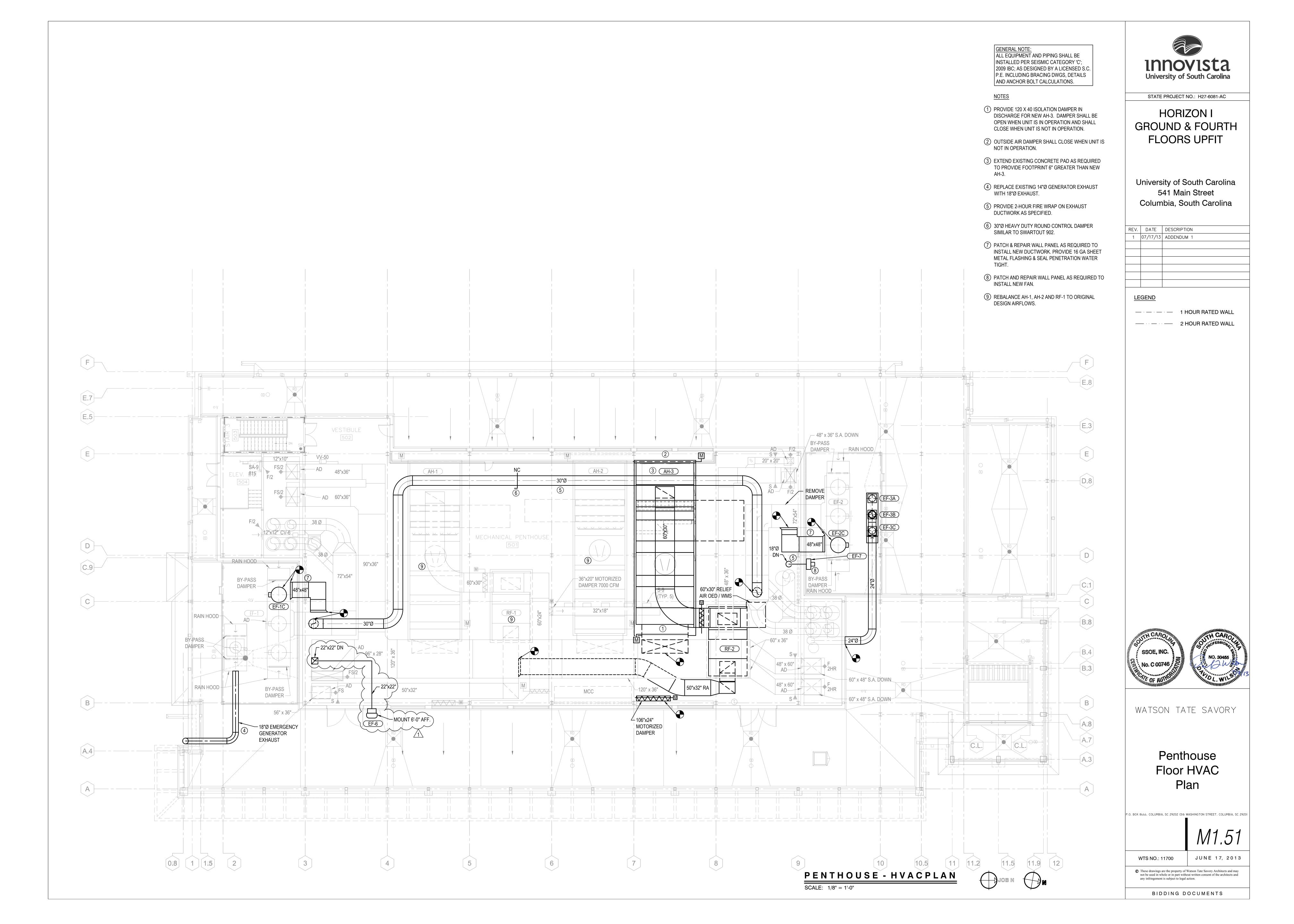


SECOND FLOOR PLAN- HVAC

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



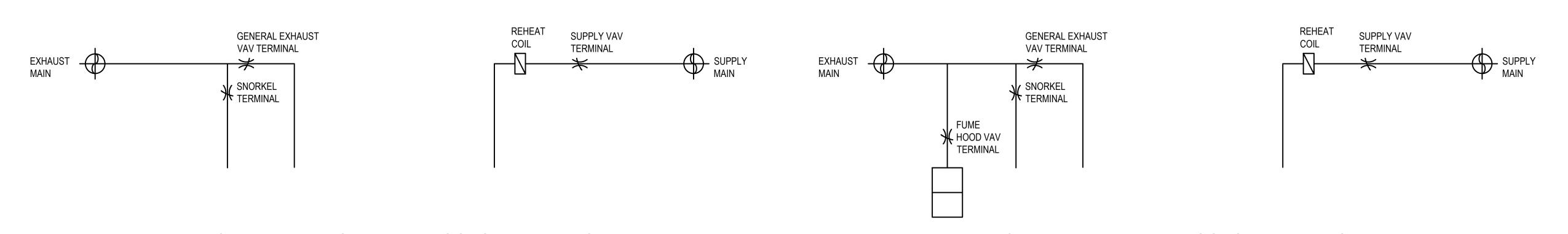




		Fume		LADON	AIONIES	S AIR BALAN	CL SCIILD	JLC			
Room Name	Room Number	Hood Design Flow	Fume Hood Min Flow	Snorkel Flow	Local Exhaust Design Flow	Local Exhaust Min Flow	General Exhaust Max Flow	General Exhaust Min Flow	Supply Maximum Flow	Supply Minimum Flow	Transfer Ai Requiremer
NEUTRON CONTROL ROOM	007	-	-	-	-	-	-400	-400	400	400	0
NEUTRON LAB	007B	-	-	-	-	-	-1050	-1050	900	900	150
SHARED INSTRUMENTATION	006	-	-	-	-	-	-650	-650	500	500	150
AEROSPACE OPERATOR AREA	028	-	-	-	-	-	-300	-300	150	150	150
EMP FACILITY	028A	-	-	-	-	-	-300	-300	300	300	-
AEROSPACE ANALYSIS	029	-	-	-	-	-	-1100	-550	800	250	300
		-785	-350								
REGALBUTO SYNTHESIS	000	-785	-350						2990	4050	450
LAB	030	-785	-350	-	-	-	-	-	2990	1250	150
		-785	-350								
REGALBUTO GENERIC	031	-785	-350	-600					2020	1150	150
LAB	031	-785	-350	-000		-	-	- 1	2020	1150	150
AEROSPACE FABRICATION LAB #2	032	-485	-200	-600	-600	-	-1350	-200	2000	1135	150
FIBER CUTTING ROOM	021B	-	-	-	-	-	-530	-265	380	115	150
AEROSPACE FABRICATION LAB #3	021	-	-	-	-	-	-1105	-500	1255	650	150
DECAL DUTO AULI AD	007	-785	-350		450	450			4570	700	450
REGALBUTO/YU LAB	027	-785	-350	-	-150	-150	-	-	1570	700	150
REGALBUTO REACTOR	026	-785	-350	1050					2470	1600	150
LAB	020	-785	-350	-1050	-	-	-	-	2470	1600	150
	024	-945	-945	-450	_	_	_	_	2190	2190	150
NUCLEAR RESEARCH	024	-945	-945			-	_	<u>-</u>	2100	2130	130
		-1300	-1300								
NUCLEAR RESEARCH	025	-3920	-3920	-450	_	_	_	<u>-</u>	10740	10740	150
		-3920	-3920	.00							100
		-1300	-1300								
SERVICE CORRIDOR	H006	-	-	-	-1200	-1200	-100	-100	1150	1150	150
SERVICE CORRIDOR	H006A	-	-	-	-1050	-1050	-100	-100	1000	1000	150
SERVICE CORRIDOR	H007	-	-	-	-950	-950	-100	-100	900	900	150
SERVICE CORRIDOR	H008	-	-	-	-750	-750	-100	-100	700	700	150

				LABOR	ATORIES	S AIR BALAN	CE SCHED	ULE			
Room Name	Room Number	Fume Hood Design Flow	Fume Hood Min Flow	Snorkel Flow	Local Exhaust Design Flow	Local Exhaust Min Flow	General Exhaust Max Flow	General Exhaust Min Flow	Supply Maximum Flow	Supply Minimum Flow	Transfer Air Requirement
MCNAIR RESEARCH LAB #1	421	1900	1900	-	-	-	-785	-350	2535	2100	150
WALK-IN VENTILATED STORAGE	416	-	-	-	-	-	-150	-150	0	0	150
AEROSPACE FABRICATION LAB #1	417	-485	-200	-150	-3000	-3000	-	-	3485	3200	150
FIBER CUTTING ROOM	417A	-	-	-	-	-	-500	-250	350	100	150
GIURGIUTIU RESEARCH LAB	418	-485	-200	-	-	-	-600	-535	650	535	150
		-785	-350								
VEIDNER RESEARCH LAB	415	-785 -350	-150		!		1	2725	2420	450	
VEIDNER RESEARCH LAD	415	-785	-350	-150	-	-	-	-	3735	2430	150
		-1380	-1380								
MCNAIR RESEARCH LAB	420	-	-	_	_	_	-1940	-970	1790	820	150
2	720	-	-		_		1040	370	1700	020	100
SERVICE CORRIDOR	H406	-	-	<u>-</u>	-	-	-1000	-1000	850	850	150
SERVICE CORRIDOR	H407	-	-	-	-	-	-1150	-1150	1000	1000	150
SERVICE CORRIDOR	H408	_	_	-	_	_	-1150	-1150	1000	1000	150

				LABORA	ATORIES	AIR BALAN	CE SCHEDU	ILE			
Room Name	Room Number	Fume Hood Design Flow	Fume Hood Min Flow	Snorkel Flow	Local Exhaust Design Flow	Local Exhaust Min Flow	General Exhaust Max Flow	General Exhaust Min Flow	Supply Maximum Flow	Supply Minimum Flow	Negative Requirement
		-785	-350								
CHEMISTRY LAB	118B	-3220	-3220	-200	0	0	0	0	3805	3370	-400



TYPICAL LAB WITHOUT FUME HOODS VENTILATION

TYPICAL LAB WITH FUME HOODS VENTILATION

SCALE: NONE

GENERAL NOTE:
ALL EQUIPMENT, DUCTWORK, AND PIPING SHALL BE INSTALLED PER SEISMIC CATEGORY 'C'; 2009 IBC; CONTRACTOR IS RESPONSIBLE FOR THE DESIGN BY A LICENSED S.C. P.E. INCLUDING BRACING DWGS, DETAILS, AND ANCHOR BOLT CALCULATIONS.



STATE PROJECT NO.: H27-6081-AC

HORIZON I GROUND & FOURTH FLOORS UPFIT

University of South Carolina 541 Main Street Columbia, South Carolina

REV.	DATE	DESCRIPTION
1	07/17/13	ADDENDUM 1

SEQUENCE OF OPERATIONS: AHU-3:

AHU-1, AHU-2 AND AHU-3 ARE MANIFOLDED TOGETHER AND SHALL OPERATE AS A SINGLE AIR HANDLING UNIT.

PROVIDE AIR FLOW MEASURING STATION FOR AHU-3 OUTSIDE AIRFLOW AND SUPPLY AIRFLOW.

DISCHARGE DAMPER ON AHU-3 SHALL OPEN WHEN UNIT IS OPERATING AND SHALL CLOSE WHEN UNIT IS NOT OPERATING.

HOT WATER PREHEAT COIL PUMP (HWP-1) SHALL OPERATE WHEN OUTSIDE AIR TEMPERATURE IS BELOW 45°F (FA) AND HOT WATER PREHEAT COIL CONTROL VALVE SHALL BE 100% OPEN WHEN AHU-3 SUPPLY FAN IS SIGNALED TO START. HOT WATER PREHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN COIL LEAVING AIR TEMPERATURE OF 52°F (FA).

FREEZESTAT ON INLET OF CHILLED WATER COIL SHALL OPEN CHILLED WATER CONTROL VALVE, OPEN HEATING HOT WATER CONTROL VALVE, START HOT WATER COIL PUMP (HWP-1) AND CLOSE OUTSIDE AIR DAMPER WHEN TEMPERATURE OF 38°F IS SENSED.

CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN UNIT DISCHARGE AIR TEMPERATURE SETPOINT OF 55°F (FA).

SUPPLY FAN VFD FOR AHU-1, AHU-2 AND AHU-3 SHALL MODULATE IN UNISON TO MAINTAIN DUCT STATIC PRESSURE SETPOINT FOR BOTH OF THE (2) EXISTING DUCT STATIC PRESSURE SENSORS (CONTROL TO MAINTAIN STATIC PRESSURE SETPOINT AT WORSE CASE OF TWO SENSORS). OUTSIDE AIR DAMPER FOR AHU-1 AND AHU-3 SHALL MODULATED TO MAINTAIN OUTSIDE AIRFLOW EQUAL TO TOTAL EXHAUST AIRFLOW (EF-1A/1B/1C + EF-2A/2B/2C AIRFLOW) LESS AHU-2 SUPPLY AIRFLOW PLUS 1000 CFM OFFSET (ADJ). OUTDOOR AIRFLOW FOR AHU-1 AND AHU-3 SHALL BE LIMITED TO MAXIMUM 90000 CFM (ADJ.) OF OUTDOOR AIR.

RETURN FANS RF-1 AND RF-3 SPEED SHALL MODULATE TO MAINTAIN RETURN AIRFLOW EQUAL TO AHU-1 AND AHU-3 SUPPLY AIRFLOW LESS AHU-1 AND AHU-3 OUTSIDE AIRFLOW. AHU-1 AND AHU-3 RETURN AIR DAMPERS SHALL BE 100% OPEN AND RELIEF AIR DAMPERS SHALL BE 100% CLOSED. AHU-1 ECONOMIZER MODE OF OPERATION SHALL BE DISABLED. AHU-1 AND AHU-3 PREHEAT COIL CONTROL VALVE SHALL MODULATE TO MAINTAIN PREHEAT COIL LEAVING AIR TEMPERATURE SETPOINT OF 52°F (ADJ.). PROVIDE LOW LIMIT STATIC PRESSURE SWITCH IN MIXED AIR SECTION OF AHU-3, SWITCH SHALL DE-ENERGIZE AHU-3 SUPPLY FAN IF STATIC PRESSURE SWITCH SENSES PRESSURE OF -4"WC (ADJ.).

