MECHANICAL SPECIFICATIONS

A. THE WORK HEREIN INCLUDES PROVIDING THE INDICATED SYSTEMS AND PROVIDING NEW MATERIALS, FITTINGS AND ACCESSORIES NECESSARY FOR COMPLETE FUNCTIONING SYSTEMS. THE WORK ALSO INCLUDES FINAL CONNECTIONS TO ALL EQUIPMENT PROVIDED BY THIS CONTRACTOR AS WELL AS ALL EQUIPMENT PROVIDED BY OTHERS. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST RULES, REGULATIONS AND CODES OF THE STATE OF PENNSYLVANIA, AS WELL AS LOCAL AND/OR ORDINANCE CODES. WORK IS SUBJECT TO INSPECTION BY ANY AND ALL CERTIFIED PROFESSIONALS PERTINENT TO THE COMPLETION OF THIS PROJECT.

B. THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THESE DRAWINGS ARE **DIAGRAMMATIC IN NATURE** AND THEREFORE SHOW GENERAL LOCATION, TYPE, FIXTURES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURERS STANDARD ROUGH-IN DRAWINGS FOR EXACT CONNECTION LOCATIONS. COORDINATE CAREFULLY WITH EXISTING DUCT, EQUIPMENT AND STRUCTURE.

C. ALL WORK IS TO BE COORDINATED WITH THE WORK OF ALL OTHER TRADES AND WITH EQUIPMENT FURNISHED BY OTHERS.

D. CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO BID. NO EXTRAS WILL BE ALLOWED FOR CONTRACTOR FAILURE TO BECOME FAMILIAR WITH ALL EXISTING CONDITIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES THEREIN FOR RESOLUTION.

E. SUBMIT SHOP DRAWINGS FOR ALL EQUIPMENT TO ENGINEER FOR APPROVAL PRIOR TO COMMENCING WORK.

F. ALL NEW EQUIPMENT, MATERIALS AND INSTALLATION ARE TO BE WARRANTED FROM ONE YEAR TO BE FREE OF DEFECT.

G. ALL INSULATION SHALL MEET TEMPERATURE AND SMOKE RATINGS AS REQUIRED BY NFPA FOR THE INTENDED USE.

H. COORDINATE ALL EQUIPMENT TO ALLOW FOR SERVICE ACCESS. DO NOT ALLOW PIPING, CONDUITS OR OTHER MATERIALS TO BE INSTALLED THAT WOULD PREVENT ACCESS. PROVIDE ACCESS PANELS WHERE WALLS AND/OR CEILINGS PREVENT ACCESS TO EQUIPMENT.

I. INSTALL ALL EQUIPMENT PER MANUFACTURERS INSTRUCTIONS.

J. MECHANICAL CONTRACTORS TO INSPECT ALL NEW DUCTWORK FOR AIR LEAKAGE AND PATCH/REPAIR DUCTWORK AS REQUIRED WITH ACCEPTABLE SEALANT. DUCTWORK SEALING SHALL BE TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.

