



Wayne RESA

Building Automation System Integration

Education Center
 33500 Van Born Rd.
 Wayne, MI 48184

Burger Baylor
 28865 Carlysle St.
 Inkster, MI 48141

List of Drawings

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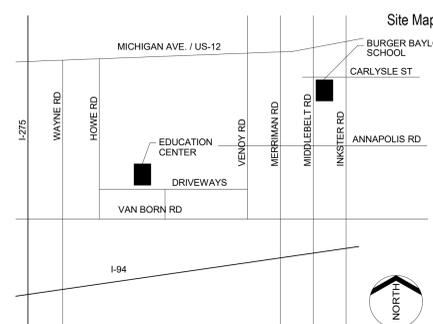
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Code Information

CONSTRUCTION CODES AND STANDARDS
 Building: Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 2015 Michigan Rehabilitation Code for Existing Building, Incorporating the 2015 Edition of the International Existing Building Code
 Electrical: Michigan Department of Licensing and Regulatory Affairs, 2017 Michigan Electrical Code, Incorporating The 2017 Edition of the National Electrical Code

Issued for Issue Date

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Registration Seal

Signature	Signature	Signature
Date	Date	Date

ABBREVIATIONS

AAV	AIR ADMITTANCE VALVE
AC	AIR COMPRESSOR
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
AHJ	AIR FLOW TRANSMITTED
AHU	AIR HANDLING UNIT
AFD	AIR PRESSURE DROP
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
ASR	AUTOMATIC SPRINKLER RISER

DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEG	DEGREES
DN	DOWN
DN	DAY/NIGHT
DPR	DAMPEN
D&T	DRIP & TRAP
DT	DRAIN TILE CONNECTION

EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EHC	ELECTRIC HEATING COIL
EHW	ELECTRIC INFRARED HEATER
EJ	EXPANSION JOINT
EV	ELEVATION
ELEC	ELECTRICAL
EMCS	ENERGY MONITORING AND CONTROL SYSTEM
ENT	ENTERING
ER	EXHAUST REGISTER
ERC	ENERGY RECOVERY UNIT
ES	EMERGENCY SHOWER
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
EWB	ENTERING WET BULB
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
(E)	EXISTING
EXP	EXPANSION

FDAMP	FIRE DAMPER
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHV	FIRE HOSE VALVE
FL	FIRE LINE
FLA	FULL LOAD AMPS
FMS	FLOW MEASUREMENT STATION
FFM	FEET PER MINUTE
FT	FOOT/FEET
F&T	FLOAT & THERMOSTATIC STEAM TRAP
FTR	FINISHED TUBE RADIATION
FVC	FIRE VALVE CABINET

GA	GAGE/GAUGE
GALV	GALVANIZED
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
GR	GRILLE
GV	GATE VALVE

MA	MIXED AIR
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGV	MASTER GAS VALVE
MH	MAN HOLE
MIN	MINIMUM
MS	MOTOR STARTER
MZ	MULTI-ZONE UNIT

LAB	LAVATORY
LBHWR	POUNDS PER HOUR
LL	LOW LIMIT
LP	LIGHTING PANEL
LP STM	LOW PRESSURE STEAM
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE

PA	PUMP
PAC	PIPE ANCHOR
PCR	PACKAGED AIR CONDITIONING UNIT
PD	PUMPED CONDENSATE RETURN PRESSURE DROP
PG	PIPE GUIDE
PLB	PLUMBING
PSI	POUNDS PER SQUARE INCH - GAUGE
PRV	PRESSURE REDUCING VALVE
PVC	POLYVINYL CHLORIDE PLASTIC

RA	RADIATOR
RAU	RADIANT CEILING PANEL
RG	RETURN GRILLE
RH	RELATIVE HUMIDITY
RF	RETURN FAN
RM	ROOM
RFP	REDUCED PRESSURE BACKFLOW PREVENTER
RF	RADIANT PANEL
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
RS	ROOF SUMP
RTD	RESISTANCE TEMPERATURE DETECTOR

SA	SANITARY
SAN	SANITARY
SAT	SATURATED
SC	STEAM COIL
SE	SUPPLY FAN
SH	SHEET
SHT	SUMP PUMP
SP	SPECIFICATIONS
SPR	SPRINKLER HEAD
SS	SPRINKLER
SV	SERVICE SINK
SW	SOLENOID VALVE
SW	SAFE WASTE SINK

ST	STEAM
TC	TEMPERATURE CONTROL
TD	TRENCH DRAIN
TV	TURNING VANES
TW	TEMPERED WATER
TY	TYPICAL

UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UR	URINAL
UV	UNIT VENTILATOR

V	VENT
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VS	VIBRATION ISOLATOR
VTR	VENT THROUGH ROOF

W	WASTE
WAV	WASTE AND VENT
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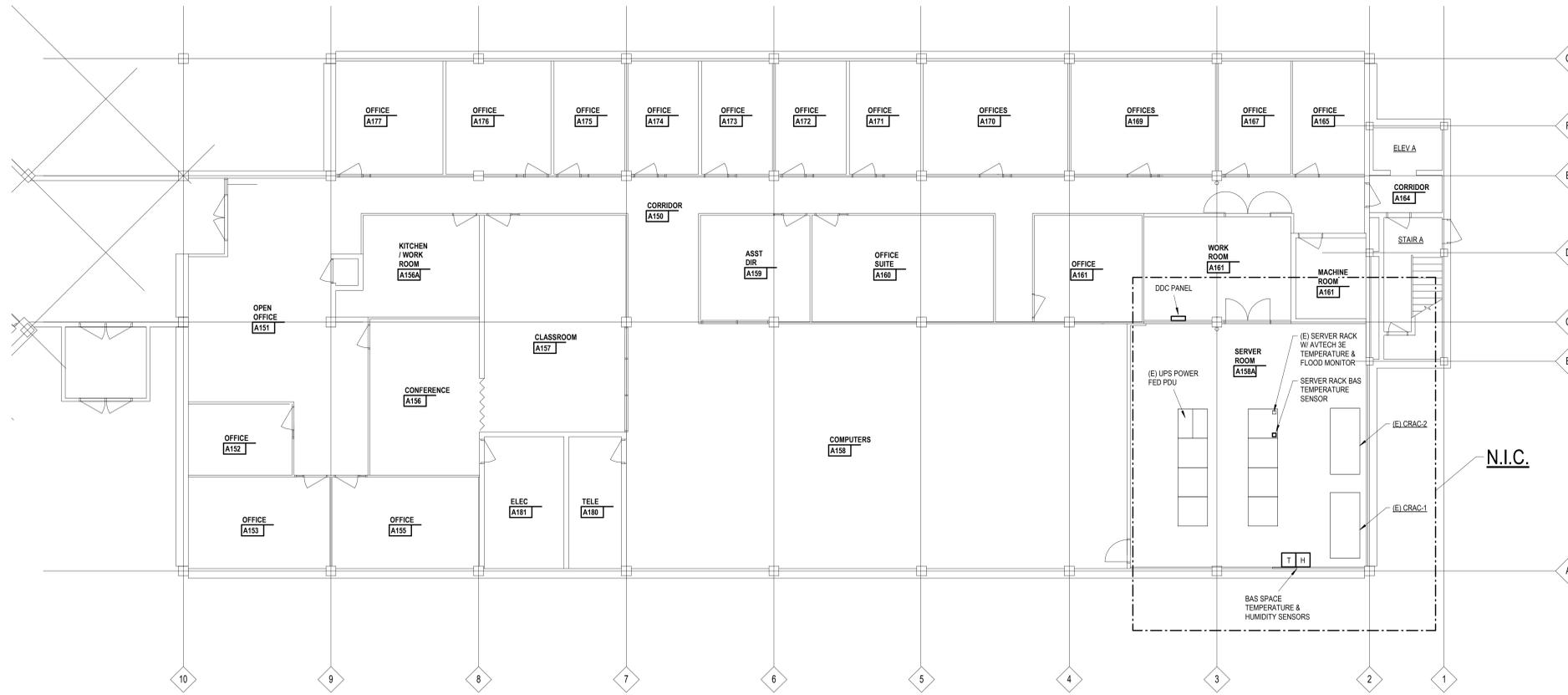
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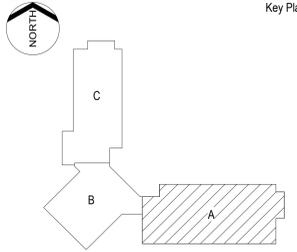
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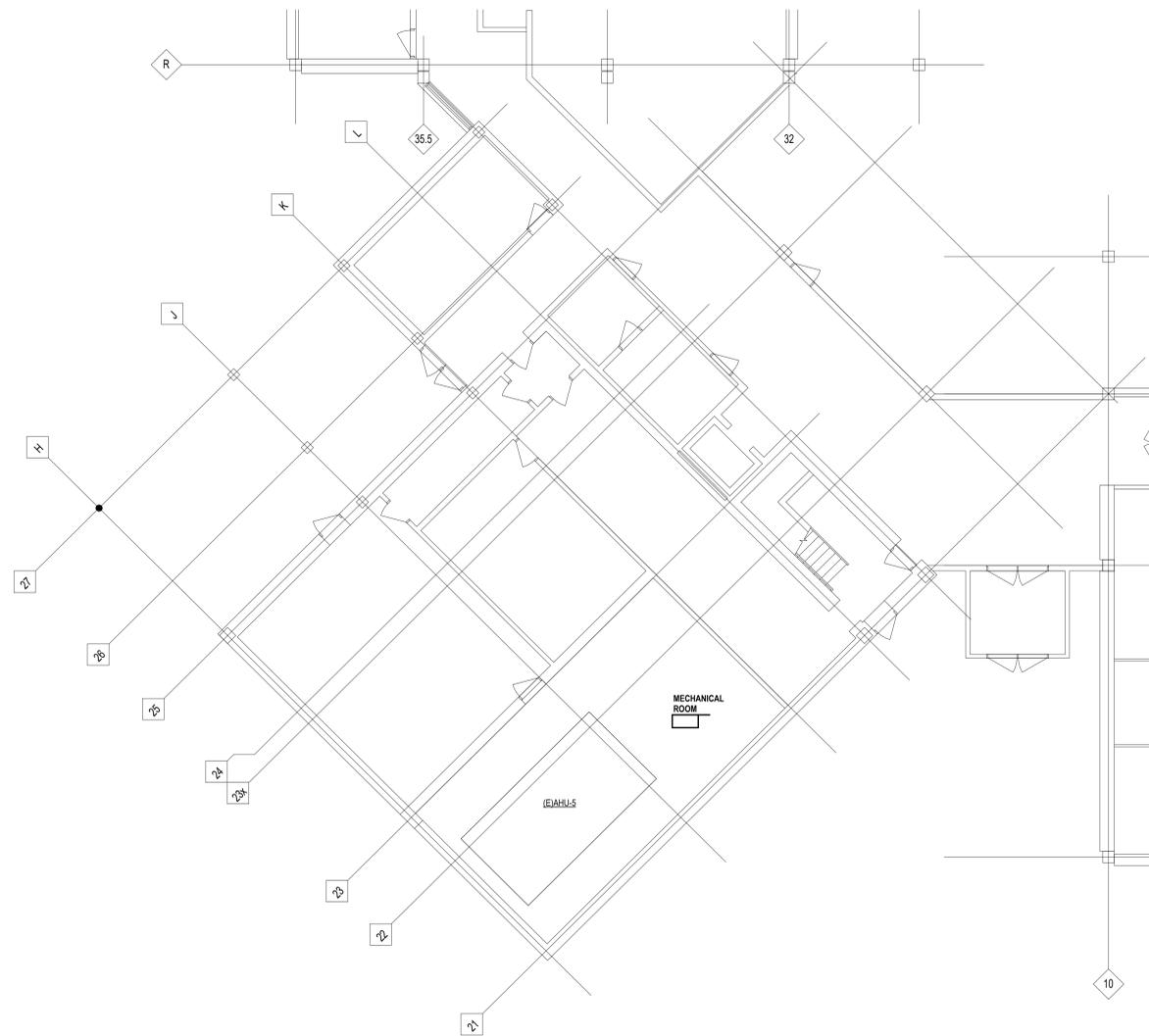
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 33500 Van Born Rd.
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Key Plan



