

MECHANICAL SPECIFICATIONS

HVAC SPECIFICATIONS

1. THE WORK SHALL INCLUDE, FURNISHING AND INSTALLING ALL HEATING, AIR CONDITIONING, VENTILATION, AND EQUIPMENT AS SHOWN ON THE FLOOR PLANS AND AS SPECIFIED HEREIN.

2. THE GENERAL AND SPECIAL CONDITIONS AIA DOCUMENT A-201 SHALL GOVERN THIS WORK TO THE EXTENT THAT THEY APPLY. THE DRAWINGS AND THE SPECIFICATIONS ARE COMPLEMENTARY TO EACH OTHER AND WHAT IS CALLED FOR BY ONE SHALL BE BINDING AS IF CALLED FOR BY BOTH.

3. THE CONTRACTOR SHALL EXAMINE THE DRAWINGS, SPECIFICATIONS AND JOB SITE AND FULLY INFORM HIMSELF OF ALL EXISTING CONDITIONS AND WORK REQUIRED BY THE DRAWINGS AND SPECIFICATIONS BEFORE SUBMITTING HIS BID. WAIVER OF RESPONSIBILITY OR REQUEST FOR ADDITIONAL PAYMENT BASED ON LACK OF KNOWLEDGE OF EXISTING CONDITIONS AT THE SITE WILL NOT BE ACCEPTED OR CONSIDERED.

4. WORK SHALL BE PROTECTED AT ALL TIMES FROM DAMAGE BY PERSONS OR WEATHER AND ALL DAMAGED WORK RESTORED TO A NEW CONDITION BEFORE FINAL ACCEPTANCE.

5. ALL THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE WASHINGTON DC MECHANICAL CODE, 2012 PLUMBING CODE, LATEST APPLICABLE NFPA, AND ALL LOCAL CODES AND REGULATIONS. WHERE ANY PORTIONS OF THE SYSTEMS SHOWN ON THE DRAWINGS WHICH IS NOT IN ACCORDANCE WITH ALL APPLICABLE LAWS, ORDINANCES, REGULATIONS OR CODES, THIS CONTRACTOR SHALL MAKE ALL CHANGES REQUIRED BY THE ENFORCING AUTHORITIES IN A MANNER APPROVED BY THE ENGINEER.

6. THE CONTRACTOR SHALL ORDER AND OBTAIN ALL NECESSARY TESTS, PERMITS AND CERTIFICATES OF APPROVAL AND PAY ANY REQUIRED FEES FOR SAME.

7. THE CONTRACTOR SHALL COORDINATE ALL HIS WORK WITH THE GENERAL CONTRACTOR AND THE WORK OF THE OTHER DISCIPLINES.

8. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, ALL EQUIPMENT SHALL BE NEW AND SHALL BE INSTALLED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

9. PRIOR TO FABRICATION OF DUCTWORK, THIS CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS. IF DUCTS CANNOT BE INSTALLED AS SHOWN ON THE DRAWINGS, THIS CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY. ANY EXTRA OR DEDUCT NECESSITATED BY THE ABOVE CONDITION SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO THE CONTINUATION OF THE WORK.

10. EXAMINE ALL SERVICES, EQUIPMENT, SURFACES ETC., WHICH THIS WORK IS IN ANY WAY DEPENDENT UPON. SHOULD THE CONTRACTOR DISCOVER ANY CONDITIONS WHICH WILL PREVENT FOLLOWING GOOD PRACTICE OR RESULT IN LESS THAN A FIRST-CLASS INSTALLATION, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY AND SHALL NOT PROCEED WITH HIS WORK UNTIL HE HAS RECEIVED INSTRUCTIONS FROM THE ARCHITECT.

11. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION TO BE FREE FROM DEFECTS FOR ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER. ANY DEFECTS OCCURRING DURING THE GUARANTEE PERIOD SHALL BE CORRECTED AT NO ADDITIONAL COST TO THE OWNER.

12. ALL EQUIPMENT REQUIRING ELECTRIC POWER SHALL BE SUITED FOR USE WITH THE POWER TO BE SUPPLIED. ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE ELECTRICAL CONTRACTOR.

