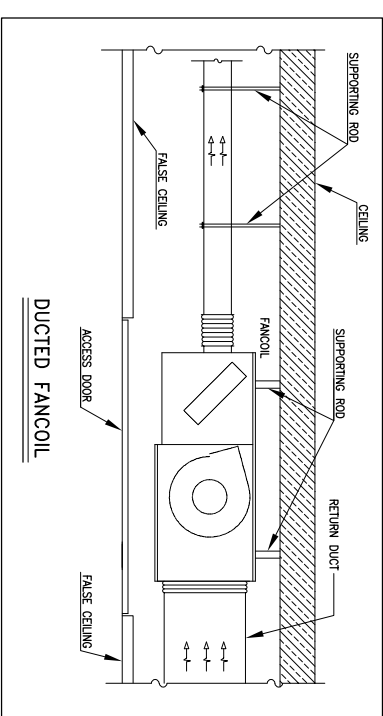
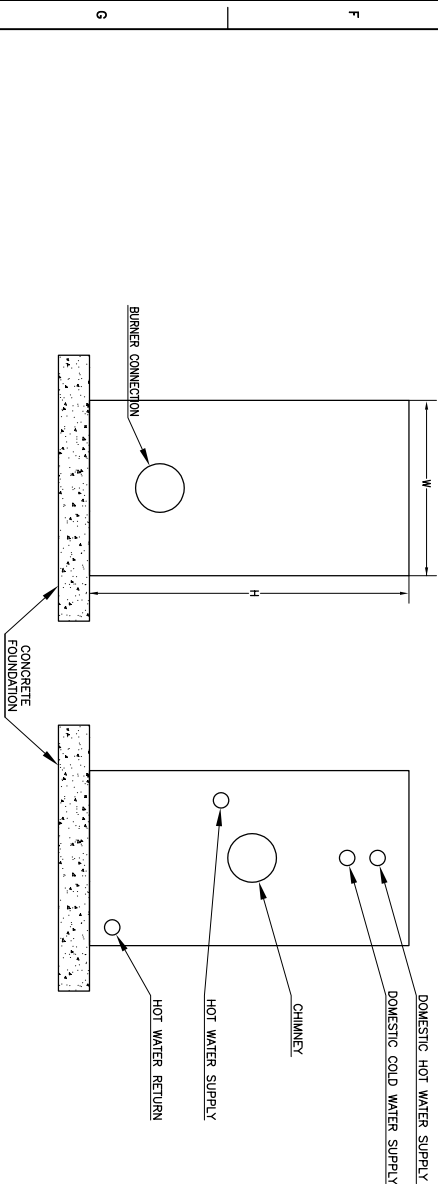
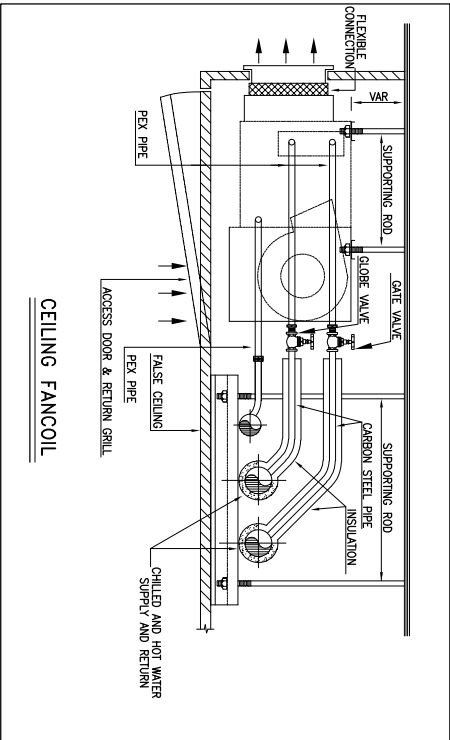
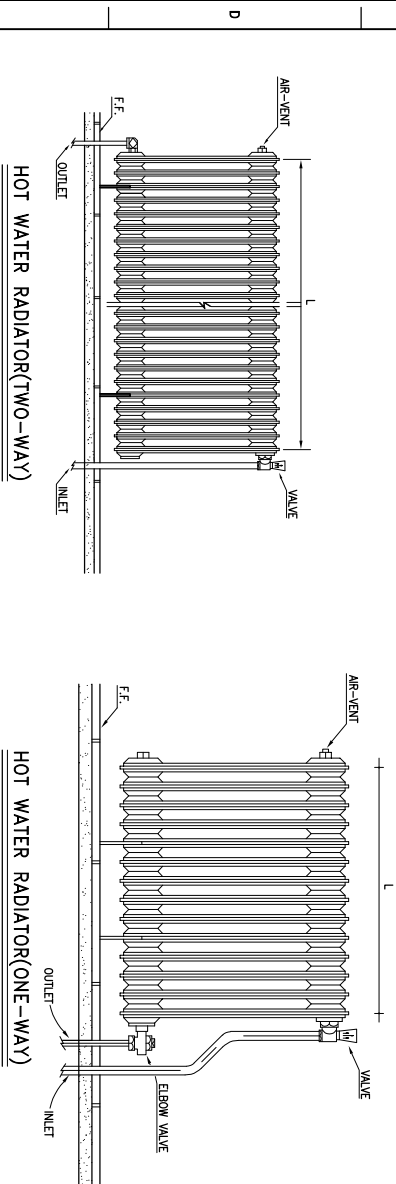
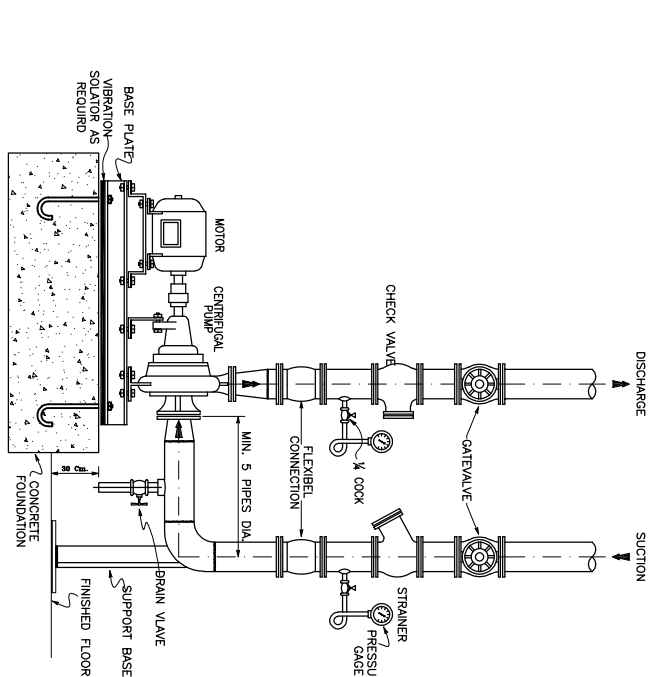
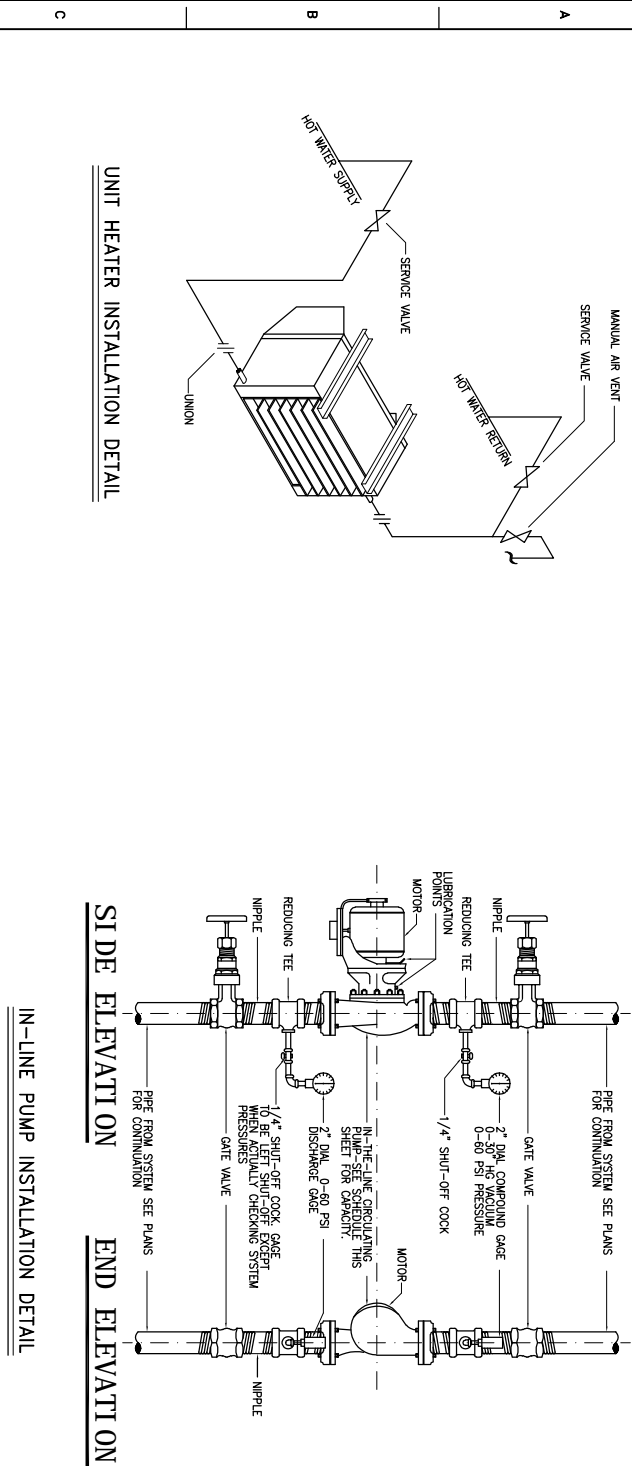
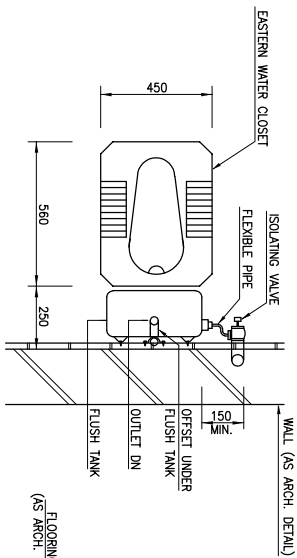


GENERAL NOTES

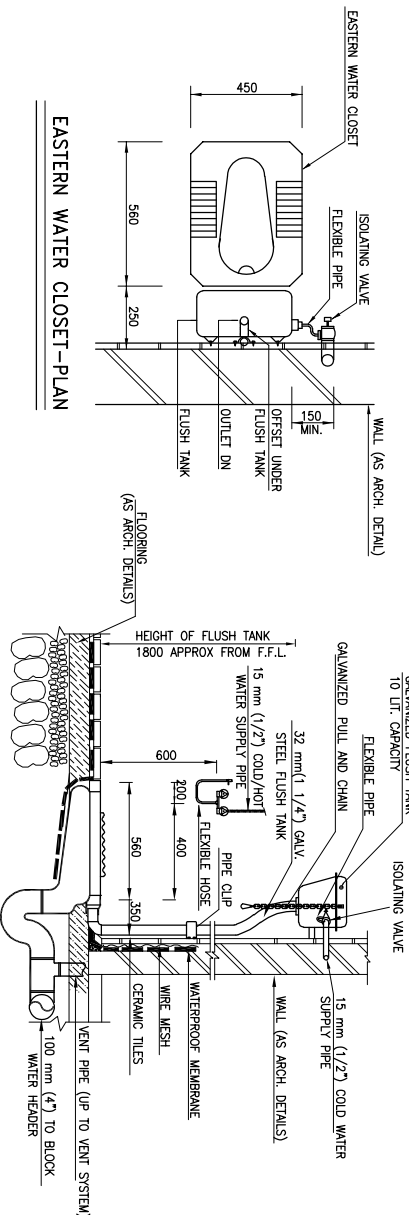


REMARKS  
1. ALL DIMENSIONS SHOULD BE REVIEW AFTER THE PURCHASE ORDER IS FINALIZED.

