ABBREVIATIONS		SYMBOLS LISTED ARE FOR GENERAL USE. DISREGARD THOSE WHICH ARE NOT USED ON DRAWING.			BUILDING DEPARTMENT INFORMATION			
ABBREV.	DESCRIPTION	SYMBOL	ABBREV.	DESCRIPTION	1. AUTHORITY HAVING JURISDICTION:			
ACCU	AIR COOLED CONDENSING UNIT	<b>—</b>		ARROW INDICATES DIRECTION OF FLOW	COUNTY OF LOS ANGELES, DEPARTMENT OF 16005 E. CENTRAL AVENUE	F PUBLIC WORKS, BUILDING AND SAFETY.		
AFC		DN			626.961.9614			
AFF	ABOVE FINISHED FLOOR ABOVE FINISHED GRADE				<b></b>			
AHU AMPS	AIR HANDLING UNIT AMPERES				<u></u>	SEISMIC NOTES		
APD	AIR PRESSURE DROP			PIPE DOWN	1 ANCHORAGE AND/OR SEISMIC R	RESTRAINTS SHALL BE DESIGNED BY A REGISTERED		
BFF	BELOW FINISHED FLOOR	o		PIPE UP	PROFESSIONAL ENGINEER LICE	NSED IN THE STATE OF CALIFORNIA.		
BOD	BOILDING BOTTOM OF DUCT			TEE DOWN	2. THE ANCHORAGE AND/OR SEISM SYSTEMS LISTED SHALL BE DES	AIC RESTRAINT OF PERMANENT EQUIPMENT AND ASSOCIATED		
BTU CD	BRITISH THERMAL UNIT				PRESCRIBED IN SECTION 1632.2	OF THE 2010 CALIFORNIA BUILDING CODE.		
CFH		→→★)		VALVE IN RISER	3. SEISMIC RESTRAINTS ARE REQU SMACNA GUIDELINES FOR SEISM	JIRED FOR THE FOLLOWING INSTALLATIONS. REFER TO THE MIC RESTRAINTS FOR ADDITIONAL REQUIREMENTS:		
CFM CR	CONDENSATE RETURN	⊣ф⊢		BALL VALVE	A) FLOOR OR ROOF MOUNTED	DEQUIPMENT WEIGHING 400 LBS. OR GREATER.		
CW DB	COLD WATER DRY BULB	-	CV	CHECK VALVE	B) SUSPENDED OR WALL MOU	INTED EQUIPMENT WEIGHING 20 LBS. OR GREATER.		
dB DC	DECIBEL DIRECT CURRENT		GV	GATE VALVE	C) VIBRATION ISOLATION EQU	IPMENT WEIGHING 20 LBS. OR GREATER.		
DEG	DEGREES				) PIPING 1-1/4 INCHES NOMIN	IAL DIAMETER AND LARGER LOCATED IN BOILER. MECHANICAL		
DIA DIM	DIAMETER DIMENSION	_ <b>_</b>	GLV	GLOBE VALVE	EQUIPMENT AND REFRIGER	RATION MECHANICAL ROOMS.		
DISC		-\$-	PRV	PRESSURE REDUCING VALVE	E) PIPING 2-1/2 INCHES NOMIN	IAL DIAMETER AND LARGER.		
DWG(S)	DRAWING(S)			MOTORIZED 2-WAY ELECTRIC VALVE	F) DUCTWORK 6 SQUARE FEE	T AND LARGER IN CROSS SECTIONAL AREA.		
DX EA	DIRECT EXPANSION EXHAUST AIR, EACH	  			G) ROUND DUCTWORK 28 IN L			
EAT				MOTORIZED 3-WAY ELECTRIC VALVE	H) PIPES AND DUCTS SUPPOR INDIVIDUALLY REQUIRE BR/	ACING NEED NOT BE BRACED IF CONNECTIONS TO THE PIPE/DUCT C		
EF	EXHAUST FAN			PNEUMATIC 2-WAY CONTROL VALVE	DIRECTIONAL CHANGES DO NOT PROVIDED, BRACING IS	) NOT RESTRICT MOVEMENT OF THE TRAPEZE. IF THIS FLEXIBILITY I S REQUIRED WHEN THE COMBINED OPERATING WEIGHT OF ALL		
EFF ESP	EFFICIENCY EXTERNAL STATIC PRESSURE			PNEUMATIC 3-WAY CONTROL VALVE	ELEMENTS SUPPORTED BY	THE TRAPEZE IS 10 LBS/FT OR GREATER.		
EWB	ENTERING WET BULB							
EXH EXIST, (E)	EXISTING			"Y" STRAINER				
FC FD	FAN COIL FIRE DAMPER	+++++++++++++++++++++++++++++++++++++++		"Y" STRAINER WITH SHUTOFF VALVE	APP	LICABLE CODES		
FPI	FINS PER INCH	赵		RELIEF VALVE (R) OR SAFETY VALVE (S)	1 2016			
° F	FOOT, FEET DEGREES FAHRENHEIT				2. 2016	S CALIFORNIA FLOMBING CODE		
GC GPM	GENERAL CONTRACTOR GALLONS PER MINUTE	<u>4</u> ~			3. 2017 4. 2017	7 COUNTY OF LOS ANGELES BUILDING CODE		
HD		-5-		FLOW CONTROL VALVE	5. 2017	COUNTY OF LOS ANGELES PLUMBING CODE		
HP HTG	HORSEPOWER, HEAT PUMP HEATING			FLOW METER				
HZ ID	HERTZ INSIDE DIAMETER			GAS COCK	DRAWING/E	DETAIL REFERENCE KEY		
IN IN WG	INCH INCHES WATER GAUGE							
IN WC	INCHES OF WATER COLUMN			BUTTERFLY VALVE	SYMBOL	DESCRIPTION		
L LAT	LENGTH LEAVING AIR TEMPERATURE			ELECTRONIC CONTROL VALVE	[1]	PI AN REFERENCE / KEY NOTE		
LB(S),#		i		UNION		REVISION		
LF								
LRA LWB	LOCKED ROTOR AMPS LEAVING WET BULB							
MAX MBH	MAXIMUM		PG	PRESSURE GAGE	<b>P</b>			
MCA	MINIMUM CIRCUIT AMPACITY	, Ū		THERMOMETER IN WELL		- REFER TO		
MD MFR	MOTORIZED DAMPER MANUFACTURER	<u> </u>		AUTOMATIC AIR VENT				
MIN NTS	MINIMUM NOT TO SCALE				RE: 2/MO.0	$\begin{pmatrix} 2 \\ M0.01 \end{pmatrix}$		
OA OBD	OUTSIDE AIR OPPOSED BLADE DAMPER			PIPE SIZE INCREASER				
OD DD				BACKFLOW PREVENTER		- SHEET NUMBER OF DRAWING/DETAIL		
POC	POUNDS PER SQUARE INCH				· · · · · · · · · · · · · · · · · · ·			
QTY RA	QUANTITY RETURN AIR	l H		TEMPERATURE GAUGE		- EQUIPMENT I.D.		
RCP		014/0						
REQD	REQUIRED	Cws						
RHG	REFRIGERANT HOT GAS	CWR		CHILLED WATER RETURN				
RL RI A	REFRIGERANT LIQUID	HWS		HEATING WATER SUPPLY				
RPM M	REVOLUTIONS PER MINUTE MOTOR	HWR		HEATING WATER RETURN				
RS	REFRIGERANT SUCTION							
RTU SA	ROOF TOP UNIT		CW	COLD WATER				
SF	SQUARE FEET / SUPPLY FAN		HW	HOT WATER				
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTOR'S		HWR	HOT WATER RETURN				
SP	NATIONAL ASSOCIATION							
SPEC	SPECIFICATION							
SQ SS	SQUARE STAINLESS STEEL							
SER T	SERVICE SINK							
TDH	TOTAL DYNAMIC HEAD							
THRU TSP	THROUGH TOTAL STATIC PRESSURE							
TYP U/C	TYPICAL UNDERCUT							
V	VOLT							
VA VD	VOLT-AMPERE VOLUME DAMPER							
W W/	WATT, WIDTH WITH							
W/O	WITHOUT							
WC	WATER COLUMN							
XFMR	TRANSFORMER	l						