13. PRIOR TO PURCHASING OF ANY EQUIPMENT, FIXTURES, ETC., SUBMIT SHOP DRAWINGS (6 COPIES) FOR APPROVAL OF THE FOLLOWING ITEMS:

a. HVAC EQUIPMENT

b. FANS

c. CEILING DIFFUSERS

d. DUCTWORK

e. INSULATION

f. BALANCING CONTRACTOR QUALIFICATIONS

14. THE CONTRACTOR SHALL INSTRUCT THE OWNER IN THE OPERATION AND MAINTENANCE OF ALL COMPONENTS OF THE INSTALLATION.

15. THREE MAINTENANCE AND INFORMATION MANUAL SHALL BE PREPARED, SUBJECT TO THE ARCHITECT'S APPROVAL, FOR THE OWNER. THE MANUAL SHALL INCLUDE COPIES OF ALL SHOP DRAWINGS, WRITTEN OPERATING INSTRUCTIONS, PARTS LISTS, VENDOR LIST, SERVICES AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT.

16. ALL EQUIPMENT SHALL BE TESTED FOR PROPER OPERATION AND CORRECTED AS NECESSARY.
- BASIC MATERIALS AND METHODS

1. PIPE HANGER AND SUPPORTS: CLEVIS OR SPLIT RING TYPE SPACING AND ROD SIZE AS RECOMMENDED IN ASHRAE 2005 HANDBOOK AND IN ACCORDANCE WITH INDUSTRY PRACTICE. HANGERS FOR COPPER PIPE SHALL BE COPPER OR COPPER PLATED. BAND IRON HANGERS SHALL NOT BE USED. HANGERS AND ACCESSORIES SHALL BE FAM CORPORATION OR APPROVED EQUAL.

2. ALL PIPE PENETRATIONS OF EXTERIOR WALLS AND FOUNDATION WALLS SHALL BE SLEEVED WITH SCHEDULE 40 PIPE. ALL OPENINGS SHALL BE CAULKED AND SEALED WATERTIGHT.

3. THE REFRIGERANT SUCTION AND LIQUID LINES, THERMOSTAT WIRING AND POWER WIRING SHALL ALL BE RUN TOGETHER IN A TIGHT BUNDLE AND SHALL BE SECURED WITH PLASTIC FASTENERS, SPECIFICALLY DESIGNED FOR THIS PURPOSE, AT 18" INTERVALS.

4. ALL ROOF PENETRATING SHALL BE FLASHED.
- PIPING SPECIALTIES

1. PROVIDE ESCUTOHEON PLATES WHEREVER PIPES PASS THROUGH WALLS, FLOORS OR CEILINGS, OUTSIDE DIAMETER TO COVER COMPLETELY PIPE PENETRATION HOLE OR PIPE SLEEVE. NICKEL OR CHROME FINISH FOR EXPOSED AREAS, PRIME PAINT FINISH FOR CONCEALED AREAS.

2. UNIONS: PROVIDE DIELECTRIC UNIONS AT CONNECTIONS BETWEEN FERROUS AND NON-FERROUS PIPING. WATTS, EPCO OR EQUAL.

3. PROVIDE UL LISTED PLASTIC PIPE FIRE BARRIER DEVICE AS MANUFACTURED BY 3M WHEREVER PVC PIPE PENETRATES FIRE RATED WALLS.
- EQUIPMENT IDENTIFICATION

1. PROVIDE IDENTIFICATION TAGS FOR ALL HVAC EQUIPMENT.

a. TAGS SHALL BE NON-FERROUS METAL OR BAKELITE TAG MATERIAL, STAMPED OR ENGRAVED WITH IDENTIFICATION LETTERS AND NUMBERS, AND CHAIN OR WIRE FOR ATTACHMENT. TAGS SHALL BE LOCATED IN AN AREA THAT DOES NOT OBSTRUCT THE PROPER ACCESS FOR SERVICE AND MAINTENANCE.

2. DEFINITIONS

a. GENERAL: EMPLOY THE SERVICES OF AN INDEPENDENT TESTING, ADJUSTING, AND BALANCING AGENCY MEETING THE QUALIFICATIONS SPECIFIED BELOW, TO BE THE SINGLE SOURCE OF RESPONSIBILITY TO TEST, ADJUST, AND BALANCE THE BUILDING MECHANICAL SYSTEMS IDENTIFIED ABOVE, TO PRODUCE THE DESIGN OBJECTIVES.

b. AT CONTRACTOR'S OPTION SELECT A FIRM CERTIFIED WITH EITHER THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) OR THE AMERICAN AIR BALANCING COUNCIL (AABC) IN THOSE TESTING & BALANCING DISCIPLINES REQUIRED FOR THIS PROJECT.
- INSULATION

1. PROVIDE INSULATION FOR DUCTWORK, PIPING, AND EQUIPMENT OF TYPES AND THICKNESS SPECIFIED HEREIN. INSULATION SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED RATING NOT EXCEEDING 50. INSTALL INSULATION IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. A CONTINUOUS VAPOR BARRIER SHALL BE PROVIDED ON ALL COLD PIPING AND COLD AIR DUCTWORK. INSULATION SHALL BE ARMSTRONG, CERTAINTED OR OWENS-CORNING.

