

**Johnston County Public Schools
HVAC CONTROLS REPLACEMENTS – PACKAGE 5**

ADDENDUM NO. 2

DATE: December 14, 2023

PROJECT: Johnston County Public Schools
Controls Replacements – Package 5

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 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 1ME-201 – Keynote removed.
5. Sheet 1M-601 – Flowmeter and Air Systems schedules adjusted.
6. Sheet 2ME-204 – Keynote removed.
7. Sheet 2M-601 – Air System schedule adjusted.
8. Sheet 2M-603 – Flowmeter schedule adjusted.
9. Sheet 3ME-204 – Keynote removed.
10. Sheet 3M-601 – Air System schedule adjusted
11. Sheet 3M-603 – Flowmeter
12. Sheet 4ME-201 – Keynote removed.
13. Sheet 4ME-204 – Keynote removed.
14. Sheet 4M-601 – Air System schedule adjusted
15. Sheet 4M-603 – 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. **West Smithfield – 6 Tanks**
 1. **Glycol - See Calmac O&M Manual. Approximately 25% glycol ; System volume – 1,450 gallons (6 tanks @ 157 + 350 gal in ~135' 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 – 3,900 gallons**
 - ii. **River Dell – 6 tanks**
 1. **Building – 3,900 gallons**
 - iii. **Riverwood – 6 Tanks**
 1. **Building – 3,900 gallons**
 - b. **Flushing shall be completed per Calmac operating and maintenance instructions.**

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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.
6. Spec 23-08-00 page 2 item C says to monitor the below but does not show on the control diagrams, monitor or not? This is under the commissioning section:
 - a. Elevator sump – **Not applicable**
 - b. Freezer and cooler temps – **Removed from scope**
 - c. Metering – **Domestic Water and Hydronic Flow Only**
 - d. Fire alarm – **Applicable for control schematics/sequences only for shutdown.**
 - e. Security system – **Not applicable**
7. Air handling schematics show mixing box damper actuators plus a relief damper, but there’s a damper schedule with a different quantities of dampers on the drawings... go only with the schedule? I’m thinking go with what’s on the schedule.
Incorrect, damper schedule does not include all dampers. The damper schedule is for “independent”, “remote” or “shared” dampers separate from the equipment such as an AHU or FCU. Additional dampers may be included as part of the AHU or FCU that would be shown on the control schematic.
8. Drawings show on the boilers and chillers to be integrated to the BAS and says to provide a “device controller and integrate”. Do the chillers and boilers have comm cards? If not, do we provide?

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A plant controller is to be provided. Hardwired points for each chiller / boiler are shown in schematic and comm cards may be available in some instances for additional point integration. If there is not an existing comm card, then the hardwired points will be required and a comm card will be noted if it is to be added to existing chiller / boiler.

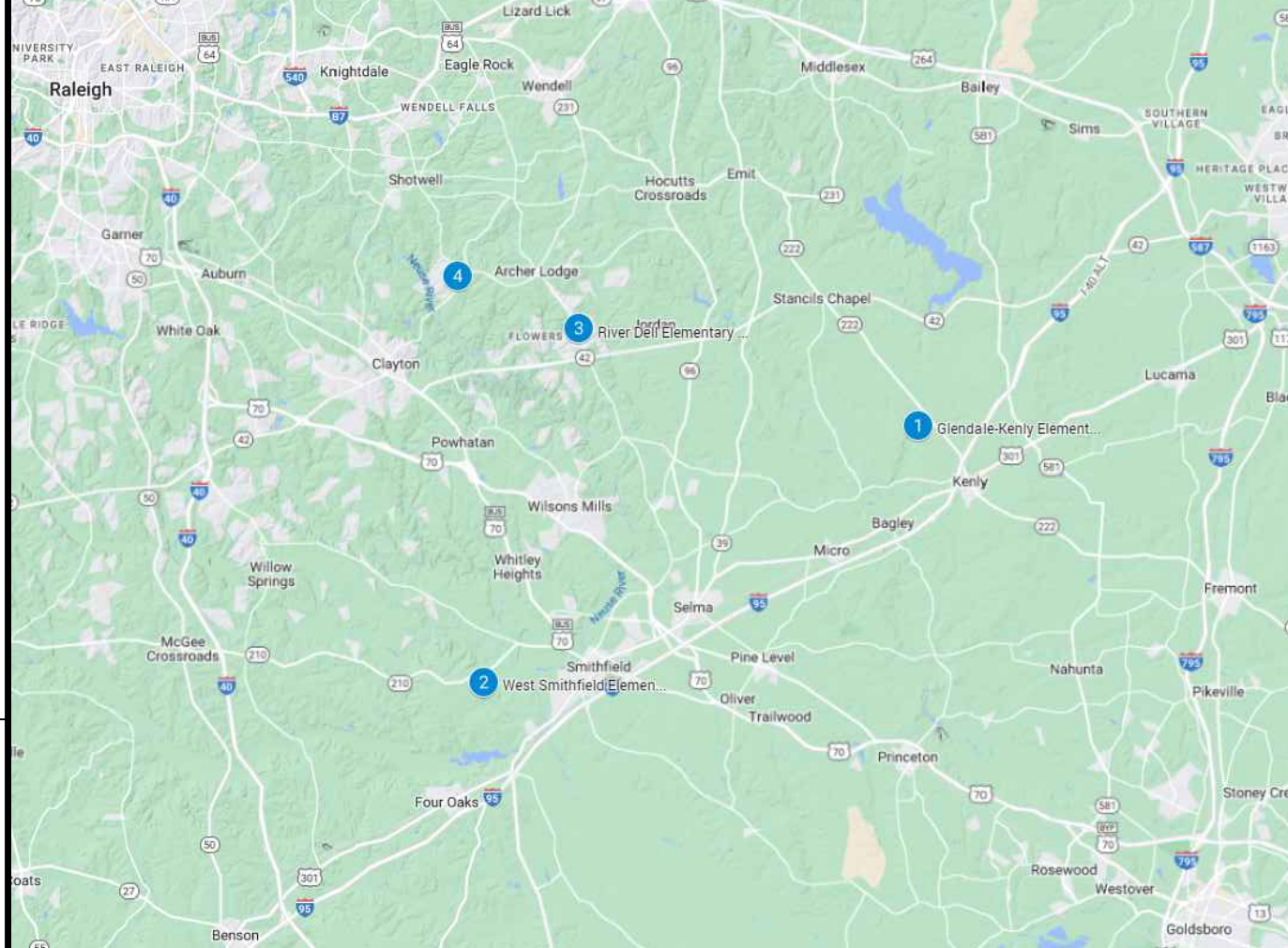
9. Specs call for the existing control system to stay working while the changeout is taking place. Is the existing system LON or BACnet? Do we need to install a new communications trunk?
If the existing system needs to stay operational a new communications trunk will be required, unless where network is existing to chillers/boilers.
10. Drawing show that the fan coils have a control panel, can we reuse?
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 requirement. 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.
11. New control panels for the boiler/chiller plants?
Yes, there are certain boiler / chiller plants with recent controller replacements as part of boiler / chiller changeout. These controllers may be modified to meet current contract drawings and specification requirements or replaced for same purpose.
12. Do we know who’s controls are in each of the 8 schools? That would determine if they existing controls are LON or BACnet and if we could reuse any comm wiring.
A new communications trunk will be required along with IP CAT5/6 wire.

