2022-042
CONSTRUCTION DOCUMENTS
05-24-2024

GENERAL NOTES

1. VERIFY COLLAR SIZES ON ALL AIR TERMINALS, EQUIPMENT OUTLETS AND INLETS, TRANSITION DUCTWORK AS NECESSARY. EXTERNALLY INSULATE TRANSITIONS AT EQUIPMENT CONNECTIONS.
2. FIELD VERIFY CLEAR SPACE AVAILABLE, ROUTING PATH, AND CONFLICTS WITH STRUCTURE AND THE WORK OF OTHER TRADES PRIOR TO FABRICATING DUCTWORK. PROVIDE OFFSETS IN DUCTWORK AS REQUIRED, WHETHER SPECIFICALLY INDICATED ON DRAWINGS OR NOT. SUBMIT SHOP DRAWINGS ON DUCTWORK LAYOUT PRIOR TO COMMENCING WORK. MAINTAIN CLEARANCE AROUND ALL LIGHT FIXTURES AS REQUIRED TO REMOVE AND SERVICE FIXTURES. COORDINATE WITH ROOF TRUSSES/STRUCTURE. PRESSURE TEST ALL NEW DUCTWORK FOR LEAKS. SEE SPECIFICATIONS.
3. CONTRACTOR SHALL INSTALL ALL EQUIPMENT, PIPING, AND DUCTWORK SUCH THAT MANUFACTURERS' RECOMMENDED CLEARANCES ARE MET FOR ALL ACCESS PANELS, MOTORS, FANS, BELTS, FILTERS AND AIR INTAKES. CONDENSATE LINES SHALL BE CLEAR OF FILTER RACK ACCESS.
4. PROVIDE DUCT FLEX CONNECTIONS & VIBRATION ISOLATION FOR ALL EQUIPMENT WITH ROTATING ELEMENTS THAT IS NOT FACTORY-INTERNALLY ISOLATED.
5. WASTE VENT STACKS, EXHAUST FANS, ETC. SHALL BE A MINIMUM OF 10 FT. FROM OUTSIDE AIR INTAKES.
6. ALL AHU FILTERS SHALL BE OF A READILY AVAILABLE SIZE, OF DISPOSABLE TYPE, AND BE ACCESSIBLE WITHOUT THE USE OF SCREWS OR OTHER MECHANICAL DEVICES REQUIRING TOOLS.
7. PROVIDE ACCESS PANELS IN HARD CEILINGS AS REQUIRED FOR MAINTENANCE AND ADJUSTMENT OF DAMPERS, VALVES, AND EQUIPMENT LOCATED ABOVE CEILING.
8. ALL BIRD AND INSECT SCREENS SHALL BE ANODIZED ALUMINUM.
9. BECAUSE OF THE SMALL SCALE OF CONTRACT DOCUMENTS IT IS NOT POSSIBLE TO SHOW ALL OFFSETS, TRANSITIONS, ETC. THE CONTRACT DOCUMENTS ARE ESSENTIALLY DIAGRAMATIC. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS COORDINATED WITH THE STRUCTURE AND ARCHITECTURAL WORK FOR REVIEW PRIOR TO COMMENCING WORK
10. THIS PROJECT SHALL INCLUDE COMMISSIONING OF THE HVAC, CONTROLS, AND RELATED ELECTRICAL SYSTEMS. THE SERVICES OF THE COMMISSIONING AUTHORITY ARE PROVIDED UNDER SEPARATE CONTRACT. UNDER THIS CONTRACT, THE PRIME CONTRACTOR, SUBCONTRACTORS, AND EQUIPMENT MANUFACTURERS SHALL PROVIDE LABOR AND MATERIAL AS REQUIRED TO ASSIST AND PARTICIPATE IN THE COMMISSIONING PROCESS FOR THE SCOPE OF WORK AS DESCRIBED IN SECTION 15995 OF THE PROJECT SPECIFICATIONS.
11. ALL WORK SHALL COMPLY WITH 8TH EDITION (2023) FLORIDA BUILDING CODE
12. SEAL AND PROTECT ALL WORK IN PROGRESS DURING CONSTRUCTION SUCH AS DUCT AND PIPING TO PREVENT ACCUMULATION OF CONSTRUCTION DEBRIS.
13. WHERE EXISTING DEVICES OR SYSTEMS ARE SHOWN TO BE REMOVED, REMOVE ALL ASSOCIATED SUPPORTS AND COMPONENTS UNLESS NOTED TO REMAIN FOR REUSE.
14. DDC CONTROLS MAY UTILIZE EXISTING CONDUIT AND DEVICES BOXES WHERE THE EXISTING LOCATION DOES NOT CONFLICT WITH NEW WORK.

DUCTWORK AND INSULATION NOTES

1. ALL ROUND FLEXIBLE DUCT SHALL BE FLEXMASTER TYPE 8M OR ENGINEER APPROVED EQUAL. MAXIMUM LENGTH OF ANY FLEXIBLE DUCT RUNOUT SHALL BE 5'-0". WHERE LENGTH REQUIRED EXCEEDS 5'-0", INSTALL EXTERNALLY INSULATED ROUND SNAPLOCK DUCT FOR BALANCE OF DISTANCE TO SPIN-IN TAP AT MAIN DUCT TRUNK.
2. SEAL ALL DUCT PENETRATIONS OF WALLS AND FLOORS AIRTIGHT, REGARDLESS OF WHETHER WALLS AND FLOORS ARE FIRE RATED OR NOT.
3. EXCEPT AS INDICATED IN NOTE No. 2, ALL SUPPLY AIR DUCTWORK UPSTREAM OF AIR TERMINAL UNITS SHALL BE MEDIUM PRESSURE GALVANIZED ROUND OR FLAT OVAL SPIRAL SEAM AS INDICATED. MEDIUM PRESSURE DUCT SHALL BE SMACNA STATIC PRESSURE CLASS 6" W.C., SEAL CLASS A, EXTERNALLY INSULATED WITH 2" THICK DUCT WRAP WITH A MINIMUM INSTALLED R-VALUE OF 6.0. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
4. PROVIDE DOUBLE-WALL ROUND OR FLAT OVAL SPIRAL SEAM DUCTWORK AT THE DISCHARGE OF EACH AIR HANDLING UNIT AND AS INDICATED. DOUBLE-WALL DUCT SHALL HAVE 2" THICK, 3 lb DENSITY INSULATION SANDWICHED BETWEEN THE OUTER GALVANIZED SPIRAL WALL AND THE INNER PERFORATED WALL. UNLESS INDICATED OTHERWISE, PROVIDE DOUBLE-WALL DUCT FOR THE FIRST FITTING AND THE FOLLOWING 40 FEET OF DUCT. IF THE FIRST FITTING IS A PLENUM OR A Y-FITTING, DOUBLE-WALL DUCT SHALL EXTEND 40 FEET IN ALL DIRECTIONS. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS. DOUBLE-WALL FITTINGS SHALL ALSO HAVE A PERFORATED INNER LINER.
5. ALL SUPPLY AIR DUCTWORK DOWNSTREAM OF AIR TERMINAL UNITS SHALL BE LOW PRESSURE RECTANGULAR OR ROUND GALVANIZED AS INDICATED, SMACNA STATIC PRESSURE CLASS 2" W.C., SEAL CLASS B EXTERNALLY INSULATED WITH 2" THICK DUCT WRAP WITH A MINIMUM INSTALLED R-VALUE OF 6.0. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS.
6. ALL OUTSIDE AND RETURN AIR DUCTWORK SHALL BE LOW PRESSURE RECTANGULAR GALVANIZED SMACNA PRESSURE CLASS 3" W.C., SEAL CLASS B. DUCTWORK THAT IS HIDDEN ABOVE CEILINGS SHALL BE EXTERNALLY INSULATED WITH 2" THICK DUCT WRAP WITH A MINIMUM INSTALLED R-VALUE OF 6.0. DUCTWORK THAT IS EXPOSED IN MECHANICAL ROOMS SHALL BE EXTERNALLY INSULATED WITH 2" THICK RIGID INSULATION BOARD WITH A MINIMUM INSTALLED R-VALUE OF 6.0 AND A FIELD APPLIED JACKED SUITABLE FOR PAINTING.
7. ALL TRANSFER DUCTS SHALL BE INTERNALLY INSULATED WITH 1" THICK ACOUSTICAL DUCT LINER. DUCT SIZES INDICATED ARE INSIDE CLEAR DIMENSIONS UNLESS NOTED OTHERWISE.
8. STANDARD EXHAUST AIR DUCTWORK SHALL BE GALVANIZED LOW PRESSURE RECTANGULAR OR ROUND, SMACNA STATIC PRESSURE CLASS 1" W.C., SEAL CLASS A, INSULATION NOT REQUIRED.
9. AVOID ROUTING DUCTWORK AND LOCATING TU'S WITHIN 6" OF TOP OF LIGHT FIXTURES WHEREVER POSSIBLE. MAINTAIN CLEARANCE BETWEEN TU'S AND DUCT INSULATION TO TOP OF LIGHTS. PROVIDE CLEARANCE ALL AROUND AIR TERMINAL UNITS AS REQUIRED FOR ROUTINE MAINTENANCE.
10. ALL DUCTWORK WALL PENETRATIONS SHALL BE SEALED AIR TIGHT REGARDLESS WALL FIRE RATING STATUS.
11. ALL DUCTWORK PENETRATING FIRE RATED WALLS SHALL BE PROVIDED WITH A FIRE DAMPER AS REQUIRED BY CODE.
12. PROVIDE MVD'S AT ALL NEW TAKEOFFS FROM DUCTS WHETHER SPECIFICALLY SHOWN OR NOT.
13. PROVIDE DUCT ACCESS PANELS AT ALL AIR FLOW MEASURINGS STATIONS, SMOKE DETECTORS, AND MOTORIZED DAMPERS.
14. WHERE DUCTWORK IS REMOVED FROM A TRUNK LINE AND THE OPENING IS NOT TO BE REUSED OR ENLARGED, CLOSE THE DUCT TO MATCH EXISTING MATERIAL AND SEAL WITH MASTIC. INSULATE TO PER PROJECT SPECIFICATIONS FOR NEW DUCTWORK.

PIPING GENERAL NOTES

1. BUTTERFLY VALVES INDICATED FOR FLOW BALANCING AND SHUT OFF SERVICE SHALL BE PROVIDED WITH INFINITE POSITION THROTTLING HANDLE AND MEMORY STOP. AFTER HYDRONIC TEST AND BALANCE HAS BEEN COMPLETED, THE CONTRACTOR SHALL POSITION THE MEMORY STOP AT THE FINAL BALANCE POINT OF EACH VALVE. PROVIDE STAMPED ALUMINUM TAG FOR EACH VALVE INDICATING "BALANCING VALVE - DO NOT REMOVE MEMORY STOP - RETURN TO BALANCE SETTING."
2. PROVIDE AIR CHAMBER AND AUTOMATIC AIR VENTS AT ALL HIGH POINTS IN SYSTEM, PIPE TO FLOOR DRAIN WITH COPPER TUBING. SEE "AUTOMATIC AIR VENT DETAIL" ON SHEET M300.
3. BUTTERFLY VALVES FOR SHUT OFF SERVICE SHALL BE PROVIDED WITH STAMPED ALUMINUM TAG INDICATING "SERVICE VALVE."
4. ALL CONNECTIONS TO AIR VENTS AND PRESSURE GAGES SHALL BE MADE WITH BRASS PIPING.
5. INSTALL PIPE HANGERS NEXT TO AND ON BOTH SIDES OF ALL EQUIPMENT.
6. SEAL ALL PIPE PENETRATIONS OF WALLS AND FLOORS AIR TIGHT REGARDLESS OF WHETHER WALLS OR FLOORS ARE FIRE RATED OR NOT.
7. REFER TO SHEETS M302 AND M303 FOR FIRE AND SMOKE WALL PENETRATION DETAILS.

LEGEND

AHU-2	AIR HANDLING UNIT TAG
TU-2.1	AIR TERMINAL UNIT. '2' IS THE ASSOCIATED AIR HANDLER UNIT TAG, '1' IS THE EQUIPMENT NUMBER.
HWP-1	HEATING WATER PUMP TAG.
1	SHEET NOTE
	RECTANGULAR SUPPLY OR OUTSIDE AIR DUCTWORK IN SECTION.
	RECTANGULAR RETURN OR EXHAUST AIR DUCTWORK IN SECTION.
EX. 10"x8"	EXISTING EQUIPMENT, DUCT, OR PIPING TO REMAIN.
10"x8"	EXISTING EQUIPMENT, DUCT, OR PIPING TO BE REMOVED.
10"x8"	RECTANGULAR DUCTWORK. FIRST DIMENSION INDICATES SIDE SHOWN. SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
8"Ø / 10"x8" FO	DOUBLE-WALL, FACTORY INSULATED, SOUND ATTENUATING ROUND OR FLAT OVAL SPIRAL SEAM DUCTWORK. SIZE INDICATED IS INSIDE CLEAR DIMENSION. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
8"Ø / 10"x8" FO	SINGLE-WALL ROUND OR FLAT OVAL SPIRAL SEAM DUCTWORK. SIZE INDICATED IS INSIDE CLEAR DIMENSION. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
	SQUARE THROAT ELBOW IN RECTANGULAR DUCTWORK WITH DOUBLE WALL TURNING VANES. PROVIDE FOR ALL RECTANGULAR DUCT LARGER THAN 12" IN THE TURNING DIMENSION.
	LONG RADIUS (RADIUS IS MINIMUM 1-1/2 TIMES THE TURNING DIMENSION) ELBOW. PROVIDE FOR ALL ROUND DUCT AND RECTANGULAR DUCT 12" OR SMALLER IN THE TURNING DIMENSION.
8"Ø	FACTORY FABRICATED AND INSULATED SOUND ATTENUATING FLEXIBLE ROUND DUCT. SIZE SHOWN IS INSIDE CLEAR DIMENSION. MAXIMUM LENGTH IS 8 FEET.
	ROUND BRANCH TAKE-OFF FROM RECTANGULAR MAIN DUCT. BRANCH DUCT SHALL BE FLEXIBLE ROUND DUCT OR ROUND METAL SNAPLOCK DUCT AS INDICATED. ROUND DUCT CONNECTION SHALL BE MADE WITH A 45 DEGREE SIDE TAKEOFF FITTING WITH A MANUAL VOLUME DAMPER.
FD	FIRE DAMPER IN DUCT PENETRATION OF FIRE RATED WALL. PROVIDE ACCESS IN DUCT IMMEDIATELY ADJACENT TO DAMPER. SEE 'VERTICAL FIRE DAMPER DETAIL' ON SHEET M302.
MVD / ACD	MANUAL VOLUME DAMPER (MVD) OR AUTOMATIC CONTROL DAMPER (ACD) IN DUCT. PROVIDE OPPOSED BLADE TYPE WITH LOCKING QUADRANT REGULATOR. ACD SHALL BE A MOTORIZED, FULLY MODULATING DAMPER.
	RECTANGULAR TO ROUND TRANSITION.
	RECTANGULAR BRANCH DUCT TAKE-OFF FROM RECTANGULAR MAIN DUCT. TAKE-OFF SHALL BE MADE WITH A 45° COLLAR.
	SUPPLY AND OUTSIDE AIR FLOW.
	RETURN AND EXHAUST AIR FLOW.
8"ø CD 300 CFM	CEILING DIFFUSER. 24"x24" SQUARE CONE FACE. ROUND NECK SIZE AND AIR FLOW AS INDICATED. DIRECTION OF THROW AS INDICATED BY ARROWS. TITUS MODEL TMS OR APPROVED EQUIVALENT. SEE 'CEILING DIFFUSER DETAIL' ON SHEET M301.
20"x20" RAG 750 CFM	RETURN AIR GRILLE. LOUVERED FACE, RECTANGULAR NECK SIZE AND AIR FLOW AS INDICATED. TITUS MODEL 350FL OR APPROVED EQUIVALENT. PROVIDE WITH A 24"x24" EXTENDED PANEL FOR INSTALLATION IN A LAY-IN CEILING GRID. PROVIDE SQUARE TO ROUND ADAPTER WHERE FLEX DUCT IS SHOWN.
12"x10" SWR 300 CFM	SIDEWALL REGISTER. RECTANGULAR NECK SIZE AND AIR FLOW AS INDICATED. DIRECTION OF THROW AS INDICATED BY ARROW. PROVIDE WITH OPPOSED BLADE VOLUME DAMPER OPERABLE FROM THE FACE OF THE REGISTER. TITUS MODEL 300RS OR APPROVED EQUIVALENT.
T	SPACE TEMPERATURE SENSOR PROVIDED BY HVAC CONTROLS CONTRACTOR. MOUNT AT 48" A.F.F. SEE HVAC CONTROLS ON SHEETS M400 AND M401.
	CONNECTION OF NEW TO EXISTING
AFM	AIRFLOW MEASURING STATION
S	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY DIVISION 16, INSTALLED IN DUCT BY DIVISION 15, AND WIRED BY DIVISION 16
	INTERNALLY LINED DUCT
22" x 22" TG	TRANSFER GRILLE. LOUVERED FACE, RECTANGULAR NECK SIZE AS INDICATED. TITUS MODEL 350FL OR APPROVED EQUIVALENT. PROVIDE WITH A 24"x24" EXTENDED PANEL FOR INSTALLATION IN A LAY-IN CEILING GRID. PROVIDE TITUS MODEL RCP RETURN CANOPY OR APPROVED EQUIVALENT.

—CHWS—	CHILLED WATER SUPPLY PIPING
—CHWR—	CHILLED WATER RETURN PIPING
—HWS—	HEATING WATER SUPPLY PIPING
—HWR—	HEATING WATER RETURN PIPING
	DOMESTIC COLD WATER PIPING
	DIRECTION OF WATER FLOW
	GATE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	BUTTERFLY OR BALL VALVE WITH MEMORY STOP FOR FLOW BALANCING
	PIPE FLANGE
	UNION
	FLEXIBLE PIPE CONNECTOR
P/T	COMBINATION PRESSURE AND TEMPERATURE TEST PLUG WITH EXTENDED NECK AND CAP
	STRAINER WITH BLOW DOWN GATE VALVE FULL SIZE OF STRAINER AND 3/4" HOSE END CONNECTION WITH CAP
	PRESSURE GAUGE WITH 1/4" BALL VALVE
	THERMOMETER WITH 1/4" BALL VALVE
	AUTOMATIC AIR VENT WITH 1/4" BALL VALVE. ROUTE 1/4" SOFT COPPER TUBING FROM DISCHARGE TO FLOOR DRAIN UNLESS OTHERWISE NOTED.
	ELBOW TURN UP
	ELBOW TURN DOWN
	CONNECTION, BOTTOM
	CONNECTION, TOP

ACD	AUTOMATIC CONTROL DAMPER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING ENGINEERS
C	COMMON (3-WAY CONTROL VALVE)
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE (AIR FLOW)
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CONT	CONTINUOUS OR CONTINUED
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DWGS	DRAWINGS
EA	EXHAUST AIR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
EX	EXISTING
FD	FIRE DAMPER
FO	FLAT OVAL
FT	FEET
FT^2	SQUARE FEET
GALV	GALVANIZED
HP	HORSEPOWER
HWP	HEATING WATER PUMP
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
$IN\text{-}H_2O$	INCHES - WATER COLUMN
LVG	LEAVING
MA	MIXED AIR
MAX	MAXIMUM
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OC	ON CENTER
RA	RETURN AIR
RAG	RETURN AIR GRILLE
RAR	RETURN AIR REGISTER
REQD	REQUIRED
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DETECTOR (DUCT-MOUNTED)
SMACNA	SHEET METAL AND AIR-CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
SW	SWITCH
SWG	SIDE-WALL GRILLE (SA)
SWR	SIDE-WALL REGISTER (SA)
TA	TRANSFER AIR
TD	TRIPLE-DUTY (VALVE)
TEMP	TEMPERATURE
TU	AIR TERMINAL UNIT (VAV BOX)
TYP	TYPICAL
VAV	VARIABLE AIR FLOW
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
WG	WATER GAUGE

GENERAL NOTE
THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMISSION OF FINAL BID TO BECOME THOROUGHLY ACQUAINTED WITH THE ACTUAL EXISTING CONDITIONS AND CLEARANCES IN THE FIELD. THE EXISTING STRUCTURAL DESIGN AND ABOVE-CEILING CLEARANCES WERE DETERMINED THROUGH NON-DESTRUCTIVE SITE INVESTIGATION.

THIS IS AN OLD BUILDING, WITH MANY ABANDONED AND ACTIVE UTILITIES ABOVE THE CEILINGS. ALTHOUGH EVERY EFFORT HAS BEEN MADE TO COORDINATE DUCT AND PIPE ROUTING WITH THE SPACE AVAILABLE, THE CONTRACTOR MAY NEED TO DETERMINE THE BEST ROUTING IN THE FIELD. ANY DEVIATION IN THE DUCT OR PIPE SIZING AND ANY MAJOR DEVIATION FROM ROUTING AS INDICATED IN THIS DRAWING SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION OR INSTALLATION OF ANY DUCT OR PIPE IN QUESTION.

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David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD
HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC LEGEND
AND NOTES

M001

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10"x8"	EXISTING EQUIPMENT, DUCT, OR PIPING TO REMAIN.
10"x8"	EXISTING EQUIPMENT, DUCT, OR PIPING TO BE REMOVED.
10"x8"	RECTANGULAR DUCTWORK. FIRST DIMENSION INDICATES SIDE SHOWN. SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
8"Ø / 10"x8" FO	DOUBLE-WALL, FACTORY INSULATED, SOUND ATTENUATING ROUND OR FLAT OVAL SPIRAL SEAM DUCTWORK. SIZE INDICATED IS INSIDE CLEAR DIMENSION. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
8"Ø / 10"x8" FO	SINGLE-WALL ROUND OR FLAT OVAL SPIRAL SEAM DUCTWORK. SIZE INDICATED IS INSIDE CLEAR DIMENSION. SEE 'DUCTWORK AND INSULATION NOTES' ON THIS SHEET.
	SQUARE THROAT ELBOW IN RECTANGULAR DUCTWORK WITH DOUBLE WALL TURNING VANES. PROVIDE FOR ALL RECTANGULAR DUCT LARGER THAN 12" IN THE TURNING DIMENSION.
	LONG RADIUS (RADIUS IS MINIMUM 1-1/2 TIMES THE TURNING DIMENSION) ELBOW. PROVIDE FOR ALL ROUND DUCT AND RECTANGULAR DUCT 12" OR SMALLER IN THE TURNING DIMENSION.
8"Ø	FACTORY FABRICATED AND INSULATED SOUND ATTENUATING FLEXIBLE ROUND DUCT. SIZE SHOWN IS INSIDE CLEAR DIMENSION. MAXIMUM LENGTH IS 8 FEET.
	ROUND BRANCH TAKE-OFF FROM RECTANGULAR MAIN DUCT. BRANCH DUCT SHALL BE FLEXIBLE ROUND DUCT OR ROUND METAL SNAPLOCK DUCT AS INDICATED. ROUND DUCT CONNECTION SHALL BE MADE WITH A 45 DEGREE SIDE TAKEOFF FITTING WITH A MANUAL VOLUME DAMPER.
FD	FIRE DAMPER IN DUCT PENETRATION OF FIRE RATED WALL. PROVIDE ACCESS IN DUCT IMMEDIATELY ADJACENT TO DAMPER. SEE 'VERTICAL FIRE DAMPER DETAIL' ON SHEET M302.
MVD / ACD	MANUAL VOLUME DAMPER (MVD) OR AUTOMATIC CONTROL DAMPER (ACD) IN DUCT. PROVIDE OPPOSED BLADE TYPE WITH LOCKING QUADRANT REGULATOR. ACD SHALL BE A MOTORIZED, FULLY MODULATING DAMPER.
	RECTANGULAR TO ROUND TRANSITION.
	RECTANGULAR BRANCH DUCT TAKE-OFF FROM RECTANGULAR MAIN DUCT. TAKE-OFF SHALL BE MADE WITH A 45° COLLAR.
→	SUPPLY AND OUTSIDE AIR FLOW.
	RETURN AND EXHAUST AIR FLOW.
8"Ø CD 300 CFM	CEILING DIFFUSER. 24"x24" SQUARE CONE FACE. ROUND NECK SIZE AND AIR FLOW AS INDICATED. DIRECTION OF THROW AS INDICATED BY ARROWS. TITUS MODEL TMS OR APPROVED EQUIVALENT. SEE 'CEILING DIFFUSER DETAIL' ON SHEET M301.
20"x20" RAG 750 CFM	RETURN AIR GRILLE. EGG CRATE FACE WITH 1/2"x1/2"x1/2" ALUMINUM CORE. RECTANGULAR NECK SIZE AND AIR FLOW AS INDICATED. TITUS MODEL 50F OR APPROVED EQUIVALENT. PROVIDE WITH A 24"x24" EXTENDED PANEL FOR INSTALLATION IN A LAY-IN CEILING GRID.
12"x10" SWR 300 CFM	SIDEWALL REGISTER. RECTANGULAR NECK SIZE AND AIR FLOW AS INDICATED. DIRECTION OF THROW AS INDICATED BY ARROW. PROVIDE WITH OPPOSED BLADE VOLUME DAMPER OPERABLE FROM THE FACE OF THE REGISTER. TITUS MODEL 300RS OR APPROVED EQUIVALENT.
T	SPACE TEMPERATURE SENSOR PROVIDED BY HVAC CONTROLS CONTRACTOR. MOUNT AT 48" A.F.F. SEE HVAC CONTROLS ON SHEETS M400 AND M401.
	CONNECTION OF NEW TO EXISTING.
AFM	AIRFLOW MEASURING STATION
S	DUCT MOUNTED SMOKE DETECTOR. FURNISHED BY DIVISION 16, INSTALLED IN DUCT BY DIVISION 15, AND WIRED BY DIVISION 16
	INTERNALLY LINED DUCT

—CHWS—	CHILLED WATER SUPPLY PIPING
—CHWR—	CHILLED WATER RETURN PIPING
—HWS—	HEATING WATER SUPPLY PIPING
—HWR—	HEATING WATER RETURN PIPING
	DOMESTIC COLD WATER PIPING
	DIRECTION OF WATER FLOW
	GATE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	2-WAY CONTROL VALVE
	3-WAY CONTROL VALVE
	BUTTERFLY OR BALL VALVE WITH MEMORY STOP FOR FLOW BALANCING
	PIPE FLANGE
	UNION
	FLEXIBLE PIPE CONNECTOR
P/T	COMBINATION PRESSURE AND TEMPERATURE TEST PLUG WITH EXTENDED NECK AND CAP
	STRAINER WITH BLOW DOWN GATE VALVE FULL SIZE OF STRAINER AND 3/4" HOSE END CONNECTION WITH CAP
	PRESSURE GAUGE WITH 1/4" BALL VALVE
	THERMOMETER WITH 1/4" BALL VALVE
	AUTOMATIC AIR VENT WITH 1/4" BALL VALVE. ROUTE 1/4" SOFT COPPER TUBING FROM DISCHARGE TO FLOOR DRAIN UNLESS OTHERWISE NOTED.
	ELBOW TURN UP
	ELBOW TURN DOWN
	CONNECTION, BOTTOM
	CONNECTION, TOP

ACD	AUTOMATIC CONTROL DAMPER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING ENGINEERS
C	COMMON (3-WAY CONTROL VALVE)
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE (AIR FLOW)
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CONT	CONTINUOUS OR CONTINUED
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DWGS	DRAWINGS
EA	EXHAUST AIR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
ENT	ENTERING
ESP	EXTERNAL STATIC PRESSURE
EX	EXISTING
FD	FIRE DAMPER
FO	FLAT OVAL
FT	FEET
FT^2	SQUARE FEET
GALV	GALVANIZED
HP	HORSEPOWER
HWP	HEATING WATER PUMP
HWR	HEATING WATER RETURN
HWS	HEATING WATER SUPPLY
$IN\text{-}H_2O$	INCHES - WATER COLUMN
LVG	LEAVING
MA	MIXED AIR
MAX	MAXIMUM
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OA	OUTSIDE AIR
OC	ON CENTER
RA	RETURN AIR
RAG	RETURN AIR GRILLE
RAR	RETURN AIR REGISTER
REQD	REQUIRED
RM	ROOM
SA	SUPPLY AIR
SD	SMOKE DETECTOR (DUCT-MOUNTED)
SMACNA	SHEET METAL AND AIR-CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION
SW	SWITCH
SWG	SIDE-WALL GRILLE (SA)
SWR	SIDE-WALL REGISTER (SA)
TA	TRANSFER AIR
TD	TRIPLE-DUTY (VALVE)
TEMP	TEMPERATURE
TYP	TYPICAL
TU	AIR TERMINAL UNIT (VAV BOX)
VAV	VARIABLE AIR FLOW
VFD	VARIABLE FREQUENCY DRIVE
W/	WITH
WG	WATER GAUGE

GENERAL NOTE
THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMISSION OF FINAL BID TO BECOME THOROUGHLY ACQUAINTED WITH THE ACTUAL EXISTING CONDITIONS AND CLEARANCES IN THE FIELD. THE EXISTING STRUCTURAL DESIGN AND ABOVE-CEILING CLEARANCES WERE DETERMINED THROUGH NON-DESTRUCTIVE SITE INVESTIGATION.

THIS IS AN OLD BUILDING, WITH MANY ABANDONED AND ACTIVE UTILITIES ABOVE THE CEILINGS. ALTHOUGH EVERY EFFORT HAS BEEN MADE TO COORDINATE DUCT AND PIPE ROUTING WITH THE SPACE AVAILABLE, THE CONTRACTOR MAY NEED TO DETERMINE THE BEST ROUTING IN THE FIELD. ANY DEVIATION IN THE DUCT OR PIPE SIZING AND ANY MAJOR DEVIATION FROM ROUTING AS INDICATED IN THIS DRAWING SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER PRIOR TO THE FABRICATION OR INSTALLATION OF ANY DUCT OR PIPE IN QUESTION.

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC LEGEND AND NOTES

OWNER FURNISHED AIR HANDLING UNIT SCHEDULE

MARK	TYPE (1)	FAN DATA: WHEEL TYPE	FAN DATA: AIR VOLUME CONTROL (2)	FAN DATA: TOTAL AIR (CFM)	FAN DATA: OUTSIDE AIR (CFM)	FAN DATA: EXTERNAL STATIC PRESSURE (INCHES H_2O)	FAN DATA: TOTAL STATIC PRESSURE (INCHES H_2O)	ELECTRICAL DATA: MAXIMUM POWER	ELECTRICAL DATA: VOLTS	ELECTRICAL DATA: PHASE	ELECTRICAL DATA: HERTZ
AHU-1	HDT-VAV	PLENUM	VFD	12450	2435	2.0 (3)	3.9 (4)	15 HP	208	3	60
AHU-2	HDT-VAV	PLENUM	VFD	13200	2560	1.5 (3)	3.5 (4)	15 HP	208	3	60

MARK	CHILLED WATER COIL DATA: COIL AIR (CFM)	MAX. FACE VELOCITY (FPM)	TOTAL COOLING CAPACITY (BTU/HR)	SENSIBLE COOLING CAPACITY (BTU/HR)	ENTERING AIR TEMP. °F db	ENTERING AIR TEMP. °F wb	LEAVING AIR TEMP. °F db	LEAVING AIR TEMP. °F wb	CHILLED WATER DATA: GPM	CHILLED WATER DATA: °F ENT	CHILLED WATER DATA: °F LVG	MAX. PRESS. DROPS: WATER (FT H_2O)	MAX. PRESS. DROPS: AIR (IN H_2O)
AHU-1	12450	500	479800	336200	77.2	64.6	52.0	50.9	80	44.0	56.0	10.0	1.0
AHU-2	12265	500	478600	343600	75.6	62.9	49.6	48.6	80	44.0	56.0	11.0	1.0

MARK	PREFILTER DATA: TYPE (5)	THICK	MERV (6)	MAX. FACE VELOCITY (FPM)	MAXIMUM AIR PRESSURE DROP (IN H_2O) (7)	FINAL FILTER DATA: TYPE (5)	THICK	MERV (6)	MAX. FACE VELOCITY (FPM)	MAXIMUM AIR PRESSURE DROP (IN H_2O) (7)	REMARKS
AHU-1	PLT	2"	8	550	0.66	PLT	4"	13	550	0.7	(8)(9)(10)(11)
AHU-2	PLT	2"	8	550	0.66	PLT	4"	13	550	0.7	(8)(9)(10)(11)(12)

AIR HANDLING UNIT SCHEDULE NOTES

(1) HDT - HORIZONTAL DRAW THROUGH
VAV - VARIABLE AIR VOLUME

(2) VFD - VARIABLE FREQUENCY DRIVE

(3) DOES NOT INCLUDE PRESSURE DROP THROUGH CASING, COILS, FILTERS, OR FILTER HOUSING.

(4) INCLUDES PRESSURE DROP THROUGH CASING, COILS, FILTERS, AND FILTER HOUSING.

(5) PLT - PLEATED
CRT - CARTRIDGE

(6) MINIMUM EFFICIENCY REPORTING VALUE, IN ACCORDANCE WITH ASHRAE STANDARD 52.2.

(7) MID-LIFE RESISTANCE

(8) TRAP CONDENSATE PIPING AT UNIT AND ROUTE TO NEAREST FLOOR DRAIN. SEE 'NEGATIVE PRESSURE CONDENSATE DRAIN TRAP' DETAIL ON SHEET M301.

(9) PROVIDE AIR HANDLING UNIT WITH FACTORY-MOUNTED ELECTRICAL DISCONNECT.

(10) PROVIDE ULTRAVOILET GERMICIDAL IRRDIATION SYSTEM (UVGI LIGHTING) IN AHU FOR COOLING COIL.

(11) SEE SEQUENCE OF OPERATION ON SHEET M400.

(12) AIR HANDLING UNIT MUST BE ABLE TO BE BROKEN DOWN TO PASS THROUGH A 36" NOMINAL DOOR OPENING.

AIR TERMINAL UNIT SCHEDULE

MARK	AIR TERMINAL TYPE (1)	MAXIMUM PRIMARY AIR FLOW (CFM)	MINIMUM PRIMARY AIR FLOW (CFM)	ROUND INLET SIZE (2)	DIFFERENTIAL STATIC PRESSURE (INCHES H_2O) (3)	HEATING WATER COIL DATA: HEATING AIR FLOW (CFM)	TOTAL HEATING CAPACITY (BTU/HR)	AIR TEMP. DATA °F ENT	AIR TEMP. DATA °F LVG	HEATING WATER DATA GPM	HEATING WATER DATA °F ENT	HEATING WATER DATA °F LVG	MAX. PRESS. DROPS WATER (FT H_2O)	MAX. PRESS. DROPS AIR (IN H_2O)	PIPING RUNOUT SIZE	CONTROL VALVE	REMARKS
TU-1.01	VAVRH	645	145	8"	0.33	310	11300	50.0	84.0	0.75	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.02	VAVRH	645	145	8"	0.33	310	11300	50.0	84.0	0.75	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.03	VAVRH	150	45	5"	0.05	75	2700	50.0	84.0	0.2	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.04	VAVRH	1100	330	12"	0.25	430	15800	50.0	84.0	1.0	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.05	VAVRH	810	245	9"	0.28	265	9700	50.0	84.0	0.7	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.06	VAVRH	265	80	5"	0.14	100	3600	50.0	84.0	0.25	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.07	VAVRH	1100	330	12"	0.24	400	14800	50.0	84.0	1.0	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.08	VAVRH	1145	345	12"	0.26	520	19200	50.0	84.0	1.3	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-1.09	VAVRH	1160	350	12"	0.27	610	22300	50.0	84.0	1.5	140	110	5.0	.15	3/4"	3-WAY	(4)(5)(6)
TU-1.10	VAVRH	150	45	4"	0.08	45	1700	50.0	84.0	0.1	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.11	VAVRH	950	350	9"	0.37	630	23100	50.0	84.0	1.5	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-1.12	VAVRH	890	265	9"	0.33	265	9800	50.0	84.0	0.7	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.13	VAVRH	375	115	6"	0.31	125	4600	50.0	84.0	0.3	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.14	VAVRH	1260	380	12"	0.31	500	18200	50.0	84.0	1.2	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-1.15	VAVRH	1035	310	10"	0.38	330	12100	50.0	84.0	0.8	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.16	VAVRH	1030	310	10"	0.38	310	11000	50.0	84.0	0.75	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-1.17	VAVRH	1270	380	12"	0.31	610	22300	50.0	84.0	1.5	140	110	5.0	.15	3/4"	3-WAY	(4)(5)(6)
TU-2.01	VAVRH	1185	355	12"	0.28	430	14100	53.7	84.0	0.9	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-2.02	VAVRH	765	230	9"	0.26	550	18000	53.7	84.0	1.2	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-2.03	VAVRH	1075	320	12"	0.23	530	17300	53.7	84.0	1.2	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-2.04	VAVRH	655	195	8"	0.34	240	7800	53.7	84.0	0.5	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-2.05	VAVRH	1085	325	12"	0.24	690	22500	53.7	84.0	1.5	140	110	5.0	.15	3/4"	3-WAY	(4)(5)(6)
TU-2.06	VAVRH	1805	540	14"	0.31	1300	42400	53.7	84.0	2.8	140	110	5.0	.15	3/4"	3-WAY	(4)(5)(6)
TU-2.07	VAVRH	1780	520	14"	0.29	1345	43900	53.7	84.0	2.9	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)
TU-2.08	VAVRH	1125	340	12"	0.25	340	9200	53.7	84.0	0.6	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-2.09	VAVRH	1730	520	14"	0.29	520	14900	53.7	84.0	1.0	140	110	5.0	.15	1/2"	2-WAY	(4)(5)(6)
TU-2.10	VAVRH	2080	780	14"	0.41	1780	58200	53.7	84.0	3.9	140	110	5.0	.15	3/4"	2-WAY	(4)(5)(6)

AIR TERMINAL UNIT SCHEDULE NOTES

(1) VAVRH - VARIABLE AIR VOLUME WITH HEATING WATER REHEAT.

(2) ROUND INLET DUCT CONNECTION SHALL NOT BE LARGER THAN SIZE INDICATED.

(3) MAXIMUM INTERNAL RESISTANCE OF AIR TERMINAL UNIT (INLET-TO-DISCHARGE STATIC PRESSURE DIFFERENTIAL) WITH PRIMARY AIR DAMPER FULL OPEN AT MAXIMUM PRIMARY AIR FLOW INDICATED. INCLUDES PRESSURE DROP ACROSS THE HEATING WATER COIL.

(4) ACOUSTIC PERFORMANCE SHALL NOT EXCEED PUBLISHED CATALOG SOUND DATA.

(5) PROVIDE EACH UNIT WITH A 120V CONTROLS TRANSFORMER TO SUPPLY 24 VOLT POWER TO THE DAMPER ACTUATOR AND CONTROLS.

(6) SEE 'COIL CONNECTION SCHEMATIC' ON SHEET M300, 'TERMINAL UNIT MOUNTING DETAIL' ON SHEET M301, AND SEQUENCE OF OPERATION ON SHEET M401.

FAN SCHEDULE

UNIT	TYPE	CFM	MAX. FAN RPM	ESP (IN. H20)	MAX. MOTOR POWER	SONES/db (MAX.)	BASIS OF DESIGN	MODEL	CONTROL	ELECTRICAL VOLTS/PHASE	NOTES
EF-2.1	INLINE	840	883	0.40	1/3 HP	3.5	COOK	GN-822	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,3,4,5,6,7
EF-2.2	INLINE	100	1411	0.25	1/25 HP	1.3	COOK	GN-242	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,7
EF-2.3	INLINE	870	871	0.20	1/3 HP	3.5	COOK	GN-822	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,3,4,5,6,7
EF-2.4	INLINE	200	1571	0.20	1/16 HP	3.5	COOK	GN-322	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,7
EF-2.5	INLINE	1705	941	0.25	1/2 HP	4.5	COOK	GN-1000	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,3,4,5,6,7

1. PROVIDE DISCONNECT
2. PROVIDE SOLID STATE SPEED CONTROLLER.
3. PROVIDE BACK DRAFT DAMPER
4. PROVIDE THERMAL OVERLOAD
5. PROVIDE DIRECT DRIVE FAN
6. PROVIDE ECM FAN WITH SPEED CONTROLLER
7. PROVIDE VIBRATION ISOLATION HANGERS.

AIR PURIFICATION EQUIPMENT SCHEDULE

ZONE	SUPPLY CFM	OA CFM	PRESS. IN. W.C.	BASIS OF DESIGN	MODEL	QUANTITY	ELECTRICAL VOLTS/PHASE	ELECTRICAL WATTS	NOTES
AHU-1	12450	2435	<0.01	GPS	GPS-IMOD	1	120/1	7.8	1,2,3,4
AHU-2	13200	2560	<0.01	GPS	GPS-IMOD	1	120/1	7.8	1,2,3,4

1. PROVIDE PRODUCT BY BASIS OF DESIGN, GLOBAL PLASMA SOLUTIONS, NU-CALGON, OR LISTED IN SPECIFICATIONS.
2. PROVIDE BASIS OF DESIGN OR EQUAL LISTED IN SPECIFICATIONS.
3. BI-POLAR IONIZATION SYSTEMS REQUIRING PERISHABLE GLASS TUBES ARE NOT ACCEPTABLE.
4. MANUFACTURER MUST PASS UL-867-2007 OZONE CHAMBER TESTING BY EITHER UL OR ETL.

MINI SPLIT SYSTEM CONDENSING UNIT SCHEDULE

UNIT MSHP	BASIS OF DESIGN	MODEL	NOMINAL COOL CAPACITY (BTUH)	DESIGN COOLING OUTDOOR TEMP DB	SEER	NOMINAL HEAT CAPACITY (BTUH)	DESIGN HEATING OUTDOOR TEMP DB	HSPF	VOLTS/PHASE	MCA (AMPS)	MOP (AMPS)	NOTES
1	MITSUBISHI	PUZ-A12NKA7	12000	93/78	21.0	14000	25	10.2	208/1	11.0	28	1,2,3
2	MITSUBISHI	PUZ-A12NKA7	12000	93/78	21.0	14000	25	10.2	208/1	11.0	28	1,2,3
3	MITSUBISHI	PUZ-A12NKA7	12000	93/78	21.0	14000	25	10.2	208/1	11.0	28	1,2,3

1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB)
2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 47°(DB)
3. EFFICIENCY VALUES FOR EER, IEER, AND COP ARE BASED ON AHRI CONDITIONS

MINI SPLIT SYSTEM AIR HANDLING UNIT SCHEDULE

UNIT	BASIS OF DESIGN	MODEL	TYPE	NOMINAL COOL CAPACITY (BTUH)	RATED COOLING EAT °F DB/WB	RATED COOLING CAPACITY (BTUH): COOLING TOTAL	RATED COOLING CAPACITY (BTUH): COOLING SENSIBLE	NOMINAL HEAT CAPACITY (BTUH)	RATED HEATING EAT °F DB	RATED HEATING TOTAL CAPACITY (BTUH)	AIRFLOW (CFM)	NOTES
WM-1	MITSUBISHI	PKA-A12LA	WALL MOUNT	12000	80/67	12000	10560	14000	70	18000	375	1,2,3,4,5
WM-2	MITSUBISHI	PKA-A12LA	WALL MOUNT	12000	80/67	12000	10560	14000	70	18000	375	1,2,3,4,5
WM-3	MITSUBISHI	PKA-A12LA	WALL MOUNT	12000	80/67	12000	10560	14000	70	18000	375	1,2,3,4,5

1. NOMINAL COOLING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 80/67°F (DB/WB), OUTDOOR OF 95°F (DB)
2. NOMINAL HEATING CAPACITIES ARE BASED ON INDOOR COIL EAT OF 70°F (DB), OUTDOOR OF 47°(DB)
3. PROVIDE HARD WIRED REMOTE THERMOSTAT
4. PROVIDE CONDENSATE PUMP
5. POWERED FROM OUTDOOR UNIT

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC SCHEDULES

FAN SCHEDULE

UNIT	TYPE	CFM	MAX. FAN RPM	ESP (IN. H20)	MAX. MOTOR POWER	SONES/db (MAX.)	BASIS OF DESIGN	MODEL	CONTROL	ELECTRICAL VOLTS/PHASE	NOTES
EF-1	CREF	100	1138	0.20	1/20 HP	2.5	COOK	70C15DH	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,6,7
EF-2	CREF	290	1068	0.25	1/25 HP	6.5	COOK	100C10DM	DEDICATED WALL SWITCH BY DIVISION 16	115/1	1,2,3,4,5,6,7
EF-3	CREF	150	1304	0.20	1/20 HP	3.7	COOK	70C15DH	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,6,7
EF-4	CREF	1120	557	0.20	1/8 HP	3.1	COOK	165C17D	CONTINUOUSLY DURING LAB MODE BY DDC	115/1	1,3,4,5,6,7,9
EF-5	CREF	1285	600	0.20	1/8 HP	3.8	COOK	165C17D	CONTINUOUSLY DURING LAB MODE BY DDC	115/1	1,3,4,5,6,7,9
EF-6	CREF	170	1548	0.30	1/20 HP	5.1	COOK	70C15DH	WALL MOUNTED TIME SWITCH	115/1	1,2,3,4,5,6,7,10
EF-7	CREF	170	1548	0.30	1/20 HP	5.1	COOK	70C15DH	WALL MOUNTED TIME SWITCH	115/1	1,2,3,4,5,6,7,10
EF-8	CREF	170	1548	0.30	1/20 HP	5.1	COOK	70C15DH	WALL MOUNTED TIME SWITCH	115/1	1,2,3,4,5,6,7,10
EF-9	CREF	170	1548	0.30	1/20 HP	5.1	COOK	70C15DH	WALL MOUNTED TIME SWITCH	115/1	1,2,3,4,5,6,7,10
EF-10	CREF	170	1548	0.30	1/20 HP	5.1	COOK	70C15DH	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,6,7
EF-11	CREF	285	1036	0.30	1/25 HP	4.2	COOK	101C10D	CONTINUOUSLY DURING OCCUPANCY BY DDC	115/1	1,2,3,4,5,6,7
EF-12	CREF	1230	602	0.20	1/3 HP	3.8	COOK	165C10D	CONTINUOUSLY DURING LAB MODE BY DDC	115/1	1,3,4,5,6,7,9

1. PROVIDE DISCONNECT
2. PROVIDE SOLID STATE SPEED CONTROLLER.
3. PROVIDE BACK DRAFT DAMPER
4. PROVIDE THERMAL OVERLOAD
5. PROVIDE DIRECT DRIVE FAN
6. PROVIDE CURB AS REQUIRED TO MOUNT TO EXISTING CURB
7. PROVIDE FAN WITH FLORIDA PRODUCT APPROVAL
8. PROVIDE WHITE FINISH ALUMINUM GRILLE
9. PROVIDE ECM FAN WITH SPEED CONTROLLER
10. PROVIDE ELECTRONIC COUNTDOWN TIMER WITHOUT HOLD BY INTERMATIC OR EQUAL. MATCH FINISH OF EXISTING WALL DEVICES.
11. PROVIDE SIDE DISCHARGE.
12. PROVIDE VIBRATION ISOLATION HANGERS.

