

AIR TERMINAL (10" MIN. ABOVE DUCT)

SUPPORT AND ATTACH AIR TERMINAL AND CABLE TO VENT AND ROOF PER LIGHTNING PROTECTION INSTITUTE STANDARD LPI-175

F STRANDED COPPER CABLE

EXHAUST FAN ON MBRATION ISOLATORS

PROVIDE 3 GUY WIRES SPACED 120 DEGREES APART. SECURED WITH ANCHORS AND TIGHTEN UTILIZING TURNBUCKLES.

CADWELD TO EXIST. LIGHTNIN PROTECTION SYSTEM MAIN

CONDUCTOR (COPPER)

3'-0' FUME HOOD FAN
DIAMETER D. @ 3000 FPM±
DISCHARGE DUCT SIZE 575 CFM 6"6 DIAMETER d. © 1000 FPM± SUCTION SIDE DUCT SIZE 6' HPFH 575 CFM 10"# AIRFLOWS BASED ON 80 FPM FACE 2'-0" VELOCITY WITH SASH SET AT 18"
VERTICAL HEIGHT.

STAINLESS 1 2"x1 2"x 12" WELD STEEL ANGLE RING TO STACKHEAD

VARIES (MIN. 10'-0" ABOVE ROOF DECK)

FLANGED CONNECTION (SEE DETAIL)

SEE DETAIL ABOVE

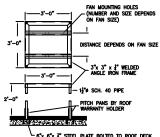
FAN INLET

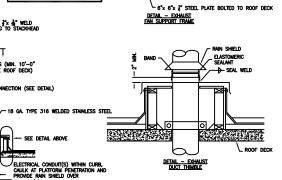
CONDITIES)

4D

11 50 - TO

TYPICAL DETAIL - FUME HOOD EXHAUST FAN SUPPORT FRAME





RED TEXT APPLIES ONLY WHEN LIGHTNING PROTECTION SYSTEM IS IN PLACE — DELETE IF THERE IS NO LIGHTNING PROTECTION IN PLACE.

R" STAINLESS STEEL WORM GEAR CLAMP

1. THE EXISTING HOOD UTILITY CONNECTIONS SHALL BE REMOVED FROM THE EXISTING HOOD WHICH SHALL BE DEMOLISHED BY OTHERS, THE HOOD UTILITY CONNECTIONS SHALL BE RECONNECTED TO THE NEW HOOD AS DETAILED ON 6/M-1.

2. The existing hood exhaust fan, located on the roof, shall be demolished and removed by the contractor.

3. THE EXISTING AUXILIARY, MAKE UP AIR FAN AND ASSOCIATED DUCT WORK SHALL BE DEMOLISHED AND REMOVED BY THE CONTRACTOR. THE DUCTWORK INTAKE LOLVER SHALL BE CAPPED AND SEALED WAITERFRIGHT.

4. EXHAUST DUCTWORK WITHIN THE BUILDING SHALL REMAIN AND BE REUSED TO THE EXTENT

5. THE NEW FUME HOOD EXHAUST DUCTIVORK SHALL BE ROUTED THROUGH A NEW ROOF CURB/THE EUSTING ROOF PENETRATION AND ROOF CURB. THE CURB CAP SHALL BE REPLACED WITH A NEW 14 GA. SS CAP WHICH SHALL BE MADE WEATHER TIGHT. THE EUSTING FAN SUPPORT CURB CAP AND RAILS SHALL BE DEDICUSED AND REPLACED WITH A NEW 14 GA. SS CAP AND IMADE

6. THE NEW HOOD EXHAUST UTILITY SET FAN SHALL BE SUPPORTED ON A NEW SUPPORT FRAME AS DETAILED ON 1/M-3.0, WHICH SHALL BE LOCATED TO ALLOW 5 DUCT DIMETERS OF STRAIGHT BUCH UTILITY OF THE FLEXIBLE FAN CONNECTION. THE FAN BOSHAME STACK SHALL BE LOCATED AT A DISTANCE NO LESS THAN 15' FROM ANY OUTSIDE AR INTIME. THE FAN STACK SHALL BE SUPPORTED WITH GUT'S WINES, TURNSHOLGELS AND ACKNORMS AS INDICATED ON PORMINES. COORDINATE FINAL FAN LOCATION AND THE DISTANCE AND ACKNORMS AS INDICATED ON PORMINES. COORDINATE FINAL FAN LOCATION WIN HOUSE DESIGN ENGINEER (706-542-6560) PRORT OR RELIVANCE DISSING PARAMETER OF THE PROPERTY OF THE PROPERTY

7 NEW FAN SHALL RE CONNECTED TO EXISTING LIGHTNING PROTECTION SYSTEM AS SHOWN ON

8. Fume hood exhaust fan varuble frequency drime shall be installed in enclosure as detailed on 5/14–3.0. See electrical sheets for drime wring details, drive shall be located in space on wall adjacent to filme hood along with electrical disconnect. Coordinate raive location with find-electrical engineer from to install

9. FAN SHALL OPERATE VIA ITS VARIABLE FREQUENCY DRIVE TO MAINTAIN 80 FEET PER MINUTE FACE VELOCITY AT 18" SASH POSITION. THE DRIVE SHALL BE JUMPED OUT TO PREVENT ON/OFF SWITCHING VIA THE HOOD. THE HOOD FAN CONTROL SWITCH SHALL BE BLANKED/THE HOOD EXHAUST FAN SHALL BE SWITCHED ON/OFF VIA A HOOD MOUNTED SWITCH (FACTORY SUPPLIED)

10.ASHRAE STANDARD 110 TESTING FOR SMOKE VISUALIZATION, FACE VELOCITY AND TRACER GAS TESTING SHALL BE COORDINATED WITH  $\underline{\text{DERCL CROMO}}$ , FND—0.6MI (706—542—6561) UPON COMPLETION OF INSTALLATION AND TEST & BALANCE.

