Johnston County Public Schools
HVAC CONTROLS REPLACEMENTS – PACKAGE 6

ADDENDUM NO. 2

DATE: **December 14, 2023**

PROJECT: **Johnston County Public Schools**
Controls Replacements – Package 6

OWNER: **Johnston County Public Schools**
2320 US 70 Business, Smithfield, NC 27577

ENGINEER: **Dewberry Engineers Inc.**
2610 Wycliff Road, Suite 410, Raleigh, NC 27607

This Addendum, applicable to the work designated herein, shall be understood to be and is an Addendum to the contract documents and, as such, shall be become a part of and included in the contract.

Drawings:

1. Sheet 0G-001 – Sheet added.
2. Sheet 0M-502 – New sheet for added details.
3. Sheet 0M-720 – Added gymnasium timer switch to SOO.
4. Sheet 0M-723 – Add CO2 to heat pump
5. Sheet 1ME-201 – Keynote removed.
6. Sheet 1ME-203 – Keynote removed.
7. Sheet 1M-601 – Damper and Air System schedules adjusted.
8. Sheet 1M-602 – Flowmeter schedule adjusted.
9. Sheet 2ME-201 – Keynote removed. Thermostats combined for FCU-130 and AHU-103.
10. Sheet 2ME-204 – Keynote removed.
11. Sheet 2ME-205 – Keynote removed.
12. Sheet 2M-601 – Air System schedule adjusted.
13. Sheet 2M-602 – Flowmeter schedule adjusted.
14. Sheet 3ME-201 – Thermostats combined for FCU-130 and AHU-103.
15. Sheet 3M-601 – Air System schedules adjusted.
16. Sheet 3M-602 – Flowmeter schedule adjusted.
17. Sheet 4ME-201 – Thermostats combined for FCU-130 and AHU-103.
18. Sheet 4ME-203 – Keynote removed.
19. Sheet 4ME-204 – Keynote removed.
20. Sheet 4ME-206 – Thermostat moved and note added.
21. Sheet 4M-601 – Air System schedule adjusted.
22. Sheet 4M-602 – Flowmeter schedule adjusted.

Specifications:

1. None.

Contractor Questions:

1. What are the glycol and non-glycol loop volumes for water treatment at each of the schools?
    a. Estimated Volumes (Not Verified)
        i. Benson – 9 Tanks
            1. Glycol - See Calmac O&M Manual. Approximately 25% glycol ; System volume – 1,883 gallons (9 tanks @ 157 + 470 gal in ~1222’ of 8”

pipe + 10% sf for mech rm hxr, etc). Include biocide similar to Aquacar PS20. 192 oz / 16 per tank. Contractor to verify prior to install.

2. Building 5,600 – gallons

ii. McGees – 9 tanks
1. Building – 5,750 gallons

iii. Four Oaks – 9 Tanks
1. Building – 5,600 gallons

iv. Riverwood – 9 Tanks
1. Building – 5,750 gallons

b. Flushing shall be completed per Calmac operating and maintenance instructions.

2. Have there been any hazardous materials confirmed to be present at any of the schools? If so, what is the plan for remediation?
Asbestos records are kept for each school. All schools in this package are recorded as having no Asbestos. Hazard material reports beyond that are typically done by contractors before work begins.

3. Do any of the schools have a roof warranty that needs to be maintained? If so, please provide a contact for the required roofing company.
No

4. Can work be performed during the school year as long as classes are not disrupted and required zone comfort is maintained?
Yes

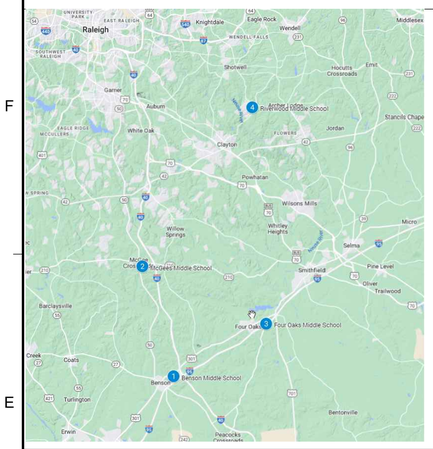
5. Per the spec for this project all controls panels are to be UL listed panels. They are also to have hinged doors and removable back plates. Please verify that the existing control panels will not meet this spec and will need to be replaced.
Control Panel Assemblies must be UL listed. Enclosure must be listed either as an assembly "508A closed" or as a backplate with components "508A open". If the installation includes only the controller that is UL listed in the existing control panel then the control panel is not considered an assembly and will not have to have a 3rd party listing or new control panel assembly listing. Reuse of existing control panels may be done at the contractor's discretion to meet this requirement and take responsibility of the existing panel. The controls contractor will take responsibility and warranty for all control system components that are reused or new to complete a fully functioning control system compliant with the contract drawings and specifications.

Attached Documents:

1. None.

End of Addendum No. 2

VICINITY MAP



WORK LOCATIONS

1. BENSON MIDDLE SCHOOL
   1600 N WALL ST,
   BENSON, NC 27504
2. MCGEES MIDDLE SCHOOL
   13353 NC-210,
   BENSON, NC 27504
3. FOUR OAKS MIDDLE SCHOOL
   1475 BOYETTE RD,
   FOUR OAKS, NC 27524
4. RIVERWOOD MIDDLE SCHOOL
   204 ATHLETIC CLUB BLVD,
   CLAYTON, NC 27527

CONTACTS

OWNER:	MEP:
JOHNSTON COUNTY PUBLIC SCHOOLS CONSTRUCTION 601-A WEST MARKET ST., SMITHFIELD, NC 27577 CONTACT: MATTHEW JOHNSON PROJECT MANAGER P: 919.934.2021 F: 919.934.3381 E-MAIL: MATTHEWVJOHNSON@ JOHNSTON.K12.NC.US	DEWBERRY ENGINEERS, INC. 2610 WYCLIFF ROAD SUITE 410 RALEIGH, NC 27607 CONTACT: CHRISTOPHER HERRON P: 919.425.7628 E-MAIL: CHERRON@dewberry.com

JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

HVAC CONTROLS UPGRADE DEWBERRY PACKAGE 6

JOHNSTON COUNTY, NC

PROJECT SCOPE

JOHNSTON COUNTY SCHOOLS HVAC CONTROLS UPGRADES PROJECT IS A MECHANICAL CONTROLS CONTRACTOR PROJECT THAT INCLUDES ALL NECESSARY PERMITTING AND WORK TO COMPLETE CODE COMPLIANT CONSTRUCTION OF THE FOLLOWING:

A. UPGRADE AND MODERNIZE EXISTING SCHOOLS WITH NEW A BUILDING AUTOMATION SYSTEM CONTROL SYSTEM.
   - A.1. REPLACE BUILDING CONTROLLERS, DEVICE CONTROLLERS, ACTUATORS, WIRING, AND SENSORS THAT INTEGRATE INTO AN EXISTING COUNTYWIDE TRIDIUM NIAGARA 4 SYSTEM TO IMPROVE INDOOR AIR QUALITY MONITORING AND CONTROL SEQUENCES.
   - A.2. PROVIDE NEW BUILDING CONTROLLERS FOR INTEGRATION OF NEW DEVICE CONTROLLERS.
   - A.3. PROVIDE DATA CABLING FOR OWNER IT WHERE NEW DATA DROPS ARE REQUIRED.
   - A.4. PROVIDE NEW CONTROL VALVES WHERE INDICATED.
   - A.5. PROVIDE AIRFLOW MEASUREMENT FLOW STATIONS ON ZONE DAMPERS AND TERMINAL UNITS FOR CONNECTION TO NEW DEVICE CONTROLLERS.
   - A.6. PROVIDE NEW MODERNIZED CONTROL SCHEMATICS AND SEQUENCES.
   - A.7. PROVIDE NEW GRAPHICS, SCHEDULING, AND TRENDING DATA FOR CONTROLLERS
   - A.8. PROVIDE NEW CHILLER PLANT CONTROLLERS.
   - A.9. PROVIDE NEW HEATING HOT WATER PLANT CONTROLLERS.
   - A.10. PROVIDE NEW AIR SYSTEM CONTROLLERS.
   - A.11. PROVIDE NEW EXHAUST FAN CONTROLS FOR GENERAL VENTILATION EXHAUST FANS. SWITCHED AND THERMOSTAT HARDWIRED EXHAUST FANS ARE NOT INCLUDED IN SCOPE AND SHOWN FOR REFERENCE.
   - A.12. PROVIDE NEW OUTSIDE AIR MONITORING STATION.
   - A.13. INTEGRATE EXISTING AND NEW EQUIPMENT CONTROLLERS.
   - A.14. PROVIDE WALL MODULES FOR CONTROLLERS. PROVIDE WIRE MOLD TO MATCH WALL COLOR IN LOCATIONS WHERE EXISTING CABLE PATH CANNOT BE USED.
   - A.15. PROVIDE MULTIPLE WALL MODULES FOR TEMPERATURE SENSING AND OCCUPANCY/SETPOINT CONTROL AIR SYSTEMS IN LOCATIONS SUBJECT TO DAMAGE OR TAMPERING SUCH AS GYMNASIUMS, WRESTLING ROOMS, WEIGHTLIFTING, LOCKER ROOMS, AND CAFETERIAS. COORDINATE WITH OWNER ON LOCATION.
   - A.16. PROVIDE CARBON DIOXIDE MONITORING FOR DEMAND CONTROL VENTILATION AND INDOOR AIR QUALITY MONITORING. MONITORED THROUGH WALL MODULE FOR SINGLE SPACE SERVED AREAS AND RETURN AIR DUCT MOUNTED AT AIR HANDLING UNIT FOR AREAS WITH MULTIPLE SPACES SERVED.
   - A.17. PROVIDE TIMER SWITCH IN PRINCIPAL'S OFFICE AND ATHLETIC DIRECTOR / COACHES OFFICE FOR ADMIN AND GYMNASIUM OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.
   - A.18. PROVIDE NEW ELECTROMAGNETIC FLOW SENSORS AND PIPING INSTALLATION KITS FOR HYDRONIC SYSTEMS.
B. PROVIDE NEW PUMPS WITH VARIABLE FREQUENCY DRIVES (VFD). PROVIDE NEW INVERTER DUTY RATED MOTORS WITH SHAFT GROUNDING RING FOR VFD INSTALLATION.
C. PROVIDE NEW PUMP MOTORS WITH VARIABLE FREQUENCY DRIVES (VFD). PROVIDE NEW INVERTER DUTY RATED MOTOR WITH SHAFT GROUNDING RING FOR VFD INSTALLATION.
D. PROVIDE TEST AND BALANCE FOR HVAC SYSTEMS TO:
   - D.1. VERIFY AND RESTORE TO ORIGINAL VENTILATION REQUIREMENTS.
   - D.2. VERIFY AND BALANCE NEW HYDRONIC CONTROL VALVES.
   - D.3. VERIFY AND BALANCE NEW PUMPS.
   - D.4. VERIFY AND CALIBRATE NEW CONTROL SYSTEM COMPONENTS.
E. PROVIDE FUNCTIONAL TESTING AND CONTROLS CHECKOUT TO ENSURE PROPER SYSTEM OPERATION.
F. CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR THAT ALLOWS COMPLETION WITHIN THE SCHEDULED TIMEFRAME.
G. PROVIDE NEW DUCTLESS MINI SPLIT SYSTEMS AND ASSOCIATED CONDENSING UNIT AT BENSON, MCGEES, AND FOUR OAKS MIDDLE SCHOOLS. RUN NEW REFRIGERANT PIPING BETWEEN EACH ASSOCIATED DMSS AND CONDENSING UNIT.
H. PROVIDE GLYCOL WATER TREATMENT FOR HYDRONIC SYSTEM BETWEEN CHILLERS AND THERMAL STORAGE TANKS. FOR THERMAL STORAGE TANKS, FLUSH TO REMOVE POTENTIAL BIOLOGICAL GROWTH AND POUR IN INITIAL TREATMENT OF BIOCIDE ICE STORAGE TANK SYSTEM WITH WATER. FILL TO APPROPRIATE LEVEL. PROVIDE RE-COMMISSIONING OF ICE STORAGE SYSTEM IN CONFORMANCE WITH THE MANUFACTURER.
I. REPLACE ICE STORAGE VALVE ACTUATORS.
J. PROVIDE FUNCTIONAL TESTING AND CONTROLS CHECKOUT TO ENSURE PROPER SYSTEM OPERATION.
K. WORK SHALL BE FULLY INSTALLED AND COMMISSIONED BY AUGUST 4, 2024. CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR THAT ALLOWS COMPLETION WITHIN THE SCHEDULED TIMEFRAME.

DRAWING INDEX

NO	TITLE
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0G-002	BUILDING CODE SUMMARY
0G-003	BUILDING CODE SUMMARY
0G-004	BUILDING CODE SUMMARY
0G-005	BUILDING CODE SUMMARY
0G-006	SYMBOLS ABBREVIATIONS & NOTES
0G-007	SYMBOLS ABBREVIATIONS & NOTES
0M-501	DETAILS
0M-502	DETAILS
0M-700	CONTROL SCHEMATICS & SEQUENCES
0M-701	CONTROL SCHEMATICS & SEQUENCES
0M-702	CONTROL SCHEMATICS & SEQUENCES
0M-710	CONTROL SCHEMATICS & SEQUENCES
0M-720	CONTROL SCHEMATICS & SEQUENCES
0M-721	CONTROL SCHEMATICS & SEQUENCES
0M-722	CONTROL SCHEMATICS & SEQUENCES
0M-723	CONTROL SCHEMATICS & SEQUENCES
1M-110	BENSON MS OVERALL FIRST FLOOR PLAN
1ME-201	BENSON MS AREA A
1ME-202	BENSON MS AREA B
1ME-203	BENSON MS AREA C
1ME-204	BENSON MS AREA D
1ME-205	BENSON MS AREA E
1ME-206	BENSON MS AREA F
1ME-401	BENSON MS ENLARGED PLANS
1M-402	BENSON MS ENLARGED PLANS
1M-601	BENSON MS SCHEDULES
1M-602	BENSON MS SCHEDULES
1M-603	BENSON MS SCHEDULES
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2M-110	MCGEES MS OVERALL FIRST FLOOR PLAN
2ME-201	MCGEES MS AREA A
2ME-202	MCGEES MS AREA B
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2ME-204	MCGEES MS AREA D
2ME-205	MCGEES MS AREA E
2ME-206	MCGEES MS AREA F
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2M-601	MCGEES MS SCHEDULES
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2M-603	MCGEES MS SCHEDULES
2E-601	MCGEES MS SCHEDULES
3M-110	FOUR OAKS MS OVERALL FIRST FLOOR PLAN
3ME-201	FOUR OAKS MS AREA A
3ME-202	FOUR OAKS MS AREA B
3ME-203	FOUR OAKS MS AREA C
3ME-204	FOUR OAKS MS AREA D
3ME-205	FOUR OAKS MS AREA E
3ME-206	FOUR OAKS MS AREA F
3ME-401	FOUR OAKS MS ENLARGED PLANS
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3E-601	FOUR OAKS MS SCHEDULES
4M-110	RIVERWOOD MS OVERALL FIRST FLOOR PLAN
4ME-201	RIVERWOOD MS AREA A
4ME-202	RIVERWOOD MS AREA B
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4ME-204	RIVERWOOD MS AREA D
4ME-205	RIVERWOOD MS AREA E
4ME-206	RIVERWOOD MS AREA F
4ME-401	RIVERWOOD MS ENLARGED PLANS
4M-601	RIVERWOOD MS SCHEDULES
4M-602	RIVERWOOD MS SCHEDULES
4M-603	RIVERWOOD MS SCHEDULES
4E-601	RIVERWOOD MS SCHEDULES

DRAWING NUMBER CODE

#X ###

BUILDING NUMBER
0 = ALL PACKAGE 6 BUILDINGS

PACKAGE 6
1 = BENSON MIDDLE SCHOOL
2 = MCGEES MIDDLE SCHOOL
3 = FOUR OAKS MIDDLE SCHOOL
4 = RIVERWOOD MIDDLE SCHOOL

DISCIPLINE CODE
G = GENERAL INFORMATION ALL TRADES
A = ARCHITECTURAL
M = MECHANICAL
E = ELECTRICAL
C = CONTROLS
S = STRUCTURAL
F = FIRE PROTECTION
P = PLUMBING
T = TELECOM

DRAWING GROUP
0 = MISC. INFO.
1 = FLOOR PLANS
2 = AREA PLANS
3 = RISERS
4 = ENLARGED PLANS
5 = DETAILS
6 = SCHEDULES
7 = SCHEMATICS, POINTS, & SEQUENCES
700 - GENERAL CONTROLS
701-709 - HOT WATER CONTROLS
710-719 - CHILLED WATER CONTROLS
720 - MISC. AIR CONTROLS
721-729 - AHU CONTROLS

FLOOR NUMBER OR SEQUENCE NUMBER

SEQUENCE NUMBER

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6 (2)
JOHNSTON COUNTY, NC

SEAL

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

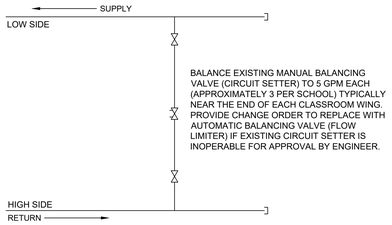
TITLE
COVER SHEET

PROJECT NO. 5159407-P3

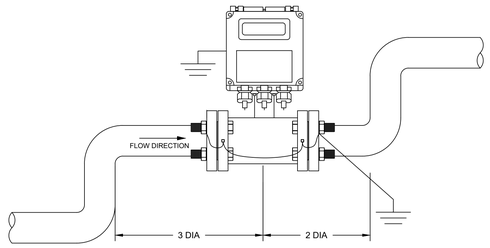
0G-001

SHEET NO. . OF ##

12/22/2016 9:07:16 AM
P:\5015\5159407\CAD\PACKAGE 6\LEAD SHEETS\5015159407-P6 0G-001 COVER SHEET.DWG



1 END OF LINE MINIMUM FLOW BYPASS — SCALE: NTS



INSTALL VIA MANUFACTURER'S INSTALLATION INSTRUCTIONS INCLUDING BUT NOT LIMITED TO STRAIGHT RUN AND GROUNDING REQUIREMENTS.

2 IN-LINE FLOW METER INSTALLATION — SCALE: NTS

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

JOHNSTON COUNTY, NC

SEAL

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/14/23

DRAWN BY SD
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE

DETAILS

PROJECT NO. 5159407-P3

1

0M-502

SHEET NO. . OF ##

0 - GENERAL EXHAUST FANS, CONSTANT VOLUME, BAS CONTROLLED

0.1. Operation

A. Safety Devices: Safeties shall be in operation at all times (MSD in auto, hand, override, etc).

1. Hardwire low limit pressure safety with manual reset for exhaust fan.

B. Start/Stop

1. Interlock exhaust fans with AHU occupied operation: start/stop exhaust fan with associated air handling unit. See schedule for exhaust fans and their associated air handling unit.
2. For exhaust fans that run continuously: start exhaust fan and run continuously, regardless of occupancy or air handler status.
3. Determine fan status through an adjustable current sensor. Set current sensor to identify when belt broken. If a fan fails to start as commanded, generate an alarm. If fan belt is broken, generate an alarm.

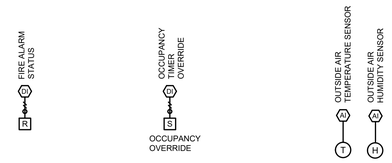
C. For exhaust fans with motorized backdraft dampers: provide logic, either hardwired or software, to ensure damper is open prior to starting the exhaust fan. If damper does not open, generate an alarm.

0.2. Graphical Interface

A. Provide a tabular graphical display for all Exhaust Fans, with the following points:

- Exhaust fan service and location (ex: wing A general, bathroom 203, etc)
- Exhaust fan status, on/off/alarm, speed command, speed feedback, fault and fault text
- Associated AHU

1	GENERAL EXHAUST FAN	SCALE: NTS
		##-##-##-##



MISCELLANEOUS SEQUENCES

0 - OUTSIDE AIR TEMPERATURE AND HUMIDITY

0.1. Operation

A. Provide combination outside air temperature and humidity combination sensor on north wall of building. Locate away from any building corners or vortices. Locate away from sources which will impact readings (sun, exhaust, wind, etc).

B. Economizer operation for all equipment shall be based off the local outside air sensor.

C. Networked weather shall be displayed on the main graphics page for the building.

D. When outside air temperature and/or humidity is displayed on a graphic, indicate which sensor the reading is coming from (local, networked, etc).

0.2. Graphical Interface

A. Provide a graphical display for the outside air temperature and humidity sensor, with the following points:

- Outside air temperature and humidity

1 - FIRE ALARM CONTROL PANEL, BAS MONITORING ONLY

1.1. Operation

A. Fire alarm control panel will operate independently from the BAS.

B. Monitor fire alarm control panel auxiliary contacts. When alarm contact closes, generate alarm.

1.2. Graphical Interface

A. Provide a graphical display for the fire alarm control panel, with the following points:

- Fire alarm control panel alarm

2 - TIMER SWITCH

2.1. Operation

A. Provide wall mounted spring wound countdown timer switch for occupancy override for each admin and gymnasium area located in principal and athletic director / coach office.

B. Wire to nearest controller.

C. Override occupancy schedule for associated equipment to occupied while timer is active.

2.2. Graphical Interface

A. Provide a graphical display with the timer status and a list of the associated equipment with the following points:

- Admin Timer Switch Status
- Gymnasium Timer Switch Status

2

3 - DOMESTIC WATER MONITORING AND UNOCCUPIED LEAKAGE ALARM

3.1. Operation

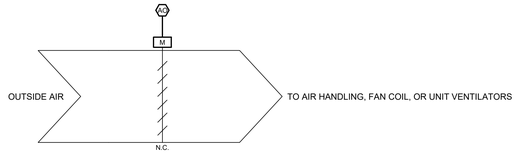
A. Electromagnetic Flow Meters shall measure domestic water flow in gallons per minute. This flow rate will be monitored during unoccupied times to alarm above a user definable threshold. Generate an alarm at the BAS if all systems are unoccupied and instantaneous domestic water flow rises above an adjustable leak detection setpoint (initially 10GPM). BAS shall also totalize domestic water flow and reset monthly.

