

01 31 13.13 BACNET AND OTHER DEVICE INTERFACES INTEGRATION

1 - GENERAL

1.01 Related Sections

- 1.01.1.1 Section 25 00 13 - All Trades Work Responsibilities
- 1.01.1.2 Division 25 Responsibility Matrix

1.02 Definitions

- 1.02.1 BACnet Interface Device - Devices that use BACnet to communicate and represent data in BACnet format. They translate this data into one or more non-BACnet protocols.

1.03 Related Sections

- 1.03.1.1 Section 23 05 05 - BACnet and Other Device Interface Integration
- 1.03.1.2 Section 25 05 05 - BACnet and Other Device Interface Integration
- 1.03.1.3 Section 26 05 05 - BACnet and Other Device Interface Integration

1.04 Controls Coordination Meeting

- 1.04.1 Within 90 days of Contract award, the General Contractor shall convene a meeting with the Controls Contractor in the Contract Documents and with all Subcontractors (and/or Manufacturer's representatives) who are supplying equipment with packaged controls that are to be integrated with the BAS, to coordinate details of the integration.

- 1.04.1.1 Attendance at this meeting is mandatory.
- 1.04.1.2 This meeting may be done virtually and may be organized by Division.

- 1.04.2 The purpose of this meeting shall be to ensure that there are no uncoordinated auxiliary contacts for the supplied integration of the packaged controls (both networked devices and equipment with the Owner's BAS device network prior to submittal.

- 1.04.3 The Owner or a designated representative shall make arrangements to hold the meeting at the Place of the Work and shall be present at this meeting.

- 1.04.4 No Submittals for BACnet Interface Devices will be approved prior to this meeting.

1.05 Divisions responsible for supplying BACnet and non-BACnet Device Interfaces

- 1.05.1 The following Divisions have responsibility for providing equipment with BACnet and non-BACnet interfaces and other equipment in the Work.

- 1.05.1.1 Division 23.
- 1.05.1.2 Division 25.
- 1.05.1.3 Division 26.

- 1.05.2 The following Divisions have responsibility for networking BACnet/IP Interface Devices. The IP drops are shown on the BACnet Single Line Diagram attached as Schedule 3 to the Division 25 Specification.

- 1.05.2.1 Division 26 is responsible for providing conduit and pull wire.
- 1.05.2.2 Division 27, Electrical Contractor or designated Trade is responsible for installing the Cat 6 network cable from the device to the patch panel.
- 1.05.2.3 All Work shall be done to meet UL 864 UICL 10th Edition.

This Division 01 Section makes it clear that the GC is responsible for co-ordinating the Work of the Trades that have BACnet devices in their Scope of Work.

Co-ordination meeting to be set up by the GC is critical.

Major Trades with BACnet device responsibilities.

23 05 05 BACNET AND OTHER DEVICE INTERFACES INTEGRATION

1 - GENERAL

1.01 Related Sections

- 1.01.1 Section 01 31 13.31 - BACnet and Other Device Interface Integration
- 1.01.2 Section 25 00 13 - All Trades Work Responsibilities

1.02 Controls Coordination Meeting at the Call of the General Contractor

- 1.02.1 This Division and Equipment Suppliers carried by the Division shall attend the Controls Coordination Meeting specified in 01 31 13.13 and in Division 25. This Division shall require that all Contractors (and/or Manufacturer's representatives) who are supplying equipment with packaged controls that are to be integrated with the BAS, to coordinate details of the integration with the Division prior to submittal.
 - 1.02.1.1 The purpose of this meeting shall be to ensure that there are no conflicts in the integration of the supplied equipment packaged controls with the BAS. The meeting shall include the submission of equipment Shop Drawings.
 - 1.02.1.2 Submittals for these products shall not be approved prior to the meeting.
- 1.02.2 Following this meeting, this Division and the Subcontractors/Subtrades reporting to this Division are responsible for providing, via the Submittal process, the BACnet Interface Device(s) and the required Connections (aux contacts)
 - 1.02.2.1 Each Subcontractor/subtrade under this Division shall provide the Owner and all affected Contractors with details of the proposed interface, including the PICS for BACnet interfaces, hardware and software identifiers for the interface points, network topology, communication speeds, required network accessories, etc.

1.03 Shop Drawings and Submittals

- 1.03.1 The Equipment Supplier shall provide product data sheets illustrating the equipment packaged controls interface type, wiring requirements, and the BACnet Interface Device(s) to be integrated with the BAS device network in the Work. The data sheets shall detail:
 - 1.03.1.1 Equipment packaged controls interface type, wiring requirements.
 - 1.03.1.2 Equipment packaged controls native protocol (if not native BACnet, also provide a complete listing of the equipment packaged controls native data objects and their operating parameters).
 - 1.03.1.3 BACnet PICS listing for the BACnet Interface Device(s).
 - 1.03.1.4 BACnet Objects listing.
 - 1.03.1.5 Installation and configuration requirements (packaged controls interface and/or gateway)
 - 1.03.1.5.1 Where the BACnet Interface Device is a BACnet gateway, the Equipment Supplier shall provide a Modbus register list for review and markup by the Division. The list shall include a list of the mapped BACnet Object Types that represent the Modbus or proprietary registers/points.
- 1.03.2 If the Equipment Supplier is providing a proprietary protocol to BACnet gateway from an OEM supplier, both suppliers shall jointly warrant in writing that the gateway can successfully parse the equipment packaged controls native protocol to BACnet MS/TP or BACnet/IP. All gateways shall be authorized by and provided by the Division.

1.04 BACnet and Non-BACnet Interface

- 1.04.1 The following equipment shall be supplied with BACnet interfaces or shall come with aux contacts or shall have stick-built controls by Division 25:

This Major Trade shall co-ordinate their BACnet Work with the GC.

