

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF INDOOR UNIT SCHEDULE

System Tag	System 1	System 1	System 1	System 1	System 1	System 1	System 1	System 1	System 1
Tag Reference	IDU-A1	IDU-A2	IDU-A3	ADU-A4	IDU-A5	IDU-A6	IDU-A7	IDU-A8	IDU-A9
Room Name	Corr A	ADMIN WAITING A104	CLERICAL A105	PRINCIPLE A107	STAFF A110	CONFERENCE A108	NURSE OFFICE A117	EXAM A116	WAITING A115
M-NET Address	1	2	3	4	5	6	7	8	9
Model	TPMFYP015BM140F	TPMFYP006BM140F	TPLFYP012FM140A	TPMFYP012BM140F	TPMFYP008BM140F	TPMFYP008BM140F	TPMFYP012BM140F	TPLFYP008FM140A	TPMFYP006BM140F
Type	Ceiling Cassette (One-Way)	Ceiling Cassette (One-Way)	Ceiling-Cassette (Four-Way)	Ceiling Cassette (One-Way)	Ceiling Cassette (One-Way)	Ceiling Cassette (One-Way)	Ceiling Cassette (One-Way)	Ceiling-Cassette (Four-Way)	Ceiling Cassette (One-Way)
Nominal Cooling Capacity (BTU/h)	15,000.0	6,000.0	12,000.0	12,000.0	8,000.0	8,000.0	12,000.0	8,000.0	6,000.0
Nominal Heating Capacity (BTU/h)	17,000.0	6,700.0	13,500.0	13,500.0	9,000.0	9,000.0	13,500.0	9,000.0	6,700.0
Cooling Design Entering Temp DB/WB (°F)	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2	80.0/67.2
Heating Design Entering Temp DB/WB (°F)	67.5	67.6	67.2	67.2	67.7	67.7	67.2	67.6	67.6
Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2
Cooling Total Capacity (BTU/h)	15,072.7	6,029.1	12,058.1	12,058.1	8,038.8	8,038.8	12,058.1	8,038.8	6,029.1
Cooling Sensible Capacity (BTU/h)	9,526.2	5,037.2	8,022.8	7,852.0	6,163.8	6,163.8	7,852.0	6,165.4	5,037.2
Heating Capacity (BTU/h)	15,935.3	6,272.1	12,704.6	12,704.6	8,414.0	8,414.0	12,704.6	8,425.2	6,272.1
Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
Peak Fan Airflow (cfm)	378	307	335	328	328	328	328	315	307
Max Fan ESP Setting 208V/230V (IN WG)									
Sound Pressure Per Fan Speed 208V/230V (dBA)	33-35-37-39	27-30-33-35	26-30-34	32-34-36-37	32-34-36-37	32-34-36-37	32-34-36-37	26-30-33	27-30-33-35
Voltage / Phase	208-230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
Power Cooling 208V/230V (kW)	0.05	0.04	0.02	0.04	0.04	0.04	0.04	0.02	0.04
Power Heating 208V/230V (kW)	0.05	0.04	0.02	0.04	0.04	0.04	0.04	0.02	0.04
Electrical MCA/MFS	0.33/15	0.25/15	0.29/0.29/15	0.26/15	0.25/15	0.25/15	0.26/15	0.28/0.28/15	0.25/15
Condensate Removal Rate (gal/hr)	0.67	0.11	0.45	0.50	0.21	0.21	0.50	0.25	0.11
Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6	1, 2, 3, 4, 5, 6

- Notes & Options:
- Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
 - Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
 - See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities
 - See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices.
 - Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system. Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply. It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.
 - It is recommended to always base heating corrected capacity on full demand.

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF OUTDOOR UNIT SCHEDULE

System Tag	System 1
Tag Reference	VRF-1
M-NET Address	51
Model Number	TURYE0963ANW0AN
Modules	P96
Nominal Cooling Capacity (BTU/h)	96,000.0
Nominal Heating Capacity (BTU/h)	108,000.0
Cooling Efficiency IEER/EER	29.8 / 14.4
Heating COP @ 47°F	4.1
Nom System Connected Capacity (% of NOM)	90.6%
Design Cooling Outdoor Temp DB (°F)	94.0
Design Heating Outdoor Temp WB (°F)	6.0
Corrected Cooling Total Capacity (BTU/h)	96,310.9
Corrected Heating Capacity (BTU/h)	91,846.6
Sound Pressure (dBA)	58.5/60
Compressor Type	SCROLL
Compressor Quantity	1
Preliminary Added Field Charge (See Note 5)	16.6
Voltage / Phase	208/230V / 3-phase 3-wire
MCA 208/230	31/29
Recommended Fuse Size (RFS)	45/45
MOCP	45/45
Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6, 7, 8, 9

- Notes & Options:
- Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)
 - Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)
 - Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.
 - For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning.
 - Added field charge listed is in addition to factory charge. This must be updated based upon final as-built piping layout.
 - Factory representatives shall review the project prior to and throughout the installation of CITY MULTI equipment
 - Factory representatives shall startup and commission CITY MULTI equipment upon completion of equipment installations
 - Factory representatives shall provide on-site assistance for the BMS integration of the CITY MULTI equipment
 - Factory representatives shall provide end-user training on the CITY MULTI equipment upon completion of the installation of equipment

VRF HEAT RECOVERY BRANCH CIRCUIT CONTROLLER

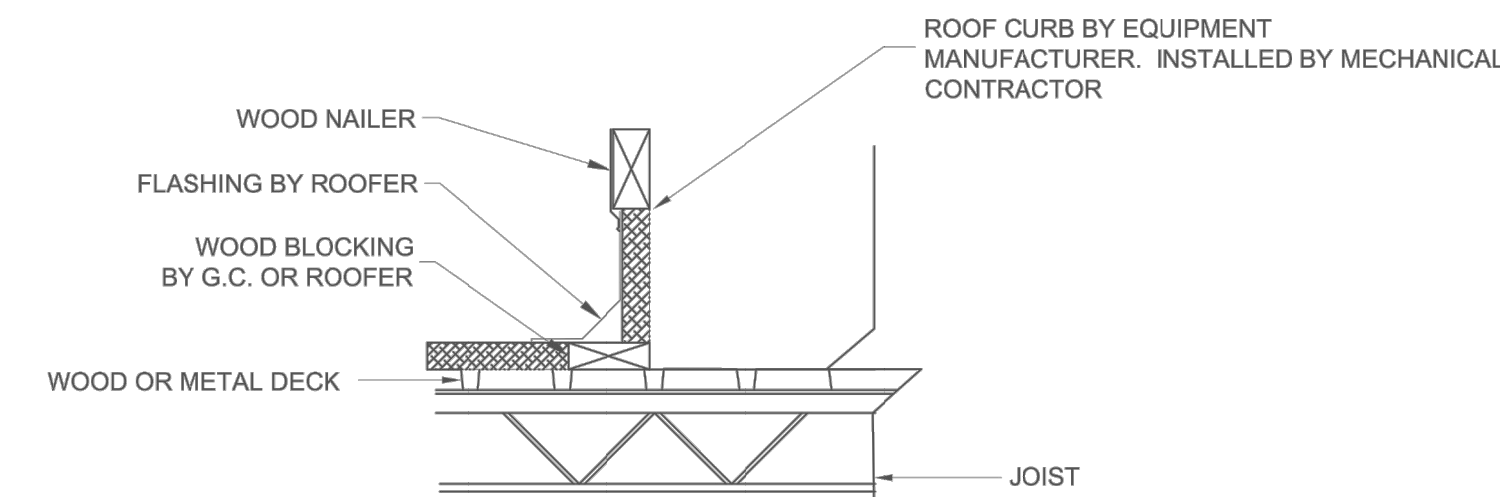
System Tag	System 1
Tag Reference	BC-1
M-NET Address	52
Model Number	TCMBM1012JA11N4
Type (double / Main / Sub)	Main
Number of Ports	12
Connected Capacity to BC	87,000.0
Voltage / Phase	208/230V / 1-phase
Power Cooling 208V/230V (kW)	0.198/0.255
Power Heating 208V/230V (kW)	0.106/0.137
MCA 208/230	
Applicable System Notes - See Notes Below	1, 2

- Notes & Options:
- Include Diamondback Ball Valves BV-Series, 700PSIG working pressure, full port, 410A rated.
 - For sub BC controller CMB-P-NJ-GB1 or -GB, the total connectable indoor unit capacity can be 126,000 BTUs or less. If two sub BC controllers are used, the total indoor unit capacity connected to BOTH sub BC controllers also cannot exceed 126,000 BTUs. For sub BC controller CMB-P1016NU-HB1 the total connectable indoor unit capacity can be 126,000 BTUs or less. However, if two sub controllers are used, and one of them is CMB-1016NU-HB1, the total indoor unit capacity connected to BOTH sub controllers must NOT exceed 168,000 BTUs.

LOSSNAY ENERGY RECOVERY VENTILATOR SCHEDULE

Lossnay Tag	ERV-1
Model Number	TLGHF0470RVXD1A
Interlocked or Stand Alone	Stand-Alone
M-NET Address	10
Core Type	Fixed Permeable Cross Plate
Airflow (cfm)	470
Max ESP (INWG)	0.60
Nominal Recovery Effectiveness (Extra High Fan Speed)	Temperature Recovery 69.0% Enthalpy Cooling 51.0% Enthalpy Heating 64.0%
Voltage / Phase	208-230V/1-phase
MCA / MOCP	/15
Notes / Options	1, 2, 3

- Notes & Options:
- Max external static pressure is at airflow listed with fan set on extra high speed.
 - See schematic piping/control diagram for indication of required lossnay local remote controller (stand alone operation) and M-NET connection points of 3 Washable factory standard pre-filter on return and O/A intake side of cross plate core.



- NOTES:
- COORDINATE NECESSARY ROOF OPENINGS WITH GENERAL CONTRACTOR AND ROOF. MAINTAIN DECKING UNDER UNIT EXCEPT WHERE DUCTWORK OR PIPING PASS THROUGH.
 - COORDINATE METAL ANGEL OR SUPPORTS AROUND DUCTWORK OPENINGS TO SUPPORT DECKING.

ROOF CURB DETAIL
NOT TO SCALE

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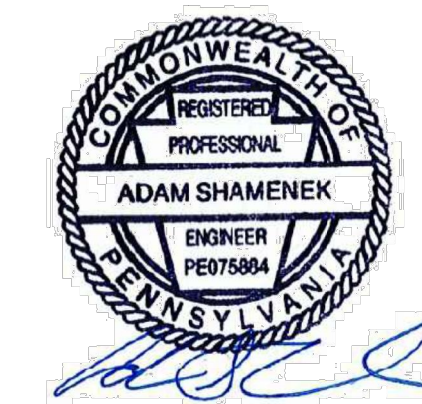


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ELEMENTARY SCHOOL HVAC UPGRADE

62 ASHLEY WAY
LEESPORT, PA 19553

HVAC SCHEDULES AND DETAILS



PROJECT NUMBER: 20159

SCALE: AS NOTED

DATE: 4/20/2021

DRAWN BY: AWB

CHECKED BY: ALS

DATE CHECKED: 4/20/2021

REVISIONS

DATE: DESCRIPTION:

M003

HVAC SPECIFICATIONS SECTION 15500:

A. GENERAL:

- THE WORK OF THIS SECTION INCLUDES, BUT IS NOT LIMITED TO, THE HVAC SYSTEM. QUALITY ASSURANCE: COMPLY WITH THE CURRENT: INTERNATIONAL MECHANICAL CODE (IMC), INTERNATIONAL PLUMBING CODE (IPC), INTERNATIONAL FUEL GAS CODE (IFGC), INTERNATIONAL BUILDING CODE (IBC), INTERNATIONAL ENERGY CONSERVATION CODE (IECC); LOCAL CODES AND AMENDMENTS
- NFPA 70; UL LISTING; NFPA 90A & 90;

B. SUBMITTALS:

- PRODUCT DATA FOR HEATING AND COOLING UNITS.
- DUCTWORK SHOP STANDARDS AND ACCESSORIES.
- PIPING SHOP STANDARDS AND ACCESSORIES.
- WARRANTIES AND GUARANTEES

C. PIPING:

- GENERAL: PROVIDE STEEL PIPE SLEEVES FOR MASONRY WALL PENETRATIONS, TIGHT FITTING SHEET METAL SLEEVES IN WOOD PENETRATIONS AND 3M FIRE STOPPING IN RATED WALL OR FLOOR PENETRATIONS. PROVIDE DIELECTRIC FITTINGS OR UNIONS IN ALL PIPE CONNECTIONS OF DISSIMILAR METALS.
- REFRIGERANT: ASTM B 743 COPPER TUBE WITH WROUGHT COPPER FITTINGS AND BRAZED JOINTS. REFER TO MANUFACTURER'S RECOMMENDATION FOR INSULATION THICKNESS.
- CONDENSATE PIPING: TYPE M DWV, DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND SOLDER JOINTS. 1/2" FIBERGLASS INSULATION.
- CHILLED/HOT WATER:
 - PIPE SIZE 2" AND SMALLER: TYPE "L" DRAWN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS, AND BRAZED JOINTS.
 - PIPE SIZE 2-1/2" AND OVER: SCHEDULE 40 STEEL PIPE, GROOVED, MECHANICAL JOINT COUPLING AND FITTINGS, AND GROOVED, MECHANICAL JOINTS.
 - INSULATION: TO MATCH EXISTING WHERE SYSTEMS WERE CAPPED.
- NATURAL GAS ABOVE GRADE: RUN IN SCHEDULE 40 ASTM A53 BLACK STEEL PIPE AND THREADED FITTINGS. USE WELDED FITTINGS FOR 10 PSIG AND ABOVE. THREADED JOINTS WITH MALLEABLE FITTINGS MAY BE MADE AT UNIT CONNECTIONS. PAINT EXTERIOR EXPOSED STEEL PIPING FOR CORROSION PROTECTION, COLOR SELECTED BY OWNER OR ARCHITECT.