3.2. Graphical Interface

A. Provide a graphical display with the following points:

- Instantaneous Domestic Water Flow
- Totalized Domestic Water Flow
- Domestic water unoccupied leakage alarm and setpoints

2	MISCELLANEOUS POINTS	SCALE: NTS
		##-##-##-##



0 - COMMON OA DAMPER

0.1. Operation

A. Safety Devices: Safeties shall be in operation at all times.

1. Freeze Protection
   a. If associated air handling unit shuts down on freeze protection, close common OA damper.
   b. Fan coil units with common outdoor air ductwork do not have physical freeze protection devices. Programmed freeze protection will be implemented. When outdoor air temperature falls below 20°F (adj.) during occupied times the common outdoor air dampers feeding fan coil units, blower coil units, and unit ventilators shall be commanded closed.
2. Fire Alarm Shutdown: When the fire alarm is active, set dampers to off positions. Generate an alarm.

B. Common OA Dampers

1. General
   a. Monitor associated AHUs status.
   b. Open damper for minimum ventilation when any of the associated AHUs goes into occupied mode.
2. Minimum Ventilation Operation
   a. When any AHU fan is running, the outside dampers are indexed to the minimum outside air position, initially 100% (adj.) open, to be determined by TAB.
      A) Note to TAB contractor: The value for each damper shall be determined individually to maintain the design OA flow (see AHU schedule).

0.2. Unoccupied & Preoccupied Mode Operation

A. Close common OA damper.

0.3. Graphical Interface

A. Provide a graphical display for the common OA damper, with a schematic of the unit and the following points.

- Damper position and setpoint
- Associated Air Handling Units & Calculated CO2 value
- Occupancy status
- Fire Alarm Status

3	COMMON OA DAMPER	SCALE: NTS

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

JOHNSTON COUNTY, NC

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042058 WESTON L. HOCKEN

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD

APPROVED BY WLH

CHECKED BY JPH

DATE 11/22/2023 P6

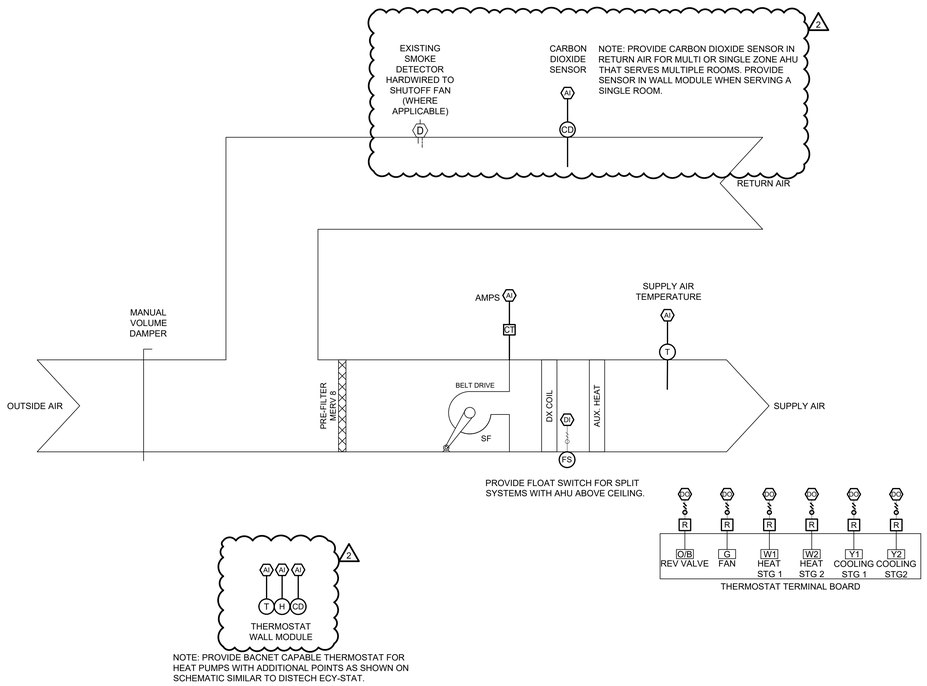
TITLE

CONTROL SCHEMATICS & SEQUENCES

PROJECT NO. 5159407-P3

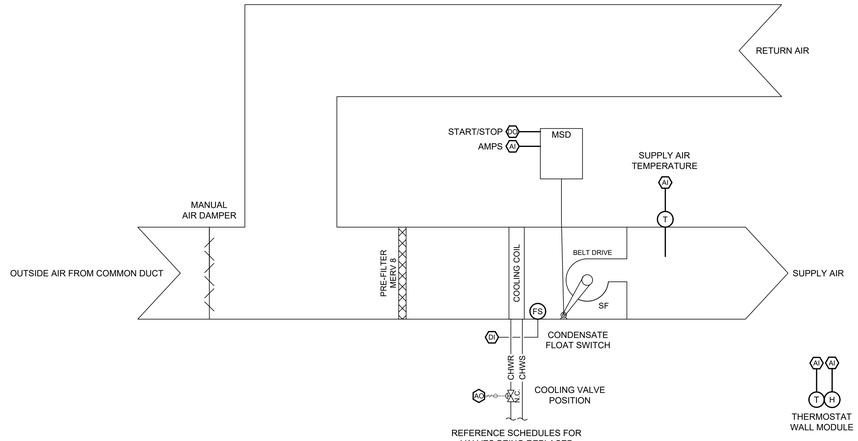
0M-720

SHEET NO. . OF ##



2 SINGLE-ZONE CONSTANT VOLUME AIR HANDLING UNITS - HEAT PUMP

SCALE: NTS



2 MDF FAN COIL UNIT CONTROL DIAGRAM - COOLING ONLY

SCALE: NTS

0 - SINGLE-ZONE CV AIR HANDLING UNITS – HEAT PUMP

0.1. Operation

A. Safety Devices: Safeties shall be in operation at all times (Fan in auto, hand, override, etc). Fan command/status mismatch is proxy for safety alarm(s).
1. Fire Alarm Shutdown: When the fire alarm is active, stop fan. Generate an alarm. Safety shall be hardwired and require manual reset (via fire alarm system control panel).
2. Float Switch: When the float switch is active, stop fan. Generate an alarm. Safety shall be hardwired and require manual reset (via graphic). Float switch shall be installed by manufacturer on cooling drain pan or provided by the controls contractor. Coordinate with equipment.
3. After all safeties have cleared, allow AHU operation.

B. Supply Fan
1. The fan shall either
   a. run continuously, or
   b. cycle with heating and cooling, without circulation, or
   c. cycle with heating and cooling, plus circulation. If the fan does not run for 30 minutes (adj) due to heating or cooling, enable fan to run for 5 minutes (adj). The timer shall be reset after every circulation, heating, or cooling cycle, regardless of fan elapsed runtime.

   Provide dropdown on front-end for user selection. Initial configuration shall be run continuously.
2. Determine fan status through a current sensor. Set current sensor to identify when belt broken. If a fan fails to start as commanded, generate an alarm. If fan belt is broken, generate an alarm.
3. On a signal to start, after all safeties have been cleared, energize the fan.
4. Once supply fan status is proved on, start general exhaust fan (s).

A. Outside Dampers
1. Dampers are manual/fixed. No BAS control required.

B. DX Coil (Heat Pump) w/ Emergency Heat
1. When the fan is running, stage/modulate compressor(s) to provide DX cooling to maintain the space at the cooling setpoint (72°F, adj).
2. When the fan is running, energize/de-energize the reversing valve and stage/modulate compressor(s) to provide DX heating to maintain the space at the heating setpoint (68°F, adj).
   a. Disable DX heating when outside temperature is below 20°F (adj).
3. If the DX heating cannot maintain the space temperature at the heating setpoint, stage/modulate emergency heat to maintain the space at the heating setpoint.
4. The BAS shall provide a minimum 2°F (non-adj) deadband between cooling and heating setpoints.
5. Monitor supply air temperature.
   a. If the DX heating is running, and the supply air temperature does not reach 80°F (adj) after 5 minutes (adj), generate an alarm.
   b. If the DX cooling is running, and the supply air temperature does not reach 55°F (adj) after 5 minutes (adj), generate an alarm.
6. Provide adjustable outside air temperature lockout for heating and cooling modes.
   a. Cooling mode – enable when greater than 65F
   b. Heating mode – enable when less than 55F.

C. Additional Control Requirements
1. Provide with wall module (see "Wall Module Requirements").
2. When space humidity rises above 65% (adj) for 15 minutes (adj), generate an alarm.
3. When the space CO2 rises above 1,100 ppm (adj), generate an alarm. Provide the space CO2 to the controller for demand control ventilation (where applicable).

D. Belt (where applicable)
1. Generate an alarm for belt change when fan runtime exceeds user input maximum (8,000 hours, adj).

0.2. Unoccupied Mode Operation

A. Unit shall operate as described above, except:
1. Fan mode shall be cycle with heating and cooling, without circulation regardless of user selection.
2. Increase cooling setpoint to 78°F (unoccupied cooling setpoint, adj) and decrease heating setpoint to 62°F (unoccupied heating setpoint, adj).
3. If the occupancy override is pressed, or the space temperature rises above the unoccupied cooling setpoint, or falls below the unoccupied heating setpoint, place the unit into preoccupancy mode. The AHU shall control to the occupied setpoints.
4. The unit shall return to unoccupied operation when occupied setpoints are reached, the minimum runtime of 30 minutes (adj) has been met, and the occupancy override expires.

0.3. Preoccupancy Mode Operation

A. Unit shall enter preoccupancy period prior to occupied period in accordance with optimum start/stop strategy.

B. Unit shall operate as described above, except:
1. Dampers shall be in off position. Minimum outside air shall not be introduced.

0.4. Graphical Interface

A. Provide a graphical display for the Air Handling Unit, with a schematic of the unit and the following points:
- System on/off
- Occupancy status
- Fire alarm, float switch, and other alarms
- Supply fan on/off, mode, and runtime
- Supply fan status and alarm
- DX stages, reversing valve, and heating/cooling mode
- Belt runtime and time to next change
- Emergency heat stages (where applicable)
- Space temperature and heating/cooling setpoints
- Space temperature setpoint max and min limits
- Space override status
- Space humidity, alarm, and alarm setpoint (where applicable)
- Space CO2 level, alarm and alarm setpoint (where applicable)
- Supply air temperature and alarms
- Associated exhaust fan status(es)

0 - SINGLE ZONE CV MDF FAN COIL UNIT COOLING ONLY (NO ECONOMIZER W/ COMMON OAD)

0.1. Operation

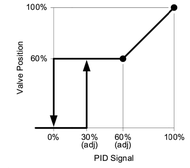
A. Safety Devices: Safeties shall be in operation at all times (Fan starter/VFD in auto, hand, override, etc).
1. Float Switch (Where Applicable): When the float switch is active, stop fan and return valves and dampers to off positions. Generate an alarm. Safety shall be hardwired and require manual reset (via graphic). Float switch shall be installed by manufacturer on cooling drain pan.
2. After all safeties have cleared, allow FCU operation.

B. Supply Fan
1. The fan shall either
   a. run continuously, or
   b. cycle with cooling, without circulation, or
   c. cycle and cooling, plus circulation. If the fan does not run for 30 minutes (adj) due to cooling, enable fan to run for 5 minutes (adj). The timer shall be reset after every circulation or cooling cycle, regardless of fan elapsed runtime.

   Provide dropdown on front-end for user selection. Initial configuration shall be run continuously.
2. Determine fan status through a current sensor. If a fan fails to start as commanded, generate an alarm.

C. Outside Damper and Exhaust Fan Interlock (Where Applicable)
   A) See schedules and plans for locations with details found on 0M-720.

D. Cooling Coil (CHW) – New modulating valve actuators
1. When the fan is running, the cooling valve shall modulate to maintain the space at the cooling setpoint, initially 68+2=70°F (2°F deadband above DMSS setpoint, adj), in accordance with the PID chart below.



E. Additional Control Requirements
1. Provide with wall module (see "Wall Module Requirements").
2. If space humidity remains above 65% (adj) for 15 minutes (adj), generate an alarm.

F. Belt (where applicable)
1. Generate an alarm for belt change when fan runtime exceeds user input maximum (8,000 hours, adj).

0.2. Unoccupied Mode Operation

A. Unit shall operate as described above, except:
1. Fan shall be off, and valves and dampers shall be in off positions.
2. Increase cooling setpoint to 75°F (unoccupied cooling setpoint, adj)
3. If the occupancy override is pressed, or the space temperature rises above the unoccupied cooling setpoint, place the unit into preoccupancy mode. The unit shall control to the occupied setpoints.
4. The unit shall return to unoccupied operation when occupied setpoints are reached, the minimum runtime of 30 minutes (adj) has been met, and the occupancy override expires.

0.3. Preoccupancy Mode Operation

A. Unit shall enter preoccupancy period prior to occupied period in accordance with optimum start/stop strategy.

0.4. Graphical Interface

A. Provide a graphical display for the AHU, with a schematic of the unit and the following points.
- System on/off
- Occupancy status
- Freeze protection and alarm setpoint
- Float switch(es) alarms
- Supply fan status, on/off/alarm
- Common outside damper commands (where applicable)
- Exhaust Fan commands (where applicable)
- CHW coil valve commands
- Belt runtime and time to next change
- Space/Return temperature and cooling setpoints
- Space/Return temperature setpoint max and min limits
- Space override status
- Space/Return humidity, alarm, and alarm setpoint (where applicable)
- Supply air temperature

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
JOHNSTON COUNTY, NC

SEAL

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

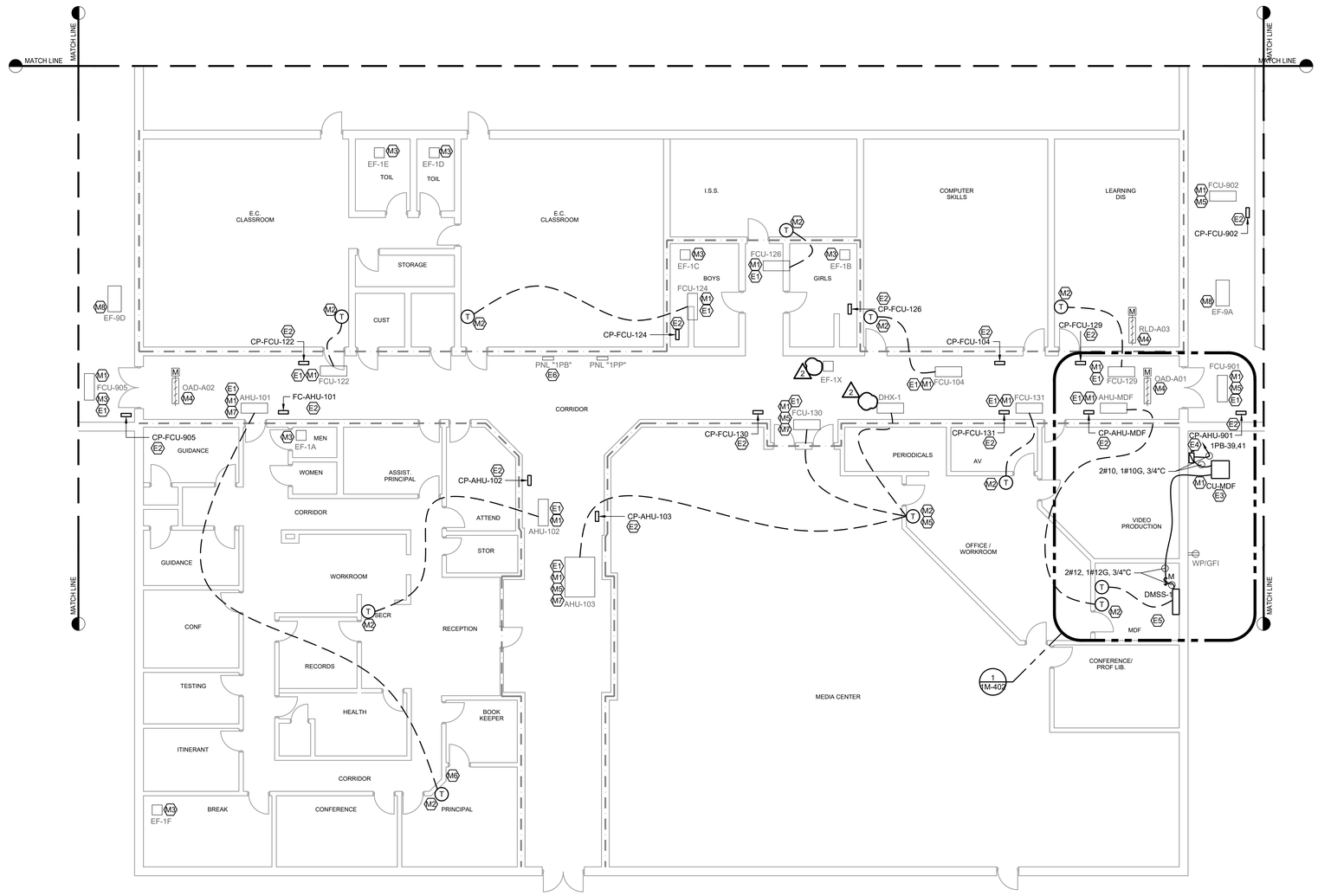
TITLE

CONTROL SCHEMATICS & SEQUENCES

PROJECT NO. 5159407-P3

0M-723

SHEET NO. . OF ##



1 FIRST FLOOR AREA A

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

0' 4" 8" 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M6. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

M7. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M8. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

M9. NOT USED

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

E3. DISCONNECT AND REMOVED DISCONNECT SWITCH AND WIRING TO AC-MDF. CIRCUIT 1PP-13,15,17 TO BE REMOVED BACK TO PANEL. UP DATE PANEL DIRECTORY. PANEL NET LOAD DECREASED.

E4. PROVIDE 208V, 2P, 30A FUSED DISCONNECT SWITCH IN A NEMA TYPE 3R ENCLOSURE FOR CU-1. FUSE TO BE SIZED PER MANUFACTURER RECOMMENDATION. PROVIDE POWER CONNECTION TO CU-1 WITH LIQUID TIGHT FMC. PROVIDE 3/4"C WITH FIELD SUPPLIED INTERCONNECTING WIRING BETWEEN CU-1 AND DMSS-1. PROVIDE SOURCE DESIGNATION LABEL FOR DISCONNECT SWITCH. UPDATE PANEL DIRECTORY.

E5. PROVIDE 208V, 2P, 20A TOGGLE STARTER SWITCH IN A NEMA TYPE 1 ENCLOSURE FOR DMSS-1 WITH SOURCE DESIGNATION LABEL. PROVIDE POWER CIRCUIT CONNECTION TO UNIT WITH LIQUID TIGHT FMC.

E6. REFER TO PANEL SCHEDULE ON SHEET 1E-601 FOR ADDITIONAL WORK. COORDINATE SHUTDOWN WITH OWNER. PROVIDE UPDATED PANEL DIRECTORY.

GENERAL LEGEND

- # REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

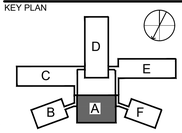
BENSON MIDDLE SCHOOL
1600 N WALL ST,
BENSON, NC 27504

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 KRISTEN L. HOGAXON — 12/14/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022057 JONATHAN P. COMPTON — 12/14/2023

KEY PLAN



AREA A | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
BENSON MS AREA A

PROJECT NO. 50159407-P6

1ME-201

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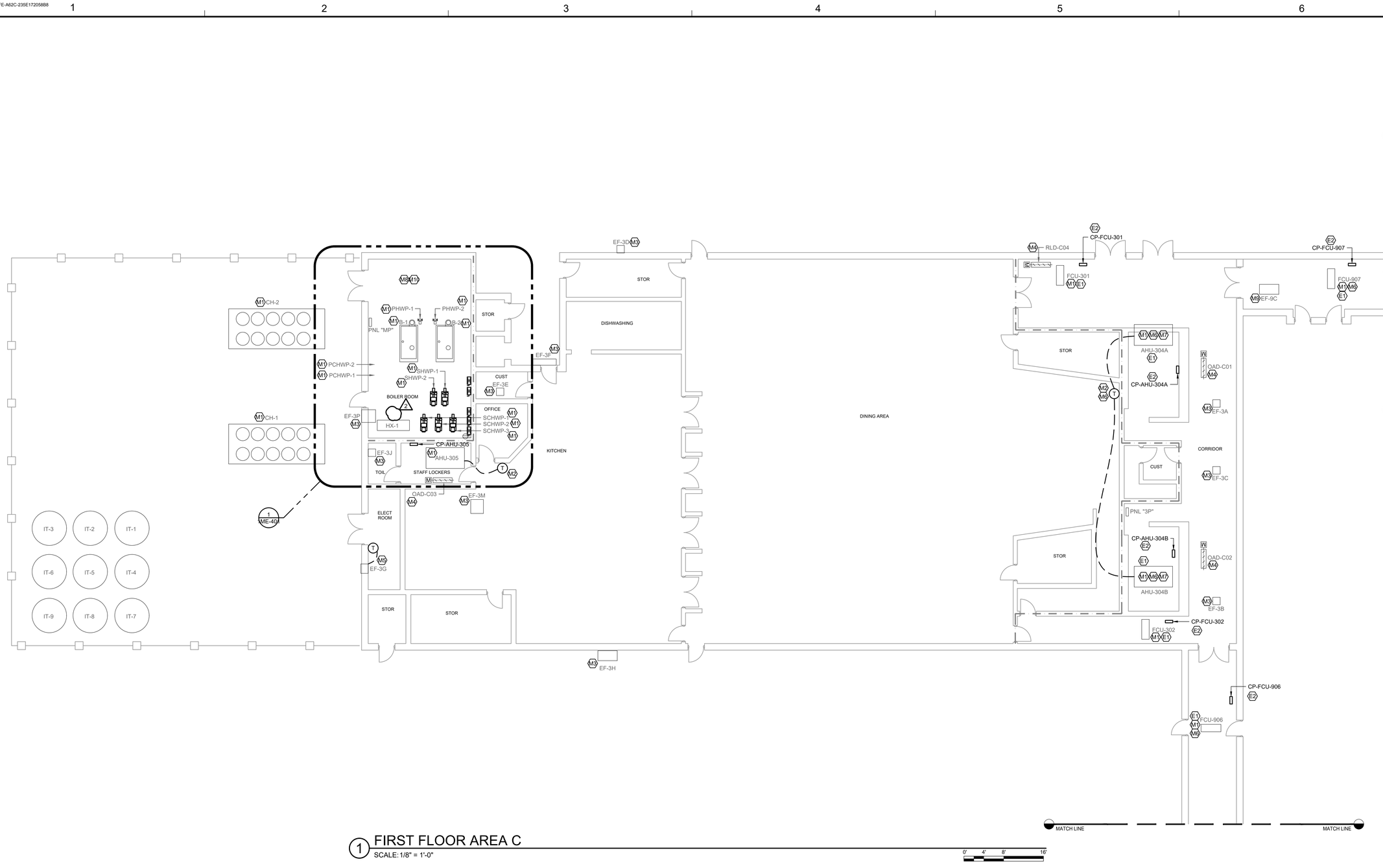

1 FIRST FLOOR AREA C
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. EXISTING FAN HARDWIRED TO THERMOSTAT OR SWITCH, NOT INCLUDED IN BAS SCOPE.

