Addendum 2

Owner Information	INDIANA UNIVERSITY
Contractor Information	N/A

DATE	11/13/2026
PROJECT NAME	BL572 – Intercollegiate Athletics Gymnasium – First Floor HVAC & Lighting Upgrades
INTROBA PROJECT #	2035.0013084.001
IU PROJECT #	20250522
DISTRIBUTION	Owner
ADDENDUM CONSIST OF	(32) 8.5 x 11 PAGES & (53) 30 x 42 PAGES

The following additions, revisions, and modifications are part of the contract documents, which shall be amended accordingly. Acknowledge receipt of addenda on the bid form. Failure to acknowledge receipt of this addendum may result in the rejection of your offer.

GENERAL

SIEMENS CONTROL DRAWINGS

1. Issuing controls drawings in their entirety.

SPECIFICATIONS

FRONT END

BID FORM

1. Page 3, replace “Haakon” with “Pace”.

MECHANICAL

237313 MODULAR PACKAGED AIR-HANDLING UNITS

1. Paragraph 2.1, A, revise list as follows:
    1. Carrier Global Corp.
    2. Trane Technologies plc.
    3. Pace

ELECTRICAL

260573 POWER SYSTEM STUDIES

1. Paragraph 1.3, C, 2; revise statement to be electronically submitted by removing electronic media submission requirement.

283111 DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

1. Specification was edited thoroughly specification within documentation set supersedes original specification. Below is general changes made.
    a. Removed all references to Mass notification requirements.
    b. Warranty period extended from 1 to 2 years.
    c. Junction box and conduit labeling modified to match IU standards.

DRAWINGS

GENERAL

1. All drawings with a first and second floor plan (demolition and new work) have been updated to reflect architectural revisions. Refer to architectural revision drawings for all associated architectural work.

ARCHITECTURAL

A-101 – ARCHITECTURAL FLOOR PLAN LEVEL 01

1. Add FLOOR PLAN NOTES 3, 4, 5, and 6 as indicated on attached drawings.
2. Change A/A-101 PARTIAL Floor PLAN as indicated on attached drawings.
3. Change RCP NOTE 8 as indicated on attached drawings.
4. Change B/A-101 PARTIAL REFLECTED CEILING PLAN as indicated on attached drawings.

A-102 – ARCHITECTURAL FLOOR PLAN LEVEL 02

1. Change FLOOR PLAN NOTE 1 as indicated on attached drawings.
2. Add WALL TYPE 3 as indicated on attached drawings.
3. Add FLOOR PLAN NOTE 4 as indicated on attached drawings.
4. Change A/A-102 PARTIAL FLOOR PLAN as indicated on attached drawings.
5. Change DOOR AND FRAME SCHEDULE as indicated on attached drawings.

6. Change DOOR DETAILS as indicated on attached drawings.

STRUCTURAL

S-101 – STRUCTURAL PLANS & SECTIONS

1. Shifted new column locations and associated dimensions.

PLUMBING

PD-201 – PLUMBING DEMOLITION PLAN BL572 LEVEL 1 & 2

1. Modified piping locations to match existing conditions in 001C Mechanical Room.
2. Modified demolition extents in 001C Mechanical Room.

P-201 – PLUMBING PLAN BL572 LEVEL 1 & 2

1. Modified routing of new piping in 001C Mechanical Room.

MECHANICAL

M-202 – MECHANICAL DUCTWORK PLAN BL572 LEVEL 1

1. Reissuing sheet in its entirety.

M-203 – MECHANICAL DUCTWORK PLAN BL572 LEVEL 2

1. Modified architectural floor plan background.
2. Modified ductwork based on new architectural walls.
3. Added Sheet Note #3 to Sheet Keynotes and drawings.

M-404 – MECHANICAL ALTERNATE PLAN

1. Added Sheet Note #4 to Sheet Keynotes and drawings.

M-601 – MECHANICAL SCHEDULES

1. Air Handling Unit Schedule. Added Schedule Note #9.

ELECTRICAL

E-000 – ELECTRICAL LEGEND

1. Modified notation methods for existing and existing to be removed to provide clarity and align with plans.

E-202 – ELECTRICAL POWER PLANS BL57 LEVEL 1

1. Added location for existing building telecom/data rack for reference.
2. Modified name for new 112.5kva transformer to XD.
3. Added additional power for high output fire alarm speaker units within gym.
4. Added data outlet for mechanical control panel.
5. Modified language of sheet note #2 for clarity.
6. Modified language of sheet note four to include shroud above and below panel.
7. Modified graphical representation of existing panels to clarify scope.

E-203 – ELECTRICAL POWER PLAN BL572 LEVEL 2

1. Modified graphical representation of existing panels to clarify scope.
2. Added circuit for new EVAC panel.

E-302 – ELECTRICAL LIGHTING PLAN BL572 LEVEL 1

1. Modified lighting control within room 005 and 005A.
2. Added emergency lighting throughout floorplan.
3. Added replacement of exit signage throughout plans.
4. Modified graphical representation of existing to remain fixtures and equipment to clarify scope.
5. Added note for modification of fixture locations within room 006 according to existing fencing layout.
6. Added occupancy sensors throughout floorplan.
7. Added manual dimming control for room 009.

E-501 – ELECTRICAL NEW PANEL SCHEDULES & SINGLE LINE DIAGRAMS

1. Modified sheet name.
2. Added demo and new single line diagrams.
3. Modified panel characteristics for all new panel schedules.
4. Updated branch circuiting per plan changes and single line changes.
5. Added notation for contractor to update all panel directories and trace unknown circuits as required to update.

E-601 – ELECTRICAL SCHEDULES

1. Added additional alternate manufactures to luminaire schedule.
2. Added type X1 to luminaire schedule.
3. Modified description for fixtures LB1 and S1 in luminaire schedule.
4. Modified all fixture voltages on luminaire schedule to universal.
5. Modified all fixture color temp. on luminaire schedule to 3500K.
6. Modified mounting for fixtures LB1 and S1 in luminaire schedule.
7. Added emergency back-up directional note.

ED-202 – ELECTRICAL DEMOLITION PLAN BL572 LEVEL 1

1. Modified graphical representation of existing panels, devices, and fixtures to clarify scope.
2. Modified sheet note three to add clarity to direction.

3. Added general note B to clarify fire alarm scope.

ED-203 – ELECTRICAL DEMOLITION PLAN BL572 LEVEL 2

1. Modified graphical representation of existing panels, devices, and fixtures to clarify scope.
2. Added general notes to clarify fire alarm scope.

FA-001 – FIRE ALARM LEGEND

1. Modified general notes for specific project.

FA-202 – FIRE ALARM PLAN BL572 LEVEL 1

1. Added smoke detection to room 007.
2. Added visual device and smoke detector in room 009B.
3. Added smoke detector in transformer XD closet.

FA-203 – FIRE ALARM PLAN BL572 LEVEL 2

1. Modified fire alarm layout to align with architectural change of room 100Z

FA-601 – FIRE ALARM DETAILS

1. Modified notes on detail 4 to align to project parameters.
2. Modified fire alarm matrix to remove all mass notification for building.

SIGNATURE Christopher Hawk 

SIEMENS

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Smart Infrastructure

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Indianapolis, IN 46268
USA

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FAX: 866 814-3089

11/12/26

FOR INFORMATION CONTACT
ERIC HUGHES

ENGINEERING DATA FOR
Indiana University Intercollegiate Gym -
First Floor HVAC and Lighting Upgrades

IU PROJ #20250522,
USA

44OP-425512

Springpoint Architects
ARCHITECT

Introba
ENGINEER

CONTRACTOR

DWG	DESCRIPTION
	GENERAL
	Cover Sheet
TOCA	Table of Contents
	SCHEDULES
	Valve Schedule
AFMS	AFMS Schedule
	GENERAL
	CIC NOTES
LEG	Legend & Abbreviations
ABAC	Anixter Building Auto. Cables
ALN	ALN Communication
MSTP	MSTP Communication
DWIR1	DXR Wiring Specification
DWIR2	DXR Wiring Specification2
P7WIR	PXC7 TX-I/O Wiring Spec.
TTRM1	TX-I/O Termination Spec.
TTRM2	TX-I/O Termination Spec. 2
TTRM3	TX-I/O Termination Spec. 3
	CONTROL DRAWINGS
001-002	SYSTEM RISER
003-010	AHU-1 CONTROL SYSTEM
011-012	EXHAUST FANS
013-014	15109 - VAV Supply Box w/HW
	DDC PANEL LAYOUTS
015-019	PXC7-3 AHU-1

REVISION HISTORY

SIEMENS

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH			11/05/26

Table of Contents

440P-425512

TOCA

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Indianapolis
Smart Infrastructure

Valve Submittal - Water

LOCATION:
JOB NO: 44OP-425512
ENGR: WLH

PROJECT NAME: IU - IGYM 1st Flr HVAC Upgrade

DATE: 11/05/26
PAGE: 1
REV:

GENERAL NOTES:
1. All valves 2-1/2" and larger have flanged ends, 2" and smaller have screwed ends.
2. All control valves and wells shall be installed by the mechanical contractor.
3. Standard abbreviations used on control valves are:

BODY TYPES: 3W - Three way; 2W - Two way; A - Angle; N.C. - Normally Closed; N.O. - Normally Open; NOC - Ball Valve can be N.O. or N.C.; BF - Butterfly Valve; DS - Double Seated;

UNITS:
Steam inlet pressure, actual pressure drop, and shut off pressure indicated in PSIG.

ACTUATOR TYPES: SR - Spring Return; NSR - No Spring Return CR - Capacitor Driven Return; DA - Double Acting

Valve ID/ Location	Qty	Product Number		Valve Size	Body Type	Body Style	Actual Cv	Actuator Type	Design P. Drop (psi)	Required Flow (gpm)	Min (gpm)	Max (gpm)	Preset (gpm)	Steam Inlet	Press Drop (psi)	Valve Spec Sheet	Shut Off	ANSI Class	Comment
Mechanical System: AHU-1															**AHU-1 CONTROL SYSTEM**				
V-1	1	274-03170		2.00	2W	Globe	40.00	NO-SR	5	69.30	N/A	N/A	N/A	--	3.0016	154 006	49	250	AHU-1 PREHEAT VLV
V-2	1	291-05981		3.00	2W	Globe	100.00	NO-SR	5	146.00	N/A	N/A	N/A	--	2.1316	154 008	101	125	AHU-1 COOLING VLV
Mechanical System: VAV															**15109 - VAV Supply Box w/HW**				
V-1	1	259-02069		0.50	3W	Globe	4.00	NSR	5	6.30	N/A	N/A	N/A	--	2.4806	154 025	50	250	ATU 1.01 RM 009
V-2	1	259-02032	ALT-2	0.50	2W	Globe	0.63	NO-NSR	5	1.00	N/A	N/A	N/A	--	2.5195	154 010	120	250	ATU 1.02 RM 008
V-3	1	259-02032	ALT-2	0.50	2W	Globe	0.63	NO-NSR	5	1.00	N/A	N/A	N/A	--	2.5195	154 010	120	250	ATU 1.03 RM 008
V-4	1	259-02032		0.50	2W	Globe	0.63	NO-NSR	5	1.00	N/A	N/A	N/A	--	2.5195	154 010	120	250	ATU 1.04 RM 005
V-5	1	259-02032		0.50	2W	Globe	0.63	NO-NSR	5	1.00	N/A	N/A	N/A	--	2.5195	154 010	120	250	ATU 1.05 RM 099
V-6	1	259-02036		0.50	2W	Globe	1.60	NO-NSR	5	2.50	N/A	N/A	N/A	--	2.4414	154 010	120	250	ATU 1.06 RM 005F
V-7	1	259-02034		0.50	2W	Globe	1.00	NO-NSR	5	2.00	N/A	N/A	N/A	--	4	154 010	120	250	ATU 1.07 RM 001

NOTES: All control valves and wells shall be installed by the heating contractor.

AFMS SCHEDULE						
FLOW STATION TAG No.	SYSTEM SERVED	DUCT SIZES (IN.) W x H	CONFIGURATION			EBTRON Advantage Gold AFMS
			C	R	O	
AFMS-1	AHU-1	70X34		•		CONFIRM PART NUMBER: GTC116e-P W/ 2 INSERTION PROBES WITH 8 SENSORS EACH 10' CABLES 70" PROBE LENGTH x 34" ADJACENT SIDE

C = CIRCULAR
R = RECTANGLE
O = OVAL

NOTE 1: CONFIRM AFMS SIZE AND INSTALLATION CLEARANCE PRIOR TO ORDERING.

REVISION HISTORY

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

AFMS SCHEDULE

440P-425512

AFMS

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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 <u>name</u>. Tag wiring at the field device with the full point <u>address</u>.
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

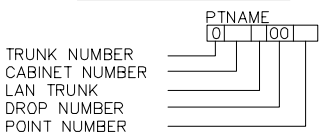
30. CIC shall create and keep an up to date list of DXR Bar Codes in a binder that is accessible to Siemens. CIC will create a list of terminal equipment that is controlled by DXR Controllers. CIC will remove the Bar Code from the DXR Controllers at the time of controls installation for each DXR and 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
AC	AIR COMPRESSOR
AD	AIR DRYER
ADXR	ACTUATOR DXR
AE	ACTUATOR ELECTRIC
AEM	APOGEE ETHERNET MICROSERVER
AF	AIR FILTER
AFS	AIR FLOW STATION
AOP	ANALOG OUTPUT, PNEUMATIC
AP	ACTUATOR PNEUMATIC
APS	AUX. POWER SUPPLY
AT	AUTOMATIC TRAP
ATD	AUTO TANK DRAIN
ATEC	ACTUATOR TEC
AZM	AUTOZERO MODULE
BCU	BUS COUPLING UNIT
BELL	BELL
BIM	BUS INTERFACE MODULE
BOIL	BOILER
BRT	BRIGHTNESS
BRTT	BRIGHTNESS AND TEMPERATURE
BTN	BUTTON
CBL	CABLES
CKV	CHECK VALVE
CM	CONSTRUCTION MATERIALS
CP	COMPONENT PANEL
CPU	CENTRAL PROCESSING UNIT
CRT	CATHODE RAY TUBE
CS	CURRENT SWITCH
CT	CURRENT TRANSDUCER
CTTE	CO2 TEMP TRANSMITTER ELEC
CVC	CONSTANT VOLUME CONTROLLER
D	DAMPER
DDC	DUAL DUCT CONTROLLER
DEM	DEMAND ENERGY MONITOR
DP	DEW POINT TRANSMITTER
DPR	DIFFERENTIAL PRESS. REGULATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DPTE	DIFF. PRESS. TRANSMITTER ELEC.
DPTP	DIFFERENTIAL PRESSURE PNEUMATIC
DPU	DIGITAL POINT UNIT
DXR	TERMINAL EQUIPMENT CONTROLLER
EC	ENTHALPY COMPARITOR
EP	ELECTRO-PNEUMATIC VALVE
ES	END SWITCH
ET	ENTHALPY TRANSMITTER
EXP	EXPANSION PANEL
FAN	FAN
FHC	FUME HOOD CONTROLLER
FM	FLOW MTR. (FLOW METER STATION)
FMS	FIRE MGMT. SYSTEM
FS	FLOW SWITCH
FTP	FLOW TRANSMITTER PNEU.
G	GAUGE
GD	GAS DETECTOR
H	HYGROSTATS
HE	HUMIDIFIER ELECTRIC

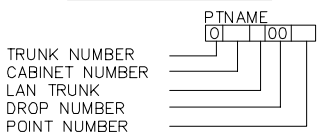
CONTROL SYMBOL	CONTROL SYMBOL DESCRIPTION
HHC	HAND-HELD OPERATOR'S TERMINAL
HL	HIGH LIMIT
HMI	GAMMA TOUCH PANEL
HOA	HAND-OFF-AUTO SWITCH
HORN	HORN
HPC	HEAT PUMP CONTROLLER
HTD	HIGH TEMPERATURE DETECTOR
HTE	HUMIDITY TRANSMITTER ELECTRIC
HTP	HUMIDITY TRANSMITTER PNEUMATIC
INT	INTERCOM
KWM	ELECTRIC KILOWATT METER
LA	LIGHT ACTUATOR
LC	LIMIT CONTROLLER (LIMITEM)
LLS	LIQUID LEVEL SWITCH
LLT	LIQUID LEVEL TRANS.
LPR	POWER SUPPLY 24VAC/24VDC
LTDE	LOW TEMP. DETECTOR ELECTRIC
LTDP	LOW TEMP. DETECTOR PNEUMATIC
LUI	LOCAL USER INTERFACE
MBC	MODULAR BUILDING CONTROLLER
MDM	MODEM
ME	ELECTRONIC ACTUATOR
MEC	MODULAR EQUIPMENT CONTROLLER
MG	MAGNEHELIC GAUGE
MPU	MULTI-POINT UNIT
MS	MOTOR STARTER
OCC	OCCUPANCY
OCCB	OCCUPANCY AND BRIGHTNESS
OBS	OBSOLETE
ODP	OPERATOR DATA PANEL
P	PUMP
PA	PULSE ACCUMULATOR
PCT	PROGRAMMABLE CLOCK TIMER
PE	PRESSURE ELECTRIC SWITCH
PL	PILOT LIGHT
PM	POWER MONITOR
PNL	PANEL
PPM	POINT PICKUP MODULE
PRC	PRESSURE REG. CONTROLLER
PRV	PRESSURE REDUCING VALVE
PS	POSITIONING SWITCH
PSE	POSITION SENSOR ELECTRIC
PST	PULL STATION
PT	PITOT TUBE
PTE	PRESSURE TRANSMITTER ELECTRIC
PTP	PRESSURE TRANSMITTER PNEUMATIC
PTR	PRINTER
PV	PILOT VALVE
PXCC	PX COMPACT CONTROLLER
PXCM	PXC-MODULAR CONTROLLER
PXG3	BACNET ROUTER ETHERNETIP-MS/TP
RBC	REMOTE BUILDING CONTROLLER
RC	RECEIVER CONTROLLER

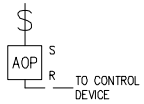
CONTROL SYMBOL	CONTROL SYMBOL DESCRIPTION
RCU	REMOTE CONTROL UNIT
RE	RELAY ELECTRIC
RP	RELAY PNEUMATIC
RS	RESTRICTOR
RV	RELIEF VALVE
S/W	SOFTWARE
SA	SHADE ACTUATOR
SC	STEP CONTROLLER
SCU	STAND ALONE CONTROL UNIT
SD	SMOKE DETECTOR
SE	SWITCH ELECTRIC
SIO	SLX IO MODULES
SLX	APOGEE SLX CONTROLLER
SPKR	SPEAKER
SPP	STATIC PRESSURE PROBE
SPR	STATIC PRESSURE REGULATOR
SV	SOLENOID VALVE
SW	SWITCH PNEUMATIC
T	ROOM THERMOSTAT, PNEUMATIC
TBC	TERMINAL BOX CONTROLLER
TC	TEMPERATURE CONTROLLER(S200)
TCU	TERMINAL CONTROL UNIT
TDR	TIME DELAY RELAY
TE	THERMOSTAT, ELECTRIC
TEC	TERMINAL EQUIPMENT CONTROLLER
TH	THERMOMETER
TI	TRUNK INTERFACE
TIE	TRUNK ISOLATOR EXTENDER
TIU	TELCOM INTERFACE UNIT
TMR	TIMER, TIME CLOCK
TTE	TEMPERATURE TRANSMITTER ELECTRIC
TTP	TEMPERATURE TRANSMITTER PNEUMATIC
TXIO	TX-I/O FAMILY CONTROLLER MODULES
UC	UNITARY CONTROLLER
UCC	UNIT CONDITIONER CONTROLLER
UVC	UNIT VENT CONTROLLER
V	VALVE
V*	VALVE SERVICE PARTS
VA	TEC VALVE ACTUATOR
VAC	VARIABLE AIR VOLUME CONTROLLER
VB	VIBRATION ISOLATOR
VTE	VELOCITY TRANSMITTER ELECTRICAL
W	WELL
WST	WEATHER STATION
XDR	TRANSDUCER
XFMR	TRANSFORMER

DDC ELECTRICAL POINT



DDC PNEUMATIC POINT





DETAILS


ELECTRICAL TERMINATION

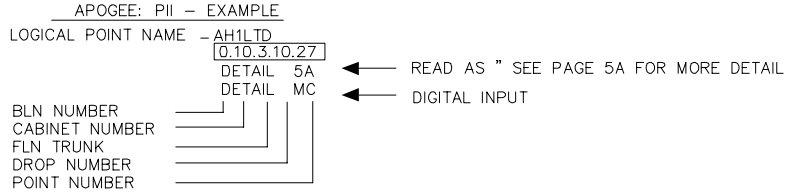

PNEUMATIC TERMINATION

DETAIL XX STANDARD DDC TERMINATION

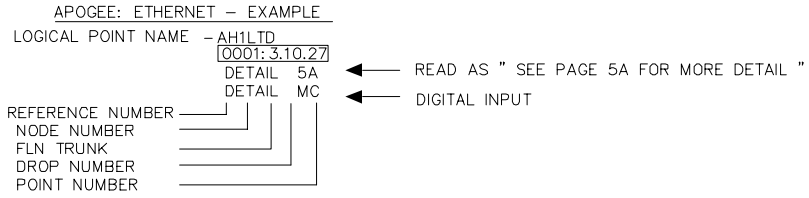

NOTE OR REVISION

DETAIL XX PAGE REFERENCE

APOGEE: PII – EXAMPLE



APOGEE: ETHERNET – EXAMPLE



REVISION HISTORY

SIEMENS

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IU - IGYM 1st Flr HVAC Upgrade

IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

Legend & Abbreviations

440P-425512

LEG

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Anixter Building Automation Cables

Non-Plenum

SBT Part Number	Description	Print Legend
H-TP20-CM	20AWG,STR,1TP,CM,BLUE JACKET	NORTHFLEX ® H-TP20-CM “DI, DO, AI, AO” (Mfg E#) 20AWG 1P 75°C CM (UL) C(UL)
H-3C20-CM	20AWG,STR,3COND,CM,BLUE JACKET	NORTHFLEX ® H-3C20-CM “TEC V/D” (Mfg E#) 20 AWG 3C 75°C CM (UL) C(UL)
H-TP18-CMR	18AWG,STR,1TP,CMR,BLUE JACKET	NORTHFLEX ® H-TP18-CMR “DI, DO, AI, AO” (Mfg E#) 18AWG 1P 75°C CMR (UL) C(UL)
H-3C18-CMR	18AWG,STR,3COND,CMR,BLUE JACKET	NORTHFLEX ® H-3C18-CMR “TEC V/D” (Mfg E#) 18 AWG 3C 75°C CMR (UL) C(UL)
H-2C14-CL3R	14AWG,STR,2COND,CL3R,DARK BLUE JACKET	H-2C14-CL3R “LV POWER” (Mfg E#) 14 AWG 2C 75°C CL3R (UL) C(UL)
H-B-TSP24LC-CM	BLN24AWG,STR,TSP,LOCAP,CM,ORANGE JACKET	H-B-TSP24LC-CM “BLN” (Mfg E#) 24 AWG 1P 75°C CM (UL) C(UL)
H-F-TSP24LC-CM	FLN24AWG,STR,TSP,LOCAP,CM,ORANGE JACKET W/ BLUE STRIPE	NORTHFLEX ® H-F-TSP24LC-CM “FLN” (Mfg E#) 24 AWG 1P 75°C CM (UL) C(UL)
H-3P24-CMR	24AWG,SOL,3P,CMR,BLUE JACKET	NORTHFLEX ® H-3P24-CMR “TEC STAT” (Mfg E#) 24 AWG 3P 75°C CMR (UL) C(UL)
LON-1PS22-CM	22AWG,STR,1PAIR,OAS,CM,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-1PS22-CM “LON FLN” (Mfg E#) 22AWG 1P 75O C CM (UL) C(UL)
LON-2PS22-CM	22AWG,STR,2PAIR,OAS,CM,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-2PS22-CM “LON FLN” (Mfg E#) 22AWG 2P 75O C CM (UL) C(UL)
E-4TP24CAT5-CM	24AWG,SOL,4TP,CAT5,CM	NORTHFLEX ® E-4TP24CAT5-CM “ETHERNET” (Mfg E#) 24AWG 4P 75O C CM (UL C(UL)
H-A-1.5TSP24LC-CM	ALN485, 24AWG, STR, TP+1C, OAS, LOCAP, CM	NORTHFLEX ® H-A-1.5TSP24LC-CM "ALN485" 24 AWG 1P+1C 75°C CM (UL) C(UL) (Mfg E#)
H-F-1.5TSP24LC-CM	FLN485, 24AWG, STR, TP+1C, OAS, LOCAP, CM	NORTHFLEX ® H-A-1.5TSP24LC-CM "FLN485" 24 AWG 1P+1C 75°C CM (UL) C(UL) (Mfg E#)

Plenum

SBT Part Number	Description	Print Legend
H-TP20-CMP	20AWG,STR,1TP,CMP,BLUE JACKET	NORTHFLEX ® H-TP20-CMP “DI, DO, AI, AO” (Mfg E#) 20 AWG 2C 75°C CMP (UL) C(UL)
H-3C20-CMP	20AWG,STR,3COND,CMP,BLUE JACKET	NORTHFLEX ® H-3C20-CMP “TEC V/D” (Mfg E#) 20 AWG 3C 75°C CMP (UL) C(UL)
H-TP18-CMP	18AWG,STR,1TP,CMP,BLUE JACKET	NORTHFLEX ® H-TP18-CMP “DI, DO, AI, AO” (Mfg E#) 18 AWG 2C 75°C CMP (UL) C(UL)
H-3C18-CMP	18AWG,STR,3COND,CMP,BLUE JACKET	NORTHFLEX ® H-3C18-CMP “TEC V/D” (Mfg E#) 18 AWG 3C 75°C CMP (UL) C(UL)
H-2C14-CL3P	14AWG,STR,2COND,CL3P,DARK BLUE JACKET	NORTHFLEX ® H-2C14-CL3P “LV POWER” (Mfg E#) 14 AWG 2C 75°C CL3P (UL) C(UL)
H-B-TSP24LC-CMP	BLN24AWG,STR,TSP,LOCAP,CMP,ORANGE JACKET	NORTHFLEX ® H-B-TSP24LC-CMP “BLN” (Mfg E#) 24 AWG TSP 75°C CMP (UL) C(UL)
H-F-TSP24LC-CMP	FLN24AWG,STR,TSP,LOCAP,CMP,ORANGE JACKET W/ BLUE STRIPE	NORTHFLEX ® H-F-TSP24LC-CMP “FLN” (Mfg E#) 24 AWG TSP 75°C CMP (UL) C(UL)
H-3P24-CMP	24AWG,SOL,3PAIR,CMP,BLUE JACKET	NORTHFLEX ® H-3P24-CMP “TEC STAT” (Mfg E#) 24 AWG 3P 75°C CMP (UL) C(UL)
KNX-TSP20LC-CMP	20AWG,SOL,1TSP,CMP,ORNGE/GRN STRIPE	NORTHFLEX ® KNX-TSP20LC-CMP “KNX PL-LINK” 20AWG SOL 1TSP 75° C CM (UL) C(UL) E179333
LON-1P22-CMP	22AWG,STR,1PAIR,CMP,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-1P22-CMP “LON FLN” (Mfg E#) 22AWG 1P 75O C CMP (UL) C(UL)
LON-2P22-CMP	22AWG,STR,2PAIR,CMP,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-2P22-CMP “LON FLN” (Mfg E#) 22AWG 2P 75O C CMP (UL) C(UL)
LON-1PS22-CMP	22AWG,STR,1PAIR,OAS,CMP,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-1PS22-CMP “LON FLN” (Mfg E#) 22AWG 1P 75O C CMP (UL) C(UL)
LON-2PS22-CMP	22AWG,STR,2PAIR,OAS,CMP,ORANGE JACKET W/ WHITE STRIPE	NORTHFLEX ® LON-2PS22-CMP “LON FLN” (Mfg E#) 22AWG 2P 75O C CMP (UL) C(UL)
E-4TP24CAT5-CMP	24AWG,SOL,4TP,CAT5,CMP	NORTHFLEX ® E-4TP24CAT5-CMP “ETHERNET” (Mfg E#) 24AWG 4P 75O C CMP (UL
H-A-1.5TSP24LC-CMP	ALN485, 24AWG, STR, TP+1C, OAS, LOCAP, CMP	NORTHFLEX ® H-A-1.5TSP24LC-CM "ALN485" 24 AWG 1P+1C 75°C CM (UL) C(UL) (Mfg E#)
H-F-1.5TSP24LC-CMP	FLN485, 24AWG, STR, TP+1C, OAS, LOCAP, CMP	NORTHFLEX ® H-A-1.5TSP24LC-CM "FLN485" 24 AWG 1P+1C 75°C CM (UL) C(UL) (Mfg E#)

Assemblies

Part Number	Description	Print Legend
550-827	CABLE ASSEMBLY TEC TO SSB 3 POS 10 FT	N
550-828	CABLE ASSEMBLY TEC TO SSC 3 POS 10 FT	N

REVISION HISTORY

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

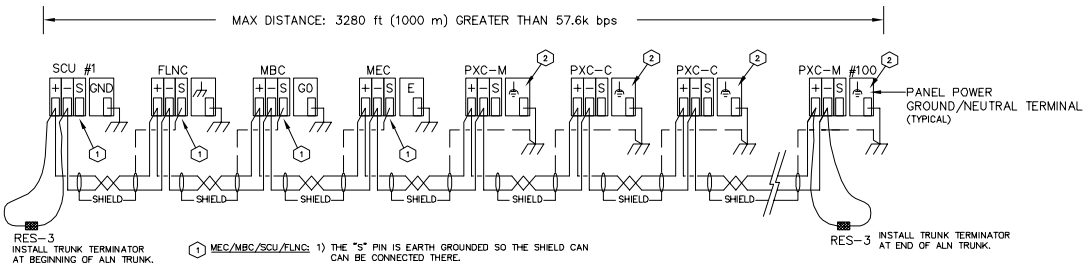
Anixter Building Auto. Cables

440P-425512

ABAC

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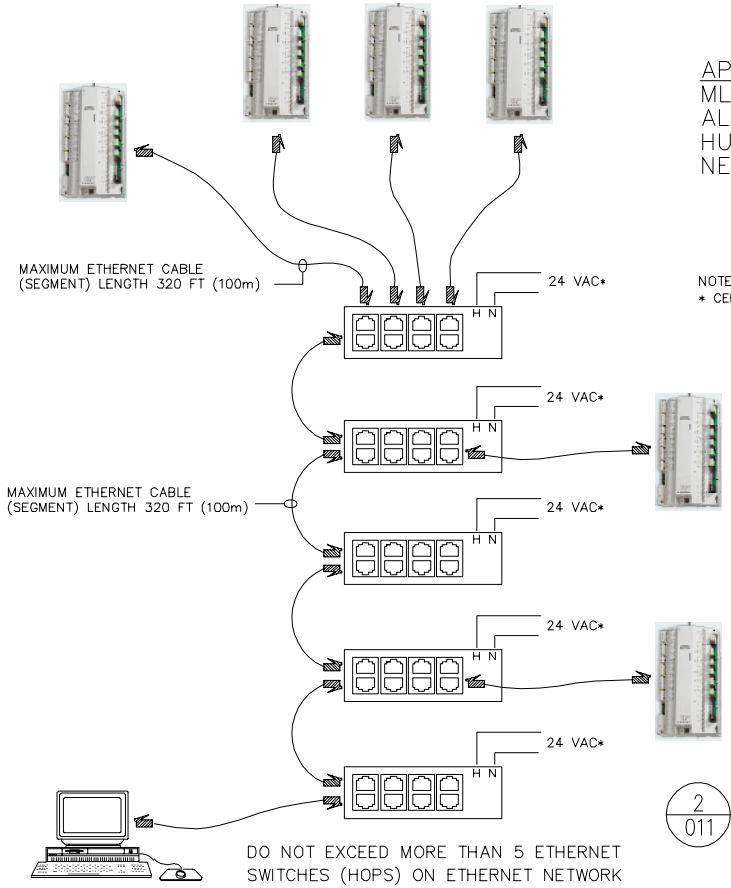


RES-3
538-664
BLN TRUNK TERMINATOR

1
011

SIEMENS P2 ALN (BLN) NETWORK

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



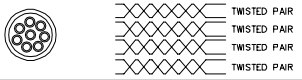
APPLICABLE TO:
MLN (WORKSTATION TO ETHERNET)
ALNs (ETHERNET, BACnet/IP, AEM)
HUBS, SWITCHES, ROUTERS
NETWORK INTERFACE CARD

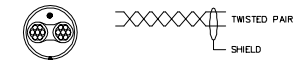
NOTE:-
* CERTAIN MODELS MAY REQUIRE 24 VDC OR 120 VAC..

2
011

SIEMENS ETHERNET NETWORK

10Base-T/100Base-TX
COMMUNICATION PROTOCOL: ETHERNET TCP/IP

ALN ETHERNET CABLE SPECIFICATIONS

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 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

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

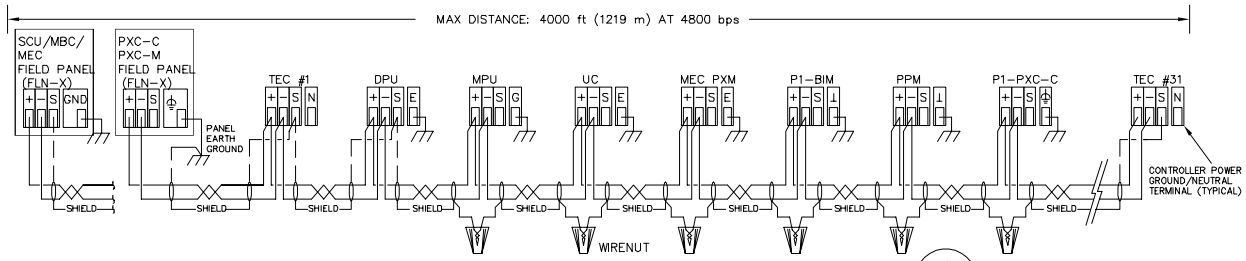
ALN Communication

440P-425512

ALN

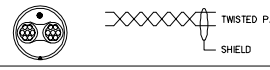
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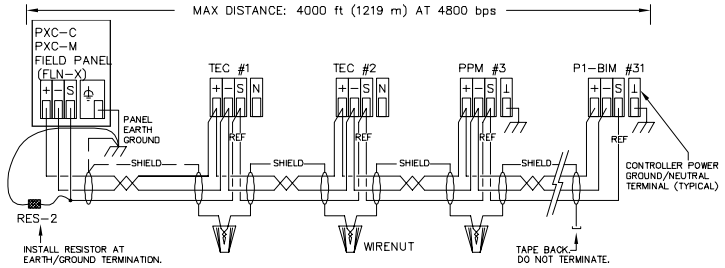


1 MSTP SIEMENS LEGACY P1 FLN NETWORK

SIEMENS P1 FLOOR LEVEL NETWORK (FLN)
COMMUNICATION PROTOCOL: RS-485
WIRING FOR 1 PAIR (2 CONDUCTOR TSP)

FLN TSP CABLE SPECIFICATIONS

TWISTED PAIR 24 AWG (STRANDED) 12 PICOFARAD/FT CAPACITANCE OR LESS 4 TWISTS PER FOOT.
SHIELD 100% OVERALL FOIL

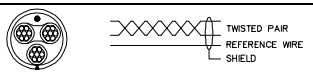
PART NUMBERS
ANNIXTER PART NUMBER: H-AF-TSP24LC-CMPBX-P DESCRIPTION: ALN/FLN24AWG,STR,TSP,LOCAP,CMP (FT-6)



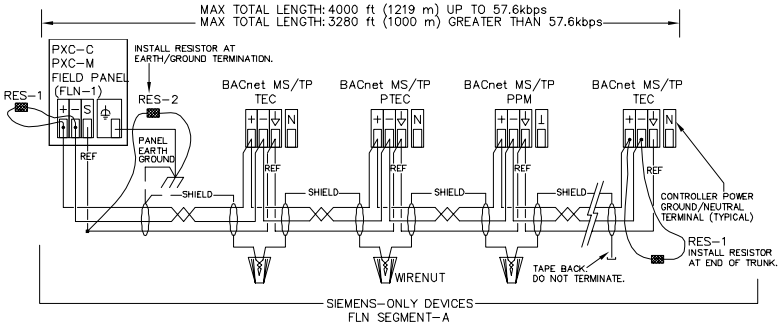
RES-2
550-974P10
EARTH TERMINATOR RESISTOR

2 MSTP SIEMENS P1 FLN NETWORK

SIEMENS P1 FLOOR LEVEL NETWORK (FLN)
COMMUNICATION PROTOCOL: RS-485
WIRING FOR 1.5 PAIR (2 CONDUCTOR TSP, & 1 CONDUCTOR)

FLN 1.5 PAIR CABLE SPECIFICATIONS

TWISTED PAIR 24 AWG (STRANDED) 11 PICOFARAD/FT CAPACITANCE CONDUCTOR TO CONDUCTOR. 24 PICOFARAD/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:

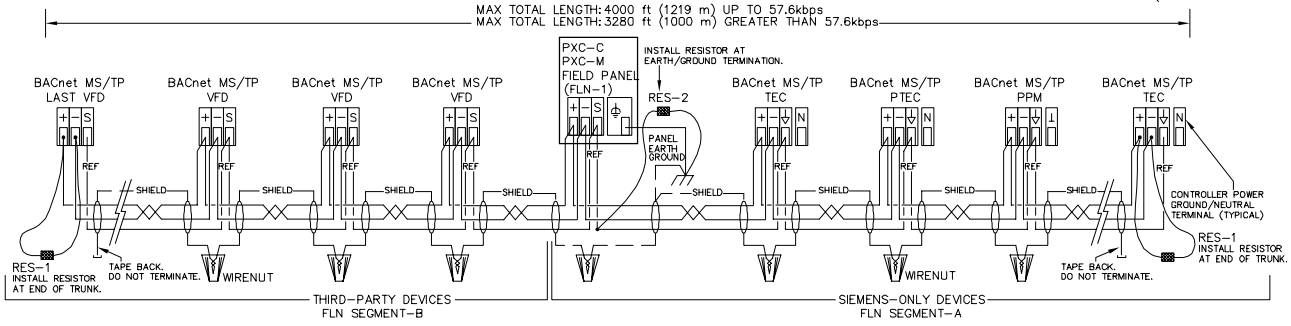
1) FLN WIRING MUST BE CONNECTED IN A DAISY-CHAIN.
2) FOR SIEMENS-ONLY FLN NETWORK, WIRE AS SHOWN FOR FLN SEGMENT-A. INSTALL END-OF-LINE RESISTOR RES-1 AT FIELD PANEL AND ON LAST TEC.
3) FOR FLN NETWORK WITH SIEMENS & THIRD-PART DEVICES, WIRE AS SHOWN WITH FLN SEGMENT-A AND SEGMENT-B. INSTALL END-OF-LINE RESISTOR RES-1 ON LAST TEC AND ON LAST THIRD-PARTY DEVICE. DO NOT INSTALL E-O-L RESISTOR ON FIELD PANEL.

RES-1
550-975P100
120 OHM 1/2W RESISTOR

RES-2
550-974P10
EARTH TERMINATOR RESISTOR

3 MSTP BACnet MS/TP FLN NETWORK

BACnet MASTER/SLAVE TOKEN PASSING NETWORK
COMMUNICATION PROTOCOL: RS-485
WIRING FOR 1.5 PAIR (2 CONDUCTOR TSP, & 1 CONDUCTOR)



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

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MSTP Communication

440P-425512

MSTP

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Important Safety Information
System-specific:
The electrical safety for building automation and control systems by Siemens Building Technologies is essentially based on safely separating low voltage from mains voltage.
Application as per SELV or PELV pursuant to HD 384 "Electrical installation of buildings" depending on the grounding (24V AC) of the low voltage:
Ungrounded = Safety Extra-Low Voltage (SELV).
Grounded = Protection by Extra Low Voltage (PELV).
Device-related safety is guaranteed, among others, by:
1. Low-voltage power supply 24V AC per SELV or PELV
2. Comply with specific regulations for electrical wiring per the following sections.
3. Observe the following points when grounding 24V AC (system neutral):
4. Operating voltage of 24V AC is permitted in principle for both grounded as well as non-grounded system neutral. Local regulations and customers apply accordingly.
5. Grounding may be required or not allowed for functional reasons.
6. 24V AC systems are generally grounded unless disadvised by the manufacturer.
7. In order to avoid ground loops, connect systems with PELV to the ground at one location only (especially for transformers), if no other indication exists.

Mains and operating voltage:

Operating voltage 24V AC:
1. It must meet requirements for SELV or PELV. Permitted deviation for nominal voltage 24V AC on the device: -10 +/- 20%.

Transformer specification 24V AC:
1. Use safety insulating transformers as per EN 61558 with double insulation designed for 100% duty to supply SELV or PELV circuits..
2. Power taken from the transformer should be at least 50% of nominal load for efficiency reasons (effectiveness).
3. Transformer nominal power should be at least 25VA. For smaller transformers, the ratio of open circuit voltage to full load is unfavorable (> + 20%).

Operational voltage fuse 24V AC:
Transformers on the secondary side correspond to the actual load of all connected devices as per transformer sizing:
1. 24V AC line (system potential) must always be fused.
2. There required, also line (system neutral).

Mains filter:

Spikes and high-frequency interference may occur in areas with high levels of interference. The disturbances not only impact the transformer on the primary side, but may also influence secondary connected components.
A mains filter should be attached on the primary transformer if such interference is anticipated. Mains filters should be installed as close to the network transformer as possible and grounded.

Device-specific :

Devices using different power circuits:
Devices must have the required insulation of the power circuits from each other to be able to connect them directly without additional insulation.

Interfaces for different voltage circuits :
Connections via interfaces increase the risk of distributing dangerous voltage through the building. Ensure that the required insulation is available at all times and installed per applicable regulations.

DXR2 with 24V AC supply:
1. A class 2 transformer or an external T4 A fuse is compulsory.
2. Max. 100VA per transformer / per fuse circuit.

Installation:

Mounting position:
Recommended:
1. Wall, horizontal from left to right or from right to left.
2. Wall, vertical from bottom to top.
3. Ambient temperature 23 to 122°F (-5 to 50 °C)

AC 24V power lines:

1. DXR2 room automation stations with 24V AC supply are limited to a consumption of 4A/100VA.
2. Supply: Class 2 transformer OR external 4A fuse OR transformer >100VA for more than one DXR2. (In this case a separate 4A fuse is required for every 100VA).
3. DXR2 room automation stations with 24V AC supply can only be wired in star topology.
4. An external power supply of field devices should be fused separately for secure operation.

24V AC Transformer :

Operating voltage :
1. The operating voltage is 24V AC. It must comply with SELV or PELV to HD 60364-4-41 (2007-01-01) requirements.
2. The acceptable deviation of the 24V AC nominal voltage connected to the transformer is +20%/-10%. This means that after taking account of the cable and contact resistances, a tolerance of +/-20% for the field device supply can be guaranteed in the field devices.

Specification for 24V AC transformers:
1. Double-insulated safety transformers to EN 61558, designed for continuous operation, to supply SELV or PELV circuits.
2. The rated transformer output must be at least 50VA. In smaller transformers the ratio of no-load voltage to full-load voltage is unfavorable (> +20%).
3. For reasons of power efficiency the rated transformer output should not exceed 200 % of the maximum load.

Wiring DXR2:
The 24V AC can only be wired in star distribution for the DXR2 room automation stations. 24V AC must be fused with max. 4A (or Class 2 transformer).

Power consumption DXR2 24V AC:
Max. permissible input current 24V AC (through terminals 5 and 6) = Total max. 4A.

Base load (without loading by field devices)
DXR2.M11, DXR2.x12P 9VA
DXR2.M18 11VA
DXR2.E18 13VA
KNX PL-Link supply 5VA/3W
29V DC / Max. 50 mA
The bus supply can be switched off manually via tool if not used. Transit power 24V AC
Field supply 24V AC Max. 6VA
Field supply 24V DC (DXR2.E18 only)Max. 2.4W
Digital output (triac active) 6VA (250mA)
Note: Certain applications ensure that only one triac at a time is active: No simultaneous heating and cooling. Two heating outputs are alternatively on 50% of the time, the same with two cooling outputs. This can be considered in the transformer sizing.
Unconfigured triac 6VA (250mA)

Cable lengths 24V AC

The permissible voltage drop of 0.6 V on the power wire between the transformer and the most distant power point (room automation station, power module, bus interface module) is the basis for calculations.

Permissible load [VA]

Cable length for 24V AC (SI)					
Cable X-section	2.5m	5.0m	10m	20m	50m
AWG16	200VA	100VA	50VA	25VA	10VA
AWG14	320VA	160VA	80VA	40VA	16VA
Cable length for 24V AC (US)					
Cable X-section	8.2ft	16.4ft	32.8ft	65.6ft	164ft
AWG16	200VA	100VA	50VA	25VA	10VA
AWG14	320VA	160VA	80VA	40VA	16VA

Notes :
1. The supply wire (24V AC) and return lines can each have the indicated lengths.
2. Power is added together for multiple back-to-back looped PXC3 or DXR2 ("daisy chain") which reduces the cable length accordingly.
3. Each supply point (room automation stations/power module/bus interface module) is either connected separately to the transformer's terminal block (star wiring) or looped via the room automation station.
4. Cables may be wired in parallel to increase the cross section.

Wiring of field devices (without bus)
As a rule, comply with local regulations for electrical installations. These take precedence over any notes in this document.

Wiring for Triac outputs 24V AC.
The following applies for wiring to actuating devices such as valves, damper actuators or protection connected to the Triac outputs:
1. Use stranded, 2 or multiple core round cables, screened (standard off-the-shelf installation cable).
2. Single wires may not be used.
3. Wiring may be laid together with power lines (230V AC). They must be isolated from the power lines per regulations. Isolation must meet PELV requirements.
4. Wiring can not be led in the same cable as the power lines.
5. See table below for maximum single cable lengths. However, the length must not exceed 984ft (300m) (EM interference). DXR2: 262ft (80m).