VARIABLE AIR VOLUME TERMINAL UNIT SCHEDULE

MARK	TOTAL CFM	COOL CFM MIN.	HEATING CFM MAX.	HEATING COIL EAT (°F)	LAT (°F)	MBH (MIN.)	EWT (°F)	LWT (°F)	GPM	NUM. OF ROWS	MAX. UNIT APD (IN.)	MAX. WPD (FT.)	CONTROL VALVE TYPE	CONTROL VALVE PRESSURE DROP	SOUND POWER AT 1.0" REF. CFM	RADIATED NC	DISCHARGE NC	INLET SIZE (IN.)	MANUFACTURER	MODEL NUMBER
TU-1.01	670	200	525	65.0	95.0	17.7	140	123.1	2.1	2	0.20	5.0	2-WAY	11.5 FT	670	17	17	9	TITUS	DESV
TU-1.02	1410	425	1410	65.0	95.0	31.0	140	124.1	3.9	2	0.38	5.0	2-WAY	11.5 FT	1410	22	20	12	TITUS	DESV
TU-1.03	145	45	45	65.0	95.0	0.8	140	110	0.1	2	0.15	5.0	3-WAY	11.5 FT	145	21	22	4	TITUS	DESV
TU-1.04	140	45	45	65.0	95.0	1.4	140	110	0.1	2	0.15	5.0	3-WAY	11.5 FT	140	20	20	4	TITUS	DESV
TU-1.05	150	45	45	65.0	95.0	0.8	140	110	0.1	2	0.15	5.0	2-WAY	11.5 FT	150	22	22	4	TITUS	DESV
TU-1.06	565	170	170	65.0	91.0	4.9	140	110	0.3	2	0.26	5.0	2-WAY	11.5 FT	565	19	18	8	TITUS	DESV
TU-1.07	475	145	145	65.0	87.0	3.5	140	110	0.2	2	0.26	5.0	2-WAY	11.5 FT	475	20	16	7	TITUS	DESV
TU-1.08	130	45	45	65.0	90.0	1.8	140	110	0.1	2	0.15	5.0	3-WAY	11.5 FT	130	18	20	4	TITUS	DESV
TU-1.09	755	225	420	65.0	95.0	13.6	140	114.7	0.9	2	0.25	5.0	3-WAY	11.5 FT	755	18	15	9	TITUS	DESV
TU-1.10	1100	330	635	65.0	95.0	20.5	140	112	1.4	2	0.24	5.0	2-WAY	11.5 FT	1100	19	18	12	TITUS	DESV
TU-1.11	1200	325	1030	65.0	82.0	18.9	140	110	1.2	2	0.28	5.0	3-WAY	11.5 FT	1200	20	18	12	TITUS	DESV
TU-1.12	1650	495	1650	65.0	87.0	39.3	140	110	2.6	2	0.27	5.0	2-WAY	11.5 FT	1650	20	15	14	TITUS	DESV
TU-1.13	690	230	690	65.0	89.0	18.1	140	115.9	1.5	2	0.21	5.0	2-WAY	11.5 FT	690	18	18	9	TITUS	DESV
TU-1.14	2420	730	1365	65.0	90.0	37.6	140	113.2	2.8	2	0.53	5.0	2-WAY	11.5 FT	2420	23	18	14	TITUS	DESV
TU-1.15	1510	455	1015	65.0	93.0	30.9	140	111.9	2.2	2	0.23	5.0	2-WAY	11.5 FT	1510	20	14	14	TITUS	DESV
TU-2.01	460	170	315	61.1	91.0	10.3	140	114.3	0.8	2	0.24	5.0	2-WAY	11.5 FT	455	20	16	7	TITUS	DESV
TU-2.02	230	70	125	61.1	94.0	4.4	140	110	0.3	2	0.15	5.0	2-WAY	11.5 FT	230	20	20	5	TITUS	DESV
TU-2.03	170	50	50	61.1	95.0	1.9	140	110	0.2	2	0.15	5.0	2-WAY	11.5 FT	170	24	23	4	TITUS	DESV
TU-2.04	300	90	90	61.1	93.0	2.7	140	110	0.2	2	0.18	5.0	2-WAY	11.5 FT	300	24	19	5	TITUS	DESV
TU-2.05	490	150	150	61.1	88.0	2.6	140	110	0.2	2	0.28	5.0	2-WAY	11.5 FT	490	22	17	7	TITUS	DESV
TU-2.06	660	200	285	61.1	92.0	9.4	140	113	0.7	2	0.34	5.0	3-WAY	11.5 FT	660	22	20	8	TITUS	DESV
TU-2.07	230	70	125	61.1	94.0	4.4	140	110	0.3	2	0.15	5.0	3-WAY	11.5 FT	230	20	20	5	TITUS	DESV
TU-2.08	240	70	110	61.1	95.0	4.1	140	110	0.3	2	0.15	5.0	3-WAY	11.5 FT	240	21	20	5	TITUS	DESV
TU-2.09	200	50	75	61.1	95.0	2.7	140	110	0.2	2	0.15	5.0	2-WAY	11.5 FT	200	24	23	4	TITUS	DESV
TU-2.10	130	45	45	61.1	95.0	1.5	140	110	0.1	2	0.15	5.0	2-WAY	11.5 FT	130	18	20	4	TITUS	DESV

TERMINAL UNIT SCHEDULE NOTES:

1. ALL VAV TERMINAL UNITS SHALL BE PRESSURE INDEPENDENT.
2. PROVIDE ALL VAV TERMINAL UNITS WITH ACCESS PANEL WITH TOOL-LESS CAM LOCK ENTRY TO ALLOW SERVICING OF AIR VALVE WITHOUT DISCONNECTING DUCT WORK.
3. PROVIDE ALL VAV TERMINAL UNITS WITH FOIL FACED INSULATION.
4. SOUND DATA FOR DISCHARGE NC BASED ON 10 dB ROOM ABSORPTION, 5' UNLINED DUCT (12"x12"), 5' LINED FLEX DUCT (8") TO DIFFUSER, AND MAX 300 CFM PER DIFFUSER.
5. SOUND DATA FOR RADIATED NC BASED ON 10 dB ROOM ABSORPTION, 3' DEEP CEILING CAVITY, AND 5/8" THICK, 20 LB/CU. FT. FIBER CEILING TILE.
6. PROVIDE VAV TERMINAL UNITS WITH FACTORY MULTIPOINT FLOW SENSOR.
7. PROVIDE FACTORY MOUNTED 120V CONTROLS TRANSFORMER TO SUPPLY 24 VOLT POWER TO DAMPER ACTUATOR AND CONTROLS.

AIR PURIFICATION EQUIPMENT SCHEDULE

ZONE	SUPPLY CFM	OA CFM	PRESS. IN. W.C.	BASIS OF DESIGN	MODEL	QUANTITY	ELECTRICAL VOLTS/PHASE	ELECTRICAL WATTS	NOTES
AHU-1	12705	1485	<0.01	GPS	GPS-IMOD	1	120/1	7.8	1,2,3,4
AHU-2	3100	215	<0.01	GPS	GPS-IMOD	1	120/1	7.8	1,2,3,4

1. PROVIDE PRODUCT BY BASIS OF DESIGN, GLOBAL PLASMA SOLUTIONS, NU-CALGON, OR AS LISTED IN SPECIFICATIONS.
2. PROVIDE BASIS OF DESIGN OR EQUAL LISTED IN SPECIFICATIONS.
3. BI-POLAR IONIZATION SYSTEMS REQUIRING PERISHABLE GLASS TUBES ARE NOT ACCEPTABLE.
4. MANUFACTURER MUST PASS UL-867-2007 OZONE CHAMBER TESTING BY EITHER UL OR ETL.

OWNER FURNISHED AIR HANDLING UNIT SCHEDULE

UNIT DESIGNATION	FAN DATA: TYPE	FAN TYPE	AIR VOLUME CONTROL	MAX. AIR FLOW (CFM)	MIN. AIR FLOW (CFM)	OUTSIDE AIR FLOW (CFM)	APPROX. ESP (IN. W.C.)	TOTAL SP (IN. W.C.)	MAXIMUM FAN MOTOR HORSEPOWER	NOM MOTOR RPM	CHILLED WATER COIL DATA: MAX. FACE VELOCITY (FPM)	UNIT TOTAL CAPACITY (MBH)	UNIT SENSIBLE CAPACITY (MBH)	DESIGN AIRFLOW (CFM)	AIR SIDE EAT (°F) DB	AIR SIDE EAT (°F) WB	AIR SIDE LAT (°F) DB	AIR SIDE LAT (°F) WB	WATER SIDE FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT H2O)	CONTROL VALVE (BY DDC CONTRACTOR)	CONTROL VALVE PRESSURE DROP
AHU-1	VDT	DDPF	VAV	12705	3850	1485/5150	2.0	3.9	15	1800	500	636.8	389.4	12570	80.2	67.9	51.5	50.7	80	44.0	60	5.0	2-WAY	11.5 FT
AHU-2	VDT	DDPF	VAV	3100	925	215	1.5	2.3	3	1800	500	87.9	73.5	3070	73.4	60.7	51.2	50.1	11	44.0	60	5.0	2-WAY	11.5 FT

UNIT DESIGNATION	HEATING WATER COIL DATA: AIR FLOW (CFM)	MAX. FACE VELOCITY (FPM)	UNIT TOTAL CAPACITY (MBH)	AIR SIDE EAT (°F) DB	AIR SIDE LAT (°F) DB	WATER SIDE FLOW (GPM)	EWT (°F)	LWT (°F)	MAX. WPD (FT H2O)	CONTROL VALVE (BY DDC CONTRACTOR)	CONTROL VALVE PRESSURE DROP	FILTER SECTION: TYPE	FILTER EFF. (MERV)	THICKNESS (IN)	NOTES
AHU-1	9215	500	209.0	44.0	65.0	14	140	110	5.0	2-WAY	11.5 FT	CARTRIDGE	13	4	1,2,3,4,5,7,8,9,10
AHU-2	NO HEATING COIL											CARTRIDGE	13	4	1,2,3,4,5,7,8,10

SCHEDULE LEGEND:

HDT - HORIZONTAL DRAW THRU
SDU - STACKED DEHUMIDIFICATION UNIT
FC - FORWARD CURVED
DDPF - DIRECT DRIVE PLENUM FAN
BC - BACKWARD CURVED
SZVAV - VARIABLE AIR VOLUME, SINGLE ZONE
VAV - VARIABLE AIR VOLUME, MULTIPLE ZONES
CV - CONSTANT VOLUME

SCHEDULE NOTES:

1. ESP DOES NOT INCLUDE PRESSURE DROP THROUGH AHU CASING OR COILS.
2. TOTAL SP INCLUDES PRESSURE DROP THROUGH CASING, COILS, AND MID LIFE FILTER PRESSURE DROP
3. AVERAGE ATMOSPHERIC DUST SPOT EFFICIENCY BASED ON ASHRAE 52-76.
4. BASIS OF DESIGN: TRANE CSAA AIR HANDLING UNIT
5. 2" THICKNESS MERV 8 PRE FILTERS AND SPECIFIED FINAL FILTERS.
6. VARIABLE FREQUENCY DRIVE WITH INTEGRAL DISCONNECT FOR FAN MOTOR PROVIDED BY DDC CONTRACTOR
7. 208V/3 PHASE
8. MAX FACE VELOCITY FOR CHILLED WATER COIL IN REFERENCE TO MAX AIRFLOW
9. HEATING COIL IN PREHEAT POSITION
10. PROVIDE UV LIGHTS WITH DOOR INTERLOCKING DISCONNECT

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

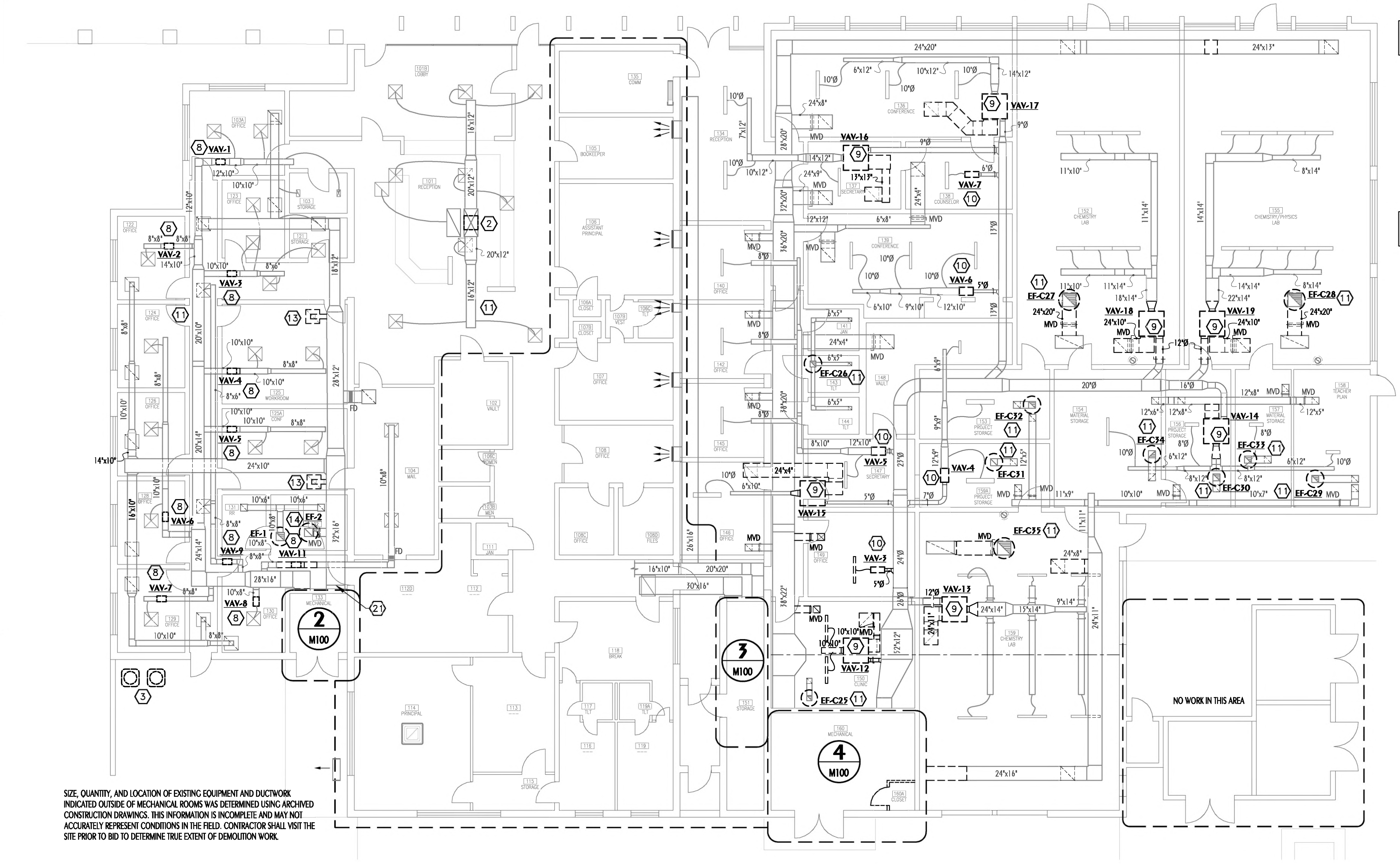
No.	Description	Date

PROJECT NUMBER: 2022-101
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC SCHEDULES

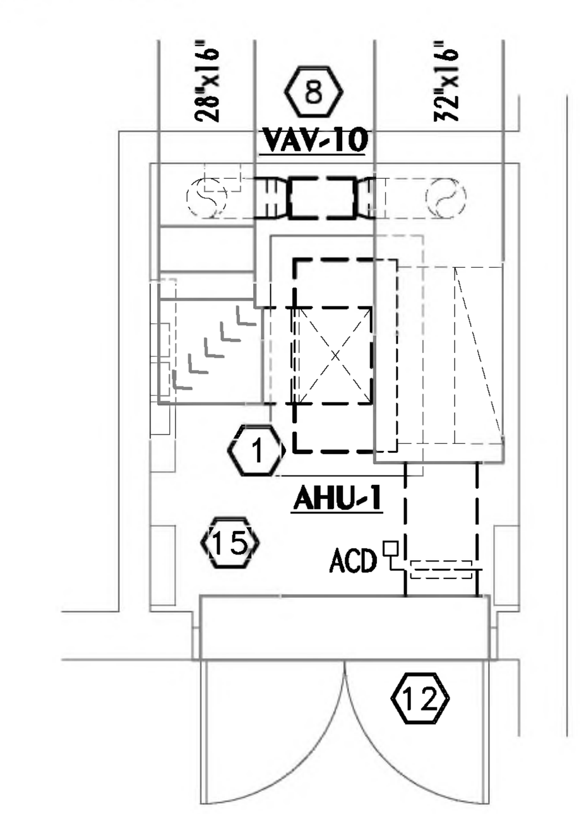
M002

2022-101
CONSTRUCTION DOCUMENTS
05-24-2024

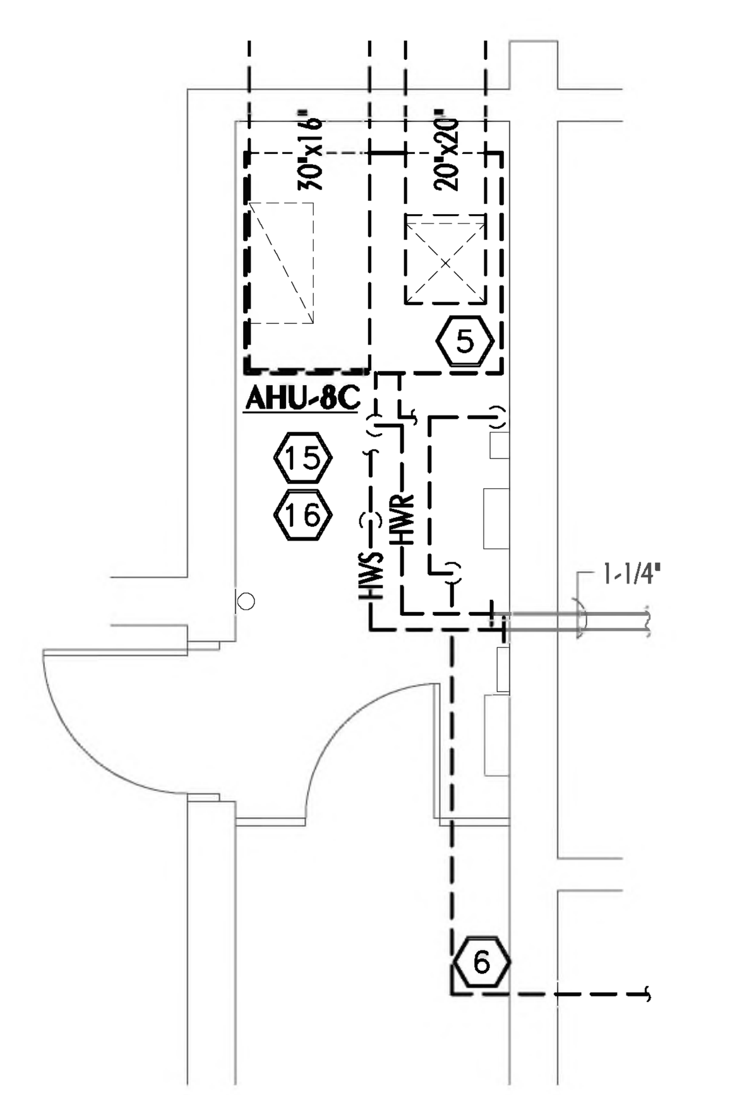


SIZE, QUANTITY, AND LOCATION OF EXISTING EQUIPMENT AND DUCTWORK INDICATED OUTSIDE OF MECHANICAL ROOMS WAS DETERMINED USING ARCHIVED CONSTRUCTION DRAWINGS. THIS INFORMATION IS INCOMPLETE AND MAY NOT ACCURATELY REPRESENT CONDITIONS IN THE FIELD. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE TRUE EXTENT OF DEMOLITION WORK.

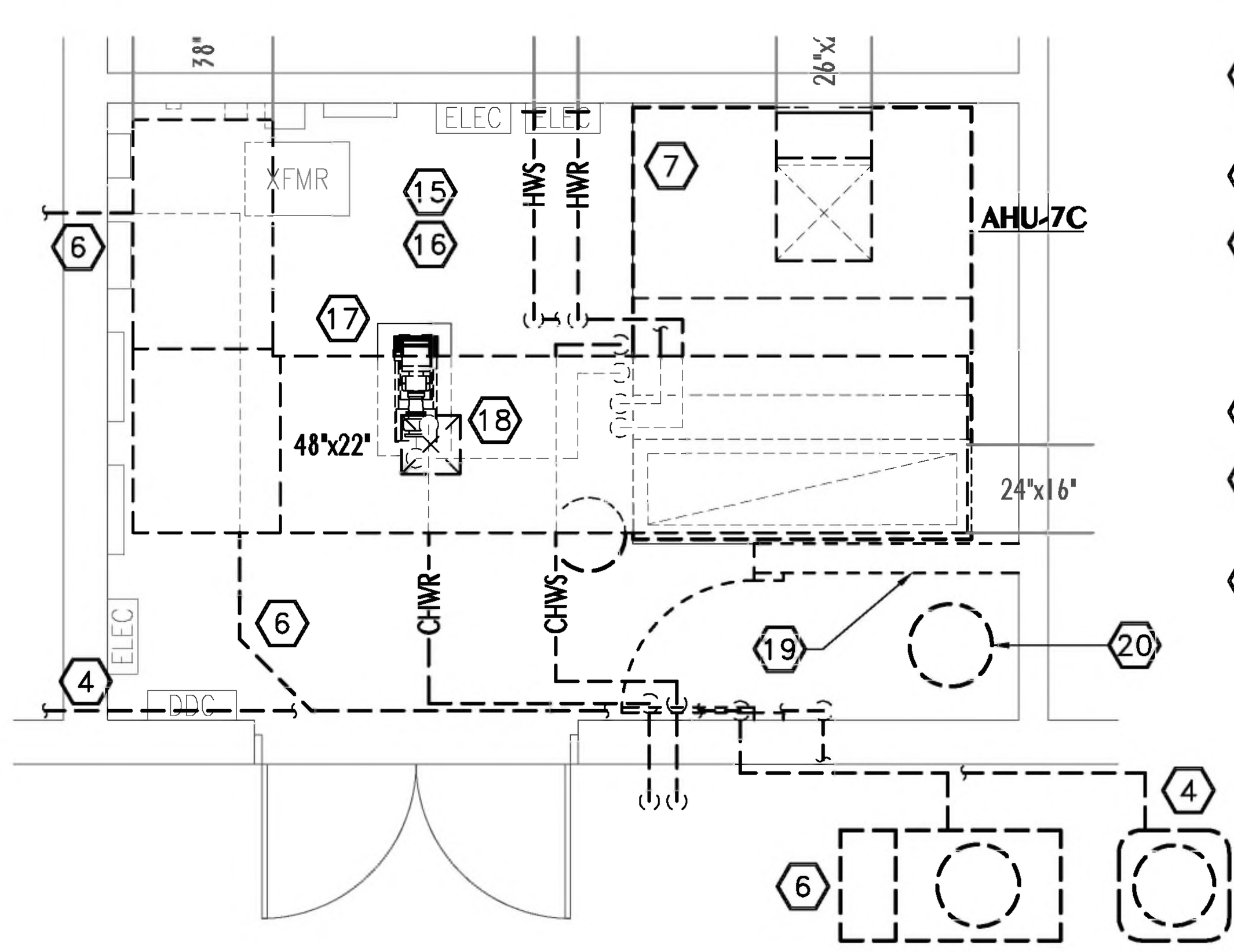
1 / M100 — HVAC DUCTWORK DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



2 / M100 — ENLARGED DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



3 / M100 — ENLARGED DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



4 / M100 — ENLARGED DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

1. REMOVE AND REINSTALL EXISTING CEILING AS REQUIRED TO COMPLETE SCOPE OF WORK.
2. WHERE EXISTING WALL FINISHES ARE DISTURBED, THE CONTRACTOR SHALL PAINT THE EXISTING WALL FROM CORNER TO CORNER TO MATCH THE EXISTING COLOR AND FINISH.
3. PROTECT ALL EXISTING FINISHES DURING CONSTRUCTION. FINISHES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO MATCH EXISTING CONDITIONS.
4. SEAL PENETRATIONS OF EXISTING WALLS NOT TO BE REUSED TO MATCH WALL CONSTRUCTION AND FIRE RATING.

SHEET NOTES

1. REMOVE NOMINAL 7.5 TON DX SPLIT-SYSTEM AIR HANDLER AND ELECTRIC HEATER ALONG WITH ALL ASSOCIATED REFRIGERANT PIPING BETWEEN IT AND TWO ASSOCIATED 3.5 TON OUTDOOR HEAT PUMP UNITS.
2. REMOVE NOMINAL 5 TON DX SPLIT-SYSTEM AIR HANDLER AND ELECTRIC HEATER ALONG WITH ASSOCIATED SUPPLY AND RETURN AIR DUCTWORK IN ATTIC AND REFRIGERANT PIPING BETWEEN IT AND ASSOCIATED OUTDOOR HEAT PUMP UNIT. MAINTAIN ORIGINAL ROOF OPENING AND DUCTWORK BELOW ROOF FOR CONNECTION TO NEW DUCTWORK. REFER TO NEW WORK PLAN.
3. REMOVE TWO NOMINAL 3.5 TON DX SPLIT-SYSTEM OUTDOOR HEAT PUMP UNITS ASSOCIATED WITH NOMINAL 7.5 TON AIR HANDLER. REMOVE ALL ASSOCIATED REFRIGERANT PIPING. REMOVE CONCRETE HOUSEKEEPING PADS AND FENCE.
4. REMOVE NOMINAL 5 TON DX SPLIT-SYSTEM OUTDOOR HEAT PUMP UNIT ASSOCIATED WITH NOMINAL 5 TON AIR HANDLER IN ATTIC. REMOVE ALL ASSOCIATED REFRIGERANT PIPING. REMOVE CONCRETE HOUSEKEEPING PADS AND FENCE.
5. REMOVE BUILT-UP CENTRAL STATION AIR HANDLING UNIT WITH DX COOLING AND HYDRONIC HEATING COILS. REMOVE ALL ASSOCIATED REFRIGERANT PIPING BETWEEN IT AND ASSOCIATED OUTDOOR CONDENSING UNIT. REMOVE ALL HEATING WATER PIPING IN MECHANICAL ROOM. REMOVE ALL ASSOCIATED SUPPLY AND RETURN AIR DUCTWORK IN MECHANICAL ROOM.
6. REMOVE DX SPLIT-SYSTEM OUTDOOR CONDENSING UNIT ASSOCIATED WITH BUILT-UP CENTRAL STATION AIR HANDLING UNIT. REMOVE ALL ASSOCIATED REFRIGERANT PIPING. REMOVE CONCRETE HOUSEKEEPING PADS AND FENCE.
7. REMOVE VARIABLE AIR VOLUME 4-PIPE HYDRONIC AIR HANDLING UNIT COMPLETE WITH ALL ASSOCIATED PIPING, VALVES, DUCTWORK, SENSORS, CONTROLS AND ACCESSORIES. HOUSEKEEPING PAD TO REMAIN.
8. DISCONNECT AND REMOVE AIR TERMINAL UNIT AND HEATER ALONG WITH ASSOCIATED LOW AND MEDIUM PRESSURE DUCTWORK, FITTINGS, AND ACCESSORIES AS NECESSARY FOR NEW WORK.
9. DISCONNECT HEATING WATER PIPING AND REMOVE FAN-POWERED AIR TERMINAL UNIT AND HEATER ALONG WITH ASSOCIATED LOW AND MEDIUM PRESSURE DUCTWORK, FITTINGS, AND ACCESSORIES AS NECESSARY FOR NEW WORK. REMOVE ASSOCIATED RETURN AIR GRILLE AND DUCTWORK.
10. REMOVE AIR TERMINAL UNIT ALONG WITH ASSOCIATED LOW AND MEDIUM PRESSURE DUCTWORK, FITTINGS, AND ACCESSORIES AS NECESSARY FOR NEW WORK.
11. DISCONNECT DUCTWORK AND REMOVE EXHAUST FAN AND ASSOCIATED DUCTWORK, FITTINGS, AND ACCESSORIES BACK TO THE POINT INDICATED.
12. LEAVE OUTSIDE AIR LOUVER AND PLENUM IN PLACE FOR CONNECTION OF NEW DUCT. SEE 'ENLARGED NEW WORK PLAN' ON SHEET M200.
13. REMOVE CEILING AIR DEVICES AND RUNOUT TO MAIN TRUNK AS INDICATED.
14. REMOVE ROOFTOP EXHAUST FAN CONNECTED TO EXISTING RETURN AIR DUCT SYSTEM, ALONG WITH ALL ASSOCIATED DUCTWORK, DAMPERS, CONTROLS AND ACCESSORIES. SEAL EXISTING ROOF CURB WEATHER-TIGHT WITH INSULATED STAINLESS STEEL CURB CAP.
15. REMOVE ALL INDICATED DUCTWORK, DAMPERS, AND ACCESSORIES FROM MECHANICAL ROOM.
16. REMOVE ALL INDICATED PIPING, VALVES, FITTINGS, AND ACCESSORIES FROM MECHANICAL ROOM.
17. REMOVE CHILLED WATER PUMP AND HOUSEKEEPING PAD.
18. EXISTING OUTSIDE AIR INLET THROUGH ROOF TO REMAIN AND BE REUSED. DISCONNECT AND REMOVE 16"x16" DUCTWORK ALONG WITH ALL ASSOCIATED DAMPERS AND ACCESSORIES INSIDE SPACE. SEAL EXISTING ROOF CURB WEATHER-TIGHT WITH INSULATED STAINLESS STEEL CURB CAP.
19. REMOVE CMU WALL AND DOOR.
20. REMOVE GAS FIRED ATMOSPHERIC WATER HEATER, VENT PIPE, NATURAL GAS SUPPLY, HOT, AND COLD WATER PIPING FOR CONNECTION TO NEW.
21. EXISTING DUCT IS OFFSET FOR CLARITY.

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

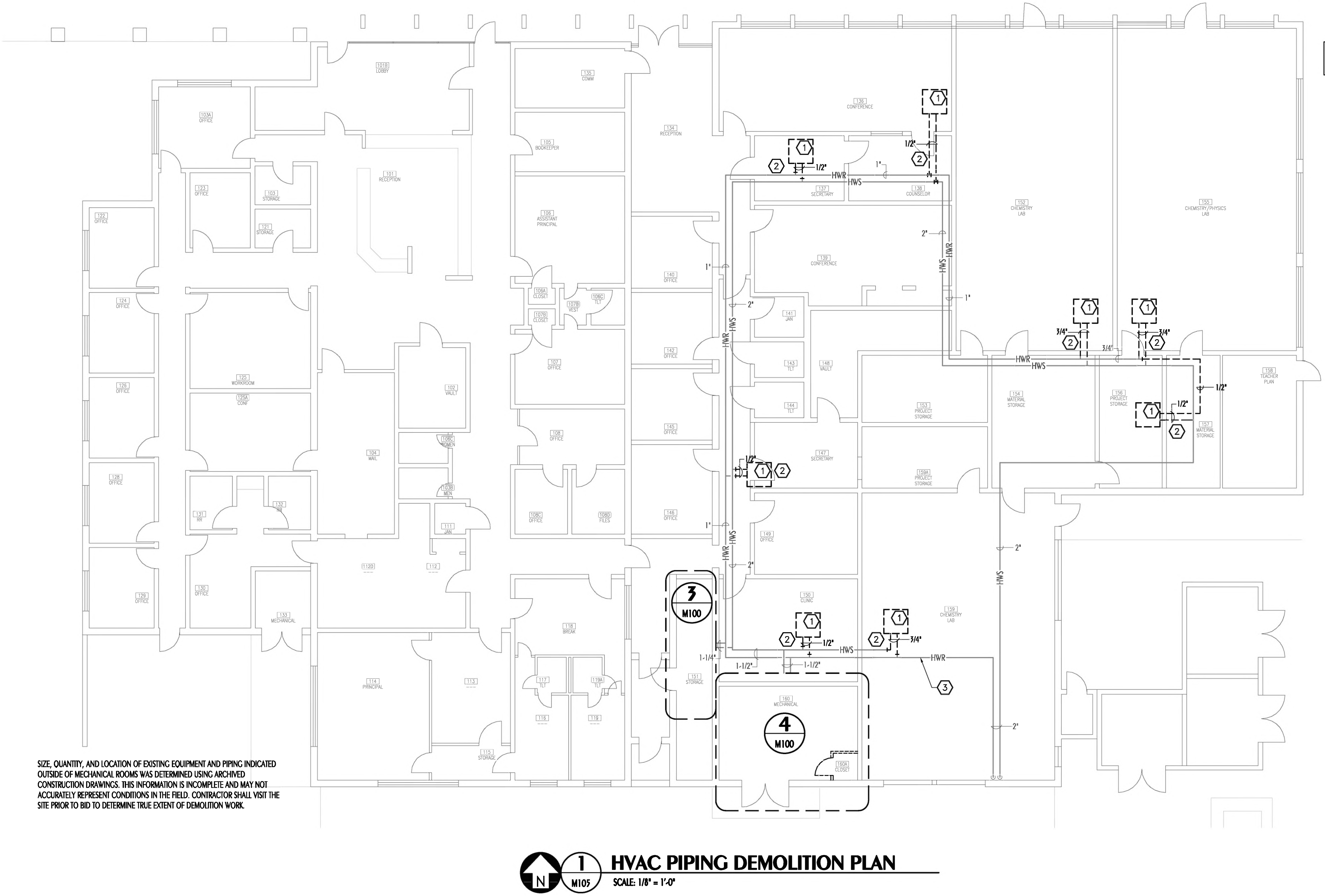
No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT AND DUCTWORK DEMOLITION

M100

2022-101
CONSTRUCTION DOCUMENTS
05-24-2024



SIZE, QUANTITY, AND LOCATION OF EXISTING EQUIPMENT AND PIPING INDICATED OUTSIDE OF MECHANICAL ROOMS WAS DETERMINED USING ARCHIVED CONSTRUCTION DRAWINGS. THIS INFORMATION IS INCOMPLETE AND MAY NOT ACCURATELY REPRESENT CONDITIONS IN THE FIELD. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE TRUE EXTENT OF DEMOLITION WORK.

1 M105 HVAC PIPING DEMOLITION PLAN

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

SHEET NOTES

1. REMOVE HEATING WATER COIL ALONG WITH ALL CONNECTIONS, PIPING, VALVES, FITTINGS, AND ACCESSORIES BACK TO POINT INDICATED.
2. REMOVE HEATING WATER PIPING ALONG ALL VALVES, FITTINGS, ACCESSORIES, AND PIPE HANGERS BACK TO POINT INDICATED.
3. REWORK EXISTING HWR AS NECESSARY TO FOR INSTALLATION OF NEW RETURN AND OUTSIDE AIR DUCTWORK.

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Bay District Schools
RUTHERFORD HIGH SCHOOL
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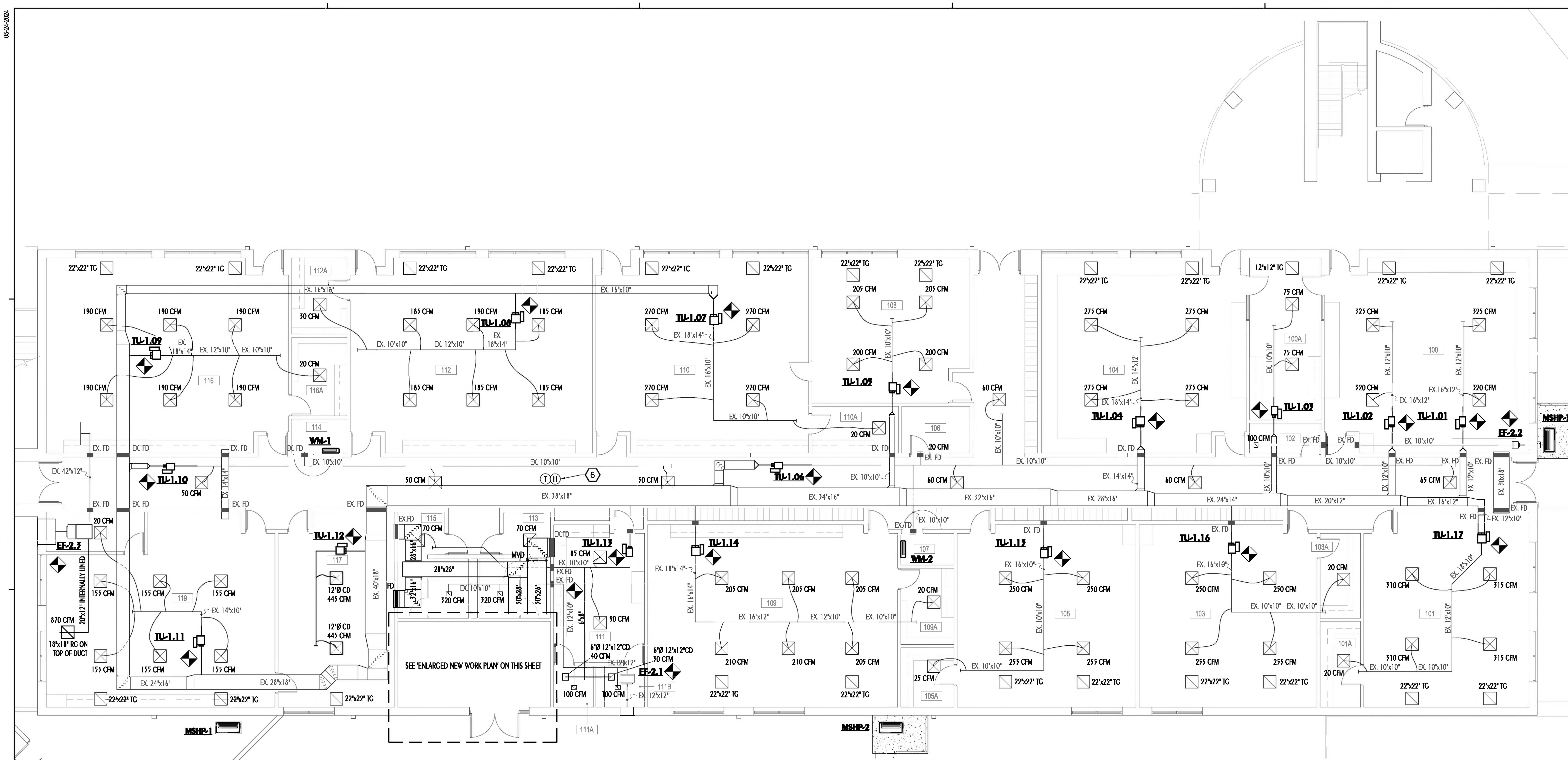
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING DEMOLITION

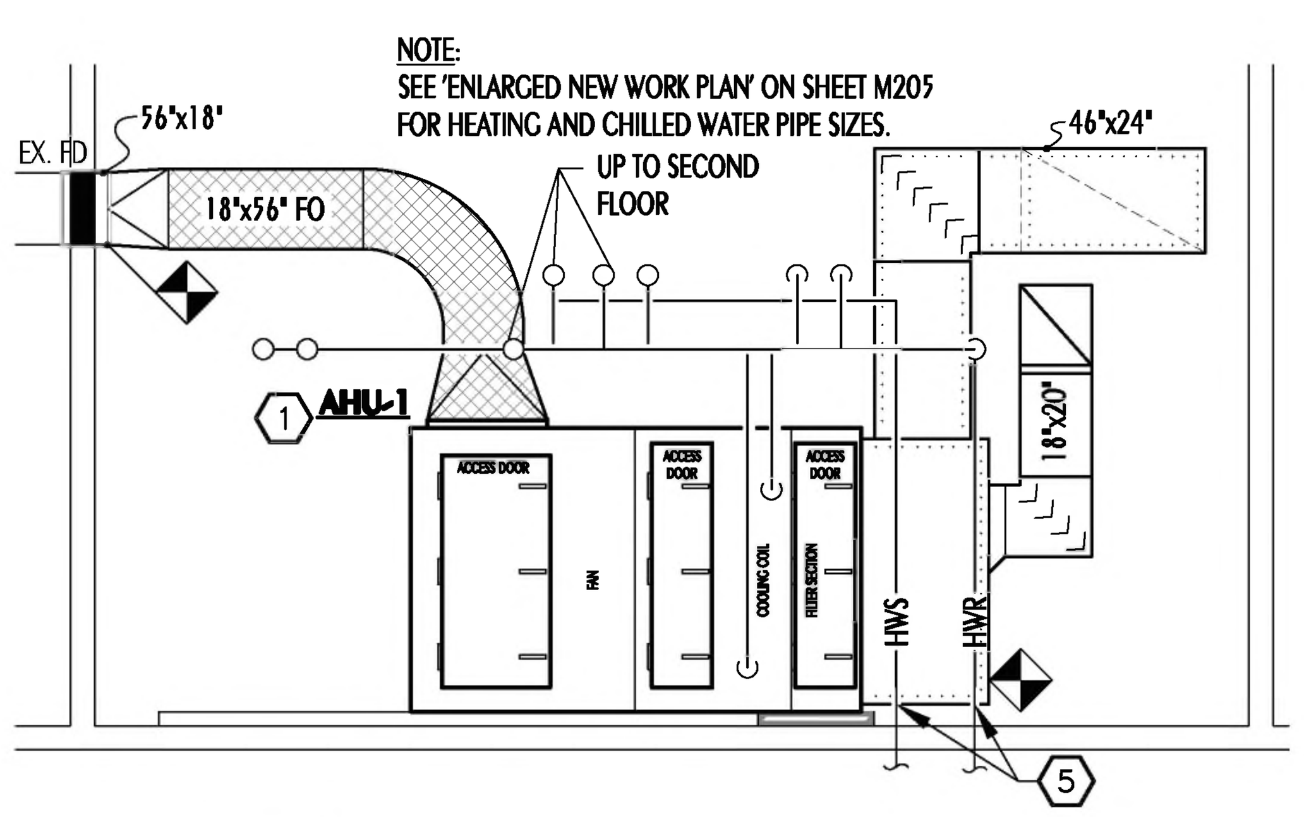
M105



1st FLOOR HVAC NEW WORK PLAN

1 / M200

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



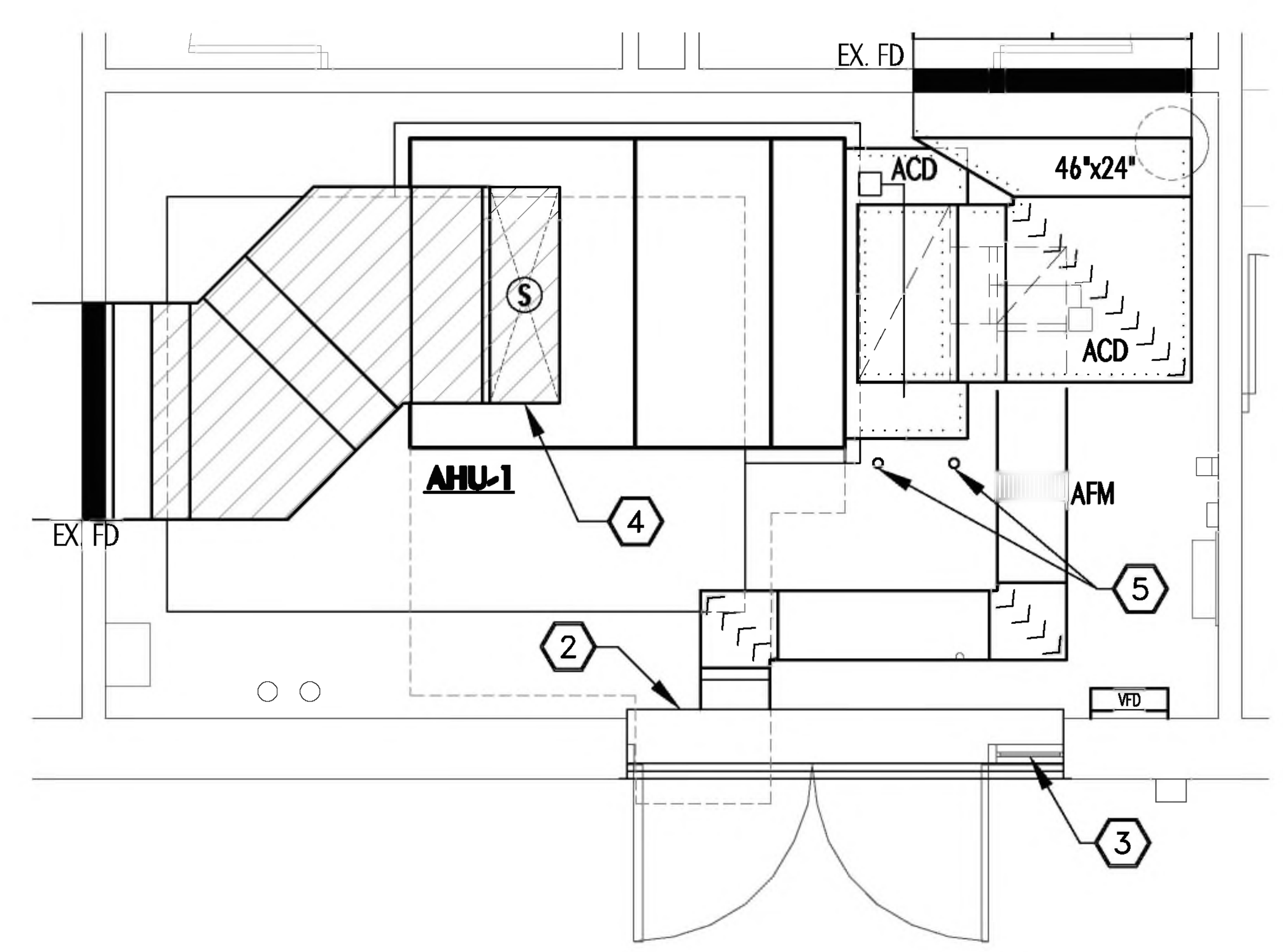
AHU-1 ELEVATION

A / M200

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

SHEET NOTES

1. INSTALL NEW AIR HANDLING UNIT ON EXTENDED HOUSEKEEPING PAD SO THAT CHILLED WATER COIL CAN BE REMOVED THROUGH EXTERIOR DOORS.
2. CONNECT NEW OUTSIDE AIR DUCT TO EXISTING PLENUM. REPAIR BACK OF PLENUM AS NECESSARY AND INSULATE TO MATCH ADJACENT EXISTING.
3. SEAL INTERIOR FACE OF TWO LOUVERS WITH SHEET METAL. CAULK AIRTIGHT. INSULATE INSIDE OF COVER WITH 2" THICK RIGID FOIL-FACE INSULATION. ONE LOUVER IS BESIDE ENTRY DOOR, AND THE OTHER IS OVERHEAD.
4. ROUTE SUPPLY AIR DUCT FULL-SIZE DOWN TO AHU AND TRANSITION SMOOTHLY AT UNIT OPENING. OFFSET AND TRANSITION AS NECESSARY FOR CONNECTION.
5. COORDINATE FINAL LOCATION OF AHU WITH EXISTING HOT WATER PIPE RISERS TO REMAIN.
6. CEILING MOUNTED SENSORS.



ENLARGED NEW WORK PLAN

2 / M200

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

ROOM DESCRIPTIONS

100	CLASSROOM	109A	STORAGE
100A	TEACHER PLANNING/STORAGE	110	CLASSROOM
101	CLASSROOM	110A	STORAGE
101A	STORAGE	111	NURSES OFFICE
102	CUSTODIAL	111A	REST ROOM
103	CLASSROOM	111B	REST ROOM
103A	STORAGE	112	CLASSROOM
104	CLASSROOM	112A	STORAGE
105	CLASSROOM	113	REST ROOM
105A	STORAGE	114	COMMUNICATIONS
106	COMMUNICATIONS/SECURITY	115	REST ROOM
107	COMMUNICATIONS	116	CLASSROOM
108	CLASSROOM	116A	STORAGE
109	CLASSROOM	117	CLASSROOM
		119	CLASSROOM

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

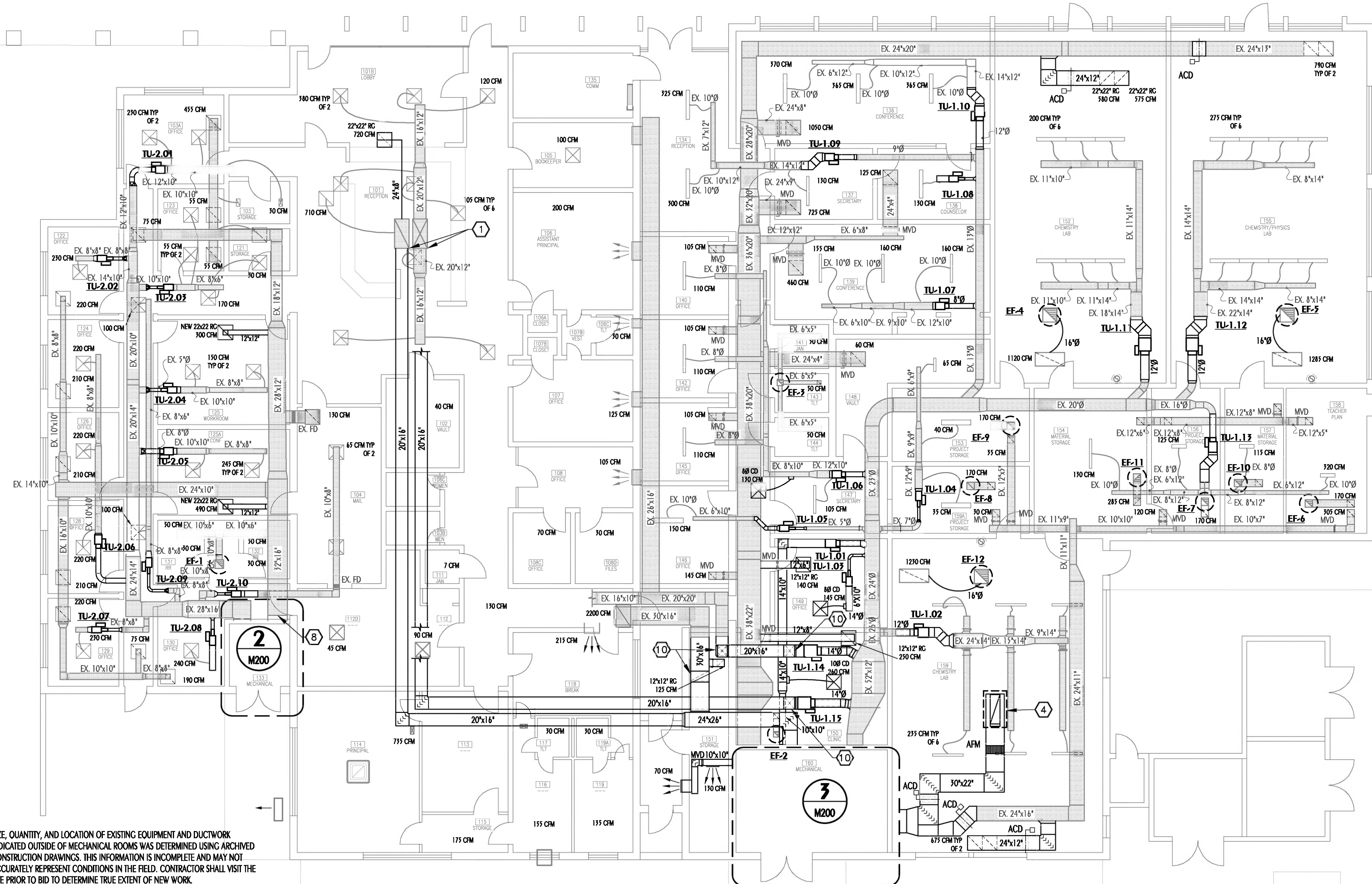
No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT AND DUCTWORK NEW WORK 1st FLOOR

M200

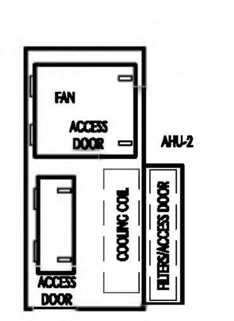
2022-042
CONSTRUCTION DOCUMENTS
05-24-2024



SIZE, QUANTITY, AND LOCATION OF EXISTING EQUIPMENT AND DUCTWORK INDICATED OUTSIDE OF MECHANICAL ROOMS WAS DETERMINED USING ARCHIVED CONSTRUCTION DRAWINGS. THIS INFORMATION IS INCOMPLETE AND MAY NOT ACCURATELY REPRESENT CONDITIONS IN THE FIELD. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE TRUE EXTENT OF NEW WORK.

