A TRADITION OF EXCELLENCE FOR ALL

LCS

LYNCHBURG CITY SCHOOLS

AHU-3 MODIFICATIONS

CITY OF LYNCHBURG PROJECT NUMBER: YS526-0170

LYNCHBURG CITY SCHOOLS
SANDUSKY ELEMENTARY SCHOOL
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MEAD PROJECT NUMBER: 372-030

DATE: OCTOBER 23, 2014

DRAWING INDEX

M1 HVAC GENERAL REQUIREMENTS, LEGEND, NOTES, & ABBREVIATIONS
M2 HVAC PARTIAL FLOOR PLANS
M3 HVAC CONTROLS

SET NO. _____

HVAC GENERAL REQUIREMENTS

1.0 GENERAL

1.01 THE CONTRACT DOCUMENTS APPLY TO THESE SPECIFICATIONS.

1.02 PROVIDE ALL NECESSARY LABOR AND MATERIALS FOR THE WORK SHOWN ON THE DRAWINGS, WHICH INCLUDES REMOVAL OF EQUIPMENT AND COMPONENTS TO BE REMOVED AS WELL AS INSTALLATION OF HVAC SYSTEMS AND DDC CONTROL SYSTEMS.

1.03 WORK SHALL MEET REQUIREMENTS OF LOCAL BUILDING CODES AND ORDINANCES, APPLICABLE REQUIREMENTS OF THE VUSBC AND NFPA.

1.04 SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

A. DDC CONTROLS
B. VARIABLE FREQUENCY DRIVES
C. DUCT SMOKE DETECTORS

1.05 PLACING IN SERVICE:

A. BEFORE BEING PLACED INTO OPERATION, ALL EQUIPMENT REQUIRING PREOPERATIONAL ATTENTION SHALL BE SERVICED IN ACCORDANCE WITH THE REQUIREMENTS OF THESE SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATIONS.

B. THIS SERVICING SHALL INCLUDE LUBRICATION, CONTROL CALIBRATIONS AND ADJUSTMENTS, AND TESTING AND ADJUSTING OF OPERATING CONTROLS.

C. AT THE COMPLETION OF PERFORMANCE TEST AND FOLLOWING APPROVAL OF TEST RESULTS, THE CONTRACTOR SHALL RECHECK ALL EQUIPMENT AND VERIFY THAT EACH ITEM IS FUNCTIONING CORRECTLY.

D. FURNISH ALL NECESSARY EQUIPMENT AND ASSUME ALL COSTS INVOLVED TO PERFORM ALL TESTING, CLEANING, AND BALANCING OPERATIONS REQUIRED.

E. TEST, ADJUST AND BALANCE ALL SYSTEMS UNTIL DESIGN FUNCTION AND OPERATION ARE ACHIEVED. THE CONTRACTOR SHALL ENGAGE THE SERVICES OF AN INDEPENDENT CONTRACTOR WHO SPECIALIZES IN THE PRACTICE OF TESTING, ADJUSTING AND BALANCING MECHANICAL EQUIPMENT AND SYSTEMS.

F. CLEAN DUCT SYSTEM AS SPECIFIED.

2.0 PRODUCTS

2.01 DUCTWORK:

A. NEW AND REPAIRED DUCT SYSTEMS SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS, THE NATIONAL FIRE PROTECTION ASSOCIATION AND MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE.

B. SYSTEMS AND MATERIALS: LOW VELOCITY A/C (GENERAL USE) GALVANIZED STEEL AND MEDIUM VELOCITY A/C GALVANIZED STEEL.

C. FITTINGS FOR ALL DUCT SYSTEMS SHALL BE OF THE SAME MATERIAL AS THE DUCT.

D. MATERIALS: GALVANIZED STEEL SHALL MEET REQUIREMENTS OF ASTM A-527, "STEEL SHEET, ZINC COATED BY THE HOT-DIP PROCESS, LOC-FORMING QUALITY." MANUAL DAMPER OPERATORS SHALL BE LOCKING TYPE AS MANUFACTURED BY VENTFABRICS, INC. OR YOUNG REGULATOR COMPANY.

E. FLEXIBLE AIR DUCT SHALL BE FLEXMASTER TYPE 8M INSULATED FLEXIBLE DUCT. THE COMPLETE DUCT SHALL CONFORM TO NFPA 90A AND BE LISTED BY UNDERWRITER'S LABORATORIES AS 181 CLASS 1 AIR DUCT.

