GENERAL NOTES

- 1. ALL WORK PERFORMED SHALL BE DONE IN STRICT ACCORDANCE TO ALL APPLICABLE MECHANICAL, BUILDING, ENERGY, FUEL GAS, AND LOCAL CODES, WITH AMENDMENTS.
- 2. WHERE USED. THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
- 3. COORDINATE MECHANICAL WORK WITH ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL AND LANDSCAPE WORK SHOWN ON OTHER CONTRACT DOCUMENTS. PROVIDE ADDITIONAL OFFSETS FOR COORDINATED INSTALLATION WHERE REQUIRED.
- COORDINATE HVAC, PLUMBING, AND FIRE PROTECTION WORK PRIOR TO INSTALLATION. DUCTWORK AND EQUIPMENT ACCESS TAKES PRECEDENCE OVER ALL PIPING EXCEPT GRAVITY SYSTEMS FOR AVAILABLE SPACE.
- COORDINATE EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSE BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT. BEFORE SUBSTANTIAL COMPLETION, CLEAN EQUIPMENT, FIXTURES, EXPOSED DUCTS,
- PROVIDE EQUIPMENT THAT FITS INTO THE SPACE ALLOTTED AND ALLOWS ADEQUATE ACCEPTABLE CLEARANCE FOR INSTALLATION, REPLACEMENT, SERVICING, AND MAINTENANCE. COORDINATE WITH OTHER TRADES TO ENSURE NO CONFLICT WITH REQUIRED CLEARANCES.
- 8. CONTRACTOR SHALL OBTAIN & PAY FOR ALL PERMITS AND CONSTRUCTION FEES. FURNISH FINAL CERTIFICATE TO OWNER SHOWING COMPLIANCE WITH CODE REQUIREMENTS.
- 9. REFER TO TYPICAL DETAILS PROVIDED IN THIS DRAWING SET FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR CONFORMANCE WITH DETAILS.
- 10. A SHORT DASH IN A SCHEDULE TABLE CELL INDICATES THAT THE COLUMN HEADING IS NOT USED OR NOT APPLICABLE TO
- 11. ALL PIPING & DUCTWORK IN FINISHED ROOMS OR SPACES SHALL BE CONCEALED IN A FURRED CHASE OR ABOVE THE HARD
- 12. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 70 STANDARDS AND LOCAL REQUIREMENTS.
- 13. ALL FIELD WIRING SHALL REQUIRE AN ELECTRICAL PERMIT AND SHALL BE PERFORMED BY A LICENSED ELECTRICIAN.
- 14. LOCATE VALVES, WATER HAMMER ARRESTERS, CLEANOUTS, DAMPERS, CONTROLS AND SIMILAR COMPONENTS SO THAT THEY ARE ACCESSIBLE. PROVIDE ACCESS DOORS FOR MECHANICAL EQUIPMENT INSTALLED BEHIND WALLS, ABOVE INACCESSIBLE CEILINGS AND BELOW FLOORS. COORDINATE ACCESS DOOR LOCATIONS WITH ARCHITECT/ENGINEER.
- 15. ACCESS PANELS SHALL BE 16 GA. STEEL, FLUSH TYPE ACCESS DOOR WITH CONCEALED HINGE AND SLOT SCREWDRIVER TYPE CAM LATCH. PROVIDE FACTORY PRIMED IN PAINTED SURFACE AREAS FOR FIELD PAINTING. PROVIDE STAINLESS STEEL FOR ALL OTHER AREAS. PROVIDE UL LISTED AND LABELED DOOR WHERE FIRE-RESISTANCE RATING IS INDICATED ON DRAWINGS. ACCESS DOOR SHALL BE SIZED SO THAT ADJACENT EQUIPMENT IS ACCESSIBLE. PROVIDE ACUDOR, ELMDOR,
- 16. INSTALL TAG ON CEILING GRID FRAME TO INDICATE LOCATION AND TYPE OF EQUIPMENT THAT REQUIRES MAINTENANCE.

- INSULATE PIPING PER WASHINGTON STATE ENERGY CODE SECTION C403.10.3.
- 2. ALL PRESSURES LISTED ARE GAGE PRESSURES UNLESS OTHERWISE NOTED.
- PROVIDE COMPLETE CONDENSATE DRAINAGE SYSTEM FOR ALL INDOOR UNIT. FIELD ROUTE DRAINAGE PIPING FROM EQUIPMENT TO NEAREST DRAIN LOCATION (SUCH AS SERVICE SINK, FUNNEL DRAIN, ETC.). SLOPE NON-PRESSURIZED DRAIN PIPING TO DRAIN LOCATION. PIPING & FITTINGS SHALL BE PVC. MINIMUM PIPE SIZE SHALL BE 3/4". INCREASE PIPE SIZE WHERE APPLICABLE PER IMC 307.2.2
- 4. VALVES SHALL BE INSTALLED SO THAT SYSTEM REMAINS IN SERVICE WHEN EQUIPMENT OR PIPING ON EQUIPMENT SIDE OF VALVE IS REMOVED.
- THE PROPOSED ROUTING FOR THE REFRIGERATION PIPING BETWEEN THE INDOOR AND OUTDOOR UNITS IS INDICATED AS A SINGLE LINE ON THE PLANS. THAT SINGLE LINE REPRESENTS ALL THE PIPING RUNS REQUIRED FOR THE SYSTEM DESIGNED. SIZE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATION.

HVAC/SHEET METAL:

- 1. THE FIRST FIGURE OF DUCT SIZE CALLOUTS INDICATES DIMENSION OF FACE SHOWN OR INDICATED. DUCT SIZES ARE NET INSIDE DIMENSIONS. PROVIDE ANY APPLICABLE DUCT LINING AND INSULATION PER THESE PLANS.
- 2. DUCT SIZE NOT SHOWN SHALL BE SIZED TO VELOCITIES NO GREATER THAN UP STREAM SECTIONS USING SIMILAR ASPECT
- 3. TOTAL STATIC PRESSURE NOTED IN SCHEDULES SHALL BE ASSUMED TO INCLUDE DUCT SYSTEM, TERMINAL UNITS, FILTERS,
- 4. ALL SUPPLY AIR FILTERS SHALL BE MERV-8 RATED.
- 5. AIR TERMINAL SIZES SHOWN ON PLANS ARE NECK SIZES. PROVIDE ADDITIONAL PANS, HARDWARE, ETC., REQUIRED TO INSTALL AIR TERMINAL IN CEILING SYSTEM.
- 6. AIR TERMINALS IN UNFINISHED SPACES OR OPEN CEILING AREAS SHALL BE INSTALLED AT[8] AFF UNLESS OTHERWISE NOTED
- 7. DUCTWORK SHALL BE 2.0" PRESSURE CLASS UNLESS OTHERWISE NOTED ON THESE DRAWINGS.
- CONSTRUCT DUCTWORK ACCORDING TO WASHINGTON STATE ENERGY CODE SECTION C403.10.2. ALL DUCT WORK SHALL BE PRIMED GALVANIZED SHEET STEEL, LOCK FORMING QUALITY, FABRICATED IN ACCORDANCE TO SMACNA STANDARDS.
- 9. PROVIDE TURNING VANES IN ALL MITERED RECTANGULAR DUCT ELBOWS & TEES.
- 10. PROVIDE MOTORIZED DAMPERS ON OUTDOOR AIR SUPPLY, AND EXHAUST OPENINGS. DAMPERS SHALL HAVE A MAXIMUM LEAKAGE RATE OF 4 CFM PER SQUARE FOOT AT 1" W.C.
- 11. ALL SUPPLY AND RETURN DUCTWORK SHALL BE INSULATED AND SEALED PER WASHINGTON STATE ENERGY CODE SECTION
- 12. OUTSIDE AIR DUCTWORK SHALL BE INSULATED IN ACCORDANCE WITH C403.10.1.1
- 13. VENTILATION AND EXHAUST AIR IS PROVIDED IN ACCORDANCE WITH C403.2.2.
- 14. PROVIDE EACH ZONE WITH THERMOSTATIC CONTROLS THAT PROVIDE A DEADBAND OF AT LEAST 5 DEGREES FAHRENHEIT IN WHICH HEATING OR COOLING ENERGY IS CAPABLE OF BEING SHUT OFF OR REDUCED TO A MINIMUM. THERMOSTAT SHALL BE CAPABLE OF THERMOSTATIC SETBACK, AUTOMATIC SETBACK AND SHUTDOWN, AND AUTOMATIC START CAPABILITIES PER WASHINGTON STATE ENERGY CODE SECTION C403.4.
- 15. PROVIDE TEMPORARY COVERS OVER OPEN ENDS OF EQUIPMENT AND DUCTWORK DURING CONSTRUCTION.
- 16. PROVIDE MANUAL VOLUME DAMPER FOR EACH DIFFUSER, REGISTER, AND GRILLE. OPPOSED BLADE DAMPERS LOCATED AT THE DIFFUSER, REGISTER, AND GRILLE SHALL NOT BE USED FOR SYSTEM BALANCE.
- 17. PROVIDE DUCT ACCESS DOORS AT DUCT SMOKE DETECTORS, BACKDRAFT DAMPERS, MOTORIZED CONTROL DAMPERS, FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, DUCT MOUNTED COILS, DUCT AIRFLOW STATIONS AND LOUVER PLENUMS.

APPLICABLE CODES

AS ADOPTED BY THE CITY OF PUYALLUP, WA

INTERNATIONAL MECHANICAL CODE, IMC 2018 INTERNATIONAL BUILDING CODE, IBC 2018 WASHINGTON STATE ENERGY CODE, WSEC 2018 INTERNATIONAL FUEL GAS CODE, IFGC 2018 UNIFORM PLUMBING CODE, UPC 2018

AND ASSOCIATED WASHINGTON ADMINISTRATIVE CODE AMENDMENTS

DESIGN CONDITIONS

OUTDOOR CONDITIONS (PUYALLUP) COOLING: 86°F DB (WSEC APPENDIX C) HEATING: 19°F DB (WSEC APPENDIX C)

INDOOR CONDITIONS COOLING: 75°F DB, 50% RH HEATING: 70°F DB

SCOPE OF WORK

- DEMOLISH EXISTING AIR HANDLING EQUIPMENT ON ROOF AS INDICATED ON PLANS.
- INSTALL NEW ROOFTOP AIR HANDLERS IN PLACE OF EXISTING UNITS.
- REPLACE EXISTING 20 TON AIR HANDLER WITH TWO USED SPLIT SYSTEM UNITS. INSTALL OUTSIDE AIR AND ECONOMIZER. PROVIDE ELECTRIC HEAT OPTION FOR SPLIT SYSTEMS. NOTE: UNITS ARE EXISTING AND FUNCTIONALITY AFTER
- INSTALLATION CANNOT BE GUARANTEED. MODIFY DUCT AS SHOWN TO SUIT NEW SPACE LAYOUT.

