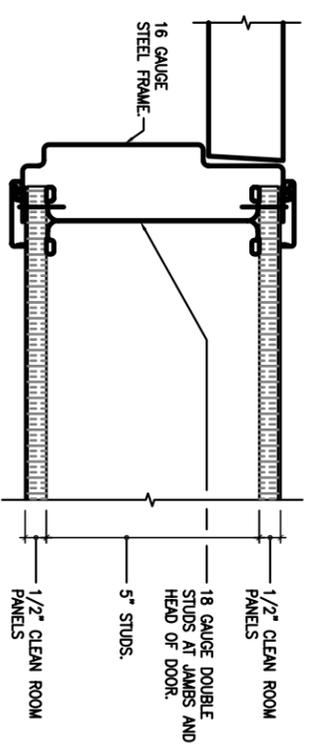




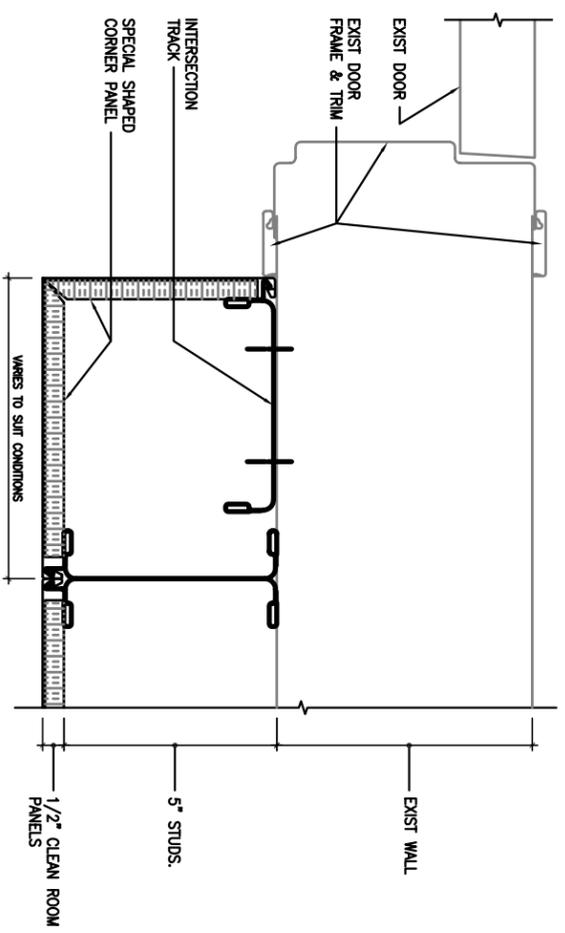




REVISIONS		
SYMBOL	DESCRIPTION	DATE



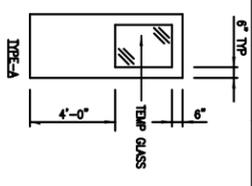
JAMB DETAIL AT NEW DOOR  
SCALE: 6"=1'-0"



JAMB DETAIL AT EXISTING DOOR  
SCALE: 6"=1'-0"

DOORS AND FRAMES

DOOR NO.	SIZE			DOOR		FRAME		ACUSTIC STC RATING	HARDWARE SET NO.	LINTEL	REMARKS
	W	H	T	MAT	GLASS	MAT	TYPE				
104	(2) 4'-0"	8'-0"	1 3/4"	STL	TEMP	STL	TEMP				DOOR, FRAME, AIR INTRUSION SEALS AND HARDWARE BY CLEAN ROOM WALL PANEL MANUFACTURER



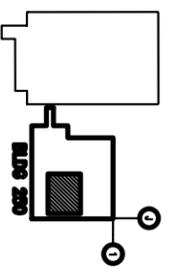
ROOM FINISHES

NOTE: THE NUMERICAL MATERIAL DESIGNATION TAKES PRECEDENCE OVER THE COLUMN LOCATION BOX

ROOM NO.	ROOM NAME	FLOORS			BASES			WALLS					CEILINGS						REMARKS					
		1	2	3	1	2	3	1	2	3	4	5	6	1	2	3	4	5		6				
104	CLEAN ROOM				1	2	3	1	2	3	1	2	3	4	5	6	1	2	3	4	5	6		
190 & 191	UTILITY SPINE																							1/2" NEW CLEAN ROOM CHASSIS

FINAL SUBMISSION  
FEB. 14, 2003

KEY PLAN



GRAPHIC SCALE



DESIGNED BY: [Signature]      DRAWN BY: [Signature]      CHECKED BY: [Signature]      IN CHARGE: [Signature]

DATE: [ ]      DATE: [ ]      DATE: [ ]      DATE: [ ]

DESIGNER OF THE NAVY      NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY      WASHINGTON, D.C. 20375 - 8399

**CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250  
FINISH & DOOR SCHEDULES AND DETAILS**

SHEET NO. 0      DRAWING NO. A-4      SHEET OF [ ]

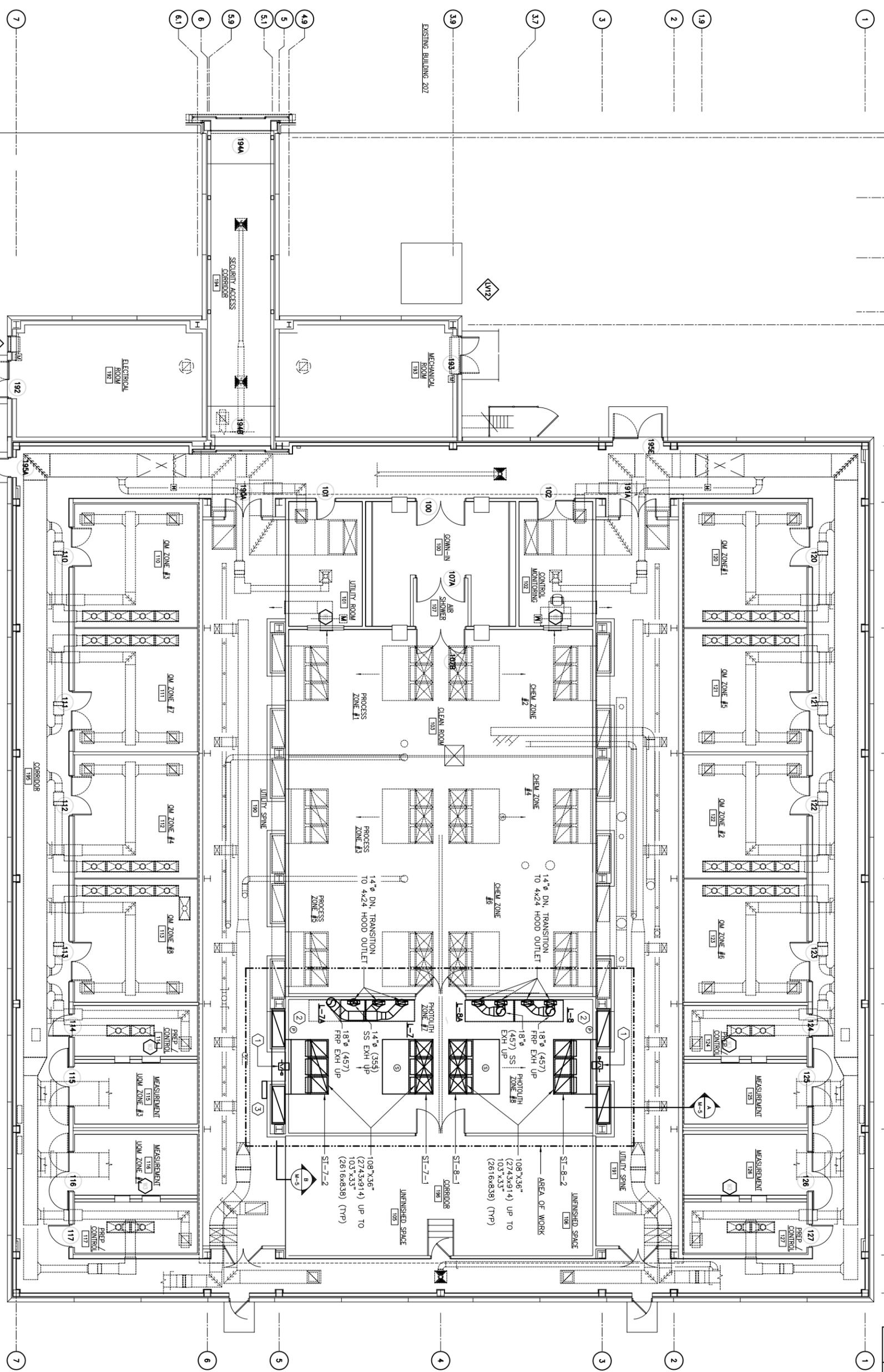
SYMBOL	DESCRIPTION	DATE	APPROVED

**GENERAL NOTES:**

1. ALL DUCT PENETRATIONS THROUGH THE WALL SHALL BE SEALED WITH FIRE RESISTANT MATERIAL PER SECTION 15065.
2. ALL WORK IN CLEANROOM SHALL FOLLOW CLEAN CONSTRUCTION PROTOCOL DOCUMENT TO BE FURNISHED BY CONSTRUCTION MANAGER.
3. QUIET/ULTRA QUIET ROOMS PERIMETER WALLS SHALL BE SOUND WRAPPED PER SPECIFICATION SECTION 15065.
4. DUCTWORK BETWEEN PENTHOUSE FLOOR AND DOWNSTAIRS SOUND ATTENUATION SHALL BE SOUND WRAPPED PER SPECIFICATION SECTION 15065.
5. THE CONTRACTING OFFICER AND NAVY SHALL BE RESPONSIBLE FOR LOCATING THE WET-PROCESSING STATIONS IN PLACE. CONTRACTOR SHALL MAKE FINAL CONNECTIONS TO STATION.

**DRAWING NOTES:**

1. 12x10 PRESSURE RELIEF TRANSFER DUCT THRU WALL WITH AUTOMATIC PRESSURE CONTROL DAMPER, PROVIDE 12x6 GRILLE ON EACH SIDE OF WALL. MOUNT 9'-0" ABOVE RAISED FLOOR.
2. SPACE DIFFERENTIAL PRESSURE SENSOR
3. ZONE NO.7 AND NO.8 A/C CONTROL PANEL

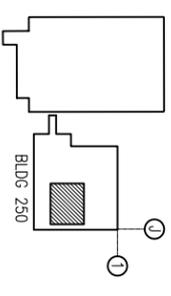


**HVAC FLOOR PLAN**

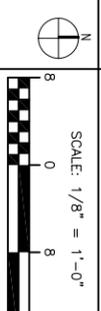
SCALE: 1/8" = 1'-0"

FINAL SUBMISSION - 2/14/03

**KEY PLAN**



**GRAPHIC SCALE**



CAUTION: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

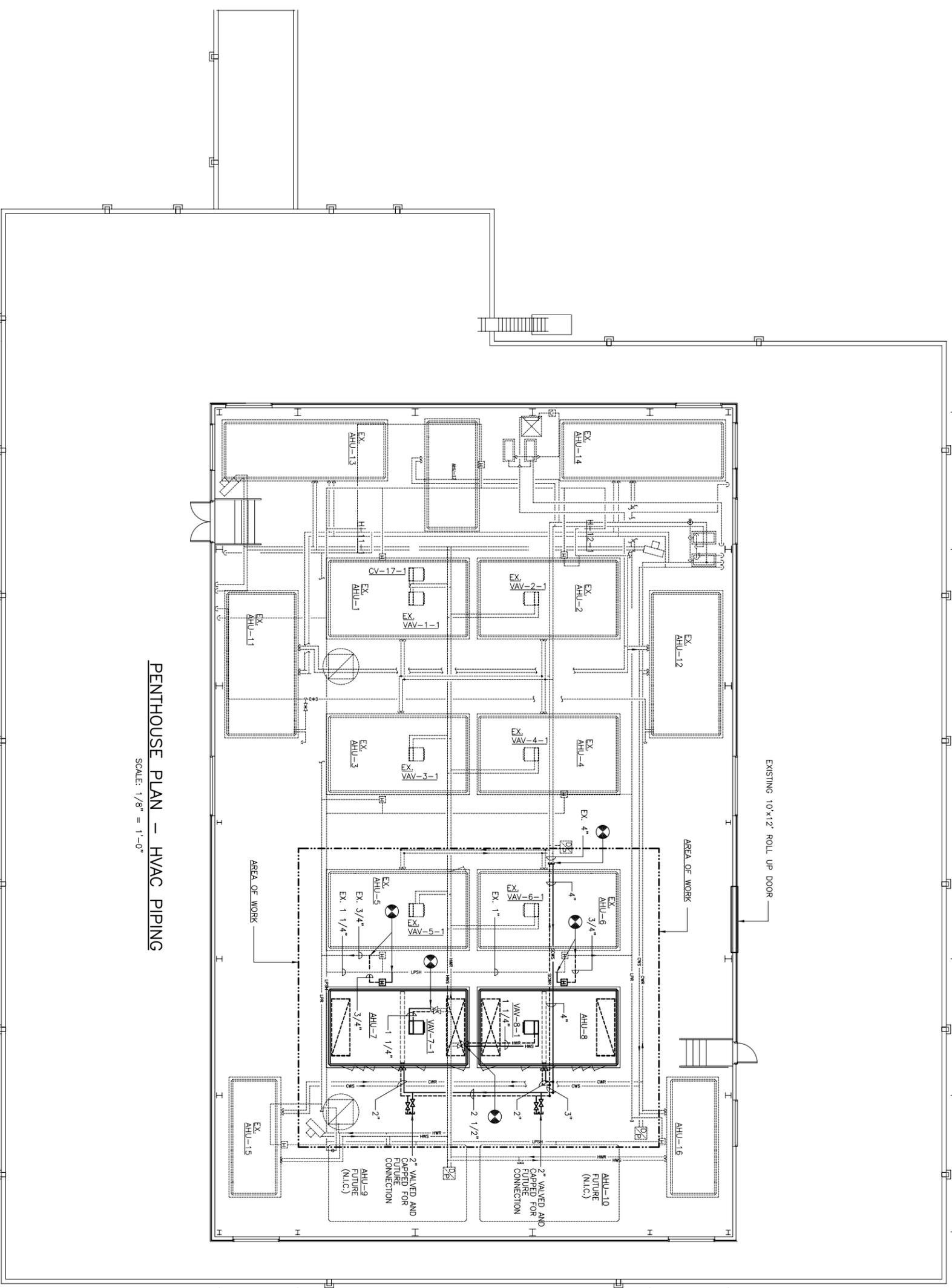
DESIGNED BY	
DRAWN BY	
CHECKED BY	
DATE	

REGISTERED PROFESSIONAL ENGINEER	
REGISTERATION NO.	
DATE SIGNED	

DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
NAVAL RESEARCH LABORATORY	WASHINGTON, D.C. 20375 - 5320
CLEAN ROOMS NO. 7 AND 8,	HVAC FLOOR PLAN
NAVAC DRAWING NO.	
CONSTR. CONTR. NO.	
DATE	
APPROVED	
OFFICER IN CHARGE	
DATE	
SHEET	0
SCALE	AS NOTED
DRAWING NO.	<b>M1</b>
SHEET	OF

B C D E F G H

REVISIONS		
SYMBOL	DESCRIPTION	DATE



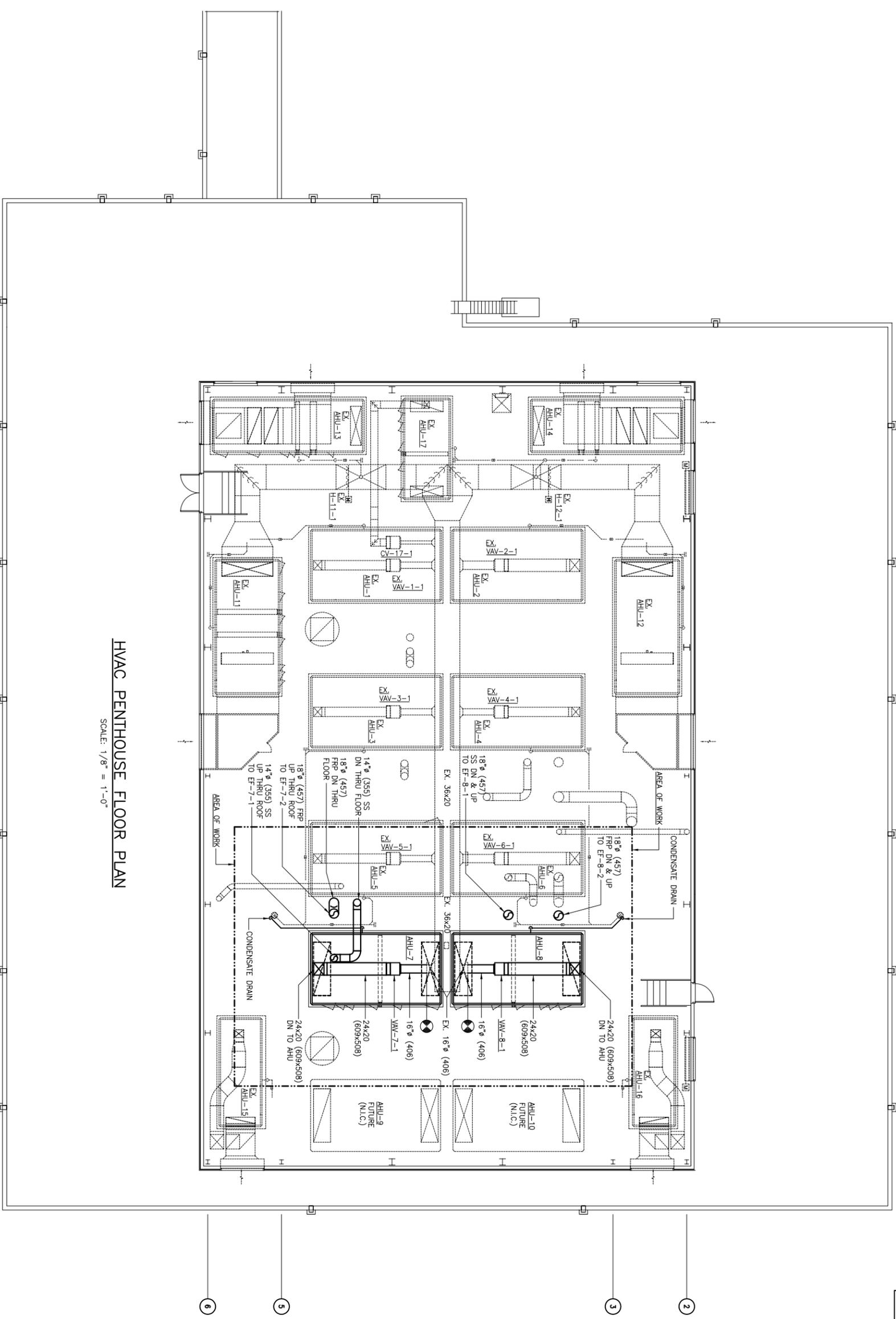
**PENTHOUSE PLAN – HVAC PIPING**  
SCALE: 1/8" = 1'-0"

