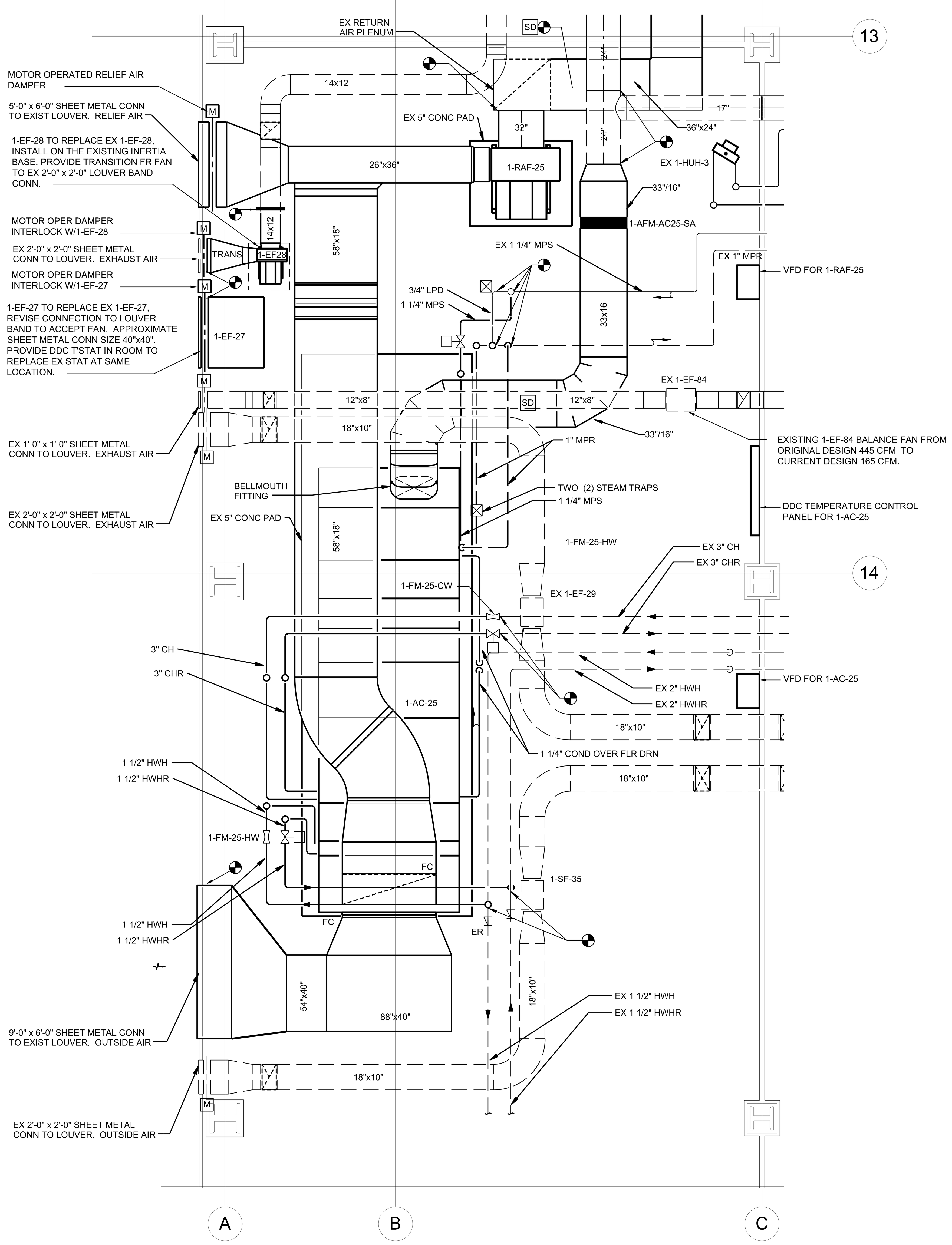
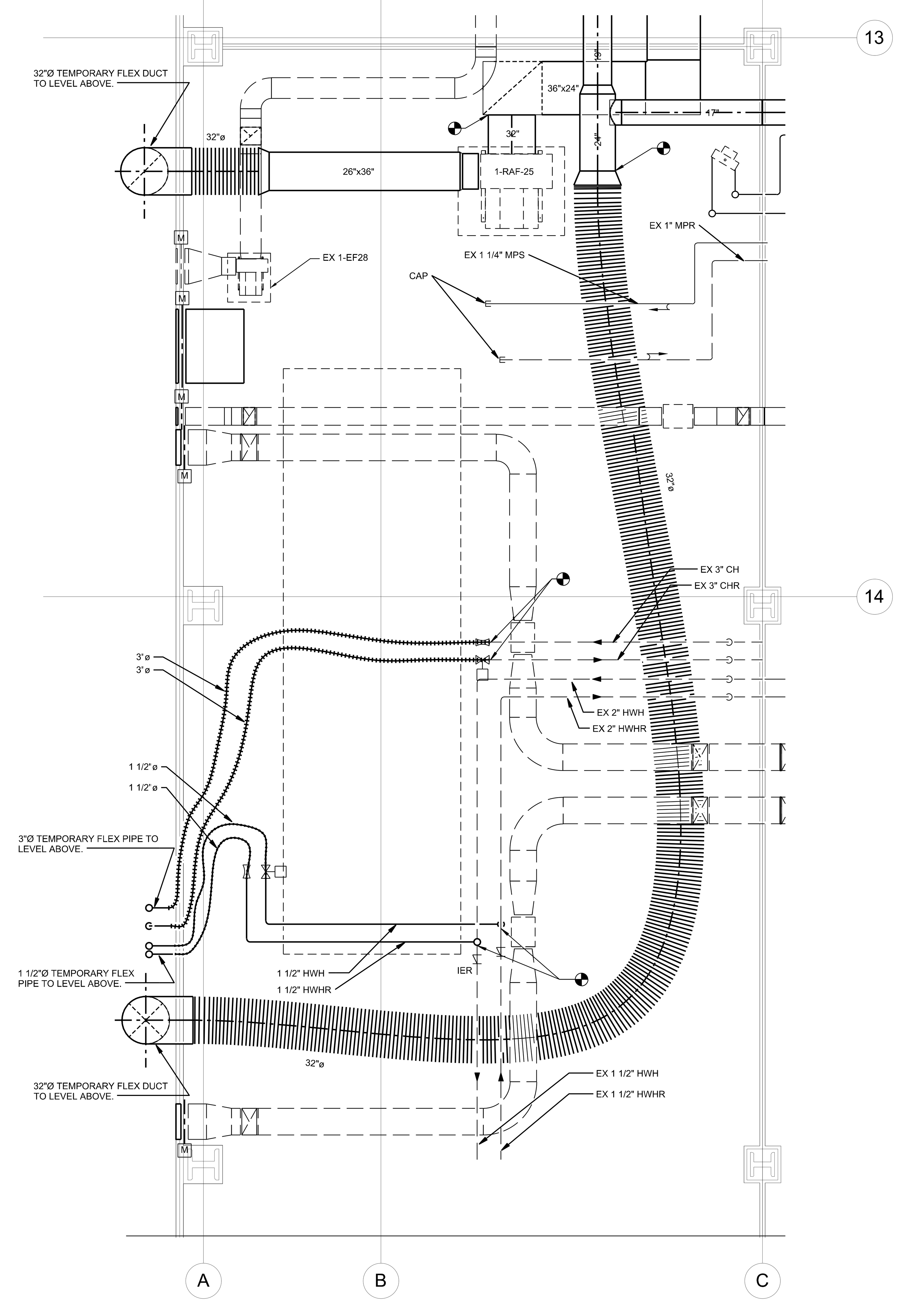


1 MECHANICAL EQUIPMENT ROOM 6A103 ENLARGED PLAN - PHASE 1

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



2 MECHANICAL EQUIPMENT ROOM 6A103 ENLARGED PLAN - TEMPORARY CONNECTIONS - PHASE 1

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

NOTE:
REFER TO DRAWING M-105 FOR TEMPORARY AC-25 LOCATION AND WORK.

GENERAL NOTES THIS DRAWING:

1. ALL CRANE LIFTS ASSOCIATED WITH ALL PHASES OF WORK, INCLUDING BUT NOT LIMITED TO DELIVERY OF TEMPORARY UNITS, REMOVAL OF EXISTING UNITS, AND DELIVERY OF NEW UNITS SHALL BE PERFORMED ON WEEKENDS.
2. ANY UNIT SHUT-DOWNS REQUIRED SHALL BE SCHEDULED IN ADVANCE WITH FACILITIES ENGINEERING GROUP.
3. MEASURE AND RECORD AIRFLOWS OF UNITS PRIOR TO DEMOLITION.
4. CONTRACTOR SHALL VERIFY THAT NOT MORE THAN EXISTING AC AND RAF SYSTEMS ARE CONNECTED TO THE EXISTING ATC PANELS BEFORE DEMOLITION. PANEL SHALL REMAIN IN PLACE IF OTHER EQUIPMENT NOT DEMOLISHED UNDER THIS PROJECT IS SERVED FROM THIS PANEL.
5. PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A SCHEDULE FOR THE ENTIRE PROJECT INDICATING TOTAL LENGTH OF TIME FOR THE PROJECT, ESTIMATED AREA SHUT DOWNS, AND PHASES OF WORK.

GENERAL NEW WORK NOTES THIS DRAWING:

1. THE MECHANICAL CONTRACTOR SHALL LOCALLY CLEAN THE AFFECTED AREAS OF ALL DUCT/PIPE DISTURBANCES.
2. FURNISH NEW TERMINAL AIR BOX AND SUPPLY/RETURN/EXHAUST AIR DUCTWORK BETWEEN THE POINTS OF NEW TO EXISTING CONNECTION SYMBOLS. FURNISH NEW HOT WATER HEATING SUPPLY AND RETURN PIPING INCLUDING NEW VALVES AND ACCESORIES AS SHOWN ON THE DETAIL AND CONNECT TO NEAREST MAIN.
3. PROVIDE NEW DIRECT DIGITAL CONTROL ADJUSTABLE TEMPERATURE SENSOR TO CONTROL ASSOCIATED VVB TERMINAL DEVICE.
4. REPLACE OR REPAIR ALL WORN/TORN INSULATION OF THE PIPING AND DUCTWORK ASSOCIATED WITH 1-AC-25 AND 1-RAF-25.

GENERAL TEMPORARY UNIT NOTES THIS DRAWING:

1. EXISTING AIR HANDLING UNIT 1-AC-25 MUST REMAIN FULLY OPERATIONAL UNTIL THE TEMPORARY AIR HANDLING UNIT 1-TEMPAC-25 IS IN PLACE AND IS READY FOR THE SWITCH OVER FROM THE EXISTING UNIT TO THE TEMPORARY UNIT. THE SWITCH OVER WILL BE PERFORMED AS WEEKEND WORK, AND MUST BE COMPLETED BEFORE HOSPITAL OPERATING HOURS START ON MONDAY MORNING. SWITCH OVER TO BE COORDINATED WITH FACILITIES ENGINEERING GROUP.
2. THE 1 1/2" HEATING HOT WATER VALVES WILL REMAIN CLOSED DURING THE OPERATION AND USE OF 1-TEMPAC-25 UNLESS HEATING IS A PRIORITY. IN THAT CASE, THE TEMPORARY 1 1/2" WATER FLEX HOSES WILL BE CONNECTED TO THE 1 1/2" HWH&R PIPING AND VALVES SHALL BE OPENED. WHEN IN THE HEATING MODE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FREEZE PROTECTION OF PIPING. THE CONTRACTOR SHALL FURNISH A HEAT EXCHANGER, PUMP, GLYCOL FILL AND ALL OTHER REQUIRED COMPONENTS. THE MECHANICAL CONTRACTOR SHALL ADJUST VALVING TO MAINTAIN A LEAVING AIR TEMPERATURE OF 55°F.
3. THE 3" CHILLED WATER VALVES WILL REMAIN OPEN DURING THE OPERATION AND USE OF 1-TEMPAC-25 UNLESS HEATING IS A PRIORITY. IN THAT CASE, THE VALVES WILL BE CLOSED. THE MECHANICAL CONTRACTOR SHALL ADJUST VALVING TO MAINTAIN A LEAVING AIR TEMPERATURE OF 55°F.
4. SUPPORT OF THE TEMPORARY UNIT SHALL NOT DAMAGE THE EXISTING ROOF. ANY DAMAGE TO THE EXISTING ROOF BY THE CONTRACTOR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AND TO MATCH EXISTING CONDITIONS APPROVED BY THE FACILITIES ENGINEERING GROUP.
5. DISCONNECT AND REMOVE EXISTING LOUVER AND SUPPORT MEMBERS TO FACILITATE REMOVAL OF EXISTING AIR HANDLING UNITS AND INSTALLATION OF NEW AIR HANDLING UNIT SECTIONS. REINSTALL AT COMPLETION OF WORK TO MATCH EXISTING.
6. TEMPORARY SUPPLY AND RETURN DUCTS AND FLEXIBLE WATER HOSES SHALL PENETRATE EXTERIOR WALL THRU EXISTING LOUVER SYSTEM. WHERE REQUIRED, THE EXISTING LOUVERED WALL SECTION, METAL PANELS AND INSULATION SHALL BE REMOVED AND STORED FOR FUTURE RE-INSTALLATION. WHERE DUCT OR HOSES PENETRATE EXTERIOR WALL, THESE PENETRATIONS SHALL BE SEALED AND INSULATED . AFTER TEMPORARY DUCTS AND HOSES ARE NO LONGER REQUIRED, THE PENETRATIONS SHALL BE CLOSED OFF, SEALED, AND INSULATED TO MATCH EXISTING CONDITIONS.
7. EXISTING LOUVER SHALL BE RE-INSTALLED. EXISTING SMOKE DETECTOR TO BE RELOCATED TO TEMPORARY DUCTING DURING PHASED CONSTRUCTION. UPON COMPLETION OF NEW DUCTWORK, NEW SMOKE DETECTOR TO BE PLACED IN NEW DUCTWORK. REFER TO NEW WORK PLAN FOR LOCATION.

INFECTION CONTROL PROCEDURES (ICRA):

GENERAL NOTES:

1. BEFORE CONSTRUCTION BEGINS, COORDINATE THE ICRA PROCEDURE WITH THE FACILITY INFECTION CONTROL DEPARTMENT AND ARCHITECTURAL DRAWINGS.
2. COORDINATE WITH FACILITY DEPARTMENT FOR ANY PHASING PLAN REQUIREMENTS TO SCHEDULE SHUTDOWNS 48 HOURS IN ADVANCE, TEMPORARY RELOCATION OR CLOSED DOWN AREAS THAT MAY BE AFFECTED DUE TO THE RENOVATION OF THE SCHEDULED PROJECT.
3. CONTRACTOR TO TAKE AIRFLOW READINGS IN AREAS OUTSIDE OF CURRENT CONSTRUCTION PHASE PRIOR TO BEGINNING WORK & AFTER WORK IS COMPLETE TO MAKE SURE AREAS ARE OPERATING PROPERLY.

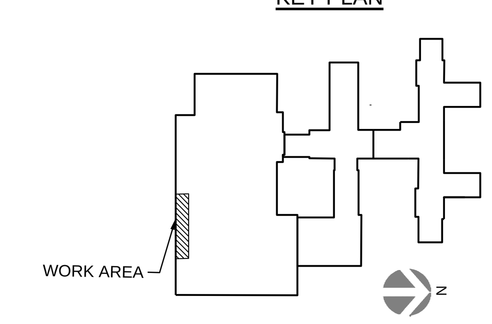
DURING CONSTRUCTION:

1. REMOVE OR ISOLATE HVAC SYSTEM IN AREA WHERE WORK IS BEING DONE TO PREVENT CONTAMINATION OF DUCT SYSTEM.
2. COMPLETE ALL CRITICAL BARRIERS I.E. SHEETROCK, PLYWOOD, PLASTIC, TO SEAL AREA FROM NON WORK AREA OR IMPLEMENT CONTROL CUBE METHOD (CART W/PLASTIC COVERING AND SEALED CONNECTION TO WORK SITE W/ HEPA VACUUM FOR VACUUMING PRIOR TO EXIT) BEFORE CONSTRUCTION BEGINS.
3. MAINTAIN NEGATIVE AIR PRESSURE W/IN WORK SITE UTILIZING HEPA EQUIPPED AIR FILTRATION UNITS. CONTRACTOR SHALL MAINTAIN 0.001" NEGATIVE PRESSURE.
4. SEAL HOLES, PIPES, CONDUITS, AND PUNCTURES APPROPRIATELY.
5. CONSTRUCT ANTEROOM AND PROVIDE W/ WALK OFF STICKY MATS. REQUIRE ALL PERSONNEL TO PASS THROUGH THIS ROOM SO THEY CAN VACUUM CLEAN THEMSELVES BEFORE LEAVING THE WORK SITE. AN ALTERNATIVE TO THIS METHOD WOULD TO WEAR CLOTH OR PAPER COVERALLS THAT ARE REMOVED EACH TIME THEY LEAVE THE WORK SITE.
6. ALL PERSONNEL ENTERING WORK SITE ARE REQUIRED TO WEAR SHOE COVERS. SHOE COVERS MUST BE CHANGED EACH TIME THE WORKER EXITS THE WORK SITE.
7. CONTAIN CONSTRUCTION WASTE BEFORE TRANSPORT IN TIGHTLY COVERED CONTAINERS.
8. COVER TRANSPORT RECEPTACLES OR CARTS. TAPE COVER SHUT UNLESS USING A SOLID LID.
9. CONTRACTOR IS TO MAINTAIN EXISTING QUANTITY (2) OF SMOKE COMPARTMENTS WITHIN AREA OF CONSTRUCTION DURING ALL CONSTRUCTION PHASES.
10. IF HEPA FILTER UNIT DISCHARGE DUCT MUST LEAVE THE ICRA CONTAINMENT AREA TO BE DISCHARGED TO THE OUTSIDE, THE DUCT SHALL BE SHEET METAL WHEN CROSSING THE ICRA BARRIER TO THE POINT OF DISCHARGE. A PLAN SHALL BE SUBMITTED AND REVIEWED WITH THE VA ENGINEER FOR OCCUPIED AREAS THAT THE DISCHARGED DUCT MUST TRAVERSE. FLEX DUCT IS PERMITTED INSIDE THE ICRA BARRIER AND OTHER LOCATIONS AS APPROVED BY THE VA. CONNECTIONS TO THE OUTSIDE DISCHARGE POINT SHALL BE MADE WITH SHEET METAL AND SHALL BE SECURE. CONNECTIONS SHALL NOT BE MADE WITH DUCT TAPE.
11. ANY MEP WORK OUTSIDE THE ICRA BARRIER DOES NOT REQUIRE FULL BARRIER WALL PROTECTION. LESS STRINGENT MEASURES SUCH AS PLASTIC SHEETING SHALL BE PERMITTED AS APPROVED BY THE VA ENGINEERING PERSONEL FOR THE AREAS OF SHORT TERM WORK.

POST CONSTRUCTION:

1. DO NOT REMOVE BARRIERS FROM WORK AREA UNTIL COMPLETE PROJECT IS INSPECTED BY THE OWNER'S PROJECT ENGINEER AND THOROUGHLY CLEANED BY THE OWNER'S ENVIRONMENTAL SERVICES DEPARTMENT.
2. REMOVE BARRIER MATERIAL CAREFULLY TO MINIMIZE SPREADING OF DIRT AND DEBRIS ASSOCIATED WITH CONSTRUCTION.
3. VACUUM WORK AREA WITH HEPA FILTERED VACUUMS.
4. WET MOP AREA WITH DISINFECTANT.
5. REMOVE ISOLATION OF HVAC SYSTEM IN AREAS WHERE WORK HAS BEEN PERFORMED.

KEY PLAN



FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

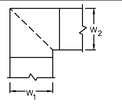
levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title:	MECHANICAL ROOM 6A103 - ENLARGED PLAN
Approved:	
Project Title:	5th Floor SAME DAY SURGERY RENOV. VA Medical Center
Location:	Philadelphia, Pennsylvania
Date:	04.28.16
Checked By:	TME
Drawn By:	NJB
Project Number:	642-11-120
Building Number:	TWO
Drawing Number:	M401
Dwg.	32 of 61

Office of Construction and Facilities Management

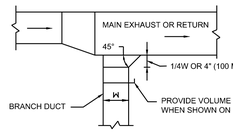
Department of Veterans Affairs



NOTES:

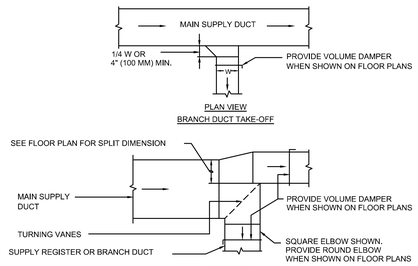
1. ALL VANED ELBOWS SHALL BE CONSTRUCTED AND INSTALLED AS DETAILED BY SMACNA.
2. WHEN W 2 DOES NOT EQUAL W 1 VANE SHALL BE SINGLE VANE TYPE REGARDLESS OF W DIMENSION.
3. ALL SINGLE VANES SHALL HAVE A 2" (50 MM) RADIUS, 1 1/2" (40 MM) MAXIMUM SPACE BETWEEN VANES AND A 3/4" (20 MM) TRAILING EDGE.
4. WHEN W 2 EQUALS W 1 AND W IS GREATER THAN 20" (500 MM) VANES SHALL BE DOUBLE VANE TYPE.

1 DUCTWORK SQUARE VANED ELBOWS
NO SCALE

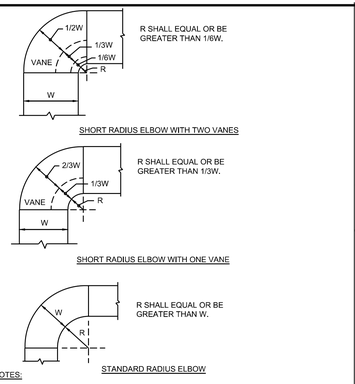


PLAN VIEW

2 EXHAUST OR RETURN BRANCH DUCTWORK
NO SCALE



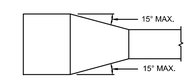
3 SUPPLY DUCTWORK TAKE-OFFS
NO SCALE



NOTES:

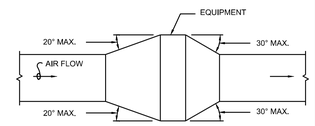
1. THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.
2. ALL STANDARD RADIUS ELBOWS SHOWN ON FLOOR PLANS MAY BE MADE SHORT RADIUS ELBOWS. ALL SHORT RADIUS ELBOWS SHALL HAVE VANES. VANES SHALL BE CONSTRUCTED, SUPPORTED AND FASTENED AS RECOMMENDED BY SMACNA.