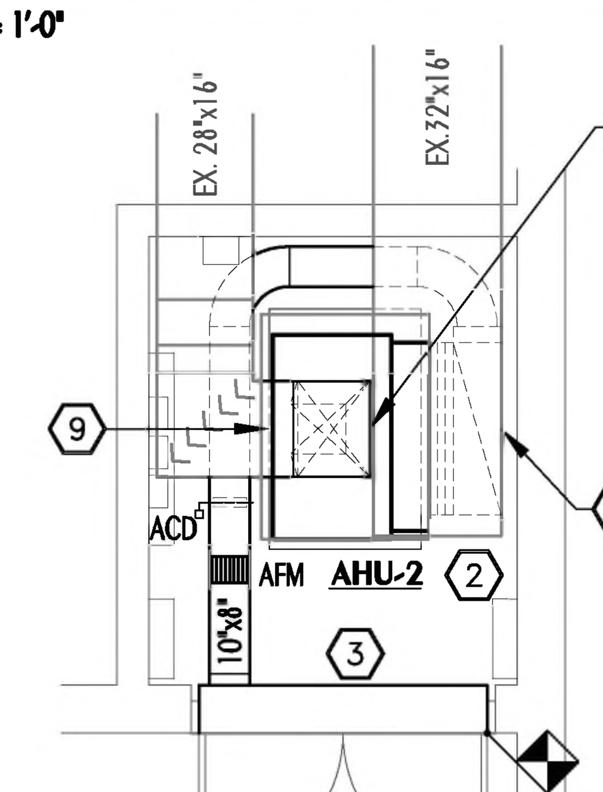
1 M200 HVAC DUCTWORK NEW WORK PLAN

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



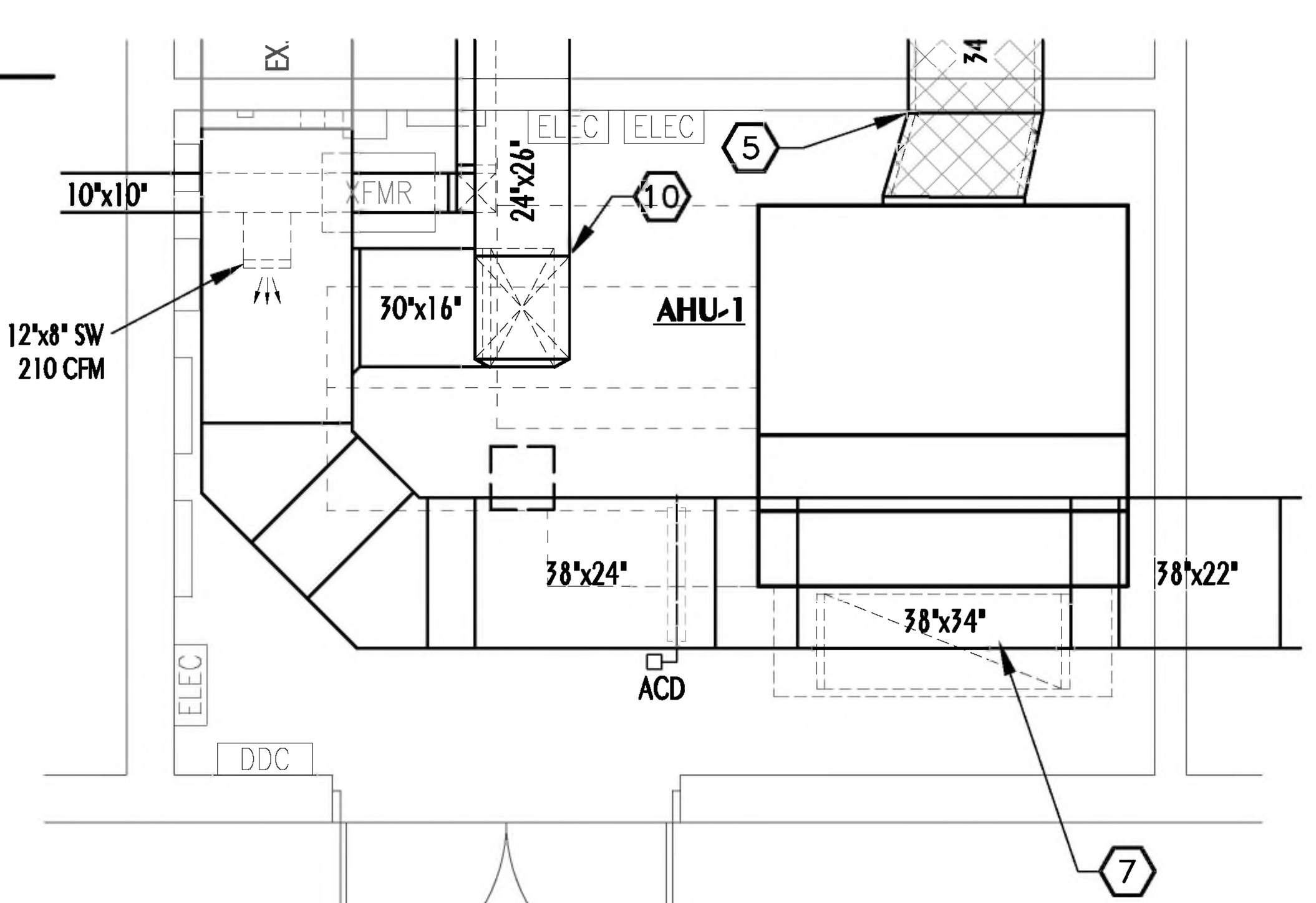
B M200 AHU-2 ELEVATION

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



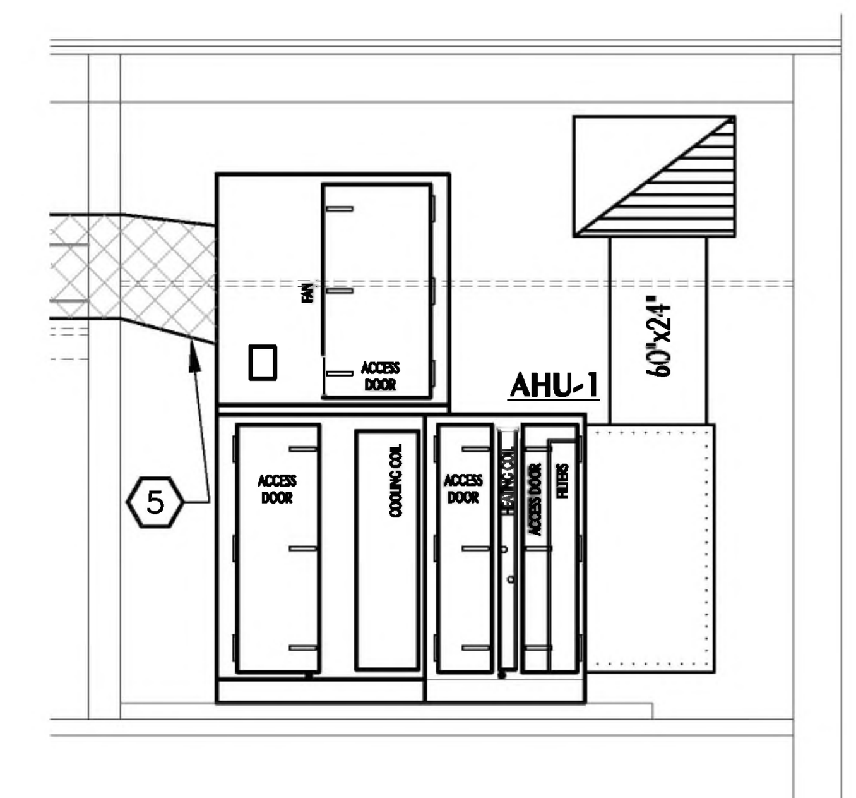
2 M200 ENLARGED NEW WORK PLAN

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



3 M200 ENLARGED NEW WORK PLAN

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



B M200 AHU-1 ELEVATION

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

SHEET NOTES

1. CONNECT SUPPLY AND RETURN FROM AHU-1 TO EXISTING DUCTWORK IN OFFICE RECEPTION.
2. INSTALL NEW AIR HANDLING UNIT ON EXTENDED HOUSEKEEPING PAD SO THAT CHILLED WATER COIL CAN BE REMOVED THROUGH EXTERIOR DOORS.
3. PROVIDE NEW PLENUM SAME SIZE AS EXISTING OUTSIDE AIR LOUVER AND APPROXIMATELY 12" DEEP. CONNECT NEW OA DUCT TO BACK OF PLENUM AS INDICATED.
4. PROVIDE 16"X48" INTAKE HOOD, COOK MODEL GI DUCTED OR EQUAL. PROVIDE CURB AND PANEL BY METAL ROOF MANUFACTURER. REFER TO STRUCTURAL DRAWING S-1 FOR CONCRETE TEE PENETRATIONS.
5. ROUTE SUPPLY AIR DUCT FULL-SIZE TO AHU AND TRANSITION SMOOTHLY AT UNIT OPENING. OFFSET AND TRANSITION AS NECESSARY FOR CONNECTION.
6. ROUTE 43"x12" RETURN AIR DUCT UP TO BOTTOM OF 32"x16" DUCT.
7. ROUTE 60"x24" RETURN AIR DUCT UP TO BOTTOM OF 38"x34" DUCT.
8. EXISTING DUCT IS OFFSET FOR CLARITY.
9. CONCRETE HOUSEKEEPING PAD EXTENSION SAME HEIGHT AS EXISTING (APPROXIMATELY 3-1/2" TALL). NEW PAD EXTENSION SHALL BE 4000 psi, REINFORCED WITH #4 REBAR @ 8" O.C. EACH WAY. PROVIDE 2" COVER OVER REINFORCEMENT. PAD SHALL MATCH EXISTING WIDTH DIMENSION AND BE MINIMUM 3" LARGER THAN AHU ON ALL SIDES.
10. ROUTE DUCT UP THROUGH ORIGINAL BUILDING ROOF AND BELOW RETROFIT METAL ROOF AS SHOWN. REFER TO STRUCTURAL DRAWING S-1 FOR CONCRETE TEE PENETRATIONS.

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CONSTRUCTION DOCUMENTS

Bay District Schools
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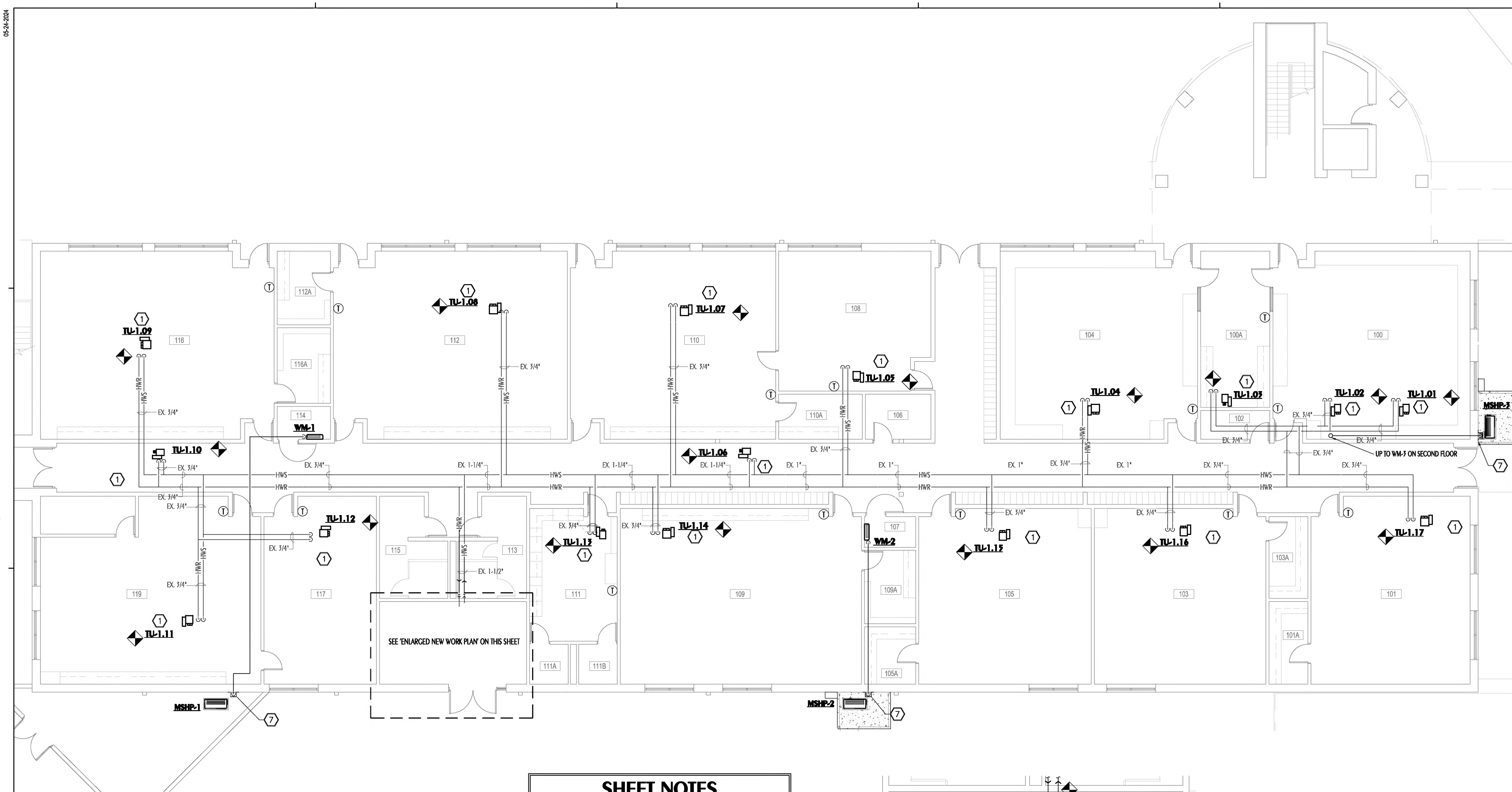
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT AND DUCTWORK NEW WORK

M200

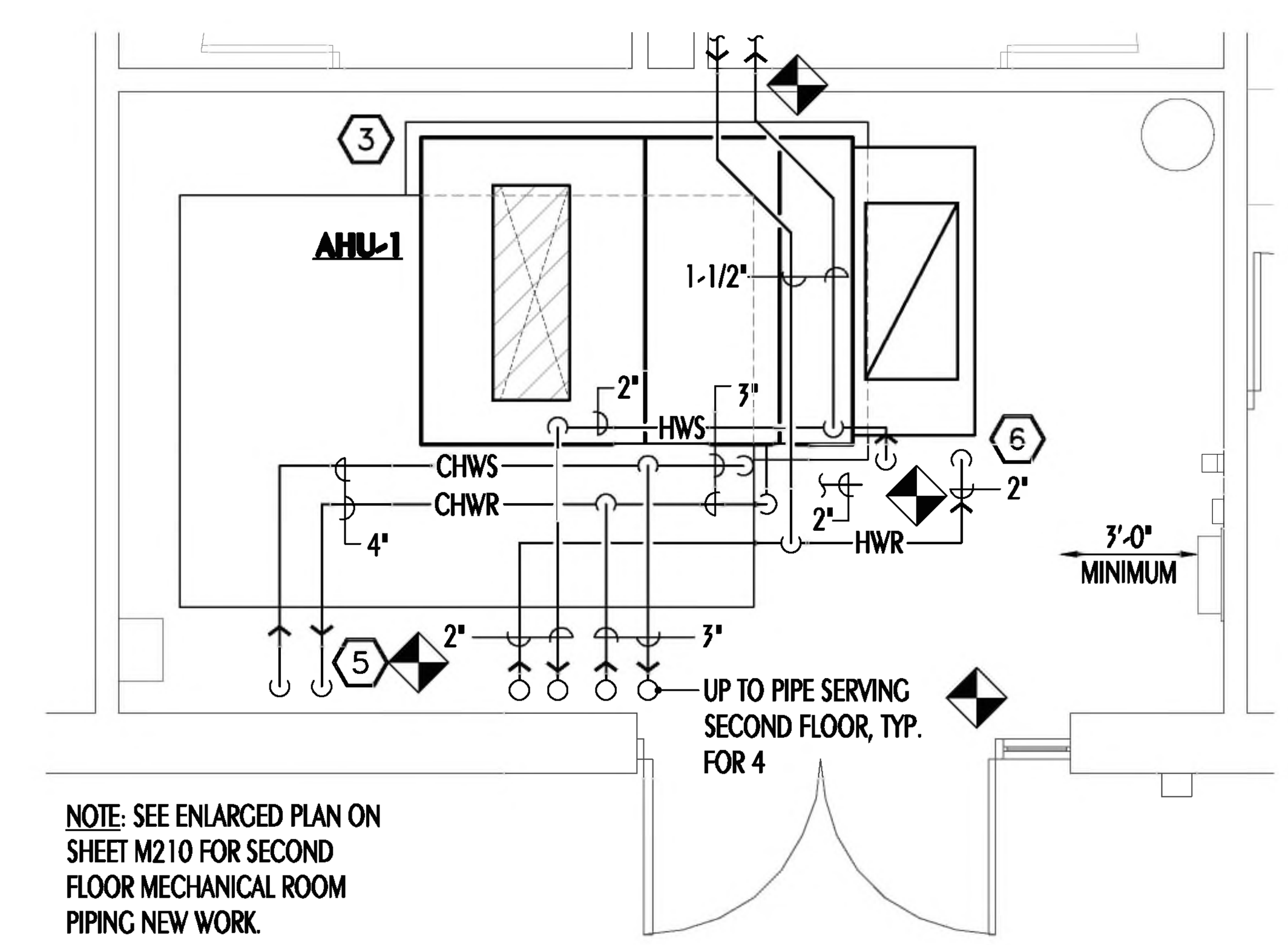


1 1st FLOOR HVAC NEW WORK

M205
SCALE: 1/8" = 1'-0"

SHEET NOTES

1. SEE 'AIR TERMINAL UNIT SCHEDULE' ON SHEET M002 FOR 2 OR 3-WAY CONTROL VALVE DETERMINATION. THEN SEE 'COIL CONNECTION SCHEMATIC, PIPE SIZE 2" AND SMALLER' ON SHEET M300.
2. SEE 'COIL CONNECTION SCHEMATIC, PIPE SIZE LARGER THAN 2" ON SHEET M300.
3. CONCRETE HOUSEKEEPING PAD EXTENSION SAME HEIGHT AS EXISTING (APPROXIMATELY 3-1/2" TALL). NEW PAD EXTENSION SHALL BE 4000 psi, REINFORCED WITH #4 REBAR @ 8" O.C. EACH WAY. PROVIDE 2" COVER OVER REINFORCEMENT. PAD SHALL MATCH EXISTING WIDTH DIMENSION AND BE MINIMUM 3" LARGER THAN AHU ON ALL SIDES.
4. INSTALL NEW HEATING WATER PUMP ON EXISTING CONCRETE HOUSEKEEPING PAD. PROVIDE NEW SUCTION DIFFUSER AND ALL NEW FITTINGS AND ACCESSORIES. SEE 'PUMP INSTALLATION DETAIL' ON SHEET M301.
5. CONNECT NEW 4" CHILLED WATER PIPING TO EXISTING NEAR FLOOR LEVEL.
6. CONNECT NEW 2" HW PIPING TO EXISTING NEAR FLOOR LEVEL.
7. PROVIDE STAINLESS STEEL REFRIGERANT PIPE CHASE FROM GROUND TO PIPE PENETRATION ABOVE CEILING. SEAL AT BOTH ENDS. ROUTE REFRIGERANT LINES AND CONDENSATE DRAIN TOGETHER UNLESS NOTED OTHERWISE. DISPOSE OF CONDENSATE OVER CONCRETE SPLASH BLOCK PER DETAIL 9/M301.



2 ENLARGED NEW WORK PLAN

M205
SCALE: 1/4" = 1'-0"

ROOM DESCRIPTIONS

100	CLASSROOM	109A	STORAGE
100A	TEACHER PLANNING/STORAGE	110	CLASSROOM
101	CLASSROOM	110A	STORAGE
101A	STORAGE	111	NURSES OFFICE
102	CUSTODIAL	111A	REST ROOM
103	CLASSROOM	111B	REST ROOM
103A	STORAGE	112	CLASSROOM
104	CLASSROOM	112A	STORAGE
105	CLASSROOM	113	REST ROOM
105A	STORAGE	114	COMMUNICATIONS
106	COMMUNICATIONS/SECURITY	115	REST ROOM
107	COMMUNICATIONS	116	CLASSROOM
108	CLASSROOM	116A	STORAGE
109	CLASSROOM	117	CLASSROOM
		119	CLASSROOM

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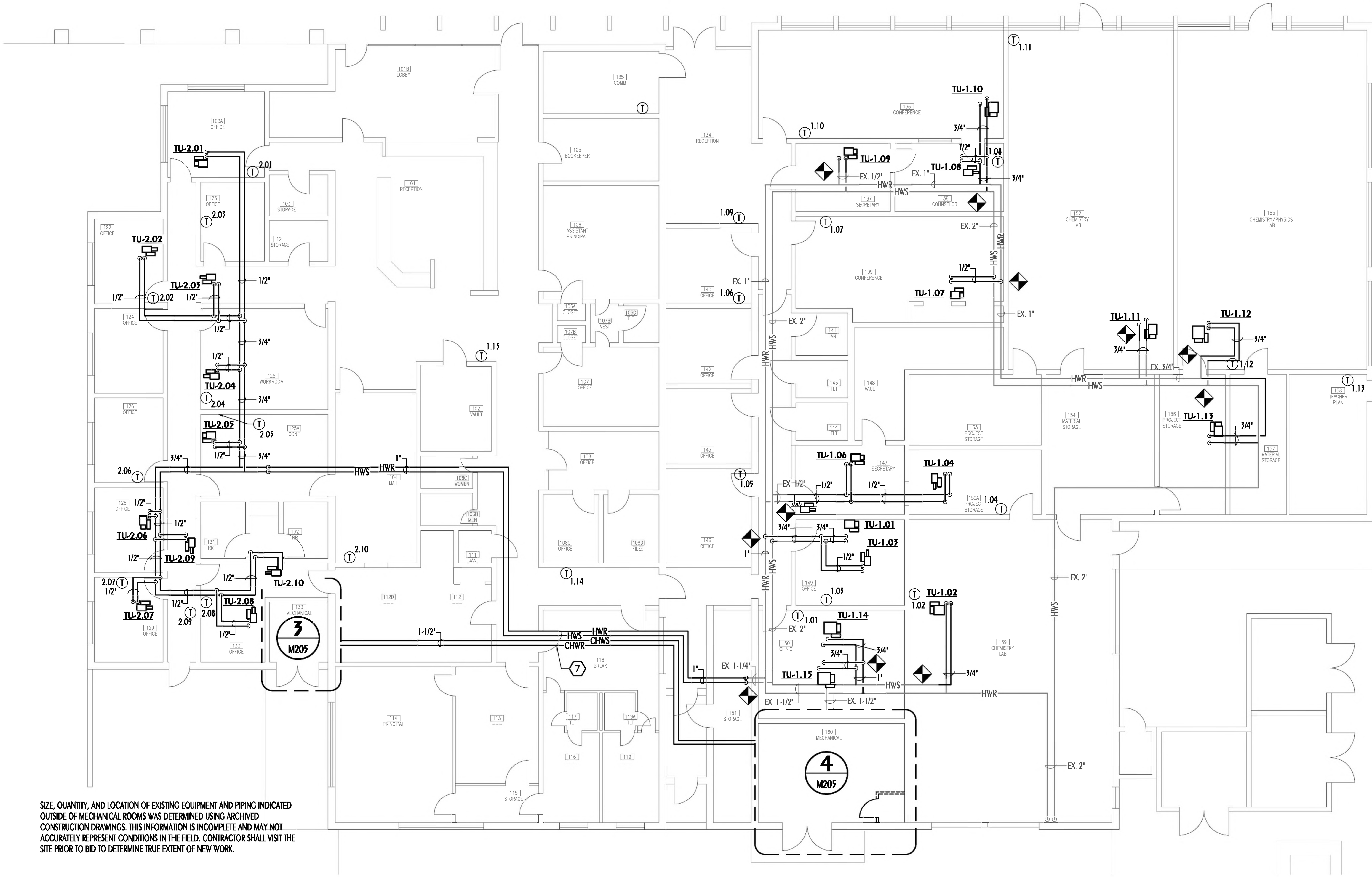
Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

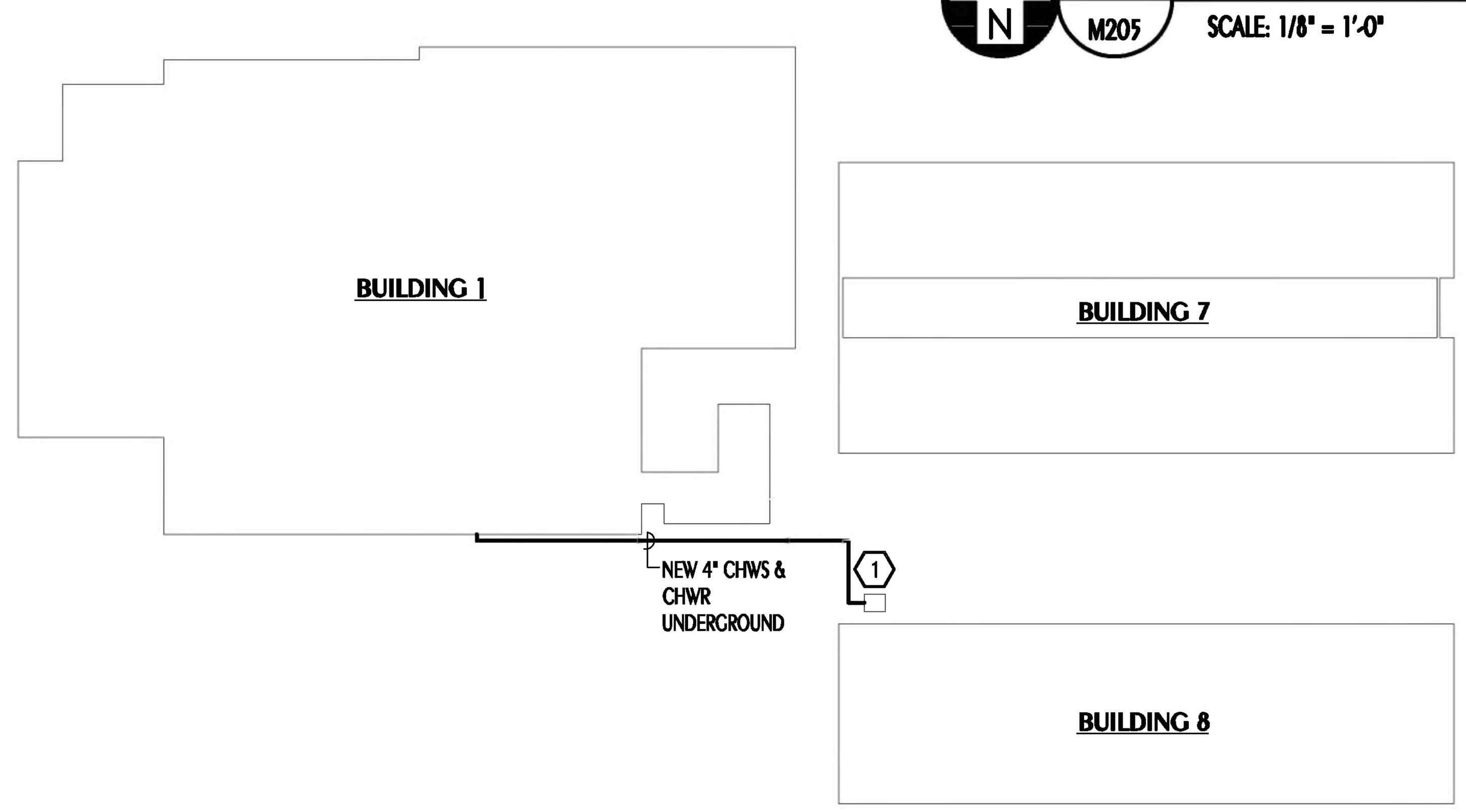
PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING
NEW WORK
1st FLOOR

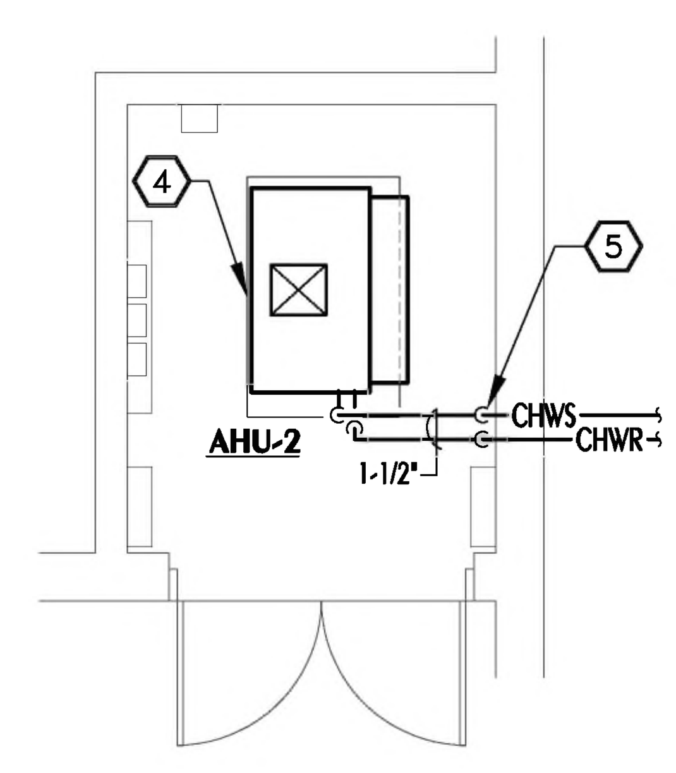


SIZE, QUANTITY, AND LOCATION OF EXISTING EQUIPMENT AND PIPING INDICATED OUTSIDE OF MECHANICAL ROOMS WAS DETERMINED USING ARCHIVED CONSTRUCTION DRAWINGS. THIS INFORMATION IS INCOMPLETE AND MAY NOT ACCURATELY REPRESENT CONDITIONS IN THE FIELD. CONTRACTOR SHALL VISIT THE SITE PRIOR TO BID TO DETERMINE TRUE EXTENT OF NEW WORK.

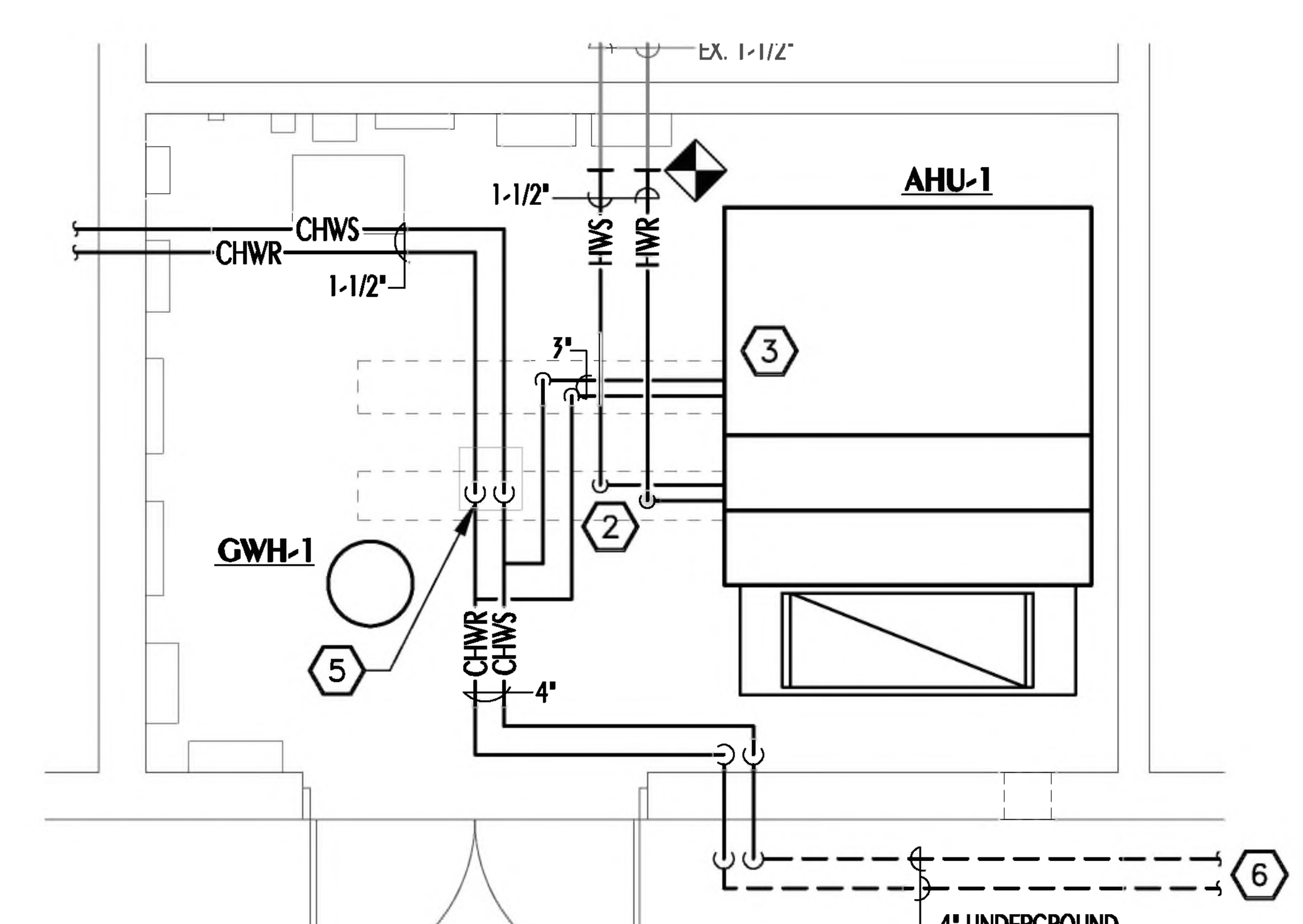
1 HVAC PIPING NEW WORK PLAN
M205
SCALE: 1/8" = 1'-0"



2 HVAC PIPING SITE PLAN
M205
SCALE: 1/32" = 1'-0"



3 ENLARGED NEW WORK PLAN
M205
SCALE: 1/4" = 1'-0"



4 ENLARGED NEW WORK PLAN
M205
SCALE: 1/4" = 1'-0"

SHEET NOTES

1. CONNECT 3" UNDERGROUND CHILLED WATER PIPE TO EXISTING 4" INSIDE VALVE BOX. CONTRACTOR SHALL LOCATE VALVE BOX IN THE FIELD AND VERIFY EXISTING PIPE SIZE AND DIRECTION OF FLOW BEFORE CONNECTION. RESTORE EXISTING LANDSCAPE, SIDEWALK, AND PARKING LOT TO CONDITION EQUAL TO PRIOR CONSTRUCTION.
2. SEE 'COIL CONNECTION SCHEMATIC, PIPE SIZE 2" AND SMALLER" ON SHEET M300.
3. SEE 'COIL CONNECTION SCHEMATIC, PIPE SIZE LARGER THAN 2" ON SHEET M300.
4. CONCRETE HOUSEKEEPING PAD EXTENSION . SEE SHEET M200 FOR DETAILS.
5. RISE NEW PIPING TO ATTIC SPACE. SEAL PENETRATIONS THROUGH CONCRETE DOUBLE TEE CEILING AIR TIGHT.
6. SEE 'HVAC NEW WORK SITE PLAN' ON SHEET 2/M205 FOR CONTINUATION.
7. ROUTE NEW PIPING IN ATTIC.

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1000 School Ave., Panama City, Florida 32401

No.	Description	Date

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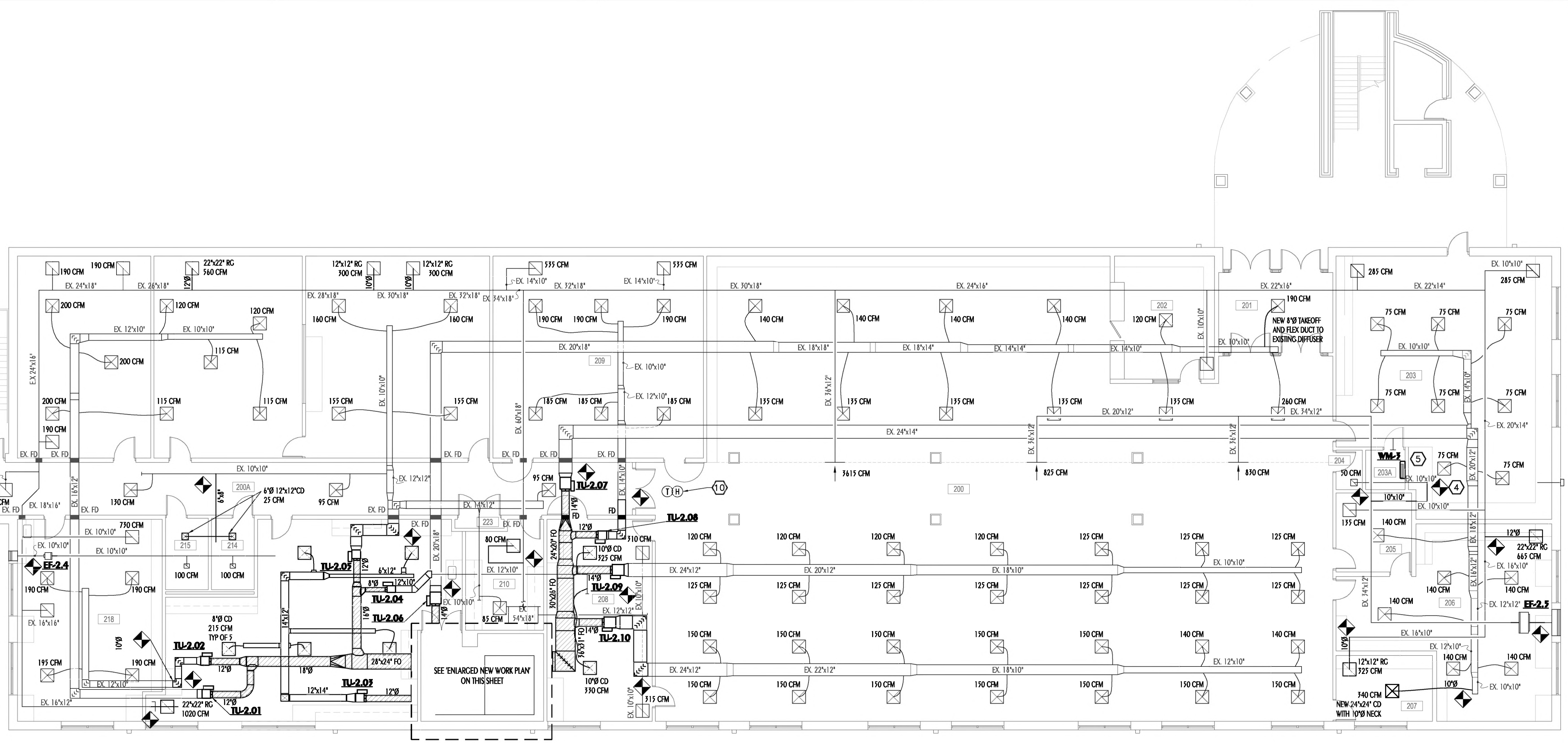
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING NEW WORK

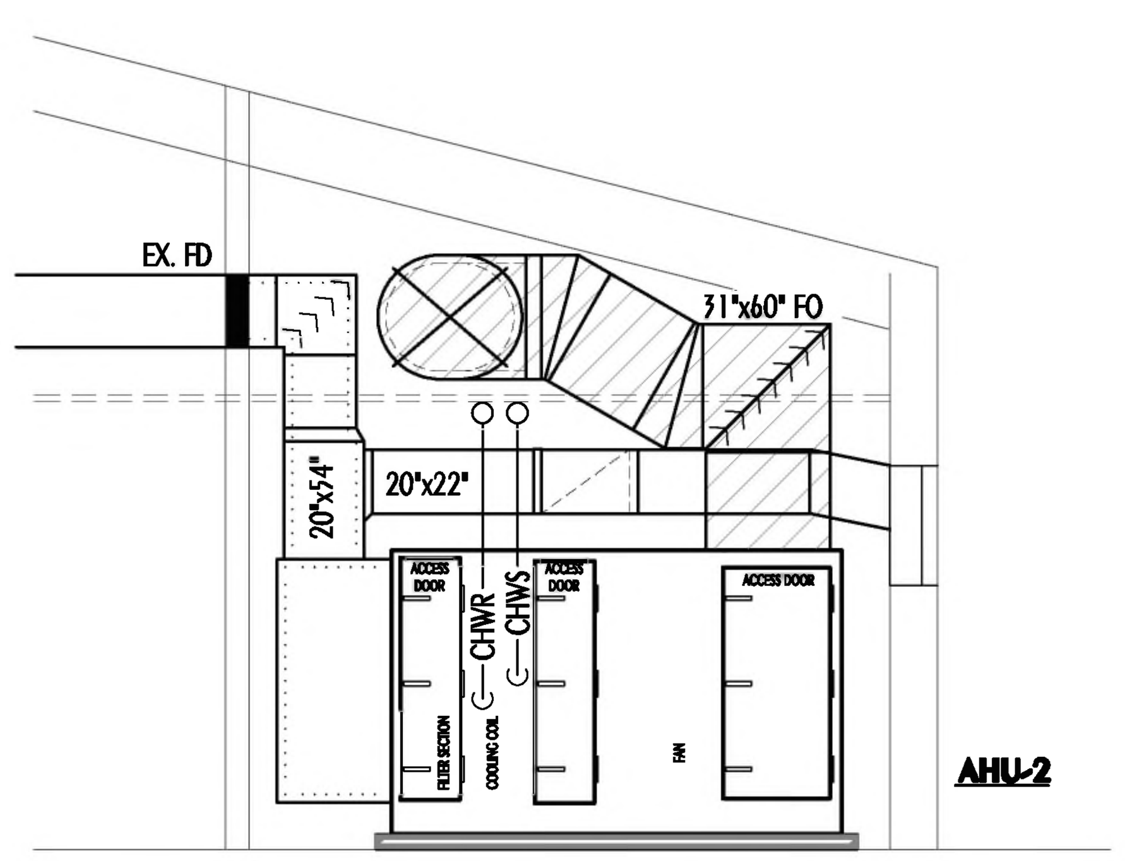
M205



1 2nd FLOOR HVAC NEW WORK

M210

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



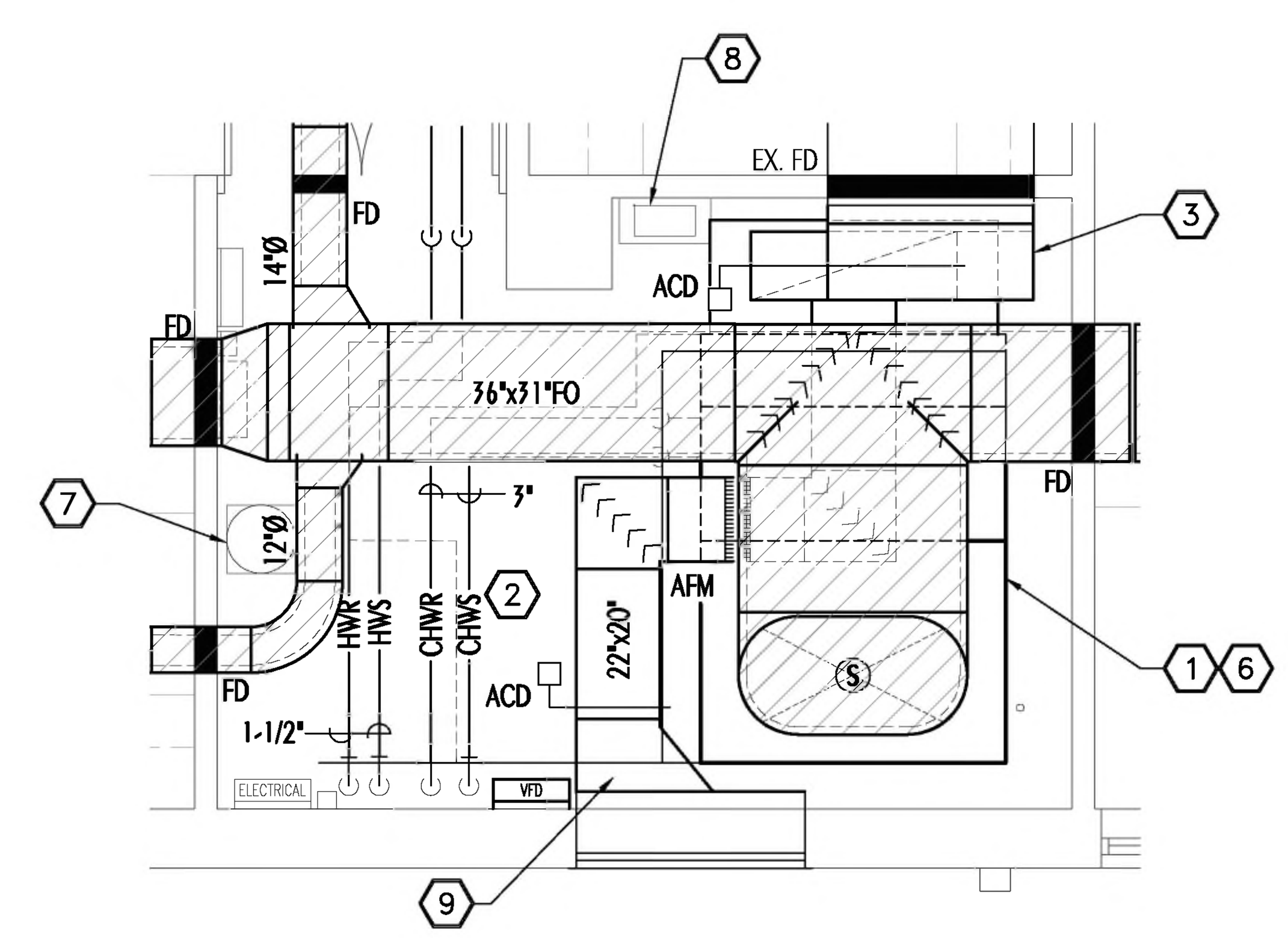
A AHU-2 ELEVATION

M210

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

SHEET NOTES

1. INSTALL NEW AIR HANDLING UNIT ON EXTENDED CONCRETE HOUSEKEEPING PAD. SEE 'EQUIPMENT PAD PLAN' ON THIS SHEET.
2. CONNECT NEW OUTSIDE AIR DUCT TO EXISTING PLENUM AT LOUVER. SMOOTHLY TRANSITION FROM PLENUM DIMENSIONS TO DUCT DIMENSIONS.
3. ROUTE DUCT FULL-SIZE DOWN TO AHU. OFFSET AND TRANSITION AS NECESSARY FOR CONNECTION TO UNIT OPENING.
4. CONNECT 10"x10" EXHAUST DUCT TO EF-2.5 EXHAUST SYSTEM.
5. ROUTE WM-3 CONDENSATE DRAIN TO JANITORS SINK IN 204.
6. CONCRETE HOUSEKEEPING PAD EXTENSION SAME HEIGHT AS EXISTING (APPROXIMATELY 3-1/2" TALL). NEW PAD EXTENSION SHALL BE 4000 psi, REINFORCED WITH #4 REBAR @ 8" O.C. EACH WAY. PROVIDE 2" COVER OVER REINFORCEMENT. PAD SHALL MATCH EXISTING WIDTH DIMENSION AND BE MINIMUM 3" LARGER THAN AHU ON ALL SIDES.
7. RELOCATE ELECTRIC WATER HEATER TO LOCATION SHOWN. CORE DRILL NEW HOLE FOR T/P RELIEF TO MAINTAIN ELECTRICAL PANEL CLEARANCE.
8. RELOCATE ELECTRIC WATER COOLER REMOTE CHILLER TO POINT SHOWN.
9. CORE DRILL NEW HOLE FOR CONDENSATE DRAIN TO MAINTAIN ELECTRICAL PANEL CLEARANCE. RATE CONDENSATE TO FIRST FLOOR MECHANICAL ROOM FLOOR DRAIN.
10. CEILING MOUNTED SENSORS.



