

MECHANICAL SPECIFICATIONS:

1. GENERAL:
- a. FURNISH ALL LABOR, SUPERVISION, MATERIALS, EQUIPMENT AND FACILITIES NECESSARY TO FURNISH, FABRICATE, DELIVER, STORE AND INSTALL ALL WORK NOTED ON THE DRAWINGS AND/OR SPECIFIED HEREIN.
- b. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL WORK NECESSARY TO MAKE A COMPLETE SYSTEM WHETHER OR NOT SUCH DETAILS ARE MENTIONED IN THESE SPECIFICATIONS OR SHOWN ON THE PLANS, BUT WHICH ARE OBVIOUSLY NECESSARY TO MAKE A COMPLETE SYSTEM, EXCEPTING ONLY THOSE PORTIONS THAT ARE SPECIFICALLY MENTIONED HEREIN OR PLAINLY MARKED ON THE ACCOMPANYING DRAWINGS AS BEING INSTALLED UNDER ANOTHER SECTION OF THE SPECIFICATIONS.
2. WORKMANSHIP:
- a. THE WORK SHALL BE ACCOMPLISHED IN A THOROUGH AND WORKMAN-LIKE MANNER SATISFACTORY TO AND MEETING THE APPROVAL OF THE OWNER AND ARCHITECT.
3. MATERIALS:
- a. ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND THE BEST OF THEIR RESPECTIVE KIND, FREE FROM ALL DEFECTS AND OF THE MAKE AND QUALITY SPECIFIED.
4. SITE INSPECTION:
- a. CONTRACTOR SHALL VISIT THE SITE OF WORK PRIOR TO SUBMISSION OF HIS BID AND THOROUGHLY FAMILIARIZE HIMSELF WITH THE WORKING CONDITIONS & EXACT NATURE OF THE WORK.
- b. SUBMISSION OF A BID ACKNOWLEDGES FULL RESPONSIBILITY FOR FURNISHING A COMPLETE AND FUNCTIONAL SYSTEM.
- c. NO CHANGES IN CONTRACT WILL BE MADE TO ACCOMMODATE OR ALLOW EXTRA FUNDS FOR ANY OMISSION WHICH RESULTS FROM A FAILURE TO THOROUGHLY MAKE THE EXAMINATION.
5. CODES AND PERMITS:
- a. ALL MECHANICAL EQUIPMENT, INSTALLATION, ETC., SHALL CONFORM TO THE 2021 INTERNATIONAL MECHANICAL CODE (IMC), 2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) AND ORDINANCES AS INTERPRETED BY THE EAGLE COUNTY BUILDING DEPARTMENT.
- b. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS.
- c. COPIES OF ALL PERMITS AND INSPECTION REPORTS SHALL BE SUBMITTED TO THE ARCHITECT.
6. AS-BUILTS:
- a. CONTRACTOR SHALL PROVIDE A COMPLETE SET OF AS-BUILT DOCUMENTS WITH ALL CHANGES NOTED THEREON AT THE COMPLETION OF THE PROJECT AND PRIOR TO FINAL ACCEPTANCE AND PAYMENT.
7. GUARANTEE:
- a. CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE ALL LABOR AND MATERIALS ON ALL WORK AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER COMPLETION.
8. SUBMITTALS:
- a. CATALOG INFORMATION AND CUTS OF ALL EQUIPMENT AND DEVICES (WITH ALL OPTIONS CLEARLY MARKED) SHALL BE ELECTRONICALLY SUBMITTED TO THE ARCHITECT FOR REVIEW. PERFORMANCE SELECTIONS REQUIRED FOR HEAT EXCHANGERS AND PUMPS.
9. COORDINATION:
- a. THE DRAWINGS ARE DIAGRAMMATIC AND INTENDED TO SHOW SCOPE.
- b. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO PROVIDE BEST ARRANGEMENT OF ALL DUCTS, PIPES, CONDUIT, ETC.
10. CUTTING AND PATCHING:
- a. ALL CUTTING AND PATCHING REQUIRED OF THE STRUCTURE (NEW OR EXISTING) SHALL BE PROVIDED UNDER OTHER SECTIONS OF THE WORK.
- b. PROVIDE NECESSARY REQUIREMENTS TO THE PROJECT SUPERINTENDENT.
- c. X-RAY SLABS PRIOR TO CORING.
11. CLEANUP:
- a. UPON COMPLETION OF THE WORK UNDER THIS SECTION, THE CONTRACTOR SHALL REMOVE ALL SURPLUS MATERIALS, EQUIPMENT AND DEBRIS INCIDENTAL TO THIS WORK AND LEAVE THE PREMISES CLEAN AND ORDERLY.
12. MECHANICAL IDENTIFICATION
- a. EQUIPMENT NAMEPLATES: METAL, WITH DATA ENGRAVED OR STAMPED, FOR PERMANENT ATTACHMENT ON EQUIPMENT.
- b. PIPE MARKERS: PREPRINTED, COLOR CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING DIRECTION OF FLOW.
- c. VALVE TAGS: STAMPED OR ENGRAVED WITH 1/4" LETTERS FOR PIPING SYSTEM ABBREVIATION AND 1/2" NUMBERS, WITH NUMBERING SCHEME. PROVIDE 5/32" HOLE FOR FASTENER.
- d. VALVE TAG SCHEDULE: PREPARE A VALVE TAG SCHEDULE TO BE SUBMITTED TO THE MAINTENANCE ENGINEER FOR RECORD.

13. DUCTWORK:
- a. DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE 2021 IMC AND SMACNA STANDARDS.
- b. DUCTWORK SHALL BE GALVANIZED STEEL GAUGES TO MEET SMACNA STANDARDS. DUCTWORK SIZES INDICATED ARE INSIDE TO INSIDE [OUTSIDE TO OUTSIDE] DIMENSIONS.
- c. ALL DUCT JOINTS SHALL BE SEALED AIR TIGHT WITH RCD CORP. # 6 MASTIC ADHESIVE WITH VERSA GRIP OR MESH.
- d. ALL FINAL CONNECTIONS TO SUPPLY GRILLES SHALL BE COMPLETED WITH ACOUSTICAL FLEXIBLE DUCT UNLESS OTHERWISE NOTED ON THE PLANS. MINIMUM LENGTH IS 3'. MAXIMUM LENGTH IS 5'.
- e. FLEXIBLE DUCT USED FOR CONDITIONED AIR SHALL BE UL APPROVED, VINYL COATED, WIRE REINFORCED FIBERGLASS, WITH MAXIMUM THERMAL CONDUCTIVITY OF 0.30 BTU-IN/HR-FT²-°F AND A MAXIMUM LENGTH OF FIVE FEET.
- f. DUCTWORK SHALL BE SIZED AT A MAXIMUM VELOCITY OF 1,500 FPM; 1" PRESSURE DROP PER 100 FEET.
- g. EACH MECHANICAL VENTILATION SYSTEM (SUPPLY AND/OR EXHAUST) SHALL BE EQUIPPED WITH A MEANS OF SHUT-OFF WHEN VENTILATION IS NOT REQUIRED, AND BACKDRAFT DAMPERS WHICH CAN BE CLOSED ON FAN SHUTDOWN SHALL BE PROVIDED FOR AIR INTAKES AND/OR DISCHARGES.
- h. CLEAN OUT ALL DUCTS PRIOR TO SUPPLY AND RETURN GRILLE INSTALLATION
- i. DOUBLE THICKNESS TURNING VANES SHALL BE USED ON ALL DUCT TURNS OF 90°.
14. HEATING PIPING:
- a. HEATING HOT WATER PIPING 2½" INCHES AND BELOW SHALL BE TYPE "L" COPPER, HARD DRAWN, WITH WROUGHT COPPER SWEAT FITTINGS. JOINTS SHALL BE SOLDERED WITH 95-5 OR SILVER SOLDER. CONDENSER WATER AND HEATING HOT WATER PIPING 3" AND ABOVE SHALL BE SCHEDULE 40 BLACK STEEL A-53 SEAMLESS PIPE WITH WELDED FITTINGS.
- b. VALVES SHALL BE DANFOSS OR EQUAL; SERVICE PRESSURE SHALL BE AS REQUIRED. VALVES SHALL BE SUITABLE FOR SERVICE INTENDED. PROVIDE PRESSURE INDEPENDENT CONTROL VALVE MODELS FOR ALL VARIABLE SPEED SYSTEMS UNLESS NOTED OTHERWISE.
- c. PROVIDE HANGERS, SUPPORTS AND INSULATION SADDLES AS REQUIRED AND PER ANSI REQUIREMENTS. PLUMBERS TAPE AND WIRE ARE NOT ACCEPTABLE.
- d. PIPING SHALL BE SIZED AT A MAXIMUM PRESSURE DROP OF 3.5 FT PER 100 FEET & 4 FEET/SEC VELOCITY. UNLESS OTHERWISE NOTED, ALL PIPING SHOWN ON PLANS HAS BEEN SIZED FOR COPPER. PROVIDE DEDUCT ALTERNATE PRICING FOR PEX. IF PEX IS USED, UPSIZE PIPE BY 1 NOMINAL SIZE.
- e. CONTROL VALVE Cv RATINGS SHALL BE SELECTED AT A MAXIMUM PRESSURE DIFFERENTIAL ACROSS THE VALVE OF 2 PSI.
- f. PROVIDE 3" DIA. X 24" L SCHEDULE 40 PVC INLINE FILTER FILLED WITH LIMESTONE AGGREGATE TO NEUTRALIZE THE BOILER'S CONDENSATE DRAIN.
- g. PROVIDE EXPANSION JOINTS OR LOOPS ON ALL HEATING WATER PIPING RUNS IN EXCESS OF 50'.
15. DUCTWORK INSULATION:
- a. ALL DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS PER SECTION 604 OF THE 2021 IMC.
- b. INSULATION SHALL BE UL LISTED IN COMPLIANCE WITH A FLAME-SPREAD INDEX NOT MORE THAN 25 AND SMOKE DEVELOPED INDEX NOT MORE THAN 50, PER SECTION 604.3 OF THE 2021 IMC. INSTALLATION SHALL BE IN ACCORDANCE WITH IMC REQUIREMENTS.
- c. RECTANGULAR SUPPLY, RETURN & TRANSFER DUCTWORK SHALL BE INTERNALLY LINED WITH A VAPOR RESISTANT DUCT LINER OF THICKNESSES SPECIFIED BELOW.
- d. CONCEALED ROUND, CONCEALED OVAL & OUTDOOR AIR DUCTS SHALL BE EXTERNALLY WRAPPED WITH FIBERGLASS INSULATION WITH AN EXTERNAL VAPOR BARRIER. REQUIRED R-VALUES ARE SPECIFIED BELOW.
- e. ALL SUPPLY, RETURN & TRANSFER DUCTWORK LOCATED WITHIN THE BUILDING ENVELOPE SHALL BE INSULATED TO A MINIMUM OF R-4 (1" LINER) UNLESS SPECIFIED OTHERWISE ON THE PLANS.
- f. ALL SUPPLY & RETURN DUCTWORK SHALL BE INSULATED TO A MINIMUM OF R-6 (1-1/2" LINER) WHEN LOCATED IN UNCONDITIONED SPACES AND SHALL BE INSULATED TO A MINIMUM OF R-12 (3" LINER) AND WEATHERPROOFED WHEN LOCATED OUTSIDE THE BUILDING.
- g. ALL OUTDOOR AIR DUCTS SHALL BE INSULATED TO A MINIMUM OF R-6 WITH A VAPOR BARRIER.
16. PIPING INSULATION:
- a. ALL HYDRONIC PIPING SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS PER SECTION 1204 OF THE 2021 IMC.
- b. ALL EXPOSED PIPING SHALL UTILIZE FIBERGLASS INSULATION WITH VAPOR BARRIER, WHEREVER ARMAFLEX IS USED, IT MUST BE FIELD TAPED ALONG BOTH LONGITUDINAL AND RADIAL SEAMS. SELF-ADHEARING ALONE IS NOT ACCEPTABLE.
- c. INSULATION SHALL BE UL LISTED IN COMPLIANCE WITH A FLAME-SPREAD INDEX NOT MORE THAN 25 AND SMOKE DEVELOPED INDEX NOT MORE THAN 50, PER SECTION 1204 OF THE 2015 IMC. INSTALLATION SHALL BE IN ACCORDANCE WITH IMC REQUIREMENTS.
- d. ALL HYDRONIC PIPING INSULATION SHALL HAVE A THERMAL CONDUCTIVITY LESS THAN OR EQUAL TO 0.27 BTU-IN/HR-FT²-°F.
- e. ALL HEATING WATER PIPING 1-1/2" OR SMALLER SHALL BE INSULATED WITH 1-1/2" THICKNESS. HEATING WATER PIPING LARGER THAN 1-1/2" SHALL BE INSULATED WITH 2" THICKNESS.
- f. ALL CHILLED WATER PIPING SHALL BE INSULATED WITH 1-1/2" THICKNESS WITH AN APPROVED VAPOR BARRIER.
- g. ALL PIPING ROUTED BELOW THE SLAB UNDERGROUND SHALL BE TYPE "K" COPPER AND SHALL BE INSULATED WITH ARMPLEX TYPE INSULATION.
17. TEMPERATURE CONTROL DEVICES:
- a. CONTRACTOR SHALL PROVIDE CONTROLS CAPABLE OF MEETING THE SEQUENCE OF OPERATION DESCRIBED ON SHEET M1.0.
- b. MECHANICAL CONTRACTOR TO COORDINATE ALL REQUIREMENTS WITH UNIT MANUFACTURERS PRIOR TO PURCHASING.
- c. THE HVAC SYSTEM SHALL BE PROVIDED WITH 7-DAY PROGRAMMABLE AUTOMATIC SPACE TEMPERATURE CONTROL DEVICES (THERMOSTATS) AS SHOWN ON THE PLANS. THE THERMOSTATS SHALL BE CAPABLE OF SCHEDULING OCCUPANCIES AND PROVIDING SETBACK CAPABILITIES TO MAINTAIN ZONE SETPOINTS DOWN TO 55°F OR UP TO 85°F.
- d. CONTROLS SHALL BE CAPABLE OF PROVIDING A DEADBAND OF AT LEAST 5°F BETWEEN HEATING AND COOLING.
- e. THERMOSTATS SHALL HAVE NUMERIC SET POINTS IN °F, ADJUSTABLE SETPOINT STOPS, AND SHALL BE MOUNTED AT 46" ABOVE FINISHED FLOOR ADJACENT TO THE ROOM'S LIGHT SWITCH.
- f. COORDINATE CONTROL TIE-INS WITH CONTROLS CONTRACTOR AS NECESSARY.
- g. ALL THERMOSTATS SHALL BE APPROVED BY THE OWNER.