DXR2 room automation stations with 24V AC supply:

Use cable cross section suited for 4A according to local regulations (T 4A fuse external / Class 2 transformer). Cable cross section >= AWG18. Triacs are not protected and are destroyed if overloaded.
2. Cable length <= 262ft (80m)

Signal wiring
The following applies in common for signal wiring of field devices such as temperature sensors, window switches, presence detectors, dew point sensors or electrical buttons:

1. Use stranded, 2 or multiple core round cables, without screen (standard off-the-shelf installation cable).
2. Single wires or ribbon cables may not be used.
3. Signal wiring may be laid together with power lines (230V AC). They must be isolated from the power lines per regulations. Isolation must meet PELV requirements.
4. Signal wiring can not be led in the same cable as the power lines.
5. The length must not exceed the following value (measuring errors, EM interference): DXR2: 262ft (80m).
6. All system neutral terminals of a device are interconnected. TX-I/O: The connection is not in the terminal base but in the plug-in module. When this unit is unplugged there is no connection.
7. The system neutral of a digital input can be connected to any signal neutral terminal of the device.
8. It is also permissible to combine the system neutral conductors of several digital inputs in order to save wire. TX-I/O: However, system ground must be connected at least once per module.
9. With analog inputs and outputs, the measuring neutral must always be connected to the terminal associated with that specific I/O point to avoid possible measurement errors.
10. 0 to 10V DC actuators with 0 to 10V DC feedback: System neutral of output and feedback may be in the same conductor due to the small current of the U10 and Y10 signals. However, output and feedback must be on the same device and there is no 24V DC supply current admissible on the system neutral conductor.

Relay outputs

1. External fuse of max. 10A for protection of the PCB tracks.
2. Relays have volt-free relay contacts. The mains voltage / switching voltage (230V AC / 24V AC/DC) must be supplied as an external voltage to the terminals.
3. The maximum load of the relay contracts must be observed (see data sheets for the corresponding devices)
4. The sizing and fusing of the power lines are oriented to overall connected load and local regulations.
5. The fused electrical values must therefore be reviewed in the data sheets for the corresponding devices.
6. The lines must be secured on the device with strain relief.
7. Cable length: as per load and local regulations.
8. The maximum current of the relays is limited to 4 (3)A.

Inputs and Outputs

Digital inputs

Cable length
The permissible length of the cables connected to the status contacts, regardless of the thickness of the wire (min. diameter 0.024in / 0.6mm) is restricted to 262ft (80m).

Common conductor with multiple contacts:
When several status or counter contacts are to be connected, a common conductor may be used. This saves wiring. However, system ground must be connected at least once per module. Digital inputs are not electrically isolated from the system electronics. Mechanical contacts must be volt-free. Electronic switches must comply with SELV or PELV standards.

Analog inputs

Cable length:
The maximum permissible cable length for passive resistance sensors and transmitters depends on the permissible measuring error due to the line resistance. The maximum cable length for DXR2 is 262ft (80m).

Active sensors 0 - 10V DC

Cable length:
The maximum cable length for DXR2 is 262ft (80m). The permissible length of 10V DC cables for measured signals, and of the cables to supply the sensors from the TRA device, have to be calculated on the following basis for each active sensor.
1. Max. 7% voltage drop (1.68V) on the cables due to the sensor supply current. Reason: to ensure sufficient voltage for the sensor supply.
2. Measuring error of max. 0.5% of the measuring range due to line resistance on the measuring conductor (not critical, as the measuring current is only 0.1mA)
3. Longer cables are permissible provided larger measuring errors are acceptable.
4. If the active sensor is supplied locally from a transformer, the sensor cable can be up to 984ft (300m) long (DXR2: 262ft (80m)) with a wire diameter of greater than or equil to 0.024in (0.6mm). The local transformer MUST NOT be earthed (earth loop)!
5. In case of active sensors with 24V AC supply, use cable cross section suited for 10A according to local regulations .
6.

Digital outputs (relays, triacs)

Cable length:
The cable between the switching outputs and the equipment to be switched may be up to 262ft (80m) for DXR2.
The permissible lengths of the cables between the relay outputs / triacs and the actuators depend on the type of actuator in use and are calculated as follows:
Relays: Voltage drop of max. 7% (1.68V) on the 24V AC operating voltage for the actuator.
Triacs: Voltage drop of max. 3% (0.72V) on the 24V AC operating voltage for the actuator (the triac itself has already 4% voltage drop).

Analog outputs

Cable length
The permissible cable lengths for 0 - 10V DC control signals and for the 24V AC operating voltage are given in the data sheets of the individual actuators.
Where the actuators are supplied locally with 24V AC, the control signal cable may be up to 984ft (300m) long (DXR2: 262ft (80m)) with a diameter of greater than or equil to 0.024in (0.6mm).
The local transformer MUST NOT be earthed (earth loop)!
0 - 10V DC actuators with 0 - 10V DC feedback: System neutral of output and feedback may be in the same conductor due to the small current. However, output and feedback must be on the same device.

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IU PROJ #20250522,

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DXR Wiring Specification

440P-425512

DWIR1

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Ethernet network:

Network topologies
1. Star topology (general).
2. Line topology (for room automation).
3. DXR2 and PXC3 can be mixed.
4. The number of room automation stations is limited to 20 for a line topology (daisy chain).
5. The next device has no 24V AC power when a room automation station is removed. The connection exists only on the board, but not on the terminal block.
6. The Ethernet switch is inactive when a room automation station has no 24V AC power. The next devices, if in line topology, are disconnected from the network. For secure operation of the system it is recommended to supply each room automation station separately with 24V AC.

Cables – Room automation stations are connected to one another via switches and Ethernet cables with RJ45 connectors. The following conditions must be met:
1. Standard Ethernet cable min. category 5
2. Shielded or unshielded STP (Shielded Twisted Pair) or UTP (Unshielded Twisted Pair).
3. Length between switch and Room automation station max. 328ft (100m).
4. Length between Room automation stations Max. 328ft (100m).
5. Number of devices under a line topology max. 20.
6. Standard IT product at 100MB or 1GB.

Power over Ethernet (PoE) – Power over Ethernet (PoE) is a simple solution to supply power to room operator units consuming only little power. This saves a power cable and associated installation costs. PoE allows for installing Ethernet devices also in hard–to–access locations or areas where too many cables are an issue. In PoE, power sourcing equipment (PSE) supplies power to powered devices (PD, here: end devices). Voltage is supplied via the RJ45 plugs and a twisted–pair cable (TP) to the devices either:
1. Via data transmission lines
2. Or via unused lines of the RJ45 connection.
PoE requires a star topology. Standard PoE switches have between 4 and 16 outputs. In large plants (e.g. different rooms in a hotel) require use of multiple switches in a line topology.

Specifications:

Standard Ethernet cable	min category 5
Screened or unscreened	STP / UTP

STP (Shielded Twisted Pair)
or UTP (Unshielded Twisted Pair)
Distance between switch and station = max 328ft (100m).
Distance between switch and end unit = max 328ft (100m).

MS/TP networks:

Network topologies – MS/TP networks for Desigo TRA can only be wired in line topology. The network distance for a fully or partially loaded network is 4000ft (1220m) at a maximum network speed of 76,800 bps. Lower speeds do not mean longer network sections are possible. DXR2 controller support up to 115,200 bps. Network repeaters can be used to extend this distance.
To determine how many devices can be on a network section, add up all the loading numbers and do not exceed 32. Many third–party devices have full load interfaces. Check the manufacturer's literature for network loading information. The RS–485 specification allows 32 full load devices on a section of network cable before a repeater is required. Desigo TRA devices are 1/8 load devices, so, in theory, you could place 256 on a network section.

Response times normally limit the maximum number of devices on a network to lower values of around 96 devices.
1. Two 120Ohm ½W resistors between + and – at BOTH ends of the network section.
2. OneSpecial PTC thermistor between Reference () and earth at ONE end of the network section. This prevents the cable from being damaged by high ground currents that may occur if the reference wire is accidentally grounded to earth ground at a second location.

Technical data BACnet MS/TP – Inter–node protocol communications on BACnet MS/TP networks take place over RS–485 physical media.
Desigo TRA devices use the 3–wire interface.
1. By providing the RS–485 ground signal of the interface to the network termination plug, all node communication ports can be referenced together providing a high degree of noise immunity.
2. The RS–485 common reference wire is terminated at one point (and only one point) to earth ground.
3. An overall foil shield and drain wire provide additional noise protection.
4. The decision to use the orange jacket cable or orange jacket with blue stripe cable is up to the user/customer. The only difference in the cables is the addition of the blue stripe, which can be useful to indicate a different protocol usage (e.g. Automatic level vs. floor level network).



Cable Specifications

Transmission medium (bus cable)	1.5–Pair (1 TP & 1 conductor) with overall Shield and drain wire
Gauge (pair)	24 AWG (0.25 mm2) stranded
Capacitance conductor to conductor	12.5 pF/foot (41 pF/m)
conductor to shield	24 pF/foot (79 pF/m)
Impedance	120 Ohm
Twists	min. 4 per foot (13 per m)
Reference wire	24 AWG (0.25 mm2) stranded, 3 inch lay with twisted pair
Shield	100% overall foil with drain wire
NEC class	UL listed, CM, CMP (167°F (75°C or higher)
CEC class	FT4, FT6 (167°F (75°C) or higher)

KNX PL–Link room bus:

1. The KNX PL–Link bus must be conducted inside the building. The cables must never leave the building.
2. The KNX PL–Link bus facilities communications from the PXC3 room automation station to a maximum 64 devices on the KNX bus devices for various manufacturers.
3. Note: The number of devices is also limited by the number of data points and the available bus power. Data points and bus power are incremented during engineering with the ABT tool.
4. The KNX PL–Link bus basic version comprises one cable and two stranded bus wires.
5. The PXC3 has one internal bus power supply of 160mA.
6. The DXR2 has one internal bus power supply of 50mA.
7. The PXC3 also includes an 24V AC / 2A output for devices with increased power consumption that is supplied via 24V AC rather than via the KNX PL–Link bus.
8. The KNX PL–Link is physically based on the KNX bus (Konnex).
9. In KNX networks area/line couplers and IP routers are not admitted.
10. Interconnection of room automation stations via KNX PL–Link is not admissible; the connection is done exclusively via Ethernet switches (Section 9).
11. The polarity of the KNX PL–Link bus conductors must be respected (KNX terminals + and –).

Bus power supply – A bus power supply is required for bus communications. Throttled voltage 29V DC is used.

Internal KNX PL–Link Power Supply:
The room automation stations have an internal bus power supply. which is switched on by default. If an external supply is used, the internal supply must be switched off manually in the ABT (KNX PL–Link rail properties), as parallel operation is not permitted.
Bus power and the KNX bus are electrically isolated from device electronics for devices with bus power.
Parallel operation of the internal KNX PL–Link bus supply with an external bus power supply is not permitted.
The internal bus power supply must be switched off in the tool when an external bus power supply is used.

External bus supply:
An external bus power supply unit (PSU) is required when the 160mA of the PXC3 / the 50mA of the DXR2 is insufficient to cover the power demand of the connected devices.
Power supply units for 160, 320 and 640mA available in specialty stores. The total power supply for the devices must be calculated to determine the appropriate size. Comply with the corresponding details in the datasheet.
A 640mA power supply unit suffices for a line featuring 64 devices on the KNX bus with an average power demand of 10mA each.

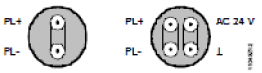
(Parallel operation)
5. In principle, parallel operation of external bus supplies among themselves is possible. However, check if the specific PSU is allowed to be operated in parallel with other PSUs. Refer to the technical specifications. The below mentioned Siemens devices are not submitted to this restriction.
6. A minimum cable distance is required between two PSU.

Bus topologies – Up to 64 devices with KNX PL–Link can be installed on one line (main line as well). No restrictions apply to the type mix.

Note:
1. There is no need to calculate the bus load number E for up to 64 devices.
2. A maximum of 64 devices may be installed even if devices requiring less power are used.

Permissible bus topologies are: Tree, line, and star topologies. These topologies can be mixed as needed. However, ring topologies are not allowed. The tree topology is advantageous if a large network must be created.

Cables
The bus lines (= wired pair) are connected via PL+ (red) and PL– (black).



24V AC can be provided in the same (2 x 2 stands) or in a separate cable.

Bus cable screening : In TRA plants, bus cables without screen are permitted. The screens available for bus cables do not need to be connected. If interference is expected on the KNX bus, use a cable with screen. Connect the screen as per standard installation rules.

Network with internal power supply: Comply with the following distances for a KNX network with the internal power supply from the room automation station:

1. Distance between device and internal supply, max 262ft (80m).
2. Distance between devices, max 262ft (80m).
3. Total length of all lines on one line, max 262ft (80m).

Network with external power supply: Comply with the following distances for a KNX network with external bus power supply (PSU)

1. Distance PSU to PXC3 with switched off internal supply, Min. 0ft (0m).
2. Distance device to next PSU, Max. 1148ft (350m).
3. Distance between two PSU operated in parallel Min. 656ft (200m), (Min. 0ft (0m) for the new Siemens power supply modules.).
4. Distance between devices, Max. 2297ft (700m).
5. Total length of all lines on one line, Max. 3281ft (1000m).

Polarity: Important – The bus conductors must NOT be inverted. (KNX terminals + and –).

Permissible load [VA] :

	Cable length for 24V AC				
AWG	32.8ft	65.6ft	164ft	328ft	656ft
AWG20	48VA	30VA	12VA	6VA	3VA
AWG18	48VA	48VA	20VA	10VA	5VA
AWG16	48VA	48VA	32VA	16VA	8VA
AWG14	48VA	48VA	48VA	24VA	12VA

Permissible load [VA] (SI):

	Cable length for AC 24V				
AWG	10m	20m	50m	100m	200m
AWG20	48VA	30VA	12VA	6VA	3VA
AWG18	48VA	48VA	20VA	10VA	5VA
AWG16	48VA	48VA	32VA	16VA	8VA
AWG14	48VA	48VA	48VA	24VA	12VA

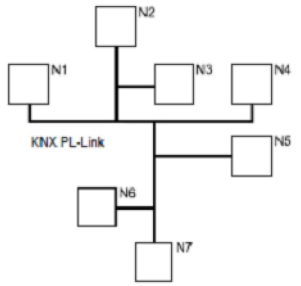
KNX PL–Link Technical data
KNX bus :
1. Transmission medium (bus cable),TP (twisted pair)
2. Baud rate, 9.6 kbps (fixed for TP)
3. Bus line polarity, PL+, PL– (not interchangeable)
4. Bus terminating resistor, Not required.

KNX bus cable:
1. Cable type, 20AWG two conductor, solid, communication cable (Anixter KNX–TSP20LC–CMP or similar).
2. Wire diameter, Min. 0.8 mm (AWG20), Max. 1.0 mm (AWG18).
3. Line resistance, 20 to 75 Ω/km.
4. Specific capacity, 10 to 100 nF/km at 10 kHz.
5. Specific inductivity, 450 to 850 µH/km at 10 kHz.
6. Screens, Not required.

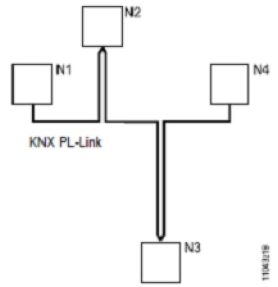
Bus power supply: DXR2 is 30V DC, 50mA for max. 5 KNX devices with 10mA each .

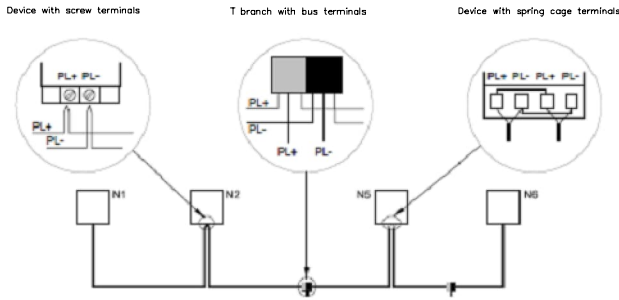
Max. number of devices: 64 devices in a KNX PL–Link network.

Tree Topology(with stub lines)



Line Topology (with loops)





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DXR Wiring Specification2

440P-425512

DWIR2

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PXC7 MODULAR 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	2	#24 (4) TP [6] CAT5 OR BETTER	300ft (100 m)	CHECK LOCAL CODES

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:

1. DISTANCES SHOWN ASSURE LESS THAN 10% VOLTAGE DROP ACROSS THE WIRE FOR A TYPICAL STARTER.

1. WHEN DAISY-CHAINING 24V AC/DC POWER TO CONTROLLERS USE #14 WIRE.

2. CONDUIT SHARING RULES: ONLY WHERE LOCAL CODES PERMIT. BOTH CLASS1 AND CLASS 2 WIRING CAN BE RUN TO THE PXC7 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

3. 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.

4. WIRE LENGTH AFFECTS POINT INTERCEPT ENTRY. ADJUST INTERCEPT ACCORDINGLY FOR EACH WIRE GAUGE AND SENSOR TYPE.

5. 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.

6. 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 PXC7 AND 20ft (6m) TO CONNECT SWITCH OR HUB.

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

PXC7 WIRE SPECIFICATIONS

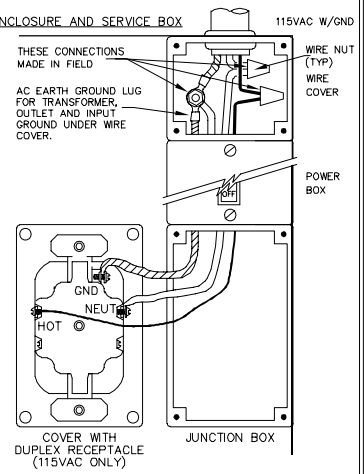
TABLE 2

	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

1. UL RECOGNIZED WIRE (LABELED WITH A BACKWARDS 'RU') IS NOT FIELD INSTALLABLE. USE ONLY UL-LISTED WIRE.
2. 300 VAC WIRE CAN BE USED IN FIELD PANELS CONTAINING VOLTAGES BELOW 150 VAC.

T1 00 PXC7 CONDUIT PENETRATIONS

NOTES:
1. NO MORE THAN THREE (3) 384VA OR SIX (6) 192VA FULLY LOADED PXA CABINETS ALLOWED ON A SINGLE 3-WIRE 115V, 15A CIRCUIT.
2. RECEPTACLE IS PREWIRED AND MOUNTED IN FACTORY, FOR 115VAC SERVICE BOX ONLY.
3. DC INPUT/OUTPUT ONLY AVAILABLE ON BUS CONNECTION MODULES.

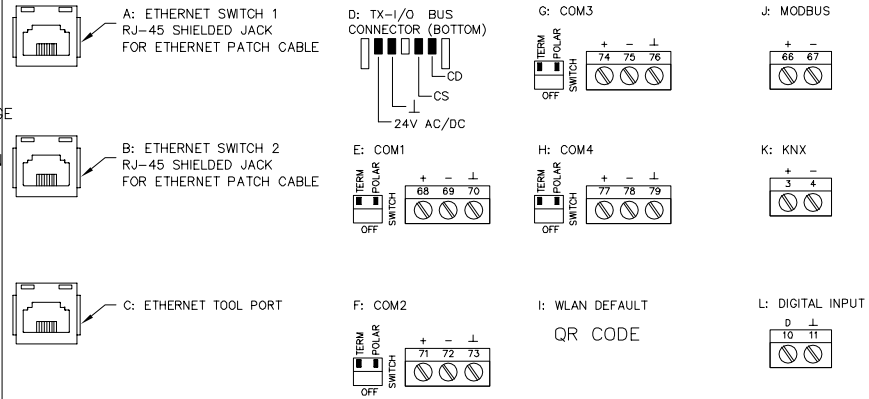


PXC7 FAMILY VA RATINGS & SENSOR SUPPLY

PRODUCT	24VDC (W)	24VAC INPUT VA	24VAC OUTPUT VA
PXC7.E400.A	7.2	71	48

TX-I/O MODULE	24VDC LOAD (W) MAX.
TXM1.8D	1.1
TXM1.16D	1.4
TXM1.8U	1.5
TXM1.8U-ML	1.8
TXM1.8X	2.2
TXM1.8X-ML	2.3
TXM1.6R	1.7
TXM1.6R-M	1.9
TXM1.8T	1.0
TXM1.4D3R	1.0

T2 00 PXC7 POWER WIRING



NOTES:
1. COMMUNICATION CONNECTORS PLUG INTO PXC7.
2. THE TERMINAL FOR THE FUNCTIONAL GROUND MUST BE CONNECTED ON THE INSTALLATION SIDE OF THE BUILDING GROUNDING SYSTEM (PE).

T3 00 PXC7 COMMUNICATION TERMINATIONS

FOR PXC7, SERIES CONTROLLERS AND SUPPLY MODULES

REVISION HISTORY

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

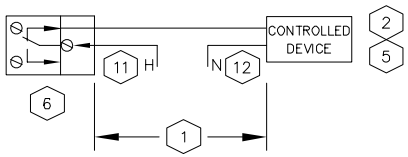
PXC7 TX-I/O Wiring Spec.

440P-425512

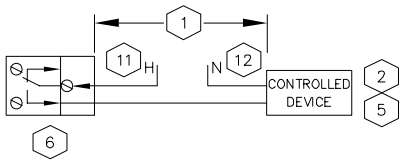
P7WIR

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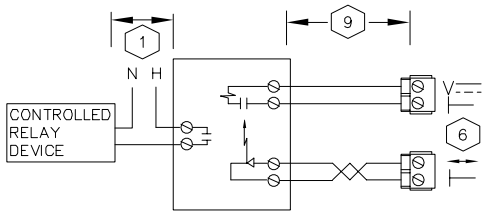
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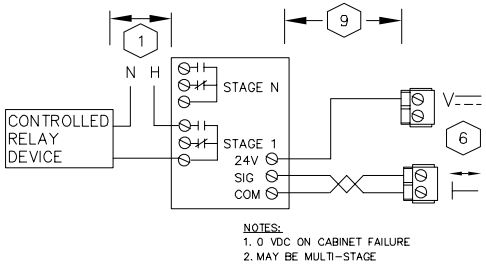
A 00 — DIGITAL OUTPUT (6R) NC
PULSED OR LATCHED



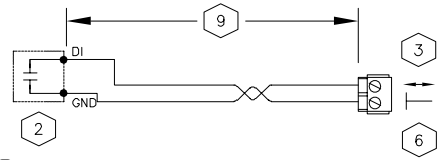
B 00 — DIGITAL OUTPUT (6R) NO
PULSED OR LATCHED



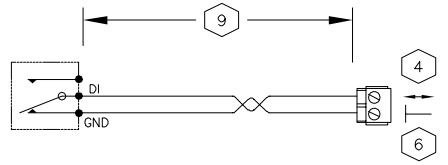
C 00 — DIGITAL OUTPUT (8U,8X) Latched
VOLTAGE TO SOLID STATE RELAY



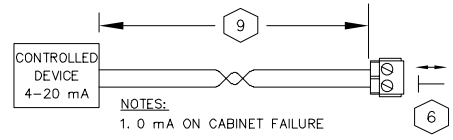
D 00 — DIGITAL OUTPUT (8U,8X) Sequenced
VOLTAGE TO SEQUENCING MODULE



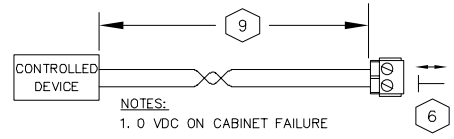
E 00 — DIGITAL INPUT (8D,16D,8U,8x)
DRY CONTACT



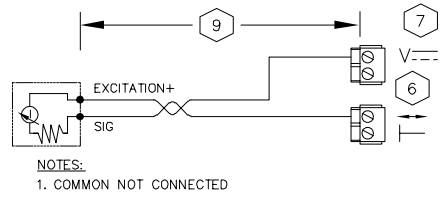
F 00 — DIGITAL INPUT (8D,16D,8U,8X)
PULSE ACCUMULATOR



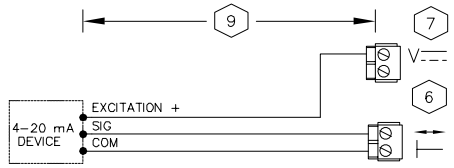
H 00 — ANALOG OUTPUT (8X) 4–20 mA



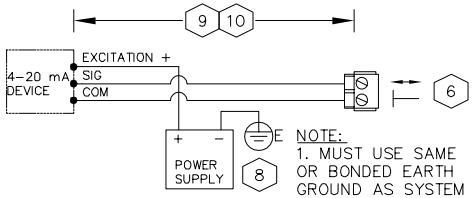
I 00 — ANALOG OUTPUT (8U,8X) 0–10VDC



M 00 — ANALOG INPUT (8X) 4–20 mA
2–WIRE INTERNAL POWERED



N 00 — ANALOG INPUT (8X) 4–20mA
3–WIRE INTERNAL POWERED



O 00 — ANALOG INPUT (8X) 4–20mA
3–WIRE EXTERNAL POWERED

NOTES:

1. MAXIMUM WIRE RUN LENGTHS ARE BASED ON THE CURRENT DRAW AND WIRE GAGE. SEE DRAWING TWIR.
2. SEE CONTROL DRAWINGS FOR NORMAL DE–ENERGIZED CONTACT STATE
3. MAXIMUM CONTACT CLOSURE RATE IS 10 PER SECOND
   8D, 16d EXCITATION = 24VDC, 8mA
   8U, 8X EXCITATION = 24VDC, 8mA, 20ms, 100mA
4. 8D, 16D MAXIMUM PULSE RATE = 10Hz (50ms PER STATE, 100ms PER PULSE)
   8U, 8X MAXIMUM PULSE RATE = 20Hz (25ms PER STATE, 50ms PER PULSE)
5. PXC MODULAR DO CONTACT RATINGS
   AC OPERATION:
   4A @ 240VAC (RESISTIVE)
   3A @ 240VAC (INDUCTIVE)
   SIZE 4 MOTOR STARTER
   DC OPERATION:
   40W @ < 50VDC
   20W @ > 50VDC
6. REFER TO PXC MODULAR PANEL FOR ACTUAL POINT ADDRESSES. REFER TO TXMI TERMINATION TABLES FOR ACTUAL TERMINALS FOR EACH PANEL ADDRESS. COMMON TERMINAL MAY BE SHARED BY 2 POINTS.
7. REFER TO DRAWING P1 ON TWIR FOR MAXIMUM CURRENT PROVIDED BY THE 24VDC SENSOR SUPPLY ON P1 BIM OR BUS POWER SUPPLY
8. EXTERNAL POWER SUPPLY CAN EITHER BE A 24VDC POWER SUPPLY OR A 24VAC TRANSFORMER DEPENDING ON THE SENSOR SELECTED. IF NOT AN ISOLATED NC CLASS 2 CIRCUIT THEN POWER SOURCE, NEUTRAL AND PXC MODULAR COMMON MUST BE BOTH CONNECTED TO THE SAME OR BONDED BUILDING APPROVED EARTH GROUND. FOR FURTHER DETAILS SEE EARTH GROUNDING RULES (125–3002) APOGEE WIRING GUIDELINES FOR FIELD PANELS AND EQUIPMENT CONTROLLERS.
9. 50mA OR LESS – 750ft/230m
   50mA TO 100mA – 375ft/115m
10. 100mA TO 150mA – 250ft/76m
    150mA TO 200mA – 187ft/57m
    200mA TO 250mA – 150ft/46m
11. WHERE H TERMINAL IS NOT A NEC CLASS 2 CIRCUIT, RELAY COMMON TERMINAL BRANCH CURRENT MUST BE EXTERNALLY LIMITED TO 10A MAXIMUM BY AN NEC APPROVED MEANS. NOT A FUSE.
12. WHERE REQUIRED, N TERMINAL BRANCH CURRENT MUST BE EXTERNALLY LIMITED BY AN NEC APPROVED MEANS.

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IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

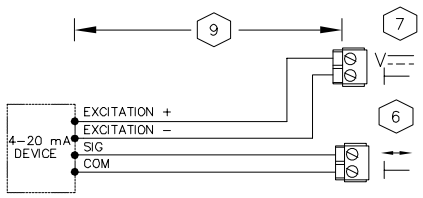
TX-I/O Termination Spec.

440P-425512

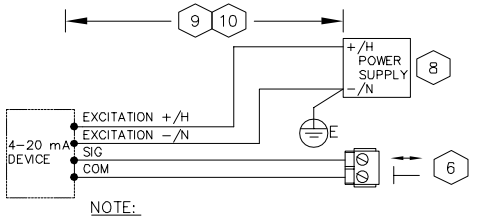
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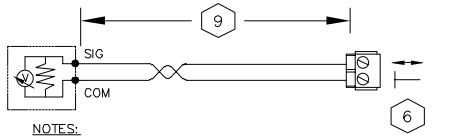


P 00 ANALOG INPUT (8X) 4–20mA
4–WIRE INTERNAL POWERED



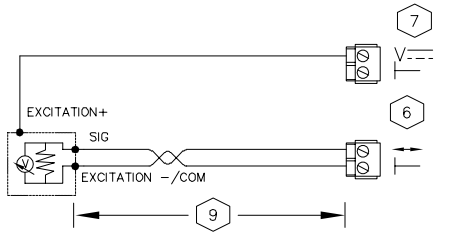
NOTE:
1. MUST USE SAME OR BONDED EARTH GROUND AS SYSTEM NEUTRAL

Q 00 ANALOG INPUT (8X) 4–20mA
4–WIRE EXTERNAL POWERED

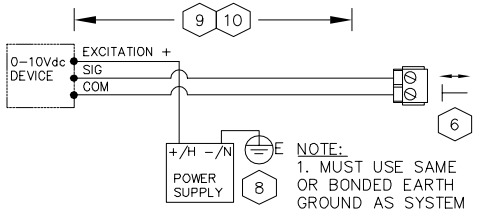


NOTES:
1. TRANSDUCER POWERED FROM ISOLATED INPUT
2. TRANSDUCER OUTPUT VOLTAGE

R 00 ANALOG INPUT (8U,8X) 0–10 Vdc
SELF POWERED TRANSDUCER

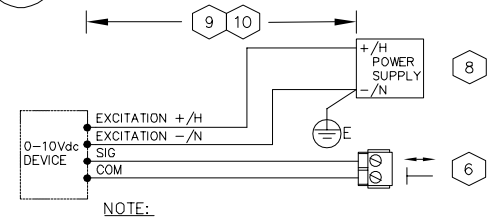


S 00 ANALOG INPUT (8U,8X) 0–10VDC
3–WIRE INTERNAL POWERED



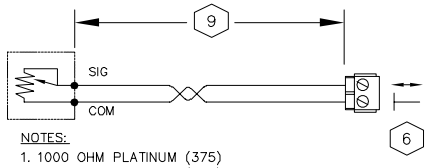
NOTE:
1. MUST USE SAME OR BONDED EARTH GROUND AS SYSTEM NEUTRAL

T 00 ANALOG INPUT (8U,8X) 0–10VDC
3–WIRE EXTERNAL POWERED



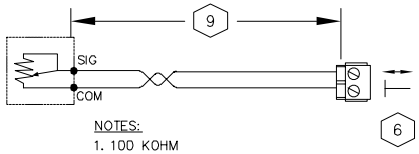
NOTE:
1. MUST USE SAME OR BONDED EARTH GROUND AS SYSTEM NEUTRAL

U 00 ANALOG INPUT (8U,8X) 0–10VDC
4–WIRE EXTERNAL POWERED



NOTES:
1. 1000 OHM PLATINUM (375)
2. 1000 OHM PLATINUM (385)
3. 1000 OHM NICKEL
4. CUSTOM

V 00 ANALOG INPUT (8X,8U) RTD



NOTES:
1. 100 KOHM
2. 10 KOHM
3. CUSTOM

W 00 ANALOG INPUT (8X,8U) THERMISTOR

TXM1 TERMINATION TABLES

1. ALL TXM1 TERMINALS (MEASURING, NEUTRAL, RELAY, SUPPLY) ARE CONNECTED IN THE PLUG–IN I/O MODULE, NOT IN THE TERMINAL BUS.

		TXM1.8D, TXM1.16D							
I/O POINT		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SYSTEM NEUTRAL[1]	⊥ (–)	1	3	5	7	9	11	13	15
DIGITAL INPUT	⏐ (+)	2	4	6	8	10	12	14	16

1. NEUTRAL CAN BE CONNECTED TO ANY NEUTRAL TERMINAL ON SAME MODULE AND SEVERAL CAN SHARE SAME NEUTRAL TERMINAL.

		TXM1.16D							
I/O POINT		(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
SYSTEM NEUTRAL	⊥ (–)	18	20	22	24	26	28	30	32
DIGITAL INPUT[1]	⏐ (+)	19	21	23	25	27	29	31	33

1. NO PULSE ACCUMULATOR

		TXM1.8U, TXM1.8U–ML							
I/O POINT		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SYSTEM NEUTRAL	⊥ (–)	2	6	10	14	19	23	27	31
UNIVERSAL I/O	⏐ (+)	4	8	12	16	21	25	29	33
24V AC/DC ACTUATOR SUPPLY[1]	~		7		15		24		32

1. 24V DC ONLY AVAILABLE WITH BUS CONNECTOR MODULE (BCM) POWERED EXTERNALLY BY DC SUPPLY.

		TXM1.8X, TXM1.8X–ML							
I/O POINT		(1)	(2)	(3)	(4)	(5)[1]	(6)[1]	(7)[1]	(8)[1]
SYSTEM NEUTRAL	⊥ (–)	2	6	10	14	19	23	27	31
UNIVERSAL I/O	⏐ (+)	4	8	12	16	21	25	29	33
24V AC/DC ACTUATOR SUPPLY[2]	~		7		15		24		32
24V DC SENSOR SUPPLY[3]	⎓	3		11		20		28	

1. 4–20 mA OUTPUT AVAILABLE ON POINTS 5–8 ONLY.

2. 24V DC ONLY AVAILABLE WITH BUS CONNECTOR MODULE (BCM) POWERED EXTERNALLY BY DC SUPPLY.

3. MAY POWER EXTERNAL SENSORS 0.6w (25mA) OR 1.2w (50mA) PER TERMINATION UP TO 2.4w (100mA) MAXIMUM FOR ALL TERMINATIONS.

		TXM1.6R, TXM1.6R–M					
I/O POINT		(1)	(2)	(3)	(4)	(5)	(6)
COMMON[1]	⏐ (C)	3	9	15	20	26	32
NORMALLY CLOSED	⏐⌐ (NC)	4	10	16	19	25	31
NORMALLY OPEN	⏐ (NO)	2	8	14	21	27	33

1. COMMONS ARE NOT INTERNALLY CONNECTED.

NOTE: REFER TO TERMINATION SHEET #1 FOR INSTALLATION DETAILS.

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

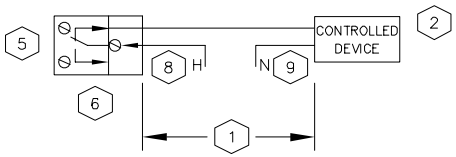
TX-I/O Termination Spec. 2

440P-425512

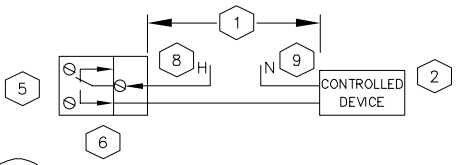
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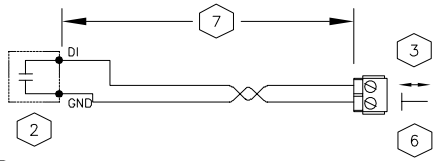
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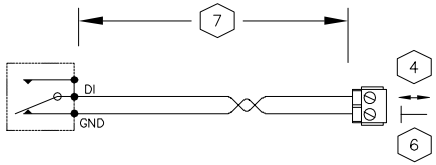
A 00 DIGITAL OUTPUT (1.4D3R, 1.8T) NC
PULSED OR LATCHED



B 00 DIGITAL OUTPUT (1.4D3R, 1.8T) NO
PULSED OR LATCHED



E 00 DIGITAL INPUT (1.4D3R)
DRY CONTACT



F 00 DIGITAL INPUT (1.4D3R)
PULSE ACCUMULATOR

NOTES:

1. MAXIMUM WIRE RUN LENGTHS ARE BASED ON THE CURRENT DRAW AND WIRE GAUGE. SEE DRAWING P7WIR.
2. SEE CONTROL DRAWINGS FOR NORMAL DE-ENERGIZED CONTACT STATE
3. MAXIMUM CONTACT CLOSURE RATE IS 10 PER SECOND
4. 1.4D3R MAXIMUM PULSE RATE UP TO 10Hz
5. DO CONTACT RATINGS
   AC OPERATION:
   4A @ 250VAC (RESISTIVE)
   3A @ 250VAC (INDUCTIVE)

   DC OPERATION:
   4A @ 30VDC (RESISTIVE), UL APPLICATIONS
   3A @ 30VDC GENERAL PURPOSE
   3A @ 30VDC (RESISTIVE)
6. REFER TO PXC7 PANEL FOR ACTUAL POINT ADDRESSES. REFER TO TXM TERMINATION TABLES FOR ACTUAL TERMINALS FOR EACH PANEL ADDRESS. COMMON TERMINAL MAY BE SHARED BY 2 POINTS.
7. 50mA OR LESS – 750ft/230m
   50mA TO 100mA – 375ft/115m
8. WHERE H TERMINAL IS NOT A NEC CLASS 2 CIRCUIT, RELAY COMMON TERMINAL BRANCH CURRENT MUST BE EXTERNALLY LIMITED TO 10A MAXIMUM BY AN NEC APPROVED MEANS. NOT A FUSE.
9. WHERE REQUIRED, N TERMINAL BRANCH CURRENT MUST BE EXTERNALLY LIMITED BY AN NEC APPROVED MEANS.

	TXM1.4D3R		
I/O POINT	(1)	(2)	(3)
SUPPLY	3	9	15
NORMALLY OPEN ⏐ (NO)	2	8	14
NORMALLY CLOSED ⏐/ (NC)	4	10	16

	TXM1.4D3R			
I/O POINT	(5)	(6)	(7)	(8)
SYSTEM NEUTRAL[1] ⊥ (–)	26	28	30	32
DIGITAL INPUT ⏐ (+)	27	29	31	33

1. TERMINALS 26, 28, 30, 32 ARE SYSTEM NEUTRAL TERMINALS.

THEY ARE INTERCONNECTED, NOT IN THE TERMINAL BASE BUT IN THE PLUG-IN I/O MODULE. WHEN I/O MODULE IS REMOVED, THERE IS NO CONNECTION.

THE SYSTEM NEUTRAL OF A DIGITAL INPUT CAN BE CONNECTED TO ANY SYSTEM NEUTRAL TERMINAL.

	TXM1.8T							
I/O POINT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SUPPLY[1] ~	2	6	10	14	19	23	27	31
DIGITAL OUTPUT[2] ⏐ (+)	4	8	12	16	21	25	29	33

1.THE LOAD CAN BE CONNECTED DIRECTLY TO THE CORRESPONDING OUTPUT TERMINALS. NO SEPARATE 24VAC SUPPLY IS REQUIRED.

2. THE TRIAC CLOSES THE CONTACT TO ⊥ (SYSTEM NEUTRAL).

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IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

TX-I/O Termination Spec. 3

440P-425512

TTRM3

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Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AUX 3	1	567-454	SIEMENS	155-272P25	#2 ELECT PANEL 20X20X6
PNL 3	1	PXA-ENC34	SIEMENS	149475	ENCLOSURE ASSY 34
	1	PXA-SB115V192VA	SIEMENS	588783	SERVICE BOX 115V, 24VAC, 192VA
PWR 3-4	2	PSH500A	FUNCTIONAL DEVICES	1208cut143	PS FIVE 100VA C2 120-24VAC ENC

SEE DEMOLITION DRAWINGS FOR REMOVAL OF EXISTING CONTROLS IN THE BASE AND ALTERNATE BIDS.

REVISION HISTORY

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IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

SYSTEM RISER

440P-425512

001

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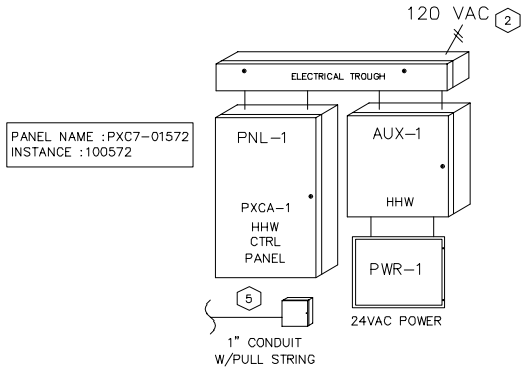
INSTALLATION NOTES:

1. REFER TO PLANS FOR MORE DETAIL ON CONTROL PANEL LOCATIONS.
2. POWER TO DDC PANELS BY DIVISION 26 ELECTRICAL AS STATED IN CONTRACT DOCUMENTS. POWER THAT IS NOT INDICATED IN CONTRACT DOCUMENTS BUT IS REQUIRED FOR BUILDING AUTOMATION SYSTEM (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. REFER TO TX-I/O WIRING SPECIFICATION DRAWING TWIR FOR PXCM COMMUNICATION TERMINATION DETAILS.
5. CIC TO PROVIDE A DEDICATED 1" CONDUIT WITH A PULL STRING FROM IDF/MDF ROOM TO A JUNCTION BOX (MINIMUM 6"X6"X4") LOCATED NEXT TO SIEMENS PANEL WITH A RACEWAY FOR PATCH CABLE CONNECTION TO PXCM CONTROLLER. COORDINATE WITH IU FOR LOCATION OF IDF/MDF ROOM. IF 2-4 ETHERNET CABLES ARE NEEDED A 1 1/4" CONDUIT IS REQUIRED.
6. TRANSFORMER PANELS TO BE LOCATED AS SHOWN ON ELECTRICAL DRAWINGS. MOUNTING AND FIELD WIRING BY CIC, POWER WIRING BY EC.

1ST FLR

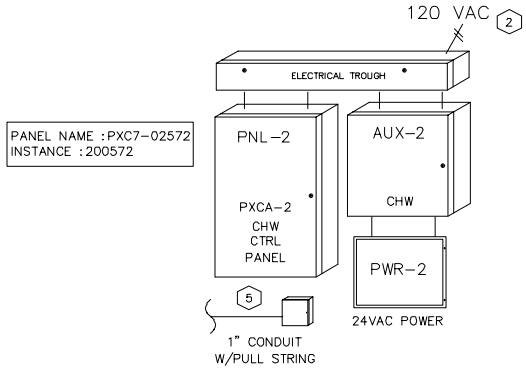
GND FLR

MECHANICAL ROOM 001D



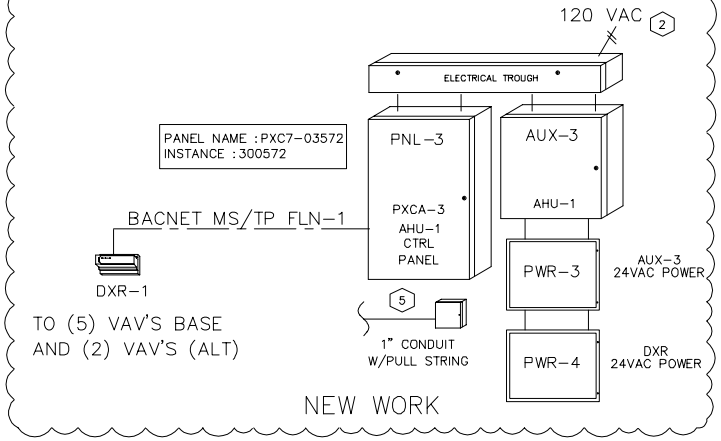
EXISTING PANEL

MECHANICAL ROOM 001C



EXISTING PANEL

MECHANICAL ROOM 001C



NEW WORK

1/002 SYSTEM NETWORK DIAGRAM

SERVES: BACNET IP

REVISION HISTORY

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IU - IGYM 1st Flr HVAC Upgrade

IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

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Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE 1-3	3	GCA161.1U	SIEMENS	154001	MOD(V) SR,24V, MED.
AFMS 1-3	3	FBO	N/A	N/A	FURNISHED BY OTHERS
AFMS 4	1				SEE AFMS SCHEDULE
CS 1	1	H608	VERIS	1006cut016	CUR SW SPLTCOR-ADJ SETPT W/LED
D					PROVIDED BY UNIT MFGR.
DPS 1-4	4	AFS-460-DSS	KELE INC	N/A	2-12in SWITCH W/2 SPST CONTACTS
DPTE 1	1	2641010WD11A1C	SETRA	0608cut003	DP TRAN AIR,1%,10" ENC
DPTE 2-3	2	2641005WB11A1C	SETRA	0608cut003	DP TRAN AIR,1%,+/-5" ENC
DPTE 4	1	2641001WB11A1C	SETRA	0608cut003	DP TRAN AIR,1%,+/-1" ENC
HTTE 1A	1	QFM3171	SIEMENS	149991	DUCT RH & TEMP SENSOR, 4-20mA, 2%
HTTE 1B	1	N/A	N/A	N/A	N/A
HTTE 2A	1	QFM3171	SIEMENS	149991	DUCT RH & TEMP SENSOR, 4-20mA, 2%
HTTE 2B	1	N/A	N/A	N/A	N/A
LTDE 1	2	134-1504	SIEMENS	155 016	T'STAT, LOW TEMP,15/55,MANUAL
RIB 1-7	7	RIBU1C	FUNCTIONAL DEVICES	N/A	RIB 120VAC 24VAC/DC SPDT
SD 1-2	2	FBO	N/A	N/A	FURNISHED BY OTHERS
SPP 1-5	5	269-062	SIEMENS	N/A	PR269 ACCESSORY, SENSING TUBE
SPP 6	1	A-306	DWYER	1011cut060	STATIC PRESSURE SENSOR OUTDOOR
SPP 7	1	RPS-W	KELE	N/A	ROOM STATIC PRESSURE SENSOR-WHITE
TTE 1-2	2	QAM2012.750	SIEMENS	149916	DUCT AVG TEMP, PT 1K OHM(385), 24' FLEX
TTE 3-4	2	QAE2012.005	SIEMENS	149919	IMMERSION TMP SNSR, PT 1K OHM(385) 2.5"
V					SEE VALVE SUBMITTAL
WD 1-3	3	WD-1B-C	KELE INC	N/A	WATER DETECTOR SPDT W/DEENERGIZED RELAY
Panel Mounted Devices					
RE 1-2	2	RH2B-UL-AC24VKIT	IDEC	1202cut016	RELAY&SOC,GP DPDT AC24V W/LED

AIR HANDLING SYSTEM – SEQUENCE OF OPERATION

DESCRIPTION
THE SYSTEM CONSIST OF A MODULAR AIR HANDLING UNIT EQUIPPED WITH THE FOLLOWING PRIMARY COMPONENTS:
- SUPPLY FAN(S) WITH A VFD AND INLET STYLE AFMS
- RETURN FAN WITH A VFD AND INLET STYLE AFMS
- HEATING HOT WATER HEATING COIL
- CHILLED WATER COOLING COIL
- FILTER BANKS
- AIR BLENDER
- OUTDOOR AIR INTAKE WITH CONTROL DAMPER AND AIRFLOW STATION
- RETURN AIR DAMPER
- RELIEF AIR DAMPER

ALL SET-POINTS SHALL BE ADJUSTABLE BY AN OPERATOR WITHOUT ADDITIONAL SOFTWARE.

