

# GENERAL DEMOLITION NOTES-A:

## 1. DEFINITIONS:

REMOVE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF SITE, UNLESS INDICATED TO BE REMOVED AND SALVAGED OR REMOVED AND REINSTALLED.

REMOVE AND SALVAGE: DETACH ITEMS FROM EXISTING CONSTRUCTION AND DELIVER THEM TO THE OWNER.

REMOVE AND REINSTALL: DETACH ITEMS FROM EXISTING CONSTRUCTION, PREPARE THEM OR REUSE, AND REINSTALL THEM WHERE INDICATED.

EXISTING TO REMAIN: EXISTING ITEMS OF CONSTRUCTION THAT ARE NOT TO BE REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, REMOVED AND SALVAGED AND REINSTALLED.

CUTTING: REMOVAL OF IN-PLACE CONSTRUCTION NECESSARY TO PERMIT INSTALLATION OR PERFORMANCE OF OTHER WORK.

PATCHING: FITTING AND REPAIR WORK REQUIRED TO RESTORE SURFACES TO ORIGINAL CONDITIONS AFTER INSTALLATION OF OTHER WORK.

2. PREDEMOLITION: SHOW EXISTING CONDITIONS OF ADJOINING CONSTRUCTION AND SITE IMPROVEMENTS, INCLUDING FINISHED SURFACES, THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY SELECTIVE DEMOLITION OPERATIONS.
3. OWNER WILL OCCUPY PORTIONS OF BUILDING IMMEDIATELY ADJACENT TO SELECTIVE DEMOLITION AREA. CONDUCT SELECTIVE DEMOLITION SO OWNER'S OPERATIONS WILL NOT BE DISRUPTED.
4. NOTIFY ENGINEER OF DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DRAWING BEFORE PROCEEDING WITH SELECTIVE DEMOLITION.
5. IF MATERIALS SUSPECTED OF CONTAINING HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; IMMEDIATELY NOTIFY ENGINEER AND OWNER. OWNER WILL REMOVE HAZARDOUS MATERIALS UNDER A SEPARATE CONTRACT.
6. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE IS NOT PERMITTED UNLESS OTHERWISE NOTED OR AUTHORIZED.
7. VERIFY THAT THE UTILITIES EFFECTED HAVE BEEN DISCONNECTED AND CAPPED.
8. SURVEY EXISTING CONDITIONS AND CORRELATE WITH REQUIREMENTS INDICATED TO DETERMINE EXTENT OF SELECTIVE DEMOLITION REQUIRED.
9. INVENTORY AND RECORD CONDITION OF ITEMS TO BE REMOVED AND REINSTALLED AND ITEMS TO BE REMOVED AND SALVAGED.
10. WHEN ANTICIPATED MECHANICAL, ELECTRICAL, OR STRUCTURAL ELEMENTS THAT CONFLICT WITH INTENDED FUNCTION OR DESIGN ARE ENCOUNTERED, INVESTIGATE AND MEASURE THE NATURE AND EXTENT OF CONFLICT. PROMPTLY SUBMIT A WRITTEN REPORT TO THE ENGINEER.
11. ENGAGE A PROFESSIONAL ENGINEER TO SURVEY CONDITION OF BUILDING TO DETERMINE WHETHER REMOVING ANY ELEMENT MIGHT RESULT IN STRUCTURAL DEFICIENCY OR UNPLANNED COLLAPSE OF ANY PORTION OF STRUCTURE OR ADJACENT STRUCTURES DURING SELECTIVE DEMOLITION OPERATIONS.
12. SITE ACCESS AND TEMPORARY CONTROLS: CONDUCT SELECTIVE DEMOLITION AND DEBRIS-REMOVAL OPERATIONS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, WALKWAYS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
13. TEMPORARY FACILITIES: PROVIDE TEMPORARY BARRICADES AND OTHER PROTECTION REQUIRED TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN.

# GENERAL DEMOLITION NOTES-B:

1. GENERAL: DEMOLISH AND REMOVE EXISTING CONSTRUCTION ONLY TO THE EXTENT REQUIRED BY NEW CONSTRUCTION AND AS INDICATED. USE METHODS REQUIRED TO COMPLETE THE WORK WITHIN THE LIMITATIONS OF GOVERNING REGULATIONS AS FOLLOWS:
  - a.) PROCEED WITH SELECTIVE DEMOLITION SYSTEMATICALLY, FROM LOWER TO HIGHER LEVEL. COMPLETE SELECTIVE DEMOLITION OPERATIONS ABOVE EACH FLOOR OR TIER BEFORE DISTURBING SUPPORTING MEMBERS ON THE NEXT LOWER LEVEL.
  - b.) NEATLY CUT OPENINGS AND HOLES PLUMB, SQUARE, AND TRUE TO DIMENSIONS REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAIN OR ADJOINING CONSTRUCTION. USE HAND TOOLS OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING AND CHOPPING, TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES. TEMPORARILY COVER OPENINGS TO REMAIN.
  - c.) CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE INTO CONCEALED SURFACES TO AVOID MARRING EXISTING FINISHED SURFACES.
  - d.) DO NOT USE CUTTING TORCHES UNTIL WORK AREA IS CLEARED OF FLAMMABLE MATERIALS. AT CONCEALED SPACES, SUCH AS DUCT AND PIPE INTERIORS, VERIFY CONDITION AND CONTENTS OF HIDDEN SPACE BEFORE STARTING FLAME-CUTTING OPERATIONS. MAINTAIN PORTABLE FIRE SUPPRESSION DEVICES DURING FLAME-CUTTING OPERATIONS.
  - e.) MAINTAIN ADEQUATE VENTILATION WHEN USING CUTTING TORCHES.
  - f.) REMOVE DECAYED, VERMIN-INFESTED, OR OTHERWISE DANGEROUS OR UNSUITABLE MATERIALS AND PROMPTLY DISPOSE OF OFF-SITE.
  - g.) REMOVE STRUCTURAL FRAMING MEMBERS AND LOWER TO GROUND BY METHOD SUITABLE TO AVOID FREE FALL AND TO PREVENT GROUND IMPACT OR DUST GENERATION.
  - h.) LOCATE SELECTIVE DEMOLITION EQUIPMENT AND REMOVE DEBRIS AND MATERIALS SO AS NOT TO IMPOSE EXCESSIVE LOADS ON SUPPORTING WALLS, FLOORS, OR FRAMING.
  - i.) DISPOSE OF DEMOLISHED ITEMS AND MATERIALS PROMPTLY.
2. DO NOT CUT AND PATCH OPERATING ELEMENTS AND RELATED COMPONENTS IN A MANNER THAT RESULTS IN REDUCING THEIR CAPACITY TO PERFORM AS INTENDED OR THAT RESULTS IN INCREASED MAINTENANCE OR DECREASED OPERATIONAL LIFE OR SAFETY. OPERATING ELEMENTS INCLUDE BUT NOT LIMITED TO THE FOLLOWING:
  - a.) PRIMARY OPERATIONAL SYSTEMS AND EQUIPMENT.
  - b.) MECHANICAL SYSTEMS PIPING AND DUCTS.
  - c.) CONTROL SYSTEMS.
  - d.) COMMUNICATION SYSTEMS.
  - e.) CONVEYING SYSTEMS.
  - f.) ELECTRICAL WIRING SYSTEMS.
3. DO NOT CUT AND PATCH MISCELLANEOUS ELEMENTS OR RELATED COMPONENTS IN A MANNER THAT COULD CHANGE THEIR LOAD-CARRYING CAPACITY, THAT RESULTS IN REDUCING THEIR CAPACITY TO PERFORM AS INTENDED, OR THAT RESULTS IN INCREASED MAINTENANCE OR DECREASED OPERATIONAL LIFE OR SAFETY. MISCELLANEOUS ELEMENTS INCLUDE BUT NOT LIMITED TO THE FOLLOWING:
  - a.) WATER, MOISTURE, OR VAPOR BARRIERS.
  - b.) MEMBRANES AND FLASHING.
  - c.) EXTERIOR CURTAIN WALL CONSTRUCTION.
  - d.) EQUIPMENT SUPPORTS
  - e.) PIPING, DUCTWORK, VESSELS, AND EQUIPMENT
  - f.) NOISE AND VIBRATION-CONTROL ELEMENTS AND SYSTEM.
4. DO NOT CUT AND PATCH CONSTRUCTION IN A MANNER THAT RESULTS IN VISUAL EVIDENCE OF CUTTING AND PATCHING. DO NOT CUT AND PATCH CONSTRUCTION EXPOSED ON THE EXTERIOR OR IN OCCUPIED SPACES IN A MANNER THAT WOULD, IN THE ENGINEER'S OPINION, REDUCE THE BUILDING'S AESTHETIC QUALITIES. REMOVE AND REPLACE CONSTRUCTION THAT HAS BEEN CUT AND PATCHED IN A VISUALLY UNSATISFACTORY MANNER.
5. BEFORE PROCEEDING, MEET AT PROJECT SITE WITH PARTIES INVOLVED IN CUTTING AND PATCHING, INCLUDING MECHANICAL AND ELECTRICAL TRADES. REVIEW AREAS OF POTENTIAL INTERFERENCE AND CONFLICT. COORDINATE PROCEDURES AND RESOLVE POTENTIAL CONFLICTS BEFORE PROCEEDING.
6. EXISTING WARRANTIES: REMOVE, REPLACE, PATCH, AND REPAIR MATERIALS AND SURFACES CUT OR DAMAGED DURING CUTTING AND PATCHING OPERATIONS, BY METHODS AND WITH MATERIALS SO AS NOT TO VOID EXISTING WARRANTIES.