Project Administrator	M. Nowicki
Project Designer	C. Murphy
Project Architect / Engineer	C. Murphy
Drawn By	C. Murphy
D.M. Review	
Approved	D. DiCiuccio/M. Nowicki
Drawing Scale	1/8" = 1'-0"
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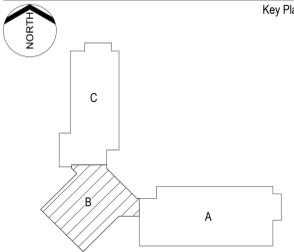


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Building Automation System Integration

33500 Van Born Rd.
 Wayne, MI 48184

Key Plan



Project Administrator

M. Nowicki

Project Designer

C. Murphy

Project Architect / Engineer

C. Murphy

Drawn By

C. Murphy

Checked

D. DiCiuccio

Approved

D. DiCiuccio/M. Nowicki

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IDS Drawing Title

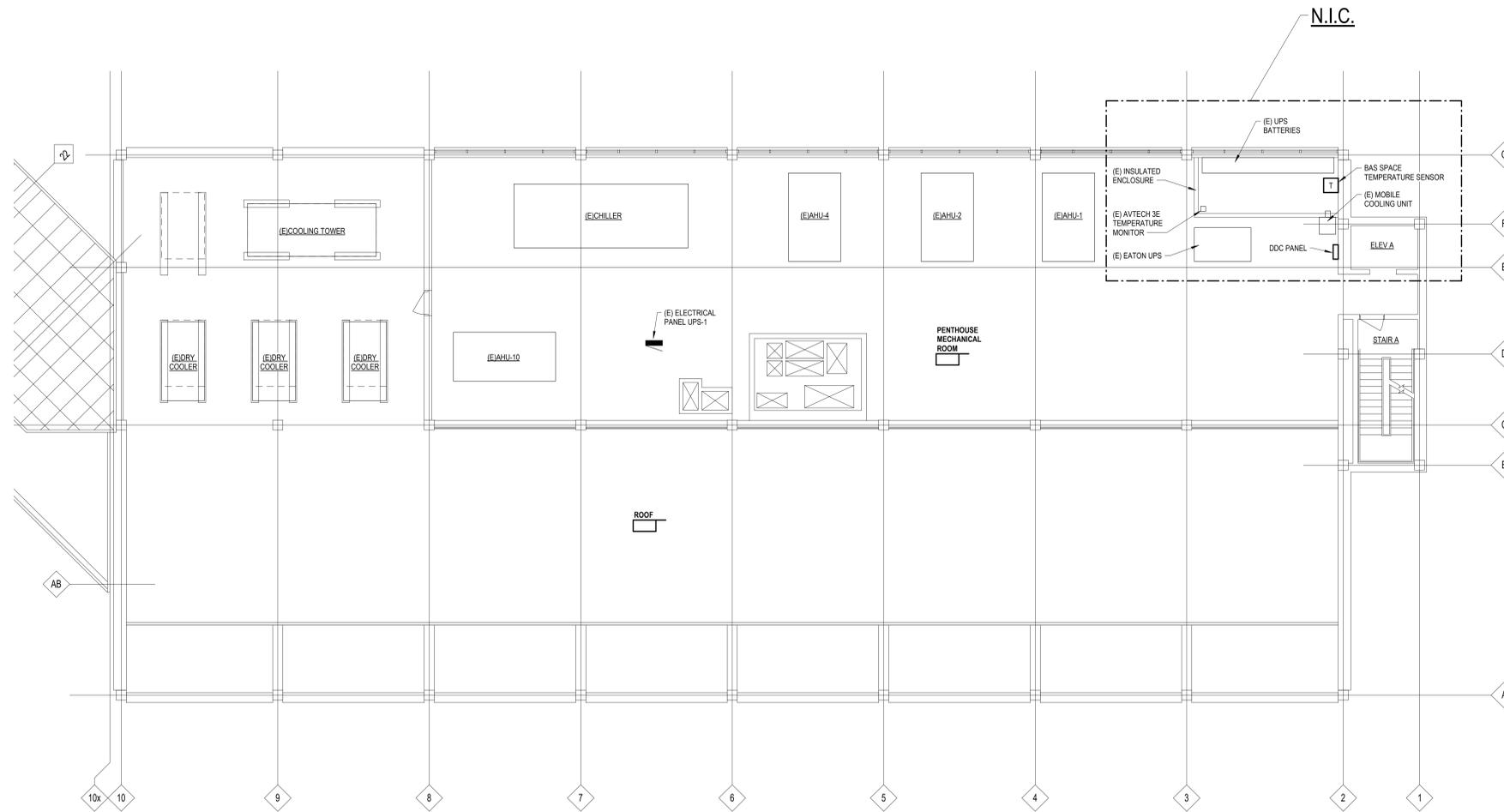
Education Center
 First Floor Plan - Area B

103 Project Number

Drawing Number

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ME1.1B



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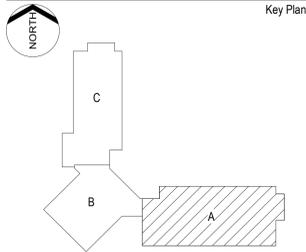


