



ADDENDUM NO. 1

RE: Indiana University Bloomington
BL439 McNutt Central
Renovation of Existing Apartment

OWNER: The Trustees of Indiana University
Bloomington, Indiana

PROJECT No.: 20241429

ARCH. PROJECT
No.: 25-03

DATE: April 29, 2025

ISSUED BY: Springpoint Architects, p.c.
522 West 2nd Street
Bloomington, IN 47403

TO: Bidders

This Addendum modifies the Bidding Documents dated April 16, 2025, and will become part of the Contract Documents. Acknowledge receipt of this Addendum on Bid Form. Failure to do so may subject the Bidder to disqualification.

GENERAL CLARIFICATIONS:

1. Reference attached Pre-Bid Meeting Agenda dated April 23, 2025.
2. Reference attached Pre-Bid Sign-In Sheet dated April 24, 2025.
3. **Site Access has been modified reference Details 'C' and 'D' on revised COVER sheet, see attached.**
4. HVAC: The owner's pre-purchased air handling unit has a lead time of 14 weeks. The unit will be released no later than May 9, 2025. The intent is that all other HVAC work in the surrounding apartments can be completed while waiting for the unit.
5. The existing walls to be removed on are presumed to be non-load bearing CMU, unless otherwise noted.
6. The existing roof and ceiling structure are concrete waffle slab construction on concrete beam and column super-structure.

CHANGES TO BIDDING REQUIREMENTS:

1. **The date of Substantial Completion has been changed to November 15, 2025.**
2. Replace BID FORM with attached. **Bidders must use the bid form contained within this addendum.**



CHANGES TO SPECIFICATIONS:

1. Add section 232923 Variable Frequency Controllers

CHANGES TO DRAWINGS:

1. Add Siemens temperature controls drawings. Owner is providing parts and programming as part of the pre-purchase program. The Controls Installation Contractor shall install all owner devices, and provide and install all raceway, wiring, etc. The Controls Installation Contractor shall be a sub to the HVAC contractor, and all of these costs shall be included with the unified bid.
2. Sheet H203 – 3RD FLOOR HVAC PLAN
 - a. Added location of building pressure sensor.
3. Sheet E302A – 2ND FLOOR POWER AND SYSTEMS PLAN
 - a. Added keynote #E15.
4. Sheet E303 – 3RD FLOOR POWER AND SYSTEMS PLAN
 - a. Added data drop for temperature control panel in Mech C397. Added keynote #E16.
 - b. See added General Note "I" for revised scope for data cabling.

LIST OF ATTACHMENTS:

1. Pre-Bid Meeting Agenda dated April 23, 2025
2. Pre-Bid Sign-In Sheet dated April 23, 2025
3. **BID FORM**
4. Specification Section "232923 Variable Frequency Controllers"
5. Siemens Temperature Control Drawings
6. Drawing Sheet "COVER"
7. Drawing Sheet "H203 – 3RD FLOOR HVAC PLAN"
8. Drawing Sheet "E302A – 2ND FLOOR POWER AND SYSTEMS PLAN"
9. Drawing Sheet "E303 – 3RD FLOOR POWER AND SYSTEMS PLAN"



Indiana University Bloomington
BL439 McNutt Central
Renovation of Existing Apartments
#20241429
PRE-BID Meeting Agenda
April 23, 2025

- I. Introductions
 - A. Bob Richardson, IU Capital Planning & Facilities Team Lead
 - B. Gary Chambers, IU Construction Project Manager
 - C. Larry Isom,
 - D. Dawn Gray, Springpoint Architect
 - E. Bill Stacey, CMTA Engineers
- II. Sign-in Sheet
- III. Bids Due: Wednesday, **May 7**, 2025, 2pm.
- IV. Project Timeframe (reference Summary of Work Section 01100):
 - A. Construction Start – May 21, 2025
 - B. Substantial completion – ~~September 15~~, 2025.
 - C. Questions during bidding should be addressed to Dawn Gray, dawn@springpointarchitects.com, email preferred. Monday May 5th Final Addendum to be issued. Questions in by noon, May 2nd.
- V. Bidding Requirements, reference Instruction to Bidders in the project specification manual:
 - A. 5% bid security
 - B. Contractors written drug testing program
 - C. Contractors Minority and Women’s Business Enterprise Participation Plan
- VI. Project Requirements
 - A. General Conditions & IU Standard supplementary conditions and modifications in front end. Refer to Capital Planning and Facilities Divisions 00 and 01.
 - B. Payment and Performance Bond
- VII. Documents – Available thru the IU Plan hosted by Eastern Engineering and sets are available to view at the Springpoint Architects office
- VIII. Project Identification: Project includes construction of Apartment Renovations at the Third Floor of BL439 McNutt Central, 1101 Fee Lane at Indiana University’s Bloomington Campus



as shown on the Construction Documents prepared by Springpoint Architects, P.C., and their consultants, dated April 16, 2025.

A. Project will be constructed by a General Contractor as a single prime construction contract.

B. Contractor Access to Site:

1. Access to the project site will be limited and final arrangements will be coordinated with owner prior to construction beginning:
 - a. Existing materials that are to be removed and new materials to be installed must go through the third floor windows as shown.
 - b. Hours from removing and stocking material are limited to between 1:30 – 4:00 pm.
 - c. Pedestrian walkways and ADA ramp must be restricted and supervised by the contractor during the removal and stocking of materials.
 - d. Building elevator use will be limited to the transport of the following:
 - i. Air Handler Unit
 - ii. One-piece bathtub and shower enclosures
 - iii. Other items will be at the discretion of the owner
 - e. Final locations of site access elements must be coordinated and verified with owner before beginning construction
 - f. Contractor is responsible for projecting basement with plywood or other approved material prior to dumpster installation.
 - g. Construction fencing per IU's standards is required.
2. Site Access plan and details will be part of Addendum No.1
3. The contractor is responsible for construction barriers and additional dust management required to complete the project.
4. The contractor is responsible for protecting all finishes to remain, including walls, floors, elevators, etc. in the project area and routes, interior and exterior, to the project area.

C. Project Description

1. The work includes the construction of restroom upgrades:
 - a. The work includes the construction of two apartments on the 3rd floor. The project consists of the demolition of interior walls, ceilings, and flooring with new construction of cmu walls, metal stud walls, bulkheads, doors and frames. The finishes include acoustical tile ceilings, resilient tile, and sheet flooring, wall paint, and wood cabinetry with plastic laminate countertops, and solid surface countertops with integral sinks. Apartments are to be accessible with ADA compliant fixtures and accessories.



- b. The HVAC work includes the demolition of existing fin-tube heating system and installation of a new air handler unit, VAV boxes, ductwork, and controls to serve the third floor.
- c. Plumbing work includes the demolition of existing plumbing fixtures and associated lines and fitting. The new plumbing works includes ADA compliant plumbing fixtures and piping including kitchen sink, lavatories, toilets (wall hung), bath tub/shower and shower unit.
- d. The electrical work includes demolition of power, and lighting. The new work includes new power, and LED light fixtures.
- e. The work includes revisions to sprinkler piping.

INDIANA UNIVERSITY - BLOOMINGTON

BL439 McNutt Central – Renovation of Existing Apartments

Project No. 20241429

SIGN-IN SHEET

April 23, 2025

NAME	TELEPHONE	EMAIL ADDRESS
Trace Haruht / CDI	(812) 232-3327 (office)	estimating@cdinc.net
RADT Couch / TERSTP	317-506-2110 cell	randy@terster.com
Tyler Doades / CSRS	812-339-9114	tdoades@commercial-service.com
Ali Rashap NWP DEVELOPMENT	773-586-5832	ali@nwpdevelopment.com
Brooks DeMers / WEEDLE	(812)-345-8308	bdemers@weedlepros.com
Tony Fox - Fox Coast	812-327-0143	tony@foxcoastfranchise.com
Mallory Halcomb - HFI	317-517-5541	mhalcomb@harrellfish.com
BEN ROBINSON	812 929 - 2359	BROBINSON@BUSINESS ASSOCIATES.COM
Charlie Whitlow / CCAT	317-986-7687	cwhitlow@ccat.com
Paul MacArthur	812-655-1622	pmac@theio.edu

BID FORM
for

BL439 McNutt Central
Renovation of Existing Apartments
Indiana University Bloomington
Bloomington, Indiana
IU 20241429

TO: The Trustees of Indiana University
Bloomington, Indiana

****Submit bid online via www.iuplanroom.com****

FROM:

Bidder's Name _____
Address _____
City, State, Zip Code _____
Phone Number _____ FAX Number _____

CONTACTS:

Bid / Contract Information: Name: _____
Phone: _____ E-mail: _____
Proposed Project Manager: Name: _____
Phone: _____ E-mail: _____

Indicate if your firm is a certified minority-, women-, or veteran-owned business ____ Yes ____ No
If “Yes”, please attach a copy of certification

FOR: **Unified Bid** to include General, Mechanical, and Electrical Construction Work

Bidders:

LUMP SUM BASE BID

The undersigned Bidder, with a complete understanding of existing conditions at the Project Site and a complete understanding of the Bidding Documents, including any Addenda acknowledged hereinafter, for BL439 McNutt Central – Renovation of Existing Apartments on the Indiana University Bloomington campus, as prepared by Springpoint Architects, pc, hereby proposes to complete the project, in full and complete accordance with the requirements of the Bidding documents, for the LUMP SUM BASE BID PRICE of:

_____ Dollars \$ _____
(written amount) (numerals)

MAJOR SUBCONTRACTORS

Subcontractors and other persons and organizations proposed by the Bidder and accepted by the Owner and the Owner's Representative must be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Owner's Representative.

If requested, the supplemental Subcontractors and Products List will be submitted by email to the Owner, bidtab@iu.edu, and Springpoint Architects, dawn@springpointarchitects.com within 48 hours of the bid opening. The understanding of the Owner and the design team is that these same Major Subcontractors will be the same subcontractors listed below.

The Contractor proposes to utilize the following primary subcontractors for the work indicated.

List one major subcontractor per trade. Any deviation could result in the Owner removing the bid from consideration.

Indicate which are certified by the State of Indiana as an MBE, WBE, or VBE company by circling the M/W/VBE after the name.

MECHANICAL: _____ M/W/VBE

ELECTRICAL: _____ M/W/VBE

PLUMBING: _____ M/W/VBE

TAX EXEMPTIONS

The undersigned Bidder has informed himself and all his prospective sub-contractors and suppliers of the tax exempt status of the Owner, as set forth in the General Conditions, and therefore, has not included these taxes in his Lump Sum Base Bid price.

SUBSTITUTIONS

The undersigned Bidder has based his bid upon the materials, products, articles, equipment, brands, manufacturers and processes described in the Bidding Documents or upon approved equivalents. Proof of equivalency of substitutions is the responsibility of the Bidder, but the Architect/Engineer shall be the sole judge of equivalency. Proposed equivalent substitutions shall be equal in all respects to the requirements of the Bidding Documents, including but not limited to the design, quality, physical size, performance characteristics, strength, previous history of use, and to the method of installation, attachment, or connection to related or adjoining work. Determination of equivalency of proposed substitutions shall be by the Architect/Engineer, before the bid opening date, as described in paragraph entitled "Substitutions" in the Instructions to Bidders.

COMPLETION DATE

The Undersigned Bidder agrees to coordinate and expedite his work, and shall take into consideration

any lead time and schedule parameters, with all contractors and that this Work will be completed no later than **November 15, 2025**.

ASSIGNMENT OF COORDINATION

The undersigned Bidder agrees, to the assignment of Mechanical and Electrical work to the successful General Contractor for the responsibility of complete coordination of the work as stated in the Instructions to Bidders.

PERFORMANCE AND PAYMENT BOND

The undersigned Bidder agrees, if awarded the Contract, to deliver to the Owner a satisfactory Performance Bond, in the full amount (100%) of the total Contract price, not later than the date of execution of the contract. The cost of the Bond shall be included in the Lump Sum Base Bid contained in this Proposal.

SUPPLEMENTAL AND REQUIRED DOCUMENTS

Bid Security; State Form 96 (Revised 2013); Written Drug Testing Program, which must be in full compliance with IC 4-13-18; a completed Minority, Women's and Veteran's Business Enterprise Participation Plan; Contractor Asbestos Certification; Asbestos Protocol for Contractors.

ADDENDA

The following Addenda have been received by the undersigned Bidder; and all costs resulting from these Addenda have been included in the preparation of this Bid Form:

Addendum No. _____	Dated _____
Addendum No. _____	Dated _____
Addendum No. _____	Dated _____

SIGNATURES

1. **When a Bidder is an Individual:**

_____ Witness	_____ Bidder
Date: _____	Address: _____ _____

2. **When a Bidder is a Partnership:**

_____ Name of Partnership	
Date: _____	Address: _____ _____
_____ Partner	_____ Partner

3. When Bidder is a Corporation:

Name of Corporation

Date: _____

Address: _____

By: _____
President

Attest: _____
Secretary

CORPORATE SEAL

END

****Submit bid online via www.iuplanroom.com****

PART 1 - GENERAL

1.1 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. This Section includes solid-state, IGBT, VFCs for speed control of three-phase, squirrel-cage induction motors.

1.3 DEFINITIONS

- A. BMS: Building management system.
- B. IGBT: Integrated gate bipolar transistor.
- C. LAN: Local area network.
- D. PID: Control action, proportional plus integral plus derivative.
- E. PWM: Pulse-width modulated.
- F. VFC: Variable frequency controller.

1.4 SUBMITTALS

- A. Product Data: For each type of VFC. Include dimensions, mounting arrangements, location for conduit entries, shipping and operating weights, and manufacturer's technical data on features, performance, electrical ratings, characteristics, and finishes.
- B. Shop Drawings: For each VFC.
 - 1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings. Include the following:
 - a. Each installed unit's type and details.
 - b. Nameplate legends.
 - c. Short-circuit current rating of integrated unit.
 - d. Listed and labeled for series rating of overcurrent protective devices in combination controllers by an NRTL acceptable to authorities having jurisdiction.

-
- e. Features, characteristics, ratings, and factory settings of each motor-control center unit.
 - 2. Wiring Diagrams: Power, signal, and control wiring for VFCs. Provide schematic wiring diagram for each type of VFC.
 - C. Coordination Drawings: Floor plans, drawn to scale, showing dimensioned layout, required working clearances, and required area above and around VFCs where pipe and ducts are prohibited. Show VFC layout and relationships between electrical components and adjacent structural and mechanical elements. Show support locations, type of support, and weight on each support. Indicate field measurements.
 - D. Field quality-control test reports.
 - E. Operation and Maintenance Data: For VFCs, all installed devices, and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 1 Section "Operation and Maintenance Data," include the following:
 - 1. Routine maintenance requirements for VFCs and all installed components.
 - 2. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.
 - F. Load-Current and List of Settings of Adjustable Overload Relays: Compile after motors have been installed and arrange to demonstrate that dip switch settings for motor running overload protection suit actual motor to be protected.
- 1.5 QUALITY ASSURANCE
- A. Manufacturer Qualifications: A qualified manufacturer. Maintain, within 100 miles of Project site, a service center capable of providing training, parts, and emergency maintenance and repairs.
 - B. Source Limitations: Obtain VFCs of a single type through one source from a single manufacturer.
 - C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - D. Comply with NFPA 70.
 - E. Product Selection for Restricted Space: Drawings indicate maximum dimensions for VFCs, minimum clearances between VFCs, and adjacent surfaces and other items. Comply with indicated maximum dimensions and clearances.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver VFCs in shipping splits of lengths that can be moved past obstructions in delivery path as indicated.
- B. Store VFCs indoors in clean, dry space with uniform temperature to prevent condensation. Protect VFCs from exposure to dirt, fumes, water, corrosive substances, and physical damage.
- C. If stored in areas subject to weather, cover VFCs to protect them from weather, dirt, dust, corrosive substances, and physical damage. Remove loose packing and flammable materials from inside controllers; install electric heating of sufficient wattage to prevent condensation.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Rate equipment for continuous operation, capable of driving full load without derating, under the following conditions, unless otherwise indicated:
 - 1. Ambient Temperature: 0 to 40 deg C.
 - 2. Humidity: Less than 90 percent (noncondensing).
 - 3. Altitude: Not exceeding 3300 feet.

1.8 COORDINATION

- A. Coordinate layout and installation of VFCs with other construction including conduit, piping, equipment, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."
- C. Coordinate features of VFCs, installed units, and accessory devices with pilot devices and control circuits to which they connect.
- D. Coordinate features, accessories, and functions of each VFC and each installed unit with ratings and characteristics of supply circuit, motor, required control sequence, and duty cycle of motor and load.

1.9 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. Spare Fuses: Furnish one spare for every five installed, but no fewer than one set of three of each type and rating.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. ABB
 2. Danfoss

2.2 VARIABLE FREQUENCY CONTROLLERS

- A. Description: NEMA ICS 2, IGBT, VFC; listed and labeled as a complete unit and arranged to provide variable speed of an NEMA MG 1, Design B, 3-phase induction motor by adjusting output voltage and frequency.
1. Provide unit suitable for operation of premium-efficiency motor as defined by NEMA MG 1.
- B. Design and Rating: Match load type such as fans, blowers, and pumps; and type of connection used between motor and load such as direct or through a power-transmission connection.
- C. Output Rating: 3-phase; 6 to 60 Hz, with voltage proportional to frequency throughout voltage range.
- D. Unit Operating Requirements:
1. Input ac voltage tolerance of 380 to 500 V, plus or minus 10 percent.
 2. Input frequency tolerance of 50/60 Hz, plus or minus 6 percent.
 3. Minimum Efficiency: 96 percent at 60 Hz, full load.
 4. Minimum Displacement Primary-Side Power Factor: 96 percent.
 5. Overload Capability: 1.1 times the base load current for 60 seconds; 2.0 times the base load current for 3 seconds.
 6. Starting Torque: 100 percent of rated torque or as indicated.
 7. Speed Regulation: Plus or minus 1 percent.
- E. Isolated control interface to allow controller to follow control signal over an 11:1 speed range.
1. Electrical Signal: 4 to 20 mA at 24 V.
- F. Internal Adjustability Capabilities:
1. Minimum Speed: 5 to 25 percent of maximum rpm.
 2. Maximum Speed: 80 to 100 percent of maximum rpm.
 3. Acceleration: 2 to a minimum of 22 seconds.
 4. Deceleration: 2 to a minimum of 22 seconds.
 5. Current Limit: 50 to a minimum of 110 percent of maximum rating.

- G. Self-Protection and Reliability Features:
1. Input transient protection by means of surge suppressors.
 2. Under- and overvoltage trips; inverter overtemperature, overload, and overcurrent trips.
 3. Motor Overload Relay: Adjustable and capable of NEMA ICS 2, Class 20 performance.
 4. Notch filter to prevent operation of the controller-motor-load combination at a natural frequency of the combination.
 5. Instantaneous line-to-line and line-to-ground overcurrent trips.
 6. Loss-of-phase protection.
 7. Reverse-phase protection.
 8. Short-circuit protection.
 9. Motor overtemperature fault.
- H. Automatic Reset/Restart: Attempts three restarts after controller fault or on return of power after an interruption and before shutting down for manual reset or fault correction. Bidirectional autospeed search shall be capable of starting into rotating loads spinning in either direction and returning motor to set speed in proper direction, without damage to controller, motor, or load.
- I. Power-Interruption Protection: To prevent motor from re-energizing after a power interruption until motor has stopped.
- J. Torque Boost: Automatically varies starting and continuous torque to at least 1.5 times the minimum torque to ensure high-starting torque and increased torque at slow speeds.
- K. Motor Temperature Compensation at Slow Speeds: Adjustable current fall-back based on output frequency for temperature protection of self-cooled, fan-ventilated motors at slow speeds.
- L. Input Line Conditioning: 3% line reactors.
- M. Status Lights: Door-mounted LED indicators shall indicate the following conditions:
1. Power on.
 2. Run.
 3. Overvoltage.
 4. Line fault.
 5. Overcurrent.
 6. External fault.
- N. Panel-Mounted Operator Station: Start-stop and auto-manual selector switches with manual speed control potentiometer and elapsed time meter.
- O. Indicating Devices: Meters or digital readout devices and selector switch, mounted flush in controller door and connected to indicate the following controller parameters:
1. Output frequency (Hz).

2. Motor speed (rpm).
3. Motor status (running, stop, fault).
4. Motor current (amperes).
5. Motor torque (percent).
6. Fault or alarming status (code).
7. PID feedback signal (percent).
8. DC-link voltage (VDC).
9. Set-point frequency (Hz).
10. Motor output voltage (V).

P. Control Signal Interface:

1. Electric Input Signal Interface: A minimum of 2 analog inputs (0 to 10 V or 0/4-20 mA) and 6 programmable digital inputs.
2. Remote Signal Inputs: Capability to accept any of the following speed-setting input signals from the BMS or other control systems:
 - a. 0 to 10-V dc.
 - b. 0-20 or 4-20 mA.
 - c. Potentiometer using up/down digital inputs.
 - d. Fixed frequencies using digital inputs.
 - e. RS485.
 - f. Keypad display for local hand operation.
3. Output Signal Interface:
 - a. A minimum of 1 analog output signal (0/4-20 mA), which can be programmed to any of the following:
 - 1) Output frequency (Hz).
 - 2) Output current (load).
 - 3) DC-link voltage (VDC).
 - 4) Motor torque (percent).
 - 5) Motor speed (rpm).
 - 6) Set-point frequency (Hz).
4. Remote Indication Interface: A minimum of 2 dry circuit relay outputs (120-V ac, 1 A) for remote indication of the following:
 - a. Motor running.
 - b. Set-point speed reached.
 - c. Fault and warning indication (overtemperature or overcurrent).
 - d. PID high- or low-speed limits reached.

Q. Communications: Provide an RS485 interface allowing VFC to be used with an external system within a multidrop LAN configuration. Interface shall allow all parameter settings of VFC to be programmed via BMS control. Provide capability for VFC to retain these settings within the nonvolatile memory.

- R. Integral Disconnecting Means: NEMA KS 1, fusible switch with lockable handle.
- S. Isolating Switch: Non-load-break switch arranged to isolate VFC and permit safe troubleshooting and testing, both energized and de-energized, while motor is operating in bypass mode.
- T. Remote Indicating Circuit Terminals: Mode selection, controller status, and controller fault.

2.3 ENCLOSURES

- A. NEMA 1.

2.4 ACCESSORIES

- A. Devices shall be factory installed in controller enclosure, unless otherwise indicated.
- B. Push-Button Stations, Pilot Lights, and Selector Switches: NEMA ICS 2, heavy-duty type.
- C. Stop and Lockout Push-Button Station: Momentary-break, push-button station with a factory-applied hasp arranged so padlock can be used to lock push button in depressed position with control circuit open.
- D. Control Relays: Auxiliary and adjustable time-delay relays.
- E. Standard Displays:
 - 1. Output frequency (Hz).
 - 2. Set-point frequency (Hz).
 - 3. Motor current (amperes).
 - 4. DC-link voltage (VDC).
 - 5. Motor torque (percent).
 - 6. Motor speed (rpm).
 - 7. Motor output voltage (V).
- F. Historical Logging Information and Displays:
 - 1. Real-time clock with current time and date.
 - 2. Running log of total power versus time.
 - 3. Total run time.
 - 4. Fault log, maintaining last four faults with time and date stamp for each.