3.0 EXECUTION

3.01 DUCT SYSTEMS SHALL BE BALANCED TO PROVIDE AIR QUANTITIES WITHIN +/- TEN (10) PERCENT OF SPECIFIED REQUIREMENTS.

SYMBOLS

(T) THERMOSTAT

SHEET METAL

SUPPLY DUCT UP

SUPPLY DUCT DOWN

EXHAUST OUTSIDE AIR OR RETURN DUCT UP

EXHAUST OUTSIDE AIR OR RETURN DUCT DOWN

ROUND DUCT

DUCT WITH TURNING VANES

ROUND DUCT UP

ROUND DUCT DOWN

FD# VERTICAL FIRE DAMPER, PARTITION RATING

M MOTOR OPERATED DAMPER

CEILING DIFFUSER

RETURN OR RELIEF AIR REGISTER

DENOTES EXISTING EQUIPMENT

ABBREVIATIONS

ABV	ABOVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
BOD	BOTTOM OF DUCT
BTUH	BRITISH THERMAL UNIT PER HOUR
CAV	CONSTANT AIR VOLUME
CFM	CUBIC FEET PER MINUTE
CLG.	CEILING
DB	DRY BULB
DN	DOWN
DX	DIRECT EXPANSION
(E)	EXISTING
EAT	ENTERING AIR TEMPERATURE
ENT.	ENTERING
ER	EXHAUST REGISTER
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DAMPER
FPM	FEET PER MINUTE
HP	HORSEPOWER
LAT	LEAVING AIR TEMPERATURE
LVG.	LEAVING
MAX.	MAXIMUM
MBH	THOUSAND BTU PER HOUR
MFR.	MANUFACTURER
MIN.	MINIMUM
MOD	MOTOR OPERATED DAMPER
MVD	MANUAL VOLUME DAMPER
NOM	NOMINAL
NTS	NOT TO SCALE
OA	OUTSIDE AIR
PSIG	POUNDS PER SQUARE INCH GAUGE
RA	RETURN AIR
REL	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RR	RETURN REGISTER
SA	SUPPLY AIR
SD	SMOKE DAMPER
SP	STATIC PRESSURE (INCHES OF WATER)
TYP.	TYPICAL
WB	WET BULB TEMPERATURE, DEG. °F
WL	WALL LOUVER
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE

GENERAL NOTES

1. WHERE DUCTWORK, PIPING, OR ANY OTHER MECHANICAL EQUIPMENT IS INSTALLED ABOVE THE CEILING STRUCTURE, SUFFICIENT CLEARANCE SHALL BE PROVIDED BELOW ALL LOW POINTS OF THIS EQUIPMENT FOR THE INSTALLATION OF THE FINISHED CEILING AND ITS STRUCTURE AND ALL CEILING-MOUNTED EQUIPMENT INCLUDING CEILING-MOUNTED MECHANICAL EQUIPMENT, LIGHT FIXTURES, PLUMBING LINES, SPRINKLER HEADS, ETC. CLEARANCES REQUIRED FOR THE INSTALLATION OF THIS CEILING-MOUNTED EQUIPMENT SHALL BE VERIFIED AND COORDINATED WITH THE GENERAL CONTRACTOR AND ALL INVOLVED SUBCONTRACTORS BEFORE INSTALLING THE MECHANICAL EQUIPMENT.

2. WHERE SPACE IS LIMITED, SUCH AS IN THE FURRED CEILING SPACES AND CHASES, ROUTES AND CLEARANCES AND INSTALLATION PROCEDURES FOR DUCTWORK, PIPING, VALVES, AND OTHER MECHANICAL EQUIPMENT SHALL BE VERIFIED AND COORDINATED WITH OTHER WORK BEFORE EQUIPMENT IS INSTALLED.

3. ALL STRUCTURAL STEEL AND OTHER MATERIALS REQUIRED FOR OVERHEAD-SUSPENDED MECHANICAL EQUIPMENT SHALL BE PROVIDED BY MECHANICAL CONTRACTOR UNLESS DETAILED ON STRUCTURAL DRAWINGS. ALL NECESSARY REINFORCING IN BUILDING STRUCTURE SHALL BE PROVIDED BY GENERAL CONTRACTOR.

4. GRILLE AND OTHER EQUIPMENT MOUNTING HEIGHTS WHERE SHOWN ON DRAWINGS ARE MEASURED FROM FINISHED FLOOR TO BOTTOM EDGE OF OPENING UNLESS OTHERWISE INDICATED.

5. MOUNT WALL SENSORS WITH SETPOINT ADJUSTMENT 5'-0" ABOVE FINISHED FLOOR.

6. IF ANY EQUIPMENT OTHER THAN THAT SHOWN OR SPECIFIED IS FURNISHED, THE CONTRACTOR SHALL VERIFY THAT THE EQUIPMENT CAN BE INSTALLED IN THE SPACE AVAILABLE, INCLUDING PASSAGE THROUGH DOORS AND ACCESS DOORS AND ACCESS TO THOSE PARTS OF THE EQUIPMENT REQUIRING SERVICE.