FINAL SUBMISSION – 2/14/03

<p>KEY PLAN</p>		<p>GRAPHIC SCALE</p> <p>SCALE: 1/8" = 1'-0"</p>	
<p>DESIGNED BY: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p> <p>DATE: _____</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>Registration No. _____</p> <p>State of _____</p>	
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND</p> <p>NAVAL RESEARCH LABORATORY</p> <p>WASHINGTON, D.C. 20375 – 5320</p>		<p>CLEAN ROOMS NO. 7 AND 8,</p> <p>BUILDING 250</p> <p>PENTHOUSE PLAN – HVAC PIPING</p>	
<p>APPROVED BY: _____</p> <p>DATE: _____</p>		<p>APPROVED BY: _____</p> <p>DATE: _____</p>	
<p>SHEET NO. _____</p> <p>OF _____</p>		<p>DRAWING NO. _____</p> <p>CONSTR. CONTR. NO. _____</p> <p>FW-D NO. _____</p>	

<p>DESIGNED BY: _____</p> <p>DRAWN BY: _____</p> <p>CHECKED BY: _____</p> <p>DATE: _____</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>Registration No. _____</p> <p>State of _____</p>	
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND</p> <p>NAVAL RESEARCH LABORATORY</p> <p>WASHINGTON, D.C. 20375 – 5320</p>		<p>CLEAN ROOMS NO. 7 AND 8,</p> <p>BUILDING 250</p> <p>PENTHOUSE PLAN – HVAC PIPING</p>	
<p>APPROVED BY: _____</p> <p>DATE: _____</p>		<p>APPROVED BY: _____</p> <p>DATE: _____</p>	
<p>SHEET NO. _____</p> <p>OF _____</p>		<p>DRAWING NO. _____</p> <p>CONSTR. CONTR. NO. _____</p> <p>FW-D NO. _____</p>	

REVISIONS		
SYMBOL	DESCRIPTION	DATE

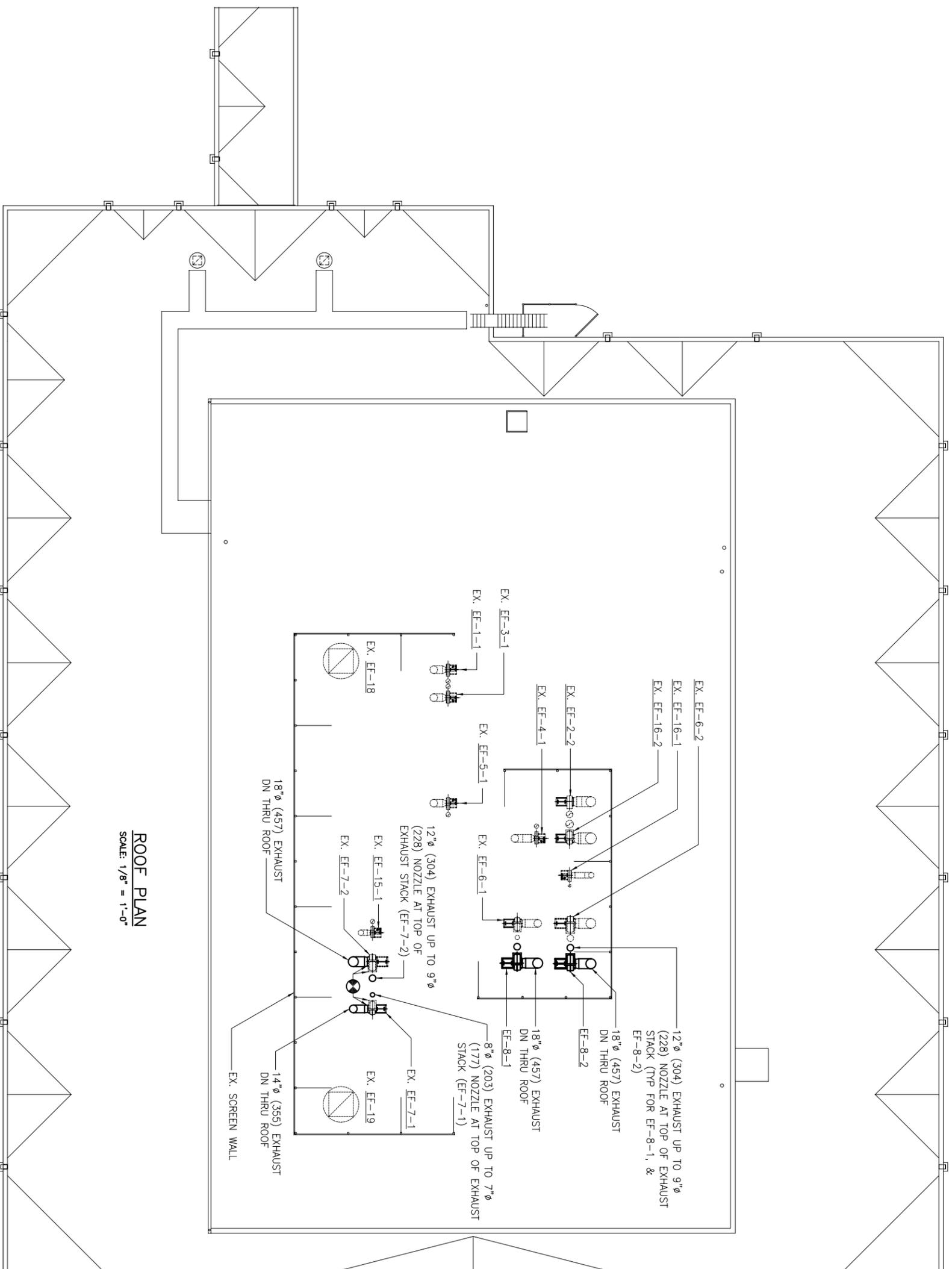


**HVAC PENTHOUSE FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

<p>KEY PLAN</p>		<p>GRAPHIC SCALE</p> <p>SCALE: 1/8" = 1'-0"</p> <p>CAUTION: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.</p>	
<p><b>Gipe Associates Inc.</b> Consulting Engineers 1200 North 17th Street, Suite 200 Arlington, VA 22209 Tel: (703) 271-2400 Fax: (703) 271-2401</p>		<p>DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ DATE: _____</p>	
<p>DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL RESEARCH LABORATORY WASHINGTON, D.C. 20375 - 5320</p>		<p>REGISTERED PROFESSIONAL ENGINEER STATE OF VIRGINIA EX. 110822-2420 (410) 922-8888</p>	
<p>CLEAN ROOMS NO. 7 AND 8, BUILDING 250 HVAC PENTHOUSE FLOOR PLAN</p>		<p>APPROVED: _____ OFFICER IN CHARGE</p>	
<p>NAVFAC DRAWING NO. _____ CONSTR. CONTR. NO. N00173-03-D-2400</p>		<p>DATE: _____ DATE: _____</p>	
<p>SHR. CODE IDENT. NO. _____ SHEET NO. _____</p>		<p>DATE: _____ DRAWING NO. <b>M3</b></p>	
<p>SCALE AS NOTED</p>		<p>SHEET _____ OF _____</p>	

FINAL SUBMISSION - 2/14/03

REVISIONS		
SYMBOL	DESCRIPTION	DATE

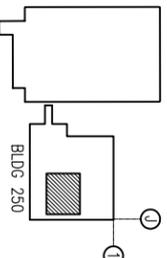


**ROOF PLAN**  
SCALE: 1/8" = 1'-0"

KEY PLAN

GRAPHIC SCALE

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



**Gipe Associates Inc.**  
Consulting Engineers  
10000 Old Dominion Road, Suite 200  
Falls Church, VA 22041  
(703) 281-2400  
www.gipe.com

DESIGNED BY: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_  
DRAWN BY: \_\_\_\_\_  
DATE: \_\_\_\_\_

PROFESSIONAL  
CERTIFICATION  
REGISTRATION NO. \_\_\_\_\_  
DATE SIGNED \_\_\_\_\_

DESIGNED

DRAWN

CHECKED

SUPER

IN CHARGE

SAFETY OFF

APPROVED

APPROVED

OFFICER IN CHARGE

DATE: \_\_\_\_\_

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250  
ROOF PLAN

NAVJAC DRAWING NO. \_\_\_\_\_  
CONSTR. CONTR. NO. N00173-03-D-2400  
SPECIFICATION NO. \_\_\_\_\_

FW NO. \_\_\_\_\_  
FW-D NO. \_\_\_\_\_

DRAWING NO. **M4**

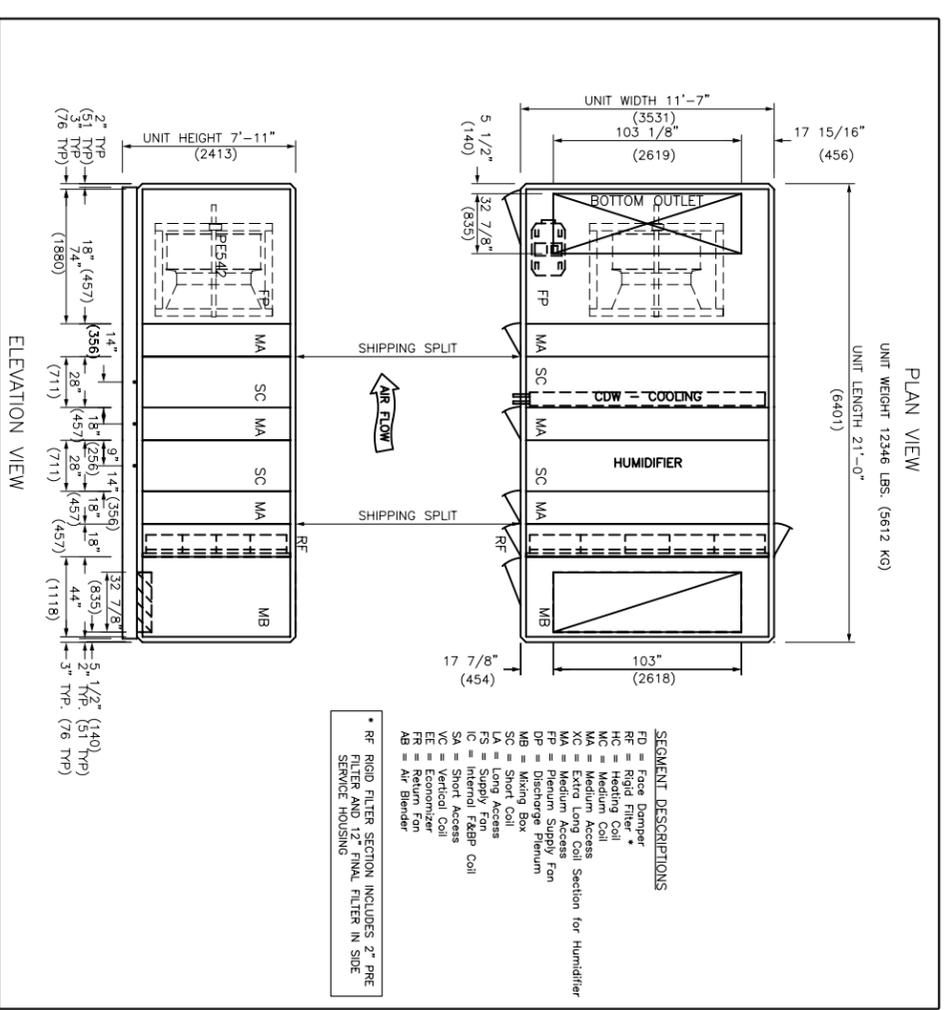
SHEET \_\_\_\_\_ OF \_\_\_\_\_

SCALE AS NOTED

FINAL SUBMISSION - 2/14/03

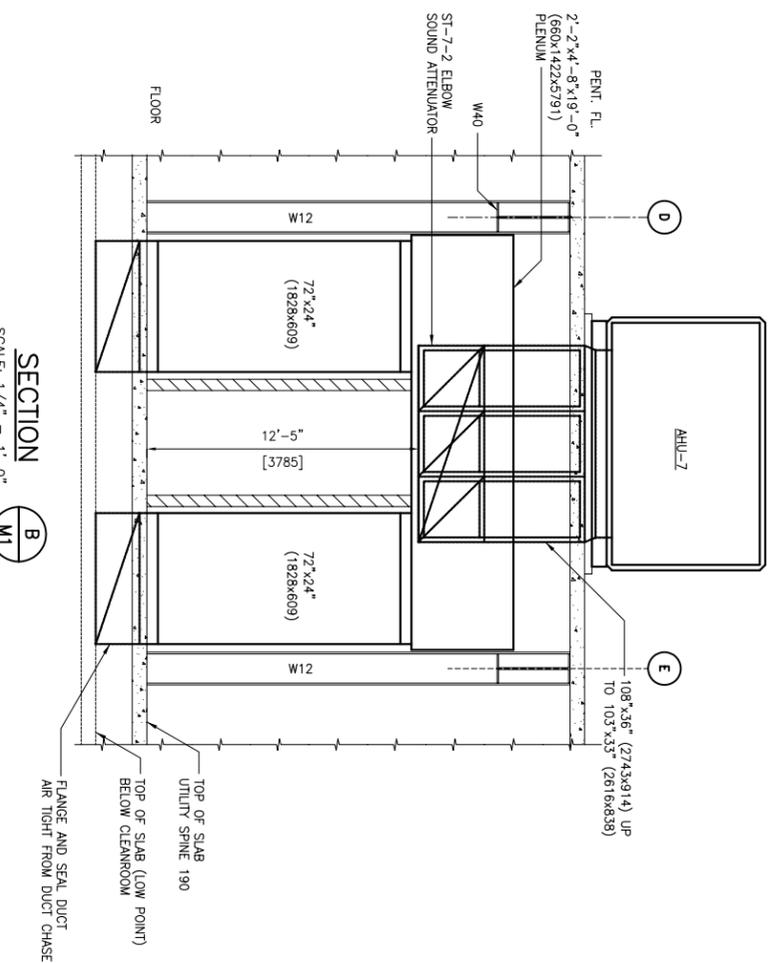
CAUTION: IF THIS DRAWING IS A REDUCTION,  
GRAPHIC SCALE MUST BE USED.

PLAN VIEW  
UNIT WEIGHT 12346 LBS. (5612 KG)  
UNIT LENGTH 21'-0"  
(6401)



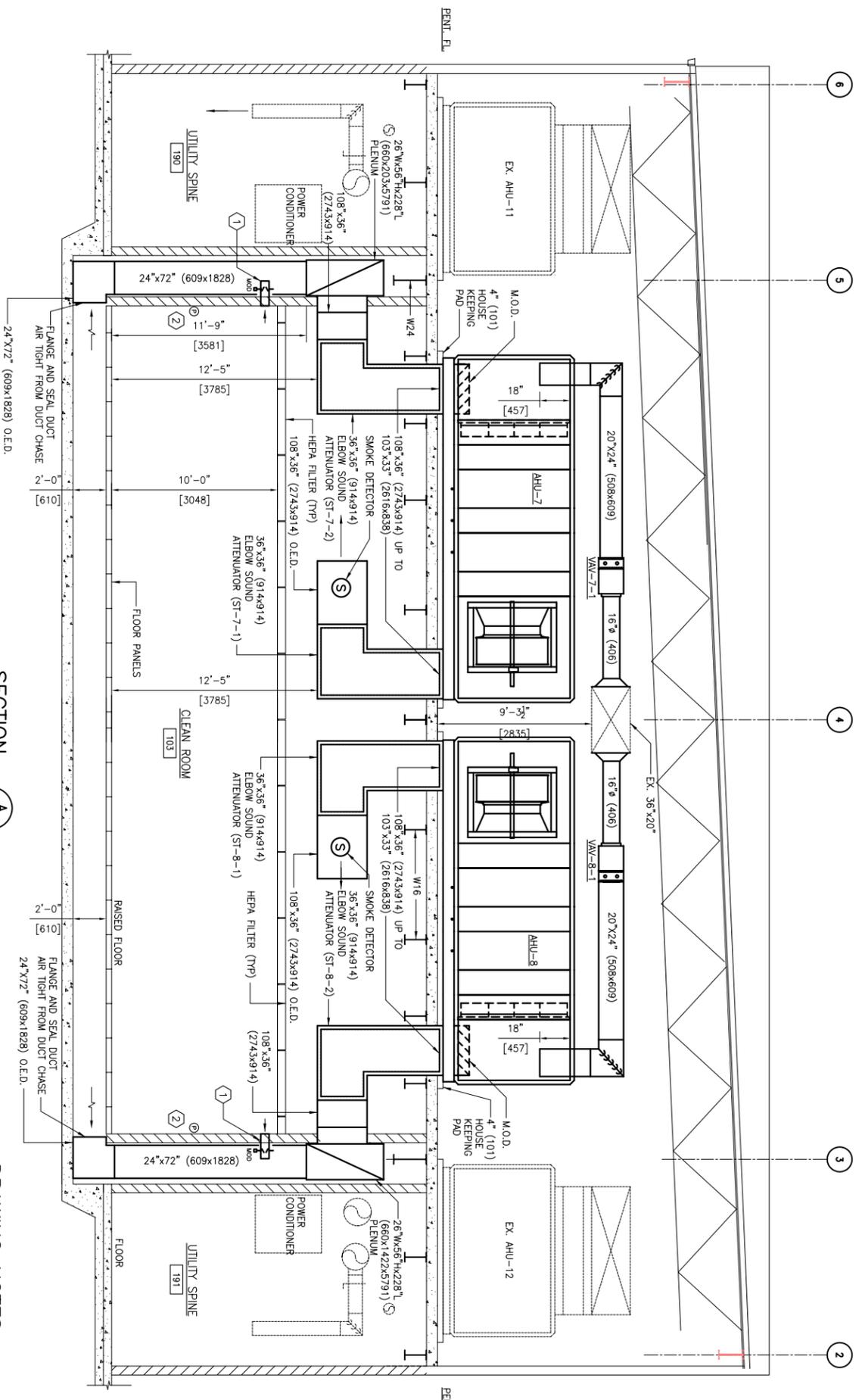
- SEGMENT DESCRIPTIONS
- FD = Face Damper
  - RF = Rigid Filter
  - FC = Flexible Filter
  - MC = Medium Coil
  - MA = Medium Access
  - XC = Extra Long Coil Section for Humidifier
  - PC = Pre-Filter
  - PA = Parallel Plate Filter
  - DP = Discharge Plenum
  - MB = Mixing Box
  - SC = Short Coil
  - LA = Long Access
  - LA = Supply Fan
  - LA = Return Fan
  - SA = Short Access
  - VC = Vertical Coil
  - EC = Economizer
  - ER = Return Fan
  - AB = Air Blender
- \* RIGID FILTER SECTION INCLUDES 2" PRE FILTER AND 12" FINAL FILTER IN SIDE SERVICE HOUSING

