

three inches = one foot
one and one-half inch = one foot
one inch = one foot
one-half inch = one foot
three-quarters inch = one foot
one-half inch = one foot
three-eighths inch = one foot
one-quarter inch = one foot
one-eighth inch = one foot

PUMP SCHEDULE

MARK	9-P1	9-P2	9-P3	9-P4	9-P4	9-P5	9-P5	9-P6	9-P7	9-P8
LOCATION	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT	CHILLER PLANT
SERVICE	PRIM. CHILLED WTR.	PRIM. CHILLED WTR.	PRIM. CHILLED WTR.	CONDENSER WATER	CONDENSER WATER	CONDENSER WATER	CONDENSER WATER	CONDENSER WATER	SEC. CHILLED WATER	SEC. CHILLED WATER
PUMP DATA										
MANUFACTURER	AURORA	AURORA	AURORA	AURORA	BELL & GOSSETT	AURORA	BELL & GOSSETT	AURORA	AURORA	AURORA
SERIES	VP	VP	VP	VP	100HHC	VP	100HHC	VP	VP	VP
MODEL										
TYPE	344A-BF	344A-BF	344A-BF	342A	F	342A	F	342A	344A-BF	344A-BF
SIZE	4"x5" X9B	4"x5" X9B	4"x5" X9B	4"x5" X9B	10	6"x6" x9"	10	4"x5" X9B	4"x5" x11"	4"x5" x11"
SERIAL NO.	86-14825-2	86-14825-1	86-14825-3	86-14826-1	1170	894	1170	86-14826-3	86-14827-1	86-14827-2
FLOW (GPM)	480	480	480	600	82	70	82	600	510	510
HEAD (FT)	40	40	40	53	6	6	6	53	83	83
IMPELLER SIZE (IN)	1	1	1	1	3	3	3	1	1	1
NO. STAGES	1	1	1	1	1,770	1,770	1,770	1,750	1,750	1,750
SPEED (RPM)	1,750	1,750	1,750	1,750	79	86	79	81	76	76
EFFICIENCY (%)	75	75	75	81						
MOTOR DATA										
MANUFACTURER	U.S. ELECTRIC	U.S. ELECTRIC	U.S. ELECTRIC	U.S. ELECTRIC	40	U.S. ELECTRIC	40	U.S. ELECTRIC	U.S. ELECTRIC	U.S. ELECTRIC
HORSEPOWER	7.5	7.5	7.5	15	324TP	255-M	324TP	15	25	25
FRAME SIZE	213T	213T	213T	234-M	480	480	480	234-M	284T	284T
SPEED (RPM)	1,740	1,740	1,740	1,765	1,770	1,770	1,770	1,765	1,760	1,760
VOLTS	480	480	480	480	480	480	480	480	480	480
PHASE	3	3	3	3	3	3	3	3	3	3
HERTZ	60	60	60	60	60	60	60	60	60	60
FULL LOAD AMPS	10.1	10.1	10.1	19.6	50.8	23.8	50.8	19.6	32.5	32.5
SERVICE FACTOR	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.25	1.15	1.15
DUTY										
WEIGHT (LB)					1,700		1,700			
REMARKS:	1	1	1	2	3,4,5,6,7,8	2	3,4,5,6,7,8	2	1	1

- REMARKS:
- EXISTING PUMP TO REMAIN.
 - EXISTING PUMP TO BE REMOVED.
 - PROVIDE WITH MECHANICAL SEALS.
 - PROVIDE WITH SUCTION BASKET STRAINER.
 - PROVIDE WITH PREMIUM EFFICIENCY INVERTOR DUTY MOTOR.
 - PROVIDE WITH BASE SOLE PLATE.
 - PUMP SHALL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE, SEE DIVISION 16 PLANS AND SPECIFICATIONS.
 - OR APPROVED EQUAL.