2.5 FACTORY FINISHES

- A. Finish: Manufacturer's standard paint applied to factory-assembled and -tested VFCs before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, surfaces, and substrates to receive VFCs for compliance with requirements, installation tolerances, and other conditions affecting performance.
- B. Examine roughing-in for conduit systems to verify actual locations of conduit connections before VFC installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

- A. Select features of each VFC to coordinate with ratings and characteristics of supply circuit and motor; required control sequence; and duty cycle of motor, controller, and load.
- B. Select horsepower rating of controllers to suit motor controlled.

3.3 INSTALLATION

- A. Anchor each VFC assembly to steel-channel sills arranged and sized according to manufacturer's written instructions. Attach by bolting. Level and grout sills flush with mounting surface.
- B. Install VFCs on walls.
- C. Comply with mounting and anchoring requirements specified in Division 26 Section "Electrical Supports and Seismic Restraints."
- D. Controller Fuses: Install fuses in each fusible switch. Comply with requirements in Division 26 Section "Fuses."

3.4 IDENTIFICATION

- A. Identify VFCs, components, and control wiring according to Division 26 Section "Electrical Identification."
- B. Operating Instructions: Frame printed operating instructions for VFCs, including control sequences and emergency procedures. Fabricate frame of finished metal, and cover instructions with clear acrylic plastic. Mount on front of VFC units.

3.5 CONTROL WIRING INSTALLATION

- A. Install wiring between VFCs and remote devices according to Division 26 Section "Conductors and Cables."
- B. Bundle, train, and support wiring in enclosures.
- C. Connect hand-off-automatic switch and other automatic-control devices where applicable.
 - 1. Connect selector switches with control circuit in both hand and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

3.6 CONNECTIONS

- A. Conduit installation requirements are specified in other Division 26 Sections. Drawings indicate general arrangement of conduit, fittings, and specialties.
- B. Ground equipment according to Division 26 "Grounding and Bonding."

3.7 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each enclosed controller element, bus, component, connecting supply, feeder, and control circuit.
 - 2. Test continuity of each circuit.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to perform the following:
 - 1. Inspect controllers, wiring, components, connections, and equipment installation. Test and adjust controllers, components, and equipment.
 - 2. Report results in writing.
- C. Perform the following field tests and inspections and prepare test reports:
 - 1. Perform each electrical test and visual and mechanical inspection, except optional tests, stated in NETA ATS. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.8 ADJUSTING

- A. Set field-adjustable switches and circuit-breaker trip ranges.

3.9 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain variable frequency controllers. Refer to Division 1 Section "Demonstration and Training."

END OF SECTION 232923

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES

PHONE: 317-293-8880
FAX: 317-293-0374

04/25/25

FOR INFORMATION CONTACT
ERIC HUGHES

ENGINEERING DATA FOR
IU - MCNUTT CENTRAL RENO
EXISTING APARTMENT
BLOOMINGTON
IU PROJECT #20241429, IN
USA

44OP-397692

SPRINGPOINT
ARCHITECT

ENGINEER

CONTRACTOR

GENERAL NOTES FOR CONTROLS INSTALLATION CONTRACTOR (CIC)

1. All work shall be performed in accordance with the contract documents and all applicable codes and standards.
2. Provide and install all wiring, conduit, circuit breakers, etc., and any needed mounting hardware to install control devices/panels (brackets, extensions, stands, etc.) for a complete installation.
3. Mount, wire and pipe (control pneumatics) all devices including panels, sensors, relays, actuators, switches, sensor covers/guards, etc. for a complete installation.
4. All installation of the energy management system and components is by the CIC unless noted otherwise.
5. IU, IUI, IUK, IUE, through Siemens Building Technologies, Inc., will provide all system controllers, relays, transformers, sensors, prefabricated auxiliary panels and switches unless otherwise noted. The CIC will provide all installation materials necessary to mount, install, and wire all controls devices.
6. All devices to be installed according to manufacturer's recommendations and the contract documents. Field verify exact locations of all devices/equipment. Coordinate with Siemens.
7. All routings for electrical installation are to be verified by the CIC.
8. C.I.C. shall be responsible for interlock wiring between VFDs and local disconnect switches, where applicable.
9. C.I.C. shall coordinate their work with Siemens, the Contractor, other Subcontractors, and the Owner.
10. All control devices and panels that require 120V power that are not powered by the division 26 contractor shall require a dedicated circuit from its own breaker. Provide circuit breakers and power wiring where required.
11. Mount panels on racks when wall space is not available. The engineer shows panel locations on HVAC drawings. Actual panel locations are to be coordinated with the contractors and owner.
12. All line voltage wiring shall be installed in conduit.
13. All wiring must be pulled in one length. Splicing is not allowed. All Control wiring shall be continuous.
14. All wiring in mechanical rooms, concealed and inaccessible places and/or where required by project plans and specifications shall be installed in conduit.
15. Any conductor carrying voltage greater than 24VAC shall not occupy the same conduit as low voltage wiring.
16. Conduits installed outdoors or encased in concrete shall be in rigid conduit.
17. Open cable shall be installed only where space is accessible and allowed by the project plans and specifications. In these cases, cable shall be rated for space they occupy. Provide plenum rated materials as required.
18. See specifications and IU PPA Control Design Standard document for conduit use & installation requirements.
19. Provide as-built record drawings of installation of the system.
20. Record drawings shall include routing and sizing of communications wiring, sensor wiring, power trunk wiring, transformer locations, field device locations, etc.
21. C.I.C. shall receive, handle, and store, as needed, all material to be installed under their contract. Subcontractor shall be responsible for verification of quantity received. The CIC will be responsible for verifying all received material. Discrepancies must be immediately documented with the shipping company prior to their leaving the delivery site and shall be reported in writing to Siemens Building Technologies, Inc. within 48 hours. The CIC is responsible for the security of all materials received and stored. The CIC will replace, at his expense, any materials missing or damaged.
22. Provide and install all tags and labels per plans and specifications for all control devices. Coordinate tag and label text, size and type with Siemens. Tag wiring at the field panel with the full point name. Tag wiring at the field device with the full point address.
23. Terminate all wiring. If necessary, CIC will make all cutover terminations under the supervision of Siemens Building Technologies at startup, unless otherwise directed by Siemens.
24. CIC is responsible for participating in the commissioning process to the extent that it involves their installation work.
25. For wire runs to devices that require 24 VAC such as electric valve actuators, electric damper actuators, sensing devices, etc., CIC shall use the following wiring arrangement:
 - a. For devices that use a three-wire arrangement per the control drawings for carrying the 24VAC power and signal to the device, install cable type 18-gauge 3 conductor (18-3C) unless otherwise noted on control wiring diagrams. Neutral is tied together at the auxiliary panel.
 - b. For devices that use a four-wire arrangement per the control drawings for carrying the 24VAC power and signal to the device, use the following cable types unless otherwise noted on control wiring diagrams.
 - i. Install cable type 14-gauge 2 conductor (14-2C) for the 24VAC powering the device.
 - ii. Install cable type 18-gauge 2 conductor (18-2C) for the signal controlling the device.
 - iii. Tie neutrals together at the device.
 - c. QPA and Q series sensors may be landed to the RTS port on the BACnet TEC controller and will have a pre-terminated wire in either 50- or 100-foot length. See individual drawing details for further information.
26. C.I.C. shall use control wire according to the following schedule. Purchase wire manufactured by one of the following three vendors or approved equal. If wire size is not specified coordinate with Siemens and plan on using 12 gauge.
27. Minimum conduit size: 3/4".
28. Control wiring concealed in walls will be in EMT conduit. Existing wall will be 3/4" flex if inaccessible.
29. Wire size for terminal equipment devices will be either 18 AWG – 2 conductor or 18 AWG – 3 conductor wire unless otherwise noted or providing power to the TEC.

Anixter

Description	Part Number	Application
ETHERNET 23AWG, CAT6	CMP-00424AVA-7-06	Ethernet Network Communication cabling (verify type/color)
24-1p (STR) SHD Cable-Plenum	H-B-TSP24LC-CMP	BLN trunks
24-1p (STR) SDH Cable-Plenum	H-F-TSP24LC-CMP	FLN trunks
24-1.5p (STR) FT-6 Cable-Plenum	H-F-1.5TSP24LC-CMP	MSTP FLN BACnet trunks
20-2c (Solid) Cable-Plenum	KNX-TSP20LC-CMP	KNX Cable for DXR
18-2c (STR) Cable-Plenum	H-TP18-CMP	Point/low voltage wiring
18-3c (STR) Cable-Plenum	H-3C18-CMP	DXR/TEC actuators, transducers
18-6c (STR) Cable-Plenum	1806C-2-2N-01	Point/low voltage wiring
14-2c (STR) Cable-Plenum	H-2C14-CL3P	24VAC power trunk/power for devices

Anixter Contact: Gina Menolascino, Siemens Industry Account Manager
888-479-3830
2301 Patriot Blvd. Glenview, IL, 60026
sbt@anixter.com

Belden

Description	Part Number	Application
ETHERNET 23AWG, CAT6	2413F D151000	Ethernet Network Communication cabling (verify type/color)
24-1p (STR) SHD Cable-Plenum	YR48881 0031000 (CMP)	BLN trunks
24-1p (STR) SDH Cable-Plenum	YR49243 2121000 (CMP)	FLN trunks
24-1.5p (STR) FT-6 Cable-Plenum	SPECIAL ORDER WIRE	MSTP FLN BACnet trunks
20-2c (Solid) Cable-Plenum	SPECIAL ORDER WIRE	KNX Cable for DXR
18-2c (STR) Cable-Plenum	YM48514 0061000	Point/low voltage wiring
18-3c (STR) Cable-Plenum	YM48447 0061000	DXR/TEC actuators, transducers
18-6c (STR) Cable-Plenum	SPECIAL ORDER WIRE	Point/low voltage wiring
14-2c (STR) Cable-Plenum	YM48515 0131000	24VAC power trunk/power for devices

Belden Contact: Communications Supply Corporation
317-266-1600
1560 Indiana Avenue, Indianapolis, IN 46202
buybelden@gocsc.com

The Cable Company

Description	Part Number	Application
ETHERNET 23AWG, CAT6	5652P66CMP1000	Ethernet Network Communication cabling (verify type/color)
24-1p (STR) SHD Cable-Plenum	5200BLN	BLN trunks
24-1p (STR) SDH Cable-Plenum	5200FLN	FLN trunks
24-1.5p (STR) FT-6 Cable-Plenum	5201P67FLN1000	MSTP FLN BACnet trunks
20-2c (Solid) Cable-Plenum	5212-P47KNX1003	KNX Cable for DXR
18-2c (STR) Cable-Plenum	5041SBT	Point/low voltage wiring
18-3c (STR) Cable-Plenum	5043SBT	DXR/TEC actuators, transducers
18-6c (STR) Cable-Plenum	5046P33CMP	Point/low voltage wiring
14-2c (STR) Cable-Plenum	5061SBT	24VAC power trunk/power for devices

TCC Contact: Caitlin/Bart
800-677-9473
498 Bonnie Lane, Elk Grove Village, IL 60007
ilsales@tccwire.com

30. CIC shall create and keep an up to date list of DXR Bar Codes in a binder that is accessible to Siemens. CIC will create a list of terminal equipment that is controlled by DXR Controllers. CIC will remove the Bar Code from the DXR Controllers at the time of controls installation for each DXR and affix the Bar Code next to the associated Terminal Equipment Name in the DXR Bar Code Binder. CIC will scan the information and transmit in .pdf format to Siemens upon request.
31. CIC installation verification list. CIC shall create and keep an up to date list of the status of Mechanical System and Terminal Equipment controls installation in a binder that is accessible to Siemens. CIC will update Siemens weekly with the status of controls installation for each Mechanical System and each piece of Terminal Equipment.

CONTROL SYMBOL		CONTROL SYMBOL DESCRIPTION		CONTROL SYMBOL		CONTROL SYMBOL DESCRIPTION	
AC	AIR COMPRESSOR	HHC	HAND-HELD OPERATOR'S TERMINAL	RCU	REMOTE CONTROL UNIT		
AD	AIR DRYER	HL	HIGH LIMIT	RE	RELAY ELECTRIC		
ADXR	ACTUATOR DXR	HMI	GAMMA TOUCH PANEL	RP	RELAY PNEUMATIC		
AE	ACTUATOR ELECTRIC	HOA	HAND-OFF-AUTO SWITCH	RS	RESTRICTOR		
AEM	APOGEE ETHERNET MICROSERVER	HORN	HORN	RV	RELIEF VALVE		
AF	AIR FILTER	HPC	HEAT PUMP CONTROLLER	S/W	SOFTWARE		
AFS	AIR FLOW STATION	HTD	HIGH TEMPERATURE DETECTOR	SA	SHADE ACTUATOR		
AOP	ANALOG OUTPUT, PNEUMATIC	HTE	HUMIDITY TRANSMITTER ELECTRIC	SC	STEP CONTROLLER		
AP	ACTUATOR PNEUMATIC	HTP	HUMIDITY TRANSMITTER PNEUMATIC	SCU	STAND ALONE CONTROL UNIT		
APS	AUX. POWER SUPPLY	INT	INTERCOM	SD	SMOKE DETECTOR		
AT	AUTOMATIC TRAP	KWM	ELECTRIC KILOWATT METER	SE	SWITCH ELECTRIC		
ATD	AUTO TANK DRAIN	LA	LIGHT ACTUATOR	SIO	SLX IO MODULES		
ATEC	ACTUATOR TEC	LC	LIMIT CONTROLLER (LIMITEM)	SLX	APOGEE SLX CONTROLLER		
AZM	AUTOZERO MODULE	LLS	LIQUID LEVEL SWITCH	SPKR	SPEAKER		
BCU	BUS COUPLING UNIT	LLT	LIQUID LEVEL TRANS.	SPP	STATIC PRESSURE PROBE		
BELL	BELL	LPR	POWER SUPPLY 24VAC/24VDC	SPR	STATIC PRESSURE REGULATOR		
BIM	BUS INTERFACE MODULE	LTDE	LOW TEMP. DETECTOR ELECTRIC	SV	SOLENOID VALVE		
BOIL	BOILER	LTDP	LOW TEMP. DETECTOR PNEUMATIC	SW	SWITCH PNEUMATIC		
BRT	BRIGHTNESS	LUI	LOCAL USER INTERFACE	T	ROOM THERMOSTAT, PNEUMATIC		
BRTT	BRIGHTNESS AND TEMPERATURE	MBC	MODULAR BUILDING CONTROLLER	TBC	TERMINAL BOX CONTROLLER		
BTN	BUTTON	MDM	MODEM	TC	TEMPERATURE CONTROLLER(S200)		
CBL	CABLES	ME	ELECTRONIC ACTUATOR	TCU	TERMINAL CONTROL UNIT		
CKV	CHECK VALVE	MEC	MODULAR EQUIPMENT CONTROLLER	TDR	TIME DELAY RELAY		
CM	CONSTRUCTION MATERIALS	MG	MAGNEHELIC GAUGE	TE	THERMOSTAT, ELECTRIC		
CP	COMPONENT PANEL	MPU	MULTI-POINT UNIT	TEC	TERMINAL EQUIPMENT CONTROLLER		
CPU	CENTRAL PROCESSING UNIT	MS	MOTOR STARTER	TH	THERMOMETER		
CRT	CATHODE RAY TUBE	OCC	OCCUPANCY	TI	TRUNK INTERFACE		
CS	CURRENT SWITCH	OCCB	OCCUPANCY AND BRIGHTNESS	TIE	TRUNK ISOLATOR EXTENDER		
CT	CURRENT TRANSDUCER	OBS	OBSOLETE	TIU	TELCOM INTERFACE UNIT		
CTTE	CO2 TEMP TRANSMITTER ELEC	ODP	OPERATOR DATA PANEL	TMR	TIMER, TIME CLOCK		
CVC	CONSTANT VOLUME CONTROLLER	P	PUMP	TTE	TEMPERATURE TRANSMITTER ELECTRIC		
D	DAMPER	PA	PULSE ACCUMULATOR	TTP	TEMPERATURE TRANSMITTER PNEUMATIC		
DDC	DUAL DUCT CONTROLLER	PCT	PROGRAMMABLE CLOCK TIMER	TXIO	TX-I/O FAMILY CONTROLLER MODULES		
DEM	DEMAND ENERGY MONITOR	PE	PRESSURE ELECTRIC SWITCH	UC	UNITARY CONTROLLER		
DP	DEW POINT TRANSMITTER	PL	PILOT LIGHT	UCC	UNIT CONDITIONER CONTROLLER		
DPR	DIFFERENTIAL PRESS. REGULATOR	PM	POWER MONITOR	UVC	UNIT VENT CONTROLLER		
DPS	DIFFERENTIAL PRESSURE SWITCH	PNL	PANEL	V	VALVE		
DPTE	DIFF. PRESS. TRANSMITTER ELEC.	PPM	POINT PICKUP MODULE	V*	VALVE SERVICE PARTS		
DPTP	DIFFERENTIAL PRESSURE PNEUMATIC	PRC	PRESSURE REG. CONTROLLER	VA	TEC VALVE ACTUATOR		
DPU	DIGITAL POINT UNIT	PRV	PRESSURE REDUCING VALVE	VAC	VARIABLE AIR VOLUME CONTROLLER		
DXR	TERMINAL EQUIPMENT CONTROLLER	PS	POSITIONING SWITCH	VB	VIBRATION ISOLATOR		
EC	ENTHALPY COMPARITOR	PSE	POSITION SENSOR ELECTRIC	VTE	VELOCITY TRANSMITTER ELECTRICAL		
EP	ELECTRO-PNEUMATIC VALVE	PST	PULL STATION	W	WELL		
ES	END SWITCH	PT	PITOT TUBE	WST	WEATHER STATION		
ET	ENTHALPY TRANSMITTER	PTE	PRESSURE TRANSMITTER ELECTRIC	XDR	TRANSDUCER		
EXP	EXPANSION PANEL	PTP	PRESSURE TRANSMITTER PNEUMATIC	XFMR	TRANSFORMER		
FAN	FAN	PTR	PRINTER				
FHC	FUME HOOD CONTROLLER	PV	PILOT VALVE				
FM	FLOW MTR. (FLOW METER STATION)	PXCC	PX COMPACT CONTROLLER				
FMS	FIRE MGMT. SYSTEM	PXCM	PXC-MODULAR CONTROLLER				
FS	FLOW SWITCH	PXG3	BACNET ROUTER ETHERNETIP-MS/TP				
FTP	FLOW TRANSMITTER PNEU.	RBC	REMOTE BUILDING CONTROLLER				
G	GAUGE	RC	RECEIVER CONTROLLER				
GD	GAS DETECTOR						
H	HYGROSTATS						
HE	HUMIDIFIER ELECTRIC						

DDC ELECTRICAL POINT

PTNAME

00000000

TRUNK NUMBER

CABINET NUMBER

LAN TRUNK

DROP NUMBER

POINT NUMBER

DDC PNEUMATIC POINT

PTNAME

00000000

TRUNK NUMBER

CABINET NUMBER

LAN TRUNK

DROP NUMBER

POINT NUMBER

\$

AOP

S

R

TO CONTROL DEVICE

ELECTRICAL TERMINATION

PNEUMATIC TERMINATION

DETAIL XX

STANDARD DDC TERMINATION

NOTE OR REVISION

DETAIL XX

PAGE REFERENCE

APOGEE: PII - EXAMPLE

LOGICAL POINT NAME - AH1LTD

0.10.3.10.27

DETAIL 5A

DETAIL MC

BLN NUMBER

CABINET NUMBER

FLN TRUNK

DROP NUMBER

POINT NUMBER

READ AS " SEE PAGE 5A FOR MORE DETAIL "

DIGITAL INPUT

APOGEE: ETHERNET - EXAMPLE

LOGICAL POINT NAME - AH1LTD

0001:3.10.27

DETAIL 5A

DETAIL MC

REFERENCE NUMBER

NODE NUMBER

FLN TRUNK

DROP NUMBER

POINT NUMBER

READ AS " SEE PAGE 5A FOR MORE DETAIL "

DIGITAL INPUT

REVISION HISTORY			
0	4/25/2025	HB	SUBMITTAL SET

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO

IU PROJECT #20241429, IN

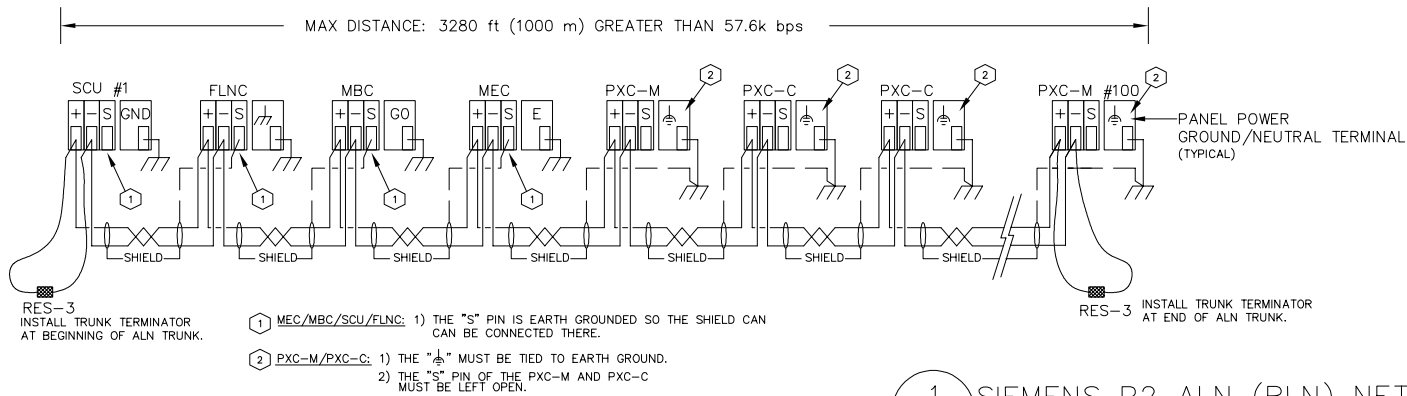
ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB		04/25/25	04/25/25

Legend & Abbreviations

440P397692

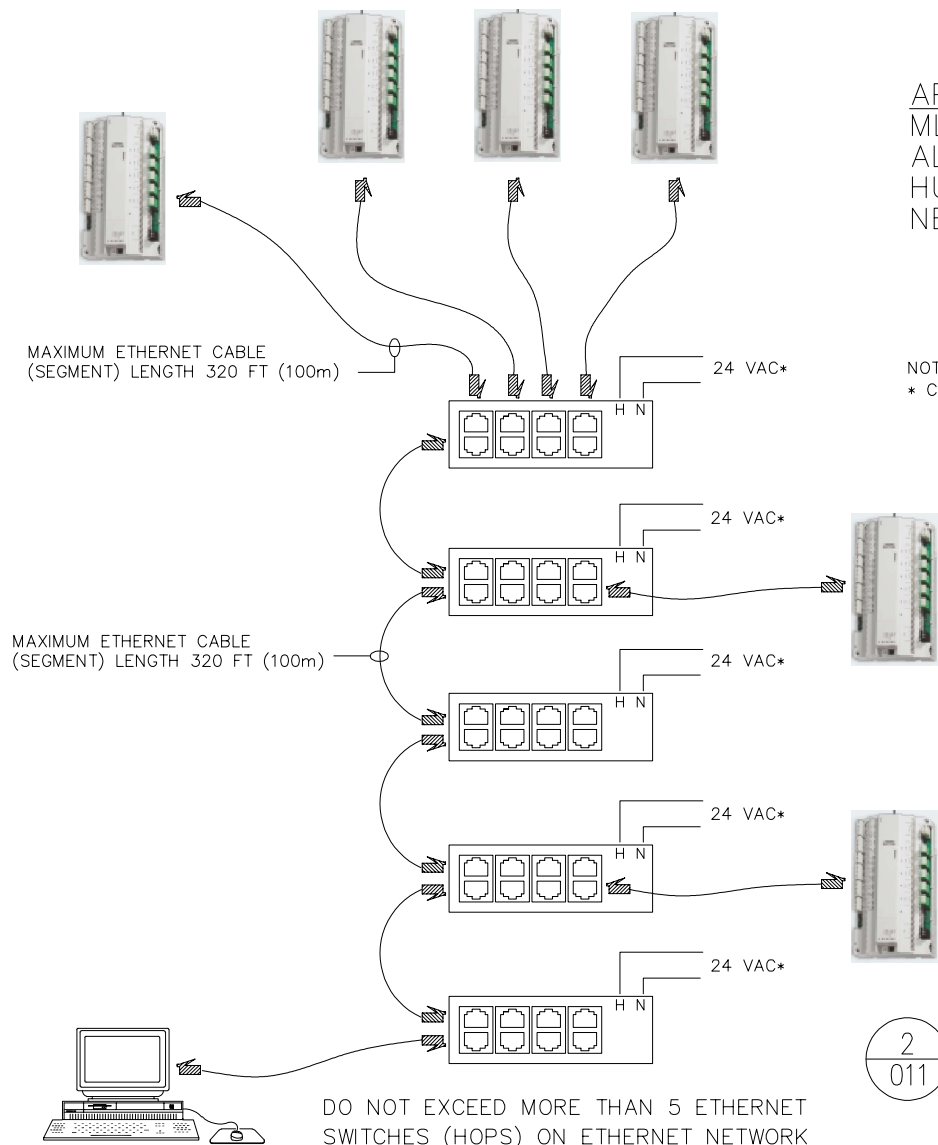
0

LEG



RES-3
538-664
BLN TRUNK TERMINATOR

1
011 SIEMENS P2 ALN (BLN) NETWORK
SIEMENS P2 AUTOMATED LEVEL NETWORK (ALN)
COMMUNICATION PROTOCOL: RS-485



APPLICABLE TO:
MLN (WORKSTATION TO ETHERNET)
ALNs (ETHERNET, BACnet/IP, AEM)
HUBS, SWITCHES, ROUTERS
NETWORK INTERFACE CARD

NOTE: -
* CERTAIN MODELS MAY REQUIRE 24 VDC OR 120 VAC..