11.THIS BUILDING HAS A WARRANTED ROOF, DEMOLITION, REPAIR, AND NEW WORK UNDER THIS CONTRACT IS REQUIRED TO BE ACCOMPLISHED IN A WAY THAT MAINTAINS THE NEW ROOF WARRANTY, PREVENT DAMAGE TO ROOF, COORDINATE WITH THE NEW ROOF'S MAINIFECTURER TO DESURE MATERIALS, DETAILING, AND LABOR ARE PROVIDED SO AS TO MAINTAIN ROOF WARRANTY, FOR ROOF



NOTES:

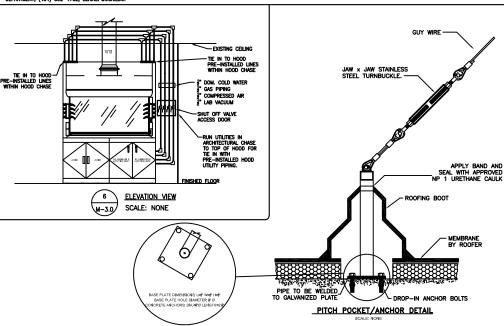
FAN OPTIONS SHALL INCLUDE: TEFC 208/3/60 MOTOR, SHAFT GROUNDING, PHENOLIC EPOXY COATING WITH UV, DRAIN, FLANGED INLET, FLANGED OUTLET, RUB RING, AND ALUMINUM WHEEL.

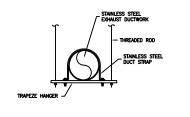
FAN TO BE SUPPLIED WITH ABB ACS150 VARIABLE FREQUENCY DRIVE

FUME HOOD SCHEDULE											
	DESIG.	BASIS 0	BASIS OF DESIGN		FLOW CONDITIONS			UTILITES			
	DESIG.	MFGR.	MODEL NO.	CFM	S.P.	FACE VELOCITY	SASH HEIGHT	DCW	G	A	٧
	FH-4204	SUPREME AIR	LV05-6'	965	.30"	117 FPM	18°	1*	ł.	ł.	Į"

 $\underline{\text{NOTES}};$  fume hood shall be supplied by owner.

ALL NEW FUME HOODS SHALL BE ASHRAE 110 TESTED BY CERTIFIED AND APPROVED FUME HOOD TESTING CONTRACTOR.

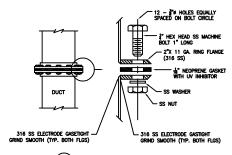




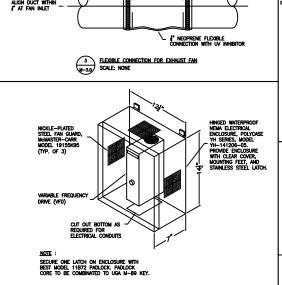
FLEXIBLE CONNECTION FOR

(E-30)

FUME HOOD EXHAUST DUCT HANGER DETAIL



EXPLODED VIEW OF FLANGED CONNECTION M-3.0 SCALE: NONE TYPICAL FOR ALL EXHAUST DUCTS

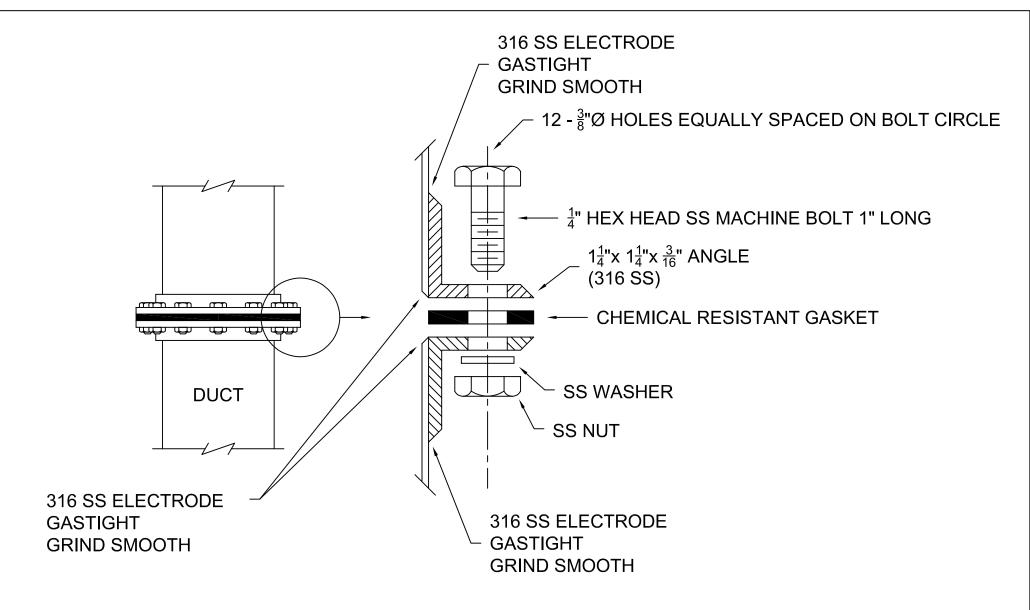


5 ENCLOSURE FOR EXHAUST FAN VARIABLE FREQUENCY DRIVE W-3.0 SCALE: NONE INITIAL FOR UGA STANDARDS 05/01/2023



FUME HOOD REPLACEMENT

11 53 13-A



## EXPLODED VIEW OF FLANGED CONNECTION

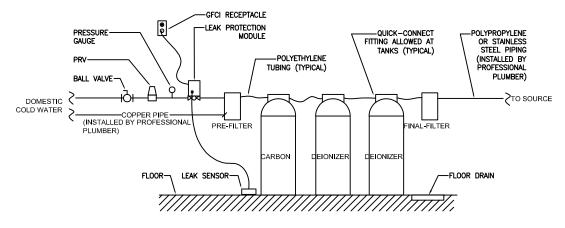
TYPICAL FOR ALL EXHAUST DUCTS NOT TO SCALE