Attached Documents:

1. None.

End of Addendum No. 2

VICINITY MAP



- WORK LOCATIONS**
1. GLENDALE KENLY ELEMENTARY SCHOOL
2001 BAY VALLEY RD.
KENLY, NC 27542
 2. WEST SMITHFIELD ELEMENTARY SCHOOL
2655 GALLIEE RD.
SMITHFIELD, NC 27577
 3. RIVER DELL ELEMENTARY SCHOOL
12100 BUFFALO RD.
CLAYTON, NC 27527
 4. RIVERWOOD ELEMENTARY SCHOOL
108 ATHLETIC CLUB BLVD.
CLAYTON, NC 27527

CONTACTS

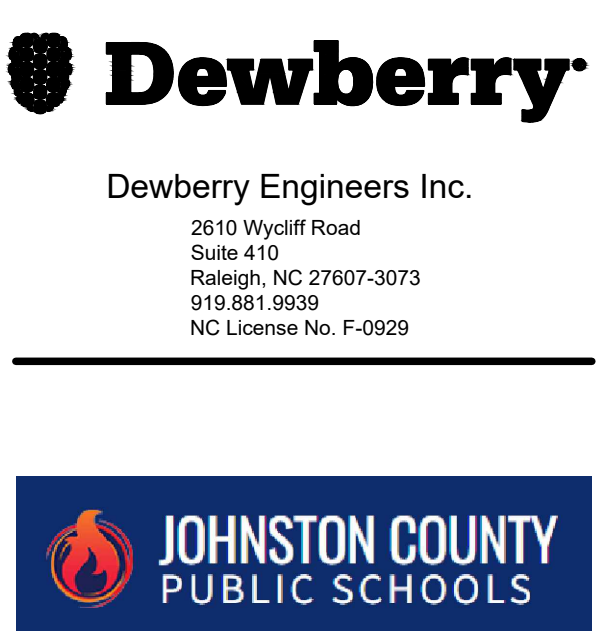
OWNER:
JOHNSTON COUNTY PUBLIC SCHOOLS CONSTRUCTION
601-A WEST MARKET ST.,
SMITHFIELD, NC 27577

MEP:
DEWBERRY ENGINEERS, INC.
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607

CONTACT:
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PROJECT MANAGER
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E-MAIL:
MATTHEWV.JOHNSON@JOHNSTON.K12.NC.US



JOHNSTON COUNTY PUBLIC SCHOOLS HVAC CONTROLS UPGRADE DEWBERRY PACKAGE 5 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 COUNTY-WIDE 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 TRENDS 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 RIVER DELL AND WEST SMITHFIELD ELEMENTARY 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 BIOCIDIC 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.

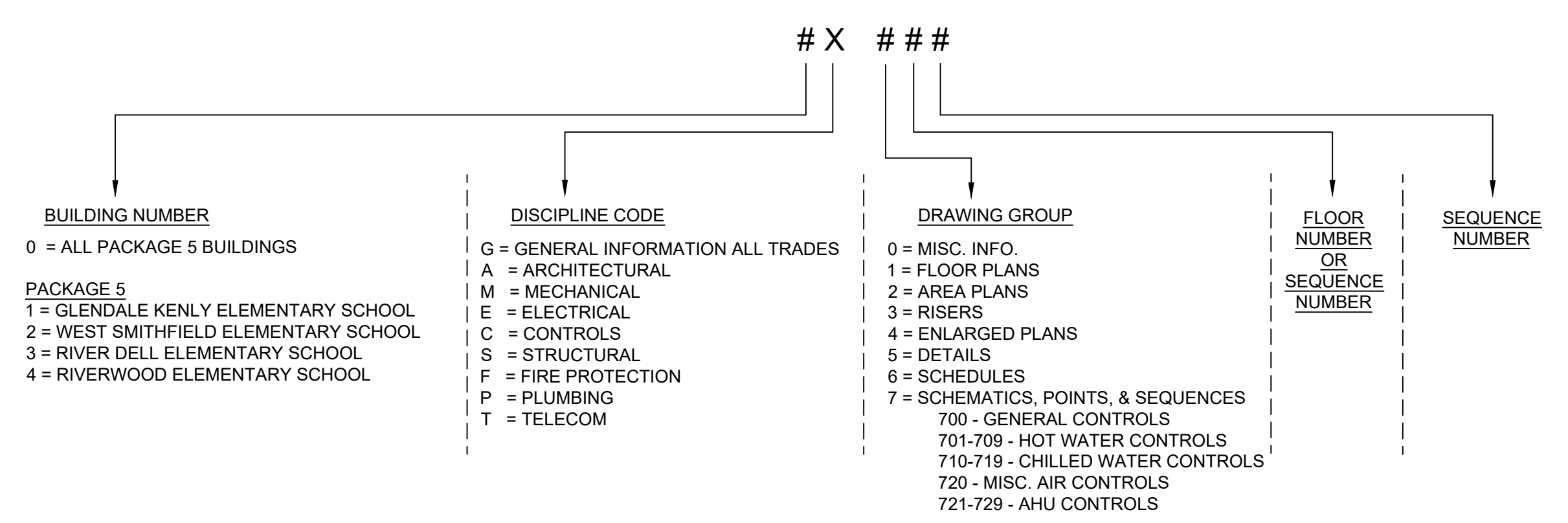
J. PROVIDE FUNCTIONAL TESTING AND CONTROLS CHECKOUT TO ENSURE PROPER SYSTEM OPERATION.

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.

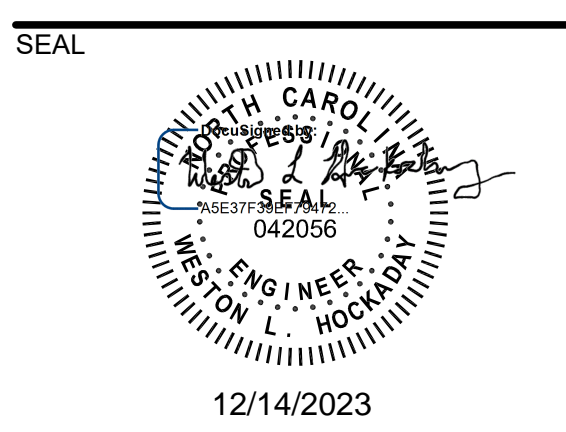
DRAWING INDEX

NO	TITLE
0G-001	COVER SHEET
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-711	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	GLENDALE KENLY ES FIRST FLOOR PLAN
1ME-201	GLENDALE KENLY ES AREA A
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1ME-204	GLENDALE KENLY ES AREA D
1ME-205	GLENDALE KENLY ES AREA E
1ME-401	GLENDALE KENLY ES ENLARGED PLANS
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2M-110	WEST SMITHFIELD ES FIRST FLOOR PLAN
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2ME-202	WEST SMITHFIELD ES AREA B
2ME-203	WEST SMITHFIELD ES AREA C
2ME-204	WEST SMITHFIELD ES AREA D
2ME-205	WEST SMITHFIELD ES AREA E
2ME-401	WEST SMITHFIELD ES ENLARGED PLANS
2M-402	WEST SMITHFIELD ES ENLARGED PLANS
2M-601	SCHEDULES
2M-602	SCHEDULES
2M-603	SCHEDULES
2E-601	SCHEDULES
3M-110	RIVER DELL ES FIRST FLOOR PLAN
3ME-201	RIVER DELL ES AREA A
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3ME-203	RIVER DELL ES AREA C
3ME-204	RIVER DELL ES AREA D
3ME-205	RIVER DELL ES AREA E
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3M-601	SCHEDULES
3M-602	SCHEDULES
3M-603	SCHEDULES
3E-601	SCHEDULES
4M-110	RIVERWOOD ES FIRST FLOOR PLAN
4ME-201	RIVERWOOD ES AREA A
4ME-202	RIVERWOOD ES AREA B
4ME-203	RIVERWOOD ES AREA C
4ME-204	RIVERWOOD ES AREA D
4ME-205	RIVERWOOD ES AREA E
4ME-401	RIVERWOOD ES ENLARGED PLANS
4M-601	SCHEDULES
4M-602	SCHEDULES
4M-603	SCHEDULES
4E-601	SCHEDULES