2. TYPE I - GLASS FIBER, LB. DENSITY DUCT WRAP, FACED WITH A REINFORCED ALUMINUM FOIL KRAFT WITH VAPOR BARRIER FACING AND A 2" TAPING FLANGE. CERTAINTED DUCT WRAP OR OWENS-CORNING ALL SERVICE DUCT WRAP. OUT INSULATION TO STRETCH-OUT DIMENSIONS AS RECOMMENDED BY MANUFACTURER.

3. TYPE II - DUCT LINING - 1" THICK SEMI-RIGID, COATED GLASS FIBER, 2 LB. DENSITY. CERTAINTED ULTRALITE OR OWENS-CORNING AEROFLEX DUCT LINER. WHERE DUCTWORK IS ACOUSTICALLY LINED, ADDITIONAL INSULATION IS NOT REQUIRED ON THE EXTERIOR SURFACE UNLESS OTHERWISE NOTED. CERTAINTED ULTRALITE OR OWENS-CORNING AEROFLEX DUCT LINER.

4. TYPE III - FLEXIBLE ELASTOMERIC THERMAL INSULATION WITH A MAXIMUM WATER VAPOR TRANSMISSION OF 0.17 PERM-IN WITH A "K" FACTOR OF 0.27 OR LESS AT 75 F MEAN TEMPERATURE. ARMSTRONG AEROFLEX II. INSULATION LOCATED OUTDOORS SHALL BE COVERED WITH WEATHER RESISTANT PROTECTIVE FINISH, ARMAFLEX FINISH OR EQUAL.

5. TYPE IV - KITCHEN HOOD EXHAUST DUCT INSULATION SHALL BE FIRE BARRIER R15+ DUCT WRAP NON-COMBUSTIBLE UL LISTED FIREPROOF WRAP AS MANUFACTURED BY 3M.

6. TYPE V - 2" THICK, RIGID FIBERGLASS BOARD, 3 LB. 70K FRK. AND VAPOR BARRIER PROTECTIVE COATING CHILDERS CHL-FRM WB CP-35.

7. FOR THE SERVICES INDICATED USE INSULATION THICKNESSES AND TYPES AS FOLLOWS:

a. SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK - 1.5", TYPE I.

b. REFRIGERANT PIPING - 5/8", TYPE III.

c. DUCT LINING - TYPE II, WHERE SHOWN ON FLOOR PLANS. WHERE DUCT LINING IS INSTALLED ADDITIONAL INSULATION IS NOT REQUIRED UNLESS OTHERWISE NOTED.

d. SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK IN TIGHT CEILING SPACES (KITCHEN AREA & WQINITY) - 1", TYPE III (SHEET INSULATION).

e. KITCHEN EXHAUST AND MAKE UP AIR DUCTWORK - 2", TYPE IV. DUCTWORK RUNNING OUTDOORS SHALL HAVE PROTECTIVE CANVAS COVER WITH MASTIC. REFER TO TYPICAL DUCT SUPPORT DETAIL FOR INSULATION COVERING/JACKET.

f. SUPPLY, RETURN AND OUTSIDE AIR DUCTWORK OUTSIDE ON ROOF - 2", TYPE V. REFER TO TYPICAL DUCT SUPPORT DETAIL FOR INSULATION COVERING/JACKET.
- AIR DISTRIBUTION

1. DUCTWORK SHALL BE CONSTRUCTED OF BEST QUALITY GALVANIZED SHEET METAL AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. CONSTRUCTION AND INSTALLATION SHALL CONFORM TO THE LATEST DUCT MANUAL OF THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL DUCTWORK SHALL BE CONSTRUCTED AND SEALED TO MEET 2" PRESSURE CLASSIFICATION.