OPERATING MODES
THE AIR HANDLING UNIT SHALL BE UNDER CONTROL OF THE BAS AND CONFIGURED FOR BOTH OCCUPIED, UNOCCUPIED MODES OF OPERATION AND FULLY COORDINATE WITH ASSOCIATED TERMINAL UNITS. THE SYSTEM SHALL BE CONFIGURED WITH AN OPERATING SCHEDULE AND UTILIZE NIGHT SETUP/SETBACK ROUTINES. VENTILATION AIR SHALL BE ENABLED DURING OCCUPIED PERIODS AND DISABLED DURING UN-OCCUPIED PERIODS.

SUPPLY FAN
THE VFD CURRENT SWITCH SHALL PROVE FLOW STATUS FOR THE FAN AND ALARM IF THE FAN IS ENABLED AND STATUS IS NOT PROVEN. THE BAS SHALL VARY THE SPEED OF THE SUPPLY FAN VIA VFD TO MAINTAIN THE DUCT STATIC PRESSURE SET-POINT AS MONITORED BY A REMOTE PRESSURE TRANSDUCER LOCATED DOWNSTREAM OF THE AHU. THE BALANCER WILL IDENTIFY THE MAXIMUM SUPPLY AIR STATIC PRESSURE SET-POINT.

THE AFMS (AIR FLOW MEASURING STATION) SHALL MONITOR THE AIRFLOW AND OUTPUT TO THE BAS. THE BAS SHALL MONITOR FAN SPEEDS, STATUS, AND ALARMS FROM THE VARIABLE FREQUENCY DRIVES.
SAFETIES: UPON ACTIVATION OF THE HARDWIRED PRESSURE SWITCH, THE SUPPLY FAN SHALL SHUT-DOWN AND REQUIRING A MANUAL RESET. THE BAS WILL NOTIFY THE OPERATOR OF A HIGH LIMIT ALARM. THE HIGH LIMIT SET-POINT SHALL BE SET 1.0 IN WG BELOW THE RATED DUCT PRESSURE –COORDINATE WITH MECHANICAL CONTRACTOR AND ENGINEER.

RETURN FAN
THE BAS SHALL OPERATE THE RETURN FAN ANYTIME THE SUPPLY FAN IS OPERATING. THE VFD CURRENT SWITCH SHALL PROVE FLOW STATUS FOR THE AND ALARM IF THE FAN IS ENABLED AND THE STATUS IS NOT PROVEN. THE BAS SHALL VARY THE SPEED OF THE RETURN FAN VIA VFD TO MAINTAIN THE RETURN DISCHARGE STATIC PRESSURE SET-POINT. THE STATIC PRESSURE SET-POINT SHALL BE FIXED. THE BALANCER WILL IDENTIFY THE RETURN AIR STATIC PRESSURE SET-POINT. THE AFMS (AIR FLOW MEASURING STATION) SHALL MONITOR THE AIRFLOW AND OUTPUT TO THE BAS. THE BAS SHALL MONITOR FAN SPEEDS, STATUS, AND ALARMS FROM THE VARIABLE FREQUENCY DRIVES.
SAFETIES: UPON ACTIVATION OF THE HARDWIRED PRESSURE SWITCH, THE RETURN FAN SHALL SHUT-DOWN AND REQUIRING A MANUAL RESET. THE BAS WILL NOTIFY THE OPERATOR OF A LOW LIMIT ALARM. THE LOW LIMIT SET-POINT SHALL BE SET 1.0 IN WG ABOVE THE RATED DUCT PRESSURE –COORDINATE WITH MECHANICAL CONTRACTOR AND ENGINEER.

HEATING COIL
ON A CALL FOR HEATING, THE HEATING COIL CONTROL VALVE SHALL MODULATE AS REQUIRED TO MEET THE PREHEAT AIR TEMPERATURE SENSOR SET-POINT.
FREEZE PROTECTION: WHEN THE OUTSIDE AIR TEMPERATURE IS BELOW 40'F, THE HEATING WATER CIRCULATING PUMP SHALL BE ENABLED AND OPERATE CONTINUOUSLY AT A CONSTANT SPEED. UPON ACTIVATION OF THE HARDWIRED FREEZE-STAT SET TO 35'F, THE HEATING AND COOLING COIL CONTROL VALVES SHALL OPEN, SUPPLY AND RETURN FANS SHALL BE DISABLED, OUTDOOR AIR AND RELIEF AIR DAMPERS SHALL CLOSE, AND THE BAS WILL NOTIFY THE OPERATOR OF A FREEZE ALARM.
COOLING COIL
ON A CALL FOR COOLING, THE COOLING COIL CONTROL VALVE SHALL MODULATE AS REQUIRED TO MEET THE SUPPLY AIR TEMPERATURE SENSOR SET-POINT. SAFETIES: UPON ACTIVATION OF THE COOLING COIL FLOAT SWITCH, THE COOLING COIL CONTROL VALVE SHALL CLOSE, AND THE BAS WILL NOTIFY THE OPERATOR OF A CONDENSATE OVERFLOW ALARM.

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IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
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AHU-1 CONTROL SYSTEM

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SUPPLY TEMPERATURE SET-POINT
THE SUPPLY TEMPERATURE SET-POINT SHALL BE RESET PROPORTIONALLY BETWEEN THE MINIMUM AND MAXIMUM SET-POINT BASED ON OUTDOOR AIR TEMPERATURE USING THE FOLLOWING RANGE:
MINIMUM SAT = 55°F @ OAT = 95°F
MAXIMUM SAT = 58°F @ OAT = 0°F

VENTILATION OUTSIDE AIR CONTROL
WHEN VENTILATION IS ENABLED, THE BAS SHALL OPEN AND MODULATE THE OUTSIDE AIR DAMPER AS REQUIRED TO MEET THE OUTDOOR AIRFLOW SET-POINT BASED ON THE AIRFLOW MEASURING STATION OUTPUT. THE OUTDOOR AIR FLOW SET-POINT SHALL BE EQUAL TO THE MAXIMUM OA CFM DURING OCCUPIED PERIODS. DURING UN-OCCUPIED PERIODS THE SET-POINT SHALL BE EQUAL TO THE MINIMUM OA CFM IF ANY OF THE EXHAUST FANS ARE IN OPERATION. OTHERWISE, THE OUTDOOR AIR DAMPER SHALL BE CLOSED.

ECONOMIZER CONTROL
A FIXED DRY BULB SETPOINT SHALL ENABLE THE ECONOMIZER. WHEN THE OUTDOOR AIR TEMPERATURE IS LESS THAN THE ECONOMIZER ENABLE SET-POINT, ECONOMIZER MODE SHALL BE ENABLED. MODULATE THE OUTDOOR AIR DAMPER AND RETURN AIR DAMPER TO MAINTAIN REQUIRED MIXED AIR TEMPERATURE SET-POINT. THE ECONOMIZER ENABLE SET-POINT SHALL BE 65°F. MONITOR THE MIXED AIR TEMPERATURE AND DISABLE THE ECONOMIZER MODE IF THE TEMPERATURE IS LESS THAN 45°F.

RETURN AIR DAMPER CONTROL
THE RETURN AIR DAMPER SHALL OPERATE INVERSELY WITH THE OUTDOOR AIR DAMPER WITH A SEPARATE SIGNAL AND OFFSET.

RELIEF DAMPER
THE RELIEF DAMPER SHALL MODULATE TO MAINTAIN THE BUILDING PRESSURE SET-POINT. WHEN DISABLED, THE RELIEF DAMPER SHALL CLOSE FULLY. THE DIFFERENTIAL PRESSURE SET-POINT SHALL BE +0.05 IN WG.

SMOKE DETECTION
UPON ACTIVATION OF THE HARDWIRED SUPPLY AIR OR RETURN AIR SMOKE DETECTORS, THE SUPPLY AND RETURN FANS SHALL SHUT-DOWN AND GENERATE A SMOKE ALARM.

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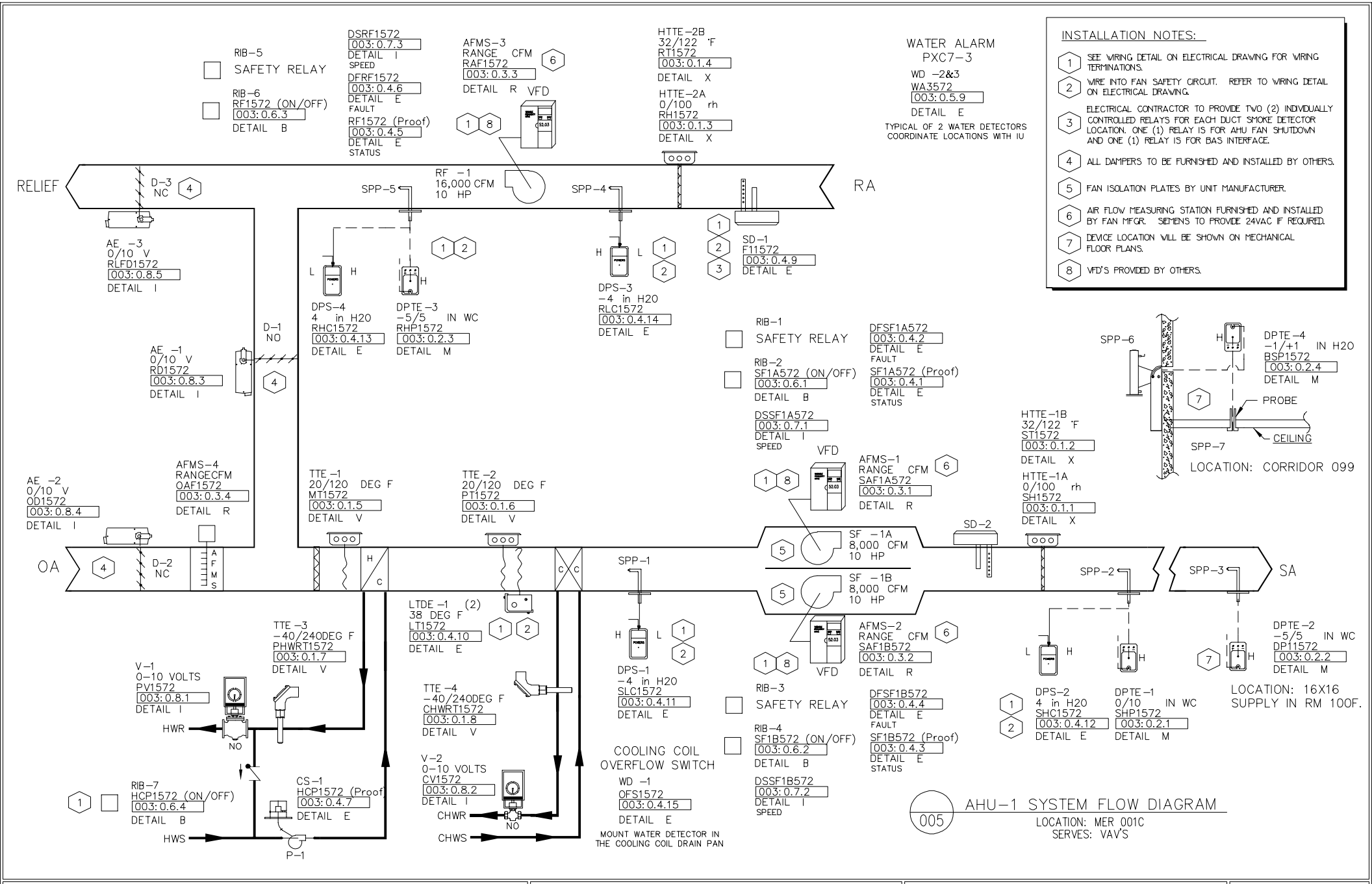
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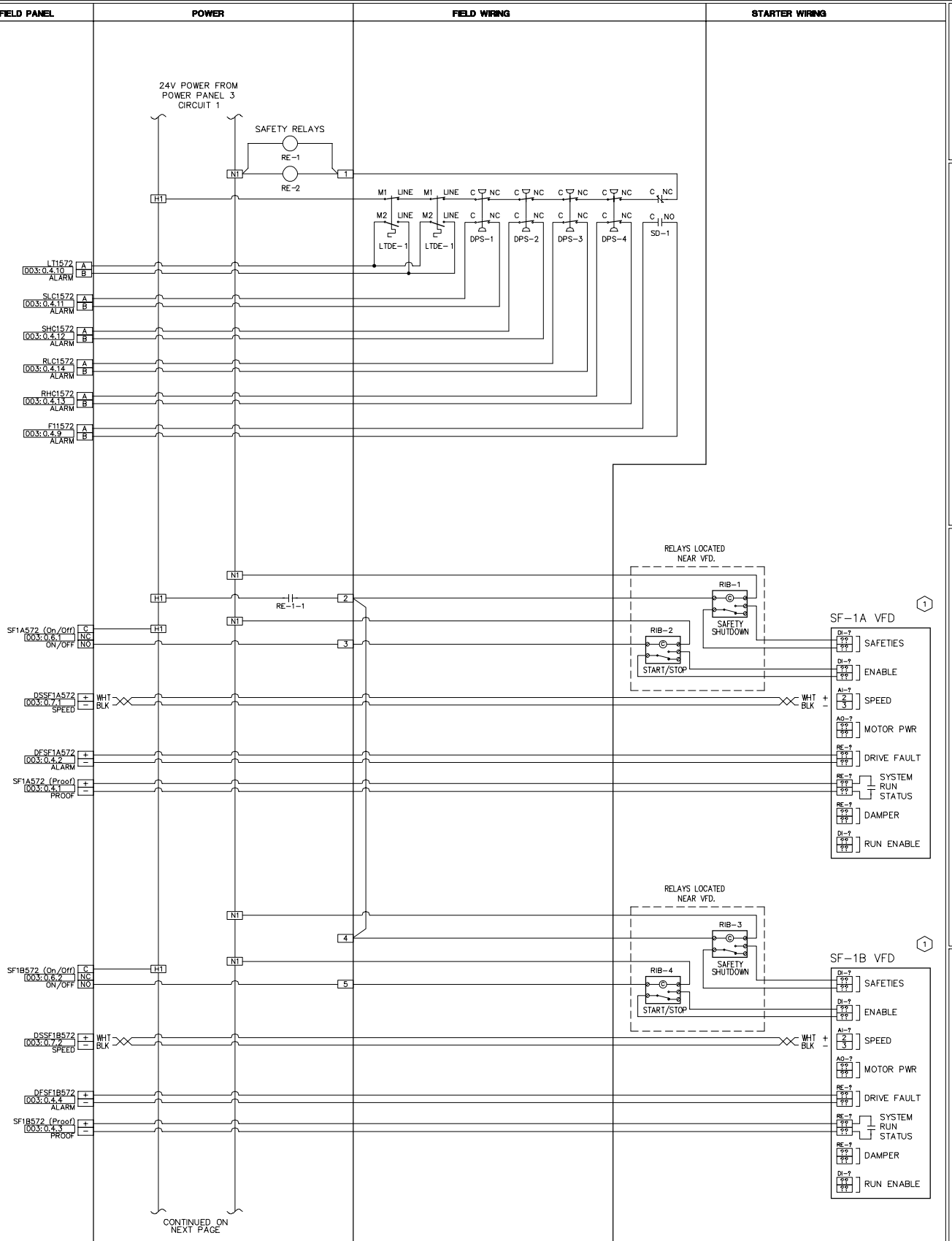
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INSTALLATION NOTES:

1. 120 VAC POWER BY ELECTRICAL CONTRACTOR.
2. RELAYS LOCATED NEAR VFD.
3. VERIFY VFD CABLE SPECIFICATION AND INPUT ISOLATION REQUIREMENTS W/VFD MFG.
4. EXACT LOCATION OF FIELD DEVICES TO BE COORDINATED WITH IUES/SIEMENS.
5. ALL WIRING TO MEET REQUIRMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS.

1 / 006 AHU WIRING DIAGRAMS

LOCATION: AUX PANEL

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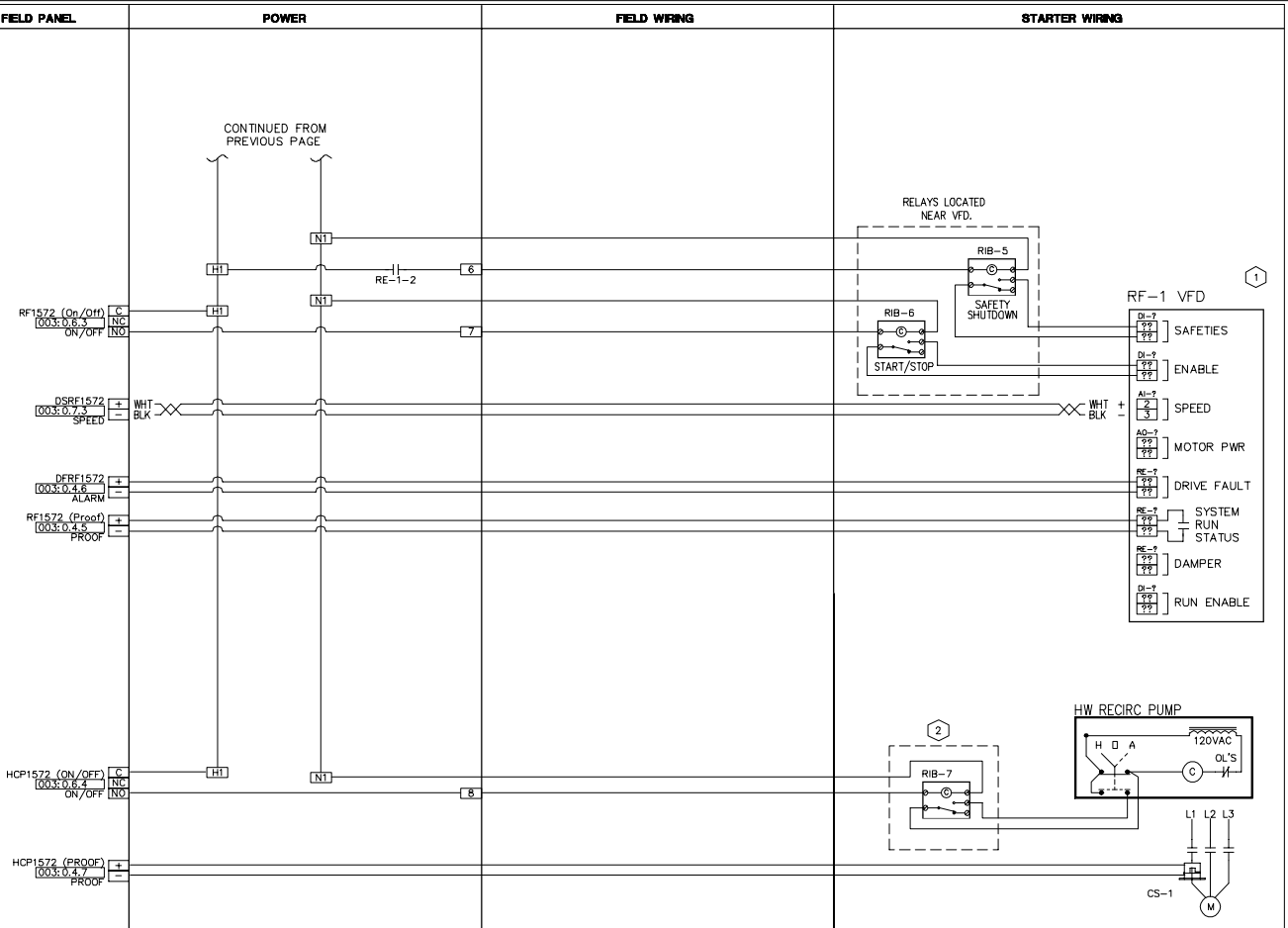
AHU-1 CONTROL SYSTEM

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REVISION HISTORY

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INSTALLATION NOTES:

1. 120 VAC POWER BY ELECTRICAL CONTRACTOR.
2. RELAYS LOCATED NEAR VFD.
3. VERIFY VFD CABLE SPECIFICATION AND INPUT ISOLATION REQUIREMENTS W/VFD MFG.
4. EXACT LOCATION OF FIELD DEVICES TO BE COORDINATED WITH IUES/SIEMENS.
5. ALL WIRING TO MEET REQUIRMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS.

1/007 AHU WIRING DIAGRAMS

LOCATION: AUX PANEL

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FIELD PANEL | POWER | FIELD WIRING | STARTER WIRING

24V POWER FROM POWER PANEL 3 CIRCUIT 4

SAF1A572 003:0.3.1 FLOW — 24V + WHT, − BLK — H4 / N4 — AFMS-1 — SF-1A FLOW

SAF1B572 003:0.3.2 FLOW — 24V + WHT, − BLK — H4 / N4 — AFMS-2 — SF-1B FLOW

RAF1572 003:0.3.3 FLOW — 24V + WHT, − BLK — H4 / N4 — AFMS-3 — RF-1 FLOW

OAF1572 003:0.3.4 FLOW — 24V + WHT, − BLK — H4 / N4 — AFMS-4 — O/A FLOW

EXHAUST FANS

24V POWER FROM POWER PANEL 3 CIRCUIT 5

EF2572 (ON/OFF) 003:0.6.5 ON/OFF — C, NC, NO — H5 / N5 — 20

EF2572 (PROOF) 003:0.5.1 PROOF — +, −

(2) RIB-1

EXHAUST FAN 2 — H O A — 120VAC — OL'S — C

L1 L2 L3 — CS-1 — M

4VA

OFS1572 003:0.4.15 WATER ALARM — +, −

WD-1 LEAK DETECTOR — POWER COMMON — RELAY 1

COOLING COIL OVERFLOW SWITCH

WD-2 LEAK DETECTOR — POWER COMMON — RELAY 1

4VA

WA3571 003:0.5.9 WATER ALARM — +, −

WD-3 LEAK DETECTOR — POWER COMMON — RELAY 1

FINAL LOCATIONS TO BE COORDINATED WITH IU/SIEMENS

INSTALLATION NOTES:

1. 120 VAC POWER BY ELECTRICAL CONTRACTOR.
2. EXACT LOCATION OF FIELD DEVICES TO BE COORDINATED WITH IUES/SIEMENS.
3. ALL WIRING TO MEET REQUIRMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS.

1/008 AHU WIRING DIAGRAMS

LOCATION: AUX PANEL

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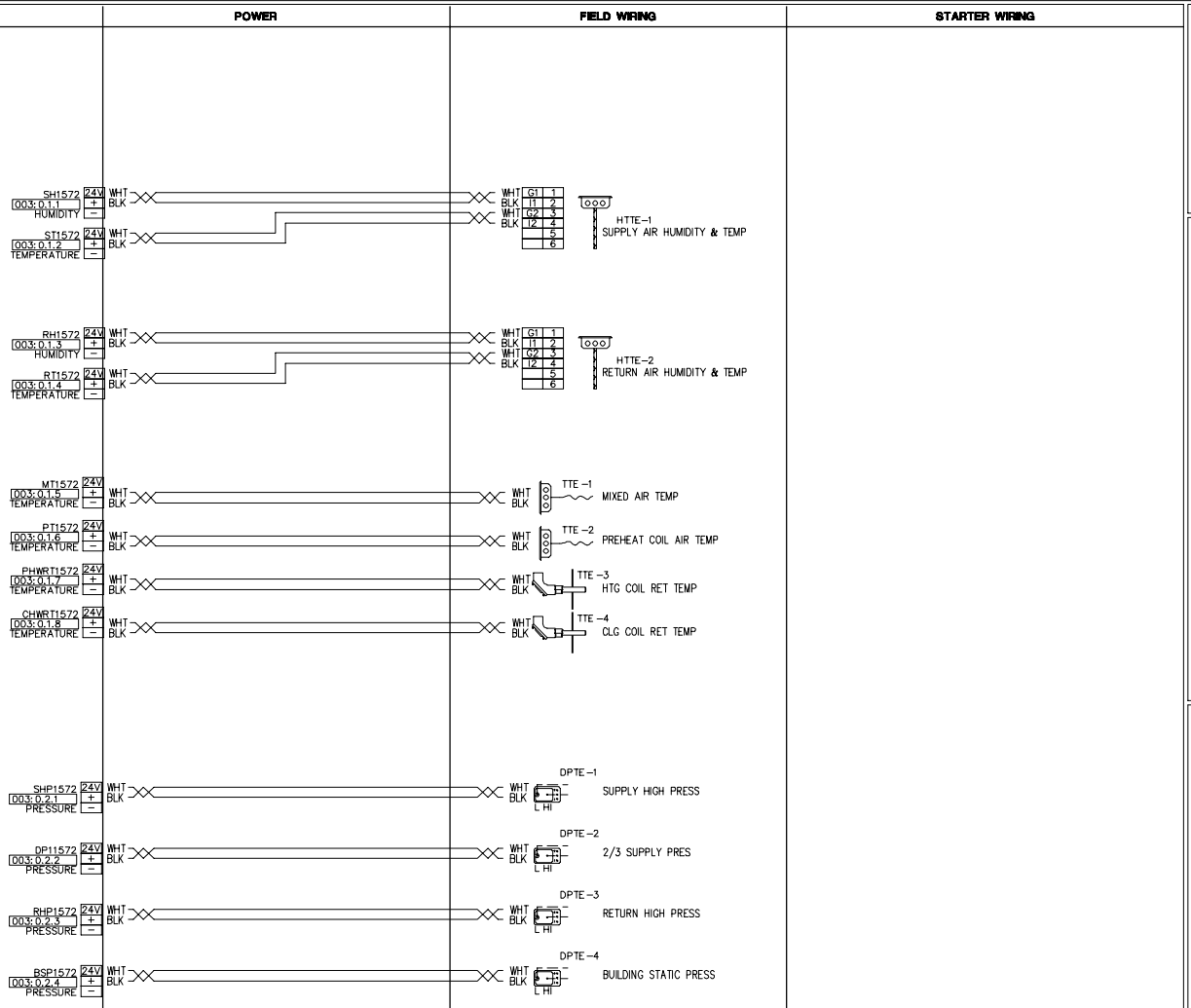
AHU-1 CONTROL SYSTEM

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INSTALLATION NOTES:

1. 120 VAC POWER BY ELECTRICAL CONTRACTOR.
2. EXACT LOCATION OF FIELD DEVICES TO BE COORDINATED WITH IUES/SIEMENS.
3. ALL WIRING TO MEET REQUIRMENTS OF STANDARD WIRING SPECIFICATIONS DRAWINGS.

1 / 009 AHU WIRING DIAGRAMS

LOCATION: AUX PANEL

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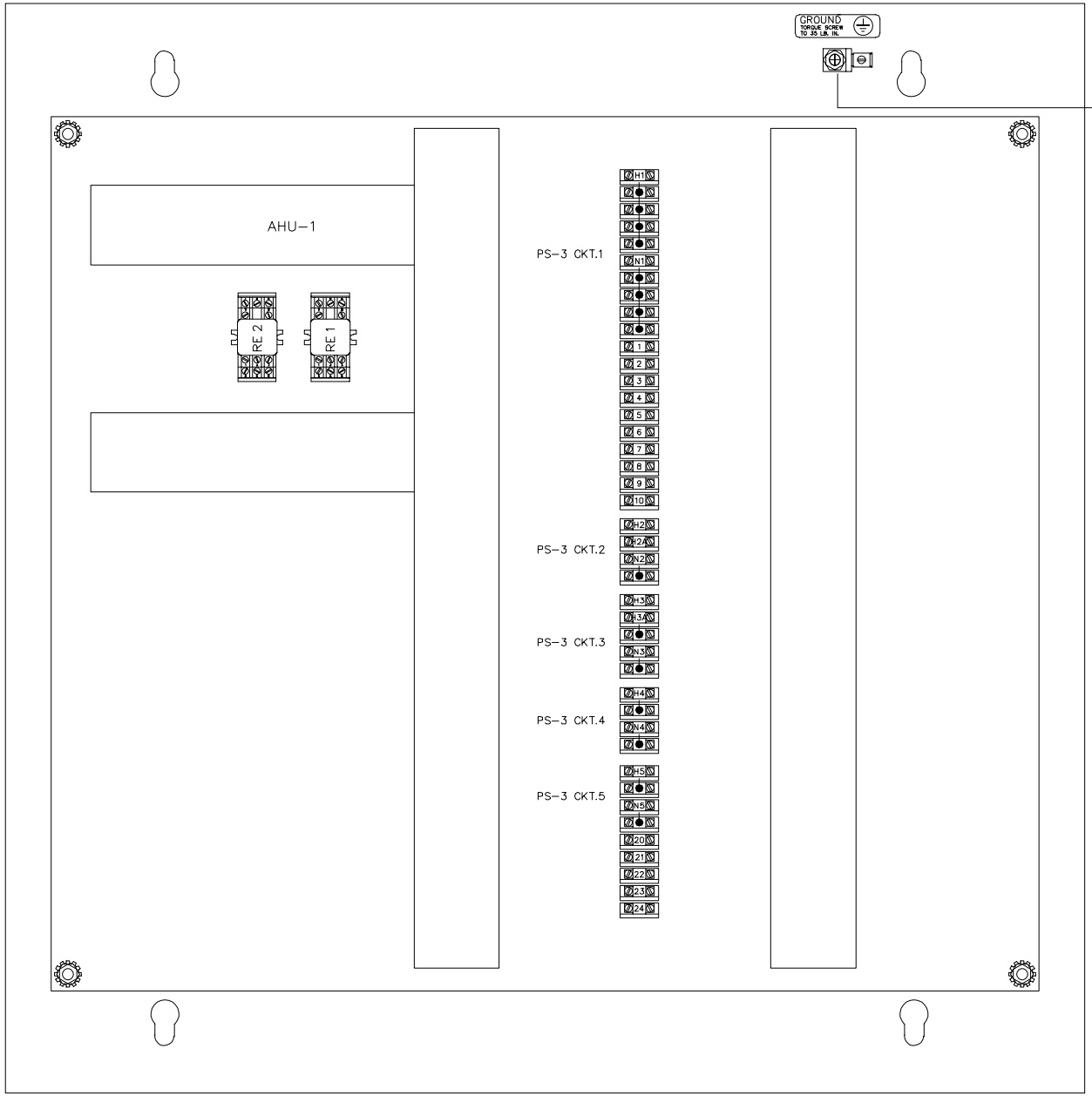
AHU-1 CONTROL SYSTEM

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1/010 AHU COMPONENT PANEL
LOCATION: REFER TO FLOOR PLAN

REVISION HISTORY

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AHU-1 CONTROL SYSTEM

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Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
CS 1	1	H608	VERIS	1006cut016	CUR SW SPLTCOR-ADJ SETPT W/LED
RIB 1	1	RIB2401B	FUNCTIONAL DEVICES	1208cut021	20A SPDT 24VAC/DC/120VAC

EXHAUST FAN SEQUENCE OF OPERATION

SYSTEM DESCRIPTION
THE SYSTEM CONSISTS OF A CONSTANT VOLUME EXHAUST FAN AND A BACK DRAFT DAMPER.

EXHAUST FAN
START/STOP: UPON RECEIVING A SIGNAL TO START THE BAS SHALL START THE EXHAUST FAN.

THE FAN SHALL RUN CONTINUOUSLY DURING OCCUPIED HOURS. OCCUPANCY SCHEDULE SHALL BE COORDINATED WITH OWNER.

INSTALL A CURRENT STATUS SWITCH TO PROVE SUPPLY FAN OPERATION. SEND AN ALARM TO THE OPERATOR'S WORKSTATION UPON FAN FAILURE.

REVISION HISTORY

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EXHAUST FANS

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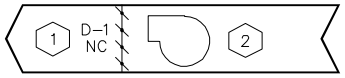
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INSTALLATION NOTES:

1. GRAVITY BACK DRAFT DAMPER PROVIDED BY UNIT MANUFACTURER.
2. ECM MOTOR PROVIDED FOR BALANCING ONLY.



EF-2

RIB-1
EF2572(ON/OFF)
003: 0.6.5
DETAIL B

CS-1
EF2572(PROOF)
003: 0.5.1
DETAIL E

1
012

EF-2

LOCATION: ROOF
SERVES: IGYM
SEE DRAWING 008 FOR WIRING DETAILS

REVISION HISTORY

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EXHAUST FANS

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BASE BID:

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE 1	5	GDE131.1P	SIEMENS	154 011	ACT NSR PLENUM 24/108L 5Nm
DXR 1	5	DXR2.M12P-102B	SIEMENS	A6V10502838	DXR2.M12P Room Automation Station
TTE 1	5	QMX3.P30	SIEMENS	A6V10394781	QMX3 ROOM TEMP ONLY
TTE 2	5	QAM2030.010	SIEMENS	149915	DUCT POINT TEMP, 10K OHM TYPE 2, 4"
V					SEE VALVE SUBMITTAL

ALT-1 BID:

Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Field Mounted Devices					
AE 1	2	GDE131.1P	SIEMENS	154 011	ACT NSR PLENUM 24/108L 5Nm
DXR 1	2	DXR2.M12P-102B	SIEMENS	A6V10502838	DXR2.M12P Room Automation Station
TTE 1	2	QMX3.P30	SIEMENS	A6V10394781	QMX3 ROOM TEMP ONLY
TTE 2	2	QAM2030.010	SIEMENS	149915	DUCT POINT TEMP, 10K OHM TYPE 2, 4"
V					SEE VALVE SUBMITTAL

AIR TERMINAL UNIT WITH REHEAT SEQUENCE OF OPERATION

DESCRIPTION
BAS ATU CONTROLLER SHALL MODULATE THE ATU DAMPER AND HEATING WATER REHEAT COIL CONTROL VALVE TO MAINTAIN A SPACE TEMPERATURE OF 75°F IN THE SUMMER OR 72°F IN THE WINTER BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. THE SYSTEM CONSIST OF:

- AIR FLOW CONTROL DAMPER
- FLOW STATION
- HEATING WATER CONTROL VALVE
- WALL MOUNTED THERMOSTATS

OCCUPIED OPERATION
A PROGRAMMED OPERATING SCHEDULE SHALL BE COORDINATED WITH THE OWNER.

THE BAS VAV BOX CONTROLLER SHALL MODULATE THE VAV BOX DAMPER AND BAS HOT WATER REHEAT COIL CONTROL VALVE TO MAINTAIN THE SPACE TEMPERATURE SETPOINT OF 75°F IN THE SUMMER OR 72°F IN THE WINTER (ADJ.) BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR LOCATION. AT FULL COOLING, THE VAV BOX SHALL BE OPEN TO THE MAXIMUM CFM POSITION. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.

UPON A FALL IN SPACE TEMPERATURE, THE BAS SHALL MODULATE THE VAV BOX TO ITS MINIMUM POSITION PER THE ATU SCHEDULE UNTIL THE SPACE SETPOINT IS MAINTAINED. THE REHEAT COIL CONTROL VALVE SHALL BE CLOSED.

UPON A FURTHER FALL IN SPACE TEMPERATURE, THE REHEAT COIL CONTROL VALVE AND THE ATU SHALL MODULATE IN UNISON TO MAINTAIN THE SPACE SETPOINT UNTIL THE VAV BOX AIRFLOW REACHES ITS MAXIMUM HEATING SETPOINT.

UNOCCUPIED MODE
WHEN THE SPACE IS SCHEDULED AS "UNOCCUPIED" FROM THE FRONT END, THE AIR TERMINAL UNIT DAMPER SHALL MODULATE TO ITS MINIMUM POSITION.

ALARMS
SEND AN ALARM TO THE BAS OPERATOR INTERFACE IF THE SPACE TEMPERATURE FALLS 3°F (ADJ.) BELOW SETPOINT FOR MORE THAN 30 MINUTES (ADJ).

REVISION HISTORY

SIEMENS
Indianapolis
Smart Infrastructure
3502 Woodview Trace
Indianapolis, IN 46268
USA
Phone: 317 293-8880
Fax: 866 814-3089

IU - IGYM 1st Flr HVAC Upgrade
IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

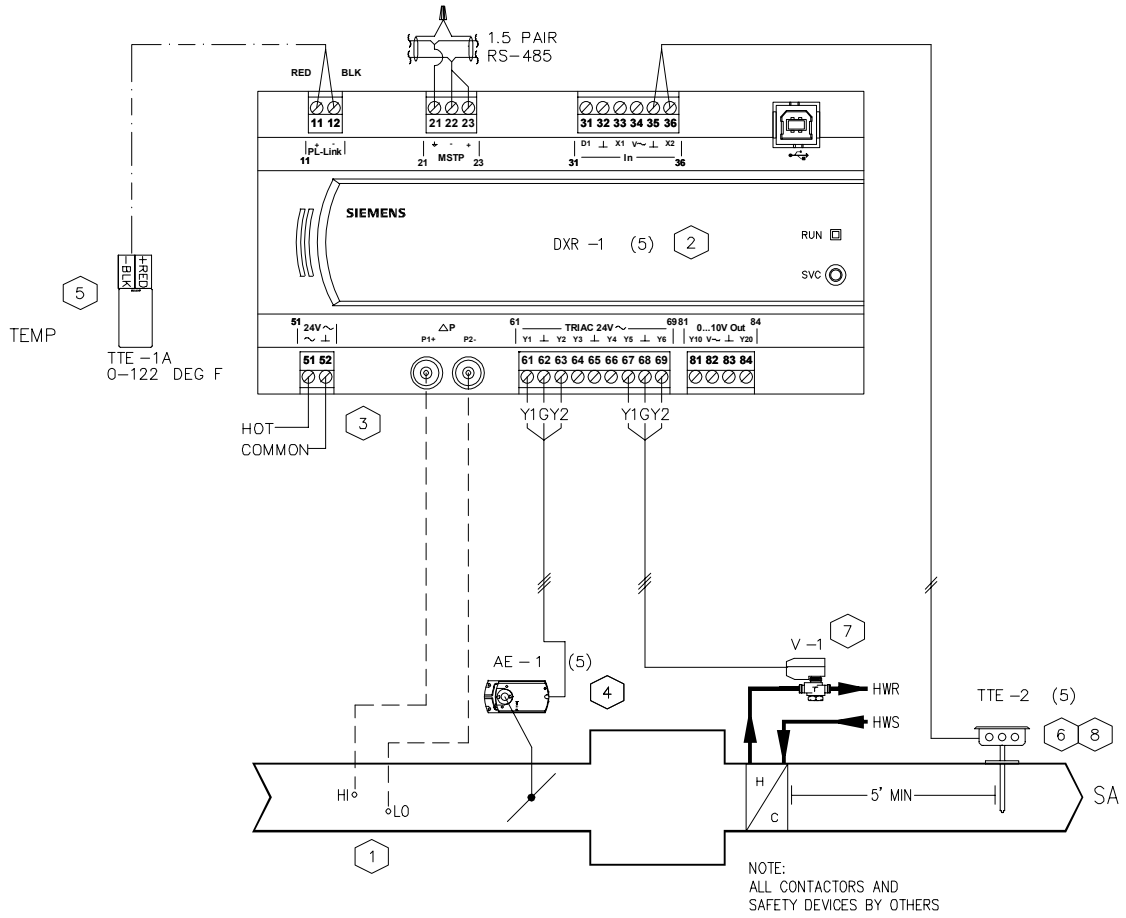
15109 - VAV Supply Box w/HW

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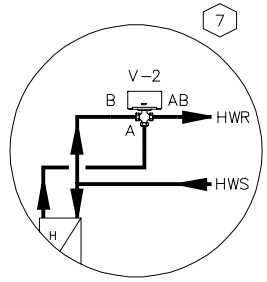


INSTALLATION NOTES:

1. VAV BOX INSTALLED BY MECHANICAL CONTRACTOR WITH 3 TO 5 STRAIGHT DUCT DIAMETERS UPSTREAM OF BOX TO PROVIDE PROPER FLOW SENSING
2. DXR2-1 TO BE MOUNTED IN MANUFACTURER SUPPLIED CONTROLLER ENCLOSURE
3. REFER TO BUILDING POWER TRUNK DRAWING FOR 24 VAC POWER
4. MOUNT ACTUATOR WITH DAMPER IN FULL OPEN POSITION. VERIFY DXR-1 AND ACTUATOR REQUIREMENT WITH THE BOX MANUFACTURER
5. LOCATE AS SHOWN ON FLOOR PLANS/CONTRACT DOCUMENTS
6. 4" SENSOR SELECTED AS DEFAULT. SIZE AS APPROPRIATE.
7. 3-WAY VALVE PIPING DETAIL. FIELD VERIFY LOCATION OF 3W VALVES.
8. PLACE SENSOR MIN 5 FT DOWNSTREAM OF COIL FACE.

M-MOUNTED
W-WIRED
P-PIPED

DEVICE	CIC		MANUFACTURER	DIVISION 26	DIVISION 23
	FITTER	ELEC.			
TTE-1/2		M,W			
AE-1		M,W			
DXR2-1		M,W,P			
COMMS		W			
POWER (24VAC)		W			



1/014 VAV w/HW RHT (BASE)
ATU 1.01 RM 009
ATU 1.04 RM 005
ATU 1.05 RM 099
ATU 1.06 RM 005G
ATU 1.07 RM 001

2/014 VAV w/HW RHT (ALT-1)
ATU 1.02 RM 008
ATU 1.03 RM 008

3/014 3-WAY REHEAT VALVE
ATU 1.01 RM 009

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Control Device	Qty	Product Number	Manufacturer	Document Number	Description
Panel Mounted Devices					
PXC7 003	1	PXC7.E400.A	SIEMENS	N/A	PXC7.E400.A MODULAR, BACNET, Desigo
	1	TXA1.K24	SIEMENS	149476	@ADDRESS KEY 1-24
	1	TXS1.12F4	SIEMENS	149476	24VDC SUPPLY 1200MA, 4 A FUSE
	3	TXM1.8X	SIEMENS	149476	8 UNIV I/O MODULE W/ 4-20MA
	2	TXM1.16D	SIEMENS	149476	16 DIGITAL INPUT MODULE
	1	TXS1.EF4	SIEMENS	149476	BUS CONNECTION MODULE, 4A FUSE
	1	TXM1.6R	SIEMENS	149476	6 RELAY OUTPUT MODULE
	2	TXM1.8U	SIEMENS	149476	8 UNIVERSAL I/O MODULE

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ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

PXC7-3 AHU-1

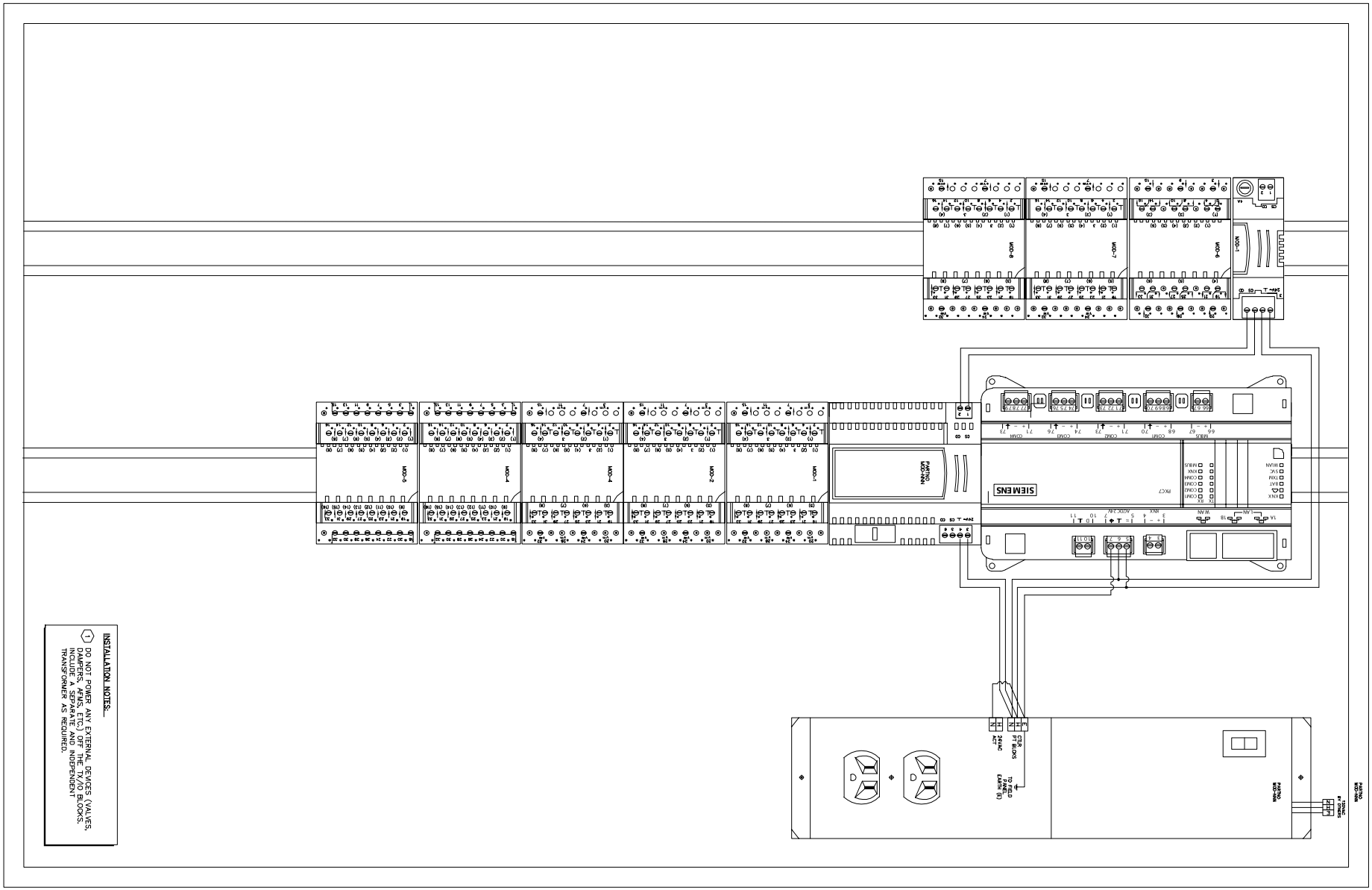
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NOTE: THIS INSTALLATION DRAWING IS SMOKE CONTROL COMPLIANT. HOWEVER, IF YOU CHANGE THE PXCM PLACEMENT OR WIRING, IT WILL BECOME NON-COMPLIANT.