ABBREVIATIONS

VENT TO ROOF

VARIABLE AIR VOLUME

VARIABLE REFRIGERANT FLOW

WASHINGTON STATE ENERGY CODE

VOLTAGE

VERTICAL

WINTER

VOLT

VTR

VAV

VERT

WIN

WSEC

ADDITE	VIATIONS			ANICAL LEGEND	
(E) AABC	EXISTING AMERICAN AIR BALANCE COUNCIL	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF AFUE	ABOVE FINISHED FLOOR ANNUAL FUEL UTILIZATION EFFICIENCY	\boxtimes	SUPPLY DUCT, OSA DUCT UP		SQUARE 4-WAY CEILING DIFFUSERS
AG AGA AHRI	AIR GAP AMERICAN GAS ASSOCIATION AIR CONDITIONING, HEATING, & REFRIGERATION INSTITUTE	×	SUPPLY DUCT, OSA DUCT DOWN	동기 도 3	RETURN GRILLE
AMP ASHRAE	AMPERAGE AMERICAN SOCIETY OF HEATING, REFRIGERATION,		RETURN, RELIEF, TRANSFER UP		EXHAUST GRILLE
ASME	AND AIR CONDITIONING ENGINEERS AMERICAN SOCIETY OF MECHANICAL ENGINEERS		RETURN, RELIEF, TRANSFER DOWN	5 G — 5	NATURAL GAS PIPING
ASTM BAS	AMERICAN SOCIETY FOR TESTING AND MATERIALS BUILDING AUTOMATION SYSTEM		EXHAUST AIR UP	5 R 	REFRIGERANT PIPING
BHP CB CFH	BREAK HORSE POWER CATCH BASIN CUBIC FEET PER HOUR	Y	EXHAUST AIR DOWN	S	EXISTING PIPING
CFM COND	CUBIC FEET PER MINUTE CONDENSATE	(2)	RECTANGULAR ELBOW WITH TURNING VANES	ک ک	CROSSING LINES, NON CONNECTING
CONFIG CSA	CONFIGURATION CANADIAN STANDARDS ASSOCIATION	D	ROUND/ RECTANGULAR ELBOW	\$	PIPE CONTINUATION
DB DC DDC	DRY BULB DOUBLE CHECK DIRECT DIGITAL CONTROLS		RECTANGULAR DUCT SQUARE ELBOW UP	<u> </u>	CAP
DIA DN	DIAMETER DOWN		RECTANGULAR DUCT, RADIUS ELBOW UP	©	CURRENT SENSOR
DOAS DX EA	DEDICATED OUTSIDE AIR SYSTEM DIRECT EXPANSION EXHAUST AIR		RECTANGULAR DUCT, SQUARE ELBOW DOWN	®	CURRENT RELAY
EAT EC	ENTERING AIR TEMPERATURE ELECTRICAL CONTRACTOR		RECTANGULAR DUCT, RADIUS ELBOW DOWN	(SD)	SMOKE DETECTOR
ECM EFF	ELECTRICALLY COMMUTATED MOTOR EFFICIENCY	OI -	ROUND DUCT ELBOW UP	(SP)	SPACE PRESSURE SENSOR
ESP ETC EX. SP.	EXTERNAL STATIC PRESSURE ET CETERA EXTERNAL STATIC PRESSURE	CI	ROUND DUCT ELBOW DOWN	<u>s</u>	SWITCH
FLA FM	FULL LOAD AMPS FACTORY MANUAL	P-01	EQUIPMENT ABBREVIATION AND NUMBER (TAG)	PE	PRESSURE ELEMENT
FPM FT GA	FEET PER MINUTE FEET GAUGE	SD-X, XX/XX XXX CFM	AIR TERMINAL TYPE, SIZE, AND CFM	(P)	DIFFERENTIAL PRESSURE ELEMENT
HP HR	HORSEPOWER HOUR	X	DETAIL NUMBER	Θ	HUMIDISTAT (H'STAT)
IBC IFGC	INTERNATIONAL BUILDING CODE INTERNATIONAL FUEL GAS CODE INTERNATIONAL MECHANICAL CODE	XX	DRAWING NUMBER WHERE DRAWN		HUMIDITY ELEMENT
IMC IN IU	INCH INDOOR UNIT	∽ c →	CONDENSATE	(FA)	FIRE ALARM
LAT LB/LBS/#	LATERAL POUND/ POUNDS	├	GATE VALVE (GV)	M	MOTOR/ ACTUATOR
MAX MC MCA	MAXIMUM MECHANICAL CONTRACTOR MAXIMUM CIRCUIT AMPACITY	~~~~	FLEXIBLE DUCT	©	OCCUPANCY SENSOR
MERV MFG/MFR	MINIMUM EFFICIENCY REPORTING VALUE MANUFACTURER		VOLUME DAMPER (VD)	\bigcirc	THERMOSTAT (T'STAT)
MIN MOCP/ MOP MSS	MINIMUM MAXIMUM OVER CURRENT PROTECTION MANUFACTURER'S STANDARDIZATION SOCIETY	I	MOTORIZED DAMPER	\bigcirc	TEMPERATURE INDICATOR
NEBB NEMA	NATIONAL ENVIRONMENTAL BALANCING BUREAU NATIONAL ELECTRICAL MANUFACTURERS		BACKDRAFT DAMPER	Œ	TEMPERATURE ELEMENT
OC	ASSOCIATION ON CENTER	- [] 0	CEILING RADIATION DAMPER	F	FLOW INDICATOR
NFPA NO NOM	NATIONAL FIRE PROTECTION ASSOCIATION NUMBER NOMINAL		FIRE DAMPER	Œ	FLOW ELEMENT
NTS OSA	NOT TO SCALE OUTSIDE AIR	 1 1 1 1 1 1 1 1 1 	SMOKE DAMPER	Œ	CONDUCTIVITY SENSOR
PH PSF PSI	PHASE POUNDS PER SQUARE FOOT POUNDS PER SQUARE INCH	<u> </u>	COMBINATION FIRE/SMOKE DAMPER	ECM	ELECTRONICALLY COMMUTATED MOTOR
PSIG RA	POUNDS PER SQUARE INCH, GAUGE RETURN AIR	X"Ø	ROUND DUCT	VFD	VARIABLE FREQUENCY DRIVE
RH RP	RELATIVE HUMIDITY REDUCED PRESSURE	X/X	SQUARE DUCT	C02	CARBON DIOXIDE SENSOR
RPM SA SF	REVOLUTIONS PER MINUTE SUPPLY AIR SQUARE FEET	X/X"Ø	OVAL DUCT	EPO	EMERGENCY POWER OFF SWITCH
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION	•	POINT OF CONNECTION	NO	NITROGEN OXIDE SENSOR
SPEC STM THRD	SPECIFICATION STEAM THREADED	$lackbox{}{lackbox{}}{lackbox{}{lackbox{}{lackbox{}}{lackbox{}{lackbox{}{lackbox{}}{lackbox{}{lackbox{}}{lackbox{}}{lackbox{}{lackbox{}}{lackbox$	LIMIT OF DEMOLITION		DEVICIO
TYP UL	TYPICAL UNDERWRITERS LABORATORY				REVISIO
UPC V	UNIFORM PLUMBING CODE VENT/ VOLT				

THE APPROVED CONSTRUCTION PLANS, DOCUMENTS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

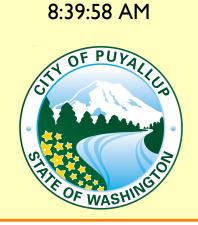
MECHANICAL LEGEND

FULL SIZED LEDGIBLE COLOR PLANS ARE REQUIRED TO BE PROVIDED BY THE PERMITEE ON SITE FOR INSPECTION

Approval of submitted plans is not an approval of omissions or oversights by this office or noncompliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

City of Puyallup Building **ACCEPTED**

> **J**Montgomery 06/08/2023 8:39:58 AM



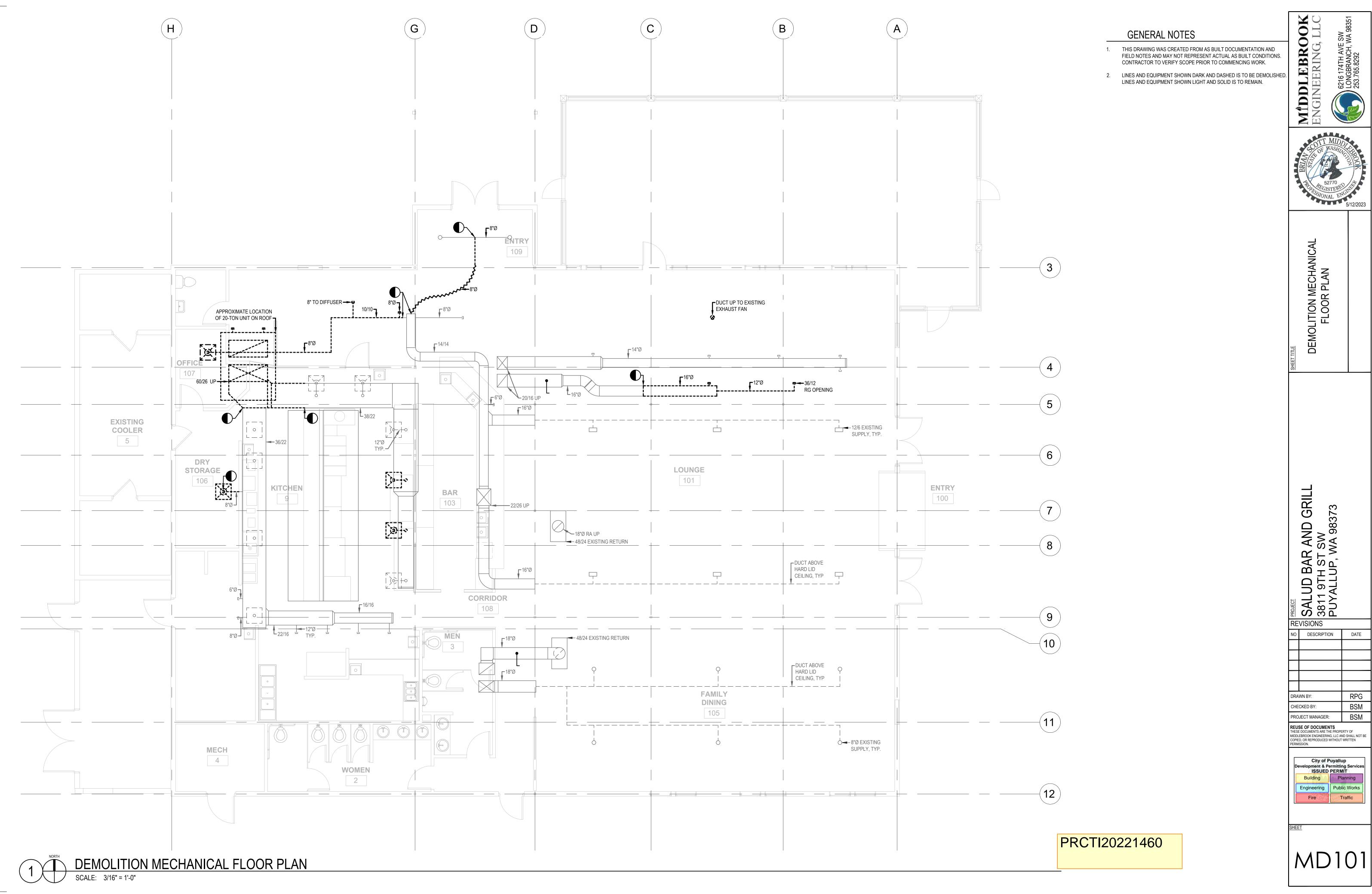
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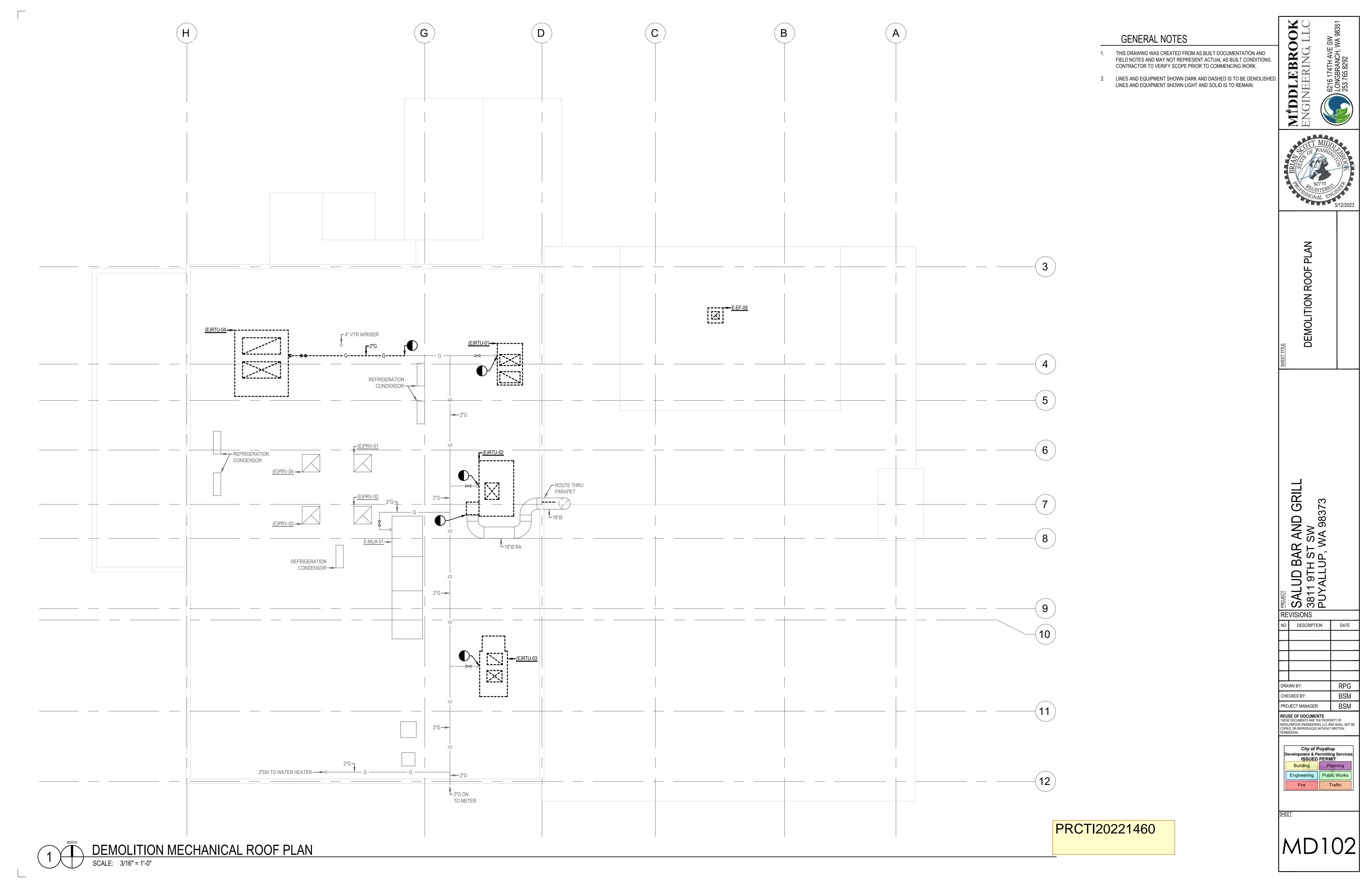
R AND I SW WA 983 SAR ST.S P, W $\mathbf{\Omega}$ SALUD 3811 9TI PUYALL **REVISIONS** DESCRIPTION