Attending the Co-ordination Meeting is critical for major trades and BACnet Equipment Suppliers

BACnet is added to the device at the factory. It is not added by Division 25 on site.

Submittals for both the equipment and BACnet device requirements must therefore be approved via Procore before the equipment can be ordered.

25 05 05 INTEGRATED AUTOMATION – COMMON WORK REQUIREMENTS – DEVICE INTERFACE INTEGRATION

1 - GENERAL

1.01 Related Sections

- 1.01.1 Section 01 31 13.13 – BACnet and Other Device Interface Integration
- 1.01.2 Section 23 05 05 – BACnet and Other Device Interface Integration
- 1.01.3 Section 25 00 13 – All Trades Work Responsibilities
- 1.01.4 Section 26 05 05 – BACnet and Other Device Interface Integration
- 1.01.5 Section 28 05 05 – BACnet and Other Device Interface Integration

1.02 General Requirements

- 1.02.1 Division 25 BAS Contractor is responsible for reading all the sections in this Specification as there is Work for this Division 25 BAS Contractor in each section.

2 - PRODUCTS

Not Used

3 - EXECUTION

Not Used

End of Section

This Major Trade shall co-ordinate their BACnet Work with the GC.

Attending the Co-ordination Meeting is critical for Division 25 is covered in each BACnet Interface Device Section.

BACnet is added to the device at the factory. It is not added by Division 25 on site. Only the ADi panel Modbus to BACnet Integration is provided by Division 25 on-site.

Submittals for both the equipment and BACnet device requirements must therefore be approved via Procore before the equipment can be ordered. The Submittal requirement applies to the ADi Modbus to BACnet gateway by Division 25.

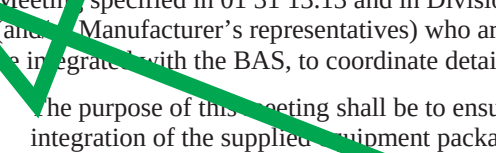
26 05 05 BACNET AND OTHER DEVICE INTERFACES INTEGRATION

1 - GENERAL

1.01 Related Sections

- 1.01.1 Section 01 31 13.51 - PA Net and Other Device Interface I
- 1.01.2 Section 25 00 13 - All Trades Work Responsibilities

1.02 Controls Coordination Meeting at the Call of the General Contractor

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- Attending the Co-ordination Meeting is critical for major trades and BACnet Equipment Suppliers.**
- 1.02.1 This Division and Equipment Suppliers carried by the Division shall attend the Controls Co-ordination Meeting specified in 01 31 13.13 and in Division 25. This Meeting shall be held with the Controls Contractors (and Manufacturer's representatives) who are supplying the equipment with packaged controls that are to be integrated with the BAS, to coordinate details of the interface.
- 1.02.1.1 The purpose of this meeting shall be to ensure that there is no unresolved issues regarding the integration of the supplied equipment packaged controls.
- 1.02.1.2 Submittals for these products shall not be approved prior to the meeting.
- 1.02.2 Following this meeting, this Division and the Subcontractors/Subtrade responsible for providing, via the Submittal process, the BACnet Connections (aux contacts)
- 1.02.2.1 Each Subcontractor/subtrade under this Division shall provide the Controls Contractors with details of the proposed interface, including the PICS for BACnet interfaces, hardware and software identifiers for the interface point, communication speeds, required network accessories, etc.

1.03 Shop Drawings and Submittals

- 1.03.1 The Equipment Supplier shall provide product data sheets illustrating the equipment packaged controls interface type(s) to be integrated with the BAS device network in the Work. The data sheets shall detail:
- 1.03.1.1 Equipment packaged controls interface type, wiring requirements.
 - 1.03.1.2 Equipment packaged controls native protocol (if not native BACnet, also provide a complete listing of packaged controls native data objects and their operating parameters).
 - 1.03.1.3 BACnet MCS listing for BACnet Interface Device(s).
 - 1.03.1.4 BACnet Objects listing.
 - 1.03.1.5 Installation and configuration requirements (packaged controls interface and/or gateway).
 - 1.03.1.5.1 Where the BACnet Interface Device is a gateway between a proprietary protocol such as Modbus, Equipment Supplier shall provide a Modbus register list for review and markup by the Commissioning Authority. The Equipment Supplier shall then provide a list of the mapped BACnet Object Types that represent the Modbus or proprietary registers/points.
- 1.03.2 If the Equipment Supplier is providing a proprietary protocol to BACnet gateway from an OEM supplier, both suppliers shall provide data sheets illustrating the equipment packaged controls interface type(s) to be integrated with the BAS device network in the Work. The data sheets shall detail:
- 1.03.2.1 Equipment packaged controls interface type, wiring requirements.
 - 1.03.2.2 Equipment packaged controls native protocol (if not native BACnet, also provide a complete listing of packaged controls native data objects and their operating parameters).
 - 1.03.2.3 BACnet MCS listing for BACnet Interface Device(s).
 - 1.03.2.4 BACnet Objects listing.
 - 1.03.2.5 Installation and configuration requirements (packaged controls interface and/or gateway).
 - 1.03.2.5.1 Where the BACnet Interface Device is a gateway between a proprietary protocol such as Modbus, Equipment Supplier shall provide a Modbus register list for review and markup by the Commissioning Authority. The Equipment Supplier shall then provide a list of the mapped BACnet Object Types that represent the Modbus or proprietary registers/points.
- 1.03.3 If the Equipment Supplier is providing a proprietary protocol to BACnet gateway from an OEM supplier, both suppliers shall provide data sheets illustrating the equipment packaged controls interface type(s) to be integrated with the BAS device network in the Work. The data sheets shall detail:
- 1.03.3.1 Equipment packaged controls interface type, wiring requirements.
 - 1.03.3.2 Equipment packaged controls native protocol (if not native BACnet, also provide a complete listing of packaged controls native data objects and their operating parameters).
 - 1.03.3.3 BACnet MCS listing for BACnet Interface Device(s).
 - 1.03.3.4 BACnet Objects listing.
 - 1.03.3.5 Installation and configuration requirements (packaged controls interface and/or gateway).
 - 1.03.3.5.1 Where the BACnet Interface Device is a gateway between a proprietary protocol such as Modbus, Equipment Supplier shall provide a Modbus register list for review and markup by the Commissioning Authority. The Equipment Supplier shall then provide a list of the mapped BACnet Object Types that represent the Modbus or proprietary registers/points.