DUCTWORK

A. PERFORM WORK IN ACCORDANCE WITH SMACNA - HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, UNLESS MORE STRINGENT REQUIREMENTS ARE NOTED IN LOCAL CODES.
B. GALVANIZED STEEL DUCTS: ASTM A525 AND ASTM A527 GALVANIZED STEEL SHEET, LOCK-FORMING QUALITY, HAVING G60 ZINC COATING OF IN CONFORMANCE WITH ASTM A90.
C. FABRICATE AND SUPPORT IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, UNLESS MORE STRINGENT REQUIREMENTS ARE NOTED IN LOCAL CODES.
D. INSTALLATION - GENERAL:
   1. INSTALL AND SEAL DUCTS IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, UNLESS MORE STRINGENT REQUIREMENTS ARE NOTED IN LOCAL CODES.
   2. SUPPORT DUCTWORK IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE, CHAPTER 4, HANGERS AND SUPPORTS.
   3. DUCT HANGERS SHALL NOT ATTACH TO BOTTOM CHORD OF STEEL JOIST OR METAL ROOF DECKING. ATTACH TO TOP CHORD OF STEEL JOIST.
   4. CONNECT DIFFUSERS OR LIGHT TROFFER BOOTS TO LOW PRESSURE DUCTS DIRECTLY OR WITH 5 FEET MAXIMUM LENGTH OF FLEXIBLE DUCT HELD IN PLACE WITH STRAP OR CLAMP.
E. PROTECTION: DURING CONSTRUCTION, PROVIDE TEMPORARY CLOSURES OF METAL OR TAPED POLYETHYLENE ON OPEN DUCTWORK TO PREVENT CONSTRUCTION DUST FROM ENTERING DUCTWORK SYSTEM.
G. INSULATION: ALL SUPPLY AND RETURN DUCTWORK SHALL HAVE 1-1/2" DUCTWRAP. PROVIDE 1" DUCTWRAP INSULATION ON FIRST 10 FEET OF EXHAUST DUCTWORK FROM ROOF PENETRATION.

TESTING, ADJUSTING & BALANCING

A. WORK INCLUDES:
   1. TESTING, ADJUSTMENT, AND BALANCING OF NEW AIR SYSTEMS.
   2. MEASUREMENT OF FINAL OPERATING CONDITION OF HVAC SYSTEMS.
B. SERVICES PROVIDED BY AN INDEPENDENT, CERTIFIED TESTING AND BALANCING AGENCY.
C. PERFORM TOTAL SYSTEM BALANCE IN ACCORDANCE WITH AABC NATIONAL STANDARDS FOR FIELD MEASUREMENT AND INSTRUMENTATION, TOTAL SYSTEM BALANCE OR NEBB PROCEDURAL STANDARDS FOR TESTING, BALANCING AND ADJUSTING OF ENVIRONMENTAL SYSTEMS.
D. SUBMIT COPIES OF T&B REPORT TO ENGINEER FOR APPROVAL PRIOR TO FINAL INSPECTION. PROVIDE COPY OF FINAL APPROVED T&B REPORT TO CODE INSPECTOR AT FINAL INSPECTION.

AUTOMATIC TEMPERATURE CONTROLS

1. EXHAUST FAN (EF-1)
   1.1. EXHAUST FAN EF-1 SHALL BE INDEXED 'ON' AT EITHER LAB HOOD. EXHAUST FAN SWITCHES SHALL BE WIRED IN PARALLEL TO START FAN AT EITHER HOOD.
   1.2. A LOW LEAKAGE, MOTORIZED DAMPER SHALL BE PROVIDED IN EXHAUST FAN CURB TO CLOSE WHEN EXHAUST FAN IS 'OFF'.

2. MAKE-UP AIR UNIT (MAU-1)
   2.1. MAKE-UP AIR UNIT MAU-1 SHALL BE INTERLOCKED TO RUN WHENEVER EXHAUST FAN EF-1 IS OPERATING.
   2.2. A DISCHARGE AIR THERMOSTAT SHALL BE INSTALLED IN THE SUPPLY AIR DUCTWORK FROM THE UNIT.
   2.3. AN OUTDOOR THERMOSTAT SHALL INDEX THE UNIT TO COOLING WHEN THE OUTDOOR AIR TEMPERATURE RISES ABOVE 70° F (ADJUSTABLE).
   2.4. THE OUTDOOR THERMOSTAT SHALL INDEX THE UNIT TO HEATING WHEN THE OUTDOOR AIR TEMPERATURE DROPS BELOW 65° F (ADJUSTABLE).
   2.5. THE DISCHARGE THERMOSTAT SHALL CYCLE THE COOLING TO MAINTAIN A DISCHARGE AIR TEMPERATURE OF 72 DEGREES F (ADJUSTABLE).
   2.6. THE DISCHARGE THERMOSTAT SHALL CYCLE THE HEATING TO MAINTAIN A DISCHARGE TEMPERATURE OF 70 DEGREES F (ADJUSTABLE).
   2.7. A LOW LEAKAGE, MOTORIZED OUTDOOR AIR DAMPER SHALL BE PROVIDED IN OUTDOOR AIR INTAKE TO CLOSE WHEN THE MAKE-UP AIR UNIT IS 'OFF'.