DRAWING NUMBER CODE



JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 5
JOHNSTON COUNTY, NC



KEY PLAN

SCALE

REVISIONS

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

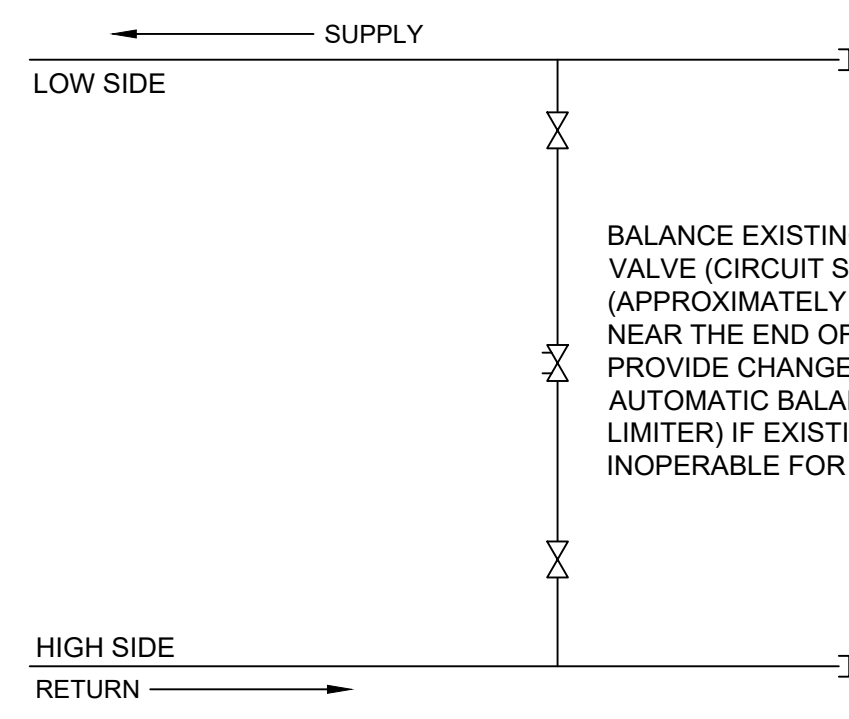
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DATE: 11/22/2023 PS
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PROJECT NO. 50159407-PS

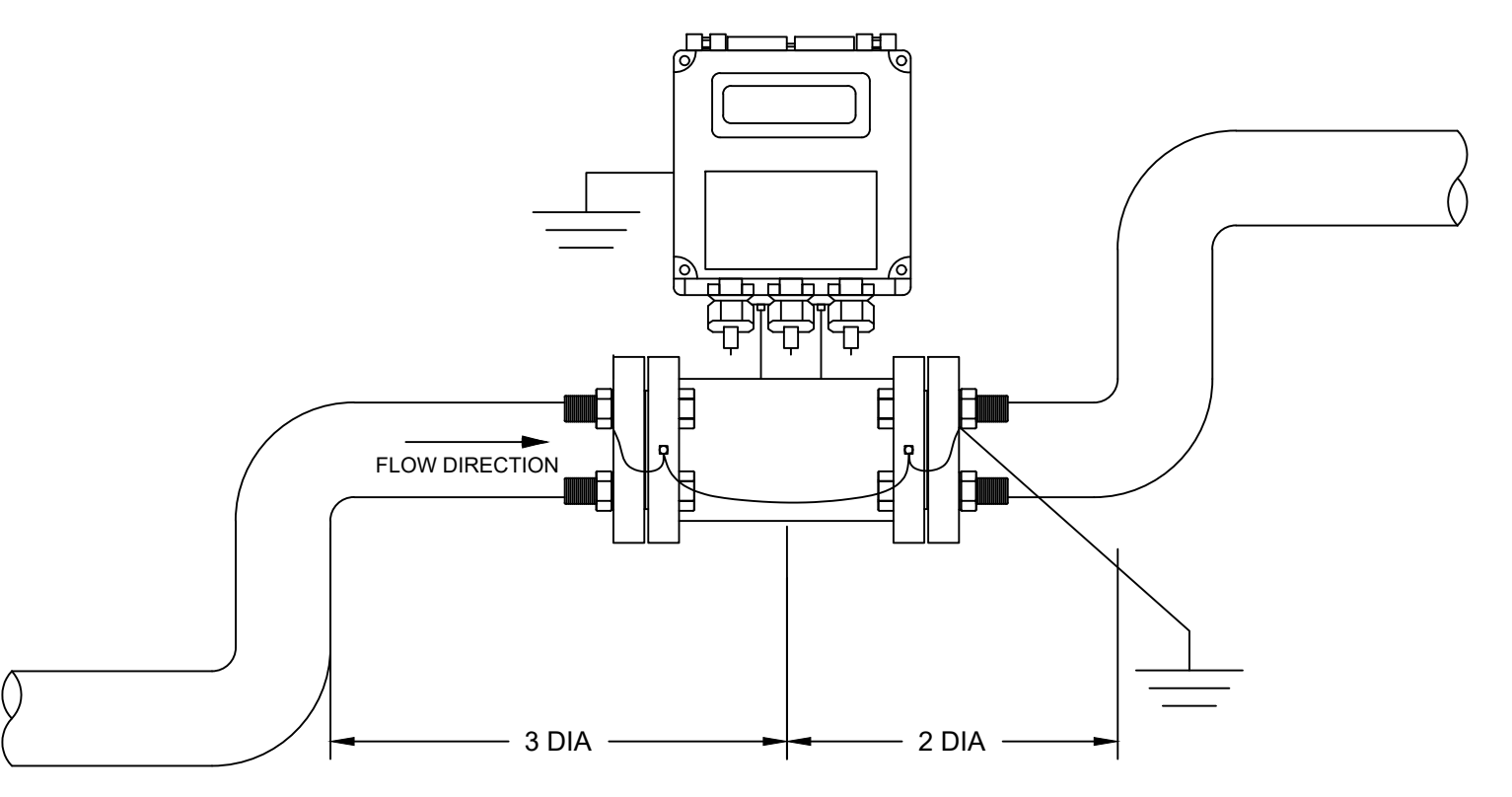
0G-001

SHEET NO. OF ##

F



BALANCE EXISTING MANUAL BALANCING VALVE (CIRCUIT SETTER) TO 5 GPM EACH (APPROXIMATELY 3 PER SCHOOL) TYPICALLY NEAR THE END OF EACH CLASSROOM WING. PROVIDE CHANGE ORDER TO REPLACE WITH AUTOMATIC BALANCING VALVE (FLOW LIMITER) IF EXISTING CIRCUIT SETTER IS INOPERABLE FOR APPROVAL BY ENGINEER.