# GENERAL DEMOLITION NOTES-C:

1. IN PLACE MATERIALS: USE MATERIALS IDENTICAL TO IN-PLACE MATERIALS. FOR EXPOSED SURFACES, USE MATERIALS THAT USUALLY MATCH IN-PLACE ADJACENT SURFACES TO THE FULLEST EXTENT POSSIBLE. IF IDENTICAL MATERIALS ARE UNAVAILABLE OR CANNOT BE USED, USE MATERIALS THAT, WHEN INSTALLED, WILL MATCH THE VISUAL AND FUNCTIONAL PERFORMANCE OF IN-PLACE MATERIALS.
2. EXAMINE SURFACES TO BE CUT AND PATCHED AND CONDITIONS UNDER WHICH CUTTING AND PATCHING ARE TO BE PERFORMED. COMPATIBILITY: BEFORE PATCHING, VERIFY COMPATIBILITY WITH AND SUITABILITY OF SUBSTRATES, INCLUDING COMPATIBILITY WITH IN-PLACE FINISHES OR PRIMERS. PROCEED WITH INSTALLATION ONLY AFTER UNSAFE OR UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.
3. TEMPORARY SUPPORT AND PROTECTION: PROVIDE TEMPORARY SUPPORT OF WORK TO BE CUT. PROTECT IN-PLACE CONSTRUCTION DURING CUTTING AND PATCHING TO PREVENT DAMAGE. PROVIDE PROTECTION FROM ADVERSE WEATHER CONDITIONS FOR PORTIONS OF PROJECT THAT MIGHT BE EXPOSED DURING CUTTING AND PATCHING OPERATIONS. AVOID INTERFERENCE WITH USE OF ADJOINING AREAS OR INTERRUPTION OF FREE PASSAGE TO ADJOINING AREAS.
4. CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE INTO CONCEALED SURFACES.
5. CUT OFF PIPE OR CONDUIT IN WALLS OR PARTITIONS TO BE REMOVED. CAP, VALVE, OR PLUG AND SEAL REMAINING PORTION OF PIPE OR CONDUIT TO PREVENT ENTRANCE OF MOISTURE OR OTHER FOREIGN MATTER AFTER CUTTING.
6. EXPOSED FINISHES: RESTORE EXPOSED FINISHES OF PATCHED AREAS AND EXTEND FINISH RESTORATION INTO RETAINED ADJOINING CONSTRUCTION IN A MANNER THAT WILL ELIMINATE EVIDENCE OF PATCHING AND REFINISHING. CLEAN PIPING, CONDUIT, AND SIMILAR FEATURES BEFORE APPLYING PAINT OR OTHER FINISHING MATERIALS. RESTORE DAMAGED PIPE COVERING TO ITS ORIGINAL CONDITION.
7. CEILINGS: PATCH, REPAIR OR REHANG IN-PLACE CEILINGS AS NECESSARY TO PROVIDE AN EVEN-PLANE SURFACE OF UNIFORM APPEARANCE.
8. EXTERIOR BUILDING ENCLOSURE: PATCH COMPONENTS IN A MANNER THAT RESTORES ENCLOSURE TO A WEATHER TIGHT CONDITION.
9. CLEANING: CLEAN AREA AND SPACES WHERE CUTTING AND PATCHING ARE PERFORMED. COMPLETELY REMOVE PAINT, MORTAR, OILS, PUTTY, AND SIMILAR MATERIALS.

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West Virginia Department of  
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Bureau for Public Health  
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Bioterrorism Lab Renovations  
DEMOLITION  
DETAILS, NOTES &  
SCHEDULES

DATE: 04.30.10

DESIGNED: M. Estep

DRAWN: Staff

CHECKED: M. Estep

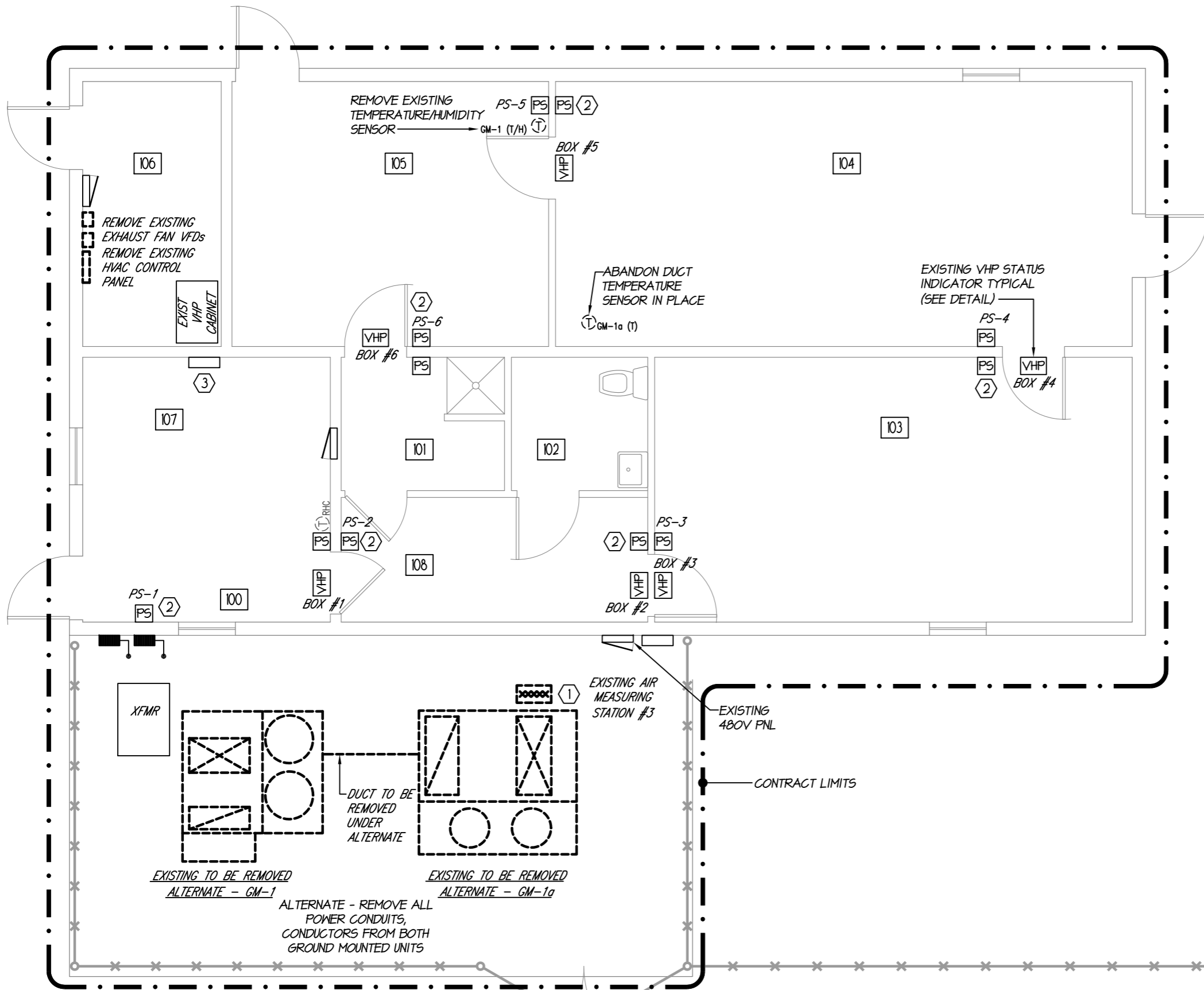
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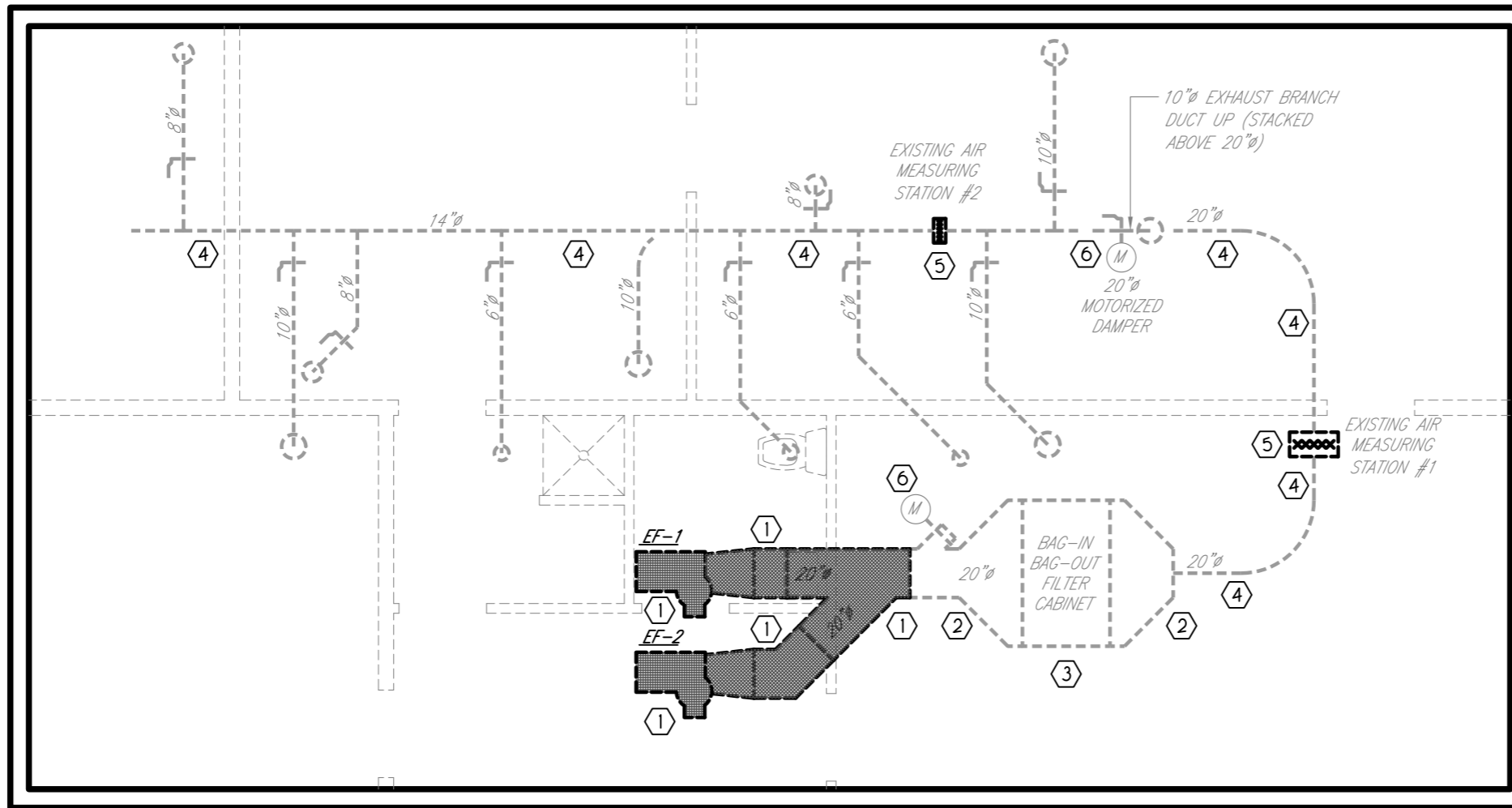
**PLAN NOTES:**

1. CONFIRM SUPPLY AIR FLOW MEASURING STATION INTEGRITY. CALIBRATE AS REQUIRED. CONFIRM THE STATION IS FUNCTIONING WITHIN MANUFACTURER'S TOLERANCES. DOCUMENT CONDITION OF STATION AND NOTIFY ENGINEER. REPLACE AIR FLOW STATION AS REQUIRED.
2. CONFIRM PRESSURE SENSOR IS MONITORING THE DIFFERENCE IN PRESSURE BETWEEN THE TWO ROOMS. CALIBRATE AS REQUIRED. CONFIRM SENSOR IS FUNCTIONING WITHIN MANUFACTURER'S TOLERANCES. DOCUMENT CONDITION OF EQUIPMENT AND NOTIFY ENGINEER. REPLACE PRESSURE DIFFERENTIAL SENSOR AS REQUIRED.
3. WITH GROUND MOUNTED UNIT ALTERNATE MODIFY PANEL COVER OF EXISTING REMOTE CONTROL PANEL. SEE DETAIL.