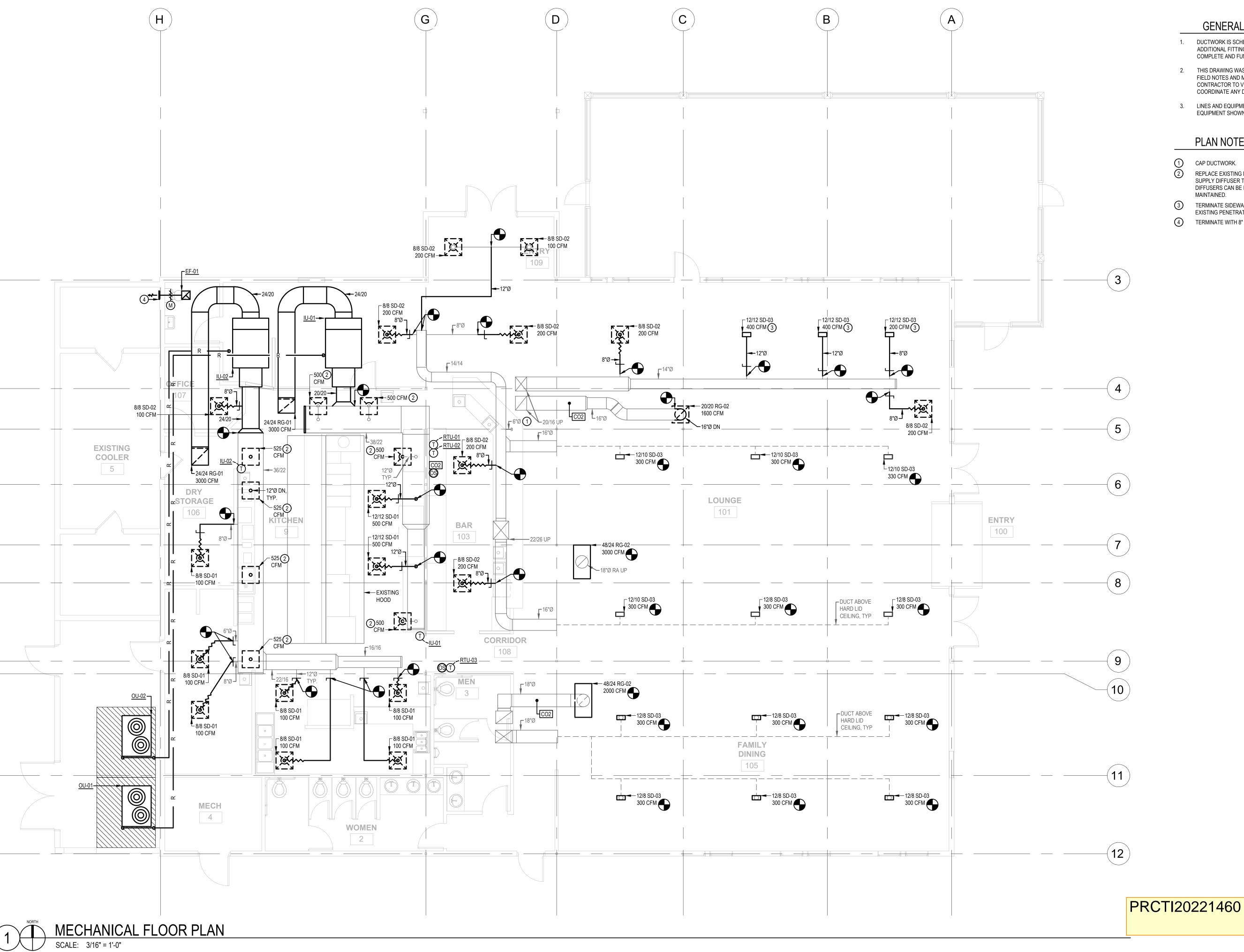
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DATE

City of Puyallup opment & Permitting Service ISSUED PERMIT Building Planning Engineering Public Works Fire Traffic







GENERAL NOTES

- DUCTWORK IS SCHEMATIC IN NATURE. CONTRACTOR TO PROVIDE ADDITIONAL FITTINGS AND OFFSETS AS REQUIRED TO INSTALL A COMPLETE AND FUNCTIONING SYSTEM.
- THIS DRAWING WAS CREATED FROM AS BUILT DOCUMENTATION AND FIELD NOTES AND MAY NOT REPRESENT ACTUAL AS BUILT CONDITIONS. CONTRACTOR TO VERIFY SCOPE PRIOR TO COMMENCING WORK. COORDINATE ANY DISCREPANCIES WITH MECHANICAL ENGINEER.
- LINES AND EQUIPMENT SHOWN DARK IS NEW WORK. LINES AND EQUIPMENT SHOWN LIGHT IS EXISTING TO REMAIN.

PLAN NOTES

- CAP DUCTWORK.
- REPLACE EXISTING DIFFUSER WITH 12/12 SD-02. REBALANCE EXISTING SUPPLY DIFFUSER TO LISTED AIRFLOW. AT OWNER'S REQUEST, EXISTING DIFFUSERS CAN BE REUSED IF PROPER AIRFLOW LISTED CAN BE
- TERMINATE SIDEWALL VERTICALLY ON UPPER HALF WALL. REUTILIZE EXISTING PENETRATIONS WHERE POSSIBLE.
- TERMINATE WITH 8" EXHAUST CAP LOCATED ABOVE FREEZER.

THE REAL PROPERTY.

M'DDLEBROOK ENGINEERING, LLC

RE SALUD BAR AND GF 3811 9TH ST SW PUYALLUP, WA 98373

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City of Puyallup velopment & Permitting Serv ISSUED PERMIT Building Planning Engineering Public Works Traffic



- DUCTWORK IS SCHEMATIC IN NATURE. CONTRACTOR TO PROVIDE ADDITIONAL FITTINGS AND OFFSETS AS REQUIRED TO INSTALL A
- 2. THIS DRAWING WAS CREATED FROM AS BUILT DOCUMENTATION AND FIELD NOTES AND MAY NOT REPRESENT ACTUAL AS BUILT CONDITIONS. CONTRACTOR TO VERIFY SCOPE PRIOR TO COMMENCING WORK.
- LINES AND EQUIPMENT SHOWN DARK IS NEW WORK. LINES AND

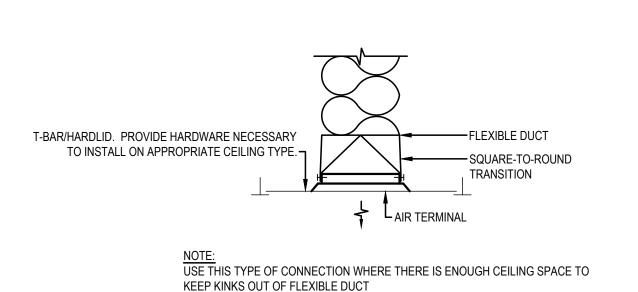
EXISTING MAKE-UP AIR UNIT. MC SHALL REPAIR TO WORKING ORDER OR REPLACE AS REQUIRED. MINIMUM AIR BALANCE TO 6545 CFM AT 0.625"ESP.

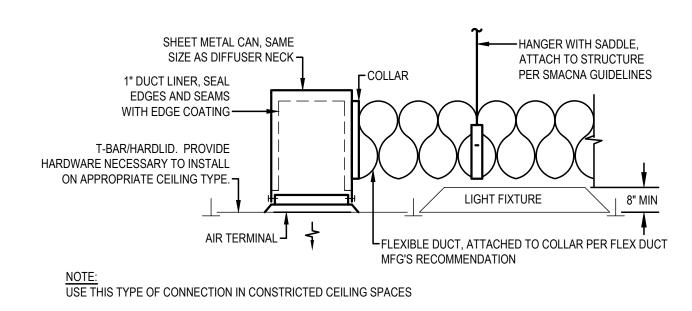
SALUD BAR AND GF 3811 9TH ST SW PUYALLUP, WA 98373

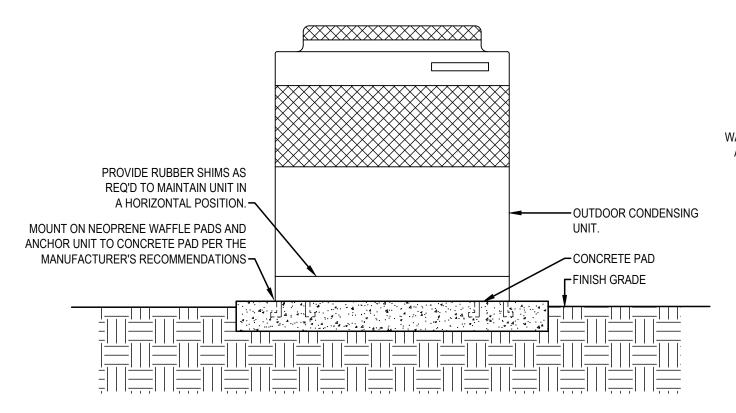
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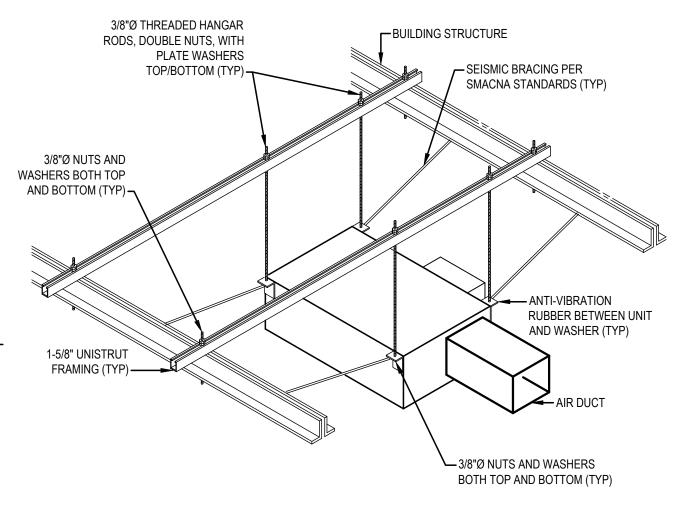
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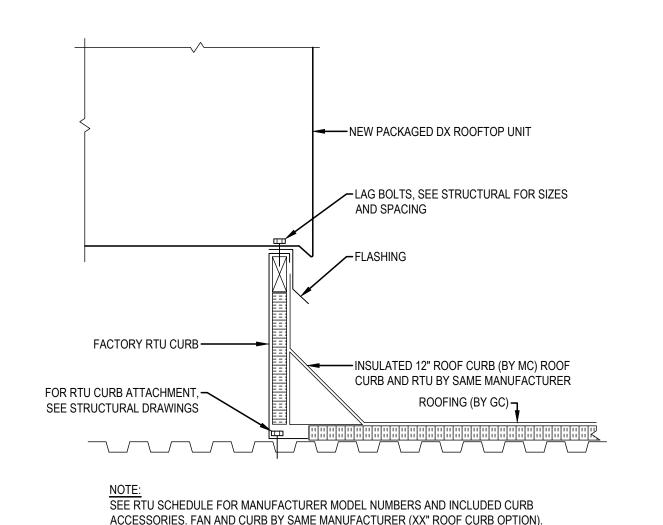