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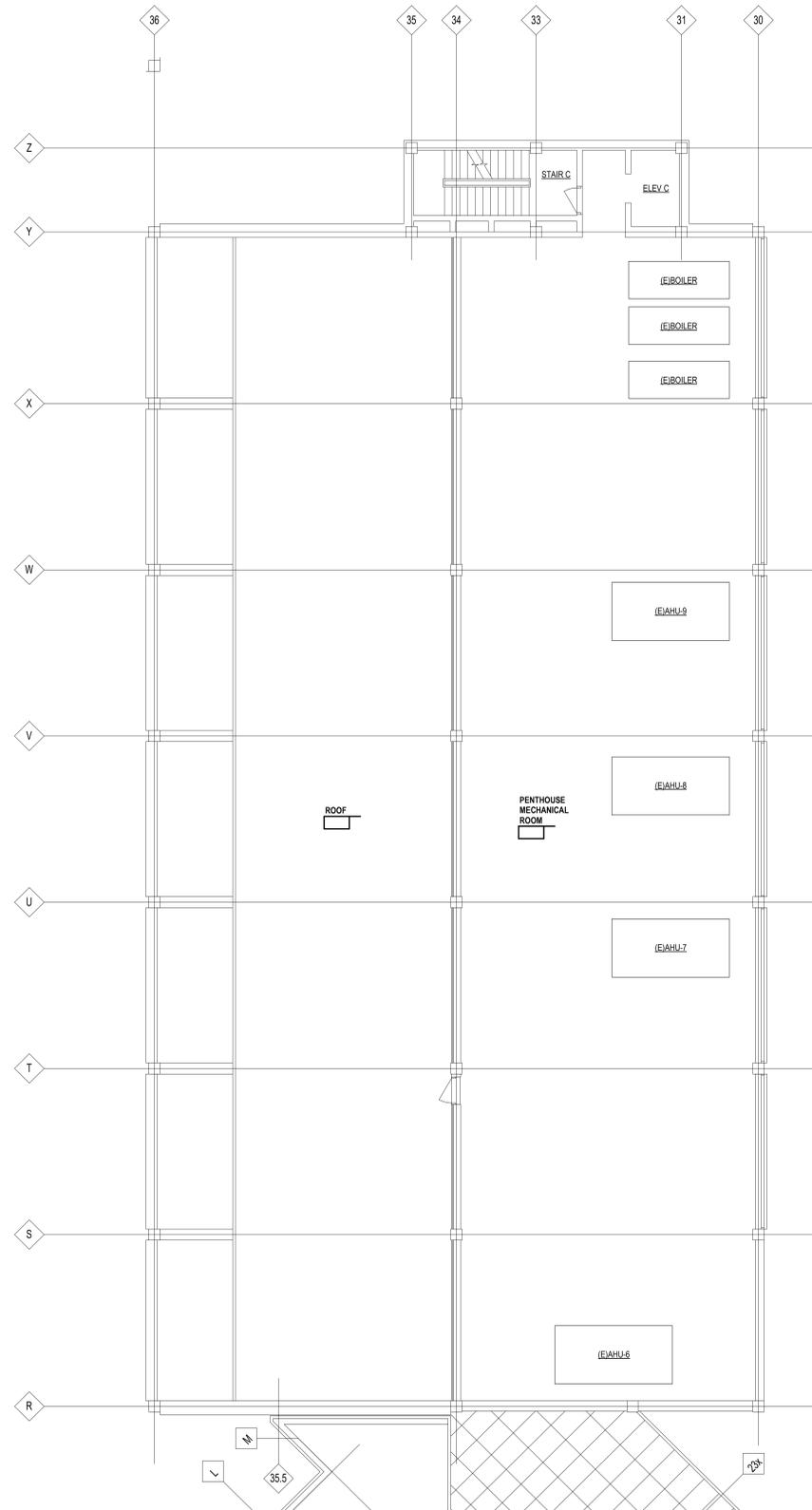
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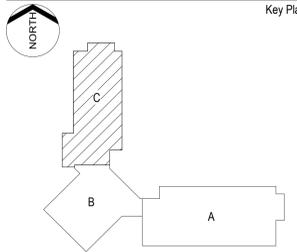


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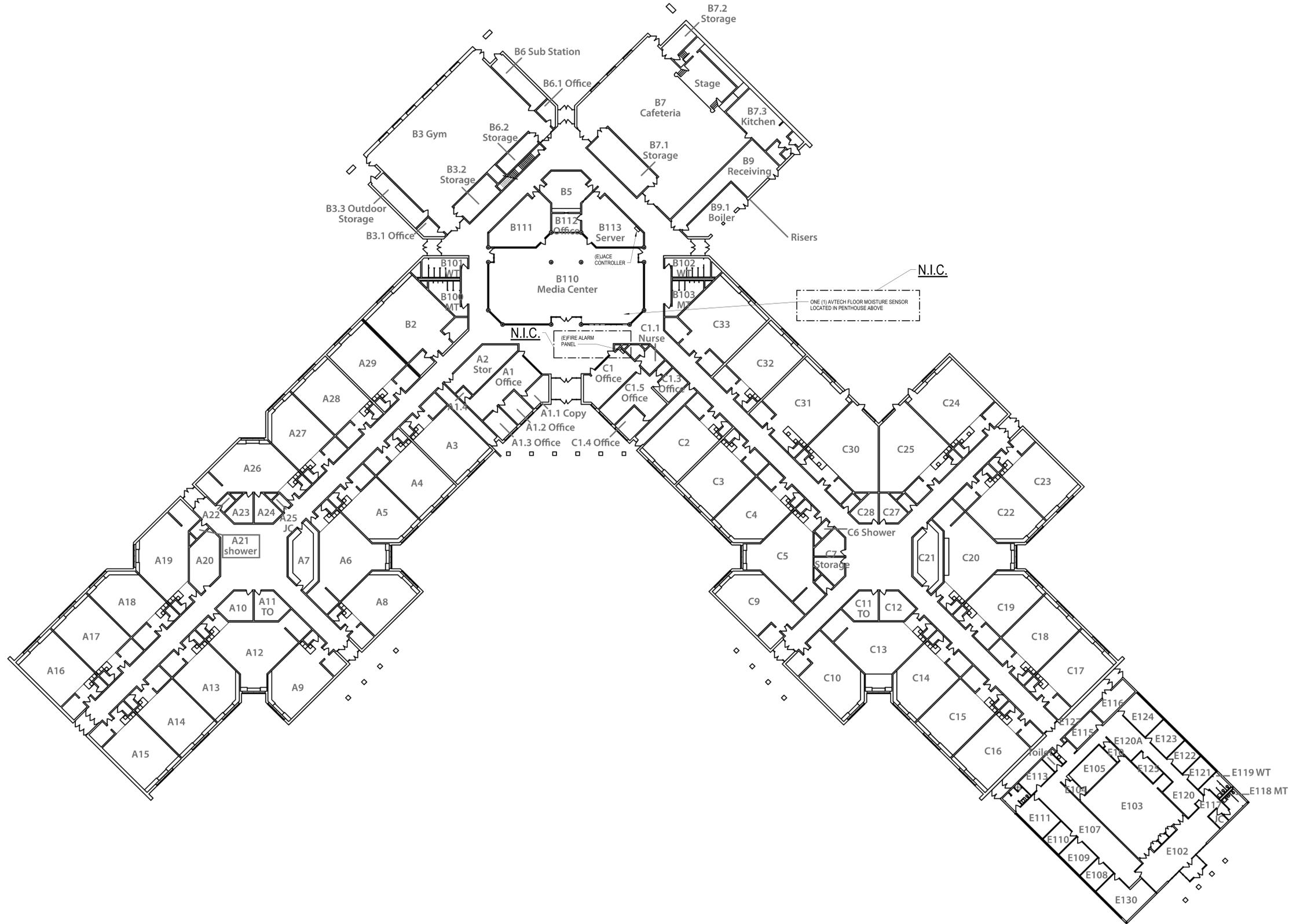
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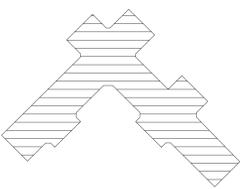