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

1 END OF LINE MINIMUM FLOW BYPASS

SCALE: NTS

2 IN-LINE FLOW METER INSTALLATION

SCALE: NTS

E

D

C

B

A



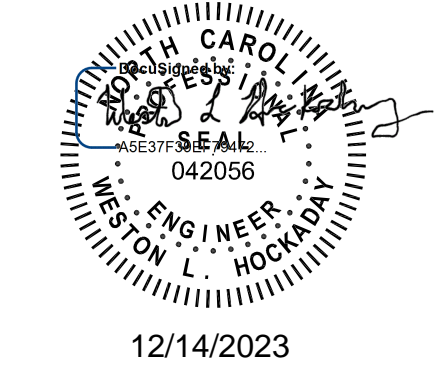
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Raleigh, NC 27607-3073
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NC License No. F-0929



JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 5

JOHNSTON COUNTY,
NC

SEAL



12/14/2023

KEY PLAN

SCALE

REVISIONS

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

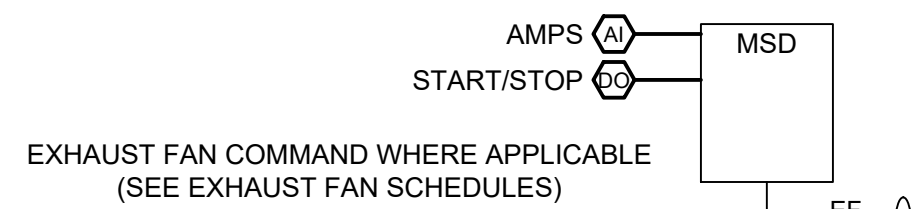
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DATE: 11/22/2023 PS
TITLE

DETAILS

PROJECT NO. 50159407-P5

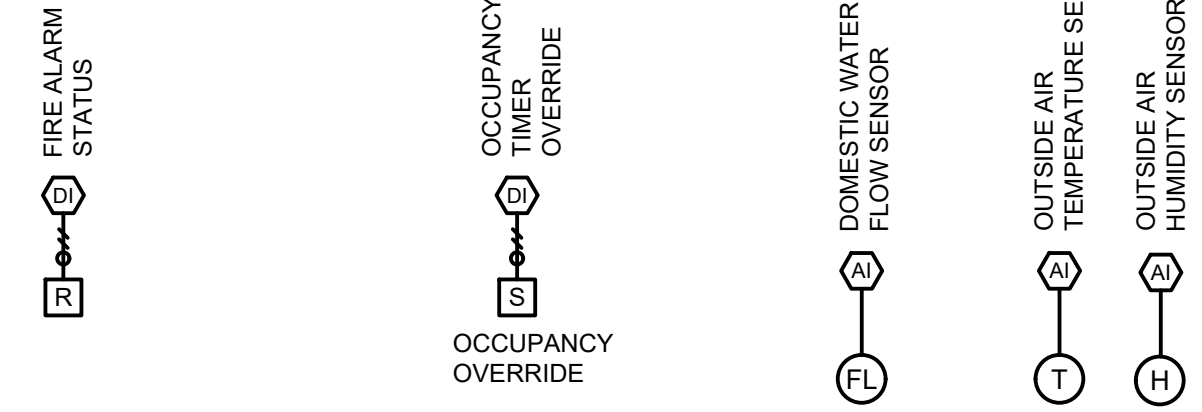
OM-502

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



MISCELLANEOUS SEQUENCES

0 - OUTSIDE AIR TEMPERATURE AND HUMIDITY

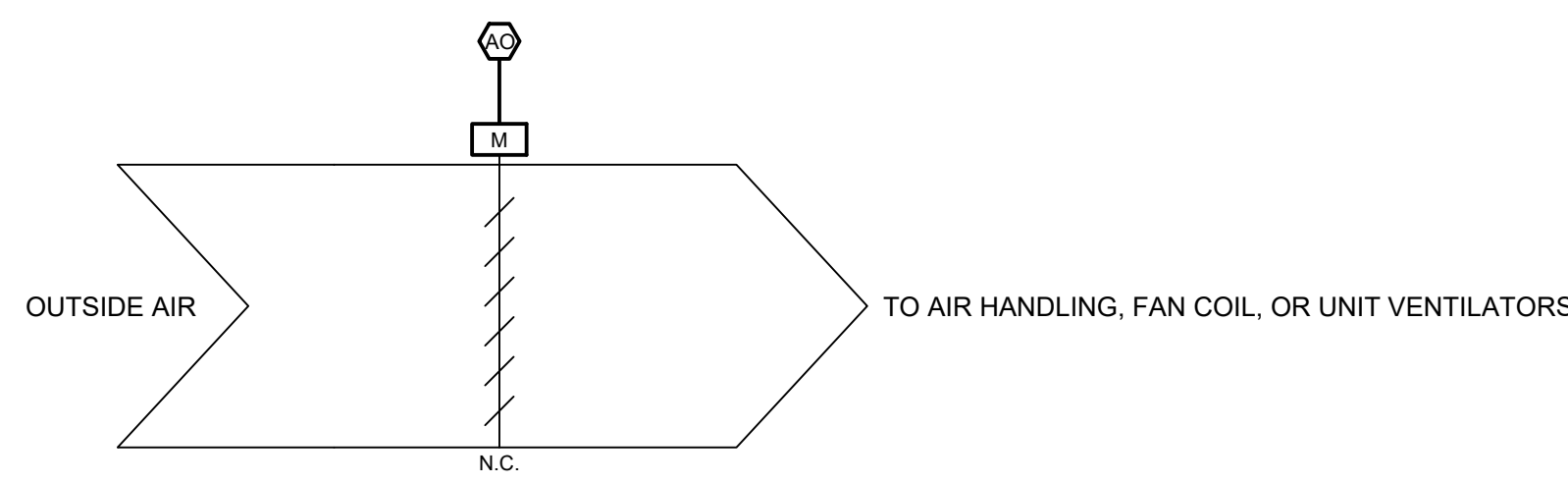
- 0.1. Operation
 - A. Provide combination outside air temperature and humidity combination sensor on north wall of building. Locate away from any building corners or vortices. Locate away from sources which will impact readings (sun, exhaust, wind, etc).
 - B. Economizer operation for all equipment 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
- 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

SCALE: NTS
##-##-###

2 MISCELLANEOUS POINTS

SCALE: NTS
##-##-###

3 COMMON OA DAMPER



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

SCALE: NTS

1 GENERAL EXHAUST FAN

1/20/2016 9:15:15 AM P:\2015\2016\CAD\PACKAGE 5\LEAD SHEETS\50159407-P5-OM-720-CONTROL SCHEMATICS & SEQUENCES.DWG



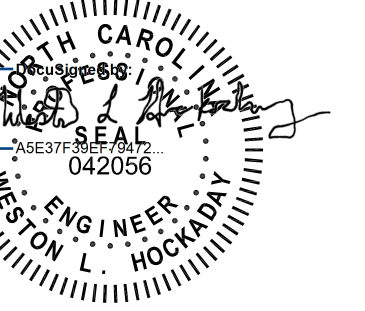
Dewberry Engineers Inc.
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Suite 410
Raleigh, NC 27607-3073
919.851.9939
NC License No. F-0929



JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 5

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: VLH
 CHECKED BY: JPH
 DATE: 11/22/2023 P5