ROOF MOUNTED EXHAUST FAN SCHEDULE

REF.	MANUFACTURER/MODEL	CFM	ESP IN. WG	FAN RPM	TYPE/ DRIVE	AREA SERVED	MOTOR HP	MOTOR V/PH/HZ	REMARKS
EF-1	GREENHECK / VECTOR 'H' SIZE 9 W/ 8" NOZZLE	1,030	0.80	3,175	BELT	CHEMISTRY / PREP	1	208V/3PH/60HZ	INTERLOCK TO RUN FROM EITHER LAB HOOD

NOTES
1. ACID RESISTANT EPOXY COATING FOR ALL PARTS AND ACCESSORIES (BACKDRAFT DAMPER, ETC.) EXPOSED TO AIRFLOW.
2. WITH HIGH PLUME DISCHARGE NOZZLE, ROOF CURB, BY-PASS PLENUM AND MOTORIZED ISOLATION DAMPER.

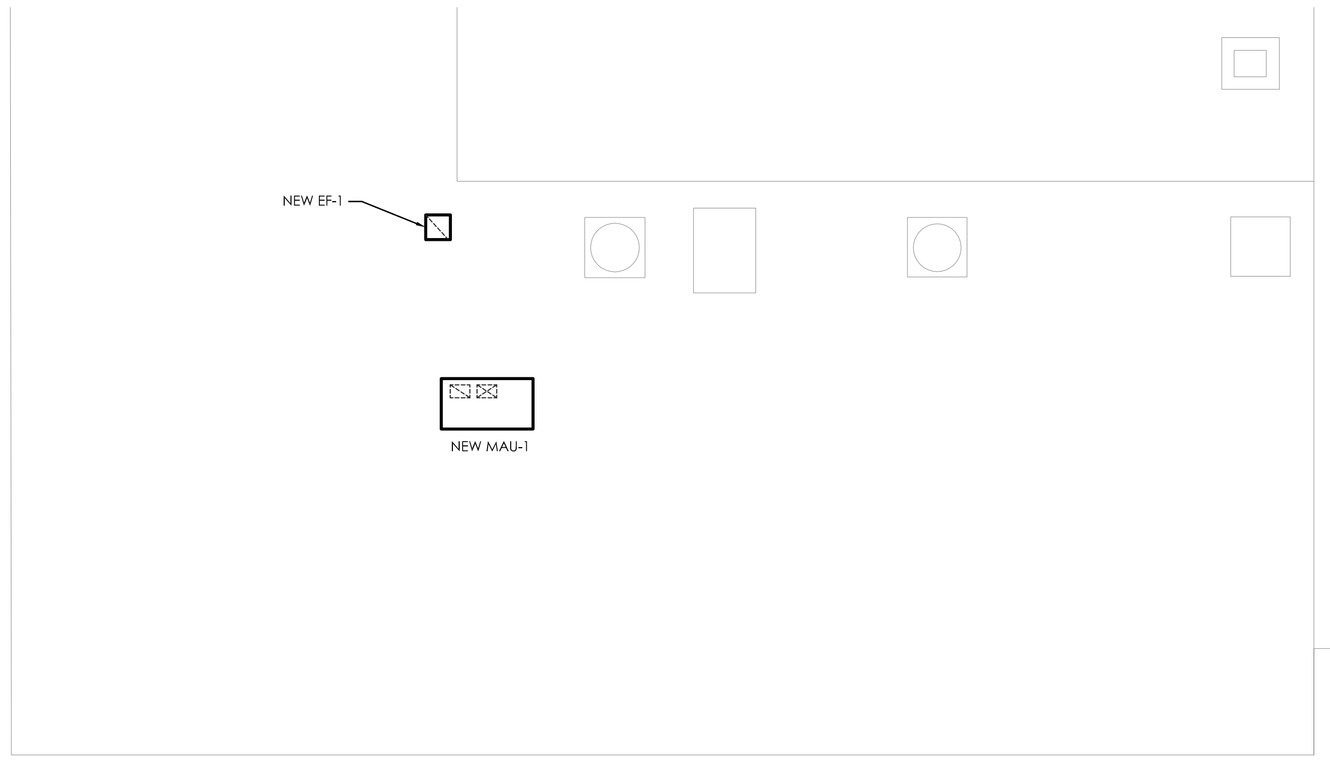
MAKE-UP AIR UNIT SCHEDULE