AIR HANDLING UNIT NO. 7 & 8  
SCALE: 1/4" = 1'-0"



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

KEY PLAN		GRAPHIC SCALE					
<p>DESIGNED BY: [Signature]</p> <p>DRAWN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>	
<p>DESIGNED BY: [Signature]</p> <p>DRAWN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>	
<p>DESIGNED BY: [Signature]</p> <p>DRAWN BY: [Signature]</p> <p>CHECKED BY: [Signature]</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>		<p>REGISTERED PROFESSIONAL ENGINEER</p> <p>REGISTERED NO. 102</p> <p>DATE: 02/14/03</p>	



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

- DRAWING NOTES:
- 1 12x10 PRESSURE RELIEF TRANSFER DUCT THRU WALL WITH AUTOMATIC PRESSURE CONTROL DAMPER, PROVIDE 12x6 GRILLE ON EACH SIDE OF WALL. MOUNT 9'-0" ABOVE RAISED FLOOR.
  - 2 SPACE DIFFERENTIAL PRESSURE SENSOR

FINAL SUBMISSION - 2/14/03

SYMBOL	DESCRIPTION	DATE	APPROVED

DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250

HVAC BUILDING SECTIONS

SCALE AS NOTED

DRAWING NO. M5

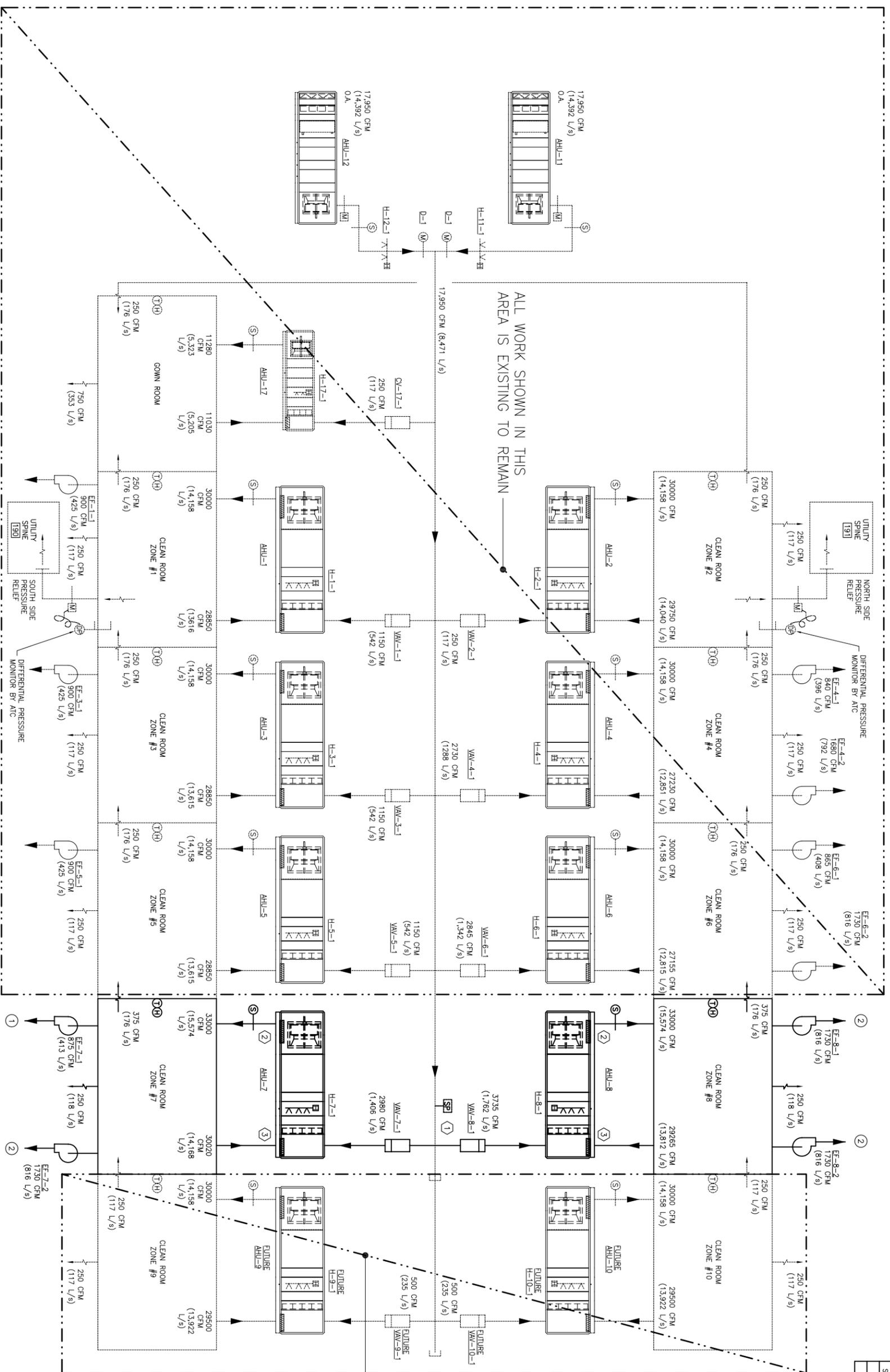
SYMBOL	DESCRIPTION	DATE	APPROVED

REVISIONS

- DRAWING NOTES:**
- ① RELOCATED STATIC PRESSURE SENSOR
  - ② SUPPLY AIR ISOLATION DAMPER PROVIDED BY A/C MANUFACTURER
  - ③ RETURN AIR ISOLATION DAMPER FURNISHED BY AHU MANUFACTURER

EQUIPMENT	LENGTH	
	4 FOOT	8 FOOT
MODULAR WET STATION	①	②
EYE SHIELD FULL CLOSED	480 CFM (226.53 L/s)	960 CFM (453.07 L/s)
EYE SHIELD FULL OPEN	875 CFM (408.23 L/s)	1730 CFM (816.47 L/s)

NOTE: THE EXHAUST AIRFLOW SCHEDULE ABOVE SHALL BE USED BY TAB CONTRACTOR TO BALANCE CLEARROOM HVAC & EXHAUST SYSTEMS.



ALL WORK SHOWN IN THIS AREA IS EXISTING TO REMAIN

ALL WORK SHOWN IN THIS AREA IS FUTURE

**HVAC AIR FLOW DIAGRAMS**  
NO SCALE

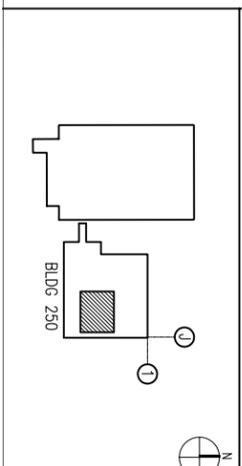
FINAL SUBMISSION - 2/14/03

KEY PLAN

GRAPHIC SCALE

DESIGNED BY: **Gipe Associates Inc.**  
CONSULTING ENGINEERS

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

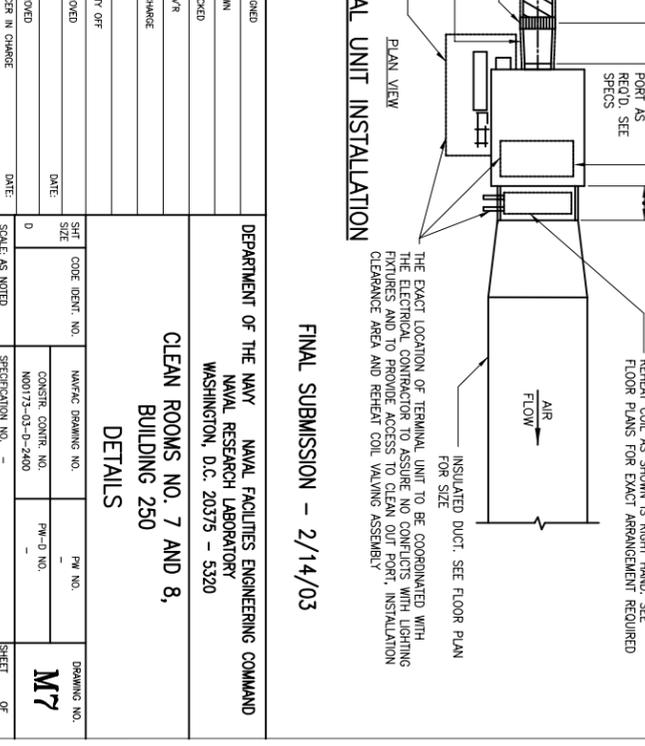
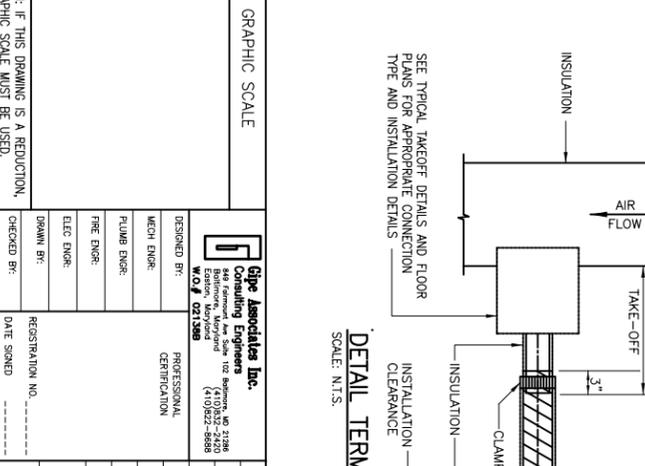
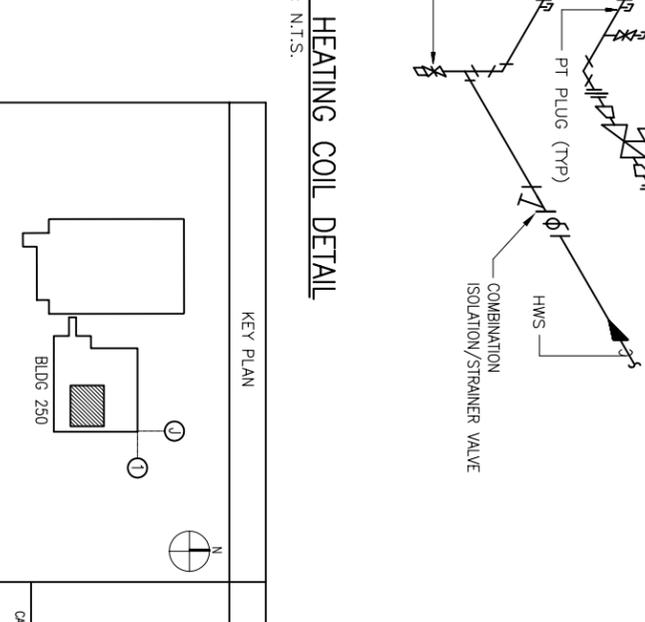
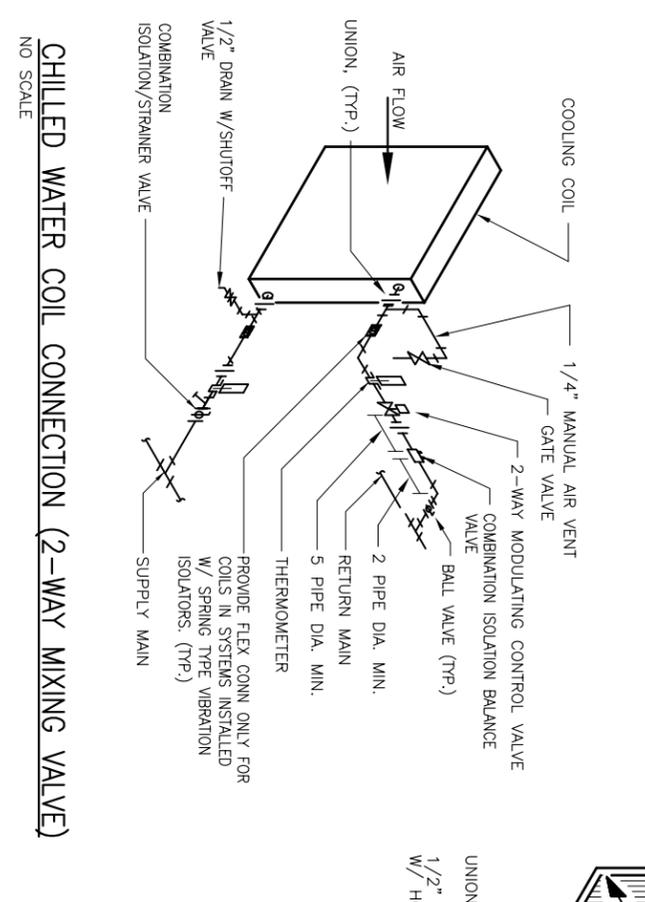
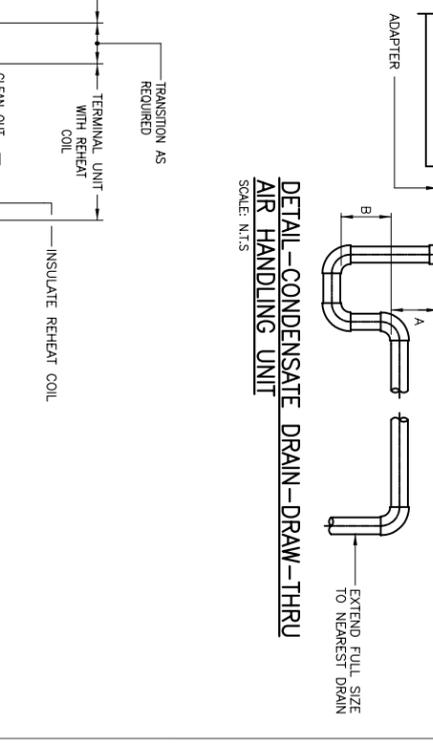
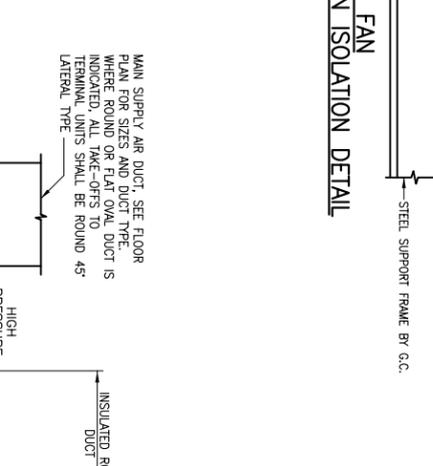
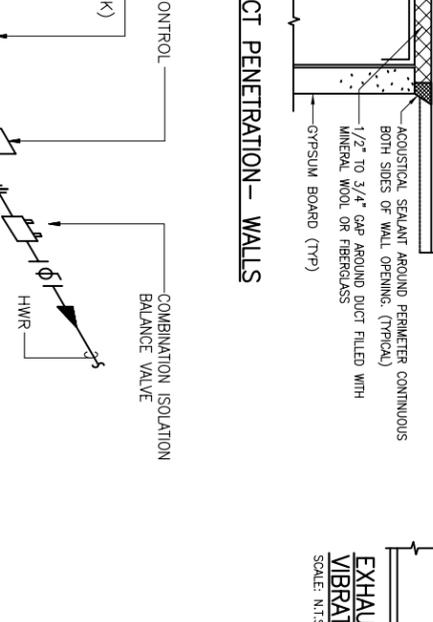
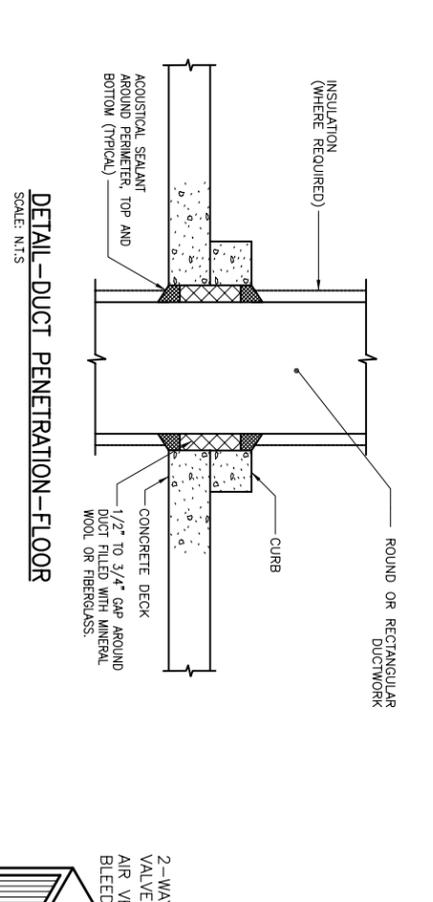
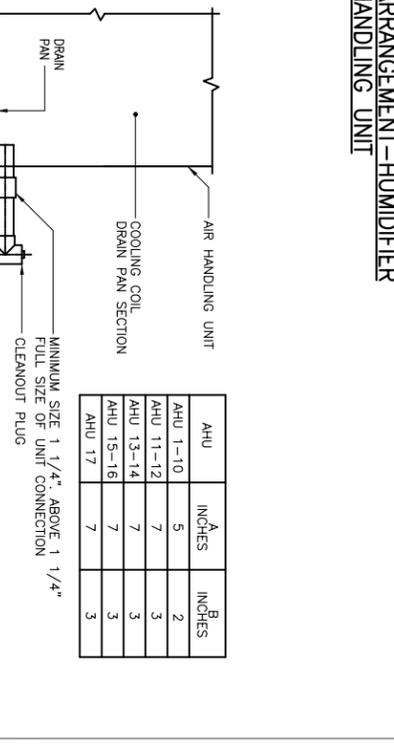
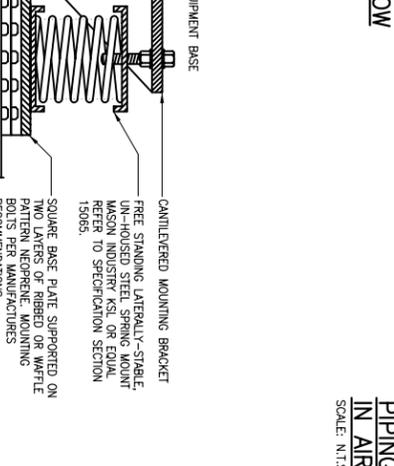
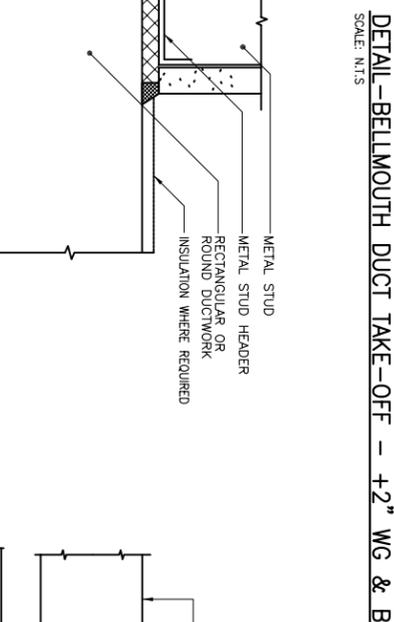
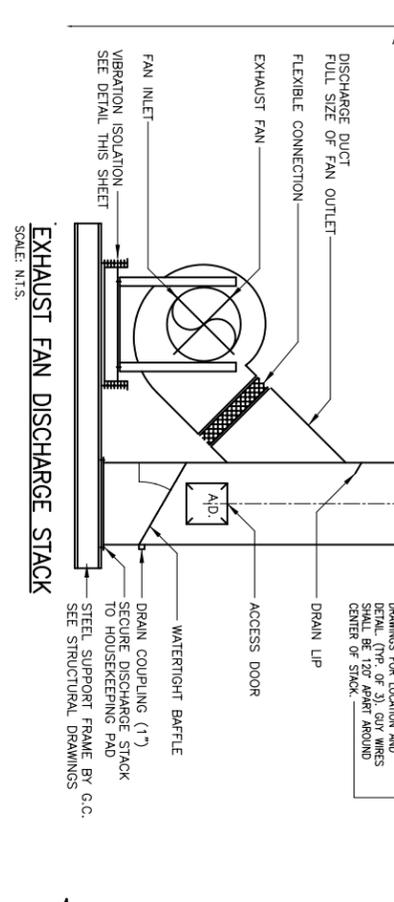
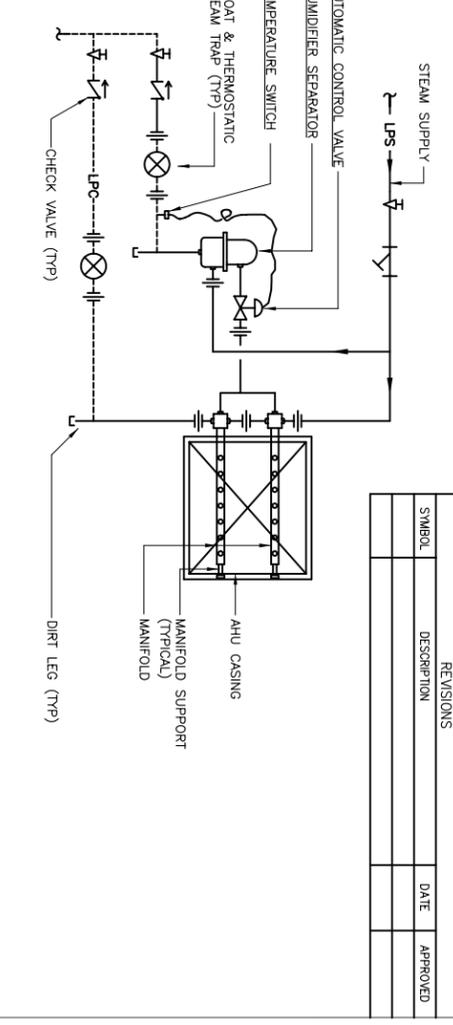
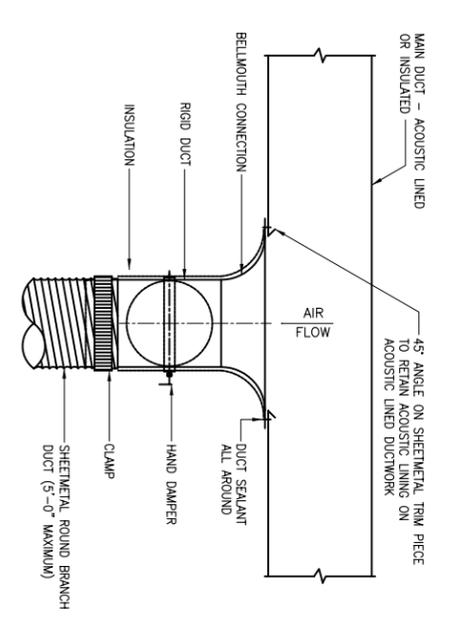
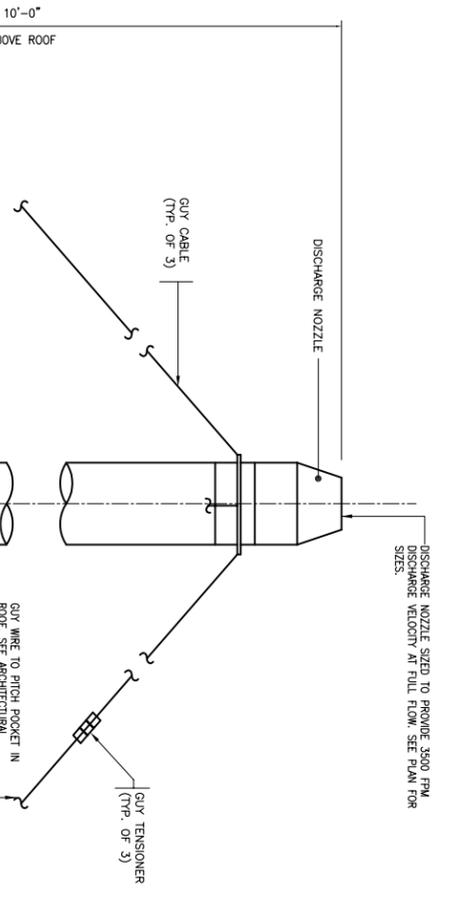