TITLE
CONTROL SCHEMATICS & SEQUENCES

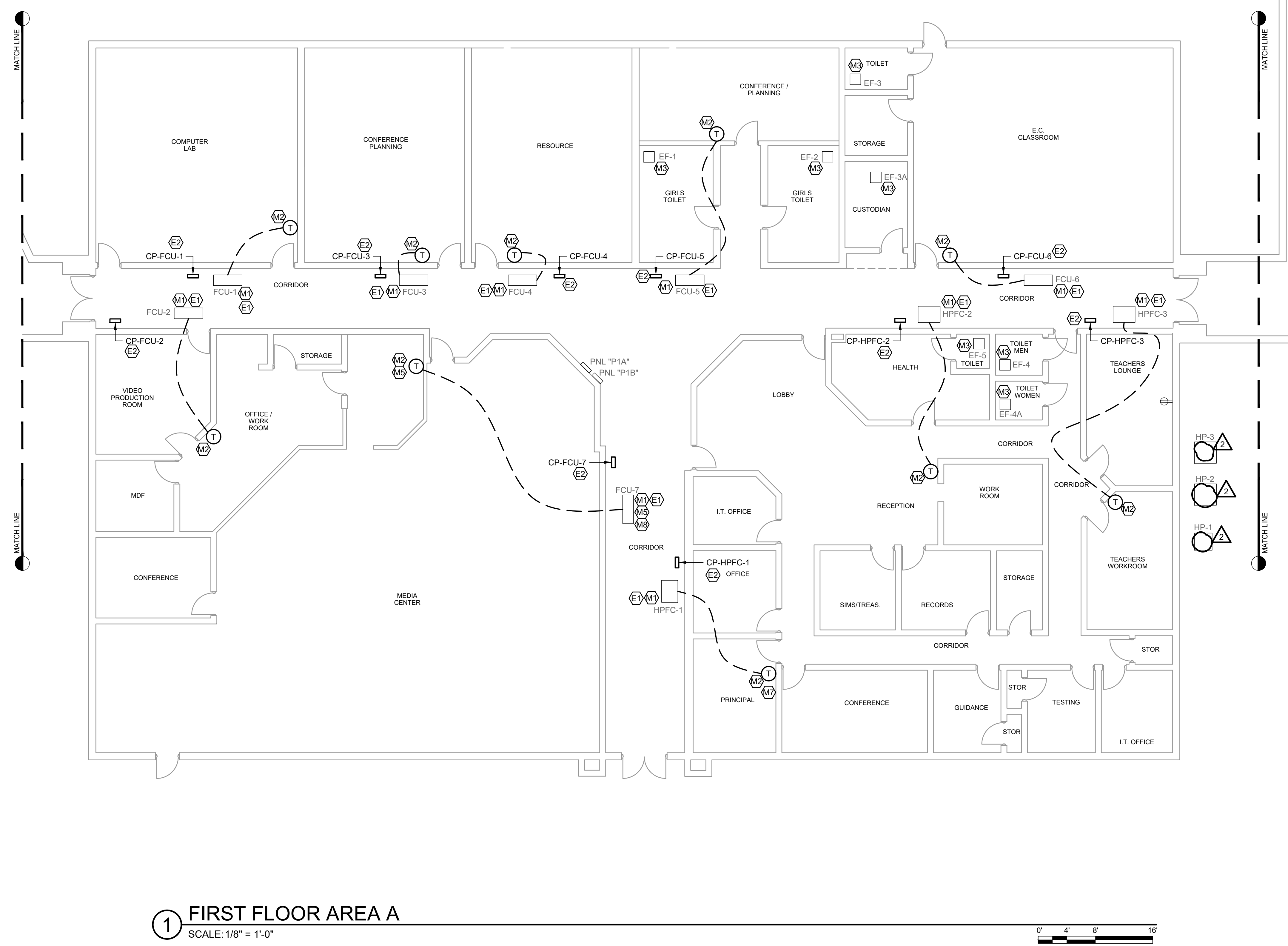
PROJECT NO. 50159407-P5

OM-720

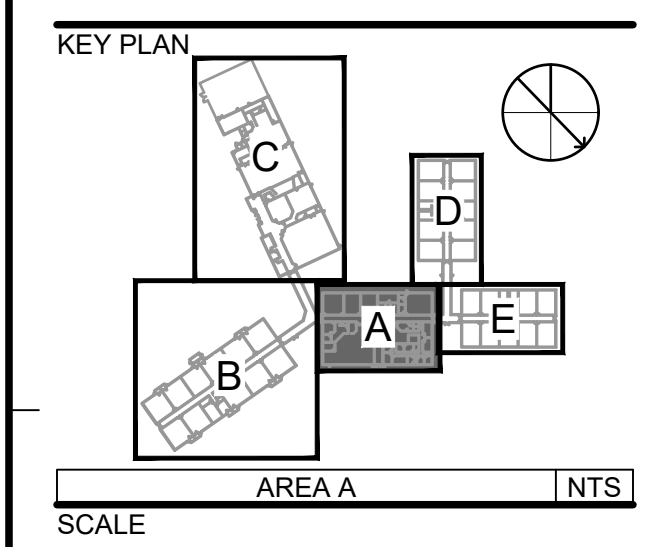
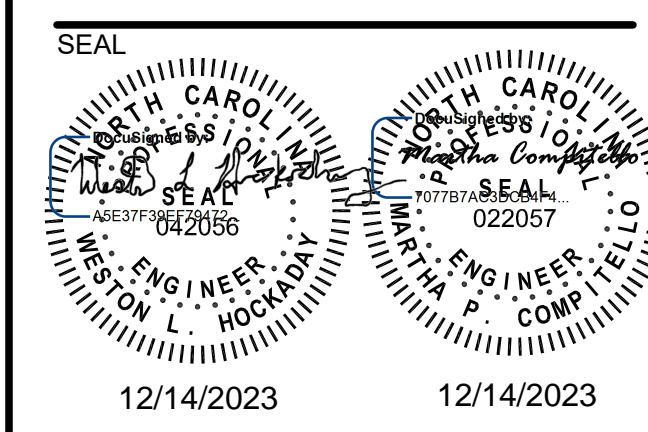
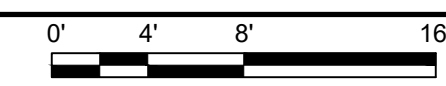
SHEET NO. . OF ##

F
E
D
C
B
A

12/20/23 8:07:15 AM
P:\2023\19407\19407-P5 1M-201 GLENDALE KENLY ES AREA A.DWG



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



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

GENERAL NOTES

- REFER TO 0G-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 0G-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
- 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 AND PANEL MAY BE REUSED AT CONTRACTORS DISCRETION. MUST VERIFY PRIOR TO BID.
 - M2. PROVIDE NEW WALL MODULE INDICATED AT 48" AFF. FOR DEVICE CONTROLLER. REUSE EXISTING CABLE PATH OR PROVIDE NEW WIRE-MOLD FOR CABLE 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. NOT USED.
 - 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.
 - M7. PROVIDE TIMER SWITCH WHERE SHOWN FOR OCCUPANCY OVERRIDE. COORDINATE WITH OWNER ON LOCATION.
 - 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.
 - 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.

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

DRAWN BY: SDR/LP
APPROVED BY: VLH
CHECKED BY: JPH
DATE: 11/22/2023 P5

TITLE
GLENDALE KENLY ES AREA A

PROJECT NO. 50159407-P5

1ME-201

SHEET NO. OF ##



Dewberry Engineers Inc.
2610 Wyatt Road
Suite 410
Raleigh, NC 27607-3073
919.851.9939
NC License No. F-0929



JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE
WEST SMITHFIELD ELEMENTARY SCHOOL
2685 GALILEE RD.
SMITHFIELD, NC 27577

AIR SYSTEMS CONTROL SCHEDULE - WEST SMITHFIELD ELEMENTARY SCHOOL

Table with columns: MARK, TYPE, LOCATION, SERVICE, CONTROL SCHEMATIC NUMBER, AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM), NOTES. Contains 54 rows of equipment data.

AIR SYSTEMS CONTROL SCHEDULE - WEST SMITHFIELD ELEMENTARY SCHOOL

Table with columns: MARK, TYPE, LOCATION, SERVICE, CONTROL SCHEMATIC NUMBER, AHU OUTSIDE AIRFLOW (DCV/VENT) (CFM), NOTES. Contains 20 rows of equipment data.