2
011 SIEMENS ETHERNET NETWORK
10Base-T/100Base-TX
COMMUNICATION PROTOCOL: ETHERNET TCP/IP

ALN ETHERNET CABLE SPECIFICATIONS	
	TWISTED PAIR TWISTED PAIR TWISTED PAIR TWISTED PAIR
4 UNSHIELDED TWISTED PAIR (UTP) 24 AWG (SOLID) 17 PICOFARAD/FT CAPACITANCE AT 1KHz, 1MHz IEEE802.3 CATEGORY 5 CERTIFIED OR BETTER	
SHIELD NONE	
PART NUMBERS	
PLEASE REFER TO CERCO AND ANIXTER CABLE PART NUMBERS (SEE DRAWINGS 6A & 6B).	

ALN TSP CABLE SPECIFICATIONS	
	TWISTED PAIR SHIELD
TWISTED PAIR 24 AWG (STRANDED) 12 PICOFARAD/FT CAPACITANCE OR LESS 4 TWISTS PER FOOT.	
SHIELD 100% OVERALL FOIL	
PART NUMBERS	
PLEASE REFER TO CERCO AND ANIXTER CABLE PART NUMBERS (SEE DRAWINGS 6A & 6B).	

NOTES:

NEVER RUN NETWORK CABLING CLOSER THAN 5 FEET TO A VARIABLE FREQUENCY DRIVE (VFD) EXCEPT AT THE POINT WHERE THE NETWORK MUST CONNECT TO THE VFD. NETWORK ENTRY INTO A VFD MUST BE THROUGH A SEPERATE CONDUIT AND ALL NETWORK WIRING MUST BE KEPT AS FAR AS POSSIBLE FROM HIGH POWER CABLING IN THE DRIVE.

NEVER RUN NETWORK CABLE CLOSER THAN 5 FEET FROM CONDUITS CARRYING 100KVA OR GREATER. ALWAYS CROSS HIGH POWER CABLES (AT A DISTANCE OF 5 FEET) AT A 90° ANGLE.

NETWORK RUN IN OPEN CABLE TRAYS WITH CIRCUITS CARRYING 20 AMPS SHOULD BE NO CLOSER THAN 26 INCHES TO THE HIGHER POWER CABLES.

NETWORK RUN IN ENCLOSED TRAYS WITH CONDUITS CARRYING OVER 20 AMPS SHOULD BE NO CLOSER THAN 18 INCHES TO THE HIGHER POWER CABLES.

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

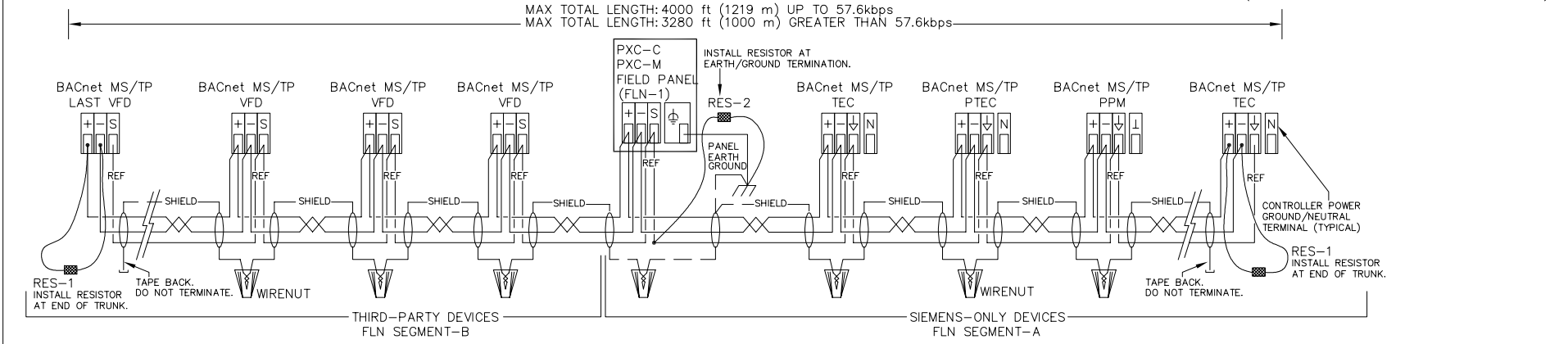
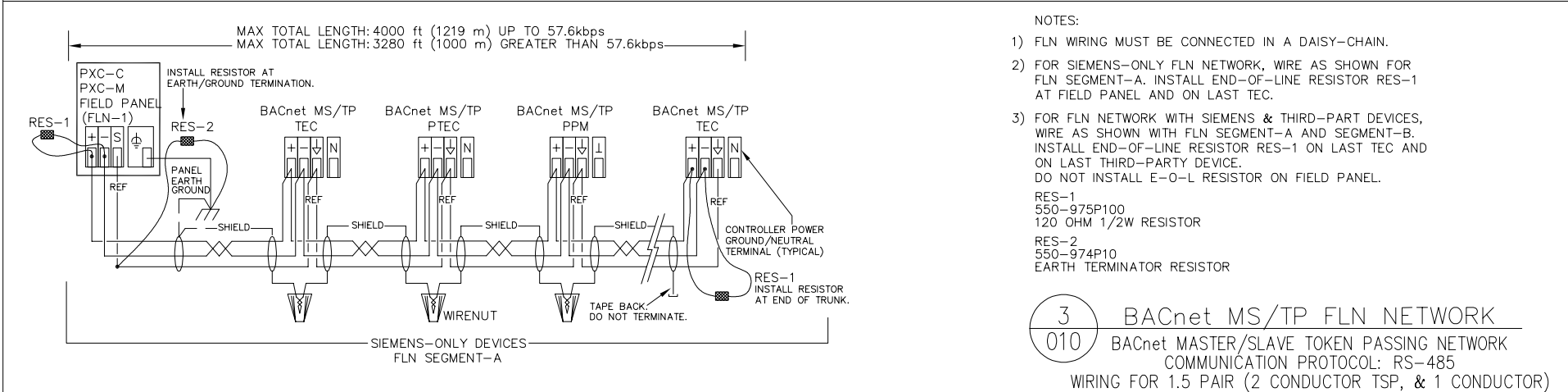
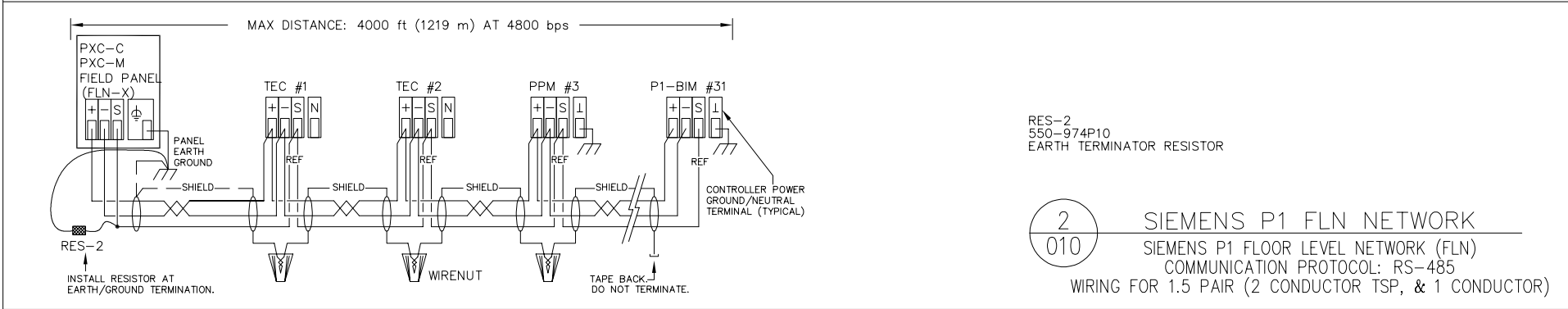
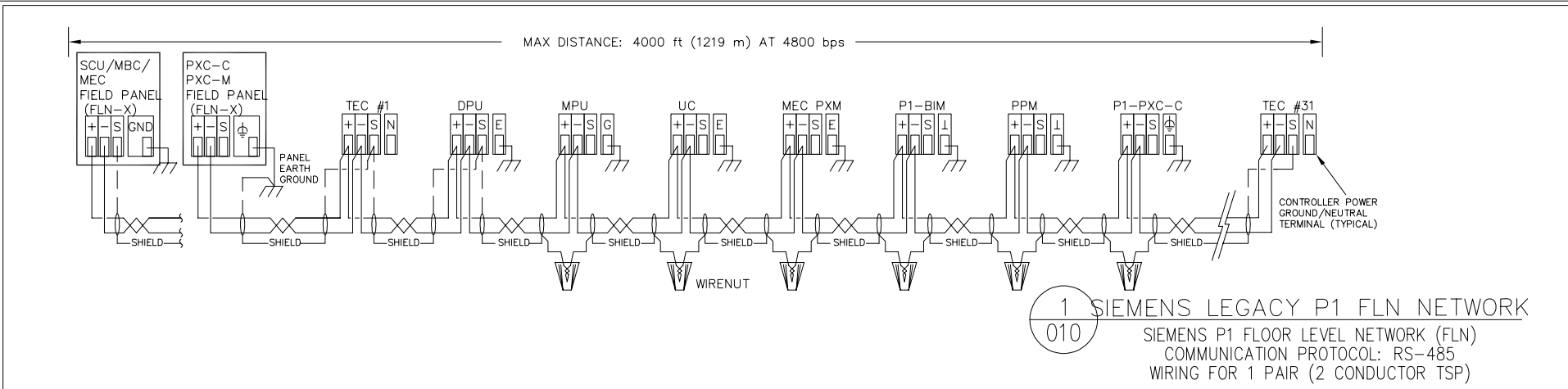
IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN


ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB		04/25/25	04/25/25


ALN WIRING SPECIFICATION

440P397692
0

ALN



FLN TSP CABLE SPECIFICATIONS	
	TWISTED PAIR SHIELD
TWISTED PAIR 24 AWG (STRANDED) 12 PICO FARAD/FT CAPACITANCE OR LESS 4 TWISTS PER FOOT.	
SHIELD 100% OVERALL FOIL	
PART NUMBERS	
ANNIXTER PART NUMBER: H-AF-TSP24LC-CMPBX-P DESCRIPTION: ALN/FLN24AWG,STR,TSP,LOCAP,CMP (FT-6)	

FLN 1.5 PAIR CABLE SPECIFICATIONS	
	TWISTED PAIR REFERENCE WIRE SHIELD
TWISTED PAIR 24 AWG (STRANDED) 11 PICO FARAD/FT CAPACITANCE CONDUCTOR TO CONDUCTOR. 24 PICO FARAD/FT CAPACITANCE CONDUCTOR TO SHIELD. 4 TWISTS PER FOOT.	
REFERENCE WIRE 24 AWG (STRANDED), 3 INCH LAY WITH TWISTED PAIR	
SHIELD 100% OVERALL FOIL WITH DRAIN WIRE	
PART NUMBERS	
ANNIXTER PART NUMBER: H-A-1.5TSP24LC-CMP-Y DESCRIPTION: 24-1.5PR STR TC FFEP FT6 SHD YEL (FT-6)	
CERCO PART NUMBER: 8304R DESCRIPTION: 22AWG 3C STR FT6 ORG (FT-6)	

NOTES:

NEVER RUN NETWORK CABLING CLOSER THAN 5 FEET TO A VARIABLE FREQUENCY DRIVE (VFD) EXCEPT AT THE POINT WHERE THE NETWORK MUST CONNECT TO THE VFD. NETWORK ENTRY INTO A VFD MUST BE THROUGH A SEPERATE CONDUIT AND ALL NETWORK WIRING MUST BE KEPT AS FAR AS POSSIBLE FROM HIGH POWER CABLING IN THE DRIVE.

NEVER RUN NETWORK CABLE CLOSER THAN 5 FEET FROM CONDUITS CARRYING 100KVA OR GREATER. ALWAYS CROSS HIGH POWER CABLES (AT A DISTANCE OF 5 FEET) AT A 90° ANGLE.

NETWORK RUN IN OPEN CABLE TRAYS WITH CIRCUITS CARRYING 20 AMPS SHOULD BE NO CLOSER THAN 26 INCHES TO THE HIGHER POWER CABLES.

NETWORK RUN IN ENCLOSED TRAYS WITH CONDUITS CARRYING OVER 20 AMPS SHOULD BE NO CLOSER THAN 18 INCHES TO THE HIGHER POWER CABLES.

REVISION HISTORY			
0	4/25/2025	HB	SUBMITTAL SET

--	--	--	--

SIEMENS

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

IU - MCNUTT CENTRAL RENO				
IU PROJECT #20241429, IN				
ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
FLN WIRING SPECIFICATIONS				

440P397692
0

FWIRE

PXCC WIRING TYPE AND GAUGE REQUIREMENTS

TABLE 1

CIRCUIT TYPE	CLASS	WIRE TYPE	MAX. DISTANCE	CONDUIT SHARING ²
AC LINE POWER ¹	POWER	#12–14 THHN	REFER TO NEC	CHECK LOCAL CODES
DIGITAL OUTPUT	1 & 2	TP not required, check job specs & local codes #18 to #24 AWG	SEE TABLE 3	CHECK LOCAL CODES
DIGITAL INPUT	2	TP not required, check job specs & local codes #18 to #24 AWG	750ft (230 m)	CHECK LOCAL CODES
ANALOG INPUT ⁴ 100K/10K Thermistor	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ANALOG INPUT ⁴ 1K Ni OR RTD	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ANALOG INPUT 0–10 V	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ANALOG INPUT 4–20 mA	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ANALOG OUTPUT 0–10 V	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ANALOG OUTPUT 4–20 mA	2	#18–#24 TP ^{3,6} or TSP ⁵ CM(FT4) or CMP(FT6)	750ft (230 m)	CHECK LOCAL CODES
ETHERNET ALN	2	#24 (4) TP ⁶ CAT5 OR BETTER	295ft (90 m)	CHECK LOCAL CODES
ALN TRUNK	2	#24 TSP	SEE TABLE 4	CHECK LOCAL CODES

- WHEN DAISY-CHAINING 24VAC POWER TO CONTROLLERS USE #14 WIRE.
- CONDUIT SHARING RULES: ONLY WHERE LOCAL CODES PERMIT. BOTH CLASS1 AND CLASS 2 WIRING CAN BE RUN TO THE PXCC PROVIDED THE CLASS 2 WIRE IS UL LISTED 300V 75°C(167°F) OR HIGHER OR THE CLASS 2 WIRE IS NEC TYPE CM (FT4) (75°C OR HIGHER) OR CMP(FT6) (75°C OR HIGHER). NEC TYPE CL2 AND CL2P IS NOT ACCEPTABLE UNLESS ALSO UL LISTED AND MARKED 300V 75°C (167°F) OR HIGHER
- TWISTED PAIR, NON-JACKETED UL LISTED 75°C(167°F) AND 300V, CABLE CAN BE USED IN PLACE OF CM(FT4) OR CMP(FT6)(BOTH MUST BE RATED 75°C OR HIGHER) CABLE WHEN CONTAINED IN CONDUIT PER LOCAL CODES. SEE THE FIELD PURCHASING GUIDE FOR WIRE.
- WIRE LENGTH AFFECTS POINT INTERCEPT ENTRY. ADJUST INTERCEPT ACCORDINGLY FOR EACH WIRE GAUGE AND SENSOR TYPE.
- SHIELDED TWISETED PAIR (TSP) IS NOT REQUIRED FOR ELECTRICAL NOISE LEVELS UPTO 10 V/M. AT HIGHER LEVELS TSP MAY BE NEEDED.TERMINATE SHIELD ON ENCLOSURE AND TAPE BACK ON POINT END.
- FOR 24AWG INSTALL CATEGORY5 OR BETTER CABLE PER ANSI/TIA/EIA-568-B.1 OR HIGHER. USE SOLID COPPER BETWEEN JACK BOXES. USE STRANDED COPPER PATCH CABLES 13ft (4m) TO CONNECT PXCC AND 20ft (6m) TO CONNECT SWITCH OR HUB.

PXCC WIRE SPECIFICATIONS

TABLE 2

	LOW-VOLTAGE POINT APPLICATIONS	POINT USAGE	ALN TRUNK	EALN
CABLE CONFIGURATION	TWISTED PAIR OR TSP	TWISTED PAIR (UNJACKETED) OR TSP	TWISTED SHIELDED PAIR	(4) TWISTED PAIR
GAUGE	#18 TO #22 AWG (STRANDED)	#18 TO #22 AWG (STRANDED)	24 AWG (STRANDED)	24AWG(STRANDED)
CAPACITANCE	n.a.	n.a.	12.5 pf/ft OR LESS	13 pf/ft OR LESS
TWISTS PER FOOT	6 MINIMUM	6 MINIMUM	6 MINIMUM	CATEGORY 5 Min
SHIELDS	NOT REQUIRED (IN CASE OF TSP, 100% FOIL W/ DRAIN WIRE)	NOT REQUIRED (IN CASE OF TSP, 100% FOIL W/ DRAIN WIRE)	100% FOIL W/ DRAIN WIRE	NOT REQUIRED
NEC CLASS	CM, CMP (75°C OR HIGHER)	NOT SPECIFIED	CM, CMP (75°C OR HIGHER)	MM, MMP
CEC CLASS	FT4, FT6 (75°C OR HIGHER)	NOT SPECIFIED	FT4, FT6 (75°C OR HIGHER)	NOT SPECIFIED
UL VOLTAGE RATING	NOT SPECIFIED	300 VAC ²	NOT SPECIFIED	NOT SPECIFIED
UL TEMP. RATING	NOT SPECIFIED	75°C (167°F)	NOT SPECIFIED	NOT SPECIFIED

- UL RECOGNIZED WIRE (LABELED WITH A BACKWARDS 'RU') IS NOT FIELD INSTALLABLE. USE ONLY UL-LISTED WIRE.
- 300 VAC WIRE CAN BE USED IN FIELD PANELS CONTAINING VOLTAGES BELOW 150 VAC.

MAXIMUM DO WIRE RUN LENGHTS

TABLE 3

NOMINAL INRUSH	STARTER SIZE	WIRE SIZE		
		#18	#16	#14
200 VA	0 1	500ft (152m)	900ft (274m)	1400ft (427m)
550 VA	2	200ft (61m)	300ft (91m)	500ft (152m)
1150 VA	3	100ft (30m)	150ft (46m)	250ft (76m)
1500 VA	4	70ft (21m)	100ft (30m)	200ft (61m)

TABLE 3 NOTES:

- DISTANCES SHOWN ASSURE LESS THAN 10% VOLTAGE DROP ACROSS THE WIRE FOR A TYPICAL STARTER.
- PXCC DO CONTACT RATINGS
4A @ 250VAC & 30VDC
SIZE 4 MOTOR STARTER
- WIRING LENGTHS SHOWN ARE FOR 120VOLTS.

MAXIMUM NUMBER HSTIE IN SERIES ON ALN TRUNK

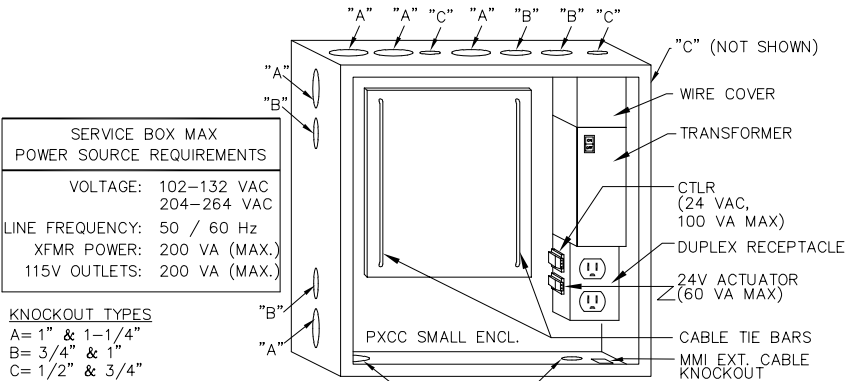
TABLE 4

SPEED	1200 BAUD	4800 BAUD	9600 – 38.4K BAUD	57.6K – 115.2K BAUD
SERIES TIE'S	10	7	6	
ALN TRUNK DISTANCE	4000ft (1.2km)	4000ft (1.2km)	4000ft (1.2km)	3280ft (1km)

- TIE MUST BE USED TO ISOLATE ALN BETWEEN PXCC CONNECTED TO DIFFERENT SERVICE GROUNDS OR ON BOTH SIDES OF THE ALN CABLE THAT EXITS BUILDING.
- THE MAX ALN DISTANCE APPLIES TO EACH SIDE OF THE TIE.