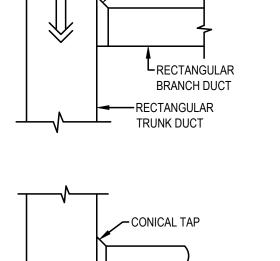




OUTDOOR CONDENSING **UNIT MOUNTING DETAIL**

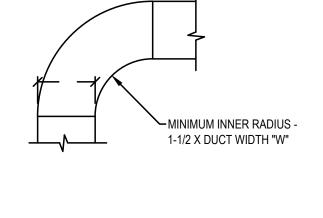
TYPICAL SUSPENDED EQUIPMENT

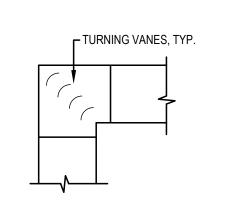


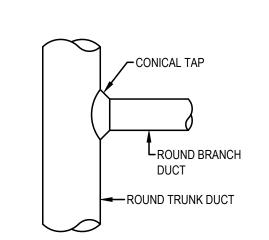


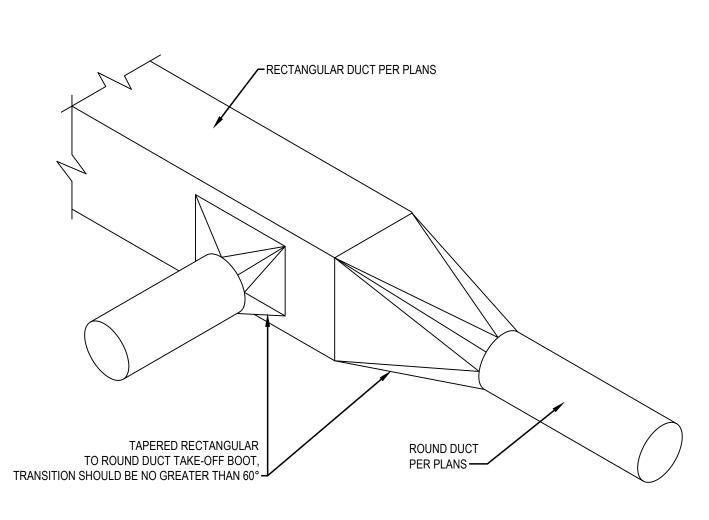
-RECTANGULAR TAP

AIR FLOW





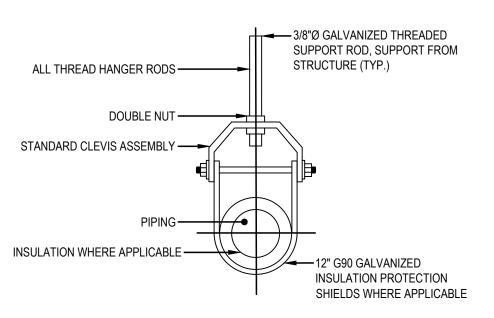


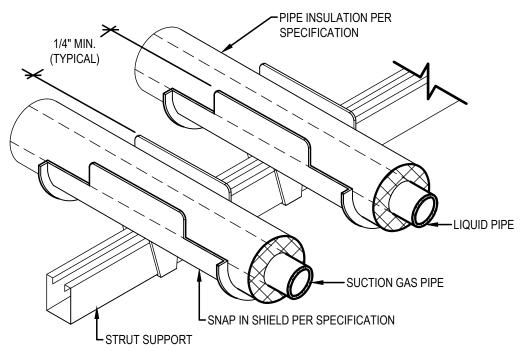


ROOFTOP UNIT CURB DETAIL

TYPICAL DUCT ELBOW AND DUCT TEE DETAILS

RECTANGULAR TO ROUND DUCT TRANSITION INSTALLATION DETAIL



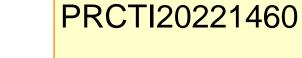


PIPE INSULATION PER SPECIFICATION STRUT SUPPORT - CUSHION CLAMP PER SPECIFICATIONS LIQUID PIPE

SLEEVE, LENGTH AS REQUIRED TO EXTEND - CHROME PLATED WALL THROUGH WALL -**ESCUTCHEON AS REQUIRED** FOR FINISHED APPEARANCE TYPICAL HORIZONTAL PIPE ACOUSTICAL CAULKING ALL AROUND MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO →BACKER ROD (TYP) OPENING AS A PERMANENT FORM.

1. SUCTION GAS, DISCHARGE GAS, AND LIQUID PIPES SHALL BE INDIVIDUALLY SUPPORTED. AT NO TIME SHALL PIPES BE COMBINED AND INSTALLED WITHIN THE SAME SNAP IN SHIELD SUPPORT. 2. DETAIL APPLIES TO STRUT AND TRAPEZE STYLE SUPPORTS.

> VERTICAL REFRIGERANT PIPE SUPPORT DETAIL



SEE ARCH PLANS FOR EXACT

WALL TYPE AND THICKNESS

RIL

UD BAR AND GI 1 9TH ST SW 7ALLUP, WA 98373

SALUD 3811 9TH PUYALL

DESCRIPTION

RPG

BSM

BSM

REVISIONS

DRAWN BY:

CHECKED BY:

PROJECT MANAGER:

REUSE OF DOCUMENTS

Building Engineering

Fire

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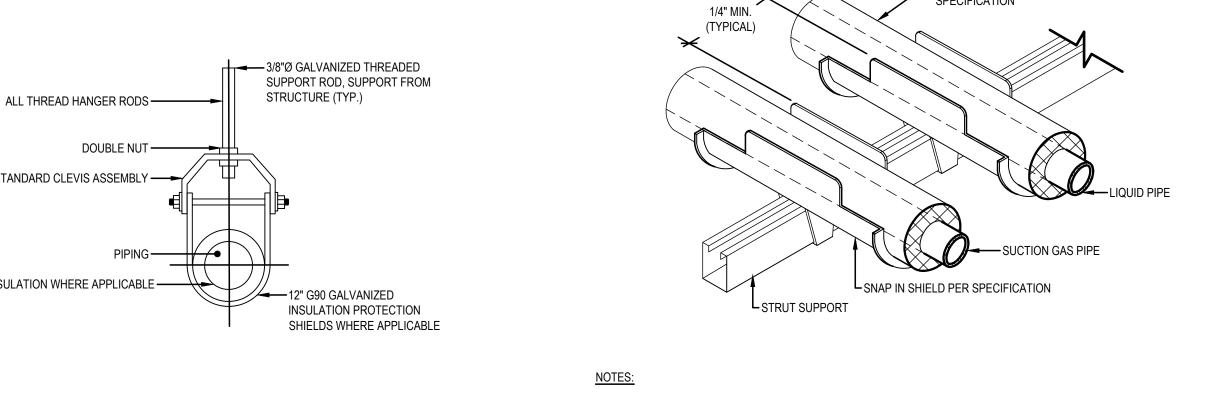
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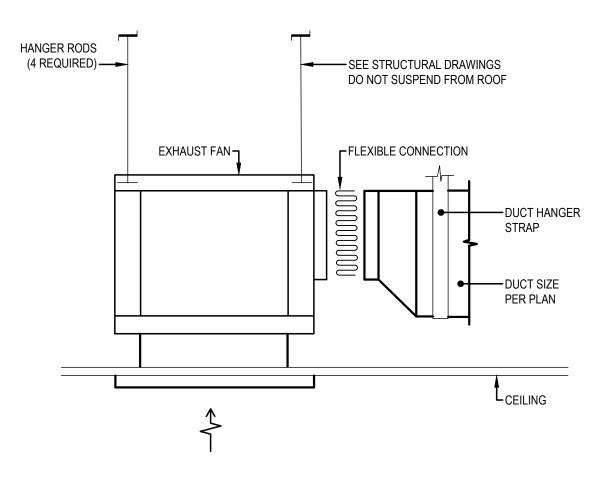
Traffic





PIPE HANGER DETAIL

REFRIGERANT PIPE SUPPORT DETAIL



CEILING MOUNTED EXHAUST FAN INSTALLATION DETAIL

SCALE: N





DETAILS II

SALUD BAR AND GRILL
SINGUISION SALUD BAR AND GRILL
SINGUISION SALT 9TH ST SW
PUYALLUP, WA 98373

DRAWN BY: RPG
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PROJECT MANAGER: BSM

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City of Puyallup
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Building Planning
Engineering Public Works
Fire Traffic

SHEET

PACKAGED ROOFTOP AIR HANDLING UNIT SCHEDULE

UNIT	MFR.	MODEL	LOCATION	TOTAL	067		SUPPLY FAN DATA				HEATING			COOLIN	G SECTION		WEIGHT	SOUND RATING	FILTERS	ELECTRICAL				DISCONNECT	DUCT SMOKE	NOTES
NO				CFM	OSA	ΗP	BHP	ESP	RPM	INPUT (MBH)	OUTPUT (MBH)	EFFICIENCY	NOMINAL TONS	TOTAL MBH	SENSIBLE MBH	EER		DB (A)		MCA	MOP	V	PH	FURN. BY	DETECTOR FURN. BY	
RTU-01	ARCOAIRE	RGC048HGFA0AAA	ROOF	1,600	770	1.0	0.47	0.3	1636	60	49	82%	4.0	4.8	34.3	11.6	545	79	MERV 8	26	30	208	3	EC	NA	1,2,3,4,5
RTU-02	ARCOAIRE	RGV090HD2A0AAA	ROOF	3,000	1,225	2.5	0.94	0.3	1364	125	103	82%	7.5	90.5	66.0	11.2	790	79	MERV 8	39	50	208	3	EC	MC	1,2,3,4
RTU-03	ARCOAIRE	RGV060HLFA0AAA	ROOF	2000	960	1.5	0.77	0.3	1930	60	49	82%	5.0	58.5	44.7	11	560	79	MERV 8	31	45	208	3	EC	MC	1,2,3,4,5

1. PROVIDE WITH MANUFACTURER'S RECOMMENDED GAS VALVES AND SAFETY DEVICES.

5. OWNER TO PROVIDE UPGRADE TO MEDIUM HEAT UNITS AS SOON AS THE EQUIPMENT BECOMES AVAILABLE. SYSTEM WILL NOT MAINTAIN 70 dF AT LOW HEAT.

2. PROVIDE WITH MANUFACTURER'S RECOMMENDED CURB ADAPTER AND SLOPED TO MATCH ROOF PITCH.

4. PROVIDE WITH STAINLESS FITTINGS AND HEAT EXCHANGER ON GAS BURNER.

3. PROVIDE WITH FULLY INTEGRATED, 100% CAPABLE FIXED DRY BULB ECONOMIZER.

INDOOR UNIT SCHEDULE

UNIT NO	MFR	MODEL	TYPE	AREA	AIRFLOW	DDM	ESP	OSA	COOLIN	COOLING (MBH)		AUX COIL	WEIGHT		ELE	ECTRICAL	DISCON	NOTES	
				SERVED	CFM	Krivi	IN. W.C.	CFM	TOTAL	SENSIBLE	TOTAL	(KW)		MCA	MOP	V	PH	FURN BY	
IU-01	ALLIED	TAA90	DUCTED	KITCHEN 9	3000	807	0.60	-	92.3	73.4	88	7.5	350	40	45	208	3	EC	1, 2, 3, 4, 5, 6, 7
IU-02	ALLIED	TAA90	DUCTED	KITCHEN 9	3000	807	0.60	-	92.3	73.4	88	7.5	350	40	45	208	3	EC	1, 2, 3, 4, 5, 6, 7

GENERAL NOTES:

1. EXISTING EQUIPMENT IS PROVIDED BY OWNER, INSTALLED BY THIS CONTRACTOR. MEL CANNOT WARRANT OR GUARANTEE THE OPERATION OF AN EXISTING RELOCATED UNIT.

NOTES:

1. PROVIDE 3/4" CONDENSATE P-TRAP AND PIPING CONNECTION. INDIRECTLY TERMINATE AT NEAREST FLOOR SINK.

2. PROVIDE WITH ALL APPURTENANCES NECESSARY FOR A COMPLETE INSTALLATION.

3. SEE CORRESPONDING OUTDOOR UNIT SCHEDULE FOR EFFICIENCY DATA.

4. OSA SHALL BE THROUGH THE MAKEUP AIR UNIT TO THE SPACE.

5. NO ECONOMIZER PROVIDED PER EXCEPTION 10 OF C403.8 THE 2018 WSEC.

6. CONTRACTOR SHALL PROVIDE 10KW AUX HEATER ACCESSORY FOR EXISTING UNIT. HEATER OPERATES 7.5KW AT 208V. COMPLETED SYSTEM IS A SINGLE POINT POWER CONNECTION.

7. CONFIRM ALL DATA, INCLUDING ELECTRICAL DATA WITH EXISTING UNIT.

AIR TERMINAL SCHEDULE													
UNIT NO	MFR	MODEL	MOUNTING STYLE										
0			TYPE	J <u></u>	NOTES								
SD-01	TITUS	MCD	T-BAR	MODULAR CORE	1,2								
SD-02	TITUS	MCD	SURFACE	MODULAR CORE	1,2								
SD-03	TITUS	300RL	SIDEWALL/SURFACE	DOUBLE DEFLECTION	1,2								
RG-01	TITUS	50F	T-BAR	EGGCRATE	1,2								
RG-02	TITUS	50F	SURFACE	EGGCRATE	1,2								

NOTES:

1. PROVIDE AIR BALANCING DEVICE AT EACH AIR TERMINAL.

2. COORDINATE FINISH WITH ARCHITECT.

			2/101111	o Egon Meitt Gonebole		
UNIT NO	TYPE	MFR	MODEL	DESCRIPTION/ DATA	SCOPE	NOTES
(E) RTU-01	PACKAGED ROOFTOP (DX W/ GAS)	TRANE	YHC060A3RLA1TD20000006A0	5 TONS COOLING, 60MBH HEATING, 2120 CFM, 1.0" ESP	TO BE REPLACED	
(E) RTU-02	PACKAGED ROOFTOP (DX W/ GAS)	TRANE	YHC092A3RLA1MC00000006A0	7.5 TONS COOLING, 60MBH HEATING, 2830 CFM, 1.0"ESP	TO BE REPLACED	
(E) RTU-03	PACKAGED ROOFTOP (DX W/ GAS)	TRANE	YHC048A3RLA1PD20000006A0	4 TONS COOLING, 60MBH HEATING, 1620 CFM, 1.0" ESP	TO BE REPLACED	
(E) RTU-04	PACKAGED ROOFTOP (DX W/ GAS)	TRANE	YCD241C3LBCA	20 TONS COOLING, 250 MBH HEATING, 8000 CFM, 1.0" ESP	TO BE DEMOLISHED (N.I.C.)	1
(E) MUA-01	ROOFTOP GAS MAKE-UP AIR	CAPTIVEAIRE	A4-D.1000-920	6000 CFM MIN, 9300 CFM MAX, 0.625" ESP, 5.0HP, 80MBH HEATING, 70° TEMPERATURE RISE	TO BE REPAIRED	2
(E) PRV-01	UPBLAST EXHAUST FAN	CAPTIVEAIRE	NCA18FA	3600 CFM, 1.38"ESP, 1.5HP, UL706 & 762 COMPLIANT	EXISTING TO REMAIN	
(E) PRV-02	UPBLAST EXHAUST FAN	CAPTIVEAIRE	NCA18FA	3675 CFM, 1.38"ESP, 1.5HP, UL706 & 762 COMPLIANT	EXISTING TO REMAIN	
(E) PRV-03	UPBLAST EXHAUST FAN	CAPTIVEAIRE	NCA16HPFA	2150 CFM, 1.38"ESP, 1.0HP, UL706 & 762 COMPLIANT	N.I.C.	
(E) PRV-04	UPBLAST EXHAUST FAN	CAPTIVEAIRE	NCA16HPFA	2200 CFM, 1.38"ESP, 1.0HP, UL706 & 762 COMPLIANT	N.I.C.	