7. OPEN ENDS OF ALL RETURN AND EXHAUST DUCTS IN THE FURRED SPACE ABOVE THE CEILING SHALL BE COVERED WITH 1/2" MESH G.I. SECURELY ATTACHED TO THE DUCTS.

8. ALL DUCTWORK AND PIPING SHALL BE LOCATED ABOVE NEW OR EXISTING CEILING UNLESS NOTED OTHERWISE.

9. OFFSET DUCTS AND PIPING WHERE NECESSARY TO CLEAR OTHER WORK SUCH AS BEAMS, PIPES, ELECTRICAL EQUIPMENT, ETC., COORDINATE DUCTWORK INSTALLATION WITH OTHER TRADES TO AVOID SPACE CONFLICTS.

10. DUCT SIZES SHOWN ON PLANS INDICATE CLEAR INSIDE DIMENSIONS OF DUCTS, NOT INCLUDING ALLOWANCE FOR INTERNAL INSULATION.

11. WHERE CONNECTIONS OR ALTERATIONS ARE MADE TO EXISTING PIPING, OR OTHER MECHANICAL EQUIPMENT, THE EXACT LOCATION AND CONFIGURATION OF THIS EQUIPMENT SHALL BE DETERMINED ON THE JOB SITE. ROUTE AND CLEARANCES FOR NEW PIPING, OR OTHER MECHANICAL EQUIPMENT CONNECTING TO EXISTING EQUIPMENT SHALL BE VERIFIED ON THE JOB SITE BEFORE FABRICATING ANY NEW EQUIPMENT.

12. WHERE ANY PART OF BUILDING OR EXISTING EQUIPMENT IS CUT OR OTHERWISE DISFIGURED TO PERMIT INSTALLATION OF NEW EQUIPMENT OR RELOCATION OF EXISTING EQUIPMENT, THIS PART OF BUILDING OR EXISTING EQUIPMENT SHALL BE REPAIRED OR REPLACED TO MATCH EXISTING.

13. ITEMS REMOVED DURING DEMOLITION MAY BE REUSED. HANDLE WITH EXTREME CARE AND TOUCH-UP DAMAGED SURFACES OR REPLACE WITH NEW AT OWNER'S DISCRETION. ITEMS DAMAGED DURING DEMOLITION SHALL BE REPLACED AT NO COST TO OWNER. OWNER HAS FIRST REFUSAL ON ALL ITEMS REMOVED DURING DEMOLITION.

14. PROVIDE AND INSTALL ACCESS DOORS IN DRYWALL TO MATCH EXISTING FOR ACCESS TO ALL BALANCING DAMPERS AND NEW OR RELOCATED EQUIPMENT.

15. AIR-BALANCE REPORT SHALL ACCOMPANY A SET OF AS-BUILT PLANS INDICATING EXACT TO-SCALE LOCATIONS AND FINAL BALANCE AIR RATES. MAINTAIN A MINIMUM OF ONE INTACT SET OF PROJECT PLANS AND SPECIFICATIONS AT JOB SITE MARKED TO SHOW ALL DEVIATIONS PERMITTED DURING CONSTRUCTION AS THE WORK IS INSTALLED. ALL MARKS SHALL BE RED IN COLOR, COMPLETE, CLEAR AND LEGIBLE.

16. THE EXISTING SINGLE DUCT VAV TERMINALS IN THE CLASS ROOM AND OFFICE AREAS ARE TRANE MODEL HTB WITH NO REHEAT AND ELECTRIC (RETROFITTED) ACTUATORS. SIZES AS INDICATED ON DRAWINGS. THE EXISTING SINGLE DUCT TERMINALS IN THE GYM AREA APPEAR TO BE TRANE MODEL HCB WITH NO REHEAT AND ELECTRIC (RETROFITTED) ACTUATORS. THE EXISTING TERMINAL UNIT SERVING THE STAGE IS AN INDUCTION-TYPE UNIT LICENSED BY BARBER-COLEMAN WITH TWO ELECTRIC (RETROFITTED) ACTUATORS.