TAG	REFRIG.	TOTAL CFM	OA CFM	COOLING CAPACITY TOTAL MBH	COOLING CAPACITY SENSIBLE MBH	COOLING CAPACITY EDB °F	COOLING CAPACITY EWB °F	COOLING CAPACITY SAT °F	SEER	HEATING CAPACITY GAS INPUT	HEATING CAPACITY NET OUTPUT	HEATING CAPACITY EAT °F	EFF.	FAN MOTOR DATA HP	FAN MOTOR DATA RPM	FAN MOTOR DATA TYPE	ELECTRICAL DATA VOLTS	ELECTRICAL DATA PHASE	ELECTRICAL DATA MCA	MANUFACTURER / MODEL
AHU-1	R-410A	1,990	1,030	62.1	49.2	83	70	60	13	100 MBH	80 MBH	0	80%	1/2	1090	FC	208	3	25.1	YORK / ZF060T10P2AAA2A

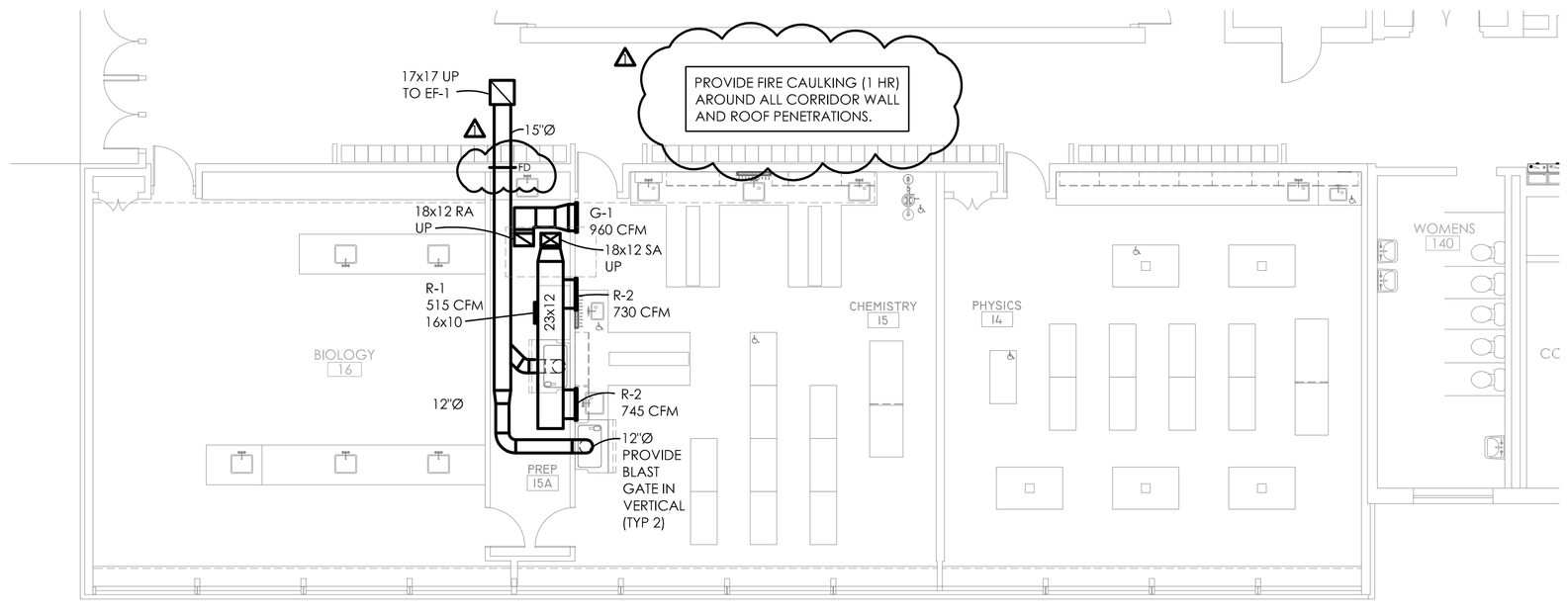
NOTE: PROVIDE DISCHARGE AIR SENSOR. INTERLOCK UNIT TO RUN WITH EF-1.