2 ENLARGED NEW WORK PLAN

M210

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

ROOM DESCRIPTIONS

200	MEDIA CENTER	209	LARGE GROUP PROJECTS
200A	CORRIDOR	210	DARK ROOM
201	ENTRY VESTIBULE	211	CLASSROOM
202	PERIODICALS	212	CLASSROOM
203	AUDIO VIDEO STORAGE	213A	CLASSROOM
203A	CER	213B	CLASSROOM
204	CUSTODIAN	214	REST ROOM
205	OFFICE	215	REST ROOM
206	MEDIA PRODUCTION	218	WORK ROOM
207	CONFERENCE	223	ELECTRICAL CLOSET
208	SMALL GROUP PROJECTS		

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Bay District Schools
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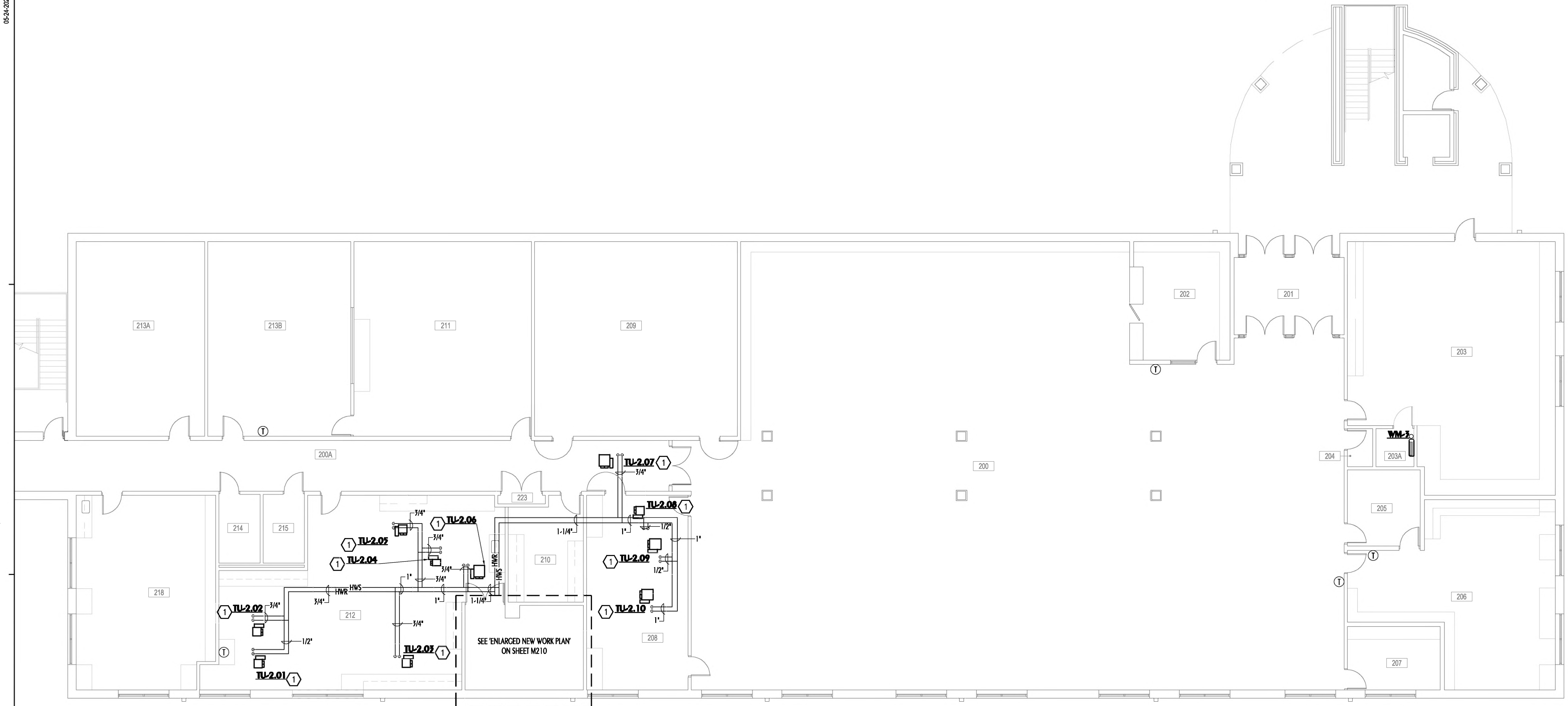
No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT AND DUCTWORK NEW WORK 2nd FLOOR

M210

2022-042
CONSTRUCTION DOCUMENTS
05-24-2024



SHEET NOTES

1. SEE 'AIR TERMINAL UNIT SCHEDULE' ON SHEET M002 FOR 2 OR 3-WAY CONTROL VALVE DETERMINATION. THEN SEE 'COIL CONNECTION SCHEMATIC, PIPE SIZE 2" AND SMALLER' ON SHEET M300.

1 — 2nd FLOOR HVAC NEW WORK (M215)

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

ROOM DESCRIPTIONS

200	MEDIA CENTER
200A	CORRIDOR
201	ENTRY VESTIBULE
202	PERIODICALS
203	AUDIO VIDEO STORAGE
203A	CER
204	CUSTODIAN
205	OFFICE
206	MEDIA PRODUCTION
207	CONFERENCE
208	SMALL GROUP PROJECTS
209	LARGE GROUP PROJECTS
210	DARK ROOM
211	CLASSROOM
212	CLASSROOM
213A	CLASSROOM
213B	CLASSROOM
214	REST ROOM
215	REST ROOM
218	WORK ROOM
223	ELECTRICAL CLOSET

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CONSTRUCTION DOCUMENTS

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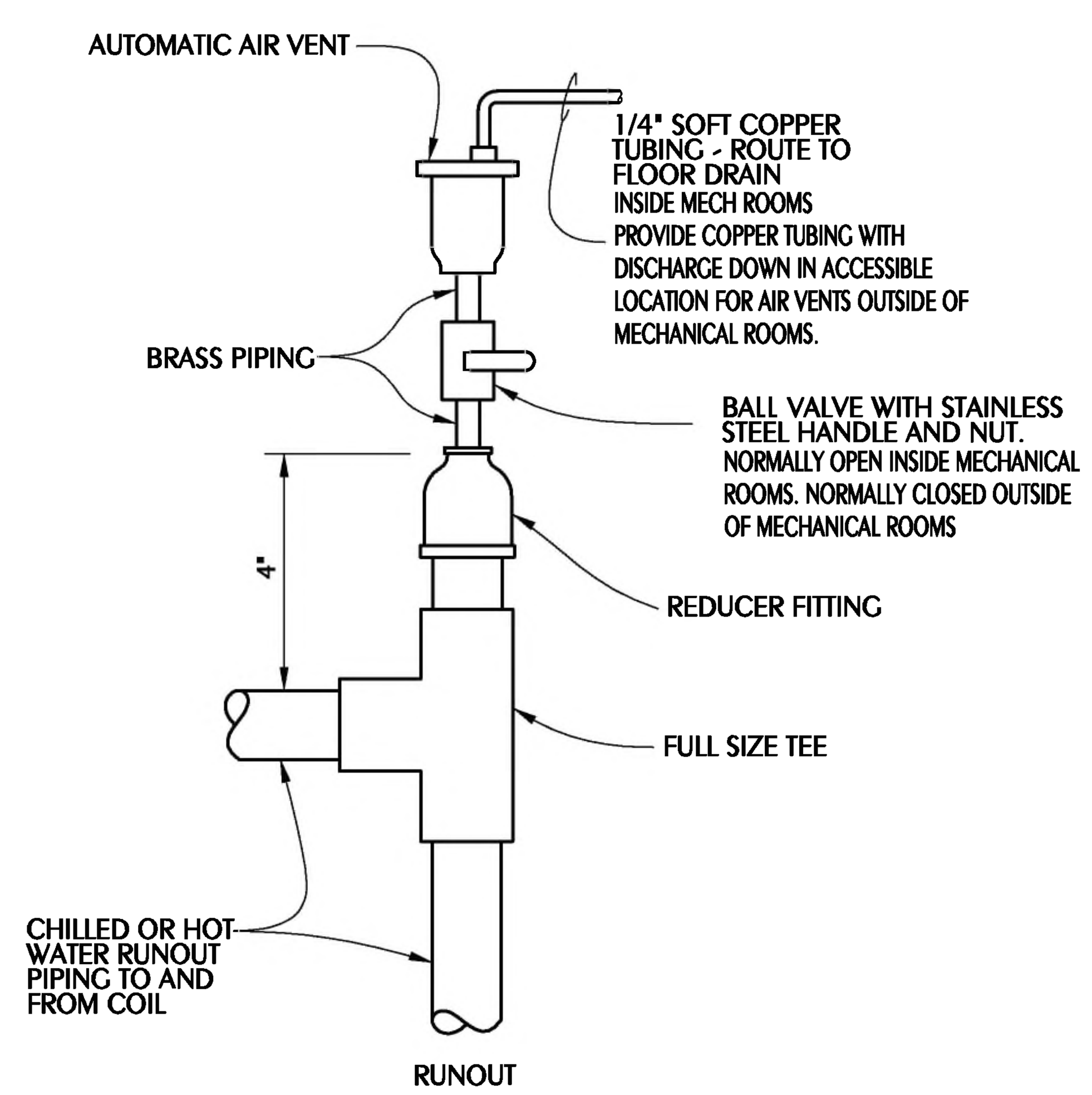
No.	Description	Date

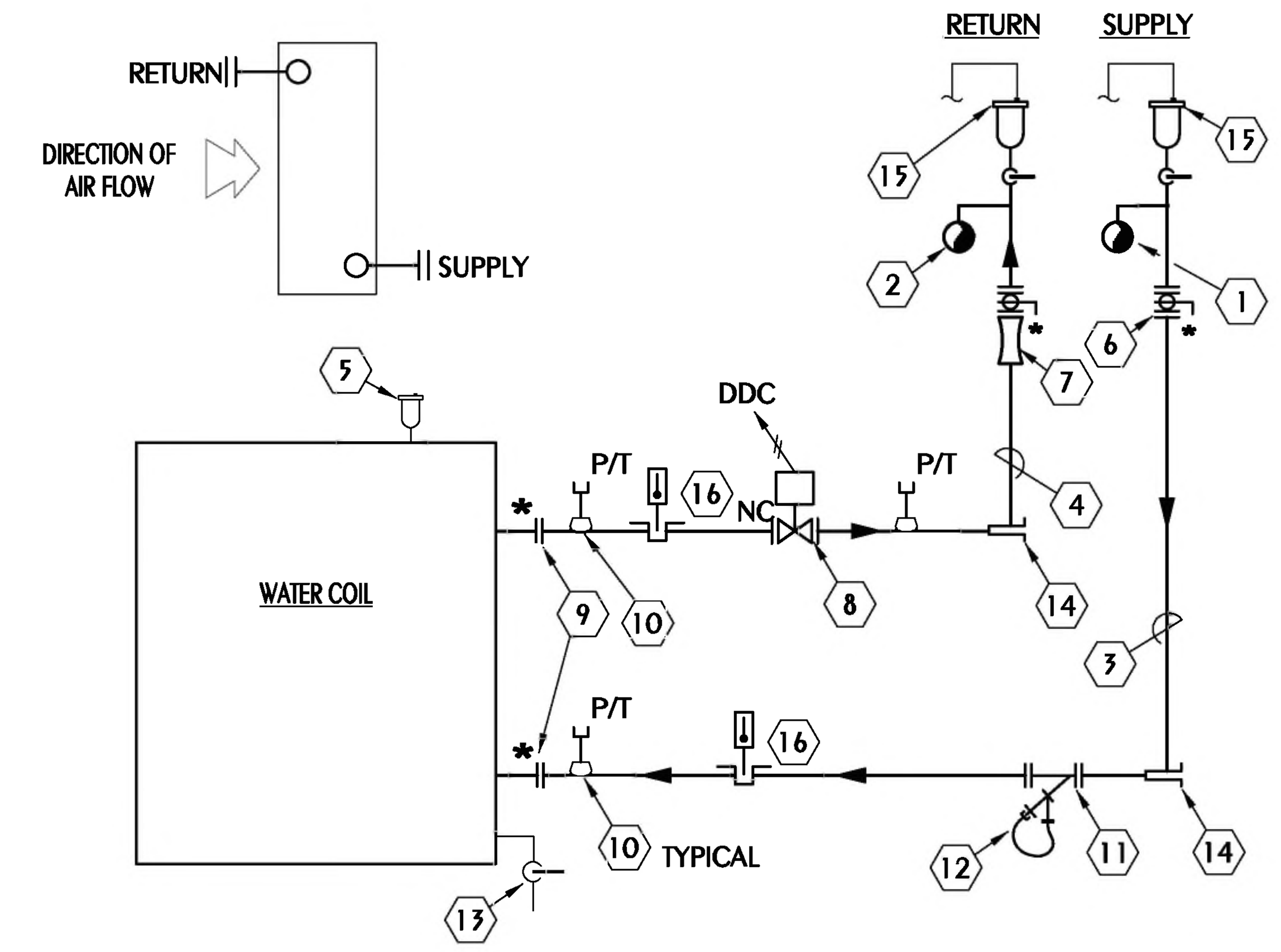
PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING
NEW WORK
2nd FLOOR

M215



1 AUTOMATIC AIR VENT DETAIL
M300
SCALE: NONE



KEY NOTES:

1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BUTTERFLY SERVICE VALVE, FLANGED
7. MANUAL SHUTOFF VENTURI VALVE
8. 2-WAY PRESSURE INDEPENDENT CONTROL VALVE, BRASS CONSTRUCTION.
9. SERVICE FLANGE
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. CAST IRON STRAINER, FLANGED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN, FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR.
15. 3/4" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER

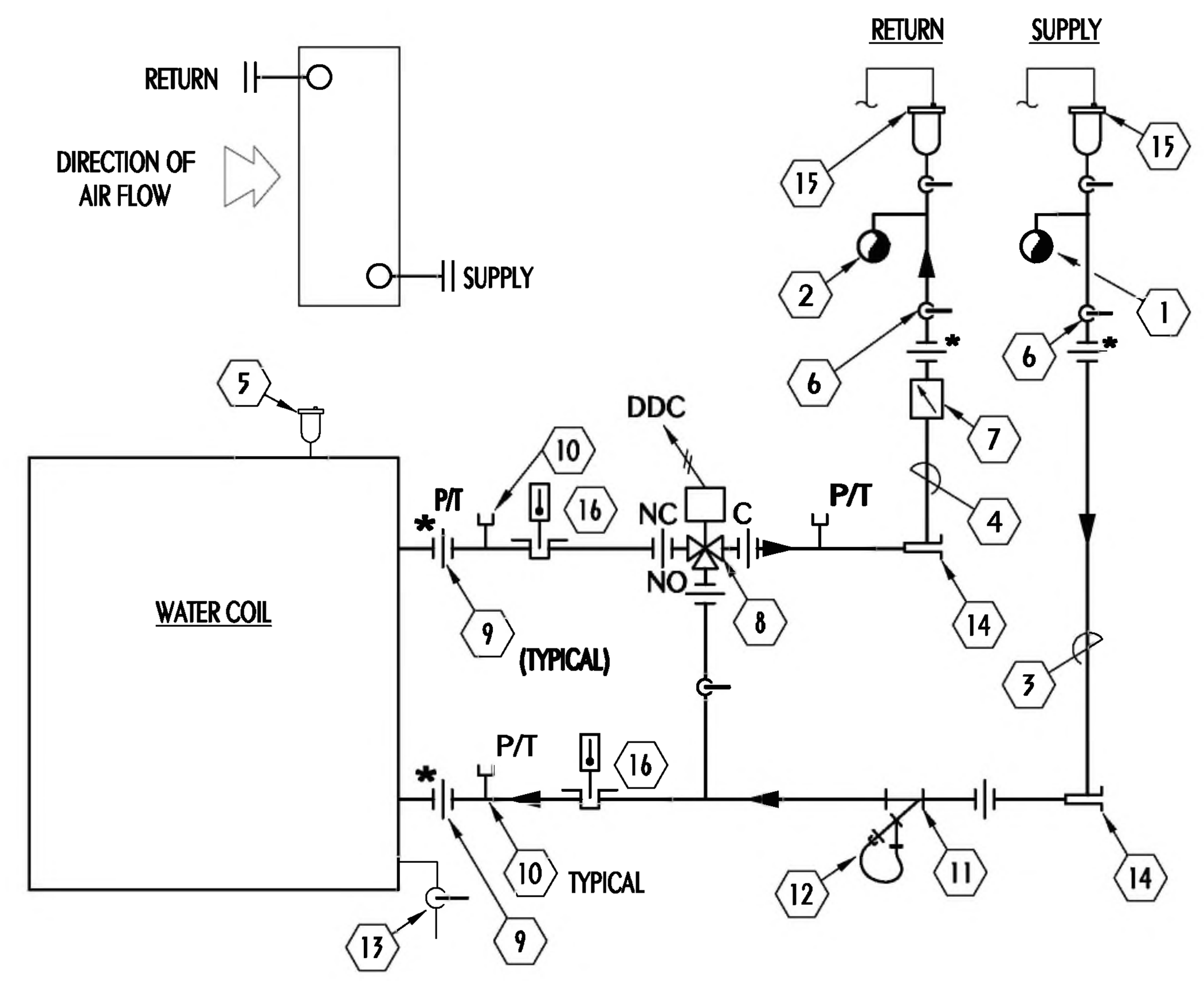
GENERAL NOTES:

1) PROVIDE PRESSURE INDEPENDENT ELECTRIC CONTROL VALVES WITH CONSTANT DIFFERENTIAL PRESSURE FOR 100% VALVE AUTHORITY, OPERATING RANGE 4-60 PSI.

2) INSTALL P/T PORTS IN FORGED STEEL THREDOLETS OR REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.

3) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

2 COIL CONNECTION SCHEMATIC
M300
SCALE: NONE — PIPE SIZE LARGER THAN 2"



KEY NOTES:

1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BALL SERVICE VALVE, SCREWED
7. AUTOMATIC FLOW CONTROL VALVE, SCREWED
8. 3-WAY CONTROL VALVE, BRONZE SCREWED BODY, MIXING PATTERN, LINEAR FLOW PLUG.
9. SERVICE UNION
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. BRONZE STRAINER, SCREWED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR.
15. 1/2" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER (OMIT ON TERMINAL UNITS AND FAN COIL UNITS)

GENERAL NOTES:

1) SUPPLY AND RETURN RUNOUT PIPING FROM TEE AT AUTO AIR VENT TO COIL SHALL BE HARD DRAWN TYPE L COPPER.

2) AUTOMATIC FLOW CONTROL VALVES SHALL BE FLOW DESIGN AUTO FLOW SERIES YR, SCREWED ENDS, Y-PATTERN, LINE SIZE, WITH TWO FACTORY P/T PORTS. RANGE 2-32 PSID.

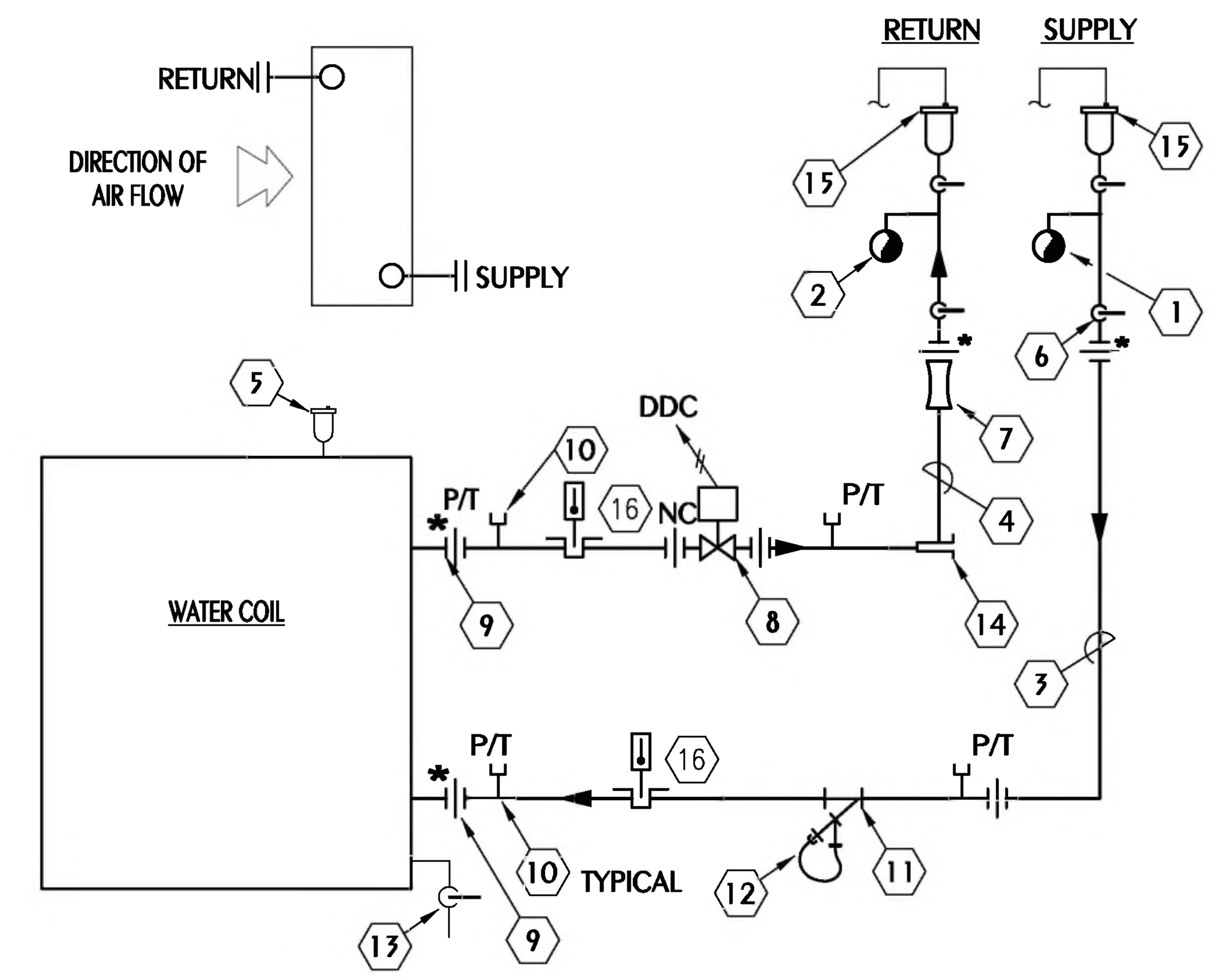
3) INSTALL COIL COMPONENTS IN THE PHYSICAL RELATIONSHIP INDICATED WITH RESPECT TO THE COIL, AND TO EACH OTHER.

4) INSTALL 3-WAY CONTROL VALVE WITH ACTUATOR IN VERTICAL POSITION.

5) INSTALL P/T PORTS IN REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.

6) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

3 COIL CONNECTION SCHEMATIC
M300
SCALE: NONE — PIPE SIZE 2" AND SMALLER - THREE WAY CONTROL VALVE



KEY NOTES:

1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BALL SERVICE VALVE, SCREWED
7. MANUAL SHUTOFF VENTURI VALVE
8. 2-WAY PRESSURE INDEPENDENT CONTROL VALVE, BRONZE SCREWED BODY.
9. SERVICE UNION
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. BRONZE STRAINER, SCREWED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR. (OMIT ON FAN COIL UNITS).
15. 1/2" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER (OMIT ON TERMINAL UNITS AND FAN COIL UNITS)

GENERAL NOTES:

1) SUPPLY AND RETURN RUNOUT PIPING FROM TEE AT AUTO AIR VENT TO COIL SHALL BE SCREWED SCHEDULE 40 STEEL OR HARD DRAWN COPPER.

2) PROVIDE PRESSURE INDEPENDENT ELECTRIC CONTROL VALVES WITH CONSTANT DIFFERENTIAL PRESSURE FOR 100% VALVE AUTHORITY, OPERATING RANGE 4-60 PSI.

3) INSTALL COIL COMPONENTS IN THE PHYSICAL RELATIONSHIP INDICATED WITH RESPECT TO THE COIL, AND TO EACH OTHER.

4) INSTALL 2-WAY CONTROL VALVE WITH ACTUATOR IN VERTICAL POSITION.

5) INSTALL P/T PORTS IN REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.

6) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

4 COIL CONNECTION SCHEMATIC
M300
SCALE: NONE — PIPE SIZE 2" AND SMALLER

WATFORD ENGINEERING
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850.526.3447 www.watford-engineering.com
Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

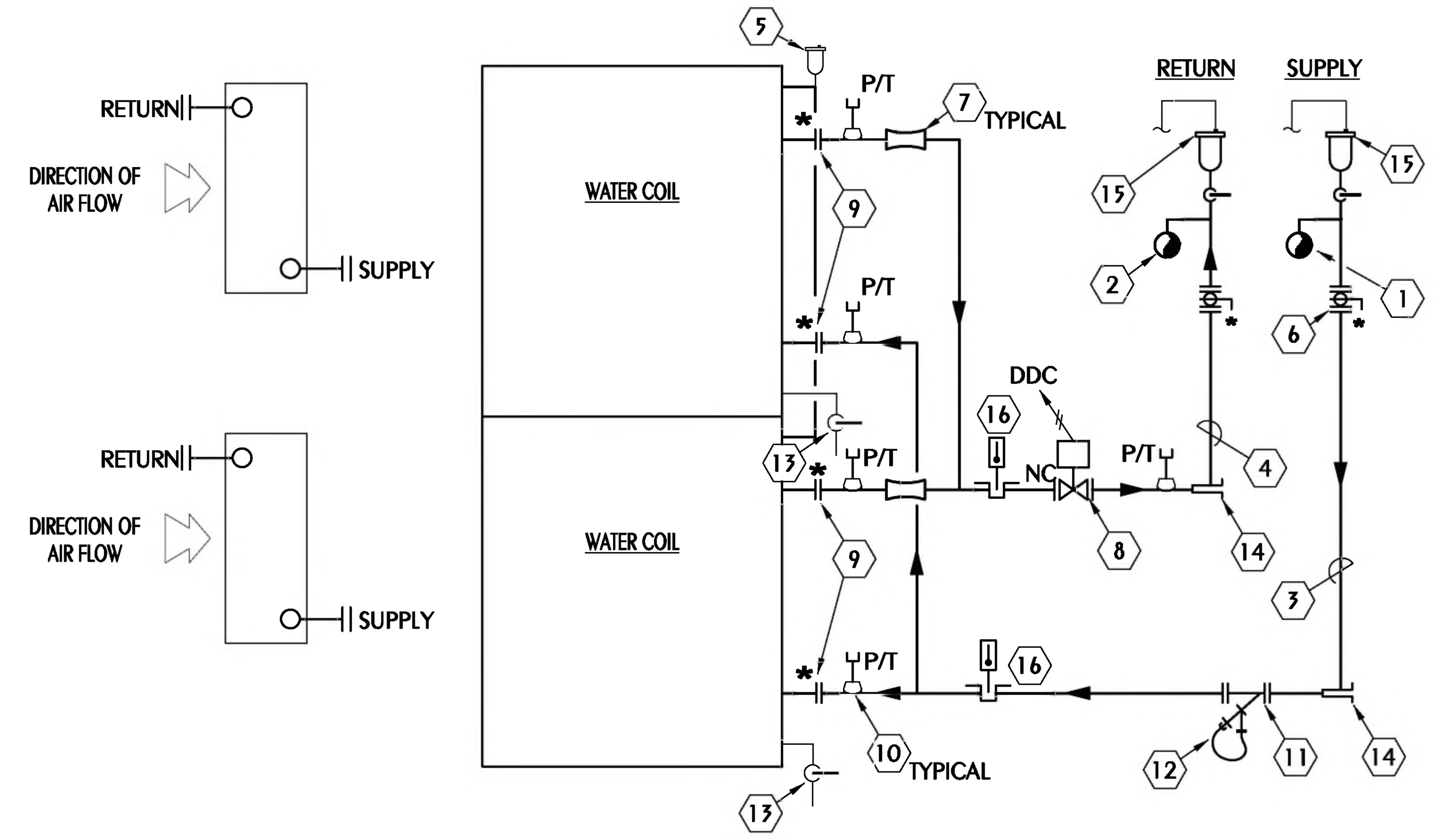
Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-101
DATE: 05-24-2024
DRAWN BY: SLD
DESIGNED BY: S. Day

HVAC COIL CONNECTION DETAILS

2022-042
CONSTRUCTION DOCUMENTS
05-24-2024



KEY NOTES:

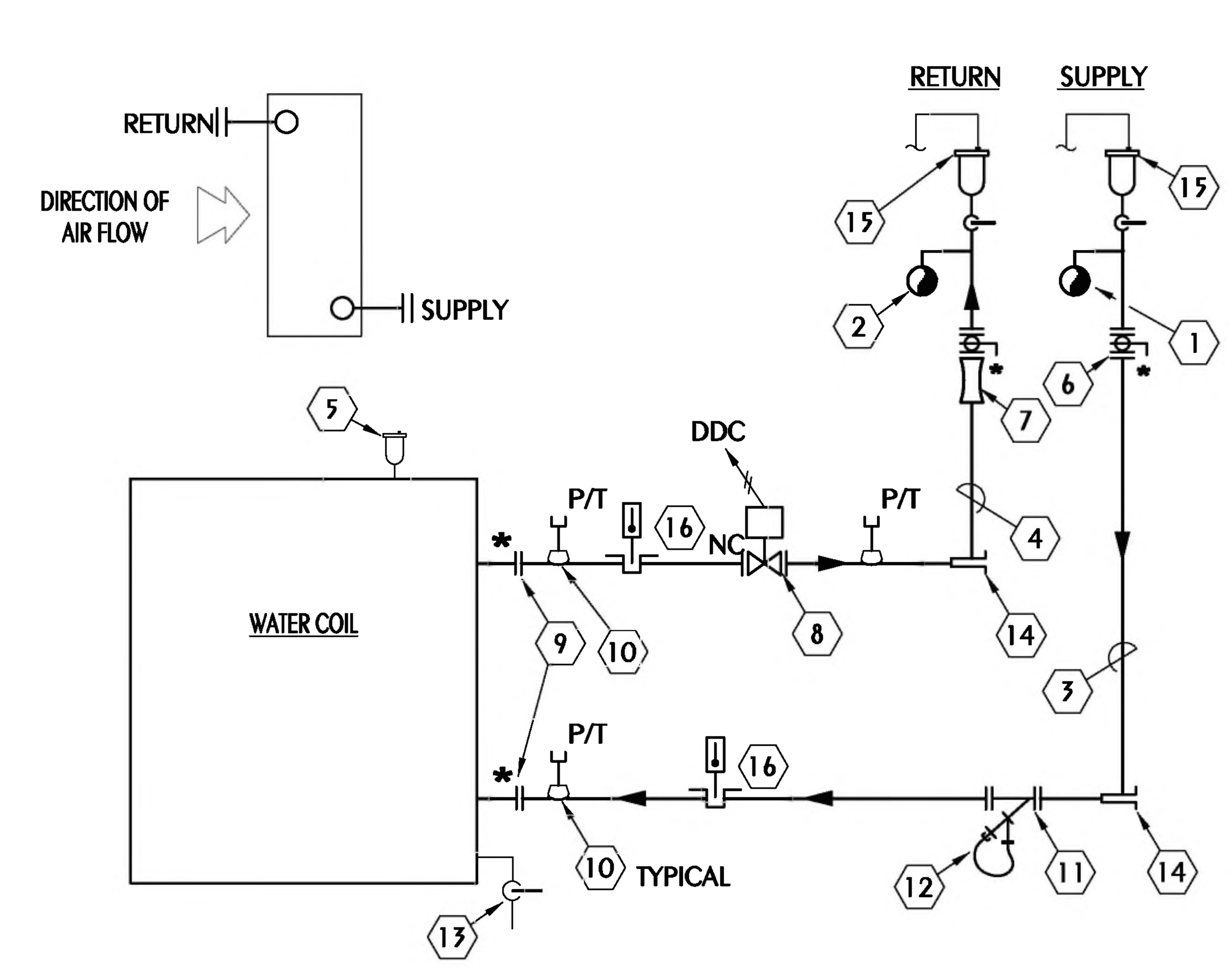
1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BUTTERFLY SERVICE VALVE, FLANGED
7. MANUAL SHUTOFF VENTURI VALVE
8. 2-WAY PRESSURE INDEPENDENT CONTROL VALVE, BRASS CONSTRUCTION.
9. SERVICE FLANGE
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. CAST IRON STRAINER, FLANGED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN, FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR.
15. 3/4" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER

GENERAL NOTES:

1) PROVIDE PRESSURE INDEPENDENT ELECTRIC CONTROL VALVES WITH CONSTANT DIFFERENTIAL PRESSURE FOR 100% VALVE AUTHORITY, OPERATING RANGE 4-60 PSI.
2) INSTALL P/T PORTS IN FORCED STEEL THREDOLETS OR REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.
3) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

1 / M300 COIL CONNECTION SCHEMATIC

SCALE: NONE — PIPE SIZE LARGER THAN 2" STACKED COILS



KEY NOTES:

1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
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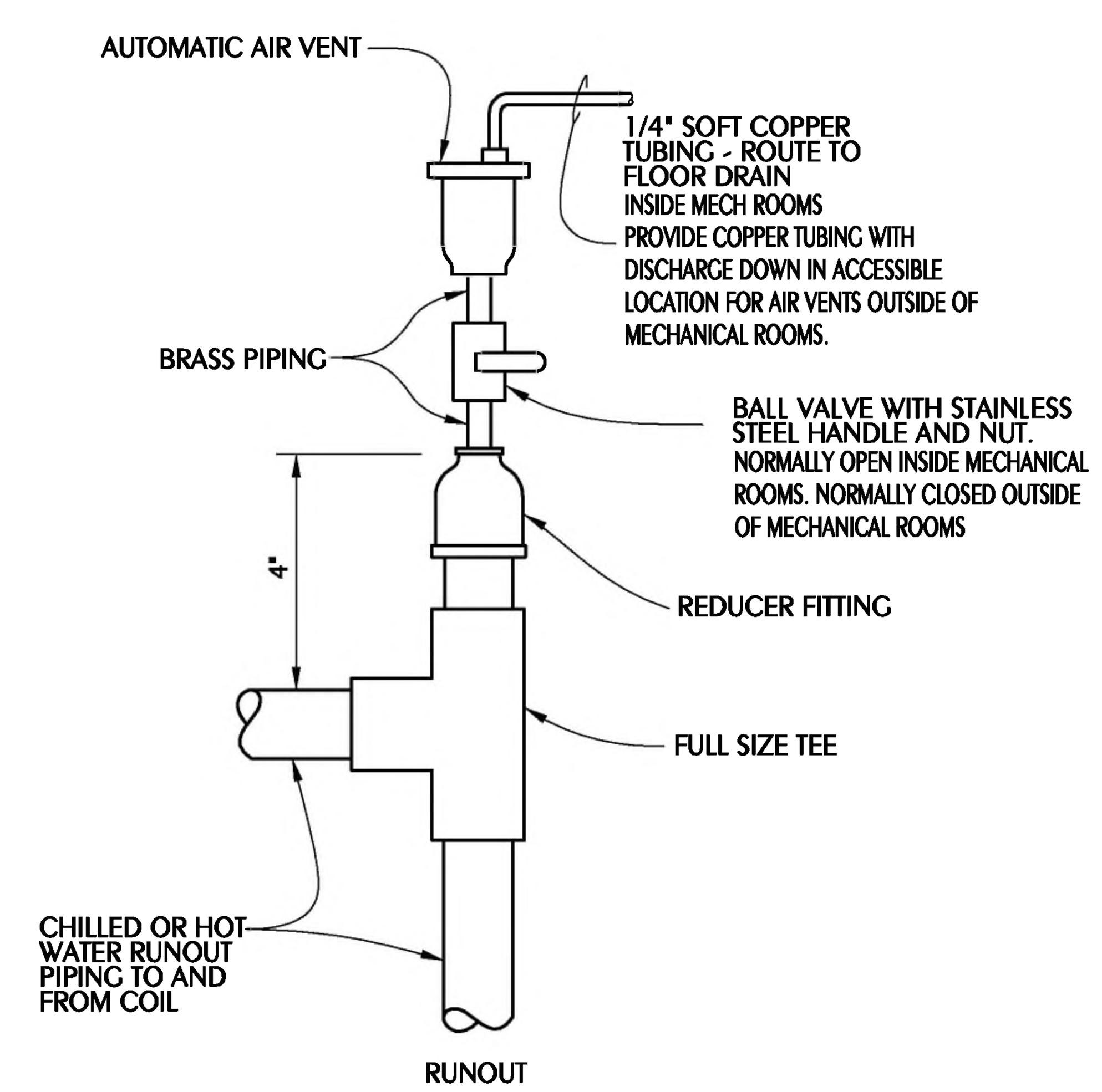
7. MANUAL SHUTOFF VENTURI VALVE
8. 2-WAY PRESSURE INDEPENDENT CONTROL VALVE, BRASS CONSTRUCTION.
9. SERVICE FLANGE
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. CAST IRON STRAINER, FLANGED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN, FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR.
15. 3/4" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER

GENERAL NOTES:

1) PROVIDE PRESSURE INDEPENDENT ELECTRIC CONTROL VALVES WITH CONSTANT DIFFERENTIAL PRESSURE FOR 100% VALVE AUTHORITY, OPERATING RANGE 4-60 PSI.
2) INSTALL P/T PORTS IN FORCED STEEL THREDOLETS OR REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.
3) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

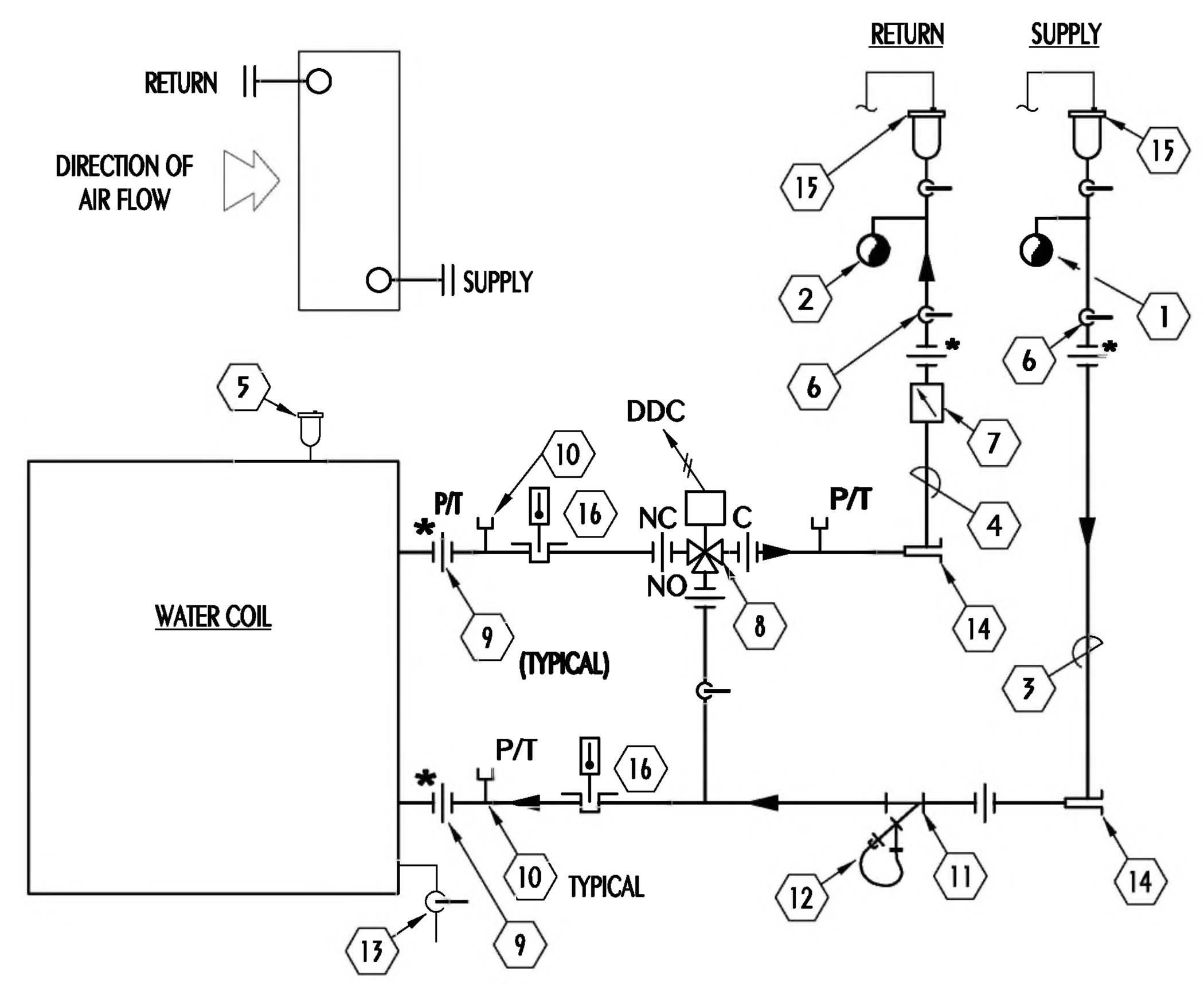
2 / M300 COIL CONNECTION SCHEMATIC

SCALE: NONE — PIPE SIZE LARGER THAN 2"



3 / M300 AUTOMATIC AIR VENT DETAIL

SCALE: NONE



KEY NOTES:

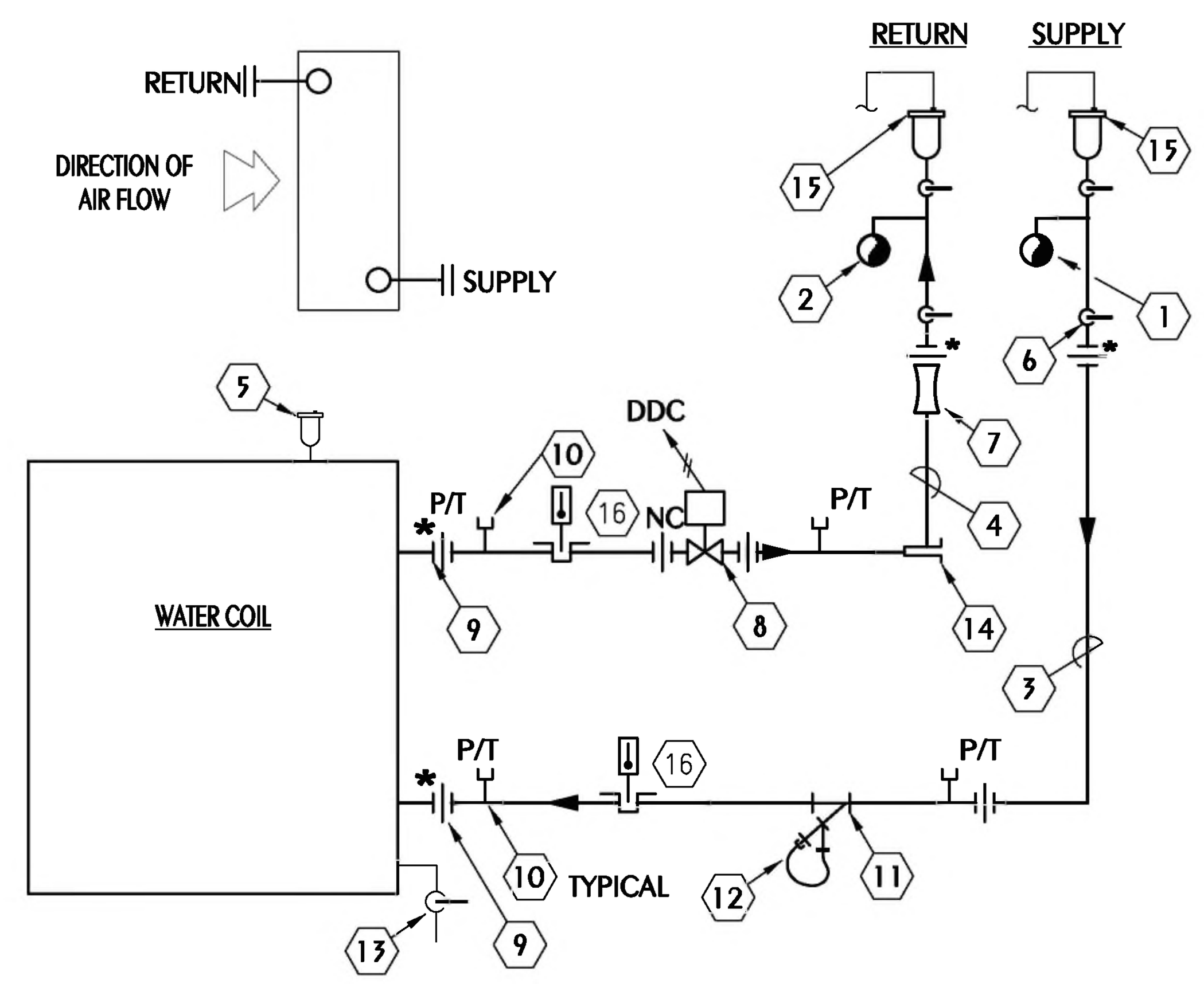
1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BALL SERVICE VALVE, SCREWED
7. AUTOMATIC FLOW CONTROL VALVE, SCREWED
8. 3-WAY CONTROL VALVE, BRONZE SCREWED BODY, MIXING PATTERN, LINEAR FLOW PLUG.
9. SERVICE UNION
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. BRONZE STRAINER, SCREWED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR.
15. 1/2" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER-OMIT ON TERMINAL UNITS AND FAN COIL UNITS

GENERAL NOTES:

1) SUPPLY AND RETURN RUNOUT PIPING FROM TEE AT AUTO AIR VENT TO COIL SHALL BE HARD DRAWN TYPE L COPPER.
2) AUTOMATIC FLOW CONTROL VALVES SHALL BE FLOW DESIGN AUTO FLOW SERIES YR, SCREWED ENDS, Y-PATTERN, LINE SIZE, WITH TWO FACTORY P/T PORTS. RANGE 2-32 PSID.
3) INSTALL COIL COMPONENTS IN THE PHYSICAL RELATIONSHIP INDICATED WITH RESPECT TO THE COIL, AND TO EACH OTHER.
4) INSTALL 3-WAY CONTROL VALVE WITH ACTUATOR IN VERTICAL POSITION.
5) INSTALL P/T PORTS IN REDUCING TEE. HALF COUPLINGS ARE NOT ALLOWABLE.
6) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

4 / M300 COIL CONNECTION SCHEMATIC

SCALE: NONE — PIPE SIZE 2" AND SMALLER - THREE WAY CONTROL VALVE



KEY NOTES:

1. SUPPLY MAIN
2. RETURN MAIN
3. SUPPLY RUNOUT
4. RETURN RUNOUT
5. 1/4" AUTOMATIC AIR VENT IN COIL HEADER, FLOW DESIGN MODEL AA025.
6. BALL SERVICE VALVE, SCREWED
7. MANUAL SHUTOFF VENTURI VALVE
8. 2-WAY PRESSURE INDEPENDENT CONTROL VALVE, BRONZE SCREWED BODY.
9. SERVICE UNION
10. PRESSURE/TEMPERATURE PORT WITH EXTENDED NECK
11. BRONZE STRAINER, SCREWED.
12. STRAINER BLOWDOWN/HOSE END DRAIN VALVE WITH BRASS CAP AND CHAIN FLOW DESIGN MODEL HE.
13. 3/8" COPPER DRAIN W/BALL VALVE
14. STAINLESS STEEL WELL FOR DDC TEMPERATURE TRANSMITTER IN TEE, COORDINATE WITH DDC CONTRACTOR. (OMIT ON FAN COIL UNITS).
15. 1/2" AUTOMATIC AIR VENT, SEE MOUNTING DETAIL THIS SHEET.
16. THERMOMETER-OMIT ON TERMINAL UNITS AND FAN COIL UNITS

GENERAL NOTES:

1) SUPPLY AND RETURN RUNOUT PIPING FROM TEE AT AUTO AIR VENT TO COIL SHALL BE SCREWED SCHEDULE 40 STEEL OR HARD DRAWN COPPER.
2) PROVIDE PRESSURE INDEPENDENT ELECTRIC CONTROL VALVES WITH CONSTANT DIFFERENTIAL PRESSURE FOR 100% VALVE AUTHORITY, OPERATING RANGE 4-60 PSI.
3) INSTALL COIL COMPONENTS IN THE PHYSICAL RELATIONSHIP INDICATED WITH RESPECT TO THE COIL, AND TO EACH OTHER.
4) INSTALL 2-WAY CONTROL VALVE WITH ACTUATOR IN VERTICAL POSITION.
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6) ARRANGE PIPING SUCH THAT THE ENTIRE COIL CONNECTION ASSEMBLY CAN BE REMOVED BY DISCONNECTING AT POINTS MARKED WITH AN ASTERISK (*) FOR COIL SERVICING. PIPING SHALL NOT INTERFERE WITH ACCESS TO ANY COMPONENT OF THE AIR HANDLING UNIT THAT REQUIRES SERVICE.