18. GAS APPLIANCE VENTING:
- a. ACCEPTABLE VENT MATERIALS, ROUTING, DISTANCE AND TERMINATION LOCATIONS SHALL COMPLY WITH ENGINEERED FLUE INFORMATION ON SHEET M1.3 AND ALL REQUIREMENTS IN CHAPTER 8 OF THE 2021 IMC.
19. WATER QUALITY:
- a. HEATING AND CHILLED WATER CONDITIONS SHALL BE WITHIN HARDNESS AND PH RANGE SUITABLE FOR MECHANICAL EQUIPMENT (PER MANUFACTURER). CONTRACTOR TO TEST CONDITIONS PRIOR TO SYSTEM FILL. WATER SOFTENERS OR OTHER DEVICES MAY BE REQUIRED TO IMPROVE WATER QUALITY.
- b. INCLUDE CORROSION INHIBITORS ON ALL PROPYLENE GLYCOL MIXTURES.
- c. PRIOR TO SYSTEM FILL, ALL TUBING SYSTEMS AND MANIFOLDS SHALL BE CLEANED AS PRESCRIBED BY THE TUBING MANUFACTURER. SUPPLY ALL TOOLS, CONNECTIONS, LABOR, AND ACCESSORIES NECESSARY TO PROPERLY REMOVE ALL FOREIGN MATERIAL, CHEMICAL, AND RESIDUE WITHIN THE TUBING SYSTEM BEFORE PERMANENTLY CHARGING THE SYSTEM AND PLACING INTO OPERATION.
20. BEFORE STARTING ANY WORK, THE CONTRACTOR FOR THIS SECTION OF THE WORK SHALL EXAMINE A COMPLETE SET OF DRAWINGS FOR ALL TRADES, INCLUDING ARCHITECTURAL, STRUCTURAL, HVAC, ELECTRICAL, FIRE PROTECTION AND PLUMBING. DIMENSIONS, SPACE REQUIREMENTS AND POINTS OF CONNECTION TO ALL EQUIPMENT SHALL BE VERIFIED, AND ANY MINOR ADJUSTMENTS NECESSARY TO AVOID CONFLICT WITH THE BUILDING STRUCTURE AND THE WORK OF THE OTHER TRADES SHALL BE MADE. CONTRACTOR SHALL NOTIFY ARCHITECT IMMEDIATELY IF ANY MAJOR CONFLICTS OCCUR.
21. COORDINATE LOCATIONS OF ALL ROOF AND EXTERIOR WALL OPENINGS WITH ALL RELEVANT TRADES, AND PROVIDE WATERTIGHT FLASHINGS WHEREVER PENETRATIONS OCCUR. EXACT LOCATIONS AND SIZES MAY BE DEPENDENT UPON EQUIPMENT SELECTIONS; COORDINATE SIZES AND LOCATIONS OF ALL OPENINGS WITH APPROPRIATE EQUIPMENT REQUIREMENTS.
22. PERMANENT ACCESS TO EQUIPMENT SHALL BE PROVIDED, AND A MINIMUM OF 30" CLEAR WORKING SPACE IN FRONT OF ACCESS PANELS TO THE COMPRESSOR, BLOWER ASSEMBLY AND AIR FILTER SECTION OF THE EQUIPMENT SHALL BE PROVIDED BY GENERAL CONTRACTOR.
23. ALL EQUIPMENT SHALL BE SECURELY FASTENED TO THE BUILDING STRUCTURE WITH CODE APPROVED VIBRATION ISOLATORS.
24. EACH PIECE OF EQUIPMENT AND ALL SYSTEMS SHALL BE ADJUSTED AND RE-ADJUSTED TO ENSURE PROPER FUNCTION OF ALL CONTROLS, MAINTENANCE OF TEMPERATURE, ADEQUACY OF FLOWS AND CAPACITIES, ELIMINATION OF NOISE AND VIBRATION, AND SHALL BE LEFT IN PROPER OPERATING CONDITION.
25. TEST & BALANCING:
- a. THE ENTIRE HEATING AND VENTILATING SYSTEM SHALL BE BALANCED BY AN INDEPENDENT CERTIFIED TEST AND BALANCE COMPANY.
- b. 5 COPIES OF THEIR BALANCE REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL. ELECTRONIC DISTRIBUTION PREFERRED.
- c. ALL REQUIRED RE-SHEEVING AND ADJUSTING OF EQUIPMENT SHALL BE MADE BY THE TEST & BALANCE CONTRACTOR.
- d. ALL FINAL MEASURED CAPACITIES SHALL BE WITHIN 10% OF THOSE INDICATED ON THE PLANS.
26. THE GENERAL CONTRACTOR SHALL FURNISH & INSTALL ALL OF THE REQUIRED ACCESS PANELS IN THE DRYWALL CEILINGS TO GAIN SERVICE ACCESS TO THE EQUIPMENT. EQUIPMENT WITH MANUFACTURER MANDATED SERVICE REQUIREMENTS INSTALLED WITHIN CRAWLSPACES MUST BE A MAXIMUM OF 20 FEET FROM AN ACCESS PANEL.
27. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTALLATION, OPERATION & MAINTENANCE MANUAL'S RECOMMENDATIONS ESPECIALLY FOR SERVICE CLEARANCES.
28. FILTERS:
- a. SHALL BE UL RATED AND APPROVED.
- b. PRESSURE DROPS SHALL NOT EXCEED .10" STATIC PRESSURE.
29. ELECTRICAL CONNECTIONS:
- a. UNLESS OTHERWISE INDICATED ALL MAGNETIC MOTOR STARTERS, THERMAL OVERLOADS, LOW VOLTAGE THERMOSTATS, CONTROL RELAYS, CONTROL TRANSFORMERS AND SOLENOID VALVES SHALL BY FURNISHED BY THE MECHANICAL CONTRACTOR.
- b. UNLESS OTHERWISE SPECIFIED, ALL MOTORIZED DAMPERS SHALL BE LOW VOLTAGE. ALL WIRING AND POWER CONNECTIONS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.
- c. PROVIDE MOTORS AND EQUIPMENT FOR ONLY THOSE CURRENT CHARACTERISTICS INDICATED ON THE DRAWINGS.
- d. IT IS THE INTENT OF THIS DIVISION TO REQUIRE A COMPLETE SYSTEM PER THE CONTRACT DOCUMENTS.
- e. COORDINATE ALL EQUIPMENT REQUIRING ELECTRICAL POWER, REGARDLESS OF VOLTAGE, WITH OTHER TRADES, SO THAT ALL SYSTEMS ARE COMPLETE AND OPERATIONAL.
- f. ALL THREE PHASE MOTORS SHALL BE PROVIDED WITH PHASE LOSS PROTECTION.
- g. ALL SINGLE AND THREE PHASE MOTORS, STARTERS AND DISCONNECTS PROVIDED BY MECHANICAL CONTRACTOR AND WIRED BY THE ELECTRICAL CONTRACTOR.
30. TEMPORARY HEATING DURING CONSTRUCTION:
- a. MECHANICAL EQUIPMENT SHALL NOT BE UTILIZED FOR TEMPORARY HEATING.

MECHANICAL LEGEND

—HWS—	HEATING WATER SUPPLY	OA	OUTDOOR AIR
—HWR—	HEATING WATER RETURN	RA	RETURN AIR
—CWS—	CHILLED WATER SUPPLY	SA	SUPPLY AIR
—CWR—	CHILLED WATER RETURN	EA	EXHAUST AIR
—SMS—	SNOWMELT SUPPLY	RAD	RETURN AIR DAMPER
—SMR—	SNOWMELT RETURN	SAD	SUPPLY AIR DAMPER
—RFS—	RADIANT FLOOR SUPPLY	SG	SUPPLY GRILLE
—RFR—	RADIANT FLOOR RETURN	RG	RETURN GRILLE
—G—	GAS	TG	TRANSFER GRILLE
—MPG—	MEDIUM PRESSURE NATURAL GAS	SD	SUPPLY DIFFUSER
—○—	PIPE RISER	RD	RETURN DIFFUSER
—○—	PIPE DROP	TA	TRANSFER AIR
—○—	PIPE TAKEOFF (FROM BOTTOM OF MAIN)	Ⓣ	THERMOSTAT
—○—	PIPE TAKEOFF (FROM TOP OF MAIN)	Ⓢ	SENSOR (CALL OUT ON DRAWINGS)
—┐—	PIP END CAP	Ⓢ	FIRE/SMOKE DAMPER
—┐—	PIPE CONTINUATION	Ⓢ	FIRE DAMPER
—┐—	PIPE EXPANSION GUIDE	Ⓢ	MOTOR OPERATED DAMPER (MOD)
—┐—	PIPE UNION	Ⓢ	MANUAL BALANCING DAMPER
—┐—	PIPE ANCHOR	Ⓢ	BACK DRAFT DAMPER (BDD)
—┐—	FLEXIBLE PIPE CONNECTION	Ⓢ	CHANGE OF ELEVATION
—┐—	PIPE EXPANSION JOINT	Ⓢ	(D) DROP (R) RISE
—┐—	POINT OF NEW CONNECTION	Ⓢ	FLEXIBLE DUCT CONNECTION
—┐—	PLUG VALVE	Ⓢ	TURNING VANES IN 90° ELBOW
—┐—	CHECK VALVE	Ⓢ	DUCT SIZES ARE NET FREE AREA
—┐—	BALL VALVE	Ⓢ	1ST NO. IS DUCT WIDTH.
—┐—	BALANCING VALVE	Ⓢ	2ND NO. IS DUCT DEPTH.
—┐—	FLOW REGULATOR VALVE	Ⓢ	SECTION THRU ROUND DUCT
—┐—	BUTTERFLY VALVE	Ⓢ	SECTION THRU SUPPLY AIR DUCT
—┐—	PRESSURE REDUCING VALVE	Ⓢ	SECTION THRU RETURN/EXHAUST AIR DUCT
—┐—	2-WAY CONTROL VALVE	Ⓢ	ROUND DUCT TURN DOWN
—┐—	3-WAY CONTROL VALVE	Ⓢ	SUPPLY DUCT TURN DOWN
—┐—	4-WAY CONTROL VALVE	Ⓢ	RETURN/EXHAUST DUCT TURN DOWN
—┐—	DIFFERENTIAL BYPASS VALVE	Ⓢ	SUPPLY REGISTER/DIFFUSER/LOUVER
—┐—	STRAINER	Ⓢ	RETURN REGISTER/DIFFUSER/LOUVER
—┐—	NATURAL GAS PRESSURE REGULATOR	Ⓢ	OUTSIDE AIR REGISTER/DIFFUSER/LOUVER
—┐—	AIR VENT	Ⓢ	EXHAUST REGISTER/DIFFUSER/LOUVER
—┐—	PRESSURE - TEMP. TAP	Ⓢ	TRANSFER REGISTER/DIFFUSER/LOUVER
—┐—	PRESSURE GAUGE	Ⓢ	CFM DOOR UNDERCUT
—┐—	THERMOMETER	Ⓢ	(A) SECTION CUT LINE
		Ⓢ	(B) SHEET SHOWN ON