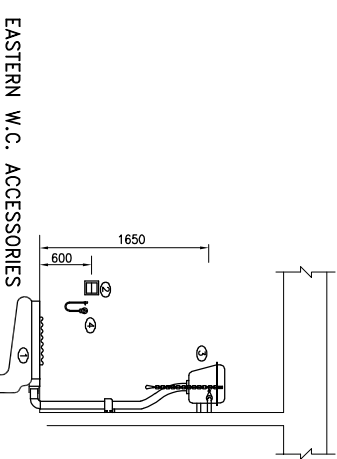
03				
02	10-JUL-23	FIN	H.RASOULI	H.RASOULI
01	26-JUN-23	AFC	H.RASOULI	AR.AHOUEI
00	29-JAN-23	IFA	H.RASOULI	M.Mahmoudi
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.
Project				
Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit				
P.O. No.:6258				
Client:				
Consultant:				
DRAWING TITLE:				
STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM				
OLD Doc. No.: -				
Size: A1				
SHEET No.				
12 OF 12				
REV. 01				



EASTERN WATER CLOSET-PLAN

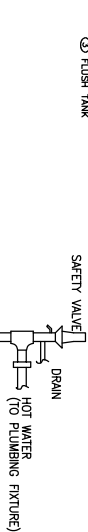


INSTALLATION DETAIL FOR EASTERN WATER CLOSET

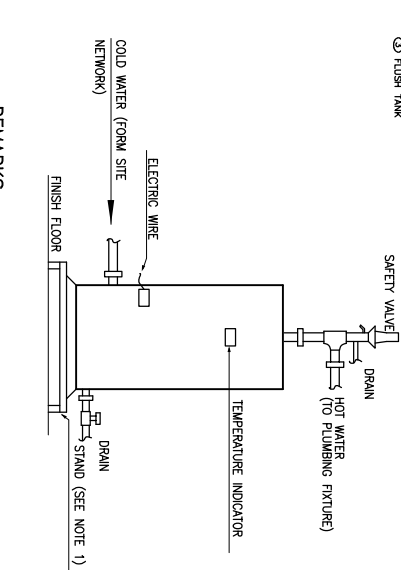
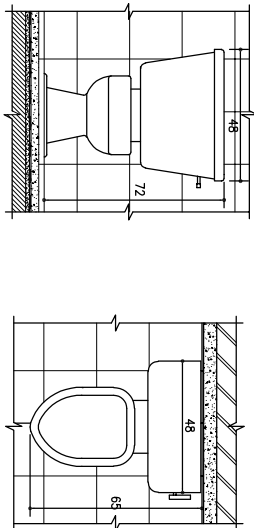


EASTERN W.C. ACCESSORIES

- ① WATER CLOSE
- ② PAPER HOLDER
- ③ FLUSH TANK



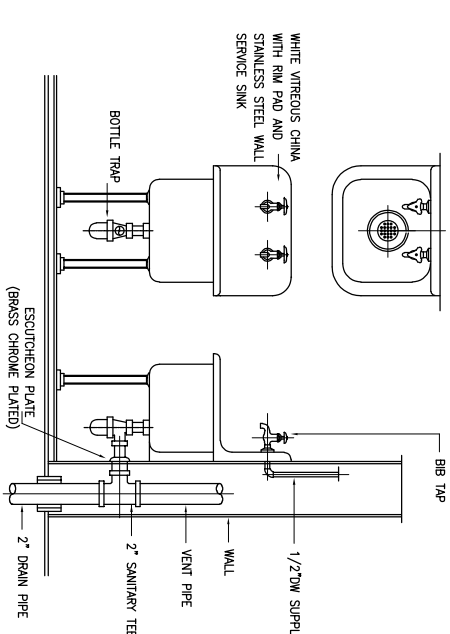
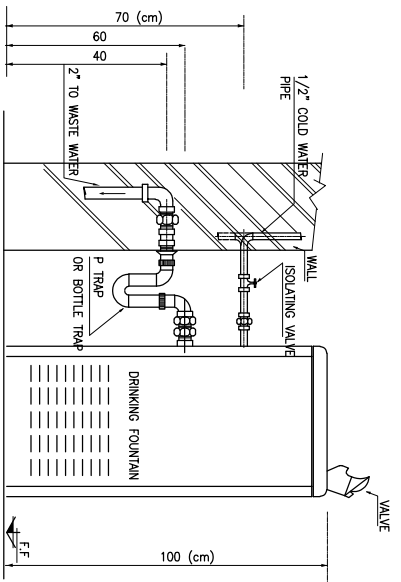
INSTALLATION DETAIL FOR WESTERN WATER CLOSET



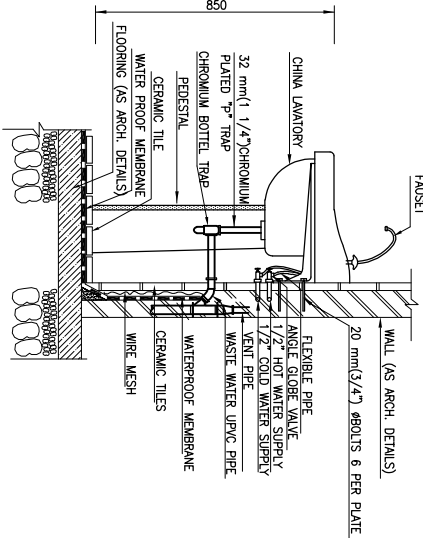
REMARKS:  
1- SUITABLE STAND OF DOMESTIC WATER HEATER SHALL BE CONSTRUCTED OF L 50\*50\*3 mm WITH SIZES OF 600 mm(L)\*600 mm(W).

INSTALLATION DETAIL FOR ELECT. DOMESTIC WATER HEATER

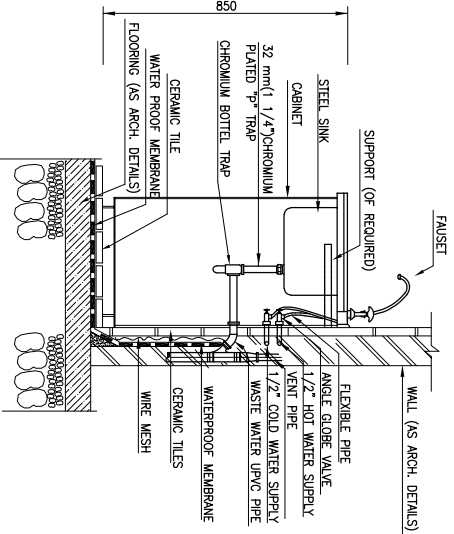
INSTALLATION OF DRINKING FOUNTAIN



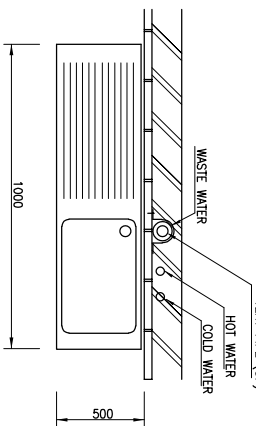
JANITOR BASIN



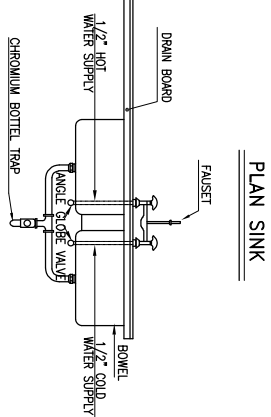
INSTALLATION DETAIL FOR PEDESTAL LAVATORY



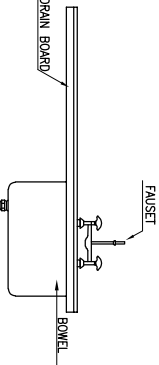
INSTALLATION DETAIL FOR KITCHEN SINK



PLAN SINK

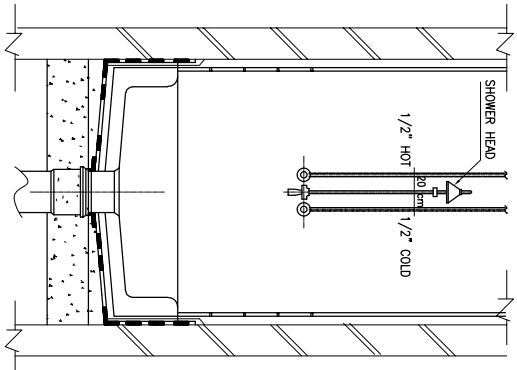
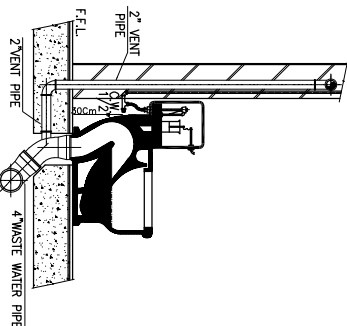


KITCHEN SINK (TWO BOWEL & ONE DRAIN BOARD)

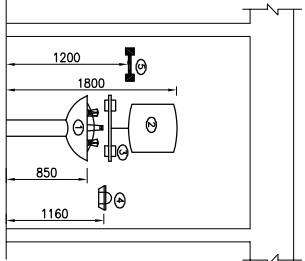
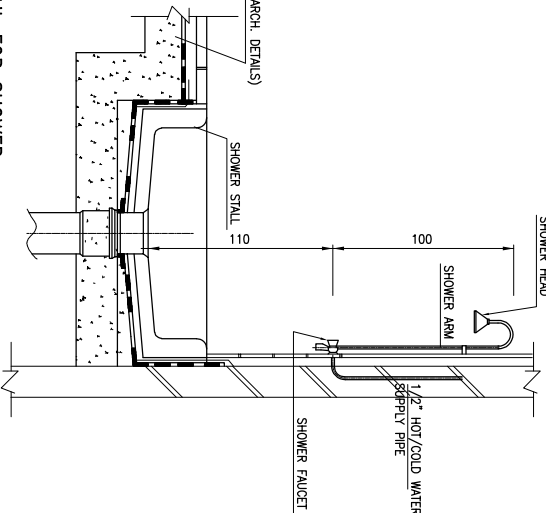


KITCHEN SINK ONE BOWEL & ONE DRAIN BOARD

WESTERN WATER CLOSET DETAIL WITH CONNECTION

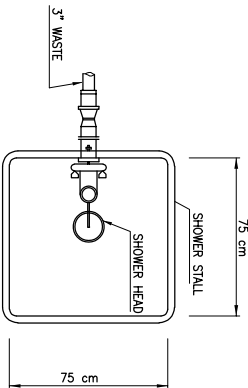


INSTALLATION DETAIL FOR SHOWER



LAVATORY ACCESSORIES

- ① LAVATORY
- ② SOAP HOLDER
- ③ MIRROR
- ④ SHELF



GENERAL NOTES

REFERENCE DOCUMENTS

LEGEND

KEY PLAN

Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APP'D.
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00	29-JAN-23	IFA	H.RASOULI	H.RASOULI	M.Mahmoodi

Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit

P.O. No.:6258

SCALE : 1:100

Client:

Consultant:



STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM

QUD Doc. No.:	Doc. No.:	1 OF 12	REV. 01
Size: A1	SHEET No.		



Suction and liquid lines shall be insulated with pre-molded flexible rubber foam (elastomeric) with following specification:

Maximum thermal conductivity: 0.036 W/m-K at mean temperature of 0°C

\* SUCTION AND LIQUID LINES SHALL BE INSULATED WITH PRE-MOLDED FLEXIBLE RUBBER FOAM (ELASTOMERIC )WITH FOLLOWING SPECIFICATION: MAXIMUM THERMAL CONDUCTIVITY : 0.036 W/m-K AT MEAN TEMPERATURE OF 0°C

\* VAPOUR BARRIER PERMEABILITY SHALL BE NO MORE THAN 0.05.

\* GENERAL NOTES

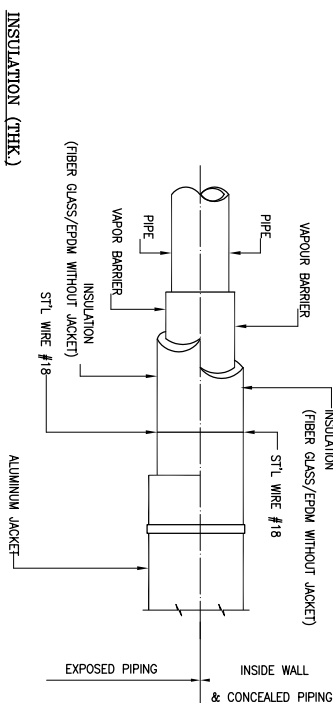
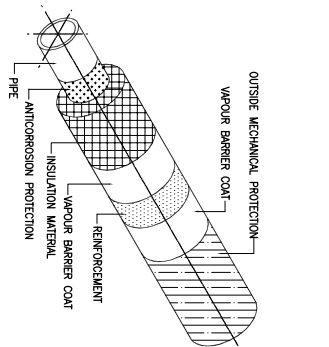
1. IF SELECTED INSULATION MATERIAL IS A RIGID FORM(FOAMGLASS OR PHENOLIC FOAM) PRIMARY COAT IS NOT NECESSARY BUT FOAMSEAL(FOSTER 30-45) VAPOR BARRIER SEALANT SHALL BE USED AS A BEDDING COMPOUND(INSIDE SHELLS AND JOINTS).