NOTES:

1. ROOF REPAIR IS BY OTHERS.

2. RESET MINIMUM OSA PER PLANS. HOOD AND MUA SYSTEM SHALL PROVIDE AT LEAST THIS VOLUME OF AIR DURING KITCHEN'S OCCUPIED HOURS.

FAN SCHEDULE

UNIT NO MFR	MODEL	CONFICURATION	ADEA CEDVED	PERFORMANCE					SPEED	CONTROLLED BY OR	WEIGHT		ELECT	RICAL		DISCONNECT	NOTES	
UNITINO	IVIFR	MODEL	CONFIGURATION	AREA SERVED	MAX CFM	DESIGN CFM	EX. S.P.	RPM	(SONES)	CONTROL	INTERLOCKED WITH	LBS	HP	WATT	VOLTS	PH	FURN. BY	NOTES
EF-01	GREENHECK	SP-A90-130-VG-QD	CEILING	STAFF RESTROOM	130	90	0.625	887	2.1	CV	TIMER	33	0.02	24.1	120	1	EC	1

GENERAL NOTES:

1. PROVIDE ALL FANS WITH 70% OR GREATER EFFICIENCY MOTORS OR ELECTRONICALLY COMMUTATED MOTORS AS REQUIRED BY 2018 WSEC SECTION C405.8 FOR FRACTIONAL

HORSEPOWER FAN MOTORS THAT ARE 1/2 HP AND LARGER

2. EQUIPMENT MAY BE SUBSTITUTED UPON ENGINEER'S APPROVAL FOR EQUAL OR OTHER MFG/MODEL. REFER TO EQUIPMENT SCHEDULES FOR FINAL SELECTIONS.

NOTES:

1. PROVIDE WITH HANGING VIBRATION ISOLATOR KIT. (GREENHECK #: 451329)

OUTDOOR UNIT SCHEDULE

_																		ı
UNIT NO	MFR	MODEL	LOCATION	COOLING (MBH)					IG (MBH)	WEIGHT	NOISE	ELECTRICAL				DISCON	NOTES	l
				NOMINAL TONNAGE	EER	TOTAL	COP (HPSF)	(LBS)	(DB)	MCA	MOP	V	PH	FURN BY		l		
OU-01	ALLIED	TPA090S4S	BACK OF HOUSE	7.5	92.3	73.8	11	88	3.3	500	85	38	60	208	3	EC	1, 2, 3, 4, 5, 6, 7	l
OU-02	ALLIED	TPA090S4S	BACK OF HOUSE	7.5	92.3	73.8	11	88	3.3	500	85	38	60	208	1	EC	1, 2, 3, 4, 5, 6, 7	ı

1. COOLING CAPACITY MBH AT 95 D.B. OUTDOOR AND 77 D.B./67 W.B. INDOOR.

2. HEATING CAPACITY AND EFFICIENCY AT 47 D.B. OUTDOOR AND 70 D.B. INDOOR.

3. PROVIDE ADDITIONAL REFRIGERANT CHARGE AS REQUIRED TO FULLY CHARGE SYSTEM.

4. PROVIDE WITH ALL APPURTENANCES NECESSARY FOR A COMPLETE INSTALLATION.

5. PROVIDE WITH R410-A REFRIGERANT.

6. PROVIDE ALL UNITS LOCATED OUTDOORS WITH LOCKING REFRIGERANT ACCESS PORT PER IMC 1101.10

7. CONFIRM ALL DATA, INCLUDING ELECTRICAL DATA WITH EXISTING UNIT.

SALUD BAR AND GF 3811 9TH ST SW PUYALLUP, WA 98373 REVISIONS

DESCRIPTION DATE RPG DRAWN BY:

BSM

BSM PROJECT MANAGER: REUSE OF DOCUMENTS
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SEQUENCE OF OPERATIONS

1. PROVIDE AND INSTALL ALL NECESSARY DEVICES INCLUDING BUT NOT LIMITED TO: ACTUATORS, RELAYS, SWITCHES, SENSORS, DAMPERS, CONDUIT, AND WIRING NECESSARY TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.

THE CONTROL SYSTEM SHALL BE COMPLETE PRIOR TO BALANCING OF THE PROJECT, CONTROL PERSONNEL ARE TO ASSIST IN SYSTEM OPERATION FOR THE BALANCER, THE CONTROL SYSTEM SHALL BE COMPLETE PRIOR TO HVAC SYSTEM COMMISSIONING AND CONTROL PERSONNEL ARE TO ASSIST IN SYSTEM OPERATION AND TESTING DURING COMMISSIONING. THE CONTROL SYSTEM SHALL BE COMMISSIONED PRIOR TO OWNER OCCUPANCY.

OFF HOURS ARE 6:00 PM TO 6:00 AM AND WEEKENDS, ADJUSTABLE. MORNING WARM-UP IS TO BE STARTED AT AN "OPTIMAL START" TIME. OCCUPIED HOURS ARE 6:00 AM TO 6:00 PM MONDAY THROUGH FRIDAY, ADJUSTABLE.

TYPICAL SETPOINTS (ADJUSTABLE):

HEATING SPACE TEMPERATURE - 70 DEGREES FAHRENHEIT COOLING SPACE TEMPERATURE - 75 DEGREES FAHRENHEIT

SPLIT SYSTEM CONTROL SEQUENCE (DUCTED)

SPLIT SYSTEMS INDOOR/OUTDOOR UNITS SHALL BE CONTROLLED BY LOCAL THERMOSTAT. UNITS SHALL OPERATE ON INTERNAL CONTROLS TO MAINTAIN ROOM

- SPACE STATS SHALL BE EQUIPPED WITH PUSHBUTTONS TO PROVIDE UNOCCUPIED OVERRIDE REQUEST AND SPACE TEMPERATURE SETPOINT ADJUSTMENT AS REQUIRED. OVERRIDE RUNTIME SHALL BE 2 HOURS (ADJUSTABLE). NIGHT SETBACK TEMPERATURE SETPOINT SHALL BE 55°F HEATING AND 85°F COOLING (ADJUSTABLE).
- UNIT SHALL BE PROGRAMMED FOR START/STOP THROUGH THE LOCAL STAT BASED ON DESIGNED OCCUPIED MODES WITH WEEKDAY, WEEKEND AND HOLIDAY SCHEDULES.

- SUPPLY FAN SHALL START VIA A SCHEDULE (ADJUSTABLE), WARM-UP MODE COMMAND (ADJUSTABLE) OR OVERRIDE COMMAND (ADJUSTABLE). WARM-UP MODE COMMAND IS GENERATED BY LOCAL STAT. OVERRIDE COMMAND IS TRIGGERED BY SPACE STAT UNOCCUPIED OVERRIDE REQUEST OR SPACE STAT CALLING FOR NIGHT SETBACK CONDITIONING.
- FAN SHALL OPERATE AT CONSTANT SPEED AS DETERMINED BY THE AIR BALANCE CONTRACTOR. FAN SHALL OPERATE AT LOW SPEED BETWEEN DEADBAND.

HEAT PUMP HEATING

- HEAT PUMP HEATING ENABLE IS OFF WHEN FAN STATUS IS OFF.
- HEAT PUMP STAGES TO MAINTAIN SPACE TEMPERATURE SETPOINT. AUXILIARY HEAT ACTIVATES ONLY IF HEAT PUMP IS UNABLE TO MAINTAIN ROOM SETPOINT.

- DX COOLING ENABLE IS OFF WHEN FAN IS OFF.
- DX COOLING ACTIVATES TO MAINTAIN SPACE TEMPERATURE SETPOINT AS THE SECOND STAGE OF COOLING. (STAGE COMPRESSOR WHERE AVAILABLE)

SPACE AIR TEMPERATURE SETPOINT IS 70°F (ADJUSTABLE) FOR HEATING CONTROL AND 75°F (ADJUSTABLE) FOR COOLING CONTROL.

PACKAGED ROOFTOP UNIT

- SPACE STAT SHALL BE EQUIPPED WITH PUSHBUTTON TO PROVIDE UNOCCUPIED OVERRIDE REQUEST AND SPACE TEMPERATURE SETPOINT ADJUSTMENT AS REQUIRED. OVERRIDE RUNTIME SHALL BE 2 HOURS (ADJUSTABLE). NIGHT SETBACK TEMPERATURE SETPOINT SHALL BE 55°F
- HEATING AND 85°F COOLING (ADJUSTABLE). UNIT SHALL BE PROGRAMMED FOR START/ STOP THROUGH THE LOCAL STAT BASED ON DESIGNED OCCUPIED MODES WITH WEEKDAY, WEEKEND, AND HOLIDAY SCHEDULES.

- SUPPLY FAN SHALL START VIA A SCHEDULE (ADJUSTABLE). WARM-UP MODE COMMAND (ADJUSTABLE) OR OVERRIDE COMMAND (ADJUSTABLE). WARM-UP MODE COMMAND IS GENERATED BY LOCAL STAT. OVERRIDE COMMAND IS TRIGGERED BY SPACE STAT UNOCCUPIED OVERRIDE REQUEST OR SPACE STAT CALLING FOR NIGHT SETBACK CONDITIONING.
- OCCUPIED MODE, WHERE APPLICABLE: UPON ACTIVATION OF UNIT, OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL OPEN. FAN SHALL ACTIVATE VIA DAMPER END SWITCH.
- FAN SHALL OPERATE AT CONSTANT SPEED AS DETERMINED BY THE AIR BALANCE CONTRACTOR. FAN DEACTIVATES AT DEADBAND. SYSTEMS GREATER THAN 3.5 TONS SHALL HAVE 2 STAGES OF FAN CONTROL PER C403.8.5.1.
- UNOCCUPIED MODE: FAN SHALL DEACTIVATE AND ASSOCIATED MOTORIZED DAMPERS SHALL CLOSE.

HEATING ENABLE IS OFF WHEN FAN STATUS IS OFF.

UPON A CALL FOR HEATING, GAS BURNER STAGES TO MAINTAIN TEMP SET

DX COOLING COIL ENABLE IS OFF WHEN FAN IS OFF. FIRST STAGE OF COOLING SHALL BE VIA THE ECONOMIZER, SEE BELOW. DX COOLING COIL ACTIVATES TO MAINTAIN SPACE TEMPERATURE SETPOINT AS

THE SECOND STAGE OF COOLING. (STAGE COMPRESSOR WHERE AVAILABLE)

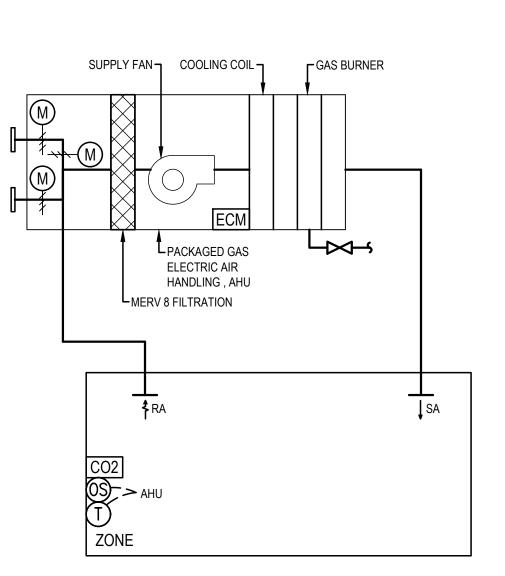
- ECONOMIZER CONSISTS OF THE RETURN AIR DAMPER AND OUTSIDE AIR DAMPER WORKING IN OPPOSITION. OUTSIDE AIR DAMPER SPRINGS NORMALLY CLOSED AND RETURN AIR DAMPER SPRINGS NORMALLY OPEN.
- ECONOMIZER IS CLOSED WHEN FAN IS OFF, THE SYSTEM IS IN WARM-UP MODE
- OR THE SYSTEM IS IN NIGHT MODE. ECONOMIZER CLOSES TO MINIMUM DAMPER POSITION (ADJUSTABLE) IN HEATING MODE. ESTABLISHED POSITION BASED ON SCHEDULED AIRFLOW
- DURING BALANCING. ECONOMIZED MODULATED AS FIRST STAGE OF COOLING TO MAINTAIN THE SPACE TEMPERATURE. PROVIDE PARTIAL MECHANICAL COOLING AS REQUIRED
- BY WSEC. ECONOMIZER CLOSES TO MINIMUM POSITION WHEN THE OUTSIDE AIR TEMPERATURE EXCEEDS THE SPACE AIR TEMPERATURE.