1.04 BACnet and Non-BACnet Interfacing

- 1.04.1 The following equipment shall be supplied with BA Get interface or shall come with aux contacts or shall have stick-built controls to be approved via Procore before

This Major Trade shall co-ordinate their BACnet Work with the GC.

Attending the Co-ordination Meeting is critical for major trades and BACnet Equipment Suppliers.

BACnet is added to the device at the factory. It is not added by Division 25 on site.

Submittals for both the equipment and BACnet device requirements must therefore be approved via Procore before the equipment can be ordered.

25 00 13 INTEGRATED AUTOMATION – GENERAL REQUIREMENTS – ALL TRADES WORK RESPONSIBILITIES

1 - GENERAL

1.01 Application

- 1.01.1 This Specification Section applies to Mechanical and Electrical Contractor(s) or Trades as well as all Equipment Suppliers who are responsible for providing BACnet Interface Devices and auxiliary contacts with their equipment per this Specification.
- 1.01.2 This Specification Section also part of the Work of the Division 25 BAS Contractor.

1.02 Related Sections

- 1.02.1 Section 23 05 93.
- 1.02.2 Section 23 09 00.

1.03 General Requirements

- 1.03.1 The Specification shall be read as a whole by all parties concerned. Sectioning of the Specification is for convenience only; each section may contain less or more than the completed Work of any Trade.
- 1.03.2 Sections of these Specifications are not intended to delegate functions or to delegate Work and supply to any specific Trade. The Work shall include all labor, materials, equipment and tools required for a complete and working installation as described in the Drawings and these Specifications.
- 1.03.3 Perform all Work as outlined herein and shown on the Drawings and outlined in the Specifications. Provide all materials, tools and labor to complete the installation and commission the Work, to the satisfaction of the Owner.
- 1.03.4 The Work shall be performed under the supervision of experienced project managers/co-coordinators, all of whom shall be properly trained and qualified for this Work.
- 1.03.5 Improper installation or erection, or the use of unapproved materials, due to failure in complying with the requirements outlined in the Contract Documents, authorizes the Owner to require removal and re-installation at no additional cost to the Work.
- 1.03.6 The Contract Documents shall be interpreted according to the laws of the Place of the Work.
- 1.03.7 Contract Documents include all Drawings and documents prepared for the Work.
- 1.03.8 Where an instruction is given in the Contract Documents, it shall be deemed to be an instruction given to the Division 25 BAS Contractor and Equipment Suppliers.
- 1.03.9 Where a list of items to be provided is given in the Specifications, the Division 25 BAS Contractor and Equipment Suppliers shall provide the items in a series of subclauses). Where there is a reference or made to the clause, any references to Division 28 in the Contract Documents shall refer to Division 26.
- 1.03.10 In this Division "Provide" means to supply, install, and set system to operate to the satisfaction of the Lake County BAS Consultant. If commissioning is specified, Division 25 BAS Contractor shall commission system as specified, to fulfil the intended function to the satisfaction of the Owner.
- 1.03.11 All non-IP network cabling Work shall be done by Division 25 BAS Contractor and Equipment Suppliers in accordance with TIA-862 latest Edition. All conduit and pathways to be installed in the Work shall be done accordance with the requirements outlined in Division 26. All BACnet MS/TP devices shall meet the requirements of EIA-485. The Division 25 BAS Contractor and Equipment Suppliers shall run all wiring in BLUE conduit. Free air wiring and wiremould on finished walls and ceilings may only be used with written permission of the Owner.
- 1.03.12 The following Divisions contain BACnet Interface Devices that will be connected to the Owner's BACnet Internetwork for the Work:
- 1.03.12.1 Division 23.
- 1.03.12.2 Division 26.
- 1.03.12.3 Any references to Division 28 in the Contract Documents shall refer to Division 26.
- 1.03.13 The term BACnet Master/Slave has been replaced by Manager/Subordinate.
- 1.03.14 The terms Modbus Master and Modbus Manager are used interchangeably in the Contract Documents.
- 1.03.15 The terms Modbus Slave and Modbus Subordinate are used interchangeably in the Contract Documents.

The 25 00 13 All Trades Work Responsibilities section applies to All Trades providing BACnet products and services.

SECTION 262923 - VARIABLE-FREQUENCY MOTOR CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes separately enclosed, preassembled, combination for speed control of three-phase, squirrel-cage induction motors.
- B. Related Sections:
 - 1. Section 262419 "Motor-Control Centers" for VFCs installed in motor-control centers.
 - 2. Section 25 20 26.29.23 Integrated Automation – BACnet Interface Device (Gateway/Native BACnet Devices) Variable Frequency Motor Controllers (All Types).
 - 3. 25 00 13 Integrated Automation – General Requirements – All Trades Work responsibilities.
 - 4. Division 25 Schedule 2 - BACNET SINGLE LINE DIAGRAM AND RESPONSIBILITY MATRIX (APPLIES TO ALL TRADES).