SHEET M0.0

**ABBREVIATIONS** 



ULE	CONDENSATE TANK					
	MARK	CT-1				
ACH	MANUFACTURER	BRYAN				
ACH	MODEL	HFS-50				
	GALLONS	50				
DEL AB200	SIZE	34"x35"x52" (LxWxH)				
	PUMPS	DUPLEX, 1 HP EACH				
R	FLOW RATE	6.9 GPM				
	OPERATING WEIGHT	900 LBS				
	ELECTRICAL	208/3/60				
٨X	OPERATING PRESSURE	60 PSI				
14 PSI MAX	NOTES: PROVIDE CONTROL PANE CAPABILITY.	EL WITH BOILER COMMUNICATION				
8 AMPS	BLOWDOW	'N SEPERATOR				
	MARK	BD-1				
MS PORTS, GAS TRAIN,	MANUFACTURER AND MODEL	BURNHAM B230				
	DIMENSION	10"Ø x 20", 3"Ø VENT				
20.9555.	OPERATING PRESSURE (MAX)	200 PSI				
	NOTES: PROVIDE AUTOMATIC AFTER COOLER WITH MODULATING TEMP CONTROLLER.					

## PUMP SCHEDULE

		_							
/ODEL NO. DVED EQUAL)	TYPE	GPM	HEAD (FT.WTR)	HP	VOLTS/PH/HZ	RPM	WEIGHT LBS	REMARKS	
'ILO S 21 ZFX	IN LINE	7.5	5	0.25	115/1Ø/60	1750	100	1	
					5				

1. PROVIDE CEILING SUPPORTS, PIPE TEMP SENSOR CONTROL AND DISCONNECT. PUMP TO HAVE ALL BRONZE/S.S. CONSTRUCTION.

THERMOSTATIC MIXING VALVE									
/ODEL NO. DVED EQUAL)	TYPE	CONNECTIONS	LWT	MAX PRESSURE	MAX GPM	WEIGHT LBS	REMARKS		
_EFFI 16469	3-WAY	1"	140°F	200 PSI	7.5	6	1		

1. PROVIDE ADJUSTABLE, MOTORIZED MODEL WITH ALL BRONZE OR STAINLESS STEEL CONSTRUCTION. PROVIDE OUTDOOR RESET CONTROLLER.

WATER SOFTENER SYSTEM								
.)	CONTROL VALVE MFR & MODEL NO. (OR APPROVED EQUAL)	CONN	FLOW	BACKWASH	MAX PRESSURE	MAX TEMP	POWER	REMARKS
	CLACK WS2EE	2"	66 GPM	12 GPM	100 PSI	110°F	120/1/60	1, 2
	CLACK WS2EE	2"	66 GPM	12 GPM	100 PSI	110°F	120/1/60	1, 2

## WATER TREATMENT

	EL	ECTRICAL	OPER.		
SERVICE	H.P.	V/PH/HZ. (LBS.)		REMARKS	
STEAM BOILER		120/1/60		3 POWERED RELAYS, PIGTAILS, BOILER SENSOR WITH ATC.	
STEAM BOILER				DUAL CONTAINMENT, 24Lx14Wx13.5H, ULTRIMINE SB-100K	
STEAM BOILER		120/1/60		0.26 GPH, 145 PSI.	
STEAM BOILER				3/4", 316 S.S. WITH CHECK VALVE QC-31675	

**VGINEERING REK ENGINEERING, INC** ECHANICAL PLUMBING ENGINEERI 321 Rampart Street, Suite 203 Orange, CA 92868 TEL 714.769.9700 WNeal@TrekEngineering.com M32264 Exp. 12/31/18 MECHANICAL CENTER 91792 ORNIA ) UNIFIED SCH HARD FOOD ( δQ AND RICH Ś ROWL RUTH 4032 ( ц PROJEC STEAM SYSTEM REPLACEMENT I DATE REM 04/04/17 50% PROGRESS 06/05/17 80% PROGRESS 03/20/18 BID SET 03/20/18 BID SET MECHANICAL DETAILS AND SCHEDULES SHEET M0.1







# **GENERAL NOTES:**

1. CONTRACTOR TO PERFORM THOROUGH SITE VISIT PRIOR TO BID AND TO ISSUE RFI'S FOR ANY PART OF THE SCOPE THAT IS UNCLEAR. 2. CONTRACTOR TO INCLUDE ALL REQUIRED TRADES FOR A COMPLETE TURNKEY PROPOSAL.