INSTALLATION NOTES:

1. DO NOT POWER ANY EXTERNAL DEVICES (VALVES, DAMPERS, ETC.) OFF THE PXC7 I/O BLOCKS. INCLUDE A SEPARATE AND INDEPENDENT TRANSFORMER AS REQUIRED.

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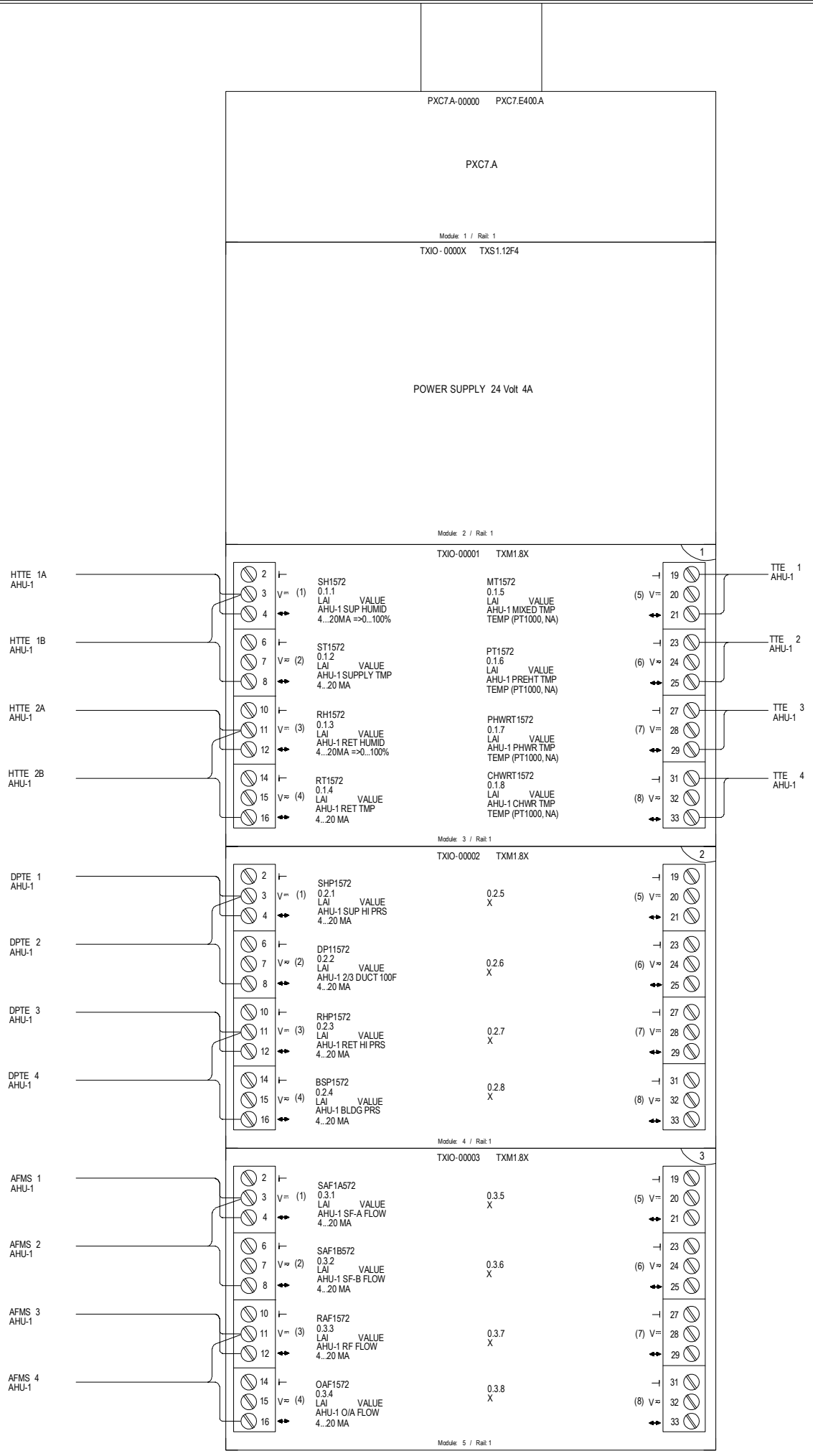
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IU PROJ #20250522,

ENGINEER	DRAFTER	CHECKED BY	INITIAL RELEASE	LAST EDIT DATE
WLH	WLH		10/28/26	11/05/26

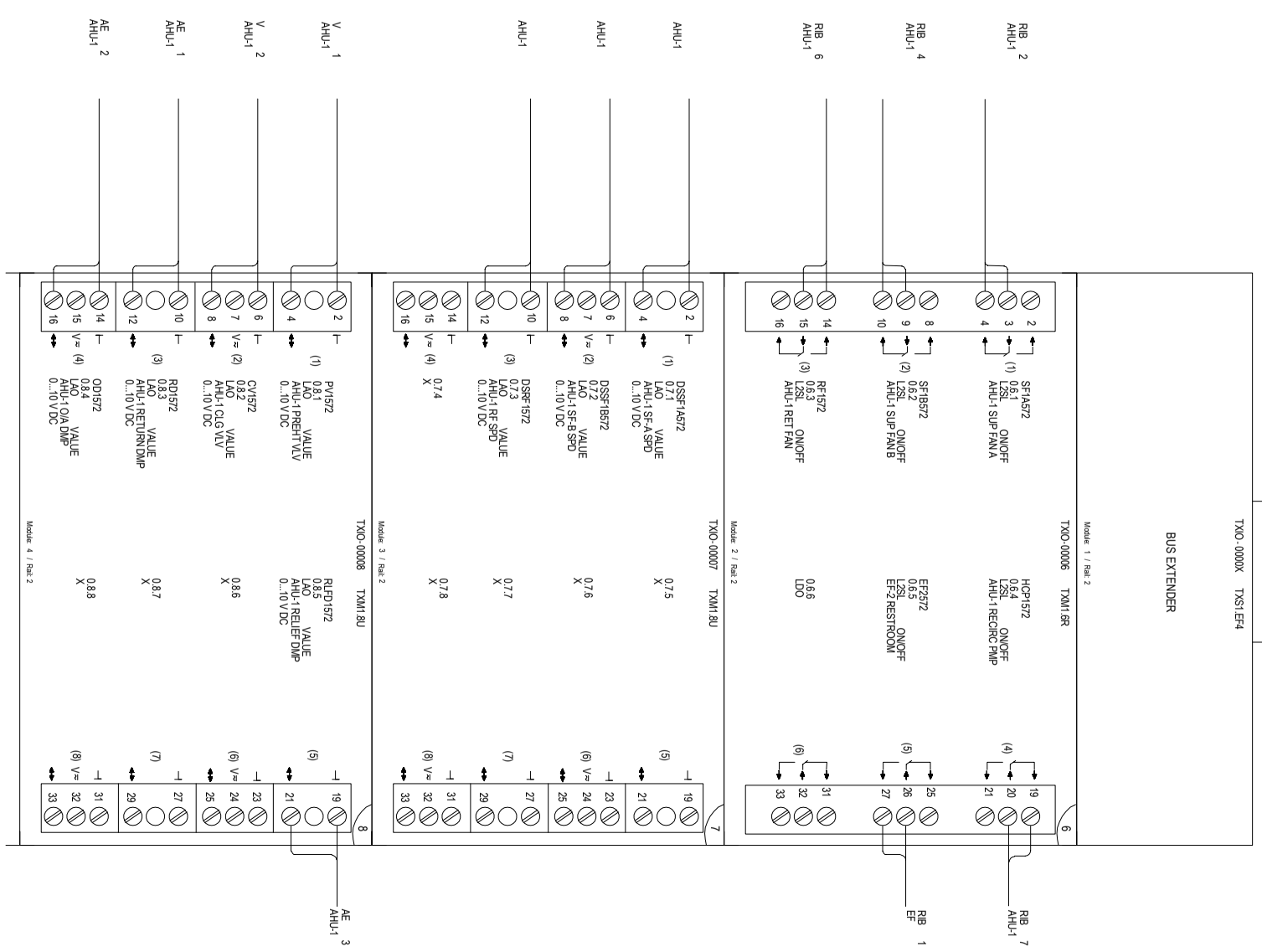
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BID FORM
for

BL572 Intercollegiate Gym First Floor HVAC and Lighting Upgrades
Indiana University Bloomington
Bloomington, Indiana
IU 20250522

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 BL572 Intercollegiate Gym First Floor HVAC and Lighting Upgrades on the Indiana University Bloomington campus, as prepared by Introba, 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 Introba, christopher.hawk@introba.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.

General Contractor: _____ M/W/VBE

Mechanical Contractor: _____ M/W/VBE

Electrical Contractor: _____ M/W/VBE

ALTERNATE PROPOSALS

1. Alternate proposals are requested under Alternates of the Bidding Documents. (See Specification Index)
2. The alternate proposal shall indicate the amount to be added to or deducted from the Lump Sum Base Bid if the alternate proposal is accepted by the Owner.
3. The alternate proposal shall include all costs necessary for the complete installation of the materials or items indicated for the alternate proposal, including materials, labor, equipment, operations, administration, overhead, profit, and taxes (as applicable).
4. The alternate proposal shall also include all costs for changes in the work (including work of other Separate Contracts) that will be made necessary by acceptance of the alternate proposal.
5. The Bidder shall submit prices for all the alternates listed below in the manner indicated. Cross out (Add) or (Deduct) as applicable. If there is no change in price to the Lump Sum Base Bid, write in "No Change".

Mandatory Alternate No. 1: Air Handler(s) Alternate

Provide Air Handler(s) No. AHU-1.

Bidder is required to list a price for AT LEAST ONE (1) Air Handler Manufacturer, although bidders are encouraged to offer prices for more than one (1) Air Handler Manufacturer. The submitted equipment will be evaluated as described in Section 237312 and factors other than price may be taken into consideration as the bids are analyzed.

In order for the Air Handler Manufacturer's price – submitted by the Bidder – to be valid, the Air Handler Manufacturer must submit the following criteria by which the air handler bid will be evaluated:

Upload all proposed air handler submittals in PDF format along with required bid form and supplemental documents.

*Label each PDF submittal as follows:

"[your company name] – IU [20250522] – [manufacturer name]"

Alternate No. 1A: (Trane)

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Alternate No. 1B: (Carrier)

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Alternate No. 1C: (Pace)

(Add) (Deduct) _____ Dollars $_____
(written amount) (numerals)

Non-Mandatory Alternate No. 2: 008 Dry Diving Room Alternate

Renovate 008 Dry Diving Room in its entirety.

Bidder is required to list a price for the complete renovation of 008 Dry Diving Room for all disciplines (architectural, structural, plumbing, mechanical, electrical, and fire alarm) as shown and represented in the contract documents.

Alternate No. 2: (008 Dry Diving Room)

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

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 **June 30th, 2027**.

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****

SECTION 28 31 11 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Fire alarm and detection systems.

1.3 DEFINITIONS

A. LED: Light-emitting diode.

B. NICET: National Institute for Certification in Engineering Technologies.

1.4 PERFORMANCE REQUIREMENTS

A. The fire alarm Design Documents and this Specification Section describe the minimum required features, material quality and operational requirements of the fire alarm system. These Documents do not depict every connection to be made and wire to be installed. The Vendor and Contractor are solely responsible for determining all wiring, programming, interconnections and additional equipment required to create a complete and fully functional fire alarm, based on the equipment and performance characteristics described within these Documents.

B. Provide all components, devices, hardware, software, programming, peripheral devices, extension components, conduit, wiring, etc., required for a new fire alarm system. Required components include, but are not limited to, initiating devices and circuits, signaling devices and circuits, notification devices and circuits, monitoring devices and circuits, power supplies, batteries, auxiliary devices, and control circuits for other building systems such as dampers, magnetic door hold open devices, fan shut down, elevator recall, etc. Upon completion of construction, the complete fire alarm system shall function as a single system, able to be reset from any single reset location point and annunciated at any annunciator location.

C. Device layouts and limited equipment have been shown on the Construction Documents. Additional equipment, wiring, components, etc required to create a complete and fully functional system has not been shown and is the responsibility of the Contractor. Shop Drawing Submittals shall indicate all requirements to create said fire alarm system.

1.5 SUBMITTALS

A. General Submittal Requirements:

1. Failure to comply with all of the requirements within Specification 26 05 00 and within this Specification Section will result in the submitted Shop Drawing being rejected without review. All listed requirements must be submitted within a single Submittal package.
2. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect/Engineer.
3. Shop Drawings shall be prepared by persons with the following qualifications:

    a. Trained and certified by manufacturer in fire-alarm system design.
    b. NICET-certified fire-alarm technician, Level III minimum.
    c. Licensed or certified by authorities having jurisdiction.

B. Product Data: For each type of product indicated on Drawings and required to complete installation if not indicated on Drawings. Indicate part numbers being ordered for each equipment or component variation required. If device or equipment is shown on Construction Documents, indicate corresponding fire alarm symbol at the top of each product data sheet.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.

1. Include CAD floor plans indicating the complete layout of the entire system, including auxiliary equipment, wiring and device addresses.

    a. A legend shall be provided to indicate which fire alarm symbols correspond with Construction Document fire alarm symbols, if different.

2. Actual routing of notification appliance circuits required for circuit survivability as dictated in Part 3 of this Specification.
3. Include a complete fire alarm riser diagram indicating the wiring sequence of devices and their connections to the control equipment. Include a color code schedule for the wiring.
4. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
5. Include voltage drop calculations for notification appliance circuits.
6. Include battery-size calculations including total available capacity, used capacity and future capacity available.
7. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
8. Include plans, sections, and elevations of heating, ventilating, and air-conditioning ducts, drawn to scale and coordinating installation of duct smoke detectors and access to them. Show critical dimensions that relate to placement and support of sampling tubes, detector housing, and remote status and alarm indicators. Locate detectors according to manufacturer's written recommendations.
9. Provide equipment rack elevation, console layout, grounding detail and amplifier power calculations for voice alarm systems.
10. Manufacturer wiring requirements, such as size, type, and manufacturer.
11. Photocopy of NICET certification of person overseeing the preparation of fire alarm Drawings, Shop Drawings, installation, and testing.
12. Stamp and signature of Professional Engineer overseeing fire alarm design shall be required on Drawings as required to comply with local or state regulations.

D. Calculations:

1. Battery Capacity Calculations: Battery size shall be a minimum of 125% of the calculated requirement. Batteries must be capable of operating the panel in normal mode for 24 hours with sufficient capacity to operate the panel in alarm mode for 15 minutes at the end of that 24-hour period.
2. Provide Voltage Drop Calculations meeting NFPA 72 & UM Standard requirements for additional system capacity.

E. Installation and maintenance manuals per Section 26 05 00.

F. Field quality-control reports.

G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:

1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
2. Provide "Record of Completion Documents" according to NFPA 72 article "Permanent Records" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter.
3. Provide "Maintenance, Inspection and Testing Records" according to NFPA 72 article of the same name and include the following:

    a. Frequency of testing of installed components.
    b. Frequency of inspection of installed components.
    c. Requirements and recommendations related to results of maintenance.
    d. Manufacturer's user training manuals.

4. Provide Shop Drawings as reviewed by the Architect/Engineer and Authority Having Jurisdiction.
5. Provide hardcopy and electronically reproducible CAD floor plans indicating location of fire alarm devices, wiring and associated addresses.

H. Software and Firmware Operational Documentation:

1. Device address list.

I. Project Record Documents:

1. Submit Record Documents per Section 26 05 00.
2. Provide a CAD Drawing of each building area depicting each device location and address. Labeling of devices on Drawings shall be consistent with labeling in the field. Scale CAD Drawings no smaller than 1/16 inch = 1 foot-0 inch.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Installer Qualifications: A factory authorized, licensed electrical or security Contractor with minimum 5 years' experience in the design, installation, and maintenance of fire alarm by fire alarm system manufacturer specified and selected. Installation shall be by personnel certified by NICET as fire-alarm Level III technician.

C. Source Limitations for Fire-Alarm System and Components: Obtain system from single source from single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

E. NFPA Certification: Obtain certification according to NFPA 72 by a UL-listed alarm company.

1.7 SYSTEM DESCRIPTION

A. UL-certified automatic and manual addressable fire alarm system, consisting of multiplexed signal transmission, dedicated to fire-alarm only. Compliant with NFPA 72..

B. Alarm Indication: By synchronized sounding of emergency voice alarm communication system and tone signals and synchronized flashing of strobes. Audible and visual signals shall be synchronized throughout the facility.

C. Voice Communication: An emergency voice alarm communication system shall be utilized to notify occupants of fire alarm initiation and provide instructions to evacuate the facility using digitized voice messages. Manual voice override functionality shall be provided.

1.8 SEQUENCING AND SCHEDULING

A. Interruption of Existing Fire-Alarm Service: Do not interrupt fire-alarm service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary guard service according to requirements indicated:

1. Notify Owner no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with interruption of service without Owner's written permission.

B. Existing Fire-Alarm Equipment: Maintain existing equipment fully operational until new equipment has been tested and accepted. As new equipment is installed, label it "NOT IN SERVICE" until it is accepted. Remove labels from new equipment when put into service and label existing fire-alarm equipment "NOT IN SERVICE" until removed from the building.

C. Equipment Removal: After acceptance of partial new fire-alarm system, remove existing disconnected devices and wiring. Owner has first right of refusal of all removed equipment.

1.9 EXTRA MATERIALS

A. Provide five (5) visual devices of each type specified (e.g., 15, 30, 75 candela).

B. Provide five (5) audible notification devices of each type specified (e.g., speaker, horn, etc.).

C. Provide ten (10) addressable smoke detectors (head and base).

D. Provide five (5) addressable monitor modules.

E. Provide five (5) addressable relay modules.

F. Extra material shall be shipped directly to owner and not the Contractor.

1.10 WARRANTY

A. Provide two (2) year warranty for all labor and materials from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products from a single source. Approved manufacturers include the following:

1. Simplex.
2. Semiens.

2.2 FIRE ALARM CONTROL PANEL

A. General: Comply with UL 864, “Control Units for Fire-Protective Signaling Systems.”

B. Cabinet: Lockable steel enclosure with transparent opening for viewing all indicators. Arrange panel so all operations required for testing or for normal care and maintenance of the system are performed from the front of the enclosure. If more than a single unit is required to form a complete control panel, provide exactly matching modular unit enclosures. Accommodate all components to allow ample gutter space for interconnection of panels as well as field wiring. Identify each enclosure by an engraved, red-laminated, phenolic resin nameplate. Lettering on the enclosure nameplate shall not be less than 1 inch high. Identify individual components and modules within the cabinets with permanent labels. Provide provisions for electrical conduit connections within the top and sides of the cabinet.

C. Parameters:

1. Minimum Total Addressable Points: 2000.
2. Minimum Total SLC Loops: 6.
3. Panel Expansion Capability, Minimum Total SLC Loops: 10.
4. Minimum Node Capacity for Network System: 100.

D. Central Processing Unit:

1. The Central Processing Unit shall communicate with, monitor, and control all other modules within the control panel. Removal, disconnection, or failure of any control panel module shall be detected and reported to the system display by the Central Processing Unit.

2. The Central Processing Unit shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. These programs shall be stored in non-volatile programmable memory.
3. The Central Processing Unit shall provide a real-time clock for time annotation of all system events.
4. All power for the central processing unit shall be provided and supervised by the Fire Alarm Control Panel.

E. Signal Line Circuit Board (SLC):

1. Each circuit board shall contain its own microprocessor and shall be capable of operating in local/degrade mode.
2. Each circuit board shall provide power and communicate with all intelligent addressable detectors and modules on a single pair of wires.
3. The system shall be designed such that each signaling line circuit is limited to only 80 percent of its total capacity at initial installation.
4. Pathway Class Designation: Class B: Circuits not capable of transmitting an alarm beyond the location of the fault condition. Does not include a redundant path.

F. Notification Appliance Circuit Board (NAC):

1. Each board shall contain its own microprocessor and shall be provided to control each notification appliance circuit. The board shall communicate and provide power to all devices on its loop.
2. Pathway Class Designation: Class B: Circuits not capable of transmitting an alarm beyond the location of the fault condition. Does not include a redundant path.

G. Display:

1. The system display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.
2. The display assembly shall contain and display custom alphanumeric labels for all intelligent detectors, addressable modules and software zones.
3. The system display shall provide a backlit alphanumeric liquid crystal display (LCD) and status indicators for the following system parameters: AC Power, System Alarm, System Trouble, Display Trouble, CPU Failure and Signal Silence.
4. An alphanumeric touch keypad shall be provided for control capability to command all system functions and for field programming. Two different password levels shall be provided for Administrator and User credentials to prevent unauthorized system control or programming.
5. Displayed descriptions of addressable points shall include actual room names and numbers as selected by Owner. Coordinate descriptions with Owner prior to programming.

H. Power Supply:

1. The addressable main power supply shall operate at 120VAC, 60Hz and shall provide all necessary power for the Fire Alarm Control Panel. Components requiring 120VAC power shall be provided by a dedicated life safety branch circuit using two #12 conductors and one #12 ground in 3/4 inch conduit from a dedicated 20A, single pole circuit breaker with a red handle and manufacturer handle lock-on device.

a. Initiating devices, notification appliances, signaling lines and trouble signals shall be provided by a 24VDC power source, obtained from the 120VAC service and power supply module.
b. The 24VDC power supply system shall consist of batteries, automatic battery charger and automatic transfer upon primary power failure. Provide additional batteries as required.

2. All power supplies shall conform to NFPA and UL864 for power-limiting requirements.
3. Integral battery chargers shall be provided with the main power supply for use with internal batteries. Battery capacity shall be sufficient for operation of the entire system for 24 hours in a non-alarm state, followed by alarm mode for 15 minutes, plus 25 percent spare capacity for future devices.
4. The power supply, primary power, battery presence, and battery voltage shall be electrically supervised.

I. Universal Digital Alarm Communicator Transmitter (UDACT):

1. Provide UDACT mounted within fire alarm control cabinet in a standard module position. As an option, the UDACT may have the ability for remote mounting. The wire connections between the UDACT and the fire alarm control panel shall be supervised.
2. Provide dual phone line interface capable of fire alarm notification to the local fire alarm department, fire protection agency or monitoring service. Communicator shall be capable of transmitting events in a format compatible with receiving station.
3. Communicator shall be FCC registered. Contractor shall provide two RJ31X jacks and provide connection of communicators to Owner’s telephone system.

J. Monitoring and Certification:

1. The fire alarm equipment supplier shall provide Central Station Monitoring Service in full compliance with the applicable version of NFPA 72. This shall include runner services for alarm, trouble and supervisory conditions, maintenance, and service agreements as well as UL listed monitoring service.
2. The fire alarm equipment supplier shall provide either a UL Certificate or Factory Mutual (FM) Placard on the installed system. This shall include full compliance with NFPA 72 initial inspection and testing chapters including all required documentation. The documentation shall include, but not be limited to, voltage drop and battery calculations, device wiring, As-Built Drawings, record of completion, and copy of fire alarm panel programming and central station history report. The equipment supplier must provide a UL Certificate or FM Placard as well as UL Category UUFX monitoring service in order to meet these requirements.
3. The UL Certificate or FM Placard must be installed at the fire alarm control panel. If this certificate or placard is not installed at the time of substantial completion, written confirmation proving the certificate or placard has been issued by the appropriate agency must be provided.

K. Surge Protection:

1. The fire alarm control panel shall be furnished with an integral surge protection device.

L. History Storage:

1. The fire alarm control panel shall utilize battery-protected non-volatile memory to store a minimum of 400 events in a log.

a. These events shall be stored in memory until downloaded or manually cleared. Resetting of the control panel shall not clear the memory.

M. Digital Voice Command Center:

1. The Digital Voice Command Center, located with the fire alarm control panel, shall contain all equipment required for audio control, firefighter's phone system control, signaling and supervisory functions. It shall include speaker zone indication and control, firefighter's phone system circuit indication and control, digital voice units, main firefighter's phone system handset and microphone.
2. Function: The Digital Voice Command Center equipment shall perform the following functions:

a. Provide automatic annunciation of digitally recorded voice messages and tones.
b. Operate as a supervised, multi-channel emergency voice communication system.
c. Operate as a two-way firefighter's telephone system control center.

1) Two-way communication circuits shall be supervised for open and short circuit conditions.
2) Means shall be provided to connect the firefighter's phone voice communications to the speaker circuits in order to allow voice paging over the speaker circuit from a telephone handset or main microphone.

d. Audibly and visually annunciate the active or trouble condition of every speaker circuit and firefighter phone circuit.
e. Audibly and visually annunciate any trouble condition for digital tone and voice units required for normal operation of the system.
f. Provide all-call emergency paging activities through activation of a single control switch.

3. Audio Amplifiers:

a. The audio amplifiers shall provide dual channel audio power at 25 Volts RMS for distribution to speaker circuits.
b. Provide multiple audio amplifiers to supply incremental audio power or to function as an automatically switched backup amplifier system.
c. The audio amplifier shall include an integral power supply, and shall provide built-in LED indicators for the following conditions:

1) General trouble.
2) Fault.
3) Power supply abnormal condition.
4) Battery trouble.
5) Audio transmit/receive.

d. Adjustment of the correct audio level for the amplifier shall not require any special tools or test equipment.
e. Amplifiers shall include audio input and amplifier output supervision and backup input with automatic switch over function if primary amplifier should fail.

4. Audio Message Generator (Digitized or Pre-Recorded Voice):

a. Each initiating zone or intelligent device shall interface with an emergency voice communication system capable of transmitting a prerecorded voice message to all speakers in the building.
b. Actuation of any alarm initiating device shall cause a pre-recorded message to sound over the speakers. The message shall be repeated four (4) times. Pre-and-post-message tones shall be supported.

    1) Coordinate all prerecorded messages with Owner and Authority Having Jurisdiction. Prerecorded messages shall be from a female voice and shall be in English and/or the multi-lingual language of the majority of the building occupants.

c. Messages shall be annunciated by a single channel in all evacuation signal zones throughout the building.
d. Primary messages shall be annunciated in the zone of alarm and adjoining areas' evacuation signaling zones, and the secondary message in all other evacuation signaling zones.
e. A built-in microphone shall be provided to allow paging through speaker circuits.
f. The audio message generator shall have the following indicators to allow for proper operator understanding:

    1) General trouble.
    2) Microphone trouble.
    3) Busy/wait.
    4) All-call.
    5) In-use.

N. Fire Alarm Panel Functions:

1. The trouble indicator light shall illuminate if the fire alarm control panel reports the following from any panel or annunciator on the system:

    a. Low battery or battery voltage.
    b. Abnormal switch or control position.
    c. Battery or charger failure.
    d. Ground fault, open circuit or short circuit.
    e. AC power loss or irregularity.
    f. Module removal.

O. Facility Management Control System Interface:

1. Provide addressable interface devices to report the following events to the facility management control system:

    a. General Alarm.
    b. System Trouble.
    c. Supervisory Alarm.

2. Provide BACnet IP interface for fire alarm panel to communicate status with the facility management control system. Provide a list of points with descriptions to the facility management control system supplier. Provide RJ45 connection and cable.

P. Printer:

1. Equip FACP with printer compatible jack, RS232.

SIGNALING LINE CIRCUIT DEVICES

Q. Manual Fire Alarm Boxes:

1. Comply with UL 38.
2. Boxes shall be directly connected to a SLC loop and finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
3. Double-action mechanism requiring two actions to initiate an alarm pull-lever type; with integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
4. Station Reset: Key- operated switch.

R. Smoke Detectors:

1. Comply with UL 268.
2. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base in locations shown on Drawings with all mounting hardware provided. Provide terminals in the fixed base for connection to building wiring.
4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
5. Integral Visual-Indicating Light: LED type indicating detector has operated and power-on status.
6. Photoelectric Smoke Detector: Detector shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
7. Detector shall be directly connected to a SLC loop. Each detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
8. Dual status LEDs shall be provided on each smoke detector to indicate the detector is operational and in regular communication with the control panel, or in an alarm condition.
9. Each detector shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.

S. Duct Smoke Detectors:

1. Comply with UL 268A.
2. The smoke detector housing shall accommodate an intelligent photoelectric smoke detector having the same features specified for standard smoke detectors with the following additional features required below.
3. Provide sampling tubes and mounting hardware to match the duct to which it is attached. Sampling tube design and dimensions shall be as recommended by manufacturer for specific duct size, air velocity and installation conditions where applied. Where the detector housing is larger than the duct height, the Contractor shall fabricate a mounting bracket for the detector and attach according to the fire alarm manufacturer’s recommendations.

4. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
5. Weatherproof Duct Housing Enclosure for outdoor locations: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
6. Remote Indication: Provide a remote LED indicator device if detector is not visible from a floor standing position. If detector is located above a suspended ceiling, mount remote indicator in ceiling directly below detector with a white single-gang faceplate, labeled to indicate device type and mechanical equipment being monitored.

T. Heat Detectors:

1. Comply with UL 521.
2. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 degrees F or a rate of rise that exceeds 15 degrees F per minute unless otherwise indicated.
3. Mounting: Twist-lock base interchangeable with smoke-detector bases. Provide two-piece head/base design.
4. Integral Addressable Module: Arranged to communicate detector status (normal, alarm, or trouble) to fire-alarm control unit.
5. Device shall connect directly to a SLC loop.
6. Dual status LEDs shall be provided on each smoke detector to indicate the detector is operational and in regular communication with the control panel, or in an alarm condition.
7. Each detector shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.

U. Multi-Criteria Detector:

1. The multi-criteria detector shall be an addressable device that is designed to sense and monitor a minimum of photoelectric, carbon monoxide and thermal technologies within a single sensing device.
2. Multi-criteria detectors shall be capable of distinguishing between a fire condition and a false alarm condition by examining the characteristics of the thermal and smoke sensing chambers and comparing them to a database of actual fire and deceptive phenomena.
3. Multi-criteria detectors shall be provided with two (2) sets of Form A/Form C contacts that activate independently for smoke and carbon monoxide events.

2.3 NOTIFICATION APPLIANCES

A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.

B. All wall-mounted audible, visual and combination notification devices shall be white in color, with red**,** lettering. Lettering shall read “FIRE.”

C. All ceiling-mounted audible, visual and combination notification devices shall be white in color, with red, lettering. Lettering shall read “FIRE.”

D. Audio Speaker Devices 4-inch or 8-inch Diameter Ceiling-Mount or Wall-Mount:

1. All speakers shall operate on 70V RMS system, have a minimum frequency range of 300 to 40000Hz, and shall be provided with field-selectable output taps available in 3dBA increments.
2. Speakers in corridors and public spaces shall produce a nominal sound output of 84 dBA at 10 feet.
3. All speakers shall be capable of reproducing a clear signal consisting of a live or prerecorded voice, with intelligibility.

E. High-Resolution Speaker Units:

1. HyperSpike speakers shall operate on 70V RMS system and provided with field-selectable output taps. Tap settings at 24-watt output.
2. Speakers shall produce a nominal sound output of 92dBA.

    a. Model: TCPA-10.
    b. Certification: UL1480.
    c. Color: TBD.
    d. Accessories: As required

F. Addressable Visual Notification Appliances:

1. Xenon strobe lights or equivalent in compliance with UL 1971 and ADAAG with clear or nominal clear lens for fire alarm systems.
2. The maximum pulse duration shall be two-tenths of one second (0.2 second) with a maximum duty cycle of 40 percent. The flash rate shall be 1 Hertz.
3. Visual alarm notification appliances shall be flash in a temporal pattern and fully synchronized with all other units.
4. Rated Light Output:

    a. 15/30/75/110 Candela, selectable in the field, as indicated on Drawings.

5. Mounting: As indicated on Drawings.
6. Strobe Leads: Factory connected to screw terminals.

G. Combination Addressable Audible/Visual Notification Appliances:

1. Single device with integral audible and visual notification, meeting the requirements for each component (audible and visual) per this specification.

H. Exterior (Re-Entrant) Speakers:

1. Speakers shall operate on 25V RMS system and be provided with a built-in 5 Watt amplifier.
2. Speakers shall be provided with tap settings to provide a nominal sound output of 110-116dBA with a 300-10,000Hz frequency response.
3. Provide weatherproof, outdoor rated housing and backbox.

2.4 ADDRESSABLE INTERFACE DEVICES

A. Addressable Relays:

1. Addressable relay module available for control of auxiliary devices, rated for the electrical load being controlled. Contractor shall provide additional slave relay(s) as required to achieve desired function.
2. Addressable relays shall connect directly to a SLC loop and receive power from a separate 24VDC circuit. Addressable relay shall supply 24VDC power to the device(s) being controlled, unless otherwise indicated on the Drawings.

B. Addressable Monitor Modules:

1. Addressable monitor module available for monitoring of auxiliary devices. It shall interface initiating devices with the fire alarm control panel.
2. Addressable monitor modules shall connect directly to a SLC loop and receive power from a separate 24VDC circuit.
3. The addressable monitor module shall provide the required power to operate the monitored device(s).
4. At the Contractor's option, an integral relay capable of providing a direct signal auxiliary device may be provided within the monitor module.

2.5 MAGNETIC DOOR HOLDERS

A. Description: Units shall be equipped for wall or floor mounting as indicated and shall be complete with matching door plate. Electromagnet operates from a 24V AC 120V AC source and shall require no more than 3 watts to develop 25 pounds holding force.

B. Material and Finish: Match door hardware.

1. Door holders are to be provided by the electrical Contractor.

2.6 NOTIFICATION APPLIANCE CIRCUIT EXTENDER PANELS

A. This Contractor and Vendor shall be responsible for furnishing and installing notification appliance circuit extender panels as necessary to provide remote power supply for notification appliance circuits, based on calculations performed by the Vendor.

B. Notification appliance circuit extender panels may be installed only in back-of-house areas such as janitor, electrical, mechanical and telecommunications closets. Coordinate final locations with Architect/Engineer prior to rough-in where not indicated on Drawings. Indicate locations of extender panels on Shop Drawing Submittals.

C. Notification appliance circuit extender panels shall be self-contained remote power supplies with batteries and charger mounted in a surface or recessed lockable cabinet. Manufacturer shall match fire alarm control panel.

D. Battery capacity shall be sufficient for operation for 24 hours of non-alarm state, followed by alarm for 15 minutes.

E. Notification appliance circuit extender panels shall be provided with 25 percent spare capacity for future devices.

F. Power for notification appliance extender panels shall be from a 120VAC circuit supplied by the nearest life safety panelboard. Extend two #12 conductors and 1#12 ground in 3/4 inch conduit

to each notification appliance circuit extender panel from a dedicated 20A, single pole circuit breaker. Provide red handle-lock device for each circuit breaker serving notification appliance extender panels.

2.7 WIRING

A. All fire alarm wiring, and cables shall be furnished and installed by the Contractor.

B. Wiring shall be in accordance with local, state and national codes. Number and size of conductors shall be as recommended by the fire alarm system manufacturer.

C. All analog voice speaker and analog telephone circuits shall utilize twisted/shielded pair to eliminate cross talk.

D. All wiring and cables shall be UL listed and labeled as complying with NFPA 70 Article 760.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

A. Comply with NFPA 70, NFPA 72, local and state codes and manufacturer recommendations for installation of fire-alarm equipment.

1. Devices specified to be surface mounted shall be mounted on a manufacturer provided backbox, painted to match the color of the device. The backbox shall be the same size and shape of the device and must not have visible knockouts.

B. Fire Alarm Control Panel:

1. Surface mount the fire alarm control panel plumb in location shown on Drawings. All expansion cabinets, if required, shall be located at the fire alarm control panel.

C. Signaling Line Circuit Devices:

1. General:

a. Do not install pull stations, fire alarm annunciators and signaling appliances before all dust producing construction in the area has ceased.
b. Ceiling mounted devices shall be located where shown on the floor plans or reflected ceiling plans. Where a conflict arises with architectural elements or other items that will not allow installation in shown location, the Contractor shall notify the Engineer to coordinate a different acceptable location and adjust location of device such that the new location meets all NFPA 72 requirements and applicable building codes.
c. Coordinate the location of all ceiling devices with luminaires, sprinkler heads, piping, diffusers, grilles and other obstructions to maintain a neat and operable operation. Mounting locations and spacing must in accordance with NFPA 72.
d. Center ceiling mounted devices within each ceiling tile where installed in a grid type ceiling. Devices installed within hard ceilings shall be arranged in a neat and uniform pattern.

e. Provide a means of isolating addressable devices connected to the SLC so that connection to no more than 50 devices would be lost by single fault on a pathway, per NFPA-72 chapter 23.6.
f. Provide a means of isolating addressable devices connected to the SLC so that connection to the devices in no more than one zone would be lost by a single fault on a pathway, per NFPA-72 chapter 23.6.

1) Zones are designated as each separate floor, by floor area if floor exceeds 22,500 sf, by fire or smoke barrier boundaries, by maximum length or circuit.

2. Manual Fire Alarm Boxes:

a. Mount semi-flush in recessed back boxes, installed 48 inches above the finished floor.

3. Smoke Detectors:

a. Detector heads shall not be installed until after the final construction cleaning, unless required by the Authority Having Jurisdiction. If detector heads must be installed prior to final cleaning, they may not be installed until they can be connected to a fully functional fire alarm control panel.
b. All smoke detectors must be installed in an accessible location, including in-duct smoke detectors, and detectors at the top of elevator shafts. Provide access panels as required. Coordinate with General Contractor.
c. Provide a smoke detector at each Fire Alarm Panel and Notification Appliance Circuit Extender Panel location whether shown on Drawings or not.
d. Smoke detectors must be located at least 3 feet-0 inches from each supply air diffuser and return grille.
e. Smoke detectors shall be installed at least 12 inches from any part of a lighting fixture.

4. Duct Smoke Detectors:

a. Duct smoke detectors with respective sampling tubes shall be installed on the duct where shown on Drawings in compliance with manufacturer’s requirements. Sampling tubes shall extend the full width of the duct. All duct penetrations shall be sealed air-tight.

5. Heat Detectors:

a. Detector heads shall not be installed until after the final construction cleaning, unless required by the Authority Having Jurisdiction. If detector heads must be installed prior to final cleaning, they may not be installed until they can be connected to a fully functional fire alarm control panel.
b. All heat detectors must be installed in an accessible location.
c. Provide heat detectors within 2 feet-0 inches of each sprinkler head within elevator pit, elevator shaft and elevator equipment room. Final quantity of sprinkler heads and respective locations must be coordinated with Fire Protection Contractor.
d. Heat detectors shall be installed at least 12 inches from any part of a lighting fixture.
e. All heat detectors must be installed in an accessible location, including and detectors at the top of elevator shafts. Provide access panels as required.

D. Notification Appliance Devices:

1. Devices shall be located where shown on Drawings.
2. Wall mounted devices shall be installed on flush-mounted backboxes. Where new device is noted to be installed on a non-stud/drywall wall then surface mounting with exposed conduit feed is acceptable.
3. Ceiling mounted devices shall be installed flush with ceiling, centered within ceiling tile if installed in a grid-type system. Devices installed within hard ceilings shall be arranged in a neat and uniform pattern.
4. Where devices are to be installed in a location having a ceiling exceeding a 30 foot-0 inch height, provide stem-mounting device and support hardware, installed such that the entire device is below 30 feet-0 inches.

E. Addressable Interface Devices:

1. Addressable Relays:

a. Mount each addressable relay within an enclosure located in an accessible serviceable area as near as possible to the device(s) being controlled unless otherwise specifically noted. Provide all required mounting hardware and label each enclosure to indicate relay function. Provide remote indicator to allow inspection of the device status from a floor standing location if device is not visible from a floor standing position.

2. Addressable Monitor Modules:

a. Mount each addressable monitor module within an enclosure located in an accessible serviceable area as near as possible to the device(s) being controlled unless otherwise specifically noted. Provide all required mounting hardware and label each enclosure to indicate device being monitored. Provide remote indicator to allow inspection of the device status from a floor standing location if device is not visible from a floor standing position.

F. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.

G. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.2 ANNUNCIATORS

A. Install and arrange as indicated, located where shown on Drawings and approved by the Fire Marshal.

3.3 WIRING

A. Fire alarm wiring shall be provided by the Contractor in accordance with the manufacturer’s recommendations and in compliance with the National Fire Codes.

B. Connect all components together for a completely functional ready to operate system as shown on the Drawings, as specified herein and as directed by the manufacturer.

C. Install all fire alarm wiring in conduit.

D. Fire alarm wiring splices shall be avoided to the extent possible. If needed, splices may only be made in accessible junction boxes, compliant with NFPA 70.

E. Signal line circuits connecting devices shall not span floors.

3.4 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Paint all junction boxes associated with the fire alarm system red. Identify SLC and NAC circuit on junction box cover.

C. Provide all fire alarm conduit with red finish. Conduit to be labeled at 25’ intervals with white ‘FIRE ALARM’ lettering.

D. Color Coding: Color code fire alarm conductors differently from the normal building power wiring. Differentiate the following circuit types by using different conductor colors with an overall red jacket.

1. Alarm circuits.
2. Supervisory circuits.
3. Initiating circuits.
4. Notification circuits.
5. Door release.
6. Central station.
7. DC power supply.
8. Power branch circuits.

3.5 GROUNDING

A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100 and manufacturer written requirements. Install a ground wire from main service ground to fire alarm control unit.

B. For audio circuits, minimize the following to the greatest extent possible: ground loops, common mode returns, noise pickup, cross talk and other impairments.

3.6 SEQUENCES OF OPERATION

A. General:

1. Refer to the Fire Alarm Operation Matrix within the Drawings for basic requirements and system input/output relationships.

B. Panel/Annunciator Alarm, Trouble, Supervisory Indication:

1. Respective system Alarm, Trouble or Supervisory LED indicator light shall cycle on/off at the following locations:

a. Fire alarm control panel.
b. Remote annunciator locations.
c. Fire alarm transponder.

2. Appropriate signal shall be transmitted to the central station via the digital communicator.
3. Appropriate signal shall be transmitted to the building automation system via addressable relay points**.**
4. Event date, time and type of occurrence shall be recorded within the Fire Alarm Control Panel event history.

C. Fire Alarm Visual Alarm Sequence:

1. Visual alarms throughout the building shall flash. Strobes within the building shall be synchronized.

D. Fire Alarm Audible Alarm Sequence:

1. Audible alarms throughout the building shall sound.

E. Air Handling Unit Shutdown Sequence:

1. Utilizing addressable relays, the fire alarm system shall directly shut down the air handling units through each unit's local motor controller.
2. Each air handling unit shall be individually shut down based on alarming device location and area served.
3. Once alarm state has been reset, air handling units shall automatically be re-energized and resume normal operation.

F. Door Holder Release Sequence:

1. Utilizing an addressable relay, the power connection to magnetic door holders and/or 'hold' switch circuitry within door hardware shall be interrupted, allowing doors to close.
2. All door holders located throughout the floor building shall simultaneously close.

G. Fire Protection Electric Sprinkler Bell Sequence:

1. Utilizing an addressable relay, the electric sprinkler bell shall activate upon water flow detection through flow switches.

H. Fire Door Release Sequence:

1. Utilizing an addressable relay, each fire door shall close upon initiation of the corresponding smoke detector specifically noted for door closure.
2. Once alarm state has been reset, the addressable relay shall allow the door to open.

3.7 FIELD QUALITY CONTROL

A. Field tests shall be witnessed by Owner's representative and authorities having jurisdiction.

B. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

C. Tests and Inspections:

1. Test fire alarm system in accordance with NFPA 72 Chapter 14, local Fire Marshal requirements and local building codes.
2. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
3. Contractor shall test and adjust the voice fire alarm system after all furnishings, wall and floor coverings and fixed equipment is in place and operating. Measurements should be taken at a height of five feet above the finished floor level.

    a. Adjust speaker taps to the lowest tap setting that achieves a sound level higher than or equal to the following:

        1) 15dBA above ambient levels as indicated in NFPA 72 table A.18.4.3
        2) 15dBA above measured ambient. 5dBA above the maximum measured sound level with duration of more than 60 seconds.

D. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.

E. Fire-alarm system will be considered defective if it does not pass tests and inspections.

F. Include services of the manufacturer’s software programmer to write initial custom-user program for the annunciator.

G. Contractor and Owner shall coordinate actual room numbers to be used within facility. Final room numbers should be used for fire alarm system programming and Record Documents.