M6. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M7. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M8. PROVIDE NEW WATER METER, ONICON FM-3200, OR EQUAL, IN EXISTING WATER PIPING UPSTREAM OF ALL BRANCH CONNECTIONS. METER SHALL BE MOUNTED BY BAS AND PROVIDE ALARM OF HIGH WATER FLOW UNDER UNOCCUPIED MODE.

M9. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

M10. PROVIDE NEW ACTUATOR FOR EXISTING ICE STORAGE THREE WAY CONTROL VALVE.

M11 (NOT USED) 2

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- # REVISION NUMBER
- # KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

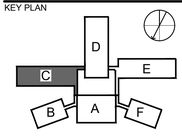
BENSON MIDDLE SCHOOL
1600 N WALL ST,
BENSON, NC 27504

SEAL

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 042056 — 12/14/2023

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 022057 — 12/14/2023

KEY PLAN



AREA C | NTS

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE

BENSON MS
AREA C

PROJECT NO. 50159407-P6

1ME-203

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AIR SYSTEMS CONTROL SCHEDULE - BENSON MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
AHU-101	AHU	A	ADMIN OFFICES - PERIMETER	1/0M-721	250/250	2,3,4,6
AHU-102	AHU	A	ADMIN OFFICES - INTERIOR	1/0M-721	200/200	2,3,4,6
AHU-103	AHU	A	MEDIA CENTER 130	1/0M-721	185/560	2,3,4,5,6
FCU-104	AHU	A	COMPUTER LAB 128	1/0M-721	230/230	2,3,4,6
FCU-122	FCU	A	E.C. CLASSROOM 122	1/0M-722	240	1,2,3,4,6
FCU-124	FCU	A	E.C. CLASSROOM 124	1/0M-722	160	1,2,3,4,6
FCU-126	FCU	A	I.S.S. 126 / TOILET / CORRIDOR	1/0M-722	400	1,2,3,4,6
FCU-129	FCU	A	LEARNING DIS. 129	1/0M-722	120	1,2,3,4,6
FCU-130	FCU	A	LEISURE READING AREA	1/0M-722	135	1,2,3,4,6
FCU-131	FCU	A	MEDIA CENTER OFFICES	1/0M-722	120	1,2,3,4,6
FCU-201	FCU	D	BAND ROOM 201A	1/0M-722	215	1,2,3,4,6
FCU-202	FCU	D	CHORAL ROOM 202A / OFFICE	1/0M-722	215	1,2,3,4,6
FCU-203	FCU	D	ART ROOM 203A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-204	FCU	D	HEALTH/PE 204A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-207	FCU	D	MALE TOILETS 207 / LOBBY 208 E	1/0M-722	250	1,2,3,4,6
FCU-208	FCU	D	FEMAIL TOILETS 206 / LOBBY 208 W	1/0M-722	310	1,2,3,4,6
AHU-214A	AHU	D	GYM 214 - EAST	1/0M-721	400/6000	2,3,4,5,6
AHU-214B	ERV	D	GYM 214 - WEST	2/0M-721	6000	1,2,3,4,5,6
FCU-216	FCU	D	FEMALE LOCKER 216 / OFFICES	1/0M-722	570	1,2,3,4,6
FCU-222	FCU	D	MALE LOCKER 222 / CORRIDOR	1/0M-722	600	1,2,3,4,6
FCU-301	FCU	C	GIRLS 301 / CORRIDOR 300 NORTH	1/0M-722	300	1,2,3,4,5,6
FCU-302	FCU	C	BOYS 303 / CORRIDOR 300 SOUTH	1/0M-722	300	1,2,3,4,5,6
AHU-304A	AHU	C	DINING ROOM 304 NORTH	1/0M-721	925/1350	2,3,4,5,6
AHU-304B	AHU	C	DINING ROOM 304 SOUTH	1/0M-721	920/1350	2,3,4,5,6
AHU-305	AHU	C	KITCHEN AREA	1/0M-721	425/425	2,3,4,6
FCU-601	FCU	B	RESOURCE 601 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-602	FCU	B	CLASSROOM 602	1/0M-722	200	1,2,3,4,6
FCU-603	FCU	B	CLASSROOM 603	1/0M-722	240	1,2,3,4,6
FCU-604	FCU	B	CLASSROOM 604 & STORAGE 600D	1/0M-722	240	1,2,3,4,6
FCU-605	FCU	B	CLASSROOM 605	1/0M-722	240	1,2,3,4,6
FCU-607	FCU	B	CLASSROOM 607	1/0M-722	240	1,2,3,4,6
FCU-608	FCU	B	CLASSROOM 608 & STORAGE 606	1/0M-722	250	1,2,3,4,6
FCU-611	FCU	B	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-612	FCU	B	BOYS 610 / GIRLS 612 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-701	FCU	F	RESOURCE 701 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-702	FCU	F	CLASSROOM 702	1/0M-722	200	1,2,3,4,6
FCU-703	FCU	F	CLASSROOM 703	1/0M-722	240	1,2,3,4,6
FCU-704	FCU	F	CLASSROOM 704 & STORAGE 700D	1/0M-722	240	1,2,3,4,6
FCU-705	FCU	F	CLASSROOM 705	1/0M-722	240	1,2,3,4,6
FCU-707	FCU	F	CLASSROOM 707	1/0M-722	240	1,2,3,4,6
FCU-708	FCU	F	CLASSROOM 708 & STORAGE 706	1/0M-722	250	1,2,3,4,6
FCU-711	FCU	F	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-712	FCU	F	BOYS 710 / GIRLS 712 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6

AIR SYSTEMS CONTROL SCHEDULE - BENSON MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
FCU-801	FCU	E	RESOURCE 801 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-802	FCU	E	CLASSROOM 802	1/0M-722	240	1,2,3,4,6
FCU-803	FCU	E	CLASSROOM 803	1/0M-722	240	1,2,3,4,6
FCU-804	FCU	E	CLASSROOM 804 & STORAGE 800D	1/0M-722	240	1,2,3,4,6
FCU-805	FCU	E	CLASSROOM 805	1/0M-722	240	1,2,3,4,6
FCU-807	FCU	E	CLASSROOM 807	1/0M-722	240	1,2,3,4,6
FCU-808	FCU	E	CLASSROOM 808 & STORAGE 806	1/0M-722	240	1,2,3,4,6
FCU-809	FCU	E	CLASSROOM 809	1/0M-722	240	1,2,3,4,6
FCU-811	FCU	E	CONFERENCE / STAFF/ TOILETS	1/0M-722	150	1,2,3,4,6
FCU-812	FCU	E	BOYS 810 / GIRLS 812 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-814	FCU	E	CLASSROOM 814 / STORAGE 816	1/0M-722	240	1,2,3,4,6
FCU-815	FCU	E	CLASSROOM 815	1/0M-722	240	1,2,3,4,6
FCU-817	FCU	E	CLASSROOM 817	1/0M-722	240	1,2,3,4,6
FCU-818	FCU	E	CLASSROOM 818 / STORAGE 800E	1/0M-722	240	1,2,3,4,6
FCU-819	FCU	E	CLASSROOM 819 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-901	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-902	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-903	FCU	E	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-904	FCU	E	CONNECTOR 902	1/0M-722	100	1,2,3,4,5,6
FCU-905	FCU	A	CONNECTOR 100-600 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-906	FCU	C	CONNECTOR 100-300 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-907	FCU	C	CONNECTOR 903	1/0M-722	100	1,2,3,4,5,6
DHX-1	DHX	A	MEDIA CENTER	-	100	7
AHU-MDF	FCU	A	MDF 135	2/0M-723	-	2,3,4

NOTES:

1. PROVIDE TEST AND BALANCE TO DETERMINE VENTILATION SETTING FOR OUTSIDE AIR DAMPER POSITION. OUTSIDE AIR FLOW RATES WERE OBTAINED FROM ORIGINAL DESIGN ASBUILTS.
2. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS
3. PROVIDE EQUIPMENT CONTROLLER AND SENSORS. SEE ASSOCIATED CONTROL SCHEMATIC FOR POINTS TO INCLUDE.
4. DEMOLISH CHILLED WATER AND HEATING HOT WATER CONTROL VALVES FOR AHU AND PROVIDE NEW 2 WAY PRESSURE INDEPENDENT CONTROL VALVES. PROVIDE NEW 2-WAY CONTROL VALVE TO MATCH EXISTING SIZE. MODIFY PIPING AS NECESSARY TO ACCOMODATE NEW
5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.
6. DEMOLISH AND PROVIDE NEW ACTUATOR(S) FOR MOTOR-OPERATED DAMPERS. MULTIPLE UNITS SERVED BY ONE OAD, NOT ONE PER UNIT. MATCH EXISTING COMMAND.
7. EXISTING EQUIPMENT INTERLOCK TO REMAIN.

LOUVER DAMPER SCHEDULE - BENSON MIDDLE SCHOOL

MARK	TYPE	LOCATION	LOCATION (ORIGINAL)	SERVICE	ASSOCIATED LOUVER	CONTROL SCHEMATIC NUMBER	MAXIMUM AIRFLOW CFM	NOTES
OAD-A01	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-103, FCU-104, FCU-124, FCU-125, FCU-129, FCU-130, FCU-131	LV-1A	3/0M-720	1500	1
OAD-A02	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-101, AHU-102, FCU-122	LV-1B	3/0M-720	2800	1
RLD-A03	AHU RELIEF AIR DAMPER	AREA A	AREA 100	FCU-129	LV-1C	3/0M-720	2400	1
OAD-B01	OUTSIDE AIR DAMPER	AREA B	AREA 600	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-6A	3/0M-720	3750	1
OAD-B02	OUTSIDE AIR DAMPER	AREA B	AREA 600	FCU-606, FCU-607, FCU-611, FCU-612	LV-6B	3/0M-720	3750	1
OAD-C01	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3A	3/0M-720	2250	1
OAD-C02	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3B	3/0M-720	2250	1
OAD-C03	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-305	LV-3Z	1/0M-721	-	1
RLD-C04	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304A, AHU-304B	LV-3C	1/0M-721	3750	1
OAD-D01	OUTSIDE AIR DAMPER	AREA D	AREA 200	FCU-201, FCU-202	LV-2A	3/0M-720	2250	1
OAD-D02	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214A, FCU-204, FCU-208	LV-2B	3/0M-720	2250	1
OAD-D03	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214B, FCU-203, FCU-207	LV-2C	3/0M-720	2250	1
RLD-D04	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214A	LV-2D	1/0M-721	3750	1
RLD-D05	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214B	LV-2E	1/0M-721	3750	1
OAD-E01	OUTSIDE AIR DAMPER	AREA E	AREA 800	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-8A	3/0M-720	2250	1
OAD-E02	OUTSIDE AIR DAMPER	AREA E	AREA 800	FCU-606, FCU-607, FCU-611, FCU-612	LV-8B	3/0M-720	2250	1
OAD-F01	OUTSIDE AIR DAMPER	AREA F	AREA 700	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-7A	3/0M-720	2250	1
OAD-F02	OUTSIDE AIR DAMPER	AREA F	AREA 700	FCU-606, FCU-607, FCU-611, FCU-612	LV-7B	3/0M-720	2250	1

NOTES:

1. PROVIDE NEW ACTUATOR AND CONTROL WIRING TO EQUIPMENT CONTROLLER. TEST AND BALANCE TO VALUES IN COMMON OUTSIDE AIR DAMPER SCHEMATIC.
2. SINGULAR RELIEF DAMPER ACTUATOR CONTROLLED BY AHU304A. NO SIGNAL FOR RELIEF DAMPER FROM 304B.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

BENSON MIDDLE SCHOOL
1600 N WALL ST,
BENSON, NC 27504

SEAL

NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 042056 ENGINEER WILSON L. HOLLADAY

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE

BENSON MS SCHEDULES

PROJECT NO. 50159407-P6

1M-601

SHEET NO. . OF

HYDRONIC SYSTEMS CONTROL SCHEDULE - BENSON MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	HYDRONICS FLOW (GPM)	NOTES
B-1	BOILER - CI	C	BUILDING	1/0M-701	110	1,2,5
B-2	BOILER - CI	C	BUILDING	1/0M-701	110	1,2,5
SHWP-1	PUMP	C	BUILDING	1/0M-701	250	1,2,3,4,5
SHWP-2	PUMP	C	BUILDING	1/0M-701	250	1,2,3,4,5
PHWP-1	PUMP	C	BOILER 1	1/0M-701	110	1,5
PHWP-2	PUMP	C	BOILER 2	1/0M-701	110	1,5
CH-1	ACC	C	BUILDING	1/0M-710	300	1,2,5
CH-2	ACC	C	BUILDING	1/0M-710	300	1,2,5
SCHWP-1	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
SCHWP-2	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
SCHWP-3	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
PCHWP-1	PUMP	C	CHILLER 1	1/0M-710	325	1,5
PCHWP-2	PUMP	C	CHILLER 2	1/0M-710	325	1,5
HX-1	HXR	C	HEAT EXCHANGER	1/0M-710	650	1,2,5

NOTES:
1. PROVIDE NEW EQUIPMENT CONTROLLER AND EQUIPMENT LABEL. SEE SCHEMATIC FOR POINTS.
2. REFER TO CONTROL VALVE SCHEDULE FOR NEW SECONDARY PLANT CONTROL VALVE.
3. REFER TO VFD SCHEDULE FOR NEW VFDS FOR PUMPS.
4. REFER TO PUMP SCHEDULE FOR NEW PUMP.
5. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.

PUMP SCHEDULE - BENSON MIDDLE SCHOOL

MARK	SERVICE	TYPE	MANUFACTURER / MODEL	SUCTION (IN DIA)	DISCHARGE (IN DIA)	IMPELLER (IN DIA)	FLOW (GPM)	HEAD (FT H2O)	EFF. (%)	SPEED (RPM)	BRAKE MOTOR (HP)	NOMINAL MOTOR (HP)	VOLTAGE/ PHASE	STARTER/ DSCNNCT MEANS	NOTES
SCHWP-1	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SCHWP-2	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SCHWP-3	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SHWP-1	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3
SHWP-2	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3

NOTES:
1. REFER TO SECTION 232123 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE STARTING AND DISCONNECTING MEANS AS SCHEDULED. (MRS = MOTOR RATED SWITCH; MS/D = COMBINATION MOTOR-STARTER AND DISCONNECT; AND VFD = VARIABLE FREQUENCY DRIVE)
3. PUMPS MOTOR SELECTION SHALL BE BASED ON NON-OVERLOADING SERVICE.

VARIABLE FREQUENCY DRIVE SCHEDULE - BENSON MIDDLE SCHOOL

MARK	VOLTS	PHASE	HP	BYPASS	NEMA ENCLOSURE	MANUFACTURER	MODEL NO.	NOTES
VFD-SCHWP-1	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-2	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-3	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-1	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-2	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4

NOTES:
1. REFER TO SECTION 230514 FOR ADDITIONAL REQUIREMENTS.
2. FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
3. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.
4. EXTEND AND CONNECT PREVIOUS CIRCUIT TO NEW PUMP CONTROLLER PANELS, VFDs, AND PUMPS.

BENSON MS - DUCTLESS MINI-SPLIT UNIT SCHEDULE

MARK (INDOOR UNIT)	MARK (OUTDOOR UNIT)	SERVICE	TYPE	MANUFACTURER / MODEL INDOOR & OUTDOOR	REFRIG. TYPE	SUPPLY AIR FLOW (CFM)	COOLING TOT. CAP. (MBH)	COOLING SEER/EER (BTUH/W)	MAX. SOUND INDOOR (dBA)	MAX. SOUND OUTDOOR (dBA)	ELECTRICAL - INDOOR UNIT MCA (A)	ELECTRICAL - INDOOR UNIT VOLTAGE/ PHASE	ELECTRICAL - OUTDOOR UNIT MCA (A)	ELECTRICAL - OUTDOOR UNIT MOCP (A)	ELECTRICAL - OUTDOOR UNIT VOLTAGE/ PHASE	DIMENSIONS AND WEIGHT - OUTDOOR FOOTPRINT (FT x FT)	DIMENSIONS AND WEIGHT - OUTDOOR HEIGHT (FT)	DIMENSIONS AND WEIGHT - OUTDOOR WEIGHT (LBS)	NOTES
DMSS-1	CU-MDF	MDF ROOM	WALL MTD / COOLING ONLY	MITSUBISHI / PKA-A24KA8 & PUYA24NHA7	R-410A	775	24.0	21.4 / 12.2	45	47	1.0	208/1	19.0	26	208/1	3.2 x 1.2	3.1	151	1,2,3,4,5,6,7,8

NOTES:
1. REFER TO SECTION 238116 FOR ADDITIONAL REQUIREMENTS.
2. SOUND PERFORMANCE IS BASED ON SOUND PRESSURE LEVELS MEASURED AT 3 FEET FROM UNIT AT FULL CAPACITY IN ACCORDANCE WITH AHRI 270 AND 350.
3. ALL UNITS SHALL MEET OR EXCEED SEASONAL ENERGY EFFICIENCY RATIO (SEER) FOR NOMINAL COOLING SIZES LESS THAN 65,000 BTUH AND ENERGY EFFICIENCY RATIO (EER) FOR SIZES GREATER THAN OR EQUAL TO 65,000 BTUH.
4. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
5. PROVIDE SINGLE-POINT POWER CONNECTION. PROVIDE FUSED-DISCONNECT SWITCH FOR OUTDOOR UNIT. PROVIDE MOTOR-RATED DISCONNECT SWITCH FOR INDOOR UNIT.
6. PROVIDE LOW AMBIENT TEMPERATURE OPTION.
7. PROVIDE WIRED THERMOSTAT / TEMPERATURE SENSOR AS INDICATED. WIRELESS REMOTE CONTROLS ARE NOT ACCEPTABLE.
8. PROVIDE OPTIONAL CONDENSATE DRAIN PUMP AND INTEGRAL POWER CONNECTION.

WATER FLOWMETER SCHEDULE - BENSON MIDDLE SCHOOL

MARK	PIPE SIZE	SERVICE	MANUFACTURER	MODEL NO.	NOTES
HW-FLOW	5	HOT WATER	ONICON	F-3500	
CHW-FLOW	8	CHILLED WATER	ONICON	F-3500	
DOM-FLOW	4	DOMESTIC WATER	ONICON	F-3200	

NOTES:
1. REFER TO PLANS FOR ADDITIONAL REQUIREMENTS.