SUPPLY DUCT HIGH LIMIT PRESSURE SWITCH SHALL OVERRIDE AHU-3 VFD FAN SPEED SIGNAL AND SHUTDOWN SUPPLY FAN IF PRESSURE OF 5" WC IS SENSED.

DUCT MOUNTED SMOKE DETECTOR IN DISCHARGE DUCT OF AHU-3 SHALL SHUT OFF UNIT IF SMOKE IS DETECTED.
DUCT MOUNTED RETURN AIR SMOKE DETECTORS SHALL CLOSE ASSOCIATED

PROVIDE DIFFERENTIAL STATIC PRESSURE INDICATION ACROSS PRE-FILTER AND FINAL FILTER BANKS.

SEQUENCE OF OPERATIONS: EF-1C AND 2C:

SMOKE DAMPER UPON DETECTION OF SMOKE.

FAN EF-1C SHALL BE OPERATE IN UNISON WITH EXISTING FANS EF-1A AND 1B TO MAINTAIN EXHAUST PLENUM STATIC PRESSURE SETPOINT.

FAN EF-2C SHALL OPERATE IN UNISON WITH EXISTING FANS EF-2A AND 2B TO MAINTAIN EXHAUST PLENUM STATIC PRESSURE SETPOINT.

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SEQUENCE OF OPERATIONS: EF-3A AND 3B:

FANS SHALL BE MOUNTED ON COMMON EXHAUST PLENUM. FANS SHALL BE STARTED AND RUN CONTINUOUSLY. OUTSIDE AIR BYPASS DAMPER(S) SHALL MODULATE TO MAINTAIN EXHAUST DUCT STATIC PRESSURE TRANSMITTER SETPOINT (SETPOINT TO BE DETERMINED DURING BALANCING). PROVIDE DIFFERENTIAL STATIC PRESSURE INDICATION ACROSS FILTERS IN

SEQUENCE OF OPERATIONS: EF-6:

BAG-IN/BAG-OUT FILTER ASSEMBLY.

FAN SHALL ME STARTED MANUALLY AND RUN CONTINUOUSLY. SMOKE DETECTORS IN DATA CLOSET(S) (NEW AND EXISTING) SHALL CLOSE ASSOCIATED COMBINATION FIRE/SMOKE DAMPER UPON DETECTION OF SMOKE.

SEQUENCE OF OPERATIONS: CHILLED WATER PUMPS P-1 & P-2:

MODIFY CONTROL SEQUENCE OF EXISTING PUMPS AS REQUIRED TO ALLOW P-1 & P-2 TO OPERATE IN LEAD-LAG MODE WITH BOTH PUMPS CAPABLE OF OPERATING AT THE SAME TIME. LEAD PUMP SHALL OPERATE TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE SETPOINT. IF LEAD PUMP IS OPERATING AT 100% SPEED AND CANNOT MAINTAIN DIFFERENTIAL PRESSURE SETPOINT, LAG PUMP SHALL BE STARTED AND PUMPS OPERATE AT THE SAME SPEED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT. IF BOTH PUMPS ARE OPERATING AND OPERATING BELOW 30% SPEED, LAG PUMP SHALL BE STOPPED AND LEAD PUMP SHALL MODULATE SPEED TO MAINTAIN DIFFERENTIAL PRESSURE SETPOINT.

SEQUENCE OF OPERATION - LABORATORY CONTROLS

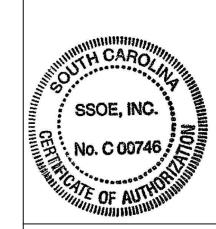
CONTROLLER SHALL MODULATE GENERAL EXHAUST VALVE FROM MAXIMUM TO MINIMUM TO MAINTAIN SPACE SET POINT TEMPERATURE. SUPPLY VALVE SHALL TRACK EXHAUST AIR FLOW TO MAINTAIN CFM DIFFERENTIAL OFFSET. REHEAT COIL SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SET POINT.

FUME HOOD EXHAUST CONTROL

THE HOOD CONTROLLER WILL MODULATE THE HOOD EXHAUST VALVE TO MAINTAIN THE HOOD FACE VELOCITY OF 100 FPM. ZONE PRESSURE SENSOR SHALL REDUCE FUME HOOD FACE VELOCITY TO 60 FPM WHEN USERS ARE NOT SENSED IN FRONT OF HOOD.

CONTROL SIGNAL FOR ALL AIR TERMINAL DEVICES FOR NON-LABORATORY SPACES SHALL BE OVERRIDDEN TO MINIMUM POSITION UPON FAILURE OF AH-1 OR AH-2. OVERRIDE SHALL BE MANUALLY RESET AFTER AH-1 AND AH-2 HAVE RESTARTED.

OCCUPANCY SENSORS SHALL REDUCE AIRFLOWS TO 6 AC/HR FOR UNOCCUPIED LABS.



WATSON TATE SAVORY

Mechanical
Airflow Diagrams

P.O. BOX 8444. COLUMBIA, SC 29202 1316 WASHINGTON STREET. COLUMBIA, SC 29201

WTS NO.: 11700 JUNE 17, 2013

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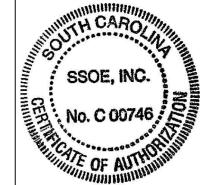
								LIVIII)	MAL D	EVIC				
MARK	SERVICE	MANUFACTURER	INLET SIZE (IN)	MAX CFM	MIN. CFM	MAX PRESSURE DROP (IN WC)	MIN. INLET SP	МВН	EAT TEMP	EWT TEMP	LWT TEMP	PRESSURE DROP (FT)	GPM	REMARKS
VV-1	SUPPLY	PHOENIX	8	400	400	0.6	1	13	55	180	160	20	1	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-2	SUPPLY	PHOENIX	10	900	900	0.6	1	29.3	55	180	160	20	2	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-3	SUPPLY	PHOENIX	8	500	500	0.6	1	16.3	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-4	SUPPLY	PHOENIX	8	150	150	0.6	1	3.3	55	180	160	20	0.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-5	SUPPLY	PHOENIX	8	300	300	0.6	1	6.5	55	180	160	20	0.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-6	SUPPLY	PHOENIX	10	800	250	0.6	1	17.4	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-7	SUPPLY	PHOENIX	14	1500	625	0.6	1	32.6	55	180	160	20	2.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-8	SUPPLY	PHOENIX	14	1490	625	0.6	1	32.6	55	180	160	20	2.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-9	SUPPLY	PHOENIX	14	2020	7100	0.6	1	43.8	55	180	160	20	3	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-10	SUPPLY	PHOENIX	14	2000	1135	0.6	1	43.4	55	180	160	20	3	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-11	SUPPLY	PHOENIX	8	380	115	0.6	1	8.3	55	180	160	20	0.75	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-12 VV-13	SUPPLY	PHOENIX PHOENIX	14	1255 1570	650 700	0.6	1	27.2 34.1	55 55	180	160	20	2	REHEAT COIL TO MATCH BOX OUTLET SIZE REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-13	SUPPLY	PHOENIX	(2) 14	2470	1600	0.6	1	54	55	180	160	20	3 Λ	REHEAT COIL TO MATCH BOX OUTLET SIZE REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-14 VV-15	SUPPLY	PHOENIX	(2) 14	3580	3580	0.6	1	77.7	55	180	160	20	5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-16	SUPPLY	PHOENIX	14	2190	2190	0.6	1	47.6	55	180	160	20	3.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-17	SUPPLY	PHOENIX	(2) 14	3580	3580	0.6	1	77.7	55	180	160	20	5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-17 VV-18	SUPPLY	PHOENIX	(2) 14	3580	3580	0.6	1	77.7	55	180	160	20	5	REHEAT COIL TO MATCH BOX OUTLET SIZE REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-10 VV-19	SUPPLY	PHOENIX	12	900	900	0.6	1	19.6	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-19 VV-20	SUPPLY	PHOENIX	10	700	700	0.6	1	15.1	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-21	SUPPLY	NAILOR	10	700	400	0.6	1	13	55	180	160	20	1	
VV-22	SUPPLY	NAILOR	8	540	200	0.6	1	6.5	55	180	160	20	0.5	
VV-23	SUPPLY	NAILOR	10	800	400	0.6	1	13	55	180	160	20	1	
VV-24	SUPPLY	NAILOR	8	440	200	0.6	1	6.6	55	180	160	20	0.5	
VV-25	SUPPLY	NAILOR	5	210	100	0.6	1	3.3	55	180	160	20	0.5	
VV-26	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-27	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-28	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-29	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-30	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-31	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-32	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-33	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-34	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-35	SUPPLY	NAILOR	5	130	100	0.6	1	3.3	55	180	160	20	0.5	
VV-36	SUPPLY	NAILOR	5	200	100	0.6	1	3.3	55	180	160	20	0.5	
VV-37	SUPPLY	NAILOR	10	990	400	0.6	1	13	55	180	160	20	1	
VV-38	SUPPLY	NAILOR	6	300	300	0.6	1	9.8	55	180	160	20	1	
VV-39	SUPPLY	NAILOR	5	230	100	0.6	. 1	3.3	55	180	160	20	0.5	
VV-40	SUPPLY	NAILOR	5	230	100	0.6	1	3.3	55	180	160	20	0.5	
VV-41	SUPPLY	NAILOR NAILOR	10	960	400	0.6	1	13	55	180	160	20	1	
VV-42 VV-43	SUPPLY	NAILOR NAILOR	10	755 400	400	0.6	1	13	55 55	180	160	20	1	
VV-43 VV-44	SUPPLY	NAILOR PHOENIX	14	2150	2150	0.6	1	46.7	55	180	160	20	3.5	
VV-44 VV-45	SUPPLY	NAILOR	6	310	310	0.6	1	10	55	180	160	20	0.75	
EV-1	EXHAUST	PHOENIX	10	785	350	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-2	EXHAUST	PHOENIX	8	485	200	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-3	EXHAUST	PHOENIX	14	1900	1900	0.6								SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-4	EXHAUST	PHOENIX	12	945	945	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-5	EXHAUST	PHOENIX	12	1300	1300	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-6	EXHAUST	PHOENIX	8	600	600	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-7	EXHAUST	PHOENIX	8	150	150	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-8	EXHAUST	PHOENIX	10	750	750	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-9	EXHAUST	PHOENIX	8	450	450	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-10	EXHAUST	PHOENIX	12	1105	500	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-11	EXHAUST	PHOENIX	12	1050	1050	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-12	EXHAUST	PHOENIX	14	2200	2200	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-13	EXHAUST	PHOENIX	10	850	850	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-14	EXHAUST	PHOENIX 1	8	400	400	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-15	EXHAUST	PHOENIX	12	1050	1050	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-16	EXHAUST	PHOENIX	8	650	650	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-17	EXHAUST	PHOENIX	8	300	300	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-18	EXHAUST	PHOENIX	12	1100	550	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-19	EXHAUST	PHOENIX	14	1350	200	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-20	EXHAUST	PHOENIX	8	530	265	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-21	EXHAUST	PHOENIX	10	950	950	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-22	EXHAUST	NAILOR	8	600	600	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-23	EXHAUST	NAILOR	4	100	100	0.6								SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-24	EXHAUST	PHOENIX	14	1400	1400	0.6	. 1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-25	EXHAUST	PHOENIX	(2) 14	3920 1300	3920 1300	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-26	EXHAUST	PHOENIX	. 4.4	4200	. 4000	0.6								SEE DRAWINGS FOR QUANTITY AND LOCATIONS