GENERAL NOTES:

- COMPLY WITH LOCAL BUILDING CODES
- SIZE WIRE FOR LOAD, CURRENT, AND VOLTAGE.
- ALL WIRE TO BE APPROVED OR LISTED FOR THE INTENDED APPLICATION BY AGENCIES SUCH AS UL, NEC, CSA.
- ALWAYS REFER TO LOCAL CODES FOR CONDUIT SHARING.
- WIRING MUST HAVE INSULATION RATED FOR HIGHEST VOLTAGE CIRCUIT IN CONDUIT.
- THE ALN TRUNK MUST BE AN UNINTERRUPTED RUN BETWEEN CABINETS. NO SPLICES ALLOWED.
- CM/CMP/MM/MMP WIRE IS NOT USABLE FOR CLASS 1 CIRCUITS.
- FOR EXTENDED TEMPERATURE INSTALLATIONS USE ONLY COPPER WIRE LISTED FOR 90°C OR HIGHER



P1 PXCC CONDUIT PENETRATIONS

PXCC FAMILY VA RATINGS & SENSOR SUPPLY		
PRODUCT	24VAC VA RATING	24VDC mA
PX COMPACT 16	18	100
PX COMPACT 24	20	100
PX COMPACT 36	35	200

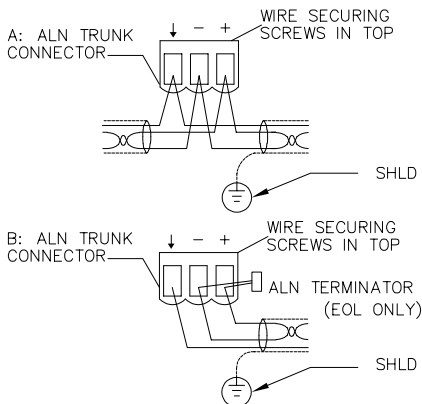
NOTES:

- NO MORE THAN SEVEN (7) FULLY LOADED PXCC CABINETS ALLOWED ON A SINGLE 3-WIRE CIRCUIT.
- RECEPTACLE IS PRE-WIRED AND MOUNTED IN FACTORY, FOR 115VAC SERVICE BOX ONLY.

P2 PXCC POWER WIRING

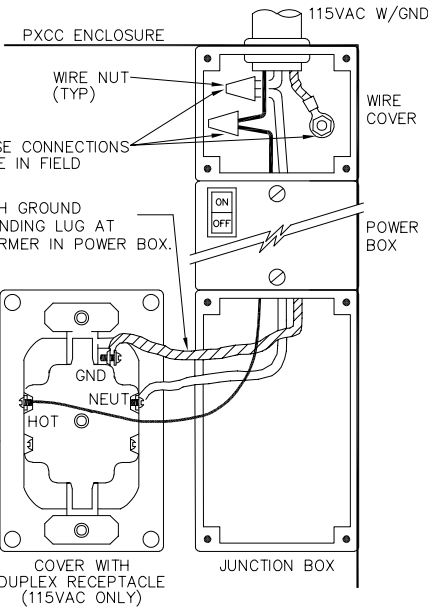
NOTES:

- COMMUNICATION CONNECTORS PLUG INTO PXCC.
- ALN MUST BE DAISEY-CHAINED WHEN RUNNING 19.2 k BAUD OR FASTER AND TRUNK TERMINATORS USED AT BOTH ENDS OF LINE P3C.
- TERMINATE SHIELD AT LEAVING END OF ALN TRUNK ONLY.
- USE ALN SHIELD TERMINATION P3A WHEN 24VAC E TERMINAL IS EARTH GROUNDED.
- USE ALN SHIELD TERMINATION P3B WHEN 24VAC E TERMINAL IS OPEN.



NOTE:
REFER TO "APOGEE WIRING GUIDELINES FOR FIELD PANELS AND EQUIPMENT CONTROLLERS (125-3002)" FOR FLN WIRING CONFIG'S.

P3 PXCC COMMN TERMINATIONS



PXCC ON ETHERNET CONNECTOR

E: EALN ETHERNET CONNECTOR RJ-45 SHIELDED JACK FOR ETHERNET PATCH CABLE

H: PXCC – HMI⁷ RJ45 JACK FOR RS232 SERVICE MODE SERIAL PRINTER OR PXCC
7. DO NOT INSERT RJ-11 6 PIN PLUG WITHOUT PIN 1 AND 8 VOIDS

G: USB DEVICE CONNECTOR



FOR LAPTOP

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

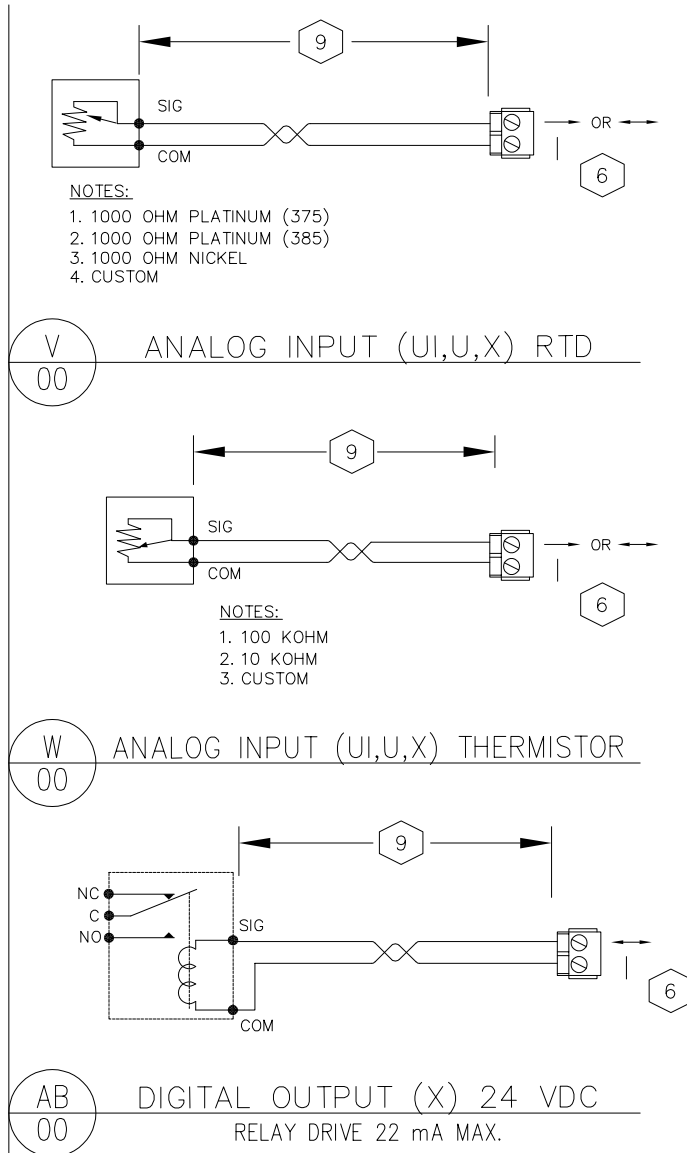
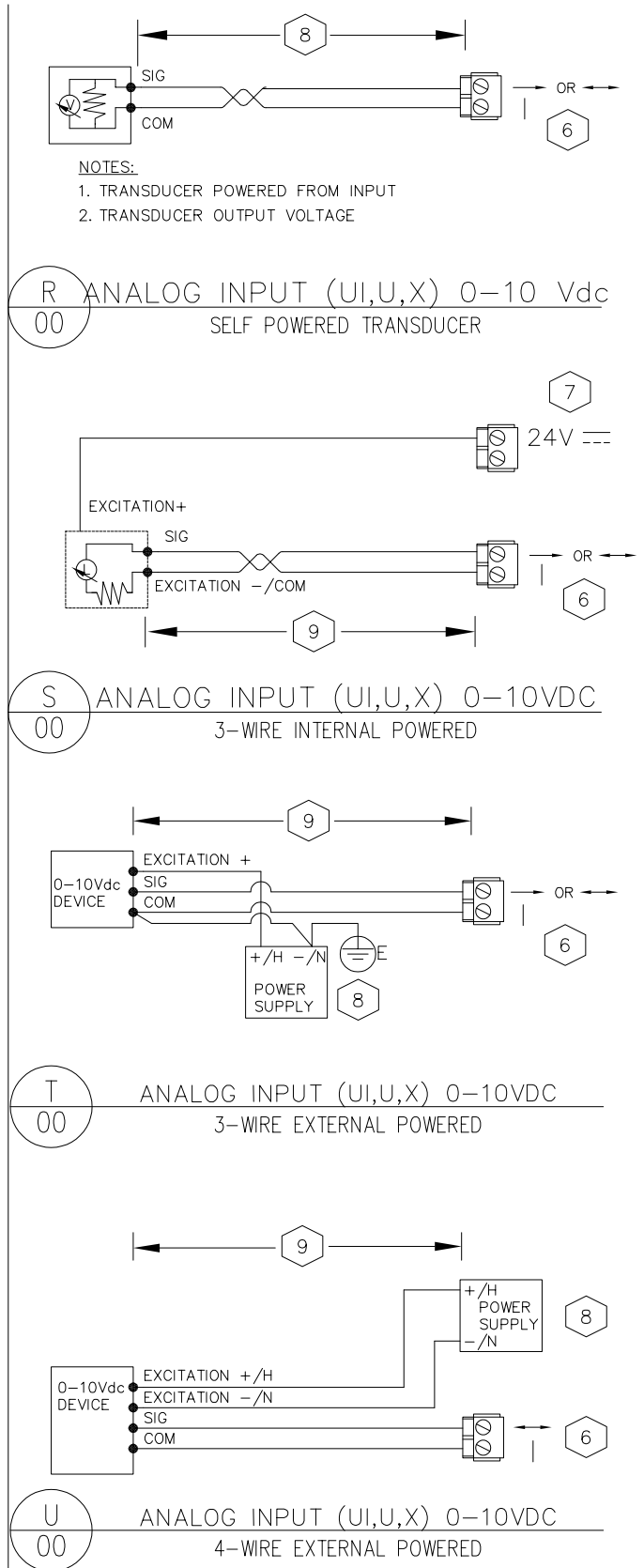
IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN

ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
----------------	---------------	------------	-----------------------------	----------------------------

PXCC Wiring Specification

440P397692
0

PWIR



Point Address Table for the PXC16.				
Point Type	Point Type Number	Terminals		PXC Point Address
		Signal ²	Common	
Universal Input (UI)	UI1	25	26	1
	UI2	27	26	2
	UI3	28	29	3
Universal Input/Output (U)	U4	30	29	4
	U5	31	32	5
	U6	33	32	6
	U7	34	35	7
	U8	36	35	8
Analog Output (AO)	A09	53	54	9
	A010	55	56	10
	A011	57	56	11
Digital Input (DI)	DI12	58	59	12
	DI13	60	59	13
Digital Output (DO)	DO14	4, 5, 6		14
	DO15	7, 8, 9		15
	DO16	10, 11, 12		16

Point Address Table for the PXC24.				
Point Type	Point Type Number	Terminals		PXC Point Address
		Signal ²	Common	
Universal Input (UI)	UI1	25	26	1
	UI2	27	26	2
	UI3	28	29	3
Universal Input/Output (U)	U4	30	29	4
	U5	31	32	5
	U6	33	32	6
	U7	34	35	7
	U8	36	35	8
	U9	41	42	9
	U10	43	42	10
	U11	44	45	11
	U12	46	45	12
	X13 (U13) ¹	47	48	13
Super Universal Input/Output (X) ¹	X14 (U14) ¹	49	48	14
	X15 (U15) ¹	50	51	15
	X16 (U16) ¹	52	51	16
Analog Output (AO)	A017	53	54	17
	A018	55	56	18
	A019	57	56	19
Digital Output (DO)	DO20	4, 5, 6		20
	DO21	7, 8, 9		21
	DO22	10, 11, 12		22
	DO23	13, 14, 15		23
	DO24	16, 17, 18		24

Point Address Table for the PXC36.				
Point Type	Point Type Number	Terminals		PXC Point Address
		Signal ²	Common	
Super Universal Input/Output (X) ¹	X1	30	31	1
	X2	32	31	2
	X3	33	34	3
	X4	35	34	4
	X5	36	37	5
	X6	38	37	6
	X7	39	40	7
	X8	41	40	8
Universal Input/Output (U)	U9	50	51	9
	U10	52	51	10
	U11	53	54	11
	U12	55	54	12
	U13	56	57	13
	U14	58	57	14
	U15	59	60	15
	U16	61	60	16
	U17	62	63	17
	U18	64	63	18
	U19	65	66	19
	U20	67	66	20
	U21	68	69	21
	U22	70	69	22
	U23	71	72	23
	U24	73	72	24
Digital Input (DI)	DI25	74	75	25
	DI26	76	75	26
	DI27	77	78	27
	DI28	79	78	28
Digital Output (DO)	DO29	4,5,6		29
	DO30	7,8,9		30
	DO31	10,11,12		31
	DO32	13,14,15		32
	DO33	16,17,18		33
	DO34	19,20,21		34
	DO35	22,23,24		35
	DO36	25,26,27		36

Notes:

1. FOR PRE-PXC24.2 CONTROLLERS, POINTS 13-16 WERE UNIVERSAL I/O POINTS INSTEAD OF THE CURRENT SUPER UNIVERSAL I/O POINTS.

2. FOR THE APPROPRIATE TERMINAL SYMBOL, PLEASE REFER TO THE RESPECTIVE POINT TYPE COLUMN.

3. THE Common TERMINAL IS ALWAYS THE FOLLOWING SYMBOL: |

4. SEE BELOW FOR DIGITAL OUTPUT SYMBOL:

NC
C
NO

<div>Siemens Industry, Inc.</div> <div>Valve Schedule</div> <div>Job Name: IU - MCNUTT CENTRAL RENOVATION</div> <div>Job Number: 44OP-397692</div> <div>Revision: 0</div> <div>Date: 4/24/2025</div> <div>System: AHU Valves</div>																			
Number	Unit ID	Valve Tag	Q'ty	Product Number	Line Sizes (in.)	Valve Sizes (in.)	onfiguratio	Body Style	Calculate d Cv	Actual Cv	Failsafe	Flow (GPM)	Design P.D	Actual P.D	Close-Off (psi)	Control Signal	Voltage	Document Number	Comment
1	AHU-6	AHU-6 HCV	1	274-03164	1.00	0.50	2W/Sng	Globe	1.79	2.50	NO-SR	4.00	5.00	2.56	250	0-10VDC	24 VAC	155-772	
2	AHU-6	AHU-6 CCV	1	274-03167	1.50	1.00	2W/Sng	Globe	8.50	10.00	NO-SR	19.00	5.00	3.61	201	0-10VDC	24 VAC	155-772	

Notes:

All control valves and wells shall be installed by the mechanical contractor

Flow units are in GPM (Water) lbs/hr (Steam)

Failsafe Notation: NSR = Non-Spring Return, SR = Spring Return, FS = Failsafe

Valve Configuration Notation: 2W = 2-Way, 3W = 3-Way

Seating Notation: Sng = Single Seated, Dbl = Double Seated

Siemens Industry, Inc.
Job Name: IU - MCNUTT CENTRAL RENOVATION
Job Number: 44OP-397692
Revision: 0
Date: 4/24/2025

Valve Schedule

System: Air Terminal Unit Valves

Number	Unit ID	Valve Tag	Q'ty	Product Number	Line Sizes (in.)	Valve Sizes (in.)	Configuration	Body Style	Calculated Cv	Actual Cv	Failsafe	Flow (GPM)	Design P.D	Actual P.D	Close-Off (psi)	Control Signal	Voltage	Document Number	Comment
1	TU-301	TU-301 RHV	1	259-02034	N/A	0.50	2W/Sng	Globe	0.80	1.00	NO-NSR	1.80	5.00	3.24	120	Floating	24 VAC	155-306P25	
2	TU-302	TU-302 RHV	1	259-02032	N/A	0.50	2W/Sng	Globe	0.45	0.63	NO-NSR	1.00	5.00	2.52	120	Floating	24 VAC	155-306P25	
3	TU-303	TU-303 RHV	1	259-02032	N/A	0.50	2W/Sng	Globe	0.45	0.63	NO-NSR	1.00	5.00	2.52	120	Floating	24 VAC	155-306P25	
4	TU-304	TU-304 RHV	1	259-02034	N/A	0.50	2W/Sng	Globe	0.67	1.00	NO-NSR	1.50	5.00	2.25	120	Floating	24 VAC	155-306P25	
5	TU-305	TU-305 RHV	1	259-02034	N/A	0.50	2W/Sng	Globe	0.67	1.00	NO-NSR	1.50	5.00	2.25	120	Floating	24 VAC	155-306P25	
6	TU-306	TU-306 RHV	1	259-02032	N/A	0.50	2W/Sng	Globe	0.45	0.63	NO-NSR	1.00	5.00	2.52	120	Floating	24 VAC	155-306P25	
7	TU-307	TU-307 RHV	1	259-02032	N/A	0.50	2W/Sng	Globe	0.45	0.63	NO-NSR	1.00	5.00	2.52	120	Floating	24 VAC	155-306P25	
8	TU-308	TU-308 RHV	1	259-02032	N/A	0.50	2W/Sng	Globe	0.54	0.63	NO-NSR	1.20	5.00	3.63	120	Floating	24 VAC	155-306P25	

System: Air Terminal Unit Valves																			
Number	Unit ID	Valve Tag	Q'ty	Product Number	Line Sizes (in.)	Valve Sizes (in.)	Configuration	Body Style	Calculated Cv	Actual Cv	Failsafe	Flow (GPM)	Design P.D	Actual P.D	Close-Off (psi)	Control Signal	Voltage	Document Number	Comment

Notes:

All control valves and wells shall be installed by the mechanical contractor

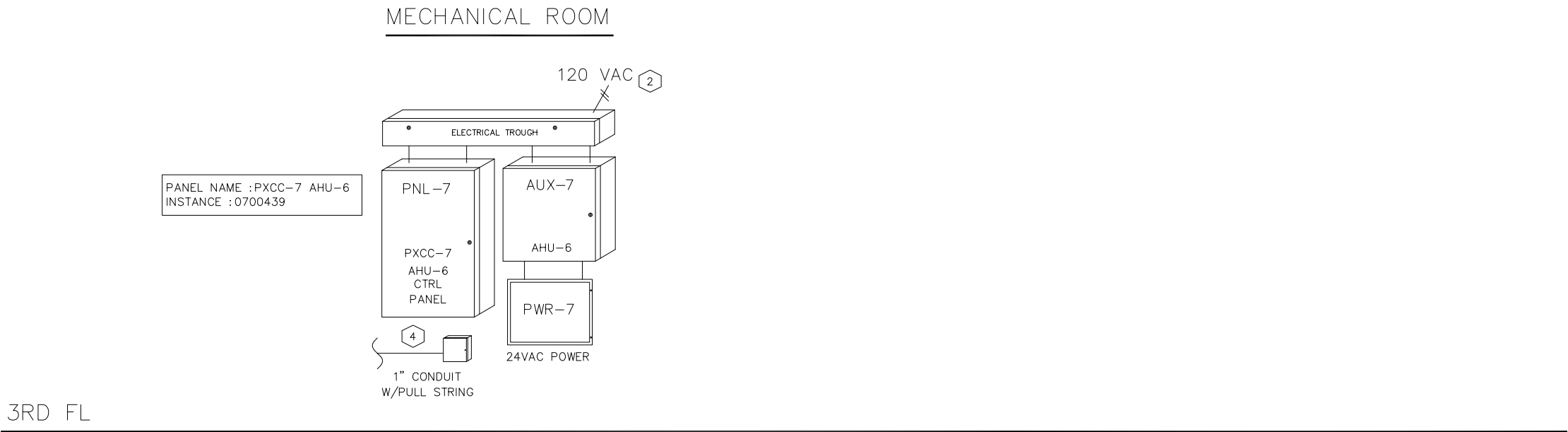
Flow units are in GPM (Water) lbs/hr (Steam)

Failsafe Notation: NSR = Non-Spring Return, SR = Spring Return, FS = Failsafe

Valve Configuration Notation: 2W = 2-Way, 3W = 3-Way

Seating Notation: Sng = Single Seated, Dbl = Double Seated

- INSTALLATION NOTES:
- 1 REFER TO PLAN H203 FOR MORE DETAIL ON CONTROL PANEL LOCATIONS.
 - 2 POWER TO IDC PANELS BY DIVISION 26 ELECTRICAL AS STATED IN CONTRACT DOCUMENTS. POWER THAT IS NOT INDICATED IN CONTRACT DOCUMENTS BUT IS REQUIRED FOR BUILDING AUTOMATION SYSTEM1 (BAS) SHALL BE THE RESPONSIBILITY OF THE CONTROLS INSTALLATION CONTRACTOR (CIC).
 - 3 CIC TO PROVIDE BARRIER FOR SEPARATION WITHIN THE ELECTRIC TROUGH OF LOW VOLTAGE WIRE AND 120V POWER WIRING.
 - 4 CIC TO RUN 1" CONDUIT FROM JUNCTION BOX LOCATED NEXT TO SIEMENS PANEL TO OUTSIDE OF MECHANICAL ROOM. CIC TO INCLUDE PULL STRING. CIC TO RUN 1" CONDUIT FROM FUNCTION BOX TO SIEMENS PANEL. DATA CONTRACTOR TO PULL CABLE AND TERMINATE.
 - 5 TRANSFORMER PANELS TO BE LOCATED AS SHOWN ON ELECTRICAL DRAWINGS. MOUNTING AND FIELD WIRING BY CIC, POWER WIRING BY EC.