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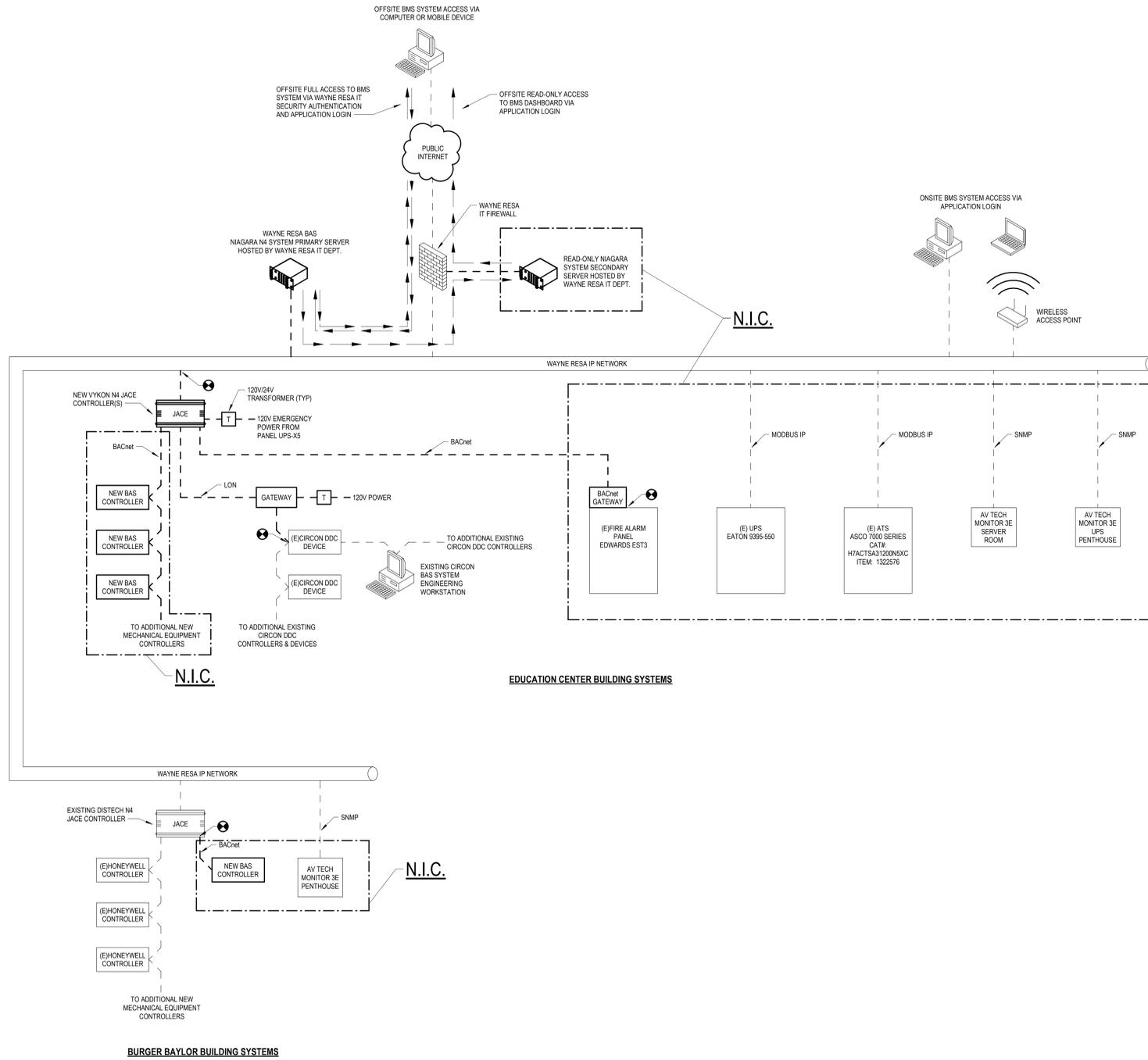
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BUILDING AUTOMATION SYSTEM NETWORK RISER DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL PROVIDE A NEW BUILDING AUTOMATION SYSTEM (BAS) PRIMARY TRIDUUM NIAGARA N4 OPERATOR INTERFACE SYSTEM (OIS) FOR CENTRAL MONITORING AND OPERATION OF ALL WAYNE RESA BAS EQUIPMENT. MSCC SHALL INSTALL OIS ON A WAYNE RESA PROVIDED VIRTUAL SERVER, IN COORDINATION WITH THE WAYNE RESA IT DEPARTMENT.
 - MSCC SHALL PROVIDE A SECONDARY TRIDUUM NIAGARA N4 OIS, INSTALLED IN THE WAYNE RESA DMZ. SYSTEM SHALL BE CONFIGURED FOR READ-ONLY VIEWING OF CRITICAL SITE MONITORING POINTS. SECONDARY OIS SHALL BE CONFIGURED IN COORDINATION WITH THE WAYNE RESA IT DEPARTMENT AND NETWORK SECURITY STAFF TO RECEIVE INFORMATION FROM THE PRIMARY OIS, AND TO MAKE LIMITED GRAPHICS AND POINT STATUSES AVAILABLE ON THE PUBLIC INTERNET WITHOUT SITE VPN AUTHENTICATION.
 - MSCC SHALL PROVIDE A NEW BUILDING AUTOMATION SYSTEM (BAS) NIAGARA N4 VYKON JACE CONTROLLER(S), GATEWAY/INTEGRATION DEVICE OR DEVICES, POWER SUPPLIES, AND NEMA 1 ENCLOSURES AS NECESSARY TO INTEGRATE ALL IDENTIFIED FIELD DEVICES AND DEVICE NETWORKS TO THE COMMON WAYNE RESA FRONT END BAS SYSTEM PRIMARY SERVER.
 - NETWORK RISER AND DEVICES SHALL BE POWERED AND CONFIGURED TO PROVIDE REMOTE MONITORING OF GENERATOR POWERED EQUIPMENT AND SYSTEMS DURING A NORMAL POWER OUTAGE. DEVICES REQUIRED TO COMMUNICATE ASSOCIATED MONITORING POINTS TO THE BAS FRONT END SERVER SHALL BE PROVIDED WITH BUILDING UPS AND GENERATOR BACKED POWER, AND SHALL BE NETWORKED TO WAYNE RESA IT NETWORKING EQUIPMENT WHICH IS ALSO PROVIDED WITH BUILDING UPS AND GENERATOR BACKED POWER.
 - MSCC SHALL INTEGRATE ALL EXISTING EDUCATION CENTER CIRCON DDC SYSTEM DEVICES AND POINTS INTO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER. MSCC SHALL UPDATE EXISTING CIRCON CONTROLLERS AND DEVICES AS NECESSARY TO FACILITATE A FULLY FUNCTIONAL NIAGARA OIS INTEGRATION. MSCC SHALL CONFIGURE EQUIPMENT OPERATION SCHEDULES, ALARMS, AND TRENDS WITHIN AND MANAGED BY THE NEW OIS TO MATCH ALL EXISTING CIRCON SYSTEM FUNCTIONALITY.
 - MSCC SHALL UPDATE EXISTING BURGER BAYLOR BUILDING NIAGARA SYSTEMS TO BE ACCESSED AND MANAGED VIA THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER. EQUIPMENT AND SOFTWARE SHALL BE UPDATED AS NECESSARY TO RETAIN ALL EXISTING SYSTEM FUNCTIONALITY. SYSTEM GRAPHICS, DATABASES, ETC. SHALL BE STORED CENTRALLY AT THE PRIMARY OIS SERVER AS APPLICABLE.
 - MSCC SHALL CONNECT NEW MONITORING POINTS TO THE EXISTING EDUCATION CENTER GENERATOR AND BATTERY CHARGER AND SHALL INTEGRATE INTO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER.
 - MSCC SHALL CONNECT NEW MONITORING POINTS TO AND SHALL INTEGRATE THE EXISTING EDUCATION CENTER ATS VIA MODBUS TO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER. ATS SHALL INCLUDE DATA CONNECTIONS AND CONFIGURATIONS AS NECESSARY TO ENABLE BOTH MODBUS INTEGRATION, AND REMOTE ACCESS TO THE EXISTING DEVICE ONBOARD WEBSERVER.
 - MSCC SHALL CONNECT NEW MONITORING POINTS TO AND SHALL INTEGRATE THE EXISTING EDUCATION CENTER UPS VIA MODBUS TO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER. UPS SHALL INCLUDE DATA CONNECTIONS AND CONFIGURATIONS AS NECESSARY TO ENABLE BOTH MODBUS INTEGRATION, AND REMOTE ACCESS TO THE EXISTING DEVICE ONBOARD WEBSERVER.
 - MSCC SHALL COORDINATE WITH FIRE ALARM SERVICE TEAM TO PROVIDE NEW BAS-GATEWAY AND INTEGRATE THE EXISTING EDUCATION CENTER FIRE ALARM SYSTEM TO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER.
 - MSCC SHALL COORDINATE WITH FIRE ALARM SERVICE TEAM TO PROVIDE A NEW ALARM MONITORING POINT CONNECTED TO THE EXISTING BURGER BAYLOR FIRE ALARM SYSTEM AND INTEGRATED TO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER.
 - MSCC SHALL UPDATE EXISTING AV TECH MONITOR DEVICES TO COMMUNICATE VIA SNMP TO THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER VIA THE LOCAL JACE CONTROLLER. MSCC SHALL CONFIGURE ALARMS AND TRENDS WITHIN AND MANAGED BY THE NEW OIS TO MATCH ALL EXISTING AV TECH SYSTEM FUNCTIONALITY.
 - THE ELECTRICAL CONTRACTOR (EC) SHALL PROVIDE 120V POWER TO NEW DDC CONTROLLER POWER SUPPLIES. THE EC AND MSCC SHALL COORDINATE AS NECESSARY.
 - THE EC SHALL PROVIDE ETHERNET IP DATA WIRING AND CONNECTIONS TO THE WAYNE RESA IP NETWORK. THE EC AND MSCC SHALL COORDINATE AS NECESSARY.

