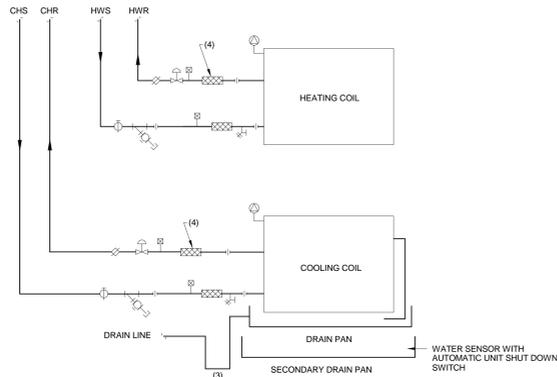


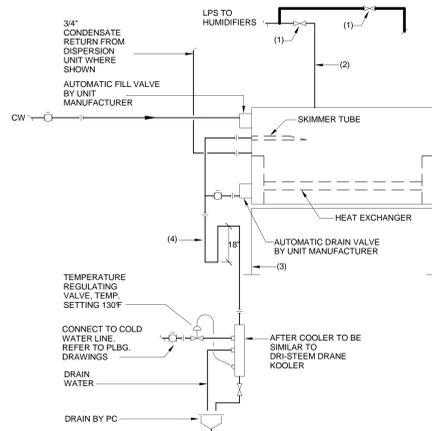
- NOTES:
- (1) REFER TO SPECIFICATION SECTION 23 2116 FOR UNION REQUIREMENTS.
  - (2) REFER TO SPECIFICATION SECTION 23 2118 FOR BALANCING VALVE SIZING AND STRAIGHT INLET AND OUTLET PIPING REQUIREMENTS.
  - (3) USE TOP OR TOP 45° CONNECTION.

**7 RADIANT CEILING PANEL PIPING (HEATING ONLY)**  
12" = 1'-0"



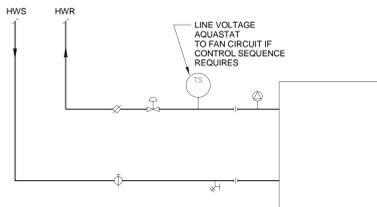
- NOTES:
- (1) REFER TO SPECIFICATION SECTION 23 2116 FOR UNION REQUIREMENTS.
  - (2) REFER TO SPECIFICATION SECTION 23 2118 FOR BALANCING VALVE SIZING AND STRAIGHT INLET AND OUTLET PIPING REQUIREMENTS.
  - (3) REFER TO COOLING COIL CONDENSATE DRAIN TRAP PIPING DETAIL FOR CONSTRUCTION OF CONDENSATE DRAIN TRAP PIPING. PROVIDE SECONDARY DRAIN PAN AND CONDENSATE PUMP PER SCHEDULES.
  - (4) REFER TO SPECIFICATION SECTION 23 0550

**8 FAN COIL UNIT PIPING (HEATING AND COOLING)**  
NTS



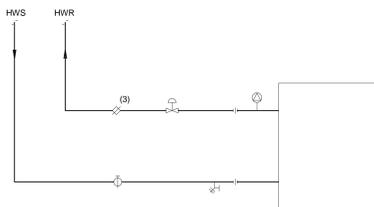
- NOTES:
- (1) PROVIDE GATE VALVE WHERE TWO OR MORE STEAM GENERATORS ARE USED.
  - (2) PIPE SIZE SHALL BE AS SHOWN ON PLAN, BUT NOT LESS THAN STEAM OUTLET SIZE OF STEAM GENERATOR.
  - (3) SUPPORT LEGS OR WALL BRACKET AS SHOWN ON DRAWING IS TO BE FURNISHED WITH UNIT BY UNIT MANUFACTURER.
  - (4) PIPE SIZE AS RECOMMENDED BY UNIT MANUFACTURER, BUT NOT LESS THAN 1".