CAUTION: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

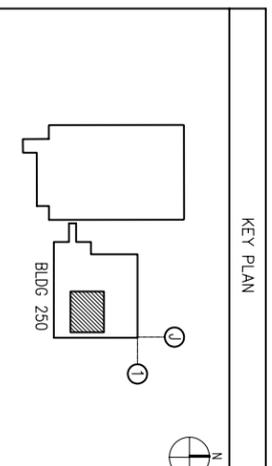
DESIGNED BY: <b>Gipe Associates Inc.</b>	PROFESSIONAL CERTIFICATION
RESIGNED BY:	
MECH ENGINEER:	
PLUMB ENGINEER:	
FIRE ENGINEER:	
ELEC ENGINEER:	
DRAWN BY:	
CHECKED BY:	
REGISTRATION NO.:	
DATE:	

DESIGNED BY:	DATE:	APPROVED OFFICER IN CHARGE:
CHECKED BY:	DATE:	
RESIGNED BY:	DATE:	
MECH ENGINEER:	DATE:	
PLUMB ENGINEER:	DATE:	
FIRE ENGINEER:	DATE:	
ELEC ENGINEER:	DATE:	
DRAWN BY:	DATE:	
CHECKED BY:	DATE:	
REGISTRATION NO.:	DATE:	
SCALE AS NOTED		

DRAWING NO. **M6**



FINAL SUBMISSION - 2/14/03



CAUTION - IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.

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MECH ENGR: [Signature]	
FLUID ENGR: [Signature]	
FIRE ENGR: [Signature]	
ELEC ENGR: [Signature]	
DRAWN BY: [Signature]	
CHECKED BY: [Signature]	
DATE SHOWN: [Date]	

DESIGNED	DRAMA
CHECKED	DRAMA
SUPERV	
IN CHARGE	
SAFETY OFF	
APPROVED	
APPROVED OFFICER IN CHARGE	

DEPARTMENT OF THE NAVY	NAVAL FACILITIES ENGINEERING COMMAND
NAVAL RESEARCH LABORATORY	WASHINGTON, D.C. 20375 - 5320
CLEAN ROOMS NO. 7 AND 8,	BUILDING 250
DETAILS	
NAVAC DRAWING NO.	FW NO.
CONSTR. CONTR. NO.	FW-D NO.
DATE:	DATE:
SCALE: AS NOTED	SHEET OF

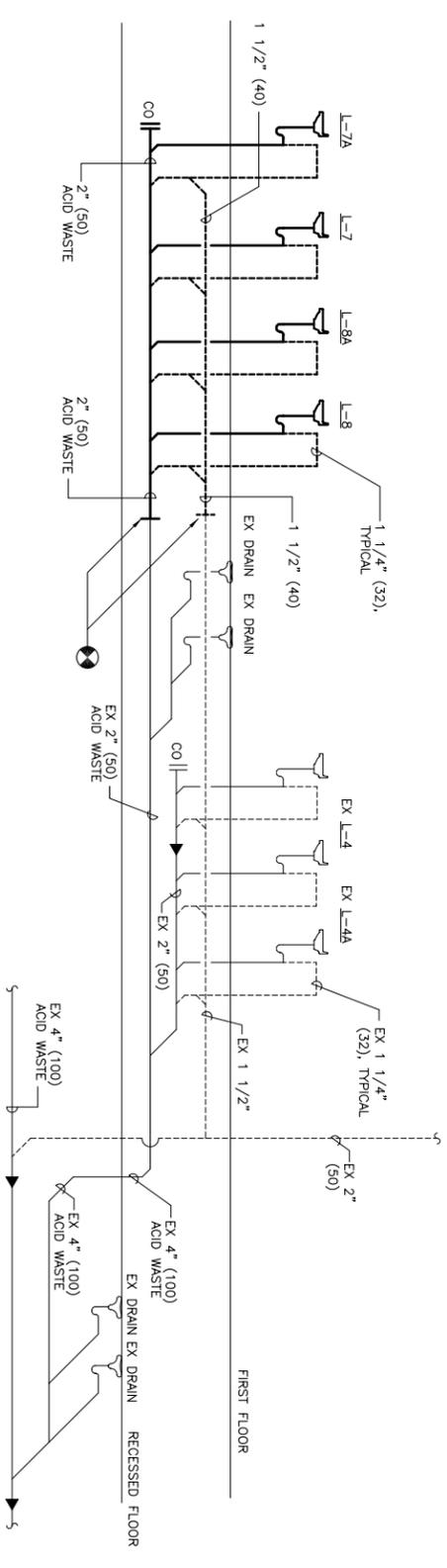
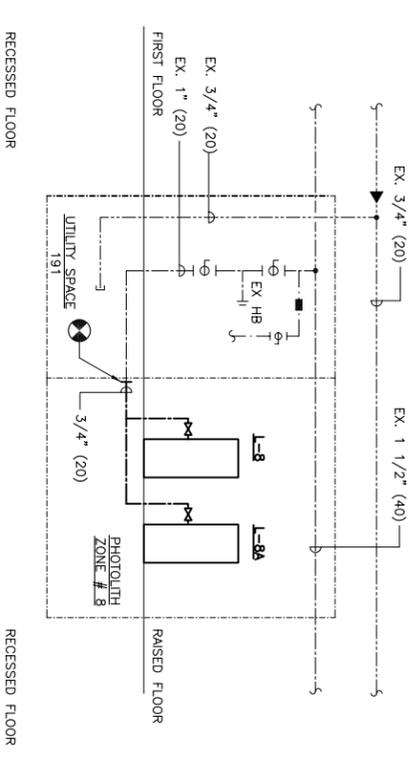
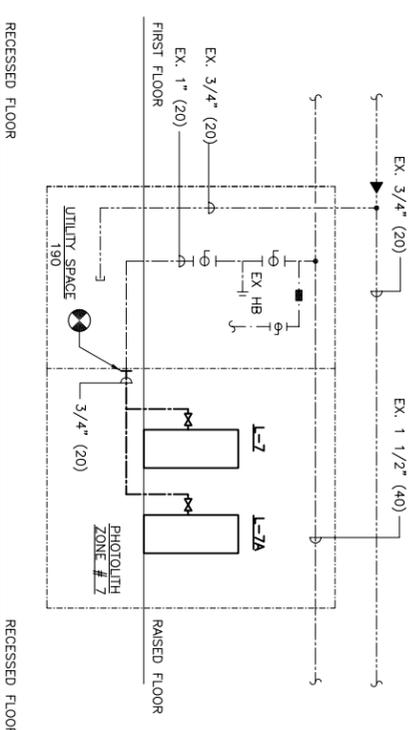
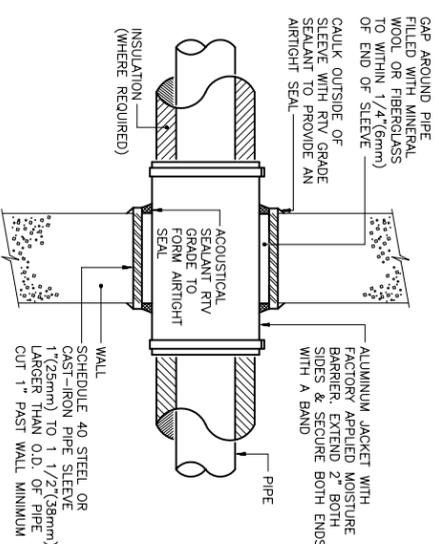
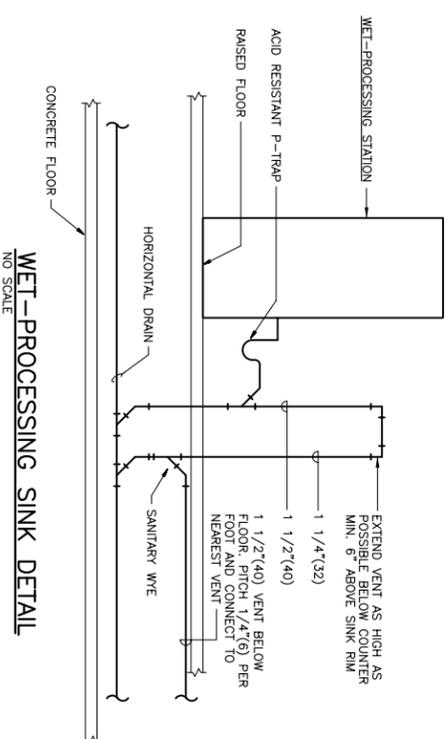
DRAWING NO. **M7**



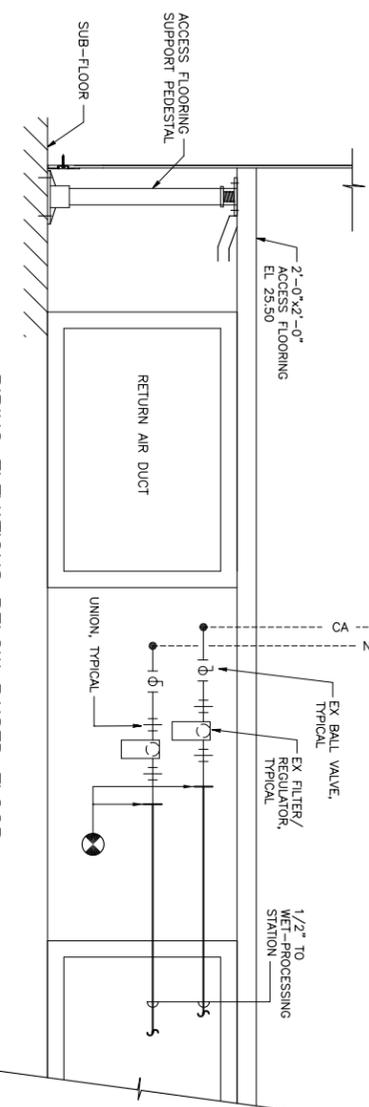


REVISIONS		
SYMBOL	DESCRIPTION	DATE

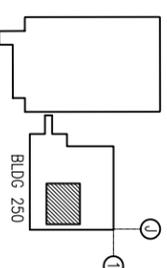
PLUMBING FIXTURE SCHEDULE									
SYMBOL	FIXTURE	HW	TW	CW	WASTE	VENT	NITROGEN	COMPRESSED AIR	DESCRIPTION
L-7	WET-PROCESSING STATION	-	-	1/2 (15)	(2) 1 1/2 (40)	1 1/4 (32)	1/2 (15)	1/2 (15)	PROVIDED BY LAB EQUIP. SUPPLIER. FINAL CONNECTIONS BY PC
L-7A	WET-PROCESSING STATION	-	-	-	1 1/2 (40)	1 1/4 (32)	1/2 (15)	1/2 (15)	PROVIDED BY LAB EQUIP. SUPPLIER. FINAL CONNECTIONS BY PC
L-8	WET-PROCESSING STATION	-	-	1/2 (15)	(2) 1 1/2 (40)	1 1/4 (32)	1/2 (15)	1/2 (15)	PROVIDED BY LAB EQUIP. SUPPLIER. FINAL CONNECTIONS BY PC
L-8A	WET-PROCESSING STATION	-	-	1/2 (15)	(2) 1 1/2 (40)	1 1/4 (32)	1/2 (15)	1/2 (15)	PROVIDED BY LAB EQUIP. SUPPLIER. FINAL CONNECTIONS BY PC