2. SEAL DUCTS TRANSVERSE JOINTS WITH UL LISTED LIQUID OR MASTIC SEALANT IN ACCORDANCE WITH SMACNA DUCT SEALING REQUIREMENTS SEAL CLASS C. DUCT TAPE WILL NOT BE ACCEPTABLE.

3. PROVIDE TURNING VANES ON ALL SQUARE ELBOWS EXCEPT FOR GREASE DUCTS.

5. VOLUME DAMPERS FOR DUCTWORK CONCEALED IN WALLS, GYPOBOARD CEILINGS ETC. SHALL BE COMPLETE WITH CONNECTING RODS, GEARS AND ALL NECESSARY ACCESSORIES TO ADJUST THE VOLUME DAMPER WITHOUT DISTURBING THE FINISHED SURFACE. YOUNG REGULATOR CO. SERIES 912 FOR STRAIGHT CONNECTION, SERIES 914 WITH MITER GEAR FOR OFFSET DAMPER POSITION.

6. FURNISH AND INSTALL THE HOOD(S) EXHAUST DUCT SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH THE 2009 COMMONWEALTH OF VIRGINIA MECHANICAL CODE ARTICLE "COMMERCIAL KITCHEN GREASE DUCTS AND EXHAUST EQUIPMENT" AND "COMMERCIAL KITCHEN HOODS" PER NFPA 96 "STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS" AND AS INDICATED ON THE DRAWINGS.

7. KITCHEN EXHAUST DUCT SHALL BE MINIMUM 16 GA WELDED STEEL CONSTRUCTION. PORTIONS OF KITCHEN EXHAUST DUCT EXPOSED TO VIEW SHALL BE MINIMUM 18 GA WELDED STAINLESS STEEL CONSTRUCTION WITH NO VISIBLE STEEL IMPERFECTIONS.

8. ALL EXHAUST AND MAKE UP AIR DUCTWORK LOCATED INDOORS SERVING KITCHEN EXHAUST HOODS SHALL BE WRAPPED WITH FIRE INSULATION SO AS TO RESULT IN A ZERO CLEARANCE TO COMBUSTIBLES SYSTEMS. DUCTS SHALL BE WRAPPED WITH FIREWRAP DUCT INSULATION MANUFACTURED BY 3M. INSTALL IN ACCORDANCE WITH MANUFACTURERS' WRITTEN RECOMMENDATIONS. PROVIDE RATED ACCESS DOORS WHERE CLEANOUTS ARE REQUIRED ON THE DUCT BY 2009 COMMONWEALTH OF VIRGINIA MECHANICAL CODE.

9. RUN DUCTS AS HIGH AS POSSIBLE TIGHT TO THE UNDERSIDE OF STRUCTURE ABOVE.

10. LOUVERS: RAINPROOF CONSTRUCTION, EXTRUDED ALUMINUM STATIONARY LOUVER WITH 12 GA. BLADES MOUNTED AT 45 DEGREES, STAINLESS STEEL FASTENERS AND 1/2" SQUARE ALUMINUM BIRD SCREEN MOUNTED ON THE INSIDE. ANODIZED BRONZE FINISH OR ANODIZED CLEAR ALUMINUM FINISH AS SELECTED BY THE ARCHITECT. AIRLINE PRODUCTS CO. SERIES XB, THICKNESS AS REQUIRED BY THE WALL CONSTRUCTION.

11. PROVIDE FLEXIBLE DUCT CONNECTION AT DISCHARGE AND INLET CONNECTIONS TO ROOFTOP UNITS.

12. AIR OUTLETS & INLETS: ALL AIR OUTLETS & INLETS SHALL BE STEEL. ALUMINUM WILL NOT BE ALLOWED UNLESS SPECIFICALLY NOTED BELOW.

a. LOUVERED CEILING DIFFUSERS - 24x24 or 12x12 AS PER SCHEDULE ON DRAWINGS, STEEL CONSTRUCTION, WITH ADJUSTABLE PATTERN DEFLECTOR (APD) AND OPPOSED BLADE DAMPERS.

b. EXHAUST REGISTERS AND RETURN REGISTERS SHALL BE STEEL WITH HORIZONTAL, 45 DEGREE BLADES AT MANUFACTURER'S STANDARD SPACING AND WITH ADJUSTABLE OPPOSED BLADE DAMPER ASSEMBLY KEY ADJUSTABLE FROM FACE OF REGISTER

4. CODES AND STANDARDS

a. ASHRAE: ASHRAE HANDBOOK, 2005 APPLICATIONS VOLUME, CHAPTER 37, TESTING, ADJUSTING, AND BALANCING.

b. EITHER ONE OF THE FOLLOWING TWO STANDARDS:

(1) NEBB: "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS."