4 DUCTWORK RADIUS ELBOW
NO SCALE



PLAN OR SIDE VIEW

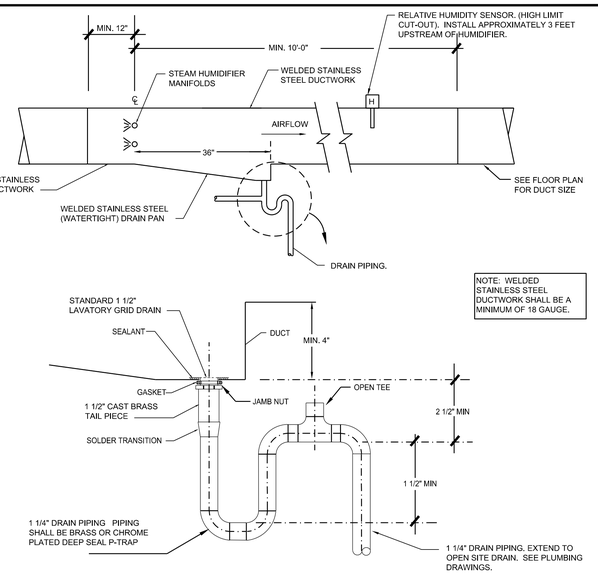
5 TYPICAL DUCTWORK TRANSITION
NO SCALE



PLAN OR SIDE VIEW

NOTE:
UNLESS OTHERWISE INDICATED ON PLANS, MAXIMUM ANGLES SHOWN SHALL APPLY.

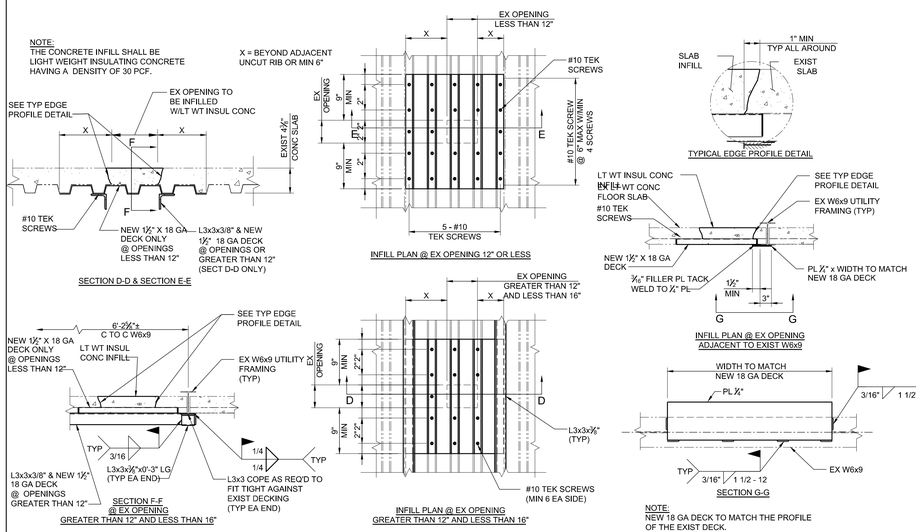
6 TYPICAL DUCTWORK TRANSITION WITH EQUIPMENT MOUNTED IN DUCT
NO SCALE



7 DUCT HUMIDIFIER INSTALLATINO DETAIL
NO SCALE

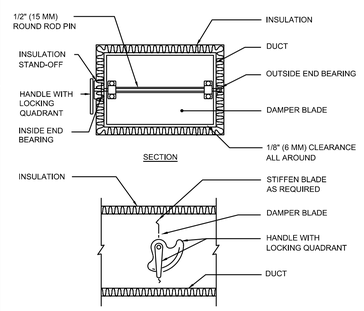
NOTE:
THE CONCRETE INFILL SHALL BE LIGHT WEIGHT INSULATING CONCRETE HAVING A DENSITY OF 30 PCF.

X = BEYOND ADJACENT UNCUT RIB OR MIN 6"



NOTE:
NEW 18 GA DECK TO MATCH THE PROFILE OF THE EXIST DECK.

8 TYPICAL UTILITY FLOOR INFILL DETAIL
NO SCALE

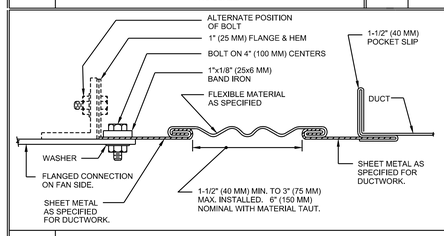


NOTE:
VOLUME CONTROL DAMPERS INSTALLED IN DUCTWORK THAT IS OF STAINLESS CONSTRUCTION SHALL BE OF TOTALLY WELDED STAINLESS STEEL CONSTRUCTION.

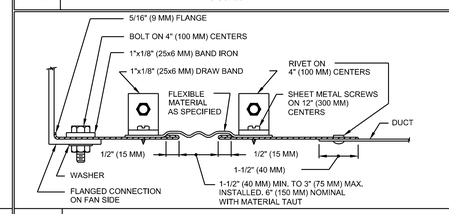
NOTES:

1. DELETE INSULATION STAND-OFF ON DUCTWORK WITHOUT EXTERIOR INSULATION.
2. DETAIL SHOWS SINGLE BLADE DAMPER. DAMPER INSTALLATION SHALL BE SIMILAR FOR MULTI-BLADE DAMPERS & ROUND DAMPERS.

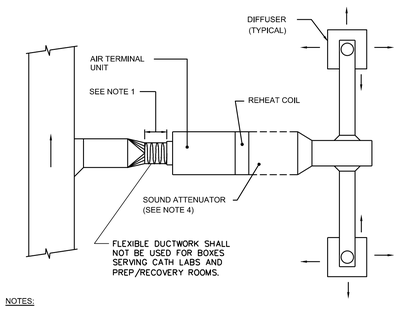
9 VOLUME DAMPER DETAIL
NO SCALE



10 RECTANGULAR FLEXIBLE CONNECTION
NO SCALE



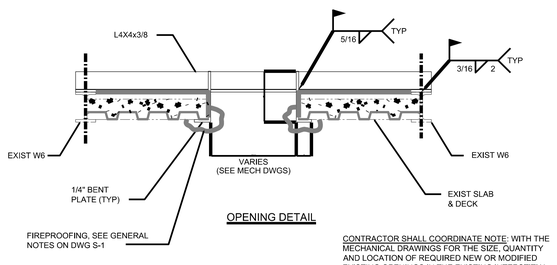
11 ROUND FLEXIBLE CONNECTION
NO SCALE



NOTES:

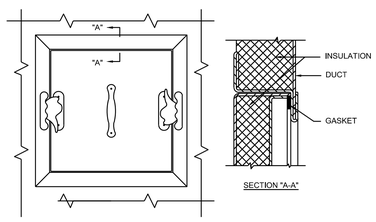
1. FLEXIBLE DUCT CONNECTION SHALL BE PROVIDED FOR AIR TERMINAL UNIT INLET DUCT CONNECTION (REFER TO DETAILS 11 AND 12 THIS SHEET).
2. BENDS SHALL BE MADE WITH NOT LESS THAN ONE DUCT DIAMETER CENTER LINE RADIUS.
3. USE SOUND ATTENUATOR ONLY, IF REQUIRED, TO MEET DESIGN ROOM NC LEVEL.

12 FLEXIBLE DUCT CONNECTION FOR AIR TERMINAL UNITS
NO SCALE



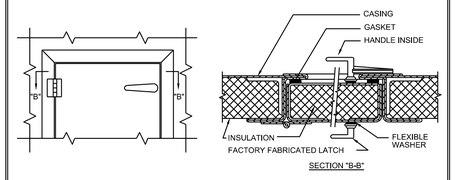
CONTRACTOR SHALL COORDINATE NOTE: WITH THE MECHANICAL DRAWINGS FOR THE SIZE, QUANTITY AND LOCATION OF REQUIRED NEW OR MODIFIED EXISTING OPENINGS IN THE EXISTING INTERSTITIAL FLOOR DECK. ALL CUTTING OF EXISTING DECK TO BE POWER SAWED.

13 TYPICAL DETAILS FOR NEW OR MODIFIED OPENINGS AND CLOSURE OF EXISTING OPENINGS IN UTILITY FLOORS
NO SCALE



NOTE:
ACCESS DOORS INSTALLED IN DUCTWORK THAT IS OF STAINLESS CONSTRUCTION SHALL BE OF TOTALLY WELDED STAINLESS STEEL CONSTRUCTION.

14 ACCESS PANEL
NO SCALE

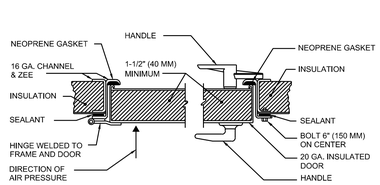


NOTES:

1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.

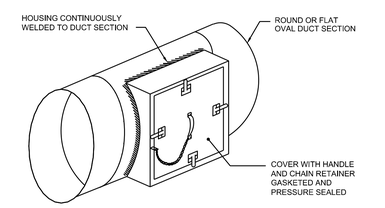
NOTE:
ACCESS DOORS INSTALLED IN DUCTWORK THAT IS OF STAINLESS CONSTRUCTION SHALL BE OF TOTALLY WELDED STAINLESS STEEL CONSTRUCTION.

15 ACCESS DOOR
NO SCALE



NOTE:
ACCESS DOORS INSTALLED IN DUCTWORK THAT IS OF STAINLESS CONSTRUCTION SHALL BE OF TOTALLY WELDED STAINLESS STEEL CONSTRUCTION.

16 ACCESS PANEL FOR HIGH PRESSURE DUCT SYSTEMS
NO SCALE



NOTE:
ACCESS DOORS INSTALLED IN DUCTWORK THAT IS OF STAINLESS CONSTRUCTION SHALL BE OF TOTALLY WELDED STAINLESS STEEL CONSTRUCTION.

17 ACCESS SECTION FOR ROUND/OVAL DUCT
NO SCALE

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Revisions	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY M. EASTWOOD
No. PE041287-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators
H.F. LENZ COMPANY

Drawing Title: MECHANICAL DETAILS

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: NJB

Project Number: 642-11-120

Building Number: TWO

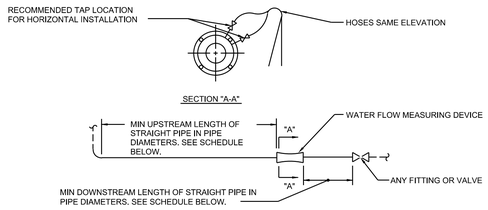
Drawing Number: M501

Dwg. 33 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



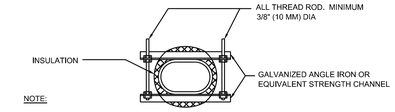
WATER FLOW MEASURING DEVICE INSTALLATION SCHEDULE			
TYPE	MIN UPSTREAM LENGTH OF STRAIGHT PIPE IN PIPE DIAMETERS		MIN DOWNSTREAM LENGTH OF STRAIGHT PIPE IN PIPE DIAMETERS
	FOR SIDE TEE	FOR VALVE OR OTHER FITTING	
ORIFICE FLANGE OR FLOATING BALL WITH IMPACT TUBE	20	10	5
VENTURI, AUTOMATIC BALANCING CONTROL VALVE, OR INSERTION VELOCITY AVERAGING AND MEASURING TUBE	10	5	2

NOTES:

1. DIMENSIONS SHOWN IN SCHEDULE ARE MINIMUM REQUIRED. IF MANUFACTURER OF FURNISHED WATER FLOW MEASURING DEVICE RECOMMENDS A GREATER DIMENSION, USE THEIR RECOMMENDATION.
2. INSTALL THE WATER FLOW MEASURING DEVICE SO THE FLOW ARROW IS IN THE SAME DIRECTION AS THE FLOW.
3. THE WATER FLOW MEASURING DEVICE MAY BE INSTALLED IN EITHER HORIZONTAL OR VERTICAL PIPE. UNITS REQUIRING REMOTE METERS SHALL HAVE THE METER CONNECTIONS LOCATED ON OR NEAR THE SIDE WHEN INSTALLED IN HORIZONTAL PIPE. SEE SECTION "A-A". THE METER CONNECTIONS CAN BE INSTALLED IN ANY POSITION WHEN INSTALLED IN VERTICAL PIPE.

1 WATER FLOW MEASURING DEVICE INSTALLATION DETAIL

NO SCALE



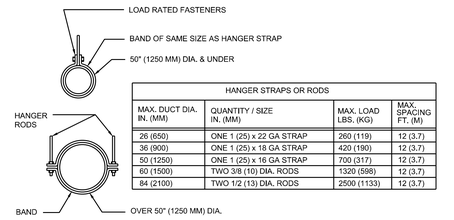
NOTE:

1. PROVIDE BRACING TO LIMIT THE AMPLITUDE OF WALL VIBRATION AND WALL DEFLECTION TO SPECIFIED MAXIMUMS.
2. MINIMUM BRACING REQUIREMENTS:

MAXIMUM DUCT WIDTH IN (MM)	MINIMUM SIZE ANGLE IN. (MM)	MAXIMUM SPACING FT. (M)
UP TO 26 (650)	NONE	
27 (675) TO 40 (1000)	1-1/2x1-1/2x3/16 (40x40x7)	6 (1.83)
41 (1025) TO 60 (1500)	2x2x3/16 (50x50x7)	4 (1.22)
61 1525) TO 72 (1800)	2x2x3/16 (50x50x7)	2 (0.61)

3. INSULATION: FOR COLD DUCTS INSULATE BRACES AND PROVIDE VAPOR BARRIER..

2 FLAT OVAL DUCT HANGERS/REINFORCEMENT



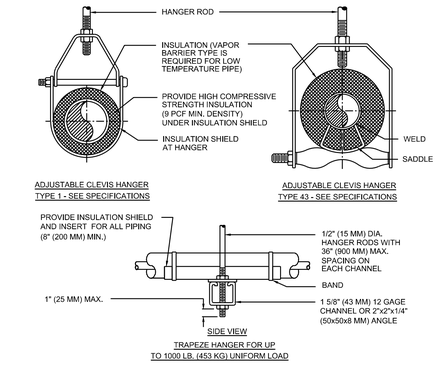
HANGER STRAPS OR RODS			
MAX. DUCT DIA. IN. (MM)	QUANTITY / SIZE IN. (MM)	MAX. LOAD LBS. (KG)	MAX. SPACING FT. (M)
26 (650)	ONE 1 (25) x 22 GA STRAP	260 (119)	12 (3.7)
36 (900)	ONE 1 (25) x 18 GA STRAP	420 (190)	12 (3.7)
50 (1250)	ONE 1 (25) x 16 GA STRAP	700 (317)	12 (3.7)
60 (1500)	TWO 3/8 (10) DIA. RODS	1320 (598)	12 (3.7)
84 (2100)	TWO 1/2 (13) DIA. RODS	2500 (1133)	12 (3.7)

NOTE:

1. TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.

4 ROUND DUCT HANGERS

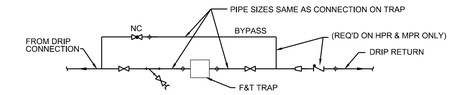
NO SCALE



MAXIMUM PIPE/TUBING SUPPORT SPACING																				
NOM. SIZE	IN. (MM)	THRU 3/4 THRU (20)	1 (25)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (65)	3 (75)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)	14 (350)	16 (400)	18 (450)	20 (500)	24 (600)
PIPE	FT. (M)	7 (2.1)	7 (2.1)	7 (2.1)	9 (2.7)	10 (3.0)	11 (3.4)	12 (3.7)	14 (4.1)	16 (4.9)	17 (5.2)	19 (5.8)	22 (6.7)	23 (7.0)	25 (7.6)	27 (8.2)	28 (8.5)	30 (9.1)	32 (9.6)
TUBING	FT. (M)	5 FT 5 FT	6 (1.8)	7 (2.1)	8 (2.4)	8 (2.4)	9 (2.7)	10 (3.0)	12 (3.7)	13 (4.0)	14 (4.1)	16 (4.9)	- -	- -	- -	- -	- -	- -	- -

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.

6 TYPICAL PIPE HANGERS

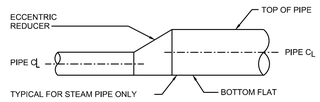


3 MANUAL AIR VENT

NO SCALE

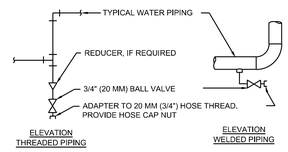
5 STEAM TRAP ASSEMBLY

NO SCALE



7 TYPICAL PIPE SIZE CHANGE FOR STEAM

NO SCALE

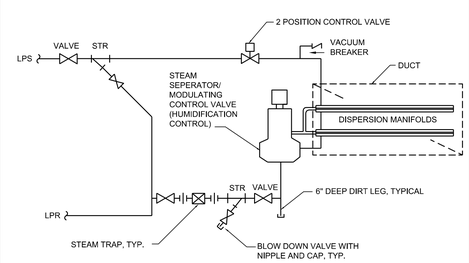


NOTES:

1. DRAIN ALL LOW POINTS AS INDICATED ABOVE.
2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.

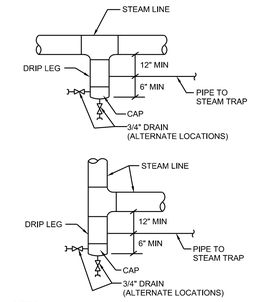
9 TYPICAL CHILLED AND HOT WATER PIPING DRAIN VALVE CONNECTIONS

NO SCALE



10 DUCT HUMIDIFIER PIPING DETAIL

NO SCALE

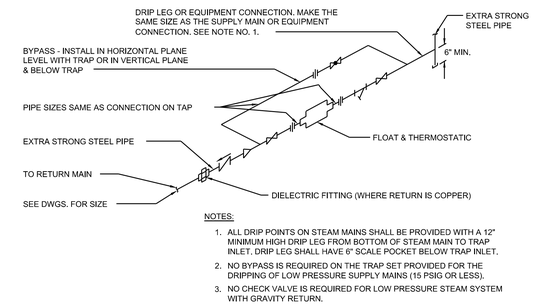


NOTES:

1. DRIP POCKET PIPE SIZE SAME AS STEAM MAIN UNLESS OTHERWISE NOTED.

11 STEAM LINE DRIP POCKET

NO SCALE

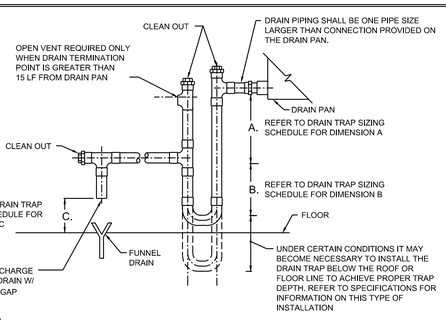


NOTES:

1. ALL DRIP POINTS ON STEAM MAINS SHALL BE PROVIDED WITH A 12" MINIMUM HIGH DRIP LEG FROM BOTTOM OF STEAM MAIN TO TRAP INLET. DRIP LEG SHALL HAVE 6" SCALE POCKET BELOW TRAP INLET.
2. NO BYPASS IS REQUIRED ON THE TRAP SET PROVIDED FOR THE DRIPPING OF LOW PRESSURE SUPPLY MAINS (15 PSIG OR LESS).
3. NO CHECK VALVE IS REQUIRED FOR LOW PRESSURE STEAM SYSTEM WITH GRAVITY RETURN.
4. NO BYPASS OR STRAINER IS REQUIRED ON TRAP SETS IN PARALLEL FOR PRE-HEAT COILS. ONLY ONE CHECK VALVE & ONE DIELECTRIC FITTING IS REQUIRED.

12 FLOAT & THERMOSTATIC AND/OR TRAP SET CONNECTIONS

NO SCALE



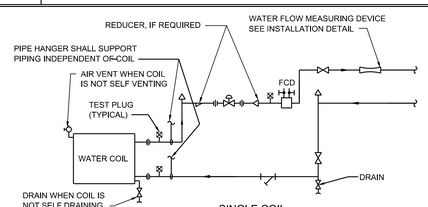
NOTE:

DRAIN PAN MAY BE LOCATED IN THE NEGATIVE OR POSITIVE PRESSURE AREA OF THE AIR STREAM. REFER TO DRAIN TRAP SIZING SCHEDULE FOR DIMENSIONAL DATA REQUIRED FOR SPECIFIC DRAIN LOCATION.

DIMENSION	DRAIN TRAP LOCATION FOR NEGATIVE PRESSURE	DRAIN TRAP LOCATION FOR POSITIVE PRESSURE
A.	4"	2"
B.	4"	TOTAL AHU SP ± 1 (4" MINIMUM)
C.	2" ABOVE SPLASH BLOCK OR 2" ABOVE FUNNEL DRAIN	2" ABOVE SPLASH BLOCK OR 2" ABOVE FUNNEL DRAIN

13 AIR HANDLING UNIT CONDENSATE DRAIN TRAP PIPING DETAIL

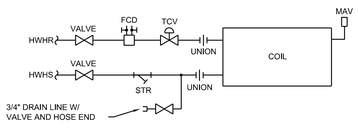
NO SCALE



NOTES:

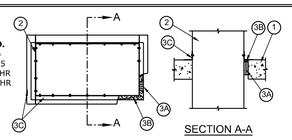
1. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS. NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALVES, OR EQUIPMENT.

14 TYPICAL CONNECTIONS TO WATER COILS



15 AUXILIARY HEAT COIL PIPING DETAIL - HOT WATER

NO SCALE



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. (114 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. FLOOR ASSEMBLY MAY ALSO BE CONSTRUCTED OF ANY MIN 6 IN. (152 MM) THICK UL CLASSIFIED HOLLOW-CORE PRECAST CONCRETE UNITS*. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX AREA OF OPENING 640 SQ IN. (4129 CM2) WITH A MAX DIMENSION OF 32 IN. (813 MM). MAX AREA OF IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE IS 49 SQ IN. (316 CM2) WITH A MAX DIMENSION OF 7 IN. (178 MM).

SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFTV) CATEGORIES IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. STEEL DUCT - NOM 30 IN. BY 18 IN. (762 MM BY 457 MM) (OR SMALLER) NO. 24 GAUGE (OR HEAVIER) STEEL DUCT TO BE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN OPENING. ANNULAR SPACE BETWEEN DUCT AND PERIPHERY OF OPENING SHALL BE SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 2 IN. (51 MM). DUCT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

3. FIRESTOP SYSTEM - THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:

A. PACKING MATERIAL - MIN 3 IN. (76 MM) THICKNESS OF MIN 4 PCF (64 KG/M3) MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL. IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE, PACKING MATERIAL TO BE RECESSED FROM TOP AND BOTTOM SURFACES OF FLOOR AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

B. FILL VOID OR CAVITY MATERIALS* - CAULK OR SEALANT - MIN 1/2 IN. (13 MM) THICKNESS OF CAULK APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE, MIN 1/2 IN. (13 MM) THICKNESS OF CAULK APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP AND BOTTOM SURFACES OF FLOOR. MIN 1/4 IN. (6 MM) DIAM BEAD OF CAULK APPLIED TO THE DUCT/CONCRETE INTERFACE AT THE POINT CONTACT LOCATION ON THE TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL OR HOLLOW-CORE CONCRETE.