EXHAUST FAN CONTROL SCHEDULE - BENSON MIDDLE SCHOOL

MARK	LOCATION	CFM (FOR REFERENCE ONLY, HIDE FROM SHEETS)	AHU / SERVICE	CONTROL SCHEMATIC NUMBER	NOTES
EF-1A	A	100	ADMIN TOILETS	1/0M-720	1
EF-1B	A	275	GIRLS 127	1/0M-720	1
EF-1C	A	275	BOYS 125	1/0M-720	1
EF-1D	A	100	TOILET 122D	1/0M-720	1
EF-1E	A	125	TOILET 122C	1/0M-720	1
EF-1F	A	475	BREAK RM 106 / TOILET 119A	1/0M-720	1
EF-1X	A	320	DHX-1 EXHAUST	-	2
EF-2A	D	310	FEMALE TOILETS 206	1/0M-720	1
EF-2B	D	250	MALE TOILETS 207	1/0M-720	1
EF-2C	D	570	FEMALE LOCKER RM 216	1/0M-720	1
EF-2D	D	600	MALE LOCKER RM 222	1/0M-720	1
EF-2E	D	125	CHORAL RM STORAGE 202B	1/0M-720	1
EF-2F	D	250	PE STORAGE 213	1/0M-720	1
EF-2P	D	300	PE 220A	1/0M-720	1
EF-3A	C	300	GIRLS 301	1/0M-720	1
EF-3B	C	300	BOYS 303	1/0M-720	1
EF-3C	C	200	CUSTODIAN 302	1/0M-720	1
EF-3E	C	60	CUSTODIAN 309	1/0M-720	1
EF-3J	C	100	STAFF TOILET 313	1/0M-720	1
EF-6A	B	120	TOILETS 600A, 600B	1/0M-720	1
EF-6B	B	550	BOYS 610 / GIRLS 612	1/0M-720	1
EF-7A	F	120	TOILETS 700A, 700B	1/0M-720	1
EF-7B	F	550	BOYS 710 / GIRLS 712	1/0M-720	1
EF-8A	E	120	TOILETS 800A, 800B	1/0M-720	1
EF-8B	E	550	BOYS 810 / GIRLS 812	1/0M-720	1

NOTES:
1. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.
2. EXISTING EQUIPMENT INTERLOCK TO REMAIN.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
BENSON MIDDLE SCHOOL
1600 N WALL ST,
BENSON, NC 27504

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 WILLIAM L. HOCKADAY
12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 2	12/14/23

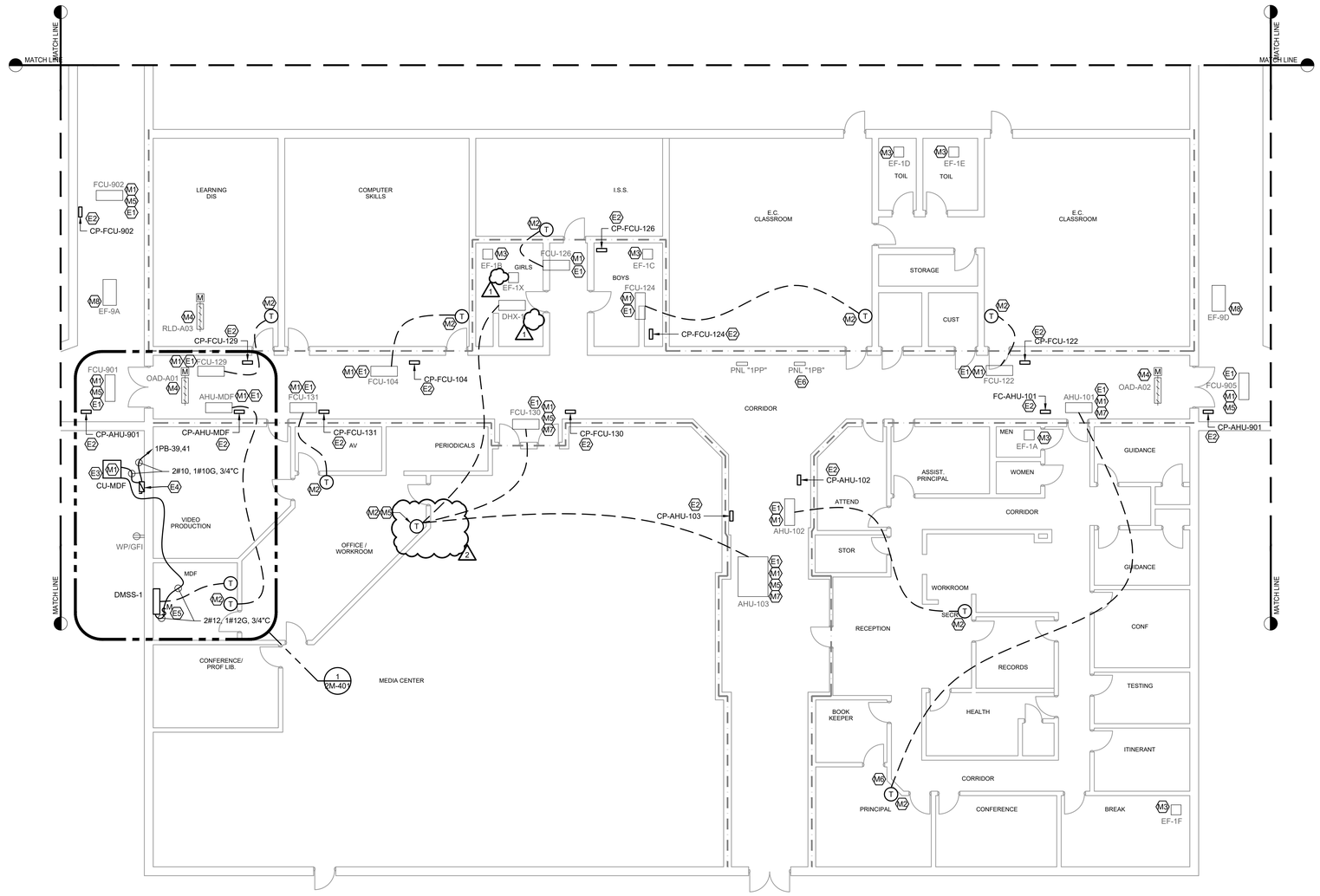
DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
BENSON MS SCHEDULES

PROJECT NO. 50159407-P6

1M-602

SHEET NO. . OF



1 FIRST FLOOR AREA A
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M6. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

M7. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M8. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

M9. NOT USED 2

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

E3. DISCONNECT AND REMOVED DISCONNECT SWITCH AND WIRING TO AC-MDF. CIRCUIT 1PP-13,15,17 TO BE REMOVED BACK TO PANEL. UP DATE PANEL DIRECTORY. PANEL NET LOAD DECREASED.

E4. PROVIDE 208V, 2P, 30A FUSED DISCONNECT SWITCH IN A NEMA TYPE 3R ENCLOSURE FOR CU-1. FUSE TO BE SIZED PER MANUFACTURER RECOMMENDATION. PROVIDE POWER CONNECTION TO CU-1 WITH LIQUID TIGHT FMC. PROVIDE 3/4"C WITH FIELD SUPPLIED INTERCONNECTING WIRING BETWEEN CU-1 AND DMSS-1. PROVIDE SOURCE DESIGNATION LABEL FOR DISCONNECT SWITCH. UPDATE PANEL DIRECTORY.

E5. PROVIDE 208V, 2P, 20A TOGGLE STARTER SWITCH IN A NEMA TYPE 1 ENCLOSURE FOR DMSS-1 WITH SOURCE DESIGNATION LABEL. PROVIDE POWER CIRCUIT CONNECTION TO UNIT WITH LIQUID TIGHT FMC.

E6. REFER TO PANEL SCHEDULE ON SHEET 2E-601 FOR ADDITIONAL WORK. COORDINATE SHUTDOWN WITH OWNER. PROVIDE UPDATED PANEL DIRECTORY.

GENERAL LEGEND

- (1) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

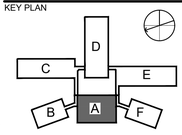
JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
MCGREES MIDDLE SCHOOL
13353 NC-210,
BENSON, NC 27504

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 ENGINEER JUSTIN L. HOCKER — 12/14/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022057 ENGINEER NATHAN P. COMPTON — 12/14/2023

KEY PLAN



AREA A | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

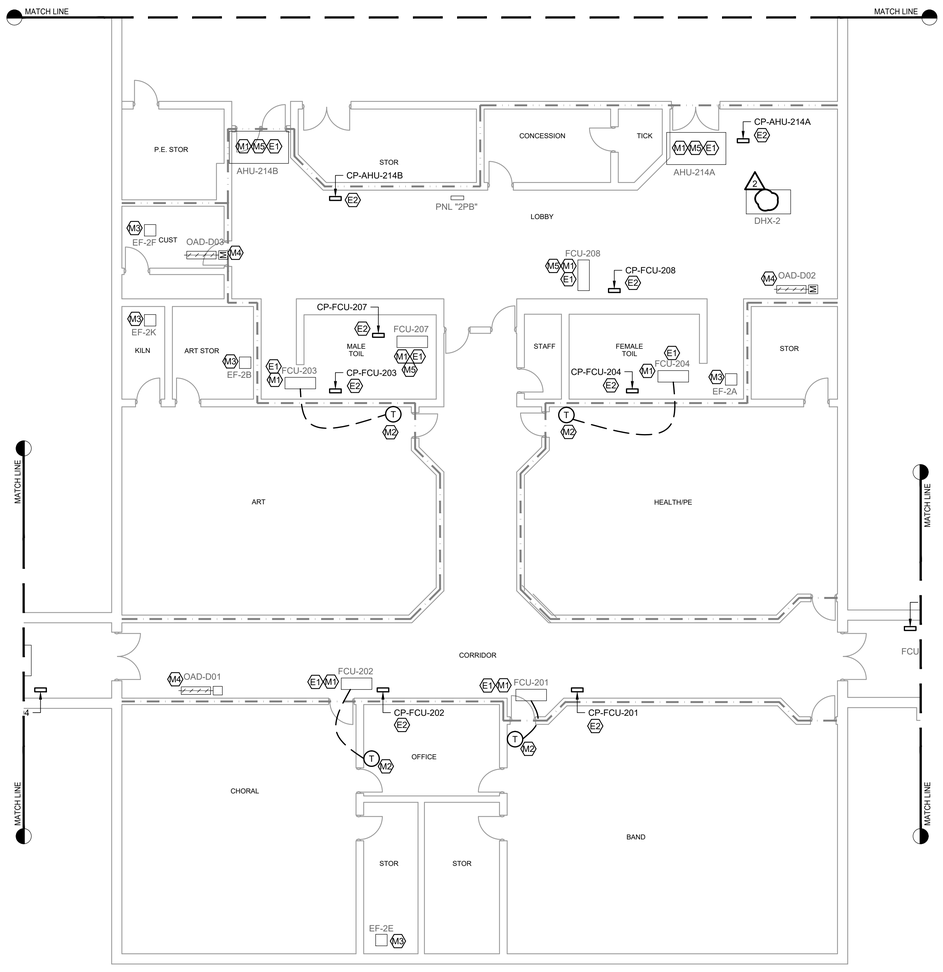
DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
MCGEES MS AREA A

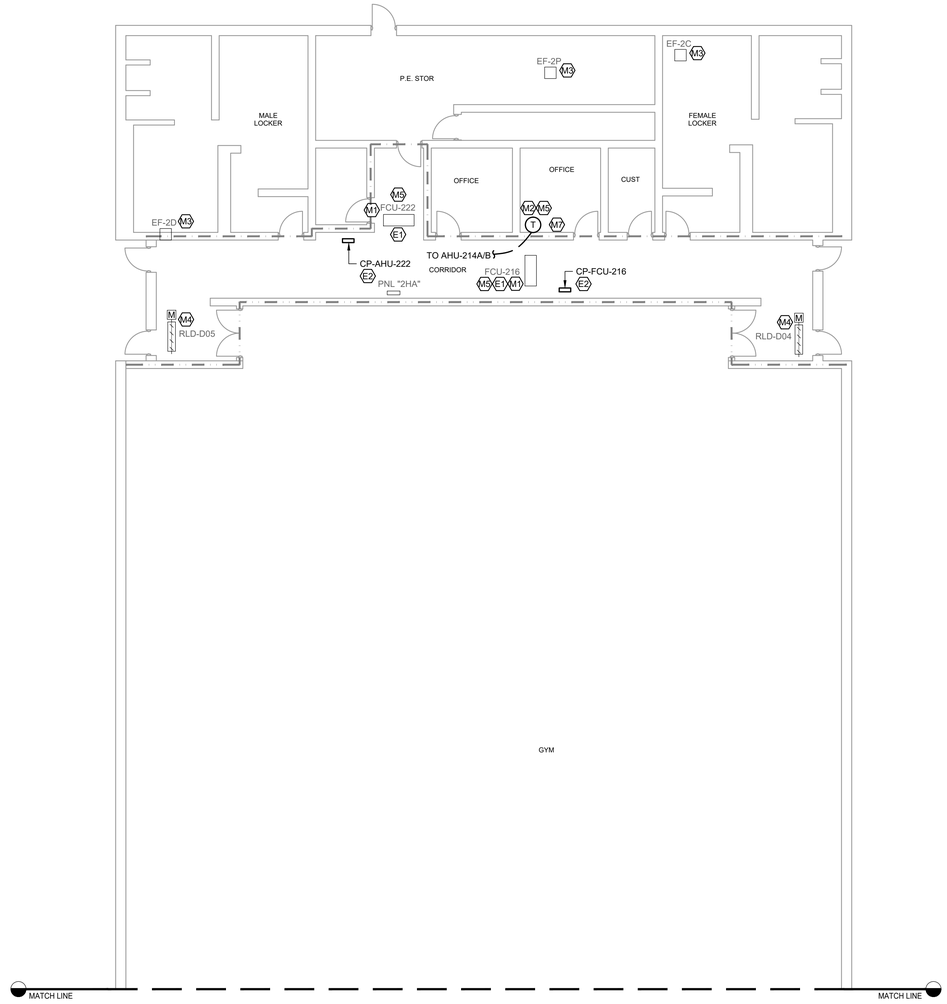
PROJECT NO. 50159407-P6

2ME-201

SHEET NO. . OF



1 FIRST FLOOR AREA D.1
SCALE: 1/8" = 1'-0"
0' 4' 8' 16'



2 FIRST FLOOR AREA D.2
SCALE: 1/8" = 1'-0"
0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M6 (NOT USED) 2

M7. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- (#) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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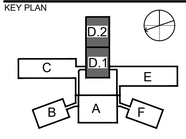
JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
MCGREES MIDDLE SCHOOL
13353 NC-210,
BENSON, NC 27504

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 — 12/14/2023
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022057 — 12/14/2023

KEY PLAN


AREA D | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

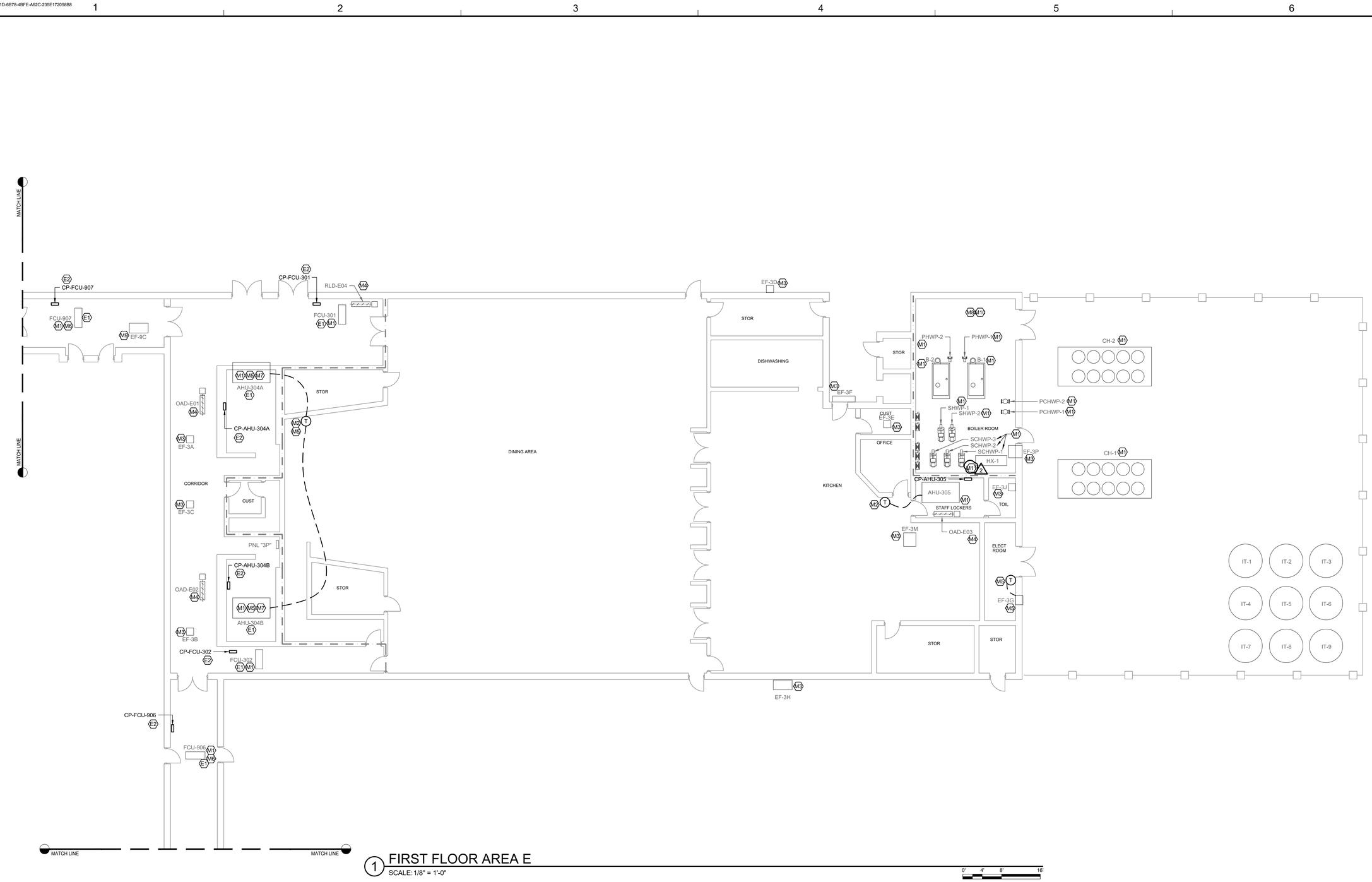
DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
MCGEES MS
AREA D

PROJECT NO. 50159407-P6

2ME-204

SHEET NO. . OF



1 FIRST FLOOR AREA E

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

0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. EXISTING FAN HARDWIRED TO THERMOSTAT OR SWITCH, NOT INCLUDED IN BAS SCOPE.

M6. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M7. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M8. PROVIDE NEW WATER METER, ONICON FM-3200, OR EQUAL, IN EXISTING WATER PIPING UPSTREAM OF ALL BRANCH CONNECTIONS. METER SHALL BE MONITORED BY BAS AND PROVIDE ALARM OF HIGH WATER FLOW UNDER UNOCCUPIED MODE.

M9. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

M10. PROVIDE NEW ACTUATOR FOR EXISTING ICE STORAGE THREE WAY CONTROL VALVE.

M11. NOT USED (2)

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- (2) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
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- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

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CONTROLS UPGRADE PACKAGE 6

MCGREES MIDDLE SCHOOL
13353 NC-210,
BENSON, NC 27504

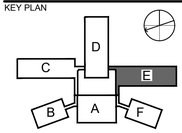
SEAL

NORTH CAROLINA PE 042056 SEAL 042056 ENGINEER JOSHUA L. HOLMAN

NORTH CAROLINA PE 022057 SEAL 022057 ENGINEER JOSHUA P. COMPTON

12/14/2023 12/14/2023

KEY PLAN



AREA E | NTS

SCALE

REVISIONS

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2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
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DATE 11/22/2023 P6

TITLE

MCGEES MS AREA E

PROJECT NO. 50159407-P6

2ME-205

SHEET NO. . OF

1/22/2016 9:07:15 AM
P:\50159407\CAD\PACKAGE 6\MECH\50159407-P6 2M-205 MCGEES MS AREA E.DWG

AIR SYSTEMS CONTROL SCHEDULE - MCGEE'S CROSSROADS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
AHU-101	AHU	A	ADMIN OFFICES - PERIMETER	1/0M-721	250/250	2,3,4,6
AHU-102	AHU	A	ADMIN OFFICES - INTERIOR	1/0M-721	200/200	2,3,4,6
AHU-103	AHU	A	MEDIA CENTER 130	1/0M-721	185/560	1,2,3,4,5,6
FCU-104	AHU	A	COMPUTER LAB 128	1/0M-721	230/230	2,3,4,6
FCU-122	FCU	A	E.C. CLASSROOM 122	1/0M-722	240	1,2,3,4,6
FCU-124	FCU	A	E.C. CLASSROOM 124	1/0M-722	160	1,2,3,4,6
FCU-126	FCU	A	I.S.S. 126 / TOILET / CORRIDOR	1/0M-722	400	1,2,3,4,6
FCU-129	FCU	A	LEARNING DIS. 129	1/0M-722	120	1,2,3,4,6
FCU-130	FCU	A	LEISURE READING AREA	1/0M-722	135	1,2,3,4,6
FCU-131	FCU	A	MEDIA CENTER OFFICES	1/0M-722	120	1,2,3,4,6
FCU-201	FCU	D	BAND ROOM 201A	1/0M-722	215	1,2,3,4,6
FCU-202	FCU	D	CHORAL ROOM 202A / OFFICE	1/0M-722	215	1,2,3,4,6
FCU-203	FCU	D	ART ROOM 203A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-204	FCU	D	HEALTH/PE 204A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-207	FCU	D	MALE TOILETS 207 / LOBBY 208 E	1/0M-722	250	1,2,3,4,6
FCU-208	FCU	D	FEMAIL TOILETS 206 / LOBBY 208 W	1/0M-722	310	1,2,3,4,6
AHU-214A	AHU	D	GYM 214 - EAST	1/0M-721	400/6000	2,3,4,5,6
AHU-214B	AHU	D	GYM 214 - WEST	1/0M-721	400/6000	2,3,4,5,6
FCU-216	FCU	D	FEMALE LOCKER 216 / OFFICES	1/0M-722	570	1,2,3,4,6
FCU-222	FCU	D	MALE LOCKER 222 / CORRIDOR	1/0M-722	600	1,2,3,4,6
FCU-301	FCU	E	GIRLS 301 / CORRIDOR 300 NORTH	1/0M-722	300	1,2,3,4,5,6
FCU-302	FCU	E	BOYS 303 / CORRIDOR 300 SOUTH	1/0M-722	300	1,2,3,4,5,6
AHU-304A	AHU	E	DINING ROOM 304 NORTH	1/0M-721	925/1350	2,3,4,5,6
AHU-304B	AHU	E	DINING ROOM 304 SOUTH	1/0M-721	920/1350	2,3,4,5,6
AHU-305	AHU	E	KITCHEN AREA	1/0M-721	425/425	2,3,4,6
FCU-601	FCU	F	RESOURCE 601 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-602	FCU	F	CLASSROOM 602	1/0M-722	200	1,2,3,4,6
FCU-603	FCU	F	CLASSROOM 603	1/0M-722	240	1,2,3,4,6
FCU-604	FCU	F	CLASSROOM 604 & STORAGE 600D	1/0M-722	240	1,2,3,4,6
FCU-605	FCU	F	CLASSROOM 605	1/0M-722	240	1,2,3,4,6
FCU-607	FCU	F	CLASSROOM 607	1/0M-722	240	1,2,3,4,6
FCU-608	FCU	F	CLASSROOM 608 & STORAGE 606	1/0M-722	250	1,2,3,4,6
FCU-611	FCU	F	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-612	FCU	F	BOYS 610 / GIRLS 612 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-613	FCU	F	CLASSROOM 613	1/0M-722	240	1,2,3,4,6
FCU-614	FCU	F	CLASSROOM 614 / STORAGE 616	1/0M-722	240	1,2,3,4,6
FCU-615	FCU	F	CLASSROOM 615	1/0M-722	240	1,2,3,4,6
FCU-617	FCU	F	CLASSROOM 617	1/0M-722	240	1,2,3,4,6
FCU-618	FCU	F	CLASSROOM 618 / STORAGE 600E	1/0M-722	240	1,2,3,4,6
FCU-701	FCU	B	RESOURCE 701 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-702	FCU	B	CLASSROOM 702	1/0M-722	200	1,2,3,4,6
FCU-703	FCU	B	CLASSROOM 703	1/0M-722	240	1,2,3,4,6
FCU-704	FCU	B	CLASSROOM 704 & STORAGE 700D	1/0M-722	240	1,2,3,4,6
FCU-705	FCU	B	CLASSROOM 705	1/0M-722	240	1,2,3,4,6
FCU-707	FCU	B	CLASSROOM 707	1/0M-722	240	1,2,3,4,6
FCU-708	FCU	B	CLASSROOM 708 & STORAGE 706	1/0M-722	250	1,2,3,4,6
FCU-711	FCU	B	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-712	FCU	B	BOYS 710 / GIRLS 712 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-713	FCU	B	CLASSROOM 713	1/0M-722	240	1,2,3,4,6
FCU-714	FCU	B	CLASSROOM 714 / STORAGE 716	1/0M-722	240	1,2,3,4,6

