MISCELLANEOUS			PIPING TYPES			PIPING	SYMBOLS	ABE	BREVIATIONS:				
SYMBOL DESCRIPTION	SYMBOL	DESCRIPTION	DOUBLE LINE PIPING	SINGLE LINE PIPING	PIPE	 		ABBREVIA		ABBREVIATION DESCRIPTION	ABBREVIATION DESCRIPTION	ABI	BREVIATION DESCRIPTION
SECTION NO.	K3		(2" AND ABOVE)	(UP TO 2")	TYPE	SYMBOL ABBRE	EVIATION DESCRIPTION	-	A	EDR EFFECTIVE DIRECT RADIATION EER ENERGY EFFICIENCY RATIO	M	SFCS	SPRINKLER FLOOR CONTROL STATION
SECTION VIEW SHEET	\boxtimes	SUPPLY DIFFUSER-4-WAY						A ABV	AIR (COMPRESSED) ABOVE	EF EXHAUST FAN EFF EFFICIENCY	MA MAKE-UP AIR	SH SHT	SHOWER SHEET
1 SIM		THROW SUPPLY	CHS	CHS	CHILLED WATER	P&T	PRESSURE/TEMPERATUR E PORT TAPS	A/C AC	AIR CONDITIONING ALTERNATING CURRENT	EL ELEVATION	MAT MIXED AIR TEMPERAT MAX MAXIMUM	SK	SIMILAR SINK
A101		DIFFUSER-3-WAY THROW			SUPPLY	-CR	CONCENTRIC REDUCER	ACCH	AIR COMPRESSOR AIR COOLED CHILLER AIR COOLED CONDENSING UNIT	ENCL ENCLOSURE	MBH THOUSAND BTUH MC MECHANICAL CONTR MCA MINIMUM CIRCUIT AM		STARTING KILOVOLT AMPS STARTING KILOWATTS SHEET METAL
A DETAIL DESIGNATION	√∑ ►	SUPPLY DIFFUSER-2-WAY	←	— — — CHR — — —	CHILLED WATER RETURN	ER	ECCENTRIC REDUCER	ACCU AD	ACCESS DOOR AREA DRAIN	ENGRENGINEER ENT ENTERING ES END SUCTION	MCC MOTOR CONTROL CE MECH MECHANICAL		STATIC PRESSURE SUMP PUMP
		THROW SUPPLY DIFFUSER-1-WAY	HWS <	HWS	HEATING	FJ		ADJ AF	ADJUSTABLE AIR FILTER	EMERGENCY SHOWER ESP EXTERNAL STATIC PRESSURE	MFR MANUFACTURER MH MANHOLE	SPEC SPR	SPECIFICATION SPRINKLER
AHU POWERED EQUIPMENT DESIGNATION		THROW			WATER SUPPLY	EJ EJ	EXPANSION JOINT	AFC AFF	ABOVE FINISHED CEILING ABOVE FINISHED FLOOR	ET EXPANSION TANK ETR EXISTING TO REMAIN	MI MALLEABLE IRON MIN MINIMUM MOCP MAXIMUM OVER CUR	SS SS	SQUARE STAINLESS STEEL
VAV NON POWERED		CEILING ACCESS	HWR -	- $ -$ HWR $ -$	HEATING WATER RETURN	— — U	UNION	AFG AHU AI	ABOVE FINISHED GRADE AIR HANDLING UNIT ALUMINUM	EVAP EVAPORATOR EWB ENTERING WET BULB EWT ENTERING WATER	PROTECTION MP MEDIUM PRESSURE	SSD SSFU	SERVICE SINK SUBSURFACE DRAIN SANITARY SEWER FIXTURE
1.01 EQUIPMENT DESIGNATION		PANEL PANEL	0,140	0140		П	THERMOMETER W/	AMB AP	AMBIENT ACCESS PANEL	TEMPERATURE	MS MOP SINK MTD MOUNTED	SSSC	UNITS SOLID STATE SPEED
TYPE BASEBOARD EQUIPMENT		RETURN DIFFUSER	CWS	CWS	CONDENSER WATER SUPPLY	<u> </u>	THERMOWELL	APD ARI		EXT EXTERNAL EXTG EXISTING	MTL METAL MU MAKE-UP	STD	CONTROL STANDARD
LENGTH DESIGNATION				CWR	CONDENSER	AV	AIR VENT	AS ASHRAE	ARCHITECT AIR SEPARATOR AMERICAN SOCIETY OF HEATING	F	MUA MAKE-UP AIR UNIT MVD MANUAL VOLUME DA	MPER STR	STEEL STRAINER SURFACE
2" 1 SHEET KEY NOTES		EXHAUST DIFFUSER			WATER RETURN	→ ∑ - FC	FLEXIBLE PIPE CONNECTOR	ASME	AND REFRIGERATION ENGINEERS AMERICAN SOCIETY OF	F DEGREE FAHRENHEIT FBO FURNISHED BY OTHERS	N	SUSP	SUSPEND SANITARY VENT
POINT OF DISCONNECTION	H * * * *	HUMIDIFIER	D	D	CONDENSATE DRAIN	[FS] FS	FLOW SWITCH	ASTM	MECHANICAL ENGINEERS AMERICAN SOCIETY OF TESTING	FCO FLOOR CLEAN OUT FCS FLOOR CONTROL SWITCH	(N) NEW NC NORMALLY CLOSED	ST	SOUND TRAP T
ARROW INDICATES	I	TIOMIDII ILIX	HPS <	—//— HPS —//	HIGH PRESSURE	PS PS		AV	AND MATERIALS ACID VENT AIR VENT	FCU FAN COIL UNIT FD FLOOR DRAIN FIRE DAMPER	NFPA NATIONAL FIRE PROT ASSOCIATION NIC NOT IN CONTRACT	ECTION	TEMPERATURE CONTROL
DIRECTION OF FLOW EXTERIOR WALL LOUVER		FLEXIBLE DUCT CONNECTION		// 6 //	STEAM SUPPLY	PS PS	PRESSURE SWITCH	AVG AW	AVERAGE ACID WASTE		NO NORMALLY OPEN NO NUMBER	TD TDH	TRENCH DRAIN TOTAL DYNAMIC HEAD
EXTERIOR WALL LOUVER (UNDER ARCH. SECTION)		CONNECTION	> MPS	MPS	MEDIUM PRESSURE STEAM	PG	PRESSURE GAUGE W/ GAUGE COCK	AWS AUX	AMERICAN WELDING SOCIETY AUXILIARY	FG FIBERGLASS FF FINAL FILTER	NTS NOT TO SCALE	TF TG	TRANSFER FAN TRANSFER GRILLE
UC UNDERCUT DOOR (UNDER ARCH. SECTION)	-	SUPPLY AIR			SUPPLY		ELBOW UP		В	FH FIRE HYDRANT FHC FIRE HOSE CABINET FHR FIRE HOSE RACK	OA OUTSIDE AIR	TH BLK TOD TOP	THRUST BLOCK TOP OF DUCT (AFF) TOP OF PIPE (AFF)
DOOR LOUVER (UNDER		FLOW SYMBOL RETURN/EXHAUST	LPS	LPS	LOW PRESSURE STEAM SUPPLY		ELBOW DOWN	B BC	BOILER BELOW COUNTER	FIXT FIXTURE FLA FULL LOAD AMPS	OAF OUTSIDE AIR FAN OAHU OUTSIDE AIR HANDLII		TRAP PRIMER TRAP PRIMER DEVICE
LOUVER DOOR FULL	—— √ -	AIR FLOW SYMBOL		_/_/ — HPR — _/_/	HIGH PRESSURE			B/C BFV	BACK OF CURB BUTTERFLY VALVE	FLEX FLEXIBLE FL FLOW LINES	OBD OPPOSED BLADE DAN OC ON CENTER	IPER TSP	TOTAL STATIC PRESSURE THERMOSTAT
L/D HEIGHT. (UNDER ARCH. SECTION)	الالالا	HEAT TRACE			CONDENSATE RETURN		TEE UP	BHP	BOX HYDRANT BRAKE HORSEPOWER BUILDING	FLR FLOOR FP FAN POWERED MIXING BOX FIRE PUMP	OD OUTSIDE DIAMETER OVERFLOW DRAIN OFCU OUTSIDE AIR FAN CO	I UNIT	TYPICAL
EQUIPMENT DESI	GNATIO	ON	MPR — — —	-/- — MPR — $-/-$	MEDIUM PRESSURE CONDENSATE RETURN		TEE DOWN	BM BOD	BENCHMARK BOTTOM OF DUCT (AFF)	FPI FINS PER INCH FPM FEET PER MINUTE	OPG OPENING OS&Y OPEN STEM AND YOL		URINAL
LEVEL		TES TYPE OF EQUIPMENT		— — — LPR — — —			PIPE CAP OR PLUG	BOF BOS	BOTTOM OF FOOTING BOTTOM OF STRUCTURE	FRIC FRICTION FRZR FREEZER	Р	U/F U/S	UNDERFLOOR UNDERSLAB
01 - LEVEL 01	FCU				LOW PRESSURE CONDENSATE RETURN		ISOLATION VALVE, RE:	BT	BATH TUB BREAK TANK BRITISH THERMAL UNIT	FS FLOW SWITCH FIRE SPRINKLER FSK FLOOR SINK	P PUMP	UCD	UNDERCUT DOOR UNDERGROUND UNIT HEATER
	1A.01 INDICA	ATES UNIT NUMBER WITHIN AREA	RS	RS	REFRIGERANT SUCTION		SPECS	BV BWV	BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE	FT FOOT FEET	P PUMP PLUMBING EQUIPMEN PC PLUMBING CONTRAC		UNIT HEATER UNDERWRITERS LABORATORIES
04 - LEVEL 04 05 - LEVEL 05 06 - LEVEL 06	INDICA	TES AREA (A,B,C,D,E,F,G) ETC.				OS&Y	OUTSIDE STEM AND		C	FT WC FEET, WATER COLUMN FUT FUTURE	PCR PUMPED CONDENSA' RETURN		UNLESS NOTED OTHERWISE UP THROUGH ROOF
			RL	RL	REFRIGERANT LIQUID	DV	DRAIN VALVE W/ HOSE	C	CELSIUS	G	PD PRESSURE DROP PLANTER DRAIN		V
DUCTWORK			RHG <	RHG	REFRIGERANT	DV	END CONNECTION	CAB CAV	CABINET CONSTANT AIR VOLUME CATCH BASIN	G GAS GA GAUGE	PF PRE-FILTER PH PHASE POST HYDRANT	V	VOLT, VENT VOLT-AMPERE
ROUND DUCT UP	19 -	٦			HOT GAS		BALL VALVE W/ HOSE	CC CD	COOLING COIL CONDENSATE DRAIN LINE	GAL GALLON GALV GALVANIZED	PIV POST INDICATOR VAL PLBG PLUMBING	VE VAC VAV	VACUUM VARIABLE AIR VOLUME
TRANSITION:			A	A	CONTROL AIR (PNEUMATIC)		CONNECTION	CFH CFM	CUBIC FEET PER HOUR CUBIC FEET PER MINUTE	GC GENERAL CONTRACTOR GLV GLOBE VALVE	PNEU PNEUMATIC PNL PANEL	VB	VALVE BOX VACUUM BREAKER
RECTANGULAR TO ROUND	H		> BD		,	cv	CHECK VALVE WITH INDICATION OF FLOW	CFS CI	CUBIC FEET PER SECOND CAST IRON CIRCULATING	GND GROUND GPD GALLONS PER DAY GPM GALLONS PER MINUTE	PNTH PENTHOUSE PP POLYPROPYLENE PPM PARTS PER MILLION	VCP VD VEL	VITRIFIED CLAY PIPE VOLUME DAMPER VELOCITY
			BD	———— BD ————	BOILER BLOW DOWN		DIRECTION	CL CLG	CIRCULATING CENTERLINE CEILING		PRESS PRESSURE PRI PRIMARY	VERT VFD	VELOCITY VERTICAL VARIABLE FREUENCY DRIVE
FIRE DAMPER F	\square		BF	BF	BOILER FEED	PRV	PRESSURE REDUCING	CLR CMP	CLEAR CORRIGATED METAL PIPE	H	PRS PRIMARY REDUCING PRV PRESSURE REDUCIN	VOV VOV	VALVE IN BOX VALVE ON VERTICAL
SMOKE DAMPER S FIRE/SMOKE F/S							VALVE	CMU CPI CPVC	CONCRETE MASONRY UNIT CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL	HB HOSE BIBB HC HEATING COIL	PSF POUNDS PER SQUAR PSI POUNDS PER SQUAR PSIG POUNDS PER SQUAR	EINCH VR	VACUUM PUMP VARIABLE AIR VOLUME REHEAT
DAMPER		— EXISTING DIFFUSER	BO	——— во ———	BLOW OFF	SV SV	SOLENOID VALVE	CPVC CO	CHLORINATED POLYVINYL CHLORIDE CLEANOUT	HC HEATING COIL HD HEAD HUB DRAIN	GAUGE PT PLUMBING TRIM	VSD VTR	REHEAT VARIABLE SPEED DRIVE VENT THROUGH ROOF
_	. -	EXISTING	CF <	CF	CHEMICAL	F FCV	AUTO FLOW CONTROL	COL COMB	COLUMN COMBINATION	HF HUMIDIFIER HORIZ HORIZONTAL	PV PLUG VALVE PVC POLYVINYL CHLORIDI	<u> </u>	
MOTORIZED DAMPER M BACKDRAFT B	\blacksquare	DUCTWORK TO BE REMOVED	<u> </u>	C.	FEEDER		VALVE W/ TEST PORTS	COMP CON	COMPRESSOR CONVERTER	HP HORSEPOWER HALON PANEL	PWL SOUND POWER LEVE	-	W
DAMPER		/ EXISTING	PCS/R	PCS/R	PROCESS COOLING WATER SUPPLY/RETURN	CS,BV	, CIRCUIT SETTER OR BALANCING VALVE	CONC	CONCRETE CONCENTRIC CONDENSER	HPU HEAT PUMP UNIT HKP HOUSEKEEPING PAD HSC HORIZONTAL SPLIT CASE	Q QTY QUANTITY	W	WATT, WASTE, WIDTH WITH
EXISTING THERMOSTAT——T (E)		DUCTWORK				GLV	GLOBE VALVE (STRAIGHT PATTERN)	CONN	CONDENSATE CONNECTION	HSTAT HUMIDISTAT HT HEIGHT	R	W/O WB	WITHOUT WETBULB
NEW THERMOSTAT——──────────────────────────────────			HTWS/R	HTWS/R	HIGH TEMP. HOT WATER SUPPLY/RETURN	GLV	GLOBE VALVE (ANGLE	CONT	CONTINUOUS CONTINUATION	HTG HEATING HTR HEATER	(R) REMOVE	WC WCO	WATER CLOSET WALL CLEANOUT
SPACE TEMPERATURETS		POINT OF CONN. (CONN. NEW TO EXISTING)	PHWS/R	PHWS/R	PRIMARY OR DISTRICT	<u></u>	PATTERN)	COP	CONTROLLER CONTRACTOR COEFFICIENT OF PERFORMANCE	HU HUMIDIFIER SECTION HW HOT WATER HWC HOT WATER CIRCULATOR	RELOCATE RA RETURN AIR RAD REFRIGERATED AIR D	RYER IIWF	WATER FILTER WALL HYDRANT WATER METER
SPACE HUMIDISTAT——H	RECTA	ANGULAR BRANCH			HEATING WATER SUPPLY/RETURN	——————————BFV	BUTTERFLY VALVE	CRAC — CRT	COMPUTER ROOM A/C UNIT CATHODE RAY TUBE	HWP HOT WATER PUMP HWR HOT WATER RETURN	RAF RETURN AIR FAN RAG RETURN AIR GRILLE	WP WPD	WEATHERPROOF WATER PRESSURE DROP
SPACE HUMIDITY SENSOR ← HS SPACE PRESSURE SENSOR ← PS		—DIFFUSER TYPE	PCHS/R	PCHS/R	PRIMARY OR DISTRICT CHILLED WATER	BV	BALL VALVE	CRU CT	CONDENSATE RETURN UNIT COOLING TOWER	HWS HOT WATER SUPPLY HX HEAT EXCHANGER	RAT RETURN AIR TEMPER RCP REFLECTED CEILING	ATURE WWF PLAN WT	WELDED WIRE FABRIC WATER TIGHT
CARBON DIOXIDE SENSOR——CD		A SIZE (QTY)	PR <		SUPPLY/RETURN PUMPED CONDENSATE	TCV	AUTOMATIC TEMPERATURE CONTROL	CU CW	CENTER COPPER COLD WATER	HZ HERTZ	REINFORCED CONCR RD ROOF DRAIN RE REFERENCE	= 1 = PIPE	WEIGHT Y
CARBON MONOXIDECO	CONIC	SUPPLY			RETURN		VALVE, 2-WAY	CWP CWR	CONDENSER WATER PUMP CONDENSER WATER RETURN		REFER RECIRC RECIRCULATE	_Y	YARD HYDRANT
NITROGEN DIOXIDE ─────ND SENSOR		DIFFUSER —ROUND DUCT	(E)	———— (E) ————	EXISTING PIPING	тсу	AUTOMATIC TEMPERATURE CONTROL	CWS CV	CONDENSER WATER SUPPLY CONSTANT VOLUME	IE INVERT ELEVATION IH INFRARED HEATER	RED REDUCER REFR REFRIGERATOR		Z
DUCT MOUNTED SMOKE DETECTOR—		DOWN		,			VALVE, 3-WAY	-	D	IN INCH IN WC INCH, WATER COLUMN INSUL INSULATION	REG REGISTER REINF REINFORCING REQD REQUIRED	z	ZONE
TRANSITION-RECT. TO RECT. OR ROUND TO ROUND	S NEW DUCTV	DUCT DIMENSIONS WORK (WIDTH x HEIGHT)	(E)	(E)	EXISTING PIPING TO BE REMOVED	BV BV	BALANCING VALVE	dB DB	DECIBEL DRY-BULB	INT INTERNAL INTERIOR	REV REVISION REVISE		
CONICAL SPIN-IN— FITTING W/ MANUAL		SUPPLY OR OUTSIDE AIR				TMP	TEMPERATURE/PRESSURE RELIEF VALVE	DC	DOUBLE DUCT CONSTANT VOLUME DIRECT CURRENT	IW INDIRECT WASTE	RF RETURN FAN RH RELATIVE HUMIDITY		
VOLUME DAMPER	/ ₁ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	DOWN					VALVE IN	DDC DESIG DEFL	DIRECT DIGITAL CONTROL DESIGNATION DEFLECTION	J JB JUNCTION BOX	RHG REFRIGERANT HOT G RKVA RUNNING KILOVOLT A RKW RUNNING KILOWATTS	MPS	
LOW PRESSURE	1	"x16" X					RISER	DTL DF	DEFLECTION DETAIL DRINKING FOUNTAIN	JP JOCKEY PUMP	RL REFRIGERANT LIQUIE RLA RUNNING LOAD AMPS		
FLEXIBLE DUCT		NG VANES FER DAMPER				STR	STRAINER W/ BLOW-OFF & CAPPED HOSE END	DIA DIFF	DIAMETER DIFFUSER	K	RM ROOM REFRIGERANT MACH	NE	
SUPPLY SLOT————————————————————————————————————							CONNECTION	DIM DISC	DIMENSION DISCONNECT		RPM REVOLUTIONS PER M RS REFRIGERANT SUCTI		
RISE IN——						ST ST	STEAM TRAP	DP IDPR	DOWN DISCHARGE PLENUM DAMPER	KO KNOCKOUT KVA KILOVOLT AMPS KW KILOWATT	RTU ROOFTOP UNIT RV RELIEF VALVE		
DIRECTION OFDR	ROP IN DIRECTION RFLOW	N OF RETURN DIFFUSER						DS	DOUNSPOUT DOUBLE SUCTION	L	S		
UP DN		RETURN OR RELIEF AIR DN						DV DW	DOUBLE DUCT VAV DISHWASHER	L LENGTH	SA SUPPLY AIR SAF SUPPLY AIR FAN		
		EXHAUST DIFFUSER						DWG DWH	DRAWING DOMESTIC WATER HEATER	LAT LEAVING AIR TEMPERATURE LAV LAVATORY LBS POLINIS	SAG SUPPLY AIR GRILLE SAN SANITARY SEWER SAR SUPPLY AIR REGISTE	,	
RETURN OR—— RELIEF AIR UP		EXHAUST DIFFUSER EXHAUST AIR DN						DWP DX	DOMESTIC WATER PUMP DIRECT EXPANSION	LBS/HR POUNDS PER HOUR	SAR SUPPLY AIR REGISTE SCHED SCHEDULE SCFM STANDARD AIR CUBIC		
									E	LP LINEAR FEET LP LOW PRESSURE LRA LOCKED ROTOR AMPS	PER MINUTE SCR SILICON CONTROLLE		
EXHAUST—— AIR UP								(E) EA	EXISTING EACH	LVG LEAVING LVL LEVEL	RECTIFIER SD STORM DRAIN		
								EAT EC	ENTERING AIR TEMPERATURE ELECTRICAL CONTRACTOR	LWB LEAVING WET BULB LWCO LOW WATER CUT OFF	SE SEWAGE EJECTOR SEC SECONDARY		
								EDB IFDF	ECCENTRIC ENTERING DRY BULB ELECTRIC DRINKING FOUNTAIN		SECT SECTION SENS SENSIBLE SF SQUARE FEET		
								EDH	ELECTRIC DRINKING FOUNTAIN ELECTRIC DUCT HEATER		GGO, MET LET		
			I			1	1			J			



MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 United States

LANDMARK CONSULTANTS INC

DESIGNWORKSHOP

Tel 303.595.8585 Fax 303.825.6823

 141 9th Street
 1390 Lawrence Street

 PO Box 774943
 Suite 100

 Steamboat Springs, CO
 Denver, CO 80204

 80477
 Tel 303.623.5186

 Tel 970.871.9494

MARTIN/MARTIN
CONSULTING ENGINEERS ENGIN

12499 West Colfax Ave. Lakewood, CO 80215 United States Tel 303.431.6100

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

te Description

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signat



Project Name
SSRC | BASE

SSRC | BASE AREA IMPROVEMENTS
Project Number

003.7835.000

Description
MECHANICAL LEGEND

Scale 1/8" = 1'-0"

_ ___

1A-M0.000

GENERAL MECHANICAL CONTRACT REQUIREMENTS:

- 1. UNLESS OTHERWISE NOTED, THE WORK DESCRIBED ON THE PLANS AND SPECIFICATIONS SHALL INCLUDE THE FURNISHING AND INSTALLATION OF ALL LABOR AND MATERIALS NECESSARY FOR COMPLETE AND OPERATIONAL HVAC, FIRE PROTECTION AND PLUMBING SYSTEMS. CONTRACTOR SHALL FURNISH THESE EVEN IF ITEMS REQUIRED TO ACHIEVE THIS (I.E. OFFSETS, ISOLATION AND BALANCING DEVICES, MAINTENANCE CLEARANCES, ETC.) ARE NOT SPECIFICALLY SHOWN.
- 2. DATA GIVEN ON THE DRAWINGS IS AS EXACT AS COULD BE SECURED. ABSOLUTE ACCURACY IS NOT GUARANTEED AND THE CONTRACTOR SHALL OBTAIN AND VERIFY EXACT LOCATIONS. MEASUREMENTS. LEVELS. SPACE REQUIREMENTS, POTENTIAL CONFLICTS WITH OTHER TRADES, ETC. AT THE SITE AND SHALL SATISFACTORILY ADAPT HIS WORK TO THE ACTUAL CONDITIONS OF THE JOB.
- 3. THE DRAWINGS ARE DIAGRAMMATICAL IN NATURE AND SHALL NOT BE SCALED. THEY SHOW CERTAIN PHYSICAL RELATIONSHIPS WHICH MUST BE ESTABLISHED WITHIN THE DIVISION 21,22 AND 23 WORK AND ITS INTERFACE WITH OTHER WORK. ESTABLISHING THIS RELATIONSHIP IN THE FIELD IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR. THIS DIVISION SHALL COORDINATE ITS WORK WITH ALL DIVISIONS OF THE WORK AND ADJUST ITS WORK AS REQUIRED BY THE ACTUAL CONDITIONS OF THE PROJECT.
- A. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING A BID TO BECOME THOROUGHLY FAMILIAR WITH THE ACTUAL CONDITIONS OF THE PROJECT. NO EXTRAS WILL BE ALLOWED DUE TO LACK OF KNOWLEDGE OF EXISTING CONDITIONS.
- B. CERTAIN SYSTEMS REQUIRE ENGINEERING OF INSTALLATION DETAILS BY CONTRACTOR. UNLESS FULLY DETAILED IN THE CONTRACT DOCUMENTS, SUCH ENGINEERING IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR.
- C. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE WHERE CLEARANCES ARE LIMITED. AND WHERE INSTALLATION DRAWINGS OR SCHEMATICS, "CONSTRUCTION DRAWINGS", OR COORDINATION DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH, OR IN EXCESS OF, THOSE REQUIRED BY THE SPECIFICATIONS. THE CONTRACTOR SHALL PREPARE ALL SUCH COORDINATION DRAWINGS AS PART OF THE BASE CONTRACT. SUCH DRAWINGS MAY BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR RECORD AND COMMENT. ANY WORK INSTALLED WITHOUT APPROVED COORDINATION DRAWINGS IS DONE AT THE CONTRACTOR'S RISK.
- 4. THESE NOTES ONLY SUPPLEMENT, AND DO NOT REPLACE, THE SPECIFICATIONS.

5. DEFINITIONS AND TERMINOLOGY

- A. THE DEFINITIONS OF DIVISION 1 AND THE GENERAL CONDITIONS OF THIS SPECIFICATION ALSO APPLY TO THE DIVISION 21,22 AND 23 CONTRACT
- B. "CONTRACT DOCUMENTS" CONSTITUTE THE DRAWINGS, SPECIFICATIONS, GENERAL CONDITIONS, PROJECT MANUALS, ETC., PREPARED BY ENGINEER (OR OTHER DESIGN PROFESSIONAL IN ASSOCIATION WITH ENGINEER) FOR CONTRACTOR'S BID OR CONTRACTOR'S NEGOTIATIONS WITH THE OWNER. THE DIVISION 21,22 AND 23 DRAWINGS AND SPECIFICATIONS PREPARED BY THE ENGINEER ARE NOT CONSTRUCTION DOCUMENTS.
- C. "CONSTRUCTION DOCUMENTS", "CONSTRUCTION DRAWINGS", AND SIMILAR TERMS FOR DIVISION 21,22 AND 23 WORK REFER TO INSTALLATION DIAGRAMS. SHOP DRAWINGS AND COORDINATION DRAWINGS PREPARED BY THE CONTRACTOR USING THE DESIGN INTENT INDICATED ON THE ENGINEER'S CONTRACT DOCUMENTS. THESE SPECIFICATIONS DETAIL
- CONTRACTOR" AND FOR PREPARATION OF CONSTRUCTION DOCUMENTS D. "(N)" INDICATES "NEW" EQUIPMENT TO BE PROVIDED UNDER THIS

THE CONTRACTOR'S RESPONSIBILITY FOR "ENGINEERING BY

- E. "(E)" INDICATES "EXISTING" EQUIPMENT ON SITE WHICH MAY OR MAY NOT NEED TO BE RELOCATED AS A PART OF THIS WORK.
- F. "(R)" INDICATES EXISTING EQUIPMENT TO BE RELOCATED AS PART OF
- G. "FURNISH" MEANS TO "SUPPLY" AND USUALLY REFERS TO AN ITEM OF
- H. "INSTALL" MEANS TO "SET IN PLACE, CONNECT AND PLACE IN FULL OPERATIONAL ORDER".
- I. "PROVIDE" MEANS TO "FURNISH AND INSTALL"
- J. "EQUIVALENT" MEANS "MEETS THE SPECIFICATIONS OF THE REFERENCE PRODUCT OR ITEM IN ALL SIGNIFICANT ASPECTS." SIGNIFICANT ASPECTS SHALL BE AS DETERMINED BY THE ARCHITECT/ENGINEER.
- K. "WORK BY OTHER(S) DIVISIONS"; "RE: XX DIVISION", AND SIMILAR EXPRESSIONS MEANS WORK TO BE PERFORMED UNDER THE CONTRACT DOCUMENTS, BUT NOT NECESSARILY UNDER THE DIVISION OR SECTION OF THE WORK ON WHICH THE NOTE APPEARS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO COORDINATE THE WORK OF THE CONTRACT BETWEEN HIS/HER SUPPLIERS, SUBCONTRACTORS AND EMPLOYEES. IF CLARIFICATION IS REQUIRED, CONSULT ARCHITECT/ENGINEER BEFORE SUBMITTING BID.
- L. BY INFERENCE, ANY REFERENCE TO A "CONTRACTOR" OR "SUB-CONTRACTOR" MEANS THE ENTITY WHICH HAS CONTRACTED WITH THE OWNER FOR THE WORK OF THE CONTRACT DOCUMENTS.
- M. "ENGINEER" MEANS THE DESIGN PROFESSIONAL FIRM WHICH HAS PREPARED THESE CONTRACT DOCUMENTS. ALL QUESTIONS. SUBMITTALS, ETC. OF THIS DIVISION SHALL BE ROUTED THROUGH THE ARCHITECT TO THE ENGINEER (THROUGH PROPER CONTRACTUAL

- **ELECTRICAL COORDINATION:**
- 1. VERIFY THE ELECTRICAL SERVICE PROVIDED BY THE ELECTRICAL CONTRACTOR BEFORE ORDERING ANY MECHANICAL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.
- 2. PROVIDE PREMIUM EFFICIENCY MOTORS WITH 1.15 SERVICE FACTOR ON ALL EQUIPMENT, MOTORS SHALL BE CAPABLE OF OPERATING CONTINUOUSLY AT 105°F UNDER JOBSITE CONDITIONS AND ALTITUDE.
- 3. UNLESS NOTED OTHERWISE, ALL MECHANICAL EQUIPMENT SHALL BE PROVIDED WITH HOA SWITCH AND STARTER COMPATIBLE WITH EQUIPMENT AND BMS SYSTEM, STARTERS SHALL BE PROVIDED BY DIVISION 21.22 AND 23 UNLESS IN A MOTOR CONTROL CENTER. ALL DISCONNECTS SHALL BE FURNISHED BY DIVISION 26.
- 4. THE ELECTRICAL POWER FOR CERTAIN EQUIPMENT PROVIDED UNDER DIVISION 21.22 AND 23 HAS NOT BEEN SPECIFICALLY INDICATED ON THE ELECTRICAL DRAWINGS AND MUST BE PROVIDED BY AND FIELD COORDINATED BY THE DIVISION 21,22 AND 23 TRADE REQUIRING SUCH
- SUFFICIENT POWER FOR THIS PURPOSE SHALL BE FURNISHED AS "SPARE", DEDICATED CIRCUIT CAPACITY IN DIVISION 26'S PANELBOARDS. ALL WIRING, CONDUIT AND ELECTRICAL DEVICES DOWNSTREAM OF THE PANELBOARDS IS THE RESPONSIBILITY OF THE DIVISION 21,22 AND 23 TRADE REQUIRING THE POWER UNLESS OTHERWISE SHOWN ON THE ELECTRICAL DRAWINGS.
- SUCH EQUIPMENT IS HEREBY DEFINED AS:
- A. ELECTRICAL HEAT TRACE. REQUIRED HEAT TRACE LOCATIONS. CAPACITIES AND SPECIFICATION ARE SHOWN OR INDICATED ON THE DRAWINGS. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- B. FIRE PROTECTION AIR COMPRESSORS, DRY-PIPE CONTROL PANELS AND VALVES. REQUIRED CONNECTIONS ARE INCLUDED IN THE DIVISION 21 WORK, AND WILL BE SHOWN BY THAT CONTRACTOR'S ENGINEERED SYSTEM DESIGN DRAWINGS.
- (1) PRE-ACTION SYSTEM INITIATION SIGNALS (SUCH AS SMOKE DETECTORS, OR GENERAL ALARM CONDITIONS IN A PRE-ACTION ZONE) SHALL BE PROVIDED UNDER DIVISION 28 FIRE-ALARM WORK.
- (2) DIVISION 21 SHALL PROVIDE PRE-ACTION CONTROL PANEL AND INTERCONNECTION BETWEEN NEAREST SUITABLE FIRE ALARM PANEL AND LOCATION OF PRE-ACTION VALVE(S).
- (3) DIVISION 28 SHALL PROVIDE INTERCONNECTION BETWEEN FIRE COMMAND CENTER ALARM PANEL (PROVIDED UNDER DIVISION 28) AND REMOTE COMMUNICATION FIRE ALARM PANEL (PROVIDED UNDER DIVISION 28).
- C. TEMPERATURE CONTROL PANELS, CONTROL AIR COMPRESSORS AND LINE VOLTAGE POWER FOR 24V CONTROL TRANSFORMERS. REQUIRED CONNECTION ARE INCLUDED IN DIVISION 230900 AND WILL BE SHOWN BY THAT CONTRACTOR'S CONTROL SUBMITTAL DRAWINGS.
- D. IT IS NOT PERMISSIBLE TO UTILIZE "SPARE" POWER FROM ADJACENT POWER CIRCUITS TO SERVE ANY OF THE ABOVE LOADS. ALL POWER MUST COME FROM DEDICATED CIRCUITS.

5. SMOKE DETECTORS:

- FOR AIR HANDLING UNITS AND AIR SYSTEMS WITH A CAPACITY EXCEEDING 2000 CFM, PROVIDE UL LISTED SMOKE DETECTORS IN RETURN AIR SYSTEMS IN ACCORDANCE WITH THE INTERNATIONAL MECHANICAL CODE AND ELSEWHERE AS SHOWN ON THE DRAWINGS.
- SMOKE DETECTORS WILL BE FURNISHED AND SET IN PLACE UNDER THIS DIVISION. DETECTORS WILL BE WIRED UNDER DIVISION 28. SMOKE DETECTORS MUST BE OF THE SAME MANUFACTURER. AND COMPATIBLE WITH THE FIRE FLARM SYSTEM PROVIDED UNDER DIVISION 28 (IF APPLICABLE). CONNECT RELAY(S) TO FAN CONTROL CIRCUIT TO STOP FAN WHEN SMOKE IS

INSTALLATION:

DETECTED.