**DEMOLITION - HVAC FLOOR PLAN**

SCALE: 3/16" = 1'-0"



### # PLAN NOTES:

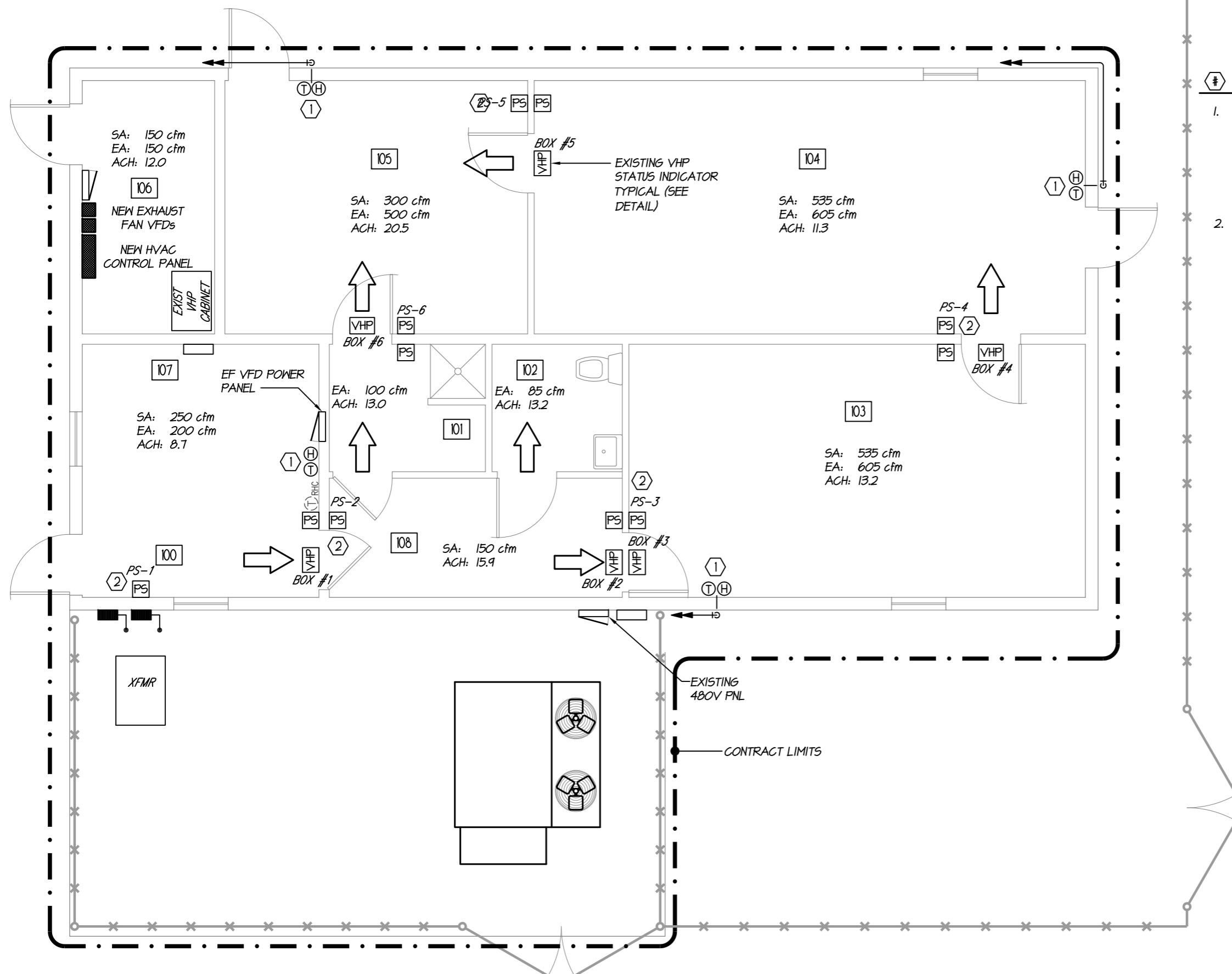
1. REMOVE ROOF MOUNTED EXHAUST DUCT AND ROOF MOUNTED EXHAUST FANS AS SHOWN. REUSE EXISTING EXHAUST STACKS ON NEW EXHAUST FANS SEE DETAIL. REMOVE CONDUCTORS FROM CONDUIT BACK TO THEIR VARIABLE FREQUENCY DRIVES AND FROM THE DRIVES BACK TO THEIR POWER PANEL. BID AS AN ALTERNATE.
2. THE OWNER SHALL PURGE THE BUILDING USING THE EXISTING HYDROGEN PEROXIDE SYSTEM TO ASSURE THAT THE EXISTING EXHAUST DUCT IS FREE AND CLEAR OF ANY UNDESIRABLES.
3. THE OWNER SHALL ENGAGE THEIR REPRESENTATIVE TO REMOVE THE HEPA FILTERS PRIOR TO THE EXHAUST DUCT DEMOLITIONS.
4. EXISTING EXHAUST DUCT TO REMAIN.
5. CONFIRM SUPPLY AIR FLOW MEASURING STATION INTEGRITY. CALIBRATE AS REQUIRED, IF POSSIBLE. CONFIRM THE STATION IS FUNCTIONING WITHIN MANUFACTURER'S TOLERANCES. DOCUMENT CONDITION OF STATION AND NOTIFY ENGINEER. REPLACE AIR FLOW STATION AS REQUIRED.
6. CONFIRM MOTOR OPERATED DAMPER INTEGRITY. CALIBRATE AS REQUIRED, IF POSSIBLE. DOCUMENT THE CONDITION OF THE ASSEMBLY, AND NOTIFY THE ENGINEER. REPLACE AS REQUIRED.

## DEMOLITION - HVAC ROOF PLAN

SCALE: 3/16" = 1'-0"