COOLING TOWER SCHEDULE

MARK	9-CT1	9-CT2	9-CT1	9-CT2
MANUFACTURER	BALTIMORE AIR COIL	BALTIMORE AIR COIL	MARLEY	MARLEY
MODEL NO.	3547M	3547M	21323	21323
SERIAL NO.	87-200414	87-200413		
IN SERVICE DATE	1987	1987		
YEARS IN SERVICE	18	18		
TYPE	CROSSFLOW	CROSSFLOW	CROSSFLOW	CROSSFLOW
OPERATING CONDITIONS				
AMBIENT WET BULB (F)	66	65	65	65
EWI (F)	90	90	85	90
LWT (F)	80	80	75	80
DELTA T (F)	10	10	10	10
FLOW (GPM)	600	894	770	1,140
GP/MTON	3	4.47	3	4.56
WPD (FT H2O)			10'	10'
FAN				
AIRFLOW (CFM)			92,400	92,400
FAN SPEED (RPM)			646	646
FAN TIP SPEED (FPM)			12,177	12,177
MOTOR SIZE (HP)	5	5	20	20
MOTOR SPEED (RPM)	1,800/900	1,800/900	1,800	1,800
MOTOR ENCLOSURE	TEAO	TEAO	TEFC	TEFC
SOUND LEVEL (dBA)			79	79
ELECTRICAL DATA				
VOLTS	480	480	480	480
PHASE	3	3	3	3
HERTZ	60	60	60	60
FULL LOAD AMPS				
DIMENSIONS				
LENGTH			12'-8"	12'-8"
WIDTH			12'-8"	12'-8"
HEIGHT			9'-9"	9'-9"
INLET SIZE (IN)	2EA-6	2EA-6	8	8
OUTLET SIZE (IN)	10	10	10	10
DRAIN SIZE (IN)	2	2	2	2
OVERFLOW SIZE (IN)	3	3	4	4
DRY WEIGHT (LB)			5,244	5,244
OPERATING WEIGHT (LB)			11,358	11,358
DRAIN DOWN (GAL)			724	890
REMARKS:	1	1	2,3,4,5,6,7	2,3,4,5,6,7

- REMARKS:
- EXISTING COOLING TOWER TO BE REMOVED.
 - PROVIDE WITH PREMIUM EFFICIENCY INVERTOR DUTY MOTOR.
 - PUMP SHALL BE CONTROLLED BY A VARIABLE FREQUENCY DRIVE, SEE DIVISION 16 PLANS AND SPECIFICATIONS.
 - PROVIDE WITH VIBRATION LIMIT SWITCH.
 - PROVIDE WITH 1"x1" INLET GUARDS TO PREVENT DAMAGE TO FILL FROM GOLF BALLS.
 - PROVIDE WITH FAN GUARD WITH 1-1/2" ROD SPACING TO PREVENT ENTRY OF GOLF BALLS INTO TOWER.
 - OR APPROVED EQUAL.

AIR AND DIRT SEPARATOR SCHEDULE

MARK	9-DS1	9-ADS1
SERVICE	CONDENSER WATER	CHILLED WATER
SEPARATOR TYPE	DIRT	AIR & DIRT
MANUFACTURER	SPIROTHERM	SPIROTHERM
MODEL NO.	THT-1000	WHT-800
FLOW (GPM)	1,910	960
VELOCITY (FPM)	5	5
FLOW COEFFICIENT (CV)	2,040	1,340
WATER PRESSURE DROP (FT)	2.02	1.18
WATER VOLUME (GAL)	-	-
EFFICIENCY		
FREE AIR (%)	100	100
ENTRAINED AIR (%)	100	100
DISSOLVED AIR (%)	99.6	99.6
PIPE SIZE (IN.)	10	8
DRY WEIGHT (LB)	66.3	489
REMARKS:	1,4	1,2,3,4,5

- REMARKS:
- PROVIDE WITH FULL PORT BALL TYPE DRAIN VALVE.
 - PROVIDE WITH AUTOMATIC AIR VENT.
 - PROVIDE WITH HIGH CAPACITY SKIMMER/AIR VENT.
 - INSTALL DIRT SEPARATOR 9-DS1 AND AIR/DIRT SEPARATOR 9-ADS1 UNDER THE BASE BID.
 - DELETE AIR/DIRT SEPARATOR 9-ADS1 UNDER DEDUCTIVE ALTERNATE BID NO. 1
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EXPANSION TANK SCHEDULE