(2) AABC: "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE".

c. PRE-BALANCING CONFERENCE: PRIOR TO BEGINNING OF THE TESTING, ADJUSTING, AND BALANCING PROCEDURES, SCHEDULE AND CONDUCT A CONFERENCE WITH REPRESENTATIVES OF INSTALLERS OF THE MECHANICAL SYSTEMS. THE OBJECTIVE OF THE CONFERENCE IS FINAL COORDINATION AND VERIFICATION OF SYSTEM OPERATION AND READINESS FOR TESTING, ADJUSTING, AND BALANCING.

5. SUBMITTALS

a. ENGINEER AND TECHNICIANS DATA: SUBMIT PROOF THAT THE TEST AND BALANCE ENGINEER ASSIGNED TO SUPERVISE THE PROCEDURES, AND THE TECHNICIANS PROPOSED TO PERFORM THE PROCEDURES MEET THE QUALIFICATIONS SPECIFIED BELOW.

b. CERTIFIED REPORTS: SUBMIT TESTING, ADJUSTING, AND BALANCING REPORTS BEARING THE SEAL AND SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED, ADJUSTED, AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS. ARE AN ACCURATE REPRESENTATION OF HOW THE SYSTEMS HAVE BEEN INSTALLED; ARE A TRUE REPRESENTATION OF HOW THE SYSTEMS ARE OPERATING AT THE COMPLETION OF THE TESTING, ADJUSTING, AND BALANCING PROCEDURES; AND ARE AN ACCURATE RECORD OF ALL FINAL QUANTITIES MEASURED, TO ESTABLISH NORMAL OPERATING VALUES OF THE SYSTEMS. FOLLOW THE PROCEDURES AND FORMAT SPECIFIED BELOW.

c. PREPARE A REPORT, TYPE WRITTEN, ORGANIZED AND FORMATTED AS SPECIFIED BELOW. SUBMIT 6 COMPLETE SETS OF FINAL REPORTS.

d. REPORT FORMAT: REPORT FORMS SHALL BE THOSE STANDARD FORMS PREPARED BY THE REFERENCED STANDARD FOR EACH RESPECTIVE ITEM AND SYSTEM TO BE TESTED, ADJUSTED, AND BALANCED. BIND REPORT FORMS COMPLETE WITH SCHEMATIC SYSTEMS DIAGRAMS AND OTHER DATA IN REINFORCED, VINYL, THREE-RING BINDERS. PROVIDE BINDING EDGE LABELS WITH THE PROJECT IDENTIFICATION AND A TITLE DESCRIPTIVE OF THE CONTENTS. DIVIDE THE CONTENTS OF THE ORDER INTO THE BELOW LISTED DIVISIONS, SEPARATED BY DIVIDER TABS:

(1) GENERAL INFORMATION AND SUMMARY

(2) CALIBRATION REPORT

(3) AIR SYSTEMS

(4) TEMPERATURE CONTROL SYSTEMS

(5) SOUND AND VIBRATION SYSTEMS

(6) RECOMMENDATIONS

e. REPORT CONTENTS: PROVIDE THE FOLLOWING MINIMUM INFORMATION, FORMS AND DATA:

(1) GENERAL INFORMATION AND SUMMARY: INSIDE COVER SHEET TO IDENTIFY TESTING, ADJUSTING, AND BALANCING AGENCY, CONTRACTOR, OWNER, ARCHITECT, ENGINEER, AND PROJECT. INCLUDE ADDRESSES, AND CONTACT NAMES AND TELEPHONE NUMBERS. ALSO INCLUDE A CERTIFICATION SHEET CONTAINING THE SEAL AND NAME ADDRESS, TELEPHONE NUMBER, AND SIGNATURE OF THE CERTIFIED TEST AND BALANCE ENGINEER. PROVIDE THE DIVISION A LISTING OF THE INSTRUMENTATIONS USED FOR THE PROCEDURES ALONG WITH THE PROOF OF CALIBRATION.

