MISCELLANEOUS			PIPING TYPES			PIPING	SYMBOLS	ABE	BREVIATIONS:						
SYMBOL DESCRIPTION	SYMBOL	DESCRIPTION	DOUBLE LINE PIPING (2" AND ABOVE)	SINGLE LINE PIPING (UP TO 2")	PIPE TYPE	SYMBOL ABBR	REVIATION DESCRIPTION	ABBREVIA	TION DESCRIPTION	ABBREVIA	TION DESCRIPTION	ABBREVIA	TION DESCRIPTION	ABBRE\	VIATION DESCRIPTION
SECTION NO.		SUPPLY	(2 7110 7100 12)	(61 102)	2	FITTINGS:		<u> </u>	AID (COMPDESSED)	EDR EER	EFFECTIVE DIRECT RADIATION ENERGY EFFICIENCY RATIO EXHAUST FAN		M	SFCS	SPRINKLER FLOOR CONTRO STATION SHOWER
SIM SECTION VIEW SHEET		DIFFUSER-4-WAY THROW	 			<u>'</u> P&T	PRESSURE/TEMPERATUR	ABV A/C	AIR (COMPRESSED) ABOVE AIR CONDITIONING	EFF EJ	EXHAUST FAIN EFFICIENCY EXPANSION JOINT	MA MAT	MAKE-UP AIR MIXED AIR TEMPERATURE	SHT SIM	SHEET SIMILAR
1 A101		SUPPLY DIFFUSER-3-WAY	CHS	———— CHS ————	CHILLED WATER SUPPLY		E PORT TAPS	AC AC	ALTERNATING CURRENT AIR COMPRESSOR	EL EMRG	ELEVATION EMERGENCY	MAX MBH	MAXIMUM THOUSAND BTUH	SK SKVA	SINK STARTING KILOVOLT AMPS
	Y 5	THROW SUPPLY	├	CHR	- CHILLED WATER	CR	CONCENTRIC REDUCER	ACCH ACCU	AIR COOLED CHILLER AIR COOLED CONDENSING UNIT ACCESS DOOR	ENCL ENGR	ENCLOSURE ENGINEER ENTERING	MC MCA MCC	MECHANICAL CONTRACTOR MINIMUM CIRCUIT AMPACITY MOTOR CONTROL CENTER	SKW SM	STARTING KILOWATTS SHEET METAL STATIC PRESSURE
M1-01 DESIGNATION		DIFFUSER-2-WAY THROW			RETURN	ER	ECCENTRIC REDUCER	ADJ	ACCESS DOOR AREA DRAIN ADJUSTABLE	ES	END SUCTION EMERGENCY SHOWER	MECH MFR	MECHANICAL MANUFACTURER	SPEC	SUMP PUMP SPECIFICATION
AHU POWERED EQUIPMENT		SUPPLY DIFFUSER-1-WAY THROW	HWS	HWS	HEATING WATER SUPPLY	EJ EJ	EXPANSION JOINT	AF AFC	AIR FILTER ABOVE FINISHED CEILING	ESP ET	EXTERNAL STATIC PRESSURE EXPANSION TANK	MI	MANHOLE MALLEABLE IRON	SPR SQ	SPRINKLER SQUARE
1.01 DESIGNATION				— — — HWR— — —	- HEATING WATER		UNION	AFF AFG AHU	ABOVE FINISHED FLOOR ABOVE FINISHED GRADE AIR HANDLING UNIT	ETR EVAP EWB	EXISTING TO REMAIN EVAPORATOR ENTERING WET BULB	MIN MOCP	MINIMUM MAXIMUM OVER CURRENT PROTECTION	SSD	STAINLESS STEEL SERVICE SINK SUBSURFACE DRAIN
VAV NON POWERED 1.01 EQUIPMENT DESIGNATION		CEILING ACCESS PANEL		TIVVIX	RETURN		UNION	AL AMB	ALUMINUM AMBIENT	EWT	ENTERING WATER TEMPERATURE	MP MS	MEDIUM PRESSURE MOP SINK	SSFU	SANITARY SEWER FIXTURE UNITS
		···	> CWS	CWS	CONDENSER WATER SUPPLY	Т	THERMOMETER W/ THERMOWELL	AP APD	ACCESS PANEL AIR PRESSURE DROP	EX EXT	EXTERNAL	MTD MTL	MOUNTED METAL	SSSC	SOLID STATE SPEED CONTROL
TYPE BASEBOARD EQUIPMENT DESIGNATION	F	RETURN DIFFUSER		OMB		AV	AIR VENT	ARI ARCH AS	AMERICAN REFRIGERANT INSTITUTE ARCHITECT AIR SEPARATOR	EXTG	EXISTING	MUA MVD	MAKE-UP MAKE-UP AIR UNIT MANUAL VOLUME DAMPER	STD STL STR	STANDARD STEEL STRAINER
2" 1 SHEET KEY NOTES		EXHAUST	- CWR	— — CWR— — —	CONDENSER WATER RETURN	FC FC	FLEXIBLE PIPE	ASHRAE	AMERICAN SOCIETY OF HEATING AND REFRIGERATION ENGINEERS	F	DEGREE FAHRENHEIT		N	SURF SUSP	SURFACE SUSPEND
POINT OF		DIFFUSER	D >	D	CONDENSATE		CONNECTOR	ASME ASTM	AMERICAN SOCIETY OF MECHANICAL ENGINEERS AMERICAN SOCIETY OF TESTING	FBO FCO	FURNISHED BY OTHERS FLOOR CLEAN OUT FLOOR CONTROL SWITCH	(N)	NEW NORMALLY CLOSED	SV ST	SANITARY VENT SOUND TRAP
DISCONNECTION ARROW INDICATES	H AAA H	HUMIDIFIER	'		DRAIN		FLOW SWITCH	AV	AND MATERIALS ACID VENT	FCU FD	FAN COIL UNIT FLOOR DRAIN	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION		T
DIRECTION OF FLOW		FLEXIBLE DUCT	HPS	// HPS //	HIGH PRESSURE STEAM SUPPLY	PS PS	PRESSURE SWITCH	AVG	AIR VENT AVERAGE ACID WASTE	FDS	FIRE DAMPER FIRE DEPARTMENT SIAMESE	NIC NO	NOT IN CONTRACT NORMALLY OPEN	TC TD	TEMPERATURE CONTROL TRENCH DRAIN
EXTERIOR WALL LOUVER (UNDER ARCH. SECTION)		FLEXIBLE DUCT CONNECTION	MPS <	MPS	, - MEDIUM	PG	PRESSURE GAUGE W/ GAUGE COCK	AWS AUX	ACID WASTE AMERICAN WELDING SOCIETY AUXILIARY	FG FF	FIRE DEPARTMENT VALVE FIBERGLASS FINAL FILTER	NO NTS	NUMBER NOT TO SCALE	TF Trg	TOTAL DYNAMIC HEAD TRANSFER FAN TRANSFER GRILLE
UC UNDERCUT DOOR (UNDER	\	OLIDDI V. AID			PRESSURE STEAM SUPPLY		ELBOW UP		В	FH FHC	FIRE HYDRANT FIRE HOSE CABINET		0	TH BLK	THRUST BLOCK TOP OF DUCT (AFF)
D/I DOOR LOUVER (UNDER	F	SUPPLY AIR FLOW SYMBOL	LPS	———— LPS ————	LOW PRESSURE STEAM SUPPLY			B	BOILER	FHR FIXT	FIRE HOSE RACK FIXTURE FULL LOAD AMPS	OA OAF	OUTSIDE AIR OUTSIDE AIR HANDLING LINIT	TOP TP	TOP OF PIPE (ÀFF) TRAP PRIMER TRAP PRIMER DEVICE
ARCH. SECTION)		RETURN/EXHAUST AIR FLOW SYMBOL		_/_/ — HPR — _/_/	, HIGH PRESSURE		ELBOW DOWN	B/C BFV	BELOW COUNTER BACK OF CURB BUTTERFLY VALVE	FLA FLEX FL	FULL LOAD AMPS FLEXIBLE FLOW LINES	OAHU OBD OC	OUTSIDE AIR HANDLING UNIT OPPOSED BLADE DAMPER ON CENTER	TPD TSP TSTAT	TRAP PRIMER DEVICE TOTAL STATIC PRESSURE THERMOSTAT
L/D LOUVER DOOR FULL HEIGHT. (UNDER ARCH. SECTION)	22222 	HEAT TRACE		// //	CONDENSATE RETURN		TEE UP	BH BHP	BOX HYDRANT BRAKE HORSEPOWER	FLR FP	FLOOR FAN POWERED MIXING BOX	OD	OUTSIDE DIAMETER OVERFLOW DRAIN	TYP	TYPICAL
EQUIPMENT DESI	CNATIO	N	MPR	$\frac{1}{2}$ — MPR — $\frac{1}{2}$	MEDIUM PRESSURE CONDENSATE RETURN	<u> </u>	TEE DOWN	BLDG BM BOD	BUILDING BENCHMARK BOTTOM OF DUCT (AFF)	FPI FPM	FIRE PUMP FINS PER INCH FEET PER MINUTE	OFCU OPG OS&Y	OUTSIDE AIR FAN COIL UNIT OPENING OPEN STEM AND YOLK		URINAL
EQUIPMENT DESI	GNATIO	'IN	 	— — — LPR — — —	OONDENO, WE KE TONK]	PIPE CAP OR PLUG	BOF BOS	BOTTOM OF BUCT (AFF) BOTTOM OF FOOTING BOTTOM OF STRUCTURE	FRIC FRZR	FRICTION FREEZER	0301	D	U/F U/S	UNDERFLOOR UNDERSLAB
<u>LEVEL</u>		S TYPE OF EQUIPMENT		— — LPK — — —	LOW PRESSURE CONDENSATE RETURN	- N	ISOLATION VALVE, RE:	ВТ	BATH TUB BREAK TANK	FS	FLOW SWITCH FIRE SPRINKLER	5	PUMP	UCD UG	UNDERCUT DOOR UNDERGROUND
01 - LEVEL 01	1-01		RS	RS	REFRIGERANT		SPECS	BTU BV BWV	BRITISH THERMAL UNIT BALL VALVE BACK WATER VALVE	FT	FLOOR SINK FOOT FEET	PC	PUMP PLUMBING EQUIPMENT PLUMBING CONTRACTOR	UL	UNIT HEATER UNDERWRITERS LABORATORIES
	INDICATE	ES UNIT NUMBER WITHIN AREA	' 		SUCTION	OS&Y	OUTSIDE STEM AND		C	FT WC FUT	FEET, WATER COLUMN FUTURE	PCR	PUMPED CONDENSATE RETURN	UNO UTR	UNLESS NOTED OTHERWISE UP THROUGH ROOF
DUCTWODK			RL >	RL	REFRIGERANT LIQUID	DV	DRAIN VALVE W/ HOSE	C	CELSIUS CABINET		G	PD	PRESSURE DROP PLANTER DRAIN PRE-FILTER		V
DUCTWORK			RHG <	RHG	REFRIGERANT		END CONNECTION	CAB CAV CB	CABINET CONSTANT AIR VOLUME CATCH BASIN	G GA	GAS GAUGE	PH	PHASE POST HYDRANT	V VA	VOLT, VENT VOLT-AMPERE
ROUND DUCT UP					HOT GAS		BALL VALVE W/ HOSE CONNECTION	CC CD	COOLING COIL CONDENSATE DRAIN LINE	GAL GALV	GALLON GALVANIZED	PIV PLBG	POST INDICATOR VALVE PLUMBING	VAC VAV	VACUUM VARIABLE AIR VOLUME
TRANSITION:————————————————————————————————————			A >	— А	CONTROL AIR (PNEUMATIC)			CFH CFM CFS	CUBIC FEET PER HOUR CUBIC FEET PER MINUTE CUBIC FEET PER SECOND	GLV GND	GENERAL CONTRACTOR GLOBE VALVE GROUND	PNEU PNL PNTH	PNEUMATIC PANEL PENTHOUSE	VB VCP	VALVE BOX VACUUM BREAKER VITRIFIED CLAY PIPE
RECTANGULAR TO ROUND			BD S	——— ВD ———	- BOILER BLOW	cv	CHECK VALVE WITH INDICATION OF FLOW	CI CIRC	CAST IRON CIRCULATING	GPD GPM	GALLONS PER DAY GALLONS PER MINUTE	PP PPM	POLYPROPYLENE PARTS PER MILLION	VD VEL	VOLUME DAMPER VELOCITY
FIRE DAMPER F					DOWN		DIRECTION	CL CLG	CENTERLINE CEILING	GSH GV	GRAND SENSIBLE HEAT GATE VALVE	PRESS PRI PRS	PRESSURE PRIMARY PRIMARY REDUCING STATION	VERT VFD	VERTICAL VARIABLE FREUENCY DRIVE VALVE IN BOX
SMOKE DAMPER S			BF	——————————————————————————————————————	BOILER FEED	PRV	PRESSURE REDUCING VALVE	CMP CMU	CLEAR CORRIGATED METAL PIPE CONCRETE MASONRY UNIT		Н	PRV PSF	PRESSURE REDUCING VALVE POUNDS PER SQUARE FOOT		VALVE IN BOX VALVE ON VERTICAL VACUUM PUMP
		EXISTING	BO S	во	- BLOW OFF	S SV		CPI CPVC	CAST IRON PIPE INSTITUTE CHLORINATED POLYVINYL	HB HC	HOSE BIBB HEATING COIL	PSI PSIG	POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH,	VR	VARIABLE AIR VOLUME REHEAT
DAMPER	П	DIFFUSER		50	BLOW OIT	SV SV	SOLENOID VALVE	co	CHLORIDE CLEANOUT COLUMN	HD	HEAD HUB DRAIN HUMIDIFIER	PT PV	GAUGE PLUMBING TRIM PLUG VALVE	VSD VTR	VARIABLE SPEED DRIVE VENT THROUGH ROOF
MOTORIZED DAMPER M	Ĺ	EXISTING DUCTWORK	<pre>CF</pre>	CF	CHEMICAL FEEDER	FCV FCV	AUTO FLOW CONTROL VALVE W/ TEST PORTS	COL COMB COMP	COMBINATION COMPRESSOR	HORIZ HP	HORIZONTAL HORSEPOWER	PVC PWL	POLYVINYL CHLORIDE SOUND POWER LEVEL		\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
BACKDRAFT B DAMPER		TO BE REMOVED	D00/D	PCS/R	PROCESS COOLING	CS.B'	CIRCUIT SETTER OR	CON CONC	CONVERTER CONCRETE	HPU	HALON PANEL HEAT PUMP UNIT		Q	<u> </u>	W
		EXISTING DUCTWORK	PCS/R	. 55/11	WATER SUPPLY/RETURN	CS,B	BALANCING VALVE GLOBE VALVE	COND	CONCENTRIC CONDENSER CONDENSATE	HKP HSC HSTAT	HOUSEKEEPING PAD HORIZONTAL SPLIT CASE HUMIDISTAT	QTY	QUANTITY	W/W/O	WATT, WASTE, WIDTH WITH WITHOUT
EXISTING THERMOSTAT——T (E)			HTWS/R	HTWS/R	HIGH TEMP. HOT WATER	T GLV	(STRAIGHT PATTERN)	CONN CONT	CONNECTION CONTINUOUS	HT HTG	HEIGHT HEATING		R	WB WC	WETBULB WATER CLOSET
NEW THERMOSTAT T		POINT OF CONN. (CONN.	'		SUPPLY/RETURN	GLV	GLOBE VALVE (ANGLE PATTERN)	CONTR	CONTINUATION CONTROLLER CONTRACTOR	HTR HU HW	HEATER HUMIDIFIER SECTION HOT WATER	(R)	REMOVE RELOCATE RETURN AIR	WCO WF WH	WALL CLEANOUT WATER FILTER WALL HYDRANT
SENSOR SPACE HUMIDISTAT H	RECTANG	NEW TO EXISTING) GULAR BRANCH	PHWS/R	PHWS/R	PRIMARY OR DISTRICT HEATING WATER	BFV	BUTTERFLY VALVE	COP CRAC	CONTRACTOR COEFFICIENT OF PERFORMANCE COMPUTER ROOM A/C UNIT	HWC HWP	HOT WATER HOT WATER CIRCULATOR HOT WATER PUMP	RAD RAF	REFRIGERATED AIR DRYER RETURN AIR FAN	WM WP	WATER METER WEATHERPROOF
SPACE HUMIDITY SENSOR——HS	TAP	/—DIFFUSER	PCHS/R	PCHS/R	SUPPLY/RETURN - PRIMARY OR DISTRICT	RV.	BALL VALVE	CRT CRU	CATHODE RAY TUBE CONDENSATE RETURN UNIT	HWR HWS	HOT WATER RETURN HOT WATER SUPPLY	RAG RAT RCP	RETURN AIR GRILLE RETURN AIR TEMPERATURE	WPD WWF	WATER PRESSURE DROP WELDED WIRE FABRIC
SPACE PRESSURE SENSOR——PS		TYPE			CHILLED WATER SUPPLY/RETURN		AUTOMATIC	CTR	COOLING TOWER CENTER COPPER	HZ HZ	HEAT EXCHANGER HERTZ	RD	REFLECTED CEILING PLAN REINFORCED CONCRETE PIPE ROOF DRAIN	I VV I	WATER TIGHT WEIGHT
CARBON DIOXIDE SENSOR——CD CARBON MONOXIDE CO		A SIZE (QTY)	→ PR	PR	PUMPED CONDENSATE RETURN	TCV	TEMPERATURE CONTROL VALVE, 2-WAY	CW CWP	COLD WATER CONDENSER WATER PUMP		1	RE	REFERENCE REFER	,,,	Υ
NITROGEN DIOXIDE——ND	CONICAL	DIFFUSER	(E)	———— (E) ————	- EXISTING PIPING	TCV	AUTOMATIC TEMPERATURE CONTROL	CWR CWS	CONDENSER WATER RETURN CONDENSER WATER SUPPLY CONSTANT VOLUME	IID IE IIH	INSIDE DIAMTER INVERT ELEVATION INFRARED HEATER	RECIRC RED REFR	RECIRCULATE REDUCER REFRIGERATOR	Y	YARD HYDRANT 7
SENSOR DUCT MOUNTED SMOKE		ROUND DUCT DOWN		(/		TCV	VALVE, 3-WAY		CONSTANT VOLUME	IN IN WC	INCH	REG REINF	REGISTER REINFORCING	Z	ZONE
TRANSITION-RECT. TO RECT. OR—	S NEW	DUCT DIMENSIONS	(E)	(E)	- EXISTING PIPING TO BE REMOVED	BV BV	BALANCING VALVE	dB	DECIBEL	INSUL INT	INSULATION INTERNAL	REQD REV	REQUIRED REVISION		
ROUND TO ROUND CONICAL SPIN-IN	DUCTWO	RK (WIDTH x HEIGHT) SUPPLY OR				TMP	TEMPERATURE/PRESSURE	DB DC	DRY-BULB DOUBLE DUCT CONSTANT VOLUME DIRECT CURRENT	IW	INTERIOR INDIRECT WASTE	RF RH	REVISE RETURN FAN RELATIVE HUMIDITY		
FITTING W/ MANUAL VOLUME DAMPER		OUTSIDE AIR DOWN				<u> </u>	RELIEF VALVE VALVE IN	DDC DESIG	DIRECT DIGITAL CONTROL DESIGNATION		J	RHG RKVA	REFRIGERANT HOT GAS RUNNING KILOVOLT AMPS		
LOW PRESSURE	20"x1						RISER	DEFL DTL	DEFLECTION DETAIL	JB JP	JUNCTION BOX JOCKEY PUMP	RKW RL	RUNNING KILOWATTS REFRIGERANT LIQUID RUNNING LOAD AMPS		
FLEXIBLE DUCT	TURNING —SPLITTER					STR	STRAINER W/ BLOW-OFF & CAPPED HOSE END	DF DIA DIFF	DRINKING FOUNTAIN DIAMETER DIFFUSER		K	RM	ROOM REFRIGERANT MACHINE		
SUPPLY SLOT————————————————————————————————————						>	CONNECTION	DIM DISC	DIMENSION DISCONNECT	KEC	KITCHEN EQUIPMENT CONTRACTOR	RPM RS	REVOLUTIONS PER MINUTE REFRIGERANT SUCTION		
RISE IN—						——————————————————————————————————————	STEAM TRAP	DN DP DPR	DOWN DISCHARGE PLENUM DAMPER	KO KVA KW	KNOCKOUT KILOVOLT AMPS KILOWATT	RV RV	ROOFTOP UNIT RELIEF VALVE		
DIRECTION OFDF	ROP IN DIRECTION O	F —RETURN DIFFUSER						DS	DAMPER DOUNSPOUT DOUBLE SUCTION	I XVV			S	4	
UP DN		RETURN OR RELIEF AIR DN						DV DW	DOUBLE DUCT VAV DISHWASHER	L	LENGTH	SA SAF	SUPPLY AIR SUPPLY AIR FAN		
		EXHAUST DIFFUSER						DWG DWH	DRAWING DOMESTIC WATER BLIMP	LAT LAV LBS	LAVATORY	SAG SAN SAR	SUPPLY AIR GRILLE SANITARY SEWER SUPPLY AIR REGISTER		
RETURN OR——RELIEF AIR UP		EXHAUST AIR DN						DWP DX	DOMESTIC WATER PUMP DIRECT EXPANSION	LBS LBS/HR LF	POUNDS PER HOUR	SAR SCHED SCFM	SUPPLY AIR REGISTER SCHEDULE STANDARD AIR CUBIC FEET		
									E	LP LRA	LOW PRESSURE LOCKED ROTOR AMPS	SCR	PER MINUTE SILICON CONTROLLED		
EXHAUST—— AIR UP								(E) EA	EXISTING EACH ENTERING AIR TEMPERATURE	LVG LVL LWB	LEAVING LEVEL LEAVING WET BULB	SD SE	RECTIFIER STORM DRAIN SEWAGE EJECTOR		
								EC ECC	ELECTRICAL CONTRACTOR ECCENTRIC	LWCO LWT	LOW WATER CUT OFF LEAVING WATER	SEC SECT	SECONDARY SECTION		
								EDB EDF	ENTERING DRY BULB ELECTRIC DRINKING FOUNTAIN		TEMPERATURE	SENS SF	SENSIBLE SQUARE FEET		
								EDH	ELECTRIC DUCT HEATER						



Tel 303.595.8585 Fax 303.825.6823

ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

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



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

MARTIN/MARTIN
CONSULTING ENGINEERS

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

△ Date Description

- 2021.05.21 BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature



Project Name

Steamboat Base Village Redevelopment Project Number

003.7835.000

Description

MECHANICAL LEGEND

Scale 1/8" = 1'-0"

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 DOCUMENTS.
- 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 THE CONTRACTOR'S RESPONSIBILITY FOR "ENGINEERING BY CONTRACTOR" AND FOR PREPARATION OF CONSTRUCTION DOCUMENTS.
- D. "(N)" INDICATES "NEW" EQUIPMENT TO BE PROVIDED UNDER THIS
- 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 EQUIPMENT.
- 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 CHANNELS).

EXISTING BUILDING:

- 1. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING BUILDING WILL BE OCCUPIED BY THE OWNER DURING CONSTRUCTION. CONTINUED OPERATION OF THE FACILITY SHALL NOT BE HINDERED BY THIS WORK. THE CONTRACTOR SHALL ACCOUNT FOR ALL ADDITIONAL COSTS WHICH MAY BE INCURRED BY HIM DUE TO THE DIFFICULTY OF WORKING OVER AND AROUND EMPLOYEES, DESKS, EQUIPMENT, ETC.; AND DUE TO THE HOURS OF THE DAY IN WHICH AN AREA MAY BE AVAILABLE WHEN SUBMITTING HIS BID.
- 2. MAINTAIN A MARK-UP SET OF DRAWINGS WHICH INDICATE VARIATIONS IN THE ACTUAL INSTALLATION FROM THE ORIGINAL DESIGN. SURRENDER DRAWINGS TO OWNER UPON COMPLETION.
- 3. ALL CAPACITIES ARE SCHEDULED AT JOBSITE ALTITUDE OF 6700 FT. ABOVE SEA LEVEL.
- 4. COORDINATE ALL PENETRATIONS OF THE FLOOR SLAB AND CONCRETE WALL PRIOR TO COMMENCING WORK UTILIZE X-RAY AND VISUAL INVESTIGATION OF EXISTING CONDITIONS AS REQUIRED PRIOR TO DRILLING OR CUTTING COORDINATE ALL NEW PENETRATIONS WITH OTHER DIVISIONS OF THE WORK. ALL CONTRACTORS ARE INDIVIDUALLY RESPONSIBLE FOR ALL PENETRATIONS REQUIRED BY THEIR DIVISIONS.

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. 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 * D = FLEXIBLE DUCT DIAMETER 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
- (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

PANEL AND LOCATION OF PRE-ACTION VALVE(S).

- 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
- 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

2000 CFM, PROVIDE UL LISTED SMOKE DETECTORS IN RETURN AIR SYSTEMS

- 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 DETECTED.
- INSTALLATION:
- 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 TRAP GUARDS OR PRIMERS FOR ALL FLOOR DRAINS AND FLOOR SINKS SHOWN ON DRAWIINGS. 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.

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.

FOR DUCT WIDTHS GREATER THAN 36".

C. MINIMUM TURNING RADIUM OF R = 1.5D.

- 4. UNLESS OTHERWISE NOTED. ALL CHANGES IN DIRECTION SHALL BE MADE WITH 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 ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS FOR "STANDARD SPACING".
- B. USE DOUBLE THICKNESS (AIRFOIL) BLADES WITHOUT TRAILING EDGES
- 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.
- * R = RADIUS OF TURN AS MEASURED TO CENTERLINE OF DUCT.

A. MAKE ALL TAPS TO ROUND DUCTWORK WITH CONICAL TEES

- 7. BRANCH LINES:
- B. MAKE ALL TAPS TO RECTANGLE DUCTWORK WITH 45° ENTRY OR CONICAL SPIN IN TO ROUND.
- C. INCLUDE DAMPERS AT ALL BRANCH LINES.
- 8. INCLUDE DAMPERS AT ALL BRANCH LINES, WHERE SHOWN ON THE DRAWINGS, AND WHERE OTHERWISE REQUIRED FOR BALANCING.

PIPE INSTALLATION:

CONDENSATE DRAINAGE:

- 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.
- 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 SCREEN 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. 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 COMPONENTS.
- 9. PROVIDE ISOLATION VALVES AT EVERY HYDRONIC BRANCH LINE.
- 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. 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 CONSTRUCTION WITH NO NOTICEABLE DIFFERENCE IN CONTINUITY. 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 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) TO VERIFY LOCATIONS AND COORDINATION OF WORK BETWEEN TRADES PRIOR TO INSTALLATION.
- 3. 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
- 4. NO GAS LINES SHALL BE LOCATED BELOW BUILDING SLAB.
- 5. 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.
- A. DO NOT LOCATE PIPING DIRECTLY ABOVE ANY ELECTRICAL EQUIPMENT IN ELECTRICAL ROOMS.

STRUCTURE:

- 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 OF A STRUCTURAL EXPANSION JOINT.

FIRE PROTECTION NOTES:

1-1/2" DR TO FLOOR DRAINS.

- 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 EXISTING SPRINKLER HEADS.
- C. CONFORM TO HAZARD OCCUPANCY REQUIREMENTS OF NFPA 13.
- 2. THE ENTIRE BUILDING SHALL BE SERVED BY EXISTING GONDOLA SQUARE GLYCOL 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 NEW WORK.
- 4. SYSTEM SHALL BE INSTALLED COMPLETE AND OPERATIONAL, INCLUDING WATER 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.
- 6. COORDINATE ALL WORK WITH ALL OTHER TRADES. 7. SUPPLY OWNER AN EXTRA STOCK OF SIX SPRINKLER HEADS (6), THREE (3) OF 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 INCLUDE: 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.

CONSTRUCTION VENTILATION:

- 1. 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.



ALTERRA east west partners

Tel 303,595,8585

Fax 303.825.6823

2305 Mount Werner Circle

Steamboat Springs, CO 80487

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



14143 Denver West Pkwy Suite 300 Golden, CO United States



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

Tel 303.421.6655

∆ Date Description 2021.05.21 BP4D - GONDOLA SQUARE INTERIORS

BLDG. A. C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature



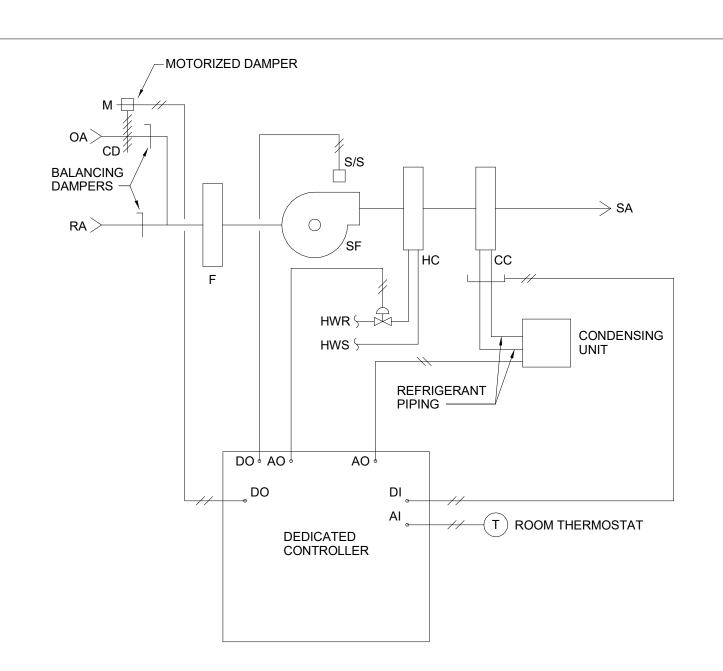
Redevelopment

Project Number 003.7835.000

MECHANICAL GENERAL NOTES

1/8" = 1'-0"

M0.001



A BUILDING F FAN COIL UNIT CONTROL

SEQUENCE OF OPERATION:

D. FAN SAFETY CONTROLS:

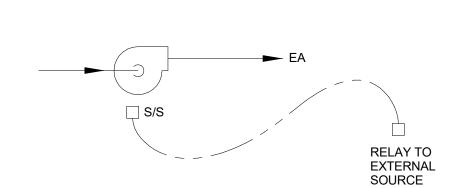
SIGNAL FROM DEVICE.

DISABLED IF THE FANS ARE OFF.

- 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. 2. UNIT SHALL BE PROVIDED WITH A PROGRAMMABLE THERMOSTAT CAPABLE OF HOURLY OCCUPIED/UNOCCUPIED MODE SEQUENCING AND SETPOINT ADJUSTMENT. PROGRAMMABLE THERMOSTAT SHALL BE PROVIDED WITH PASSWORD PROTECTION.
- B. OCCUPIED MODE: 1. UNITS WITH OUTSIDE AIR DUCTWORK: WHEN THE FCU IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY. THE OUTSIDE AIR MOTORIZED DAMPER SHALL BE OPEN. THE SUPPLY FAN SHALL UTILIZE MULTI-SPEED FAN CONTROL. COOLING AND HEATING SHALL MODULATE IN SEQUENCE TO MAINTAIN SPACE TEMPERATURE SETPOINT. 2. UNITS WITH NO OUTSIDE AIR DUCTWORK: WHEN THE FCU IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE INTERMITTENTLY. THE SUPPLY FAN SHALL UTILIZE MULTI-SPEED FAN CONTROL. COOLING AND HEATING SHALL MODULATE IN SEQUENCE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- 1. WHEN THE FCU ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, THE OUTSIDE AIR DAMPER SHALL CLOSE, COOLING SHALL BE DISABLED, AND HEATING CONTROL VALVE
- 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 HEATING SETPOINT. 3. WHEN COOLING IS REQUIRED IN THE SPACE, THE SUPPLY FAN SHALL CYCLE ON AND COOLING SHALL MODULATE TO MAINTAIN SPACE 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

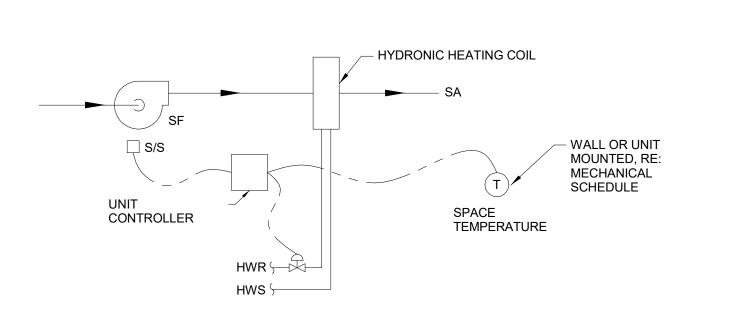
1. DE-ENERGIZE THE SUPPLY FAN WHENEVER THE OVERFLOW SENSOR HAS TRIPPED. MANUAL

- RESET REQUIRED. E. HEATING CONTROL: 1. THE HEATING CONTROL VALVE SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE.
- HEATING CONTROL VALVE SHALL CLOSE IF THE FANS ARE OFF. F. COOLING CONTROL: 1. THE COOLING SHALL MODULATE TO MAINTAIN SPACE TEMPERATURE. COOLING SHALL BE



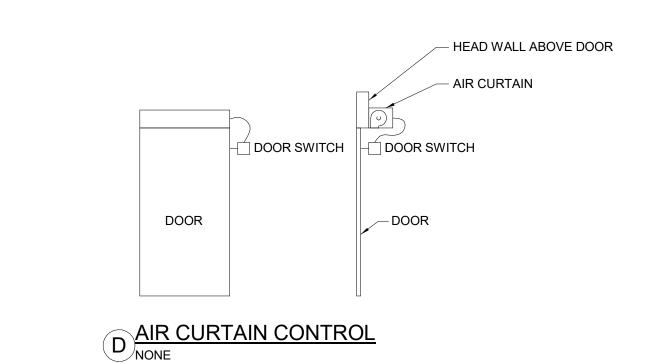
BUILDING F EXHAUST FAN CONTROL (INTERLOCK)

A. INTERLOCK FAN WITH FAN COIL UNIT SERVING SAME AREA. ENERGIZE FAN UPON RELAY

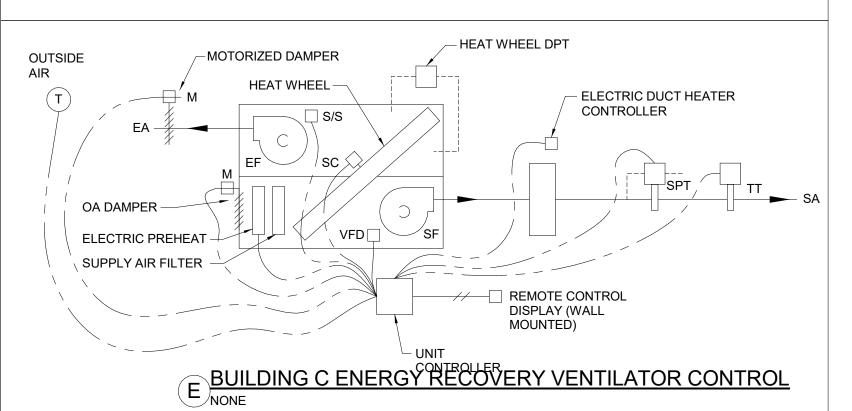


HYDRONIC CABINET UNIT HEATER/ HYDRONIC UNIT HEATER CONTROL

- A. THERMOSTAT SHALL CYCLE FAN & OPEN HEATING WATER VALVE TO MAINTAIN SPACE
- B. WHERE REMOTE MOUNTED THERMOSTAT IS INDICATED, PROVIDE CONTROL TRANSFORMER AND LOW VOLTAGE THERMOSTAT BY TEMPERATURE CONTROLS CONTRACTOR.



A. EACH DOOR PROTECTED WITH AIR CURTAIN(S) SHALL BE PROVIDED WITH A DOOR SWITCH. WHEN THE DOOR OPENS EITHER FULLY OR PARTIALLY, THE AIR CURTAIN SHALL ENERGIZE. WHEN THE DOOR HAS FULLY CLOSED, THE AIR CURTAIN SHALL DE-ENERGIZE.



A. ENERGY RECOVERY VENTILATOR SHALL BE PROVIDED WITH REMOTE DISPLAY BY ERV MANUFACTURER FOR SCHEDULING OF OCCUPIED AND UNOCCUPIED MODES. REMOTE DISPLAY SHALL BE WALL MOUNTED. B. WHEN THE UNIT IS IN OCCUPIED MODE, THE SUPPLY FAN VFD SHALL BE ENERGIZED AND SHALL MODULATE TO MAINTAIN SUPPLY DUCT STATIC PRESSURE SETPOINT. THE EXHAUST FAN VFD SHALL BE ENERGIZED AND SHALL TRACK THE SUPPLY FAN BLOWER SPEED VIA INTERNAL PACKAGED CONTROLS. THE HEAT WHEEL SHALL MODULATE TO MAINTAIN SUPPLY AIR TEMPERATURE SETPOINT. THE ERV CONTROLLER SHALL RESET THE SUPPLY TEMPERATURE SETPOINT BASED ON OUTSIDE AIR TEMPERATURE. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 55F, SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 68F (ADJ.). WHEN OUTSIDE AIR TEMPERATURE IS ABOVE 65F, SUPPLY AIR TEMPERATURE SETPOINT SHALL BE 55F (ADJ.). WHEN OUTSIDE AIR TEMPERATURE IS BETWEEN 55F AND 65F, THE SUPPLY AIR TEMPERATURE SETPOINT SHALL BE ADJUSTED LINEARLY BETWEEN 55F AND 68F. C. WHEN OUTSIDE AIR TEMPERATURE IS BELOW 5F (ADJ.) AND THE DIFFERENTIAL PRESSURE ACROSS THE

WHEEL RISES TO 1.5", FROST CONTROL MODE SHALL BE ENABLED. UNIT MOUNTED ELECTRIC PREHEAT SHALL BE ENERGIZED. WHEN OUTSIDE AIR RISES ABOVE 5F (ADJ.) AND THE DIFFERENTIAL PRESSURE ACROSS THE WHEEL FALLS BELOW 1.5", UNIT SHALL RESUME NORMAL OPERATION. D. HEATING CONTROL: EACH ENERGY RECOVERY VENTILATOR SHALL BE PROVIDED WITH AN EXTERNAL ELECTRIC DUCT HEATER WITH SCR CONTROL. THE ERV CONTROLLER SHALL MODULATE HEATING AT THE EXTERNAL ELECTRIC DUCT HEATER TO MAINTAIN SUPPLY AIR DISCHARGE TEMPERATURE SETPOINT. HEATING SHALL BE LOCKED OUT WHEN OUTSIDE AIR IS ABOVE 68F (ADJ.).

CONTROL LEGEND

ABBR DE	ESCRIPTION	ABBR DI	ESCRIPTION	ABBR D	ESCRIPTION
Al	ANALOG INPUT	FR	FREEZESTAT	PHC	PREHEAT COIL
AO	ANALOG OUTPUT	FRN	FURNACE	PT	PRESSURE TRANSMITTER
BDD	BACKDRAFT DAMPER	FS	FLOW SWITCH	PZ	PIEZOMETER RING
BTU	BTU METER	FSCP	FIREFIGHTER SMOKE	RA	RETURN AIR
С	CONTROLLER		CONTROL PANEL	RF	RETURN FAN
CC	COOLING COIL	FSPD	FAN SPEED	s	SPACE TEMPERATURE SENSOR
CD	CONTROL DAMPER	FT	FLOW TRANSMITTER	S/S	START/STOP
CFM	AIRFLOW MEASURING SENSOR	н	HUMIDITY OR HIGH	sa	SUPPLY AIR
CHR	CHILLED WATER RETURN	HC	HEATING COIL	sc	SPEED CONTROL
CHS	CHILLED WATER SUPPLY		HIGH/LOW	SD	SMOKE DETECTOR
CO2	CARBON DIOXIDE	HH	HIGH LIMIT HUMIDITY SWITCH	SF	SUPPLY FAN
COND	CONDENSATE OVERFLOW	HS	HUMIDITY SENSOR	SPT	STATIC PRESSURE TRANSMITTE
COV	CHANGE OF VALUE	HT	HUMIDITY TRANSMITTER	SR	SWITCHING RELAY
CSEN	CURRENT SENSOR	HWR	HOT WATER RETURN	T	THERMOSTAT
DI	DIGITAL INPUT	HWS	HOT WATER SUPPLY	TM	THERMAL MASS METER
DO	DIGITAL OUTPUT	IR	INTERLOCK RELAY	TO	TIMED OVERRIDE SWITCH
DP	DIFFERENTIAL PRESSURE	L	LEVEL OR LOW	TS	TEMPERATURE SENSOR
EA	EXHAUST AIR	LAN	LOCAL AREA NETWORK	TT	TEMPERATURE TRANSMITTER
ES	END SWITCH		CONNECTION	TTAB	TEMPERATURE TRANSMITTER
F	FILTER ASSEMBLY OR FAIL	M	MOTORIZED CONTROL		W/AVERAGING BULB
FACP	FIRE ALARM CONTROL PANEL	MIN	MINIMUM	V	VALVE
FAS	FIRE ALARM SYSTEM	ND	NITROGEN DIOXIDE	VFD	VARIABLE FREQUENCY DRIVE
FC	FAIL CLOSED	OA	OUTSIDE AIR	VP	VIRTUAL POINT
FCU	FAN COIL UNIT	os	OCCUPANCY SENSOR	vs	VELOCITY SENSOR
FM	FLOW METER	P	SPACE STATIC PRESSURE	WBT	WET BULB TEMPERATURE
FO	FAIL OPEN	∥P-E	PNEUMATIC ELECTRIC SWITCH		TRANSMITTER

CONTROL SYSTEM GENERAL NOTES:

DESIGN INTENT:

- 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
- 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 CONTROL SYSTEMS, 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 TEMPERATURE CONTROLS SUBMITTAL SHALL DISTINGUISH WHERE SPECIFIC SEQUENCE ELEMENTS ARE PROVIDED WITHIN THE BOILER PLANT CONTROL 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:

GENERAL:

- A. PROVIDE INDIVIDUAL INPUTS OR OUTPUTS FOR EACH POINT LISTED IN THE POINTS LIST 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.
- B. IN THE EVENT OF A POWER OUTAGE OR OTHER MALFUNCTION, THE CURRENTLY ENABLED CONTROLS SEQUENCES SHALL BE MAINTAINED. RE: SPECIFICATIONS.

OCCUPANCY SCHEDULES:

- A. THE FOLLOWING SPECIAL OCCUPANCY SCHEDULE MODES ARE HEREBY DEFINED: OCCUPIED MODE UNOCCUPIED MODE
- B. ANY DEVICE UTILIZING ON/OFF CONTROL OR SCHEDULING VIA BMS SHALL BE CAPABLE OF
- BEING PROGRAMMED TO CONFORM TO ANY OF THE ABOVE SEQUENCES.
- C. THE BMS SHALL STAGE AIR HANDLERS TO/FROM OCCUPIED MODE TO MINIMIZE SUDDEN CHANGES IN SYSTEM FLOW REQUIREMENTS.

INITIAL SPACE THERMOSTAT SEPOINTS

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

MISCELLANEOUS NON-DDC CONTROL:

A. MISCELLANEOUS PUMPS: PUMPS SHALL OPERATE PER SCHEDULE AND DRAWINGS.

Gensler

Steamboat Springs, CO 80487

2305 Mount Werner Circle

ALTERRA east west partners

1225 17th Street Tel 303.595.8585 Suite 150 Fax 303.825.6823



Denver, CO 80202 United States

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

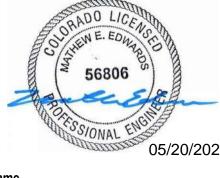


12499 West Colfax Ave. Lakewood, CO 80215 United States Tel 303.431.6100

∆ Date Description

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Seal / Signature



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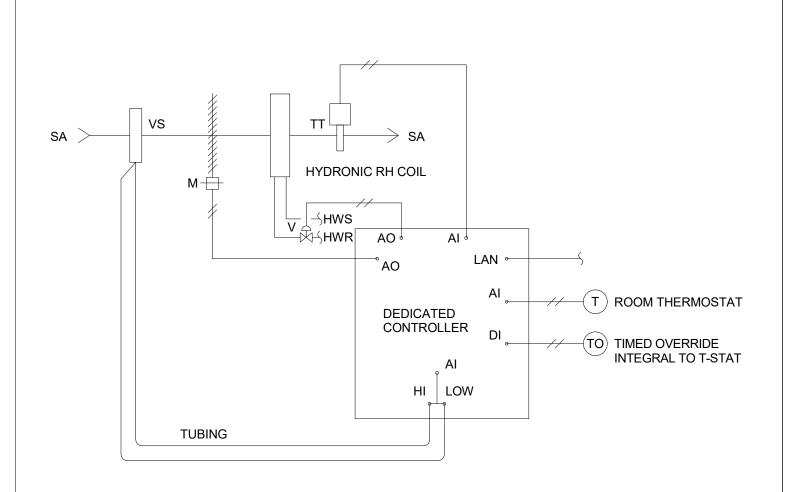
Project Number 003.7835.000

Description

MECHANICAL CONTROLS

1/8" = 1'-0"

M0.002



BUILDING A SUPPLY VARIABLE AIR VOLUME (VAV) BOX A WITH HOT WATER REHEAT CONTROL

SEQUENCE OF OPERATION:

1. ON A RISE IN SPACE TEMPERATURE ABOVE THE COOLING SETPOINT, THE UNIT SHALL MODULATE UP TO ITS MAXIMUM CFM TO MAINTAIN COOLING SETPOINT. AS SPACE TEMPERATURE DECREASES, THE UNIT SHALL MODULATE DOWN TO ITS MINIMUM COOLING CFM TO MAINTAIN COOLING SETPOINT. UPON A FURTHER DECREASE IN SPACE TEMPERATURE, THE UNIT SHALL MODULATE TO ITS FIXED HEATING MINIMUM CFM AND THE HEATING WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN HEATING SETPOINT.

B. UNOCCUPIED MODE: 1. WHEN UNIT ENTERS UNOCCUPIED MODE, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND

HEATING WATER 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 HEATING SETPOINT.

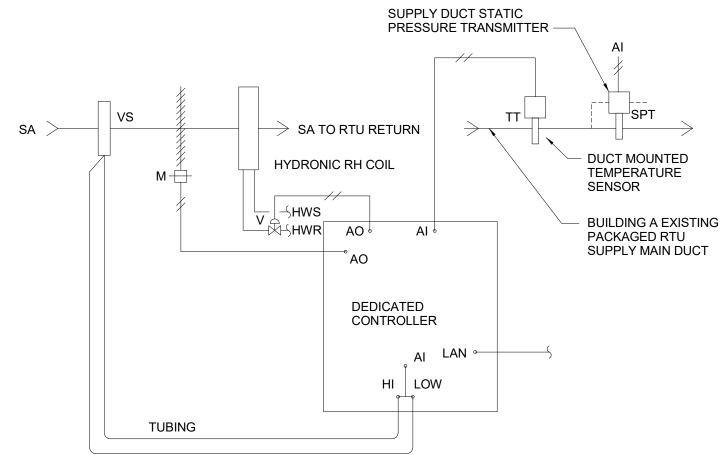
3. WHEN COOLING OR HEATING IS REQUIRED IN THE SPACE, THE AIR HANDLING SYSTEM SERVING THE UNIT SHALL CYCLE ON AND THE UNIT SHALL OPERATE PER OCCUPIED MODE

SEQUENCE TO MAINTAIN SETBACK SPACE TEMPERATURE 4. IF THE AIR HANDLING SYSTEM SERVING THE UNIT CYCLES ON AT ANY TIME DURING UNOCCUPIED MODE, THE UNIT CONTROL DAMPER SHALL BE OPEN AND UNIT SHALL MODULATE PER THE SETBACK MODE ABOVE. WHEN THE AIR HANDLING UNIT CYCLES OFF UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING SHALL BE DISABLED. 5. PROVIDE TIMED OVERRIDE SWITCH AT EACH SPACE THERMOSTAT. OVERRIDE SHALI

RETURN SYSTEM SERVING ZONE TO OCCUPIED MODE FOR TWO HOURS (ADJ.). SYSTEM

SHALL BE CAPABLE OF LOCKING OUT OVERRIDE CONTROL AT EACH INDIVIDUAL ZONE.

C. PRE-OCCUPANCY WARM-UP AND COOL-DOWN MODES: 1. WHEN THE AIR HANDLING SYSTEM SERVING THE UNIT ENTERS PRE-OCCUPANCY WARM-UP OR PRE-OCCUPANCY COOL-DOWN MODE, UNIT SHALL OPERATE PER OCCUPIED MODE SEQUENCE. UNIT SHALL CONTINUE TO OPERATE IN OCCUPIED MODE AS THE AIR HANDLING SYSTEM TRANSITIONS TO OCCUPIED MODE.



BUILDING A BYPASS VARIABLE AIR VOLUME (VAV) BOX WITH HOT WATER REHEAT CONTROL

SEQUENCE OF OPERATION:

1. THE SYSTEM IS PROVIDED WITH A BYPASS VAV BOX WHICH DIRECTS SUPPLY AIRFLOW FROM THE PACKAGED ROOFTOP UNIT SUPPLY MAIN DUCT TO THE RETURN PLENUM IN ORDER TO KEEP AIRFLOW AT THE ROOFTOP UNIT CONSTANT DURING HEATING AND COOLING MODES. THE BYPASS VAV BOX SHALL OPERATE IN A REVERSE-ACTING AIRFLOW SEQUENCE SUCH THAT WHEN OTHER VAV BOXES IN THE SYSTEM ARE REDUCING AIRFLOW, THE BYPASS VAV BOX SHALL INCREASE AIRFLOW SO THAT FLOW AT THE ROOFTOP UNIT REMAINS AT OR ABOVE 5,600 CFM. THE BYPASS VAV BOX SHALL BE CONTROLLED TO MAINTAIN SUPPLY DUCT STATIC PRESSURE ON THE DISCHARGE SIDE OF THE EXISTING PACKAGED ROOFTOP UNIT.

B. OCCUPIED MODE: 1. THE BMS SHALL MONITOR AND CONTROL DUCT STATIC PRESSURE IN THE PACKAGED

ROOFTOP UNIT SUPPLY MAIN DUCT. 2. AS THE SUPPLY VAV BOXES IN THE AIR HANDLING SYSTEM REDUCE AIRFLOW, THE BYPASS VAV BOX SHALL INCREASE AIRFLOW TO MAINTAIN SUPPLY DUCT STATIC PRESSURE

3. AS THE SUPPLY VAV BOXES IN THE AIR HANDLING SYSTEM INCREASE AIRFLOW, THE BYPASS VAV BOX SHALL REDUCE AIRFLOW TO MAINTAIN SUPPLY DUCT STATIC PRESSURE. ONCE THE BYPASS VAV BOX HAS REACHED MINIMUM AIRFLOW, IT SHALL REMAIN AT MINIMUM

AIRFLOW AS LONG AS DUCT STATIC PRESSURE IS ABOVE SETPOINT. 4. THE BYPASS VAV BOX IS EQUIPPED WITH A REHEAT COIL. PROVIDE A DUCT MOUNTED TEMPERATURE SENSOR DOWNSTREAM OF THE PACKAGED ROOFTOP UNIT FOR CONTROL OF THE BYPASS VAV BOX REHEAT COIL. WHEN SUPPLY AIR TEMPERATURE LEAVING THE ROOFTOP UNIT FALLS BELOW 55F (ADJ.), THE BYPASS VAV BOX REHEAT COIL HOT WATER VALVE SHALL OPEN AND MODULATE TO MAINTAIN A MINIMUM OF 55F (ADJ.) SUPPLY AIR TEMPERATURE LEAVING THE ROOFTOP UNIT.

C. UNOCCUPIED MODE:

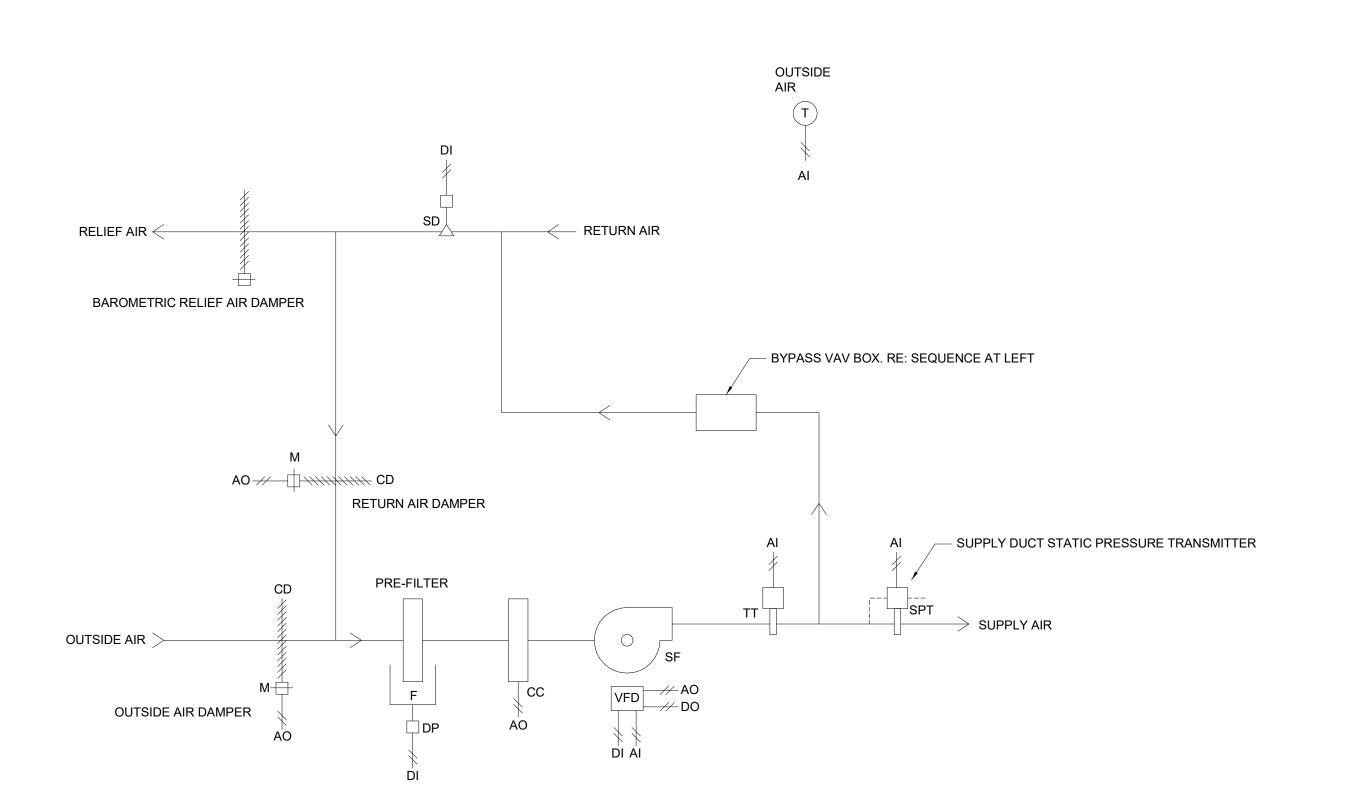
1. WHEN UNIT ENTERS UNOCCUPIED MODE, UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING WATER CONTROL VALVE SHALL CLOSE. 2. IF THE AIR HANDLING SYSTEM SERVING THE UNIT CYCLES ON AT ANY TIME DURING UNOCCUPIED MODE, THE UNIT CONTROL DAMPER SHALL BE OPEN AND UNIT SHALL

UNIT VOLUME DAMPER SHALL FULLY CLOSE AND HEATING SHALL BE DISABLED.

SYSTEM TRANSITIONS TO OCCUPIED MODE.

D. PRE-OCCUPANCY WARM-UP AND COOL-DOWN MODES: 1. WHEN THE AIR HANDLING SYSTEM SERVING THE UNIT ENTERS PRE-OCCUPANCY WARM-UP OR PRE-OCCUPANCY COOL-DOWN MODE. UNIT SHALL OPERATE PER OCCUPIED MODE SEQUENCE. UNIT SHALL CONTINUE TO OPERATE IN OCCUPIED MODE AS THE AIR HANDLING

MODULATE PER THE OCCUPIED MODE ABOVE. WHEN THE AIR HANDLING UNIT CYCLES OFF,



SEQUENCE OF OPERATION:

1. THE ROOFTOP UNIT SERVING BUILDING A IS EXISTING TO REMAIN. THE FOLLOWING SEQUENCE OF OPERATION INCLUDES REQUIRED FUNCTIONALITY OF THE AIR HANDLING SYSTEM INCLUDING REQUIRED SEQUENCE ADJUSTMENTS AND CONTROLLABILITY FOR THE EXISTING ROOFTOP UNIT.

2. THE EXISTING ROOFTOP UNIT SHALL BE MODIFIED TO INCLUDE AN APR CONTROL VALVE ON THE LEAD COMPRESSOR CIRCUIT TO PROVIDE VARIABLE COOLING CAPACITY FOR TIGHTER DISCHARGE AIR TEMPERATURE CONTROL. REFER TO MECHANICAL SCHEDULES.

B. OCCUPIED MODE:

1. WHEN THE UNIT IS IN THE OCCUPIED MODE, THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AT FIXED SPEED. THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM OUTSIDE AIRFLOW OR ECONOMIZER AIRFLOW AS REQUIRED. AIR SHALL BE RELIEVED FROM THE BUILDING THROUGH THE BAROMETRIC RELIEF DAMPER IN THE ROOFTOP UNIT. COOLING AND ECONOMIZER DAMPERS SHALL MODULATE IN SEQUENCE TO MAINTAIN DISCHARGE AIR TEMPERATURE (DAT).

C. UNOCCUPIED MODE:

CONDITIONS ARE MET.

1. WHEN THE UNIT ENTERS UNOCCUPIED MODE THE SUPPLY FAN SHALL BE OFF, THE OUTSIDE AIR DAMPER SHALL BE CLOSED, THE RETURN AIR DAMPER SHALL BE OPEN, AND COOLING

SHALL BE DISABLED. 2. WHEN THERE IS AN UNOCCUPIED CALL FOR COOLING AT ANY ZONE SERVED BY THE AIR HANDLING SYSTEM, THE SUPPLY FAN SHALL CYCLE ON AND COOLING AND/OR ECONOMIZER DAMPERS SHALL MODULATE TO MAINTAIN DISCHARGE AIR TEMPERATURE. OUTSIDE AIR DAMPER SHALL BE CLOSED AND RETURN AIR DAMPER SHALL BE OPEN UNLESS ECONOMIZER

3. WHEN THERE IS AN UNOCCUPIED CALL FOR HEATING AT ANY VAV BOX ZONE SERVED BY THE AIR HANDLING SYSTEM, THE SUPPLY FAN SHALL CYCLE ON, OUTSIDE AIR DAMPER SHALL BE CLOSED, AND RETURN AIR DAMPER SHALL BE OPEN.

4. UPON ALL SPACE T-STATS REACHING UNOCCUPIED MODE SETPOINT, UNIT SHALL CYCLE OFF.

D. OPTIMUM START WARM-UP MODE:

1. PRIOR TO SCHEDULED OCCUPANCY, IF THE AVERAGE SPACE TEMPERATURE, AS MEASURED AND AVERAGED OVER EACH THERMOSTAT SERVED BY THE SYSTEM, IS LESS THAN THE MORNING WARM-UP SETPOINT OF 70F (ADJ.), THE BMS SHALL INITIATE THE OPTIMUM START

WARM-UP SEQUENCE. 2. THE BMS SHALL CALCULATE THE REQUIRED TIME TO BRING ALL SPACES WITHIN OCCUPIED HEATING SETPOINTS BASED ON THE AVERAGE TEMPERATURE OF ALL SPACES SERVED AND THE OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS INITIATED.

3. UPON INITIATING OPTIMUM START WARM-UP MODE, THE SUPPLY FAN SHALL BE ENERGIZED, THE OUTSIDE AIR DAMPER SHALL BE CLOSED, AND THE RETURN AIR DAMPER SHALL BE OPEN. 4. COOLING SHALL BE LOCKED OUT. 5. REVERT TO OCCUPIED MODE (ALLOW OUTSIDE AIR DAMPER TO OPEN) WHEN ALL SPACE STATS HAVE REACHED OCCUPIED HEATING SETPOINT.

E. OPTIMUM START COOL-DOWN MODE:

1. PRIOR TO SCHEDULED OCCUPANCY, IF THE AVERAGE SPACE TEMPERATURE, AS MEASURED AND AVERAGED OVER EACH THERMOSTAT SERVED BY THE SYSTEM, IS MORE THAN THE MORNING COOL-DOWN SETPOINT OF 78F (ADJ.), THE BMS SHALL INITIATE THE OPTIMUM

COOLING SETPOINTS BASED ON THE AVERAGE TEMPERATURE OF ALL SPACES SERVED AND THE OUTSIDE AIR TEMPERATURE WHEN THE SEQUENCE IS INITIATED. 3. UPON INITIATING OPTIMUM START COOL-DOWN MODE, THE SUPPLY FAN SHALL BE ENERGIZED. THE OUTSIDE AIR DAMPER SHALL BE CLOSED. AND THE RETURN AIR DAMPER

DISCHARGE AIR TEMPERATURE. 4. HEATING SHALL BE LOCKED OUT. 5. REVERT TO OCCUPIED MODE (ALLOW OUTSIDE AIR DAMPER TO OPEN IF NOT ALREADY OPEN)

F. FAN SAFETY CONTROLS: 1. DE-ENERGIZE THE SUPPLY AND RETURN FANS WHENEVER THE SMOKE DETECTOR HAS

G. ECONOMIZER CONTROL: 1. WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE 75F, AND COOLING IS REQUIRED, THE ECONOMIZER CONTROL SHALL BE ENABLED. THE ECONOMIZER DAMPERS SHALL MODULATE BETWEEN MINIMUM POSITION AND FULL OPEN TO MAINTAIN THE DISCHARGE AIR TEMPERATURE. COOLING SHALL BE ENABLED WITH THE OUTSIDE AIR DAMPERS FULLY OPEN

1. THE BMS SHALL MONITOR AND CONTROL DUCT STATIC PRESSURE IN THE PACKAGED

ROOFTOP UNIT SUPPLY MAIN DUCT. 2. THE BYPASS VAV BOX SHALL MODULATE AS REQUIRED TO MAINTAIN SUPPLY DUCT STATIC PRESSURE ON THE DISCHARGE SIDE OF THE EXISTING PACKAGED ROOFTOP UNIT. REFER TO

I. DISCHARGE AIR TEMPERATURE: 1. MAINTAIN 55F (ADJ.) DISCHARGE AIR TEMPERATURE WHEN COOLING IS ENABLED.

SYSTEM. AIRFLOW SHALL BE REPORTED IN UNITS OF CFM. 3. IF ANY VAV BOX SERVED BY THE SYSTEM MODULATES TO 95% OF COOLING CFM, REDUCE DISCHARGE AIR TEMPERATURE IN INCREMENTS OF 1 DEGREE F EVERY 5 MINUTES (ADJ.)

REACHES MINIMUM SETPOINT OF 55F (ADJ.). 4. IF ALL VAV BOXES SERVED BY THE SYSTEM ARE BELOW 70% COOLING CFM, INCREASE DISCHARGE AIR TEMPERATURE IN INCREMENTS OF 1 DEGREE F EVERY 5 MINUTES (ADJ.)

REACHES MAXIMUM SETPOINT OF 70F (ADJ.). ALARM BMS.

J. COOLING CONTROL: 1. THE UNIT SHALL MODULATE COOLING THROUGH ITS INTERNAL CONTROLS TO MAINTAIN THE DAT. COOLING SHALL BE DISABLED IF THE RTU IS IN HEATING MODE, THE FANS ARE OFF, OR THE DISCHARGE AIR TEMPERATURE SENSOR HAS FAILED. THE APR CONTROL VALVE SHALL BE CONTROLLED VIA INTERNAL UNIT CONTROLS.

START COOL-DOWN SEQUENCE. 2. THE BMS SHALL CALCULATE THE REQUIRED TIME TO BRING ALL SPACES WITHIN OCCUPIED

SHALL BE OPEN. COOLING AND/OR ECONOMIZER DAMPERS SHALL MODULATE TO MAINTAIN

WHEN ALL SPACE STATS HAVE REACHED OCCUPIED COOLING SETPOINT.

TRIPPED. THE SMOKE DETECTOR REQUIRES A MANUAL RESET.

AS LONG AS OUTSIDE AIR TEMPERATURE IS LESS THAN 75F. WHEN OUTSIDE AIR TEMPERATURE EXCEEDS 75F, ECONOMIZER CONTROL SHALL BE DISABLED.

H. SUPPLY DUCT STATIC PRESSURE:

BYPASS VAV BOX SEQUENCE. 8. INITIAL STATIC PRESSURE SETPOINT SHALL BE 0.7" W.C.

2. THE BMS SHALL DETERMINE AND REPORT AIRFLOW OF EACH VAV BOX SERVED BY THE

UNTIL ALL BOXES ARE BELOW 90% COOLING CFM OR UNTIL DISCHARGE AIR TEMPERATURE

UNTIL ONE BOX EXCEEDS 70% COOLING CFM OR UNTIL DISCHARGE AIR TEMPERATURE

5. IF DAT DROPS BELOW 40F (ADJ) DE-ENERGIZE FANS AND CLOSE OA AND RELIEF AIR DAMPERS.

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ALTERRA east west partners

Tel 303.595.8585

Fax 303.825.6823

2305 Mount Werner Circle

Gensler

1225 17th Street

Denver, CO 80202

14143 Denver West Pkwy

MARTIN/MARTIN

∆ Date Description

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AND CONSTRUCTION

BLDG, A. C AND F - ISSUE FOR PERMIT

12499 West Colfax Ave. Lakewood, CO 80215

United States

Suite 300 Golden, CO

United States Tel 303.421.6655

United States Tel 303.431.6100

Suite 150

Steamboat Springs, CO 80487

Redevelopment

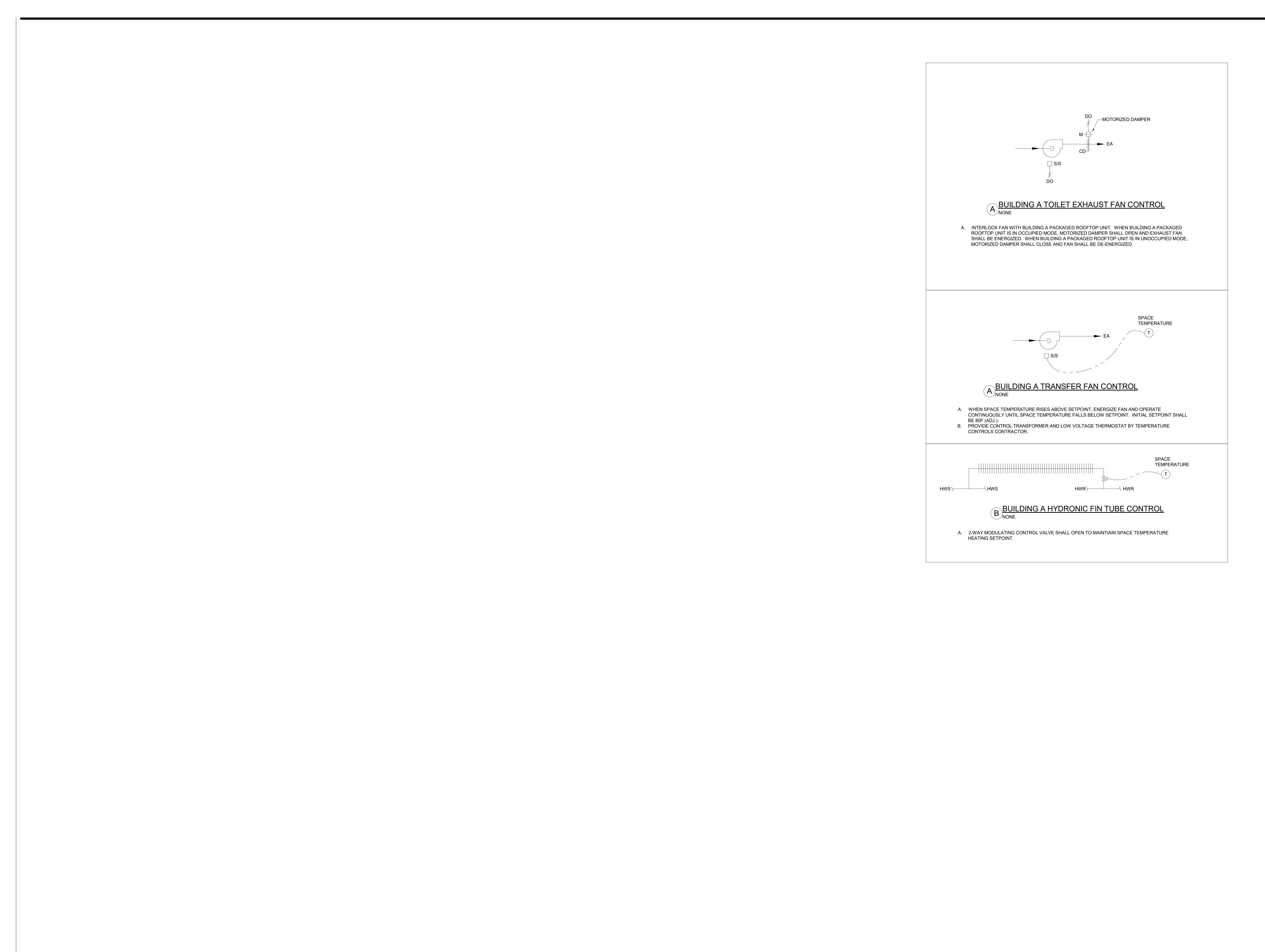
Project Number 003.7835.000

Description

MECHANICAL CONTROLS

1/8" = 1'-0"

M0.003





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



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



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

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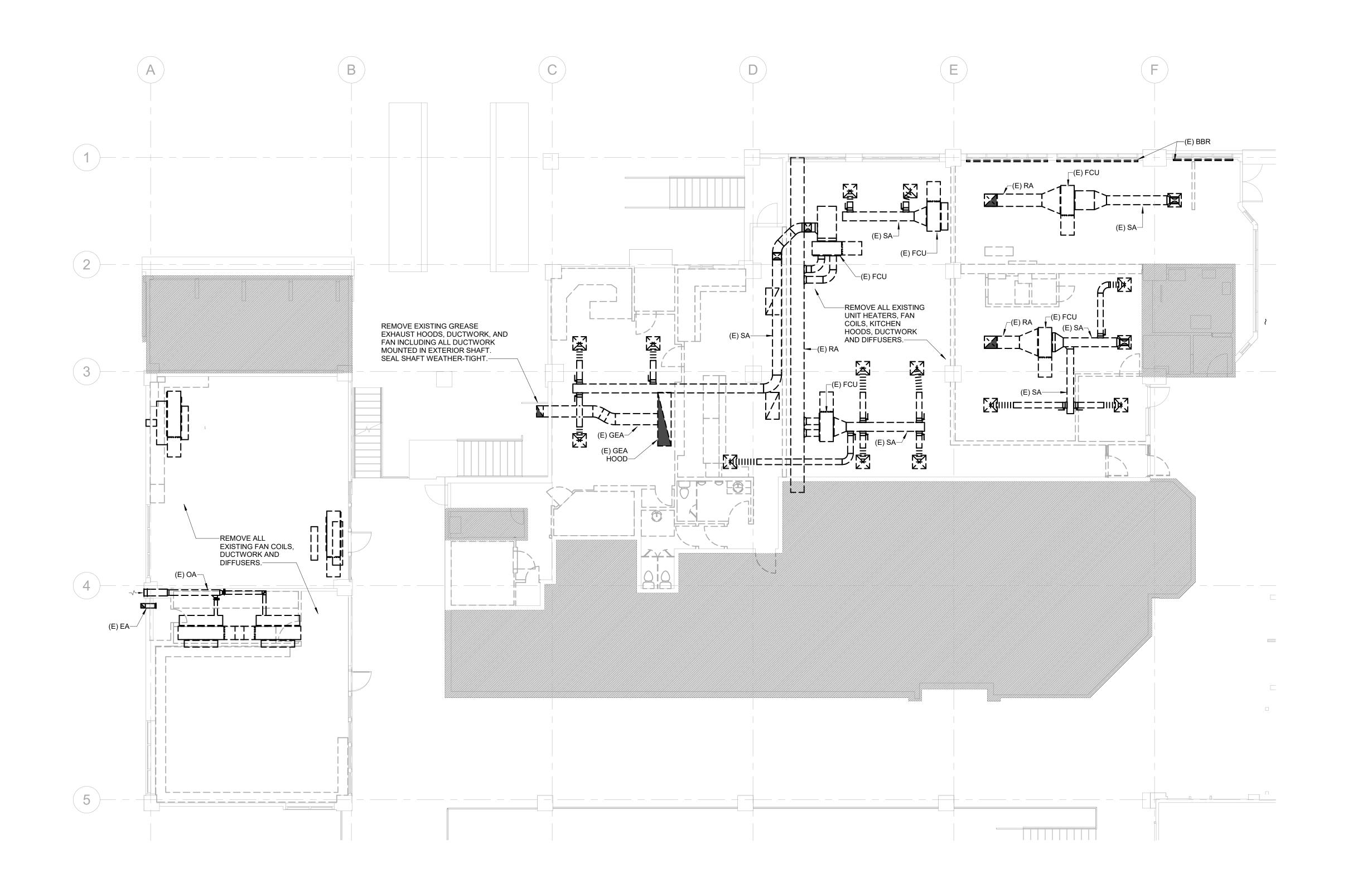
003.7835.000

Description

MECHANICAL CONTROLS

Scale 1/8" = 1'-0"

M0.004



GENERAL NOTES: 1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS

INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK. 5. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS,

RELOCATING AS NECESSARY. 6. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED, RE: ARCHITECTURAL DEMO PLANS. 7. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

KEYNOTES

ALTERRA east west partners MOUNTAIN COMPANY

> 2305 Mount Werner Circle Steamboat Springs, CO 80487

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

Tel 303.595.8585

Fax 303.825.6823

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

MARTIN/MARTIN
CONSULTING ENGINEERS

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

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KEY PLAN

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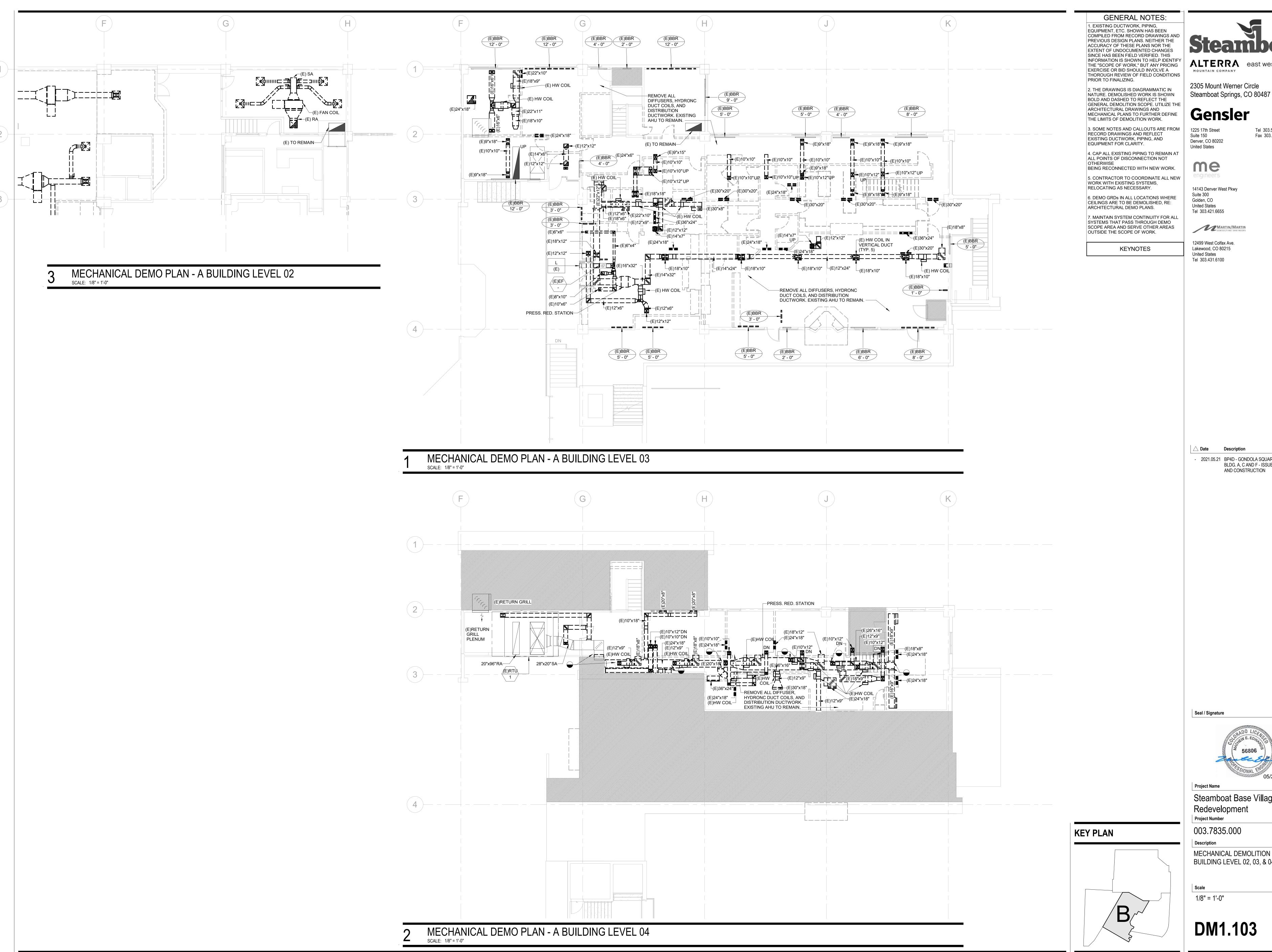
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MECHANICAL DEMOLITION PLAN - C & F BUILDING LEVEL 02

1/8" = 1'-0"

DM1.102

MECHANICAL DEMO PLAN - C & F BUILDING LEVEL 02



ALTERRA east west partners

2305 Mount Werner Circle

Tel 303.595.8585

Fax 303.825.6823

14143 Denver West Pkwy

MARTIN/MARTIN

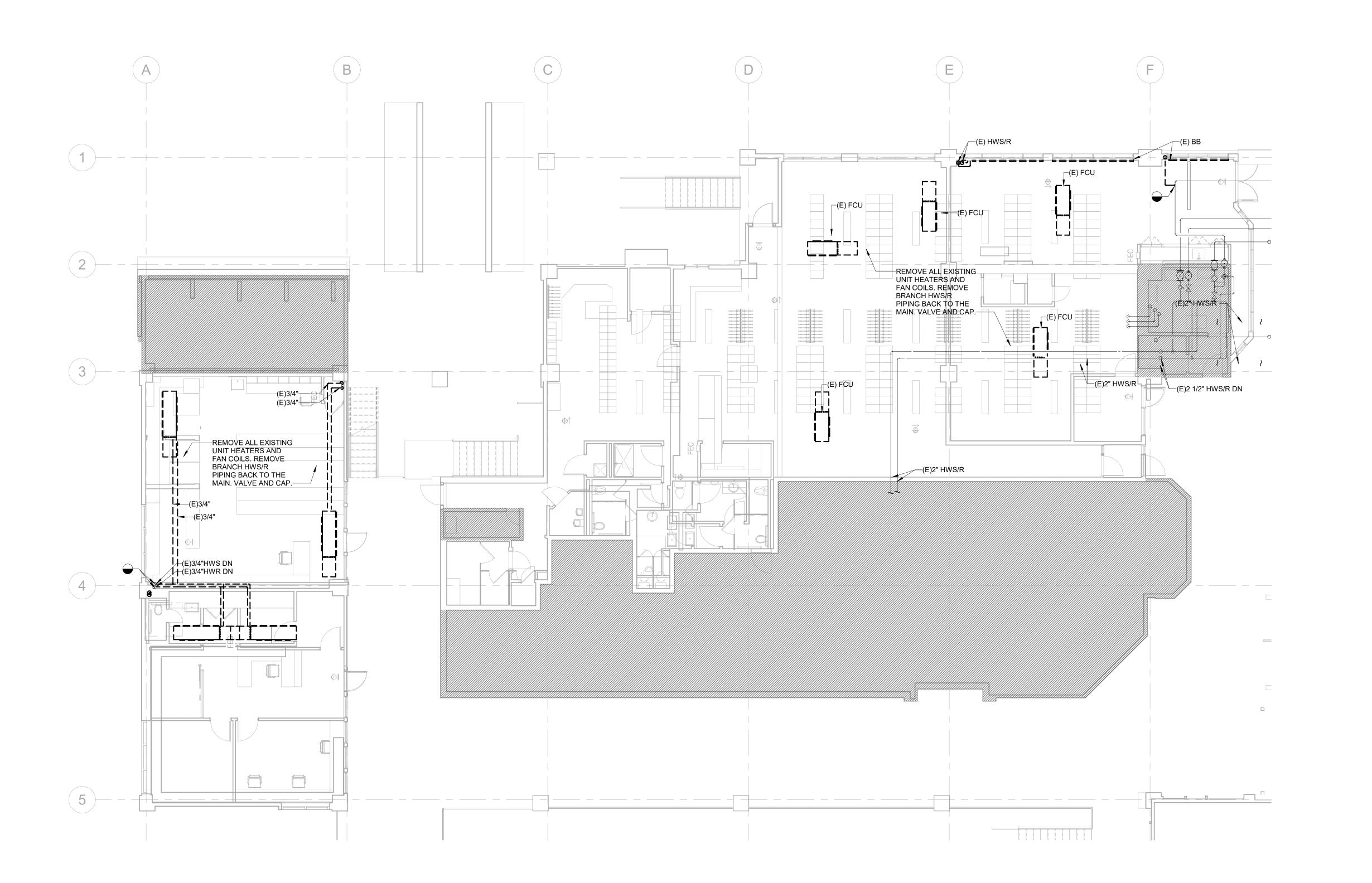
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Steamboat Base Village Redevelopment

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MECHANICAL DEMOLITION PLAN - A BUILDING LEVEL 02, 03, & 04



GENERAL NOTES: 1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE

ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK. 5. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS,

RELOCATING AS NECESSARY. 6. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED, RE: ARCHITECTURAL DEMO PLANS. 7. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

KEYNOTES

ALTERRA east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

1225 17th Street Suite 150 Denver, CO 80202

United States

Tel 303.595.8585 Fax 303.825.6823

Tel 303.421.6655

14143 Denver West Pkwy Suite 300 Golden, CO United States

MARTIN/MARTIN
CONSULTING ENGINEERS

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

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KEY PLAN

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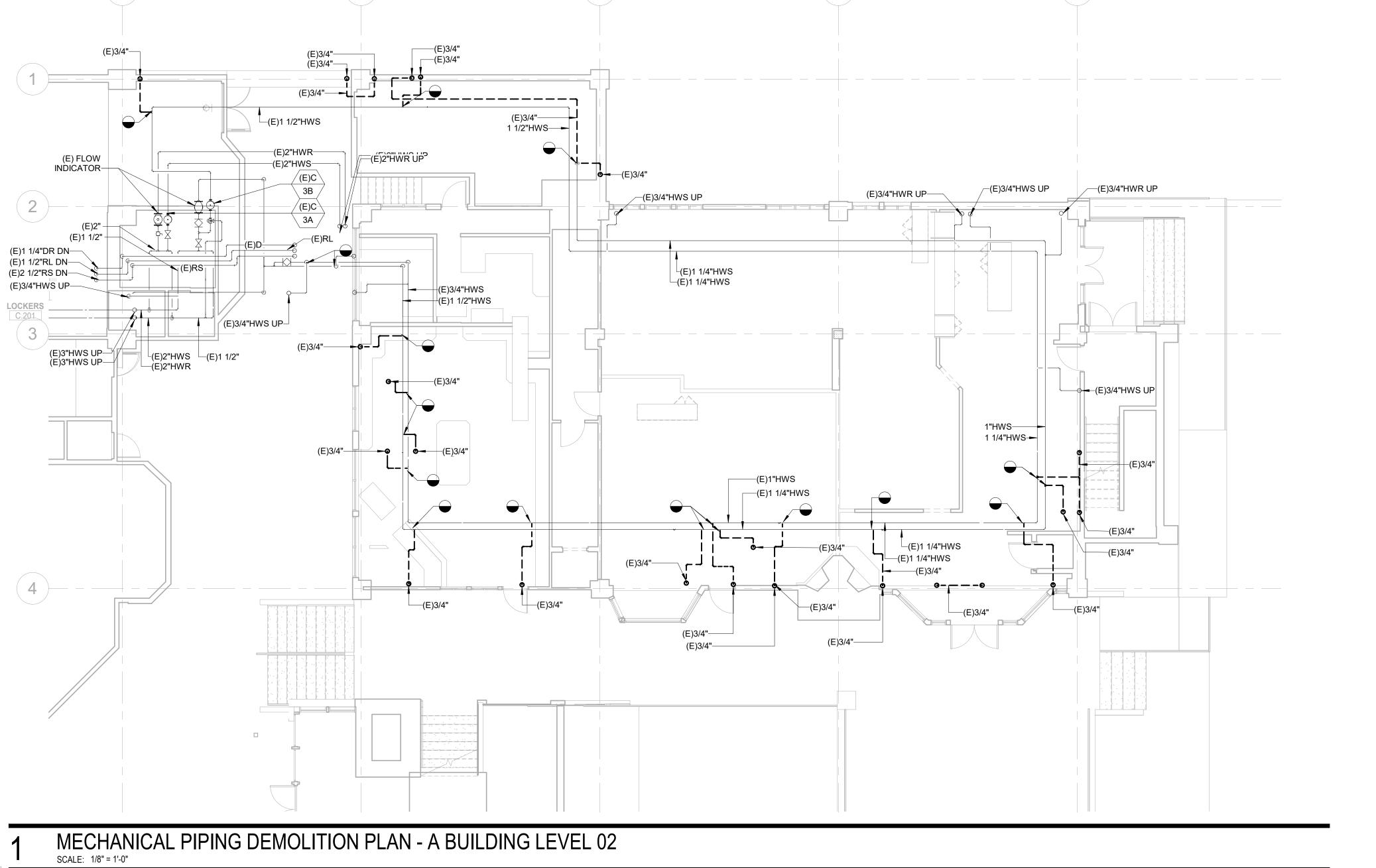
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MECHANICAL PIPING DEMOLITION PLAN - C & F BUILDING LEVEL 02

1/8" = 1'-0"

DM1.104

MECHANICAL PIPING DEMO PLAN - C & F BUILDING LEVEL 02



GENERAL NOTES:

1. EXISTING DUCTWORK, PIPING,
EQUIPMENT, ETC. SHOWN HAS BEEN
COMPILED FROM RECORD DRAWINGS AND
PREVIOUS DESIGN PLANS, NEITHER THE

PREVIOUS DESIGN PLANS. NEITHER THE
ACCURACY OF THESE PLANS NOR THE
EXTENT OF UNDOCUMENTED CHANGES
SINCE HAS BEEN FIELD VERIFIED. THIS
INFORMATION IS SHOWN TO HELP IDENTIFY
THE "SCOPE OF WORK," BUT ANY PRICING
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PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK.

5. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

6. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED, RE: ARCHITECTURAL DEMO PLANS.

7. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

KEYNOTES

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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

IIE ngineers

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

MARTIN/MARTIN
CONSULTING ENGINEERS

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

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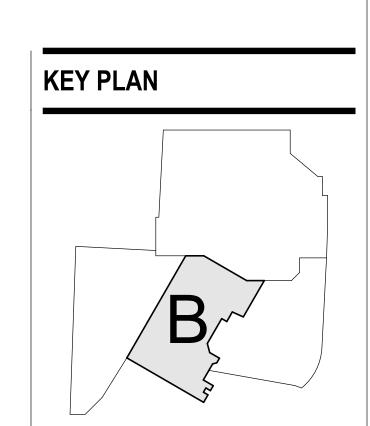
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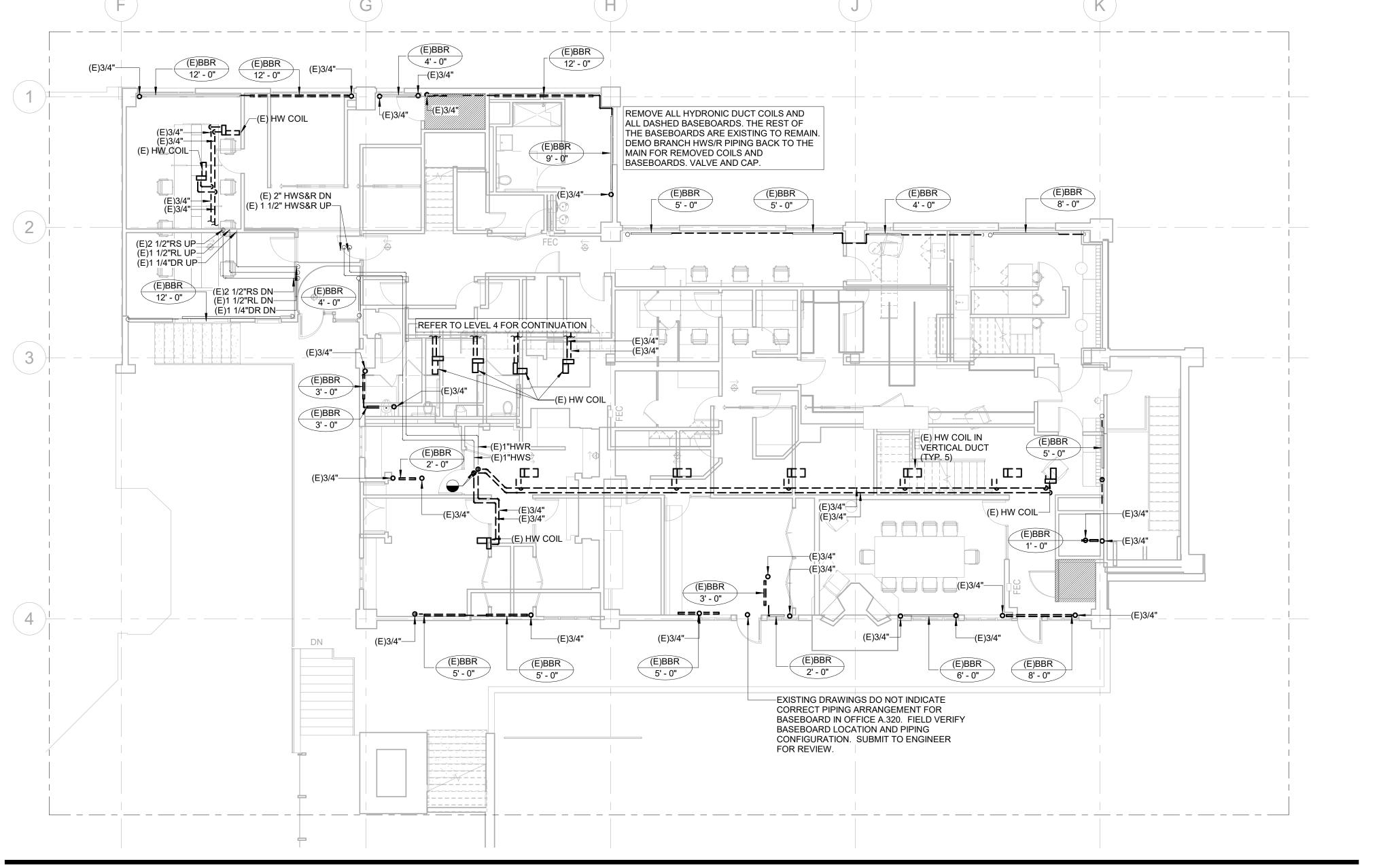
MECHANICAL PIPING DEMOLITION
PLAN - A BUILDING LEVEL 02

Scale

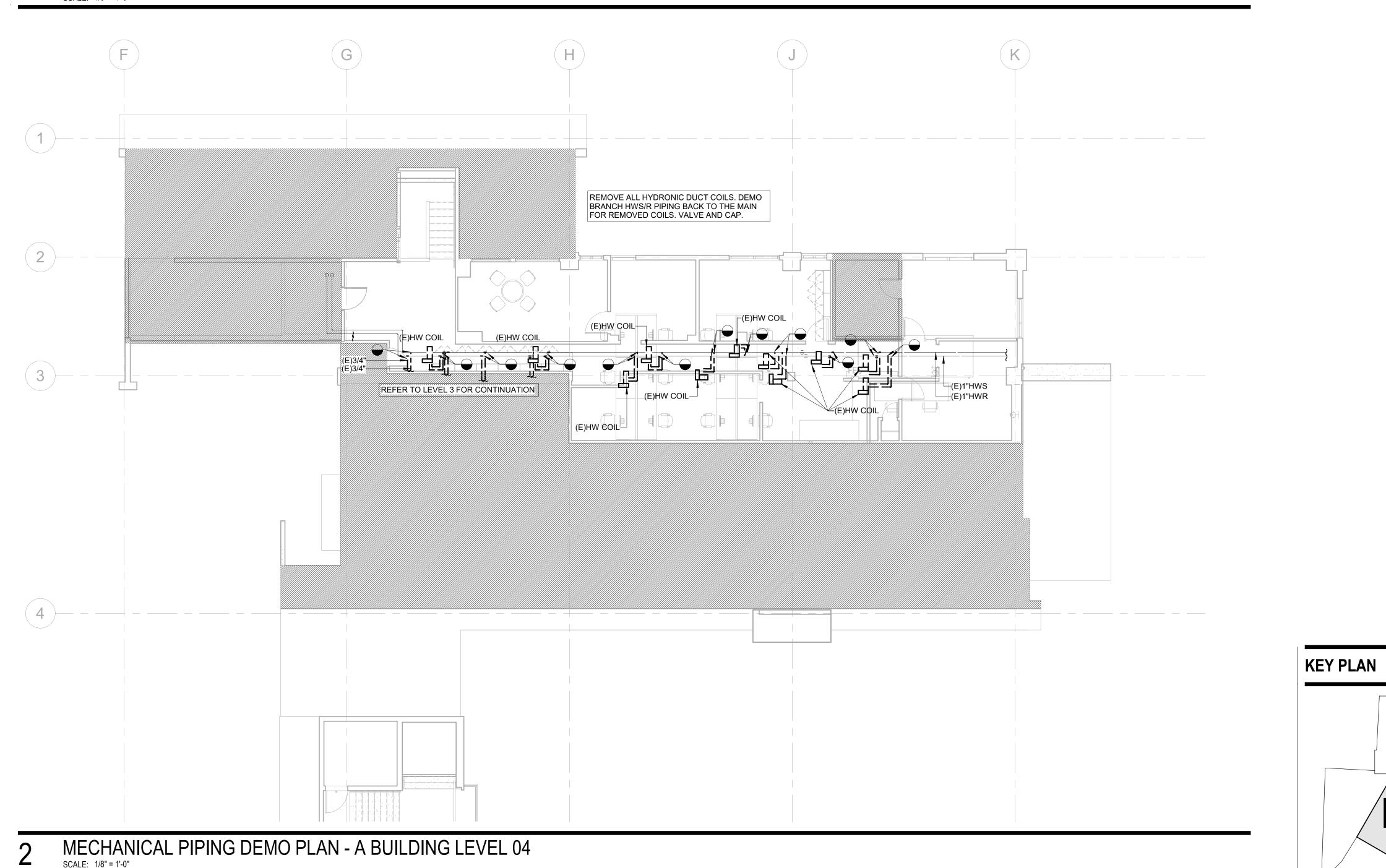
1/8" = 1'-0"

DM1.105





MECHANICAL PIPING DEMO PLAN - A BUILDING LEVEL 03



GENERAL NOTES: 1. EXISTING DUCTWORK, PIPING, EQUIPMENT, ETC. SHOWN HAS BEEN COMPILED FROM RECORD DRAWINGS AND PREVIOUS DESIGN PLANS. NEITHER THE ACCURACY OF THESE PLANS NOR THE EXTENT OF UNDOCUMENTED CHANGES SINCE HAS BEEN FIELD VERIFIED. THIS INFORMATION IS SHOWN TO HELP IDENTIFY THE "SCOPE OF WORK," BUT ANY PRICING EXERCISE OR BID SHOULD INVOLVE A THOROUGH REVIEW OF FIELD CONDITIONS PRIOR TO FINALIZING.

2. THE DRAWINGS IS DIAGRAMMATIC IN NATURE. DEMOLISHED WORK IS SHOWN BOLD AND DASHED TO REFLECT THE GENERAL DEMOLITION SCOPE. UTILIZE THE ARCHITECTURAL DRAWINGS AND MECHANICAL PLANS TO FURTHER DEFINE THE LIMITS OF DEMOLITION WORK.

3. SOME NOTES AND CALLOUTS ARE FROM RECORD DRAWINGS AND REFLECT EXISTING DUCTWORK, PIPING, AND EQUIPMENT FOR CLARITY.

4. CAP ALL EXISTING PIPING TO REMAIN AT ALL POINTS OF DISCONNECTION NOT OTHERWISE BEING RECONNECTED WITH NEW WORK. 5. CONTRACTOR TO COORDINATE ALL NEW WORK WITH EXISTING SYSTEMS, RELOCATING AS NECESSARY.

6. DEMO GRDs IN ALL LOCATIONS WHERE CEILINGS ARE TO BE DEMOLISHED, RE: ARCHITECTURAL DEMO PLANS. 7. MAINTAIN SYSTEM CONTINUITY FOR ALL SYSTEMS THAT PASS THROUGH DEMO SCOPE AREA AND SERVE OTHER AREAS OUTSIDE THE SCOPE OF WORK.

KEYNOTES

ALTERRA east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

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

Tel 303.595.8585 Fax 303.825.6823

14143 Denver West Pkwy Golden, CO United States Tel 303.421.6655

MARTIN/MARTIN

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

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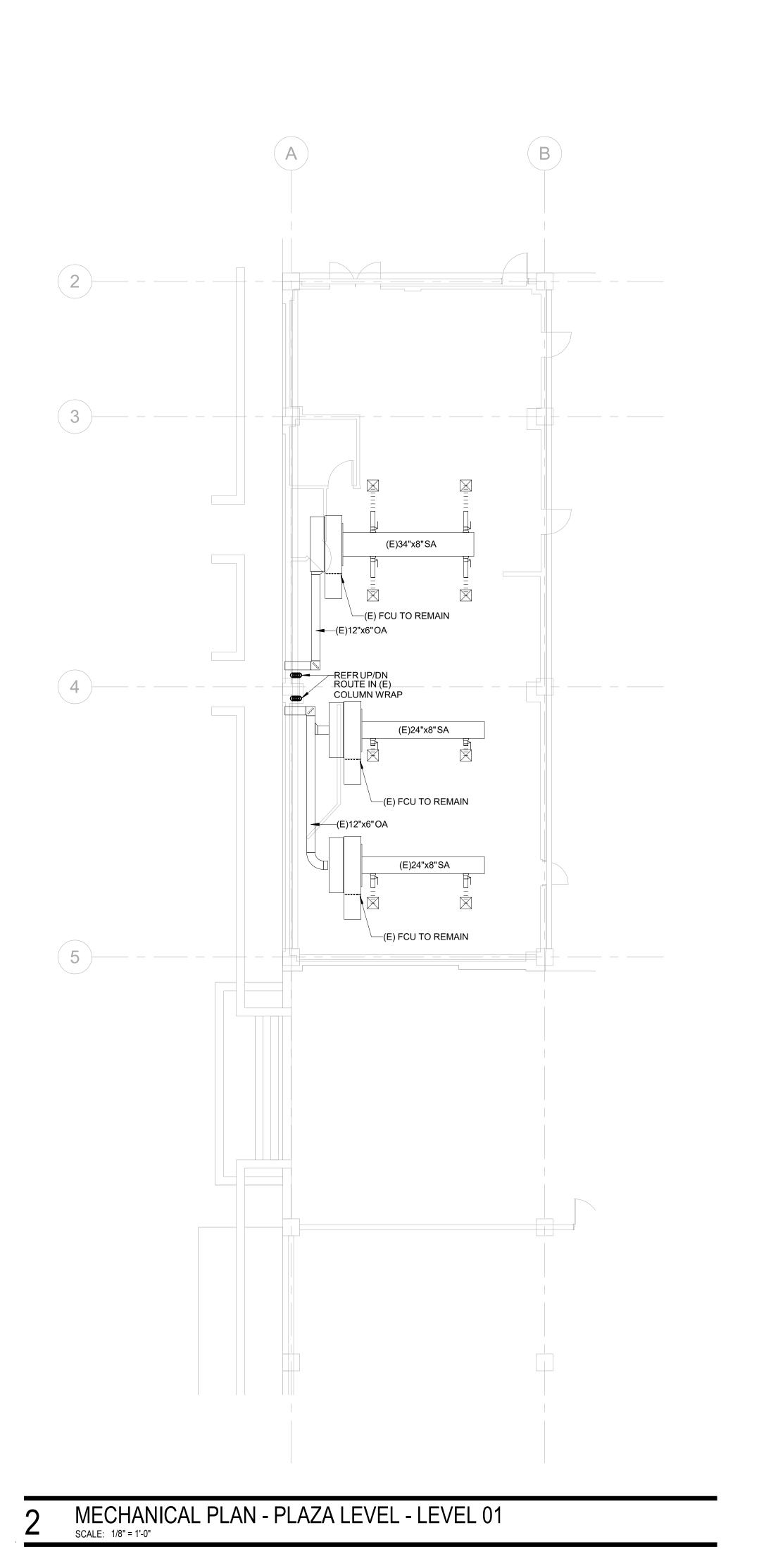
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MECHANICAL PIPING DEMOLITION PLAN - A BUILDING LEVEL 03 & 04

1/8" = 1'-0"

DM1.106



WALL HUNG CONDESNING UNITS (TYP. 4)
PROVIDE UNISTRUT SHELF FROM WALL. MOUNT
UNIT WITH REQUIRED MANUFACTURER CLEARANCES.

GENERAL NOTES:

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

3. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF DOWNSTREAM OF VENTILATION FAN.

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

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. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS. 8. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

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

10. 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.

11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS. 12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMIANL UNITS, UNLESS NOTED

OTHERWISE.

KEY PLAN

14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

KEYNOTES

ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

Suite 150 Denver, CO 80202

United States

Tel 303.595.8585 Fax 303.825.6823



Tel 303.421.6655

14143 Denver West Pkwy Suite 300 Golden, CO United States

MARTIN/MARTIN

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

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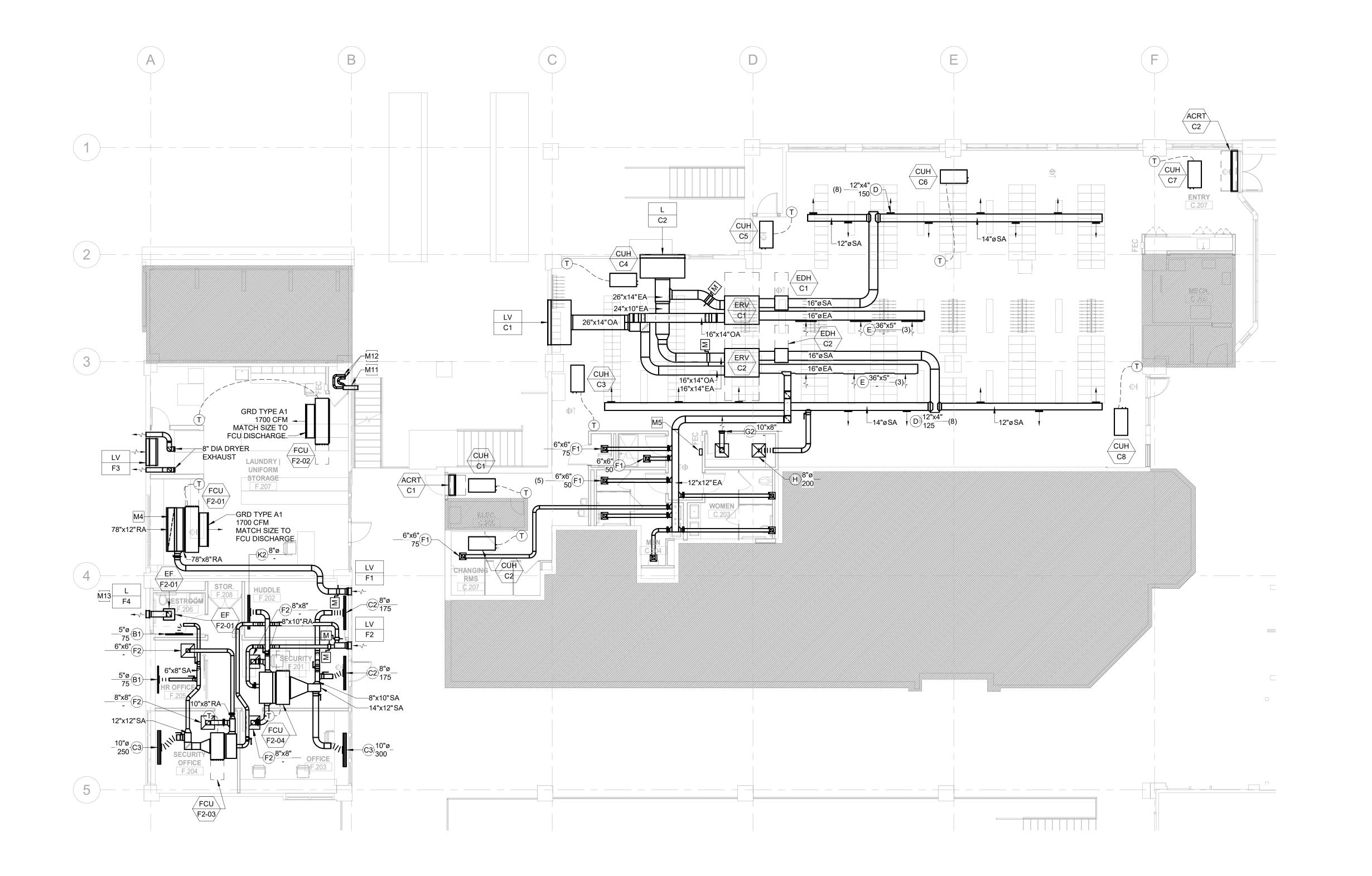
MECHANICAL PLAN - F BUILDING LEVEL 01

1/8" = 1'-0"

M1.201

© 2021 Gensler

MECHANICAL PLAN - CHRISTY'S LOWER LEVEL 01
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. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF DOWNSTREAM OF

4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.

VENTILATION FAN.

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. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS. 8. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

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

10. 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.

DEGREE DUCT ELBOWS. 12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS. 13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMIANL UNITS, UNLESS NOTED

OTHERWISE.

11. PROVIDE TURNING VANES IN ALL 90

14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

KEYNOTES

M4 PROVIDE BALANCING DAMPER IN VERTICAL SECTION OF RETURN AIR ERV REMOTE CONTROL DISPLAY. RE:
CONTROLS DRAWINGS.

111 CONCENTRIC WATER HEATER VENT.

M12 COMBUSTION AIR AND VENT
CONNECTIONS TO GWH.

M13 MOUNT LOUVER AS HIGH AS
POSSIBLE.

KEY PLAN

ALTERRA east west partners

2305 Mount Werner Circle Steamboat Springs, CO 80487

MOUNTAIN COMPANY

Suite 150 Denver, CO 80202

United States

Fax 303.825.6823

Tel 303.595.8585

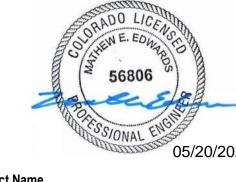
14143 Denver West Pkwy Suite 300 Golden, CO United States Tel 303.421.6655

MARTIN/MARTIN
CONSULTING ENGINEERS

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

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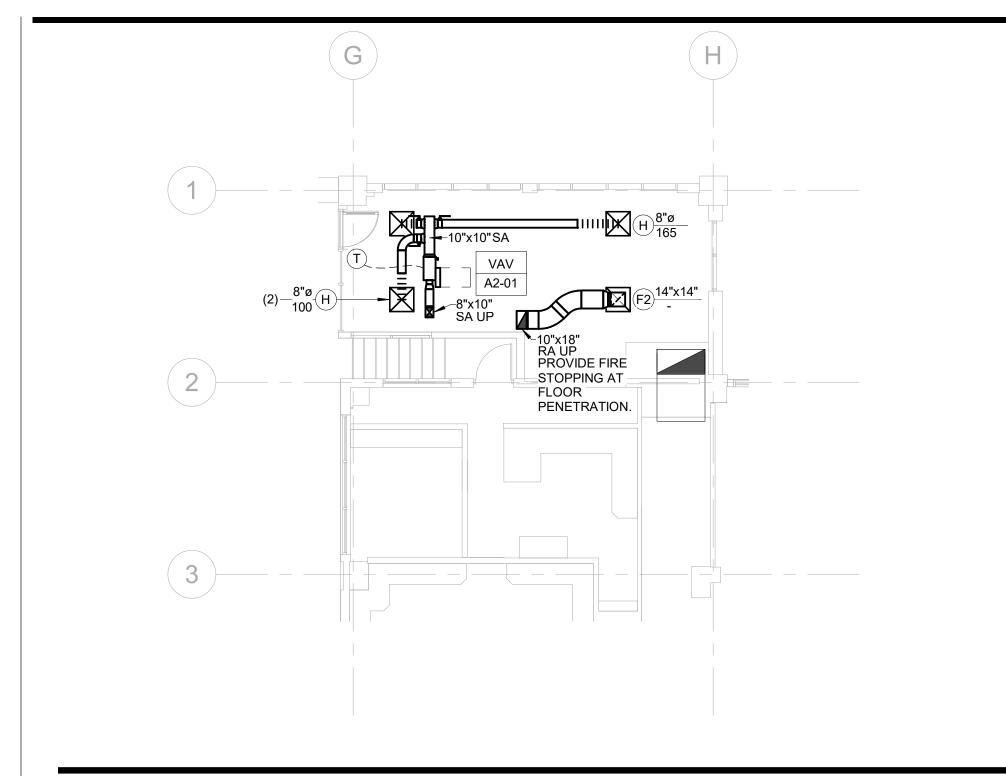
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MECHANICAL PLAN - C & F BUILDING LEVEL 02

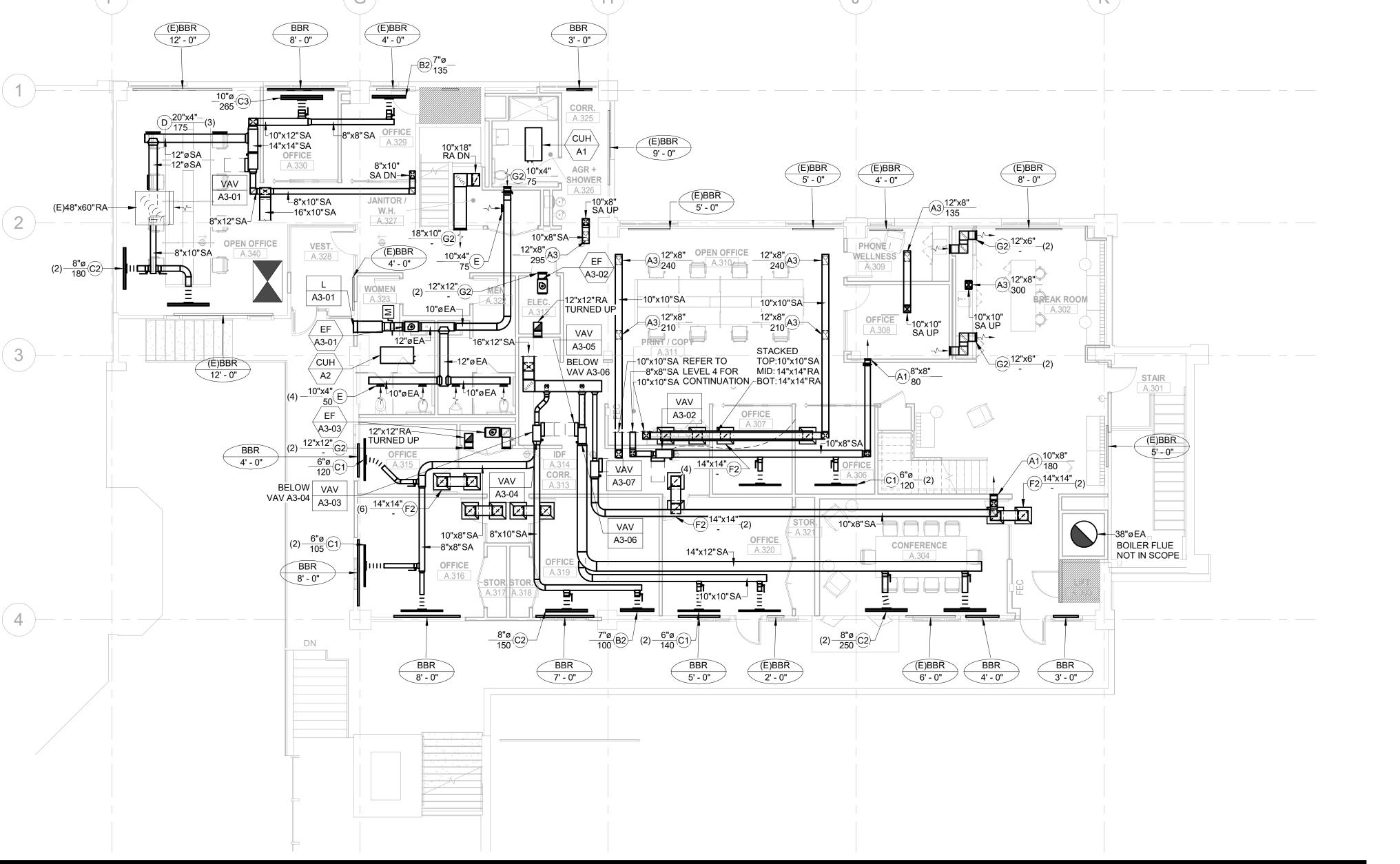
1/8" = 1'-0"

M1.202

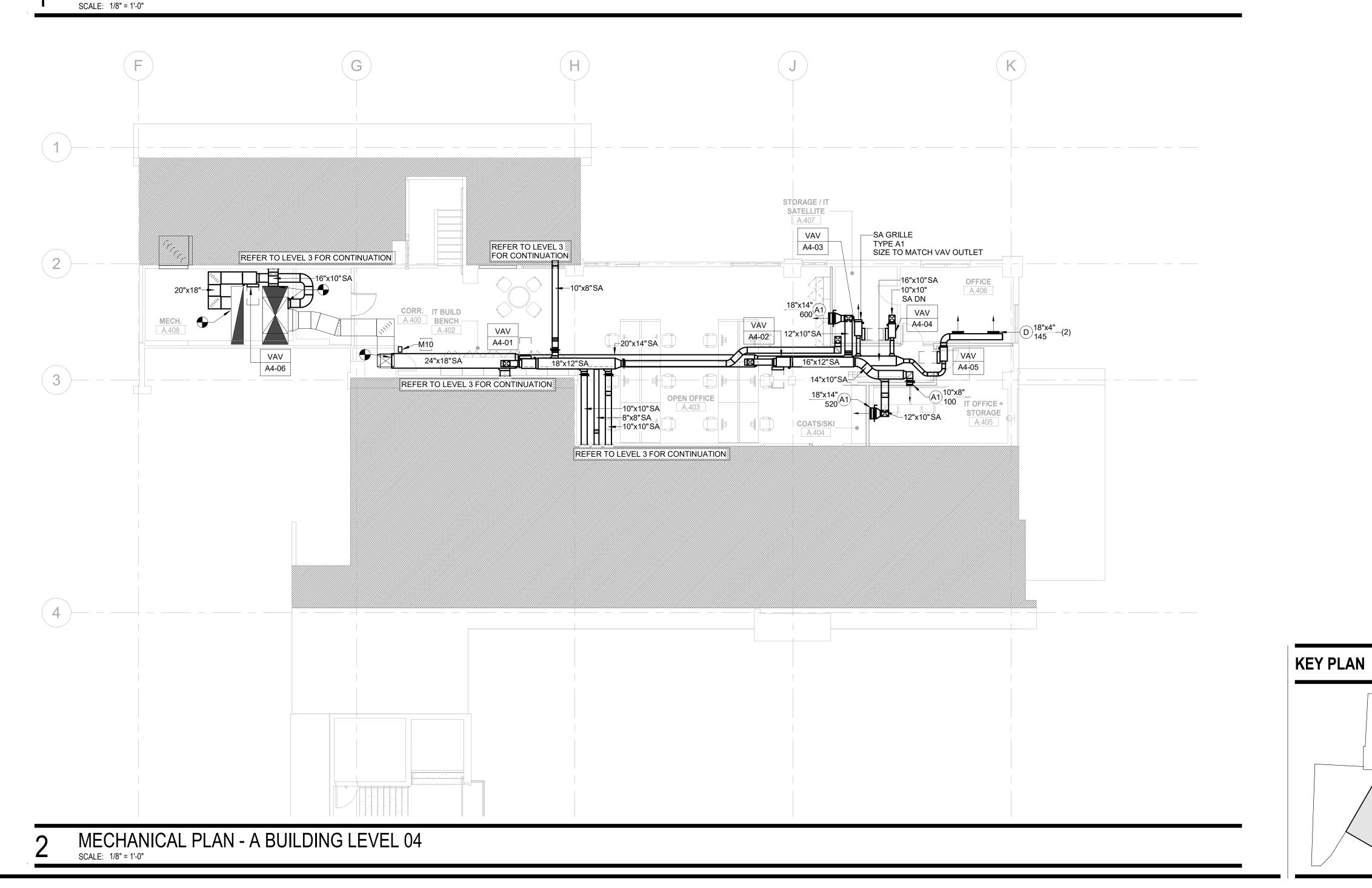
MECHANICAL PLAN - C & F BUILDING LEVEL 02



MECHANICAL PLAN - A BUILDING LEVEL 02



MECHANICAL PLAN - A BUILDING LEVEL 03
SCALE: 1/8" = 1'-0"



GENERAL NOTES:

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC. 3. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF DOWNSTREAM OF

VENTILATION FAN. 4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.

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

9. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL A/E REVIEW PRIOR TO ROUGH-IN.

10. ALL DUCT/PIPE PENETRATIONS

THROUGH FIRE RATED/SMOKE RATED

REFER TO LIFE SAFETY DRAWINGS FOR FIRE/SMOKE RATING REQUIREMENTS. 11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS. 12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS.

14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

KEYNOTES

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8. INSTALL EXPOSED DUCTWORK AS HIGH

SPACE TEMPERATURE SENSORS, T-STATS, ETC. AS PART OF SUBMITTAL PROCESS FOR

PARTITIONS SHALL BE CAULKED AND SEALED TO MEET THE RATING REQUIRED.

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

M10 BUILDING A TEMPERATURE CONTROL SYSTEM TOUCHSCREEN INTERFACE.

ALTERRA east west partners MOUNTAIN COMPANY

Steamboat Springs, CO 80487

Tel 303.595.8585

Fax 303.825.6823

2305 Mount Werner Circle

Gensler

Denver, CO 80202 **United States**

1225 17th Street

Suite 150

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

MARTIN/MARTIN

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

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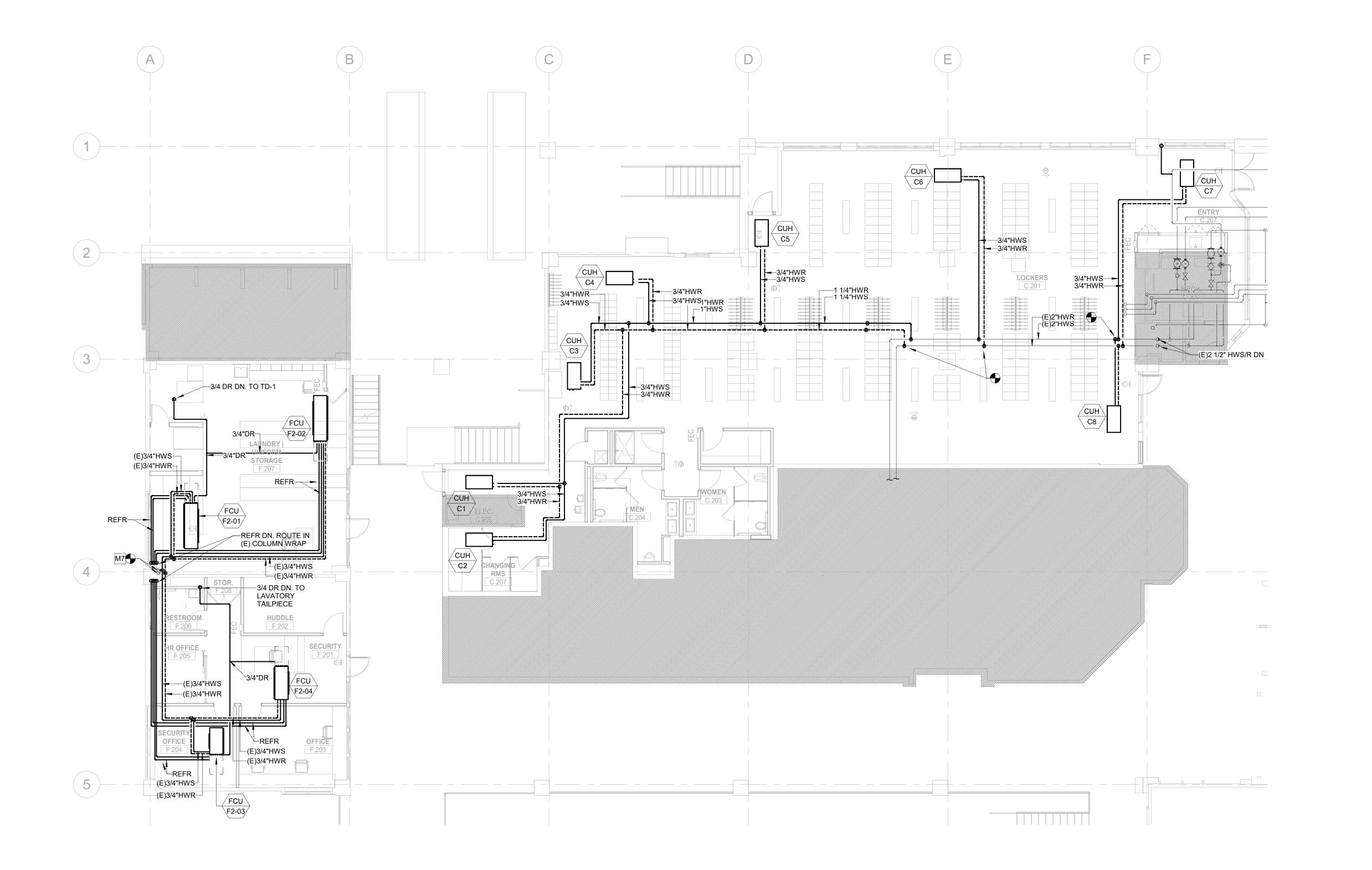
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MECHANICAL PLAN - A BUILDING LEVEL 02, 03, & 04

1/8" = 1'-0"

M1.203



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ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.

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

7. PROVIDE THROUGH FACE BALANCING FOR ALL DIFFUSERS, REGISTERS, AND GRILLES ABOVE INACCESSIBLE AREAS. 8. INSTALL EXPOSED DUCTWORK AS HIGH

9. TEMPERATURE CONTROLS CONTRACTOR SHALL SUBMIT PLANS INDICATING ALL SPACE TEMPERATURE SENSORS, T-STATS, ETC. AS PART OF SUBMITTAL PROCESS FOR

10. 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

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

UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

M7 CONNECT TO EXISTING 3/4" HWS/R.

GENERAL NOTES:

2. MAINTAIN CODE REQUIRED AREA OF SEPARATION FROM OUTSIDE AIR INTAKES TO TERMINATIONS OF EXHAUST, COMBUSTION AIR, PLUMBING VENTS, ETC. 3. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF DOWNSTREAM OF

VENTILATION FAN. 4. PROVIDE MANUAL BALANCE DAMPERS IN 1225 17th Street Suite 150 Denver, CO 80202

SWITCHES.

AS POSSIBLE.

A/E REVIEW PRIOR TO ROUGH-IN.

FIRE/SMOKE RATING REQUIREMENTS. 11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS. 12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS.

OTHERWISE. 14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING

KEYNOTES

- 2021.05.21 BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

ALTERRA east west partners

Tel 303.595.8585

Fax 303.825.6823

MOUNTAIN COMPANY

United States

Suite 300

Golden, CO United States

Tel 303.421.6655

14143 Denver West Pkwy

MARTIN/MARTIN
CONSULTING ENGINEERS

12499 West Colfax Ave. Lakewood, CO 80215

United States

Tel 303.431.6100

2305 Mount Werner Circle

Steamboat Springs, CO 80487

Seal / Signature



KEY PLAN

Steamboat Base Village Redevelopment Project Number

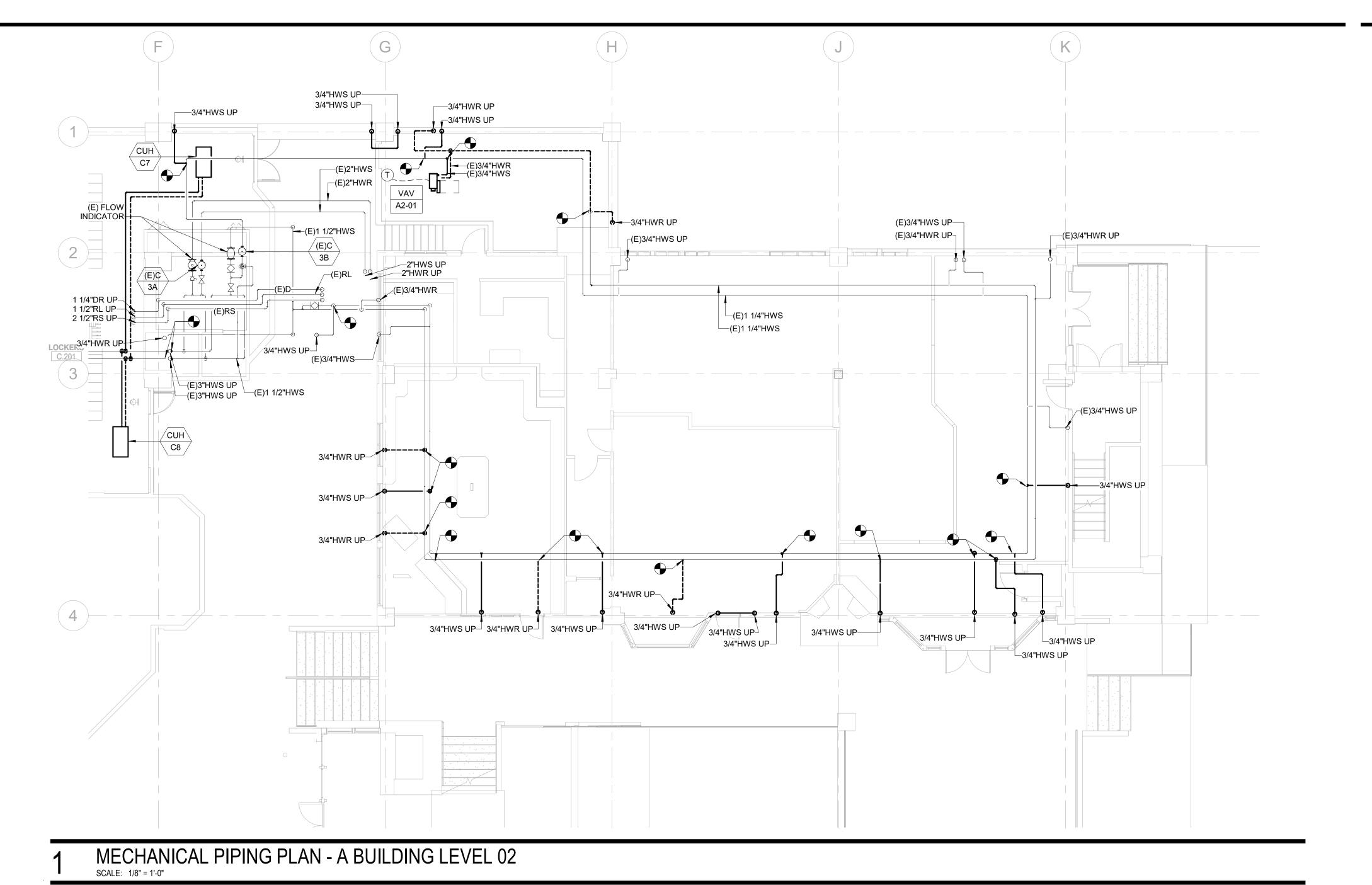
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MECHANICAL PIPING PLAN - C & F **BUILDING LEVEL 02**

1/8" = 1'-0"

M1.302

MECHANICAL PIPING PLAN - C & F BUILDING LEVEL 02



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.

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3. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF VENTILATION FAN.

4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.

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

8. INSTALL EXPOSED DUCTWORK AS HIGH AS POSSIBLE.

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

10. 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.

11. PROVIDE TURNING VANES IN ALL 90 DEGREE DUCT ELBOWS.
12. PROVIDE ISOLATION VALVES AT EACH BRANCH LINE OFF OF MAINS.
13. PROVIDE 3/4" BRANCH PIPING TO ALL TERMIANL UNITS, UNLESS NOTED OTHERWISE.

14. PROVIDE CONDENSATE DRAIN FROM ALL DX EVAPORATOR COILS TO NEAREST MOP SINK, FLOOR DRAIN, OR APPROVED INDIRECT CONNECTION POINT. PROVIDE CONDENSATE PUMP FOR ALL COOLING UNITS THAT CANNOT BE DRAINED BY GRAVITY TO TERMINATION LOCATION.

KEYNOTES

Steambo

ALTERRA east west partners

Tel 303.595.8585

Fax 303.825.6823

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensle

1225 17th Street Suite 150 Denver, CO 80202



United States

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

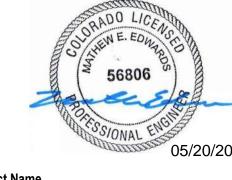
MARTIN/MARTIN
CONSULTING ENGINEERS

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

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Project Name

Steamboat Base Village Redevelopment Project Number

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MECHANICAL PIPING PLAN - A
BUILDING LEVEL 02

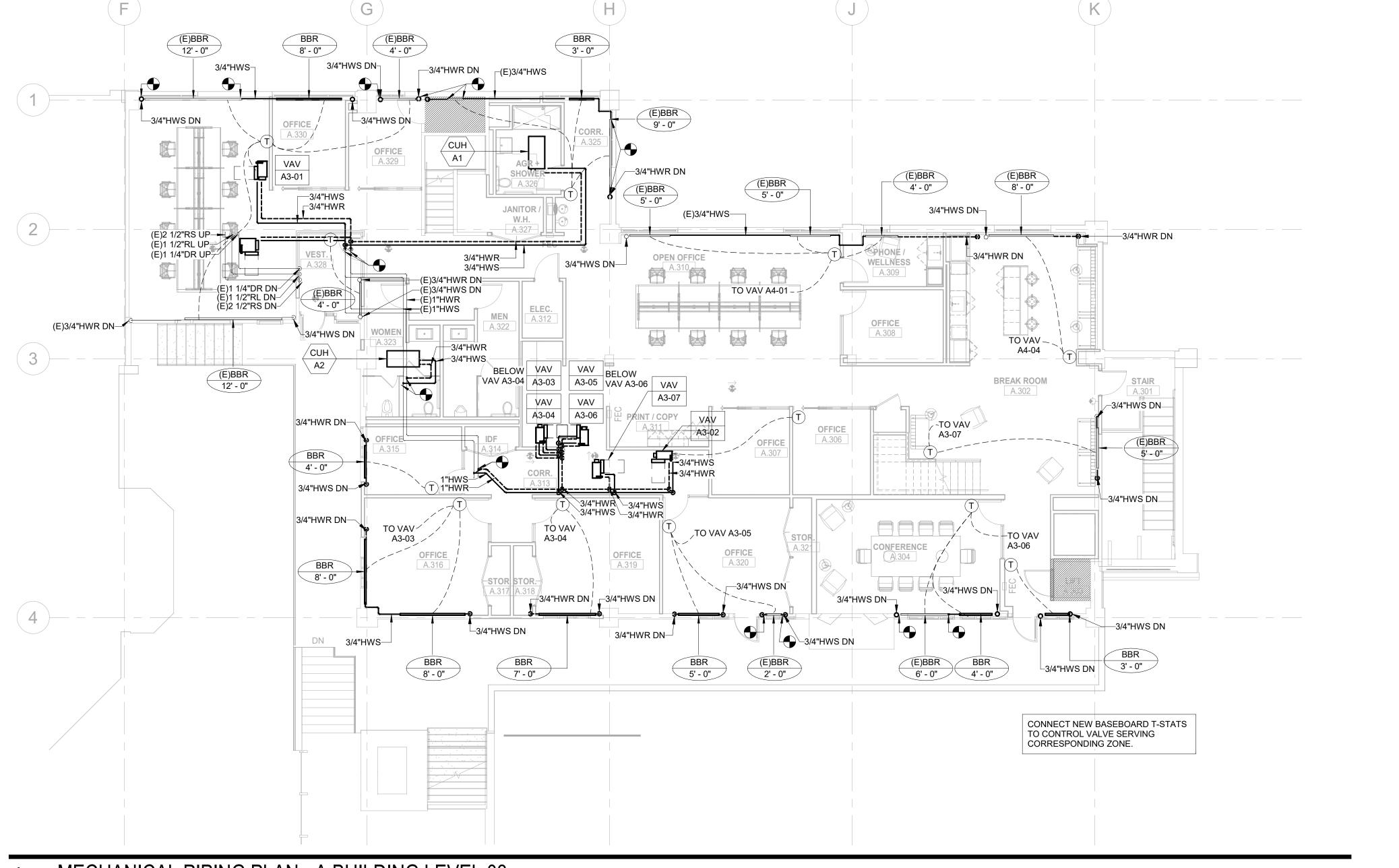
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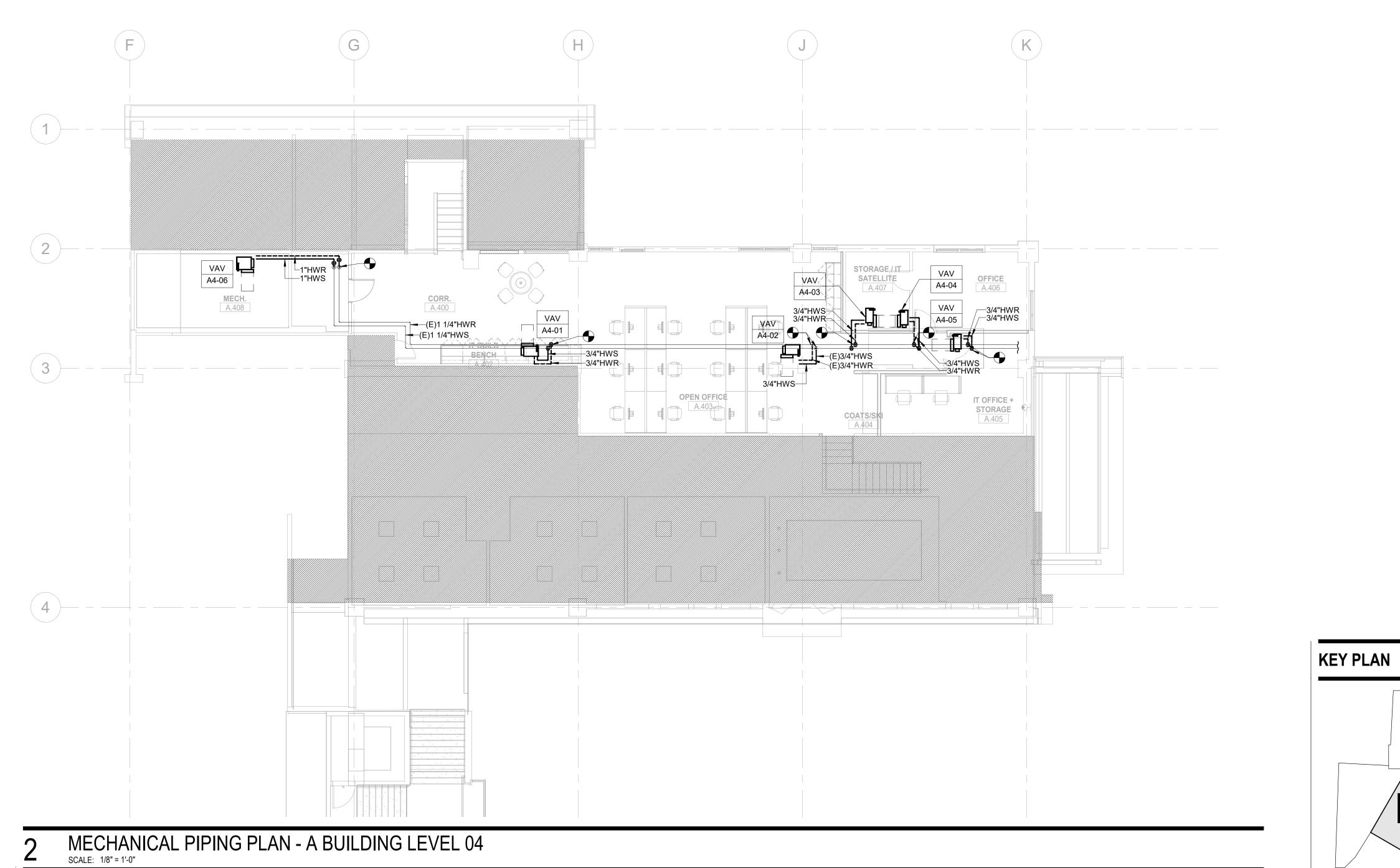
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KEY PLAN

B



MECHANICAL PIPING PLAN - A BUILDING LEVEL 03
SCALE: 1/8" = 1'-0"



GENERAL NOTES:

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VENTILATION FAN. 4. PROVIDE MANUAL BALANCE DAMPERS IN ALL SUPPLY DUCT BRANCH TAPS DOWNSTREAM OF FAN UNITS.

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THROUGH FIRE RATED/SMOKE RATED

PARTITIONS SHALL BE CAULKED AND

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GRAVITY TO TERMINATION LOCATION.

13. PROVIDE 3/4" BRANCH PIPING TO ALL

TERMIANL UNITS, UNLESS NOTED

KEYNOTES

Tel 303.595.8585

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ALTERRA east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

1225 17th Street Suite 150 Denver, CO 80202

United States

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MARTIN/MARTIN

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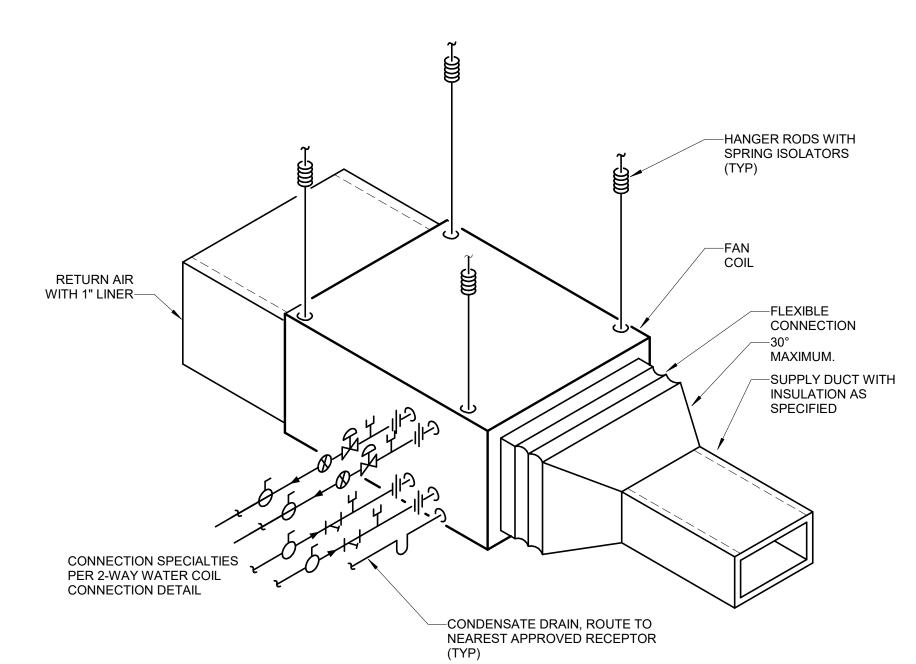
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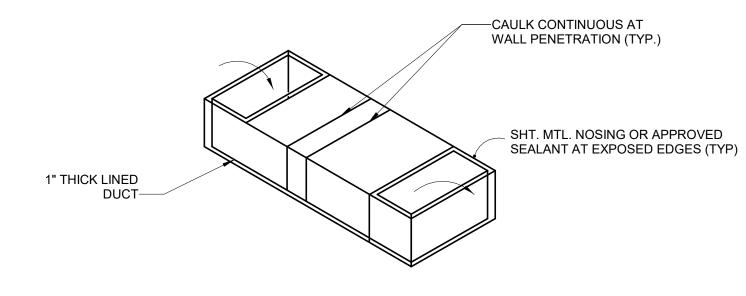
MECHANICAL PIPING PLAN - A BUILDING LEVEL 03 & 04

1/8" = 1'-0"

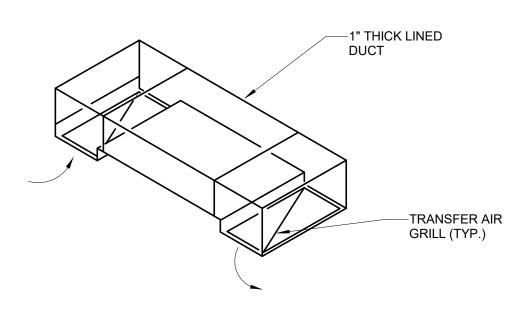
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5 FAN COIL DETAIL-GSQ NO SCALE

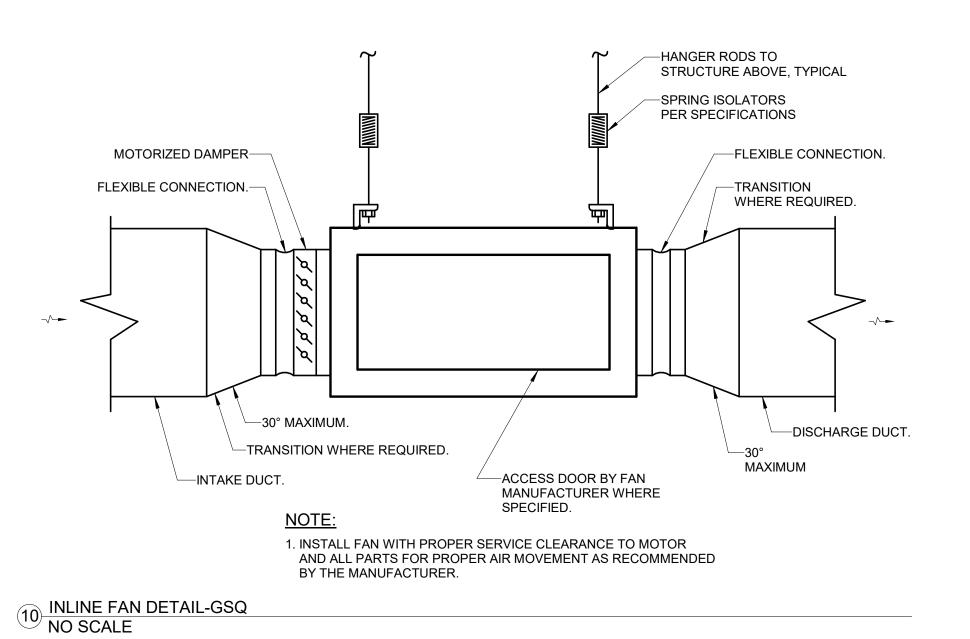


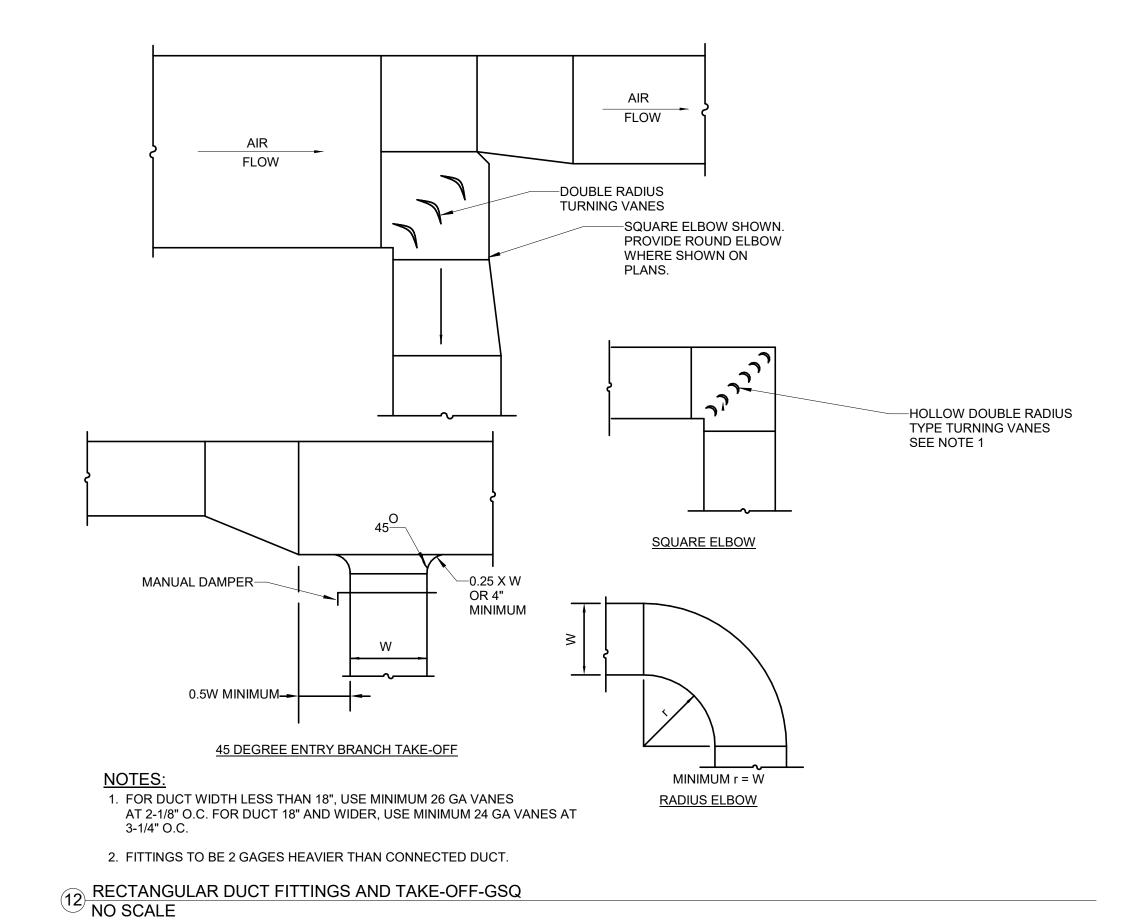
RETURN AIR TRANSFER BOOT

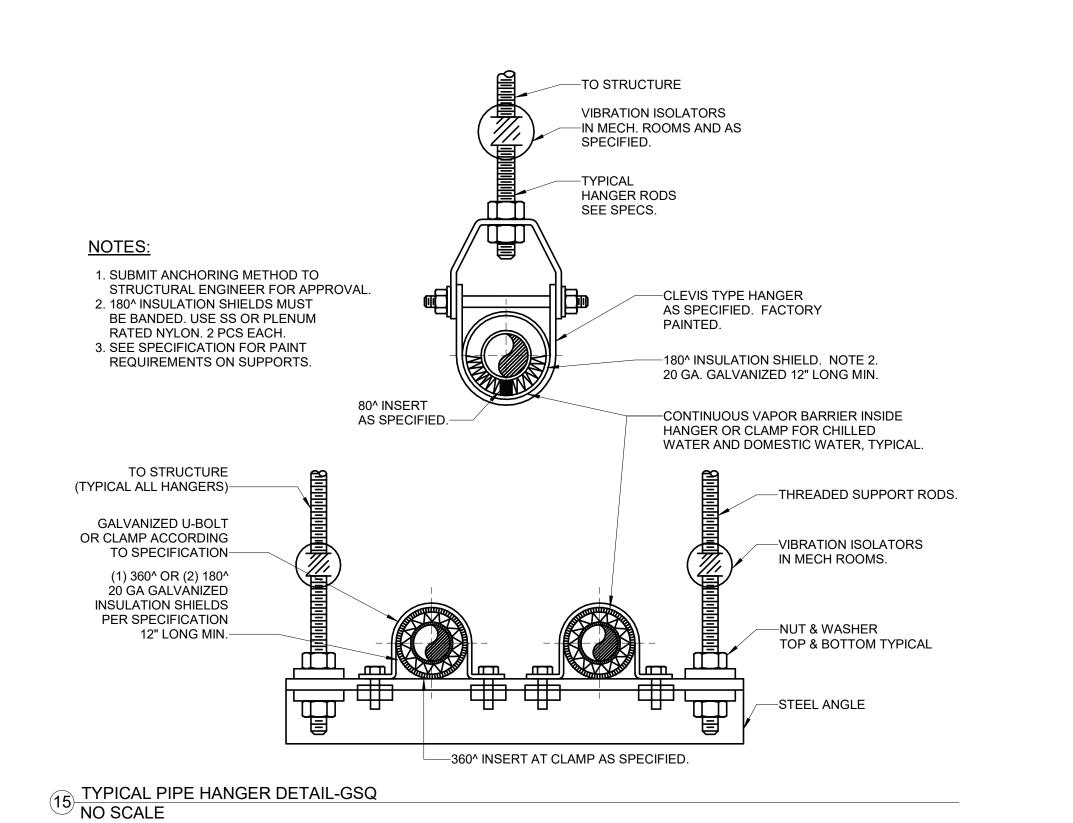


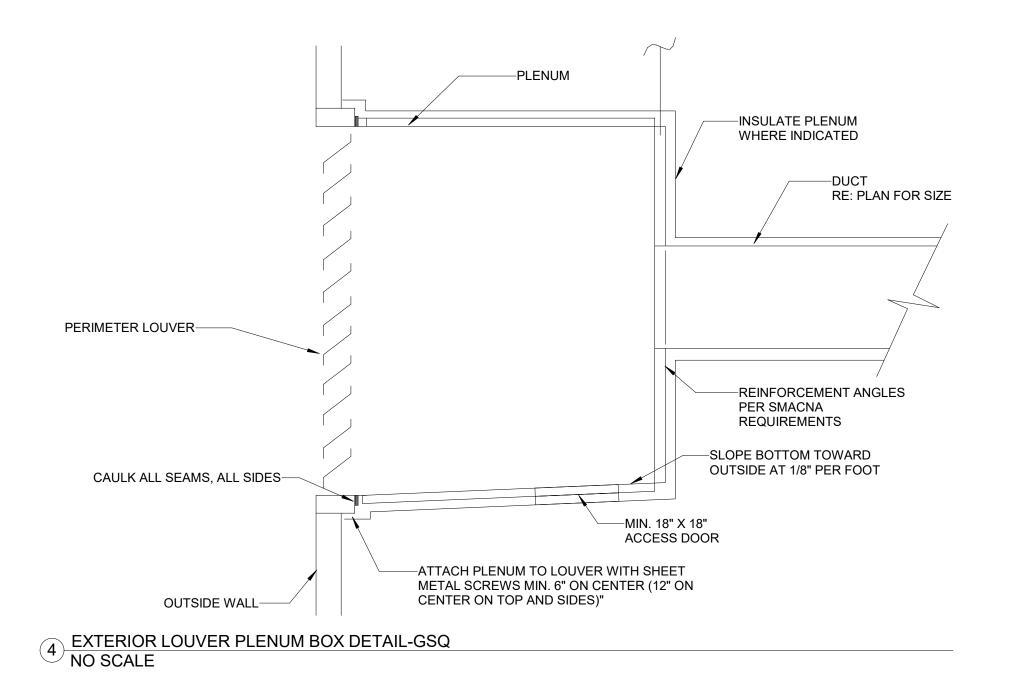
TRANSFER AIR DUCT

RETURN AIR TRANSFER BOOT AND AIR DUCT-GSQ NO SCALE











Tel 303.595.8585

Fax 303.825.6823

2305 Mount Werner Circle

Gensler

Steamboat Springs, CO 80487

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



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



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

2021.05.21 BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature



Steamboat Base Village Redevelopment

003.7835.000

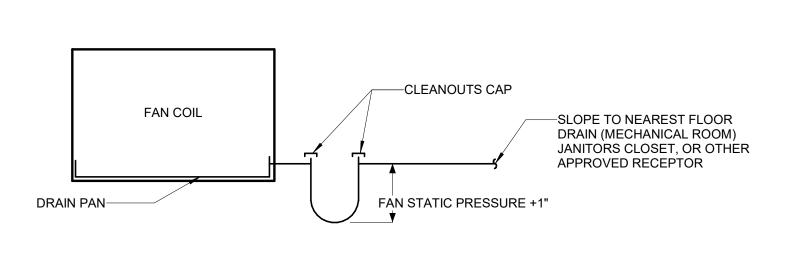
Project Number

Description MECHANICAL DETAILS

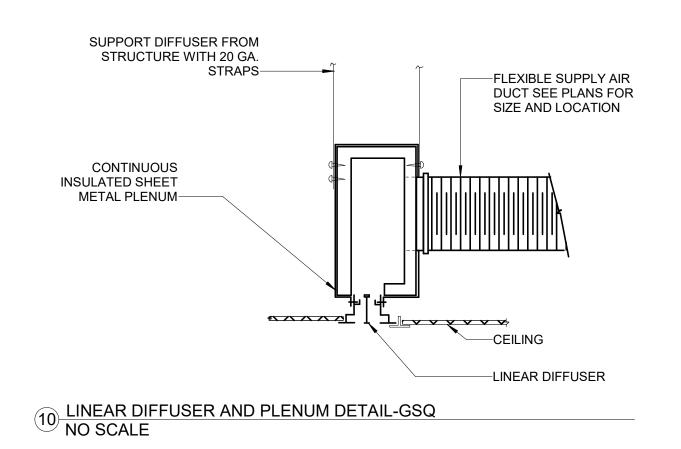
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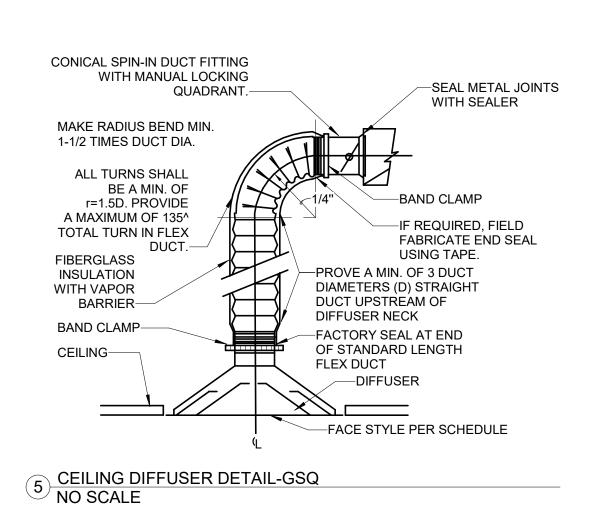
NO SCALE

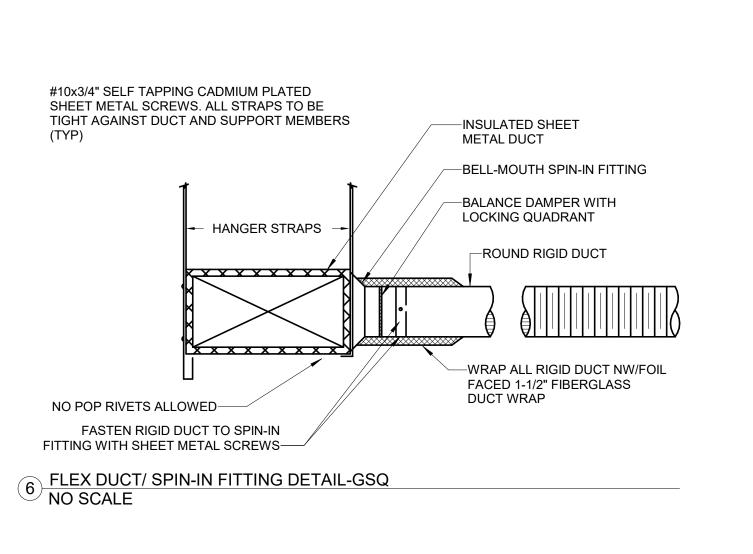
M8.000

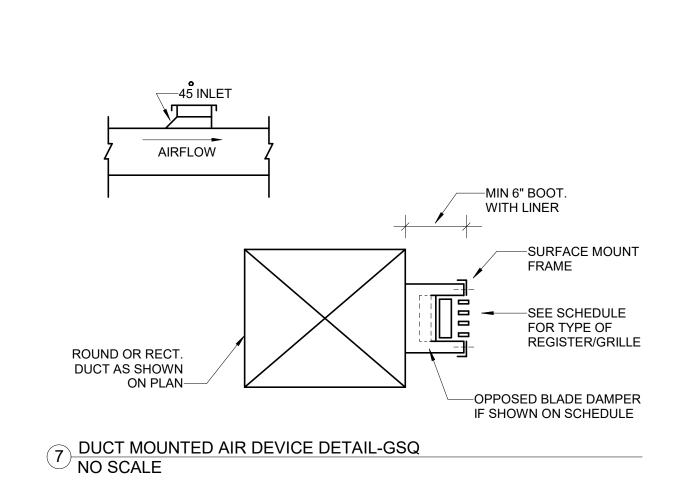


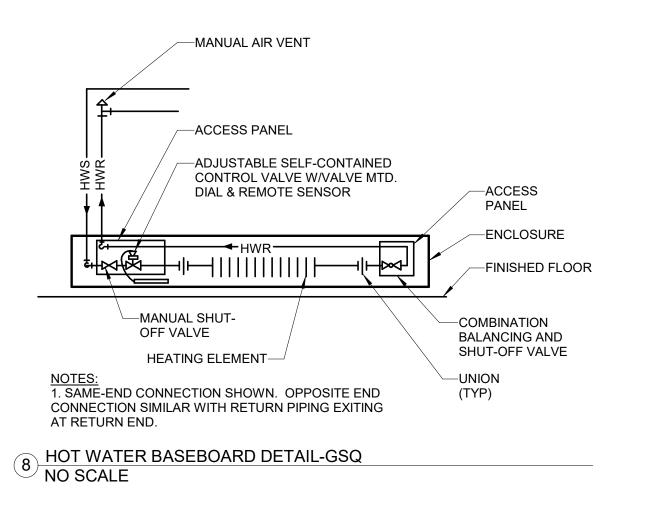
1. INSULATE CONDENSATE DRAIN WHEN ABOVE CEILINGS. 9 FAN COIL UNIT CONDENSATE DRAIN DETAIL-GSQ NO SCALE

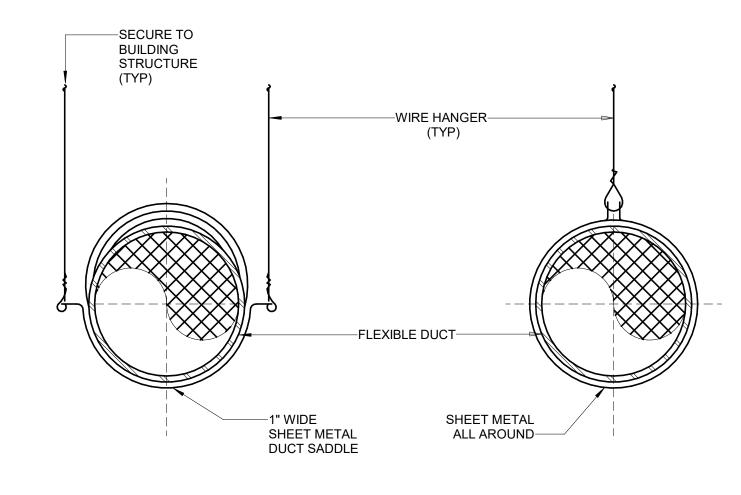




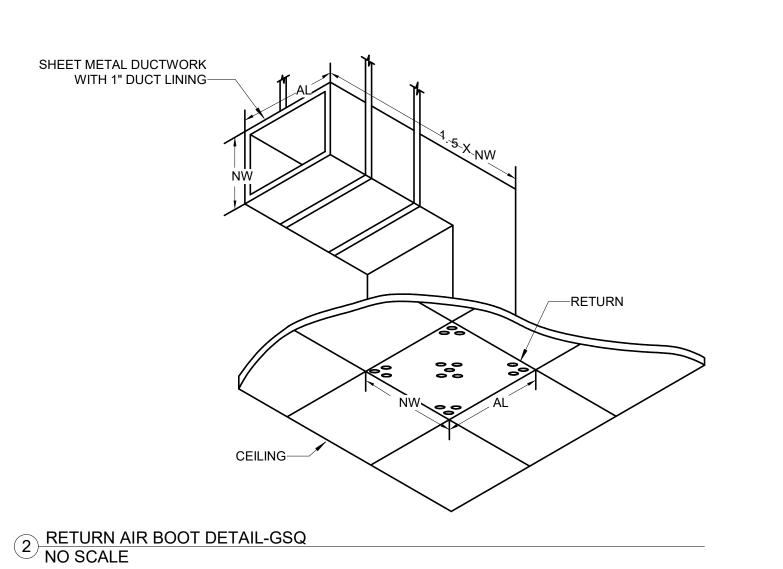


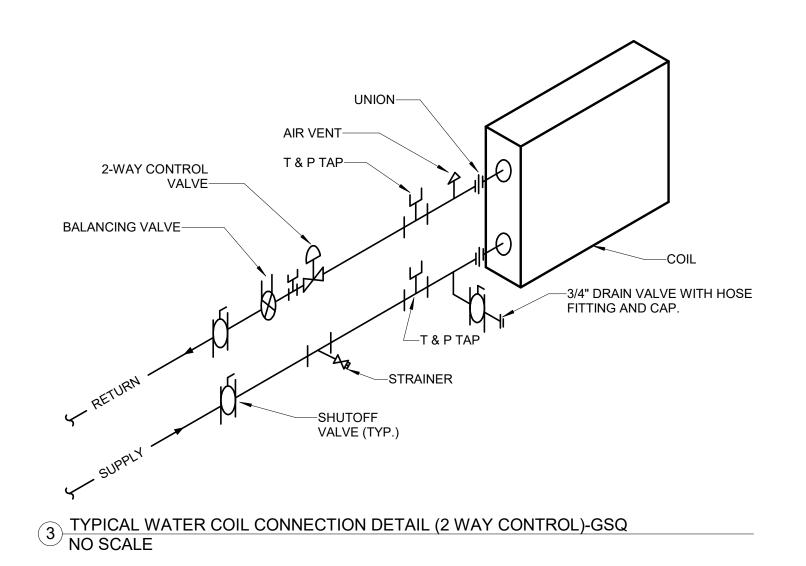


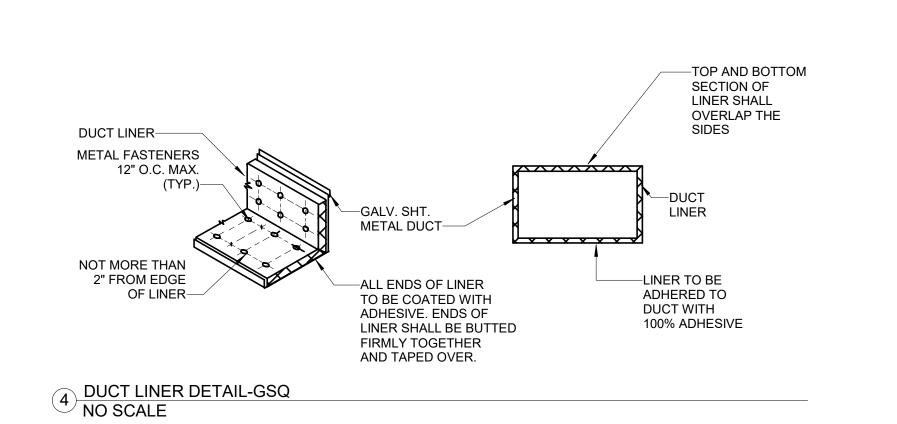




NOTE: 1. SUPPORT AT 3' MAX. 1 FLEXIBLE DUCT SUPPORT-GSQ NO SCALE









Tel 303.595.8585

Fax 303.825.6823

↑LTERR ♦ east west partners MOUNTAIN COMPANY

2305 Mount Werner Circle Steamboat Springs, CO 80487

Gensler

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Description MECHANICAL DETAILS

Scale NOT TO SCALE

M8.001

					ROO	FTOP	UN	IT SCH	HED	DUL	.E										
					SU	IPPLY FAN				COOL	ING CAPACITY	(AIR-CO	OLED D	<)	FILTER		ELEC	TRICAL	-		
	AREA		MANUFACTURER/		TSP "W.C.	ESP "W.C.		MIN. OSA	EAT	(°F)	UNIT LAT (°F)	TOTAL	SENS							WEIGHT	
CODE	SERVED	LOCATION	MODEL NO.	CFM	(ALT.)	(ALT.)	HP	(CFM)	DB	WB	DB	MBH	MBH	EER	TYPE	VOLT	PH	MCA	MOP	(LBS)	REMARKS
E)RTU-1	BUILDING A	ROOF	TRANE TSD210F4R0	5,600	1.18	1	5	1,000	80.0	62.0	55.2	167	116	11.0	2" PANEL	460	3	43	60	2,500	

1. UNIT IS EXISTING TO REMAIN.

2. UNIT SHALL BE MODIFIED TO INCLUDE AN APR CONTROL VALVE ON THE LEAD COMPRESSOR CIRCUIT FOR TURNDOWN TO 4.5 TONS AT THE LOWEST STEP. ENGAGE OEM MANUFACTURER'S AUTHORIZED TECHNICIAN TO PERFORM MODIFICATION WORK.

											ENEI	RGY RE	COV	ERY	VEN	NTIL	_AT	OR S	SCHI	EDU	LE												
			SU	PPLY FAI	N	EXH	IAUST FA	N	FILTE	RS	HEA	TING (ELEC.							HEAT RE	COVER	Υ												
				ESP			ESP				1	PREHEAT)			С	OOLING	G					ŀ	HEATING	;					ELE	ECTRICAL			
CODE	AREA	MANUFACTURER/	MAX	"W.C.		MAX	"W.C.			APD	EAT L	AT HTG. CAP	. OSA	EAT (F)	EXH E	AT (F)	OSA L	AT (F)	TOT.	OSA E	AT (F)	EXH E	AT (F)	OSA L	AT (F)	ТОТ.						WEIGHT	
(ERV)	SERVED	MODEL NO.	CFM	(ALT.)	HP	CFM	(ALT.)	HP	TYPE	"W.C.	(°F) (°F) (KW)	DB	WB	DB	WB	DB	WB	EFF.	DB	WB	DB	WB	DB	WB	EFF	VOLT PH	MCA	DISC.	FUSE	FEEDER	LBS	REMARKS
C1	BUILDING C LOCKER	GREENHECK / ERV-20-15L	1,200	0.75	3/4	1,200	0.75	3/4	MERV 8	0.06	-10.0	5.8 5.0	88.0	57.0	85.9	56.3	77.0	60.6	78.3%	5.8	2.1	16.7	14.2	60.0	47.7	5.3%	480 3	13.1	30A/3P	20A	(3#12, #12G) 3/4"C	900	A,B
C2	BUILDING C LOCKER	GREENHECK / ERV-20-15L	1,200	0.75	3/4	1,200	0.75	3/4	MERV 8	0.06	-10.0	5.8 5.0	88.0	57.0	85.9	56.3	77.0	60.6	78.3%	5.8	2.1	16.7	14.2	60.0	47.7	5.3%	480 3	13.1	30A/3P	20A	(3#12, #12G) 3/4"C	900	A,B

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

2. PROVIDE A MINIMUM OF 3 FEET CLEARANCE IN FRONT OF DISCONNECTS SWITCHES AND CONTROL PANELS. COMPLY FULLY WITH NEC.

3. UNIT STATIC PRESSURE CAPABILITY SHALL INCLUDE SCHEDULED EXTERNAL STATIC PRESSURE PLUS ALL SCHEDULED INTERNAL PRESSURE DROPS. 4. SCHEDULED FAN VALUES (CFM, SP AND HP) ARE ACTUAL AT ALTITUDE OF 6700 FT.

5. MAXIMUM WHEEL AND FILTER FACE VELOCITY = 500 FPM 6. REFER TO MECHANICAL CONTROLS DRAWINGS.

A. 100% OUTSIDE AIR UNIT.

B. SERVED BY (2) PERIMETER MECHANICAL LOUVERS. SEE LOUVER SCHEDULE.

			AID OI	IDTAIN				•					
			AIR C	JRTAIN	1 SC	HED	ULE	•					
CODE	MANUFACTURER/									ELECTF	RICAL		WEIGHT
(ACRT)	MODEL NO.	SERVICE	LOCATION	TYPE	CFM	HP	VOLT	PH	FLA	DISC.	FUSE	FEEDER	(LBS)
C1	MARS / STD2 36	ENTRY DOOR	BUILDING C LOCEKER	AMBIENT	1350	1/2	115	1	5.1	\$.T.O.	-	(2#12,#12G) 3/4"C	70
C2	MARS / STD2 72	ENTRY DOOR	BUILDING C LOCEKER	AMBIENT	2700	1/2 (x2)	115	1	10.2	\$.T.O.	-	(2#12,#12G) 3/4"C	130

GENERAL NOTES:

1. PROVIDE DOOR SWITCH. RE: CONTROL DIAGRAMS.

			ME	CHANICAL L	OUVER SO	HEDIIIE				
			IAIT			HLDULL				
CODE	MANUFACTURER /					MINIMUM FREE	FACE	E SIZE	PLENUM	
(L)	MODEL	SERVICE	LOCATION	AIRFLOW	VELOCITY	AREA (SF)	WIDTH (IN)	HEIGHT (IN)	BOX DEPTH	REMARKS
A1	RUSKIN / ELF6375DX	EF A3-01	BUILDING A	350	500	0.7	16	14	3'-0"	A,B
C1	RUSKIN / ELF6375DX	ERV-C1	BUILDING C	2400	500	4.8	80	18	3'-0"	A,B
C2	RUSKIN / ELF6375DX	ERV-C2	BUILDING C	2400	500	4.8	80	18	3'-0"	A,B
F1	RUSKIN / ELF6375DX	FCU-F1/F2	BUILDING F	200	500	0.4	12	12	3'-0"	A,B
F2	RUSKIN / ELF6375DX	FCU-F3/F4	BUILDING F	150	500	0.3	12	12	3'-0"	A,B
F3	RUSKIN / ELF6375DX	LAUNDRY MAKE-UP	BUILDING F	1600	500	3.2	48	20	1'-0"	A,B
F4	RUSKIN / ELF6375DX	RR EXHAUST	BUILDING F	100	500	0.2	12	12	3'-0"	A,B

GENERAL NOTES

1. LOUVERS SCHEDULED HERE ARE CONNECTED TO MECHANICAL SYSTEMS.

REMARK NOTES

A. PROVIDE INSULATED PLENUM. SLOPE BASE OF PLENUM TO DRAIN WATER OUT THROUGH LOUVER FACE. RE: MECHANICAL DETAILS.

B. PROVIDE BIRD SCREEN.

			ENVIF	RONM	ENT	AL FA	N SC	CHE	EDU	LE							
CODE	MANUFACTURER/					ESP "W.C.							ELECTRICAL				
(EF)	MODEL NO.	SERVICE	LOCATION	TYPE	CFM	(ALT.)	DRIVE	HP	VOLT	PH FI	LA	DISC.	FUSE	FEEDER	MTG	CTRL REM	/IARKS
A3-01	GREENHECK / CSP-A510-VG	RESTROOM EXHAUST	BUILDING A LEVEL 3	INLINE	350	.5	D	0.17	115	1 2.	45	\$.T.O.		(2#12, #12G) 3/4"C	1	I	
A3-02	GREENHECK / SP-A780	ELEC	LEVEL 2	INLINE	500	.5	D	0.06	115	1 3	.3	\$.T.O.		(2#12, #12G) 3/4"C	1	II	
A3-03	GREENHECK / SP-A780	ELEC	LEVEL 2	INLINE	500	.5	D	0.06	115	1 3	.3	\$.T.O.		(2#12, #12G) 3/4"C	1	H	
F2-01	PANASONIC / WHISPERCEILING	RESTROOM EXHAUST	BUILDING F LEVEL 2	CEILING	100	.5	D	0.01	115	1 .2	27	\$.T.O.		(2#12, #12G) 3/4"C		III .	Α

GENERAL NOTES:

1. DRIVE TYPE: D = DIRECT-PROVIDE RHEOSTAT SPEED CONTROLLER IN FAN HOUSING. 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.

MOUNTING (MTG):

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

CONTROL (CTRL):

I. INTERLOCKROOFTOP UNIT SERVING SAME AREA. RE: MECHANICAL CONTROLS DRAWINGS. II. CONTROL VIA WALL SENSOR-ENERGIZE AT 75°F (ADJUSTABLE).

III. INTERLOCK FAN WITH FCU F2-03. RE: MECHANICAL CONTROLS DRAWINGS.

REMARK NOTES

A. PROVIDE INTEGRAL BACKDRAFT DAMPER. PROVIDE 1.5" EXTERNAL DUCT WRAP ON EXHAUST DUCT TO PERIMETER LOUVER.

		ELEC	CTR	IC	DU	CT HE	AT	ER					
								HEA	TING	COIL			
	MANUFACTURER/	OSA								ELECTRI	CAL		
AREA SERVED	MODEL NO.	CFM	EAT	LAT	KW	CONTROL	V	PH	FLA	FUSE	DISC.	FEEDER	REMARK
BUILDING C	INDEECO QUA	1200	58.0	75.0	5.3	SCR	480	3	6.4	15A FRS-RK	30A/3P	(3#12,#12G) 3/4"C	A,B
BUILDING C	INDEECO QUA	1200	58.0	75.0	5.3	SCR	480	3	6.4	15A FRS-RK	30A/3P	(3#12,#12G) 3/4"C	A,B
L NOTES			•										
	BUILDING C BUILDING C	AREA SERVED MANUFACTURER/ MODEL NO. BUILDING C INDEECO QUA BUILDING C INDEECO QUA	AREA SERVED MANUFACTURER/ MODEL NO. CFM BUILDING C INDEECO QUA 1200 BUILDING C INDEECO QUA 1200	MANUFACTURER/ OSA CFM EAT BUILDING C INDEECO QUA 1200 58.0 BUILDING C INDEECO QUA 1200 58.0	MANUFACTURER/ OSA CFM EAT LAT BUILDING C INDEECO QUA 1200 58.0 75.0 BUILDING C INDEECO QUA 1200 58.0 75.0	MANUFACTURER/ OSA CFM EAT LAT KW BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 BUILDING C INDEECO QUA 1200 58.0 75.0 5.3	AREA SERVED MANUFACTURER/ OSA CFM EAT LAT KW CONTROL BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR	MANUFACTURER/ OSA CFM EAT LAT KW CONTROL V BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480 BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480	MANUFACTURER/ OSA CFM EAT LAT KW CONTROL V PH BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480 3 BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480 3	AREA SERVED MANUFACTURER/ OSA CFM EAT LAT KW CONTROL V PH FLA BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480 3 6.4 BUILDING C INDEECO QUA 1200 58.0 75.0 5.3 SCR 480 3 6.4	MANUFACTURER/ OSA CFM EAT LAT KW CONTROL V PH FLA FUSE	MANUFACTURER/	MANUFACTURER/

1. MOUNT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS INCLUDING ALL UL LISTING REQUIREMENTS.

A. PROVIDE LINE VOLTAGE DUCT MOUNTED THERMOSTAT DOWNSTREAM OF HEATER.

B. INTERLOCK HEATER WITH ERV SERVING SAME AREA.

	MANUFACTURER/					
CODE	MODEL NO.	SERVICE	TYPE	ACCESSORIES	FACE SIZE	REMARKS
A1	PRICE / 520	SUPPLY	LOUVERED		NECK +2"	
A2	PRICE / 620	SUPPLY	LOUVERED		NECK +2"	А
A3	PRICE / 510	SUPPLY	DOUBLE DEFLECTION		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		А
E	PRICE / SDGE	EXHAUST/RETURN	SPIRAL MOUNT	PERFORATED, AIR SCOOP		A
F1	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		12"x12"	
F2	PRICE / PDDR	EXHAUST/RETURN	PERFORATED		24"x24"	
G1	PRICE / 510	EXHAUST/RETURN	LOUVERED		SEE PLANS	
G2	PRICE / 530	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	
K1	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(1) 1" SLOT, 60" LENGTH	
K2	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(2) 1" SLOT, 60" LENGTH	
K3	PRICE / SDR	RETURN	LINEAR SLOT	60" FACTORY PLENUM	(3) 1" SLOT, 60" LENGTH	

GENERAL NOTES:

1. NOT ALL GRD TYPES LISTED ON SCHEDULE MAY APPLY. 2. SEE PLANS FOR CFM AND NECK SIZE.

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

4. COLOR TO BE COORDINATED WITH ARCHITECT. 5. MATERIAL IS STEEL UNLESS OTHERWISE NOTED.

6. PROVIDE A REMOTE, THROUGH FACE, CABLE OPERATED BALANCING DAMPER WHEN INSTALLED IN AN INACCESSIBLE CEILING.

7. PROVIDE FRAME AND TRIM COMPATIBLE WITH CEILING SYSTEM. RE: ARCHITECTURAL RCP DRAWINGS. 8. PROVIDE SQUARE TO ROUND ADAPTER FOR RECTANGULAR FACE GRILLES CONNECTED TO ROUND BRANCH DUCTS.

REMARK NOTES:

A. ALUMINUM CONSTRUCTION.



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MECHANICAL SCHEDULES

MEP0.000

														FA	N CO	IL S	CHEDUL	E (HYD	RONIC/DX	()										
				FAN		DX CC	OLING	COIL		Н	EATING	3 COIL					ELECTR	ICAL		CONDENSING					Е	LECTRICAL -	CONDENS	NG UNIT		
CODE	MANUFACTURER/			OA	ESP	EAT (°F)	TOT	TAL SI	ENS	EAT			WPD							UNIT	MANUFACTURER /	CAPACITY								
(FCU)	MODEL NO.	AREA SERVED	CFM	CFM	(IN.)	DB WE	3 ME	BH M	ЛВH	(°F)	MBH	GPM	(FT)	HP	VOLT P	H MCA	FUSE	DISCON.	FEEDER	CODE	MODEL NO.	(MBH)	VOLT	PH	MCA	FUSE	DISCON.	FEEDER	E-POWER	REMARKS
																													1	
F2-01	TRANE / FCCB080	BUILDING F LAUNDRY	700	200	0.35 7	8.7 53.9	9 14	.4 1	13.9	48.6	18.7	1.3	1.0	0.22	2 208 1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	F1	TRANE / 4TTR6018J	14.4	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	N	В
F2-02	TRANE / FCCB080	BUILDING F LAUNDRY	700	0	0.35 7	5.0 52.	5 12	.1 1	11.7	72.0	5.0	0.4	0.5	0.22	2 208 1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	F2	TRANE / 4TTR6018J	12.1	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	N	Α
F2-03	TRANE / FCCB060	BUILDING F SECURITY OFFICES	400	50	.5 7	6.6 53.	1 7.	5	7.3	58.8	8.1	0.6	1.0	0.22	2 208 1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	F3	TRANE / 4TTR6018J	7.5	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	N	В
F2-04	TRANE / FCCB080	BUILDING F SECURITY OFFICES	650	100	.5 7	7.0 53.3	3 12	.4 1	12.0	54.0	13.7	1.0	0.9	0.22	2 208 1	2.25	5A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	F4	TRANE / 4TTR6018J	12.4	208	1	12	15A FRN-RK	30A/3P	(3#12, #12G) 3/4"C	N	В

1. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL.

2. PROVIDE 1" MERV 8 FILTERS.

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

A. PROVIDE ENCLOSURE WITH BOTTOM RETURN AND FRONT DISCHARGE.

B. PROVIDE BACK RETURN WITH LINED RETURN DUCT. PROVIDE BALANCING DAMPER UPSTREAM OF OA CONNECTION.

BASI	EBOARD RADI	ATION SCHEDU	JLE (HYD	RONIC)					VA	V BO	X S	CHE	EDU	LE (H	YDI	RON	IC)			
	MANUFACTURER/							DESIGN	PRIMARY A	IRFLOW			HEAT	ING COIL			MAX			
CODE	MODEL NO.	CAPACITY (BTUH/LF)	GPM/FT	ROWS			MANUFACTURER/	COOLING	HEATING	DESIGN	EAT	LAT	COIL		APD	WPD	RADIATED	INLET	OUTLET	
					CODE	AREA SERVED	MODEL NO.	MAX	MAX	MIN	(F)	(F) (I	MBH) F	ROWS GPI	л "W.C	. FT	NC LEVEL	(DIA.)	SIZE	REMARKS
BBR	SIGMA / SWE-06T	350	0.1	1																
					VAV - A2-01	SEE PLANS	PRICE SDV 6	365	300	300	53	90	9.3	1 1.0	0.09	0.65	30	6	12 X 8	
GENERAL N	IOTES:	,			VAV - A3-01	SEE PLANS	PRICE SDV 10	880	545	545	53	90	16.8	1 1.8	0.28	2.66	30	10	14 X 12.5	
l. EWT= 150	0 °F, LWT= 130 °F, 30% PROP	YLENE GLYCOL.			VAV - A3-02	SEE PLANS	PRICE SDV 6	320	200	200	53	90	6.2	1 0.7	0.07	0.35	30	6	12 X 8	
		D LENGTH. MINIMUM FLOW FOI		PM.	VAV - A3-03	SEE PLANS	PRICE SDV 6	330	270	270	53	90	8.3	1 0.9	0.07	0.54	30	6	12 X 8	
		E UNLESS OTHERWISE NOTED.			VAV - A3-04	SEE PLANS	PRICE SDV 6	250	155	155	53	90	4.8	1 0.5	0.05	0.19	30	6	12 X 8	
	JRE COLOR SELECTED BY A				VAV - A3-05	SEE PLANS	PRICE SDV 6	280	175	175	53	90	5.4	1 0.6	0.06	0.26	30	6	12 X 8	
b. TUBE MA	TERIAL IS COPPER, FIN MAT	ERIAL ALUMINUM UNLESS OTHI	ERWISE NOTED.		VAV - A3-06	SEE PLANS	PRICE SDV 8	500	255	255	53	90	7.9	1 0.8	0.15	0.44	30	8	12 X 10	
					VAV - A3-07	SEE PLANS	PRICE SDV 6	180	220	180	53	90	6.8	1 0.7	0.04	0.35	30	6	12 X 8	
					VAV - A4-01	SEE PLANS	PRICE SDV 12	1330	685	685	53	90	21.2	1 2.3	0.31	0.67	30	12	16 X 15	
					VAV - A4-02	SEE PLANS	PRICE SDV 12	1220	420	420	53	90	13	1 1.4	0.26	0.28	30	12	16 X 15	
					VAV - A4-03	SEE PLANS	PRICE SDV 6	225	120	120	53	90	3.7	1 0.4	0.04	0.03	30	6	12 X 8	
					VAV - A4-04	SEE PLANS	PRICE SDV 6	300	230	230	53	90	7.1	1 0.8	0.06	0.44	30	6	12 X 8	
					VAV - A4-05	SEE PLANS	PRICE SDV 6	285	275	275	53	90	8.5	1 0.9	0.06	0.54	30	6	12 X 8	
					VAV - A4-06	BYPASS	PRICE SDV 14	1790	1790	430	55	85	44.8	1 4.8	0.18	4.03	30	14	20 X 17.5	Α

GENERAL NOTES 1. EWT = 150F, LWT=130F, 30% PROPYLENE GLYCOL.

2. PRIMARY AIR: 53F, 1.0" W.C. INLET STATIC PRESSURE, 0.25" W.C. UNIT DOWNSTREAM STATIC PRESSURE UNLESS NOTED OTHERWISE.

3. MAXIMUM NC LEVELS ARE RADIATED SOUND DATA BASED ON THE MAXIMUM COOLING CFM LISTED. 4. CONTROLS SHALL BE BY MANUFACTURER OR BY TEMPERATURE CONTROL CONTRACTOR AND MOUNTED AT THE FACTORY. SEE SPECIFICATIONS. TEMPERATURE CONTROL CONTRACTOR TO

PROVIDE 2- WAY CONTROL VALVE PACKAGE UNLESS NOTED OTHERWISE. 5. MOUNT WITH 3 STRAIGHT DUCT DIAMETERS UPSTREAM OF THE BOX.

REMARK NOTES

A. REVERSE ACTING BYPASS VAV

		CABINET U	JNIT H	EAT	ER	SC	HE	DUL	E (H	łYDi	RONIC	;)			
CODE	MANUFACTURER/	AREA		CAP.							ELECTRIC	CAL		CONN.	
(CUH)	MODEL NO.	SERVED	CONFIG	(MBH)	CFM	GPM	HP	VOLT	PH	FLA	DISC	FUSE	FEEDER	SIZE	REMARKS
A1	ZEHNDER RITTLING / RFRC-420-02	BUILDING A RESTROOM	CEILING	5	150	0.6	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
A2	ZEHNDER RITTLING / RFRC-420-02	BUILDING A RESTROOM	CEILING	5	150	0.6	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C1	ZEHNDER RITTLING / RC-390-03	BUILDING C LOCKER	CEILING	15	300	2.3	1/4	120	1	0.88	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C2	ZEHNDER RITTLING / RC-390-02	BUILDING C LOCKER	CEILING	10	220	1.7	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C3	ZEHNDER RITTLING / RC-390-02	BUILDING C LOCKER	CEILING	10	220	1.7	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C4	ZEHNDER RITTLING / RC-390-02	BUILDING C LOCKER	CEILING	10	220	1.7	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C5	ZEHNDER RITTLING / RC-390-02	BUILDING C LOCKER	CEILING	10	220	1.7	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C6	ZEHNDER RITTLING / RC-390-02	BUILDING C LOCKER	CEILING	10	220	1.7	1/4	120	1	0.78	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C7	ZEHNDER RITTLING / RC-390-03	BUILDING C LOCKER	CEILING	30	300	2.3	1/4	120	1	0.88	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α
C8	ZEHNDER RITTLING / RC-390-03	BUILDING C LOCKER	CEILING	15	300	2.3	1/4	120	1	0.88	\$.T.O.	-	(2#12, #12G) 3/4"C	1/2	Α

GENERAL NOTES:

1. EAT = 68°F, LAT = 90°F.

2. HEATING WATER: EWT = 150°F, LWT = 130°F, 30% PROPYLENE GLYCOL.

3. ELEVATION = 6,700 FT.

4. PROVIDE FAN SPEED CONTROL SWITCH. 5. PROVIDE ECM MOTOR.

REMARK NOTES:

A. PROVIDE CONTROL TRANSFORMER AND REMOTE MOUNTED LOW VOLTAGE THERMOSTAT.

ALTERRA east west partners

2305 Mount Werner Circle

Gensler

Steamboat Springs, CO 80487

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

Tel 303.595.8585 Fax 303.825.6823



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

MARTIN/MARTIN

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

- 2021.05.21 BP4D - GONDOLA SQUARE INTERIORS BLDG. A, C AND F - ISSUE FOR PERMIT AND CONSTRUCTION

Seal / Signature



Steamboat Base Village Redevelopment

Project Number

003.7835.000

MECHANICAL SCHEDULES

NOT TO SCALE

MEP0.001