Project Title

WAYNE RESA
 Leading... Learning for All

Wayne RESA

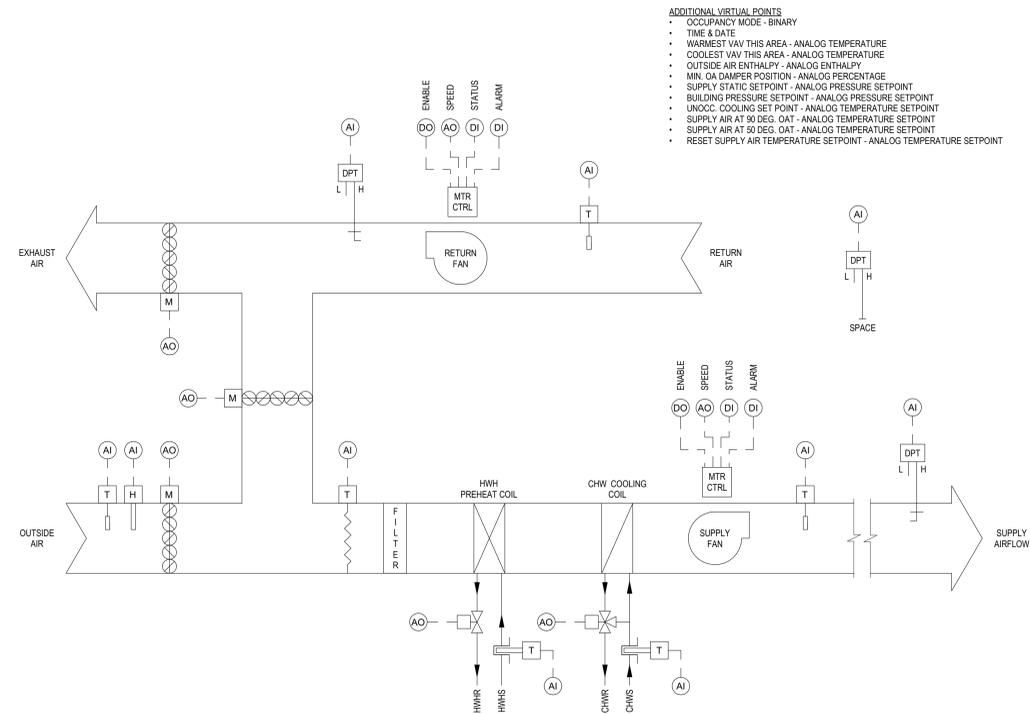
Building Automation System Integration

33500 Van Born Rd.
 Wayne, MI 48184

Key Plan

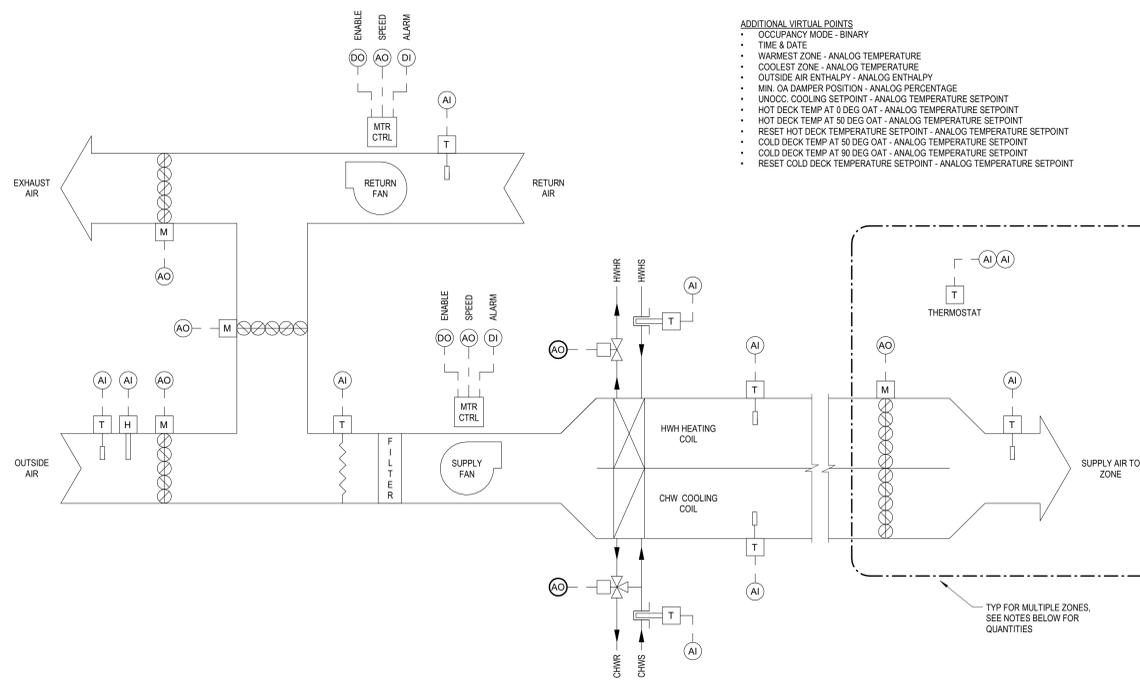
Project Administrator	M. Nowicki
Project Designer	C. Murphy
Project Architect / Engineer	C. Murphy
Drawn By	C. Murphy
D.M. Review	D.M. Review
D. DiCiccio	D. DiCiccio
Drawing Scale	No Scale
Issued for	Issue Date
Quality Management Review	03-26-2021
Bids	05-14-2021

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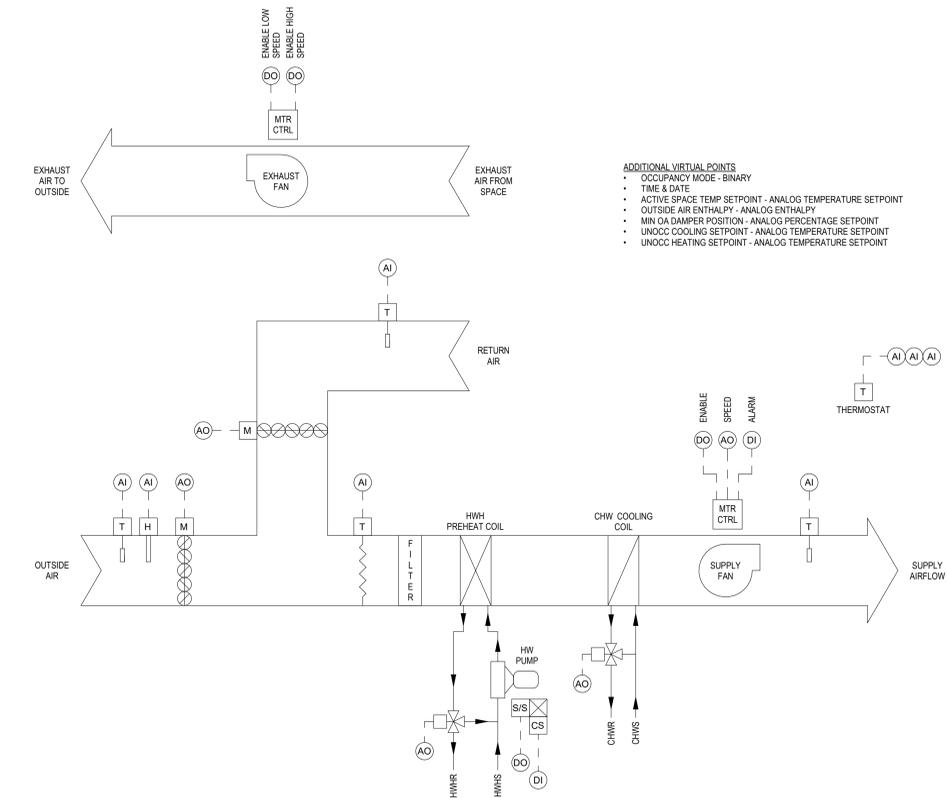
AIR HANDLING UNIT MONITORING DIAGRAM - TYPE A

- NOTES**
1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. MSCC SHALL PROVIDE A NEW TIME SCHEDULE FOR OCCUPIED/UNOCCUPIED OPERATION, MANAGEABLE VIA THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM.
 3. THIS DIAGRAM IS TYPICAL FOR THE FOLLOWING UNITS:
 A. AHU-1
 B. AHU-2
 C. AHU-4
 D. AHU-7
 E. AHU-9



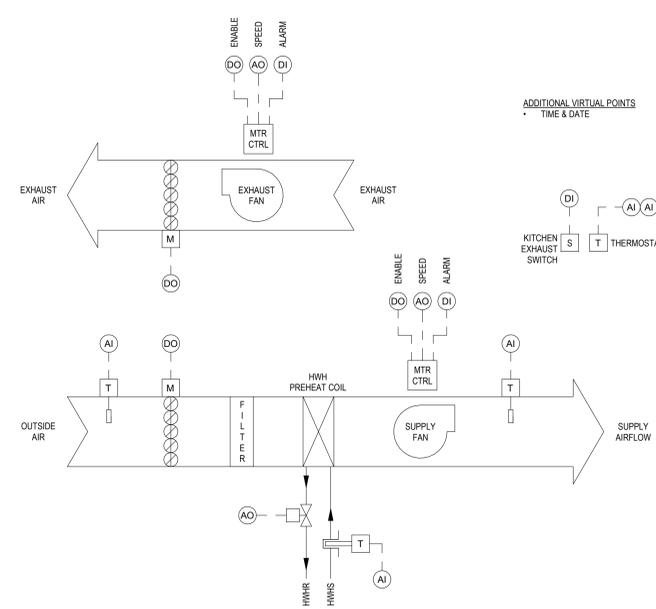
AIR HANDLING UNIT MONITORING DIAGRAM - TYPE B

- NOTES**
1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. MSCC SHALL PROVIDE A NEW TIME SCHEDULE FOR OCCUPIED/UNOCCUPIED OPERATION, MANAGEABLE VIA THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM.
 3. MSCC SHALL PROVIDE A NEW TIME SCHEDULE FOR OCCUPIED/UNOCCUPIED OPERATION, MANAGEABLE VIA THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM.
 4. THIS DIAGRAM IS TYPICAL FOR THE FOLLOWING UNITS:
 A. AHU-6 (4 HOT/COLD DECK ZONES)
 B. AHU-8 (7 HOT/COLD DECK ZONES)



AIR HANDLING UNIT AHU-5 MONITORING DIAGRAM

- NOTES**
1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. MSCC SHALL PROVIDE A NEW TIME SCHEDULE FOR OCCUPIED/UNOCCUPIED OPERATION, MANAGEABLE VIA THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM.