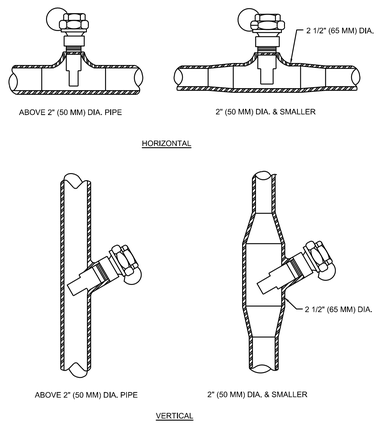
3M COMPANY - CP 25WB+, IC 15WB+ CAULK OR FB-3000 WT SEALANT.

C. RETAINING ANGLES - MIN 16 GA GALV STEEL ANGLES SIZED TO LAP DUCT A MIN OF 2 IN. (51 MM) AND LAP PERIPHERY OF OPENING A MIN OF 1 IN. (25 MM). ANGLES ATTACHED TO ALL FOUR SIDES OF STEEL DUCT ON TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL WITH NO. 10 (OR LARGER) STEEL SHEET METAL SCREWS SPACED A MAX 1 IN. (25 MM) FROM EACH END AND MAX 6 IN. (152 MM) OC.

*BEARING THE UL CLASSIFICATION MARKING

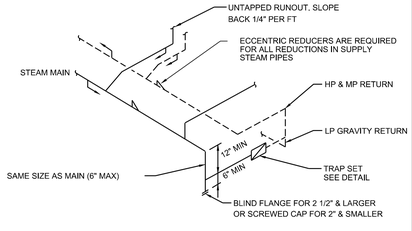
16 DUCT PENERTRATION FIRESTOP DETAIL SYSTEM No. C-AJ-7076

NO SCALE



17 INSTALLATION OF THERMOMETER WELLS

NO SCALE



NOTES:

1. SLOPE MAINS & BRANCHES DOWN 1" PER 40 FEET IN DIRECTION OF FLOW UNLESS SHOWN OTHERWISE.
2. LIMIT UNTRAPPED, COUNTER FLOW, RUNOUTS TO 10 FEET MAXIMUM. COUNTER FLOW RUN OUTS SHALL BE OVERSIZED BY ONE PIPE SIZE.
3. END OF MAIN SHOWN LOW POINT IN STEAM MAIN SIMILAR

18 TYPICAL STEAM LINE & DRIP PIPING

NOT TO SCALE

FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL ENGINEER
TIMOTHY M. EARHART
No. 041382-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: MECHANICAL DETAILS	Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center		Project Number: 642-11-120
Approved:			Building Number: TWO
	Location: Philadelphia, Pennsylvania		Drawing Number: M502
	Date: 04.28.16	Checked By: TME / Drawn By: NJB	Dwg. 34 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

AIR HANDLING UNIT SCHEDULE

UNIT No	LOCATION / WEIGHT	AREA SERVED	CFM SUPPLY	CFM OA	ESP	TSP
1-AC-25	EQUIP ROOM 6A103 5940 LBS	5TH FLR A & B	13000 (11515)	3900 (3450)	4.25	7.85

SUPPLY FAN DATA

UNIT No	QTY	CFM	FAN TYPE	ARRANGEMENT, INLET ROTATION & DISCHARGE	WHEEL TYPE	WHEEL MIN DIA	RPM	DRIVE	MOTOR NOM HP	MOTOR ELEC	VFD
1-AC-25	2	6500	PL	1H x 2W	AF	24"	3135	DD	15.0	3/60/460V	YES

WATER COILS (COOLING)

UNIT No	MAX FACE VEL (FPM)	MAX SP LOSS	ENT AIR °F DB	ENT AIR °F WB	LVG AIR °F DB	LVG AIR °F WB	CIRCULATING FLUID: FLUID	GPM	TEMP IN	TEMP OUT	MAX PD FT	TOT MBH	SENS MBH
1-AC-25	516	1.28	80.5	66.6	50.5	50.4	CW	120.9	45.0	54.8	4.7	596.9	402.0

WATER COILS (HEATING)

UNIT No	MAX FACE VEL (FPM)	MAX SP LOSS	TEMP AIR °F ENT	TEMP AIR °F LVG	CIRCULATING FLUID: FLUID	GPM	TEMP IN	TEMP OUT	MAX PD FT	TOT MBH
1-AC-25	506	0.04	50.4	74.5	HWH	20.0	180.0	145.5	1.2	335.9

ULTRA VIOLET LIGHT IRRADIATOR SYSTEM

UNIT No	LOCATION	MAX AV (FPM)	SURFACE REFLECTIVITY	IRRADIATE AIRBORNE PATHOGENS	IRRADIATE SURFACE PATHOGENS	TARGET MICROBES	MIN UVC DOSE* (μW/CM^2)	ELECTRICAL REQUIREMENTS V/Ø/Hz	TOTAL WATTS	AMPS
1-AC-25	COOLING COIL	500	57%	NO	YES	MOLD GROWTH CONTROL	72	120/1/60	204	1.7

NOTE:

1. THE CONTRACTOR SHALL TAKE PRE-DEMOLITION AIR FLOW READINGS FOR EACH OF THE AIR SYSTEMS MAIN BRANCH DUCTS SERVING THE AREAS IN EACH PHASE OF CONSTRUCTION, AND RECORD FOR FUTURE REFERENCE. AT THE COMPLETION OF THE WORK IN EACH PHASE, THE CONTRACTOR SHALL PERFORM AIR BALANCING TO PROVIDE THE REQUIRED AIR FLOW TO THE NEW CONSTRUCTION AREA AND MAINTAIN THE PRE-DEMOLITION AIR FLOW TO THE SPACES TO BE RENOVATED IN FUTURE PHASES OF CONSTRUCTION, AS WELL AS PHASES COMPLETED EARLIER. THIS PHASED BALANCING SHALL INCLUDE ALL AIR SYSTEM UNITS SERVING THE AREA OF CONSTRUCTION.
2. THE OUTSIDE AIR CFM IS THE MINIMUM AMOUNT OF AIR TO BE PROVIDED.
3. UNIT SHALL NOT EXCEED 57" IN HEIGHT. USEABLE LOUVER BAND OPENING IS APPROXIMATELY 68" TALL. LOUVER STANDS 21.5" AFF.
4. EACH ACCESS DOOR SHALL HAVE A CONTACTOR TO SWITCH OFF THE UV LIGHTS WHEN DOOR IS OPENED.
5. MANUFACTURER SHALL VERIFY UV INTENSITIES LISTED ON THIS SCHEDULE AS APPLICABLE TO THEIR PRODUCT. HIGHER INTENSITIES, ADDITIONAL LAMPS, ETC MAY BE REQUIRED TO SATISFY THE PERFORMANCE REQUIREMENTS LISTED ON THIS SCHEDULE AND IN THE SPECIFICATION. THE MANUFACTURER SHALL PROVIDE DOCUMENTATION THAT THEIR SYSTEM COMPLIES WITH THE PERFORMANCE REQUIREMENTS.
6. HUMIDIFIERS SHALL BE JACKETED TYPE AND SHALL BE CAPABLE OF HAVING LIVE MOTIVE STEAM TO LIFT THE CONDENSATE.
7. PROVIDE AHU WITH STAINLESS STEEL LINER.

AIR HANDLING UNIT SCHEDULE CONTINUED

AIR FILTERS

RATED EFF %	MERV	MAX SP DROP INITIAL	MAX SP DROP FINAL	HOUSING TYPE	FILTERS No	FILTERS SIZE
30	8	0.14	0.39	4" PLTD SIDE	16	20x16
90-95	14	0.64	0.89	12" RIGID SIDE	4 4	20x20 24x20

STEAM HUMIDIFIER

NUMBER OF MANIFOLDS	VAPOR TRAIL IN	EAT DB	EAT RH	LAT DB	LAT RH	STEAM PSIG ENT ON/OFF VALVE	STEAM PSIG ENT CTRL VALVE	CONTROL VALVE LBS/HR	TRAP LBS/HR CAPACITY	BASIS OF DESIGN
1	12	52	35	52	62	10	10	131	500	JCI SOULITION XT

DUCT CONSTRUCTION SCHEDULE

SYSTEM	USE	EXTENT OF DUCTWORK	SMACNA CLASS PRESS.	SMACNA CLASS SEAL	NOTE
1-AC-25	SA	FROM AHU TO TERMINAL BOX	+8"	A	-
	SA	FROM TERMINAL BOX TO DIFFUSER	+3"	B	-
	OA	ALL	-3"	B	-
1-RAF-25	RA	FROM GRILLES TO 1-RAF-25	-3"	B	-
	RA	FROM 1-RAF-25 TO DISCHARGE	+3"	B	-
	RA	FROM 1-RAF-25 TO 1-AC-25	+3"	B	-
EX 1-AC-24	SA	FROM AHU TO TERMINAL BOX	+8"	A	-
	SA	FROM TERMINAL BOX TO DIFFUSER	+3"	B	-
	EA	FROM GRILLES TO 1-AC-24	-3"	B	-
EX 1-EF-84	EA	FROM GRILLES TO EX EF-84	-3"	B	-
1-EF-28	EA	FROM GRILLES TO 1-EF-28	-3"	B	-
EX EF-108 ISOLATION EF	EA	FROM ETB TO EF	-4"	A	-
	EA	FROM GRILLES TO ETB	-2"	A	-

TEMPORARY PACKAGED AIR HANDLING UNIT SCHEDULE

UNIT No	LOCATION	AREA SERVED	CFM SUPPLY	CFM OA	EXT SP	MOTOR NOM HP	MOTOR PHASE VLTGE	MCA
1-TEMPAC-25	7TH FLR ROOF 6081 LBS	5TH FLOOR	10555	2050	4.25	30	3-460	55 A

WATER COILS (HEATING)

UNIT No	ENT AIR °F DB	ENT AIR °F WB	LVG AIR °F DB	LVG AIR °F WB	CIRCULATING FLUID: FLUID	GPM	TEMP IN	TEMP OUT	MAX LOSS FT FLUID	MIN MBH
1-TEMPAC-25	50	-	80	-	HWH	21	180	150	9.5	305

AIR FILTERS

UNIT No	MERV	RATED EFF %	MAX SP DROP INITIAL	MAX SP DROP FINAL	HOUSING TYPE	FILTERS No	FILTERS SIZE
1-TEMPAC-25	7	30	0.12	0.7	SIDE SERVICE	4 4	20x20x4 14x20x4

NOTE:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND REMOVAL OF TEMPORARY AIR HANDLER INCLUDING CRANING.
2. TEMPORARY UNIT SHALL HAVE UNIT CONTROLS CAPABLE OF MAINTAINING A CONSTANT SUPPLY AIR TEMPERATURE OF 55 F BY MODULATING A TEMPORARY TWO WAY CONTROL VALVE FOR THE WATER COIL. DURING THE COOLING SEASON CONNECT THE TEMPORARY WATER PIPING TO THE 3" CHILLED WATER PIPING CONNECTIONS. DURING THE HEATING SEASON CONNECT TEMPORARY WATER PIPING TO THE 4" HEATING HOT WATER PIPING CONNECTIONS. IN THE HEATING SEASON CONFIGURATION THE CONTRACTOR IS RESPONSIBLE FOR COIL AND WATER PIPING FREEZE PROTECTION AND WILL PROVIDE A TEMPORARY HEAT EXCHANGER, PUMP, GLYCOL MIXTURE AND ALL OTHER ITEMS NECESSARY.
3. TEMPORARY PIPING MUST NOT BE CROSS CONNECTED BETWEEN HEATING AND CHILLED WATER SYSTEMS, WHEN CHANGING FROM HEATING TO COOLING ALL GLYCOL MUST BE FLUSHED OUT OF THE COIL AND FLEX HOSE BEFORE CONNECTING TO THE CHILLED WATER PIPING SYSTEM.
4. THE TEMPORARY UNIT WILL BE LOCATED ON THE ROOF ABOVE THE EQUIPMENT. SUPPORTING OF UNIT SHALL NOT DAMAGE THE EXISTING ROOF. ANY SITE CONDITIONS DAMAGED BY THE CONTRACTOR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR TO MATCH EXISTING CONDITIONS AND THE APPROVAL OF THE FACILITIES ENGINEERING GROUP.
5. THE TEMPORARY UNIT SUPPLY FAN SHALL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE, PROVIDED BY UNIT MANUFACTURER.
6. PROVIDE FLEXIBLE DUCT MATERIAL FOR CONNECTING THE TEMPORARY HVAC UNITS TO THE AIR DISTRIBUTION SYSTEMS. PROVIDE A MOLECULARLY BONDED, HEAT SEALED, SPRING STEEL WIRE REINFORCED FLEXIBLE HOSE MATERIAL DESIGNED TO PERFORM IN A TEMPERATURE RANGE OF -20 TO 200 DEG. F. MATERIAL FABRIC SHALL BE 10 OZ./SQ. YD. (+/- 10 PERCENT) WITH A 9 BY 9 COUNT SCRIM AND A PVC FILE LAMINATED TO BOTH SIDES. FLEXIBLE DUCTS SHALL BE CONNECTED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
7. PROVIDE FLEXIBLE WATER HOSES FOR CONNECTING THE TEMPORARY HVAC UNITS TO THE HYDRONIC DISTRIBUTION SYSTEMS. PROVIDE A FLEXIBLE HOSE MATERIAL CONSTRUCTED OF OZONE-RESISTANT EPDM RUBBER WITH HIGH TENSILE TEXTILE REINFORCING CORDS DESIGNED TO PERFORM IN A TEMPERATURE RANGE OF -30 TO 185 DEG. F AND A MAXIMUM PRESSURE RATING OF 150 PSI. PROVIDE MANUFACTURER'S STANDARD COUPLINGS FOR CONNECTING TO THE HYDRONIC DISTRIBUTION SYSTEMS. FLEXIBLE HOSES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
8. THE TEMPORARY UNIT SHALL BE EQUIPPED WITH A FACTORY MOUNTED DISCONNECT SWITCH.

EQUIPMENT SOUND POWER LEVEL SCHEDULE

UNIT	COMPONENT	62.5	125	250	500	1000	2000	4000	8000
		SOUND POWER LEVEL BY OCTAVE BAND							
1-AC-25	DISCHARGE Lw	90	88	88	93	92	88	83	73
	RA TOP Lw	87	85	83	86	86	82	76	66
1-RAF-25	DISCHARGE Lw	98	93	85	80	77	72	67	63
1-EF-27	DISCHARGE Lw	80	85	85	88	85	80	75	71
1-EF-28	DISCHARGE Lw	85	79	73	75	70	68	61	55

TEMPORARY COOLING COIL SCHEDULE (WATER)

SYMBOL	LOCATION	SERVES	CFM	NOMINAL SIZE LXH	FACE VELOCITY	EAT °F DB	EAT °F WB	LAT °F DB	LAT °F WB	SP IN	SENS MBH	FLUID	GPM	EWT °F	LWT °F	WPD	ROWS	TOTAL MBH	REMARKS
						CHILLED WATER COOLING COIL													
TEMPCC-25	7TH FLR ROOF	5TH FLOOR	10555	72x72	293	78	65	51	50	0.39	316	CW	95	45	55	12.25	5	455	-

AIR FLOW MEASURING DEVICE

SYMBOL	LOCATION	DUCT	DUCT SIZE	DUCT TYPE	CFM MIN	CFM MAX	MAX SP LOSS MIN	FAN SYSTEM
1-AFM-AC25-SA	6A103	SA	33/16 OVAL	HV	11515	13000	-	1-AC-25
1-AFM-AC25-RA	6B101	RA	34x24	LV	7835	10150	-	1-AC-25

NOTES:

1. THE MIN CFM IS THE DESIGNED OPERATING CFM THE MAX IS THE SELECTED FAN CFM.
2. 1-AFM-AC25-RA IS EXISTING TO REMAIN, THE NUMBER IS A NEW DESIGNATION FOR EASE OF IDENTIFICATION OF UNIT.
3. CLEAN AIR FLOW STATIONS AFTER EACH PROJECT PHASE AND AFTER FINAL AIR BALANCING IS PERFORMED.

FAN SCHEDULE ABBREVIATIONS

- BI BACKWARD INCLINED
- CW CLOCKWISE
- CF CENTRIFUGAL FAN
- TH TOP HORIZONTAL
- WEF WALL EXHAUST FAN

EXHAUST AIR FAN SCHEDULE

FAN NO.	LOCATION	FAN CFM / SYSTEM CFM	ESP	FAN TYPE	ARRANGEMENT & DISCHARGE	WHEEL TYPE	TIP SPEED	FAN RPM	DRIVE	MOTOR NOM. HP	MOTOR PHASE VOLTAGE	VFD	REMARKS
1-EF-28	6TH FLOOR ROOM MECHANICAL ROOM 6A103	1075 810	2.0"	CF	CW-TH	BI	6408	2200	DIRECT	3/4	460/60/3	NO	-
1-EF-27	6TH FLOOR ROOM MECHANICAL ROOM 6A103	8648 8400	0.75	WEF	CFD	PROP	10,933	1160	DIRECT	3	460/60/3	NO	-

NOTE:

1. FANS SHALL BE SUPPLIED WITH THE FOLLOWING OPTIONS - FLANGED OUTLET, BELT GUARD, AND EXTENDED LUBE LINES.
2. FANS SHALL BE SUPPORTED WITH AN INERTIA BASE.
3. PROVIDE ADJUSTABLE POTENTIOMETER ON ALL DIRECT DRIVE EXHAUST FANS FOR FAN BALANCING.

WATER FLOW MEASURING DEVICE

SYMBOL	LOCATION	SYSTEM	TYPE	CAPACITY GPM	SIZE	REMARKS
1-FM-25-HW	6A103	HOT WATER	VENTURI	20.0	1 1/2"	-
1-FM-25-CW	6A103	CHILLED WATER	VENTURI	120.9	3"	-

STEAM HUMIDIFIER SCHEDULE

SYMBOL	LOCATION	SERVES	CFM	OUTPUT LBS/HR	SUPPLY STEAM PSIG	No, OF MANIFOLDS	ENT RH	LVG RH	ENT OAT	DUCT TEMP	DUCT SIZE	TRAP LBS /HR	SYSTEM
SH-5A167	6A103	OR 5A167	2530	78	10	2	4.06	77.3	-10°F	55°F	24x12	500	AC-24
SH-5A168	6A103	OR 5A168	2210	68	10	2	4.06	77.3	-10°F	55°F	22x12	500	AC-24

NOTE:

1. HUMIDIFIERS SHALL BE JACKETED TYPE AND SHALL BE CAPABLE OF HAVING LIVE MOTIVE STEAM TO LIFT THE CONDENSATE.

RETURN AIR FAN SCHEDULE

FAN NO.	LOCATION	FAN CFM / SYSTEM CFM	S. P.	FAN TYPE	ARRANGEMENT & DISCHARGE	WHEEL TYPE	OUTLET VELOCITY	FAN RPM	DRIVE	MOTOR NOM. HP	MOTOR PHASE VOLTAGE	VFD	REMARKS
1-RAF-25	EQUIPMENT ROOM 6A103	10150 7835	1.5"	CF	CCW-TH	AF	1963	903	BELT	5	3-460	YES	-

NOTE:

1. FANS SHALL BE SUPPLIED WITH THE FOLLOWING OPTIONS - FLANGED OUTLET, BELT GUARD, AND EXTENDED LUBE LINES.
2. FANS SHALL BE SUPPORTED WITH AN INERTIA BASE.

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"Bid Document Update"

Revisions: Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL ENGINEER TIMOTHY M. EARHART