	0	INITIAL FOR UGA STANDARDS	05/01/2023	
Į				
Г				



EXHAUST DUCT FLANGED CONNECTION

11 53 13-B



## DE-IONIZED WATER INSTALLATION DETAIL

### NOTES:

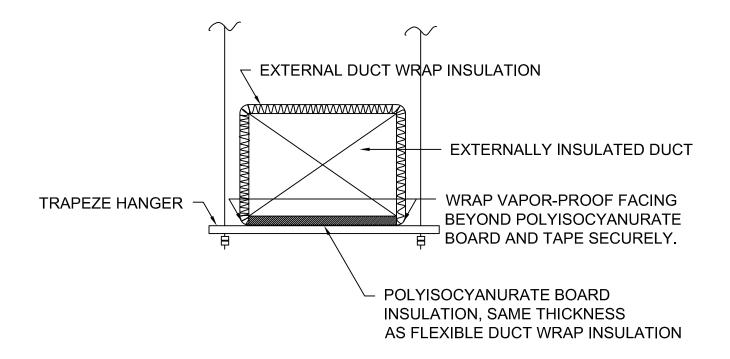
- 1. ALL CONNECTOR FITTINGS SHALL BE WITH THREADED CONNECTIONS WITH O-RINGS, COMPRESSION FITTINGS ARE NOT ALLOWED.
- LEAK DETECTION MODEL SHALL BE SERIES 1000 LEAK-GOPHER, OR APPROVED EQUAL, FOR LARGE DISTRIBUTED SYSTEMS, AUTOMATIC FLOW LIMITING DEVICES MAY BE REQUIRED IN PLACE OF LEAK DETECTION. (PROVIDE FLO-LOGIC SYSTEM OR EQUAL)
- FLOOR DRAINS SHALL BE REQUIRED FOR INSTALLATIONS IN NEW BUILDING, BUT FOR RENOVATIONS SHALL BE CONSIDERED ON A CASE-BY-CASE SCENARIO.
- 4. PRV SHALL BE BRASS CONSTRUCTION (WATTS OR APPROVED EQUAL)
- 5. GFCI RECEPTACLE SHALL BE REQUIRED WHEN NECESSARY AS REQUIRED TO MEET CODE.
- 6. ALL SHOWN RIGID PIPE (COPPER, STAINLESS STEEL, OR POLYPROPYLENE) SHALL BE INSTALLED BY A PROFESSIONAL PLUMBER (FMD OR A PLUMBING CONTRACTOR).
- 7. ALL INSTALLATIONS MUST BE APPROVED BY FMD. DEPENDING UPON LOCATION RELATIVE TO SENSITIVE EQUIPMENT (ELECTRICAL ROOMS, RESEARCH EQUIPMENT, ETC.) REQUIREMENTS MAY VARY.
- 8. ANY PIPING DISTRIBUTION BEYOND THE FINAL FILTER SHALL BE STAINLESS STEEL OR HEAT-FUSED POLYPROPYLENE AND SHALL BE PROPERLY SUPPORTED WITH PIPE HANGERS, SADDLES, PIPING CLAMPS, ETC., UNLESS THE END SOURCE IS DIRECTLY ADJACENT TO THE DI TANKS, THEN POLYETHYLENE TUBING IS ACCEPTABLE.

0	INITIAL FOR UGA STANDARDS	05/01/2023



**DE-IONIZED WATER INSTALLATION** 

22 00 00-A



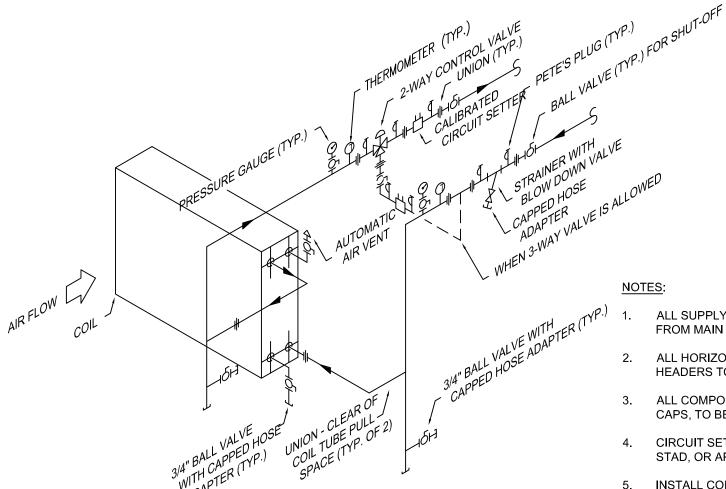
# TRAPEZE HANGER INSULATION DETAIL NO SCALE

0	INITIAL FOR UGA STANDARDS	05/01/2023	



TRAPEZE HANGER INSULATION

23 07 13-A



- ALL SUPPLY AND RETURN HEADERS TO BE FULL SIZE FROM MAIN (SEE PLANS FOR PIPE SIZE).
- 2. ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTIONS.
- 3. ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
- 4. CIRCUIT SETTER SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.
- 5. INSTALL CONTROL VALVE PACKAGE IN HORIZONTAL PIPE RUN AS REQUIRED TO FACILITATE COIL REMOVAL.