AIR HANDLING UNIT AHU-10 MONITORING DIAGRAM

- NOTES**
1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.

Project Title



Wayne RESA

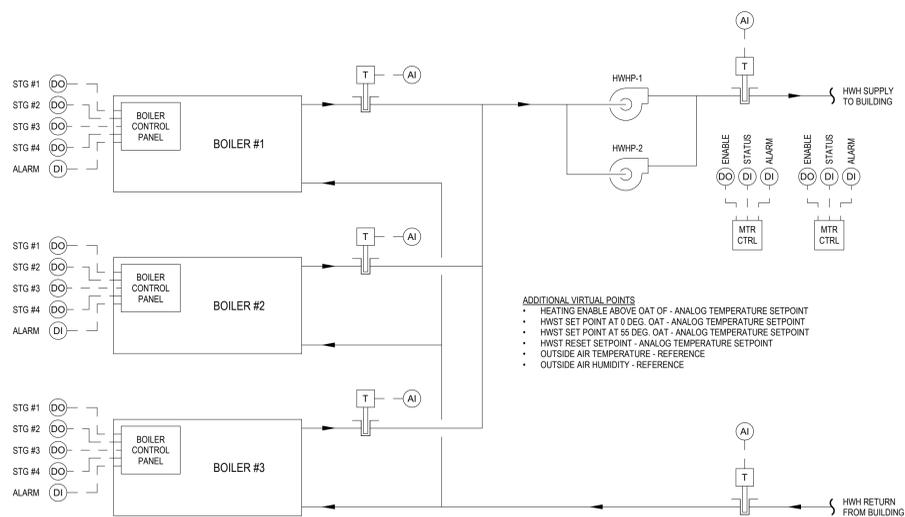
Building Automation System Integration

33500 Van Born Rd.
Wayne, MI 48184

Key Plan

Project Administrator	M. Nowicki
Project Designer	C. Murphy
Project Architect / Engineer	C. Murphy
Drawn By	C. Murphy
D.M. Review	
D. DiCiccio	Approved
D. DiCiccio/M. Nowicki	Approved
Drawing Scale	No Scale

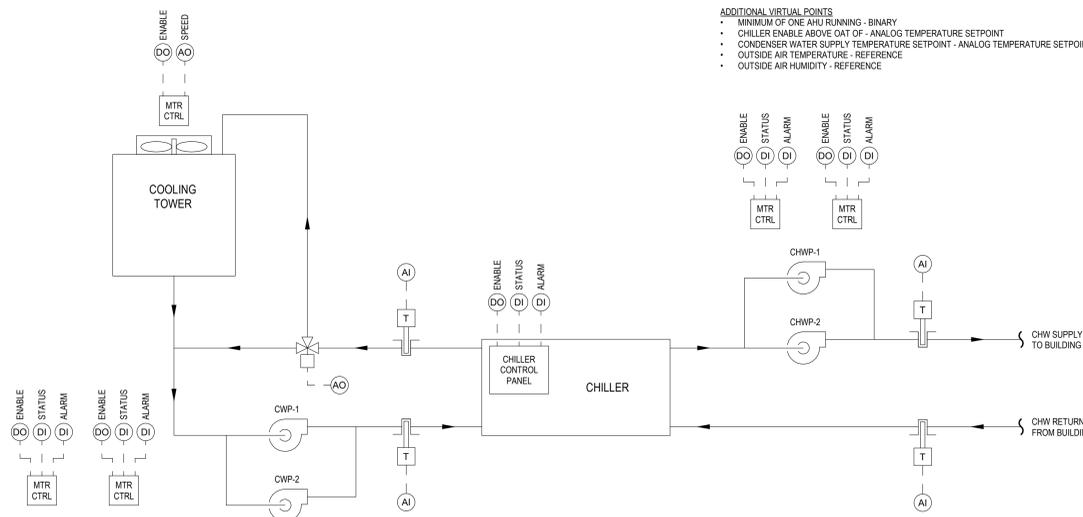
Issued for	Issue Date
Quality Management Review	03-26-2021
Bids	05-14-2021



HEATING WATER SYSTEM MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.

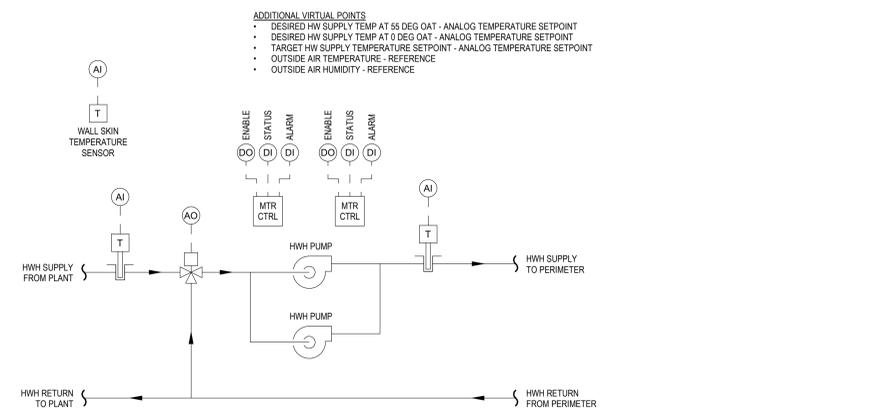
- ADDITIONAL VIRTUAL POINTS**
- HEATING ENABLE ABOVE OAT - ANALOG TEMPERATURE SETPOINT
 - DESIRED HW SUPPLY TEMP AT 55 DEG OAT - ANALOG TEMPERATURE SETPOINT
 - DESIRED HW SUPPLY TEMP AT 0 DEG OAT - ANALOG TEMPERATURE SETPOINT
 - TARGET HW SUPPLY TEMPERATURE SETPOINT - ANALOG TEMPERATURE SETPOINT
 - OUTSIDE AIR TEMPERATURE - REFERENCE
 - OUTSIDE AIR HUMIDITY - REFERENCE



CHILLED WATER SYSTEM MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.

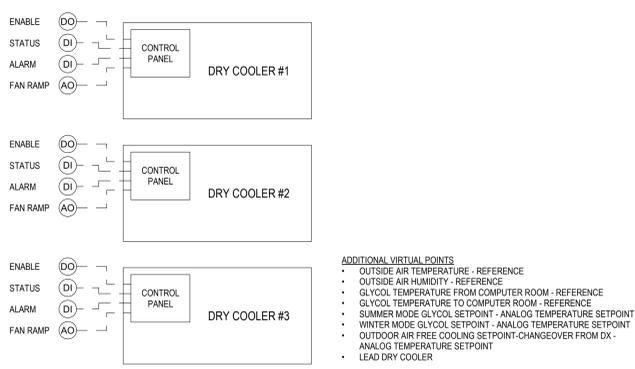
- ADDITIONAL VIRTUAL POINTS**
- MINIMUM OF ONE AHU RUNNING - BINARY
 - CHILLER ENABLE ABOVE OAT - ANALOG TEMPERATURE SETPOINT
 - CONDENSER WATER SUPPLY TEMPERATURE SETPOINT - ANALOG TEMPERATURE SETPOINT
 - OUTSIDE AIR TEMPERATURE - REFERENCE
 - OUTSIDE AIR HUMIDITY - REFERENCE



PERIMETER HEATING WATER SYSTEM MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. THIS DIAGRAM IS TYPICAL FOR THE FOLLOWING ZONES:
 A. A-WING NORTH EXPOSURE
 B. A-WING 2ND FLOOR SOUTH
 C. A-WING 3RD FLOOR SOUTH
 D. C-WING EAST EXPOSURE
 E. C-WING 2ND FLOOR WEST
 F. C-WING 3RD FLOOR WEST

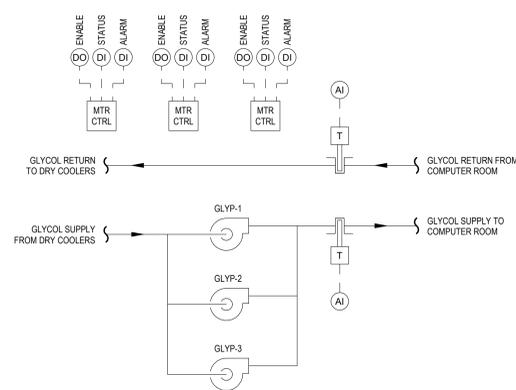
- ADDITIONAL VIRTUAL POINTS**
- DESIRED HW SUPPLY TEMP AT 55 DEG OAT - ANALOG TEMPERATURE SETPOINT
 - DESIRED HW SUPPLY TEMP AT 0 DEG OAT - ANALOG TEMPERATURE SETPOINT
 - TARGET HW SUPPLY TEMPERATURE SETPOINT - ANALOG TEMPERATURE SETPOINT
 - OUTSIDE AIR TEMPERATURE - REFERENCE
 - OUTSIDE AIR HUMIDITY - REFERENCE



GLYCOL DRY COOLER SYSTEM MONITORING DIAGRAM

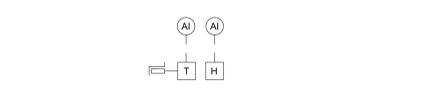
NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.