5 / M300 COIL CONNECTION SCHEMATIC

SCALE: NONE — PIPE SIZE 2" AND SMALLER

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David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

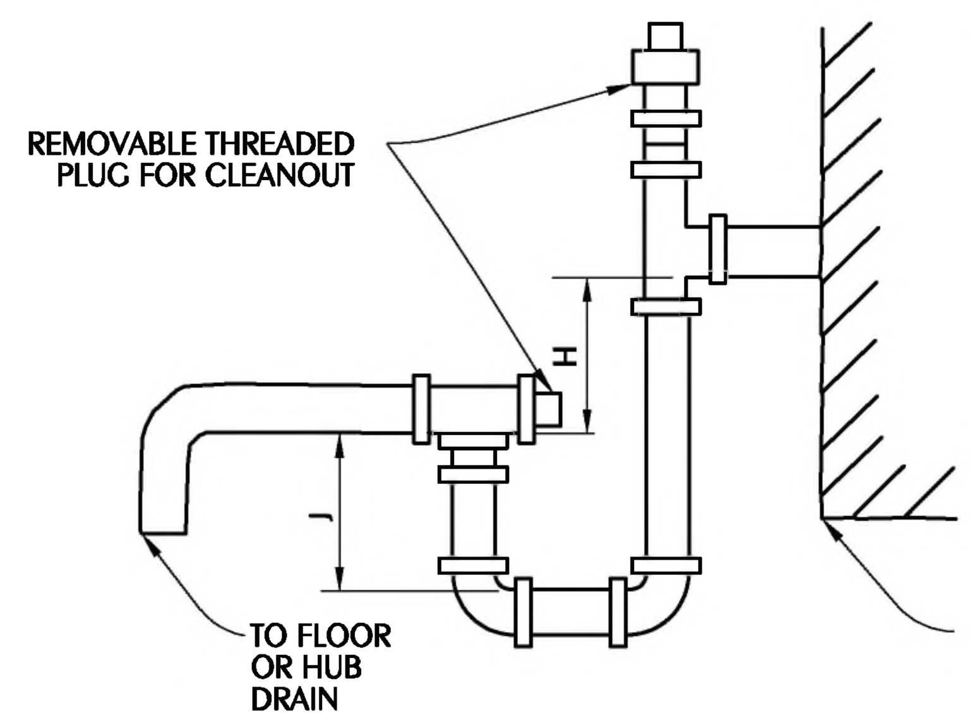
Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING
COIL CONNECTION
DETAILS

M300



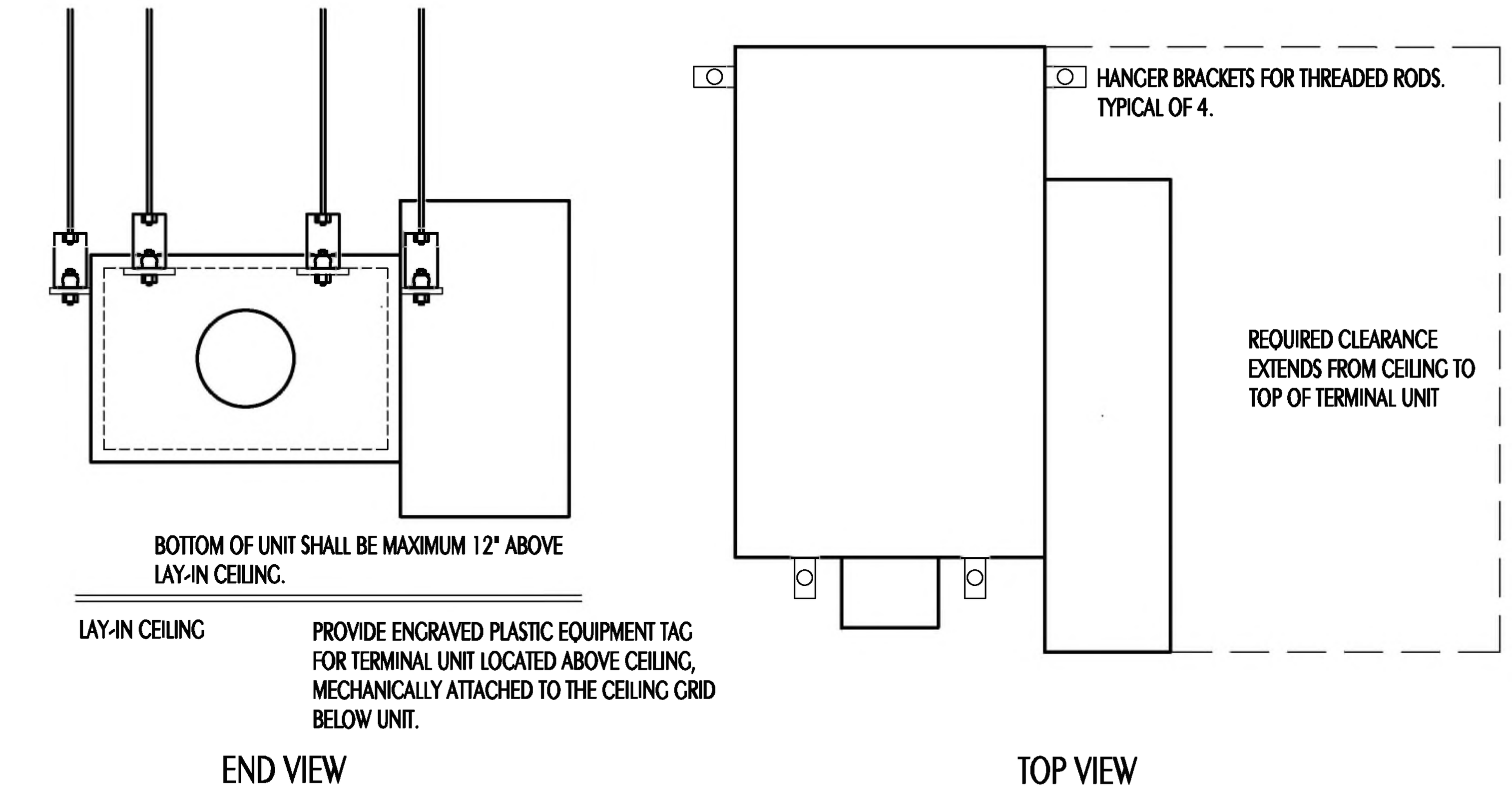
NOTES:
PIPE TYPE 'L' HARD DRAWN COPPER CONDENSATE LINE AT FULL SIZE OF UNIT CONNECTION, BUT IN NO CASE SMALLER THAN 3/4".

LOCATE TRAPS SO AS TO BE ACCESSIBLE FOR CLEANING.

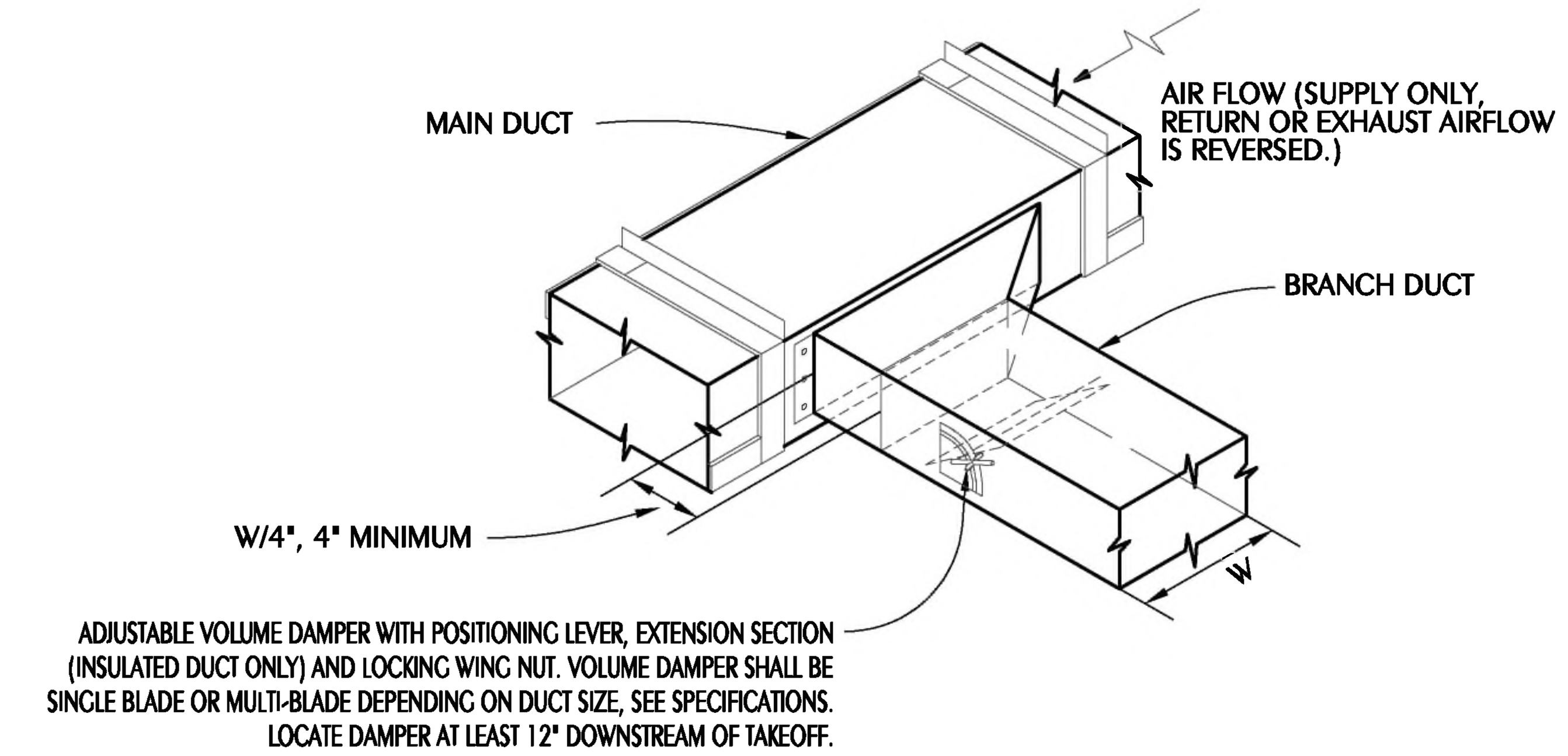
H = AIR UNIT TOTAL STATIC PRESSURE + 1"

J = H/2

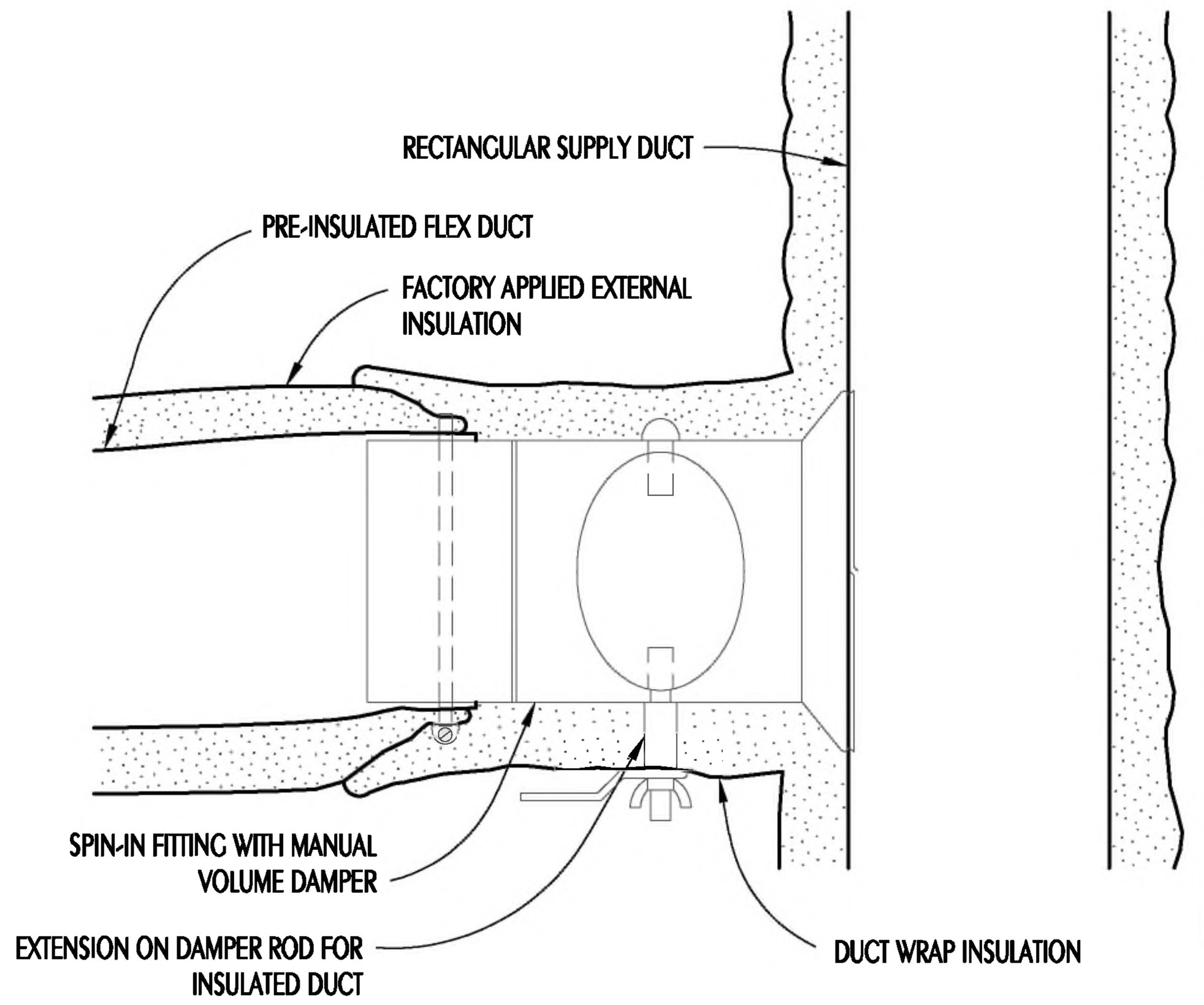
1 M301 NEGATIVE PRESSURE CONDENSATE DRAIN TRAP
SCALE: NONE



2 M301 TERMINAL UNIT MOUNTING DETAIL
SCALE: NONE



3 M301 BRANCH DUCT TAKEOFF DETAIL
SCALE: NONE



NOTES:
CONNECT FLEXIBLE DUCT TO FITTING WITH DRAWBAND AND SEALER.

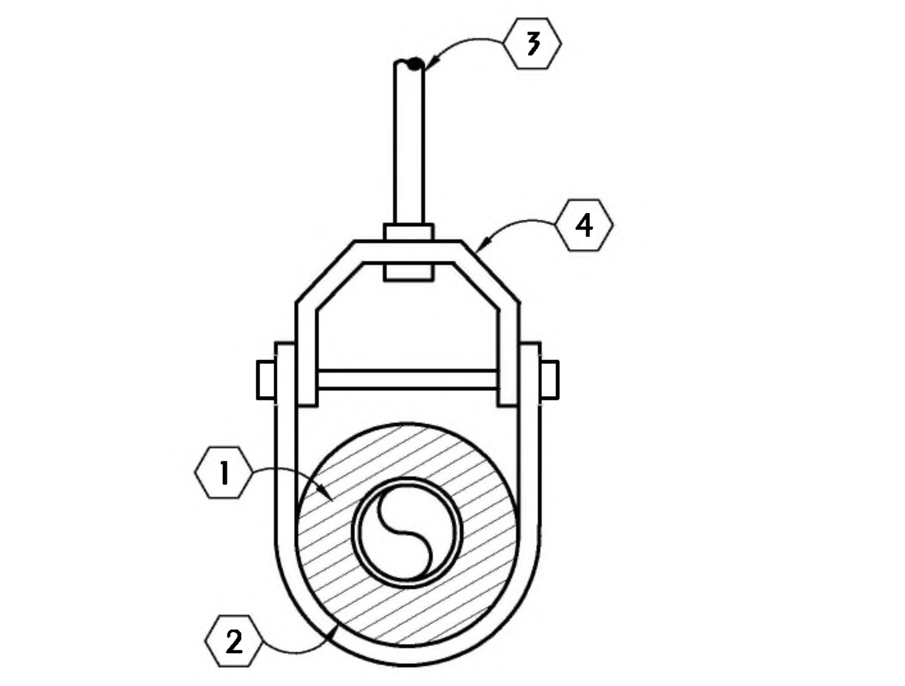
ROUND HARD DUCT RUNOUTS SHOULD START WITH SPIN-IN FITTINGS SIMILAR TO THIS DETAIL.

PROVIDE CABLE ACTIVATED DAMPER WITH ADJUSTMENT IN FACE OF CEILING DIFFUSER FOR DAMPERS NOT LOCATED ABOVE AN ACCESSIBLE CEILING.

FLEXIBLE INSULATION SHALL BE 2" THICK, ASTM C553, TYPE 1, CLASS B-3 WITH 1 PCF DENSITY AND UL RATED ALUMINUM FOIL VAPOR BARRIER (FSK)

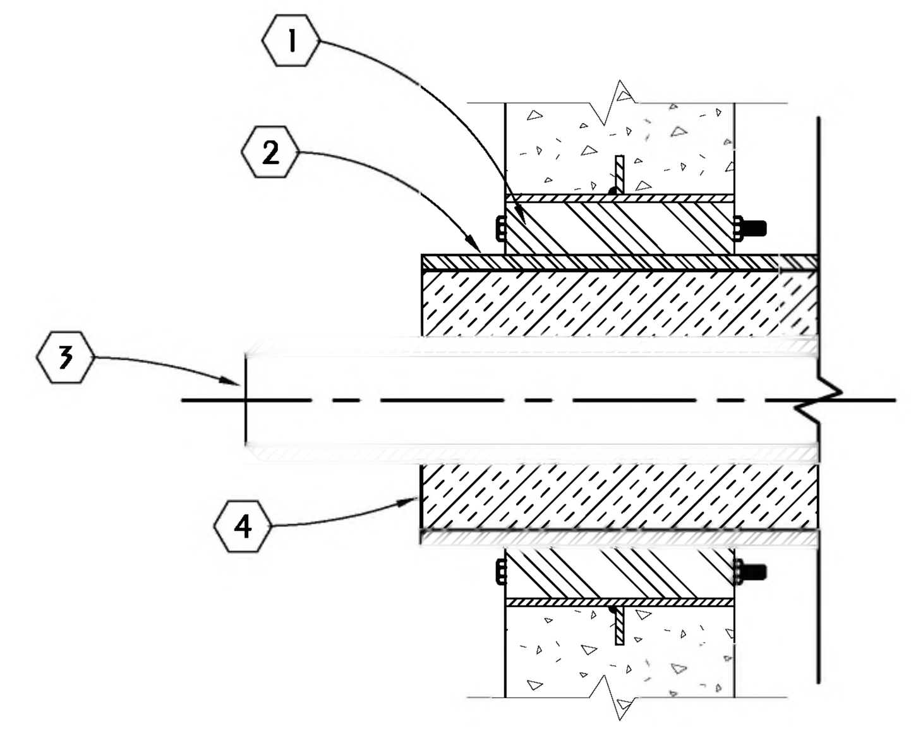
WRAP OVER OPPOSED BLADE DAMPERS AFTER TEST AND BALANCE

4 M301 FLEX DUCT TAKEOFF DETAIL
SCALE: NONE



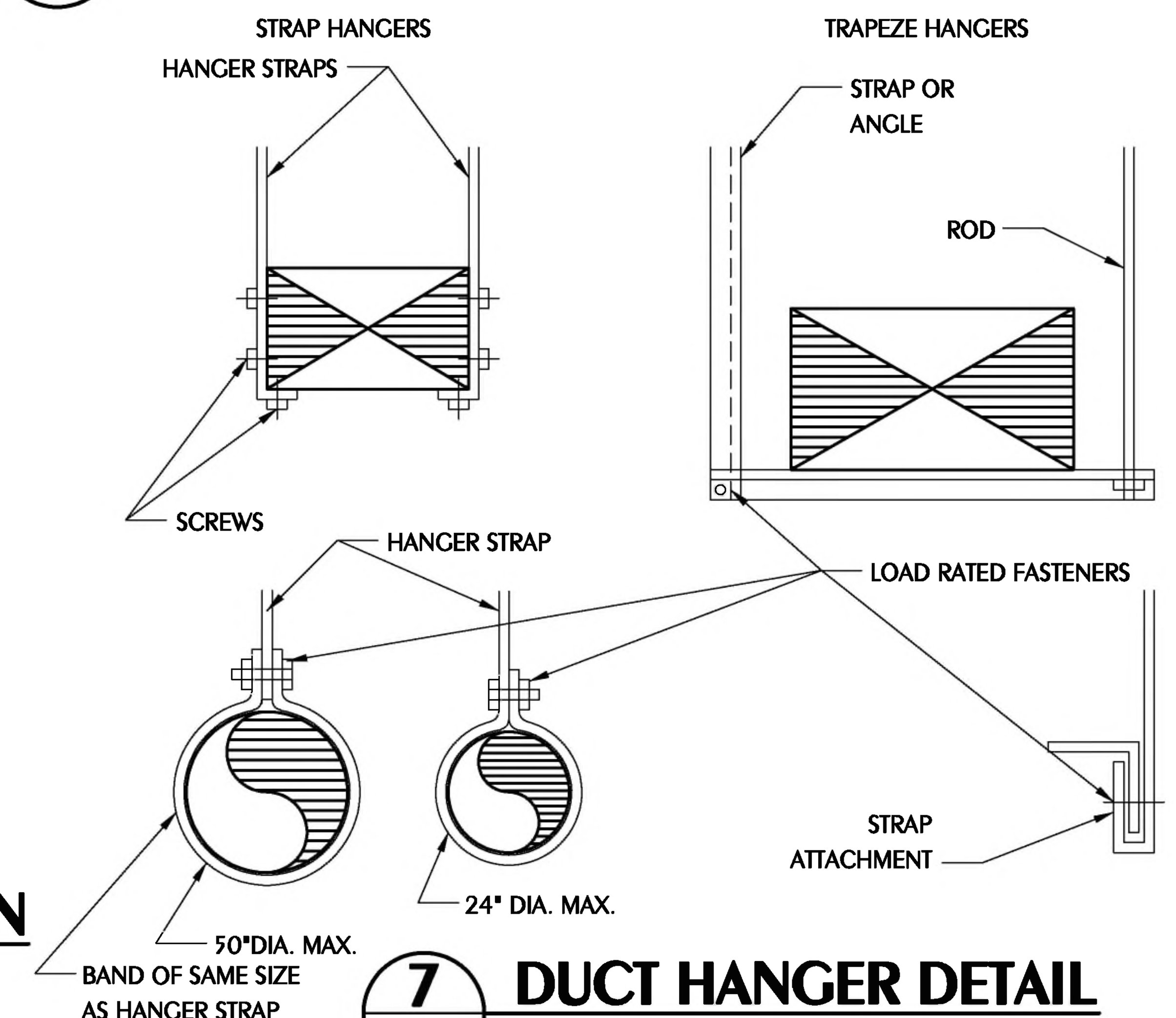
1. INSULATION
2. PIPE COVERING PROTECTION SADDLE
3. HANGER ROD FASTEN TO STRUCTURE PER SPECIFICATION
4. CLEVIS TYPE HANGER

5 M301 OVERHEAD PIPE SUPPORT DETAIL
SCALE: NONE



1. WALL SEAL APPURTENANCES PER SPECIFICATIONS
2. PIPE SLEEVE PER SPECIFICATIONS
3. CHILLED OR HEATING WATER PIPING
4. INSULATION

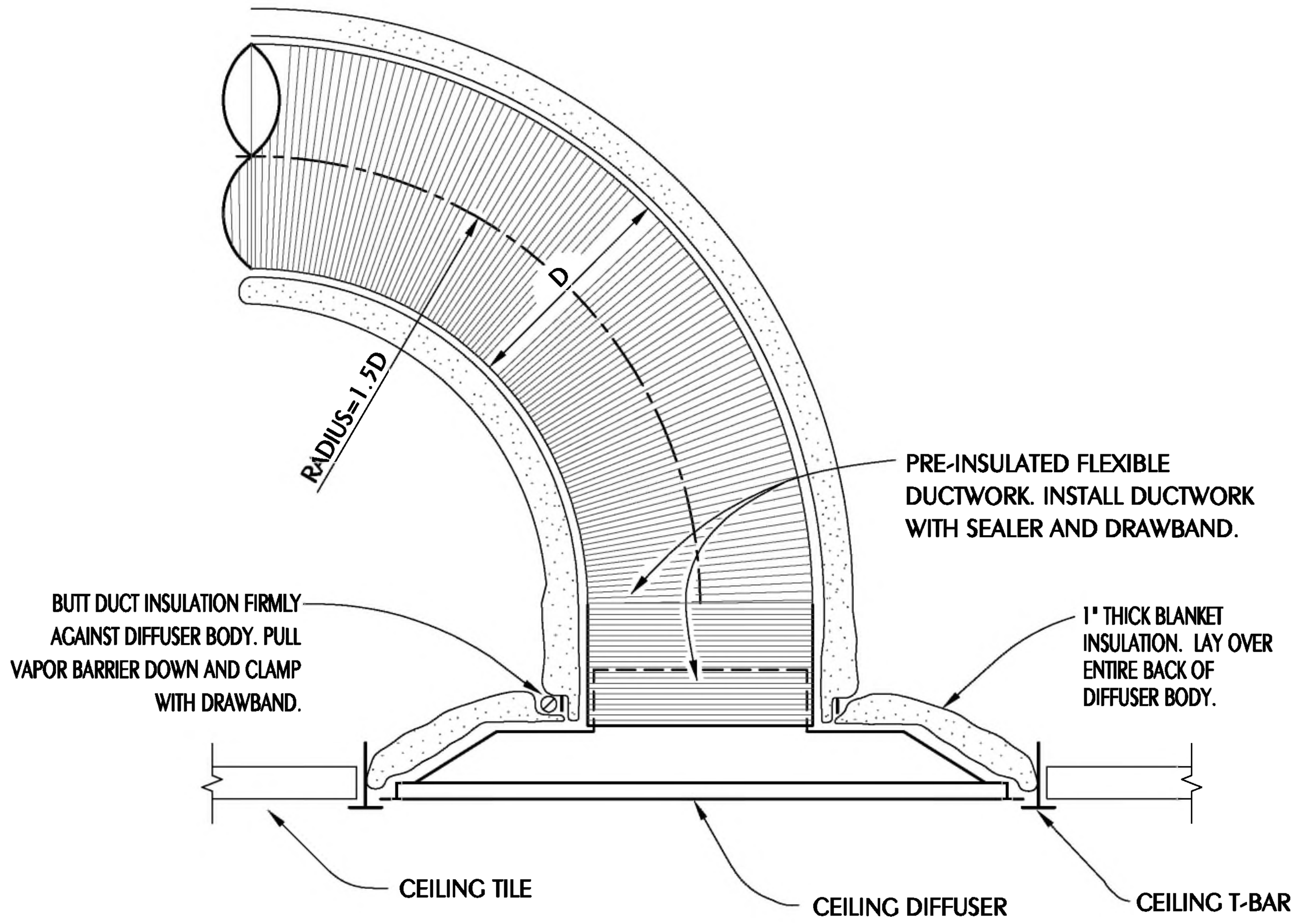
6 M301 PIPING WALL PIPE PENETRATION
SCALE: NONE



7 M301 DUCT HANGER DETAIL
SCALE: NONE

CHAINLINK FENCE NOTES

1. MANUFACTURERS: ALLIED FENCE MFG CO; ALLIED TUBE & CONDUIT FENCE DIVISION; ANCHOR FENCE, INC; DAVIS WALKER CORPORATION; SOUTHEASTERN WIRE.
2. POSTS, RAILS, FRAMES, AND BRACES: TYPE 1 (ROUND SECTIONS): SEAMLESS STEEL PIPE, ASTM A120, STANDARD WEIGHT SCHEDULE 40; SIZE AND WEIGHT AS SPECIFIED HEREIN. GALVANIZED PER ASTM F1083, GRADE E ZINC COATING OF 1.8OZ/SF MINIMUM. ALL PIPE SHALL BE INTERNALLY AND EXTERNALLY GALVANIZED.
3. INTERMEDIATE POSTS SHALL BE 2.375" OD, 3.65 LBS PER LINEAR FOOT. TOP RAILS SHALL BE 1.66" OD, 2.27 LBS PER LINEAR FOOT, NO JOINTS ALLOWED IN SECTIONS UNDER 18 FT.
4. CORNER AND END POSTS SHALL BE 2.875" OD, 5.79 LBS PER LINEAR FOOT.
5. GATE FRAMES SHALL BE 1.90" OD, 2.72 LBS PER LINEAR FOOT.
6. GATE POSTS SHALL BE 4.0" OD, 9.10 LBS PER LINEAR FOOT.
7. CHAIN LINK FABRIC: GALVANIZED STEEL, ASTM A392, 11 GAUGE, STEEL WIRE, TENSILE STRENGTH OF 75000 PSI. CLASS 2 ZINC-COATED (GALVANIZED) WIRE, HELICALLY WOUND AND WOVEN TO MESH FROM UNFINISHED GAUGE WIRE. WOVEN FABRIC SHALL BE A 1.75" MESH WITH KNUCKLED SELVAGES BOTH TOP AND BOTTOM. PULL FABRIC TAUT AND TIE TO POSTS (15" ON CENTER), RAILS (24" ON CENTER), AND TENSION WIRES.
8. TENSION WIRE: 7 GAUGE WIRE, 0.177" DIAMETER ZINC COATED, 1.2 OZ/SF PER ASTM A824, TYPE II. PROVIDE AT BOTTOM OF FABRIC, ATTACHED AT 24" ON CENTER.
9. FABRIC TO LINE POST, RAILS, BRACES, ETC TIES: 9 GAUGE STEEL WIRE WITH COATED PER ITEM 8.
10. FABRIC TO TENSION WIRE, 11 GAUGE HOG RINGS, COATED PER ITEM 8. 6 GAUGE ZINC COATED WIRE FOR TYING TENSION WIRE TO POSTS.
11. POST TOPS: PRESSED STEEL OR MALLEABLE IRON ZINC COATED, 1.8 OZ/SF MINIMUM. DRIVE FIT, WEATHERTIGHT CLOSURE FOR TUBULAR POSTS.
12. STRETCHER BARS: HEAVY PRESSED STEEL OR MALLEABLE IRON, ZINC COATED, 2.0 OZ/SF PER ASTM A153. ONE PIECE LENGTHS EQUAL TO FULL HEIGHT OF FABRIC WITH A MINIMUM CROSS SECTION OF 3/16" X 3/4". PROVIDE ONE STRETCHER BAR FOR EACH GATE OR END POST AND TWO STRETCHER BARS FOR CORNER AND PULL POSTS. ATTACH WITH BANDS OR CLIPS SPACED AT 15" ON CENTER MAX.
13. GATES: ASSEMBLE GATE FRAMES BY WELDING CONNECTIONS. WELD AREAS TO BE PROTECTED WITH ZINC-RICH PAINT PER ASTM A780. USE SAME FABRIC SPECIFIED FOR FENCE WITH STRETCHER BARS AT ALL EDGES. WIRE TIES AT TOP AND BOTTOM ARE ACCEPTABLE IF STRETCHER BARS ARE NOT USED. BRACE AS REQUIRED FOR RIGID FRAME WITH NO TWIST OR SAGGING.
14. GATE HARDWARE: GALVANIZE PER ASTM A153. PRESSED STEEL OR MALLEABLE IRON HINGES, NON LIFT OFF TYPE, OFFSET TO PERMIT 180 DEGREE GATE OPENING. FORKED TYPE LATCH WITH PADLOCK EYE TO PERMIT OPERATION FROM EITHER SIDE OF GATE. PROVIDE DROP ROD TO HOLD INACTIVE LEAF OF DOUBLE GATES. DOUBLE GATES SHALL BE SECURED BY A SINGLE PADLOCK EYE.
15. CONFORM TO ASTM F567 FOR INSTALLATION.
16. PROVIDE END, CORNER, OR PULL POST AT EACH TERMINATION AND CHANGE IN HORIZONTAL OR VERTICAL DIRECTION OF 30 DEGREES OR MORE. SPACE LINE POSTS UNIFORMLY AT APPROXIMATELY 6 FT ON CENTER.
17. DRILL OR DIG POST HOLES AT FOUR TIMES THE DIAMETER OF THE POST. RECESS POSTS 30" FOR FENCES 60" TALL OR LESS, 36" FOR FENCES GREATER THAN 60" AND LESS THAN 120", AND 42" FOR FENCES GREATER THAN 120" TALL.
18. PROVIDE SLEEVES WITH ANCHOR LUGS FOR POSTS TO BE INSTALLED IN CONCRETE SLABS. GROUT POST SOLID IN SLEEVE WITH TOP OF GROUT SLOPING AWAY FROM POST FOR PROPER DRAINAGE.
19. FENCE SHALL BE 5'-0" TALL WITH LAYOUT AND GATES AS INDICATED.



NOTES:
NEW FLEX DUCT SHALL BE NO LONGER THAN 5'-0".

PROVIDE 24x24 LAY IN PANEL FOR DIFFUSERS IN LAY IN CEILINGS.

PROVIDE BEVELED MOUNTING FRAME FOR DIFFUSERS IN HARD CEILINGS.

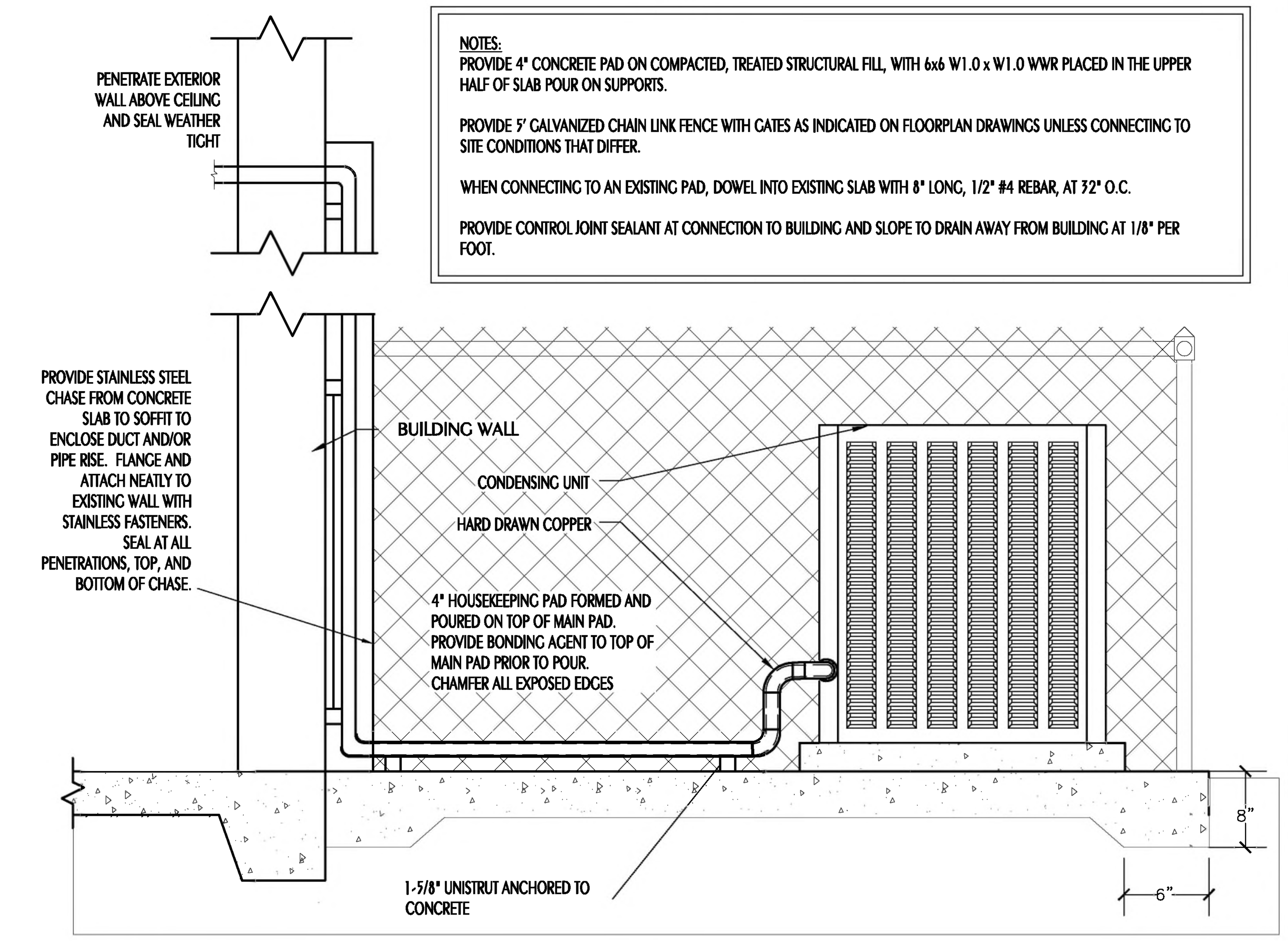
8 M301 CEILING DIFFUSER DETAIL
SCALE: NONE

NOTES:
PROVIDE 4" CONCRETE PAD ON COMPACTED, TREATED STRUCTURAL FILL, WITH 6x6 W1.0 x W1.0 WWR PLACED IN THE UPPER HALF OF SLAB POUR ON SUPPORTS.

PROVIDE 5' GALVANIZED CHAIN LINK FENCE WITH GATES AS INDICATED ON FLOORPLAN DRAWINGS UNLESS CONNECTING TO SITE CONDITIONS THAT DIFFER.

WHEN CONNECTING TO AN EXISTING PAD, DOWEL INTO EXISTING SLAB WITH 8" LONG, 1/2" #4 REBAR, AT 32" O.C.

PROVIDE CONTROL JOINT SEALANT AT CONNECTION TO BUILDING AND SLOPE TO DRAIN AWAY FROM BUILDING AT 1/8" PER FOOT.



9 M301 TYPICAL OUTDOOR EQUIPMENT YARD DETAIL
SCALE: NONE

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4452 Clinton Street, Marianna, Florida 32446
850.526.3447 www.watford-engineering.com
Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

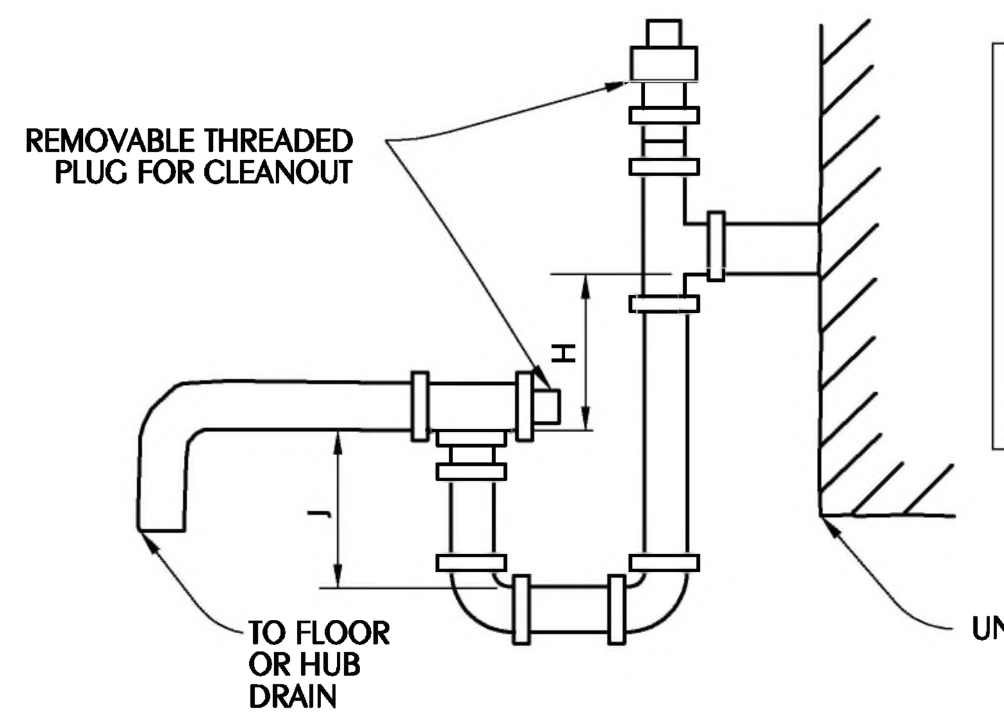
CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT, PIPING, AND DUCTWORK DETAILS



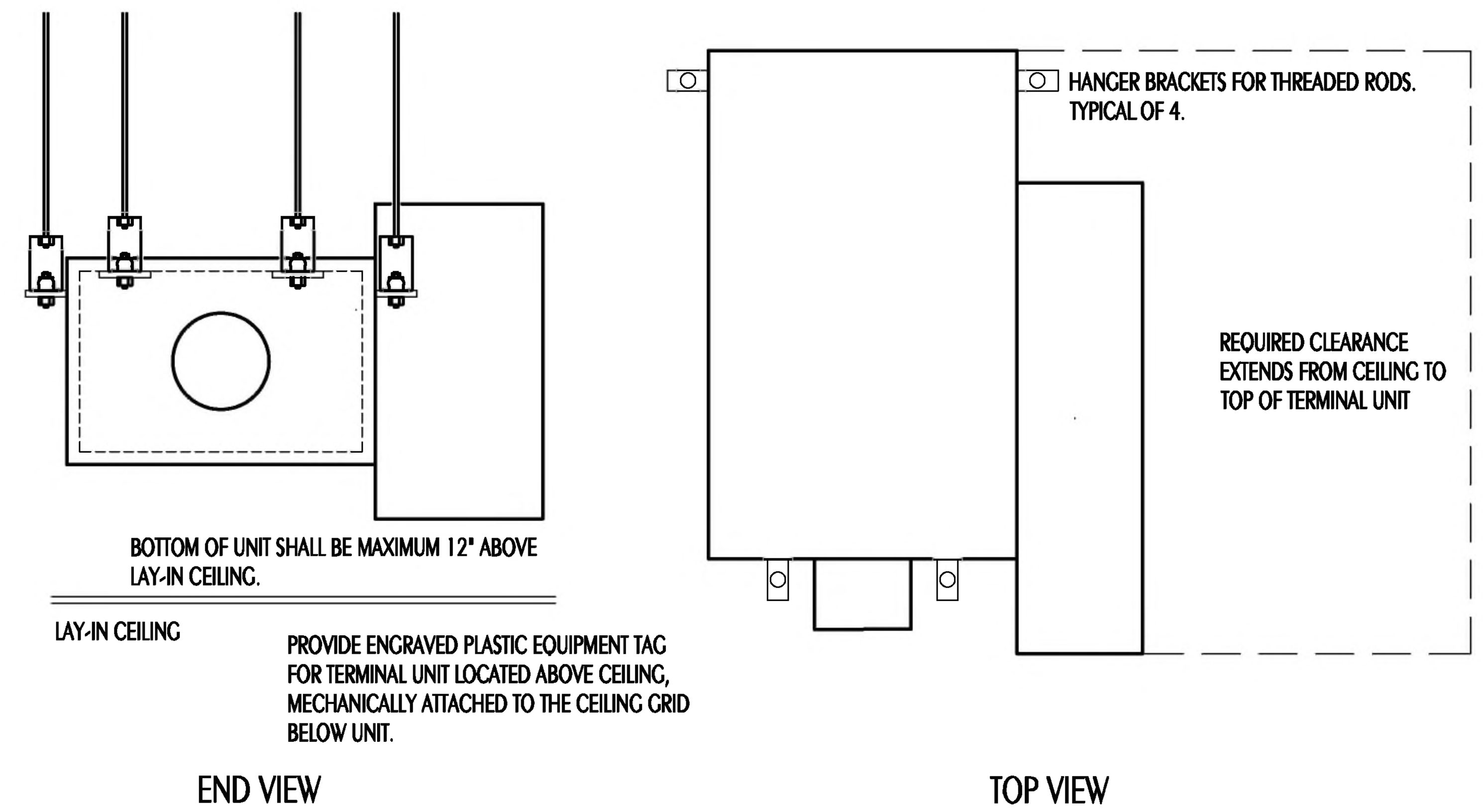
NOTES:
PIPE TYPE 'L' HARD DRAWN COPPER CONDENSATE LINE AT FULL SIZE OF UNIT CONNECTION, BUT IN NO CASE SMALLER THAN 3/4".

LOCATE TRAPS SO AS TO BE ACCESSIBLE FOR CLEANING.