## A.H.U. COIL PIPING DETAIL - SINGLE COIL

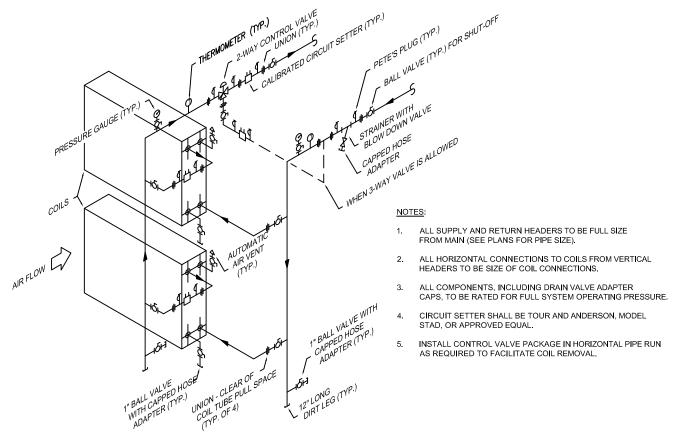
SCHEMATIC ONLY

0	INITIAL FOR UGA STANDARDS	05/01/2023



AHU COIL- SINGLE COIL

23 20 00-A



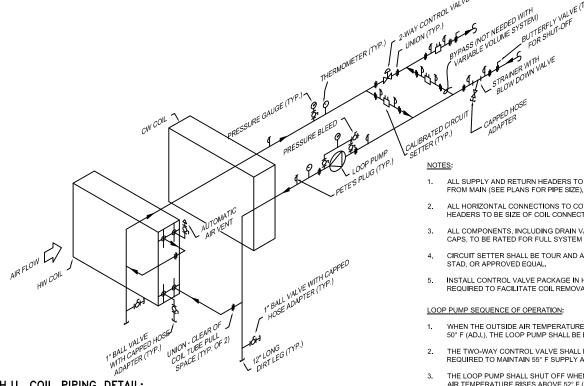
A.H.U. COIL PIPING DETAIL - MULTIPLE COILS

0	INITIAL FOR UGA STANDARDS	05/01/2023	



AHU COIL - MULTIPLE COILS

23 20 00-B



A.H.U. COIL PIPING DETAIL: HOT WATER COIL WITH LOOP PUMP & 2-WAY VALVE

SCHEMATIC ONLY

## ALL SUPPLY AND RETURN HEADERS TO BE FULL SIZE

- ALL HORIZONTAL CONNECTIONS TO COILS FROM VERTICAL HEADERS TO BE SIZE OF COIL CONNECTIONS.
- ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
- CIRCUIT SETTER SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.
- INSTALL CONTROL VALVE PACKAGE IN HORIZONTAL PIPE RUN AS REQUIRED TO FACILITATE COIL REMOVAL.

## LOOP PUMP SEQUENCE OF OPERATION:

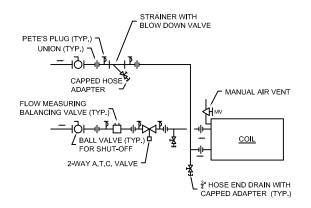
- WHEN THE OUTSIDE AIR TEMPERATURE DROPS BELOW 50° F (ADJ.), THE LOOP PUMP SHALL BE ENERGIZED.
- THE TWO-WAY CONTROL VALVE SHALL MODULATE AS REQUIRED TO MAINTAIN 55° F SUPPLY AIR DISCHARGE TEMPERATURE.
- THE LOOP PUMP SHALL SHUT OFF WHEN THE OUTSIDE AIR TEMPERATURE RISES ABOVE 52° F (ADJ.).
- DESIGNER NOTE: LOOP PUMP SEQUENCE OF OPERATION INCLUDED IN AIR HANDLING UNIT SEQUENCE OF OPERATION. T0 BE

0	INITIAL FOR UGA STANDARDS	05/01/2023



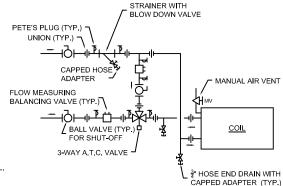
AHU COIL - HW COIL WITH LOOP PUMP

23 20 00-C



### NOTES:

- ARRANGE ALL PIPING TO ALLOW REMOVAL OF COIL.
- 2. PIPING SHOWN IS DIAGRAMMATIC.
- ALL COMPONENTS, INCLUDING DRAIN VALVE
   ADAPTER CAPS, TO BE RATED FOR FULL
   SYSTEM OPERATING PRESSURE.
- 4. CIRCUIT SETTERS SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.



### NOTES:

- ARRANGE ALL PIPING TO ALLOW REMOVAL
  OF COIL
- 2. PIPING SHOWN IS DIAGRAMMATIC.
- ALL COMPONENTS, INCLUDING DRAIN VALVE ADAPTER CAPS, TO BE RATED FOR FULL SYSTEM OPERATING PRESSURE.
- 4. CIRCUIT SETTERS SHALL BE TOUR AND ANDERSON, MODEL STAD, OR APPROVED EQUAL.

# FAN COIL UNIT & TERMINAL UNIT COIL PIPING DETAIL 2-WAY VALVE CONFIGURATION

(SCHEMATIC ONLY)

## FAN COIL UNIT & TERMINAL UNIT COIL PIPING DETAIL 3-WAY VALVE CONFIGURATION

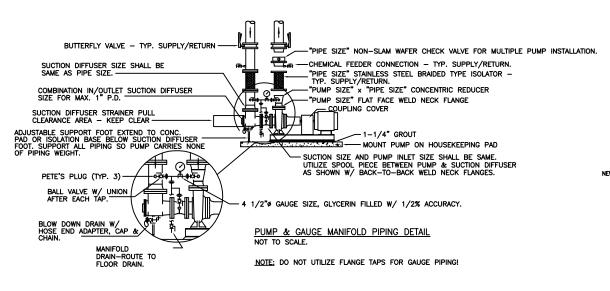
(SCHEMATIC ONLY)

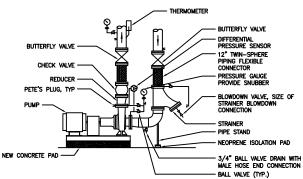
0	INITIAL FOR UGA STANDARDS	05/01/2023



FCU & TERMINAL UNIT PIPING

23 20 00-D





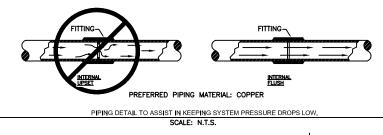
NOTES:

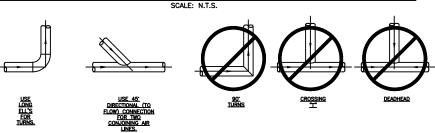
1. TRIPLE DUTY VALVES ARE NOT ACCEPTABLE.