1.2 DEFINITIONS

- A. CE: Conforme Europeene (European Compliance).
- B. CPT: Control power transformer.
- C. DDC: Direct digital control.
- D. EMI: Electromagnetic interference.

The 25 00 13 All Trades Work Responsibilities section applies to All Trades providing BACnet products and services.

Section 262923 covers the VFD equipment requirements.

Section 25 20 26.29.23 is a companion section that covers the BACnet Interface requirements for the VFD.

All BACnet devices have these Division 25 companion sections.

These Division 25 sections have their own Procore entry.

25 20 26.29.23 INTEGRATED AUTOMATION – BACNET INTERFACE DEVICE (GATEWAYS/NATIVE BACNET DEVICES) – VARIABLE FREQUENCY DRIVES (ALL TYPES)

1 - GENERAL

1.01 Scope of Work

1.01.1 This Specification section outlines the Work requirements for the Division 25 BAS Contractor, Division 23 and Equipment Supplier (referred to in this Specification as the Equipment Supplier) responsible for the BACnet Interface Device for the equipment outlined in this section.

1.01.1.1 Division 25 BAS Contractor is responsible for the BACnet Interface Devices for the VFDs and is designated as the Equipment Supplier in this Specification section.

1.01.1.2 The terms VFC and VFD are used interchangeably in this Specification.

1.01.2 The General Contractor shall convene a meeting (with the Equipment Supplier and Manufacturer's representative) who are supplying equipment to coordinate work for this BACnet Interface Device.

1.01.3 The Owner or his designated representative shall be present at this meeting. Division 25 BAS Contractor shall be present at this meeting.

1.01.4 Each Division 25 BAS Contractor and/or Equipment Supplier providing BACnet Interface Device(s) in this section shall provide the Owner and all other effected Division 25 BAS Contractors, with details of the proposed interface, including:

1.01.4.1 PICS for BACnet equipment details the BACnet BIBBs, BACnet Object Types and BACnet services supported.

1.01.4.2 If a gateway provide details on the proprietary protocol used in the Equipment Supplier's equipment and the BACnet protocol used in the gateway.

1.01.4.3 Hardware and software object list using the object list in this section as a guide. This would include object instances for BACnet, register mapping numbers for Modbus, SNVTs for LonMark or other identifiers.

1.01.4.4 Networking requirements including any network address range restrictions, bus communication speeds and any required network accessories.

1.01.4.5 Communications and power wiring requirements for the gateway and ancillary equipment to be terminated into the BACnet Interface Device (valves, dampers, sensors, etc.).

1.01.4.6 Equipment installation and mounting requirements if the device is not integral to the Equipment Supplier's equipment.

1.01.4.7 AutoCAD files to be used to create the BAS graphics.

1.01.4.8 The purpose of this meeting shall be to insure there are no unresolved issues regarding the integration of these products into the BAS Device Network.

1.01.5 Once this information is reviewed and approved, the Equipment Supplier shall provide a formal Submittal on the BACnet Interface Device via the Shop Drawing process.

1.01.6 Submittals for these products shall not be approved prior to the completion of this meeting.

1.01.7 If the Equipment Supplier is providing a BACnet gateway device from an OEM Equipment Supplier that maps proprietary points to BACnet Object Types, both Equipment Suppliers shall jointly warrant in writing that the gateway can successfully pass the proprietary protocol used by the packaged controls that control the equipment.

1.01.8 The BACnet Interface Device shall permit Division 25 BAS Contractor to plot the BACnet objects into a BAS device so graphics, trends, alarms and schedules can be provided for these mapped points.

1.01.8.1 Division 25 BAS Contractor shall map the points from this BACnet Interface Device to BACnet BAS device so graphics, trends, alarms and schedules can be provided for these mapped points.

1.01.8.2 Division 25 shall create graphics, set up trends or add schedules for this BACnet Interface Device per the requirements in Division 25.

1.02 Shop Drawings

Section 25 20 26.29.23 is a companion section that covers the BACnet Interface requirements for the VFD.

All BACnet devices have these Division 25 companion sections.

These Division 25 sections have their own Procure entry.

There is a Submittal track for the 26 29 23 VFD.

Create a separate 25 20 26.29.23 Submittal track in Procure for BACnet devices.