1
R01

SYSTEM NETWORK DIAGRAM

SERVES: BACNET IP

REVISION HISTORY				<div>SIEMENS</div> <div>SIEMENS INDUSTRY INC. SMART INFRASTRUCTURE DIVISION</div>	<div>3502 WOODVIEW TRACE SUITE 240 INDIANAPOLIS, IN 46268 UNITED STATES PHONE: 317-293-8880 FAX: 317-293-0374</div>	<div>IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN</div>					<div>440P397692 0 R01</div>
0	4/25/2025	HB	SUBMITTAL SET			ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25	
						SYSTEM RISER					

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AUX 7	1	567-352	SIEMENS	155 272	#3 PNEU PANEL 24X24X9
PNL 7	1	PXA-ENC34	SIEMENS	149475	ENCLOSURE ASSY 34
	1	PXA-SB115V192VA	SIEMENS	588783	SERVICE BOX 115V, 24VAC, 192VA
PWR 7	1	PSH500A-LVC	FUNCTIONAL		Power Supply HILO 100Vx5 multi-tap

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN

ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
----------------	---------------	------------	-----------------------------	----------------------------

SYSTEM RISER BOM

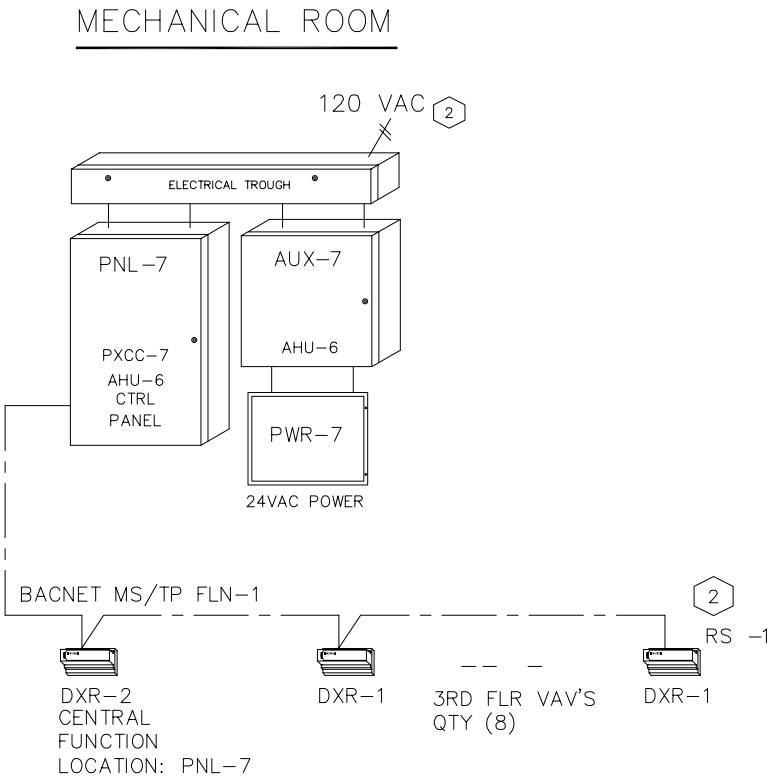
440P397692
0

R01A

© COPYRIGHT 1994-2025 SIEMENS INDUSTRY INC. ALL RIGHTS RESERVED

INSTALLATION NOTES:

- 1 SEE SYSTEM ARCHITECTURE DRAWING FOR DETAILS AND NOTES.
- 2 CIC TO INSTALL END-OF-LINE RESISTOR RS-1.



BLDG	PANEL	FLN	MAC ADDR	MARK	ROOM #	ROOM DESCRIPTION	CONTROLLER	SYSTEM NAME	INSTANCE NUMBER	FLOOR	POWER SUPPLY	CIRCUIT	POWER VA	MECH DWG
439	PXCC-7 AHU-6	1	6	TU-301	C301	1-BEDROOM APARTMENT	DXR	VAVC301439	0706439	3RD	PWR-7	1	13.3	H203
439	PXCC-7 AHU-6	1	7	TU-302	C303B	BEDROOM 2	DXR	VAVC303B439	0707439	3RD	PWR-7	1	13.3	H203
439	PXCC-7 AHU-6	1	8	TU-303	C303A	BEDROOM 1	DXR	VAVC303A439	0708439	3RD	PWR-7	1	13.3	H203
439	PXCC-7 AHU-6	1	1	TU-304	C303	2-BEDROOM APARTMENT	DXR	VAVC303439	0701439	3RD	PWR-7	2	13.3	H203
439	PXCC-7 AHU-6	1	2	TU-305	C304	2-BEDROOM APARTMENT	DXR	VAVC304439	0702439	3RD	PWR-7	2	13.3	H203
439	PXCC-7 AHU-6	1	3	TU-306	C304A	BEDROOM 1	DXR	VAVC304A439	0703439	3RD	PWR-7	2	13.3	H203
439	PXCC-7 AHU-6	1	4	TU-307	C304B	BEDROOM 2	DXR	VAVC304B439	0704439	3RD	PWR-7	2	15.3	H203
439	PXCC-7 AHU-6	1	5	TU-308	C399	CORRIDOOR	DXR	VAVC399439	0705439	3RD	PWR-7	2	15.3	H203

1
R02

PXCC-7 MS/TP NETWORK

SERVES: BACNET MS/TP

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB		04/25/25	04/25/25

PNL-7 MSTP DXR NETWORK

440P397692
0

R02

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Panel Mounted Devices					
DXR 1	1	DXR2.M11-101B	SIEMENS	A6V10502834	DXR2.M11 Room Automation Station
RS 1	1	550-975P100	SIEMENS		RS485 NETWORK END-OF-LINE TERMINATORS

REVISION HISTORY				
0	4/25/2025	HB	SUBMITTAL SET	

SIEMENS

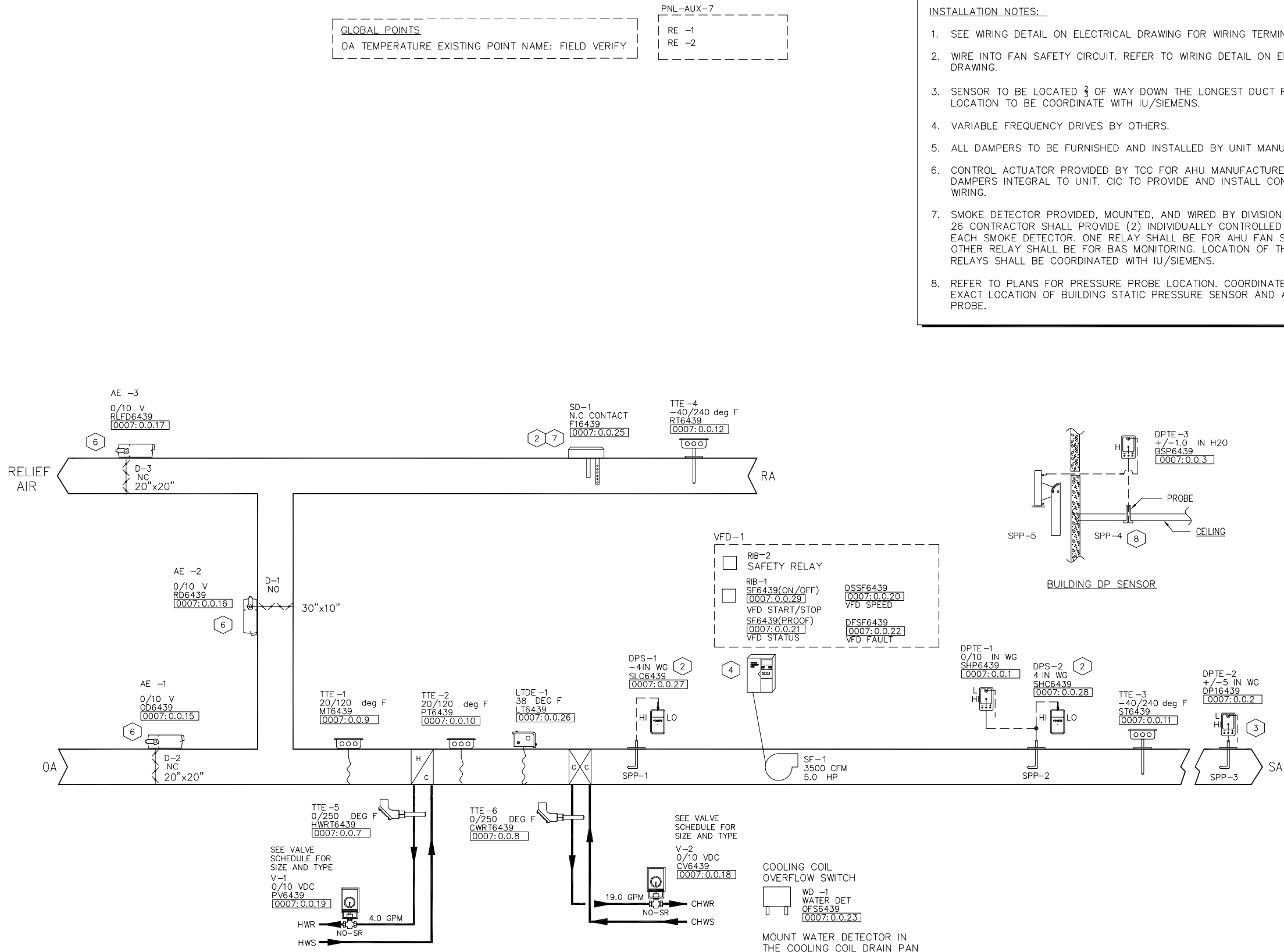
SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN				
ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
PNL-7 MSTP DXR NETWORK BOM				

440P397692
0

R02A



- INSTALLATION NOTES:
- SEE WIRING DETAIL ON ELECTRICAL DRAWING FOR WIRING TERMINATIONS.
 - WIRE INTO FAN SAFETY CIRCUIT. REFER TO WIRING DETAIL ON ELECTRICAL DRAWING.
 - SENSOR TO BE LOCATED $\frac{3}{4}$ OF WAY DOWN THE LONGEST DUCT RUN. EXACT LOCATION TO BE COORDINATE WITH IU/SIEMENS.
 - VARIABLE FREQUENCY DRIVES BY OTHERS.
 - ALL DAMPERS TO BE FURNISHED AND INSTALLED BY UNIT MANUFACTURER.
 - CONTROL ACTUATOR PROVIDED BY TCC FOR AHU MANUFACTURER CONTROL DAMPERS INTEGRAL TO UNIT. CIC TO PROVIDE AND INSTALL CONTROL AND POWER WIRING.
 - SMOKE DETECTOR PROVIDED, MOUNTED, AND WIRED BY DIVISION 26. THE DIVISION 26 CONTRACTOR SHALL PROVIDE (2) INDIVIDUALLY CONTROLLED RELAYS FOR EACH SMOKE DETECTOR. ONE RELAY SHALL BE FOR AHU FAN SHUTDOWN, THE OTHER RELAY SHALL BE FOR BAS MONITORING. LOCATION OF THE FIRE ALARM RELAYS SHALL BE COORDINATED WITH IU/SIEMENS.
 - REFER TO PLANS FOR PRESSURE PROBE LOCATION. COORDINATE WITH OWNER FOR EXACT LOCATION OF BUILDING STATIC PRESSURE SENSOR AND ASSOCIATED PROBE.

REF#	FIELD PANEL NAME	FIELD PANEL NODE NAME
0007	PXCC-7 AHU-6	PXCC-7AHU-6

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46288
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

IU - MCNUTT CENTRAL RENO
IU PROJECT #20241428, IN

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB	HB	04/25/25	04/25/25

AHU-6 CONTROL

440P397692

0

100

REVISION HISTORY		
0	4/25/2025	HB SUBMITTAL SET

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISIONFAX: 317-293-0374

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880

ENGINEER
HB

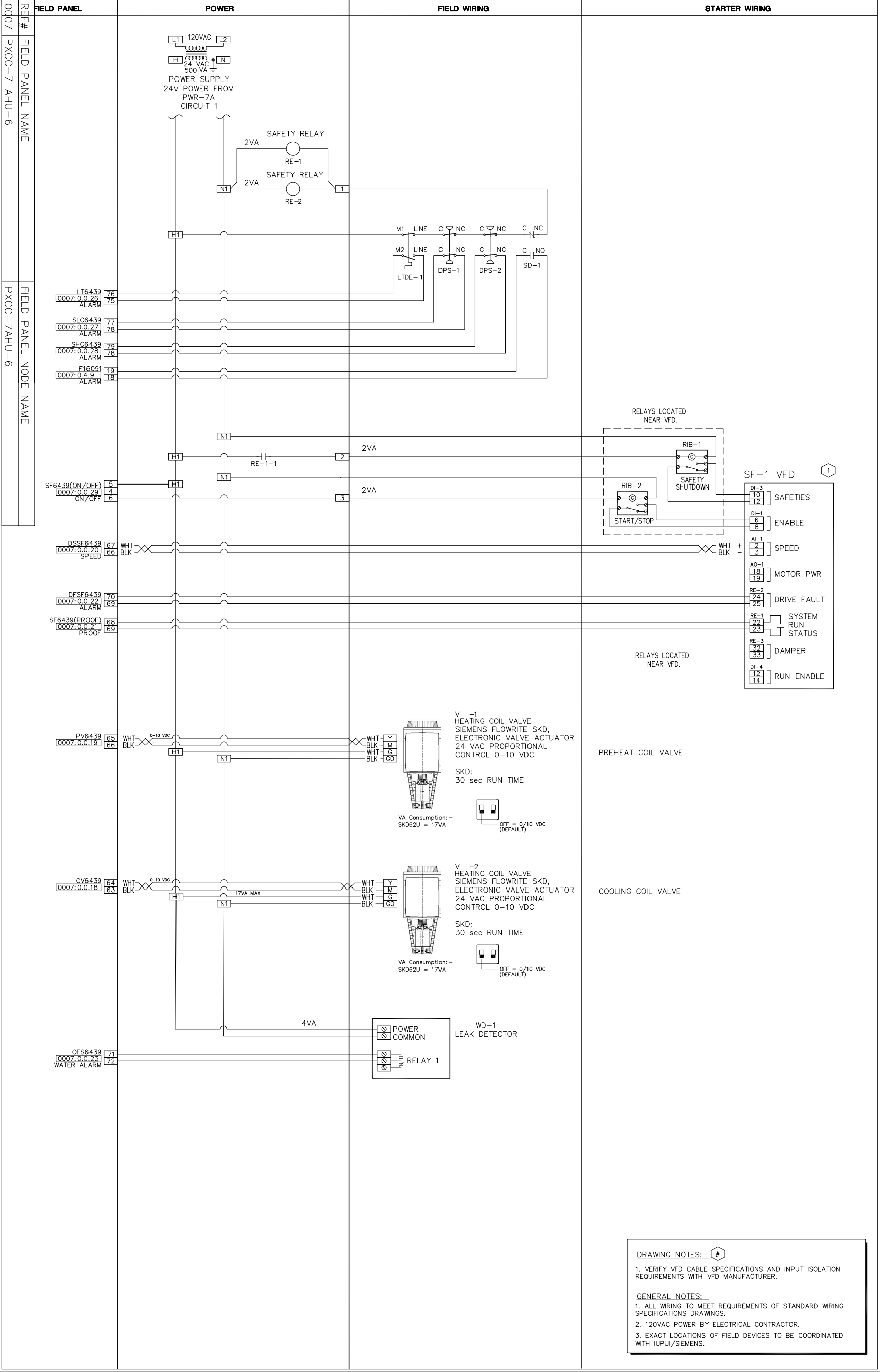
DRAFTER
HB

CHECKED BY
04/25/25

INITIAL RELEASE
04/25/25

LAST EDIT DATE

440P397692
0
100A



DRAWING NOTES: #

1. VERIFY VFD CABLE SPECIFICATIONS AND INPUT ISOLATION REQUIREMENTS WITH VFD MANUFACTURER.

GENERAL NOTES:

1. ALL WIRING TO MEET REQUIREMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS.

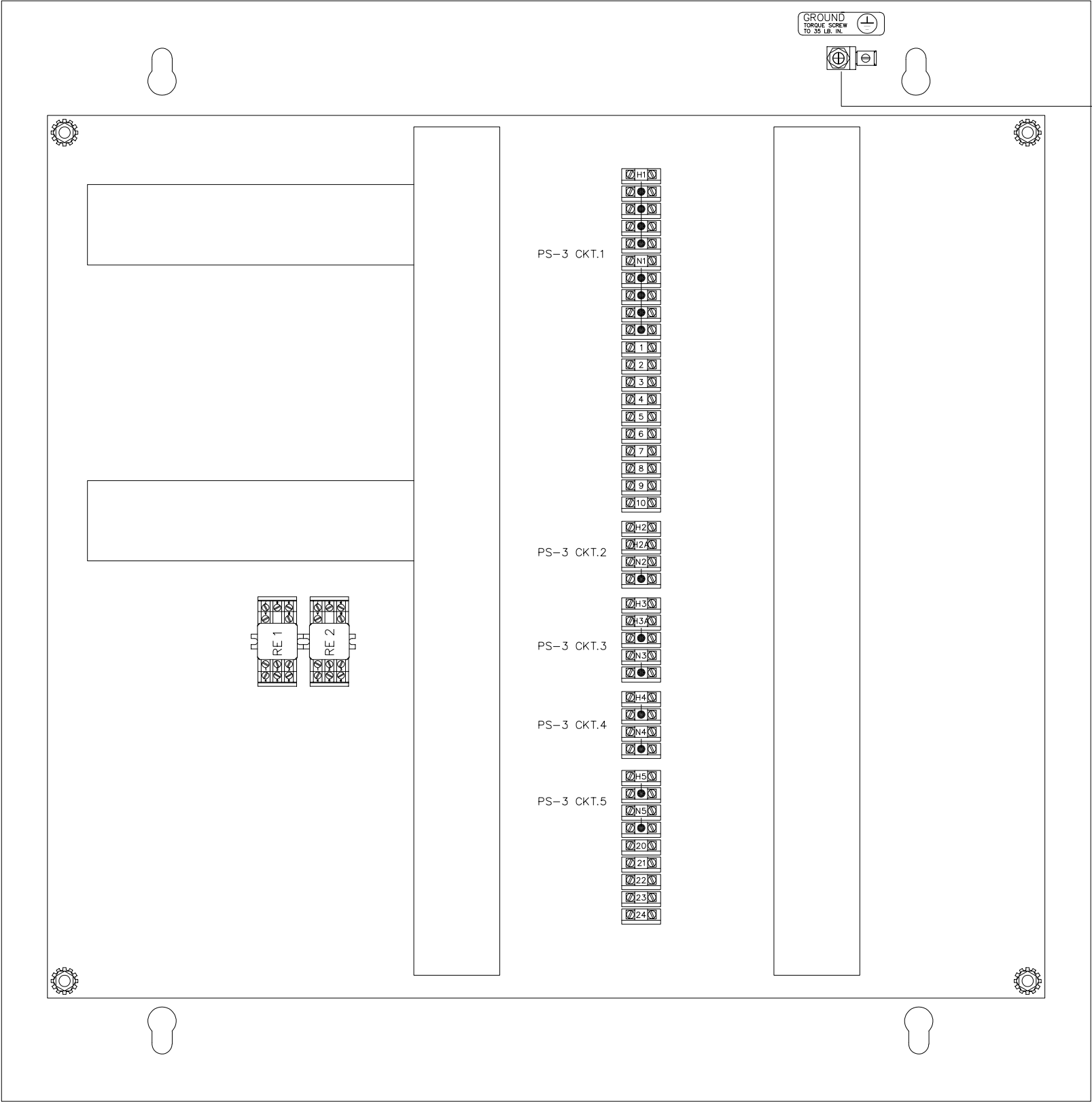
2. 120VAC POWER BY ELECTRICAL CONTRACTOR.

3. EXACT LOCATIONS OF FIELD DEVICES TO BE COORDINATED WITH IUPUI/SIEMENS.

STARTER / VFD / PACKAGED CONTROLLER WIRING				FIELD WIRING				COMPONENT PANEL / POWER				FIELD PANEL			
<div>OUTSIDE AIR DAMPER ACTUATOR</div> <div>RETURN AIR DAMPER ACTUATOR</div> <div>RELIEF AIR DAMPER ACTUATOR</div> <div>GENERAL NOTES: 1. ALL WIRING TO MEET REQUIREMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS. 2. 120VAC POWER BY ELECTRICAL CONTRACTOR. 3. EXACT LOCATIONS OF FIELD DEVICES TO BE COORDINATED WITH IUPUI/SIEMENS.</div>				<div>AE - 1 0/10 V ELECTRONIC DAMPER ACTUATOR OPENAIR GMA SERIES SPRING RETURN 24 Vac, 0 to 10 Vdc GMA = 62 lb-in TORQUE VA Consumption: - GMA161.1U/P = 5VA</div> <div>AE - 2 0/10 V ELECTRONIC DAMPER ACTUATOR OPENAIR GMA SERIES SPRING RETURN 24 Vac, 0 to 10 Vdc GMA = 62 lb-in TORQUE VA Consumption: - GMA161.1U/P = 5VA</div> <div>AE - 3 0/10 V ELECTRONIC DAMPER ACTUATOR OPENAIR GMA SERIES SPRING RETURN 24 Vac, 0 to 10 Vdc GMA = 62 lb-in TORQUE VA Consumption: - GMA161.1U/P = 5VA</div>				<p>24V POWER FROM PWR-2 CIRCUIT 2 100VA</p> <p>RE-2-1</p> <p>WHT + BLK -</p> <p>WHT BLK</p> <p>0-10 Vdc</p> <p>WHT + BLK -</p> <p>WHT BLK</p> <p>0-10 Vdc</p> <p>WHT + BLK -</p> <p>WHT BLK</p> <p>0-10 Vdc</p>				<div>REF# FIELD PANEL NAME</div> <div>0007 PXCC-7 AHU-6</div> <div>FIELD PANEL NODE NAME</div> <div>PXCC-7AHU-6</div>			
				<div>SIEMENS</div> <div>3502 WOODVIEW TRACE SUITE 240 INDIANAPOLIS, IN 46268 UNITED STATES PHONE: 317-293-8880 SMART INFRASTRUCTURE DIVISIONFAX: 317-293-0374</div>				<div>IU - MCNUTT CENTRAL RENO</div> <div>IU PROJECT #20241429, IN</div> <div>ENGINEER DRAFTER CHECKED BY INITIAL RELEASE LAST EDIT DATE</div> <div>HB HB 04/25/25 04/25/25</div> <div>AHU-6 ELEC. WIRING 2</div>							

440P3976920

100B



1
100D

AHU COMPONENT PANEL
LOCATION: REFER TO FLOOR PLAN

REVISION HISTORY

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB		04/25/25	04/25/25

AHU-6 AUX PANEL LAYOUT

440P397692
0

100D

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE 1–3	3	GMA161.1P	SIEMENS	154004	MOD SR 24V,62LBIN,PLM
DPS 1–2	2	AFS–460–DSS	KELE INC		2–12in SWITCH W/2 SPST CONTACTS
DPTE 1	1	2641010WD11A1C	SETRA	0608cut003	DP TRAN AIR,1%,+/-1" ENC
DPTE 2	1	2641005WB11A1C	SETRA	0608cut003	DP TRAN AIR,1%,+/-5" ENC
DPTE 3	1	2641001WB11A1C	SETRA	0608cut003	DP TRAN AIR,1%,+/-1" ENC
HTTE 1	1	QFM3171	SIEMENS	149991	DUCT RH & TEMP SENSOR, 4–20mA, 2%
LTDE 1	2	134–1504	SIEMENS	155 016	T'STAT, LOW TEMP,15/55,MANUAL
	6	M–648–K	KELE INC		CAPILLARY MOUNTING CLIP–INDIVIDUAL PIECE
RIB 1–2	2	RIBU1C	FUNCTIONAL DEVICES	1208cut013	RIB 120VAC 24VAC/DC SPDT
SPP 1–3	3	269–062	SIEMENS		PR269 ACCESSORY, SENSING TUBE
SPP 4	1	RPS–W	KELE		ROOM STATIC PRESSURE SENSOR–WHITE
SPP 5	1	A–306	DWYER	1011cut060	STATIC PRESSURE SENSOR OUTDOOR
TTE 1–2	2	QAM2012.750	SIEMENS	149916	DUCT AVG TEMP, PT 1K OHM(385), 24' FLEX
TTE 3	1	QAM2012.045	SIEMENS	149915	DUCT PNT TEMP, PT 1K OHM(385), 18" RIGID
TTE 4–5	2	QAE2012.005	SIEMENS	149919	IMMERSION TMP SNSR, PT 1K OHM(385) 2.5"
WD 1	1	WD–1B–C	KELE INC		WATER DETECTOR SPDT W/DEENERGIZED RELAY
Panel Mounted Devices					
RE 1	1	RH2B–UL–AC24VKIT	IDEC	1202cut016	RELAY&SOC,GP DPDT AC24V W/LED
RE 2	1	RH2B–UL–AC24VKIT	IDEC	1202cut016	RELAY&SOC,GP DPDT AC24V W/LED

AIR HANDLING UNIT AHU-6 SEQUENCE OF OPERATION

TCC SHALL PROVIDE AND CIC SHALL INSTALL A TEMPERATURE CONTROL PANEL TO HOUSE THE EQUIPMENT REQUIRED TO CONTROL THE AIR HANDLING UNIT. SEE MECHANICAL DRAWING FOR ADDITIONAL REQUIREMENTS.