2. ALL WATER FLOW BALANCING SHALL BE PERFORMED BY USE OF THE VFD.

3. UPON COMPLETION OF PIPING SYSTEM FLUSHING AND CLEANING, THE
CONTRACTOR SHALL REMOVE ALL STRAINER START—UP SCREENS/STRAINERS
AND SECURE EACH TO THE ASSOCIATED STRAINER UNTIL THE ENGINEER
AND SCRUPE THE PERIODIAL CAN CONFIRM THEIR REMOVAL

PUMP & GAUGE MANIFOLD PIPING DETAIL NOT TO SCALE.





### GUIDELINES FOR PIPING INSTALLATION:

### SCALE: N.T.S.

#### NOTE:

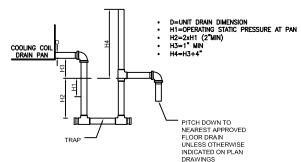
- 1. NO CROSSING TEES AND DEAD HEADS.
- 2. INTERCONNECTING PIPING 20 FT/SEC VELOCITY OR LESS.
- 3. DISTRIBUTION HEADER 30 FT/SEC VELOCITY OR LESS.
- 4. FEED TO PROCESS SHOULD BE 35 FPS OR LESS.

0	INITIAL FOR UGA STANDARDS	05/01/2023



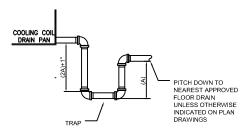
PUMP & GAUGE MANIFOLD PIPING: **END SUCTION PUMP** 

23 20 00-E



ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET
 DO NOT PENETRATE FLOOR SLAB WITH TRAP.

1 BLOW-THROUGH CONDENSATE DRAIN TRAPS SCALE: NONE



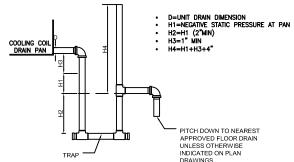
- NOTES:

  1. ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET

  2. A = UNIT TOTAL STATIC PRESSURE (T.S.P.)

  3. DO NOT PENETRATE FLOOR SLAB WITH TRAP.

**③ CONDENSATE DRAIN TRAPS** SCALE: NONE



1. ALL CONDENSATE DRAIN LINES SHALL BE FULL SIZE OF DRAIN PAN OUTLET
2. DO NOT PENETRATE FLOOR SLAB WITH TRAP.

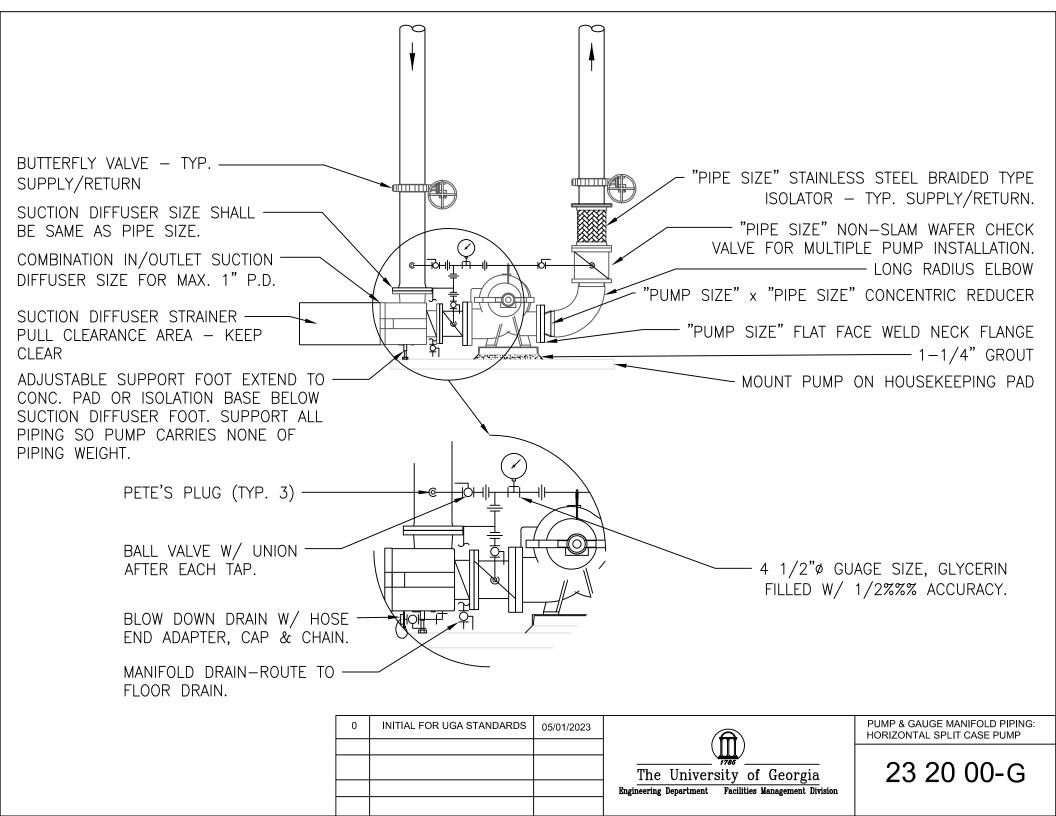
2 DRAW-THROUGH CONDENSATE DRAIN TRAPS

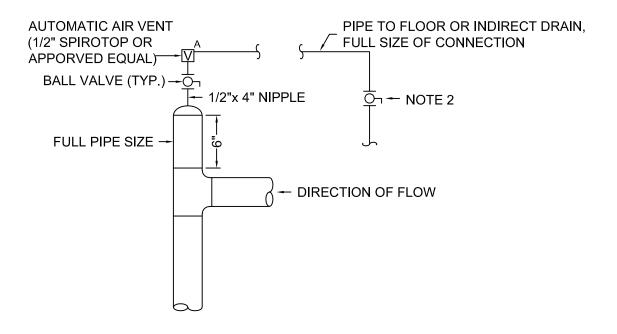
	0	INITIAL FOR UGA STANDARDS	05/01/2023
- 1			



CONDENSATE DRAIN TRAPS

23 20 00-F





## NOTES:

- 1. VENT ALL HIGH POINTS AS INDICATED ABOVE.
- 2. PROVIDE BALL VALVE IN ACCESSIBLE LOCATION WHERE DISCHARGE FROM TUBING CAN BE OBSERVED. PROVIDE AAV WHERE INDICATED. PROVIDE BALL VALVE AHEAD OF AAV.