2. ALL JOINTS SHALL BE SEALED IN CASE OF RIGID FOAM.

3. VAPOR BARRIER SHALL NOT BE PERFORATED WITH SCREW, DRILL OR POP RIVET.

4. NO DEVIATION WILL BE GRANTED ON THE ABOVE MARKS AND TYPE OF PRODUCTS.

PIPE THERMAL INSULATION (REFRIGERANT PIPING)

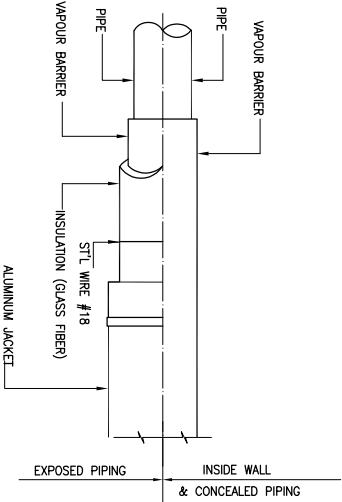


INSULATION (THK.)

ITEM	N.P.S.	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
INSIDE WALL		20mm	25mm	25mm	30mm	30mm	30mm	30mm	30mm	30mm
DOME HOT WATER										
EXPOSED		20mm	25mm	25mm	30mm	30mm	30mm	30mm	30mm	30mm
DOME HOT WATER										

- \* INSULATION MATERIAL FOR 5-LAYER PIPES IS EPDM WITH THICKNESS AS INDICATED BY VENDOR.
- \* 5-LAYER PIPES SHALL INSTALLED WITHOUT VAPOR BARRIER OR JACKETING.

DOMESTIC HOT WATER PIPE INSULATION

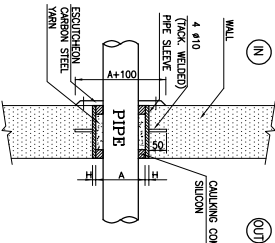
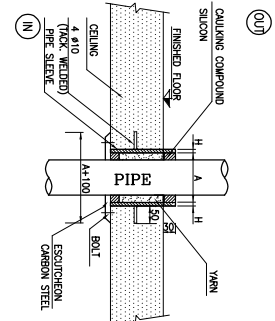
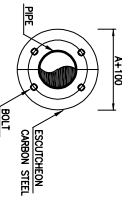


INSULATION (THK.)

ITEM	N.P.S.	1/2"	1/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
INSIDE WALL		-	-	-	-	-	-	-	-	-
DOME COLD WATER										
EXPOSED		15mm	15mm	15mm	15mm	15mm	15mm	15mm	15mm	15mm
DOME COLD WATER										

- \* INSULATION MATERIAL FOR 5-LAYER PIPES IS EPDM WITH THICKNESS AS INDICATED BY VENDOR.
- \* 5-LAYER PIPES SHALL INSTALLED WITHOUT VAPOR BARRIER OR JACKETING.

DOMESTIC COLD WATER PIPE INSULATION



THROUGH WALL

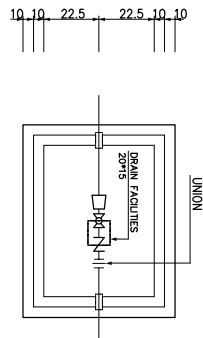
THROUGH CEILING

SLEEVE SCHEDULE

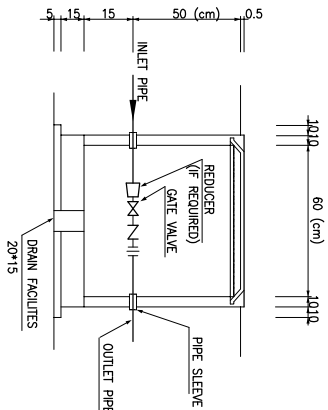
PIPE SIZE (NOMINAL)	15	20	25	32	40	50	65	80	100	125	150	200
ITEM	32	32	40	50	65	80	100	125	150	200	250	300
A (NOMINAL)	(11/7)	(11/7)	(11/7)	(11/7)	(21/2)	(5)	(4)	(5)	(6)	(6)	(10)	(12)
H (MM)	3.5	3.5	3.7	4	4.5	5.5	6	6.5	7	8	9	10

NOTE: FOR SELECTING SLEEVE FOR PIPE CROSSING THROUGH WALL OR CEILING, PIPE INSULATION SHALL BE CONSIDERED TOO.

TYPICAL PLAN



TYPICAL SECTION



INSTALLATION DETAIL FOR VALVE CHAMBER

03					
02	10-JUL-23	FIN	H.RASOULI	H.RASOULI	AR.AHOOEI
01	26-JUN-23	AFC	H.RASOULI	H.RASOULI	AR.AHOOEI
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Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit

P.O. No.:6258

Client:



Consultant:



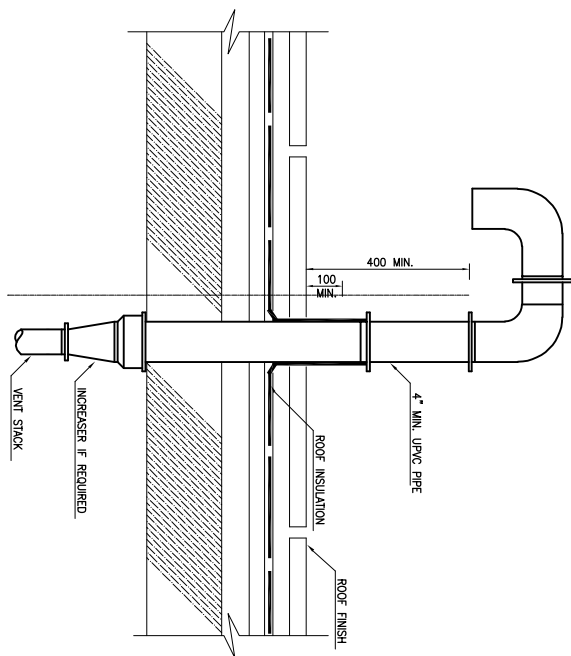
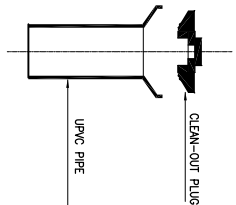
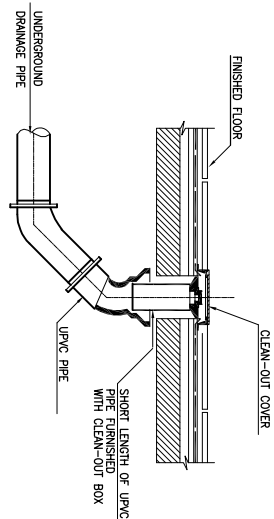
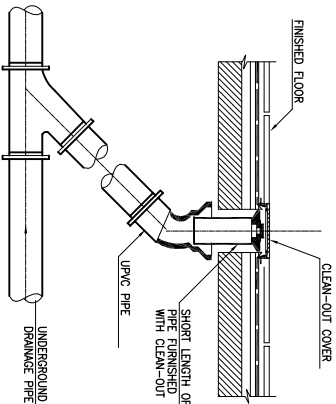
DRAWING TITLE:

STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM

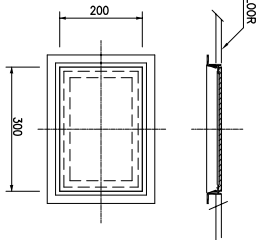
OLD Doc. No.: -	Doc. No.: LRP-TNA-HV-99-STD-0001
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Size: A1	SHEET No.	3 OF 12	REV. 01
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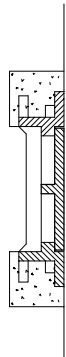




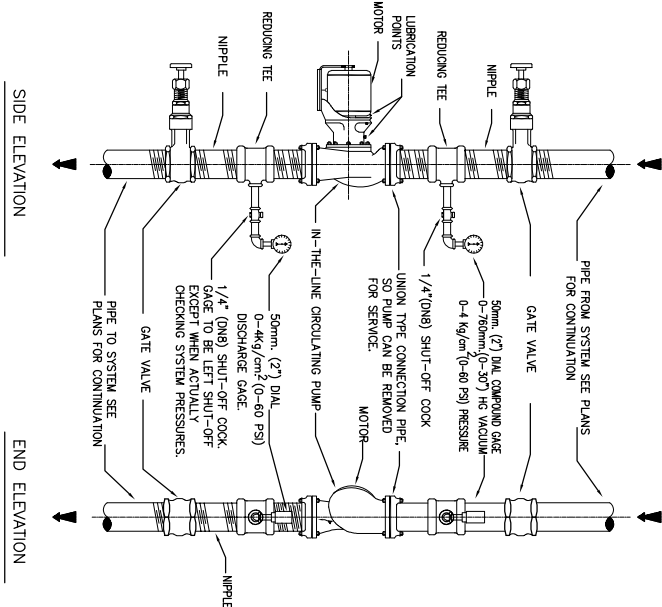
VENT STACK TERMINAL ON ROOF



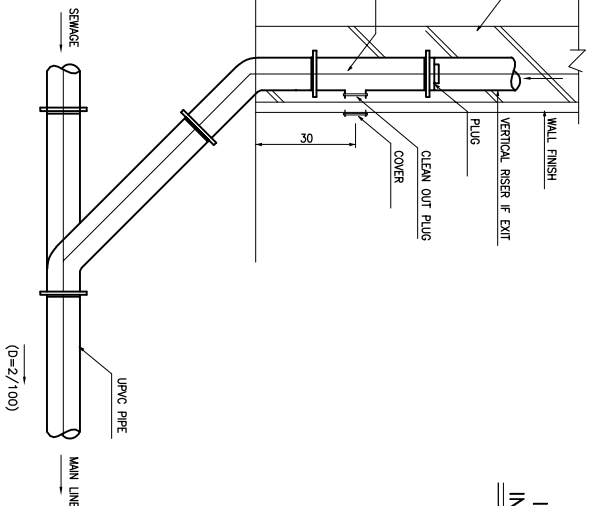
CLEAN-OUT COVER



CLEAN OUT COVER



INSTALLATION DETAILS  
IN-THE-LINE CIRCULATING PUMP



INSTALLATION DETAIL FOR WALL CLEANOUT

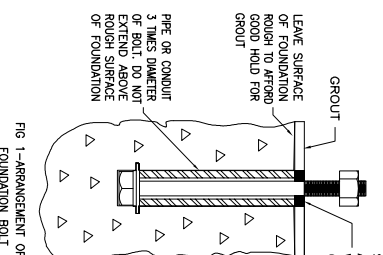


FIG 1-ARRANGEMENT OF FOUNDATION BOLT

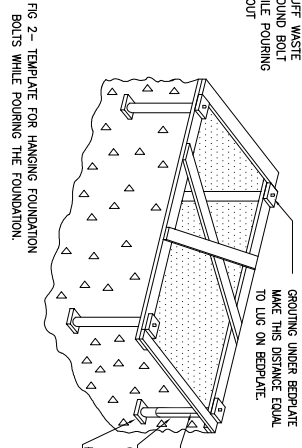
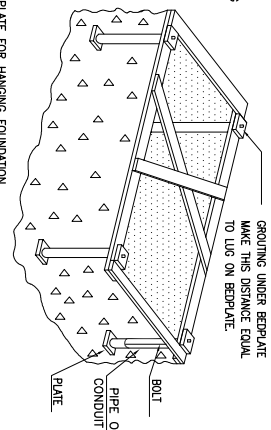
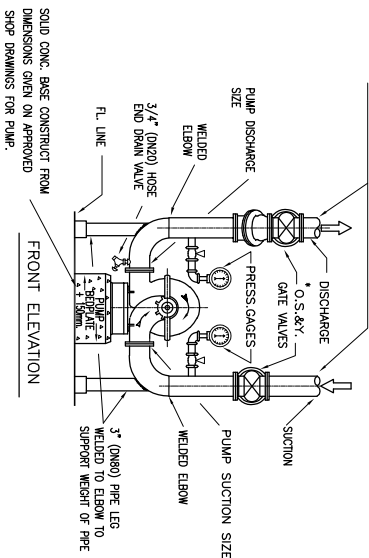


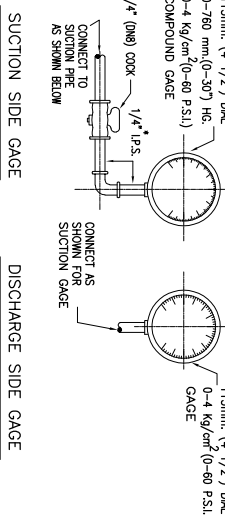
FIG 2- TEMPLATE FOR HANGING FOUNDATION BOLTS WHILE POURING THE FOUNDATION.