SUPPLY FAN START/STOP: (1) SUPPLY FANS WILL BE STARTED ACCORDING TO THE OPERATING SCHEDULE OR MANUALLY AS SELECTED BY THE OPERATOR. MINIMUM RUN TIME SHALL BE 30 MINUTES (ADJ). IF THE SUPPLY FAN STATUS DOES NOT MATCH THE COMMANDED VALUE, AN ALARM SHALL BE GENERATED. WHEN THE SUPPLY FAN STATUS INDICATES THE FAN STARTED, THE CONTROL SEQUENCE WILL BE ENABLED.

SUPPLY DUCT STATIC PRESSURE CONTROL: THE SUPPLY FAN WILL MODULATE TO MAINTAIN THE DISCHARGE STATIC PRESSURE AT SETPOINT. THE INITIAL SETPOINT MAXIMUM SHALL BE 1.5” WITH A MINIMUM OF .5”. BOTH SETTINGS SHALL BE DETERMINED BY THE BALANCE CONTRACTOR. SENSOR SHALL BE LOCATED 2/3 OF THE WAY DOWN THE MAIN DUCT RUN.

DISCHARGE TEMPERATURE CONTROL: THE MIXED AIR DAMPERS, PREHEAT VALVE AND COOLING VALVE SHALL MODULATE TO MAINTAIN THE FOLLOWING DISCHARGE AIR TEMPERATURE SCHEDULE:

THE MIXED AIR DAMPERS WITH MODULATE TO MAINTAIN THE MIXED AIR TEMPERATURE SETPOINT.

THE PREHEAT VALVE WILL MODULATE TO MAINTAIN THE PREHEAT AIR TEMPERTURE SETPOINT

THE COOLING COIL WILL MODULAT TO MAINTAIN THE DESIRED DISCHARGE AIR TEMPERATURE SETPOINT.

OUTSIDE AIR TEMPERATURE	DISCHARGE TEMPERATURE
0F	62F
32F	60F
70F	55F

ECONOMIZER SWITCHOVER: WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 70 DEG F (ADJ), THE ECONOMIZER MODE SHALL BE ENABLED.

BUILDING STATIC PRESSURE CONTROL: THE RELIEF DAMPER WILL MODULATE TO MAINTAIN A SLIGHTLY POSITIVE BUILDING PRESSURE AT SETPOINT.

SAFETY: ALL OF THE SAFETY DEVICES ARE MANUAL RESET; THE DEVICE THAT HAS TRIPPED MUST BE MANUALLY RESET BEFORE RESTARTING THE AIR HANDLING UNIT. THE SUPPLY FAN WILL BE SHUTDOWN IF ANY OF THE FOLLOWING OCCUR:

–IF A TEMPERATURE LOW LIMIT SWITCH SENSES A TEMPERATURE BELOW 38F (ADJ). LOW LIMIT TO BE LOCATED ON THE DISCHARGE SIDE OF THE PREHEAT COIL.

–IF A FIRE ALARM SHUTDOWN CONTACT IS PROVIDED,

–IF A HIGH STATIC PRESSURE SWITCH LOCATED AFTER THE SUPPLY FAN SENSES A DISCHARGE PRESSURE THAT IS GREATER THAN 5” W.C. (ADJ)

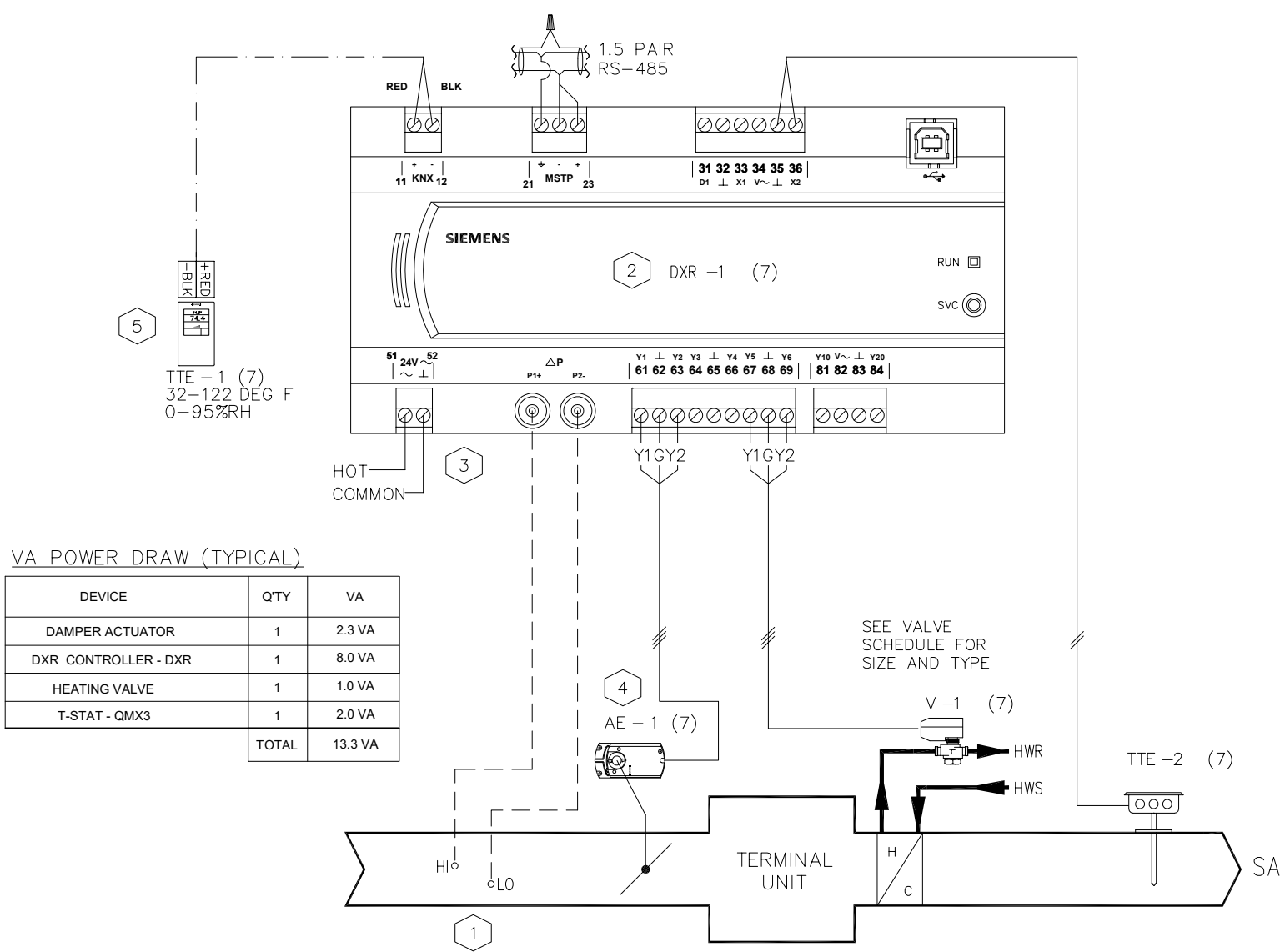
SHUTDOWN: WHEN THE UNIT IS SHUTDOWN BY EITHER A STOP COMMAND OR SYSTEM SAFETY THE UNIT WILL BE SET AS FOLLOWS:

SUPPLY FAN WILL BE OFF, OUTSIDE AIR DAMPER WILL CLOSE, RETURN AIR DAMPER WILL OPEN, CHILLED WATER VALVE SHALL CLOSE, PREHEAT VALVE SHALL MODULATE TO MAINTAIN A PREHEAT DISCHARGE TEMPERATURE (PH–T) OF 60F (ADJ.)

REVISION HISTORY			
0	4/25/2025	HB	SUBMITTAL SET

SIEMENS	3502 WOODVIEW TRACE SUITE 240 INDIANAPOLIS, IN 46268 UNITED STATES PHONE: 317-293-8880 FAX: 317-293-0374		IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN	
SIEMENS INDUSTRY INC. SMART INFRASTRUCTURE DIVISION		ENGINEER HB	DRAFTER HB	CHECKED BY INITIAL RELEASE 04/25/25
		LAST EDIT DATE 04/25/25		
		AHU-1 CONTROL BOM & SOO		

440P397692 0
100E



VA POWER DRAW (TYPICAL)

DEVICE	Q'TY	VA
DAMPER ACTUATOR	1	2.3 VA
DXR CONTROLLER - DXR	1	8.0 VA
HEATING VALVE	1	1.0 VA
T-STAT - QMX3	1	2.0 VA
TOTAL		13.3 VA

- INSTALLATION NOTES:
- VAV BOX INSTALLED BY MECHANICAL CONTRACTOR WITH 3 TO 5 STRAIGHT DUCT DIAMETERS UPSTREAM OF BOX TO PROVIDE PROPER FLOW SENSING
 - DXR TO BE MOUNTED IN MANUFACTURER SUPPLIED CONTROLLER ENCLOSURE. CIC FIELD MOUNTED FOR DXR AND ALL CONTROL DEVICES.
 - REFER TO BUILDING POWER TRUNK DRAWING FOR 24 VAC POWER
 - CLOSE DAMPER FULLY. MOUNT ACTUATOR AND SECURE TO SHAFT. PUSH ACT'R OVERRIDE BUTTON AND ROTATE DAMPER TO FULL OPEN. AE-1 TO BE FACTORY MOUNTED AND WIRED BY THE VAV BOX MANUFACTURER.
 - LOCATE AS SHOWN ON FLOOR PLANS/CONTRACT DOCUMENTS

1
400
VAV W/ HW REHEAT
TYPICAL OF Q'TY: (7)
LOCATION: SEE FLN DEVICE SCHEDULE
SERVES: SEE FLN DEVICE SCHEDULE
BASE APPLICATION: 14023

REVISION HISTORY				
0	4/25/2025	HB	SUBMITTAL SET	

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN				
ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
VAV BOX W REHEAT COIL				

440P397692
0
400

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE1	7	GDE131.1P	SIEMENS	154 011	ACT NSR PLENUM 24/108L 5Nm
DXR1	7	DXR2.M12P-102B	SIEMENS	A6V10502838	DXR2.M12P Room Automation Station
TTE1	7	QMX3.P44	SIEMENS		QMX3 ROOM TEMP, RH WITH DISPLAY
TTE2	7	QAM2030.010	SIEMENS	149915	DUCT POINT TEMP, 10K OHM TYPE 2, 4"

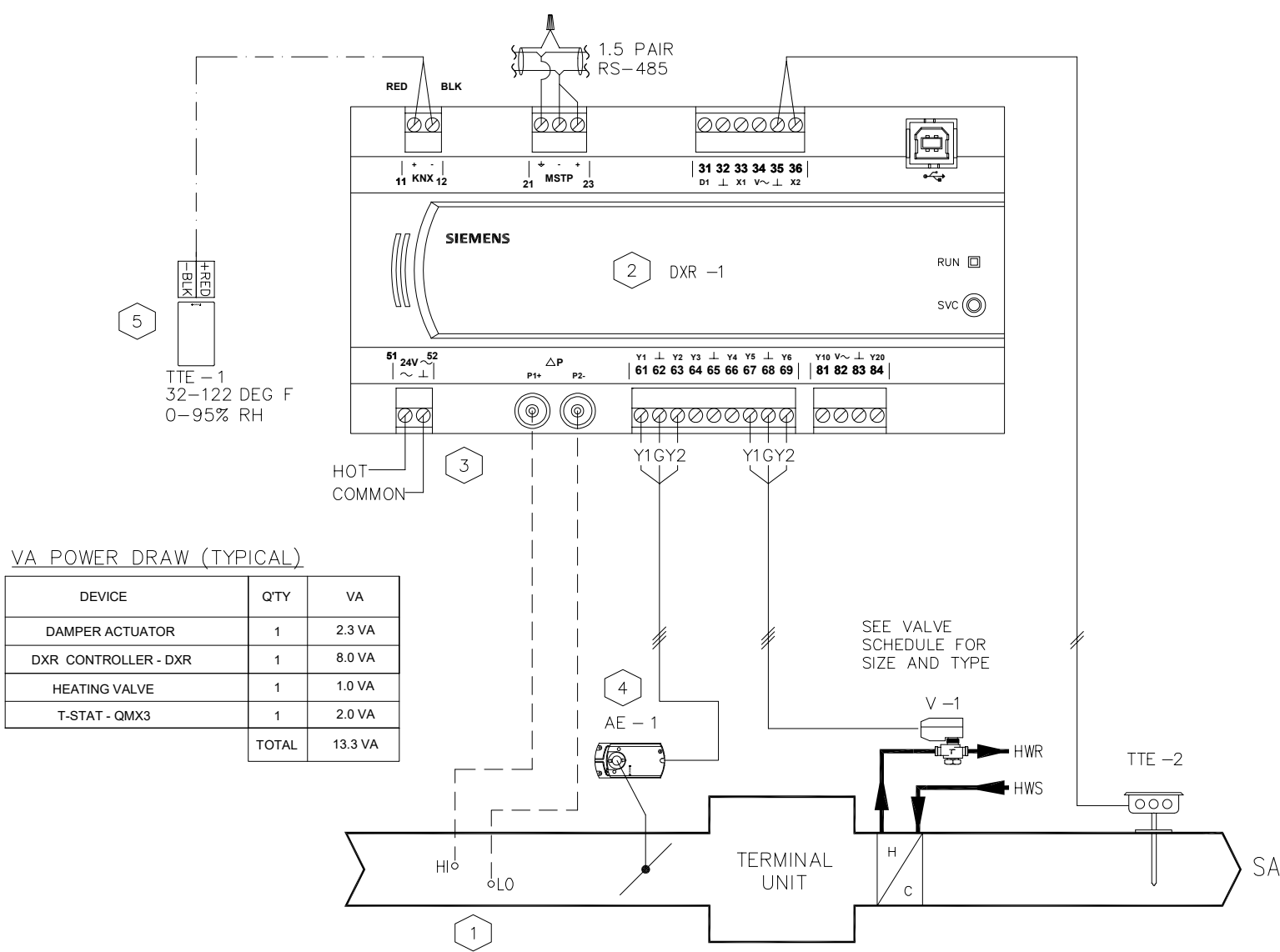
VAV BOX WITH REHEAT SEQUENCE OF OPERATION

DISCHARGE AIR TEMPERATURE SENSOR: TCC SHALL PROVIDE A SUPPLY AIR TEMPERATURE SENSOR FOR MONITORING PURPOSES AND TO LIMIT THE DISCHARGE AT 95F (ADJ).

OCCUPIED MODE: WHEN THE ZONE TEMPERATURE IS BETWEEN THE HEATING AND COOLING SETPOINTS, THE PRIMARY AIR DAMPER WILL BE AT THE MINIMUM CFM AND THE REHEAT VALVE SHALL BE FULLY CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE COOLING SETPOINT OF 72F (ADJ) PLUS THE DEAD BAND, THE PRIMARY AIR DAMPER SHALL INCREASE THE CFM AND THE REHEAT VALVE SHALL REMAIN FULLY CLOSED. ON A DROP IN TEMPERATURE BELOW THE HEATING SETPOINT OF 70F (ADJ), THE REHEAT VALVE SHALL MODULATE OPEN AFTER LOOP SIGNAL INCREASE AND THE PRIMARY AIR DAMPER SHALL MAINTAIN MINIMUM CFM UP TO THE HEATING MAX AIRFLOW. REFERENCE DIAGRAM AND SETPOINT MATRIX FOR FURTHER DETAILS.

UNOCCUPIED (NIGHT SETBACK) MODE: WHEN IN THE UNOCCUPIED MODE, THE VAV BOX SEQUENCE SHALL BE THE SAME AS THE ABOVE OCCUPIED SEQUENCE. UNOCCUPIED HEATING SETPOINT SHALL BE 65F (ADJ) AND THE COOLING SETPOINT SHALL BE 82F (ADJ). WHEN ANY TWO VAV BOXES REACH EITHER THEIR HEATING OR COOLING SETPOINT, THE AIR HANDLING UNIT SHALL START AND RUN TO MAINTAIN THE UNOCCUPIED SETPOINT. PROVIDE DIFFERENTIAL TO PREVENT SHORT CYCLING OF AHU.

REVISION HISTORY				<div>SIEMENS</div> <div>SIEMENS INDUSTRY INC. SMART INFRASTRUCTURE DIVISION</div>	<div>3502 WOODVIEW TRACE SUITE 240 INDIANAPOLIS, IN 46268 UNITED STATES PHONE: 317-293-8880 FAX: 317-293-0374</div>	IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN					<div>440P397692 0</div> <div>400A</div>
0	4/25/2025	HB	SUBMITTAL SET			ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE	
						HB	HB		04/25/25	04/25/25	
						VAV BOX W REHEAT BOM & SOO					



VA POWER DRAW (TYPICAL)

DEVICE	Q'TY	VA
DAMPER ACTUATOR	1	2.3 VA
DXR CONTROLLER - DXR	1	8.0 VA
HEATING VALVE	1	1.0 VA
T-STAT - QMX3	1	2.0 VA
TOTAL		13.3 VA

INSTALLATION NOTES:

- VAV BOX INSTALLED BY MECHANICAL CONTRACTOR WITH 3 TO 5 STRAIGHT DUCT DIAMETERS UPSTREAM OF BOX TO PROVIDE PROPER FLOW SENSING
- DXR TO BE MOUNTED IN MANUFACTURER SUPPLIED CONTROLLER ENCLOSURE. CIC FIELD MOUNTED FOR DXR AND ALL CONTROL DEVICES.
- REFER TO BUILDING POWER TRUNK DRAWING FOR 24 VAC POWER
- CLOSE DAMPER FULLY. MOUNT ACTUATOR AND SECURE TO SHAFT. PUSH ACT'R OVERRIDE BUTTON AND ROTATE DAMPER TO FULL OPEN. AE-1 TO BE FACTORY MOUNTED AND WIRED BY THE VAV BOX MANUFACTURER.
- LOCATE AS SHOWN ON FLOOR PLANS/CONTRACT DOCUMENTS

1
401 VAV W/ HW REHEAT
TYPICAL OF Q'TY: (1)
LOCATION: SEE FLN DEVICE SCHEDULE
SERVES: SEE FLN DEVICE SCHEDULE
BASE APPLICATION: 14023

REVISION HISTORY

0	4/25/2025	HB	SUBMITTAL SET
---	-----------	----	---------------

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO
IU PROJECT #20241429, IN

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
HB	HB		04/25/25	04/25/25

VAV BOX W RHT COIL, NO LCD

440P397692
0

401

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE1	1	GDE131.1P	SIEMENS	154 011	ACT NSR PLENUM 24/108L 5Nm
DXR1	1	DXR2.M12P-102B	SIEMENS	A6V10502838	DXR2.M12P Room Automation Station
TTE1	1	QMX3.P40	SIEMENS		QMXS ROOM TEMP, RH SENSOR ONLY
TTE2	2	QAM2030.010	SIEMENS	149915	DUCT POINT TEMP, 10K OHM TYPE 2, 4"

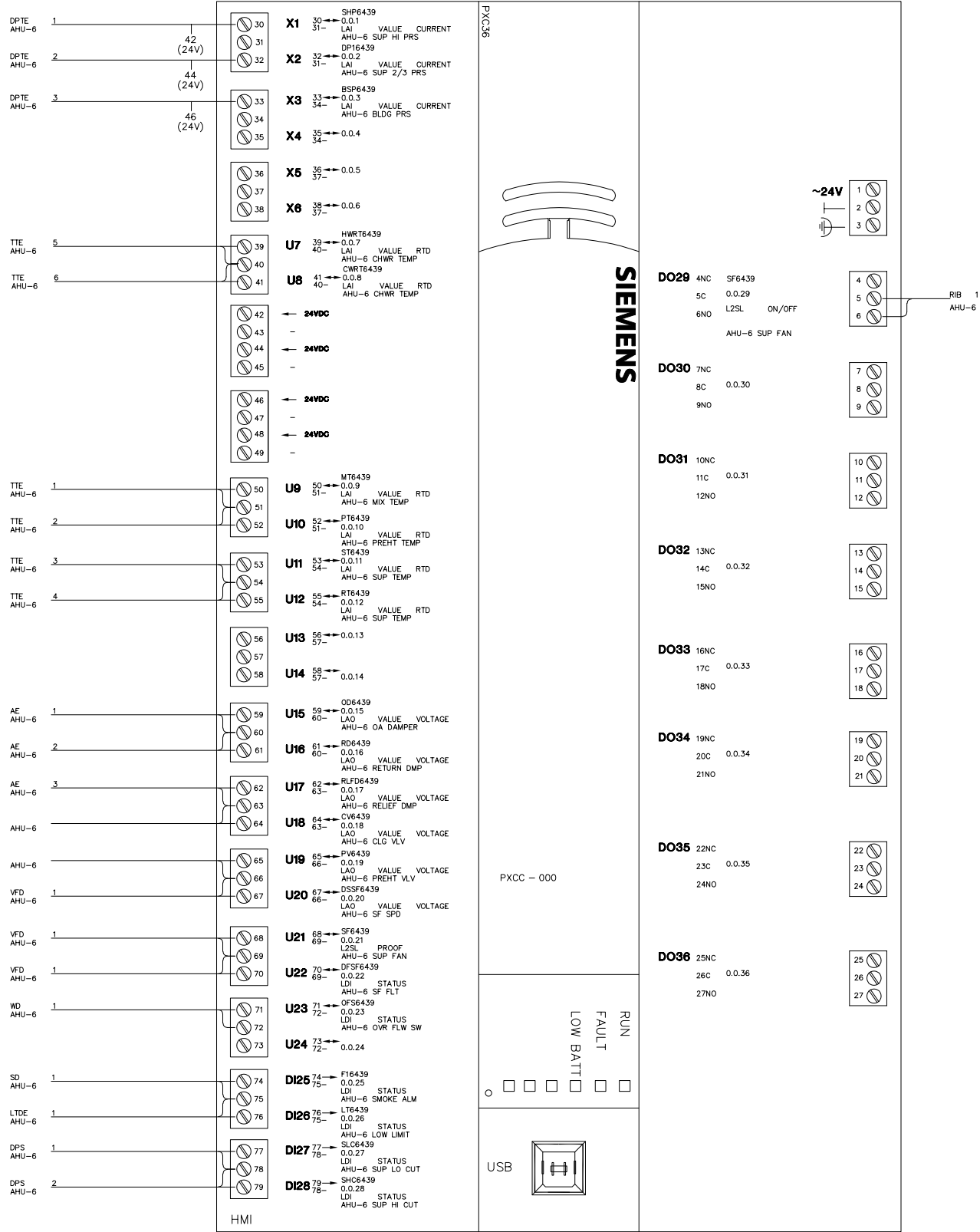
VAV BOX WITH REHEAT SEQUENCE OF OPERATION

DISCHARGE AIR TEMPERATURE SENSOR: TCC SHALL PROVIDE A SUPPLY AIR TEMPERATURE SENSOR FOR MONITORING PURPOSES AND TO LIMIT THE DISCHARGE AT 95F (ADJ).