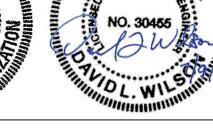


HORIZON I **GROUND & FOURTH FLOORS UPFIT**

University of South Carolina 541 Main Street Columbia, South Carolina

REV.	DATE	DESCRIPTION
1	07/17/13	ADDENDUM 1





WATSON TATE SAVORY

Mechanical Schedules

P.O. BOX 8444. COLUMBIA, SC 29202 1316 WASHINGTON STREET. COLUMBIA, SC 29201

JUNE 17, 2013

WTS NO.: 11700

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						A	IR TE	ERMI	NAL D	EVIC	ES			
MARK	SERVICE	MANUFACTURER	INLET SIZE (IN)	MAX CFM	MIN. CFM	MAX PRESSURE DROP (IN WC)	MIN. INLE	T MBH	EAT TEMP	EWT TEMP	LWT TEMP	PRESSURE DROP (FT)	GPM	REMARKS
VV-401	SUPPLY	PHOENIX	(2) 14	3735	2430	0.6	1	81	55	180	160	20	6	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-402	SUPPLY	PHOENIX	14	1745	1600	0.6	1	37.9	55	180	160	20	3	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-403	SUPPLY	PHOENIX	10	650	535	0.6	1	14.1	55	180	160	20	1	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-404	SUPPLY	PHOENIX	14	1740	1600	0.6	1	37.9	55	180	160	20	3	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-405	SUPPLY	PHOENIX	8	350	100	0.6	1	7.6	55	180	160	20	0.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-406	SUPPLY	PHOENIX	12	1270	1050	0.6	1	27.6	55	180	160	20	2	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-407	SUPPLY	PHOENIX	12	895	410	0.6	1	19.4	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-408	SUPPLY	PHOENIX	12	895	410	0.6	1	19.4	55	180	160	20	1.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-409	SUPPLY	PHOENIX	12	1265	1050	0.6	1	27.6	55	180	160	20	2	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-410	SUPPLY	PHOENIX 1	12	1000	1000	0.6	1	21.7	55	180	160	20	2	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-411 VV-412	SUPPLY	PHOENIX PHOENIX	10	1000	1000	0.6	1	21.7	55 55	180	160	20	0.75	REHEAT COIL TO MATCH BOX OUTLET SIZE REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-412 VV-413	SUPPLY	NAILOR	5	175	1000	0.6	1	3.3	55	180	160	20	0.5	REHEAT COIL TO MATCH BOX OUTLET SIZE
VV-413	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-415	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-416	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-417	SUPPLY	NAILOR	5	190	100	0.6	1	3.3	55	180	160	20	0.5	
VV-418	SUPPLY	NAILOR	6	325	140	0.6	1	4.6	55	180	160	20	0.5	
VV-419	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-420	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-421	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-422	SUPPLY	NAILOR	5	190	100	0.6	1	3.3	55	180	160	20	0.5	
VV-423	SUPPLY	NAILOR	8	400	200	0.6	1	6.5	55	180	160	20	0.5	
VV-424	SUPPLY	NAILOR	12	1125	550	0.6	1	17.9	55	180	160	20	1.5	
VV-425	SUPPLY	NAILOR	8	460	200	0.6	1	6.5	55	180	160	20	0.5	
VV-426	SUPPLY	NAILOR	8	600	200	0.6	1	6.5	55	180	160	20	0.5	
VV-427	SUPPLY	NAILOR	6	385	140	0.6	1	4.6	55	180	160	20	0.5	
VV-428	SUPPLY	NAILOR	5	280	100	0.6	1	3.3	55	180	160	20	0.5	
VV-429	SUPPLY	NAILOR	5	215	100	0.6	1	3.3	55	180	160	20	0.5	
VV-430	SUPPLY	NAILOR	5	160	100	0.6	1	3.3	55	180	160	20	0.5	
VV-431	SUPPLY	NAILOR	5	100	100	0.6	1	3.3	55	180	160	20	0.5	
VV-432 VV-433	SUPPLY	NAILOR NAILOR	5	100	100	0.6	1	3.3	55 55	180	160	20	0.5	
VV-433 VV-434	SUPPLY	NAILOR	10	510	200	0.6	1	6.5	55	180	160	20	0.5	
VV-434 VV-435	SUPPLY	NAILOR	10	685	400	0.6	1	13	55	180	160	20	1	
VV-436	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-437	SUPPLY	NAILOR	5	125	100	0.6	1	3.3	55	180	160	20	0.5	
VV-438	SUPPLY	NAILOR	5	100	100	0.6	1	3.3	55	180	160	20	0.5	
VV-439	SUPPLY	NAILOR	5	100	100	0.6	1	3.3	55	180	160	20	0.5	
VV-440	SUPPLY	NAILOR	5	100	100	0.6	1	3.3	55	180	160	20	0.5	
VV-441	SUPPLY	NAILOR	5	145	100	0.6	1	3.3	55	180	160	20	0.5	
VV-442	SUPPLY	NAILOR	6	320	140	0.6	1	7.5	55	180	160	20	0.5	
VV-443	SUPPLY	NAILOR	5	100	100	0.6	1	3.3	55	180	160	20	0.5	
VV-444	SUPPLY	NAILOR	8	700	200	0.6	1	6.6	55	180	160	20	0.5	
VV-445	SUPPLY	NAILOR	5	210	100	0.6	1	3.3	55	180	160	20	0.5	
VV-446	SUPPLY	NAILOR	6	320	140	0.6	1	4.6	55	180	160	20	0.5	
VV-447	SUPPLY	NAILOR	5	210	100	0.6	1	3.3	55	180	160	20	0.5	
VV-448	SUPPLY	NAILOR	6	285	140	0.6	1	4.6	55	180	160	20	0.5	
VV-449	SUPPLY	NAILOR	8	400	400	0.6	1	11.3	55	180	160	20	0.75	
VV-450	SUPPLY	NAILOR NAILOR	16	2430	1000	0.6	1	33	55 55	180	160	20	2.5	
VV-451 EV-401	SUPPLY EXHAUST	NAILOR PHOENIX	10	160 785	100 350	0.6	1	3.3		180	160	20	0.5	SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-401	EXHAUST	PHOENIX	8	485	200	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-403	EXHAUST	PHOENIX	12	1380	1380	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-404	EXHAUST	PHOENIX	8	600	200	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-405	EXHAUST	PHOENIX	8	150	150	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-406	EXHAUST	PHOENIX	12	970	485	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-407	EXHAUST	PHOENIX	12	1000	1000	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-408	EXHAUST	PHOENIX	14	1900	1900	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-409	EXHAUST	PHOENIX	2 (14)	3000	3000	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-410	EXHAUST	PHOENIX	10	785	350	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-411	EXHAUST	PHOENIX	8	500	250	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
EV-412	EXHAUST	PHOENIX	12	1150	1150	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS
			8	600	600	0.6								SEE DRAWINGS FOR QUANTITY AND LOCATIONS

	AIR TERMINAL DEVICES													
			INLET SIZE			MAX PRESSURE DROP (IN	MIN INI FT			Н	EATING COIL			
MARK	SERVICE	MANUFACTURER	(IN)	MAX CFM	MIN. CFM	WC)	SP	МВН	EAT TEMP	EWT TEMP °F	LWT TEMP °F	PRESSURE DROP (FT)	GPM	REMARKS
VV-118B	SUPPLY	PHOENIX	(2) 14	3805	3370	0.6	1	82.6	55	180	160	20	5	REHEAT COIL TO MATCH BOX OUTLET SIZE
EV-118B3	EXHAUST	PHOENIX	(2) 14	3220	3220	0.6	1							SEE DRAWINGS FOR QUANTITY AND LOCATIONS



HORIZON I GROUND & FOURTH FLOORS UPFIT

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WATSON TATE SAVORY

Mechanical Schedules

P.O. BOX 8444. COLUMBIA, SC 29202 1316 WASHINGTON STREET. COLUMBIA, SC 29201

M6.51

WTS NO.: 11700 JUNE 17, 2013

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															AIR	HA	NDL	ING U	INITS															
					SI	UPPLY FAN	N DATA									COIL DATA	\							RE	TURN F	AN					FILTER DATA			
MARK	SERVICE	MFR.	MODEL	CFM TOTAL	CFM O.A.	ESP. IN.	TSP. IN.	VFD	ELECT.	HP SERVI	COIL		Δ P AIR IN.	ENTERING	G AIR TEMP	. LEAVING	AIR TEMP.	MBH TOTAL		GPM E	ENT°F	ΔP WATER FT.	CFM	TSP	НР	ELEC	VFD	SERVICE	TYPE	% EFF	FACE	INITIAL ∆P IN.	DIRTY ΔP IN.	REMARKS
						W.G.	W.G.				CFM	VEL. FPM	W.G.	DB °F	WB °F	DB °F	WB °F	SENSIBLE				W.G.								ASHRAE	VELOCITY	W.G.	W.G.	
ALL 2	LADC	MaQUAY	CALI444CDAC	60000	60000	2	7	VEC	460/2/60	100 COOLI	G 60000	500	1	96	76	51.1	50.9	5013	WATER	984	42	25	20000	4	20	460/3/60	YES	PRE	CART	30	500	0.28	0.7	
AH-3	LABS	McQUAY	CAH141GDAC	60000	60000	١		169	460/3/60	HEATI	G 60000	500	0.13	20		52		2084	WATER	138	180							FINAL	RIGID	95	500	0.44	1.5	

				EXH	AUST	FAN	SCH	EDU	LE		
MARK	LOCATION	AREA SERVED	MFR.	MODEL	CAPACITY (CFM)	STATIC PRESSURE (IN WG)	RPM	ELECT. V/PH/HZ	MOTOR (HP)	DRIVE TYPE	REMARKS
EF-1C	ROOF	LAB VAV EXHAUST	STROBIC AIR	TS4L600C12	40000	4	1170	460/3/60	60	DIRECT	FAN TO MOUNT ON EXISTING EXHAUST PLENUM
EF-2C	ROOF	LAB VAV EXHAUST	STROBIC AIR	TS4L600C12	40000	4	1170	460/3/60	60	DIRECT	FAN TO MOUNT ON EXISTING EXHAUST PLENUM
EF-3A	ROOF	RADIOISOTOPE FUME HOOD	STROBIC AIR	BS00218	1500	4	1770	460/3/60	3	DIRECT	MOUNT EF-3A, 3B AND 3C ON COMMON PLENUM
EF-3B	ROOF	RADIOISOTOPE FUME HOOD	STROBIC AIR	BS00218	1500	4	1770	460/3/60	3	DIRECT	MOUNT EF-3A, 3B AND 3C ON COMMON PLENUM
EF-3C	ROOF	RADIOISOTOPE FUME HOOD	STROBIC AIR	BS00218	1500	4	1770	460/3/60	3	DIRECT	MOUNT EF-3A, 3B AND 3C ON COMMON PLENUM
EF-6	PENTHOUSE	DATA CLOSETS	GREENHECK	CWB180	3855	1.25	1360	460/3/60	2	BELT	
EF-7	PENTHOUSE	TOILET EXHAUST	GREENHECK	CWB200	3400	2.5	1535	460/3/60	3	BELT	

MARK	SERVICE	TYPE	FACE SIZE	NECK SIZE	MAX CFM	REMARKS
E-1	EXHAUST	LOUVER	SEE PLANS	SEE PLANS	SEE PLANS	BASED ON NAILOR 6145H
E-2	EXHAUST	LOUVER	24X24	SEE PLANS	SEE PLANS	BASED ON NAILOR 6145H
E-3	EXHAUST	BAR	8X8	8X8	300	NOT USED
R-1	RETURN	LOUVER	24X12	22X12	1680	BASED ON NAILOR 4302
R-2	RETURN	LINEAR	48X4	SEE PLANS	SEE PLANS	NOT USED
SP-1	SUPPLY	LOUVER	24X24	SEE PLANS	SEE PLANS	BASED ON NAILOR UNI
SP-2	SUPPLY	RADIAL	48X12	12	750	BASED ON NAILOR 92FRP-2
SP-3	SUPPLY	BAR	8X4	8X4	300	BASED ON NAILOR 49-280
SP-4	SUPPLY	LINEAR	48X4	6	150	NOT USED
SP-6	SUPPLY	ROUND	10	6	200	NOT USED
SP-8	SUPPLY	LINEAR BAR	36x6	36X6	720	1/2" SPACING, 0 DEGREE DEFLECTION, BASED ON NAILOR 49-280

							PU	MP SCH	HEDU	JLE					
					FLOW	INLET	OUTLET	FEET OF LIQUID	LIQUID	TO BE HAI	NDLED	ELECTRICAL	MIN MOTOR		
MARK	TYPE	SYSTEM SERVED	MANUFACTURER	MODEL	GPM	SIZE	SIZE	TOTAL		SP.		(V/PH/HZ)	HP	RPM	NOTES
								HEAD	TYPE	GRAV	TEMP F	,			
HWP-1	INLINE	HOT WATER COIL PUMP AHU-3	B&G	SERIES 80 - 3X3X7B	138	3"	3"	40	WATER	1	180	460/3/60	3	1750	
P-15	INLINE	PCWS	B&G	SERIES 90 - 1A	15	1	1	90	WATER	1	65	460/3/60	2	3450	

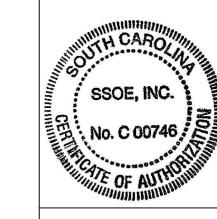


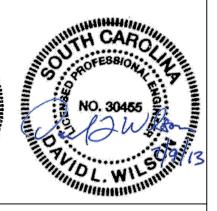
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HORIZON I **GROUND & FOURTH FLOORS UPFIT**

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1	07/17/13	ADDENDUM 1





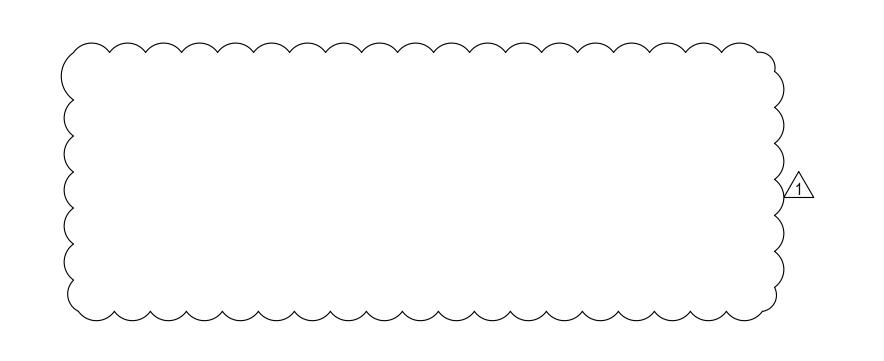
WATSON TATE SAVORY

Mechanical Schedules

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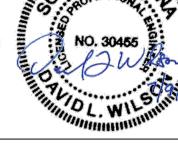
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REV.	DATE	DESCRIPTION
1	07/17/13	ADDENDUM 1
LE	GEND	

— 1 HOUR RATED WALL
— 2 HOUR RATED WALL

GENERAL NOTE:
ALL EQUIPMENT AND PIPING SHALL BE
INSTALLED PER SEISMIC CATEGORY 'C';
2009 IBC; AS DESIGNED BY A LICENSED S.C.
P.E. INCLUDING BRACING DWGS, DETAILS
AND ANCHOR BOLT CALCULATIONS.