## AUTOMATIC AIR VENT DETAIL

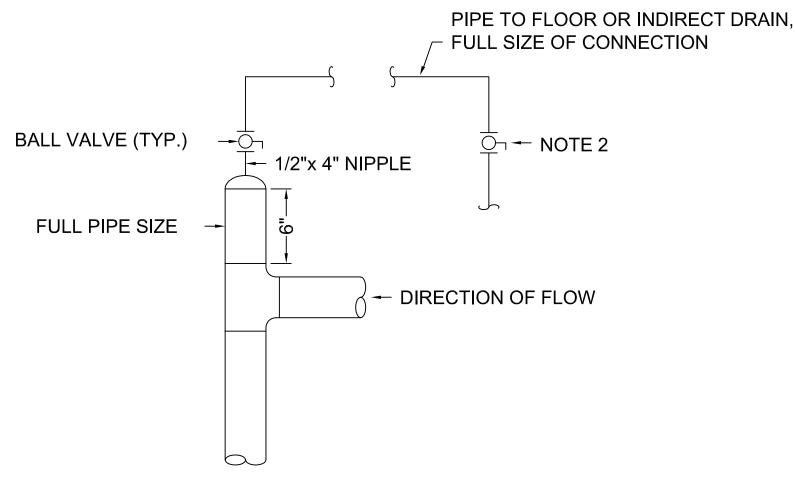
SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023	
			Eng



AUTOMATIC AIR VENT

23 21 13-A



# MANUAL AIR VENT DETAIL

SCALE: NONE

## NOTES:

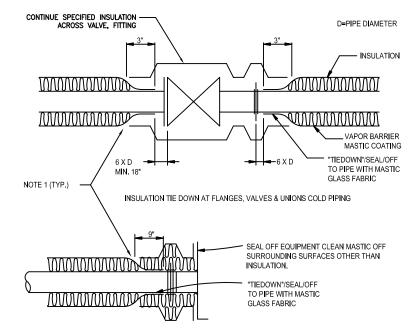
- 1. VENT ALL HIGH POINTS AS INDICATED ABOVE.
- 2. PROVIDE BALL VALVE IN ACCESSIBLE LOCATION WHERE DISCHARGE FROM TUBING CAN BE OBSERVED.

	0	INITIAL FOR UGA STANDARDS	05/01/2023		MANUAL AIR VENT
ł				$(\widehat{\mathbb{H}})$	
				The University of Georgia	23 21 13-
į				Engineering Department Facilities Management Division	20 21 10

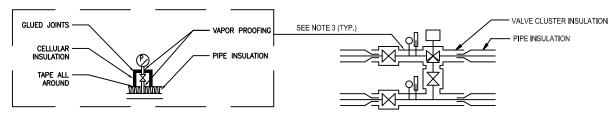
3-B

#### NOTES

- IDENTIFY ALL "TIE DOWNS" INCLUDING ON STRAIGHT RUNS OF PIPE WITH 4" WIDE PLASTIC ADHESIVE BANDS TAPED ALL AROUND AND MARKED "VAPOR PROOFED TO PIPE". PROVIDE TIE-DOWNS EVERY 21 FEET ON STRAIGHT RUNS OF PIPE.
- DO NOT DAMAGE VAPOR BARRIER/TIE DOWNS ON EXISTING WORK WHEN ADDING NEW WORK. REPAIR ANY DAMAGE DONE.
- 3. PROVIDE INSULATION ON ALL INSTRUMENTS, VALVES, PROBES, PETE'S PLUGS, TO PREVENT CONDENSATION/DRIPPING. INSULATION MAY BE "ARMAFLEX" OR OTHER APPROVED FLEXIBLE CELLULAR INSULATION FIXED WITH MANUFACTURER'S APPROVED ADHESIVE OR "NO DRIP" TAPE NEATLY APPLIED. THE CELLULAR INSULATION SHALL BE FORMED INTO A "CUP" OF SUITABLE DIAMETER TO FIT OVER THE VALVE, PROBE, ETC. AND TAPED TO THE SURFACE OF THE PIPE INSULATION.



INSULATION TIE DOWN AT EQUIPMENT COLD PIPING



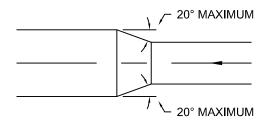
INSULATION TIE DOWN/SEAL OFF POINTS FOR CHILLED WATER PIPE DETAIL SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023

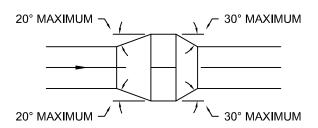


INSULATION TIE-DOWN

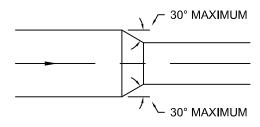
23 21 13-C



① <u>DIVERGING DUCT TRANSITION</u>
UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY



(2) <u>TRANSITION AT EQUIPMENT</u> UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY



(3) <u>CONVERGING DUCT TRANSITION</u>
UNLESS NOTED OTHERWISE ON PLANS, ANGLES SHOWN SHALL APPLY

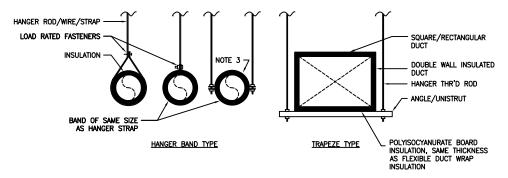
# DUCT TRANSITIONS SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023