**PLAN NOTES:**

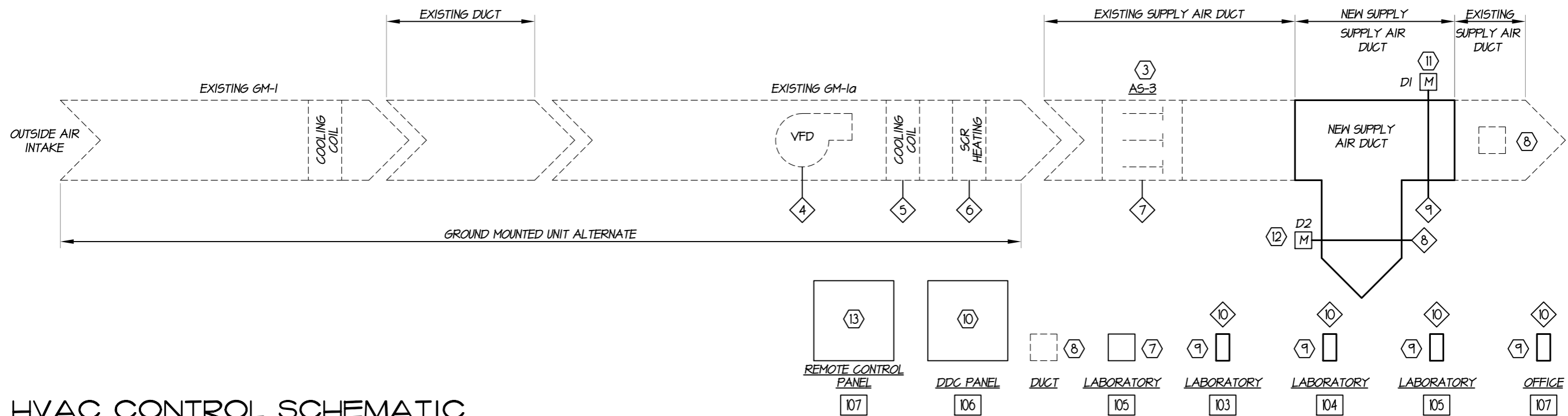
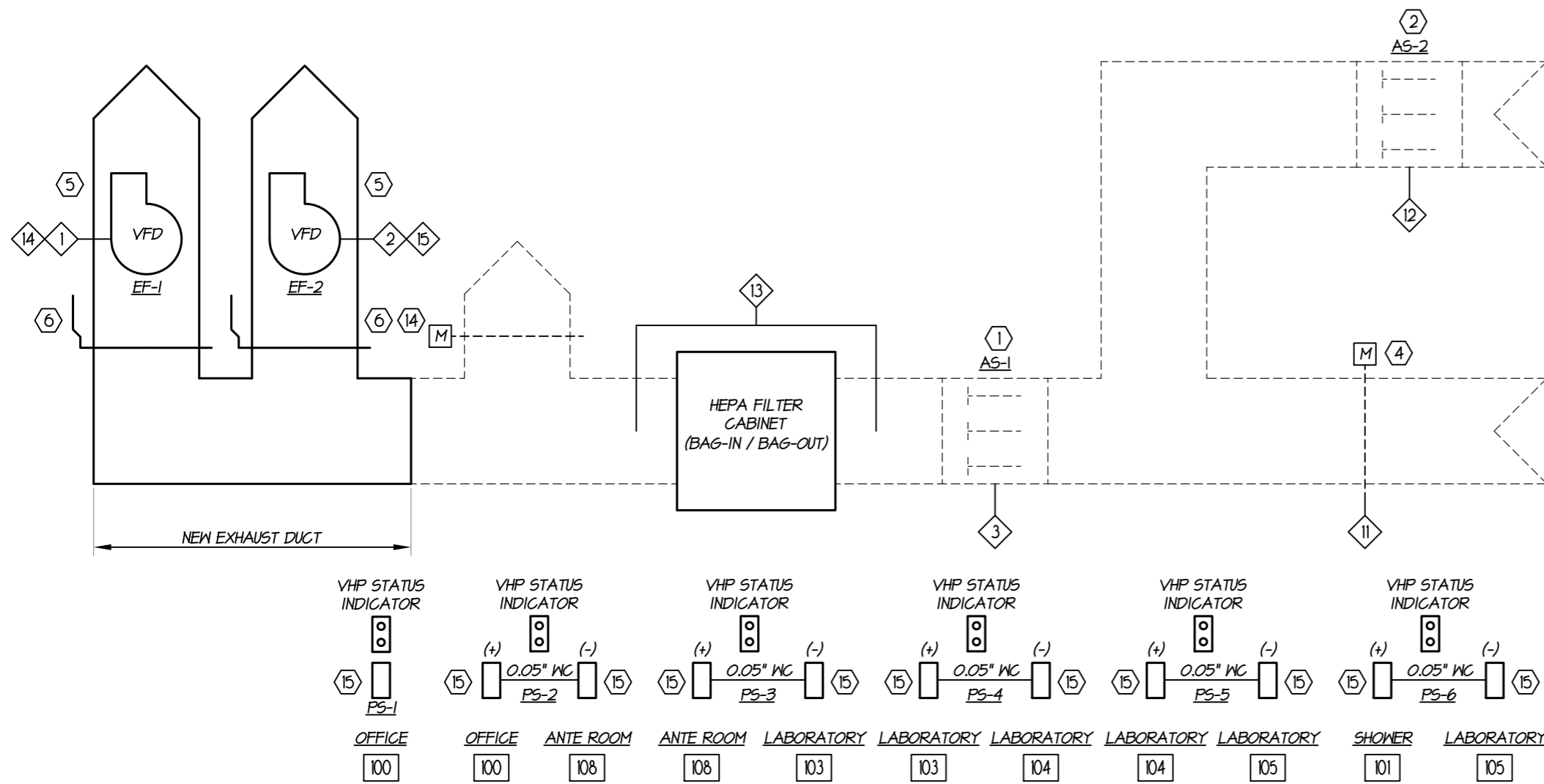
1. NEW TEMPERATURE/HUMIDITY SENSOR INSTALLED IN LOCATION SHOWN. INSTALL CONDUCTORS WITHIN EMT ON EXTERIOR OF BUILDING. EXTEND UP FROM DEVICE ELEVATION AND INSTALL AT FACIA ELEVATION TO MECHANICAL ROOM. MAKE ALL HOLES AIR TIGHT. (ALTERNATE LOCATION - USE EXISTING CONDUIT FOR PRESSURE SENSORS.)
2. CONFIRM PRESSURE SENSOR IS MONITORING THE DIFFERENCE IN PRESSURE BETWEEN THE TWO ROOMS CALIBRATE AS REQUIRED. CONFIRM SENSOR IS FUNCTIONING WITHIN MANUFACTURER'S TOLERANCES. DOCUMENT CONDITION OF EQUIPMENT AND NOTIFY ENGINEER. REPLACE PRESSURE DIFFERENTIAL SENSOR AS REQUIRED.



**MECHANICAL - NEW AIR FLOW & DEVICE PLAN**  
SCALE: 3/16" = 1'-0"

# **SCHEMATIC NOTES:**

1. EXHAUST AIR FLOW MEASURING STATION (AS-1).
2. EXHAUST AIR FLOW MEASURING STATION - DECONTAMINATION MODE (AS-2).
3. SUPPLY AIR FLOW MEASURING STATION (AS-3).
4. NOT USED.
5. NEW EXHAUST FAN WITH NEW VARIABLE FREQUENCY DRIVE.
6. EXISTING MANUAL DAMPERS TO BE REUSED.
7. HARD WIRED TEMPERATURE AND HUMIDITY SENSOR TO CONTROL GM-1.
8. EXISTING DUCT SENSOR TO BE ABANDONED.
9. NEW TEMPERATURE/HUMIDITY SENSOR.
10. NEW DIRECT DIGITAL CONTROL SYSTEM PANEL.
11. NEW MOTORIZED DAMPER (D1) TO CLOSE UPON EXHAUST FAN FAILURE - NORMALLY OPENED.
12. NEW MOTORIZED DAMPER (D2) TO OPEN UPON EXHAUST FAN FAILURE - NORMALLY CLOSED.
13. REMOTE CONTROL PANEL (SEE DETAIL).
14. RELIEF DAMPER DURING DECONTAMINATION MODE - NORMALLY CLOSED.
15. CONFIRM FUNCTIONALITY AND REPLACE AS REQUIRED. ALL NEW HOLES MUST BE SEALED AIR TIGHT



**HVAC CONTROL SCHEMATIC**

◆ OPERATION NOTES (SEE MO.2):

1. EXHAUST FAN (EF-1) WITH VARIABLE FREQUENCY DRIVE TO OPERATE AT APPROXIMATELY 50% BASED ON AIR FLOW MEASURING STATION (AS-1). THE EXHAUST FAN SHALL RUN CONTINUOUSLY TO MAINTAIN HALF OF THE FIXED SET POINT SENSED FROM THE AIR FLOW MEASURING STATION. SHOULD THE COMPLIMENTARY EXHAUST FAN (EF-2) FAIL, THE EXHAUST FAN SHALL INCREASE AND MAINTAIN 100% OF THE SET POINT FROM THE AIR FLOW MEASURING STATION (AS-1).
2. EXHAUST FAN (EF-1) WITH VARIABLE FREQUENCY DRIVE TO OPERATE AT APPROXIMATELY 50% BASED ON AIR FLOW MEASURING STATION (AS-1). THE EXHAUST FAN SHALL RUN CONTINUOUSLY TO MAINTAIN HALF OF THE FIXED SET POINT SENSED FROM THE AIR FLOW MEASURING STATION. SHOULD THE COMPLIMENTARY EXHAUST FAN (EF-2) FAIL, THE EXHAUST FAN SHALL INCREASE AND MAINTAIN 100% OF THE SET POINT FROM THE AIR FLOW MEASURING STATION (AS-1).
3. AIR FLOW MEASURING STATION (AS-1) - DEVICE SHALL MEASURE AND CONTROL EXHAUST FANS EF-1 & EF-2 TO MAINTAIN A CONSTANT AIR FLOW SET POINT. SHOULD ONE EXHAUST FAN FAIL THE COMPLIMENTARY EXHAUST FAN SHALL MAINTAIN THE CONSTANT AIR FLOW SET POINT.
4. GROUND MOUNTED UNIT SUPPLY FAN SHALL RESPOND TO PRESSURE SENSORS INSTALLED WITHIN THE SPACES. THE SUPPLY FAN SHALL REDUCE AIR FLOW SHOULD THE LABORATORY SPACES BECOME DECREASING NEGATIVE. DURING EXHAUST FAN FAILURE THE SUPPLY FAN SHALL RAMP DOWN. THE CONTROL SYSTEM SHALL OPEN D2 AND CLOSE DAMPER D1 UNTIL AIR FLOW MEASURING STATION HAS PROVEN EXHAUST AIR FLOW HAS REACHED SET POINT. THE CONTROL SYSTEM SHALL OPEN DAMPER D1 & CLOSE DAMPER D2. THE SUPPLY AIR FAN SHALL RAMP UP TO SATISFY SETPOINTS (TEMPERATURE/HUMIDITY & AS-3).
5. ON A RISE IN TEMPERATURE THE GROUND MOUNTED UNIT'S DIRECT EXPANSION COOLING SHALL STAGE TO MAINTAIN THE TEMPERATURE AND HUMIDITY SENSORS LOCATED WITH THE SPACE. SHOULD THE HUMIDITY RISE ABOVE THE SET POINT THE COOLING SYSTEM SHALL DISREGARD THE TEMPERATURE SENSOR AND THE ELECTRIC HEATING COIL SHALL INCREASE UNTIL TEMPERATURE SENSOR IS SATISFIED. THE COOLING SYSTEM SHALL DISREGARD THE TEMPERATURE SENSOR UNTIL THE HUMIDITY SENSOR IS SATISFIED (ALTERNATE - GROUND MOUNTED UNIT TO UTILIZE THE CONTROLERS DEHUMIDIFICATION MODE).
6. THE ELECTRIC COIL SHALL MAINTAIN THE TEMPERATURE SENSOR SET POINT WITH A DROP IN SPACE TEMPERATURE. SEE OPERATIONAL NOTE #5 FOR THE DEHUMIDIFY CONTROL SEQUENCE (ALTERNATE - GROUND MOUNTED UNIT TO UTILIZE THE CONTROLERS DEHUMIDIFICATION MODE).
7. THE AIR FLOW MEASURING STATION (AS-2) SHALL OPERATE THE SUPPLY AIR FAN AT A CONSTANT AIR FLOW. SHOULD A LABORATORY SPACE RECEIVE AN ALARM THE SUPPLY AIR FAN SHALL REDUCE AIR FLOW UNTIL ALARM IS ELIMINATED.
8. SHOULD ANY LABORATORY SPACE BECOME DECREASINGLY NEGATIVE AND THE SUPPLY FAN CANNOT SLOW DOWN "FAST ENOUGH" THE MOTORIZED DAMPER (D2) SHALL OPEN AND MOTORIZED DAMPER (D1) SHALL CLOSE. AS THE SPACE BECOMES INCREASINGLY NEGATIVE, THE PRESSURE SENSORS ARE SATISFIED AND THE EXHAUST FAN(S) HAVE SATISFIED THE AIR FLOW MEASURING STATION (AS-1), THE DAMPERS SHALL RETURN TO THEIR NORMAL POSITION.
9. SEE OPERATIONAL NOTE #8 ABOVE.
10. THE TEMPERATURE/HUMIDITY SENSOR READINGS SHALL BE AVERAGED AND THE GROUND MOUNTED UNIT SHALL RESPOND TO THE MEAN READING. SHOULD ONE OF THE TEMPERATURE/HUMIDITY SENSORS HAVE A READING "TOO FAR OFF" FROM THE REMAINING SENSORS, THE SAID SENSOR SHALL NOT BE AVERAGED IN.
11. WHEN THE DECONTAMINATION MODE IS INITIATED THE MOTORIZED DAMPER SHALL CLOSE.
12. WHEN THE DECONTAMINATION MODE IS INITIATED THE AIR FLOW MEASURING STATION SHALL CONTROL EXHAUST FAN #1 OR EXHAUST FAN #2 (DOWN TO 100 cfm). SHOULD THE FIRST EXHAUST FAN FAIL TO RESPOND THE REMAINING EXHAUST FAN SHALL ENERGIZE.
13. INSTALL NEW HEPA FILTER DIFFERENTIAL PRESSURE SWITCH. DEVICE SHALL SEND AN ALARM TO THE CONTROL PANEL & REMOTE CONTROL PANEL AT A PREDETERMINED SET POINT.
14. VERIFY EXHAUST FAN (EF-1) OPERATION FROM AIR FLOW MEASURING STATION AND CURRENT SENSOR SHALL ENERGIZE VISUAL LIGHT TO REMOTE CONTROL PANEL.
15. VERIFY EXHAUST FAN (EF-2) OPERATION FROM AIR FLOW MEASURING STATION AND CURRENT SENSOR SHALL ENERGIZE VISUAL LIGHT TO REMOTE CONTROL PANEL.