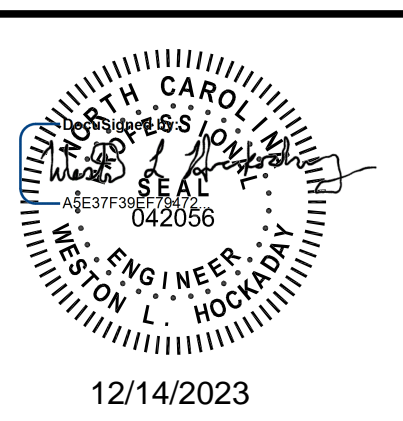
NOTES:
1. PROVIDE TEST AND BALANCE TO DETERMINE VENTILATION SETTING FOR OUTSIDE AIR DAMPER POSITION. OUTSIDE AIR FLOW RATES WERE OBTAINED FROM ORIGINAL DESIGN ASBULTS.
2. PROVIDE NEW EQUIPMENT LABELS FOR EQUIPMENT, MOTOR STARTER/DISCONNECTS, VARIABLE FREQUENCY DRIVES, AND ELECTRICAL PANELS.
3. PROVIDE 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 ACCOMMODATE 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 - WEST SMITHFIELD ELEMENTARY SCHOOL

Table with columns: MARK, TYPE, LOCATION, LOCATION (ORIGINAL), SERVICE, ASSOCIATED LOUVER, CONTROL SCHEMATIC NUMBER, AHU MAXIMUM AIRFLOW CFM, NOTES. Contains 18 rows of damper data.

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

SEAL



12/14/2023

KEY PLAN

SCALE

REVISIONS

Table with columns: NO., DESCRIPTION, DATE. Contains 2 revision entries.

DRAWN BY: SD/RLP
APPROVED BY: WLH
CHECKED BY: JPH
DATE: 11/22/2023 PS
TITLE: SCHEDULES

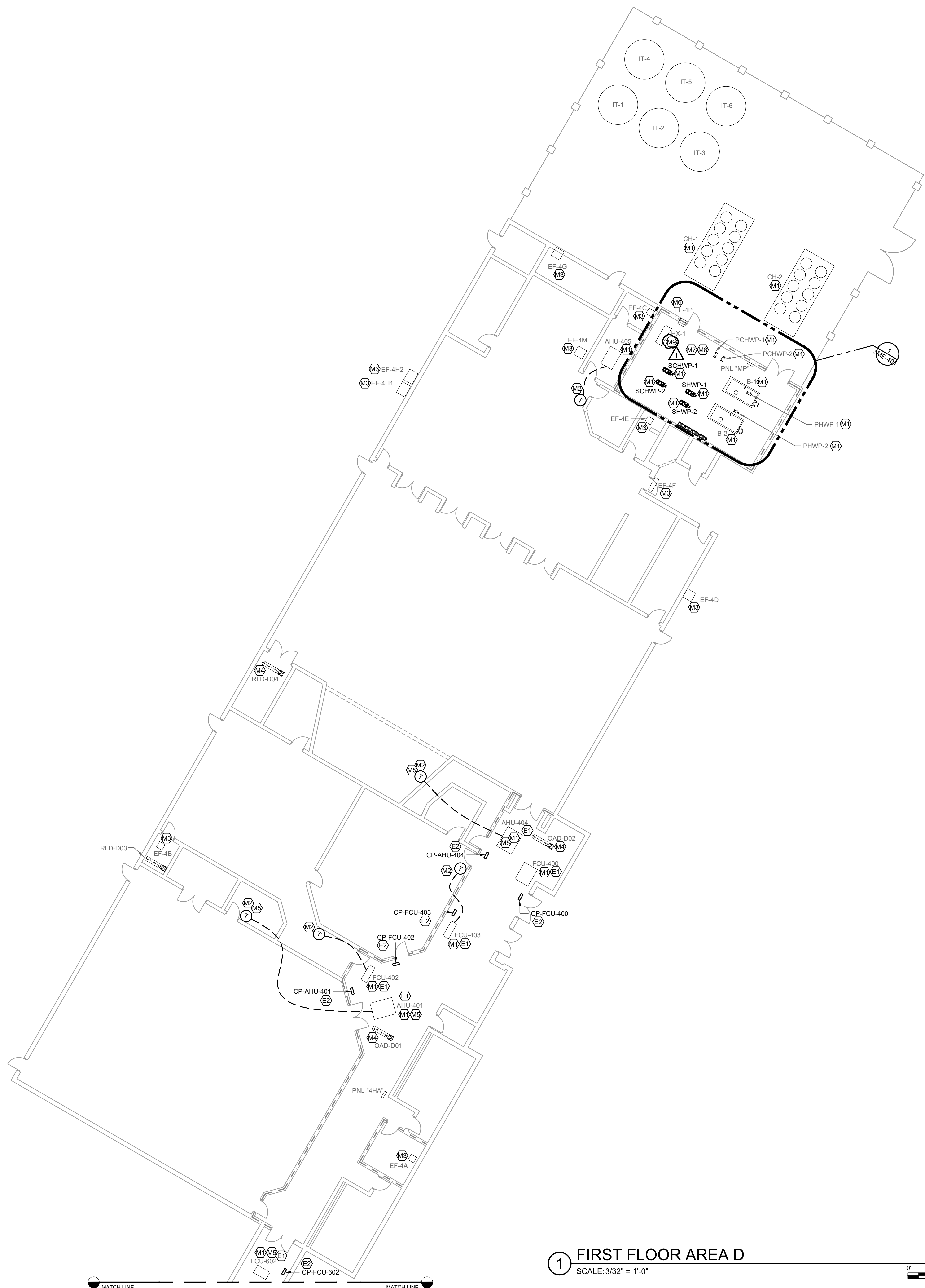
PROJECT NO. 50159407-P5

2M-601

SHEET NO. OF #

12/20/23 8:07:15 AM
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1/20/2016 8:07:15 AM
P:\2015\2016\CAD\PACKAGE\BPM\50159407-P5_3M-204 RIVER DELLS AREA D.DWG



1 FIRST FLOOR AREA D
SCALE: 3/32" = 1'-0"

GENERAL NOTES

- REFER TO 06-006 FOR MECHANICAL AND ELECTRICAL SYMBOLS AND ABBREVIATIONS AND SHEET 06-007 FOR MECHANICAL AND ELECTRICAL GENERAL NOTES.
- 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:
- 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.
 - 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.
 - PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.
 - REFERENCE SCHEDULES FOR WHAT EQUIPMENT IS SERVED BY THIS DAMPER.
 - PROVIDE RETURN AIR TEMPERATURE/HUMIDITY CONTROL. PROVIDE WITH REMOTE THERMOSTAT WALL MODULE FOR OVERRIDE AND SETPOINT ADJUSTMENT WHERE NOTED ON PLANS.
 - EXISTING FAN OPERATED THROUGH FIRE ALARM, NOT INCLUDED IN BAS SCOPE.
 - 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.
 - PROVIDE NEW ACTUATOR FOR EXISTING ICE STORAGE THREE WAY CONTROL VALVE.
 - NOT USED.