D. PIPE HANGERS AND SUPPORTS:

- PROVIDE CLEVIS TYPE HANGER WITH OVER-SIZED YOKE WHERE REQUIRED FOR INSULATION.
- PROVIDE JOIST HANGERS AND ALL THREADED RODS.
- PROVIDE PIPE CLAMPS TO SUPPORT VERTICAL PIPING THROUGH FLOOR.
- PROVIDE INSULATION SHIELDS WHERE INSULATION OCCURS.
- PROVIDE B-LINE DURALOCK OR EQUAL) SUPPORTS WITH UNISTRUCT PIPE CLAMP FOR ROOF PIPING.
- REFER TO DRAWING TABLES (DWG M001):
 - PIPING SPACING SUPPORT
 - GAS PIPING SPACING SUPPORT
 - HANGER ROD SIZING

E. IDENTIFICATION:

- GENERAL: PROVIDE PERMANENT LABELS ON ALL EQUIPMENT WITH DRAWING TAG, CAPACITY, AND ELECTRICAL CHARACTERISTICS.
- OUTDOOR EQUIPMENT: PROVIDE STAMPED METAL NAMEPLATES.
- PROVIDE PIPE LABELS SHOWING TYPE OF DUTY (I.E. "HOT WATER SUPPLY" AND DIRECTION OF FLOW) AT 15 FOOT INTERVALS.

F. ELECTRICAL REQUIREMENTS:

- GENERAL: PROVIDE STARTERS, RELAYS, CONTROLS, POWER FOR ACTUATORS, SWITCHES, MEANS OF DISCONNECT, JUNCTION BOXES, CONTROLLERS, ET CETERA REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM. FOLLOW THE REQUIREMENTS OF THE ELECTRICAL SECTION OF THE SPECIFICATION.
- MOTORS: PROVIDE MOTORS FOR MECHANICAL EQUIPMENT SUPPLIED BY THE EQUIPMENT MANUFACTURER WHEN POSSIBLE. PROVIDE MOTORS OF PHASE AND VOLTAGE INDICATED ON DRAWINGS AND SUITABLE FOR THE LOADING AND ENVIRONMENT. PROVIDE OPEN DRIP PROOF (ODP) MOTOR ENCLOSURES FOR NORMAL USE OR TOTALLY ENCLOSED FAN COOLED (TEFC) ENCLOSURES FOR OUTDOOR USE, HAZARDOUS OR DIRTY ENVIRONMENTS. PROVIDE MOTORS WITH 1.15 SERVICE FACTOR, INSULATION CLASS F, AND PRE-LUBRICATED BALL BEARINGS RATED FOR CONTINUOUS DUTY UP TO 105°F AMBIENT TEMPERATURE AND 3300FT ALTITUDE. POLY-PHASE MOTORS SHALL BE PREMIUM EFFICIENCY AND WHEN USED WITH VARIABLE SPEED DRIVES, SHALL BE RATED FOR INVERTER DUTY. SINGLE PHASE MOTORS LARGER THAN 1/2HP SHALL BE OPEN-CAPACITOR START, CAPACITOR RUN TYPE UNLESS OTHERWISE INDICATED. SINGLE PHASE MOTORS 1/2HP AND SMALLER MAY BE SPLIT PHASE START, CAPACITOR RUN TYPE OR PERMANENT-SPLIT CAPACITOR TYPE.
- STARTERS: PROVIDE EACH MOTOR WITH A MOTOR STARTER OF PROPER DESIGN TO MEET THE REQUIREMENTS OF THE MOTOR AND DRIVE. STARTER TYPES SHALL INCLUDE MAGNETIC, MANUAL, SOLID-STATE REDUCED VOLTAGE, OR VARIABLE SPEED DRIVE, COORDINATE STARTER REQUIREMENTS WITH THE EQUIPMENT AND CONTROL SEQUENCE. PROVIDE ACCESSORIES SUCH AS CONTACTS, OVERLOADS, EXTERNAL RESETS, CONTROL CIRCUIT TRANSFORMERS, PILOT LIGHTS, PUSH BUTTONS, HOA AND OTHER SELECTOR SWITCHES AS NEEDED FOR THE SPECIFIED OPERATION.

G. PACKAGED HEATING AND COOLING ROOFTOP UNIT (RTU-1 & RTU-2):

- FURNISH AND INSTALL GAS HEATING/COOLING SYSTEMS, SELF CONTAINED, FULLY CHARGED, FACTORY ASSEMBLED, WIRED AND TESTED UNITS WITH VERTICAL DISCHARGE AIRFLOW AND 12" ROOF CURB.
- PROVIDE 100% MODULATING OUTSIDE AIR ECONOMIZER DAMPERS AND GRAVITY RELIEF OR POWERED EXHAUST. INCLUDE DUAL ENTHALPY CONTROLS.
- PROVIDE CAPACITY, PERFORMANCE, STAGES, AND OPTIONS LISTED ON THE DRAWING SCHEDULE.
- UNIT SHALL HAVE STAGED COOLING.
- UNIT SHALL HAVE STAGED GAS HEAT.
- ALL UNITS SHALL BE FACTORY ASSEMBLED, PIPED, INTERNALLY WIRED AND FULLY CHARGED WITH R-410.
- ALL UNITS SHALL BE DESIGNED TO OPERATE AT OUTDOOR AMBIENT TEMPERATURES FROM 0°F TO 120°F.
- COOLING AND HEATING CAPACITIES SHALL BE RATED IN ACCORDANCE WITH A.R.I. STANDARDS.
- THE UNIT DESIGN SHALL BE CERTIFIED BY THE AGA OR CSA, SPECIFICALLY FOR OUTDOOR APPLICATIONS USING PROPANE OR NATURAL GAS.
- UNITS SHALL BE WEATHERPROOFED AND DESIGNED FOR OUTDOOR ROOFTOP INSTALLATION.
- PROVIDE HOT GAS REHEAT COIL AND DEHUMIDIFICATION CONTROLS.
- PROVIDE LOW AMBIENT CONTROLS.
- PROVIDE FACTORY MOUNTED CONVENIENCE OUTLET.
- PROVIDE FAULT DETECTION AND DIAGNOSTICS.
- PROVIDE FACTORY MOUNTED DISCONNECT.
- PROVIDE FIELD DUCT MOUNTED CARBON DIOXIDE SENSOR.
- PROVIDE FIELD DUCT MOUNTED RELATIVE HUMIDITY SENSOR.
- EXTERIOR SURFACES OF ALL UNITS SHALL BE PHOSPHATIZED, ZINC-COATED STEEL WITH EPOXY RESIN PRIMER AND BAKED ENAMEL FINISH.
- ACCESS TO FILTERS, BLOWER, HEATING SECTION, AND OTHER ITEMS NEEDING PERIODIC CHECKING OR MAINTENANCE SHALL BE THROUGH HINGED ACCESS DOORS WITH QUARTER-TURN LATCHES. DOOR FASTENING SCREWS ARE NOT ACCEPTABLE.
- ALL OPENINGS THROUGH THE BASE PAN OF THE UNIT SHALL HAVE UPTURNED FLANGES OF AT LEAST 1/2" IN HEIGHT AROUND THE OPENING THROUGH THE BASE PAN.
- THE INTERIOR AIR SIDE OF THE CABINET SHALL BE ENTIRELY INSULATED ON ALL EXTERIOR PANELS WITH 1 INCH THICK, 1-1/2 LB DENSITY FIBERGLASS INSULATION.
- ALL BELT DRIVE BLOWER(S) SHALL HAVE BACKWARD INCLINED AIRFOIL BLADES.
- ALL DIRECT DRIVE BLOWER(S) SHALL HAVE FORWARD CURVED BLADES.
- OVER SIZED FAN FOR VAV APPLICATION WITH SHAFT GROUND RINGS.
- COORDINATE ROOF OPENINGS AND LOCATIONS WITH STRUCTURAL OPENINGS AND REINFORCEMENT.

H. VARIABLE REFRIGERANT FLOW (IDU-4, VRF-1, BC-1-1):

- PROVIDE CITY-MULTI VRF SIMULTANEOUS HEATING AND COOLING SYSTEM AS MANUFACTURED BY TRANE/MITSUBISHI.
- PROVIDE NECESSARY CONTROLS TO BE FURNISHED WITH SYSTEM.
 - PROVIDE CENTRAL MINI-CONTROLLER TO ACCESS ENTIRE SYSTEMS
 - PROVIDE ALL NECESSARY CONTROL WIRING.
 - PROVIDE INTEGRATION WITH EXISTING TRANE CONTROL SYSTEM

I. ENERGY RECOVERY VENTILATOR (ERV-1):

- LOSSANY MITSUBISHI ELECTRIC
- PROVIDE TOTAL ENERGY CORE AIR-TO-AIR HEAT RECOVERY VENTILATOR FOR INDOOR INSTALLATION
- PROVIDE SINGLE WALL INSULATED CABINET.
- HIGH EFFICIENCY DC MOTOR WITH 4 SPEED SETTINGS.
- OUTDOOR AIR AND EXHAUST AIR FILTER ASSEMBLY.
- FIELD CONFIGURABLE AIRFLOW OUTLET/INLETS.

J. ROOFTOP MAKE UP AIR UNITS:

- DESCRIPTION: 100% OUTSIDE AIR ROOFTOP HEATING AND COOLING VENTILATION UNIT, DIRECT FIRED, RAIN HOOD, INLET SCREEN, FILTER SECTION W/ 2" PLEATED FILTERS, ROOF CURB, TWO (2) CONDENSING UNIT.
- INSULATION: DOUBLE WALL, FROM BURNER SECTION THROUGH END OF UNIT.
- BURNER: CAST ALUMINUM BURNER MANIFOLD WITH STAINLESS STEEL MIXING PLATES. ELECTRONICALLY MODULATED.
- FAN & MOTOR: FORWARD CURVED CENTRIFUGAL FAN, BELT DRIVE, W/ STARTER & OVERLOADS.
- CONTROLS: REMOTE CONTROL STATION, DISCHARGE AIR SENSOR CONTROL WITH SPACE OVERRIDE SENSORS.
- AIR BALANCE BASED ON FUTURE HOOD REQUIREMENTS.
- SEE DRAWING SCHEDULE FOR MANUFACTURER/MODEL AND ADDITIONAL INFORMATION.

K. DUCTWORK, ACCESSORIES AND INSULATION:

- DUCTWORK: GALVANIZED G90 SHEET METAL FABRICATED IN ACCORDANCE WITH SMACNA STANDARDS.
- BLANKET INSULATION (FIBERGLASS): 3/4 LB/CF GLASS FIBERS BONDED WITH A THERMOSETTING RESIN (MIN R-6), ASTM C 1290 TYPE III WITH ASTM C 1136 TYPE I FOIL REINFORCED KRAFT (FRK) LOW PERMEANCE VAPOR RETARDER FACING.
- INSULATION APPLICATION: APPLY INSULATION AS FOLLOWS:
 - SEE DUCTWORK CONSTRUCTION MATERIAL SCHEDULE:
 - INDOOR CONCEALED SUPPLY AIR AND K&E UP AIR: 2" 2" BLANKET WITH VAPOR BARRIER (R-6).
 - INDOOR EXPOSED SUPPLY AIR: 1" THICK, 1.5 LB DUCT LINER.
 - INDOOR CONCEALED RETURN AND TRANSFER AIR: 2" 2" BLANKET WITH VAPOR BARRIER (R-6).
 - INDOOR EXPOSED RETURN AIR: NONE EXCEPT 1" THICK, 1.5 LB DUCT LINER FROM UNIT TO 15FT UPSTREAM DUCTWORK
 - INDOOR CONCEALED OUTSIDE AIR: 1.5" BLANKET WITH VAPOR BARRIER.
 - INDOOR EXHAUST AIR: BARE METAL
- TURNING VANES: PROVIDE GALVANIZED STEEL AIRFOIL TYPE TURNING VANES IN DUCT ELBOWS AS INDICATED.
- CONTROL DAMPERS: PROVIDE ULTRA-LOW LEAK GALVANIZED STEEL DAMPERS GALVANIZED STEEL SHAFTS AND STEEL BEARINGS, NEOPRENE BLADE AND EDGE SEALS.
- FLEXIBLE DUCTWORK: VINYL LINER, 2" FIBERGLASS INSULATION (MIN R-6) WITH STEEL WIRE REINFORCEMENT AND VINYL JACKET, MEETING FLAME SPREAD AND SMOKE DEVELOPED REQUIREMENTS OF UL 181.

L. AIR DEVICES:

- CONSTRUCTION: PROVIDE REGISTERS, GRILLES, AND DIFFUSERS WITH BAKED WHITE ENAMEL ALUMINUM OR STEEL CONSTRUCTION, SUITABLE FOR FIELD PAINTING.
- CEILING DIFFUSERS: ASPIRATING TYPE, SQUARE FACE, WITH ROUND NECK OR SQUARE TO ROUND TRANSITION AND OPPOSED BLADE DAMPER. SEE SCHEDULE OR EQUAL.
- GRILLES & REGISTERS: HORIZONTAL FACE BARS WITH 45° DEFLECTION ON 1/2" CENTERS, OPPOSED BLADE DAMPER FOR REGISTERS. SEE SCHEDULE OR EQUAL.

