

CROSWELL-LEXINGTON
COMMUNITY SCHOOLS

GEIGER ELEMENTARY
HVAC Controls Upgrade

CROSWELL, MICHIGAN
PROJECT NO. 2022-017

APRIL 8, 2022 BID DOCUMENTS



architects planners interiors

LIST OF DRAWINGS

MECHANICAL

M0.00	MECHANICAL GENERAL INFORMATION
M1.10	MECHANICAL HVAC COMPOSITE NEW WORK PLAN
M8.00	TEMPERATURE CONTROLS



SCALE: 1/16" = 1'-0"

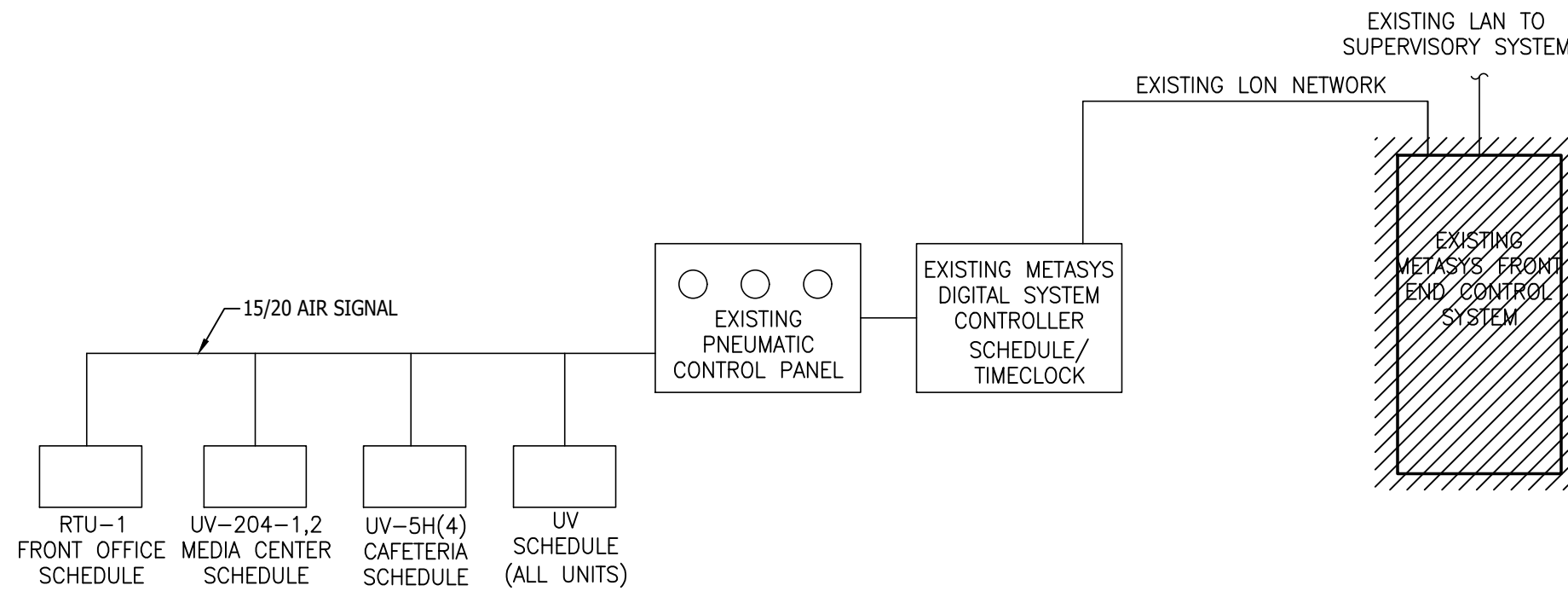
NEW WORK KEYED NOTES	
1	ALTERNATE M1: EXISTING PNEUMATIC THERMOSTAT TO REMAIN. INSTALL FLAT PLATE TEMPERATURE SENSOR ADJACENT TO EXISTING THERMOSTAT.