OCCUPIED MODE: WHEN THE ZONE TEMPERATURE IS BETWEEN THE HEATING AND COOLING SETPOINTS, THE PRIMARY AIR DAMPER WILL BE AT THE MINIMUM CFM AND THE REHEAT VALVE SHALL BE FULLY CLOSED. ON A RISE IN ZONE TEMPERATURE ABOVE THE COOLING SETPOINT OF 72F (ADJ) PLUS THE DEAD BAND, THE PRIMARY AIR DAMPER SHALL INCREASE THE CFM AND THE REHEAT VALVE SHALL REMAIN FULLY CLOSED. ON A DROP IN TEMPERATURE BELOW THE HEATING SETPOINT OF 70F (ADJ), THE REHEAT VALVE SHALL MODULATE OPEN AFTER LOOP SIGNAL INCREASE AND THE PRIMARY AIR DAMPER SHALL MAINTAIN MINIMUM CFM UP TO THE HEATING MAX AIRFLOW. REFERENCE DIAGRAM AND SETPOINT MATRIX FOR FURTHER DETAILS.

UNOCCUPIED (NIGHT SETBACK) MODE: WHEN IN THE UNOCCUPIED MODE, THE VAV BOX SEQUENCE SHALL BE THE SAME AS THE ABOVE OCCUPIED SEQUENCE. UNOCCUPIED HEATING SETPOINT SHALL BE 65F (ADJ) AND THE COOLING SETPOINT SHALL BE 82F (ADJ). WHEN ANY TWO VAV BOXES REACH EITHER THEIR HEATING OR COOLING SETPOINT, THE AIR HANDLING UNIT SHALL START AND RUN TO MAINTAIN THE UNOCCUPIED SETPOINT. PROVIDE DIFFERENTIAL TO PREVENT SHORT CYCLING OF AHU.

REVISION HISTORY				<div>SIEMENS</div> <div>3502 WOODVIEW TRACE SUITE 240 INDIANAPOLIS, IN 46268 UNITED STATES PHONE: 317-293-8880 FAX: 317-293-0374</div> <div>SIEMENS INDUSTRY INC. SMART INFRASTRUCTURE DIVISION</div>	<div>IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN</div> <table><tr><td>ENGINEER</td><td>DRAFTER</td><td>CHECKED BY</td><td>INITIAL RELEASE</td><td>LAST EDIT DATE</td></tr><tr><td>HB</td><td>HB</td><td></td><td>04/25/25</td><td>04/25/25</td></tr></table> <div>VAV BOX W REHEAT BOM & SOO</div>					ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE	HB	HB		04/25/25	04/25/25	<div>440P397692 0</div> <div>401A</div>
ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE		LAST EDIT DATE															
HB	HB		04/25/25		04/25/25															
0	4/25/2025	HB	SUBMITTAL SET																	



REVISION HISTORY			
0	4/25/2025	HB	SUBMITTAL SET

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN				
ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
PXCC-7 AHU-6				

440P397692
0

E100

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Panel Mounted Devices					
PXCC 7	1	PXC36-E.A	SIEMENS	149206	PXC COMPACT 36-PT, BACNET, APOGEE
	1	LSM-FLN36.A	SIEMENS		FLN LICENSE FOR PXC36

REVISION HISTORY				
0	4/25/2025	HB	SUBMITTAL SET	

SIEMENS

SIEMENS INDUSTRY INC.
SMART INFRASTRUCTURE DIVISION

3502 WOODVIEW TRACE
SUITE 240
INDIANAPOLIS, IN 46268
UNITED STATES
PHONE: 317-293-8880
FAX: 317-293-0374

IU - MCNUTT CENTRAL RENO IU PROJECT #20241429, IN				
ENGINEER HB	DRAFTER HB	CHECKED BY	INITIAL RELEASE 04/25/25	LAST EDIT DATE 04/25/25
PXCC-7 AHU-6 BOM				

440P397692
0

E100A

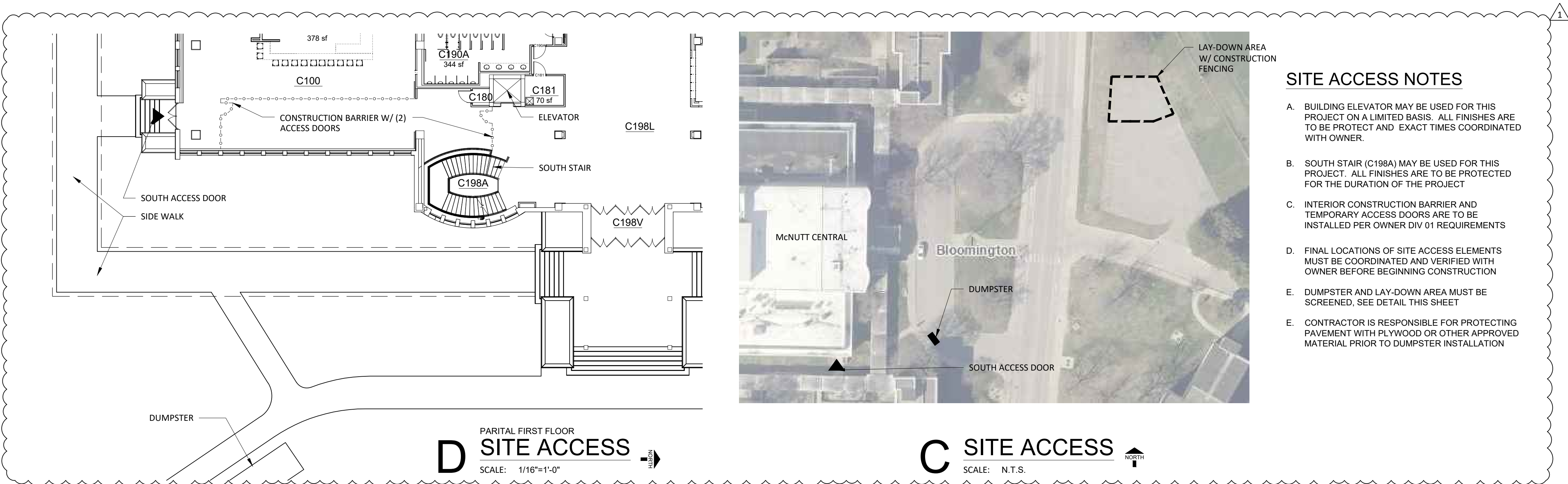
INDIANA UNIVERSITY - BLOOMINGTON CAMPUS

BL439 MCNUTT CENTRAL

RENOVATION OF EXISTING APARTMENTS

IU PROJECT NO. 20241429

APRIL 16, 2025

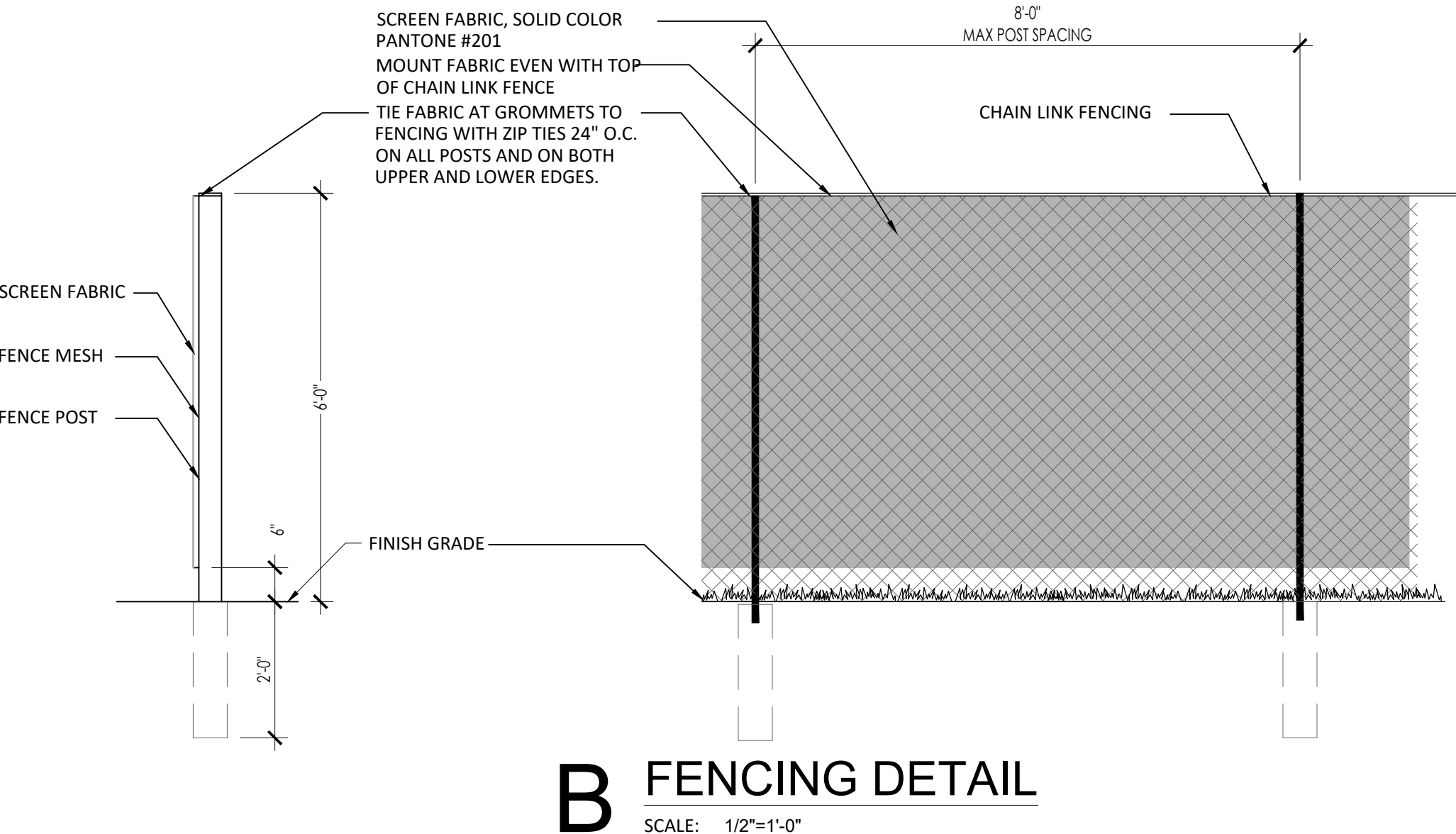


DRAWING INDEX

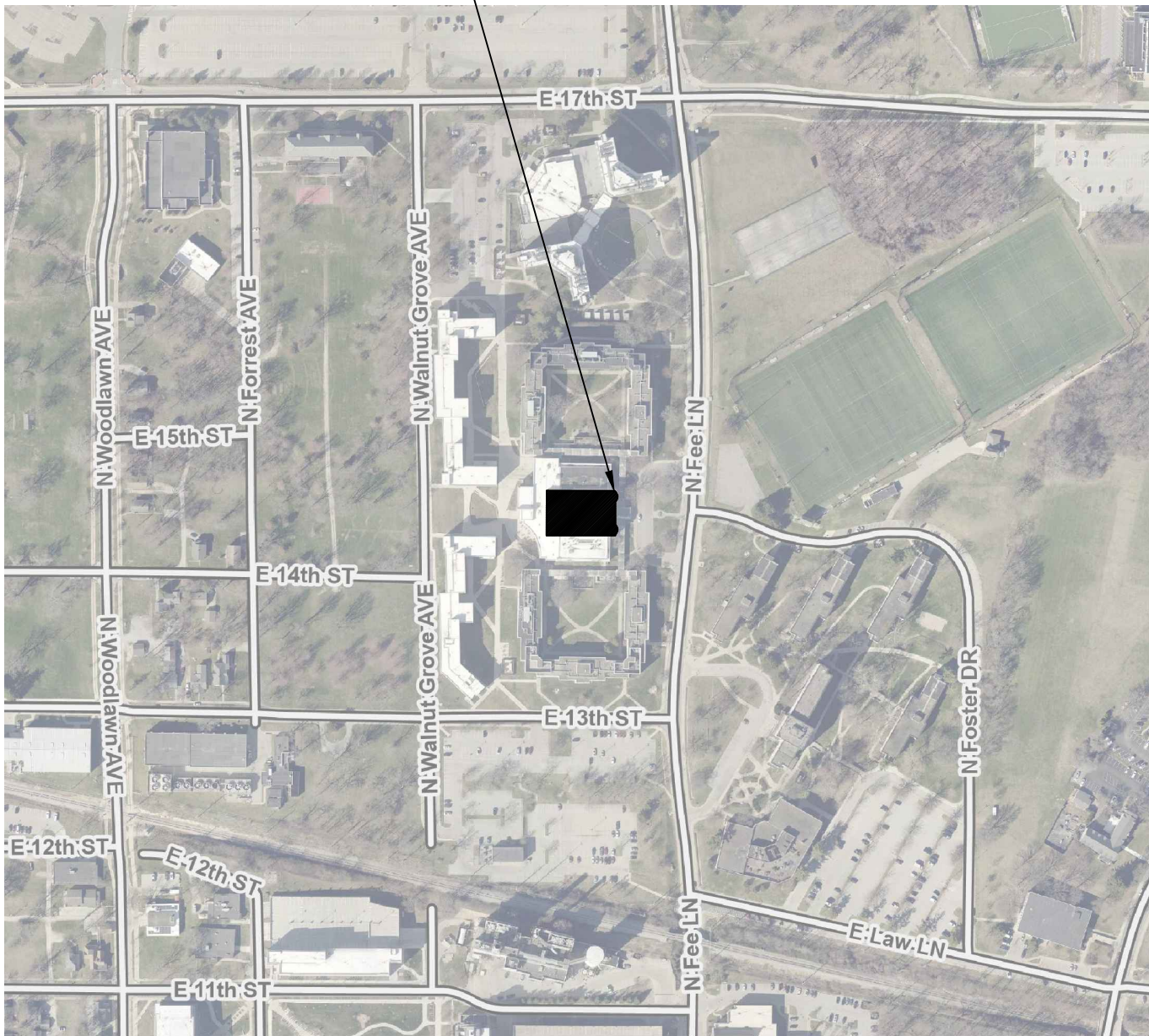
COVER	DRAWING INDEX, SITE PLAN	E001	ELECTRICAL LEGEND
D101	2ND & 3RD FLOOR DEMOLITION PLANS	E103	3RD FLOOR ELECTRICAL DEMOLITION PLAN
A101	3RD FLOOR PLAN	E203	3RD FLOOR LIGHTING PLAN
A111	3RD FLOOR REFLECTED CEILING PLAN	E302	3RD FLOOR POWER AND SYSTEMS PLAN
A501	SCHEDULES, DETAILS, & INTERIOR ELEVATIONS	E302A	2ND FLOOR POWER AND SYSTEMS PLAN
		E302B	2ND FLOOR POWER AND SYSTEMS PLAN CLASSROOM C208
		E303	3RD FLOOR POWER AND SYSTEMS PLAN
H001	MECHANICAL LEGEND	E801	ELECTRICAL SCHEDULES AND DETAILS
H102	2ND FLOOR HVAC DEMOLITION PLAN	E802	ELECTRICAL SCHEDULES AND DETAILS
H103	3RD FLOOR HVAC DEMOLITION PLAN	E803	ELECTRICAL SCHEDULES AND DETAILS
H104	ROOF HVAC DEMOLITION PLAN		
H202	2ND FLOOR HVAC PLAN		
H203	3RD FLOOR HVAC PLAN		
H204	ROOF HVAC PLAN		
H801	HVAC SCHEDULES		
H901	HVAC DETAILS		
P001	PLUMBING LEGEND		
P102	2ND FLOOR PLUMBING DEMOLITION PLAN		
P103	3RD FLOOR PLUMBING DEMOLITION PLAN		
P202	2ND FLOOR PLUMBING PLAN		
P203	3RD FLOOR PLUMBING PLAN		
P204	ROOF PLUMBING PLAN		
P701	PLUMBING RISER DIAGRAMS		
P901	PLUMBING DETAILS		

NOTES

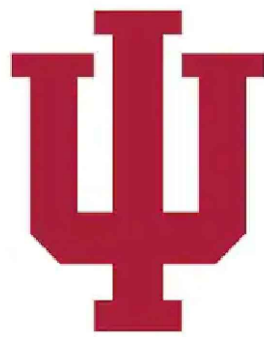
1. INSTALL FENCE IN ACCORDANCE WITH REQUIREMENTS OF 015626 - TEMPORARY FENCING.
2. INSTALL IN LOCATIONS SHOWN ON PLANS.
3. INSPECT SITE WITH OWNER'S REPRESENTATIVE TO DETERMINE FINAL LOCATIONS.
4. PROVIDE HALF MOON VENTS 4' O.C. MIN. TWO ROWS.
5. SCREEN SHALL BE MINIMUM 80% PRIVACY, KNITTED HDPE UV POLYETHYLENE OR PVC CONSTRUCTION
6. PLEASE CONTACT IU SIGN WHOP FOR ADDITIONAL CONSTRUCTION NEEDS: 812-856-0761



PROJECT SITE:
MCNUTT CENTRAL
1101 N FEE LANE
BLOOMINGTON, INDIANA 47406



OWNER



THE TRUSTEES OF INDIANA UNIVERSITY
BLOOMINGTON, INDIANA

ARCHITECT

springpoint
ARCHITECTS, PC

SPRINGPOINT ARCHITECTS PC
522 WEST 2ND STREET
BLOOMINGTON, INDIANA 47403
812.318.2930
WWW.SPRINGPOINTARCHITECTS.COM

MEP ENGINEER



CMTA, INC.
9225 PRIORITY WAY WEST DRIVE, SUITE 130
INDIANAPOLIS, INDIANA 46240
317.703.6226

GENERAL HVAC NOTES

- A. ABOVE CEILING SPACE IS VERY LIMITED. COORDINATE DUCT AND PIPE ROUTING WITH EXISTING CONDITIONS AND ALL OTHER TRADES PRIOR TO RELEASING ANY MATERIALS FOR FABRICATION.
- B. COORDINATE OPENINGS IN WALLS FOR DUCTS AND SIDEWALL GRILLES WITH FRAMING CONTRACTOR. COORDINATE BULKHEAD SIZES WITH FRAMING CONTRACTOR DURING ABOVE CEILING COORDINATION.
- C. COORDINATE NEW FLOOR OPENINGS FOR PIPING WITH EXISTING CONCRETE WAFFLE STRUCTURE. INSTALL PIPES ONLY IN CENTER (THIN) AREA OF WAFFLE STRUCTURE. FIELD VERIFY EXACT LOCATION.
- D. HVAC CONTRACTOR SHALL INCLUDE IN THEIR BID ALL ROOF CUT AND PATCH REQUIRED FOR THEIR WORK. COORDINATE ROOFING WORK WITH PLUMBING ROOF WORK ALSO. ROOF CONTRACTOR SHALL BE xxxxxxx TO MAINTAIN WARRANTY.