MARK	9-ET1
MANUFACTURER	EXTROL
MODEL NO.	400-L
TYPE	DIAPHRAGM
SYSTEM SERVED	CHILLED
SYSTEM CONTENT (GAL.)	7800
MIN. FILL PRESSURE (PSIG)	50
MAX. OPERATING PRESSURE (PSIG)	125
MAX. SYSTEM OPERATING PRESSURE (PSIG)	75
AVERAGE WATER TEMP. (F)	50
PRECHARGE PRESSURE (PSIG)	50
TANK VOLUME (GAL.)	105
ACCEPTANCE VOLUME (GAL)	105
DIMENSIONAL DATA	
TANK DIAMETER (IN.)	24
TANK HEIGHT (IN.)	66
SHIPPING WEIGHT (LB)	283

- REMARKS:
- TANK SHALL BE OF THE REPLACEABLE BLADDER DESIGN.
 - PROVIDE WITH INTEGRAL FLOOR STAND.
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INSULATION SCHEDULE

MECHANICAL SYSTEMS TO BE INSULATED	TEMPERATURE RANGE (F)	PIPE OR DUCT SIZE	INSULATION MATERIAL	INSULATION FORM	INSULATION THICKNESS (INCHES)	VAPOR BARRIER REQUIRED	REMARKS
PIPING SYSTEM							
DOMESTIC COLD WATER	ALL	ALL	FIBERGLASS	PIPE	1	YES	2,3
CHILLED WATER	35-100	1/2" TO 6"	FIBERGLASS	PIPE	1	YES	2,3
CHILLED WATER	35-100	8" TO 16"	FIBERGLASS	PIPE	1.5	YES	2,3
EQUIPMENT							
CHILLED WATER AIR/DIRT SEPARATORS	35-100	N/A	FIBERGLASS	BOARD	1.5	YES	2
EXISTING PIPING, DUCTWORK AND EQUIPMENT INSULATION							
EXISTING PIPE AND DUCT INSULATION REPAIR	ALL	ALL					1

- REMARKS:
- EXISTING INSULATION THAT HAS BEEN DAMAGED SHALL BE REPLACED WITH INSULATION TYPE AND THICKNESS TO MATCH EXISTING.
 - INSULATION SHALL HAVE AN ALL-SERVICE-JACKET
 - PIPE FITTING INSULATION SHALL BE MITERED AND SEALED WITH MASTIC OR COVERED WITH PVC FITTING COVERS.

CHILLER SCHEDULE

MARK	9-COU1
MANUFACTURER	CARRIER
MODEL NO.	19DK53173AE
SERIAL NO.	39619
IN SERVICE DATE	
YEARS IN SERVICE	
TYPE	CENTRIFUGAL
REFRIGERANT	
REFRIGERANT TYPE	R-11
REFRIGERANT CHARGE	600
REFRIGERANT PHASEOUT DATE	
PURGE	
DRIVE	
CAPACITY (TONS)	200P
INPUT POWER (KW)	
EFFICIENCY (KW/TON)	
EVAPORATOR	
EWI (F)	54
LWT(F)	44
DELTA T (F)	10
FLOW (GPM)	480
FLOW (GP/MTON)	2.4
FOULING FACTOR	
WPD (FT)	21P
NO. PASSES	2P
PIPE SIZE (IN)	6
CONDENSER	
EWI (F)	80
LWT(F)	90
DELTA T (F)	10
FLOW (GPM)	600
FLOW (GP/MTON)	3
FOULING FACTOR	
WPD (FT)	28P
NO. PASSES	2P
PIPE SIZE (IN)	6
ELECTRICAL DATA	
VOLTS	480
PHASE	3
HERTZ	60
RATED LOAD AMPS	186
WEIGHT (LB)	1,2,3,4,5

- REMARKS:
- EXISTING CHILLER TO REMAIN.
 - COMPRESSOR SIZE - 180K232
 - COMPRESSOR SERIAL NO. - 42555
 - SHELL SIZE - 19DK237
 - SHELL SERIAL NO. 44649

ABSORPTION CHILLER SCHEDULE

MARK	9-ACU1
MANUFACTURER	YORK
MODEL NO.	ST-148C-45-C-S-C
SERIAL NO.	GNGLV R03430
CAPACITY (TONS)	200
EVAPORATOR	
ENTERING WATER TEMP. (F)	54
LEAVING WATER TEMP. (F)	44
WATER FLOW (GPM)	480
MAX. WATER PRES. DROP (FT)	17.9
FOULING FACTOR	0.00025
CONDENSER/ABSORBER	
ENTERING WATER TEMP. (F)	80
LEAVING WATER TEMP. (F)	90
WATER FLOW (GPM)	894
MAX. WATER PRES. DROP (FT)	11.1
FOULING FACTOR	0.00025