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AIR HANDLING UNIT SCHEDULE																																				
TAG	LOCATION	AREA SERVED	SUPPLY FAN SECTION				COOLING COIL																HEATING COIL						FILTER		UNIT WEIGHT (LBS)	UNIT DIMENSION L x W x H (INCH)	BASED ON MANUFACTURER AND MODEL	REMARKS		
			NO. OF FANS	CFM	E.S.P (IN. W.G.)	T.S.P. (IN. W.G.)	MOTOR DATA (per fan)			SENSIBLE CAPACITY (MBH)	TOTAL CAPACITY (MBH)	AIR				WATER				FACE AREA (SQ.FT)	MAX FPM	ROWS/FI N PER FT.	CAPACITY (MBH)	AIR		WATER		FACE AREA (SQ.FT.)	ROWS/FI N PER FT.	PRE-FILTER					FINAL FILTER	
							KW	RPM	V/Ph			DB (F)	WB (F)	DB (F)	WB (F)	FLOW (GPM)	EWT (F)	LWT (F)	P.D. (FT)					DB (F)	WB (F)	DB (F)	WB (F)									FLOW (GPM)
AHU-5	BABCOX - 2ND FLR.	2ND FLOOR - MED CELL AREA	2	4,500	1.8		2.5	3153	480/3	167.49	118.72	80.0	67.0	55.6	55.2	34	45	55	3.8	10.41	432	4/12	178.9	30.0	66.8	17	180	159	3	22.5	1/6	MERV-8	MERV-13	195 x 114 x 50	ENGINEERED AIR	SEE NOTES
AHU-7	BABCOX - 2ND FLR.	2ND FLOOR - JAIL ADMIN AREA	2	5,000	2.1		3.9	3490	480/3	172.1	115.80	77.0	66.0	55.3	54.8	35	45	55	3.2	9.3	533	8/6	236.9	40.0	66.3	26	180	161	1.8	1/12	MERV-8	MERV-13	137 x 55 x 42	ENGINEERED AIR	SEE NOTES	
NOTES: 1. UNIT SHALL HAVE 2" CASING. 2. PROVIDE OUTSIDE AND RETURN DAMPERS. 3. AHU CONSTRUCTION SHALL BE 2" R14 U/1150 THERMO-COMPOSITE CONSTRUCTION OR 4" ALL ALUMINUM CONSTRUCTION. SEE SPEC SECTION 237313 FOR DETAILS. 4. PROVIDE AIRFLOW MONITORING STATION ON OUTDOOR AIR INTAKE AND CONNECT BAS. 5. PROVIDE FREEZESTAT ON ALL HW AND CHW AHU COILS. REFER TO PUMP SCHEDULE FOR PUMP DETAILS AND DETAIL SHEETS FOR PIPING ARRANGMENT. 6. ALL UNITS TO MATCH DIMENSIONS IN THE SCHEDULE EXACTLY TO MAXIMIZE SPACE IN THE MECHANICAL ROOM. PROVIDE ALUMINUM TREADPLATE FLOOR FOR THE FOLLOWING SECTIONS: FAN SECTION, COIL SECTION, DAMPER SECTION, AND FILTER SECTION. 7. AHU-5 SHALL BE A DUAL DUCT AHU WITH (1) COLD DECK AND (1) NEUTRAL DECK WITH INNERGY TECH WRAP AROUND HEAT PIPE SYSTEM PER SPEC SECTION 237200. 8. PROVIDE DUAL DIRECT DRIVE PLENUM FANS, EACH FAN TO HAVE INDIVIDUAL VFD. PROVIDE A SEPARATE VFD FOR EACH FAN. 9. UNITS TO SHIP IN MODULES TO FIT IN THROUGH EXISTING WALL OPENING. 10. PROVIDE MIN. 6" CONCRETE BASE AND BASE RAILS UNDER ALL AHU'S. CONFIRM COOLING COIL DRAIN TRAP DIMENSIONS AND INSTALLATION PRIOR TO INSTALLATION OF CONCRETE BASE. 11. PROVIDE SMOKE DETECTOR IN RETURN AIR DUCT. 12. THERE IS NO BACNET INTERFACE DEVICE FOR THIS UNIT. ALL CONTROLS ARE STICK-BUILT. SEE DIVISION 25 FOR DETAILS. ALL STICK-BUILT CONTROLS SHALL BE CONNECTED TO A UL-LISTED BAS PANEL TO MAINTAIN THE UL CHAIN OF CUSTODY FOR THE AHU. THE ONLY OTHER BACNET MS/TP NETWORKED DEVICE ON THE AHU IS THE AIRFLOW STATION. THIS DEVICE SHALL BE EBTRON GOLD BACNET MS/TP OR APPROVED EQUAL..... EQUAL. THIS DEVICE DOES NOT HAVE TO BE UL-LISTED AS IT IS NOT PART OF THE SMOKE CONTROL SEQUENCE. SEE DIVISION 25 BACNET SINGLE LINE DIAGRAM FOR DETAILS. 13. FOR AHU-5 SEE ADDITIONAL INFORMATION ON WRAP-AROUND HEAT PIPE SCHEDULE.																																				

AHU-WRAP-AROUND HEAT PIPE SCHEDULE																					
TAG	LOCATION	AREA SERVED	CFM	PRE-COOL PERFORMANCE				WRAP COIL PERFORMANCE						RE-HEAT PERFORMANCE				HEAT RECOVERY (MBH)	MAX FACE VELOCITY (FPM)	BASED ON MANUFACTURER AND MODEL	REMARKS
				AIR				AIR				COOLING COIL		AIR							
				EAT	LAT		EAT	LAT		EWT/LWT	P.D.	EAT	LAT								
				DB (F)	WB (F)	DB (F)	WB (F)	DB (F)	WB (F)	DB (F)	WB (F)	(F)	GPM	(FT)	DB (F)	WB (F)	DB (F)	WB (F)			
AHU-5	BABCOX - 2ND FLR.	2ND FLOOR - MED CELL AREA	4500	80.0	67.0	64.9	62.0	64.9	62.0	54.9	54.7	44/55.4	18.9	7.8	54.9	54.7	70.0	60.3	73.47	332	ENGINEERED AIR
NOTES: 1. REFER TO NOTES ON AHU SCHEDULE. 2. THERE IS NO BACNET INTERFACE DEVICE FOR THIS UNIT. ALL CONTROLS ARE STICK-BUILT. SEE DIVISION 25 FOR DETAILS. ALL STICK-BUILT CONTROLS SHALL BE CONNECTED TO A UL-LISTED BAS PANEL TO MAINTAIN THE UL CHAIN OF CUSTODY FOR THE AHU. THE ONLY OTHER BACNET MS/TP NETWORKED DEVICE ON THE AHU IS THE AIRFLOW STATION. THIS DEVICE SHALL BE EBTRON GOLD BACNET MS/TP OR APPROVED EQUAL. THIS DEVICE DOES NOT HAVE TO BE UL-LISTED AS IT IS NOT PART OF THE SMOKE CONTROL SEQUENCE. SEE DIVISION 25 BACNET SINGLE LINE DIAGRAM FOR DETAILS.																					