SPACE AIR TEMPERATURE SETPOINT IS 70°F (ADJUSTABLE) FOR HEATING CONTROL AND 75°F (ADJUSTABLE) FOR COOLING CONTROL.

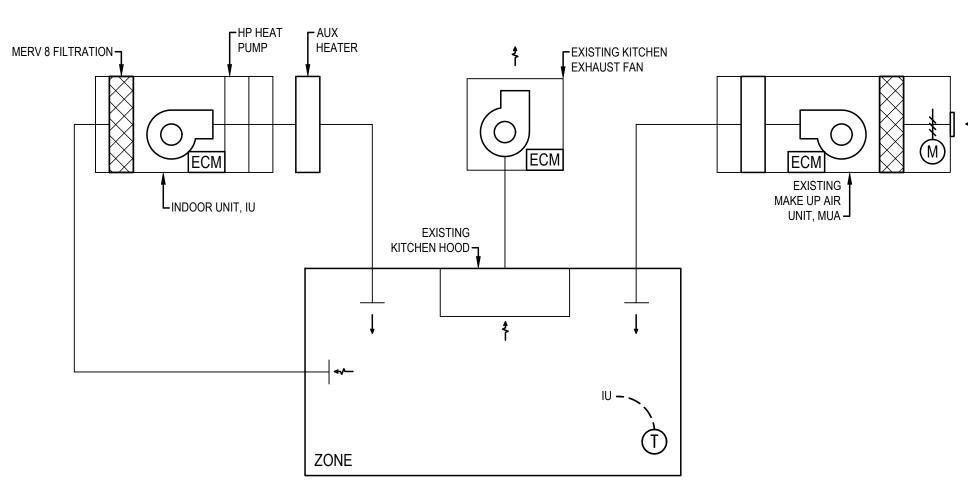
- CO2 SENSORS WILL BE INCLUDED WHERE SHOWN ON PLAN. ECONOMIZER DAMPERS SHALL INITIALLY BE AT MINIMUM OSA POSITION. AS CO2 CONCENTRATION RISER, ECONOMIZER DAMPERS SHALL MODULATE TO PROVIDE INCREASED OSA FLOW. SETPOINT SHALL BE 800 PPM, ADJUSTABLE.
- OCCUPANCY SENSORS SHALL BE LOCATED WHERE SHOWN ON PLAN. OCCUPANCY DAMPER SHALL SHUT OFF OUTDOOR AIRFLOW IF SPACE IS UNOCCUPIED DURING BUSINESS HOURS.

EXHAUST FANS

- UNIT OPERATES ON OCCUPANCY TIMER TO PROVIDE MINIMUM VENTILATION
- 2. MOTORIZED DAMPER SHALL BE OPEN WHEN FAN IS ENABLED.



TYPICAL SYSTEM FLOW DIAGRAM



NOT TO SCALE

1. SYSTEM SHALL BE PROVIDED WITH DEMAND VENTILATION SYSTEM TO PROVIDE NOT LESS THAN A 50% REDUCTION IN EXHAUST AND REPLACEMENT AIR SYSTEM AIRFLOW RATES. PROVIDED CONTROLS SHALL ALLOW FOR MODULATION OF AIRFLOWS TO MAINTAIN FULL CAPTURE AND CONTAINMENT OF SMOKE, EFFLUENT, AND COMBUSTION PRODUCTS. MINIMUM AIRFLOW SHALL SATISFY VENTILATION REQUIREMENT. FANS AND MUA SHALL RUN, AT MINIMUM, AT THIS MINIMUM SPEED AT ALL TIMES DURING OCCUPIED HOURS.

KITCHEN FLOW DIAGRAM

PRCTI20221460



SEQUENCE OF OPERATIONS

R AND r SW WA 983 BAR H ST & UP, W SALUD 3811 9TH PUYALL **REVISIONS** DATE DESCRIPTION RPG DRAWN BY: BSM CHECKED BY:

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BSM

THE DRAWINGS ARE DIAGRAMMATIC. COORDINATE INSTALLATION WITH THE BUILDING, PROVIDE ALL NECESSARY OFFSETS, CHANGES IN DIRECTION, EXTENSIONS

AND ASSOCIATED MATERIALS FOR A COMPLETE AND FUNCTIONAL INSTALLATION. COORDINATE MECHANICAL WORK WITH ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL, AND LANDSCAPE WORK SHOWN ON OTHER CONTRACT DOCUMENTS. PROVIDE ADDITIONAL PIPE OR DUCT OFFSETS WHERE REQUIRED TO COORDINATE

LOCATIONS AND SIZES OF (FLOOR, WALL, AND ROOF OPENINGS) SHALL BE COORDINATED WITH OTHER TRADES INVOLVED. INCLUDE THE FOLLOWING IN THE COST OF MECHANICAL WORK: CUTTING, CORING, PATCHING AND PAINTING OF EXISTING WALLS, CEILINGS, FLOORS, AND ROOFS AS REQUIRED TO ACCOMMODATE WORK AS INDICATED IN THE MECHANICAL CONTRACT DOCUMENTS UNLESS SPECIFICALLY SHOWN ON ARCHITECTURAL DOCUMENTS

MAINTAIN A SET OF PLANS ON SITE. RECORD ALL CHANGES TO ACTUAL ARRANGEMENTS ON THESE PLANS. PROVIDE THIS SET OF PLANS TO THE OWNER'S REPRESENTATIVE WHEN WORK IS COMPLETE.

ALL WORK PERFORMED SHALL BE DONE IN STRICT ACCORDANCE TO ALL APPLICABLE MECHANICAL, BUILDING, ENERGY, FUEL GAS, AND LOCAL CODES, WITH AMENDMENTS.

CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS AND CONSTRUCTION FEES. FURNISH FINAL CERTIFICATE TO OWNER SHOWING COMPLIANCE WITH CODE

PROJECT SCHEDULING: COMPLY WITH OWNER'S REQUIREMENTS

OPERATION AND MAINTENANCE MANUAL: PROVIDE COMPLETE OPERATIONS AND MAINTENANCE MANUAL IN HARD COVER. PROVIDE OPERATIONS, MAINTENANCE AND PARTS DATA ON ANY ITEM OF EQUIPMENT THAT HAS MOVING PARTS.

PROVIDE THE FOLLOWING DOCUMENTS PRIOR TO FINAL ACCEPTANCE OF THE PROJECT. FINAL PAYMENT OF THE CONTRACT WILL BE CONTINGENT UPON RECEIVING THESE DOCUMENTS:

RECORD (AS-BUILT) DRAWINGS

MAINTENANCE AND OPERATING INSTRUCTIONS (3 SETS).

EXTENDED WARRANTIES (OTHER THAN THE ONE-YEAR). BALANCING LOGS (AIR AND HYDRONIC SYSTEMS) (3 SETS)

FINAL CERTIFICATES OF INSPECTION AND CODE COMPLIANCE COMMISSIONING DOCUMENTATION PER WSEC

11. WARRANTY PROVISIONS: THE CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT AND SYSTEMS FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE. REPAIR OR REPLACE DEFECTIVE MATERIAL, EQUIPMENT, OR POOR WORKMANSHIP, WHICH MAY SHOW ITSELF DURING THIS WARRANTY PERIOD.

DEMOLITION

COMPLETE ALL DEMOLITION AND REMOVAL OF WORK NECESSARY FOR THE COMPLETION OF THE WORK SHOWN ON THE DRAWINGS. ALL MECHANICAL MATERIALS DESIGNATED FOR REMOVAL SHALL BE REMOVED FROM SITE AND DISPOSED OF LEGALLY. THE CONTRACTOR SHALL COORDINATE FOR ALL RECYCLABLE CONSTRUCTION WASTE GENERATED UNDER THIS CONTRACT TO BE RECYCLED. LOADING AND DISPOSAL AS DESCRIBED HERE SHALL BE AT NO ADDITIONAL EXPENSE TO THE OWNER

COMPLY WITH APPLICABLE CODES AND REGULATIONS FOR DEMOLITION OPERATIONS AND SAFETY OF ADJACENT STRUCTURES AND PUBLIC. OBTAIN REQUIRED PERMITS.

PROVIDE, ERECT, AND MAINTAIN TEMPORARY BARRIERS AND SECURITY

CONDUCT OPERATIONS TO MINIMIZE EFFECTS ON AND INTERFERENCE WITH ADJACENT STRUCTURES AND OCCUPANTS.

CONDUCT OPERATIONS TO MINIMIZE OBSTRUCTION OF PUBLIC AND PRIVATE ENTRANCES AND EXITS: DO NOT OBSTRUCT REQUIRED EXITS AT ANY TIME: PROTECT PERSONS USING ENTRANCES AND EXITS FROM REMOVAL OPERATIONS 1

3. DO NOT BEGIN REMOVAL UNTIL RECEIPT OF NOTIFICATION TO PROCEED FROM OWNER. OWNER HAS FIRST RIGHTS OF REFUSAL FOR DEMOLISHED MATERIALS AND **FQUIPMENT** EXISTING MATERIALS THAT ARE REMOVED SHALL NOT BE REUSED IN NEW SYSTEMS

EXCEPT WHERE INDICATED ON DRAWINGS. CONTRACTOR SHALL REMOVE ALL PIPING, DUCTWORK, AND EQUIPMENT INCLUDING

ALL ASSOCIATED INSULATION, HANGERS, VALVES, PLENUM WALLS, DAMPERS, WIREMOLD, WIRING, CONTROLS, AND APPURTENANCES ASSOCIATE WITH EACH PIECE OF EQUIPMENT PROTECT EXISTING STRUCTURES AND OTHER ELEMENTS THAT ARE NOT TO BE

REMOVED. WHERE EXISTING ITEMS PENETRATE A WALL, CEILING, FLOOR, OR ROOF, CONTRACTOR SHALL PROVIDE INFILL AT (E) PENETRATIONS WITH LIKE MATERIALS PATCH AND REPAIRS TO MATCH SURROUNDING SURFACES, INCLUDING PAINT. CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT OF EXISTING MECHANICAL

EQUIPMENT WHERE REQUIRED BY DEMOLITION OR ALTERATION OF EXISTING STRUCTURE DURING CONSTRUCTION. COORDINATE WITH GC AND PROVIDE NECESSARY SUPPORTS AND HANGERS TO MAINTAIN INTEGRITY, SAFETY AND PROPER OPERATION OF EXISTING MECHANICAL SYSTEMS

MAINTAIN AND RESTORE (IF INTERRUPTED) ALL CONDUITS & CONDUCTORS, PIPING, & DUCTWORK PASSING THROUGH RENOVATED AREAS AND SERVICING UNDISTURBED

REMOVE ALL ABANDONED DUCTWORK, PIPING, CONTROLS, WIRING, ETC., WHERE ACCESSIBLE IN RENOVATED AREAS. WHERE CONTROLS ARE DEMOLISHED, REMOVE WIRING BACK TO NEAREST CONTROL

PANEL OR JUNCTION BOX. REMOVE ACCESSIBLE CONDUIT, JUNCTION BOXES, ETC. CONTRACTOR SHALL PERFORM DEMOLITION IN NEAT AND SKILLFUL MANNER SO AS NOT TO DAMAGE OR DEFACE ANY CONSTRUCTION THAT IS TO REMAIN.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO INCLUDE ALL COSTS ASSOCIATED WITH NECESSARY DEMOLITION TO ALLOW NEW CONSTRUCTION SHOWN IN CONTRACT DOCUMENTS.

SEISMIC AND VIBRATION REQUIREMENTS

HANGERS AND SEISMIC BRACING FOR THE MECHANICAL SYSTEMS SHALL BE DESIGNED AND PROVIDED BY THE MECHANICAL CONTRACTOR. REFER TO CONTRACTOR SHOP DRAWINGS FOR LOCATIONS OF EQUIPMENT AND HUNG MECHANICAL SYSTEMS. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE SUPPORT SYSTEMS AND DESIGN LOADS FOR HUNG MECHANICAL SYSTEMS WITH THE GENERAL CONTRACTOR AND OTHER TRADES THAT MAY BE IMPACTED. PROVIDE ALL SEISMIC RESTRAINT REQUIRED BY THE AUTHORITY HAVING

JURISDICTION AND THE APPLICABLE CODES.

EMPLOY A LICENSED STRUCTURAL ENGINEER, IF NECESSARY, TO ACHIEVE COMPLIANCE

THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION, INC. (SMACNA) SEISMIC RESTRAINT MANUAL GUIDELINES MAY BE USED FOR PIPING AND DUCTWORK. INSURE THE PROPER HAZARD LEVEL IS EMPLOYED FOR THE AREA OF INSTALLATION.

VIBRATION CRITERIA: PROVIDE VIBRATION ISOLATION IN ACCORDANCE WITH THE AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS (ASHRAE): APPLICATIONS HANDBOOK.