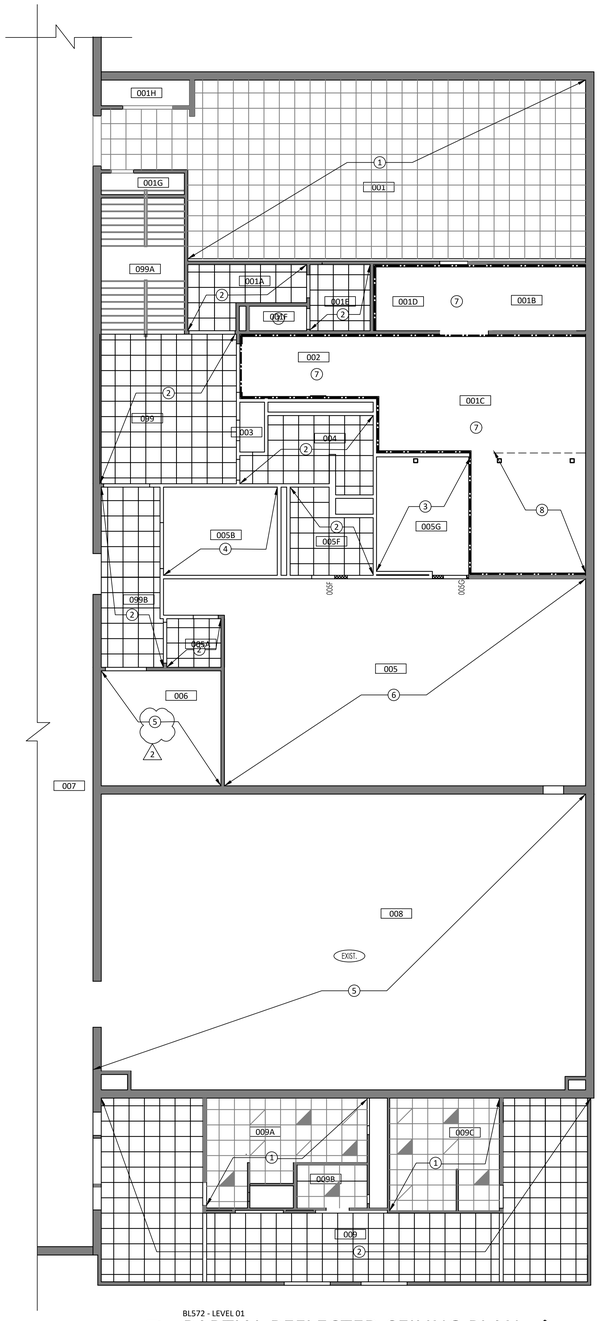
3.8 SYSTEM TRAINING

A. Authorized manufacturer representative shall provide the following minimum on-site training to instruct the Owner’s representative as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

1. System Operators: One day.
2. Graphical User Interface Operation and Editing: One day.

B. The Contractor and/or the system manufacturer’s representatives shall provide a typewritten “Sequence of Operation.”

END OF SECTION



BL572 - LEVEL 01

B PARTIAL REFLECTED CEILING PLAN

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

GENERAL RCP NOTES

A. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND LOCATIONS. REPORT DISCREPANCIES TO ARCHITECT.

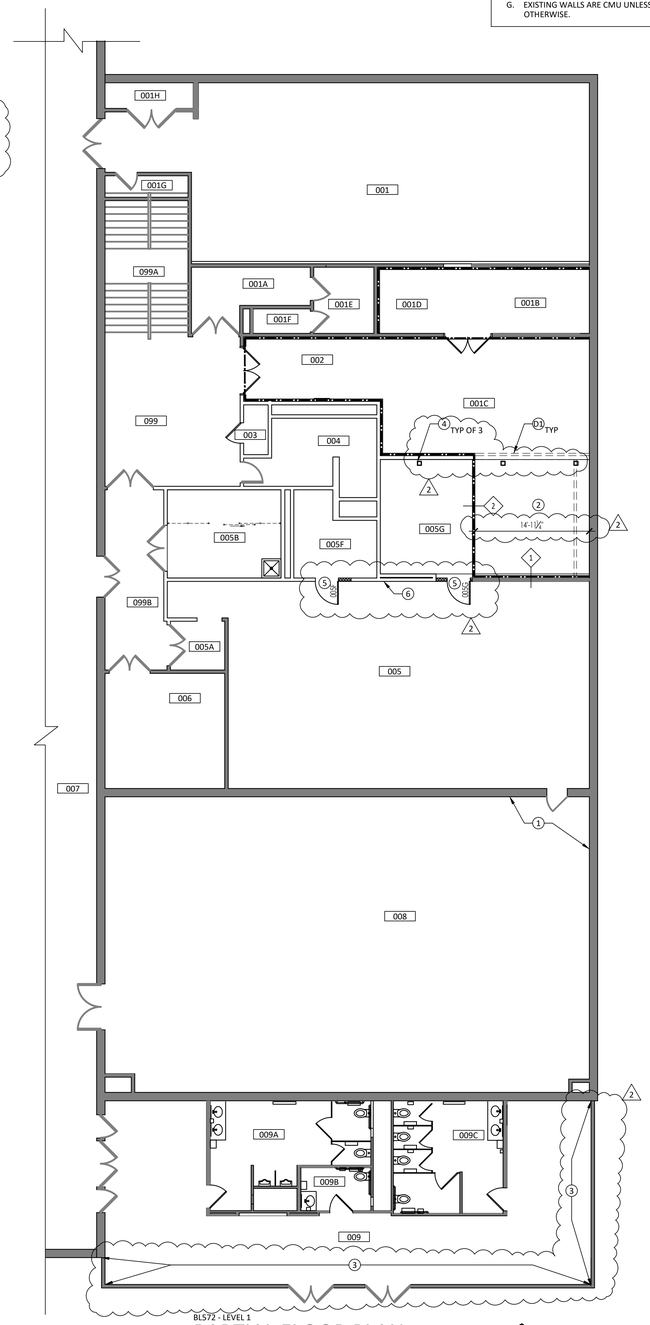
B. COORDINATE WORK OF OTHER TRADES WITH YOUR TRADE BEFORE STARTING ANY CONSTRUCTION.

C. MEASURE EACH CEILING AREA AND ESTABLISH LAYOUT OF ACOUSTICAL PANELS TO BALANCE BORDER DIETHS AT OPPOSITE EDGES OF EACH CEILING. AVOID USING LESS-THAN-HALF WIDTH PANELS AT BORDERS AND COMPLY WITH LAYOUT SHOWN.

D. ALL NEW ACOUSTICAL PANEL CEILINGS TO MATCH EXISTING HEIGHT ABOVE FINISH FLOOR

RCP NOTES

1. EXISTING ACOUSTICAL PANEL CEILING SYSTEM. REMOVE & REINSTALL EXISTING PANELS AND GRID AS REQUIRED TO UPGRADE HVAC DUCT WORK. EXISTING LIGHTING TO REMAIN. REFERENCE MEP SERIES.
2. REMOVE EXISTING ACOUSTICAL PANEL CEILING SYSTEM AND PROVIDE NEW ACOUSTICAL PANEL CEILING SYSTEM. UPGRADE HVAC AND LIGHTING, REFERENCE MEP SERIES.
3. EXISTING GYPSUM BOARD CEILING SYSTEM, PAINT. UPGRADE HVAC AND LIGHTING, REFERENCE MEP SERIES.
4. OPEN TO STRUCTURE. UPGRADE HVAC, REFERENCE MEP SERIES.
5. OPEN TO STRUCTURE. UPGRADE HVAC AND LIGHTING, REFERENCE MEP SERIES.
6. OPEN TO STRUCTURE. UPGRADE HVAC AND LIGHTING, REFERENCE MEP SERIES. PAINT ALL EXPOSED DECK STRUCTURE, DUCTWORK, CONDUIT, ETC.
7. NO WORK, THIS ROOM.
8. 1-HOUR SPRAY-APPLIED FIRE RESISTIVE MATERIAL LIKE BLAZE-SHIELD II (DRYMIX) - OR - CAFCO 300 (WET MIX) TO MEET THE FOLLOWING UL ASSEMBLIES:
   FLOOR-CEILING ASSEMBLY: D858 -OR- D759
   FLOOR BEAM: N823 -OR- D759
   BAR JOISTS: N830 -OR- N761



BL572 - LEVEL 1

A PARTIAL FLOOR PLAN

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

DEMOLITION GENERAL NOTES

A. GENERAL CONTRACTOR TO FIELD CHECK AND VERIFY ALL DIMENSIONS, CONDITIONS AND LOCATIONS. **REPORT DISCREPANCIES TO ARCHITECT.**

B. COORDINATE WORK OF OTHER TRADES WITH YOUR TRADE PRIOR TO STARTING ANY CONSTRUCTION.

C. PLANS ARE TO SERVE AS A GUIDE ONLY, SEE ALL CONSTRUCTION DOCUMENTS AND VISIT SITE TO DETERMINE ENTIRE SCOPE OF DEMOLITION WORK NEEDED.

D. CUTTING AND PATCHING/FINISHING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR FOR WHOM THE WORK IS REQUIRED. THE ACTUAL WORK SHALL BE EXECUTED BY THE TRADE AND/OR CONTRACTOR EXPERIENCED AND SKILLED IN SUCH WORK.

E. ALL SURFACES TO REMAIN THAT RECEIVE DEMOLITION WORK OR NEED PATCHING SHALL BE PATCHED AND REFINISHED AS REQUIRED TO MATCH EXISTING SURROUNDING SURFACES IN COLOR, TEXTURE, AND PATTERN TO COVER THE ENTIRE SURFACE AREA TO THE NEAREST INSIDE CORNER, OFFSET, OR INTERSECTION.

F. ALL EXISTING SURFACES TO REMAIN SHALL BE PROTECTED FOR THE DURATION OF THE PROJECT WITHIN THE PROJECT LIMITS & ACCESS TO THE PROJECT.

G. EXISTING WALLS ARE CMU UNLESS NOTED OTHERWISE.

GENERAL NOTES

A. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND LOCATIONS. **REPORT DISCREPANCIES TO ARCHITECT.**

D. DIMENSIONS ARE TO FACE OF FRAMING AT NEW WALLS AND FACE OF FINISH AT EXISTING WALLS. DRAWINGS ARE NOT TO BE SCALED.

E. COORDINATE WORK OF OTHER TRADES WITH YOUR TRADE BEFORE STARTING ANY CONSTRUCTION.

F. ALL NEW DUCT, PIPING, CONDUIT, ETC. TO BE PAINTED WHERE EXPOSED.

G. ALL SURFACES TO REMAIN THAT RECEIVE DEMOLITION WORK OR NEED PATCHING SHALL BE PATCHED AND REFINISHED AS REQUIRED TO MATCH EXISTING SURROUNDING SURFACES IN COLOR, TEXTURE, AND PATTERN TO COVER THE ENTIRE SURFACE AREA TO THE NEAREST INSIDE CORNER, OFFSET, OR INTERSECTION.

DEMOLITION PLAN NOTES

D1. REMOVE EXISTING WALL

FLOOR PLAN NOTES

1. PATCH EXISTING WALL AND CEILING WHERE HVAC EQUIPMENT AND DUCT WORK ARE TO BE REMOVED.
2. CEMENTIOUS TOPPING SLAB TO CREATE LEVEL SURFACE, THIS ROOM. PREP EXISTING SLAB AS REQUIRED FOR PROPER BONDING.
3. PROVIDE R19 BATT INSULATION FROM ABOVE CEILING TO STRUCTURAL DECK AT EXTERIOR WALLS.
4. NEW STEEL COLUMN, REFERENCE STRUCTURAL.
5. NEW DOOR LOCATION. PROVIDE NEW HEADER AND INFILL EXISTING CMU WALL, TOOTH-IN, AS REQUIRED.
6. PATCH EXISTING WALL WHERE SINKS HAVE BEEN REMOVED, PAINT.

FINISH NOTES

PAINT: WALL
MFR: SHERWIN WILLIAMS
COLOR: MATCH EXISTING
FINISH: LOW LUSTRE LATEX ENAMEL

PAINT: FRAMES
MFR: SHERWIN WILLIAMS
COLOR: MATCH EXISTING
FINISH: SEMI GLOSS WATERBORNE EPOXY

PAINT: CEILINGS,GYPSUM BOARD/PLASTER
MFR: SHERWIN WILLIAMS
COLOR: WHITE
FINISH: FLAT

PAINT: CEILINGS, OPEN TO STRUCTURE
MFR: SHERWIN WILLIAMS
COLOR: SW6258 TRICORN BLACK
FINISH: DRYFALL

RESILIENT BASE: NEW WALLS
MFR: ROPPE
COLOR: BLACK
STYLE: 4" COVE

LEGEND

EXISTING WALL - CMU THIS FLOOR

TYPE 1: 1-HOUR FIRE PARTITION (IBC MEMBRANE): NEW 3-5/8" METAL STUDS AT 16" O.C. ON EXISTING CMU WALL WITH (3) LAYERS OF TYPE 'X' GYPSUM WALLBOARD ROOM SIDE, PAINT. INFILL METAL STUD VOID WITH SOUND BATT INSULATION. WALL TO EXTEND TO UNDERSIDE OF STRUCTURAL DECK ABOVE.

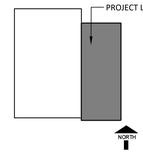
TYPE-2: 1-HOUR FIRE PARTITION (IBC MEMBRANE): NEW 3-5/8" METAL STUDS AT 16" O.C. WITH (1) LAYER OF TYPE 'X' GYPSUM WALLBOARD EACH SIDE, PAINT. INFILL METAL STUD VOID WITH SOUND BATT INSULAITON. WALL TO EXTEND TO UNDERSIDE OF STRUCTURAL DECK ABOVE.

TYPE-3: PARTIAL HEIGHT WALL TO 42" AFF: NEW 3-5/8" METAL STUDS AT 16" O.C. WITH (1) LAYER OF TYPE 'X' GYPSUM WALLBOARD EACH SIDE, PAINT. PROVIDE 1X WOOD CAP, PAINT.

NEW DOOR, REFERENCE DOOR SCHEDULE

EXISTING DOOR TO REMAIN

KEY MAP:



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DAWN MICHELLE GRAY
REGISTERED
No. AR11300003
INDIANA
ARCHITECT

NO	REVISION	CHK	DATE
ADD-02	ADDENDUM 2	DMG	11.13.2026

CLIENT
INDIANA UNIVERSITY

PROJECT ADDRESS
2721 EAST 10TH STREET
BLOOMINGTON, IN 47408

PROJECT
BL572 - PHASE 2 - HVAC REPLACEMENT

IU PROJECT #20250202
INTROBA PROJECT #2013084.001

DATE ISSUED
OCTOBER 27, 2026

DESIGNED	CHECKED	APPROVED
DMG	DMG	DMG

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
ARCHITECTURAL FLOOR PLAN, LEVEL 01

DRAWING No.
A-101

DOOR AND FRAME SCHEDULE

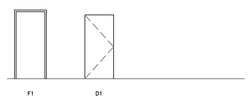
	DOOR				FRAME										
DOOR NO.	DOOR WIDTH	DOOR HEIGHT	DOOR MAT.	DOOR ELEV.	FRAME DEPTH	FRAME MAT.	FRAME ELEV.	HEAD DETAIL	JAMB DETAIL	SILL DETAIL	GLASS	LABEL	HDWR. SET #	REMARKS	DOOR NO.
005F	3'-0"	7'-0"	HM	D1	VIF	HM	F1	-	-	-	-	-	1		005F
005G	3'-0"	7'-0"	HM	D1	VIF	HM	F1	-	-	-	-	-	1		005G
100L	3'-0"	7'-0"	HM	D1	VIF	HM	F1	H1	J1	-	-	45	1		100L

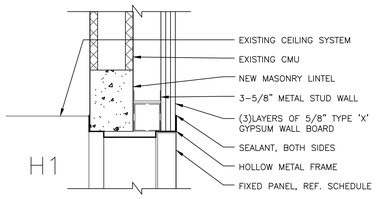
GENERAL NOTES:

A. ALL SIGNAGE BY OWNER.
B. CONTRACTOR TO FIELD VERIFY ALL EXISTING WALL CONDITIONS & WIDTHS.

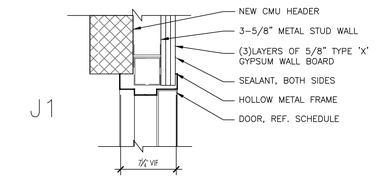
MATERIALS LEGEND:
HM HOLLOW METAL

REMARKS:
1. –

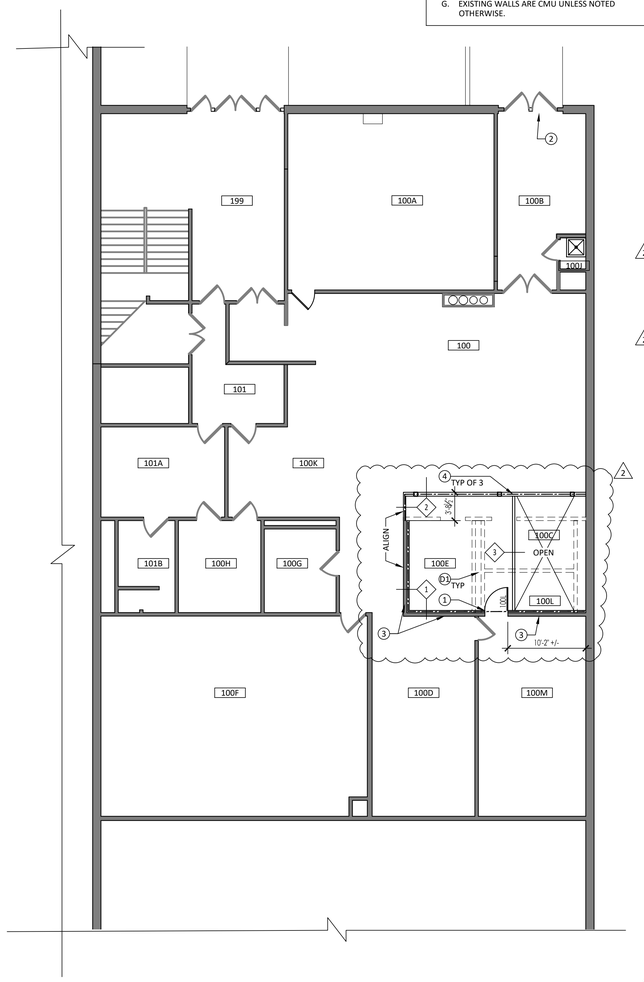




C ELEVATIONS
DOOR & FRAME
SCALE: 1/4" = 1'-0"



D DOOR DETAILS
SCALE: 1 1/2" = 1'-0"



A BL572 - LEVEL 2
PARTIAL FLOOR PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION GENERAL NOTES

A. GENERAL CONTRACTOR TO FIELD CHECK AND VERIFY ALL DIMENSIONS, CONDITIONS AND LOCATIONS. **REPORT DISCREPANCIES TO ARCHITECT.**

B. COORDINATE WORK OF OTHER TRADES WITH YOUR TRADE PRIOR TO STARTING ANY CONSTRUCTION.

C. PLANS ARE TO SERVE AS A GUIDE ONLY, SEE ALL CONSTRUCTION DOCUMENTS AND VISIT SITE TO DETERMINE ENTIRE SCOPE OF DEMOLITION WORK NEEDED.

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E. ALL SURFACES TO REMAIN THAT RECEIVE DEMOLITION WORK OR NEED PATCHING SHALL BE PATCHED AND REFINISHED AS REQUIRED TO MATCH EXISTING SURROUNDING SURFACES IN COLOR, TEXTURE, AND PATTERN TO COVER THE ENTIRE SURFACE AREA TO THE NEAREST INSIDE CORNER, OFFSET, OR INTERSECTION.

F. ALL EXISTING SURFACES TO REMAIN SHALL BE PROTECTED FOR THE DURATION OF THE PROJECT WITHIN THE PROJECT LIMITS & ACCESS TO THE PROJECT.

G. EXISTING WALLS ARE CMU UNLESS NOTED OTHERWISE.

GENERAL NOTES

A. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS, CONDITIONS AND LOCATIONS. **REPORT DISCREPANCIES TO ARCHITECT.**

D. DIMENSIONS ARE TO FACE OF FRAMING AT NEW WALLS AND FACE OF FINISH AT EXISTING WALLS. DRAWINGS ARE NOT TO BE SCALED.

E. COORDINATE WORK OF OTHER TRADES WITH YOUR TRADE BEFORE STARTING ANY CONSTRUCTION.

F. ALL NEW DUCT, PIPING, CONDUIT, ETC. TO BE PAINTED WHERE EXPOSED.

G. ALL SURFACES TO REMAIN THAT RECEIVE DEMOLITION WORK OR NEED PATCHING SHALL BE PATCHED AND REFINISHED AS REQUIRED TO MATCH EXISTING SURROUNDING SURFACES IN COLOR, TEXTURE, AND PATTERN TO COVER THE ENTIRE SURFACE AREA TO THE NEAREST INSIDE CORNER, OFFSET, OR INTERSECTION.

DEMOLITION PLAN NOTES

D1 REMOVE EXISTING WALL

D2 REMOVE EXISTING DOOR AND FRAME

FLOOR PLAN NOTES

1. NEW DOOR LOCATION. PROVIDE NEW HEADER AND INFILL EXISTING CMU WALL, TOOTH-IN, AS REQUIRED.
2. PATCH WALL WHERE DUCT/LOUVERS ARE TO BE REMOVED. MATCH ADJACENT INTERIOR AND EXTERIOR FINISHES.
3. PROVIDE PAINT AT EXISTING WALL.
4. NEW STEEL COLUMN, REFERENCE STRUCTURAL

FINISH NOTES

PAINT: WALL
MFR: SHERWIN WILLIAMS
COLOR: NATE'S PAPER WHITE
FINISH: LOW LUSTRE LATEX ENAMEL

PAINT: FRAMES
MFR: SHERWIN WILLIAMS
COLOR: MATCH EXISTING
FINISH: SEMI GLOSS WATERBORNE EPOXY

PAINT: CEILINGS,GYPSUM BOARD/PLASTER
MFR: SHERWIN WILLIAMS
COLOR: WHITE
FINISH: FLAT

PAINT: CEILINGS, OPEN TO STRUCTURE
MFR: SHERWIN WILLIAMS
COLOR: SW6258 TRICORN BLACK
FINISH: DRYFALL

RESILIENT BASE: NEW WALLS
MFR: ROPPE
COLOR: BLACK
STYLE: 4" COVE

LEGEND

EXISTING WALL - CMU THIS FLOOR

TYPE 1: 1-HOUR FIRE PARTITION (IBC MEMBRANE): NEW 3-5/8" METAL STUDS AT 16" O.C. ON EXISTING CMU WALL WITH (3) LAYERS OF TYPE 'X' GYPSUM WALLBOARD ROOM SIDE, PAINT. INFILL METAL STUD VOID WITH SOUND BATT INSULATION. WALL TO EXTEND TO UNDERSIDE OF STRUCTURAL DECK ABOVE.

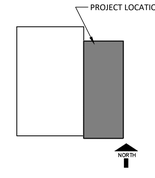
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XX NEW DOOR, REFERENCE DOOR SCHEDULE

EXISTING DOOR TO REMAIN

KEY MAP:



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BLOOMINGTON, INDIANA

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DAN MICHELLE GRAY REGISTERED No. AR11300003 INDIANA ARCHITECT

NO	REVISION	CHK	DATE
ADD-02	ADDENDUM 2	DMG	11.13.2026

CLIENT
INDIANA UNIVERSITY

PROJECT ADDRESS
2721 EAST 10TH STREET
BLOOMINGTON, IN 47408

PROJECT
BL572 - PHASE 2 - HVAC REPLACEMENT

IU PROJECT #0026502
INTROBA PROJECT #001308A.001

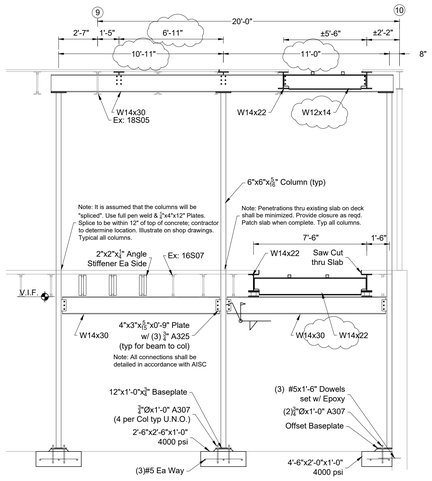
DATE ISSUED
OCTOBER 27, 2026

DESIGNED	CHECKED	APPROVED
DMG	DMG	DMG

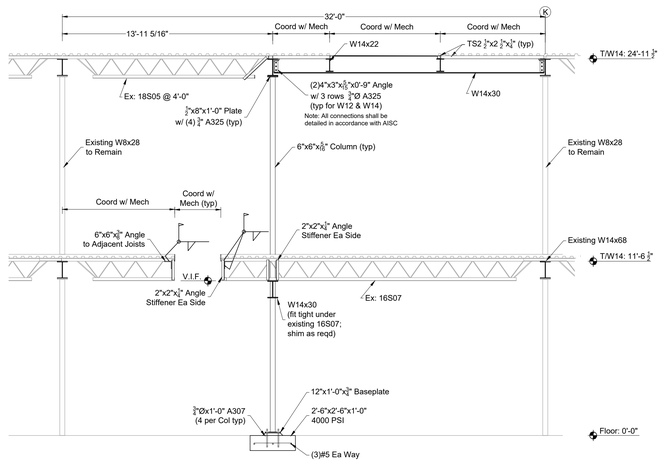
DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
ARCHITECTURAL FLOOR PLANS, LEVEL 02

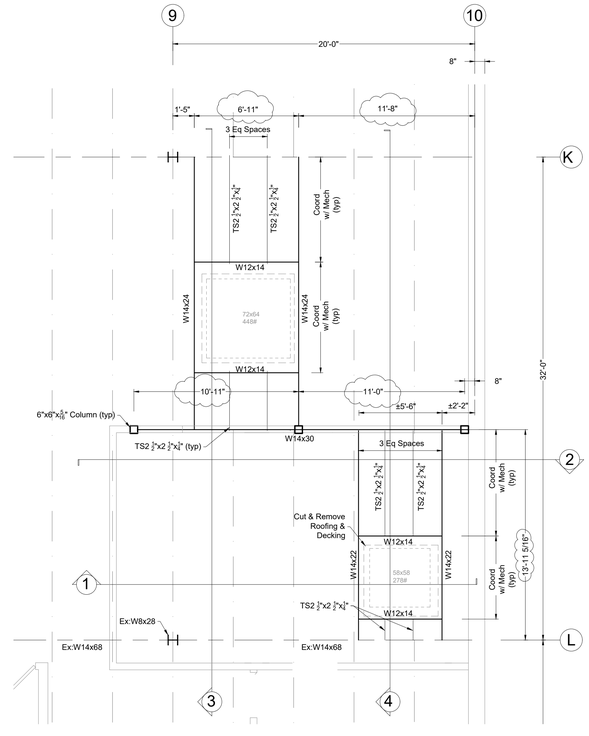
DRAWING No.
A-102



1 **FRAMING SECTION (Looking North)**
1/4" = 1'-0"

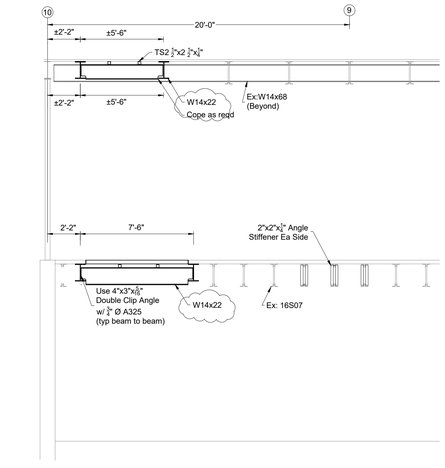


3 **FRAMING SECTION (Looking West)**
1/4" = 1'-0"

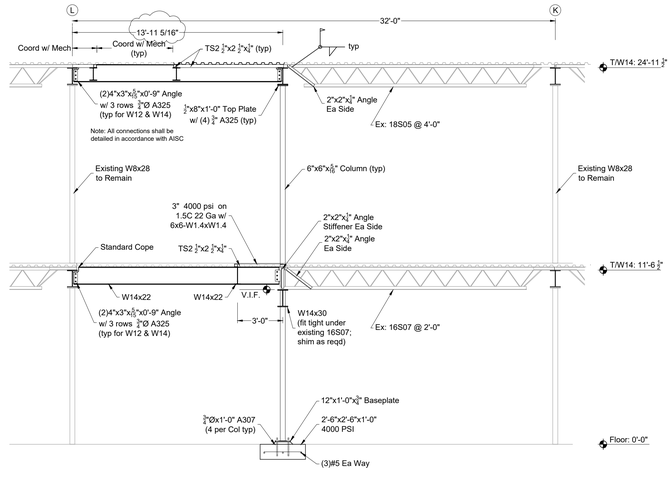


B **BL572 FRAMING PLAN - ROOF**
1/4" = 1'-0"

PLAN NORTH



2 **FRAMING SECTION (Looking South)**
1/4" = 1'-0"



4 **FRAMING SECTION (Looking West)**
1/4" = 1'-0"

Project Summary

This project basically consists of installation of new framing and modification of existing to allow installation of new mechanical equipment.

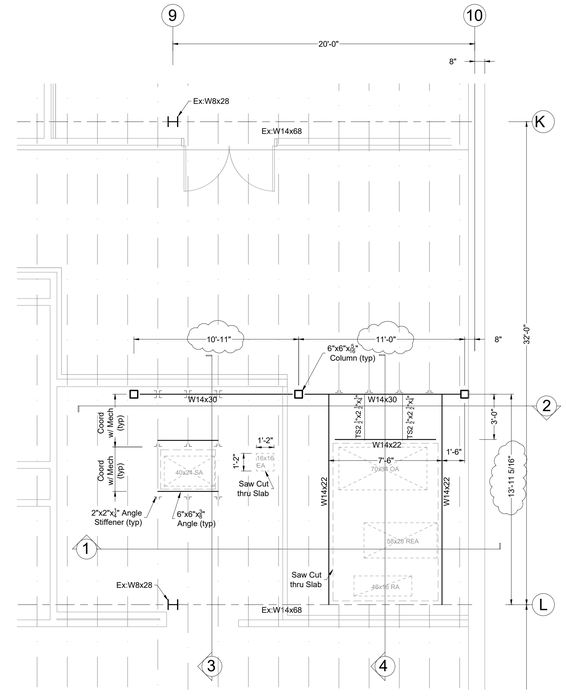
Contractors shall "walk-down" this project prior to bidding so that a complete understanding of the work, conditions, access, etc is developed.

All new Structural Work is to be coordinated with the new Mechanical Work

All penetrations thru walls & floors that are no longer required shall be properly filled/patched with appropriate materials.

GENERAL NOTES

1) Design Loading New Structure:
Roof: 45 PSF Total
Floor: 100 PSF + Mechanical Equipment
2) All Structural Steel Shall Conform to the Following:
Rolled Shapes ASTM A572 (Fy=50 ksi)
Angles,Plates ASTM A36 (Fy=36 ksi)
Structural Tubes ASTM A500-B (Fy=46 ksi)
3) All welds shall be per AWS Standards, and be with E70xx Electrode or ER70S-x wire.
4) All Structural Steel shall be detailed, fabricated and erected in accordance with AISC 'Load & Resistance Factor Design - Manual of Steel Construction'
5) Field verify all dimensions prior to beginning work.
6) Follow all 'OSHA' 'IU Safety' and all other jurisdictional agency guidelines performing Work.
7) 1/4" weld at contact perimeter of connections unless noted otherwise.



A **BL572 FRAMING PLAN - LEVEL 1**
1/4" = 1'-0"

PLAN NORTH

INDIANA UNIVERSITY
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BFW Crane, Inc. (Structural)

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JOHN D. CRANE
REGISTERED
NO.
PE19500032
STATE OF
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PROFESSIONAL ENGINEER
10/29/2026

NO	REVISION	CHK	DATE
1	ADDENDUM #2		11/13/2026

CLIENT
INDIANA UNIVERSITY

PROJECT ADDRESS
2721 EAST 10TH STREET
BLOOMINGTON, IN 47408

PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250322
INTROBA PROJECT #001.0084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
JDC		

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
STRUCTURAL PLANS & SECTIONS

DRAWING No.
S-101

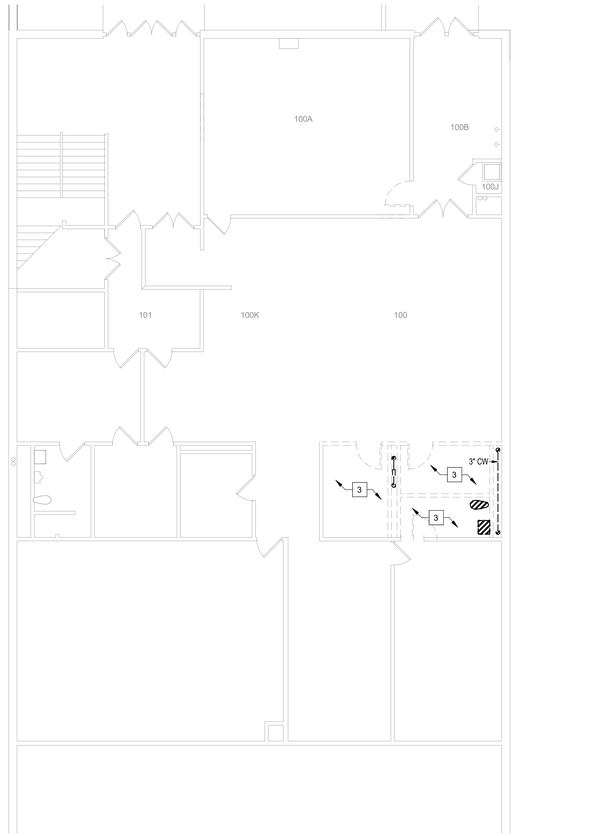
SHEET KEYNOTES

1. PLUG EXISTING FLOOR DRAIN.
2. REMOVE EXISTING SHOWER HEAD. REMOVE WATER AND VENT PIPING BACK TO CEILING SPACE AND CAP. REMOVE WASTE PIPING TO FLOOR LEVEL AND CAP. PATCH AND REPAIR CEILING, WALL, AND FLOOR FINISHES AS REQUIRED.
3. DEMOLISH ALL PLUMBING FIXTURES, PIPING, ACCESSORIES, FITTINGS, AND HANGERS. CAP PIPING IN CEILING SPACE BELOW. PATCH AND REPAIR CEILING, WALL, AND FLOOR FINISHES AS REQUIRED.
4. REMOVE AND RETAIN BALANCING VALVE ARRANGEMENT FOR REINSTALLATION IN NEW WORK.



1 **PD01-LEVEL 1 DEMO PLAN - BL572 LEVEL 1**
1/8" = 1'-0"

PLAN NORTH



2 **PD02-LEVEL 2 DEMO PLAN BL572**
1/8" = 1'-0"

PLAN NORTH

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BLOOMINGTON, INDIANA

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CHRISTOPHER D. HAWK — REGISTERED — No. 15 — STATE OF INDIANA — PROFESSIONAL ENGINEER

NO.	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

CLIENT
INDIANA UNIVERSITY

PROJECT ADDRESS
2721 EAST 10TH STREET
BLOOMINGTON, IN 47408

PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #20213084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
JCG	CDH	CDH

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
PLUMBING DEMOLITION PLAN BL572 LEVEL 1 & 2

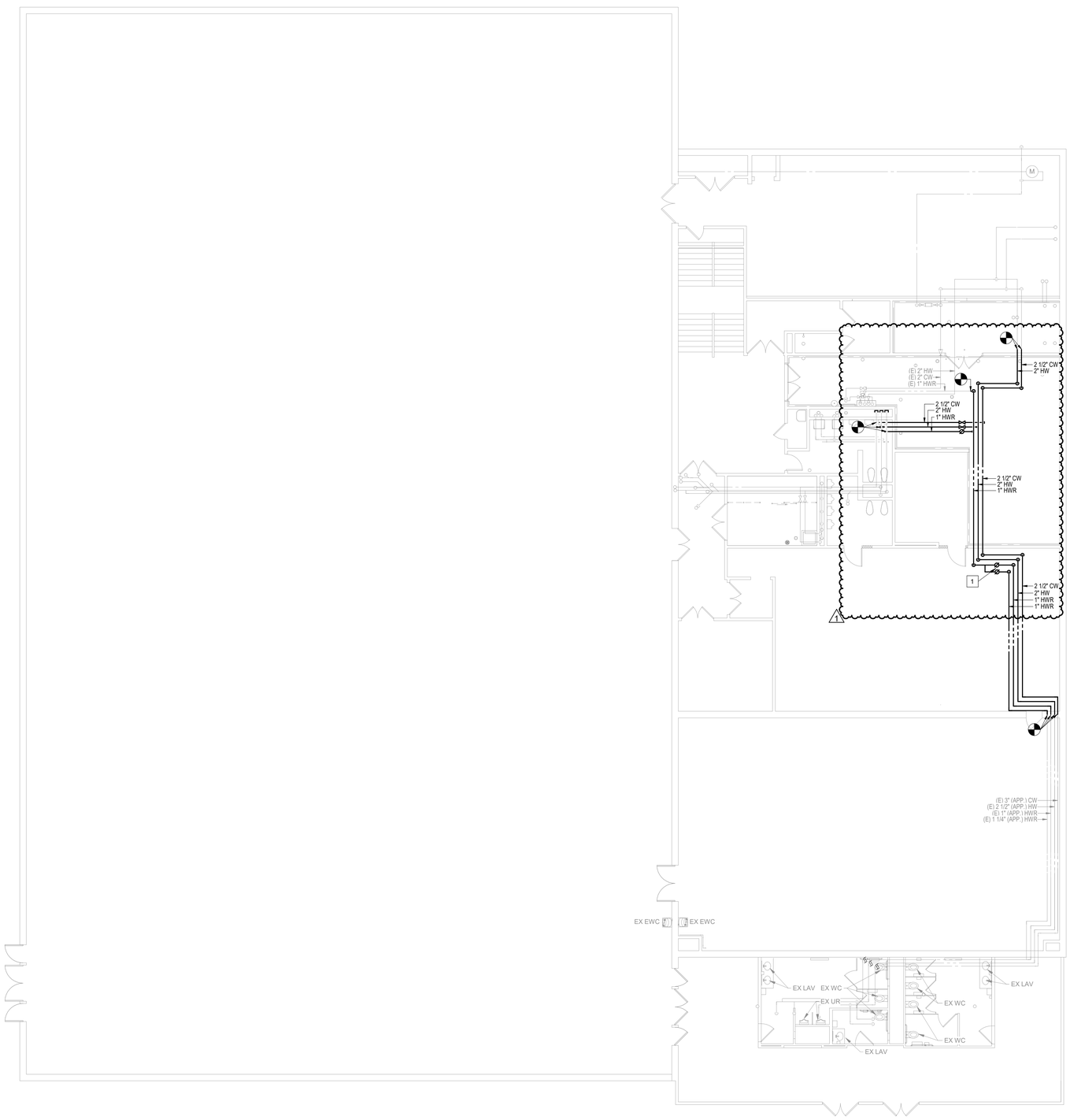
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SHEET KEYNOTES

1. RELOCATED EXISTING BALANCING VALVE ARRANGEMENT.



PLAN NORTH

1 **P02 - LEVEL 1 BL572**

1/8" = 1'-0"

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1	ADDENDUM 2		11/13/26

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PROJECT ADDRESS
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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #0013084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
JCG	CDH	CDH

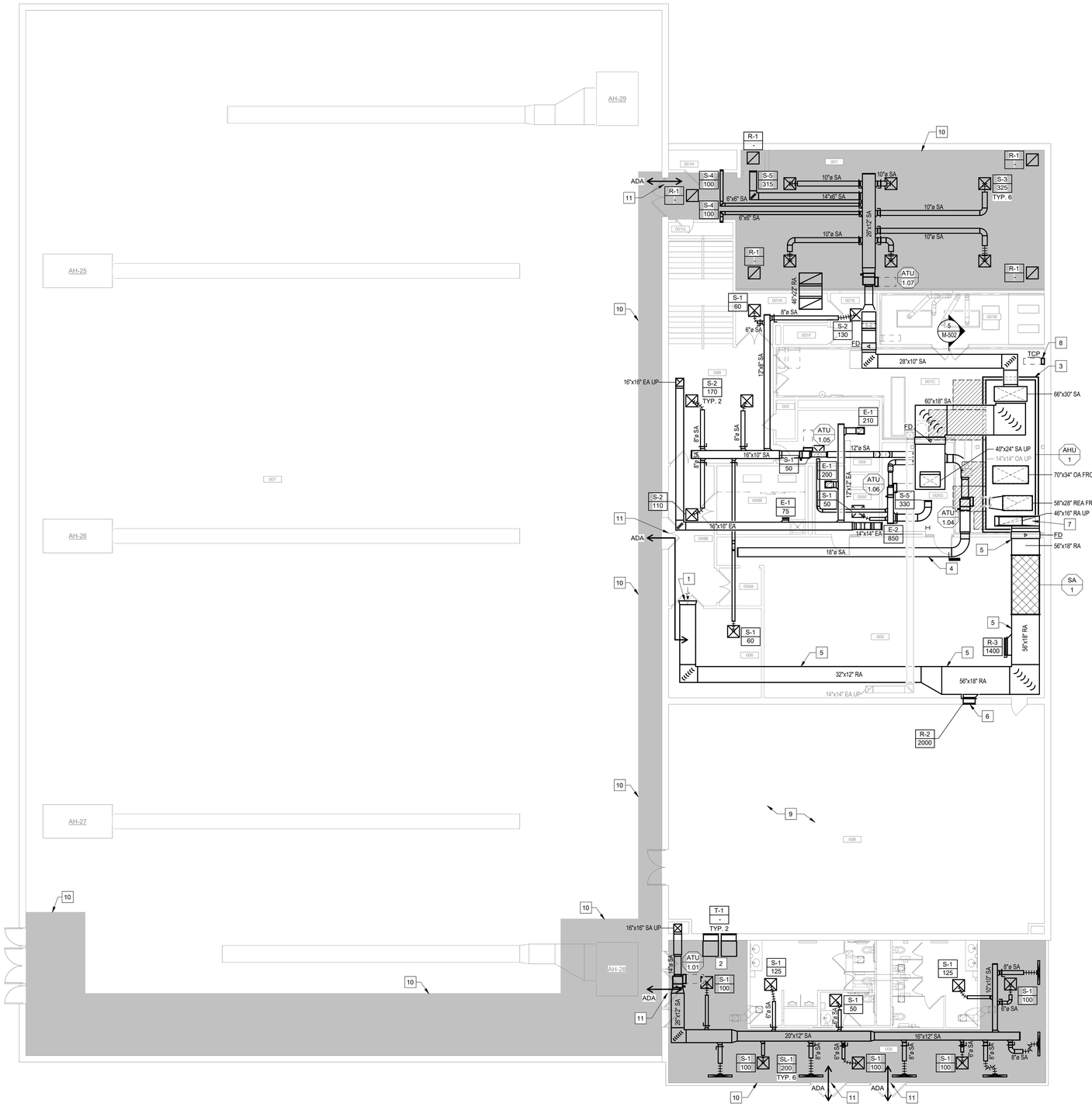
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DRAWING TITLE
PLUMBING PLAN BL572 LEVEL 1 & 2

DRAWING No.
P-201

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1 **MECHANICAL DUCTWORK PLAN BL572 LEVEL 1**

1/8" = 1'-0"

SHEET KEYNOTES

#	
1.	INSTALL A BELL-MOUTH OPEN-ENDED, RETURN DUCT TRANSITION ABOVE CEILING. OPEN-ENDED SIZE IS LABELED DUCT SIZE PLUS 4", HEIGHT SAME AS DUCT, SEE DETAIL.
2.	PROVIDE (2) 30X12 TRANSFER AIR DUCT. SEE DETAIL. PAINT INTERIOR OF DUCTWORK BLACK.
3.	4" CONCRETE EQUIPMENT PAD FOR AHU-1. COORDINATE WIDTH AND LENGTH WITH EQUIPMENT SELECTION. REFER TO MECHANICAL DETAIL 6 ON SHEET M-501 AND STRUCTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
4.	PROVIDE 18" ø FABRIC DUCTWORK SIMILAR TO PRIHODA OR APPROVED EQUAL. FABRIC DUCTWORK TO BE COLORED CRIMSON AND MATCH GYMNASIUM FABRIC DUCTWORK EXACTLY. VERIFY COLOR SELECTION WITH OWNER.
5.	SHOP-PRIME DUCTWORK TO RECEIVE FIELD PAINT; FINAL COLOR SELECTION SHALL BE VERIFIED WITH OWNER AND ARCHITECT.
6.	INSTALL RETURN GRILLE FOR LOBBY RETURN AIR. INSTALL GRILLE SUCH THAT AIR IS RETURNED LOW IN HIGH DIVE ROOM AND CONNECTION TO MAIN RETURN DUCT IN WEIGHT ROOM IS ALIGNED. APPROXIMATE RETURN GRILLE HEIGHT IN HIGH DIVE ROOM IS 6' 2" ABOVE FINISHED FLOOR (ADJ). PAINT RETURN GRILLE TO MATCH HIGH DIVE WALLS. VERIFY COLOR SELECTION WITH OWNER.
7.	INSTALL RETURN AIR PLENUM BOX AT THIS LOCATION TO CONNECT FIRST AND SECOND FLOOR RETURN AIR DUCTWORK TOGETHER ENTERING AIR HANDLING UNIT.
8.	TEMPERATURE CONTROL PANEL FOR NEW AIR HANDLING UNIT.
9.	OWNER SHALL FACILITATE REMOVAL AND REINSTALLATION OF DIVING BOARDS AND MISCELLANEOUS OBSTRUCTIONS FROM DIVING AREA TO ACCOMMODATE FLOOR PROTECTION FOR DEMOLITION WORK AND NEW CONSTRUCTION.
10.	PROVIDE FLOORING PROTECTION FOR MEP WORK AS SHOWN IN HATCHING. ANY ADDITIONAL AREA REQUIRED FOR SCOPE OF WORK SHALL BE INCLUDED IN CONTRACTOR'S BID. FOR FLOORING PROTECTION, PROVIDE TWO (2) LAYERS OF 3/4" CDX WITH A SINGLE LAYER OF 10MM VISQUEEN FIBER REINFORCED FILM BETWEEN CDX AND FLOOR. ARRANGE CDX SO THAT EDGES ARE STAGGERED BETWEEN LAYERS. PROVIDE INDIVIDUAL PROTECTION UNDER ALL CONSTRUCTION RELATED EQUIPMENT, SUCH AS DIAPERS, ETC.
11.	PROVIDE EDGE PROTECTION SIMILAR TO RUBBER THRESHOLD RAMP OR APPROVED EQUAL TO MAINTAIN ADA ACCESSIBILITY IN ALL AREAS CALLED OUT INCLUDING, BUT NOT LIMITED TO, ENTIRE EDGES OF FLOOR PROTECTION, DOOR FRAMES, LIPS/UNEVEN SURFACES, AND ANY ROOM REQUIRING ADA ACCESSIBILITY.