M. CONTROLS:

- PROVIDE TRANE DIGITAL CONTROL PACKAGE TO CONNECT TO EXISTING BUILDING MANAGEMENT SYSTEM. COORDINATE WITH TRANE.
- PROVIDE ALL DEVICES, AND LOW VOLTAGE CONTROL WIRING NECESSARY TO ACCOMPLISH THE SPECIFIED SEQUENCE OF OPERATION, PLUS 120V POWER FOR DAMPER AND VALVE ACTUATORS.
- PROVIDE 120 TO 24 VAC TRANSFORMERS, RELAYS, WIRING, SWITCHES, ELECTRIC AND ELECTRONIC CONTROLS EQUIPMENT, ACTUATORS, ENGINEERING, COMMISSIONING, START-UP, ET CETERA REQUIRED FOR A COMPLETE CONTROL SYSTEM WITH SPECIFIED SEQUENCE OF OPERATION:

N. BALANCING AND COMMISSIONING:

- VERIFY PROPER INSTALLATION OF MECHANICAL EQUIPMENT PRIOR TO BALANCING AND REPORT ANY DEFICIENCIES.
- VERIFY ALL NECESSARY COMPONENTS ARE INSTALLED SUCH AS BALANCING VALVES AND DAMPERS.
- VERIFY OPERATION OF SYSTEMS AND EQUIPMENT COMPLIES WITH THE SPECIFIED SEQUENCE OF OPERATION IN ALL MODES.
- BALANCE AIR SYSTEMS TO WITHIN 0 TO 10% OF INDICATED VALUES.
- SUBMIT REPORTS SPECIFIED UNDER SUBMITTALS.

O. TRAINING:

- TRAIN OWNERS REPRESENTATIVE TO ADJUST, OPERATE, AND MAINTAIN ALL EQUIPMENT AND ASSOCIATED CONTROLS.

P. RECORD DOCUMENTS/CLOSEOUT SUBMITTALS:

- PROVIDE OPERATIONAL AND MAINTENANCE MANUALS TO BE DELIVERED ELECTRONICALLY AND IN THREE RING BINDER.
- AS-BUILT DRAWINGS: DELIVER TO OWNER AT THE COMPLETION OF THE PROJECT A SET OF PRINTS OF THE DRAWINGS MARKED IN RED SHOWING CHANGES IN LOCATIONS, MODELS AND CAPACITIES OF THE SYSTEM.
- BALANCING AND COMMISSIONING REPORTS: SUBMIT PRE-TEST VERIFICATION AND BALANCING DATA REPORTS.

SEQUENCE OF OPERATION: (ALL SET POINTS SHALL BE ADJUSTABLE THROUGH TRANE CONTROL SYSTEM)

CONSTANT VOLUME PACKAGED UNITS (RTU-4):

- COOLING AND HEATING CYCLES WILL BE BASED ON DIGITAL CONTROLLER. ALL SET POINTS, SCHEDULES, AND SETBACKS WILL BE ADJUSTABLE BY OCCUPANT.
- OCCUPIED CYCLE (BASED ON T-STAT PROGRAM): OPEN OUTSIDE AIR DAMPER TO MINIMUM POSITION, AND OPERATE SUPPLY FAN CONTINUOUSLY. ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT (74°F) WITH ECONOMIZER DISABLED, OPERATE COMPRESSOR(S) IN STAGES TO SATISFY THE THERMOSTAT. ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT (74°F) WITH ECONOMIZER ENABLED, MODULATE THE RETURN AIR AND OUTSIDE AIR DAMPERS TO SATISFY THE THERMOSTAT. ON A CONTINUED RISE IN SPACE TEMPERATURE ABOVE THE COOLING SET POINT (74°F), OPERATE THE COMPRESSOR(S) IN STAGES TO SATISFY THE THERMOSTAT. ON A FALL IN SPACE TEMPERATURE BELOW THE HEATING SET POINT (70°F) AND THE OUTSIDE AIR DAMPER AT MINIMUM, OPERATE THE GAS BURNER TO SATISFY THE THERMOSTAT.
- UNOCCUPIED CYCLE: CLOSE THE OUTSIDE AIR DAMPER. ON A FALL IN SPACE TEMPERATURE BELOW THE HEATING SETBACK TEMPERATURE (65°F), START THE SUPPLY FAN AND OPERATE THE GAS BURNER TO SATISFY THE THERMOSTAT.
- ECONOMIZER: ENABLE ECONOMIZER CYCLE WHEN OUTSIDE AIR ENTHALPY IS LESS THAN 28 BTU/LB.
- DEHUMIDIFICATION (HOT GAS REHEAT): OPERATE DEHUMIDIFICATION CYCLE, WHEN COOLING IS NOT ENABLED, UPON RISE IN SPACE HUMIDITY ABOVE 60%RH.
- CO2 CONTROL: MODULATE OUTSIDE AIR DAMPER WHEN NOT IN ECONOMIZER MODE, TO MAINTAIN A CARBON DIOXIDE LEVEL AT OR BELOW 1000 PPM. MAINTAIN MINIMUM OUTSIDE AIR DAMPER SETTING WHEN UNIT IS OPERATING IN OCCUPIED MODE.

VARIABLE REFRIGERANT FLOW SYSTEM (VRF) (IDU-4, VRF-1, BC-1-1):

- OCCUPIED/UNOCCUPIED CYCLE BASED ON SCHEDULE IN CENTRAL CONTROLLER.
- OCCUPIED MODE: ALL FANS SHALL RUN CONTINUOUSLY E
- UNOCCUPIED MODE: ALL FANS SHALL BE DISABLED, UNLESS NEED TO OPERATE TO MAINTAIN UNOCCUPIED HEATING OR COOLING SET POINTS.
- ALL COOLING AND HEATING OPERATION WILL BE COMMANDED THROUGH TRANE ZONE CONTROLLERS THROUGH A CENTRAL CONTROLLER. THE SYSTEM USES PROPRIETARY CONTROL SEQUENCES TO SATISFY COOLING AND HEATING DEMAND. THE FOLLOWING IS A GENERAL SEQUENCE TO ESTABLISH A BASELINE OPERATION.
- COOLING MODE: ON A RISE IN SPACE TEMPERATURE ABOVE COOLING SET POINT THE SPECIFIC IDU-# SHALL MODULATE REFRIGERANT AND AIRFLOW TO MAINTAIN SET POINT.
- HEATING MODE: ON A DROP IN SPACE TEMPERATURE BELOW HEATING SET POINT THE SPECIFIC IDU-# SHALL MODULATE REFRIGERANT AND AIRFLOW TO MAINTAIN SET POINT.
- OUTDOOR UNIT COMPRESSOR OPERATION WILL BE SPECIFIC TO HITACHI'S OWN INTERNAL EQUIPMENT SEQUENCE.

ENERGY RECOVERY VENTILATOR (ERV-1): FAN SHALL OPERATED WHEN VRF SYSTEM IS OCCUPIED

- A CONTROL SIGNAL WILL BE REQUIRED TO INITIATE ERV OPERATION ON OCCUPANCY.
- PROVIDE NECESSARY CONTROL WIRING AND RELAYS.

KITCHEN MAKEUP AIR UNIT (MAU-1):

- UNIT CONTROLS: THE UNIT SHALL BE PROVIDED FROM THE FACTORY WITH:
 - 24VAC TRANSFORMER
 - TERMINAL STRIP
 - EXHAUST FAN MOTOR STARTER (KEF-1) PROVIDE FIELD WIRING
 - FACTORY MOUNTED AND WIRED OUTDOOR AIR INLET DAMPER WITH ACTUATOR
 - REMOTE CONTROL PANEL: MOUNTED AT COOKLINE HOOD (KH-1)
- KITCHEN REMOTE CONTROL PANEL:
 - INTEGRATE INTO EXISTING KITCHEN CONTROL PANEL OR POWER SWITCH.
- UNIT STARTUP:
 - EXHAUST FAN ENABLED.
 - SUPPLY FAN ENABLE IS RECEIVED.
 - EXHAUST FAN CONTRACTORS ARE PROVED ELECTRICALLY.
 - OUTDOOR AIR INLET DAMPER ACTUATOR IS ENERGIZED.
 - OUTDOOR AIR INLET DAMPER ACTUATOR LIMIT SWITCH IS PROVEN CLOSED.
 - SUPPLY FAN IS ENABLED.
- COOLING CYCLE: ON A RISE IN DISCHARGE AIR TEMPERATURE ABOVE SET POINT (76°F) THE UNIT SHALL OPERATE COMPRESSOR (S) IN STAGES TO REDUCE DISCHARGE AIR TEMPERATURE. AN OUTDOOR AIR TEMPERATURE SENSOR (MOUNTED IN UNIT INLET) WILL ALLOW COOLING OR LOCKOUT COOLING BASED ON OUTDOOR TEMPERATURE SET POINT (76°F) UPON DROP IN OUTDOOR TEMPERATURE BELOW SET POINT, COOLING SHALL BE DISABLED. ADJUSTABLE DISCHARGE AIR SET POINT.
- HEATING CYCLE: ON A FALL IN DISCHARGE AIR TEMPERATURE BELOW SET POINT (65°F) THE UNIT SHALL MODULATE GAS HEATING TO MAINTAIN A 55°F TO 65°F, ADJUSTABLE DISCHARGE AIR SETPOINT.
- COOLING CYCLE: ON A RISE IN DISCHARGE AIR TEMPERATURE ABOVE SETPOINT (80°F) THE UNIT SHALL OPERATE COOLING (STAGES) TO DROP DISCHARGE AIR TEMP TO SETPOINT (70°F)
- ROOM OVERRIDE: A ROOM OVERRIDE THERMOSTAT SHALL ELEVATE THE SUPPLY AIR TEMPERATURE SET POINT 5°F TO 40°F UPON A CALL FOR HEATING FROM THE SPACE.
- BUILDING FREEZE PROTECTION: IF SUPPLY AIR DROPS BELOW 35°F FOR 5 MINUTES THE SUPPLY FAN SHALL DISABLE.
- CYCLING THE THE FAN SWITCH WILL RESET THE TIMER.
- SEQUENCE IS INTENDED TO PREVENT THE UNIT FROM SUPPLYING COLD AIR TO THE BUILDING.

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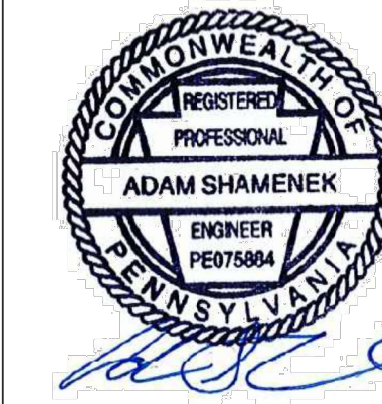


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SCHUYLKILL VALLEY SCHOOL DISTRICT
ELEMENTARY SCHOOL HVAC UPGRADE

62 ASHLEY WAY
LEESPORT, PA 19533

HVAC SPECIFICATIONS AND
SEQUENCE OF OPERATION



PROJECT NUMBER:	20159
SCALE:	AS NOTED
DATE:	4/20/2021
DRAWN BY:	AWB
CHECKED BY:	ALS
DATE CHECKED:	4/20/2021

REVISIONS	
DATE:	DESCRIPTION:

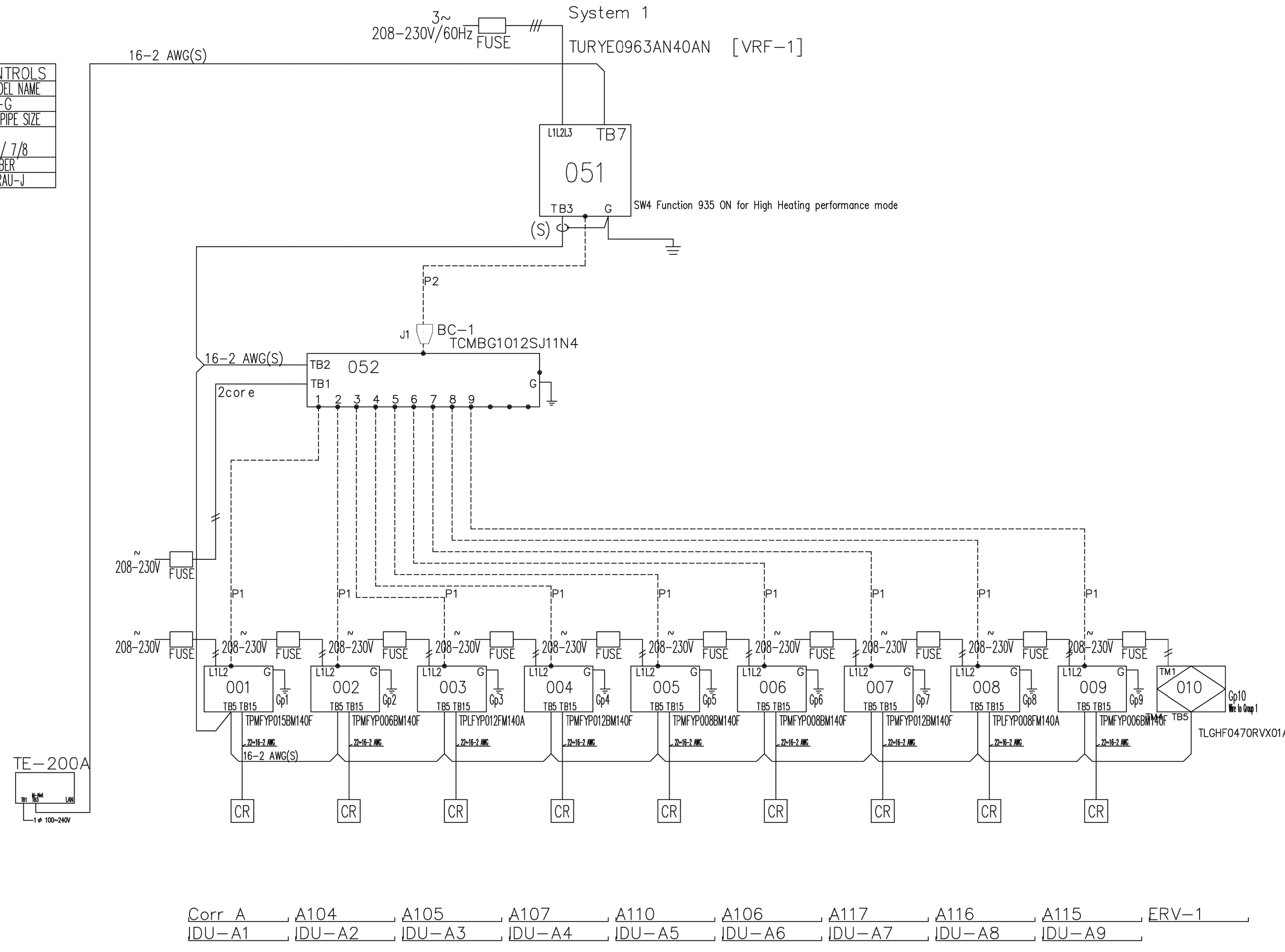
M004

DIAGRAM	SYMBOL LEGEND	CONT.No	PAGE
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CITY MULTI
SYSTEM SCHEMATIC DWG.