WATSON TATE SAVORY

Enlarged Fourth
Floor Lab
Compressed Air &
Vacuum Piping Plan

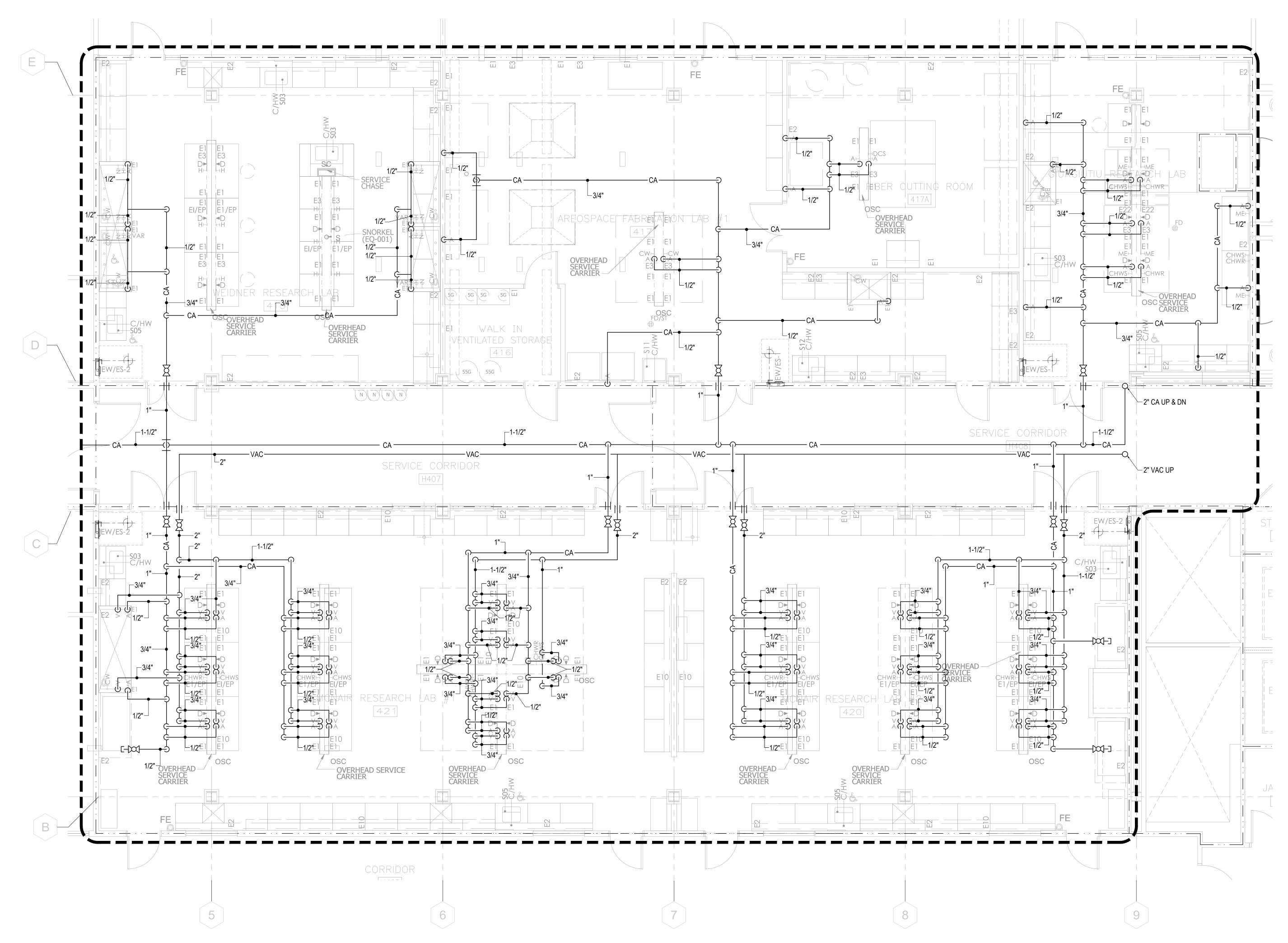
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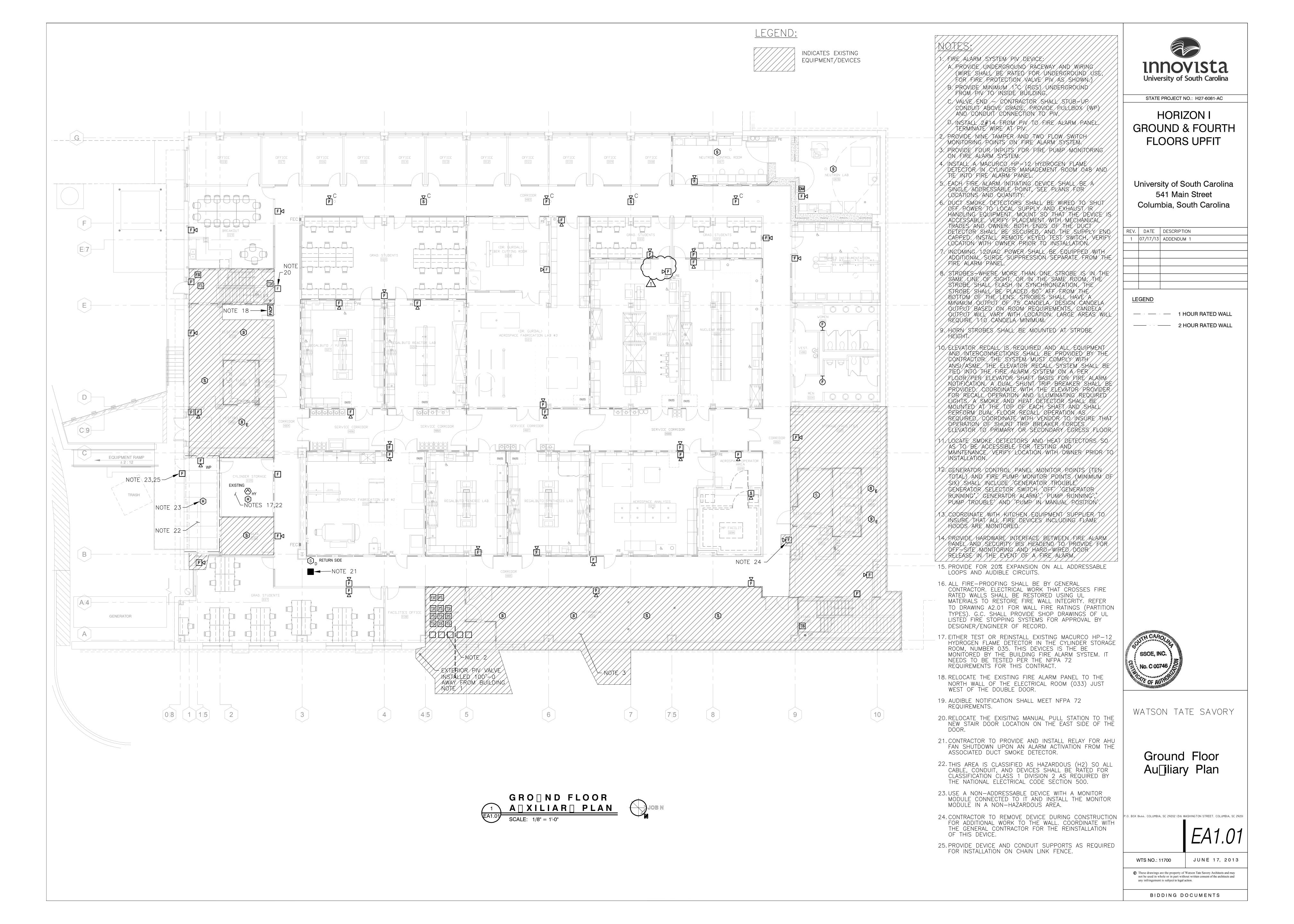
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<u>LEGEND:</u> ///SEE/DRAWHYG/EAY.Ø1/FOR/HOTES. 2. ALL FIRE-PROOFING SHALL BE BY GENERAL CONTRACTOR. ELECTRICAL WORK THAT CROSSES FIRE RATED WALLS SHALL BE RESTORED USING UL MATERIALS TO RESTORE FIRE WALL INTEGRITY. REFER TO DRAWING A2.41 FOR WALL FIRE RATINGS (PARTITION TYPES). G.C. SHALL PROVIDE SHOP DRAWINGS OF UL LISTED FIRE STOPPING SYSTEMS FOR APPROVAL BY DESIGNER/ENGINEER OF RECORD. 3. AUDIBLE NOTIFICATION SHALL MEET NFPA 72 REQUIREMENTS. 4. CONTRACTOR TO PROVIDE AND INSTALL RELAY FOR AHU FAN SHUTDOWN UPON AN ALARM ACTIVATION FROM THE ASSOCIATED DUCT SMOKE DETECTOR. 5. ADJUST CANDELA OF EXISTING FIRE ALARM STROBE TO 110 CANDELA. 1 16 2





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HORIZON I **GROUND & FOURTH FLOORS UPFIT**

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	REV.	DATE	DESCRIPTION
	1	07/17/13	ADDENDUM 1
1			

<u>LEGEND</u>

— — — 1 HOUR RATED WALL —— · · — 2 HOUR RATED WALL

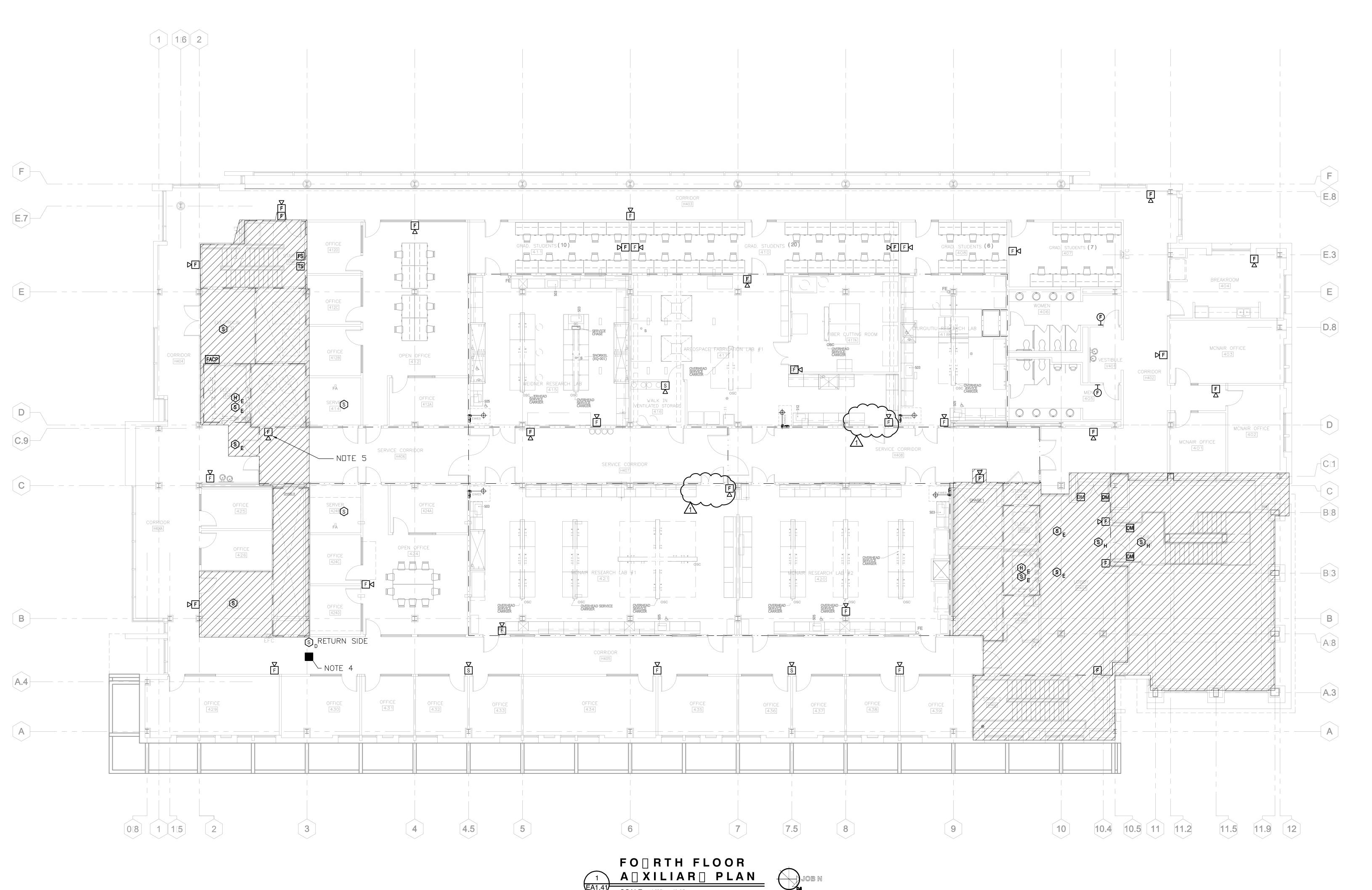
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Fourth Floor Au∏liary Plan

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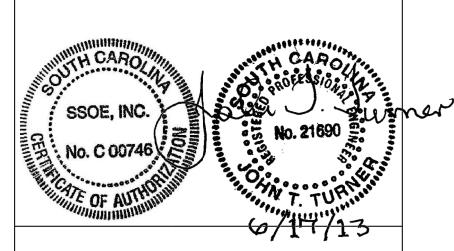
		LIGHTING FIXTURE SO	CHEDULE	EDULE							
ΓΥΡΕ	LAMPS	DESCRIPTION	VOLTS	MFR. & CAT. NO.	COMMENTS						
A1	(2) F54T5HO	PENDANT, INDIRECT, FLUORESCENT MOUNTED 12" BELOW CEILING, PARALLEL BLADE LOUVER WITH ACRYLIC DIFFUSER, DUAL CIRCUIT, <10%THD FUSED PROGRAMMED START BALLAST WITH HIGH POWER FACTOR, TITANIUM SILVER FINISH, RUN LENGTH TO MATCH APPLICATION	277V	FOCALPOINT TWELVE SERIES OR APPROVED EQUAL							
A2	(2) F54T5HO	SAME AS TYPE 'A1' EXCEPT WITH 0-10V ELECTRONIC DIMMING BALLAST	277V	FOCALPOINT TWELVE SERIES OR APPROVED EQUAL							
В1	(3) F25T8 (25W)	RECESSED 2' X 4' PARABOLIC TROFFER WITH LOW IRIDESCENT ANDODIZED DIFFUSE ALUMINUM LOUVER WITH NON-DIRECTIONAL OPTICS, 18 CELL LOUVER, TWO (2) <10%THD FUSED PROGRAMMED START BALLASTS WITH HIGH POWER FACTOR	277V	LITHONIA 2PM3 SERIES OR APPROVED EQUAL							
B2	(4) F25T8 (25W)	SAME AS TYPE 'B2' EXCEPT WITH FOUR (4) LAMPS AND 24 CELL LOUVER	277V	LITHONIA 2PM3 SERIES OR APPROVED EQUAL							
D	(1) 32W TRT	6" ROUND APERATURE FLUORESCENT DOWNLIGHT WITH LOW-IRIDESCENT SPECULAR ALZAK REFLECTOR, FUSED ELECTRONIC BALLAST, HORIZONTAL LAMP	277V	LITHONIA LF6N OR APPROVED EQUAL							
E	(1) 26W TRT	4" ROUND APERATURE FLUORESCENT DOWNLIGHT WITH LOW-IRIDESCENT SPECULAR ALZAK REFLECTOR, FUSED ELECTRONIC BALLAST	277V	GOTHAM AFV SERIES, OCEAN STATE FLV SERIES, OR APPROV	VED EQUAL						
F	(1) F54T5HO	FLUORESCENT WALL WASHER, NARROW APERATURE, POWDER COATED WITH SPECULAR REFLECTOR, ASYMMETRIC FIXTURE, <10%THD FUSED ELECTRONIC BALLAST	277V	FOCALPOINT AVENUE A SERIES, PMC S33R SERIES, OR APPROVED EQU	JAL						
G1	(2) F32T8	4' GENERAL PURPOSE FLUORESCENT CHANNEL, WALL MOUNTED WITH WIRE GUARD, <10%THD FUSED ELECTRONIC BALLAST	277V	LITHONIA C SERIES OR APPROVED EQU	JAL						
Н	(1) BIAX 18W	1' FLUORESCENT WALL SCONCE WITH LINEAR OPAL ACRYLIC DIFFUSER IN TITANIUM SILVER FINISH	277V	FOCALPOINT METRO SERIES, BETA CALCO 61 SERIES, OR APPROVED	D EQUAL						
J	(1) F32T8	4' FLUORSECENT WALL WASHER FIXTURE, <10%THD FUSED ELECTRONIC BALLAST	277V	FOCALPOINT FOCUS 4 SERIES, COLUMBIA CS4 SERIES, OR APPROVED	QUAL						
х	LED	LED EXIT FIXTURE WITH DIE-CAST ALUMINUM CONSTRUCTION, UNIVERSAL MOUNTING, NICAD BATTERY 90 MINUTE EMERGENCY OPERATION, BRUSHED ALUMINUM W/ BLACK HOUSING, LISTED FOR 100' VIEWING DISTANCE	277V	PHILLIPS CX SERIES OR APPROVED EQUAL							