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: MECHANICAL SCHEDULES

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

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Project Number: 642-11-120

Building Number: TWO

Drawing Number: M601

Dwg. 35 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

FGI ASHRAE 2013-170 TABLE 7-1

ROOM # - NAME	FUNCTION	ROOM AREA SF	ROOM HEIGHT FT	ROOM VOLUME CU FT	AIA TOTAL AIR CHANGE RATE/HR	ACTUAL TOTAL AIR CHANGE RATE/HR	AIA OUTDOOR AIR CHANGE RATE/HR	ACTUAL OUTDOOR AIR CHANGE RATE/HR	AIA AIR MOVEMENT RELATIONSHIP	RELATIVE HUMIDITY %	SUPPLY CFM	RETURN CFM	EXHAUST CFM	TRANSFER AIR TO/FROM
5B108A - WAITING ROOM	ER WAITING ROOMS	768	9	6912	12	12.2	2	3.1	IN	MAX 65	1190	0	1400	210 FR 5B108G
5A173 - ANESTHESIA OFFICE 5	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A175 - ANESTHESIA OFFICE 4	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A176 - ANESTHESIA OFFICE 3	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A177 - ANESTHESIA OFFICE 2	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A178 - ANESTHESIA OFFICE 1	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A179 - 10 EXAM ROOMS C THRU J	RECOVERY ROOM	1146	9	10314	6	7.0	2	2.1	N/A	30-60	1200	0	0	1200 TO HALL 4
5A179A - OMNICELL	NOT REQUIRED BY FGI	93	8	744	N/A	6.9	N/A	2.1	N/A	N/R	85	85	0	0
5A179B - NOURISH	NOT REQUIRED BY FGI	50	8	400	N/A	15.0	N/A	3.4	N/A	N/R	75	0	100	25 FR C5-26
5A179E - NURSES STATION 2	NOT REQUIRED BY FGI	750	9	6750	N/A	4.4	N/A	1.3	N/A	N/R	500	500	0	0
5A179F - ELEC. CLOSET	NOT REQUIRED BY FGI	89	9	979	N/A	10.1	N/A	3.0	N/A	N/R	165	165	0	0
5A179G - STORAGE	NOT REQUIRED BY FGI	140	9	1260	N/A	4.8	N/A	1.4	N/A	N/R	100	100	0	0
5A179H - BED STORAGE	NOT REQUIRED BY FGI	149	9	1341	N/A	6.0	N/A	1.8	N/A	N/R	135	135	0	0
5A179R - SOILED UTILITY	TOILET ROOM	53	8	424	10	10.6	N/A	0.0	IN	N/R	0	0	75	75 FR C5-26
5A180 - ANTE ROOM 1	AII ISOLATION ANTEROOM	90	9	810	10	11.1	N/A	1.1	N/A	N/R	50	0	150	150 FR C5-26
5A180A - ISO 11	AII ISOLATION ANTEROOM	169	9	1521	10	12.2	N/A	3.1	N/A	N/R	260	0	310	50 FR 5A180
5A181 - ANTE ROOM 2	AII ISOLATION ANTEROOM	90	9	810	10	11.1	N/A	1.1	N/A	N/R	50	0	150	150 FR C5-26
5A181A - ISO 12	AII ISOLATION ANTEROOM	169	9	1521	10	12.2	N/A	3.1	N/A	N/R	260	0	310	50 FR 5A181
5A182 - CHIEF ANESTHESIA	NOT REQUIRED BY FGI	126	9	1134	N/A	7.9	N/A	2.4	N/A	N/R	150	150	0	0
5A183 - SECRETARY	NOT REQUIRED BY FGI	138	9	1242	N/A	8.2	N/A	2.5	N/A	N/R	170	170	0	0
5B101 - ICU DIR.	NOT REQUIRED BY FGI	143	9	1287	N/A	7.9	N/A	2.8	N/A	N/R	200	200	0	0
5B102 - ON-CALL 3	NOT REQUIRED BY FGI	115	9	1035	N/A	8.1	N/A	2.4	N/A	N/R	140	140	0	0
5B103 - ON-CALL 2	NOT REQUIRED BY FGI	115	9	1035	N/A	8.1	N/A	2.4	N/A	N/R	140	140	0	0
5B104 - ON-CALL 1	NOT REQUIRED BY FGI	115	9	1035	N/A	8.1	N/A	2.4	N/A	N/R	140	140	0	0
5B105 - CONFERENCE ROOM	NOT REQUIRED BY FGI	263	9	2367	N/A	17.7	N/A	5.3	N/A	N/R	700	700	0	0
5B108B - CONSULT	NOT REQUIRED BY FGI	129	8	1032	N/A	5.8	N/A	1.7	N/A	MAX 60	100	100	0	0
5B108C - TLT. 1	TOILET ROOM	70	8	560	10	10.7	N/A	0.0	IN	N/R	0	0	100	100 FR 5B108G
5B108D - TLT. 2	TOILET ROOM	70	8	560	10	10.7	N/A	0.0	IN	N/R	0	0	100	100 FR 5B108G
5B108E - CLEAN SUPPLY	CLEAN WORKROOM	79	8	632	4	7.1	2	2.1	OUT	MAX 60	75	0	0	75 TO 5B108G
5B108F - LOCKERS	NOT REQUIRED BY FGI	89	8	712	N/A	8.4	N/A	0.0	N/A	N/R	0	0	100	100 FR 5B108G
5B108G - NURSES STATION 1	NOT REQUIRED BY FGI	1090	9	9810	N/A	6.1	N/A	1.8	N/A	N/R	1000	565	0	300 TO 5B108C, 5B108D, 5B108F, 75 FR 5B108E, 210 TO 5B108A
5B109 - SPU #6 EXAM'S A THRU F	EXAMINATION ROOM	787	9	7083	6	6.4	2	1.9	N/A	MAX 60	750	0	0	750 TO C5-26
C5-26D - HALL 4	CORRIDOR	653	9	5877	2	18.4	N/A	1.8	N/A	N/R	600	1800	0	1200 FR 5A179
5C126 - O2 STORAGE	NOT REQUIRED BY FGI	84	8	672	N/A	8.9	N/A	0.0	N/A	N/R	0	0	100	100 FR C5-23
5C127 - STAFF TLT. 2	TOILET ROOM	72	8	576	10	10.4	N/A	0.0	IN	N/R	0	0	100	100 FR C5-23
5C140 - ICU DIRECTOR	NOT REQUIRED BY FGI	126	9	1134	N/A	9.0	N/A	2.7	N/A	N/R	170	170	0	0
5C148 - CORRIDOR 4	CORRIDOR	790	8	6320	2	12.9	N/A	2.4	N/A	N/R	440	0	550	0
5A168 - OR #1	PROCEDURE ROOM	366	9.7	3550	15	37.4	3	11.2	OUT	20-60	2210	0	1870	0
5A167 - OR #2	PROCEDURE ROOM	458	9.7	4443	15	34.2	3	10.3	OUT	20-60	2530	0	2100	0
C5-26C - HALL 3	CORRIDOR	194	9	1746	2	6.0	N/A	1.8	N/A	N/R	175	175	0	0
C5-23 - CORRIDOR 3 (EAST)	CORRIDOR	780	8	6240	2	4.0	N/A	1.2	N/A	N/R	420	320	0	100 TO 5A179J
C5-23 - CORRIDOR 3 (WEST)	CORRIDOR	686	8	5488	2	3.7	N/A	1.1	N/A	N/R	340	140	0	200 TO 5C127/5C126
C5-25 - CORRIDOR 2 (NORTH)	CORRIDOR	600	8	4800	2	8.0	N/A	2.4	N/A	N/R	640	640	0	0
C5-26 - HALL 1 NORTH	CORRIDOR	251	9	2259	2	6.1	N/A	1.8	N/A	N/R	230	130	0	25 TO 5A179B, 75 TO 5A179R
C5-26 - HALL 2 SOUTH	CORRIDOR	326	9	2934	2	15.3	N/A	1.8	N/A	N/R	300	750	0	750 FR 5B109, 300 TO 5A181/5A180
HAC 5A179J	JANITORS CLOSET	40	9	360	10	16.7	N/A	0.0	IN	N/R	0	0	100	100 FR C5-23

CONSTANT / VARIABLE VOLUME BOX SCHEDULE

SYMBOL	LOCATION	SERVES	CFM		BOX DIMENSIONS			INLET DUCT SIZE	NOM COIL SIZE OR DISCH DUCT W x H	AUXILIARY HEATING COIL										MAX APD (IN)	REMARKS
			MIN	MAX	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)			CFM	EAT °F	LAT °F	EWT °F	LWT °F	MAX WPD FT	GPM	ROWS	TOTAL MBH			
CVB-5A179-1	6B101	PACU HALL	600	600	29	16	15	12	16x15	600	55	85	180	129.6	0.09	0.8	2	19.6	0.12	-
CVB-5A179-2	6B101	Hall 5A179, Sto 5A179G, BS 5A179H	510	510	29	12	10	8	12x10	510	55	90	180	135.5	0.08	0.5	2	19.5	0.12	-
CVB-5A179C	6B101	PACU 9	120	120	29	16	15	12	16x15	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179D	6B101	PACU 10	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179E	6B101	Nurse Station 2	500	500	29	12	10	8	12x10	500	55	89	180	133.2	0.16	0.8	2	18.2	0.17	-
CVB-5A179F	6B101	Elect Closet 5A179F	0	165	29	12	8	5	12x8	-	-	-	-	-	-	-	-	-	0.02	-
CVB-5A179K	6B101	PACU 7	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179L	6B101	PACU 6	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179M	6B101	PACU 5	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179N	6B101	PACU 4	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179O	6B101	PACU 3	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179P	6B101	PACU 2	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A179Q	6B101	PACU 1	120	120	29	12	8	5	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5A180A	6B101	ISO II & Ante 5A180	310	310	29	14	12 1/2	9	14x12 1/2	310	55	90	180	140.1	0.08	0.6	2	11.6	0.12	-
CVB-5A181A	6B101	ISO II & Ante 5A181	310	310	29	14	12 1/2	10	14x12 1/2	310	55	90	180	140.1	0.08	0.6	2	11.6	0.12	-
CVB-5A179J	6B101	PACU 8	120	120	29	12	8	6	12x8	120	55	113	180	149.2	0.06	0.5	2	7.5	0.02	-
CVB-5B108A	6B101	Waiting Room	1190	1190	29	12	10	8	12x10	1190	55	89	180	129.7	0.28	1.8	2	44.1	0.22	-
CVB-5B108G	6B101	Nurse Station 5B108G & 5B108E	1075	1075	29	12	10	8	12x10	1075	55	90	180	128.0	0.26	1.6	2	40.4	0.19	-
CVB-5B109	6B101	SPU Hall 5B109, SPU-1 & SPU-6	430	430	29	12	8	5	12x8	430	55	91	180	134.0	0.14	0.8	2	16.8	0.13	-
CVB-5B109B	6B101	SPU-2,3,4 & 5	320	320	29	12	8	6	12x8	320	55	90	180	130.8	0.08	0.5	2	12.0	0.08	-
CVB-C5-21	6B101	Corridor 4	440	440	29	12	10	7	12x10	440	55	92	180	127.5	0.09	0.7	2	18.0	0.17	-
CVB-C5-23	6B101	Corridor C5-23	340	340	29	12	10	7	12x10	340	55	88	180	130.0	0.08	0.5	2	12.2	0.09	-
CVB-C5-23	6B101	Corridor East C5-23	495	495	29	12	10	8	12x10	495	55	90	180	133.1	0.18	0.5	2	18.2	0.12	-
CVB-C5-25	6B101	Corridor 2 (North)	320	640	29	14	12 1/2	9	14x12 1/2	320	55	81	180	143.1	0.05	0.5	1	9.0	0.02	-
CVB-C5-26	6B101	Hall C5-26, Omni Cell 5A179A, NOURISH 51179B	690	690	29	12	8	5	12x8	690	55	87	180	131.5	0.12	1.0	2	23.6	0.15	-
VVB-5A173	6B101	Anesthesia 5 5A173	110	150	29	14	13	9	14x13	110	55	115	180	150.4	0.06	0.5	2	7.2	0.02	-
VVB-5A175	6B101	Anesthesia 4 5A175	110	150	29	12	10	7	12x10	110	55	115	180	150.4	0.06	0.5	2	7.2	0.02	-
VVB-5A176	6B101	Anesthesia 5A176	110	150	29	12	8	5	12x8	110	55	126	180	158.3	0.11	0.8	2	8.5	0.02	-
VVB-5A177	6B101	Anesthesia 2 5A177	110	150	29	12	8	5	12x8	110	55	115	180	150.4	0.06	0.5	2	7.2	0.02	-
VVB-5A178	6B101	Anesthesia Office 5A178	110	150	29	12	8	5	12x8	110	55	115	180	150.4	0.06	0.5	2	7.2	0.02	-
VVB-5A182	6B101	Chief Anesthesia 5A182	110	150	29	12	8	5	12x8	110	55	100	180	157.9	0.14	0.5	1	5.4	0.01	-
VVB-5A183	6B101	Secretary 5A183	120	170	29	12	8	5	12x8	120	55	98	180	157.1	0.14	0.5	1	5.6	0.01	-
VVB-5A184	6B101	Nurse Manager 5A184	120	170	29	12	8	5	12x8	120	55	98	180	157.1	0.14	0.5	1	5.6	0.01	-
VVB-5B101	6B101	ICU Director 5B101	120	200	29	12	8	5	12x8	120	55	98	180	157.1	0.14	0.5	1	5.6	0.01	-
VVB-5B102	6B101	On-Call 3 5B102	90	140	29	12	8	5	12x8	90	55	122	180	153.2	0.06	0.5	2	6.5	0.02	-
VVB-5B103	6B101	On-Call 2 5B103	90	140	29	12	8	5	12x8	90	55	122	180	153.2	0.06	0.5	2	6.5	0.02	-
VVB-5B104	6B101	On-Call 5B104	90	140	29	12	8	5	12x8	90	55	122	180	153.2	0.06	0.5	2	6.5	0.02	-
VVB-5B105	6B101	Conference Room 5B105	175	700	29	12	8	6	12x8	175	55	107	180	139.8	0.04	0.5	2	9.8	0.02	-
VVB-5B108B	6B101	Consult 5B108B	90	100	29	12	8	5	12x10	90	55	122	180	153.2	0.06	0.5	2	9.8	0.02	-
VVB-5B156	6B101	Server Room 5B156	0	100	29	12	8	5	12x10	-	-	-	-	-	-	-	-	-	0.02	-
VVB-5A168	6A103	SPECIAL PROCEDURE #1 5A168	900	2210	31	20	17 1/2	14	20x17 1/2	2210	55	94	180	134.7	0.40	3.0	2	66.2	0.18	-
VVB-5A167	6A103	SPECIAL PROCEDURE #2 5A167	1050	2530	31	24	18	16	24x18	2530	55	93	180	137.7	0.70	3.5	2	72.4	0.24	-

EXHAUST TRACKING BOX SCHEDULE

SYMBOL	LOCATION	SERVES	CFM		L (IN)	W (IN)	H (IN)	INLET DUCT INCHES DIA	OUTLET DUCT INCHES DIM	MAX SP LOSS MIN	REMARKS
			MIN	MAX							
ETB-5B180A	6B101	1S0 II 5B180A & ANTE 5B180	310	310	18	12	10	7	12x10	0.4	-
ETB-5B181A	6B101	1S0 II 5B181A & ANTE 5B181	310	310	18	12	10	7	12x10	0.4	-
ETB-5A168	6A103	SPECIAL PROCEDURE #1 5A168	700	1870	18	24	18	16	24x18	0.4	-
ETB-5A167	6A103	SPECIAL PROCEDURE #2 5A167	850	2100	18	24	18	16	24x18	0.4	-

FULLY SPRINKLERED
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"Bid Document Update"	
Revisions:	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY M. EARHART
No. PE041997-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: MECHANICAL SCHEDULES

Approved:

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Project Number: 642-11-120

Building Number: TWO

Drawing Number: M602

Dwg. 36 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

DUCT SMOKE DETECTORS

EXISTING SMOKE CONTROL PANEL WILL CLOSE SMOKE/COMBINATION SMOKE DAMPER.
DI - SMOKE DETECTOR

DUCT MOUNTED AIRFLOW MEASURING DEVICE

AI - AIRFLOW

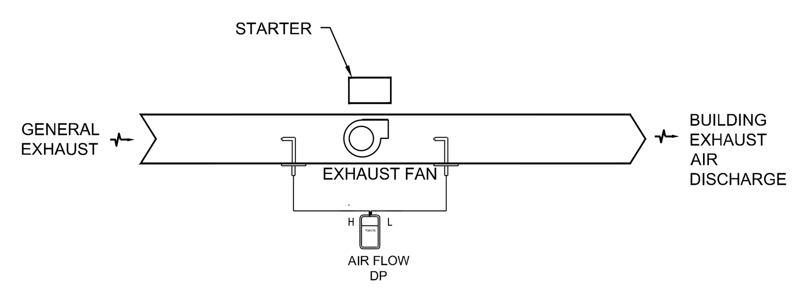
OR HEPA DIFFUSER ARRANGEMENT

MONITOR THE FOLLOWING AND COORDINATE:

AI FILTER PRESSURE DROP
ALARM PRESSURE DROP ALARM (ONE PER O.R.)

OR TEMPERATURE AND HUMIDITY SENSOR

TEMPERATURE AND HUMIDITY SENSORS LOCATED IN THE OPERATING ROOMS SHALL BE PROVIDED WITH A DIGITAL VISUAL READ OUT OF THE ROOM'S TEMPERATURE/HUMIDITY LEVELS.



EXHAUST SYSTEM 1-EF-26

SEQUENCE OF CONTROL

THE EXHAUST FAN SHALL BE PROGRAMMED TO OPERATE WITH THE SAME OCCUPIED / UNOCCUPIED SCHEDULE AS THE EXISTING EXISTING AIR HANDLING UNIT 1-AC-25 LOCATED IN THE 6TH FLOOR MER. CONNECT INTO THE NEAREST DDC PANEL. THE FAN SHALL BE STARTED BY THE BAS AND SHALL RUN CONTINUOUSLY.

THE FAN SHALL DE-ENERGIZE IF AHU 1-AC-25 IS SHUTDOWN BY THE AHU SMOKE DETECTORS. THE FAN SHALL BE CAPABLE OF MANUAL RESTART AT THE BAS AND SHALL START WITH THE AHU DURING A SOME PURGE OPERATION.

VARIABLE AIR VOLUME BOX

GENERAL:

120 VAC POWER SHALL BE SUPPLIED TO A JUNCTION BOX BY THE PROJECT ELECTRICAL CONTRACTOR. IT WILL BE THIS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ANY AND ALL POWER CONVERSION AND DISTRIBUTION REQUIRED TO PROPERLY POWER THE VAV BOX CONTROL SYSTEM. A MAXIMUM OF FOUR VAV BOXES SHALL BE SERVED BY EACH POWER CONVERSION/DISTRIBUTION DEVICE. DRIVE OPEN / DRIVE CLOSE ACTUATORS SHALL BE ACCEPTABLE FOR USE WITH THE HOT WATER COIL CONTROL VALVES.

RUN CONDITIONS:
THE UNIT SHALL OPERATE IN AN OCCUPIED MODE, EXCEPT DURING SCHEDULED UNOCCUPIED PERIODS:

OCCUPIED MODE: THE UNIT SHALL MAINTAIN

A 75°F (ADJ.) COOLING SETPOINT

A 70°F (ADJ.) HEATING SETPOINT.

UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN

A 75°F (ADJ.) COOLING SETPOINT.

A 65°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

ZONE UNOCCUPIED OVERRIDE:
A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:
THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

VAV W/REHEAT OCCUPIED: THE DAMPER SHALL BE OPEN TO MAINTAIN A MINIMUM SCHEDULED AIR FLOW. WHENEVER THE ROOM TEMPERATURE DROPS TO THE HEATING SETPOINT, THE REHEAT VALVE SHALL MODULATE OPEN THROUGHOUT THE REHEAT THROTTLING RANGE. WHENEVER THE ROOM TEMPERATURE RISES, THE REHEAT VALVE SHALL MODULATE CLOSED UNTIL FULLY CLOSED AT THE REHEAT SETPOINT. WHENEVER THE ROOM TEMPERATURE RISES TO THE COOL THROTTLING RANGE, THE DAMPER SHALL MODULATE OPEN THROUGHOUT THE COOL THROTTLING RANGE UNTIL BOX REACHES SCHEDULED MAXIMUM AIR FLOW. WHENEVER THE ROOM TEMPERATURE DROPS, THE DAMPER SHALL MODULATE CLOSED THROUGHOUT THE COOL THROTTLING RANGE TO MAINTAIN A MINIMUM SCHEDULED AIR FLOW.

UNOCCUPIED: THE VAV BOX SHALL OPERATE IN AN UNOCCUPIED MODE WHEN PROGRAMMED INTO THE SCHEDULE. THE DAMPER SHALL OPERATE AS IN THE OCCUPIED MODE, EXCEPT AT A LOWER HEATING SETPOINT (ADJ) AND A HIGHER COOLING SETPOINT (ADJ).

REHEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT.

RADIANT PANEL VALVE:

FOR SPACES WITH RADIANT PANEL AND A VVB BOX, A MODULATING VALVE SHALL BE PROVIDED TO ENABLE HEATING AT THE RADIANT PANEL. THE VALVE SHALL ONLY BE ENABLED TO OPEN WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN 40°F (ADJ) AND THERE IS A CALL FOR HEATING. WHEN THERE IS A CALL FOR HEATING, THE CONTROLLER SHALL MODULATE THE RADIANT PANEL VALVE SIMULTANEOUSLY WITH THE REHEAT COIL VALVE TO MAINTAIN HEATING SETPOINT.

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).

LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

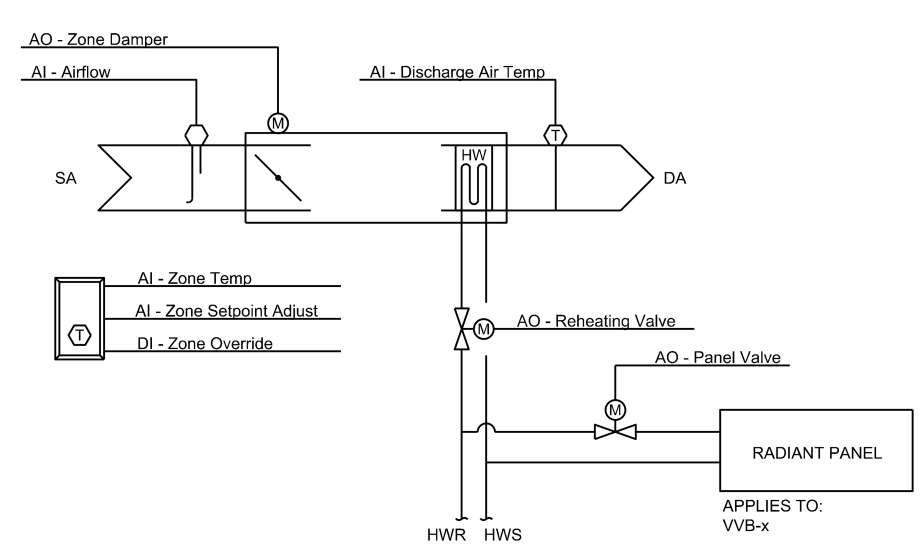
ZONE SCHEDULE:

THE ATC CONTRACTOR SHALL MEET WITH THE OWNER TO DETERMINE THE ROOMS OR ZONES FOR OCCUPANCY SCHEDULING. TYPICAL ROOMS TO BE SCHEDULED ARE OFFICES, CONFERENCE ROOMS, AND AREAS NOT OCCUPIED 24/7.

	HARDWARE POINTS				SOFTWARE POINTS					
POINT NAME	AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	GRAPHIC
ZONE TEMP	•							•		•
ZONE TEMP SETPOINT ADJUST	•							•		•
ZONE OVERRIDE			•					•		•
AIRFLOW (MAX AND MIN)	•							•		•
DISCHARGE AIR TEMP	•							•		•
ZONE DAMPER		•								•
REHEATING VALVE		•								•
RADIANT PANEL VALVE		•								•
OCCUPANCY SENSOR STATUS			•							•
AIRFLOW SETPOINT					•					•
HEATING MODE						•				
SCHEDULE							•			
HEATING SETPOINT								•		•
COOLING SETPOINT								•		•
HIGH ZONE TEMP									•	
LOW ZONE TEMP									•	
HIGH DISCHARGE AIR TEMP									•	
LOW DISCHARGE AIR TEMP									•	

NOTE: PROVIDE ANY ADDITIONAL POINTS REQUIRED FOR SEQUENCES OF OPERATION

VARIABLE AIR VOLUME BOX (VVB) CONTROL DIAGRAM



VARIABLE AIR VOLUME BOX W/ TRACKING EXHAUST

GENERAL:

120 VAC POWER SHALL BE SUPPLIED TO A JUNCTION BOX BY THE PROJECT ELECTRICAL CONTRACTOR. IT WILL BE THIS CONTRACTOR'S RESPONSIBILITY TO PROVIDE ANY AND ALL POWER CONVERSION AND DISTRIBUTION REQUIRED TO PROPERLY POWER THE VAV BOX CONTROL SYSTEM. A MAXIMUM OF FOUR VAV BOXES SHALL BE SERVED BY EACH POWER CONVERSION/DISTRIBUTION DEVICE. DRIVE OPEN / DRIVE CLOSE ACTUATORS SHALL BE ACCEPTABLE FOR USE WITH THE HOT WATER COIL CONTROL VALVES.

RUN CONDITIONS:
THE UNIT SHALL OPERATE IN AN OCCUPIED MODE, EXCEPT DURING SCHEDULED OCCUPIED PERIODS:

OCCUPIED MODE: THE UNIT SHALL MAINTAIN

A 75°F (ADJ.) COOLING SETPOINT. 66°F (ADJ.) COOLING SETPOINT FOR ORS.

A 70°F (ADJ.) HEATING SETPOINT. 75°F (ADJ.) HEATING SETPOINT FOR ORS.

UNOCCUPIED MODE: THE UNIT SHALL MAINTAIN

A 75°F (ADJ.) COOLING SETPOINT.