GENERAL SHEET NOTES

A. REFER TO SHEET M-000 FOR PROJECT GENERAL NOTES.

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1	ADDENDUM 2		11/13/26

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INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #0013084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
SJH	CDH	CDH

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
MECHANICAL DUCTWORK PLAN BL572 LEVEL 1

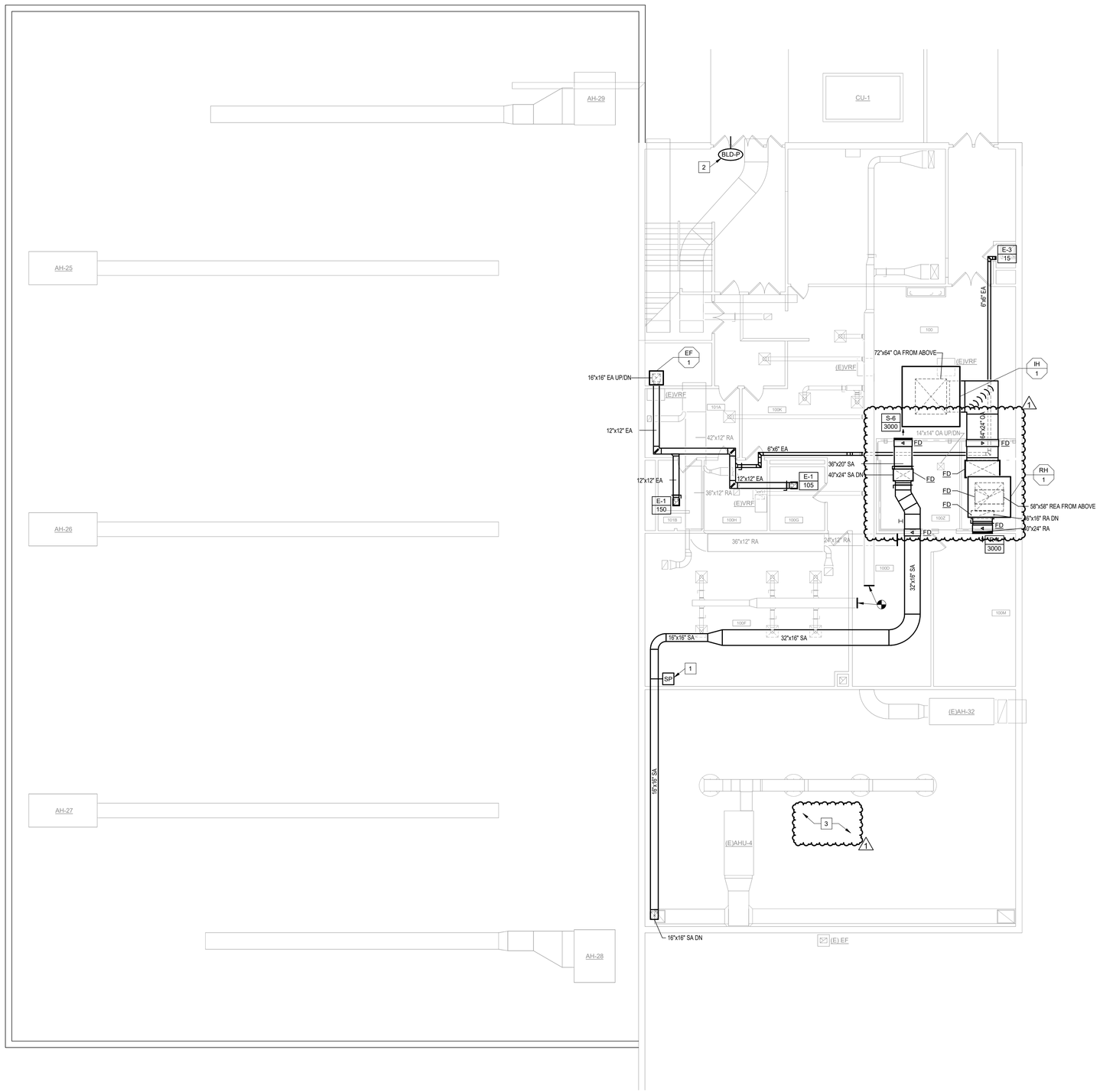
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#	SHEET KEYNOTES
1.	PROVIDE A DUCT STATIC PRESSURE SENSOR AT THIS LOCATION.
2.	PROVIDE A BUILDING STATIC PRESSURE SENSOR AT THIS LOCATION.
3.	OWNER SHALL FACILITATE REMOVAL AND REINSTALLATION OF DIVING BOARDS AND MISCELLANEOUS OBSTRUCTIONS FROM DIVING AREA TO ACCOMMODATE FLOOR PROTECTION FOR DEMOLITION WORK AND NEW CONSTRUCTION.

GENERAL SHEET NOTES
A. REFER TO SHEET M-000 FOR PROJECT GENERAL NOTES.



1 MECHANICAL DUCTWORK PLAN BL572 LEVEL 2

1/8" = 1'-0"

PLAN NORTH

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INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #001308 4.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
SJH	CDH	CDH

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DRAWING TITLE
MECHANICAL DUCTWORK PLAN BL572 LEVEL 2

DRAWING No.
M-203

Autodesk Docs://2025-01-0308 IU BL572 Interior Attic Gym Classes & Assembly Expansion/001308.001 IU_BL572_MEP_Phase 2.rvt

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SHEET KEYNOTES

1. IN AN ALTERNATE PHASE, REMOVE EXISTING HIGH DIVE AIR HANDLING UNIT AND ALL ASSOCIATED DUCTWORK, PIPING, CONTROLS, WIRING, HANGERS, SUPPORTS, AND ALL ACCESSORIES IN ITS ENTIRETY.
2. PROVIDE 24" Ø FABRIC DUCTWORK SIMILAR TO PRIHODA OR APPROVED EQUAL. FABRIC DUCTWORK TO BE COLORED CRIMSON AND MATCH GYMNASIUM FABRIC DUCTWORK EXACTLY. VERIFY COLOR SELECTION WITH OWNER.
3. INSTALL RETURN GRILLE FOR LOBBY RETURN AIR. INSTALL GRILLE SUCH THAT AIR IS RETURNED LOW IN HIGH DIVE ROOM AND CONNECTION TO MAIN RETURN DUCT IN WEIGHT ROOM IS ALIGNED. APPROXIMATE RETURN GRILLE HEIGHT IN HIGH DIVE ROOM IS 6' 2" ABOVE FINISHED FLOOR (ADJ). PAINT RETURN GRILLE TO MATCH HIGH DIVE WALLS. VERIFY COLOR SELECTION WITH OWNER.
4. OWNER SHALL FACILITATE REMOVAL AND REINSTALLATION OF DIVING BOARDS AND MISCELLANEOUS OBSTRUCTIONS FROM DIVING AREA TO ACCOMMODATE FLOOR PROTECTION FOR DEMOLITION WORK AND NEW CONSTRUCTION.

GENERAL SHEET NOTES

A. REFER TO SHEET M-000 FOR PROJECT GENERAL NOTES.

AIR TERMINAL UNIT SCHEDULE - ALTERNATE

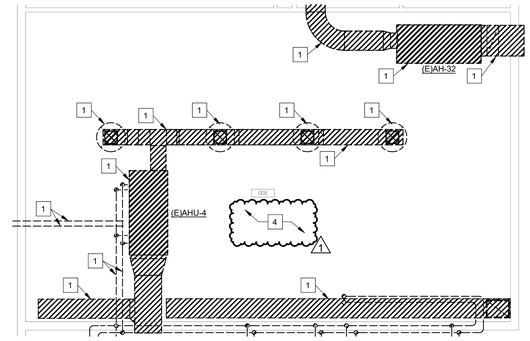
NOTES:
1. MAX TOTAL PRESSURE DROP SHALL INCLUDE BOX AND REHEAT COIL (WHERE APPLICABLE).
2. PROVIDE THE NUMBER OF COIL ROWS AS REQUIRED TO MEET SCHEDULED PERFORMANCE AND STILL FALL WITHIN REHEAT COIL PRESSURE DROP LIMITATION.
3. PROVIDE WITH OPTIONAL BOTTOM ACCESS DOOR PER THE SPECIFICATIONS.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	ROUND DUCT INLET SIZE (IN)	PRIMARY AIRFLOW (CFM)		AUXILIARY HOT WATER HEATING COIL									NOTES
ID	#							COOLING MAX	MIN	AIRFLOW (CFM)	CAPACITY (MBH)	EAT (°F)	LAT (°F)	EWT (°F)	FLOW (GPM)	ROWS	WPD (FT HD)	APD (IN WC)	
ATU	1.02	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	HIGH DIVING ROOM 008	HIGH DIVING ROOM 008	14	2000	600	1100	47.6	55	95	180	3	2	0.68	0.53	1, 2, 3
ATU	1.03	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	HIGH DIVING ROOM 008	HIGH DIVING ROOM 008	14	2000	600	1100	47.6	55	95	180	3	2	0.68	0.53	1, 2, 3

AIR DEVICE SCHEDULE - ALTERNATE

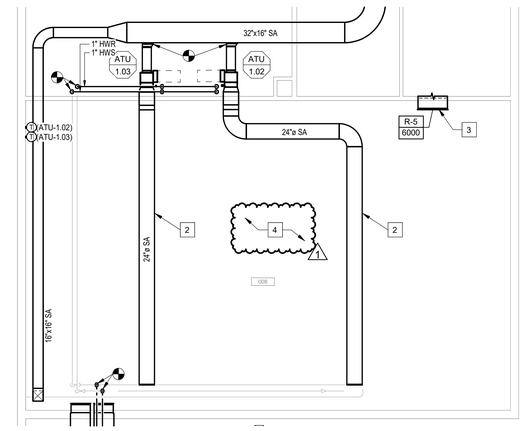
NOTES:
1. EXPANDED METAL ALUMINUM GRILLE. PROVIDE GRILLE WITH 0° BLADE DEFLECTION.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	NECK SIZE (IN)	FACE SIZE (IN x IN)	MATERIAL	FINISH	MAX TPD (IN WC)	MAX NOISE (NC)	MAX CFM @ LISTED CONDITIONS	NOTES
ID	#													
R	5	TITUS	350RL	LOUVERED FACE	CEILING	RETURN AIR	46X36	48X38	STEEL	WHITE	0.1	30	6000	1



1 **MECHANICAL ALTERNATE DEMOLITION PLAN BL572 LEVEL 2**
1/8" = 1'-0"

PLAN NORTH



2 **MECHANICAL ALTERNATE NEW WORK PLAN BL572 LEVEL 2**
1/8" = 1'-0"

PLAN NORTH

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INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #I251004.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
SJH	CDH	CDH

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
MECHANICAL ALTERNATE PLAN

DRAWING No.
M-404

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AIR HANDLING UNIT SCHEDULE

NOTES:
1. REFERENCE SPECIFIC EQUIPMENT COMPONENT FOR ELECTRICAL DATA WHEN MULTIPLE POWER CONNECTIONS ARE REQUIRED.
2. SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFER TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
3. PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION.
4. PROVIDE ALL FANS WITH CERAMIC BEARINGS AS FAN CONFIGURATION OPTION.
5. AIR HANDLING UNIT CONSISTS OF TWO (2) SUPPLY FANS AND ONE (1) RETURN FAN.
6. VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED AND INSTALLED BY DIV. 26. PROVIDE ONE (1) VFD FOR EACH SUPPLY AND RETURN FAN MOTOR.
7. PROVIDE AIR BLENDER ACCESSORY WITH APPROXIMATELY 15 SQUARE FOOT AREA AND 0.162" APD OR APPROVED EQUAL.
8. PROVIDE MANUAL BLOCK OFF PLATE FOR 4/4 SUPPLY FANS.
9. PROVIDE STAINLESS STEEL LINER FOR COOLING COIL SECTION. 1

MARK								SUPPLY FAN								RETURN FAN								FILTERS		MAX SOUND POWER RATING (DISCHARGE / INLET / RADIATED)								ELECTRICAL DATA				NOTES
									STATIC PRESSURE								STATIC PRESSURE							FINAL		OCTAVE BAND (HZ)											
ID	#	MFR.	MODEL	LOCATION	MIN. OA (CFM)	MAX SIZE (LxWxH)	MAX OPERATING WEIGHT (LBS)	TOTAL AIRFLOW (CFM)	TSP (IN WC)	ESP (IN WC)	TYPE	DRIVE	MAX FAN SPEED (RPM)	MOTOR SPEED (RPM)	MIN. FAN EFF. (%)	TOTAL AIRFLOW (CFM)	TSP (IN WC)	ESP (IN WC)	TYPE	DRIVE	MAX FAN SPEED (RPM)	MOTOR SPEED (RPM)	MIN. FAN EFF. (%)	TYPE	DESIGN APD (IN WC)	63	125	250	500	1000	2000	4000	8000	AMPS (FLA)	HP	VOLTS	PHASE	
AHU	1	TRANE	CSAA035	001C	7000	301"x100"x71"	8209	16000	3.92	2.00	PLENUM	DIRECT	1862	1800	68.6	16000	1.64	1.00	PLENUM	DIRECT	1291	1200	79.2	MERV-8	0.56	81	84	86	89	85	87	81	71	SUPPLY FANS: (2) 12.5 RETURN FAN: 14.3	SUPPLY FANS: (2) 10 HP RETURN FAN: 10 HP	480	3	ALL

AIR HANDLING UNIT SCHEDULE - COILS

NOTES:
1. REFERENCE SPECIFIC EQUIPMENT COMPONENT FOR ELECTRICAL DATA WHEN MULTIPLE POWER CONNECTIONS ARE REQUIRED.
2. SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFER TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
3. PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION.
4. PROVIDE ALL FANS WITH CERAMIC BEARINGS AS FAN CONFIGURATION OPTION.
5. AIR HANDLING UNIT CONSISTS OF TWO (2) SUPPLY FANS AND ONE (1) RETURN FAN.
6. VARIABLE FREQUENCY DRIVES SHALL BE FURNISHED BY DIV. 23 AND INSTALLED BY DIV. 26. PROVIDE ONE (1) VFD FOR EACH SUPPLY AND RETURN FAN MOTOR.
7. PROVIDE AIR BLENDER ACCESSORY WITH APPROXIMATELY 15 SQUARE FOOT AREA AND 0.162" APD OR APPROVED EQUAL.
8. PROVIDE MANUAL BLOCK OFF PLATE FOR 4/4 SUPPLY FANS.
9. PROVIDE STAINLESS STEEL LINER FOR COOLING COIL SECTION. 1

MARK		HEATING HOT WATER COIL											CHILLED WATER COIL											NOTES
											MAX PD											MAX PD		
ID	#	CAPACITY (MBH)	MAX FACE VELC. (FPM)	EAT (°F)	LAT (°F)	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	ROWS	AIR (IN WC)	WATER (FT)	SENS.	TOTAL	MAX FACE VELC. (FPM)	DB (°F)	WB (°F)	LAT (°F)	WATER FLOW (GPM)	EWT (°F)	LWT (°F)	ROWS	AIR (IN WC)	WATER (FT)	
AHU	1	694	490	45.0	85.0	69.3	180	160	1	0.09	9.44	524.6	882.6	458	84.0	71.0	54.5	146	42	54	8	0.70	9.63	ALL

FAN SCHEDULE

NOTES:
1. SOUND POWER LEVEL RATINGS SHOWN IN DECIBELS, REFERRED TO 10(-12) WATTS CALCULATED PER AMCA STANDARD 301.
2. PROVIDE WITH INVERTER-READY OR INVERTER-DUTY MOTOR FOR VARIABLE SPEED OPERATION.
3. PROVIDE WITH DISCONNECT SWITCH.
4. PROVIDE WITH BIRD SCREEN, 18" ROOF CURB, AND GRAVITY BACKDRAFT DAMPER.
5. PROVIDE WITH ELECTRONICALLY COMMUTATED MOTOR.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	DRIVE	AIRFLOW (CFM)	ESP (IN WC)	MAX FAN SPEED (RPM)	MOTOR SPEED (RPM)	MIN STATIC EFF (%)	MAX SOUND POWER RATING (INLET / OUTLET)								MAX WEIGHT (LBS)	ELECTRICAL DATA			NOTES
													OCTAVE												
ID	#												63	125	250	500	1000	2000	4000	8000		HP	VOLTS	PHASE	
EF	1	COOK	ACE-D 150C15D (FSC)	CENTRIFUGAL DOWNBLAST	ROOF	IGYM	DIRECT	1600	1.25	1395	1550	52	78	80	82	73	68	67	61	57	53	3/4	120	1	ALL

NON-POWERED ROOF VENTILATOR SCHEDULE

NOTES:
1. PROVIDE WITH BIRD SCREEN AND 18" ROOF CURB.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	CONSTRUCTION			PERFORMANCE		NOTES
							THROAT SIZE		MATERIAL	OVERALL SIZE (LxWxH)	MAX CFM	FREE AREA VEL (FPM)	
ID	#						LENGTH	WIDTH					
IH	1	COOK	GI	INTAKE	ROOF	AHU-1	64"	72"	ALUMINUM	123"X118"X35"	16000	500	1
RH	1	COOK	GR	RELIEF	ROOF	AHU-1	58"	58"	ALUMINUM	87"X83"X24"	16000	700	1

AIR TERMINAL UNIT SCHEDULE

NOTES:
1. MAX TOTAL PRESSURE DROP SHALL INCLUDE BOX AND REHEAT COIL (WHERE APPLICABLE).
2. PROVIDE THE NUMBER OF COIL ROWS AS REQUIRED TO MEET SCHEDULED PERFORMANCE AND STILL FALL WITHIN REHEAT COIL PRESSURE DROP LIMITATION.
3. PROVIDE WITH OPTIONAL BOTTOM ACCESS DOOR PER THE SPECIFICATIONS.
4. PROVIDE WITH INTEGRAL SOUND ATTENUATOR AT DISCHARGE.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	ROUND DUCT INLET SIZE (IN)	PRIMARY AIRFLOW (CFM)		AUXILIARY HOT WATER HEATING COIL									NOTES
								COOLING MAX	MIN	AIRFLOW (CFM)	CAPACITY (MBH)	EAT (°F)	LAT (°F) (2)	EWT (°F)	FLOW (GPM)	ROWS	WPD (FT HD)	APD (IN WC)	
ID	#																		
ATU	1.01	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	LOBBY 099	LOBBY 099	14	2000	1100	2000	86.7	55	95	180	8.4	2	2.71	0.29	1, 2, 3
ATU	1.04	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	HEALTH CLUB/WEIGHT ROOM 005	HEALTH CLUB/WEIGHT ROOM 005	14	1400	630	630	27.5	55	95	180	1.5	2	0.2	0.5	1, 2, 3, 4
ATU	1.05	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	CORRIDOR 099	CORRIDOR 001A, OFFICE 001E, ATHLETIC STORAGE 006, CORRIDOR 099, CORRIDOR 099B	10	640	210	640	27.7	55	95	180	1.5	2	0.2	0.14	1, 2, 3, 4
ATU	1.06	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	SHOWERS 005G	SHOWERS 005G	8	430	130	430	18.6	55	95	180	1.7	2	0.32	0.22	1, 2, 3, 4
ATU	1.07	TITUS	DESV	SINGLE DUCT TERMINAL UNIT	HEALTH CLUB/AEROBICS ROOM 001	HEALTH CLUB/AEROBICS ROOM 001	16	2465	975	1075	46.5	55	95	180	2	2	0.21	0.3	1, 2, 3, 4

PUMP SCHEDULE

NOTES:
1. PROVIDE STARTER FOR PUMP.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	WATER FLOW (GPM)	TDH (FT)	MAX NPSH REQD (FT)	MOTOR SPEED (RPM)	ELECTRICAL DATA			NOTES
ID	#										HP	VOLTS	PHASE	
HCP	1	BELL & GOSSETT	E-90 2AAC	INLINE CENTRIFUGAL ECM PUMP	001C	AHU-1 HEATING WATER RECIRCULATION	70	15	5.73	1800	0.5	120	1	1

SOUND ATTENUATOR SCHEDULE

NOTES:
1. PROVIDE WITH INLET AND OUTLET FLANGED CONNECTIONS.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	SIZE WxH (IN)	LENGTH (IN)	AIRFLOW (CFM)	AIR FLOW VELOCITY (FPM)	MAX STATIC PD (IN WC)	DYNAMIC INSERTION LOSS -dB								NOTES
												OCTAVE BAND (HZ)								
ID	#											63	125	250	500	1000	2000	4000	8000	
SA	1	DYNASONICS	RFN 12G	RECTANGULAR SILENCER	HEALTH CLUB/WEIGHT ROOM 005	RETURN AIR	56Wx18H	120	10,600	1515	0.39	12	16	35	54	53	55	38	23	1

AIR DEVICE SCHEDULE

NOTES:
1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR TYPE OF CEILING INSTALLATION. CONTRACTOR SHALL COORDINATE CEILING TYPES PRIOR TO ORDERING DIFFUSERS.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	NECK SIZE (IN)	FACE SIZE (IN x IN)	MATERIAL	FINISH	MAX TPD (IN WC)	MAX NOISE (NC)	MAX CFM @ LISTED CONDITIONS	NOTES
ID	#													
S	1	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	6	24x24	STEEL	WHITE	0.1	30	150	1
S	2	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	8	24x24	STEEL	WHITE	0.1	30	250	1
S	3	TITUS	OMNI	SQUARE PLAQUE	CEILING	SUPPLY AIR	10	24x24	STEEL	WHITE	0.1	30	350	1
S	4	TITUS	301RL	LOUVERED FACE	WALL	SUPPLY AIR	6x6	6x6	STEEL	WHITE	0.1	30	150	1
S	5	TITUS	301RL	LOUVERED FACE	WALL	SUPPLY AIR	14x6	16x8	STEEL	WHITE	0.1	30	350	1
S	6	TITUS	301RL	LOUVERED FACE	WALL	SUPPLY AIR	36x20	38x22	STEEL	WHITE	0.1	30	3000	1
R	1	TITUS	350RL	SQUARE PLAQUE	CEILING	RETURN AIR	22x22	24x24	STEEL	WHITE	0.1	30	2200	1
R	2	TITUS	350RL	LOUVERED FACE	WALL	RETURN AIR	24x20	26x22	STEEL	WHITE	0.1	30	2200	1
R	3	TITUS	350RL	LOUVERED FACE	DUCT	RETURN AIR	34x14	36x16	STEEL	WHITE	0.1	30	2250	1
R	4	TITUS	350RL	LOUVERED FACE	WALL	RETURN AIR	40x24	42x26	STEEL	WHITE	0.1	30	4440	1
E	1	TITUS	350RL	LOUVERED FACE	CEILING/WALL	EXHAUST AIR	12x12	14x14	STEEL	WHITE	0.1	21	700	1
E	2	TITUS	350RL	LOUVERED FACE	CEILING/WALL	EXHAUST AIR	14x14	16x16	STEEL	WHITE	0.1	21	850	1
E	3	TITUS	350RL	LOUVERED FACE	CEILING/WALL	EXHAUST AIR	6x6	6x6	STEEL	WHITE	0.1	21	100	1
T	1	TITUS	350RL	LOUVERED FACE	WALL	EXHAUST AIR	30x12	32x14	STEEL	WHITE	0.1	30	1600	1

AIR DEVICE LINEAR SCHEDULE

NOTES:
1. PROVIDE WITH INSULATED PLENUM BOX.
2. ARCHITECT SHALL DETERMINE COLOR AND FINISH DURING SHOP DRAWING SUBMITTAL PROCESS.
3. THROW VALUES ARE GIVEN IN TERMINAL VELOCITIES OF 150, 100 AND 50 FPM.
4. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR TYPE OF CEILING INSTALLATION. CONTRACTOR SHALL COORDINATE CEILING TYPES PRIOR TO ORDERING DIFFUSERS.

MARK		MFR.	MODEL	TYPE	LOCATION	SERVICE	MAX CFM	LENGTH (IN)	INLET SIZE	WIDTH (IN)	SLOTS	MAX APD	MAX NC	THROW (FT)	NOTES
ID	#														
SL	1	TITUS	ML-39 W/ MRI PLENUM	LINEAR SLOT	CEILING	SUPPLY AIR	200	48	8	1"	2	0.1	25	15-23-34	1, 2, 3, 4

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REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER D. HAWK — NO. 21500 — STATE OF INDIANA

NO	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #0013084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
SJH	CDH	CDH

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
MECHANICAL SCHEDULES

DRAWING No.
M-601

Autodesk Docs://20252.IDT2B6.IDS_E/B27T.Inwood 4th Flat Choe & Hoeing Systems/IDT2B6.IDS_E_B27T_MEP_Phase 2.rvt

ELECTRICAL SYMBOLS AND LEGEND

EXISTING / DEMOLITION

- EXISTING EQUIPMENT / RACEWAYS TO REMAIN
- EXISTING EQUIPMENT / RACEWAYS TO BE REMOVED
- NEW EQUIPMENT / RACEWAYS
- EXISTING TO REMAIN
- EXISTING TO BE REMOVED
- NEW EQUIPMENT, LIGHTING FIXTURE OR DEVICE

SINGLE LINE DIAGRAM

- TRANSFORMER , AS NOTED ON SINGLE LINE DIAGRAM
- ISOLATION TRANSFORMER , AS NOTED ON SINGLE LINE DIAGRAM
- VARIABLE FREQUENCY DRIVE
- CIRCUIT BREAKER, 3 POLE UNLESS NOTED OTHERWISE
- MOTOR STARTER WITH OVERCURRENT PROTECTION, 3 POLE UNLESS NOTED OTHERWISE
- MOTOR STARTER WITH FUSED AND DISCONNECT SWITCH, 3 POLE UNLESS NOTED OTHERWISE
- GROUND FAULT RELAY
- SHUNT TRIP RELAY
- DRAW-OUT CIRCUIT BREAKER
- NON-FUSED DISCONNECT SWITCH, 30 AMP, 3P UNLESS NOTED OTHERWISE
- FUSED DISCONNECT SWITCH, 3 POLE UNLESS NOTED OTHERWISE
- CIRCUIT BREAKER BUS TAP
- DEMAND TYPE KWH METER
- DEMAND TYPE KWH METER WITH ENCLOSURE
- PROVISION FOR UTILITY COMPANY KWH METER
- KIRK-KEY INTERLOCK BETWEEN DEVICES
- AUTOMATIC TRANSFER SWITCH WITH GENERATOR STARTING AND TRANSFER SWITCH STATUS CONTACTS
- AUTOMATIC TRANSFER SWITCH WITH BY-PASS ISOLATION, GENERATOR STARTING CONTACTS AND TRANSFER SWITCH STATUS CONTACT
- CURRENT TRANSFORMER (CT)
- AMMETER
- ELECTRONIC METER
- SEPARABLE CONNECTOR(S)
- GROUND
- EMERGENCY GENERATOR, AS NOTED ON SINGLE LINE DIAGRAM
- SURGE PROTECTIVE DEVICE
- PANELBOARD WITH LUGS ONLY. UP TO 84 CIRCUITS IN A SINGLE CABINET. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION
- PANELBOARD WITH MAIN CIRCUIT BREAKER. UP TO 84 CIRCUITS IN A SINGLE CABINET. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
- PANELBOARD WITH MAIN CIRCUIT BREAKER AND FEED THROUGH GUTTER AND FEEDER TAP IN GUTTER. UP TO 84 CIRCUITS IN A SINGLE CABINET. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION.
- PANELBOARD WITH MAIN CIRCUIT BREAKER AND FEED THROUGH GUTTER AND FEEDER TAP IN GUTTER. UP TO 84 CIRCUITS IN EACH CABINET. REFER TO PANEL SCHEDULE FOR ADDITIONAL INFORMATION.

GROUNDING SYSTEM

FLOOR	WALL	
		GROUND PLATE, FLAT TAPPED SIDE TO BE FLUSH WITH FURNISHED SURFACE. CADWELD B164-2Q OR EQUIVALENT
GB	GB	GROUND BUS
TGB	TGB	TECHNICAL GROUND BUS
		GROUND ROD
		GROUND ROD TEST WELL
		EXOTHERMIC GROUND CONNECTION
		GROUND WIRE

RECEPTACLES / POWER

FLOOR	WALL	CEILING	
			SURFACE RACEWAY. REFER TO DRAWING NOTES AND/OR SPECIFICATIONS FOR TYPE. (DEVICES MOUNTED IN RACEWAY).
			SIMPLEX RECEPTACLE
			DUPLEX RECEPTACLE
			QUADRUPLEX RECEPTACLE
			ABOVE COUNTER RECEPTACLES. INSTALL ABOVE COUNTER.
			GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES
	WP WP		"WP" = GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES WITH EXTRA DUTY WEATHERPROOF WHILE-IN-USE COVER
	a a		CONTROLLED DUPLEX / QUADRUPLEX RECEPTACLE 'a' = CORRESPONDS TO CONTROL ZONE/SWITCH
	a a		HALF CONTROLLED DUPLEX / QUADRUPLEX RECEPTACLE 'a' = CORRESPONDS TO CONTROL ZONE/SWITCH
			EMERGENCY POWERED OUTLETS (DUPLEX / QUADRUPLEX)
	S		SWITCHED RECEPTACLES
			CLOCK RECEPTACLES
		J	JUNCTION BOX
		JB	JUNCTION BOX. SIZE AS REQUIRED FOR NUMBER OF WIRES OR RACEWAYS
		FP	SYSTEM FURNITURE POWER FEED, REFER TO DETAIL FOR RACEWAY AND BOX REQUIREMENTS
	X	X	HEAVY DUTY RECEPTACLE. REFER TO HEAVY DUTY RECEPTACLE SCHEDULE, THIS SHEET "X" = DENOTES NEMA TYPE PER SCHEDULE
	X	X	EMERGENCY POWERED HEAVY DUTY RECEPTACLE. REFER TO HEAVY DUTY RECEPTACLE SCHEDULE, THIS SHEET "X" = DENOTES NEMA TYPE PER SCHEDULE
PT#			POKE-THRU (PT) '#' = TYPE. REFER TO SCHEDULE FOR ADDITIONAL SPECIFICATION AND DESCRIPTION
FB#			FLOOR BOX (FB) '#' = TYPE. REFER TO SCHEDULE FOR ADDITIONAL SPECIFICATION AND DESCRIPTION

NOTE: ALL OUTLETS ON WALLS ARE MOUNTED AT 18" AFF, UNLESS NOTED OTHERWISE

WHERE NOTED:

+XX" = DISTANCE ABOVE FINISHED FLOOR

HEAVY DUTY RECEPTACLE SCHEDULE

HEAVY DUTY RECEPTACLE DESCRIPTION SCHEDULE:
(NUMBER OF WIRES INCLUDE GROUND)
PROVIDE WITH MATCHING PLUG AND CORD AS REQUIRED FOR EQUIPMENT SERVED.

TAG (NEMA TYPE)	RATING	DESCRIPTION
L5-20R	125V, 1Ø, 20A, 2P, 3W	NEMA L5-20R LOCKING RECEPTACLE
L5-30R	125V, 1Ø, 30A, 2P, 3W	NEMA L5-30R LOCKING RECEPTACLE
5-30R	125V, 1Ø, 30A, 2P, 3W	NEMA 5-30R RECEPTACLE
5-50R	125V, 1Ø, 50A, 2P, 3W	NEMA 5-50R RECEPTACLE
14-20R	125/250V, 1Ø, 20A, 3P, 4W	NEMA 14-20R RECEPTACLE
14-30R	125/250V, 1Ø, 30A, 3P, 4W	NEMA 14-30R RECEPTACLE
L21-20R	125/250V, 3Ø, 20A, 3P, 5W	NEMA L21-20R LOCKING RECEPTACLE
L21-30R	125/250V, 3Ø, 30A, 3P, 5W	NEMA L21-30R LOCKING RECEPTACLE
6-20R	250V, 1Ø, 20A, 2P, 3W	NEMA 6-20R RECEPTACLE
6-30R	250V, 1Ø, 30A, 2P, 3W	NEMA 6-30R RECEPTACLE
6-50R	250V, 1Ø, 50A, 2P, 3W	NEMA 6-50R RECEPTACLE
15-20R	250V, 3Ø, 20A, 3P, 4W	NEMA 15-20R RECEPTACLE
15-30R	250V, 3Ø, 30A, 3P, 4W	NEMA 15-30R RECEPTACLE
15-50R	250V, 3Ø, 50A, 3P, 4W	NEMA 15-50R RECEPTACLE
L16-20R	480V, 3Ø, 20A, 3P, 4W	NEMA L16-20R LOCKING RECEPTACLE
L16-30R	480V, 3Ø, 30A, 3P, 4W	NEMA L16-30R LOCKING RECEPTACLE

TELECOMMUNICATIONS

FLOOR	WALL	CEILING	
	(18)		MULTI-OUTLET RACEWAY WITH PROVISIONS FOR COMMUNICATIONS RECEPTACLES MOUNTED ON 12" CENTER UNLESS OTHERWISE NOTED. NUMBER IN (X) PARENTHESIS INDICATES DISTANCE BETWEEN DEVICES
			COMBINATION TELEPHONE DATA OUTLET. PROVIDE 1¼"CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE UNLESS NOTED OTHERWISE
			DATA OUTLET. PROVIDE 1" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE UNLESS NOTED OTHERWISE
			TELEPHONE OUTLET, PROVIDE 1" CONDUIT STUBBED INTO ACCESSIBLE CEILING SPACE UNLESS NOTED OTHERWISE. 1" CONDUIT TO CLOSEST TERMINAL POINT WITHOUT INTERMEDIATE BOXES
T		T	SYSTEM FURNITURE COMBINATION TELEPHONE DATA FEED, REFER TO DETAILS FOR RACEWAY AND BOX REQUIREMENTS
			WALL MOUNTED DATA DEVICES AT +48", UON

LIGHTING

WALL	CEILING	
		RECESSED MOUNTED TROFFER
		SURFACE MOUNTED TROFFER
		SUSPENDED OR PENDANT MOUNTED LUMINAIRE
		STRIP OR TRACK LIGHT
		SURFACE MOUNTED DOWNLIGHT
		RECESSED MOUNTED DOWNLIGHT
		PENDANT MOUNTED DOWNLIGHT
		WALL MOUNTED LUMINAIRE
		DIRECTIONAL LUMINAIRE
		POLE MOUNT FIXTURES (1, 2, 3, 4 HEADS)
EXIT		EXIT SIGN; SHADED PORTION INDICATES ILLUMINATED FACE. DIRECTIONAL ARROWS AS INDICATED ON PLANS. CONFIRM WE INTEND TO PROVIDE HIGH AND LOW LEVEL EXIT SIGNS FOR THIS PROJECT.
TRACK		
LED		
MULTIPLES		
UNDERWATER		

NOTES:

A. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING FIXTURE TYPE AND MOUNTING CONDITIONS REGARDLESS OF SYMBOL USED ON PLANS.
B. REFER TO FIXTURE SCHEDULE FOR FIXTURE DESCRIPTION, MOUNTING AND LAMP INFORMATION. SHADED FIXTURE SYMBOLS INDICATE FIXTURE IS CONNECTED TO THE LIFE SAFETY SYSTEM OR HAS SECONDARY POWER SOURCE.

EXAMPLES: NORMAL EMERGENCY CRITICAL NORMAL EMERGENCY CRITICAL

LUMINAIRE NOMENCLATURE: A 3,a,z1

"A" DENOTES FIXTURE TYPE
"3" DENOTES CIRCUIT NUMBER
"a" DENOTES SWITCH ZONE
"z1" DENOTES DAYLIGHT ZONE
"r1" DENOTES SITE RELAY ZONE

SWITCHING

WALL	CEILING	
Sx		SWITCH, SUBSCRIPT INDICATES: X = NONE - SINGLE POLE X = 3 - THREE WAY X = A,B,C - OUTLET CONTROLLED X = 2 - DOUBLE POLE X = KP - KEY OPERATED WITH PILOT LIGHT X = P - PILOT LIGHT X = R - MOMENTARY RELAY ON/OFF
Sab		2-SINGLE POLE SWITCHES, UNDER COMMON PLATE, + 42" UON
Sabc		3-SINGLE POLE SWITCHES, UNDER COMMON PLATE, + 42" UON
X33		LOW VOLTAGE LIGHTING CONTROL. NUMBER IN ELONGATED HEXAGON INDICATES CONTROL IDENTIFICATION. REFER TO SEQUENCE OF OPERATIONS AND LIGHTING CONTROL DETAILS FOR ADDITIONAL INFORMATION
SL abc		LOW VOLTAGE LIGHTING CONTROL SUBSCRIPT INDICATES: X = D - DIMMER SWITCH X = S - SENSOR SWITCH X = T - TIMER SWITCH X = M - LOW VOLTAGE MASTER CONTROL SWITCH
SLX		DIMMER WITH INTEGRAL SWITCH, +42" UON. '600' INDICATES RATING IN WATTS
		ROOM TYPE OCCUPANCY SENSOR, ARROW INDICATES DIRECTION OR ORIENTATION. SUBSCRIPT INDICATES SWITCH LEG OR CIRCUIT TO BE CONTROLLED
		ROOM TYPE OCCUPANCY SENSOR, ARROW INDICATES DIRECTION OR ORIENTATION, SUBSCRIPT INDICATES SWITCH LEG OR CIRCUIT TO BE CONTROLLED
		CORRIDOR TYPE OCCUPANCY SENSOR, ARROW INDICATES DIRECTION OR ORIENTATION. SUBSCRIPT INDICATES SWITCH LEG OR CIRCUIT TO BE CONTROLLED
X		SENSOR TYPE SUBSCRIPT INDICATES: X = DT - DUAL TECHNOLOGY X = H - HALLWAY X = HB - HIGH BAY X = IR - PASSIVE INFRARED X = US - ULTRASONIC
P		PHOTOSENSOR - WALL MOUNT WITH DIRECTIONAL VIEW. ARROW INDICATES AIMING DIRECTION
P		PHOTOSENSOR - CEILING MOUNT WITH DIRECTIONAL VIEW. ARROW INDICATES AIMING DIRECTION
P		PHOTOSENSOR - CEILING MOUNT WITH 360 VIEW

GENERAL ELECTRICAL SYMBOLS

RECESSED	SURFACE	
		NON-FUSED DISCONNECT SWITCH. REFER TO EQUIPMENT SCHEDULE FOR SIZING.
		FUSED DISCONNECT SWITCH. REFER TO EQUIPMENT SCHEDULE FOR SIZING.
		COMBINATION STARTER DISCONNECT SWITCH. REFER TO EQUIPMENT SCHEDULE FOR SIZING.
	5	MOTOR, 5 HP INDICATED
	T	TRANSFORMER
		RELAY OR EQUIPMENT CABINET AS INDICATED ON PLAN
SM		LIGHTING OR POWER PANEL BOARD
		MANUAL MOTOR STARTER WITH THERMAL OVERLOAD NUMBER OF POLES AS REQUIRED
		PUSH-BUTTON STATION. +42" UON
		VFD. REFER TO EQUIPMENT SCHEDULES SIZE AND TYPE.
		FREE STANDING SWITCHBOARD, MOTOR CONTROL CENTER OR DISTRIBUTION BOARD
		FIRE TREATED PLYWOOD BACKBOARD 3/4"X96" HIGH X LENGTH AS INDICATED
EEE		ELECTRICAL EQUIPMENT DESIGNATION DESIGNED "EQ01"
##		SHEET KEYED NOTE "##" ON SAME SHEET
P 1		MECHANICAL EQUIPMENT DESIGNATION "P-1" INDICATED
X33		EQUIPMENT NAME OR NUMBER
+4'-6"		MOUNTING HEIGHT FROM FINISHED FLOOR TO CENTERLINE OF OUTLET OR EQUIPMENT
MH=4'-6"		MOUNTING HEIGHT FROM FINISHED FLOOR TO BOTTOM OF OUTLET OR EQUIPMENT
1 E-6		DETAIL REFERENCE NUMBER "1" ON DRAWING "E-6"
A E-6		SECTION OR ELEVATION REFERENCE LETTER "A" ON DRAWING "E-6"
A-1,3,5		INDICATES HOMERUN WITH THREE CIRCUITS AND A SEPARATE NEUTRALS

RACEWAYS AND WIRING

FLOOR	WALL	CEILING	
			CONDUIT CONCEALED IN CEILING OR WALL SPACE
			CONDUIT RUN EXPOSED
			CONDUIT RUN UNDERGROUND OR CONCEALED IN FLOOR SPACE
			EXISTING CONDUIT TO REMAIN
			CONDUIT RISING UP FROM RUN
			CONDUIT DROPPING DOWN FROM RUN
A-1	A-1	A-1	HOMERUN TO PANELBOARD, CABINET OR TERMINAL BACKBOARD AS INDICATED

01 SHEET LIST - ELECTRICAL

NUMBER	NAME
E-000	ELECTRICAL LEGEND
E-202	ELECTRICAL POWER PLAN BL572 LEVEL 1
E-203	ELECTRICAL POWER PLAN BL572 LEVEL 2
E-302	ELECTRICAL LIGHTING PLAN BL572 LEVEL 1
E-501	ELECTRICAL NEW PANEL SCHEDULES & SINGLE LINE DIAGRAMS
E-601	ELECTRICAL SCHEDULES
ED-202	ELECTRICAL DEMOLITION PLAN BL572 LEVEL 1
ED-203	ELECTRICAL DEMOLITION PLANS BL572 LEVEL 2
Grand total: 8	

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NO	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #001.0004.001

DATE ISSUED
OCT 29, 2026

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ZRM	CDH	CDH

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DRAWING TITLE
ELECTRICAL LEGEND

DRAWING No.
E-000

Autodesk Docs://20250501/0004.001_IU BL572 Interior Alts Main Chiller & Heating Systems/ED-000.001_CL_BL572_MEP_Primary2.rvt

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GENERAL NOTES

A. REFER TO SHEET E-000 FOR PROJECT GENERAL NOTES AND SYMBOL LEGENDS.

B. ANY ELECTRICAL OUTAGE NEEDED FOR WORK SHALL BE PERFORMED DURING IU NON-OPERATING HOURS. ALL OUTAGES TO BE COORDINATED AND APPROVED BY IU FACILITIES AT THE START OF THE PROJECT.

SHEET NOTES:

1 PROVIDE UNISTRUT RACKING TO MOUNT PANEL SO THAT FRONT OF PANEL IS FLUSH WITH ADJACENT DISTRIBUTION PANEL

2 PROVIDE UNISTRUT RACKING TO MOUNT DISCONNECT SO THAT FRONT OF DISCONNECT IS FLUSH WITH FRONT FACE OF TRANSFORMER

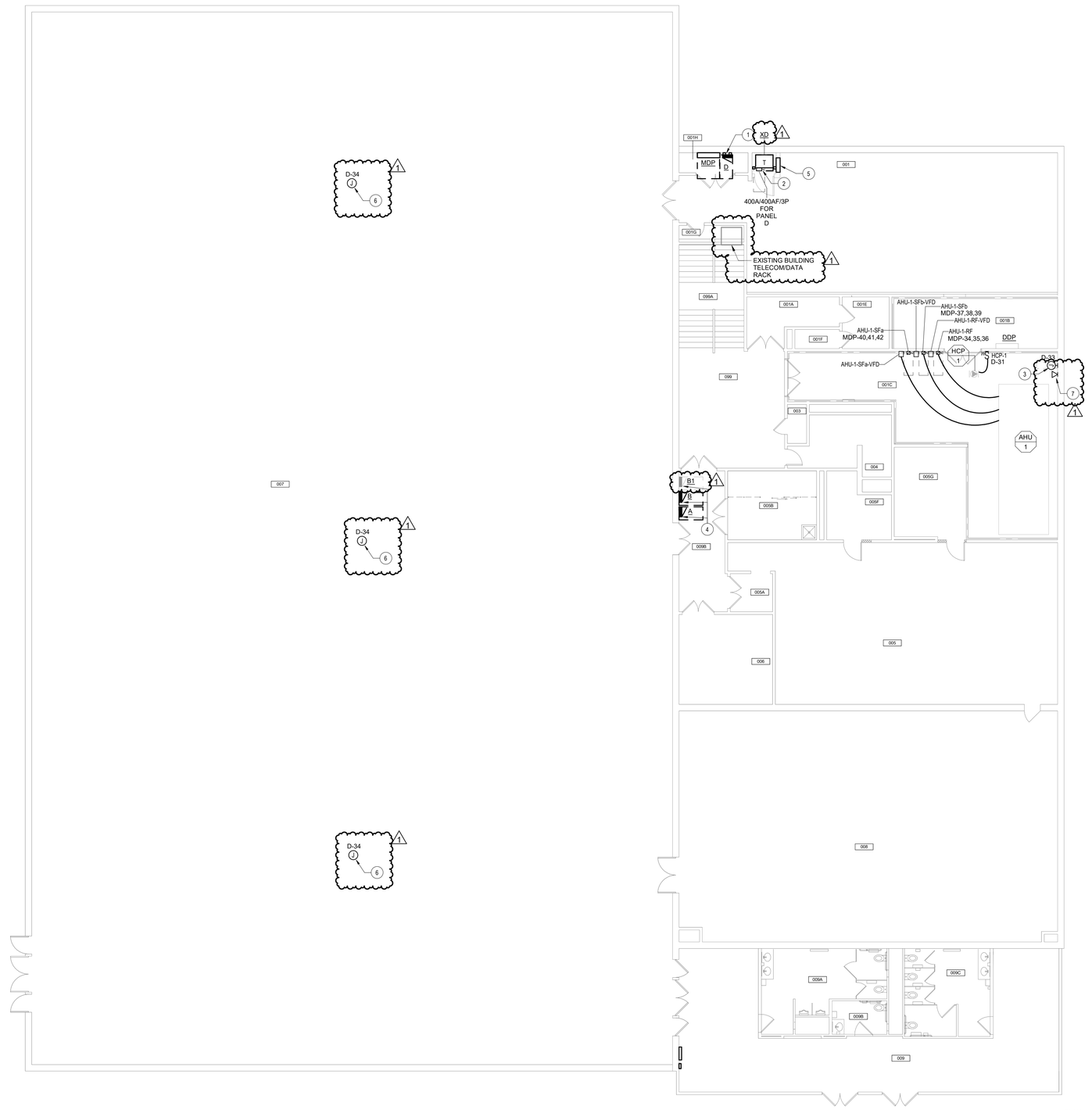
3 PROVIDE POWER FOR MECHANICAL TCP. EXACT CONNECTION LOCATION TO BE DETERMINED BY COORDINATION WITH MECHANICAL CONTRACTOR.