AIR SYSTEMS CONTROL SCHEDULE - MCGEE'S CROSSROADS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
FCU-715	FCU	B	CLASSROOM 715	1/0M-722	240	1,2,3,4,6
FCU-717	FCU	B	CLASSROOM 717 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-718	FCU	B	CLASSROOM 718 / STORAGE 700E	1/0M-722	240	1,2,3,4,6
FCU-801	FCU	C	RESOURCE 801 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-802	FCU	C	CLASSROOM 802	1/0M-722	240	1,2,3,4,6
FCU-803	FCU	C	CLASSROOM 803	1/0M-722	240	1,2,3,4,6
FCU-804	FCU	C	CLASSROOM 804 & STORAGE 800D	1/0M-722	240	1,2,3,4,6
FCU-805	FCU	C	CLASSROOM 805	1/0M-722	240	1,2,3,4,6
FCU-807	FCU	C	CLASSROOM 807	1/0M-722	240	1,2,3,4,6
FCU-808	FCU	C	CLASSROOM 808 & STORAGE 806	1/0M-722	240	1,2,3,4,6
FCU-809	FCU	C	CLASSROOM 809	1/0M-722	240	1,2,3,4,6
FCU-811	FCU	C	CONFERENCE / STAFF/ TOILETS	1/0M-722	150	1,2,3,4,6
FCU-812	FCU	C	BOYS 810 / GIRLS 812 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-814	FCU	C	CLASSROOM 814 / STORAGE 816	1/0M-722	240	1,2,3,4,6
FCU-815	FCU	C	CLASSROOM 815	1/0M-722	240	1,2,3,4,6
FCU-817	FCU	C	CLASSROOM 817	1/0M-722	240	1,2,3,4,6
FCU-818	FCU	C	CLASSROOM 818 / STORAGE 800E	1/0M-722	240	1,2,3,4,6
FCU-819	FCU	C	CLASSROOM 819 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-901	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-902	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-903	FCU	C	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-904	FCU	C	CONNECTOR 902	1/0M-722	100	1,2,3,4,5,6
FCU-905	FCU	A	CONNECTOR 100-600 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-906	FCU	E	CONNECTOR 100-300 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-907	FCU	E	CONNECTOR 903	1/0M-722	100	1,2,3,4,5,6
DHX-1	DHX	A	MEDIA CENTER	-	-	7
DHX-2	DHX	D	GYM 214 - EAST	-	-	7
AHU-MDF	FCU	A	MDF 135	2/0M-723	-	2,3,4

NOTES:

1. PROVIDE TEST AND BALANCE TO DETERMINE VENTILATION SETTING FOR OUTSIDE AIR DAMPER POSITION. OUTSIDE AIR FLOW RATES WERE OBTAINED FROM ORIGINAL DESIGN ASBUILTS.
2. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS
3. PROVIDE EQUIPMENT CONTROLLER AND SENSORS. SEE ASSOCIATED CONTROL SCHEMATIC FOR POINTS TO INCLUDE.
4. DEMOLISH CHILLED WATER AND HEATING HOT WATER CONTROL VALVES FOR AHU AND PROVIDE NEW 2 WAY PRESSURE INDEPENDENT CONTROL VALVES. PROVIDE NEW 2-WAY CONTROL VALVE TO MATCH EXISTING SIZE. MODIFY PIPING AS NECESSARY TO ACCOMODATE NEW
5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.
6. DEMOLISH AND PROVIDE NEW ACTUATOR(S) FOR MOTOR-OPERATED DAMPERS. MULTIPLE UNITS SERVED BY ONE OAD, NOT ONE PER UNIT. MATCH EXISTING COMMAND.
7. EXISTING EQUIPMENT INTERLOCK TO REMAIN.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
MCGREES MIDDLE SCHOOL
13353 NC-210,
BENSON, NC 27504

SEAL

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
MCGEES MS SCHEDULES

PROJECT NO. 50159407-P6

2M-601

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HYDRONIC SYSTEMS CONTROL SCHEDULE - MCGEE'S CROSSROADS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	HYDRONICS FLOW (GPM)	NOTES
B-1	BOILER - CI	E	BUILDING	1/0M-702	110	1,2,3
B-2	BOILER - CI	E	BUILDING	1/0M-702	110	1,2,3
SHWP-1	PUMP	E	BUILDING	1/0M-702	250	1,2,3
SHWP-2	PUMP	E	BUILDING	1/0M-702	250	1,2,3
PHWP-1	PUMP	E	BOILER 1	1/0M-702	110	1,3
PHWP-2	PUMP	E	BOILER 2	1/0M-702	110	1,3
CH-1	ACC	E	BUILDING	1/0M-710	325	1,2,3
CH-2	ACC	E	BUILDING	1/0M-710	325	1,2,3
SCHWP-1	PUMP	E	BUILDING	1/0M-710	325	1,2,3
SCHWP-2	PUMP	E	BUILDING	1/0M-710	325	1,2,3
SCHWP-3	PUMP	E	BUILDING	1/0M-710	325	1,2,3
PCHWP-1	PUMP	E	CHILLER 1	1/0M-710	325	1,3
PCHWP-2	PUMP	E	CHILLER 2	1/0M-710	325	1,3
HX-1	HXR	E	HEAT EXCHANGER	1/0M-710	650	1,2,3

NOTES:
1. PROVIDE NEW EQUIPMENT CONTROLLER AND EQUIPMENT LABEL. SEE SCHEMATIC FOR POINTS.
2. REFER TO CONTROL VALVE SCHEDULE FOR NEW SECONDARY PLANT CONTROL VALVE.
3. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.

MCGEES MS - DUCTLESS MINI-SPLIT UNIT SCHEDULE

MARK (INDOOR UNIT)	MARK (OUTDOOR UNIT)	SERVICE	TYPE	MANUFACTURER / MODEL INDOOR & OUTDOOR	REFRIG. TYPE	SUPPLY AIR FLOW (CFM)	COOLING TOT. CAP. (MBH)	COOLING SEER/EER (BTUH/W)	MAX. SOUND INDOOR (dBA)	MAX. SOUND OUTDOOR (dBA)	ELECTRICAL - INDOOR UNIT MCA (A)	ELECTRICAL - INDOOR UNIT VOLTAGE/ PHASE	ELECTRICAL - OUTDOOR UNIT MCA (A)	ELECTRICAL - OUTDOOR UNIT MOCP (A)	ELECTRICAL - OUTDOOR UNIT VOLTAGE/ PHASE	DIMENSIONS AND WEIGHT - OUTDOOR FOOTPRINT (FT x FT)	DIMENSIONS AND WEIGHT - OUTDOOR HEIGHT (FT)	DIMENSIONS AND WEIGHT - OUTDOOR WEIGHT (LBS)	NOTES
DMSS-1	CU-MDF	MDF ROOM	WALL MTD / COOLING ONLY	MITSUBISHI / PKA-A24KA8 & PUYA24NHA7	R-410A	775	24.0	21.4 / 12.2	45	47	1.0	208/1	19.0	26	208/1	3.2 x 1.2	3.1	151	1,2,3,4,5,6,7,8

NOTES:
1. REFER TO SECTION 238116 FOR ADDITIONAL REQUIREMENTS.
2. SOUND PERFORMANCE IS BASED ON SOUND PRESSURE LEVELS MEASURED AT 3 FEET FROM UNIT AT FULL CAPACITY IN ACCORDANCE WITH AHRI 270 AND 350.
3. ALL UNITS SHALL MEET OR EXCEED SEASONAL ENERGY EFFICIENCY RATIO (SEER) FOR NOMINAL COOLING SIZES LESS THAN 65,000 BTUH AND ENERGY EFFICIENCY RATIO (EER) FOR SIZES GREATER THAN OR EQUAL TO 65,000 BTUH.
4. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
5. PROVIDE SINGLE-POINT POWER CONNECTION. PROVIDE FUSED-DISCONNECT SWITCH FOR OUTDOOR UNIT. PROVIDE MOTOR-RATED DISCONNECT SWITCH FOR INDOOR UNIT.
6. PROVIDE LOW AMBIENT TEMPERATURE OPTION.
7. PROVIDE WIRED THERMOSTAT / TEMPERATURE SENSOR AS INDICATED. WIRELESS REMOTE CONTROLS ARE NOT ACCEPTABLE.
8. PROVIDE OPTIONAL CONDENSATE DRAIN PUMP AND INTEGRAL POWER CONNECTION.

WATER FLOWMETER SCHEDULE - MCGEES MIDDLE SCHOOL

MARK	PIPE SIZE	SERVICE	MANUFACTURER	MODEL NO.	NOTES
HW-FLOW	5	HOT WATER	ONICON	F-3500	
CHW-FLOW	8	CHILLED WATER	ONICON	F-3500	
DOM-FLOW	4	DOMESTIC WATER	ONICON	F-3200	

NOTES:
1. REFER TO PLANS FOR ADDITIONAL REQUIREMENTS.

LOUVER DAMPER SCHEDULE - MCGEE'S CROSSROADS MIDDLE SCHOOL

MARK	TYPE	LOCATION	LOCATION (ORIGINAL)	SERVICE	ASSOCIATED LOUVER	CONTROL SCHEMATIC NUMBER	MAXIMUM AIRFLOW (CFM)2	NOTES
OAD-A01	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-103, FCU-104, FCU-124, FCU-126, FCU-129, FCU-130, FCU-131	LV-1A	3/0M-720	1500	1
OAD-A02	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-101, AHU-102, FCU-122	LV-1B	3/0M-720	2800	1
RLD-A03	AHU RELIEF AIR DAMPER	AREA A	AREA 100	FCU-129	LV-1C	3/0M-720	2400	1
OAD-B01	OUTSIDE AIR DAMPER	AREA B	AREA 700	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-7A	3/0M-720	2250	1
OAD-B02	OUTSIDE AIR DAMPER	AREA B	AREA 700	FCU-606, FCU-607, FCU-611, FCU-612	LV-7B	3/0M-720	2250	1
OAD-C01	OUTSIDE AIR DAMPER	AREA C	AREA 800	FCU-801, FCU-802, FCU-803, FCU-804, FCU-805	LV-8A	3/0M-720	2250	1
OAD-C02	OUTSIDE AIR DAMPER	AREA C	AREA 800	FCU-806, FCU-807, FCU-811, FCU-812	LV-8B	3/0M-720	2250	1
OAD-D01	OUTSIDE AIR DAMPER	AREA D	AREA 200	FCU-201, FCU-202	LV-2A	3/0M-720	2250	1
OAD-D02	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214A, FCU-204, FCU-208	LV-2B	3/0M-720	2250	1
OAD-D03	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214B, FCU-203, FCU-207	LV-2C	3/0M-720	2250	1
RLD-D04	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214A	LV-2D	1/0M-721	3750	1
RLD-D05	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214B	LV-2E	1/0M-721	3750	1
OAD-E01	OUTSIDE AIR DAMPER	AREA E	AREA 300	AHU-304A	LV-3A	3/0M-720	2250	1
OAD-E02	OUTSIDE AIR DAMPER	AREA E	AREA 300	AHU-304B	LV-3B	3/0M-720	2250	1
OAD-E03	OUTSIDE AIR DAMPER	AREA E	AREA 300	AHU-305	LV-3Z	1/0M-721	4470	1
RLD-E04	AHU RELIEF AIR DAMPER	AREA E	AREA 300	AHU-304A, AHU-304B	LV-3C	1/0M-721	3750	1
OAD-F01	OUTSIDE AIR DAMPER	AREA F	AREA 600	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-6A	3/0M-720	3750	1
OAD-F02	OUTSIDE AIR DAMPER	AREA F	AREA 600	FCU-606, FCU-607, FCU-611, FCU-612	LV-6B	3/0M-720	3750	1

NOTES:
1. PROVIDE NEW ACTUATOR AND CONTROL WIRING TO EQUIPMENT CONTROLLER. TEST AND BALANCE TO VALUES IN COMMON OUTSIDE AIR DAMPER SCHEMATIC.

EXHAUST FAN CONTROL SCHEDULE - MCGEE'S CROSSROADS MIDDLE SCHOOL

MARK	LOCATION	CFM (FOR REFERENCE ONLY, HIDE FROM SHEETS)	AHU / SERVICE	CONTROL SCHEMATIC NUMBER	NOTES
EF-1A	A	100	ADMIN TOILETS	1/0M-720	1
EF-1B	A	275	GIRLS 127	1/0M-720	1
EF-1C	A	275	BOYS 125	1/0M-720	1
EF-1D	A	100	TOILET 122D	1/0M-720	1
EF-1E	A	125	TOILET 122C	1/0M-720	1
EF-1F	A	475	BREAK RM 106 / TOILET 119A	1/0M-720	1
EF-1X	A	320	DHX-1 EXHAUST	-	2
EF-2A	D	310	FEMALE TOILETS 206	1/0M-720	1
EF-2B	D	250	MALE TOILETS 207	1/0M-720	1
EF-2C	D	570	FEMALE LOCKER RM 216	1/0M-720	1
EF-2D	D	600	MALE LOCKER RM 222	1/0M-720	1
EF-2E	D	125	CHORAL RM STORAGE 202B	1/0M-720	1
EF-2F	D	250	PE STORAGE 213	1/0M-720	1
EF-2P	D	300	PE 220A	1/0M-720	1
EF-3A	E	300	GIRLS 301	1/0M-720	1
EF-3B	E	300	BOYS 303	1/0M-720	1
EF-3C	E	200	CUSTODIAN 302	1/0M-720	1
EF-3E	E	60	CUSTODIAN 309	1/0M-720	1
EF-3J	E	100	STAFF TOILET 313	1/0M-720	1
EF-6A	F	120	TOILETS 600A, 600B	1/0M-720	1
EF-6B	F	550	BOYS 610 / GIRLS 612	1/0M-720	1
EF-7A	B	120	TOILETS 700A, 700B	1/0M-720	1
EF-7B	B	550	BOYS 710 / GIRLS 712	1/0M-720	1
EF-8A	C	120	TOILETS 800A, 800B	1/0M-720	1
EF-8B	C	550	BOYS 810 / GIRLS 812	1/0M-720	1

NOTES:
1. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.
2. EXISTING EQUIPMENT INTERLOCK TO REMAIN.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
MCGREES MIDDLE SCHOOL
13353 NC-210,
BENSON, NC 27504

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 WILLIAM L. HOLTKAMP
12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 2	12/14/23

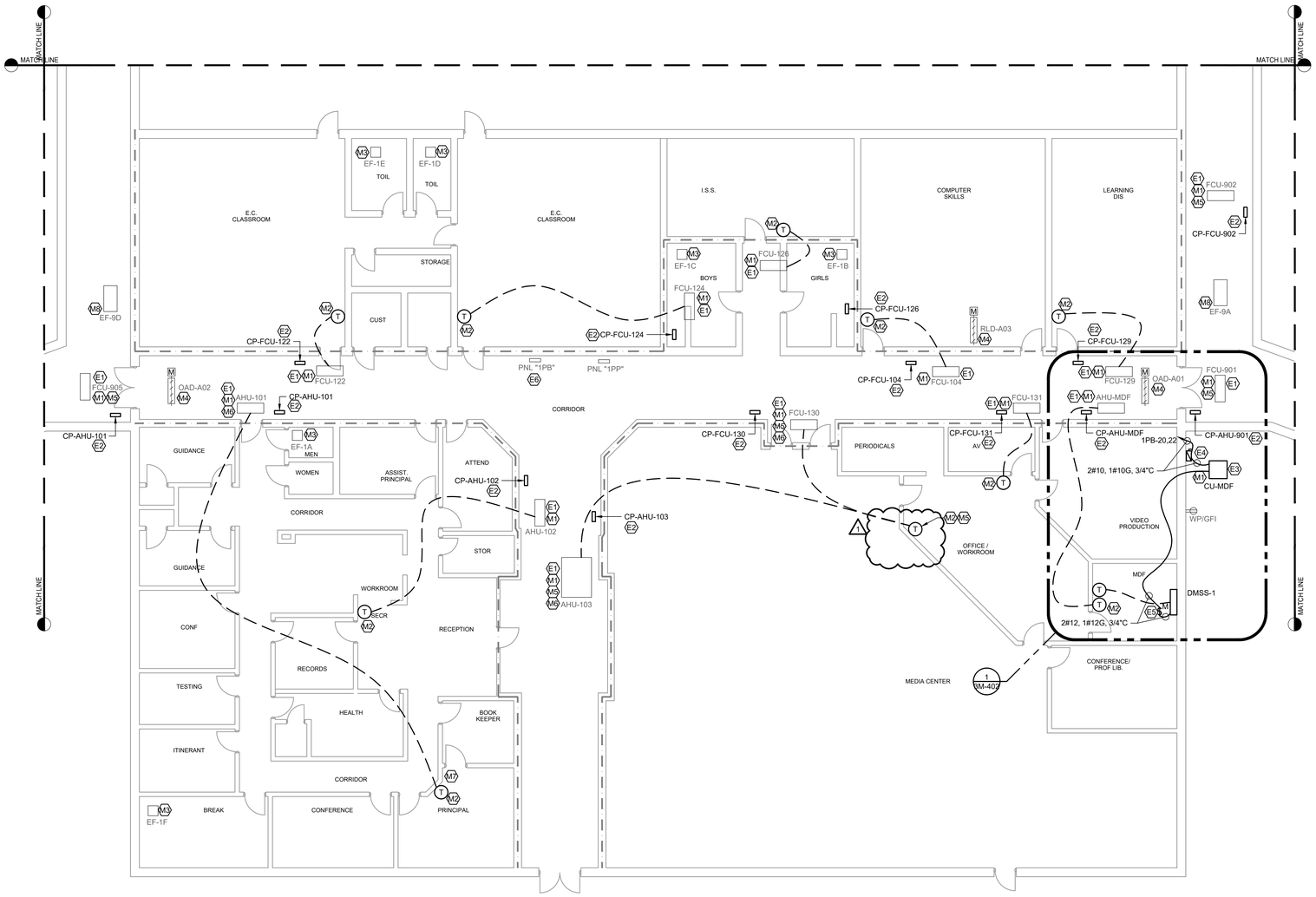
DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
MCGEES MS SCHEDULES

PROJECT NO. 50159407-P6

2M-602

SHEET NO. . OF



1 FIRST FLOOR AREA A
SCALE: 1/8" = 1'-0"

0' 4" 8" 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M6. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M7. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

M8. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

E3. DISCONNECT AND REMOVED DISCONNECT SWITCH AND WIRING TO AC-MDF. CIRCUIT 1PP-13,15,17 TO BE REMOVED BACK TO PANEL. UP DATE PANEL DIRECTORY. PANEL NET LOAD DECREASED.

E4. PROVIDE 208V, 2P, 30A FUSED DISCONNECT SWITCH IN A NEMA TYPE 3R ENCLOSURE FOR CU-1. FUSE TO BE SIZED PER MANUFACTURER RECOMMENDATION. PROVIDE POWER CONNECTION TO CU-1 WITH LIQUID TIGHT FMC. PROVIDE 3/4"C WITH FIELD SUPPLIED INTERCONNECTING WIRING BETWEEN CU-1 AND DMSS-1. PROVIDE SOURCE DESIGNATION LABEL FOR DISCONNECT SWITCH. UPDATE PANEL DIRECTORY.

E5. PROVIDE 208V, 2P, 20A TOGGLE STARTER SWITCH IN A NEMA TYPE 1 ENCLOSURE FOR DMSS-1 WITH SOURCE DESIGNATION LABEL. PROVIDE POWER CIRCUIT CONNECTION TO UNIT WITH LIQUID TIGHT FMC.

E6. REFER TO PANEL SCHEDULE ON SHEET 2E-601 FOR ADDITIONAL WORK. COORDINATE SHUTDOWN WITH OWNER. PROVIDE UPDATED PANEL DIRECTORY.