ISSUE DATE	ISSUED FOR
04/08/2022	BID DOCUMENTS
DRAWN	RPL
CHECKED	MPH
APPROVED	MPH

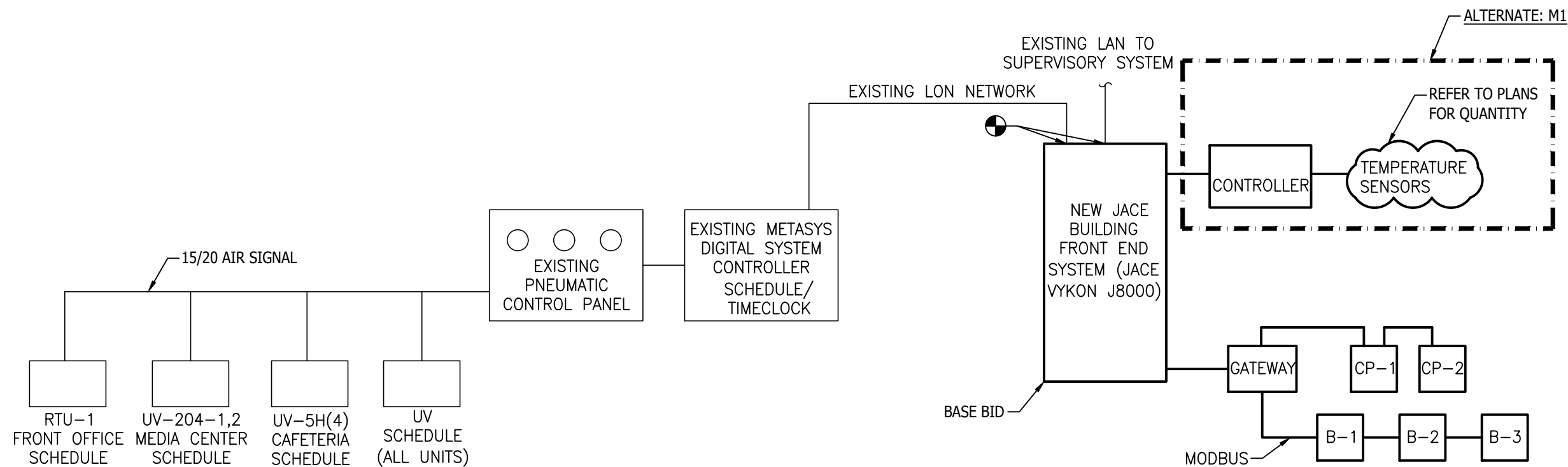


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Croswell,
Michigan

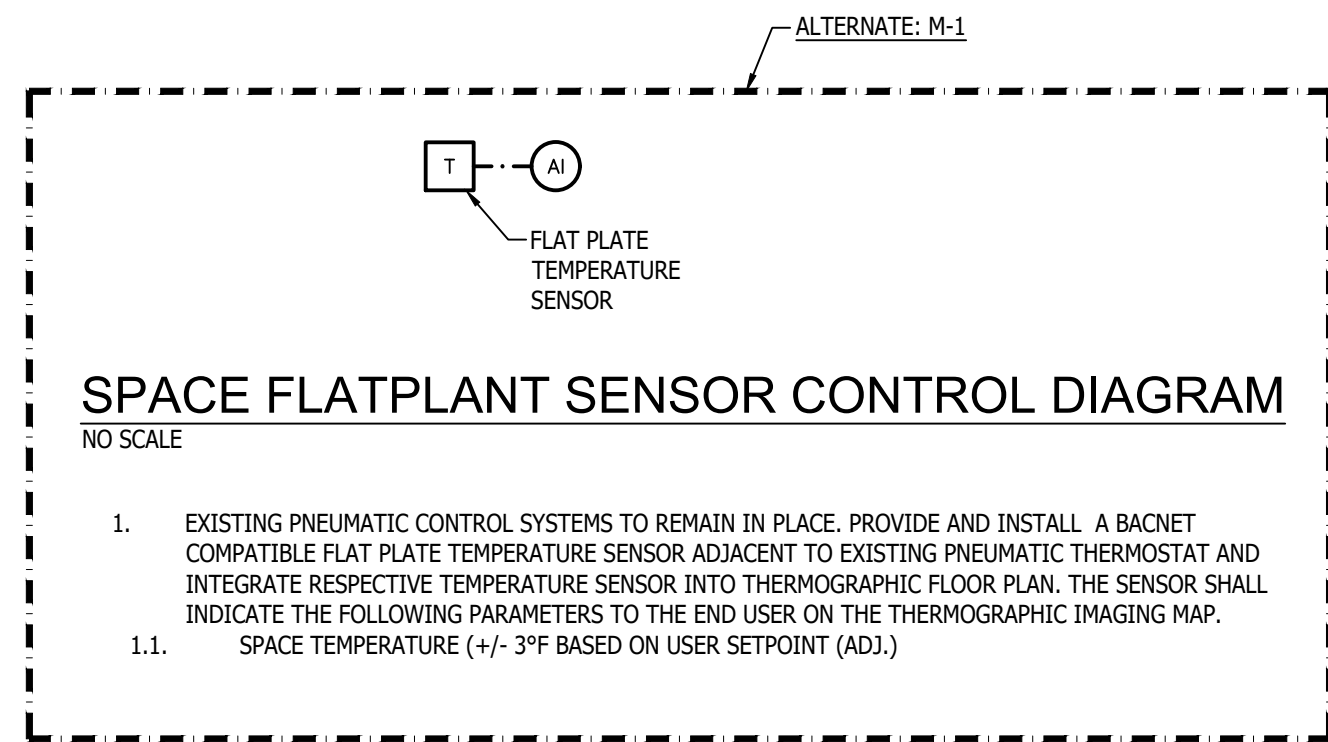


BUILDING AUTOMATION SYSTEM RISER DIAGRAM DEMOLITION
NO SCALE

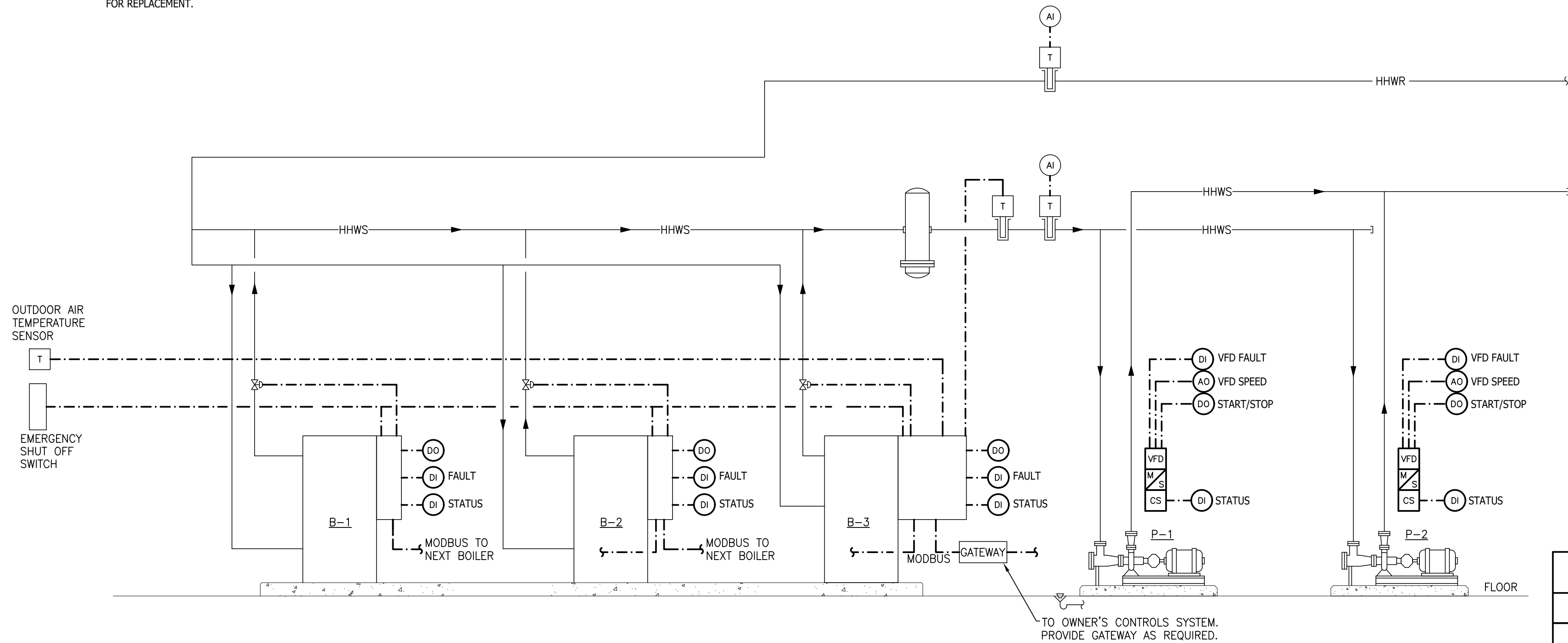


BUILDING AUTOMATION SYSTEM RISER DIAGRAM NEW WORK
NO SCALE

1. PROVIDE A SYSTEM EQUIPMENT UPGRADE OF THE DISTRICT'S BUILDING AUTOMATION SYSTEM (AKA ENERGY MANAGEMENT SYSTEM) FRONT END SYSTEM (CURRENTLY METASYS/PNEUMATIC) TO BACNET TRIDUUM NIAGARA AX SUPERVISOR VERSION N4 WITH CURRENT PATCHES. PROVIDE FOR BACNET OVER IP LICENSING AND COMMUNICATION FOR THE BUILDING.
2. ALTERNATE M1: PROVIDE BUILDING FLOOR PLANS WITH INTERACTIVE SPACE THERMAL IMAGING INDICATING THE RESPECTIVE EQUIPMENT OPERATION. PROVIDE AN "EMERGENCY MASTER SHUT OFF" OPERATION FOR THE BUILDING MANAGEMENT SYSTEM.
3. TC CONTRACTOR TO DEVELOP A DEFICIENCIES LIST OF EXISTING TERMINAL EQUIPMENT AND RELATED COMPONENTS SYSTEM THAT MAY HAVE ISSUES, ASSUME FOR BIDDING PURPOSES THAT COMMUNICATIONS AND WIRING IS IN TACT. SCOPE OF WORK DOES NOT REQUIRE TO CORRECT ANY IDENTIFIED DEFICIENCIES - ANY POTENTIAL WORK WOULD BE COORDINATED WITH LEXINGTON-CROSELL SCHOOL DISTRICT PERSONNEL ASSOCIATED WITH THIS PROJECT.
4. TC CONTRACTOR TO INCLUDE AN ALLOWANCE OF \$5,000 THAT IS TO BE APPLIED TO THE SYSTEM DEFICIENCIES. ANY UNUSED FUNDS SHALL BE RETURNED TO THE OWNER AS A CREDIT.
5. TC CONTRACTOR TO VERIFY ALL ACTUATOR FUNCTIONALITY AT COMMENCEMENT OF CONSTRUCTION. REPORT FINDINGS TO OWNER AND CREATE DEFICIENCIES REPORT FOR REPLACEMENT.