PLAN NOTES - H203

1. 20"x20" UP TO NEW INTAKE HOOD. OFFSET VERTICAL DUCT AS REQUIRED TO PENETRATE DECK IN THE CENTER OF CONCRETE WAFFLE.
2. 20"x20" UP TO NEW RELIEF HOOD. OFFSET VERTICAL DUCT AS REQUIRED TO PENETRATE DECK IN THE CENTER OF CONCRETE WAFFLE.
3. HVAC CONTRACTOR TO PROVIDE NEW VFD FOR NEW AHU FAN. VFD TO BE MOUNTED BY ELECTRICAL CONTRACTOR. POWER WIRING BY ELECTRICAL CONTRACTOR, AND CONTROL WIRING BY C/C.
4. LOCATION OF TEMPERATURE CONTROL PANEL FOR SPACE. PROVIDED BY SIEMENS AND INSTALLED BY C/C.
5. 6"x6" EXHAUST DUCT UP TO NEW EXHAUST FAN ON ROOF.
6. PROVIDE INTEGRAL OPPOSED BLADE VOLUME DAMPER FOR THIS SUPPLY GRILLE.
7. AIR HANDLING UNIT IS PROVIDED BY OWNER. CONTRACTOR SHALL RECEIVE AND INSTALL SECTIONS. ANY SECTION THAT CANNOT FIT IN ELEVATOR SHALL BE DISASSEMBLED OR RE-ASSEMBLED PER MANUFACTURER'S REQUIREMENTS. CONTRACTOR MAY ALTERNATELY ROUTE SECTION UP IN STAIRWELL IF FEASIBLE; FIELD VERIFY PATH INSIDE BUILDING AND ROUTING METHOD PRIOR TO BID.
8. 4"Ø DRYER DUCT UP THROUGH ROOF.
9. MOTORIZED DAMPER AND ACTUATOR SHALL BE PROVIDED AND INSTALLED BY HVAC CONTRACTOR. WIRED BY C/C. DAMPERS SHALL BE LOW-LEAKAGE TYPE WITH INSULATED ALUMINUM BLADES AND NEOPRENE SEALS. CONFIRM ACTUATOR VOLTAGE WITH SIEMENS.
10. LOCATION OF BUILDING PRESSURE SENSOR MOUNTED IN CEILING TILE. SEE TEMPERATURE CONTROLS DRAWINGS FOR MORE DETAILS.

springpoint
ARCHITECTS, PC

522 WEST 2ND STREET
BLOOMINGTON, INDIANA
47403
812.318.2930
www.springpointarchitects.com

CMTA
A LEGENCE Company

copyright © 2024 springpoint architects, pc includes architectural work, building design, plans or drawings and specifications. this work shall be used only pursuant to the agreement with springpoint architects, pc, no other use, dissemination, or reproduction may be made without prior written consent from springpoint architects, pc.

certified



William R. Stacey

project title

INDIANA UNIVERSITY - BLOOMINGTON CAMPUS
BL439 MCNUITT CENTRAL
RENOVATION OF
EXISTING APARTMENTS
INDIANA UNIVERSITY CAMPUS BLOOMINGTON, IN

project information

IU PROJECT No.: 20241429
ARCHITECT PROJECT No.: 25-03
ISSUE DATE: 04.16.2025
ISSUE STATUS: CONSTRUCTION DOCUMENTS

REVISIONS

1 ADDENDUM 1 04.28.2025

sheet title

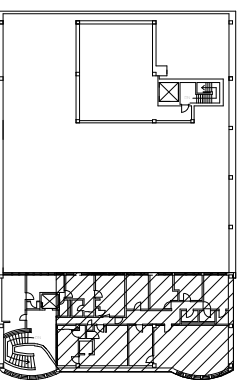
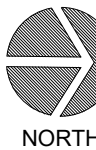
3RD FLOOR
HVAC PLAN

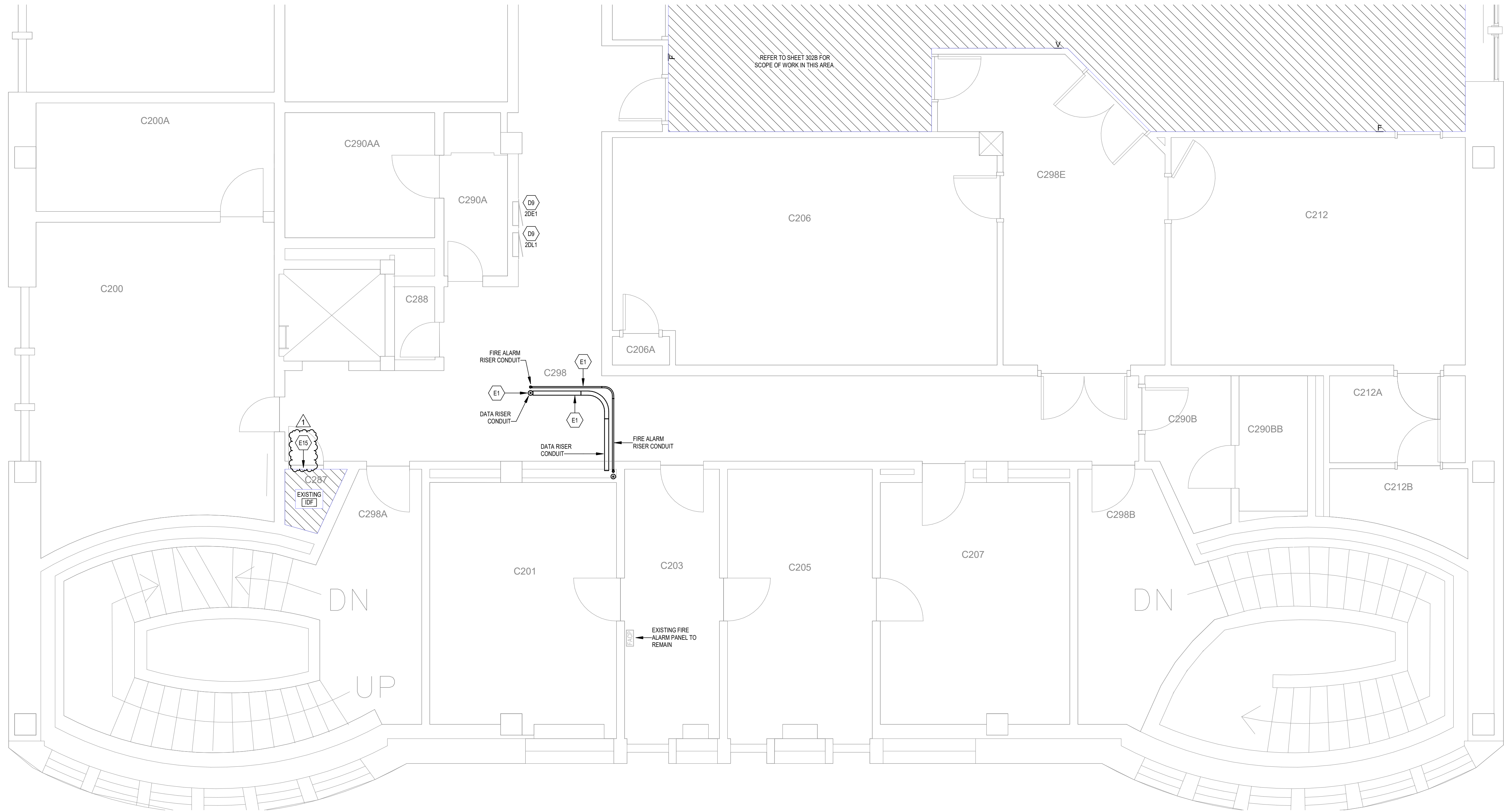
sheet number

H203

3RD FLOOR HVAC PLAN

SCALE: 1/4" = 1'-0"





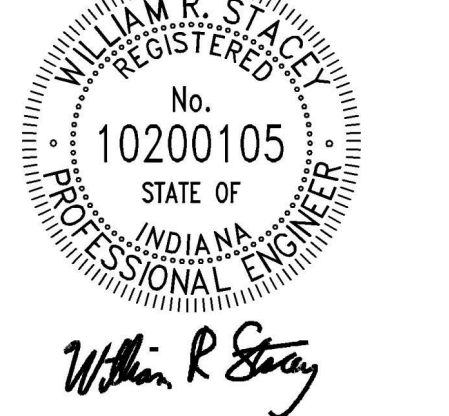
GENERAL NOTES (POWER/SYSTEMS):

- REFER TO THE ARCHITECT'S REFLECTED CEILING PLANS, ELEVATIONS, AND CASEWORK DETAILS FOR EXACT LOCATIONS OF ALL WALL AND CEILING MOUNTED ELECTRICAL DEVICES.
- CONTRACTOR SHALL FOLLOW BRANCH CIRCUITING LAY-OUT, AS INDICATED ON THE FLOOR PLANS, WITH A MAXIMUM OF THREE (3) BRANCH CIRCUITS PER HOMERUN. EACH BRANCH CIRCUIT SHALL BE PROVIDED WITH A DEDICATED NEUTRAL CONDUCTOR. DEDICATED NEUTRAL CONDUCTORS SHALL BE CONSIDERED CURRENT CARRYING. IF ADDITIONAL CONDUCTORS ARE RAN IN THE SAME CONDUIT WITH THOSE INDICATED, CONTRACTOR SHALL DERATE ALL CURRENT CARRYING CONDUCTORS PER NEC 310.15(B)(3), AND UPSIZE CONDUIT AS REQUIRED PER NEC 300.17 AND ANNEX C. MULTIWIRED BRANCH CIRCUITS AS DEFINED IN NEC 100 / 210.4 (CIRCUITS SHARING A COMMON NEUTRAL CONDUCTOR) SHALL NOT BE PERMITTED.
- IDENTIFY THE PANEL AND CIRCUIT NUMBER FOR ALL RECEPTACLES, SWITCHES, ETC. IN AREA OF CONSTRUCTION. PROVIDE CLEAR ADHESIVE LABELS WITH BLACK LETTERING. IN HEALTHCARE FACILITIES, ENGRAVE EMERGENCY DEVICE COVERPLATES IN PATIENT CARE AREAS. MARK INSIDES OF ALL DEVICE BOXES WITH PANEL AND CIRCUIT NUMBER.
- RECEPTACLES THAT ARE CONTROLLED BY AN AUTOMATIC MEANS SUCH AS OCCUPANCY SENSOR OR ENERGY MANAGEMENT SYSTEM SHALL BE MARKED IN ACCORDANCE WITH NEC 406.3(E).
- LOCATIONS OF ELECTRICAL CONNECTIONS AND LOCAL DISCONNECTS SHALL BE COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO ENSURE ACCESS AND WORKING CLEARANCE IS MAINTAINED PER NEC. NOTIFY OTHER TRADES OF REQUIRED CLEARANCE AREAS TO AVOID ROUTING OF OTHER SYSTEMS IN THESE AREAS. DO NOT INSTALL ELECTRICAL EQUIPMENT OVER EQUIPMENT NAMEPLATES OR ACCESS PANELS OR THROUGH ACCESS/MAINTENANCE CLEARANCES OF EQUIPMENT BY OTHER TRADES.
- REFER TO "SYSTEM INSTALLATION MATRIX" (ON SYSTEMS LEGEND SHEET) AND SPECIFICATIONS FOR CONTRACTOR REQUIREMENTS OF EACH SYSTEM.
- THE CONTRACTOR SHALL ROUTE ALL "SYSTEM CONDUIT STUB-UPS" TO THE NEAREST CORRIDOR CABLING PATH (SEE "STUB-UP" DETAILS). REFER TO CABLING PATH INSTALLATION DETAIL FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL PAINT ALL SYSTEMS CONDUIT STUB-UPS LIGHT BLUE FOR SYSTEMS CABLING INTO THE CORRIDOR CABLING PATH. PROVIDE PULL STRINGS IN ALL NEW CONDUIT RUNS FOR SYSTEM CABLING INSTALLATION.
- IN LIEU OF RE-USING EXISTING DATA CABLES FOR NEW DATA DROP LOCATIONS AS INDICATED ON THESE PLANS, ELECTRICAL CONTRACTOR HAS THE OPTION TO REMOVE ALL EXISTING DATA CABLES AND PULL NEW. SEE LOCATION OF SECOND FLOOR IDF ON SHEET E302A. NEW AND/OR RE-CONNECTED CABLE RUNS TO BE DIRECTED BACK TO EXISTING DATA RACK AND PATCH PANELS IN THIS ROOM. FIELD VERIFY EXACT REQUIREMENTS PRIOR TO DEMOLITION AND NEW WORK. SEE DIVISION 27 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

KEYNOTES

- D9 EXISTING ELECTRICAL PANEL TO REMAIN.
- E1 PROPOSED ROUTES AND LOCATIONS FOR (2) TWO NEW CONDUITS UP FROM SECOND FLOOR TO THIRD FLOOR ABOVE. INTERCEPT AND EXTEND EXISTING CONDUITS ABOVE SECOND FLOOR CEILING SPACE. ROUTE OVER AND UP TO JAN C398 ON THIRD FLOOR ABOVE. CONTRACTOR TO FIELD VERIFY BEST ROUTE PRIOR TO INSTALLATION. CONDUIT SIZES TO MATCH EXISTING. EXISTING CABLEING TO BE RE-ROUTED WITHIN NEW CONDUITS AND ALL SYSTEMS TO BE RE-CONNECTED AS REQUIRED.
- E15 LOCATION OF EXISTING IDF RACK. UTILIZE EXISTING SPARES IN EXISTING PATCH PANELS TO SUPPORT SCOPE OF WORK. REFER TO DIVISION 27 SPECIFICATIONS FOR LABELING PRACTICES, AND ADDITIONAL REQUIREMENTS AND INFORMATION.

certified



project title

INDIANA UNIVERSITY - BLOOMINGTON CAMPUS
BL439 MCNUITT CENTRAL
RENOVATION OF
EXISTING APARTMENTS
INDIANA UNIVERSITY CAMPUS BLOOMINGTON, IN

project information

IU PROJECT No.: 20241429
ARCHITECT PROJECT No.: 25-03
ISSUE DATE: 04.16.2025
ISSUE STATUS: CONSTRUCTION DOCUMENTS

REVISIONS

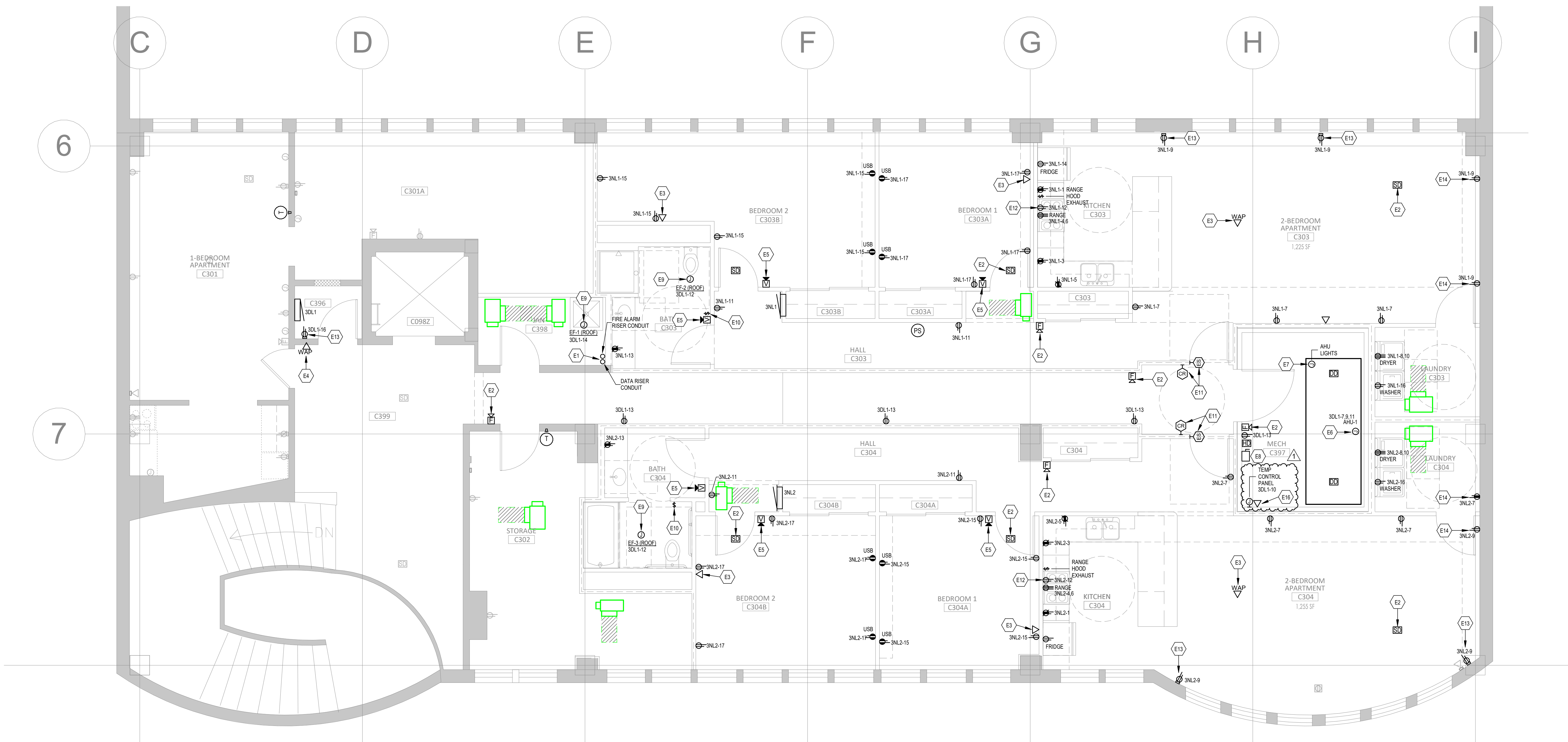
1 ADDENDUM 1 04.28.2025

sheet title

2ND FLOOR
POWER AND
SYSTEMS PLAN

sheet number

E302A



1 3RD FLOOR POWER AND SYSTEMS PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES (POWER/SYSTEMS):

- REFER TO THE ARCHITECT'S REFLECTED CEILING PLANS, ELEVATIONS, AND CASEWORK DETAILS FOR EXACT LOCATIONS OF ALL WALL AND CEILING MOUNTED ELECTRICAL DEVICES.
- CONTRACTOR SHALL FOLLOW BRANCH CIRCUITING LAY-OUT, AS INDICATED ON THE FLOOR PLANS, WITH A MAXIMUM OF THREE (3) BRANCH CIRCUITS PER HOMERUN. EACH BRANCH CIRCUIT SHALL BE PROVIDED WITH A DEDICATED NEUTRAL CONDUCTOR. DEDICATED NEUTRAL CONDUCTORS SHALL BE CONSIDERED CURRENT CARRYING. IF ADDITIONAL CONDUCTORS ARE RAN IN THE SAME CONDUIT WITH THOSE INDICATED, CONTRACTOR SHALL DERATE ALL CURRENT CARRYING CONDUCTORS PER NEC 310.15(B)(3), AND UPSIZE CONDUIT AS REQUIRED PER NEC 300.17 AND ANNEX C. MULTIWIRE BRANCH CIRCUITS AS DEFINED IN NEC 100 / 210.4 (CIRCUITS SHARING A COMMON NEUTRAL CONDUCTOR) SHALL NOT BE PERMITTED.
- IDENTIFY THE PANEL AND CIRCUIT NUMBER FOR ALL RECEPTACLES, SWITCHES, ETC. IN AREA OF CONSTRUCTION. PROVIDE CLEAR ADHESIVE LABELS WITH BLACK LETTERING. IN HEALTHCARE FACILITIES, ENGRAVE EMERGENCY DEVICE COVERPLATES IN PATIENT CARE AREAS. MARK INSIDES OF ALL DEVICE BOXES WITH PANEL AND CIRCUIT NUMBER.
- RECEPTACLES THAT ARE CONTROLLED BY AN AUTOMATIC MEANS SUCH AS OCCUPANCY SENSOR OR ENERGY MANAGEMENT SYSTEM SHALL BE MARKED IN ACCORDANCE WITH NEC 406.3(E).
- LOCATIONS OF ELECTRICAL CONNECTIONS AND LOCAL DISCONNECTS SHALL BE COORDINATED WITH MECHANICAL AND PLUMBING CONTRACTORS TO ENSURE ACCESS AND WORKING CLEARANCE IS MAINTAINED PER NEC. NOTIFY OTHER TRADES OF REQUIRED CLEARANCE AREAS TO AVOID ROUTING OF OTHER SYSTEMS IN THESE AREAS. DO NOT INSTALL ELECTRICAL EQUIPMENT OVER EQUIPMENT NAMEPLATES OR ACCESS PANELS OR THROUGH ACCESS/MAINTENANCE CLEARANCES OF EQUIPMENT BY OTHER TRADES.
- REFER TO "SYSTEM INSTALLATION MATRIX" (ON SYSTEMS LEGEND SHEET) AND SPECIFICATIONS FOR CONTRACTOR REQUIREMENTS OF EACH SYSTEM.
- THE CONTRACTOR SHALL ROUTE ALL "SYSTEM CONDUIT STUB-UPS" TO THE NEAREST CORRIDOR CABLING PATH (SEE "STUB-UP" DETAILS). REFER TO CABLING PATH INSTALLATION DETAIL FOR ADDITIONAL REQUIREMENTS.
- CONTRACTOR SHALL PAINT ALL SYSTEMS CONDUIT STUB-UPS LIGHT BLUE FOR SYSTEMS CABLING INTO THE CORRIDOR CABLING PATH. PROVIDE PULL STRINGS IN ALL NEW CONDUIT RUNS FOR SYSTEM CABLING INSTALLATION.

1. IN LIEU OF RE-USING EXISTING DATA CABLES FOR NEW DATA DROP LOCATIONS AS INDICATED ON THESE PLANS, ELECTRICAL CONTRACTOR HAS THE OPTION TO REMOVE ALL EXISTING DATA CABLES AND PULL NEW. SEE LOCATION OF SECOND FLOOR IDF ON SHEET E302A. NEW AND/OR RE-CONNECTED CABLE RUNS TO BE DIRECTED BACK TO EXISTING DATA RACK AND PATCH PANELS IN THIS ROOM. FIELD VERIFY EXACT REQUIREMENTS PRIOR TO DEMOLITION AND NEW WORK. SEE DIVISION 27 SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

KEYNOTES

- PROPOSED ROUTES AND LOCATIONS FOR (2) TWO NEW CONDUITS UP FROM SECOND FLOOR TO THIRD FLOOR ABOVE. INTERCEPT AND EXTEND EXISTING CONDUITS ABOVE SECOND FLOOR CEILING SPACE. ROUTE OVER AND UP TO JAN C398 ON THIRD FLOOR ABOVE. CONTRACTOR TO FIELD VERIFY BEST ROUTE PRIOR TO INSTALLATION. CONDUIT SIZES TO MATCH EXISTING. EXISTING CABLING TO BE RE-ROUTED WITHIN NEW CONDUITS AND ALL SYSTEMS TO BE RE-CONNECTED AS REQUIRED.
- RELOCATED FIRE ALARM DEVICE. CONNECT TO EXISTING FIRE ALARM CIRCUIT SERVING THIS AREA. PROVIDE WIREMOLD 700 SERIES OR APPROVED EQUAL FOR SURFACE INSTALLATION AS REQUIRED, ARCHITECT TO SELECT FINAL FINISH.
- UTILIZED EXISTING DATA CABLING ABOVE CEILING FOR NEW DEVICE CONNECTIONS. PROVIDE ADDITIONAL CONDUIT PATHWAYS AS REQUIRED.
- RE-INSTALLED DEVICE(S). RE-CONNECT TO EXISTING CBLING/CIRCUITING PREVIOUSLY SERVING DEVICE(S).
- NEW FIRE ALARM DEVICE. CONNECT TO EXISTING FIRE ALARM CIRCUIT SERVING THIS AREA. PROVIDE WIREMOLD 700 SERIES OR APPROVED EQUAL FOR SURFACE INSTALLATION AS REQUIRED, ARCHITECT TO SELECT FINAL FINISH.
- ROUTE POWER THROUGH INTEGRAL VFD PROVIDED BY MANUFACTURER. ALL FINAL ELECTRICAL CONNECTIONS BY ELECTRICAL CONTRACTOR.
- PROVIDE 120V/1PH CONNECTION TO INTEGRAL UNIT LIGHTING. ROUTE POWER THROUGH LIGHT SWITCH PROVIDED WITH UNIT.
- PROVIDE 30A/250V/3P FUSIBLE HEAVY-DUTY DISCONNECT SWITCH IN NEMA-1 ENCLOSURE FUSED AT NAMEPLATE RATING TO SERVE NEW EQUIPMENT INDICATED. COORDINATE EXACT CONNECTION REQUIREMENTS WITH EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN. COORDINATE DISCONNECT LOCATION WITH ALL TRADES AND MAINTAIN ALL CODE REQUIRED CLEARANCES.
- ROUTE POWER THROUGH INTEGRAL DISCONNECT PROVIDED WITH UNIT.
- ROUTE EXHAUST FAN POWER AND CONTROLS THROUGH WALL MOUNT SWITCH. REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
- PROVIDE ROUGH-IN FOR NEW DOOR ACCESS DEVICES. DEVICES ARE O.F.O.I.
- PROVIDE DUPLEX RECEPTACLE FOR RANGE HOOD LIGHTS AND EXHAUST AT NEW CABINETS ABOVE. COORDINATE WITH ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN.
- PROVIDE SURFACE MOUNT DEVICE. WIREMOLD 700 SERIES OR APPROVED EQUAL. COLOR BY ARCHITECT.
- PROVIDE NEW DEVICE(S) AND COVERPLATE(S). CONNECT TO CIRCUIT INDICATED.
- PROVIDE DATA DROP FOR TEMPERATURE CONTROL PANEL. CIC TO PROVIDE RACEWAY AND BACKBOX IN MECH C397. EC TO PULL CABLE AND TERMINATE INSIDE OF BACKBOX.