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West Virginia Department of  
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Bioterrorism Lab Renovations  
**MECHANICAL  
DETAILS, NOTES &  
SCHEDULES**

DATE: 04.30.10  
DESIGNED: M. Estep  
DRAWN: Staff  
CHECKED: M. Estep  
PROJECT #: 09018  
SHEET NO

**MO.3**

POINTS LIST	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT
GM-1a LEAVING AIR TEMPERATURE	●			
GM-1a SUPPLY AIR FLOW VELOCITY	●			
GM-1 SUPPLY AIR TEMPERATURE	●			
OUTSIDE AIR TEMPERATURE	●			
OUTSIDE AIR TEMPERATURE	●			
ZONE TEMPERATURE (GM-1a)	103	●		
ZONE HUMIDITY (GM-1a)	103	●		
ZONE TEMPERATURE (GM-1a)	104	●		
ZONE HUMIDITY (GM-1a)	104	●		
ZONE TEMPERATURE (GM-1a)	105	●		
ZONE HUMIDITY (GM-1a)	105	●		
ZONE TEMPERATURE (GM-1a)	107	●		
ZONE HUMIDITY (GM-1a)	107	●		
EXHAUST AIR FLOW (AS-3)	●			
EXHAUST AIR FLOW (AS-1)	●			
PRESSURE SENSOR (PS-1)	●			
PRESSURE SENSOR (PS-2)	●			
PRESSURE SENSOR (PS-3)	●			
PRESSURE SENSOR (PS-4)	●			
PRESSURE SENSOR (PS-5)	●			
PRESSURE SENSOR (PS-6)	●			
GM-1a HEAT SIGNAL		●		
EXHAUST FAN SPEED (EF-1)		●		
EXHAUST FAN SPEED (EF-2)		●		
SUPPLY FAN SPEED (GM-1a)		●		
EXHAUST FAN STATUS (EF-1)			●	
EXHAUST FAN STATUS (EF-2)			●	
EXHAUST FAN MAINTENANCE SWITCH (EF-1)			●	
EXHAUST FAN MAINTENANCE SWITCH (EF-2)			●	
FIRE ALARM STATUS			●	

POINTS LIST	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT
SUPPLY FAN STATUS (GM-1a)			●	
VHP GENERATOR RUN STATUS			●	
VHP GENERATOR RELEASE STATUS			●	
VHP GENERATOR ALARM STATUS			●	
VHP ENABLE SWITCH STATUS			●	
VHP ABORT SWITCH STATUS			●	
DEHUMIDIFIER RUN STATUS			●	
DEHUMIDIFIER ALARM STATUS			●	
BOX 1-1 SUITE 1 ALARM STATUS ????			●	
BOX 1-2 SUITE 1 ALARM STATUS ????			●	
BOX 2-1 SUITE 2 ALARM STATUS ????			●	
BOX 2-2 SUITE 2 ALARM STATUS ????			●	
BOX 2-3 SUITE 2 ALARM STATUS ????			●	
BOX 2-4 SUITE 2 ALARM STATUS ????			●	
BOX 3 SUITE 3 ALARM STATUS ????			●	
SUITE 1 SENSOR ALARM STATUS	103		●	
SUITE 2 SENSOR ALARM STATUS	104		●	
SUITE 3 SENSOR ALARM STATUS	105		●	
ANTE ROOM ALARM STATUS	108		●	
OFFICE ALARM STATUS	100		●	
BSC3 ALARM STATUS	105		●	
BSC2 ALARM STATUS	104		●	
BSC1 ALARM STATUS	103		●	
FILTER STATUS (GM-1)			●	
FILTER STATUS (GM-1a)			●	
SHUNT DAMPER OPEN/CLOSE (8")				●
SHUNT DAMPER OPEN/CLOSE (20")				●
VHP DEHUMIDIFIER				●
DX COOLING STAGE #1 (GM-1a)				●
DX COOLING STAGE #2 (GM-1a)				●

POINTS LIST	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT
REMOTE PANEL AUDIBLE ALARM				●
DX COOLING STAGE #1 (GM-1)				●
DX COOLING STAGE #2 (GM-1)				●
SUPPLY FAN START/STOP (GM-1a)				●
STIRRING FANS	103			●
STIRRING FANS	104			●
ALARM LIGHTS	103			●
ALARM LIGHTS	104			●
ALARM LIGHTS	105			●
VHP PRE-RELEASE LIGHT				●
VHP RELEASE LIGHT				●
STIRRING FANS	105			●

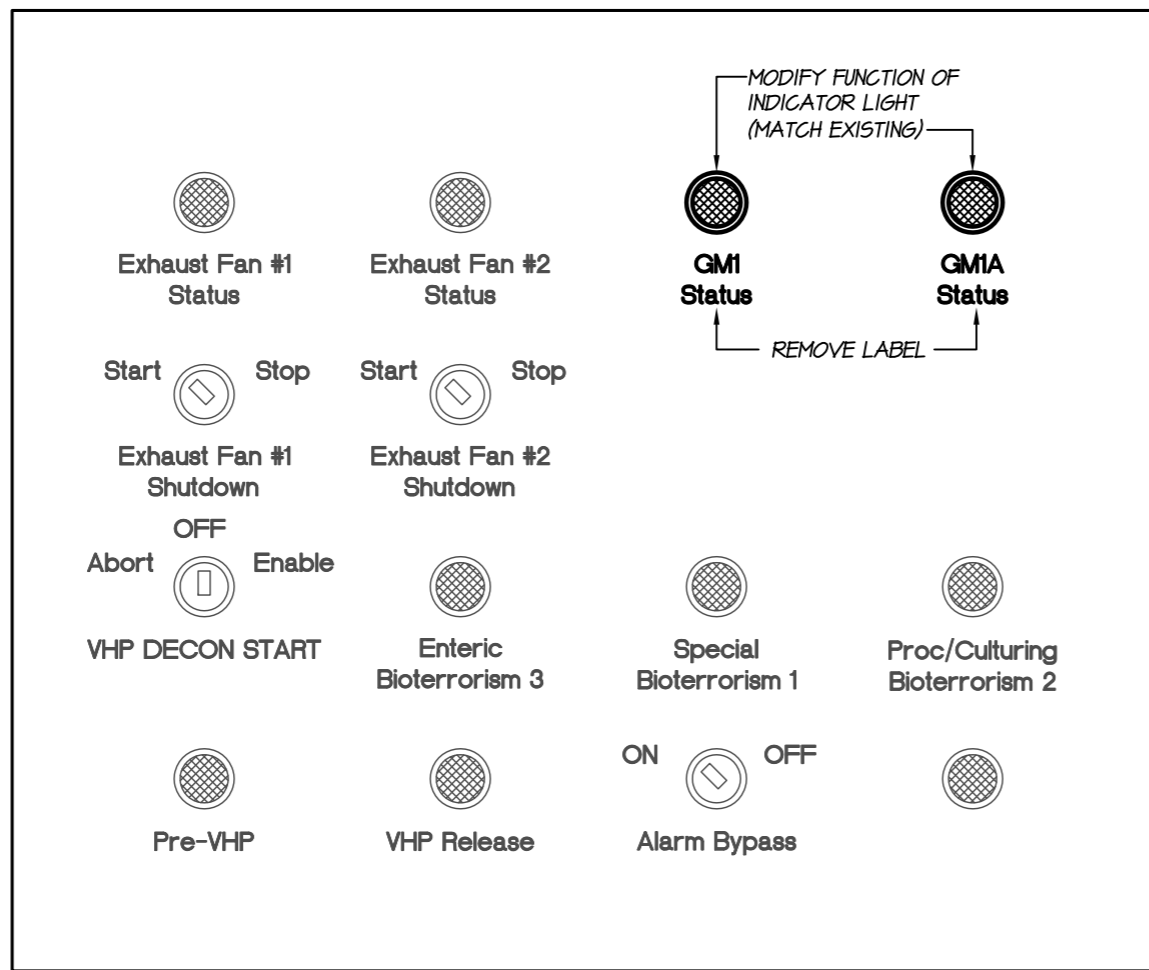
POINTS LIST	ANALOG IN	ANALOG OUT	DIGITAL IN	DIGITAL OUT
REMOTE PANEL AUDIBLE ALARM				●
DX COOLING STAGE #1 (GM-1)				●
DX COOLING STAGE #2 (GM-1)				●
SUPPLY FAN START/STOP (GM-1a)				●
STIRRING FANS	103			●
STIRRING FANS	104			●
ALARM LIGHTS	103			●
ALARM LIGHTS	104			●
ALARM LIGHTS	105			●
VHP PRE-RELEASE LIGHT				●
VHP RELEASE LIGHT				●
STIRRING FANS	105			●

NOTE:

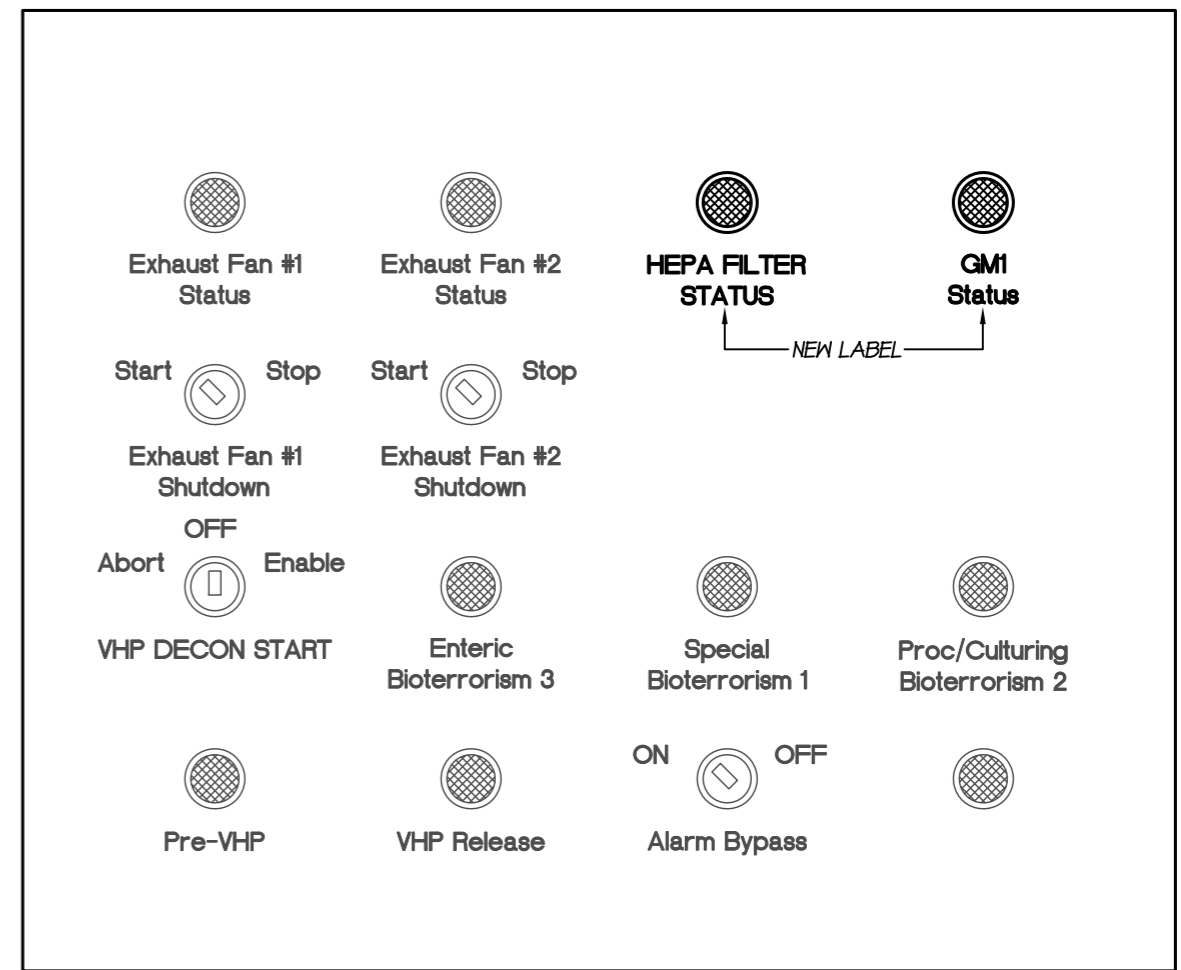
ENGAGE AN AUTHORIZED REPRESENTATIVE TO TRANSFER DATA AND RE-COMMISSION THE EXISTING DECONTAMINATION SYSTEM. INCORPORATE NEW CONDUIT AND WIRING AS REQUIRED.

EXTRACT CYCLE PARAMETERS FROM EXISTING BUILDING AUTOMATION SYSTEM BAS, FOR EXAMPLE:

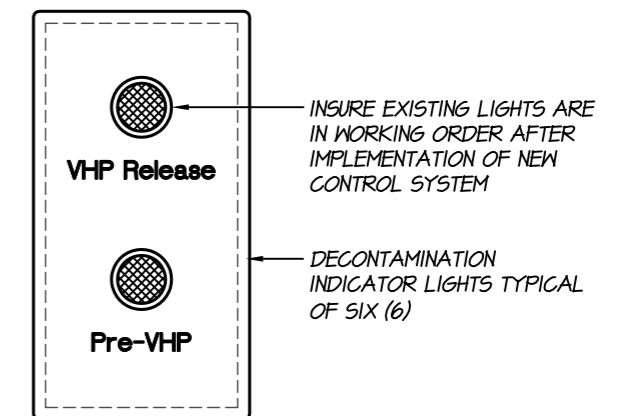
- HUMIDITY SETPOINT, VALVE OPEN/CLOSE (DURATION FOR EACH ZONE).
- TRANSITION SEQUENCE (VALVE IN NEW ROOM OPENS BEFORE VALVE FROM PRIOR ROOM CLOSES), ALL FANS ON AT ONCE OR ROOM BY ROOM?
- END SIGNAL FROM VHP TO TURN ON HVAC.
- GET THESE CYCLE PARAMETERS INTO NEW BAS POSSIBLY ORCHESTRATE A TEST RUN (CYCLE WITH WATER)
- AN AUTHORIZED REPRESENTATIVE SHALL COME IN TO RETRAIN STAFF.
- THE SYSTEM SHALL BE VALIDATED BASED ON WHAT YOU LEARN IN TRAINING.



**EXISTING REMOTE CONTROL PANEL**



**NEW REMOTE CONTROL PANEL**



**EXISTING VHP STATUS INDICATOR**  
SCALE: 1/2" = 1"



# ALTERNATE - GROUND MOUNTED UNIT (GM-I)

1009 Sandhill Dr.  
St. Albans, WV 25177  
meceinc@verizon.net



			HEATING	COIL MODULE						SUPPLY AIR FAN					COMPRESSOR			TOTAL		WEIGHT	
MARK	MAKE	MODEL	MBH OUTPUT	TONS	CAPACITY BTU/hr	ENTERING		LEAVING		CFM	HP	VOLTAGE	PHASE	FLA	NUMBER	VOLTAGE	PHASE	RLA (each)	MCA	MOCp	LBS
						DB	WB	GCC	GSC												
GM-I	AAON	RN-015	72.9	14	168,440	91	73	168.4	101.26	2,200	2.0	460	3	3.4	2	460	3	12.6	100	110	1,784

**NOTES:**

1. PROVIDE AND INSTALL 18" CURB FOR HORIZONTAL DISCHARGE.
2. CONTROLLER FOR UNIT SHALL BE PROVIDED BY THE CONTROLS CONTRACTOR
3. UNIT SHALL BE STANDARD WITH THE FOLLOWING OPTIONS.
  - a. R-410A REFRIGERANT
  - b. AIR COOLED CONDENSER WITH STANDARD EVAPORATOR COIL
  - c. POLYMER COATED EVAPORATOR AND CONDENSER COILS
  - d. ONE MODULATING DIGITAL SCROLL COMPRESSOR & ONE ON/OFF COMPRESSOR
  - e. ELECTRIC HEAT BOKW
  - f. MODULATING SCR ELECTRIC 0-10V SIGNAL
  - g. MOTORIZED 100% OA DAMPER - 2 POSITION ACTUATOR
  - h. FACTORY WIRED CONVENIENCE RECEPTACLE
  - i. PREMIUM EFFICIENCY MOTOR
  - j. 18.5" DIRECT DRIVE BACKWARD (WITH VFD) INCLINED PLENUM
  - k. MERV 6 PLEATED FILTERS MINIMUM
  - l. CONDENSER FAN CYCLING
  - m. REFRIGERATION OPTIONS: HOT GAS REHEAT FOR DEHUMIDIFICATION  
HGB LAG & MHGR, SIGHT GLASS
  - n. POWER OPTIONS: 150A DISCONNECT, PHASE & BROWN OUT
  - o. CABINET OPTIONS: DOUBLE WALL R-13 FOAM INSULATION & STAINLESS STEEL DRAIN PAN
  - p. LEAVING AIR TEMPERATURE: 72 F & 40% RH @ ENTERING AIR CONDITIONS ABOVE