INSTALLATION DETAILS  
DOUBLE SUCTION HORIZONTALLY SPLIT CASE PUMP

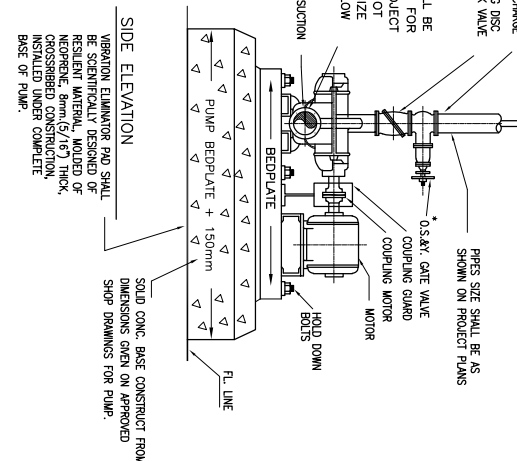


FRONT ELEVATION



SUCTION SIDE GAGE

DISCHARGE SIDE GAGE



SIDE ELEVATION

PUMP ALIGNMENT

CONTRACTOR SHALL CHECK TEST, & START EACH BASE MOUNTED, PUMP & SHALL HAVE THE PUMP MANUFACTURER ALIGN THE PUMP WITH A DIAL INDICATOR WITHIN 002 AMP. DISCHARGE & SUCTION READINGS SHALL BE RECORDED & FORWARDED FOR RECORD PURPOSES.

REFERENCE DOCUMENTS

LEGEND

KEY PLAN

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Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit

P.O. No.:6258

Client:



Consultant:



DRAWING TITLE:

STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM

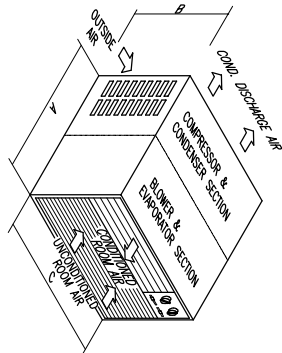
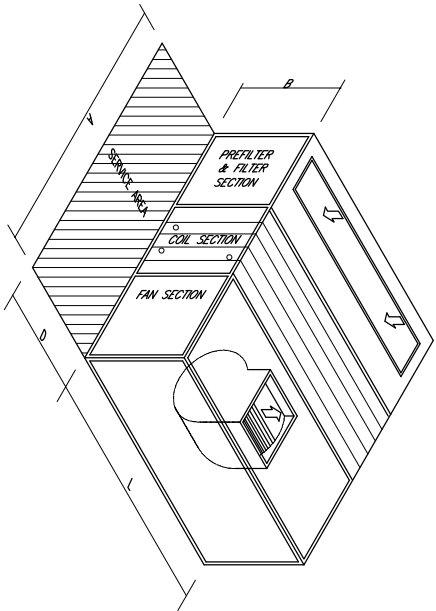
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SHEET No.

4 OF 12

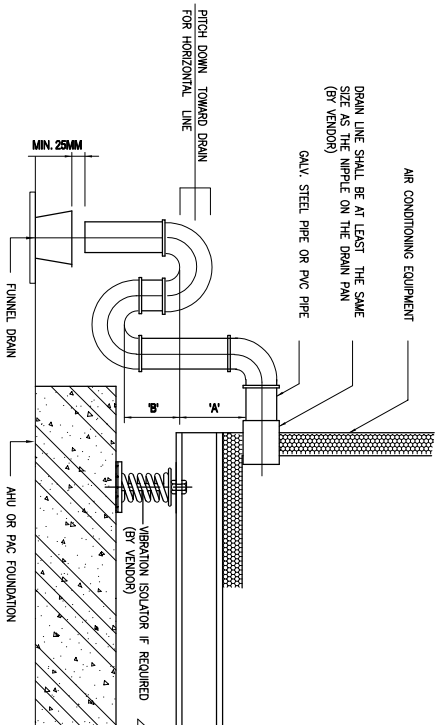
REV. 01



REMARKS:  
1-ROOM AIR CONDITIONER SHALL BE WALL MOUNTED.

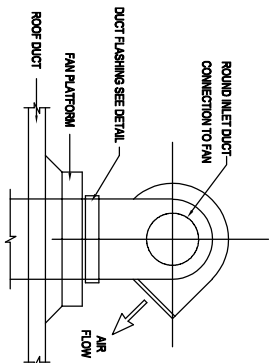
HORIZONTAL AIR HANDELING UNIT (TYPICAL)

THROUGH THE WALL PACKAGED ROOM AIR CONDITIONER (TYPICAL)

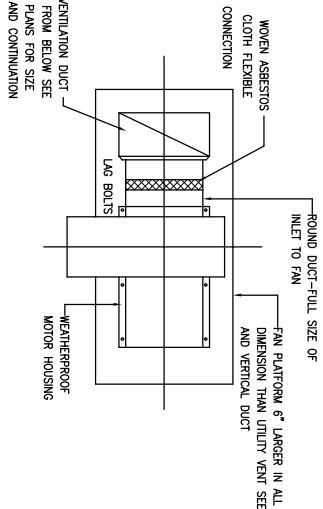


REMARKS:  
1. DRAIN THRU UNIT: 'A' = STATIC PRESSURE IN PAN +50 MM, 'B'=STATIC PRESSURE IN PAN  
2. BLOW THRU UNIT: A = MIN. 25 MM, B=STATIC PRESSURE IN PAN x 2  
3. CONNECTION SIZE & CONNECTION TYPE SHALL BE CONFORMED TO FINAL VENDOR DATA.

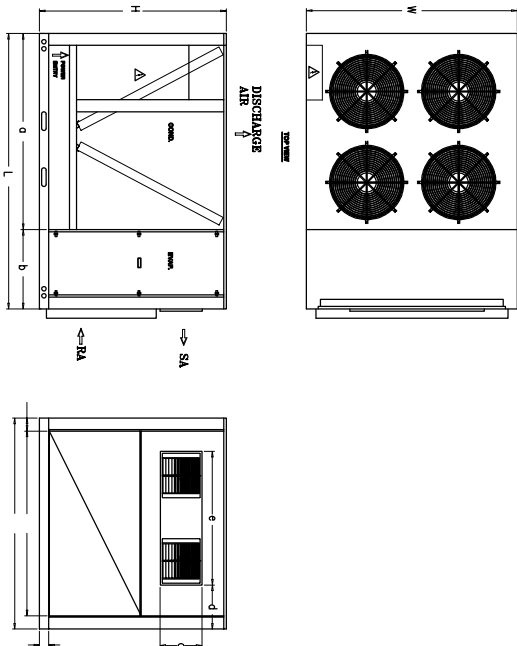
AIR CONDITIONING EQUIPMENT DRAIN ('U' TRAP)



DUCT END ELEVATION



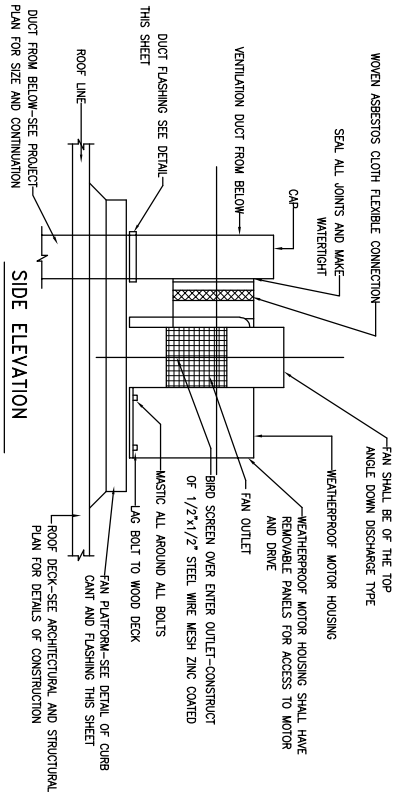
PLAN



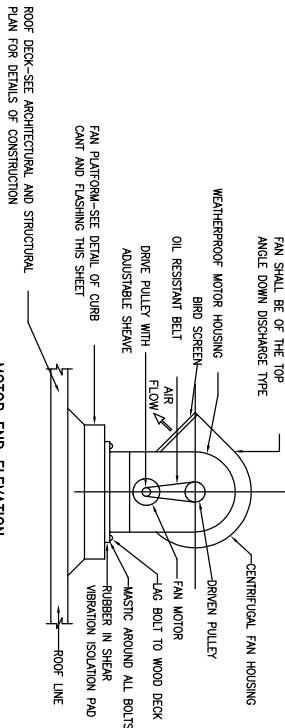
SIDE VIEW

FRONT VIEW

ROOFTOP PACKAGE

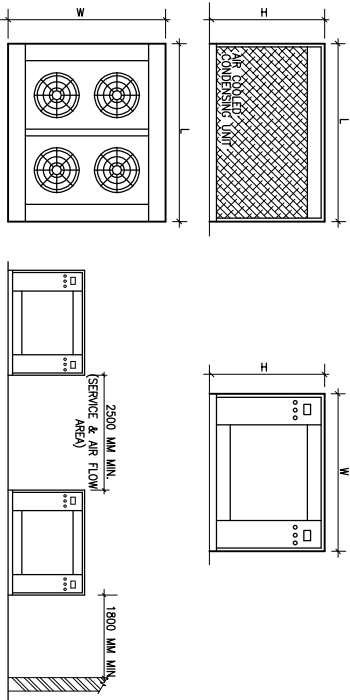


SIDE ELEVATION

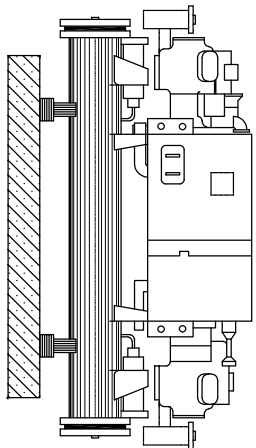


MOTOR END ELEVATION

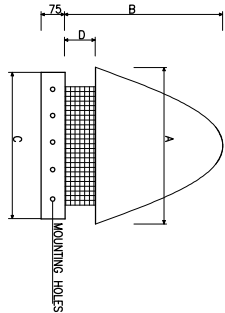
DETAILS OF THE INSTALLATION OF THE ROOF MOUNTED UTILITY VENT SET



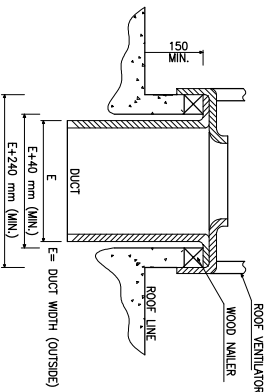
OUTDOOR CONDENSING UNIT (TYPICAL)



INDOOR COMPRESSOR UNIT (TYPICAL)



CENTRIFUGAL ROOF MOUNTED VENTILATOR (TYPICAL)



VENTILATOR INSTALLATION

GENERAL NOTES

REFERENCE DOCUMENTS

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Project  
Completing the Remaining Documents of Design  
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P.O. No.:6258

Client:



Consultant:



DRAWING TITLE:

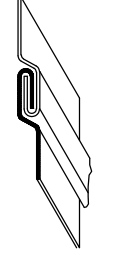
STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM

QUD Doc. No.: -	Doc. No.: LRB-TNA-HV-99-STD-0001
Size: A1	SHEET No. 5 OF 12 REV. 01

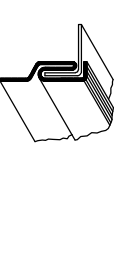
A	TRANSVERSE JOINT										INTERMEDIATE REINFORCEMENT				
	DIMENSION OF LONGEST SIDE mm. (N.)	MINIMUM REINFORCING ANGLE SIZE mm. (N.) AND MAXIMUM LONGITUDINAL SPACING mm. (N.) BETWEEN TRANSVERSE JOINTS AND/OR INTERMEDIATE REINFORCING	UNREINFORCED				REINFORCED				H + T (Min) mm. (N)	H + B + T (Min) mm. (N)			
			MINIMUM HIGH-H (mm.)				REINFORCED ANGLE SIZE IN.	REINFORCED ANGLE SIZE IN.	REINFORCED ANGLE SIZE IN.	REINFORCED ANGLE SIZE IN.					
			DRIVE SLIP	5° SLIP	5° SLIP	5° SLIP									
B	GAGE	THICKNESS MM. (N)	NOT RECOMMENDED	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED	NOT REQUIRED
	UP THRU 450(18)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	475-775 (19-30)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	775-1050 (31-42)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	1050-1350 (41-53)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	1350-1500 (53-59)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	1500-1800 (59-71)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	1800-2100 (71-83)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	2100-2400 (83-95)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED
	2400-2700 (95-106)	0.201 (0.028) 0.691 (0.028)	25	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	0.70(24)	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED<td>NOT REQUIRED</td></td></td>	NOT REQUIRED <td>NOT REQUIRED<td>NOT REQUIRED</td></td>	NOT REQUIRED <td>NOT REQUIRED</td>	NOT REQUIRED

REMARKS:  
1- THIS SCHEDULE IS SUITABLE FOR DUCTWORK OF STATIC PRESSURE DOES NOT EXCEED 600 PA (2 1/2" WATER GAUGE).  
2- THIS SAME SHEET THICKNESS, MUST BE USED IN ALL SIDES OF DUCT. EACH DUCT DIMENSION, WIDTH OR DEPTH, CONTROLS THE MINIMUM REINFORCEMENT REQUIREMENTS FOR THAT SIDE.