1. EXISTING PNEUMATIC CONTROL SYSTEMS TO REMAIN IN PLACE. PROVIDE AND INSTALL A BACNET COMPATIBLE FLAT PLATE TEMPERATURE SENSOR ADJACENT TO EXISTING PNEUMATIC THERMOSTAT AND INTEGRATE RESPECTIVE TEMPERATURE SENSOR INTO THERMOGRAPHIC FLOOR PLAN. THE SENSOR SHALL INDICATE THE FOLLOWING PARAMETERS TO THE END USER ON THE THERMOGRAPHIC IMAGING MAP.
 - 1.1. SPACE TEMPERATURE (+/- 3°F BASED ON USER SETPOINT (ADJ.))



HEATING HOT WATER SYSTEM CONTROL DIAGRAM
NO SCALE

HEATING HOT WATER SYSTEM CONTROL DIAGRAM

HEATING HOT WATER SYSTEM SEQUENCE OF OPERATIONS:
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

1. WITH THE HYDRONIC HEATING PUMPS' HAND/AUTO/OFF SWITCH IN THE "AUTO" POSITION, THE DDC SYSTEM SHALL ENERGIZE THE LEAD PUMP. ONE OF THE PUMPS SHALL BE DESIGNATED "LEAD PUMP" AND SHALL OPERATE CONTINUOUSLY. THE OTHER PUMP SHALL SERVE AS THE "STANDBY PUMP".
2. THE DDC SYSTEM SHALL ALTERNATE PUMP OPERATION BASED ON RUN TIME HOURS OR AT THE BEGINNING OF EACH MONTH.
3. EACH PUMP WILL PROVE OPERATION TO THE DDC SYSTEM WITH ITS CURRENT SWITCH. IF A PUMP FAILS, AN ALARM WILL BE SENT TO THE DDC SYSTEM AND THE STANDBY PUMP WILL BE ACTIVATED.
4. THE PUMP SPEED SHALL BE ADJUSTED DURING BALANCING AND SET AT A FIXED OPERATING SPEED.
5. WHEN ENABLED BY THE BMS, THE BOILER CONTROL PANEL (INTERNAL TO THE LEAD BOILER) SHALL CONTROL THE FIRING OF THE BOILERS BASED HEATING HOT WATER SUPPLY WATER SETPOINT. IF A BOILER FAILS, AN ALARM WILL BE GENERATED AND STANDBY BOILERS WILL BE ACTIVATED.
6. IF THE PRIMARY BOILER CANNOT MAINTAIN SUPPLY WATER SETPOINT, THE FIRST LAG BOILERS SHALL BE ENERGIZED. AS SUPPLY WATER SETPOINT IS MET, THE LAG BOILERS SHALL BE DE-ENERGIZED.
7. WHEN THE EMERGENCY SHUT OFF SWITCH IS ACTIVATED, THE BOILERS SHALL IMMEDIATELY BE DE-ENERGIZED AND AN ALARM SHALL BE SENT TO THE BMS (THRU MONITORING OF THE EMERGENCY SHUT-OFF SWITCH).
8. THE BUILDING DDC SYSTEM SHALL MONITOR ALL TEMPERATURE POINTS INDICATED, BOILER STATUS, BOILER ALARM, PUMP ALARM, PUMP STATUS, AND OUTSIDE AIR TEMPERATURE.

HEATING HOT WATER SUPPLY (HHWS) RESET SCHEDULE	
OUTSIDE AIR TEMP.	HHWS TEMPERATURE
≥ 50°F	150°F
≤ 25°F	180°F

Croswell-Lexington
Community Schools:
Geiger Elementary
HVAC Controls Upgrade

Croswell,
Michigan

TEMPERATURE
CONTROLS

2022-017

M8.00



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