SEQUENCE OF OPERATION:

THE MECHANICAL CONTROLS SHALL BE INTERLOCKED WITH EXISTING BUILDING MANAGEMENT SYSTEM. COORDINATE REQUIREMENTS WITH MAINTENANCE. PRIOR TO THE FINAL CONTROLS DESIGN, THE CONTROLS CONSULTANT SHALL VERIFY ALL POINTS OF MONITORING AND CONTROL WITH THE OWNER. ONCE THE CONTROL SYSTEM HAS BEEN DESIGNED, THE FINAL SEQUENCE OF OPERATION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

BOILERS, B-1-4, P-1-4:

THE BOILERS AND THEIR ASSOCIATED BOILER PUMPS SHALL STAGE AND ROTATE TO PROVIDE SPACE HEATING & SNOWMELT. UPON A CALL FOR ANY HEATING THE BOILERS SHALL FIRE BASED UPON AN OUTDOOR RESET SCHEDULE WITH A MAXIMUM TEMPERATURE AT THE BOILER SUPPLY WATER TEMPERATURE SENSOR OF 180°F (ADJ.). BOILER PUMPS P-1-4 SHALL VARY THEIR SPEED BASED UPON INPUT FROM A 0-10V SIGNAL FROM THE BOILER TO MAINTAIN A 40°F (ADJ.) DELTA T.

HEATING DISTRIBUTION PUMPS, P-5a-b:

THE VARIABLE SPEED HEATING PUMPS SHALL OPERATE IN DUTY/STANDBY MODE. UPON ANY CALL FOR HEATING, EITHER PUMP SHALL START & VARY ITS SPEED ACCORDING TO A PROPORTIONAL PRESSURE CURVE. 3-WAY MOTORIZED VALVE SHALL PROVIDE WATER TEMPERATURE AS DETERMINED BY OUTDOOR RESET SCHEDULE. COORDINATE Cv OF VALVE WITH ENGINEER.

SNOWMELT, HX-1, P-6-7:

THE SNOWMELT SYSTEM SHALL BE CONTROLLED ACCORDING TO AN OUTDOOR TEMPERATURE SENSOR AND A SLAB SNOWICE SENSOR VIA TEKMAR 654 CONTROLLER. WHEN THE OUTDOOR TEMPERATURE IS BELOW 35°F(ADJ.), THE SNOWMELT SYSTEM SHALL BE ENABLED, P-6 & 7 SHALL RUN, AND THE 3-WAY MIXING VALVE SHALL MODULATE TO MAINTAIN A SLAB TEMPERATURE OF 28°F(ADJ.). IF THE SYSTEM IS ENABLED AND MOISTURE IS SENSED ON THE SLAB, THE 3-WAY MIXING VALVE SHALL MODULATE TO MAINTAIN A SLAB TEMPERATURE OF 38°F (ADJ.).

SNOWMELT, HX-2, P-8-9:

THE SNOWMELT SYSTEM SHALL BE CONTROLLED ACCORDING TO AN OUTDOOR TEMPERATURE SENSOR AND A SLAB SNOWICE SENSOR VIA TEKMAR 654 CONTROLLER. WHEN THE OUTDOOR TEMPERATURE IS BELOW 35°F(ADJ.), THE SNOWMELT SYSTEM SHALL BE ENABLED, P-8 & 9 SHALL RUN, AND THE 3-WAY MIXING VALVE SHALL MODULATE TO MAINTAIN A SLAB TEMPERATURE OF 28°F(ADJ.). IF THE SYSTEM IS ENABLED AND MOISTURE IS SENSED ON THE SLAB, THE 3-WAY MIXING VALVE SHALL MODULATE TO MAINTAIN A SLAB TEMPERATURE OF 38°F (ADJ.).

MECHANICAL ROOM EXHAUST AND SUPPLY FANS EF-1 & SF-1:

THE MECHANICAL ROOM EXHAUST AND SUPPLY FANS SHALL BE CONTROLLED BY A REVERSE ACTING THERMOSTAT SET TO 80°F (ADJ.). UPON A CALL FROM THE THERMOSTAT BOTH FANS SHALL ACTIVATE SIMULTANEOUSLY. FANS SHALL BE BALANCED TO MATCHING CFM. EXHAUST FAN SHALL NOT RUN UNLESS SUPPLY FAN IS RUNNING.



EGE BOILER
REPLACEMENT

217 ELDON WILSON RD., GYPSUM, CO

AEC PROJECT #: 25020.00

DATE: 08/19/25
ISSUE: PERMIT SET

Drawn By: MWS
Checked By: TOC

MECHANICAL
LEGEND
SPEC'S &
SEQUENCE

BOILER SCHEDULE																				OR EQUIVALENT	
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	CAPACITY (MBH) @ 8000' ASL		GAS PRESSURE (IN WC)		AFUE (%)	FLOW (GPM)	MAX PD (FT)	RELIEF PRESS (PSI)	EWT (°F)	LWT (°F)	ELECTRICAL DATA	AIR INTAKE DIA (IN)	VENT DIA (IN)	OPER. WT. (LBS)	DIMENSIONS			REMARKS
				IN	OUT	MIN	MAX							V/ PH / Hz				L(IN)	H(IN)	W(IN)	
B-1	LOCHINVAR CREST FB2001	SNOWMELT AND HEATING	BOILER ROOM	1,999.0	1,730	4	14	96.4	91.7	7.8	50	140	180	120 / 1 / 60	8	8	2,570	66.5	78	30	1, 2, 3, 4, 5, 6, 7
B-2	LOCHINVAR CREST FB2001	SNOWMELT AND HEATING	BOILER ROOM	1,999.0	1,730	4	14	96.4	91.7	7.8	50	140	180	120 / 1 / 60	8	8	2,570	66.5	78	30	1, 2, 3, 4, 5, 6, 7
B-3	LOCHINVAR CREST FB2001	SNOWMELT AND HEATING	BOILER ROOM	1,999.0	1,730	4	14	96.4	91.7	7.8	50	140	180	120 / 1 / 60	8	8	2,570	66.5	78	30	1, 2, 3, 4, 5, 6, 7
B-4	LOCHINVAR CREST FB2001	SNOWMELT AND HEATING	BOILER ROOM	1,999.0	1,730	4	14	96.4	91.7	7.8	50	140	180	120 / 1 / 60	8	8	2,570	66.5	78	30	1, 2, 3, 4, 5, 6, 7
1- OUTDOOR RESET; 2- 30% P. G. 3- LOW LIMIT CUTOFF; 4- UTILIZE EXISTING E.P.O. SWITCH; 5- COMMON ENGINEERED VENT PIPING; 6- PROVIDE MOTORIZED ISOLATION DAMPER ON FLUE; 7- REFER TO SHEET M1.3 FOR COMMON VENTING DESIGN																					

HEAT EXCHANGER SCHEDULE													OR EQUIVALENT	
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TOTAL MBH	PRIMARY SIDE				SECONDARY SIDE				DIMENSIONS (H x W x D)	REMARKS
					EWT (°F)	LWT (°F)	GPM	PD (FT)	EWT (°F)	LWT (°F)	GPM	PD (FT)		
HX-1	BELL & GOSSETT BP423-60	SNOWMELT	BOILER ROOM	916.3	180	140	48.3	1.8	106	130	85.1	5.6	24.3 x 7.5 x 9.2	FIELD INSULATE HEAT EXCHANGER. VERIFY EXISTING GPMs PRIOR TO DEMOLITION. CONTACT ENGINEER IF VALUES DIFFER GREATLY FROM SHOWN.
HX-2	BELL & GOSSETT BP410-50	SNOWMELT	BOILER ROOM	409.4	180	140	21.6	6.2	106	130	38.0	18.1	12.2 x 4.4 x 6.2	FIELD INSULATE HEAT EXCHANGER. VERIFY EXISTING GPMs PRIOR TO DEMOLITION. CONTACT ENGINEER IF VALUES DIFFER GREATLY FROM SHOWN.

GLYCOL FEEDER SCHEDULE												OR EQUIVALENT
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TANK VOLUME (GAL.)	DIMENSIONS			FREE FLOW (GPM)	ELECTRICAL DATA		OPER. WEIGHT (LBS)	LOCATION
					L (IN)	W (IN)	H (IN)		PWR	V / PH /Hz		
GF-1	AXIOM SF100	HEATING WATER	BOILER ROOM	55	24	24	49	1.4	0.7 AMP	115 / 1 / 60	508	-
GF-2	AXIOM SF100	SNOWMELT (HX-1)	BOILER ROOM	55	24	24	49	1.4	0.7 AMP	115 / 1 / 60	508	-
GF-3	AXIOM DMF300	SNOWMELT (HX-2)	BOILER ROOM	17	12	12	36	1	50 W	115 / 1 / 60	160	-

EXPANSION TANK SCHEDULE												OR EQUIVALENT
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TANK VOLUME (GAL)	ACCEP T VOLUME (GAL)	DIMENSIONS		CHARGE PRESSURE (PSI)	RELIEF PRESSURE (PSI)	WATER TEMP (°F)	OPER. WEIGHT (LBS)	REMARKS
						DIA (IN)	H (IN)					
ET-1	WESSELS NLA-500	HEATING WATER	BOILER ROOM	132	132	30	57	MATCH EXISTING	50	180	1435	1. SIZED TO MATCH EXISTING
ET-2	WESSELS NTA-240	SNOWMELT (HX-1)	BOILER ROOM	140	114	24	78	MATCH EXISTING	50	130	1308	1. SIZED TO MATCH EXISTING
ET-3	WESSELS NTA-40	SNOWMELT (HX-2)	BOILER ROOM	25	20.2	16	33	MATCH EXISTING	50	130	252	1. SIZED TO MATCH EXISTING

1 - ASME RATED

PUMP SCHEDULE										OR EQUIVALENT
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TYPE	GPM	TOTAL HEAD (FT)	ELECTRICAL DATA		REMARKS	
							V / PH / Hz	HP/W		
P-1	GRUNDFOS MAGNA3 50-150 GF	B-1	BOILER ROOM	INLINE	91.7	17.0	208-230 / 1 / 60	598 W	1, 3	
P-2	GRUNDFOS MAGNA3 50-150 GF	B-2	BOILER ROOM	INLINE	91.7	17.0	208-230 / 1 / 60	598 W	1, 3	
P-3	GRUNDFOS MAGNA3 50-150 GF	B-3	BOILER ROOM	INLINE	91.7	17.0	208-230 / 1 / 60	598 W	1, 3	
P-4	GRUNDFOS MAGNA3 50-150 GF	B-4	BOILER ROOM	INLINE	91.7	17.0	208-230 / 1 / 60	598 W	1, 3	
P-5A & B	GRUNDFOS NBSE 030-070/5.39	HEATING WATER DISTRIBUTION	BOILER ROOM	BASE MOUNTED	250.0	60.0	200-240 / 3 / 60	7.5 HP	1, 3, 4	
P-6	GRUNDFOS UPS 32-160 F	HX-1 SNOWMELT (HOT)	BOILER ROOM	INLINE	48.3	16.6	208 - 230 / 3 / 60	600 W	1, 4	
P-7	GRUNDFOS UPS 80-160 F	HX-1 SNOWMELT (COLD)	BOILER ROOM	INLINE	85.0	45.4	208-230 / 3 / 60	2050 W	2, 4	
P-8	GRUNDFOS UPS 26-150 F	HX-2 SNOWMELT (HOT)	BOILER ROOM	INLINE	21.6	20.0	208-230 / 1 / 60	370 W	1, 4	
P-9	GRUNDFOS UPS 40-240 F	HX-2 SNOWMELT (COLD)	BOILER ROOM	INLINE	38.0	48.0	208-230 / 3 / 60	1440 W	2, 4	
1- 30% PROPYLENE GLYCOL; 2 - 50% PROPYLENE GLYCOL; 3- VARIABLE SPEED; 4- GPMS DETERMINED BASED ON ASSUMPTIONS FROM COMPILED DOCUMENTS PROVIDED BY EGE MAINTENANCE AND FIELD VISITS. CONTRACTOR TO TAKE MEASUREMENTS PRIOR TO DEMOLITION AND BALANCE TO MATCH EXISTING.										