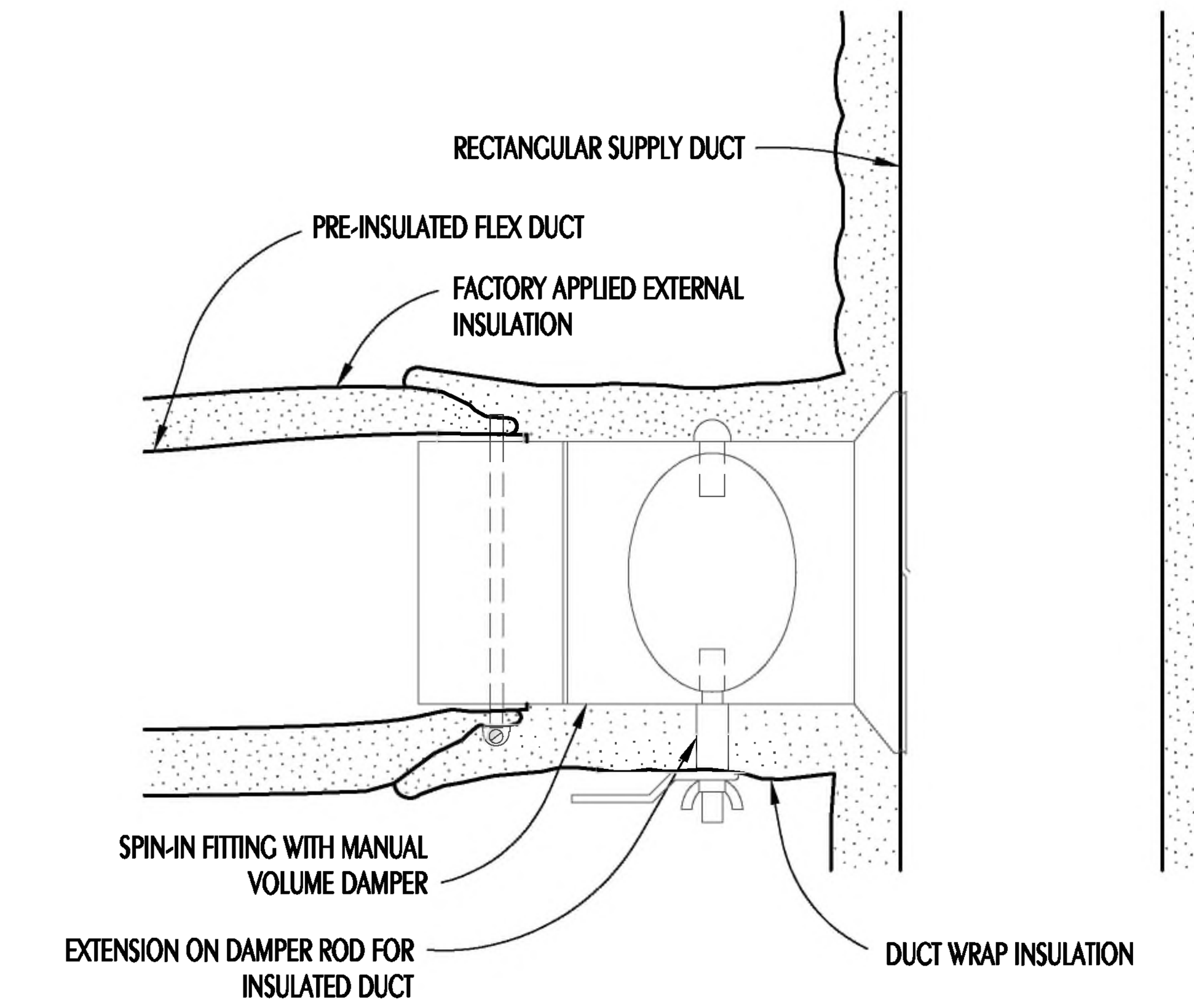
H = AIR UNIT TOTAL STATIC PRESSURE + 1"

J = H/2

1 NEGATIVE PRESSURE CONDENSATE DRAIN TRAP
M301
SCALE: NONE



2 TERMINAL UNIT MOUNTING DETAIL
M301
SCALE: NONE



NOTES:
CONNECT FLEXIBLE DUCT TO FITTING WITH DRAWBAND AND SEALER.

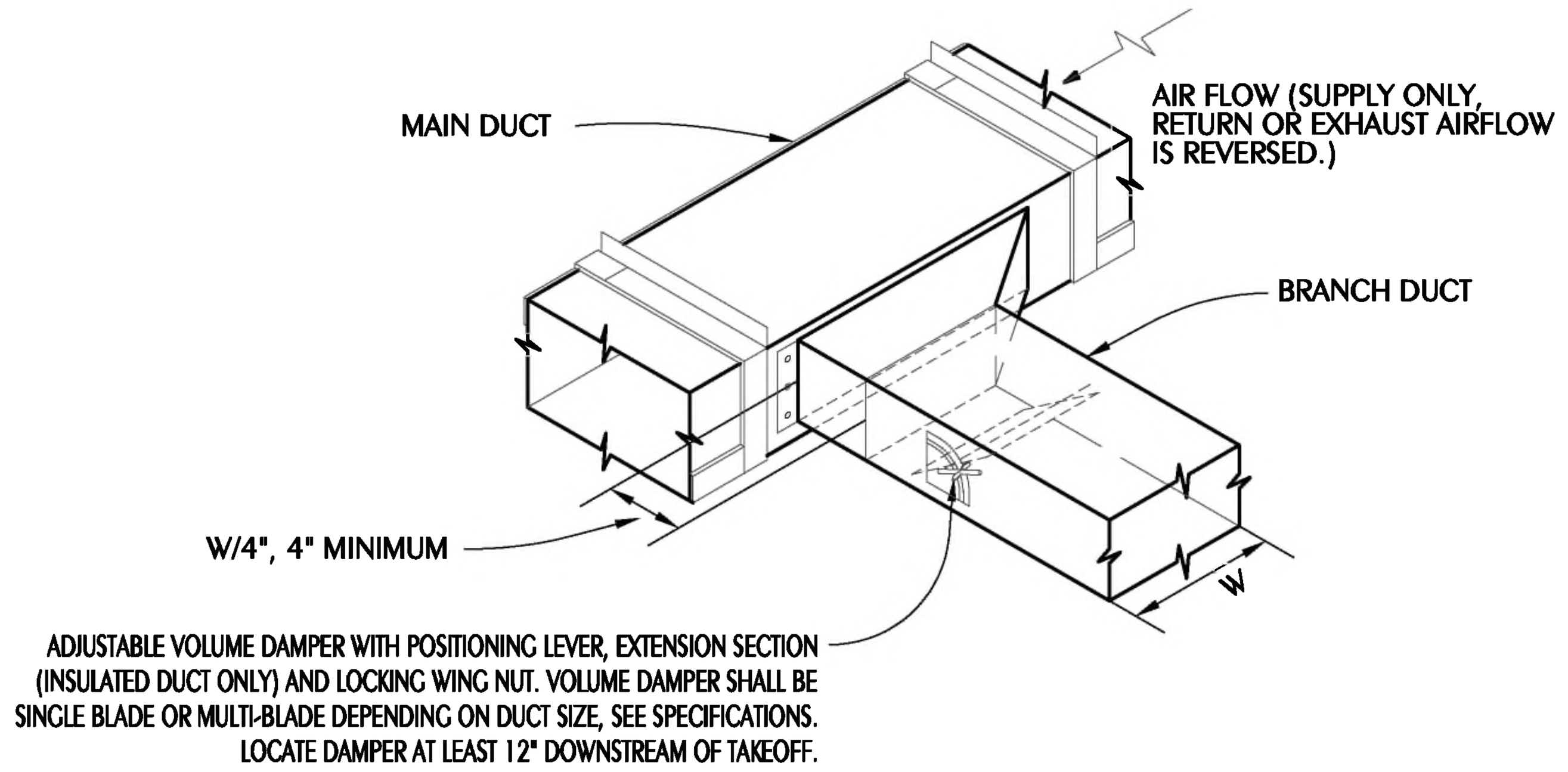
ROUND HARD DUCT RUNOUTS SHOULD START WITH SPIN-IN FITTINGS SIMILAR TO THIS DETAIL.

PROVIDE CABLE ACTIVATED DAMPER WITH ADJUSTMENT IN FACE OF CEILING DIFFUSER FOR DAMPERS NOT INSTALLED ABOVE AN ACCESSIBLE CEILING.

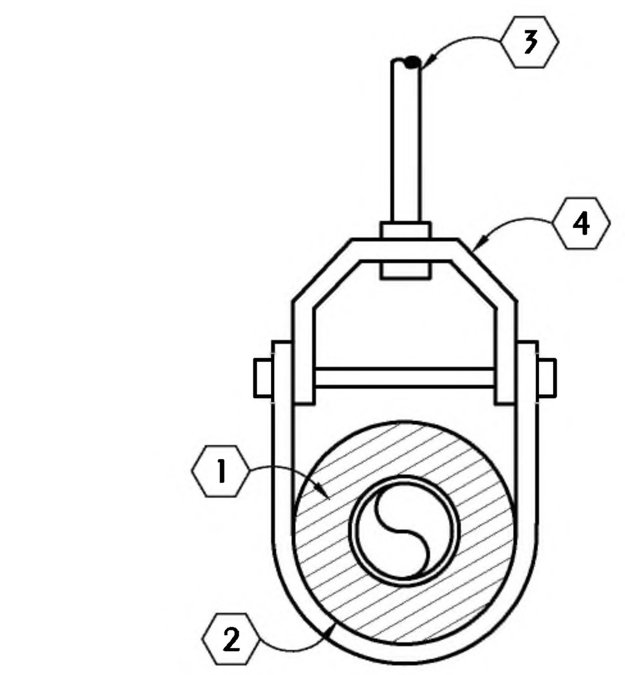
FLEXIBLE INSULATION SHALL BE 2" THICK, ASTM C553, TYPE 1, CLASS B-3 WITH 1 PCF DENSITY AND UL RATED ALUMINUM FOIL VAPOR BARRIER (FSK)

WRAP OVER OPPOSED BLADE DAMPERS AFTER TEST AND BALANCE

3 FLEX DUCT TAKEOFF DETAIL
M301
SCALE: NONE

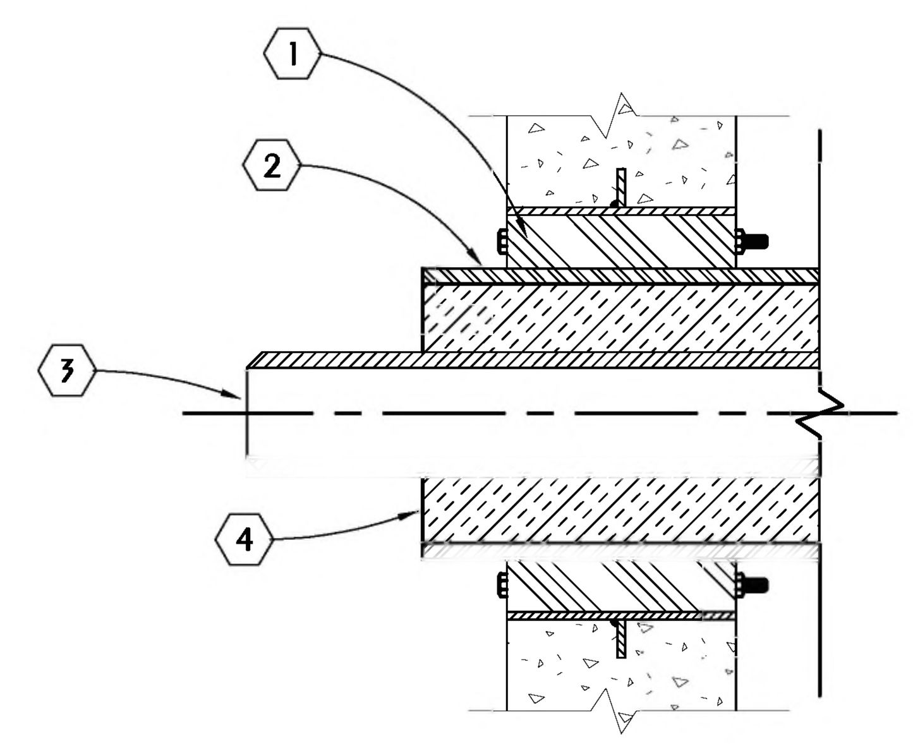


4 BRANCH DUCT TAKEOFF DETAIL
M301
SCALE: NONE



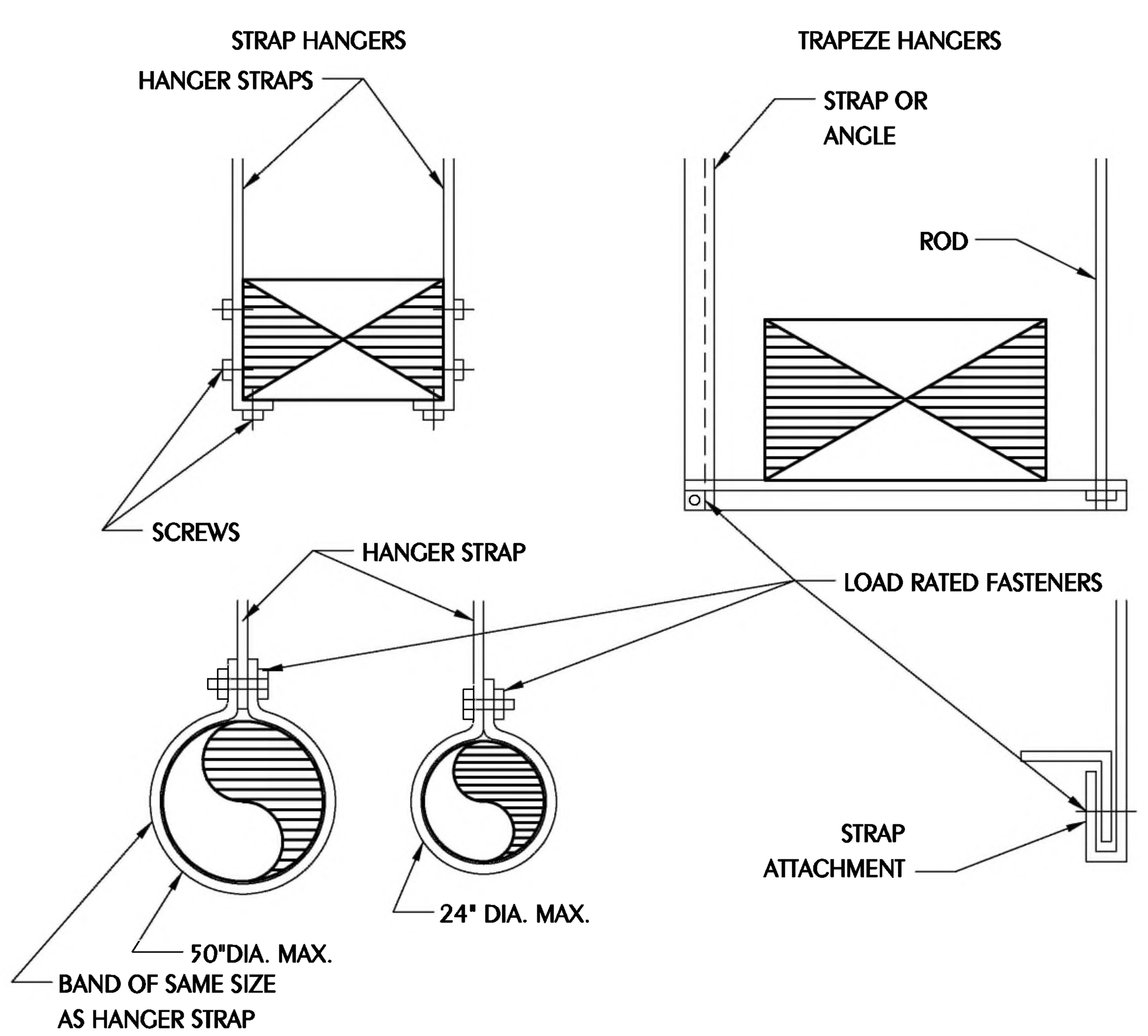
1. INSULATION
2. PIPE COVERING PROTECTION SADDLE
3. HANGER ROD FASTEN TO STRUCTURE PER SPECIFICATION
4. CLEVIS TYPE HANGER

5 OVERHEAD PIPE SUPPORT DETAIL
M301
SCALE: NONE

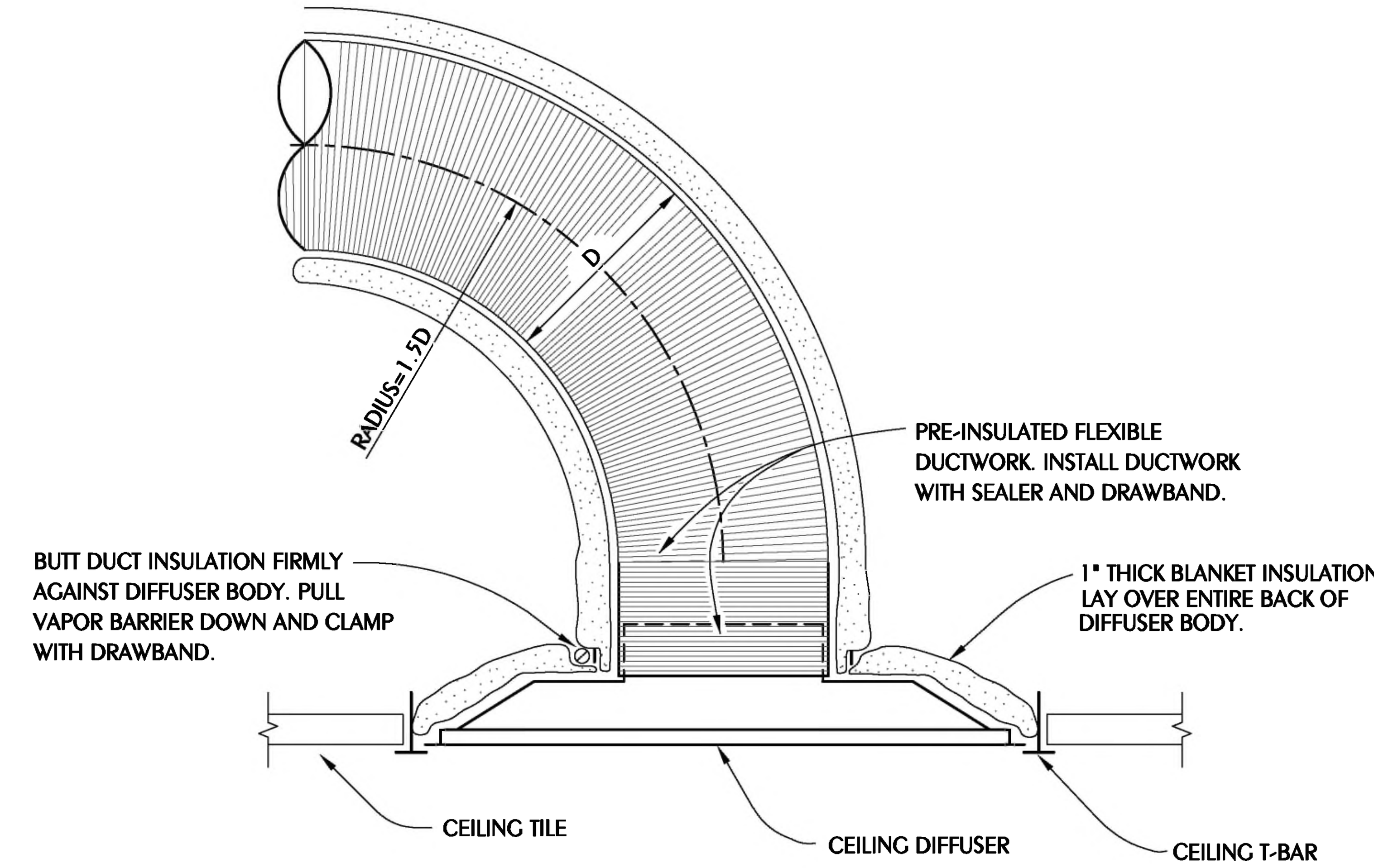


1. WALL SEAL APPURTENANCES PER SPECIFICATIONS
2. PIPE SLEEVE PER SPECIFICATIONS
3. CHILLED OR HEATING WATER PIPING
4. INSULATION

6 PIPING WALL PIPE PENETRATION
M301
SCALE: NONE



7 DUCT HANGER DETAIL
M301
SCALE: NONE



NOTES:
NEW FLEX DUCT SHALL BE NO LONGER THAN 5'-0".

PROVIDE 24x24 LAY IN PANEL FOR DIFFUSERS IN LAY IN CEILINGS.

PROVIDE BEVELED MOUNTING FRAME FOR DIFFUSERS IN HARD CEILINGS.

8 CEILING DIFFUSER DETAIL
M301
SCALE: NONE

WATFORD ENGINEERING
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Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

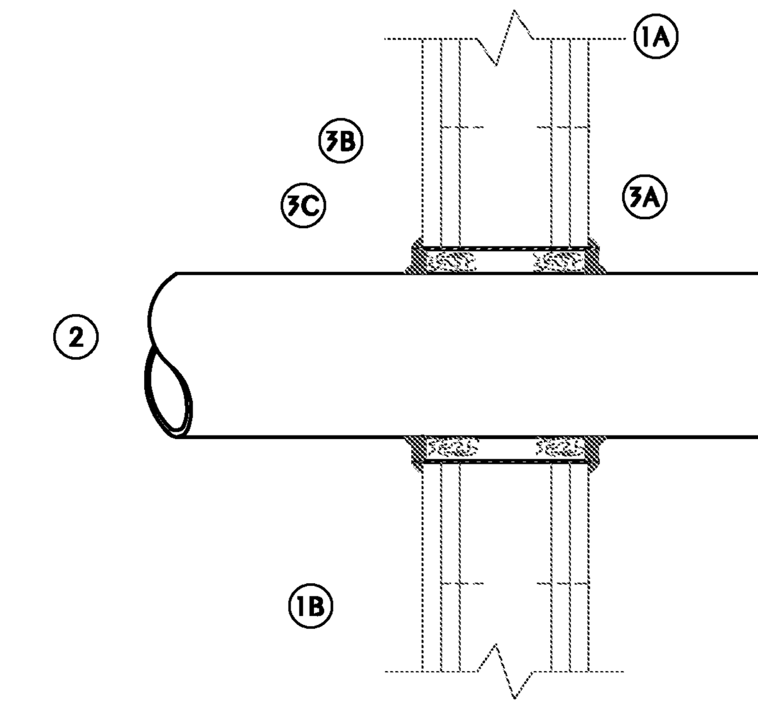
CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT, PIPING, AND DUCTWORK DETAILS



CONSULT CURRENT UNDERWRITERS LABORATORIES, INC. "FIRE RESISTANCE DIRECTORY" FOR DETAILS.

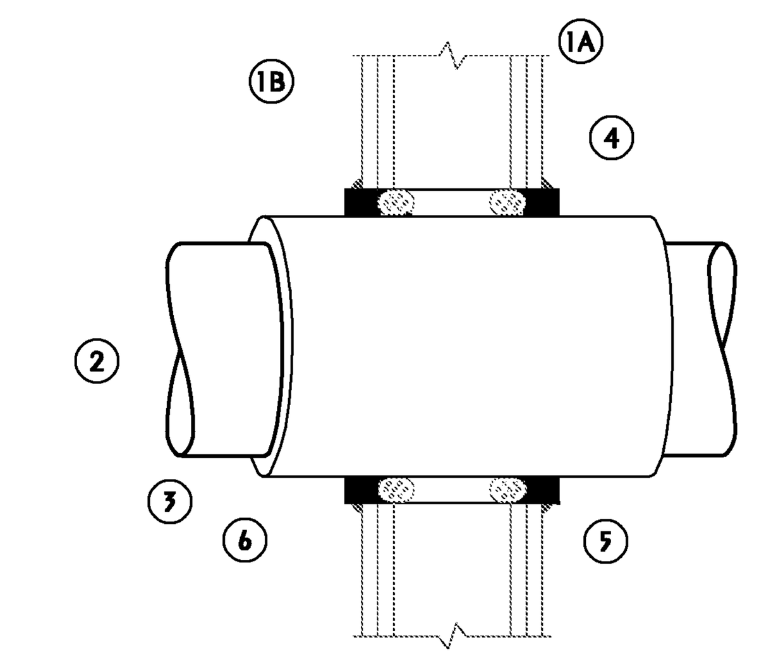
UL SYSTEM WL1003

1. WALL ASSEMBLY—THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS—WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC WITH NOM 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-1/2 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.
   B. WALLBOARD, GYPSUM*—NOM 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 15 IN.

   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.
2. THROUGH-PENETRANT—ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE SPACE BETWEEN PIPES, CONDUITS OR TUBING AND THE STEEL SLEEVE (ITEM 3A) SHALL BE MIN OF 0 IN. (POINT CONTACT) TO MAX 2-3/8 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   A. STEEL PIPE—NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. IRON PIPE—NOM 12 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIAM (OR SMALLER) OR CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.
   C. CONDUIT—NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
   D. COPPER TUBING—NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   E. COPPER PIPE—NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. FIRESTOP SYSTEM—INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS.
   A. STEEL SLEEVE—CYLINDRICAL SLEEVE FABRICATED FROM MIN 0.019 IN. THICK (NO. 28 GAUGE) GALV SHEET STEEL AND HAVING A MIN 2 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL SLEEVE TO BE EQUAL TO THICKNESS OF WALL PLUS 1 TO 4 IN. SUCH THAT, WHEN INSTALLED, THE ENDS OF THE SLEEVE WILL PROJECT APPROXIMATELY 1/2 TO 2 IN. BEYOND THE SURFACE OF THE WALL ON BOTH SIDES OF THE WALL ASSEMBLY. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAM SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENINGS AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM WALLBOARD LAYERS.
   B. PACKING MATERIAL—MIN 1 IN. THICKNESS OF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO STEEL SLEEVE ON BOTH SIDES OF THE WALL ASSEMBLY AS PERMANENT FORMS. PACKING MATERIAL TO BE RECESSED MIN 1/2 IN. FROM END OF STEEL SLEEVE (FLUSH WITH OR RECESSED INTO GYPSUM WALLBOARD SURFACE) ON BOTH SIDES OF WALL ASSEMBLY.
   B1. PACKING MATERIAL—(NOT SHOWN)—AS AN ALTERNATE TO ITEM B, NOM 1 IN. THICK POLYETHYLENE BACKER ROD MAY BE USED. THE BACKER ROD IS TO BE RECESSED WITHIN THE STEEL SLEEVE A MIN OF 1 IN. FROM EACH SURFACE OF WALL.
   C. FILL, VOID OR CAVITY MATERIALS*—CAULK—WHEN MINERAL WOOL BATT INSULATION IS USED, APPLIED TO FILL THE STEEL SLEEVE TO A MIN DEPTH OF 1/2 IN. ON BOTH SIDES OF WALL ASSEMBLY. WHEN BACKER ROD IS USED, A MIN THICKNESS OF 1 IN. OF CP-25WB+ CAULK IS REQUIRED FLUSH WITH SURFACE OF WALL. A NOM 1/4 IN. DIAM CONTINUOUS BEAD OF CAULK SHALL BE APPLIED AROUND THE CIRCUMFERENCE OF THE STEEL SLEEVE AT ITS EGRESS FROM THE GYPSUM WALLBOARD LAYERS ON BOTH SIDES OF THE WALL ASSEMBLY.
      MINNESOTA MINING & MFG. CO.—CP 25WB+

*BEARING THE UL CLASSIFICATION MARKING

1 TYPICAL FIRE RATED WALL PENETRATION
M302 SCALE: NONE — BARE METALLIC PIPE



CONSULT CURRENT UNDERWRITERS LABORATORIES "FIRE RESISTANCE DIRECTORY" FOR DETAILS

UL SYSTEM WL5011

1. WALL ASSEMBLY—THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALLASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   A. STUDS—WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC WITH NOM 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8 IN. WIDE BY 1-3/8 DEEP CHANNELS SPACED MAX 24 IN. OC.
   B. WALLBOARD, GYPSUM*—NOM 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 14-1/2 IN. FOR WOOD STUD WALLS AND 17 IN. FOR STEEL STUD WALLS.

   THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS 1 HR WHEN INSTALLED IN A 1 HR FIRE RATED WALL AND 2 HR WHEN INSTALLED IN A 2 HR FIRE RATED WALL.
2. THROUGH PENETRANTS—ONE METALLIC PIPE, CONDUIT OR TUBING TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   A. STEEL PIPE—NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE. WHEN STEEL PIPE IS USED, T RATING IS 1 HR.
   B. CONDUIT—NOM 3 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR STEEL CONDUIT. WHEN STEEL CONDUIT IS USED, T RATING IS 1/4 HR.
   C. COPPER TUBING—NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING. WHEN COPPER TUBING IS USED, T RATING IS 1/2 AND 1 HR WHEN INSTALLED IN 1 AND 2 HR RATED WALLS, RESPECTIVELY.
   D. COPPER PIPE—NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE. WHEN COPPER PIPE IS USED, T RATING IS 1/2 AND 1 HR WHEN INSTALLED IN 1 AND 2 HR RATED WALLS, RESPECTIVELY.
3. PIPE COVERING*—NOM 1 OR 1-1/2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORYAPPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SEALED WITH METAL FASTENER STRIP TAPE SUPPLIED WITH THE PRODUCT.
   SEE PIPE AND EQUIPMENT COVERINGS—MATERIALS—(BRGU) CATEGORY IN BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
4. STEEL SLEEVE—CYLINDRICAL SLEEVE FABRICATED FROM MIN 0.019 IN. THICK (NO. 28 GAUGE) GALV SHEET STEEL AND HAVING A MIN 2 IN. LAP ALONG THE LONGITUDINAL SEAM. LENGTH OF STEEL SLEEVE TO BE EQUAL TO THICKNESS OF WALL PLUS 1 IN. SUCH THAT, WHEN INSTALLED, THE ENDS OF THE SLEEVE WILL PROJECT APPROX 1/2 IN. BEYOND THE SURFACE OF THE WALL ON BOTH SIDES OF THE WALL ASSEMBLY. THE DIAM OF THE OPENINGS CUT IN THE GYPSUM WALLBOARD LAYERS ON EACH SIDE OF THE WALL ASSEMBLY (CONCENTRIC WITH PIPE) TO BE 2 TO 2-1/2 IN. LARGER THAN OUTSIDE DIAM OF PIPE INSULATION SUCH THAT, WHEN THE STEEL SLEEVE IS INSTALLED, A 1 TO 1-1/4 IN. ANNULAR SPACE WILL BE PRESENT BETWEEN THE STEEL SLEEVE AND THE PIPE INSULATION AROUND THE ENTIRE CIRCUMFERENCE OF THE PIPE. SLEEVE INSTALLED BY COILING THE SHEET STEEL TO A DIAM SMALLER THAN THE THROUGH OPENING, INSERTING THE COIL THROUGH THE OPENINGS AND RELEASING THE COIL TO LET IT UNCOIL AGAINST THE CIRCULAR CUTOUTS IN THE GYPSUM WALLBOARD LAYERS.
5. PACKING MATERIAL—POLYETHYLENE BACKER ROD OR MIN 1 IN. THICKNESS OF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO STEEL SLEEVE ON BOTH SIDES OF THE WALL ASSEMBLY AS PERMANENT FORMS. PACKING MATERIAL TO BE RECESSED MIN 1 IN. FROM END OF STEEL SLEEVE (RECESSED MIN 1/2 IN. INTO GYPSUM WALLBOARD SURFACE) ON BOTH SIDES OF WALL ASSEMBLY.
6. FILL, VOID OR CAVITY MATERIALS*—CAULK—MIN 1 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS ON BOTH SIDES OF WALL ASSEMBLY. THICKNESS FOR FILL MATERIAL FOR NOM 3 IN. DIAM (OR SMALLER) STEEL PIPES OR CONDUITS MAY BE REDUCED TO A MIN 1/2 IN. A NOM 1/4 IN. DIAM CONTINUOUS BEAD OF CAULK SHALL BE APPLIED AROUND THE CIRCUMFERENCE OF THE STEEL SLEEVE AT ITS EGRESS FROM THE GYPSUM WALLBOARD LAYERS ON BOTH SIDES OF THE WALL ASSEMBLY.
      MINNESOTA MINING & MFG. CO.—CP 25WB+

*BEARING THE UL CLASSIFICATION MARKING

2 TYPICAL FIRE RATED WALL PENETRATION
M302 SCALE: NONE — INSULATED METALLIC PIPE

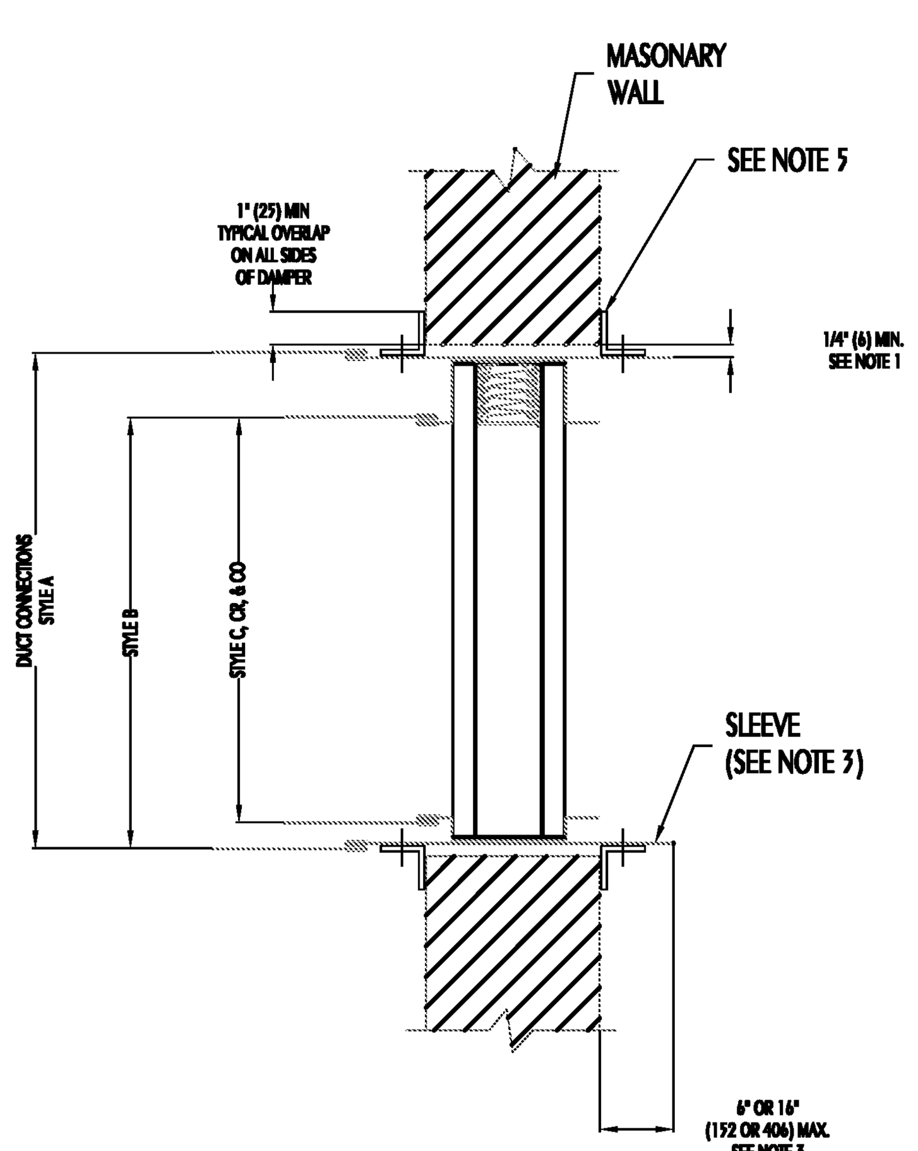
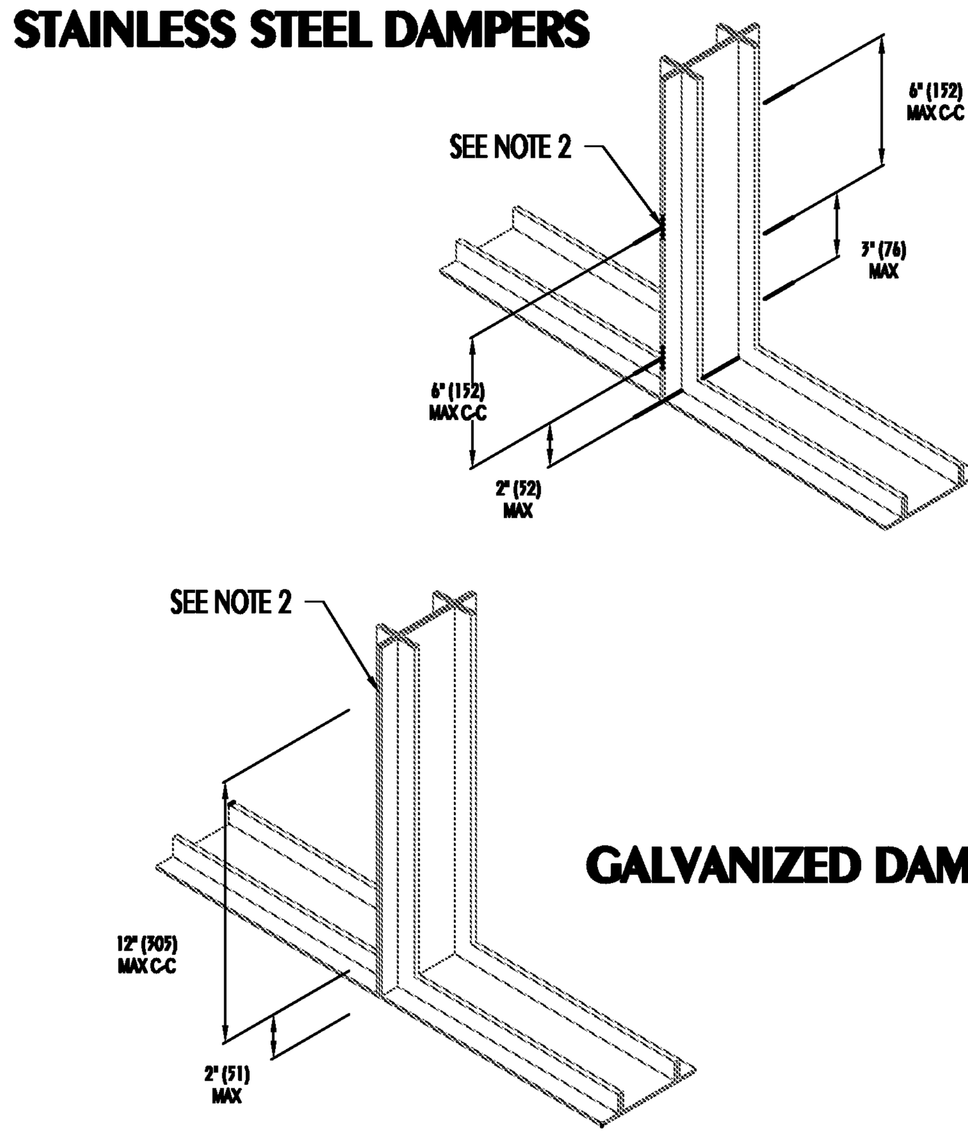


FIGURE 1

STAINLESS STEEL DAMPERS



GALVANIZED DAMPERS

FIGURE 2
1 1/2 HOUR

1. Opening Clearance
   The opening in the wall or floor shall be larger than the damper/sleeve assembly to permit installation or expansion. For two angle installations the opening shall be a minimum of 1/8" per foot (3 per 305) larger than the overall size of the damper/sleeve assembly. The maximum opening size shall not exceed 1/8" per foot (3 per 305) plus 2" (51), nor shall the opening be less than 1/4" (6) larger than the damper/sleeve assembly. For one angle installations, the opening shall be a minimum of 1/4" (6) to a maximum of 1" (25) larger than the overall size of the damper/sleeve assembly. The opening may be as much as 2" (51) larger than the damper/sleeve assembly if a 16ga (1.6) mounting angles is utilized.
2. Fasteners and Multiple Section Assembly
   Use No. 10 (M5) bolts or screws, 3/16" (5) rivets, tack welds or spot welds as depicted in figures 3 and 4 and spaced as follows when joining individual dampers to make multiple section damper assemblies or when fastening damper to the sleeve:
   Vertical Mount (In wall)
      Galvanized steel dampers 12" (305) spacing
      Stainless steel dampers 6" (152) spacing
   Horizontal Mount (In floor)
      All dampers 6" (152) spacing
   Multiple section horizontal mount dampers require a 14 gage thick x 41/2" (2 x 114) wide steel reinforcing plate sandwiched between the damper frames with 1/2" (13) long welds staggered intermittently and spaced on maximum 6" (152) centers. The reinforcing plate must be the same material as the dampers. The length must be equal to the damper width of two or more adjoining damper sections. Reinforcing plates are not required for assemblies consisting of two dampers attached end-to-end or three dampers attached side-to-side as depicted in figure 5.
3. Damper Sleeve
   Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gage requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA90A. If a breakaway style duct/sleeve connection is not used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide by 24" (610) high and 14 gage (1.9) for dampers exceeding 36" (914) wide by 24" (610) high. Damper sleeve shall not extend more than 6" (152) beyond the fire wall or partition unless damper is equipped with a factory installed access door. Sleeve may extend up to 16" (406) beyond the fire wall or partition on sides equipped with a factory installed access door. Sleeve shall terminate at both sides of wall within dimensions shown.
4. Damper Orientation
   Use "Air Flow" and "Mount with Arrow Up" labels on Dynamic DIBD and DIBDX models for proper damper orientation. For Static IBD models use only "Mount With Arrow Up" label on damper for proper damper orientation.
5. Mounting Angles
   Mounting angles shall be a minimum of 11/2" x 11/2" x 20 gage steel (38 x 38 x 1.0). For openings in metal stud, wood stud walls or concrete/masonry walls and floors of sizes 90" x 49" or 49" x 90" (2286 x 1245 or 1245 x 2286) and less mounting angles are only required on one side of the wall or top side of the floor and must be attached to both the sleeve and the wall or floor. Mounting angles may be installed directly to the metal stud under the wall board on metal stud wall installations only. Larger openings require mounting angles on both sides of the partition and must be attached only to the sleeve. Mounting angles must overlap the partition a minimum of 1" (25). Do not weld or fasten angles together at corners of dampers. Ruskin fire dampers may be installed using Ruskin FAST angle for one angle installation or Ruskin PFMA for two angle installations.
   a. Mounting Angle Fasteners
      Sleeve: #10 bolts or screws, 3/16" (5) steel rivets or 1/2" (13) long welds.
      Masonry/Wall or Floor: #10 self-tapping concrete screws.
      Wood/Steel Stud Wall: #10 screws
   b. Mounting Angle Fastener Spacing
      For one angle installations the sleeve fasteners shall be spaced at 6" (152) o.c. and the wall or floor fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 fasteners on each side, top and bottom. Screw fasteners used in metal stud must engage the metal stud a minimum of 1/2" (13). Screw fasteners used in wood stud must engage the wood stud a minimum of 3/4" (19). Screw fasteners used in masonry walls or floors must engage the wall a minimum of 11/2" (38). For two angle installations the fasteners shall be spaced at 8" (203) o.c.
6. Duct/Sleeve Connections
   a. Break-away Duct/Sleeve Connections
      Rectangular ducts must use one or more of the connections: plain "S" slip, hemmed "S" slip, double "S" slip, inside slip joint, standing S, standing S (angle reinforced), standing, standing S (bar reinforced), standing S (angle reinforced, or drive slip joint.
      A maximum of two #10 sheet metal screws on each side and the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used. Connections using these slip joints on the top and bottom with flat drive slips up to 20" (508) long on the sides may also be used.
   b. Round and Oval Break-away Connections
      Round and flat oval break-away connections must use either a 4" (102) wide drawband or #10 sheet metal screws spaced equally around the circumference of the duct as follows:
      - Duct diameters 22" (559) and smaller – Maximum 3 screws.
      - Duct diameters over 22" (559) and including 36" (914) – Maximum 5 screws.
      - Duct diameters over 36" (914) and up to and including 191" (4851) total perimeter – Maximum 8 screws. For flat oval ducts, the diameter is considered the largest (major) dimension of the duct.

      Note: When optional sealing of these joints is desired, the following sealants may be applied in accordance with the sealant manufacturer's instructions:
         Hardcast, Inc. – Iron Grip 601 Precision –PA2084T
         Eco Duct Seal 44-52 Design Polymerics – DP 1010
   c. Flanged Break-away Style Duct Sleeve Connections.
      Flanged connection systems manufactured by Ductmate, Nexus or Ward are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement. TDC and TDF roll-formed flanged connections using 3/8" (10) steel bolts and nuts, and metal cleats, as tested by SMACNA, are approved break-away connections when installed as shown on the Flanged System Breakaway Connections Supplement.
   d. Non-Break-away Duct/Sleeve Connections
      If other duct sleeve connections are used, the sleeve shall be a minimum of 16 gage (1.6) for dampers up to 36" (914) wide x 24" (610) high and 14 gage (2.0) for dampers exceeding 36" (914) wide x 24" (610) high.
7. Installation and Maintenance
   To ensure optimum operation and performance, the damper must be installed so it is square and free from racking. Each fire damper should be maintained and tested on a regular basis and in accordance with the latest editions of NFPA 90A and local codes. Care should be exercised to ensure that such tests are performed safely and do not cause system damage.

3 VERTICAL FIRE DAMPER DETAIL
M302 SCALE: NONE

NOTE: ALL SYSTEMS DETAILED ON MECHANICAL PENETRATIONS SHEETS ARE BASED ON THE MANUFACTURERS SPECIFIED AS BASIS OF DESIGN AND APPLY TO MECHANICAL, FIRE PROTECTION, AND PLUMBING. THE CONTRACTOR SHALL SUBMIT A PENETRATIONS PACKAGE DETAILING EACH PENETRATION AND PRODUCTS TO BE USED TO THE PERMITTING AUTHORITY FOR THE ACTUAL SYSTEMS TO BE USED.

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Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC FIRE-RATED WALL PENETRATION DETAILS

M302

1. FLOOR OR WALL ASSEMBLY—MIN 2-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150) PCF CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF OPENING IS 18 IN. SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE—NOM 10 IN. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX OF 2 IN. ABOVE TOP OF FLOOR OR BEYOND EITHER SURFACE OF WALL. T RATING IS 0 HR WHEN SLEEVE IS USED.

2. THROUGH PENETRANT—NOM 4 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER PIPE, NOM 12 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIAM (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE OR NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE CENTERED IN THE OPENING AND RIGIDLY SUPPORTED ON BOTH SIDES OF THE FLOOR OR WALL ASSEMBLY.

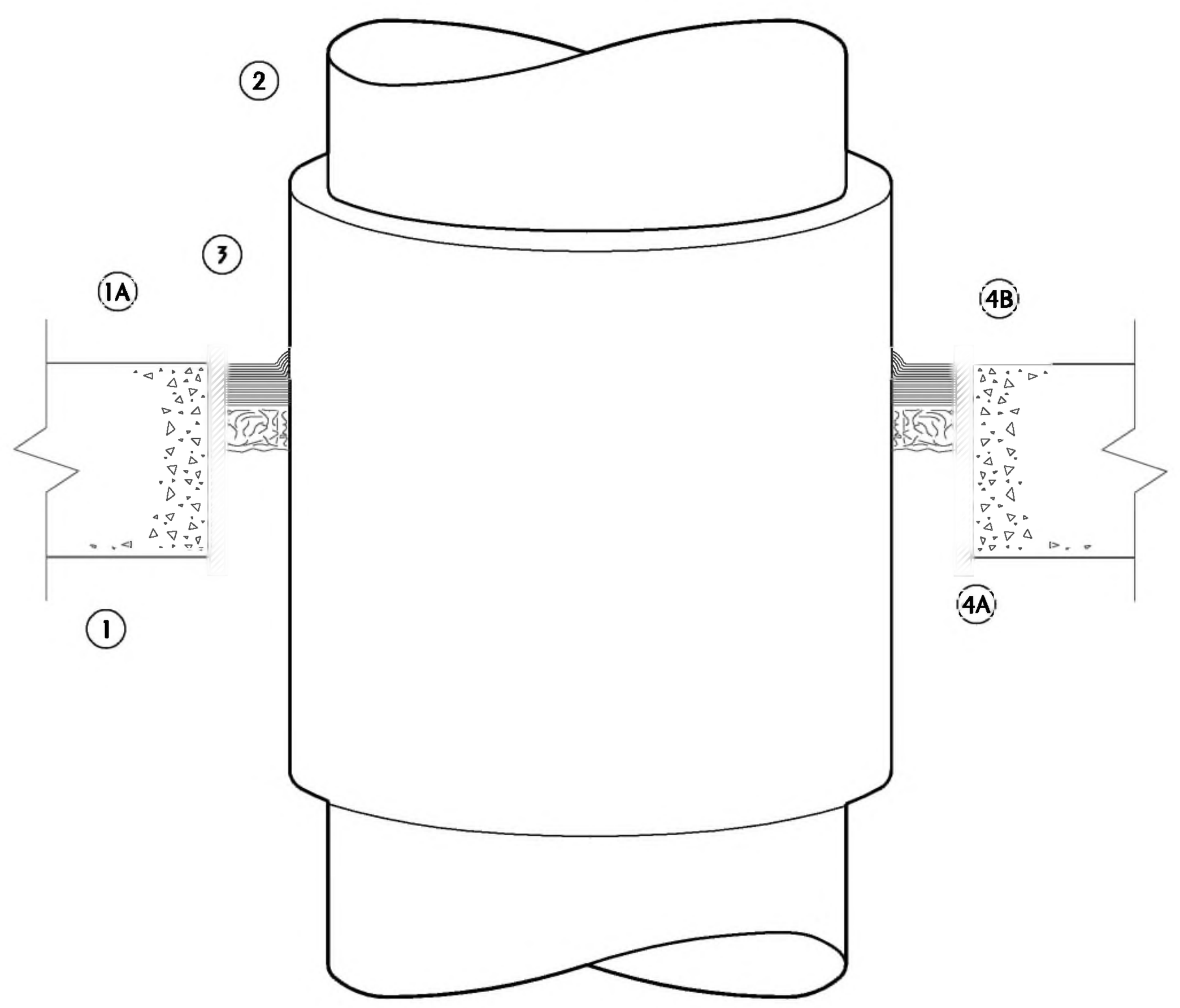
3. PIPE COVERING*—NOM 1/2 TO 2 IN. THICK HOLLOW CYLINDRICAL HEAVY DENSITY (MIN. 3.5 PCF) GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT STRIP TAPE SUPPLIED WITH THE PRODUCT. SEE PIPE AND EQUIPMENT COVERING—MATERIALS*(BRGU) CATEGORY IN BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.