This drawing is schematic in nature. Final routing of piping & wiring shall be determined by the installing contractor and/or designer of record. Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-R301S-G
SYMBOL	LIQUID PIPE / GAS PIPE SIZE
P1	1/4 / 1/2
P2	3/4 / 7/8
SYMBOL	MODE NUMBER
CR	TAC-Y153GRAU-J

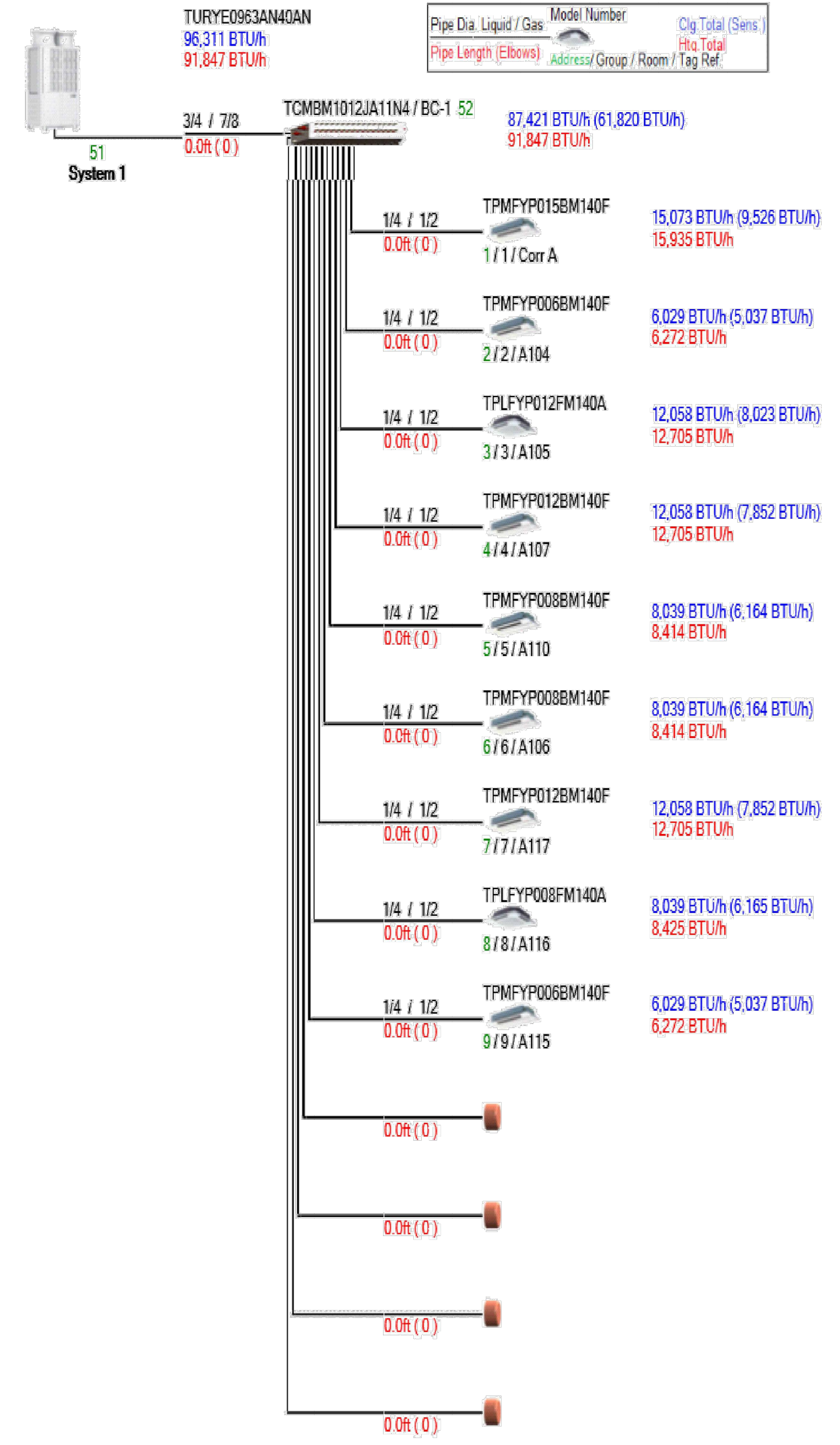


Corr_A _____ A104 _____ A105 _____ A107 _____ A110 _____ A106 _____ A117 _____ A116 _____ A115 _____ ERV-1 _____
 IDU-A1 _____ IDU-A2 _____ IDU-A3 _____ IDU-A4 _____ IDU-A5 _____ IDU-A6 _____ IDU-A7 _____ IDU-A8 _____ IDU-A9 _____

- REMARKS
- REFER TO MANUFACTURER'S INSTALLATION MANUAL FOR ADDITIONAL INSTALLATION INFORMATION ON CONTROL WIRING AND REFRIGERANT PIPING.
 - REFER TO MANUFACTURER'S INFORMATION FOR REFRIGERANT PIPING INSULATION THICKNESS. WHERE INSULATION IS NOT RECOMMENDED REFER TO THE 2015 IECC.
 - INSTALLER MUST COMPLETE A TRANSMITSUBISHI CERTIFICATION INSTALLATION CLASS.
 - TRANE/MITSUBISHI VRF MUST BE COMMISSIONED BY A CERTIFIED TRANE/MITSUBISHI VRF COMMISSIONING PROFESSIONAL.

VRF SYSTEM SCHEMATIC
NOT TO SCALE

Diamond System Builder
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db: 4.3.0.46
4/20/2021
6:34 AM

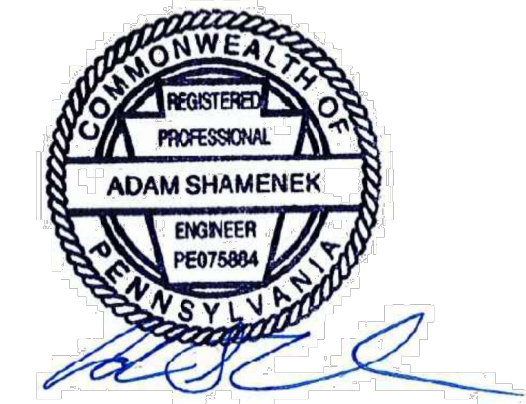


VRF PIPING DIAGRAM
NOT TO SCALE

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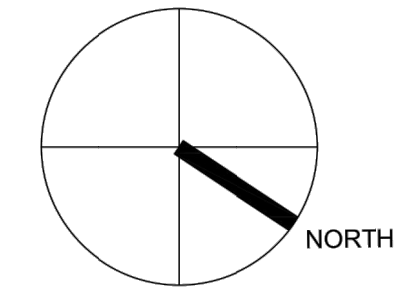


SCHUYLKILL VALLEY SCHOOL DISTRICT
ELEMENTARY SCHOOL HVAC UPGRADE
62 ASHLEY WAY
LEESPORT, PA 19533
VRF SCHEMATICS



PROJECT NUMBER:	20159
SCALE:	AS NOTED
DATE:	4/20/2021
DRAWN BY:	AWB
CHECKED BY:	ALS
DATE CHECKED:	4/20/2021
REVISIONS	
DATE:	DESCRIPTION:

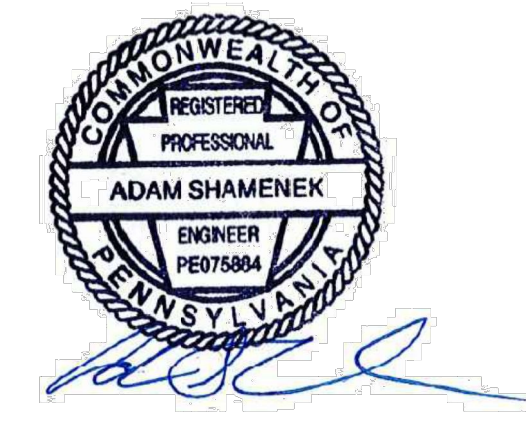
M005



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SCHUYLKILL VALLEY SCHOOL DISTRICT
 ELEMENTARY SCHOOL HVAC UPGRADE
 62 ASHLEY WAY
 LEESPORT, PA 19533
 FIRST FLOOR AREA A
 DEMOLITION PLAN



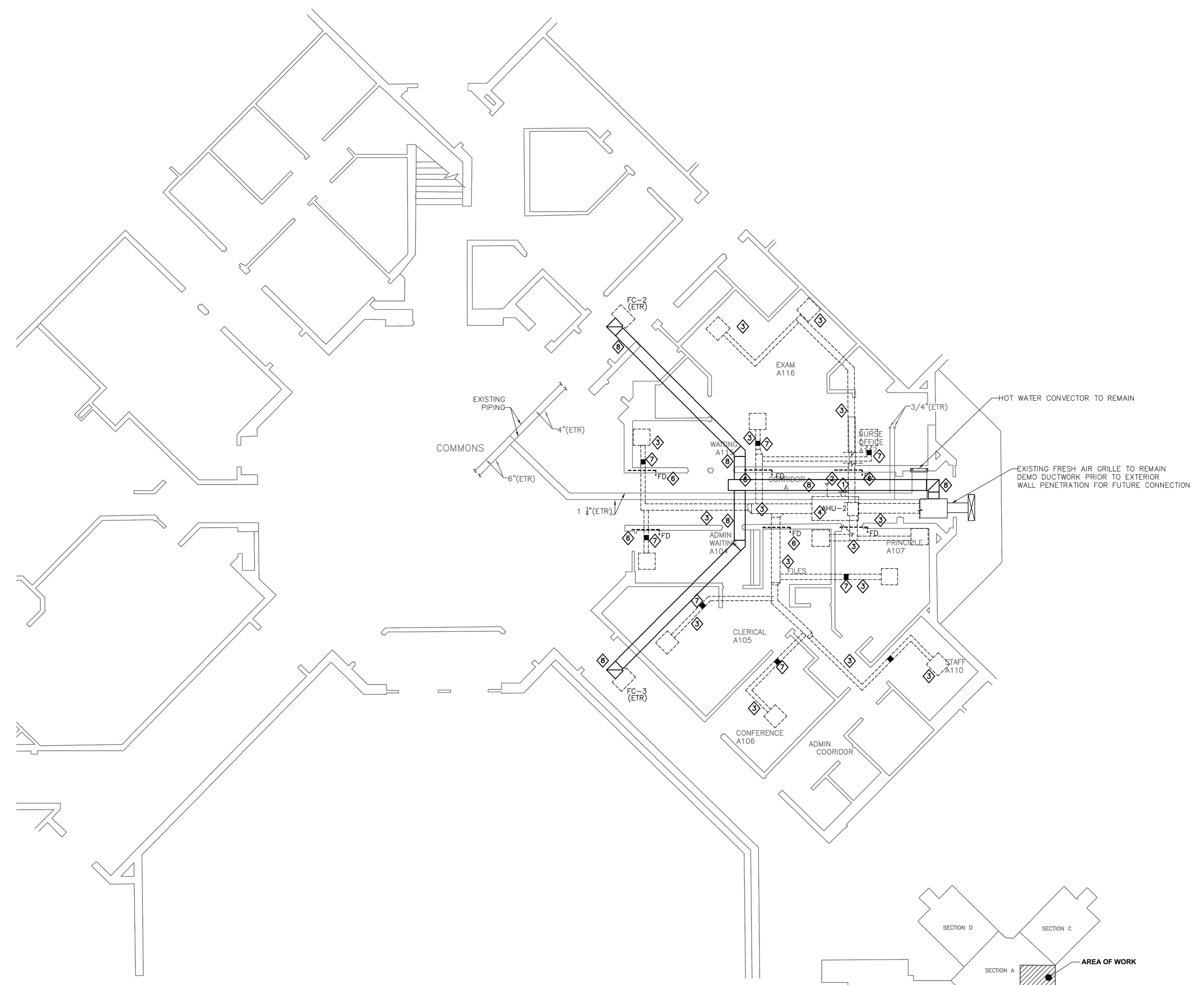
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SCALE:	AS NOTED
DATE:	4/20/2021
DRAWN BY:	AWB
CHECKED BY:	ALS
DATE CHECKED:	4/20/2021
REVISIONS	
DATE:	DESCRIPTION:

MD101

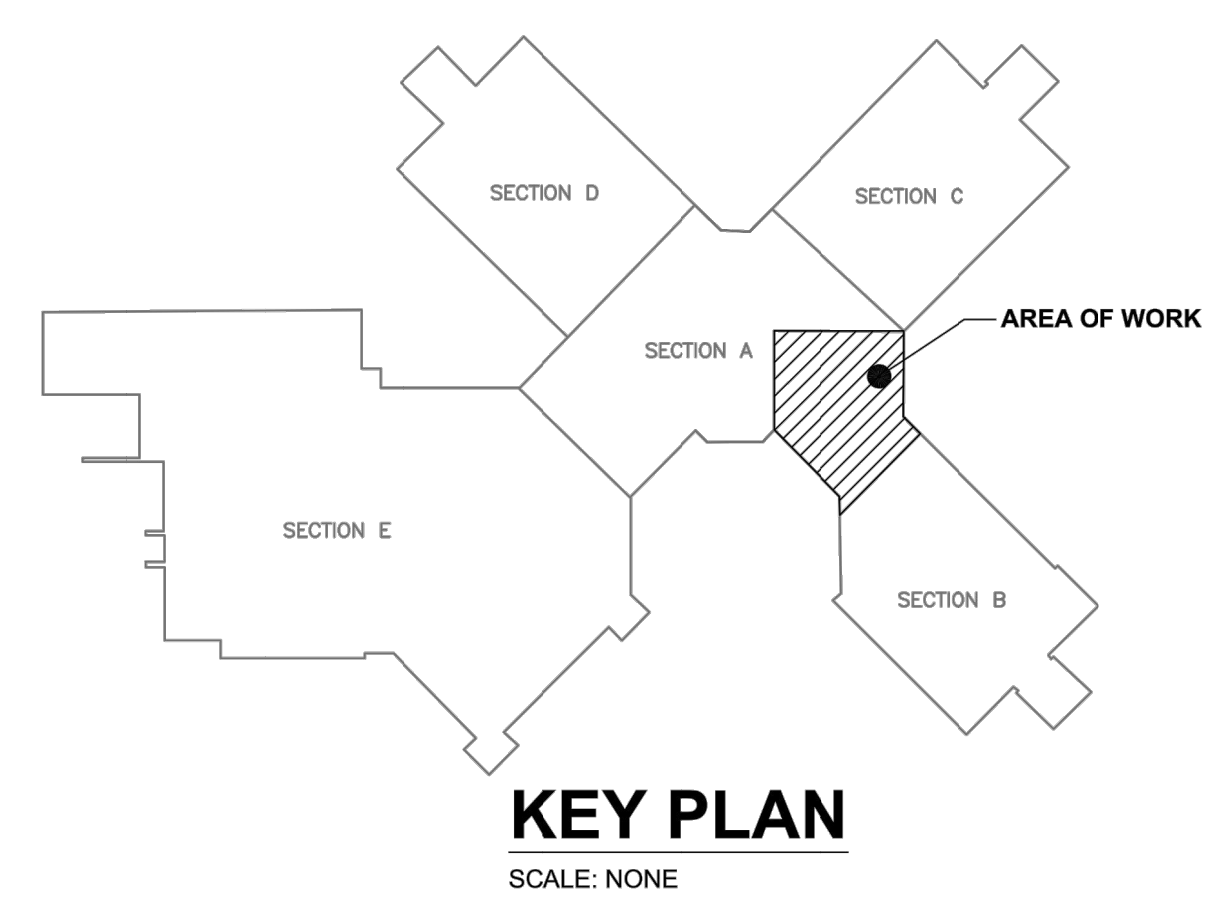
- ### DEMOLITION GENERAL NOTES
- EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM RECORD DRAWINGS WHEN AVAILABLE. MAY NOT INDICATE ACTUAL CONDITIONS IN DETAIL AND DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXACT EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OR ENGINEER IN WRITING IF THE EXISTING CONDITIONS ARE DISCOVERED THAT PREVENT THE EXECUTION OF WORK. THE CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL DIRECTION IS PROVIDED.
 - EVERY EFFORT HAS BEEN MADE TO INDICATE ALL DEVICES THAT ARE BEING REMOVED THROUGH EXISTING DRAWINGS AND FIELD OBSERVATIONS.
 - THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED TO COMPLETE DEMOLITION WORK.
 - THE CONTRACTOR SHALL COORDINATE PATCH AND SEALING OF ALL OPENINGS GENERATED BY DEMOLITION WORK TO MATCH EXISTING CONDITIONS.
 - COORDINATE ANY ELECTRICAL CIRCUIT DEMOLITION WITH ELECTRICAL CONTRACTOR. COORDINATE ELECTRIC HAS BEEN DISCONNECTED BEFORE REMOVING ANY EQUIPMENT.
 - PROTECT EXISTING TO REMAIN EQUIPMENT.
 - REMOVE ALL THERMOSTATS WITHIN AREA OF WORK.
 - REMOVE AND REINSTALL EXISTING SUPPLY AIR SMOKE DETECTORS. COORDINATE WITH FACILITY STAFF AND ELECTRICAL CONTRACTOR FOR DISCONNECTION AND RECONNECTION TO FIRE ALARM SYSTEM.
 - EXISTING RETURN AIR SMOKE DETECTORS TO REMAIN IN RETURN DUCTWORK TO REMAIN

- ### DEMOLITION PLAN NOTES
- REMOVE EXISTING CHILLED/HOT WATER PIPING TO THE POINT INDICATED. DRAIN SYSTEM TO BELOW PIPING CONNECTION LEVEL AND CAP AS CLOSE TO MAIN AS POSSIBLE. COORDINATE PATCHING AND SEALING OF WALL OPENINGS.
 - DEMO EXISTING CONDENSATE PIPING.
 - REMOVE EXISTING DUCTWORK & ASSOCIATED DIFFUSERS
 - REMOVE EXISTING AHU-2. COORDINATE POWER DISCONNECT WITH E.C.
 - REMOVE EXISTING GRAVITY INTAKES, FANS, AND DUCTWORK TO AHU(S). COORDINATE CURB PATCHING OF ROOF WITH GENERAL CONTRACTOR AND ROOFER.
 - EXISTING FIRE DAMPERS TO REMAIN, CLOSE FIRE DAMPERS NOT UTILIZED IN NEW WORK
 - REMOVE EXISTING ELECTRIC DUCT HEATER. COORDINATE POWER DISCONNECT WITH E.C.
 - OUTSIDE AIR DUCT, EXISTING TO REMAIN

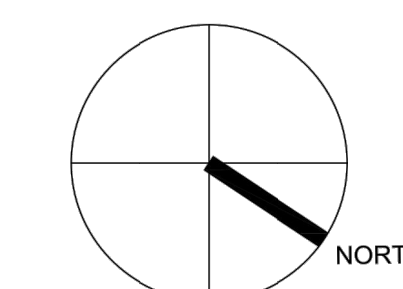
- PIPING SYSTEM DEMOLITION NOTES:**
- SYSTEM DRAINING:**
- DISABLE AT ELECTRICAL DISCONNECT ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO PUMPS, BOILERS, CHILLER, AND DEVICES CRITICAL TO WATER FLOW.
 - DRAIN CHILLED/HOT WATER SYSTEM TO BELOW PIPING TO REMOVED ON SYSTEM
 - DRAIN AHU#4, FC#4, UV#4, AND PIPING IN A MANNER TO NOT DAMAGE OTHER ELEMENTS OF THE BUILDING.
 - PROVIDED PROTECTION TO BUILDING ELEMENTS IF DRAINING SYSTEM COULD CAUSE DAMAGE.
 - DISPOSE OF SYSTEM WATER IN ACCORDANCE WITH CHEMICAL TREATMENT GUIDELINES.
- SYSTEM REFILL:**
- VERIFY ALL NEW PIPING CONNECTIONS ARE SECURED AND TIGHT BEFORE REFILLING SYSTEM.
 - PURGE ALL AIR FROM SYSTEM BEFORE PUTTING SYSTEM EQUIPMENT BACK INTO OPERATION.
 - INSPECT AREAS OF WORK FOR LEAKS.
 - AFTER SYSTEMS ARE PUT BACK INTO SERVICE CHECK MANUAL AIR VENTS FOR RESIDUAL AIR TRAPPED IN SYSTEM.
 - VERIFY OPERATION OF EQUIPMENT.
- CHEMICAL TREATMENT:**
- BEFORE DRAINING SYSTEM, MEASURE EXISTING CHEMICAL/GLYCOL LEVELS.
 - VERIFY TYPES OF CHEMICALS WITH FACILITY STAFF.
 - RETURN SYSTEM TO EXISTING TREATMENT LEVELS.
 - MEASURE VOLUME OF WATER USED TO REFILL SYSTEM TO CALCULATE NECESSARY CHEMICAL TREATMENT VOLUME.



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



KEY PLAN
 SCALE: NONE



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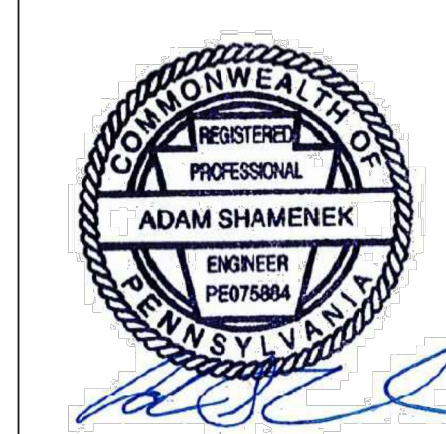


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ELEMENTARY SCHOOL HVAC UPGRADE

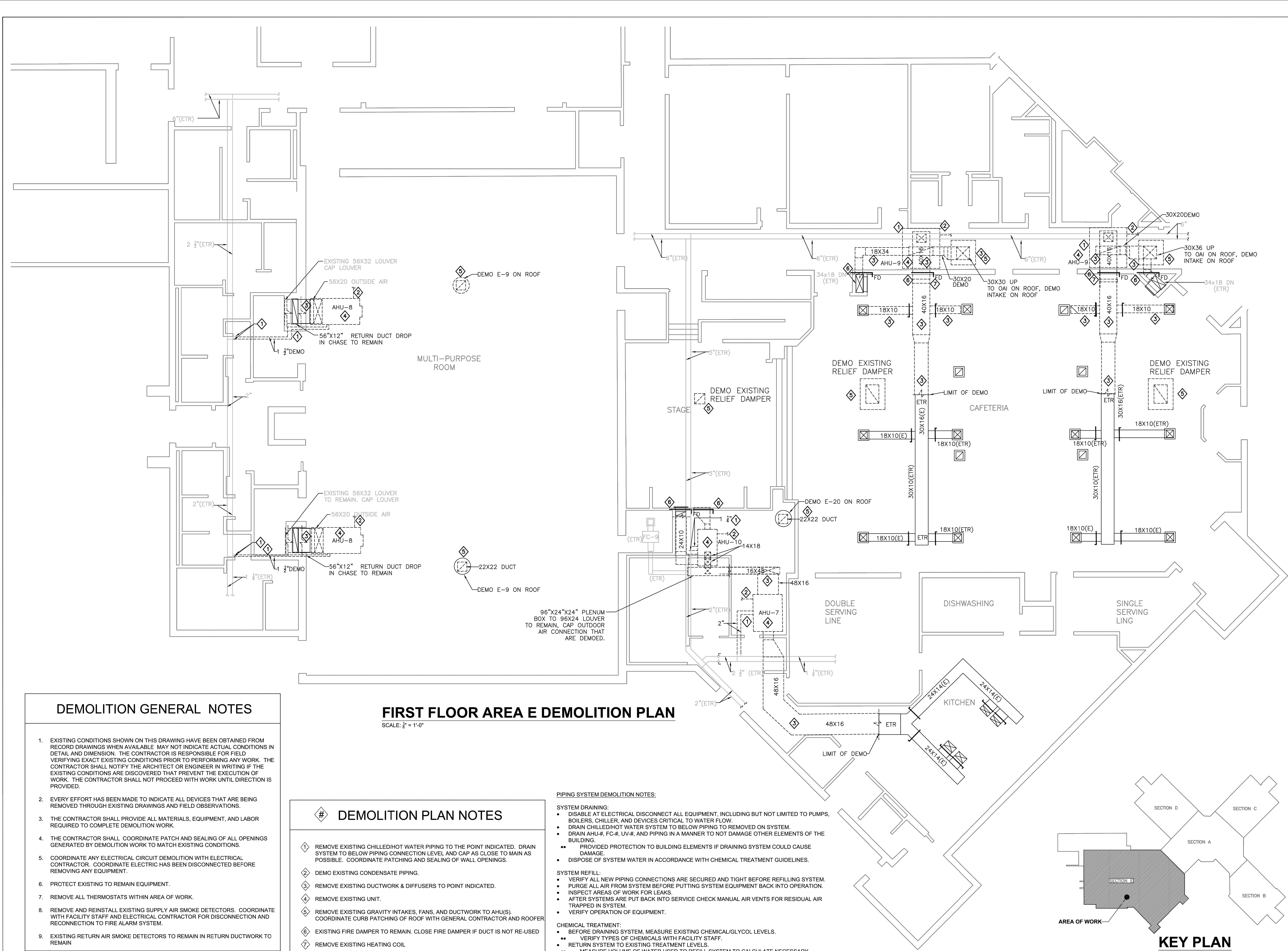
62 ASHLEY WAY
LEESPORT, PA 19533

AREA E DEMOLITION PLAN



PROJECT NUMBER:	20159
SCALE:	AS NOTED
DATE:	4/20/2021
DRAWN BY:	AWB
CHECKED BY:	ALS
DATE CHECKED:	4/20/2021
REVISIONS	
DATE:	DESCRIPTION:

MD102



FIRST FLOOR AREA E DEMOLITION PLAN

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

DEMOLITION GENERAL NOTES

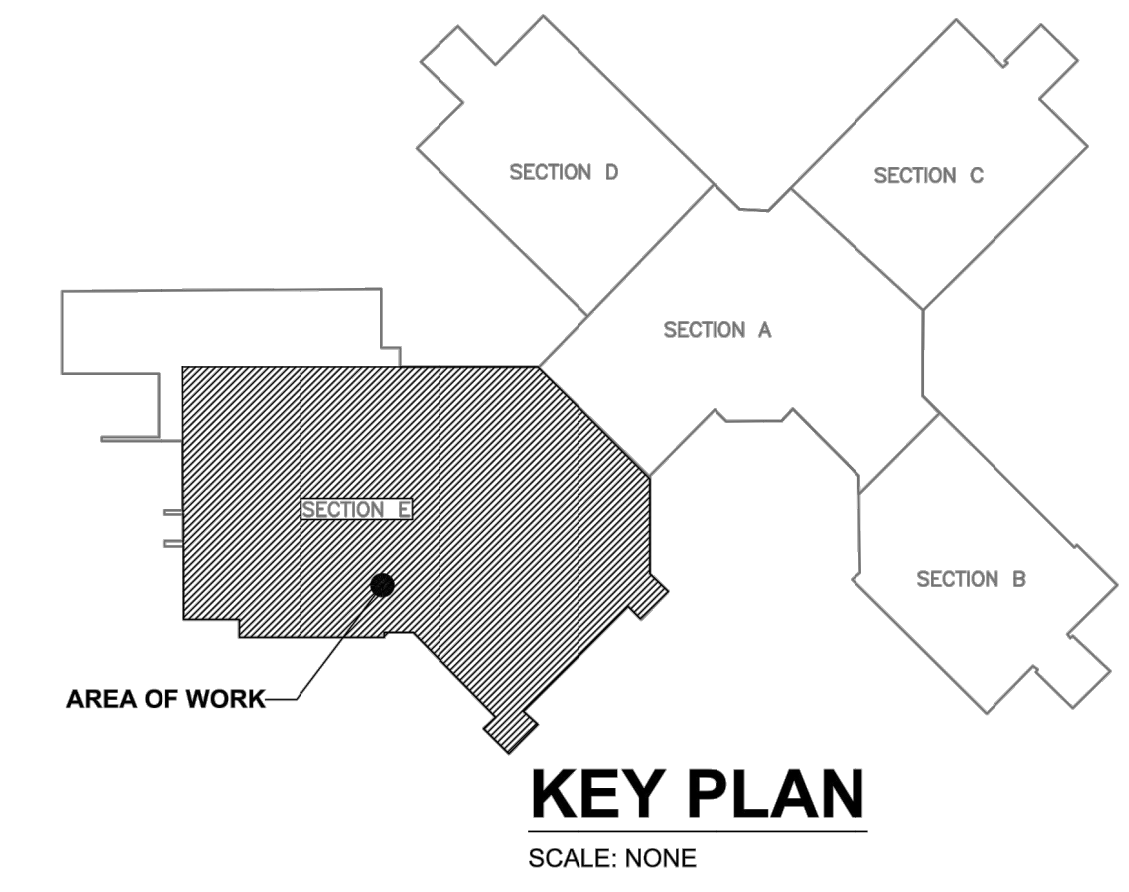
- EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM RECORD DRAWINGS WHEN AVAILABLE. MAY NOT INDICATE ACTUAL CONDITIONS IN DETAIL AND DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXACT EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OR ENGINEER IN WRITING IF THE EXISTING CONDITIONS ARE DISCOVERED THAT PREVENT THE EXECUTION OF WORK. THE CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL DIRECTION IS PROVIDED.
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- THE CONTRACTOR SHALL COORDINATE PATCH AND SEALING OF ALL OPENINGS GENERATED BY DEMOLITION WORK TO MATCH EXISTING CONDITIONS.
- COORDINATE ANY ELECTRICAL CIRCUIT DEMOLITION WITH ELECTRICAL CONTRACTOR. COORDINATE ELECTRICAL DISCONNECTION BEFORE REMOVING ANY EQUIPMENT.
- PROTECT EXISTING TO REMAIN EQUIPMENT.
- REMOVE ALL THERMOSTATS WITHIN AREA OF WORK.
- REMOVE AND REINSTALL EXISTING SUPPLY AIR SMOKE DETECTORS. COORDINATE WITH FACILITY STAFF AND ELECTRICAL CONTRACTOR FOR DISCONNECTION AND RECONNECTION TO FIRE ALARM SYSTEM.
- EXISTING RETURN AIR SMOKE DETECTORS TO REMAIN IN RETURN DUCTWORK TO REMAIN

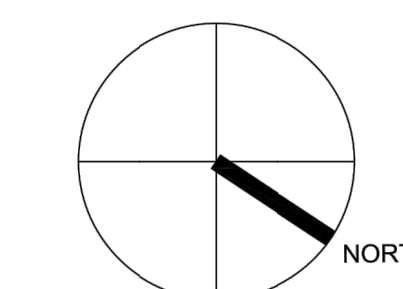
DEMOLITION PLAN NOTES

- ① REMOVE EXISTING CHILLED/HOT WATER PIPING TO THE POINT INDICATED. DRAIN SYSTEM TO BELOW PIPING CONNECTION LEVEL AND CAP AS CLOSE TO MAIN AS POSSIBLE. COORDINATE PATCHING AND SEALING OF WALL OPENINGS.
- ② DEMO EXISTING CONDENSATE PIPING.
- ③ REMOVE EXISTING DUCTWORK & DIFFUSERS TO POINT INDICATED.
- ④ REMOVE EXISTING UNIT.
- ⑤ REMOVE EXISTING GRAVITY INTAKES, FANS, AND DUCTWORK TO AHU(S). COORDINATE CURB PATCHING OF ROOF WITH GENERAL CONTRACTOR AND ROOFER.
- ⑥ EXISTING FIRE DAMPER TO REMAIN. CLOSE FIRE DAMPER IF DUCT IS NOT RE-USED
- ⑦ REMOVE EXISTING HEATING COIL

PIPING SYSTEM DEMOLITION NOTES:

- SYSTEM DRAINING:**
- DISABLE AT ELECTRICAL DISCONNECT ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO PUMPS, BOILERS, CHILLER, AND DEVICES CRITICAL TO WATER FLOW.
 - DRAIN CHILLED/HOT WATER SYSTEM TO BELOW PIPING TO BE REMOVED ON SYSTEM.
 - DRAIN AHU-#, FC-#, UV-#, AND PIPING IN A MANNER TO NOT DAMAGE OTHER ELEMENTS OF THE BUILDING.
 - PROVIDED PROTECTION TO BUILDING ELEMENTS IF DRAINING SYSTEM COULD CAUSE DAMAGE.
 - DISPOSE OF SYSTEM WATER IN ACCORDANCE WITH CHEMICAL TREATMENT GUIDELINES.
- SYSTEM REFILL:**
- VERIFY ALL NEW PIPING CONNECTIONS ARE SECURED AND TIGHT BEFORE REFILLING SYSTEM.
 - PURGE ALL AIR FROM SYSTEM BEFORE PUTTING SYSTEM EQUIPMENT BACK INTO OPERATION.
 - INSPECT AREAS OF WORK FOR LEAKS.
 - AFTER SYSTEMS ARE PUT BACK INTO SERVICE CHECK MANUAL AIR VENTS FOR RESIDUAL AIR TRAPPED IN SYSTEM.
 - VERIFY OPERATION OF EQUIPMENT.
- CHEMICAL TREATMENT:**
- BEFORE DRAINING SYSTEM, MEASURE EXISTING CHEMICAL/GLYCOL LEVELS.
 - VERIFY TYPES OF CHEMICALS WITH FACILITY STAFF.
 - RETURN SYSTEM TO EXISTING TREATMENT LEVELS.
 - MEASURE VOLUME OF WATER USED TO REFILL SYSTEM TO CALCULATE NECESSARY CHEMICAL TREATMENT VOLUME.





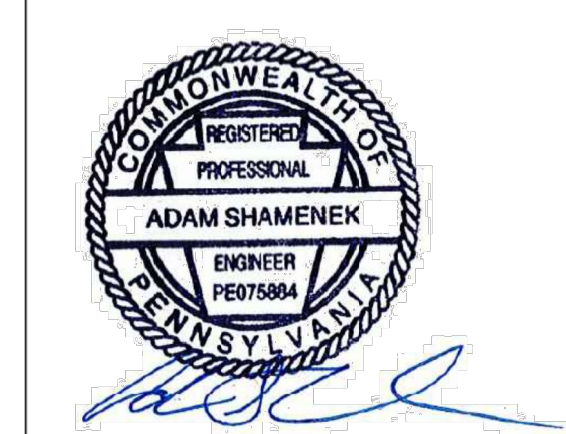
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SCHUYLKILL VALLEY SCHOOL DISTRICT
ELEMENTARY SCHOOL HVAC UPGRADE

62 ASHLEY WAY
LEESPORT, PA 19533

2ND FLOOR AREA A DEMOLITION



PROJECT NUMBER:	20159
SCALE:	AS NOTED
DATE:	4/20/2021
DRAWN BY:	AWB
CHECKED BY:	ALS
DATE CHECKED:	4/20/2021
REVISIONS	
DATE:	DESCRIPTION:

MD201

DEMOLITION GENERAL NOTES

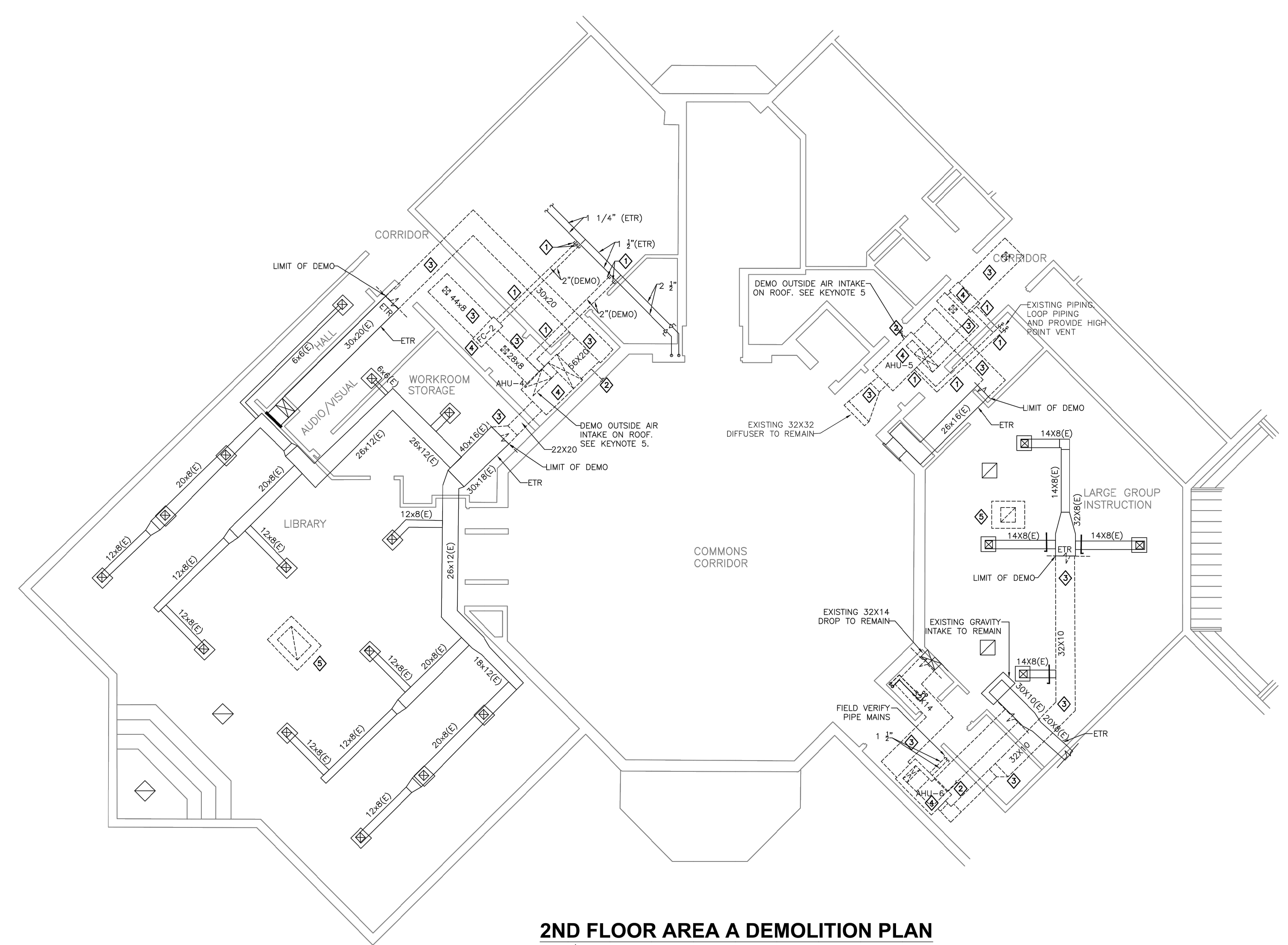
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- EVERY EFFORT HAS BEEN MADE TO INDICATE ALL DEVICES THAT ARE BEING REMOVED THROUGH EXISTING DRAWINGS AND FIELD OBSERVATIONS.
- THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED TO COMPLETE DEMOLITION WORK.
- THE CONTRACTOR SHALL COORDINATE PATCH AND SEALING OF ALL OPENINGS GENERATED BY DEMOLITION WORK TO MATCH EXISTING CONDITIONS.
- COORDINATE ANY ELECTRICAL CIRCUIT DEMOLITION WITH ELECTRICAL CONTRACTOR. COORDINATE ELECTRIC HAS BEEN DISCONNECTED BEFORE REMOVING ANY EQUIPMENT.
- PROTECT EXISTING TO REMAIN EQUIPMENT.
- REMOVE ALL THERMOSTATS WITHIN AREA OF WORK.
- REMOVE AND REINSTALL EXISTING SUPPLY AIR SMOKE DETECTORS. COORDINATE WITH FACILITY STAFF AND ELECTRICAL CONTRACTOR FOR DISCONNECTION AND RECONNECTION TO FIRE ALARM SYSTEM.
- EXISTING RETURN AIR SMOKE DETECTORS TO REMAIN IN RETURN DUCTWORK TO REMAIN