LOUVER SCHEDULE												OR EQUIVALENT
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	CFM	SIZE (W"xH")	FACE VELOCITY (FPM)	PRESSURE DROP (IN SP)	FREE AREA (ft²)	FRAME TYPE	FINISH	REMARKS	
L-1	RUSKIN ELF6375DX	MECHANICAL HEAT RELIEF	WEST WALL	900	20x20	726	0.08	1.24	COORD. W/ ARCH	COORD. W/ ARCH	UTILIZE HOLE FROM DEMOLISHED COMBUSTION AIR DUCT.	

FAN SCHEDULE												OR EQUIVALENT
UNIT TAG	MANUFACTURER & MODEL NO.	SERVICE	LOCATION	TYPE	TOTAL CFM	FAN RPM	ESP (IN)	ELECTRICAL DATA		NOISE LEVEL (SONES)	OPER. WT. (LBS)	REMARKS
								POWER	V/PH / Hz			
EF-1	ATMOSPHERE S-1000	HEAT RELIEF	BOILER ROOM	INLINE	900	2970	0.6	232 W	120 v / 60	-	19.8	INTERLOCK WITH REVERSE ACTING THERMOSTAT AND <u>SF-1</u> . BALANCE TO MATCH CFM OF <u>SF-1</u> .
SF-1	ATMOSPHERE S-1000	HEAT RELIEF	BOILER ROOM	INLINE	900	2970	0.6	232 W	120 v / 60	-	19.8	INTERLOCK WITH REVERSE ACTING THERMOSTAT AND <u>EF-1</u> . BALANCE TO MATCH CFM OF <u>EF-1</u> .

EXISTING SNOWMELT SCHEDULE															OR EQUIVALENT
ZONE TAG	MANUFACTURER & MODEL NO.	SERVICE	AREA (SQ FT)	BTU/H ² SQ FT	SURFACE FINISH	TUBE DIA (IN)	*TUBE SPACING (IN)	*NUMBER LOOPS	*LEADER LENGTH	*ACTIVE LOOP LENGTH	*TOTAL LOOP LENGTH	*GPM/ LOOP	*GPM/ MANIFOLD	*PD (FT)	REMARKS
1	WIRSBO hePEX	WESTERN WALKWAY	3,275	125	CONCRETE	5/8	9	20	5	218	228	1.9	38.0	13.6	1, 4, 5
2	WIRSBO hePEX	CENTRAL ENTRANCE	750	125	CONCRETE	5/8	9	5	5	200	210	1.7	8.7	10.7	1, 3, 5
3	WIRSBO hePEX	EASTERN WALKWAY	4,000	125	CONCRETE	5/8	9	25	5	213	223	1.9	46.4	12.8	1, 3, 5
4	WIRSBO hePEX	BAGGAGE CLAIM WALKWAY	530	125	CONCRETE	5/8	9	4	5	177	187	1.5	6.2	7.6	2, 3, 5
5	WIRSBO hePEX	ROOF	2,050	125	CONCRETE	5/8	9	14	5	195	205	1.7	23.8	10.0	2, 3, 5
1 - SQUARE FOOTAGES TAKEN OFF OF PDF PROVIDED BY EGE MAINTENANCE AND ARE APPROXIMATE; 2 - SQUARE FOOTAGES FROM APPROXIMATE FIELD MEASUREMENTS; 3 - SNOWMELT PROVIDED BY HX-1 PER BUILDING MAINTENANCE; 4 - SNOWMELT PROVIDED BY HX-2 PER TO PROVIDING MAINTENANCE; 5 - VERIFY GPM'S IN FIELD PRIOR TO ANY NEW WORK. CONTACT ENGINEER CONCERNING DIFFERENCES; *ALL VALUES ARE ASSUMED AND MUST BE VERIFIED IN FIELD															



EGE BOILER REPLACEMENT

217 ELDON WILSON RD., GYPSUM, CO

AEC PROJECT #: 25020.00

DATE:	ISSUE:
08/19/25	PERMIT SET

Drawn By: MWS	Checked By: TOC
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MECHANICAL SCHEDULES

M1.1



8/22/2025

Commercial Chimney and Gas Vent Calculation

The following calculation is based off the ASHRAE Chimney and Duct Design Equations. Jeremias Inc. disclaims any responsibility for improper vent system performance as a result of the use of this calculation.

Project Name: Eagle Airport
Project City: Gypsum
Project State: CO

Project By: Clyde Tose
Project For: Bryan Eiselt
Company: SSI

Appliance Make & Model: Lochinvar, Crest FBN2001

Allowable Pressure (in w.c.): Min. to Max.

Appliance Fuel Type: Natural Gas or Equivalent
Appliance Input (MBH): 2000
Appliance CO2%:

Flue Gas Temperature (F):
Ambient Temperature (F): 60
Local Altitude (ft): 6312

Input Combustion Air Intake Information

Duct Diameter (in): 90 Degree Elbow: 15 Degree Elbow: 90° Boot Tee:
Air Duct Length (ft): 45 Degree Elbow: Lateral Tee: Tapered Increases:
Additional Loss (in w.c.): 30 Degree Elbow: Straight Tee: Stepped Increases:
Additional Resistance (k):

Input Exhaust Vent Information

Vent Diameter (in): 8
Total Horizontal Run (ft):
Total Vertical Rise (ft): 8
Additional Loss (in w.c.):
Additional Resistance (k):
Termination Style: No Termination

Straight Tee: 87 Degree Elbow: Tapered Increases:
Lateral Tee: 90 Degree Elbow: Stepped Increases:
15 Degree Elbow: 87° Boot Tee: Drain Section: 1
30 Degree Elbow: 90° Boot Tee: Lined Bellows:
45 Degree Elbow: 1 90° Wye Tee: Draft Hood (Y/N): No
Damper (Y/N): Yes

* Additional Loss values (in w.c.) and additional resistance values (k) shall be positive.

System Information

Barometric Pressure (in Hg): 23.72
Combustion Air Density (lb/ft³): 0.0605
Combustion Air Flow (CFM): 509.73
Combustion Fitting Loss (k): N/A
Combustion Friction Loss (k): N/A

Exhaust Mass Flow (lb): 0.925
Exhaust Gas Density (lb/ft³): 0.0484
Exhaust Gas Flow (CFM): 637.24
Exhaust Fitting Loss (k): 0.900
Exhaust Friction Loss (k): 1.187

Exhaust Gas Velocity (ft/min): 1825.56
Combustion Air Velocity (ft/min):
Booster Pressure Rq'd, Db (in w.c.): 0
Booster Pressure @ 70°F (in w.c.): 0.000
Booster Flow Required (CFM): 637.24

System Solution

Exhaust Vent Diameter (in): 8
Pressure loss, dP (in w.c.): 0.159

Combustion Vent Diameter (in): N/A
Combustion Air Pres. Loss (in w.c.): N/A

Theoretical Draft, D_t (in w.c.): 0.019
Available Draft, Da (in w.c.): 0.140
Total Pressure (in w.c.): 0.140

Sizing Summary - Individual Vent			
Vent Diameter (in)	High Fire (in w.c.)	Low Fire (in w.c.)	With Intake (in w.c.)
8	0.140	-0.019	0.140

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J1-CDE220526

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8/22/2025

Commercial Chimney and Gas Vent Calculation

The following calculation is based off the ASHRAE Chimney and Duct Design Equations. Jeremias Inc. disclaims any responsibility for improper vent system performance as a result of the use of this calculation.

Project Name: Eagle Airport
Project City: Gypsum
Project State: CO

Project By: Clyde Tose
Project For: Bryan Eiselt
Company: SSI

Appliance Make & Model: Lochinvar, Crest FBN2001

Allowable Pressure (in w.c.): Min. to Max.

Appliance Fuel Type: Natural Gas or Equivalent
Appliance Input (MBH): 8004
Appliance CO2%:

Flue Gas Temperature (F):
Ambient Temperature (F): 60
Local Altitude (ft): 6312

Input Combustion Air Intake Information

Duct Diameter (in): 90 Degree Elbow: 15 Degree Elbow: 90° Boot Tee:
Air Duct Length (ft): 45 Degree Elbow: Lateral Tee: Tapered Increases:
Additional Loss (in w.c.): 30 Degree Elbow: Straight Tee: Stepped Increases:
Additional Resistance (k):

Input Exhaust Vent Information

Vent Diameter (in): 16
Total Horizontal Run (ft): 14
Total Vertical Rise (ft): 10
Additional Loss (in w.c.):
Additional Resistance (k):
Termination Style: Open Termination

Straight Tee: 87 Degree Elbow: Tapered Increases:
Lateral Tee: 1 90 Degree Elbow: Stepped Increases:
15 Degree Elbow: 87° Boot Tee: Drain Section: 1
30 Degree Elbow: 90° Boot Tee: Lined Bellows:
45 Degree Elbow: 90° Wye Tee: Draft Hood (Y/N): No
Damper (Y/N): No

* Additional Loss values (in w.c.) and additional resistance values (k) shall be positive.