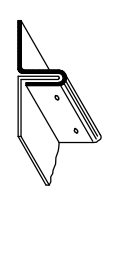
RECOMMENDED DUCT CONSTRUCTION TABLE (RECTANGULAR LOW PRESSURE DUCT)



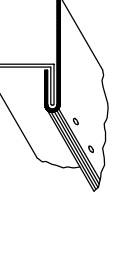
GROOVED SEAM



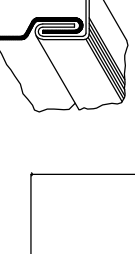
PITTSBURGH LOCK



STANDING SEAM

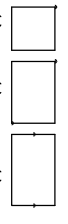


SINGLE CORNER SEAM

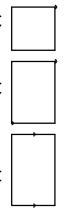


DOUBLE CORNER SEAM

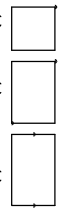
SEAM LOCATIONS



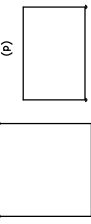
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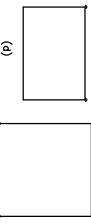
(b)




(c)



(d)



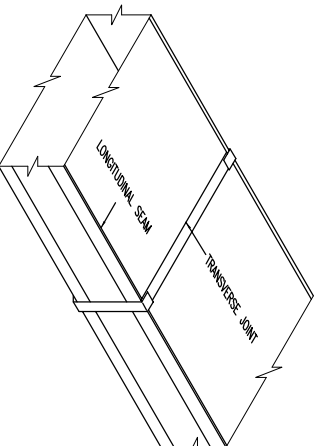
(e)



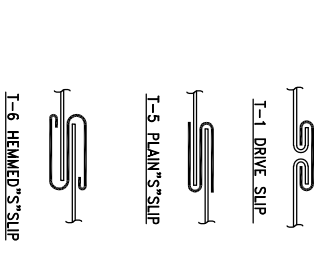
(f)

NUMBER OF SEAMS AND LOCATION VARIES WITH JOINT TYPE, SHEET STOCK AND ASSEMBLY PLANS.


LONGITUDINAL SEAMS FOR RECTANGULAR DUCT




LONGITUDINAL SEAM




TRANSVERSE JOINT



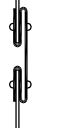
I-1 DRIVE SLIP



I-5 PLAIN S SLIP



I-6 HEMMED S SLIP

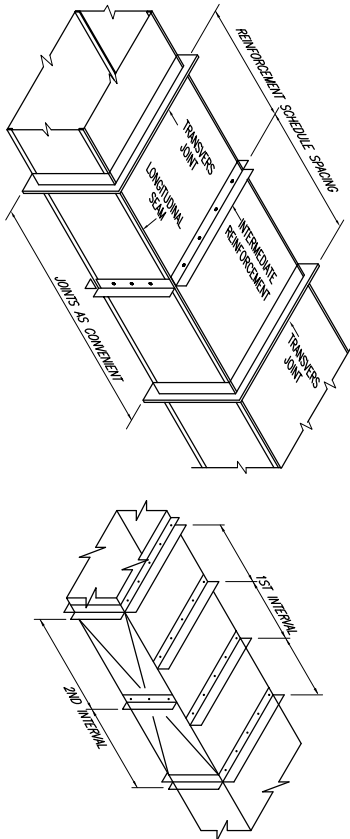


I-8 DOUBLE S SLIP

UNREINFORCED DUCT

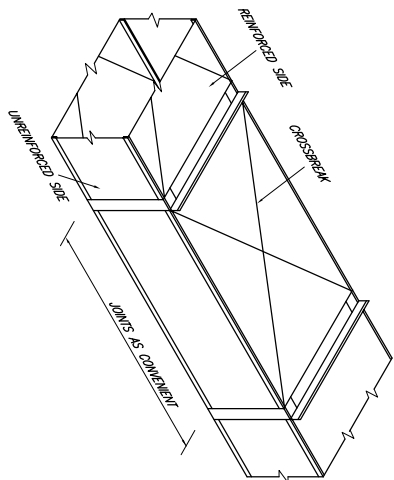
REMARKS

1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.1-7



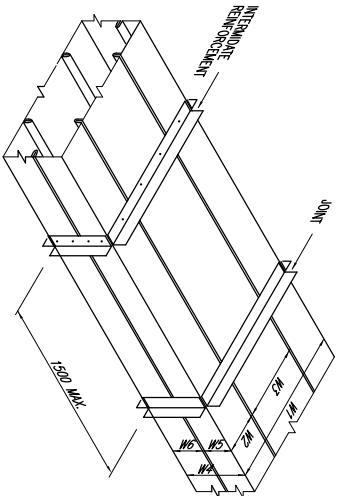
REMARKS  
1. REFERENCE : SMACNA STANDARD AND EDITION-1995, FIG.1-10  
2. REINFORCEMENT INTERVAL SPACING PER SCHEDULES FOR EACH DUCT DIMENSION.  
3. INTERVALS NEED NOT NECESSARILY COINCIDE ON ADJACENT SIDES.

DUCT REINFORCED ON ALL SIDES



REMARKS:  
1- REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.1-8  
2- DUCT SIZES 500 MM. WIDTH AND LARGER WHICH HAVE MORE THAN 0.93 M. SHALL BE CROSS BROKEN UNLESS DUCTS WILL HAVE INSULATION COVERING.  
3- IT IS UNNECESSARY TO BREAK ALL SIDES UNLESS EACH DUCT DIMENSION REQUIRES IT.  
4- CROSS BREAKS SHALL NOT AFFECT REINFORCEMENT SPACING.

CROSSBROKEN DUCT



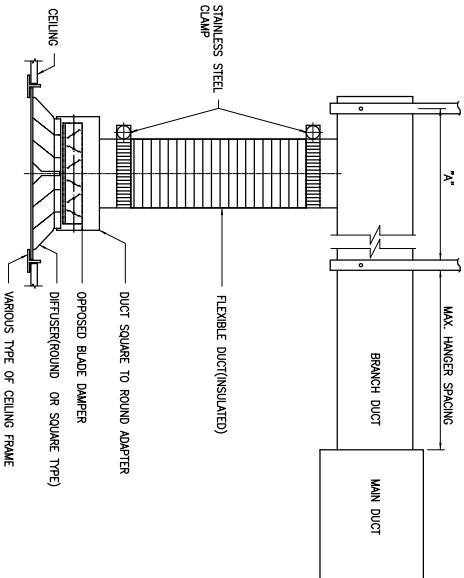
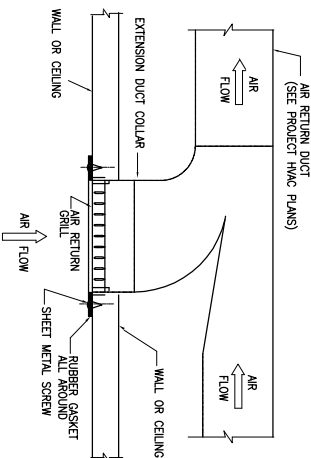
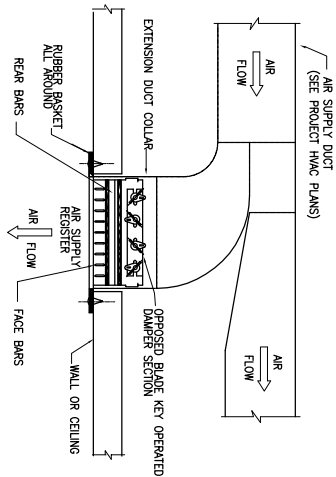
REMARKS  
1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.1-6  
2. USE DUCT GAGE REQUIRED BY GREATEST SUBDIVISION OF "W" AND THE SELECTED SPACING (1500 MM.) OR FOR THE UNSEALED SIDE, WHICHEVER IS GREATER THICKNESS.  
3. SIZE JOINTS AND SELECT INTERMEDIAT REINFORCEMENT FROM RECOMMENDED DUCT CONSTRUCTION TABLE.  
4. MINIMUM STANDING SEAM SIZES ARE :25mm FOR DUCTS 1050 AND LESS , 40mm FOR 1100 OVERALL WIDTH AND UP.  
5. STITCH WELD SEAMS ON EXTERIOR OR BOLT, SCREW OR BUTTON PUNCH SEAMS ON INTERIOR.  
6. SEE CROSSBREAKING REQUIREMENTS FOR EACH "W".

INSIDE STANDING SEAM-LONGITUDINAL-500 PA MAXIMUM

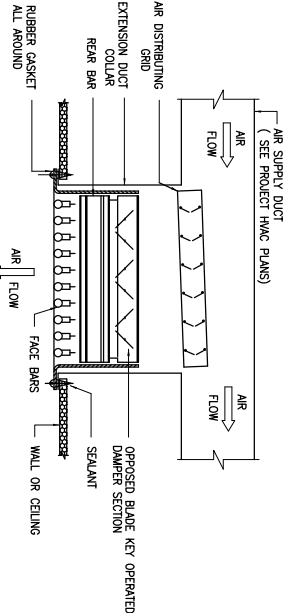
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01	26-JUN-23	AFC	H.RASOOL	H.RASOOL	AR.AHOOEI
00	29-JAN-23	IFA	H.RASOOL	H.RASOOL	M.Mahmoodi
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APP'D.
Project					
Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit					
P.O. No.:6258					
Client:		Consultant:			
DRAWING TITLE:		STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM			
OLD Doc. No.: -		Doc. No.: LRB-TNA-HV-99-STD-0001		REV. 01	
Size: A1		SHEET No.		6 OF 12	
14		15		16	



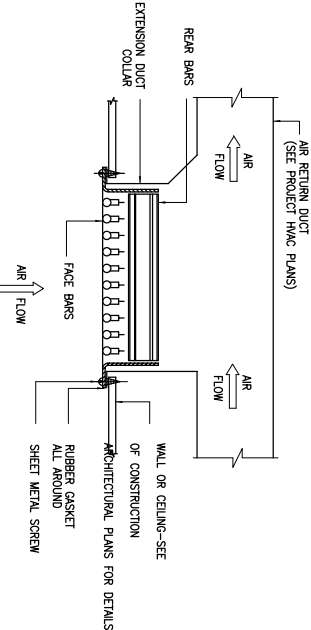
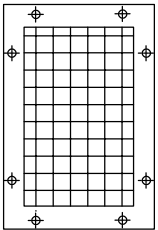




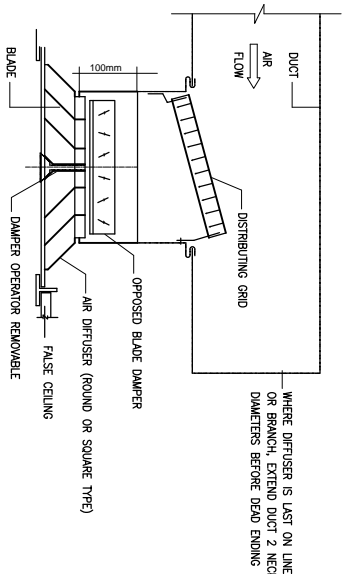
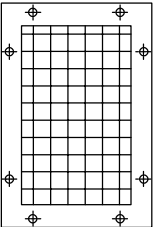
REMARKS  
1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.2-13M  
2. ADD SUPPORTS IF 7"X" IS OVER 900 OR DIFFUSER IS HEAVY.