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WATSON TATE SAVORY

Lighting
Fixture Schedule

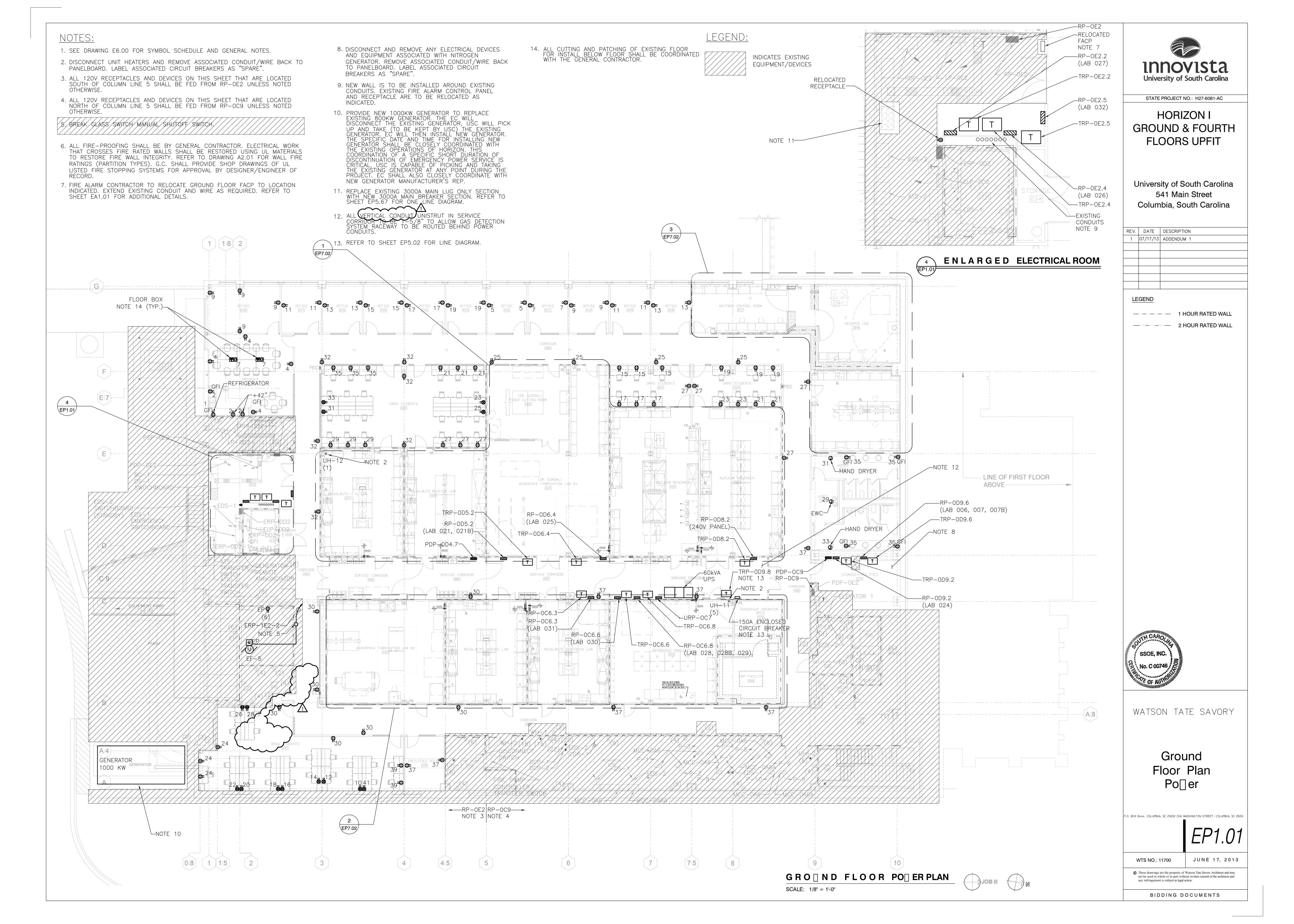
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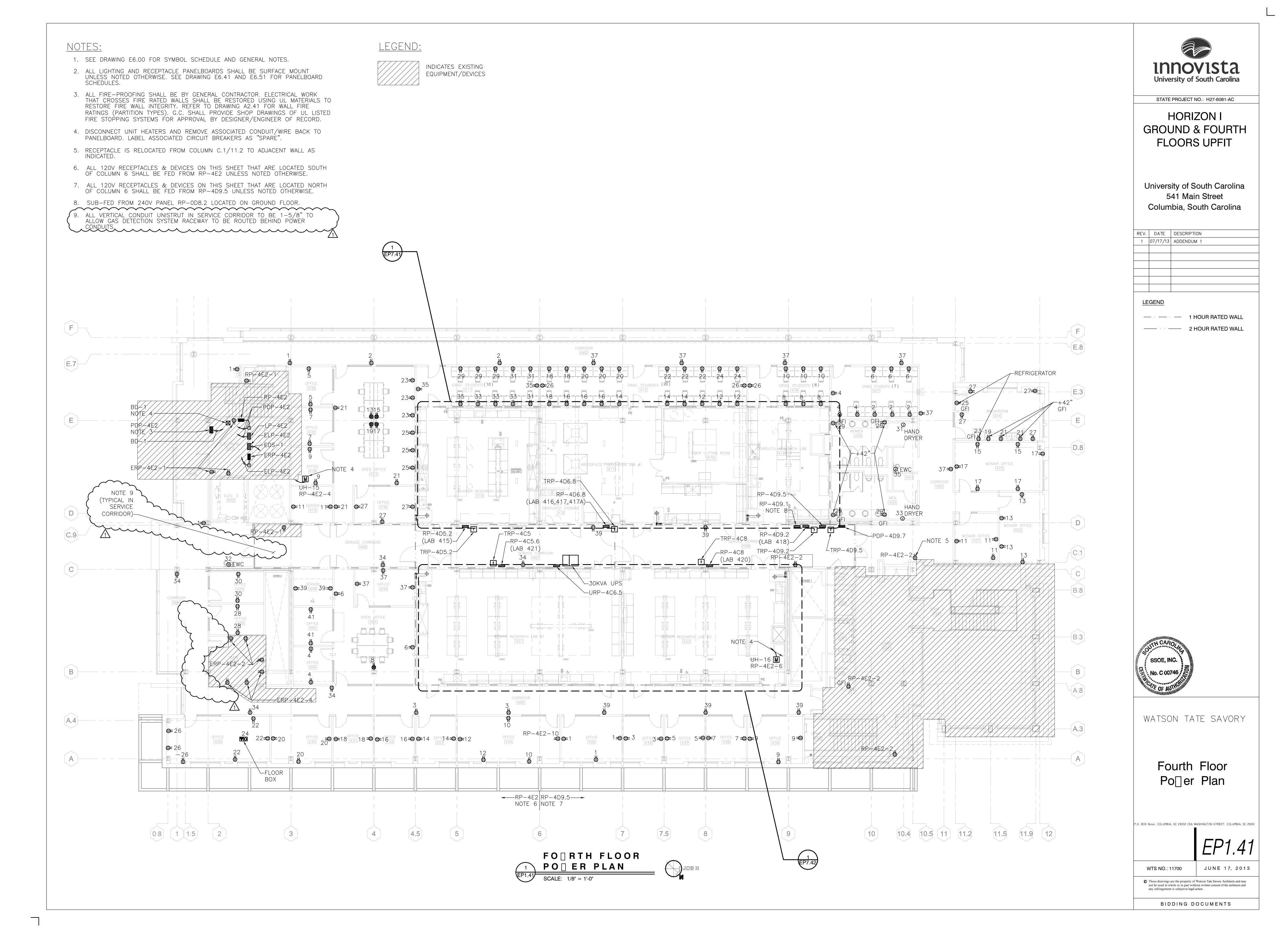
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NOTES:

- 1. REFER TO DRAWING E6.00 FOR SYMBOL SCHEDULE AND GENERAL NOTES.
- 2. HATCH AREAS INDICATE EXISTING DEVICES
- 3. REFER TO DRAWING EP5.65 FOR MCC ONE LINE DIAGRAMS.
- 4. ELECTRICAL WORK THAT CROSSES FIRE RATED WALLS SHALL BE RESTORED USING UL MATERIALS TO RESTORE FIRE WALL INTEGRITY. REFER TO DRAWING A2.51 FOR WALL FIRE RATINGS (LEGEND). PROVIDE SHOP DRAWINGS OF UL LISTED FIRE STOPPING SYSTEMS FOR APPROVAL BY DESIGNER/ENGINEER OF
- 5. UTILIZE EXISTING SPARE 20A, 1—POLE CIRCUIT BREAKER IN PANEL RP—PE4 FOR DESICCANT DRYER CIRCUIT.
- 6. AIR COMPRESSOR CONTROL PANEL SHALL BE PROVIDED BY AIR COMPRESSOR PROVIDER. PROVIDE FUSED DISCONNECT WITH CLASS RK5 FUSES. COORDINATE FINAL SHORT CIRCUIT PROTECTION AND CABLE REQUIREMENTS WITH EQUIPMENT PROVIDER PRIOR TO INSTALLATION.
- 7. PROVIDE 120V, 20A CIRCUIT TO EXISTING PANEL RP-PE4. UTILIZE NEXT AVAILABLE OR SPARE BREAKER.

LEGEND:





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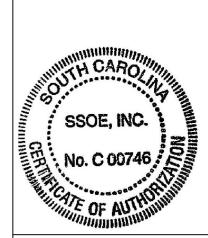
HORIZON I **GROUND & FOURTH FLOORS UPFIT**

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1	07/17/13	ADDENDUM 1
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LE	GEND	