4. FIRESTOP SYSTEM—THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:
   A. PACKING MATERIAL—MIN 1 IN. THICKNESS OF FIRMLY PACKED MINERAL WOOL BATT INSULATION USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR SLEEVE OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM B).
   B. FILL, VOID OR CAVITY MATERIAL*—CAULK—APPLIED TO FILL THE ANNULAR SPACE FLUSH WITH THE TOP SURFACE OF THE FLOOR OR SLEEVE OR FLUSH WITH BOTH SURFACES OF WALL. WHEN NOM PIPE COVERING THICKNESS IS 2 IN., MIN THICKNESS OF CAULK FILL MATERIAL IS 2 IN. WHEN NOM PIPE COVERING THICKNESS IS 1-1/2 IN. OR LESS, MIN THICKNESS OF CAULK FILL MATERIAL IS 1 IN. THE HOURLY F AND T RATINGS OF THE FIRESTOP SYSTEM ARE DEPENDENT UPON THE THICKNESS OF THE FLOOR OR WALL, THE SIZE OF PIPE, THE THICKNESS OF PIPE COVERING MATERIAL AND THE SIZE OF THE ANNULAR SPACE (BETWEEN THE PIPE COVERING MATERIAL AND THE EDGE OF THE CIRCULAR THROUGH OPENING), AS SHOWN IN THE FOLLOWING TABLE:

MIN FLOOR OR WALL THKNS IN.	MAX PIPE DIAM IN.	NOM PIPE COVERING THKNS IN.	ANNULAR SPACE IN.	F RATING HR	T RATING HR
2-1/2	4	1 OR 1-1/2	1/2 TO 2-3/8	2	1
4-1/2	4	2	1/4 TO 3-5/8	2	1-1/2
2-1/2	12	1	1/2 TO 1-1/2	2	1/2
4-1/2	12	1	1/2 TO 2-3/8	3	1
2-1/2	12	1/2	1/2 TO 2-3/8	2	0

MINNESOTA MINING & MFG. CO.—CP 25WB+.

*BEARING THE UL CLASSIFICATION MARKING

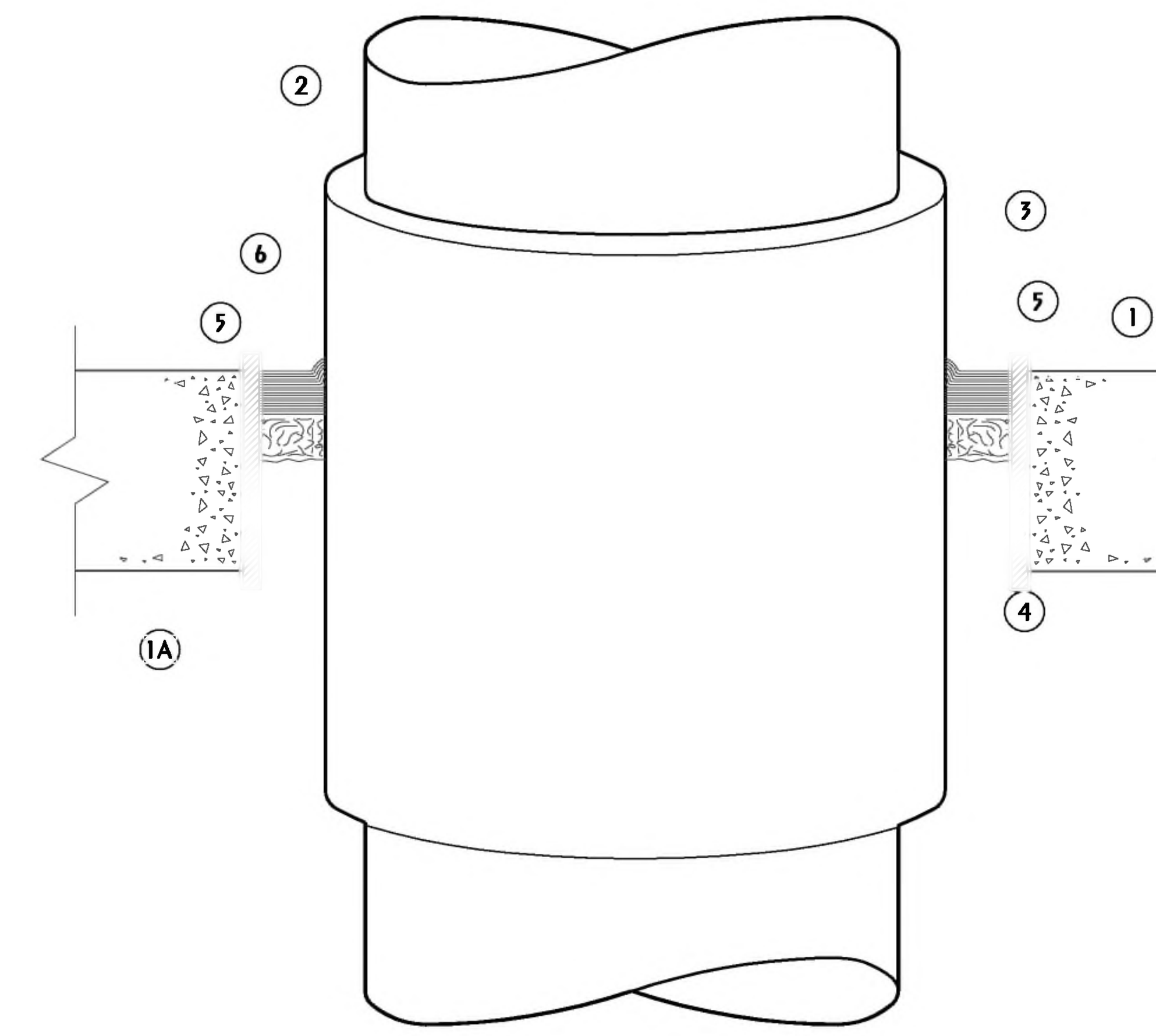


CONSULT CURRENT UNDERWRITERS LABORATORIES "FIRE RESISTANCE DIRECTORY" FOR DETAILS

UL SYSTEM CAJ5001

1 M303 TYPICAL FIRE RATED WALL/FLOOR PENETRATION

SCALE: NONE — FIBERGLASS INSULATED METALLIC PIPE



CONSULT CURRENT UNDERWRITERS LABORATORIES "FIRE RESISTANCE DIRECTORY" FOR DETAILS

UL SYSTEM CAJ5060

1. FLOOR OR WALL ASSEMBLY—MIN 2-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. F RATINGS AND T RATINGS ARE DEPENDENT ON THE MIN THICKNESS OF FLOOR OR WALL, AS WELL AS THE MAX SIZE OF THE PIPE AND THE NOM THICKNESS OF THE CELLULAR GLASS INSULATION, AS NOTED IN ITEM 3. MAX DIAM OF THROUGH OPENING IS 28-1/2 IN.
   SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

1A. STEEL SLEEVE—MAX 15 IN. ID (OR SMALLER), MIN 0.25 IN. WALL THICKNESS (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX OF 2 IN. ABOVE TOP OF FLOOR OR BEYOND EITHER SURFACE OF WALL. T RATING IS 0 HR WHEN SLEEVE IS USED.

2. THROUGH PENETRANTS—ONE METALLIC PIPE OR TUBING TO BE POSITIONED WITHIN THE FIRESTOP SYSTEM. PIPE OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBING MAY BE USED:
   A. STEEL PIPE—NOM 20 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   B. COPPER TUBING—NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   C. COPPER PIPE—NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

3. PIPE COVERING MATERIALS*—CELLULAR GLASS INSULATION—NOM 1-1/2 TO 3 IN. THICK CELLULAR GLASS UNITS SIZED TO THE OUTSIDE DIAM OF THE STEEL PIPE AND SUPPLIED IN NOM 24 IN. LONG HALF SECTIONS OR NOM 18 IN. LONG SEGMENTS. PIPE INSULATION INSTALLED ON PIPE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. F RATINGS AND T RATINGS ARE DEPENDENT ON THE ITEMS NOTED IN THE FOLLOWING TABLE:

MIN FLOOR OR WALL THKNS IN.	MAX PIPE DIAM IN.	NOM GLASS INSUL THKNS IN.	F RATING HR	T RATING HR
2-1/2	6	1-1/2 AND 3	2	3/4
4-1/2	6	1-1/2	3	1
4-1/2	6	3	3	1-1/2
4-1/2	20	1-1/2	2	1/2
4-1/2	20	3	2	1

PITTSBURGH CORNING CORP.—FOAMGLAS

4. PACKING MATERIAL—MIN 1 IN. THICKNESS OF TIGHTLY-PACKED MINERAL WOOL BATT INSULATION MATERIAL USED AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED MIN 1 IN. FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL TO ACCOMMODATE THE CAULK FILL MATERIAL (ITEM 5).

5. FILL, VOID OR CAVITY MATERIALS*—CAULK—INSTALLED TO FILL ANNULAR SPACE TO A MIN DEPTH OF 1 IN., FLUSH WITH TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL. A MIN 1/2 IN. DIAM BEAD OF CAULK SHALL BE APPLIED TO THE PIPE INSULATION/CONCRETE INTERFACE AT THE POINT CONTACT LOCATION ON THE TOP SURFACE OF THE FLOOR AND ON BOTH SIDES OF WALLS.
   MINNESOTA MINING & MFG. CO.—CP 25WB+

6. METAL JACKET—MIN 12 IN. LONG JACKET FORMED OF MIN 0.010 IN. THICK STEEL OR ALUMINUM SHEET CUT TO WRAP TIGHTLY AROUND THE PIPE INSULATION WITH A MIN 2 IN. LAP AND SECURED USING BANDS AND SEALS OF SIMILAR MATERIAL. BANDS TO BE LOCATED WITHIN 2 IN. OF EACH END OF THE JACKET AND SPACED MAX 10 IN. OC. JACKET TO BE INSTALLED WITH EDGE ABUTTING SURFACE OF CAULK FILL MATERIAL (ITEM 5) ON TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL. METAL JACKET TO BE USED IN ADDITION TO ANY OTHER JACKETING MATERIAL WHICH MAY BE REQUIRED OR DESIRED ON THE PIPE INSULATION.

*BEARING THE UL CLASSIFICATION MARKING

2 M303 TYPICAL FIRE RATED WALL/FLOOR PENETRATION

SCALE: NONE — CELLULAR GLASS INSULATED METALLIC PIPE

NOTE: ALL SYSTEMS DETAILED ON MECHANICAL PENETRATIONS SHEETS ARE BASED ON THE MANUFACTURERS SPECIFIED AS BASIS OF DESIGN AND APPLY TO MECHANICAL, FIRE PROTECTION, AND PLUMBING. THE CONTRACTOR SHALL SUBMIT A PENETRATIONS PACKAGE DETAILING EACH PENETRATION AND PRODUCTS TO BE USED TO THE PERMITTING AUTHORITY FOR THE ACTUAL SYSTEMS TO BE USED.

WATFORD ENGINEERING
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850.526.3447 www.watford-engineering.com
Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC FIRE-RATED WALL PENETRATION DETAILS

DIRECT DIGITAL CONTROLS GENERAL NOTES

1. THE CONTRACTOR SHALL PROVIDE NEW DDC CONTROLLERS FOR ALL NEW EQUIPMENT. THE NEW CONTROLLERS SHALL TIE INTO THE EXISTING TRANE FRONT END AND SHALL PERFORM THE INDICATED SEQUENCES, ALL OTHER FUNCTIONS REQUIRED BY THE CONTRACT DOCUMENTS, AND ALL OTHER FUNCTIONS REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.
2. ALL SEQUENCES ARE SUBJECT TO SAFETIES. DDC CONTRACTOR SHALL PROVIDE ALL NECESSARY AND CUSTOMARY SAFETIES.
3. ALL WIRING EXPOSED IN MECHANICAL ROOMS, INSIDE WALLS, OR IN FINISHED SPACES SHALL BE IN CONDUIT. ALL CONDUIT SHALL BE IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS, REQUIREMENTS FOR 120 VAC CIRCUITS.
4. ALL CONTROL TUBING SHALL BE RUN IN CONDUIT. ALL CONDUIT SHALL BE IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS, REQUIREMENTS FOR 120 VAC CIRCUITS.
5. ALL WELLS SHALL BE 316 STAINLESS STEEL AND SHALL BE INSTALLED IN NEW THREDOLETS WHETHER INSTALLED IN NEW OR EXISTING PIPING. IN CHILLED WATER PIPING PROVIDE NEW WELLS WITH EXTENDED NECK TO SUIT INSULATION THICKNESS.
6. THE DDC CONTRACTOR IS CO-RESPONSIBLE, ALONG WITH THE TAB CONTRACTOR FOR COORDINATING THE PROPER INSTALLATION OF WELLS, PRESSURE TAPS, AND P/T TAPS IN ALL LOCATIONS INDICATED AND OTHERWISE AS REQUIRED FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
7. THE DDC CONTRACTOR AND THE TAB CONTRACTOR SHALL UTILIZE P/T'S TO CALIBRATE INSTRUMENTS TO CERTIFIED PRESSURE GAGES, PRESSURE METERS AND THERMOMETERS.
8. CONDUIT SHALL BE RUN PERPENDICULAR AND PARALLEL TO BUILDING LINES IN A FIRST CLASS WORKMANSHIP LIKE MANNER.
9. NO EXPOSED CONDUIT SHALL BE USED IN FINISHED SPACES WITHOUT APPROVAL OF THE OWNER AND ENGINEER.
10. WHERE EXISTING CONTROLS DEVICES ARE REMOVED AND THE EXISTING LOCATION IS NOT TO BE REUSED, THE CONTRACTOR SHALL PROVIDE A BLANK COVER PLATE TO MATCH EXISTING ROOM DEVICES.
11. WHERE NEW DEVICES REPLACING EXISTING DEVICES DO NOT FULLY COVER THE FOOTPRINT OF THE EXISTING DEVICE, THE CONTRACTOR SHALL PROVIDE AN ESCUTCHEON OR TRIM PIECE TO COVER THE UNFINISHED SURFACE. AS AN ALTERNATE, THE CONTRACTOR MAY PAINT THE ENTIRE WALL THAT THE DEVICES RESIDES UPON TO MATCH EXISTING COLOR.
12. PROVIDE OPERATING SCHEDULE FOR EACH AHU. PROVIDE SEPARATE OPERATING SCHEDULE FOR OUTSIDE AIR FOR EACH AHU.
13. PROVIDE DUCT ACCESS DOOR AT EACH AIRFLOW MEASURING STATION TO ALLOW SERVICE AND INSPECTION OF DUCT MOUNTED UNIT.
14. PROVIDE DUCT ACCESS DOOR AT EACH CONTROL DAMPER TO ALLOW SERVICE AND INSPECTION OF DAMPER MECHANISM.
15. THIS PROJECT SHALL INCLUDE COMMISSIONING OF THE HVAC, CONTROLS, AND RELATED ELECTRICAL SYSTEMS. THE SERVICES OF THE COMMISSIONING AUTHORITY ARE PROVIDED UNDER SEPARATE CONTRACT. UNDER THIS CONTRACT, THE PRIME CONTRACTOR, SUBCONTRACTORS, AND EQUIPMENT MANUFACTURERS SHALL PROVIDE LABOR AND MATERIAL AS REQUIRED TO ASSIST AND PARTICIPATE IN THE COMMISSIONING PROCESS FOR THE SCOPE OF WORK AS DESCRIBED IN SECTION 15995 OF THE PROJECT SPECIFICATIONS.

SEQUENCE OF OPERATION
VARIABLE VOLUME AHU

STARTING AND STOPPING OF EQUIPMENT SHALL BE ACCOMPLISHED THROUGH A "HAND-OFF-AUTO" SWITCH LOCATED ON FACE OF DDC CONTROL PANEL. AN ALARM SHALL BE POSTED TO THE DDC SYSTEM ANYTIME THE HOA SWITCH IS INDEXED TO THE "HAND" OR "OFF" POSITIONS. WITH THE HOA SWITCH IN THE "AUTO" POSITION, THE UNIT SHALL BE STARTED AUTOMATICALLY BY THE DDC SYSTEM AND ALL CONTROLS ACTIVATED SUBJECT TO FIRE ALARM RELAY, SAFETIES AND OVERLOADS.

OCCUPIED MODE: OPEN OUTSIDE AIR DAMPER AND START EXHAUST FANS INDICATED WHENEVER THE BUILDING IS IN OCCUPIED MODE.

COOLING COIL FREEZE PROTECTION: THE DDC SYSTEM SHALL CLOSE THE OUTSIDE AIR DAMPER ANYTIME THE COOLING COIL ENTERING AIR TEMPERATURE FALLS BELOW 40°F LONGER THAN 5 MINUTES. THE LOW LIMIT FREEZE STAT SHALL STOP THE AHU FAN MOTOR ANYTIME THE COOLING COIL ENTERING AIR TEMPERATURE FALLS BELOW 35°F.

DISCHARGE TEMPERATURE CONTROL: THE DDC SYSTEM SHALL MODULATE THE CHILLED WATER VALVE AS REQUIRED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SET POINT (REFER TO AHU SCHEDULE). WHEN MINIMUM SPEED IS REACHED AND THERE IS A CALL FOR HEATING FROM ANY ZONE, THE DDC SHALL RESET SUPPLY AIR TEMPERATURE UP IN 2°F INCREMENTS EVERY FIVE MINUTES TO A MAXIMUM OF 65°F. THE DDC SHALL REVERSE SUPPLY AIR RESET UPON A CALL FOR COOLING OR WHEN RETURN AIR RH RISES ABOVE 57°F DEW POINT (ADJUSTABLE).

FAN SPEED CONTROL: SUBJECT TO THE DUCT MOUNTED HIGH LIMIT STATIC PRESSURE SENSORS, THE ADJUSTABLE VARIABLE FREQUENCY DRIVE SHALL MODULATE FAN SPEED AS REQUIRED TO MAINTAIN A CONSTANT STATIC PRESSURE AT THE DUCT MOUNTED STATIC PRESSURE SENSOR. THE DUCT STATIC PRESSURE SET POINT SHALL BE SET AT THE MINIMUM REQUIRED FOR TEST AND BALANCE. WHEN NONE OF THE TU'S ASSOCIATED WITH THE AHU HAVE BEEN IN FULL COOLING MODE FOR FIVE MINUTES, THE DDC SHALL RESET THE DUCT STATIC PRESSURE DOWN 0.15". AHU AIRFLOW SHALL BE LIMITED TO SCHEDULED MAXIMUM AND MINIMUM VALUES. AHU FAN SHALL RUN CONTINUOUSLY DURING OCCUPANCY.

OUTSIDE AIR CONTROL: THE DDC SYSTEM, WITH OA DUCT MOUNTED FLOW MEASURING STATION, SHALL MODULATE RA AND OA DAMPERS AS REQUIRED TO MAINTAIN OUTSIDE AIR QUANTITY AT SET POINT REGARDLESS OF THE TOTAL AIR FLOW OF THE AIR HANDLING UNIT AT ANYTIME. READOUT OF OUTSIDE AIR QUANTITY SHALL BE IN CFM. OUTSIDE AIR DAMPER SHALL BE OPENED TO ITS BALANCED POSITION DURING OCCUPIED CYCLES. UPON FAILURE THE OA DAMPER SHALL BE NORMALLY CLOSED. WHENEVER THE AHU OPERATES DURING UNOCCUPIED MODE, THE OA DAMPER SHALL REMAIN CLOSED.

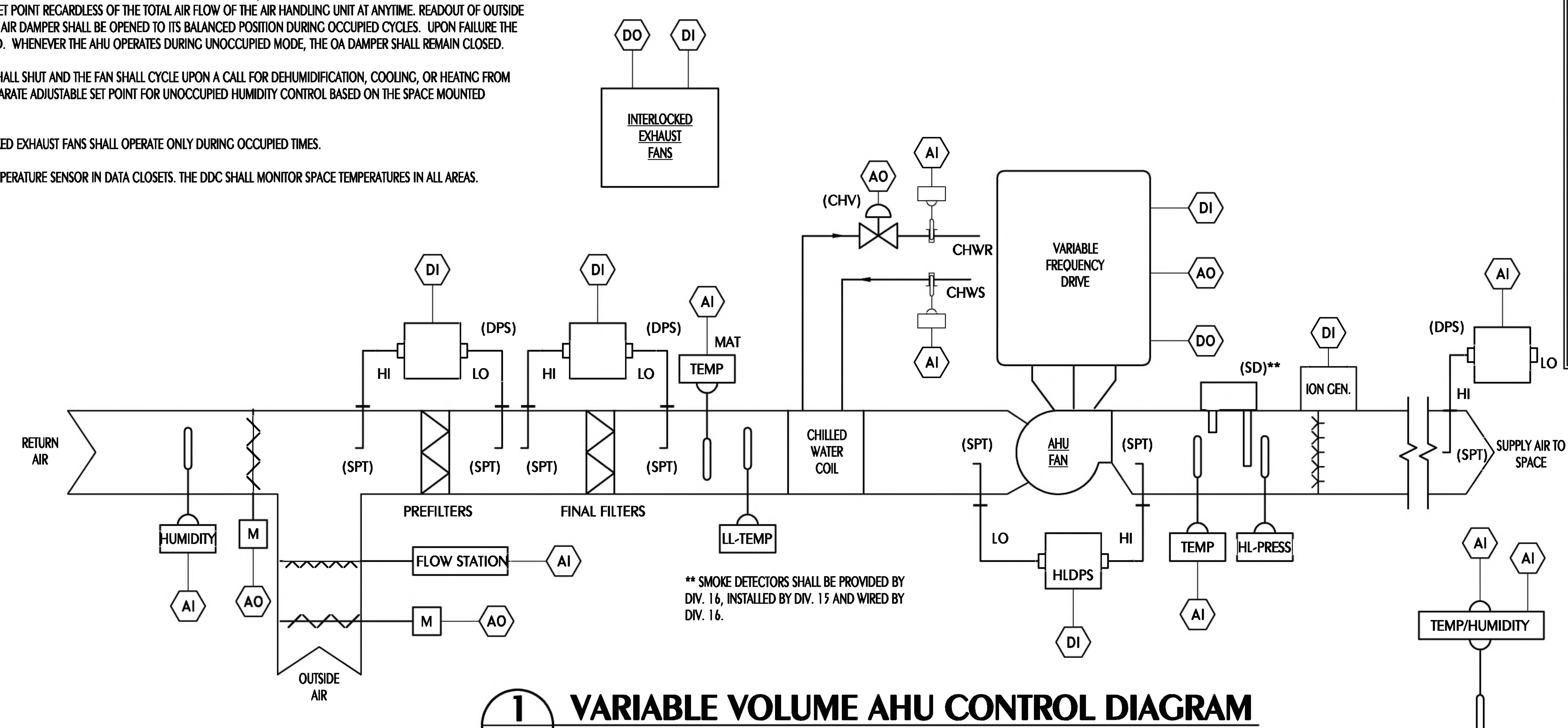
UNOCCUPIED MODE: THE OA DAMPER SHALL SHUT AND THE FAN SHALL CYCLE UPON A CALL FOR DEHUMIDIFICATION, COOLING, OR HEATNG FROM ANY SPACE. THE DDC SHALL HAVE A SEPARATE ADJUSTABLE SET POINT FOR UNOCCUPIED HUMIDITY CONTROL BASED ON THE SPACE MOUNTED TEMPERATURE AND HUMIDITY SENSOR.

INTERLOCKED EXHAUST FANS: INTERLOCKED EXHAUST FANS SHALL OPERATE ONLY DURING OCCUPIED TIMES.

MONITORED ZONES: PROVIDE ROOM TEMPERATURE SENSOR IN DATA CLOSETS. THE DDC SHALL MONITOR SPACE TEMPERATURES IN ALL AREAS.

VARIABLE VOLUME AHU POINTS LIST

SYSTEM POINT DESCRIPTION		ANALOG									DIGITAL									SYSTEMS FEATURES											
		INPUT					OUTPUT				INPUT				OUTPUT					ALARMS						PROGRAMS					
	GRAPHIC	TEMPERATURE	CFM	STATIC PRESSURE	ION COUNT	HUMIDITY	DDC	SPEED	SET POINT ADJ.		FAULT	STATUS	FILTER STATUS	SMOKE	START/STOP	OPEN/CLOSE	LOCK OUT	ENABLE/DISABLE	HIGH/LOW	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	LATCHING	TIME SCHEDULING	RUN TIME	TIMED OVERRIDE	MODE CONTROL		
CONTROL PANEL	X																						X	X	X	X	X		X		
FAN CONTROL								X			X	X			X							X									
RETURN AIR						X														X	X	X									
BI-POLAR IONIZATION											X											X									
MIXED AIR		X																		X	X	X									
CHWC DISCHARGE AIR		X																		X	X	X									
COOLING VALVE							X																								
CHWS		X																		X	X	X									
CHWR		X																		X	X	X									
FILTERS													X							X		X									
OUTSIDE AIR			X		X															X	X	X									
RETURN AIR DAMPER							X																								
DUCT STATIC PRESSURE				X																X	X	X									
OUTSIDE AIR DAMPER												X				X															
HLDPS																			X	X											
EXHAUST FANS											X				X																
DATA CLOSET		X																		X	X	X									
SPACE SENSOR (LOCATION NOTED ON PLANS)		X				X														X	X	X									



1 M400 **VARIABLE VOLUME AHU CONTROL DIAGRAM**
SCALE: NONE
TYPICAL FOR AHU-1,2

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC CONTROLS

M400

DIRECT DIGITAL CONTROLS GENERAL NOTES

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4. ALL CONTROL TUBING SHALL BE RUN IN CONDUIT. ALL CONDUIT SHALL BE IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS, REQUIREMENTS FOR 120 VAC CIRCUITS.
5. ALL WELLS SHALL BE 316 STAINLESS STEEL AND SHALL BE INSTALLED IN NEW THREDOLETS WHETHER INSTALLED IN NEW OR EXISTING PIPING. IN CHILLED WATER PIPING PROVIDE NEW WELLS WITH EXTENDED NECK TO SUIT INSULATION THICKNESS.
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11. WHERE NEW DEVICES REPLACING EXISTING DEVICES DO NOT FULLY COVER THE FOOTPRINT OF THE EXISTING DEVICE, THE CONTRACTOR SHALL PROVIDE AN ESCUTCHEON OR TRIM PIECE TO COVER THE UNFINISHED SURFACE. AS AN ALTERNATE, THE CONTRACTOR MAY PAINT THE ENTIRE WALL THAT THE DEVICES RESIDES UPON TO MATCH EXISTING COLOR.
12. PROVIDE OPERATING SCHEDULE FOR EACH AHU. PROVIDE SEPARATE OPERATING SCHEDULE FOR OUTSIDE AIR FOR EACH AHU.
13. PROVIDE DUCT ACCESS DOOR AT EACH AIRFLOW MEASURING STATION TO ALLOW SERVICE AND INSPECTION OF DUCT MOUNTED UNIT.
14. PROVIDE DUCT ACCESS DOOR AT EACH CONTROL DAMPER TO ALLOW SERVICE AND INSPECTION OF DAMPER MECHANISM.
15. THIS PROJECT SHALL INCLUDE COMMISSIONING OF THE HVAC, CONTROLS, AND RELATED ELECTRICAL SYSTEMS. THE SERVICES OF THE COMMISSIONING AUTHORITY ARE PROVIDED UNDER SEPARATE CONTRACT. UNDER THIS CONTRACT, THE PRIME CONTRACTOR, SUBCONTRACTORS, AND EQUIPMENT MANUFACTURERS SHALL PROVIDE LABOR AND MATERIAL AS REQUIRED TO ASSIST AND PARTICIPATE IN THE COMMISSIONING PROCESS FOR THE SCOPE OF WORK AS DESCRIBED IN SECTION 15995 OF THE PROJECT SPECIFICATIONS.

SEQUENCE OF OPERATION VARIABLE VOLUME AHU

STARTING AND STOPPING OF EQUIPMENT SHALL BE ACCOMPLISHED THROUGH A "HAND-OFF-AUTO" SWITCH LOCATED ON FACE OF DDC CONTROL PANEL. AN ALARM SHALL BE POSTED TO THE DDC SYSTEM ANYTIME THE HOA SWITCH IS INDEXED TO THE "HAND" OR "OFF" POSITIONS. WITH THE HOA SWITCH IN THE "AUTO" POSITION, THE UNIT SHALL BE STARTED AUTOMATICALLY BY THE DDC SYSTEM AND ALL CONTROLS ACTIVATED SUBJECT TO FIRE ALARM RELAY, SAFETIES AND OVERLOADS.

OCCUPIED MODE: OPEN OUTSIDE AIR DAMPER AND START EXHAUST FANS INDICATED WHENEVER THE BUILDING IS IN OCCUPIED MODE.

COOLING COIL FREEZE PROTECTION: THE DDC SYSTEM SHALL CLOSE THE OUTSIDE AIR DAMPER ANYTIME THE COOLING COIL ENTERING AIR TEMPERATURE FALLS BELOW 40°F LONGER THAN 5 MINUTES. THE LOW LIMIT FREEZE STAT SHALL STOP THE AHU FAN MOTOR ANYTIME THE COOLING COIL ENTERING AIR TEMPERATURE FALLS BELOW 35°F.

HOT WATER PREHEAT COIL TEMPERATURE CONTROL (AHU-1 ONLY): THE DDC SHALL ENABLE PREHEAT WHEN THE MIXED AIR TEMPERATURE FALLS 5 DEGREES BELOW THE DESIGN COOLING COIL DISCHARGE TEMPERATURE. THE COOLING COIL SHALL BE LOCKED OUT ANYTIME THE PREHEAT IS ENABLED. UPON A FALL IN MIXED AIR TEMPERATURE 5 DEGREES BELOW THE COOLING COIL LEAVING AIR TEMPERATURE SETPOINT, THE DDC SHALL MODULATE THE HOT WATER VALVE TO PREHEAT THE AIR TO 55°F. WHEN THERE IS A CALL FOR HEATING FROM ANY ZONE, THE DDC SHALL RESET SUPPLY AIR TEMPERATURE UP IN 2°F INCREMENTS UNTIL THE SCHEDULED LEAVING AIR TEMPERATURE IS REACHED OR THE CALL FOR HEATING HAS BEEN SATISFIED. THE DDC SHALL REVERSE PREHEAT COIL LEAVING AIR TEMPERATURE RESET UPON A CALL FOR COOLING.

CHILLED WATER COIL TEMPERATURE CONTROL: THE DDC SYSTEM SHALL MODULATE THE CHILLED WATER VALVE AS REQUIRED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE AT SET POINT (REFER TO AHU SCHEDULE). WHEN MINIMUM SPEED IS REACHED AND THERE IS A CALL FOR HEATING FROM ANY ZONE, THE DDC SHALL RESET SUPPLY AIR TEMPERATURE UP IN 2°F INCREMENTS EVERY FIVE MINUTES TO A MAXIMUM OF 65°F. THE DDC SHALL REVERSE SUPPLY AIR RESET UPON A CALL FOR COOLING OR WHEN RETURN AIR DEWPOINT RISES ABOVE 57°F (ADJUSTABLE).

FAN SPEED CONTROL: SUBJECT TO THE DUCT MOUNTED HIGH LIMIT STATIC PRESSURE SENSORS, THE ADJUSTABLE VARIABLE FREQUENCY DRIVE SHALL MODULATE FAN SPEED AS REQUIRED TO MAINTAIN A CONSTANT STATIC PRESSURE AT THE DUCT MOUNTED STATIC PRESSURE SENSOR. THE DUCT STATIC PRESSURE SET POINT SHALL BE SET AT THE MINIMUM REQUIRED FOR TEST AND BALANCE. WHEN NONE OF THE TU'S ASSOCIATED WITH THE AHU HAVE BEEN IN FULL COOLING MODE FOR FIVE MINUTES, THE DDC SHALL RESET THE DUCT STATIC PRESSURE DOWN 0.15". AHU AIRFLOW SHALL BE LIMITED TO SCHEDULED MAXIMUM AND MINIMUM VALUES. AHU FAN SHALL RUN CONTINUOUSLY.

AHU-1 OUTSIDE AIR CONTROL: THE DDC SYSTEM, WITH OA DUCT MOUNTED FLOW MEASURING STATION, SHALL MODULATE RA DAMPER AND OA DAMPER AS REQUIRED TO MAINTAIN OUTSIDE AIR QUANTITY AT SET POINT REGARDLESS OF THE TOTAL AIR FLOW OF THE AIR HANDLING UNIT AT ANYTIME. READOUT OF OUTSIDE AIR QUANTITY SHALL BE IN CFM. OUTSIDE AIR DAMPER SHALL BE OPENED TO ITS BALANCED POSITION DURING OCCUPIED CYCLES. UPON FAILURE THE OA DAMPER SHALL BE NORMALLY CLOSED. THE DDC SHALL MONITOR LAB CLASSROOM CONTROL PANELS FOR STATUS AND ILLUMINATE THE GREEN CLASSROOM MODE LED OR RED LAB MODE LED AS COMMANDED. UPON A CALL FOR LAB MODE IN A ZONE, THE DDC SHALL ADD THE QUANTITY OF OUTSIDE AIR TO THE CURRENT SET POINT AS INDICATED BELOW, CLOSE THE ROOM RETURN AIR DAMPER, AND START THE INDICATED LAB EXHAUST FAN. WHENEVER THE AHU OPERATES DURING UNOCCUPIED MODE, THE OA DAMPER SHALL REMAIN CLOSED.

ZONE	OUTSIDE AIRFLOW ADD
TU-1.02	1230 CFM
TU-1.11	1120 CFM
TU-1.12	1285 CFM

AHU-2 OUTSIDE AIR CONTROL: THE DDC SYSTEM, WITH OA DUCT MOUNTED FLOW MEASURING STATION, SHALL MODULATE RA AND OA DAMPERS AS REQUIRED TO MAINTAIN OUTSIDE AIR QUANTITY AT SET POINT REGARDLESS OF THE TOTAL AIR FLOW OF THE AIR HANDLING UNIT AT ANYTIME. READOUT OF OUTSIDE AIR QUANTITY SHALL BE IN CFM. OUTSIDE AIR DAMPER SHALL BE OPENED TO ITS BALANCED POSITION DURING OCCUPIED CYCLES. UPON FAILURE THE OA DAMPER SHALL BE NORMALLY CLOSED. WHENEVER THE AHU OPERATES DURING UNOCCUPIED MODE, THE OA DAMPER SHALL REMAIN CLOSED.

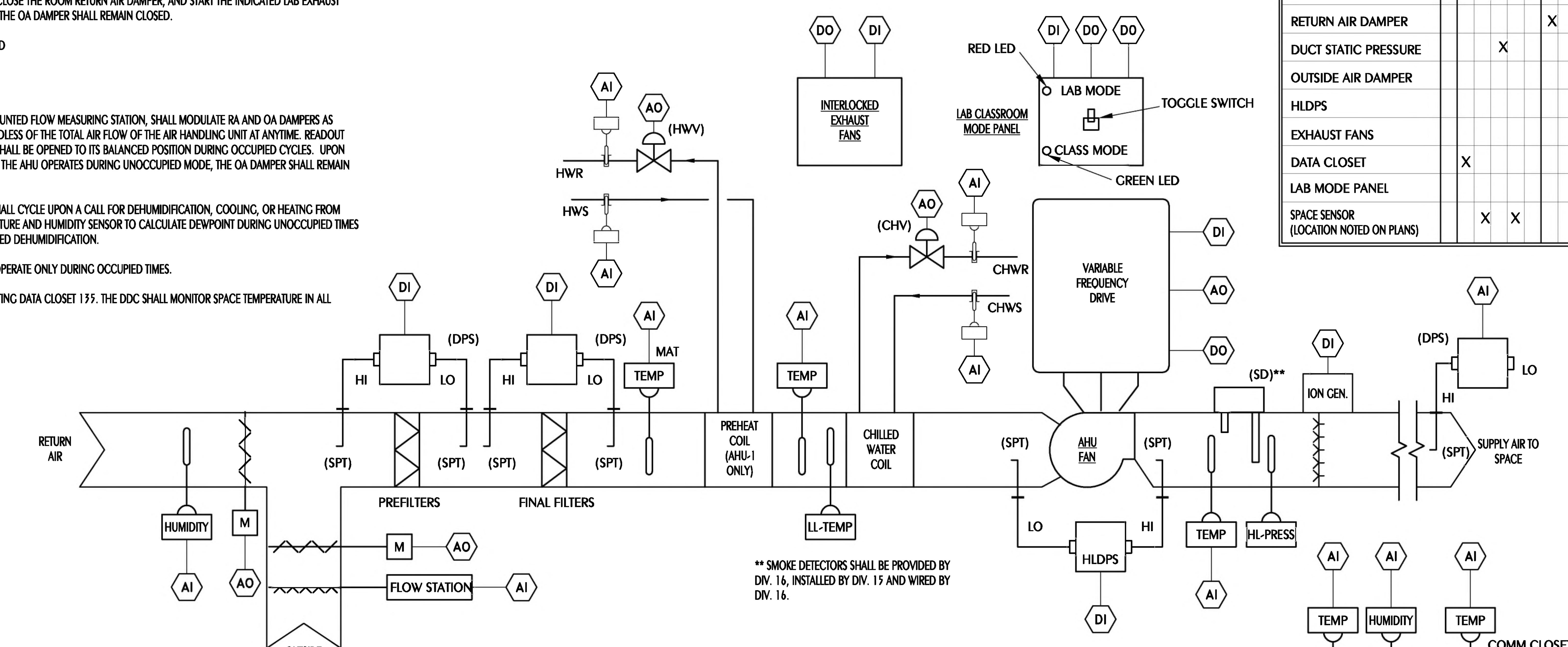
UNOCCUPIED MODE: THE OA DAMPER SHALL SHUT AND THE FAN SHALL CYCLE UPON A CALL FOR DEHUMIDIFICATION, COOLING, OR HEATNG FROM ANY SPACE. THE DDC SHALL UTILIZE THE SPACE MOUNTED TEMPERATURE AND HUMIDITY SENSOR TO CALCULATE DEWPOINT DURING UNOCCUPIED TIMES AND SHALL HAVE A SEPARATE ADJUSTABLE SETPOINT FOR UNOCCUPIED DEHUMIDIFICATION.

INTERLOCKED EXHAUST FANS: INTERLOCKED EXHAUST FANS SHALL OPERATE ONLY DURING OCCUPIED TIMES.

MONITORED ZONES: PROVIDE ROOM TEMPERATURE SENSOR IN EXISTING DATA CLOSET 135. THE DDC SHALL MONITOR SPACE TEMPERATURE IN ALL AREAS.

VARIABLE VOLUME AHU POINTS LIST

SYSTEM POINT DESCRIPTION	GRAPHIC	ANALOG INPUT: TEMPERATURE	ANALOG INPUT: CFM	ANALOG INPUT: STATIC PRESSURE	ANALOG INPUT: ION COUNT	ANALOG INPUT: HUMIDITY	ANALOG OUTPUT: DDC	ANALOG OUTPUT: VARIABLE FREQ. DRIVE	ANALOG OUTPUT: SET POINT ADJ.	DIGITAL INPUT: FAULT	DIGITAL INPUT: STATUS	DIGITAL INPUT: FILTER STATUS	DIGITAL INPUT: LAB MODE	DIGITAL OUTPUT: START/STOP	DIGITAL OUTPUT: OPEN/CLOSE	DIGITAL OUTPUT: LOCK OUT	DIGITAL OUTPUT: LAB/CLASS	DIGITAL OUTPUT: HIGH/LOW	ALARMS: HIGH ANALOG	ALARMS: LOW ANALOG	ALARMS: SENSOR FAIL	ALARMS: COMM. FAIL	ALARMS: DIAGNOSTICS	ALARMS: LATCHING	PROGRAMS: TIME SCHEDULING	PROGRAMS: RUN TIME	PROGRAMS: TIMED OVERRIDE	PROGRAMS: MODE CONTROL
CONTROL PANEL	X																					X	X	X	X	X		X
FAN CONTROL								X		X	X			X							X							
RETURN AIR						X													X	X	X							
BI-POLAR IONIZATION										X											X							
MIXED AIR		X																	X	X	X							
CHWC DISCHARGE AIR		X																	X	X	X							
COOLING VALVE							X																					
CHWS		X																	X	X	X							
CHWR		X																	X	X	X							
HWC DISCHARGE AIR		X																	X	X	X							
HEATING VALVE							X																					
HWS		X																	X	X	X							
HWR		X																	X	X	X							
FILTERS												X							X		X							
OUTSIDE AIR			X		X														X	X	X							
RETURN AIR DAMPER							X																					
DUCT STATIC PRESSURE				X															X	X	X							
OUTSIDE AIR DAMPER											X				X													
HLDPS																		X	X									
EXHAUST FANS										X				X														
DATA CLOSET		X																	X	X	X							
LAB MODE PANEL													X				X				X							X
SPACE SENSOR (LOCATION NOTED ON PLANS)			X		X														X	X	X							



1 M400 **VARIABLE VOLUME AHU CONTROL DIAGRAM**
SCALE: NONE
TYPICAL FOR AHU-1,2

WATFORD ENGINEERING
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850.526.3447 www.watford-engineering.com
Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-101
DATE:	05-24-2024
DRAWN BY:	SLD
DESIGNED BY:	S. Day

HVAC CONTROLS

SEQUENCE OF OPERATION
SINGLE DUCT TERMINAL UNIT

EACH TERMINAL UNIT SHALL BE PROVIDED WITH A UNIT CONTROL MODULE (UCM). THE UCM SHALL BE FIELD OR FACTORY MOUNTED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO EACH TERMINAL UNIT.

UNIT AIRFLOW SHALL BE MONITORED BY AN INTEGRAL, MULTIPLE POINT, AVERAGING FLOW SENSING DEVICE AND A TRANSDUCER TO MAINTAIN AIRFLOW WITHIN 5% OF RATED CFM DOWN TO A MINIMUM CFM AS SCHEDULED, INDEPENDENT OF CHANGES IN SYSTEM STATIC PRESSURE.

COOLING MODE: THE UCM SHALL MONITOR THE ZONE TEMPERATURE AGAINST ITS SET POINT (74°F ADJUSTABLE) AND MODULATE THE DAMPER TO MEET THE ZONE SETPOINT. IF THE TU CALLS FOR FULL COOLING AND CANNOT REACH MAXIMUM AIRFLOW FOR FIVE MINUTES, THE DDC SHALL RESET THE AHU STATIC PRESSURE UP 0.15".

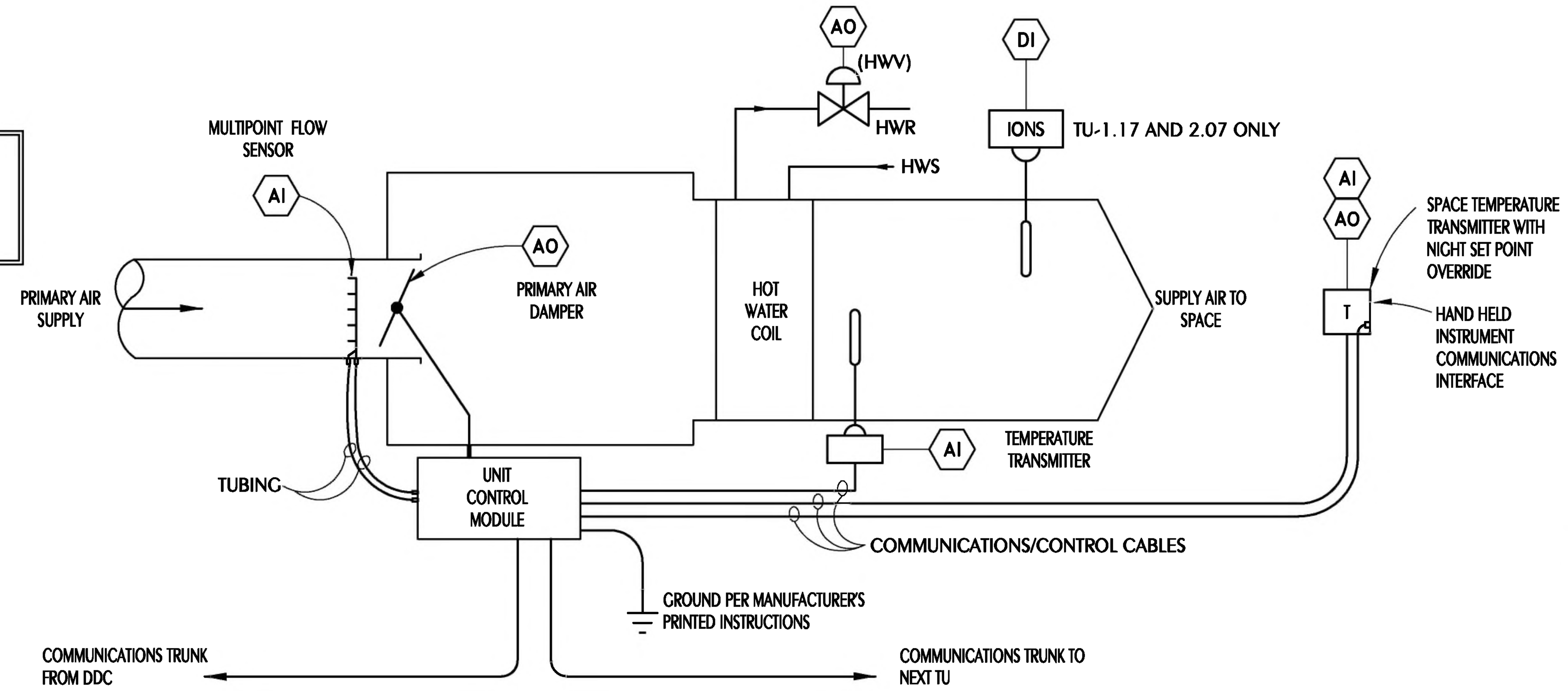
HEATING MODE: THE DAMPER SHALL MODULATE TO THE HEATING AIRFLOW (SEE TU SCHEDULES) AND THE HOT WATER VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE (COOLING SET POINT MINUS 3°F).

THE ZONE TEMPERATURE SENSOR WITH SET POINT ADJUSTMENT SHALL BE PROVIDED WITH NIGHT SETBACK OVERRIDE, AND A COMMUNICATIONS JACK. UPPER AND LOWER ZONE TEMPERATURE SET POINTS SHALL BE SET BY THE DDC.

OCCUPIED/UNOCCUPIED MODE: CONTROLS CONTRACTOR SHALL CONSULT WITH OWNER FOR SPACE TEMPERATURE SETPOINTS.

OVERRIDE MODE: THE OVERRIDE TIMER SHALL PLACE THE TU AND AHU IN OCCUPIED MODE FOR ONE HOUR (ADJUSTABLE).

ION SENSOR: TU-1.17 AND 2.07 SHALL BE EQUIPPED WITH A SUPPLY AIR MOUNTED ION SENSOR WITH ADJUSTABLE SETPOINT AND DIGITAL OUTPUT. THE DDC SHALL POST AN ALARM WHEN THE ION COUNT FALLS BELOW THE SETPOINT. INITIAL SETPOINT MINIMUM SHALL BE 5000 IONS/CC/SEC. DUCT SETPOINT SHALL BE CONFIRMED BY SPACE ION MEASUREMENTS AT A MINIMUM OF 2000 IONS/CC/SEC IN THE SPACE SERVED.



1 / M401 **SINGLE DUCT TU CONTROL DIAGRAM**
SCALE: NONE

SINGLE DUCT TU POINTS LIST

SYSTEM POINT DESCRIPTION		ANALOG										DIGITAL										SYSTEMS FEATURES											
		INPUT				OUTPUT					INPUT				OUTPUT					ALARMS						PROGRAMS					
	GRAPHIC	TEMPERATURE	IONS	CFM	HUMIDITY	OPEN	VARIABLE FREQ. DRIVE	SET POINT ADJ.			PNEU. TRANSDUCER	STATUS ON/OFF	FILTER STATUS	IONS	START/STOP	OPEN/CLOSE	LOCKOUT	ENABLE/DISABLE	HIGH/LOW	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	LATCHING	TIME SCHEDULING	RUN TIME	TIMED OVERRIDE	MODE CONTROL		
CONTROL PANEL																							X	X	X	X	X	X	X		
SUPPLY AIR TO SPACE		X												X						X	X	X									
ZONE TEMPERATURE		X						X												X	X	X									
HEATING VALVE						X																									
DAMPER						X																									
FLOW SENSOR				X																		X									

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Florida Certificate of Authorization: 27825

David N Watford, PE Florida License 58208

CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC CONTROLS

SEQUENCE OF OPERATION SINGLE DUCT TERMINAL UNIT

EACH TERMINAL UNIT SHALL BE PROVIDED WITH A UNIT CONTROL MODULE (UCM). THE UCM SHALL BE FIELD OR FACTORY MOUNTED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO EACH TERMINAL UNIT.