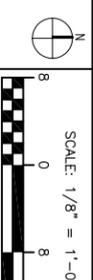
FINAL SUBMISSION - 2/14/03



KEY PLAN



GRAPHIC SCALE



DESIGNED BY: **Gipe Associates Inc.**  
CONSULTING ENGINEERS  
1000 North 17th Street, Suite 200  
Arlington, VA 22209  
(703) 261-1234  
FAX: (703) 261-1235

PROFESSIONAL CERTIFICATION

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250

RISER DIAGRAMS AND DETAILS

NAVAC DRAWING NO. \_\_\_\_\_  
CONSTR. CONTR. NO. N00173-03-D-2400  
PW-D NO. \_\_\_\_\_  
DRAWING NO. **P2**  
SHEET \_\_\_\_\_ OF \_\_\_\_\_

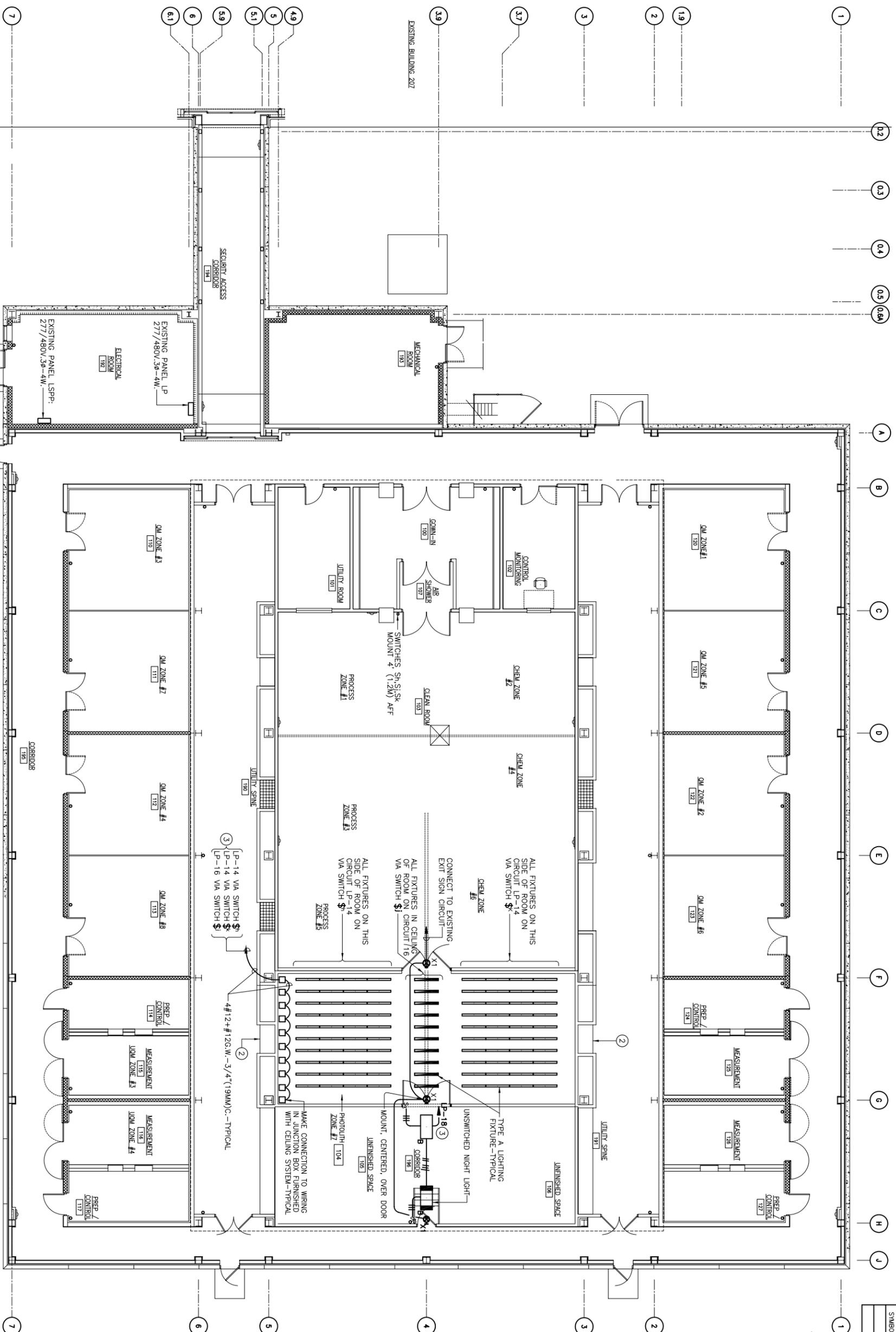
APPROVED OFFICER IN CHARGE: \_\_\_\_\_ DATE: \_\_\_\_\_  
SCALE: AS NOTED

CAUTION: IF THIS DRAWING IS A REDUCTION, GRAPHIC SCALE MUST BE USED.



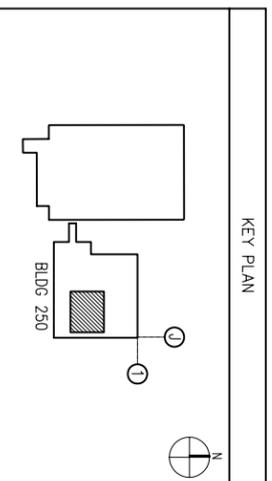
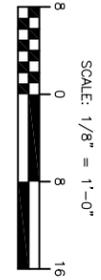
REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED

- DRAWING NOTES:**
- VIA EMERGENCY/STANDBY ILLUMINATION RELAY BYPASS. CONNECT TO EX. CIRCUIT FROM PANEL LSPP. SEE CONTROL DIAGRAM, DWG. E9.
  - ROUTE/LOCATE CONDUITS/WIRING AS CLOSE AS POSSIBLE TO THIS WALL. ALL CONDUITS TO BE SUSPENDED FROM STRUCTURE ABOVE.
  - TO 20A, 2P. CB. PROVIDE NEW CB TO MATCH EX. PANELBOARD.



**LIGHTING FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

FINAL SUBMISSION - 2/14/03



**GRAPHIC SCALE**

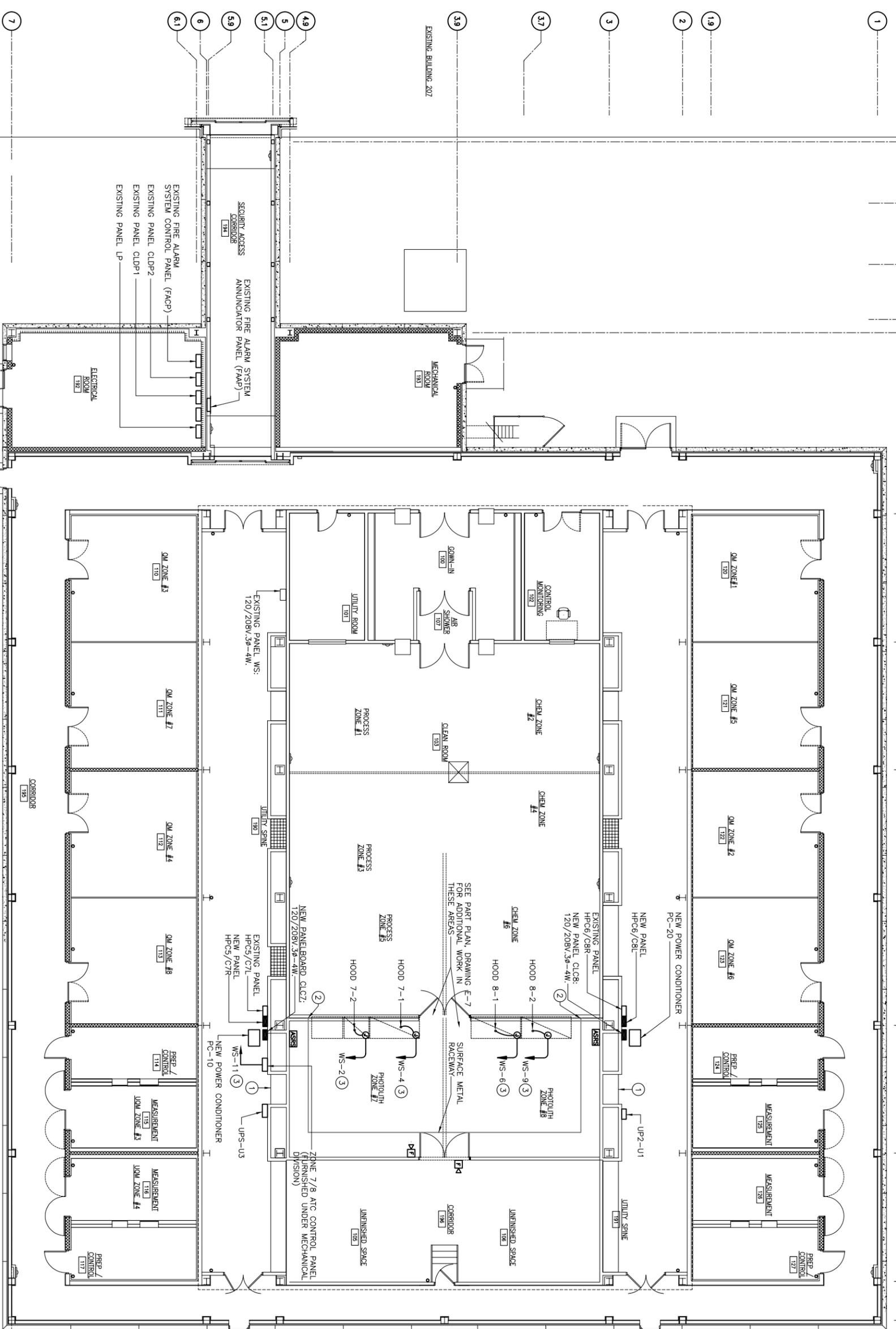
DESIGNED BY:	RESIGNED BY:	PROFESSIONAL CERTIFICATION:
FLUOR ENGINEER:	MECH ENGINEER:	REGISTERED PROFESSIONAL:
ELECTRICAL ENGINEER:	REGISTERED PROFESSIONAL:	REGISTERED PROFESSIONAL:
DATE:	DATE:	DATE:

DEPARTMENT OF THE NAVY		NAVAL FACILITIES ENGINEERING COMMAND	
NAVAL RESEARCH LABORATORY		WASHINGTON, D.C. 20375 - 5320	
CLEAN ROOMS NO. 7 AND 8,		LIGHTING FLOOR PLAN	
NAVFAC DRAWING NO.	FW NO.	CONSTR. CONTR. NO.	FW-D NO.
N00173-03-D-2400			
DATE:	DATE:	DATE:	DATE:
0			
SCALE AS NOTED			

DRAWING NO. **B2**

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED
1			

- DRAWING NOTES:**
- 1 ROUTE/LOCATE ALL CONDUITS/WIRING AS CLOSE AS POSSIBLE TO THIS WALL. ALL CONDUITS TO BE SUSPENDED FROM STRUCTURE ABOVE.
  - 2 COORDINATE WITH EXISTING SURFACE METAL RACEWAY. NEW RACEWAY TO BE LOCATED AND MOUNTED TO MATCH EXISTING.
  - 3 SEE SCHEMATIC POWER DIAGRAM DWG. E1.



**POWER, GROUNDING AND FIRE ALARM FLOOR PLAN**  
SCALE: 1/8" = 1'-0"

7 FINAL SUBMISSION - 2/14/03

KEY PLAN

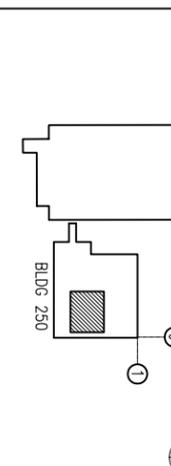
GRAPHIC SCALE

**Gipe Associates Inc.**  
Consulting Engineers  
1220 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004  
(202) 462-1999

DESIGNED BY: [Signature]  
CHECKED BY: [Signature]  
SUPERV. IN CHARGE: [Signature]  
SAFETY OFF: [Signature]  
APPROVED: [Signature]  
DATE: [Date]

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250  
POWER, GROUNDING AND FIRE ALARM  
FLOOR PLAN



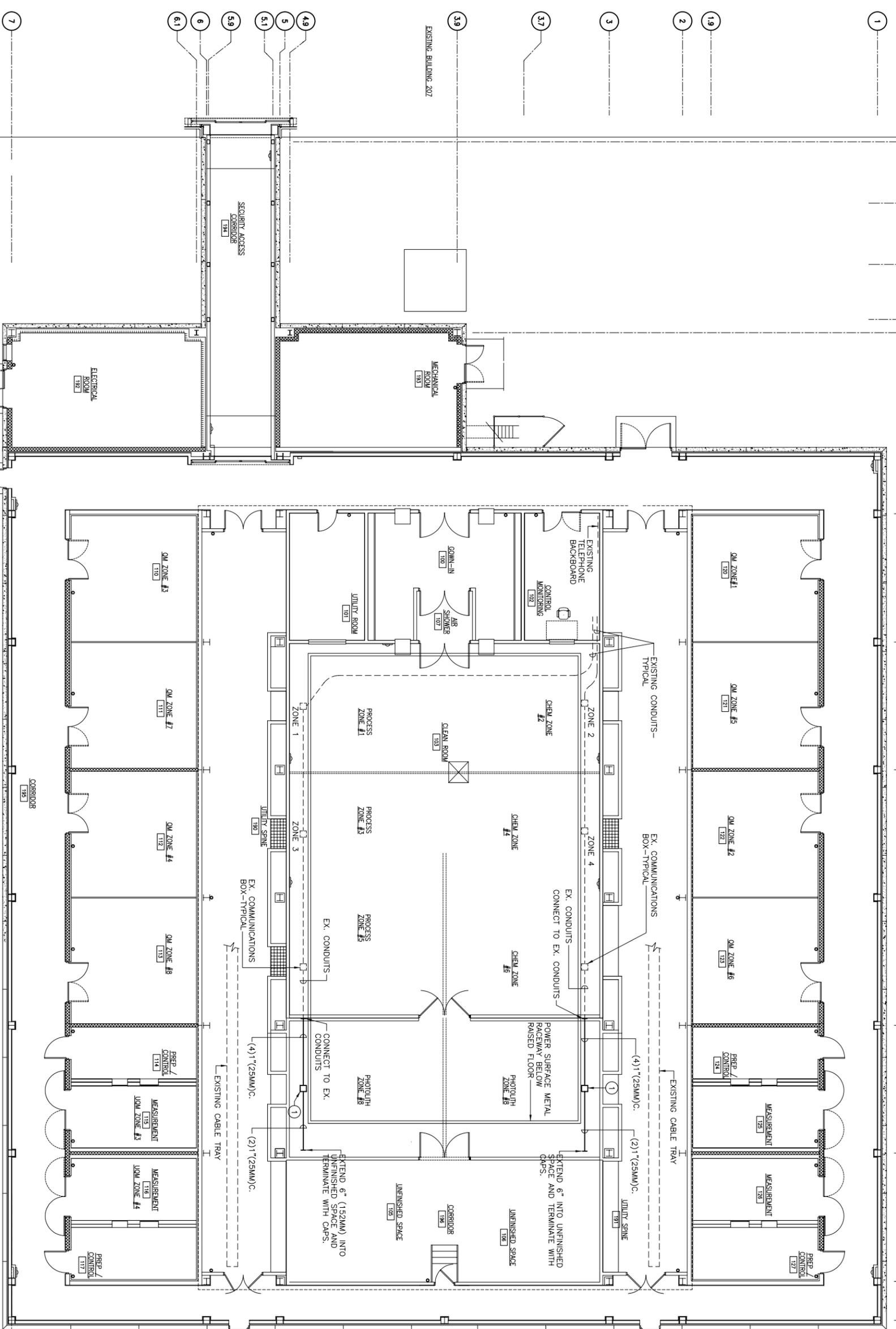
DESIGNED BY:	PROFESSIONAL CERTIFICATION:
MECH ENGR:	
PLUMB ENGR:	
FIRE ENGR:	
ELEC ENGR:	
DRAWN BY:	REGISTRATION NO.:
CHECKED BY:	DATE SIGNED:

SHT. NO.:	0	OF	0
CONSTR. CONTR. NO.:	N00173-03-D-2400	FW-D NO.:	
NAVJAC DRAWING NO.:		FW NO.:	
APPROVED OFFICER IN CHARGE:		DATE:	
CHECKED BY:		DATE:	
SCALE:	AS NOTED	DRAWING NO.:	<b>E3</b>
		SHEET:	OF

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

SYMBOL	REVISIONS	DESCRIPTION	DATE	APPROVED
1				

- DRAWING NOTES:**
- MULTI-GANG COMMUNICATION BOX WITH: (2) MULTIMODE FIBER JACKS, (2) SINGLEMODE FIBER JACKS, (2) CAT 6 UTP DATA JACKS, (1) CAT 6 UTP VOICE JACK, MOUNT ON BACKSIDE OF RACEWAY SUPPORT STRUCTURE. INSTALLATION AND EQUIPMENT TO MATCH EXISTING.
  - MULTIMODE FIBER JACKS: FIBER OPTIC SINGLEMODE FIBER JACKS: FIBER OPTIC ST DATA JACKS: RJ-45, 8-POSITION VOICE JACK: RJ-45, 8-POSITION



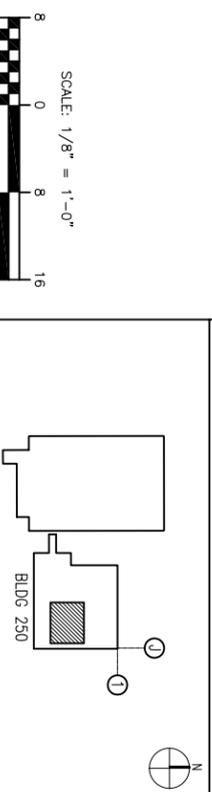
**COMMUNICATIONS FLOOR PLAN**

SCALE: 1/8" = 1'-0"  
 NOTE: SEE SCHEMATIC RISER, DWG. EB.