4 PROVIDE ELECTRICAL PANEL WITH SHEET METAL SHROUD FROM BOTTOM OF PANEL TO FLOOR AND FROM TOP OF PANEL TO CEILING. PROVIDE SHROUDS WITH REMOVABLE FRONT COVER PLATE. PAINT SHROUD TO MATCH SURROUNDING WALL.

5 PATCH EXISTING CMU WALL PER ARCHITECTURAL DIRECTION IN AREA WHERE PANEL WAS REMOVED.

6 PROVIDE SUPPLEMENTAL POWER FOR HIGH OUTPUT HYPERSPIKE FIRE ALARM UNIT.

7 PROVIDE DATA FOR MECHANICAL TCP. EXACT CONNECTION LOCATION TO BE DETERMINED BY COORDINATION WITH MECHANICAL CONTRACTOR. DATA CONDUIT TO BE PROVIDED BACK TO ROOM HOSTING BUILDING TELECOM RACK.



1 **LEVEL 1 ELECTRICAL POWER PLAN BL572**
1/8" = 1'-0"

PLAN NORTH

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INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #I2025052
INTROBA PROJECT #001130M.001

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ZRM	CDH	CDH

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DRAWING TITLE
ELECTRICAL POWER PLAN BL572 LEVEL 1

DRAWING No.
E-202

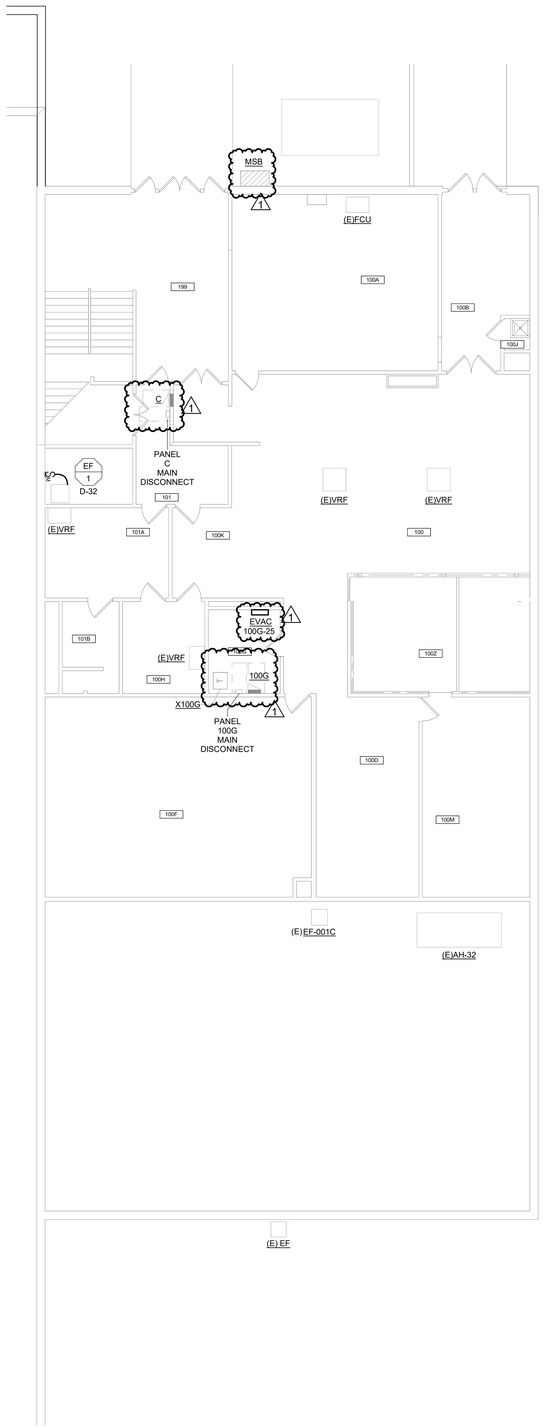
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GENERAL NOTES

A. REFER TO SHEET E-000 FOR PROJECT GENERAL NOTES AND SYMBOL LEGENDS.

B. ANY ELECTRICAL OUTAGE NEEDED FOR WORK SHALL BE PERFORMED DURING IU NON-OPERATING HOURS. ALL OUTAGES TO BE COORDINATED AND APPROVED BY IU FACILITIES AT THE START OF THE PROJECT.



1 **LEVEL 2 ELECTRICAL PLAN BL572**
1/8" = 1'-0"

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #001304.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
ZRM	CDH	Approver

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
ELECTRICAL POWER PLAN BL572 LEVEL 2

DRAWING No.
E-203

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Autodesk Docs://20250301/20804200_IU BL572 Intercol Gym Floor Chiller & Heating Systems/BL572BIM-001_IU_BL572_ARP_Phase 2.rvt

GENERAL NOTES

A. REFER TO SHEET E-000 FOR PROJECT GENERAL NOTES AND SYMBOL LEGENDS.

B. ANY ELECTRICAL OUTAGE NEEDED FOR WORK SHALL BE PERFORMED DURING IU NON-OPERATING HOURS. ALL OUTAGES TO BE COORDINATED AND APPROVED BY IU FACILITIES AT THE START OF THE PROJECT.

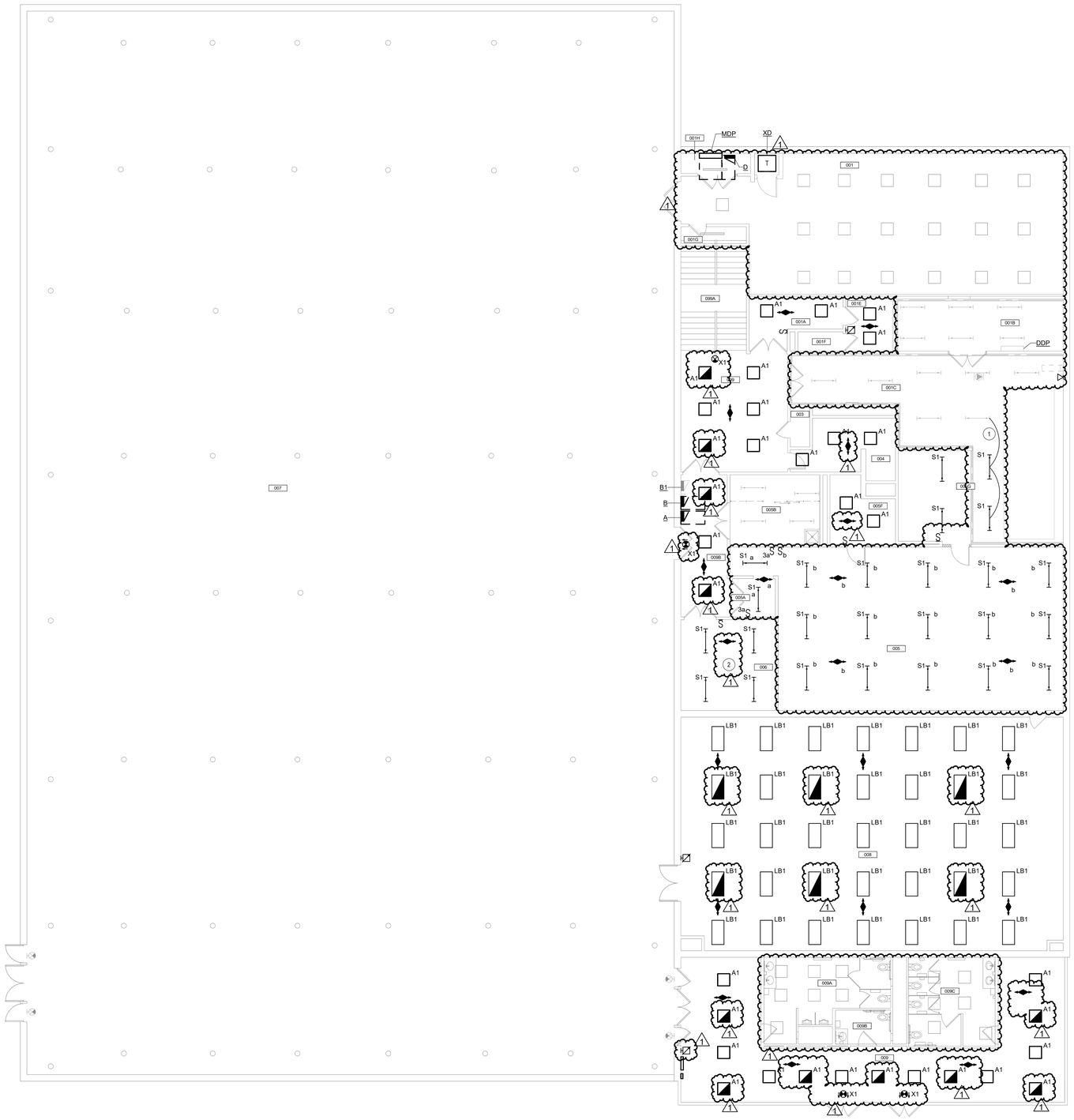
C. ALL NEW LIGHTING TO BE CIRCUITED BACK TO LIGHTING CIRCUIT PREVIOUSLY SERVING AREA.

1 D. ALL FIXTURES WITHOUT TAG ARE EXISTING TO REMAIN AND PROTECTED DURING CONSTRUCTION PROCESS.

1C ## SHEET NOTES:

1 EXISTING LIGHTING CIRCUITING AND CONTROLS FOR ROOM 001C TO BE EXTENDED TO ADD NEW LIGHTING FIXTURES AS SHOWN.

2 MODIFY FIXTURE LOCATIONS WITHIN ROOM AS REQUIRED TO ACCOMMODATE EXISTING FENCING.



1 **LEVEL 1 ELECTRICAL PLAN BL572**
1/8" = 1'-0"

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NO	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20255022
INTROBA PROJECT #0013084.001

DATE ISSUED
OCT 29, 2026

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ZRM	CDH	CDH

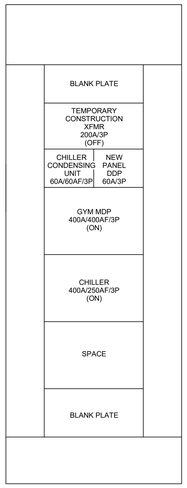
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100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
ELECTRICAL LIGHTING PLAN BL572 LEVEL 1

DRAWING No.
E-302

Autodesk Docs://20251001/0013084.001_IU BL572 Interior Adv Mat Cluster & Seating Expansion/0013084.001_IU_BL572_ARP_Phase 2.rvt

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NOTES

- EXISTING DISTRUBUTION PANELBOARD IS A SQUARE D QMB FUSIBLE PANEL. NEW FUSES AND COVERPLATES TO BE LISTED AS COMPATIBLE WITH EXISTING PANEL. PROVIDED FOR REFERENCE ONLY

3 BL572 IGYM MSB BLOCK DIAGRAM

NOT TO SCALE

New Branch Panel: D

VOLTS: 120/208V/3PH/4W
PHASES: 3
WIRES: 4
MOUNTING: SURFACE

LOCATION: 001H
SUPPLY FROM: XD
KAIC: 22
KAIC AVAILABLE: PER STUDY

MAIN BREAKER: MLO
AMP BUSSING: 400
NEUTRAL BUS: 100%
IG BUS: WITHOUT

CKT	Circuit Description	Load Class	Type	BRKR	ØA	ØB	ØC	BRKR	Type	Load Class	Circuit Description	CKT
1	EXISTING LOAD	--		20	1 0			1 20		--	EXISTING LOAD	2
3	EXISTING LOAD	--		20	1	0 0		1 20		--	EXISTING LOAD	4
5	EXISTING LOAD	--		20	1		0 0	1 20		--	EXISTING LOAD	6
7	EXISTING LOAD	--		20	1 0			1 20		--	EXISTING LOAD	8
9	EXISTING LOAD	--		20	1	0 0		1 20		--	EXISTING LOAD	10
11	EXISTING LOAD	--		20	1		0 0	1 20		--	EXISTING LOAD	12
13	EXISTING LOAD	--		20	1 0			1 20		--	EXISTING LOAD	14
15	EXISTING LOAD	--		20	1	0 0		1 20		--	EXISTING LOAD	16
17	EXISTING LOAD	--		20	1		0 0	1 20		--	EXISTING LOAD	18
19	EXISTING LOAD	--		50	2 0	0		2 30		--	EXISTING LOAD	20
21						0 0						22
23	EXISTING LOAD	--		50	2		0 0	1 20		--	EXISTING LOAD	24
25					0 0			1 20		--	EXISTING LOAD	26
27	EXISTING LOAD	--		20	1	0 0		2 30		--	EXISTING LOAD	28
29	EXISTING LOAD	--		20	1		0 0					30
31	HCP-1	M		20	1 1475	1625		1 25		M	EXHAUST FAN EF-1	32
33	MECHANICAL CONTROL PANEL	G		20		0 1500		1 20		G	GYM HO FA UNITS	34
35	SPARE	--		20			0 0	1 20		--	SPARE	36
37					0 0							38
39	PANEL B			100	3	0 0		3 100			PANEL C	40
41							0 0					42
					Total Load (VA)	2832	1500 0					
					Total Load (A)	26	14 0					
						ØA	ØB ØC					

Load Classifications:	Conn. Load (VA)	Calc. Demand (VA)
(GN) - General, Non-Continuous Equipment = Constant, 100%	1500	1500
(M) - Motor = 100% + 25% of largest	2832	3246

Panel Totals:	KVA	A
Subtotal connected load:	4	12
Subtotal Estimated Demand:	**5**	**13**
Desired Spare Capacity:	40 %	
Spare Capacity Used:	2	5
Total Est. Demand w/ Spare:	**7**	**18**

Notes:
1. EXISTING LOADS NOTED ARE FROM DEMOLISHED PANEL D. PROVIDED EACH EXISTING LOAD WITH NEW BREAKER. REFER TO SINGLE LINE DIAGRAM FOR DIRECTION ON REROUTING CIRCUITS.

PROVIDE PANEL WITH NEW CIRCUIT DIRECTORY. CONTRACTOR TO TRACE EXISTING CIRCUITS AS REQUIRED TO PROVIDE UPDATED PANEL DIRECTORY. EACH CIRCUIT DISCRIPTION TO INCLUDE AT MINIMUM ROOM NUMBER AND TYPE OF DEVICE(S) SERVED.

New Branch Panel: MDP

Location: 001H
Supply From: MSB
Mounting: Surface
Enclosure: NEMA 1

Volts: 277/480V/3PH/4W
Phases: 3
Wires: 4

A.I.C. Rating: 42,000 A
Mains Type: MCB
Mains Rating: 400
MCB Rating: 400

Notes:

CKT	Circuit Description	Type	Poles	A	B	C
1,2,3	TRANSFORMER XD	150	3	2832	1500	0
4,5,6	TRANSFORMER X100G	70	3	500	0	0
7,8,9	PANEL A	100	3	0	0	0
10,11,12	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
13,14,15	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
16,17,18	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
19,20,21	EXISTING LOAD (FROM PANEL P)	50	3	0	0	0
22,23,24	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
25,26,27	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
28,29,30	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
31,32,33	EXISTING LOAD (FROM PANEL P)	30	3	0	0	0
34,35,36	AHU-1 RETURN FAN	20	3	3963	3963	3963
37,38,39	AHU-1 SUPPLY FAN	20	3	3464	3464	3464
40,41,42	AHU-1 SUPPLY FAN	20	3	3464	3464	3464
43	EXISTING LOAD (FROM PANEL X)	20	1	0		
44	EXISTING LOAD (FROM PANEL X)	20	1		0	
45	EXISTING LOAD (FROM PANEL X)	20	1			0
46	EXISTING LOAD (FROM PANEL X)	20	1	0		
47	EXISTING LOAD (FROM PANEL X)	20	1		0	
48	EXISTING LOAD (FROM PANEL X)	20	1			0
49,50,51	SPARE	100	3	0	0	0
52,53,54	SPARE	60	3	0	0	0
			Total Load:	14223	12391	10891
			Total Amps:	52	46	39

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals
(M) - Motor = 100% + 25% of largest	35504	108.37%	38476	
(GN) - General, Non-Continuous Equipment = Constant,...	1500	100.00%	1500	**Total Conn. Load:** 37504
(GC) - General, Continuous Equipment = Constant, 125%	500	100.00%	500	**Total Est. Demand:** 40476
				Total Conn. Current: 45
				Total Est. Demand Current: 49

Notes:
EXISTING LOADS NOTED FROM DEMOLISHED PANEL ARE TO BE PROVIDED WITH NEW BREAKER. REFER TO SINGLE LINE DIAGRAM FOR DIRECTION ON REROUTING CIRCUITS.

PROVIDE PANEL WITH NEW CIRCUIT DIRECTORY. CONTRACTOR TO TRACE EXISTING CIRCUITS AS REQUIRED TO PROVIDE UPDATED PANEL DIRECTORY. EACH CIRCUIT DISCRIPTION TO INCLUDE ROOM NUMBER AND TYPE OF DEVICE(S) SERVED.

New Branch Panel: A

VOLTS: 277/480V/3PH/4W
PHASES: 3
WIRES: 4
MOUNTING: SURFACE

LOCATION: 009B
SUPPLY FROM: MDP
KAIC: 42
KAIC AVAILABLE: PER STUDY

MAIN BREAKER: 100 A
AMP BUSSING: 100
NEUTRAL BUS: 100%
IG BUS: WITHOUT

CKT	Circuit Description	Load Class	Type	BRKR	A	B	C	BRKR	Type	Load Class	Circuit Description	CKT
1	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	2
3	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	4
5	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	6
7	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	8
9	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	10
11	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	12
13	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	14
15	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	16
17	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	18
19	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	20
21						0 0		1 20		--	EXISTING LOAD	22
23	EXISTING LOAD	--		30 3			0 0	1 20		--	SPARE	24
25					0 0			1 20		--	SPARE	26
27	SPARE	--		20 1		0 0		1 20		--	SPARE	28
29	SPARE	--		20 1			0 0	1 20		--	SPARE	30
31	SPARE	--		20 1	0 0			1 20		--	SPARE	32
33	SPARE	--		20 1		0 0		1 20		--	SPARE	34
35	SPARE	--		20 1			0 0	1 20		--	SPARE	36
37	SPARE	--		20 1	0 0			1 20		--	SPARE	38
39	SPARE	--		20 1		0 0		1 20		--	SPARE	40
41	SPARE	--		20 1			0 0	1 20		--	SPARE	42
				Total Load (VA)	0	0	0					
				Total Load (A)	0	0	0					
					ØA	ØB	ØC					

Load Classifications:	Conn. Load (VA)	Calc. Demand (VA)

Panel Totals:	KVA
Subtotal connected load:	0
Subtotal Estimated Demand:	**0**
Desired Spare Capacity:	20 %
Spare Capacity Used:	0
Total Est. Demand w/ Spare:	**0**

Notes:
1. EXISTING LOADS NOTED ARE FROM DEMOLISHED PANEL A. PROVIDED EACH EXISTING LOAD WITH NEW BREAKER. REFER TO FLOOR PLANS FOR DIRECTION ON REROUTING CIRCUITS.

PROVIDE PANEL WITH NEW CIRCUIT DIRECTORY. CONTRACTOR TO TRACE EXISTING CIRCUITS AS REQUIRED TO PROVIDE UPDATED PANEL DIRECTORY. EACH CIRCUIT DISCRIPTION TO INCLUDE AT MINIMUM ROOM NUMBER AND TYPE OF DEVICE(S) SERVED.

New Branch Panel: B

VOLTS: 120/208V/3PH/4W
PHASES: 3
WIRES: 4
MOUNTING: SURFACE

LOCATION: 009d
SUPPLY FROM: D
KAIC: 22
KAIC AVAILABLE: PER STUDY

MAIN BREAKER: 100 A
AMP BUSSING: 100
NEUTRAL BUS: 100%
IG BUS: WITHOUT

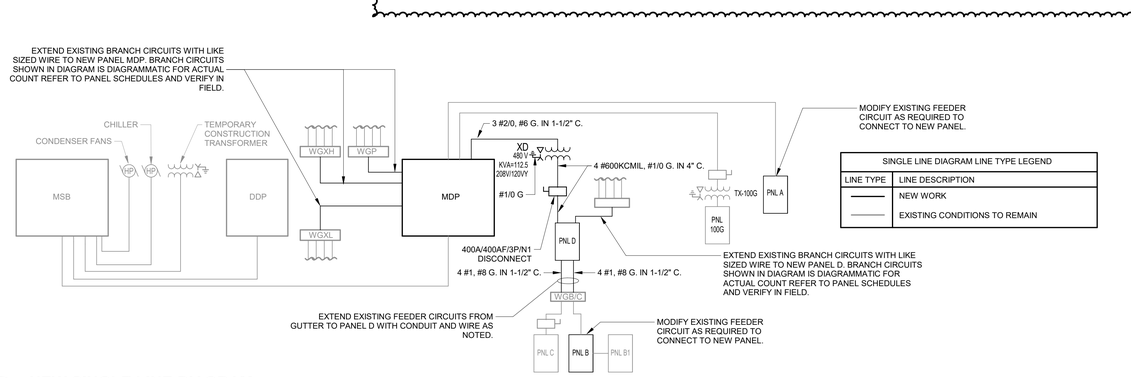
CKT	Circuit Description	Load Class	Type	BRKR	ØA	ØB	ØC	BRKR	Type	Load Class	Circuit Description	CKT
1	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	2
3	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	4
5	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	6
7	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	8
9	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	10
11	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	12
13	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	14
15	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	16
17	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	18
19	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	20
21	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	22
23	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	24
25	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	26
27	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	28
29	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	30
31	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	32
33	EXISTING LOAD	--		20 1		0 0		1 20		--	EXISTING LOAD	34
35	EXISTING LOAD	--		20 1			0 0	1 20		--	EXISTING LOAD	36
37	EXISTING LOAD	--		20 1	0 0			1 20		--	EXISTING LOAD	38
39	EXISTING LOAD	--		20 1		0 0		3 60		--	PANEL B1	40
41	EXISTING LOAD	--		20 1			0 0					42
				Total Load (VA)	0	0	0					
				Total Load (A)	0	0	0					
					ØA	ØB	ØC					

Load Classifications:	Conn. Load (VA)	Calc. Demand (VA)

Panel Totals:	KVA
Subtotal connected load:	0
Subtotal Estimated Demand:	**0**
Desired Spare Capacity:	20 %
Spare Capacity Used:	0
Total Est. Demand w/ Spare:	**0**

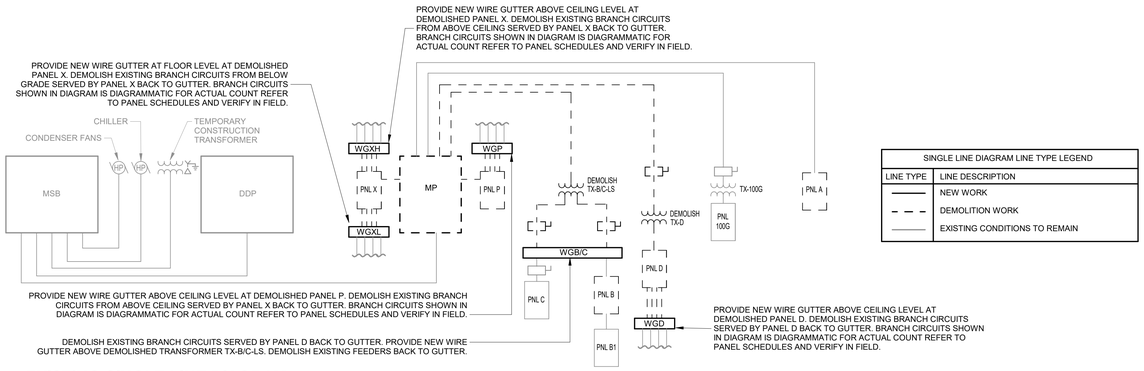
Notes:
1. EXISTING LOADS NOTED ARE FROM DEMOLISHED PANEL B. PROVIDED EACH EXISTING LOAD WITH NEW BREAKER. REFER TO FLOOR PLANS FOR DIRECTION ON REROUTING CIRCUITS.

PROVIDE PANEL WITH NEW CIRCUIT DIRECTORY. CONTRACTOR TO TRACE EXISTING CIRCUITS AS REQUIRED TO PROVIDE UPDATED PANEL DIRECTORY. EACH CIRCUIT DISCRIPTION TO INCLUDE AT MINIMUM ROOM NUMBER AND TYPE OF DEVICE(S) SERVED.



2 NEW SINGLE LINE DIAGRAM

NOT TO SCALE



1 EXISTING SINGLE LINE DIAGRAM

NOT TO SCALE

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ELECTRICAL NEW PANEL SCHEDULES & SINGLE LINE DIAGRAMS

DRAWING No.
E-501

Autodesk Docs://0550.001308.IU/0.1.IU.E.E1.E1.E1

_ELECTRICAL EQUIPMENT CONNECTION SCHEDULE

GENERAL NOTES:
A. UNLESS NOTED OTHERWISE, MINIMUM SCCR TO BE: XXXX A.
B. XXXXX
C. XXXXX

DISCONNECT SWITCH TYPE:
NFDS = NON FUSED DISCONNECT
FDS = FUSED DISCONNECT
TOG = TOGGLE

STARTER ABBREVIATIONS:

COMB1-XX - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH FUSED DISCONNECT.
COMB2 - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH UNFUSED DISCONNECT SWITCH.
COMB3-XX - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKER DISCONNECT.
COMB4 - COMBINATION FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITH MAGNETIC ONLY MOLDED CASE CIRCUIT BREAKER DISCONNECT.
FVNR - FULL VOLTAGE NON-REVERSING MAGNETIC STARTER WITHOUT DISCONNECT.
MAN - MANUAL MOTOR STARTER WITH DISCONNECT SWITCH AND REPLACEABLE THERMAL OVERLOAD CONTACTS.
SDS - STAR DELTA STARTER.
PWCP - PREWIRED CONTROL PANEL.
VFD - VARIABLE FREQUENCY DRIVE.
2S2W - 2 SPEED 2 WINDING.
2S1W - 2 SPEED SINGLE WINDING.
RV - REDUCED VOLTAGE SOLID STATE STARTER
FVR - FULL VOLTAGE REVERSING MAGNETIC STARTER WIHTOUT DISCONNECT

KEYED NOTES:
1. PROVIDE CONNECTION BACK TO fIRE ALARM CONTROL PANEL FOR SHUTDOWN.

WIRE AND CONDUIT
REFER TO FEEDER SCHEDULE WHEN 'WIRE AND CONDUIT' CONTAINS FEEDER DESIGNATION INSTEAD OF CONDUCTOR SIZE.

LEGEND:
CELLS BLACKED OUT - NOT APPLICABLE
CELLS GRAYED OUT - NOT APPLICABLE

EQUIPMENT INFORMATION		ELECTRICAL INFORMATION					CIRCUIT INFORMATION		DISCONNECT INFORMATION				STARTER/VFD INFORMATION					
EQUIPMENT NUMBER	DESCRIPTION OF EQIPMENT SERVED	VOLTAGE	PHASE	APPARENT POWER	CALCULATED CURRENT	MIN SCCR	PANEL-CIRCUIT #	WIRE AND CONDUIT	TYPE	DISC SIZE (POLE/AMP)	FUSE SIZE (AMP)	ENCLOSURE TYPE	TYPE	NEMA SIZE	FUSE/BREAKER SIZE (AMP)	ENCLOSURE TYPE	CONTROL WIRING	NOTES
(J-Box)		120 V		500 VA	4 A		D-34			1P/								
(J-Box)		120 V		500 VA	4 A		D-34			1P/								
(J-Box)		120 V		500 VA	4 A		D-34			1P/								
AIR HANDLING UNIT																		
AHU-1-RF	AHU-1 RETURN FAN	480 V	3	11888 VA	14 A	65,000 A	MDP-34,35,36	3 #12, #12 G. IN 3/4" C.	FDS	3P/30A	20	NEMA 1	-	-	-	-		1
AHU-1-RF-VFD	AHU-1 RETURN FAN VFD	480 V	1	0 VA	0 A					3P/								
AHU-1-SFa	AHU-1 SUPPLY FAN	480 V	3	10392 VA	12 A	65,000 A	MDP-40,41,42	3 #12, #12 G. IN 3/4" C.	FDS	3P/30A	20	NEMA 1	-	-	-	-		1
AHU-1-SFa-VFD	AHU-1 SUPPLY FAN VFD	480 V	1	0 VA	0 A					3P/								
AHU-1-SFb	AHU-1 SUPPLY FAN	480 V	3	10392 VA	12 A	65,000 A	MDP-37,38,39	3 #12, #12 G. IN 3/4" C.	FDS	3P/30A	20	NEMA 1	-	-	-	-		1
AHU-1-SFb-VFD	AHU-1 SUPPLY FAN VFD	480 V	1	0 VA	0 A					3P/								
EXHAUST FAN																		
EF-1	EXHAUST FAN	120 V	1	1656 VA	14 A		D-32	2 #12, #12 G. IN 3/4" C.	TOGGLE (1HP RATED)	1P/20A		NEMA 3R	-	-	-	-		
PUMP																		
HCP-1	HEATING HOT WATER RECIRCULATION PUMP	120 V	1	1176 VA	10 A		D-31	2 #12, #12 G. IN 3/4" C.	TOGGLE (1HP RATED)	1P/20A		NEMA 1	-	-	-	-		

LUMINAIRE SCHEDULE

LUMINAIRE												LOCATION AND INSTALLATION		
TYPE	LIGHT SOURCE	DESCRIPTION	MANUFACTURER	CATALOG SERIES	ALTERNATE MANUFACTURER SERIES	WATTAGE (W)	VOLTAGE (V)	DIMMING	LAMP LUMENS	COLOR TEMP (K)	MOUNTING	LOCATION	NOTES
A1	LED	TROFFER STYLE LED RECESSED 2'X2' FIXTURE	LITHONIA LIGHTING	2BLT2-33L-ADP-EZ1-LP835	COLUMBIA LIGHTING: LCAT22 SERIES METALUX: CRUZE ST 22CZ2 SERIES LSI: ALPT22 SERIES	26.5	UNV	0-10V 10%	3300	3500 K	RECESSED	PUBLIC SPACES	
LB1	LED	LOWBAY LINEAR LED LOW GLARE SUSPENDED FIXTURE	LITHONIA LIGHTING	MSL-10000LM-SBL-MVOLT-GZ10-35K-CRI	COLUMBIA LIGHTING: PELA SERIES METALUX: SPHB SERIES LENA LIGHTING: TITAN GUARD LED PRO SERIES	86	UNV	0-10V 10%	10000	3500 K	AIRCRAFT CABLE SUSPENDED AT 6" BELOW STRUCTURE	DIVING GYM	
S1	LED	CHAIN SUSPENDED 4' LINEAR STRIP WITH ROUND LENS FOR USE WHERE HUMIDITY AND MOISTURE ARE LIKELY PRESENT. UL LISTED FOR USE IN DAMP LOCATIONS.	LITHONIA LIGHTING	CLV-L48-4000LM-SEF-RDL-MVOLT-GZ10-35K-80CRI	COLUMBIA LIGHTING: MPS SERIES METALUX: MPS SERIES LSI: AST SERIES	44	UNV	0-10V 10%	4000	3500 K	CHAIN HUNG AT 9' AFF	BACK OF HOUSE	
X1	LED	HIGH STRENGTH CAST ALUMINUM HOUSING EXIT SIGN. DIE-CAST ALUMINUM MOUNTING CANOPY DESIGNED FOR UNIVERSAL CEILING, END, OR WALL MOUNTING. RED LETTERS AND ARROWS. ARROWS ARE REQUIRED OR AS SHOWN ON THE DRAWINGS. SINGLE OR DOUBLE FACED AS REQUIRED OR AS SHOWN ON THE DRAWINGS. BLACK HOUSING WITH BRUSHED ALUMINUM FACE, U.L. LISTED FOR DAMP LOCATIONS, UL924 LISTED, SELF TESTING WITH INTEGRAL 90 MIN BATTERY BACKUP.	LITHONIA LIGHTING	LQC-X-R-EL N	DUAL-LITE: SE SERIES SURE-LITES: CX SERIES LSI: EXC SERIES	3	UNV	-	-	-	PER PLANS	ENTIRE BUILDING	1

FIXTURE SCHEDULE GENERAL NOTES
- ALL EMERGENCY FIXTURES TO BE PROVIDED WITH MANUFACTURER INSTALLED BATTERY BACK-UP.

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CHRISTOPHER D. HANK — REGISTERED — NO. 21500015 — STATE OF INDIANA — PROFESSIONAL ENGINEER

NO.	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

CLIENT
INDIANA UNIVERSITY

PROJECT ADDRESS
2721 EAST 10TH STREET
BLOOMINGTON, IN 47408

PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20220522
INTROBA PROJECT #22013084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
ZRM	CDH	CDH

DRAWING STATUS
100% CONSTRUCTION DOCUMENTS

DRAWING TITLE
ELECTRICAL SCHEDULES

DRAWING No.
E-601

Autodesk Docs://22013.001 IU BLOOMINGTON/22013084.001_IU BLOOMINGTON_GYM_First Floor HVAC and Lighting Upgrades/E601_IU BLOOMINGTON_GYM_First Floor HVAC and Lighting Upgrades_ELECTRICAL SCHEDULES_Phase 2.rvt

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GENERAL NOTES

A. MAINTAIN LIGHTING CIRCUITS TO ALL SPACES TO BE REUSED IN RENOVATION.

1 B. BUILDING FIRE ALARM SYSTEM IN ITS ENTIRETY TO BE DEMOLISHED.

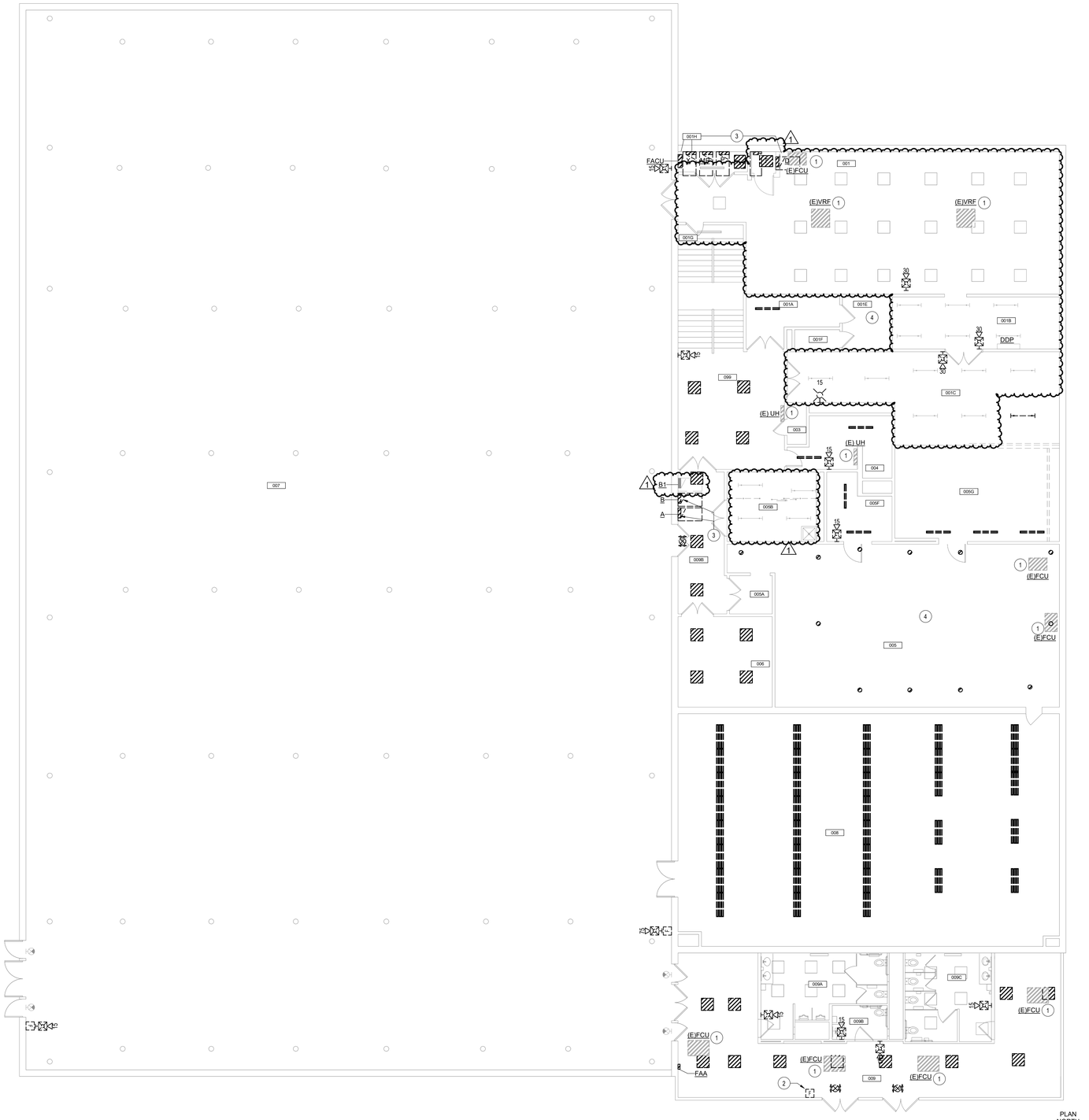
SHEET NOTES:

1 DISCONNECT AND DEMOLISH ASSOCIATED ELECTRICAL EXISTING EQUIPMENT FOR UNIT. REMOVE CIRCUIT WIRING AND CONDUIT BACK TO THE SOURCE PANEL. AT SOURCE BREAKER, TURN BREAKER OFF AND LABEL AS SPARE.

2 DEMOLISH DEVICE AND PATHWAY ABOVE CEILING PATHWAY TO DEVICE TO BE REUSED FOR NEW DEVICE.

1 3 PRIOR TO DEMOLITION OF PANELS, DISCONNECT ALL ASSOCIATED CONNECTION TO PANEL. LOCATE A WIRE GUTTER ABOVE CEILING ABOVE PANEL AND PULL BACK CIRCUITS FOR RECONNECTION TO NEW PANEL.

4 DEMOLISH ALL EXISTING LIGHTING IN THIS SPACE.



1 **LEVEL 1 ELECTRICAL DEMOLITION PLAN BL572**
1/8" = 1'-0"

PLAN NORTH

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NO	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #00013084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
ZRM	CDH	CDH

DRAWING STATUS
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DRAWING TITLE
ELECTRICAL DEMOLITION PLAN BL572
LEVEL 1

DRAWING No.
ED-202

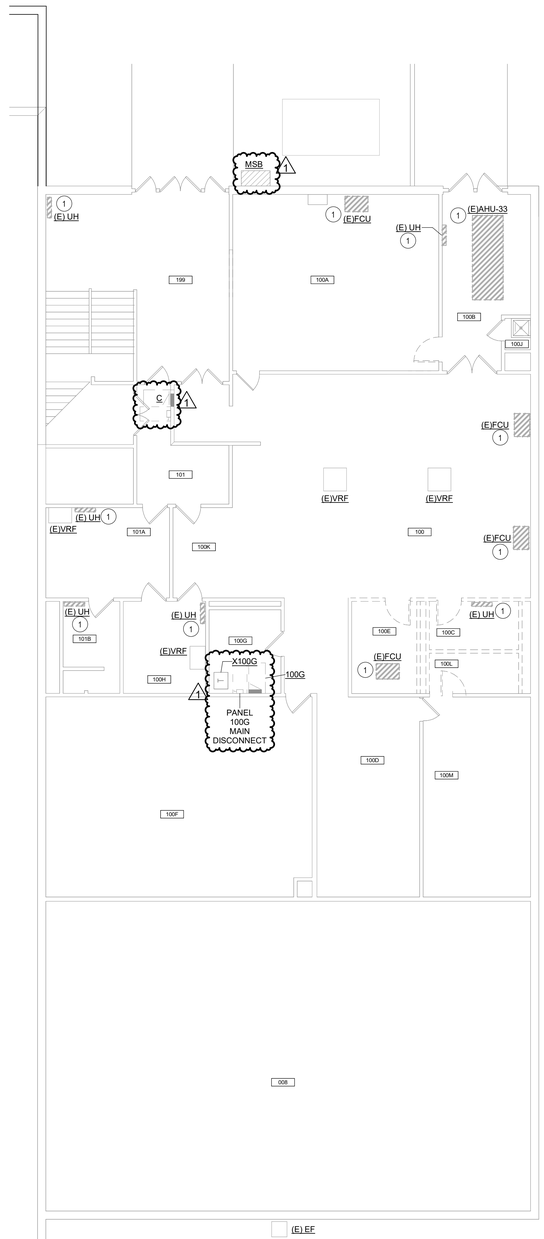
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GENERAL NOTES

A. BUILDING FIRE ALARM SYSTEM IN ITS ENTIRETY TO BE DEMOLISHED.

1



1 **LEVEL 2 ELECTRICAL DEMOLITION PLAN BL572**
1/8" = 1'-0"

PLAN NORTH

SHEET NOTES:

1 DISCONNECT AND DEMOLISH ASSOCIATED ELECTRICAL EXISTING EQUIPMENT FOR UNIT. REMOVE CIRCUIT WIRING AND CONDUIT BACK TO THE SOURCE PANEL. ADD SOURCE BREAKER, TURN BREAKER OFF AND LABEL AS SPARE.