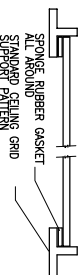
### SUPPLY AIR REGISTER INSTALLATION



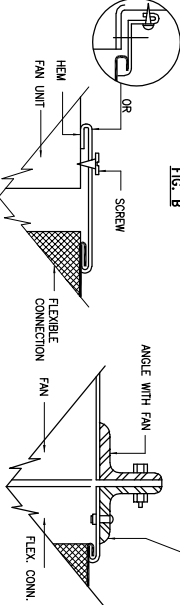
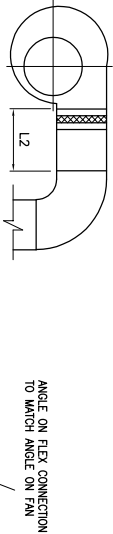
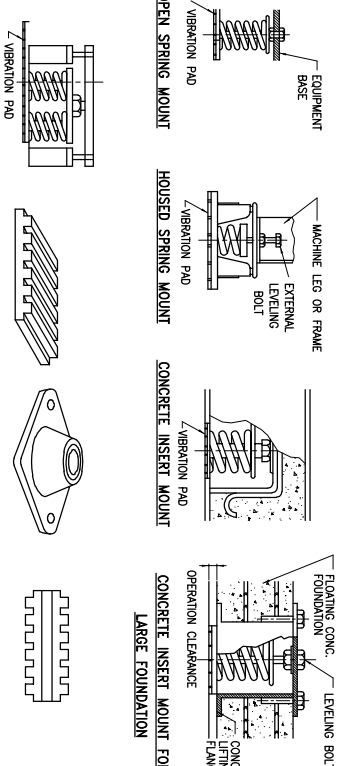
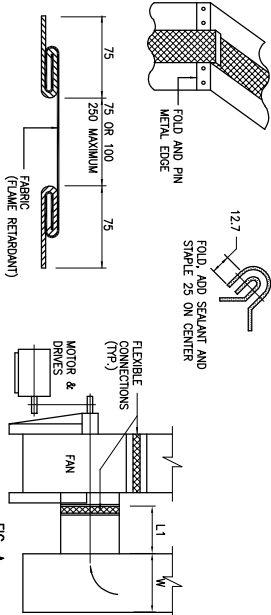
### RETURN AIR GRILL INSTALLATION



### CEILING DIFFUSER - SQUARE OR ROUND TYPE

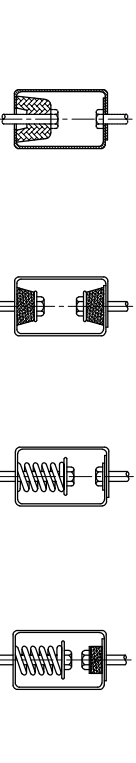


### DIFFUSER CEILING SUPPORT

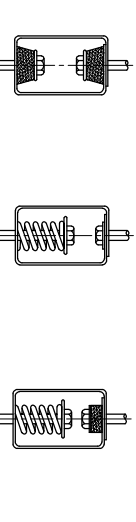


### FLEXIBLE CONNECTION AT FAN

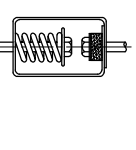
REMARKS  
1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG. 2-17  
2. SEE SMACNA DUCT DESIGN MANUAL AND AMCA PUBLICATION 201REVIEW PERFORMANCE OF VARIOUS INLET AND OUTLET CONDITIONS (11.12.W DIMENSIONS, ETC.)



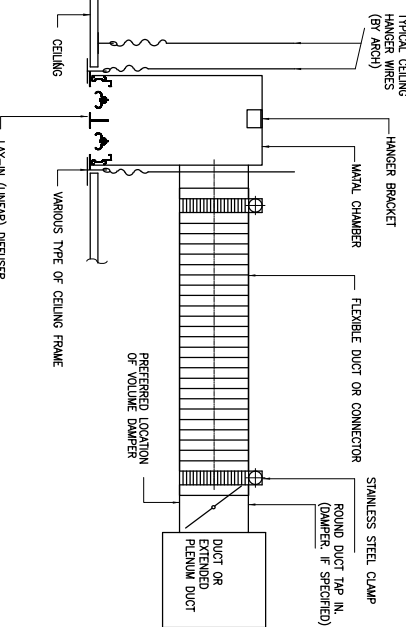
### RUBBER ISOLATION HANGER



### RUBBER ISOLATION MOUNT



### RUBBER ISOLATION PAD



REMARKS  
1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.2-15  
2. THE CEILING SUPPORT SYSTEM MUST SUPPORT DIFFUSER WEIGHT WHEN FLEXIBLE CONNECTIONS ARE USED.  
3. A PROPERLY SIZED HOLE IS PROVIDED IN THE CEILING TILE.  
4. THE DIFFUSER DOES NOT SUPPORT THE TILE

### LAY-IN(LINEAR) DIFFUSER

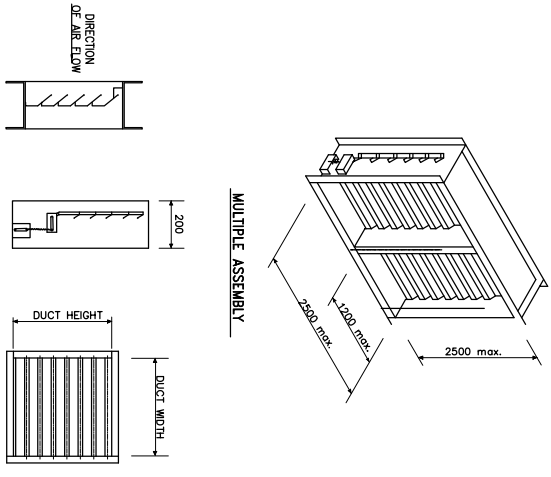
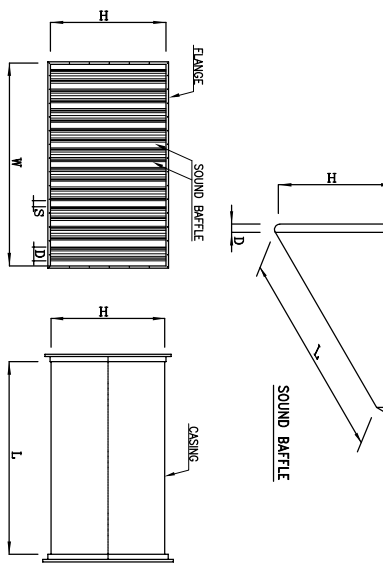
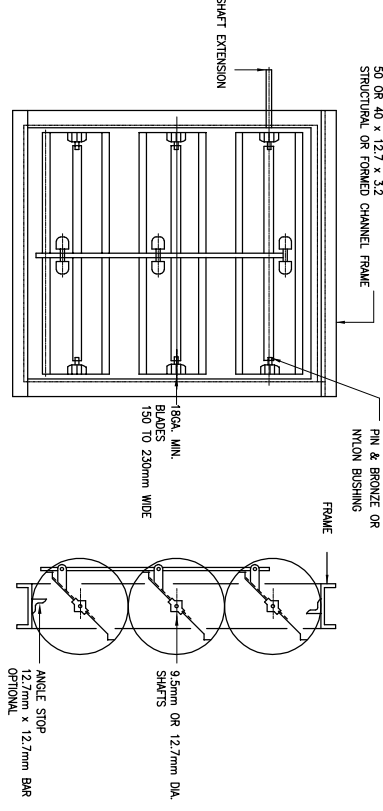
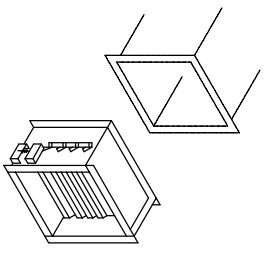
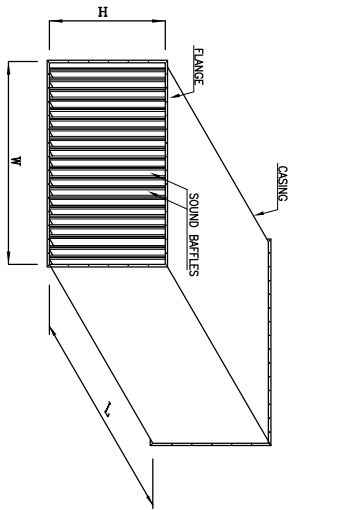
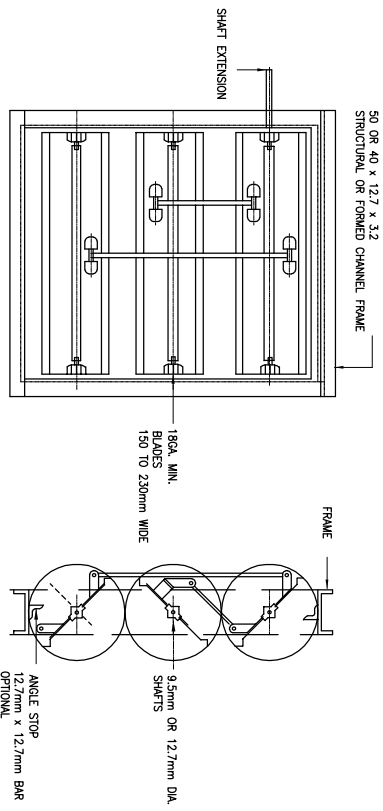
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02	10-JUL-23	FIN	H.RASOULI	H.RASOULI	AR.AHOUEI
01	26-JUN-23	AFC	H.RASOULI	H.RASOULI	AR.AHOUEI
00	29-JAN-23	IFA	H.RASOULI	H.RASOULI	M.Mahmoodi
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APP'D.
Project					
Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit					
P.O. No.:6258					
Client:			Consultant:		
DRAWING TITLE:			STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM		
QUD Doc. No.: -			Doc. No.: LRB-TNA-HV-99-STD-0001		
Size: A1			SHEET No. 8 OF 12		
14			REV. 01		

### GENERAL NOTES

### REFERENCE DOCUMENTS

### LEGEND

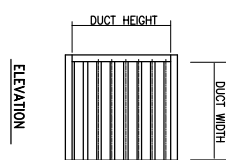
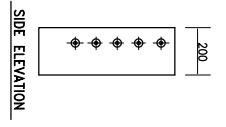
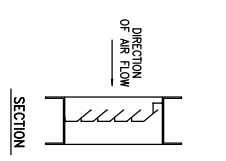
### KEY PLAN



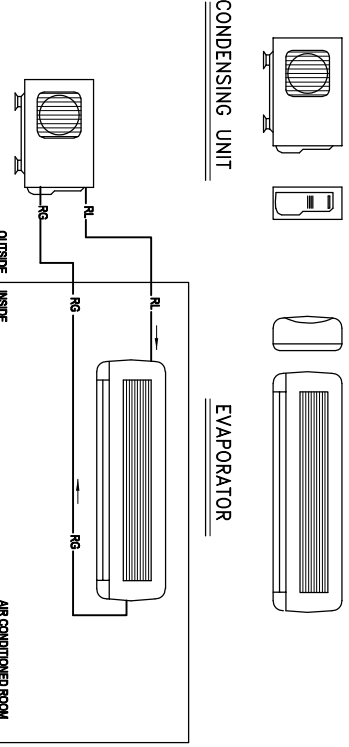
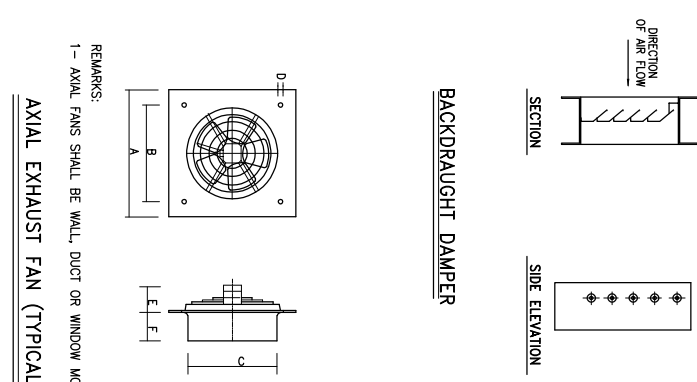
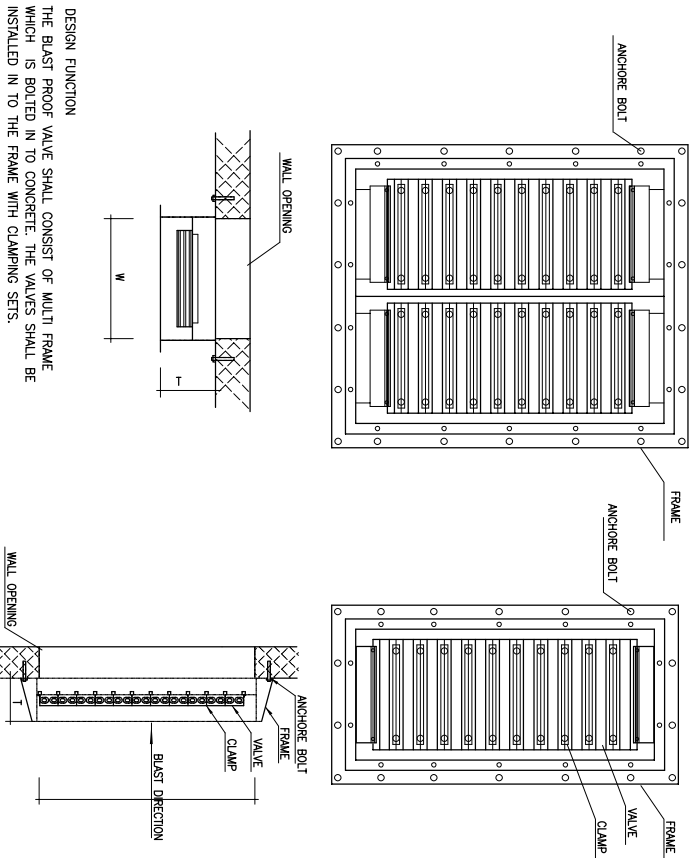
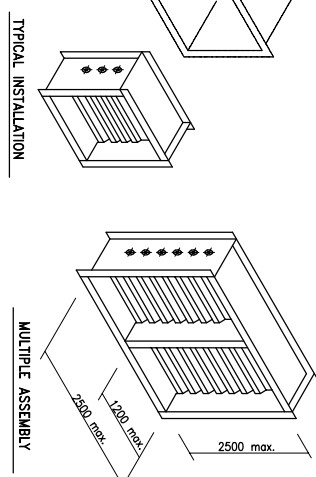
REMARKS  
1. REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG-2-13

VOLUME DAMPER-MULTI BLADE TYPE

SOUND ATTENUATOR (TYPICAL)



BACKDRAUGHT DAMPER



03					
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01	26-JUN-23	AFC	H.RASOULI	H.RASOULI	AR.AHOOEI
00	29-JAN-23	IFA	H.RASOULI	H.RASOULI	M.Mahmoodi
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APP'D.