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SANDUSKY ELEMENTARY SCHOOL
AHU #3 MODIFICATIONS
LYNCHBURG, VIRGINIA

HVAC GENERAL REQUIREMENTS, LEGEND, NOTES, & ABBREVIATIONS

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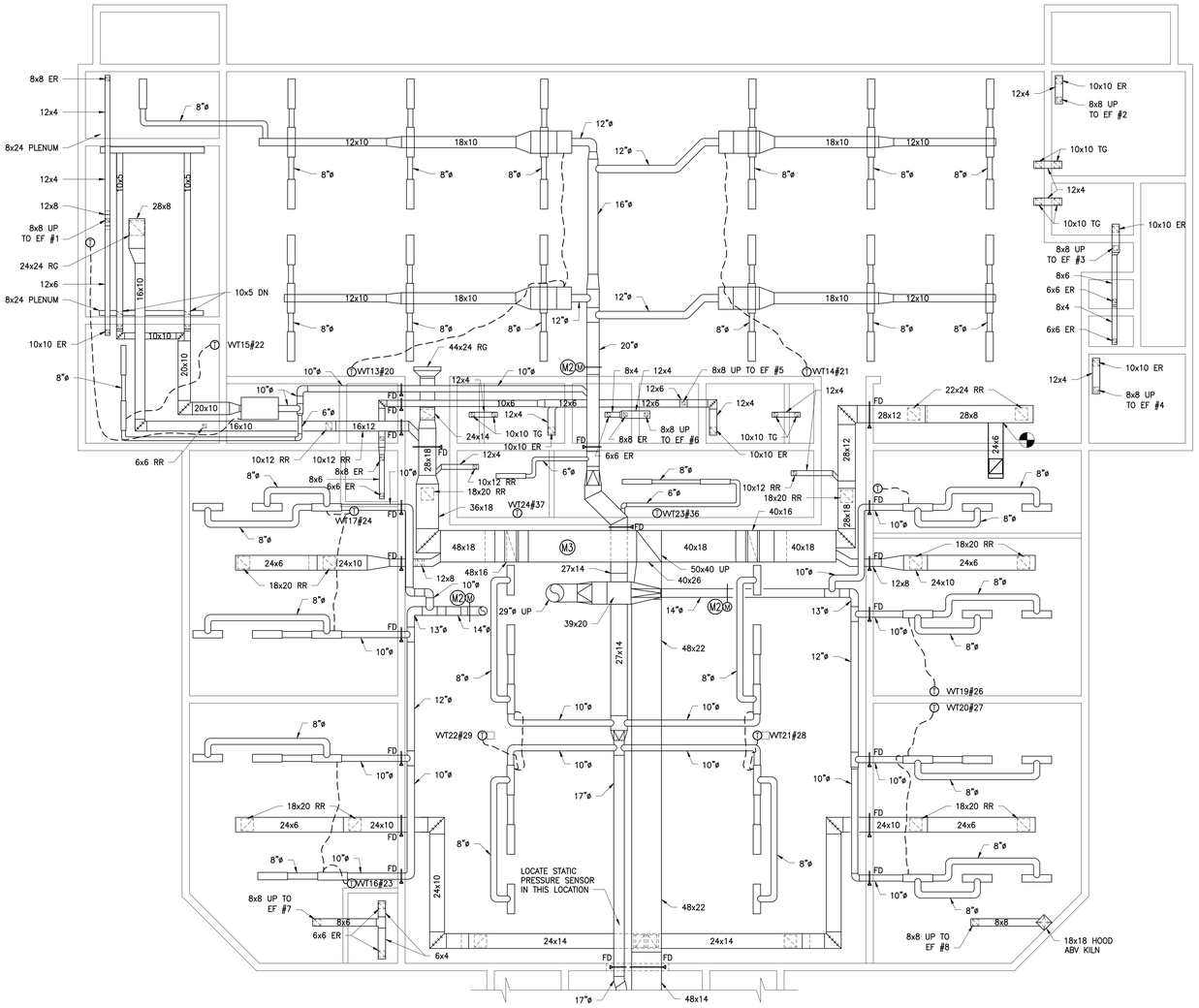
DRAWING NO.
M1
1 OF 3