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1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250502
INTROBA PROJECT #0251304.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
ZRM	CDH	Approver

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DRAWING TITLE
ELECTRICAL DEMOLITION PLANS BL572
LEVEL 2

DRAWING No.
ED-203

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NOTIFICATION SOUND LEVEL

SPACE CLASSIFICATION	AMBIENT SOUND	MIN. SOUND LEVEL
ASSEMBLY	55dBA	70dBA
ELEC / REST ROOM	45dBA	60dBA
MECHANICAL	85dBA	100dBA
STORAGE	30dBA	45dBA

FIRE ALARM DEMOLITION NOTES

1. REMOVE, CAP AND RELOCATE EQUIPMENT, DEVICES, CONDUIT, WIRE, ETC., AS SHOWN AND SPECIFIED ON DRAWINGS, AND AS MAY BECOME NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS. VISIBLY EXAMINE ALL EXISTING WALLS DESIGNATED FOR REMOVAL TO DETERMINE THE CONDUIT AND THE WIRING THAT WILL REQUIRE CAPPING AND REMOVAL, WHETHER OR NOT SUCH CONDITIONS ARE INDICATED ON THE DRAWINGS. FAILURE TO VISIT THE SITE AND TO TAKE ALL EXISTING CONDITIONS INTO ACCOUNT WILL NOT ALLOW FOR CHANGES TO THE SCOPE OF WORK.
2. ALL EXISTING EQUIPMENT AND DEVICES TO REMAIN SHALL STAY IN-TACT AND OPERATIONAL DURING THE CONSTRUCTION PROCESS. MAINTAIN CIRCUIT CONTINUITY TO ALL EXISTING DEVICES, EQUIPMENT, ETC., TO REMAIN IN USE WHETHER NOTED ON THE PLANS OR NOT. IF A DEVICE REQUIRING POWER IS DISTURBED OR INTERRUPTED, RESTORE THE DEVICE TO IT'S ORIGINAL OPERATIONAL STATE. ANY DEMOLITION WORK REQUIRING MODIFICATION OF EXISTING ELECTRICAL SYSTEMS SHALL NOT COMPROMISE THE SYSTEMS TO REMAIN. INSTALL NEW CONDUIT AND WIRING WHERE NECESSARY TO RESTORE POWER PER NEC REQUIREMENTS.
3. THE FIRE ALARM DEMOLITION CONTENT SHOWS EXISTING CONDITIONS BASED ON FIELD OBSERVATIONS AND ORIGINAL DRAWINGS. ADDITIONAL COMPONENTS AND CONDITIONS THAT ARE NOT SHOWN ON THE DRAWINGS MAY EXIST AND MAY REQUIRE CERTAIN REMODELING OR ADJUSTMENTS THAT ARE NOT NOTED ON THE DRAWINGS. FIELD VERIFY THE LOCATIONS OF ALL EXISTING EQUIPMENT AND DEVICES SHOWN ON THE DRAWINGS PRIOR TO BIDDING.
4. REMOVE ALL UNUSED WIRING AND CABLES BACK TO THEIR SOURCE. REMOVE ALL UNUSED CONDUIT THAT IS EXPOSED OR ABOVE ACCESSIBLE CEILINGS WHICH IS AFFECTED BY OR IS IN THE AREA OF THE DEMOLITION WORK. CONDUIT ABANDONED IN PLACE SHALL BE MARKED "ABANDONED".
5. THE INTENTION OF THE FIRE ALARM DEMOLITION DRAWINGS IS TO DISCONNECT AND REMOVE ENTIRETY OF EXISTING SYSTEM. FIELD VERIFY EXACT MATERIAL QUANTITIES REQUIRED TO BE REMOVED.
6. DISCONNECT AND REMOVE ALL EXISTING FIRE ALARM EQUIPMENT, DEVICES, ASSOCIATED RACEWAYS, SUPPORTING HARDWARE, AND WIRING. ALTHOUGH AN ATTEMPT HAS BEEN MADE TO INDICATE ALL OF THIS WORK, TOTAL ACCURACY IS NOT GUARANTEED. VISIBLY EXAMINE ALL AREAS AND WALLS AND CEILINGS SCHEDULED FOR REMOVAL TO DETERMINE EXISTING ELECTRICAL ITEMS TO REMAIN.
7. WHERE FIRE ALARM EQUIPMENT, DEVICES, CONDUIT, BOXES, AND SUPPORTING HARDWARE ARE REMOVED, THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR AND RESTORE ALL INTERIOR/EXTERIOR WALLS, CEILINGS, FLOORS, AND CONCRETE WORK REQUIRING PATCHING, PLASTERING, PAINTING AND ANY OTHER REPAIRS DUE TO ELECTRICAL WORK TO RESTORE THE ORIGINAL FINISH AND APPEARANCE, USING WORKERS QUALIFIED IN THE APPROPRIATE TRADE.
8. NOT ALL EXISTING UTILITIES AND OR ELECTRICAL SYSTEMS ARE SHOWN ON PLANS. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
9. WHERE BURIED CONDUITS EXTENDING OUT OF A CONCRETE SLAB BECOME ABANDONED, CUT AND GRIND THE CONDUITS OFF FLUSH WITH TOP OF SLAB AND PLUG WITH NON-SHRINK/WATERPROOF GROUT FILL.
10. TAKE ALL REMOVED MATERIALS FROM THE PROJECT SITE. EXCEPT FOR THOSE TO BE RELOCATED, STORED, OR TURNED OVER TO THE OWNER.
11. ACCEPTANCE OF CONTRACT MEANS INSTALLER ACCEPTS EXISTING CONDITIONS.
12. COORDINATE ALL DEMOLITION WORK WITH ALL OTHER TRADES AND EXISTING CONDITIONS.
13. PROVIDE BLANK COVER PLATE OR OVERSIZED VINYL COVER AS APPROVED BY OWNER'S REPRESENTATIVE, SUFFICIENT IN SIZE WITH MUD RING TO COVER UP THE OPENING WHERE A FLUSH DEVICE IS BEING REMOVED FROM WALLS THAT ARE TO REMAIN. PROVIDE A LABEL ON THE INTERIOR SIDE OF THE PLATE STATING "ABANDONED FIRE ALARM". BLANK COVER PLATE SHALL MATCH THE EXISTING SURFACE COLOR IT'S INSTALLED ON.
14. PROVIDE UPDATED PANEL DIRECTORIES FOR PANELBOARDS WHICH HAVE HAD ALTERATIONS TO THE CIRCUITS ORIGINATING THEREIN. DESCRIBE THE LOAD AND LOCATION. PROVIDE TYPED, NOT HAND WRITTEN PANELBOARD DIRECTORIES.
15. LEGALLY DISPOSE OF HAZARDOUS MATERIALS OR OTHER EQUIPMENT. COMPLY WITH ALL FEDERAL STATE, AND LOCAL LAWS.

FIRE ALARM GENERAL NOTES

1. MAKE ALL INSTALLATIONS IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG).
2. REFER TO SPECIFICATIONS SECTION 283111 FOR ADDITIONAL INFORMATION PERTAINING TO THE FIRE ALARM SYSTEM.
3. MOUNTING HEIGHTS INDICATED WITHIN PLANS AND SCHEDULES ARE DIMENSIONED TO THE CENTER LINE OF THE DEVICE, EQUIPMENT, ETC. UNLESS OTHERWISE NOTED.
4. THE FIRE ALARM NEW WORK CONTENT SHOWN ON THE DRAWINGS REPRESENTS A SCHEMATIC LAYOUT WITH CERTAIN SPECIFIC REQUIREMENTS IDENTIFIED. CONTRACTOR SHALL PROVIDE ENGINEERED SHOP DRAWINGS (SIGNED AND SEALED) AND FINAL INSTALLATION IN COMPLIANCE WITH THIS FIRE ALARM DESIGN CONTENT AND REQUIREMENTS SET FORTH BY THESE DRAWINGS, AND ANY ADDITIONAL REQUIREMENTS ESTABLISHED BY CODE, THE AUTHORITIES HAVING JURISDICTION, OR UNFORESEEN CONDITIONS.
5. THE ENGINEERED FIRE ALARM SHOP DRAWINGS SHALL INCLUDE ALL DEVICES, EQUIPMENT, AND APPURTENANCES AS REQUIRED BY APPLICABLE CODES OR AS NECESSARY FOR A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM INCLUDING INTERFACES WITH OTHER SYSTEMS AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS.
6. SPECIAL REQUIREMENTS FOR CIRCUIT BREAKERS PROVIDING OVERCURRENT PROTECTION TO FIRE ALARM SYSTEM CLASS I CIRCUITS: PROVIDE VISUALLY-DISTINGUISHABLE RED CIRCUIT BREAKER(S) WITH LOCK-ON DEVICE AND "FIRE ALARM SYSTEM" LABEL.
7. SIGNALING LINE CIRCUITS SHALL BE ROUTED IN A CLASS 'B' CONFIGURATION.
8. NOTIFICATION APPLIANCE CIRCUITS SHALL BE ROUTED IN A CLASS 'B' CONFIGURATION.
9. FIRE ALARM CIRCUITS SHALL BE ROUTED IN CONDUIT.
10. CONCEAL ALL CONDUIT IN WALLS, PARTITIONS, ABOVE CEILINGS, AND IN FLOOR SLABS, ETC., UNLESS OTHERWISE INDICATED ON THE PLANS OR IN THE SPECIFICATIONS. CONDUIT ROUTED IN MECHANICAL ROOMS, ELECTRICAL ROOMS, AND STORAGE ROOMS WITHOUT CEILINGS MAY BE ROUTED EXPOSED.
11. COORDINATE VERTICAL CONDUIT ROUTING TO WALL MOUNTED DEVICES TO ENSURE DEVICES LOCATED WITHIN AN 18-INCH HORIZONTAL DIMENSION WILL BE CENTER-ALIGNED VERTICALLY.
12. FIELD COORDINATE ALL FIRE ALARM EQUIPMENT MOUNTING LOCATIONS WITH EXISTING CONDITIONS, AND TO AVOID ENCROACHMENT OF REQUIRED CLEARANCES, OPERATION AND ACCESS TO EQUIPMENT FROM OTHER TRADES. FIRE ALARM EQUIPMENT LOCATIONS SHOWN ON PLANS ARE DIAGRAMMATICAL ONLY AND MIGHT NOT BE EXACT.
13. WALL MOUNTED AUDIBLE ONLY NOTIFICATION DEVICES SHALL BE MOUNTED WITH THE TOP OF THE DEVICE +90" A.F.F. OR 6" BELOW THE CEILING, WHICHEVER IS LOWER. AUDIBLE/VISUAL AND VISUAL ONLY NOTIFICATION DEVICES SHALL BE MOUNTED SO THAT THE ENTIRE LENSE IS NO LESS THAN 80" AND NOT HIGHER THAN 96" A.F.F.
14. FOR VISUAL NOTIFICATION DEVICES, PROVIDE DEVICES WITH A FIELD SELECTABLE SWITCH RANGING FROM 15CD TO 115CD FOR DEVICES 115CD OR LOWER.
15. COORDINATE THE APPROPRIATE MOUNTING LOCATION WITH THE AFFECTED DISCIPLINES WHEN A FIRE ALARM SYSTEM COMPONENT/ EQUIPMENT/DEVICE IS SPECIFIED TO BE MOUNTED ONTO THE SURFACE OF ANOTHER DISCIPLINE'S EQUIPMENT.
16. PENETRATIONS IN FIRE RATED WALLS AND FLOORS/CEILINGS SHALL BE SEALED BY A CERTIFIED FIRESTOPPING CONTRACTOR. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS MUST HAVE BEEN TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS.
17. PERFORM ALL WELDING ACCORDING TO AMERICAN WELDING SOCIETY STANDARDS. FURNISH CERTIFICATES QUALIFYING EACH WELDER TO THE ARCHITECT OR ENGINEER PRIOR TO START OF WORK. THE ARCHITECT OR ENGINEER RESERVES THE RIGHT TO REQUIRE QUALIFYING DEMONSTRATION, AT NO ADDITIONAL EXPENSE, OF ANY WELDERS ASSIGNED TO THE JOB.
18. REPLACE OR REINSTALL ALL PORTIONS OF THE BUILDING (CEILING TILES, WALLS, ETC) REMOVED TO ACCOMMODATE THE INSTALLATION OF ANY ELECTRICAL DEVICE, EQUIPMENT, ETC., USING WORKERS QUALIFIED IN THE APPROPRIATE TRADE.

FIRE ALARM UPDATED SYMBOLS

ANNOTATION	WALL	CEILING	FIRE ALARM NOTIFICATION APPLIANCES
P-1	P	P	BELL
1 E-6	C	C	CHIME
A E-6	CH	CH	COMBINATION HORN / STROBE, "CD" CANDELA INDICATED
CD_W	CS_W	CS_W	COMBINATION SPEAKER / STROBE, "CD" CANDELA & "W" WATTAGE INDICATED
EEE	H	H	HYPER SPIKE SPEAKER SYSTEM
2	M	M	HORN (MINI)
	RTS	RTS	REMOTE ALARM INDICATING AND TEST SWITCH
	RI	RI	REMOTE INDICATOR
			ROTATING BEACON
	W S	W S	SPEAKER ONLY. "W" WATTAGE TAP INDICATED
	CD	CD	VISIBLE STROBE ONLY. "CD" CANDELA INDICATED

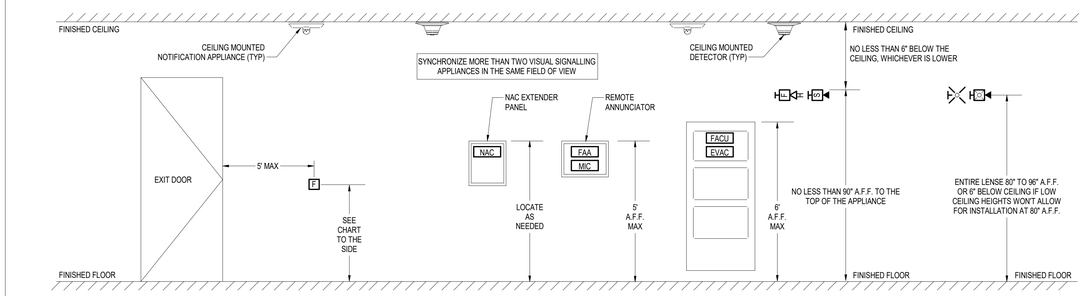
DEVICE GENERAL SUBSCRIPT LEGEND

WP- WEATHER PROOF RATED DEVICE
DH- DOOR HOLD-OPEN RELEASE DEVICE
EL- ELEVATOR EMERGENCY FUNCTION DEVICE
PC- PROTECTIVE CAGE/GUARD
KH- KITCHEN HOOD
AHUI- AIR HANDLING UNIT SHUTDOWN DEVICE
FSDI- FIRE/SMOKE DAMPER OPERATION DEVICE
SDI- SMOKE DAMPER OPERATION DEVICE
LT- LOCKING TYPE MANUAL PULL STATION
CA- CLEAN AGENT SYSTEM

WALL SURFACE MOUNTED	WALL RECESSED MOUNTED	FIRE ALARM EQUIPMENT
		FA CONTROL UNITS
		EVAC = VOICE EVACUATION FIRE ALARM CONTROL UNIT
		FACU = FIRE ALARM CONTROL UNIT, SUBSCRIPT "D" DENOTES DEDICATED FIRE ALARM CONTROL UNIT
		ASDP = AIR SAMPLING DETECTION PANEL CONTROL UNIT
		RSFACU = RELEASING SERVICE FIRE ALARM CONTROL UNIT
		SCP = SMOKE CONTROL PANEL
		WCU = WIRELESS CONTROL UNIT
		FA POWER, AMPLIFIER CABINETS
		NAC = NOTIFICATION CIRCUIT POWER BOOSTER EXTENDER PANEL, SUBSCRIPT NUMBER DENOTES UNIT NUMBER (WHERE APPLICABLE)
		AMP = REMOTELY LOCATED EVACUATION AMPLIFIER CABINET, SUBSCRIPT NUMBER DENOTES UNIT NUMBER (WHERE APPLICABLE)
		BATT = BATTERY CABINET
		FATC = FIRE ALARM TERMINAL CABINET
		FA EMERGENCY COMMUNICATION EQUIPMENT
		ARCM = AREA OF REFUGE EMERGENCY COMMUNICATIONS SYSTEM - MASTER CALL UNIT
		ARCR = AREA OF REFUGE EMERGENCY COMMUNICATIONS SYSTEM - REMOTE CALL UNIT
		ACU = AUTONOMOUS CONTROL UNIT
		LOC = LOCAL OPERATING CONSOL
		FA COMMUNICATION EQUIPMENT
		FAC = FIRE ALARM COMMUNICATOR
		RCES = RADIO COMMUNICATIONS ENHANCEMENT SYSTEM
		TRP = FIRE ALARM TRANSPONDER, SUBSCRIPT NUMBER DENOTES UNIT NUMBER (WHERE APPLICABLE)
		FA ANNUNCIATORS
		FAA = REMOTE FIRE ALARM ANNUNCIATOR
		GAP = GRAPHIC ANNUNCIATOR WORK STATION
		MIC = REMOTE VOICE EVACUATION MICROPHONE
		PAN = PRINTER
		FA INTERFACE EQUIPMENT
		FSCU = FIRE SUPPRESSION CONTROL UNIT
		HVAC = CONTROL PANEL FOR HVAC EQUIPMENT
		PRE = PRE-ACTION SYSTEM CONTROL UNIT
		PP = PURGE PANEL
		SAP = SPRINKLER ALARM PANEL
		FPC = FIRE PUMP CONTROLLER
		ESR = ELEVATOR STATUS / RECALL
		FA MISC. EQUIPMENT
		RP = RELAY PANEL
		FADC = FIRE ALARM DOCUMENT CABINET
		KB = RAPID ENTRY KEY

WALL	CEILING	FIRE ALARM NOTIFICATION APPLIANCES
		SMOKE DETECTION - SIGNAL INITIATING DEVICES
SX	SX	SINGLE STATION & MULTI-STATION SMOKE DETECTOR. PHOTOELECTRIC WITH SOUNDER BASE. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION
MS	MS	LF = LOW FREQUENCY I = IONIZATION A = ALARM SILENCE
SX	SX	SINGLE STATION & MULTI-STATION SMOKE DETECTOR. PHOTOELECTRIC WITH SOUNDER BASE AND 120V POWERED. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION
MS	MS	LF = LOW FREQUENCY I = IONIZATION A = ALARM SILENCE
S_x	S_x	SMOKE DETECTOR. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION. NO SUBSCRIPT = PHOTOELECTRIC SMOKE DETECTOR BR = BEAM RECEIVER R = RELAY BASE BT = BEAM TRANSMITTER SB = SOUNDER BASE SF = SUBFLOOR LF = LOW FREQUENCY I = IONIZATION AS = AIR SAMPLING PORT
MC_x	MC_x	MULTI-CRITERIA DETECTOR; SMOKE & HEAT. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION. CO = CO IS INCLUDED LF = LOW FREQUENCY SB = SOUDER BASE
	I H S	SMOKE DETECTOR / SENSOR FOR DUCT
		AIR SAMPLING DETECTOR PIPING
		HEAT DETECTION - SIGNAL INITIATING DEVICES
H_x	H_x	HEAT DETECTOR TYPE. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION R = RATE OF RISE F/XXX = FIXED TEMPERATURE/TEMPERATURE RATING R/C = RATE COMPENSATION R/F = COMBINATION RATE OF RISE / FIXED TEMPERATURE
H	H	HEAT DETECTOR = LINE TYPES
		FLAME DETECTION - SIGNAL INITIATING DEVICES
A_x	A_x	FLAME DETECTOR TYPE. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION IR = INFRARED DETECTOR UV = ULTRAVIOLET DETECTOR UV / IR = COMBINATION ULTRAVIOLET / INFRARED DETECTOR VR = VISIBLE RADIATION DETECTOR
		GAS DETECTION - SIGNAL INITIATING DEVICES
A_x	A_x	FLAME DETECTOR TYPE. REFER TO LIST BELOW FOR SUBSCRIPT IDENTIFICATION CO = CARBON MONOXIDE CO2 = CARBON DIOXIDE FG = FUEL GAS DETECTOR HCL = HYDROGEN CHLORIDE CH4 = METHANE DETECTOR O2 = OXYGEN DETECTOR

WALL	CEILING	EMERGENCY COMMUNICATION NOTIFICATION APPLIANCES
CD_W	CD_W	COMBINATION SPEAKER / STROBE, "CD" CANDELA & "W" WATTAGE INDICATED
ET	ET	EMERGENCY TEXTUAL VISIBLE APPLIANCE
CD	CD	VISIBLE ONLY STROBE, "CD" CANDELA INDICATED
		ADDRESSABLE INTERFACE MODULES
AIM	AIM	INTERFACE DEVICE TYPE. REFER TO LIST BELOW FOR TYPE AND SUBSCRIPT IDENTIFICATION AIM = ADDRESSABLE INPUT MODULE AIO = ADDRESSABLE INPUT / OUTPUT MODULE, PROVIDE NUMBER OF INPUTS AND OUTPUTS AS REQUIRED FOR NOTED FUNCTIONALITY AOM = ADDRESSABLE OUTPUT CONTROL MODULE IM = ISOLATION MODULE
		MANUAL FIRE ALARM & FIRE SUPPRESSION BOX TYPES
F		PULL STATION
A		SIGNAL INITIATING DEVICE - ABORT SWITCH
A		AEROSOL
CO2		CARBON DIOXIDE
CA		CLEAN AGENT
DL		DELUGE FIRE SPRINKLER
DK		DRILL KEY
DC		DRY CHEMICAL
HY		HYBRID (WATER & INERT GAS) FIRE EXTINGUISHING SYSTEM
FO		FOAM
HL		HALON
PRE		PREACTION
WM		WATER MIST
WC		WET CHEMICAL
WT		WATCHMAN'S TOUR STATION
		INTERFACE ALARM AND SUPERVISORY DEVICES
HT		HIGH TEMPERATURE SWITCH
LS		LEVEL DETECTOR SWITCH
LT		LOW TEMPERATURE SWITCH
MD		MAINTENANCE / DISCONNECT SWITCH
PS		PRESSURE DETECTOR / SWITCH
WF		FLOW DETECTOR / SWITCH
SOV		SUPERVISED SOLENOID VALVE
TSS		TEMPERATURE SUPERVISORY SWITCH
PIV		POST INDICATOR VALVE
VS		VALVE SUPERVISORY SWITCH
VS		VALVE WITH INTEGRAL SUPERVISORY SWITCH
W		WATER DETECTOR
		RELATED AND INTERFACED SYSTEM COMPONENTS
DCL		DOOR CLOSER
DH		DOOR HOLDER
		END OF LINE RESISTOR
x		FIRE SERVICE PHONE A = ACCESSIBLE H = HANDSET J = JACK FWS = FLOOR WARDEN STATION
SDCI		INTEGRATED SMOKE SENSOR AND DOOR CLOSER
SA		SYNC ADAPTER MODULE (STROBE SYNCHRONIZATION)
SS		SURGE SUPPRESSOR
S		DAMPER - FIRE / SMOKE
S		DAMPER - SMOKE



EQUIPMENT MOUNTING NOTES:

1. THESE MOUNTING DIMENSIONS COMPLY WITH THE FOLLOWING CURRENT CODES & STANDARDS:
   A. NFPA 72
   B. THE IBC BUILDING CODE
   C. ADA AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES
2. DO NOT INSTALL ANY EQUIPMENT OUTSIDE UNLESS IT IS LISTED FOR OUTDOOR USE.
3. ALL DEVICES & APPLIANCE HEIGHTS SHOULD BE CONSISTENT FOR THE ENTIRE PROJECT.
4. THE FIRE ALARM PANEL SHALL BE LOCATED IN A CLIMATE CONTROLLED AREA.
5. VERIFY ALL DIMENSIONS PROVIDED PER THE APPLICABLE SPECIFICATIONS AND STANDARDS FOR THIS PROJECT. INSTALLATION MUST COMPLY WITH LOCAL REQUIREMENTS AND GOVERNING MINIMUM STANDARDS FOR THIS SYSTEM.

MANUAL PULL STATION MOUNTING HEIGHT REQUIREMENTS (FROM OPERABLE PART OF DEVICE)

CODE	MINIMUM	MAXIMUM
NFPA-72	42"	48"
IBC	42"	48"
ADA	42"	* 44" / 48"

*WITH OBSTRUCTION EXTENDING FROM WALL 20"-25"/ WITHOUT OBSTRUCTION

1 TYPICAL EQUIPMENT & DEVICE MOUNTING GUIDELINES

NOT TO SCALE

01 SHEET LIST - FIRE ALARM

NUMBER	NAME
FA-001	FIRE ALARM LEGEND
FA-202	FIRE ALARM PLAN BL572 LEVEL 1
FA-203	FIRE ALARM PLAN BL572 LEVEL 2
FA-601	FIRE ALARM DETAILS
Grand total: 4	

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AV	AUDIO/VIDEO
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
C	CONDUIT
CAT	CATEGORY
CCTV	CLOSED CIRCUIT TELEVISION
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
COMM	COMMUNICATIONS
DC	DIRECT CURRENT
EF	EXHAUST FAN
EIA	ELECTRONICS INDUSTRIES ASSOCIATIONS
EMT	ELECTRICAL METALLIC TUBING
ETR	EXISTING TO REMAIN
FAA	FIRE ALARM ANNUNCIATOR
FACU	FIRE ALARM CONTROL UNIT
FBO	FURNISHED BY OTHERS
FO	FIBER OPTIC
FPP	FIBER OPTIC PATCH PANEL
FT	FEET OR FOOT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GC	GENERAL CONTRACTOR
JBOX	JUNCTION BOX
MAX	MAXIMUM
MM	MULTIMODE
MTD	MOUNTED
N.C.	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURES ASSOCIATION
MA	MANUFACTURER'S ASSOCIATION
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
NTS	NOT TO SCALE
OC	ON CENTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED,OWNER INSTALLED
PVC	POLYVINYL CHLORIDE
R	RELAY
RGS	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
SM	SINGLE-MODE
SPD	SURGE PROTECTION DEVICE
SPECS	CONTRACT SPECIFICATIONS
TR	TELECOMMUNICATIONS ROOM
TYP	TYPICAL
UL	UNDERWRITERS' LABORATORIES
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTS
VA	VOLT AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT
WP	WEATHERPROOF
WR	WEATHER-RESISTANT
XRL	EXISTING TO BE RELOCATED

FIRE STOPPING NOTES

1. MATERIALS: USE ONLY FIRE STOP PRODUCTS THAT HAVE BEEN UL 1479, ASTM E-814, OR UL 2079 TESTED FOR SPECIFIC FIRE RATE CONSTRUCTION CONDITIONS CONFORMING TO CONSTRUCTION ASSEMBLY TYPE, PENETRATING ITEM TYPE, ANNULAR SPACE REQUIREMENTS, AND FIRE RATING INVOLVED FOR EACH SEPARATE INSTANCE.
2. FOR SINGLE PENETRATIONS: A READY-TO-USE LATEX BASED INTUMESCENT SEALANT IS REQUIRED TO MAINTAIN THE FIRE RATING OF THE ASSEMBLY PENETRATED. THE SEALANT MUST HAVE UL LISTING FOR BOTH SLEEVED AND NON-SLEEVED APPLICATIONS.
3. FOR LARGE OPENINGS: CONTAINING MULTIPLE PENETRATIONS (2 OR MORE), A READY-TO-USE FOAM INTUMESCENT BLOCK MATERIAL MUST BE ABLE TO BE REMOVED AND REINSTALLED WITHOUT COMPROMISING FIRE PROTECTION INTEGRITY. COMPLY WITH MANUFACTURER'S RECOMMENDED PROCEDURES AND PRECAUTIONS. DO NOT USE DAMAGED OR EXPIRED MATERIALS.
4. MANUFACTURERS: JOHNS MANVILLE INTERNATIONAL, 3M BRAND, CSD SEALING SYSTEMS, HILTI, CIBA-GEIGY, HEAVY-DUTY/NEALSON. REFER TO DIVISION 7 FOR FURTHER REQUIREMENTS.
5. CONTRACTOR: PENETRATIONS IN FIRE RATED WALLS AND FLOORS/CEILINGS SHALL BE SEALED BY A CERTIFIED FIRE STOPPING CONTRACTOR.

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NO	REVISION	CHK	DATE
1	ADDENDUM 2		11/13/26

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20220522
INTROBA PROJECT #20213084.001

DATE ISSUED
OCT 29, 2026

DESIGNED	CHECKED	APPROVED
ZRM	CDH	CDH

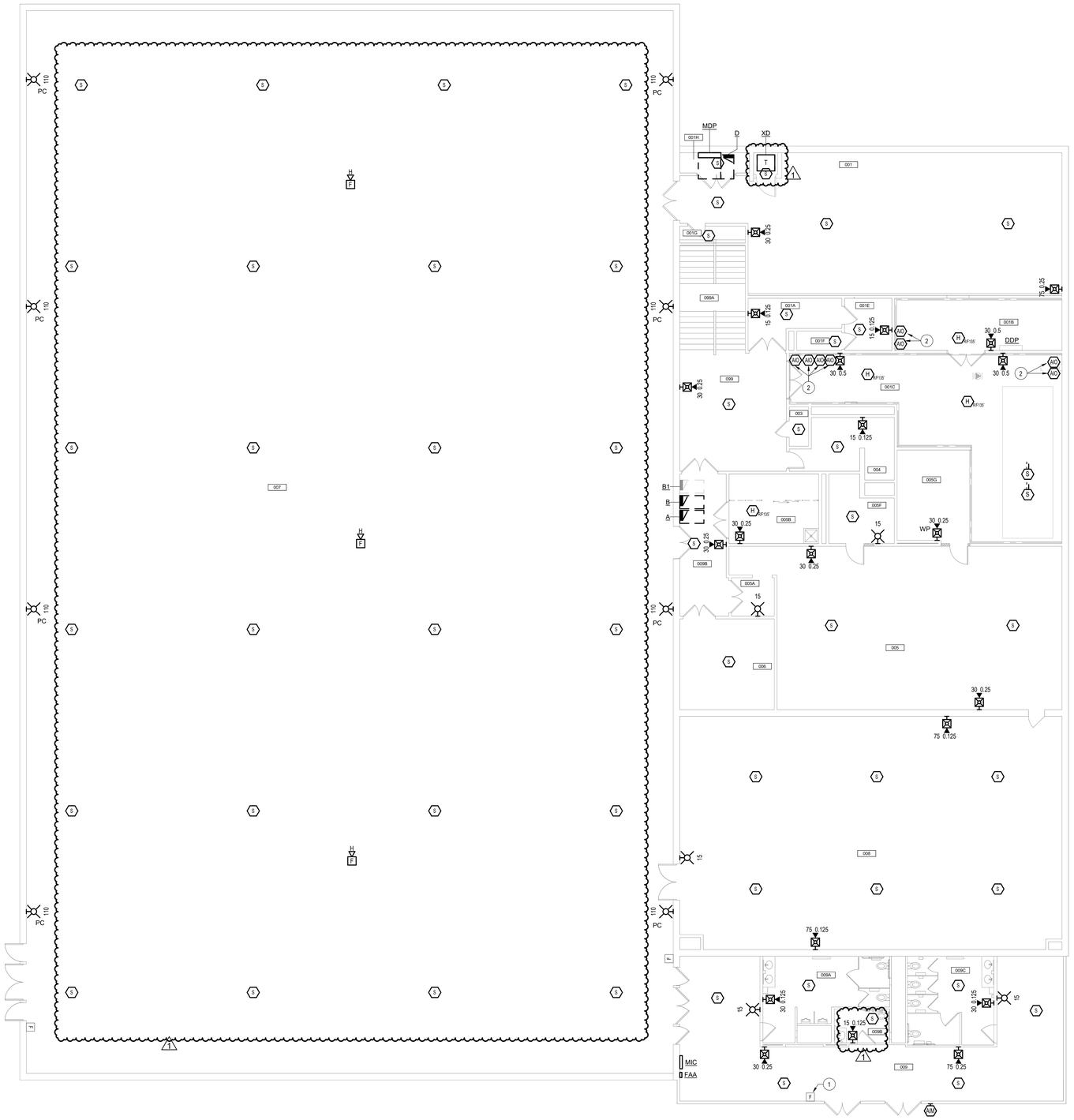
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DRAWING TITLE
FIRE ALARM LEGEND

DRAWING No.
FA-001

Autodesk Docs://20220522 IU BL572 Intercol. Ath Gym Chiller & Heating System/20220522 IU BL572 MEP Phase 2.rvt

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1 LEVEL 1 ELECTRICAL PLAN BL572
1/8" = 1'-0"

SHEET NOTES:

1 UTILIZE EXISTING FIRE ALARM PATHWAY FOR NEW FIRE ALARM DEVICE.
2 PROVIDE FIRE ALARM UNITS TO COMMUNICATE WITH HVAC CONTROLLER FOR UNIT SHUTDOWN OPERATION.

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250502
INTROBA PROJECT #0251.0084.001

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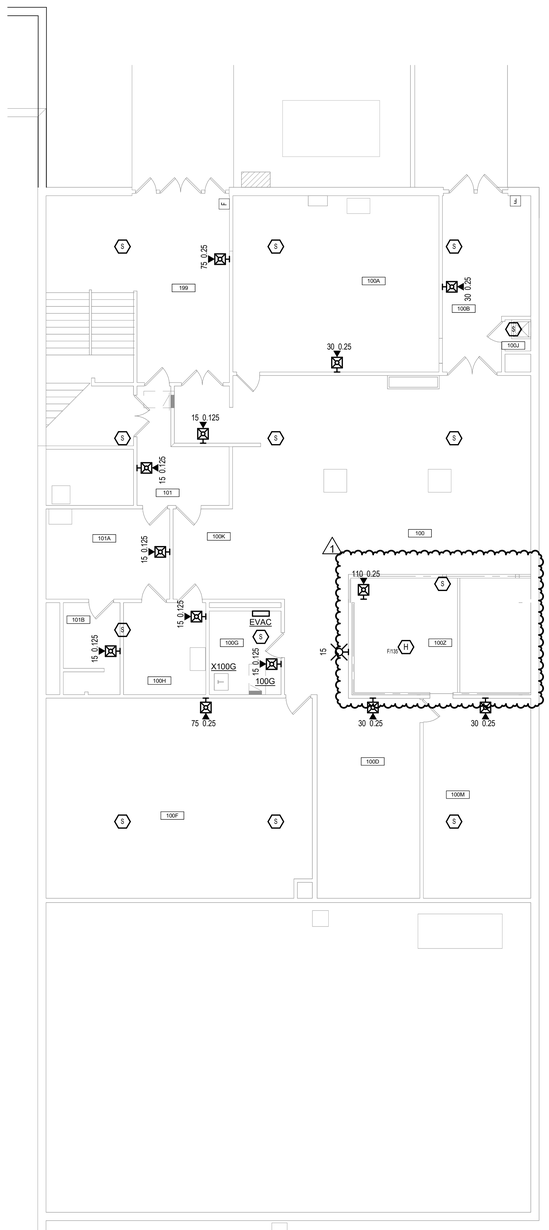
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DRAWING TITLE
FIRE ALARM PLAN BL572 LEVEL 1

DRAWING No.
FA-202

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1 LEVEL 2 ELECTRICAL PLAN BL572
1/8" = 1'-0"

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PROJECT
INTERCOLLEGIATE GYM - FIRST FLOOR HVAC AND LIGHTING UPGRADES

IU PROJECT #20250522
INTROBA PROJECT #0013084.001

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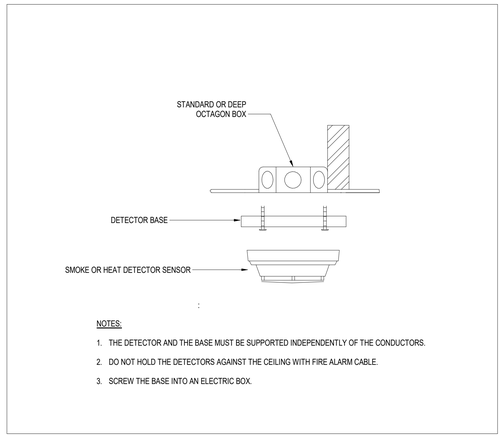
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DRAWING TITLE
FIRE ALARM PLAN BL572 LEVEL 2

DRAWING No.
FA-203

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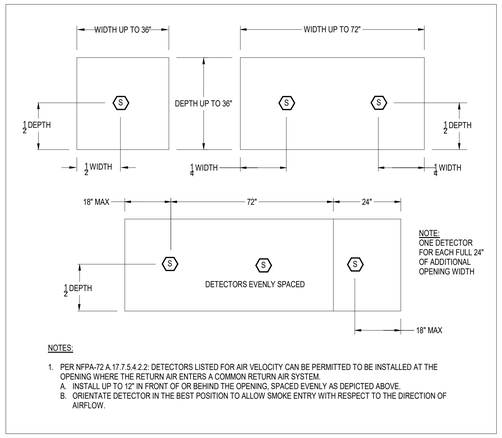


NOTES:

1. THE DETECTOR AND THE BASE MUST BE SUPPORTED INDEPENDENTLY OF THE CONDUCTORS.
2. DO NOT HOLD THE DETECTORS AGAINST THE CEILING WITH FIRE ALARM CABLE.
3. SCREW THE BASE INTO AN ELECTRIC BOX.

6 DRYWALL DETECTOR MOUNTING

NOT TO SCALE



NOTE:
ONE DETECTOR FOR EACH FULL 24" OF ADDITIONAL OPENING WIDTH

NOTES:

1. PER NFPA-72 A.17.7.5.4.2.2: DETECTORS LISTED FOR AIR VELOCITY CAN BE PERMITTED TO BE INSTALLED AT THE OPENING WHERE THE RETURN AIR ENTERS A COMMON RETURN AIR SYSTEM.
   A. INSTALL UP TO 12" IN FRONT OF OR BEHIND THE OPENING, SPACED EVENLY AS DEPICTED ABOVE.
   B. ORIENTATE DETECTOR IN THE BEST POSITION TO ALLOW SMOKE ENTRY WITH RESPECT TO THE DIRECTION OF AIRFLOW.

3 SMOKE DETECTOR INSTALLATION AT RETURN AIR OPENINGS

NOT TO SCALE

PLAN MARK	SYSTEM INPUT	SEQUENCE OF OPERATION: INITIATE AN ALARM CONDITION AT THE FACU PANEL AND REMOTE VOICE ANNUNCIATOR(S)	INITIATE A SUPERVISORY CONDITION AT THE FACU PANEL AND REMOTE VOICE ANNUNCIATOR(S)	INITIATE A TROUBLE CONDITION AT THE FACU PANEL AND REMOTE VOICE ANNUNCIATOR(S)	ACTIVATE AUDIBLE AND VISUAL ALARMS	ACTIVATE AUDIBLE ALARMS	AIR HANDLING UNIT SHUTDOWN	FIRE/SMOKE DAMPER CLOSURE	DOOR HOLD RELEASE	ACCESS CONTROL DOOR UNLOCKING	EXTERIOR HORN STROBE ACTIVATION	TRANSMIT ALARM CONDITION TO IU CAMPUS POLICE	TRANSMIT ALL NON-ALARM CONDITIONS TO THE IU CAMPUS CONTROL CENTER
INITIATING DEVICES	MANUAL PULL STATION	●			●				●	●		●	
	SMOKE DETECTOR, GENERAL	●			●				●	●		●	
	HEAT DETECTOR, GENERAL	●			●				●	●		●	
	DUCT SMOKE DETECTOR AT AHU		●				●						●
	DUCT SMOKE DETECTOR AT FIRE/SMOKE DAMPER		●					●					●
INTERFACE MODULES	HVAC CONTROL PANEL POWER MONITORING		●										●
	KNOX BOX		●										●
FA SYS.	FIRE ALARM SYSTEM TROUBLE			●									●

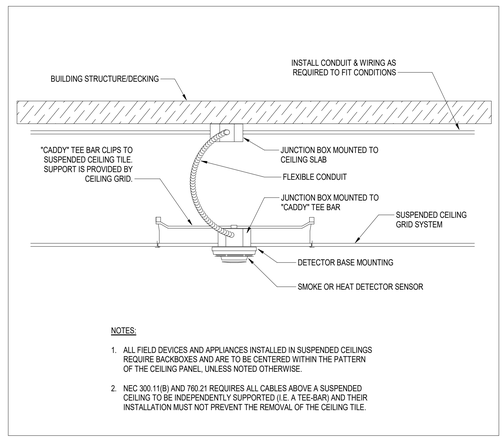
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MATRIX GENERAL NOTES

1. REFER TO FLOOR PLANS FOR DEVICE LOCATIONS AND ADDITIONAL INFORMATION.
2. REFER TO SPECIFICATION SECTION 28 3111 FOR DESCRIPTION OF FIRE ALARM SEQUENCE OF OPERATIONS.

1 FIRE ALARM SYSTEM MATRIX

NOT TO SCALE

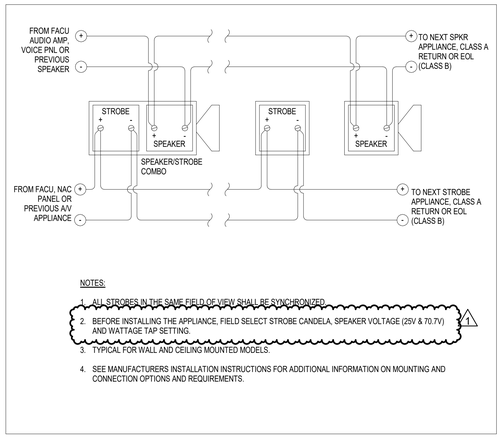


NOTES:

1. ALL FIELD DEVICES AND APPLIANCES INSTALLED IN SUSPENDED CEILINGS REQUIRE BACKBOXES AND ARE TO BE CENTERED WITHIN THE PATTERN OF THE CEILING PANEL, UNLESS NOTED OTHERWISE.
2. NEC 300.11(B) AND 760.21 REQUIRES ALL CABLES ABOVE A SUSPENDED CEILING TO BE INDEPENDENTLY SUPPORTED (I.E. A TEE-BAR) AND THEIR INSTALLATION MUST NOT PREVENT THE REMOVAL OF THE CEILING TILE.

7 DROP CEILING DETECTOR MOUNTING

NOT TO SCALE

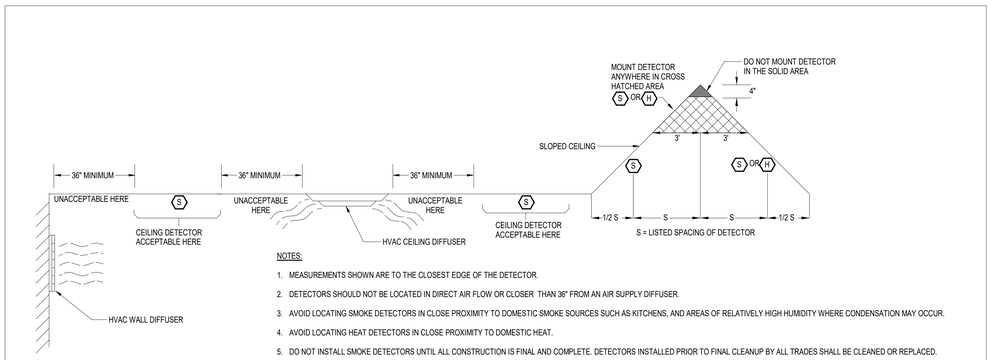


NOTES:

1. ALL STROBES IN THE SAME FIELD OF VIEW SHALL BE SYNCHRONIZED.
2. BEFORE INSTALLING THE APPLIANCE, FIELD SELECT STROBE CANDELA, SPEAKER VOLTAGE (25V & 70.7V) AND WATTAGE TAP SETTING. 1
3. TYPICAL FOR WALL AND CEILING MOUNTED MODELS.
4. SEE MANUFACTURERS INSTALLATION INSTRUCTIONS FOR ADDITIONAL INFORMATION ON MOUNTING AND CONNECTION OPTIONS AND REQUIREMENTS.

4 SPEAKER/STROBE CIRCUIT WIRING

NOT TO SCALE

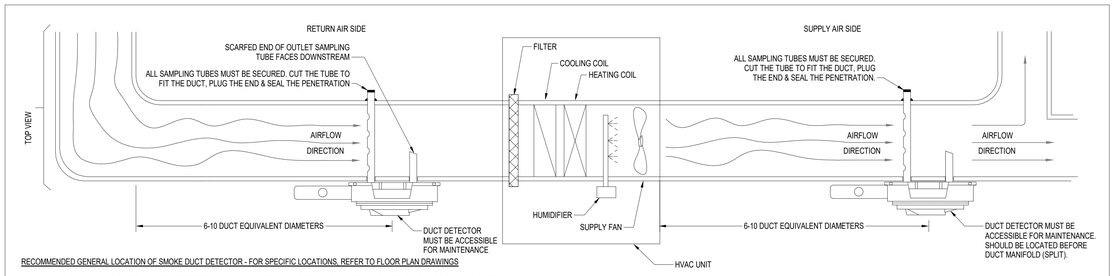


NOTES:

1. MEASUREMENTS SHOWN ARE TO THE CLOSEST EDGE OF THE DETECTOR.
2. DETECTORS SHOULD NOT BE LOCATED IN DIRECT AIR FLOW OR CLOSER THAN 36" FROM AN AIR SUPPLY DIFFUSER.
3. AVOID LOCATING SMOKE DETECTORS IN CLOSE PROXIMITY TO DOMESTIC SMOKE SOURCES SUCH AS KITCHENS, AND AREAS OF RELATIVELY HIGH HUMIDITY WHERE CONDENSATION MAY OCCUR.
4. AVOID LOCATING HEAT DETECTORS IN CLOSE PROXIMITY TO DOMESTIC HEAT.
5. DO NOT INSTALL SMOKE DETECTORS UNTIL ALL CONSTRUCTION IS FINAL AND COMPLETE. DETECTORS INSTALLED PRIOR TO FINAL CLEANUP BY ALL TRADES SHALL BE CLEANED OR REPLACED.
6. INSTALL ALL SMOKE DETECTORS ON THE CEILING, UNLESS OTHERWISE NOTED.
7. DO NOT MOUNT DETECTORS DIRECTLY ADJACENT TO FLUORESCENT LIGHTS. A RECOMMENDED DISTANCE IS 1 FOOT OR GREATER.
8. MOUNT SMOKE DETECTORS A MINIMUM OF 3FT OUTSIDE BATHROOMS WHICH HAVE SHOWERS.

5 TYPICAL DETECTOR MOUNTING GUIDELINES

NOT TO SCALE



RECOMMENDED GENERAL LOCATION OF SMOKE DUCT DETECTOR - FOR SPECIFIC LOCATIONS, REFER TO FLOOR PLAN DRAWINGS

1. PER NFPA 90A 6.4.2.1, LOCATE THE DUCT DETECTOR IN THE MAIN SUPPLY DUCT FOR UNITS PRODUCING AIRFLOW OF MORE THAN 2,000CFM, DOWNSTREAM FROM THE FILTERS & BLOWER. THIS STANDARD ALSO REQUIRES A DUCT DETECTOR MOUNTED ON THE RETURN SIDE FOR RETURN SYSTEMS WITH AIRFLOW GREATER THAN 15,000CFM WHICH SERVES MORE THAN ONE FLOOR OF THE BUILDING.
2. TO SAMPLE THE "SMOOTH" AIR STREAM AND RELIABLY DETECT SMOKE, THE DUCT DETECTOR SHOULD BE MOUNTED AT A LOCATION WITHIN A STRAIGHT DUCT RUN (GENERALLY 6-10 DUCT EQUIVALENT DIAMETERS), AND AVOID SHARP TURNS OR TRANSITION CONNECTORS IN THE DUCT.
3. DUCT DETECTORS USE SAMPLING TUBES WHICH MONITOR THE FULL WIDTH OF THE DUCT. THE SAMPLING HOLES MUST BE ORIENTED PROPERLY, THE END OF THE SAMPLING TUBE MUST BE PLUGGED. FOR DUCTS LARGER THAN 36-INCHES, THE SAMPLING TUBE WILL BE SUPPORTED VIA A SUPPORT HOLE IN THE DUCT AS SHOWN IN NFPA 72 A.17.7.5.5.2(b), AND THAT DUCT PENETRATION MUST BE SEALED. THE SAMPLING TUBE MUST BE INSTALLED ACROSS THE WIDEST PART OF THE DUCT.
4. TO MAINTAIN PROPER AIRFLOW THROUGH THE DUCT DETECTOR, THE EXHAUST TUBE MUST BE POSITIONED DOWNSTREAM OF THE SAMPLING TUBE.
5. DUCT DETECTORS SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

2 TYPICAL DUCT DETECTOR PLACEMENT

NOT TO SCALE

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DRAWING STATUS
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DRAWING TITLE
FIRE ALARM DETAILS

DRAWING No.
FA-601

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