—— · · —— 2 HOUR RATED WALL

— — — 1 HOUR RATED WALL

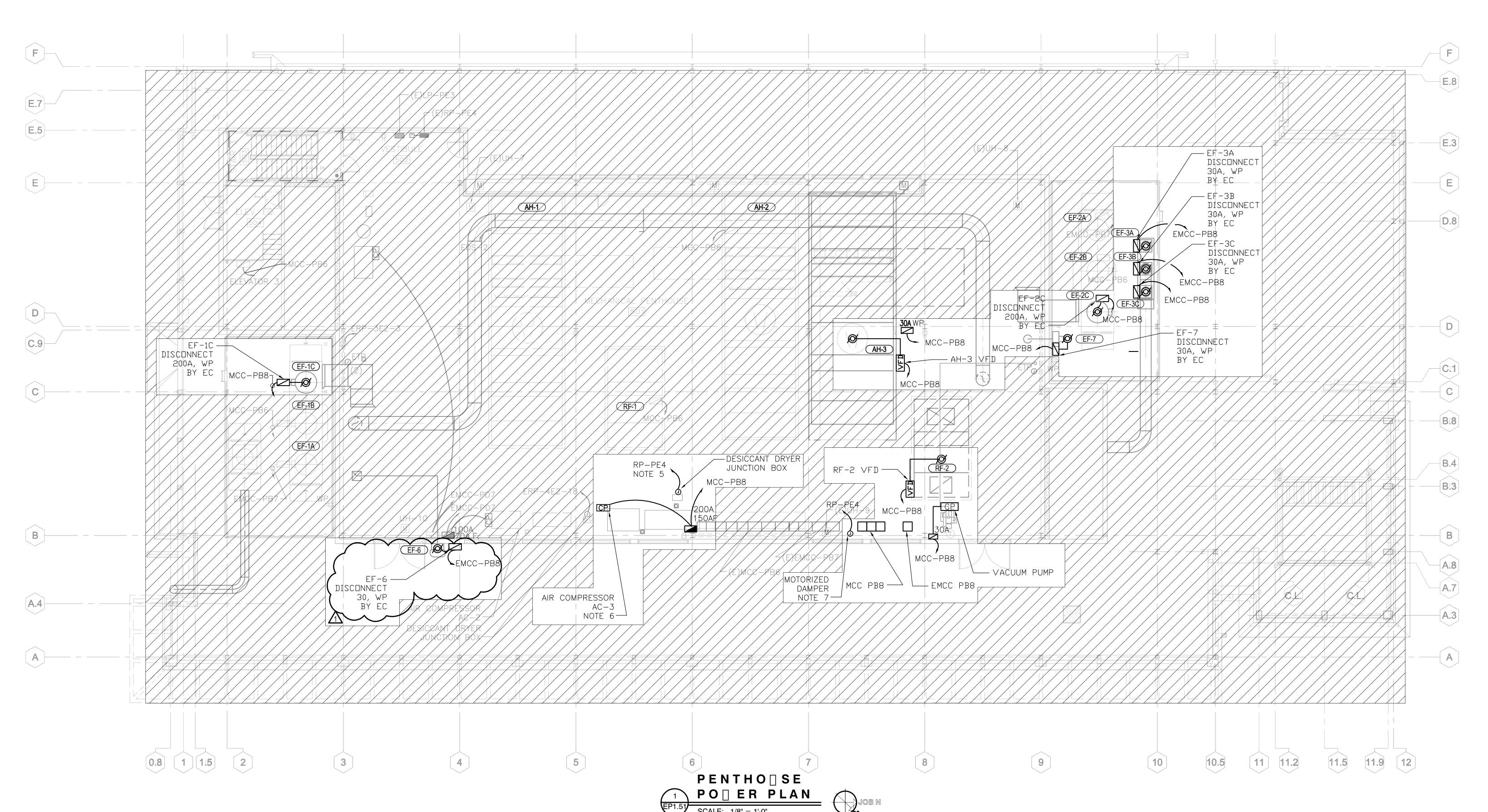


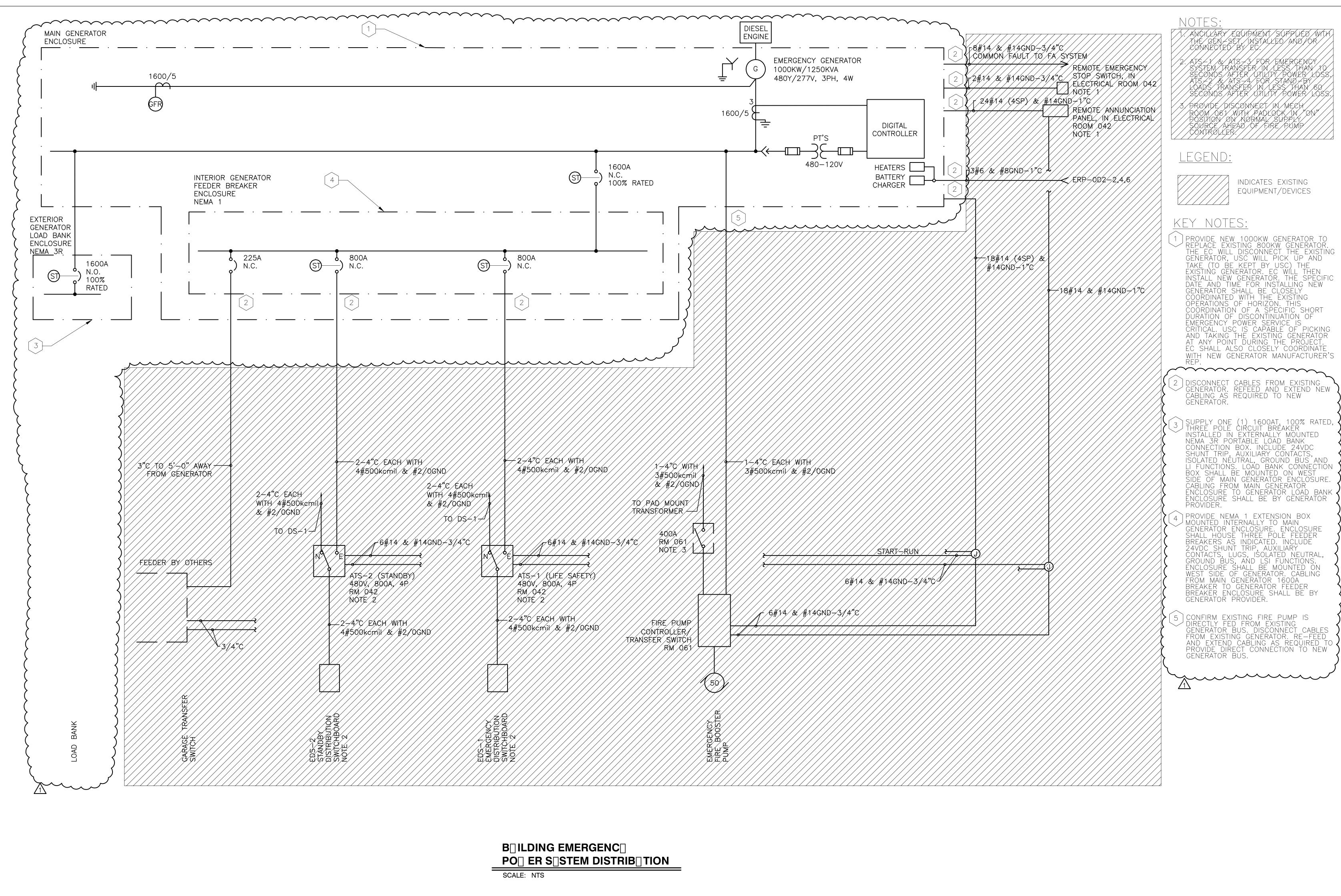
WATSON TATE SAVORY

Penthouse Po∏er Plan

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SSOE, INC.

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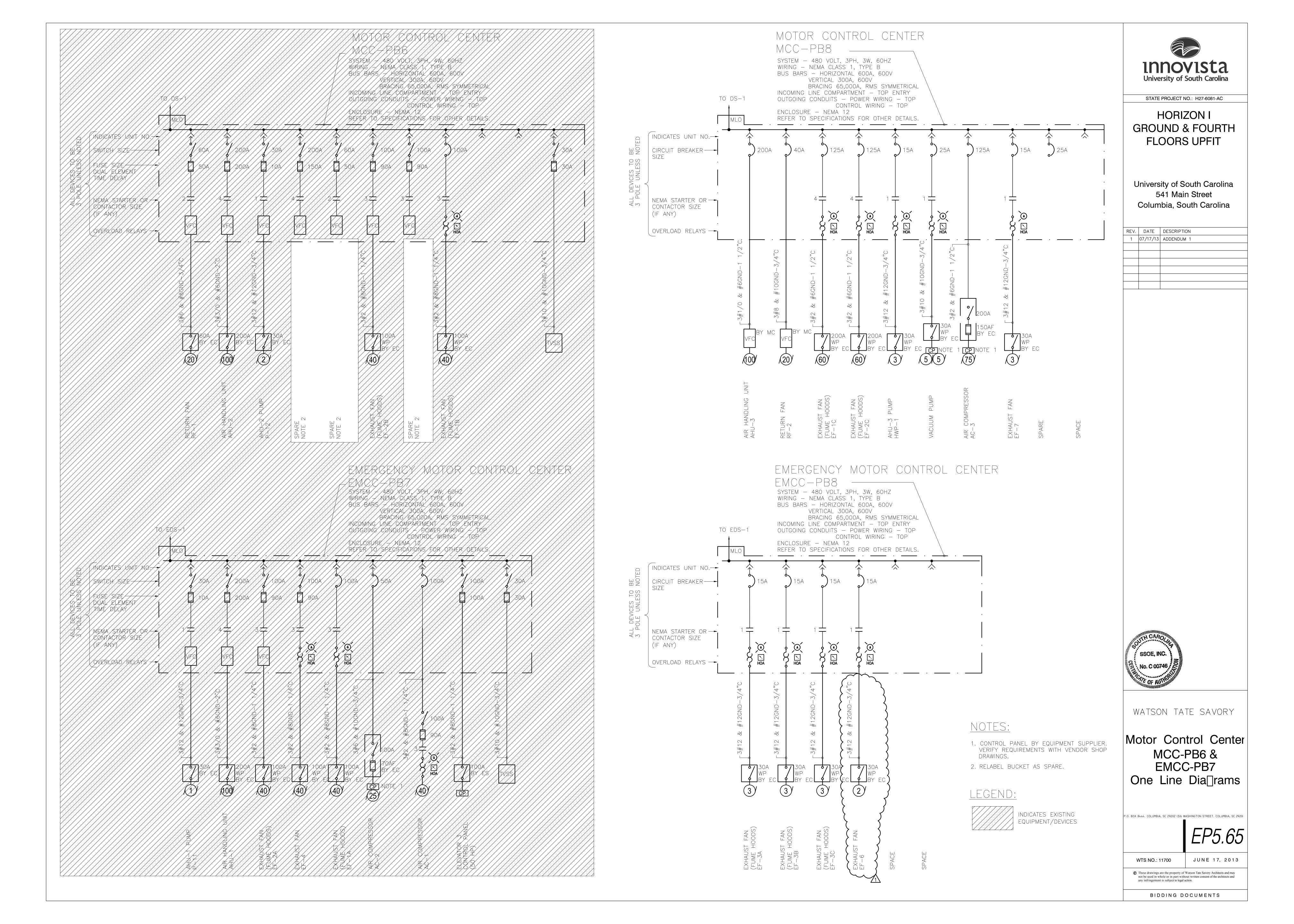
Generator System One Line Dia ram

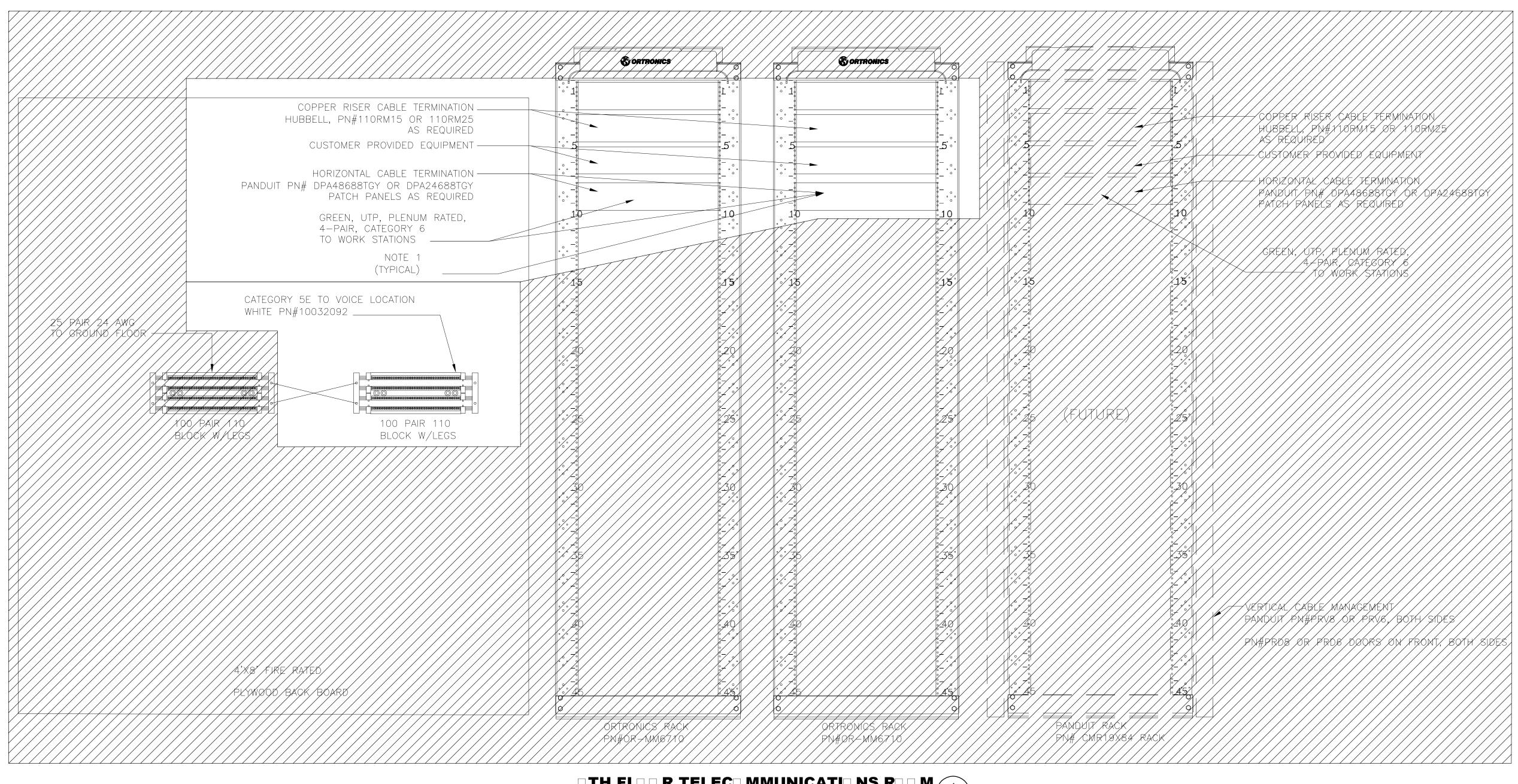
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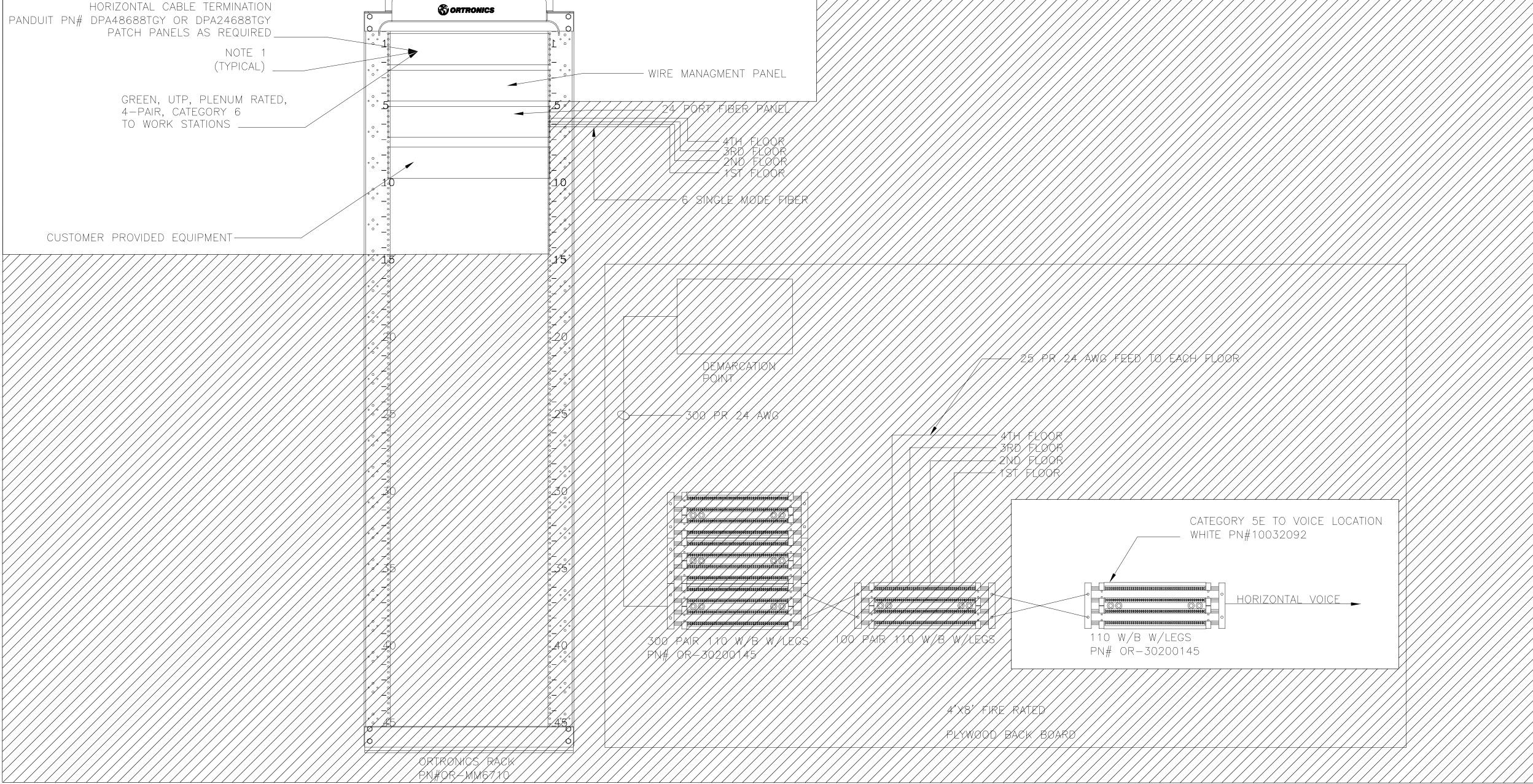
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TH FLOR TELECOMMUNICATIONS ROM 1



VOICE/DATA GENERAL NOTES:

- A. OWNER TO PROVIDE AND PULL CAT 6 CABLE, BUILD OUT THE DATA CLOSET, AND PUNCH DOWN. ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL ALL CONDUIT, CABLE TRAY, WALL PENETRATIONS, SLEEVES, SUPPORTS, DATA OUTLETS, AND OTHER REQUIRED DATA CABLE SUPPORT INFRASTRUCTURE.
- B. VOICE AND DATA CABLES ARE TO BE UL/NEC LISTED TYPE AND INSTALLED AS PER NEC #725, 770, 800 AND EIA/TIA 568A AS APPLICABLE, UNLESS OTHERWISE STATED IN SPECIFICATIONS.
- C. ALL DATA AND VOICE CABLES ARE TO BE CATEGORY 6.
- D. CABLES SHALL BE PLACED WITH SUFFICIENT BENDING RADIUS SO AS NOT TO KINK SHEAR OR DAMAGE JACKETS.
- E. ALL HORIZONTAL CABLE SHALL BE PLENUM RATED IN PLENUM AREAS.