# PLAN NOTES:

- DEMO BOILER, FLUE, PIPING TO SOV, GAS PIPING TO SOV, VENTS, CONTROLS AND POWER. PREPARE FOR NEW BOILER.
   DEMO HW-2 TANK, PIPING, VALVES AND FITTINGS.
- DEMO CT-1, PIPING, VALVES AND FITTINGS, TO BE REPLACED WITH NEW, 2-PUMP MODEL.
- WS-1 AND WS-2 TO BE REMOVED AND RE-INSTALLED. PREPARE PIPING FOR TEMPORARY DISCLOCATION.
- 5 DEMO EXISTING GAS PIPING AS INDICATED, PROVIDE NEW SOV AND TEMPORARY BLIND FLANGE.
- 6 DEMO CHEMICAL TREATMENT SYSTEM, TO BE REPLACED WITH NEW.

—12"x12" PIT DRAIN WITH FD IN BOTTOM

TREK ENGINEERING, INC MECHANICAL<sup>®</sup> PLUMBING ENGINEERIN 321 Rampart Street, Suite 203 Orange, CA 92868 TEL 714.769.9700 WNeal@TrekEngineering.com M32264 Exp. 12/31/18 MECHANICAL

CENTER 91792 SCI  $\cap$ UNIFIED IARD FOC AND RICH ROWL











MECHANICAL DEMOLITION ISOMETRIC PLAN BOILER ROOM

## PLAN NOTES:



DEMO BOILER, FLUE, PIPING TO SOV, GAS PIPING TO SOV, VENTS, CONTROLS AND POWER. PREPARE FOR NEW BOILER. 2 DEMO HW-2 TANK, PIPING, VALVES AND FITTINGS.

3 DEMO CT-1, PIPING, VALVES AND FITTINGS.

WS-1 AND WS-2 TO BE REMOVED AND RE-INSTALLED. PREPARE PIPING FOR TEMPORARY DISCLOCATION.

5 DEMO EXISTING PIPING AS INDICATED, PREPARE FOR MODIFICATIONS.



щŪ STEAM SYSTEM BOILE REPLACEMENT PROJE( /04/17 50% PROGRESS SET /05/17 80% PROGRESS SET /20/18 BID SET DA/00 06/00 03/2 MECHANICAL DEMOLITION ISOMETRIC PLAN BOILER ROOM SHEET M1.2







## **GENERAL NOTES:**

1. CONTRACTOR TO PERFORM THOROUGH SITE VISIT PRIOR TO BID AND TO ISSUE RFI'S FOR ANY PART OF THE SCOPE THAT IS UNCLEAR. 2. CONTRACTOR TO INCLUDE ALL REQUIRED TRADES FOR A COMPLETE TURNKEY PROPOSAL.

# PLAN NOTES:

- 1 INSTALL NEW BOILER, 10"Ø FLUE, PIPING TO SOV, GAS PIPING TO SOV, VENTS, CONTROLS AND POWER. PROVIDE NEW 4" HK PAD, EXTEND 6" BEYOND BOILER EDGE.
- (E) 19"x69" COMBUSTION AIR DOOR LOUVER, QTY 2.
- 10"Ø TYPE B FLUE UP THROUGH EXISTING ROOF OPENING. REUSE (E) FLUE CAP OR PROVIDE NEW.
- 4 THERMOSTATIC MIXING VALVE TO BE INSTALLED FOR 140°F DOMESTIC HOT WATER.
- 5 INSTALL 48"x24" DRAINABLE COMBUSTION AIR LOUVER AT 12" BELOW CEILING. PROVIDE INSECT SCREEN.
- 6 ROUTE BOILER DRAIN/RELIEF LINES TO EXISTING FLOOR SINK.
- 7 REPLACE (E) 3" STEAM HEADER AND VALVES WITH NEW.
- (E) 3" STEAM, EXTEND TO NEW STEAM HEADER.
- 9 3"Ø VENT FROM BD-1 UP THROUGH ROOF.
- 10 INSTALL 3"Ø AUTOMATIC AFTER COOLER WITH MODULATING TEMP CONTROLLER. PROVIDE 3"Ø DRAIN LINE TO FLOOR SINK. COORDINATE BLOWOFF INLET PIPE SIZE WITH BOILER.
- SOV TO BE IN CLOSED POSITION.
- 12 3" VENT THRU ROOF. PROVIDE WEATHER PROOF ROOF PENETRATION.
- (13) CHEMICAL TREATMENT SYSTEM, INSTALL AND CONNECT TO CT-1.

## COMBUSTION AIR REQUIREMENTS

- 1. REQUIREMENTS: 1 SQIN FREE AREA PER 4000 BTUH. 2. (1) BOILERS AT 2,000,000 BTUH.
- 3. (2,000,000 BTUH) / (1SQIN / 4000 BTUH) = 500 SQIN FREE AREA REQUIRED,
- HIGH AND LOW. 4. EXISTING DOOR LOUVERS: (2) 66"x19" = 2508 SQIN FACE AREA.
- 5. EXISTING FREE AREA: 2508 x 0.50 = 1254 SQIN FREE AREA.
- EXISTING DOOR LOUVERS ADEQUATE FOR LOW INTAKE REQUIREMENT.
- A NEW 48"x24" LOUVER AT 12" FROM CEILING REQUIRED FOR HIGH LOUVER.