GENERAL LEGEND

- (#) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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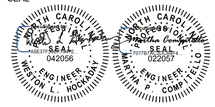
JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

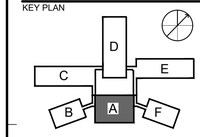
FOUR OAKS MIDDLE SCHOOL
1475 BOYETTE RD,
FOUR OAKS, NC 27524

SEAL



12/14/2023 12/14/2023

KEY PLAN



AREA A | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM #2	12/14/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
FOUR OAKS MS AREA A

PROJECT NO. 50159407-P6

3ME-201

SHEET NO. . OF

AIR SYSTEMS CONTROL SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
AHU-101	AHU	A	ADMIN OFFICES - PERIMETER	1/0M-721	250/250	2,3,4,6
AHU-102	AHU	A	ADMIN OFFICES - INTERIOR	1/0M-721	200/200	2,3,4,6
AHU-103	AHU	A	MEDIA CENTER 130	1/0M-721	185/560	2,3,4,5,6
FCU-104	AHU	A	COMPUTER LAB 128	1/0M-721	230/230	2,3,4,6
FCU-122	FCU	A	E.C. CLASSROOM 122	1/0M-722	240	1,2,3,4,6
FCU-124	FCU	A	E.C. CLASSROOM 124	1/0M-722	160	1,2,3,4,6
FCU-126	FCU	A	I.S.S. 126 / TOILET / CORRIDOR	1/0M-722	400	1,2,3,4,6
FCU-129	FCU	A	LEARNING DIS. 129	1/0M-722	120	1,2,3,4,6
FCU-130	FCU	A	LEISURE READING AREA	1/0M-722	135	1,2,3,4,6
FCU-131	FCU	A	MEDIA CENTER OFFICES	1/0M-722	120	1,2,3,4,6
FCU-201	FCU	D	BAND ROOM 201A	1/0M-722	215	1,2,3,4,6
FCU-202	FCU	D	CHORAL ROOM 202A / OFFICE	1/0M-722	215	1,2,3,4,6
FCU-203	FCU	D	ART ROOM 203A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-204	FCU	D	HEALTH/PE 204A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-207	FCU	D	MALE TOILETS 207 / LOBBY 208 E	1/0M-722	250	1,2,3,4,6
FCU-208	FCU	D	FEMAIL TOILETS 206 / LOBBY 208 W	1/0M-722	310	1,2,3,4,6
AHU-214A	AHU	D	GYM 214 - EAST	1/0M-721	500/2300	2,3,4,5,6
AHU-214B	AHU	D	GYM 214 - WEST	1/0M-721	500/2300	2,3,4,5,6
FCU-216	FCU	D	FEMALE LOCKER 216 / OFFICES	1/0M-722	570	1,2,3,4,6
FCU-222	FCU	D	MALE LOCKER 222 / CORRIDOR	1/0M-722	600	1,2,3,4,6
FCU-301	FCU	C	GIRLS 301 / CORRIDOR 300 NORTH	1/0M-722	300	1,2,3,4,5,6
FCU-302	FCU	C	BOYS 303 / CORRIDOR 300 SOUTH	1/0M-722	300	1,2,3,4,5,6
AHU-304A	AHU	C	DINING ROOM 304 NORTH	1/0M-721	915/1350	2,3,4,5,6
AHU-304B	AHU	C	DINING ROOM 304 SOUTH	1/0M-721	960/1350	2,3,4,5,6
AHU-305	AHU	C	KITCHEN AREA	1/0M-721	425/425	2,3,4,6
FCU-601	FCU	B	RESOURCE 601 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-602	FCU	B	CLASSROOM 602	1/0M-722	200	1,2,3,4,6
FCU-603	FCU	B	CLASSROOM 603	1/0M-722	240	1,2,3,4,6
FCU-604	FCU	B	CLASSROOM 604 & STORAGE 600D	1/0M-722	240	1,2,3,4,6
FCU-605	FCU	B	CLASSROOM 605	1/0M-722	240	1,2,3,4,6
FCU-607	FCU	B	CLASSROOM 607	1/0M-722	240	1,2,3,4,6
FCU-608	FCU	B	CLASSROOM 608 & STORAGE 606	1/0M-722	250	1,2,3,4,6
FCU-611	FCU	B	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-612	FCU	B	BOYS 610 / GIRLS 612 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-701	FCU	F	RESOURCE 701 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-702	FCU	F	CLASSROOM 702	1/0M-722	200	1,2,3,4,6
FCU-703	FCU	F	CLASSROOM 703	1/0M-722	240	1,2,3,4,6
FCU-704	FCU	F	CLASSROOM 704 & STORAGE 700D	1/0M-722	240	1,2,3,4,6
FCU-705	FCU	F	CLASSROOM 705	1/0M-722	240	1,2,3,4,6
FCU-707	FCU	F	CLASSROOM 707	1/0M-722	240	1,2,3,4,6
FCU-708	FCU	F	CLASSROOM 708 & STORAGE 706	1/0M-722	250	1,2,3,4,6
FCU-711	FCU	F	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-712	FCU	F	BOYS 710 / GIRLS 712 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6

AIR SYSTEMS CONTROL SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
FCU-801	FCU	E	RESOURCE 801 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-802	FCU	E	CLASSROOM 802	1/0M-722	240	1,2,3,4,6
FCU-803	FCU	E	CLASSROOM 803	1/0M-722	240	1,2,3,4,6
FCU-804	FCU	E	CLASSROOM 804 & STORAGE 800D	1/0M-722	240	1,2,3,4,6
FCU-805	FCU	E	CLASSROOM 805	1/0M-722	240	1,2,3,4,6
FCU-807	FCU	E	CLASSROOM 807	1/0M-722	240	1,2,3,4,6
FCU-808	FCU	E	CLASSROOM 808 & STORAGE 806	1/0M-722	240	1,2,3,4,6
FCU-809	FCU	E	CLASSROOM 809	1/0M-722	240	1,2,3,4,6
FCU-811	FCU	E	CONFERENCE / STAFF/ TOILETS	1/0M-722	150	1,2,3,4,6
FCU-812	FCU	E	BOYS 810 / GIRLS 812 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-901	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-902	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-903	FCU	E	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-904	FCU	E	CONNECTOR 902	1/0M-722	100	1,2,3,4,5,6
FCU-905	FCU	A	CONNECTOR 100-600 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-906	FCU	C	CONNECTOR 100-300 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-907	FCU	C	CONNECTOR 903	1/0M-722	100	1,2,3,4,5,6
AHU-MDF	FCU	A	MDF 135	2/0M-723	-	2,3,4

NOTES:

1. PROVIDE TEST AND BALANCE TO DETERMINE VENTILATION SETTING FOR OUTSIDE AIR DAMPER POSITION. OUTSIDE AIR FLOW RATES WERE OBTAINED FROM ORIGINAL DESIGN ASBUILTS.
2. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS
3. PROVIDE EQUIPMENT CONTROLLER AND SENSORS. SEE ASSOCIATED CONTROL SCHEMATIC FOR POINTS TO INCLUDE.
4. DEMOLISH CHILLED WATER AND HEATING HOT WATER CONTROL VALVES FOR AHU AND PROVIDE NEW 2 WAY PRESSURE INDEPENDENT CONTROL VALVES. PROVIDE NEW 2-WAY CONTROL VALVE TO MATCH EXISTING SIZE. MODIFY PIPING AS NECESSARY TO ACCOMODATE NEW
5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.
6. DEMOLISH AND PROVIDE NEW ACTUATOR(S) FOR MOTOR-OPERATED DAMPERS. MULTIPLE UNITS SERVED BY ONE OAD, NOT ONE PER UNIT. MATCH EXISTING COMMAND.

LOUVER DAMPER SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	TYPE	LOCATION	LOCATION (ORIGINAL)	SERVICE	ASSOCIATED LOUVER	CONTROL SCHEMATIC NUMBER	MAXIMUM AIRFLOW CFM	NOTES
OAD-A01	OUTSIDE AIR DAMPER	AREA A	AREA 100	FCU-104, FCU-124, FCU-126, FCU-129, FCU-130, FCU-131	LV-1A	3/0M-720	2885	1
OAD-A02	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-101, AHU-102, AHU-103, FCU-122	LV-1B	3/0M-720	2360	1
RLD-A03	AHU RELIEF AIR DAMPER	AREA A	AREA 100	FCU-129	LV-1C	3/0M-720	1800	1
OAD-B01	OUTSIDE AIR DAMPER	AREA B	AREA 200	FCU-201, FCU-202	LV-2A	3/0M-720	750	1
OAD-B02	OUTSIDE AIR DAMPER	AREA B	AREA 200	AHU-214A, FCU-204, FCU-208	LV-2B	3/0M-720	1310	1
OAD-B03	OUTSIDE AIR DAMPER	AREA B	AREA 200	AHU-214B, FCU-203, FCU-207	LV-2C	3/0M-720	9700	1
RLD-B04	AHU RELIEF AIR DAMPER	AREA B	AREA 200	AHU-214A	LV-2D	1/0M-721	6080	1
RLD-B05	AHU RELIEF AIR DAMPER	AREA B	AREA 200	AHU-214B	LV-2E	1/0M-721	6080	1
OAD-C01	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3A	3/0M-720	2739	1
OAD-C02	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3B	3/0M-720	2723	1
RLD-C03	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3C	1/0M-721	3000	1
RLD-C04	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3D	1/0M-721	3000	1
OAD-D01	OUTSIDE AIR DAMPER	AREA D	AREA 600	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-6A	3/0M-720	3140	1
OAD-D02	OUTSIDE AIR DAMPER	AREA D	AREA 600	FCU-607, FCU-608, FCU-611, FCU-612	LV-6B	3/0M-720	1290	1
OAD-E01	OUTSIDE AIR DAMPER	AREA E	AREA 700	FCU-701, FCU-702, FCU-703, FCU-704, FCU-705	LV-7A	3/0M-720	3140	1
OAD-E02	OUTSIDE AIR DAMPER	AREA E	AREA 700	FCU-707, FCU-708, FCU-711, FCU-712	LV-7B	3/0M-720	1290	1
OAD-F01	OUTSIDE AIR DAMPER	AREA F	AREA 800	FCU-801, FCU-802, FCU-803, FCU-804, FCU-805, FCU-807	LV-8A	3/0M-720	1180	1
OAD-F02	OUTSIDE AIR DAMPER	AREA F	AREA 800	FCU-808, FCU-809, FCU-811, FCU-812	LV-8B	3/0M-720	3200	1

NOTES:

1. PROVIDE NEW ACTUATOR AND CONTROL WIRING TO EQUIPMENT CONTROLLER. TEST AND BALANCE TO VALUES IN COMMON OUTSIDE AIR DAMPER SCHEMATIC.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

FOUR OAKS MIDDLE SCHOOL

1475 BOYETTE RD,
FOUR OAKS, NC 27524

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 24863 WILTON L. HOCKADAY 04/20/05

12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE

FOUR OAKS MS SCHEDULES

PROJECT NO. 50159407-P6

3M-601

SHEET NO. . OF

HYDRONIC SYSTEMS CONTROL SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	HYDRONICS FLOW (GPM)	NOTES
B-1	BOILER - CI	C	BUILDING	1/0M-701	110	1,2,5
B-2	BOILER - CI	C	BUILDING	1/0M-701	110	1,2,5
SHWP-1	PUMP	C	BUILDING	1/0M-701	225	1,2,3,4,5
SHWP-2	PUMP	C	BUILDING	1/0M-701	225	1,2,3,4,5
PHWP-1	PUMP	C	BOILER 1	1/0M-701	110	1,5
PHWP-2	PUMP	C	BOILER 2	1/0M-701	110	1,5
CH-1	ACC	C	BUILDING	1/0M-710	306	1,2,5
CH-2	ACC	C	BUILDING	1/0M-710	306	1,2,5
SCHWP-1	PUMP	C	BUILDING	1/0M-710	245	1,2,3,4,5
SCHWP-2	PUMP	C	BUILDING	1/0M-710	245	1,2,3,4,5
SCHWP-3	PUMP	C	BUILDING	1/0M-710	245	1,2,3,4,5
PCHWP-1	PUMP	C	CHILLER 1	1/0M-710	306	1,5
PCHWP-2	PUMP	C	CHILLER 2	1/0M-710	306	1,5
HX-1	HXR	C	HEAT EXCHANGER	1/0M-710	650	1,2,5

NOTES:
1. PROVIDE NEW EQUIPMENT CONTROLLER AND EQUIPMENT LABEL. SEE SCHEMATIC FOR POINTS.
2. REFER TO CONTROL VALVE SCHEDULE FOR NEW SECONDARY PLANT CONTROL VALVE.
3. REFER TO VFD SCHEDULE FOR NEW VFDS FOR PUMPS.
4. REFER TO PUMP SCHEDULE FOR NEW PUMP.
5. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.

PUMP SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	SERVICE	TYPE	MANUFACTURER / MODEL	SUCTION (IN DIA)	DISCHARGE (IN DIA)	IMPELLER (IN DIA)	FLOW (GPM)	HEAD (FT H2O)	EFF. (%)	SPEED (RPM)	BRAKE MOTOR (HP)	NOMINAL MOTOR (HP)	VOLTAGE/ PHASE	STARTER/ DSCNNCT MEANS	NOTES
SCHWP-1	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	9.5	245	80	77%	1685	6.4	10.0	480/3	VFD	1,2,3
SCHWP-2	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	9.5	245	80	77%	1685	6.4	10.0	480/3	VFD	1,2,3
SCHWP-3	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	9.5	245	80	77%	1685	6.4	10.0	480/3	VFD	1,2,3
SHWP-1	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3
SHWP-2	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3

NOTES:
1. REFER TO SECTION 232123 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE STARTING AND DISCONNECTING MEANS AS SCHEDULED. (MRS = MOTOR RATED SWITCH; MS/D = COMBINATION MOTOR-STARTER AND DISCONNECT; AND VFD = VARIABLE FREQUENCY DRIVE)
3. PUMPS MOTOR SELECTION SHALL BE BASED ON NON-OVERLOADING SERVICE.

VARIABLE FREQUENCY DRIVE SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	VOLTS	PHASE	HP	BYPASS	NEMA ENCLOSURE	MANUFACTURER	MODEL NO.	NOTES
VFD-SCHWP-1	480	3	10	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-2	480	3	10	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-3	480	3	10	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-1	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-2	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4

NOTES:
1. REFER TO SECTION 230514 FOR ADDITIONAL REQUIREMENTS.
2. FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
3. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.
4. EXTEND AND CONNECT PREVIOUS CIRCUIT TO NEW PUMP CONTROLLER PANELS, VFDs, AND PUMPS.

FOUR OAKS MS - DUCTLESS MINI-SPLIT UNIT SCHEDULE

MARK (INDOOR UNIT)	MARK (OUTDOOR UNIT)	SERVICE	TYPE	MANUFACTURER / MODEL INDOOR & OUTDOOR	REFRIG. TYPE	SUPPLY AIR FLOW (CFM)	COOLING TOT. CAP. (MBH)	COOLING SEER/EER (BTUH/W)	MAX. SOUND INDOOR (dBA)	MAX. SOUND OUTDOOR (dBA)	ELECTRICAL - INDOOR UNIT MCA (A)	ELECTRICAL - INDOOR UNIT VOLTAGE/ PHASE	ELECTRICAL - OUTDOOR UNIT MCA (A)	ELECTRICAL - OUTDOOR UNIT MOCP (A)	ELECTRICAL - OUTDOOR UNIT VOLTAGE/ PHASE	DIMENSIONS AND WEIGHT - OUTDOOR FOOTPRINT (FT x FT)	DIMENSIONS AND WEIGHT - OUTDOOR HEIGHT (FT)	DIMENSIONS AND WEIGHT - OUTDOOR WEIGHT (LBS)	NOTES
DMSS-1	CU-MDF	MDF ROOM	WALL MTD / COOLING ONLY	MITSUBISHI / PKA-A24KA8 & PUYA24NHA7	R-410A	775	24.0	21.4 / 12.2	45	47	1.0	208/1	19.0	26	208/1	3.2 x 1.2	3.1	151	1,2,3,4,5,6,7,8

NOTES:
1. REFER TO SECTION 238116 FOR ADDITIONAL REQUIREMENTS.
2. SOUND PERFORMANCE IS BASED ON SOUND PRESSURE LEVELS MEASURED AT 3 FEET FROM UNIT AT FULL CAPACITY IN ACCORDANCE WITH AHRI 270 AND 350.
3. ALL UNITS SHALL MEET OR EXCEED SEASONAL ENERGY EFFICIENCY RATIO (SEER) FOR NOMINAL COOLING SIZES LESS THAN 65,000 BTUH AND ENERGY EFFICIENCY RATIO (EER) FOR SIZES GREATER THAN OR EQUAL TO 65,000 BTUH.
4. SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS.
5. PROVIDE SINGLE-POINT POWER CONNECTION. PROVIDE FUSED-DISCONNECT SWITCH FOR OUTDOOR UNIT. PROVIDE MOTOR-RATED DISCONNECT SWITCH FOR INDOOR UNIT.
6. PROVIDE LOW AMBIENT TEMPERATURE OPTION.
7. PROVIDE WIRED THERMOSTAT / TEMPERATURE SENSOR AS INDICATED. WIRELESS REMOTE CONTROLS ARE NOT ACCEPTABLE.
8. PROVIDE OPTIONAL CONDENSATE DRAIN PUMP AND INTEGRAL POWER CONNECTION.

WATER FLOWMETER SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	PIPE SIZE	SERVICE	MANUFACTURER	MODEL NO.	NOTES
HW-FLOW	5	HOT WATER	ONICON	F-3500	
CHW-FLOW	8	CHILLED WATER	ONICON	F-3500	
DOM-FLOW	4	DOMESTIC WATER	ONICON	F-3500	

NOTES:
1. REFER TO PLANS FOR ADDITIONAL REQUIREMENTS.

LOUVER DAMPER SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	TYPE	LOCATION	LOCATION (ORIGINAL)	SERVICE	ASSOCIATED LOUVER	CONTROL SCHEMATIC NUMBER	MAXIMUM AIRFLOW CFM	NOTES
OAD-A01	OUTSIDE AIR DAMPER	AREA A	AREA 100	FCU-104, FCU-124, FCU-126, FCU-129, FCU-130, FCU-131	LV-1A	3/0M-720	2885	1
OAD-A02	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-101, AHU-102, AHU-103, FCU-122	LV-1B	3/0M-720	2360	1
RLD-A03	AHU RELIEF AIR DAMPER	AREA A	AREA 100	FCU-129	LV-1C	3/0M-720	1800	1
OAD-B01	OUTSIDE AIR DAMPER	AREA B	AREA 200	FCU-201, FCU-202	LV-2A	3/0M-720	750	1
OAD-B02	OUTSIDE AIR DAMPER	AREA B	AREA 200	AHU-214A, FCU-204, FCU-208	LV-2B	3/0M-720	1310	1
OAD-B03	OUTSIDE AIR DAMPER	AREA B	AREA 200	AHU-214B, FCU-203, FCU-207	LV-2C	3/0M-720	9700	1
RLD-B04	AHU RELIEF AIR DAMPER	AREA B	AREA 200	AHU-214A	LV-2D	1/0M-721	6080	1
RLD-B05	AHU RELIEF AIR DAMPER	AREA B	AREA 200	AHU-214B	LV-2E	1/0M-721	6080	1
OAD-C01	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3A	3/0M-720	2739	1
OAD-C02	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3B	3/0M-720	2723	1
RLD-C03	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3C	1/0M-721	3000	1
RLD-C04	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3D	1/0M-721	3000	1
OAD-D01	OUTSIDE AIR DAMPER	AREA D	AREA 600	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605	LV-6A	3/0M-720	3140	1
OAD-D02	OUTSIDE AIR DAMPER	AREA D	AREA 600	FCU-607, FCU-608, FCU-611, FCU-612	LV-6B	3/0M-720	1290	1
OAD-E01	OUTSIDE AIR DAMPER	AREA E	AREA 700	FCU-701, FCU-702, FCU-703, FCU-704, FCU-705	LV-7A	3/0M-720	3140	1
OAD-E02	OUTSIDE AIR DAMPER	AREA E	AREA 700	FCU-707, FCU-708, FCU-711, FCU-712	LV-7B	3/0M-720	1290	1
OAD-F01	OUTSIDE AIR DAMPER	AREA F	AREA 800	FCU-801, FCU-802, FCU-803, FCU-804, FCU-805, FCU-807	LV-8A	3/0M-720	1180	1
OAD-F02	OUTSIDE AIR DAMPER	AREA F	AREA 800	FCU-808, FCU-809, FCU-811, FCU-812	LV-8B	3/0M-720	3200	1

NOTES:
1. PROVIDE NEW ACTUATOR AND CONTROL WIRING TO EQUIPMENT CONTROLLER. TEST AND BALANCE TO VALUES IN COMMON OUTSIDE AIR DAMPER SCHEMATIC.