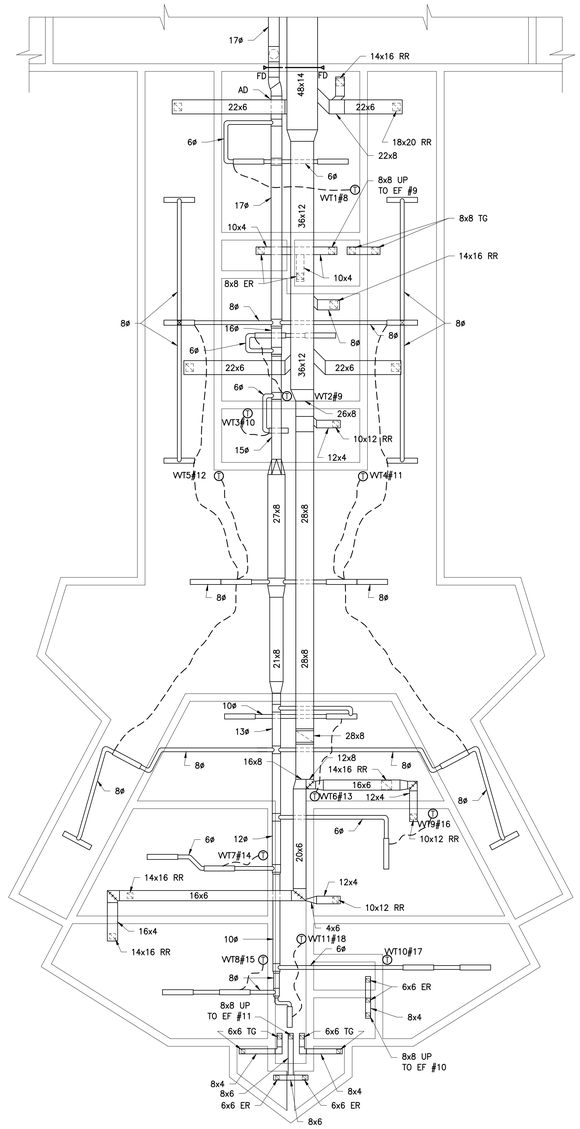
REVISION



PARTIAL PLAN

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

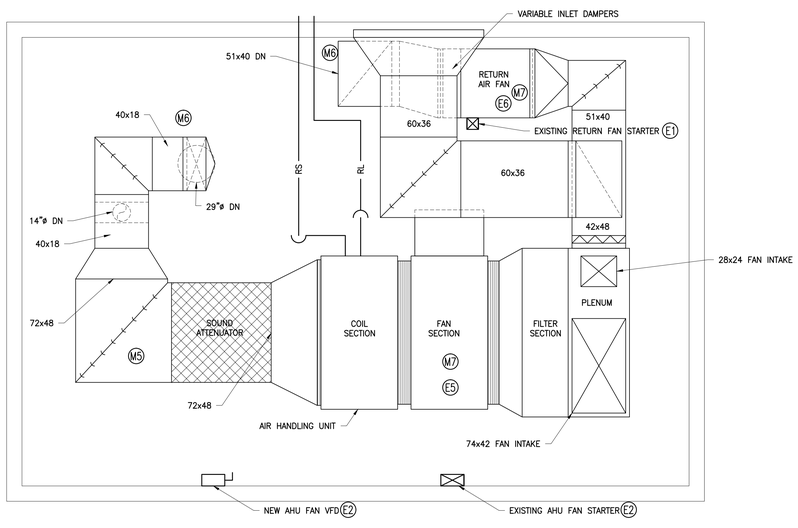
NORTH



PARTIAL PLAN

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

NORTH



PARTIAL PLAN - MECHANICAL PENTHOUSE

SCALE: 1/4"=1'-0"

ELECTRICAL PLAN NOTES

E1 REPLACE WITH 10 HP VARIABLE FREQUENCY DRIVE (VFD). INSTALL ON NEW KINDORF CHANNEL BACK.

E2 REMOVE EXISTING STARTER. INSTALL NEW, 40 HP VFD IN LOCATION SHOWN ON NEW KINDORF CHANNEL RACK. REWORK LINE AND LOAD CONDUIT AND WIRINGS TO NEW VFD.

E3 VFD'S SHALL HAVE THE FOLLOWING FEATURES.

A. 480 VOLT, 3-PHASE
B. NEMA 1 ENCLOSURE
C. COMBINATION FUSIBLE DISCONNECT STYLE
D. ANALOG, SPEER INPUT SIGNAL COMPATABLE WITH JOHNSON CONTROLS METASYS CONTROL SYSTEM
E. DRY CONTACT RUN COMMAND INPUT SIGNAL
F. DRY CONTACT "RUNNING" OUTPUT SIGNAL (FORM "C" CONTACT)
G. PULSE-WIDTH MODULATING TYPE
H. CAPABLE OF STARTING A SPINNING MOTOR
I. SAFETIES
(1) VOLTAGE AND VOLTAGE BALANCE OUT OF LIMITS. AFTER SHUTDOWN, DRIVE SHALL RE-START AUTOMATICALLY AFTER VOLTAGE HAS RETURNED TO ACCEPTABLE LIMITS.
(2) PHASE LOSS AND PHASE REVERSAL
(3) GROUND FAULT PROTECTION
(4) LINE-TO-LINE AND LINE-TO-GROUND OUTPUT SHORT CIRCUIT PROTECTION
J. DRY CONTACT "ALARM" OUTPUT SIGNAL(FORM "C" CONTACT)
K. BYPASS
L. BACNET INTERFACE TO JOHNSON CONTROLS METASYS SYSTEM.

E4 ACCEPTABLE MANUFACTURER'S

A. DANFOSS
B. CUTLER-HAMMER/WESTINGHOUSE
C. SQUARE D
D. ABB

E5 REPLACE EXISTING SUPPLY FAN MOTOR WITH NEW INVERTER-DUTY, 40 HP MOTOR. MOTOR SHALL BE FULLY COMPATIBLE WITH VFD INSTALLED. RE-ALIGN MOTOR AND FAN DRIVE SHAFT AS REQUIRED TO SUIT INSTALLATION. MOTOR SHALL BE FURNISHED WITH CLASS F INSULATION MINIMUM. MOTOR SHALL BE BALDOR, WEG, OR U.S. MOTOR.