DEMOLITION PLAN NOTES

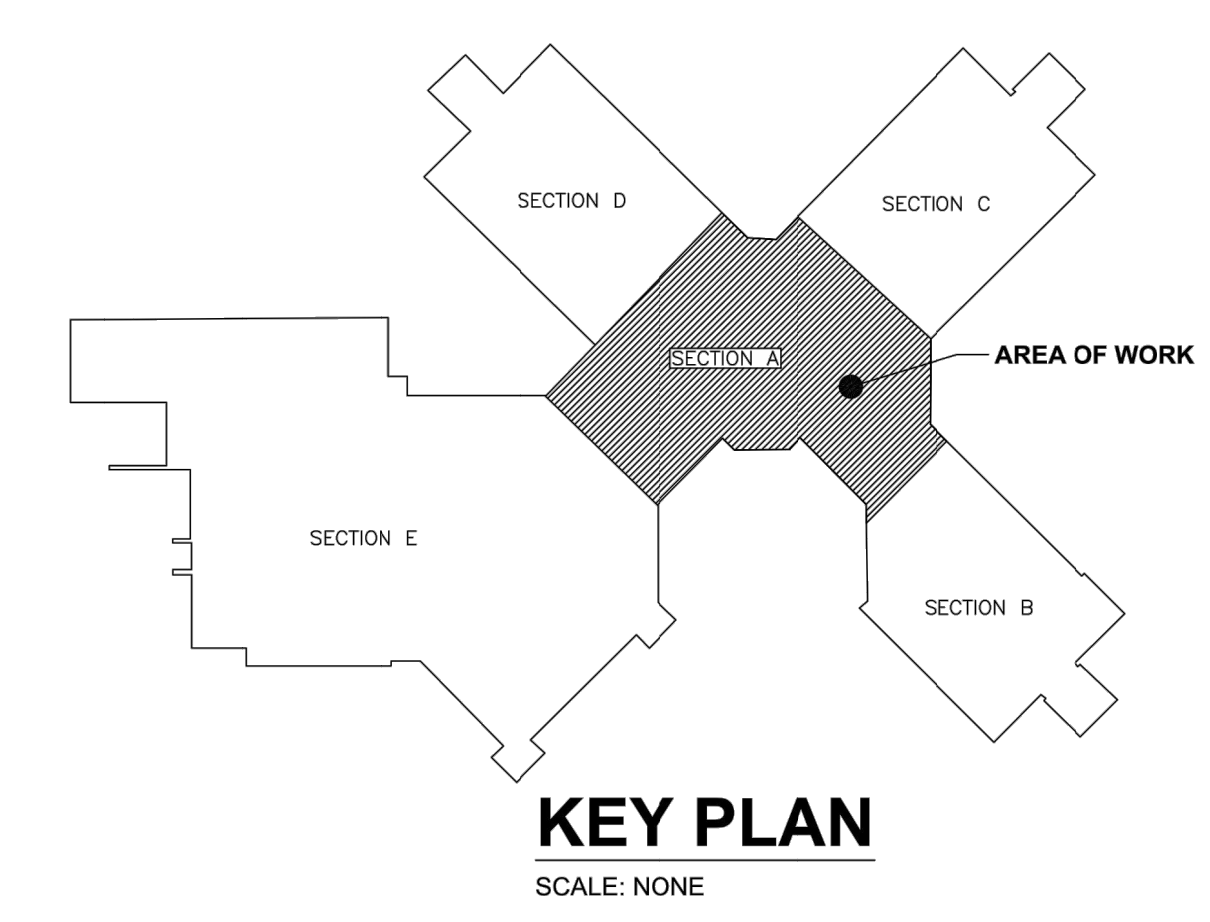
- ① REMOVE EXISTING CHILLED/HOT WATER PIPING TO THE POINT INDICATED. DRAIN SYSTEM TO BELOW PIPING CONNECTION LEVEL AND CAP AS CLOSE TO MAIN AS POSSIBLE. COORDINATE PATCHING AND SEALING OF WALL OPENINGS.
- ② DEMO EXISTING CONDENSATE PIPING.
- ③ REMOVE EXISTING DUCTWORK & DIFFUSERS TO POINT INDICATED.
- ④ REMOVE EXISTING UNIT.
- ⑤ REMOVE EXISTING GRAVITY INTAKES, FANS, AND DUCTWORK TO AHU(S). COORDINATE CURB PATCHING OF ROOF WITH GENERAL CONTRACTOR AND ROOFER.
- ⑥ EXISTING FIRE DAMPER TO REMAIN.

PIPING SYSTEM DEMOLITION NOTES:

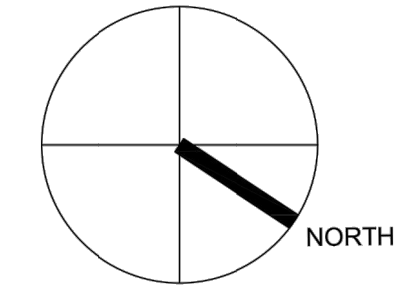
- SYSTEM DRAINING:**
- DISABLE AT ELECTRICAL DISCONNECT ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO PUMPS, BOILERS, CHILLER, AND DEVICES CRITICAL TO WATER FLOW.
 - DRAIN CHILLED/HOT WATER SYSTEM TO BELOW PIPING TO BE REMOVED ON SYSTEM.
 - DRAIN AHU'S, FC's, UV'S, AND PIPING IN A MANNER TO NOT DAMAGE OTHER ELEMENTS OF THE BUILDING.
 - PROVIDED PROTECTION TO BUILDING ELEMENTS IF DRAINING SYSTEM COULD CAUSE DAMAGE.
 - DISPOSE OF SYSTEM WATER IN ACCORDANCE WITH CHEMICAL TREATMENT GUIDELINES.
- SYSTEM REFILL:**
- VERIFY ALL NEW PIPING CONNECTIONS ARE SECURED AND TIGHT BEFORE REFILLING SYSTEM.
 - PURGE ALL AIR FROM SYSTEM BEFORE PUTTING SYSTEM EQUIPMENT BACK INTO OPERATION.
 - INSPECT AREAS OF WORK FOR LEAKS.
 - AFTER SYSTEMS ARE PUT BACK INTO SERVICE CHECK MANUAL AIR VENTS FOR RESIDUAL AIR TRAPPED IN SYSTEM.
 - VERIFY OPERATION OF EQUIPMENT.
- CHEMICAL TREATMENT:**
- BEFORE DRAINING SYSTEM, MEASURE EXISTING CHEMICAL/GLYCOL LEVELS.
 - VERIFY TYPES OF CHEMICALS WITH FACILITY STAFF.
 - RETURN SYSTEM TO EXISTING TREATMENT LEVELS.
 - MEASURE VOLUME OF WATER USED TO REFILL SYSTEM TO CALCULATE NECESSARY CHEMICAL TREATMENT VOLUME.



2ND FLOOR AREA A DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



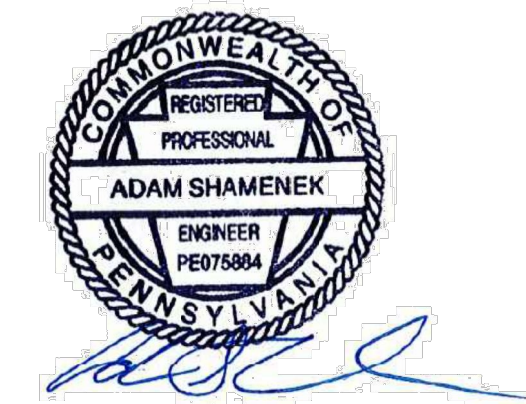
KEY PLAN
SCALE: NONE



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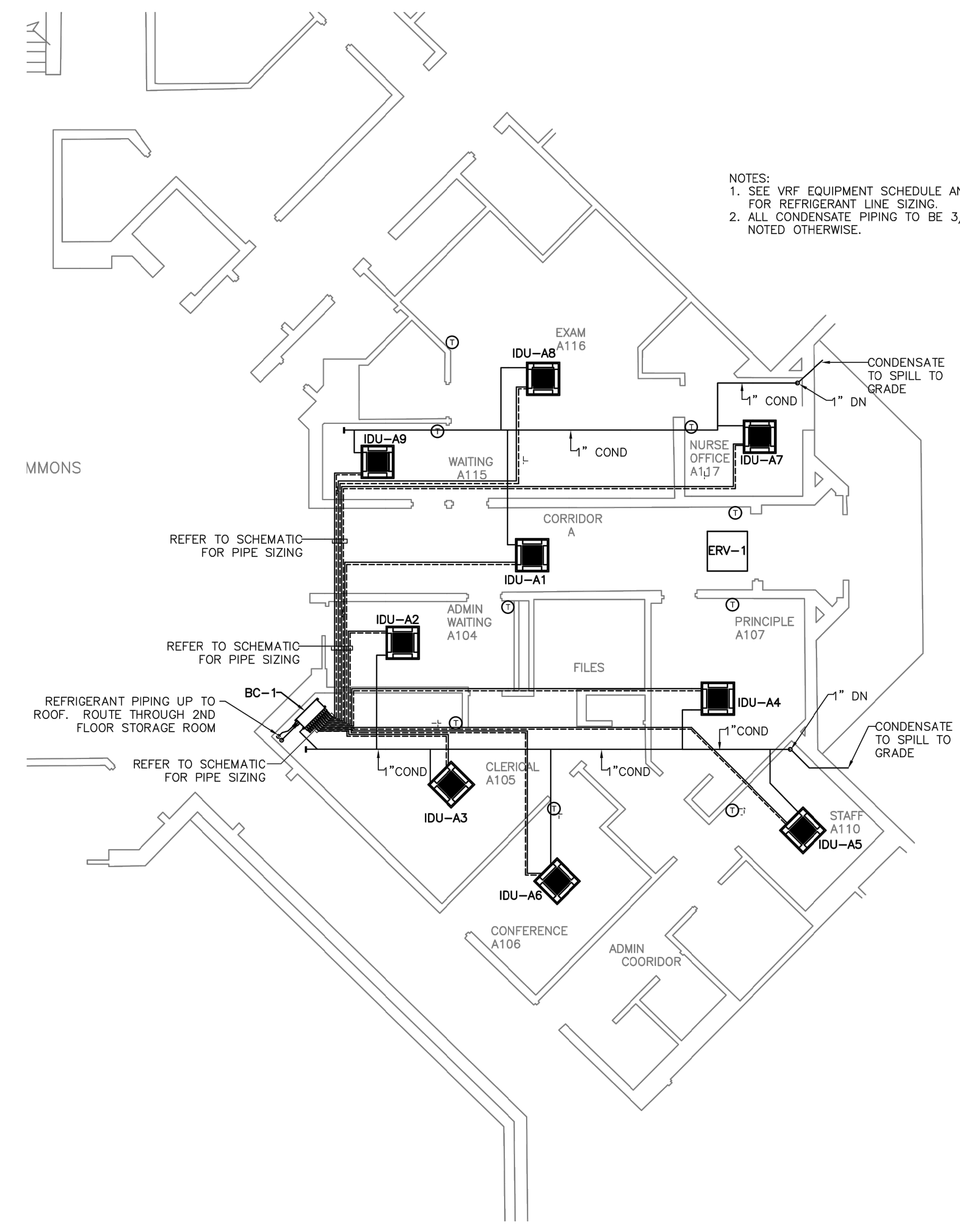


SCHUYLKILL VALLEY SCHOOL DISTRICT
ELEMENTARY SCHOOL HVAC UPGRADE
62 ASHLEY WAY
LEESPORT, PA 19533
AREA A FIRST FLOOR HVAC LAYOUT