DIFFUSER GRILLE & REGISTER SCHEDULE

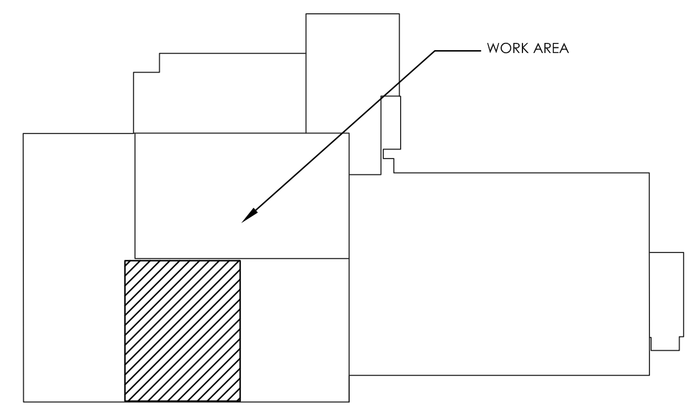
TAG	AIR SERVICE	FACE TYPE	FACE SIZE	NECK SIZE	MOUNT	FRAME	DAMPER	MANUFACTURER / MODEL	NOTES
G-1	RETURN	BAR	25-3/4 X 13-3/4	24X12	WALL	PLASTER	OBD	PRICE / 24" X 12" 510 F L D A B12	BLADES SHALL BE ANGLED UP
R-1	SUPPLY	BAR	17-3/4 X 11-3/4	16X10	WALL	PLASTER	OBD	PRICE / 16" X 10" 520D F S D A B12	
R-2	SUPPLY	BAR	23-3/4 X 11-3/4	22X10	WALL	PLASTER	OBD	PRICE / 22" X 10" 520D F S D A B12	



3 H1 PARTIAL ROOF PLAN
SCALE: 1/8" = 1'



2 H1 FIRST FLOOR HVAC PLAN
SCALE: 1/8" = 1'



1 H1 KEY PLAN
SCALE: NONE

MECHANICAL LEGEND

- SUPPLY DIFFUSER
- RETURN GRILLE
- EXHAUST GRILLE
- VOLUME DAMPER
- FLEX DUCT
- DUCT TAKE OFF
- FLEXIBLE CONNECTION
- SIDE WALL REGISTER
- THERMOSTAT
- SMOKE DETECTOR
- MOTORIZED DAMPER
- FIRE DAMPER
- ACCESS PANEL
- VELOCITY PROBE
- POINT OF NEW CONNECTION

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COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL FRANK ALAN PENO ENGINEER 50635-E

PROGRESS DATES

DESIGN REVIEW SET	02/18/13
CODE & BIDDING SET	02/25/13
⚠ CODE RESUBMISSION	05/21/13

ST. JOSEPH'S CATHOLIC ACADEMY

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SCIENCE LAB RENOVATIONS

HVAC PLANS & SPECIFICATIONS

H1