E6 REPLACE EXISTING RETURN FAN MOTOR WITH NEW INVERTER-DUTY, 10 HP MOTOR. MOTOR SHALL BE FULLY COMPATIBLE WITH VFD INSTALLED. RE-ALIGN MOTOR AND FAN DRIVE SHAFT AS REQUIRED TO SUIT INSTALLATION. MOTOR SHALL BE FURNISHED WITH CLASS F INSULATION MINIMUM. MOTOR SHALL BE BALDOR, WEG, OR U.S. MOTOR.

HVAC PLAN NOTES

M1 EXAMINE ALL DAMPERS INCLUDING FIRE, SMOKE, MOTORIZED AND MANUAL VOLUME TYPE TO ENSURE FREE, UNOBSTRUCTED AIRFLOW. REPLACE FUSIBLE LINKS IN FIRE DAMPERS, AS REQUIRED. NOTE LOCATION AND CONDITION OF ALL DAMPERS ON CONTRACTOR RED-LINES. INSTALL ACCESS DOORS AT FIRE DAMPERS, IF REQUIRED.

M2 VERIFY OPERATION OF EXISTING MOTORIZED DAMPERS THROUGH THE EXISTING JOHNSON CONTROLS METASYS SYSTEM.

M3 CLEAN RETURN DUCT SYSTEM PER SPECIFICATIONS. REMOVE EXISTING RETURN GRILLES, CLEAN AND REPLACE.

M4 RECOMMISSION EXISTING VARIABLE AIR VOLUME BOXES PER SPECIFICATIONS.

M5 REPAIR EXISTING DUCT IN THIS LOCATION.

M6 CONTRACTOR SHALL INSTALL NEW DUCT SMOKE DETECTORS, AS INDICATED AND TIE INTO FACP.

M7 REMOVE EXISTING INLET GUIDE VANES AND CONTROL LINKAGE IN SUPPLY FAN AND RETURN FAN.

8' 0' 8' 16'
1/8" = 1'-0"
GRAPHIC SCALE

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SANDUSKY ELEMENTARY SCHOOL
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HVAC PARTIAL FLOOR PLANS

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M2
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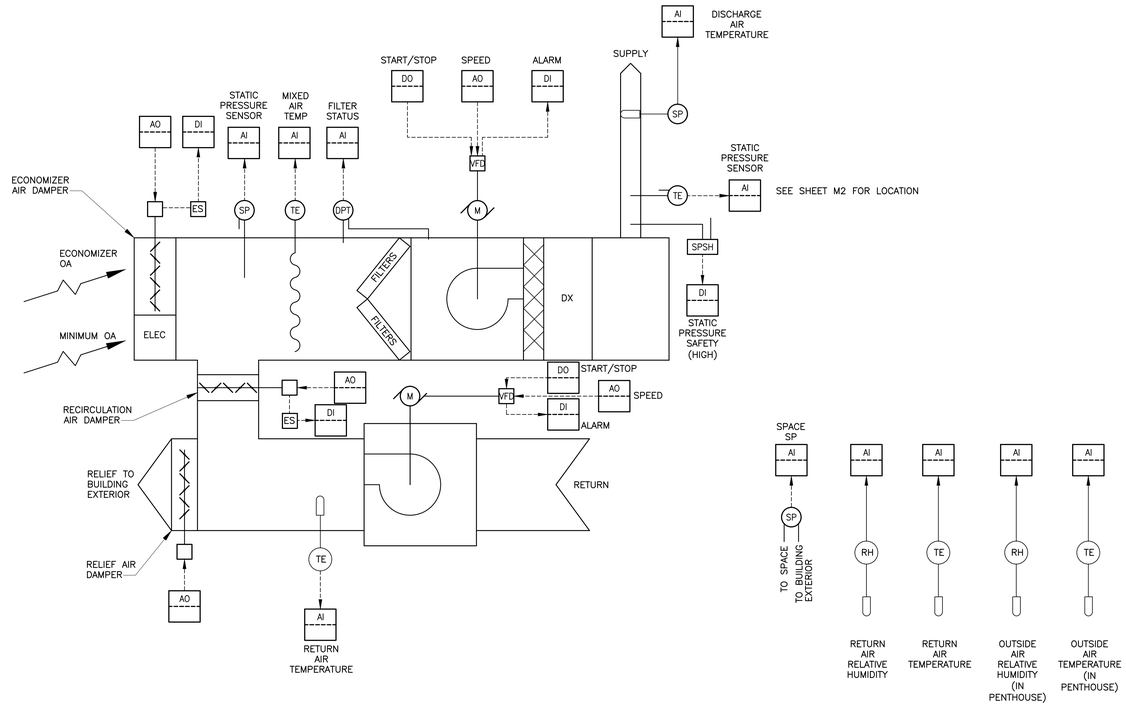
REVISION