**4 ELECTRIC STEAM HUMIDIFIER PIPING**  
NTS



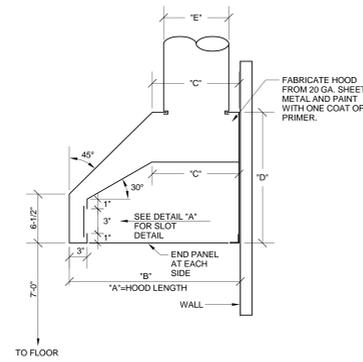
- NOTES:
- (1) REFER TO SPECIFICATION SECTION 23 2116 FOR UNION REQUIREMENTS.
  - (2) REFER TO SPECIFICATION SECTION 23 2118 FOR BALANCING VALVE SIZING AND STRAIGHT INLET AND OUTLET PIPING REQUIREMENTS.

**5 HOT WATER UNIT HEATER AND CABINET UNIT HEATER (WITH CV)**  
NTS



- NOTES:
- (1) REFER TO SPECIFICATION SECTION 23 2116 FOR UNION REQUIREMENTS.
  - (2) REFER TO SPECIFICATION SECTION 23 2118 FOR BALANCING VALVE SIZING AND STRAIGHT INLET AND OUTLET PIPING REQUIREMENTS.
  - (3) USE BALL VALVE IF CONTROL VALVE IS PRESSURE INDEPENDENT TYPE (PICV).

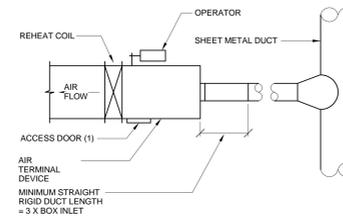
**6 HOT WATER REHEAT COIL PIPING (WITH 2-WAY CV)**  
NTS



ROOM	MARK	A	B	C	D	E	CFM
L046	SH-1	4"	1'-6"	12"	12"	10"	400
L046	GWH-1	4"	1'-6"	12"	12"	10"	400

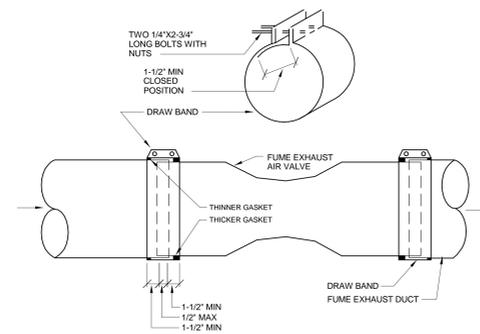
DETAIL "A"

**1 SECTION THRU HOOD (WALL CANOPY HOOD WITH 3 SIDES OPEN W/SLOTS)**  
NTS



- NOTES:
- (1) WHERE REHEAT COIL IS MOUNTED IN INLET DUCT (REFER TO SECTION 23 3314)

**2 AIR TERMINAL DEVICE DUCT CONNECTION (WITH REHEAT COIL)**  
NTS



- NOTES:
- (1) DRAW BANDS SHALL BE:
    - FABRICATED FROM THE SAME MATERIAL AS DUCT SYSTEM
    - INSTALLED TO PROVIDE TIGHT CHEMICAL SEAL AROUND ENTIRE PERIMETER OF DUCT AND AT DEVICE WITH DRAW BAND FLANGES IN PARALLEL POSITION AFTER BEING FULLY DRAWN TOGETHER.
  - (2) DRAW BAND GAUGE TO BE MIN. 24 GAUGE.
  - (3) SEALANT AND GASKET TO BE CHEMICAL RESISTANT MATERIAL. REFER TO SPECIFICATION SECTION 23 3114

**3 FUME EXHAUST AIR VALVE CONNECTION (10IN AND SMALLER)**  
NTS

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SEALS AND SIGNATURES



ISSUED FOR CONSTRUCTION 07/03/12

REV. NO. DESCRIPTION BY APVD DATE

Argonne NATIONAL LABORATORY

FMS Facilities Management Services

PROJECT TITLE ADVANCED PROTEIN CRYSTALLIZATION FACILITY, ARGONNE NATIONAL LABORATORY

PROJECT NO. 08541-00

DRAWING TITLE

MECHANICAL DETAILS

DESIGNED SPF A/E CAD FILE FACILITY (NOI)

DRAWN LW A/E DWG. NO. M6.3.0

CHECKED SPF CAD NO.

PROJECT MANAGER DWG STATE

ANL - JESSE ADAMS BAND ORDER

DATE - 08/18/11

FACILITY DOCUMENT NUMBER

J446-101-W- M6.3.0