# CENTER VENUE 91792 ALAND UNIFIED SCHOOL H RICHARD FOOD CENTE S. ELLESFORD AVENUE T COVINA, CALIFORNIA S ROWL RUTH 4032 ( с С Ш STEAM SYSTEM BOILE REPLACEMENT PROJE( кемаrks 14/17 50% Progress set 15/17 80% Progress set 0/18 BID Set MECHANICAL PLAN BOILER ROOM SHEET M2.1

WITH FD IN BOTTOM







# PLAN NOTES:



INSTALL NEW BOILER, FLUE, PIPING TO SOV, GAS PIPING TO SOV, VENTS, CONTROLS AND POWER. MOUNT TO (E) HK PAD. REPLACEMENT OF BOILERS TO BE STAGED TO ALLOW ONE BOILER OPERATIONAL AT ALL

TIMES. 10"Ø TYPE B FLUE UP THROUGH EXISTING ROOF OPENING. REUSE (E) FLUE CAP OR PROVIDE NEW.

THERMOSTATIC MIXING VALVE TO BE INSTALLED FOR 140°F DOMESTIC HOT WATER.

4 ROUTE BOILER DRAIN/RELIEF LINES TO EXISTING FLOOR SINK.

5 REPLACE (E) 3" STEAM HEADER AND VALVES WITH NEW.

h				P M		I E I ABIN CA A SI A	R = R = 92.9 = 10 et, 92.9 = 10 et			C G
				ם ודע פורעפה בתחה הבאודבם						
	REMARKS	50% PROGRESS SET	80% PROGRESS SET	BID SET						
	DATE	04/04/17	06/05/17	03/20/18						
	IS	0 B(		C E	H, TF EF	41 RI( R		AI L/ )I	- 41 M	N

M2.2

							2.5.3. PIPE IDENTIFICATION					
<ol> <li>GENERAL CO</li> <li>1.1 FURNISH AN OR SPECIFIEI</li> </ol>	ONDITIONS ND INSTALL MAT D, INCLUDING AI	ERIALS AND P	ERFORM AL	L LABOR NECESSARY FOR TH TING SYSTEMS, RESULTING I	IE WORK SHOWN N A COMPLETE AN	ID	1. PIPING IDENTIFICATION MARKED FOR QUICK A CARRIED IN THE PIPES					
1.2 DRAWINGS	1.2 DRAWINGS ARE DIAGRMMATIC AND ARE NOT INTENDED TO INDICATE EVERY OFFSET, FITTING AND COMPONENT. BASED ON THE SYSTEM CONCEPT, THE CONTRACTOR SHALL PROVIDE ALL COMPONENTS											
	3. COLOR SCHEME SHAL											
1.3 BEFORE SU CONDITIONS ALLOWED FO VISIBLE OR R SCHEDULE VI	DOMESTIC HOT WA DOMESTIC COLD W FUEL GAS SANITARY SEWER SANITARY VENT STORM DRAINS COMPRESSED AIR											
1.4 INTERRUPT INTERRUPTIC OWNER/TEN/	A. ONE MARKER SHALL BE I BRANCH TAKE-OFF. IN F BELOW CEILING LINE.											
1.5 TEST AND B INDICATED C MANUFACTU DEMONSTRA	B. FURNISH TWO IDENTIFIC MATERIALS CARRIED IN T RESPECTIVE IDENTIFYIN(											
1.6 CODES: EN HAVING JURI	C. MATERIALS: MATERIALS V APPLICABLE ASTM, ASME											
							3. DEFINITIONS					
FOLLOWING	EQUIPMENT/DE	VICES TO THE	MEOR, FOR	REVIEW & APPROVAL:	TAL FOR THE		A. PROVIDE MEANS "FURNISH					
EQUIPM SHEET N	S, REGISTERS AN ENT METAL SHOP DR	AWING	)				B. "FURNISH" MEANS "TO PUR APPURTENANCE AND SUPP					
2. BASIC MATE	RIAL AND METH	ODS					C. "INSTALL" MEANS "TO UNL NECESSARY TO ESTABLISH IN THE PROJECT."					
2.1 PIPE AND FI	ITTINGS:						D. "ENGINEER" MEANS "PRIMI					
2.1.1 HEATING H MAXIMUM 0.3 2.2 PIPE SPECI	HOT WATER: BLA 375-IN. WALL THI ALITIES:	ACK STEEL SEA ICKNESS, CON	AMLESS PIP NFORMING 1	E, WITH SCREWED OR FLANG TO ASTM A53. SCHEDULE 40.	GED OR BUTT-WEL	.DED JOINTS.	E. PERFORM WORK, PROVIDE DESCRIBED ON DRAWINGS. PROVIDE COMPLETE AND F CONTRACTOR'S WORK.					
2.2.1. SHUT-OFF BRONZE TRII EXTENSION I		F. ADDRESS QUESTIONS REG OTHERWISE, ARCHITECT'S										
BALANCING	SERVICE. DUCT	ILE IRON WITH		I TH MEMORY STOP WHEN US I, 150 PSIG, ASTM			G. CONTRACTOR TO GIVE NO AND OBTAIN NECESSARY A					
2.2.2. CHECK VA	LVES:					]	H. GUARANTEE WORK OF TH					
		DEFECTIVE MATERIALS, EQ WITHIN THIS PERIOD. PROM										
SPECIALTY	APPLICATION	TYPE	SIZE	BODY/SEAT BODY/TRIM	CONNECTION	MINIMUM RATING						
CHECK VALVE	PUMPS	SILENT	1⁄2"-2"	BRONZE/BRONZE	THREADED	200 PSIG WOG	CONTRACT.					
		SILENT GLOBE	21⁄2"-24"	IRON/BRONZE	FLANGED	CLASS 125	I. ALL MATERIALS, EQUIPMEN STANDARDS, REGULATIONS					
	PIPING	Y-PATTERN	1⁄2"-2"	BRONZE/BRONZE	THREADED	200 PSIG WOG	GOVERNMENTS, AND OTHE					

## 2.2.3. STRAINERS:

### HEATING WATER SERVICE MAXIMUM 300°F AND 150 PSIG (1/2"- 12")/125 PSIG (14"-24")

IRON/BRONZE

FLANGED

CLASS 125

SUBMITTAL REVIEW.