- ADDITIONAL VIRTUAL POINTS**
- OUTSIDE AIR TEMPERATURE - REFERENCE
 - OUTSIDE AIR HUMIDITY - REFERENCE
 - GLYCOL TEMPERATURE FROM COMPUTER ROOM - REFERENCE
 - GLYCOL TEMPERATURE TO COMPUTER ROOM - REFERENCE
 - SUMMER MODE GLYCOL SETPOINT - ANALOG TEMPERATURE SETPOINT
 - WINTER MODE GLYCOL SETPOINT - ANALOG TEMPERATURE SETPOINT
 - OUTDOOR AIR FREE COOLING SETPOINT-CHANGEOVER FROM DX - ANALOG TEMPERATURE SETPOINT
 - LEAD DRY COOLER



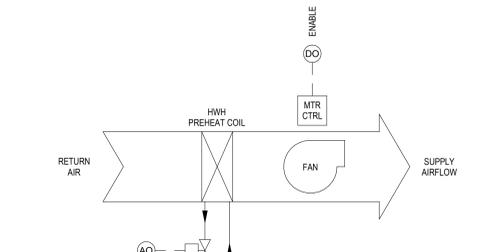
GLYCOL PUMP SYSTEM MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.



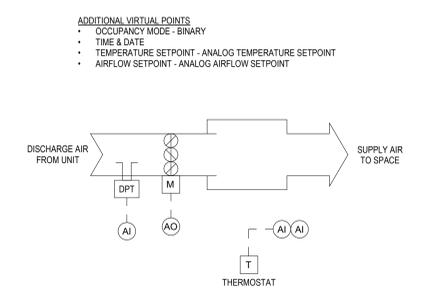
OUTSIDE AIR SENSOR MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.



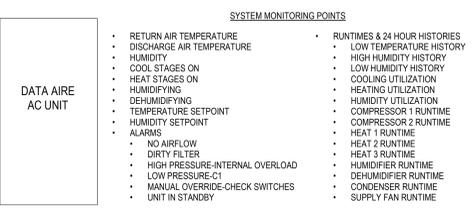
ENTRANCE HEATER UNIT MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.



VAV TERMINAL UNIT MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. MSCC SHALL LINK THE UNIT OCCUPIED/UNOCCUPIED MODE TO THE TIME SCHEDULE OF THE CORRESPONDING ZONE AIR HANDLING UNIT.
 3. THIS DIAGRAM IS TYPICAL FOR THE FOLLOWING UNITS:
 A. FIRST FLOOR
 a. VAV-101, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18
 B. SECOND FLOOR
 a. VAV-201, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18
 b. VAV-201, 02, 03, 04, 05, 06, 07, 08, 09, 1, 10, 11, 12, 13, 14, 15, 2, 3, 4
 C. THIRD FLOOR
 a. VAV-301, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22
 b. VAV-301, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23



DATA AIRE AC UNIT MONITORING DIAGRAM

NOTES
 1. THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COMPLETE INTEGRATION OF THIS EXISTING MECHANICAL SYSTEM FROM THE EXISTING CIRCON BUILDING AUTOMATION SYSTEM INTO THE NEW COMMON WAYNE RESA OPERATOR INTERFACE SYSTEM. SYSTEM SHALL BE INTEGRATED PER ALL CONSTRUCTION DOCUMENT REQUIREMENTS, SHALL AT A MINIMUM INCLUDE ALL MECHANICAL SYSTEM POINTS INDICATED IN THIS DIAGRAM, AND SHALL INCLUDE A NEW DEVELOPED SYSTEM GRAPHIC PER THIS DIAGRAM.
 2. UNIT IS LOCATED IN 2ND FLOOR C-WING.

- SYSTEM MONITORING POINTS**
- RETURN AIR TEMPERATURE
 - DISCHARGE AIR TEMPERATURE
 - HUMIDITY
 - COOL STAGES ON
 - HEAT STAGES ON
 - HUMIDIFYING
 - DEHUMIDIFYING
 - TEMPERATURE SETPOINT
 - HUMIDITY SETPOINT
 - ALARMS
 - NO AIRFLOW
 - DIRTY FILTER
 - HIGH PRESSURE-INTERNAL OVERLOAD
 - LOW PRESSURE-C1
 - MANUAL OVERRIDE-CHECK SWITCHES
 - UNIT IN STANDBY
 - RUNTIMES & 24 HOUR HISTORIES
 - LOW TEMPERATURE HISTORY
 - HIGH HUMIDITY HISTORY
 - LOW HUMIDITY HISTORY
 - COOLING UTILIZATION
 - HEATING UTILIZATION
 - HUMIDITY UTILIZATION
 - COMPRESSOR 1 RUNTIME
 - COMPRESSOR 2 RUNTIME
 - HEAT 1 RUNTIME
 - HEAT 2 RUNTIME
 - HEAT 3 RUNTIME
 - HUMIDIFIER RUNTIME
 - DEHUMIDIFIER RUNTIME
 - CONDENSER RUNTIME
 - SUPPLY FAN RUNTIME

Project Title



Wayne RESA

Building Automation System Integration

33500 Van Born Rd.
Wayne, MI 48184

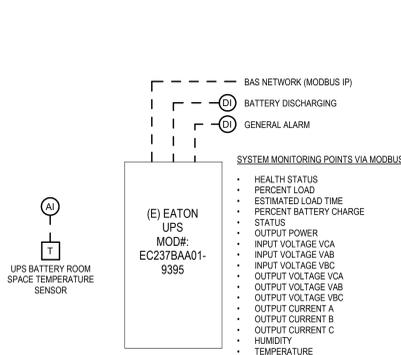
Key Plan

Project Administrator	M. Nowicki
Project Designer	C. Murphy
Project Architect / Engineer	C. Murphy
Drawn By	C. Murphy
Q.M. Review	D. DiCuccio
Approved	D. DiCuccio/M. Nowicki
Drawing Scale	No Scale
Issued for	Issue Date
Quality Management Review	03-26-2021
Bids	05-14-2021

SYSTEM	QUANTITY	APPROX. INTEGRATION POINTS EACH
HOT WATER HEATING SYSTEM	1	30
DOMESTIC HOT WATER	1	10
CHILLED WATER SYSTEM	1	40
AIR HANDLING UNIT	7	30
MULTIZONE UNIT ZONE	5	6
UNIT VENTILATOR	41	30
EXHAUST FAN	8	3
CABINET UNIT HEATER	13	3
RADIANT CEILING PANEL	2	8

BURGER BAYLOR TRIDIUM SYSTEM INTEGRATION

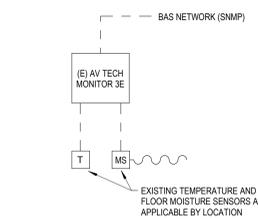
- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL UPDATE EXISTING BURGER BAYLOR BUILDING TRIDIUM/NIAGARA SYSTEMS TO BE ACCESSED AND MANAGED VIA THE NEW CENTRAL NIAGARA OPERATOR INTERFACE SYSTEM (OIS) PRIMARY SERVER. EQUIPMENT AND SOFTWARE SHALL BE UPDATED AS NECESSARY TO RETAIN ALL EXISTING SYSTEM FUNCTIONALITY.
 - THE EXISTING BURGER BAYLOR BUILDING NIAGARA SYSTEM INCLUDES SYSTEMS AND POINTS FOR INTEGRATION AS LISTED ABOVE. QUANTITIES ARE APPROXIMATE. MSCC SHALL REVIEW EXISTING NIAGARA SYSTEM AND SHALL COORDINATE AS NECESSARY TO REPLICATE ALL EXISTING SYSTEM FUNCTIONALITY IN THE NEW CENTRAL NIAGARA OIS PRIMARY SERVER.



UPS CONTROL DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL PROVIDE HARDWIRED MONITORING POINTS FOR THE EXISTING UPS AS INDICATED.
 - THE MSCC SHALL COMPLETE NETWORK INTEGRATION TO THE EXISTING UPS VIA MODBUS.
 - THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER FROM ELECTRICAL PANEL UPS-1 TO THE ASSOCIATED NEW DDC PANEL MONITORING INDICATED DIGITAL INPUT POINTS.
 - MSCC SHALL BE RESPONSIBLE TO COMPLETE REQUIRED SYSTEM CONNECTIONS AND INTEGRATION, AND TO RETAIN ALL EXISTING UPS SYSTEM FUNCTIONALITY. MSCC SHALL COORDINATE WITH EASTON/RC MERCHANT & CO. IF NECESSARY FOR ANY CONNECTIONS, CONFIGURATIONS, OR REQUIRED DEVICE UPDATES.

N.I.C.