UNIT AIRFLOW SHALL BE MONITORED BY AN INTEGRAL, MULTIPLE POINT, AVERAGING FLOW SENSING DEVICE AND A TRANSDUCER TO MAINTAIN AIRFLOW WITHIN 5% OF RATED CFM DOWN TO A MINIMUM CFM AS SCHEDULED, INDEPENDENT OF CHANCES IN SYSTEM STATIC PRESSURE.

COOLING MODE: THE UCM SHALL MONITOR THE ZONE TEMPERATURE AGAINST ITS SET POINT (74°F ADJUSTABLE) AND MODULATE THE DAMPER TO MEET THE ZONE SETPOINT. IF THE TU CALLS FOR FULL COOLING AND CANNOT REACH MAXIMUM AIRFLOW FOR FIVE MINUTES, THE DDC SHALL RESET THE AHU STATIC PRESSURE UP 0.15".

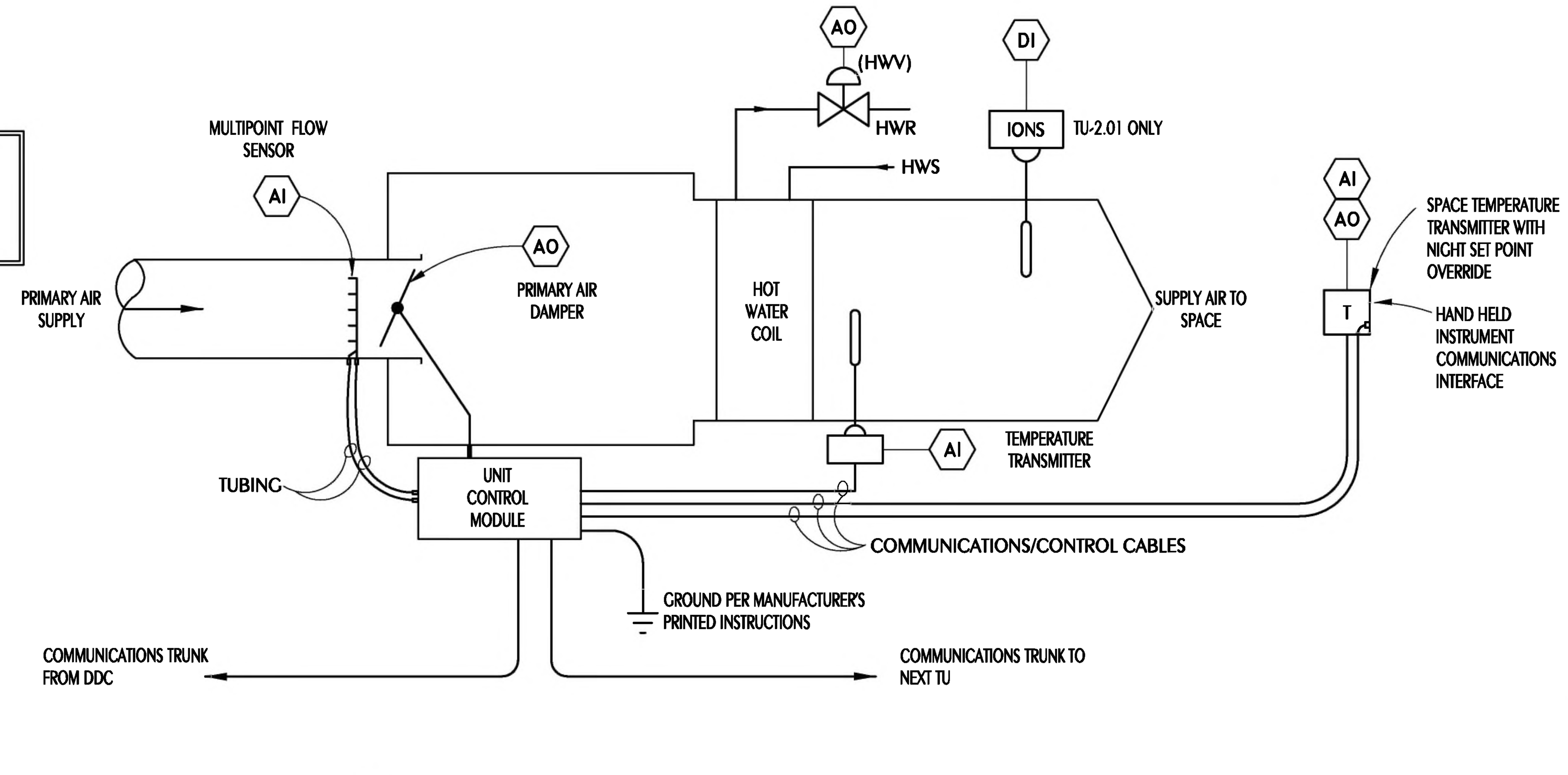
HEATING MODE: THE DAMPER SHALL MODULATE TO THE HEATING AIRFLOW (SEE TU SCHEDULES) AND THE HOT WATER VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE (COOLING SET POINT MINUS 3°F).

THE ZONE TEMPERATURE SENSOR WITH SET POINT ADJUSTMENT SHALL BE PROVIDED WITH NIGHT SETBACK OVERRIDE, AND A COMMUNICATIONS JACK. UPPER AND LOWER ZONE TEMPERATURE SET POINTS SHALL BE SET BY THE DDC.

OCCUPIED/UNOCCUPIED MODE: CONTROLS CONTRACTOR SHALL CONSULT WITH OWNER FOR SPACE TEMPERATURE SETPOINTS.

OVERRIDE MODE: THE OVERRIDE TIMER SHALL PLACE THE TU AND AHU IN OCCUPIED MODE FOR ONE HOUR (ADJUSTABLE).

ION SENSOR: TU-2.01 SHALL BE EQUIPPED WITH A SUPPLY AIR MOUNTED ION SENSOR WITH ADJUSTABLE SETPOINT AND DIGITAL OUTPUT. THE DDC SHALL POST AN ALARM WHEN THE ION COUNT FALLS BELOW THE SETPOINT. INITIAL SETPOINT MINIMUM SHALL BE 5000 IONS/CC/SEC. DUCT SETPOINT SHALL BE CONFIRMED BY SPACE ION MEASUREMENTS AT A MINIMUM OF 2000 IONS/CC/SEC IN THE SPACE SERVED.



1 M401 **SINGLE DUCT TU CONTROL DIAGRAM**
SCALE: NONE

SINGLE DUCT TU POINTS LIST

SYSTEM POINT DESCRIPTION		ANALOG									DIGITAL									SYSTEMS FEATURES											
		INPUT				OUTPUT					INPUT				OUTPUT					ALARMS						PROGRAMS					
	GRAPHIC	TEMPERATURE		CFM	HUMIDITY	OPEN	VARIABLE FREQ. DRIVE	SET POINT ADJ.			PNEU. TRANSDUCER	STATUS ON/OFF	FILTER STATUS	IONS	START/STOP	OPEN/CLOSE	LOCKOUT	ENABLE/DISABLE	HIGH/LOW	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	LATCHING	TIME SCHEDULING	RUN TIME	TIMED OVERRIDE	MODE CONTROL		
CONTROL PANEL																							X	X	X	X	X	X	X		
SUPPLY AIR TO SPACE		X												X						X	X	X									
ZONE TEMPERATURE		X						X												X	X	X									
HEATING VALVE						X																									
DAMPER						X																									
FLOW SENSOR				X																		X									

SEQUENCE OF OPERATION LAB CLASSROOM TERMINAL UNIT

THE FOLLOWING SEQUENCE OF OPERATION APPLIES TO TU-1.02, 1.11, AND 1.12 ONLY.

EACH TERMINAL UNIT SHALL BE PROVIDED WITH A UNIT CONTROL MODULE (UCM). THE UCM SHALL BE FIELD OR FACTORY MOUNTED. THE ELECTRICAL CONTRACTOR SHALL PROVIDE 120V POWER TO EACH TERMINAL UNIT.

UNIT AIRFLOW SHALL BE MONITORED BY AN INTEGRAL, MULTIPLE POINT, AVERAGING FLOW SENSING DEVICE AND A TRANSDUCER TO MAINTAIN AIRFLOW WITHIN 5% OF RATED CFM DOWN TO A MINIMUM CFM AS SCHEDULED, INDEPENDENT OF CHANCES IN SYSTEM STATIC PRESSURE.

COOLING MODE: THE UCM SHALL MONITOR THE ZONE TEMPERATURE AGAINST ITS SET POINT (74°F ADJUSTABLE) AND MODULATE THE DAMPER TO MEET THE ZONE SETPOINT. IF THE TU CALLS FOR FULL COOLING AND CANNOT REACH MAXIMUM AIRFLOW FOR FIVE MINUTES, THE DDC SHALL RESET THE AHU STATIC PRESSURE UP 0.15".

LAB MODE: THE DDC SHALL RESET THE MINIMUM AIRFLOW RATE OF THE TERMINAL UNIT TO THE DESIGN COOLING AIRFLOW UNTIL THE CALL FOR LAB MODE HAS EXPIRED.

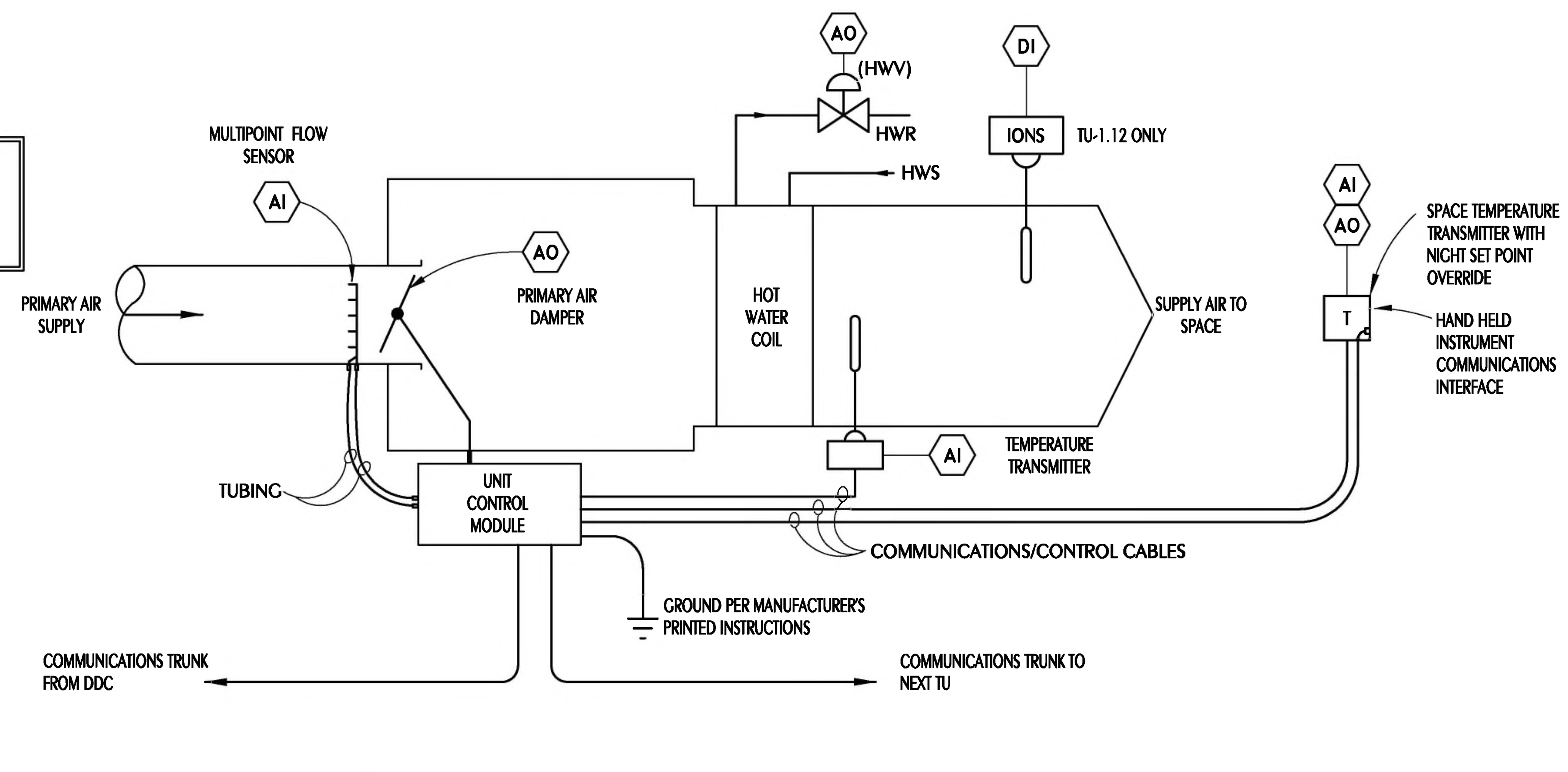
HEATING MODE: THE DAMPER SHALL MODULATE TO THE HEATING AIRFLOW (SEE TU SCHEDULES) AND THE HOT WATER VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN SPACE TEMPERATURE (COOLING SET POINT MINUS 3°F).

THE ZONE TEMPERATURE SENSOR WITH SET POINT ADJUSTMENT SHALL BE PROVIDED WITH NIGHT SETBACK OVERRIDE, AND A COMMUNICATIONS JACK. UPPER AND LOWER ZONE TEMPERATURE SET POINTS SHALL BE SET BY THE DDC.

OCCUPIED/UNOCCUPIED MODE: CONTROLS CONTRACTOR SHALL CONSULT WITH OWNER FOR SPACE TEMPERATURE SETPOINTS.

OVERRIDE MODE: THE OVERRIDE TIMER SHALL PLACE THE TU AND AHU IN OCCUPIED MODE FOR ONE HOUR (ADJUSTABLE).

ION SENSOR: TU-1.12 SHALL BE EQUIPPED WITH A SUPPLY AIR MOUNTED ION SENSOR WITH ADJUSTABLE SETPOINT AND DIGITAL OUTPUT. THE DDC SHALL POST AN ALARM WHEN THE ION COUNT FALLS BELOW THE SETPOINT. INITIAL SETPOINT MINIMUM SHALL BE 5000 IONS/CC/SEC. DUCT SETPOINT SHALL BE CONFIRMED BY SPACE ION MEASUREMENTS AT A MINIMUM OF 2000 IONS/CC/SEC IN THE SPACE SERVED.



2 M401 **SINGLE DUCT TU CONTROL DIAGRAM**
SCALE: NONE LAB CLASSROOM

SINGLE DUCT LAB CLASSROOM TU POINTS LIST

SYSTEM POINT DESCRIPTION		ANALOG									DIGITAL									SYSTEMS FEATURES											
		INPUT				OUTPUT					INPUT				OUTPUT					ALARMS						PROGRAMS					
	GRAPHIC	TEMPERATURE		CFM	HUMIDITY	OPEN	VARIABLE FREQ. DRIVE	SET POINT ADJ.			PNEU. TRANSDUCER	STATUS ON/OFF	FILTER STATUS	IONS	START/STOP	OPEN/CLOSE	LOCKOUT	ENABLE/DISABLE	HIGH/LOW	HIGH ANALOG	LOW ANALOG	SENSOR FAIL	COMM. FAIL	DIAGNOSTICS	LATCHING	TIME SCHEDULING	RUN TIME	TIMED OVERRIDE	MODE CONTROL		
CONTROL PANEL																							X	X	X	X	X	X	X		
SUPPLY AIR TO SPACE		X												X						X	X	X									
ZONE TEMPERATURE		X						X												X	X	X									
HEATING VALVE						X																									
DAMPER						X																									
FLOW SENSOR				X																		X									

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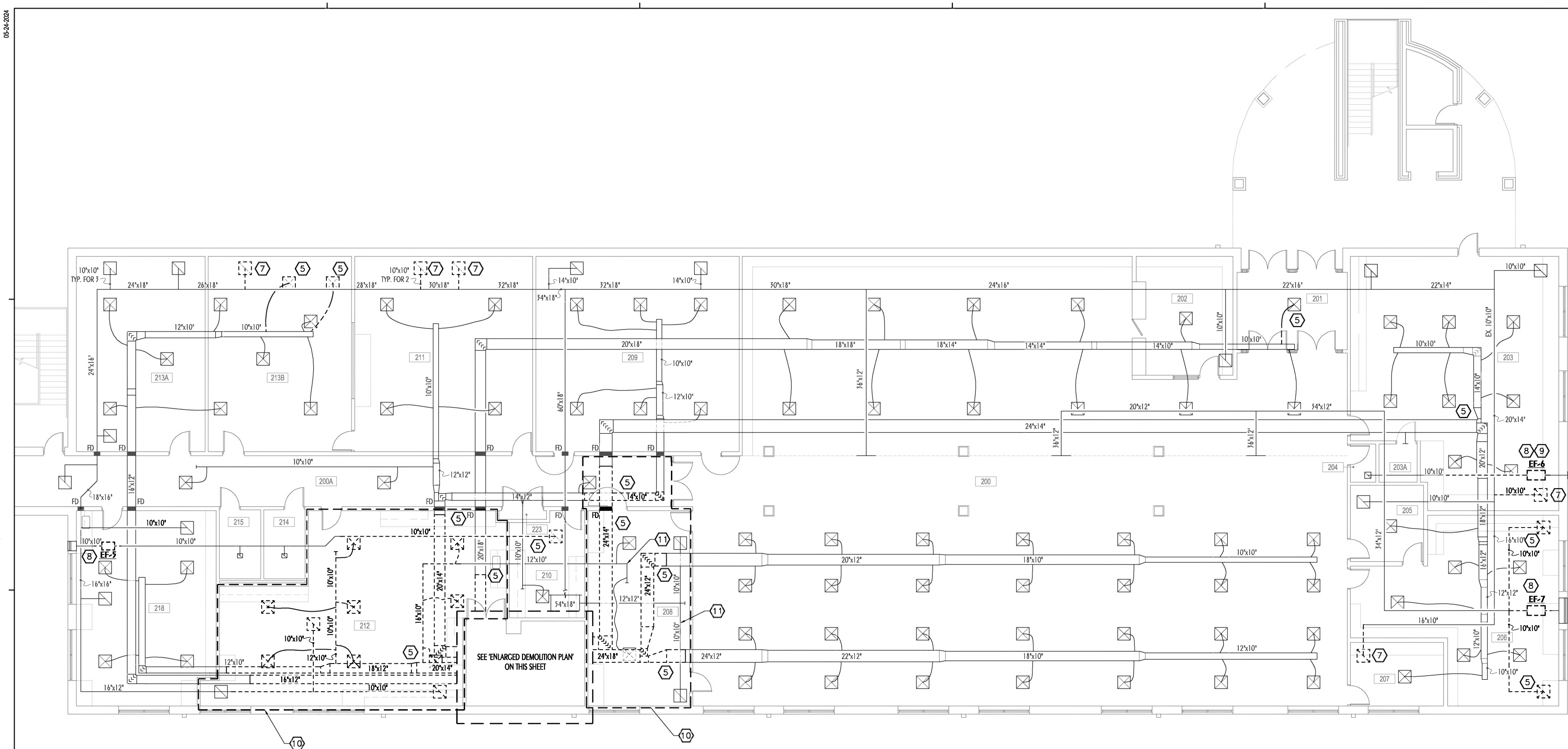
CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 1 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

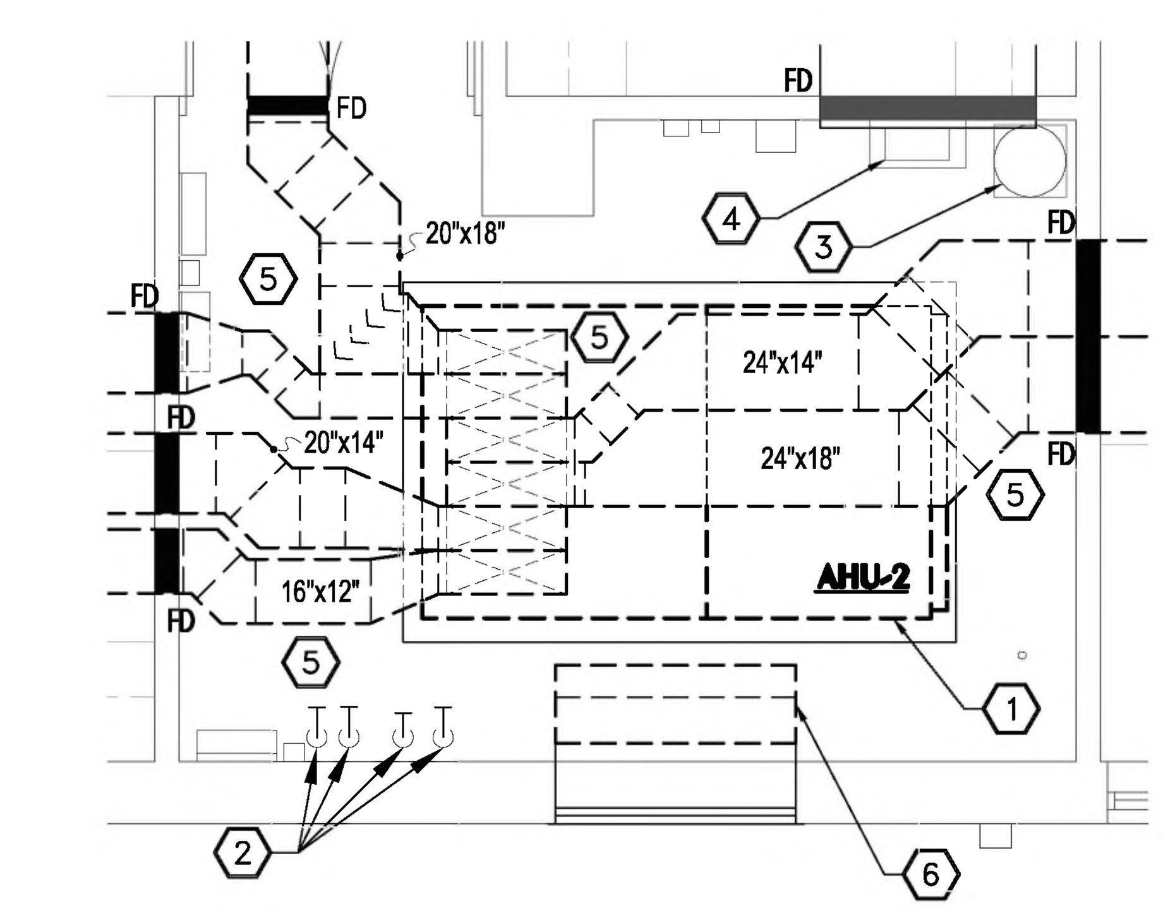
No.	Description	Date

PROJECT NUMBER: 2022-101
DATE: 05-24-2024
DRAWN BY: SLD
DESIGNED BY: S. Day

HVAC CONTROLS



1 2nd FLOOR HVAC DEMOLITION
M110
SCALE: 1/8" = 1'-0"



2 ENLARGED DEMOLITION PLAN
M110
SCALE: 1/4" = 1'-0"

SHEET NOTES

1. DISCONNECT DUCTWORK, CHILLED AND HEATING WATER PIPING, AND REMOVE MULTIZONE AIR HANDLING UNIT COMPLETE WITH ALL ASSOCIATED SENSORS AND ACCESSORIES.
2. REMOVE CHILLED AND HEATING WATER SUPPLY AND RETURN PIPING COIL CONNECTIONS, VALVES, FITTINGS, AND ACCESSORIES. REMOVE ALL CHILLED AND HEATING WATER PIPING FROM THIS SPACE BACK TO THE POINT INDICATED.
3. ELECTRIC DOMESTIC WATER HEATER TO BE REMOVED AND RELOCATED FOR REUSE. REFER TO NEW WORK PLAN.
4. ELECTRIC WATER COOLER REMOTE CHILLER TO BE REMOVED AND RELOCATED FOR REUSE. REFER TO NEW WORK PLAN.D BE REUSE.
5. REMOVE DUCTWORK BACK TO POINTS INDICATED COMPLETE WITH ALL DAMPERS, SENSORS, AND FIRE DAMPERS. REPAIR ALL WALL PENETRATIONS THROUGH FIRE RATED WALLS TO MATCH ADJACENT CONSTRUCTION AND TO RETAIN EXISTING FIRE RATING.
6. OUTSIDE AIR LOUVER TO REMAIN. REMOVE FILTER RACK AND OUTSIDE AIR DUCTWORK TO POINT INDICATED. PREPARE FOR CONNECTION OF NEW DUCTWORK. SEE 'ENLARGED NEW WORK PLAN' ON SHEET M210.
7. REMOVE RETURN AIR GRILLE AND RUNOUT DUCT. SEE '2ND FLOOR HVAC NEW WORK' PLAN ON SHEET M210.
8. DISCONNECT DUCTWORK AND REMOVE EXHAUST FAN AND ASSOCIATED DUCTWORK, FITTINGS, AND ACCESSORIES BACK TO POINT INDICATED. REMOVE AND REPLACE CEILING AS REQUIRED TO COMPLETE SCOPE OF WORK.
9. CAP AND SEAL DUCT TO EXISTING WALL CAP.
10. REMOVE EXISTING 2x2 ACOUSTICAL LAY IN CEILING FOR NEW WORK SCOPE. REPLACE CEILING TO MATCH EXISTING CONDITIONS AFTER COMPLETION OF NEW WORK.
11. REMOVE AND REINSTALL SUPPLY AND RETURN DUCT SERVING THIS ROOM AS REQUIRED FOR INSTALLATION OF NEW MEDIUM PRESSURE SUPPLY TRUNK. PROVIDE OFFSETS AND FLEX DUCT AS REQUIRED TO RAISE EXISTING DUCT ABOVE NEW SUPPLY.

ROOM DESCRIPTIONS

200	MEDIA CENTER	209	LARGE GROUP PROJECTS
200A	CORRIDOR	210	DARK ROOM
201	ENTRY VESTIBULE	211	CLASSROOM
202	PERIODICALS	212	CLASSROOM
203	AUDIO VIDEO STORAGE	213A	CLASSROOM
203A	CER	213B	CLASSROOM
204	CUSTODIAN	214	REST ROOM
205	OFFICE	215	REST ROOM
206	MEDIA PRODUCTION	218	WORK ROOM
207	CONFERENCE	223	ELECTRICAL CLOSET
208	SMALL GROUP PROJECTS		

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

No.	Description	Date

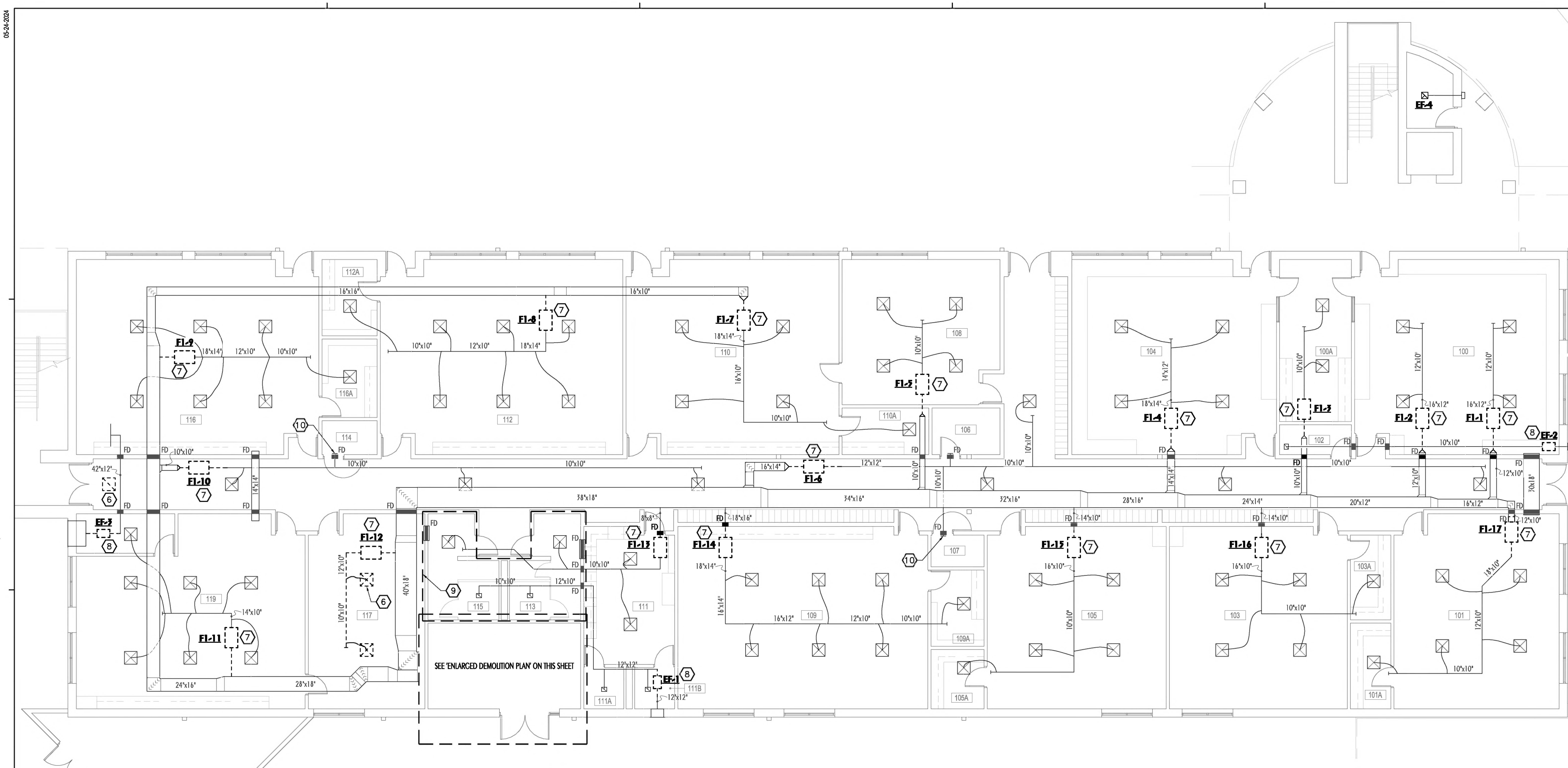
PROJECT NUMBER: 2022-042
DATE: 05-24-2024
DRAWN BY: SLD/DNW
DESIGNED BY: SLD/DNW

HVAC DEMOLITION
2nd FLOOR

M110

2022-042
CONSTRUCTION DOCUMENTS
05-24-2024

2022-042
CONSTRUCTION DOCUMENTS
05-24-2024



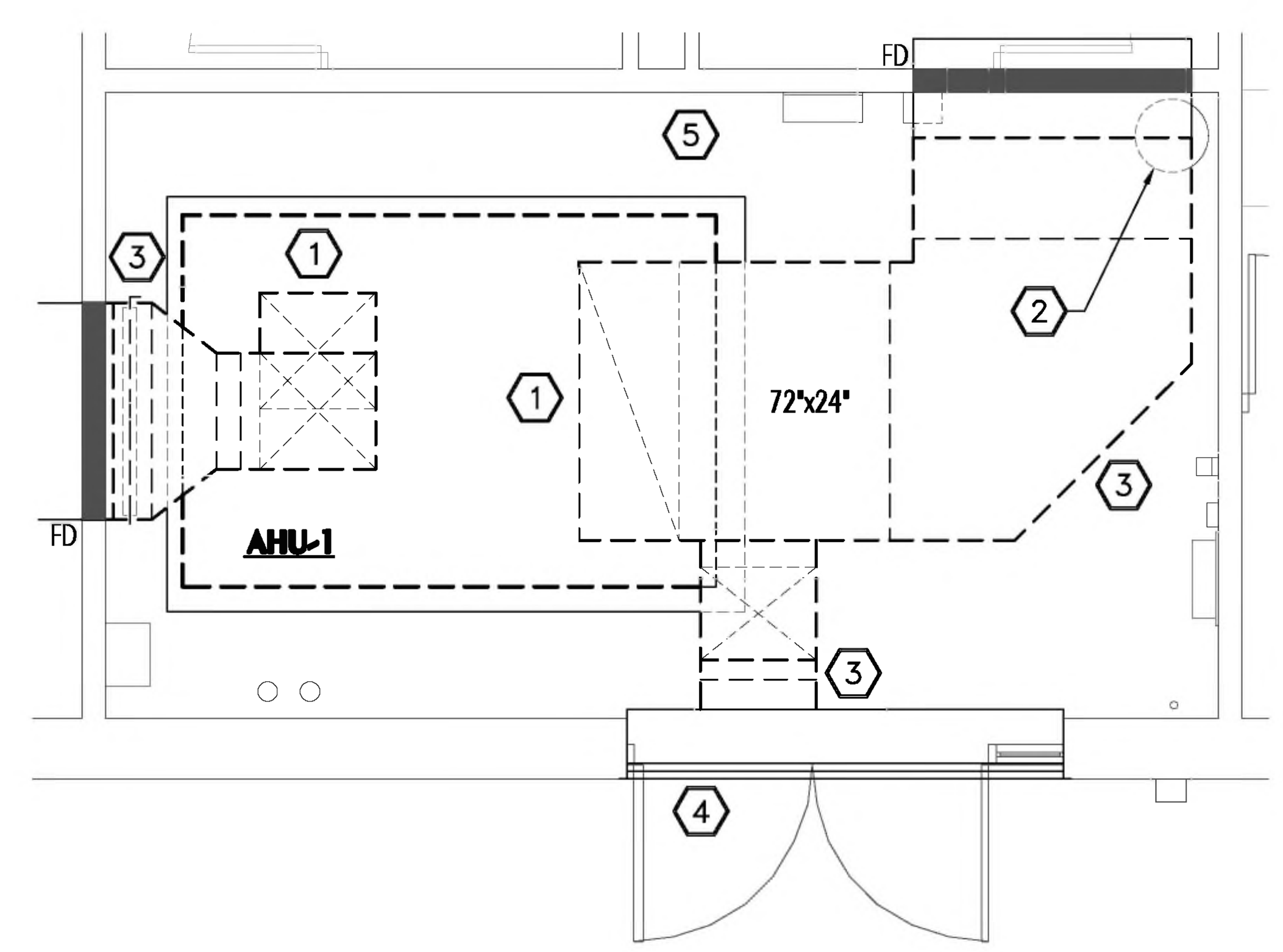
1st FLOOR HVAC DEMOLITION

1 / M100

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

SHEET NOTES

1. DISCONNECT DUCTWORK AND CHILLED WATER PIPING AND REMOVE VARIABLE AIR VOLUME AIR HANDLING UNIT COMPLETE WITH ALL ASSOCIATED SENSORS AND ACCESSORIES.
2. ELECTRIC DOMESTIC WATER HEATER TO REMAIN AND BE REUSED.
3. REMOVE DUCTWORK BACK TO POINTS INDICATED COMPLETE WITH ALL DAMPERS, SENSORS, AND FIRE DAMPERS. REPAIR ALL WALL PENETRATIONS THROUGH FIRE RATED WALLS TO MATCH ADJACENT CONSTRUCTION AND TO RETAIN EXISTING FIRE RATING.
4. LEAVE OUTSIDE AIR LOUVER AND PLENUM IN PLACE FOR CONNECTION OF NEW OUTSIDE AIR DUCT. SEE 'ENLARGED NEW WORK PLAN' ON SHEET M200.
5. REMOVE ALL ABANDONED BOILER FLUE DUCT FROM SPACE AND PATCH ALL OPENINGS IN CEILING.
6. REMOVE CEILING AIR DEVICES INDICATED.
7. DISCONNECT HEATING WATER PIPING AND REMOVE AIR TERMINAL UNIT AND HEATING WATER COIL ALONG WITH ASSOCIATED LOW AND MEDIUM PRESSURE DUCTWORK, FITTINGS, AND ACCESSORIES BACK TO POINT INDICATED. REMOVE AND REPLACE CEILING AS REQUIRED TO COMPLETE SCOPE OF WORK.
8. DISCONNECT DUCTWORK AND REMOVE EXHAUST FAN AND ASSOCIATED DUCTWORK, FITTINGS, AND ACCESSORIES BACK TO POINT INDICATED. REMOVE AND REPLACE CEILING AS REQUIRED TO COMPLETE SCOPE OF WORK.
9. REMOVE EXISTING GYP BOARD CEILING FOR NEW WORK SCOPE. REPLACE CEILING TO MATCH EXISTING CONDITIONS AFTER COMPLETION OF NEW WORK.
10. REMOVE WALL REGISTER, PERMANENTLY SEAL AND INSULATE. DUCT BEHIND REGISTER AND REINSTALL REGISTER.



ENLARGED DEMOLITION PLAN

2 / M100

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

ROOM DESCRIPTIONS

100	CLASSROOM	109A	STORAGE
100A	TEACHER PLANNING/STORAGE	110	CLASSROOM
101	CLASSROOM	110A	STORAGE
101A	STORAGE	111	NURSES OFFICE
102	CUSTODIAL	111A	REST ROOM
103	CLASSROOM	111B	REST ROOM
103A	STORAGE	112	CLASSROOM
104	CLASSROOM	112A	STORAGE
105	CLASSROOM	113	REST ROOM
105A	STORAGE	114	COMMUNICATIONS
106	COMMUNICATIONS/SECURITY	115	REST ROOM
107	COMMUNICATIONS	116	CLASSROOM
108	CLASSROOM	116A	STORAGE
109	CLASSROOM	117	CLASSROOM
		119	CLASSROOM

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CONSTRUCTION DOCUMENTS

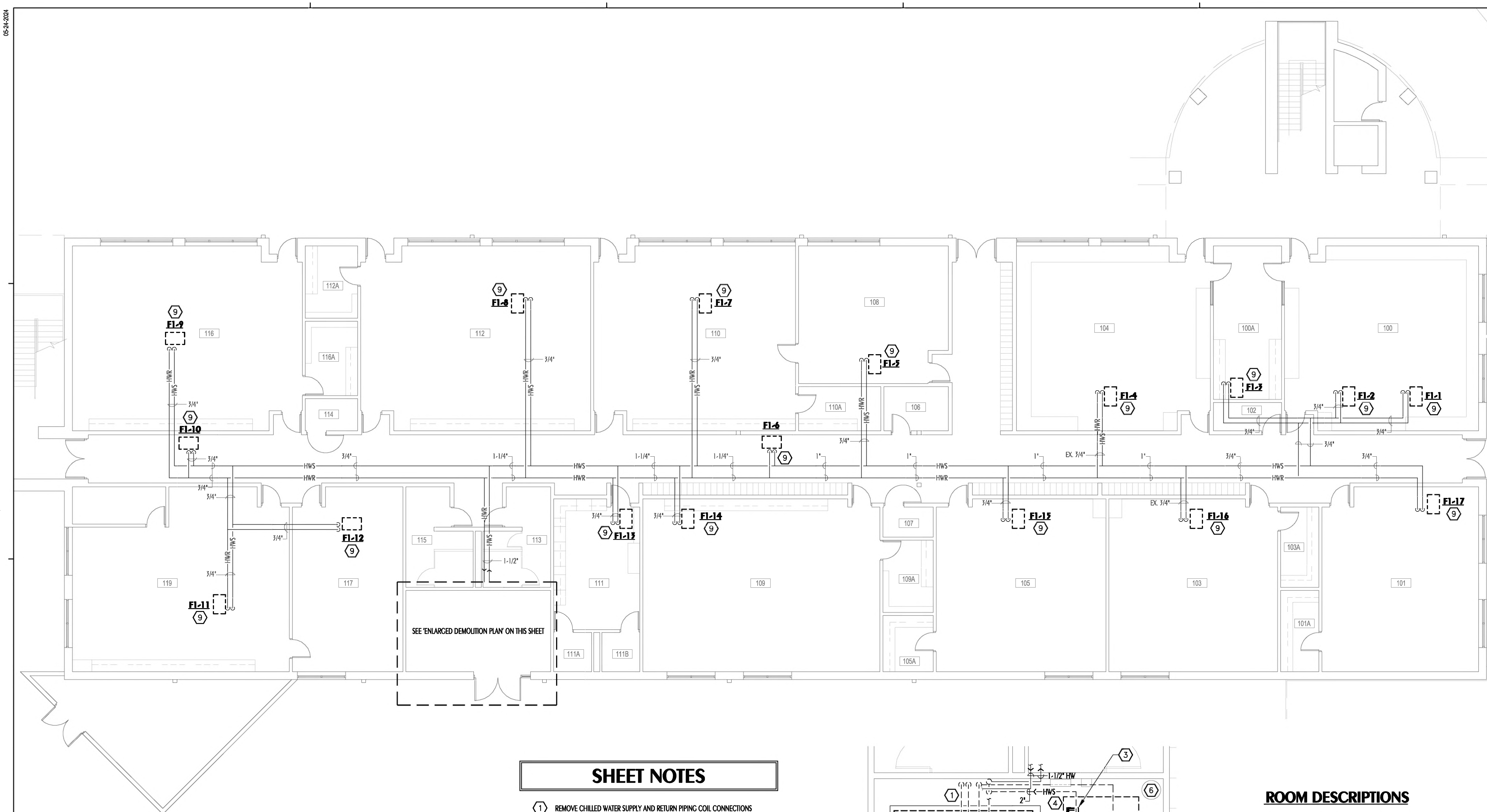
Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave.,
Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC EQUIPMENT AND DUCTWORK DEMOLITION 1st FLOOR

M100



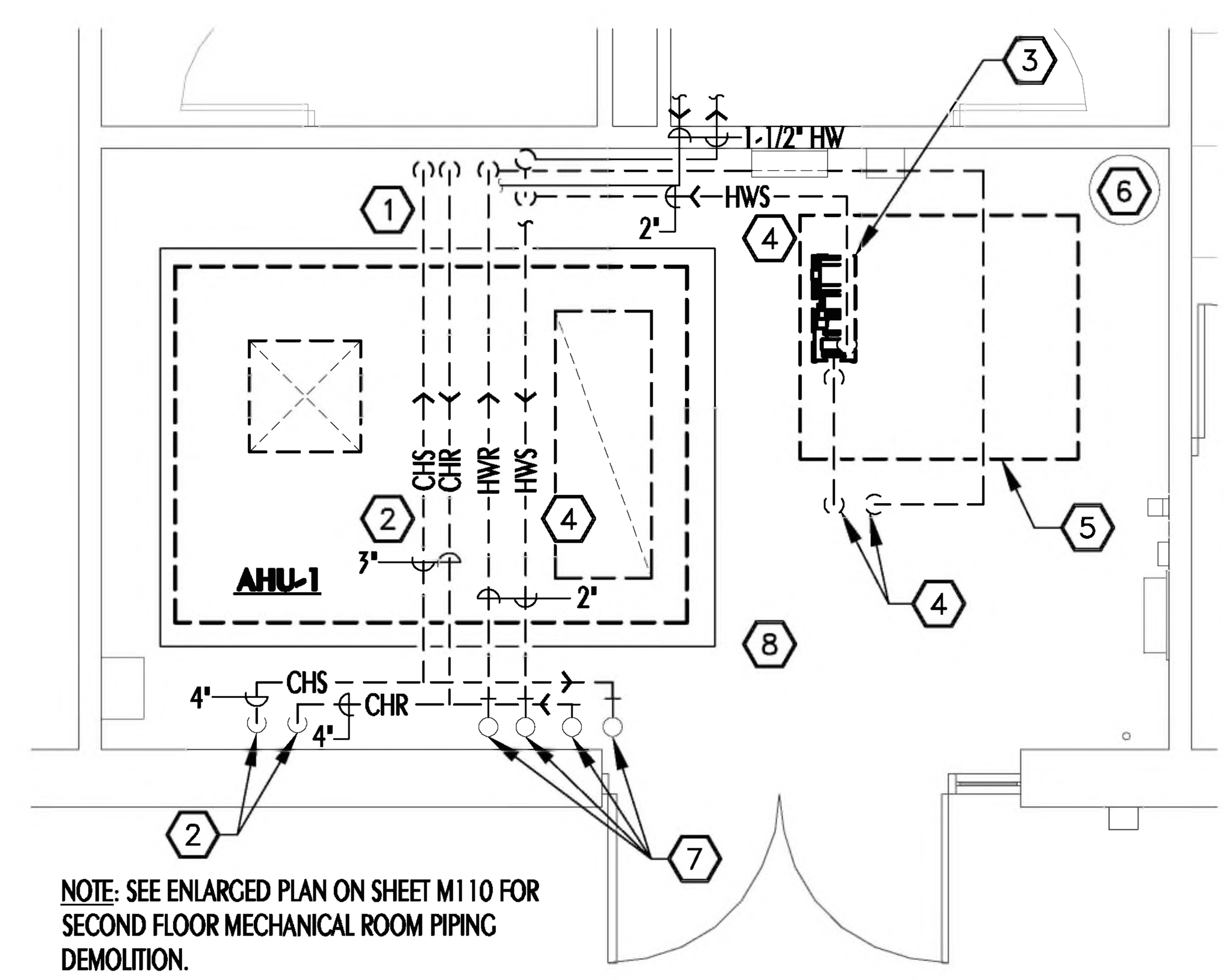
1 1st FLOOR HVAC DEMOLITION

M105

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

SHEET NOTES

1. REMOVE CHILLED WATER SUPPLY AND RETURN PIPING COIL CONNECTIONS ALONG WITH ALL ASSOCIATED PIPING, VALVES, FITTINGS, AND ACCESSORIES.
2. REMOVE ALL CHILLED WATER PIPING, VALVES, FITTINGS, ACCESSORIES, AND PIPE HANGERS FROM THIS SPACE DOWN TO APPROXIMATELY 12" ABOVE FINISHED FLOOR LEVEL. NEW PIPING WILL BE CONNECTED. SEE 'ENLARGED NEW WORK PLAN' ON SHEET M205.
3. REMOVE HEATING WATER PUMP ALONG WITH ALL ASSOCIATED VALVES, FITTINGS, AND ACCESSORIES.
4. REMOVE HEATING WATER PIPING, VALVES, FITTINGS, ACCESSORIES, AND PIPE HANGERS FROM THIS SPACE AS INDICATED TO A POINT APPROXIMATELY 12" ABOVE FINISHED FLOOR FOR CONNECTION TO NEW.
5. REMOVE 6'-0" BY 5'-6", 3-1/2" TALL CONCRETE HOUSEKEEPING PAD.
6. EXISTING ELECTRIC DOMESTIC WATER HEATER TO REMAIN AND BE REUSED.
7. EXISTING 3" CHILLED WATER AND 2" HEATING WATER SUPPLY AND RETURN PIPING TO SECOND FLOOR TO REMAIN.
8. REMOVE ALL ABANDONED NATURAL GAS PIPING FROM THIS SPACE THROUGH EXTERIOR WALL. SEAL WALL PENETRATION WITH EXPANDING FOAM AND MASTIC EXPOSED FOAM.
9. REMOVE HEATING WATER COIL ALONG WITH ALL CONNECTIONS, PIPING, VALVES, FITTINGS, AND ACCESSORIES BACK TO POINT INDICATED.



NOTE: SEE ENLARGED PLAN ON SHEET M110 FOR SECOND FLOOR MECHANICAL ROOM PIPING DEMOLITION.

2 ENLARGED DEMOLITION PLAN

M105

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

ROOM DESCRIPTIONS

100	CLASSROOM	109A	STORAGE
100A	TEACHER PLANNING/STORAGE	110	CLASSROOM
101	CLASSROOM	110A	STORAGE
101A	STORAGE	111	NURSES OFFICE
102	CUSTODIAL	111A	REST ROOM
103	CLASSROOM	111B	REST ROOM
103A	STORAGE	112	CLASSROOM
104	CLASSROOM	112A	STORAGE
105	CLASSROOM	113	REST ROOM
105A	STORAGE	114	COMMUNICATIONS
106	COMMUNICATIONS/SECURITY	115	REST ROOM
107	COMMUNICATIONS	116	CLASSROOM
108	CLASSROOM	116A	STORAGE
109	CLASSROOM	117	CLASSROOM
		119	CLASSROOM

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CONSTRUCTION DOCUMENTS

Bay District Schools
RUTHERFORD HIGH SCHOOL
BUILDING 2 HVAC RENOVATION
1000 School Ave., Panama City, Florida 32401

No.	Description	Date

PROJECT NUMBER:	2022-042
DATE:	05-24-2024
DRAWN BY:	SLD/DNW
DESIGNED BY:	SLD/DNW

HVAC PIPING DEMOLITION 1st FLOOR