System Information

Barometric Pressure (in Hg): 23.72
Combustion Air Density (lb/ft³): 0.0605
Combustion Air Flow (CFM): 2039.93
Combustion Fitting Loss (k): N/A
Combustion Friction Loss (k): N/A

Exhaust Mass Flow (lb): 0.925
Exhaust Gas Density (lb/ft³): 0.0484
Exhaust Gas Flow (CFM): 2550.24
Exhaust Fitting Loss (k): 0.950
Exhaust Friction Loss (k): 1.333

Exhaust Gas Velocity (ft/min): 1826.47
Combustion Air Velocity (ft/min):
Booster Pressure Rq'd, Db (in w.c.): 0
Booster Pressure @ 70°F (in w.c.): 0.000
Booster Flow Required (CFM): 2550.24

System Solution

Exhaust Vent Diameter (in): 16
Pressure loss, dP (in w.c.): 0.179

Combustion Vent Diameter (in): N/A
Combustion Air Pres. Loss (in w.c.): N/A

Theoretical Draft, D_t (in w.c.): 0.023
Available Draft, Da (in w.c.): 0.155
Total Pressure (in w.c.): 0.155

Sizing Summary - Individual Vent			
Vent Diameter (in)	High Fire (in w.c.)	Low Fire (in w.c.)	With Intake (in w.c.)
16	0.155	-0.023	0.155

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J1-CDE220526

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Proposal



Project Data

Project No: OP0027194
System No: 366041
Date: 8/23/2025
Prepared for: Jeremias, Inc.
Prepared by: Clyde Tose

Project Name: SSI - Eagle Airport - 25
Location: ZZ
Layout/BOM No: 366041.02.00
Layout/BOM Title: Proposal - Boiler Flue R1
Product(s): DWGV

Quote

Qty	Item No	Description
5	J-600	Sealant for Flue Gas Temperature up to 600F, 10 oz
1	GV-LUBE	GV-LUBE Lube for Gaskets, 2.5 oz. (75 ml.) tube
6	10DK-0.50	10" x 0.50 Dia Silicone Drain Tube Kit
4	DWGV8-RCIS	Raw Collar Adapter - Inside - Start
4	DWGV8-LSB	Light Support Band
1	DWGV8-12L	12" Fixed Length
1	DWGV8-36L	36" Fixed Length
4	DWGV8-24AL	24" Adjustable Length
4	DWGV8-UDL	Universal Drain Length
8	DWGV8-FCS	Flange Collar Adapter - Start
4	V82-08-G	V82-G Simple On/Off Damper, 550F
4	8FL-VB	Vee Band
3	DWGV8-48L	48" Fixed Length
1	DWGV16-DCS	Drain Tee Cap - Side
4	DWGV16-87BT8	87 Degree Reduction Boot Tee
5	DWKL16-LSB	Light Support Band
4	DWGV16-24AL	24" Adjustable Length
1	DWGV16-12L	12" Fixed Length
1	DWGV16-18L	18" Fixed Length
1	DWGV16-DCB	Drain Tee Cap - Bottom
1	DWGV16-87BT	87 Degree Boot Tee
1	DWGV16-APS	Anchor Plate Support
1	DWGV16-48LR	48" Fixed Length
1	DWGV16-24L	24" Fixed Length
1	DWKL16-FCF	Flat Cone Flashing
1	DWKL16-SCCF	Storm Collar for Coned Flashing
1	DWGV16-OTS	Open Termination w/Screen

Page 1 of 3

TECHNICAL DATA SHEET

Double Wall Special Gas Vent



DWGV

PRODUCT LINE

DWGV - Double Wall Special Gas Vent

APPLICATIONS

- Designed specifically for the condensing boiler market where ease of assembly, overall time invested, and price are the main objective
- Double Wall Special Gas Vent in 3"-12" diameters use a gasket to seal the male-to-female joint with an added external 1/2" rolled flange and vee band connection to secure it
- Outer jacket is secured by locking band
- For use with temperatures not exceeding 550°F continues and pressures not exceeding 20" WC



MATERIALS

- Inner liner made of UL-1738 Listed corrosion resistant high-grade stainless steel
 - 3" through 12" = 0.020" thick 316L or 444 stainless steel
 - 14" through 36" = 0.035" thick 316L or 444 stainless steel
 - 38" through 48" = 0.048" thick 316L stainless steel
- Seal System
 - 3" through 12" = Male-to-female with 3-ribbed gasket
 - 14" through 48" = Siliconed flange protected behind overlapping male-to-female inner
- Insulating Air Space
 - 3" through 12" = 1" insulating air space
 - 14" through 48" = 1.25" insulating air space
- Outer jacket made of 304 stainless steel
 - 3" through 12" = 0.020" thick
 - 14" through 24" = 0.025" thick
 - 26" through 48" = 0.035" thick
- All Supports and accessories are stainless steel

UL and ULC LISTINGS

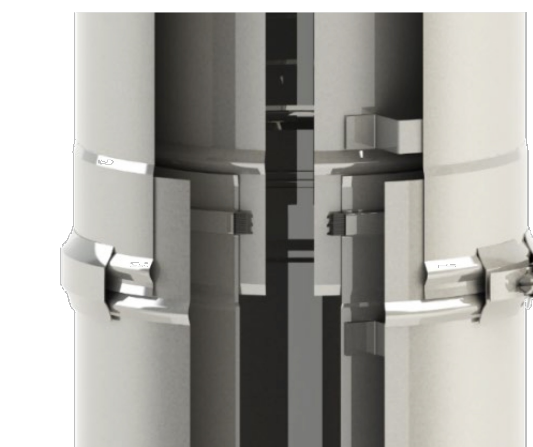
- UL-1738 Standard, Venting Systems for Gas-Burning Appliances, Categories I, III, & IV (ULC-S656 Standard for type BH Gas Venting Systems)
- Class IIC & IIB - PP (Polypropylene), CVPC, and/or PVC applications at 230°F and/or 194°F maximum flue gas temperatures and zero clearance to combustibles
- UL 441 (ULC-S605) Type B Gas Vent

FEATURES

- All stainless-steel construction with a Limited Lifetime Warranty
- Assurance of the finest quality and reliability
- Quick and easy installation

CONNECTION/INSTALLATION DETAILS

- 3" through 12"
 - Lube the gasket on the female end
 - Insert the male into the female
 - Push joint together
 - Slide Locking Band over beads and tighten
 - Industry leading 2.28" overlapping joint keeping flue gases away from gasket
- 14" through 48"
 - Apply silicone to the rolled flange
 - Insert the male into the female
 - Push joint together
 - Install and tighten the vee band
 - Slide outer Locking Band over matching grooves and tighten
 - Industry leading 1.25" overlapping joint keeps flue gasses away from the siliconed flange connection



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February 24

TECHNICAL DATA SHEET

Double Wall Special Gas Vent



DWGV

PRODUCT LINE

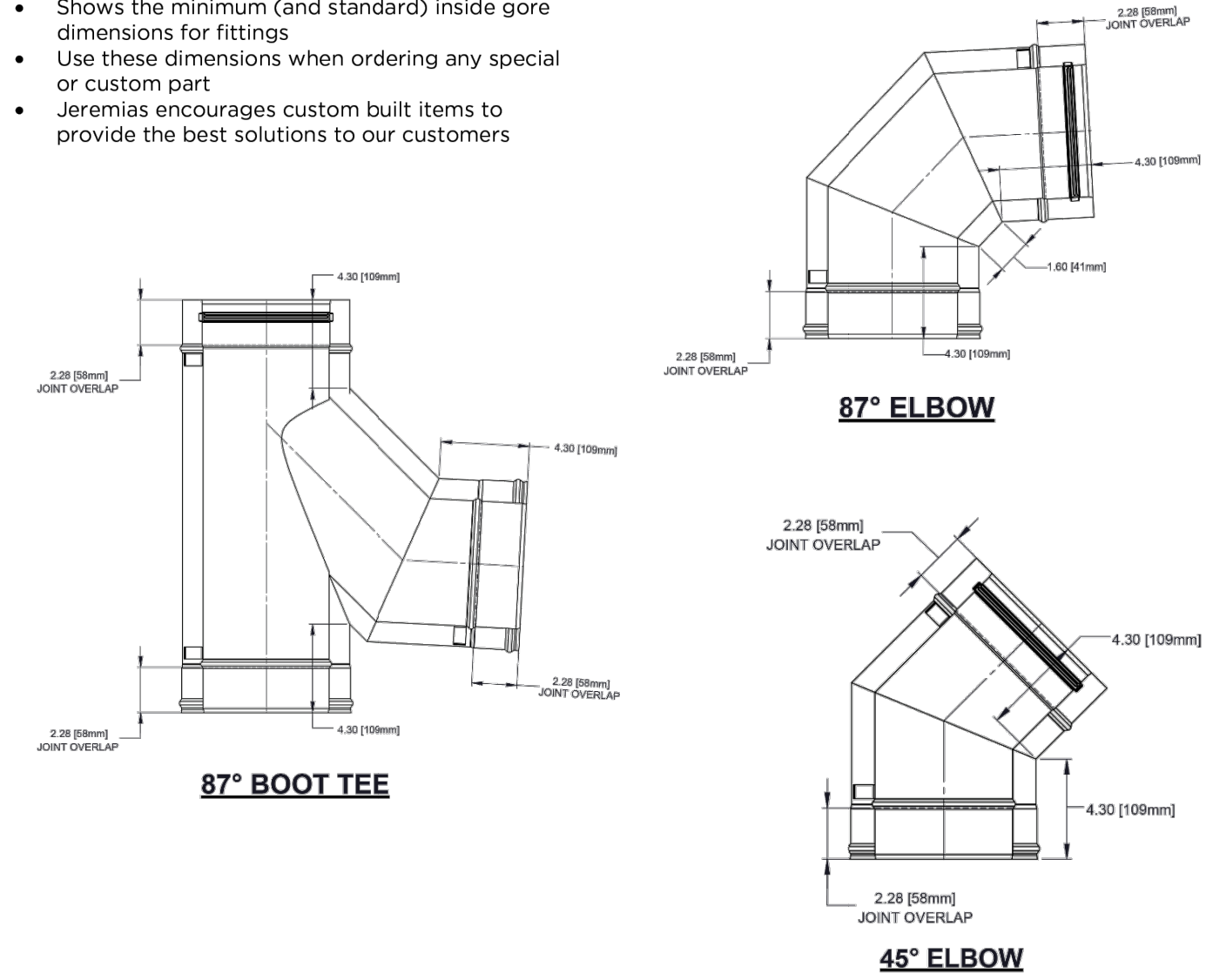
DWGV - Double Wall Special Gas Vent

SPECIFICATIONS

Diameters	3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", & 48"
Available Lengths	9", 12", 18", 24", 30", 36", 42", & 48" (or any fixed length between) *Maximum Length for 18" and above is 36"
Available Fittings	Any elbow or tee, over 40 catalog fittings per each diameter
Available Accessories	All-stainless supports, guides, hangers, adapters - over 20 accessories per each diameter

CONTROLLING DIMENSIONS

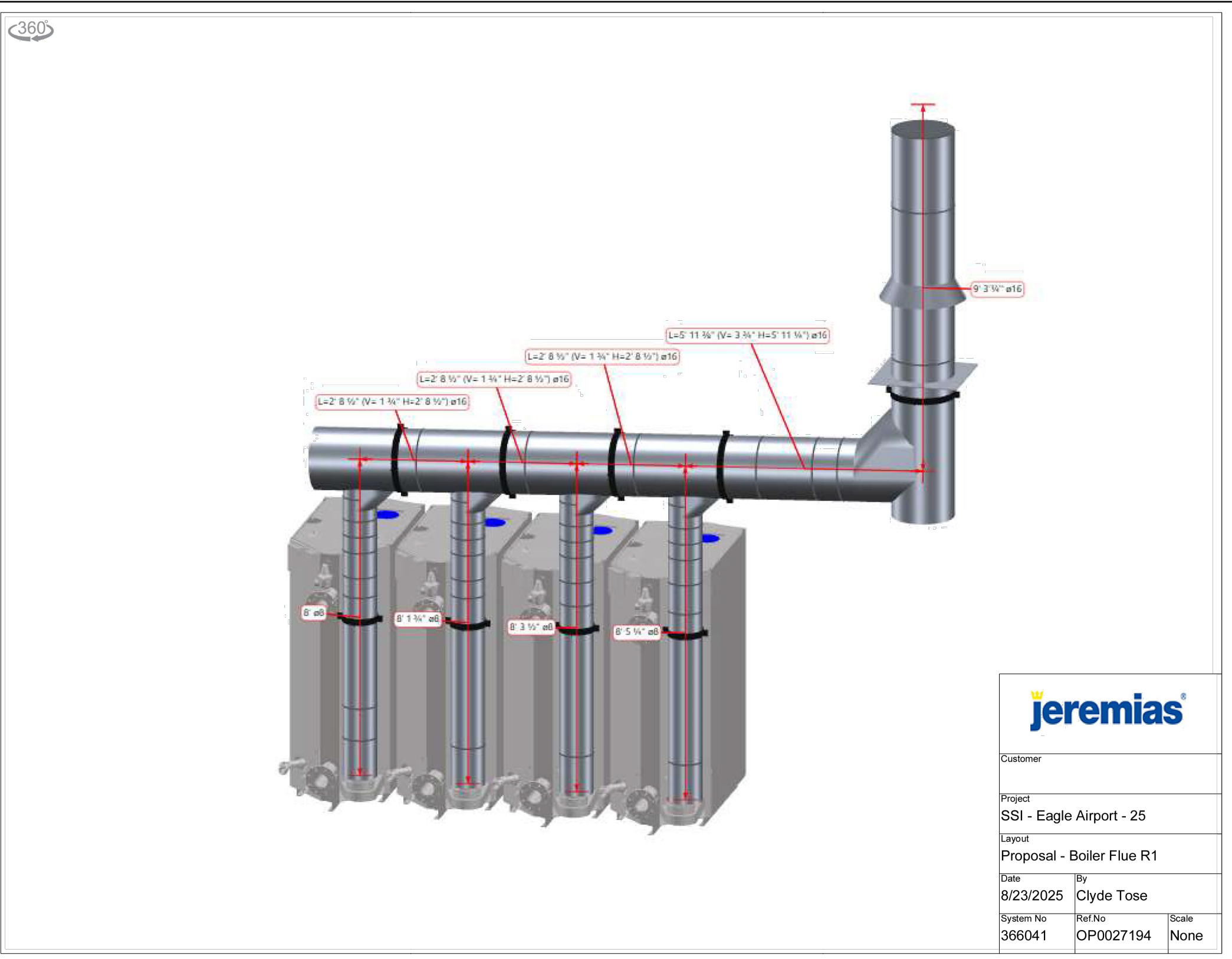
- Shows the minimum (and standard) inside gore dimensions for fittings
- Use these dimensions when ordering any special or custom part
- Jeremias encourages custom built items to provide the best solutions to our customers