BASIC MATERIALS AND METHODS

ALL MATERIALS AND EQUIPMENT SHALL BE LISTED OR LABELED BY A RECOGNIZED AGENCY. UL, AGA, FM, CSA, ARI, ETC.

EQUIPMENT SHALL BE AS INDICATED ON THE DRAWING SCHEDULES. THE DRAWING SCHEDULES ESTABLISH THE LEVEL OF QUALITY. SUBSTITUTIONS WILL BE CONSIDERED, SUBMIT TECHNICAL DATA (PERFORMANCE AND CONSTRUCTION) TO THE OWNER'S REPRESENTATIVE FOR APPROVAL. ALLOW TWO WEEKS FOR

MECHANICAL SYSTEM PENETRATIONS OF FIRE RATED ASSEMBLIES SHALL BE PROTECTED IN ACCORDANCE WITH THE BUILDING CODE IN FORCE IN THE AUTHORITY HAVING JURISDICTION FOR THIS PROJECT. THIS INCLUDES PIPING, DUCTWORK, SUPPORTS, CONDUIT, AND ANY OTHER SYSTEM AND APPURTENANCE PROVIDED AS PART OF THE MECHANICAL WORK OF THIS CONTRACT. IN ADDITION, ALL THROUGH-PENETRATION SEALING METHODOLOGIES SHALL BE LISTED IN THE UNDERWRITER'S LABORATORIES (UL) FIRE RESISTANCE DIRECTORY, ISSUE CURRENT AT TIME OF BID.

MOTORS SHALL COMPLY WITH THE WSEC.

ALL MOTORS SHALL BE ELECTRONICALLY COMMUTATED UNLESS NOTED ON SCHEDULE.

ELECTRICAL INSTALLATION SHALL COMPLY WITH THE NEC.

PROTECT STORED MATERIALS. REPLACE DAMAGED MATERIALS PRIOR TO INSTALLATION

PROVIDE WATER-TIGHT SEAL FOR OPENINGS TO THE BUILDING THROUGH WHICH PIPE PASSES. PROVIDE AND INSTALL PIPE SUPPORTS IN ACCORDANCE WITH MANUFACTURER'S

STANDARDIZATION SOCIETY OF THE VALVE AND FITTING INDUSTRY (MSS) STANDARDS, SPECIFICALLY STANDARD SP-69, "PIPE HANGERS AND SUPPORTS -SELECTION AND APPLICATION" AND STANDARD SP-58, "PIPE HANGERS AND SUPPORTS - MATERIALS, DESIGN AND MANUFACTURE". PROVIDE PIPE SUPPORT SPACING IN ACCORDANCE WITH THE UPC OR IMC.

TESTING: ALL WORK UNDER THIS CONTRACT SHALL BE THOROUGHLY AND SYSTEMATICALLY TESTED. BOTH DURING CONSTRUCTION AND AFTER COMPLETION. PIPE TESTING SHALL BE EITHER AS SPECIFIED IN THE APPROPRIATE SPECIFICATION SECTION, OR AS SPECIFIED IN THE APPLICABLE PLUMBING OR MECHANICAL CODE. DUCTWORK SHALL BE TESTED AS PART OF THE AIR BALANCING PROCESS. NOTIFY THE OWNER'S REPRESENTATIVE 48-HOURS IN ADVANCE OF ALL TESTS. TESTS SHALL BE MAINTAINED LINTIL APPROVED

START-UP, BALANCING AND COMMISSIONING.

EQUIPMENT STARTUP SHALL BE PERFORMED BY QUALIFIED PERSONNEL. THE TECHNICAL SPECIFICATION SECTIONS WILL DETAIL OTHER SPECIAL REQUIREMENTS, IF ANY. PROVIDE A STATEMENT OF THE STARTUP TECHNICIAN'S QUALIFICATIONS IF REQUESTED BY THE OWNER'S REPRESENTATIVE OR ELSEWHERE SPECIFIED.

BALANCE ALL AIR AND WATER SYSTEMS. BALANCE IN ACCORDANCE WITH EITHER NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR AMERICAN AIR BALANCE COUNCIL (AABC) CRITERIA

PROVIDE COMMISSIONING IN ACCORDANCE WITH THE WSEC, UNLESS ENHANCED COMMISSIONING IS REQUIRED. PROVIDE DOCUMENTATION OF COMMISSIONING

A CERTIFIED COMMISSIONING AGENT SHALL PROVIDE A COMMISSIONING PLAN OUTLINING THE RESPONSIBILITY MATRIX, SCHEDULE, AND EQUIPMENT FUNCTIONAL PERFORMANCE TESTING PER WSEC 408.1.2.

THE COMMISSIONING REPORT SHALL BE COMPLETED PRIOR TO FINAL MECHANICAL INSPECTION PER C408.1.3.

FINAL REPORT SHALL BE MADE AVAILABLE TO CODE OFFICIAL PER COMPLETION REQUIREMENTS OF WSEC C408.1.4

LOW PRESSURE STEEL DUCTWORK

GALVANIZED CARBON STEEL PER SMACNA STANDARDS. FLEXIBLE DUCTWORK SHALL BE VINYL COATED SPRING STEEL HELIX BONDED TO A VINYL COATED FIBERGLASS MECH LINER WRAPPED WITH FIBERGLASS WOOL INSULATION. JACKET WITH A REINFORCED METALIZED MYLER/ NEOPRENE LAMINATE **OUTER CASING**

FANS

1. SCHEDULED FANS SHALL BE THE BASIS OF DESIGN. UNITS OF SIMILAR CONSTRUCTION AND CAPABILITIES MAY BE SUBMITTED FOR REVIEW.

PROVIDE CURBS SLOPED TO MATCH ROOF PITCH FOR ROOF TOP FANS.

INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND AS NOTED ON PLANS.

4. PROVIDE ACOUSTIC LINING IN CONNECTING DUCTWORK 10' UPSTREAM AND DOWNSTREAM OF FAN, UNLESS OTHERWISE NOTED ON PLANS.

PROVIDE 2" MERV 8, PLEATED, DISPOSABLE FILTERS. SIZE OF FILTER SHALL BE COMPATIBLE WITH FILTER BOX OR AIR HANDLER.

AIR TERMINALS

SCHEDULED GRILLES, REGISTERS, AND DIFFUSERS SHALL BE THE BASIS OF DESIGN. UNITS OF SIMILAR CONSTRUCTION AND CAPABILITIES MAY BE SUBMITTED FOR REVIEW. DEVICES SHALL DISTRIBUTE THE QUANTITY OF AIRFLOW UNIFORMLY THROUGHOUT THE INDICATED SPACE WITHOUT CAUSING NOTICEABLE NOISE OR

PROVIDE ALL DEVICES FOR COMPLETE INSTALLATION DEPENDING ON LOCATION OF INSTALLATION (IE: A.C.T OR HARD LID CEILINGS).

INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND AS NOTED ON PLANS.

AIR DISTRIBUTION SYSTEM - GENERAL

PROVIDE PER THE IMC, THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) "DUCT CONSTRUCTION MANUAL, METAL AND

FLEXIBLE", AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. IN ADDITION TO THE REQUIREMENTS ABOVE, INSTALL EQUIPMENT AND COMPONENTS IN ACCORDANCE WITH THE PUBLISHED MANUFACTURER'S INSTALLATION

REQUIREMENTS FIRE DAMPERS: UL LISTED FOR SERVICE INTENDED. INSTALL IN ACCORDANCE WITH

THE LISTING. BASIS OF DESIGN SHALL REPRESENT THE QUALITY OF THE PRODUCT. FLEXIBLE CONNECTIONS: PROVIDE AT EACH FAN AND AIR HANDLING UNIT CONNECTION TO DUCT.

ACCESS PANELS: PROVIDE FOR MAINTENANCE OF ALL DUCT-MOUNTED EQUIPMENT (FIRE DAMPERS, CONTROL DAMPERS, COILS, ETC.) LOCATE VALVES, CLEANOUTS, DAMPERS, CONTROLS AND SIMILAR COMPONENTS SO

THAT THEY ARE ACCESSIBLE INSTALL TAG ON CEILING GRID FRAME TO INDICATE LOCATION AND TYPE OF EQUIPMENT THAT REQUIRES MAINTENANCE

PROVIDE ACCESS DOORS FOR MECHANICAL EQUIPMENT INSTALLED BEHIND WALLS ABOVE INACCESSIBLE CEILINGS AND BELOW FLOORS. COORDINATE ACCESS DOOR LOCATIONS WITH ARCHITECT/ENGINEER. ACCESS DOOR SHALL BE SIZED SO THAT

ADJACENT EQUIPMENT IS ACCESSIBLE. PROVIDE 16 GA, STEEL, FLUSH TYPE ACCESS DOOR WITH CONCEALED HINGE AND SLOT SCREWDRIVER TYPE CAM LATCH. PROVIDE FACTORY PRIMED IN

PROVIDE STAINLESS STEEL FOR ALL OTHER AREAS. PROVIDE UL LISTED AND LABELED DOOR WHERE FIRE-RESISTANCE RATING IS INDICATED ON

PROVIDE DUCT ACCESS PANELS FOR FIRE DAMPER ACTUATOR ACCESS.ACENT **EQUIPMENT IS ACCESSIBLE**

PAINTED SURFACE AREAS FOR FIELD PAINTING.

VOLUME DAMPERS

FABRICATED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS AND AS INDICATED

FABRICATE SPLITTER DAMPERS OF SAME MATERIAL AND GAGE AS DUCT TO 24 INCHES (600 MM) SIZE IN EITHER DIRECTION, AND TWO GAGES HEAVIER FOR LARGER SIZES, SECURED WITH CONTINUOUS HINGE OR ROD, OPERATED WITH MINIMUM 1/4-INCH (6 MM) DIAMETER ROD

FABRICATE SINGLE BLADE DAMPERS FOR DUCT SIZES TO 9-1/2 X 30 INCH. FABRICATE MULTI-BLADE DAMPER OF OPPOSED BLADE PATTERN WITH MAXIMUM BLADE SIZES 12 X 72 INCH. ASSEMBLE CENTER AND EDGE CRIMPED BLADES IN PRIME COATED OR GALVANIZED CHANNEL FRAME WITH SUITABLE

EXCEPT IN ROUND DUCTWORK 12 INCHES (300 MM) IN DIAMETER AND SMALLER, PROVIDE END BEARINGS

PROVIDE LOCKING, INDICATING QUADRANT REGULATORS ON SINGLE AND MULTI-BLADE DAMPERS. WHERE WIDTH EXCEEDS 30 INCHES (750 MM), PROVIDE REGULATOR AT BOTH ENDS.

MOTORIZED DAMPERS

COORDINATE ACTUATOR TYPE WITH CONTROLS CONTRACTOR. DAMPER ACTUATORS AND ACTUATOR LINKAGES SHALL BE MOUNTED IN THE AIRSTREAM FOR ALL ROOFTOP FANS/ROOF HOODS AND MOUNTED EXTERNAL OF THE AIRFLOW AT ALL OTHER LOCATIONS, UNLESS

SPECIFICALLY INDICATED OTHERWISE ON PLANS MULTI SECTION DAMPER ASSEMBLIES SHALL BE PROVIDED WITH A FACTORY INSTALLED COMMON JACKSHAFT

PROVIDE WITH DOUBLE FLANGE DUCT CONNECTION. SHALL BE CLASS IA LEAKAGE RATED.

PROVIDE PARALLEL BLADE AIRFOIL TYPE FOR OPEN/CLOSED CONTROL AND OPPOSED BLADE AIRFOIL TYPE FOR MODULATING/THROTTLING CONTROL

DAMPER BLADES:

EXTRUDED ALUMINUM OR GALVANIZED STEEL AIR FOILS WITH REPLACEABLE RUBBER BLADE SEALS, 6-INCHES WIDE MAXIMUM. 304 STAINLESS STEEL WHEN INSTALLED IN DISHWASHER HOOD DUCTWORK.

MAXIMUM LEAKAGE RATE SHALL BE 3 CFM/SQ. FT. OF DAMPER AREA PER 1.0-INCH W.G. IN ACCORDANCE WITH AMCA STANDARD 500D.

JAMB SEALS SHALL BE FLEXIBLE METAL COMPRESSION TYPE.

MAXIMUM PRESSURE DROP FOR A 12"X12" DAMPER SHALL BE 0.08" W.G. AT 1.000 FPM FACE VELOCITY APPROVED MANUFACTURERS

a. RUSKIN (CD50/CD60) GREENHECK (VCD-33/VCD-43)

AIR BALANCING

SCOPE OF WORK INCLUDES SETTING VOLUME (FLOW) AND SPEED ADJUSTMENTS TO HVAC. INSTRUMENTATION USED TO BALANCE THIS SYSTEM SHALL BE IN GOOD CONDITION AND MAINTAINED. IF REQUIRED BY THE OWNER, THE TESTS SHALL BE DONE IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE

THE BALANCER SHALL BE AN INDEPENDENT FIRM THAT SPECIALIZES IN BALANCING AND TESTING OF PUMPING SYSTEMS AND AIR MOVING EQUIPMENT/ AIR DISTRIBUTION AND EXHAUST SYSTEMS. THE BALANCER SHALL PROVIDE PROOF OF HAVING SUCCESSFULLY COMPLETED FIVE PROJECTS OF SIMILAR SCOPE. TESTING AND ADJUSTING SHALL BE PERFORMED IN ACCORDANCE WITH NEBB OR AABC STANDARDS AND PROCEDURES.