2.1 PIPING AND FITTINGS

A. GENERAL

D. CONNECTIONS

2<mark>1⁄</mark>2"-24"

SPECIALTY	APPLICATION	TYPE	SIZE	BODY/SEAT BODY/TRIM	CONNECTION	MINIMUM RATING	L. GENERAL NOTES		
STRAINER		Y-TYPE	1⁄2"-2"	BRONZE/STAINLESS $(/_{16}" \text{ DIA},)$	THREADED	200 PSIG WOG	APPEARANCE WH AND DUCTS EXPC		
	AIR FLOW METERS		21⁄2"-4"	IRON/STAINLESS (½6" DIA,)	FLANGED	CLASS 125	EQUIPMENT SHAI		
	PUMP SUCTION	IN-LINE Y-TYPE	1⁄2"-2"	BRONZE/STAINLESS (1/16" DIA,)	THREADED	200 PSIG WOG	N. AS WORK PROG		
					21⁄2"-4"	IRON/STAINLESS (∛₁6" DIA.)	FLANGED	CLASS 125	FROM ORIGINAL ( MODIFICATION O
	ANGLE SUCTION DIFFUSER END SUCTION PUMPS		2"-12"	IRON/STAINLESS (¾6" DIA.) STARTUP STRAINER- 16 MESH BRONZE	FLANGED	CLASS 125	O. INTERRUPTIONS TIME AND DURAT ASSOCIATED WIT PART 2 - PRODUCTS		

2.3 INSULATION:

2.3.1 WATER PIPE: ONE OR TWO PIECE FIBERGLASS PIPE INSULATION WITH ALL

SWING

PURPOSE SERVICE JACKET, WITH OR WITHOUT SELF SEALING LAP. JACKET-LAMINATED ALUMINUM FOIL AND GLASS REINFORCED VINYL COATED KRAFT PAPER. 1" THICK. COLD PIPING SHALL BE INSTALLED USING VAPOR PROOF METHODS.

2.4.1 SUPPORT HANGERS FROM SIDES OF BEAMS OR JOISTS USING POWERED ACTUATED FASTENERS OR CONCRETE ANCHORS.

COPPER PIPE - GRINNEL CT-65 OR APPROVED EQUAL.

STEEL OR CAST IRON PIPE - GRINNEL CT-65 OR EQUAL.

2.4.2 SUPPORT SPACING: COPPER PIPE: 6 FT - 3/8" ROD UP TO 1" 1-1/4" AND 1-1/2" 8 FT - 3/8" ROD

STEEL OR CAST IRON PIPE: UP TO 2" 8 FT - 3/8" ROD 2-1/2" AND OVER 10 FT - 1/2" ROD

2.5 TAGS:

2.5.1 UPON COMPLETION OF WORK, ATTACH ENGRAVED LAMINATED TAGS TO ALL VALVES. VALVE TAGS SHALL HAVE BLACK CHARACTERS ON WHITE FACES CONSECUTIVELY NUMBERED AND PREFIXED BY LETTER "V". EQUIPMENT TAGS SHALL HAVE BLACK CHARACTERS ON WHITE FACE, WITH LABELS CORRESPONDING TO DRAWING SCHEDULE NUMBERS.

2.5.2 PROVIDE FLOW ARROWS FOR ALL PIPING.

ON PER ANSI AND OSHA STANDARDS: EACH INDIVIDUAL PIPELINE SHALL BE AND EASY IDENTIFICATION AS TO CONTENT AND CHARACTER OF MATERIAL S BY SET ON SNA OR STR MARKER.

NSTALLED AND SPACED AT NOT MORE THAN 8 FT. INTERVALS AND SO LOCATED BE VISIBLE WHERE PIPING SYSTEM IS EXPOSED.

L BE APPROVED. BASE COLOR FOR MARKERS SHALL BE AS FOLLOWS:

VATER	 YELLOW	
WATER	 GREEN	
	 YELLOW	
R	 GREEN	
	 GREEN	
	 GREEN	
R	 BLUE	

INSTALLED AT EACH SIDE OF VALVES, SPECIAL FITTINGS AND AT JRRED SPACES INSTALL ONE BAND 2 FT. ABOVE FLOOR AND 19 IN.

CATION CHARTS COMPLETE WITH GLASS AND FRAME SHOWING LIST OF THE PIPING SYSTEM, CLASSIFIED BY NATURE OF ITS CONTENTS AND G COLORS.

WHEN NOT OTHERWISE DEFINITELY SPECIFIED SHALL CONFORM TO THE . AGA. AND ASA STANDARDS.

AND INSTALL"

RCHASE AND DELIVER TO THE PROJECT SITE COMPLETE WITH NECESSARY ORT.

OAD AT THE SITE DELIVERY POINT AND PERFORM EVERY OPERATION SECURE MOUNTING AND CORRECT OPERATION AT THE PROPER LOCATION

E DESIGN CONSULTANT."

MATERIALS AND EQUIPMENT FOR SYSTEMS SHOWN, SPECIFIED AND COMPLETELY COORDINATE WORK WITH WORK OF OTHER CONTRACTORS AND ULLY FUNCTIONAL INSTALLATION. REMOVE ALL DEBRIS CAUSED BY THIS

GARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. INTERPRETATION OF MEANING AND INTENT OF DRAWINGS SHALL BE FINAL.

TICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES PPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.

IIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE UIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS MPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN NRS AND REPLACEMENTS UNDER GUARANTEE AT NO ADDITIONAL COST TO TEE TO ARCHITECT BEFORE FINAL PAYMENT. STATEMENT OF GUARANTEE BE INTERPRETED TO LIMIT OWNER'S RIGHTS UNDER LAW AND THIS

NT, AND METHOD OF INSTALLATION SHALL BE IN ACCORDANCE WITH THE , CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL ER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.

J. PRIOR TO COMMENCING WORK. CONTRACTOR SHALL SUBMIT THREE COPIES OF THE SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SCHEDULE AT LEAST FIVE WORKING DAYS, EXCLUSIVE OF TRANSMITTAL TIME, FOR

. DEVIATION FROM CONTRACT DOCUMENTS, OR PROPOSED SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED, SHALL BE REQUESTED IN SEPARATE LETTER, WHETHER DEVIATIONS ARE DUE TO FIELD CONDITIONS, STANDARD SHOP PRACTICE OR OTHER CAUSE.

L. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL DRAWINGS OF THIS SECTION.

M. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN PIPES AND DUCTS EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY.

N. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN A COMPLETE SET OF PRINTS AND CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN.

O. INTERRUPTIONS TO EXISTING SERVICES AND SYSTEMS SHALL BE AS SHORT AS POSSIBLE AND AT A TIME AND DURATION APPROVED BY THE ARCHITECT OR OWNER. INCLUDE ALL PREMIUM TIME ASSOCIATED WITH INTERRUPTIONS.

. PIPE MATERIALS AND FITTING MATERIALS SHALL BE AS INDICATED IN SCHEDULE OF PIPE AND FITTING MATERIALS, PROVIDE DIELECTRIC FITTING TO CONNECT DIFFERENT PIPING MATERIALS.

B. SPECIAL REQUIREMENTS FOR HYDRONIC SYSTEMS.

. PROVIDE AIR VENT AT EACH HIGH POINT AND DRAIN VALVE AT EACH LOW POINT FOR COMPLETE SYSTEM DRAINAGE AND FOR MANUAL VENTING OF AIR FROM SYSTEM.

2. PROVIDE A SHUTOFF/ISOLATION VALVE AT THE SUPPLY AND RETURN TO EACH PIECE OF EQUIPMENT AND AS INDICATED ON DRAWINGS.

3. EQUIPMENT COOLING COIL CONDENSATE DRAINS SHALL BE TRAPPED AT EQUIPMENT CONNECTION. DRAIN LINES SHALL RUN FULL SIZE OF DRAIN TAPPING TO NEAREST FLOOR DRAIN OR AS SHOWN ON DRAWINGS. INSTALL WITH A PITCH OF 1" IN 20 FEET.

C. SCHEDULE OF F	PIPE AND FITTING M	ATERIALS:		
SERVICE PSI	PIPE MATERIAL WEIGHT	TYPE OF JOINTS	FITTING PRESS MATERIAL SWP	URE RATING . OR WEIGHT
HEATING WATER 2" AND SMALLER	STEEL SCHEDULE 40	SCREWED IRON	MALLEABLE	150
HEATING WATER	STEEL			

2-1/2" AND LARGER SCHEDULE 40 WELDED STEEL SCHEDULE 40

I. PROVIDE ECCENTRIC REDUCING COUPLINGS TO ALIGN HYDRONIC PIPES FLUSH ON TOP.

2. BRANCH LINES IN WELDED PIPING SHALL BE MADE WITH WELDING TEES EXCEPT THAT BRANCH LINES LESS THAN ONE-HALF DIAMETER OF MAIN MAY BE MADE WITH WELD-O-LETS.

- 3. NIPPLES SHALL BE SAME MATERIAL, MAKE AND THICKNESS AS PIPE WITH WHICH THEY ARE USED. CLOSE NIPPLES SHALL NOT BE USED.
- 4. MAKE PIPING CONNECTIONS 2-1/2" DIAMETER AND LARGER TO VALVES AND EQUIPMENT WITH FLAT FACE WELDING NECK FLANGES FOR PRESSURES 125 PSIG AND LESS.
- 5. MAKE PIPING CONNECTIONS 2" DIA. AND SMALLER TO VALVES AND EQUIPMENT WITH 300 PSI BRASS SEAT UNIONS ON STEEL PIPING AND WITH HEAVY SEMI-FLUSHED BRASS UNIONS ON COPPER TUBING.
- 6. FIT FLANGED JOINTS WITH JOHNS-MANVILLE OR APPROVED EQUAL RING GASKETS. FLANGES SHALL BE FACED AND DRILLED TO ASA STANDARDS AND FITTED WITH SEMI-FINISHED HEXAGON MACHINE BOLTS AND NUTS OF PROPER NUMBER AND SIZE.
- 7. MAKE SCREW JOINTS TIGHT WITH TEFLON (POLYTETRAFLUOROETHYLENE) TAPE APPLIED TO MALE THREADS. USE TAPERED THREADS.
- 8. MAKE FUSION WELDED JOINTS AS REQUIRED BY ANSI B31.1. MAKE CHANGES IN DIRECTION OF PIPE WITH WELDED FITTINGS ONLY. BEVEL CONNECTIONS BEFORE WELDING, MECHANICALLY OR BY FLAME-CUTTING.