(2) THE REMAINDER OF THE REPORT SHALL CONTAIN THE APPROPRIATE FORMS CONTAINING AS A MINIMUM, THE INFORMATION INDICATED ON THE STANDARD REPORT FORMS PREPARED BY THE AABC AND NEBB, FOR EACH RESPECTIVE ITEM AND SYSTEM. PREPARE A SCHEMATIC DIAGRAM FOR EACH ITEM OF EQUIPMENT AND SYSTEM TO ACCOMPANY EACH RESPECTIVE REPORT FORM.

(3) CALIBRATION REPORTS: SUBMIT PROOF THAT ALL REQUIRED INSTRUMENTATION HAS BEEN CALIBRATED TO TOLERANCES SPECIFIED IN THE REFERENCED STANDARDS, WITHIN A PERIOD OF SIX MONTHS PRIOR TO STARTING THE PROJECT.

(4) PREPARE REPORT OF RECOMMENDATIONS FOR CORRECTING UNSATISFACTORY MECHANICAL PERFORMANCES WHEN SYSTEM CANNOT BE SUCCESSFULLY BALANCED.

PIZZA OVEN EXHAUST DUCT

1. PROVIDE NEW TYPE 1 EXHAUST GREASE DUCTWORK TO COMPLY WITH IMC 2012.

2. DUCTWORK SHALL BE CONSTRUCTED OF BEST QUALITY GALVANIZED SHEET METAL AND SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. CONSTRUCTION AND INSTALLATION SHALL CONFORM TO THE LATEST DUCT MANUAL OF THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). ALL DUCTWORK SHALL BE CONSTRUCTED AND SEALED TO MEET 2" PRESSURE CLASSIFICATION.

3. SEAL DUCTS TRANSVERSE JOINTS WITH UL LISTED LIQUID OR MASTIC SEALANT IN ACCORDANCE WITH SMACNA DUCT SEALING REQUIREMENTS SEAL CLASS C. DUCT TAPE WILL NOT BE ACCEPTABLE.

4. FURNISH AND INSTALL THE HOOD EXHAUST DUCT SYSTEMS AND EQUIPMENT IN ACCORDANCE WITH THE 2012 WASHINGTON DC MECHANICAL CODE ARTICLE "COMMERCIAL KITCHEN GREASE DUCTS AND EXHAUST EQUIPMENT" AND "COMMERCIAL KITCHEN HOODS" PER NFPA 96 "STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS" AND AS INDICATED ON THE DRAWINGS.

5. KITCHEN EXHAUST DUCT SHALL BE MINIMUM 16 GA WELDED STEEL CONSTRUCTION. PORTIONS OF KITCHEN EXHAUST DUCT EXPOSED TO VIEW SHALL BE MINIMUM 18 GA WELDED STAINLESS STEEL CONSTRUCTION WITH NO VISIBLE STEEL IMPERFECTIONS.

6. ALL EXHAUST AND MAKE UP AIR DUCTWORK LOCATED INDOORS SERVING KITCHEN EXHAUST HOODS SHALL BE WRAPPED WITH FIRE INSULATION SO AS TO RESULT IN A ZERO CLEARANCE TO COMBUSTIBLES SYSTEMS. DUCTS SHALL BE WRAPPED WITH FIREWRAP DUCT INSULATION MANUFACTURED BY 3M. INSTALL IN ACCORDANCE WITH MANUFACTURERS' WRITTEN RECOMMENDATIONS. PROVIDE RATED ACCESS DOORS WHERE CLEANOUTS ARE REQUIRED ON THE DUCT BY WASHINGTON DC -MECHANICAL CODE 2012

7. RUN DUCTS AS HIGH AS POSSIBLE TIGHT TO THE UNDERSIDE OF STRUCTURE ABOVE.

8. CONTRACTOR SHALL PROVIDE AND INSTALL NEW FIRE SUPPRESSION SYSTEM AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY EXISTING DUCTWORK CLEARANCES AND SPRINKLER PIPING LOCATIONS PRIOR TO BID AND START WORK. NEW EXHAUST GREASE DUCTWORK SHALL BE FULLY WRAPPED PER MECHANICAL SPECIFICATIONS.

KITCHEN AIR BALANCE & CONTROLS

	EXHAUST		OUTSIDE AIR
	KITCHEN EXHAUST FAN KEF-1	1254	
EF-1:		160	-
OUTSIDE AIR EXISTING RTU'S		-	1450
TOTALS		1414	1450
AIR BALANCE = 1,450 - 1,414 = +36 CFM			

PIZZA HOOD EXHAUST FAN SCHEDULE

UNIT NO.	SERVES	CFM	TOTAL SP (IN WG)	FAN TYPE	RPM	DRIVE TYPE	ELECTRICAL DATA				PROTOTYPE HALTON	
							MOTOR W (HP)	CONNECTION				
								VOLTS	PHASE	CYCLE		
KEF-1	PIZZA OVEN	1254	0.66	UPBLAST	1750	DIRECT DRIVE	1/2	115	1	60	MODEL XRUD-141-VG PROVIDED ROOF CURB.	