CONTROLS LEGEND

- AI — ANALOG INPUT
- AO — ANALOG OUTPUT
- DI — DIGITAL INPUT
- DO — DIGITAL OUTPUT
- M — MOTOR
- MOTOR OPERATOR
- ES — END SWITCH
- VFD — VARIABLE FREQUENCY DRIVE
- RH — RELATIVE HUMIDITY SENSOR
- TE — TEMPERATURE ELEMENT
- SP — STATIC PRESSURE SENSOR
- DPT — DIFFERENTIAL PRESSURE TRANSMITTER



AHU-3
SEQUENCE OF OPERATION

ALL MODES:

ALL CONTROL FUNCTIONS INDICATED IN THIS SEQUENCE OF OPERATION SHALL BE ACCOMPLISHED BY THE EXISTING JOHNSON CONTROLS METASYS DDC CONTROL SYSTEM APPLICATION SPECIFIC CONTROLLER (ASC).

OCCUPIED MODE:

THE ASC SHALL COMMAND THE AHU TO START IN THE OCCUPIED MODE BASED ON A USER PROGRAMMABLE OCCUPANCY SCHEDULE. THE ASC SHALL COMMAND THE RELIEF AIR DAMPER TO MODULATE OPEN, THE RECIRCULATION AIR DAMPER TO MODULATE OPEN, AND THE SUPPLY AND RETURN FANS TO RUN. IF COMMUNICATING WITH THE EXISTING DDC SYSTEM, THE ASC SHALL COMMAND THE ZONE–RELATED EXHAUST FANS TO RUN BASED ON THE SAME USER PROGRAMMABLE OCCUPANCY SCHEDULE.

WHEN ENABLED, THE SUPPLY AND RETURN FANS SHALL START AT MINIMUM SPEED AND SHALL RUN CONTINUOUSLY. THE SUPPLY AND RETURN FANS SHALL BE DISABLED THROUGH A HARD–WIRED INTERLOCK, AND AN ALARM GENERATED AT THE OPERATOR'S WORKSTATION WHEN ANY OF THE FOLLOWING CONDITIONS OCCUR:

- SMOKE DETECTED IN THE SUPPLY DUCT
- SMOKE DETECTED IN THE RETURN DUCT
- SUPPLY DUCT HIGH STATIC PRESSURE

WHEN ENABLED, THE SUPPLY FAN VFD SHALL MODULATE THE SUPPLY FAN SPEED TO MAINTAIN THE SUPPLY DUCT STATIC PRESSURE AT THE SUPPLY DUCT STATIC PRESSURE SETPOINT (ADJ). DURING UNIT STARTUP AND INITIAL SYSTEM BALANCING, THE CONTROLS CONTRACTOR AND THE BALANCING CONTRACTOR SHALL DETERMINE THE PROPER SUPPLY DUCT STATIC PRESSURE SETPOINT REQUIRED TO SATISFY THE BUILDING AIRFLOW REQUIREMENTS. BEFORE SHUTDOWN, THE SUPPLY FAN VFD SHALL MODULATE THE SUPPLY FAN TO MINIMUM SPEED.

WHEN ENABLED, THE RETURN FAN VFD SHALL MODULATE THE RETURN FAN SPEED TO MAINTAIN THE MIXING BOX STATIC PRESSURE AT –0.05 IN. W.G. (ADJ). THE CONTROLS CONTRACTOR AND THE BALANCING CONTRACTOR SHALL DETERMINE THE PROPER MIXING BOX STATIC PRESSURE SETPOINT.

WHEN DISABLED, THE SUPPLY AND RETURN FAN SHALL CONTINUE TO OPERATE FOR 3 MINUTES (ADJ) AFTER DX COOLING AND ELECTRIC HEAT ARE DISABLED.

THE ASC SHALL ENABLE THE DX COOLING STAGES IN SEQUENCE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT 55°F (ADJ). THE ASC SHALL ENABLE THE ELECTRIC HEAT STAGES TO MAINTAIN THE MIXED AIR TEMPERATURE AT 50°F (ADJ). THE ELECTRIC HEAT AND DX COOLING STAGES SHALL NOT BE ENABLED SIMULTANEOUSLY.