23 31 13-A

**DUCT TRANSITIONS** 

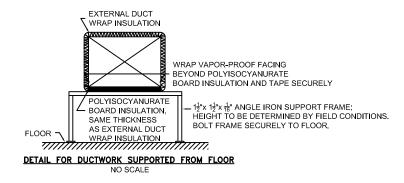


#### NOTE:

- WHERE EXTERNAL DUCT WRAP INSULATION IS UTILIZED, POLYISOCYANURATE BOARD INSULATION WILL BE USED AT BETWEEN SUPPORT AND DUCT WITH SAME THICKNESS AS EXTERNAL DUCT WRAP INSULATION.
- 2. WRAP VAPOR-PROOF FACING BEYOND POLYISOCYANURATE BOARD INSULATION AND TAPE SECURELY.
- 3. ONE HALF-ROUND MAY BE USED IF DUCT RETAINS IT'S SHAPE.

## **DUCT HANGER SUPPORT DETAIL**

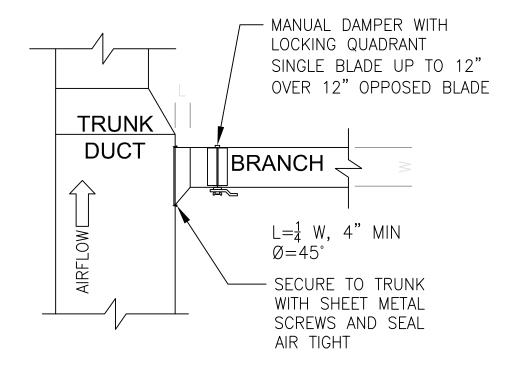
NO SCALE



0	INITIAL FOR UGA STANDARDS	05/01/2023		HA
			$(\widehat{\mathbf{m}})$	
			The University of Georgia	23
			Engineering Department Facilities Management Division	`
1			I	I

HANGERS AND SUPPORTS

23 31 13-B



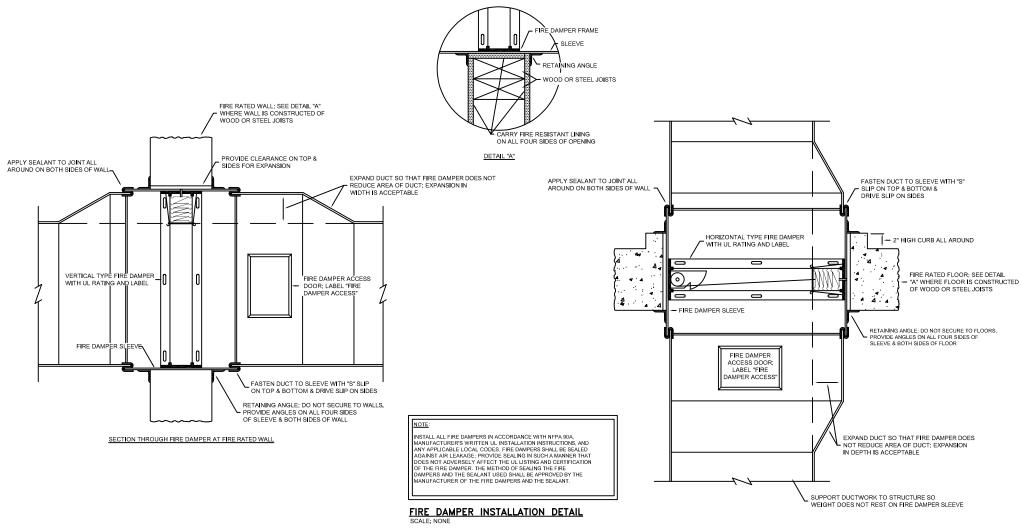
# DUCT BRANCH TAKE-OFF DETAIL NO SCALE

0	INITIAL FOR UGA STANDARDS	05/01/2023	
			] 1



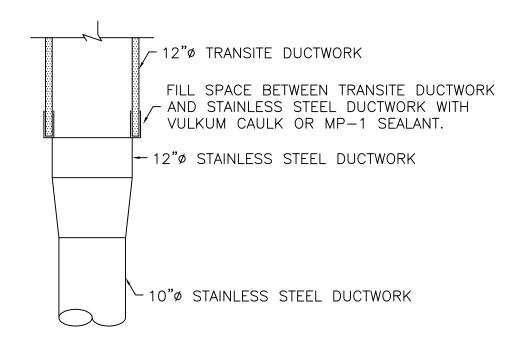
DUCT BRANCH TAKE-OFF

23 31 13-C



SECTION THROUGH FIRE DAMPER AT FIRE RATED FLOOR

0	INITIAL FOR UGA STANDARDS	05/01/2023		FIRE DAMPER DETAILS
			$(\mathbf{m})$	
			The University of Coordin	23 31 13-D
			The University of Georgia  Engineering Department Facilities Management Division	23 31 13-D



# DETAIL OF CONNECTION OF TRANSITE DUCTWORK AND STAINLESS STEEL DUCTWORK

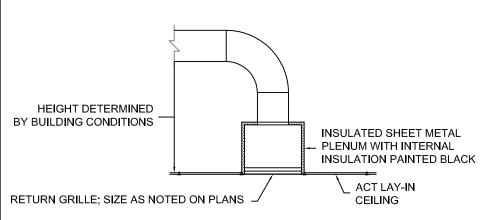
SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023