A 65°F (ADJ.) HEATING SETPOINT.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH ZONE TEMP: IF THE ZONE TEMPERATURE IS GREATER THAN THE COOLING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

LOW ZONE TEMP: IF THE ZONE TEMPERATURE IS LESS THAN THE HEATING SETPOINT BY A USER DEFINABLE AMOUNT (ADJ.).

ZONE SETPOINT ADJUST:
THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

ZONE UNOCCUPIED OVERRIDE:
A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

ROOM PRESSURE SENSOR:

ROOM PRESSURE MONITOR SHALL BE PROVIDED WITH A 30 SECOND TIME DELAY (ADJ.) TO PREVENT NUISANCE AIRFLOWS CAUSED BY OPENING AND CLOSING THE DOOR:
UNOCCUPIED:
- WHEN THE ZONE IS UNOCCUPIED THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.).
- WHEN THE ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED. RETURN TRACKING BOX SHALL TRACK SUPPLY AIR.
- WHEN ZONE TEMPERATURE IS LESS THAN ITS UNOCCUPIED HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT THE SETPOINT.

EXHAUST TRACKING BOX - FLOW CONTROL:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR FLOW AND MODULATE THE EXHAUST AIRFLOW TO TRACK THE SUPPLY.

VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:
THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

VAV W/REHEAT OCCUPIED:
THE DAMPER SHALL BE OPEN TO MAINTAIN A MINIMUM SCHEDULED AIR FLOW. WHENEVER THE ROOM TEMPERATURE DROPS TO THE HEATING SETPOINT, THE REHEAT VALVE SHALL MODULATE OPEN THROUGHOUT THE REHEAT THROTTLING RANGE. WHENEVER THE ROOM TEMPERATURE RISES, THE REHEAT VALVE SHALL MODULATE CLOSED UNTIL FULLY CLOSED AT THE REHEAT SETPOINT. WHENEVER THE ROOM TEMPERATURE RISES TO THE COOL THROTTLING RANGE, THE DAMPER SHALL MODULATE OPEN THROUGHOUT THE COOL THROTTLING RANGE UNTIL BOX REACHES SCHEDULED MAXIMUM AIR FLOW. WHENEVER THE ROOM TEMPERATURE DROPS, THE DAMPER SHALL MODULATE CLOSED THROUGHOUT THE COOL THROTTLING RANGE TO MAINTAIN A MINIMUM SCHEDULED AIR FLOW.

UNOCCUPIED:
THE VAV BOX SHALL OPERATE IN AN UNOCCUPIED MODE WHEN PROGRAMMED INTO THE SCHEDULE. THE DAMPER SHALL OPERATE AS IN THE OCCUPIED MODE, EXCEPT AT A LOWER HEATING SETPOINT (ADJ) AND A HIGHER COOLING SETPOINT (ADJ).

REHEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE REHEATING COIL VALVE OPEN ON DROPPING TEMPERATURE TO MAINTAIN ITS HEATING SETPOINT.

DISCHARGE AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

HIGH DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS GREATER THAN 120°F (ADJ.).

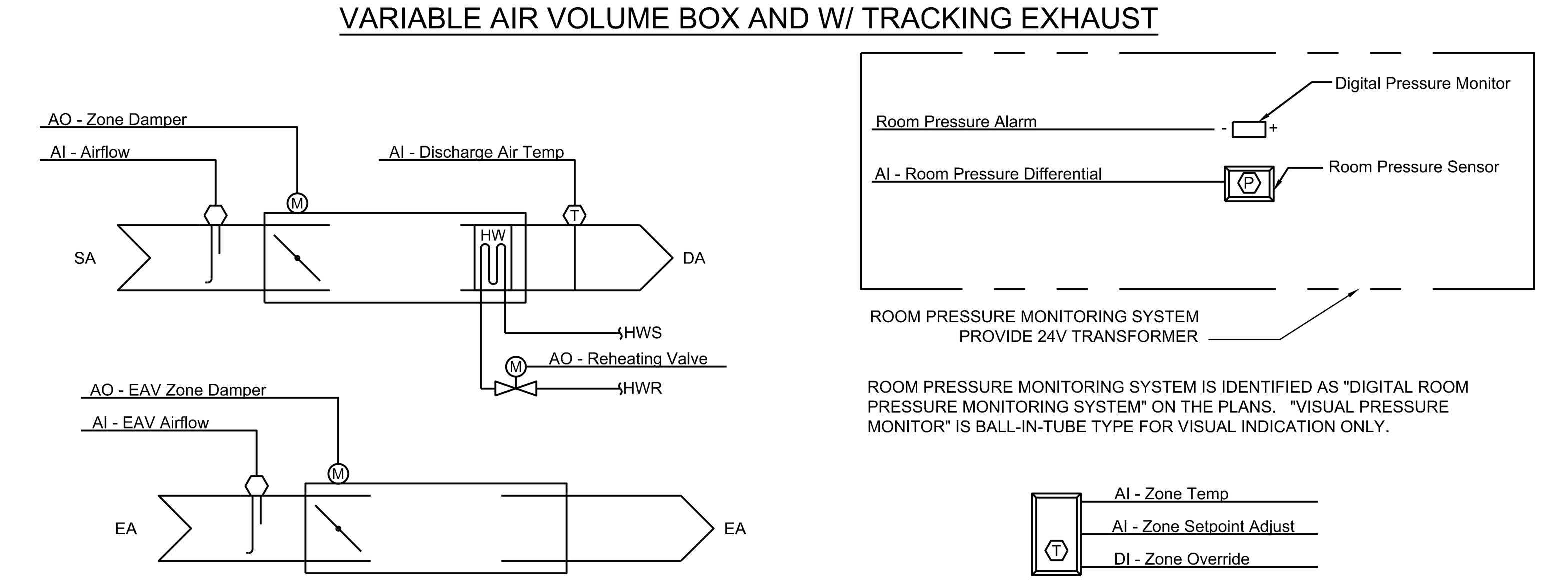
LOW DISCHARGE AIR TEMP: IF THE DISCHARGE AIR TEMPERATURE IS LESS THAN 40°F (ADJ.).

ROOM DIFFERENTIAL PRESSURE: IF DIFFERENCE IS LESS THAN 0.02" W.G. (ADJ.)

	HARDWARE POINTS				SOFTWARE POINTS					
POINT NAME	AI	AO	DI	DO	AV	DV	SCHED	TREND	ALARM	GRAPHIC
ZONE TEMP	•							•		•
ZONE TEMP SETPOINT ADJUST	•									•
AIRFLOW (MAX AND MIN)	•							•		•
DISCHARGE AIR TEMP	•							•		•
EXHAUST AIRFLOW	•							•	•	•
ROOM PRESSURE	•							•	•	•
ZONE PRESSURE SETPOINT ADJUST	•									•
ZONE DAMPER		•							•	•
EXHAUST AIR DAMPER		•						•		•
REHEATING VALVE		•						•		•
ZONE OVERRIDE			•					•		•
HEATING SETPOINT								•		•
COOLING SETPOINT								•		•
AIRFLOW SETPOINT					•			•		•
HEATING MODE						•		•		
SCHEDULE							•			
HIGH ZONE TEMP									•	
LOW ZONE TEMP									•	
HIGH DISCHARGE AIR TEMP									•	
LOW DISCHARGE AIR TEMP									•	
HIGH ZONE DIFFERENTIAL PRESSURE									•	
LOW ZONE DIFFERENTIAL PRESSURE									•	
OCCUPANCY SENSOR STATUS			•					•		•

NOTE: PROVIDE ANY ADDITIONAL POINTS REQUIRED FOR SEQUENCES OF OPERATION

VARIABLE AIR VOLUME BOX AND W/ TRACKING EXHAUST



ROOM PRESSURE MONITORING SYSTEM IS IDENTIFIED AS "DIGITAL ROOM PRESSURE MONITORING SYSTEM" ON THE PLANS. "VISUAL PRESSURE MONITOR" IS BALL-IN-TUBE TYPE FOR VISUAL INDICATION ONLY.

FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA PROFESSIONAL ENGINEER TIMOTHY M. EARHART No. PE041287-E

ARCHITECT/ENGINEERS:
levelHEADS architects + integrators
H.F. LENZ COMPANY

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Approved:
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Location: Philadelphia, Pennsylvania
Date: 04.28.16
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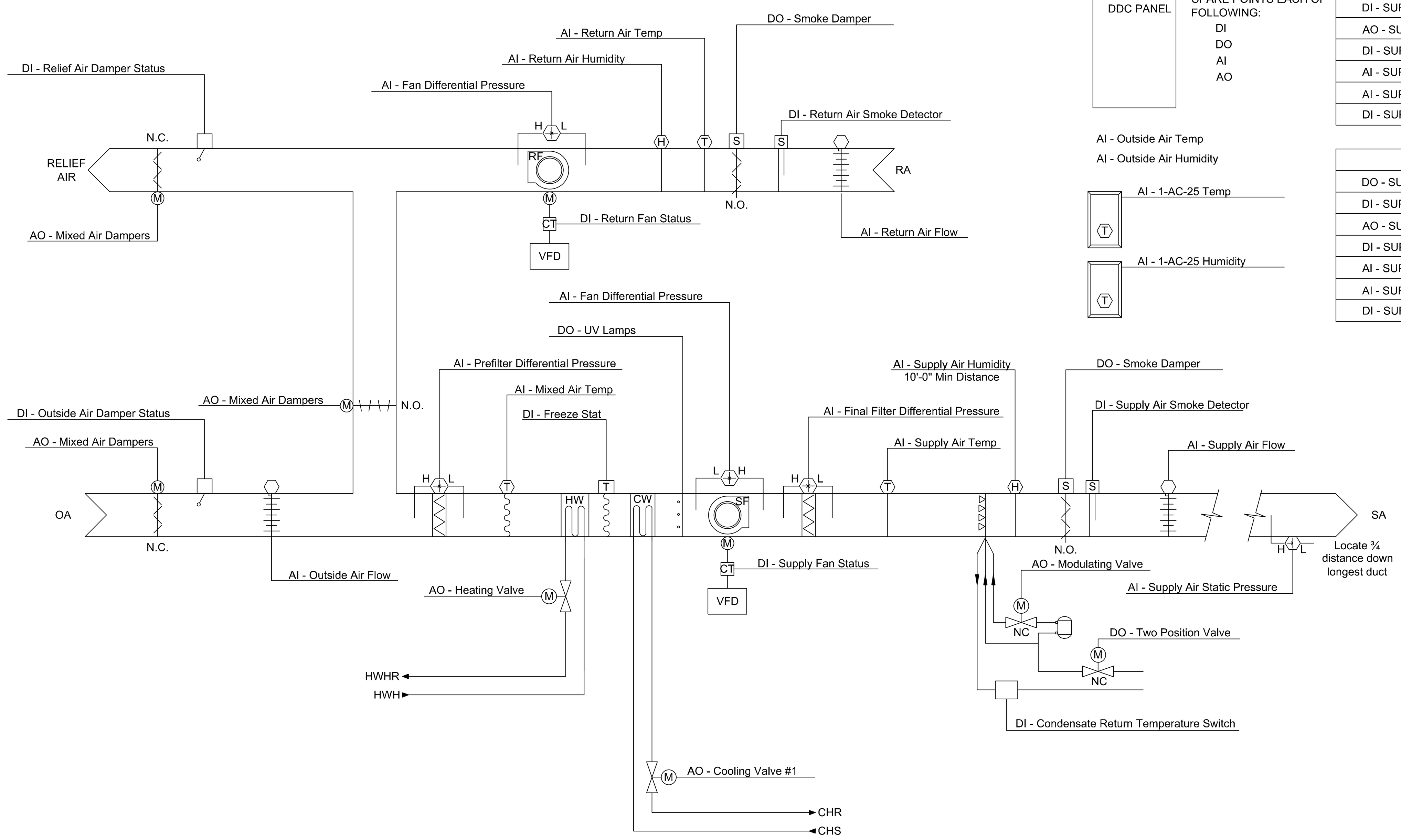
Drawn By: NJB
Project Number: 642-11-120
Building Number: TWO
Drawing Number: M701
Dwg. 37 of 61

Office of Construction and Facilities Management
Department of Veterans Affairs



1-AC-25 CONTROL DIAGRAM

DDC PANEL

PROVIDE WITH MIN 25% SPARE POINTS EACH OF FOLLOWING:
DI
DO
AI
AO

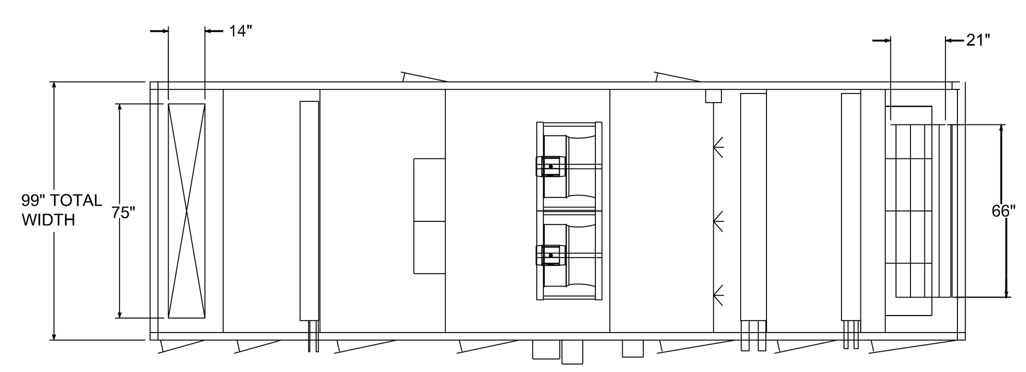
AI - Outside Air Temp
AI - Outside Air Humidity

AI - 1-AC-25 Temp

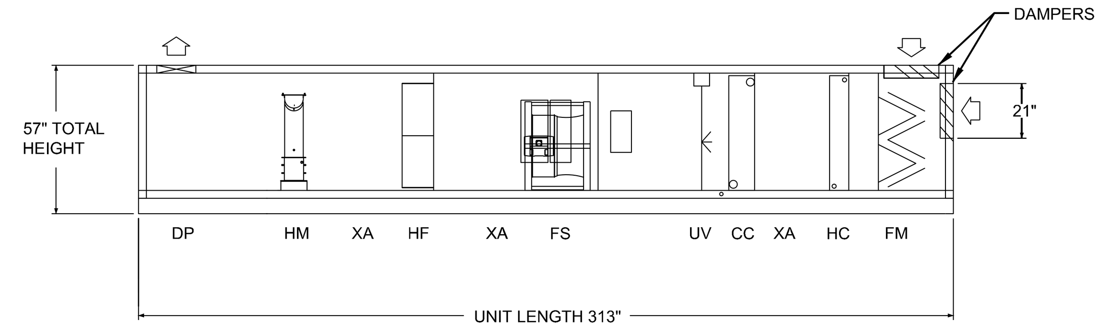
AI - 1-AC-25 Humidity

SUPPLY FAN VFD
DO - SUPPLY FAN - S/S
DI - SUPPLY FAN - STATUS
AO - SUPPLY FAN - SPEED CONTROL
DI - SUPPLY FAN - VFD RUN STATUS
AI - SUPPLY FAN - VFD CURRENT
AI - SUPPLY FAN - VFD POWER
DI - SUPPLY FAN - VFD ALARM STATUS

RETURN FAN VFD
DO - SUPPLY FAN - S/S
DI - SUPPLY FAN - STATUS
AO - SUPPLY FAN - SPEED CONTROL
DI - SUPPLY FAN - VFD RUN STATUS
AI - SUPPLY FAN - VFD CURRENT
AI - SUPPLY FAN - VFD POWER
DI - SUPPLY FAN - VFD ALARM STATUS



PLAN VIEW



SECTION VIEW

UNIT SEGMENTS

DP	DISCHARGE PLENUM
HM	HUMIDIFIER
XA	ACCESS
HF	HIGH EFFICIENCY FILTER
FS	FAN SECTION
UV	ULTRA VIOLET LIGHT
CC	COOLING COIL
HC	HEATING COIL
FM	FILTER MIXING BOX

1-AC-25 SEQUENCES OF OPERATION

RUN CONDITIONS - REQUESTED:
THE UNIT SHALL RUN CONTINUOUSLY.

EMERGENCY SHUTDOWN:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING AN EMERGENCY SHUTDOWN SIGNAL.

FREEZE PROTECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A FREEZESTAT STATUS.

SMOKE DETECTION:
THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTOR STATUS.

SUPPLY AIR TEMPERATURE SETPOINT:
WHEN INDEXED TO THE OCCUPIED COOLING MODE BY THE DDC SYSTEM, THE UNIT SUPPLY AND RETURN AIR FANS SHALL RUN CONTINUOUSLY AND THE MODULATING OUTDOOR AIR DAMPER AND RELIEF AIR DAMPER SHALL OPEN TO THEIR SCHEDULED MINIMUM POSITION. WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 50 DEGF (ADJ.), THE HEATING COIL CONTROL VALVE SHALL MODULATE OPEN TO THE HEATING COIL TO MAINTAIN SUPPLY AIR TEMPERATURE AS DETERMINED BY THE FOLLOWING FULLY ADJUSTABLE RESET SCHEDULE. ON A RISE IN SUPPLY AIR TEMPERATURE ABOVE SETPOINT (ADJ.), THE HEATING COIL CONTROL VALVE SHALL MODULATE CLOSED TO THE COIL. ON A FURTHER RISE IN SUPPLY AIR TEMPERATURE, THE OUTDOOR AIR DAMPER SHALL MODULATE OPEN FROM ITS MINIMUM SETTING TO 100% OPEN. THE RETURN AIR DAMPERS AND RELIEF AIR DAMPERS SHALL MODULATE CLOSED ACCORDINGLY. WHENEVER THE OUTDOOR AIR TEMPERATURE RISES ABOVE 50 DEGF (ADJ.), THE CONTROL VALVE SHALL BE CLOSED TO THE HEATING COIL. IF MECHANICAL COOLING IS NOT AVAILABLE, THE OUTDOOR AND RETURN AIR DAMPERS SHALL MODULATE IN AN ATTEMPT TO MAINTAIN SUPPLY AIR SETPOINT AS DETERMINED BY AN OPERATOR ADJUSTABLE (ADJ.) RESET SCHEDULE.

OAT	SAT
20 DEGF & LOWER	65 DEGF
65 DEGF & ABOVE	55 DEGF

ON A RISE IN OUTDOOR AIR TEMPERATURE ABOVE ECONOMIZER ENABLE SETPOINT (ADJ.), THE O.A. DAMPER SHALL BE POSITIONED TO SCHEDULED MINIMUM O.A. POSITION, THE RETURN AIR DAMPERS AND RELIEF AIR DAMPERS SHALL POSITION ACCORDINGLY, AND THE COOLING COIL SHALL CYCLE AS REQUIRED TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- OUTSIDE AIR DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- OUTSIDE AIR DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.
- RELIEF AIR DAMPER FAILURE: COMMANDED OPEN, BUT THE STATUS IS CLOSED.
- RELIEF AIR DAMPER IN HAND: COMMANDED CLOSED, BUT THE STATUS IS OPEN.

RELIEF AIR DAMPER CONTROL: THE DDC SYSTEM SHALL MODULATE THE RELIEF AIR DAMPER TO MAINTAIN AN OFFSET OF CFM (ADJ.) BETWEEN OUTDOOR AIR AND EXHAUST AIR QUANTITIES.

SUPPLY FAN:
SUPPLY AIR FAN CAPACITY CONTROL: WHEN THE SUPPLY AIR FAN HAS BEEN ENERGIZED AND ITS STATUS HAS BEEN VERIFIED, THE FAN CAPACITY CONTROL LOOPS SHALL BE ENABLED. THE REMOTE SUPPLY AIR DUCT STATIC PRESSURE SENSOR SHALL MODULATE THE SUPPLY AIR FAN VARIABLE SPEED DRIVE TO MAINTAIN A SUPPLY AIR DUCT STATIC PRESSURE SETPOINT OF 1.00 IN. W.C. (ADJ.). THE DUCT STATIC PRESSURE TRANSDUCER SHALL BE REFERENCED TO THE SERVICE SPACE VIA A SPACE TYPE SHIELDED STATIC PRESSURE PROBE. THE VSD SPEED SHALL BE VARIED AS REQUIRED TO MAINTAIN REMOTE STATIC SETPOINT SUBJECT TO HIGH POSITIVE AND HIGH NEGATIVE SUPPLY FAN STATIC PRESSURE LIMITS. DDC SHALL POLL VAV BOX POSITIONS AND REDUCE THE STATIC PRESSURE SENSOR SETPOINT TO MAINTAIN MINIMUM REQUIRED SP AT EACH VAV BOX (95% OPEN OF ANY ONE BOX WILL BE THRESHOLD).

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- SUPPLY FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- SUPPLY FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- SUPPLY FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

RETURN FAN:
RETURN AIR FAN CAPACITY CONTROL: WHEN THE RETURN AIR FAN HAS BEEN ENERGIZED AND ITS STATUS HAS BEEN VERIFIED, THE FAN CAPACITY CONTROL LOOPS SHALL BE ENABLED. THE VSD SPEED SHALL BE VARIED AS REQUIRED TO MAINTAIN AN OFFSET OF CFM (ADJ.) BETWEEN SUPPLY AIR AND RETURN AIR QUANTITIES, SUBJECT TO HIGH POSITIVE AND HIGH NEGATIVE RETURN FAN STATIC PRESSURE LIMITS. AIRFLOW OFFSET SHALL BE THE DIFFERENCE OF SUPPLY AIR AND RETURN AIR DIFFUSER/REGISTER AIRFLOWS SCHEDULED ON DRAWINGS.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- RETURN FAN FAILURE: COMMANDED ON, BUT THE STATUS IS OFF.
- RETURN FAN IN HAND: COMMANDED OFF, BUT THE STATUS IS ON.
- RETURN FAN RUNTIME EXCEEDED: STATUS RUNTIME EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

COOLING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE PRIMARY COOLING COIL VALVE TO MAINTAIN DISCHARGE COOLING SETPOINT.

THE COOLING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS GREATER THAN 47°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS ABOVE COOLING SETPOINT.
- AND THE FAN STATUS IS ON.

THE COOLING COIL VALVE SHALL OPEN TO 50% (ADJ.) WHENEVER THE FREEZESTAT IS ON.

HEATING COIL VALVE:
THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HEATING COIL VALVE TO MAINTAIN ITS HEATING SETPOINT.

THE HEATING SHALL BE ENABLED WHENEVER:

- OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.).
- AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT.
- AND THE FAN STATUS IS ON.

THE HEATING COIL VALVE SHALL OPEN TO 100% (ADJ.) WHENEVER THE FREEZESTAT IS ON.

HUMIDIFICATION MODE:
THE SUPPLY AIR HIGH LIMIT HUMIDITY SENSOR SETPOINT SHALL BE CAPABLE OF BEING ADJUSTED FROM EITHER THE CENTRAL OR LOCAL DDC CONTROL PANEL.