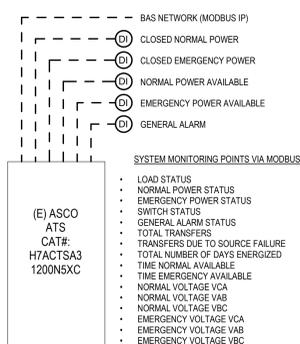
TYPICAL AV TECH MONITOR CONTROL DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL UPDATE EXISTING AV TECH MONITOR DEVICES AS NECESSARY AND SHALL COMPLETE INTEGRATION VIA SNMP AND THE EXISTING DATA CONNECTION.
 - EXISTING MONITORS AND SENSORS FOR INTEGRATION ARE AS FOLLOWS.
 - EDUCATION CENTER SERVER ROOM
 - SPACE TEMPERATURE
 - FLOOR MOISTURE
 - EDUCATION CENTER PENTHOUSE UPS
 - SPACE TEMPERATURE
 - BURGER BAYLOR PENTHOUSE
 - BURGER BAYLOR PENTHOUSE
 - FLOOR MOISTURE

- | | |
|---|---|
| EDUCATION CENTER | BURGER BAYLOR BUILDING |
| <ul style="list-style-type: none"> FIRE ALARM STATUS GENERATOR STATUS GENERATOR ALARM GENERATOR FUEL LEVEL GENERATOR BATTERY CHARGER ALARM ATS STATUS ATS ALARM UPS BATTERY DISCHARGING UPS GENERAL ALARM UPS ESTIMATED LOAD TIME UPS TEMPERATURE HWH PUMP #1 STATUS HWH PUMP #2 STATUS HWH SUPPLY TEMPERATURE GLYCOL PUMP #1 STATUS GLYCOL PUMP #2 STATUS GLYCOL PUMP #3 STATUS GLYCOL SUPPLY TEMPERATURE SERVER ROOM CRAC-1 FAN STATUS SERVER ROOM CRAC-2 FAN STATUS SERVER ROOM CRAC-1 SUPPLY AIR TEMPERATURE SERVER ROOM CRAC-2 SUPPLY AIR TEMPERATURE SERVER ROOM TEMPERATURE SERVER ROOM HUMIDITY SERVER ROOM SERVER RACK TEMPERATURE SERVER ROOM FLOOD ALARM | <ul style="list-style-type: none"> FIRE ALARM STATUS HWH PUMP #1 STATUS HWH PUMP #2 STATUS HWH SUPPLY TEMPERATURE |

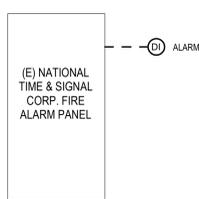
CRITICAL SYSTEM MONITORING GRAPHICS

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL CREATE A GRAPHIC TO DISPLAY THE CRITICAL WAYNE RESA SYSTEM POINTS INDICATED ABOVE. GRAPHIC SHALL INDICATE CURRENT POINT STATUS AND SHALL CHANGE POINT BACKGROUND COLOR TO CLEARLY IDENTIFY ALARM STATUS. MSCC SHALL CREATE 1 GRAPHIC FOR VIEWING VIA COMPUTER MONITOR, AND A SEPARATE EQUIVALENT GRAPHIC FORMATTED FOR EASY VIEWING VIA SMARTPHONE.



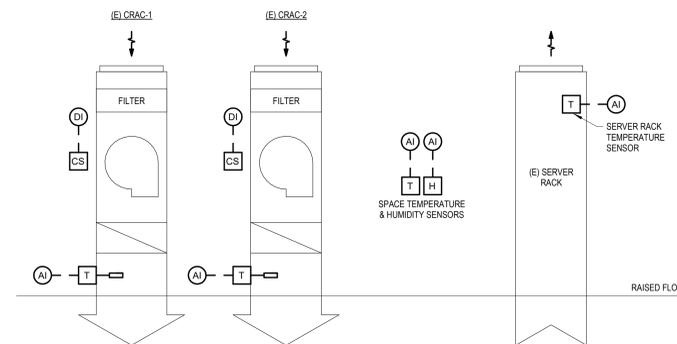
ATS CONTROL DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL PROVIDE HARDWIRED MONITORING POINTS FOR THE EXISTING ATS AS INDICATED.
 - THE MSCC SHALL COMPLETE NETWORK INTEGRATION TO THE EXISTING ATS VIA MODBUS.
 - THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER FROM THE UPS POWER FED POWER DISTRIBUTION UNIT (PDU) IN THE SERVER ROOM TO THE ASSOCIATED NEW DDC PANEL MONITORING INDICATED DIGITAL INPUT POINTS.
 - MSCC SHALL BE RESPONSIBLE TO COMPLETE REQUIRED SYSTEM CONNECTIONS AND INTEGRATION, AND TO RETAIN ALL EXISTING ATS SYSTEM FUNCTIONALITY. MSCC SHALL COORDINATE WITH ASCO IF NECESSARY FOR ANY CONNECTIONS, CONFIGURATIONS, OR REQUIRED DEVICE UPDATES.



BURGER BAYLOR FIRE ALARM SYSTEM CONTROL DIAGRAM

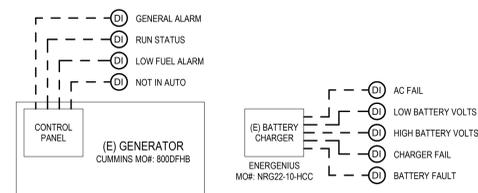
- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COORDINATE ALL CONNECTIONS AND CONFIGURATIONS WITH FIRE ALARM SERVICE TEAM (FAST).
 - A MONITORING POINT SHALL BE CONNECTED TO THE EXISTING FIRE ALARM PANEL SUCH THAT THE BAS SHALL GENERATE AN ALARM IF THERE ARE ANY FIRE ALARM CONDITIONS WITHIN THE FIRE ALARM PANEL.



EDUCATION CENTER SERVER ROOM #A158A CONTROL DIAGRAM

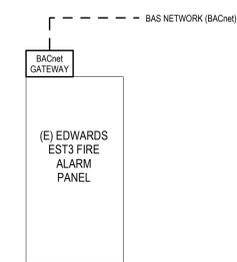
- NOTES**
- DDC PANELS MONITORING SERVER ROOM POINTS SHALL BE PROVIDED WITH BUILDING UPS AND GENERATOR BACKUP POWER BY THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR.

- SEQUENCE OF OPERATION**
- THE BUILDING AUTOMATION SYSTEM SHALL GENERATE AN ALARM IF ANY OF THE FOLLOWING CONDITIONS ARE PRESENT:
 - SPACE TEMPERATURE IS GREATER THAN 75°F (ADJ)
 - SPACE TEMPERATURE IS LESS THAN 62°F (ADJ)
 - SPACE HUMIDITY IS GREATER THAN 65%RH (ADJ)
 - SERVER RACK TEMPERATURE IS GREATER THAN 72°F (ADJ)
 - CRAC-1 FAN IS OFF
 - CRAC-1 SUPPLY AIR TEMPERATURE IS GREATER THAN 75°F (ADJ)
 - CRAC-2 FAN IS OFF
 - CRAC-2 SUPPLY AIR TEMPERATURE IS GREATER THAN 75°F (ADJ)



GENERATOR MONITORING CONTROL DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL PROVIDE HARDWIRED MONITORING POINTS FOR THE EXISTING GENERATOR EQUIPMENT AS INDICATED.
 - THE ELECTRICAL CONTRACTOR SHALL PROVIDE INDICATED RACEWAYS FROM THE GENERATOR OUT BUILDING TO THE EDUCATION CENTER FIRST FLOOR AND SHALL PROVIDE 120V POWER FROM ELECTRICAL PANEL UPS-X5 TO THE ASSOCIATED NEW DDC PANEL MONITORING INDICATED DIGITAL INPUT POINTS.
 - THE MSCC SHALL PROVIDE BAS NETWORK WIRING FROM THE NEW DDC PANEL TO THE EDUCATION CENTER FIRST FLOOR IN COORDINATION WITH THE ELECTRICAL CONTRACTOR.
 - MSCC SHALL BE RESPONSIBLE TO COMPLETE REQUIRED SYSTEM CONNECTIONS, AND TO RETAIN ALL EXISTING GENERATOR SYSTEM FUNCTIONALITY. MSCC SHALL COORDINATE WITH CUMMINS IF NECESSARY.



EDUCATION CENTER FIRE ALARM SYSTEM CONTROL DIAGRAM

- NOTES**
- THE MECHANICAL SYSTEMS CONTROLS CONTRACTOR (MSCC) SHALL COORDINATE ALL CONNECTIONS AND CONFIGURATIONS WITH FIRE ALARM SERVICE TEAM (FAST).
 - FAST SHALL PROVIDE AND INSTALL THE BACnet GATEWAY AND SHALL CONNECT TO THE EXISTING FIRE ALARM PANEL.
 - THE MSCC SHALL COMPLETE WIRING FROM THE BACnet GATEWAY TO THE BAS NETWORK, AND SHALL COMPLETE SYSTEMS INTEGRATION.
 - MSCC SHALL INTEGRATE POINTS AS NECESSARY FOR INDICATION OF FIRE ALARM STATUS BY ZONE, AND STATUS OF SUPPRESSION SYSTEMS.

Project Title



Wayne RESA

Building Automation System Integration

33500 Van Born Rd.
Wayne, MI 48184

Key Plan

Project Administrator	M. Nowicki
Project Designer	C. Murphy
Project Architect / Engineer	C. Murphy
Drawn By	C. Murphy
D.M. Review	
D. DiCiuccio	Approved
D. DiCiuccio/M. Nowicki	Approved
Drawing Scale	No Scale
Issued for	Issue Date
Quality Management Review	03-26-2021
Bids	05-14-2021