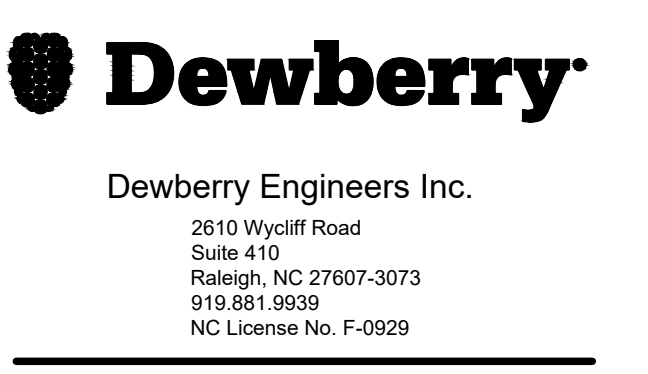
ELECTRICAL KEYNOTES:

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

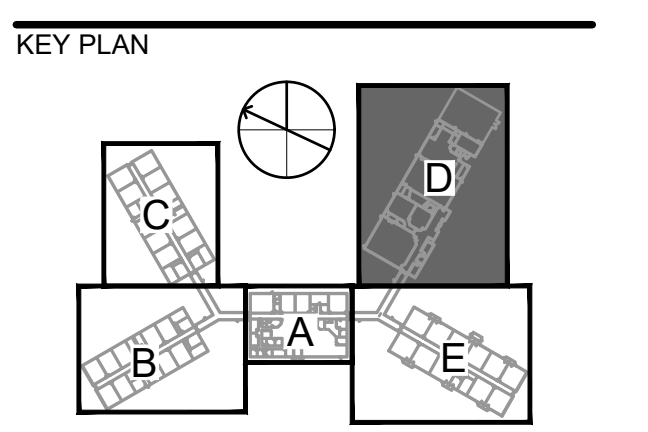
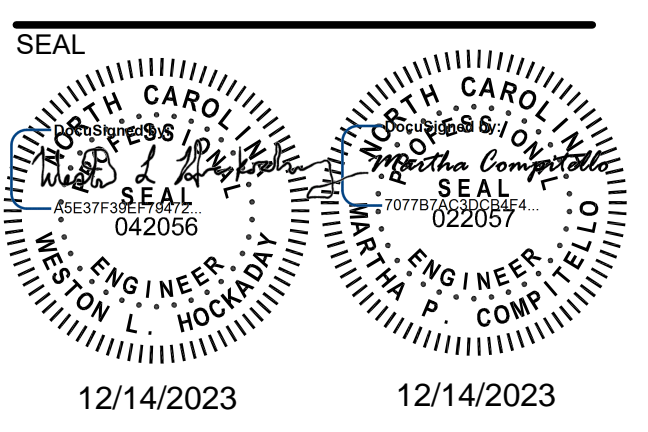
GENERAL LEGEND

- 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



JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 5
 RIVER DELLS ELEMENTARY SCHOOL
 12100 BUFFALO RD,
 CLAYTON, NC 27527



SCALE: AREA D INTS.

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

DRAWN BY: SD/RLP
 APPROVED BY: WLH
 CHECKED BY: JPH
 DATE: 11/22/2023 P5

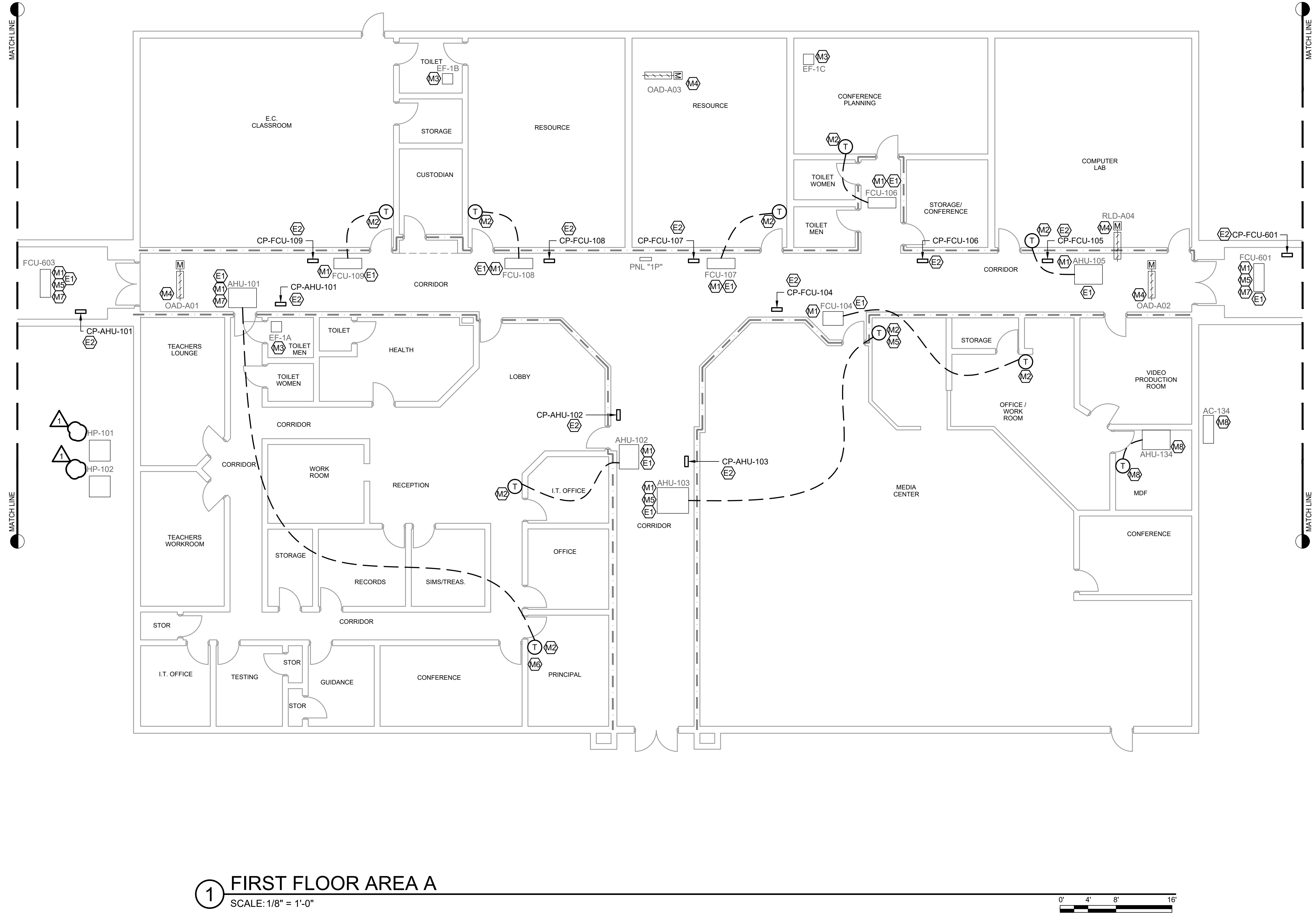
TITLE
RIVER DELLS AREA D

PROJECT NO. 50159407-P5

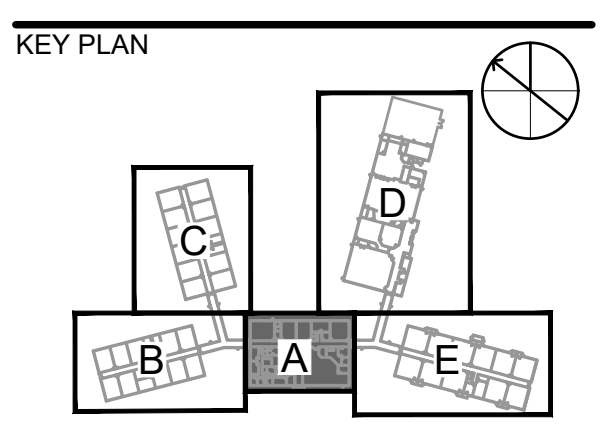
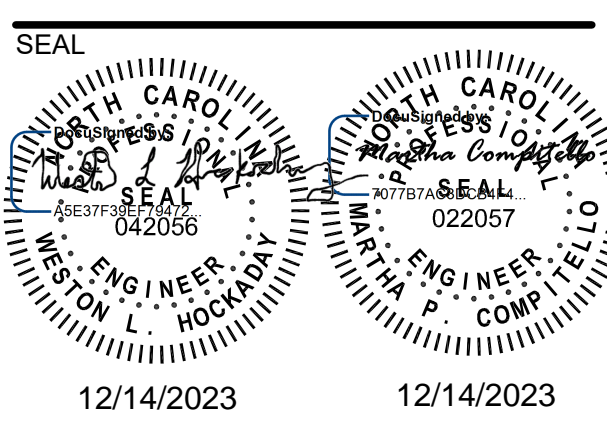
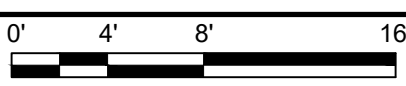
3ME-204

SHEET NO. OF ##

F
E
D
C
B
A



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



SCALE AREA A INTS.