THE RETURN AIR HUMIDITY SENSOR LOCATED IN THE RETURN AIR DUCT SHALL MODULATE THE UNIT'S HUMIDIFIER STEAM CONTROL VALVE TO MAINTAIN THE SPACE HUMIDITY. THE HIGH LIMIT HUMIDITY SENSOR SHALL MODULATE THE UNIT'S HUMIDIFIER STEAM CONTROL VALVE TO MAINTAIN A MINIMUM OF 35% ADJUSTABLE RELATIVE HUMIDITY IN THE SPACES. THE SUPPLY AIR HIGH LIMIT HUMIDITY SENSORS SHALL OVERRIDE THE RETURN AIR HUMIDITY SENSOR AND MODULATE THE HUMIDIFIER CONTROL VALVES TO MAINTAIN A MAXIMUM SUPPLY AIR RELATIVE HUMIDITY OF 80% (ADJ.). IF THE HUMIDITY SETPOINT CANNOT BE MAINTAINED WHEN THE HUMIDIFIERS ARE OPERATING, AN APPROPRIATE ALARM SHALL BE PROVIDED THROUGHOUT THE DDC NETWORK.

THE HUMIDIFIER STEAM CONDENSATE RETURN TEMPERATURE SWITCH SHALL FUNCTION TO CLOSE OFF THE HUMIDIFIER CONTROL VALVE UNTIL THE CONDENSATE TEMPERATURE APPROACHES STEAM TEMPERATURE. THE HUMIDIFIER CONTROL VALVE AND THE HUMIDIFIER STEAM SUPPLY VALVE WILL BE CLOSED TO THE HUMIDIFIER WHENEVER THE SUPPLY FAN IS OFF. THE TWO POSITION STEAM ISOLATION VALVE SHALL BE CLOSED WHEN THERE IS NO HUMIDIFICATION REQUIRED.

PREFILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE PREFILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- PREFILTER CHANGE REQUIRED: PREFILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

FINAL FILTER DIFFERENTIAL PRESSURE MONITOR:
THE CONTROLLER SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FINAL FILTER.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- FINAL FILTER CHANGE REQUIRED: FINAL FILTER DIFFERENTIAL PRESSURE EXCEEDS A USER DEFINABLE LIMIT (ADJ.).

SUPPLY AIR TEMPERATURE:
THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

ALARMS SHALL BE PROVIDED AS FOLLOWS:

- HIGH SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).
- LOW SUPPLY AIR TEMP: IF THE SUPPLY AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

UV LAMPS:
THE UV LAMP SHALL BE ENABLED ANYTIME THE UNIT IS COMMANDED ON. THE UV LAMP SHALL HAVE A HARD WIRE INTERLOCK WITH THE ACCESS DOOR TO SHUT OFF THE UV LAMP WHENEVER THE DOOR IS OPEN.

AN ALARM SHALL BE PROVIDED WHENEVER THE ACCESS DOOR IS OPEN.

GRAPHICS AND MONITORING:
BAS FRONT END SYSTEM SHALL INCLUDE GRAPHICS SHOWING ALL HVAC SYSTEMS, ALARMS AND OTHER POINTS SHOWN ON THE DRAWINGS AND INCLUDED IN THE SPECIFICATIONS AND IN ACCORDANCE WITH VA REQUIREMENTS. VFDs SHALL REPORT OPERATIONAL AND ALARM CONDITIONS TO THE BAS.

DDC PANELS:
PROVIDE NETWORK AREA CONTROL PANELS IN ACCORDANCE WITH THE SPECS TO BE LOCATED IN THE RESPECTIVE MECHANICAL ROOMS TO SERVE TERMINAL BOXES AND OTHER EQUIPMENT.

FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions: | Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL ENGINEER
TIMOTHY M. EARHART

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: MECHANICAL ATC CONTROLS

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: NJB

Project Number: 642-11-120

Building Number: TWO

Drawing Number: M702

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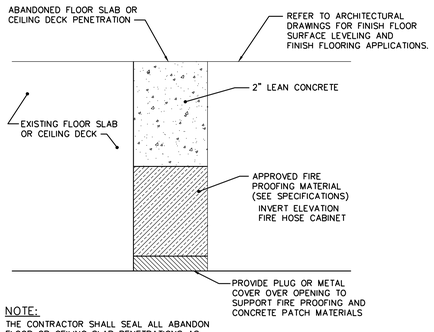
Office of Construction and Facilities Management

Department of Veterans Affairs

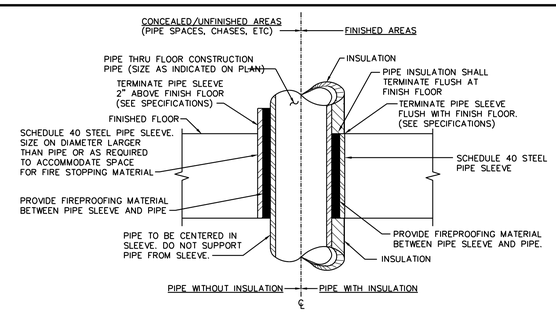
VA FORM 08-6231



NOTE:
THE CONTRACTOR SHALL SEAL ALL ABANDON FLOOR OR CEILING SLAB PENETRATIONS AS DETAILED IN A MANNER TO MAINTAIN THE TIME/ FIRE RATED CONSTRUCTION SPECIFIED.

1 TYPICAL FLOOR SLAB PATCHING DETAIL FOR REMOVED OR ABANDONED PIPE PENETRATIONS

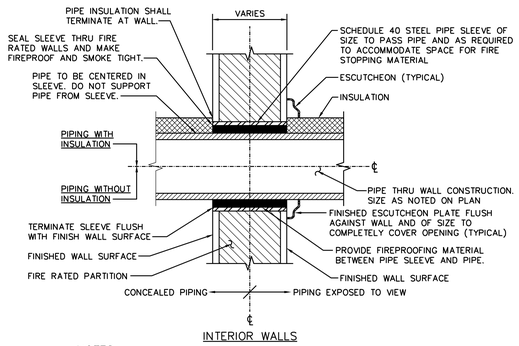
NO SCALE



NOTES:
1. APPROVED FIRE STOPPING SHALL BE PROVIDED AND INSTALLED AT ALL EXISTING AND NEW FLOOR/CEILING PENETRATIONS TO MAINTAIN TIME RATED STRUCTURAL FLOOR/CEILING SLAB.
2. APPROVED SPLIT PIPE SLEEVE ASSEMBLY SHALL BE PROVIDED WHERE EXISTING FLOOR/CEILING SLAB PENETRATION OCCURS. (SEE SPECIFICATIONS)

2 PIPE SLEEVE THRU FLOOR/ CEILING DETAIL

NO SCALE

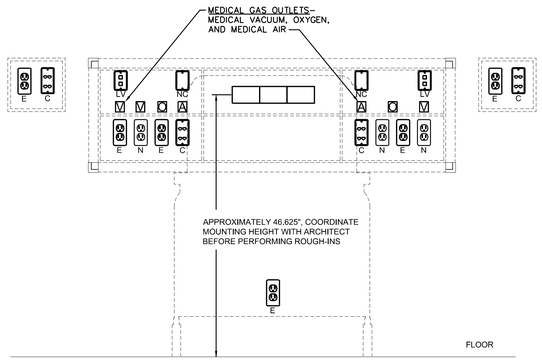


INTERIOR WALLS

NOTES:
1. APPROVED FIRE STOPPING SHALL BE PROVIDED AND INSTALLED AT ALL EXISTING AND NEW WALL PENETRATION THRU TIME RATED WALLS
2. APPROVED SPLIT PIPE SLEEVE ASSEMBLY SHALL BE PROVIDED WHERE EXISTING WALL PENETRATIONS OCCUR THRU EXISTING TIME RATED WALLS AND PARTITIONS. (SEE SPECIFICATIONS)

3 FLOOR AND FUNNEL DRAIN DETAILS

NO SCALE



NOTE:
HEADWALL UNIT PROVIDED BY GENERAL CONTRACTOR.

4 TYPICAL PREFABRICATED BEDSIDE PATIENT UNIT (PBPU DETAIL

NO SCALE

5

6

PLUMBING SYMBOLS

- EXISTING SANITARY/WASTE SEWER LINE (SAN)
- SANITARY WASTE SEWER LINE (SAN)
- ACID — SANITARY ACID WASTE SEWER LINE (AW)
- BRANCH VENT LINE (V)
- ACID — BRANCH ACID VENT LINE (AV)
- COLD WATER LINE (CW)
- HOT WATER LINE (HW)
- HOT WATER RETURN LINE (HWR)
- CDL — CONDENSATE DRAIN LINE (CDL)
- O — OXYGEN LINE
- MA — MEDICAL AIR LINE
- N — NITROGEN LINE
- MV — MEDICAL VACUUM LINE
- WAGD — WASTE ANESTHESIA GAS DISPOSAL LINE
- O — OXYGEN OUTLET (O)
- MV — MEDICAL VACUUM OUTLET (MV)
- MA — MEDICAL AIR OUTLET (MA)
- NO — NITROUS OXIDE OUTLET (NO)
- WAGD — WASTE ANESETHESIA GAS DISPOSAL OUTLET (WAGD)
- BALL VALVE
- COMBINATION BALANCING/ SHUT-OFF VALVE
- CHECK VALVE
- HOSE BIBB
- NEW CONNECTION TO EXISTING
- CAP OR PLUG
- CO — CLEANOUT
- INDICATES EXISTING PIPING, FIXTURES OR EQUIPMENTS TO BE REMOVED
- BP — REDUCED PRESSURE ZONE TYPE BACKFLOW PREVENTER
- WATER FILTER
- STRAINER
- FD — FLOOR DRAIN
- XX — INDICATES NOTE LOCATED ELSEWHERE ON DRAWING AND NOTE NUMBER
- XXX / YYYYYY — DETAIL/PLAN REFERENCE SYMBOL; INDICATES DETAIL/PLAN NUMBER; INDICATES DRAWING No FOR WHICH THE DETAIL/PLAN IS LOCATED
- X / X — IDENTIFIES THE SANITARY, WASTE AND VENT STACKS
- WATER HAMMER ARRESTOR

GENERAL PLUMBING NOTES:

1. COORDINATE LOCATIONS OF ALL LINES AND EQUIPMENT WITH OTHER CONTRACTORS.
2. REMOVE ALL EXPOSED PIPING NOT A PART OF THE REMODELED SYSTEM IN THE EXISTING BUILDING. RENDER CONCEALED PIPING NOT A PART OF THE REMODELED SYSTEM IN THE EXISTING BUILDING COMPLETELY "DEAD". WHERE CONCEALED PIPING IS IN EXISTING PARTITIONS TO BE REMOVED OR INTERFERES WITH REMODELING CONSTRUCTION, THE CONTRACTOR SHALL REMOVE PIPING AND RENDER REMAINING PIPING COMPLETELY "DEAD" OR RELOCATE PIPING IF IT IS PART OF THE REMODELED SYSTEM.
3. AT LOCATIONS INDICATED TO CONNECT NEW SANITARY LINES TO EXISTING SANITARY SEWER. DETERMINE EXACT LOCATION, SIZE AND ELEVATION AT SITE BEFORE INSTALLING NEW SEWER LINES.
4. AT LOCATIONS INDICATED TO CONNECT NEW WATER LINES TO EXISTING WATER LINES. DETERMINE EXACT LOCATION AND SIZE AT SITE BEFORE INSTALLING NEW WATER LINES.
5. THE CONTRACTOR SHALL INSULATE ALL NEW AND UNINSULATED EXISTING PIPING VALVES AND FITTINGS PART OF THE REMODELED AND EXISTING SYSTEM TO REMAIN. (REFER TO SPECIFICATIONS)
6. LIGHT LINES INDICATE EXISTING PIPING TO REMAIN. HEAVY LINES INDICATE NEW PIPING.
7. RUN DRAINAGE PIPE AS CLOSE AS POSSIBLE BELOW FLOOR SLAB OF PLAN ON WHICH SHOWN.
8. MAKE OFFSETS IN VERTICAL WASTE, SOIL, AND VENT PIPES AT 45 DEGREE ANGLE WHEREVER POSSIBLE.
9. WHERE SUSPENDED CEILINGS ARE INSTALLED, RUN PIPING ABOVE CEILING.
10. FOR COMPLETE ROOM NAMES AND NUMBERS, SEE ARCHITECTURAL DRAWINGS.
11. THE CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED PIPE SLEEVES AND FIRE STOPPING AT ALL NEW AND EXISTING FLOOR/CEILING SLAB AND WALL PENETRATIONS WITHIN THE LIMITS OF THE CONTRACT WORK AREA TO MAINTAIN THE TIME RATED CONSTRUCTION SPECIFIED. (REFER TO DETAILS ON THIS DRAWING)
12. MEDICAL GAS WORK SHALL COMPLY WITH REQUIREMENTS OF NFPA 99 (2015 EDITION), TO INCLUDE WORKER QUALIFICATIONS AND CERTIFICATION BY AN INDEPENDENT TESTING AGENCY.

SYMBOL IDENTIFICATION

FL MTD	FLOOR MOUNTED
W MTD	WALL MOUNTED
FV	FLUSH VALVE
DS	DOWNSPOUT
GPM	GALLON PER MINUTE
C AND H (C/H)	COLD AND HOT
WP (W)	WASTE PIPE
SP (S)	SOIL PIPE
VP (V)	VENT PIPE
CW (C)	COLD WATER
HW (H)	HOT WATER
EX	EXISTING
(R)	RELOCATED
ABV	ABOVE
BLW	BELOW
CLG	CEILING
FLR	FLR
INV ELEV	INVERT ELEVATION
FHC	FIRE HOSE CABINET
GPF	GALLONS PER FLUSH
VV	VA PROVIDED & INSTALLED
CC	CONTRACTOR PROVIDED & INSTALLED

PLUMBING FIXTURE CONNECTION SCHEDULE

FIXTURE	WATER	WASTE, SOIL & VENT (UNO)
WATER CLOSET (FLUSH VALVE)	1 1/4"C	4"S & 2"V
LAVATORY	1/2"H & C	1 1/2"W & V
MISC SINK	1/2"H & C	1 1/2"W & V
SERVICE SINK	1/2"H & C	3"W
DRINKING FOUNTAIN	1/2"C	1 1/2"W & V

PLUMBING FIXTURE SCHEDULE

NUMBER	TYPE OF FIXTURE	DRAINAGE WP*	DRAINAGE VP*	WATER CW*	WATER HW*	REMARKS (SEE NOTE)
P-101	WATER CLOSET FLOOR MOUNTED-ADA	4"	2"	1 1/4"	---	VITREOUS CHINA SENSOR OPERATED FLUSH VALVE - SEE NOTE 1, 2, & 3
P-413	CASEWORK LAVATORY 4" OC INTEGRAL COUNTER TOP VANITY TYPE	1 1/2"	1 1/2"	1/2"	1/2"	4" WRISTBLADE GOOSENECK FAUCET SEE NOTE 5
P-414	LAVATORY 18"x20"-4" OC VITREOUS CHINA-CONCEAL ARM CARRIER ADA/HANDICAP ACCESSIBLE (TOILET ROOM FACILITY)	1 1/2"	1 1/2"	1/2"	1/2"	4" WRISTBLADE GOOSENECK FAUCET SEE NOTE 4, 5
P-502	SERVICE SINK	4"	2"	3/4"	3/4"	SERVICE SINK FAUCET
P-519	SURGEONS SCRUB SINK TWO STATION OPERATING ROOM AREA	2"	2"	1/2"	1/2"	STAINLESS STEEL SENSOR OPERATED FAUCETS SEE NOTE 1, 2, 5, 7
P-528	CASEWORK SINK COUNTERTOP CASEWORK DROP , 8" OC 19 1/2" X 22" SINGLE COMPARTMENT STAINLESS STEEL	2"	2"	1/2"	1/2"	4" WRISTBLADE GOOSENECK FAUCET SEE NOTE 4, 5
P-610	BI LEVEL ELECTRIC WATER COOLER	1 1/2"	1 1/2"	1/2"		SEE NOTES 1, 6

FOOTNOTES:

1. PLUMBING FIXTURE CONNECTIONS SHALL BE AS INDICATED UNLESS NOTED OTHERWISE ON DRAWING. REFER TO SPECIFICATIONS FOR ADDITIONAL FIXTURE INFORMATION AND DETAILS.
2. CONNECT AND EXTEND TO NEW WASTE AND WATER SUPPLY ROUGH-IN'S.
3. PROVIDE ELECTRIC SENSOR OPERATED FLUSH VALVE ASSEMBLIES AS SPECIFIED. REFER TO THE ELECTRICAL DRAWINGS FOR 120V ELECTRICAL CONNECTIONS. PROVIDE WITH REQUIRED TRANSFORMER.
4. PROVIDE SINK WITH OFF CENTERED REAR DRAIN OPENING.
5. PROVIDE ALL LAVATORIES AND SINKS WITH ASSE APPROVED 1070 THERMOSTATIC MIXING VALVE.
6. CONNECT AND EXTEND TO EXISTING WASTE AND WATER SUPPLY ROUGH-INS..
7. PROVIDE ELECTRIC SENSOR OPERATED FAUCET ASSEMBLIES AS SPECIFIED. REFER TO THE ELECTRICAL DRAWINGS FOR 120V ELECTRICAL CONNECTIONS. PROVIDE WITH REQUIRED TRANSFORMER.

* ALL FIXTURE ROUGH-INS AND CONNECTIONS ARE AS NOTED UNLESS OTHERWISE NOTED AND INDICATED ON PLAN. (TYPICAL)

* PROVIDE WATER HAMMER ARRESTORS ON HOT AND/OR COLD SUPPLY LINES TO FIXTURES. ACCESS TO WATER HAMMER ARRESTORS IS NOT REQUIRED.

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Revisions: | Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA PROFESSIONAL ENGINEER TIMOTHY M. EARHART No. PE041207-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: PLUMBING GENERAL NOTES, DETAILS, SYMBOLS AND ABBREVIATIONS

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

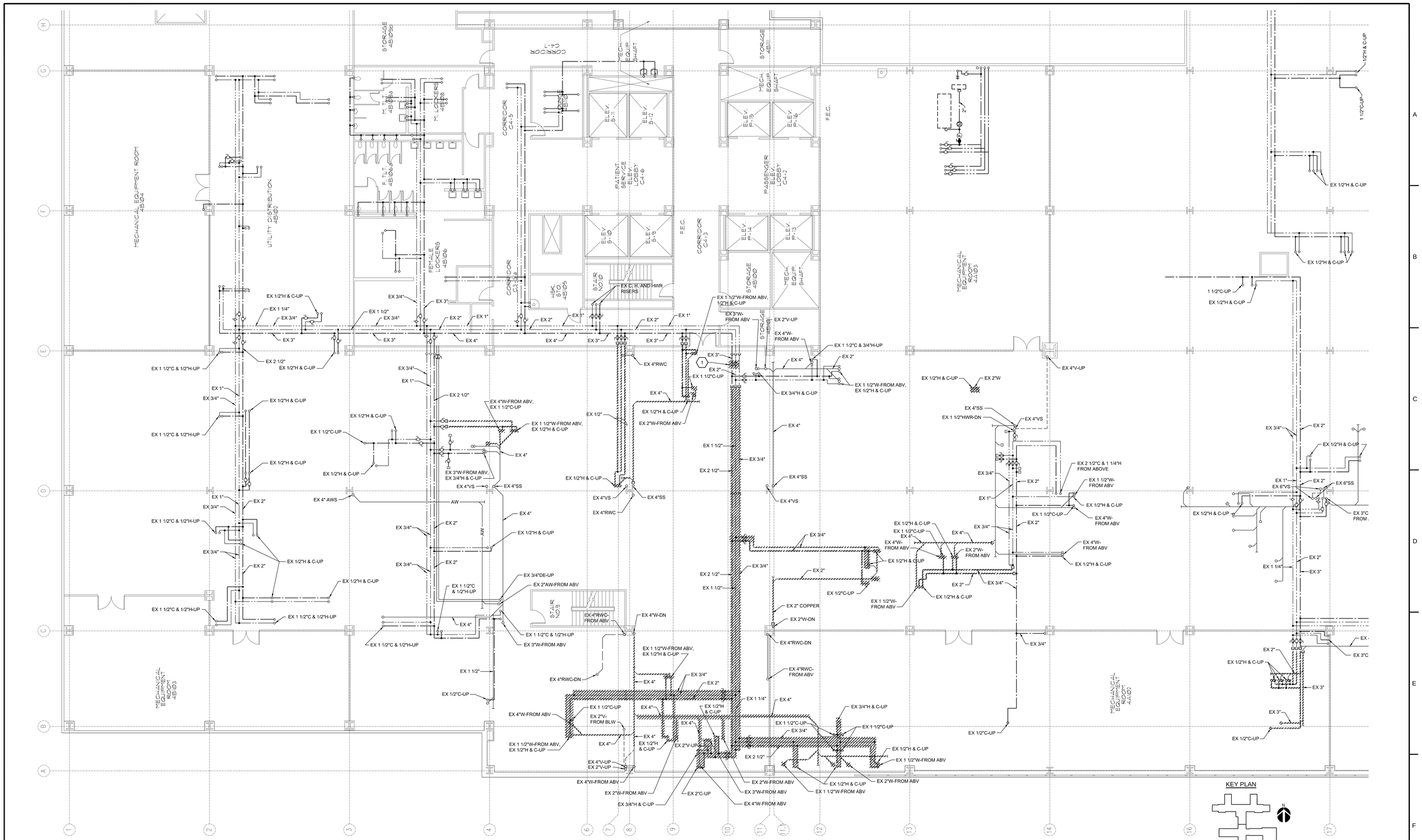
Drawing Number: PL001

Dwg. 52 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231



NOTES ELSEWHERE THIS DRAWING:

1. REMOVE AND REPLACE EXISTING DOMESTIC WATER VALVES WITH NEW.

A PARTIAL FOURTH FLOOR DEMOLITION PLAN - PLUMBING

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

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Revisions:	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
PROFESSIONAL ENGINEER
TIMOTHY M. EARHART
No. 041357-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FOURTH FLOOR PLUMBING DEMOLITION PLAN

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16

Checked By: TME

Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

Drawing Number: PL101

Dwg. 53 of 61

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Department of Veterans Affairs