2.2 VALVES AND STRAINERS

- A. VALVES ON CONDENSATE, CONDENSER WATER, CHILLED WATER, HOT WATER, AND GLYCOL SERVICES SHALL BE AS SHOWN ON TABLES.
- B. VALVES SHALL HAVE NAME OF MANUFACTURER AND GUARANTEED WORKING PRESSURE CAST OR STAMPED ON BODIES. VALVES OF SIMILAR TYPE SHALL BE BY SINGLE MANUFACTURER.
- C. BUTTERFLY VALVES: PROVIDE LUB STYLE BUTTERFLY VALVES SHOWN IN TABLES. PROVIDE BALANCING STOP ON AT LEAST ONE VALVE FOR EACH EQUIPMENT CONNECTION AND AS NECESSARY FOR BALANCING SERVICES. WHEN MANUFACTURER REQUIRES, VALVES MUST BE INSTALLED IN PROPER DIRECTION FOR SHUTOFF AND DEAD END SERVICE.
- 1. GENERAL SERVICE VALVES SHALL BE BY CENTERLINE, DEZURIK, KEYSTONE OR GRINNELL
- 2. VALVES 6" AND LARGER SHALL HAVE GEAR OPERATOR.
- 3. VALVES SMALLER THAN 6" SHALL HAVE SEVEN-POSITION LEVER.
- D. BALL VALVES: PROVIDE BALANCING STOP ON AT LEAST ONE VALVE PER EQUIPMENT CONNECTION AND AS NECESSARY FOR BALANCING SERVICE. VALVES ON INSULATED PIPING SHALL HAVE 2" EXTENDED STEMS. ALL BALL VALVES SHALL HAVE LOCKING HANDLES TO ALLOW SERVICING AND REMOVAL OF EQUIPMENT. VALVES SHALL BE BY APOLLO, CANNON, KITZ, MILWAUKEE, ROCKWELL, STOCKHAM, GRINNELL OR WATTS.
- E. GLOBE VALVES: PROVIDE GLOBE VALVES AS SHOWN IN TABLE BY CRANE, JENKINS, MILWAUKEE, STOCKHAM, GRINNELL OR WALWORTH. ALL PACKING SHALL BE NON-ASBESTOS TYPF
- F. PLUG VALVES: PROVIDE PLUG VALVES WITH 70 % PORT OPENING SHOWN IN TABLES FOR BALANCING. VALVES SHALL BE BY DEZURIK, MUELLER, ROCKEWELL, STOCKHAM OR WALWORTH. PROVIDE GEAR OPERATOR WITH MEMORY INDICATOR.
- G. CHECK VALVES: PROVIDE CHECK VALVES SHOWN IN TABLES BY APCO, MILWAUKEE, MUELLER, STOCKHAM, GRINNELL OR METRAFLEX.
- H. SPRING LOADED RELIEF VALVES: RELIEFS SHALL BE BRASS WITH EXTERNAL LEVER. ASME-APPROVED. FOR WATER RELIEFS, PIPE DISCHARGE TO INDIRECT DRAIN. PIPE CHILLER REFRIGERANT AND STEAM RELIEF DEVICES THROUGH BUILDING ENVELOPE.
- I. GATE VALVES: PROVIDE GATE VALVES SHOWN IN TABLES BY CRANE, MILWAUKEE OR STOCKHAM. ALL PACKING SHALL BE NON-ASBESTOS TYPE.
- J. IN GENERAL, VALVES SHALL HAVING OS&Y RISING STEMS TO INDICATE POSITION. FOR RESTRICTED CLEARANCES, VALVES SHALL HAVE NON-RISING STEMS. CONTRACTOR SHALL SUBMIT WHERE EACH TYPE IS USED.
- K. STRAINERS
- 1. FOR WATER SERVICE, STRAINERS SHALL BE FULL SIZE OF ENTERING PIPE SIZE AND HAVE A MAXIMUM CLEAN PRESSURE DROP OF ONE PSIG STRAINERS SHALL BE PER TABLES BY SARCO, MUELLER, WATTS OR ARMSTRONG.
- 2. PUMP START UP STRAINER SCREENS SHALL BE USED FOR CLEANING AND REMOVED AFTERWARDS.
- 3. PROVIDE BLOW-OFF VALVE ON EACH STRAINER.
- K. VACUUM BREAKER: PROVIDE VACUUM BREAKERS AT DOMESTIC WATER SUPPLIES. BREAKER SHALL BE STOCKHAM FIGURE B-320T 415.
- L. PROVIDE UNIONS FOR THREADED END VALVES TO FACILITATE REMOVAL FROM PIPE.
- M. COMBINATION BALANCING/SHUTOFF VALVES
- 1. PROVIDE COMBINATION BALANCING/SHUTOFF VALVES FOR BALANCING VALVE SERVICE VALVE SHALL BE BRONZE BODY/BRASS BALL VALVE CONSTRUCTION WITH TFE SEAT RINGS. VALVES SHALL BE RATED FOR OPERATING PRESSURES. VALVES SHALL HAVE DIFFERENTIAL PRESSURE READOUT PORTS ACROSS VALVE SEAT. MEMORY STOP SHALL ALLOW VALVE TO BE USED AS ISOLATION VALVE WITHOUT DISTURBING BALANCED SET POINT POSITION.
- A. THESE ARE MINIMUM RATINGS FOR ASTM A126, CLASS B AND ASTM B-61 AND 62. FOR HIGHER PRESSURES AND TEMPERATURES, ADJUST THESE VALUES TO INCLUDE STATIC HEAD PLUS 1.1 TIMES PRESSURE RELIEF VALVE SETTING PLUS PUMP SHUTOFF HEAD PRESSURE. FOR ACTUAL MAXIMUM ALLOWABLE VALVE AND STRAINER RATINGS, REFER TO "PRESSURE-TEMPERATURE RATINGS-NON SHOCK" TABLES AND ADJUSTED PRESSURE RATINGS" FOR COPPER TUBE, SOLDERED END VALVES [AND STRAINERS].
- 2. SWP = STEAM WORKING PRESSURE CWP = COLD WATER WORKING PRESSURE
- WSP = WORKING STEAM PRESSURE WOG = WATER, OIL OR GAS CLASS = ANSI STANDARD
- 3. USE 1/8" DIA FOR PLATE HEAT EXCHANGER APPLICATION.

## 2.3 PIPE INSULATION

- A. INSULATION SHALL BE FIBROUS GLASS INSULATION WITH FACTORY-APPLIED FIRE RETARDANT VAPOR BARRIER JACKET: BY OWENS CORNING, CERTAIN-TEED, MANVILLE OR KNAUF, INSTALLED AS REQUIRED BY MANUFACTURER. ASTM E-84 FIRE HAZARD RATING SHALL BE 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.
- B. ON INSULATED PIPING EXPOSED TO THE OUTDOOR WATERPROOF WITH 0.016" THICK ALUMINUM. JACKET WITH 2" TRANSVERSE AND LONGITUDINAL LAPPED SEAMS ORIENTED TO SHED WATER.

# MECHANICAL SPECIFICATIONS

## INSULATION THICKNESS

PIPING SYSTEM FLUID RUNOUTS CONDUCTIVITY INSULATION TEMPERATURE 12' LONG BTUH-IN/HR-F-SF OR LESS TYPES RANGE, F AT MEAN TEMP F

> UP TO 2" 1" & 1-1/4" 2-1/2" 5" TO LESS TO 2" TO 4" 6"

# HEATING WATER 140-200 2.0 2.0 2.0 2.0 2.0 0.23 @ 75"

C. INSULATION ON FITTINGS, VALVES AND FLANGES

- 1. FITTINGS, VALVES AND FLANGES SHALL BE INSULATED WITH SAME MATERIAL AND TO SAME THICKNESS AS ADJOINING PIPE INSULATION, WITH PRESENT SECTIONS. R
- 2. FOR STRAINERS AND OTHER VALVES OR FITTINGS WHICH NEED MAINTENANCE, PROVIDE PREFORMED REMOVABLE INSULATION SECTION.