FULL MODEL AAON NUMBER

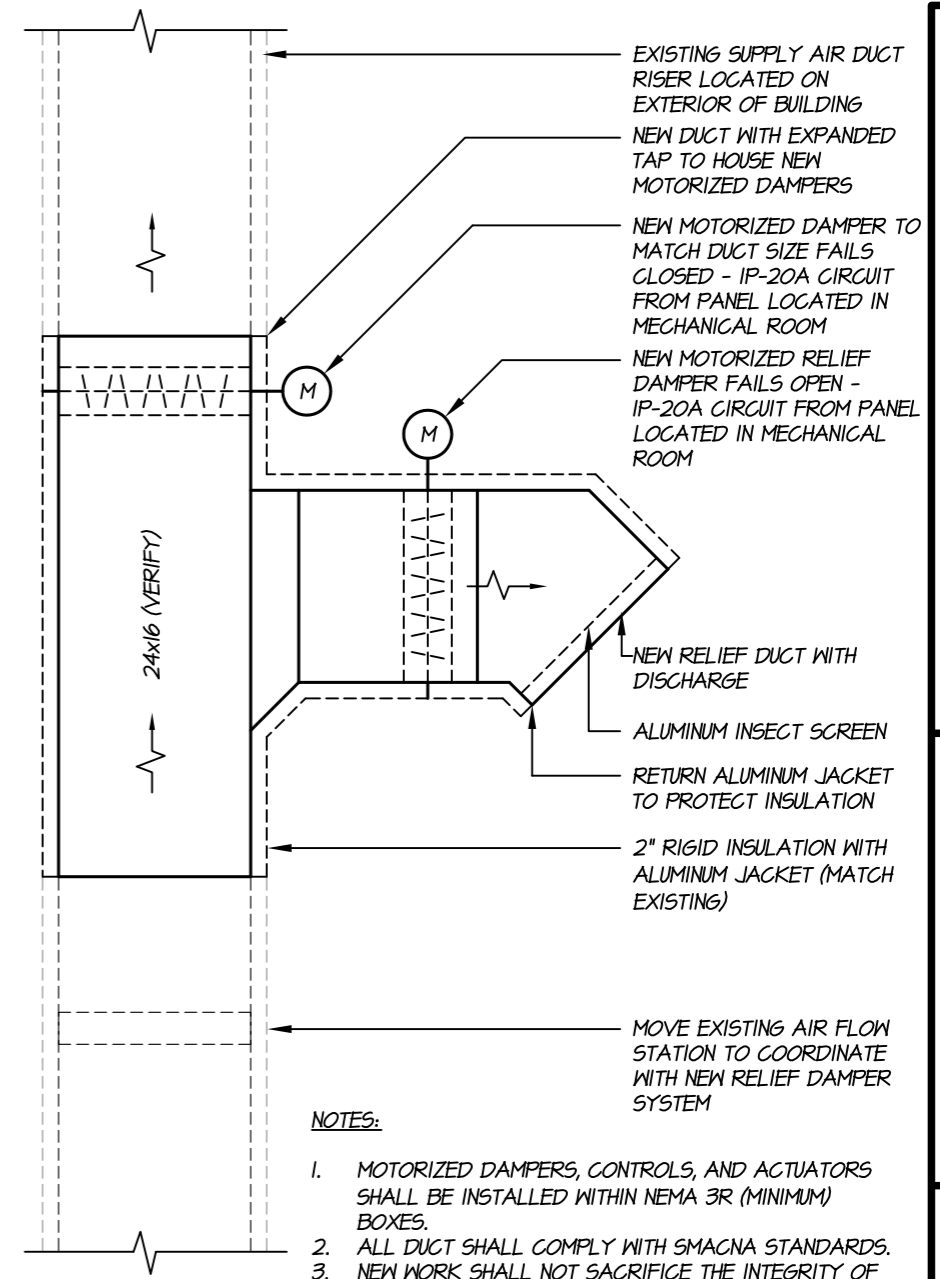
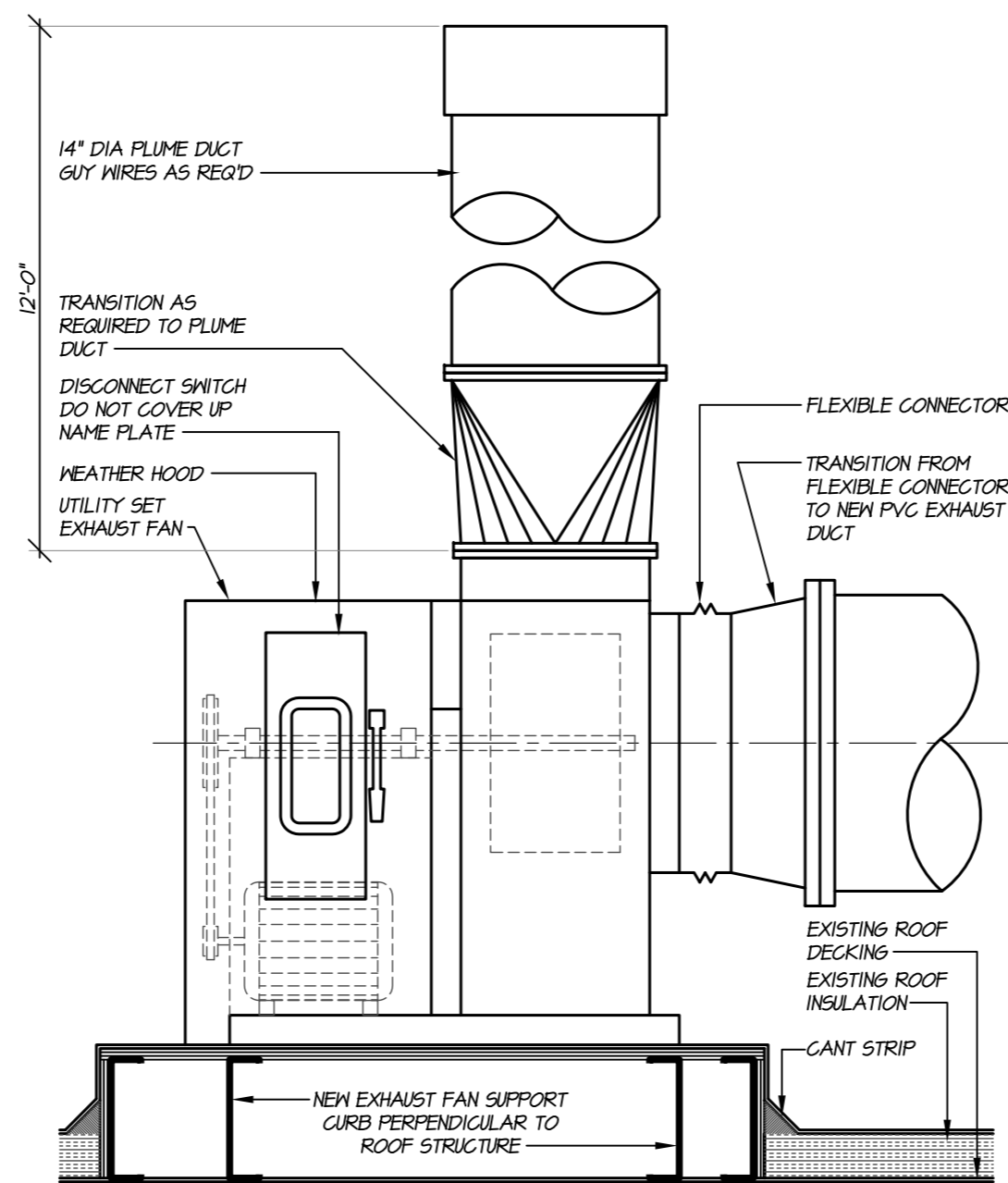
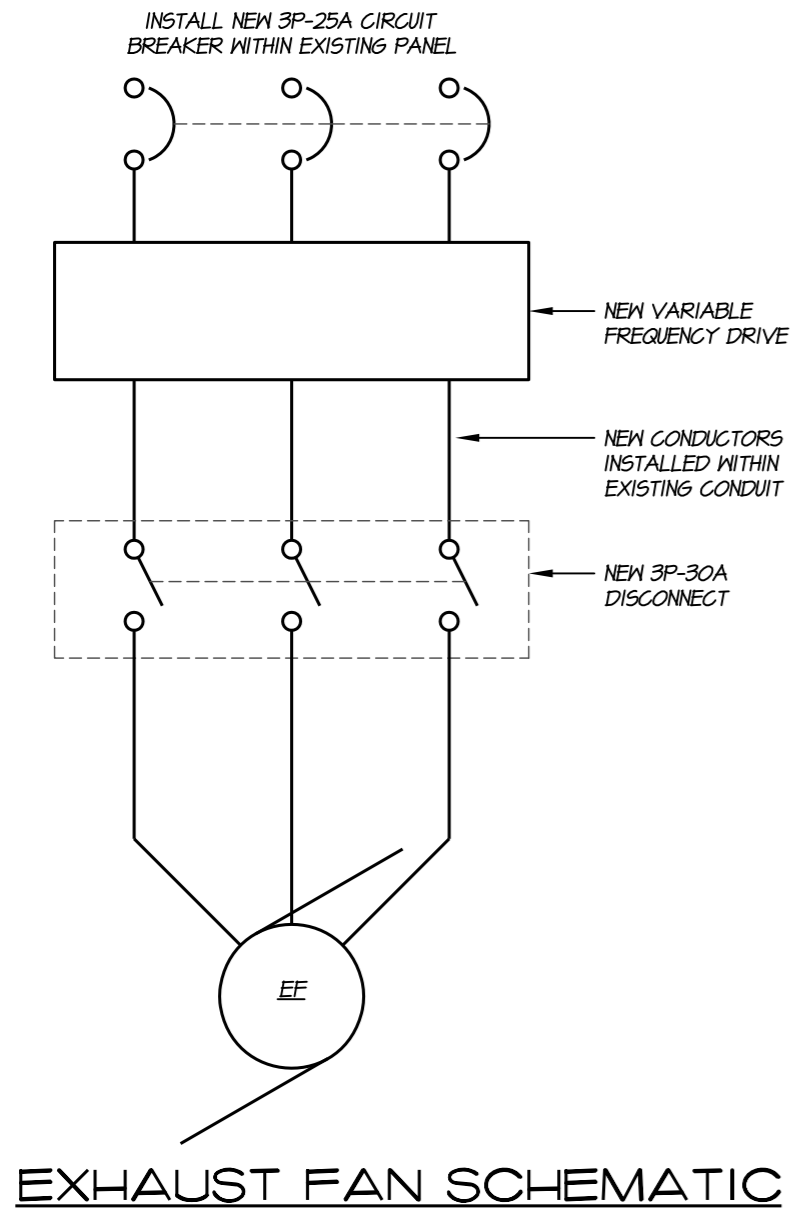
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West Virginia Department of  
 Health and Human Resources  
 Bureau for Public Health  
 Office of Laboratory Services  
 South Charleston, West Virginia

Bioterrorism Lab Renovations  
**MECHANICAL  
 DETAILS, NOTES &  
 SCHEDULES**

DATE: 04.30.10  
 DESIGNED: M. Estep  
 DRAWN: Staff  
 CHECKED: M. Estep  
 PROJECT #: 0901B  
 SHEET NO

MO.6



### UTILITY SET DETAIL

SCALE: 1" = 1'-0"