F. UNATTACHED WIRES, CABLES OR BUNDLES ARE NOT PERMITTED.

G. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR SLEEVING AND FIRE SEALING OF VOICE AND DATA UTILIZED OPENINGS IN ANY AND ALL FIRE RATED WALLS, FLOOR AND CEILINGS. INCLUDING TELECOMMUNICATIONS

- H. ALL VOICE AND DATA WORK SHALL BE CLOSELY COORDINATED WITH "OWNER".
- I. ALL CONDUITS, RECESSED WALL BOXES AND PULL WIRES ARE TO BE SUPPLIED BY ELECTRICAL CONTRACTOR.
- J. ALL CABLES ARE TO BE HELD TIGHT TO BUILDING STEEL EVERY 48"
 TO 60" USING VELCRO TIE WRAPS. USE PLENUM TIE WRAPS IN
 PLENUM AREAS. WHERE CABLE LEAVES THE CABLE TRAY, THEY MUST
 BE PROPERLY ATTACHED USING J-HOOKS.

K. OWNER MUST TAKE CARE TO FASTEN CABLES IN A MANNER CONSISTANT WITH THE GUIDELINES ESTABLISHED BY THE ANSI/EIA/TIA 568A AND 569 STANDARDS.

L. OWNER SHALL TERMINATE AND LABEL EACH NEW VOICE AND DATA CABLE WITH THE DATE OF INSTALLATION/CERTIFICATION AND ITS RESPECTIVE NUMBERING SCHEME. THE LABEL MUST BE MACHINE MADE, NOT HANDWRITTEN AND PLACED AT BOTH ENDS OF THE CABLE. CABLES TO BE TERMINATED IN NUMERICAL ROOM NUMBER ORDER.

M. OWNER SHALL KEEP ALL WIRE TAILS BETWEEN THE WIRED JUNCTION BOXES AND THE MODULAR FURNITURE AS SHORT AS POSSIBLE.

OWNER SHALL BE RESPONSIBLE FOR CROSS CONNECTING THE NEW HORIZONTAL VOICE CABLE TO THE COPPER VOICE RISER. THE VOICE/DATA CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE ALL VERTICAL RISER CABLE FROM THE TR 110 BLOCK TO THE MAIN MC LOCATION. AS WELL AS A 300 PAIR FEED FROM THE PBX LOCATION TO THE PHONE COMPANY DEMARC. THE VOICE/DATA CABLING CONTRACTOR SHALL FIELD COORDINATE WITH THE "OWNER" TO DETERMINE THE APPROPRIATE RISER PAIRS FOR CROSS—CONNECTION.

O. NEW DATA PATCH PANELS SHALL BE 48 PORT, CATEGORY 6 MODULAR PATCH PANELS.

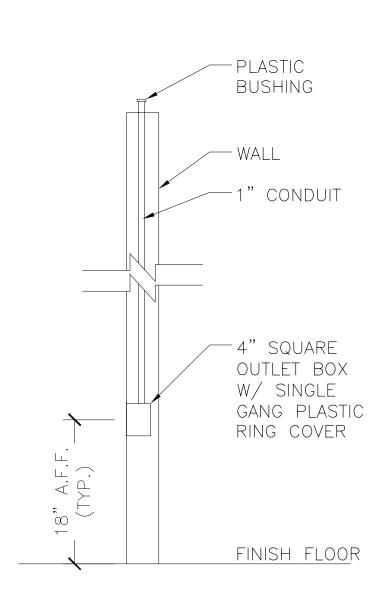
P. OWNER SHALL PROVIDE SUFFICIENT QUANTITY OF CAT 6 PATCH PANELS AND TWO POSITION ORGANIZER PANELS TO PROVIDE FOR ALL DATA JACKS AND FOR 20% EXPANSION ON EACH RACK.

Q. OWNER SHALL PROVIDE A VERTICAL POWER DISTRUBUTION UNIT FOR EACH

- R. BETWEEN CLOSETS (TELECOMMUNICATIONS ROOMS ON EACH FLOOR)
 THERE WILL BE A SIX STRAND FIBER, AND A 25 PAIR COPPER CABLE.
 THE DATA RISER SHALL SHOW THIS. THE SINGLE MODE 6 FIBER CABLE
 TO BE TERMINATED USING LC CONNECTORS. FIBER SHALL BE INSTALLED
 IN 1" INNERDUCT.
- S. USE 568-B PIN OUT CONFIGURATION FOR TERMINATING ALL RJ45 JACKS AND PATCH PANELS.

NOTES:

1. PART NUMBERS INDICATED ARE BASED ON USC COMMUNICATIONS INFRASTRUCTURE GUIDELINES FOR NEW RACKS AND EQUIPMENT. PART NUMBERS FOR NEW EQUIPMENT IN EXISTING RACKS SHALL BE COORDINATED WITH OWNER AND EXISTING EQUIPMENT ON SITE.



T PICAL ALL MUNT I ICEDATA UTLET



STATE PROJECT NO.: H27-6081-AC

HORIZON I GROUND & FOURTH FLOORS UPFIT

University of South Carolina 541 Main Street Columbia, South Carolina

REV.	DATE	DESCRIPTION
1	07/17/13	ADDENDUM 1



WATSON TATE SAVORY

Electrical
Voice/Data Details
& General Notes

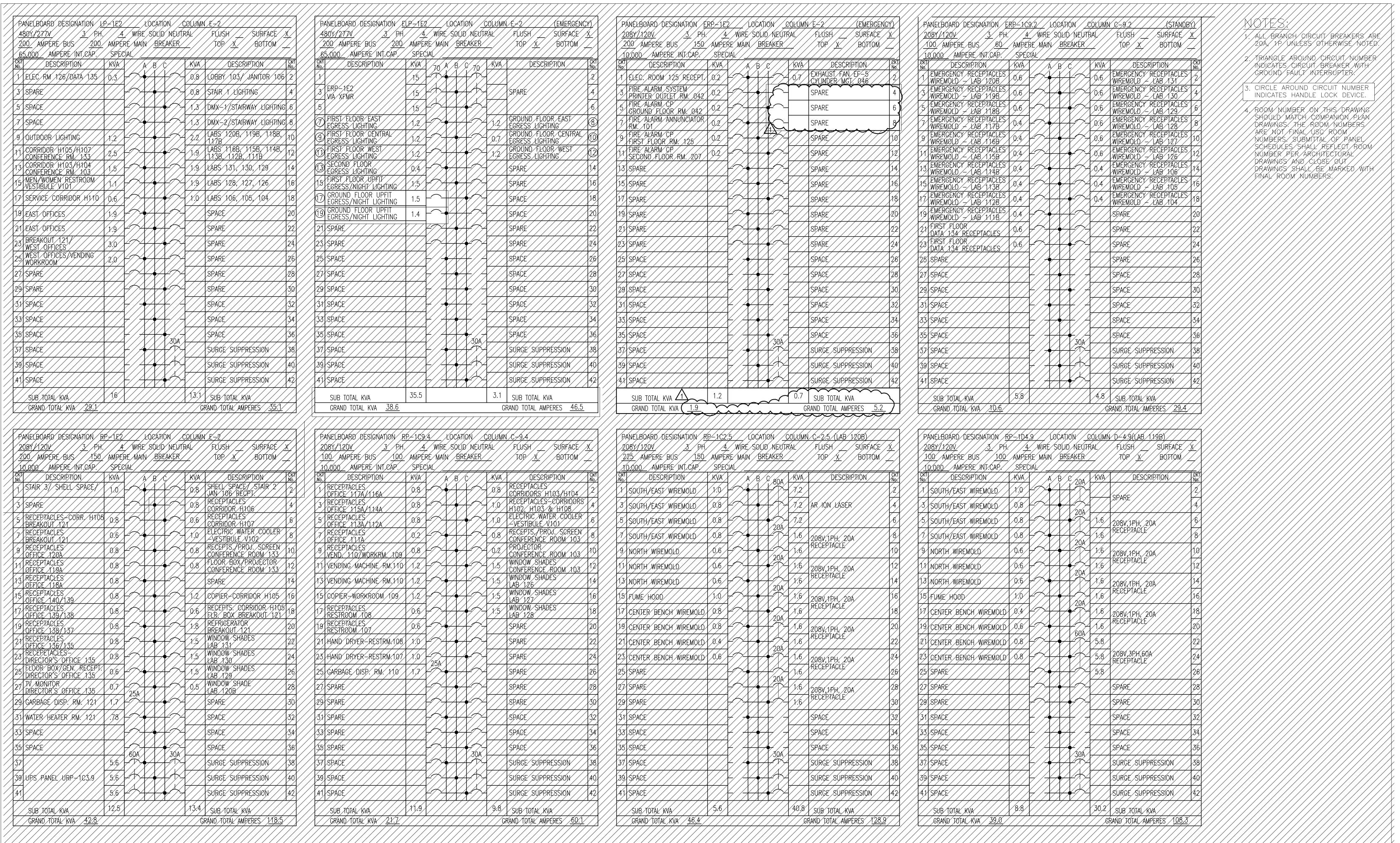
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WTS NO.: 11700 JUNE 17, 2013

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BIDDING DOCUMENTS

MAIN CLO SET GROUND FLOOR 2



NOTES:

1. ALL NEW EGRESS LIGHTING CIRCUITS ON THIS SHEET SHALL BE 2#10, #10 GND -3/4"C.

GNU - 3/4 C.

2 ALL NEW EVHALIST FAN CIDCUITS ON THIS SHEET SHALL BE 3/413 //413

2. ALL NEW EXHAUST FAN CIRCUITS ON THIS SHEET SHALL BE 2#12, #12 GND -3/4"C.

LEGEND:

INDICATES EXISTING EQUIPMENT/DEVICES

University of South Carolina

STATE PROJECT NO.: H27-6081-AC

HORIZON I

ınnovista

GROUND & FOURTH

FLOORS UPFIT

University of South Carolina 541 Main Street Columbia, South Carolina

1 07/17/13 ADDENDUM 1

REV. DATE DESCRIPTION



WATSON TATE SAVORY

First Floor Panelboard Schedules

E6.11

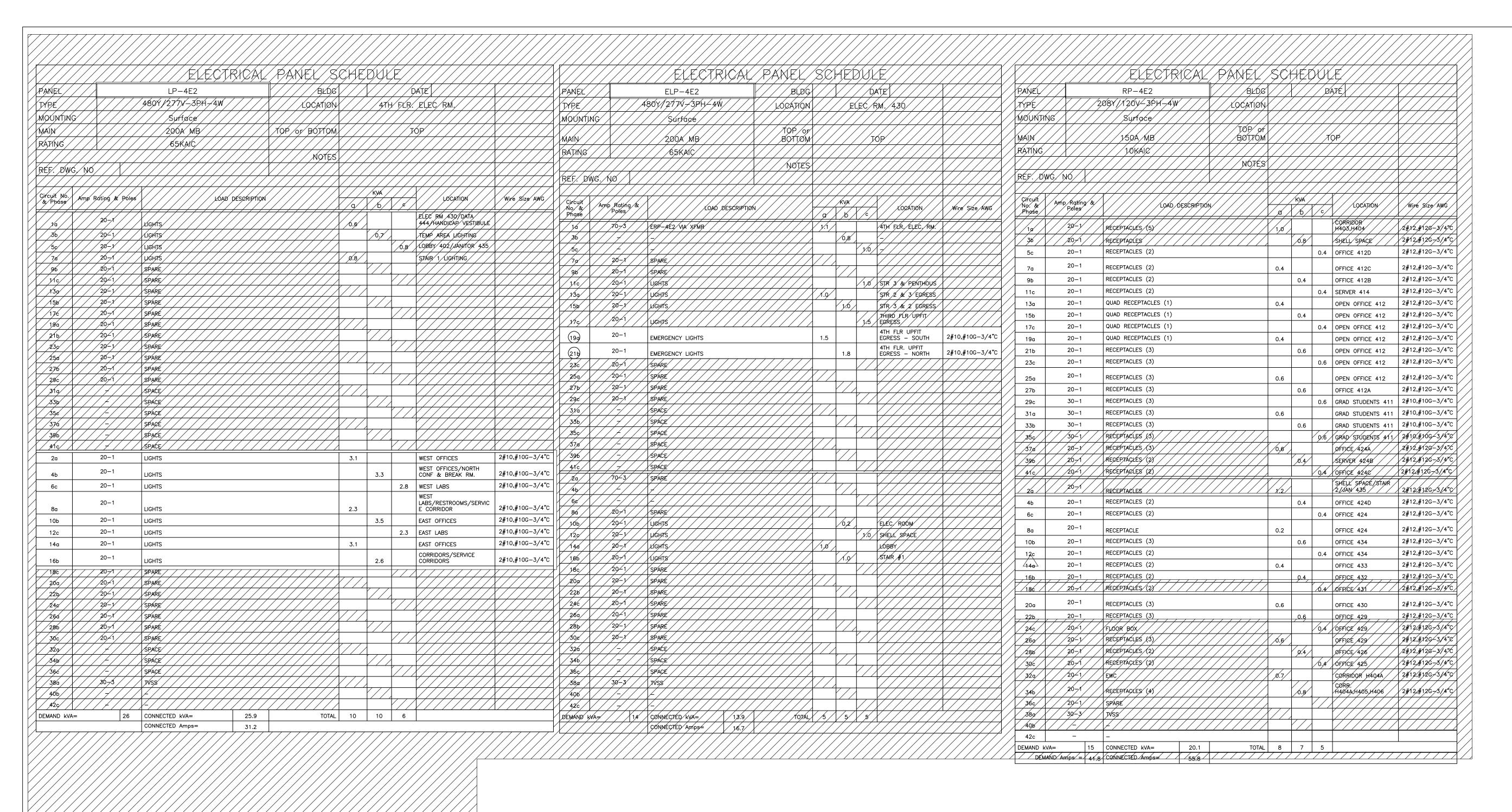
WTS NO.: 11700

JUNE 17, 2013

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ł	///		<u>////</u>	///EXECTRICAX				<u> </u>	<u> </u>		4
1	PANEL			// ERP-4E2////	BLDC		1//	<u>/</u> \\$/	STE ////		//
7	1YPE/		///2	08Y/120V-3PH-4W	LOCATION		///	///			//
ł	MOUNT	NG/	////	///Surface			///				//
1	MAIN			1/1/5000 / 1/1////	TOP Ør BOTTOK			// 4.	ØP//////		///
x	MAIN			// 150A/MB////	/ / BUTON		///				
ł	RATING	///	HH	// 10KAVC/////	Works		///	///			+/
]					MOTES	4//	///	$/\!\!/\!\!/$			+/
ł	REP. D	MG. N	9/1//		<i>X//////</i>	///	///	///			
1	Øirçuit /	H				/KVA/			+/		
ł	Nø. & Phase	/ Amp	Rating & Poles	LØAD DESCRIPTIO			1/6/		LOCATION /	Wire Size	/AWG/
ł	//a/	///	20-1//	RECEPTACLES		0.6	/ 	<i>x / /</i>	EKEC ROOM	2#12,#1294	-3/4"%
1	/3b/	$\overline{///}$	20-1	SPARE ///		1 - 7	1//				
ł	/5¢/		20-1//	SPARE///////							
1	/%/	///	20/1//	CAB LIGHTS//////////		Ø.1/			ELEV ROØM///	2#12,#12G-	13/A"C
Į	/9b/		20-1//	RECEPTACLES //		4	0,6		47H FLR DATA ROOM	////	\leftarrow
1	11/		26-X-/-	RECEPTACIES				Ø 6<	ATH FUR DATA ROOM	2#1/2,#128	-3/4"
1	13a		20-1	SPARE	- - ▼ ▼				·		
	15b		20-1	SPARE				, ,			
ŧ		$\overline{///}$						^			<i>-</i>
ł	/19ø/	/-/-/	20-1	SPARE///					Y <i>///////</i>		
1	216	///	26-1	SPARE///							$+\!$
ł	/ 23c /	///		SPACE / / / / / / / / / / / / / / / / / / /			-				//
ł	/ 25a/ 27b/	///	[SPACE SPACE		1//					H,
1	29¢	///		SPACE							+//
7	316	///	/-///	SPACE///////		1//		//			//
ł	3 <i>3</i> b	///	/_///	SPACE			///				
1	3 5c/	///	7///	SPACE							///
ł	279/		7///	SPAQE//////							
ł	/39b		<u>/-///</u>	SPACE//////		1					
ł	416	<u> </u>	<u> </u>	SPACE////				//			4
1	/ 2 ′a/	-/-/-	20/1//	SHUNT TRIP		0.2/	1		ÉLEV #3	2#12,#12G-	/3/A"(
ł	/_4b/	$\overline{///}$	20-1/	SPARÉ ///////		1	///				
ł	69/	///	20-1/	ELEV RECEPT/				Ø.2/	ELEVATOR //	2#1/2,#120-	$-\!\!\!/-$
1	/ 8d	-/-/	20-1	FIRE ALARM CAB.		9.2	1			2#12,#12G-	-/-/
ł	/ 10b/	-/-	20/1/	PENT/4TH SMK PENT/4TH SMK DMP		1-	0,2	/2/2		2#12,#12G-	$\overline{}$
ł	120	$\overline{///}$	20-1/	\ 		1		9.2/		2#12,#129	-3/4 X
1	14ø 166	///	20-1 20-1	SPARE SPARE			1				//
7	1.8c	$\overline{///}$	20/1/	SPARE		1	//	//			///
ł	20a/		20-1//	SPARE		1///	1				// ,
ť	2 2b	///		SPAQE ////	///////		///				+//
7	/24¢	///		SPACE///				///			
ł	260		7-///	SPACE//////							//
1	/28b/			SPACE /////////							<i>7</i>
1	/30c/		////	SPACE				1			
ł	/ 520/	///	<u> </u>	SPACE		<u> </u>	 				
ł	34b		<u>/-///</u>	SPACE///////		1	///	1	<i>\///////</i>		
1	/36c	///	<u> </u>	SPACE//////	///////	/ //		//			//
7	/ 38a /	///	30/3//	/tyss//////////////////////////////////		<u> </u>		-			//
ł	/ 40b/	///	<u> </u>	\ 	//////	1	<u> </u>	//			// .
ł	/ 420/ DEMAND /k	/ <u>/</u> /	2.9/	COMNECTED WAY 2.9	TØTAL	1/1/	///	//	$\mathbb{R}^{1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/$	Y////	$+\!\!\!\!/$
1	DEINIUMU K	<u> </u>	/ / /2.9/	COMNECTED Amps=//8,0	1//////NIAK	<u> </u>	1/'/	$\checkmark\!$	<i>Y </i>	/////	$-\!\!\!\!/\!$

			ELECT	RICAL	PANEL S	CHE	DUL	E.		
PANEL			URP-4C6.5 BLD			DATE				
TYPE			208Y/120V-3PH-4W	LOCATION						
MOUNTIN	G		Surface							
MAIN			35A MB		TOP or BOTTOM			Т	 OP	
RATING			10KAIC						<u> </u>	
					NOTES		18	CIRCI	JIT PANEL	
REF. DW	G NO				110120		10		/SS	
CLI. DW	0. 110							<u>'</u>		
Circuit No.						KVA				
& Phase	Amp Rating & Poles		LOAD DESCRIPTION				Ь	С	LOCATION	Wire Size AWG
1a	20-1		OHSC RECEPTACLES (2)			0.4			LAB 415	2#12,#12G-3/4°C
3b	20-1		OHSC RECEPTACLES (2)		0.4		LAB 415	2#12,#12G-3/4°C		
5c	20-1		OHSC RECEPTACLES (2)					0.4	LAB 421	2#12,#12G-3/4"0
7a	20-1		OHSC RECEPTACLES (2)			0.4			LAB 421	2#12,#12G-3/4"0
9b	20-1		OHSC RECEPTACLES (2)				0.4		LAB 420	2#12,#12G-3/4"0
11c	20-1		OHSC RECEPTACLES (2)					0.4	LAB 420	2#12,#12G-3/4°C
13a	20-1		OHSC RECEPTACLES (2)			0.4			LAB 420	2#12,#12G-3/4"0
15b	20-1		SPARE							
17c	20-1		SPARE							
2a	20-1		SPARE							
4b	20-1		SPARE							
6c	20-1		SPARE							
8a 10b	20-1		SPARE							
12c	20-1		SPARE SPARE							
14a	30-3		TVSS							
16b	_		-							
18c -		_								
DEMAND kVA	\ <u>=</u>	2.8	CONNECTED kVA=	2.8	TOTAL	1	1	1		•
DEMAND Amps = 7.8			CONNECTED Amps=	7.8						

			ELEC	TRICA	L PANEL	SCH	EDL	JLE		
PANEL		BLDG								
TYPE	PE 208Y/120V-3PH-4W				LOCATION					
MOUNTING Surface										
MAIN 150A MB				TOP or BOTTOM				TOP		
RATING			10KAIC		101 01 001101				101	
TATING			TORAIC		NOTES					
REF. DW	G. NO				NOTES					
									1	
Circuit No. & Phase	Amp Rating &	Poles	LOAD DESCRIPTION				KVA b	Wire Size AWG		
1a	20-1		RECEPTACLES (3)			0.6			OFFICE 435	2#12,#12G-3/4"C
3b	20-1		RECEPTACLES (2)				0.4		OFFICE 436	2#12,#12G-3/4"C
5c	20-1		RECEPTACLES (2)					0.4	OFFICE437	2#12,#12G-3/4"C
7a	20-1		RECEPTACLES (2)			0.4			OFFICE438	2#12,#12G-3/4"C
9b	20-1		RECEPTACLES (3)				0.6		OFFICE439	2#12,#12G-3/4"C
11c	20-1		RECEPTACLES (3)					0.6	OFFICE 401	2#12,#12G-3/4"C
13a	20-1		RECEPTACLES (4)			0.8			OFFICE 402	2#12,#12G-3/4"C
15b	20-1		RECEPTACLES (2)				0.4		OFFICE 403	2#12,#12G-3/4"C
17c	20-1		RECEPTACLES (4)					0.8	OFFICE 404	2#12,#12G-3/4"C
19a	20-1		RECEPTACLES (1)			0.2			BREAKROOM 404	2#12,#12G-3/4°C
21b	20-1		RECEPTACLES (2)				0.4		BREAKROOM 404	2#12,#12G-3/4"C
23c	20-1		REFRERIGERATOR					1.8	BREAKROOM 404	2#12,#12G-3/4"C
25a	20-1		REFRERIGERATOR			1.8			BREAKROOM 404	2#12,#12G-3/4"C
27b	20-1		RECEPTACLES (4)				0.8		BREAKROOM 404	2#12,#12G-3/4"C
29c	20-1		RECEPTACLES (4)				0.0	0.8	MEN 405, WOMEN 406	2#12,#12G-3/4°C
31a	30-1		HAND DRYER			2.0		0.0	WOMEN 406	2#10,#10G-3/4°C
33b	30-1		HAND DRYER			2.0	2.0		MEN 405	2#10,#10G-3/4°C
35c	20-1		EWC			2.0	0.7	VESTIBULE V401	2#12,#12G-3/4°C	
37a	20-1		RECEPTACLES (6)	1.2		0.7	CORRIDOR H402,H403	2#12,#12G-3/4°C		
	20-1		RECEPTACLES (5)	1.2	1.0		CORRIDOR H405, H406	2#12,#12G-3/4°C		
39b	20-1		SPARE				1.0		CORRIDOR H403, H400	2π12,π120 3/ + 0
4/1c 2a	30-1		RECEPTACLES (3)			0.6			GRAD STUDENT 407	2#10,#10G-3/4°C
	30-1		RECEPTACLES (2)			0.6	0.4			2#10,#10G-3/4°C
4b	30-1		RECEPTACLES (3)				0.4	0.0	GRAD STUDENT 407	2#10,#10G-3/4°C
6c	30-1		RECEPTACLES (3)			0.6		0.6	GRAD STUDENT 407	2#10,#10G-3/4°C
8a	30-1		RECEPTACLES (3)			0.6	0.0		GRAD STUDENT 408	2#10,#10G-3/4°C
10b							0.6		GRAD STUDENT 408	2#10,#10G-3/4°C
12c	30-1 30-1		RECEPTACLES (3) RECEPTACLES (3)					0.6	GRAD STUDENT 410	2#10,#10G-3/4°C
14a	30-1		RECEPTACLES (3)			0.6	2.5		GRAD STUDENT 410	2#10,#10G-3/4°C
16b							0.6		GRAD STUDENT 410	
18c	30-1		RECEPTACLES (3)					0.6	GRAD STUDENT 410	2#10,#10G-3/4°C
20a	30-1		RECEPTACLES (3)			0.6			GRAD STUDENT 410	2#10,#10G-3/4°C
22b	30-1		RECEPTACLES (3)				0.6	<u> </u>	GRAD STUDENT 410	2#10,#10G-3/4°C
24c	30-1		RECEPTACLES (2)					0.4	GRAD STUDENT 410	2#10,#10G-3/4°C
26a	30-1		RECEPTACLES (3)			0.6			GRAD STUDENT 408,410	2#10,#10G-3/4°C
28b	20-1		SPARE							
30c	20-1		SPARE							
32a	20-1		SPARE							
34b	20-1		SPARE							
36c	20-1		SPARE							
38a	30-3		TVSS							
40b	_		-							
42c	_			<u> </u>						
EMAND kVA	\=	21.7	CONNECTED kVA=	25.1	TOTAL	10	8	7		

NOTES:

- 1. ALL BRANCH CIRCUIT BREAKERS ARE 20A, 1P UNLESS OTHERWISE NOTED.
- 2. TRIANGLE AROUND CIRCUIT NUMBER INDICATES CIRCUIT BREAKER WITH GROUND FAULT INTERRUPTER.
- 3. CIRCLE AROUND CIRCUIT NUMBER INDICATES HANDLE LOCK DEVICE.
- 4. ROOM NUMBER ON THIS DRAWING SHOULD MATCH COMPANION PLAN DRAWINGS. THE ROOM NUMBERS ARE NOT FINAL USC ROOM NUMBERS. SUBMITTAL OF PANEL SCHEDULES SHALL REFLECT ROOM NUMBER PER A SERIES DRAWINGS AND CLOSE OUT DRAWINGS SHALL BE MARKED WITH FINAL ROOM NUMBERS.

LEGEND:





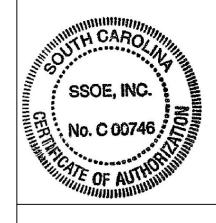
STATE PROJECT NO.: H27-6081-AC

University of South Carolina

HORIZON I GROUND & FOURTH FLOORS UPFIT

University of South Carolina 541 Main Street Columbia, South Carolina

REV.	DATE	DESCRIPTION
1	07/17/13	ADDENDUM 1



WATSON TATE SAVORY

Fourth Floor Panel Schedules

WTS NO : 11700

WTS NO.: 11700

JUNE 17, 2013

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