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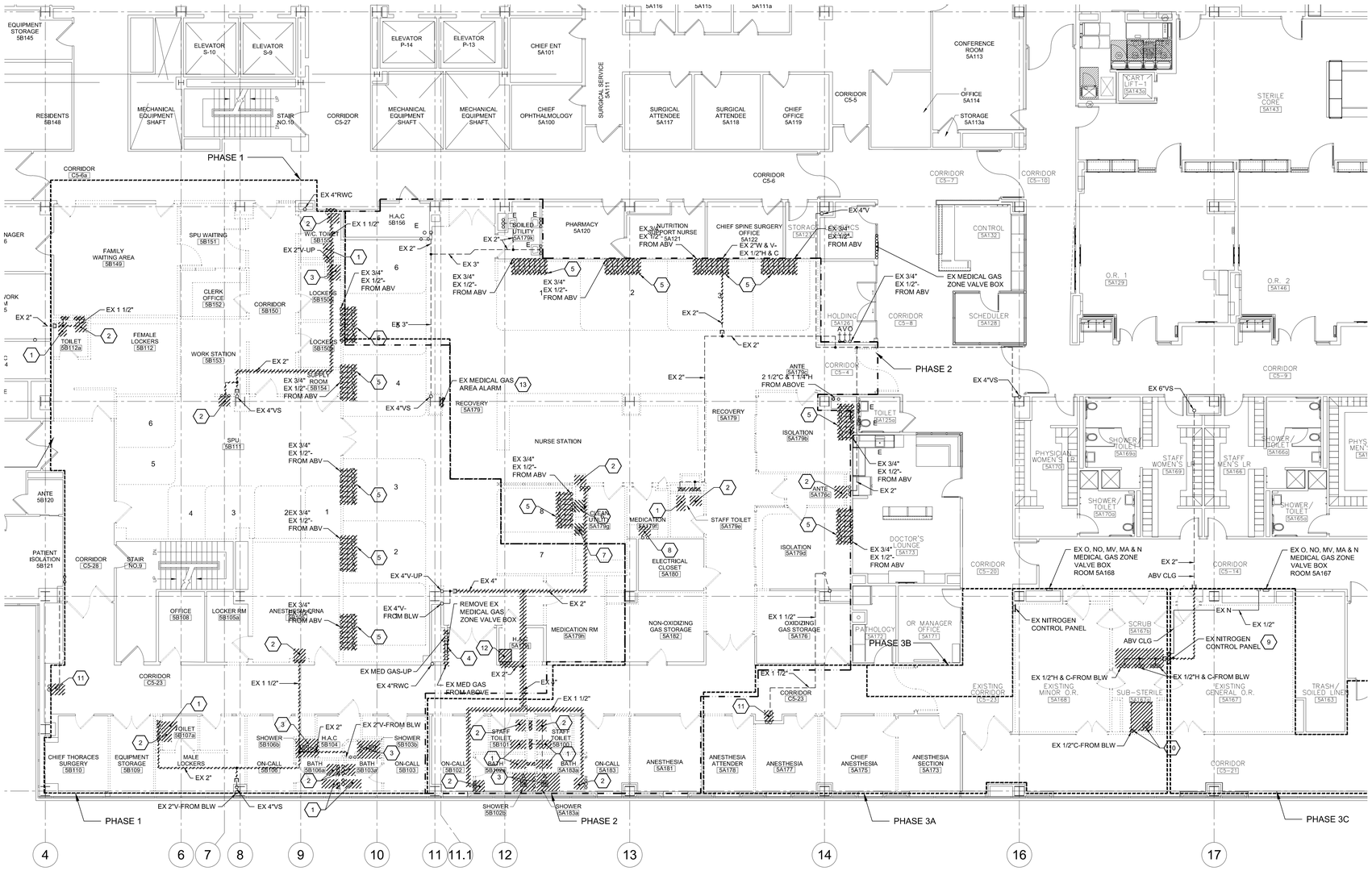


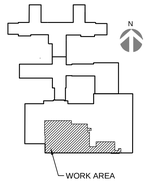
NOTES ELSEWHERE THIS DRAWING:

1. DISCONNECT AND REMOVE EXISTING WALL HUNG WATER CLOSET, CARRIER, AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
2. DISCONNECT AND REMOVE EXISTING WALL HUNG LAVATORY, CARRIER, AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
3. DISCONNECT AND REMOVE EXISTING SHOWER CONTROLS, FLOOR DRAIN, AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
4. DISCONNECT AND REMOVE EXISTING MEDICAL GAS ZONE VALVE BOX AND ASSOCIATED PIPING UP TO SERVICE LEVEL AS INDICATED ON DRAWING P1.03.
5. DISCONNECT AND REMOVE EXISTING MEDICAL GAS OUTLETS AND ASSOCIATED PIPING BACK TO MEDICAL GAS ZONE VALVE BOX.
6. DISCONNECT AND REMOVE EXISTING SINK AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
7. DISCONNECT AND REMOVE EXISTING ICE MACHINE, FLOOR DRAIN, AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
8. EXISTING HEALTH CARE EQUIPMENT MODULE REMOVED BY CONTRACTOR. DISCONNECT AND REMOVE EXISTING SINK AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING.
9. DISCONNECT AND REMOVE EXISTING NITROGEN CONTROL PANEL AND ALL ASSOCIATED PIPING IN WALL TO ACCOMMODATE NEW CONSTRUCTION.
10. DISCONNECT AND REMOVE EXISTING STERILIZER, FLOOR DRAIN, AND ALL ASSOCIATED PIPING.
11. REMOVE AND REPLACE EXISTING ELECTRIC WATER COOLERS WITH NEW.
12. DISCONNECT AND REMOVE EXISTING SERVICE SINK AND ALL ASSOCIATED PIPING. CAP PIPING AT MAINS IN SERVICE LEVEL BELOW AND ABOVE CEILING. SERVICE SINK VENT PIPING SHALL BE REMOVED PRIOR TO PHASE ONE DEMOLITION WORK FOR INSTALLATION OF NEW MEDICAL GAS ZONE VALVE BOX.
13. DISCONNECT AND REMOVE EXISTING MEDICAL GAS AREA ALARM PANEL AND ASSOCIATED PIPING.
14. VENT PIPING FROM EXISTING SCRUB SINKS SHALL BE REMOVED IN PHASE 3A OF THIS PROJECT AND CAPPED AT WALL OF MINOR OPERATING ROOM 5A168. DURING PHASE 3C WORK, REMAINING PORTION OF VENT PIPING ABOVE CEILING OF GENERAL OPERATING ROOM 5A167 SHALL BE REMOVED AND PIPING CAPPED IN CORRIDOR AS INDICATED.

A PARTIAL FIFTH FLOOR DEMOLITION PLAN - PLUMBING

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

KEY PLAN



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Revisions	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FIFTH FLOOR PLUMBING DEMOLITION PLAN

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

Drawing Number: PL102

Dwg. 54 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

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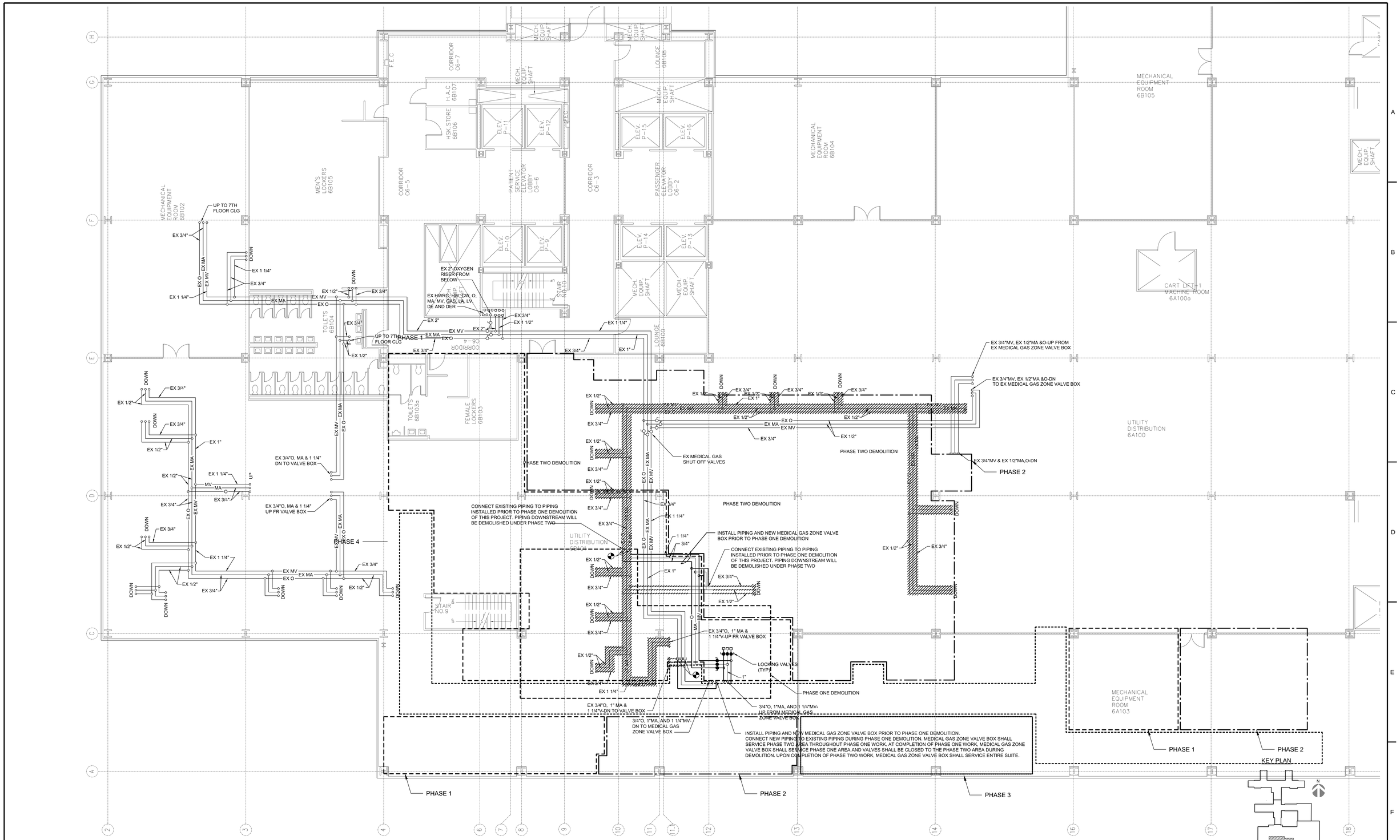

A PARTIAL SIXTH FLOOR PLAN - MEDICAL GAS DEMOLITION

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

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Revisions	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA — PROFESSIONAL ENGINEER — TIMOTHY M. EARHART — No. PE041257-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: SIXTH FLOOR PLUMBING DEMOLITION PLAN

Approved:

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Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

Drawing Number: PL103

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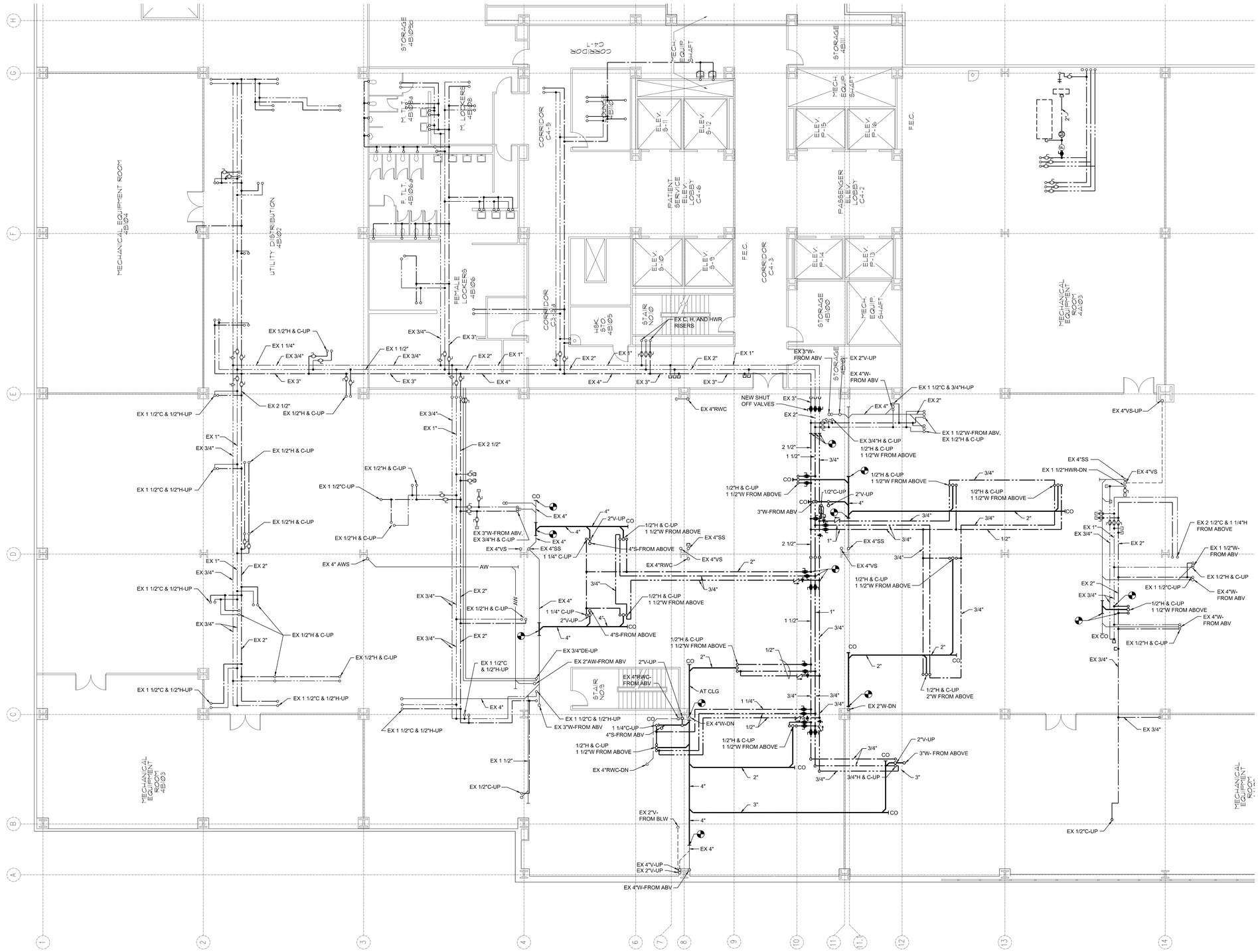
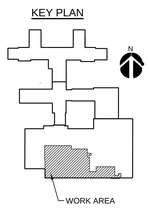


A PARTIAL FOURTH FLOOR PLAN - PLUMBING

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



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Revisions:	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA PROFESSIONAL ENGINEER TIMOTHY M. EARHART No. PE-041327-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FOURTH FLOOR PLUMBING NEW WORK PLAN

Approved:

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Location: Philadelphia, Pennsylvania

Date: 04.28.16

Checked By: TME

Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

Drawing Number: PL201

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Office of Construction and Facilities Management

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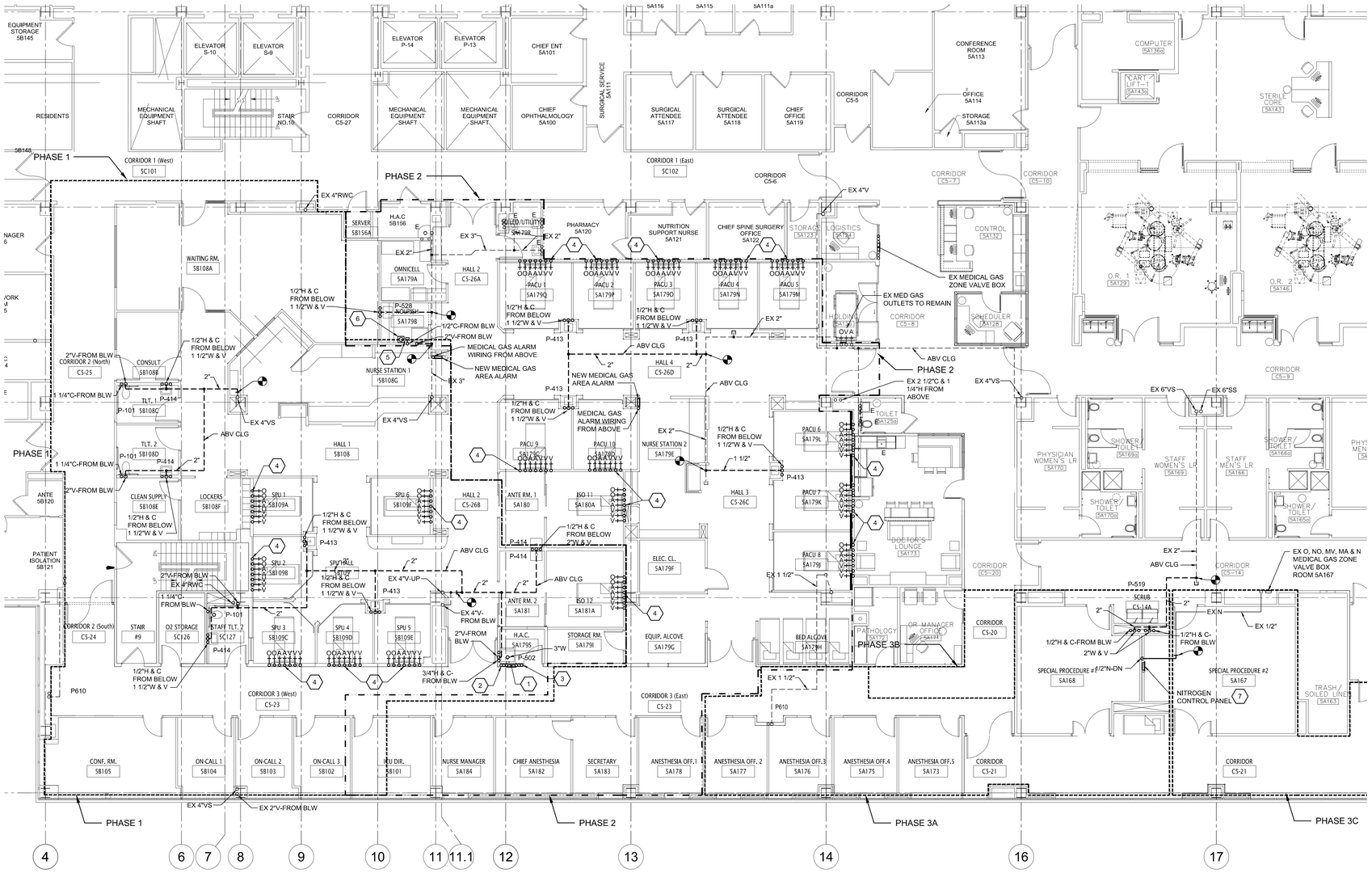


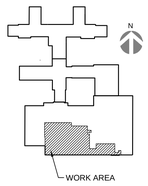
A PARTIAL FIFTH FLOOR PLAN - PLUMBING

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

NOTES ELSEWHERE THIS DRAWING:

1. NEW MEDICAL GAS ZONE VALVE BOX - 3/4" OXYGEN, 1" MEDICAL AIR, AND 1 1/4" MEDICAL VACUUM. INSTALLED PRIOR TO PHASE ONE DEMOLITION WORK.
2. 3/4" OXYGEN, 1" MEDICAL AIR, AND 1 1/4" MEDICAL VACUUM FROM SERVICE LEVEL ABOVE TO MEDICAL GAS ZONE VALVE BOX. INSTALLED PRIOR TO PHASE ONE DEMOLITION WORK.
3. 3/4" OXYGEN, 1" MEDICAL AIR, AND 1 1/4" MEDICAL VACUUM FROM MEDICAL GAS ZONE VALVE BOX UP TO SERVICE LEVEL ABOVE. INSTALLED PRIOR TO PHASE ONE DEMOLITION WORK.
4. PATIENT BEDSIDE UNIT - EXTEND 1/2" OXYGEN, 1/2" MEDICAL AIR, AND 3/4" MEDICAL VACUUM DOWN FROM SERVICE LEVEL ABOVE AND CONNECT TO MEDICAL GAS CONNECTIONS OF PBU.
5. ICE MACHINE - PROVIDE A 1/2" COLD WATER LINE WITH BALL VALVE, STRAINER, IN LINE WATER FILTER, AND DOUBLE CHECK BACKFLOW PREVENTER FOR ICE MACHINE WATER CONNECTION. CONNECT DRAIN LINE TO DRAIN CONNECTION OF ICE MACHINE AND EXTEND AND TERMINATE OVER FLOOR DRAIN WITH REQUIRED AIR GAP.COORDINATE WATER FILTER LOCATION WITH ARCHITECT.
6. FLOOR DRAIN 3"FD (TYPE 'E') - PROVIDE RAISED LIP FLOOR DRAIN SIMILAR TO ZURN MODEL NO. ZN-415-5I-Y. MOUNT FLOOR DRAIN WITH RAISED LIP FLUSH WITH FINISHED FLOOR. TERMINATE DRAIN LINE FROM ICE MACHINE OVER FLOOR DRAIN WITH REQUIRED AIR GAP.
7. RELOCATED NITROGEN CONTROL PANEL - CONNECT AND EXTEND 1/2" NITROGEN PIPING FROM EXISTING ABOVE CEILING. RUN PIPING DOWN IN WALL AND CONNECT TO RELOCATED NITROGEN CONTROL PANEL.

KEY PLAN



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Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FIFTH FLOOR PLUMBING NEW WORK PLAN

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: MGS

Project Number: 642-11-120

Building Number: TWO

Drawing Number: PL202

Dwg. 57 of 61

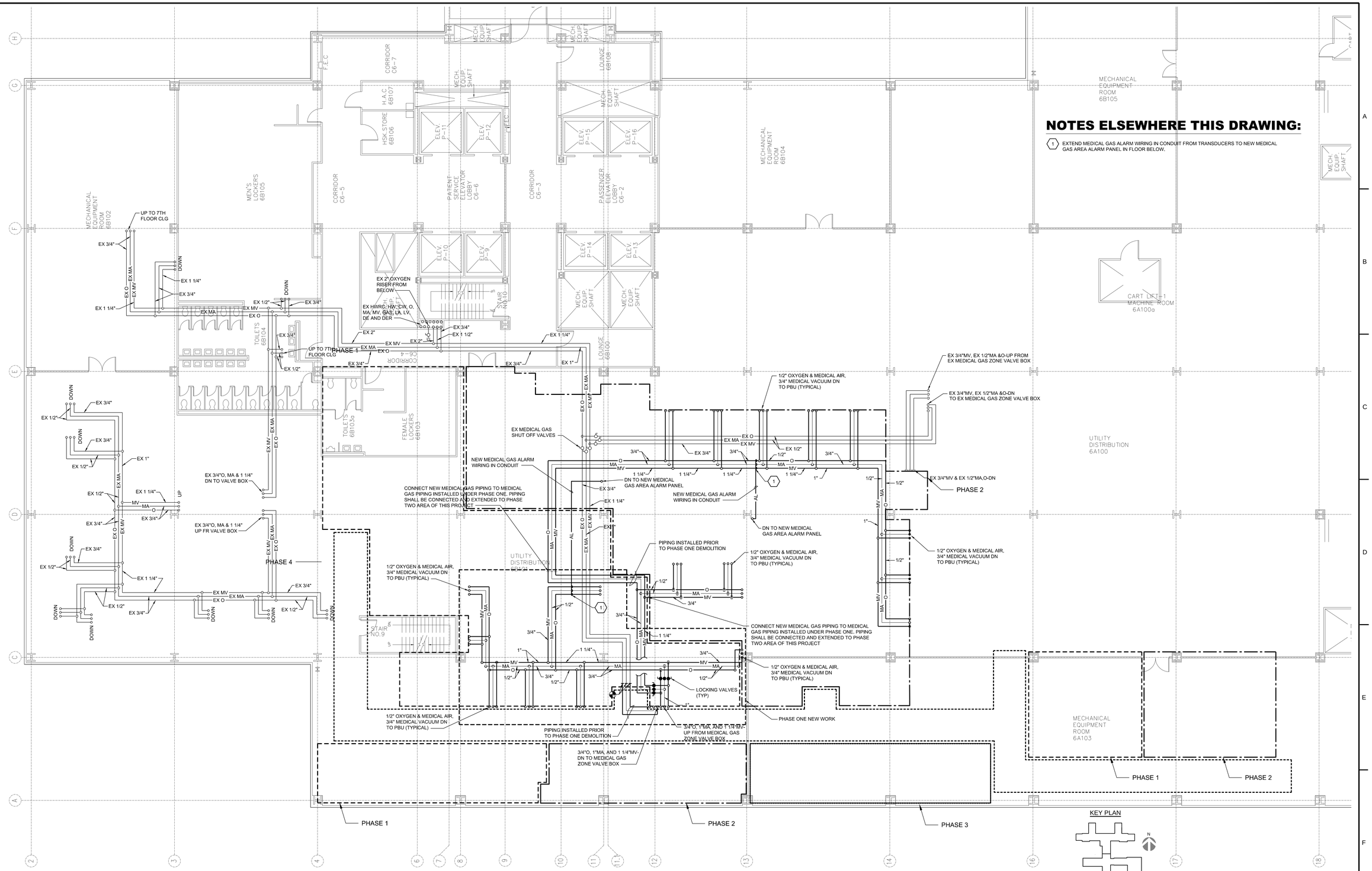
Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

NOTES ELSEWHERE THIS DRAWING:

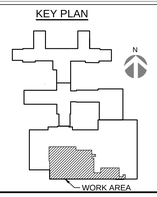
1. EXTEND MEDICAL GAS ALARM WIRING IN CONDUIT FROM TRANSDUCERS TO NEW MEDICAL GAS AREA ALARM PANEL IN FLOOR BELOW.