STEAM	
INLET PRESSURE (PSIG)	100
FLOW RATE (LBS/HR)	1,900
EFFICIENCY (LBS/TON-HR)	
ELECTRICAL CHARACTERISTICS	
VOLTS	480
PHASE	3
HERTZ	60
FULL LOAD AMPS	15.8
MIN. CIRCUIT AMPACITY	
MAX. OVERCURRENT PROT.	
DIMENSIONAL DATA	
OVERALL LENGTH (IN)	
OVERALL WIDTH (IN)	
OVERALL HEIGHT (IN)	
OPERATING WEIGHT (LB)	

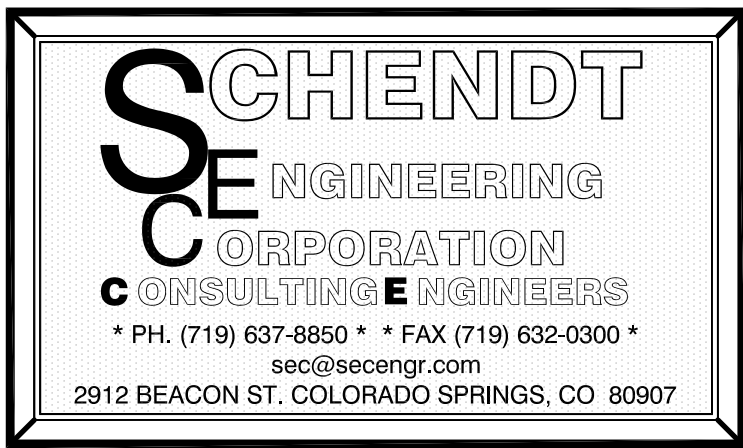
- REMARKS:
- EXISTING ABSORPTION CHILLER TO REMAIN.

PLATE HEAT EXCHANGER SCHEDULE

MARK	9-HX1
LOCATION	CHILLER PLANT
MANUFACTURER	MUELLER
MODEL NO.	AT80MHV B20
SERIAL NO.	
TYPE	PLATE & FRAME
PLATE MATERIAL	304 SS
CONSTRUCTION/GASKETS	NBR
SERVICE	FREE COOLING
HEAT TRANSFER CAPACITY (MBH)	3,000
SURFACE AREA (SF)	1,293
NUMBER OF PLATES	145
DESIGN PRESSURE (PSIG)	150
HOT SIDE DATA:	
FLOW (GPM)	600
ENTERING WATER TEMP. (F)	55
LEAVING WATER TEMP. (F)	45
MAX. WATER PRES. DROP (FT)	6
FOULING FACTOR	0.00025
CONNECTION SIZE (IN)	6
COLD SIDE DATA:	
FLOW (GPM)	1140
ENTERING WATER TEMP. (F)	43
LEAVING WATER TEMP. (F)	48.3
MAX. WATER PRES. DROP (FT)	20
FOULING FACTOR	0.0005
CONNECTION SIZE (IN)	6
DIMENSIONS	
LENGTH (IN)	71
HEIGHT (IN)	85
WIDTH (IN)	36.25
OPERATING WEIGHT (LB)	6,753
REMARKS	1,2,3,4

- REMARKS:
- PROVIDE WITH ALUMINUM SHOUD AROUND PLATES.
 - PROVIDE WITH CLASS 150 FLANGED CONNECTIONS.
 - INSTALL HEAT EXCHANGER 9-HX1 UNDER THE BASE BID.
 - DELETE HEAT EXCHANGER 9-HX1 UNDER DEDUCTIVE ALTERNATE BID NO. 2.
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CONSTRUCTION DOCUMENTS 95 % SUBMITTAL	08/12/2005 02/07/2005
Revisions	Date



Drawing Title MECHANICAL SCHEDULES	Project Title REPLACE COOLING TOWERS	Project Number 575-05-103	OFFICE OF FACILITIES MANAGEMENT Department of Veterans Affairs
Approved: Medical Center Director	Location 2121 NORTH AVENUE GRAND JUNCTION, CO 81505	Building Number BUILDING NO. 9	
Approved: Assistant Administrator, Engineering Department	Date 08/05/2005	Drawing Number H6 Dwg. 8 of 16	