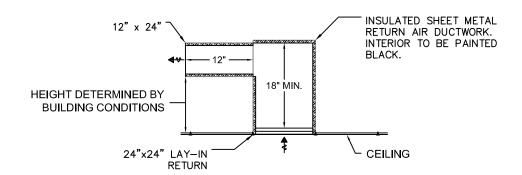


TRANSITE AND STAINLESS STEEL DUCTWORK CONNECTION

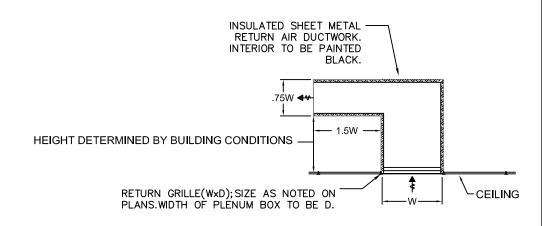
23 31 13-E



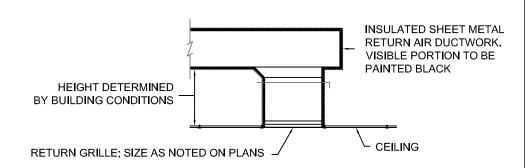
# ① DUCTED RETURN DETAIL SCALE: NONE



# ③ PLENUM RETURN DETAIL SCALE: NONE



② PLENUM RETURN DETAIL SCALE: NONE



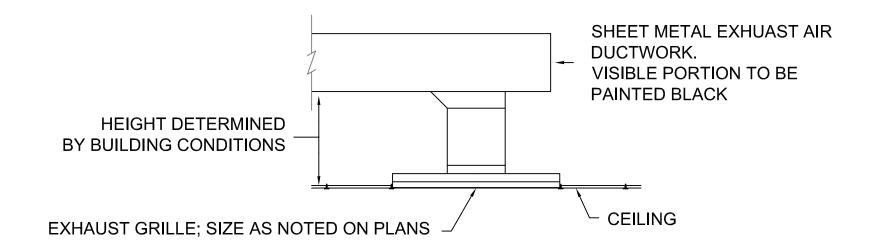
4 RETURN GRILLE CONNECTION DETAIL SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023



23 31 13-F

**RETURN GRILLE DETAILS** 



## EXHAUST GRILLE CONNECTION DETAIL

SCALE: NONE

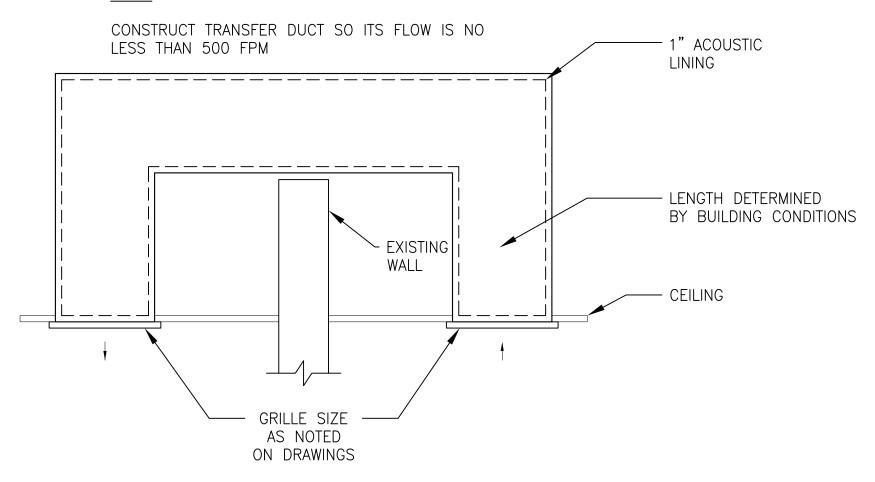
0	INITIAL FOR UGA STANDARDS	05/01/2023	
			ı



EXHAUST GRILLE CONNECTION

23 31 13-G

## NOTE:



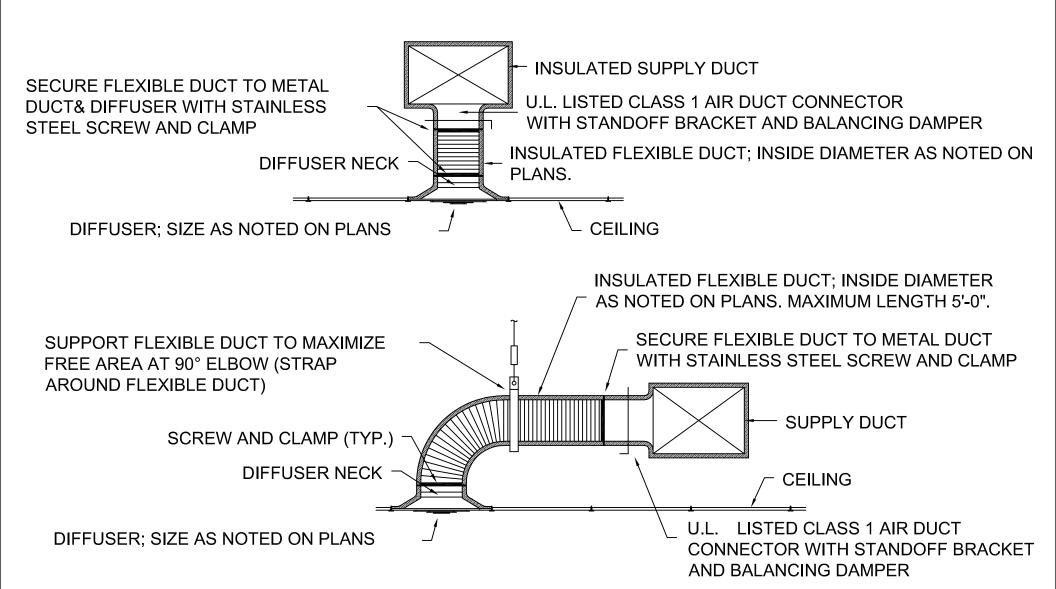
TRANSFER DUCT DETAIL
NOT TO SCALE

	05/01/2023	INITIAL FOR UGA STANDARDS	0	
;				
Engin				



23 31 13-H

TRANSFER DUCT



# DIFFUSER CONNECTION DETAIL SCALE: NONE

0	INITIAL FOR UGA STANDARDS	05/01/2023		DIFFUSER DETAILS
			( <b>m</b> )	
			The University of Georgia	23 31 13-I
			Engineering Department Facilities Management Division	2001101