ENERGY RECOVERY UNIT																											
TAG	LOCATION	SERVICE	CFM	P.D. IN. WC SUPPLY	P.D. IN. EC EXHAUST	MAX FACE VELOCITY (FPM)	WINTER CONDITIONS								SUMMER CONDITIONS								DIMENSION H x W x L (INCH)	BASED ON MANUFACTURER	REMARKS		
							RETURN EAT		EXHAUST LAT		SUPPLY EAT		SUPPLY LAT		TOTAL EFFECTIVENESS	RETURN EAT		EXHAUST LAT		SUPPLY EAT		SUPPLY LAT				TOTAL EFFECTIVENESS...	
							*F DB	*F WB	*F DB	*F WB	*F DB	*F WB	*F DB	*F WB		*F DB	*F WB	*F DB	*F WB	*F DB	*F WB	*F DB					*F WB
ERU-5	2ND FLOOR MECH. ROOM	AHU-5	2000	0.3	0.67	242.0	70.0	56.7	23.0	23.0	-1.6	-2.0	45.8	39.9	62.27%	75.0	62.0	86.4	68.7	92.1	72.8	80.8	66.7	59.32%	60 x 58 x 56	DAIKIN - CAC006GVAC	SEE NOTES

NOTES:

1. PROVIDE WITH OUTSIDE AIR DAMPER.

2. ERU CONSTRUCTION SHALL BE 2" R14 U/150 THERMO-COMPOSITE CONSTRUCTION OR 4" ALL ALUMINUM CONSTRUCTION.

3. PROVIDE INNERGY TECH TOTAL ENTHALPY PLATE PER SPEC SECTION 237200.

4. PROVIDE FILTERS ON BOTH SIDES OF THE ENTHALPY PLATE.

5. THERE IS NO BACNET INTERFACE DEVICE FOR THIS UNIT. ALL CONTROLS ARE STICK-BUILT. SEE DIVISION 25 FOR DETAILS. ALL STICK-BUILT CONTROLS SHALL BE CONNECTED TO A UL-LISTED BAS PANEL TO MAINTAIN THE UL CHAIN OF CUSTODY FOR THE AHU.

FAN SCHEDULE												
TAG	LOCATION	AREA SERVED	CFM	S.P. (IN. W.G.)	CONSTRUCTION DATA		ELECTRICAL DATA			UNIT WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
					FAN TYPE	DRIVE	HP	RPM	V / PH			
RF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	2,250	0.50	INLINE	DIRECT	0.75	1,725	480/3	150	COOK - 165SQNH17D VF2	SEE NOTES
SF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	2,000	1.50	INLINE	DIRECT	1.5	1,725	480/3	185	COOK - 180SQNH17D VF2	SEE NOTES
EF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	1,850	1.75	INLINE	DIRECT	1.5	1,725	480/3	185	COOK - 180SQNH17D VF2	SEE NOTES
REF-7	2ND FLOOR MECHANICAL ROOM	AHU-7	4,000	0.75	INLINE	DIRECT	3.0	1,725	480/3	301	COOK - 210SQNH17D VF2	SEE NOTES
NOTES: 1. EXHAUST FAN SHALL INCLUDE AN ELECTRICAL DISCONNECT SWITCH LOCATED AT UNIT. 2. MOTOR VFD RATED WITH SHAFT GROUNDING PROTECTION.												

FAN SCHEDULE												
TAG	LOCATION	AREA SERVED	CFM	S.P. (IN. W.G.)	CONSTRUCTION DATA		ELECTRICAL DATA			UNIT WEIGHT (LBS)	MANUFACTURER AND MODEL	REMARKS
					FAN TYPE	DRIVE	HP	RPM	V / PH			
RF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	2,250	0.50	INLINE	DIRECT	0.75	1,725	480/3	150	COOK - 165SQNH17D VF2	SEE NOTES
SF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	2,000	1.50	INLINE	DIRECT	1.5	1,725	480/3	185	COOK - 180SQNH17D VF2	SEE NOTES
EF-5	2ND FLOOR MECHANICAL ROOM	AHU-5	1,850	1.75	INLINE	DIRECT	1.5	1,725	480/3	185	COOK - 180SQNH17D VF2	SEE NOTES
REF-7	2ND FLOOR MECHANICAL ROOM	AHU-7	4,000	0.75	INLINE	DIRECT	3.0	1,725	480/3	301	COOK - 210SQNH17D VF2	SEE NOTES

NOTES:

1. EXHAUST FAN SHALL INCLUDE AN ELECTRICAL DISCONNECT SWITCH LOCATED AT UNIT.

2. MOTOR VFD RATED WITH SHAFT GROUNDING PROTECTION.

3. PROVIDE WITH VFD.

4. PROVIDE WITH HANGERS & VIBRATORS ISOLATORS. ALONG WITH THE EQUIPMENT SUPPLIER, POINT NAMES AND DEVICE NAMES SHALL BE WHITELISTED IN THE EQUIPMENT SUPPLIER'S BACNET INTERFACE DEVICE SO THE NAMES CAN BE CHANGED TO THE EQUIPMENT THAT DO NOT APPLY TO THE WORK. IF THERE ARE POINTS IN THE EQUIPMENT SUPPLIER'S BACNET INTERFACE DEVICE IF THEY ARE NOT USED IN THE WORK. DIVISION 25 IS RESPONSIBLE FOR NETWORKING TO THE EQUIPMENT SUPPLIER'S BACNET INTERFACE DEVICE. THE BASIS OF DESIGN FOR THIS DEVICE IS ABB ACH580. ALL VFDs SHALL COME WITH THE EQUIVALENT OF AN ABB ACH580 ELECTRONIC BYPASS OR APPROVED EQUAL. PROVIDE A SEPARATE DISCONNECT IF THE ELECTRONIC BYPASS DOES NOT TERMINATE POWER TO THE VFD SO IT CAN BE LOCKED OUT AND TAGGED OUT FOR SERVICE. APPROVED VFD SUPPLIERS ARE ABB, DANFOSS AND YASKAWA. THE VFD SHALL HAVE UL-APPROVED FIREMAN'S OVERRIDE CONTACTS SO DIVISION 25 CAN LAND FIRE ALARM CONTROL WIRING ON THESE CONTACTS TO MEET THE SMOKE CONTROL SEQUENCE OF OPERATIONS SPECIFIED IN THE CONTRACT DOCUMENTS. DIVISION 25 SHALL CONNECT THESE DEVICES TO A NEW MS/TP TRUNK OF DEVICES THAT IS IN TURN CONNECTED TO A NEW UL-LISTED BACNET/TP PANEL. SEE DIVISION 25 BACNET SINGLE LINE DIAGRAM FOR DETAILS. DIVISION 25 SHALL PROVIDE HARDWIRED CONNECTIONS FOR VFD ENABLE, VFD SPEED AND VFD COMMON ALARM. ALL OTHER POINTS ARE TRANSMITTED OVER THE...

The Drawings have a *Cliff Notes* Summary for the BACnet devices like the VFD.



Syska HENNESSY GROUP

A member company of SH Group, Inc.

Syska Hennessy Group, Inc.
10 S. Riverside Plaza
Suite 1810
Chicago, IL 60606
Tel: 312.588.3590
Fax: 312.588.3578
www.syska.com

CONSULTANTS:

Robert H. Babcox Justice Complex
20 South County Street
Waukegan, IL 60085
Medical Unit AHU Replacement

ie for Bid
ed for Owner Review
ed for Owner Review
5 CD
DESCRIPTION
008058
NESSY GROUP

SCHEDULES

NUMBER:

1.M011

From Division 28 BACnet One-Line Diagram on Page 6 below.

Simplex shall change the existing Fire Alarm Panel programming to allow for all remaining AHUs in Building G Network Riser Diagram to shut down if the space zones 1-8, 11-14 and 31-32 are in alarm so JCI no longer has to perform this function. This will allow the existing non-UL 864 UUKL BAS controls to remain in place.

NETWORK RISER

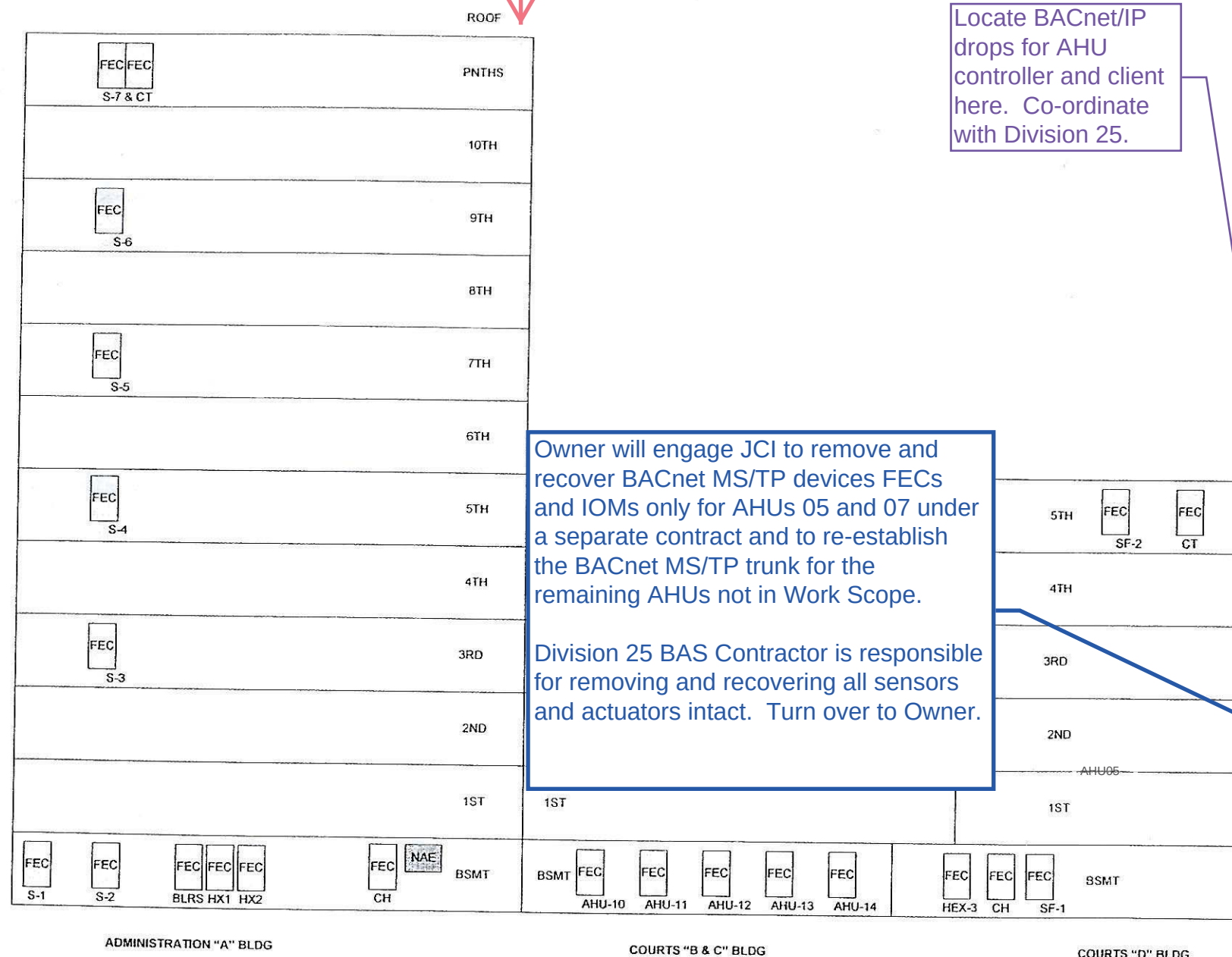
Locate BACnet/IP drops for AHU controller and client here. Co-ordinate with Division 25.