Project  
Completing the Remaining Documents of Design  
and Engineering Services for LAB2 Unit



Client:

Consistent:

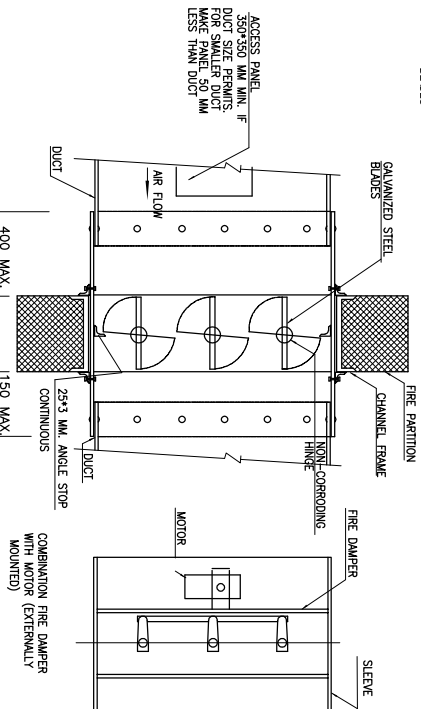
P.O. No.:6258

DRAWING TITLE:  
STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM

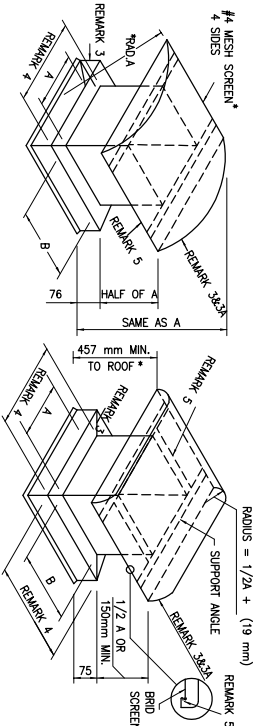
Doc. No.: -	Doc. No.: LRB-TNA-HV-99-STD-0001
Size: A1	SHEET No. 9 OF 12
REV. 01	

14

FOR DAMPERS TO 36" WIDE USE NO.18 U.S. GAUGE  
FOR DAMPERS TO 37" TO 43" WIDE USE NO.16 U.S. GAUGE  
BLADES



TYPICAL FIRE DAMPER INSTALLATION ( MULTI-LOUVER TYPE)

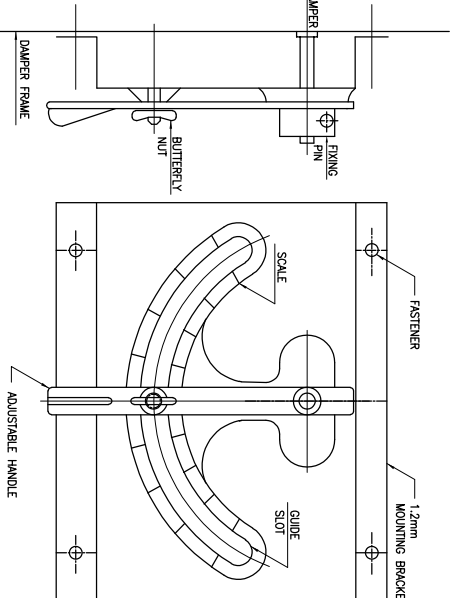


\* SEE ADDITIONAL NOTES ON RECTANGULAR GOOSENECK DETAIL FOR SCREEN AREA COMPENSATION, DEFLECTORS, CURB HEIGHTS & R/W ELEVATION.

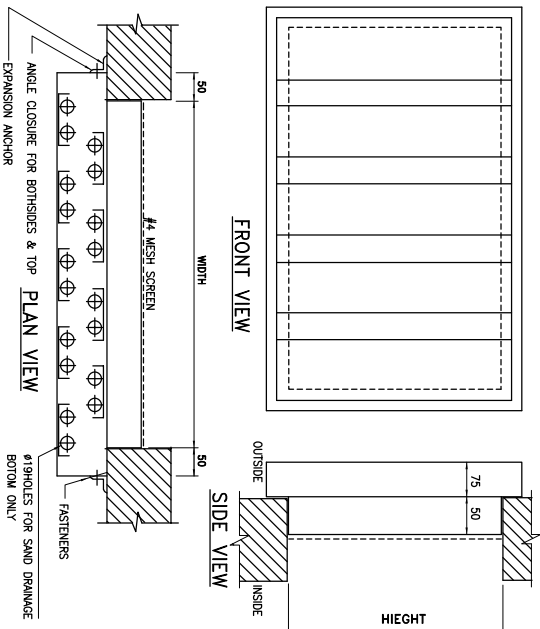
## REMARKS

- REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.5-6
- WHEN  $A \times B = 1.11$  SQ. M USE 22GA, WHEN  $A \times B = 1.11$  TO 1.67 SQ. M = USE 20GA. WHEN CONSTRUCTION IS GALVANIZED USE GA. SCHEDULE SHOWN, WHEN CONSTRUCTION IS ALUMINUM USE FOUR GAGES HEAVIER.
- WELDED OR BUTTED AND SOLDERED.
- COVER END SPANS ON UNITS MAY BE SEALED PITTSBURGH.
- DIMENSIONS AS REQ'D. TO FLASH OVER CURB.
- SUPPORT SCREEN ON 3/5"(19 mm)HEMLED FLANGE.
- CURBS MAY BE FLASHED AS SHOWN IN RECTANGULAR GOOSENECK DETAIL.
- IF USED FOR DAMPER ACCESS, USE HINGES AND LATCHES.

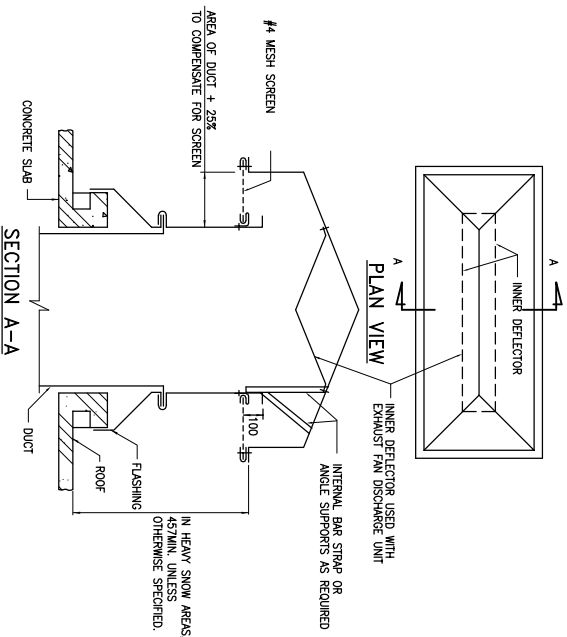
## INTAKE OR EXHAUST VENTILATORS



QUADRANT (HANDLE FOR VOLUME DAMPER)



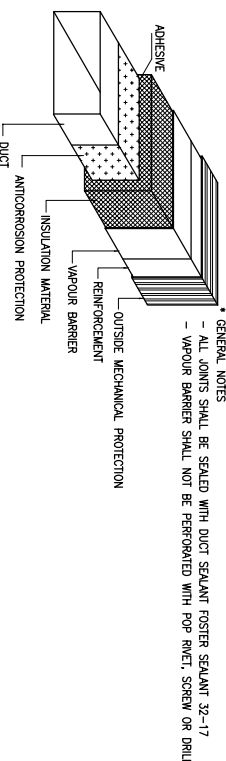
SAND TRAP LOUVER



## REMARKS

- REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.5-7
- FOR CURB AND FLASHING DETAIL SEE RECTANGULAR GOOSENECK DETAIL.

## LARGE INTAKE OR EXHAUST VENTILATOR

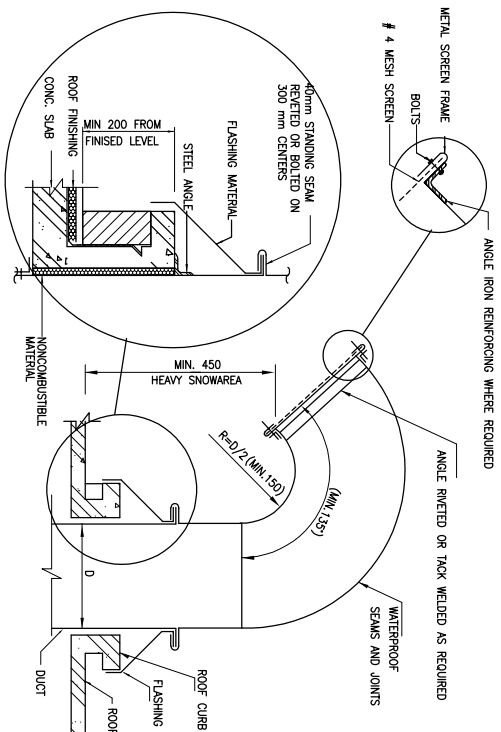


## GENERAL NOTES

- ALL JOINTS SHALL BE SEALED WITH DUCT SEALANT FOSTER SEALANT 32-17
- VAPOUR BARRIER SHALL NOT BE PERFORATED WITH POP ANVET, SCREEN OR DRILL

1.DUCT	* INSIDE DUCT	1.DUCT	* OUTSIDE DUCT
2. ANTICORROSION PROTECTION	: GALVANIZED STEEL (OR STAINLESS STEEL IN CASE OF WALL PENETRATION)	2. ANTICORROSION PROTECTION	: GALVANIZED STEEL
3. ADHESIVE	: FOSTER-PRIMER 51-14	3. ADHESIVE	: FOSTER-PRIMER 51-14
4. INSULATION MATERIAL	: FOSTER QUICK TACK 85-60 (WATER BASE ADHESIVE)	4. INSULATION MATERIAL	: FOSTER QUICK TACK 85-60 (WATER BASE ADHESIVE)
5. VAPOUR BARRIER COATS	: LAMENAL WOOL 48 KG/M <sup>3</sup> WITH FACING 25 MM THICK	5. VAPOUR BARRIER COATS	: ALUMINUM FOL
6. REINFORCEMENT	: OPEN WOVEN GLASS CLOTH DIPPED IN VAPOUR BARRIER	6. REINFORCEMENT	: ALUMINUM CLADDING
		7. OUTSIDE MECHANICAL PROTECTION	: ALUMINUM SHEET (1 mm THICKNESS)

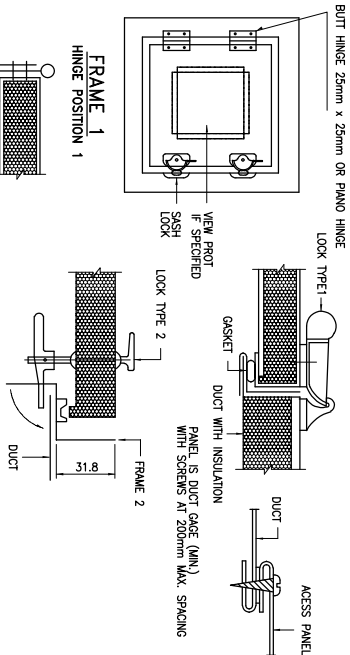
## DUCT THERMAL INSULATION



## REMARKS

- REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.5-5
- FOR ROOF FINISHING DETAIL SHALL BE CONFORMED TO ARCHITECTURE DWG.