### RELIEF DAMPER DETAIL

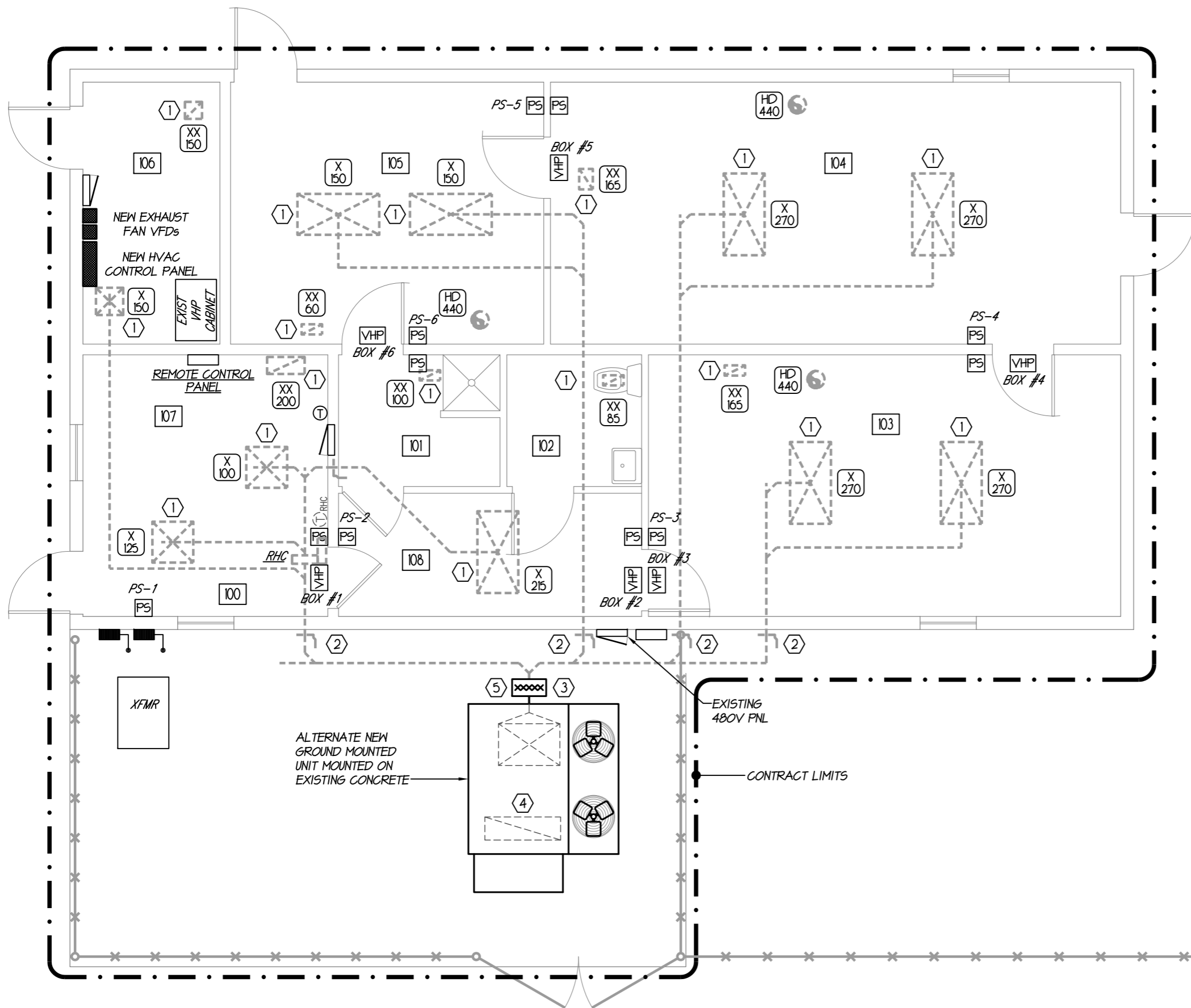
SCALE: 1/2" = 1'-0"

## EXHAUST FAN SCHEDULE

MARK	MAKE	MODEL	TYPE	CFM	ESP (in H <sub>2</sub> O)	POWER	LOCATION	FAN RPM	DRIVE	WT	(V/PH)	NEC FLC	REMARKS
EF-1	GREENHECK	SNB-216-50	UTILITY SET	3,300	4.25	5 HP	ROOF	2,228	BELT DRIVE (VFD)	300 lb	208 / 3φ	16.7 A	
EF-2	GREENHECK	SNB-216-50	UTILITY SET	3,300	4.25	5 HP	ROOF	2,228	BELT DRIVE (VFD)	300 lb	208 / 3φ	16.7 A	

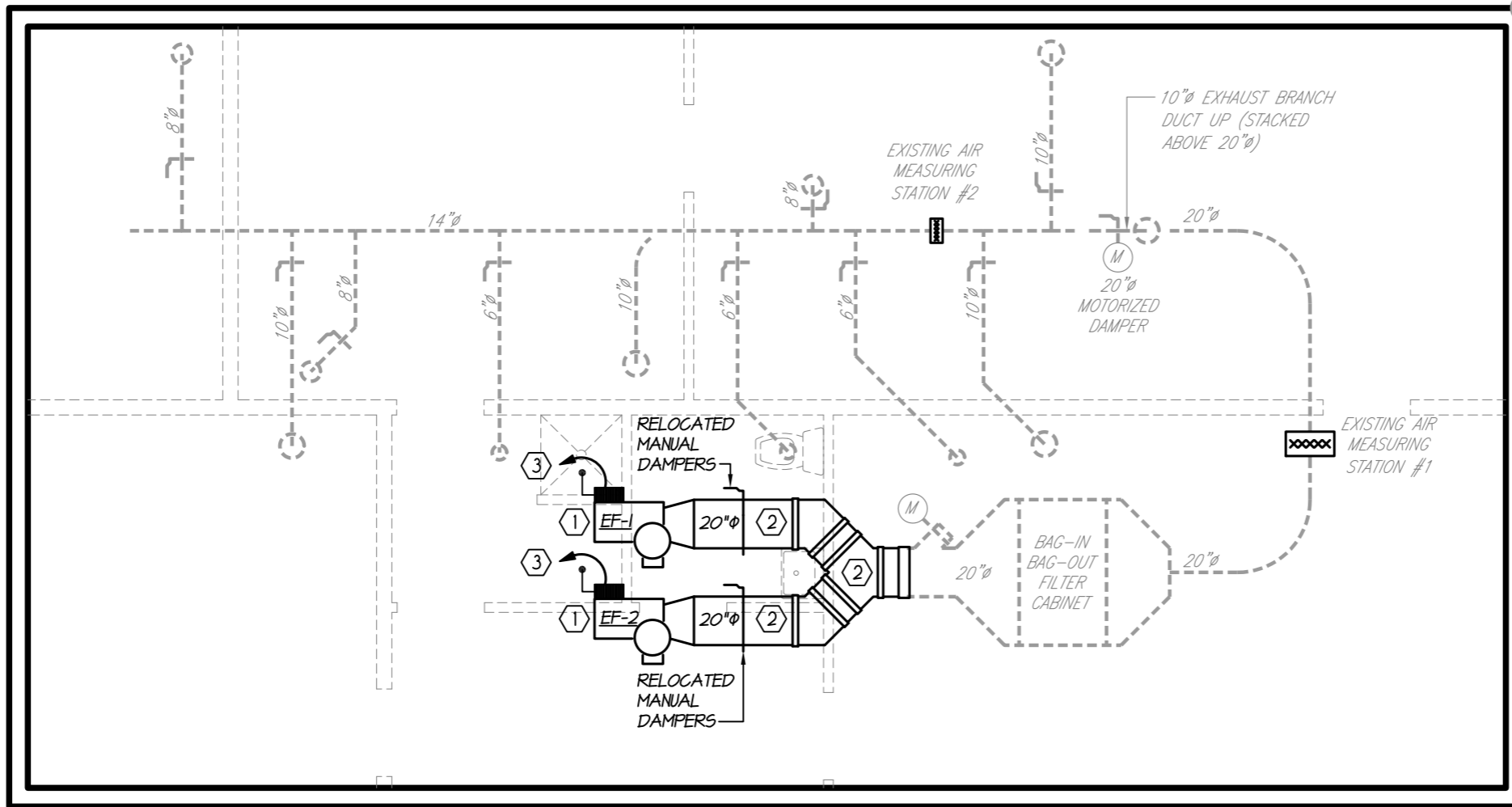
#### REQUIREMENTS:

- PROVIDE SUBMITTALS FOR EACH EXHAUST FANS.
- ACCEPTABLE MANUFACTURERS: GREENHECK, COOK, PENN & CAPTIVEAIRE
- PROVIDE HOUSED SPRING FLOOR ISOLATION SPRINGS
- PREWIRED DISCONNECT SWITCH
- EPOXY POWDER COAT WITH UV PROTECTION
- STEEL FLANGE INLET WITH FLEX DUCT CONNECTION TRANSITION TO PVC EXHAUST DUCT AS REQUIRED.
- OSHA APPROVED BELT GUARD WITH FINISH AS ABOVE.
- SEE SEQUENCE OF OPERATION FOR OPERATION.
- THERMAL OVERLOAD PROTECTION.
- PROVIDE AND INSTALL A REMOTE MOUNTED VARIABLE FREQUENCY DRIVE FOR EACH FAN.
- VARIABLE FREQUENCY DRIVES MUST BE COMPATIBLE WITH NEW DDC CONTROL SYSTEM.
- PROVIDE AND INSTALL FLUM 14'-0" IN HEIGHT MINIMUM. INSTALL GUY WIRES AS RECOMMENDED BY MANUFACTURER.
- ALUMINUM INSECT SCREEN OVER DISCHARGE OF FLUME.



- PLAN NOTES:**
1. SURFACE CLEAN GRILLES AND DIFFUSERS. REPAIR AS REQUIRED.
  2. ADJUST DAMPER TO RELECT NEW VALUES.
  3. AIR FLOW STATION (AS-3) AND RELIEF DAMPER CONFIGURATION SEE DETAIL.
  4. ALTERNATE - CLOSE RETURN AIR OPENING IN UNIT.
  5. ALTERNATE - INSTALL AN ELBOW AT THE BOTTOM OF THE SUPPLY AIR OPENING AND EXTEND A NEW 24x14 SUPPLY AIR DUCT WITH 2" RIGID INSULATION AND ALUMINUM JACKET TIE INTO EXISTING EXTERIOR DUCT. SET DUCT ON RUBBER ISOLATION PAD.
  6. ALTERNATE - REPLACE EXISTING 3P BREAKER WITHIN 480V PANEL WITH NEW 3P-110A BREAKER. INSTALL NEW CONDUCTORS TO NEW GROUND MOUNTED UNIT (4 #2's & #6 EGC in 1.5" CONDUIT).

**MECHANICAL - NEW HVAC FLOOR PLAN**  
SCALE: 3/16" = 1'-0"



### # PLAN NOTES:

1. NEW EXHAUST FAN SEE DETAIL AND SCHEDULE.
2. NEW EXHAUST DUCT.
3. NEW 4 #10's & #10 EGC IN EXISTING CONDUIT TO VFD IN MECHANICAL ROOM. UPGRADE EXISTING EXHAUST FAN CONDUCTORS FROM VFD TO PANEL LOCATED WITHIN OFFICE, UTILIZE EXISTING CONDUIT.

## MECHANICAL - HVAC ROOF PLAN

SCALE: 3/16" = 1'-0"