EXHAUST FAN CONTROL SCHEDULE - FOUR OAKS MIDDLE SCHOOL

MARK	LOCATION	CFM (FOR REFERENCE ONLY, HIDE FROM SHEETS)	AHU / SERVICE	CONTROL SCHEMATIC NUMBER	NOTES
EF-1A	A	100	ADMIN TOILETS	1/0M-720	1
EF-1B	A	275	GIRLS 127	1/0M-720	1
EF-1C	A	275	BOYS 125	1/0M-720	1
EF-1D	A	100	TOILET 122D	1/0M-720	1
EF-1E	A	125	TOILET 122C	1/0M-720	1
EF-1F	A	475	BREAK RM 106 / TOILET 119A	1/0M-720	1
EF-2A	D	310	FEMALE TOILETS 206	1/0M-720	1
EF-2B	D	250	MALE TOILETS 207	1/0M-720	1
EF-2C	D	570	FEMALE LOCKER RM 216	1/0M-720	1
EF-2D	D	600	MALE LOCKER RM 222	1/0M-720	1
EF-2E	D	125	CHORAL RM STORAGE 202B	1/0M-720	1
EF-2F	D	125	PE STORAGE 213	1/0M-720	1
EF-3A	C	300	GIRLS 301	1/0M-720	1
EF-3B	C	300	BOYS 303	1/0M-720	1
EF-3C	C	200	CUSTODIAN 302	1/0M-720	1
EF-3E	C	60	CUSTODIAN 309	1/0M-720	1
EF-3J	C	100	STAFF TOILET 313	1/0M-720	1
EF-6A	B	120	TOILETS 600A, 600B	1/0M-720	1
EF-6B	B	550	BOYS 610 / GIRLS 612	1/0M-720	1
EF-7A	F	120	TOILETS 700A, 700B	1/0M-720	1
EF-7B	F	550	BOYS 710 / GIRLS 712	1/0M-720	1
EF-8A	E	120	TOILETS 800A, 800B	1/0M-720	1
EF-8B	E	550	BOYS 810 / GIRLS 812	1/0M-720	1

NOTES:
1. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
FOUR OAKS MIDDLE SCHOOL
1475 BOYETTE RD,
FOUR OAKS, NC 27524

SEAL
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 042056 WILLIAM L. HOCUTT
12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 2	12/14/23

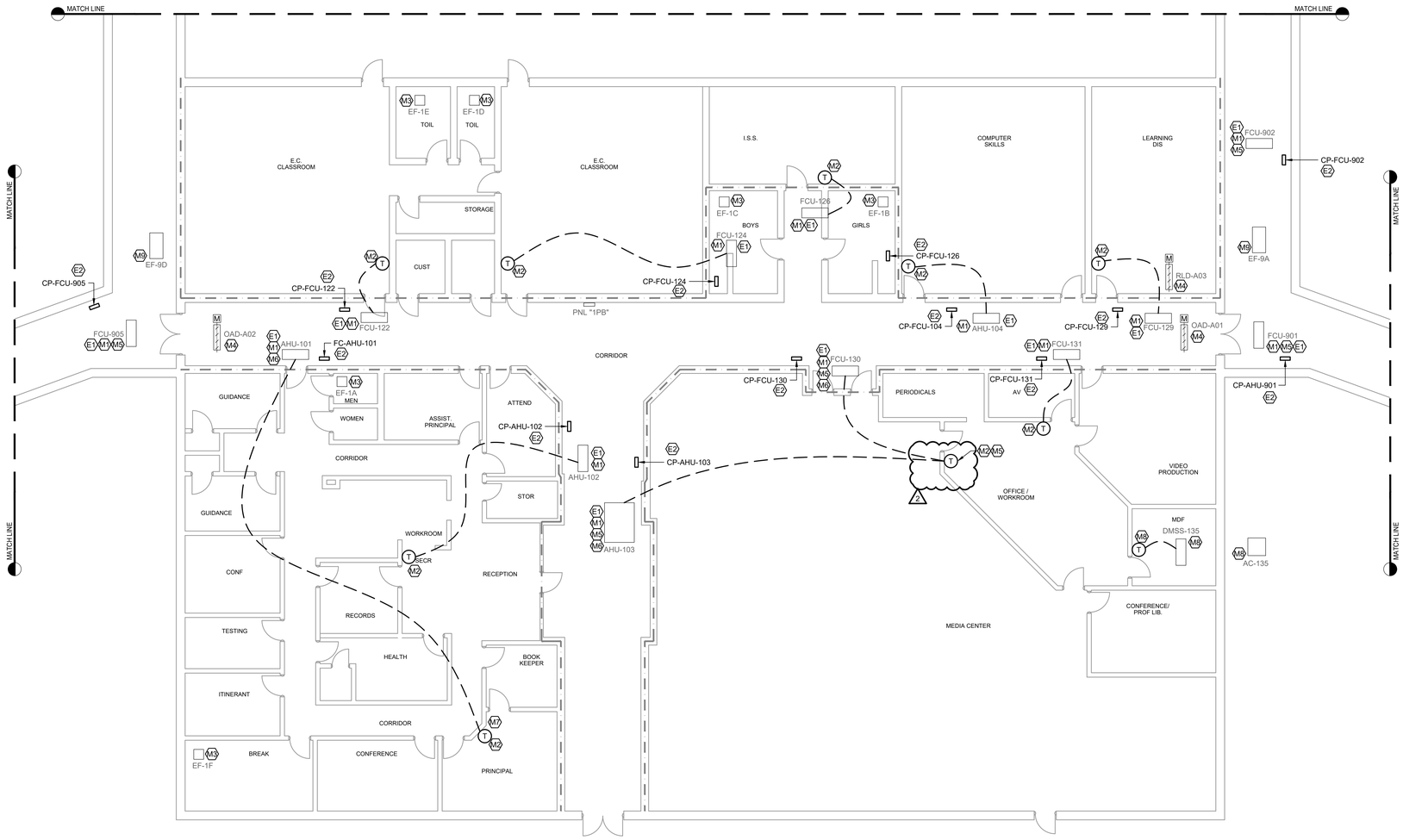
DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
FOUR OAKS MS SCHEDULES

PROJECT NO. 50159407-P6

3M-602

SHEET NO. . OF



1 FIRST FLOOR AREA A
SCALE: 1/8" = 1'-0"

0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M6. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M7. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

M8. NOT INCLUDED IN BAS SCOPE.

M9. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- REVISION NUMBER
- KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

Dewberry

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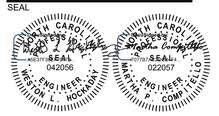
JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

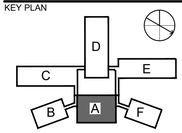
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD.
CLAYTON, NC 27527

SEAL



12/14/2023 12/14/2023

KEY PLAN



AREA A | NTS

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
RIVERWOOD MS AREA A

PROJECT NO. 50159407-P6

4ME-201

SHEET NO. . OF

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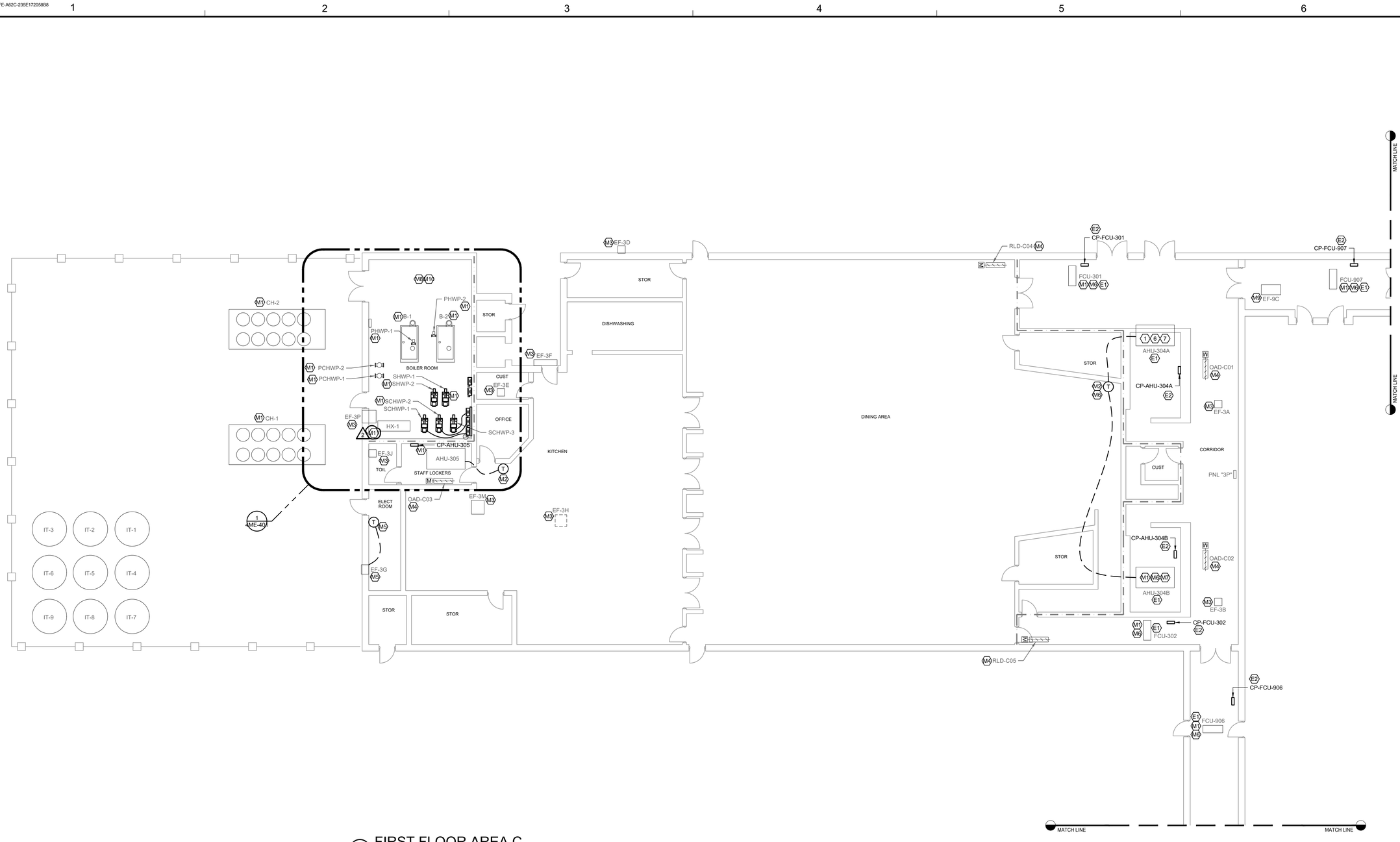

1 FIRST FLOOR AREA C

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

0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF. FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. EXISTING FAN HARDWIRED TO THERMOSTAT OR SWITCH, NOT INCLUDED IN BAS SCOPE.

M6. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M7. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

M8. PROVIDE NEW WATER METER, ONICON FM-3200, OR EQUAL, IN EXISTING WATER PIPING UPSTREAM OF ALL BRANCH CONNECTIONS. METER SHALL BE MONITORED BY BAS AND PROVIDE ALARM OF HIGH WATER FLOW UNDER UNOCCUPIED MODE.

M9. EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.

M10. PROVIDE NEW ACTUATOR FOR EXISTING ICE STORAGE THREE WAY CONTROL VALVE.

M11. NOT USED (2)

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- (#) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

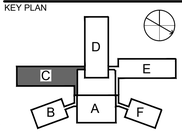
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 JOHNSTON COUNTY, NC — 12/14/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022057 — 12/14/2023

KEY PLAN



AREA C | NTS

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP

APPROVED BY WLH

CHECKED BY JPH

DATE 11/22/2023 P6

TITLE

RIVERWOOD MS AREA C

PROJECT NO. 50159407-P6

4ME-203

SHEET NO. . OF

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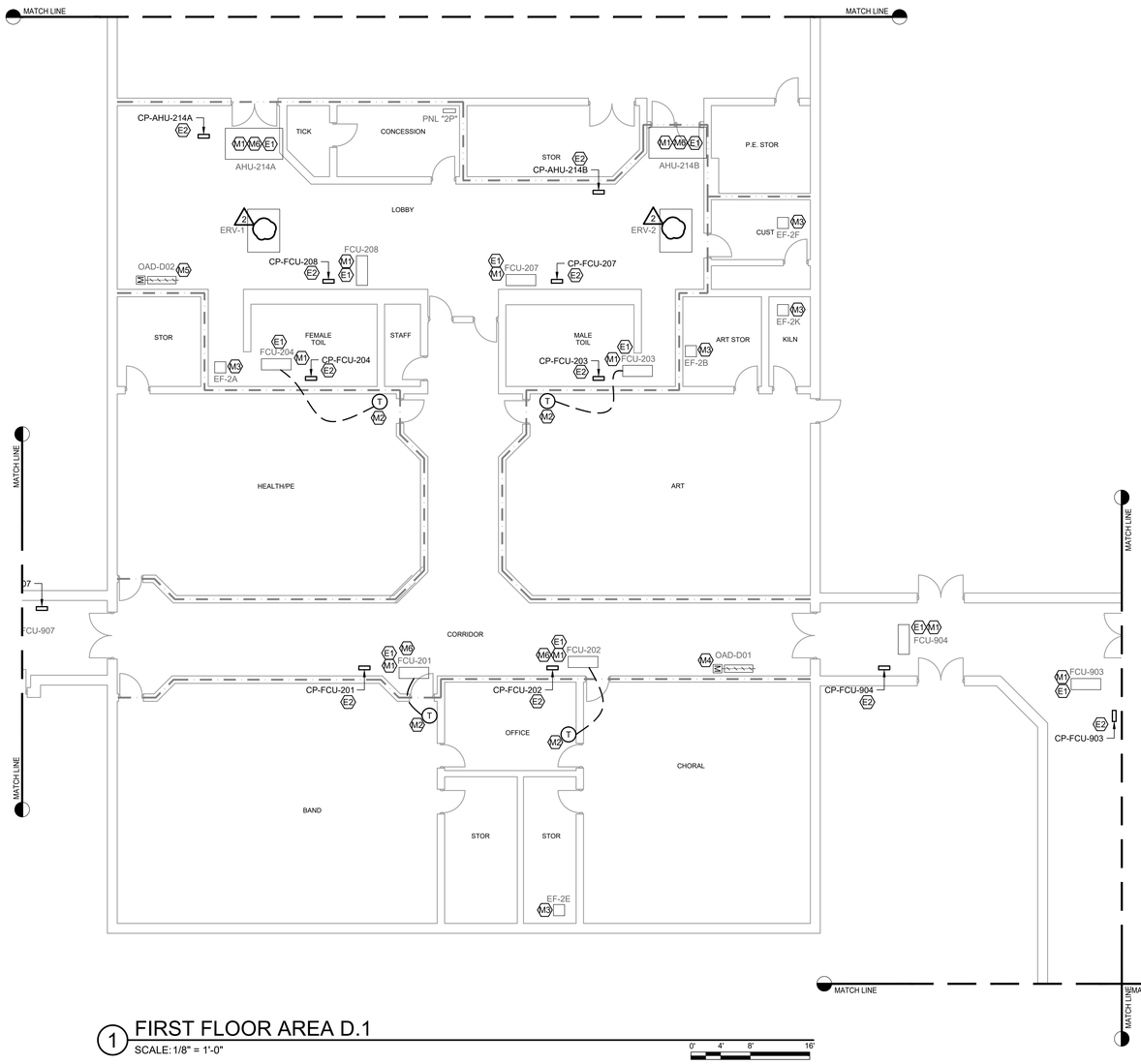
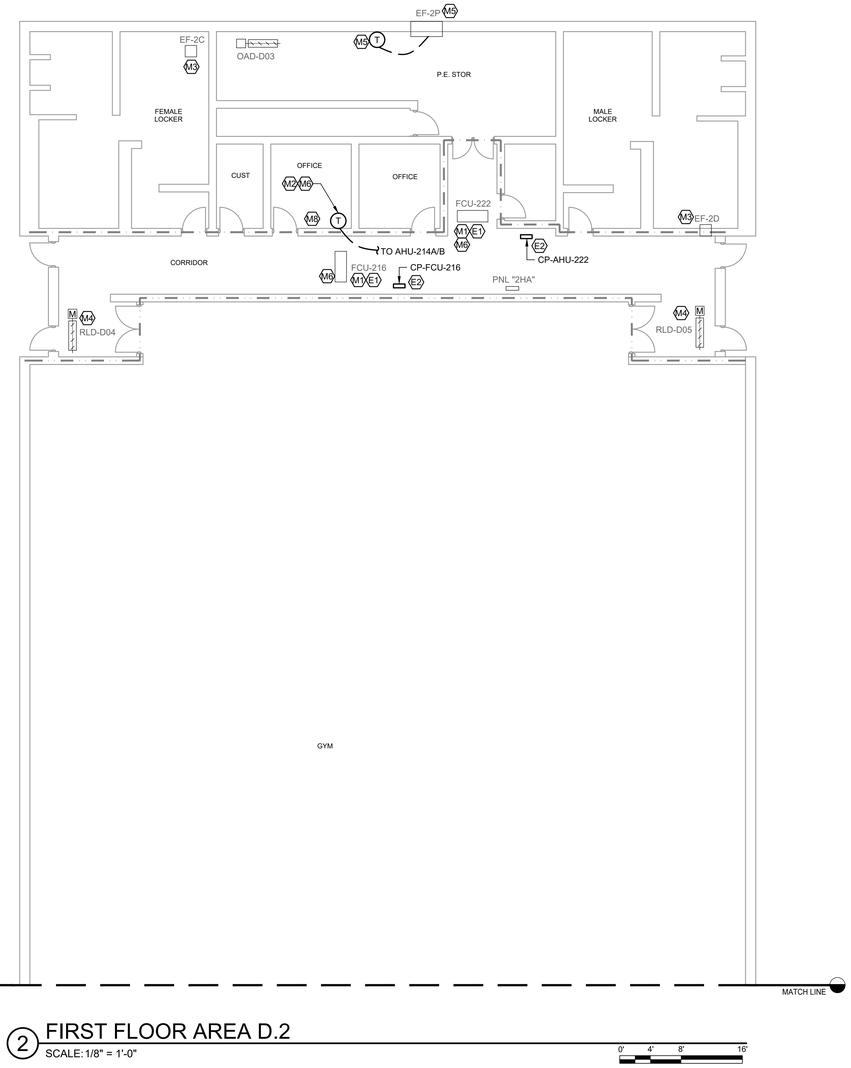


1 FIRST FLOOR AREA D.1
SCALE: 1/8" = 1'-0"
0' 4' 8' 16'



2 FIRST FLOOR AREA D.2
SCALE: 1/8" = 1'-0"
0' 4' 8' 16'

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF. FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. EXISTING FAN HARDWIRED TO THERMOSTAT OR SWITCH, NOT INCLUDED IN BAS SCOPE.

M6. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.

M7. NOT USED

M8. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- (#) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
- DARK DASHED LINES INDICATE DEMOLITION.
- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

Dewberry

Dewberry Engineers Inc.
2610 Wycliff Road
Suite 410
Raleigh, NC 27607-3073
919.881.9939
NC License No. F-0929

JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

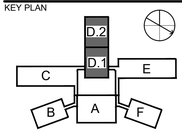
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527

SEAL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042056 WILLIAM L. HOCKADAY REGISTERED PROFESSIONAL ENGINEER
12/14/2023

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 002057 JOSHUA P. COMPTON REGISTERED LANDSCAPE ARCHITECT
12/14/2023

KEY PLAN



AREA D | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
RIVERWOOD MS
AREA D

PROJECT NO. 50159407-P6

4ME-204

SHEET NO. . OF

1/22/2016 9:07:15 AM
P:\50159407\CAD\PACKAGE 6\MECH\50159407-P6 4M-204 RIVERWOOD MS AREA D.DWG

1 FIRST FLOOR AREA F
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
2. PROVIDE TEST AND BALANCE FOR AHUS TO SCHEDULED OUTSIDE AIR CFM TO SET DAMPER POSITION. REFERENCE SEQUENCE OF OPERATION FOR MORE DETAILS.

KEY NOTES (#)

MECHANICAL KEYNOTES:

M1. PROVIDE DEVICE CONTROLLER AND INTEGRATE INTO BUILDING AUTOMATION SYSTEM. SEE SCHEMATIC AND SCHEDULE FOR ADDITIONAL INFORMATION. WHERE AVAILABLE, EXISTING CONTROL POWER PANEL MAY BE REUSED AT CONTRACTORS DISCRETION, MUST VERIFY PRIOR TO BID.

M2. PROVIDE NEW WALL MODULE INDICATED IN SCHEMATIC AT 48" AFF, FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FROM ABOVE CEILING TO MOUNTING HEIGHT AT LOCATION SHOWN, CONTRACTOR MUST VERIFY PRIOR TO BID.

M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

M4. REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.

M5. PROVIDE HOT TAP IN HOT WATER SUPPLY AND RETURN PIPING. PROVIDE HYDRONIC DIFFERENTIAL PRESSURE SENSOR WITH LCD READOUT, VALVE LOCK ASSEMBLY, AND ANALOG SIGNAL FOR PUMP CONTROL. PROGRAM TO SECONDARY HOT WATER PUMP VFD SPEED CONTROL.

M6. PROVIDE HOT TAP IN CHILLED WATER SUPPLY AND RETURN PIPING. PROVIDE HYDRONIC DIFFERENTIAL PRESSURE SENSOR WITH LCD READOUT, VALVE LOCK ASSEMBLY, AND ANALOG SIGNAL FOR PUMP CONTROL.

M7. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SET POINT ADJUSTMENT WHERE NOTED ON PLANS.

2 M8. DEMOLISH EXISTING WALL MODULE. DEMOLISH ALL WIRING BACK TO POINT OF COMMON USE. REMOVE ANY WIRE MOLD. PATCH AND REPAIR THE WALL TO MATCH EXISTING.

ELECTRICAL KEYNOTES:

E1. DISCONNECT AND REMOVE POWER CIRCUIT FROM CONTROL PANEL TO NEAREST JBOX. CIRCUIT TO BE REUSED FOR NEW CONTROL PANEL.

E2. EXTEND AND CONNECT EXISTING CONTROL POWER CIRCUIT MADE AVAILABLE BY DEMOLITION TO NEW CONTROL PANEL. IF CONTROL PANEL HAS ONLY ONE CONTROLLER SERVING TWO UNITS, THEN INTERCEPT CONTROL POWER CIRCUIT AND CONNECT TO BOTH NEW CONTROLLERS WITH 2#12, 1#12G IN 3/4" C. CONTROL PANEL PROVIDED BY MECHANICAL CONTRACTOR. LABEL CONTROL PANEL WITH PANEL SOURCE AND CIRCUIT NUMBER. PANEL NET LOAD MAY INCREASE BY .5 AMPS.