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February 24



aec
Architectural Engineering Consultants
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An Office with LEED™ Accredited Professionals
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www.aec-vail.com



EGE BOILER REPLACEMENT

217 ELDON WILSON RD., GYPSUM, CO

AEC PROJECT #: 25020.00

DATE: 08/19/25
ISSUE: PERMIT SET

Drawn By: MWS
Checked By: TOC

ENGINEERED
BOILER
FLUE

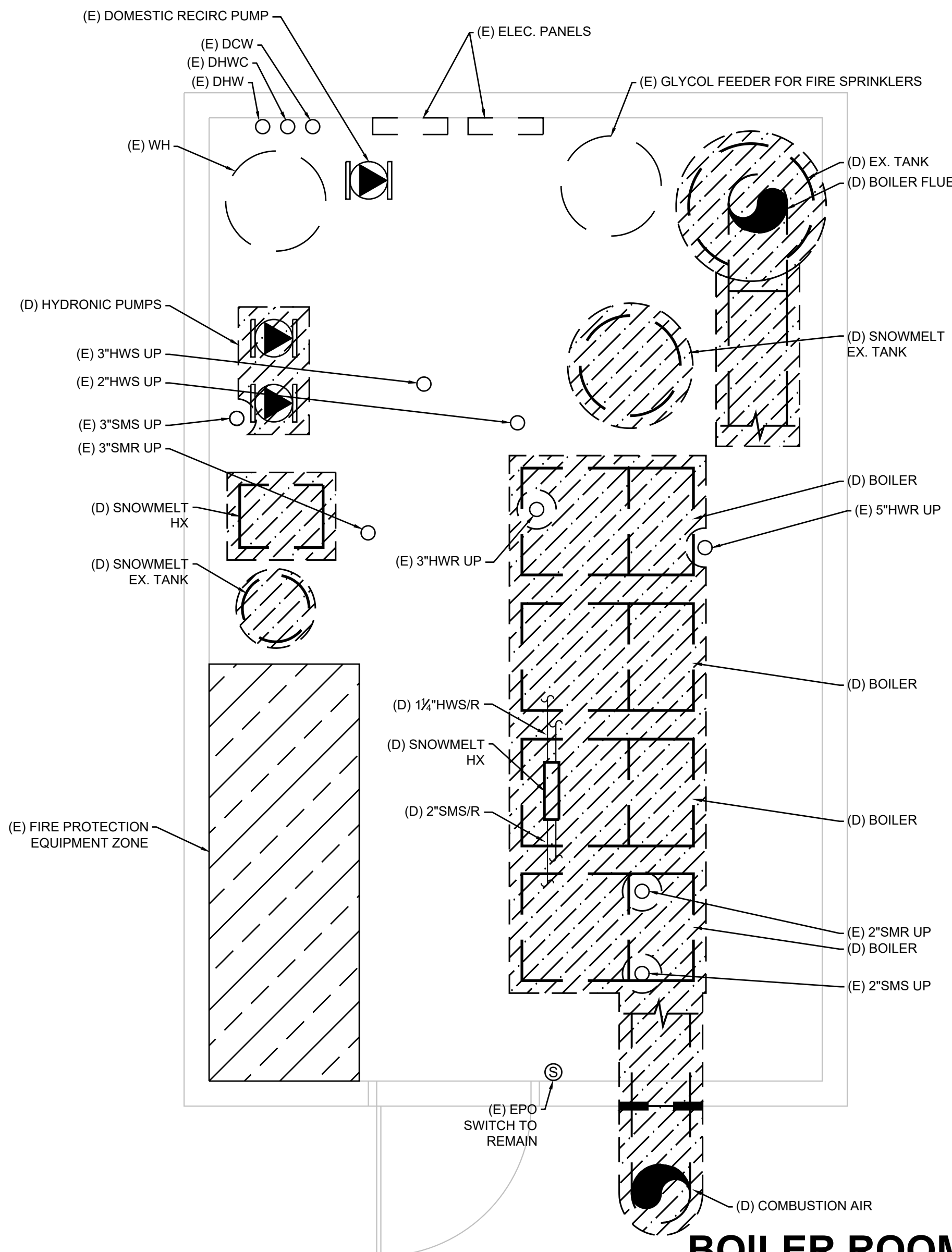
M1.3
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DEMOLITION GENERAL NOTES:

1. DEMOLISH (D) MEANS TO DETACH ITEMS FROM EXISTING CONSTRUCTION AND LEGALLY DISPOSE OF THEM OFF SITE, UNLESS OTHERWISE INDICATED TO BE REMOVED AND REINSTALLED.
2. REMOVE AND REINSTALL (R) MEANS TO DETACH ITEMS FROM EXISTING CONDITIONS, PREPARE THEM FOR REUSE, TEMPORARY STORE AS REQUIRED AND REINSTALL THEM AS INDICATED.
3. EXISTING (E) RELATES TO ITEMS OF CONSTRUCTION THAT ARE NOT TO BE REMOVED AND THAT ARE NOT OTHERWISE INDICATED TO BE REMOVED, SALVAGED, OR REMOVED AND REINSTALLED.
4. DRAWINGS ATTEMPT TO SHOW EXISTING CONDITIONS, BUT ALL EXISTING CONDITIONS MAY NOT BE SHOWN OR VISIBLE ON SITE. EXACT SIZING AND ROUTING OF EXISTING SYSTEMS SHALL BE VERIFIED IN FIELD PRIOR TO START OF WORK. NOTIFY ENGINEER OF ANY MAJOR DISCREPANCIES.

DEMOLISH ALL EXISTING COMPONENTS OF THE BOILER HYDRONIC SYSTEM EXCEPT FOR THE PIPES LEAVING THE ROOM. ENSURE ALL COMPONENTS OF OTHER SYSTEMS IN THE ROOM, INCLUDING, BUT NOT LIMITED TO, CHILLED WATER AND FIRE SPRINKLER, ARE NOT DISTURBED. MAINTAIN ALL FIRE RATINGS AS REQUIRED BETWEEN MECHANICAL ROOM AND ATTIC.



CONTRACTOR TO MEASURE FLOWS PRODUCED BY PUMPS WITH ALL EQUIPMENT RUNNING PRIOR TO DEMOLITION. CONTACT ENGINEER IF ANY MAJOR DISCREPANCIES BETWEEN NEW EQUIPMENT SCHEDULES AND MEASURED FLOWS.

BOILER ROOM DEMOLITION PLAN

SCALE: 1/2" = 1'-0"



**EGE BOILER
REPLACEMENT**
217 ELDON WILSON RD., GYPSUM, CO

AEC PROJECT #: 25020.00

DATE: 08/19/25
ISSUE: PERMIT SET

Drawn By: MWS
Checked By: TOC

**BOILER ROOM
DEMOLITION
PLAN**

SCALE 1/2" = 1'-0"

M2.0
5 of 6

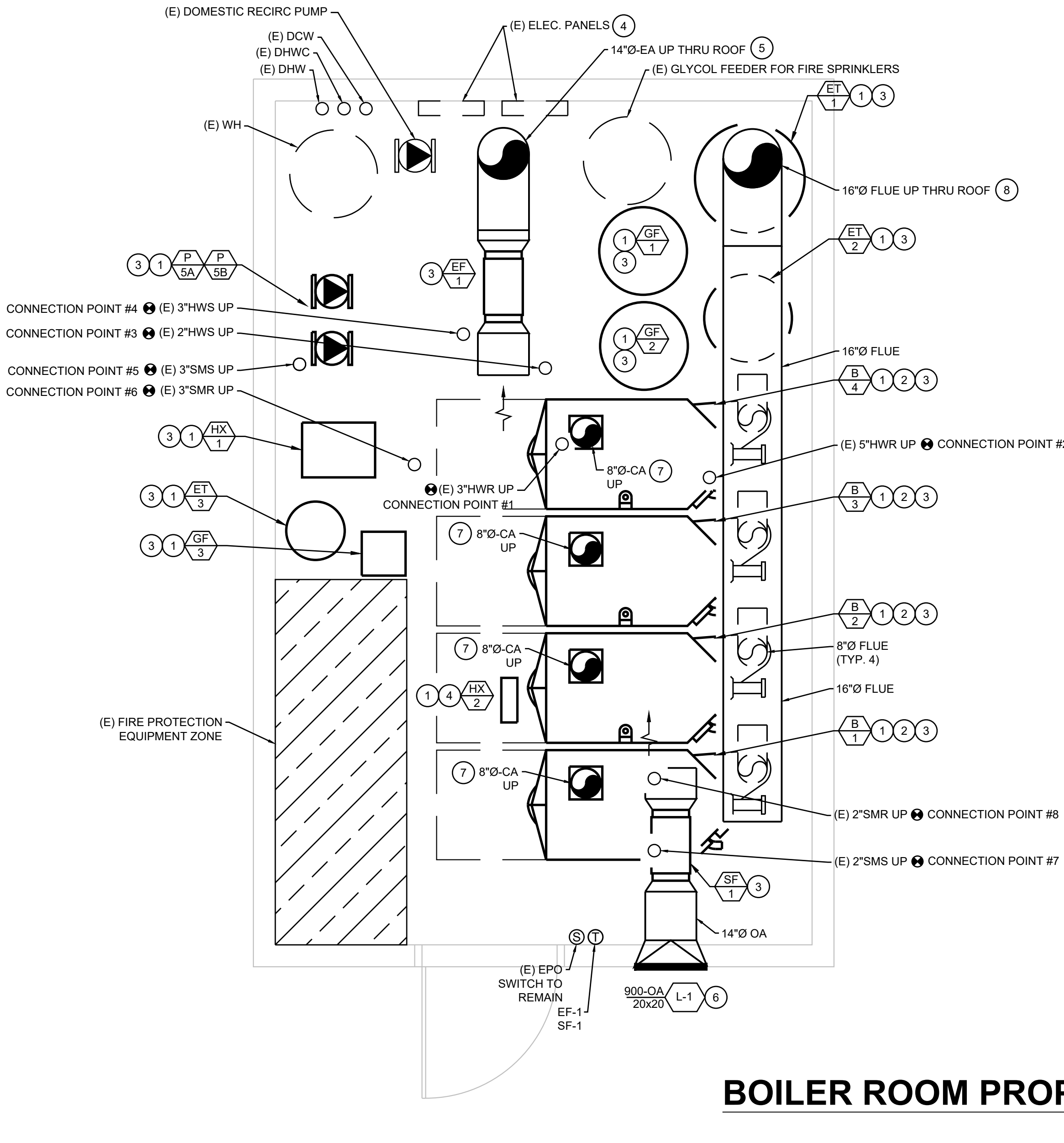
GENERAL NOTES:

1. OFFSET PIPING AS REQUIRED TO AVOID ALL DUCTWORK, LIGHTS, AND STRUCTURE. COORDINATE ALL STRUCTURAL PENETRATIONS WITH THE STRUCTURAL ENGINEER.
2. ALL PIPING PASSING THROUGH FIRE-RATED ASSEMBLIES SHALL INCLUDE A FIRE-RATED PIPE SEALANT RATED TO MATCH THAT OF THE ASSEMBLY.
3. ALL PIPING SIZED FOR TYPE L COPPER OR STEEL PIPE.
4. REFERENCE HEATING WATER PIPING DIAGRAM, SHEET M1.2 FOR PIPING LAYOUT FROM CONNECTION POINTS TO BOILERS.