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

GENERAL NOTES

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

KEY NOTES

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 - M3. PROVIDE NEW CONTROL POINTS TIED INTO ASSOCIATED AHU CONTROLLER.
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 - 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. 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.
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- POINT OF DISCONNECTION

WALL RATING LEGEND

DRAWN BY: SD/R/LP
APPROVED BY: WLH
CHECKED BY: JPH
DATE: 11/22/2023 PS

TITLE
RIVERWOOD ES AREA A

PROJECT NO. 50159407-PS

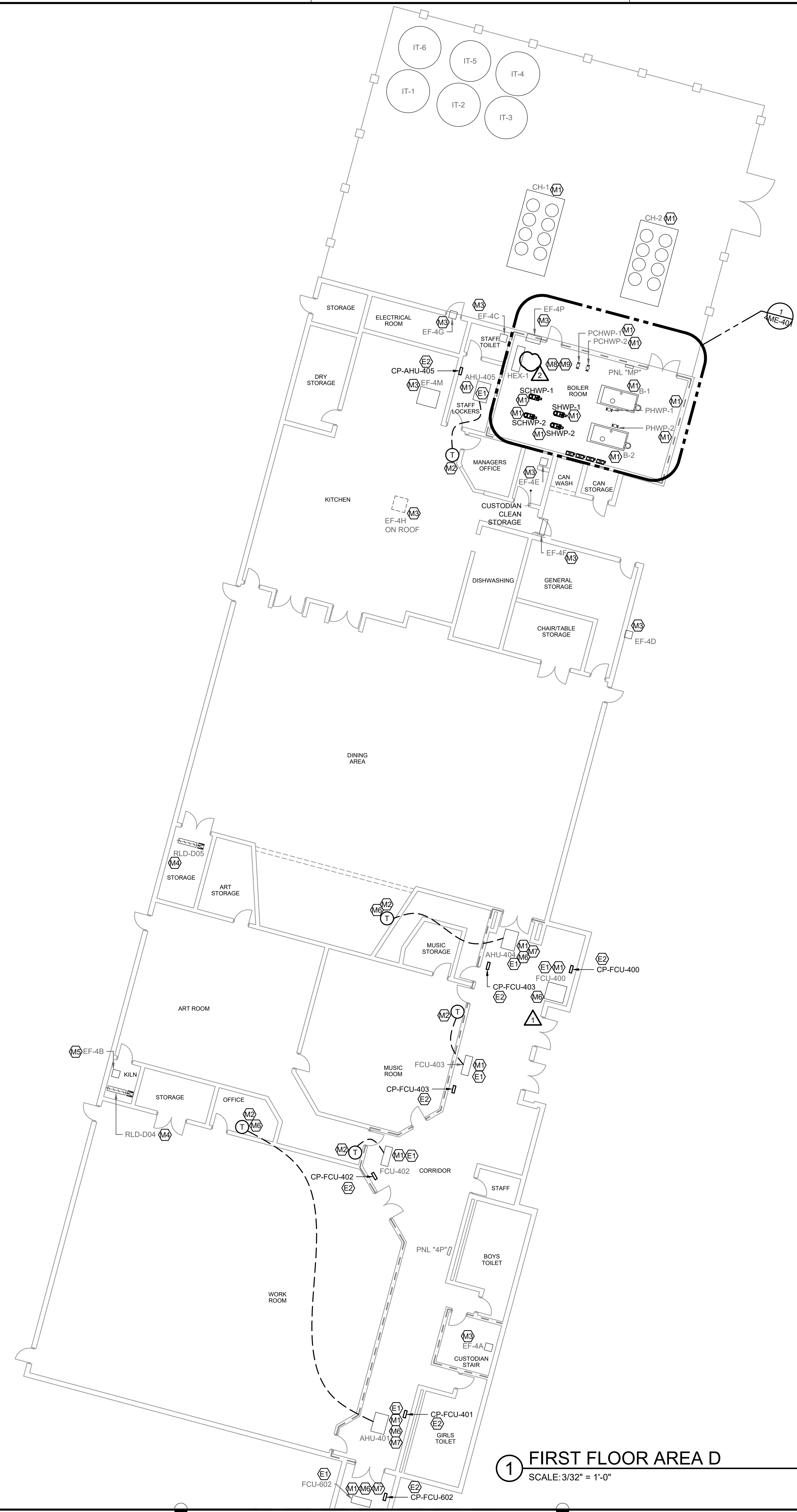
4ME-201

SHEET NO. OF ##

12/20/2016 9:07:15 AM P:\2015\2015\407\PACKAGE 5\159407-PS-4M-201 RIVERWOOD ES AREA A.DWG

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1/20/2016 8:07:15 AM
P:\2015\407\CAD\PACKAGE\BPM\ES\0159407-P5-4M-204 RIVERWOOD ES AREA D.DWG



1 FIRST FLOOR AREA D
SCALE: 3/32" = 1'-0"

GENERAL NOTES

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WALL RATING LEGEND

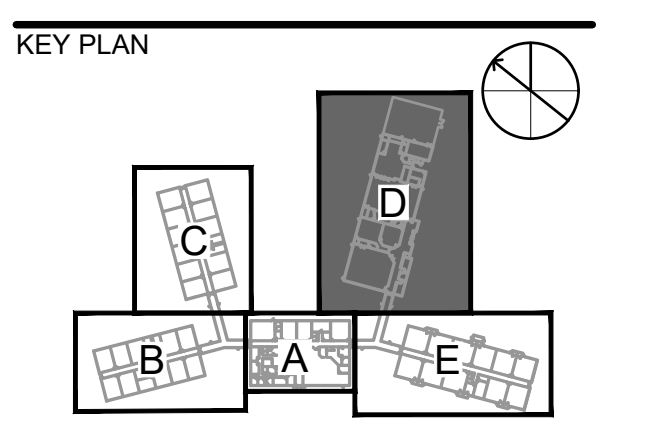
Dewberry
Dewberry Engineers Inc.
2610 Wyckoff Road
Suite 410
Raleigh, NC 27607-3073
919.851.9939
NC License No. F-0929

JOHNSTON COUNTY PUBLIC SCHOOLS

JOHNSTON COUNTY PUBLIC SCHOOLS
CONTROLS UPGRADE PACKAGE 5
RIVERWOOD ELEMENTARY SCHOOL
108 ATHLETIC CLUB BLVD,
CLAYTON, NC 27527.

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEERS & SURVEYORS
L. L. HOBBS, P.E.
022057
12/14/2023

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEERS & SURVEYORS
L. L. HOBBS, P.E.
022057
12/14/2023



SCALE: AREA D NTS

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 P5

TITLE
RIVERWOOD ES AREA D

PROJECT NO. 50159407-P5

4ME-204

SHEET NO. OF ##