- 1. SUSPEND EACH TRADE'S WORK SEPARATELY FROM THE STRUCTURE. DUCTWORK SHALL BE HELD TIGHT TO STRUCTURE EXCEPT WHERE OTHERWISE SHOWN.
- 2. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY INDICATED OTHERWISE OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
- 3. PROVIDE MANUFACTURER'S RECOMMENDED SERVICE CLEARANCE AROUND
- ALL EQUIPMENT REQUIRING SAME.
- 4. PROVIDE FOR SAFE CONDUCT OF THE WORK, CAREFUL REMOVAL AND DISPOSITION OF MATERIALS AND PROTECTION OF PROPERTY WHICH IS TO REMAIN UNDISTURBED.
- 5. PROVIDE ACCESS DOORS FOR ALL EQUIPMENT, VALVES, CLEANOUTS, ACTUATORS AND CONTROLS WHICH REQUIRE ACCESS FOR ADJUSTMENT OR SERVICING AND WHICH ARE LOCATED IN OTHERWISE INACCESSIBLE LOCATIONS.
- A. FOR EQUIPMENT LOCATED IN "ACCESSIBLE LOCATIONS" SUCH AS LAY-IN CEILINGS: LOCATE EQUIPMENT TO PROVIDE ADEQUATE SERVICE CLEARANCE FOR NORMAL MAINTENANCE WITHOUT REMOVING ARCHITECTURAL, ELECTRICAL OR STRUCTURAL ELEMENTS SUCH AS THE CEILING SUPPORT SYSTEM, ELECTRICAL FIXTURES, ETC. "NORMAL MAINTENANCE" INCLUDES. BUT IS NOT LIMITED TO:FILTER CHANGING: GREASING OF BEARINGS; USING P/T PORTS FOR PRESSURE OR TEMPERATURE MEASUREMENTS; SERVICING CONTROL VALVES AND SERVICING CONTROL PANELS.
- 6. ISOLATE ALL PRESSURIZED PIPE (WATER, ETC.) AT EACH RISER, BRANCH, PIECE OF EQUIPMENT, AND AREA SERVED.
- 7. PROVIDE PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS SHOWN ON DRAWINGS. PRIMERS MAY BE CONNECTED TO FLUSH FIXTURES OR BE STAND ALONE. SEE SPECIFICATIONS.
- 8. NO DOMESTIC WATER, CHILLED WATER, OR HEATING WATER LINES SHALL BE LOCATED EXPOSED IN FINISHED SPACES OR BELOW THE BUILDING SLAB UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- 9. NO GAS LINES SHALL BE LOCATED BELOW BUILDING SLAB.
- 10. ALL CURBS, ROOF JACKS, ROOF THIMBLES, SANITARY VENTS, ROOF DRAINS. ETC. SHALL BE COMPATIBLE WITH ROOFING SYSTEM TO BE PROVIDED. REFERENCE ARCHITECTURAL DIVISION FOR REQUIRED FLASHING DETAILS.
- 11. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CONCRETE EQUIPMENT PAD DIMENSIONS, BASED ON THE FINAL EQUIPMENT SELECTION, TO THE STRUCTURAL AND GENERAL CONTRACTOR FOR INCLUSION IN THOSE CONTRACTOR'S WORK AS DESCRIBED BY THE GENERAL CONTRACTOR.
- 12. WARRANTY: AT A MINIMUM, THE ENTIRE MECHANICAL SYSTEM SHALL BE WARRANTED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER ACCEPTANCE OF THE SYSTEM BY THE OWNER, REFER TO INDIVIDUAL SPECIFICATION SECTIONS FOR SPECIFIC WARRANTY REQUIREMENTS.

DUCTWORK INSTALLATION:

1. SEAL ALL SEAMS (LONGITUDINAL AND TRANSVERSE) AIR TIGHT WITH SEALANT PER SPECIFICATIONS.

2. DUCT DIMENSIONS ARE INSIDE CLEAR.

- 3. DIFFUSER NECK SIZE IS SAME AS FLEXIBLE DUCT SIZE.
- RADIUS ELBOWS WITH RADIUS TO CENTERLINE EQUAL TO 1.5 DUCT WIDTH. 5. WHERE REQUIRED FOR SPACE CONSTRAINTS, PROVIDE MITERED ELBOWS WITH
- TURNING VANES AS FOLLOWS: A. FOR DUCT WIDTHS OF 36" OR LESS, PROVIDE MANUFACTURED SINGLE WIDTH TURNING VANES, WITH NO TRAILING EDGES AND SPACING IN

4. UNLESS OTHERWISE NOTED, ALL CHANGES IN DIRECTION SHALL BE MADE WITH

- ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR "STANDARD SPACING". B. USE DOUBLE THICKNESS (AIRFOIL) BLADES WITHOUT TRAILING EDGES
- FOR DUCT WIDTHS GREATER THAN 36". 6. ALL FLEXIBLE DUCTS SHALL NOT BE LESS THAN 4', OR MORE THAN 10' IN
- LENGTH. INSTALL FLEXIBLE DUCTWORK SUCH THAT:
- A. MINIMUM OVERALL LENGTH OF 3D, STRAIGHT INTO NECK OF DIFFUSER. B. MAXIMUM OF 135° OF TOTAL TURNING IN ENTIRE LENGTH OF FLEXIBLE DUCT. C. MINIMUM TURNING RADIUM OF R = 1.5D.
- * D = FLEXIBLE DUCT DIAMETER * R = RADIUS OF TURN AS MEASURED TO CENTERLINE OF DUCT.
- 7. RETURN AIR PLENUM: THE HVAC SYSTEM WILL USE THE SPACE ABOVE THE CEILING AS A RETURN AIR PLENUM. CONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF NFPA AND LOCAL CODE REQUIREMENTS FOR ALL MATERIAL INSTALLED IN THE RETURN AIR PLENUM.
- A. IN ADDITION. THE CONTRACTOR SHALL PROVIDE A COMPLETE RETURN AIR PATH BETWEEN ALL RETURN AIR DEVICES (GRILLES ETC.) AND THEIR RESPECTIVE HVAC UNIT. MAXIMUM VELOCITY OF RETURN AIR IN PLENUM SHALL GENERALLY NOT EXCEED 250 FEET PER MINUTE, NOR EXCEED 750 FEET PER MINUTE AT ANY CROSS-SECTION OF THE RETURN AIR PATH.

- A. MAKE ALL TAPS TO ROUND DUCTWORK WITH CONICAL TEES. B. MAKE ALL TAPS TO RECTANGLE DUCTWORK WITH 45° ENTRY OR CONICAL SPIN IN TO ROUND.
- C. INCLUDE DAMPERS AT ALL BRANCH LINES.

PIPE INSTALLATION:

- 10. DUCT SIZES NOT CALLED OUT SHALL BE DETERMINED BASED ON 0.08" S.P. LOSS OR LESS PER 100 FT. OF LENGTH.
- 11. ASSUME ROUND OR OVAL DUCTS IN EXPOSED AREAS.
- 12. INCLUDE DAMPERS AT ALL BRANCH LINES, WHERE SHOWN ON THE DRAWINGS, AND WHERE OTHERWISE REQUIRED FOR BALANCING.

1. ALL PIPING SHALL BE ADEQUATELY SUPPORTED FROM THE BUILDING STRUCTURE TO PREVENT SAGGING, POCKETING, SWAYING OR DISPLACEMENT BY

MEANS OF HANGERS AND SUPPORTS. PIPING IS NOT TO BE SUPPORTED BY

- EQUIPMENT. 2. PROVIDE DIELECTRIC UNIONS BETWEEN DISSIMILAR MATERIALS
- 3. PROVIDE MANUAL AIR VENTS AND CAPPED HOSE-END DRAINS WITH ISOLATION VALVES AT PIPING HIGH AND LOW POINTS.
- 4. WELD PIPE IN ACCORDANCE WITH APPLICABLE CODES AND STANDARDS.
- WELDERS SHALL BE CERTIFIED FOR TYPE OF WORK BEING PERFORMED.
- 5. FLUSH OUT PIPING AND REMOVE CONTROL DEVICES BEFORE PERFORMING PRESSURE TEST. DO NOT USE PIPING SYSTEM VALVES TO ISOLATE SECTIONS WHERE TEST PRESSURE EXCEEDS VALVE PRESSURE RATING. PRESSURIZE PIPING AT 100 PSIG. IF LEAKAGE IS OBSERVED OR IF TEMPERATURE COMPENSATED PRESSURE DROP EXCEEDS 1% OF TEST PRESSURE, REPAIR LEAKS
- AND RETEST. DO NOT USE AIR PRESSURE TO TEST PLASTIC PIPE. 6. PROVIDE SUPPORT UNDER ELBOWS ON PUMP SUCTION AND DISCHARGE LINES.
- 7. ALL STRAINERS SHALL BE FURNISHED WITH A "ROUGHING" SCREEN AND TWO (2) SCREENS FOR NORMAL OPERATION. INSTALL STRAINER WITH ROUGHING SCRFFN AND OPERATE SYSTEM FOR 24 HOURS MINIMUM (RUN DOMESTIC WATER SYSTEMS AT MAX FLOW FOR A MINIMUM OF ONE HALF (1/2) HOUR. REMOVE ROUGHING SCREEN AND INSTALL NORMAL SCREEN, AFTER TWO WEEKS OF NORMAL
- OPERATION INSTALL NEW NORMAL SCREEN. 8. PIPING SIZES SHALL BE BASED ON 2' OR LESS HEAD LOSS PER 100 FEET OF
- LENGTH. VELOCITIES SHALL NOT EXCEED 10 FEET PER SECOND. 9. INSTALL ALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHIN THE PIPING SYSTEM. ENSURE ALL REQUIRED PIPE EXPANSION WILL OCCUR IN THE PROPER DIRECTION AND SEGMENT OF PIPE. PROPERLY ANCHOR (RE: SPECIFICATIONS) ALL PIPING REQUIRING EXPANSION/CONTRACTION ISOLATION. COORDINATE PIPE EXPANSION/CONTRACTION TO PREVENT DAMAGE TO ANY AND ALL BUILDING

10. PROVIDE ISOLATION VALVES AT EVERY HYDRONIC BRANCH LINE.

CONDENSATE DRAINAGE:

COMPONENTS.

- 1. PROVIDE CONDENSATE DRAINAGE FOR ALL COOLING COILS AND OVERFLOW PANS.
- 2. ROUTE CONDENSATE PIPING, FULL SIZE OF DRIP PAN CONNECTION, TO NEAREST CODE APPROVED RECEPTACLE. INSULATE WHERE LOCATED ABOVE FINISHED CEILINGS.
- 3. HEAT TRACE CONDENSATE LINES FROM FOOD SERVICE EQUIPMENT. LOUVERS:
- 1. ALL LOUVERS LOCATED ON EXTERIOR WALLS SHALL BE PROVIDED BY DIVISION 23. REQUIRED LOUVER FREE AREAS ARE INDICATED ON DIVISION 23 DRAWINGS. IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO CONFIRM THAT THE REQUIRED FREE AREA HAS BEEN PROVIDED, PRIOR TO CONNECTION TO THAT LOUVER. DIVISION 23 SHALL PROVIDE ALL LOUVER PLENUMS.

CUTTING, PATCHING AND DEMOLITION:

- 1. KEEP DEMOLITION & CUTTING TO MINIMUM REQUIRED FOR PROPER EXECUTION OF WORK.
- 2. BE RESPONSIBLE FOR ALL CUTTING AND PATCHING NECESSARY FOR THE COMPLETION OF THE WORK.
- 3. NO CUTTING (NOT SHOWN ON THE CONTRACT DOCUMENTS) SHALL BE DONE WITHOUT THE APPROVAL OF THE ARCHITECT AS TO LOCATIONS, METHOD AND
- EXTENT OF THE CUTTING. 4. REPAIR ALL ACCIDENTAL OR INTENTIONAL DAMAGE TO MATCH EXISTING
- APPEARANCE OR FUNCTION. 5. ALL "CAPPED" SANITARY AND VENT LINES SHALL BE RECONNECTED OR RE-ROUTED AS NECESSARY TO PREVENT "DEAD-ENDS" IN THE PIPING. ALL

CONSTRUCTION WITH NO NOTICEABLE DIFFERENCE IN CONTINUITY,

- PIPING SHALL DRAIN TO ACTIVE SANITARY WASTE LINES AND ALL BRANCHES WITH TRAPS SHALL BE ADEQUATELY VENTED.
- **GENERAL PLUMBING CONTRACT REQUIREMENTS** 1. THE GENERAL MECHANICAL REQUIREMENTS PERTAIN TO THE WORK OF THIS
- 2. PREPARE SHOP DRAWINGS OF ALL NEW WORK (INCLUDING SLEEVE LOCATIONS)
- 3. ALL DRAIN GRATES, CLEANOUT COVERS, AND OTHER FINISHED, EXPOSED COMPONENTS SHALL BE PROTECTED FROM DAMAGE. DAMAGED COMPONENTS SHALL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.

TO VERIFY LOCATIONS AND COORDINATION OF WORK BETWEEN TRADES PRIOR

- 4. COORDINATE ROUTING OF ALL PLUMBING PIPING BELOW SLAB WITH STRUCTURAL GRADE BEAMS, TIE BEAMS, ETC, ALLOW FOR REROUTING OF PIPING AS REQUIRED.
- 5. ALL REQUIRED OPENINGS IN CONCRETE BEAMS AND STRUCTURAL WALLS ARE TO BE ACCOMPLISHED USING SLEEVES PROPERLY SIZED FOR THE PIPE THEY SERVE. CORE DRILLING IN BEAMS IS NOT ALLOWED. CORE DRILLING IN PANS IS ALLOWED UPON PRIOR APPROVAL OF ARCHITECT AND STRUCTURAL
- 6. HORIZONTAL STORM AND SANITARY PIPING SHALL RUN AT A SLOPE OF 1/4" PER FOOT MINIMUM FOR 3" AND SMALLER PIPING. 4" AND LARGER PIPING SHALL RUN AT 1/8" PER FOOT MINIMUM.
- 7. NO DOMESTIC WATER LINES SHALL BE LOCATED EXPOSED IN FINISHED SPACES OR BELOW THE BUILDING SLAB UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
- 8. WHERE SHOWN, MINIMIZE THE NUMBER OF JOINTS ON ANY PRESSURIZED PIPING BELOW CONCRETE SLABS. ALL BELOW GRADE PIPING TO BE PRESSURE TESTED AND WITNESSED BY ARCHITECT BEFORE BACKFILLING.
- 9. ALL CLEANOUTS FOR HORIZONTAL STORM DRAINAGE SYSTEM SHALL BE PIPE SIZE OR MAXIMUM 6" FOR LARGER PIPE. 10. IN ADDITION TO THE CLEANOUT LOCATIONS SHOWN ON DRAWINGS, PROVIDE
- ADDITIONAL CLEANOUTS AT: A. ALL UPPER TERMINALS.
- B. EACH RUN OF PIPING WHICH IS MORE THAN 100 FEET IN LENGTH OR FRACTION THEREOF.
- C. HORIZONTAL LINES 5 FEET OR MORE.
- D. HORIZONTAL LINES FOR EACH AGGREGATE CHANGE OF DIRECTION EXCEEDING 135 DEGREES.
- E. AT THE BASE OF ALL WASTE AND VENT RISERS. ALL VERTICAL CLEANOUTS SHALL BE SIZED TO ACCOMMODATE THE LARGEST PIPE ON THAT BRANCH LINE, BUT NEVER LARGER THAN 4".
- 11. NO GAS LINES SHALL BE LOCATED BELOW BUILDING SLAB. ALL GAS PIPING IN AIR PLENUMS TO BE WELDED
- 12. PROVIDE ISOLATION VALVES ON ALL PIPING SERVING HOSE BIBBS. 13. ANY ELECTRICAL SPACE NOT CONSTRUCTED WITH A SUB-ROOF WHICH MAY HAVE PLUMBING PIPING AT THE CEILING OF THESE SPACES SHALL HAVE A DRIP PAN INSTALLED BELOW THE PIPING. DRIP PANS SHALL BE 1.5 TIMES

THE WIDTH OF THE PIPING SERVED WITH A MINIMUM OF 2" HIGH SIDES.

DRIP PANS SHALL BE SUSPENDED FROM THE PIPING SERVED AND SHALL

SLOPE AT A MINIMUM 1/8"/FT. DRIP PANS SHALL DISCHARGE WITH MIN. 1-1/2" DR TO FLOOR DRAINS.

A. DO NOT LOCATE PIPING DIRECTLY ABOVE ANY ELECTRICAL EQUIPMENT

- IN ELECTRICAL ROOMS. 14. MAINTAIN DESIGNATED PLUMBING FIXTURE HEADER SIZE FOR FULL BANK OF
- FIXTURES. 15. PROVIDE GAS VENTS EXTENDING CONTINUOUSLY FROM ALL INTERIOR GAS REGULATORS TO THE EXTERIOR OF THE BUILDING. TERMINATE AT AN APPROVED LOCATION. SIZE VENTS SUCH THAT MINIMUM VENT SIZE (FOR VENT WHICH IS 10 FEET OR LESS IN LENGTH) EQUALS RELIEF OUTLET PIPE SIZE. INCREASE VENT PIPE SIZE ONE PIPE SIZE FOR EVERY ADDITIONAL
- A. PROVIDE AN ISOLATION VALVE DOWNSTREAM OF EVERY INTERIOR GAS REGULATOR.
- **STRUCTURE:**

TEN FEET OF VENT PIPE LENGTH.

OF A STRUCTURAL EXPANSION JOINT

ENGINEER.

- 1. DO NOT PENETRATE STRUCTURAL MEMBERS. ALL EQUIPMENT SUPPORTS SHALL BE ATTACHED TO THE LOAD BEARING MEMBERS OF STRUCTURAL ELEMENTS. DO NOT OVER-STRESS ANY STRUCTURAL MEMBERS. CONTACT STRUCTURAL ENGINEER FOR ALLOWABLE LOADS FOR SPECIFIC MEMBERS.
- 2. DO NOT UTILIZE POWER DRIVEN ANCHORS FOR ANY LOCATIONS WHICH REQUIRE THE LOAD TO BE HELD IN TENSION. SEE STRUCTURAL DIVISION
- FOR ADDITIONAL RESTRICTIONS 3. SEE ALSO STRUCTURAL DIVISION FOR ACCEPTABLE ANCHORING AND SUPPORT
- MEANS, METHODS, AND LOCATIONS. 4. PROVIDE FLEXIBLE CONNECTORS, EXPANSION LOOPS, EXPANSION JOINTS. ADDITIONAL FITTINGS OR EQUIVALENT TO ACCOMMODATE THE THERMAL EXPANSION OF THE BUILDING THROUGH STRUCTURAL EXPANSION JOINTS. PROVIDE SUCH FITTING AT EVERY PIPE, DUCT, CONDUIT, ETC. CROSSING

CONSTRUCTION VENTILATION:

- WHERE EXISTING OR NEW MECHANICAL SYSTEMS ARE USED FOR TEMPORARY VENTILATION OR CLIMATE CONTROL, MECHANICAL EQUIPMENT INSTALLER SHALL PROVIDE CONSTRUCTION FILTERS, MAINTAIN EQUIPMENT, AND CLEAN. ADJUST AND PUT IN NEW CONDITION BEFORE BUILDING OCCUPANCY. PARTS AND LABOR WARRANTY SHALL NOT BE CONSIDERED TO START UNTIL ACCEPTANCE OF SYSTEM BY OWNER.
- 2. PROVIDE CONSTRUCTION FILTERS INSTALLED AT ALL AIR MOVING DEVICES THROUGHOUT THE CONSTRUCTION. REMOVE FILTERS ONLY FOR BALANCING AND FINAL TURNOVER. INSPECT ALL NON-CONSTRUCTION FILTERS AND REPLACE ALL THOSE DEEMED NECESSARY BY THE ENGINEER PRIOR TO ACCEPTANCE OF THE SYSTEM BY THE OWNER.
- GAS FIRED VENTING REQUIREMENTS:
- ROOF (AS DETERMINED BY CODE) WITH WEATHER CAP. SLOPE HORIZONTAL RUNS

TOWARD POINT OF ORIGINATION AT MINIMUM 1/4" PER 1'.

- (1) DO NOT SPIRAL WRAP ON PIPE.
- (2) MAKE ONE WRAP AT VALVES.
- (3) SECURE TO PIPE WITH METHODS APPROVED BY MANUFACTURER.
- D. TEST PER MANUFACTURER'S RECOMMENDATIONS.
- (1) DOMESTIC WATER (COLD, HOT, RECIRC.) EXPOSED TO FREEZING
- (2) SANITARY TRAPS AND THE DOWNSTREAM HORIZONTAL PIPE WHERE
- (3) STORM PIPING SUBJECT TO FREEZING CONDITIONS.
- F. ALL HEAT TRACE PIPE SHALL BE INSULATED PER SPECIFICATIONS.

G. COORDINATE ALL HEAT TRACING AND REQUIRED CIRCUITS WITH ELECTRICAL CONTRACTOR.

FIRE PROTECTION NOTES

1. FIRE PROTECTION NOTES

- A. SUBMIT SHOP DRAWINGS SHOWING PROPOSED LAYOUT OF FIRE PROTECTION SYSTEM. DRAWINGS SHALL SHOW ACTUAL EQUIPMENT TO BE USED, DIMENSIONS AND HYDRAULIC CALCULATIONS. SHOP DRAWINGS SHALL BE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO SUBMITTAL TO ENGINEER OR ARCHITECT.
- B. SHOW THE CONNECTING MAIN AND BRANCH PIPE SIZES FOR ALL RELOCATED
- 2. THE ENTIRE BUILDING SHALL BE SERVED BY A WET PIPE TYPE FIRE SPRINKLER SYSTEM. COORDINATE ELECTRICAL, FIRE PROTECTION AND MECHANICAL SPACE REQUIREMENTS CAREFULLY BEFORE PROCEEDING WITH INSTALLATION.
- 3. EXTEND THE EXISTING SPRINKLER SYSTEM, RELOCATE EXISTING AND ADD NEW SPRINKLER HEADS IN ACCORDANCE WITH NFPA 13. ALL APPLICABLE CODES AND ORDINANCES AND PROJECT REQUIREMENTS TO COMPLETELY PROTECT THE
- FLOW INDICATOR, CONNECTIONS TO EXISTING ALARM, DRAIN PIPING. IDENTIFICATION SIGNS, ETC.

5. WORK SHALL BE PERFORMED BY A QUALIFIED FIRE SPRINKLER INSTALLER WITH A

- MINIMUM OF (5) FIVE YEARS EXPERIENCE IN SIMILAR INSTALLATIONS.
- EACH TYPE, AND A SPRINKLER WRENCH. FIRE STOPPING:
- 1. FIRE STOPPING REQUIREMENT: PENETRATIONS THROUGH RATED WALLS AND FLOORS SHALL BE SEALED WITH A MATERIAL CAPABLE OF PREVENTING THE PASSAGE OF FLAMES AND HOT GASSES WHEN SUBJECTED TO THE REQUIREMENTS OF THE TEST STANDARD SPECIFIC FOR FIRE STOPS ASTM-E-814. ACCEPTANCE MATERIALS NCLUDE: DOW CORNING RTV FIRE STOP FOAM FOR BARE PIPE, METAL CONDUIT, AND ELECTRICAL CABLE; 3M FIRE DAM 21,22 AND 230 CAULK FOR BARE PIPE, METAL CONDUIT, AND BUILDING CONSTRUCTION; GAPS 3M FS-195 INTUMESCENT

STRIPS FOR INSULATED PIPES, PLASTIC PIPE OR CONDUIT, AND ELECTRICAL CABLE

- 1. ALL FLUES SERVING GAS FIRED EQUIPMENT SHALL BE DOUBLE WALL TYPE "B" BY METALBESTOS CO. OR EQUAL. TERMINATE FLUES A MINIMUM HEIGHT ABOVE

ELECTRIC HEAT FREEZE PROTECTION:

1. PIPE HEAT TRACE CABLE:

- A. HEAT TRACE CABLE SHALL BE INSTALLED BY A LICENSED ELECTRICIAN.
- B. APPLY THE HEAT TRACE CABLE ON THE PIPE AFTER PRESSURE

- C. APPLY "ELECTRICALLY TRACED" SIGNS ON OUTSIDE OF INSULATION.
- E. APPLY HEAT TRACE TO THE FOLLOWING PIPING SYSTEMS.
- EXPOSED TO FREEZING CONDITIONS.

- EXISTING SPRINKLER HEADS. C. CONFORM TO HAZARD OCCUPANCY REQUIREMENTS OF NFPA 13.

- 4. SYSTEM SHALL BE INSTALLED COMPLETE AND OPERATIONAL, INCLUDING WATER

6. COORDINATE ALL WORK WITH ALL OTHER TRADES.

7. SUPPLY OWNER AN EXTRA STOCK OF SIX SPRINKLER HEADS (6), THREE (3) OF

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Denver, CO 80204 Steamboat Springs, CO Tel 303.623.5186 Tel 970.871.9494



ALTERRA east west partners

2305 Mount Werner Circle

1225 17th Street

Denver, CO 80202

12499 West Colfax Ave.

Lakewood, CO 80215

United States

Tel 303.431.6100

United States

Suite 150

Steamboat Springs, CO 80487

MARTIN/MARTIN

Suite 300

Golden, CO

United States Tel 303.421.6655

14143 Denver West Pkwy

Tel 303.595.8585

Fax 303.825.6823

DESIGNWORKSHOP

∆ Date Description

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT



IMPROVEMENTS Project Number 003.7835.000

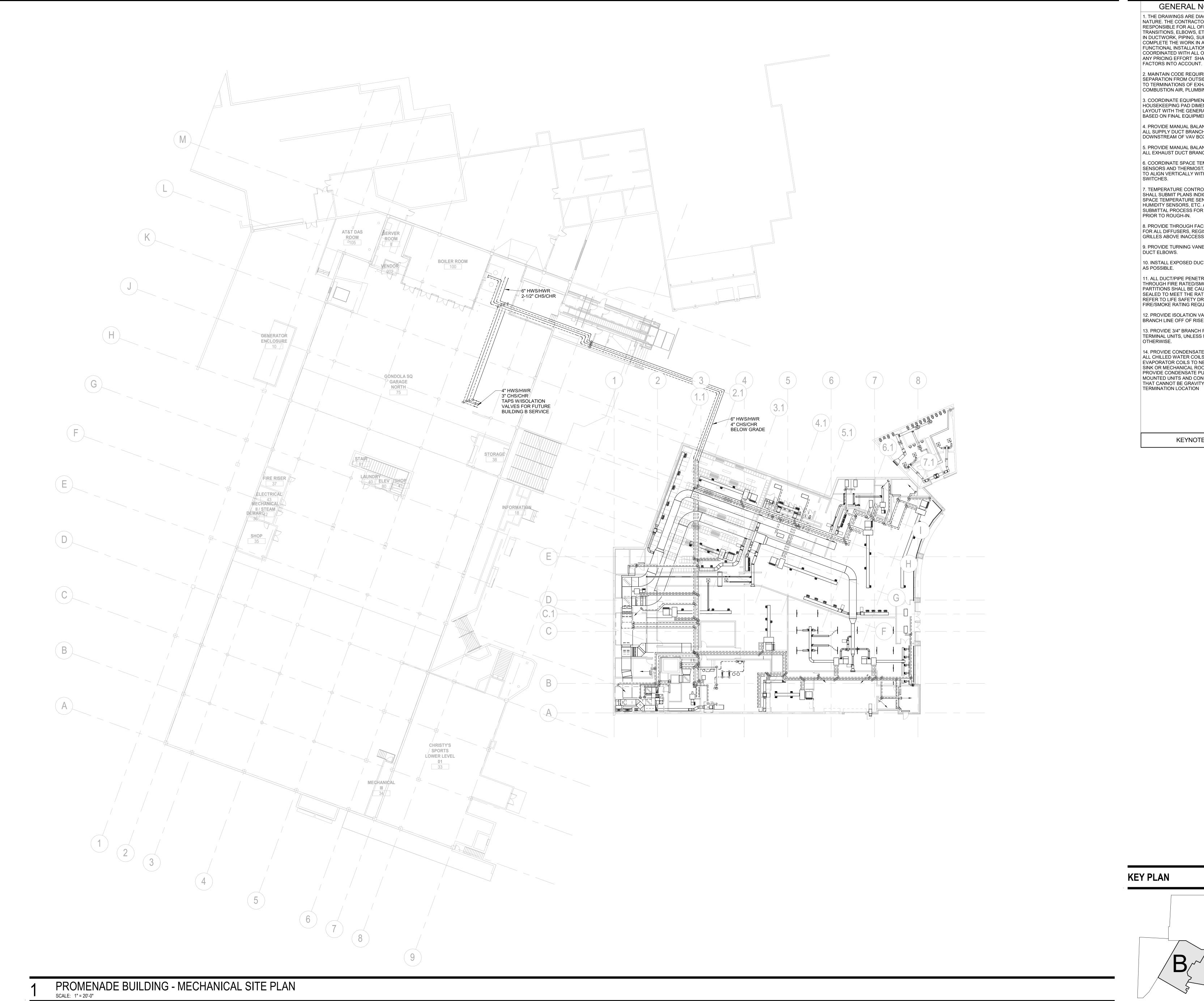
PROMENADE - MECHANICAL

GENERAL NOTES

1/8" = 1'-0"

Description

1A-M0.001



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN
FUNCTIONAL INSTALLATION THAT IS FULLY
COORDINATED WITH ALL OTHER TRADES.
ANY PRICING EFFORT SHALL TAKE THESE

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street ALL SUPPLY DUCT BRANCH TAPS Suite 150 DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE. 11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED

PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.
REFER TO LIFE SAFETY DRAWINGS FOR
FIRE/SMOKE RATING REQUIREMENTS. 12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF RISER.

13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

KEYNOTES

↑LTERR ♦ east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

MOUNTAIN COMPANY

Suite 150 Denver, CO 80202

United States

80477

Lakewood, CO 80215

United States Tel 303.431.6100

Tel 303.595.8585 Fax 303.825.6823

LANDMARK CONSULTANTS, INC.

DESIGNWORKSHOP

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN
CONSULTING ENGINEERS

12499 West Colfax Ave.

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



Project Name

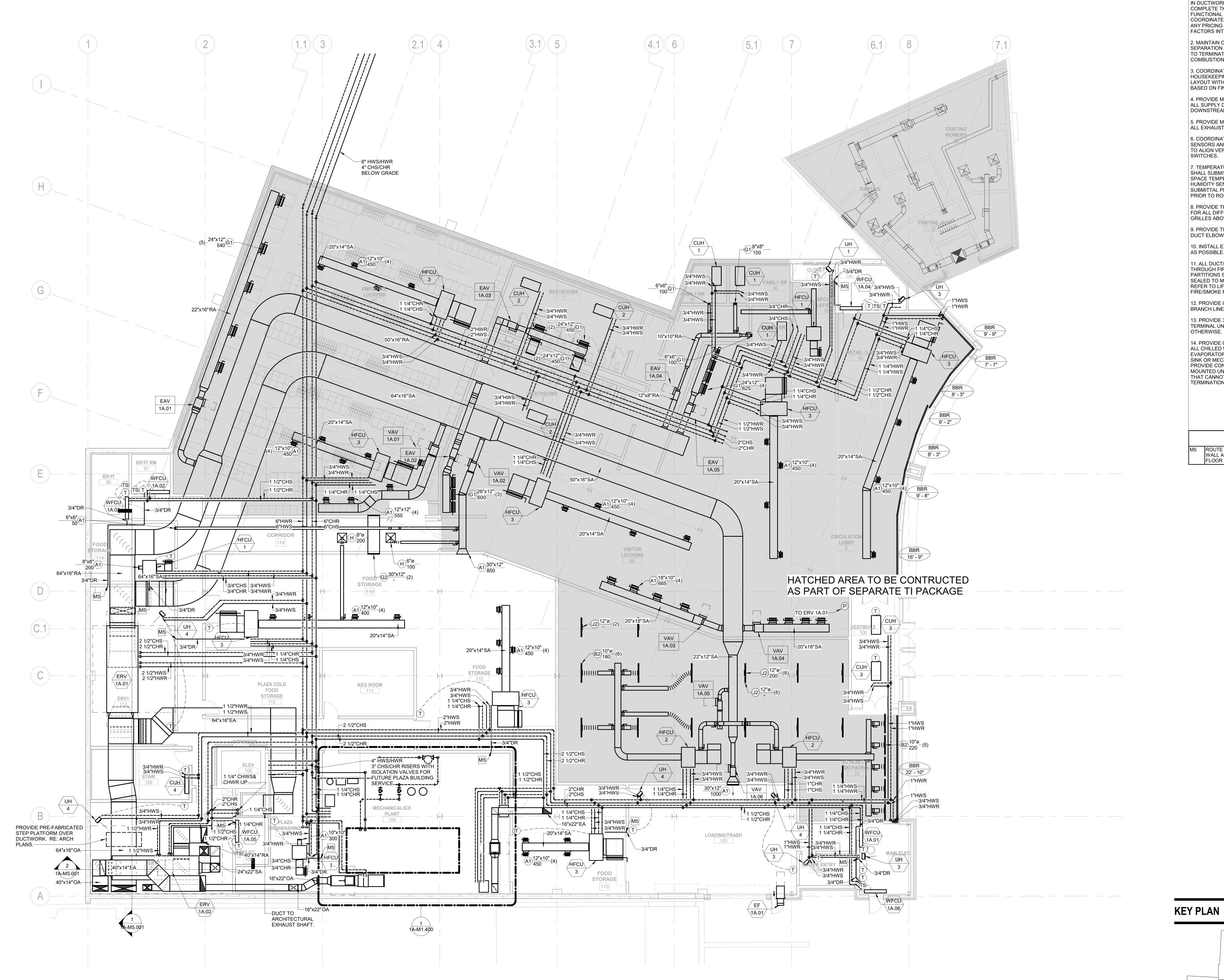
SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

PROMENADE - MECHANICAL SITE PLAN

Scale 1" = 20'-0"

1A-M1.100



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE FACTORS INTO ACCOUNT.

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED. REFER TO LIFE SAFETY DRAWINGS FOR FIRE/SMOKE RATING REQUIREMENTS. 12. PROVIDE ISOLATION VALVES AT EACH

BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

> **KEYNOTES** ROUTE CONDENSATE DRAIN DOWN IN WALL AND STUB OUT OF WALL TO FLOOR DRAIN.

ALTERRA east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

1225 17th Street Suite 150

141 9th Street

80477

PO Box 774943

12499 West Colfax Ave.

Lakewood, CO 80215

Tel 303.431.6100

United States

Tel 303.595.8585 Fax 303.825.6823 Denver, CO 80202

United States

DESIGNWORKSHOP

1390 Lawrence Street Suite 100 Denver, CO 80204 Steamboat Springs, CO Tel 303.623.5186 Tel 970.871.9494

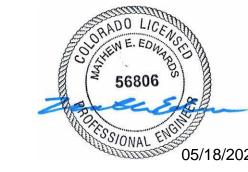
MARTIN/MARTIN CONSULTING ENGINEERS

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

∆ Date Description

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



Project Name

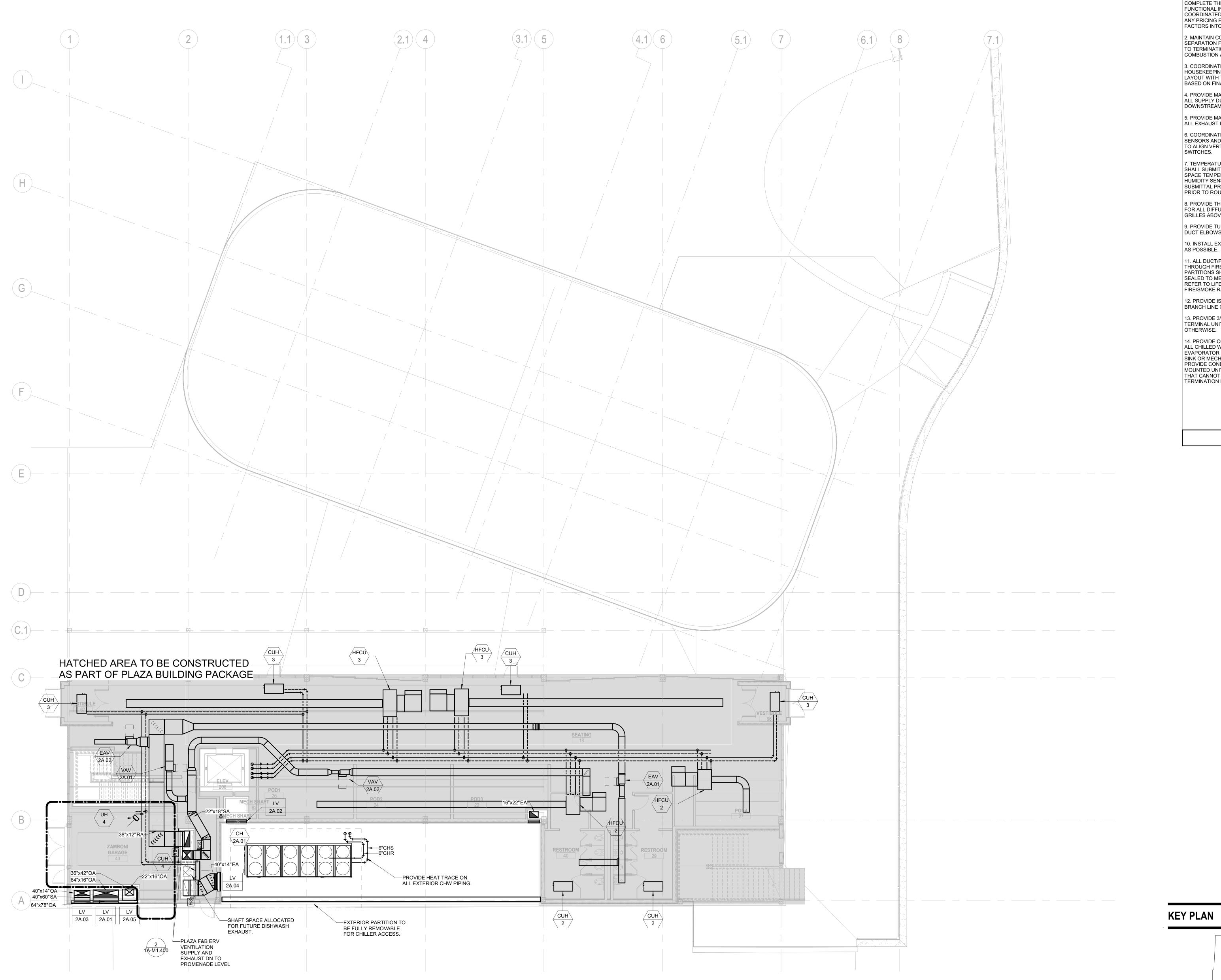
SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

PROMENADE - MECHANICAL PLAN -LEVEL 00

1/8" = 1'-0"

1A-M1.200



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE

FACTORS INTO ACCOUNT. 2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

Steamboat Springs, CO 80487

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street ALL SUPPLY DUCT BRANCH TAPS Suite 150 DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.
REFER TO LIFE SAFETY DRAWINGS FOR
FIRE/SMOKE RATING REQUIREMENTS. 12. PROVIDE ISOLATION VALVES AT EACH

BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

KEYNOTES

ALTERRA east west partners

2305 Mount Werner Circle

MOUNTAIN COMPANY

Suite 150

Tel 303.595.8585 Fax 303.825.6823 Denver, CO 80202 United States

141 9th Street

80477

PO Box 774943

Tel 970.871.9494

12499 West Colfax Ave.

Lakewood, CO 80215

United States

Tel 303.431.6100

DESIGNWORKSHOP 1390 Lawrence Street Suite 100 Steamboat Springs, CO Denver, CO 80204

Tel 303.623.5186

MARTIN/MARTIN CONSULTING ENGINEERS

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



Project Name

SSRC | BASE AREA **IMPROVEMENTS** Project Number

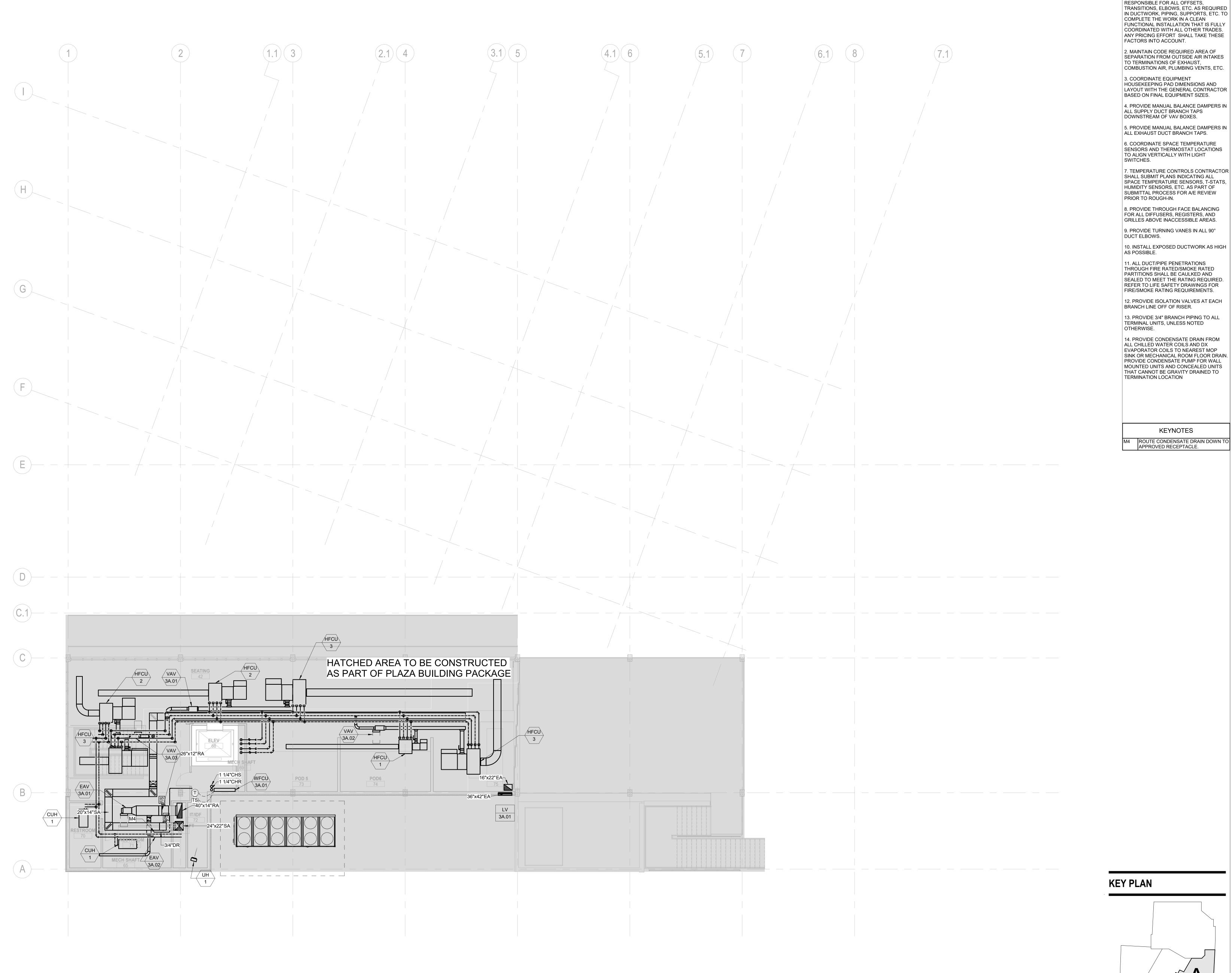
003.7835.000

Description PROMENADE - MECHANICAL PLAN -LEVEL 01

1/8" = 1'-0"

1A-M1.201

MECHANICAL PLAN - LEVEL 01 PLAZA SCALE: 1/8" = 1'-0"



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE FACTORS INTO ACCOUNT.

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

Steamboat Springs, CO 80487

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street ALL SUPPLY DUCT BRANCH TAPS Suite 150 DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

AS POSSIBLE. 11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED

PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.
REFER TO LIFE SAFETY DRAWINGS FOR
FIRE/SMOKE RATING REQUIREMENTS. 12. PROVIDE ISOLATION VALVES AT EACH

BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

> **KEYNOTES** ROUTE CONDENSATE DRAIN DOWN TO APPROVED RECEPTACLE.

↑LTERR ♦ east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle

Denver, CO 80202

80477

Tel 303.431.6100

Suite 150

Fax 303.825.6823

United States

LANDMARK CONSULTANTS, INC. **DESIGNWORKSHOP**

Tel 303.595.8585

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS

12499 West Colfax Ave. Lakewood, CO 80215 United States

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

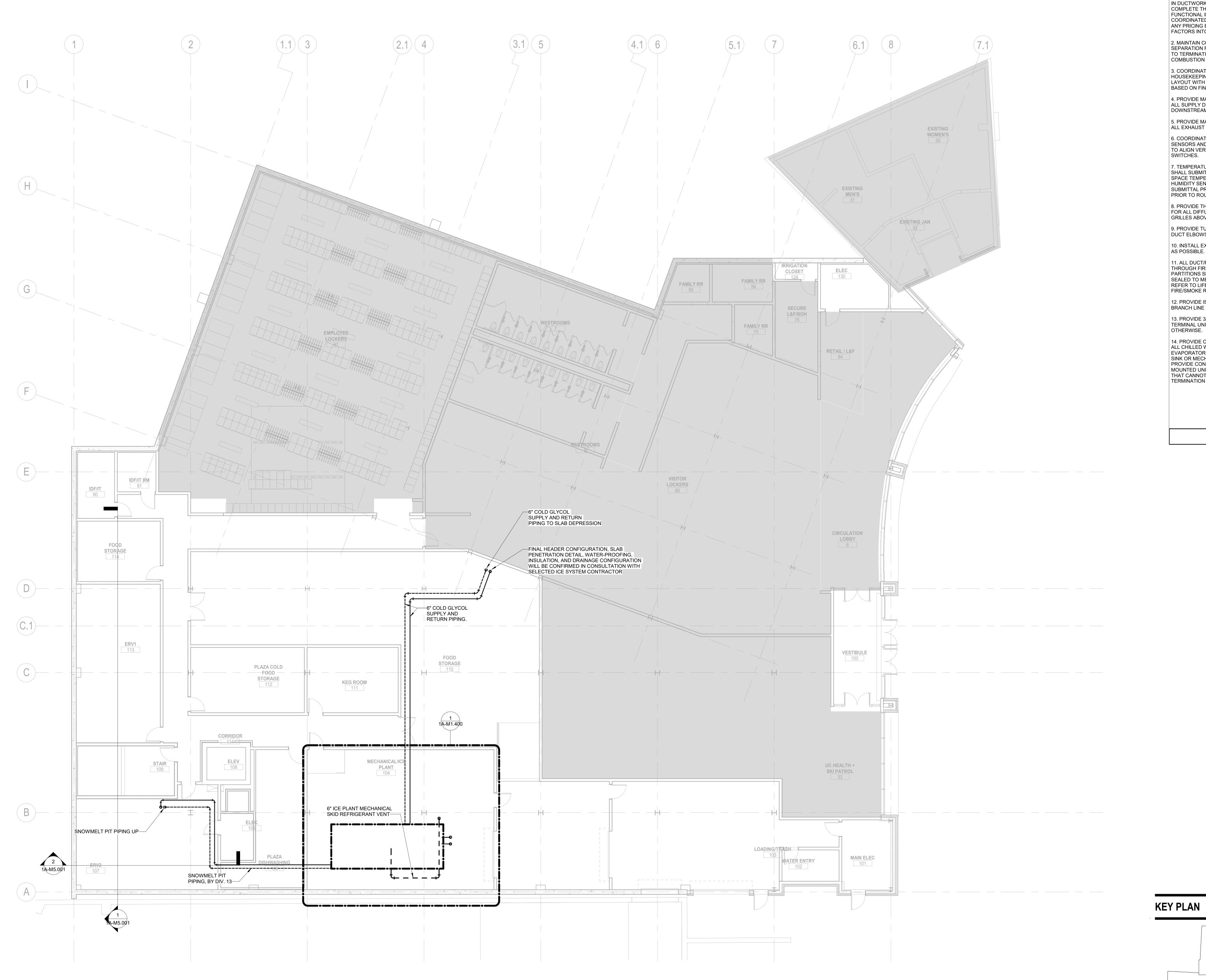
PROMENADE - MECHANICAL PLAN -LEVEL 02

1/8" = 1'-0"

1A-M1.202

© 2018 Gensler

MECHANICAL PLAN - LEVEL 02 PLAZA SCALE: 1/8" = 1'-0"



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE

FACTORS INTO ACCOUNT. 2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.
REFER TO LIFE SAFETY DRAWINGS FOR
FIRE/SMOKE RATING REQUIREMENTS.

12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED

OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

KEYNOTES

ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

MOUNTAIN COMPANY

1225 17th Street Suite 150 Denver, CO 80202

United States

80477

Tel 970.871.9494

Lakewood, CO 80215

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

United States Tel 303.431.6100

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP 141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204 Tel 303.623.5186

MARTIN/MARTIN CONSULTING ENGINEERS 12499 West Colfax Ave.

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

Seal / Signature



SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

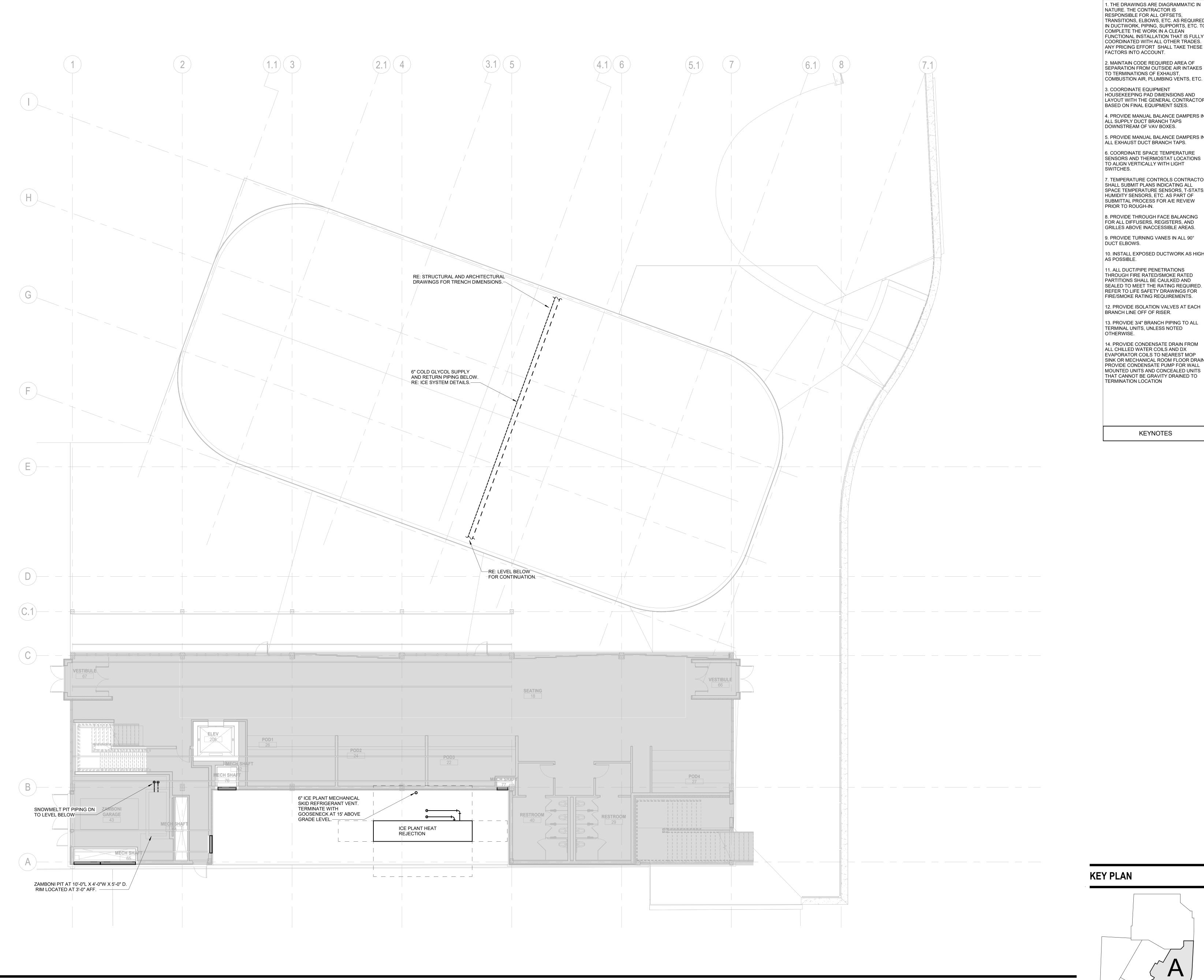
PROMENADE - ICE PLANT PLAN -LEVEL 00

1/8" = 1'-0"

1A-M1.300

© 2018 Gensler

ICE PLANT PLAN - LOWER LEVEL 00 PROMENADE



1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

3. COORDINATE EQUIPMENT
HOUSEKEEPING PAD DIMENSIONS AND
LAYOUT WITH THE GENERAL CONTRACTOR
BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street ALL SUPPLY DUCT BRANCH TAPS Suite 150 DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.
REFER TO LIFE SAFETY DRAWINGS FOR
FIRE/SMOKE RATING REQUIREMENTS.

BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

KEYNOTES

↑LTERR east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

MOUNTAIN COMPANY

Suite 150

Fax 303.825.6823 Denver, CO 80202 United States

80477

Lakewood, CO 80215

United States

Tel 303.431.6100

DESIGNWORKSHOP

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Denver, CO 80204 Steamboat Springs, CO Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS 12499 West Colfax Ave.

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

Tel 303.595.8585

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

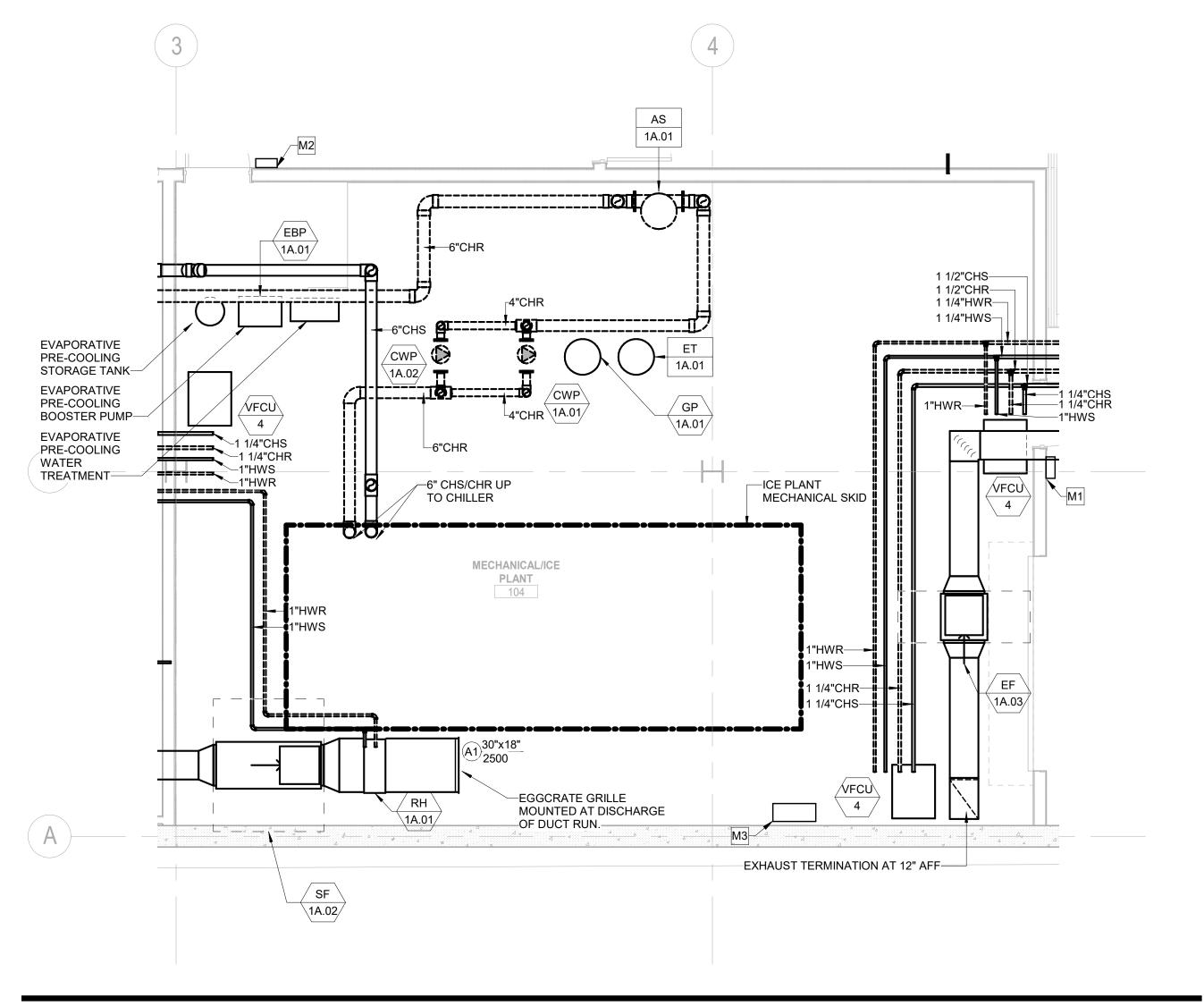
PROMENADE - ICE PLANT PLAN -LEVEL 01

1/8" = 1'-0"

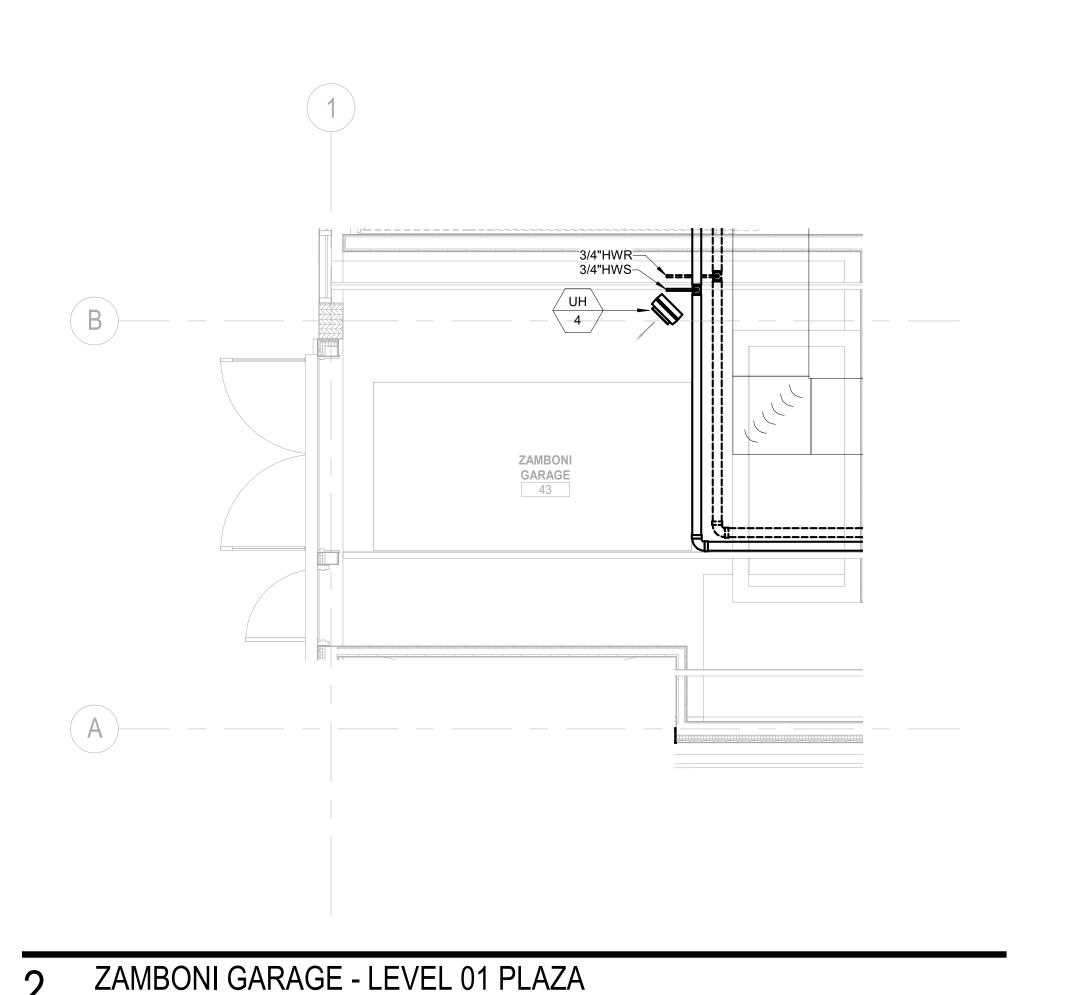
1A-M1.301

© 2018 Gensler

ICE PLANT PLAN - LEVEL 01 PLAZA



MECHANICAL/ICE PLANT ROOM SCALE: 1/4" = 1'-0"



GENERAL NOTES:

1. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE CONTRACTOR IS RESPONSIBLE FOR ALL OFFSETS, TRANSITIONS, ELBOWS, ETC. AS REQUIRED IN DUCTWORK, PIPING, SUPPORTS, ETC. TO COMPLETE THE WORK IN A CLEAN FUNCTIONAL INSTALLATION THAT IS FULLY COORDINATED WITH ALL OTHER TRADES. ANY PRICING EFFORT SHALL TAKE THESE FACTORS INTO ACCOUNT.

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC.

3. COORDINATE EQUIPMENT HOUSEKEEPING PAD DIMENSIONS AND LAYOUT WITH THE GENERAL CONTRACTOR BASED ON FINAL EQUIPMENT SIZES.

4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF VAV BOXES.

5. PROVIDE MANUAL BALANCE DAMPERS IN ALL EXHAUST DUCT BRANCH TAPS. 6. COORDINATE SPACE TEMPERATURE SENSORS AND THERMOSTAT LOCATIONS TO ALIGN VERTICALLY WITH LIGHT SWITCHES.

7. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, HUMIDITY SENSORS, ETC. AS PART OF SUBMITTAL PROCESS FOR A/E REVIEW PRIOR TO ROUGH-IN.

8. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS.

9. PROVIDE TURNING VANES IN ALL 90° DUCT ELBOWS.

10. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE. 11. ALL DUCT/PIPE PENETRATIONS THROUGH FIRE RATED/SMOKE RATED PARTITIONS SHALL BE CAULKED AND

SEALED TO MEET THE RATING REQUIRED. REFER TO LIFE SAFETY DRAWINGS FOR FIRE/SMOKE RATING REQUIREMENTS. 12. PROVIDE ISOLATION VALVES AT EACH

BRANCH LINE OFF OF RISER. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMINAL UNITS, UNLESS NOTED OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL CHILLED WATER COILS AND DX EVAPORATOR COILS TO NEAREST MOP SINK OR MECHANICAL ROOM FLOOR DRAIN. PROVIDE CONDENSATE PUMP FOR WALL MOUNTED UNITS AND CONCEALED UNITS THAT CANNOT BE GRAVITY DRAINED TO TERMINATION LOCATION

KEYNOTES

- REFRIGERANT LEAK DETECTION SYSTEM REMOTE MONITORING
- REFRIGERANT LEAK DETECTION SYSTEM REMOTE MONITORING
- REFRIGERANT LEAK MONITORING SYSTEM. RE: SPECIFICATION 13 10 61 ICE RINK REFRIGERATION AND PIPING.

ALTERRA east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

1225 17th Street Suite 150 Denver, CO 80202

United States

80477

Tel 970.871.9494

12499 West Colfax Ave.

Lakewood, CO 80215

United States

Tel 303.431.6100

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204 Tel 303.623.5186

MARTIN/MARTIN CONSULTING ENGINEERS

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

Seal / Signature



SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

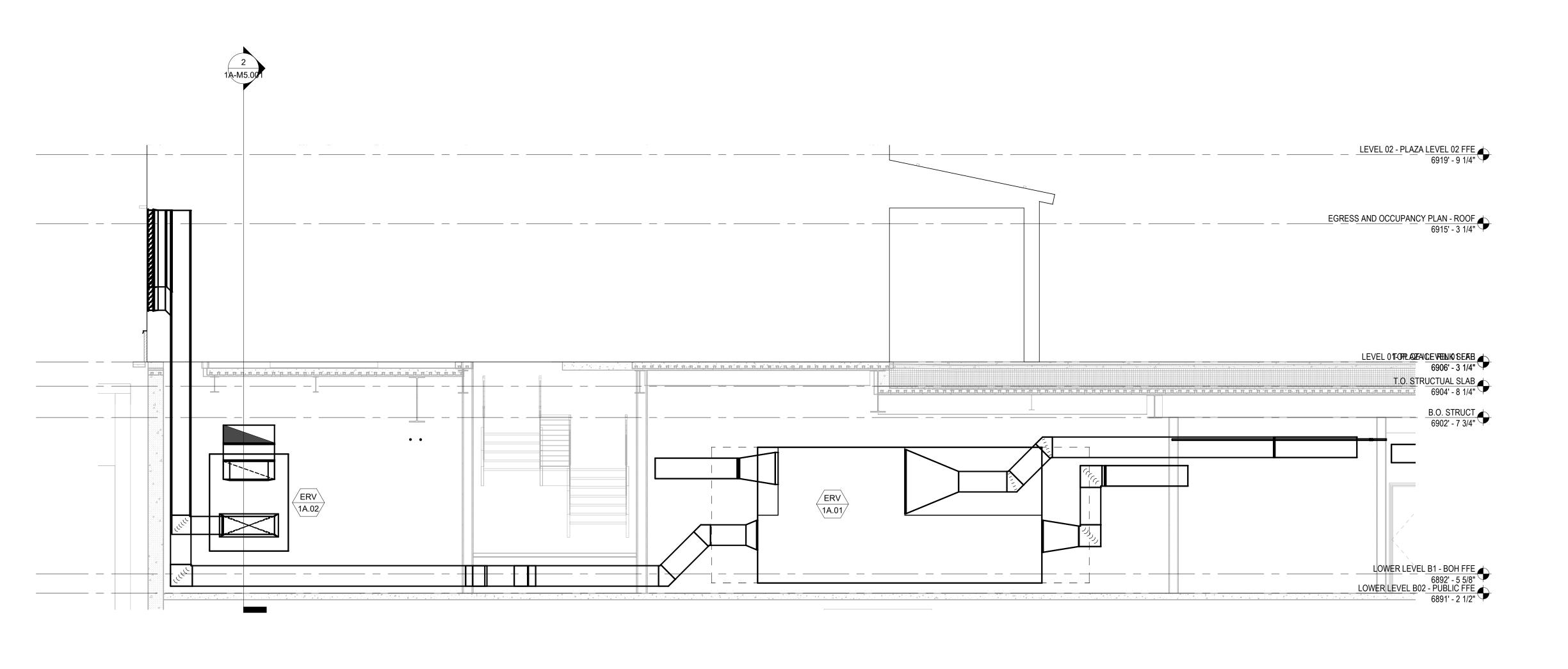
PROMENADE - MECHANICAL ENLARGED PLANS

1/4" = 1'-0"

1A-M1.400

© 2018 Gensler

KEY PLAN



PROMENADE MECHANICAL SECTION 1 SCALE: 1/4" = 1'-0"

LEVEL 02 - PAZALEVEL 02 FTE STUTY - 9 M2 - 9

PROMENADE MECHANICAL SECTION 2

SCALE: 1/4" = 1'-0"



ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 United States

nited States

IARK INSULTANTS, INC.

DESIGNWORKSHOP

 141 9th Street
 1390 Lawrence Street

 PO Box 774943
 Suite 100

 Steamboat Springs, CO
 Denver, CO 80204

 80477
 Tel 303.623.5186

 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS ENGINE

12499 West Colfax Ave. Lakewood, CO 80215 United States Tel 303.431.6100

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

Tel 303.595.8585 Fax 303.825.6823

△ Date Description

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



Project Name

SSRC | BASE AREA IMPROVEMENTS

Project Number 003.7835.000

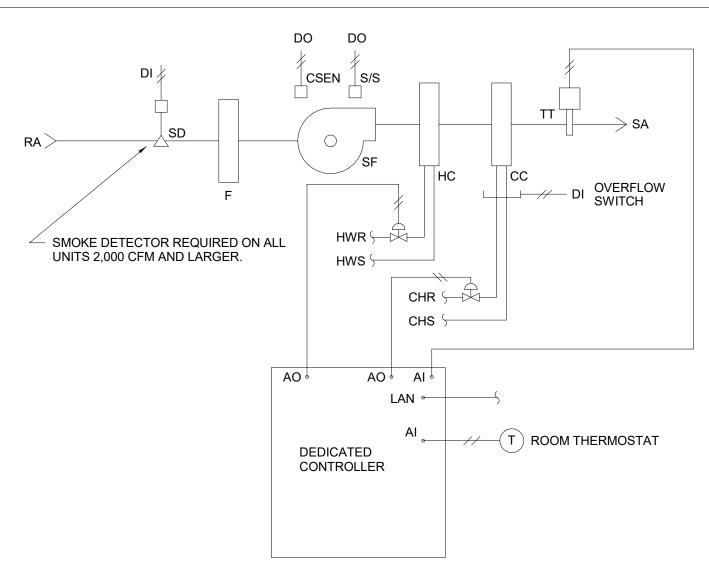
Description
PROMENADE - MECHANICAL

Scale

SECTIONS

1/4" = 1'-0"

1A-M5.001



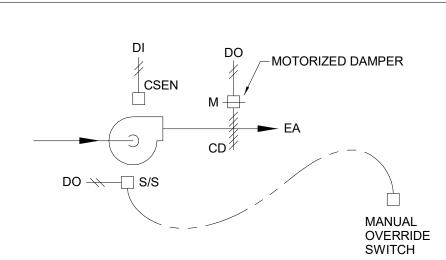
D ICE PLANT FAN COIL UNIT CONTROL

SEQUENCE OF OPERATION:

- 1. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE FAN COIL UNIT. POINTS REQUIRED TO EXECUTE THIS SEQUENCE SHALL BE COORDINATED BETWEEN THE EQUIPMENT PROVIDER AND TEMPERATURE CONTROLS CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. SUBMIT LIST OF ITEMS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO EXECUTE THIS SEQUENCE.
- B. OCCUPIED MODE: 1. WHEN THE UNIT IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE INTERMITTENTLY. THE SUPPLY FAN SHALL DELIVER CONSTANT AIRFLOW. COOLING VALVE AND HEATING VALVE (WHERE APPLICABLE) SHALL MODULATE IN SEQUENCE TO MAINTAIN SPACE TEMPERATURE SETPOINT. 2. UNITS ARE INTENDED TO REMAIN IN OCCUPIED MODE 24 HOURS PER DAY, 7 DAYS PER WEEK,
- C. UNOCCUPIED MODE: 1. WHEN THE UNIT ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, COOLING CONTROL VALVE SHALL CLOSE, AND HEATING CONTROL VALVE SHALL CLOSE.
- D. FAN SAFETY CONTROLS: 1. DE-ENERGIZE THE SUPPLY FAN WHENEVER THE OVERFLOW SENSOR HAS TRIPPED OR SUPPLY FAN STATUS INDICATES A FAILURE (AFTER A TWO-MINUTE DELAY). MANUAL RESET REQUIRED FOR ALL FAILURES. 2. ALARM THE BMS WITH THE APPROPRIATE ALARM MESSAGE.
- E. SMOKE DETECTION SHUTDOWN: 1. UNITS 2,000 CFM AND LARGER: WHEN SMOKE IS DETECTED AT THE RETURN AIR INLET, THE SUPPLY FAN SHALL BE DE-ENERGIZED, THE COOLING SHALL BE DISABLED, AND HEATING SHALL BE DISABLED.
- F. REFRIGERANT LEAK DETECTION: 1. WHEN A REFRIGERANT LEAK IS DETECTED IN THE ROOM, THE UNIT SHALL CONTINUE IN CURRENT OPERATING MODE.
- G. SPACE TEMPERATURE CONTROL: 1. PROVIDE A DISCHARGE AIR TEMPERATURE SENSOR FOR EQUIPMENT MONITORING. 2. PROVIDE A DEAD-BAND BETWEEN COOLING AND HEATING WHERE THE COOLING AND HEATING

ARE DISABLED AND THE SUPPLY FAN SHALL BE OFF.

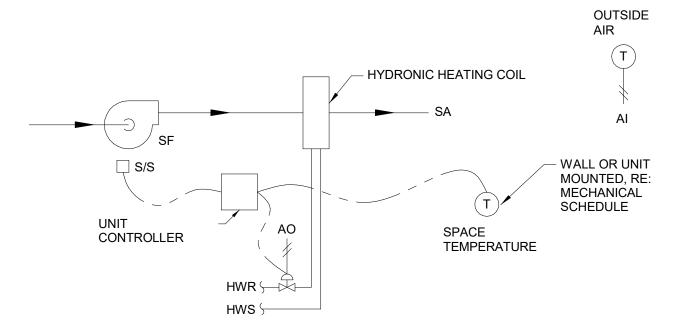
- H. HEATING CONTROL: 1. THE HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE HEATING SETPOINT. HEATING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.
- I. COOLING CONTROL: 1. THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE COOLING SETPOINT. COOLING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.



LOADING DOCK EXHAUST FAN CONTROL

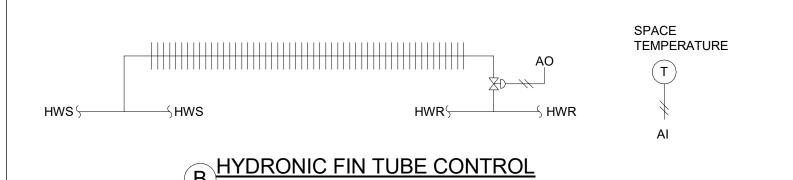
- A. FAN SHALL BE INTERLOCKED WITH ENERGY RECOVERY VENTILATOR SERVING SAME AREA. MOTORIZED DAMPER SHALL OPEN AND FAN SHALL BE ENERGIZED WHENEVER ASSOCIATED
- ENERGY RECOVERY VENTILATOR IS OPERATING. B. PROVIDE WALL MOUNTED OVERRIDE SWITCH TO MANUALLY START THE FAN AND OPEN THE MOTORIZED DAMPER. WALL MOUNTED OVERRIDE SWITCH TO BE LOCATED IN LOADING/TRASH AREA NEAR EXTERIOR ENTRY DOOR. SWITCH SHALL BE LABELED WITH TWO POSITIONS:

"MANUAL ON" AND "AUTO-BMS CONTROL".

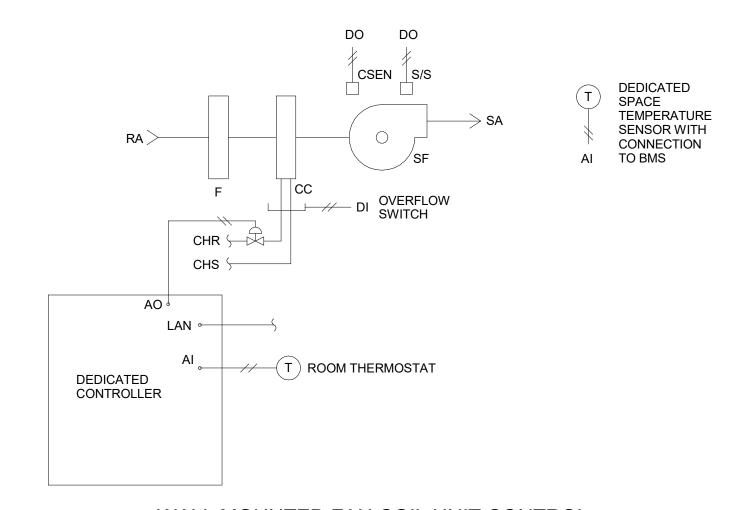


HYDRONIC CABINET UNIT HEATER/ HYDRONIC UNIT HEATER CONTROL

- A. THERMOSTAT SHALL CYCLE FAN & OPEN HEATING WATER VALVE TO MAINTAIN SPACE SETPOINT. HEATING VALVE POSITION TO BE REPORTED TO THE BMS AS PERCENTAGE OPEN.
- B. WHERE REMOTE MOUNTED THERMOSTAT IS INDICATED, PROVIDE CONTROL TRANSFORMER AND LOW VOLTAGE THERMOSTAT BY TEMPERATURE CONTROLS CONTRACTOR.
- C. ALL HEATERS SERVING BUILDING ENTRY VESTIBULES SHALL BE PROVIDED WITH BMS RELAY TO INTERRUPT POWER AND PREVENT UNIT OPERATION WHEN OUTSIDE AIR IS ABOVE 45 DEGREES F. EACH VESTIBULE THERMOSTAT SHALL BE CONFIGURED TO HEAT THE VESTIBULE TO NO



A. 2-WAY MODULATING CONTROL VALVE SHALL OPEN TO MAINTIAIN SPACE TEMPERATURE HEATING SETPOINT. MULTIPLE SECTIONS MAY BE CONTROLLED VIA THE SAME VALVE WITHIN THE SAME TEMPERATURE ZONE (EXPOSURE). UP TO 50 LINEAL FEET OF FIN TUBE MAY BE CONNECTED TO A SINGLE HEATING WATER CONTROL VALVE. HEATING WATER CONTROL VALVES SHALL OPERATE AS THE FIRST STAGE OF HEATING FOR ASSOCIATED ZONE. HEATING VALVE POSITION TO BE REPORTED TO THE BMS AS PERCENTAGE OPEN.



C WALL MOUNTED FAN COIL UNIT CONTROL

SEQUENCE OF OPERATION:

- A. GENERAL: 1. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE WALL MOUNTED FAN COIL UNIT. POINTS REQUIRED TO EXECUTE THIS SEQUENCE SHALL BE COORDINATED BETWEEN THE EQUIPMENT PROVIDER AND TEMPERATURE CONTROLS CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. SUBMIT LIST OF ITEMS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO EXECUTE THIS SEQUENCE.
- B. OCCUPIED MODE: 1. WHEN THE UNIT IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE INTERMITTENTLY. THE SUPPLY FAN SHALL DELIVER CONSTANT AIRFLOW. COOLING VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- C. UNOCCUPIED MODE: 1. WHEN THE FCU ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF AND THE COOLING CONTROL VALVE SHALL CLOSE.
- D. FAN SAFETY CONTROLS: 1. ALARM THE BMS WHEN SPACE TEMPERATURE RISES ABOVE 95F (ADJ.). ALARM THE BMS WITH APPROPRIATE MESSAGE.
- E. COOLING CONTROL: 1. THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE COOLING SETPOINT.

COOLING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.

CONTROL LEGEND

ABBR DESCRIPTION

ANALOG INPUT AO ANALOG OUTPUT BDD BACKDRAFT DAMPER BTU BTU METER CONTROLLER

CC COOLING COIL CD CONTROL DAMPER CFM AIRFLOW MEASURING SENSOR CHR CHILLED WATER RETURN CHS CHILLED WATER SUPPLY CO2 CARBON DIOXIDE COND CONDENSATE OVERFLOW COV CHANGE OF VALUE

CURRENT SENSOR CSEN DIGITAL INPUT DO DIGITAL OUTPUT DIFFERENTIAL PRESSURE EXHAUST AIR || ES

FAS FIRE ALARM SYSTEM || FC FAIL CLOSED FCU FAN COIL UNIT

FAIL OPEN

ABBR DESCRIPTION

FRN FURNACE FS FLOW SWITCH FIREFIGHTER SMOKE CONTROL PANEL FSPD FAN SPEED

HUMIDITY OR HIGH HEATING COIL HIGH/LOW HUMIDITY SENSOR

HWR HOT WATER RETURN HWS HOT WATER SUPPLY R INTERLOCK RELAY LEVEL OR LOW LAN LOCAL AREA NETWORK CONNECTION

FM FLOW METER

FREEZESTAT

FT FLOW TRANSMITTER

HIGH LIMIT HUMIDITY SWITCH HUMIDITY TRANSMITTER

P-E PNEUMATIC ELECTRIC SWITCH

END SWITCH FILTER ASSEMBLY OR FAIL MOTORIZED CONTROL FIRE ALARM CONTROL PANEL MIN MINIMUM NITROGEN DIOXIDE OUTSIDE AIR OS OCCUPANCY SENSOR SPACE STATIC PRESSURE ABBR DESCRIPTION

SA

PHC PREHEAT COIL PRESSURE TRANSMITTER PZ PIEZOMETER RING RETURN AIR RETURN FAN SPACE TEMPERATURE SENSOR S/S START/STOP

> || sc SPEED CONTROL SMOKE DETECTOR SUPPLY FAN SPT STATIC PRESSURE TRANSMITTER SWITCHING RELAY THERMOSTAT

VFD VARIABLE FREQUENCY DRIVE

TRANSMITTER

SUPPLY AIR

THERMAL MASS METER TIMED OVERRIDE SWITCH TEMPERATURE SENSOR TEMPERATURE TRANSMITTER TEMPERATURE TRANSMITTER W/AVERAGING BULB VALVE

80477 VP VIRTUAL POINT VS VELOCITY SENSOR Tel 970.871.9494 WBT WET BULB TEMPERATURE

MARTIN/MARTIN
CONSULTING ENGINEER

Steamboat Springs, CO

12499 West Colfax Ave. Lakewood, CO 80215 United States Tel 303.431.6100

14143 Denver West Pkwy Suite 300 Golden, CO United States

Tel 303.421.6655

Tel 303.595.8585

Fax 303.825.6823

DESIGNWORKSHOP

1390 Lawrence Street

Denver, CO 80204

Tel 303.623.5186

Suite 100

ALTERRA east west partners

2305 Mount Werner Circle

Gensler

1225 17th Street

Denver, CO 80202

United States

141 9th Street

PO Box 774943

Suite 150

Steamboat Springs, CO 80487

Date Description
 Description

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

MISCELLANEOUS NON-DDC CONTROL

- A. CHEMICAL TREATMENT: PROVIDE REQUIRED FIELD WIRING INTERLOCKS.
- B. MISCELLANEOUS PUMPS: PUMPS SHALL OPERATE PER SCHEDULE AND DRAWINGS. FOR EXAMPLE, RECIRCULATION PUMPS CYCLE TO MAINTAIN DHW TEMPERATURE.

MISCELLANEOUS DDC CONTROL:

- AUTOMATED INTERFACE: PROVIDE WEB-BASED INTERFACE FOR REMOTE ACCESS TO THE BMS. INTERFACE SHALL BE PASSWORD PROTECTED AND SHALL ALLOW FOR FULL CONTROL OF ALL BMS FUNCTIONALITY.
- B. FIRE ALARM SYSTEM INTERFACE: PROVIDE CONNECTION TO FIRE ALARM SYSTEM AND REPORT FIRE ALARM CONDITION AT BMS OPERATOR STATION.
- C. PUMPS SHALL OPERATE PER OTHER APPLICABLE CONTROL SECTIONS. BMS SHALL MONITOR ALL PUMPS INCLUDING GLYCOL FEED PUMPS. DOMESTIC HOT WATER RECIRCULATION PUMP(S)
- D. REFERENCE MECHANICAL EQUIPMENT SCHEDULES (ESPECIALLY "FANS") FOR ADDITIONAL CONTROL SEQUENCES.
- 1. UNLESS NOTED OTHERWISE, PROVIDE START, STOP, AND STATUS AT BMS OPERATOR STATION FOR ALL FANS. PROVIDE STATUS ONLY FOR FANS OPERATED VIA LINE VOLTAGE THERMOSTAT, MANUAL SWITCH, OR LOCAL TIMER. FAN STATUS SHALL BE INDICATED VIA CURRENT SENSOR AT FAN ELECTRICAL CONNECTION. 2. RE: MECHANICAL SCHEDULES FOR ADDITIONAL REQUIREMENTS
- F. ELECTRICAL AND DATA ROOM TEMPERATURE MONITORING: 1. PROVIDE SPACE TEMPERATURE SENSOR IN EACH ELECTRICAL ROOM AND DATA ROOM FOR BMS TEMPERATURE MONITORING AND HIGH/LOW ALARMING.
- G. ELECTRIC HEAT TRACE SYSTEMS: 1. EACH HEAT TRACE SYSTEM SHALL OPERATE UNDER ITS OWN SELF CONTAINED CONTROLS. ALARM BMS WHEN FAILURE US DETECTED AT EACH HEAT TRACE CONTROLLER. ALARMS SHALL BE ADDRESSABLE TO EACH HEAT TRACE SYSTEM. 2. HEAT TRACE SYSTEMS:
- 2.1. PLAZA LEVEL CHILLED WATER SUPPLY/RETURN PIPING TO CHILLER
- H. EXHAUST, RELIEF, AND INTAKE DAMPERS: 1. EXHAUST, RELIEF, AND INTAKE LOCATIONS THAT CONTAIN MOTORIZED DAMPERS SHALL INTERLOCK THE POSITION OF THE DAMPER WITH THE OPERATION OF THE ASSOCIATED EQUIPMENT. WHEN THE EQUIPMENT IS ENABLED, THE DAMPER SHALL BE OPEN, WHEN THE EQUIPMENT IS DISABLED, THE DAMPER SHALL BE CLOSED. ALL DAMPERS TO BE FAST-ACTING OR AN EQUIPMENT DELAY SHALL BE PROVIDED TO PREVENT FULL AIRFLOW PRIOR TO DAMPER REACHING FULL OPEN POSITION.
- H. SUMP LEVEL ALARMS: 1. PROVIDE LEVEL ALARM AT EACH PLUMBING SUMP. ALARM THE BMS WHEN AN OVERFLOW CONDITION EXISTS. ALARM MAY BE EITHER A DEDICATED LEVEL ALARM OR CONNECTION
- TO THE ASSOCIATED SUMP PUMP. 2. SUMP LEVEL ALARMS: 2.1. ELEVATOR SUMPS
- 2.2. SUMP PUMPS
- 2.3. SEWAGE EJECTORS
- ICE SYSTEM: 1. PROVIDE THE FOLLOWING POINTS FROM THE ICE SYSTEM CONTROLS AT THE BMS OPERATOR STATION: SLAB TEMPERATURE (2 LOCATIONS), BRINE SUPPLY TEMPERATURE, REFRIGERANT LEAK DETECTION ALARM.

CONTROL SYSTEM GENERAL NOTES:

- A. THE CONTROL DRAWINGS AND SEQUENCES ARE PROVIDED TO COMMUNICATE A DESIGN INTENT FOR CONTROL OF INDICATED SYSTEMS. ALTERNATIVE CONTROL METHODS MAY BE USED WHERE PRACTICAL OR WHERE NECESSARY TO MEET REQUIRED SYSTEM PERFORMANCE. WHERE ALTERNATIVE CONTROL METHODS ARE USED TO MEET THE DESIGN INTENT, THESE METHODS SHALL BE INDICATED IN SUBMITTAL TO ENGINEER FOR EVALUATION. ENGINEER SHALL DETERMINE IF A SUBMITTED ALTERNATIVE CONTROL METHOD MEETS THE DESIGN INTENT.
- B. ALTHOUGH THE MECHANICAL DRAWINGS MAY INDICATE A PRODUCT AS BASIS OF DESIGN, THE CONTROL DRAWINGS AND SEQUENCES ARE PROVIDED TO INDICATE A DESIGN INTENT FOR THE COMPLETE SYSTEM THAT IS APPLICABLE TO MULTIPLE POTENTIAL PRODUCTS OR MANUFACTURERS. CONTROL METHODS SHALL BE DEVELOPED BY THE TEMPERATURE CONTROLS CONTRACTOR AND/OR EQUIPMENT PROVIDER IN ORDER TO ACHIEVE THE REQUIRED SYSTEM PERFORMANCE.
- **REQUIRED COORDINATION:**
- A. THE DIVISION 23 CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION BETWEEN EQUIPMENT PROVIDERS AND TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO FULLY SATISFY THE DESIGN INTENT. INTERFACE BETWEEN THE BMS AND CONTROLLED EQUIPMENT, INCLUDING ITEMS PROVIDED BY EACH ENTITY, COMMUNICATION PROTOCOL, SIGNAL TYPE, ETC., SHALL BE COORDINATED PRIOR TO RELEASE OF EQUIPMENT FOR PRODUCTION.
- B. THE TEMPERATURE CONTROLS CONTRACTOR SHALL PROVIDE SUBMITTAL DRAWINGS AND PRODUCT DATA FOR THE ENTIRE CONTROL SYSTEM TO ENGINEER FOR REVIEW. THE DIVISION 230900 SUBMITTAL SHALL DISTINGUISH WHERE SPECIFIC SEQUENCE ELEMENTS ARE PROVIDED WITHIN THE BUILDING MANAGEMENT SYSTEM OR WITHIN PACKAGED EQUIPMENT CONTROLLERS. RE: SPECIFICATIONS FOR REQUIREMENTS.
- C. REFER TO SPECIFICATION SECTION 23 05 01 MECHANICAL AND ELECTRICAL COORDINATION.

SEQUENCE OF OPERATION GENERAL NOTES:

- A. ALTHOUGH EACH SEPARATE CONTROL DIAGRAM MAY INDICATE AN OUTDOOR AIR TEMPERATURE SENSOR, OUTDOOR AIR HUMIDITY SENSOR, AND/OR OUTSIDE AIR CARBON DIOXIDE SENSOR, TEMPERATURE CONTROLS CONTRACTOR MAY UTILIZE ONE OF EACH SENSOR AS A COMMON INPUT TO THE SYSTEM FOR USE IN MULTIPLE SEQUENCES. COORDINATE LOCATION WITH ARCHITECT/ENGINEER PRIOR TO INSTALLATION.
- B. PROVIDE INDIVIDUAL INPUTS OR OUTPUTS FOR EACH POINT LISTED IN THE POINTS LISTS OR CONTROL DIAGRAM. PROVIDE ANY ADDITIONAL POINTS NOT LISTED IN THE POINTS LIST OR CONTROL DIAGRAM, BUT REQUIRED TO MEET THE SEQUENCE OF OPERATION, AT NO ADDITIONAL COST TO THE OWNER. ALL ANALOG OUTPUTS SHALL BE 4-20MA, 0-10VDC OR 0-20VDC UNLESS OTHERWISE INDICATED.
- C. ALL SETPOINTS SHALL BE FULLY ADJUSTABLE AT THE OPERATOR WORKSTATION UNLESS
- NOTED OTHERWISE. D. PROVIDE OVERRIDE CONTROL OF ALL POINTS AT THE OPERATOR WORKSTATION UNLESS
- NOTED OTHERWISE OR WHERE PROHIBITED BY EQUIPMENT PACKAGED CONTROLLERS. E. IN THE EVENT OF A POWER OUTAGE OR OTHER MALFUNCTION, THE CURRENTLY ENABLED CONTROLS SEQUENCES SHALL BE MAINTAINED. RE: SPECIFICATIONS. IN ADDITION, CHILLED WATER VALVES SHALL FAIL CLOSED AND HEATING WATER VALVES SHALL FAIL OPEN.

OCCUPANCY SCHEDULES:

- A. THE FOLLOWING SPECIAL OCCUPANCY SCHEDULE MODES ARE HEREBY DEFINED: OCCUPIED MODE
- 2. UNOCCUPIED MODE
- BEING PROGRAMMED TO CONFORM TO ANY OF THE ABOVE SEQUENCES. C. THE BMS SHALL STAGE AIR HANDLERS TO/FROM OCCUPIED MODE TO MINIMIZE SUDDEN

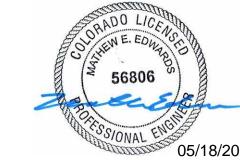
B. ANY DEVICE UTILIZING ON/OFF CONTROL OR SCHEDULING VIA BMS SHALL BE CAPABLE OF

CHANGES IN SYSTEM FLOW REQUIREMENTS. **INITIAL SPACE THERMOSTAT SEPOINTS**

- A. INITIAL SPACE THERMOSTAT SETPOINTS SHALL BE AS FOLLOWS:
- OCCUPIED SPACES:
- COOLING: 76F HEATING: 70F
- 2. MECHANICAL AND ELECTRICAL ROOMS: COOLING: 80F
- **HEATING: 65F** 3. BUILDING ENTRY VESTIBULES:
- **HEATING: 60F** 4. MISCELLANEOUS HEATING-ONLY AREAS: **HEATING: 65F**

ALL SPACE THERMOSTAT SETPOINTS CORRESPONDING TO EQUIPMENT CONTROLLED BY THE BMS SHALL BE ADJUSTABLE FROM THE BMS OPERATOR STATION.

Seal / Signature



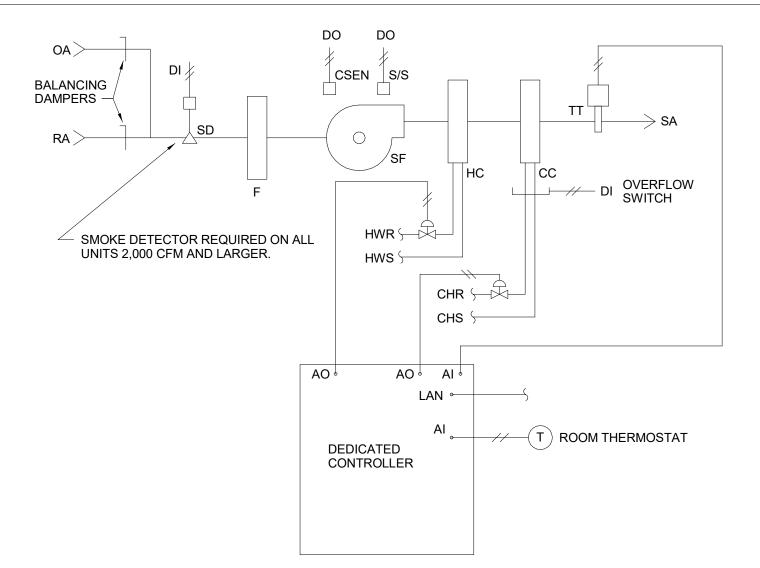
SSRC | BASE AREA **IMPROVEMENTS**

Project Number 003.7835.000

PROMENADE - MECHANICAL CONTROLS

NOT TO SCALE

1A-M7.001



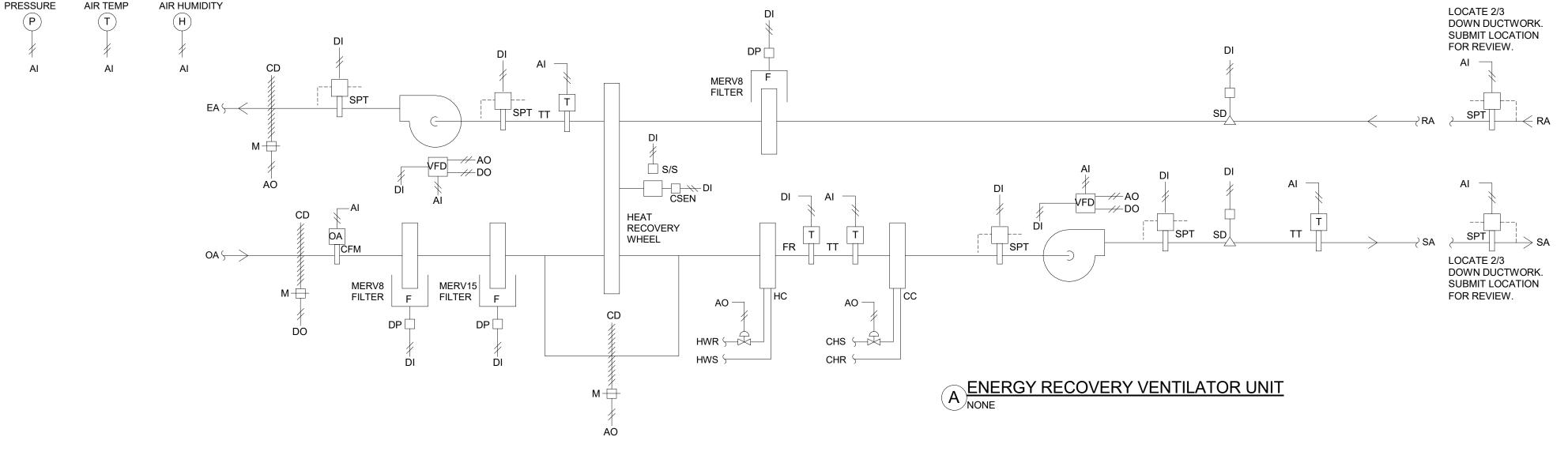
A FAN COIL UNIT CONTROL NONE

SEQUENCE OF OPERATION:

MAINTAIN SPACE TEMPERATURE.

HEATING SETPOINT.

- 1. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE FAN COIL UNIT. POINTS REQUIRED TO EXECUTE THIS SEQUENCE SHALL BE COORDINATED BETWEEN THE EQUIPMENT PROVIDER AND TEMPERATURE CONTROLS CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. SUBMIT LIST OF ITEMS TO BE PROVIDED BY THE TEMPERATURE CONTROLS CONTRACTOR IN ORDER TO EXECUTE THIS SEQUENCE.
- 1. WHEN THE FCU IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. THE SUPPLY FAN SHALL DELIVER CONSTANT AIRFLOW. COOLING VALVE AND HEATING VALVE SHALL MODULATE IN SEQUENCE TO MAINTAIN DISCHARGE AIR TEMPERATURE. DISCHARGE AIR TEMPERATURE SHALL BE RESET AS NECESSARY TO
- C. UNOCCUPIED MODE: 1. WHEN THE FCU ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, COOLING CONTROL VALVE SHALL CLOSE, AND HEATING CONTROL VALVE SHALL CLOSE. 2. SPACE TEMPERATURE SHALL BE SETBACK AND MAINTAINED BELOW A 5F (ADJ.) OFFSET TO OCCUPIED MODE COOLING SETPOINT AND ABOVE A 10F (ADJ.) OFFSET TO OCCUPIED MODE
- 3. WHEN COOLING IS REQUIRED IN THE SPACE, THE SUPPLY FAN SHALL CYCLE ON AND COOLING SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE. 4. WHEN HEATING IS REQUIRED IN THE SPACE, THE SUPPLY FAN SHALL CYCLE ON AND HEATING
- SHALL MODULATE TO FULL. 5. UPON SPACE TEMPERATURE REACHING UNOCCUPIED MODE SETPOINT, UNIT SHALL CYCLE
- D. OPTIMUM START WARM-UP MODE: 1. PRIOR TO SCHEDULED OCCUPANCY, IF THE SPACE TEMPERATURE IS LESS THAN THE MORNING WARM-UP SETPOINT OF 70F (ADJ.), THE OPTIMUM START WARM-UP SEQUENCE SHALL BE INITIATED.
- 2. THE CONTROL SYSTEM SHALL CALCULATE THE REQUIRED TIME TO BRING SPACE TEMPERATURE TO OCCUPIED HEATING SETPOINT BASED ON THE CURRENT SPACE TEMPERATURE AND THE CURRENT OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS
- 3. UPON INITIATING OPTIMUM START WARM-UP MODE, THE SUPPLY FAN AND HEATING SHALL MODULATE AS OUTLINED IN OCCUPIED MODE SEQUENCE TO MAINTAIN SPACE TEMPERATURE
- 4. COOLING SHALL BE LOCKED OUT. 5. REVERT TO OCCUPIED MODE WHEN SPACE TEMPERATURE HAS REACHED OCCUPIED HEATING SETPOINT.
- E. OPTIMUM START COOL-DOWN MODE: 1. PRIOR TO SCHEDULED OCCUPANCY, IF THE SPACE TEMPERATURE IS MORE THAN THE MORNING COOL-DOWN SETPOINT OF 78F (ADJ.), THE OPTIMUM START COOL-DOWN SEQUENCE SHALL BE INITIATED.
- 2. THE CONTROL SYSTEM SHALL CALCULATE THE REQUIRED TIME TO BRING SPACE TEMPERATURE TO OCCUPIED COOLING SETPOINT BASED ON THE CURRENT SPACE TEMPERATURE AND THE CURRENT OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS
- 3. UPON INITIATING OPTIMUM START COOL-DOWN MODE, THE SUPPLY FAN AND COOLING SHALL MODULATE AS OUTLINED IN OCCUPIED MODE SEQUENCE TO MAINTAIN SPACE TEMPERATURE 4. HEATING SHALL BE LOCKED OUT.
- 5. REVERT TO OCCUPIED MODE WHEN SPACE TEMPERATURE HAS REACHED OCCUPIED COOLING SETPOINT.
- F. FAN SAFETY CONTROLS:
- 1. DE-ENERGIZE THE SUPPLY FAN WHENEVER THE OVERFLOW SENSOR HAS TRIPPED OR SUPPLY FAN STATUS INDICATES A FAILURE (AFTER A TWO-MINUTE DELAY). MANUAL RESET REQUIRED FOR ALL FAILURES.
- 2. ALARM THE BMS WITH THE APPROPRIATE ALARM MESSAGE.
- G. SMOKE DETECTION SHUTDOWN: 1. UNITS 2,000 CFM AND LARGER: WHEN SMOKE IS DETECTED AT THE RETURN AIR INLET, THE
- SUPPLY FAN SHALL BE DE-ENERGIZED, THE COOLING SHALL BE DISABLED, AND HEATING SHALL BE DISABLED. 2. WHEN A FAN COIL UNIT HAS SHUT DOWN DUE TO SMOKE DETECTION, THE ASSOCIATED
- VENTILATION SYSTEM SERVING THE UNIT SHALL BE SHUT DOWN. PROVIDE ADDRESSABLE ALARM AT THE BMS OPERATOR STATION. 3. WHEN THE VENTILATION SYSTEM SERVING THE UNIT HAS SHUT DOWN DUE TO SMOKE DETECTION, THE FCU SUPPLY FAN SHALL BE DE-ENERGIZED, COOLING SHALL BE DISABLED,
- AND HEATING SHALL BE DISABLED. H. DISCHARGE AIR TEMPERATURE:
- 1. PROVIDE A CASCADE RESET (VIA PID LOOP) OF DISCHARGE AIR TEMPERATURE TO MAINTAIN
- 2. PROVIDE A DEAD-BAND BETWEEN COOLING AND HEATING WHERE THE COOLING AND HEATING ARE DISABLED AND THE SUPPLY FAN SHALL REMAIN ENERGIZED.
- I. HEATING CONTROL: 1. THE HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN THE DAT. HEATING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.
- J. COOLING CONTROL: 1. THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN THE DAT. COOLING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF.



SEQUENCE OF OPERATION:

SELF AVERAGING MANIFOLD.

- A. CONFIGURATION, RE: SCHEDULE
- 1. WHEN THE ERV IS IN THE OCCUPIED MODE, THE SUPPLY AND RETURN FANS SHALL OPERATE CONTINUOUSLY. THE SUPPLY FAN VFD SHALL MODULATE TO MAINTAIN THE SUPPLY DUCT STATIC PRESSURE AND THE EXHAUST FAN VFD SHALL MODULATE TO MAINTAIN THE EXHAUST DUCT STATIC PRESSURE. CHILLED WATER CONTROL VALVE, HEATING WATER CONTROL VALVE, AND HEAT RECOVERY WHEEL SHALL MODULATE IN SEQUENCE TO MAINTAIN DISCHARGE AIR TEMPERATURE (DAT). THE ERV SHALL ENTER OCCUPIED MODE BASED ON
- OFF, THE HEAT WHEEL SHALL STOP, CHILLED WATER CONTROL VALVE SHALL CLOSE, AND THE EA DAMPER SHALL CLOSE. 2. WHEN TEMPERATURE DOWNSTREAM OF THE HEATING COIL FALLS TO 45F (ADJ.), HEATING
- D. FAN SAFETY CONTROLS: 1. DE-ENERGIZE THE SUPPLY AND EXHAUST FANS WHENEVER EITHER SMOKE DETECTOR HAS TRIPPED, HEAT RECOVERY ROTATION DETECTION FAILS, OR A FAN STATUS INDICATES A
- FAILURE (AFTER A TWO-MINUTE DELAY). SMOKE DETECTORS AND FAN FAILURES REQUIRE A 2. DE-ENERGIZE THE SUPPLY AND EXHAUST FANS WHEN THE SUPPLY FAN DISCHARGE STATIC
- PRESSURE HIGH-LIMIT REACHES 2.0 INCHES WC (ADJ.). SUPPLY FAN STATIC PRESSURE HIGH-LIMIT REACHES 3.0 INCHES WC (ADJ.)
- E. VFD CONTROL: 1. WHEN THE SUPPLY AND EXHAUST FANS ARE TURNED ON, EACH VFD SHALL SLOWLY RAMP UP TO SETPOINT AND MODULATE TO MAINTAIN THE CORRESPONDING DUCT STATIC PRESSURE. THE STATIC PRESSURE SENSORS SHALL BE LOCATED BY THIS DIVISION. 2. SUBMIT SENSOR LOCATIONS TO ENGINEER FOR REVIEW. 3. SENSING DEVICE SHALL BE MULTIPLE POINT, NON-PULSATING STATIC SENSING SECTION WITH
- F. OUTSIDE AIR MONITORING AND TRENDING: MEASURING STATION LOCATED AT THE INTAKE OF THE UNIT.

- G. BUILDING PRESSURE CONTROL
- 1. ZONE LEVEL EXHAUST AND VENTILATION: 1.1. EACH EXHAUSTED AREA IS PROVIDED WITH A CONSTANT VOLUME EAV BOX FOR PRESSURE INDEPENDENT EXHAUST AIRFLOW CONTROL. EACH VENTILATED AREA IS PROVIDED WITH EITHER A CONSTANT VOLUME OR A VARIABLE VOLUME VAV BOX FOR PRESSURE INDEPENDENT VENTILATION AIRFLOW CONTROL AND BUILDING PRESSURE
- 1.2. ALL EXHAUST EAV BOXES SHALL MODULATE TO MAINTAIN FIXED EXHAUST AIRFLOW RATES INDICATED. 1.3. SUPPLY VAV BOXES LOCATED IN THE SAME SPACE AS EAV BOXES SHALL BE CONSTANT VOLUME AND SHALL MODULATE TO MAINTAIN FIXED VENTILATION SUPPLY AIRFLOW.
- 1.4. SUPPLY VAV BOXES LOCATED IN AREAS THAT ARE NOT PROVIDED WITH EAV BOXES (HEALTH CLINIC, FOOD STORAGE, ETC.) SHALL MODULATE TOGETHER TO MAINTAIN POSITIVE BUILDING STATIC PRESSURE SETPOINT OF 0.03" W.C. AS MEASURED IN THE HEALTH CLINIC SPACE. SUPPLY VAV BOXES SHALL MODULATE AS A PERCENTAGE OF DESIGN AIRFLOW UP TO A MAXIMUM OF 125% OF DESIGN CFM.
- 2.1. PRIOR TO EQUIPMENT STARTUP, ENSURE VENTILATION SYSTEM HAS ADEQUATE OPENINGS ONTO EACH AREA TO ALLOW FOR VENTILATION SUPPLY AIR FOR TESTING. DO NOT OPERATE THE ERV AT AIRFLOWS HIGHER THAN THE CONNECTED VAV BOXES CAN
- 1. COOLING MODE: WHEN OUTSIDE AIR RISES ABOVE 65F (ADJ.), THE UNIT SHALL ENTER
- 1.1. DISCHARGE AIR DRY BULB TEMPERATURE SHALL FLOAT FROM A MINIMUM OF 65F (ADJ.) TO A MAXIMUM DISCHARGE AIR DRY BULB TEMPERATURE SETPOINT OF 70F (ADJ.). WHEN DISCHARGE AIR IS BETWEEN MINIMUM AND MAXIMUM, CHILLED WATER CONTROL VALVE SHALL CLOSE, THE HEAT WHEEL SHALL BE DISABLED, AND THE OUTSIDE AIR BYPASS DAMPER SHALL BE OPEN. IF DISCHARGE AIR TEMPERATURE RISES ABOVE SETPOINT, THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN DISCHARGE AIR DRY BULB
- HEATING MODE. 2.1. THE BMS SHALL CONTROL HEATING WATER CONTROL VALVE TO ENSURE UNIT DISCHARGE AIR DRY BULB TEMPERATURE DOES NOT FALL BELOW 65F (ADJ.) MINIMUM. 2.2. THE BMS SHALL RESET DISCHARGE AIR DRY BULB TEMPERATURE SETPOINT ACCORDING
- 2.3. HEATING WATER CONTROL VALVE AND HEAT WHEEL SHALL BE ENABLED TOGETHER IN
- 2.4. 3. IF DISCHARGE AIR DRY BULB TEMPERATURE DROPS BELOW 40F (ADJ.), DE-ENERGIZE

- COOLING CONTROL:
- 1. STAGE 1 CHILLED WATER CONTROL VALVE: 1.1. WHEN DISCHARGE AIR DRY BULB TEMPERATURE RISES ABOVE SETPOINT, CHILLED WATER COOLING SHALL BE ENABLED AND SHALL MODULATE TO MAINTAIN DISCHARGE AIR DRY BULB TEMPERATURE SETPOINT.
- 2. STAGE 2 HEAT WHEEL CONTROL: 2.1. WHEN OUTSIDE AIR TEMPERATURE IS GREATER THAN EXHAUST AIR TEMPERATURE, THE HEAT WHEEL SHALL ROTATE AT CONSTANT SPEED AND THE OUTSIDE AIR BYPASS
- DAMPER SHALL BE CLOSED. 2.2. WHEN HEAT WHEEL IS DISABLED, HEAT WHEEL SHALL STOP AND THE OUTSIDE AIR
- BYPASS DAMPER SHALL BE OPEN. 3. STAGE 1 AND STAGE 2 SHALL BE ENABLED TOGETHER WHEN STAGE 2 CONDITIONS ARE MET. 4. COOLING SHALL BE DISABLED IF THE UNIT IS IN HEATING MODE, EITHER THE SUPPLY OR EXHAUST FAN IS OFF, OR THE DISCHARGE AIR SENSORS HAVE FAILED.
- HEATING CONTROL:
- 1. STAGE 1 HEAT WHEEL CONTROL: 1.1. UPON A CALL FOR HEATING, THE HEAT WHEEL SHALL ROTATE AT CONSTANT SPEED AND
- THE OUTSIDE AIR BYPASS DAMPER SHALL BE CLOSED. 1.2. FROST CONTROL: WHEN THE EXHAUST AIR TEMPERATURE LEAVING THE HEAT WHEEL FALLS TO THE FROST PROTECTION SETPOINT OF 25F (ADJ.), THE HEAT WHEEL SHALL CONTINUE TO ROTATE AT CONSTANT SPEED AND THE OUTSIDE AIR BYPASS DAMPER SHALL SLOWLY OPEN AND MODULATE TO MAINTAIN EXHAUST AIR FROST PROTECTION SETPOINT. WHEN THE OUTSIDE AIR BYPASS DAMPER HAS MODULATED TO FULL OPEN POSITION AND THE EXHAUST AIR TEMPERATURE LEAVING THE HEAT WHEEL FALLS BELOW 20F (ADJ.) FOR 5 MINUTES, THE HEAT WHEEL SHALL STOP AND THE OUTSIDE AIR BYPASS DAMPER SHALL CLOSE. WHEN THE OUTSIDE AIR TEMPERATURE RISES TO 20F (ADJ.), THE HEAT WHEEL SHALL RUN AT CONSTANT SPEED AND FROST CONTROL MODE SHALL BE
- 2. STAGE 2 HEATING WATER CONTROL VALVE:

ALARMS SHALL BE ADDRESSABLE TO EACH FILTER.

- 2.1. WHEN STAGE 1 HEAT WHEEL CONTROL IS ENABLED AND DISCHARGE AIR DRY BULB TEMPERATURE SETPOINT IS NOT MET, THE HEATING WATER CONTROL VALVE SHALL OPEN AND MODULATE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. 3. HEATING SHALL BE DISABLED IF EITHER THE SUPPLY OR EXHAUST FAN IS OFF.
- K. ADDITIONAL ALARMS: 1. ALARM THE BMS WHEN FILTER PRESSURE DROP EXCEEDS DIRTY FILTER SETPOINT. FILTER

DEDICATED CONTROLLER •—————(CD) ROOM CO2 (SELECT LOCATIONS ONLY) RE: TUBING

A VENTILATION SUPPLY VARIABLE AIR VOLUME (VAV) BOX NONE

SEQUENCE OF OPERATION:

- A. OCCUPIED MODE:
- . CONSTANT VOLUME UNITS: WHEN AIR HANDLING SYSTEM IS IN OCCUPIED MODE, UNIT SHALL MODULATE TO MAINTAIN CONSTANT AIRFLOW. 2. UNIT SHALL REPORT CONTROL DAMPER POSITION AND PRIMARY AIRFLOW AS SEPARATE VALUES TO THE BMS. REPORT DAMPER POSITION AS PERCENTAGE OPEN. REPORT PRIMARY AIRFLOW IN
- B. UNOCCUPIED MODE: 1. UNIT VOLUME DAMPER SHALL BE FULLY CLOSED.
- 1. ALARM THE TIME, VAV BOX DESIGNATION, AND
- DURATION OF ALL VAV OVER-RIDES.

LAN • DEDICATED CONTROLLER HI LOW TUBING

EXHAUST & VENTILATION RELIEF

1. CONSTANT VOLUME UNITS: WHEN AIR HANDLING

A. OCCUPIED MODE:

SEQUENCE OF OPERATION:

SYSTEM IS IN OCCUPIED MODE, UNIT SHALL MODULATE TO MAINTAIN CONSTANT AIRFLOW. 2. UNIT SHALL REPORT CONTROL DAMPER POSITION AND PRIMARY AIRFLOW AS SEPARATE VALUES TO THE BMS. REPORT DAMPER POSITION AS

PERCENTAGE OPEN. REPORT PRIMARY AIRFLOW IN

- B. UNOCCUPIED MODE: 1. UNIT VOLUME DAMPER SHALL BE FULLY CLOSED.
- ALARMS:
- 1. ALARM THE TIME, VAV BOX DESIGNATION, AND DURATION OF ALL VAV OVER-RIDES.

Seal / Signature



ALTERRA east west partners

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP

1390 Lawrence Street

14143 Denver West Pkwy

Denver, CO 80204 Tel 303.623.5186

Suite 100

Suite 300

Golden, CO

United States

Tel 303.421.6655

2305 Mount Werner Circle

Gensler

1225 17th Street

Denver, CO 80202 United States

141 9th Street

PO Box 774943

Tel 970.871.9494

Steamboat Springs, CO

12499 West Colfax Ave. Lakewood, CO 80215

United States

Tel 303.431.6100

MARTIN/MARTIN

Date Description
 Description

PERMIT

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

Suite 150

Steamboat Springs, CO 80487

SSRC | BASE AREA **IMPROVEMENTS**

Project Number 003.7835.000

PROMENADE - MECHANICAL

CONTROLS

NOT TO SCALE

1A-M7.002

© 2018 Gensler

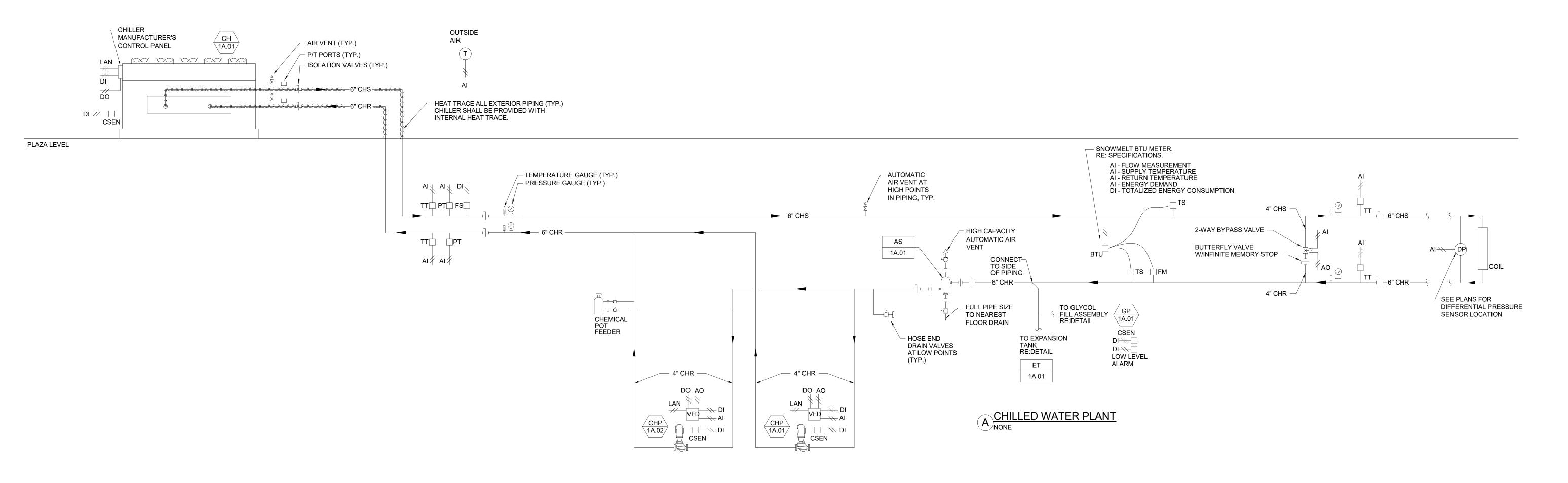
SPACE STATIC OUTSIDE AIR TEMP AIR HUMIDITY

- TIME OF DAY SCHEDULE AT BMS OPERATOR STATION. 1. WHEN THE ERV IS IN THE UNOCCUPIED MODE THE SUPPLY AND EXHAUST FANS SHALL BE HEATING WATER CONTROL VALVE SHALL CLOSE, THE OUTSIDE AIR DAMPER SHALL CLOSE,
- WATER VALVE SHALL MODULATE TO FULL OPEN AND REMAIN OPEN UNTIL TEMPERATURE DOWNSTREAM OF THE HEATING COIL RISES ABOVE SETPOINT.
- PRESSURE HIGH-LIMIT REACHES 4.0 INCHES WC (ADJ.). 3. DE-ENERGIZE THE SUPPLY AND EXHAUST FANS WHEN THE EXHAUST FAN DISCHARGE STATIC 4. PROVIDE SUCTION STATIC PRESSURE SWITCH AT INLET OF SUPPLY FAN. SWITCH TO BE TIED TO SUPPLY FAN START CIRCUIT. DE-ENERGIZE SUPPLY AND EXHAUST FAN WHEN SUCTION
- 5. ALARM THE BMS WITH THE APPROPRIATE ALARM MESSAGE.
- 1. MEASURE AND TREND THE OUTDOOR AIRFLOW THROUGH THE OUTDOOR AIRFLOW

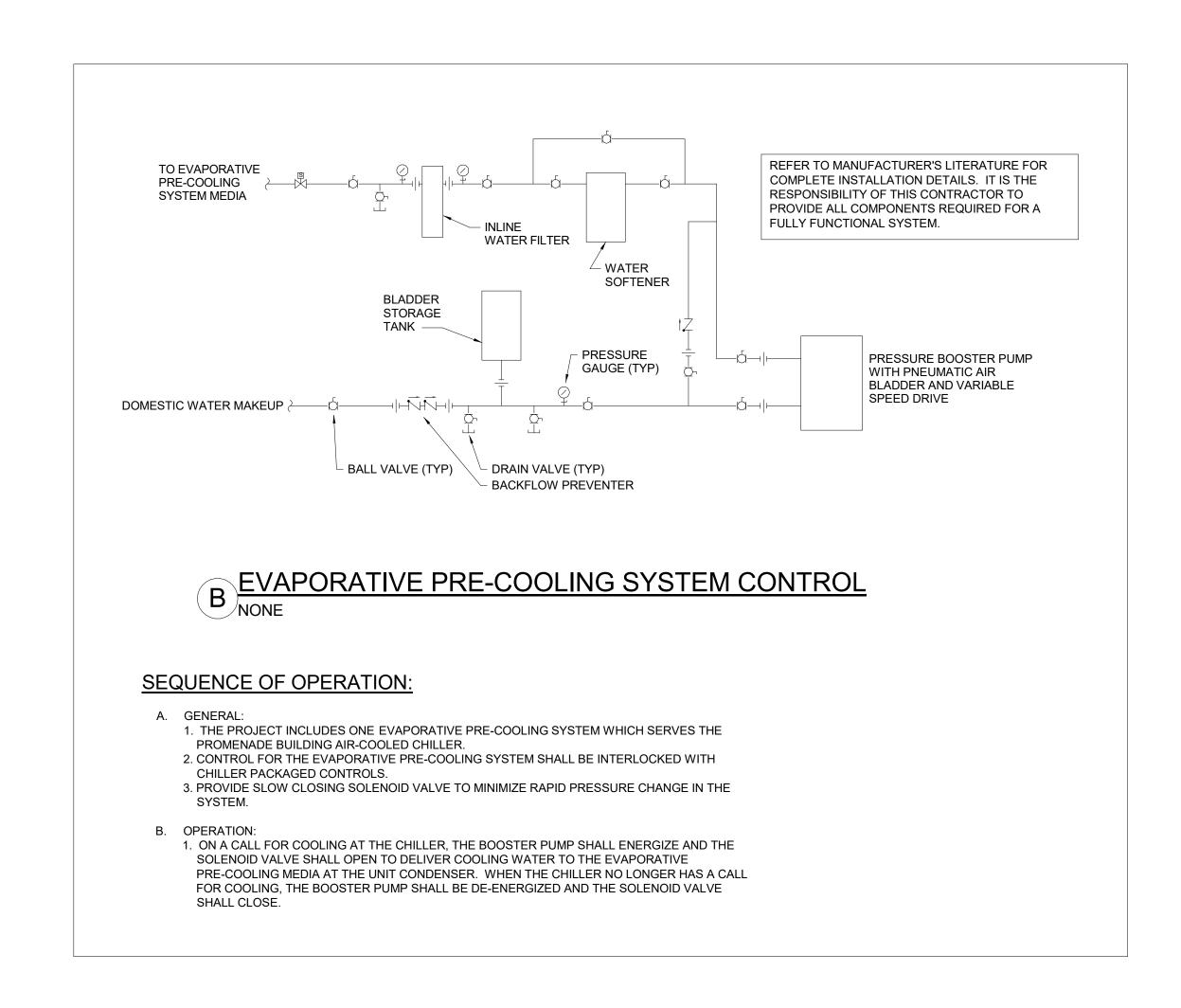
2. SYSTEM STARTUP:

- WITHSTAND. H. DISCHARGE AIR CONDITIONS:
- TEMPERATURE SETPOINT. 1.2. CHILLED WATER COOLING AND HEAT WHEEL SHALL BE ENABLED TOGETHER IN STAGES.
- 2. HEATING MODE: WHEN OUTSIDE AIR FALLS BELOW 65F (ADJ.), THE UNIT SHALL ENTER
- TO THE FOLLOWING RESET STRATEGY: OUTSIDE AIR DRY BULB TEMPERATURE DISCHARGE AIR DRY BULB TEMPERATURE 20 DEGREES F 75 DEGREES F (ADJ.) 50 DEGREES F 65 DEGREES F (ADJ.) BETWEEN 20-50 DEGREES F RAMP LINEARLY BETWEEN 75-65 F

FANS AND CLOSE OA AND RELIEF AIR DAMPERS. ALARM BMS.



PROMENADE LEVEL



CHILLED WATER PLANT SEQUENCE OF OPERATION:

- A. GENERAL 1. THE BMS SHALL INDEPENDENTLY MONITOR POINTS INDICATED ON THE CONTROL DIAGRAM AND ALL POINTS REQUIRED TO PERFORM THE FOLLOWING SEQUENCES AND MONITORING FUNCTIONS.
- 2. THE BMS SHALL ENABLE/DISABLE THE CHILLED WATER SYSTEM BASED UPON: A. OUTDOOR AIR TEMPERATURE - ENABLE CHILLER SYSTEM WHEN OUTSIDE AIR TEMPERATURE IS
- ABOVE 55F (ADJ.) B. SYSTEM LOAD C. MANUAL OR FORCED
- B. SEQUENCE OF OPERATION: 1. INTENT: THE BMS SHALL CONTROL THE CHILLED WATER SYSTEM INCLUDING PUMPS, VALVES, AND THE PACKAGED CHILLER MICROPROCESSOR. THE BMS SHALL PERFORM ALL START/STOP,
- MICROPROCESSOR WILL PERFORM ALL INTERNAL CHILLER TEMPERATURE CONTROL FUNCTIONS, ECONOMIZER FUNCTIONS, AND CHILLER SAFETY FUNCTIONS AND SHALL COMMUNICATE WITH THE BMS VIA A SERIAL COMMUNICATION INTERFACE.

TEMPERATURE SETPOINT, AND SCHEDULING FUNCTIONS. THE PACKAGED CHILLER

- 2. START SEQUENCE: UPON SIGNAL TO ENABLE AT THE BMS OPERATOR STATION, THE BMS SHALL: A. ENABLE THE VARIABLE SPEED DISTRIBUTION PUMPING SYSTEM. BYPASS VALVE POSITION B. START AND PROVE BOTH CHILLED WATER PUMPS.
- C. CONTINUALLY MONITOR THE PRESSURE IN THE SUPPLY AND RETURN PIPING MAINS TO THE CHILLER AND DISPLAY BOTH PRESSURE AND PRESSURE DIFFERENTIAL AT THE BMS OPERATOR'S WORKSTATION. CONTINUALLY MONITOR FLOW TO THE CHILLER VIA FLOW METER AND DISPLAY AT THE BMS OPERATOR'S WORKSTATION. DISPLAY BOTH MINIMUM AND OPERATING EVAPORATOR FLOW FOR THE CHILLER AT BMS OPERATOR'S WORKSTATION.
- D. MODULATE BYPASS VALVE, AS NECESSARY, TO MAINTAIN PLANT MINIMUM FLOW (ADJ.) AS MEASURED AT THE PLANT BTU METERING STATION. WHEN FLOW IS ABOVE REQUIRED MINIMUM CHILLER FLOW, BYPASS VALVE SHALL MODULATE CLOSED. E. ENABLE THE CHILLER VIA SIGNAL TO THE PACKAGED CHILLER MICROPROCESSOR ONCE
- MINIMUM FLOW TO THE CHILLER IS PROVEN. 3. STOP SEQUENCE: UPON SIGNAL TO DISABLE AT THE BMS OPERATOR STATION, THE BMS SHALL:
- A. DISABLE THE CHILLERS VIA SIGNAL TO THE PACKAGED CHILLER MICROPROCESSOR. B. CONFIRM THE CHILLER HAS STOPPED VIA COMMUNICATION INTERFACE WITH THE PACKAGED CHILLER MICROPROCESSOR.
- C. DISABLE ALL CHILLED WATER PUMPS. D. OPEN BYPASS VALVE.
- E. CHILLER SHALL NOT BE RESTARTED FOR A FIVE MINUTE DELAY (ADJ.). 4. TEMPERATURE CONTROL: UPON SUCCESSFUL STARTUP, PACKAGED CHILLER MICROPROCESSOR
- SHALL MAINTAIN CHILLED WATER SUPPLY TEMPERATURE SETPOINT ADJUSTABLE AT THE BMS OPERATOR STATION.
- A. INITIAL CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL BE 44 DEGREES F. B. CHILLED WATER SUPPLY TEMPERATURE SETPOINT SHALL BE RESET BY THE BMS ACCORDING TO THE FOLLOWING RESET SCHEDULE:
 - CHILLED WATER LEAVING TEMPERATURE OUTSIDE AIR DRY BULB TEMPERATURE 80 DEGREES F (ADJ.) 44 DEGREES F (ADJ.) 60 DEGREES F (ADJ.) 50 DEGREES F (ADJ.) RAMP LINEARLY BETWEEN 44-50F BETWEEN 80-60 DEGREES F
- C. WHEN CHILLED WATER SUPPLY TEMPERATURE IS RESET ABOVE INITIAL SETPOINT AND ANY ZONE SERVED IS ABOVE COOLING SETPOINT FOR MORE THAN 10 CONSECUTIVE MINUTES (ADJ.), CHILLED WATER SETPOINT SHALL BE RETURNED TO INITIAL CHILLED WATER SETPOINT. AFTER DELAY OF 1 HOUR (ADJ.), CHILLED WATER SUPPLY TEMPERATURE RESET SHALL BE
- D. CHILLER ECONOMIZER MODE: WHEN OUTSIDE AIR IS 5 DEGREES F (ADJ.) LOWER THAN THE CHILLED WATER SUPPLY TEMPERATURE SETPOINT, THE PACKAGED CHILLER MICROPROCESSOR SHALL ENABLE ECONOMIZER MODE. WHEN ECONOMIZER MODE IS ENABLED, THE PACKAGED CHILLER MICROPROCESSOR SHALL STOP COMPRESSOR COOLING AND DIVERT WATER AS REQUIRED FOR FREE COOLING. ALARM BMS IF ECONOMIZER MODE IS ENABLED AND CHILLED WATER SUPPLY TEMPERATURE IS ABOVE SETPOINT FOR 15 MINUTES

- 5. PUMP CONTROL: ONCE CHILLER START SEQUENCE IS COMPLETE, THE PUMP VFD'S SHALL MODULATE THEIR RESPECTIVE PUMPS IN PARALLEL TO MAINTAIN SYSTEM DIFFERENTIAL PRESSURE SETPOINT. REQUIRED MINIMUM SYSTEM FLOW SHALL BE 200 GPM (ADJ.) VFD HZ SETPOINTS TO MAINTAIN MINIMUM FLOW SHALL BE DETERMINED DURING TESTING AND BALANCING AND SHALL BE DETERMINED AND PROGRAMMED FOR TWO PUMPS RUNNING IN PARALLEL AND ONLY ONE PUMP RUNNING DURING MINIMUM FLOW CONDITION. THE BMS SHALL BE CAPABLE OF ENABLING AND DISABLING INDIVIDUAL PUMP VFD'S SEPARATELY AT THE BMS OPERATOR STATION. IN RESPONSE TO LOW-LOAD, THE VFD'S SHALL MODULATE THEIR RESPECTIVE PUMPS IN PARALLEL TO MAINTAIN A SYSTEM DIFFERENTIAL PRESSURE SETPOINT.
- A. INITIAL DIFFERENTIAL PRESSURE SETPOINT SHALL BE DETERMINED UPON SYSTEM TESTING AND BALANCING.
- 13. BYPASS VALVE CONTROL: ONCE CHILLED WATER FLOW APPROACHES PLANT MINIMUM FLOW (AS INDICATED VIA DIRECT MEASUREMENT AT CHILLED WATER FLOW METER), THE BYPASS VALVE SHALL MODULATE OPEN TO MAINTAIN MINIMUM SYSTEM FLOW. AS BYPASS VALVE APPROACHES FULL OPEN, PUMP VFD'S SHALL INCREASE, IF NECESSARY, TO ENSURE CHILLED WATER FLOW
- DOES NOT DECREASE BELOW MINIMUM SYSTEM FLOW. 14. CHILLED WATER PUMP FAILURE: UPON FAILURE OF ONE OF THE CHW PUMPS, RESET SEQUENCE TO UTILIZE REMAINING PUMP AND GENERATE AN APPROPRIATE ALARM AT THE BMS OPERATOR
- 15. CHILLER FAILURE: UPON CHILLER FAILURE, THE BMS SHALL ALARM AND SHALL AUTOMATICALLY INITIATE A CHILLED WATER PLANT SHUT DOWN.
- 16. COMMUNICATION FAILURE: UPON A LOSS OF SIGNAL FROM THE PACKAGED CHILLER MICROPROCESSOR, THE BMS SHALL ALLOW THE SYSTEM TO CONTINUE TO RUN AND SHALL
- GENERATE AN APPROPRIATE ALARM AT THE BMS OPERATOR STATION. 18. SYSTEM SOFT START: THE CHILLER SEQUENCING SOFTWARE SHALL PROVIDE OPERATOR ADJUSTABLE CHILLED WATER TEMPERATURE RAMP RATES TO ENSURE THAT THE SYSTEM WATER TEMPERATURE DOES NOT APPROACH SETPOINT TOO QUICKLY OR TOO SLOWLY AT SYSTEM START-UP. THIS PREVENTS THE UNNECESSARY OPERATION OF CHILLERS AND LIMITS SYSTEM ELECTRICAL DEMAND DURING DISTRIBUTION LOOP TEMPERATURE PULL DOWN. THE MAXIMUM COOL DOWN RATE IN THE CHILLED WATER LOOP SHALL NOT EXCEED 2F PER MINUTE (ADJ.).
- 21. CHILLER STATUS DISPLAY: THE BMS SHALL PROVIDE AN OPERATING STATUS REPORT FOR THE CHILLER INCLUDING THE FOLLOWING:
- A. CHILLER OPERATING MODE (COOLING MODE, ECONOMIZER MODE, OFF)
- B. CHILLER LEAVING WATER TEMPERATURE SETPOINT. CHILLED WATER ENTERING AND LEAVING TEMPERATURES.
- D. CHILLED WATER ENTERING AND LEAVING PRESSURES. E. CHILLER DIFFERENTIAL PRESSURE. F. CHILLER WATER FLOW.
- G. CHILLER LOAD AS MEASURED AT BTU METERING STATION. H. CHILLER LOAD IN PERCENTAGE OF TOTAL CHILLER CAPACITY.
- 22. DIAGNOSTIC/PROTECTION: THE BMS SHALL BE ABLE TO ALARM FROM ALL SENSED POINTS AND DIAGNOSTIC ALARMS SENSED BY THE PACKAGED CHILLER MICROPROCESSOR. ALARM LIMITS SHALL BE DESIGNED FOR ALL SENSED ANALOG POINTS.
- 23. CHILLER PLANT STATUS DISPLAY: THE BMS SHALL PROVIDE A PLANT STATUS REPORT. THE DISPLAY SHALL INCLUDE THE FOLLOWING: A. ON/OFF STATUS OF CHILLER.
- B. ON/OFF STATUS AND SPEED OF EACH PUMP.

TRACE SYSTEM.

- C. SYSTEM DIFFERENTIAL PRESSURE AND SETPOINT. D. CHILLER DIFFERENTIAL PRESSURE AND FLOW.
- E. BYPASS VALVE POSITION. F. PLANT EWT AND LWT.
- G. CALCULATED TOTAL PLANT TONNAGE PRODUCTION. 24. SYSTEM DIAGNOSTIC AND ALARM INDICATION: THE PACKAGED CHILLER MICROPROCESSOR SHALL DISPLAY LOCALLY ALL THE ALARM, MONITORING, AND OPERATION CONDITIONS AS DESCRIBED IN SPECIFICATIONS. IT SHALL ALSO SUPPLY TO THE BMS A COMMON BINARY STATUS FOR ANY OF THESE ALARM CONDITIONS.
- 25. FREEZE PROTECTION: UPON A DROP IN OUTDOOR AIR TEMPERATURE TO 0F, ONE PRIMARY CHILLED WATER PUMP SHALL ENERGIZE, PUMP VARIABLE FREQUENCY DRIVE SHALL MODULATE TO
- MINIMUM SPEED, AND BYPASS VALVE SHALL OPEN FOR A PERIOD OF 2 MINUTES (ADJ.) EVERY 2 HOURS (ADJ.) FOR SUPPLEMENTARY FREEZE PROTECTION. 26. HEAT TRACE: MONITOR HEAT TRACE ON EXTERIOR PIPING. ALARM BMS UPON FAILURE OF HEAT



MOUNTAIN COMPANY 2305 Mount Werner Circle

Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 **United States**

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204 80477 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN
CONSULTING ENGINEERS

Lakewood, CO 80215 United States

Tel 303.431.6100

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

Date Description
 Description

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



IMPROVEMENTS

Project Number 003.7835.000

PROMENADE - MECHANICAL CONTROLS

NOT TO SCALE

1A-M7.003

		EN	ERGY	YN	Œ	TI	ER	SCH		DU	JLI	E/F	POINTS LIST
SYSTEM: ENERGY METERING SYSTEM												-	
			ENE	RGY D	EMA	AND		ENERG	Y CO	ŅSUN		N	
	ТУРЕ	LOAD CATEGORY	FIND	HOURLY PEAK	DAILY PEAK	MONTHLY PEAK	ANNUAL PEAK	TINU	HOURLY TOTAL	DAILY TOTAL	MONTHLY TOTAL	ANNUAL TOTAL	
POINT DESCRIPTION											_		REMARKS
BUILDING MAIN ELECTRICAL SERVICE METER	E	MAIN	kW		X	X	X	kWh	X		X	X	
PANEL L1N2 - LIGHTING	E	LTG	kW		X	X	X	kWh	X		X	X	DATA FOR FACILIZITAL ROD DERIVER VIA CINCLE CONNECTION TO VITCUEN ROD METERING CVCTEM
PLAZA BUILDING KITCHEN PODS - POD-1	E	PLUG	kW		X	X	X	kWh	X		X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PLAZA BUILDING KITCHEN PODS - POD-2	E	PLUG	kW		X	X	X	kWh	X		X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PLAZA BUILDING KITCHEN PODS - POD-3	E	PLUG	kW		X	X	X	kWh	X		X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PLAZA BUILDING KITCHEN PODS - POD-4	E	PLUG	kW	X	X	X	X	kWh	X	_	X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PLAZA BUILDING KITCHEN PODS - POD-5	E	PLUG	kW		X	X	X	kWh	X	_	X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PLAZA BUILDING KITCHEN PODS - POD-6	E	PLUG	kW	 	X	X	X	kWh	X	_	X		DATA FOR EACH KITCHEN POD DERIVED VIA SINGLE CONNECTION TO KITCHEN POD METERING SYSTEM.
PANEL L1N1 - LIGHTING	E	LTG	kW	X	X	X	X	kWh	X		X		OBTAIN PANEL LOAD BY DEDUCTING PANEL R3N1 METERED USAGE FROM PANEL L1N1 METERED USAGE.
PANEL R3N1 - PLUG LOADS	E	PLUG	kW		X	X	X	kWh	X		X	X	
CHILLER ELECTRICITY METER	E	MECH	kW		X	X	X	kWh	X		X	X	
PANEL R1N1 - PLUG LOADS	E	PLUG	kW		X	X	X	kWh	X	+	X	X	
PANEL R1N3 - PLUG LOADS	E	PLUG	kW		Х	Х	X	kWh	Х		X	X	
PANEL M1N3 - MECHANICAL LOADS	E	MECH	kW	X	Χ	Х	Х	kWh	Х	X	X		OBTAIN PANEL LOAD BY DEDUCTING ZAMBONI ROOM METERED USAGE FROM PANEL M1N3 METERED USAGE
ZAMBONI ROOM - MECHANICAL LOADS	E		kW	X	Х	Х	Х	kWh	Х		X	Х	
PANEL M1N2 - MECHANICAL LOADS	E		kW	X	Х	Х	Х	kWh	Х	X	X		OBTAIN PANEL LOAD BY DEDUCTING PANEL R1N4 METERED USAGE FROM PANEL M1N2 METERED USAGE.
PANEL R1N4 - PLUG LOADS	E	PLUG	kW	X	Χ	Х	Х	kWh	Х		X	Х	
PANEL M1N1 - MECHANICAL LOADS	E	MECH	kW	X	Χ	Х	Х	kWh	Х	X	X	Х	
ICE PLANT ELECTRICITY METER	E	MECH					Х				X		
BUILDING LIGHTING	VIR		kW		Х	Х	Х	kWh	X				OBTAIN BY ADDING ALL BUILDING LTG METERS
BUILDING HVAC/PLUMBING	VIR		kW	X	Χ	Х	Х	kWh	X	X	X		OBTAIN BY ADDING ALL BUILDING MECH METERS. DO NOT DOUBLE COUNT SUB-METERS.
BUILDING PLUG LOAD	VIR		kW	X	Х	X	X	kWh	Х	X	X	Х	OBTAIN BY ADDING ALL BUILDING PLUG LOAD METERS. DO NOT DOUBLE COUNT SUB-METERS.
CHILLER PLANT BTU METER	BTU	MECH	TONS	Х	Χ	Х	Х	TON-HRS	Х	Х	Х	Х	
CHILLER PLANT EFFICIENCY	VIR		kW/TON										SEE NOTE 10 BELOW.
PROMENADE BUILDING MAIN NATURAL GAS SERVICE METER	NG	MAIN	TH/H	X	X	X	Х	THERMS	Х	X	Х	X	
NATURAL GAS SERVICE TO PLAZA BUILDING KITCHENS		MECH		Х	Χ	Х	Х	THERMS		+	Х		
NATURAL GAS SERVICE TO PLAZA FIRE PITS		MECH	-		Χ		Х	THERMS		Х			
MAIN DOMESTIC WATER SERVICE	DW	MAIN	GAL/H	X	X	X	Х	GAL	X	X	X	X	
ICE PLANT PROCESS WATER	DW	_	GAL/H	Y	X	X	X	GAL	X	X	X	X	
IRRIGATION WATER	DW		GAL/H	X	X	X	X	GAL	X		X	X	
GENERAL NOTES: 1. TYPE CODES:													
E: ELECTRICITY													
NG: NATURAL GAS													
DW: DOMESTIC WATER													
BTU: BTU METER													
VIR: VIRTUAL METER OBTAINED VIA ADDITION OR SUBTRACTION													
2. LOAD CATEGORIES:													
MAIN: MAIN BUILDING METER													

MAIN: MAIN BUILDING METER MECH: MECHANICAL

LTG: LIGHTING

PLB: PLUMBING

PLUG: PLUG LOAD

PROC: PROCESS B. ALL METERS SHALL RECORD AT INTERVALS OF ONE HOUR OR LESS.

4. ALL METERS SHALL REPORT BOTH DEMAND (kW OR BTU/h) AND CONSUMPTION (kWh OR THERMS) UNLESS OTHERWISE NOTED.

5. MAIN ELECTRICAL SERVICE ENTRANCE METERS SHALL RECORD POWER FACTOR AND REPORT HOURLY. RECORD HOURLY VALUES FOR A MINIMUM OF THREE YEARS.

6. ALL METERS INDICATED SHALL HAVE DIRECT CONNECTION TO THE BMS VIA SERIAL COMMUNICATION UNLESS OTHERWISE NOTED. 7. RECORDED DATA FOR EACH METER SHALL INCLUDE HOURLY, DAILY, MONTHLY, AND ANNUAL PEAK DEMAND AND TOTAL CONSUMPTION. INFORMATION FOR EACH METER POINT INDICATED SHALL BE REPORTED AT THE

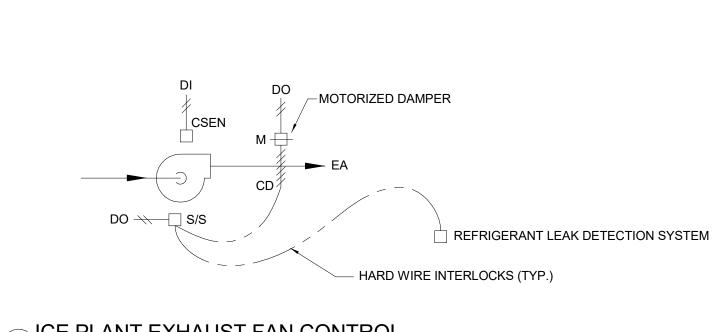
BMS OPERATOR STATION IN CALENDAR FORMAT. DATA SHALL BE STORED FOR A MINIMUM OF THREE YEARS.

8. METERED DATA SHALL BE REMOTELY ACCESSIBLE THROUGH THE BMS.

9. METERING SYSTEM SHALL BE EXPANDABLE TO INCLUDE ADDITIONAL METERS FOR SHELL AREAS INDICATED ON ARCHITECTURAL DRAWINGS. 10. REPORT HOURLY CHILLER PLANT kW/TON USING 1 HOUR MEASUREMENT OF TOTAL ELECTRICITY CONSUMED (kWh) DIVIDED BY SAME 1 HOUR MEASUREMENT OF TOTAL COOLING ENERGY PRODUCED (TON-HRS).

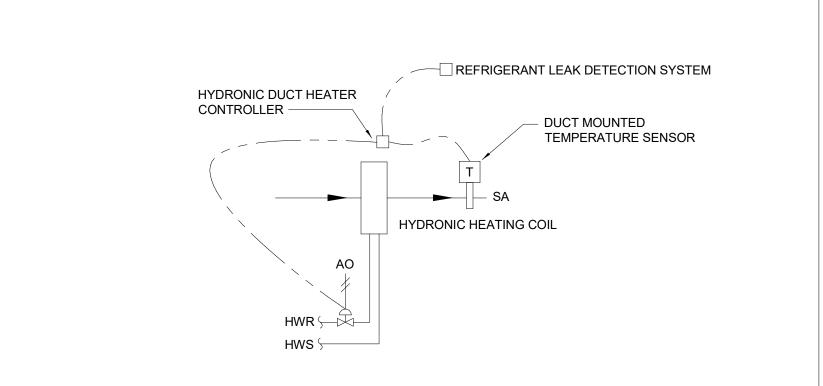
REPORT MONTHLY MAXIMUM AND MINIMUM CHILLER KW/TON. DATA SHALL BE STORED FOR A MINIMUM OF THREE YEARS.

11. WHERE METERED CATEGORY VIRTUAL POINTS ARE INDICATED, DO NOT DOUBLE COUNT SUB-METERS. FOR METERS IN SERIES, COUNT ONLY THE UPSTREAM METER IN THE CATEGORY TOTAL.



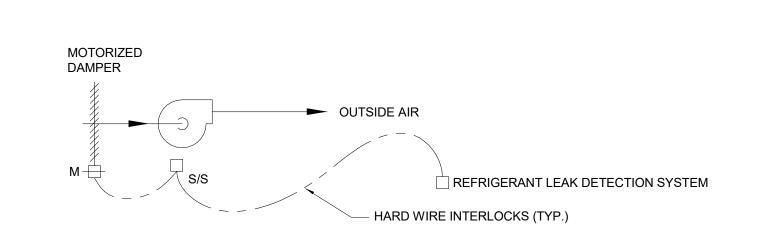
A ICE PLANT EXHAUST FAN CONTROL NONE

A. FAN SHALL BE INTERLOCKED WITH SUPPLY FAN SERVING SAME AREA. FAN TO RUN CONTINUOUSLY AT A LOW SPEED OF 700CFM. UPON REFRIGERANT LEAK DETECTION SYSTEM ACTIVATION, MODULATE FAN TO HIGH SPEED OF 2500CFM.



B HYDRONIC REHEAT COIL CONTROL

A. INTERLOCK HYDRONIC DUCT HEATER WITH VENTILATION SUPPLY FAN SERVING SAME AREA. MODULATE CONTROL VALVE TO MAINTAIN VENTILATION SUPPLY AIR TEMPERATURE OF 65F (ADJ.) CONTINUOUSLY.



C ICE PLANT SUPPLY FAN VENTILATION CONTROL

A. FAN SHALL BE INTERLOCKED WITH EXHAUST FAN SERVING SAME AREA. FAN TO RUN CONTINUOUSLY AT A LOW SPEED OF 700CFM. UPON REFRIGERANT LEAK DETECTION SYSTEM ACTIVATION, MODULATE FAN TO HIGH SPEED OF 2500CFM.



2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 **United States**

Tel 303.595.8585 Fax 303.825.6823

1390 Lawrence Street

Denver, CO 80204 Tel 303.623.5186

Suite 100

DESIGNWORKSHOP

141 9th Street PO Box 774943 Steamboat Springs, CO 80477 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS

12499 West Colfax Ave. Lakewood, CO 80215

United States Tel 303.431.6100 14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

Seal / Signature



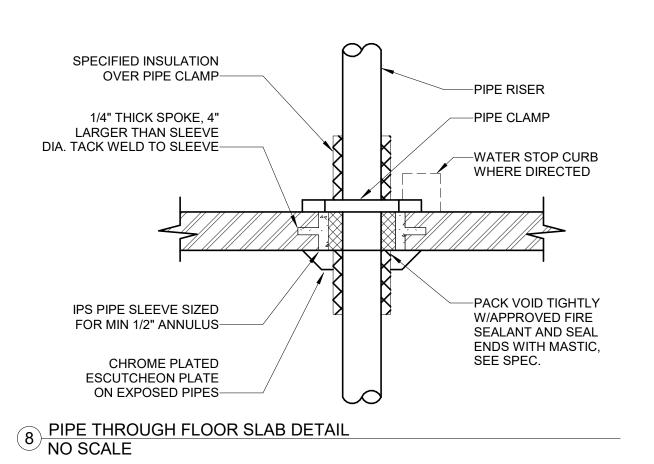
SSRC | BASE AREA **IMPROVEMENTS** Project Number

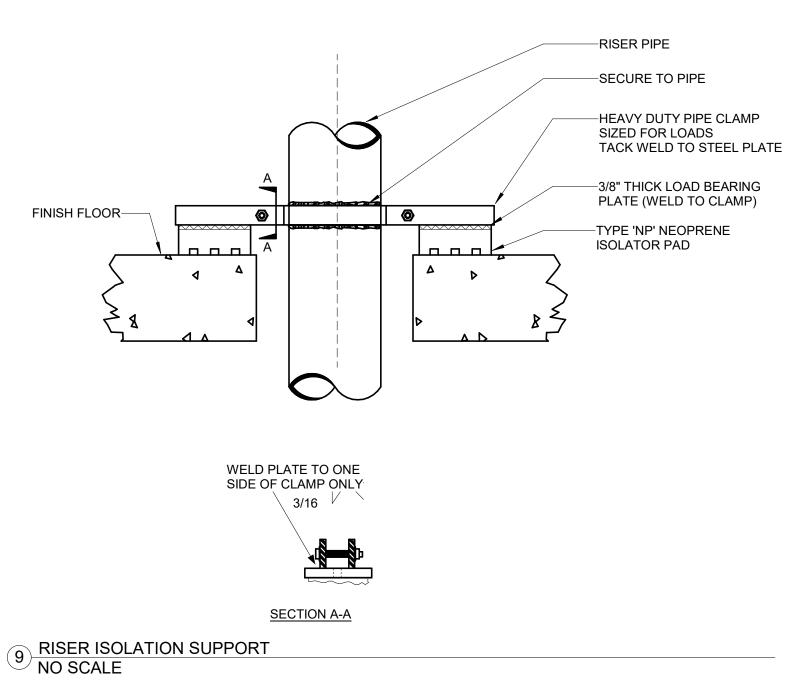
003.7835.000

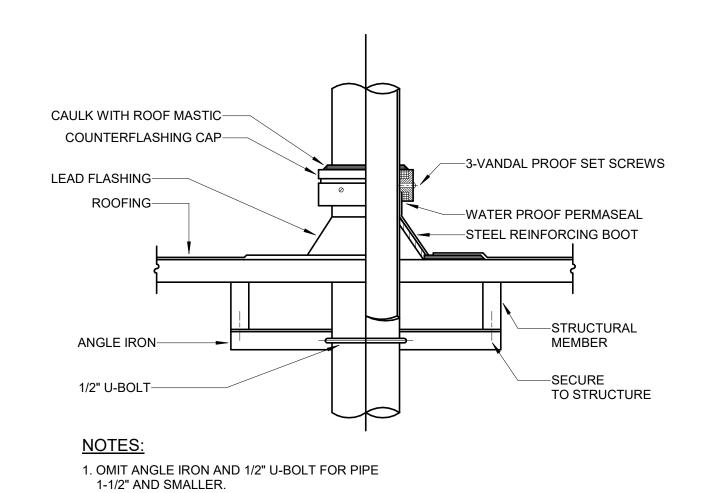
Description PROMENADE - MECHANICAL CONTROLS

NOT TO SCALE

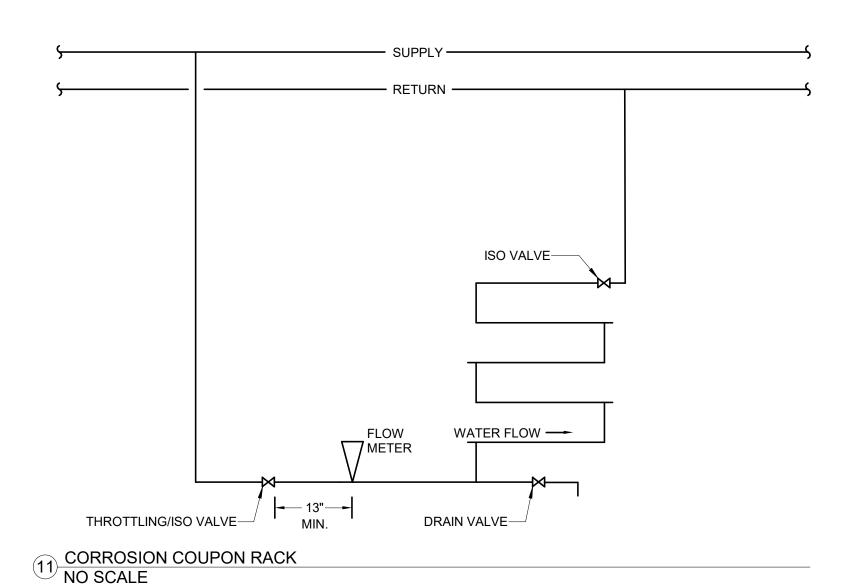
1A-M7.004

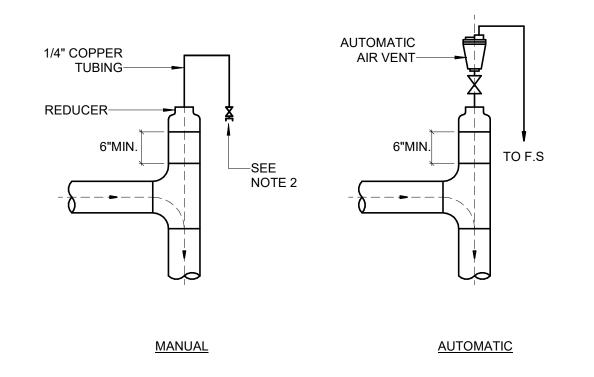




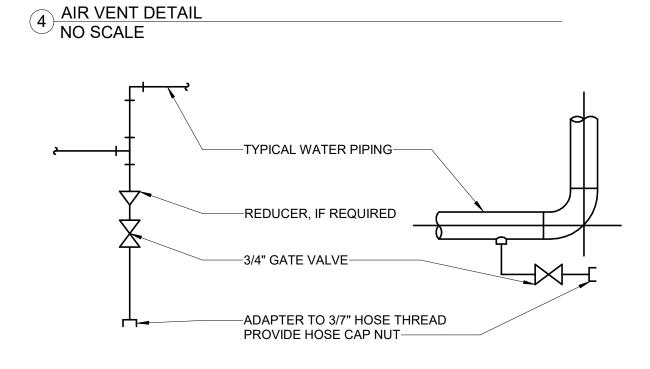


10 PIPE THROUGH ROOF NO SCALE





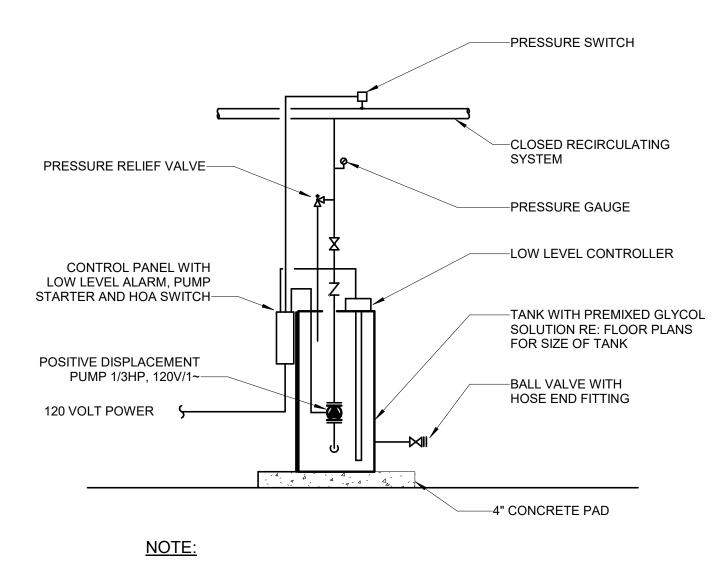
1. INSTALL MANUAL AIR VENT AT HIGH POINTS WHERE FLOW CHANGES DIRECTION. INSTALL AUTOMATIC AIR VENT TO PIPING WHICH INSTALLED IN EXPOSED AREA INCLUDING FAN ROOM AND MECHANICAL ROOM. 2. INSTALL HOSE VALVE ABOVE CEILING IN AN ACCESSIBLE 3. WELDED PIPE FITTING SHOWN. SCREWED FITTING SIMILAR.



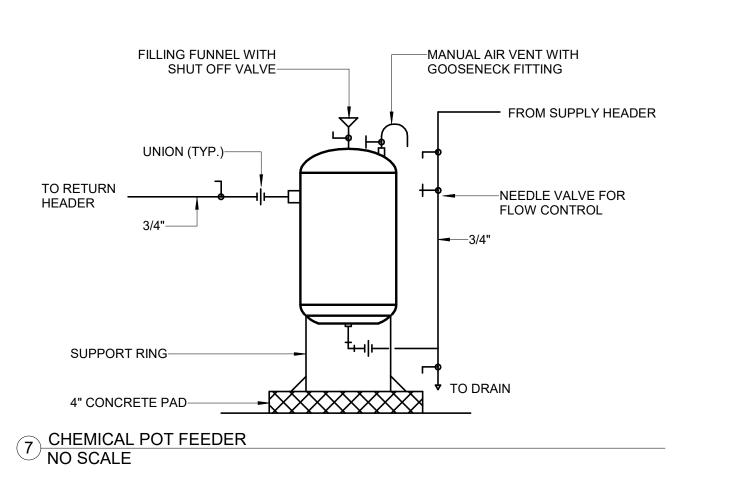
ELEVATION ELEVATION WELDED PIPING WELDED PIPING

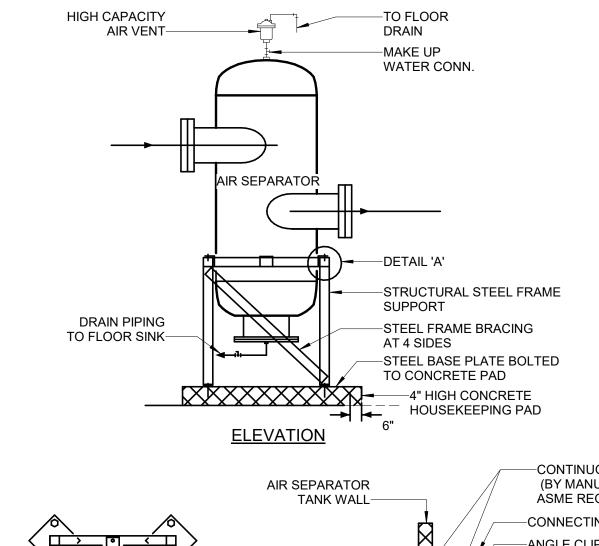
1. PROVIDE DRAIN VALVES AT LOW POINTS OF WATER SYSTEM. 2. WHERE SCALE POCKETS ARE SHOWN ON PIPE RISER DIAGRAMS AND/OR PLANS LOCATE DRAIN AT BOTTOM OF SCALE POCKET.

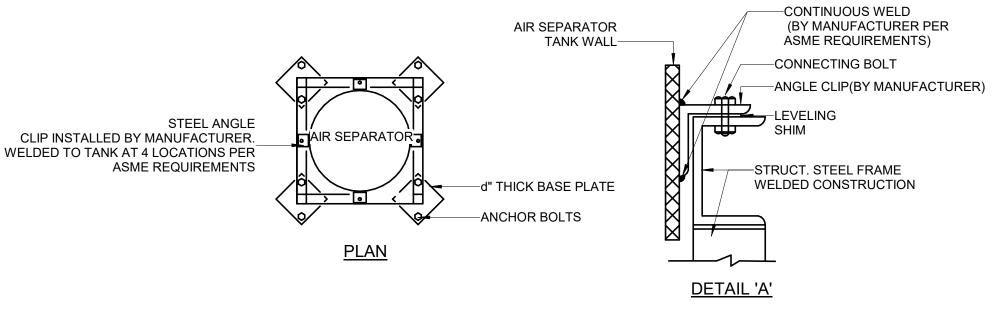
5 DRAIN VALVE CONNECTION DETAIL NO SCALE

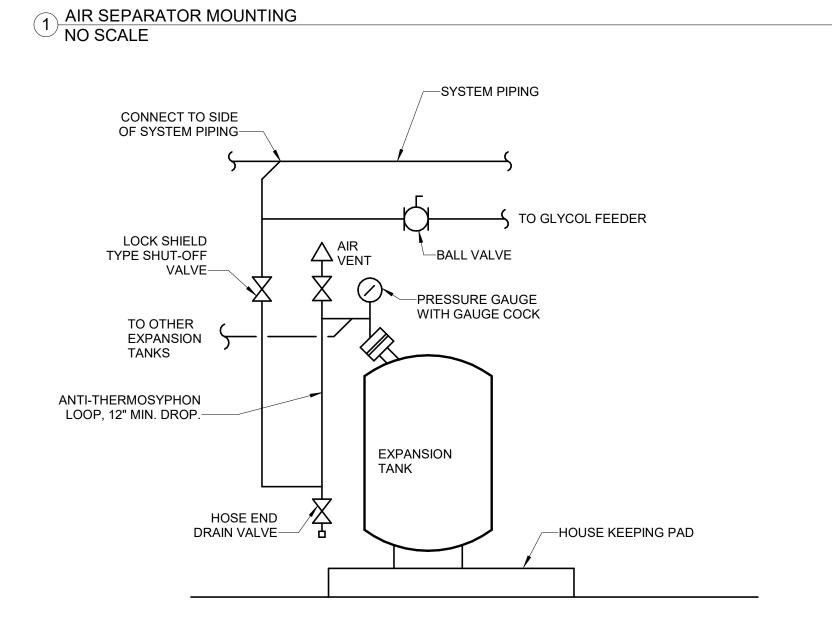


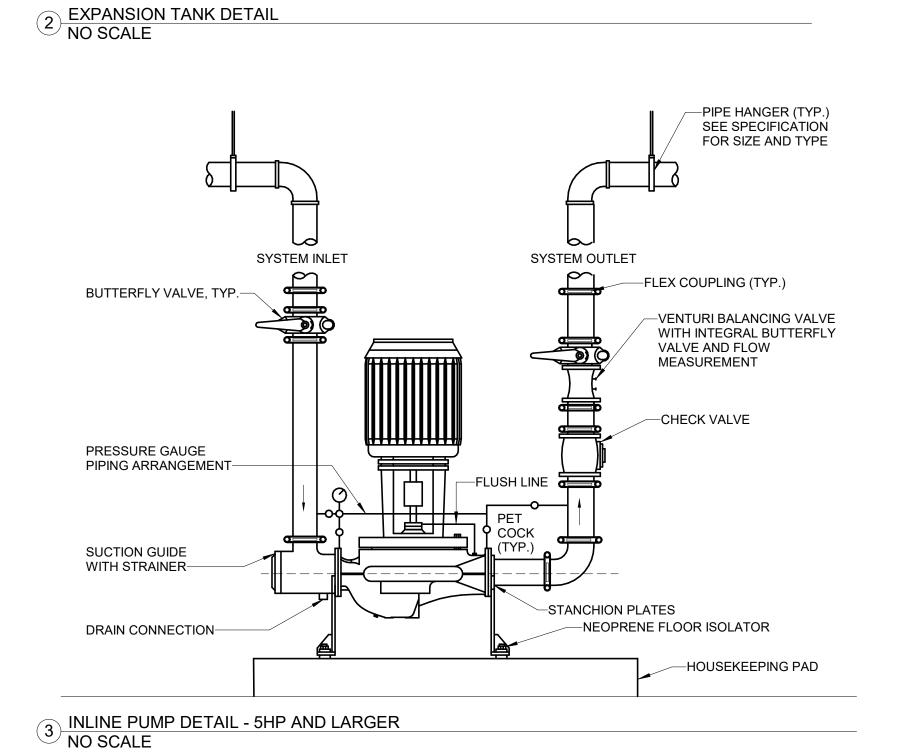
1. GLYCOL FEEDER SHALL BE A PACKAGED SYSTEM PROVIDED BY THE WATER TREATMENT SUPPLIER. H.O.H OR EQUIVALENT 6 GLYCOL FEED ASSEMBLY DETAIL NO SCALE













MOUNTAIN COMPANY 2305 Mount Werner Circle

Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 **United States**

80477

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP 141 9th Street PO Box 774943

1390 Lawrence Street Suite 100 Steamboat Springs, CO Denver, CO 80204 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS

12499 West Colfax Ave. Lakewood, CO 80215 **United States**

Tel 303.431.6100

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND PERMIT

Seal / Signature



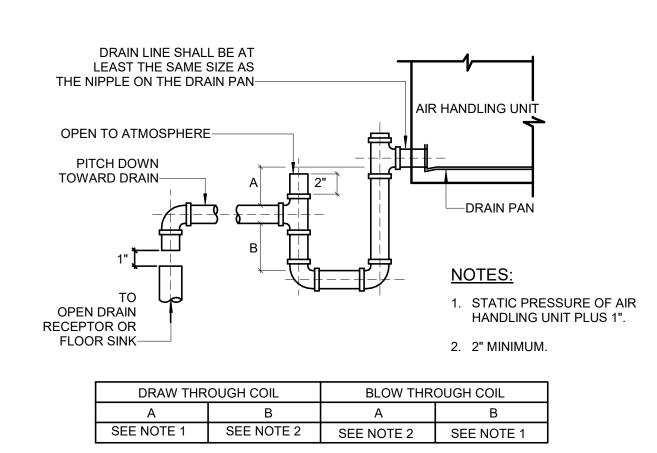
Project Name SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

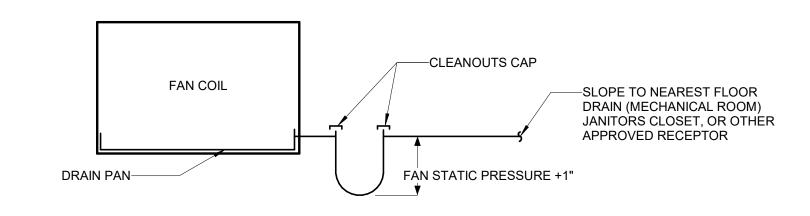
PROMENADE - MECHANICAL DETAILS

NO SCALE

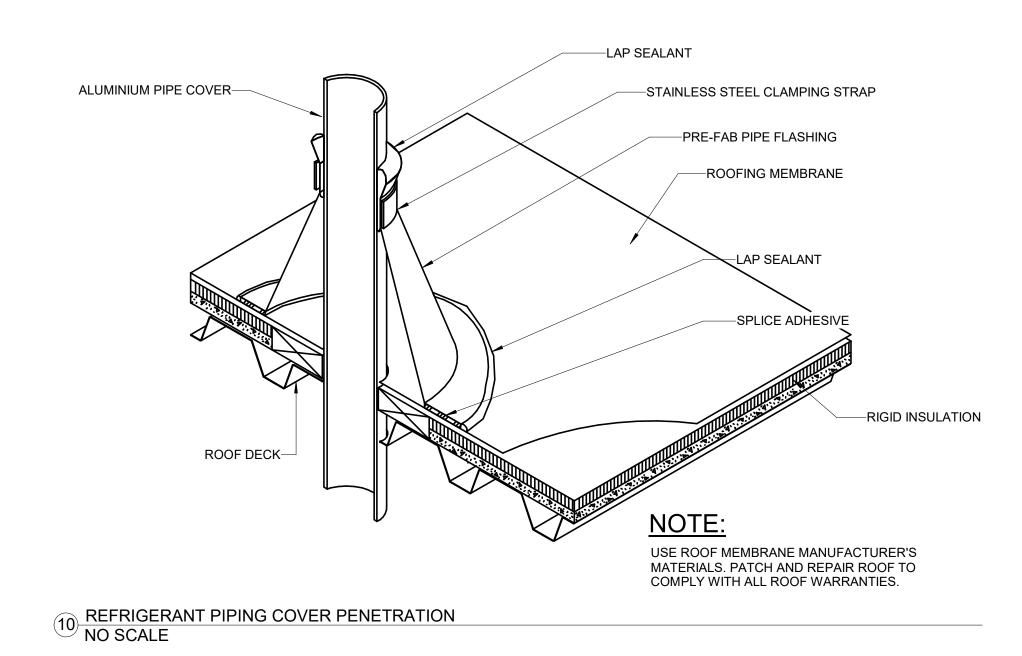
1A-M8.000

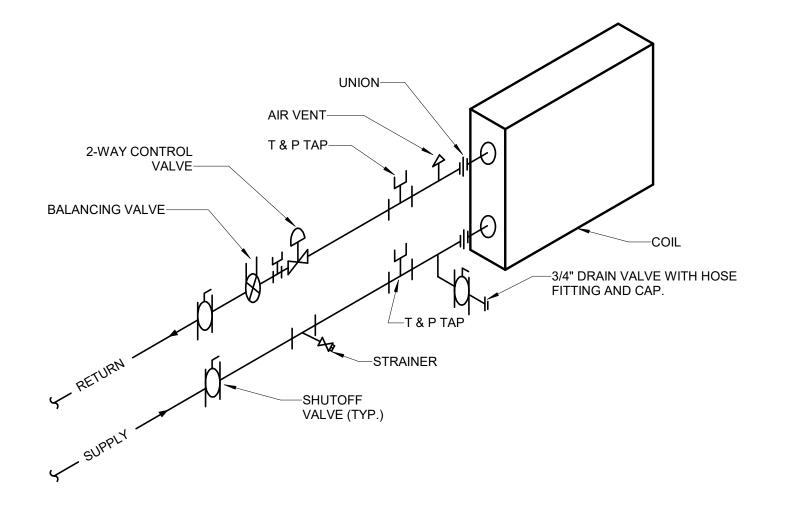


8 DRAIN AND TRAP FROM AIR HANDLING UNIT NO SCALE

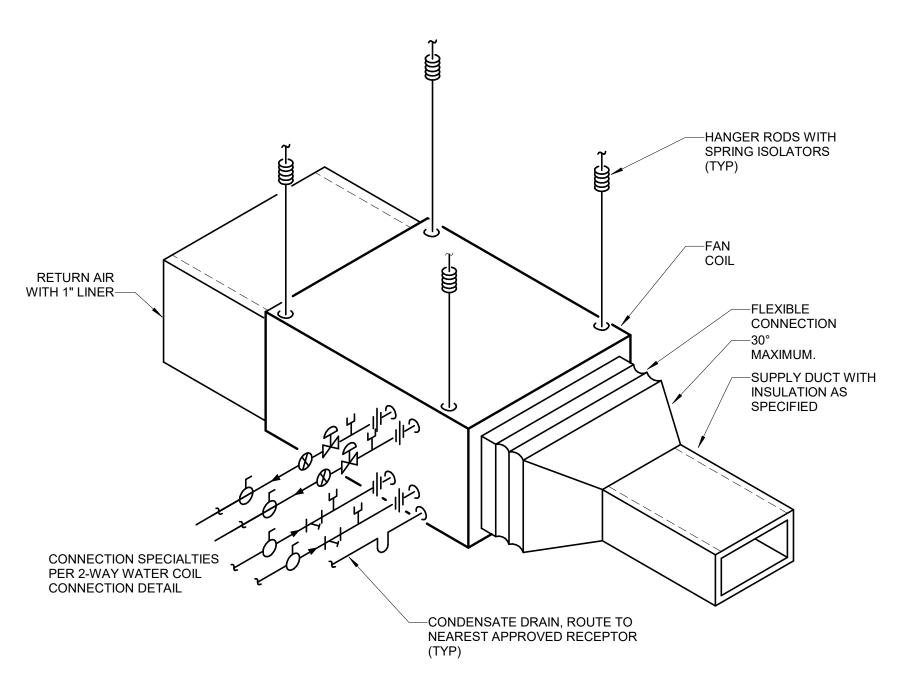


1. INSULATE CONDENSATE DRAIN WHEN ABOVE CEILINGS. 9 FAN COIL UNIT CONDENSATE DRAIN DETAIL NO SCALE

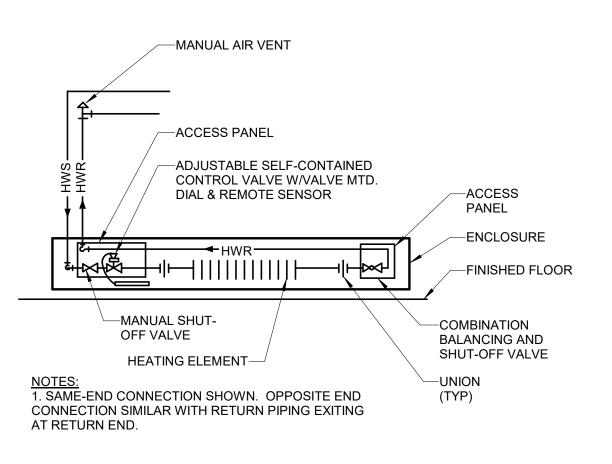




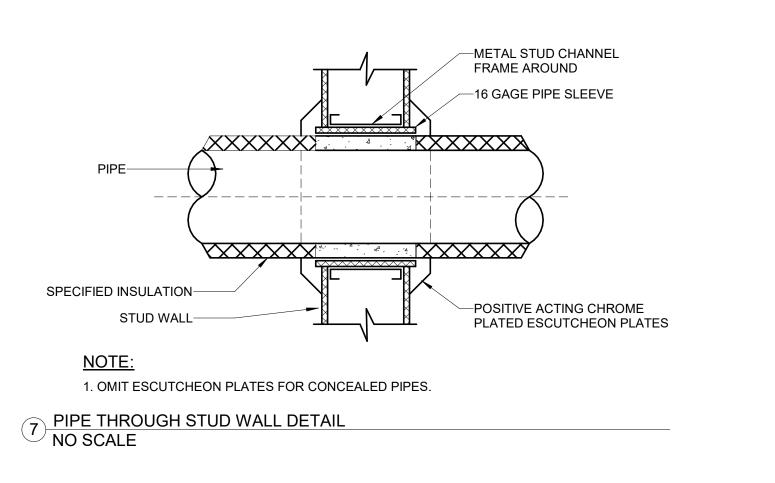
4 TYPICAL WATER COIL CONNECTION DETAIL (2 WAY CONTROL) NO SCALE

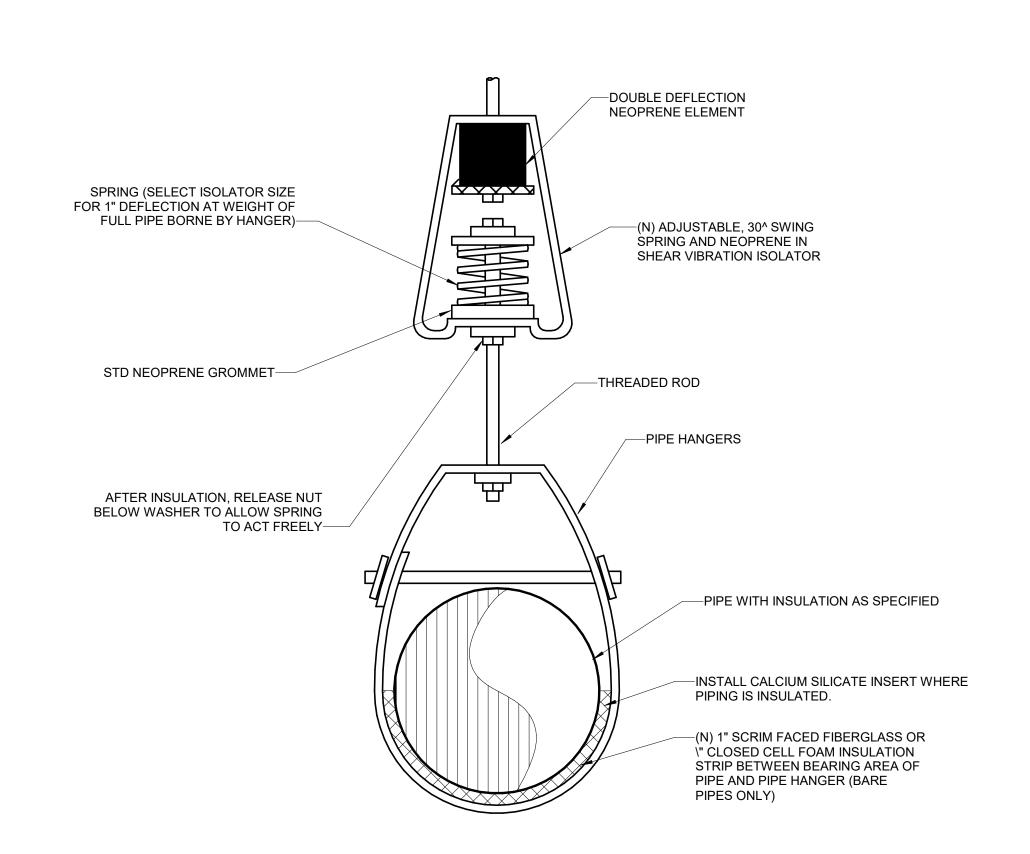


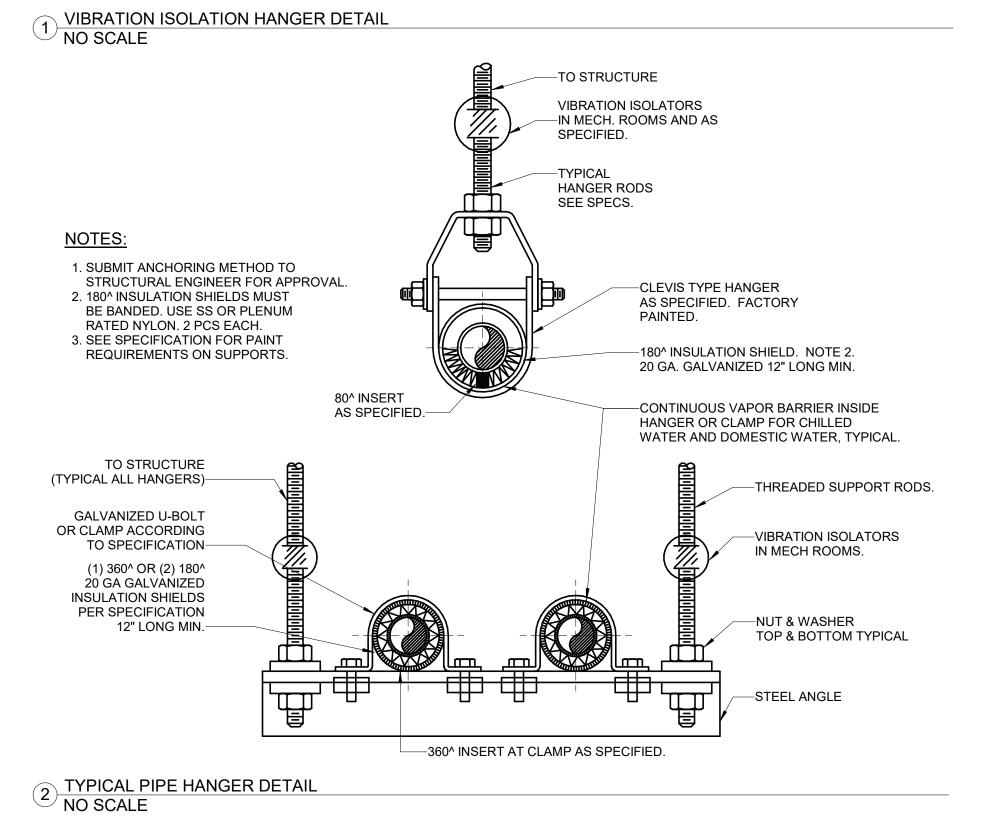
5 FAN COIL DETAIL NO SCALE

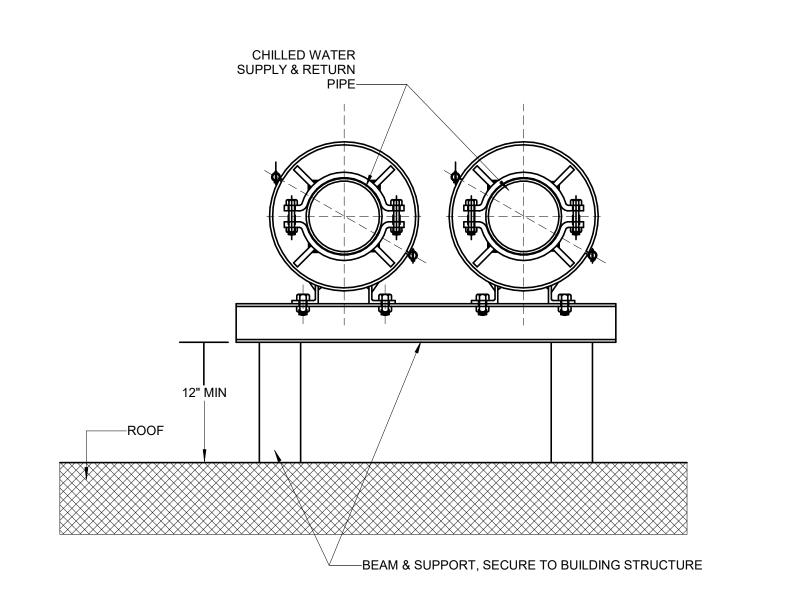


6 HOT WATER BASEBOARD DETAIL NO SCALE









3 ROOF PIPE SUPPORT 1/8" = 1'-0"



2305 Mount Werner Circle

Steamboat Springs, CO 80487

Gensler

MOUNTAIN COMPANY

1225 17th Street Suite 150 Denver, CO 80202 **United States**

United States

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP

1390 Lawrence Street

Suite 100

141 9th Street PO Box 774943 Steamboat Springs, CO 80477

Denver, CO 80204 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN CONSULTING ENGINEERS

12499 West Colfax Ave. Lakewood, CO 80215

14143 Denver West Pkwy Suite 300 Golden, CO Tel 303.431.6100 United States Tel 303.421.6655

 ∆ Date Description 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

PERMIT

Seal / Signature



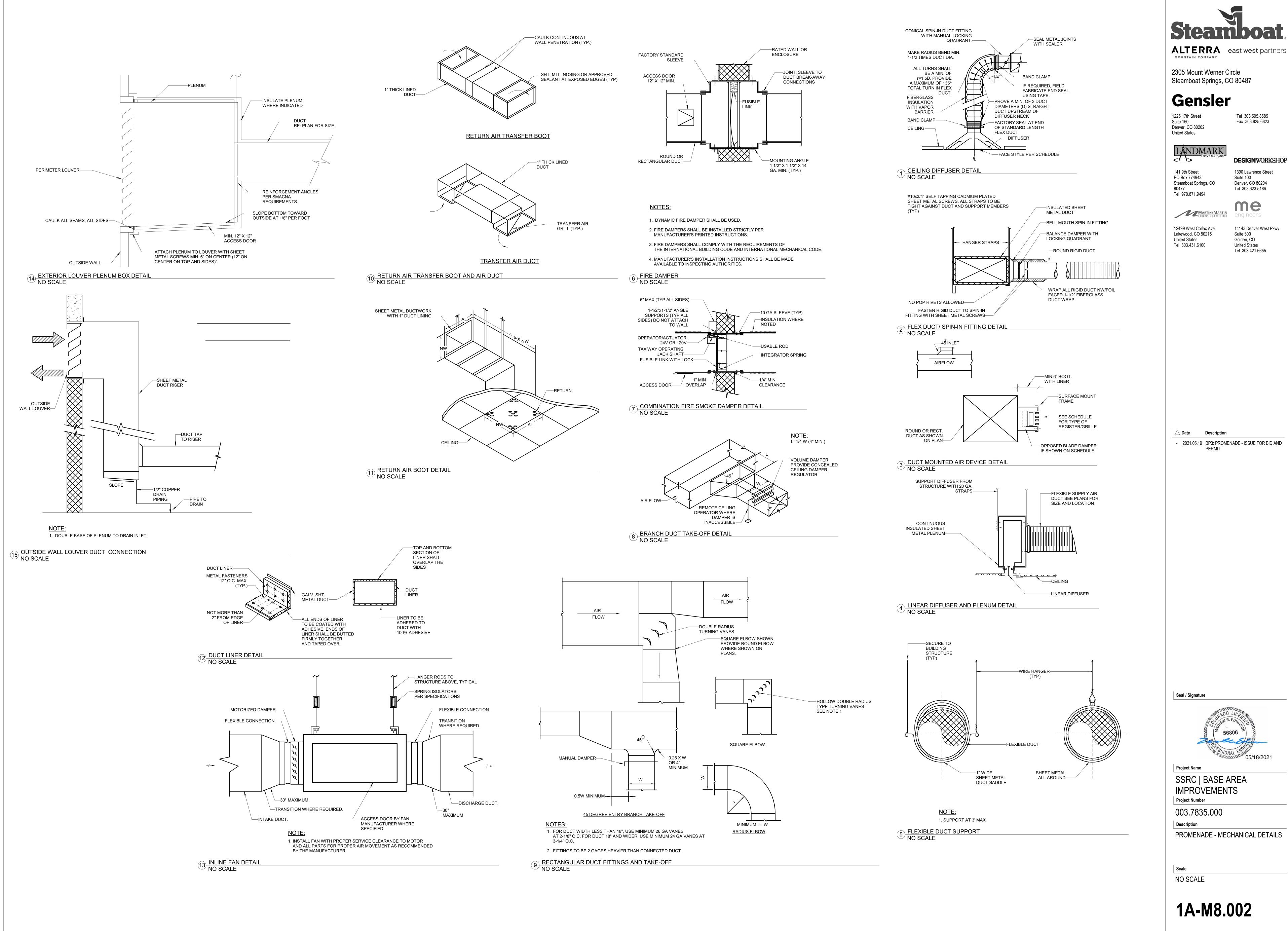
Project Name SSRC | BASE AREA **IMPROVEMENTS** Project Number

003.7835.000

PROMENADE - MECHANICAL DETAILS

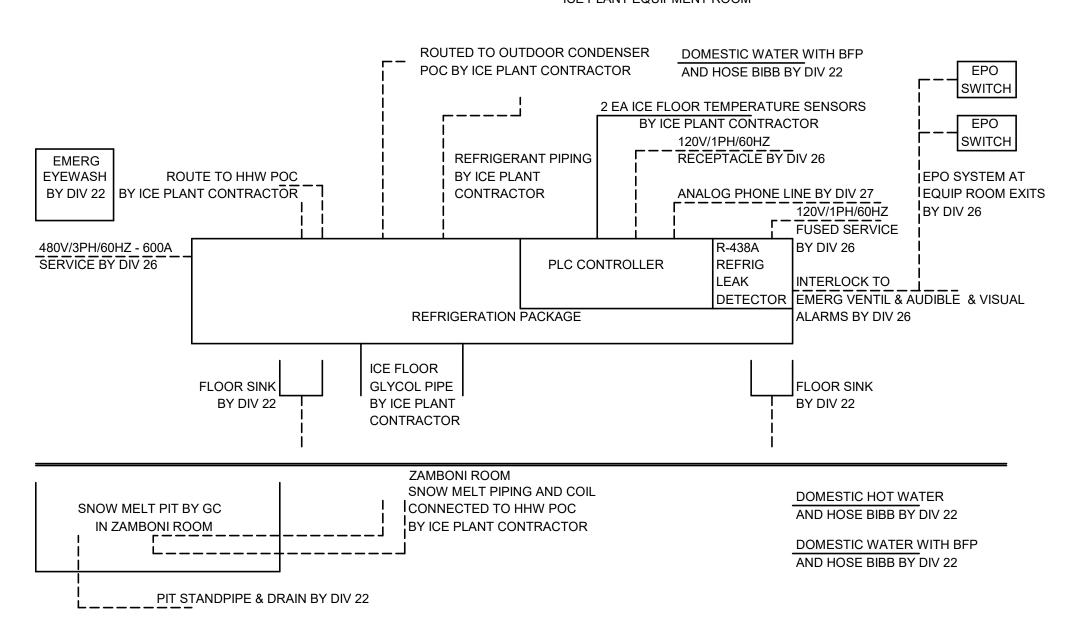
1/8" = 1'-0"

1A-M8.001

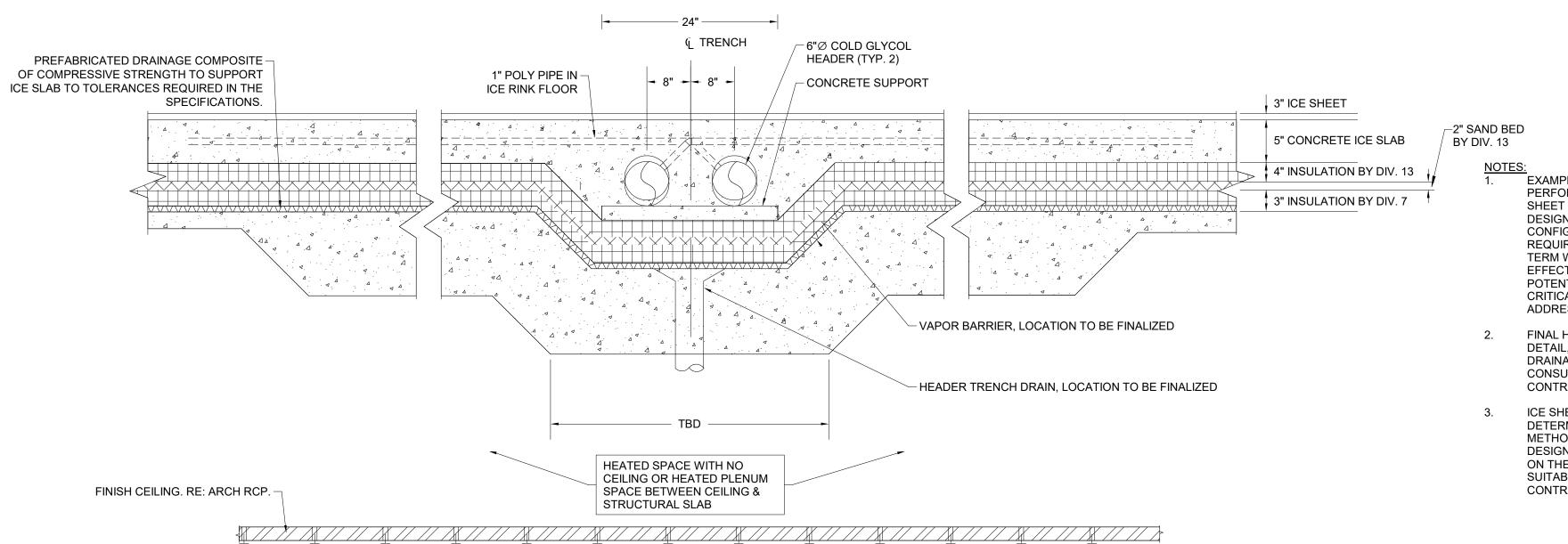


1 ICE SYSTEM COORDINATION NO SCALE

ICE PLANT EQUIPMENT ROOM



3 RINK TEMPERATURE SENSOR PLAN VIEW NO SCALE



EXAMPLE HEADER DETAIL IS SHOWN TO IDENTIFY PERFORMANCE CRITERIA. ULTIMATELY, THE ICE SHEET CONTRACTOR SHALL WORK WITH THE DESIGN TEAM TO DEVELOP THE FINAL CONFIGURATION TO MEET THE OWNER'S REQUIREMENTS IN A MANNER SUITABLE FOR LONG-TERM WARRANTY AND PERFORMANCE. MINIMIZING EFFECTS OF DEFLECTION, CONDENSATION, AND POTENTIAL WATER MIGRATION ARE EXAMPLES OF CRITICAL VARIABLES THIS EXAMPLE ATTEMPTS TO FINAL HEADER CONFIGURATION, SLAB PENETRATION DETAIL, WATER-PROOFING, INSULATION, AND DRAINAGE CONFIGURATION WILL BE CONFIRMED IN CONSULTATION WITH SELECTED ICE SYSTEM CONTRACTOR DURING FINAL DESIGN PROCESS.

ICE SHEET CONTRACTOR TO NOTE IMPORTANCE OF DETERMINING EFFECTIVE WATER CONTROL METHODS ABOVE AND BELOW STRUCTURAL SLAB. DESIGN-ASSIST ROLE WILL INCLUDE CONSULTATION ON THESE SYSTEMS FOR A FINAL CONFIGURATION SUITABLE FOR WARRANTY BY ICE SHEET CONTRACTOR.

MARTIN/MARTIN CONSULTING ENGINEERS 12499 West Colfax Ave. Lakewood, CO 80215 **United States**

14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

Tel 303.595.8585

Fax 303.825.6823

DESIGNWORKSHOP

1390 Lawrence Street

Denver, CO 80204

Tel 303.623.5186

Suite 100

∧LTERR∧ east west partners

2305 Mount Werner Circle

Gensler

1225 17th Street

Denver, CO 80202

United States

141 9th Street

80477

PO Box 774943

Tel 970.871.9494

Steamboat Springs, CO

Suite 150

Steamboat Springs, CO 80487

Tel 303.431.6100

 ∆ Date Description 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

PERMIT

Seal / Signature



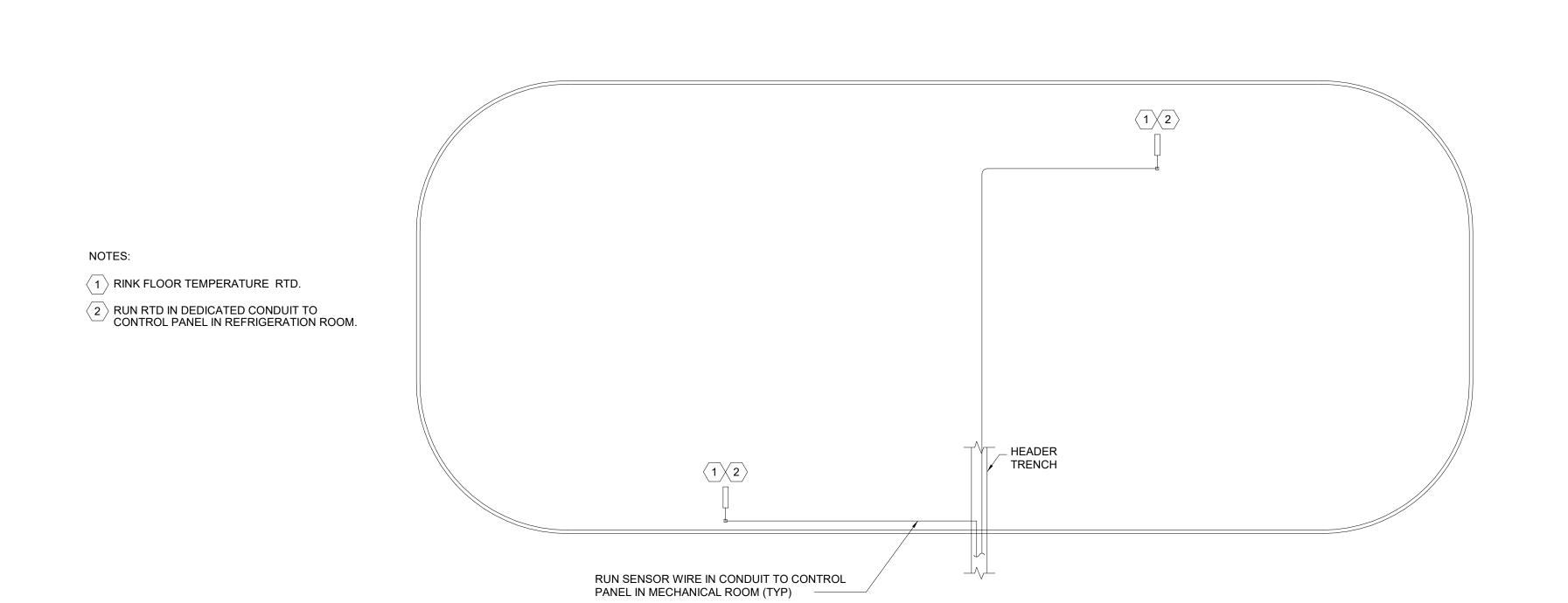
SSRC | BASE AREA **IMPROVEMENTS Project Number**

003.7835.000

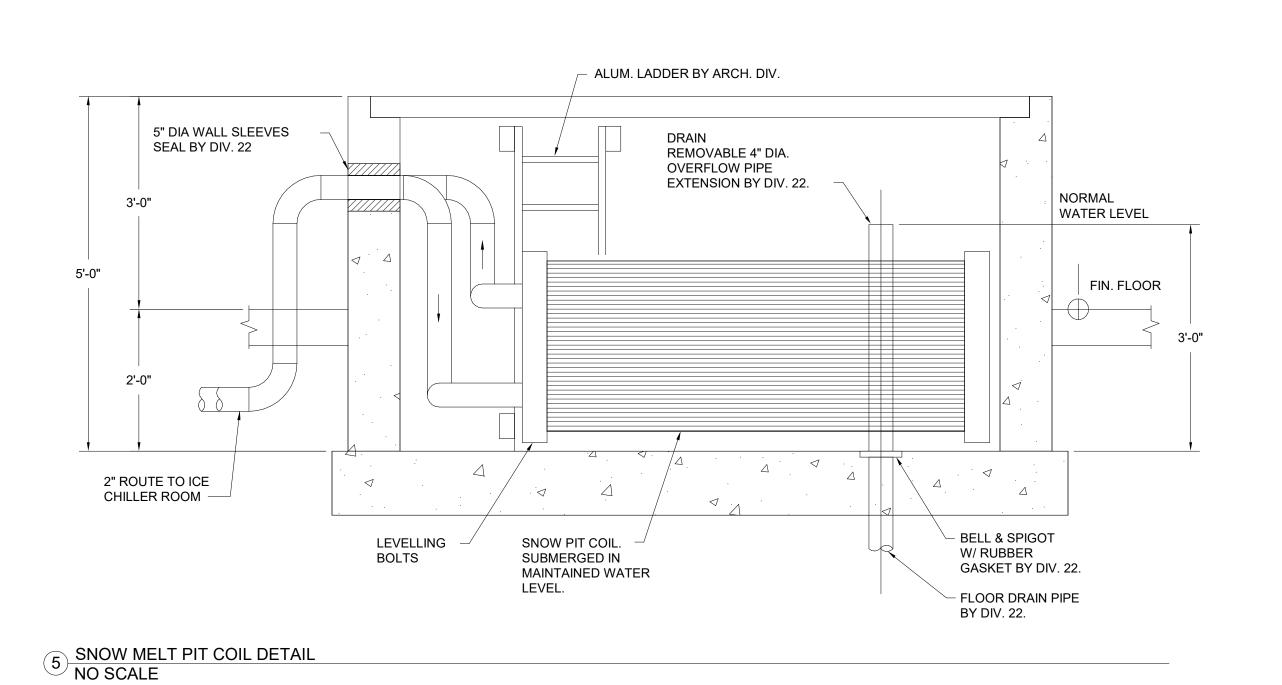
PROMENADE - ICE PLANT DETAILS

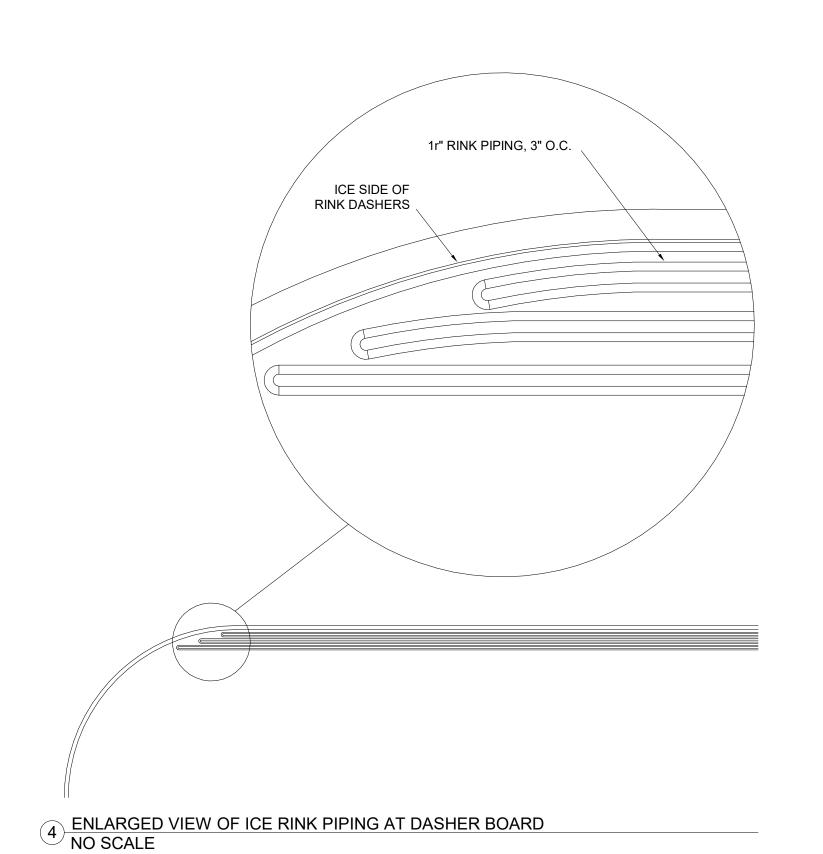
NO SCALE

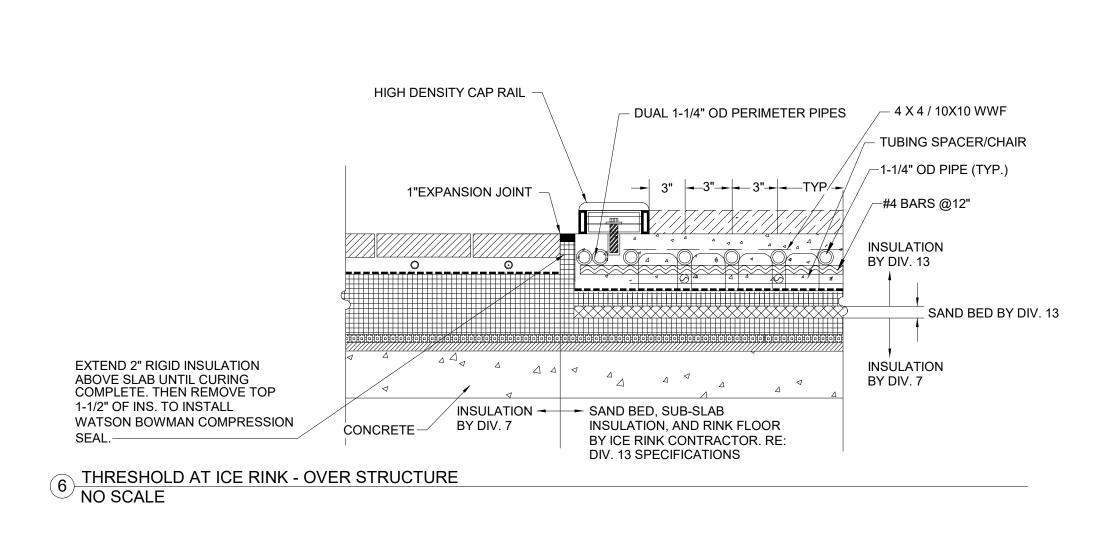
1A-M9.000

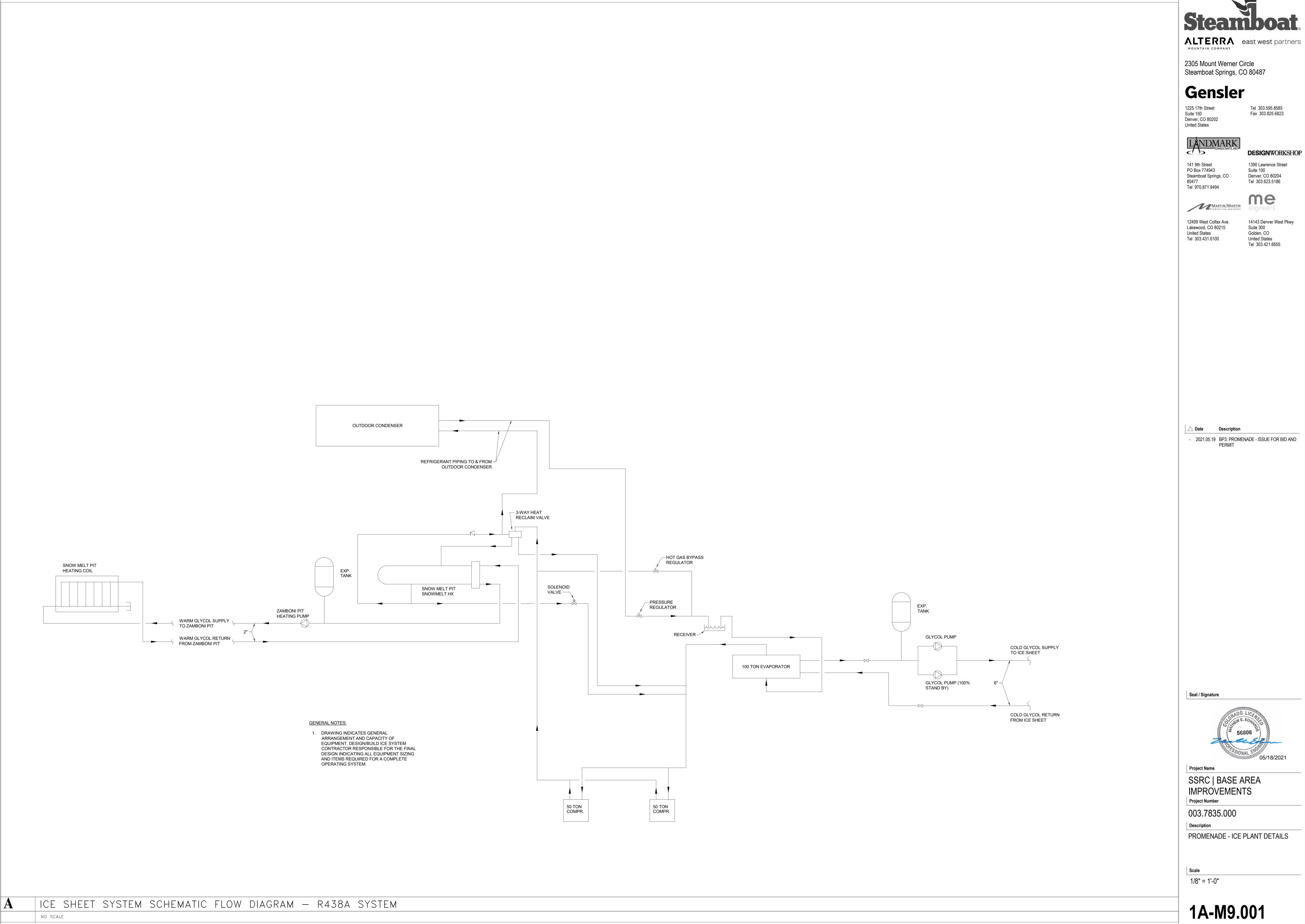


2 SECTION AT HEADER TRENCH NO SCALE









AIR-COOLED CHILLER SCHEDULE

														AII \- 0 \		OIIIL		OOI												
		CAF	ACITY		CHILLI	ED WAT	ER DA	ГА							EL	ECTRICAL	-								KW/TON				OPERATING	
CODE	MANUFACTURER/	NOM.	ACTUAL	EWT	LWT		WPD	DESIGN					CHIL	LER						HEAT TR	RACE			NPLV	AT DESIGN	HEIGHT	WIDTH	LENGTH	WEIGHT	
(CH)	MODEL NO.	(TONS)	(MBH)	(F)	(F)	GPM	(FT)	DB (F)	SCCR	VOLT	PH	MCA	MOP	FUSE	DISCON.	FEEDER	VOLT	PH M	OP FU	JSE DI	SCON.	FEEDER	EER	EER	CONDITIONS	(IN)	(IN)	(IN)	(LBS)	REMARKS
2A.01	TRANE/RTAF	170	1740	54	44	374	40	88	65	460	3	321	450	RE:	ONE-LINES		277	1 2	20	- \$	\$.T.O.	(2#12, #12G) 3/4"C	9.7	15.3	0.934	98.0	98.0	274.0	12,500	

GENERAL NOTES:

1. FLUID CONTAINS 30% PROPYLENE GLYCOL.

2. JOB SITE ELEVATION = 6,700 FT.

3. PROVIDE FREE COOLING COIL WITH INTERNAL DIVERTING VALVE.

4. PROVIDE MANUFACTURER'S STANDARD ROOF CURB, 14" CURB HEIGHT. PROVIDE 2" DEFLECTION SPRING ISOLATORS PER MECHANICAL SPECIFICATIONS.

5. PROVIDE 115V CONVENIENCE OUTLET. 6. PROVIDE SINGLE POINT POWER CONNECTION FOR CHILLER. PROVIDE CONTROL TRANSFORMER AS REQUIRED. HEAT TRACE CONNECTION SHALL BE VERIFIED BY MANUFACTURER FOR SINGLE POINT OR DEDICATED HEAT TRACE CONNECTION.

7. PROVIDE VARIABLE SPEED COMPRESSORS FOR CAPACITY CONTROL.

8. PROVIDE EVAPORATIVE PRE-COOLING SYSTEM, EVAPORCOOL OR EQUAL. PROVIDE BOOSTER PUMP, WATER TREATMENT, EXPANSION TANK, MEDIA AT CHILLER AIR INTAKES, AND COMPLETE PIPING SYSTEM

TO PROVIDE DOMESTIC WATER TO EVAPORATIVE PRE-COOLING MEDIA. INTERLOCK WITH CHILLER TO OPERATE ON CALL FOR COOLING.

				PL	IMP SC	HEDU	LE									
	MANUFACTURER/		PUMP		HEAD	NPSHR	IMPELLER						ELECTR	ICAL		
CODE	MODEL NO.	SERVICE	TYPE	GPM	(FT)	(FT)	DIA (IN)	BHP	HP	VOLT	PH F	LA	FUSE	DISCON.	FEEDER	REMARKS
CWP-1A.01	TACO/SKV 3006D	PRIMARY CHILLED WATER LOOP	INLINE	200	75	12	5.2	5.14	7.5	460	3	11	15A LPS-RK	30A/3P	(3#12, #12G) 3/4"C	A,B,C
CWP-1A.02	TACO/SKV 3006D	PRIMARY CHILLED WATER LOOP	INLINE	200	75	12	5.2	5.14	7.5	460	3	11	15A LPS-RK	30A/3P	(3#12, #12G) 3/4"C	A,B,C
GP-1B.01	NEPTUNE/G-50	GLYCOL FEEDER	POS. DISP.						0.5	120	1	10	-	CORD & PLUG	(2#12, #12G) 3/4"C	C,D

GENERAL NOTES:

1. PROVIDE MAGNETIC STARTER WITH AUXILIARY CONTACTS AND HOA SWITCH ON ALL THREE PHASE MOTORS.

2. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER NEMA STANDARD MG1-2003, TABLES 12-12 AND 12-13.

3. FOR PARALLEL PUMP APPLICATIONS MANUFACTURER SHALL REVIEW SINGLE PUMP OPERATION SUCH THAT PUMP CAN OPERATE AND NOT EXCEED

THE END OPERATION POINT ON THE PUMP CURVE AND MOTOR HP IS PROPERLY SELECTED TO PREVENT OVERLOADING. 4. NPSHR AT SCHEDULED OPERATING POINT SHALL NOT EXCEED 0.8*NPSHA.

5. REFER TO DRAWINGS TO DETERMINE REQUIRED PUMP ROTATION. COORDINATE WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING.

A. PROVIDE WITH VARIABLE FREQUENCY DRIVE WITH INTEGRAL OVER-CURRENT PROTECTION AND GROUND FAULT PROTECTION PER NEC 430.

B. 50% CAPACITY (PARALLEL PUMP APPLICATION).

C. FLUID CONTAINS 30% PROPYLENE GLYCOL. ALL PUMP COMPONENTS IN CONTACT WITH FLUID SHALL BE COMPATIBLE WITH GLYCOL. ADJUST STANDARD

CATALOG PERFORMANCE TO ACCOUNT FOR USE OF GLYCOL. D. ELECTRICAL CONNECTION TO 120V WALL RECEPTACLE.

		EVAPORATIVE PRE-COO	LING	BO	OS 1	ΓER	P	UMF	SCHE	DUL	E		
			CAP	ACITY					ELECTRICA	\L		OPERATING	
CODE	MANUFACTURER/											WEIGHT	
(EBP)	MODEL NO.	SERVICE	GPM	PSI	HP	VOLT	PH	AMPS	FUSE	DISCON.	FEEDER	(LBS)	REMARKS
1A.01	TOWLE WHITNEY/TW1000-15W-40	CHILLER EVAPORATIVE PRE-COOLING SYSTEM	15	40	1/2	480	3	3	15A LPS-RK	30A/3P	(3#12, #12G) 3/4"C	100	

GENERAL NOTES:

1. PUMP SHALL BE PROVIDED BY EVAPORATIVE PRE-COOLING SYSTEM MANUFACTURER. REFER TO SPECIFICATIONS.

2. PUMP SHALL BE CENTRIFUGAL TYPE WITH FACTORY WIRED VARIABLE FREQUENCY DRIVE.

3. PROVIDE PUMP WITH INTEGRAL DIAPHRAGM EXPANSION TANK SIZED BY EVAPORATIVE PRE-COOLING SYSTEM MANUFACTURER.

4. PROVIDE THE FOLLOWING PUMP COMPONENTS: RELIEF VALVE, CHECK VALVE, STEEL FRAME, PRESSURE GAUGE, TANK TEE, BRASS NIPPLE, AND COPPER FITTINGS. 5. REFER TO MECHANICAL CONTROLS DRAWINGS FOR REQUIRED EVAPORATIVE PRE-COOLING SYSTEM PIPING AND CONTROL FUNCTIONS.

				E	XPANSIO	N TANK						
				DESIGN PARAM	ETERS	OPERATING F	PARAMETERS					
DE	MANUFACTURER/		SYSTEM	MIN.	MAX.	MIN.	MAX.			MIN. ACCEPT.	PRECHARGE	
T)	MODEL NO.	SERVICE	VOLUME	TEMPERATURE (F)	TEMPERATURE (F)	PRESSURE (PSIG)	PRESSURE (PSIG)	CONFIG.	TYPE	(GAL)	(PSIG)	REMARKS

GENERAL NOTES:

1. TYPE: B=FULL ACCEPTANCE BLADDER.

2. LOCATE GLYCOL FEEDER CONNECTION AT EXPANSION TANK CONNECTION TO HYDRONIC SYSTEM. REFER TO DETAIL.

3. PROVIDE MAKEUP WATER WITH FILL PRESSURE NO HIGER THAN 20 PSI.

4. PROVIDE PRESSURE RELIEF VALVE SET AT 75 PSIG. 5. FLUID CONTAINS 30% PROPYLENE GLYCOL.

			AIR SE	PAR	ATOR				
		DESIG	N PARAMETER	S		DIMENS	IONS		
		SYSTEM	PIPE						
CODE		FLOW	SIZE	MAX PD	MANUFACTURER/	DIAMETER	HEIGHT	WEIGHT	
(AS)	SERVICE	(GPM)	(IN)	(FT. HD.)	MODEL NO.	(IN.)	(IN.)	(LBS)	REMARKS
1A.01	CHILLED WATER	385	6	1	TACO/ACT06F	20	41	0.008	

GENERAL NOTES: 1. FLUID CONTAINS 30% PROPYLENE GLYCOL. 2. PROVIDE WITH STRAINER.

3. PROVIDE FLOOR STAND SUPPORT.

ALTERRA east west partners

2305 Mount Werner Circle

Steamboat Springs, CO 80487 Gensler

1225 17th Street Suite 150 Denver, CO 80202 **United States**

80477

Tel 303.595.8585 Fax 303.825.6823

Tel 303.623.5186

DESIGNWORKSHOP 141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO Denver, CO 80204

Tel 970.871.9494

MARTIN/MARTIN
CONSULTING ENGINEERS

12499 West Colfax Ave. 14143 Denver West Pkwy Lakewood, CO 80215 Suite 300 United States Tel 303.431.6100

Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND



IMPROVEMENTS Project Number

003.7835.000 PROMENADE - MECHANICAL

SCHEDULES

1A-MEP0.000

																ENERG	GY R	ECO\	VERY VE	ENTILA	TOR	SCH	IEDL	JLE						
				SUPPL	Y FAN			EXH	AUST FAN				COOLIN	IG CAPACIT	Y (CHILLED V	VATER)			HEATING	CAPACITY (HE	EATING HO	T WATE	ER)							
					ESP				ESP					,													C(OOLING		
CODE		MANUFACTURER/	MAX	MIN	"W.C.		MAX	MIN	"W.C.		EA	T (°F)	UNIT LA	AT (°F)	TOTAL	SENSIBLE		WPD			CAP		WPD	OSA	EAT (F)	OSA	LAT (F)	EXH F	EAT (F)	Τ
(ERV)	LOCATION	MODEL NO.	CFM	CFM	(ALT.)	HP	CFM	CFM	(ALT.)	HP	DB	WB	DB	WB	(MBH)	(MBH)	GPM	(FT)	EAT (°F)	LAT (°F)	(MBH)	GPM	(FT)	DB	WB	DB	WB	DB	WB	1
																														T
1A.01	ERV 1	CSAA021	10,000	5,000	1.50	10	10,000	5,000	1.50	10	79.1	59.6	55.0	51.0	211.4	211.4	45.7	3.5	35.4	90	465	48.9	2.4	88.0	56.2	79.1	59.6	75.0	61.5	T
1A.02	ERV 2	CSAA010	4,700	2,350	1.50	5	4,700	2,350	1.50	5	79.0	59.6	55.0	51.0	100.0	100.0	22.0	1.6	35.4	90	220	23	1.0	88.0	56.2	79.0	59.6	75.0	61.5	T
																														T
					ELEC	TRICAL SI	NGLE POINT (CONNECTION					•	FILTERS			'				'		-		•					
										SUPF	PLY PRE F	ILTER	SUPF	PLY FINAL F	ILTER	EXHAUS	ST PRE F	ILTER												
CODE		MANUFACTURER/																												
(ERV)	LOCATION	MODEL NO.	VOLT	PH	MCA	E-POW	FUSE	DISCONNECT	Γ FEEDER	TYPE	APD	("W.C.)	TYPE	APE) ("W.C.)	TYPE	APD	("W.C.)												
1A.01	ERV 1	CSAA021	460	3	33.67	N	40A LPS-RK	60A/3P	(3#8, #10G) 3/4"C	MERV 8	(0.55	MERV 15		0.55	MERV 8		0.64												
1A.02	ERV 2	CSAA010	460	3	19.76	N	30A LPS-RK	30A/3P	(3#10, #10G) 3/4"C	MERV 8	(0.56	MERV 15		0.56	MERV 8		0.65												

1. PROVIDE NEMA PREMIUM EFFICIENCY MOTORS.

2. INSTALL UNITS WITH ADEQUATE CLEARANCE FOR COIL PULL, FILTER REPLACEMENT AND TO FULLY OPEN ACCESS DOORS.

3. PROVIDE MINIMUM CLEARANCE IN FRONT OF DISCONNECTS SWITCHES AND CONTROL PANELS AS REQUIRED AND TO COMPLY FULLY WITH NEC 110.26. 4. UNIT STATIC PRESSURE CAPABILITY SHALL INCLUDE SCHEDULED EXTERNAL STATIC PRESSURE PLUS ALL SCHEDULED INTERNAL PRESSURE DROPS.

5. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR OPERATION AT JOB SITE ELEVATION. JOB SITE ELEVATION = 6700 FT.

6. PROVIDE DUCT SMOKE DETECTOR IN THE SUPPLY AIR DUCT AND RETURN AIR DUCT. RE: MECHANICAL CONTROLS DRAWINGS.

7. MAXIMUM COOLING COIL FACE VELOCITY = 500 FPM 8. ERV-1A.02 UNIT TO BE MOUNTED ON STRUCTURAL SUPPORTS. RE: STRUCTURAL DRAWINGS.

8. ERV-1A.01 PROVIDE STEEL BASE RAILS. 10. PROVIDE SINGLE POINT POWER CONNECTION.

11. CHILLED WATER: EWT = 44F, LWT = 54F, 30% PROPYLENE GLYCOL. 12. HEATING WATER: EWT = 150F, LWT = 130F, 30% PROPYLENE GLYCOL.

A. 100% OUTSIDE AIR UNIT WITH 2-POSITION OUTSIDE AIR DAMPER AND 2-POSITION EXHAUST AIR DAMPERS.

B. PROVIDE VARIABLE FREQUENCY DRIVES ON ALL SUPPLY AND EXHAUST FANS. UNIT SHALL BE CONFIGURED TO CONTROL SUPPLY AIR AND EXHAUST AIR DUCT STATIC PRESSURE WITHIN THE BUILDING.

C. PROVIDE MODULATING 2-WAY CONTROL VALVES FOR CHILLED WATER AND HEATING HOT WATER. D. PROVIDE CONVENIENCE RECEPTACLE POWERED FROM UNIT SINGLE POINT POWER CONNECTION. PROVIDE STEP-DOWN TRANSFORMER.

E. PROVIDE INTERNAL ISOLATION OF ALL FANS AND MOTORS. REFER TO SPECIFICATIONS.

			НС	RIZO	NTA	L FA	N C	OIL S	SCH	EDL	JLE ((HYI	DRC	ONIC	C)											ŀ	lIGH	WAL	L F	AN C	OIL	SCH	EDUL	_E (ŀ	HYDI	RON	IIC)						
			FAN			COOLING	G COIL				l	HEATIN	G COIL						ELECTR	RICAL						FA	N				COOLIN	IG COIL								ELECTRICA	ĄL		
CODE MANUFACTURER/		SUPI	PLY ESP	EAT (°F)	TOTAL	SENS	MAX		WPI	DEAT		MIN			WPD								CODE	MANUFACTURER/		SUPPLY	ESP	EAT (°	°F) T	OTAL	SENS	MAX			WPD	1							
(HFCU) MODEL NO.	AREA SER\	/ED CF	M (IN.)	DB WE	MBH	MBH L	_AT(°F)	GPM RO	OW (FT)	MBH	LAT(°F) GPM	ROW	(FT)	HP	VOLT	PH FLA	A DISCON	N. F	FEEDER	FUSE REMARK	S (WFCU)	MODEL NO.	AREA SERVED	CFM	(IN.)	DB	WB	мвн	MBH	LAT(°F)	GPM	ROW	(FT)	HP	VOL	.T PH F	FLA D	ISCON.	FEEDER	FUSE	REMARKS
1 ENGINEERED COMFORT/D35FH2	:W-08 1 TON	60	0 0.3	75 62	12.8	10.2	55	2.7	4 1.2	65	11.5	85	1.3	1	4.6	1/8	120	1 3.3	\$.T.O.	. (2#12,	, #12G) 3/4"C	; -	1A.01	MULTIAQUA/MHWW-36-H-3	MAIN ELEC	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	, -	Α
2 ENGINEERED COMFORT/D35FHZ	:W-16 2 TON	110	0.3	75 62	25.7	19.7	55	5.4	5 2.7	65	19.6	85	2.2	1	2.5	1/4	120	1 7.2	2 \$.T.O.	. (2#12,	, #12G) 3/4"C	; -	1A.02	MULTIAQUA/MHWW-36-H-3	IDF/IT	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	, -	Α
3 ENGINEERED COMFORT/D35FH2	:W-24 3 TON	180	0.3	75 62	38.7	31.1	55	8.1	5 3.6	65	31.1	85	3.5	1	6.5	1/2	120	1 11.8	8 \$.T.O.	. (2#12,	, #12G) 3/4"C	; -	1A.03	MULTIAQUA/MHWW-36-H-3	IDF/IT RM	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	,	А
4 ENGINEERED COMFORT/D35FHZ	:W-30 4 TON	230	0.3	75 62	49.5	39.8	55	10.4	5 2.3	65	40.5	85	4.6	1	3.2	1/2	120	1 12.6	6 \$.T.O.	. (2#12,	, #12G) 3/4"C	; - A	1A.04	MULTIAQUA/MHWW-36-H-3	MAIN ELEC	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	,	Α
																							1A.05	MULTIAQUA/MHWW-36-H-3	ELEC	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	, -	Α
		'	'	'			-		'						•	,		'	'	'			1A.06	MULTIAQUA/MHWW-36-H-3	ELEC	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	,	Α
GENERAL NOTES:																							3A.01	MULTIAQUA/MHWW-36-H-3	ELEC	850	0	80	67	36.0	22.0	55	9.5	1	24.5	1/12	120	, 1	0.9	\$.T.O.	(2#12, #12G) 3/4"C	, -	Α
1. CHILLED WATER: EWT = 44°F, LWT = 54°	F, 30% PROPYLENE	E GLYCOL.																																		1							

. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL. 3. PROVIDE 2" MERV 8 THROW AWAY FILTERS.

4. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR

OPERATION AT JOBSITE ELEVATION. JOB SITE ELEVATION = 6700 FT.

5. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER MENA STANDARD MG1-2003, TABLES 12-12 AND 12-13.

6.PROVIDE CONDENSATE PUMP POWERED FROM EQUIPMENT. PUMP SHALL BE PROVIDED WITH VOLTAGE MATCHING FAN COIL UNIT. IF TRANSFORMER IS PROVIDED FOR

CONDENSATE PUMP OPERATION, PROVIDE LINE ITEM COST. GRAVITY DRAINAGE ACCEPTABLE WHERE POSSIBLE. 7. DESIGN OUTSIDE AIR CONDITIONS:

COOLING: 88F dB/56.2F wB

HEATING: -10F dB

REMARK NOTES:

A. PROVIDE DUCT SMOKE DETECTORS PER CODE FOR ALL UNITS 2000 CFM OR GREATER.

GENERAL NOTES:

1. CHILLED WATER: EWT = 44°F, LWT = 54°F, 30% PROPYLENE GLYCOL. 2. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR

OPERATION AT JOBSITE ELEVATION. JOB SITE ELEVATION = 6700 FT.

3. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER MENA STANDARD MG1-2003, TABLES 12-12 AND 12-13.

4.PROVIDE CONDENSATE PUMP POWERED FROM EQUIPMENT. PUMP SHALL BE PROVIDED WITH VOLTAGE MATCHING FAN COIL UNIT. IF TRANSFORMER IS PROVIDED FOR

465 | 48.9 | 2.4 | 88.0 | 56.2 | 79.1 | 59.6 | 75.0 | 61.5 | 67%

220 23 1.0 88.0 56.2 79.0 59.6 75.0 61.5 68%

WPD OSA EAT (F) OSA LAT (F) EXH EAT (F) SENSIBLE LATENT OSA EAT (F) OSA LAT (F)

EFF.

EFF.

CONDENSATE PUMP OPERATION, PROVIDE LINE ITEM COST. GRAVITY DRAINAGE ACCEPTABLE WHERE POSSIBLE. 5. DESIGN OUTSIDE AIR CONDITIONS:

COOLING: 88F dB/56.2F wB

HEATING: -10F dB

REMARK NOTES: PROVIDE REMOTE THERMOSTAT.

		(CABINET UNIT	HE	ATI	ER S	SCH	1EC	ULE	(H)	/DR	ON	IC)				
CODE	MANUFACTURER/	AREA		CAP.				WPD				EL	ECTRIC	CAL		CONN.	
(CUH)	MODEL NO.	SERVED	CONFIG	(MBH)	CFM	GPM	ROW	(FT)	WATTS	VOLT	PH	FLA	DISC	FUSE	FEEDER	SIZE	REMARKS
1	TRANE/FORCEFLO-02	SEE PLANS	HORIZONTAL RECESSED	18	315	1.3	2	7.2	84	120	1	3.1	\$.T.O.	-	(2#12, #12G) 3/4"C	3/4"	A,C,D
2	TRANE/FORCEFLO-04	SEE PLANS	HORIZONTAL RECESSED	25	410	1.7	2	2.85	110	120	1	3.1	\$.T.O.	-	(2#12, #12G) 3/4"C	3/4"	A,C,D
3	TRANE/FORCEFLO-06	SEE PLANS	HORIZONTAL RECESSED	41	700	2.8	2	8.6	162	120	1	3.1	\$.T.O.	-	(2#12, #12G) 3/4"C	3/4"	A,C,D
4	TRANE/FORCEFLO-06	SEE PLANS	VERTICAL CABINET	41	700	2.8	2	8.6	162	120	1	3.1	\$.T.O.	-	(2#12, #12G) 3/4"C	3/4"	A,B,D

GENERAL NOTES: 1. EAT = 65°F, LAT = 95°F.

2. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL. 3. JOB SITE ELEVATION = 6,700 FT.

REMARK NOTES:

A. PROVIDE UNIT MOUNTED DISCONNECT SWITCH.

B. PROVIDE FRONT STAMPED INLET AND FRONT STAMPED OUTLET LOUVERS. C. PROVIDE BOTTOM STAMPED INLET AND BOTTOM STAMPED OUTLET LOUVERS.

D. PROVIDE WALL MOUNTED THERMOSTAT.

			UNIT H	EAT	ER	SC	HE	DUL	_E (H	YDF	RON	NC)				
	DE MANUFACTURER/ WATER SIDE AIR SIDE ELECTRICAL WPD EAT LAT															
CODE	MANUFACTURER/		CAPACITY		WPD	EAT	LAT									
(UH)	MODEL NO.	SERVICE	(MBH)	GPM	(FT)	(F)	(F)	CFM	WATTS	VOLT	PH	FLA	DISC	FUSE	FEEDER	REMARKS
1	TRANE / UHSB08	SEE PLANS	8	0.8	0.8	60	95	250	16	120	1	1	\$.T.O.	-	(2#12, #12G) 3/4" C	A,B
2	TRANE / UHSB18	SEE PLANS	18	1.9	2.2	60	95	500	16	120	1	1	\$.T.O.	-	(2#12, #12G) 3/4" C	A,B
3	TRANE / UHSB25	SEE PLANS	24	2.5	2.2	60	95	580	25	120	1	1	\$.T.O.	-	(2#12, #12G) 3/4" C	A,B

4 TRANE / UHSB36 SEE PLANS 35 3.6 3 60 95 850 1/20 HP 120 1 1 \$.T.O. - (2#12, #12G) 3/4" C A,B

GENERAL NOTES

1. EWT =150F, LWT = 130F. 2. WATER CONTAINS 30% PROPYLENE GLYCOL.

3. JOB SITE ELEVATION = 6700 FT.

REMARK NOTES

A. PROVIDE WALL MOUNTED THERMOSTAT.

B. HORIZONTAL DISCHARGE W/ LOUVER.

				RI	EHEAT	COI	L							
	MANUFACTURER/ MAX MIN APD HEATING COIL INLET OU													
CODE		MANUFACTURER/	MAX	MIN	APD							INLET	OUTLET	
(RH)	AREA SERVED	MODEL NO.	CFM	CFM	"W.C.	EAT	LAT	MBH	GPM	ROW	WPD (FT)	SIZE	SIZE	REMARKS
1A.01	LEVEL 00	GREENHECK/HW58S02B06	2500	700	0.29	-10.0	25.0	90.0	9.7	2.0	1.6	26"X15"	26"X15"	A,B

GENERAL NOTES

1. MOUNT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS INCLUDING ALL UL LISTING REQUIREMENTS. 2. HEATING COIL DISCHARGE TEMPERATURES SHALL NOT EXCEED 100F OR HAVE A TEMPERATURE RISE GREATER THAN 45F. 3. EWT =150F, LWT = 130F.

4. WATER CONTAINS 30% PROPYLENE GLYCOL. 5. JOB SITE ELEVATION = 6700 FT.

REMARK NOTES A. PROVIDE LINE VOLTAGE DUCT MOUNTED THERMOSTAT DOWNSTREAM OF HEATER. CONTROL TO 65F LEAVING AIR TEMP.

B. INTERLOCK HEATER WITH ICE PLANT VENTILATION SYSTEM.

	VERTICAL FAN COIL SCHEDULE (HYDRONIC)																									
		FAN COOLING COIL HEATING COIL ELECTRICAL																								
CODE	MANUFACTURER/		SUPPLY	ESP	EAT	Γ (°F)	TOTAL	SENS	MAX			WPD	EAT		MIN			WPD								
(VFCU)	MODEL NO.	AREA SERVED	CFM	(IN.)	DB	WB	MBH	MBH	LAT(°F)	GPM	ROW	(FT)	(°F)	MBH	LAT(°F)	GPM	ROW	(FT)	HP	VOLT	PH	FLA	DISCON.	FEEDER	FUSE	REMARKS
1	ENGINEERED COMFORT/ D39MUZW-06	1 TON	500	0.3	75	62	12.1	9.1	55	2.5	4	6.6	65	9.3	85	1	1	2.68	1/6	120	1	3.6	\$.T.O.	(2#12, #12G) 3/4"C	-	Α
2	ENGINEERED COMFORT/ D39MUZW-15	2 TON	1000	0.3	75	62	24.5	18.3	55	5.2	4	4.2	65	22.0	85	2.5	1	3.97	1/4	120	1	8.7	\$.T.O.	(2#12, #12G) 3/4"C	-	Α
3	ENGINEERED COMFORT/ D39MUZW-19	3 TON	1550	0.3	75	62	35.5	27.5	55	7.5	4	6.1	65	35.2	85	4	1	11.8	1/2	120	1	12.7	\$.T.O.	(2#12, #12G) 3/4"C	-	Α
4	ENGINEERED COMFORT/ E39MUZW-21	4 TON	1960	0.3	75	62	39.9	33.0	55	8.4	4	7.7	65	39.1	85	4.4	1	14.5	1	120	1	16	\$.T.O.	(2#12, #12G) 3/4"C	-	В

1. CHILLED WATER: EWT = 44°F, LWT = 54°F, 30% PROPYLENE GLYCOL.

2. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL. 3. PROVIDE 2" MERV 8 THROW AWAY FILTERS.

4. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR

OPERATION AT JOBSITE ELEVATION. JOB SITE ELEVATION = 6700 FT. 5. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER MENA STANDARD MG1-2003, TABLES 12-12 AND 12-13.

6.PROVIDE CONDENSATE PUMP POWERED FROM EQUIPMENT. PUMP SHALL BE PROVIDED WITH VOLTAGE MATCHING FAN COIL UNIT. IF TRANSFORMER IS PROVIDED FOR

CONDENSATE PUMP OPERATION, PROVIDE LINE ITEM COST. GRAVITY DRAINAGE ACCEPTABLE WHERE POSSIBLE. 7. DESIGN OUTSIDE AIR CONDITIONS:

COOLING: 88F dB/56.2F wB HEATING: -10F dB

REMARK NOTES:

A. PROVIDE WITH AN ECM MOTOR. B. PROVIDE WITH ECM 3-SPEED MOTOR.

	BASEBOARD RADIATI	ON SCHE	DUL	E (HY	DRONI	<u>C)</u>
CODE	MANUFACTURER/	CAPACITY	GPM/		ENCLOSURE	
(BBR)	MODEL NO.	(BTUH/LF)	FT	ROWS	HEIGHT (IN)	REMARKS
BBR-1	ZEHNDER RITTLING/FTR 3/4C	570	0.057	2	14	A,B

GENERAL NOTES:

SENSIBLE WHEEL HEAT RECOVERY

WB

63% -10.0 -2.0 14.1 19.1 65.0

DB

HEATING

DB WB DB

64% -10.0 -2.0 14.0 19.1 65.0 51.5 41.6 39.0 68%

EXH EAT (F) EXH LAT (F) SENSIBLE LATENT WEIGHT

67%

63%

WB DB WB EFF.

51.5 41.6 39.0

1. EWT= 150°F, LWT= 130°F, 30% GLYCOL. 2. MINIMUM FLOW FOR CIRCUIT IS 1 GPM.

3. PROVIDE WALL TO WALL ENCLOSURE UNLESS OTHERWISE NOTED.

4. ENCLOSURE COLOR SELECTED BY ARCHITECT. 5. TUBE MATERIAL IS COPPER, FIN MATERIAL ALUMINUM UNLESS OTHERWISE NOTED.

REMARK NOTES:

A. PROVIDE ZEHNDER RITTLING TYPE PIBG5 BAR GRILLE ENCLOSURE, 16GA CONSTRUCTION WITH BOTTOM OPEN INLET, TOP OUTLET, SURFACE MOUNTED, AND ENCLOSED BACK.

B. INTERLOCK CONTROL WITH HVAC ZONE SERVING SAME SPACE. BASEBOARD SHALL ACT AS FIRST STAGE HEATING.

Seal / Signature



ALTERRA east west partners

Tel 303.595.8585

Fax 303.825.6823

DESIGNWORKSHOP

1390 Lawrence Street

14143 Denver West Pkwy

Denver, CO 80204

Tel 303.623.5186

Suite 100

Suite 300 Golden, CO

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

United States

Tel 303.421.6655

2305 Mount Werner Circle

Gensler

LANDMARK

Steamboat Springs, CO

12499 West Colfax Ave.

Lakewood, CO 80215

United States Tel 303.431.6100

MARTIN/MARTIN

1225 17th Street

Denver, CO 80202 **United States**

141 9th Street

PO Box 774943

Tel 970.871.9494

Suite 150

Steamboat Springs, CO 80487

REMARKS

A,B,C,D,E

A,B,C,D,E

SSRC | BASE AREA **IMPROVEMENTS**

Project Number

003.7835.000

PROMENADE - MECHANICAL SCHEDULES

1A-MEP0.001

ENVIRONMENTAL FAN SCHEDULE																				
	ELECTRICAL SOUNI													SOUND	DECIBEL					
	MANUFACTURER/				MAX	LOW	"W.C.											POWER	LEVEL	
CODE	MODEL NO.	SERVICE	LOCATION	TYPE	CFM	CFM	(ALT.)	DRIVE	HP	VOLT	PH	FLA	DISC.	FEEDER	FUSE	MTG	CTRL	LwA	dBA	REMARKS
EF 1A.01	GREENHECK/SE1-14-440-VG	LOADING/TRASH	LOWER LEVEL	PROPELLOR	900	-	0.3	В	1/2	120	1	9.8	\$.T.O.	(2#12, #12G) 3/4"C	-	2	1	68	57	A,B,D
SF 1A.02	GREENHECK/BSQ140	MECHANICAL/ICE PLANT SUPPLY	LOWER LEVEL	INLINE	2500	700	1	VFD(B)	1	460	3	2.1	20A/3P	(3#12, #12G) 3/4"C	15A LPS-RK	1	II	-	-	A,B,C
EF 1A.03	GREENHECK/BSQ160	MECHANICAL/ICE PLANT EXHAUST	LOWER LEVEL	INLINE	2500	700	0.5	VFD(B)	1/2	120	1	9.6	\$.T.O.	(2#12, #12G) 3/4"C	-	1	II	-	-	A,B

1. DRIVE TYPE: VFD(B) = BELT DRIVE FAN WITH VARIABLE FREQUENCY DRIVE.

B = BELT-PROVIDE ADJUSTABLE SHEAVE UNLESS OTHERWISE NOTED. 2. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE. MOTOR HP HAS BEEN ADJUSTED FROM SEA LEVEL CONDITIONS FOR

OPERATION AT JOB SITE ELEVATION. JOB SITE ELEVATION = 6,700 FT. B. PROVIDE MAGNETIC STARTER WITH AUXILARY CONTACTS AND HOA SWITCH ON ALL THREE PHASE UNITS EXCEPT WHEN

SERVED FROM MOTOR CONTROL CENTER. 3. PROVIDE PREMIUM EFFICIENCY MOTORS FOR MOTORS 1 HP AND OVER PER NEMA STANDARD MG1-2003, TABLES 12-12 AND 12-13.

MOUNTING (MTG):

1. INSTALL FAN WITH FLEXIBLE CONNECTIONS AT DUCT INLET AND OUTLET AND WITH HANGING VIBRATION ISOLATORS.

2. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CONTROL (CTRL):

I. INTERLOCK WITH ENERGY RECOVERY VENTILATOR SERVING THE SAME AREA. MONITOR VIA BMS AND PROVIDE MANUAL OVERRIDE SWITCH. II. RUN CONTINUOUSLY AT LOW SPEED FOR ROOM VENTILATION AND PROVIDE MAX CFM OVERRIDE IN REFRIGERANT PURGE MODE, CONTROL VIA DDC SYSTEM.

REMARK NOTES:

A. PROVIDE BELT AND MOTOR GUARD. B. PROVIDE MOTORIZED BACKDRAFT DAMPER AT ROOF OR WALL PENETRATION.

C. PROVIDE A 2" MERV 8 FILTER

D. PROVIDE WITH WALL HOUSING, WEATHERHOOD AND OSHA WIRE GUARD.

100% Ou	ıtdoor	air	
ERV	1Δ.	.01	

System name and number
Condition analyzed (impacts Ez) ERV 1A.01 Heating

					_							
Zone Name and Number	Occupancy Category	Zone Floor Area	Are you using default value for zone	_	People Outdoor Air Rate	Area Outdoor Air Rate	Breathing Zone Outdoor Airflow (people related	Breathing Zone Outdoor Airflow (area related	Breathing Zone Outdoor Airflow	Zone Air Distribution Effectiveness	Zone Outdoor Airflow	Zone Outdoor Airflow Provided
		Az	population?		Rp	Ra		`	Vbz	Ez	Voz	(measured or design)
		(sq ft)		(people)	(cfm per person)	(cfm per sq ft)	(cfm)	(cfm)	(cfm)		(cfm)	(cfm)
							Rp Pz	Ra Az	(Rp Pz + Ra Az)*1.3		Vbz / Ez	
					0.00	0.00	0.00	0.00	0.00		0.00	
HALLWAY	Common corridors	335	Yes	0.00	0.00	0.00	0.00	20.09	20.09	0.50	40.18	60
RETAIL / L & F	Reception areas	165	Yes	49.50	5.00	0.00	247.50	9.90	257.39			
CIRCULATION LOBBY	Lobbies / prefunction	915	Yes	274.50	7.50	0.06	2,058.75	54.90	2,113.65			450
UC HEALTH + SKI PATROL	Office space	2,450	Yes	122.50	5.00	0.00	612.50	147.00	759.50	0.80	949.37	500
FOOD STORAGE 114	Occupiable storage rooms for dry	230		4.60	5.00	0.00	3 23.00	13.80	36.79	0.80		
CORRIDOR 114	Common corridors	1,025		0.00	0.00	0.00		61.50	61.50	0.80		
FOOD STORAGE 110	Occupiable storage rooms for dry	2,720	Yes	54.40				163.19	435.19			
					0.00	0.00	0.00	0.00	0.00		0.00	

System area (sq ft)	As	(sq ft)	7,840.00	∑Az
System population	Ps	(people)	505.50	∑Pz
Outdoor air intake flow (30% above 62.1 requirement)	Vot	(cfm)	4,620	∑Voz
Outdoor air intake flow provided (measured or design)		(cfm)	10,000	

	REFRIGERANT CALCULATIONS												
ROOM	REFRIGERANT TYPE	REFRIGERANT CLASSIFICATION	ESTIMATED TOTAL REFRIGERANT CHARGE (LBS) (NOTE 2)	ROOM AREA (SF)	ROOM VOLUME (CF)	NORMAL VENTILATION RATE (CFM)	EMERGENCY VENTILATION RATE (CFM)						
ICE PLANT	R-438A	A1	600	1200	14400	700	2,500						
GENERAL NOTES													

1. INFORMATION ABOVE IS BASED ON THE BASIS OF DESIGN AND THE 2018 INTERNATIONAL MECHANICAL CODE. 2. ESTIMATED TOTAL REFRIGERANT CHARGE IS THE MAXIMUM CHARGE ANTICIPATED WITHIN THE ICE PLANT SKID.

		GRILLE R	EGISTER D	IFFUSER SCH	EDULE	
	MANUFACTURER/					
CODE	MODEL NO.	SERVICE	TYPE	ACCESSORIES	FACE SIZE	REMARKS
A1	PRICE / 520L	SUPPLY	LOUVERED		NECK +2"	
A2	PRICE / 620L	SUPPLY	LOUVERED		NECK +2"	А
A3	PRICE / 520	SUPPLY	DOUBLE		NECK +2"	
B1	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(1) 1" SLOT, 48" LENGTH	
B2	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(2) 1" SLOT, 48" LENGTH	
В3	PRICE / SDS	SUPPLY	LINEAR SLOT	48" FACTORY PLENUM	(3) 1" SLOT, 48" LENGTH	
C1	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(1) 1" SLOT, 60" LENGTH	
C2	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(2) 1" SLOT, 60" LENGTH	
C3	PRICE / SDS	SUPPLY	LINEAR SLOT	60" FACTORY PLENUM	(3) 1" SLOT, 60" LENGTH	
D	PRICE / SDGE	SUPPLY	SPIRAL MOUNT	AIR SCOOP		A
Е	PRICE / SDGE	EXHAUST/RETURN	SPIRAL MOUNT	PERFORATED		А
F1	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		12"x12"	
F2	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		24"x24"	
G1	PRICE / 510L	EXHAUST/RETURN	LOUVERED		SEE PLANS	
G2	PRICE / 530L	EXHAUST/RETURN	LOUVERED		SEE PLANS	
Н	PRICE / SPD	SUPPLY	SQUARE CEILING		24"x24"	
J1	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(1) 1" SLOT, 48" LENGTH	
J2	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(2) 1" SLOT, 48" LENGTH	
J3	PRICE / SDR	RETURN	LINEAR SLOT	48" FACTORY PLENUM	(3) 1" SLOT, 48" LENGTH	

GENERAL NOTES: 1. SEE PLANS FOR CFM AND NECK SIZE.

2. MAXIMUM NOISE CRITERIA (NC) SHALL BE 30 UNLESS OTHERWISE NOTED.

3. COLOR TO BE COORDINATED WITH ARCHITECT. 4. MATERIAL IS STEEL UNLESS OTHERWISE NOTED.

5. PROVIDE A REMOTE, THROUGH FACE, CABLE OPERATED BALANCING DAMPER WHEN INSTALLED IN AN INACCESSIBLE CEILING. 6. PROVIDE FRAME AND TRIM COMPATIBLE WITH CEILING SYSTEM. RE: ARCHITECTURAL RCP DRAWINGS.

7. PROVIDE SQUARE TO ROUND ADAPTER FOR RECTANGULAR FACE GRILLES CONNECTED TO ROUND BRANCH DUCTS.

REMARK NOTES: A. ALUMINUM CONSTRUCTION.

		VA	V BOX S	CHEDU	JLE					
			DESIG	N CFM	CAPACIT	ΓΥ (CFM)				
CODE (VAV)	AREA SERVED	MANUFACTURER/ MODEL NO.	AIRFLOW (CFM)	DESIGN (CFM)	MAX.	MIN.	MAX. NC @ DESIGN MAX.	INLET SIZE	OUTLET SIZE	REMARKS
1A.01	EMPLOYEE LOCKER	TITUS DESV 14	2200	2200	3000	450	-	14	20 X 17.5	Α
1A.02	FOOD STORAGE	TITUS DESV 12	1000	1000	2000	325	-	12	16 X 15	Α
1A.03	VISITORS LOCKER/RESTROOMS	TITUS DESV 14	2650	2650	3000	450	-	14	20 X 17.5	Α
1A.04	VISITORS LOCKER/RESTROOMS	TITUS DESV 14	2650	2650	3000	450	-	14	20 X 17.5	Α
1A.05	UC HEALTH + SKI PATROL	TITUS DESV 8	500	500	900	145	-	8	12 X 10	Α
1A.06	LOADING/TRASH	TITUS DESV 12	1000	1000	2000	325	-	12	16 X 15	Α
ENERAL NO	TES									

1. MOUNT WITH 5 STRAIGHT DUCT DIAMETERS UPSTREAM OF THE BOX.

2. MAXIMUM OUTLET S.P.= 0.75". 3. MAXIMUM NC LEVELS ARE RADIATED SOUND DATA AND BASED ON THE MAXIMUM BOX CFM

LISTED AND AT A PRESSURE DROP ACROSS THE BOX OF 2.0".

4. JOBSITE ELEVATION = 6700FT.

REMARK NOTES A. PROVIDE CONSTANT VOLUME BOX.

	EAV BOX SCHEDULE												
			DESIG	N CFM	CAPACITY	Y (CFM)							
CODE		MANUFACTURER/	AIRFLOW	DESIGN			MAX. NC @	INLET	OUTLET				
(EAV)	AREA SERVED	MODEL NO.	(CFM)	(CFM)	MAX.	MIN.	DESIGN MAX.	SIZE	SIZE	REMARKS			
1A.01	EMPLOYEE LOCKER	TITUS DESV 14	2700	2700	3000	450	-	14	20 X 17.5	Α			
1A.02	VISITORS LOCKER	TITUS DESV 12	1800	1800	2000	325	-	12	16 X 15	Α			
1A.03	RESTROOMS	TITUS DESV 12	1800	1800	2000	325	-	12	16 X 15	Α			
1A.04	RESTROOMS	TITUS DESV 6	350	350	500	80	-	6	12 X 8	А			
1A.05	VISITORS LOCKER	TITUS DESV 14	2500	2500	3000	450	-	14	20 X 17.5	Α			

GENERAL NOTES

1. MOUNT WITH 5 STRAIGHT DUCT DIAMETERS UPSTREAM OF THE BOX. 2. MAXIMUM OUTLET S.P.= 0.5".

3. MAXIMUM NC LEVELS ARE RADIATED SOUND DATA AND BASED ON THE MAXIMUM BOX CFM LISTED AND AT A PRESSURE DROP ACROSS THE BOX OF 2.0".

4. JOBSITE ELEVATION = 6700FT.

REMARK NOTES A. PROVIDE CONSTANT VOLUME BOX.

	LOUVER SCHEDULE													
CODE	MANUFACTURER/		AIRFLOW	MINIMUM	FACE DIMENSIONS									
(LV)	MODEL NO.	SERVICE	(CFM)	FREE AREA (SF)	WIDTH (IN) X HEIGHT (IN)	REMARKS								
2A.01	RUSKIN/ELF6375DX	PROMENADE ERV	10,000	20	64 X 78									
2A.02	RUSKIN/ELF6375DX	PROMENADE ERV	10,000	13.4	50 X 70									
2A.03	RUSKIN/ELF6375DX	PLAZA F&B ERV	4,700	9.4	40 X 60									
2A.04	RUSKIN/ELF6375DX	PLAZA F&B ERV	4,700	6.3	40 X 48									
2A.05	RUSKIN/ELF6375DX	ICE PLANT INTAKE	2,500	5	36 X 42									
3A.01	RUSKIN/ELF6375DX	ICE PLANT EXHAUST	2,500	5	36 X 42									

GENERAL NOTES:

1. LOUVERS ARE PROVIDED BY DIVISION 23.

2. REFER TO ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL DETAILS. 3. PROVIDE EXTERIOR INSULATION ON ALL LOUVER PLENUMS AND SHEET METAL BETWEEN LOUVER AND

MOTORIZED DAMPER. REFER TO MECHANICAL INSULATION SPECIFICATION.

ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

1225 17th Street Suite 150 Denver, CO 80202 **United States**

Tel 303.595.8585 Fax 303.825.6823

DESIGNWORKSHOP

141 9th Street 1390 Lawrence Street PO Box 774943 Suite 100 Steamboat Springs, CO 80477 Denver, CO 80204 Tel 303.623.5186 Tel 970.871.9494

MARTIN/MARTIN
CONSULTING ENGINEERS 14143 Denver West Pkwy

12499 West Colfax Ave. Lakewood, CO 80215 United States Tel 303.431.6100

Suite 300 Golden, CO United States Tel 303.421.6655

- 2021.05.19 BP3: PROMENADE - ISSUE FOR BID AND

Seal / Signature



SSRC | BASE AREA **IMPROVEMENTS**

Project Number 003.7835.000

Description PROMENADE - MECHANICAL SCHEDULES

Scale

1A-MEP0.002