SHEET DETAIL NOTES:

1. REFERENCE BOILER PIPING DIAGRAM FOR PIPING CONNECTIONS TO BOILER ROOM EQUIPMENT AND CONNECTIONS BACK TO EXISTING SYSTEMS.
2. ROUTE BOILER FLUES FROM BOILERS PER ENGINEERED FLUE INSTRUCTIONS ON SHEET M1.3. ENSURE BOILERS HAVE A MOTORIZED FLUE DAMPER PROVIDED BY LOCHINVAR INSTALLED. A CONDENSATE DRAIN MUST BE INSTALLED ABOVE THE FLUE DAMPER. SIDEWALL VENTING IS NOT ALLOWED. BOILERS MUST BE CONNECTED AND CONTROLLED WITH THE INTEGRAL CREST SMART TOUCH CASCADE.
3. MAINTAIN ALL SERVICE CLEARANCES PER MANUFACTURER'S RECOMMENDATIONS.
4. DO NOT LOCATE EQUIPMENT OR ROUTE ANY COMPONENT OF THE MECHANICAL SYSTEM OVER ELECTRICAL PANELS.
5. TERMINATE EXHAUST 3' AWAY FROM NATURAL AIR INTAKES, 10' FROM MECHANICAL AIR INTAKES, 10' FROM PROPERTY LINE, 7' ABOVE THE WALKWAYS, 3' ABOVE GROUND OR 12" ABOVE SNOW LEVEL (WHICHEVER IS HIGHER).
6. LOUVER TO UTILIZE HOLE FROM DEMOLISHED COMBUSTION AIR.
7. ROUTE COMBUSTION AIR INDIVIDUALLY THRU ROOF AND TERMINATE AND MAINTAIN ALL CLEARANCES PER MANUFACTURER'S INSTRUCTIONS. ENSURE A MINIMUM 12' AIR INTAKE LENGTH.
8. TERMINATE BOILER FLUE PER MANUFACTURER'S INSTRUCTIONS. ENSURE ALL REQUIRED CLEARANCES ARE MAINTAINED.

RE-CONNECT PIPES FROM NEW BOILER HEADER AND PUMPS TO CORRESPONDING PIPES LEAVING THE ROOM. MAINTAIN ALL FIRE RATINGS AS REQUIRED BETWEEN MECHANICAL ROOM AND ATTIC. NOT ALL NECESSARY EQUIPMENT IS SHOWN ON THE FLOOR PLAN. REFERENCE SHEET M1.1 FOR FULL EQUIPMENT SCHEDULES AND SHEET M1.2 FOR PIPING DIAGRAM. CONTRACTOR TO CONFIRM AVAILABLE SPACE TO INSTALL BOILERS AND PIPING PRIOR TO PURCHASING EQUIPMENT.

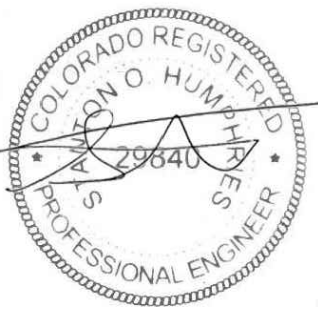


BOILER ROOM PROPOSED PLAN

SCALE: 1/2" = 1'-0"



aec
Architectural Engineering Consultants
Mechanical, Electrical & Lighting Design Services
An Office with LEED™ Accredited Professionals
40801 US Hwy 285, Suite 200, Fort Collins, Colorado, 81620
Phone: 970-748-8520
www.aec-vail.com



**EGE BOILER
REPLACEMENT**

217 ELDON WILSON RD., GYPSUM, CO

AEC PROJECT #: 25020.00

DATE: 08/19/25
ISSUE: PERMIT SET

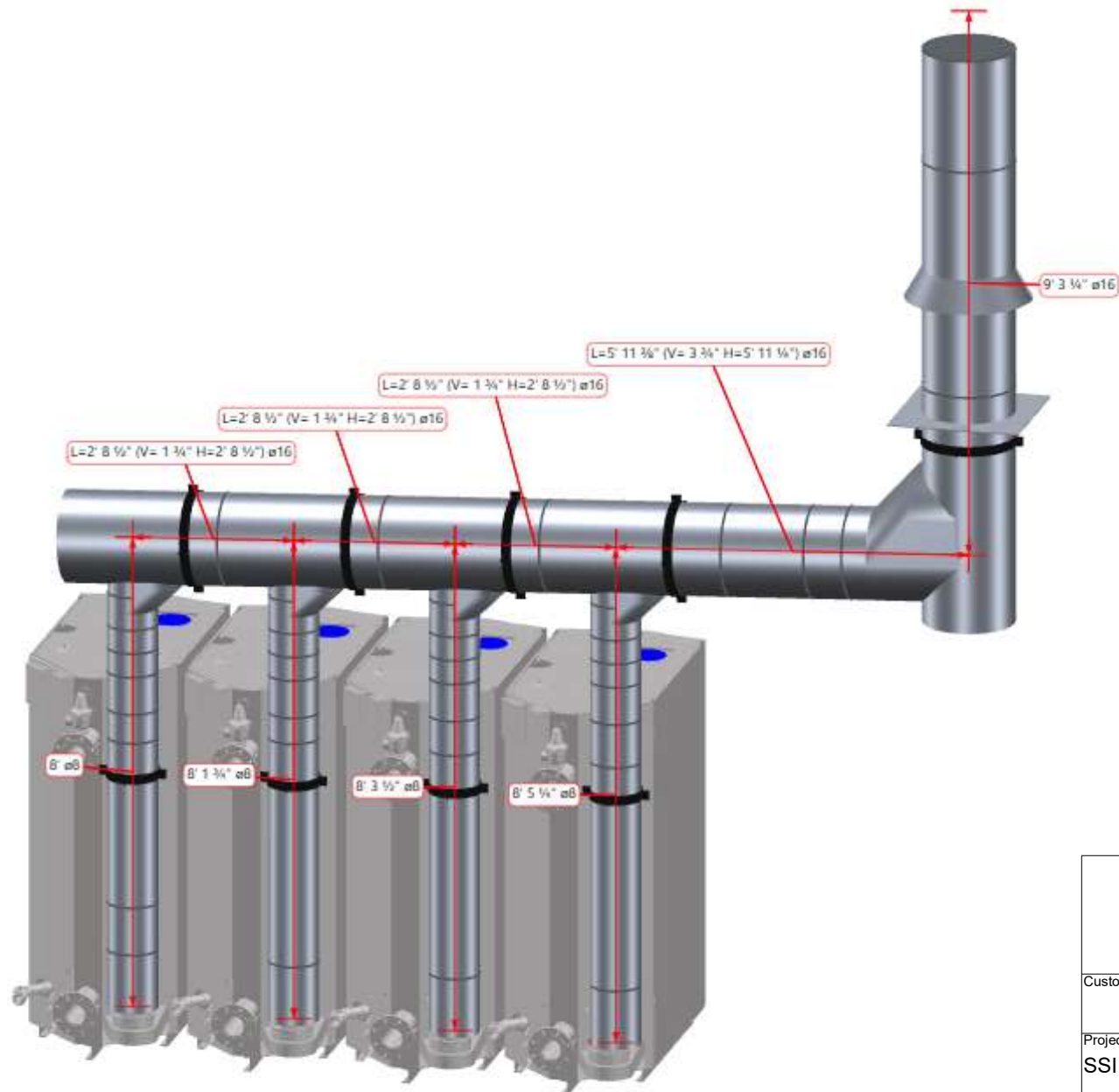
Drawn By: MWS
Checked By: TOC

**BOILER ROOM
PROPOSED
PLAN**

SCALE 1/2" = 1'-0"

M2.1
6 of 6

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jeremias®

Customer

Project

SSI - Eagle Airport - 25

Layout

Proposal - Boiler Flue R1

Date

8/23/2025

By

Clyde Tose

System No

366041

Ref.No

OP0027194

Scale

None

Proposal



Project Data

Project No:	OP0027194	Project Name:	SSI - Eagle Airport - 25
System No:	366041	Location:	ZZ
Date:	8/23/2025	Layout/BOM No:	366041.02.00
Prepared for:		Layout/BOM Title:	Proposal - Boiler Flue R1
Prepared by:	Jeremias, Inc. Clyde Tose	Product(s):	DWGV

Quote

Qty	Item No	Description
5	J-600	Sealant for Flue Gas Temperature up to 600F, 10 oz
1	GV-LUBE	GV-LUBE Lube for Gaskets, 2.5 oz. (75 ml.) tube
6	10DK-0.50	10' x 0.50 Dia Silicone Drain Tube Kit
4	DWGV8-RCIS	Raw Collar Adapter - Inside - Start
4	DWGV8-LSB	Light Support Band
1	DWGV8-12L	12" Fixed Length
1	DWGV8-36L	36" Fixed Length
4	DWGV8-24AL	24" Adjustable Length
4	DWGV8-UDL	Universal Drain Length
8	DWGV8-FCS	Flange Collar Adapter - Start
4	VB2-08-G	VB2-G Simple On/Off Damper, 550F
4	8FL-VB	Vee Band
3	DWGV8-48L	48" Fixed Length
1	DWGV16-DCS	Drain Tee Cap - Side
4	DWGV16-87BT8	87 Degree Reduction Boot Tee
5	DWKL16-LSB	Light Support Band
4	DWGV16-24AL	24" Adjustable Length
1	DWGV16-12L	12" Fixed Length
1	DWGV16-18L	18" Fixed Length
1	DWGV16-DCB	Drain Tee Cap - Bottom
1	DWGV16-87BT	87 Degree Boot Tee
1	DWGV16-APS	Anchor Plate Support
1	DWGV16-48LR	48" Fixed Length
1	DWGV16-24L	24" Fixed Length
1	DWKL16-FCF	Flat Cone Flashing
1	DWKL16-SCCF	Storm Collar for Coned Flashing
1	DWGV16-OTS	Open Termination w/Screen



Commercial Chimney and Gas Vent Calculation

The following calculation is based off the ASHRAE Chimney and Duct Design Equations. Jeremias Inc. disclaims any responsibility for improper vent system performance as a result of the use of this calculation.

Project Name: Eagle Airport
Project City: Gypsum
Project State: CO

Project By: Clyde Tose
Project For: Bryan Eiselt
Company: SSI

Appliance Make & Model: Lochinvar, Crest FBN2001

Allowable Pressure (in w.c.): Min. to Max.

Appliance Fuel Type: Natural Gas or Equivalent
Appliance Input (MBH): 2000
Appliance CO2%:

Flue Gas Temperature (F):
Ambient Temperature (F): 60
Local Altitude (ft): 6312

Input Combustion Air Intake Information

Duct Diameter (in): 90 Degree Elbow: 15 Degree Elbow: 90° Boot Tee:
Air Duct Length (ft): 45 Degree Elbow: Lateral Tee: Tapered Increaser:
Additional Loss (in w.c.):* 30 Degree Elbow: Straight Tee: Stepped Increaser:
Additional Resistance (k):*

Input Exhaust Vent Information

Vent Diameter (in): 8 **Straight Tee:** 87 Degree Elbow: Tapered Increaser:
Total Horizontal Run (ft): Lateral Tee: 90 Degree Elbow: Stepped Increaser:
Total Vertical Rise (ft) 8 **15 Degree Elbow:** 87° Boot Tee: Drain Section: 1
Additional Loss (in w.c.):* 30 Degree Elbow: 90° Boot Tee: Lined Bellows:
Additional Resistance (k):* 45 Degree Elbow: 1 90° Wye Tee: Draft Hood (Y/N): No
Termination Style: No Termination Damper (Y/N): Yes

* Additional Loss values (in w.c.) and additional resistance values (k) shall be positive.