EXISTING GAS RTU SCHEDULE

UNIT NO.	RTU-1		RTU-2
	AIR FLOW (CONSTANT)	2000 CFM	
OUTSIDE AIR CFM (MAXIMUM)	660	790	
FILTER	2"	2"	
E.D.B.	80°F	80°F	
E.W.B.	67°F	67°F	
AMBIENT	95°F	95°F	
L.D.B.	59.55°F	59.55°F	
L.W.B.	58.32°F	58.32°F	
TOTAL COOLING (BTU/H)	100.6 MBH	100.6 MBH	
SENSIBLE COOLING (BTU/H)	75.6 MBH	75.6 MBH	
GAS INPUT LOW (BTU/H)	150 MBH	150 MBH	
GAS OUTPUT (BTU/H)	121.500 MBH	121.500 MBH	
VOLTAGE/PHASE/HERTZ	208/3/60	208/3/60	
TONS	5	6	
COMPRESSOR RLA	28.8	28.8	
NO. OF CONDENSER FANS	2	2	
CONDENSER FAN HP/AMPS	1.2A	1.2A	
MINIMUM CIRCUIT AMPS	48	48	
MAXIMUM FUSE AMPS	70	70	
UNIT OPERATING WEIGHT (LBS.)	1100	1100	
EER/SEER	12.0/14.0	12.0/14.0	
BASIS OF DESIGN	EXISTING	EXISTING	

6. JOB CONDITIONS:

a. DO NOT PROCEED WITH TESTING, ADJUSTING, AND BALANCING WORK UNTIL HVAC WORK HAS BEEN COMPLETED, IS CLEAN AND FREE FROM DEBRIS, DIRT, AND DISCARDED BUILDING MATERIALS AND SYSTEMS ARE FULLY OPERABLE. ENSURE THAT THERE IS NO LATENT RESIDUAL WORK STILL TO BE COMPLETED.

7. TEST INSTRUMENTS:

a. UTILIZE TEST INSTRUMENTS AND EQUIPMENT FOR TAB WORK REQUIRED, OF TYPE, PRECISION, AND CAPACITY AS RECOMMENDED IN REFERENCED STANDARDS.

8. EXECUTION

a. INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY TO ALLOW ADEQUATE PERFORMANCE OF PROCEDURES.

b. PATCH HOLES IN INSULATION, DUCTWORK AND HOUSINGS WHICH HAVE BEEN CUT OR DRILLED FOR TEST PURPOSES, AND ACCESS FOR TEST INSTRUMENTS USING SAME PRODUCTS AS USED ORIGINALLY.

c. SEAL DUCTS AND PIPING, AND TEST FOR AND REPAIR LEAKS.

d. SEAL INSULATION TO RE-ESTABLISH INTEGRITY OF THE VAPOR BARRIER.

e. MARK EQUIPMENT SETTINGS, INCLUDING DAMPER CONTROL POSITIONS, VALVE INDICATORS, FAN SPEED CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, TO SHOW FINAL SETTINGS. MARK WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIALS.

f. TEST AND ADJUST MECHANICAL SYSTEMS FOR SOUND AND VIBRATION IN ACCORDANCE WITH THE DETAILED INSTRUCTIONS OF THE REFERENCED STANDARDS.

9. RECORD AND REPORT DATA:

a. RECORD ALL DATA OBTAINED DURING TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH, AND ON THE FORMS RECOMMENDED BY THE REFERENCED STANDARDS, AND AS APPROVED ON THE SAMPLE REPORT FORMS.