## RECTANGULAR GOOSENECK



## FRAME 2

## HINGE POSITION 2

## FRAME 3

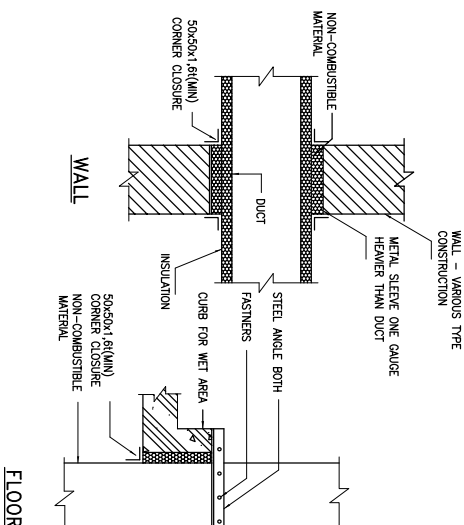
## HINGE POSITION 3

ROOF SIZE (mm)	NO. HINGES	NO. LOCKS	METAL GAGE (mm)
500 P <sub>o</sub> 300 X 300	2-3	1-5	240(70) 260(55)
500 P <sub>o</sub> 400 X 500	2-5	2-5	220(65) 240(70) 260(55)
500 P <sub>o</sub> 600 X 600	2-5	2-5	220(65) 220(65) 260(55)
750 P <sub>o</sub> 300 X 300	2-3	1-5	220(65) 220(65) 260(55)
750 P <sub>o</sub> 400 X 500	2-5	1-1, 1-B	200(10) 200(10) 260(55)
750 P <sub>o</sub> 600 X 600	2-5	1-1, 1-B	200(10) 200(10) 240(70)
1000 P <sub>o</sub> 300 X 300	2-3	1-5	200(10) 200(10) 260(55)
1000 P <sub>o</sub> 400 X 500	2-5	1-1, 1-B	200(10) 181(31) 240(70)
1000 P <sub>o</sub> 600 X 600	2-5	1-1, 1-B	200(10) 181(31) 240(70)

## REMARKS

- REFERENCE : SMACNA STANDARD 2ND EDITION-1995, FIG.2-10
- CONSTRUCTION AND AIRTIGHTNESS MUST BE SUITABLE FOR THE DUCT PRESSURE CLASS USED.

## DUCT ACCESS DOORS AND PANELS



DUCT THROUGH WALL AND FLOOR

Completing the Remaining Documents of Design  
and Engineering Services for LAB2 Unit

P.O. No.:6258

Client:

Consultant:



Project

Rev.

Date

Purpose of Issue

PRE'D.

CHK'D.

APP'D.

STANDARD DRAWING FOR HVAC &amp; PLUMBING SYSTEM

QUD Doc. No.: -

Size: A1

SHEET No.

10 OF 12

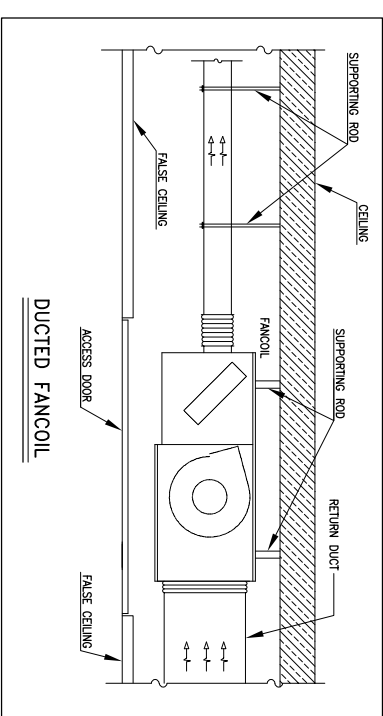
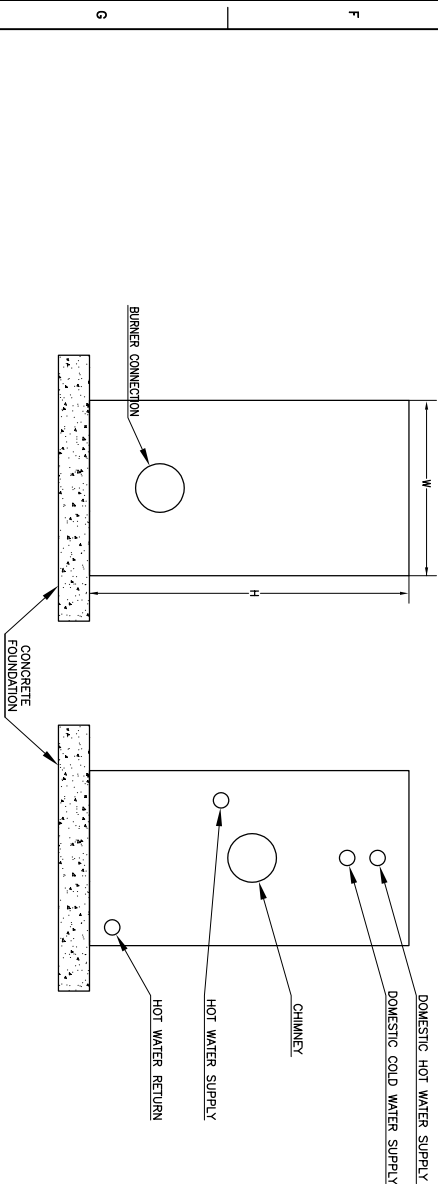
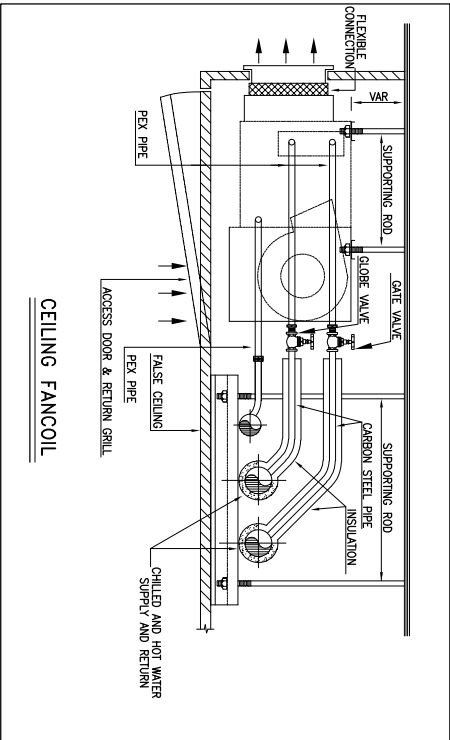
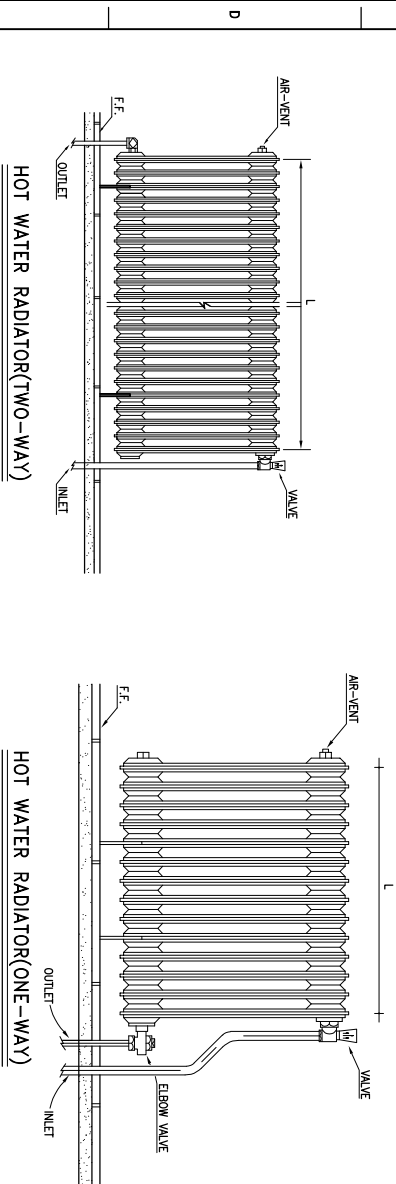
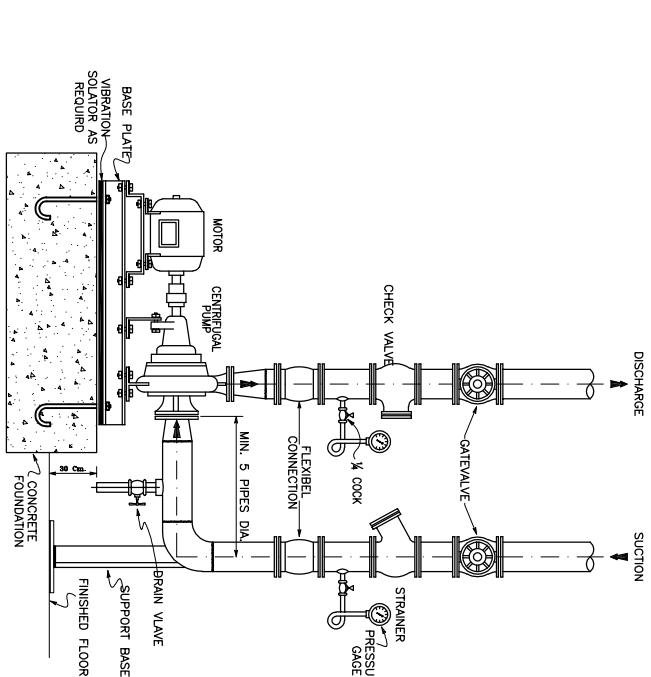
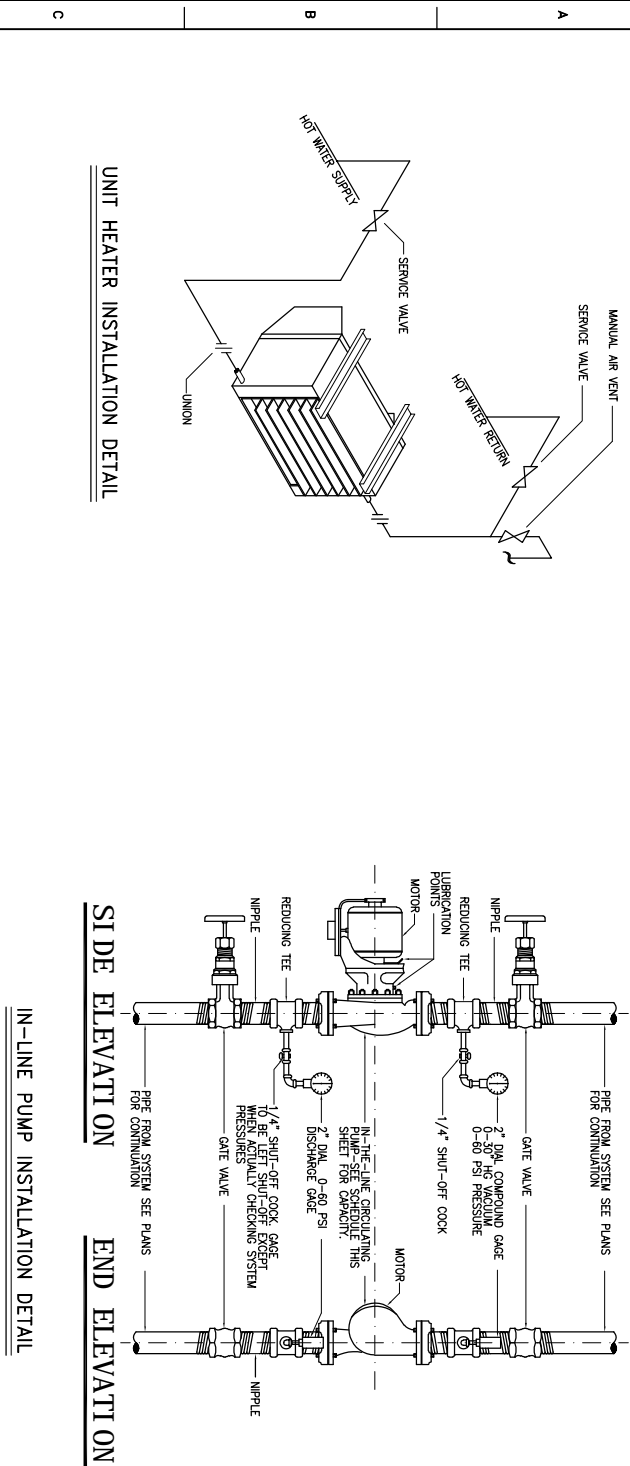
REV. 01









GENERAL NOTES



REMARKS  
1. ALL DIMENSIONS SHOULD BE REVIEW AFTER THE PURCHASE ORDER IS FINALIZED.

03					
02	10-JUL-23	FIN	H.RASOULI	H.RASOULI	AR.AHOUEI
01	26-JUN-23	AFC	H.RASOULI	H.RASOULI	AR.AHOUEI
00	29-JAN-23	IFA	H.RASOULI	H.RASOULI	M.Mahmoodi
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APP'D.
Project					
Completing the Remaining Documents of Design and Engineering Services for LAB2 Unit					
P.O. No.:6258					
Client:			Consultant:		
					
DRAWING TITLE:					
STANDARD DRAWING FOR HVAC & PLUMBING SYSTEM					
OLD Doc. No.: -		Doc. No.: IRR-TNA-HV-99-STD-0001			
Size: A1	SHEET No.	12 OF 12	REV. 01		