The BAS work shall be done to meet UL864 UUKL 10th Edition requirements.

The existing BAS work done under UL864 UUKL 9th Edition requirements shall remain in place undisturbed.

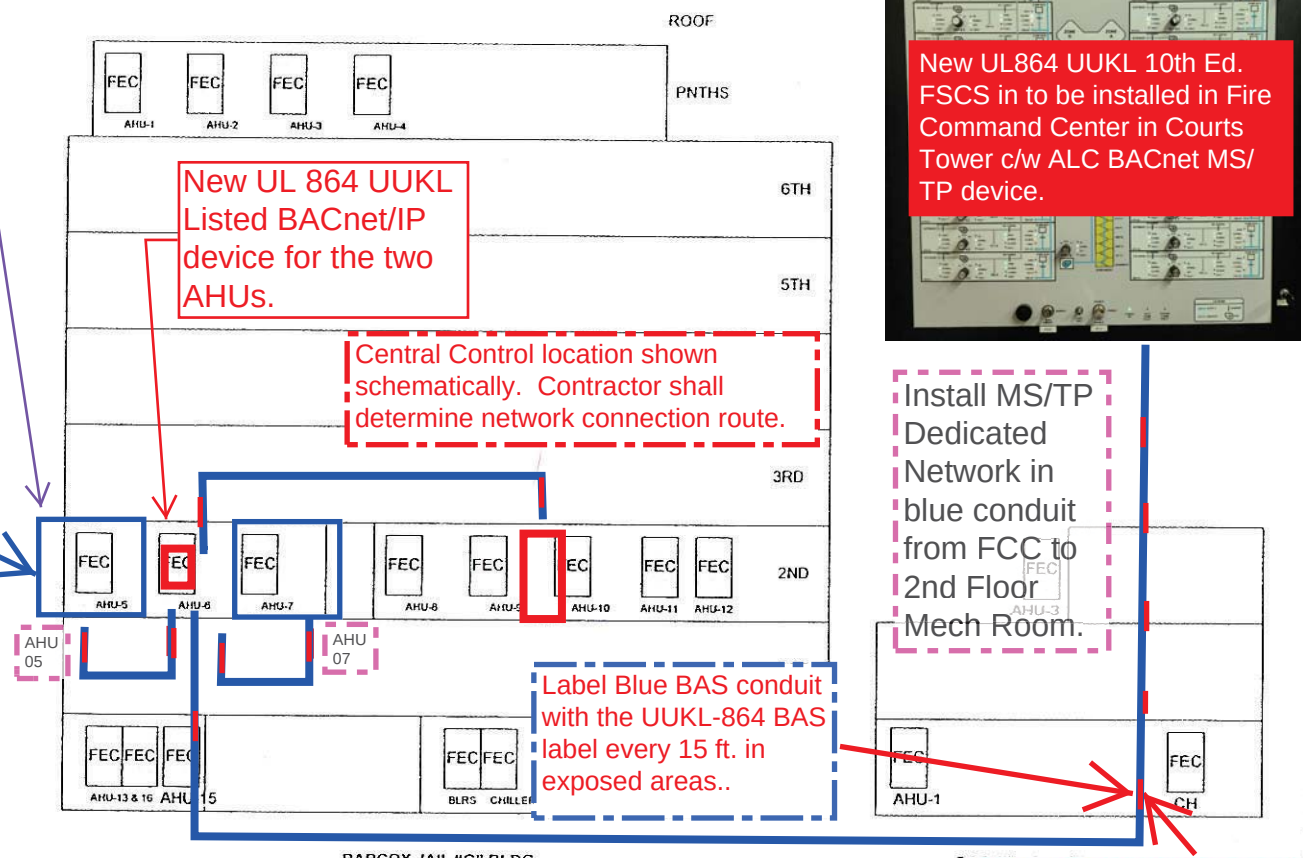
Any new Work shall not be connected to this existing Work.

See photos below showing Central Control BAS panel location and networking arrangements.



Owner will engage JCI to remove and recover BACnet MS/TP devices FECs and IOMs only for AHUs 05 and 07 under a separate contract and to re-establish the BACnet MS/TP trunk for the remaining AHUs not in Work Scope.

Division 25 BAS Contractor is responsible for removing and recovering all sensors and actuators intact. Turn over to Owner.



New UL864 UUKL 10th Ed. FSCS in to be installed in Fire Command Center in Courts Tower c/w ALC BACnet MS/TP device.

UL 864 UUKL BAS

Lake County Smoke Evac and AHU BACnet Single Line Diagram

AHU Plant BACnet Interface Devices

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AS-BUILTS
10/01/2008

See Responsibility Matrix that follows for additional details on Work Responsibilities by BACnet Interface Device Type

REFERENCE DRAWING		NO.		REVISION-LOCATION		ECH		DATE		BY	
Sales Engineer		Project Manager		Application Engineer		DRAWN		APPROVED		DATE	
Steve Mountz						DATE		DATE		DATE	
Branch Information		Contract Number		Drawing Number		Contract Number		Drawing Number		Contract Number	
Johnson Controls		6010-0189		NET-1		6010-0189		NET-1		6010-0189	
3007 Malmo Dr											
Arlington Heights											
IL 60005											
Phone: 847-364-1500											
Fax: 847-364-1536											