DAMAGE DONE TO THE SYSTEM BY THE BALANCER SHALL BY HIS/HER RESPONSIBILITY TO RECTIFY. NEATLY TYPED RECORDS SHALL BE MAINTAINED AT ALL STEPS. ADJUSTMENTS. AND BEGINNING AND FINAL READINGS. THE RECORDS SHALL ALSO INCLUDE MEASUREMENT LOCATIONS, DESIGN CAPACITIES, AND DATES AND NAMES OF PERSONNEL INVOLVED. FINAL SETTINGS SHALL BE CLEARLY MARKED ON EACH BALANCING DEVICE.

CHECK OUT TEMPERATURE CONTROLS TO ASSURE PROPER CONTROL SEQUENCE, PROPER CONTROL SETTINGS, AND PROPER CONTROL CALIBRATION. REPORT MALFUNCTIONS IN LOGS UNDER "ADDITIONAL REMARKS."

AIR BALANCE LOG: TEST AND ADJUST ENTIRE SYSTEM WITHIN SCOPE OF WORK. VOLUMES SHALL BE WITHIN 10% OF DESIGN REQUIREMENTS.

MEASURE TOTAL STATIC PRESSURE INCLUDING DUCT SYSTEM, TERMINAL UNITS, FILTERS, ETC.

ADJUST AND RECORD SYSTEM TO DESIGN RECIRCULATED AIR CFM. DIFFUSERS, GRILLES AND REGISTERS SHALL BE ADJUSTED TO MINIMIZE

DRAFTS IN ALL AREAS. ALL FILTERS SHALL BE CLEAN AND IN PLACE BEFORE STARTING FANS. DATA: RECORD AND CHECK THE FOLLOWING SYSTEMS AND EQUIPMENT. AIR TERMINALS: SUPPLY, RETURN, OR EXHAUST IDENTIFICATIONS,

CATALOGUE IDENTIFICATION, APPLICATIONS FACTORS, DESIGN AND

RECORDED VELOCITIES AND AIR QUANTITIES, AND STATIC PRESSURES

PRCTI20221460

COPPER LINESET SHALL BE USED FOR REFRIGERANT PIPING.

SIZE OF PIPING SHALL BE PER THE MANUFACTURER'S RECOMMENDATION AND REQUIREMENTS

MATERIALS FOR COPPER LINESET SHALL BE SOFT ANNEALED COPPER. CONTRACTOR TO SELECT END FINISHING TO SUIT INSTALLATION AND MANUFACTURER'S

RECOMMENDATION. LINE SET SHALL BE CONTINUOUS FROM OUTDOOR UNIT TO INDOOR UNIT. SUCH THAT

THERE ARE NO JOINTS IN FIRE RATED CORRIDOR OR EXIT PASSAGE WAYS. NO REFRIGERANT PIPE SHALL BE INSTALLED IN STAIR WELLS.

INSTALL PER IMC CHAPTER 11.

PLASTIC PIPE, DWV & SEWER

PVC PLASTIC DRAIN, WASTE, AND VENT PIPE AND FITTINGS SHALL BE PER IAPMO INSTALLATION STANDARD (IS) 09-03, "PVC BUILDING DRAIN, WASTE, AND VENT PIPE AND FITTINGS."

PIPING SYSTEM SPECIALTIES

SPECIALITY PIPE SYSTEMS SHALL BE CONSTRUCTED OF MATERIALS THAT ARE COMPATIBLE WITH THE TYPE OF PIPING MATERIAL AND FLUIDS IN THE SYSTEM. THEY SHALL BE RATED FOR THE TEMPERATURES AND PRESSURES OF THE SYSTEMS IN WHICH THE VALVES ARE INSTALLED

PROVIDE SENSORS WHERE INDICATED ON THE PLANS.

PROVIDE DIELECTRIC BREAKS BETWEEN DISSIMILAR METALS

VALVES

VALVES SHALL BE CONSTRUCTED OF MATERIALS THAT ARE COMPATIBLE WITH THE TYPE OF PIPING MATERIAL AND FLUIDS IN THE SYSTEM. VALVES SHALL BE RATED FOR THE TEMPERATURES AND PRESSURES OF THE SYSTEMS IN WHICH THE VALVES ARE INSTALLED

LOCATE AND ORIENT VALVES TO PERMIT PROPER OPERATION AND ACCESS FOR MAINTENANCE OF PACKING, SEAT, AND DISK. GENERALLY, LOCATE VALVES IN OVERHEAD PIPING IN HORIZONTAL POSITION. PROVIDE A UNION ADJACENT TO ONE END OF EACH THREADED VALVE

PIPE TESTING

REFRIGERANT PIPING SHALL BE TESTED FOR A PERIOD OF NOT LESS THAN 60 MINUTES AT A PRESSURE NOT LOWER THAN THE DESIGN PRESSURES OR THE SETTING OF THE PRESSURE RELIEF DEVICES. TEST PER IMC SECTION 1110.

PIPING SHALL BE TESTED USING AIR, NITROGEN, OR CARBON DIOXIDE. TEST PRESSURE SHALL BE NOT LESS THAT 1.5 TIMES THE PROPOSED MAXIMUM WORKING PRESSURE, BUT NOT THAN 3 PSI IRRESPECTIVE OF THE DESIGN PRESSURE. TEST LENGTH SHALL BE NOT LESS THAN ONE HALF HOUR FOR EVERY 500 CUBIC FEET OF PIPE VOLUME OR FRACTION THEREOF. ALL GAS PIPING TESTING SHALL BE IN ACCORDANCE WITH IFGC 406.

PIPING IS CONSIDERED "PASSED" IF THE PRESSURE REMAINS UNCHANGED FOR THE DURATIONS LISTED ABOVE.

REFRIGERANT PIPE INSULATION

RUBBER OR FLEXIBLE FOAM STYLE INSULATION FOR REFRIGERANT PIPING SYSTEMS

SHALL BE PROVIDED WITH LINESET. PROVIDE PER THE WSEC AND THE MANUFACTURER'S PUBLISHED INSTRUCTIONS.

INSULATION THICKNESSES SHALL COMPLY WITH WSEC LINESET PIPING EXPOSED TO WEATHER SHALL BE PROTECTED FROM DAMAGE. PROVIDE ARMAFLEX SHIELD OR EQUAL IN AREAS THAT ARE EXTERIOR TO THE BUILDING ENVELOPE OR AREAS THAT ARE SUBJECT TO DAMAGE

STAND ALONE CONTROL SYSTEMS

SCOPE: PROVIDE UNIT CONTROLS, ZONE TEMPERATURE CONTROLS AND ANY OTHER CONTROL ITEMS REQUIREMENT FOR A COMPLETE AND FUNCTIONAL SYSTEM. PROVIDE ALL REQUIRED WIRING, CONDUIT, COMPONENTS (RELAYS TRANSFORMERS, ETC) AND EQUIPMENT. OBTAIN AND UNDERSTAND ALL MECHANICAL AND PLUMBING DOCUMENTS BEFORE BIDDING WORK.

APPROVED MANUFACTURERS ARE TRANE, MITSUBISHI, AND HONEYWELL. NO OTHER MANUFACTURER IS ACCEPTABLE UNLESS APPROVED BY THE OWNER'S REPRESENTATIVE

SPECIFIC REQUIREMENTS: EACH UNIT SHALL HAVE INDIVIDUAL STANDALONE CONTROLS THAT PERFORM THE FUNCTIONS LISTED IN THE DRAWINGS.

PNEUMATIC CONTROLS ARE NOT ACCEPTABLE. ROOM TEMPERATURE SENSORS - ROOM TEMPERATURE SENSORS SHALL BE MOUNTED 54" AFF UNLESS OTHERWISE NOTED ON PLANS. VERIFY ALL LOCATIONS WITH OWNER'S REPRESENTATIVE.

ACTUATION FQUIPMENT SPRING RETURN IS REQUIRED IN ALL EQUIPMENT EXPOSED TO OUTDOOR AIR AND/OR FAILSAFE CONDITIONS.

ALL AIR HANDLER AND DOAS DAMPER AND VALVE ACTUATION SHALL BE SPRING RETURN AND PROPORTIONALLY CONTROLLED.

ALL 120V ACTUATORS SHALL HAVE DISCONNECTS IN ACCORDANCE WITH ELECTRICAL STANDARDS. ALL CONTROLS ACTUATORS SHALL BE SIZED CAPABLE OF CLOSING AGAINST

THE MAXIMUM SYSTEM SHUTOFF PRESSURE.

TIME INVOLVED SHALL BE INCLUDED IN THE BID.

A. ALL CLASS 2 (24VAC OR LESS) CONTROLS WIRING SHALL BE CONCEALED IN CONDUIT, UNLESS CONCEALED IN ACCESSIBLE LOCATIONS.

WIRE SUPPORTS SHALL BE INSTALLED PER LOCAL WIRING CODE REQUIREMENTS. DEFAULT SUPPORT SPACING SHALL BE 5'. SUPPORTS SHALL HANG FROM THE BUILDING STRUCTURE AND BE DESIGNED FOR THIS APPLICATION.

PROVIDE FIRE STOPPING FOR ALL PENETRATIONS USED BY CONTROLS CONDUIT AND RACEWAYS.

PROVIDE FULL COMMISSIONING OF THE CONTROL SYSTEM IN ACCORDANCE WITH PROVIDE 2 HOURS OF SCHEDULED INSTRUCTION PERIOD TO THE OWNER. COST FOR

WIRING SHALL NOT PENETRATE STRUCTURAL ELEMENTS.

INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS, THE NEC AND THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

FLUID OPERATING INSULATION CONDUCTIVITY NOMINAL OR TUBE SIZE (inches) < 1 1 to 1-1/2 1-1/2 to < 4 TEMPERATURE, °F 4 to < 8 ≥8 AND USAGE (°F) BTU \cdot in./(h \cdot ft² \cdot °F) 0.32 - 0.34 4.5 5.0 5.0 250 5.0 5.0 0.29 - 0.32 200 3.0 4.0 4.5 4.5 4.5 0.27 - 0.30 150 2.5 2.5 2.5 3.0 3.0 125 0.25 - 0.29 1.5 1.5 2.0 2.0 2.0

1.0

0.5

1.0

1.5

1.0

1.0

1.5

1.0

1.0

1.5

1.0

1.5

PIPE INSULATION SCHEDULE

GENERAL NOTES:

> 350

251 - 350

201 - 250

141 - 200

105 - 140

40 - 60

< 40

1. FOR PIPING SMALLER THAN 1-1/2 INCH (38mm) AND LOCATED IN PARTITIONS WITHIN CONDITIONED SPACES, REDUCTION OF THESE THICKNESESS BY 1 INCH (25mm) SHALL BE PERMITTED (BEFORE THICKNESSES REQUIRED IN FOOTNOTE b) NOT TO A THICKNESS LESS THAN 1 INCH (25mm).

0.5

0.5

2. FOR INSULATION OUTSIDE THE STATED CONDUCTIVITY RANGE, THE MINUMUM THICKNESS (T) SHALL BE DETERMINED AS FOLLOWS:

 $T = r\{(1 + t/r)^{K}/^{k} - 1\}$

WHERE:

T = MINIMUM INSULATION THICKNESS. r = ACTUAL OUTSIDE RADIUS OF PIPE

t = INSULATION THICKNESS LISTED IN THE TABLE FOR APPLICABLE FLUID TEMPERATUREAND PIPE SIZE.

0.21 - 0.28

0.21 - 0.27

0.20 - 0.26

K = CONDUCTIVITY OF ALTERNATE MATERIAL AT MEAN RATING TEMPERATURE INDICATED FOR THE APPLICABLE FLUID TEMPERATURE (Btu · in/h · ft² x °F)

100

75

75

k = THE UPPER VALUE OF THE CONDUCTIVITY RANGE LISTED IN THE TABLE FOR THE APPLICABLE FLUID TEMPERATURE.

3. FOR DIRECT-BURIED HEATING AND HOT WATER SYSTEM PIPING, REDUCTION OF THESE THICKNESSES BY 1-1/2 INCHES (38mm) SHALL BE PERMITTED (BEFORE THCKNESS ADJUSTMENT REQUIRED IN FOOTNOTE b BY BUT NOT TO THICKNESS LESS THAN 1 INCH (25mm)

- BEEF

R AND r SW ST. P, V $\mathbf{Z} = \mathbf{B}$ **ALUD** SAL 3811 PUY DESCRIPTION

REVISIONS DATE RPG DRAWN BY: BSM CHECKED BY: BSM PROJECT MANAGER: REUSE OF DOCUMENTS MIDDLEBROOK ENGINEERING, LLC AND SHALL NOT BE COPIED, OR REPRODUCED WITHOUT WRITTEN

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