A PARTIAL SIXTH FLOOR PLAN - MEDICAL GAS

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

KEY PLAN



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Revisions	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title:	SIXTH FLOOR PLUMBING NEW WORK PLAN
Approved:	
Project Title:	5th Floor SAME DAY SURGERY RENOV. VA Medical Center
Location:	Philadelphia, Pennsylvania
Date:	04.28.16
Checked By:	TME
Drawn By:	MGS
Project Number:	642-11-120
Building Number:	TWO
Drawing Number:	PL203
Dwg.	58 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

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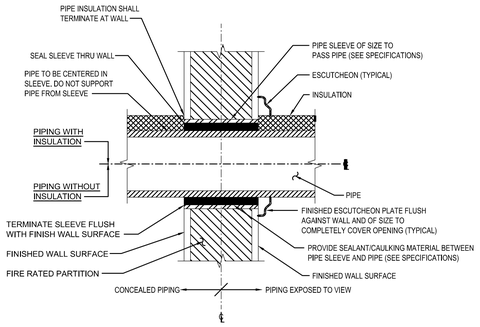
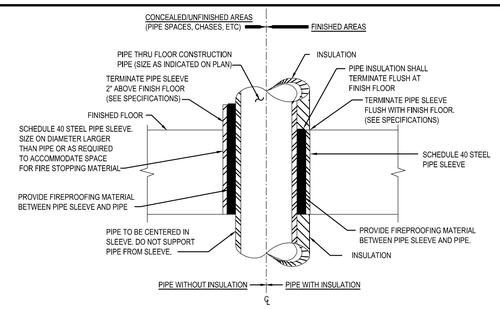


1 PIPE SLEEVE THRU WALL DETAIL

NO SCALE

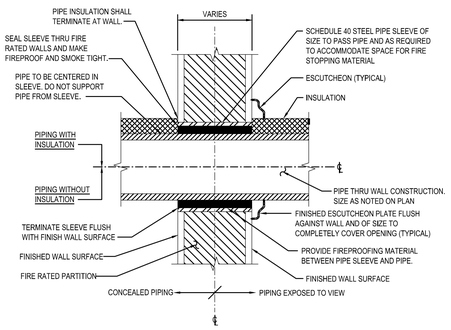


NOTES:

1. APPROVED FIRE STOPPING SHALL BE PROVIDED AND INSTALLED AT ALL EXISTING AND NEW FLOOR/CEILING PENETRATIONS TO MAINTAIN TIME RATED STRUCTURAL FLOOR/CEILING SLAB.
2. APPROVED SPLIT PIPE SLEEVE ASSEMBLY SHALL BE PROVIDED WHERE EXISTING FLOOR/CEILING SLAB PENETRATION OCCURS. (SEE SPECIFICATIONS)

2 PIPE SLEEVE THRU FLOOR DETAIL

NO SCALE



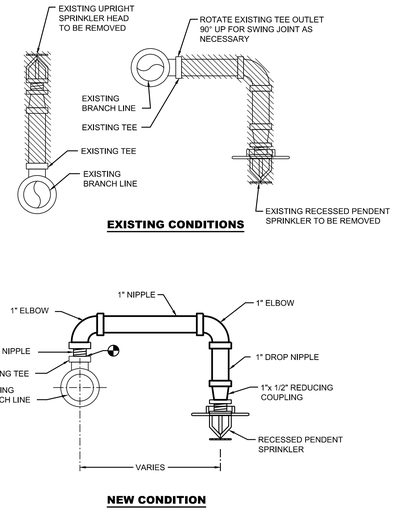
INTERIOR WALLS

NOTES:

1. APPROVED FIRE STOPPING SHALL BE PROVIDED AND INSTALLED AT ALL EXISTING AND NEW WALL PENETRATION THRU TIME RATED WALLS AND PARTITIONS.
2. APPROVED SPLIT PIPE SLEEVE ASSEMBLY SHALL BE PROVIDED WHERE EXISTING WALL PENETRATIONS OCCUR THRU EXISTING TIME RATED WALLS AND PARTITIONS. (SEE SPECIFICATIONS)

3 PIPE SLEEVE THRU FIRE-RATED WALL DETAIL

NO SCALE



4 TYPICAL SPRINKLER RETURN BEND DETAIL

NO SCALE

5 NOT USED

NO SCALE

6 NOT USED

NO SCALE

SYMBOL IDENTIFICATION

FL MTD	FLOOR MOUNTED
W MTD	WALL MOUNTED
FR	FIRE RISER
GPM	GALLON PER MINUTE
EX	EXISTING
(R)	RELOCATED
ABV	ABOVE
BLW	BELOW
CLG	CEILING
DEPT	DEPARTMENT
FHC	FIRE HOSE CABINET
FLR	FLOOR

FIRE PROTECTION SYMBOL AND ABBREVIATION SCHEDULE

EX FS	EX FIRE SPRINKLER LINE		EX RECESSED PENDENT SPRINKLER
FS	FIRE SPRINKLER LINE		RECESSED PENDENT SPRINKLER
	INDICATES EXISTING ITEM TO BE REMOVED		EX UPRIGHT SPRINKLER
XX	INDICATES NOTE FOUND ELSEWHERE ON DRAWING		UPRIGHT SPRINKLER WITH CAGE GUARD
XXX / YYYYY	DETAIL/PLAN REFERENCE SYMBOL INDICATES DETAIL/PLAN NUMBER INDICATES DRAWING No FOR WHICH THE DETAIL/PLAN IS LOCATED	ABV	ABOVE
		CLG	CEILING
		EX	EXISTING
	PIPE CAP	TYP	TYPICAL
	NEW TO EXISTING CONNECTION		

GENERAL FIRE PROTECTION NOTES:

1. SPRINKLER HEAD LOCATIONS ARE INDICATED ON DRAWING FOR BID PURPOSES ONLY. SPRINKLER PIPE SIZES AND LOCATIONS SHALL CONFORM TO NFPA REQUIREMENTS. PIPING SHALL BE HYDRAULICALLY CALCULATED AND SIZED. THE SPRINKLER SYSTEM AND HEAD LOCATION SHALL BE DESIGNED AND INSTALLED AS SPECIFIED. (REFER TO SPECIFICATIONS)
2. ALL SPRINKLER HEADS SHALL BE PLACED IN THE CENTER OF ALL CEILING TILES UNLESS CEILING IS FURRED.
3. SPRINKLER CONTRACTOR SHALL COORDINATE SPRINKLER HEAD INSTALLATION WITH LIGHTING AND DIFFUSER LOCATIONS.
4. ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY CONTRACTOR AT THE SITE.
5. ALL FIRE SPRINKLER PIPING SHALL BE CONCEALED ABOVE CEILING OR IN WALLS.
6. EXISTING HARD COPY BUILDING FIRE SPRINKLER DRAWINGS MAY BE OBTAINED UPON REQUEST FROM THE VA RESIDENT ENGINEERS OFFICE FOR ADDITIONAL INFORMATION NEEDED FOR DESIGN CALCULATIONS IN REGARDS TO THE EXISTING SYSTEM BEYOND THE LIMITS OF THE CONTRACT WORK AREA SHOWN.
7. THE CONTRACTOR SHALL REMOVE THE EXISTING SPRINKLER HEADS AND ASSOCIATED PIPING IN THE RENOVATION AREAS AS NOTED. AT LOCATIONS WHERE EXISTING FIRE SPRINKLERS AND ASSOCIATED PIPING ARE TO REMAIN PROVISIONS SHALL BE MADE TO PROVIDE TEMPORARY OPERATION.
8. THE CONTRACTOR SHALL PROVIDE AND INSTALL APPROVED PIPE SLEEVES AND FIRE STOPPING AT ALL NEW AND EXISTING FLOOR/CEILING SLAB AND WALL PENETRATIONS WITHIN THE LIMITS OF THE CONTRACT WORK AREA TO MAINTAIN THE TIME RATED CONSTRUCTION SPECIFIED. (REFER TO DETAILS ON THIS DRAWING)
9. COORDINATE LOCATIONS OF ALL LINES AND EQUIPMENT WITH OTHER CONTRACTORS.
10. REMOVE ALL EXPOSED PIPING NOT A PART OF THE REMODELED SYSTEM IN THE EXISTING BUILDING. RENDER CONCEALED PIPING NOT A PART OF THE REMODELED SYSTEM IN THE EXISTING BUILDING COMPLETELY "DEAD". WHERE CONCEALED PIPING IS IN EXISTING PARTITIONS TO BE REMOVED OR INTERFERES WITH REMODELING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE PIPING AND RENDER REMAINING PIPING COMPLETELY "DEAD" OR RELOCATE PIPING IF IT IS PART OF THE REMODELED SYSTEM.
11. LOCATIONS OF EXISTING FIRE SPRINKLER PIPING INDICATED ON THE PLANS HAVE BEEN OBTAINED FROM EXISTING DRAWINGS AND ARE APPROXIMATE LOCATIONS. AT LOCATIONS INDICATED TO CONNECT NEW FIRE SPRINKLER LINES TO EXISTING FIRE SPRINKLER LINES, DETERMINE EXACT LOCATION AND SIZE AT SITE BEFORE INSTALLING NEW WATER LINES.
12. PROVIDE ACCESS PANELS IN PLASTER CEILINGS FOR ALL VALVES, WATER FLOW SWITCHES AND ANY OTHER DEVICES WHICH REQUIRES INSPECTION OR MAINTENANCE. FURNISH AND INSTALL ACCESS PANELS UNDER ARCHITECTURAL SPECIFICATIONS.
13. LIGHT LINES INDICATE EXISTING PIPING TO REMAIN. HEAVY LINES INDICATE NEW PIPING.
14. FOR COMPLETE ROOM NAMES AND NUMBERS, SEE ARCHITECTURAL DRAWINGS.

SPRINKLER DESIGN CHART

	MECHANICAL AND ELECTRICAL AREAS	STORAGE AREAS	ALL OTHER AREAS
OCCUPANCY CLASSIFICATION:	ORDINARY GROUP 1	ORDINARY GROUP 1	LIGHT
TYPE OF SPRINKLER SYSTEM:	WET PIPE	WET PIPE	WET PIPE
DESIGN AREA OF WATER APPLICATION:	1500 SQ FT	1500 SQ FT	1500 SQ FT
MINIMUM DENSITY:	.15 GPM/SQ FT	.15 GPM/SQ FT	.10 GPM/SQ FT
MAXIMUM AREA PER SPRINKLER:	130 SQ FT	130 SQ FT	225 SQ FT
MINIMUM SPRINKLER TEMPERATURE RATING:	200°F (286°F NEAR HEATING EQUIPMENT)	155°F	155°F
SPRINKLER 'K' FACTOR:	K=5.6	K=5.6	K=5.6
SPRINKLER TYPE:	QUICK RESPONSE RECESSED PENDENT OR UPRIGHT WITH CAGE GUARD AS INDICATED	QUICK RESPONSE RECESSED PENDENT	QUICK RESPONSE RECESSED PENDENT

FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions:	Date

CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY M. EARHART
No. PE-041397-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FIRE PROTECTION LEGEND, DETAILS AND GENERAL NOTES

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: JAM

Project Number: 642-11-120

Building Number: TWO

Drawing Number: FA001

Dwg. 59 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

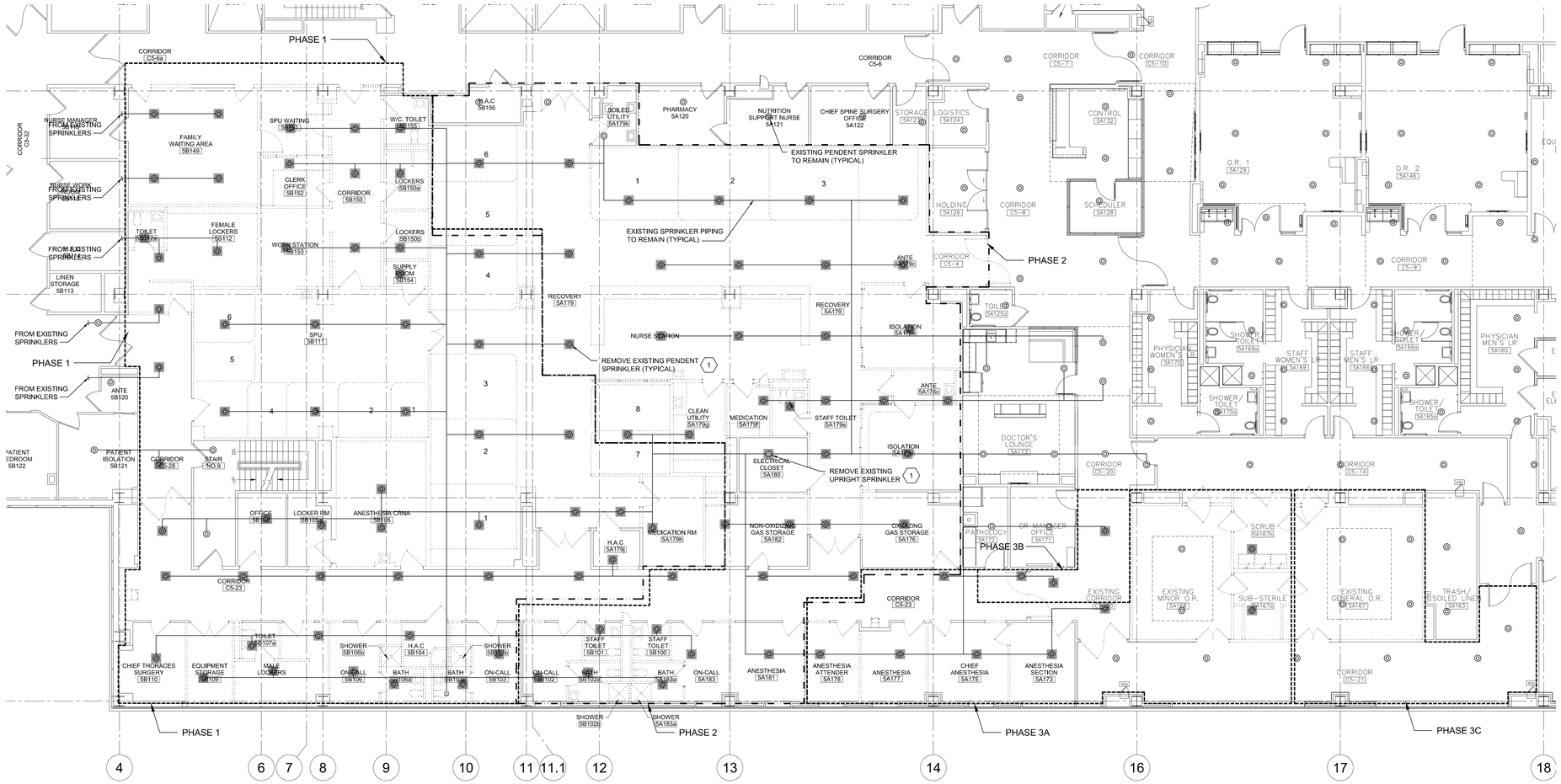
VA FORM 08-6231

NOTES:

1. AREAS ON THIS PLAN WHERE SPRINKLERS ARE NOT INDICATED ARE PROTECTED BY SPRINKLERS OUTSIDE OF THE PROJECT SCOPE OF WORK. WATER SERVICE TO THE SPRINKLERS OUTSIDE OF THE PROJECT SCOPE OF WORK SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT.

NOTES ELSEWHERE ON THIS DRAWING:

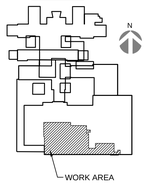
1. UTILIZE THE EXISTING SPRINKLER PIPING AND OUTLETS TO SUPPLY NEW SPRINKLERS THROUGHOUT THE PROJECT SCOPE OF WORK. ANY EXISTING SPRINKLER OUTLETS NOT USED SHALL BE SEALED WITH AN APPROVED PLUG.



A PARTIAL FIFTH FLOOR DEMOLITION PLAN - FIRE PROTECTION

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

KEY PLAN



FULLY SPRINKLERED
100% FINAL SUBMISSION

Revisions:	Date

CONSULTANTS:

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FIFTH FLOOR FIRE PROTECTION DEMOLITION PLAN

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16 | Checked By: TME | Drawn By: JAM

Project Number: 642-11-120

Building Number: TWO

Drawing Number: FA101

Dwg. 60 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

NOTES:

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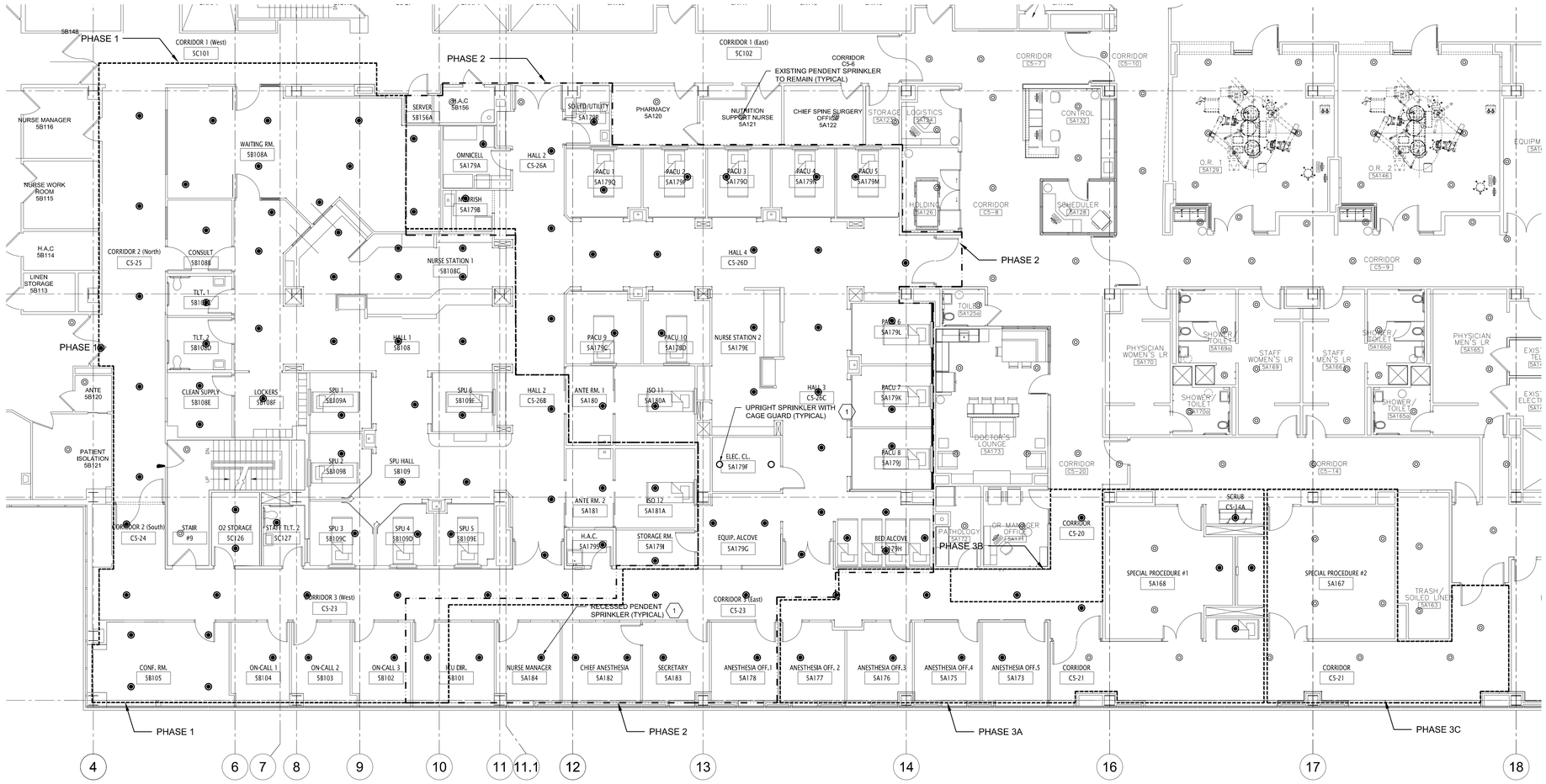
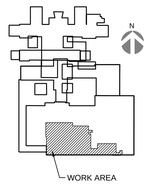


A PARTIAL FIFTH FLOOR PLAN - FIRE PROTECTION

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

KEY PLAN



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CONSULTANTS:

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL ENGINEER
TIMOTHY M. EARHART
No. PE041382-E

ARCHITECT/ENGINEERS:

levelHEADS architects + integrators

H.F. LENZ COMPANY

Drawing Title: FIFTH FLOOR FIRE PROTECTION PLAN

Approved:

Project Title: 5th Floor SAME DAY SURGERY RENOV. VA Medical Center

Location: Philadelphia, Pennsylvania

Date: 04.28.16

Checked By: TME

Drawn By: JAM

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Building Number: TWO

Drawing Number: FA201

Dwg. 61 of 61

Office of Construction and Facilities Management

Department of Veterans Affairs

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