7 FINAL SUBMISSION - 2/14/03

**KEY PLAN**

**GRAPHIC SCALE**



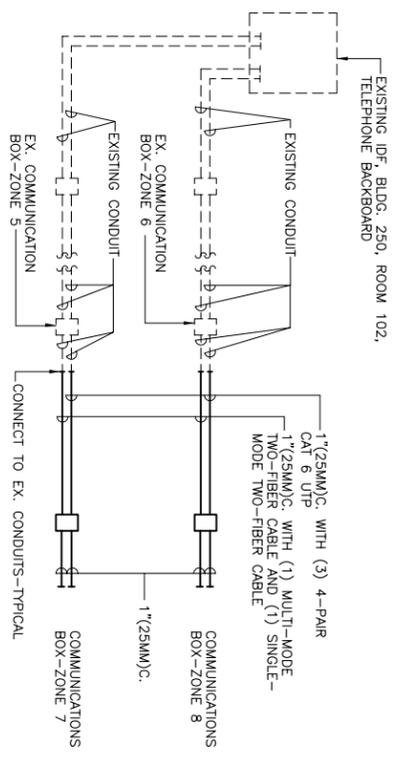
SCALE: 1/8" = 1'-0"  
 0 8 16

<b>Designated by:</b> Consulting Engineers Building, Maryland 4000 02-1586 410-922-8888		<b>DESIGNED BY:</b> GRAHAM		<b>DEPARTMENT OF THE NAVY</b> NAVAL FACILITIES ENGINEERING COMMAND NAVAL RESEARCH LABORATORY WASHINGTON, D.C. 20375 - 5320	
<b>MECH ENGR:</b> FLUVE ENGR: FIRE ENGR: ELEC ENGR: IRMMV BR: DATE SIGNED:		<b>PROFESSIONAL CERTIFICATION:</b> SUPERV IN CHARGE: SAFETY OFF: APPROVED: DATE:		<b>REGISTERATION NO.:</b> APPROVED OFFICER IN CHARGE: DATE:	
<b>CHECKED BY:</b> DATE SIGNED:		<b>APPROVED:</b> DATE:		<b>NAVAC DRAWING NO.:</b> CONSTR. CONTR. NO. N00173-03-D-2400 PW-D NO.	
<b>DATE SIGNED:</b>		<b>DATE:</b>		<b>DRAWING NO.:</b> <b>E4</b> SHEET OF	



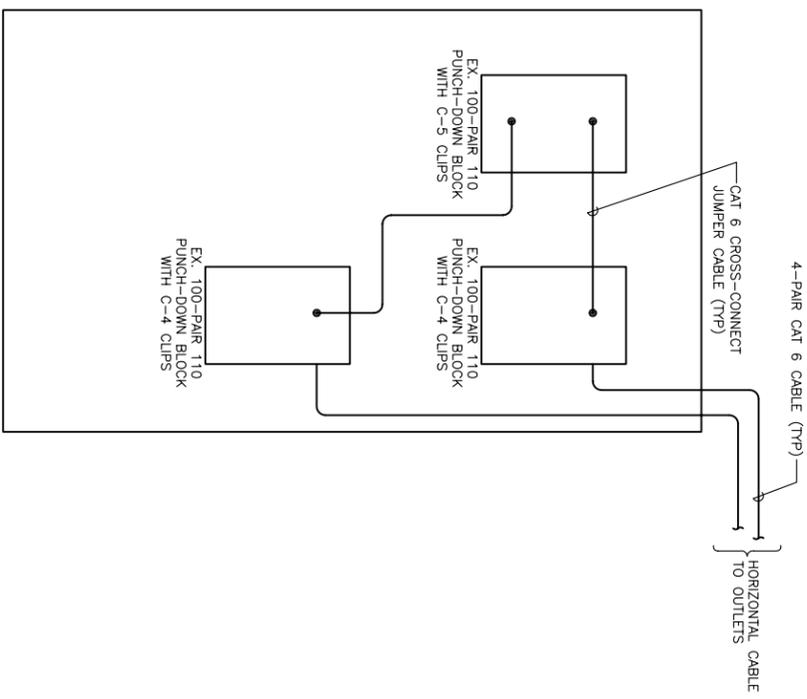
# LIGHTING FIXTURE SCHEDULE

TYPE SYMBOL	DESCRIPTION	MOUNTING	LAMPS NO.	WATTS	LAMP CODE	V.	MANUFACTURER AND CATALOG NO.	NOTES
A	CLEAN ROOM FLUORESCENT, NOMINAL 48" (1219MM) LONG, WITH WRAP-AROUND ACRYLIC DIFFUSER, ELECTRONIC BALLAST.	CEILING	1	32	F32T8 GOLD	Z77	GORDON 55MM CEILING SYSTEM FAN-FIRE PARALOUNT INDUSTRIES #2 TO MATCH EXISTING	THESE FIXTURES & DIFFUSERS WILL BE PROVIDED WITH THE CEILING SYSTEM. PROVIDE LAMPS TO SUIT AND INSTALL DIFFUSERS.
B	STEM-SUSPENDED FLUORESCENT, 4' LONG WITH WRAP-AROUND PRISMATIC DIFFUSER.	STEM-SUSPENDED CEILING	3	32	F32T8	Z77	HOLOPHANE #HW-S-M-4-D-S-H71-043-EP4-1-2 OR APPROVED EQUAL	PROVIDE A MARK V ADVANCE BALLAST WITH <10% THD. PROVIDE LAMPS TO MATCH EXISTING
X1	EXIT SIGN, SURFACE MOUNTED, WITH LED FLASHING AND INTERMITTENT LAMPS	WALL	-	-	-	Z77	LITHONIA "TITAN" #LX-S-W-1-R-Z77 OR APPROVED EQUAL TO MATCH EXISTING	



## COMMUNICATIONS - SCHEMATIC RISER DIAGRAM

NOTES: 1. EXTEND NEW CABLES FROM NEW BOXES VIA NEW AND EXISTING CONDUIT TO EXISTING TELEPHONE BACKBOARD. TERMINATE CABLES ON EXISTING TERMINAL BLOCKS TO MATCH EXISTING.  
2. PROVIDE PULL CORB IN ALL CONDUITS.



## EXISTING TELEPHONE BACKBOARD

NO SCALE

PANEL DESIGNATION		TYPE: N/OOD		NUMBER OF POLES: 42	
HPC6/C8L		MAIN BUS RATING: 225A		MAIN RATING: 225A MLO	
LOCATION: SOUTH UTILITY SPINE		VOLTAGE: 208Y/120, 3 PHASE, 4W		PANEL MOUNTING: SURFACE	
PANEL ENCL. (NEMA): 1		PANEL MIN. A.I.C. RATING: 10,000			

CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA	CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA
1	20A/2	RECEPTACLE	A0	B0	2	20A/2	RECEPTACLE	A0	B0
3	20A/2	RECEPTACLE			4	20A/2	RECEPTACLE		
5	20A/2	RECEPTACLE			6	20A/2	RECEPTACLE		
7	20A/1	RECEPTACLE			8	20A/1	RECEPTACLE		
9	20A/1	RECEPTACLE			10	20A/1	RECEPTACLE		
11	20A/1	RECEPTACLES			12	20A/1	RECEPTACLES		
13	20A/1	RECEPTACLES			14	20A/1	RECEPTACLES		
15	20A/1	RECEPTACLES - UT SPINE			16	20A/1	RECEPTACLES - UT SPINE		
17	20A/1	RECEPTACLES - UT SPINE			18	20A/1	RECEPTACLES - UT SPINE		
19	20A/1	SPACE			20	20A/1	SPACE		
21	20A/1	SPACE			22	20A/1	SPACE		
23	20A/1	SPACE			24	20A/1	SPACE		
25	20A/1	SPACE			26	20A/1	SPACE		
27	20A/1	SPACE			28	20A/1	SPACE		
29	20A/1	SPACE FOR			30	20A/1	SPACE FOR		
31	20A/1	SPACE FOR			32	20A/1	SPACE FOR		
33	20A/1	SPACE FOR			34	20A/1	SPACE FOR		
35	20A/1	SPACE FOR			36	20A/1	SPACE FOR		
37	20A/1	SPACE FOR			38	20A/1	SPACE FOR		
39	20A/1	SPACE FOR			40	20A/1	SPACE FOR		
41	20A/1	SPACE FOR			42	20A/1	SPACE FOR		
TOTAL					TOTAL				

PANEL CONNECTED LOAD  
 A0 = SOLID NEUTRAL BUS  
 B0 = EQUIPMENT GROUND BUS  
 C0 = PANEL RATED TVSS UNIT

DEMAND LOAD: \_\_\_\_\_

SYMBOL	DESCRIPTION	DATE	APPROVED

PANEL DESIGNATION		TYPE: N/OOD		NUMBER OF POLES: 30	
CLC8		MAIN BUS RATING: 100A		MAIN RATING: 100A MCB	
LOCATION: SOUTH UTILITY SPINE		VOLTAGE: 208Y/120, 3 PHASE, 4W		PANEL MOUNTING: SURFACE	
PANEL ENCL. (NEMA): 1		PANEL MIN. A.I.C. RATING: 10,000			

CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA	CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA
1	20A/1	RECEPTACLES	A0	B0	2	20A/1	RECEPTACLES	A0	B0
3	20A/1	RECEPTACLES			4	20A/1	RECEPTACLES		
5	20A/1	RECEPTACLES			6	20A/1	RECEPTACLES		
7	20A/1	SPACE			8	20A/1	SPACE		
9	20A/1	SPACE			10	20A/1	SPACE		
11	20A/1	SPACE			12	20A/1	SPACE		
13	20A/1	SPACE			14	20A/1	SPACE		
15	20A/1	SPACE			16	20A/1	SPACE		
17	20A/1	SPACE			18	20A/1	SPACE		
19	20A/1	SPACE			20	20A/1	SPACE		
21	20A/1	SPACE			22	20A/1	SPACE		
23	20A/1	SPACE			24	20A/1	SPACE		
25	20A/1	SPACE			26	20A/1	SPACE		
27	20A/1	SPACE			28	20A/1	SPACE		
29	20A/1	SPACE			30	20A/1	SPACE		
TOTAL					TOTAL				

NOTE: TVSS UNIT MAYBE INTEGRAL WITHIN THE PANEL.

PANEL DESIGNATION		TYPE: N/OOD		NUMBER OF POLES: 42	
HPC5/C7R		MAIN BUS RATING: 225A		MAIN RATING: 225A MLO	
LOCATION: SOUTH UTILITY SPINE		VOLTAGE: 208Y/120, 3 PHASE, 4W		PANEL MOUNTING: SURFACE	
PANEL ENCL. (NEMA): 1		PANEL MIN. A.I.C. RATING: 10,000			

CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA	CIR. No.	CIR. BKR.	DESCRIPTION	LOAD - KVA	LOAD - KVA
1	20A/2	RECEPTACLE	A0	B0	2	20A/2	RECEPTACLE	A0	B0
3	20A/2	RECEPTACLE			4	20A/2	RECEPTACLE		
5	20A/2	RECEPTACLE			6	20A/2	RECEPTACLE		
7	20A/1	RECEPTACLE			8	20A/1	RECEPTACLE		
9	20A/1	RECEPTACLES			10	20A/1	RECEPTACLES		
11	20A/1	RECEPTACLES			12	20A/1	RECEPTACLES		
13	20A/1	RECEPTACLES			14	20A/1	RECEPTACLES		
15	20A/1	RECEPTACLES-UT SPINE			16	20A/1	RECEPTACLES-UT SPINE		
17	20A/1	RECEPTACLES-UT SPINE			18	20A/1	RECEPTACLES-UT SPINE		
19	20A/1	SPACE			20	20A/1	SPACE		
21	20A/1	SPACE			22	20A/1	SPACE		
23	20A/1	SPACE			24	20A/1	SPACE		
25	20A/1	SPACE			26	20A/1	SPACE		
27	20A/1	SPACE			28	20A/1	SPACE		
29	20A/1	SPACE			30	20A/1	SPACE		
TOTAL					TOTAL				

NOTE: TVSS UNIT MAYBE INTEGRAL WITHIN THE PANEL.

PANEL DESIGNATION		TYPE: N/OOD		NUMBER OF POLES: 30	
CLC7		MAIN BUS RATING: 100A		MAIN RATING: 100A MCB	
LOCATION: SOUTH UTILITY SPINE		VOLTAGE: 208Y/120, 3 PHASE, 4W		PANEL MOUNTING: SURFACE	
PANEL ENCL. (NEMA): 1		PANEL MIN. A.I.C. RATING: 10,000			

NO.	EQUIPMENT SERVED	HP	VOLTAGE/PHASE	NEMA ENCL.	SERVICE PANEL	NOTES
VFD-7	AHU-7	40	480/3	1	PHPP1	1,2
VFD-8	AHU-8	40	480/3	1	PHPP2	1,2
VFD-26	EXH. FAN EF-8-1	2	480/3	1	EMEP1	2
VFD-27	EXH. FAN EF-8-2	2	480/3	1	EMEP1	2
VFD-32	EXH. FAN EF-7-1(EX)	1	480/3	1	EMEP2	2
VFD-33	EXH. FAN EF-7-2(EX)	2	480/3	1	EMEP2	2

NOTES: 1. PROVIDE INTEGRAL DISCONNECT  
2. VERIFY ACTUAL HORSEPOWER AND ELECTRICAL CHARACTERISTICS OF MOTOR.

## FINAL SUBMISSION - 2/14/03

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REGISTERED PROFESSIONAL ENGINEER

CONSULTING ENGINEERS INC.

1000 ...

WASHINGTON, D.C. 20037-5520

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REGISTERED PROFESSIONAL ENGINEER

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1000 ...

WASHINGTON, D.C. 20037-5520

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WASHINGTON, D.C. 20037-5520

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REGISTERED PROFESSIONAL ENGINEER

CONSULTING ENGINEERS INC.

1000 ...

WASHINGTON, D.C. 20037-5520

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REGISTERED PROFESSIONAL ENGINEER

CONSULTING ENGINEERS INC.

1000 ...

WASHINGTON, D.C. 20037-5520

DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REGISTERED PROFESSIONAL ENGINEER

CONSULTING ENGINEERS INC.

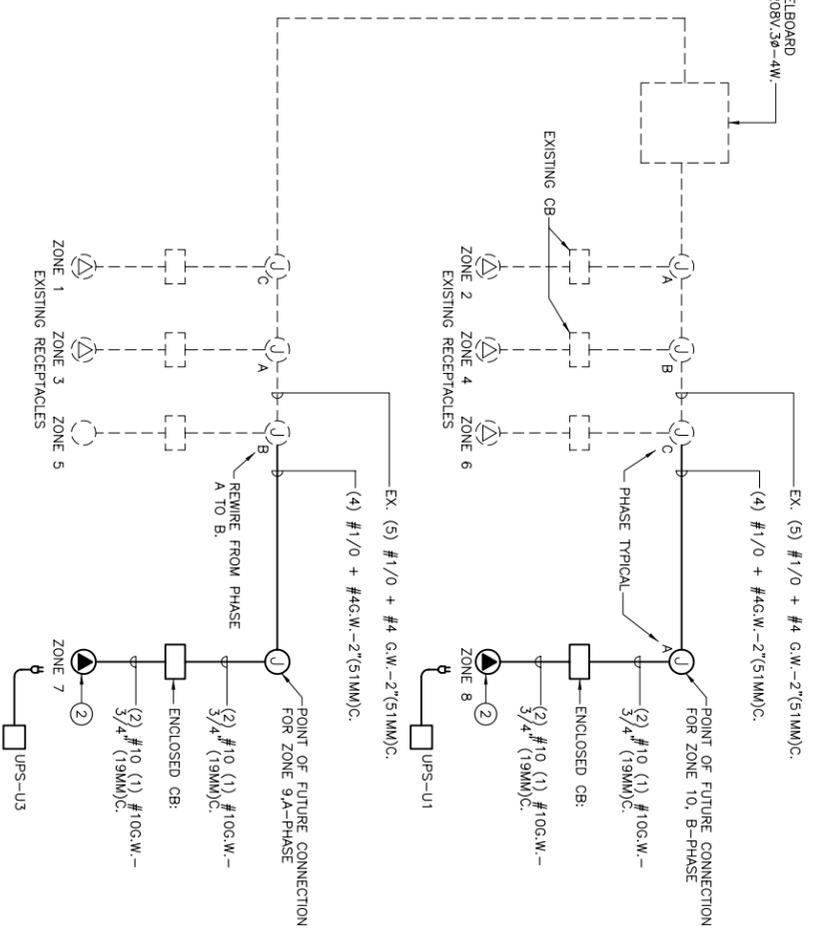
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WASHINGTON, D.C. 20037-5520