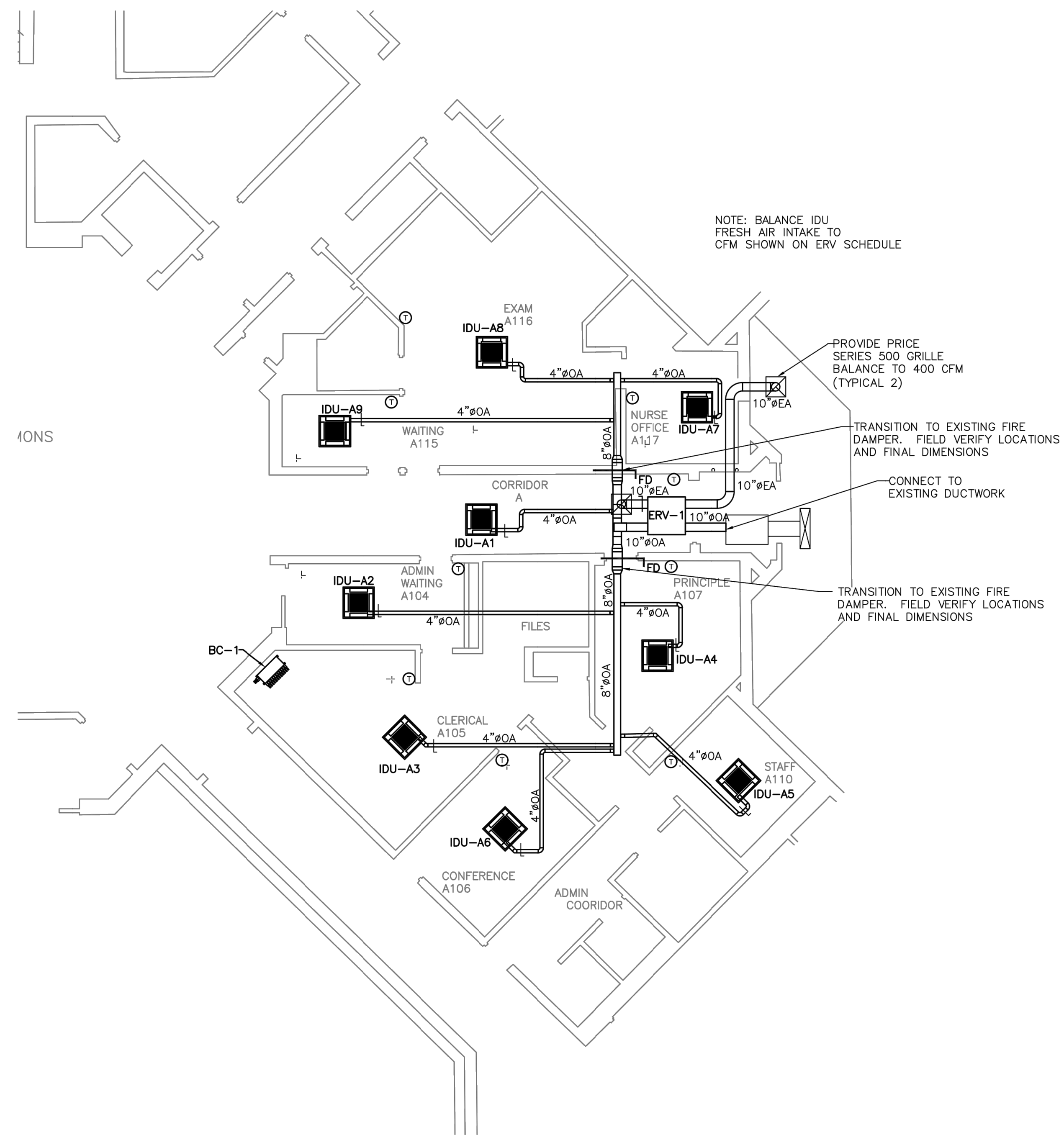


PROJECT NUMBER: 20159
SCALE: AS NOTED
DATE: 4/20/2021
DRAWN BY: AWB
CHECKED BY: ALS
DATE CHECKED: 4/20/2021
REVISIONS
DATE: DESCRIPTION:

M101



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



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

HVAC GENERAL NOTES

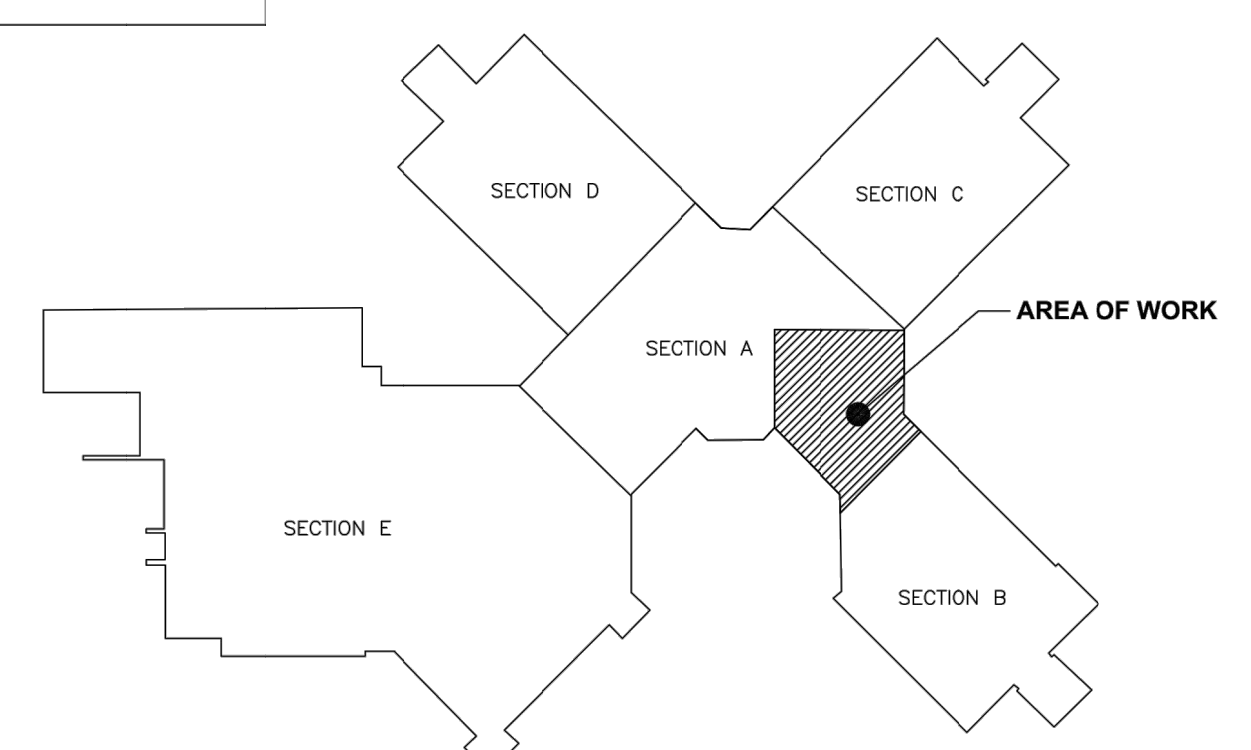
- EXISTING CONDITIONS SHOWN ON THIS DRAWING HAVE BEEN OBTAINED FROM RECORD DRAWINGS WHEN AVAILABLE. MAY NOT INDICATE ACTUAL CONDITIONS IN DETAIL AND DIMENSION. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXACT EXISTING CONDITIONS PRIOR TO PERFORMING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT OR ENGINEER IN WRITING IF THE EXISTING CONDITIONS ARE DISCOVERED THAT PREVENT THE EXECUTION OF WORK. THE CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL DIRECTION IS PROVIDED.
- COORDINATE CEILING TILE REMOVAL AND REPLACEMENTS WITH GENERAL AND ELECTRICAL CONTRACTOR. COORDINATE UNIT LOCATIONS WITH EXISTING LIGHTING AND MODIFY CEILING TILE AND GRID AS NECESSARY TO ACCOMMODATE NEW UNITS.
- PROVIDE NECESSARY CONTROL WIRING FOR VRF SYSTEM. REFER TO MANUFACTURER'S INSTRUCTIONS FOR DETAILS. PROVIDE WIRE MOLD IF NEEDED TO CONCEAL WIRING.
- PROVIDE NECESSARY MATERIALS FOR INSTALLING ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- PROVIDE NECESSARY CONTROL WIRING AND DDC CONTROL BY TRANE.
- VERIFY THERMOSTAT LOCATIONS WITH OWNER.
- KEEP ALL ROOFTOP EQUIPMENT MORE THAN 10 FEET FROM THE EDGE OF THE ROOF. ANY EQUIPMENT WITHIN 10 FEET MUST MEET THE REQUIREMENTS OF THE 2015 IMC SECTION 304.11

VRF NOTES

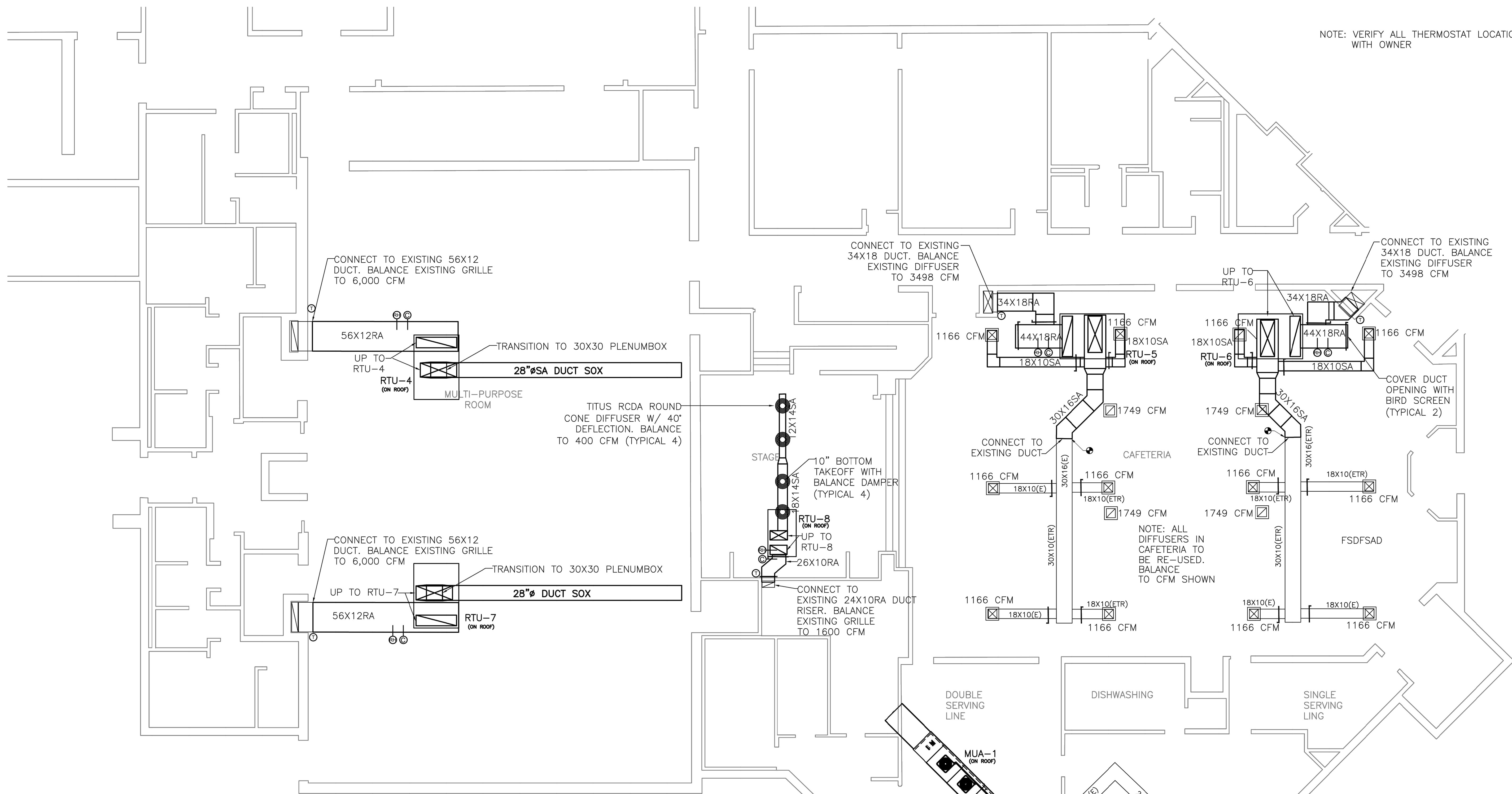
- LOCATE VRF CONDENSING UNIT ON THE ROOF. COORDINATE LOCATION WITH STRUCTURAL DRAWINGS. LOCATE UNIT SUPPORT POINTS OVER EXISTING BUILDING STRUCTURE.
- PROVIDE SUPPORTS, MITSUBISHI SUPER STAND, TO ELEVATE EQUIPMENT AT LEAST 12 - 18 INCHES ABOVE ROOF.
- INSTALL ERV-1 RECESSED BETWEEN BAR JOISTS. PROVIDE ADEQUATE CLEARANCE FOR FILTER CHANGE AND SERVICE.
- FIELD VERIFY DUCTWORK ROUTING TO COORDINATE WITH EXISTING SYSTEMS AND TRANSFER AIR DUCTWORK.
- FIELD VERIFY CONDENSATE ROUTING. CONNECT TO EXISTING AND COORDINATE SLOPE REQUIRED.
- REFRIGERANT PIPING PENETRATION THROUGH ROOF. COORDINATE WITH GENERAL CONTRACTOR FOR SEALING PENETRATION.
- FIELD COORDINATE LOCATION OF TE-200 MASTER CONTROLLER.

GRILLES, REGISTERS, & DIFFUSER SCHEDULE

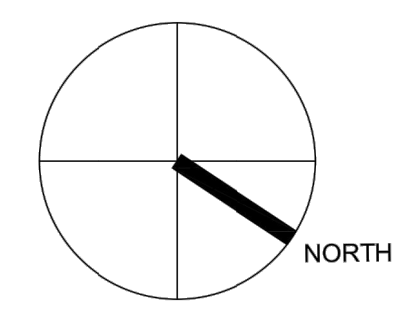
TAG	CFM RANGE	NECK SIZE (INCHES)	DIFFUSER DESCRIPTION/STYLE	BASIS OF DESIGN	ACCESSORIES/NOTES
RG-D	400	10 DIA	PERFORATED RETURN GRILLE, 2FTX2FT T-BAR LAY-IN	TITUS PAR	



KEY PLAN
SCALE: NONE



NOTE: VERIFY ALL THERMOSTAT LOCATIONS WITH OWNER



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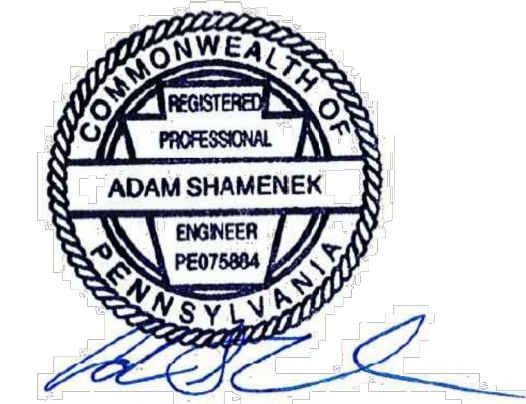
SCHUYLKILL VALLEY SCHOOL DISTRICT
ELEMENTARY SCHOOL HVAC UPGRADE

62 ASHLEY WAY
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AREA E HVAC LAYOUT

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



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M102