GENERAL LEGEND

- (#) REVISION NUMBER
- (#) KEY NOTES
- LIGHT LINES INDICATE EXISTING OR BY OTHERS.
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- DARK SOLID LINES INDICATE NEW WORK
- CONNECT NEW TO EXISTING
- POINT OF DISCONNECTION

WALL RATING LEGEND

- 1 HR RATED WALL
- 2 HR RATED WALL
- 4 HR RATED WALL

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS

CONTROLS UPGRADE PACKAGE 6

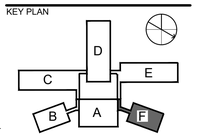
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 052056 ENGINEER JOSHUA L. HOGAN
12/14/2023

NORTH CAROLINA PROFESSIONAL SEAL 052057 ENGINEER RALPH L. PENNY, JR. COMMITTED
12/14/2023

KEY PLAN



AREA F | NTS
SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
RIVERWOOD MS AREA F

PROJECT NO. 50159407-P6

4ME-206

SHEET NO. . OF

AIR SYSTEMS CONTROL SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
AHU-101	AHU	A	ADMIN OFFICES - PERIMETER	1/0M-721	250/250	1,2,3,4,6
AHU-102	AHU	A	ADMIN OFFICES - INTERIOR	1/0M-721	200/200	1,2,3,4,6
AHU-103	AHU	A	MEDIA CENTER 130	1/0M-721	185/560	1,2,3,4,5,6
AHU-104	AHU	A	COMPUTER LAB 128	1/0M-721	230/230	1,2,3,4,6
FCU-122	FCU	A	E.C. CLASSROOM 122	1/0M-722	240	1,2,3,4,6
FCU-124	FCU	A	E.C. CLASSROOM 124	1/0M-722	160	1,2,3,4,6
FCU-126	FCU	A	I.S.S. 126 / TOILET / CORRIDOR	1/0M-722	400	1,2,3,4,6
FCU-129	FCU	A	LEARNING DIS. 129	1/0M-722	120	1,2,3,4,6
FCU-130	FCU	A	LEISURE READING AREA	1/0M-722	135	1,2,3,4,6
FCU-131	FCU	A	MEDIA CENTER OFFICES	1/0M-722	120	1,2,3,4,6
FCU-201	FCU	D	BAND ROOM 201A	1/0M-722	215	1,2,3,4,6
FCU-202	FCU	D	CHORAL ROOM 202A / OFFICE	1/0M-722	215	1,2,3,4,6
FCU-203	FCU	D	ART ROOM 203A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-204	FCU	D	HEALTH/PE 204A / CORRIDOR	1/0M-722	200	1,2,3,4,6
FCU-207	FCU	D	MALE TOILETS 207 / LOBBY 208 E	1/0M-722	250	1,2,3,4,6
FCU-208	FCU	D	FEMAIL TOILETS 206 / LOBBY 208 W	1/0M-722	310	1,2,3,4,6
AHU-214A	AHU	D	GYM 214 - EAST	1/0M-721	500/2300	2,3,4,5,6
ERV-1	ERV	D	AHU-214A GYM 214 - EAST	-	2250	7
AHU-214B	AHU	D	GYM 214 - WEST	1/0M-721	500/2300	2,3,4,6
ERV-2	ERV	D	AHU-214B GYM 214 - WEST	-	2250	7
FCU-216	FCU	D	FEMALE LOCKER 216 / OFFICES	1/0M-722	570	1,2,3,4,5,6
FCU-222	FCU	D	MALE LOCKER 222 / CORRIDOR	1/0M-722	600	1,2,3,4,5,6
FCU-301	FCU	C	GIRLS 301 / CORRIDOR 300 NORTH	1/0M-722	300	1,2,3,4,5,6
FCU-302	FCU	C	BOYS 303 / CORRIDOR 300 SOUTH	1/0M-722	300	1,2,3,4,5,6
AHU-304A	AHU	C	DINING ROOM 304 NORTH	1/0M-721	915/1350	2,3,4,6
AHU-304B	AHU	C	DINING ROOM 304 SOUTH	1/0M-721	960/1350	2,3,4,6
AHU-305	AHU	C	KITCHEN AREA	1/0M-721	425/425	1,2,3,4,6
FCU-601	FCU	B	RESOURCE 601 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-602	FCU	B	CLASSROOM 602	1/0M-722	200	1,2,3,4,6
FCU-603	FCU	B	CLASSROOM 603	1/0M-722	240	1,2,3,4,6
FCU-604	FCU	B	CLASSROOM 604 & STORAGE 600D	1/0M-722	240	1,2,3,4,6
FCU-605	FCU	B	CLASSROOM 605	1/0M-722	240	1,2,3,4,6
FCU-607	FCU	B	CLASSROOM 607	1/0M-722	240	1,2,3,4,6
FCU-608	FCU	B	CLASSROOM 608 & STORAGE 606	1/0M-722	250	1,2,3,4,5,6
FCU-611	FCU	B	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,6
FCU-612	FCU	B	BOYS 610 / GIRLS 612 / CORRIDOR	1/0M-722	550	1,2,3,4,6
FCU-613	FCU	B	CLASSROOM 613	1/0M-722	240	1,2,3,4,6
FCU-614	FCU	B	CLASSROOM 614 / STORAGE 616	1/0M-722	240	1,2,3,4,6
FCU-615	FCU	B	CLASSROOM 615	1/0M-722	240	1,2,3,4,6
FCU-617	FCU	B	CLASSROOM 617	1/0M-722	240	1,2,3,4,6
FCU-618	FCU	B	CLASSROOM 618 / STORAGE 600E	1/0M-722	240	1,2,3,4,6
FCU-620	FCU	B	CLASSROOM 620	1/0M-722	240	1,2,3,4,6
FCU-621	FCU	B	CLASSROOM 621 / CORRIDOR	1/0M-722	240	1,2,3,4,5,6
FCU-622	FCU	B	CLASSROOM 622	1/0M-722	240	1,2,3,4,6
FCU-623	FCU	B	CLASSROOM 623 / CORRIDOR	1/0M-722	240	1,2,3,4,6

AIR SYSTEMS CONTROL SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM)	NOTES
FCU-701	FCU	F	RESOURCE 701 / CORRIDOR	1/0M-722	240	1,2,3,4,6
AHU-702	FCU	F	CLASSROOM 702	1/0M-722	200	1,2,3,4,6
FCU-703	FCU	F	CLASSROOM 703	1/0M-722	240	1,2,3,4,6
FCU-704	FCU	F	CLASSROOM 704 & STORAGE 700D	1/0M-722	240	1,2,3,4,6
FCU-705	FCU	F	CLASSROOM 705	1/0M-722	240	1,2,3,4,6
FCU-707	FCU	F	CLASSROOM 707	1/0M-722	240	1,2,3,4,6
FCU-708	FCU	F	CLASSROOM 708 & STORAGE 706	1/0M-722	250	1,2,3,4,6
FCU-711	FCU	F	CONFERENCE / STAFF/ TOILETS	1/0M-722	250	1,2,3,4,5,6
FCU-712	FCU	F	BOYS 710 / GIRLS 712 / CORRIDOR	1/0M-722	550	1,2,3,4,6
FCU-713	FCU	F	CLASSROOM 713	1/0M-722	240	1,2,3,4,6
FCU-714	FCU	F	CLASSROOM 714 / STORAGE 716	1/0M-722	240	1,2,3,4,6
FCU-715	FCU	F	CLASSROOM 715	1/0M-722	240	1,2,3,4,6
FCU-717	FCU	F	CLASSROOM 717 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-718	FCU	F	CLASSROOM 718 / STORAGE 700E	1/0M-722	240	1,2,3,4,6
FCU-720	FCU	F	CLASSROOM 720	1/0M-722	240	1,2,3,4,6
FCU-721	FCU	F	CLASSROOM 721 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-722	FCU	F	CLASSROOM 722	1/0M-722	240	1,2,3,4,6
FCU-723	FCU	F	CLASSROOM 723 / CORRIDOR	1/0M-722	240	1,2,3,4,6
AHU-801	FCU	E	RESOURCE 801 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-802	FCU	E	CLASSROOM 802	1/0M-722	240	1,2,3,4,6
FCU-803	FCU	E	CLASSROOM 803	1/0M-722	240	1,2,3,4,6
FCU-804	FCU	E	CLASSROOM 804 & STORAGE 800D	1/0M-722	240	1,2,3,4,6
FCU-805	FCU	E	CLASSROOM 805	1/0M-722	240	1,2,3,4,6
FCU-807	FCU	E	CLASSROOM 807	1/0M-722	240	1,2,3,4,6
FCU-808	FCU	E	CLASSROOM 808 & STORAGE 806	1/0M-722	240	1,2,3,4,6
FCU-809	FCU	E	CLASSROOM 809	1/0M-722	240	1,2,3,4,6
FCU-811	FCU	E	CONFERENCE / STAFF/ TOILETS	1/0M-722	150	1,2,3,4,6
FCU-812	FCU	E	BOYS 810 / GIRLS 812 / CORRIDOR	1/0M-722	550	1,2,3,4,5,6
FCU-814	FCU	E	CLASSROOM 814 / STORAGE 816	1/0M-722	240	1,2,3,4,6
FCU-815	FCU	E	CLASSROOM 815	1/0M-722	240	1,2,3,4,6
FCU-817	FCU	E	CLASSROOM 817	1/0M-722	240	1,2,3,4,6
FCU-818	FCU	E	CLASSROOM 818 / STORAGE 800E	1/0M-722	240	1,2,3,4,6
FCU-819	FCU	E	CLASSROOM 819 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-820	FCU	E	CLASSROOM 820	1/0M-722	240	1,2,3,4,6
FCU-821	FCU	E	CLASSROOM 821 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-822	FCU	E	CLASSROOM 822	1/0M-722	240	1,2,3,4,6
FCU-823	FCU	E	CLASSROOM 823 / CORRIDOR	1/0M-722	240	1,2,3,4,6
FCU-901	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-902	FCU	A	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-903	FCU	D	CONNECTOR 901	1/0M-722	100	1,2,3,4,5,6
FCU-904	FCU	D	CONNECTOR 902	1/0M-722	100	1,2,3,4,5,6
FCU-905	FCU	A	CONNECTOR 100-600 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-906	FCU	C	CONNECTOR 100-300 BUILDING	1/0M-722	100	1,2,3,4,5,6
FCU-907	FCU	C	CONNECTOR 903	1/0M-722	100	1,2,3,4,5,6
AHU-MDF	FCU	A	MDF 135	2/0M-723	-	2,3,4

NOTES:
1. PROVIDE TEST AND BALANCE TO DETERMINE VENTILATION SETTING FOR OUTSIDE AIR DAMPER POSITION. OUTSIDE AIR FLOW RATES WERE OBTAINED FROM ORIGINAL DESIGN ASBUILTS.
2. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS
3. PROVIDE EQUIPMENT CONTROLLER AND SENSORS. SEE ASSOCIATED CONTROL SCHEMATIC FOR POINTS TO INCLUDE.
4. DEMOLISH CHILLED WATER AND HEATING HOT WATER CONTROL VALVES FOR AHU AND PROVIDE NEW 2 WAY PRESSURE INDEPENDENT CONTROL VALVES. PROVIDE NEW 2-WAY CONTROL VALVE TO MATCH EXISTING SIZE. MODIFY PIPING AS NECESSARY TO ACCOMODATE NEW.
5. PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.
6. DEMOLISH AND PROVIDE NEW ACTUATOR(S) FOR MOTOR-OPERATED DAMPERS. MULTIPLE UNITS SERVED BY ONE OAD, NOT ONE PER UNIT. MATCH EXISTING COMMAND.
7. EXISTING EQUIPMENT INTERLOCK TO REMAIN.

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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527

SEAL
NORTH CAROLINA REGISTERED LICENSED PROFESSIONAL SEAL 049258 ENGINEER WILTON L. HOCHMAN
12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
2	ADDENDUM #2	12/14/23
1	ADDENDUM #1	12/01/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
RIVERWOOD MS SCHEDULES

PROJECT NO. 50159407-P6

4M-601

SHEET NO. . OF

HYDRONIC SYSTEMS CONTROL SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	TYPE	LOCATION	SERVICE	CONTROL SCHEMATIC NUMBER	HYDRONICS FLOW (GPM)	NOTES
B-1	BOILER - CI	A	BUILDING	1/0M-701	110	1,2,5
B-2	BOILER - CI	C	BUILDING	1/0M-701	110	1,2,5
SHWP-1	PUMP	C	BUILDING	1/0M-701	250	1,2,3,4,5
SHWP-2	PUMP	C	BUILDING	1/0M-701	250	1,2,3,4,5
PHWP-1	PUMP	C	BOILER 1	1/0M-701	110	1,5
PHWP-2	PUMP	C	BOILER 2	1/0M-701	110	1,5
CH-1	ACC	C	BUILDING	1/0M-710	306	1,2,5
CH-2	ACC	C	BUILDING	1/0M-710	306	1,2,5
SCHWP-1	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
SCHWP-2	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
SCHWP-3	PUMP	C	BUILDING	1/0M-710	367	1,2,3,4,5
PCHWP-1	PUMP	C	CHILLER 1	1/0M-710	306	1,5
PCHWP-2	PUMP	C	CHILLER 2	1/0M-710	306	1,5
HX-1	HXR	C	HEAT EXCHANGER	1/0M-710	650	1,2,5

NOTES:
1. PROVIDE NEW EQUIPMENT CONTROLLER AND EQUIPMENT LABEL. SEE SCHEMATIC FOR POINTS.
2. REFER TO CONTROL VALVE SCHEDULE FOR NEW SECONDARY PLANT CONTROL VALVE.
3. REFER TO VFD SCHEDULE FOR NEW VFDS FOR PUMPS.
4. REFER TO PUMP SCHEDULE FOR NEW PUMP.
5. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.

PUMP SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	SERVICE	TYPE	MANUFACTURER / MODEL	SUCTION (IN DIA)	DISCHARGE (IN DIA)	IMPELLER (IN DIA)	FLOW (GPM)	HEAD (FT H2O)	EFF. (%)	SPEED (RPM)	BRAKE MOTOR (HP)	NOMINAL MOTOR (HP)	VOLTAGE/ PHASE	STARTER/ DSCNNCT MEANS	NOTES
SCHWP-1	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SCHWP-2	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SCHWP-3	CHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 3EB	4.0	3.0	10.25	367	80	76%	1623	9.5	15.0	480/3	VFD	1,2,3
SHWP-1	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3
SHWP-2	HHW BUILDING LOOP	BASE-MOUNTED END-SUCTION	Bell & Gossett / e-1510 2.5BB	3.0	2.5	8.875	250	70	76%	1722	5.6	7.5	480/3	VFD	1,2,3

NOTES:
1. REFER TO SECTION 232123 FOR ADDITIONAL REQUIREMENTS.
2. PROVIDE STARTING AND DISCONNECTING MEANS AS SCHEDULED. (MRS = MOTOR RATED SWITCH; MS/D = COMBINATION MOTOR-STARTER AND DISCONNECT; AND VFD = VARIABLE FREQUENCY DRIVE)
3. PUMPS MOTOR SELECTION SHALL BE BASED ON NON-OVERLOADING SERVICE.

LOUVER DAMPER SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	TYPE	LOCATION	LOCATION (ORIGINAL)	SERVICE	ASSOCIATED LOUVER	CONTROL SCHEMATIC NUMBER	MAXIMUM AIRFLOW CFM	NOTES
OAD-A01	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-104, FCU-124, FCU-126, FCU-129, FCU-130, FCU-131	LV-1A	3/0M-720	2885	1
OAD-A02	OUTSIDE AIR DAMPER	AREA A	AREA 100	AHU-101, AHU-102, AHU-103, FCU-122	LV-1B	3/0M-720	2360	1
RLD-A03	AHU RELIEF AIR DAMPER	AREA A	AREA 100	FCU-129	LV-1C	3/0M-720	1800	1
OAD-B01	OUTSIDE AIR DAMPER	AREA B	AREA 600	FCU-601, FCU-602, FCU-603, FCU-604, FCU-605, FCU-607, FCU-608	LV-6A	3/0M-720	3140	1
OAD-B02	OUTSIDE AIR DAMPER	AREA B	AREA 600	FCU-611, FCU-612, FCU-613, FCU-614, FCU-615, FCU-617, FCU-618, FCU-620, FCU-621, FCU-622, FCU-623	LV-6B	3/0M-720	3000	1
OAD-C01	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3A	3/0M-720	2739	1
OAD-C02	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3B	3/0M-720	2723	1
RLD-C03	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-304A	LV-3C	1/0M-721	3000	1
RLD-C04	AHU RELIEF AIR DAMPER	AREA C	AREA 300	AHU-304B	LV-3D	1/0M-721	3000	1
OAD-C05	OUTSIDE AIR DAMPER	AREA C	AREA 300	AHU-305 & KITCHEN MACKUP AIR	LV-3M	1/0M-721	8400	1
OAD-D01	OUTSIDE AIR DAMPER	AREA D	AREA 200	FCU-201, FCU-202	LV-2A	3/0M-720	750	1
OAD-D02	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214A, FCU-204, FCU-208, ERV-1	LV-2B	3/0M-720	6080	1
OAD-D03	OUTSIDE AIR DAMPER	AREA D	AREA 200	AHU-214B, FCU-203, FCU-207, ERV-2	LV-2C	3/0M-720	6080	1
RLD-D04	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214A	LV-2D	1/0M-721	6080	1
RLD-D05	AHU RELIEF AIR DAMPER	AREA D	AREA 200	AHU-214B	LV-2E	1/0M-721	6080	1
OAD-E01	OUTSIDE AIR DAMPER	AREA E	AREA 800	AHU-801, FCU-802, FCU-803, FCU-804, FCU-805, FCU-807, FCU-808, FCU-809	LV-8A	3/0M-720	3140	1
OAD-E02	OUTSIDE AIR DAMPER	AREA E	AREA 800	FCU-811, FCU-812, FCU-814, FCU-815, FCU-817, FCU-818, FCU-819, FCU-820, FCU-821, FCU-822, FCU-823	LV-8B	3/0M-720	3000	1
OAD-F01	OUTSIDE AIR DAMPER	AREA F	AREA 700	FCU-701, FCU-702, FCU-703, FCU-704, FCU-705, FCU-707, FCU-708	LV-7A	3/0M-720	3140	1
OAD-F02	OUTSIDE AIR DAMPER	AREA F	AREA 700	FCU-711, FCU-712, FCU-713, FCU-714, FCU-715, FCU-717, FCU-718, FCU-720, FCU-721, FCU-722, FCU-723	LV-7B	3/0M-720	3000	1

NOTES:
1. PROVIDE NEW ACTUATOR AND CONTROL WIRING TO EQUIPMENT CONTROLLER. TEST AND BALANCE TO VALUES IN COMMON OUTSIDE AIR DAMPER SCHEMATIC.

EXHAUST FAN CONTROL SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	LOCATION	CFM (FOR REFERENCE ONLY, HIDE FROM SHEETS)	AHU / SERVICE	CONTROL SCHEMATIC NUMBER	NOTES
EF-1A	A	100	ADMIN TOILETS	1/0M-720	1
EF-1B	A	275	GIRLS 127	1/0M-720	1
EF-1C	A	275	BOYS 125	1/0M-720	1
EF-1D	A	100	TOILET 122D	1/0M-720	1
EF-1E	A	125	TOILET 122C	1/0M-720	1
EF-1F	A	475	BREAK RM 106 / TOILET 119A	1/0M-720	1
EF-2A	D	310	FEMALE TOILETS 206	1/0M-720	1
EF-2B	D	250	MALE TOILETS 207	1/0M-720	1
EF-2C	D	570	FEMALE LOCKER RM 216	1/0M-720	1
EF-2D	D	600	MALE LOCKER RM 222	1/0M-720	1
EF-2E	D	125	CHORAL RM STORAGE 202B	1/0M-720	1
EF-2F	D	125	PE STORAGE 213	1/0M-720	1
EF-3A	C	300	GIRLS 301	1/0M-720	1
EF-3B	C	300	BOYS 303	1/0M-720	1
EF-3C	C	200	CUSTODIAN 302	1/0M-720	1
EF-3E	C	60	CUSTODIAN 309	1/0M-720	1
EF-3J	C	100	STAFF TOILET 313	1/0M-720	1
EF-6A	B	120	TOILETS 600A, 600B	1/0M-720	1
EF-6B	B	550	BOYS 610 / GIRLS 612	1/0M-720	1
EF-6E	B	525	BOYS 610	1/0M-720	1
EF-6F	B	525	GIRLS 612	1/0M-720	1
EF-7A	F	120	TOILETS 700A, 700B	1/0M-720	1
EF-7B	F	550	BOYS 710 / GIRLS 712	1/0M-720	1
EF-7E	F	525	BOYS 710	1/0M-720	1
EF-7F	F	525	GIRLS 712	1/0M-720	1
EF-8A	E	120	TOILETS 800A, 800B	1/0M-720	1
EF-8B	E	550	BOYS 810 / GIRLS 812	1/0M-720	1
EF-8E	E	525	BOYS 810	1/0M-720	1
EF-8F	E	525	GIRLS 812	1/0M-720	1

NOTES:
1. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.

VARIABLE FREQUENCY DRIVE SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	VOLTS	PHASE	HP	BYPASS	NEMA ENCLOSURE	MANUFACTURER	MODEL NO.	NOTES
VFD-SCHWP-1	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-2	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SCHWP-3	480	3	15	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-1	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4
VFD-SHWP-2	480	3	7.5	YES	TYPE 1	ABB	ACH580VCR	1,2,3,4

NOTES:
1. REFER TO SECTION 230514 FOR ADDITIONAL REQUIREMENTS.
2. FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED AND WIRED BY ELECTRICAL CONTRACTOR.
3. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.
4. EXTEND AND CONNECT PREVIOUS CIRCUIT TO NEW PUMP CONTROLLER PANELS, VFDs, AND PUMPS.

WATER FLOWMETER SCHEDULE - RIVERWOOD MIDDLE SCHOOL

MARK	PIPE SIZE	SERVICE	MANUFACTURER	MODEL NO.	NOTES
HW-FLOW	5	HOT WATER	ONICON	F-3500	
CHW-FLOW	8	CHILLED WATER	ONICON	F-3500	
DOM-FLOW	4	DOMESTIC WATER	ONICON	F-3500	

NOTES:
1. REFER TO PLANS FOR ADDITIONAL REQUIREMENTS.

Dewberry
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JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 6
RIVERWOOD MIDDLE SCHOOL
204 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527

SEAL
NORTH CAROLINA REGISTERED PROFESSIONAL ENGINEER SEAL 042058 WILLIAM L. HOWARD
12/14/2023

KEY PLAN

SCALE

REVISIONS

NO.	DESCRIPTION	DATE
1	ADDENDUM 2	12/14/23

DRAWN BY SD/RLP
APPROVED BY WLH
CHECKED BY JPH
DATE 11/22/2023 P6

TITLE
RIVERWOOD MS SCHEDULES

PROJECT NO. 50159407-P6

4M-602

SHEET NO. . OF