HVAC SYMBOLS AND ABBREVIATIONS

	MANUAL VOLUME DAMPER	AFF	ABOVE FINISHED FLOOR
	CFM	CUBIC FEET PER MINUTE	
	E	EXISTING	
	R	RELOCATED	
	D	DEMOLITION	
	N	NEW	
	OA	OUTSIDE AIR	
	RA	RETURN AIR	
	SA	SUPPLY AIR	
	T	THERMOSTAT	
	EA	EXHAUST AIR	
	UTR	UP THRU ROOF	
	MAU	MAKE UP AIR UNIT	
	EFU	EXHAUST FAN	
	RTU	ROOFTOP UNIT	
	ER	EXISTING TO BE RELOCATED	
	RE	EXISTING TO BE REMOVED	
	3/4" DOOR UNDER CUT		
	DOOR LOUVER		
	DUCT SMOKE DETECTOR		

FLEXIBLE AIR DUCT CONNECTION DETAIL  
SCALE: NOT TO SCALE

DIFFUSER/RETURN AIR GRILLES SCHEDULE							
DEVICE	AIR FLOW RANGE (CFM)	FACE SIZE	NECK SIZE	DAMPER	P.D. (IN W.G.)	NC	PROTOTYPE TITUS
RETURN GRILLE	1000/1600	2'x2'	2'X2'	NO	.1	20	23RL
SUPPLY DIFFUSER	125 - 225	2'x2'	8"ø	YES	.1	20	TMS
SUPPLY DIFFUSER	230 - 350	2'x2'	10"ø	YES	.1	20	TMS
SUPPLY DIFFUSER FOR MAKE-UP AIR UNIT AIR SUPPLY	230-350	2'x2'	12"ø	YES	.1	20	CAPTIVEAIRE# D1-PSP-T50

NOTES: 1. ALL RETURN AIR GRILLES SHALL BE EQUIPPED WITH 1" AIR FILTERS.  
2. ENCLOSED AIR EXPOSED AREAS OF SUPPLY AIR DIFFUSERS IN CEILING SPACE WITH TYPE III INSULATION TO ELIMINATE SWEATING.

EXISTING EXHAUST FAN SCHEDULE													
UNIT NO.	SERVES	EXH.CFM PROVIDED	TOTAL SP (IN WG)	FAN TYPE	RPM	DRIVE TYPE	ELECTRICAL DATA				WEIGHT LBS		
							MOTOR HP/WATTS	CONNECTION					
								VOLTS	PHASE	CYCLE			
EF-1	BATHROOMS & MOP SINK	190	.25	CABINET	900	DIRECT DRIVE	80 W	120	1	60	12	2.3	CSP-B110

DUCTLESS HEAT PUMP SCHEDULE			
FAN COIL UNIT	FCU-1	HEAT PUMP UNIT	HP-1
CFM	530-810	NOMINAL TONS	2
COOLING/HEATING CAPACITY	24,000/29,000 BTU	COMPRESSOR RLA	18
FAN MOTOR F.L.A.	0.60 A	CONDENSER FAN FLA	0.75 A
AMPS MCA	1.0 A	REFRIGERANT TYPE	R410A
VOLTS-PHASE	208-1-60	UNIT MCA	19 A
SEER/EEER	24.2/14.3	UNIT MOCP	25 A
FILTER TYPE	HIGH EFFICIENCY	VOLTAGE/PHASE	208-1-60
CONFIGURATION	DUCTLESS SPLIT ZONING HP	MANUFACTURER	DAIKIN
MANUFACTURER	MITSUBISHI	MODEL #	PUZ-A24NH47-BS
MODEL #	PLA-A24EA7	TYPE OF THERMOSTAT	WIRELESS REMOTE CONTROLLER
WEIGHT	56 LBS	WEIGHT	153 Lbs

NOTES: 1. PROVIDE LOW AMBIENT CONTROL.  
2. PROVIDE A WALL MOUNTED CONDENSATE PUMP NEXT TO THE FCU. CONNECT DRAIN TO NEAREST ROOF DRAIN WITH BACK FLOW PREVENTOR.  
3. PROVIDE CN-24 RELAY KIT, REMOTE TEMPERATURE SENSOR, M-NET ADAPTER PAC-SF81MA-E, AIR OUTLET GUIDE & WIND BAFFLE  
4. PROVIDE 7 DAY, 24/7, AUTO ON-OFF DIGITAL WALL PROGRAMMABLE THERMOSTAT.  
5. UNITS WILL OPERATE COOLING DOWN TO 0 DEGREES F. (-17.7 DEGREES C.)  
6. INDOOR UNIT POWERED BY OUTDOOR UNIT.

25 years of design

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MECHANICAL NOTES SYMBOLS AND SCHEDULES

DocuSigned by:

DATE: 11/21/2019  
ISSUE FOR PERMIT

SHEET

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