## 2.4 PIPE HANGERS AND SUPPORTS

- A. PROVIDE PIPE STANDS, SUPPORTS, HANGERS AND OTHER SUPPORTING APPLIANCES AS NECESSARY TO SUPPORT WORK REQUIRED BY CONTRACT DOCUMENTS. SPACING OF HANGERS SHALL BE INSTRUCTED IN ACCORDANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES.
- B. PROVIDE PREFABRICATED RAIL TYPE ROOF CURBS FOR ROOF MOUNTED PIPING, U-BOLT PIPES TO CURB, SPACING SHALL BE IN ACCORDANCE WITH APPLICABLE BUILDING AND MECHANICAL CODES.

2.5 SLEEVES AND PENETRATIONS

A. PIPE SLEEVES

- 1. SLEEVES THROUGH FLOORS AND THROUGH EXTERIOR, STRUCTURAL AND FIRE-RATED CONSTRUCTION SHALL BE HOT-DIPPED GALVANIZED SCHEDULE 40 STEEL PIPE.
- 2. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS, OR APPROVED PLASTIC PIPE.
- 3. PROVIDE WATERPROOFING MEMBRANCE LOCKING DEVICES AT FLOORS. PROVIDE 150 LB. SLIP-ON WELDING FLANGES AT EXTERIOR WALL PENETRATIONS.
- B. DUCT SLEEVES AND OPENINGS.
- 1. SLEEVES THROUGH FLOORS, THROUGH EXTERIOR STRUCTURE, THROUGH FIRE-RATED CONSTRUCTION AND THROUGH SMOKE PARTITIONS THAT REQUIRE SMOKE DAMPERS SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE FOR ROUND DUCT AND SHALL MEET SMACNA FIRE DAMPER AND HEAT STOP GUIDE FOR RECTANGULAR AND FLAT OVAL DUCTS. FIREPROOF PACKING SHALL BE APPLIED TO SEAL ANY OPENINGS BETWEEN SLEEVE AND WALL.
- 2. OPENINGS IN WALLS, PARTITIONS AND OTHER FIRE-RATED CONSTRUCTION THAT DO NOT REQUIRE SMOKE DAMPERS SHALL MEET NFPA 90A, SECTION 3-3.8.
- C. PIPE SLEEVE PACKING.
- 1. PACKING BETWEEN THE PIPE AND THE SLEEVE (OR WALL OR SLAB OPENING) IN FIRE RATED WALLS OR SLABS SHALL BE A COMBINATION OF FIREPROOF INSULATION AND FIREPROOF CAULK. THE COMBINATION OF MATERIALS SHALL HAVE THE SAME FIRE RATING IN HOURS, AS THE WALL OR SLAB AS TESTED IN ACCORDANCE WITH THE LATEST EDITION OF ASTM E-814 (UL 1479). THE COMBINATION OF MATERIALS SHALL BE CLASSIFIED BY U.L. (FILL, VOID, OR CAVIPY MATERIALS) FOR THE FIRE RATING REQUIRED AND SHALL BE LISTED AS A NUMBERED SYSTEM IN THE U.L. FIRE RESISTANCE DIRECTORY. FIBROUS GLASS SHALL NOT BE USED AS THE INSULATION MATERIAL.
- 2. ACCEPTABLE FIREPROOF INSULATION MATERIALS SHALL BE: KAOLIN (KAOWOOL BY BABCOCK AND WILCOX); CERAMIC FIBER BLANKET (FIBERFRAX BY STANDARD OIL) OR FIRE RATED MINERAL WOOL (THERMAFIBER BY USG). ACCEPTABLE FIREPROOF CAULK SHALL BE: SILICONE FIRESTOP 2000 BY DOW CORNING, OR INTUMESCENT SYNTHETIC ELASTOMER (FIRE BARRIER CAULK BY 3M. HILTI CS2420).

## 2.6 ESCUTCHEONS AND DUCT COLLARS

- A. PROVIDE ADJUSTABLE ESCUTCHEONS ON EXPOSED PIPING THAT PASSES THROUGH FINISHED FLOORS, WALLS AND CEILINGS. ESCUTCHEONS SHALL BE CHROMIUM-PLATED CAST BRASS, SIZED TO COVER SLEEVE OPENING AND TO ACCOMMODATE PIPE AND INSULATION.
- B. PROVIDE 4" WIDE 20 GAUGE GALVANIZED SHEET METAL COLLARS AT SLEEVES AND PREPARED OPENINGS, SIZED TO COVER ENTIRE DUCT PENETRATION INCLUDING SLEEVE AND SEAL, AND TO ACCOMMODATE DUCT AND INSULATION AS NECESSARY. EDGES SHALL HAVE MILLED LIPS GROUND SMOOTH. PAINT TO MATCH FINISH OF DUCT OR AS DIRECTED BY ARCHITECT.

2.7 WATER SPECIALTIES

- A. PROVIDE WATER SPECIALTIES BY BEEL & GOSSETT, TACO OR AMTROL AS INDICATED ON THE DRAWINGS.
- B. EXPANSION TANKS SHALL BE ASME CONSTRUCTED, APPROVED STAMPED DIAPHRAM TYPE RATED FOR 125 PSIG WORKING PRESSURE.
- 2.8 EQUIPMENT INSULATIONONS. R
- A. GENERAL
- 1. INSULATION SHALL BE CERTAIN-TEED, KNAUF, MANVILLE OR OWENS CORNING AND SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 2. INSULATE THE FOLLOWING EQUIPMENT:
- A. PIPING AND VALVES B. EXPANSION TANKS
- C. AIR SEPARATORS
- D. PUMPS
- 3. INSULATION SHALL BE 1" THICK FIBROUS GLASS RIGID BLOCK OR SEMIRIGID BOARD RATED FOR TEMPERATURE INTENDED. INSULATION SHALL BE FORMED OR FABRICATED TO FIT EQUIPMENT. BEVEL EDGES AND BUTT AND STAGGER JOINTS.

<u>END</u>



<sup>2.4</sup> HANGERS: