PUMPS

UNIT No.	SERVICE AND LOCATION	CASING TYPE	GPM	HEAD (FT. WTR.)	MINIMUM EFFICIENCY %	BHP	MOTOR ELECTRICAL DATA HP	Volts V	Phase Ph	Cycle Hz	RPM	SIZE SUCTION (INCHES)	DISCH. (INCHES)	REMARKS
CNMS–LABORATORY BLDG.														
P–CN–3A	CLEANROOM CHASES (MECH. RM.)	ROTARY VANE	75 SCFM	26" Hg.V			5	460	3	60	1750			VACUUM PUMP
P–CN–3B	CLEANROOM CHASES (MECH. RM.)	ROTARY VANE	75 SCFM	26" Hg.V			5	460	3	60	1750			VACUUM PUMP
P–CN–4A	LAB– DI SYSTEM (MECH. RM.)	END SUCTION	17	150 *			5	460	3	60	1750	1 1/2	1	316–SS
P–CN–4B	LAB– DI SYSTEM (MECH. RM.)	END SUCTION	17	150 *	–		5	460	3	60	1750	1 1/2	1	316–SS
					–			460	3	60				
P–CN–5A	LAB– RO SYSTEM (MECH. RM.)	END SUCTION	10	550	–		10	460	3	60	1750	1 1/2	1	316–SS
P–CN–5B	LAB– RO SYSTEM (MECH. RM.)	END SUCTION	10	550	–		10	460	3	60	1750	1 1/2	1	316–SS
P–CN–07	SWHR SYSTEM (MECH. RM.)	IN–LINE	10	70	–		3	460	3	60	1750	3	3	BRONZE
P–CN–08	LAB PROCESS WASTE (MECH. RM.)	TANK TYPE SUMP PUMP	25	25	–		1	460	3	60			1	LIFT STATION
P–CN–09	SANITARY WASTE (OUTSIDE OF MECH. RM.)	TANK TYPE SUMP PUMP	–	–			–	–	–	–			–	SEWAGE EJECTOR (GRINDER)
	NOTES:													

* DOES NOT INCLUDE PRESSURE LOSS FOR SKID COMPONENTS, 150' IS ONLY FOR DISTRIBUTION PIPING LOSS

PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE CONNECTION DESCRIPTION	BRANCH CONNECTION (MINIMUM) SWC	SWH	SS	PD	V	REMARKS
WC–1	WATER CLOSET	1 "		4"		2"	WALL HUNG
WC–2	WATER CLOSET (H)	1 "		4"		2"	HANIDICAPPED (WALL HUNG)
LAV–1	LAVATORY	1/2"	1/2"	2"		1 1/2"	WALL HUNG
LAV–2	LAVATORY (H)	1/2"	1/2"	2"		1 1/2"	HANIDICAPPED (WALL HUNG)
UR–1	URINAL	3/4"		2"		2"	WALL HUNG
UR–2	URINAL (H)	3/4"		2"		2"	HANIDICAPPED (WALL HUNG)
S–1	SINK (PANTRY)	1/2"	1/2"	2"		1 1/2"	
S–2	MOP SINK (JANITOR)	3/4"	3/4"	3"		2"	
DF–1	DRINKING FOUNTAIN (H)	1/2"		2"		1 1/2"	HANIDICAPPED
FD–1	FLOOR DRAIN (GENERAL)	1/2"		3"		2"	TRAP, PRIME AND VENTED
FD–2	FLOOR DRAIN (GENERAL)			3"	3"		
FD–3	FUNNEL DRAIN				3"		
FS–1	FLOOR SINK			6"			
FCO–1	FLOOR CLEANOUT						SAME SIZE AS MAIN SS.
WCO–1	WALL CLEANOUT						
HB–1	HOSE BIBB	3/4"					INTERIOR
HB–2	HOSE BIBB	3/4"					EXTERIOR, FREEZE PROOF
EE/SS	EMRGENCY EYEWASH & SAFETY SHOWER	1 1/2"					

PUMP SKID ASSEMBLY

UNIT No.	LOCATION	SERVICE	EQUIPMENTS PUMPS	UV STERILIZER	CARTRIDGE FILTERS	MIXED BED DEIONIZERS
PS/CN–01	MECH. RM.	LABORATORY	P/CN–4A & P/CN–4B	UV/CN–4A; UV/CN–4B; UV/CN–5	F/CN–03 ; F/CN–04; F/CN/05	MBD/CN–04
PS/CN–03	MECH. RM.	LABORATORY	P/CN–5A & P/CN–5B		F/CN–01 ; F/CN–02	MBD/CN–06

NOTES:

PRESSURIZED EXPANSION TANKS

UNIT No.	SERVICE	TYPE	CAPACITY GALLONS VOLUME	ACCEPT.	SIZE DIAMETER INCHES	LENGTH INCHES	MAX. OPER. PRESSURE PSIG.	REMARKS
LABORATORY BLDG.								
ET–CN–01	CHW SYSTEM	DIAPHRAGM	7.8	5.0	12	19	150	ASME SECTION VIII CONSTRUCTION AND LABEL

MIXED BED DEIONIZERS

UNIT No.	SYSTEM	LOCATION	CAPACITY PER TANK CU. FT	QUANTITY (NO. OF TKS.)	SERVICE	REMARKS
MBD–CN–04	DEIONIZED WATER	MECH. RM.	3.61	6	LABORATORY	9"ø x 44 1/8" HIGH
MBD–CN–06	DEIONIZED WATER	MECH. RM.	3.61	4	LABORATORY	9"ø x 44 1/8" HIGH

AIR SEPARATORS

UNIT No.	SYSTEM	DESIGN FLOW GPM	PIPE SIZE IN.	PRESSURE DROP FT. WG.	STRAINER (Y/N)	REMARKS
AS–CN–01	CHILLED WATER SYSTEM	300	6	1.5	Y	STAINLESS STEEL, 304

PLATE AND FRAME HEAT EXCHANGERS

UNIT No.	SERVICE	MBH	HOT SIDE GPM	EWT DEG. F	LWT DEG. F	MAX. PRESS. DROP FT. WTR.	COLD SIDE GPM	EWT DEG. F	LWT DEG. F	MAX. PRESS. DROP FT. WTR.	NOMINAL OPERATING WEIGHT LBS.	CONTROL VALVE FLOW COEFFICIENT Cv	PIPE SIZE (INCHES)	CONNECTION TYPE	REMARKS
LABORATORY BUILDING															
HX–CN–01	PCW SYSTEM	1500	300	65	55	15	190	45	61	15	1260	150	4	FLANGE	304 SS MATERIAL

ULTRAVIOLET STERILIZERS

UNIT No.	SYSTEM	LOCATION	MAX. DESIGN FLOW (GPM)	INLET CONN. (INCHES)	SERVICE	* DIMENSIONS (LxWxH) (INCHES)
UV–CN–4A	DEIONIZED WATER	MECH. RM.	25	1 1/2"	DI SYSTEM–LAB.	38 x 7 x 21
UV–CN–4B	DEIONIZED WATER	MECH. RM.	25	1 1/2"	DI SYSTEM–LAB.	38 x 7 x 21
UV–CN–5	DEIONIZED WATER	MECH. RM.	25	1 1/2"	DI SYSTEM–LAB.	38 x 7 x 21

* AS PER MFR. (U.S. FILTER)

HOT WATER HEATER

UNIT No.	TYPE	CAPACITY GAL	LOCATION	SERVICE	ELEMENT WATTAGE (NON–SIMULTANEOUS) STD. 240 VOLT UPPER/LOWER	ELECTRICAL DATA KW RATING	VOLTS	PH	HZ	REMARKS
EWH–CN–01	VERTICAL	65	MECH. RM,	SWH SYSTEM	4500/4500	9	240	1	60	1, 2, 3, 4, 5, 6

1. U.L. CERTIFIED (174)
2. GLASS –LINED TANK
3. INCOLOY IMMERSION HEATERS
4. ASME TANK CONSTRUCTION– 125 PSI WORKING PRESSURE
5. ASME T & P RELIEF VALVE
6. FOAM INSULATED

DI FILTERS

UNIT No.	SYSTEM	LOCATION	FILTER REMOVAL RATING (MICRONS)	HOUSING INLET/OUTLET CONN.	SERVICE	REMARKS
F–CN–01	R.O. WATER	MECH. RM.	1.0	1 1/2"	LABORATORY	(1) (2) (3)
F–CN–02	R.O. WATER	MECH. RM.	1.0	1 1/2"	LABORATORY	(1) (2) (3)
F–CN–03	DEIONIZED WATER	MECH. RM.	1.0	1 1/2"	LABORATORY	(1) (2) (3)
F–CN–04	DEIONIZED WATER	MECH. RM.	0.1	1 1/2"	LABORATORY	(1) (2) (3)
F–CN–05	DEIONIZED WATER	MECH. RM.	0.1	1 1/2"	LABORATORY	(1) (2) (3)

(1) 7" ROUND x 30" HIGH

(2) 316 STAINLESS STEEL HOUSING

(3) O–RING MATERIAL: BUNA–N

TANK SCHEDULE

UNIT No.	SERVICE	TYPE	CAPACITY GALLONS VOLUME	SIZE DIAMETER INCHES	LENGTH INCHES	MAX. OPER. PRESSURE	MAX. OPER. VAC.	REMARKS
LABORATORY BLDG.								
T–CN–01	DI SYSTEM	VERTICAL	3000	76	157	6 IN. W.C.	–6 IN. W.C.	
T–CN–02	VACUUM SYSTEM	VERTICAL	120	30	48		–29.92 IN. Hg	ASME SECTION VIII CONSTRUCTION AND LABEL

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THIS DOCUMENT CONTROLLED BY
CHANGE CONTROL SYSTEM ________
ENGINEERING PROCEDURE ________

REV	CHANGE TYPE	CHANGE CONTROL SYSTEM	CHANGE REQUEST NUMBER	DESCRIPTION	DSN	CHK	DEPT	DATE	PE	DATE	PJ	DATE	REQ	DATE	UTB	DATE	RPE	RPE NO	DATE
0				CERTIFIED FOR CONSTRUCTION – 12/9/02	MI	BWJ			[initials]	1/03	[initials]	1/03	[initials]	1/03			BWJ	105869	12/9/02

REVISION OR ISSUE PURPOSE — REVISION APPROVALS

ST	CV	EC	EE	EM	IE	M	PD	SE	AR
BZ	AW	BS	AK	IM	DM	–	BWJ	–	TW

SQUAD CHECK

DRAWING APPROVALS: RPE [seal: BRUCE W. JOHNSON, REGISTERED ENGINEER, AGRICULTURE, COMMERCE, No. 00105869, STATE OF TENNESSEE] DSN DRW CHK DEPT; PE [signature] 1/24/03; PJ [signature] 1/24/03; REQ [signature] 1/24/03; REV. 0 DATE 12/9/02 UTB

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PROJECT NAME:
CENTER FOR NANOPHASE MATERIALS SCIENCES
PLUMBING / PROCESS SCHEDULES

1	48	49	50	PLANT	BLDG	FL	SH.	OF	TYPE	CLASS
3	P	X	X	8	8610		1	1	P	U

51	52	53	A/E DRAWING NUMBER:	REV
NC	NA		P9.11.40	0

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