System Information

Barometric Pressure (in Hg): 23.72 **Exhaust Mass Flow (lb):** 0.925 **Exhaust Gas Velocity (ft/min):** 1825.56
Combustion Air Density (lb/ft³): 0.0605 **Exhaust Gas Density (lb/ft³):** 0.0484 **Combustion Air Velocity (ft/min):**
Combustion Air Flow (CFM): 509.73 **Exhaust Gas Flow (CFM):** 637.24 **Booster Pressure Rq'd, Db (in w.c.):** 0
Combustion Fitting Loss (k): N/A **Exhaust Fitting Loss (k):** 0.900 **Booster Pressure @ 70°F (in w.c.):** 0.000
Combustion Friction Loss (k): N/A **Exhaust Friction Loss (k):** 1.187 **Booster Flow Required (CFM):** 637.24

System Solution

Exhaust Vent Diameter (in): 8 **Combustion Vent Diameter (in):** N/A
Pressure loss, dP (in w.c.): 0.159 **Combustion Air Pres. Loss (in w.c.):** N/A

Total High Fire (in w.c.):
 0.140 in w.c. + 0.155 in w.c. = 0.295 in w.c.
Total Low Fire (in w.c.):
 (-0.019 in w.c.) + (-0.023 in w.c.) = - 0.042 in w.c.

Theoretical Draft, Dt (in w.c.): 0.019
Available Draft, Da (in w.c.): 0.140
Total Pressure (in w.c.): 0.140

Sizing Summary - Individual Vent			
Vent Diameter (in)	High Fire (in w.c.)	Low Fire (in w.c.)	With Intake (in w.c.)
8	0.140	-0.019	0.140

www.jeremiasinc.com

Jeremias Inc.
 983 Industrial Park Drive
 Marietta, GA 30062

Phone: (678) 388-2740
 Email: info@jeremiasinc.com





Commercial Chimney and Gas Vent Calculation

The following calculation is based off the ASHRAE Chimney and Duct Design Equations. Jeremias Inc. disclaims any responsibility for improper vent system performance as a result of the use of this calculation.

Project Name: Eagle Airport
Project City: Gypsum
Project State: CO

Project By: Clyde Tose
Project For: Bryan Eiselt
Company: SSI

Appliance Make & Model: Lochinvar, Crest FBN2001

Allowable Pressure (in w.c.): Min. to Max.

Appliance Fuel Type: Natural Gas or Equivalent
Appliance Input (MBH): 8004
Appliance CO2%:

Flue Gas Temperature (F):
Ambient Temperature (F): 60
Local Altitude (ft): 6312

Input Combustion Air Intake Information

Duct Diameter (in): 90 Degree Elbow: 15 Degree Elbow: 90° Boot Tee:
Air Duct Length (ft): 45 Degree Elbow: Lateral Tee: Tapered Increaser:
Additional Loss (in w.c.):* 30 Degree Elbow: Straight Tee: Stepped Increaser:
Additional Resistance (k):*

Input Exhaust Vent Information

Vent Diameter (in): 16 **Straight Tee:** 87 Degree Elbow: Tapered Increaser:
Total Horizontal Run (ft): 14 **Lateral Tee:** 1 90 Degree Elbow: Stepped Increaser:
Total Vertical Rise (ft): 10 **15 Degree Elbow:** 87° Boot Tee: 1 **Drain Section:**
Additional Loss (in w.c.):* 30 Degree Elbow: 90° Boot Tee: Lined Bellows:
Additional Resistance (k):* 45 Degree Elbow: 90° Wye Tee: Draft Hood (Y/N): No
Termination Style: Open Termination Damper (Y/N): No

* Additional Loss values (in w.c.) and additional resistance values (k) shall be positive.

System Information

Barometric Pressure (in Hg): 23.72 **Exhaust Mass Flow (lb):** 0.925 **Exhaust Gas Velocity (ft/min):** 1826.47
Combustion Air Density (lb/ft³): 0.0605 **Exhaust Gas Density (lb/ft³):** 0.0484 **Combustion Air Velocity (ft/min):**
Combustion Air Flow (CFM): 2039.93 **Exhaust Gas Flow (CFM):** 2550.24 **Booster Pressure Rq'd, Db (in w.c.):** 0
Combustion Fitting Loss (k): N/A **Exhaust Fitting Loss (k):** 0.950 **Booster Pressure @ 70°F (in w.c.):** 0.000
Combustion Friction Loss (k): N/A **Exhaust Friction Loss (k):** 1.333 **Booster Flow Required (CFM):** 2550.24

System Solution

Exhaust Vent Diameter (in): 16 **Combustion Vent Diameter (in):** N/A
Pressure loss, dP (in w.c.): 0.179 **Combustion Air Pres. Loss (in w.c.):** N/A

Theoretical Draft, Dt (in w.c.): 0.023
Available Draft, Da (in w.c.): 0.155
Total Pressure (in w.c.): 0.155

Sizing Summary - Individual Vent			
Vent Diameter (in)	High Fire (in w.c.)	Low Fire (in w.c.)	With Intake (in w.c.)
16	0.155	-0.023	0.155

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 Email: info@jeremiasinc.com



TECHNICAL DATA SHEET

Double Wall Special Gas Vent

DWGV

PRODUCT LINE

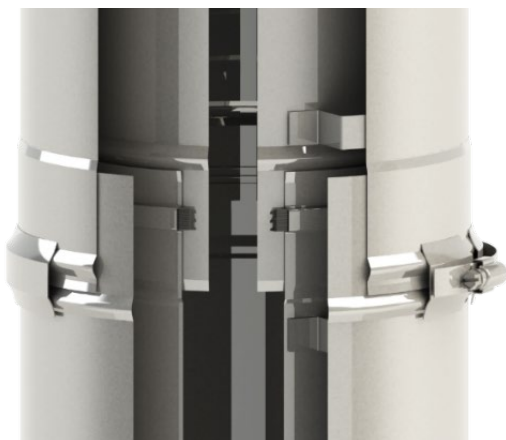
DWGV – Double Wall Special Gas Vent

APPLICATIONS

- Designed specifically for the condensing boiler market where ease of assembly, overall time invested, and price are the main objective
- Double Wall Special Gas Vent in 3"-12" diameters use a gasket to seal the male-to-female joint with an added external ½" rolled flange and vee band connection to secure it
- Outer jacket is secured by locking band
- For use with temperatures not exceeding 550°F continues and pressures not exceeding 20" WC

MATERIALS

- Inner liner made of UL-1738 Listed corrosion resistant high-grade stainless steel
 - 3" through 12" = 0.020" thick 316L or 444 stainless steel
 - 14" through 36" = 0.035" thick 316L or 444 stainless steel
 - 38" through 48" = 0.048" thick 316L stainless steel
- Seal System
 - 3" through 12" = Male-to-female with 3-ribbed gasket
 - 14" through 48" = Siliconed flange protected behind overlapping male-to-female inner
- Insulating Air Space
 - 3" through 12" = 1" insulating air space
 - 14" through 48" = 1.25" insulating air space
- Outer jacket made of 304 stainless steel
 - 3" through 12" = 0.020" thick
 - 14" through 24" = 0.025" thick
 - 26" through 48" = 0.035" thick
- All Supports and accessories are stainless steel



UL and ULC LISTINGS

1. UL-1738 Standard, Venting Systems for Gas-Burning Appliances, Categories II, III, & IV (ULC-S636 Standard for type BH Gas Venting Systems)
2. Class IIC & IIB – PP (Polypropylene), CVPC, and/or PVC applications at 230°F and/or 194°F maximum flue gas temperatures and zero clearance to combustibles
3. UL 441 (ULC-S605) Type B Gas Vent

FEATURES

- All stainless-steel construction with a Limited Lifetime Warranty
- Assurance of the finest quality and reliability
- Quick and easy installation
-

CONNECTION/INSTALLATION DETAILS

- 3" through 12"
 1. Lube the gasket on the female end
 2. Insert the male into the female
 3. Push joint together
 4. Slide Locking Band over beads and tighten
 - Industry leading 2.28" overlapping joint keeping flue gases away from gasket
- 14" through 48"
 1. Apply silicone to the rolled flange
 2. Insert the male into the female
 3. Push joint together
 4. Install and tighten the vee band
 5. Slide outer Locking Band over matching grooves and tighten
 - Industry leading 1.25" overlapping joint keeps flue gasses away from the siliconed flange connection



TECHNICAL DATA SHEET

Double Wall Special Gas Vent



DWGV

PRODUCT LINE

DWGV - Double Wall Special Gas Vent

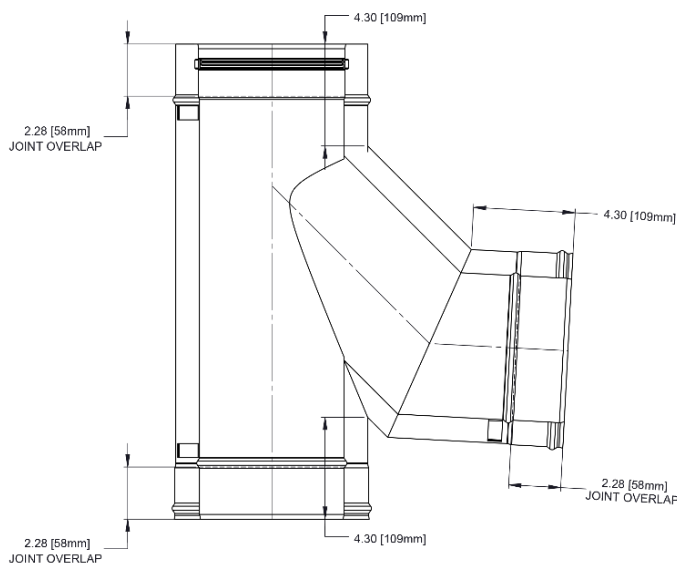


SPECIFICATIONS

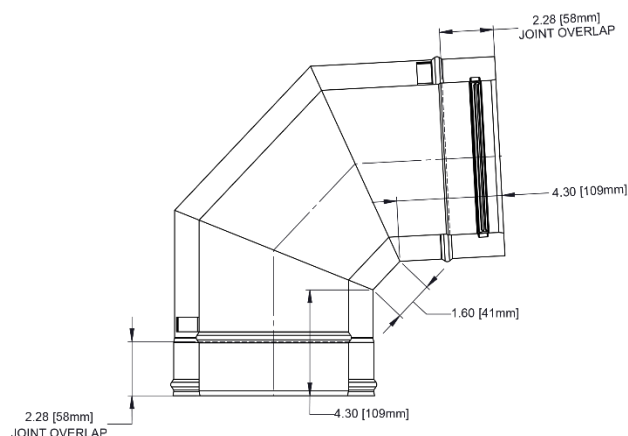
Diameters	3", 4", 5", 6", 7", 8", 9", 10", 11", 12", 13", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", & 48"
Available Lengths	9", 12", 18", 24", 30", 36", 42", & 48" (or any fixed length between) *Maximum Length for 18" and above is 36"
Available Fittings	Any elbow or tee, over 40 catalog fittings per each diameter
Available Accessories	All-stainless supports, guides, hangers, adapters - over 20 accessories per each diameter

CONTROLLING DIMENSIONS

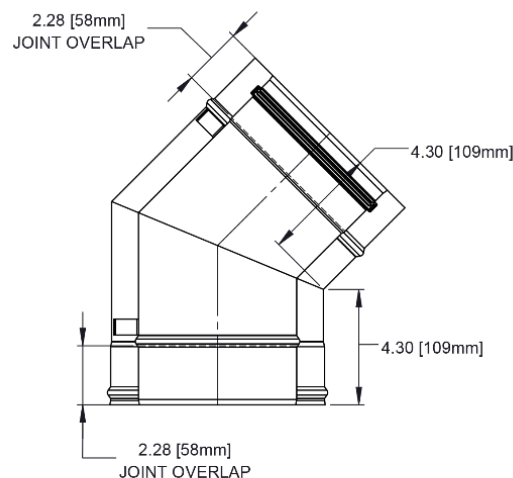
- Shows the minimum (and standard) inside gore dimensions for fittings
- Use these dimensions when ordering any special or custom part
- Jeremias encourages custom built items to provide the best solutions to our customers



87° BOOT TEE



87° ELBOW



45° ELBOW