ECONOMIZER CONTROL:
THE ECONOMIZER DAMPER SHALL BE MODULATED OPEN TO MAINTAIN THE DISCHARGE TEMPERATURE AT SETPOINT WHEN THE OUTDOOR AIR TEMPERATURE IS FAVORABLE. IF THE OUTSIDE AIR TEMPERATURE IS LESS THAN 58 DEG F (ADJ), THE ASC SHALL MODULATE THE ECONOMIZER DAMPER OPEN. ON A RISE IN THE OUTSIDE AIR TEMPERATURE ABOVE 65 DEG F (ADJ), THE ECONOMIZER DAMPER SHALL CLOSE. DX COOLING SHALL BE ENABLED DURING ECONOMIZER OPERATION. THE RECIRCULATION AIR DAMPER SHALL MODULATE IN AN INVERSE PROPORTIONAL RELATION TO THE ECONOMIZER DAMPER.

THE RELIEF AIR DAMPER SHALL MODULATE TO MAINTAIN THE SPACE PRESSURE SENSOR AT THE BUILDING STATIC PRESSURE SETPOINT. THE BUILDING PRESSURE SETPOINT SHALL BE +0.005 IN. W.G. (ADJ).

BEFORE STARTING THE SUPPLY FAN AND RETURN FAN, THE ECONOMIZER AIR DAMPER OR RECIRCULATION AIR DAMPER SHALL BE PROVEN OPEN. IF AT ANY TIME THE ECONOMIZER AIR OR RECIRCULATION AIR DAMPER LOSE PROOF OF OPEN STATUS, THE SUPPLY AND RETURN FANS SHALL BE DISABLED, AND AN ALARM SHALL BE ENUNCIATED AT THE OPERATOR'S WORKSTATION.

UNOCCUPIED MODE:

THE ASC SHALL DISABLE THE AHU BASED ON A USER PROGRAMMABLE OCCUPANCY SCHEDULE. WHEN IN UNOCCUPIED MODE, THE UNIT MOUNTED CONTROLLER SHALL DISABLE THE SUPPLY AND RETURN FAN, AND SHALL CLOSE THE ECONOMIZER AIR AND RELIEF AIR DAMPERS. THE RECIRCULATION AIR DAMPER SHALL BE OPENED.

DURING UNOCCUPIED MODE, THE UNIT MOUNTED CONTROLLER SHALL MONITOR THE SPACE TEMPERATURE OF THE ASSOCIATED ZONES. IF THE SPACE TEMPERATURE OF ANY OF THE ASSOCIATED ZONES RISES ABOVE THE UNOCCUPIED SPACE TEMPERATURE SETPOINT, THE UNIT MOUNTED CONTROLLER SHALL ENABLE THE AIR HANDLING UNIT IN UNOCCUPIED MODE.

INITIAL UNOCCUPIED SPACE TEMPERATURE SETPOINT
–COOLING 85 DEG F (ADJ)

WHEN ENABLED IN UNOCCUPIED MODE, THE ASC SHALL COMMAND THE ECONOMIZER AIR DAMPER TO CLOSE, THE RELIEF AIR DAMPER TO CLOSE, THE RECIRCULATION AIR DAMPER TO OPEN, AND THE SUPPLY AND RETURN FANS TO START AND OPERATE AS DESCRIBED HERE–IN.

WHEN DISABLED, THE SUPPLY AND RETURN FAN SHALL CONTINUE TO OPERATE FOR 3 MINUTES (ADJ) AFTER DX COOLING AND ELECTRIC HEAT ARE DISABLED.

WHEN ENABLED, THE ASC SHALL ENABLE THE STAGES OF DX COOLING TO MAINTAIN 55 DEG F (ADJ) DISCHARGE AIR. WHEN ALL SPACES SERVED BY AHU–3 FALL BELOW THE UNOCCUPIED SPACE TEMPERATURE SETPOINT MINUS 3 DEG F (ADJ) THE ASC SHALL DISABLE ALL DX COOLING STAGES, AND AFTER A DELAY OF 1 MINUTE, SHALL DISABLE THE UNIT.

WHEN ENABLED IN UNOCCUPIED MODE, THE ASSOCIATED VAV BOXES SHALL BE OPENED TO FULL OPEN.

ALL MODES:

SHOULD THE FILTER PRESSURE LOSS, AS SENSED BY DPT, RISE ABOVE THE PRESET LIMIT (ADJ), THE ASC SHALL ANNUNCIATE AN ALARM AT THE OPERATOR'S WORKSTATION.

PRIOR TO STARTING THE SUPPLY AND RETURN FANS, THE ASSOCIATED VAV BOXES SHALL BE COMMANDED TO OPEN TO 50%. WHEN ENABLED IN THE OCCUPIED MODE, AFTER A DELAY OF 30 SECONDS (ADJ) THE ASSOCIATED VAV BOXES SHALL BE RELEASED TO CONTROL TO THE ZONE TEMPERATURE SETPOINT.

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SANDUSKY ELEMENTARY SCHOOL
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HVAC CONTROLS

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3 OF 3

REVISION