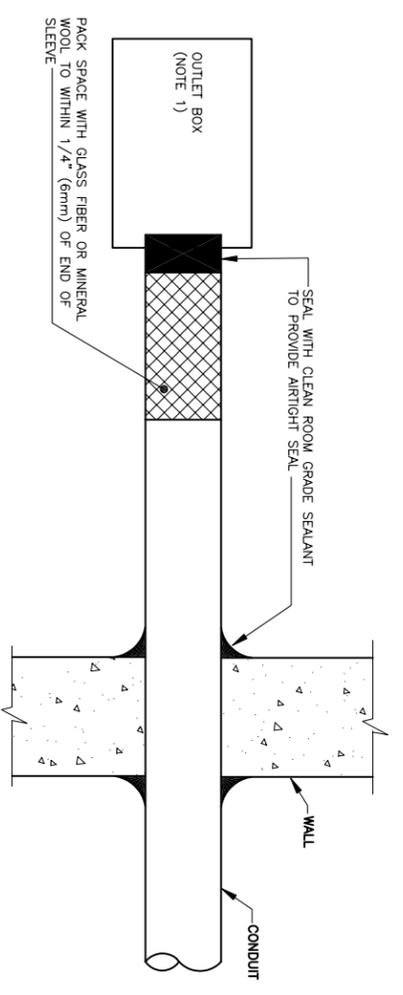
DESIGNED BY: \_\_\_\_\_

CHECKED BY: \_\_\_\_\_

EXISTING PANELBOARD  
 ELEPP: 120/208V, 3Ø-4W

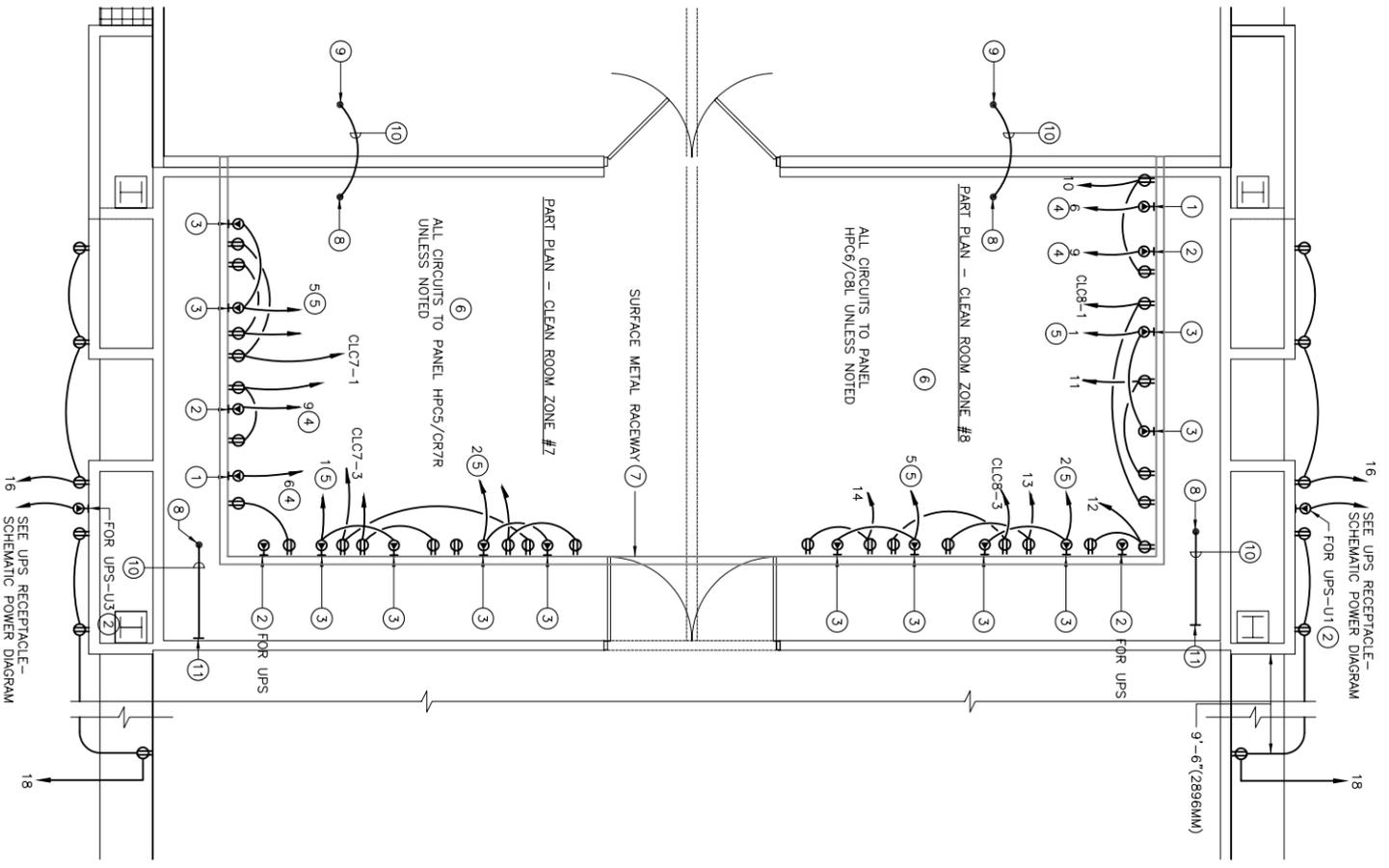


**UPS RECEPTACLE - CLEAN ROOMS 7 & 8 - SCHEMATIC POWER DIAGRAM**  
 NO SCALE



**CONDUIT PENETRATION FOR CLEAN ROOM**  
 NO SCALE

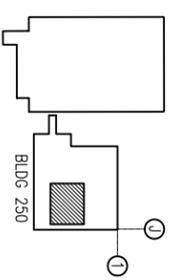
**NOTE:**  
 1. INTERIOR OF CONDUIT SHALL BE PACKED WITH GLASS FIBER OR MINERAL WOOL AND SEALED WITH CLEAN ROOM GRADE SEALANT IN FIRST OUTLET IN THE OUTLET FILTER QUIET CLEAN ROOM. THERE SHALL BE NO FITTINGS BETWEEN THE PENETRATION AND THE FIRST OUTLET. CONDUITS THAT DO NOT END IN AN OUTLET BOX SHALL BE SEALED AT THEIR OPEN END.



**PART PLAN - CLEAN ROOM ZONE #7 AND ZONE #8 POWER AND GROUNDING**  
 SCALE: 1/4"=1'-0"

KEY PLAN

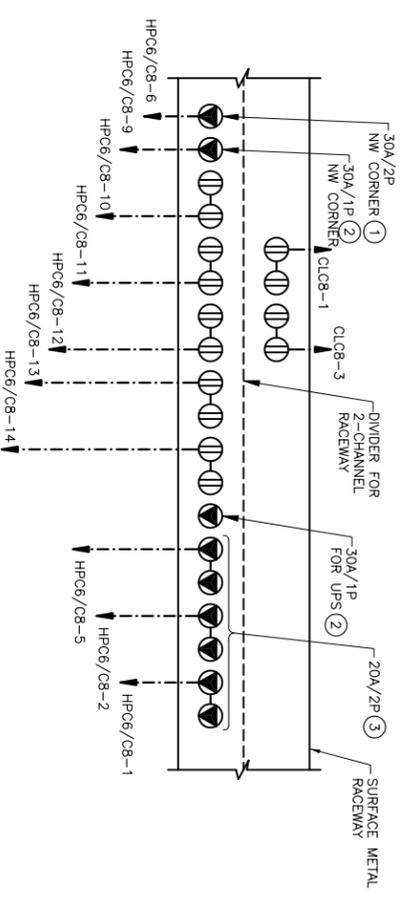
GRAPHIC SCALE



REVISIONS		
SYMBOL	DESCRIPTION	DATE

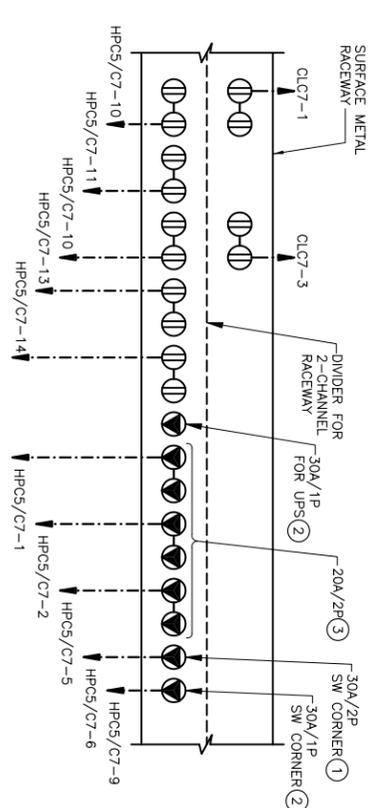
**DRAWING NOTES:**

- ① SINGLE RECEPTACLE: 30A, 250V, 2P, 3W, GROUNDING TYPE, NEMA 6-30R.
- ② SINGLE RECEPTACLE: 30A, 125V, 2P, 3W, GROUNDING TYPE, NEMA 5-30R.
- ③ SINGLE RECEPTACLE: 20A, 250V, 2P, 3W, GROUNDING TYPE, NEMA 6-20R.
- ④ (2) #10 (1) #10G.W.-3/4"(19MM).C.
- ⑤ (2) #12 (1) #12G.W.-3/4"(19MM).C.
- ⑥ MOUNT ALL RECEPTACLES IN SURFACE METAL RACEWAY.
- ⑦ MOUNT RACEWAY ON PEDESTALS UNDER RAISED FLOOR.
- ⑧ BOND TO FLOOR SYSTEM PEDESTAL.
- ⑨ BOND TO EXISTING FLOOR SYSTEM PEDESTAL.
- ⑩ #3/0 INSULATED COPPER G.W.-1" (25MM).C. THROUGH PARTITION.
- ⑪ PROVIDE 4' OF SLACK CONDUCTOR FOR FUTURE CONNECTION.



**DETAIL - CLEAN ROOM ZONE #8 PARTIAL RACEWAY ELEVATION**  
 NO SCALE

**NOTE:** UNLESS OTHERWISE INDICATED, DISTRIBUTE RECEPTACLES BY TYPE EVENLY ALONG RACEWAY FOR EACH ZONE. SUBMIT LAYOUT FOR REVIEW.



**DETAIL - CLEAN ROOM ZONE #7 PARTIAL RACEWAY ELEVATION**  
 NO SCALE

**NOTE:** UNLESS OTHERWISE INDICATED, DISTRIBUTE RECEPTACLES BY TYPE EVENLY ALONG RACEWAY FOR EACH ZONE. SUBMIT LAYOUT FOR REVIEW.

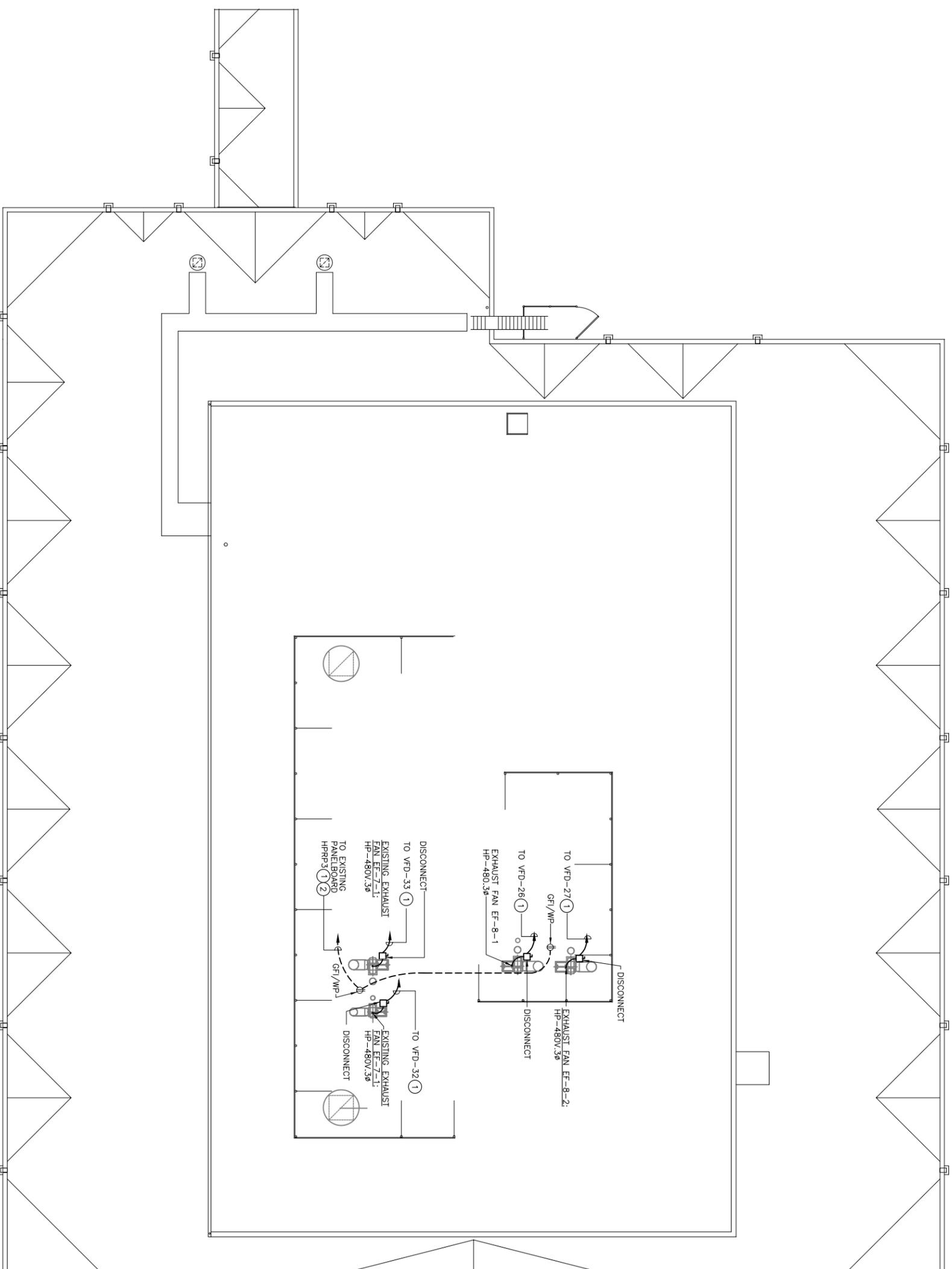
FINAL SUBMISSION - 2/14/03

		DESIGNED BY: _____ DRAWN BY: _____ CHECKED BY: _____ IN CHARGE: _____ SUPERVISOR: _____ SAFETY OFFICER: _____ APPROVED BY: _____ DATE: _____
DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND NAVAL RESEARCH LABORATORY WASHINGTON, D.C. 20375 - 5320		CLEAN ROOMS NO. 7 AND 8, BUILDING 250 PART PLANS AND DETAILS
SHEET NO. _____ OF _____ CONSTRUCTION NO. N00173-03-D-2400 DRAWING NO. _____ DATE: _____ SCALE: AS NOTED	SHEET NO. _____ OF _____ DRAWING NO. _____ DATE: _____ SCALE: AS NOTED	DRAWING NO. _____ DATE: _____ SCALE: AS NOTED

REVISIONS			
SYMBOL	DESCRIPTION	DATE	APPROVED

**DRAWING NOTES:**

- ① LOCATED ON PENTHOUSE LEVEL, SEE DRAWING ES.
- ② (2) #10(1) #106.W.-3/4" (19MM) C. TO 20A. 1P. CB. PROVIDE NEW CB TO SUIT EXISTING PANELBOARD. SEE DWG. ES FOR LOCATION OF EX. PANELBOARD HPRP3.



**POWER ROOF PLAN**  
SCALE: 1/8" = 1'-0"

FINAL SUBMISSION - 2/14/03

KEY PLAN

GRAPHIC SCALE

**Gipe Associates Inc.**  
Consulting Engineers  
1200 North 17th Street, Suite 200  
Arlington, VA 22209  
(703) 261-1100

DESIGNED BY: **BRM**  
CHECKED BY:   
SUPERVISED BY:   
IN CHARGE:   
SAFETY OFFICER:   
APPROVED BY:   
DATE:

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND  
NAVAL RESEARCH LABORATORY  
WASHINGTON, D.C. 20375 - 5320

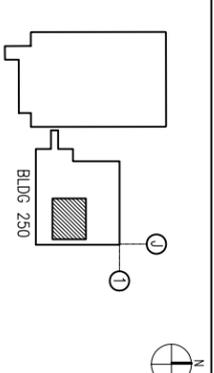
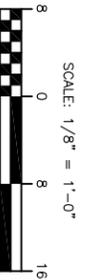
CLEAN ROOMS NO. 7 AND 8,  
BUILDING 250  
ROOF PLAN

NAVAC DRAWING NO.  PW NO.   
CONSTR. CONTR. NO.  PW-D NO.   
N00173-03-D-2400

APPROVED BY:  DATE:   
OFFICER IN CHARGE:  DATE:

SHEET NO.  OF   
SCALE AS NOTED

DRAWING NO. **E6**  
SHEET OF



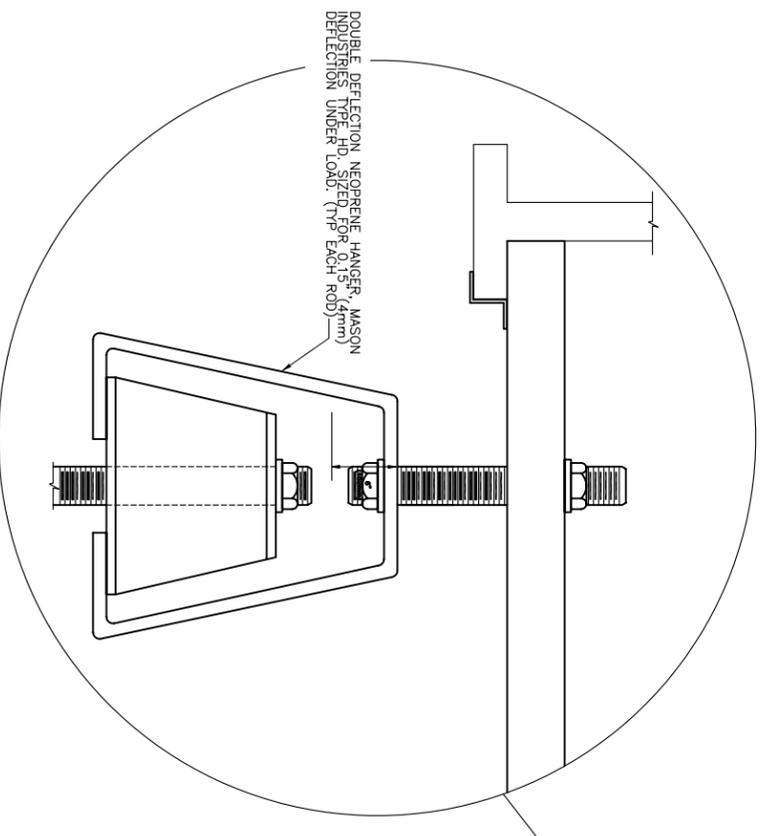
CAUTION: IF THIS DRAWING IS A REDUCTION,  
GRAPHIC SCALE MUST BE USED.

**WIRE SEPARATION NOTES:**

1. SIGNAL CIRCUITS AND ALARM CIRCUITS SHALL BE RUN IN CONDUITS SEPARATE FROM ALL OTHER WIRING.
2. SERVICE ENTRANCE, GENERATOR AND ALL LARGE FEEDERS SHALL BE IN SEPARATE CONDUITS.
3. SEPARATE WIRING INTO RACEWAY BY LEVELS AS FOLLOWS:
  - A. LEVEL 1 - 1) ANALOG SIGNALS LESS THAN 50 VOLTS AND LESS 50 MILLIAMPS
    1. 4-20ma SHIELDED INSTRUMENTATION,
    2. SHIELDED LOW LEVEL INSTRUMENTATION,
    3. VARIABLE SPEED DRIVE SPEED SIGNALS,
    - 2) DIGITAL SIGNAL AND DATA BUSES
      1. PROGRAMMABLE LOGIC CONTROLLER BUSES,
      2. MICROPROCESSOR LOGIC CONTROLLER BUSES,
      3. INSTRUMENTATION REMOTE TERMINAL UNIT BUSES.
  - B. LEVEL 2 - 1) ANALOG SIGNAL OVER 50 VOLTS AND LESS THAN 250 VOLTS
    1. TACHOMETER GENERATORS,
    - 2) DIGITAL AND DISCRETE INPUTS TO PROGRAMMABLE LOGIC CONTROLLERS AND REMOTE TERMINAL UNITS ALL OUTPUTS SUPPLYING RELAY COILS SHALL HAVE PROPER SUPPRESSION, POWER CIRCUITS OF 20 AMPERES OR LESS AND 120 VOLTS OR LESS
      1. LIGHTING AND RECEPTACLE CIRCUITS TO BE IN SEPARATE CONDUITS, UNLESS OTHERWISE NOTED,
      2. CLASS 1 CONTROL CIRCUITS ORIGINATING IN A MCC COMPARTMENT OR A MOTOR STARTER CAN BE ROUNDED IN THE POWER CONDUIT FROM SAME COMPARTMENT.
  - D. LEVEL 4 - 1) POWER CIRCUITS OVER 20 AMPERES UP TO 400 AMPERES, 600 VOLTS, EACH CIRCUIT SHALL BE RUN IN SEPARATE CONDUITS
  - E. LEVEL 5 - 1) FEEDERS OVER 400 AMPERES.
4. EACH LEVEL MUST BE RUN IN SEPARATE RACEWAYS.
5. UNLESS OTHERWISE NOTED SEPARATE ALL PARALLEL RACEWAY RUN 5'-0"(1.5m) OR LONGER WITH DIFFERENT LEVELS AS FOLLOWS:
 

LEVEL (m)	1	2	3	4	5
1	0	1"	3"	12"	12"
2	1"	0	3"	9"	12"
3	3"	3"	0	3"	6"
4	12"	9"	6"	0	3"

LEVEL (cm)	1	2	3	4	5
1	0	2.5	7.5	30	30
2	2.5	0	7.5	23	30
3	7.5	7.5	0	7.5	15
4	30	23	15	0	7.5



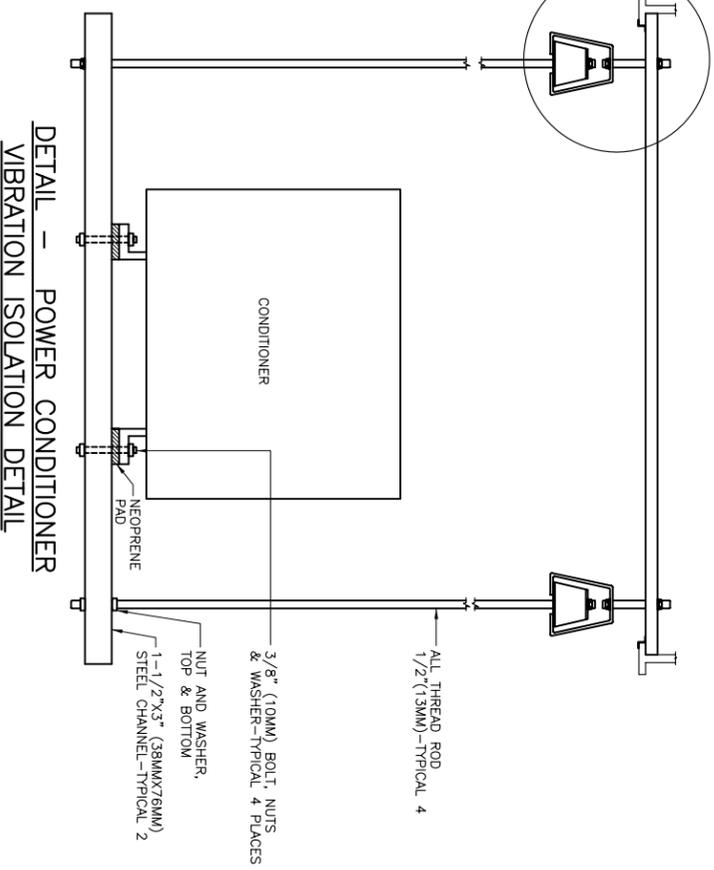
NOTES: 1. MOUNTING HEIGHT AFF AND DETAILS TO BE SAME AS EXISTING UNITS.  
2. SUBMIT DETAILS FOR REVIEW.

**GENERAL NOTES:**

1. DRAWINGS ARE DIAGRAMATIC IN NATURE. CONTRACTOR SHALL VERIFY DIMENSIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DIVISION TRADES TO PROVIDE A COMPLETE AND OPERABLE SYSTEM. CONTRACTOR SHALL COORDINATE LOCATION OF FIXTURES, DEVICES, ETC. WITH OTHER TRADES IN ORDER TO AVOID INTERFERENCES.
2. ARCHITECTURAL FEATURES SHOWN ON THESE DRAWINGS ARE FOR BACKGROUND INFORMATION ONLY. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ACTUAL BUILDING CONSTRUCTION OF WALL AND CURBS. REFER TO EQUIPMENT DRAWINGS FOR ACTUAL LOCATION OF EQUIPMENT.
3. ALL WORK SHALL BE PERFORMED AS REQUIRED BY APPLICABLE SECTION OF THE NATIONAL ELECTRICAL CODE, LATEST EDITION, AND ALL GOVERNING LOCAL CODES, LAWS, AND/OR REGULATIONS.
4. SYSTEM AND EQUIPMENT GROUNDING CONTINUITY SHALL BE ASSURED AS REQUIRED BY APPLICABLE SECTIONS OF THE NATIONAL ELECTRICAL CODE.
5. ALL WIRING SHALL BE TYPE "XHHW-2" FOR OUTDOOR USE, THWN/THHN FOR INDOOR USE UNLESS OTHERWISE NOTED. MINIMUM WIRING SHALL BE #12 (POWER WIRE). ALL WIRE SHALL BE COPPER. MINIMUM CONDUIT SIZE SHALL BE 3/4"(19mm). PROVIDE SEPARATE GROUNDING WIRE WITH ALL CIRCUIT WIRING.
6. METAL CLAD (MC) CABLE MAY BE USED FOR LIGHTING BRANCH CIRCUITS ABOVE THE CLEAN ROOM CEILING. PENETRATIONS OF CLEAN ROOM WALLS SHALL BE MADE WITH CONDUIT SEE DETAIL 11 ON E28. INTERRUPTING CAPACITY SHALL BE 10,000 AMPS, SYMMETRICAL A.I.C. FOR 120/240V SYSTEMS AND 14,000 AMPS SYMMETRICAL A.I.C. FOR 277/480V SYSTEMS. REFER TO PANEL SCHEDULES FOR A.I.C. RATINGS.
7. ALL CIRCUIT PROTECTIVE DEVICES SHALL HAVE THE REQUIRED RATING INTERRUPTING CAPACITY EQUAL TO OR GREATER THAN THE AVAILABLE SHORT-CIRCUIT CURRENT AT ITS SUPPLY TERMINAL. MINIMUM INTERRUPTING CAPACITY SHALL BE 10,000 AMPS, SYMMETRICAL A.I.C. FOR 120/240V SYSTEMS AND 14,000 AMPS SYMMETRICAL A.I.C. FOR 277/480V SYSTEMS. REFER TO PANEL SCHEDULES FOR A.I.C. RATINGS.
8. HOMERUN RACEWAYS/CONDUITS SHOULD NOT BE FILLED TO NFPA 70 CAPACITY LIMITS. LEAVE 50% ADDITIONAL SPACE TO FACILITATE REPLACEMENT OF CONDUCTORS, AND UPGRADING OF CONDUCTORS.
9. PROVIDE AN AIRTIGHT SEAL FOR ALL CONDUIT PENETRATIONS (WALLS, CEILING) INTO CLEAN ROOMS.
10. 20 AMP, 277 VOLT LIGHTING CIRCUITS WITH CIRCUIT LENGTH GREATER THAN 175'-0"(53m) SHALL BE #10 AWG. THE LENGTH OF TRAVELERS BETWEEN 3-WAY AND 4-WAY SWITCHES SHALL BE INCLUDED WHEN DETERMINING CIRCUIT LENGTH.
11. 20 AMP, 120 VOLT BRANCH CIRCUITS WITH CIRCUIT LENGTH GREATER THAN 75'-0"(23m) SHALL BE #10 AWG. 20 AMP, 120 VOLT CIRCUITS WITH CIRCUITS LENGTH GREATER THAN 125'-0"(38m) SHALL BE #8 AWG. SHORT TAPS OFF THE MAIN RUN TO INDIVIDUAL OUTLETS SHALL BE PERMITTED TO BE #12 AWG.
12. RGS CONDUIT SHALL BE USED AT THOSE LOCATIONS INDICATED IN THE DRAWINGS. PVC CONDUIT (SCHEDULE 40) SHALL BE USED AT THOSE LOCATIONS INDICATED IN THE SPECIFICATIONS OR ON THE DRAWINGS. FLEXIBLE METAL CONDUIT AND LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE USED IN ACCORDANCE WITH THE SPECIFICATIONS. EMT CONDUIT MAY BE USED IN OTHER LOCATIONS.
13. ALL PENETRATIONS SHALL BE SEALED AND/OR GASKETED.
14. CONTRACTOR SHALL MONITOR ALL ELECTRICAL CONNECTIONS UTILIZING A DEVI. MAGNUM 310 GAGESMETER AND MAINTAIN A DATA LOG. THE INSTALLATION SHALL MEET CLASS 100 CLEAN ROOM PERFORMANCE TESTS. EACH OUTLET SHALL BE TESTED FOR LEAK GROUND CURRENTS. MEASUREMENTS SHALL BE MADE BEFORE EACH SUPPORTING PANELBOARD AND THE NEAREST QUIET ROOM SHALL MAXIMUM ALLOWABLE IS 0.3 MILLIAMPS AS EACH ELECTRICAL DEVICE/OUTLET/CIRCUIT IS ENERGIZED OR SWITCHED ON/OFF. THESE SHALL BE A MAXIMUM .08 MG JUMP IN 60 HERTZ EMI PEAK TO PEAK MEASURED AT THE NEAREST QUIET LAB WALL (ON THE OTHER SIDE OF THE UTILITY CORRIDOR) WHEN MONITORED WITH A GAGESMETER WITH A RESOLUTION OF .04 MG MAX.
15. ALL POWER WIRING MUST BE RUN IN GALVANIZED CONDUIT AND ALL WIRING MUST BE MECHANICALLY TWISTED OR RUN AS NEC TYPE MC CABLE.

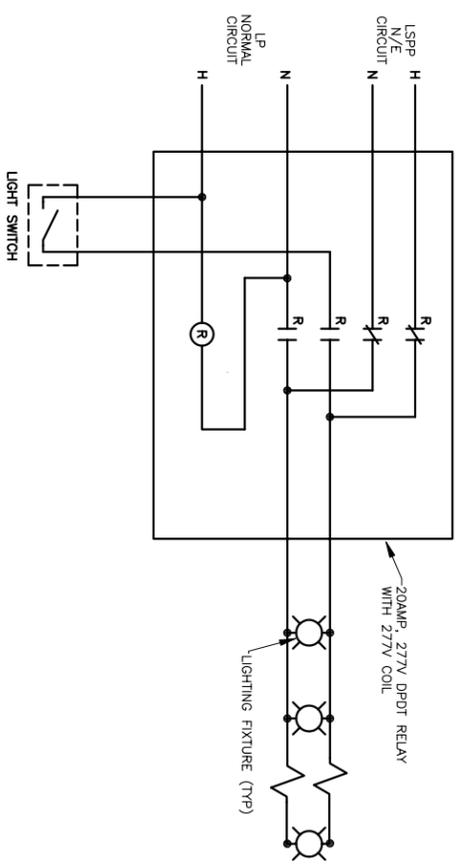
**WIRING PRACTICES FOR THE MITIGATION OF MAGNETIC FIELDS**

1. AVOID UNINTENTIONALLY GROUNDING NEUTRAL CONDUCTORS.
2. ALL CONDUCTORS FOR A GIVEN CIRCUIT SHALL BE KEPT IN CLOSE PHYSICAL PROXIMITY TO THE GREATEST EXTENT PRACTICAL. USE NYLON WIRE TIES IN SWITCHBOARDS, PANELBOARDS, PULL BOXES, WIREWAYS, SURFACE METAL RACEWAYS AND EQUIPMENT TO MINIMIZE CONDUCTOR SEPARATION.
3. IN SWITCHBOARDS AND PANELBOARDS, MINIMIZE THE LENGTH OF PHASE CONDUCTORS THAT ARE NOT ROUTED WITH THEIR ASSOCIATED NEUTRAL CONDUCTOR. MINIMIZE THE PHYSICAL DISPLACEMENT BETWEEN PHASE CONDUCTORS AND THEIR ASSOCIATED NEUTRAL CONDUCTORS.
4. DO NOT ROUTE ANY HOMERUNS OR FEEDERS ABOVE THE QUIET AND ULTRA-QUIET LABORATORY ZONES (ROOMS 110-117 AND 120-127).
5. FEEDERS RATED 100 AMPERES AND GREATER SHALL BE ROUTED IN SUCH A MANNER AS TO CREATE THE MAXIMUM DISTANCE FROM QUIET AND ULTRA-QUIET LABORATORY ZONE, INCLUDING ANY PORTION OF THE PENTHOUSE WITHIN THIS DISTANCE, SHALL BE RUN IN RGS CONDUIT. CONDUCTORS IN ALL FEEDER CONDUITS SHALL ROTATE (TWIST) AS MUCH AS POSSIBLE.
6. TO THE EXTENT PRACTICAL, NO ELECTRICAL EQUIPMENT, DEVICES AND CIRCUITS SHOULD BE LOCATED WITHIN A 15 FOOT(4.6m) ZONE FROM THE CENTER OF ANY QUIET OR ULTRA-QUIET LABORATORY ZONE (ROOMS 110-117 AND 120-127). IN THE EVENT THAT ELECTRICAL CIRCUITS MUST PASS WITHIN 15 FEET(4.6m) OF THE CENTER OF ANY QUIET OR ULTRA-QUIET LABORATORY ZONE, INCLUDING ANY PORTION OF THE PENTHOUSE WITHIN THIS DISTANCE, THE CIRCUIT SHALL BE RUN IN RGS CONDUIT REGARDLESS OF CIRCUIT RATING.



DETAIL -- POWER CONDITIONER VIBRATION ISOLATION DETAIL  
NO SCALE

EGRESS AND LIFE SAFETY LIGHTING CONTROL DIAGRAM (ROOMS 103, 104)  
NO SCALE



KEY PLAN	GRAPHIC SCALE	
	DESIGNED BY: <b>DRAMA</b> CHECKED BY: <b>DRAMA</b> DRAWN BY: <b>DRAMA</b> DATE: <b>02/14/03</b>	REGISTERED PROFESSIONAL ENGINEER STATE OF MARYLAND No. 12188 (410) 682-2420 (410) 622-8888
DESIGNED BY: _____ MECH ENGR: _____ PLUMB ENGR: _____ FIRE ENGR: _____ ELEC ENGR: _____ DRAMA BR: _____ DATE: _____	REGISTERED PROFESSIONAL ENGINEER STATE OF MARYLAND No. 12188 (410) 682-2420 (410) 622-8888	DESIGNED BY: _____ SUPER IN CHARGE: _____ SAFETY OFF: _____ APPROVED: _____ OFFICER IN CHARGE: _____ DATE: _____
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DESIGNED BY: _____ MECH ENGR: _____ PLUMB ENGR: _____ FIRE ENGR: _____ ELEC ENGR: _____ DRAMA BR: _____ DATE: _____	REGISTERED PROFESSIONAL ENGINEER STATE OF MARYLAND No. 12188 (410) 682-2420 (410) 622-8888	DESIGNED BY: _____ SUPER IN CHARGE: _____ SAFETY OFF: _____ APPROVED: _____ OFFICER IN CHARGE: _____ DATE: _____
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